SUBMITTAL TO THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

122A

FROM: TLMA - Transportation Department

SUBMITTAL DATE: April 26, 2012

SUBJECT: Construction of traffic signal and associated improvements at the intersection of Magnolia Avenue and Neece Street in the community of Home Gardens.

RECOMMENDED MOTION: That the Board of Supervisors:

1. Approve the plans and specifications for the construction of a traffic signal and associated improvements at the intersection of Magnolia Avenue and Neece Street in the community of Home Gardens; and,

2. Authorize the Clerk to advertise for bids to be received in the office of the Director of Transportation up to the hour of 2:00 PM, Wednesday, May 23, 2012, at which time bids will be opened.

Juan C. Perez
Director of Transportation

JCP:jrj:rr
(Continued On Attached Page)

FINANCIAL DATA				
	Current F.Y. Total Cost:	$ 479,423	In Current Year Budget:	Yes
	Current F.Y. Net County Cost:	$ 0	Budget Adjustment:	No
	Annual Net County Cost:	$ 0	For Fiscal Year:	2011/2012

SOURCE OF FUNDS: Prop 1B- State Local Partership Program (31%), West County DIF Siganl Mitigation Fund (69%)

There are no General Funds used in this project.

Positions To Be Deleted Per A-30 ☐

Requires 4/5 Vote ☐

C.E.O. RECOMMENDATION: APPROVE

BY: Tina Grande

County Executive Office Signature

FORM APPROVED COUNTY COUNSEL
BY: MARSHA L. VICTOR DATE 4/25/12

Departmental Concurrence

☒ Policy ☒ Policy
☐ Consent ☐ Consent
Dep't Recomm.: Per Exec. Ofc.:

MINUTES OF THE BOARD OF SUPERVISORS

On motion of Supervisor Stone, seconded by Supervisor Tavaglione and duly carried, IT WAS ORDERED that the above matter is approved as recommended.

Ayes: Buster, Tavaglione, Stone and Benoit
Nays: None
Absent: Ashley
Date: May 8, 2012
xc: Transp., COB

Kecia Harper-Ihem
Clerk of the Board
By: Deputy

Prev. Agn. Ref. | **District:** 2/2 | **Agenda Number:** 3.20

ATTACHMENTS FILED
WITH THE CLERK OF THE BOARD

Form 11 (Rev 07/2007)

BACKGROUND: The Transportation Improvement Program provides for the construction of a traffic signal and associated improvements at the intersection of Magnolia Avenue and Neece Street in the community of Home Gardens. The proposed traffic signal will improve safety by providing protected traffic movements and pedestrian crossings. This intersection is a known pedestrian path for going to and from the Home Gardens Library and adjacent bus stops. This intersection is also next to Home Gardens Fire Station #13.

The proposed associated intersection improvements include pavement reconstruction, the construction of sidewalks, ramps, curbs, gutter, retaining wall, fence, decorative stamped concrete, landscaping, striping, signing improvements and installation of two turning lanes. The existing Magnolia Avenue median will be reconstructed to accommodate the installation of these new left-turn lanes to improve intersection safety and operation by eliminating lane blockage, traffic delay and also to provide a safe queuing location for eastbound and westbound vehicles.

The proposed project improvements require acquisition of property in the median of Magnolia Avenue to accommodate the left-turn lanes. The Magnolia Avenue median area is owned by Union Pacific Railroad Company (UP). The County initiated the eminent domain process in May 2011 and the County was granted possession of UP's ROW on March 27, 2012 during a pre-judgment hearing. The land value remains to be determined in court or through negotiations between the parties, which are on-going.

The proposed work is to be funded by State Proposition 1B Local Partnership Program (SLPP) funds and West County DIF Signal Mitigation funds. The project was awarded the SLPP funds in October 2009 through a competitive process in which the County was successful. Allocation of the SLPP funds by the California Transportation Commission (CTC) occurred on October 28, 2011.

The adjustment of a fire hydrant owned by the Home Gardens County Water District (HGCWD) is included in the bid package as an alternate bid schedule. If HGCWD approves the award of the alternate bid schedule, as bid by the apparent low bidder, the costs for the work will be funded by HGCWD.

Annual traffic signal operation and maintenance costs are estimated at $5,500 to be funded from gas tax.

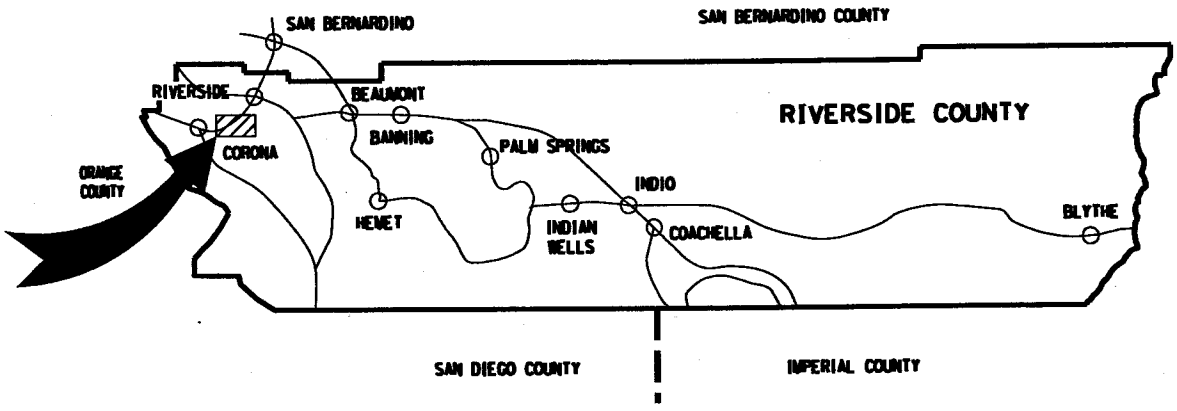
The submitted plans and specifications have been approved as to form by County Counsel.

Environmental clearance is complete.

Project Number: B6-0460

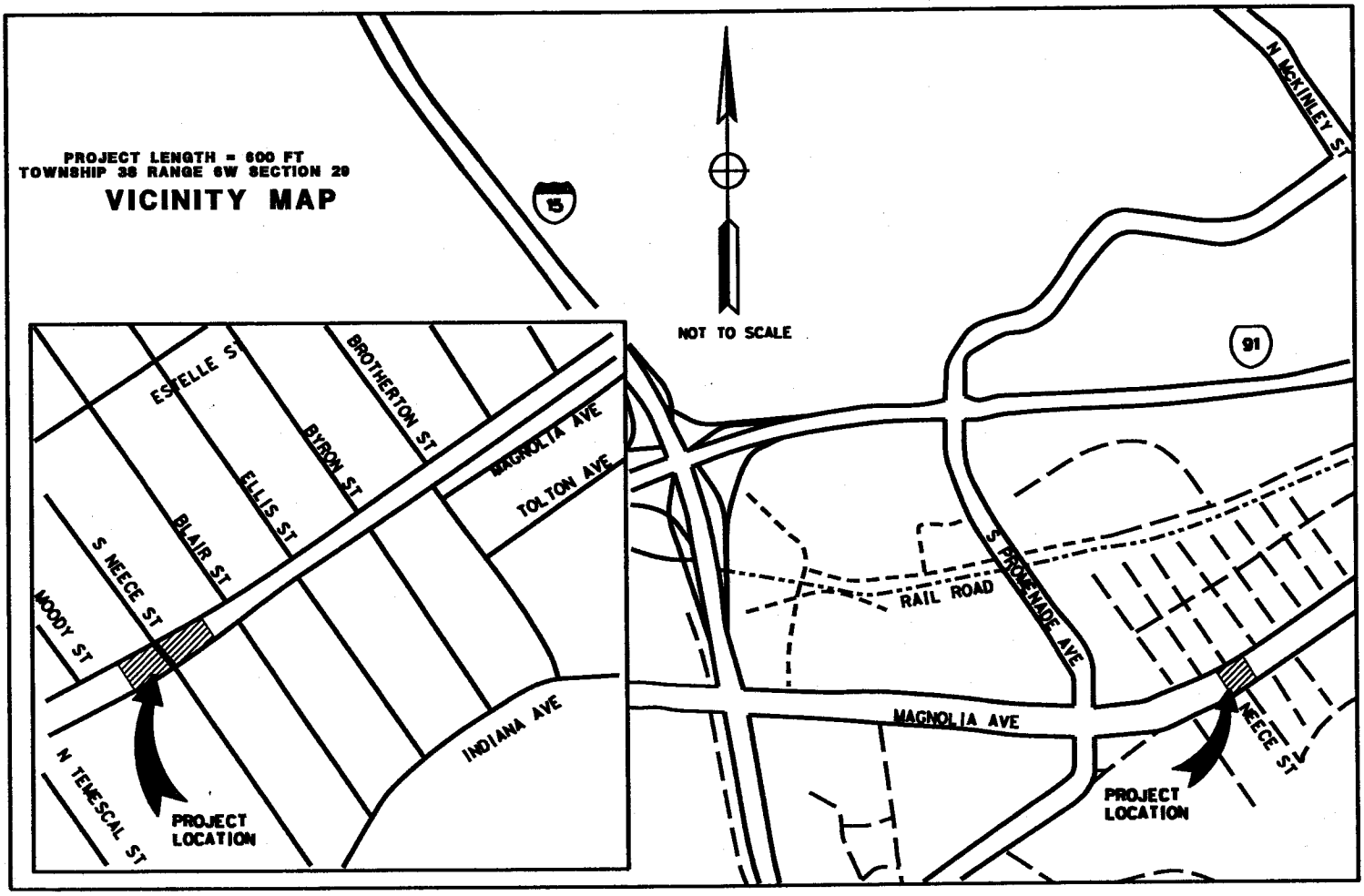
MAGNOLIA AVENUE AND NEECE STREET TRAFFIC SIGNAL AND LIGHTING PROJECT

FROM
300 FT WEST OF NEECE STREET
TO 300 FT EAST OF NEECE STREET



PROJECT LENGTH = 600 FT
TOWNSHIP 3S RANGE 6W SECTION 29

VICINITY MAP



MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. B6-0460

SPECIFICATIONS AND CONTRACT DOCUMENTS
For the construction of

MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. **B6-0460**

Contract Approvals:

Recommended by:

Dowling Tsai,
County Project Manager

4/19/12
Date

Approved by:

Khalid Nasim,
Engineering Division Manager

4/19/2012
Date

SPECIFICATIONS AND CONTRACT DOCUMENTS
For the construction of

MAGNOLIA AVENUE AND NEECE STREET TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. **B6-0460**

Engineering Certification:

These specifications, special provisions, and estimates have been prepared by or under the direction of the following Registered Civil Engineer:

Civil Engineering Only

EDWARD NG,
Registered Engineer
R.C.E. 46767

4/19/12
Date

SPECIFICATIONS AND CONTRACT DOCUMENTS

For the construction of

MAGNOLIA AVENUE AND NEECE STREET TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. **B6-0460**

Water Pollution Control Special Provision:

Reviewed and Recommended by:

Claudia Steiding — 4/19/12

Claudia Steiding — Date
Senior Transportation Planner
NPDES Coordinator
Riverside County Transportation Department

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NOTICE INVITING BIDS

County of Riverside, herein called Owner, invites sealed proposals for:

MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. B6-0460

Proposal shall be delivered to the Riverside County Transportation Department, 14th Street Annex, 3525 14th Street, Riverside, California 92501, telephone (951) 955-6780 not later than 2:00 p.m., on Wednesday, May 23, 2012, to be promptly opened in public at said address. Each proposal shall be in accordance with plans, specifications, and other contract documents, dated April 2012, and prepared by County of Riverside, whose address is same as the above, from whom they may be obtained upon deposit of $35 per set plus mailing. No refund. Prospective bidders may preview the plans, specifications and other contract documents, at no charge prior to purchase, at the above noted location.

The Contractor is required to have a Class "A" license or "C-12" license at the time of bid submission.

Dated: May 08, 2012

Kecia Harper-Ihem, Clerk of the Board

By:_____
Deputy

INSTRUCTIONS TO BIDDERS

1. **Form of Proposal.** The proposal must be made on the form of Contractor's Proposal which is included in the Contract Documents and must be completely filled in, dated and signed. If provision is made for alternates, they must all be bid, unless otherwise provided in the Special Provisions.

2. **Bid Bond.** The proposal must be accompanied by a 10% Bid Bond, using the form provided in the Contract Documents, or by a certified or cashier's check payable to the order of County in an amount not less than 10% of the amount bid, inclusive of alternates.

3. **Submission of Proposal.** A proposal must be submitted in a sealed opaque envelope which clearly identifies the bidder and the project. Bids must be received by the time and at the place set forth in the Notice Inviting Bids and may be withdrawn only as stated in the proposal. **Bids shall be completed in ink.**

4. **Contract Documents.** The complete Contract Documents are identified in the Agreement. Potential bidders are cautioned that the successful bidder incurs duties and obligations under all of the Contract Documents and that they should not merely examine the Plans and Specifications in making their bid.

5. **License.** To be considered for award of the contract, a potential bidder must have the kind of license required under provisions of the California Business and Professions Code for the work covered in this proposal. This includes joint ventures.

   Each item of work will be performed by a Contractor which is qualified and properly licensed for that work.

   Pursuant to California Labor Code Section 3099, certification is required for all persons who perform work as electricians for Contractors licensed as Class C-10 Electrical Contractors. Proof of certification shall be provided to the County before the start of construction.

6. **Quantities.** The amount of work to be done or materials to be furnished under the Contract as shown in the Contractor's Proposal are but estimates and are not to be taken as an expressed or an implied statement that the actual amount of work or materials will correspond to the estimate.

County reserves the right to increase or decrease or to entirely eliminate certain items from the work or materials to be furnished if such action is found to be desirable or expedient.

Contractor is cautioned against the unbalancing of his bid by prorating his overhead only into one or two items when there are a number of items listed in the schedule.

7. **Interpretation of Documents.** Discrepancies, omissions, ambiguities, requirements likely to cause disputes between trades and similar matter shall be promptly brought to the attention of the County of Riverside in writing. When appropriate, Addenda will be issued by County.

If the Bidder requires clarification or interpretation of the Bidding Documents, the Bidder shall make a written request to the County by a Request for Information (RFI). All requests for information must be submitted, in writing, between the hours of 8:00 AM and 5:00 PM on any day, Monday through Thursday (except holidays), up to, including and no later than the fifth (5^{th}) day prior to Bid Closing Deadline, by hand delivery, mail, fax or electronic mail. The County of Riverside will not respond to Requests for Information submitted after that time, unless the County determines, at its sole discretion, which it is in the best interest of the public and the County to do so. Requests for Information should be addressed to County of Riverside, Transportation Department, Attn: Joel Jimenez; 3525 14^{th} Street, Riverside, CA 92501, facsimile (951) 955-3164, electronic mail: jrjimenez@rctlma.org

No communication by anyone as to such matters except by an Addendum affects the meaning or requirements of the Contract Documents.

8. **ADDENDA.** County reserves the right to issue Addenda to the Contract Documents at any time prior to the time set to open bids. Each potential bidder shall leave with the County Transportation Department his name and address for the purpose of receiving Addenda to be mailed or delivered to such names at such addresses. **To be considered, a Contractor's Proposal must list and take into account all issued Addenda.**

9. **Inspection of Site.** Bidders must examine the site and acquaint themselves with all conditions affecting the work. By making his bid a bidder warrants that he has made such site examination as he deems necessary as to the condition of the site, its accessibility for materials, workmen and utilities and ability to protect existing surface and subsurface improvements. No claim for allowances - time or money - will be allowed as to such matters.

10. **Bonds.** The County requires a 100% Payment Bond and 100% Performance Bond from the successful bidder. All Bonds must be on County's forms contained in the Contract Documents.

The bonds must be underwritten by a Surety Company, which is admitted to transact the business of insurance in the State of California, and which carries a rating in the current issue of Best's Insurance Guide of "A" or better with a financial size of at least "VIII". The bond forms included in the project documents shall be used. All signatures on the bonds shall be notarized. Bonds shall be provided with an executed Power of Attorney issued by the surety.

11. **Bids.** Bids are required for the entire work, including all alternate bid schedules, if applicable, unless otherwise explicitly allowed in the bid documents. The amount of the bid for comparison purposes will be the total of all items. The total of unit basis items will be determined by extension of the item price bid on the basis of the estimated quantity set forth for the item.

The bidder shall set forth for each item of work in clearly legible figures, an item price and a total for the item in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Total" column shall be the extension of the item price bid on the basis of the estimated quantity for the item.

In case of discrepancy between the item price and the total set forth for the item, the item price shall prevail, provided, however, if the amount set forth as an item price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or in the case of unit basis items, is the same amount as the entry in the "Total" column, then the amount set forth in the "Total" column for the item shall prevail in accordance with the following:

a. As to lump sum items, the amount set forth in the "Total" column shall be the item price.

b. As to unit basis items, the amount set forth in the "Total" column shall be divided by the estimated quantity for the item and the price thus obtained shall be the item price.

The bidder is advised that the items of work may be grouped into bid schedules, and that certain bid items may be listed in more than one bid schedule, and with different bid item numbers, and the following shall apply thereto:

The bidder is directed to submit the same bid amount for all contract bid items that are listed with the same item code and item description. Said bid items are referred to herein as "Like Bid Items".

"Like Bid Items" shall be considered a single bid item for purposes of calculating increased and decreased quantities, and as otherwise applicable in Section 4-1.03, "Changes" of the Standard Specifications.

The following are not subject to this bidding requirement:

1. Bid items with the same item code but different item descriptions.

2. Bid items that are measured as "lump sum" or "force account".

3. Alternate bid schedules.

In the event that a bidder submits different unit bid amounts for "Like Bid Items", as described above, the bid will be corrected by applying the lowest of the unit bid amounts to all the respective "Like Bid Items".

No bidder may withdraw his bid for a period of ninety (90) days after the bid opening.

12. **Award of Contract.** The County reserves the right to reject all bids received. Acceptance by the governing body of the County by resolution or minute order at a meeting regularly called and held of a Contractor's Proposal constitutes an award of the contract and the execution of the Agreement is a written memorial thereof.

The County of Riverside will submit the contract documents to the low responsive and responsible bidder for execution prior to award utilizing the following procedures and requirements:

a. A bidder whose proposal is accepted shall execute the formal construction agreement with the County of Riverside, similar to the form attached hereto as a sample, and shall return said agreement, together with approved performance and payment bonds and with complete evidence of insurance as required elsewhere herein, including executed additional insured endorsements and waivers of subrogation, within ten (10) working days from the date of the Notice of Acceptance of Proposal and Intent to Award as issued by the Transportation Department. All submittals shall meet the requirements of the bid documents. Corrections, if required, shall be made and the revised documents shall be resubmitted within two (2) working days of Contractor's receipt of review comments.

b. The contract bonds and insurance documentation shall be submitted in accordance with the contract requirements prior to submission to the County of Riverside Board of Supervisors for award by the Transportation Department, and prior to the performance of any work under the contract.

c. If a Bidder to whom a Notice of Acceptance of Proposal and Intent to Award has been issued, fails or refuses to sign a construction agreement, or to furnish the bonds or insurance certificates and endorsements as required within the prescribed period of time as described above, the County of Riverside may, at its sole discretion, rescind the Notice of Acceptance, and the bid guarantee submitted by that Contractor shall become the property of the County of Riverside as prescribed in the bid documents and as allowed by law.

d. If it is in the best interest of the County of Riverside, the County reserves the right to award the contract prior to execution by the Contractor. Thereafter, County shall mail or deliver to the lowest responsible bidder the agreement for Contractor's execution and return.

13. **Return of Guarantee.** Bid bonds will not be returned unless specifically requested by the bidder. Any submitted negotiable securities of unsuccessful bidders will be returned by mail within 30 days of the award of a contract to the successful bidder. Any submitted negotiable security of the successful bidder will be returned by mail within 30 days of receipt by the County of executed contract, certificate of insurance, performance bond and payment Bond.

14. **Subletting and Subcontracting.** Bidders are required pursuant to the Subletting and Subcontracting Fair Practices Act (commencing with Section 4100 of the Public Contracts Code) to list in their proposal the name and location of place of business of each subcontractor who will perform work or labor or render services in or about the construction of the work or improvement or a subcontractor who specifically fabricates and installs a portion of the work or improvement according to detailed drawings contained in the Plans and Specifications in excess of 1/2 of 1% of this prime Contractor's total bid. Failure to list a subcontractor for a portion of the work means that the prime Contractor will do that portion of the work. It is the County's intent for the Subletting and Subcontracting Fair Practice Act to apply to all phases of the work.

15. **Qualifications of Bidders.** No award will be made to any bidder who cannot give satisfactory assurance to the Board of Supervisors as to his own ability to carry out the contract, both from his financial standing and by reason of his previous experience as a Contractor on work of the nature contemplated in the contract. The bidder may be required to submit his record of work of similar nature to that proposed under these specifications, and unfamiliarity with the type of work may be sufficient cause for rejection of bid.

16. **Contract Participation.** Riverside County's M/W/DVBE Contract Participation Program affirms the utilization and participation of qualified minority, women and disabled veteran firms in its contracting and procurement activities. The County

encourages general and prime Contractors to afford competitive subcontracting opportunities to minority, women and disabled veteran firms where possible, in their contracting and procurement activities with the County of Riverside.

17. **Hours of Work.** Attention is directed to Section 8-1.06,"Time of Completion" and Section 7-1.01A (1), "Hours of Labor" of the Standard Specifications.

Daily working hours shall be between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday, except legal holidays, as approved by the Engineer. Exceptions and specific work schedules shall be submitted to the Engineer for consideration.

18. **Labor Code.** Pursuant to the Labor Code, the governing board of the Owner has obtained from the Director of the Department of Industrial Relations, State of California, his determinations of general prevailing rates of per diem wages applicable to the work, and for holiday, and overtime work, including employer payments for health and welfare, pensions, vacation and similar purpose, as set forth on schedule which is on file at the principal office of the Owner, and which will be made available to any interested person upon request.

19. **Alternate Bid Schedules.** If the Proposal includes bid items listed under a Base Bid Schedule and one or more Alternate Bid Schedules, the following shall apply: The County may award only the items of work listed on the Base Bid Schedule, or may choose to award some or all of the Alternate Bid Schedules in addition to the Base Bid Schedule. Unless otherwise specified, the basis of the selection of the lowest bid shall be the lowest responsive and responsible bid for the sum of all Bid Schedules.

If the Proposal includes bid items listed under two or more Alternate Bid Schedules with no Base Bid Schedule, the following shall apply: This project contains Alternate Bid Schedules that may or may not be mutually exclusive, as described elsewhere in the bid documents. The County may award the items of work listed on one or more of the Alternate Bid Schedules. In the case of mutually exclusive Alternate Bid Schedules, only one of the Alternate Bid Schedules will be selected for award. Unless otherwise specified, the basis of the selection of the lowest bid shall be the lowest responsive and responsible bid for the sum of all Bid Schedules.

The County also reserves the right to reject all bids received.

20. **Dust Abatement.** Attention is directed to Section 23, "Dust Abatement" with regard to the dust abatement provisions of the contract.

21. **Submission of Insurance Certificate.** Within ten (10) working days of the date of the Notice of Acceptance of Proposal and Intent to Award issued by the County of Riverside, the successful Contractor shall submit a certificate of insurance, including required endorsements, which provides evidence that the bidding Contractor has insurance coverage that meets the requirements of Section 18 of the General Conditions. Failure to have complete insurance coverage in place and to provide all required certificates and endorsements within the specified ten (10) working days period will be grounds for declaring the bidder to not be in compliance with the bid documents, rescinding the Notice of Acceptance, making a claim against the bid bond, and awarding to the second low bidder, at the sole discretion of the County.

CONTRACTOR'S PROPOSAL

TO: COUNTY OF RIVERSIDE DATE:_____

hereafter called "County":

BIDDER:_____
(hereafter called "Contractor")

THE UNDERSIGNED, Contractor, having carefully examined the site and the Contract Documents for the construction of **MAGNOLIA AVENUE AND NEECE STREET TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT, PROJECT No. B6-0460** hereby proposes to construct the work in accordance with the Contract Documents, including Addenda Nos._____ for the amount stated in this Proposal.

By submitting this Proposal, Contractor agrees with County:

1. That unless withdrawn in person by Contractor or some person authorized in writing by Contractor not by telephone or telegram before the time specified in the Notice Inviting Bids for the public opening of bids, this Proposal constitutes an irrevocable offer for 90 calendar days after that date.

2. County has the right to reject any or all Proposals and to waive any irregularities or informalities contained in a Proposal.

3. To execute the Agreement and deliver the Faithful Performance Bond, Payment Bond and Insurance Certificate with endorsements, which comply with the requirements set forth in the Instructions to Bidders and General Conditions, within ten (10) working days of the date of the Notice of Acceptance of Proposal and Intent to Award as issued by the County of Riverside.

4. That the contract shall be awarded upon a resolution or minute order to that effect duly adopted by the governing body of County; and that execution of the Contract Documents shall constitute a written memorial thereof.

5. To submit to County such information as County may require to determine whether a particular Proposal is the lowest responsible bid submitted.

6. That the accompanying certified or cashier's check or Bid Bond is in an amount not less than 10% of the total bid submitted and constitutes a guarantee that if awarded the contract, Contractor will execute the Agreement and deliver the required bonds within ten (10) days after notice of award. If Contractor fails to execute and deliver said documents, the check or bond is to be charged with the costs of the resultant damages to County, including but not limited to publication costs, the difference in money between the amount bid and the amount in excess of the bid which it costs County to do or cause to be done the work involved, lease and rental costs, additional salaries and overhead, increased interest and costs of funding the project, attorney expense, additional engineering and architectural expense and cost of maintaining or constructing alternate facilities occasioned by the failure to execute and deliver said documents.

7. By signing this proposal the Contractor certifies that the representations made therein are made under penalty of perjury.

MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT No. B6-0460

PROPOSAL

BASE BID

ITEM No.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITY	ITEM PRICE (IN FIGURES)	TOTAL (IN FIGURES)
1	066102	DUST ABATEMENT	LS	1		
2	074020	WATER POLLUTION CONTROL	LS	1		
3	120100	TRAFFIC CONTROL SYSTEM	LS	1		
4	170101	DEVELOP WATER SUPPLY	LS	1		
5	160101	CLEARING AND GRUBBING	LS	1		
6	190101	ROADWAY EXCAVATION	CY	520		
7	260201	CLASS 2 AGGREGATE BASE	CY	365		
8	390132	HOT MIX ASPHALT (TYPE A)	TON	315		
9	011507	COLD PLANE ASPHALT CONCRETE PAVEMENT (.12')	SQYD	1,630		
10	000003	REMOVE AND REINSTALL INTERLOCKING PAVER BLOCKS	LS	1		
11	000003	RE-ESTABLISH EXISTING MONUMENT WELL	LS	1		
12	731656	CURB RAMP DETECTABLE WARNING SURFACE [PER DETAIL R1 & R3 ON PLAN]	SQFT	24		
13	510516	MINOR CONCRETE [TYPE 6 RETAINING WALL]	CY	19		
14	017315	MINOR CONCRETE (CURB RAMP) (CRS 403 - CASE A)	EA	1		
15	017316	MINOR CONCRETE (CURB RAMP) (CRS 403 - CASE B)	EA	1		
16	017319	MINOR CONCRETE [ACCESS RAMP] PER DETAIL R4 & R5 SHT C-2	EA	2		
17	017317	MINOR CONCRETE (CROSS-GUTTER AND SPANDREL)	SQFT	65		
18	017305	MINOR CONCRETE (CURB AND GUTTER) (CRS 201)	LF	743		
19	017309	MINOR CONCRETE (TYPE "D" CURB) (CRS 204)	LF	356		
20	731521	MINOR CONCRETE (SIDEWALK)	SQFT	1,102		
21	731519	MINOR CONCRETE (STAMPED CONCRETE)	SQFT	4,668		
22	000003	REMOVE AND RECONSTRUCT CONCRETE OVERSIDE DRAIN	EA	2		
23	731502	MINOR CONCRETE [1' WIDE COLORED CONCRETE STRIP]	SQFT	245		
24	000003	RAIL AND PICKET FENCE PER DETAIL I SHT C-1	LF	110		
25	152402	ADJUST WATER VALVE COVER TO GRADE	EA	1		

PROPOSAL

BASE BID

ITEM No.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITY	ITEM PRICE (IN FIGURES)	TOTAL (IN FIGURES)
26	000003	GROUND PREPARATION [FINE GRADING, SOIL PREPARATION (AMENDMENTS, FERTILIZERS, & WEED PREP.), MULCHING (RECYCLED ORGANIC) 3" THICK LAYER]	SQFT	7,345		
27	000003	1 GALLON SHRUBS / GROUNDCOVER	EA	337		
28	000003	5 GALLON SHRUBS / GROUNDCOVER	EA	243		
29	000003	1812-SAM-PRS POP-UP SPRAY HEAD W/ SWG JNT/CHK VLV	EA	96		
30	000003	PGP ULTRA POP-UP ROTOR W/ SWG JNT/CHK VLV	EA	17		
31	000003	3" NIBCO F-619-RW GATE VALVE & SCH 80 FLANGES	EA	1		
32	000003	ELECTRIC CONTROL VALVE ASSEMBLY, BALL VALVE & FITTINGS	EA	5		
33	000003	QUICK COUPLING VALVE	EA	1		
34	000003	QUICK COUPLING VALVE KEYS / HOSE SWIVELS	EA	1		
35	000003	NON- PRESSURE LATERAL LINE- SCH 40 - 3/4"	LF	450		
36	000003	NON- PRESSURE LATERAL LINE- SCH 40 - 1"	LF	175		
37	000003	NON- PRESSURE LATERAL LINE- SCH 40 - 1 1/4"	LF	150		
38	000003	NON- PRESSURE LATERAL LINE- SCH 40 - 1 1/2"	LF	125		
39	000003	NON- PRESSURE LATERAL LINE- SCH 40 - 2"	LF	100		
40	000003	PRESSURE SUPPLY LINE - CL 315 BE	LF	450		
41	000003	GREEN PLASTIC STANDARD 10" ROUND VALVE BOX W/ SUMP/FILTER FAB	EA	4		
42	000003	GREEN PLASTIC STANDARD RECTILINEAR VALVE BOX W/ SUMP/FILTER FAB	EA	5		
43	000003	14 GAUGE DIRECT BURIAL WIRE	LF	5,000		
44	000003	MISCELLANEOUS FITTINGS LATERALS	LS	1		
45	000003	90 DAY MAINTENANCE PERIOD	LS	1		
46	860201	SIGNAL AND LIGHTING	LS	1		
47	150717	REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING	SQFT	1,800		
48	840515	THERMOPLASTIC PAVEMENT MARKING	SQFT	1,200		
49	840656	PAINT TRAFFIC STRIPE (2-COAT)	LF	6,900		
50	150740	REMOVE SIGN	EA	14		
51	066148	RELOCATE SIGNS	EA	2		
52	566011	ROADSIDE SIGN - ONE POST	EA	10		

PROPOSAL

BASE BID

ITEM No.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITY	ITEM PRICE (IN FIGURES)	TOTAL (IN FIGURES)
53	850102	PAVEMENT MARKER (REFLECTIVE)	EA	179		
54	019901	DE-MOBILIZATION	LS	1	23,000.00	23,000.00

PROJECT SUB-TOTAL: ITEMS 1-54 _____ "WORDS" $_____

ALTERNATE BID No. 1 - Home Gardens County Water District

ITEM No.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITY	ITEM PRICE (IN FIGURES)	TOTAL (IN FIGURES)
55	152351	RELOCATE FIRE HYDRANT	EA	1		

PROJECT SUB-TOTAL: ITEM 55 _____ "WORDS" $_____

PROJECT TOTAL: ITEMS 1-55 _____ "WORDS" $_____

BIDDER DATA:

Name of Bidder _____

Type of Organization _____

Person(s) Authorized to Sign for Bidder _____

_____

Address _____

_____ Phone _____

Contractor's License _____
Type & Number

Expiration Date _____

8. DESIGNATION OF SUBCONTRACTORS: Contractor submits the following complete list of each subcontractor who will perform work or labor or render service in or about the construction in an amount in excess of 1/2 of 1% of the total bid.

ITEM	SUBCONTRACTOR	ADDRESS	LICENSE NO.

Percent of work to be performed by sub-contractors:____%
(Note: 50% of the work required to be performed by general contractor)

IN WITNESS WHEREOF Contractor executed this Proposal as of the date set forth on Page 1 of this proposal.

_____

_____

TITLE _____
"Contractor"

Non-Collusion Declaration

To be executed by bidder and submitted with bid. (Public Contract Code Section 7106)

The undersigned declares:

I am the _____ **(Title)** of _____ **(Company)**, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder.

All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price of any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on

_____ **(Month)** _____ **(Day)** of _____ **(Year)**,

at _____ **(City)**, California.

Signature of Declarant: _____

Printed name of Declarant: _____

Name of Bidder (Company): _____

Title or Office: _____

Note: Notarization of signature required.
☐ Check box if attachment is included.

BID BOND

Recitals:

1. _____ "Contractor", has submitted his Contractor's Proposal to County of Riverside, "County", for the construction of public work for **MAGNOLIA AVENUE AND NEECE STREET TRAFFIC SIGNAL AND STREET IMPROVEMENT, PROJECT No. B6-0460** in accordance with a Notice Inviting Bids of County dated _____.

2. _____ a _____ corporation, hereafter called "Surety", is the surety of this Bond.

Agreement:

We, Contractor as principal and Surety as surety, jointly and severally agree and state as follows:

1. The amount of the obligation of this bond is 10% of the amount of the Contractor's Proposal, including bid alternates, and inures to the benefit of County.

2. This Bond is exonerated by (1) County rejecting said Proposal or, in the alternate, (2) if said Proposal is accepted, Contractor executes the Agreement and furnishes the Bonds as agreed to in its Proposal, otherwise it remains in full force and effect for the recovery of loss, damage and expense of County resulting from failure of Contractor to act as agreed to in its Proposal. Some types of possible loss, damage and expense are specified in the Contractor's Proposal.

3. Surety, for value received, stipulates and agrees that its obligations hereunder shall in no way be impaired or affected by any extension of time within which County may accept the Proposal and waives notice of any such extension.

4. This Bond is binding on our heirs, executors, administrators, successors and assigns.

Dated: _____

_____	_____
By _____	By _____
Title: Attorney in Fact	Title: _____
"Surety"	"Contractor"

STATE OF CALIFORNIA
COUNTY OF _____ } ss. SURETY'S ACKNOWLEDGEMENT

On _____ before me, _____ personally appeared, _____, known to me, or proved to me on the basis of satisfactory evidence, to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacities, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

_____
Signature of Notary Public

Notary Public (Seal)

Note: All signatures must be notarized

Riverside County Contract No._____

AGREEMENT

THIS AGREEMENT is entered into at Riverside, California as of the date set forth below is between County of Riverside hereafter called "County" and _____ _____ hereafter called "Contractor".

W I T N E S S E T H

RECITALS:

1. Contractor has submitted to County his Contractor's Proposal for the construction of County Project, _____ _____ in strict accordance with the Contract Documents identified below and County has accepted said Proposal.

2. Contractor states that he has reexamined his Contractor's Proposal and found it to be correct, has ascertained that his subcontractors are properly licensed and possess the requisite skill and forces, has reexamined the site and Contract Documents and is of the opinion that he can presently do the work in accordance with the Contract Documents for the money set forth in his Proposal to be paid as provided in the Contract Documents.

AGREEMENT:

IT IS AGREED BY THE PARTIES AS FOLLOWS:

1. Contract Documents. The entire contract consists of the following: (a) The Agreement. (b) The Notice Inviting Bids. (c) The Instruction to Bidders. (d) The Contractor's Proposal. (e) The Bid Bond. (f) The Payment Bond. (g) The Performance Bond. (h) The General Conditions. (i) The Special Provisions. (j) The Standard Specifications of the State of California Department of Transportation edition of May 2006 as modified in other portions of the Contract Documents. (k) The Standard Plans of the Department of Transportation identified on the plans or in the Special Provisions. (l) The Plans. (m) Addenda No.____. (n) The Determination of Prevailing Wage Rates for Public Work. (o) Any Change Orders issued. (p) Any additional or supplemental specifications, notice, instructions and drawings issued in accordance with the provisions of the Contract Documents. All of said Documents presently in existence are by this reference incorporated herein with like effect as if here set forth in full and upon the proper issuance of other documents they shall likewise be deemed incorporated. The Bid Bond is exonerated upon execution of this Agreement and the Payment Bond and Faithful Performance Bond.

2. The Work. Contractor shall do all things necessary to construct the work generally described in Recital No. 1 in accordance with the Contract Documents.

3. Liquidated Damages and Time of Completion. Attention is directed to the provisions in Section 8-1.06, "Time of Completion", and in Section 8-1.07, "Liquidated Damages", of the Standard Specifications and these Special Provisions.

The Contractor shall begin work within 15 days of the date stated within the written "Notice to Proceed".

The Contractor shall notify the Engineer, in writing, of his intent to begin work at least 72 hours before work is begun. The notice shall be delivered to the Transportation Department's Construction Engineer and shall specify the date the Contractor intends to start. If the project has more than one location of work, a separate notice shall be given for each location.

Should the Contractor begin work in advance of receiving a written "Notice to Proceed", any work performed by him in advance of the date stated in the "Notice to Proceed" shall be considered as having been done by him at his own risk and as a volunteer and subject to the following:

(1) The Contractor shall, on commencing operations, take all precautions required for public safety and shall observe all the provisions in the Specifications and the Special Provisions.

(2) All work done according to the contract prior to the issuance of the "Notice to Proceed", will be considered authorized work and will be paid for as provided in the contract.

(3) The Contractor shall not be entitled to any additional compensation or an extension of time for any delay, hindrance or interference caused by or attributable to commencement of work prior to the issuance of the "Notice to Proceed".

4. Compensation. Contractor shall be paid in the manner set forth in the Contract Documents the amount of his Proposal as accepted by County, the above rates, subject to additions and deductions as provided in the Contract Documents. Said Proposal is on file in the Office of the Clerk of the Board of Supervisors of County.

IN WITNESS WHEREOF the parties hereto have executed this agreement as of the date set forth below.

COUNTY OF RIVERSIDE

BY _____
Chairman, Board of Supervisors

Dated _____

ATTEST:

Kecia Harper-Ihem, Clerk of the Board

BY_____
Deputy

_____
"County"
(Seal)

CONTRACTOR

BY _____

TITLE: _____
(If Corporation, Affix Seal)

ATTEST:

_____

TITLE: _____

Licensed in accordance with an act providing for the registration of Contractors,

License No. _____

Federal Employer Identification Number:

_____

_____
"Corporation"
(Seal)

PERFORMANCE BOND

Recitals:

1. _____ (Contractor) intend to enter into an Agreement with COUNTY OF RIVERSIDE (County) for construction of public work known as _____.

2. _____, a _____ corporation (Surety), is the Surety under this Bond.

Agreement:

We, Contractor, as Principal, and Surety, as Surety, jointly and severally agree, state, and are bound unto County, as obligee, as follows:

1. The amount of the obligation of this Bond is 100% of the estimated contract price for the Project of $_____ and inures to the benefit of County.

2. This Bond is exonerated by Contractor doing all things to be kept and performed by it in strict conformance with the Contract Documents for the Project, otherwise it remains in full force and effect for the recovery of loss, damage and expense of County resulting from failure of Contractor to so act. All of said Contract Documents are incorporated herein.

3. This obligation is binding on our successors and assigns.

4. For value received, Surety stipulates and agrees that no change, time extension, prepayment to Contractor, alteration or addition to the terms and requirements of the Contract Documents or the work to be performed thereunder shall affect its obligations hereunder and waives notice as to such matters, except the total contract price cannot be increased by more than 10% without approval of Surety.

THIS BOND is executed as of _____.

By _____

By _____

Title _____
"Contractor"

(Corporate Seal)

By _____

Type Name _____
Its Attorney in Fact
"Surety"

(Corporate Seal)

NOTE: This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledged. (Attach acknowledgements).

PAYMENT BOND

(Public Work - Civil Code 3247 et seq.)

The makers of this Bond are _____, as Principal and Original Contractor and _____, a corporation, authorized to issue Surety Bonds in California, as Surety, and this Bond is issued in conjunction with that certain public works contract to be executed between Principal and COUNTY OF RIVERSIDE a public entity, as Owner, for $_____, the total amount payable. THE AMOUNT OF THIS BOND IS ONE HUNDRED PERCENT OF SAID SUM. Said contract is for public work generally consisting of _____.

The beneficiaries of this Bond are as is stated in 3248 of the Civil Code and requirements and conditions of this Bond are as is set forth in 3248, 3249, 3250 and 3252 of said code. Without notice, Surety consents to extension of time for performance, change in requirements, amount of compensation, or prepayment under said contract.

DATED: _____

_____
Original Contractor - Principal

_____
Surety

By _____

By _____
Its Attorney In Fact

Title _____
(If corporation, affix seal)

(Corporate Seal)

STATE OF CALIFORNIA
COUNTY OF _____ } ss. SURETY'S ACKNOWLEDGEMENT

On _____ before me, _____ personally appeared, _____, known to me, or proved to me on the basis of satisfactory evidence, to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacities, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

_____
Signature of Notary Public

Notary Public (Seal)

Note: This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledged. (Attach acknowledgements).

GENERAL CONDITIONS

SS 1. DEFINITIONS:

a. "County", "Contractor", and "Contract Documents" are identified in the Agreement. "County" and "Contractor" includes their authorized representatives are treated throughout as if each were singular in number. "Contractor" includes its surety.

b. "Engineer" and "Director of Transportation" means the Director of Transportation for the County of Riverside, and includes his authorized representatives.

c. "Plans" means the portion of the Contract Documents consisting of all drawings prepared for the direction and characteristics of the work. A schedule of said drawings which constitutes the plans as of the execution of the Agreement is set forth in the Special Provisions and are supplemented by the Standard Plans referred to in the Special Provisions.

d. "State of California", "Department of Transportation" and "Director of Transportation", means the County of Riverside.

SS 2. STANDARD SPECIFICATIONS:

The Standard Specifications of the State of California Department of Transportation, edition of May 2006 hereafter called "Standard Specifications", are incorporated herein as modified in these General Conditions, the Special Provisions and the Plans.

The following subsections of the Standard Specifications are deleted:

1-1.13, 1-1.15, 1-1.18, 1-1.25, 1-1.37, 1-1.40, 2-1.01, 2-1.05, 2-1.07, 5-1.14, 7-1.165, 8-1.03, 9-1.05, 9-1.065, 9-1.10, 12-2.02.

Section 3 of the Standard Specifications is deleted.

The following deletions and additions are made from the following subsections of the Standard Specifications.

Subsection 5-1.04, add to the second paragraph at its end the following sentence: "The General Conditions govern over all of the Contract Documents except the Special Provisions, the Agreement and Bonds."

Subsection 7-1.01A (2), strike the last sentence of the second paragraph and in its place read: "These wage rates are on file in the Office of the County Clerk and are a part of the Contract."

Subsection 7-1.15, for "Director" read "Director of Transportation" except for last reference read "County of Riverside".

Subsection 7-1.16, delete references to Subsection 7-1.165.

Subsection 8-1.06, strike the last paragraph.

Subsection 8-1.08, strike "as provided in the State Contract Act".

SS 3. DIRECTOR OF TRANSPORTATION:

All work shall be done under the supervision of the Director of Transportation who shall determine the amount, quality, acceptability and fitness of all parts of the work, and interpret the Contract Documents. No act or omission of the Director of Transportation relieves Contractor of the duty to proceed with the work in strict conformity with the Contract Documents.

Upon request, Director of Transportation shall reduce to writing any oral order, objection, requirement or determination. Whenever Director of Transportation's approval is required it shall be in writing only.

All communications to County by Contractor shall be via Director of Transportation.

No work shall be performed on site other than during normal working hours without the knowledge and consent of Director of Transportation.

When in Director of Transportation's opinion, weather or other conditions are such that attempts to perform a portion of the work will probably result in work not in accordance with the Contract Documents, he shall so advise Contractor. When Contractor advises Director of Transportation that he intends to proceed despite such advise, he does so at his peril. The Director of Transportation may then order Contractor, in writing which specifies the portion of the work involved and the conditions warranting the issuance of the order, not to proceed on such portion of the work if (1) proceeding will in his judgment have an adverse effect on Contractor's ability to complete the work within the stipulated time period, or (2) proceeding will in his judgment necessitate

unusual tests and procedures to ascertain whether said portion of the work is in accordance with the Contract Documents. Contractor shall comply with such orders at its expense.

Nothing herein contained relieves Contractor from the duty to make independent determinations as to weather and other conditions affecting the proper completion of the work.

Failure for any reason of Director of Transportation to advise Contractor as to such matters, or to issue an order as above provided, does not relieve Contractor from the duty to accomplish the work in accordance with the Contract Documents.

As stated elsewhere, amounts shown in the Proposal and Agreement as to quantities are but estimates only. From time to time Director of Transportation shall direct Contractor as to the prosecution of the work in such a manner as to increase or decrease such estimates as to the work actually to be done. Contractor shall comply with such instructions and shall be paid only for work actually done based on the unit price set out in the Agreement.

SS 4. SITE INSPECTION - EFFECT OF OTHER IMPROVEMENTS SHOWN AND CONTRACTOR PROCEDURE:

Elsewhere in the Contract Documents reference may be made, graphically, descriptively or both, to the existence or possible existence of other improvements affecting the site and the prosecution of the work such as surface and subsurface utilities, drainage ditches and courses, buildings, fencing, retaining walls, roadways, curbs, trees, shrubs, and similar matters. Such matters are included to be used by Contractor to the extent he deems appropriate. However, it is expressly understood and agreed:

a. Showing or describing such items does not mean that it is an exhaustive and complete presentation and that as to matters shown or described that they necessarily exist.

b. All graphic presentations are schematic only unless the contrary is clearly set out elsewhere as to a particular matter.

c. Whenever in the plans survey markers are shown, boundaries of the site are shown or contour lines are shown, Contractor may assume that such matters are shown in accordance with acceptable standards.

All improvements of the nature above described, whether elsewhere shown or described or not, shall, unless the contrary is elsewhere specifically directed, remain in place, undisturbed and suitably protected during the course of the work.

Whenever during the course of the work a subsurface improvement is discovered which Contractor believes is unknown to County, he shall immediately so inform Director of Transportation. Except as elsewhere provided, whenever in the course of the work it becomes apparent that the work cannot proceed without the destruction or relocation of any improvement, whether shown or described or not, Contractor shall immediately cease work affecting such improvements and notify Director of Transportation as to such circumstance and await instructions as to how to proceed.

d. The Contractor shall be required to cooperate fully with all utility forces or forces of other public agencies engaged in relocation, lowering, altering or otherwise rearranging any facilities interfering with the progress of work or installing any facilities thereon.

The Contractor will also be required to cooperate fully with any County or State forces working on or near the project, or requiring access to the work in the performance of their duties.

SS 5. USE OF AND PROTECTION OF PREMISES AND REMOVAL OF DEBRIS:

At his expense Contractor shall:

a. Take every precaution against injuries to persons or damage to property.

b. Comply with regulations governing the use of the property.

c. Store and suitably protect his apparatus, equipment, materials and supplies in an orderly fashion on site.

d. Place on the work only such loads as are consistent with the safety of the work.

e. Effect all cutting, fitting, or patching of his work required to make it conform to the Plans and Specifications and interrelate with other improvements or except with the consent of Director of

Transportation, cut or otherwise alter existing improvements.

f. Protect and preserve established bench marks and monuments, make no changes in the location of such without the prior written approval of County, replace and relocate any of them which may be lost or destroyed or which require shifting because of necessary changes in grades or locations. All replacement and relocation work shall be accomplished only after approval of County and under the direct supervision and instruction of Director of Transportation.

g. Before final payment remove all surplus materials, false work, temporary structures, debris, and similar matter resulting from his operations from the site and to put the site in an orderly condition.

h. Construct, operate and maintain all passageways, guard fences, lights, barricades and other facilities required for protection by State or municipal laws and regulations and local conditions during the course of the work.

i. Guard County's property from injury or loss.

j. Take all reasonable precautions for dust and noise control and generally conduct operations so as not to constitute a nuisance.

k. The Contractor shall be responsible for the protection of existing signs, fences, concrete curb and gutter and other highway facilities which may be encountered in the roadway. The replacement or repair of any facilities which the County deems necessary as a result of the Contractor's operations shall be done by the Contractor at his own expense and to the satisfaction of the County Transportation Department.

SS 6. CHANGE ORDERS - DETAIL DRAWINGS AND INSTRUCTIONS:

Reference is made to 4-1.03 and 4-1.03A of the Standard Specifications regarding change orders. Wherever in these subsections the word "Engineer" appears read "County".

Each approved change order shall be considered as an amendment to the Contract Documents and will not be considered approved until executed by the Board of Supervisors, except Director of Transportation can approve certain change orders without the necessity of approval by

the Board as provided in a Resolution of the Board adopted March 30, 1993, Resolution Number 93-047.

The above does not limit the ability of Director of Transportation to issue further detail drawings, explanations and instructions which are customarily given by an Engineer during the course of similar work. Director of Transportation will furnish Contractor with reasonable promptness such further detailed explanations, instructions and drawings as may be necessary for the proper execution of the work, and Contractor shall conform to same provided they are consistent with the intent of the Contract Documents. In giving such additional instructions, explanations and drawings Director of Transportation has authority to make minor changes in the work which do not involve extra cost and are not inconsistent with the Contract Documents.

Contractor's acting on such instructions, explanations and drawings of Director of Transportation means that Contractor agrees that such explanations, instructions and drawings are within the scope of the work in accordance with the intent of the Contract Documents and do not constitute a basis for modification of the Contract Documents as to price or time.

SS 7. BRAND OR TRADE NAME - SUBSTITUTE OF EQUALS:

Reference is made to Section 3400 of the Public Contracts Code, which is by this reference incorporated herein with like effect as if here set forth in full.

If a potential bidder believes he knows of an equal to a specified brand or trade name which is not mentioned in the Contract Documents, then such potential bidder may so advise Director of Transportation of such fact, giving all relevant information. If appropriate, an addendum will be issued as to the alleged equal provided that such issuance may be accomplished at least 5 days before the time fixed for opening bids.

Unless the subject article or product is expressly designated for matching others in use in a particular public improvement either completed or in the course of completion, any bidder may, as part of its bid proposal, include a request for substitution of an item equal to any specified by brand or trade name.

Within 35 calendar days after award of the contract, Contractor may submit to Director of Transportation data substantiating such a request, and the difference, if any, in cost. Director of Transportation shall promptly investigate the request and make a recommendation to County as to equality. The governing body of County shall promptly determine whether the substitute is equal in every respect

to the item specified, and approve or deny the request accordingly, and shall notify Director of Transportation of the determination made, who shall advise Contractor in writing of the decision. Unless the request is granted, substitution will not be permitted.

Nothing herein shall authorize a change in the contract price or prevent the use of change orders in the manner provided elsewhere in the Contract Documents.

SS 8. FINAL INSPECTION - NOTICE OF COMPLETION:

When the work is ready for final inspection County shall cause the work to be inspected and subjected to such tests as seem to it to be required for the purpose of determining if the work is complete in every respect.

At a meeting of the governing body of County held within 10 days after final inspection, the governing body shall consider the facts developed at the inspection. If it is found that the work is apparently complete in every respect, County will accept the work and a notice of completion will be recorded.

As between the parties, the recordation of the Notice of Completion, unless recorded because of a cessation of labor, means only that the time for final payment and the commencement of the guarantee period commences to run.

SS 9. COUNTY'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT:

(1) Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors, or (2) a receiver or liquidator is appointed for Contractor or any of his property, or (3) Contractor shall refuse or fail after Notice of Warning from County by Director of Transportation to supply sufficient properly skilled workmen or suitable materials, or (4) Contractor fails to prosecute the work with such diligence as will insure its completion within the stipulated time period, or (5) Contractor shall fail to make payments to persons supplying labor or materials for the work, or (6) Contractor does not comply with applicable law or instructions of Director of Transportation, or (7) Contractor is otherwise guilty of a substantial violation of any provision of the Contract Documents, then County without prejudice to such other and further right, remedy or relief it may be entitled to, may by 10 days notice to Contractor, terminate the employment of Contractor and his right to proceed, either as to the entire work, or at County's option, as to any portion thereof as to which delay shall have occurred or breach or miscompliance relates, and may thereupon take possession of the affected work and complete

the work by contract or otherwise, as County deems expedient. In such case Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance shall exceed the expense of completion, and other damage, expense or loss of County occasioned by Contractor's failure to properly perform, such excess shall be paid by Contractor. If such expense and damage exceeds the unpaid balance, Contractor is liable to County for the excess. If County elects to proceed under this Section, it may take possession of and utilize in completing the work such materials, supplies, plant and equipment on site which may be necessary or convenient for the purpose of completing the work, County is expressly granted the right - acting via Director of Transportation, an Engineer or otherwise - to operate equipment and machinery on site for the purpose of determining whether it has a basis for proceeding under this section.

If the construction of the project herein is damaged, which damage is determined to have been proximately caused by an act of God, in excess of 5% of the contract amount, provided that the work damaged is built in accordance with applicable building standards and the plans and specifications, then the Owner, upon certification by the Engineer, may, without prejudice to any other right of remedy, terminate the contract.

Decision by County not to proceed under this Section does not constitute a waiver by County of any right it might from time to time have against Contractor under the Contract Documents.

SS 10. PAYMENT AND MONTHLY ESTIMATES:

Director of Transportation, once each month, after said work is commenced and until after the completion and acceptance thereof, shall make and deliver to Contractor duplicate certificates stating the value of work then completed according to the contract, estimated according to the standard of the unit contract price, and thereupon Contractor shall be paid an amount sufficient with all previous payments to make the aggregate ninety five percent (95%) of the amount earned as certified. Maximum value of progress payment retention, as set forth in Section 9-1.06 of the Standard Specifications and any other referenced text, shall be five (5%).

The partial payments made as the work progresses will be payment on account on work performed as of the 25th of the month and shall in no way be considered as an acceptance of any part of the work or material of the contract, nor shall they in any way govern the final estimate. No such estimate or payment shall be made when in the judgement of the

Director of Transportation the total value of the work done since the last estimate amounts to less than $300.

For the purpose of timely payment, the "receipt of payment request" date, as described in Public Contract Code 20104.50 and as referred to herein, shall be considered to be the fifth working day following the 25th day of each month.

Within 5 working days of the 25th day of each month the County shall:

a. Calculate and prepare the certificate ("progress pay estimate") stating the value of the work completed for the billing month, for the purpose of determining the proper progress payment amount.

b. If a progress pay estimate has been prepared by the County but has been contested by the Contractor as of the "receipt of payment request" date, as defined above, the County shall submit to the Contractor a document setting forth in writing a description of the dispute pertaining to the progress billing, and the County's reason for it's position. Said document shall be submitted to the Contractor as soon as practicable, but not later than 7 calendar days after the "receipt of payment request" date.

Any progress pay estimate which is undisputed and remains unpaid for thirty (30) calendar days, after the "receipt of payment request date" shall accrue interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure. The number of days available to the County to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which the County exceeds the seven-day submittal requirement set forth in the paragraph above.

Pursuant to Public Contract Code Section 20104.50, subsection (e), the progress payment date is the date that funds are encumbered and the payment warrant is issued.

SS 11. PAYMENT FOR EXTRA WORK (FORCE ACCOUNT BASIS):

Extra work to be paid for on a force account basis as directed by the Engineer will be paid for as set forth in Section 9-1.03 of the Standard Specifications. The labor surcharge, equipment rental rates and the right of way delay factors for each classification of equipment are listed in the Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates. A copy of which is on file at the Office of the Director of Transportation and is hereby incorporated herein in its entirety.

SS 12. FINAL PAYMENT:

Within thirty (30) days after the completion of the work and its acceptance by the Board of Supervisors, Director of Transportation will make a proposed final estimate in writing of the quantities of work done under the contract and the value of such work and will submit such estimate to Contractor. Within thirty (30) days thereafter Contractor shall submit to Director of Transportation his written approval of said proposed final estimate or a written statement of all claims which he has for additional compensation claimed to be due under the contract.

On Contractor's approval or if he files no claims within said period of thirty (30) days, Director of Transportation will issue a final written estimate as submitted to Contractor and County shall pay the entire sum so found to be due after deducting there from all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the contract.

If Contractor within said period of thirty (30) days files claims, Director of Transportation will issue as a semi-final estimate the proposed estimate submitted to Contractor and the County will within thirty (30) days pay the sum found due thereon after deducting all prior payments and all amounts to be kept and retained under the provisions of the contract, Director of Transportation shall then consider and investigate Contractor's claims and shall make such revisions in the said estimate as he may find to be due, and shall then make and issue his final written estimate. County will pay the amount so found due after deducting all previous payments and amount to be retained under the contract.

All prior or partial estimates and payments shall be subjected to correction in the final estimate and payment.

The final estimate shall be conclusive and binding against both parties to the contract on all questions relating to the performance of the contract and the amount of work done there under and compensation therefore, except in the case of gross error. Acceptance of final payment constitutes a release of County by Contractor of all claims relating to the work.

SS 13. DAMAGES:

Contractor acknowledges that failure to perform in strict accordance with the Contract Documents will cause County to suffer special damages in addition to cost of completion of the work in accordance with the provisions of the Contract

Documents. Such special damage could include, but is not limited to, lease and rental cost, additional salaries and overhead, interest during construction, attorney expense, additional engineering, and inspection expense and cost of maintaining or constructing alternate facilities.

SS 14. DOCUMENTS OF CONTRACTOR:

Upon demand, Contractor shall make available to County all documents in its possession relevant to the work accomplished or to be accomplished or any demand or claim of Contractor as to County. This includes copies of documents sent by Contractor or others in its possession. Contractor shall further make available to County conformed copies of all documents submitted to the sureties who executed the Bid Bond, Faithful Performance Bond or Payment Bond for the purpose of obtaining the sureties' signature, including any guarantee or indemnification made to such surety by others for such purpose. Contractor shall maintain in his possession all documents relative to the work for three years after Notice of Completion.

SS 15. RESPONSIBILITY OF CONTRACTOR TO ACT IN AN EMERGENCY:

In case of an emergency which threatens loss or injury to property or life, Contractor shall act without previous instructions as the situation may warrant. Contractor shall notify Director of Transportation immediately thereafter. Any compensation claimed by Contractor, together with substantiating documentation shall be submitted to County via Director of Transportation.

SS 16. LABOR CODE:

Reference is made to Chapter 1, Part 7, Division 2 of the California Labor Code (commencing with Section 1720). By this reference said Chapter 1 is incorporated herein with like effect as if it were here set forth in full. The parties recognize that said Chapter 1 deals, among other things with discrimination, penalties and forfeitures, their disposition and enforcement, wages, working hours, and securing worker's compensation insurance and directly effect the method of prosecution of the work by Contractor and subject it under certain conditions to penalties and forfeitures. Execution of the Agreement by the parties constitutes their agreement to abide by said Chapter 1, their stipulation as to all matters which they are required to stipulate as to by the provisions of said Chapter 1, constitutes Contractor's certification that he is aware of the provisions of said Chapter 1 and will comply with them and further constitutes Contractor's certification as

follows: "I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this contract." Contractor and his subcontractors shall comply with the provisions of SS 1777.5 of the Labor Code regarding apprentices.

Contractor shall post at each job site during the course of the work a copy of County's "Determination of Prevailing Wage Rates", copies of said Determination are available from County for this purpose.

SS 17. OBSTRUCTIONS:

Attention is directed to Sections 8-1.10, "Utility and Non-Highway Facilities" and 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions.

Add the following to the fourth paragraph of Section 8-1.10, "Utility and Non-Highway Facilities", of the Standard Specifications is amended to read:

> In the event that the utility facilities mentioned above are not removed or relocated by the times specified and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by said times, the State will compensate the Contractor for such delays to the extent provided in Section 8-1.09, "Right of Way Delays" of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities" of the Standard Specifications.

SS 18. INSURANCE - HOLD HARMLESS:

In lieu of the provisions of Section 7-1.12 the following shall apply:

> Contractor shall not commence work under this contract until he has obtained the insurance required hereunder and satisfactory proof of said insurance has been submitted to and approved by the County of Riverside.
>
> Contractor shall submit to the County of Riverside a Certificate of Insurance, signed by an authorized representative of the Contractor's insurance provider or agency, which certifies to the County that insurance

coverage is provided in accordance with the requirements of this section. The Certificate of Insurance shall include as attachments the required "Waiver of Subrogation" and "Additional Insured" policy endorsements.

I. Workers Compensation Insurance:

Contractor shall procure and maintain during the life of the contract Worker's Compensation Insurance coverage as prescribed by the laws of the State of California. Policy shall include Employers' Liability including Occupational Disease with limits not less than $1,000,000 per occurrence. Policy shall be endorsed to provide a Borrowed Servant Endorsement, Alternate Employer Endorsement, or Additional Insured Endorsement naming the County of Riverside, its Director's Officers, Special Districts, Board of Supervisors, employees, agents or representatives as Additional Insureds. Policy shall contain a Waiver of Subrogation in favor of the County of Riverside.

Contractor shall further require each of its subcontractors to procure Worker's Compensation Insurance as required by the State while working on the project and the Contractor shall require the subcontractors to endorse the policy to provide a Borrowed Servant Endorsement, Alternate Employer Endorsement, or Additional Insured Endorsement naming the County of Riverside, its Director's Officers, Special Districts, Board of Supervisors, employees, agents or representatives as Additional Insureds. Policy shall contain a Wavier of Subrogation in favor of the County of Riverside.

II. Comprehensive General Liability Insurance:

Contractor shall take out and maintain during the course of the work General Liability Insurance covering bodily injury and property damage insurance and blanket contractual coverage as to the work and obligations covered hereunder. The amount of the insurance shall be in an amount **not less than $2,000,000**. The policy may be a combined single limit or split limits, but the amount must be no less than $2,000,000 per occurance. The insurance carrier must have a current rating of "A" or better by the A.M. Best Company, a financial size of at least "VIII", and be an admitted carrier in the State of California. Any exceptions must be approved in advance by the County of Riverside Risk Management. Said insurance must contain an endorsement the County of Riverside is named as an additional insured as respects the work covered hereunder and **said insurance must not**

contain, as respects the work covered hereunder, **any exclusions as to bodily injury or death or property damage arising out of blasting, explosion, or underground damage to wire, pipes, conduits, mains, sewers, tank tunnels or any similar property - i.e. the so-called "x c u" exclusions**. The insurance certificate evidencing such insurance must **affirmatively state** that the insurance carrier (s) will give Owner 30 days written notice prior to cancellation of the insurance or a reduction in coverage, and that "County of Riverside--its Director's Officers, Special Districts, Board of Supervisors, employees, agents and representatives" are named as Additional Insureds.

In the alternate to naming County of Riverside as additional insured, Contractor may take out and maintain during the course of the work and until acceptance by County, Owner's Protective Liability Insurance in an amount not less-than $2,000,000 covering Riverside County.

III. Auto Liability:

If Lessee's vehicles or licensed mobile equipment will be on the premises or used in any manner on behalf of the County, then Lessee shall maintain auto liability insurance for all owned, non-owned or hired automobiles in an amount not less than $1,000,000 per occurrence combined single limit. Policy shall name the "County of Riverside, its Director's Officers, Special Districts, Board of Supervisors, employees, agents, or representatives" as Additional Insureds.

IV. Hold Harmless:

Contractor shall hold County of Riverside its officers, agent, and employees free and harmless from any liability whatsoever, including wrongful death, based or asserted upon any act or omission of Contractor, its officers, agents, employees or subcontractors relating to or in anywise connected with or arising from the accomplishment of the work, whether or not such acts or omissions were in furtherance of the work required by the Contract Documents and agrees to defend at his expense, including attorney fees, Owner, County of Riverside its officers, agents and employees in any legal action based upon any such alleged acts or omissions.

SS 19. EQUAL EMPLOYMENT OPPORTUNITY:

General:

Contractor shall not discriminate in its recruiting, hiring, promotion, demotion of termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age or physical handicap in the performance of this Contract shall comply with the provisions of the California Fair Employment Practice Act (commencing with SS 1410 of the Labor Code), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, Executive Order No. 11246 (30 Federal Register 12319), as amended, and all administrative rules and regulations issued pursuant to said Acts and Order. See particularly 41 Code of Federal Regulation (CFR) Chapter 60.

Contractor shall require each of its subcontractors to comply with the preceding paragraph and shall include in each subcontract language similar to the preceding paragraph.

Contractor shall permit access to its records of employment, employment advertisement, application forms and other pertinent data and records by Owner and any State or Federal agency having jurisdiction for the purpose of investigation to ascertain compliance with this Section.

Owner may assign an affirmative action representative to monitor Contractor and its subcontractor (s) conduct required by this Section, including the right of entry to the construction site for the purpose of obtaining information from persons performing work on the project providing such inspection does not interfere with the progress of the work.

Elsewhere in the Contract Documents specific requirements may be contained covering the same subject matter of this Section. If so, such specific requirements prevail over this Section in case of conflict.

Transactions of $10,000 or Under:

Contracts and subcontracts not exceeding $10,000 are exempt from the requirements of this Section. No Contractor or subcontractor shall procure supplies and/or services in less than usual quantities to avoid applicability of this Section. With respect to contracts and subcontractors for indefinite quantities, this Section applies unless the amount required in any one year under such contract will reasonably be expected not to exceed $10,000.

Transactions in Excess of $10,000, but Less Than $50,000:

At Owner's request, Contractor shall certify that it has in effect an affirmative action plan and agrees to comply with all State and Federal laws and regulations regarding Fair Employment Practices. Contractor shall maintain a written copy of its affirmative action plan and furnish Owner a copy of the plan upon request. Owner may require Contractor to complete an Affirmative Action Compliance Report, on a form furnished by Owner, setting forth definite goals during the term of the Contract.

Transactions of $50,000 or More:

If Contractor has fifty or more employees and a Contract for $50,000 or more, it shall develop and submit to Owner, within thirty days after award, a written affirmative action compliance program providing in detail specific steps to guarantee equal employment opportunity. Contractor shall include in its affirmative action program a table of job classifications, which table shall include but need not be limited to job titles, duties, and rates of pay.

Contractor shall in each subcontract let to do a portion of the work covered hereunder, where the subcontractor involved has fifty or more employees and the subcontract is for $50,000 or more, impose in the subcontract the above requirements.

For the purpose of determining the number of employees, the average of the Contractor's or its subcontractor's employees for the twelve month period immediately prior to award, or the total number of employees the Contractor or its subcontractor will have when performing this contract, whichever is higher, shall be used.

Federal Assisted Construction:

If this project is a Federally assisted construction project, then the contract provisions contained in 41 CFR SS 60-1.04 (b) are incorporated herein and the Contractor shall likewise incorporate said provisions in each subcontract entered by Contractor to perform the work. Federally assisted construction is identified as such in the Notice Inviting Bids.

SS 20. DEPOSIT OF SECURITIES:

In accordance with Public Contract Code Section 22300 and other applicable law, the Contractor may substitute securities for any moneys withheld to ensure performance under the contract.

SS 21. ASSIGNMENT OF CLAIMS:

In submitting a bid on this public works project, or any subcontractor agreeing to supply goods, services, or materials, and entering a contract pursuant thereto, the Contractor and/or subcontractor do offer and agree to assign to the Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgement by the parties.

SS 22. CLAIMS RESOLUTION:

In accordance with Public Contract Code Section 20104 - 20104.8 and other applicable law, public works claims of $375,000 or less which arise between the Contractor and the Owner shall be resolved following the statutory procedure unless the Owner has elected to resolve the dispute pursuant to Public Contract Code SS 10240 et seq.

1. All claims shall be submitted in writing and accompanied by substantiating documentation. Claims must be filed on or before the date of final payment unless other notice requirements are provide in the contract. "Claim" means a separate demand by the claimant for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the claimant and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled, or (3) an amount the payment of which is disputed by the Owner.

   (a) Claims Under or equal to $50,000. The Owner shall respond in writing to the claim within 45 days of receipt of the claim, or, the Owner may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Owner may have. If additional information is needed thereafter, it shall be provided upon mutual agreement of the Owner and the claimant. The Owner's written response shall be submitted 15 days after receiving the additional documentation, or within the same period of time taken by the claimant to produce the additional information, whichever is greater.

(b) Claims over $50,000 but less than or equal to $375,000. The Owner shall respond in writing within 60 days of receipt, or, may request in writing within 30 days of receipt of the claim, any additional documents supporting the claim or relating to defenses or claims the Owner may have against the claimant. If additional information is needed thereafter, it shall be provided pursuant to mutual agreement between the Owner and the claimant. The Owner's response shall be submitted within 30 days after receipt of the further documents, or within the same period of time taken by the claimant to produce the additional information or documents, whichever is greater.

2. If the claimant disputes the Owner's response, or if the Owner fails to respond within the statutory time period, the claimant may so notify the Owner within 15 days of the receipt of the response or the failure to respond, and demand an informal conference to meet and confer for settlement. Upon such demand, the Owner shall schedule a meet and confer conference within 30 days.

3. If following the meet and confer conference, the claim or any portion thereof remains in dispute, the claimant may file a claim pursuant to Government Code SS 900 et seq. and Government Code SS 910 et seq. For purposes of those provisions, the time within which a claim must be filed shall be tolled from the time the claimant submits the written claim until the time the claim is denied, including any time utilized for the meet and confer conference.

4. If a civil action is filed to resolve any claim, the provisions of Public Contract Code SS 20104.4 shall be followed, providing for non-binding mediation and judicial arbitration.

SS 23. DUST ABATEMENT:

Dust control shall conform to Section 10,"Dust Control", Section 7-1.01F, "Air Pollution Control", Section 17, "Watering", and Section 18, "Dust Palliative" of the Standard Specifications, Rules no. 401, 402, 403 and 403.1 of the South Coast Air Quality Management District (AQMD), Riverside County Code, Chapter 8.52, "Fugitive Dust Reduction Program For Coachella Valley", all other applicable Federal and State laws, and the requirements set forth herein.

The Contractor is cautioned that failure to control fugitive dust may result in fines being levied by the South Coast Air Quality Management District to both the Contractor and the County of Riverside, as owner. The Contractor shall be fully responsible for payment of all fines pertaining to air pollution control violations, resulting from Contractor's operations related to the construction contract, which may be levied against both the Contractor and the County of Riverside by the AQMD or other regulatory agencies. The Contractor's attention is directed to Section 7-1.01, "Laws to be Observed" of the Standard Specifications. The cost of all fines levied against the County of Riverside will be deducted from any moneys due or which may become due to the Contractor, unless other payment arrangements are made by the Contractor.

Dust control of all of the Contractor's operations is required 24 hours per day, 7 days a week for the duration of the contract, and until the disturbed soil is permanently stabilized. The Contractor shall take every precaution to prevent emissions of fugitive dust from the project site, from locations of stockpiled materials, from unpaved driving surfaces, from haul vehicles, from inactive construction areas, and from all other operations of the Contractor. The Contractor shall plan for and carry out proper and efficient measures to prevent his operations from producing dust in amounts damaging to property or which constitute a public nuisance, or which cause harm to persons living or working in the vicinity of the work. Of particular concern are emissions of PM10 particles, which are fine particulate matter of 10 microns or less and which are associated with sickness and death from respiratory disease.

The Contractor shall furnish and post dust mitigation signs, which shall be, at a minimum, in accordance with the "AQMD Signage Recommendations", attached hereto. Additional copies are available upon request from the Engineer. The sign shall include the Contractor's phone number which shall be maintained on a 24 hour basis. The sign message, size and design, including any deviations from the signage recommendations, shall be approved by the Engineer prior to fabrication.

The Contractor shall respond to complaints by mobilizing equipment and personnel at the construction site within 2 hours of each complaint to control fugitive dust.

Attention is directed to AQMD Rule 403.1, which applies to all contracts within the Coachella Valley Area of Riverside County. That AQMD Rule requires the Contractor to take specified dust control actions when prevailing wind speeds exceed 25 miles per hour. Wind forecasts, AQMD Rules and

other related information are provided by AQMD at 1-800-CUT-SMOG and at www.aqmd.gov.

Any days on which the Contractor is prevented from working, due to the requirements of AQMD Rules, will be considered as non-working days, in accordance with Section 8-1.06, "Time of Completion" of the Standard Specifications.

The Contractor shall utilize the "Best Available Control Measures" of controlling fugitive dust, as prepared by the AQMD. For projects within the Coachella Valley, the "Reasonably Available Control Measures" may be employed, if effective within the context of the AQMD rules. However, if fugitive dust crosses the project boundary, more effective control measures, including the "Best Available Control Measures" shall be implemented.

A site-specific fugitive dust control plan shall be submitted to the Engineer for review and approval at least 10 days prior to the start of construction. Additionally, for projects outside of the Coachella Valley which meet the criteria for AQMD plan approval, the Contractor shall submit the dust control plan to AQMD for approval. AQMD plan submittal criteria is defined in AQMD Rule 403 as being for projects that will have disturbed surface area in excess of 100 acres, or for projects with a scope of work which requires the movement of more than 10,000 cubic yards of soil on each of any three working days.

A sample plan and other pertinent information is attached, and additional copies are available from the Engineer upon request. The fugitive dust control plan shall include the "Reasonably Available Control Measures" and "Best Available Control Measures" of controlling fugitive dust, as may be appropriate and necessary, including but not limited to watering, application of chemical dust suppressants, wind fencing, covering of haul vehicles, haul vehicle bed-liners, covering or chemically stabilizing stored materials, phased grading, planting of vegetation, the use of a 24 hour environmental observer, and track-out controls at locations where unpaved construction accesses intersect with paved roads. The use of chemical stabilizers, which are approved by all environmental regulatory agencies, and the use of reclaimed water is encouraged. If water is intended as a primary dust control tool, the dust control plan shall provide for at least one 2,000 gallon water truck for every 4 acres of disturbed soil, unless otherwise approved by the Engineer.

If the Construction Engineer determines that the project scope and the forecasted weather conditions are such that the Contractor's work is unlikely to be a source of dust emissions, the Construction Engineer has the authority to waive the requirements for submittal of a dust control plan

and for placement of the dust control signs described herein. However, the Contractors responsibilities for the control of fugitive dust and the other requirements of this section may not be waived.

A completion notice will not be filed, and the final payment will not be made to the Contractor until the areas of disturbed soil on the construction site, including roadway shoulders, are suitably stabilized for long term control of fugitive dust.

The successful Contractor shall attend an AQMD PM10 Dust Control Program training session, and furnish evidence of attendance to the Engineer. Attendance at AQMD training seminars can be scheduled through AQMD at 1-866-861-DUST (1-866-861-3878) or by email to dustcontrol@aqmd.gov. Current AQMD certification of previous attendance will be accepted.

At that training session, the successful Contractor will be furnished with the AQMD prepared Rule 403 and Rule 403.1 implementation handbooks, which include the "Best Available Control Measures" and "Reasonably Available Control Measures", and other associated information, including a listing of suggested dust control related devices, materials and chemicals.

The signature of the Contractor on the Proposal constitutes acknowledgement by the Contractor of the dust control requirements established by law and described herein, and the enforceability of those requirements.

When the contract includes a bid item for Dust Abatement, full compensation for conformance with these dust abatement requirements, including labor, equipment, materials, developing water supply and incidentals, shall be paid at the lump sum price for Dust Abatement, and no additional compensation will be allowed therefor.

When the contract does not include a bid item for Dust Abatement, full compensation for conformance with these dust abatement requirements, including labor, equipment, materials, developing water supply and incidentals, shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

AQMD RECOMMENDATIONS

November, 2001

Plan holder shall post signage at specified locations on the subject property in accordance with the standards specified below. The exception to the standards is that all letters shall be 4 inches high, with the names and telephone numbers of appropriate contacts and services in bold print, as indicated in the standards. These signs shall also include the SCAQMD toll free complaint line 1-800-CUT-SMOG (1-800-288-7664) and the telephone number for the Environmental Observer. These signs shall be posted within 50 feet of the curb on all four (4) corners of the subject property.

For each Dust Control Plan aggregating less than, or equal to, ten (10) acres:

1. The applicant shall install a sign on such property which is visible to the public that meets the following requirements:

   (a) Such sign shall measure at least four (4) feet wide by four (4) feet high and conform to the specifications in 1 (a) below.

For each Dust Control Plan aggregating over ten (10) acres:

2. The applicant shall install a sign on such property which is visible to the public that meets the following requirements:

   (a) Such sign shall measure at least eight (8) feet wide by four (4) feet high and conform to the specifications in 1 (b) below.

THE SIGN SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

1. **The sign boards shall be constructed with materials capable of withstanding the environment in which they are placed.**

   (a) For 4' x 4' signs, the District recommends the following:

   I. ¾ " A/C laminated plywood board
   II. Two 4" x 4" posts
   III. The posts should be attached to the edges of the plywood board with at least 2 carriage bolts on each post.
   IV. The front surface of the sign board should be painted in the contrasting color of a white background with black lettering.

   (b) For 4' x 8' signs, the District recommends the following:

   I. 1" A/C laminated plywood board
   II. Two 5" x 6" posts
   III. The posts should be attached to the 4' edges of the plywood board with at least 2 carriage bolts on each post.
   IV. The front surface of the sign board should be painted in the contrasting color of a white background with black lettering.

2. **<u>The sign board shall be installed and maintained in a condition such that members of the public can easily view, access, and read the sign at all times until the expiration date of the Dust Control plan.</u>**

   (a) For 4' x 4' signs, the District recommends the following:
   - I. The lower edge of the sign board should be mounted at least 2' above the existing ground surface to facilitate ease of viewing.
   - II. The posts should be set in a hole at least 3' deep with concrete footings to preclude downing by high winds.
   - III. On the construction site, the sign should be positioned such that nothing obstructs the public's view from the primary street access point.
   - IV. For construction projects that are developed in phases, the sign should be moved to the area that is under active construction.
   - V. In situations where all phases of the construction project are completed on a property prior to expiration of the Dust Control Plan, a written request for cancellation of the Dust Control Plan must be submitted to the Engineer.

   (b) For 4' x 8' signs, the District recommends the following:
   - I. The lower edge of the sign board should be mounted at least 2' above the existing ground surface to facilitate ease of viewing.
   - II. The posts should be set in a hole at least 4' deep with concrete footings to preclude downing by high winds.
   - III. On the construction site, the sign should be positioned such that nothing obstructs the public's view from the primary street access point.
   - IV. For construction projects that are developed in phases, the sign should be moved to the area that is under active construction.
   - V. In situations where all phases of the construction project are completed on a property prior to expiration of the Dust Control Plan, a written request for cancellation of the Dust Control Plan must be submitted to the Engineer.

3. **The sign board shall contain the following information:**

   (a) Project Name
   (b) Name of Prime Contractor
   (c) Phone Number of Contractor's Employee Responsible for Dust Control Matters
   (d) County designated phone number (to be provided by the Engineer)
   (e) South Coast Air Quality Management District Phone Number

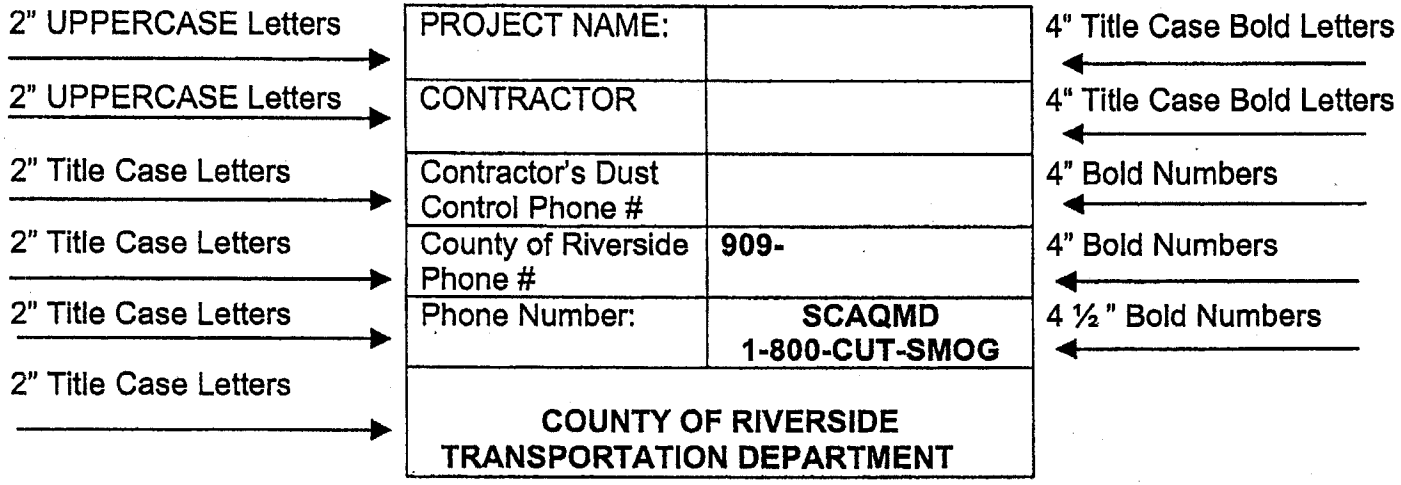
4. **The sign board shall be designed to the following alpha and numeric text dimensions (sign boards written in longhand are unacceptable).**

   (a) For a permittee subject to the 4' x 4' sign requirement, the District provides the following example: (as modified by the County of Riverside for use on County Public Works projects)

1" UPPERCASE Letters →	PROJECT NAME:		← 3 ½ " Title Case Bold Letters
1" UPPERCASE Letters →	CONTRACTOR		← 3 ½ " Title Case Bold Letters
1" Title Case Letters →	Contractor's Dust Control Phone #		← 3" Bold Numbers
1" Title Case Letters →	County of Riverside Phone #		← 3" Bold Numbers
1" Title Case Letters →	Phone Number:	**SCAQMD 1-800-CUT-SMOG**	← 3 ½ " Bold Numbers

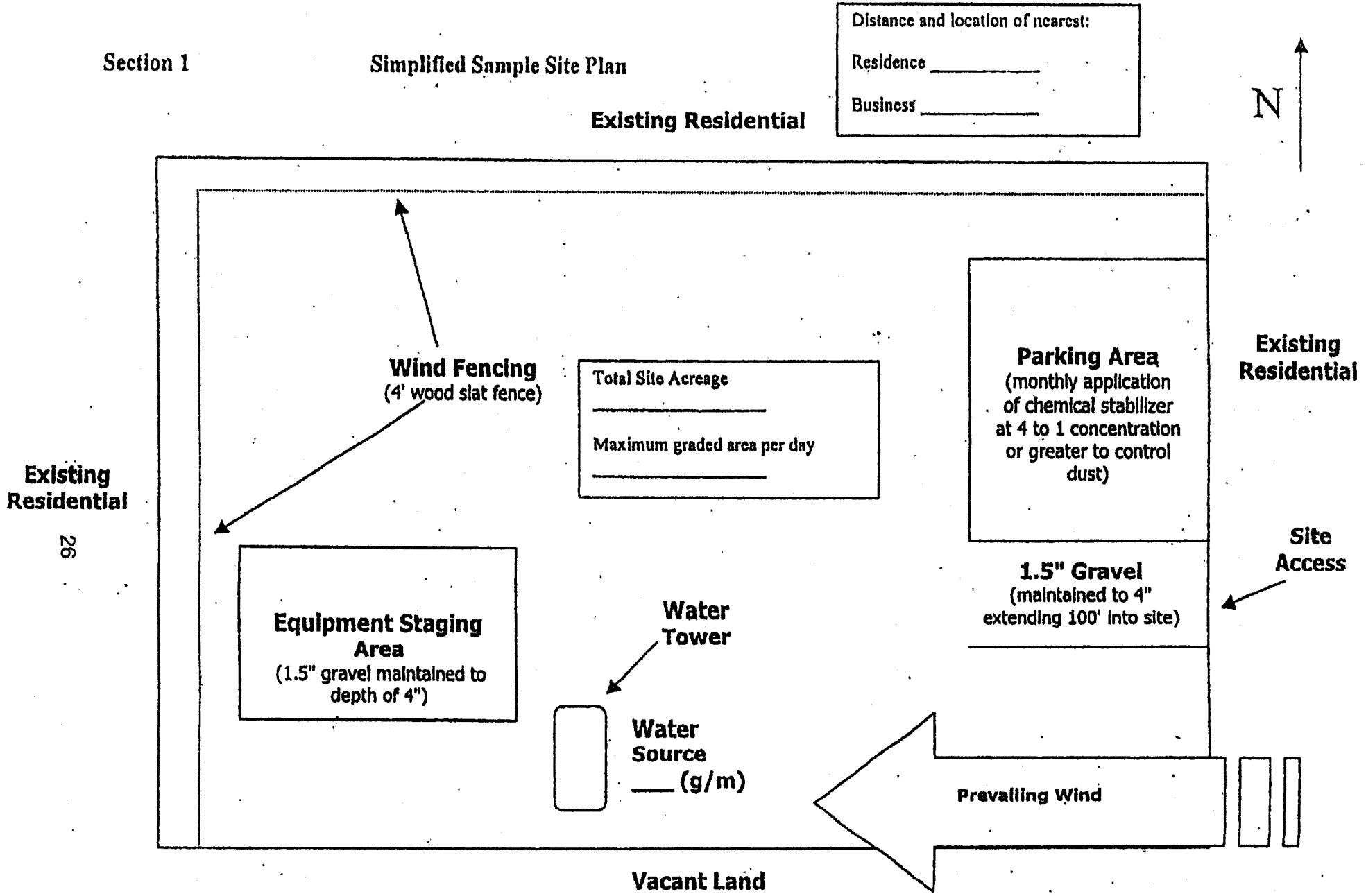
"Title Case" means the first letter of a word is capitalized and subsequent letters are lower case.

(b) For a permittee subject to the 4' x 8' sign requirement, the District provides the following example: (as modified by the County of Riverside)



Section 1

Simplified Sample Site Plan



Remember...
DUST CONTROL IS REQUIRED 24 HOURS A DAY, 7 DAYS A WEEK, REGARDLESS OF CONSTRUCTION STATUS

Plan Review Checklist
Clearing/Grubbing/Mass Grading Phase

☐ If feasible, use grading permit conditions to break the project into phases so that only a portion of the site is disturbed at any given time to ensure control of fugitive dust. This technique is critical for project sites with greater than 100 acres.

☐ Prior to initiating activity, pre-water site through use of portable irrigation lines. At least 72 hours of pre-watering is recommended for each area prior to initiating earth-movement. Require the Applicant to specify water source and available flow rate (g/m).

☐ Water applied continuously to all disturbed portions of the site by means of water truck/water pull as necessary to maintain sufficient visible moisture on the soil surface. For reference, one 2,000 gallon water truck can treat approximately 4 acres of active construction per hour. Also, for cut and fill activities, one 10,000 gallon water pull is estimated to be necessary for each 7,000 cubic yards of daily earth-movement. Multiple 4,000-gallon water trucks may be used in place of one 10,000-gallon water pull. Touch and visual contrast are reasonably good indicators of soil moisture. Surface areas that are dry to the touch and appear lighter-colored require the application of additional water to prevent visible or fugitive dust. Require the Applicant to specify the number of watering vehicles available for dust control during mass grading and during off-hours as well as availability of back-up water trucks if the site experiences dust control problems.

☐ Water towers are necessary for projects with more than 10 acres of active construction. Without a water tower, it can take up to 30 minutes to fill a 2,000 gallon water truck. Also, multiple water towers are necessary for projects that use water pulls as filling one 10,000 gallon water pull can drain a water tower which takes up to 40 minutes to refill.

☐ Wind fencing is necessary between the site and nearby residences or businesses. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through the site.

☐ A perimeter watering system consisting of portable irrigation equipment may be an effective mitigation system to protect surrounding residences and businesses. The portable watering system may be used in place of or in conjunction with watering trucks. The local jurisdiction may also be provided access to this equipment.

Remember...
DUST CONTROL IS REQUIRED 24 HOURS A DAY, 7 DAYS A WEEK, REGARDLESS OF CONSTRUCTION STATUS

☐ Construction site accesses are to be improved with 1.5" gravel maintained to a depth of 4", at least 20' wide, and extending 100 feet into the site. If the project site is not balanced, a wheel washing system and/or ribbed steel plates should be placed in the roadway before the vehicle enters the graveled area to clean the tires and prevent trackout.

☐ Equipment staging areas are to be treated with 1.5" gravel maintained to a depth of 4".

☐ Employee parking areas are to be covered with 1.5" gravel maintained to a depth of 4" or treated with chemical dust suppressants at a 4 to 1 ratio on at least a monthly basis to prevent fugitive dust.

☐ Chemical dust suppressants are to be mixed at a ratio of 20 to 1 and applied to all disturbed surfaces that are proposed to remain inactive for a period of at least 10 consecutive days. These products are effective in preventing and controlling dust. Recordkeeping is necessary to demonstrate compliance.

☐ All project sites greater than 100 acres shall monitor daily wind speeds and AQMD forecasted wind events (call 1.800.CUT.SMOG, press one for air quality information, and then press five for Coachella Valley wind forecasts). Operators shall maintain these records for review by any local code enforcement officer or AQMD inspector.

☐ An environmental observer whose primary duty is to oversee dust control at the site is to be used for construction projects greater than 100 acres and/or sites with more than 50 acres of active construction. The environmental observer is tasked with monitoring dust abatement measures and authorized to deploy additional water trucks and other dust control actions (i.e., wind fencing, street sweepers, chemical dust suppressants, etc.) as necessary to prevent or control fugitive dust.

☐ Other (specify):_____

_____

_____

_____

_____

_____

_____

Remember...
DUST CONTROL IS REQUIRED 24 HOURS A DAY, 7 DAYS A WEEK, REGARDLESS OF CONSTRUCTION STATUS

Plan Review Checklist
Finish Grading Phase

☐ Water applied continuously to all disturbed portions of the site by means of water truck/water pull as necessary to maintain sufficient visible moisture on the soil surface. For reference, one 2,000 gallon water truck can treat approximately 4 acres of active construction per hour. Also, for cut and fill activities, one 10,000 gallon water pull is estimated to be necessary for each 7,000 cubic yards of daily earth-movement. Multiple 4,000-gallon water trucks may be used in place of a 10,000-gallon water pull. Touch and visual contrast are reasonably good indicators of soil moisture. Surface areas that are dry to the touch and appear lighter-colored require the application of additional water to prevent visible or fugitive dust. Require the Applicant to specify the number of watering vehicles available for dust control during finish grading and during off-hours as well as availability of back-up water trucks if the site experiences dust control problems.

☐ Water towers are necessary for projects with more than 10 acres of active construction. Without a water tower, it can take up to 30 minutes to fill a 2,000 gallon water truck. Also, multiple water towers are necessary for projects that use water pulls as filling one 10,000 gallon water pull can drain a water tower which takes up to 40 minutes to refill.

☐ Wind fencing is necessary between the site and nearby residences or businesses to reduce fugitive dust. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through a site.

☐ Chemical dust suppressants are to be applied at a concentration of at least 10 to 1 to finish graded areas once final elevations have been reached. For areas that will remain inactive for longer periods, vegetation can be a cost-effective alternative to chemical stabilization. Wind fencing or other obstructions can keep the stabilized area free from future disturbances.

☐ Construction site access(es) are to be improved with 1.5" gravel maintained to a depth of at least 4" ,with a minimum width of at least 20', extending 100 feet into the project site.

☐ Equipment staging areas are to be treated with 1.5" gravel maintained to a depth of 4".

☐ Internal roadway networks are to be treated with chemical dust suppressants at a minimum rate of at least 4 to 1 and retreated on a monthly basis once final roadway elevations have been reached.

☐ Employee parking areas are to be treated with chemical dust suppressants at a mix ratio of at least 4 to 1 and retreated on at least a monthly basis or covered with 1.5" gravel maintained to a depth of 4" to prevent fugitive dust.

☐ Other (specify):_____

_____

_____

_____

Remember...
DUST CONTROL IS REQUIRED 24 HOURS A DAY, 7 DAYS A WEEK, REGARDLESS OF CONSTRUCTION STATUS

Plan Review Checklist
Construction Phase

☐ Water applied continuously to all disturbed portions of the site by means of water truck/water pull is necessary to maintain sufficient visible moisture on the soil surface. For reference, one 2,000 gallon water truck can treat approximately 4 acres of active construction per hour. Touch and visual contrast are reasonably good indicators of soil moisture. Surface areas that are dry to the touch and appear lighter-colored require the application of additional water to prevent visible or fugitive dust. Require the Applicant to specify the number of watering vehicles available for dust control during the construction phase and during off-hours as well as availability of back-up water trucks if the site experiences dust control problems.

☐ Wind fencing is necessary between the site and nearby residences or businesses. Off-site upwind fencing and on-site wind fencing for larger projects can also keep blowsand from being deposited onto the site or traveling through the site. Block walls, if part of the final project, can replace wind fencing during the construction phase.

☐ Chemical dust suppressants are to be applied at a concentration of at least 20 to 1 to finish graded areas once final elevations have been reached. For areas that will remain inactive for longer periods, vegetation can be a cost-effective alternative to chemical stabilization. Wind fencing or other obstructions can keep the stabilized area free from future disturbances.

☐ Construction site accesses are to be improved with 1.5" gravel, maintained to a depth of 4", with a width of at least 20', extending 100' into the project site. Paving internal roadways can substitute for gravel.

☐ Internal roadway networks are to be paved as early as feasible in the construction phase. Street sweeping of internal and/or external access roads will likely be required to control entrained road dust.

☐ Employee parking areas are to be treated with chemical dust suppressants at a mix ratio of no less than 4 to 1 and retreated on a monthly basis, or more frequently if fugitive dust is observed. If internal roadway is complete, employees are to be instructed to park on paved roads.

☐ Other (specify):_____

_____

_____

_____

_____

_____

_____

Remember...
DUST CONTROL IS REQUIRED 24 HOURS A DAY, 7 DAYS A WEEK, REGARDLESS OF CONSTRUCTION STATUS

REASONABLY AVAILABLE CONTROL MEASURES

Paragraph (d)(3) of Rule 403 allows activities outside the South Coast Air Basin (see Figure 2-1) to implement reasonably available control measures in lieu of best available control measures. Additionally, as specified by subparagraph (f)(3)(D) of Rule 403, any person seeking approval of a fugitive dust emissions control plan for projects outside the South Coast Air Basin must demonstrate to the satisfaction of the District that the given activity is employing all reasonably available fugitive dust control measures.

The District has prepared the attached listing of reasonably available fugitive dust control measures for a variety of source categories. This list is based on the U.S. Environmental Protection Agency's reference document entitled, "Control of Open Fugitive Dust Sources," Midwest Research Institute, September 1988.

The District encourages the use of those dust control measures that minimize the use of potable water. When water is needed, reclaimed water should be utilized to the greatest extent feasible.

REASONABLY AVAILABLE CONTROL MEASURES

The left column contains a listing of the sources of fugitive dust which are intended for emission control under District Rule 403 and a listing of control measures and high-wind measures. The right column contains a description of the reasonably available fugitive dust control measures for each of the sources.

Source: (1) Land Clearing/Earth-Moving

CONTROL MEASURES	DESCRIPTION
(A) Watering	(1) Application of water by means of trucks, hoses and/or sprinklers prior to conducting any land clearing. This will increase the moisture content of the soils; thereby increasing its stability. (2) Pre-application of water to depths of proposed cuts. (3) Once the land clearing/earth moving activities are complete, a second application of water can generate a thin crust that stabilizes the disturbed surface area provided that it is not disturbed. (Security fencing can be used to prevent unwanted future disturbances of sites where a surface crust has been created).
(B) Chemical stabilizers	(1) Only effective in areas which are not subject to daily disturbances. (2) Vendors can supply information on product application and required concentrations to meet the specifications established by the Rule.
(C) Wind fencing	(1) Three- to five-foot barriers with 50% or less porosity located adjacent to roadways or urban areas can be effective in reducing the amount of windblown material leaving a site. (2) Would likely be used in conjunction with other measures (e.g., watering, chemical stabilization, etc.) to ensure that visible emissions do not cross a property line.
(D) Cover haul vehicles	(1) Entire surface area of hauled earth should be covered once vehicle is full.
(E) Bedliners in haul vehicles	(1) When feasible, use in bottom-dumping haul vehicles.

HIGH WIND MEASURE

(a) Cease all active operations; or
(b) Apply water within 15 minutes to any soil surface which is being moved or otherwise disturbed.

Source: (2) Unpaved Roads

CONTROL MEASURES	DESCRIPTION
(F) Paving	(1) Requires street sweeping/cleaning if subject to material accumulation.
(G) Chemical stabilization	(1) Vendors can supply information as to application methods and concentrations to meet the specifications established by the Rule (2) Not recommended for high volume or heavy equipment traffic use.
(H) Watering	(1) In sufficient quantities to keep surface moist. (2) Required application frequency will vary according to soil type, weather conditions, and vehicular use.
(I) Reduce speed limits	(1) 15 mile per hour maximum. May need to be used in conjunction with watering or chemical stabilization to prevent visible emissions from crossing the property line.
(J) Reduce vehicular trips	(1) Access restriction or redirecting traffic to reduce vehicle trips by a minimum of 60 percent.
(K) Gravel	(1) Gravel maintained to a depth of four inches can be an effective measure. (2) Should only be used in areas where paving, chemical stabilization or frequent watering is not feasible..

HIGH WIND MEASURE

(c) Apply a chemical stabilizer (to meet the specifications established by the Rule) prior to wind events; or
(d) Apply water once each hour; or
(e) Stop all vehicular traffic.

Source: (3) Storage Piles

CONTROL MEASURES	DESCRIPTION
(L) Wind sheltering	(1) Enclose in silos. (2) Install three-sided barriers equal to height of material, with no more than 50 percent porosity.
(M) Watering	(1) Application methods include: spray bars, hoses and water trucks. (2) Frequency of application will vary on site-specific conditions.
(N) Chemical stabilizers	(1) Best for use on storage piles subject to infrequent disturbances.
(O) Altering load-in/load-out procedures	(1) Confine load-in/load-out procedures to leeward (downwind) side of the material. (2) May need to be used in conjunction with wind sheltering to prevent visible emissions from crossing the property line.
(P) Coverings	(1) Tarps, plastic, or other material can be used as a temporary covering. (2) When used, these should be anchored to prevent wind from removing coverings.

HIGH WIND MEASURE

(f) Apply chemical stabilizers (to meet the specifications established by the Rule) prior to wind events; or
(g) Apply water once per hour; or
(h) Install temporary covers.

Source: (4) Paved Road Track-Out

CONTROL MEASURES	DESCRIPTION
(Q) Chemical stabilization	(1) Most effective when used on areas where active operations have ceased. (2) Vendors can supply information on methods for application and required concentrations.
(R) Sweep/clean roadways	(1) Either sweeping or water flushing may be used.
(S) Cover haul vehicles	(1) Entire surface area should be covered once vehicle is full.
(T) Bedliners in haul vehicles	(1) When feasible, use in bottom dumping vehicles.
(U) Site access improvement	(1) Pave internal roadway system. (2) Most important segment, last 100 yards from the connection with paved public roads

HIGH WIND MEASURE

(i) Cover all haul vehicles; and
(j) Clean streets with water flushing, unless prohibited by the Regional Water Quality Control Board.

Source: (5) Disturbed Surface Areas/ Inactive Construction Sites

CONTROL MEASURES	DESCRIPTION
(Q) Chemical stabilization	(1) Most effective when used on areas where active operations have ceased. (2) Vendors can supply information on methods for application and required concentrations.
(R) Watering	(1) Requires frequent applications unless a surface crust can be developed.
(S) Wind fencing	(1) Three- to five-foot barriers with 50% or less porosity adjacent to roadways or urban areas can be effective in reducing the amount of wind blown material leaving a site.
(T) Vegetation	(1) Establish as quickly as possible when active operations have ceased. (2) Use of drought tolerant, native vegetation is encouraged.

HIGH WIND MEASURES

(k) Apply chemical stabilizers (to meet the specifications established by the Rule); or
(l) Apply water to all disturbed surface areas 3 times per day.

BEST AVAILABLE CONTROL MEASURES

Rule 403, paragraph (d)(2) requires active operations [defined in Rule 403, paragraph (c)(1)] within the South Coast Air Basin (see Figure 2-1) to implement at least one best available control measure for each fugitive dust source type on site. Additionally, as specified by subparagraph (f)(3)(D) of Rule 403, any person seeking approval of a fugitive dust emissions control plan for projects within the South Coast Air Basin must demonstrate to the satisfaction of the AQMD that the given activity is employing all best available fugitive dust control measures.

The AQMD has prepared the attached listing of best available fugitive dust control measures for a variety of source categories. This list is based on the U.S. Environmental Protection Agency's reference document entitled, "Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures," Office of Air and Radiation, September 1992.

The AQMD encourages the use of those dust control measures that minimize the use of potable water. When water is needed, reclaimed water should be utilized to the greatest extent feasible.

BEST AVAILABLE CONTROL MEASURES

The left column contains a listing of the sources of fugitive dust which are intended for emission control under District Rule 403 and a listing of control measures and high-wind measures. The right column contains a description of the best available fugitive dust control measures for each of the sources.

Source: (1) Land Clearing/Earth-Moving

CONTROL MEASURES	DESCRIPTION
(A) Watering (pre-grading)	(1) Application of water by means of trucks, hoses and/or sprinklers prior to conducting any land clearing. This will increase the moisture content of the soils; thereby increasing its stability. (2) Pre-application of water to depths of proposed cuts.
(A-1) Watering (post-grading)	(1) In active earth-moving areas water should be applied at sufficient frequency and quantity to prevent visible emissions from extending more than 100 feet from the point of origin.
(A-2) Pre-grading planning	(1) Grade each phase separately, timed to coincide with construction phase; or (2) Grade entire project, but apply chemical stabilizers or ground cover to graded areas where construction phase begins more than 60 days after grading phase ends.
(B) Chemical stabilizers	(1) Only effective in areas which are not subject to daily disturbances. (2) Vendors can supply information on product application and required concentrations to meet the specifications established by the Rule.
(C) Wind fencing	(1) Three- to five-foot barriers with 50% or less porosity located adjacent to roadways or urban areas can be effective in reducing the amount of windblown material leaving a site. Must be implemented in conjunction with either measure (A-1) or (B).
(D) Cover haul vehicles	(1) Entire surface area of hauled earth should be covered once vehicle is full.
(E) Bedliners in haul vehicles	(1) When feasible, use in bottom-dumping haul vehicles.

HIGH WIND MEASURE

(a) Cease all active operations; or
(b) Apply water within 15 minutes to any soil surface which is being moved or otherwise disturbed.

Source: (2) Unpaved Roads

CONTROL MEASURES	DESCRIPTION
(F) Paving	(1) Requires street sweeping/cleaning if subject to material accumulation.
(G) Chemical stabilization	(1) Vendors can supply information as to application methods and concentrations to meet the specifications established by the Rule (2) Not recommended for high volume or heavy equipment traffic use.
(H) Watering	(1) In sufficient quantities to keep surface moist. (2) Required application frequency will vary according to soil type, weather conditions, and vehicular use.
(I) Reduce speed limits	(1) 15 mile per hour maximum. May need to be used in conjunction with watering or chemical stabilization to prevent visible emissions from crossing the property line.
(J) Reduce vehicular trips	(1) Access restriction or redirecting traffic to reduce vehicle trips by a minimum of 60 percent.
(K) Gravel	(1) Gravel maintained to a depth of four inches can be an effective measure. (2) Should only be used in areas where paving, chemical stabilization or frequent watering is not feasible.

HIGH WIND MEASURE

(a) Apply a chemical stabilizer (to meet the specifications established by the Rule) prior to wind events; or
(b) Apply water once each hour; or
(c) Stop all vehicular traffic.

Source: (3) Storage Piles

CONTROL MEASURES	DESCRIPTION
(L) Wind sheltering	(1) Enclose in silos. (2) Install three-sided barriers equal to height of material, with no more than 50 percent porosity.
(M) Watering	(1) Application methods include: spray bars, hoses and water trucks. (2) Frequency of application will vary on site-specific conditions.
(N) Chemical stabilizers	(1) Best for use on storage piles subject to infrequent disturbances.
(O) Altering load-in/load-out procedures	(1) Confine load-in/load-out procedures to leeward (downwind) side of the material. Must be used in conjunction with either measure (L), (M), (N), or (P).
(P) Coverings	(1) Tarps, plastic, or other material can be used as a temporary covering. (2) When used, these should be anchored to prevent wind from removing coverings.

HIGH WIND MEASURE

(a) Apply chemical stabilizers (to meet the specifications established by the Rule) prior to wind events; or
(b) Apply water once per hour; or
(c) Install temporary covers.

Source: (4) Paved Road Track-Out

CONTROL MEASURES	DESCRIPTION
Compliance with District Rule 403.	Paragraph (d)(5).

Source: (5) Disturbed Surface Areas/ Inactive Construction Sites

CONTROL MEASURES	DESCRIPTION
(Q) Chemical stabilization	(1) Most effective when used on areas where active operations have ceased. (2) Vendors can supply information on methods for application and required concentrations.
(R) Watering	(1) Requires frequent applications unless a surface crust can be developed.
(S) Wind fencing	(1) Three- to five-foot barriers with 50% or less porosity adjacent to roadways or urban areas can be effective in reducing the amount of wind blown material leaving a site. Must be used in conjunction with either measure (Q), (R), or (T).
(T) Vegetation	(1) Establish as quickly as possible when active operations have ceased.*

HIGH WIND MEASURES

(a) Apply chemical stabilizers (to meet the specifications established by the Rule); or
(b) Apply water to all disturbed surface areas 3 times per day.

* Use of drought tolerant, native vegetation is encouraged.

TABLE 1

BEST [REASONABLY]* AVAILABLE CONTROL MEASURES FOR HIGH WIND CONDITIONS

FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR (1B) Apply chemical stabilizers prior to wind event; OR (2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR (3B) Take the actions specified in Table 2, Item (3c); OR (4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice [once] per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice [once] per hour; OR (2D) Install temporary coverings.
Paved road track-out	(1E) Cover all haul vehicles; OR (2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 1 may be used.

* Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

January 1999

TABLE 2
DUST CONTROL ACTIONS FOR EXEMPTION FROM PARAGRAPH (d)(4)*

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

* Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

TABLE 2 (Continued)*

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Earth-moving: Construction cut areas and mining operations:	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 [70] percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c)	Apply chemical stabilizers within five working days of grading completion; OR
	(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a)	Apply water to at least 80 [70] percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative ground cover within 21 [30] days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

* Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

TABLE 2 (Continued)*

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 [70] percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile.
All Categories	(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

* Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

TABLE 3
TRACK-OUT CONTROL OPTIONS
PARAGRAPH (d)(5)(B)

CONTROL OPTIONS

(1)	Pave or apply chemical stabilization at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.
(2)	Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that exiting vehicles do not travel on any unpaved road surface after passing through the track-out control device.
(3)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT NO. B6-0460

SPECIAL PROVISIONS

DESCRIPTION:

In general, this project consists of installing traffic signals and constructing street improvements at the intersection of Magnolia Avenue and Neece Street in the Home Gardens area of Riverside County. The work involves cold plane existing paving, removing sections of existing paving, concrete cross gutters, curb and gutter, overside drains, and trees, placing asphalt concrete pavement. Additional work includes installation of two turning lanes, pavement reconstruction, construction of sidewalk, ramps, curbs, gutter, retaining wall, tubular fencing, decorative colored and stamped concrete, landscaping, irrigation system, striping, signing improvements, and any other work as may be required.

ORDER OF WORK:

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work" of the Standard Specifications and these Special Provisions.

SPECIFICATIONS:

This project shall conform to the requirements of the May 2006 edition of the Standard Specifications and Standard Plans as issued by the State of California Department of Transportation and amendments to the standard plans and Specification.

SURVEY STAKING

County surveyors will establish external primary survey control marks and/or monuments to be used throughout the construction period. These control marks will be used by the County Surveyor to set construction stakes. The control marks will also be used to make verification surveys at various stages of work.

The County places stakes and marks per the County's Survey Manual.

Contractor must submit request for County furnished stakes:

1. Once staking area is ready for stakes
2. Request for construction stakes must be in writing.

The County will provide Contractor with a survey request form. A minimum notice of 2 working days is required from the Contractor prior to County Surveyor beginning the work requested.

Contractor must preserve stakes and marks placed by the County. Survey costs are incurred by the County; however, if the stakes or marks are destroyed, the County replaces them at the County's earliest convenience and deducts the replacement expenses.

DISPOSAL OF EXCESS EXCAVATION OR MATERIALS:

Excess earth excavation, pavement grindings and other excess materials resulting from construction operations shall be disposed of by the Contractor outside of the highway right of way, as provided in Section 7-1.13 of the Standard Specifications.

The second paragraph of Section 7-1.13 of the Standard Specifications is modified to read as follows:

> When any material is to be disposed of outside the highway right of way, and the County of Riverside has not made arrangements for the disposal of such material, the Contractor shall first obtain written authorization from the property owner on whose property the disposal is to be made and he shall file with the Engineer said authorization or a certified copy thereof together with a written release from the property owner absolving the County of Riverside from any and all responsibility in connection with the disposal of material on said property. If the disposal of materials is to be made at an established disposal facility that is available for public use, the Contractor shall retain all authorizations and receipts from said disposal facility and shall provide copies to the Engineer upon request.

PROJECT APPEARANCE:

The Contractor shall maintain a neat appearance to the work.

In areas visible to the public, the following shall applay:

A. When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of weekly.

B. Trash bins shall be furnished for debris from structure construction. Debris shall be placed in trash bins daily. Forms or falsework that are to be re-used shall be staked neatly concurrently with their removal. Forms and falsework that are not to be re-used shall be disposed of concurrently with their removal.

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

RECORD DRAWINGS:

The Contractor shall keep one clean set of bond originals to note any changes which take place during construction. These changes to the original plans and/or specifications shall be noted at the appropriate locations with the appropriate changes indicated in red pencil or ink. The Contractor shall note in large letters "RECORD DRAWINGS" on the Title Sheet of the plans. The job will not be finalized by the Engineer until these record drawings have been completed to the satisfaction of the Engineer. The changes shall be noted on the plans as the changes occur. The record drawings shall be submitted to the Resident Engineer, and become the property of the County at conclusion of the project.

Full compensation for maintaining and compiling the record drawings shall be considered to be included in other items of work and no additional compensation will be allowed therefore.

LIQUIDATED DAMAGES:

The Contractor shall diligently prosecute the work to completion before the expiration of **55** working days from the date stated in the "Notice to Proceed". The Contractor shall pay to the County of Riverside the sum of **$1000.00** per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

In addition to the liquidated damages set forth above, the Contractor shall pay to the County of Riverside the sum of **$500** same as project LD per day for each and every calendar day delay in receiving all of the below listed equipment, onto the job site or the contractors storage facility, and available for installation, within sixty (60) calendar days if standards/ posts, anchor bolts and IISNS mast arms were furnished by the County; otherwise, one hundred (100) calendar days of the contract award:

1. Traffic Signal Controller Assemblies
2. Service Equipment Enclosures
3. LED Modules
4. IISNS (Street Name Signs)

COOPERATION:

Attention is directed to Section 7-1.14, "Cooperation" of the Standard Specifications and these Special Provisions.

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

The Contractor is hereby advised to cooperate with utility companies for adjusting water valves, manholes and other facilities to grade.

Should construction be under way by other forces or by other Contractors within or adjacent to the limits of the work specified or should work of any other nature be under way by other forces within

or adjacent to those limits, the Contractor shall cooperate with all the other Contractors or other forces to the end, so any delay or hindrance to their work will be avoided. The right is reserved to perform other or additional work at or near the site (including material sources) at any time, by the use of other forces.

INSURANCE:

In addition to the requirements of Section 18, "Insurance – Hold Harmless" of these contract documents, the Contractor's Certificate of Insurance and endorsements for the project shall name the following listed entities as additional insured under the Contractor's general liability, excess liability, and auto liability insurance policies, and each listed entity shall be named on the Waiver of Subrogation for the Contractor's Workers Compensation policy.

1. "City of Corona, its officers, directors, agents and employees".

Each of the above listed entities shall also be held harmless, in accordance with the requirements of Section 18, "Insurance – Hold Harmless" of these contract documents.

Method of Payment:
Full compensation for compliance with the requirements of this Section shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

PARTIAL PAYMENTS:

Partial payment shall conform to Section 9 1.06, "Partial Pavements," and 9 1.07, "Payment After Acceptance," of the Stand Specifications and these special provisions.

For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments" of the Standard Specifications, the amount set forth for all Lump Sum items of work, shall be deemed to be maximum total value of said contract item of work which will be recognized for progress payment purposes:

A. Clearing and Grubbing	$9,500
B. Dust Abatement	$3,800
C. Develop Water Supply	$3,000
D. Re-Establish Existing Monument Well	$500

After acceptance of the contract pursuant to Section 7-1.17, "Acceptance of Contract" of the Standard Specifications, the amount, if any, payable for a contract item of work in excess of the maximum value for progress payment purposes herein above listed for said item, will be included for payment in the first estimate made after acceptance of the contract.

JOB SITE POSTERS:

Contractor shall obtain, furnish, post, preserve and maintain notices and posters in areas readily accessible to all personnel. Areas include, but are not limited to, jobsite trailer common area, material staging area, designated area where employees meet to take shift breaks, and /or equipment storage area. The designated location(s) of posters must be approved by the Engineer.

If posters are placed outside, they will need to be weatherproofed.

Copies of the posters may be obtained at the Caltrans Division of Construction Website:

http://www.dot.ca.gov/hq/construc/LaborCompliance/posters.htm

The Contractor shall check the website periodically for poster updates, additions, and changes. Contact information for various government agencies associated with poster information are provided at this website with links.

The following is a list of required posters:

Document number	Poster Name	Note/ Comment
-	Notice of Labor Compliance Program Approval	Required in English and Spanish and for all projects.
DFEH 162	Discrimination and Harassment in Employment are Prohibited by Law	Required in English and Spanish and for all projects.
DSLE 8	Payday Notice	Required for all projects.

Though not posters, but included in the listing above, are the Federal (Davis-Bacon) wage rates and the California State prevailing wage rates, which are applicable to this specific contract, and also to be posted at the job site. See Section 5-2 "Federal Prevailing Wage Decision" or see correlated addendum that updates this referenced section.

The revision dates shown in this listing were current as of April 20, 2010.

Full compensation for obtaining, furnishing, posting, preserving and maintaining all notices and job site posters shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

GRAFFITI REMOVAL AND CLEANING:

The Contractor shall remove existing graffiti within the project limits and any new graffiti produced during the construction period of the project.

Contractor shall submit a method of graffiti removal plan to the Engineer for approval. Sand blasting will not be allowed. Methods may include but not limited to power washing, solvent washing, and painting over graffiti, as appropriate for the surface to be cleaned.

All graffiti shall be completely removed or obliterated and the area feathered out to hide any imperfections.

Graffiti shall be removed from, but not limited to, the surfaces listed as follows: bricks, cinder blocks, concrete sidewalks, pavement, bridge under passes, overhead structures, drainage channels, roadside signs, temporary construction signs, barricades, k-railing, traffic control devices, all types of poles, and other objects within the project limits as directed by the Engineer. Painting of k-railing for the purposes of graffiti removal shall not be considered as repainting as outlined in paragraph one of Section 12-3.08 and shall not be paid for as extra work.

Graffiti to be removed may include, but shall not be limited to: paint, signs, wood, metal, plastic, decals, gum, markers, crayons, ropes, chains, strings, wires, and tapes of any kind on an as needed basis.

All painting over graffiti must be done with exact color matches, so as not to show any blocking or shadowing of colors. Painting over graffiti is the preferred option on previously painted surfaces, and where solvents are unsuccessful at removing graffiti. Painting services shall be done on an as needed basis on the following types of surfaces, but not limited to: walls, hardscapes, poles, fences, bollards, railings, and buildings.

Paint shall be exact color match. Paint types may include oil base, water base and enamels as approved by the Engineer. Graffiti cover-up by paint will be allowed with appropriate type of paint at locations where graffiti cannot be removed only upon direction by the Engineer. All paint applications shall adhere to the manufacture's recommendations. All material and solutions shall be safe and biodegradable and approved by the Engineer.

Regional Water Quality Control Board (RWQCB) and Air Quality Management District (AQMD) regulations, as well as all NPDES required best management practices shall be complied with and followed.

The Contractor shall so conduct his operation as to cause the least possible obstruction and inconvenience to public traffic. The Contractor shall provide, erect and maintain barricades, lights, danger signals, and warning signs as deemed appropriate by the Engineer.

When necessary, the Contractor shall provide and erect safe and adequate scaffolding and equipment, barriers, and masking, required for the proper execution of the work. All scaffolding shall be properly braced and erected to insure the safety of the workmen and meet all appropriate OSHA regulations.

The Contractor shall respond and provide manpower for any urgent graffiti removal and cleaning notifications within two (2) working days.

Method of Payment:
Full compensation for conformance with these Graffiti Removal and Cleaning requirements, including labor, equipment, materials, necessary traffic control, and incidentals, shall be paid at the lump sum price for Traffic Control System, and no additional compensation will be allowed therefor.

ITEMS OF WORK:

WATER POLLUTION CONTROL (SANTA ANA REGION):

Throughout the term of this contract, the total land disturbance area of the project site shall be less than 1 acre. The Contractor shall comply the Area-Wide Municipal Stormwater Permit NPDES No. CAS 618033, hereafter referred to in this section as the " Municipal Permit", issued by the California Regional Water Quality Control Board (CRWQCB) – Santa Ana Region. This Permit regulates both stormwater and non-stormwater discharges associated with Contractor's construction activities. A copy of the Permit may be obtained at the office of the County of Riverside Transportation Department, 14th Street Transportation Annex, 3525 14th Street, Riverside, California. (951) 955-6780, or may be obtained on the internet at: http://www.waterboards.ca.gov/santaana/

The Contractor shall comply with the requirements of the Municipal Permit, and all other applicable federal, state and local laws, ordinances, statues, rules, and regulations concerning water pollution control.

Contractor's Water Pollution Control Program (WPCP) Preparation Manual shall be prepared by a Qualified SWPPP Developer in accordance with Section 3, "Preparing a Water Pollution Control Program (WPCP)", of the *Caltrans Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual (June 2011)*, which is available as a free download from:

http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm

WATER POLLUTION CONTROL MEASURES

A. Work having the potential to cause water pollution shall not commence until the Contractor's WPCP has been reviewed and approved by the Engineer. The Engineer's review and approval of the Contractor's WPCP shall not waive any contractual requirements and shall not relieve the Contractor from achieving and maintaining compliance with all federal, state, and local laws, ordinances, statues, rules, and regulations. A copy of Contractor's WPCP shall be maintained onsite. When the WPCP or access to the construction site is requested by a representative of a federal, state, or local regulatory agency, Contractor shall make the WPCP available and Contractor shall immediately contact the Engineer. Requests from the public for the Contractor's WPCP shall be directed to the Engineer.

B. Contractor's WPCP shall describe the Contractor's plan for managing runoff during each construction phase. Contractor's WPCP shall describe the Best Management Practices

(BMPs) that will be implemented to control erosion, sediment, tracking, construction materials, construction wastes, and non-stormwater flows. BMP details shall be based upon California Stormwater Quality Association's 2009 California Stormwater Quality BMP Handbook Portal (http://www.cabmphandbooks.com) or the Caltrans Construction Site BMP Manual (http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm). Contractor's WPCP shall describe installation, operation, inspection, maintenance, and monitoring activities that will be implemented for compliance with the Municipal Permit and all applicable federal, state, and local laws, ordinances, statutes, rules, and regulations related to the protection of water quality.

C. The Contractor's WPCP preparer shall have been trained to prepare WPCPs or SWPPPs and shall have previous experience with preparing SWPPP or WPCP requirements on a previous project.

The Contractor shall designate a Water Pollution Control Manager that shall have been trained to implement WPCP or SWPPP requirements. Contractor's Water Pollution Control Manager shall:

1. Be responsible for all water pollution control work.
2. Be the Engineer's primary contact for all water pollution control work.
3. Have the authority to mobilize resources (crews, supplies, equipment, etc.) to make immediate repairs of water pollution control measures or to supplement water pollution control measures to maintain compliance with all federal, state, and local laws, ordinances, and regulations related to the protection of water quality, including the Municipal Permit.

The WPCP shall contain all required and applicable certifications and evidence of training for the Water Pollution Control Manager, WPCP Developer, and all other employees working on the project receiving formal training or certification.

D. Water Pollution Control Training: Contractor shall provide water pollution control training to Contractor's employees and subcontractors prior to their performing work on the work site. The water pollution control training shall be appropriate to the employee or subcontractor function and area of responsibility and shall address (as applicable):

1. Erosion Control (water and wind)
2. Sediment Control
3. Tracking Control
4. Materials & Waste Management
5. Non-Stormwater Discharge Management

E. Monitoring and Reporting: Observations and inspections conducted by the Contractor's Water Pollution Control Manager shall be documented on the Construction Site Inspection Checklist included in Contractor's WPCP. A copy of each completed Construction Site Inspection Checklist shall be submitted to the Engineer within 24 hours of conducting the inspection.

General Requirements:

In the event the County incurs any Administrative Civil Liability (fine) imposed by the CRWQCB – Santa Ana Region, the State Water Resources Control Board, or EPA, as a result of Contractor's

failure to fully implement the provisions of "Stormwater and Non-Stormwater Pollution Control", the Engineer, may, in the exercise of his sole judgment and discretion, withhold from payments otherwise due Contractor a sufficient amount to cover the Administrative Civil Liability including County staff time, legal counsel, consultant support costs and all other associated cost.

The Contractor shall be responsible for all costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements set forth in "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Caltrans Handbooks, Municipal Permit, Federal, State, and local regulations. For the purpose of this paragraph, costs and liabilities include, but not limited to, fines, penalties, damages, and costs associated with defending against enforcement actions whether taken against the County or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Act.

Within fifteen (15) working days after the award of the contract, the Contractor shall submit two (2) copies of the WPCP to the Engineer for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the WPCP. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the WPCP within three (3) working days of receipt of the Engineer's comments and shall allow ten (10) working days for the Engineer to review the revisions. The Contractor shall submit four (4) copies of the approved WPCP to the Engineer prior to notice to proceed. The Contractor must have an approved WPCP prior to the notice to proceed. The Engineer may provide a letter of conditional approval of the Contractor's WPCP while minor revisions are made and may allow the Contractor to begin only those certain construction activities identified in the letter of conditional approval. In no case will the conditional approval extend beyond twenty-one (21) calendar days. The Engineer may suspend construction operations until the Contractor submits a revised WPCP that is reviewed and approved by the Engineer.

Unless otherwise directed by the Engineer or specified in these Special Provisions, the Contractor's responsibility for WPCP implementation shall continue throughout any temporary suspension of work ordered in accordance with Section 8-1.05, "Temporary Suspension of the Work", of the Standard Specifications. The Engineer may withhold progress payments or order the suspension of construction operations without an extension of the contract time, if the Contractor fails to comply with the requirements of "Water Pollution Control" as determined by the Engineer.

All BMP repairs shall be implemented by the Contractor within 72 hrs.

Method of Payment:
Payment for Water Pollution Control shall be on a lump sum basis and shall include full compensation for the work performed, including, developing, preparing, revising, obtaining approval of, and amending the WPCP, implementing, installing, constructing, operating, maintaining, and removing and disposing of temporary BMPs, performing the observations, inspections, sampling, analysis, reporting, and street sweeping, and as specified in the Caltrans Handbooks, Municipal Permit and these Special Provisions, and as directed by the Engineer.

STREET SWEEPING:

GENERAL

Summary
This work includes street sweeping.

The WPCP shall describe and include the use of street sweeping as a Water Pollution Control practice for sediment control and tracking control. Street sweeping shall also conform to all applicable AQMD requirements.

Submittals

At least 5 working days before starting clearing and grubbing, or other activities with the potential for tracking sediment or debris, submit:

A. The number of street sweepers that will be used as described in the WPCP.
B. Type of sweeper technology (or technologies).

Quality Control and Assurance
Retain the following records related to street sweeping and submit weekly to Engineer:

A. Tracking Inspection Log
B. Sweeping times and locations.
C. Quantity of sweeping waste disposal.

CONSTRUCTION

Street Sweepers

Sweepers must use one of these technologies:

A. Mechanical sweeper followed by a vacuum-assisted sweeper.
B. Vacuum-assisted dry (waterless) sweeper.
C. Regenerative-air sweeper.
or
D. Sweeping by hand is acceptable in lieu of A, B, and C above.

Operation
Street sweeping shall be conducted at:

A. Paved roads at job site entrance and exit locations.
B. Paved areas within the job site that flow to storm drains or water bodies.

Street sweeping shall be conducted, and sweeper(s) shall be available to operate at all times, for the following:

A. During clearing and grubbing activities.
B. During earthwork activities.
C. During trenching activities.
D. During roadway structural section activities.
E. When vehicles are entering and leaving the job site.
F. After soil disturbing activities.
G. After observing offsite tracking of material.

Contractor's Water Pollution Control Manager shall inspect adjacent paved areas at job site entrances and exits and paved roadways within the job site on a minimum daily basis, and more frequently when activities that require street sweeping are being performed. Contractor's Water Pollution Control Manager shall maintain a "Tracking Inspection Log." Street sweeping shall be conducted:

A. Within 1 hour, if sediment or debris is observed on paved areas or paved roadways.

At least one sweeper, in good working order, must be on the job site at all times when sweeping work may be required.

Perform street sweeping to minimize dust. If dust generation is excessive or sediment pickup is ineffective, water may be used but shall be contained, collected (e.g. vacuum), and properly disposed.

Material collected during street sweeping must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Full compensation to conform with the requirements of this section shall be considered as included in the contract lump sum price paid for Water Pollution Control including furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in street sweeping, including disposal of collected material, as shown on the plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the Engineer. Therefore, no additional compensation will be allowed for street sweeping.

TRAFFIC CONTROL SYSTEM:

Contractor shall prepare construction staging and traffic control plans for review and approval by the Transportation Department.

Proposed plans shall be submitted by the Contractor for review and approval by the Transportation Department at least two weeks after awarding of the contract. The construction staging and traffic control plans shall be prepared, signed and stamped by a Civil Engineer or Traffic Engineer who is registered as such in the State of California, unless otherwise specifically allowed by the Engineer. The Contractor shall revise and implement the plans as directed by the Construction Engineer. Construction shall not begin until the Engineer provides Contractor with County approval of the plans.

Construction staging and traffic control plans shall be in accordance with the appropriate standards and specifications for construction staging, detour roads, traffic control, including the State of California Highway Design Manual, the manual on Uniform Traffic Control Devices 2003 Edition, the corresponding California Supplement, and subsequent modifications as adopted by the State of California Department of Transportation, Standard Plans and Standard Specifications, and the Work

Area Traffic Control Handbook (WATCH), as published by Building News, Inc. Any requests for deviation from the established design standards or specifications are to be submitted to the Construction Engineer for review and approval prior to submission of the required plans.

With regard to the preparation and implementation of the plans, attention is especially directed to Sections 7-1.06, 7-1.08, 7-1.09, 7-1.11, 7-1.12 and Section 12 of the State of California Standard Specifications. Section 12-2.02 of the Standard Specifications is deleted.

Maintaining traffic shall conform to the provisions in 7-1.02 "Load Limitations", 7-1.06 "Safety and Health Provisions", 7-1.08 "Public Convenience", 7-1.09 "Public Safety", and 12-3.04 "Portable Delineators" of the Standard Specifications, the Manual on Uniform Traffic Control Devices 2003 Edition, the corresponding California Supplement, and subsequent modifications as adopted by the State of California Department of Transportation, the Section of these contract documents entitled "Insurance - Hold Harmless", and these Special Provisions.

All existing traffic control signs and street name signs shall be maintained in visible locations as directed by the Engineer.

No detours will be provided, unless specifically allowed herein. The Contractor will be required to conduct his operations in such a manner that traffic will be permitted to pass through the work area with as little delay as possible.

All warning lights, signs, flares, barricades and other facilities for the sole convenience and direction of public traffic shall be furnished and maintained by the Contractor. All traffic control devices shall conform to and be placed in accordance with the Manual on Uniform Traffic Control Devices 2003 Edition, the corresponding California Supplement, and subsequent modifications as adopted by the State of California Department of Transportation.

All construction signs shall be either covered or removed when not required by the nature of the work or if no present hazard to the motorist exists.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600 or 811

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.

No payment for extra work will be allowed for work performed as specified in Section 12-2.02 (Flagging Costs) of the Standard Specifications. Flagging costs will be borne entirely by the Contractor.

Dust control shall conform to the provision of Section 10 of the Standard Specifications except that no extra work will be allowed when the Engineer orders the application of water for the purpose of controlling dust caused by public traffic as provided for in the last paragraph of Section 10.

The Contractor shall be responsible to distribute an information letter pertaining to the planned work to all affected residences and businesses, at least one week prior to commencing work adjacent to those residences and businesses. It shall be the responsibility of the Contractor to design the information letter, obtain design approval from the Engineer, print sufficient copies, and distribute the letter. The Transportation Department logo shall be included on the letter. A computer file of the logo may be obtained from the Engineer in .WPG, .DXF, .DGN or .DWG format. The letter shall be similar to the sample provided by the Engineer, and shall include a project description, the scope of work, the anticipated construction schedule, and other information as appropriate.

The Contractor shall post temporary no parking signs on affected streets 24 hours prior to work on those streets. The temporary no parking signs shall state the anticipated dates and hours of work on those streets.

Method of Payment:
Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing, installing and maintaining all traffic control devices shown on the construction staging and traffic control plans, shall be paid for on a lump sum basis, for traffic control system, and no additional compensation will be allowed therefor.

MAINTAINING TRAFFIC:

Maintaining traffic shall conform to the provisions in Section 7-1.08, "Public Convenience", Section 7-1.09, "Public Safety" and Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and "Public Safety" of these Special Provisions.

Closure is defined as the closure of a traffic lane or lanes, including shoulder, ramp or connector lanes, within a single traffic control system.

Closure shall conform to the provisions in "Traffic Control System" of these Special Provisions.

Local authorities shall be notified at least five (5) business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles.

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

When work vehicles or equipment are parked on the shoulder within six (6) feet of a traffic lane, the shoulder area shall be closed.

When work vehicles or equipment are parked on the shoulder within six (6) feet of a traffic lane, the shoulder area shall be closed with fluorescent orange traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 traffic cones or portable delineators shall be used for the taper. A W20-1 (ROAD WORK AHEAD) or W21-5b (RIGHT/LEFT SHOULDER CLOSED AHEAD) or C24 (CA) (SHOULDER WORK AHEAD) sign shall be mounted on a crashworthy portable sign support with flags. The sign shall be placed where designated by the Engineer. The sign shall be a minimum of 48" x 48" in size. The Contractor shall immediately restore to the original position and location a traffic cone or delineator that is displaced or overturned, during the progress of work.

If minor deviations are required on traffic control plan, a written request shall be submitted to the Engineer at least 15 days before the proposed date of the closure. The Engineer may approve the deviations if there is no significant increase in the cost to the County and if the work can be expedited and better serve the public traffic.

Designated County legal holidays are January 1st, the third Monday in January, February 12th, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, the second Monday in October, November 11th, Thanksgiving Day, the Friday following Thanksgiving Day, December 24th and 31st when they fall on Monday, December 25th, December 26th and January 2nd when they fall on Friday, When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When January 1st, February 12th, July 4th, November 11th, or December 25th fall on a Saturday, the preceding Friday shall be a designated legal holiday.

Method of Payment
Full compensation for furnishing, erecting, maintaining, removing and disposing of the C43 (CA), W20-1, W21-5b and C24 (CA) signs shall be considered as included in the contract lump sum price paid for Traffic Control System and no additional compensation will be allowed therefor.

DEVELOP WATER SUPPLY:

Develop water supply shall conform to the provisions of Section 17 of the Standard Specifications and these Special Provisions.

Method of Payment:
The contract lump sum price paid for Develop Water Supply shall include full compensation for conforming to the requirements of this article, as directed by the Engineering, and no additional compensation will be allowed.

SPECIES PROTECTION (MIGRATORY BIRDS):

The Department anticipates nesting or attempted nesting by migratory and nongame birds from February 15th to September 1st.

Trees will be removed to construct this project. If removal takes place during bird migration season, a pre-construction survey will be adminstered by the County.

Protective Radius
Upon discovery of a regulated species, stop construction activities within a 300-feet radius of the discovery. Immediately notify the Engineer. Do not resume activities until receiving written notification from the Engineer.

In Accordance with MSCHP guidelines, a pre-construction survey shall be conducted on the project site by a qualified biologist within 30 days preceding ground disturbance, to avoid direct take of migratory birds. If migratory birds are found within or adjacent to the direct impact area, then consultation with the resource agencies shall be necessary to identify avoidance and minimization measures.

Attention is directed to Section 10-1.14, "Clearing and Grubbing", of these Special Provisions for nesting bird regulatory requirements.

To prevent disturbance to nesting birds, construction and any removal of bushes or trees shall be conducted outside the nesting season (February 15th to September 1st). Trees should be surveyed 10 days before tree removal to ensure there are no nesting birds present.

Method of Payment:
Full compensation for Species Protection is included in the lump sum contract price bid paid for Clearing and Grubbing and no additional compensation will be allowed.

CLEARING AND GRUBBING:

Clearing and grubbing including but not limited to tree removal shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Trees, shrubs and vegetation shall be removed or trimmed as shown on the plan and/or as directed by the Engineer.

Removed trees and trimmings shall be the property of the Contractor and shall be disposed of by the Contractor, as provided in Section 7-1.13 of the Standard Specifications.

Regulatory Requirements

Attention is directed to the Federal Migratory Bird Treaty Act (15 USC 703-711) 50 CFR Part 21 and 50 CFR Part 10, and the California Department of Fish and Game Code Sections 3503, 3513

and 3800, that protect migratory birds, their occupied nests, and their eggs from disturbance or destruction.

Construction

Ground disturbance, tree, shrub and/or vegetation removal that occurs between February 15th and September 1st will not commence until a preconstruction survey for nesting birds has verified that no active nests have been located or the Engineer has approved the beginning of work. If an active nest is located, construction within 500 feet of the nest must be avoided until the nest has been vacated and the young are independent of their parents.

Between February 15th and September 1st, the Contractor shall notify the Engineer 15 working days prior to beginning work disturbing structures, the ground or vegetation. The Engineer will approve the beginning of work disturbing the ground or vegetation between February 15th and September 1st.

The Contractor shall use exclusion techniques directed by the Engineer to prevent migratory birds from nesting in trees within the project limits.

If evidence of bird nesting is discovered, the Contractor shall not disturb the nesting birds or nests until the birds have naturally left the nests. If evidence of migratory bird nesting is discovered after beginning work, the Contractor shall immediately stop work within 500 feet of the nests and notify the Engineer. Work shall not resume until the Engineer provides a written notification that work may begin at or adjacent areas of the discovered bird nest locations.

Attention is directed to Section 8-1.05, "Temporary Suspension of Work" of the Standard Specifications.

Nothing in this section shall relieve the Contractor from providing for public safety in conformance with the provisions in Section 7-1.09, "Public Safety" of the Standard Specifications.

Penalties as used in this section, "General Migratory Bird Protection" shall include fines, penalties, and damages whether proposed, assessed, or levied against the Department or the Contractor. Penalties shall also include payments or costs incurred in settlement for alleged violations of applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

Notwithstanding any other remedies authorized by law, the Department may retain or withhold monies due the Contractor under the contract, in an amount determined by the Department, up to and including the entire amount of penalties proposed, assessed, or levied as a result of the Contractor's violation of Federal or State law, regulations or requirements. Funds may be retained by the Department until final disposition has been made as to the penalties. The Contractor shall remain liable for the full amount of penalties until such time as they are finally resolved with the entity seeking the penalties. Upon final disposition, the Department shall inform the Contractor or the withheld amount.

Method of Payment:

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article including but not limited to tree removal at the locations shown on the plans, as specified in

these Special Provisons and as directed by the Engineer shall be paid for on a lump sum basis and no additional compensation will be allowed therefor.

ROADWAY EXCAVATION:

Roadway excavation and earthwork shall conform to the provisions of Section 19 "Earthwork" of the Standard Specifications and these Special Provisions. All large rocks and boulders larger than 1 foot in greatest dimension encountered during roadway excavation shall be considered unsuitable material and shall conform to Section 19-2.02 of the Standard Specifications.

Existing pavement including any base material shall be cut back to neat lines and removed as shown on the plans or as directed by the Engineer. Excess material will become the property of the Contractor and will be disposed of as provided in Section 7-1.13 of the Standard Specifications.

Removal and disposal of existing rocks, concrete slope protections, pipes as shown on the plans and as directed by the Engineer shall be considered as included in the contract bid price paid per cubic yard for Roadway Excavation and no additional compensation will be allowed.

RELATIVE COMPACTION

Relative compaction shall conform to the provisions of Section 19-5.03, "Relative Compaction (95 Percent)" of the Standard Specifications, these Special Provisions and/or as directed by the Engineer.

Whenever relative compaction is specified to be determined by Test Method No. Calif. 216, the in-place density may be determined by Test Method No. Calif. 231. The in-place density required by Test Method No. Calif. 312 may be determined by Test Method No. 231. The wet weight or dry weight basis and English Units of Measurement may be used at the option of the Materials Engineer.

Method of Payment:
The contract unit bid price paid per cubic yard for Roadway Excavation as shown on the plans shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved including compaction, removal of asphalt concrete, base, subgrade, concrete within the proposed roadway section as directed by the Engineer and no additional compensation will be allowed therefor.

FINISHING ROADWAY:

Finishing roadway shall conform to Section 22 of the Standard Specifications, and these special provisions.

Method of Payment:
Payment for Finishing Roadway will be considered as included in the various items of work and shall include full compensation for furnishing all labor, materials, tools, equipment and no additional compensation will be allowed therefor.

AGGREGATE BASE:

Aggregate base shall be Class 2 and shall conform to the provisions in Section 26, "Aggregate Bases" of the Standard Specifications and these Special Provisions and shall meet the gradation requirements for 3/4 inch maximum.

The first paragraph of Section 26-1.02A, "Class 2 Aggregate Base" shall be modified to read:

Aggregate for Class 2 aggregate base shall be free from organic matter and other deleterious matter, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm and stable base. Aggregate may consist of broken and crushed asphalt concrete or Portland cement concrete and may contain crushed aggregate base or other rock materials. The material may contain no more than 3 percent brick by weight as determined by California Test Method 202 as modified: Brick material retained on a No.4 sieve shall be identified visually and separated manually. Brick quantification shall be based on total weight of dry sample. Also, material retained on the No.4 sieve shall contain no more than 15 percent of particles (gravel) that have no more than one fractured face.

The Quality Requirements contained in Section 26-1.02A shall be modified to read:

Quality Requirements

Test	Contract Compliance
Resistance (R-Value) Virgin Rock Crushed Miscellaneous	78 Minimum 80 Minimum
Sand Equivalent	35 Minimum
Durability Index	35 Minimum
Percentage Wear 100 Revolutions 500 Revolutions	15 Maximum 52 Maximum

Method of Payment:
Quantities of Aggregate Base will be paid for at the contract unit price per cubic yard and in accordance with the provisions of Sections 26-1.06 and 26-1.07 of the Standard Specifications

HOT MIX ASPHALT:

Asphalt concrete shall be Type "A" and shall conform to the requirements of Section 39 of the Standard Specifications and the following:

Aggregate grading shall be three-quarter inch (3/4") maximum, medium.

The asphalt lift thickness table, as shown in Section 39-6.01, "General Requirements" of the Standard Specifications, is revised as follows:

Total Thickness Shown on Plans	Minimum No. of Layers	Top Layer Thickness (foot)		Next Lower Layer Thickness (foot)		All Other Lower Layer Thickness (foot)	
		Min.	Max.	Min.	Max.	Min.	Max.
0.24-foot or less[a]	1	-	-	-	-	-	-
0.25-foot	2[b]	0.12	0.13	0.12	0.13	-	-
0.26 - 0.46 foot	2	0.12	0.21	0.14	0.25	-	-
0.47-foot or more	3 or more	0.15	0.21	0.15	0.25	0.17	0.25

Footnotes to asphalt thickness table are revised as follows:

a. No Change.

b. One layer of 0.25 foot thick may be placed as approved by the Engineer. When the Traffic Index specified is 5.5 or below, two layers shall be placed.

ASPHALTS

Asphalt shall conform to the provisions in this Section, "Asphalts". Section 92, "Asphalts" of the Standard Specifications shall not apply.

Asphalt shall consist of refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt, prepared from crude petroleum. Asphalt shall be:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin;
2. Free from water;
3. Homogeneous.

GENERAL

The Contractor shall furnish asphalt in conformance with the State of California Department of Transportation's "Certification Program for Suppliers of Asphalt". The Department maintains the program requirements, procedures, and a list of approved suppliers at http://www.dot.ca.gov/hq/esc/Translab/fpmcoc.htm.

The Contractor shall ensure the safe transportation, storage, use, and disposal of asphalt.

The Contractor shall prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

GRADE

Performance graded (PG) asphalt binder shall conform to the following:

Property	AASHTO Test Method	Specification Grade		
		PG 64-10	PG 64-16	PG 70-10
Original Binder				
Flash Point, Minimum °C	T48	230	230	230
Solubility, Minimum %[b]	T44	99	99	99
Viscosity at 135 °C, Maximum, Pa·s	T316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum $G^*/\sin(\delta)$, kPa	T315	64 1.00	64 1.00	70 1.00
RTFO Test[e], Mass Loss, Maximum, %	T240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum $G^*/\sin(\delta)$, kPa	T315	64 2.20	64 2.20	70 2.20
Ductility at 25 °C Minimum, cm	T51	75	75	75
PAV[f] Aging, Temperature, °C	R28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum $G^*/\sin(\delta)$, kPa	T315	31[d] 5000	28[d] 5000	34[d] 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, Mpa Minimum M-value	T313	0 300 0.300	-6 300 0.300	0 300 0.300

Notes:

a. Note used.
b. The Engineer will waive this specification if the supplier is a Quality Supplier as defined by Department's "Certification Program for Suppliers of Asphalt".
c. The Engineer will waive this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
d. Test the sample at 3 °C higher if it fails at the specified test temperature. $G^*\sin(\delta)$ shall remain 5000 kPa maximum.
e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T240 or ASTM Designation: D2827.
f. "PAV" means Pressurized Aging Vessel.

Performance graded polymer modified asphalt binder (PG Polymer Modified) is:

Performance Graded Polymer Modified Asphalt Binder [a]

Property	AASHTO Test Method	Specification Grade		
		PG 58-34 PM	PG 64-28 PM	PG 76-22 PM
Original Binder				
Flash Point, Minimum °C	T 48	230	230	230
Solubility, Minimum % [b]	T 44[c]	98.5	98.5	98.5
Viscosity at 135°C, [d] Maximum, Pa·s	T 316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	76 1.00
RTFO Test , Mass Loss, Maximum, %	T 240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	76 2.20
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum (delta), %	T 315	Note e 80	Note e 80	Note e 80
Elastic Recovery[f], Test Temp., °C Minimum recovery, %	T 301	25 75	25 75	25 65
PAV[g] Aging, Temperature, °C	R 28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*sin(delta), kPa	T 315	16 5000	22 5000	31 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, MPa Minimum M-value	T 313	-24 300 0.300	-18 300 0.300	-12 300 0.300

Notes:

a. Do not modify PG Polymer Modifier using acid modification.
b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt".
c. The Department allows ASTM D5546 instead of AASHTO T44.
d. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
e. Test temperature is the temperature at which G*/sin(delta) is 2.2 kPa. A graph of log G*/sin(delta) plotted against temperature may be used to determine the test temperature when G*/sin(delta) is 2.2 Kpa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G*/sin(delta) is 2.2 kPa.
f. Test without a force ductility clamp may be performed.
g. "PAV" means Pressurized Aging Vessel.

SAMPLING

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 24 and 30 inches above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

1. Between 1/2 and 3/4 inch in diameter;

2. Manufactured in a manner that a one-quart sample may be taken slowly at any time during plant operations;

3. Maintained in good condition.

The Contractor shall replace failed valves.

In the Engineer's presence, take 2 one-quart samples per operating day. Provide round, friction top, one-quart containers for storing samples.

APPLYING ASPHALT

Unless otherwise specified, the Contractor shall heat and apply asphalt in conformance with the provisions in Section 93, "Liquid Asphalts" of the Standard Specifications.

Section 39-2.01, "Asphalts" is replaced in its entirety with the following:

> Asphalt binder to be mixed with aggregate shall conform to the provisions in "Asphalts" of these Special Provisions.
>
> The grade of asphalt binder shall be 64-10.
>
> Liquid asphalt for prime coat shall conform to the provisions in Section 93, "Liquid Asphalts" of the Standard Specifications and shall be Grade 64-10 unless otherwise designated by the contract item or otherwise specified in the Special Provisions.
>
> Asphaltic emulsion for paint binder (tack coat) shall conform to the provisions in Section 94, "Asphaltic Emulsion" of the Standard Specifications for the rapid-setting or slow-setting type and grade approved by the Engineer. Grade 64-10 shall be used if not otherwise specified.

Section 39-3.01B (1) shall be amended to include:

> Aggregate of the 3/4 inch or 1/2 inch maximum size and aggregate for asphalt concrete base shall be separated into 3 or more sizes and each size shall be stored in separate bins. If 3 sizes are used, one bin shall contain that portion of the material which will pass the maximum size specified and be retained on a 3/8 inch sieve; one bin shall contain that

portion of the material which will pass a 3/8 inch sieve and be retained on a No. 8 sieve; and one bin shall contain that portion of the material which will pass a No. 8 sieve.

Aggregate of 3/8 inch maximum size shall be separated into 2 sizes and each size shall be stored in separate bins. One bin shall contain that portion of the material which will pass the maximum size specified and be retained on a No. 8 sieve and one bin shall contain that portion of the material which will pass a No. 8 sieve.

The bin containing the fine material shall not contain more than 15 percent of material retained on the No. 8 sieve. The material in any of the other bins shall not contain more than 15 percent of material passing a No. 8 sieve. Failure to comply with this requirement shall be corrected immediately, and the material in the bins not meeting these requirements shall be re-screened or wasted.

All asphalt concrete for this project shall be supplied from one source unless approved by the Engineer. Said source shall be listed on the Contractors Source of Materials List as required in Section 6 of the Standard Specifications.

Asphaltic emulsion shall be furnished and applied as provided in Section 39-4.02.

In addition to the provisions in Section 39-5.01, "Spreading Equipment" of the Standard Specifications, asphalt paving equipment shall be equipped with automatic screed controls and a sensing device or devices.

When placing asphalt concrete to the lines and grades established by the Engineer, the automatic controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed, and maintained by the Contractor. Should the Contractor elect to use a ski device, the minimum length of the ski device shall be 30 feet. The ski device shall be a rigid one piece unit and the entire length shall be utilized in activating the sensor.

When placing the initial mat of asphalt concrete on existing pavement, the end of the screed nearest the centerline shall be controlled by a sensor activated by a ski device not less than 30 feet. The end of the screed farthest from centerline shall be controlled by an automatic transverse slope device set to reproduce the cross slope designated by the Engineer, by a sensor activated by a similar ski device or as directed by the Engineer.

When paving contiguously with previously placed mats, the end of the screed adjacent to the previously placed mat shall be controlled by a sensor that responds to the grade of the previously placed mat and will reproduce the grade in the new mat within a 0.12 inch tolerance. The end of the screed farthest from the previously placed mat shall be controlled in the same way it was controlled when placing the initial mat.

Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the provisions, including straightedge tolerance, of Section 39-6.03, "Compacting" of the Standard Specifications or elsewhere in these Special Provisions, the paving operations shall be discontinued and the Contractor shall modify the equipment or methods, or furnish substitute equipment.

Should the automatic screed controls fail to operate properly during a day's work, the Contractor may manually control the spreading equipment for the remainder of that day. However, the equipment shall be corrected or replaced with alternative automatically controlled equipment conforming to the provisions in this section before starting another day's work.

GENERAL CRITERIA FOR PROFILING

In addition to the straightedge provisions in Section 39-6.03, "Compacting" of the Standard Specifications, asphalt concrete pavement shall conform to the surface tolerances specified herein.

The uppermost layer of asphalt concrete surfacing shall be profiled in the presence of the Engineer using a California Profilograph or equivalent in conformance with California Test 526 and as specified in these Special Provisions.

The California Profilograph or equivalent will not be required for the following areas of the pavement surface but shall conform to the straightedge requirements in Section 39-6.03, "Compacting" of the Standard Specifications:

1. Pavement with a total thickness less than 0.24 foot;

2. Pavement on horizontal curves with a centerline curve radius of less than 1,000 feet and the pavement within the superelevation transition on those curves;

3. Pavement placed in a single lift when required by the Special Provisions;

4. Pavement with extensive grade or cross slope correction which does not receive advance leveling operations in conformance with the provisions in Section 39-6.02, "Spreading" of the Standard Specifications;

5. Pavement for ramps and connectors with steep grades and high rates of superelevation, as determined by the Engineer;

6. Shoulders and miscellaneous areas.

The Contractor shall conform to California Test 526, except a zero (null) blanking band shall be used for determining the Profile Index. Prior to beginning profiles, the profilograph shall be calibrated in the presence of the Engineer. Two profiles shall be obtained within each traffic lane, 3 feet from and parallel with the edges of the lane.

Pavements profiled shall conform to the following Profile Index requirements:

1. Pavement on tangent alignment and pavement on horizontal curves having a centerline curve radius of 2,000 feet or more shall have a Profile Index of 0.16 foot or less for each 330 feet section profiled;

2. Pavement on horizontal curves having a centerline curve radius of 1,000 feet or more but less than 2,000 feet, including the pavement within the superelevation transition of

these curves, shall have a Profile Index of 0.32 foot or less for each 330 feet section profile;

3. Pavement within any 330 feet section, containing high point areas with deviations in excess of 0.025 foot in a length of 25 feet or less, when tested in conformance with the requirements in California Test 526, shall be corrected by the Contractor regardless of the Profile Index.

The Contractor shall complete initial runs of the profilograph prior to opening the pavement to public traffic. If initial profiles can not made prior to opening the pavement to public traffic, the initial runs of the profilograph shall be made the next day that traffic control is permitted for the area to be profiled.

Areas of the top surface of the uppermost layer of asphalt concrete pavement that do not meet the specified surface tolerances shall be brought within tolerance by abrasive grinding.

Abrasive grinding shall be performed to reduce individual deviations in excess of 0.025 foot, and to reduce the Profile Index of the pavement to be within the specified tolerance. Areas which have been subjected to abrasive grinding shall receive a seal coat. Deviations in excess of 0.025 foot which cannot be brought into specified tolerance by abrasive grinding shall be corrected by either (1) removal and replacement or (2) placing an overlay of asphalt concrete. The corrective method for each area shall be selected by the Contractor and shall be approved by the Engineer prior to beginning the corrective work. Replacement or overlay pavement not meeting the specified tolerances shall be corrected by the methods specified above. Corrective work shall be at the Contractor's expense. The Contractor shall run profilograms on the areas that have received abrasive grinding or corrective work until the final profilograms indicate the Profile Index of the area is within the specifed tolerance.

When abrasive grinding is used to bring the top surface of the uppermost layer of asphalt concrete surfacing within the specified surface tolerances, additional abrasive grinding shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel with, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within a ground area. Ground areas shall be neat rectangular areas of uniform surface appearance.

The original of the final profilograms that indicate the pavement surface is within the Profile Index specified shall become the property of the County and shall be delivered to the Engineer prior to acceptance of the contract.

Method of Payment:
Asphalt concrete will be paid for at a unit price per ton as a combined item, including mineral aggregate and asphalt binder in place on the roadbed.

Full compensation for furnishing and applying asphaltic emulsion for paint binder (tack coat) shall be considered as included in the contract price paid for Asphalt Concrete.

COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS:

The provisions of this section shall apply only to the following contract items:

ITEM CODE	ITEM
390132	Hot Mix Asphalt [Type A]

The compensation payable for asphalt binder used in hot mix asphalt will be increased or decreased in conformance with the provisions of this section for paving asphalt price fluctuations exceeding 10 percent (Iu/Ib is greater than 1.10 or less than 0.90) which occur during performance of the work.

The adjustment in compensation will be determined in conformance with the following formulae when the item of hot mix asphalt is included in a monthly estimate:

A. Total monthly adjustment = AQ

B. For an increase in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 1.10) Ib$$

C. For a decrease in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 0.90) Ib$$

D. Where:

A = Adjustment in dollars per ton of paving asphalt used to produce hot mix asphalt rounded to the nearest $0.01.

Iu = The California Statewide Paving Asphalt Price Index which is in effect on the first business day of the month within the pay period in which the quantity subject to adjustment was included in the estimate.

Ib = The California Statewide Paving Asphalt Price Index for the month in which the bid opening for the project occurred.

Q = Quantity in tons of asphalt binder that was used in producing the quantity of hot mix asphalt shown under "This Estimate" on the monthly estimate using the amount of asphalt binder determined by the Engineer.

The adjustment in compensation will also be subject to the following:

A. The compensation adjustments provided herein will be shown separately on payment estimates. The Contractor shall be liable to the State for decreased compensation adjustments and the Department may deduct the amount thereof from moneys due or that may become due the Contractor.

B. Compensation adjustments made under this section will be taken into account in making adjustments in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities" of the Standard Specifications.

C. In the event of an overrun of contract time, adjustment in compensation for paving asphalt included in estimates during the overrun period will be determined using the California Statewide Paving Asphalt Price Index in effect on the first business day of the month within the pay period in which the overrun began.

The California Statewide Paving Asphalt Price Index is determined each month on the first business day of the month by the Department using the median of posted prices in effect as posted by Chevron, Mobil, and Unocal for the Buena Vista, Huntington Beach, Kern River, Long Beach, Midway Sunset, and Wilmington fields.

In the event that the companies discontinue posting their prices for a field, the Department will determine an index from the remaining posted prices. The Department reserves the right to include in the index determination the posted prices of additional fields.

The California Statewide Paving Asphalt Price Index is available on the Division of Engineering Services website at: http://www.dot.ca.gov/hq/esc/oe/asphalt_index/astable.html

COLD PLANE ASPHALT CONCRETE PAVEMENT:

The Contractor shall cold plane the asphalt concrete pavement to a depth as shown on the approved plans or as directed by the Engineer.

Where applicable, the Contractor shall wedge plane 6 feet adjacent to the concrete curb and gutter to a depth as shown on the plans below the lip of the gutter and a depth of 0.027 foot at six feet from the gutter or as otherwise shown on the plans or as directed by the Engineer.

The cold plane machine shall have a cutter head at least 72 inches wide and shall be operated so as not to produce fumes or smoke.

The depth, width and shape of the cut shall be as indicated on the plans. The outside lines of the planned area shall be neat and uniform. The road surfacing to remain in place shall not be damaged in any way.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way shall become the property of the Contractor and shall be immediately removed from the site of the work and disposed of as provided in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", of the Standard Specifications. The removal crew shall follow within 50 feet of the planer, unless otherwise directed by the Engineer.

Nothing in these Special Provisions shall relieve the Contractor from his responsibilities as provided in Section 7-1.09, "Public Safety" of the Standard Specifications.

Method of Payment:
The contract unit bid price paid per square yard for Cold Plane Asphalt Concrete Pavement shall include full compensation for providing all labor, tools, equipment and disposing of the grindings, and no additional compensation will be allowed therefor.

REMOVE AND REINSTALL INTERLOCKING PAVER BLOCKS:

The Contractor shall construct, remove or re-install interlocking paver blocks as shown on the approved plans or as directed by the Engineer.

Damaged paver blocks as directed by the Engineer shall be replaced with material that is similar or better in quality than the existing paver blocks.

GENERAL

SUMMARY

A. Section Includes:
   1. Interlocking Concrete Paver Units (manually installed).
   2. Bedding and Joint Sand.
   3. Edge Restraints.
   4. Joint sand stabilizers

REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C 33, Standard Specification for Concrete Aggregates.
   2. C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8, Freezing and Thawing.
   3. ASTM C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   4. ASTM C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   5. ASTM C 144, Standard Specification for Aggregate for Masonry Mortar.
   6. ASTM C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
   7. ASTM C 979, Standard Specification for Pigments for Integrally Colored Concrete.
   8. ASTM D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft^3 (600 kN-m/m^3)).
   9. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
   10. ASTM D 2940, Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI):
   1. ICPI Tech Spec Technical Bulletins

SUBMITTALS

A. In accordance with Conditions of the Contract, Submittal Procedures Section.
B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, concrete paver layout, patterns, color arrangement, installation and setting details.
C. Sieve analysis per ASTM C 136 for grading of bedding and joint sand.

D. Concrete pavers:
   1. Four representative full-size samples of each paver type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Owner from manufacturer's available colors.
   2. Accepted samples become the standard of acceptance for the work.
   3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
   4. Manufacturer's certification of concrete pavers by ICPI as having met applicable ASTM standards.
   5. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
E. Paver Installation Subcontractor:
   1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
   2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

QUALITY ASSURANCE
A. Paving Subcontractor Qualifications:
   1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.
   2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

DELIVERY, STORAGE & HANDLING
A. General: Comply with Division 1 Product Requirement Section.
B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.
   1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
   2. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
   3. Unload pavers at job site in such a manner that no damage occurs to the product.
D. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials.
   1. Cover bedding sand and joint sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.

PROJECT/SITE CONDITIONS
A. Environmental Requirements:
   1. Do not install sand or pavers during heavy rain.
   2. Do not install saturated sand.
   3. Do not install concrete pavers on saturated sand.

PRODUCTS

INTERLOCKING CONCRETE PAVERS
A. Manufacturer: Acker-Stone Ind., Inc. 13296 Temescal Canyon Rd. Corona, CA 92883
   1. Contact: Sales Rep. 800-258-2353
B. Interlocking Concrete Pavers:

1. Paver Type: Uni Décor Pavers
   a. Material Standard: Comply with material standards set forth in ASTM C 936.
   b. Color: Match Existing
   c. Color Pigment Material Standard: Comply with ASTM C 979.
   d. Pattern: Basketweave
   e. Size: 6 cm or 2 3/8" inches thick. 9" x 3 ½" x 5 ½".
   f. Average Compressive Strength (C140): 8000 psi (55 MPa) with no individual unit under 7200 psi (50 MPa) per ASTM C 140.
   g. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.
   h. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

BEDDING AND JOINT SAND

A. Provide bedding and joint sand as follows:
   1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
   2. Do not use limestone screenings, stone dust, or sand for the bedding sand material that does not conform to conform to the grading requirements of ASTM C 33.
   3. Do not use mason sand or sand conforming to ASTM C 144 for the bedding sand.
   4. Where concrete pavers are subject to vehicular traffic, utilize sands that are as hard as practically available.
   5. Sieve according to ASTM C 136.
   6. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1.

Table 1

Grading Requirements for Bedding Sand ASTM C 33	
Sieve Size	Percent Passing
3/8 in.(9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	0 to 1

7. Joint Sand Material Requirements: Conform to the grading requirements of ASTM C 144 as shown with modifications in Table 2 below:

Table 2

Grading Requirements for Joint Sand ASTM C 144		
Sieve Size	Natural Sand Percent Passing	Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 100
No. 50 (0.300 mm)	10 to 35	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075 mm)	0 to 1	0 to 10

EDGE RESTRAINTS

A. Provide concrete edge restraints installed around the perimeter of all interlocking concrete paving unit areas as shown in detail.

EXECUTION

EXAMINATION

A. Acceptance of Site Verification of Conditions:
   1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers.
      a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
      b. Verify that aggregate base materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
      c. Provide written density test results for soil subgrade, aggregate base materials to the Owner, General Contractor and paver installation subcontractor.
      d. Verify location, type, and elevations of edge restraints, concrete collars around utility structures, and drainage inlets.
   2. Do not proceed with installation of bedding sand and interlocking concrete pavers until subgrade soil and base conditions are corrected by the General Contractor or designated subcontractor.

PREPARATION

A. Verify base is dry, certified by General Contractor as meeting material, installation and grade specifications.
B. Verify that base is ready to support sand, concrete edge restraints, and, pavers and imposed loads.
C. Edge Restraint Preparation:
   1. Install concrete edge restraints per the drawings.

INSTALLATION

A. Spread bedding sand evenly over the base course and screed rails, using the rails and/or edge restraints to produce a nominal 2 in. thickness, allowing for specified variation in the base surface.
   1. Do not disturb screeded sand.
   2. Screeded area shall not substantially exceed that which is covered by pavers in one day.
   3. Do not use bedding sand to fill depressions in the base surface.
B. Lay pavers in pattern specified on drawings. Place units hand tight without using hammers. Make horizontal adjustments to placement of laid pavers with rubber hammers and pry bars as required.
C. Provide joints between pavers per manufacturers recommendation.
D. Joint (bond) lines shall not deviate more than ±1/2 in. (±15 mm) over 50 ft. (15 m) from string lines.
E. Fill gaps at the edges of the paved area with cut pavers or edge units.
F. Cut pavers to be placed along the edge with a masonry saw.
G. Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and joint sand.
H. Use a low-amplitude plate compactor capable of at least minimum of 4,000 lbf (18 kN) at a frequency of 75 to 100 Hz to vibrate the pavers into the sand. Remove any cracked or damaged pavers and replace with new units.
I. Simultaneously spread, sweep and compact dry joint sand into joints continuously until full. This will require at least 4 to 6 passes with a plate compactor. Do not compact within 6 ft (2 m) of unrestrained edges of paving units.
J. All work within 6 ft. (2 m) of the laying face must shall be left fully compacted with sand-filled joints at the end of each day or compacted upon acceptance of the work. Cover the laying face or any incomplete areas with plastic sheets overnight if not closed with cut and compacted pavers with joint sand to prevent exposed bedding sand from becoming saturated from rainfall.
K. Remove excess sand from surface when installation is complete.
L. Surface shall be broom clean after removal of excess joint sand.

FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge.
B. Check final surface elevations for conformance to drawings.
C. The surface elevation of pavers shall be 1/8 in. to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.
D. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.

PROTECTION

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

All decorative paver blocks construction shall be performed by qualified personnel. The Contractor shall provide written evidence demonstrating to the satisfaction of the Engineer that the installer has successfully performed paver placement and finishing work similar to that specified herein. Such evidence shall include past project documentation and references.

Payment for the construction of decorative pavers shall include, but not limited to the following, which shall be considered as included in the unit price for decorative pavers:

1. Removal and disposal of existing surfacing, and existing soil and aggregate as required;
2. Establishing grades, and assuring that all grades are met;
3. Performing all grading and compaction including all required fill import, 2-inch sand bedding import and placement, and placement of 3 mil filter fabric;

4. All scoring/grooving and required saw-cutting;
5. Installing ½" wide expansion joints;

Method of Payment:
Payment for Remove and Reinstall Interlocking Paver Blocks will be paid for at the lump sum and shall include full compensation for furnishing all labor, materials, equipment and tools, and incidentals, and for doing all the work involved including the excavation or placing of suitable fill to prepare the sub-grade, expansion joint material, complete in place and no additional compensation will be allowed therefor.

RE-ESTABLISH EXISTING MONUMENT WELL:

The Contractor shall re-establish existing monument well as shown on the approved plans and as directed by the Engineer.

The Contractor shall coordinate with County Surveyors all activities related to the monument well re-establisment.

Method of Payment:
The contract lump sum price paid for Re-Establish Existing Monument Well shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in re-establish existing monument well as shown on the pans and as directed by the Engineer and no additional compensation will be allowed therefor.

CURB RAMP DETECTABLE WARNING SURFACE:

This work includes installing detectable warning surface on the existing curb ramps or on the areas as shown on the plans, and as specified in these Special Provisions, and as directed by the Resident Engineer.

Curb Ramp Detectable Warning Surface (Truncated Domes) constructed, or furnished and installed on new Curb Ramps shall be considered as included in the contract unit price paid for Minor Concrete (Curb Ramp) and no separate payment will be made therefor.

Curb ramp detectable warning surface must be:

1. Yellow color complying with Federal Standard 595B, Color No. 33538.
2. Raised truncated domes.

The manufacturer must provide a written 5-year warranty for detectable warning surface, guaranteeing replacement when there is defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period will begin upon acceptance of the contract.

Installation of curb ramp detectable warning surface must comply with the manufacturer's recommendations.

Curb ramp detectable warning surface will be measured by the square foot for the actual area covered.

Method Payment:
The contract price paid per square foot for Curb Ramp Detectable Warning Surface includes full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all work involved in constructing detectable warning surface on existing curb ramps, including sawcut and removing existing concrete, grading and compaction, replacing with concrete Class 3, expansion joints, complete in place, as shown on the plans, as specified in these Special Provisions, and as directed by the Engineer.

CONCRETE CURB RAMPS (ACCESS RAMPS):

Concrete curb ramps and access ramps shall be constructed in accordance with all federal and state access requirements, the County Road Improvement Standards And Specifications, Section 51, 73 and 90 of the Standard Specifications, and as directed by the Engineer. Class 3 concrete shall be used. Preparation of subgrade for the concrete structures shall be performed in conformance with the requirements of Section 73-1.02 of the Standard Specifications.

Construction of curb (access) ramps shall include, but not be limited to, the following:

1) Removal and disposal of existing sidewalk, curb, and/or curb and gutter and existing soil and aggregate as required;
2) Establishing grades, and assuring that all grades are met;
3) Performing all grading and compaction – including all required aggregate import, as directed by the Engineer and in accordance with County Standard 403;
4) Construction of new sidewalk, curb, and/or curb and gutter;
5) All scoring/grooving and required saw cutting;
6) Repair of existing asphalt and PCC surfacing;
7) Installing 1/2" wide expansion joints;
8) All landscaping, and related work, to return the area adjacent to the curb ramp to its original condition and to conform the area to the new improvements.

The area behind and along the sidewalk shall be filled and compacted with native or select material and graded to match and provide a smooth transition from the back of sidewalk, to the satisfaction of the Engineer.

At a minimum, the area from the BCR to ECR shall meet all required ADA standards. Therefore, to conform to existing conditions and/or to achieve the required four-foot level area (maximum of 2.0% crossfall) at the top potion of the curb ramp, it may be necessary to extend the work beyond the BCR/ECR in certain instances.

If aggregate base or approved select material is required by the relevant County Standard to be placed under sidewalk, curb, curb and gutter or other structure due to unsuitable existing soil, then the excavation and disposal of the unsuitable material, and the placement and compaction of the

base or select material shall be considered as included in the unit price paid for the structure, and no additional compensation will be allowed therefor.

Curb ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps in conformance with the details shown on the plans and these special provisions. At the option of the Contractor, the detectable warning surface shall be prefabricated, cast-in-place, or stamped into the surface of the curb ramp. The color of the detectable warning surface shall be yellow conforming to Federal Standard 595B, Color No. 33538.

Prefabricated detectable warning surface shall be in conformance with the requirements established by the Department of General Services, Division of State Architect and be attached in conformance with the manufacturer's recommendations.

Cast-in-place and stamped detectable warning surfaces shall be painted in conformance with the provisions in Section 59-6, "Painting Concrete," of the Standard Specifications.

The finished surfaces of the detectable warning surface shall be free from blemishes.

Prior to constructing the cast-in-place or stamping the detectable warning surface, the Contractor shall demonstrate the ability to produce a detectable warning surface conforming to the details shown on the plans and these special provisions by constructing a 2-ft by 2-ft test panel.

The manufacturer shall provide a written 5-year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

Full compensation for constructing or furnishing and installing curb ramp detectable warning surfaces shall be considered as included in the contract price paid for curb ramps and no separate payment will be made therefor.

Method of Payment:
The contract unit price paid per each for Minor Concrete (Curb Ramp)(CRS 403 – Case A), Minor Concrete (Curb Ramp)(CRS 403 – Case B), and Minor Concrete [Access Ramp], shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved in the construction of curb ramps complete-in-place. This includes, but is not limited to, the excavation or placing of suitable fill to prepare the sub-grade, expansion joint material, and all work mentioned herein. Any separate contract items for concrete curb, concrete curb and gutter, or sidewalk shall not apply to curb ramps.

MINOR STRUCTURE (RETAINING WALL) :

Minor structure shall be constructed in accordance to the Plans and shall conform to the applicable portions of Section 51, 52, 75 and 90 of the standard Specifications.

Minor structure for this project is consist of retaining wall (Type 6), Caltrans Standard No. B3-11.

Concrete to be used in the construction of minor structure shall be Class 2 concrete.

All cells in the hollow unit masonry shall be filled solidly with grout. All grout shall be consolidated at the time of pouring by puddling or vibrating. The top lift of grout shall be placed to the top of the units.

Splashing, staining, or spotting on the exposed face of the wall stem shall be removed.

Method of Payment:
The contract unit bid price paid per cubic yard for Minor Concrete (Type 6 Retaining Wall) shall include full compensation for furnishing all labor materials, tools and equipment, and for doing all the work involved in the complete structure as directed by the Engineer, including reinforcement steetl, structure excavation and backfill, no additional compensation will be allowed therefor.

CONCRETE CROSS-GUTTER, SPANDRELS, CURB, GUTTER, AND SIDEWALK:

Cross Gutters, spandrels, curbs, gutters, and sidewalks shall be constructed in accordance with the details on the plans or as directed by the Engineer and in conformance with Sections 73, 90 and 51 of the Standard Specifications, except as herein modified:

Class 2 concrete shall be used for Cross-gutters and Spandrels.
Class 3 concrete shall be used curbs, gutters, and sidewalks.

The area behind and along the sidewalk shall be filled and compacted with native or select material and graded to match and provide a smooth transition from the back of sidewalk, to the satisfaction of the Engineer.

Construction of Cross Gutters, spandrels, curbs, gutters, and sidewalks shall include, but not be limited to, the following:

1) Removal and disposal of existing Cross Gutters, spandrels, curbs, gutters, and sidewalks and existing soil and aggregate as required;
2) Establishing grades, and assuring that all grades are met;
3) Performing all grading and compaction – including all required aggregate import, as directed by the Engineer and in accordance with County Standards;
4) Construction of new Cross Gutters, spandrels, curbs, gutters, and sidewalks;
5) All scoring/grooving and required saw cutting;
6) Repair of existing asphalt and PCC surfacing;
7) Installing 1/2" wide expansion joints;
8) All landscaping, and related work, to return the area adjacent to the curb ramp to its original condition and to conform the area to the new improvements.

At locations where the surface of the area behind the sidewalk is paved with Portland Cement Concrete or Asphalt Concrete, the paving shall be replaced in-kind, or as directed by the Engineer, so as to match and provide a smooth transition from the back of the sidewalk.

Excavation

Preparation of subgrade for concrete cross Gutters, spandrels, curbs, gutters, and sidewalks shall be done in conformance with the requirements of Section 73-1.02 of the Standard Specifications. Unless otherwise specified, all curbs and gutters will be backfilled as shown on the plans.

Excess material resulting from the excavation of the subgrade shall be disposed of as elsewhere provided in these Special Provisions.

Measurement and Payment:
Concrete curbs, gutters shall be measured in linear feet in accordance with the dimensions shown on the plans.

No deduction will be made for the depressed portions of the curb in computing the linear quantities of the concrete to be paid for.

Unit price paid per linear foot for concrete curbs, and concrete curb and gutters shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in constructing the curbs and gutters and depressions, complete in place, as shown on the plans or as directed by the Engineer and shall include the excavation or placing of suitable fill to prepare the sub-grade, the furnishing and placing of expansion joints and any other work incidental thereto. Expansion joints shall be 1/2 inch wide.

Concrete cross-gutters and spandrels shall be measured in accordance with the dimensions shown on the plans and no other allowance will be made for concrete unless placed in accordance with approved change orders.

Concrete sidewalks shall be measured in square feet in accordance with the dimensions shown on the plans.

The unit price paid per square foot for concrete cross gutters and spandrels, and sidewalk shall include full compensation for furnishing all labor, materials, tools, and equipment, including the excavation or placing of suitable fill to prepare the sub-grade, and expansion joint material and doing all work involved in constructing each item of work complete in place as shown on the plans or as herein specified or as directed by the Engineer.

MINOR CONCRETE COLORED STAMPED CONCRETE:

Colored stamped concrete shall be constructed in accordance with the plans and these specifications, or as directed by the Engineer and in conformance with Section 51, 52, 73 and 90 of Standard Specifications.

Class 3 concrete shall be used for the colored stamped concrete areas. Preparation of subgrade for the concrete structures shall be done in conformance with the requirements of Section 73-1.02 of the Standard Specifications.

The maximum size aggregate for the colored stamped concrete shall be 3/8 inch. Stamped concrete shall be imprinted with special tools while in the plastic stage to provide the pattern specific herein.

Pattern and Finish for the Colored Stamped Concrete:

The color and pattern of colored stamped concrete shall be:

Color:

Integral color shall be **"Coral Red"**, or close approximation as approved by the Engineer. The listed product is intended as a guideline, and products from alternate manufacturers will be accepted provided that the product and color are close approximations as determined by the Engineer.

Pattern:

The stamped concrete pattern shall be **"Fractured Slate – Random Interlocking Pattern"**, or close approximation as approved by the Engineer. The listed product is intended as a guideline, and products from alternate manufacturers will be accepted provided that the product provides a pattern of the size and texture that is a close approximation to the guideline product.

The pattern shall be implanted, indented, imprinted or stamped into the surface by means of forms, molds, or other approved devices. The impressions shall be approximately 3/8 inch in width, and shall be ungrouted unless otherwise specified.

The Contractor shall install at least one test panel, in an area not to be incorporated into the work, for the specified color and pattern. The sample shall be a minimum of 16 square feet and 4 inches thick, which shall be subject to inspection and approval by the Engineer. If ordered by the Engineer, additional test panels shall be constructed and finished until a satisfactory representation is obtained. The approved test panel shall then be the standard of comparison for enhanced concrete paving. The Contractor shall dispose of the test panel when work is completed, unless otherwise directed by the Engineer.

The Contractor shall provide the Engineer with Certificates of Compliance for all materials used in the imprinting, texturing, coloring, curing, and sealing of decorative colored stamped concrete crossing paving installation, including: Product Name, Supplier, Product Type, and Date of Delivery.

All concrete slabs shall slope to drain. Depressions in the slab surface that hold water will not be accepted.

Expansion joints, joints fillers and joint sealants shall conform to Section 51-1.12 of the Standard Specifications. Joint filler shall be ½ inch wide, premolded, polyethylene expansion foam with a perforated removable top. Remove top of perforated foam filled expansion joint and apply uniform bead of sealant into the joint assuring complete wetting of the bonding surfaces. Thoroughly clean all joint surfaces and apply masking tape to all surfaces adjacent to joints to protect them from primer and sealant residue. Prime all expansion joints carefully. Do not apply primer to any adjacent surfaces.

The colored stamped concrete shall be protected against rapid drying and damage by rain. Keep moist for at least 7 days after placing and protect by wet burlap, canvas covering or liquid-curing compound. If weather is hot or surface has dried out, spray surface with fine mist of water, starting no later than 2 hours after final troweling. Wetting is considered emergency work and shall be performed on weekends and holidays if necessary.

A clear concrete sealer shall be applied between 14 days and 28 days after concrete placement, per manufacturer's written instructions and specifications. The sealed surface shall be finished using a fine brush, which removes residual dust from the surface.

No cutting removal or patching of work will be permitted to correct damaged or defective work; defective sections shall be removed and replaced. Repair of damaged facilities shall be performed by the Contractor within a reasonable amount of time. No extensions of time will be allowed for correcting defective work.

All colored stamped concrete construction shall be performed by qualified personnel. The Contractor shall provide written evidence demonstrating to the satisfaction of the Engineer that the installer has successfully performed concrete placement and finishing work similar to that specified herein. Such evidence shall include past project documentation and references.

Construction of colored stamped concrete shall include, but not be limited to, the following:

1) Removal and disposal of existing soil, asphalt and aggregate as required;
2) Furnishing and installing and compacting any fill material required under the stamped concrete;
3) Establishing grades, and assuring that all grades are met;
4) Performing all grading and compaction
5) Construction of new stamped colored concrete;
6) All scoring/grooving and required saw cutting;
7) Installing 1/2" wide expansion joints;
8) Reinforcing steel
9) Construction of the colored stamped concrete, including furnishing and incorporating color admixtures, furnishing and applying color hardeners, furnishing and placement of clear seal and other work as required herein,

Method of Payment:
Full compensation, except as otherwise provided herein, for conforming to the requirements of this article and plans, including furnishing all labor, tools, equipments, incidentals, furnishing and disposing 4-foot x 4-foot x 4-inch thick colored stamp concrete samples for the approval of the Resident Engineer and doing all the work involved in accordance with the contract documents shall be included in the unit price bid, per square foot Minor Concrete (Stamped Concrete) and no additional compensation shall be allowed therefor.

REMOVE AND RECONSTRUCT CONCRETE OVERSIDE DRAIN:

Concrete overside drains shall be constructed in accordance with the details on the plans or as directed by the Engineer and in conformance with Sections 73, 90 and 51 of the Standard Specifications, except as herein modified:

Class 3 concrete shall be used for Overside Drains.
The concrete shall be colored and it shall match existing overside drains color.

The area behind and along the overside drains shall be filled and compacted with native or select material and graded to match and provide a smooth transition from the back of overside drain, to the satisfaction of the Engineer.

Construction of overside drains shall include, but not be limited to, the following:

1) Removal and disposal of existing overside drains and existing soil and aggregate as required;
2) Establishing grades, and assuring that all grades are met;
3) Performing all grading and compaction – including all required aggregate import, as directed by the Engineer and in accordance with County Standards;
4) Construction of new overside drains;
5) All scoring/grooving and required saw cutting;
6) Repair of existing asphalt and PCC surfacing;
7) Installing 1/2" wide expansion joints;
8) All landscaping, and related work, to return the area adjacent to the overside drains to its original condition and to conform the area to the new improvements.

At locations where the surface of the area behind the overside drains is paved with Portland Cement Concrete or Asphalt Concrete, the paving shall be replaced in-kind, or as directed by the Engineer, so as to match and provide a smooth transition from the back of the overside drains.

Excavation

Preparation of subgrade for concrete overside drains shall be done in conformance with the requirements of Section 73-1.02 of the Standard Specifications. Unless otherwise specified, all overside drains will be backfilled as shown on the plans.

Excess material resulting from the excavation of the subgrade shall be disposed of as elsewhere provided in these Special Provisions.

Meathod of Payment:
The contract unit price paid per each for Remove and Reconstruct Overside Drain shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in constructing the curbs, complete in place, as shown on the plans or as directed by the Engineer and shall include the excavation or placing of suitable fill to prepare the sub-grade, the furnishing and placing of expansion joints, reinforcement steel, and any other work incidental thereto. Expansion joints shall be 1/2 inch wide.

MINOR CONCRETE- 1-FOOT WIDE COLORED CONCRETE STRIP:

Colored concrete strip shall be constructed in accordance with the details on the plans or as directed by the Engineer and in conformance with Sections 73, 90 and 51 of the Standard Specifications, except as herein modified:

Class 3 concrete shall be used for colored concrete strip.
The concrete shall be colored and it shall match existing color.

Integral color shall be **"Coral Red"**, or close approximation as approved by the Engineer. The listed product is intended as a guideline, and products from alternate manufacturers will be accepted provided that the product and color are close approximations as determined by the Engineer.

Construction of colored concrete strip shall include, but not be limited to, the following:

1) Removal and disposal of existing colored concrete strip and existing soil and aggregate as required;
2) Establishing grades, and assuring that all grades are met;
3) Performing all grading and compaction – including all required aggregate import, as directed by the Engineer and in accordance with County Standards;
4) Construction of new colored concrete strip;
5) All scoring/grooving and required saw cutting;
6) Repair of existing asphalt and PCC surfacing;
7) Installing 1/2" wide expansion joints;
8) All landscaping, and related work, to return the area adjacent to the colored concrete strip to its original condition and to conform the area to the new improvements.

At locations where the surface of the area behind the colored concrete strip is paved with Portland Cement Concrete or Asphalt Concrete, the paving shall be replaced in-kind, or as directed by the Engineer, so as to match and provide a smooth transition from the back of the colored concrete strip.

Excavation

Preparation of subgrade for concrete colored concrete strip shall be done in conformance with the requirements of Section 73-1.02 of the Standard Specifications. Unless otherwise specified, all colored concrete strip will be backfilled as shown on the plans.

Excess material resulting from the excavation of the subgrade shall be disposed of as elsewhere provided in these Special Provisions.

Meathod of Payment:
The contract unit price paid per square foot for Minor Concrete (1' Wide Colored Concrete Strip) shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in constructing the 1' Wide Colored Concrete Strip complete in place, as shown on the plans or as directed by the Engineer and shall include the excavation or placing of

suitable fill to prepare the sub-grade, the furnishing and placing of expansion joints, reinforcement steel, and any other work incidental thereto. Expansion joints shall be 1/2 inch wide.

TUBULAR STEEL FENCE:

Tubular steel fence shall be installed in conformance with the details shown on the construction plans and as directed by the Engineer.

Method of Payment:
The contract bid price paid per linear foot for Rail and Picket Fence Per Detail I shall include full compensation for furnishing all labor, tools, material, equipment, and incidentals, and for doing all work involved including concrete footings, excavation and backfill, backfill grout, tubular steel, welding, paint, as specified in the Standard Specifications, as shown on the construction plans and as directed by the Engineer and no additional compensation will be allowed therefor.

ADJUST WATER VALVE COVER TO GRADE:

Relocation and adjustment to grade of water valve cover, as shown on the plans, shall conform to the plans, Standard Specifications of the Home Gardens County Water District, and as directed by the Engineer.

Existing water valve cover shall be adjusted to finish grade with materials similar in quality to those in the original structure in accordance with the applicable provisions of Sections 15-2 of the Standard Specifications and these Special Provisions.

After the water valve cover frames have been removed, the top of the structures shall be carefully trimmed to provide a suitable foundation for the new material.

Nothing in these Special Provisions shall relieve the Contractor from his responsibilities as provided in Section 7-1.09, "Public Safety" of the Standard Specifications.

The contract unit bid price paid per each for Adjust Water Valve Cover To Grade shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work involved and no additional compensation will be allowed therefor.

GROUND PREPARATION AND LANDSCAPING:

PART 1 - GENERAL

1.01 SUMMARY:

A. The work includes all services, labor, materials, transportation and equipment necessary to perform the work indicated on the Drawings and as specified. The conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.02 RELATED REQUIREMENTS:

A. Irrigation System
B. Landscape Maintenance

1.03 SUBMITTALS:

A. Submit certificates of compliance and invoices for soil amendments, fertilizers, and plant materials, with quantities of each.

B. Shrub Samples: Submit 3 samples of each variety and size of plant materials at the site a minimum of 15 days before planting operations. Accepted samples shall remain on the site and shall be maintained as standards of comparison for plant materials to be furnished. Samples may be incorporated into the work.

C. A sample of the soil amendments and proposed mulch material(s), including manufacturer or supplier certificate or invoice, shall be delivered to the Landscape Architect within thirty-five (35) days after recording of the Contract.

1.04 GUARANTEES AND REPLACEMENTS:

A. Shrubs and groundcovers shall be guaranteed to remain healthy and vigorously growing for a period of ninety (90) days (3 @ 30 Days) from date of final acceptance of Maintenance Period of project.

B. Plants found to be dead or not in a vigorous condition within the Maintenance and Guarantee Periods shall be replaced within fourteen (14) days at Contractor's expense.

C. Plants used for replacement shall be the same kind and size as specified in the plant list. They shall be furnished, planted and fertilized as originally specified. The expense of all repair work on existing improvements damaged during replacement shall be borne by the Contractor.

1.05 QUALITY ASSURANCE:

A. Reviews herein specified shall be made by the Landscape Architect or Landscape Inspector. The Contractor shall request review in writing a minimum of 48 hours in advance, for the following parts of work:

1. Pre-job meeting to introduce Landscape Architect, Landscape Inspector, Contractor, job project manager and job superintendent and to discuss the particular requirements of the job.

2. Incorporation of soil conditioning and fertilizing into the soil. Observation shall begin prior to amendments being rototilled into the soil. Amendment materials shall be distributed in piles around the site in quantities corresponding to the soils analysis recommendations "per 1,000 sq. ft.". Invoices showing materials and quantities purchased shall be available for review.

3. Upon completion of grading prior to planting. Review of plant materials is to coincide with this review.

4. When trees, shrubs and vines are spotted in place for planting, but before planting holes are excavated.

5. Upon completion of finish grades and planting. Application of pre-emergent herbicide is to coincide with this review.

6. When planting, and all other indicated and specified work, except the Maintenance Period, has been completed. Acceptance, in writing, shall establish beginning of the Maintenance Period.

7. Final review at the completion of the Maintenance Period. Contingent on acceptance, this review shall establish the beginning date for the Guarantee Period.

1.06 MAINTENANCE:

A. The Contractor shall continuously maintain all involved areas during the progress of the work and during the maintenance period until the final acceptance of the work.

B. The Maintenance Period begins on the first day after written acceptance of planting operations is received from the Landscape Architect, and shall continue thereafter for no less than ninety (90) continuous calendar days (3 @ 30 Days).

C. The contract completion date of the contract maintenance period will be extended, when in the opinion of the Landscape Architect, improper maintenance or possible poor or unhealthy condition of planted material or poorly established non-covering turf areas are evident at the termination of the scheduled maintenance period. The Contractor shall be responsible for additional maintenance of the work until work is completed and acceptable.

D. See Section "Landscaping Maintenance" for specific Maintenance Requirements.

1.07 GENERAL REQUIREMENTS:

A. The term "Planting Area" shall mean all areas to be planted with trees, shrubs, groundcovers, sod and seed.

B. Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practice.

C. All rock and other growth or debris accumulated during the duration of the project shall be removed from the site.

D. Prior to excavation for planting or placing of plant materials, locate all underground improvements, utility lines, etc. and take proper precautions to avoid damage. In the event of a conflict between such lines and plant locations, notify Landscape Architect and receive direction prior to proceeding. The Contractor assumes responsibility for making repairs for damages resulting from work as herein specified.

E. Grading and soil preparation work shall be performed only during the period when beneficial and optimum results may be obtained. If the moisture content of the soil should reach such a level that working it would destroy soil structure, spreading and grading operations shall be suspended until the moisture content is increased or reduced to acceptable levels and the desired results are likely to be obtained.

F. Scaled dimensions are approximate. Before proceeding with work, carefully check and verify dimensions and immediately inform the Landscape Architect of discrepancies between the drawings and specifications and actual conditions.

G. Quantities for plant materials are shown for convenience only, and not guaranteed. Check and verify count and supply sufficient number to fulfill intent of drawings.

H. Adequately stake, barricade, and protect irrigation equipment, manholes, utility lines, and other existing property during all phases of the soil amending and grading operations.

I. Rejection and Substitution: Plants not conforming to the requirements herein specified shall be considered defective, and such plants, whether in place or not, shall be marked as rejected and be immediately removed from the site of the work and replaced with acceptable plant materials. The plant materials shall meet all applicable inspections required by law. Plants shall be of the species, variety, size, age, flower color and condition as specified herein and/or as indicated on the drawings. Under no condition will there be any substitution of plant specie, variety, or reduced sizes for those listed on the accompanying drawings, except with the expressed written consent of the Landscape Architect.

J. All utilities (water and electricity) used during the installation and maintenance of the landscaping and irrigation systems for this project shall be paid for by the Owner.

1.08 FINAL SOIL AMENDMENT QUANTITIES:

A. Upon completion of all backfill and/or rough grading of planted areas, a minimum of six (6) representative samples of existing soil found in the planting areas shall be taken by the Contractor and at his/her expense sent to an independent soil testing laboratory for an agricultural suitability analysis and recommendations for quantity and application rate of amendments and include any corrective measures required to adjust pH or salt to acceptable

levels. These recommendations shall then be compared with those listed in Paragraphs 2.02 and 3.01 and the contract modified accordingly.

1.09 SOIL PREPARATION CONFORMANCE

A. Amendment materials shall be distributed in piles around the site in quantities corresponding to the soils analysis "per 1,000 sq. ft." recommendations. Invoices showing materials and quantities purchased shall be available for review. The Landscape Architect will compare the distribution piles and total quantities of each material furnished against the soils analysis recommendations. If the minimum rates of application have not been met, the Landscape Architect will require the distribution of additional quantities of these materials to fulfill the minimum application requirements specified. After approval by the Landscape Architect of the distribution and quantities of soil amendments, the Contractor will then commence with soil conditioning operations per section 3.01.

1.10 PLANT MATERIAL QUANTITY CONFORMANCE

A. After installation of plant materials, and coinciding with the pre-maintenance observation, the Landscape Architect, with the heretofore specified signed copies of the required certificates, trip slips and invoices for the plant materials and related items, will inventory such material, comparing the total area and/or the amounts specified. If the minimum amounts have not been furnished, the Landscape Architect may require the installation of additional materials to fulfill the minimum requirements specified or require that the Contractor provide credit(s) to the Owner.

PART 2 - PRODUCTS

2.01 SOIL AMENDMENT AND FERTILIZER:

A. Provide singly or in combination as required to meet specified requirements for topsoil. Soil conditioners shall be nontoxic to plants.

1. Composted Derivatives: Ground bark, nitrolized sawdust, humus, or other wood green waste material free of stones, sticks, and soil stabilized with nitrogen and having the following properties:

2. Particle Size: Minimum percent by weight passing:
   a. No. 4 mesh screen 95
   b. No. 8 mesh screen 80

3. Nitrogen Content: Minimum percent based on dry weight:
   a. Fir Sawdust 0.7
   b. Fir or Pine Bark 1.0

B. Gypsum shall be a commercially processed and packaged gypsum (CaSo, 2H 0) with minimum 80% grade containing 14% minimum combined sulfur.

C. Iron Sulphate: Ferric or ferrous sulphate in pelleted or granular form containing not less then 18 percent metallic iron. Material shall conform to the Agricultural Code of the State of California.

D. Pre-plant fertilizer for incorporation with rototilling or plant pit backfill mix shall be of a uniform 'beaded' homogeneous granular composition suitable for application with approved equipment and shall contain the following minimum available percentages by weight of plant food:

Nitrogen	5% minimum
Phosphoric acid	3% minimum
Potash	1% minimum
Iron	1%
Manganese	.05%
Zinc	.05%
Humic Acids (derived from compost)	15%
Soil Penetrant (alkyl naphthalene sodium sulfonate)	15%

E. Post-planting Fertilizer for Maintenance Period Fertilization: Organic base, long lasting, nonburning, controlled slow release, free flowing, uniform in composition, suitable for application with approved equipment, and shall contain the following minimum available percentages of weight of plant food :

Nitrogen	12% minimum
Phosphoric acid	8% minimum
Potash	8% minimum
Sulphur	7%
Iron	2%
Manganese	.05%
Zinc	.05%
Humic Acids (derived from compost)	5%

WARNING: Some fertilizers contain chelated iron which has caused staining of concrete surfaces in other projects. Contractor shall be responsible for removing all iron stains from concrete by sandblasting, or as directed by architect, at no additional cost to the Owner.

F. Planting Tablets: Tightly compressed chip type commercial grade planting tablets of varying weighted sizes with the following available percentages by weight of plant food:

Nitrogen	20% minimum
Phosphoric acid	10% minimum
Potash	5% minimum

2.02 PLANTING BACKFILL:

A. Planting backfill shall be a thoroughly blended mixture of topsoil amendments at the following mixture:

Soil Conditioner	1 part
Stock-piled on site soil	3 parts
Iron sulphate	2 lbs/per cu. yd. of mix
Gypsum	10 lbs/per cu. yd. of mix
Pre-plant fertilizer	4 lbs/per cu. yd. of mix

Soil to be used as planting medium for the project shall be fertile, well-drained, of uniform quality, free of stones over 1 inch diameter, sticks, oils, chemicals, plaster, concrete and other deleterious materials. On-site soil may be stockpiled for re-use provided it meets all requirements.

2.03 PLANT MATERIALS:

A. Nomenclature: The scientific and common names of plants herein specified conform with the approved names given in "Sunset Western Garden Book", published by Lane Publishing Company, Menlo Park, California, latest edition. See list of plant material on drawings.

B. Quality and size of all plants shall be No. 1, of Pinto Tag stock. They shall be vigorous, of normal growth, free from disease, insects, insect eggs, and/or exceed the measurements specified or the American standards for nursery stock. Pinto Tags shall be submitted to the landscape architect.

D. Container stock (1 gal., 5 gal., and 15 gal.) shall have grown in containers for at least six months, but not over two years. No container plants that have cracked or broken balls of earth, when taken from the container, shall be planted, except upon special approval. No trees with damaged roots or broken balls shall be planted and no shrubs, vines or groundcovers shall be planted that are "pot-bound" or that have damaged roots.

E. Pruning shall not be done, prior to delivery, except by written approval.

F. Observation of Plant Materials, required by County authorities, shall be a responsibility of the contractor, and where necessary, the contractor shall have secured permits or certificates prior to delivery of plants to site.

G. Plants shall be subject to observation and approval or rejection, at the project site at any time before or during progress of work, for size, variety, condition, latent defects and injuries. Rejected plants shall be removed from the project site immediately.

H. Substitutions will not be permitted except that if proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size, variety and cost.

I. Quantities shall be furnished as needed to complete work as shown on drawings.

J. The landscape architect reserves the right to observe root condition of any species, particularly those grown from seed, and if found defective, to reject the plants represented by the defective sample.

K. Identify plant species or varieties correctly on legible, weather-proof labels attached securely at the job site. There shall be a minimum of one labeled plant for each 5 plants in a lot.

2.04 HERBICIDE:

A. Weed Contact Spray, post emergent, systemic product with no soil residual activity formulated as a water soluble liquid containing 50% glyphosate and 14.5% surfactant with surflan additive.

2.05 MULCHING MATERIAL:

A. Mulching material shall be 3/8" - 1/2" dia. screened fir bark or approved equal, approved in writing, by the landscape architect.

PART 3 - EXECUTION

3.01 LEACHING, SOIL CONDITIONING, ROTOTILLING AND FERTILIZING:

A. Deep Water Leaching:

1. After complete installation and testing of the irrigation system, all areas shall be deep water leached and compacted and settled by continuous application of irrigation water until the soil has received a minimum of 12" of water.

2. After leaching operation, soil samples shall be taken by contractor per landscape architect's direction and given to the Owner's soil laboratory for testing. Soil test shall meet the following requirements:

ECe	- Maximum 3.0
pH	- Maximum 7.50
	- Minimum 6.00

3. Deep water leaching shall be done prior to the application of the commercial fertilizer.

4. Care shall be taken that the rate of application of water does not cause erosion or sluffing of soils. Do not undertake leaching operations in expansive soils.

5. All depressions, voids, erosion scars and settled trenches generated by the deep watering shall be filled with conditioned topsoil and brought to finish grade prior to digging planting pits.

B. After leaching operations and after the areas have been graded, follow the Soil Preparation Conformance procedures per section 1.09. After approval by the Landscape Architect of the requirements in section 1.09, the soil conditioning and amendment materials shall be evenly spread over all planting areas and shall be thoroughly scarified to an average depth of six (6) inches by rototilling a minimum of two (2) alternating passes:

The following materials and quantities are to be used as a basis for bidding, and may be modified based on soil analysis results.

Soil conditioner:	4 cu. yd. per 1,000 sq. ft.
Soil sulphur:	20 lbs/per 1,000 sq. ft.
Iron sulphate:	20 lbs/per 1,000 sq. ft.
Gypsum:	100 lbs/per 1,000 sq. ft.
Pre-plant fertilizer:	20 lbs/per 1,000 sq. ft.

1. Fertilizer shall be incorporated into the top six (6) inches of finish grade. Fertilizer shall be applied after leaching operation.

2. The thoroughness and completeness of the rototilling and incorporation of the soil conditioners/amendments shall be accepted by the landscape architect in writing, prior to digging planting pits. For slopes 2:1 and steeper, or as per the drawings, omit soil conditioner application and rototilling.

3.02 FINISH GRADING:

A. Finish grades shall be as indicated on landscape and civil drawings. Contractor shall notify landscape architect for a decision should any discrepancies exist between the drawings and site conditions.

B. Finish grades shall be measured as the final water compacted and settled surface grades and shall be within $\pm$ 0.1 foot of the spot elevations and grade lines indicated. Grades adjacent to hardscape shall be within +/- .01 feet of the grades indicated on the drawings.

C. Molding and rounding of the grades shall be provided at all changes in slope.

D. All undulations and irregularities in the planting surfaces resulting from tillage, rototilling and all other operations shall be leveled and floated out before planting operations are initiated.

E. Take every precaution to protect and avoid damage to erosion control materials, sprinkler heads, irrigation lines, and other underground utilities during grading and conditioning operations.

F. Final finish grades shall insure positive drainage of the site with all surface drainage away from buildings, walls, and toward roadways, drains and catch basins.

G. Final grades shall be accepted by the landscape architect/Owner's representative in writing on company letterhead prior to digging planting pits and/or before planting operations will be allowed to begin.

H. Planting surfaces shall be graded with no less than 2 percent surface slope for positive drainage.

3.03 PLANTING:

A. The layout of locations for plants and outlines of groundcover beds to be planted shall be accepted by the landscape architect in writing prior to digging plant pits for planting. All such locations shall be checked by the contractor for possible interference with existing underground piping prior to excavation of holes. If underground construction or utility lines are encountered in the excavation of planting areas, other locations for the planting may be selected by the landscape architect at no additional cost to the owner. Damage to existing utilities shall be the responsibility of the contractor.

B. Planting Shrubs:

1. All excavated holes shall have vertical sides with roughened surfaces and shall be of the minimum sizes indicated on drawings. Holes shall be, in all cases, large enough to permit handling and planting without injury or breakage of root balls or roots.

2. Excavation shall include the stripping and stacking of all acceptable soil encountered within the areas to be excavated for plant pits and planting beds. Protect all areas that are to be trucked over and upon which soil is to be temporarily stacked pending its re-use for the filling of holes, pits and beds.

3. Excess soil, generated from the planting holes shall be spread evenly on the site within the tolerances indicated in section 3.02, or as directed by the landscape architect.

4. The plants shall be planted at approved locations with the heretofore specified plant pit fertilizer and soil planting backfill. Place plant pit fertilizer after two thirds of backfill material is installed at the rates specified by the manufacturer and soils report.

5. The plants shall be placed in the planting pits, which have been hand-tamped, and water settled to the rootball base levels prior to the placement of the plants. After setting the plants, the remaining backfill material shall be carefully tamped and settled around each rootball to fill all voids.

6. Each shrub shall be placed in the center of the hole and shall be set plumb and held rigidly in position until the planting backfill has been tamped around each rootball.

7. All plants shall be set at such a level that after settling they bear the same relationship to the surrounding finish grade as they bore to the soil line grade in the container, unless otherwise noted.

8. No plant will be accepted if the rootball is broken or cracked, either before, during, or after the process of installation.

9. Plants shall be thoroughly watered into the full depth of each planting hole immediately after planting.

10. Install shrubs as shown on the drawings.

11. The contractor shall be responsible for all surface and subsurface drainage required which may affect his guarantee of the trees, shrubs, and vines.

12. Pruning after planting shall be required on shrubs when necessary to provide the specified or approved standard shapes, form and/or sizes characteristic to each plant. Pruning may include thinning, and/or cutting and shall be under the direction of the landscape architect.

C. Planting Groundcovers:

1. Groundcovers shall be planted in the areas indicated on the drawings. The groundcover plants shall be rooted cuttings grown in flats and shall remain in those flats until transplanting.

2. All groundcover plants shall be planted with soil around roots in staggered row, evenly spaced at the intervals called out on the drawings.

3. The groundcover plants shall be planted sufficiently deep to cover all roots.

4. The groundcover planting area shall be hand smoothed after planting to provide an even, smooth final finish grade.

3.04 HERBICIDE APPLICATION:

A. Herbicide or pesticide applications shall be performed only by personnel licensed for such work by the State of California.

3.05 MULCHING:

A. Landscape areas other than those hydroseeded or planted with turf shall be covered with the specified mulching material to the minimum depth indicated on the drawings.

3.06 CLEAN-UP:

A. As the project progresses on a daily basis, the contractor shall maintain all areas in a neat manner and remove unsightly debris as necessary, remove all debris and containers used in accomplishing work and sweep and clean all sidewalks, asphalt, and concrete areas adjacent to plantings.

3.07 SITE OBSERVATION & WALK-THROUGHS FOR SUBSTANTIAL COMPLETION:

A. General Observation: The landscape architect will visit the construction site at interim times during the construction process to access construction progress regarding installation of landscape material to be in compliance with the drawings, details, specifications and site conditions. The landscape architect will prepare a site report after each visit noting progress of installation, verbal communication with the contractor and identifying any field adjustments necessary that require modifications to the designed landscape. A copy of this site report will be delivered to both the owner and the contractor. The contractor is responsible to immediately address each item on the site report before proceeding with further construction.

B. Walk Through For Substantial Completion (Punch List #1):

1. Before requesting a walk through for substantial completion the following requirements must be entirely satisfied:

   a. The entire planting area is completely installed, and when letters of acceptance as described above have been obtained from the landscape architect and/or owner's representative. If the contractor failed to notify the landscape architect for any of the above items as listed above than the contractor assumes full responsibility for any design modifications directed by the landscape architect during the walk through for substantial completion any of these issues at no additional cost to the owner.

   b. All invoices, pinto tags and receipts have been delivered to the landscape architect and/or owner's representative.

2. Once the above requirements have been met a walk through for substantial completion may be requested. The following procedures will be used during the walk through:

   a. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.

   b. A visual walk through of the entire site will take place consisting of an examination of planting areas as compared to the drawings, and installation procedures as shown on the details and specifications. A punch list will be established of deficiencies in the construction and workmanship of the landscaped area as compared to the construction drawings, details, and specifications.

3. Once the Walk Through for Substantial Completion has been completed the landscape architect will provide a copy of all punch list items to the owner for review and distribution to the contractor. It is the contractor's responsibility to repair, replace, and adjust all items on the punch prior to requesting a final walk through.

C. Final Walk Through:

1. Before commencement of a final walk through is requested, each item on the walk through for substantial completion (punch list #1) must be thoroughly satisfied, addressed, and resolved by the contractor.

2. Once the above requirement has been met a final walk through may be requested. The following procedures will be used:

   a. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.

   b. Unless new issues arise between walk throughs, only those items as indicated on the walk through for substantial completion punch list will be addressed. This visual walk through will consist of walking through the punch list items created at the time of the walk

through for substantial completion, and examining outstanding items. Any remaining deficiencies in the construction and workmanship of the landscape as compared to the punch list generated at the time of the walk through for substantial completion, construction drawings, details and specifications will be noted.

3. Once the Final Walk Through is completed and all items created on the final punch list have been addressed, the Maintenance Period may begin. Any additional walk throughs required due to contractors' inability to address all issues on the punch lists described above will be provided at the contractor's expense.

3.08 MAINTENANCE PERIOD:

A. The Maintenance Period shall last for ninety (90) days (3 @ 30 Days) after notification from the landscape architect of a successful final walk through and will begin once all items on the final walk through punch list have been satisfactorily addressed by a written statement indicating such from the landscape architect to the owner.

1. The contractor is responsible for obtaining and following any maintenance manuals created specifically for the project from the owner at the beginning of the maintenance period.

2. Once the contractor has fulfilled all maintenance agreement obligations the maintenance period will end see section "Landscape Maintenance", for maintenance responsibilities.

Method of Payment:

A. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved including but not limited to Fine Grading, Soil Preparation- Amendments, Fertilizers, Weed Prep., and Mulching (Recycled Organic) 3" Thick Layer, in accordance with the contract documents shall be included in the contract price bid per square foot for Ground Preparation and no additional compensation will be allowed therefor.

B. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved in accordance with the contract documents shall be included in the unit price bid, per each, for the following Bid Items and no additional compensation will be allowed therefor:

- 1 GALLON SHRUBS/ GROUNDCOVER
- 5 GALLON SHRUBS/ GROUNDCOVER

LANDSCAPE MAINTENANCE:

PART 1 - GENERAL

1.01 SUMMARY

A. The work includes all services, labor, materials, transportation and equipment necessary to perform the work indicated on the Drawings and as specified. The conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.02 RELATED REQUIREMENTS:

A. Section 328400 Irrigation System
B. ection 329300 Landscaping

1.03 DEFINITIONS:

A. Pesticide: Includes any of the following:
   1. Fumigant
   2. Herbicide
   3. Insecticide
   4. Fungicide
   5. Rodent repellents.

B. Planting Bed: An area comprised of trees, shrubs, flowers, and ground cover, excluding grass.

1.04 DELIVERY, STORAGE AND HANDLING OF MATERIALS FOR PERMENANTLY irrigated AND TEMPORARILY IRRIGATED SLOPES and FLAT AREAS:

A. Fertilizer, Gypsum, and Iron Sulphate: Deliver to the site in original containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal laws. Instead of containers, fertilizer, and gypsum may be furnished in bulk with a certificate indicating the above information.

B. Pesticides: Deliver to the site in original containers with legible label indicating Environmental Protection Agency (EPA) registration number and manufacturer's registered uses.

1.05 STORAGE FOR PERMANENTLY IRRIGATED AND TEMPORARILY IRRIGATED SLOPES and FLAT AREAS:

A. Fertilizer, Gypsum, Iron Sulphate, and Mulch: Store in dry locations away from contaminants.

B. Pesticides: Do not store with other maintenance material. Store herbicides "downwind," relative to the airflow from other pesticides.

1.06 HANDLING FOR PERMANENTLY IRRIGATED AND TEMPORARILY IRRIGATED SLOPES and FLAT AREAS:

A. Do not drop or dump materials from vehicles.

PART 2 - PRODUCTS

2.01 pH ADJUSTERS:
A. See Specification Section: "Ground Preparation and Landscaping"

2.02 Soil Conditioners:
A. See Specification Section: "Ground Preparation and Landscaping"

2.03 PLANTING BACKFILL:
A. See Specification Section: "Ground Preparation and Landscaping"

2.04 FERTILIZERS:
A. See Specification Section: "Ground Preparation and Landscaping"

2.05 WATER:
A. See Specification Section: "Ground Preparation and Landscaping"

2.06 PESTICIDES:
A. See Specification Section: "Ground Preparation and Landscaping"

PART 3 - EXECUTION

3.01 MAINTENANCE REQUIREMENTS DURING THE NINETY (90) (3 @ 30 Days) DAY MAINTENANCE PERIOD:

A. Shrubs:

6. The contractor is responsible for the restoration and maintenance of all vegetation included in these specifications for the duration of the maintenance period. During the first two weeks of the maintenance period, the contractor shall conduct a survey of all areas and identify by quantity, species, and location, all dead, dying, and diseased vegetation. The contractor shall be responsible for restoring dying and diseased vegetation to a healthy state in accordance with accepted Horticultural Practice and Treatment. The architect and/or owners representative will be the final authority in determining which vegetation is considered dead or irreparably damaged. Restoration and replacement of vegetation is considered routine maintenance and shall be accomplished as often as necessary during the maintenance period. Vegetation replacement shall be accomplished within 5 days after the contractor discovers or has been notified of the situation. Diseased or dead vegetation shall be removed and replaced with healthy plants of the same species. All replacement plants must be approved by the architect and/or owner's representative before planting.

2. Planting beds shall be cultivated, pruned, trimmed, weeded, irrigated, fertilized, mulched, and otherwise maintained in a manner that presents a professionally landscaped appearance at all times. Plant beds shall be kept weed, gopher, squirrel, rabbit and pest free. Ground cover shall not be allowed to grow into flowers, shrubs or trees. Planting beds shall be maintained in a

manner that provides balance between the various types of vegetation, and prevents dominance of any one species. The contractor shall provide and maintain a minimum of three-inch layer of mulch in all planting beds with a slope gradient of 3:1 or less. The contractor shall provide for the special needs of various species. Diseased or dead vegetation shall be removed and replaced with healthy plants of the same species.

3. The contractor shall not use steel bow type rakes or equipment of similar design to clean plant beds. Lightweight fan rakes or vacuum equipment may be used. The contractor shall maintain the soil level in the plant beds, and ensure all surface root systems and irrigation piping are covered as required. The contractor shall be responsible for damage caused by contractor operations at no additional cost to the owner.

4. Shrubs shall be trimmed pruned, irrigated, fertilized to present a healthy and manicured appearance.

5. All shrubs shall be trimmed and pruned according to their natural growth characteristics for proper health and attractive appearance. All clippings shall be removed and disposed of by the end of each day. Pruning shall be accomplished as necessary in accordance with conditions (a) through (d) specified below. Shrubs and vines shall be trimmed to shape for aesthetic appearance and health at the frequency specified in this section.

   a. Remove growth in front of windows, over entrance ways or walks, and any growth which will obstruct vision at street intersections. Shrubs around perimeter of buildings shall be trimmed to maintain natural growth characteristics.

   b. Remove dead, damaged or diseased branches or limbs and crossing, rubbing and interfering branches.

   c. Evenly form and balance the shrub to natural growth characteristics. Hedges are to be trimmed to maintain their natural growth characteristics and not allowed to obstruct pedestrian walkways. Shrubs shall be allowed to completely fill planter beds. Shrubs, hedges and vines shall not be trimmed into round, square and or geometric shapes. Side growth shall be allowed to grow unless growth is in front of windows, over entrance ways, streets, driveways, parking area or walks, and/or any growth which will obstruct vision at street intersections.

   d. Remove growth against or over structures and into any type of electrical or telephone lines (leave growth on block walls).

6. Shrubs shall be pruned to evenly form and balance plant to natural growth characteristics. Shoots, suckers, and branches of shrubs not conforming to desired shape and size shall be removed. Retain typical growth habit of individual plants with as much height and spread as is practical. Shrubs shall be allowed to completely fill planter beds.

7. Any depression or mound around the base of shrubs intended to retain water in place for proper irrigation shall be maintained in good condition to permit the most efficient application of water and reduce waste.

8. Do not fertilize native plant material as shown on the planting legend during the maintenance period.

B. Weeds, Rodent and Pest Control:

1. Weed and pest control shall be performed to prevent encroachment of undesirable vegetation and noxious weeds, and infestation of pest (rodent, insect and fungus) into established landscapes, including lawns and around trees, shrubs, flower beds, etc. Noxious weeds in landscaped and natural growth areas, plant beds and landscaped areas shall not be allowed to establish themselves and be maintained weed free. Additionally, weed control is to be performed to eliminate grass and weeds in cracks and joints on all paved and concreted areas. Weed control is to be performed to prevent the encroachment of vegetation into perimeter fences and fire breaks. Rodent control shall be performed as required to maintain healthy vigorous plant growth. Live or dead rodents shall be removed within 24 hours from the project property and properly disposed of. Trees, shrubs, turf and vegetation shall be protected from all varieties of insect and rodent damage. Pesticides may be used to control pests. Pesticides and herbicides shall be used in a manner, which will not affect landscape plants health.

2. All pesticides, including herbicides, insecticides, fungicides, etc., shall be applied only by persons holding a valid state license for each category of pest control work involved. Any required state, county, or local permits for possession, procurement, or use of any pesticide shall be obtained and complied with at no additional expense to the owner.

3. All pesticides shall be procured, transported, stored, handled, and applied in strict accordance with the manufacturer's label, which shall be registered with the Environmental Protection Agency and the State of California. The contractor shall comply with the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act, 40 CFR 170-171, CCR Title 3, and CCR Title 8. All pesticide containers shall be managed in accordance with the requirements of CCR Title 3, Section 6684 and disposed of in accordance with CCR Title 22. Each pesticide formulation shall be registered for use under the particular environmental conditions under which it was applied. The contractor shall exercise extreme care to prevent any damage or illegal contamination by pesticides to vegetation, water, fish, animals, and humans. The contractor shall be held responsible and liable for all damage, contamination, and effects resulting from contractor's pesticide use.

4. Pesticide spraying shall be performed only on still days and will be stopped when unfavorable weather or other conditions exist which would unduly increase the hazard to personnel or desirable vegetation by drift, runoff, or leaching through the soil. Any project property or desirable vegetation damaged by the contractor due to pesticide applications shall be repaired or replaced at no additional cost to the owner.

5. Pesticide rinse water or excess pesticides from contractor operations shall be collected by the contractor in an appropriate receptacle and disposed of at an approved disposal site; or shall be applied to a similar target area to which the original application was made and in the same manner of application if allowed by the EPA registered label.

6. Job site pesticide applications shall be made by personnel capable of identifying the pest species to be controlled, knowledgeable of control techniques, and able to apply pesticide active

ingredients at prescribed dosages and rates of application, as required by the label to achieve the required control under job site conditions, without danger to people, pets or other non-target animals, plants, or property.

7. The contractor shall be responsible for having a spill kit on service vehicles and for reporting and cleaning pesticide spills as required by state laws and regulations. The contractor shall submit a written report of spills on or in project property, within 8 hours of incident to the owner on company letterhead.

C. Irrigation and Irrigation System Maintenance:

1. The contractor shall plan and adjust irrigation schedules for automatic, hand or portable irrigation systems based on minimal water requirements with the following considerations:
   a. the precipitation rates of irrigation components
   b. soil water infiltration rate and holding capacity
   c. exposure
   d. plant material
   e. site climate conditions
   f. ET (Evapotranspiration) rate
   g. Slope

   It shall be the contractor's responsibility to adjust controllers and/or hand/portable irrigation application to compensate for weekly environmental changes for the duration of the maintenance period. The contractor shall perform irrigation in a manner that promotes the health, growth, color and appearance of cultivated vegetation while preventing over watering, water run-off, erosion and ponding.

2. Irrigation includes watering of shrubs. Care shall be exercised by regulating the time and equipment to prevent wasting of water. Sprinkler heads shall be adjusted to prevent water spray on buildings, sidewalks, walls, monuments and adjacent hardscape. It shall be the contractor's responsibility to apply enough water to assure and maintain the health and vigor of all shrubs, trees, and planted areas. Irrigation controllers shall be programmed for no irrigation during periods of rain that exceed twelve hours of rainfall in one day or during rain storms of one day or more. Once rain has subsided controllers shall be reprogrammed for irrigation operations. Controllers shall also be checked and reset if necessary after power outages.

3. The contractor shall provide all equipment necessary to perform all irrigation operations. For temporarily irrigated slopes, flat areas and trees within future private lots that require manual irrigation, the contractor shall provide hoses and irrigation equipment to adequately irrigate this plant material for the duration of the maintenance period. In the event that an area has no water supply due to a system failure, the contractor shall provide a supply by either hose or truck. All valves and valve box covers shall be kept closed at all times except when in actual use.

4. Irrigation equipment shall be kept clear of any obstructions including plant material. Dirt or other debris surrounding sprinkler heads, which prevents proper operation, shall be

removed. The contractor shall be held responsible for any damage to project property caused by careless handling of irrigation equipment including slope failure at no additional cost to the owner.

5. The contractor is responsible for the maintenance and repair of all components of the irrigation system for the duration of the maintenance period. This includes irrigation equipment items as shown on the original irrigation drawings. Maintenance and repairs of irrigation equipment during the maintenance period shall be done at no additional cost to the owner. Maintenance shall include but not be limited to the following:

   a. Repair or replace broken, missing, or inoperative pop-up spray heads and pop-up rotors.

   b. Repair or replace defective sprinkler head risers, rotors on risers, fittings, swing arms and breaks in piping. Adjust and align risers. Repairs shall include all fittings as specified in the original irrigation drawings.

   c. Clean and adjust pop-up sprayheads, pop-up rotors, sprinkler head risers and rotors on risers and their gears and/or mechanisms, check and adjust for proper coverage.

   d. Remove dirt and debris from around pop-up spray heads and pop-up rotors.

   e. Repair or replace defective or malfunctioning control valves (Electric and/or Manual) flow sensors and master valves. Clean and service valves. The contractor shall replace any damaged or missing valve boxes or valve lids. Valve box lids shall be kept in place at all times. Barricades shall be placed over any valve boxes with missing lids until replaced. Valve boxes shall be kept level with existing grade as shown on the drawings.

   f. Maintain, service, repair or replace central controller systems as specified by the product manufacturer.

   g. System repairs and replacement shall be accomplished with new parts and equipment that are identical to existing.

   h. The contractor is responsible for required irrigation by any means during the periods of system breakdown.

D. Fertilizer Application During the Maintenance Period:

   1. Apply fertilizer in a manner that promotes health, growth, color and appearance of cultivated vegetation at applications rates described in section 329300 Landscaping for the duration of the maintenance period.

E. Fallen Vegetation and Debris Removal:

   1. The contractor shall police the entire project area including all paved areas, planters, lawn areas, sidewalks (including common area sidewalks) and trash enclosures and collect fallen leaves, branches and limbs regardless of length or diameter, dead vegetation, paper, trash, cigarette butts, garbage, rocks, and any and all other debris to prevent unsightly and

inordinate accumulations during normal maintenance working hours. Sidewalks shall be swept or washed as necessary to keep free of trash and graffiti. Collected items shall be promptly removed and taken to a legal disposal site.

F. Removal of Dead Animals:

1. Removal and legal disposal of animal carcasses are considered a normal maintenance task for the duration of the maintenance period. Dead carcasses shall be legally removed immediately when discovered by the contractor.

G. Erosion Control:

1. The contractor is responsible for daily visual inspection of slopes and immediately reporting areas experiencing erosion to the landscape architect and/or owner's representative on the same day noticed. If the contractor fails to notify the landscape architect and/or owner's representative of areas experiencing erosion on the same day noticed, then the contractor assumes full responsibility for any erosion control measures and/or repairs as directed by the landscape architect and/or owner's representative at no additional cost to the owner.

2. Upon notification and agreement of the applicable erosion control measure by the landscape architect, the owner and the contractor, the contractor is responsible for immediately repairing and correcting any progressive rilling that may occur.

3. Erosion control measures may include but not be limited to:
   a. Filling
   b. Raking
   c. Redirecting runoff
   d. Properly programming irrigation operations
   e. Replanting
   f. Providing additional erosion control materials such as:
      1. jut matting
      2. filter fabric
      3. hay bales
      4. hay rolls
      5. silt fencing
      6. sand bags
      7. and/or other erosion control items as required to maintain healthy plant material and stable slopes.

4. Additional erosion control measures required due to irrigation operations programmed by the contractor that did not take into account cycle and soak functions of the controller will be installed and/or repaired as directed by the landscape architect and/or owner's representative at no additional cost to the owner.

H. Frequency of Maintenance Operations:

TASK:	FREQUENCY:
Shrub and Vine Restoration and Replacement:	As Required
Weeding:	Daily
Pruning:	As Required
Tree Replacement:	As Required
Tree Staking:	As Required
Pesticide Applications:	As Required
Debris Removal & Disposal:	As Required
Irrigation System Maintenance:	As Required
Fertilizer Application:	As Required
Fallen Vegetation and Debris Removal:	Twice Weekly
Removal of Dead Animals:	As Required
Re-Mulching (Maintained at 3 Inches):	As Required
Erosion Control:	As Required

I. At the end of the ninety (90) (3 @ 30 Days) day maintenance period, the contractor shall request a post-maintenance walk through with the landscape architect. Prior to requesting this walk through the following requirements must be entirely satisfied:

1. Any outstanding maintenance items that were previously directed to be completed by the restoration specialist.

J. Preliminary Post Maintenance Walk Through: Once the above requirements have been met a preliminary post maintenance walk through may be scheduled. At the preliminary post maintenance walk through, the following procedures will be used:

1. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.

2. A visual walk through of the entire landscape area will take place consisting of an examination of planting areas and noting any remaining maintenance items to be completed.

3. Once the preliminary post maintenance walk through has been completed, the landscape architect shall prepare a punch list of outstanding items to be completed and will provide a copy of this list to the owner and contractor for review and use. It is the contractor's responsibility to repair, replace, and adjust all items on the punch list prior to requesting a final post maintenance walk through.

K. Final Post Maintenance Walk Through: Before commencement of a final post maintenance walk through, each item on the preliminary post maintenance walk through punch list must be thoroughly satisfied, addressed, and resolved by the contractor. Once the above requirement has been met a final post maintenance walk through may be requested. At the final post maintenance walk through, the following procedures will be used:

1. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.

2. Only those items as indicated on the preliminary post maintenance walk through punch list will be addressed. This visual walk through will consist of walking through the punch list items created at the time of the preliminary post maintenance walk through, and examining outstanding items. Any remaining deficiencies in the maintenance of the wetlands mitigation will be noted.

3. Once the final post maintenance walk through is completed and any outstanding items created on the final punch list have been addressed the maintenance period may end. Any additional walk throughs required due to contractors' inability to address all issues on the punch lists described above will be provided at the contractor's expense.

Method of Payment:
Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved in accordance with the contract documents shall be included in the contract price bid, per lump sum, for 90 Day Maintenance Period and no additional compensation will be allowed therefor.

IRRIGATION SYSTEM

PART 1 - GENERAL

1.01 SUMMARY:

A. This section covers the furnishings of all materials and performing all operations to provide a complete operable landscape irrigation system as shown on the drawings including the following:

1. Trenching, stockpiling excavated materials and refilling trenches.

2. Irrigation system components including but not limited to: piping, valves, fittings, rotors, spray heads, wiring and final adjustments as determined by the architect to insure efficient and uniform distribution.

3. Testing and inspection of irrigation system.

4. Clean-up and maintenance

B. The conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.02 GENERAL REQUIREMENTS:

A. Code Requirements shall be those of State and Municipal Codes and Regulations locally governing this work, providing that any requirements of the Drawings and Specifications, not conflicting therewith but exceeding the Code Requirements shall govern, unless written permission to the contrary is granted by the Architect.

B. Conform to the requirements of the reference information listed below except where more stringent requirements are shown or specified in the most current set of construction documents:

1. American Society for Testing Material (ASTM), for test methods specifically referenced in this section.

2. Underwriter's Laboratories (UL), for UL wires and cables.

C. Work involving substantial plumbing for installation of brass piping, backflow prevention devices and other related work shall be executed by a licensed and bonded plumbing contractor. Any necessary permits shall be obtained prior to beginning work.

D. Specified depths of pressure supply lines, laterals and pitch of pipes as stated in this section are minimums. Settlement of trenches lower than grades specified on the final grading plans is cause for removal of finish grade treatment, refilling trenches, recompacting and repairing of finish grade treatment.

E. Follow current printed manufacturer's specifications and drawings for items or information not specified or graphically indicated in the most current set of construction drawings.

F. Scaled dimensions are approximate and at times it is not possible to indicate offsets, fittings and other related equipment graphically on the construction drawings. Contractor shall be responsible for minor changes caused by actual site conditions. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions of related architectural elements, utilities and landscaping and furnish and install required fittings.

G. Do not install the irrigation system as shown on the construction drawings when it is obvious that actual field conditions such as physical obstructions, grading discrepancies and field dimensions vary from those recorded on the construction drawings. Immediately bring any such discrepancies to the attention of the architect prior to proceeding with work. If immediate notification is not given and such discrepancies exist, the contractor shall assume full responsibility for necessary revisions, as determined by the architect.

1.03 EXISTING FIELD CONDITIONS:

A. Preserve and protect all existing trees, plants, monuments, structures, hardscape and architectural elements from damage due to work in this section. In the event that damage does occur to inanimate object and structures, the contractor will repair or replace such damage to the satisfaction of the owner or owner's representative. Damage or injury to living plant material will be replaced by the contractor at the contractor's expense.

B. Trenching or other work required in this section under the limb spread of existing trees shall be done by hand or by other methods so as to prevent damage or harm to limbs, branches and roots.

C. Trenching in areas where root diameter exceeds 2 inches shall be done by hand. Exposed roots of this size shall be heavily wrapped with moistened burlap to avoid scarring or excessive drying. Where a trenching machine is operated in proximity to roots that are less than 2 inches, the wall of the trench shall be hand trimmed , making clean cuts through roots.

D. Trenches adjacent to or under existing trees shall be closed within 24 hours , and when this is not possible, the side of trench closest to the tree or trees affected shall be covered with moistened burlap.

E. Protect, maintain and coordinate work with other contracts, specifications, trades, and utilities. Extreme care shall be exercised in excavating and working in the area due to existing utilities. Contractor shall be responsible for damages caused by their operations. In the event that damage does occur, the costs of such repairs shall be paid by the contractor unless other arrangements have been made with the owner.

F. Use caution where trenches and piping cross existing roadways, sidewalks, hardscape, paths or curbs. In the event that damage does occur, the contractor will repair such damage at the contractor's expense.

1.04 REQUIRED DOCUMENTS:

A. Submittals

1. Submit (6) six sets of all irrigation equipment to be used, manufacturer's brochures, service manuals, guarantees, and operating instructions for approval to the architect prior to beginning work. Submittals should be in a bound form complete with table of contents. The contractor shall not proceed with work in the field until this submittal is approved in its entirety by the architect.

B. Record Drawings/As-builts

1. Prior to beginning work in the field the contractor shall secure a complete set of irrigation plans at the original scale complete with details and specifications. The contractor shall be responsible for making a set of blueline prints for every week on the project. At the end of each working day, the contractor shall record all work accomplished for that day on the set of blueline prints in red ink. These record drawings shall be brought up to date at the end of each work week by a qualified draftsperson. The drawings should indicate the following:

   a. Any zoning changes.

   b. Dimension from two permanent points of reference (building corners, fixed hardscape corners, road intersections, permanent existing utilities) the location of the following items:
      1 Connection to existing water lines.
      2 Routing of pressure supply lines at every 100' along routing.
      3 Isolation Gate Valves
      4 Quick Coupling Valves
      5 Electric Control Valves
      6 Control wire routing (if routed separately from pressure supply line).
      7 Control wire splices that are outside of the controller.
      8 Other equipment as directed by the architect.

2. Prior to scheduling a walk through for substantial completion, provide a record set of field as-built drawings as described above to the architect for review. After review, the architect will return the as-built set to the field foreman requesting further information or will notify the owner that the record set of field as-builts drawings are complete. After approval from the owner, a walk through for substantial completion may be scheduled.

C. Controller Charts

1. Prior to scheduling a walk through for substantial completion, provide a record set of field controller charts which have color coded each station within each controller to the architect for review. After review, the architect will return the controller charts to the field foreman requesting further information or will notify the owner that the record set of controller charts are complete. After approval from the owner, a walk through for substantial completion may be scheduled.

PART 2 - PRODUCTS

2.01 PIPING

A. General Piping:

1. Pipe sizes shown are nominal inside diameter unless otherwise noted.

2. Pipe shall be identified with the following indelible markings:
   a. Manufacturer's name.
   b. Nominal pipe size.
   c. Schedule or class.
   d. Pressure rating.
   e. NSF (National Sanitation Foundation) seal of approval.
   f. Date of extrusion.

B. Solvent Weld Pressure Supply Line:

1. Solvent Weld Pressure Supply Line: (downstream of Backflow prevention device) PVC CL315BE (1" - 3")

   a. Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12454-B.
   b. Type 1, Grade 1.

2. Fittings: Standard weight, Schedule 80, injection molded PVC, complying with ASTM D1784 and D2466, cell classification 12454-B.

   a. Threads- Injection molded type (where required)
   b. Tees and Ells- side gated

3. Threaded Nipples: ASTM D2464, Schedule 80 with molded threads.

4. Joint Cement and Primer: Type as recommended by manufacturer of pipe and fittings.

C. Non-Pressure Lines Below Grade:

1. Non-Pressure Lines: (downstream of electric remote control valve) PVC SCH 40.

2. Fittings: Standard weight, Schedule 40, injection molded PVC, complying with ASTM D1784 and D2466, cell classification 12454-B.

   a. Threads- Injection molded type (where required)
   b. Tees and Ells- side gated
   c. Threaded Nipples: ASTM D2464, Schedule 80 with molded threads.

3. Joint Cement and Primer: Type as recommended by manufacturer of pipe and fittings.

D. Sleeving and Conduit:

1. All PVC sleeving for pressure supply line and non- pressure supply line shall be twice the nominal size of the pipe within and used for sleeves below grade as indicated in the following sleeve and conduit schedule:

2. Sleeving and Conduit Material Under Hardscape:
   a. PVC SCH 40 for 1"-2 1/2" pressure supply line.
   b. PVC SCH40 for 3" and larger pressure supply line.
   c. PVC SCH 40 for non- pressure lines.
   d. (1) one ¾" PVC SCH. 40 conduit for up to 5 wires.
   e. (1) one 1" PVC SCH. 40 conduit for up to 8 wires.
   f. (1) one 1 ¼" PVC SCH. 40 conduit for up to 15 wires.
   g. (1) one 1 ½" PVC SCH. 40 conduit for up to 20 wires
   h. (1) one 2" PVC SCH 40 conduit for up to 30 wires.
   i. (1) one 2 ½"" PVC SCH 40 conduit for up to 35 wires.
   j. (1) one 3/4" PVC SCH 40 wire conduit for flow sensing cable.
   k. (1) one 3/4" PVC SCH 40 wire conduit for master valve wire.

2.02 ISOLATION VALVES

A. Isolation Gate Valve: Iron bolted bonnet with 2" square operating nut, non-rising stem, resilient wedge type, soft seat, flanged end epoxy coated, bronze trimmed iron body. (Use on pipe 3" and greater) as manufactured by Nibco model F-619-RW flanged, or approved equal.

2.03 QUICK COUPLING VALVES

A. Quick coupler valves shall have a body constructed of red brass with a wall thickness guaranteed to withstand normal working pressure of 150 P.S.I. without leakage with female threads (penning at base). Quick coupler valve shall have a hinge cover constructed of red brass with leather like vinyl cover bonded to it on such a manner that it becomes permanent type of cover. Quick couplers used with potable water shall have vinyl covers yellow in color.

2.04 ELECTRIC CONTROL VALVES

A. Electric Remote Control Valves: Electric control valves with pressure regulating feature two way solenoid, pilot operated made of synthetics, non corrosive material; diaphragm activated and slow closing. Include freely pivoted seat seal, retained (mounted) without attachment to diaphragm.

B. Isolation Ball Valve at Manifold and/or Electric Control Valve:

1. Ball Valve: PVC threaded ball valve, with heavy bodied PVC construction, buttress threaded double union nuts, safe-t-block seal carrier, PTFE ball seat, high impact polypropylene handlesafe-t-shear stem, full schedule 80 bore, 235PSI rating, NSF listed.

2.05 VALVE BOXES:

A. Rectangular valve boxes shall be 11-3/4 inch wide by 17 inch long and 12 inch high. Round valve boxes shall be 10-inch diameter and 10 1/2 inch high. All valve boxes shall be constructed of rigid polyolefin.

B. Valve boxes shall have locking covers secure with a 3/8-inch stainless steel bolt and washer.

C. Rectangle valve boxes shall be used for control valves, pressure regulators, flow sensors, wye strainers, filtration devices, ball valves and pull boxes.

D. Round valve boxes shall be used for gate valves quick coupler valves, flush valve assemblies and spare wires.

E. All valve boxes to be green in color unless otherwise specified for use of reclaimed water.

F. Heat brand all box lids with the appropriate two-inch high identification letters and/or numbers.

G. All valve boxes shall receive landscape fabric. Landscape fabric shall be constructed of 5.0 oz. weight proven polypropylene weed barrier with burst strength of 225 P.S.I. and capable of 12 gallons per minute of water flow and puncture strength of 60 lbs. Dewitt Pro, Mirify or approved equal.

H. All valve boxes shall receive 2 cubic feet of 3/4-inch gravel.

I. Valve Tag: Manufactured from UV stabilized plastic with 180lbs pull out resistance and hot stamped for maximum visibility. Top hole shall be designed to pass a 16 gauge or smaller solenoid pigtail or attach with a nylon tie.

2.06 IRRIGATION HEADS (GENERAL):

A. All irrigation heads shall be the size, type, and provide the same rate of precipitation with the same radius of spray, pressure and discharge in G.P.M. as listed on drawings

B. All spray head sprinklers shall have stainless steel screw adjustment for radius of spray.

C. All irrigation heads shall have a factory installed check valve or have an after market check valve installed.

D. All other requirements for non-pressure lateral line pipe to be as specified in fitting specification section.

E. In no case shall the irrigation head spacing exceed the maximum manufacturer's recommendation.

F. Irrigation heads along walks, curbs, paving, etc. shall be positioned 1 inch above finish grade. Irrigation in turf areas shall be positioned 2 inches above finish grade.

G. All sprinkler heads shall be set perpendicular to finish grades.

H. All sprinklers in turf areas shall have a minimum pop-up height of six (6) inches.

I. All sprinklers in planter/slope areas shall have a minimum pop-up height of twelve (12) inches.

2.07 POP UP SPRAY HEADS:

A. The spray head body, nozzle, stem and screen shall be molded out of heavy duty plastic.

B. Pop-up height shall be as listed in drawings and in no case shorter than 4 inches.

C. The spray head shall have an adjustment screw used for regulating flow and radius with matched precipitation rate (MPR) nozzle.

D. The spray head shall have a removable screen to protect it from clogging.

E. The spray head shall have a stainless steel spring for proper pop down.

F. The spray head shall be equipped with a factory installed check valve identified on the cap and capable of holding water up to 10 feet of elevation change.

G. The spray head shall be equipped with a factory installed pressure-regulating device constructed of stainless steel and heavy-duty plastic capable of maintaining a pressure of 35-70 P.S.I. to 30 P.S.I. for operation of the sprinkler.

H. All spray head bodies shall have universal male thread risers to accept universal female threaded nozzles.

2.08 POP UP ROTOR:

A. All pop-up rotors shall have a rubber cover and be constructed of heavy duty plastic except for wiper seal, bearing spring and bearing washers. The riser shall be constructed of plastic or of plastic encased in a stainless steel sleeve. All rotors to have a reinforced rib design with flange encasement.

B. Pop-up height shall be as listed in drawings and in no case be shorted than 3-1/2 inches.

C. The rotor shall have a diffuser pin for regulating flow and radius.

D. The rotor shall have a screen to protect it from clogging and have a minimum inlet of 3/4 inch.

2.09 ELECTRIC CONTROL VALVE WIRE

A. Low Voltage:

1. AWG UF UL approved No. 14 direct burial copper wire for all control wires and No. 14 direct burial copper wire for all common wires.

2. Wire Colors:

   a. Control Wires- As specified on drawings
   b. Common Wires- As specified on drawings.

c. Master Valve Wires- Blue.
d. Spare Wires- Green (labeled at termination)

3. Wire Splice Connectors: 3M DBY Direct Bury Splice Kits.

2.10 SAND BEDDING

A. Sand bedding shall be construction grade.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine field conditions prior to beginning work described in this section. Grading operations shall be completed and approved prior to beginning work.

B. Verify all sleeve locations below future hardscape and/or across concrete v-ditches prior to beginning work in this section. Flag all existing sleeves and conduits installed by other trades. Report any conflicts and discrepancies to the architect immediately.

C. Irrigation system shall be constructed to the sizes and grades at the locations shown on the drawings. Mark with powdered lime or marking paint routing of pressure supply line and stake the location of each sprayhead, rotor, electric control valve and other related equipment for the first three zones. Architect shall review staking and direct any necessary changes with the contractor prior to proceeding to other zones. This review does not in any way alleviate the contractor from the responsibilities associated with proper uniformity and distribution of head placement after staking.

D. Install sleeves, to accommodate pipes and wires, under paving, hardscape areas, sidewalks, and paths prior to asphalt and concrete operations. Compact backfill around sleeves to 95% Modified Proctor Density within 2% of optimum moisture content in accordance with ASTM D1557.

3.02 EXCAVATION AND BACKFILLING OF TRENCHES

A. Trench excavation shall as much as possible follow the layout shown on the drawings. Trenches shall be straight in alignment and support pipe continuously on bottom of trench. Remove rocks and debris greater than 1" in diameter. Over excavate as required for bedding material.

B. Depth of Trench (in landscape areas):

Pressure Supply Line (3" and smaller): 18" from top of pipe to finish grade.
Non-Pressure Line (12" pop-up Rotors): 18" from top of pipe to finish grade.
Non-Pressure Line (6" and smaller pop-up Rotors): 12" from top of pipe to finish grade.
Non-Pressure Line (12" pop-up Spray Heads): 18" from top of pipe to finish grade.
Non-Pressure Line (6" and smaller pop-up Spray Heads): 12" from top of pipe to finish grade
Control Wiring: directly at side and bottom of pressure supply line.

Pressure Supply line Locator Tape: 6" above top of pipe.

C. Depth of Trench (under asphalt paving or concrete):

Pressure Supply Line (3" and smaller): 24" from top of pipe to aggregate base.
Non-Pressure Line: 24" from top of pipe to aggregate base.
Control Wiring: directly at side and bottom of pressure supply line.
Pressure Supply line Locator Tape: 6" above top of pipe.

1. Piping located under asphalt paving or concrete shall be installed with the appropriate sized sleeve and backfilled with sand bedding (6" below pipe and 6" above pipe).

2. Compact backfill material in 6" lifts at 90% maximum density determined in accordance with ASTM D1557 using manual or mechanical tamping device.

3. Set in place, cap, and pressure test piping in the presence of the owner or owner's representative prior to backfilling.

D. Width of Trench:

Pipe Greater than 3": 14" minimum.
Pipe Less than 3": 7" minimum.

E. Width between Trenches:

Irrigation Trench to Irrigation Trench: 6" minimum.
Irrigation Trench and other Trade Trenches: 12" minimum.

F. Boring: Boring will only be permitted where pipe must pass under an obstruction that cannot be avoided or removed. Backfill shall match surrounding soil density and grain. Boring under existing paving, sidewalks, or hardscape may be permitted at contractor's own risk. Contractor is responsible for any repairs or damage to such items at their own expense.

G. Backfilling: Backfilling of trenches may not be done until all required testing for the irrigation system has been completed.

1. Material: Excavated material is generally considered to be adequate for backfilling operations. Before beginning the backfilling operation, insure that backfill material is free from debris and rocks greater than 1" in diameter, and is not mixed with topsoil. These materials after separated from backfill, shall be legally disposed of at contractor's expense.

2. Bedding: Bed pressure supply line with construction grade sand 6" above and 6" below pipe as shown on details. Remaining backfill may be as described above.

3. Bed all electrical control wire trenched separate from pressure supply line, with construction grade sand 6" above and 6" below wires.

4. When backfilling, slightly mound filled trenches for settlement after backfilling is compacted. Compact backfill to a 90% maximum density in accordance with ASTM D1557 with a mechanical tamper. Do not leave trenches open for a period greater than 48 hours. Open trenches shall be protected in accordance with current OSHA regulations.

5. Smooth trenches to finish grade prior to requesting a walk through for substantial completion with the architect.

3.03 INSTALLATION OF SOLVENT WELD POLYVINYL CHLORIDE PIPE (PVC)

A. Polyvinyl chloride pipe shall be cut with an approved PVC pipe cutter designed only for that purpose.

B. All plastic-to-plastic solvent weld joints shall use only the solvent recommended by the pipe manufacturer. Do not install solvent weld pipe when temperature is below 40° F.

C. Pipe ends and fittings shall be wiped with MEK, or approved equal, before welding solvent is applied. Welded joints shall be given a minimum of 15 minutes to set before moving or handling.

D. Pipe shall be snaked from side-to-side on trench bottom to allow for expansion and contractions.

E. All changes of direction over 15 degrees shall be made with appropriate fittings.

F. When pipe laying is not in progress at the end of each working day, close pipe ends with tight plug or cap.

G. Install pressure supply line locating tape along the entire length of pressure supply line.

H. Coordinate pressure supply line with sand bedding operations.

I. No water shall be permitted in the pipe until inspections have been completed and a period of at least 24 hours has elapsed for solvent weld setting and curing.

J. Center load pipe with small amount of backfill to prevent arching and slipping under pressure. Leave joints exposed for inspection during testing.

3.04 ISOLATION GATE VALVES

A. Install isolation ball valves in separate valve boxes as specified on the drawings.

3.05 QUICK COUPLING VALVES

A. Install quick coupling valves in separate valve box as specified on the detail drawings.

B. Angled nipple relative to pressure supply line shall be no greater than 45° and no less than 10°.

3.06 ELECTRIC CONTROL VALVES

A. Install each electric control valve in a separate valve box so that cross handle is 3" min. below valve box cover as specified on the detail drawings.

B. Group electric control valves together as specified on the drawings allowing a maximum of 12 " between each valve box. Install valve boxes in the same direction and parallel with one another and perpendicular to paving, hardscape, sidewalks and paths.

C. Install electric control valves on slopes within two feet from toe of slope. Use same trench as toe of slope non-pressure lateral line for pressure supply line and wire routing see section 3.02 B and C for pipe and wire depths.

3.07 VALVE BOXES

A. Install valve boxes with each type of irrigation equipment so that top of valve box is above finish grade as specified on the detail drawings. Valve box extensions are not acceptable.

B. Place gravel sump below and around each valve box prior to installing valve box as specified on the drawings. Place remaining portion of gravel inside valve box allowing full access in and around all fittings. Valve box shall be fully supported by gravel sump. No brick or wood supports are allowed.

C. Brand valve box lid of associated equipment as follows:

Electric control valve box lid with "Controller Letter and Station Number".
Quick coupling valve box lid with the letters "QC".
Isolation ball valve box lid with the letters "BV".
Air relief valve box lid with the letters "AR".
Spare Wire box lids with the letters "SW"
Wire Splice box lid with the letters "WS".

Letter and number size of brand shall be no less than 1" and no greater than 1 1/2" in height and shall be 1/8" maximum in depth. Provide sample branding to the owner or owner's representative prior to commencement of work.

D. Walk through for substantial completion will not be allowed until all branding is complete.

3.08 SPRAY HEADS AND ROTORS

A. Install spray heads and rotors as specified on drawings allowing minimum distance between paving, hardscape, sidewalks, and paths.

B. Spray heads and rotors shall not exceed the maximum head and row spacing specified on the drawings or staked in the field by the architect. In no case may spray heads or rotors be installed at a distance between heads that exceeds the manufacturer's recommended distance.

C. Angled nipples on swing joints below spray heads and rotors shall not exceed 45° nor be less than 10°.

D. After installation adjust nozzle sizes, arcs and radius of throw to allow head to head uniform distribution. Adjust all spray heads and rotors to correct height above sod as detailed. Adjust all shrub nozzles on risers and rotors on riser's perpendicular to finish grade and as specified on the drawings. No over spray will be allowed on paving, hardscape, sidewalks, and paths.

E. Adjust adjacent plant material so that it does not interfere with uniform distribution of each spray head or rotor.

F. Architect may request nozzle changes and/or adjustments without additional cost to the owner.

3.09 ELECTRICAL WIRE

A. Low Voltage Wiring:

1. Bury control wiring in same trench as pressure supply line as specified.

2. Bundle all 24 volt wires at 20' intervals with electrical tape.

3. Provide expansion loops at every pressure supply line angle fitting and at 250' length intervals along routing. Form expansion loop by wrapping wire a minimum of 10 times around a 3/4" pipe and withdrawing pipe as specified on the drawings.

4. Limit splicing of electrical wiring. Provide each splice made at intervals or in electric control valve and drip valve assembly valve boxes with 3M DBY Direct Bury Splice Kits.

5. Wire splices occurring at intervals outside electric control valve boxes shall be installed in a separate valve box.

6. Provide (1) one electrical control wire for every electric control valve. Piggy backing like zones on the same electrical control wire is not allowed.

7. Install (2) two spare #14-1 electrical control wires from the automatic controller unit pedestal to the last electric control valve on each leg of pressure supply line. Locate the spare wires in their own valve box as specified on the drawings. In addition to these spare wires, check the drawings for any additional wires that may be required and locate them in the same valve box as the spare wires.

3.10 QUALITY CONTROL

A. Preconstruction Meeting: The contractor is responsible for contacting the architect prior to beginning construction and/or ordering materials to establish a meeting to review and discuss project objectives, concerns and to review the construction documents to insure a complete understanding of required installation procedures.

B. General Observation: The architect will visit the construction site at interim times during the construction process to access construction progress regarding installation of irrigation equipment to be in compliance with the drawings, details, specifications and site conditions.

The architect will prepare a site report after each visit noting progress of installation, verbal communication with the contractor and identifying any field adjustments necessary which require modifications to the designed irrigation system. A copy of this site report will be delivered to both the owner and the contractor. The contractor is responsible to immediately address each item on the site report before proceeding with further construction.

C. Pressure Testing the Pressure Supply Line: After backfilling, flushing, and prior to the installation of each electric control valve, isolation ball valve and quick coupling valve the irrigation system shall be pressure tested.

1. Pressure testing shall be performed in the presence of the architect and owner or owner's representative utilizing the following procedure:

   a. Pressurize the irrigation system to 40 psi greater than the designated static pressure or 150 psi whichever is greater for a period of no less than 2 hours. The pressure gauge used for the pressure test shall not exceed readings greater than 300psi. Pressure pump and other equipment necessary for the test shall be furnished by the contractor.
   b. Test is acceptable if no leakage occurs within the system for the duration of the testing period.
   c. If leaks occur, repair said leaks and begin pressure test again. Repeat this operation until no leaks occur in the irrigation system.
   d. Before requesting a walk through for substantial completion, the entire irrigation system shall remain under pressure for a period of no less than 48 hours.

2. The contractor is responsible for notifying the architect one day in advance of the pressure test.

D. Flushing: Center load all piping prior to flushing. After all new irrigation piping and risers are in place and connected and all necessary diversion work has been completed and prior to the installation of sprinkler heads, rotors and quick coupling valves, thoroughly flush piping system under full head of pressure. After the furthermost riser from the point of connection begins to flush, continue flushing for a duration of five minutes. After the system is thoroughly flushed, cap all risers.

E. Walk Through For Substantial Completion:

1. Before requesting a walk through for substantial completion the following requirements must be entirely satisfied:

   a. The entire irrigation system is completely installed, flushed and satisfactorily pressure tested. If the contractor failed to notify the architect for the pressure test and flushing procedures stated above than the contractor assumes full responsibility for any design modifications directed by the architect during the walk through for substantial completion regarding pressure and flushing issues.
   b. All valve boxes have been branded.
   c. All automatic controllers are fully operable and communication has been certified in writing and checked at central control system by the central control system manufacturer on their letter head.

d. Record as-built drawings have been submitted to the architect for review as to completeness.
e. (4) Four Services manuals have been delivered to the owner or owner's representative.

2. Once the above requirements have been met a walk through for substantial completion may be requested. The following procedures will be used during the walk through:

   a. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.
   b. All valve box lids shall be removed from valve boxes and placed face up adjacent to the valve box prior to beginning the walk through.
   c. The walk through will be divided into (2) two sections and proceed as follows:

      1 Visual Walk Through: This will consist of walking through the entire irrigation system and examining all components of the system without turning on zones. A punch list will be established of deficiencies in the construction and workmanship of the irrigation system as compared to the construction drawings, details, and specifications.

      2 Operational Walk Through: This will consist of walking through the entire irrigation system observing each zone in a fully operable condition. Valves must be activated from the automatic controller unit (Manual bleeding of individual electric control valves will not be acceptable). A punch list will be established of deficiencies in the operation of each zone in the irrigation system evaluating but not limited to head spacing, row spacing, nozzle sizing, correct radius of throw, correct stationing, as compared to the construction drawings, details, and specifications.

      3 Once the Walk Through for Substantial Completion has been completed the architect will provide a copy of all punch list items to the owner for review and distribution to the contractor. It is the contractor's responsibility to repair, replace, and adjust all items on the punch prior to requesting a final walk through.

F. Final Walk Through:

1. Before commencement of a final walk through is requested, the following requirements must be entirely satisfied:

   a. Each item on the walk through for substantial completion has been thoroughly addressed and resolved by the contractor.
   b. All final record as-built drawings and controller charts have been produced by the architect for review by the architect and contractor at the final walk through.

2. Once the above requirements have been met a final walk through may be requested. The following procedures will be used:

   a. Contractor must have (2) two personnel available with radio communication for the entire length of the walk through.

b. Only those valve box lids shall be removed from valve boxes as indicated on the walk through for substantial completion punch list. The valve box lids shall be placed faced up adjacent to the valve box prior to beginning the final walk through.
c. The final walk through will be divided into (2) two sections and proceed as follows:

1 Visual Walk Through: This will consist of walking through the punch list items created at the time of the walk through for substantial completion, examining all components of the system without turning on zones. Any remaining deficiencies in the construction and workmanship of the irrigation system as compared to the punch list generated at the time of the walk through for substantial completion, construction drawings, details and specifications will be noted.

2 Operational Walk Through: This will consist of walking through the punch list items created at the time of the walk through for substantial completion and observing each zone in a fully operable condition. Valves must be activated from the automatic controller unit (Manual bleeding of individual electric control valves will not be acceptable). Any remaining deficiencies in the operation of each zone in the irrigation system including but not limited to head spacing, row spacing, nozzle sizing, correct radius of throw, correct stationing as compared to the punch list generated at the time of the walk through for substantial completion construction drawings, details, and specifications.

3 Once the Final Walk Through is completed and all items created on the final punch list have been addressed the maintenance period may begin. Any additional walk throughs required due to contractors' inability to address all issues on the punch lists described above will be provided at the contractor's expense.

3.11 MAINTENANCE PERIOD

A. The Maintenance Period shall be for ninety (90) days (3 @ 30 Days) after notification from the architect of a successful final walk through and will begin once all items on the final walk through punch list have been satisfactorily addressed by a written statement indicating such from the architect to the owner.

1. The contractor is responsible for obtaining and following any maintenance manuals created specifically for the project from the owner at the beginning of the maintenance period.

2. At the end of the maintenance period and prior to turning the project over to the owner, the contractor shall deliver the following to the owner:

a. Five (5) pop-up spray heads with nozzles of each type used, for every 100 pop-up spray heads installed on the project.

b. Five (5) rotor heads with nozzles of each type used, for every 100 rotors installed on the project.

3. Once the contractor has fulfilled all maintenance agreement obligations an has provided the above items to the owner, the maintenance period will end see section 320533 Landscape Maintenance, for maintenance responsibilities.

Method of Payment:

A. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved in accordance with the contract documents shall be included in the unit price bid, per each, for the following Bid Items and no additional compensation will be allowed therefor:
   - 1812-SAM-PRS POP-UP SPRAY HEAD W/ SWG JNT/CHK VLV
   - PGP ULTRA POP-UP ROTOR W/ SWG JNT/CHK VLV
   - 3" NIBCO F-619-RW GATE VALVE & SCH 80 FLANGES
   - ELECTRIC CONTROL VALVE ASSEMBLY, BALL VALVE & FITTINGS
   - QUICK COUPLING VALVE
   - QUICK COUPLING VALVE KEYS / HOSE SWIVELS
   - GREEN PLASTIC STANDARD 10" ROUND VALVE BOX W/ SUMP/FILTER FAB
   - GREEN PLASTIC STANDARD RECTILINEAR VALVE BOX W/ SUMP/FILTER FAB

B. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved in accordance with the contract documents shall be included in the unit price bid, per linear foot, for the following Bid Items and no additional compensation will be allowed therefor:
   - NON- PRESSURE LATERAL LINE- SCH 40 - 3/4"
   - NON- PRESSURE LATERAL LINE- SCH 40 - 1"
   - NON- PRESSURE LATERAL LINE- SCH 40 - 1 1/4"
   - NON- PRESSURE LATERAL LINE- SCH 40 - 1 1/2"
   - NON- PRESSURE LATERAL LINE- SCH 40 - 2"
   - PRESSURE SUPPLY LINE - CL 315 BE
   - 14 GAUGE DIRECT BURIAL WIRE

C. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing all labor, materials, tools, equipments, incidentals and for doing all the work involved in accordance with the contract documents shall be included in the unit price bid, per lump sum, for the following Bid Items and no additional compensation will be allowed therefor:
   - MISCELLANEOUS FITTINGS LATERALS

SIGNAL AND LIGHTING:

A. General

Furnishing and installing traffic signal and highway lighting systems, and payment shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems", of the latest edition Standard Specifications, amendments to the Standard Specifications, and these Special Provisions.

B. Start of Work

Location where signalization and highway lighting work is to be performed:

	Location	Area
1.	Magnolia Avenue & Neece Street	Corona

C. County Furnished Equipment

County furnished equipment shall conform to the provisions in Section 6-1.02, "State Furnished Materials", of the Standard Specifications and these Special Provisions.

The County of Riverside will furnish the following equipment and materials to the Contractor for installation:

1. Signal and Lighting Standards and Anchor Bolts
2. 10' Galvanized Steel IISNS Mast Arms

The Contractor shall pick up County furnished equipment and materials from the following location(s), or as directed by the Engineer, and transport them to the project site(s):

County Maintenance District Yard
19355 Ontario Avenue
Corona, CA 92881

Any County furnished equipment that is damaged after the Contractor has taken possession of the items shall be repaired to the satisfaction of the Engineer. If the damaged equipment is considered irreparable, it shall be replaced meeting the requirements stated in the Standard Specifications and these special provisions at the Contractor's cost.

D. Equipment Orders

The Contractor shall furnish all equipment and materials specified in plans and these special provisions that are not furnished by the County. All equipment shall be new and purchased by the Contractor for this project only.

The Contractor shall furnish the Engineer written statements from vendors stating that they have accepted the order for the said equipment within twenty-one (21) calendar days of the date that the County of Riverside Board of Supervisors awarded this contract. Delay in equipment delivering shall not be considered as justification for the suspension of the construction contract.

In addition to the liquidated damages set forth in Section "Liquidated Damages" of these contract documents, the Contractor shall pay to the County of Riverside the sum of $500 same as project LD per day for each and every calendar day delay in receiving all of the below listed equipment, onto the job site or the contractors storage facility, and available for installation, within sixty (60) calendar days if standards/ posts, anchor bolts and IISNS mast arms were furnished by the County; otherwise, one hundred (100) calendar days of the contract award:

1. Traffic Signal Controller Assemblies
2. Service Equipment Enclosures
3. LED Modules
4. IISNS (Street Name Signs)

E. Equipment List and Drawings

Equipment list and drawings shall conform to the provisions in Section 86-1.04, "Equipment List and Drawings", of the Standard Specifications and these Special Provisions.

The Contractor shall furnish four complete cabinet wiring diagrams for each furnished controller assembly, battery backup system, video detection system, and emergency vehicle preemption system. The cabinet wiring diagram shall include an approximately 6 inches x 8 inches or larger schematic drawing of the project intersection (preferably on an 8 ½" x 11" sheet of paper), which shall include the following information, at a minimum:

1. North arrow
2. Street names
3. Pavement delineation and markings
4. Signal poles
5. Traffic signal heads with phase designations
6. Pedestrian signal heads with phase designations
7. Loop detectors with input file designations

F. Warranties, Guaranties, Instruction Sheets, and Manuals

Warranties, guaranties and instruction sheets shall conform to the provisions in Section 86-1.05, "Warranties, Guaranties and Instruction Sheets", of the Standard Specifications and these Special Provisions.

The LED modules supplied shall have five (5) years of manufacturer warranty.

The Battery Backup System (BBS) manufacturers shall provide a five (5) year warranty. The first three (3) years shall be termed the "Advanced Replacement Program". Under this program, the manufacturer will send out a replacement within two business days of the call notifying them of an issue. The replacement unit may be either a new unit or a re-manufactured unit that is up to the latest revision. The last two years of the warranty will be factory-repair warranty for parts and labor on the BBS.

The Video Detection System shall have three (3) years of manufacturer warranty. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

The contractor shall furnish the Engineer with the manufacturer's standard written warranty pertaining to defects in materials and workmanship for all equipment furnished by the Contractor.

The Contractor shall furnish two sets of user, operation, and maintenance manuals, written in English, on all equipments and components furnished for the signal and lighting systems.

G. Blank

H. Foundations

Foundations shall conform to the provisions in Section 51, "Concrete Structures", and Section 86-2.03, "Foundations", of the Standard Specifications and these Special Provisions.

Portland cement concrete shall conform to Section 90-10, "Minor Concrete", of the Standard Specifications and shall be Class 3 except pole foundations shall be Class 2.

The Contractor shall construct the controller cabinet foundation per Standard Plans.

All foundation concrete shall be vibrated to eliminate air pockets.

I. Standards, Steel Pedestals and Posts

Standards, steel pedestals, and posts shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals and Posts", of the Standard Specifications and these Special Provisions.

Poles installed at the near-right approach of each intersection shall be banded for the emergency installation of stop signs. Banding shall conform to the strap and saddle method per Standard Plan RS4.

Type 1A standards shall be spun aluminum unless shown otherwise on the plans.

Signal mast arms shall be installed in accordance with the "Signal Arm Connection Details" of the Standard Plans unless specified otherwise on the plans.

Internally Illuminated Street name sign (IISNS) mast arm shall be 10 foot long galvanized steel mast arm with four (4) mounting taps constructed to prevent deformation or failure when subjected to 100 mph wind loads. IISNS mast arm shall extend from the shaft of the pole above and parallel to the signal mast arm in accordance with County Standard No. 1200. Two set-bolt /set-screw shall be used to assure the mast arm will not change position after it is installed and aligned.

If required by the serving electric utility, and confirmed by the Engineer, State Certified Electric Workers shall be utilized for the installation of standards, steel pedestals, and posts in accordance with State of California High Voltage Safety Orders.

J. Conduits

Conduit shall conform to the provisions in Section 86-2.05, "Conduit", of the Standard Specifications and these Special Provisions.

Conduits shall be Type 3, Schedule 80 Polyvinyl Chloride (PVC) conforming to requirements in UL Publication 651 for Rigid Non-Metallic Conduit, for underground installation only.

Conduit depth shall not exceed 60 inches below finish grade.

Conduit size shall be 2 inches minimum unless otherwise specified on the plans or in the Special Provisions. New conduit shall not pass through foundations or standards.

All conduit bends shall be factory bends. Conduit bend radius for signal interconnect conduits shall be 3 feet minimum.

A pull rope and a bare #12 AWG wire shall be installed in conduits intended for future use.

Bell bushings are required for all conduit ends. After conductors have been installed, the ends of conduits terminating in pull boxes and controller cabinets shall be sealed with sealing compound approved by the Engineer.

Trenching Installation

The Contractor may request permission, on a case by case basis, to install conduit by trenching where conduit cannot be installed by jacking or drilling as provided in Section 86-2.05C, "Installation", of the Standard Specifications. Jacking/Drilling shall be attempted a minimum of three times prior to requesting trenching installation.

If ordered by the Engineer, all pavements shall be cut to a depth of 3 inches with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter surface outside the removal area.

Trench shall be 2 inches wider than the outside diameter of the conduit being installed however not exceeding 6 inches in total width. Conduit depth shall be at a minimum of 30 inches below finished grade, with a minimum of 26 inches cover over the conduit.

The conduit shall be placed in the bottom of the trench and the trench shall be backfilled with two sack slurry to finish grade. Prior to final paving, the slurry backfill shall be excavated to a depth of 0.30 feet below the final pavement surface.

If so directed by the Engineer, the two sack slurry backfill shall be installed to a depth of 0.30 feet below the final pavement surface. The slurry shall be allowed to cure a minimum of two days prior to final paving with a commercial Type A asphalt concrete.

Prior to paving, the contractor shall grind the existing pavement a minimum of 0.10 feet. deep at a width of 3 feet minimum, centered along the full length of the trench.

K. Pull Boxes

Pull boxes shall conform to the provisions in Section 86-2.06, "Pull Boxes", of the Standard Specifications and these Special Provisions.

Traffic pull boxes shall conform to the provisions in Section 86-2.07, "Traffic Pull Boxes", of the Standard Specifications and these Special Provisions.

Pull boxes shall have a "Fibrelyte" cover and bolt down design. Cover shall have a non-skid surface.

Pull box covers shall be marked in accordance with Standard Plans ES-8. Pull box covers shall not be marked "Caltrans" except for projects on State of California right of way.

Pull boxes shall be placed with their tops flush with surrounding finish grade or as directed by the Engineer.

Pull boxes shall be installed behind the curb or as shown on the plans and shall be spaced at no more than 500 feet intervals. The exact locations shall be determined by the Engineer.

Pull boxes installed in unimproved areas, locations not protected by concrete curb and gutter, shall be traffic bearing pull box and marked with Type L markers.

L. Conductors and Wiring

Conductors shall conform to the provisions in Section 86-2.08, "Conductors", of the Standard Specifications and these Special Provisions.

Multiple circuit conductors shall conform to the provisions in Section 86-2.08B, "Multiple Circuit Conductors", of the Standard Specifications and these Special Provisions.

Signal cable conductors shall conform to the provisions in Section 86-2.08D, "Signal Cable", of the Standard Specifications and these Special Provisions.

Wiring shall conform to the provisions in Section 86-2.09, "Wiring", of the Standard Specifications and these Special Provisions.

Signal cable shall be installed continuously without splicing from the controller cabinet to each traffic signal pole. Traffic signal conductors, multiple circuit conductors, and signal cable conductors shall not be spliced unless shown otherwise on the plans.

Where splice is required, Type C or Type T splice shall be used and insulated with "Method B" as shown in the Standard Plans, ES-13A.

Where splice is required, black liquid electrical tape shall be used to provide a watertight electrical insulating coating with "Method B" as shown in the Standard Plans, ES-13A.

Minimum luminaire wiring shall be No. 10 AWG, including wiring within poles and mast arms.

Specific cabling and wiring requirements for various systems or components shall be in accordance with the Special Provisions entitled to each herein.

M. Signal Interconnect Cable

Signal Interconnect Cable (SIC) shall conform to the provisions in Section 86-2.08E, "Signal Interconnect Cable" of the Standard Specifications and these special provisions.

SIC shall be 6-pair, No. 20 AWG cable unless specified otherwise.

The Contractor shall submit a sample of the proposed SIC to the Engineer for approval prior to installation. The Contractor shall pull SIC, without splices, in new and existing conduits, and pull boxes between controller cabinets. The Contractor shall provide a minimum of 6 feet of SIC slack in each pull box, 20 feet of SIC slack inside the SIC PB adjacent to the controller cabinet, and a minimum of 3 feet of SIC slack inside the controller cabinet.

The Contractor shall solder each end of SIC conductor to a terminal lug using the hot iron method and connect them to the terminal block inside the controller cabinet in the following order:

Terminal Block Number	SIC Conductor Color Coding (County)		SIC Conductor Color Coding (Caltrans)	
1	White	(White / Blue pair)	White	(Black / White pair)
2	Blue	(White / Blue pair)	Black	(Black / White pair)
3	White	(White / Orange pair)	Red	(Black / Red pair)
4	Orange	(White / Orange pair)	Black	(Black / Red pair)
5	White	(White / Green pair)	Brown	(Black / Brown pair)
6	Green	(White / Green pair)	Black	(Black / Brown pair)
7	White	(White / Brown pair)	Blue	(Black / Blue pair)

8	Brown	(White / Brown pair)	Black	(Black / Blue pair)
9	White	(White / Slate pair)	Green	(Black / Green pair)
10	Slate	(White / Slate pair)	Black	(Black / Green pair)
11	Red	(Red / Blue pair)	Yellow	(Black / Yellow pair)
12	Blue	(Red / Blue pair)	Black	(Black / Yellow pair)

N. Bonding and Grounding

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding", of the Standard Specifications and these Special Provisions.

Grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in the adjacent pull box.

Grounding jumper shall be visible after cap has been poured on foundation.

For equipment grounding jumper a No. 8 bare copper wire shall run continuously in all circuits with the exception of conduits that contain only signal interconnect cable and/or loop detector cable and then a No. 12 bare copper wire shall run continuously in the circuit.

O. Service

Service shall conform to the provisions in Section 86-2.11, "Service", of the Standard Specifications and these Special Provisions.

Service equipment enclosure shall be Type III-CF, as shown on the Standard Plans, ES-2F, and shall conform to the following:

1. 120 / 240 volt, 2 meter service unless otherwise shown on the plans.
2. Circuit breakers required:
    - 2 - 100 Amp 2 pole (signal main and lighting main)
    - 1 - 30 Amp 1 pole (luminaires)
    - 1 - 20 Amp 1 pole (illuminated street name signs)
    - 1 - 30 Amp 1 pole (signals)
    - 1 - 15 Amp 1 pole (luminaire photoelectric control)
    - 1 - 15 Amp 1 pole (street name sign photoelectric control)
    - 1 - 15 Amp 1 pole (for video detection cameras)
    - 1 - 20 Amp 1 pole (for each beacon, if applicable)
3. Cabinet shall be fabricated from aluminum sheeting and finish shall be anodic coating in accordance with Section 86-3.04A "Cabinet Construction".
4. Circuit breakers shall be marked with identifying labels for each circuit breaker.

Type V photoelectric control contactor and test switch assembly shall be installed in the service cabinet. Photoelectric control contactors shall be as follows:

1. Luminaires - 60 Amp electrically held contact
2. Street name signs - 30 Amp electrically held contact

A GFCI outlet shall be installed on the interior side of service cabinet door and an eight (8) position terminal strip for termination of Video Cameras.

Photo Electric Control assembly shall be installed within the circuit breaker compartment of the service equipment enclosure, and accessible to the County after installation of electrical meters.

Direct burial service conductors shall not be approved.

The Contractor shall be responsible for contacting the power company, arranging and providing for the electrical service connection, and ensuring that adequate notice is provided to the serving electric company in advance of need. *The County of Riverside will pay all electric company fees required.*

The service equipment enclosure shall be separated from the controller by a minimum of 15 feet, and separated from all utility poles by a minimum of 10 feet, unless otherwise directed by the Engineer.

Service Identification

The service equipment enclosure shall provide the address of the intersection as shown on the approved plan. Address location shall be on the front upper panel. The meters shall also be labeled "LS3" (lighting meter) and "TC1" (signal meter) by lettering applied to the exterior of the enclosure in accordance with these special provisions, or as directed by the Engineer.

Lettering markings shall be black in color, with a two-inch minimum size in block letter form. Markings shall be applied to a brushed aluminum, stainless steel, or other non-corroding metallic plate, as approved by the Engineer. Plate shall be white in color. All paint and lettering markings shall conform in all respects to Federal Specification TT-E-489, latest revision, Class A, Air Drying. Said plate shall be affixed in a permanent manner by riveting or with stainless steel bolts and nuts. Bolts shall be peened after tightening. All materials used for affixing address plate shall be non-corroding. All alternate materials and methods must be approved by the Engineer prior to implementation.

P. Testing

Testing and Field Testing shall conform to the provisions in Section 86-2.14, "Testing", of the Standard Specifications and these Special Provisions.

Specific testing requirements for various systems and components shall be in accordance with the Special Provisions entitled to each herein.

The complete controller assembly and Battery Backup System shall be delivered to the following location or location as directed by the Engineer for testing:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504
Telephone (951) 955-6894

The Contractor shall allow a minimum of 15 working days for operational testing and adjustment. An additional 15 working days period shall be allowed for retesting should the equipment fail.

The conflict monitor unit shall be tested in the field before signal turn on.

Q. Controller Assembly

Controller assembly shall conform to the provisions in Section 86-3, "Controller Assemblies", of the Standard Specifications and these Special Provisions.

Controller assembly shall be Model 170 controller assembly consisting of the additional features:

1. Model 332A controller cabinet:
   - Anodic coating for both interior and exterior finish
   - A Corbin No. 2 door lock

2. An interior fluorescent lamp with an on/off switch and a door switch that will automatically turn on the lamp when cabinet door is opened.

3. A interior thermostatically controlled, 24 volt electric fan with ball or roller bearing that has capacity rating of 100 cubic feet per minute minimum.

4. Rack mounted push buttons for manual actuation of the following:
   - 8 vehicular phases,
   - 4 pedestrian phases,
   - 4 Emergency Vehicle Preemption (EVP) phases; and,
   - 2 Railroad preemption phases.

5. Model 170E local controller unit:
   - Dual Asynchronous Communications Interface Adaptor (ACIA) capability. ACIA shall be integral to the controller unit. Horizontal printed circuit board controllers will not be accepted.
   - A Model 412F Program Module with 32K 27256 EPROM, 16K RAM, and 8K zero power RAM (memory method two, memory select four).
   - Bitrans Systems, Inc. 233RV2.5 or latest version firmware, test program and a loopback cable.

6. If required per plan or special provisions, a Model 170E field master controller unit mounted above the local controller unit with the following features:
   - Same as 170E local controller except the firmware shall be Bitrans Systems, Inc. No. 245 FM.

7. A pullout shelf/drawer assembly made of aluminum with telescoping drawer guides for full extension installed below the local controller unit. The top shall have a non-slip plastic laminate permanently attached. The non-slip laminate shall not be attached with silicon adhesive.

8. Load Switches:

   Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amp triac). Pin 11 on all load switch sockets shall be wired to AC. Input and output indicators shall be installed on all load switches.

   All load switch sockets shall have individual wire terminals. Printed circuit boards will not be allowed.

9. Flasher units:

   Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amps triac).

10. Conflict monitor shall be EDI Model 2010ECL or equivalent with a red monitor assembly circuit board and capable of monitoring green, amber and red indications.

11. Loop detector sensor unit shall be Model 222:
    - Detector unit shall have delay timers adjustable from zero to a minimum of 30 seconds and extension timers adjustable from zero to a minimum of 7 seconds.
    - Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.

12. Power Distribution Assembly shall be Model PDA-2.

13. A twelve-position interconnect terminal strip.

The contractor shall furnish the following spare equipments / components:

Description	Model	Quantity
Cabinet	332	0
Controller Unit (local)	170E	0
Controller Unit (master)	170E	0
Switch Pack	200	0
Flasher Unit	204	0
Conflict Monitor Unit	2010	0
2-Channel Loop Detector	222	0
2-Channel DC Isolator	242	0
Modem Module	400	0
Program Module	412F	0

Spare equipments or components shall be delivered to the following location or as directed by the Engineer:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504
Telephone (951) 955-6894

The controller unit and controller cabinet shall be manufactured and furnished by the same manufacturer to form a complete functional controller system capable of providing the traffic signal operation specified. All traffic control equipment to be furnished shall be currently acceptable to Caltrans laboratory in Sacramento, CA, and listed on the Department of Transportation Qualified Products List.

The controller unit and controller cabinet manufacturer or supplier shall perform operational and functional testing of the supplied controller assembly and additional supplied equipment in accordance with the State of California Department of Transportation's Transportation Electrical Equipment specifications (TEES), and a Certificate of Compliance shall be issued for each successfully tested controller assembly and additional supplied equipment.

The Contractor shall modify traffic signal controller assembly if necessary and provide any necessary auxiliary equipment and cabling to achieve the intended traffic signal operation as shown on the plans. The Contractor shall make all field wiring connections to the terminal blocks inside the controller cabinet.

The Contractor shall have a technician who is qualified to work on the controller assembly from the controller manufacturer or their representative to install the program module and program the signal controller in accordance with County provided signal timing sheets, and to be present when the equipment is turned on.

R. Vehicle Signal Assemblies

Vehicle signal assemblies and auxiliary equipment shall conform to the provisions in Section 86-4.01 "Vehicle Signal Faces", Section 86-4.01B (1), "Metal Signal Sections", Section 86-4.01D "Visors", Section 86-4.04, "Backplates", and Section 86-4.08 "Signal Mounting Assemblies" of the Standard Specifications and these Special Provisions.

Programmed visibility traffic signal heads shall conform to the provisions in Section 86-4.05, "Programmed Visibility Vehicle Signal Faces", of the Standard Specifications and these Special Provisions.

Signal section housing, backplates and visors shall be metal type. Backplates shall be louvered. Visors shall be the "tunnel" type, unless otherwise specified. Top opening of signal heads shall be sealed with neoprene gaskets.

Signal Mounting Assemblies, Backplates, Signal Sections and Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

All vehicle signal indications shall be 12-inch diameter Light Emitting Diode (LED) modules in accordance with the following:

1. All circular LED modules shall comply with Institute of Transportation Engineers (ITE) Vehicle Traffic Control Signal Heads (VETCH) - LED Circular Supplement, Adopted June 27, 2005.

2. All arrow LED modules shall comply with ITE VETCH - LED Vehicle Arrow Traffic Signal Supplement, Adopted July 1, 2007.

3. All modules shall fit in existing signal housings without the use of special tools.

4. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:

5. Luminous intensity requirements of the VTCSH must be met across the entire temperature range from -40°C to + 74°C, (-40°F to +165°F).

6. The following cable colors shall be used for the AC power leads on all modules: white for common, red for the red module line, yellow for the yellow module line, and brown for the green module line.

7. The AC power leads shall exit the module via a rubber grommet strain relief, and shall be terminated with quick connect terminals with spade tab adapters. The leads shall be separate at the point at which they leave the module.

8. All external wiring used in the module shall be anti-capillary type cable to prevent the wicking of moisture to the interior of the module.

9. All power supplies shall be coated for additional moisture and thermal protection.

10. The module shall have an incandescent, non-pixilated appearance when illuminated.

11. Nominal power usage is measured at 25°C, 120 VAC. For the 8 inch modules, it shall not exceed 8 watts for Red, 8 watts for Yellow, and 8 watts for Green modules. For the 12 inch modules, it shall not exceed 10 watts for Red, 19 watts for Yellow, and 11 watts for Green modules. For the arrows, it shall not exceed 6 watts for any color.

12. All modules shall use LEDs that have been manufactured with materials that have industry acceptance as being suitable for uses in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

13. The external lens shall have a smooth outer surface to prevent the buildup of dirt and dust and shall be designed to minimize the potential for sun phantom signals.

14. The circular LED module lens material must be tinted. A tinted transparent film or coating is not permitted.

15. A module shall be sealed against dust and moisture intrusion, including rain and blowing rain per Mil-Std-810F Method 506.4, Procedure 1.

16. Arrow modules shall be clearly marked with the phrase "Suitable for mounting in any orientation".

17. Modules shall be repaired or replaced if the module fails to function as intended due to workmanship or material defects within warranty period.

18. Modules shall be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.

19. The Manufacturer shall clearly disclose the country in which the factory of module origin is located, the name of the company or organization that owns the factory including all of its parent companies and/or organizations, and their respective country of corporate citizenship.

S. Pedestrian Signal Assemblies

Pedestrian signals shall conform to the provisions in Section 86-4.06, "Pedestrian Signal Faces", of the Standard Specifications and these Special Provisions.

Pedestrian signals shall be equipped with countdown pedestrian module unless otherwise indicated on the plans.

Pedestrian signals shall be provided with a polycarbonate egg crate or Z-crate screen.

Pedestrian Signal Mounting Assemblies and Pedestrian Signal Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

Pedestrian signal indications shall utilize light emitting diode signal modules in accordance to the following:

1. It shall comply with ITE specification: Pedestrian Traffic Control Signal Indications (PTCSI) Part 2: LED Pedestrian Traffic Signal Modules, Adopted March 19, 2004.

2. All modules shall fit in existing signal housings without the use of special tools.

3. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:

The PTCSI does not cover the countdown features of countdown pedestrian signal LED modules. The countdown features shall incorporate the following:

1. Fully compliant to NEMA TS-1, NEMA TS-2, Type 170, and Type 2070 traffic signal controller specifications.

2. The countdown portion of the pedestrian (ped) module shall have a high off-state input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signal. The input impedance of the countdown circuitry shall maintain a voltage reading above 25 VAC to the conflict monitor for up to four units connected on the same channel.

3. The countdown drive circuitry shall not be damaged when subjected to defective load switches providing a half wave signal input.

4. The countdown ped module shall have an internal conflict monitor circuit preventing any possible conflicts between the Hand, Person, and Countdown signal indications. It shall be impossible for the display to countdown during a solid Hand indication.

5. Per CA MUTCD Manual 2006 edition, section 4E.07: "If used, the countdown displays shall display the number of seconds remaining until the termination of the pedestrian change interval. Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase".

6. The countdown ped module shall have a micro-processor capable of recording its own time when connected to a traffic controller. It shall be capable of displaying the digits 0 through 99.

7. When power is first applied or restored to the ped module, the countdown display will be blank during the initial cycle while it records the countdown time using the walk (person) and don't walk (flashing hand) signal indications. The normal hand and person icons shall be displayed during this cycle.

8. The countdown ped module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

9. The countdown ped module shall register the time for the walk and clearance intervals individually and shall begin counting down at the beginning of the pedestrian clearance interval. The digits shall not flash during the countdown.

10. When the flashing hand becomes solid, the ped module shall display 0 for one second and then blank-out. The display shall remain dark until the beginning of the next countdown.

11. In the event of a pre-emption, the countdown ped module shall skip the remaining time, reach 0 at the same time as the flashing Hand becomes solid, and remain dark until the next cycle.

12. In the cycle following preemption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indications and always reach 0 at the same time as the flashing Hand becomes solid.

13. If a pedestrian button is activated during the clearance interval, some controllers can change to a second walk cycle without a don't walk phase. The countdown module shall also be capable of consecutive walk cycles. The display digits will be blank during the second walk and countdown properly during the second flashing hand.

14. The countdown ped module shall not display an erroneous or conflicting time when subjected to defective load switches. Should there be a short power interruption during the ped clearance interval or if voltage is applied to both the hand and person simultaneously the display will go to "0" then blank.

15. The countdown ped module shall have accessible dip-switches for the user selectable options. The unit shall have a removable plug on the rear allowing easy access to control the user selectable functions. The countdown is disabled when all the switches are in the "ON" position. The unit shall be shipped from the factory with the specified default setting.

16. Switch 1 – Blank Cycle Following a Timing Change – Factory default is "OFF". When this switch is "OFF" the unit will allow the time to be displayed normally during the cycle following a truncated timing such as a preemption call. The countdown shall be capable of displaying the correct time and not affected by the previous reduced cycle. The unit will require 2 consecutive reduced cycles of identical value to validate and record a new time setting. If the timing is extended, the unit will record it immediately. In the "ON" position when a change in timing is detected the unit will blank out during the following cycle while the new cycle time is measured and recorded if confirmed.

17. Switch 2 – Disables Auto-sync Mode- Factory default setting is "OFF". When this switch is in the "OFF" position the auto-sync is enabled. When the clearance interval begins and the initial flash of the hand is not in sync with the walk signal the unit will measure the offset and reduce the duration of the first second by the value of the offset. This will ensure the countdown reached zero at the same time as the flashing hand becomes solid. In the "ON" position there is no time correction when the flashing hand is in offset with the walk signal. The duration of the first second will not be reduced and the hand will appear solid shortly before the countdown reaches zero.

18. Switch 3 – Countdown Starts with Flashing Hand Signal – Factory default setting is "ON". When this switch is "ON" the countdown begins when the hand signal is turned on. With this switch "ON" and the auto-sync mode enabled a short power interruption will have no effect on the countdown display. With switch 3 in the "OFF" position the countdown begins when the walk signal is turned off. This eliminates the effect of an offset hand signal. When switch 3 is in the "OFF" position the auto-sync switch 2 has no effect on the countdown. In this mode if the power to the walk signal is interrupted, the unit will interpret this as the start of the clearance interval and will display the countdown time for 2 seconds before the operation is cancelled. The countdown will resume with the normal ending of the walk signal.

19. Switch 4 – Stores Time Value in Memory, Immediate. Restart. - Factory default setting is "OFF". When this switch is in the "OFF" position and power is removed from the unit, the time value stored in the unit is erased. The unit will need to run a dark cycle before it can display the countdown again. In the "ON" position the countdown timing is stored in memory. Following a power interruption, the unit will restart with the stored value and not remain dark during the learning cycle. If the value is different after restart, it will be recorded and displayed correctly at the following cycle.

20. Switch 5 – All LEDs "ON", Test Mode – Factory default setting is "OFF". With this switch in the "ON" position all LEDs are turned on simultaneously. With both switches 4 and 5 in the "ON" position the LED test mode will also scan the 7 individual segments of both digits.

21. The countdown shall be disabled when all switches are placed in the "ON" position.

22. Nominal power usage for Ped Modules at 25°C (77°F), 120 VAC input shall not exceed the values shown in Table 1.

Table 1 – Nominal Power of Pedestrian Signals

Size	Description	Wattage @ 25°C		
		Hand	Person	Countdown[1]
16"x18"	Side by Side Hand & Person	8	7	N/A
16"x18"	Hand & Person Overlay with Countdown	9	7	5

[1] Wattage for the countdown is measured when the digits 18 are displayed.

23. All wiring shall meet the requirements of Section 13.02 of the VTCSH standard. Secured, color coded, 600V, 18 AWG jacketed wires, 1 meter (39 in) in length, conforming to the NFPA 70, National Electrical Code, and rated for service at +105°C, shall be provided.

24. The following color scheme shall be used for the ped module's AC power leads: Orange for the upraised hand, Blue for the walking person, and White for common. The countdown portion of the LED ped module shall be internally wired to the hand and walking person power.

25. The AC power leads shall exit the ped module via a rubber grommeted strain relief, and shall be terminated with insulated female quick connect terminals with spade / tab adapters. The leads shall be separate at the point at which they leave the ped module.

26. All external wiring utilized in the ped modules shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the ped module.

27. The Hand and Person Icons shall utilize separate power supplies. On countdown products, the countdown ped module must have its own power supply but may take the incoming AC power from the hand / person AC signal lines. All power supplies shall be located inside the ped module.

28. All power supplies shall be conformally coated for additional protection.

29. Off State Voltage Decay: When the hand or person icon is switched from the On state to the Off state the terminal voltage shall decay to a value less than 10 VAC RMS in less than 100 milliseconds when driven by a maximum allowed load switch leakage current of 10 milliamps peak (7.1 milliamps AC).

30. For a minimum period of 60 months, measured at 80 to 135 VAC RMS and over the ambient temperatures of -40°C to +74°C (-40°F to +165°F), the minimum maintained luminance values for the ped modules, when measured normal to the plane of the icon surface, shall not be less than:

- Walking Person, White: 2,200 cd/m^2
- Upraised Hand, Portland Orange: 1,400 cd/m^2
- Countdown Digits, Portland Orange: 1,400 cd/m^2

31. The external lens shall have a textured outer surface to reduce glare.

32. Icons that are printed on the lens shall be on the interior surfaces in order to prevent scratching and abrasion to the icons.

33. All icons and numbers shall have a uniform incandescent non-pixilated appearance.

34. All exposed components of a ped module shall be suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance. As a minimum, selected materials shall be rated for service for a period of a minimum of 60 months in a south-facing Arizona Desert installation.

35. All LEDs used to illuminate the ped module shall use material that has industry acceptance for use in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

36. The countdown display shall consist of two 7 segment digits as shown below. All countdown display digits shall be 9 inches in height for use in all size crosswalks in compliance with MUTCD recommendations.

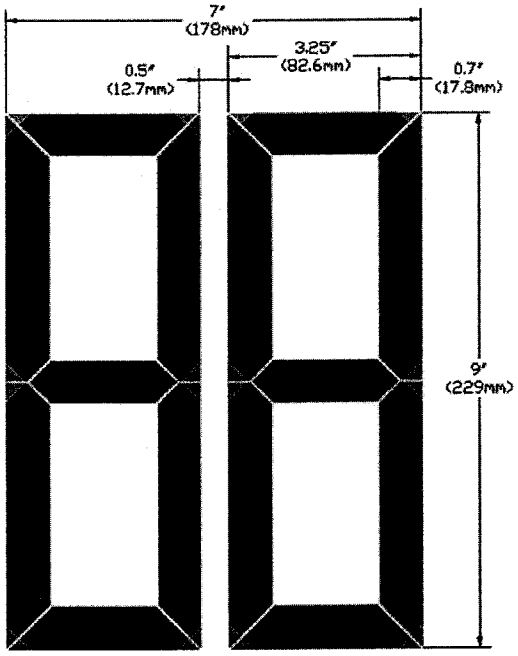


Figure 2: Countdown Display

37. Ped modules shall be repaired or replaced if the ped module fails to function as intended due to workmanship or material defects within warranty period.

38. Ped modules shall be repaired or replaced if the ped module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.

39. The manufacturer shall clearly disclose the country in which the factory of ped module origin is located, the name of the company or organization that owns the factory including all of its parent companies and organizations, and their respective country of corporate citizenship.

T. Pedestrian, Bicycle and Equestrian Push Buttons

Pedestrian, bicycle, and equestrian push buttons shall conform to the provisions in Section 86-5.02, "Pedestrian Push Buttons", of the Standard Specifications and these Special Provisions.

Push button assembly shall be Type B per Standard Plans ES-5C.

Push button housing shall be die-cast or permanent mold cast aluminum powder coated frame with stainless steel inserts and sign screws.

Push button sign shall be white powder coat base with black heat cured ink. Right and left arrow signs shall be doubled sided.

Push button shall be Polara Engineering, Inc. model BDLM2-Y, or approved equal.

Push button shall utilize solid state Piezo switch technology, pressure activated, two-tone audible, visual LED confirmation of actuation and shall be ADA compliant.

The equestrian push buttons (EPB) shall be installed at 6 feet above finish grade or as directed by the Engineer. The Engineer shall approve the EPB placement on each pole prior to installation.

U. Detectors

Detectors shall conform to the provisions in Section 86-5, "Detectors", of the Standard Specifications and these Special Provisions.

Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.

Inductive Loops

Detector loop configuration shall be Type E unless otherwise shown on the construction plan, in the Special Provisions, or as directed by the Engineer.

Limit Line detector loop configuration shall be modified Type E with diagonal saw cuts and wire winding conforming to Type D loop configuration.

Detector loop wire shall be Type 2.

Detector loop lead-in cable shall be Type B.

Detector loop curb terminations shall be Type A in accordance with Standard Plans ES-5D.

Loop sealant shall be the Hot-Melt Rubberized Asphalt sealant type, unless otherwise directed by the Engineer. Loop conductors and sealant shall be installed on the same day the loop slots are cut.

All detector loops shall be tested sequentially by the following methods:

- impedance (measured by megaohms)
- resistance (measured by ohms)
- inductance (measured in microhenries)

Video Detection

The contractor shall furnish and install video detection cameras (VDC), video detection processors (VDP), extension modules (EM), a pointing device, a drawer mounted 17 inch LCD monitor, surge suppressors, and all necessary cabling and auxiliary equipment to make the video detection systems fully functional for the intended operation. The Contractor shall furnish a spare VDC, a spare EM, and a spare VDP to the Engineer.

The video detection camera shall attach to the top of luminaire mast arm using mounting bracket provided by manufacturer, or the backside of signal mast arm using Pelco Astrobrac with 6' extension or approved equal. The Engineer shall approve the final camera placements.

The video detection systems shall be installed by supplier factory certified installers and as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

Video Detection Zones:

Placement of detection zones shall be done by using the supplied pointing device connected to the VDP to draw the detection zones on the video image from the video camera displayed on a video monitor using the menu and graphical interface built into the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters.

Detection zone setup shall not require site-specific information such as latitude, longitude, date and time to be entered into the system. No separate computer shall be required to program the detection zones.

Each detection zone shall be user definable in size and shape to suit the site and the desired vehicle detection region. A detection zone shall be approximately the width and length of one car.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

When a vehicle is detected crossing a detection zone, the corners of the detection zone shall flash on the video overlay display screen to confirm the detection of the vehicle.

Distance between the detection zone placement and the camera shall not be more than a distance of ten times the mounting height of the camera.

Functional Capabilities:

System must have a single point access to multiple rack-mounted video detection units. The access device shall provide interface capabilities to enable multiple rack-mounted video detection processors to be locally and remotely accessed from a single point via one set of user interface devices.

The video detection processor (VDP) shall process video from one or two sources. The video input to the VDP shall be in NTSC or PAL composite video format and shall be digitized and analyzed in real time. Dual video VDP's shall process images from both inputs simultaneously.

The camera shall be able to transmit the composite video signal, with minimal signal degradation, up to 1000 feet under ideal conditions.

The VDP shall have a nine-pin RS232 port that is multi-drop compatible for communications with an external computer. The VDP shall be able to accept new detector patterns from and send its detection patterns to an external computer through this RS-232 port. A Windows™ based software designed for local or remote connection for uploading and downloading data, and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The extension module (EM) shall be available to avoid the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack. The extension module shall be connected to the VDP by an 8-wire cable with modular connectors. VDP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise. The extension module shall be available in both 2 and 4 channel configurations. EM configurations shall be programmable from the VDP.

The VDP shall provide a minimum of 24 channels of vehicle presence detection/detection zones per camera through a standard detector rack edge connector and one or more extension modules.

The VDP shall store up to three different detection zone patterns within the VDP memory. The VDP's memory shall be non-volatile to prevent data loss during power outages. The VDP shall continue to operate (e.g. detect vehicles) using the existing zone configurations even when the operator is defining/modifying a zone pattern. The new zone configuration

shall not go into effect until the operator saves the configuration. Each configuration can be uniquely labeled for identification and the current configuration letter is displayed on the monitor. The selection of the detection zone pattern for current use shall be done through a local menu selection or remote computer via RS-232 port. It shall be possible to activate a detection zone pattern for a camera from VDP memory and have that detection zone pattern displayed within 1 second of activation.

The VDP shall provide dynamic zone reconfiguration (DZR) to enable normal detector operation of existing channels except the one where a zone is being added or modified during the setup process. The VDP shall output a constant call on any detection channel corresponding to a zone being modified.

The VDP shall detect vehicles in real time as they travel across each detector zone.

The VDP shall output a constant call for each enabled detector output channel if a loss of video signal occurs. The VDP shall output a constant call during the background learning period.

The VDP shall be capable of detecting a low-visibility condition automatically, such as fog, and place all defined detection zones in a constant call mode. The VDP shall automatically revert to normal detection mode when the low-visibility condition no longer exists. A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s).

Detection shall be at least 98% accurate in good weather conditions and at least 96% accurate under adverse weather conditions (rain, snow, or fog). Detection accuracy is dependent upon site geometry; camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to six detection zones shall be capable to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30 or 60 minutes.

Video Detection Processor (VDP) & Extension Module (EM) Hardware:

The VDP and EM shall be specifically designed to mount in a standard NEMA TS-1, TS-2, 2070 ATC, 170 type detector rack, using the edge connector to obtain power and provide contact closure outputs. No adapters shall be required to mount the VDP or EM in a standard detector rack. Detector rack rewiring shall not be required or shall be minimized.

The VDP and EM shall operate in a temperature range from -34°C to +74°C and a humidity range from 0% RH to 95% RH, non-condensing.

The VDP and EM shall be powered by 12 or 24 volts DC. These modules shall automatically compensate for the different input voltages.

VDP power consumption shall not exceed 300 milliamps at 24 VDC. The EM power consumption shall not exceed 120 milliamps at 24 VDC.

The VDP shall include an RS232 port for serial communications with a remote computer. The VDP RS232 port shall be multi-drop compatible. This port shall be a 9-pin "D" subminiature connector on the front of the VDP.

The VDP shall utilize flash memory technology to enable the loading of modified or enhanced software through the RS232 port without modifying the VDP hardware.

The VDP and EM shall include detector output pin out compatibility with industry standard detector racks.

The front of the VDP shall include detection indications, such as LED's, for each channel of detection that display detector outputs in real time when the system is operational.

The front of the VDP shall include one or two BNC video input connection suitable for RS170 video inputs as required. The video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection. Video must be inputted via a BNC connector on the front face of the processor. RCA type connectors/jacks for video input are not allowed. Video shall not be routed via the edge connectors of the processor.

The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices. A RCA type connector/jack for video output is not allowed.

The front panel of the VDP and EM shall have a detector test switch to allow the user to place calls on each channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.

Video Detection Camera:

The VDC used for traffic detection shall be furnished by the VDP supplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.1 lux to 10,000 lux.

The camera shall use a CCD sensing element and shall output monochrome video with resolution of not less than 380 lines horizontal.

The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with a factory adjusted manual iris. Auto-iris lenses are not allowed.

The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier. The horizontal field of view shall be adjustable from 8.1 to 45.9 degrees. A single camera configuration shall be used for all approaches in order to minimize the setup time and spares required by the user.

The camera electronics shall include Automatic Gain Control (AGC) to produce a satisfactory image at night or low light conditions.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 153 mm diameter, less than 380-mm long, and shall weigh less than 2.7 kg when the camera and lens are mounted inside the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from –34 degree C to +60 degree C and a humidity range from 0% RH to 100% RH.

The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 15 watts or less under all conditions.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module supplied by the VDP supplier. Video and power shall not be connected within the same connector.

The video signal output by the camera shall be black and white in RS170 or CCIR format.

The video signal shall be fully isolated from the camera enclosure and power cabling.

Cabling and Cable Connections:

Interface among the VDPs and EMS shall use RJ-45 interface connectors.

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281. The coax cable shall be a continuous unbroken run from the camera to the VDP. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. 75-ohm BNC plug connectors should be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the video detection system, and the manufacturer's instructions must be followed to ensure proper connection.

The power cabling shall be 16 AWG three conductor cable with a minimum outside diameter of 0.325 inch and a maximum diameter of 0.490 inch. The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras shall not acquire power from the luminaire.

All service cables shall run continuously into the service cabinet. A 1-amp Inline fuse shall be provided for each service cable and a minimum of 8-position terminal block shall be provided as directed by the Engineer inside the service cabinet.

Maintenance and Support:

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the access unit and video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on-site technical support services.

Installation or training support shall be provided by factory-authorized representative.

V. Luminaries

Luminaires shall conform to the provisions in Section 86-6, "Lighting", of the Standard Specifications and these Special Provisions.

Luminaires shall be of the cutoff type and shall be 200 or 250 Watt High Pressure Sodium Vapor as shown on the plans. The fixtures shall be constructed with flat lenses, integral ballasts, and detachable power unit assemblies. The power unit assemblies shall contain the ballast, starter board, capacitors, and a heavy-duty terminal block.

Each luminaire shall be furnished without the photoelectric unit receptacle. If the luminaire housing is provided with a hole for the receptacle, the hole shall be closed in a weatherproof manner.

Each luminaire shall have a 5-amp inline fuse installed inside the standard's hand hole.

W. Blank

X. Internally Illuminated Street Name Sign

Internally illuminated street name signs (IISNS) shall conform to the provisions in Section 86-6.065, "Internally Illuminated Street Name Signs", of the Standard Specifications and these Special Provisions.

Sign panels shall be slide-mounted or rigid mounted in a frame with white translucent diamond grade reflective legend, symbol, arrows, and border on each face, the background shall be green. FHWA Series E 10" uppercase and 7.5" lowercase fonts.

If the 8' sign panel will not accommodate a long street name using FHWA Series E 10" uppercase and 7.5" lowercase fonts, then FHWA Series E 8" and 6" lowercase fonts can be used.

The sign fixture, panels, and mounting assemblies shall be designed and constructed to prevent deformation, warp or failure when subjected to 100 mph wind loads, as set forth in the latest AASHTO publication, "Standard Specifications for Structural Supports of Highway Signs, Luminaires, and Traffic Signals", and amendments thereto. The IISNS manufacturer shall submit a certificate of compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance", with each lot of IISNSs delivered.

The IISNSs shall be attached to the 10 feet IISNS mast arm per County Standard No. 1200.

Support brackets shall be 3/8" X 1.5" or larger that can withstand 100 mph wind load.

Lighting fixture shall be LED type and conform to the following provisions:

LED Specification:

1. The LED Light System shall be an operational unit consists of LED module or modules and power supply or supplies.
2. The LED Light System shall fit within the existing 6 feet or 8 feet internally illuminated street name sign (IISNS) housing.
3. The LED Light system components shall be UL certified, damp location rated and RoHS compliant.
4. The LED Light system's power consumption shall not exceed 60W for a 6 feet sign or 80W for an 8 feet sign.
5. The LED Light system shall not require the use of an additional or external diffuser to disperse the light.
6. The LED Light system manufacturer shall have been in business supplying LED products for signage or lighting at least 12 months (references required).
7. LED Light system shall meet the minimum criteria listed in the specification. All manufacturer documentation including specification and warranty for both LED modules and power supply shall be submitted and approved by the County prior to installation.

Power Supply

1. The power supply shall be Class 2.

2. The power supply shall provide efficiency greater than 87%.
3. The manufacturer shall warrant the power supply for a minimum of 60 months.

LED Modules

1. The LED correlated color temperature shall be 4100K or higher.
2. The LED shall have a minimum of 120-degree viewing angle.
3. The LED modules shall be available in single or double sided.
4. The average life of LEDs contained in the LED Module shall be rated for 50,000 hours or more.
5. The LED modules shall produce 4100 lumens minimum to the sign face of a 6' IISNS; and 5000 lumens minimum to the sign face of an 8' IISNS.
6. The manufacturer shall warrant the LED modules for a minimum of 48 months.

Y. Photoelectric Controls

Photoelectric controls shall conform to the provisions in Section 86-6.07, "Photoelectric Controls", of the Standard Specifications and these Special Provisions.

Photoelectric controls shall be a dual Type V for luminaires and internally illuminated street name signs conforming to the County Road Improvement Standards No. 1207.

Photoelectric units shall be the delay type.

Z. Emergency Vehicle Preemption System

The Contractor shall furnish and install complete and functioning emergency vehicle preemption (EVP) system as intended per plans, the manufacturer, and these special provisions. The transmitting equipment is not included in this contract.

The EVP system shall consist of the following equipments or components:

- Optical detector for each approach, as shown on the plans
- Rack-mounted 2-channel phase selectors for 8-phase operation
- Detector cable

The Contractor shall furnish the following spare EVP equipments or components:

- One (1) rack-mounted 2-channel phase selector
- One (1) optical detector

The EVP system shall be designed to prevent simultaneous pre-emption by two or more emergency vehicles on separate approaches to the intersection.

The Engineer shall approve EVP sequence of operation prior to timing and turn-on of each respective traffic signal.

At locations where optical detectors are not to be installed, EVP cable shall be installed for future use. The following also apply:

1. EVP cable shall be installed, without splices, between the controller cabinet and each mast arm traffic signal pole.

2. EVP cable shall be connected to the EVP rack terminals within the controller cabinet.

3. Each mast arm EVP detector mounting shall be drilled and tapped in its ultimate location. In lieu of the detector, install approved water tight UL listed electrical box. EVP cable shall be installed to terminate within the mast arm mounted electrical box. Excess cable shall be coiled within the electrical box sufficient for future installation of the EVP system.

Optical Detector

The optical detector shall be mounted on the indicated signal mast arm per Riverside County Standard No. 1202.

Each optical detector shall be waterproof unit capable of receiving optical energy from a single direction. The reception angle for each optical detector unit shall be a minimum of eight (8) degrees in all directions about the aiming axis of the unit.

Internal circuitry shall be solid state and electrical power shall be provide by the associated discrimination module.

Each optical detector unit shall have a minimum of a ½ inch NPT opening used for mounting and for bringing the connecting cable into the terminal block located within the assembly. The housing shall be provided with weep holes to permit drainage of condensed moisture.

Each optical detector shall be installed, wired, and aimed as specified by the manufacturer.

Cable

Optical detector cable shall meet the requirements of IPCEA-S-61-402/NEMA WC 5, Section 7.4, 600 V Control cable, 75 degrees C, Type B, and the following:

1. The cable shall contain 3 conductors, each of which shall be AWG# 20 (7 x 28) stranded, tinned copper. Insulation of individual conductors shall be color-coded: 1-Yellow, 1-Orange, and 1-Blue.

2. The shield shall be either tinned copper braid or aluminized polyester film with a nominal 20% overlap. When film is used, an AWG# 20 (7 x 28) stranded, tinned, bare drain wire shall be placed between the insulated conductors and the shield and in contact with the conductive surface of the shield.

3. The jacket shall be marked as required by IPCEA/NEMA.

The cable run between each detector and the Traffic Controller cabinet shall be continuous without splices.

Phase Selector

Each phase selector shall conform to the requirements of Chapter I of the State of California, Department of Transportation, "Traffic Signal Control Equipment Specifications", shall be compatible and usable with a Model 170E or 2070 controller unit, and shall be mounted in the input file of a Model 332 or Model 333 JP controller cabinet.

Each phase selector shall be capable of operating at least two or more channels, each of which shall provide and independent output for each separate input.

Each phase selector, when used with its associated optical detectors, shall perform as a minimum, the following:

1. Receive Class I and Class II signals.

2. Decode the signals based on optical frequency, at 9.639 Hz + or -0.119 Hz for Class I signals and 14.035 Hz + or –0.255 Hz for Class II signals.

3. Establish the validity of received signals based on optical frequency and length of time received. A signal shall be considered valid only when received for more than 0.50 second. No combination of Class I signals shall be recognized as a Class II signal regardless of the number of signals being received, up to a maximum of 10 signals. Once a valid signal has been recognized, the effect shall be held by the module, in the event of temporary loss of signal for a minimum period of 4.0 seconds.

4. Provide an output for each channel that will result in a "low" or grounded condition of the appropriate input of a Model 170 controller unit. For a Class I signal, the output shall be a 6.25 Hz + or – 0.1 %, rectangular waveform with a 50 % duty cycle. For Class II signal, the output shall be steady.

Each phase selector shall receive power from the controller cabinet at either 12 VDC or 120 VAC.

Auxiliary inputs for each channel may enter each module through a front panel connector or by a parallel hook-up of the associated detector cables at the input location.

The phase selector shall provide an optically isolated output for each channel to the Model 170 controller unit. All outputs signals shall comply with NEMA signal level definitions and shall be compatible with the Model 170 controller assemblies' inputs.

Each phase selector shall be provided with means of preventing transients received by the detector from affecting the Model 170 controller assembly.

Each phase selector shall have a single connector board and shall occupy one slot of the input file. The front panel of each phase selector module shall have a handle to facilitate withdrawal and have the following controls and functions for each channel:

1. Range adjustments for both class I and Class II signals.

2. A 3-position, center off, momentary contact switch, one position (down) labeled for test operation of Class I signals, and one position (up) labeled for test operation of Class II signals.

3. A "signal" indication and a "call" indication each for Class I and for Class II signals. The "signal" indications denote that a signal, which is not valid, has been received; a "call" indication denotes a steady, valid signal has been received. These 2 indications may be accomplished with a single indication lamp.

In addition, the front panel shall be provided with additional connectors or ports used to perform other functions as specified by the manufacturer.

Cabinet Wiring

Wiring for a Model 332 cabinet shall conform to the following:

1. Slots 12 and 13 of input file "J" shall be wired to accept either a 2 channel or a 4 channel module.

2. Field wiring for the primary detectors, except the 24 VDC power, shall terminate on either terminal block TB-9 in the controller cabinet or on the rear of input file "J", depending on cabinet configuration. Where TB-9 is used, position assignments shall be as follows:

   a. TB-9 – 1 = Not Used
   b. TB-9 – 2 = + 24 VDC Out (Orange)
   c. TB-9 – 3 = + 24 VDC Out (Orange)
   d. TB-9 – 4 = EVA Detector (Yellow)
   e. TB-9 – 5 = EVC Detector (Yellow)
   f. TB-9 – 6 = DC Common Out (Blue)
   g. TB-9 – 7 = EVB Detector (Yellow)
   h. TB-9 – 8 = EVD Detector (Yellow)
   i. TB-9 – 9 = DC Common Out (Blue)

   Assuming TB9 – 2 and TB9 – 3 are unused on the "J" File, move wires on J11-J & J11-K (Twisted Pair) to J12-E & J13-E, respectively.

Field wiring for auxiliary detectors may terminate on terminal board TB-0 (If unused) in the controller cabinet. Use manufactures recommended wiring for these connections.

System Operation

The contractor shall demonstrate that the components of each system are compatible and will perform satisfactorily as a system. Satisfactorily performance shall be determined using the following test procedure during the functional test period:

1. Each system to be used for testing shall consist of an optical detector, an optical detector cable and a phase selector module.

2. The phase selector shall be installed in the proper input file slot of the Model 332 or 333 controller cabinet assembly.

3. Two tests shall be conducted; one using a Class I signal emitter and a distance of 1000 feet between the emitter and the detector, the other using a Class II signal emitter and a distance of 1800 feet between the emitter and the detector. Range adjustments on the phase selector shall be set to "Maximum" for each test.

4. During the tests of the Class I and Class II emitters, the proper response from the Model 170E and 2070 controller unit during the "ON" interval and there shall be no improper operation of the Model 170E or 2070 controller unit or the monitor during the "OFF" interval.

The Contractor shall arrange for, and pay the cost of, the services of a knowledgeable representative from the EVP manufacturer, to be present for the first day of the traffic signal and lighting function test to insure proper installation and functioning of the EVP equipment.

The Contractor shall arrange for, and pay the cost of, the services of the controller manufacturer to perform any controller modifications required for the installation, or operation, of the EVP equipment.

AA. Blank

BB. Battery Backup System

This special provision establishes the minimum requirements for a battery backup system (BBS) that shall provide power to a traffic signal system in the event of a power failure or interruption.

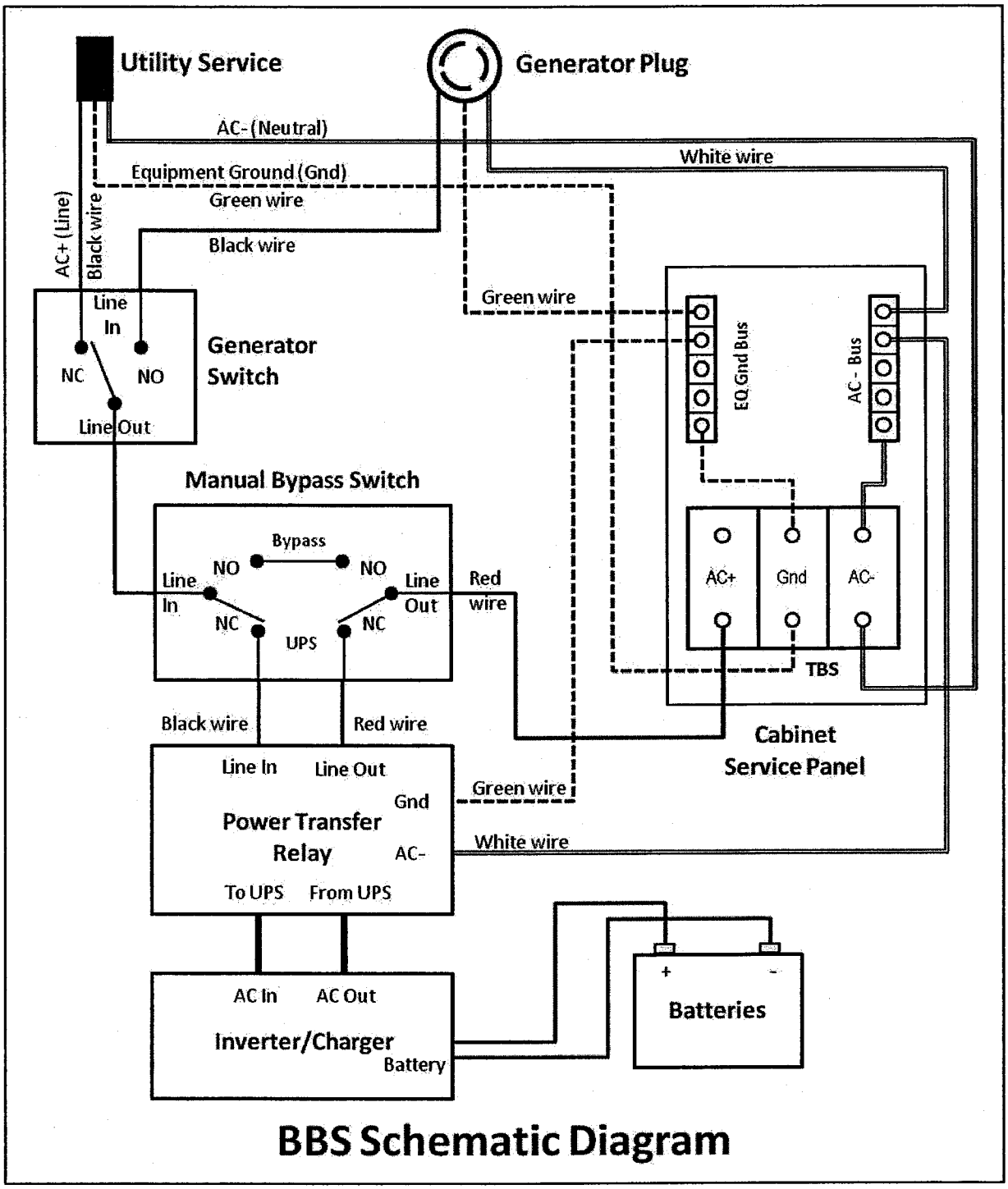
The BBS shall be designed for outdoor applications, in accordance with the current edition of Chapter 1, Section 8 requirements of Transportation Electrical Equipment Specifications (TEES).

The BBS batteries shall be external to the traffic signal controller cabinet as specified under "External Battery Cabinet Option" herein unless specified otherwise. The supplied external cabinet shall be listed on the current Caltrans pre-qualified product list for the external BBS cabinet.

The BBS shall have been installed and operational for a period of one year at an signalized intersection in the United States. The supplied BBS shall be listed on the current Caltrans pre-qualified product list for the BBS.

The BBS shall include, but not limited to the following: cabinet, utility line/generator switch, inverter/charger, power transfer relay, a separate manually operated non-electronic bypass switch, batteries, and all necessary hardware, shelving, and interconnect wiring. The following figure

shows BBS components interconnecting with each other and the controller cabinet to ensure interchangeability between all BBS manufacturers.

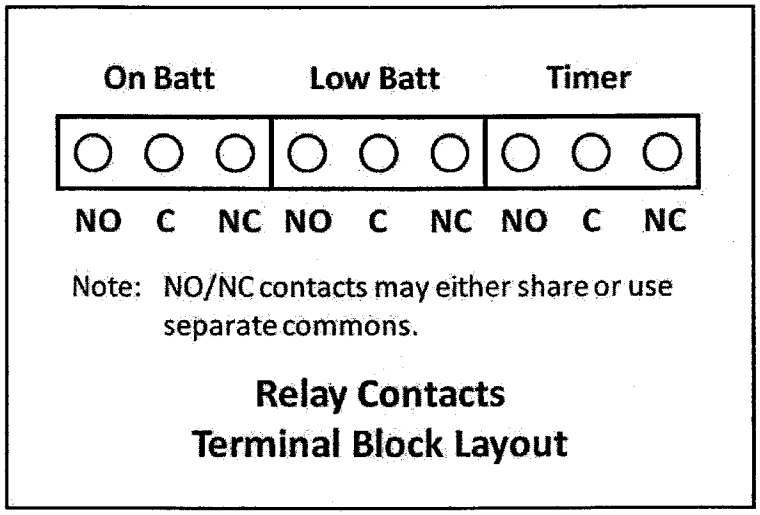


Operation

The BBS shall provide a minimum two (2) hours of full run-time operation for an intersection equipped with all LED traffic signal indications (minimum 1100W active output capacity, with 80% minimum inverter efficiency).

The maximum transfer time allowed, from disruption of normal utility line voltage to stabilized inverter line voltage from batteries, shall be 65 milliseconds. The same maximum allowable transfer time shall also apply when switching from inverter line voltage to utility line voltage.

The BBS shall provide the user with six (6)-sets of fully programmable normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) dry relay contact closures, available on a panel-mounted terminal block, rated at a minimum 120V/1A, and labeled so as to identify each contact. See below figure for typical configuration.



The first set of NO and NC contact closures shall be energized whenever the unit switches to battery power. Contact shall be labeled or marked "On Batt".

The second set of NO and NC contact closures shall be energized whenever the battery approaches approximately 40% of remaining useful capacity. Contact shall be labeled or marked "Low Batt".

The third set of NO and NC contact closures shall be energized two hours after the unit switches to battery power. Contact shall be labeled or marked "Timer".

The six programmable NO and NC contact closures shall be independently configured to activate under any of the following conditions: On Battery, Low Battery, Timer, Alarm, or Fault.

Operating temperature for inverter/charger, power transfer relay and manual bypass switch shall be –37 °C to +74 °C.

Both the Power Transfer Relay and Manual Bypass Switch shall be rated at 240VAC/30 amps, minimum.

The BBS shall use a temperature-compensated battery charging system. The charging system shall compensate over a range of 2.5 – 4.0 mV/ °C per cell.

The temperature sensor shall be external to the inverter/charger unit. The temperature sensor shall come with 10' of wire.

Batteries shall not be recharged when battery temperature exceeds 50 °C ± 3 °C.

BBS shall bypass the utility line power whenever the utility line voltage is outside of the following voltage range: 100VAC to 130VAC (± 2VAC).

When utilizing battery power, the BBS output voltage shall be between 110 VAC and 125 VAC, pure sine wave output, ≤ 3% THD, 60Hz ± 3Hz.

BBS shall be compatible with NEMA and Model 332 and 333JP Cabinets, and Model 170, 390 & 2070 Controllers and cabinet components for full time operation.

In cases of low (below 100VAC) or absent utility line power, when the utility line power has been restored at above 105 VAC ± 2 VAC for more than 30 seconds, the BBS shall transfer from battery backed inverter mode back to utility line mode.

In cases of high utility line power (above 130VAC), when the utility line power has been restored at below 125VAC ± 2 VAC for more than 30 seconds, the BBS shall transfer from battery backed inverter mode back to utility line mode.

The BBS shall have an automatic tap to step up or step down the output voltage by 10 percent. The resulting output voltages shall remain within the above prescribed voltage range: 100VAC to 130VAC. This capability will extend BBS range for operating on input AC and not reverting to battery power.

BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

In the event of inverter/charger failure, battery failure or complete battery discharge, the power transfer relay shall revert to the NC (and de-energized) state, where utility line power is connected to the cabinet.

Recharge time for the battery, from "protective low-cutoff" to 80% or more of full battery charge capacity, shall not exceed twenty (20) hours.

Mounting / Configuration

Generator Switch, Inverter/Charger, Power Transfer Relay and manually operated Bypass Switch shall fit inside a typical fully equipped traffic signal controller cabinet.

Mounting method inside the 332 and 333JP cabinet shall be shelf-mount, rack-mount or combination of either. Available rack space for front-mounted inside the 332 and 333JP cabinet is 3U or approximately 6 inches.

All interconnect wiring provided between Generator Switch, Inverter/Charger, Power Transfer Relay, Bypass Switch and Cabinet Terminal Service Block shall be no less than 9 feet of UL Style 1015 CSA TEW with the following characteristics:

- AWG Rating: 10 AWG
- Stranding: 105 strands of 10 AWG tinned copper
- Rating: 600 V, 105 °C, PVC Insulation

Relay contact wiring provided for each set of NO/NC relay contact closure terminals shall be 9 feet of UL Style 1015 CSA TEW 18 AWG wire, same ratings as above, except 16 strands of 18 AWG tinned copper.

All necessary hardware for mounting (shelf angles, rack, etc) shall be included in the **contract price paid** for the BBS, and no additional compensation will be allowed therefor.

Internal mounted battery option
(Allowed only if requested on the plans)

The controller cabinet shall be equipped with a generator twist lock flanged inlet receptable, manual transfer switch and bypass switch.

The twist lock flanged inlet receptacle shall be Hubbell 2615, NEMA L5-30P Twist Lock Flanged Male Inlet Rated for 30A/125VAC or approved equal. Receptacle shall be mounted flush to the cabinet in a weatherproof lift cover plate made of impact-resistant thermoplastic and gray in color.

The bypass switch shall transfer the load, including the UPS to the twist lock inlet receptacle. The manual transfer switch shall be wired to prevent any back feed to the utility service. Both the bypass switch and manual transfer switch shall be rack mounted independently in the controller cabinet meeting industry standards.

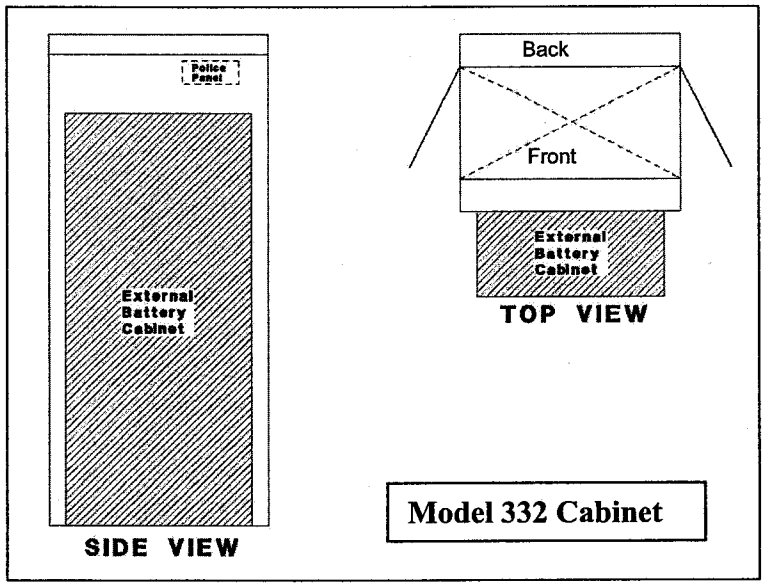
Batteries shall be mounted on swing-tray mounted below the controller shelf. A minimum of six (6) bolts/fasteners shall be used to secure swing-trays to the 332 Cabinet standard EIA 19" rack. All bolts/fasteners and washers shall meet the following requirements:

- Screw type: Pan Head Phillips machine screw
- Size and Thread pitch: 10-32
- Material: 18-8 stainless steel (Type 316 stainless steel is acceptable as an alternate)
- Washer: Use one 18-8 stainless steel flat washer under the head of each 10-32 screw; lock washers are unnecessary provided that the screws are properly tightened.

Number of screws per swivel bracket: minimum six (6) screws per swivel bracket. Screws are to be spaced evenly along bracket, with one screw near each end. Batteries may be shelf mounted in area behind controller so long as shelf and batteries do not interfere with controller unit and C1 plug.

External battery cabinet option

Batteries shall be housed in an external cabinet mounted to the side of the controller cabinet as shown in the following figure or as directed by the Engineer with a minimum of eight (8) bolts:



If BBS is installed at the back of controller cabinet, the modification shall include a minimum of 36 inches wide concrete walkway access to the BBS without encroaching outside the right-of-way. BBS shall be installed at the front of the controller cabinet (in locations where the back of the controller cabinet has limited ROW or conflicting structures and facilities and other obstructions), the BBS cabinet shall not cover the police panel. The BBS cabinet shall also not hinder the access ramp's compliance with ADA requirements.

Four shelves shall be provided within the battery cabinet. There shall be a minimum of 12 inches clearance between shelves. Each shelf shall be a minimum of 9" X 25", and capable of supporting a minimum of 125 lbs. Batteries shall be mounted on individual shelves.

The external battery cabinet shall be NEMA 3R rated in accordance to Section 2-Housings of the Chapter 7 of TEES, for the construction of the cabinet and anodic coating finish.

The external battery cabinet shall be ventilated through the use of louvered vents, filter, and one thermostatically controlled fan in accordance to Section 2-Housings of the Chapter 7 of TEES.

External battery cabinet fan shall be AC operated from the same line output of the Manual Bypass Switch that supplies power to the controller cabinet.

The external battery cabinet shall have a door opening to the entire cabinet. The door shall be attached to the cabinet through the use of a continuous stainless steel piano hinge or four, two-bolts per leaf, hinges in accordance to Section 2-Housings of the Chapter 7 of TEES. The door shall use a three-point, roller locking mechanism and standard #2 key lock to lock the door. The door shall have a stainless steel handle.

The external cabinet shall be equipped with a generator twist lock flanged inlet receptacle, manual transfer switch and bypass switch.

The twist lock flanged inlet receptacle shall be Hubbell 2615, NEMA L5-30P, Twist Lock Flanged Male Inlet Rated for 30A/125V or approved equal. Receptacle shall be mounted flush to the cabinet in a weatherproof lift cover plate made of impact-resistant thermoplastic and gray in color.

The bypass switch shall transfer the load, including the UPS to the twist lock inlet receptacle. The manual transfer switch shall be wired to prevent any back feed to the utility service. Both the bypass switch and manual transfer switch shall be rack mounted independently in BBS cabinet meeting industry standards.

The BBS with external battery cabinet shall come with all bolts, conduits and bushings, gaskets, shelves, and hardware needed for mounting.

Maintenance, Displays, Controls and Diagnostics

The BBS shall include a 2 line by 40 character LCD display to indicate current battery charge status, input/output voltages, time and settings of various conditions. The same parameters shall be available via RS232 or USB interfaces on the face of the BBS.

The BBS shall have lightning surge protection compliant with IEEE/ANSI C.62.41.

The BBS shall be capable of accepting firmware upgrades of the non-volatile, read-only memory via serial port communications. The updates shall be accomplished by uploading the software to the BBS over the RS232 serial port located on the face of the BBS.

The BBS shall be equipped with an integral system to prevent battery from destructive discharge and overcharge.

The BBS shall be capable of performing a SELF-TEST, locally from the BBS front panel LCD, or remotely via RS232 or USB interface. The duration of the SELF-TEST shall be programmable in 1-minute increments from 1 minute to 255 minutes.

The BBS and batteries shall be easily replaced with all needed hardware and shall not require any special tools for installation.

The BBS shall include a re-settable inverter event counter to indicate the number of times the BBS was activated and the total number of hours the unit has operated on battery power, accessible via the LCD screen or remotely via RS232 or USB.

The BBS shall be equipped with an event log that stores for a minimum the last 100 events. The events shall be time and date stamped. The event log shall be retrievable vial RS232, USB or from the BBS LCD screen. The event log shall be display and print out in plain English when output the RS232 or USB ports.

Battery System

Individual batteries shall be 12V, 105 amp-hour for 20 hours to 1.70 VPC @ 77F ~~type~~, and shall be easily replaced and commercially available off the shelf.

Batteries used for BBS shall consist of four (4) batteries with a cumulative minimum rated capacity of 420 amp-hours.

Batteries shall be deep cycle, sealed prismatic lead-calcium based AGM/VRLA (Absorbed Glass Mat/ Valve Regulated Lead Acid).

Batteries shall be certified by the manufacturer to operate over a temperature range of – 25 °C to +74 °C.

The batteries shall be provided with appropriate interconnect wiring and corrosion-resistant mounting trays and/or brackets appropriate for the cabinet into which they will be installed.

Batteries shall indicate maximum recharge data and recharging cycles.

Battery Harness

Battery interconnect wiring shall be via two-part modular harness:

- Part I shall be equipped with red (+) and black (-) cabling that can be permanently connected to the positive and negative posts of each battery. Each red and black pair shall be terminated into a Molex, polarized – keyed battery cable connector or equivalent. The length of the harness between batteries shall be a minimum of 12 inches.

- Part II shall be equipped with the mating Power Pole style connector for the batteries and a single, insulated Power Pole style connection to the inverter/charger unit. Harness shall be fully insulated and constructed to allow batteries to be quickly and easily connected in any order to ensure proper polarity and circuit configuration. The length of the battery interconnect harness shall be a minimum of 60 inches from the Inverter/Charger plug to the first battery in the string.

Power Pole connectors may be either one-piece or two-piece. If a two-piece connector is used, a locking pin shall be used to prevent the connectors from separating.

All battery interconnect harness wiring shall be UL Style 1015 CSA TEW or Welding Style Cable or equivalent, all of proper gauge with respect to design current and with sufficient strand count for flexibility and ease of handling.

Battery terminals shall be covered and insulated with molded boots to prevent accidental shorting.

BBS Quality Assurance

Each Battery Backup System (BBS) shall be manufactured in accordance with a manufacturer Quality Assurance (QA) program. The QA program shall include two Quality Assurance procedures:

1. Design QA - The manufacturer, or an independent testing lab hired by the manufacturer, shall perform Design Qualification Testing on new BBS system(s) offered, and when any major design change has been implemented on an existing design. A major design change is defined as any modification - material, electrical, physical, or theoretical, that changes any performance characteristics of the system, or results in a different circuit configuration. Where a dispute arises in determining if a system is a new design or if the system has had a major design change, the County will make the final determination if Design Qualification Testing is required prior to production consideration.

2. Production QA - The Production QA shall include statistically controlled routine tests to ensure minimum performance levels of BBS units built to meet this specification and a documented process of how problems are to be resolved.

QA process and test results documentation shall be kept on file for a minimum period of seven years.

Battery Backup System designs not satisfying Design QA Testing and Production QA Testing requirements shall not be labeled, advertised, or sold as conforming to this specification.

The Contractor shall arrange to have a technician, qualified to work on the battery backup system and employed by the battery backup system manufacturer or employed by the manufacturers authorized distributor, present at the time the equipment is turned on. It shall be the responsibility of the Contractor to implement and fund any traffic signal controller assembly modifications required to achieve the traffic signal operation as shown on the construction plans and as required in the Special Provisions.

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DD. Payment Method

See Signal and Lighting subsection O, "Service" for payment of all electric company fees required.

The contract price paid **per Lump Sum** for Signal and Lighting shall include full compensation for furnishing all labor, materials, tools, equipment, foundations, pole and mast arm mounted regulatory signs, documents, programming, testing, and incidents and for doing all the work specified herein, elsewhere in these Special Provisions, and plans including the complete installation of an operational traffic signal and lighting system and no additional compensation shall be allowed therefor.

REMOVE TRAFFIC STRIPES AND PAVEMENT MARKINGS:

Traffic stripes and pavement markings shall be removed as shown on the plans.

The removal of traffic stripes and markings shall be accomplished by either of the following methods.

A. Wet Sandblasting: Where blast cleaning is used for the removal of painted traffic stripes and pavement markings or for removal of objectionable material, and such removal operation is being performed within Ten (10) feet of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the sand and the surface being treated. Such removal shall be by a vacuum attachment operating concurrently with the blast cleaning operation and shall comply with AQMD requlations.

B. Grinding: A minimum of 3 passes with the grinder in a rectangular area rather than just lettering or markings so the old message cannot be identified is required. Removal shall be to a maximum depth of 1/10". Removal depth may exceed 1/10" only when necessary to effectively remove paint, and only on approval by the Engineer. Asphalt emulsion slurry shall be applied to the areas where stripes or pavement markings have been removed.

Temporary removal of stripes and pavement markings may be accomplished by either of the above methods or, at the Contractors option, by the application of removable black line mask, 3M Series 145, or approved equal. Obliteration of stripes or pavement markings by applying black paint or asphalt emulsion is not an approved removal method.

After removal of traffic stripes and pavement markings, a fog seal coat shall be applied in conformance with the provisions in Section 37, "Bituminous Seals" of the Standard Specifications and the following:

If removal of existing striping is performed more than 24 hours prior to final striping, the Contractor shall place reflective temporary striping tape throughout the limits of sandblasting, to provide channelization of traffic, for all lanes of travel.
Temporary striping tape shall be removed subsequent to final striping.

Nothing in these Special Provisions shall relieve the Contractor from his responsibilities as provided in Section 7-1.09, "Public Safety," of the Standard Specifications.

It shall be the responsibility of the Contractor to properly dispose of the residue from removal of striping and pavement markings.

Method of Payment:
The price paid per square foot for Remove Traffic Stripes And Pavement Markings shall include full compensation for furnishing all labor materials, tools, equipment and incidentals as shown on the plans and no additional compensation will be allowed therefor.

THERMOPLASTIC PAVEMENT MARKING:

Thermoplastic pavement marking shall conform to the provisions in Sections 84-1, "General" and 84-2, "Thermoplastic Traffic Stripes and Pavement Markings" of the Standard Specifications, the plans, these Special Provisions and as directed by the Engineer.

Newly painted pavement markings shall be protected from damage by public traffic or other causes until the paint is thoroughly dry. Any newly painted traffic striping which are damaged as a result of the construction, including wheel markings by public traffic and the construction equipment, shall be repainted by the Contractor and any associated removals shall be performed as called for in these Special Provisions.

Method of Payment:
The contract price paid per square foot for Thermoplastic Crosswalk and Pavement Marking shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work necessary to place the crosswalk and pavement markings complete in place, and no additional compensation will be allowed.

PAINT TRAFFIC STRIPE (2 COAT):

Painting traffic stripes (traffic lanes) shall conform to the provisions in Section 84-1, "General," and 84-3, "Painted Traffic Stripes and Pavement Markings," of the State Standard Specifications and these special provisions.

The Contractor shall furnish the necessary control points for all striping and markings and shall be responsible for the completeness and accuracy thereof to the satisfaction of the Engineer.

The Contractor shall perform all layout, alignment, and spotting for traffic stripes and markings. Traffic striping shall not vary by more than ½ inch in 50 feet from the alignment shown on the plans. The dimensional details of the stripes and markings shall conform to the provisions set forth in the California MUTCD and Maintenance Manual available from Caltrans.

Spotting with cat tracks or dribble lines shall be performed prior to the removal of existing stripes. Cat tracks shall consist of spots of paint not more than 3 inches in width and not more than 5 feet apart along the alignment of the stripe. Paint for the cat tracks shall be the same as that for the intended stripe. Paint for the dribble lines shall be neutral color obtained by mixing approximately two parts white paint with one part black paint.

SPOTTING - Spotting shall be completed prior to the removal of any existing stripes or markings. Existing stripes and markings shall be removed prior to painting new ones, but in no case shall any section of street be left without the proper striping for more than 24 hours, or over weekends or holidays.

No striping or painting work shall start until the Engineer has specifically approved the spotted markings. Existing striping and markings, if any, shall be removed prior to painting new, but in no case shall any section of street be left without the proper striping for more than 24 hours, or over the weekends or holidays.

MATERIALS - Materials shall conform to the provisions in Section 84-3.02, "Materials," of the State Standard Specifications and these Special Provisions. All traffic striping and pavement markings shall be two coats of paint with glass beads unless otherwise approved by the County and City Engineer. A minimum of 7 days and a maximum of 14 days shall elapse between application of the first and second coats of paint.

The paint for traffic striping and markings shall be as follows, or an approved equal:

White - PERVO Paint Co. #9000 ULTRA
Yellow - PERVO Paint Co #9003 ULTRA

Glass beads shall conform to State Specification 8010-21C-22 (Type II).

Newly painted traffic striping shall be protected from damage by public traffic or other causes until the paint is thoroughly dry. Any newly painted traffic striping which are damaged as a result of the construction, including wheel markings by public traffic and the construction equipment, shall be repainted by the Contractor and any associated removals shall be performed as called for in these Special Provisions.

Method of Payment:
The contract unit price paid per linear foot for Paint Traffic Stripe (2 Coats) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in painting traffic stripe (Regardless of the number, widths, and types of individual stripes involved in each traffic stripe) including any necessary cat tracks, dribble lines any layout work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

REMOVE ROADSIDE SIGNS:

Existing roadside signs shall be removed and salvaged as shown on the plans.

Existing roadside signs at locations shown on the plans to be removed shall not be removed until replacement signs have been installed or until the existing signs are no longer required for direction of public traffic, unless otherwise directed by the Engineer.

The Contractor shall deliver County owned signs to be salvaged to the nearest County Maintenance Yard as directed by the Engineer.

Method of Payment:
The contract unit price paid per each for Remove Signs shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work including excavation and backfill as specified in the Standard Specification and these Special Provisions and no additional compensation will be allowed therefor.

RELOCATE SIGN:

Roadside signs (relocate) shall conform to the provisions in Section 56 of the Standard Specifications and as directed by the Engineer.

Existing roadside signs shall be removed and relocated to the new locations shown on the plans or where directed by the engineer.

Unless otherwise approved by the Engineer, each roadside sign shall be installed at the new location on the same day that the sign is removed from its original location.

All signs shall be installed using hex head bolts, washers, nuts and jam nuts in accordance with Standard Plans RS2 or as directed by the Engineer.

Method of Payment:
The contract unit price paid per each for Relocate Sign shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including all necessary concrete excavation and backfill as specified in the Standard Specification and these Special Provisions and no additional compensation will be allowed therefor.

ROADSIDE SIGNS:

Roadside signs (install) shall conform to the provisions in Section 56-2 "Roadside Signs" of the Standard Specifications and these special provisions.

The Contractor shall furnish and install roadside signs, in accordance with Standard Plans RS-2, at the locations shown on the plans or as directed by the Engineer.

Roadside signs with steel posts shall be installed at the location shown on the construction plans or where directed by the Engineer.

Roadside signs furnished by the Contractor shall be of the standard size specified in the State of California Department of Transportation Sign Specification Sheets, unless otherwise indicated on the construction plans.

Sheeting shall be guaranteed against defects for a period of ten years from the date of fabrication.

The base metal shall be new aluminum, 0.08 gauge, of alloys 6061-T6 or 5052-H38 conforming to the requirements of ASTM Designation: B209.

Any reflective sheeting supplied, as a part of this contract, whether as a legend or background, shall be FHWA FP-85 Type IIA or AASHTO M268 Type III.

Reflective sheeting shall be applied to the sign by a method approved by the manufacturer of the sheeting and shall produce a durable bond equal to or greater than the strength of the reflective sheeting. No air pockets or bubbles shall exist between the sheeting and aluminum backing.

The reflective material and screening inks or overlay film shall be graffiti proof. The graffiti proofing method shall be supplied by and/or approved by the sheeting manufacturer. Neither the color nor the reflective intensity of the finished sign shall be significantly diminished by the use of graffiti remover when used in a manner approved by the Transportation Department in conjunction with the sheeting manufacturer. Any sign graffiti with the use of over-the-counter spray paint or marking pens, which fail to be restored, shall be replaced by the sign sheeting manufacturer.

All letters and numerals shall be in accordance with the "Standard Alphabet of Highway Signs" as used by the State of California, Department of Transportation.

All signs shall be installed using hex head bolts, washers, nuts and jam nuts in accordance with Standard Plans RS2 or as directed by the Engineer.

Method of Payment:
The contract price paid **per each** Roadside Sign shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all the work involved including all necessary concrete, excavation and backfill as specified in the Standard Specification and these Special Provisions and no additional compensation will be allowed therefor

PAVEMENT MARKERS (REFLECTIVE):

Pavement markers shall conform to the provisions in Section 85, "Pavement Markers" of the Standard Specifications and these Special Provisions.

Pavement markers shall be placed to the line established by the Engineer. All additional work necessary to establish satisfactory lines for markers shall be performed by the Contractor.

Pavement markers shall be installed where indicated on the plans in accordance with the indicated striping detail. Refer to Standard Plans A20-A through A20-D for striping and markings details.

Markers and adhesive removal shall be performed by a method approved by the Engineer. Any pavement scarring resulting from the markers removal shall be repaired to the satisfaction of the Engineer.

Method of Payment:
Payment for furnishing and placing Pavement Markers (Reflective) will be at the unit price bid per each, and shall include full compensation for furnishing all labor, materials, tools, equipment and no additional compensation will be allowed therefor.

DE-MOBILIZATION:

De-mobilization shall consist of the completion of all final construction, cleanup work, incidentals to the project site(s), and administrative work required to secure the project for termination and acceptance by the Engineer, including, but not limited to the following:

1. Satisfactory completion of Finishing Roadway in accordance with Section 22 "Finishing Roadway" of the Standard Specifications.
2. Removal of all temporary facilities, temporary utilities, plant, equipment, surplus material, construction debris and similar from project limits and adjacent property, as required and as directed by the Engineer.
3. Restoration of all temporary roads and haul routes and construction storage and office areas, etc. to original or better condition.
4. Completion of record of drawings (as-builts), to the satisfaction of the Engineer.
5. Submission of final certified payroll documents to the Engineer.
6. Submission of property owner releases, as required by the Engineer.
7. Completion of the requirements of permits issued by other agencies.
8. Satisfactory completion of punch list items, all construction and administrative items of work.

De-Mobilization shall include the satisfactory completion of all items of work, but shall not be interpreted as being a separate payment for work that is paid under separate contract items. The contract item for De-Mobilization is intended for project close-out activities.

Method of Payment:
Payment for De-Mobilization will be made on a lump-sum basis in the amount of the fixed bid price after satisfactory completion of the above listed items. Payment for De-Mobilization will be included in the final pay estimate and payment. No partial payments will be made for De-Mobilization

OBSTRUCTIONS:

Attention is directed to Sections 8-1.10, "Utility and Non-Highway Facilities", and 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions.

Existing utility and privately owned facilities shall be protected in accordance with Section 7-1.11, "Preservation of Property" and these Special Provisions. The Contractor is also responsible to protect those facilities that are to be relocated by others prior to or during construction, and shall protect those facilities in both their existing and their ultimate locations. The Contractor shall cooperate with owners and their Contractors of utility and privately owned facilities, for the relocation of said facilities, in accordance with Section 7-1.14, "Cooperation" of the Standard Specifications.

All water valves and covers, gas valves and covers, sewer manholes, survey monuments, survey markers and any other utility appurtenances shall be protected in place.

The Contractor's attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workmen and the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipe lines greater than 6 inches in diameter or pipe lines operating at pressures greater than 60 psi (gage); underground electric supply system conductors or cables either directly buried or in duct or conduit which do not have concentric neutral conductors or other effectively grounded metal shields or sheaths; and underground electrical conductors with potential to ground of more than 300 volts. The Contractor shall notify the Engineer at least twenty-four hours prior to performing any work in the vicinity of such facilities.

Attention is directed to the requirements of Government Code Sections 4216-4216.9 pertaining to existing utility facilities.

The Contractor shall assume that every house, building and lot within the project limits has utility service pipes and conductors (laterals), and that utility main and trunk facilities exist within the project limits. The Contractor shall determine if it is warranted to determine the exact location of these utility service laterals and existing main lines, unless directed by the Engineer to pot-hole at specific locations, or as otherwise required herein. The Contractor will not be directly reimbursed for determining the exact location of the utility main lines or services laterals but shall include any compensation for this work in the contract price paid for the various items of work. Any damage to existing main lines or service laterals for which pot-holing was not performed shall be considered damage due to not using reasonable care and the damage shall be repaired at the Contractor's expense.

The Contractor shall conduct his operations with the assumption that underground utility facilities exist within the project limits. The Contractor shall exercise caution and best construction practices for safety and for protection of underground facilities. The approximate locations of underground utility facilities, as shown on the plans, are based on information provided by the respective owners, listed below. The Contractor shall also utilize the markings of the regional notification center (Underground Service Alert), and above-ground utility appurtenances to determine the existence and approximate location of underground utilities.

No excavation shall be made within 4 feet of any underground utilities, as shown on the plans and/or marked by Underground Service Alert, unless and until such utilities have been positively located as to horizontal and vertical position. This requirement applies to all underground electric, natural gas, toxic or flammable gas, chlorine, oxygen or petroleum facilities.

Forty-eight hours prior to beginning construction, the Contractor shall notify the following agencies:

Underground Service Alert	800-227-2600
Southern California Edison Company	909-930-8435
Southern California Gas Company	909-335-7561
Home Gardens County Water District	909-737-4741
AT&T California	714-666-5692
NextG Networks, Inc.	877-746-3984

Method of Payment

Full compensation for all costs, including labor, equipment, materials and incidentals, required to comply with the requirements of this section above, including protection of water valves and covers, gas valves and covers, sewer manholes, survey monuments, survey markers and any other utility appurtenances, shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

Adjustments to Grade for Obstructions

The Contractor shall adjust to finish grade any valve covers encountered within the project limits, as required, for those utility valves that are provided with slip cans and are adjustable without the replacement of parts or the removal of concrete collars. In cases where the owning utility company insists upon upgrades in the standards, or when additional parts or the removal of concrete collars are required for the adjustment, said adjustment will be the responsibility of the owning utility company.

Communication and coordination with the owning utility company shall be the responsibility of the contractor.

For public safety, traffic shall not be allowed on temporary or permanent pavement until all manholes are either adjusted to grade or otherwise protected, as approved by the Engineer. The Contractor shall adjust to grade manholes and valves when and as necessary for the protection of the traveling public during construction, and shall coordinate all work on said facilities with the owning utility companies. This requirement is intended for traffic that is to be allowed on temporary surfaces during the course of construction. Final adjustment to grade will be the responsibility of the owning utility company, except as provided herein.

Said work shall be performed in accordance with Section 15-2.05A, "Frames, Covers, Grates, and Manholes" of the Standard Specifications. Full compensation for adjustment of valve covers shall be considered as included in the contract price paid for asphalt concrete or applicable items of work in the event that there is no asphalt concrete bid item, and no additional compensation will be allowed therefor.

All existing utility facilities shall be protected from damage by the Contractor's operations.

Unless otherwise provided herein, the owning utility companies will not be obligated to lower their surface utilities (manholes and valve covers) for Contractor's grading, grinding and/or paving operations. The contractor shall lower surface facilities, including manholes and valve covers, to facilitate construction, and the following shall apply:

1. Contractor shall coordinate all work with the utility owner.

2. Contractor shall be responsible for all costs and shall be responsible for any damage caused to the owner's facilities. If the Contractor observes any pre-existing damage to the utility facilities, the Contractor shall notify the Engineer and the utility owner of that damage prior to performing additional work on the facility.

3. Contractor shall, after removing grade rings and covers, arrange for pickup by, or delivery to, the owner's yard. Any and all concrete collars removed by the Contractor shall become the property of the Contractor, and shall be disposed of as specified elsewhere in these special provisions.

4. The Contractor is advised that he is responsible for ensuring that construction materials do not enter the utility owner's facilities. The Contractor shall install traffic bearing steel plates for this purpose, and provide all coordination and transportation necessary. It is recommended that the Contractor request the utility owner to provide such steel plates. If the Contractor provides steel plates, it shall be the Contractor's responsibility to coordinate with the utility owner for the return of the steel plates to the Contractor after final adjustment to grade. If the Contractor utilizes utility owner's steel plates, and if the Contract items of work include adjustment to final grade, the Contractor shall return the steel plates to the Utility owner's yard, or as otherwise arranged with the Utility owner.

5. Prior to paving or covering the plated utility facility, the Contractor shall tie-out the facility utilizing a method acceptable to the utility owner and provide notes and data of all covered facilities to both the utility owner and the Engineer.

6. The Contractor shall notify the utility owner, upon completion of the Contractor's work, when the utility owner may move in to make the final adjustments to grade.

7. The requirements for lowering of surface facilities shall not apply to vaults. The Contractor shall notify the utility owner of the need to make adjustments to such major facilities.

8. The Contractor is reminded that the utility facilities are owned by public and private utility companies that operate their facilities within public rights of way. The utility owner's preferences with regards to the handling of its facilities shall be complied with to the greatest extent feasible.

Method of Payment

Full compensation for initial lowering of surface utilities facilities shall be considered as included in the contract price paid for asphalt concrete, or applicable items of work in the event that there is no asphalt concrete bid item, and no additional compensation will be allowed therefor.

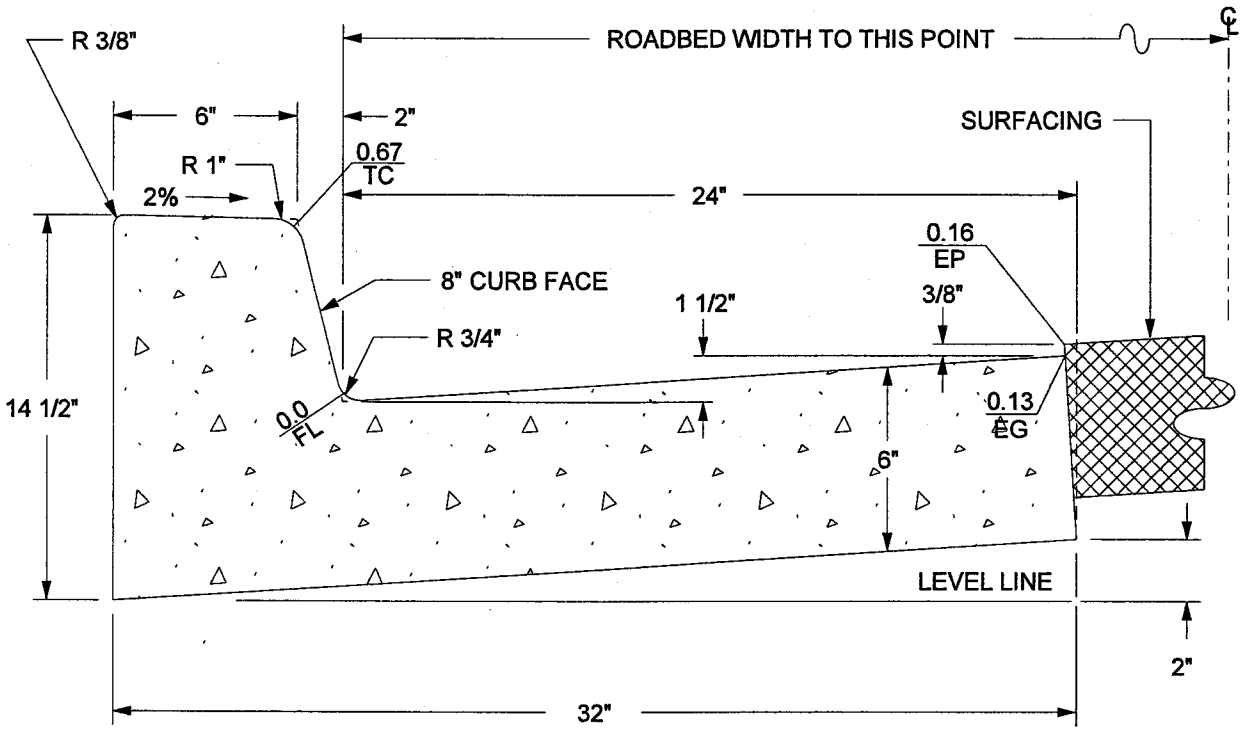
Full compensation for all costs, including labor, equipment, materials and incidentals, required to comply with the requirements of this section shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

RELOCATE FIRE HYDRANT:

Fire hydrant relocation/adjustment to grade shall conform to the plans and Standard Specifications of the Home Gardens County Water District and as directed by the Engineer.

The contract unit bid prices paid per each for Relocate Fire Hydrant/Adjust Fire Hydrant To Grade shall include full compensation for furnishing all labor, tools, materials, equipment, and incidentals for doing all work involved including concrete and replacing as necessary and no additional compensation will be allowed therefor.

ATTACHMENTS
&
REFERENCE DRAWINGS



CLASS "B" CONCRETE

1.73 CU. FT. / L.F.

1 CU. YD. = 15.60 L.F.

ABBREVIATIONS:

TC = TOP OF CURB
FL = FLOWLINE
EG = EDGE OF GUTTER
EP = EDGE OF PAVEMENT

APPROVED BY:

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

DATE: 05/01/07

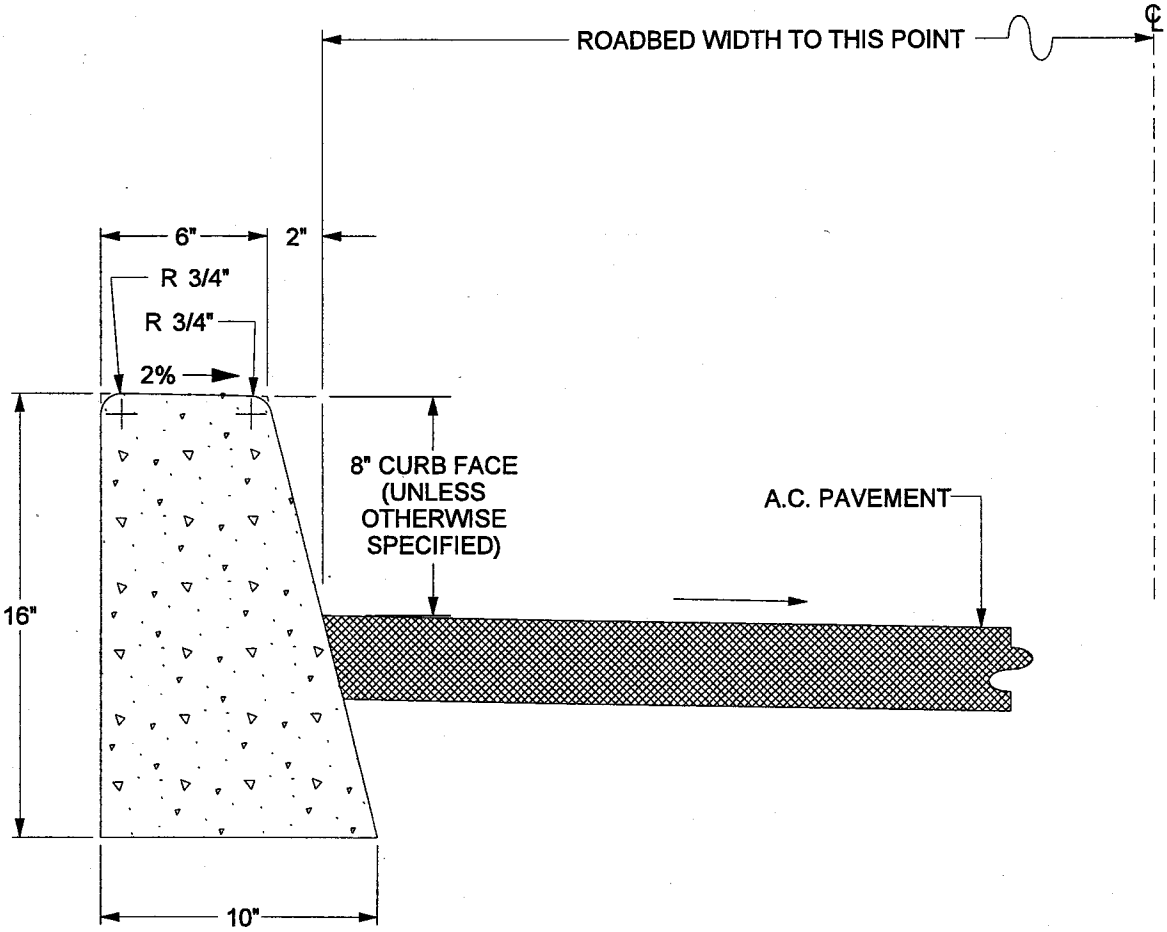
REGISTERED PROFESSIONAL ENGINEER
GEORGE A. JOHNSON
No. CE 42328
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

COUNTY OF RIVERSIDE

TYPE A-8 CURB

STANDARD NO. 201

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-71, 9-88		1				4			
2-90, 11-04		2				5			
		3				6			



CLASS "B" CONCRETE

0.888 CU FT. / L.F.

1 CU. YD. = 30.41 L.F.

APPROVED BY:

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

DATE: 05/01/07

REGISTERED PROFESSIONAL ENGINEER
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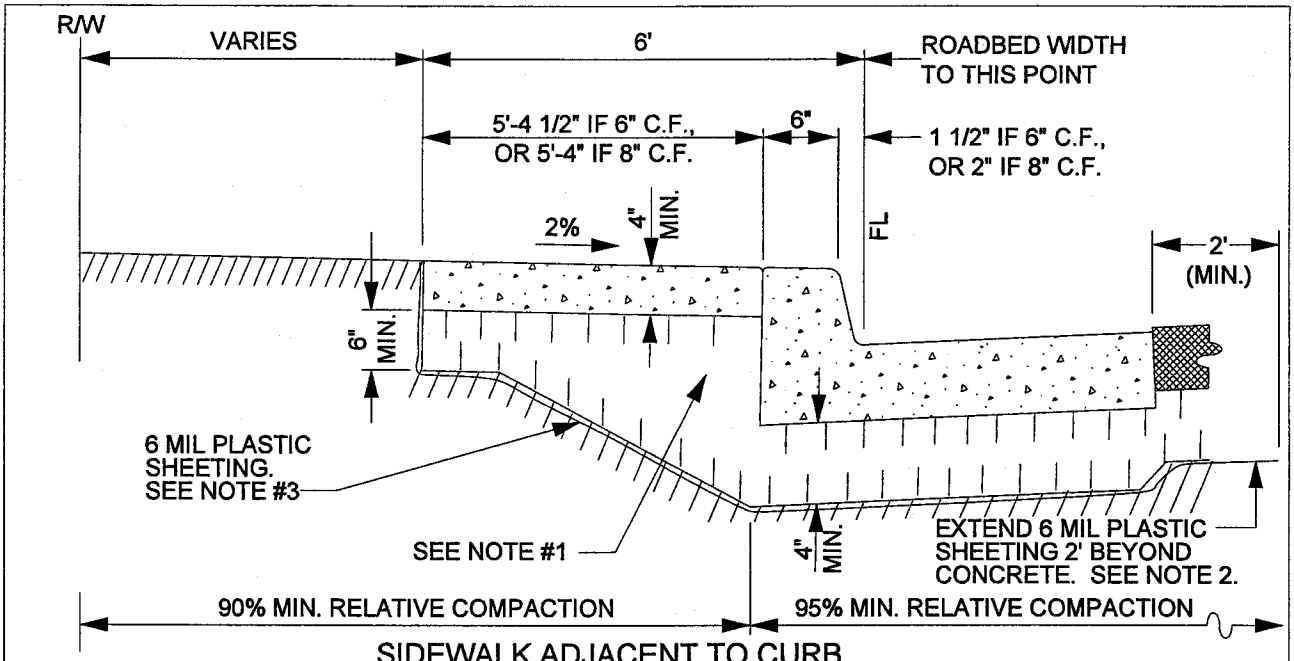
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

COUNTY OF RIVERSIDE

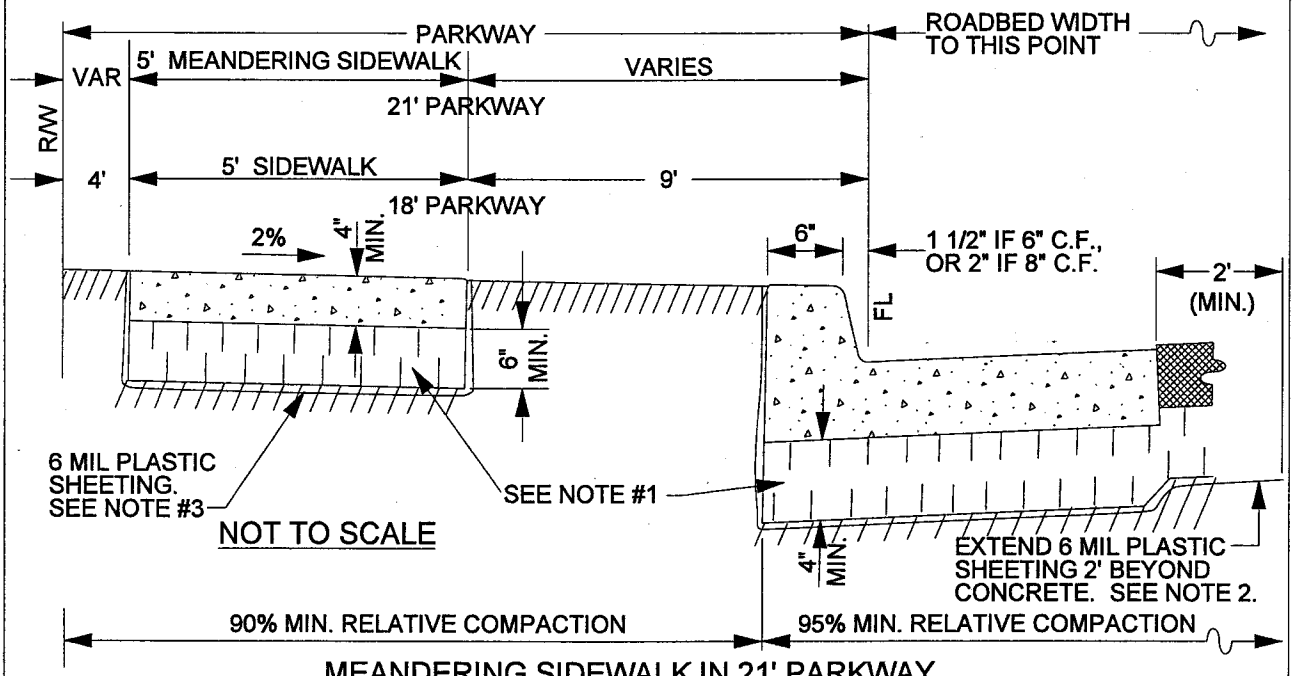
TYPE "D" CURB

STANDARD NO. 204

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-71, 2-90		1				4			
11-04		2				5			
		3				6			



SIDEWALK ADJACENT TO CURB



NOT TO SCALE

MEANDERING SIDEWALK IN 21' PARKWAY
SIDEWALK NOT ADJACENT TO CURB IN 18' PARKWAY

NOTE:

1. AGGREGATE BASE OR APPROVED SELECT MATERIAL WHEN SOILS REPORT INDICATES PRESENCE OF EXPANSIVE SOIL CONDITIONS.
2. ALL CONSTRUCTION SHALL BE CLASS "B" CONCRETE.
3. WHEN ABUTTING SOIL HAS A HIGH SULFATE CONTENT, SPECIAL CONSIDERATIONS ARE REQUIRED. SEE SPECIFICATIONS (SECTION 16.04).

APPROVED BY:

DATE: 05/01/07

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

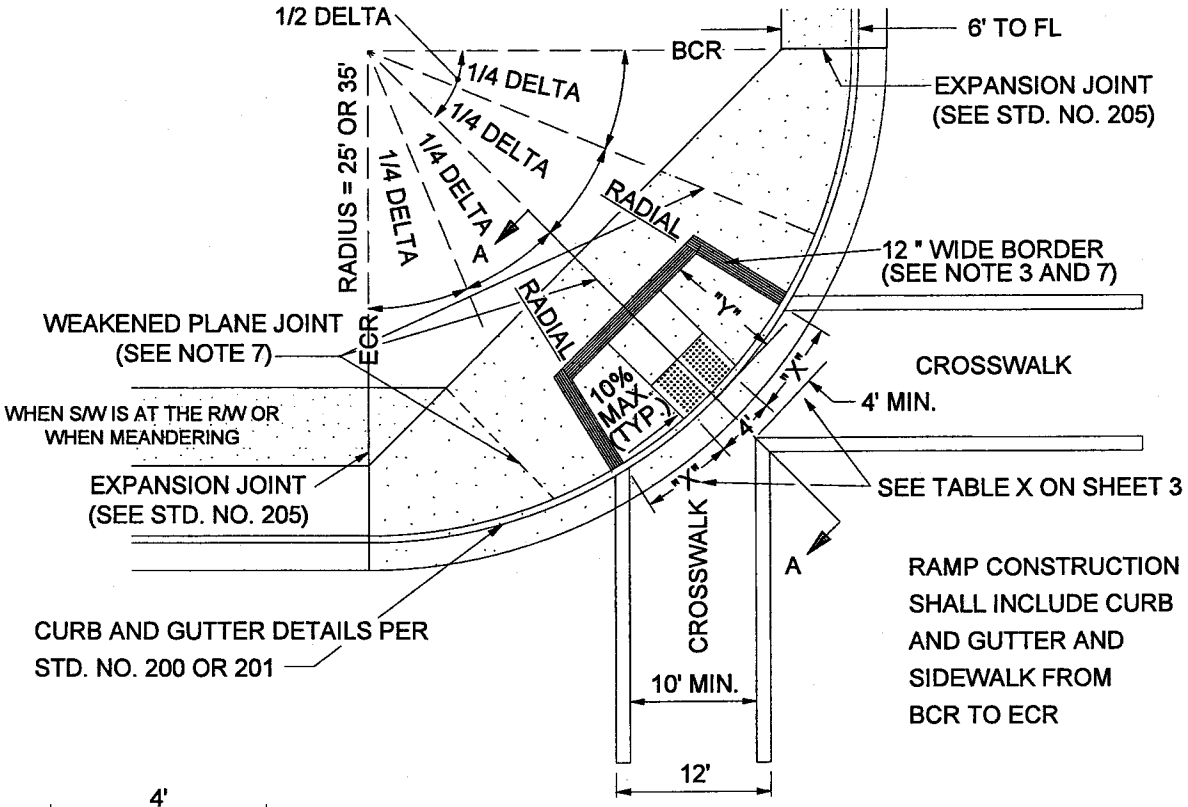
REGISTERED PROFESSIONAL ENGINEER
GEORGE A. JOHNSON
No. CE 42328
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

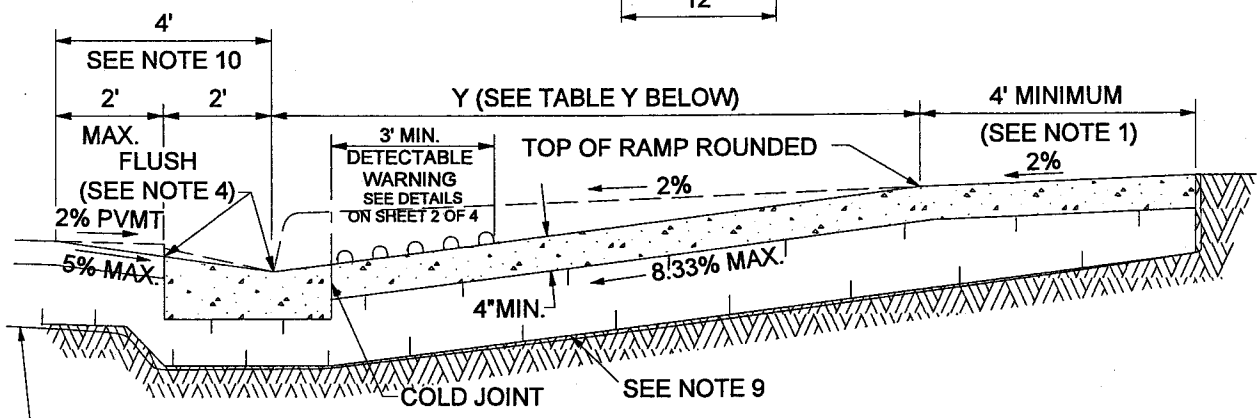
COUNTY OF RIVERSIDE

SIDEWALK AND CURB

STANDARD NO. 401

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-71, 11-77		1				4			
8-82, 9-88		2				5			
4-90, 11-04		3				6			





SECTION A-A

TABLE Y

CF	Y
6"	7.90'
8"	10.53'

$$Y = \frac{\text{CURB FACE (FT.)}}{6.33\%}$$

NOT TO SCALE

SEE SHEET 4 OF 4 FOR NOTES.

APPROVED BY:

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

DATE: 11/15/04

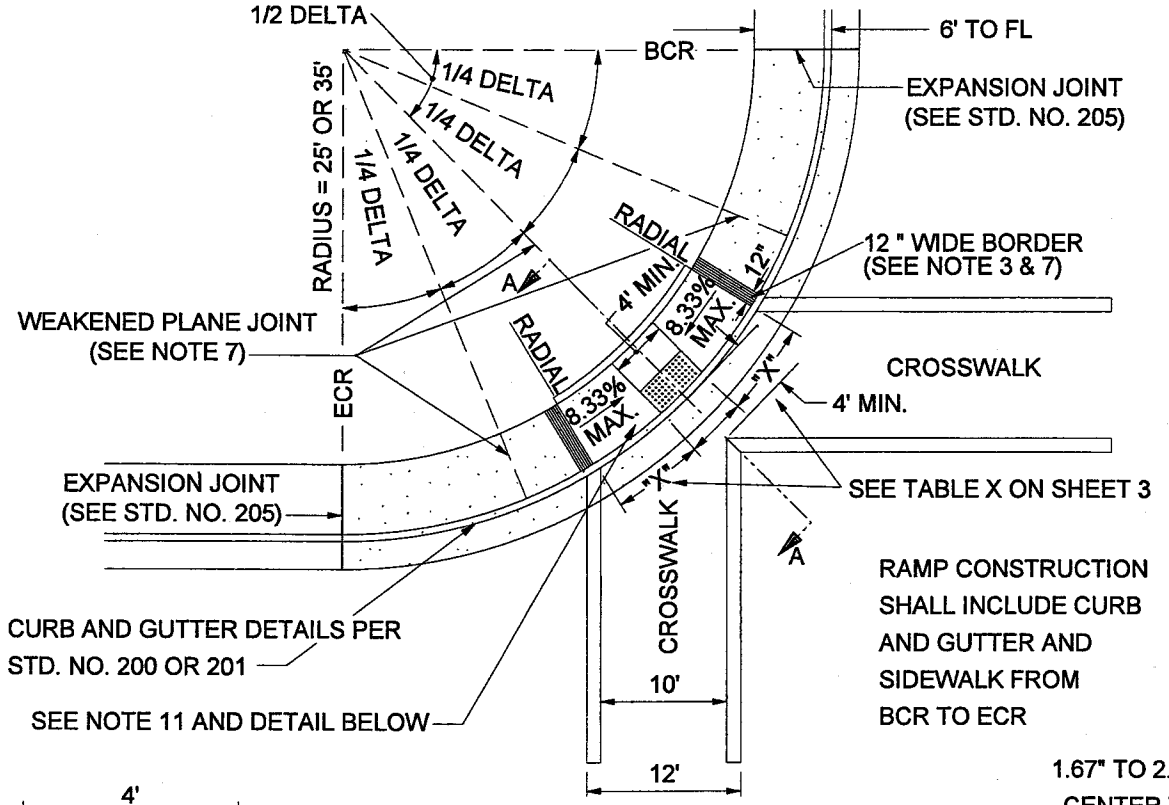
REGISTERED PROFESSIONAL ENGINEER
GEORGE A. JOHNSON
No. CE 42328
Exp. 3-31-06
CIVIL
STATE OF CALIFORNIA

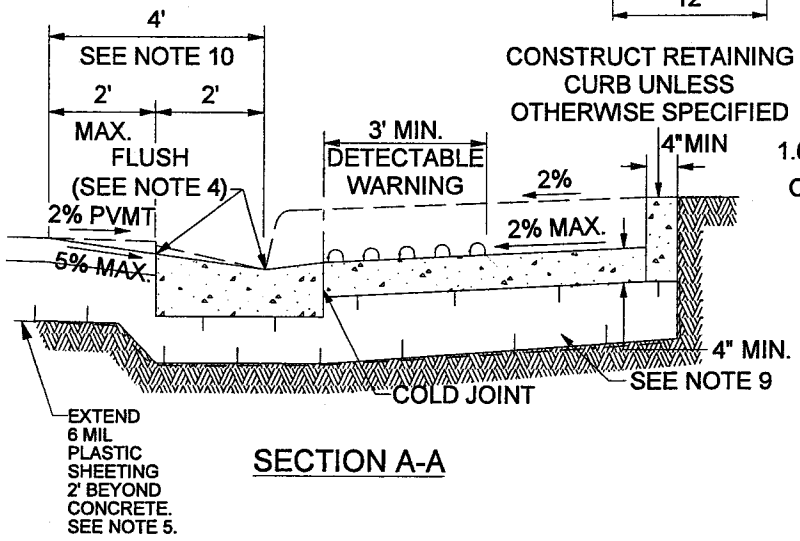
COUNTY OF RIVERSIDE

CURB RAMP CASE A

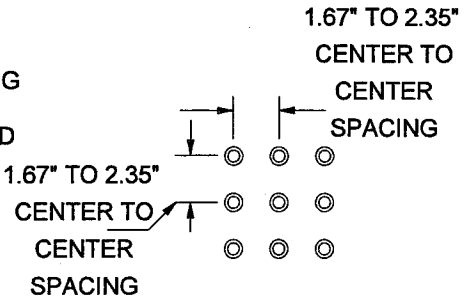
STANDARD NO. 403 (1 OF 4)

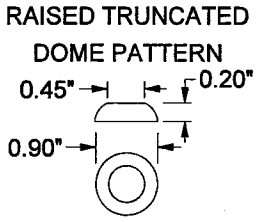
REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-77, 5-80	11-04	1				4			
10-81, 6-82		2				5			
9-88, 2-90		3				6			





SECTION A-A





RAISED TRUNCATED DOME
DETECTABLE WARNING SURFACE
SEE NOTE 11

SEE SHEET 4 OF 4 FOR NOTES.

NOT TO SCALE

APPROVED BY:

DATE: 11/15/04

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

REGISTERED PROFESSIONAL ENGINEER
GEORGE A. JOHNSON
No. CE 42328
Exp. 3-31-06
CIVIL
STATE OF CALIFORNIA

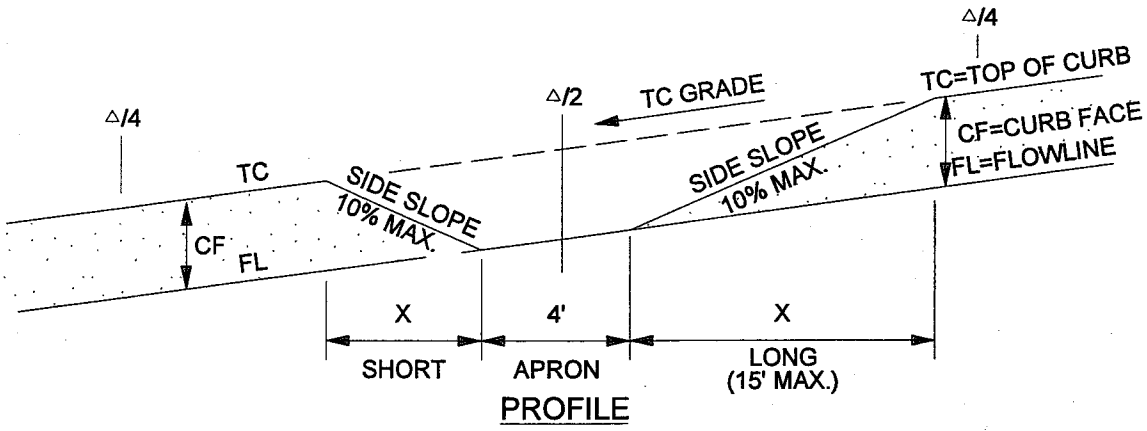
COUNTY OF RIVERSIDE

CURB RAMP CASE B

STANDARD NO. 403 (2 OF 4)

12-97

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-77, 5-80	11-04	1				4			
10-81, 6-82		2				5			
9-88, 2-90		3				6			



PROFILE

TABLE X

CF (IN)	RADIUS (FT)	SIDE SLOPE	X	TC GRADE (ALONG CURB RETURN)					
				1%	2%	3%	4%	5%	6%
6"	35'	10%	X_S	4.6	4.2	3.9	3.6	3.4	3.2
			X_L	5.6	6.3	7.2	8.4	10.0	12.5
8"	35'	10%	X_S	6.1	5.6	5.2	4.8	4.5	4.2
			X_L	7.5	8.4	9.6	11.2	13.4	15.0

TO CALCULATE "X" DIMENSION:

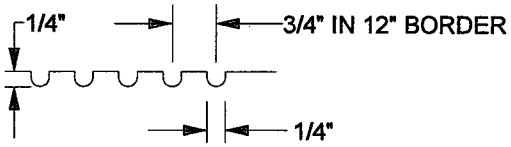
SHORT SIDE (DOWN SLOPE):

$$X_S\ (FT) = \frac{\text{CURB FACE (FT)}}{\text{SIDE SLOPE + TC GRADE}}$$

LONG SIDE (UP SLOPE):

$$X_L\ (FT) = \frac{\text{CURB FACE (FT)}}{\text{SIDE SLOPE - TC GRADE}}$$

ENGINEER TO SHOW X_S AND X_L ON IMPROVEMENT PLANS



GROOVING DETAIL

APPROVED BY:

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

DATE: 05/05/07

REGISTERED PROFESSIONAL ENGINEER
GEORGE A. JOHNSON
No. CE 42328
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

COUNTY OF RIVERSIDE

CURB RAMP

STANDARD NO. 403 (3 OF 4)

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-77, 5-80	11-04	1				4			
10-81, 6-82		2				5			
9-88, 2-90		3				6			

CONSTRUCTION NOTES:

1. IF DISTANCE FROM CURB TO BACK OF SIDEWALK IS TOO SHORT TO ACCOMODATE RAMP AND 4' LANDING, THEN USE THE CASE "B" RAMP.
2. IF SIDEWALK IS LESS THAN 6' WIDE, THE FULL WIDTH OF THE SIDEWALK SHALL BE DEPRESSED AS SHOWN IN CASE B. MINIMUM SIDEWALK WIDTH IS 4' FROM BACK OF CURB.
3. THE RAMP SHALL HAVE A 12" WIDE BORDER WITH GROOVES 1/4" WIDE AND 1/4" DEEP APPROXIMATELY 3/4" ON CENTER. SEE GROOVING DETAIL.
4. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
5. WHEN ABUTTING SOIL HAS A HIGH SULFATE CONTENT, SPECIAL CONSIDERATIONS ARE REQUIRED. SEE SPECIFICATIONS (SECTION 16.04).
6. RAMP SIDE SLOPE VARIES UNIFORMLY FROM A MAXIMUM OF UP TO 10% AT CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO TOP OF THE RAMP (EXCEPT IN CASE B).
7. CONSTRUCT WEAKENED PLANE JOINTS AT 1/4 DELTAS WHEN RADIUS EQUALS 35' AND AT INSIDE EDGE OF GROOVED BORDER WHEN RADIUS EQUALS 25'.
8. IF EXPANSIVE SOIL IS ENCOUNTERED, THEN RAMP SHALL BE CONSTRUCTED OVER CLASS 2 AGGREGATE MATERIAL.
9. CONCRETE SHALL BE CLASS B.
10. MAXIMUM SLOPES OF ADJOINING GUTTERS: THE ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP AND CONTINUOUS PASSAGE TO THE CURB RAMP SHALL NOT EXCEED 5% WITHIN 4' OF THE BOTTOM OF THE CURB RAMP.
11. DETECTABLE WARNING SURFACES ARE REQUIRED ON ALL CURB RAMPS THAT ENTER INTO A VEHICULAR TRAVEL WAY.

APPROVED BY:

George A. Johnson DATE: 11/15/04

DIRECTOR OF TRANSPORTATION
GEORGE A. JOHNSON, RCE 42328

REGISTERED PROFESSIONAL ENGINEER GEORGE A. JOHNSON No. CE 42328 Exp. 3-31-06 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE

CURB RAMP CONSTRUCTION NOTES

REVISIONS		REV.	BY:	APR'D	DATE	REV.	BY:	APR'D	DATE
8-77, 5-80	11-04	1				4			
10-81, 6-82		2				5			
9-88, 2-90		3				6			

STANDARD NO. 403 (4 OF 4)

12-97

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Duncomer Y. Hor
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Duncomer Y. Hor — No. C45803 — Exp. 12-31-08 — CIVIL — STATE OF CALIFORNIA

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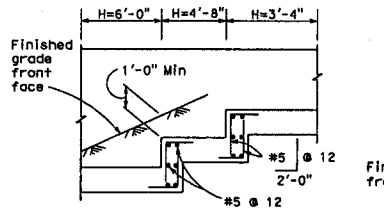
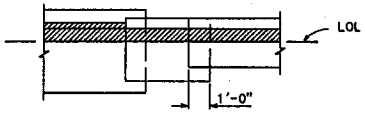
To get to the Caltrans web site, go to: http://www.dot.ca.gov

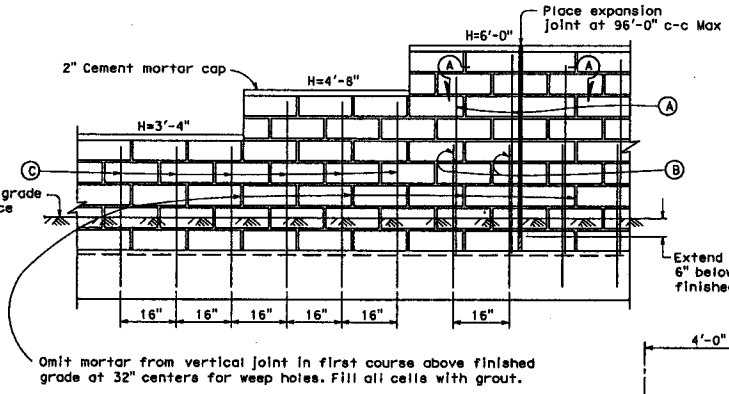


ELEVATION

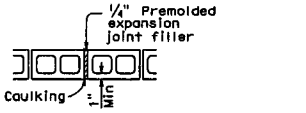


PLAN

FOOTING STEP DETAILS



ELEVATION - MASONRY CONSTRUCTION



SECTION A-A

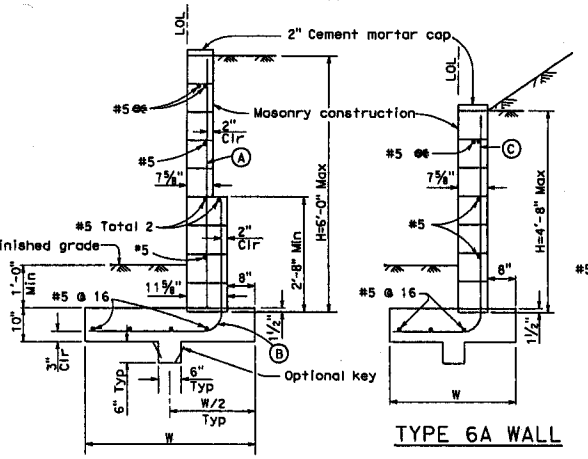
DESIGN DATA

Masonry: f_m = 500 psi f'_m = 1,500 psi f_s = 24,000 psi n = 20

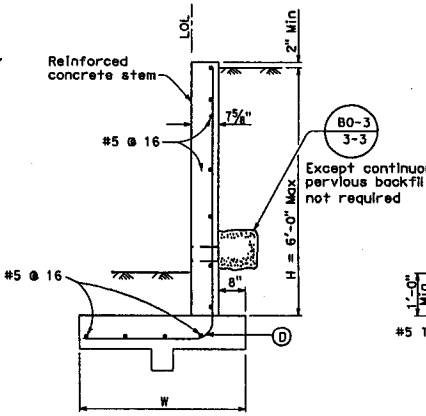
Reinforced Concrete: f_c = 1,450 psi f'_c = 3,600 psi f_s = 24,000 psi n = 10

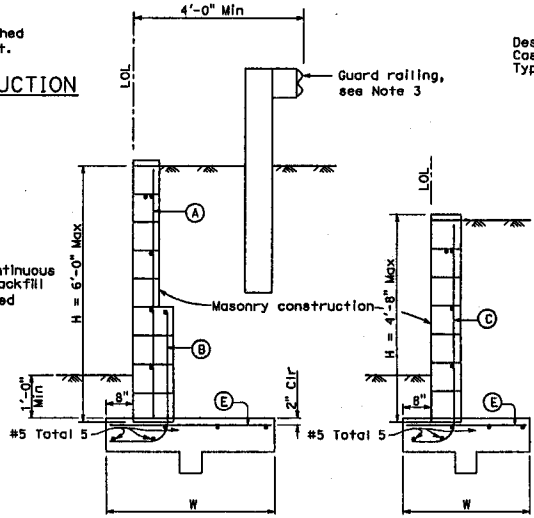
Earth = 120 lb/ft^3

Minimum allowable soil bearing capacity of foundation material = 2.0 ksf

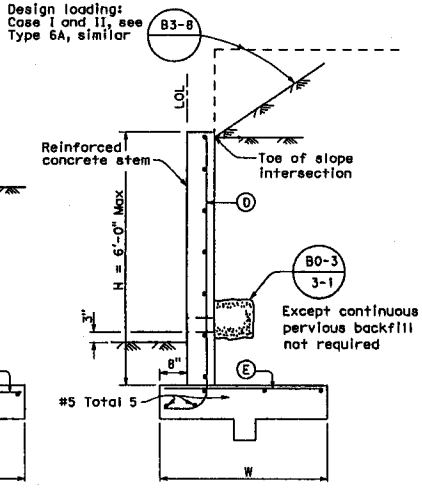


TYPE 6A WALL





TYPE 6B WALL



Type	Design H	3'-4"	4'-0"	4'-8"	5'-4"	6'-0"
6A	W	3'-3"	3'-6"	3'-10"	4'-3"	4'-6"
6A	A				#5 @ 16	#5 @ 16
6A	B				#5 @ 16	#5 @ 16
6A	C	#5 @ 16	#5 @ 16	#5 @ 16		
6A	D	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 12

NOTES:

1. For details not shown at "6B", see "6A".
2. Type 6 retaining wall shall be limited to use for walls of Design H of 6'-0" or less.
3. Where traffic is adjacent to the top of wall, guard railing should be set back from the top front face of wall at least 4'-0".
4. Unless otherwise stipulated, the Contractor will have the option of constructing the Type 6 walls of either masonry or reinforced concrete.
5. For reinforced concrete wall stem joint details, See B0-3 / 3-3 and B0-3 / 3-4.
6. No splices are allowed on (A), (B) and (C) bars.
7. At (D) bar, no splices are allowed within 1'-8" above the top of footing.

Type	Design H	3'-4"	4'-0"	4'-8"	5'-4"	6'-0"
6B	W	2'-9"	3'-0"	3'-4"	3'-9"	4'-0"
6B	A				#5 @ 16	#5 @ 16
6B	B				#5 @ 16	#5 @ 16
6B	C	#5 @ 16	#5 @ 16	#5 @ 16		
6B	D	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 12
6B	E	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 15	#5 @ 12

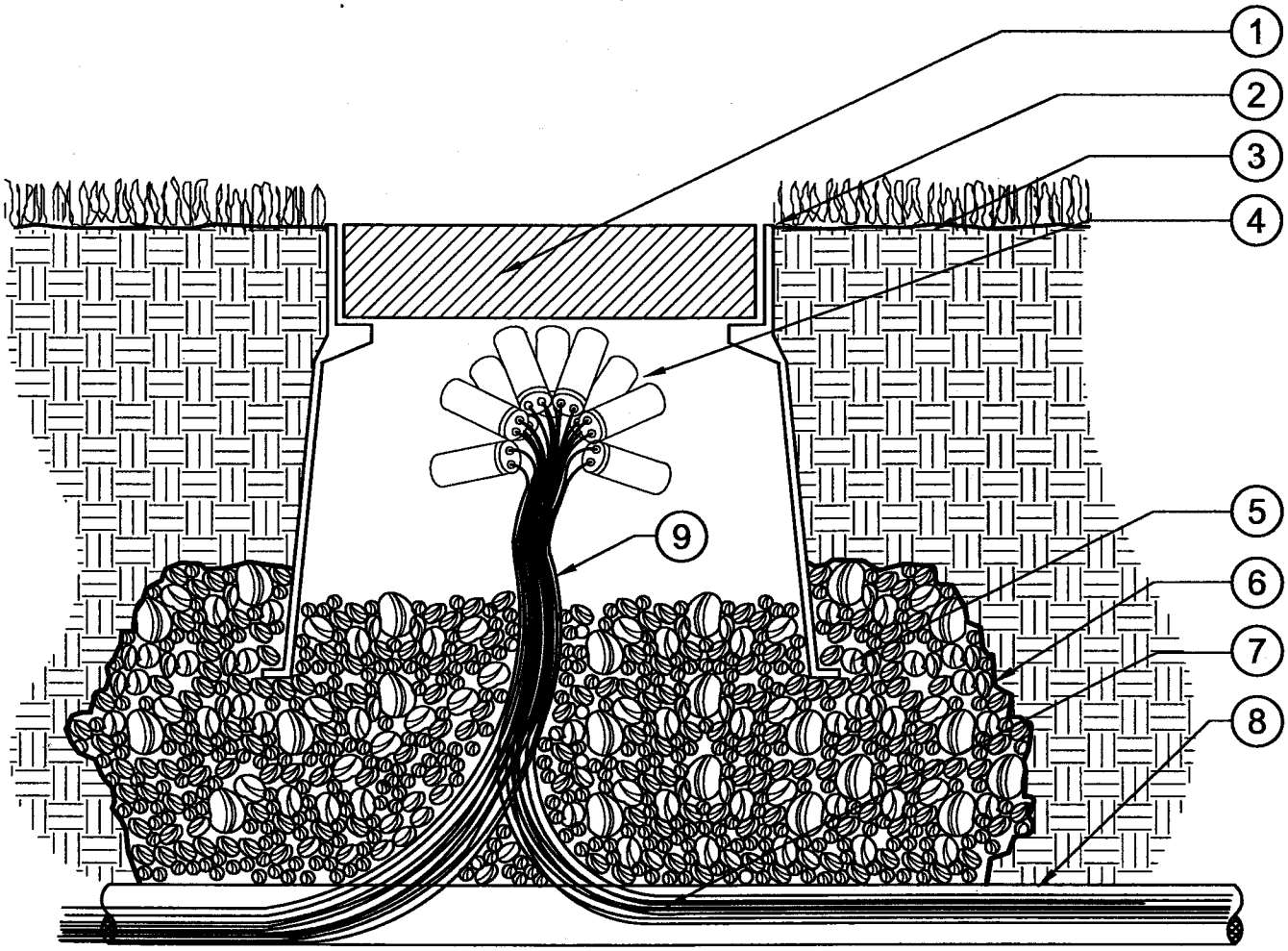
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 6 6'-0" MAXIMUM

NO SCALE

B3-11

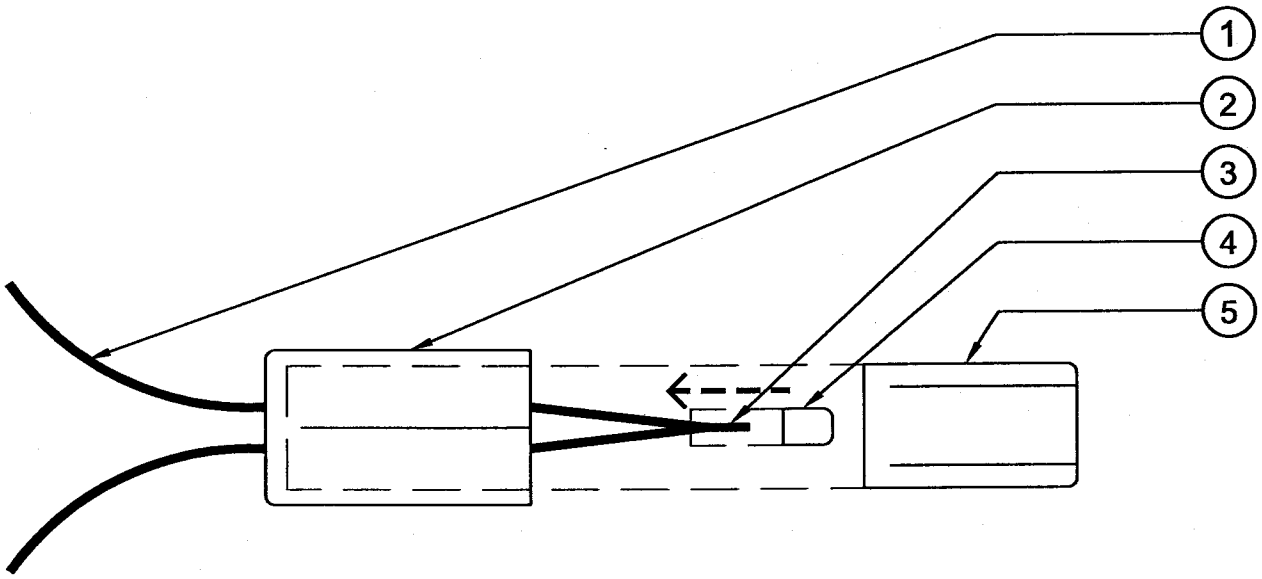
2-8-06



1. STANDARD RECTANGULAR BOX W/ LOCKING LID (DO NOT CUT ADDITIONAL HOLES IN BOX)
2. FLUSH IN LAWN AREAS, 2" IN SHRUB AREAS
3. FINISH GRADE
4. WIRE CONNECTORS (ONE FOR EACH SPLICE) LABEL ALL WIRE ENDS WITHIN 1" OF CONNECTOR.
5. 3/4" GRAVEL SUMP IN, UNDER, AND AROUND VALVE BOX. FILL TO TOP OF VALVE BOX HOLES.
6. INSTALL FILTER FABRIC AROUND GRAVEL SUMP.
7. ELECTRIC CONTROL WIRES AND COMMON WIRE
8. PRESSURE SUPPLY LINE
9. 24" MIN. LENGTH TO EACH LEG OF WIRE IN SPLICE BOX, DO NOT COIL.

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	LOW VOLTAGE SPLICE CONNECTION		
		APPROVED BY:	
STD. G-020	3"=1'-0"	REV:	DATE: 03-05-12

FILE: G-020_SPLICE CONNECTION.DWG



1. LOW VOLTAGE WIRES, 3 MAXIMUM
2. OUTER CASE OF CONNECTOR
3. STRIP AND TWIST WIRES FOR PROPER CONNECTION
4. COPPER SLEEVE CRIMP INSTALLED WITH RECOMMENDED TOOL
5. INNER CASE OF CONNECTOR

NOTE:

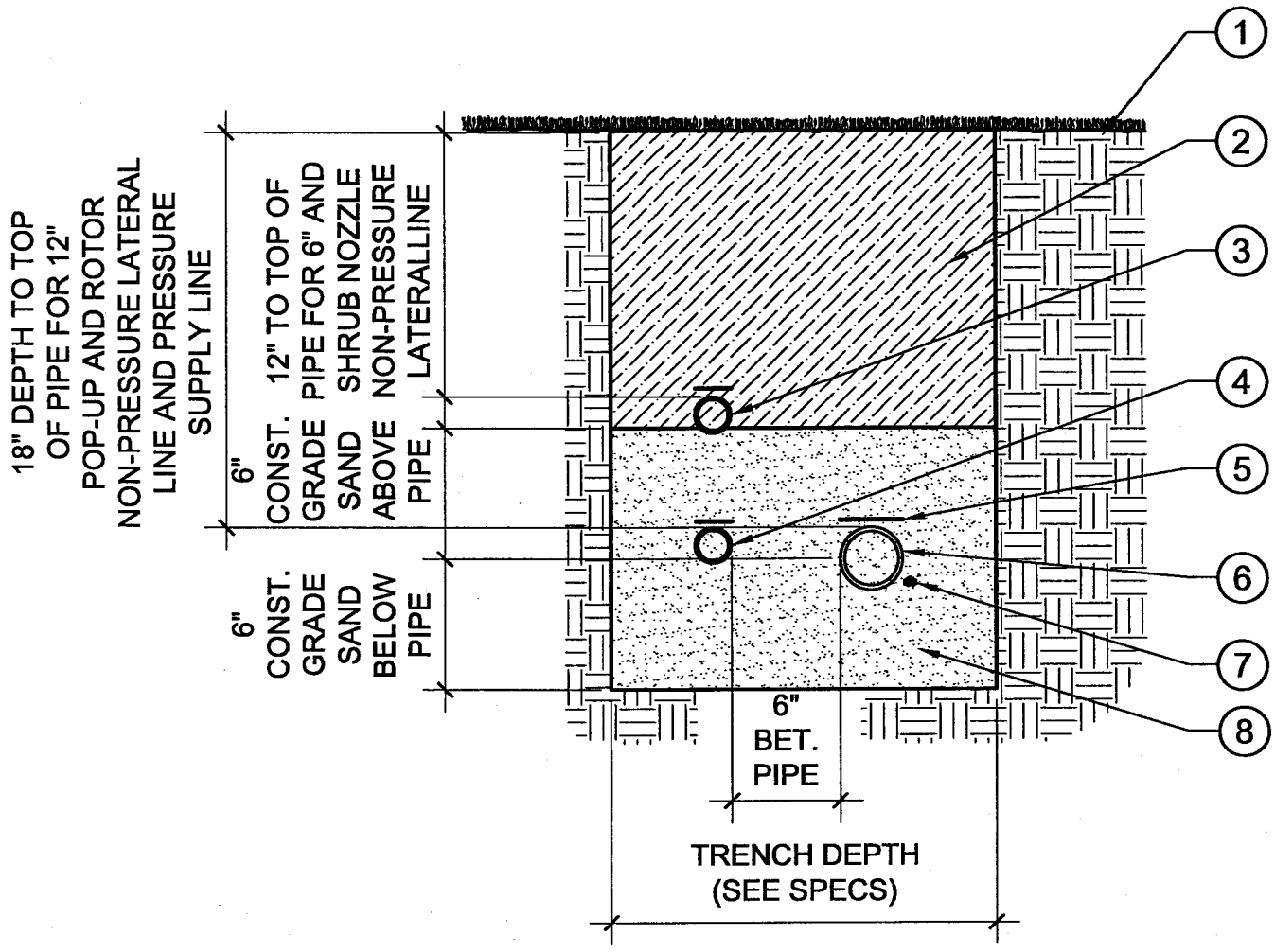
-FILL INNER CASE FILLED WITH SEALER PRIOR TO FINAL ASSEMBLY

-ALL WIRE ROUTED BETWEEN CONTROLLER AND REMOTE CONTROL VALVES SHALL BE A CONTINUOUS RUN WITH NO WIRE SPLICES

-WIRE SPLICES SHALL ONLY OCCUR AT THE REMOTE CONTROL VALVE.

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	LOW VOLTAGE WIRE CONNECTOR		
		APPROVED BY:	
STD. G-021	N.T.S.	REV:	DATE: 03-05-12

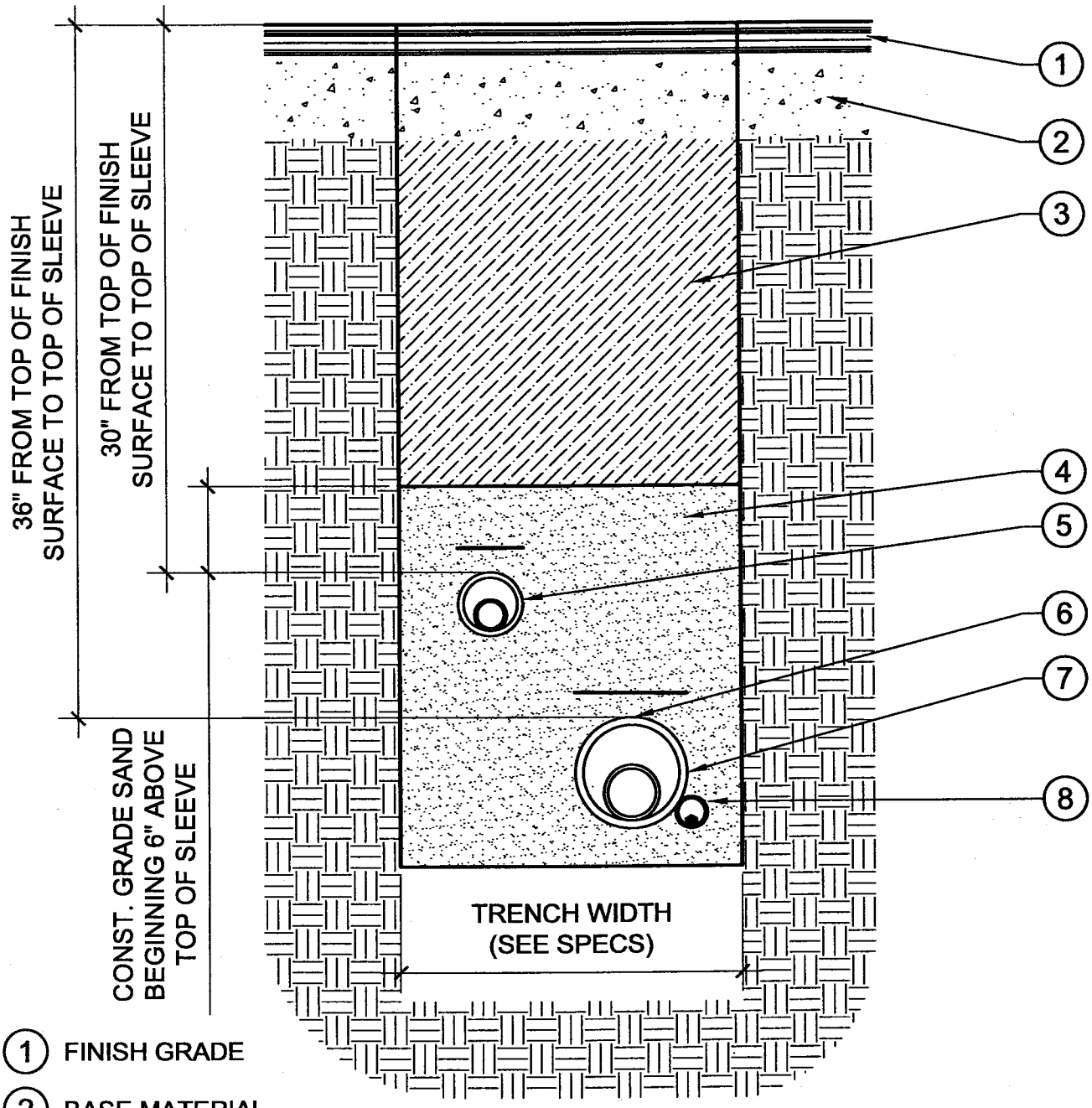
FILE: G-021_WIRE CONNECTOR.DWG



1. FINISH GRADE
2. BACKFILL (FREE OF DEBRIS AND ROCK GREATER THAN 1", SEE SPECIFICATIONS)
3. NON-PRESSURE LATERAL LINE FROM SIX INCH POP-UP OR HEADS ON RISER
4. NON-PRESSURE LATERAL LINE FROM ROTORS OR 12 INCH POP-UPS
5. DETECTOR WATER METALIC TAPE
6. PRESSURE SUPPLY LINE (SEE PLAN FOR SIZE)
7. CONTROL WIRES DIRECT BURIED ADJACENT TO AND TO THE SIDE OF PRESSURE SUPPLY LINE
8. CONSTRUCTION GRADE SAND ABOVE AND BELOW PRESSURE SUPPLY LINE

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	TRENCH IN LANDSCAPE		
		APPROVED BY:	
STD. G-040	3"=1'-0"	REV:	DATE: 03-05-12

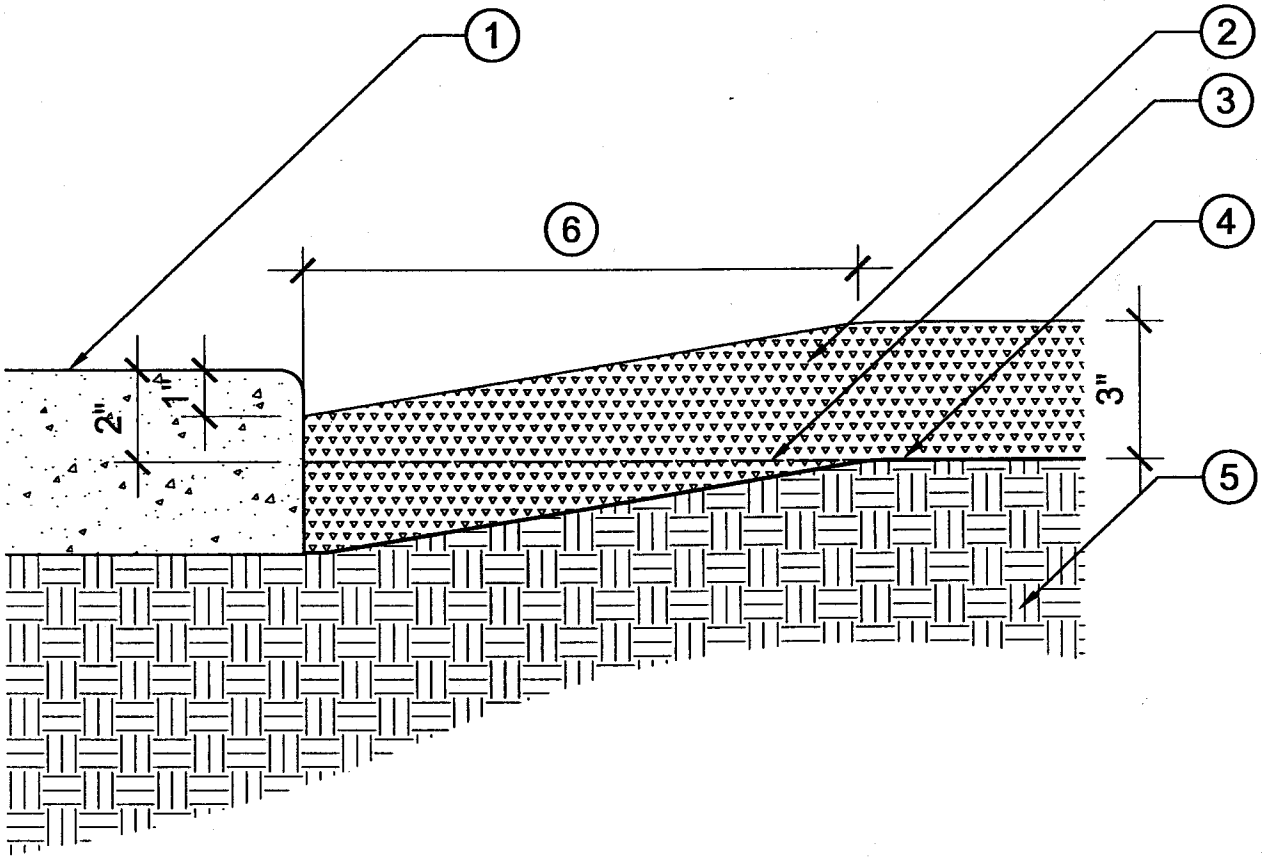
FILE: G-040_TRENCH IN LANDSCAPE.DWG



1. FINISH GRADE
2. BASE MATERIAL
3. BACKFILL MATERIAL (FREE OF DEBRIS AND ROCKS GREATER THAN 1")
4. CONSTRUCTION GRADE SAND BEGINNING 6" ABOVE TOP OF NON-PRESSURE LATERAL SLEEVE
5. NON- PRESSURE LATERAL LINE SLEEVE(SEE SPECIFICATION)
6. DETECTOR WATER METALIC TAPE (SEE SPECIFICATIONS)
7. PRESSURE SUPPLY LINE SLEEVES (SEE SPECIFICATIONS)
8. CONDUIT FOR WIRE (SEE SPECIFICATIONS)

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	TRENCH IN HARDSCAPE		
	OR AT STREET CROSSING	APPROVED BY:	
STD. G-041	3"=1'-0"	REV:	DATE: 03-05-12

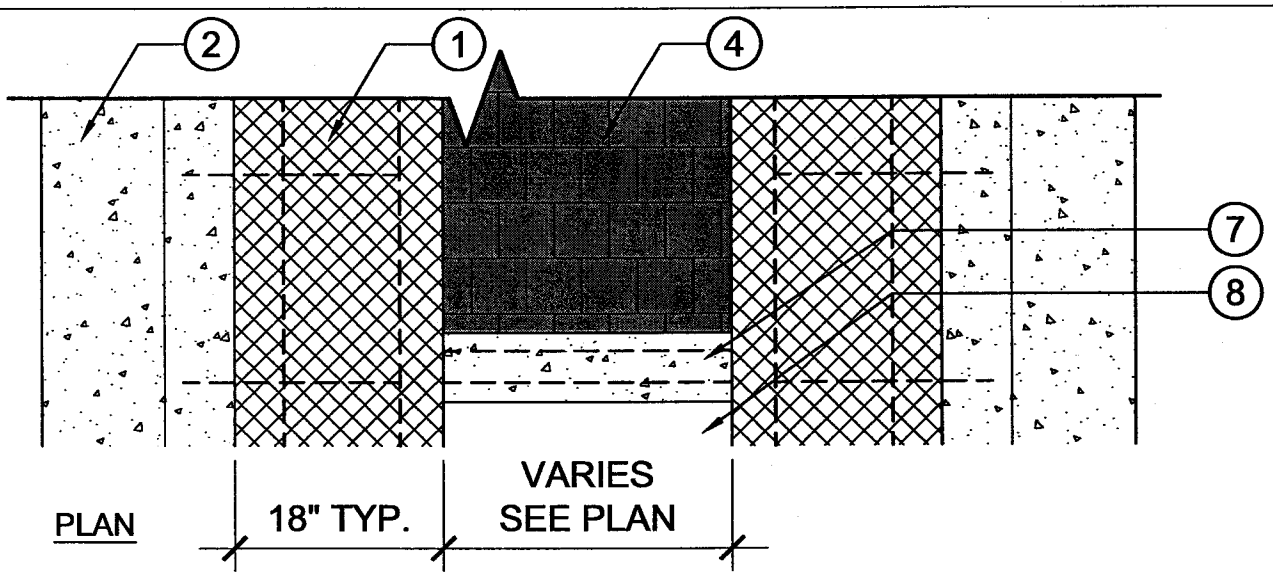
FILE: G-041_TRENCH IN HARDSCAPE.dwg

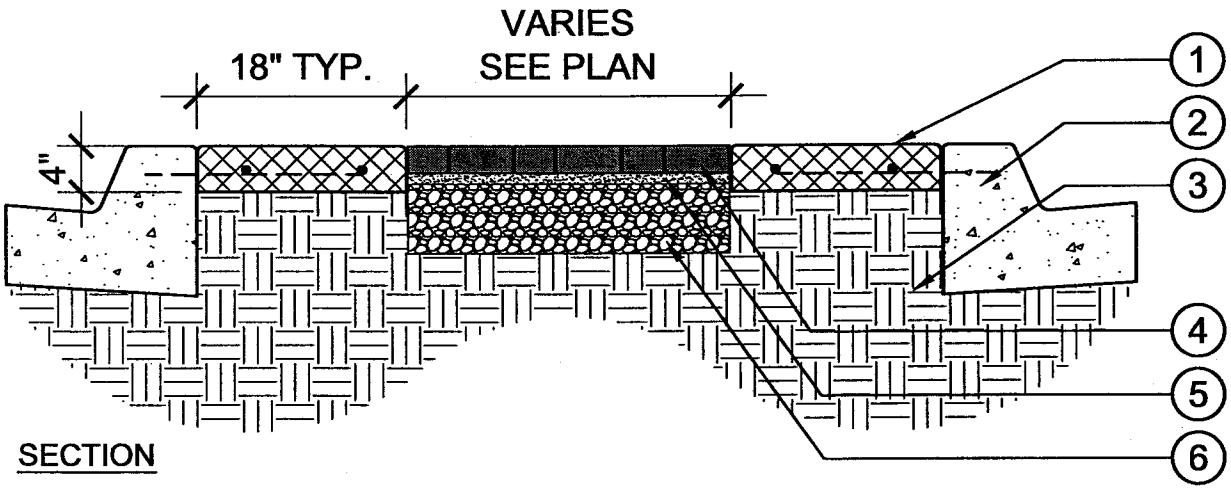


1. HARDSCAPE
2. MULCH
3. ROUGH GRADE
4. FINISH GRADE
5. BASE AND COMPACTION PER GEOTECHNICAL REPORT
6. TRANSITION AREA WIDTH VARIES 5:1 MAX. GRADE AT TRANSITION

LWD	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT
	MULCH		
	TRANSITION AT HARDSCAPE	APPROVED BY:	
STD. H-001	3"=1'-0"	REV:	DATE: 03-05-12

FILE: H-001_MULCH.DWG





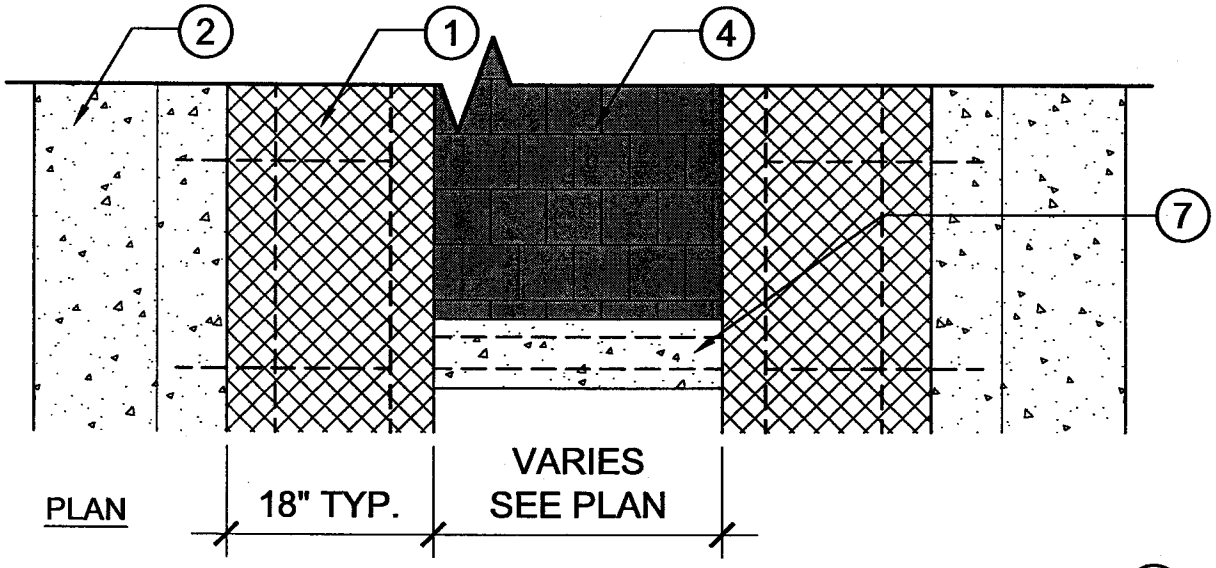
SECTION

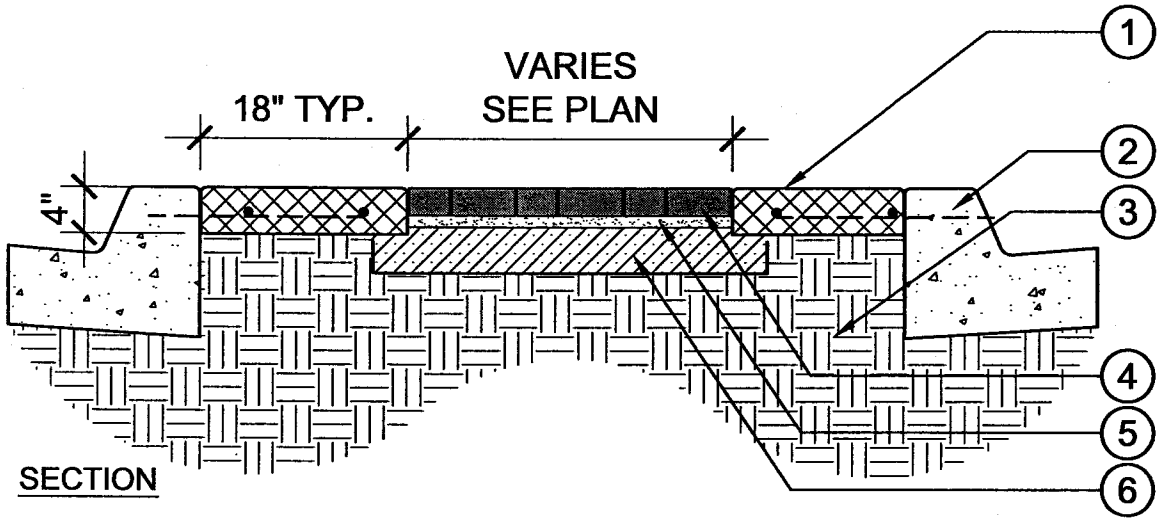
1. 18" WIDE, 4" THICK CONCRETE MAINTENANCE WALK WITH (2) #4 REBAR PARALLEL TO CURB AND #4 REBAR, DOWELED INTO CURB AT 36" O.C. (COLOR AND FINISH PER PLANS)
2. CONCRETE CURB AND GUTTER
3. BASE AND COMPACTION PER GEOTECHNICAL REPORT
4. INTERLOCKING PAVERS - 2 3/8" (60MM) MINIMUM THICKNESS PROVIDE SAND-SWEPT JOINTS PER MANUFACTURER RECOMMENDATION
5. 1" MIN. BEDDING SAND LEVELING COURSE PER MANUFACTURER'S RECOMMENDATION
6. COMPACTED ROAD BASE 4" MIN. THICK, OR PER MANUFACTURER'S RECOMMENDATION
7. 6" WIDE X 6" DEEP CONCRETE HEADER W/ (2) #4 REBAR PARALLEL
8. PLANTNG AREA

NOTE:
INTERLOCKING PAVERS PATTERN AND COLOR TO BE APPROVED PER INDIVIDUAL PROJECT AND CONDITION

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT	
	PAVERS ON GRAVEL BASE	
	APPROVED BY:	
STD. H-012	3/4" = 1'-0"	REV: DATE: 03-05-12

FILE: H-012_PAVERS_ON_GRAVEL_BASE.DWG



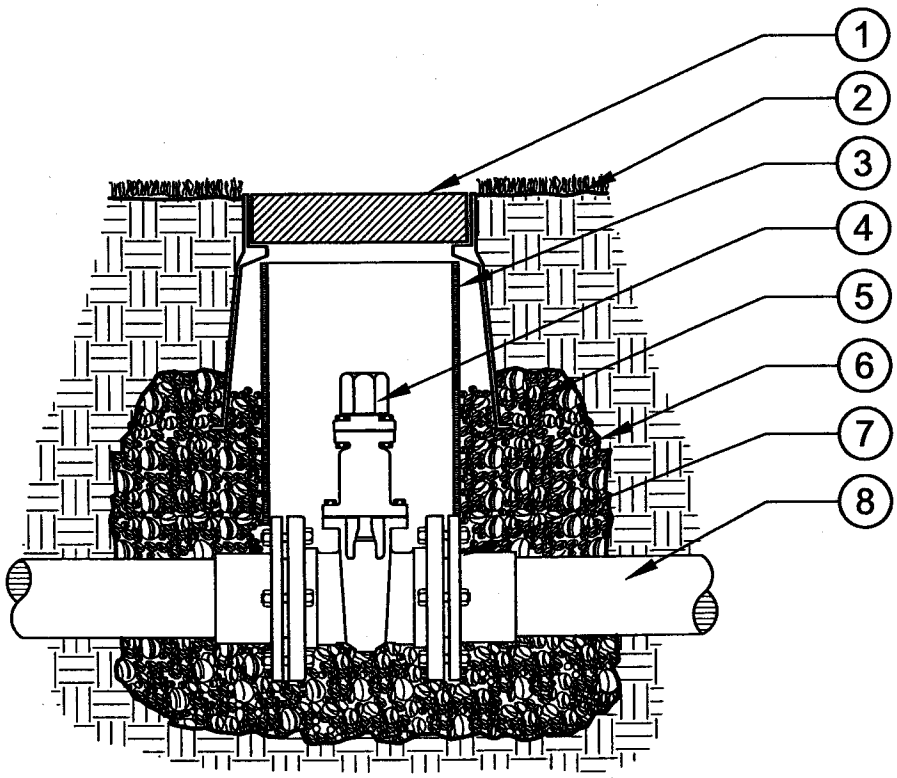


1. 18" WIDE, 4" THICK CONCRETE MAINTENANCE WALK WITH (2) #4 REBAR PARALLEL TO CURB AND #4 REBAR, DOWELED INTO CURB AT 36" O.C. (COLOR AND FINISH PER PLANS)
2. CONCRETE CURB AND GUTTER
3. BASE AND COMPACTION PER GEOTECHNICAL REPORT
4. INTERLOCKING PAVERS - 2 3/8" (60MM) MINIMUM THICKNESS PROVIDE SAND-SWEPT JOINTS PER MANUFACTURER RECOMMENDATION
5. 1" MIN. BEDDING SAND LEVELING COURSE PER MANUFACTURER'S RECOMMENDATION
6. CONCRETE PAD PER GEOTECHNICAL REPORT
7. 6" WIDE X 6" DEEP CONCRETE HEADER W/ (2) #4 REBAR PARALLEL

NOTE:
INTERLOCKING PAVERS PATTERN AND COLOR TO BE APPROVED PER INDIVIDUAL PROJECT AND CONDITION

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	PAVERS ON CONCRETE BASE		
		APPROVED BY:	
STD. H-013	3/4" = 1'-0"	REV:	DATE: 03-05-12

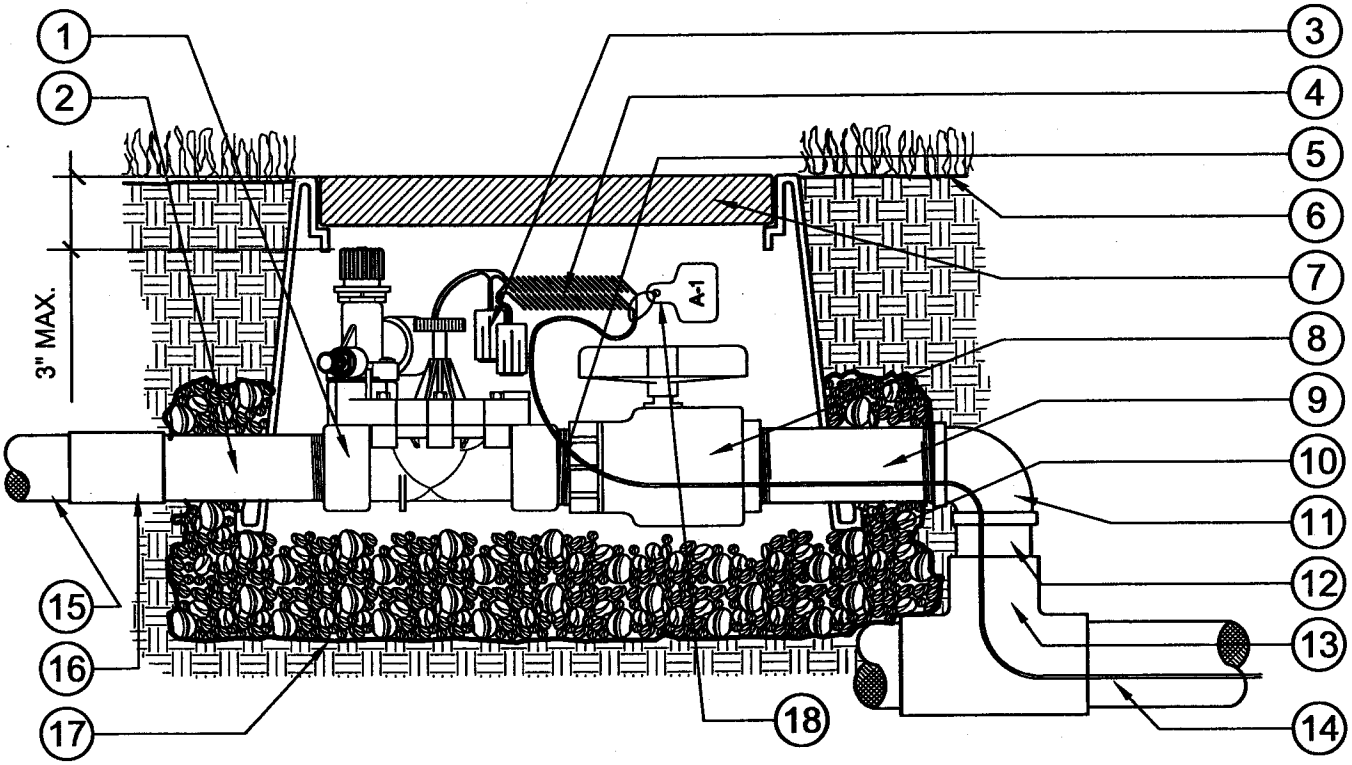
FILE: H-013_PAVERS_ON_CONCRETE_BASE.DWG



1. 10" ROUND VALVE BOX (SEE SPECIFICATIONS) (DO NOT CUT ADDITIONAL HOLES INTO BOX)
2. FINISH GRADE
3. 8" CL 160 PVC SLEEVE (TO REST ON TOP EDGE OF VALVE ASSEMBLY)
4. ISOLATION GATE VALVE WITH 2" SQUARE OPERATING NUT (SEE SPECIFICATIONS)
5. 3/4" GRAVEL SUMP IN, UNDER, AND AROUND VALVE BOX FILL TO TOP OF VALVE BOX HOLES
6. INSTALL FILTER FABRIC AROUND GRAVEL SUMP
7. FLG X SLIP SCH. 80 PVC FLANGE (2 REQUIRED)
8. PRESSURE SUPPLY LINE (REFER TO PLAN FOR SIZE)

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	ISOLATION GATE VALVE		
	FOR 3" PRESSURE SUPPLY LINE	APPROVED BY:	
STD. I-031	3"=1'-0"	REV:	DATE: 03-05-12

FILE: I-031_ISOLATION GATE VALVE 3.DWG

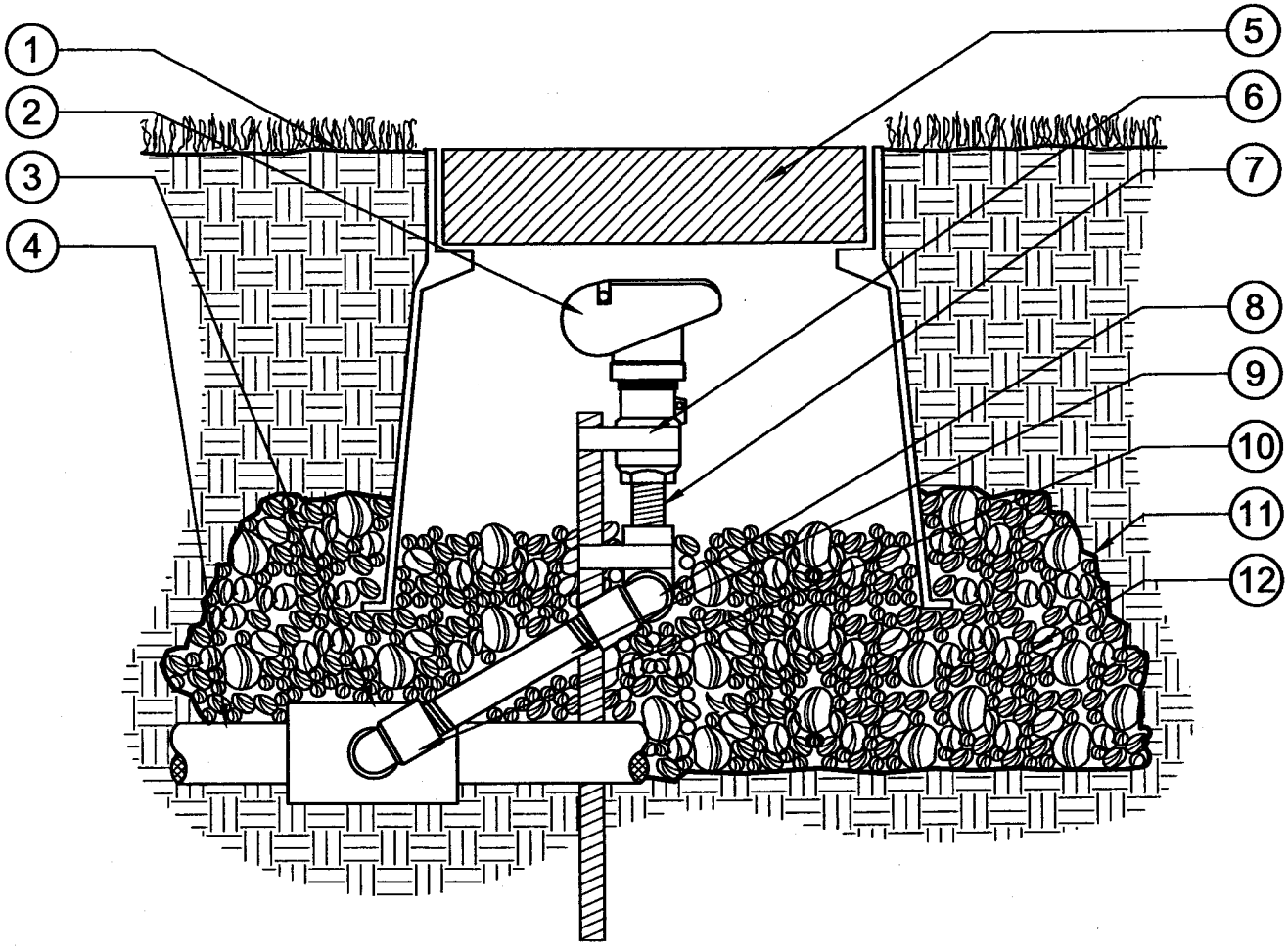


1. ELECTRIC CONTROL VALVE
2. 6" LONG SCH. 80 TOE NIPPLE (LATERAL LINE SIZE)
3. CONNECT WIRES TO VALVE USING WATER TIGHT CONNECTORS (SEE SPECIFICATIONS)
4. USE 1/2" PVC SCRAP T WRAP 12" OF ADDITIONAL WIRE BEFORE CONNECTING
5. CLOSED NIPPLE (LINE SIZE)
6. FINISH GRADE
7. RECTANGULAR VALVE BOX (SEE SPECIFICATIONS, DO NOT CUT ADDITIONAL HOLES INTO BOX)
8. PVC SCH 80 BALL VALVE (LINE SIZE)
9. 4" SCH 80 NIPPLE (LINE SIZE)
10. 3/4" GRAVEL SUMP IN, UNDER AND AROUND VALVE BOX. FILL TO TOP OF VALVE BOX HOLES
11. SLIP X FIP ELL (LINE SIZE)
12. PVC PRESSURE SUPPLY LINE (CUT TO FIT MAXIMUM DIMENSION FROM TOP OF VALVE TO TOP OF LID)
13. TEE IN PRESSURE SUPPLY LINE (LINE SIZE)
14. PRESSURE SUPPLY LINE (SEE PLAN FOR SIZE)
15. LATERAL LINE (SEE PLAN FOR SIZE)
16. SCH. 80 COUPLING (LATERAL LINE SIZE)
17. INSTALL FILTER FABRIC AROUND GRAVEL SUMP
18. VALVE IDENTIFICATION TAG

NOTE:
BALL VALVE TO BE USED ONLY IF IRRIGATION CONTROL VALVE IS INSTALLED AS A SINGLE VALVE AND NOT PART OF A MANIFOLD.

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	ELECTRIC CONTROL VALVE		
	WITH BALL VALVE	APPROVED BY:	
STD. I-041	1 1/2"=1'-0"	REV:	DATE: 03-05-12

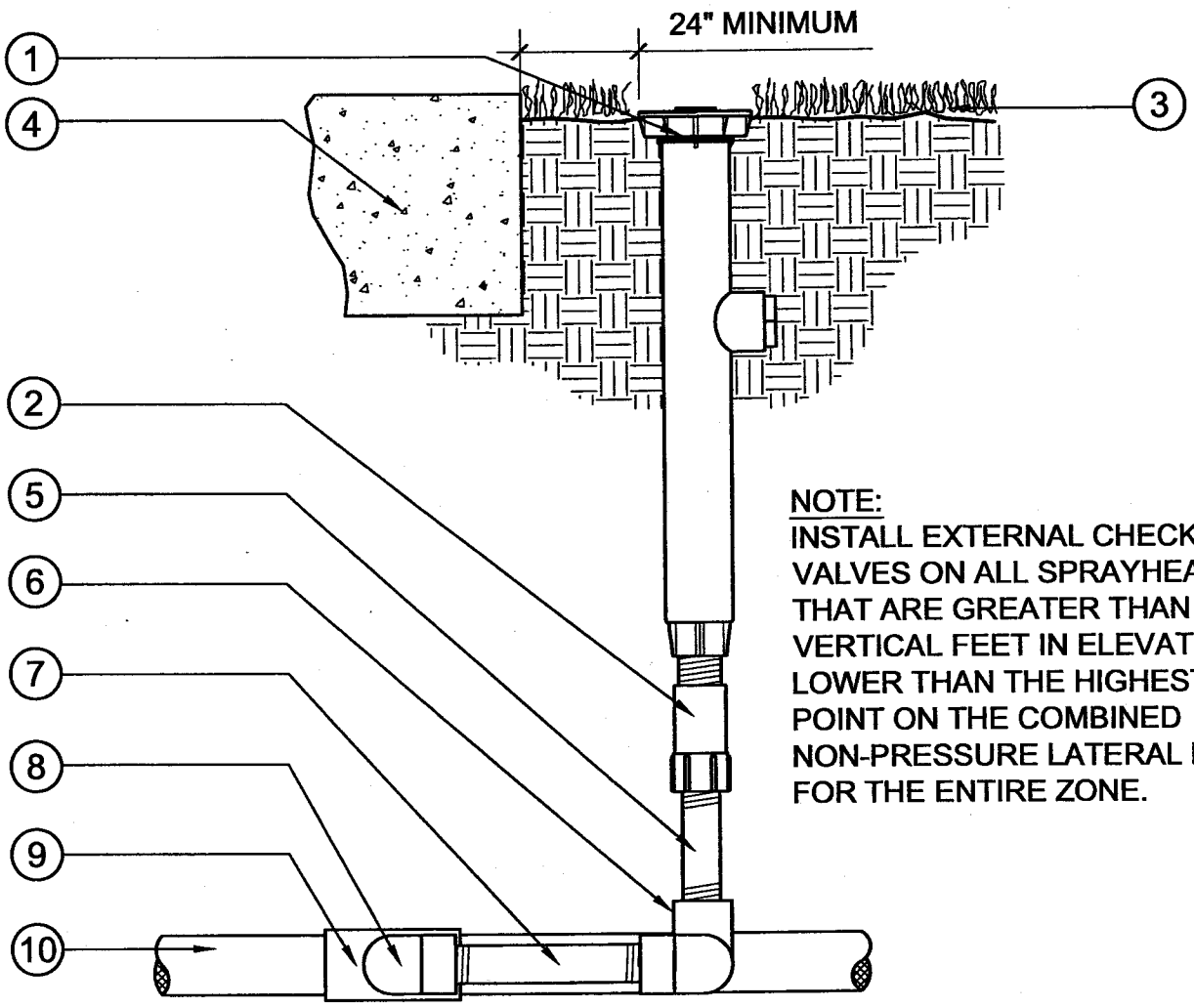
FILE: I-041_ELECTRIC CONTROL VALVE.DWG



1. FINISH GRADE
2. QUICK COUPLING VALVE (SEE LEGEND AND SPECIFICATIONS)
3. TEE IN PRESSURE SUPPLY LINE
4. PRESSURE SUPPLY LINE (SEE PLAN FOR SIZE)
5. 10" ROUND VALVE BOX (DO NOT CUT ADDITIONAL HOLES INTO BOX)
6. SCH. 40 GALV. 36" STAKE WITH (2) SPRINKLER TIES
7. PVC SCH. 80 THREADED NIPPLE (SIZE TO FIT)
8. 1" MIPT X FIPT SCH 40 90 ELL (2 REQUIRED)
9. 1" X 8" SCH. 80 NIPPLE
10. 1" PVC. SCH. 40 STREET ELL
11. INSTALL FILTER FABRIC AROUND GRAVEL SUMP
12. 3/4" GRAVEL SUMP IN, UNDER AND AROUND VALVE BOX. FILL TO TOP OF VALVE BOX HOLES

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	QUICK COUPLING VALVE		
		APPROVED BY:	
STD. I-044	3"=1'-0"	REV:	DATE: 03-05-12

FILE: I-044_QUICK COUPLER.DWG



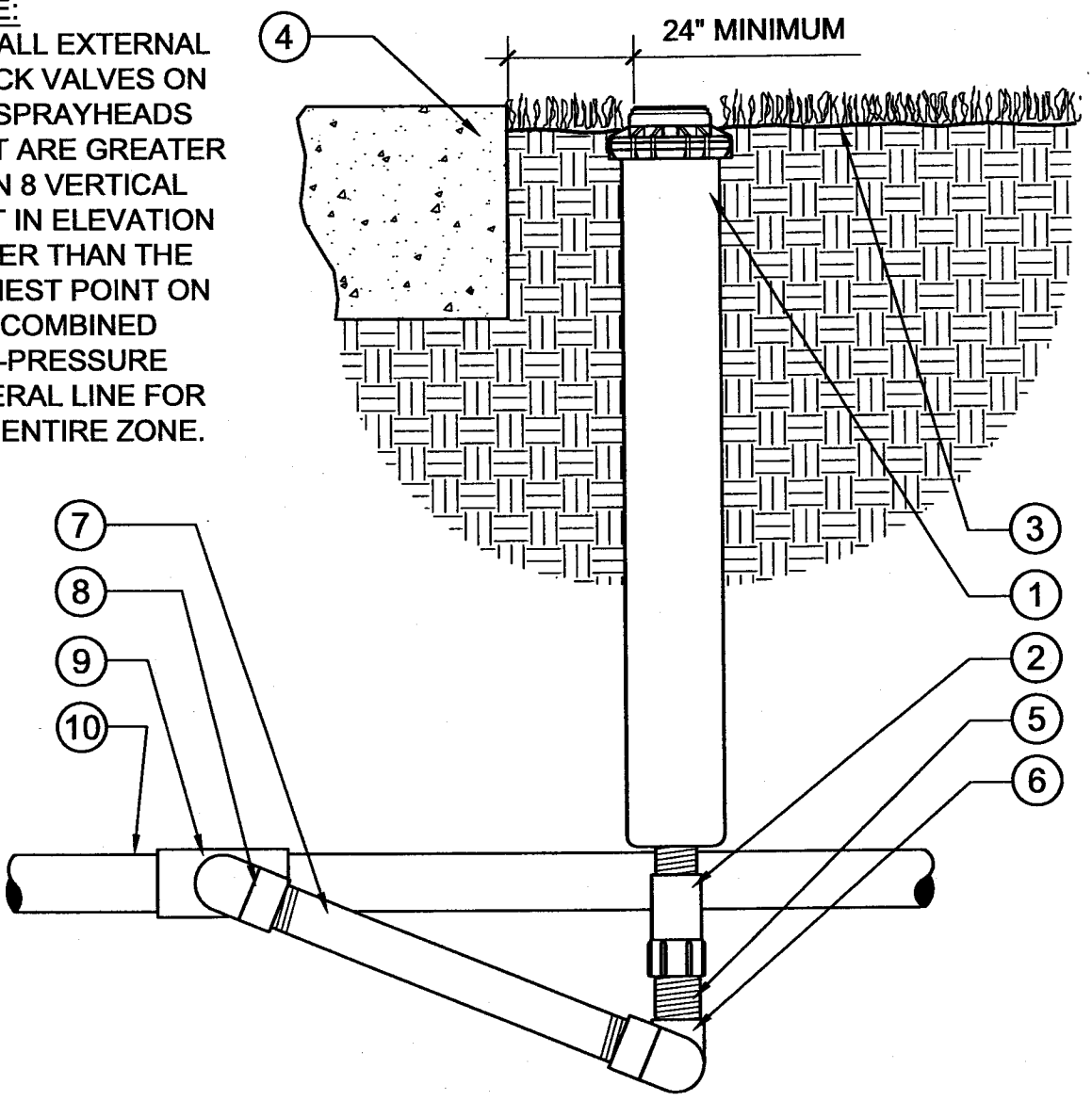
NOTE:
INSTALL EXTERNAL CHECK VALVES ON ALL SPRAYHEADS THAT ARE GREATER THAN 8 VERTICAL FEET IN ELEVATION LOWER THAN THE HIGHEST POINT ON THE COMBINED NON-PRESSURE LATERAL LINE FOR THE ENTIRE ZONE.

1. POP-UP SPRAY HEAD (SEE SPECIFICATIONS)
2. EXTERNAL CHECK VALVE (SEE SPECIFICATIONS)
3. FINISH GRADE
4. ADJACENT HARDSCAPE (IF APPLICABLE)
5. 1/2" x 2" SCH. 80 NIPPLE (1 REQUIRED)
6. 1/2" FIPT x FIPT SCH. 40 90 DEGREE ELBOW (1 REQUIRED)
7. 1/2" x 8" PVC SCH. 80 NIPPLE
8. 1/2" FIPT X MIPT SCH. 40 90 DEGREE ELBOW (2 REQUIRED)
9. S x S x T TEE IN LATERAL LINE (LATERAL SIZE x 1/2" FIPT)
10. NON-PRESSURE LATERAL LINE (SIZE AS NOTED ON PLAN)

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	12" POP-UP SPRAY HEAD		
	WITH EXTERNAL CHECK VALVE	APPROVED BY:	
STD. I-061	3"=1'-0"	REV:	DATE: 03-05-12

FILE: I-061_12 POP UP SPRAY HEAD.DWG

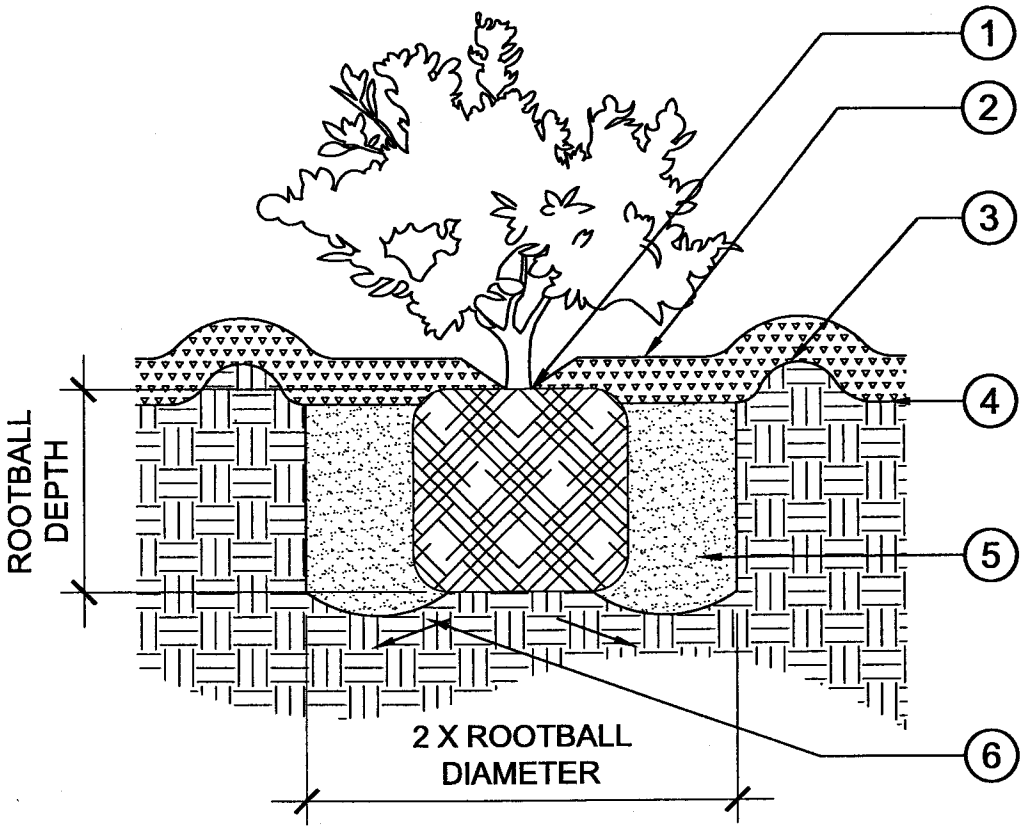
NOTE:
INSTALL EXTERNAL CHECK VALVES ON ALL SPRAYHEADS THAT ARE GREATER THAN 8 VERTICAL FEET IN ELEVATION LOWER THAN THE HIGHEST POINT ON THE COMBINED NON-PRESSURE LATERAL LINE FOR THE ENTIRE ZONE.



1. POP-UP ROTOR HEAD (SEE SPECIFICATIONS)
2. EXTERNAL CHECK VALVE (SEE SPECIFICATIONS)
3. FINISH GRADE
4. ADJACENT HARDSCAPE (IF APPLICABLE)
5. 3/4" x 2" SCH. 80 NIPPLE (1 REQUIRED)
6. 3/4" FIPT x FIPT SCH. 40 90 DEGREE ELBOW (1 REQUIRED)
7. 3/4" x 8" PVC SCH. 80 NIPPLE
8. 3/4" FIPT X MIPT SCH. 40 90 DEGREE ELBOW (2 REQUIRED)
9. S x S x T TEE IN LATERAL LINE (LATERAL SIZE x 3/4" FIPT)
10. NON-PRESSURE LATERAL LINE (SIZE AS NOTED ON PLAN)

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	12" POP-UP ROTOR		
	WITH EXTERNAL CHECK VALVE	APPROVED BY:	
STD. I-071	3"=1'-0"	REV:	DATE: 03-05-12

FILE: I-071_12 POP UP ROTOR.DWG



1. SET TOP OF ROOTBALL 1" ABOVE FINISH GRADE
2. 3" LAYER MULCH MATERIAL (SEE SPECS)
3. 3" HIGH WATERING BERM
4. FINISH GRADE
5. PLANTING BACKFILL (SEE SPECS)
6. SLOPE PLANTING HOLE TO CORNERS

	COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT		
	SHRUB ON LEVEL GRADE		
		APPROVED BY:	
STD. P-015	1"=1'-0"	REV:	DATE: 03-05-12

FILE: P-015_SHRUB_LVL.DWG

OFFICE OF
CLERK OF THE BOARD OF SUPERVISORS
1st FLOOR, COUNTY ADMINISTRATIVE CENTER
P.O. BOX 1147, 4080 LEMON STREET
RIVERSIDE, CA 92502-1147
PHONE: (951) 955-1060
FAX: (951) 955-1071

KECIA HARPER-IHEM
Clerk of the Board of Supervisors

KIMBERLY A. RECTOR
Assistant Clerk of the Board

May 8, 2012

THE PRESS ENTERPRISE
ATTN: LEGALS
PO BOX 792
RIVERSIDE, CA 92501

FAX (951) 368-9018
E-MAIL: legals@pe.com

RE: NOTICE INVITING BIDS: MAGNOLIA AVE. & NEECE ST. B6-0460

To Whom It May Concern:

Attached is a copy for publication in your newspaper for **TEN (10) TIMES:**

Friday	- May 11, 2012	Wednesday	- May 16, 2012
Saturday	- May 12, 2012	Thursday	- May 17, 2012
Sunday	- May 13, 2012	Friday	- May 18, 2012
Monday	- May 14, 2012	Saturday	- May 19, 2012
Tuesday	- May 15, 2012	Sunday	- May 20, 2012

We require your affidavit of publication immediately upon completion of the last publication.

Your invoice must be submitted to this office in duplicate, WITH TWO CLIPPINGS OF THE PUBLICATION.

NOTE: PLEASE COMPOSE THIS PUBLICATION INTO A SINGLE COLUMN FORMAT.

Thank you in advance for your assistance and expertise.

Sincerely,

Mcgil
Cecilia Gil, Board Assistant to
KECIA HARPER-IHEM, CLERK OF THE BOARD

Gil, Cecilia

From: mtinajero@pe.com on behalf of Master, PEC Legals <legalsmaster@pe.com>
Sent: Tuesday, May 08, 2012 2:15 PM
To: Gil, Cecilia
Subject: Re: [Legals] FOR PUBLICATION: Bids for Magnolia Ave. & Neece St. B6-0460

Received for publication from May 11 to May 20. Proofs with cost to follow.

On Tue, May 8, 2012 at 1:23 PM, Gil, Cecilia <CCGIL@rcbos.org> wrote:

Good afternoon!

Attached is a Notice Inviting Bids, for publication from May 11 to May 20, 2012. Please confirm. THANK YOU!

Cecilia Gil
Board Assistant to the
Clerk of the Board of Supervisors
951-955-8464

THE COUNTY ADMINISTRATIVE CENTER IS CLOSED EVERY FRIDAY UNTIL FURTHER NOTICE.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING.

--

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OFFICE OF
CLERK OF THE BOARD OF SUPERVISORS
1st FLOOR, COUNTY ADMINISTRATIVE CENTER
P.O. BOX 1147, 4080 LEMON STREET
RIVERSIDE, CA 92502-1147
PHONE: (951) 955-1060
FAX: (951) 955-1071

KECIA HARPER-IHEM
Clerk of the Board of Supervisors

KIMBERLY A. RECTOR
Assistant Clerk of the Board

May 8, 2012

RIVERSIDE COUNTY RECORD
ATTN: LEGALS
PO BOX 3187
RIVERSIDE, CA 92519

FAX (951) 685-2961
E-MAIL: recordmde@aol.com

RE: NOTICE INVITING BIDS: MAGNOLIA AVE. & NEECE ST. B6-0460

To Whom It May Concern:

Attached is a copy for publication in your newspaper for **TWO (2) TIMES:**

Thursday - May 10, 2012

Thursday - May 17, 2012

We require your affidavit of publication immediately upon completion of the last publication.

Your invoice must be submitted to this office in duplicate, WITH TWO CLIPPINGS OF THE PUBLICATION.

NOTE: PLEASE COMPOSE THIS PUBLICATION INTO A SINGLE COLUMN FORMAT.

Thank you in advance for your assistance and expertise.

Sincerely,

Mcgil
Cecilia Gil, Board Assistant to
KECIA HARPER-IHEM, CLERK OF THE BOARD

Gil, Cecilia

From: Michael Evans <recordmde@aol.com>
Sent: Tuesday, May 08, 2012 1:43 PM
To: Gil, Cecilia
Subject: Re: FOR PUBLICATION: Bids for Magnolia Ave. & Neece St. B6-0460

Hello Cecilia,
I have received the notice for publication for the two weeks.
Thanks, Mike

-----Original Message-----
From: Gil, Cecilia <CCGIL@rcbos.org>
To: recordmde <recordmde@aol.com>
Sent: Tue, May 8, 2012 1:25 pm
Subject: FOR PUBLICATION: Bids for Magnolia Ave. & Neece St. B6-0460

Good afternoon! This is the Notice Inviting Bids I asked Cathy to reserve a space for. Publication is on May 10 and 17, 2012. Please confirm. THANK YOU VERY MUCH!!

Cecilia Gil
Board Assistant to the
Clerk of the Board of Supervisors
951-955-8464

THE COUNTY ADMINISTRATIVE CENTER IS CLOSED EVERY FRIDAY UNTIL FURTHER NOTICE.
PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING.

NOTICE INVITING BIDS

County of Riverside, herein called Owner, invites sealed proposals for:

MAGNOLIA AVENUE AND NEECE STREET
TRAFFIC SIGNAL AND STREET IMPROVEMENT PROJECT

PROJECT NO. B6-0460

Proposal shall be delivered to the Riverside County Transportation Department, 14th Street Annex, 3525 14th Street, Riverside, California 92501, telephone (951) 955-6780 not later than 2:00 p.m., on Wednesday, May 23, 2012, to be promptly opened in public at said address. Each proposal shall be in accordance with plans, specifications, and other contract documents, dated April 2012, and prepared by County of Riverside, whose address is same as the above, from whom they may be obtained upon deposit of $35 per set plus mailing. No refund. Prospective bidders may preview the plans, specifications and other contract documents, at no charge prior to purchase, at the above noted location.

The Contractor is required to have a Class "A" license or "C-12" license at the time of bid submission.

Engineering Estimate	$431,000.00 - $503,000.00
Bid Bond	10%
Performance Bond	100%
Payment Bond	100%
Working Days	55 Working Days

www.tlma.co.riverside.ca.us/trans

Dated: May 8, 2012

Kecia Harper-Ihem, Clerk of the Board
By: Cecilia Gil, Board Assistant