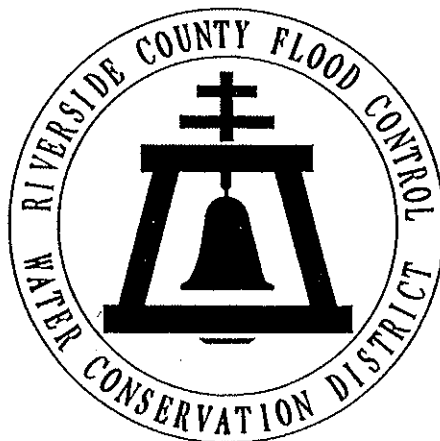


**FILE**

SPECIFICATIONS and CONTRACT DOCUMENTS  
for the CONSTRUCTION of

**L.I.D. TESTING & DEMONSTRATION  
FACILITY,  
PARKING LOT RENOVATION 2010,  
AND WATER EFFICIENT LANDSCAPE  
CONVERSION**

RIVERSIDE COUNTY, CALIFORNIA



FORM APPROVED COUNTY COUNSEL 12/10 DATE  
BY: Neal R. Kipnis

NOV 02 2010 11.3 contract  
JUL 27 2010 11.5 P&S



RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT

August 26, 2010

**ADDENDUM NO. 2**

**TO**

**L.I.D. TESTING & DEMONSTRATION FACILITY,  
PARKING LOT RENOVATION 2010,  
AND WATER EFFICIENT LANDSCAPE CONVERSION**

RIVERSIDE COUNTY, CALIFORNIA

Bid Opening Date: Tuesday, August 31, 2010 at 9:00 a.m.

**BID OPENING**

**CHANGE** Bid Opening Date to: TUESDAY, SEPTEMBER 7, 2010 AT 8:30 A.M.

**CLARIFICATION**

Any firm that participated in preparation of the project drawings and specifications shall not be allowed to bid on the work as a general contractor or a subcontractor.

**PROPOSAL**

**REPLACE** PROPOSAL in its entirety (Pages VIII, VIIIa, VIIIb, VIIIc, VIId, VIIE and VIIf) to accommodate:

- The name change of Item No. 8 Class "A" Concrete, 3'x3' Cleanout Structure to Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault and change the QUANTITY of this Item from 8 to 9;
- Splitting of Item No. 66 Stormwater and Non-Stormwater Pollution and the Non-Stormwater Discharge or Dewatering into Item No. 66 Stormwater and Non-Stormwater Pollution Control and Item No. 67 Non-Stormwater Discharge or Dewatering, per Section 29.12 Payment; and
- Renumbering the remainder of the items accordingly and to accommodate the addition of the signature lines on the bottom of Page VIIf for acknowledgment of the addendums.

**EXHIBIT**

**REPLACE** EXHIBIT Pages XIX, XIXd, XIXe and XIXf) to accommodate:

- The name change of Item No. 8 Class "A" Concrete, 3'x3' Cleanout Structure to Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault and change the QUANTITY of this Item from 8 to 9;
- Splitting of Item No. 66 Stormwater and Non-Stormwater Pollution and the Non-Stormwater Discharge or Dewatering into Item No. 66 Stormwater and Non-Stormwater Pollution Control and Item No. 67 Non-Stormwater Discharge or Dewatering, per Section 29.12 Payment; and
- Renumbering the remainder of the items accordingly.

**GENERAL PROVISIONS**

**ADD** Page 17 referenced in Addendum No. 1, which was inadvertently omitted.

**SPECIAL PROVISIONS**

**ADD** Page 37 referenced in Addendum No. 1, which was inadvertently omitted.

**DETAILED SPECIFICATIONS**

**ADD** Page 41 referenced in Addendum No. 1, which was inadvertently omitted.

**REPLACE** Section 16.10 in its entirety with the following: 16.10 Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault – The contract item Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault covers the complete construction of these structures including excavation, subgrade preparation, forming, concrete and reinforcing steel, backfill, and covers the procurement and installation of Inwesco 3636 Series Torsion Assist Frame and Cover Assemblies, or approved equal, as shown on the drawings and per manufacturer's specifications.

**CHANGE** the contract item name in Section 16.23 Measurement, Class "A" Concrete, 3'x3' Cleanout Structure to Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault.

\*\*\*\*\*

**NOTE:** Bidders are required to acknowledge receipt of all addenda at the bottom of **Sheet VIII** of the PROPOSAL. Failure to acknowledge all addenda on the bid form may cause the bid to be considered not responsive to the invitation, which would require rejection of the bid.

  
WARREN D. WILLIAMS  
General Manager-Chief Engineer

PROPOSAL

For the Construction of **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California, consisting of the following estimated quantities:

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
10	1.	Mobilization	L.S.	---	---	
11	2.	Water Control	L.S.	---	---	
12	3.	Traffic Control	L.S.	---	---	
13	4.	Clearing and Miscellaneous Work	L.S.	---	---	
13	5.	Extra Directed Work	L.S.	---	\$150,000.00	150,000.00
14	6.	Excavation	C.Y.	7,230		
15	7.	Trench Safety System	L.S.	---	---	
16	8.	Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault	EACH	9		
16	9.	Class "A" Concrete, Transition Structure No. 3	EACH	3		
16	10.	Class "A" Concrete, Under Sidewalk Drain	EACH	3		
16	11.	Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls	L.F.	158		
16	12.	Class "A" Concrete, CMU Flow Through Planter Walls	L.F.	183		
16	13.	Class "A" Concrete, Landscape Filter Basin Retaining Wall	C.Y.	48		
16	14.	Class "A" Concrete, Sampling Basin Structure	EACH	1		
16	15.	Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9)	L.F.	984		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
16	16.	Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26)	L.F.	3,500		
16	17.	Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31)	L.F.	5,250		
16	18.	Class "B" Concrete, Miscellaneous	C.Y.	57		
16	19.	Class "B" Concrete, Planter and Building Slabs	C.Y.	24		
16	20.	Install Decorative Concrete Flatwork	L.S.	---	---	
17	21.	Reinforced Concrete Pipe	L.F.	200		
19	22.	3" Class 2 Aggregate Base Driveway and Access Ramp	C.Y.	10		
19	23.	Pervious Pavers Over 2" #8 Over 3" #57 Over 13" #2 Stone	S.F.	25,400		
19	24.	Pervious Pavers Over 2" #8 Over 10-7/8" #57 Stone	S.F.	9,270		
19	25.	Pervious Pavers Over 2" #8 Over 3" #57 Over 17" #2 Stone	S.F.	5,650		
19	26.	Pervious Pavers Over 1" #8 Over 4" #57 Stone	S.F.	1,184		
19	27.	8.5" Pervious Concrete Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,360		
19	28.	8.5" Pervious Concrete Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	2,090		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
19	29.	5" Porous Asphalt Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,270		
19	30.	5" Porous Asphalt Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	1,700		
19	31.	4" AC Over 6" Class 2 Aggregate Base and 4" AC Over 11" Class 2 Aggregate Base	S.F.	76,655		
19	32.	Variable Depth AC Overlay	TONS	31		
19	33.	Grind Existing AC Pavement	S.F.	720		
19	34.	Slurry Seal	S.F.	35,800		
20	35.	Bollard	EACH	260		
21	36.	4" PVC Pipe	L.F.	78		
21	37.	6" PVC Pipe	L.F.	2,126		
21	38.	8" PVC Pipe	L.F.	369		
21	39.	12" PVC Pipe	L.F.	314		
21	40.	18" PVC Pipe	L.F.	33		
21	41.	10" Wide Slotted Drain	L.F.	177		
21	42.	Precast Concrete Flow Detection Catch Basin	EACH	3		
21	43.	9"x9" Plastic Catch Basin	EACH	7		
21	44.	18"x18" Precast Concrete Catch Basin	EACH	2		
21	45.	24"x24" Precast Concrete Catch Basin	EACH	1		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	46.	36"x36" Precast Concrete Catch Basin	EACH	5		
21	47.	Galvanized Steel Catch Basin Lid	EACH	1		
21	48.	PVC Pipe Stormwater Cleanout	EACH	23		
21	49.	Precast Concrete Headwall for 8" Pipe	EACH	1		
21	50.	3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure	L.F.	530		
21	51.	New Wheel Stops	EACH	95		
21	52.	Signs Including Post and Footing	EACH	2		
21	53.	Prefabricated 12"x22" Building and 2" Electrical Conduit from Pull Box to Prefabricated Building	L.S.	---	---	
21	54.	3.5' High Metal Railing	L.F.	55		
21	55.	Connection to Existing Building Roof Downdrains	EACH	3		
21	56.	Enhanced Grass Swale	L.S.	---	---	
21	57.	Adjust Manhole and Vault to Grade	EACH	9		
21	58.	Adjust Valve and Cleanout to Grade	EACH	13		
26	59.	Cobble Filled Trench	L.F.	430		
26	60.	4'x4' #2 Stone Infiltration Trench in Lake Smithhammer	L.F.	220		
26	61.	#57 Stone in Landscape Filter Basin and Flow Through Planters	C.Y.	31		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
26	62.	Mirafi FW402 Filter Fabric	S.F.	7,570		
26	63.	Mirafi NT100 Impermeable Barrier	S.F.	13,330		
26	64.	#2 Stone Energy Dissipaters	C.Y.	1		
27	65.	Dust Abatement	L.S.	---	---	
29	66.	Stormwater and Non-Stormwater Pollution Control	L.S.	---	---	
29	67.	Non-Stormwater Discharge or Dewatering	L.S.	---	---	
32	68.	Removal and Replacement of Existing Utilities at New Landscape Filter Basin	L.F.	360		
32	69.	Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline	L.S.	---	---	
33	70.	Filtration Soil Mixture	C.Y.	90		
38	71.	Irrigation System	L.S.	---	---	
39	72.	Soil Testing and Soil Preparation	S.F.	182,100		
40	73.	Mow Curbing	L.F.	2,875		
40	74.	Wood Chips	S.F.	145,600		
40	75.	Decomposed Granite	S.F.	2,080		
40	76.	Crushed Rock	S.F.	2,100		
40	77.	Drivable Grass	S.F.	785		
40	78.	Synthetic Turf	S.F.	315		
40	79.	Sod	S.F.	36,500		
40	80.	Flats	EACH	675		



PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
40	81.	1-Gallon	EACH	2,800		
40	82.	2-Gallon	EACH	98		
40	83.	5-Gallon	EACH	1,575		
40	84.	15-Gallon	EACH	18		
40	85.	15-Gallon Citrus	EACH	62		
40	86.	24" Box	EACH	138		
40	87.	36" Box	EACH	7		
40	88.	48" Box	EACH	1		
40	89.	6' Brown Trunk Palm	EACH	2		
41	90.	Tree Grate	EACH	2		
41	91.	Picnic Table	EACH	5		
41	92.	Waste Container	EACH	9		
41	93.	Fountain	EACH	1		
41	94.	Flag Pole	EACH	2		
41	95.	Concrete Pot #13	EACH	4		
41	96.	Concrete Pot #13A	EACH	8		
41	97.	Concrete Pot #13B	EACH	4		
41	98.	Concrete Bench #10	EACH	8		
41	99.	Concrete Bench #15	EACH	6		
42	100.	Landscape Maintenance	L.S.	---	---	
43	101.	Electrical Lighting Fixture A	EACH	24		
43	102.	Electrical Lighting Fixture B	EACH	2		
43	103.	Electrical Lighting Fixture C	EACH	5		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
43	104.	Electrical Lighting Fixture D	EACH	9		
43	105.	Electrical Lighting Fixture E	EACH	4		
43	106.	Electrical Conduit and Wire	L.F.	4,450		
<u>TOTAL</u>						

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Address

\_\_\_\_\_  
S.S.N. or E.I.N.

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Contractor's License No. and Classification

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Fax Number

ADDENDUM NO. 1 ACKNOWLEDGED \_\_\_\_\_

ADDENDUM NO. 2 ACKNOWLEDGED \_\_\_\_\_

ADDENDUM NO. 2

EXHIBIT A

(To Agreement for Riverside County Flood Control and Water Conservation District's **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California.)

Contract Price - Payment - District shall pay Contractor the following sums for the items set forth below in accordance with Contractor's Proposal as accepted by District, which sums shall be paid as provided in the General Provisions and subject to additions and deductions as provided in the Contract Documents.

It is understood that the quantities listed, except for those shown as "Final" or "Lump Sum" are but estimates only and final payment will be based on actual work performed, subject to such adjustments and alterations as elsewhere provided.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
10	1.	Mobilization	L.S.	---	---	
11	2.	Water Control	L.S.	---	---	
12	3.	Traffic Control	L.S.	---	---	
13	4.	Clearing and Miscellaneous Work	L.S.	---	---	
13	5.	Extra Directed Work	L.S.	---	\$150,000.00	150,000.00
14	6.	Excavation	C.Y.	7,230		
15	7.	Trench Safety System	L.S.	---	---	
16	8.	Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault	EACH	9		
16	9.	Class "A" Concrete, Transition Structure No. 3	EACH	3		
16	10.	Class "A" Concrete, Under Sidewalk Drain	EACH	3		
16	11.	Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls	L.F.	158		
16	12.	Class "A" Concrete, CMU Flow Through Planter Walls	L.F.	183		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	58.	Adjust Valve and Cleanout to Grade	EACH	13		
26	59.	Cobble Filled Trench	L.F.	430		
26	60.	4'x4' #2 Stone Infiltration Trench in Lake Smithhammer	L.F.	220		
26	61.	#57 Stone in Landscape Filter Basin and Flow Through Planters	C.Y.	31		
26	62.	Miramir FW402 Filter Fabric	S.F.	7,570		
26	63.	Miramir N#100 Impermeable Barrier	S.F.	13,330		
26	64.	#2 Stone Energy Dissipaters	C.Y.	1		
27	65.	Dust Abatement	L.S.	---	---	
29	66.	Stormwater and Non-Stormwater Pollution	L.S.	---	---	
29	67.	Non-Stormwater Discharge or Dewatering	L.S.	---	---	
32	68.	Removal and Replacement of Existing Utilities at New Landscape Filter Basin	L.F.	360		
32	69.	Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline	L.S.	---	---	
33	70.	Filtration Soil Mixture	C.Y.	90		
38	71.	Irrigation System	L.S.	---	---	
39	72.	Soil Testing and Soil Preparation	S.F.	182,100		
40	73.	Mow Curbing	L.F.	2,875		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
40	74.	Wood Chips	S.F.	145,600		
40	75.	Decomposed Granite	S.F.	2,080		
40	76.	Crushed Rock	S.F.	2,100		
40	77.	Drivable Grass	S.F.	785		
40	78.	Synthetic Turf	S.F.	315		
40	79.	Sod	S.F.	36,500		
40	80.	Flats	EACH	675		
40	81.	1-Gallon	EACH	2,800		
40	82.	2-Gallon	EACH	98		
40	83.	5-Gallon	EACH	1,575		
40	84.	15-Gallon	EACH	18		
40	85.	15-Gallon Citrus	EACH	62		
40	86.	24" Box	EACH	138		
40	87.	36" Box	EACH	7		
40	88.	48" Box	EACH	1		
40	89.	6' Brown Trunk Palm	EACH	2		
41	90.	Tree Grate	EACH	2		
41	91.	Picnic Table	EACH	5		
41	92.	Waste Container	EACH	9		
41	93.	Fountain	EACH	1		
41	94.	Flag Pole	EACH	2		
41	95.	Concrete Pot #13	EACH	4		
41	96.	Concrete Pot #13A	EACH	8		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
41	97.	Concrete Pot #13B	EACH	4		
41	98.	Concrete Bench #10	EACH	8		
41	99.	Concrete Bench #15	EACH	6		
42	100.	Landscape Maintenance	L.S.	---	---	
43	101.	Electrical Lighting Fixture A	EACH	24		
43	102.	Electrical Lighting Fixture B	EACH	2		
43	103.	Electrical Lighting Fixture C	EACH	5		
43	104.	Electrical Lighting Fixture D	EACH	9		
43	105.	Electrical Lighting Fixture E	EACH	4		
43	106.	Electrical Conduit and Wire	L.F.	4,450		
TOTAL						

APPENDIX NO. 2

### 6.03 SUBCONTRACTING

Reference is made to the Subletting and Subcontracting Fair Practice Act contained in the Public Contract Code (commencing §4100). By this reference, said Act is incorporated herein with like effect as if it were here set forth in full and the parties shall abide by its terms and substitution shall be only as allowed by that Act.

Contractor shall be responsible for the acts and omissions of its subcontractors and shall make certain that at all times its subcontractors comply with the terms of the Contract Documents and applicable law insofar as such compliance relates to the work.

District reserves the right to approve all subcontractors whether or not they are required to be listed in the Contractor's Proposal. As used in this Section "subcontractor" includes any person who fabricates or manufactures any article for incorporation into the work whether or not they install or test after installation or contract to install or test after installation, but does not include suppliers of fungible goods for incorporation into the work unless such supplier also installs or tests or contracts to install or test.

The Contractor shall give his personal attention to the fulfillment of the contract and shall keep the work under his control. The Contractor shall perform with his own organization work of a value amounting to not less than 60 percent of the remainder obtained by subtracting from the total original contract value the sum of any item designated herein or in the Special Provisions as Specialty Items. The furnishing and placing of reinforcing steel, when placing is performed by the supplier, will be considered as a Specialty Item for this purpose; however, he shall be designated in the list of subcontractors. The value of the work subcontracted will be based on the contract item bid price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer. Specialty Items are defined as the Installation of the following Bid Items: 20, 23 through 34, 71, 73 through 88, 99 through 105.

Where a portion of the work which has been subcontracted by the Contractor is not being prosecuted in a manner satisfactory to the District, the subcontractor shall be removed immediately on the requisition of the Engineer and shall not again be employed on the work.

### 6.04 CHARACTER OF WORKMEN

If any subcontractor or person employed by the Contractor shall fail or refuse to carry out the directions of the Engineer or shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, he shall be discharged immediately on the requisition of the Engineer, and such person shall not again be employed on this work.

### 6.05 TEMPORARY SUSPENSION OF THE WORK

The Engineer shall have the authority to suspend the work wholly or in part, for such period as he may deem necessary, due to unsuitable weather, or to such other conditions as are

## SECTION 5 - PROJECT SITE MAINTENANCE

Through all phases of construction, the Contractor shall comply with the provisions of Section 7-8 of the Standard Specifications. Before final acceptance of the work, the Contractor shall clean the work and the site of the work of all falsework, temporary structures, other construction materials and equipment, excess materials and rubbish, and shall leave the work and the site in a neat and presentable condition. Such final cleanup work shall be performed within the time specified for completion of all of the work.

## SECTION 6 - SPECIAL REQUIREMENTS

6.1 National Pollutant Discharge Elimination System (NPDES) – The Contractor shall comply with the requirements of Board Order No. R8-2010-0033 (NPDES No. CAS618033), NPDES Area-Wide Municipal Stormwater Permit, hereafter referred to in this Section as the "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. The Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Section 29 "Stormwater and Non-Stormwater Pollution Control" of the Detailed Specifications.

**The Contractor's attention is directed to: 1) Section 29.2 "General Requirements" which allows the Engineer to withhold progress payments if the Contractor fails to fully implement Section 29 "Stormwater and Non-Stormwater Pollution Control" or is deemed to be in non-compliance with the provisions of the Permit; 2) Section 29.3 "Permit Registration Documents (PRDs) Preparation and Approval" which requires that the PRDs be prepared and approved prior to the Pre-Construction meeting; and 3) Section 29.6 "SWPPP Implementation" which allows the Engineer to suspend construction operations if the Contractor fails to implement the approved SWPPP and any amendments thereto.**

6.2 Sanitation - Sewage flows shall not be interrupted. Should the Contractor disrupt existing sewer facilities, sewage shall be conveyed in closed conduits and disposed of in a sanitary sewer system. If pumping is required it shall be done at the expense of the Contractor. A backup pumping system with equal capacity shall be provided at all times. Sewage shall not be permitted to flow in trenches or be covered by backfill.

6.3 Heavy Equipment Working Hours - Heavy construction equipment will not be allowed to commence construction work until 7:00 a.m. each normal working day, unless otherwise approved by the Engineer.

6.4 Encroachment Permits – The Contractor is required to obtain an encroachment permit from the City of Riverside for work within City right of way. The City of Riverside will require the Contractor to pay a fee for the encroachment permit. A copy of the encroachment permit shall be provided to the Engineer prior to commencement of work.



Concrete flatwork shall match adjacent surfaces. The concrete shall be struck off and tamped or vibrated until a layer of mortar has been brought to the surface. The top surface and face of curbs, gutters, catch basins and sidewalks shall be finished to match adjacent surfaces.

16.8 Curing - All concrete shall be prevented from drying for a curing period of at least seven (7) days after it is placed. Surfaces exposed to air during the curing process shall be kept continuously moist for the entire period or until curing compound is applied.

Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged. Water for curing shall be clean and free from any substances that will cause discoloration of the concrete.

Concrete may be coated with curing compound in lieu of the continued application of moisture. The curing compound shall comply with the requirements of Section 90-7.01B of the State Standard Specifications. The curing compound shall be No. 5 White Pigmented Curing Compound conforming to the requirements of ASTM Designation: C-309, Type 2, Class B for all concrete surfaces other than for flatwork which shall be coated with a clear or translucent curing compound containing a red fugitive dye.

The curing compound shall be sprayed on the moist concrete surfaces as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs and finishing of that surface are completed. The curing compound shall be thoroughly mixed immediately before applying, and shall be applied at a uniform rate of not less than one gallon per 150 square feet of surface. No separate payment will be made for the curing compound or its application.

16.9 Joints - Joints shall be made at the locations shown on the drawings, per the appropriate standard drawings, or as approved by the Engineer. In case where not otherwise specified on the drawings or standard drawings, maximum control joint spacing for all concrete flatwork shall be no greater than 10 feet on center. Weakened plane joints in curbs shall be per Riverside County Road Improvement Standards and Specifications Drawing Number 205 (Std. Dwg. 205) except that the joint depth shall be increased to twenty percent (20%) of the curb depth. Expansion joints in curbs shall be per Std. Dwg. 205 and shall be full depth for all curbs. All joints to be made by cutting the concrete must be made within 12 hours of pouring the concrete and must have rounded edges per Std. Dwg. 205. The Contractor shall consider potential structural effects on the formwork and bracing for all forms that must be cut through in making the joints.

16.10 Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault – The contract item Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault covers the complete construction of these structures including excavation, subgrade preparation, forming, concrete and reinforcing steel, backfill, and covers the procurement and installation of Inwesco 3636 Series Torsion Assist Frame and Cover Assemblies, or approved equal, as shown on the drawings and per manufacturer's specifications.

of the concrete to achieve the intended colors. Special considerations must be given to such items as the use of color admixtures and/or the use of specialty or decorative aggregates to be revealed as a result of sandblasting.

A minimum of two (2) weeks prior to installation of the flatwork concrete to be etched, Contractor shall submit a concrete mix design for the concrete flatwork and shall identify the specific person(s) that will be performing the template sandblasting for review and approval by the Engineer. Sandblasting equipment operator shall have demonstrated experience in template sandblasting and Contractor shall provide evidence of successful previous projects.

Contractor is encouraged to consult with specialists in decorative template concrete sandblasting prior to submitting bids.

16.23 Measurement - Measurement for payment for the contract items Class "A" Concrete, 3'x3' Cleanout Structure and Sampling Vault; Class "A" Concrete, Transition Structure No. 3; Class "A" Concrete, Under Sidewalk Drain; and Class "A" Concrete, Sampling Basin Structure will be the number of each item constructed as specified and shown on the drawings.

Measurement for payment for the contract items Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls; Class "A" Concrete, CMU Flow Through Planter Walls; Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9); Class "B" Concrete, Standard Curb, (CD4, CD5, CD6, CD7, CD8, CD24, CD26); Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31), will be the number of lineal feet as measured along the centerline of each item constructed as specified and shown on the drawings.

Measurement for payment for the contract items Class "A" Concrete, Landscape Filter Basin Retaining Wall; Class "B" Concrete, Miscellaneous; and Class "B" Concrete, Planter and Building Slabs, will be the number of cubic yards placed as specified, and measured to the neat lines as shown on the drawings.

Measurement for the contract item Install Decorative Concrete Flatwork will be lump sum.

No measurement or payment will be made for dowels, tie bars, tie wires, blocks, chairs and other accessories for the construction of items in this section.

16.24 Payment - The contract prices paid for the various items in this section shall include full compensation for all costs incurred under this section and shall be paid upon completion of construction of each item.

## SECTION 17 - CONCRETE PIPE

17.1 Description - This section covers the contract item Reinforced Concrete Pipe as required for the work.



RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT

August 24, 2010

**ADDENDUM NO. 1  
TO  
L.I.D. TESTING & DEMONSTRATION FACILITY,  
PARKING LOT RENOVATION 2010,  
AND WATER EFFICIENT LANDSCAPE CONVERSION**

RIVERSIDE COUNTY, CALIFORNIA

**Bid Opening Date:** Tuesday, August 31, 2010 at 9:00 a.m.

**GENERAL PROVISIONS**

**ADD** to fourth paragraph of Section 6.03 SUB CONTRACTING the following:

Specialty Items are defined as the Installation of the following Bid Items: 20, 23 through 34, 71, 73 through 88, 99 through 105.

**SPECIAL PROVISIONS**

**DELETE** the word "... not..." in second sentence of Section 6.04 Encroachment Permits.

**DETAILED SPECIFICATIONS**

**REPLACE** the word Friday with the word Thursday in first paragraph of Section 12.3 Public Convenience and Access.

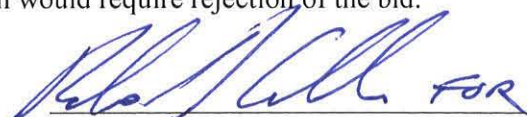
**ADD** to the first paragraph in Section 12.3 Public Convenience and Access: Change in Construction Phasing affecting the Parking and Circulation Plan shall be done on Fridays, when District offices are closed to public access.

**PROPOSAL**

**REPLACE** PROPOSAL, in its entirety (Pages VIII, VIIIa, VIIIb, VIIIc, VIId, VIIE and VIIf), to accommodate the addition of a signature line on the bottom of Page VIIf for acknowledgment of this addendum.

\*\*\*\*\*

**NOTE:** Bidders are required to acknowledge receipt of all addenda at the bottom of **Sheet VIIf** of the PROPOSAL. Failure to acknowledge all addenda on the bid form may cause the bid to be considered not responsive to the invitation, which would require rejection of the bid.

  
WARREN D. WILLIAMS  
General Manager-Chief Engineer

PROPOSAL

For the Construction of **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California, consisting of the following estimated quantities:

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
10	1.	Mobilization	L.S.	---	---	
11	2.	Water Control	L.S.	---	---	
12	3.	Traffic Control	L.S.	---	---	
13	4.	Clearing and Miscellaneous Work	L.S.	---	---	
13	5.	Extra Directed Work	L.S.	---	\$150,000.00	150,000.00
14	6.	Excavation	C.Y.	7,230		
15	7.	Trench Safety System	L.S.	---	---	
16	8.	Class "A" Concrete, 3'x3' Cleanout Structure	EACH	8		
16	9.	Class "A" Concrete, Transition Structure No. 3	EACH	3		
16	10.	Class "A" Concrete, Under Sidewalk Drain	EACH	3		
16	11.	Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls	L.F.	18		
16	12.	Class "A" Concrete, CMU Flow Through Planter Walls	L.F.	183		
16	13.	Class "A" Concrete, Landscape Filter Basin Retaining Wall	C.Y.	48		
16	14.	Class "A" Concrete, Sampling Basin Structure	EACH	1		
16	15.	Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9)	L.F.	984		

## PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
16	16.	Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26)	L.F.	3,500		
16	17.	Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31)	L.F.	5,250		
16	18.	Class "B" Concrete, Miscellaneous	C.Y.	57		
16	19.	Class "B" Concrete, Planter and Building Slabs	C.Y.	24		
16	20.	Install Decorative Concrete Flatwork	L.S.	---	---	
17	21.	Reinforced Concrete Pipe	L.F.	200		
19	22.	3" Class 2 Aggregate Base Driveway and Access Ramp	C.Y.	10		
19	23.	Pervious Pavers Over 2" #5 Over 3" #57 Over 13" #2 Stone	S.F.	25,400		
19	24.	Pervious Pavers Over 2" #8 Over 0-7/8" #57 Stone	S.F.	9,270		
19	25.	Pervious Pavers Over 2" #8 Over 3" #57 Over 17" #2 Stone	S.F.	5,660		
19	26.	Pervious Pavers Over 1" #8 Over 4" #57 Stone	S.F.	1,114		
19	27.	8.5" Pervious Concrete Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,360		
19	28.	8.5" Pervious Concrete Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	2,090		

## PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
19	29.	5" Porous Asphalt Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,270		
19	30.	5" Porous Asphalt Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	1,700		
19	31.	4" AC Over 6" Class 2 Aggregate Base and 4" AC Over 11" Class 2 Aggregate Base	S.F.	76,655		
19	32.	Variable Depth AC Overlay	TONS	31		
19	33.	Grind Existing AC Pavement	S.F.	720		
19	34.	Slurry Seal	S.F.	35,800		
20	35.	Bollard	EACH	260		
21	36.	4" PVC Pipe	L.F.	78		
21	37.	6" PVC Pipe	L.F.	2,126		
21	38.	8" PVC Pipe	L.F.	369		
21	39.	12" PVC Pipe	L.F.	34		
21	40.	18" PVC Pipe	L.F.	33		
21	41.	10" Wide Slotted Drain	L.F.	177		
21	42.	Precast Concrete Flow Detection Catch Basin	EACH	3		
21	43.	9"x9" Plastic Catch Basin	EACH	7		
21	44.	18"x18" Precast Concrete Catch Basin	EACH	2		
21	45.	24"x24" Precast Concrete Catch Basin	EACH	1		

## PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	46.	36"x36" Precast Concrete Catch Basin	EACH	5		
21	47.	Galvanized Steel Catch Basin Lid	EACH	1		
21	48.	PVC Pipe Stormwater Cleanout	EACH	23		
21	49.	Precast Concrete Headwall for 8" Pipe	EACH	1		
21	50.	3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure	L.F.	530		
21	51.	New Wheel Stops	EACH	95		
21	52.	Signs Including Post and Footing	EACH	2		
21	53.	Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building	L.S.	---	---	
21	54.	3.5' High Metal Railing	L.F.	55		
21	55.	Connection to Existing Building Roof Downdrains	EACH	3		
21	56.	Enhanced Grass Swale	L.S.	---	---	
21	57.	Adjust Manhole and Vault to Grade	EACH	9		
21	58.	Adjust Valve and Cleanout to Grade	EACH	13		
26	59.	Cobble Filled Trench	L.F.	430		
26	60.	4'x4' #2 Stone Infiltration Trench in Lake Smithhammer	L.F.	220		
26	61.	#57 Stone in Landscape Filter Basin and Flow Through Planters	C.Y.	31		

## PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
26	62.	Mirafi FW402 Filter Fabric	S.F.	7,570		
26	63.	Mirafi NT100 Impermeable Barrier	S.F.	13,330		
26	64.	#2 Stone Energy Dissipaters	C.Y.	1		
27	65.	Dust Abatement	L.S.	---	---	
29	66.	Stormwater and Non-Stormwater Pollution and the Non-Stormwater Discharge or Dewatering	L.S.	---	---	
32	67.	Removal and Replacement of Existing Utilities at New Landscape Filter Basin	L.F.	360		
32	68.	Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline	L.S.	---	---	
33	69.	Filtration Soil Mixture	C.Y.	90		
38	70.	Irrigation System	L.S.	---	---	
39	71.	Soil Testing and Soil Preparation	S.F.	182,100		
40	72.	Mow Curbing	L.F.	2,875		
40	73.	Wood Chips	S.F.	145,600		
40	74.	Decomposed Granite	S.F.	2,080		
40	75.	Crushed Rock	S.F.	2,100		
40	76.	Drivable Grass	S.F.	785		
40	77.	Synthetic Turf	S.F.	315		
40	78.	Sod	S.F.	36,500		
40	79.	Flats	EACH	675		



PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
40	80.	1-Gallon	EACH	2,800		
40	81.	2-Gallon	EACH	98		
40	82.	5-Gallon	EACH	1,575		
40	83.	15-Gallon	EACH	18		
40	84.	15-Gallon Citrus	EACH	62		
40	85.	24" Box	EACH	138		
40	86.	36" Box	EACH	7		
40	87.	48" Box	EACH	1		
40	88.	6' Brown Trunk Palm	EACH	2		
41	89.	Tree Grate	EACH	2		
41	90.	Picnic Table	EACH	5		
41	91.	Waste Container	EACH	9		
41	92.	Fountain	EACH	1		
41	93.	Flag Pole	EACH	2		
41	94.	Concrete Pot #13	EACH	4		
41	95.	Concrete Pot #13A	EACH	8		
41	96.	Concrete Pot #13B	EACH	4		
41	97.	Concrete Bench #10	EACH	8		
41	98.	Concrete Bench #15	EACH	6		
42	99.	Landscape Maintenance	L.S.	---	---	
43	100.	Electrical Lighting Fixture A	EACH	24		
43	101.	Electrical Lighting Fixture B	EACH	2		
43	102.	Electrical Lighting Fixture C	EACH	5		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
43	103.	Electrical Lighting Fixture D	EACH	9		
43	104.	Electrical Lighting Fixture E	EACH	4		
43	105.	Electrical Conduit and Wire	L.F.	4,450		
					<u>TOTAL</u>	

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Address

\_\_\_\_\_  
S.S.N. or E.I.N.

\_\_\_\_\_  
City, State, Zip

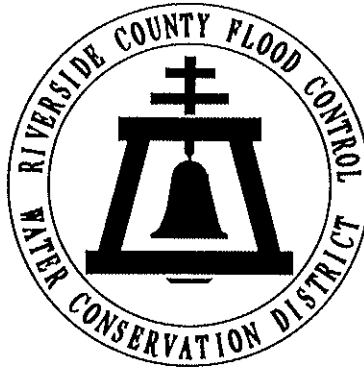
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Contractor's License No. and Classification

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Fax Number

ADDENDUM NO. 1

**ADDENDUM NO. 1 ACKNOWLEDGED** \_\_\_\_\_



SPECIFICATIONS and CONTRACT DOCUMENTS  
for the CONSTRUCTION of

L.I.D. TESTING & DEMONSTRATION  
FACILITY,  
PARKING LOT RENOVATION 2010,  
AND WATER EFFICIENT LANDSCAPE  
CONVERSION

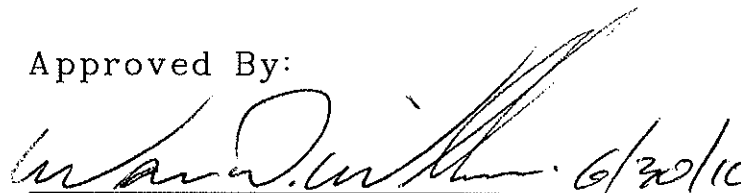
These specifications and contract documents have  
been prepared under the direction of the following  
Registered Civil Engineers:

Recommended By:

  
Chief, Design & Construction      30-June-2010  
Date



Approved By:

  
Chief Engineer      6/30/10  
Date



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NOTICE TO CONTRACTORS

Riverside County Flood Control and Water Conservation District hereinafter called "District", invites sealed proposals for construction of:

**L.I.D. TESTING & DEMONSTRATION FACILITY,  
PARKING LOT RENOVATION 2010,  
AND WATER EFFICIENT LANDSCAPE CONVERSION**

**located at the Riverside County Flood Control and Water Conservation District Office**

**1995 Market Street, Riverside, California**

Specifications and Contract Documents may be examined at the District's office at 1995 Market Street, Riverside, California, and may be obtained upon payment to District of **\$60.00** per set, received at the District's office and **\$65.00** per set if mailed. The Specifications and Contract Documents are also offered on CD-ROM for \$10.00 received at the District's office and \$15.00 if mailed. No refund.

Each proposal must be accompanied by a certified or cashier's check or bid bond equal to ten percent (10%) of the amount bid, payable to the Riverside County Flood Control and Water Conservation District as a guarantee that the Contractor will, if awarded the contract, execute a satisfactory contract and furnish the required bonds and proof of insurance.

Proposals must be in accordance with the instructions and filed with District by **9:00 a.m. on Tuesday, August 31, 2010** at the District office at the above address which time and place are fixed for the public opening of bids.

**The Contractor's attention is directed to Section 6.13 of the Special Provisions. A Pre-Bid Site Inspection Tour will be held on Thursday, August 19, 2010 at 9:00 a.m. at the entrance to the District office at 1995 Market Street, Riverside, CA 92501.**

General prevailing rate per diem wages and general prevailing rate of per diem wages for holiday and overtime work, including employer payments for health and welfare, pension, vacation, apprentices

and similar purposes for each craft, classification or type of workman needed for execution of contracts under the jurisdiction of District have been obtained by the Board of Supervisors of the District from the Director of Industrial Relations of the State of California for the area where the work is to be done. The said determinations are on file in the principal office of the District, and will be made available to any interested person upon request.

Contractors submitting proposals for this project shall have an "A" Contractors license from the State of California in order to be considered eligible for the contract award.

Dated: July 27, 2010

RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT

KECIA HARPER-IHEM  
Clerk of the Board

BY *Morgan Canola*  
Deputy

## INSTRUCTIONS TO BIDDERS

QUANTITIES: The amount of work to be done or materials to be furnished under the Contract as noted in the proposal, are but estimates and are not to be taken as an expressed or implied statement that the actual amount of work or materials will correspond to the estimate.

The right is reserved to increase or decrease or to entirely eliminate certain items from the work or materials if found desirable or expedient.

The Contractor will be allowed no claims for anticipated profits, loss of profits or for any damages of any sort because of any difference between the estimated and the actual amounts of work done, or materials furnished or used in the completed project.

The Contractor is cautioned against unbalancing of his bid by prorating his overhead into one or two items only when there are a number of items on the schedule. The overhead and indirect charges should be prorated on all items in schedule.

DISCREPANCIES AND OMISSIONS: Discrepancies, omissions, ambiguities, or requirements likely to cause disputes between trades and similar matters shall be promptly brought to the attention of the Engineer. When appropriate, Addenda will be issued by District. No communication by anyone as to such matters except by an Addendum affects the meaning or requirements of the Contract Documents.

WITHDRAWAL OF PROPOSALS: Any proposal may be withdrawn at any time prior to the hour fixed in the Notice to Contractors for the opening of proposals, provided that a request in writing, executed by the bidder or his duly authorized representative, for the withdrawal of such proposal, is filed with the Chief Engineer. The withdrawal of a proposal shall not prejudice the right of a bidder to file a new proposal.

AGREEMENT OF FIGURES: If the unit prices and the total amounts named by the bidder in the proposal do not agree, the unit prices alone will be considered as representing the bidder's intention.

INVALID PROPOSALS: Proposal submitted by telegraph or fax transmission and those which fail to reach the place fixed for opening of proposals prior to the date and hour set for opening same, will not be considered.

INSPECTION OF SITE: Bidders must examine the site and acquaint themselves with all conditions affecting the work.

Information derived from maps, plans or specifications, or from the Chief Engineer or his assistants, will not relieve the successful bidder from properly carrying out all the terms of the written contract.

By the submitting of a proposal, the bidder will be held to have personally examined the site and the drawings, to have carefully read the specifications and to have satisfied himself as to his ability to meet all the difficulties attending the execution of the proposed contract before the delivery of his proposal and agrees that if he is awarded the contract, he will make no claim against the Board of Supervisors based on ignorance or misunderstanding of the contract provisions.

QUALIFICATIONS OF BIDDERS: No proposal will be accepted from a contractor who is not licensed under laws of California, as evidenced by the submittal of the Statement of Licensure. 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 is 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 a proposal.

A bid shall be rejected and a bidder shall be disqualified to bid on a District project if the bidder or any officer, manager, partner or shareholder of the bidder within the eighteen month period prior to the bid date shall have been an officer or employee of the District.

PROPOSAL FORMS: Attention of all bidders is called to the proposal affidavit forms attached hereto and bidders are cautioned that all proposals submitted must be accompanied by the proper affidavit, properly executed. Proposals will be made on forms furnished by District.

REJECTION OF PROPOSALS CONTAINING ALTERATIONS, ERASURES OR IRREGULARITIES: Proposals may be rejected if they show any alterations of form, additions not called for, conditional proposals, incomplete proposals, erasures or irregularities of any kind. Erasures or interlineations in the proposal must be explained or noted over the signature of the bidder.

PUBLIC OPENING OF PROPOSALS: Proposals will be opened and read publicly at the time and place indicated in the Notice to Contractors. Bidders or their authorized agents are invited to be present.

DISQUALIFICATION OF BIDDERS: More than one proposal from an individual, a firm or partnership, a corporation or an association under the same or different names will not be considered. Reasonable ground for believing that any bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such bidder is interested. If there is any reason for believing that collusion exists among the bidders, none of the participants in such collusion will be considered in awarding the contract. Proposals in which the prices obviously are unbalanced may be rejected.

ADDENDA: District 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 District its name and address for the purpose of receiving Addenda. District will cause copies of 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.

AWARD OF CONTRACT: The right is reserved to reject any and all proposals and to waive technical defects as the best interests of the District may require.

The award of the Contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with the requirements prescribed. The award, if made, will be made within sixty (60) days after the opening of the proposals.

All proposals will be compared on the basis of the Engineer's estimate of the quantities of work to be done.

RETURN OF PROPOSAL GUARANTEES: Within ten (10) days after the award of the contract, the Clerk will return the proposal guarantees accompanying such of the proposals as are not considered in making the award. All other proposal guarantees will be held until the contract has been fully executed, after which they will be returned to the respective bidders whose proposal they accompany.

CONTRACT BONDS: The Contractor shall furnish two (2) surety bonds in duplicate, one as a security for the faithful performance of the contract in the amount equal to one hundred percent (100%) of the contract price, and one as security for the payment of all persons performing labor and furnishing materials in connection with the contract in an amount equal to one hundred percent (100%) of the contract price. All bonds must be submitted on forms provided by the District. Bonds submitted in any other form will not be accepted.

SUBLETTING AND SUBCONTRACTING: Bidders are required, pursuant to the Subletting and Subcontracting Fair Practices Act (commencing with Section 4100 of the Public Contract 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 specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the Plans and Specifications, in excess of one-half (½) of one percent (1%) of the 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.

CONTRACTOR'S PROPOSAL

TO THE BOARD OF SUPERVISORS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT:

The undersigned hereby declare:

(a) That the only persons or parties interested in this proposal as principals are the following:

**Name of Company (and dba if applicable):** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(If the Contractor is a corporation, give the name of the corporation and the name of its president, secretary, treasurer, and manager. If a copartnership, give the name under which the copartnership does business, and the names and addresses of all copartners. If an individual, state the name and address under which the contract is to be drawn.)

(b) That this proposal is made without collusion with any other person, firm or corporation.

(c) That he has carefully examined the location of the proposed work, and has familiarized himself with all of the physical and climatic conditions, and makes his proposal solely upon his own knowledge.

(d) That he has carefully examined the attached specifications as referred to, and the plans, and makes this proposal in accordance therewith.

(e) That, if this proposal is accepted, he will enter into a written contract with the Riverside County Flood Control and Water Conservation District, Riverside, State of California.

(f) That he proposes to enter into such contract and to accept in full payment for the work actually done thereunder the prices shown in the attached schedule. It is understood and agreed that the quantities set forth are but estimates, and that the unit prices will apply to the actual quantities whatever they may be.

Accompanying this proposal is a certified or cashier's check or bid bond payable to the order of the Riverside County Flood Control and Water Conservation District, Riverside, California, in the sum of

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

It is understood and agreed that should the Contractor within ten (10) days after the prescribed forms are presented to him for signature fail to return the contract and furnish acceptable surety bond and insurance, then, at the discretion of the District, the proceeds of said check shall become the property of the District, the Contractor shall be found in default and the project may be awarded to another contractor. The bid bond or check shall be held subject to payment to the District of the difference in money between the amount of the contract with another party to perform the work, together with the cost to the District of redrafting, redrawing and publishing documents and papers necessary to obtain new bids on said work. The bid bond or check shall, in addition, be held subject to all other actual damages suffered by the District. But if the contract is entered into and said bonds and insurance are furnished, or if the proposal is not accepted, then the said check shall be returned to the undersigned.

PROPOSAL

For the Construction of **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California, consisting of the following estimated quantities:

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
10	1.	Mobilization	L.S.	---	---	
11	2.	Water Control	L.S.	---	---	
12	3.	Traffic Control	L.S.	---	---	
13	4.	Clearing and Miscellaneous Work	L.S.	---	---	
13	5.	Extra Directed Work	L.S.	---	\$150,000.00	150,000.00
14	6.	Excavation	C.Y.	7,230		
15	7.	Trench Safety System	L.S.	---	---	
16	8.	Class "A" Concrete, 3'x3' Cleanout Structure	EACH	8		
16	9.	Class "A" Concrete, Transition Structure No. 3	EACH	3		
16	10.	Class "A" Concrete, Under Sidewalk Drain	EACH	3		
16	11.	Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls	L.F.	158		
16	12.	Class "A" Concrete, CMU Flow Through Planter Walls	L.F.	183		
16	13.	Class "A" Concrete, Landscape Filter Basin Retaining Wall	C.Y.	48		
16	14.	Class "A" Concrete, Sampling Basin Structure	EACH	1		
16	15.	Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9)	L.F.	984		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
16	16.	Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26)	L.F.	3,500		
16	17.	Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31)	L.F.	5,250		
16	18.	Class "B" Concrete, Miscellaneous	C.Y.	57		
16	19.	Class "B" Concrete, Planter and Building Slabs	C.Y.	24		
16	20.	Install Decorative Concrete Flatwork	L.S.	---	---	
17	21.	Reinforced Concrete Pipe	L.F.	200		
19	22.	3" Class 2 Aggregate Base Driveway and Access Ramp	C.Y.	10		
19	23.	Pervious Pavers Over 2" #8 Over 3" #57 Over 13" #2 Stone	S.F.	25,400		
19	24.	Pervious Pavers Over 2" #8 Over 10-7/8" #57 Stone	S.F.	9,270		
19	25.	Pervious Pavers Over 2" #8 Over 3" #57 Over 17" #2 Stone	S.F.	5,660		
19	26.	Pervious Pavers Over 1" #8 Over 4" #57 Stone	S.F.	1,184		
19	27.	8.5" Pervious Concrete Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,360		
19	28.	8.5" Pervious Concrete Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	2,090		



PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
19	29.	5" Porous Asphalt Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,270		
19	30.	5" Porous Asphalt Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	1,700		
19	31.	4" AC Over 6" Class 2 Aggregate Base and 4" AC Over 11" Class 2 Aggregate Base	S.F.	76,655		
19	32.	Variable Depth AC Overlay	TONS	31		
19	33.	Grind Existing AC Pavement	S.F.	720		
19	34.	Slurry Seal	S.F.	35,800		
20	35.	Bollard	EACH	260		
21	36.	4" PVC Pipe	L.F.	78		
21	37.	6" PVC Pipe	L.F.	2,126		
21	38.	8" PVC Pipe	L.F.	369		
21	39.	12" PVC Pipe	L.F.	314		
21	40.	18" PVC Pipe	L.F.	33		
21	41.	10" Wide Slotted Drain	L.F.	177		
21	42.	Precast Concrete Flow Detection Catch Basin	EACH	3		
21	43.	9"x9" Plastic Catch Basin	EACH	7		
21	44.	18"x18" Precast Concrete Catch Basin	EACH	2		
21	45.	24"x24" Precast Concrete Catch Basin	EACH	1		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	46.	36"x36" Precast Concrete Catch Basin	EACH	5		
21	47.	Galvanized Steel Catch Basin Lid	EACH	1		
21	48.	PVC Pipe Stormwater Cleanout	EACH	23		
21	49.	Precast Concrete Headwall for 8" Pipe	EACH	1		
21	50.	3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure	L.F.	530		
21	51.	New Wheel Stops	EACH	95		
21	52.	Signs Including Post and Footing	EACH	2		
21	53.	Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building	L.S.	---	---	
21	54.	3.5' High Metal Railing	L.F.	55		
21	55.	Connection to Existing Building Roof Downdrains	EACH	3		
21	56.	Enhanced Grass Swale	L.S.	---	---	
21	57.	Adjust Manhole and Vault to Grade	EACH	9		
21	58.	Adjust Valve and Cleanout to Grade	EACH	13		
26	59.	Cobble Filled Trench	L.F.	430		
26	60.	4'x4' #2 Stone Infiltration Trench in Lake Smithhammer	L.F.	220		
26	61.	#57 Stone in Landscape Filter Basin and Flow Through Planters	C.Y.	31		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
26	62.	Mirafi FW402 Filter Fabric	S.F.	7,570		
26	63.	Mirafi NT100 Impermeable Barrier	S.F.	13,330		
26	64.	#2 Stone Energy Dissipaters	C.Y.	1		
27	65.	Dust Abatement	L.S.	---	---	
29	66.	Stormwater and Non-Stormwater Pollution and the Non-Stormwater Discharge or Dewatering	L.S.	---	---	
32	67.	Removal and Replacement of Existing Utilities at New Landscape Filter Basin	L.F.	360		
32	68.	Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline	L.S.	---	---	
33	69.	Filtration Soil Mixture	C.Y.	90		
38	70.	Irrigation System	L.S.	---	---	
39	71.	Soil Testing and Soil Preparation	S.F.	182,100		
40	72.	Mow Curbing	L.F.	2,875		
40	73.	Wood Chips	S.F.	145,600		
40	74.	Decomposed Granite	S.F.	2,080		
40	75.	Crushed Rock	S.F.	2,100		
40	76.	Drivable Grass	S.F.	785		
40	77.	Synthetic Turf	S.F.	315		
40	78.	Sod	S.F.	36,500		
40	79.	Flats	EACH	675		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
40	80.	1-Gallon	EACH	2,800		
40	81.	2-Gallon	EACH	98		
40	82.	5-Gallon	EACH	1,575		
40	83.	15-Gallon	EACH	18		
40	84.	15-Gallon Citrus	EACH	62		
40	85.	24" Box	EACH	138		
40	86.	36" Box	EACH	7		
40	87.	48" Box	EACH	1		
40	88.	6' Brown Trunk Palm	EACH	2		
41	89.	Tree Grate	EACH	2		
41	90.	Picnic Table	EACH	5		
41	91.	Waste Container	EACH	9		
41	92.	Fountain	EACH	1		
41	93.	Flag Pole	EACH	2		
41	94.	Concrete Pot #13	EACH	4		
41	95.	Concrete Pot #13A	EACH	8		
41	96.	Concrete Pot #13B	EACH	4		
41	97.	Concrete Bench #10	EACH	8		
41	98.	Concrete Bench #15	EACH	6		
42	99.	Landscape Maintenance	L.S.	---	---	
43	100.	Electrical Lighting Fixture A	EACH	24		
43	101.	Electrical Lighting Fixture B	EACH	2		
43	102.	Electrical Lighting Fixture C	EACH	5		

PROPOSAL contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
43	103.	Electrical Lighting Fixture D	EACH	9		
43	104.	Electrical Lighting Fixture E	EACH	4		
43	105.	Electrical Conduit and Wire	L.F.	4,450		

TOTAL

\_\_\_\_\_  
Name of Company

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Address

\_\_\_\_\_  
S.S.N. or E.I.N.

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Contractor's License No. and Classification

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Fax Number

LIST OF SUBCONTRACTORS

Contractor \_\_\_\_\_

L.I.D. Testing & Demonstration Facility,  
Parking Lot Renovation 2010,  
and Water Efficient Landscape Conversion

Give the name and the location of the place of business of each Subcontractor who will perform work or labor or render service to the General Contractor in or about the construction of the work or improvement, or a Subcontractor who specially fabricates and installs a portion of the work or improvement, in an amount in excess of one-half (1/2) of one percent (1%) of the General Contractor's total bid. List the bid item numbers of the work each subcontractor will do. If a portion of an item is to be subcontracted, show what percentage of that item is to be subcontracted.

Item No. (s) \_\_\_\_\_

Name of Subcontractor \_\_\_\_\_

Address/City/Phone \_\_\_\_\_

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

Item No. (s) \_\_\_\_\_

Name of Subcontractor \_\_\_\_\_

Address/City/Phone \_\_\_\_\_

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

Item No. (s) \_\_\_\_\_

Name of Subcontractor \_\_\_\_\_

Address/City/Phone \_\_\_\_\_

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

Item No. (s) \_\_\_\_\_

Name of Subcontractor \_\_\_\_\_

Address/City/Phone \_\_\_\_\_

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

Item No. (s) \_\_\_\_\_

Name of Subcontractor \_\_\_\_\_

Address/City/Phone \_\_\_\_\_

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



CONTRACTOR ACKNOWLEDGEMENT

SPECIAL CERTIFICATION REQUIREMENTS  
FOR PERVIOUS PAVEMENT CONSTRUCTION

As an authorized official of \_\_\_\_\_ (company), I certify that I have read Sections 36 and 37 of the Detailed Specifications and understand that the pervious pavement construction on this project requires special equipment, techniques and experience.

Pervious (Portland Cement) Concrete Pavement -

I further certify that \_\_\_\_\_ (company) or its subcontractor(s) possess staff that has been certified through the National Ready Mixed Concrete Association (NRMCA) Pervious Concrete Contractor Certification program and/or possess staff meeting the experience requirements required by Section 36.3 of the Detailed Specifications.

If using a subcontractor for Pervious (Portland Cement) Concrete Pavement installation list the name as it appears on the LIST OF SUBCONTRACTORS in the bid proposal package:

Subcontractor(s):

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Porous Asphalt Pavement -

I further certify that \_\_\_\_\_ (company) or its subcontractor(s) possess staff that has the experience requirements required by Section 37.2 of the Detailed Specifications.

If using a subcontractor for Porous Asphalt Pavement installation, list the name as it appears on the LIST OF SUBCONTRACTORS in the bid proposal package:

Subcontractor(s):

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---

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DATED: \_\_\_\_\_

\_\_\_\_\_  
Signature



STATEMENT OF LICENSURE

Pursuant to California Public Contract Code §3300, the undersigned does certify as follows:

1. That the pocket license/certificate of licensure I have presented to owner as of this date is my own license, being State of California, Contractors License No. \_\_\_\_\_; and
2. That said Contractors License is current and valid; and
3. That said Contractors License is of a classification appropriate to the work to be undertaken for owner, a Class \_\_\_ license.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

DATED: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF CALIFORNIA ) §  
COUNTY OF RIVERSIDE )

On this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me

\_\_\_\_\_  
the undersigned Notary Public, personally appeared

[ ] personally known to me

[ ] proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged that he/she executed it.

WITNESS my hand and official seal.

\_\_\_\_\_  
Notary's Signature

AFFIDAVIT FOR INDIVIDUAL CONTRACTORS

STATE OF CALIFORNIA ) §  
COUNTY OF RIVERSIDE )

\_\_\_\_\_, being first duly sworn, deposes and says:

That he or she is the party making the foregoing proposal or bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Riverside County Flood Control and Water Conservation District or anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

\_\_\_\_\_  
His or Her signature

Subscribed and sworn to before me

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

\_\_\_\_\_  
Signature and stamp of Notary  
administering oath

AFFIDAVIT FOR JOINT VENTURE OR COPARTNERSHIP CONTRACTOR

STATE OF CALIFORNIA ) §  
COUNTY OF RIVERSIDE )

\_\_\_\_\_, being first duly sworn, deposes and says:

That he or she is a member of the joint venture or copartnership firm designated as

\_\_\_\_\_  
which is the party making the foregoing proposal or bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Riverside County Flood Control and Water Conservation District or anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

That he has been and is duly vested with authority to make and sign instruments for the joint venture or copartnership by

\_\_\_\_\_  
\_\_\_\_\_  
who constitute the other members of the joint venture or copartnership.

\_\_\_\_\_  
His or Her signature

Subscribed and sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Signature and stamp of Notary  
administering oath

AFFIDAVIT FOR CORPORATE CONTRACTOR

STATE OF CALIFORNIA ) §  
COUNTY OF RIVERSIDE )

\_\_\_\_\_, being first duly sworn, deposes and says:

That he or she is \_\_\_\_\_  
of \_\_\_\_\_

a corporation which is the party making the foregoing proposal or bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Riverside County Flood Control and Water Conservation District or anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

\_\_\_\_\_  
His or Her signature

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

\_\_\_\_\_  
Signature and stamp of Notary administering oath

BID BOND

Recitals:

1. \_\_\_\_\_ (Contractor), has submitted its Contractor's Proposal to the Riverside County Flood Control and Water Conservation District, (District), for the construction of public work for **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion** in accordance with a Notice to Contractors dated July 27, 2010.

2. \_\_\_\_\_ a \_\_\_\_\_ corporation, hereafter called (Surety), is the surety on 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 and inures to the benefit of District.

2. This Bond is exonerated by (1) District rejecting said Proposal or, in the alternate, (2) if said Proposal is accepted, Contractor executes the Agreement and furnishes the Bonds and Insurance as agreed to in its Proposal, otherwise it remains in full force and effect for the recovery of loss, damage and expense of District 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 District 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 \_\_\_\_\_

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Printed Name)

Title \_\_\_\_\_

(Surety)

Title \_\_\_\_\_

(Contractor)

**NOTARY ACKNOWLEDGEMENT REQUIRED FOR EACH SIGNATURE PLEASE ATTACH SEPARATE FORM**

**NOTARY ACKNOWLEDGEMENT REQUIRED FOR EACH SIGNATURE PLEASE ATTACH SEPARATE FORM**

## AGREEMENT

THIS AGREEMENT is made as of \_\_\_\_\_ and is between RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (District) and \_\_\_\_\_ (Contractor).

IT IS AGREED BY THE PARTIES AS FOLLOWS:

1. The Work. Contractor shall furnish all tools, equipment, apparatus, facilities, labor and material necessary to perform the work for **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion** of District, in exact conformity with the Contract Documents (identified below) for the Project, subject to such inspection as District deems appropriate and pursuant to orders and instructions, drawings, etc., issued by District in accordance with the Contract Documents.

2. Contract Documents. The Contract Documents for **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion** of District are: (a) Notice to Contractors; (b) Instructions To Bidders; (c) Contractor's Proposal; (d) Agreement; (e) General Provisions; (f) Special Provisions; (g) Detailed Specifications; (h) Plans; (i) Bid Bond; (j) Performance Bond; (k) Payment Bond; (l) Appendices and any other documents included in or incorporated into the contract documents; (m) Orders, Instructions, Drawings and Plans issued by District during the course of the work in accordance with the provisions of the Contract Documents.

Each of the above-mentioned documents presently in existence are by this reference incorporated herein and each of said documents not now in existence are incorporated herein as of the time of their issuance.

The Bid Bond is exonerated upon execution and delivery to District in a form satisfactory to District, of the following, duly executed by Contractor and also by its Surety as to the Bonds, Agreement, Certificate of Insurance, Payment Bond, and Performance Bond.

3. Bonds - Insurance. Prior to commencement of the work, Contractor must deliver to District and District must approve, a fully executed Performance Bond in the amount of 100% of the estimated contract price, a fully executed Payment Bond in the amount of 100% of the estimated contract price, and fully executed certificates of insurance evidencing the existence of the insurance required by Subsection 8.02 of the General Provisions. The Payment Bond and Performance Bond must be on forms furnished by District.

Should any surety on the Payment Bond or Performance Bond be deemed unsatisfactory by the Board of Supervisors of District, Contractor shall upon notice promptly substitute new Bonds in form satisfactory to District.

4. Contract Price - Payment. Attached hereto, marked Exhibit A and by this reference made a part hereof, is provision for the Contract Price and its payment.

RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT

By \_\_\_\_\_  
Chairman of its Board of Supervisors

ATTEST:

KECIA HARPER-IHEM  
Clerk of the Board

By \_\_\_\_\_  
Deputy

(Seal)

\_\_\_\_\_  
Contractor

By \_\_\_\_\_

Title \_\_\_\_\_

(If corporation affix corporate seal)

EXHIBIT A

(To Agreement for Riverside County Flood Control and Water Conservation District's **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California.)

Contract Price - Payment - District shall pay Contractor the following sums for the items set forth below in accordance with Contractor's Proposal as accepted by District, which sums shall be paid as provided in the General Provisions and subject to additions and deductions as provided in the Contract Documents.

It is understood that the quantities listed, except for those shown as "Final" or "Lump Sum" are but estimates only and final payment will be based on actual work performed, subject to such adjustments and alterations as elsewhere provided.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
10	1.	Mobilization	L.S.	---	---	
11	2.	Water Control	L.S.	---	---	
12	3.	Traffic Control	L.S.	---	---	
13	4.	Clearing and Miscellaneous Work	L.S.	---	---	
13	5.	Extra Directed Work	L.S.	---	\$150,000.00	150,000.00
14	6.	Excavation	C.Y.	7,230		
15	7.	Trench Safety System	L.S.	---	---	
16	8.	Class "A" Concrete, 3'x3' Cleanout Structure	EACH	8		
16	9.	Class "A" Concrete, Transition Structure No. 3	EACH	3		
16	10.	Class "A" Concrete, Under Sidewalk Drain	EACH	3		
16	11.	Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls	L.F.	158		
16	12.	Class "A" Concrete, CMU Flow Through Planter Walls	L.F.	183		



EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
16	13.	Class "A" Concrete, Landscape Filter Basin Retaining Wall	C.Y.	48		
16	14.	Class "A" Concrete, Sampling Basin Structure	EACH	1		
16	15.	Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9)	L.F.	984		
16	16.	Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26)	L.F.	3,500		
16	17.	Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31)	L.F.	5,250		
16	18.	Class "B" Concrete, Miscellaneous	C.Y.	57		
16	19.	Class "B" Concrete, Planter and Building Slabs	C.Y.	24		
16	20.	Install Decorative Concrete Flatwork	L.S.	---	---	
17	21.	Reinforced Concrete Pipe	L.F.	200		
19	22.	3" Class 2 Aggregate Base Driveway and Access Ramp	C.Y.	10		
19	23.	Pervious Pavers Over 2" #8 Over 3" #57 Over 13" #2 Stone	S.F.	25,400		
19	24.	Pervious Pavers Over 2" #8 Over 10-7/8" #57 Stone	S.F.	9,270		
19	25.	Pervious Pavers Over 2" #8 Over 3" #57 Over 17" #2 Stone	S.F.	5,660		
19	26.	Pervious Pavers Over 1" #8 Over 4" #57 Stone	S.F.	1,184		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
19	27.	8.5" Pervious Concrete Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,360		
19	28.	8.5" Pervious Concrete Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	2,090		
19	29.	5" Porous Asphalt Over 25" #57 Stone Over Impermeable Composite Barrier	S.F.	2,270		
19	30.	5" Porous Asphalt Over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric Over Impermeable Composite Barrier	S.F.	1,700		
19	31.	4" AC Over 6" Class 2 Aggregate Base and 4" AC Over 11" Class 2 Aggregate Base	S.F.	76,655		
19	32.	Variable Depth AC Overlay	TONS	31		
19	33.	Grind Existing AC Pavement	S.F.	720		
19	34.	Slurry Seal	S.F.	35,800		
20	35.	Bollard	EACH	260		
21	36.	4" PVC Pipe	L.F.	78		
21	37.	6" PVC Pipe	L.F.	2,126		
21	38.	8" PVC Pipe	L.F.	369		
21	39.	12" PVC Pipe	L.F.	314		
21	40.	18" PVC Pipe	L.F.	33		
21	41.	10" Wide Slotted Drain	L.F.	177		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	42.	Precast Concrete Flow Detection Catch Basin	EACH	3		
21	43.	9"x9" Plastic Catch Basin	EACH	7		
21	44.	18"x18" Precast Concrete Catch Basin	EACH	2		
21	45.	24"x24" Precast Concrete Catch Basin	EACH	1		
21	46.	36"x36" Precast Concrete Catch Basin	EACH	5		
21	47.	Galvanized Steel Catch Basin Lid	EACH	1		
21	48.	PVC Pipe Stormwater Cleanout	EACH	23		
21	49.	Precast Concrete Headwall for 8" Pipe	EACH	1		
21	50.	3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure	L.F.	530		
21	51.	New Wheel Stops	EACH	95		
21	52.	Signs Including Post and Footing	EACH	2		
21	53.	Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building	L.S.	---	---	
21	54.	3.5' High Metal Railing	L.F.	55		
21	55.	Connection to Existing Building Roof Downdrains	EACH	3		
21	56.	Enhanced Grass Swale	L.S.	---	---	
21	57.	Adjust Manhole and Vault to Grade	EACH	9		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
21	58.	Adjust Valve and Cleanout to Grade	EACH	13		
26	59.	Cobble Filled Trench	L.F.	430		
26	60.	4'x4' #2 Stone Infiltration Trench in Lake Smithhammer	L.F.	220		
26	61.	#57 Stone in Landscape Filter Basin and Flow Through Planters	C.Y.	31		
26	62.	Mirafi FW402 Filter Fabric	S.F.	7,570		
26	63.	Mirafi NT100 Impermeable Barrier	S.F.	13,330		
26	64.	#2 Stone Energy Dissipaters	C.Y.	1		
27	65.	Dust Abatement	L.S.	---	---	
29	66.	Stormwater and Non-Stormwater Pollution and the Non-Stormwater Discharge or Dewatering	L.S.	---	---	
32	67.	Removal and Replacement of Existing Utilities at New Landscape Filter Basin	L.F.	360		
32	68.	Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline	L.S.	---	---	
33	69.	Filtration Soil Mixture	C.Y.	90		
38	70.	Irrigation System	L.S.	---	---	
39	71.	Soil Testing and Soil Preparation	S.F.	182,100		
40	72.	Mow Curbing	L.F.	2,875		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
40	73.	Wood Chips	S.F.	145,600		
40	74.	Decomposed Granite	S.F.	2,080		
40	75.	Crushed Rock	S.F.	2,100		
40	76.	Drivable Grass	S.F.	785		
40	77.	Synthetic Turf	S.F.	315		
40	78.	Sod	S.F.	36,500		
40	79.	Flats	EACH	675		
40	80.	1-Gallon	EACH	2,800		
40	81.	2-Gallon	EACH	98		
40	82.	5-Gallon	EACH	1,575		
40	83.	15-Gallon	EACH	18		
40	84.	15-Gallon Citrus	EACH	62		
40	85.	24" Box	EACH	138		
40	86.	36" Box	EACH	7		
40	87.	48" Box	EACH	1		
40	88.	6' Brown Trunk Palm	EACH	2		
41	89.	Tree Grate	EACH	2		
41	90.	Picnic Table	EACH	5		
41	91.	Waste Container	EACH	9		
41	92.	Fountain	EACH	1		
41	93.	Flag Pole	EACH	2		
41	94.	Concrete Pot #13	EACH	4		
41	95.	Concrete Pot #13A	EACH	8		

EXHIBIT contd.

SEC. NO.	ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
41	96.	Concrete Pot #13B	EACH	4		
41	97.	Concrete Bench #10	EACH	8		
41	98.	Concrete Bench #15	EACH	6		
42	99.	Landscape Maintenance	L.S.	---	---	
43	100.	Electrical Lighting Fixture A	EACH	24		
43	101.	Electrical Lighting Fixture B	EACH	2		
43	102.	Electrical Lighting Fixture C	EACH	5		
43	103.	Electrical Lighting Fixture D	EACH	9		
43	104.	Electrical Lighting Fixture E	EACH	4		
43	105.	Electrical Conduit and Wire	L.F.	4,450		
TOTAL						

PERFORMANCE BOND

Recitals:

1. \_\_\_\_\_ (Contractor) has entered into an Agreement dated \_\_\_\_\_ with the Riverside County Flood Control and Water Conservation District (District) for construction of public work known as **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion.**

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 District, 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 District.

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 District 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 25% without approval of Surety.

THIS BOND is executed as of \_\_\_\_\_

\_\_\_\_\_  
By \_\_\_\_\_

By \_\_\_\_\_ Type Name \_\_\_\_\_  
Its Attorney in Fact (Surety)

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

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

PAYMENT BOND

(Public Work - Civil Code, Section 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 dated \_\_\_\_\_, between Principal and Riverside County Flood Control and Water Conservation District (District), a public entity, as Owner, for \$\_\_\_\_\_, the total amount payable. THE AMOUNT OF THIS BOND IS 100 PERCENT OF SAID SUM. Said contract is for public work generally consisting of the construction of **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion** project. The beneficiaries of this Bond are as is stated in Section 3248 of the Civil Code and the requirements and conditions of this Bond are as is set forth in Sections 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 \_\_\_\_\_ Title \_\_\_\_\_  
Its Attorney in Fact (If corporation, affix seal)

(Corporate Seal)

STATE OF CALIFORNIA§  
COUNTY OF \_\_\_\_\_)

SURETY'S ACKNOWLEDGMENT

On \_\_\_\_\_ before me personally appeared \_\_\_\_\_ known to me to be the person whose name is subscribed to the within instrument as attorney in fact of, \_\_\_\_\_ a corporation, and acknowledged that he subscribed the name of said corporation thereto, and his own name as its attorney in fact.

\_\_\_\_\_  
Notary Public (Seal)



# GENERAL PROVISIONS

## GENERAL PROVISIONS

### SECTION I - DEFINITION OF TERMS

1.01 Whenever in these specifications, or in any documents or instruments where these specifications govern, the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

(a) DISTRICT: The Riverside County Flood Control and Water Conservation District of the State of California, as created by law, also sometimes referred to as the Flood Control District, or party of the first part.

(b) BOARD OF SUPERVISORS: The Board of Supervisors of the Riverside County Flood Control and Water Conservation District as created by law, also sometimes referred to as the Board.

(c) ENGINEER: The Chief Engineer of the Riverside County Flood Control and Water Conservation District, also sometimes referred to as the Flood Control Engineer, the Chief Engineer, or the General Manager-Chief Engineer, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

(d) LABORATORY: The established laboratory of the Riverside County Road Department or laboratories authorized by the District to test materials and work involved in the contract.

(e) BIDDER: Any individual, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

(f) CONTRACTOR: The person or persons, copartnership or corporation, private or municipal, who have entered into a contract with the District, as party or parties of the second part or his or their legal representatives.

(g) SUPERINTENDENT: The Executive representative of the Contractor, present on the work at all times during progress, authorized to receive and execute instruction from the Engineer.

(h) PLANS: The official plans, profiles, typical cross sections, general cross sections, working drawings, and supplemental drawings, or exact reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications.

(i) SPECIFICATIONS: The directions, provisions, and requirements contained herein as supplemented by such special provisions, as may be necessary, pertaining to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the contract. The Special Provisions are specific clauses setting forth conditions

or requirements peculiar to the project under consideration and covering work or materials involved in the proposal and estimate but not satisfactorily covered by these General Provisions. Supplemental agreements or contract change orders are written agreements executed by the Contractor and by the District, covering alterations, amendments or extensions to the project, as hereinafter provided.

(j) CONTRACT: The written agreement covering the performance of the work and the furnishing of labor and materials in the construction of the work. The contract shall include the Notice to Contractors, the Proposal, Plans, Specifications, Special Provisions, and Contract Bonds, also, any and all supplemental agreements or contract change orders amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner.

(k) CONTRACT PRICE: Shall mean either the lump sum, unit price, or unit prices to be named in the contract, or the total of all payments under the contract at the lump sum, unit price, or unit prices, as the case may be.

(l) SURETY OR SURETIES: The bondsmen or party or parties, approved by the Engineer, who may guarantee the fulfillment of the contract by bond, and whose signatures are attached to said bond.

(m) RIGHT OF WAY: The whole right of way which is reserved for and secured for use in constructing the improvement.

(n) THE WORK: All the work specified in the Special Provisions, proposal and contract, or indicated on the plans as the contemplated complete improvement covered by the contract.

1.02 Wherever in the specifications or upon the plans the words directed, required, permitted, ordered, designated, prescribed, or words of like import are used, it will be understood that the direction, requirements, permission, order, designation, or prescription of the Flood Control Engineer is intended, and similarly the words approved, acceptable, satisfactory, or words of like import, shall mean approved by, or acceptable to, or satisfactory to, the Flood Control Engineer, unless otherwise expressly stated.

## SECTION II - SCOPE OF WORK

### 2.01 WORK TO BE DONE

It is the intent of these General Provisions, Special Provisions, Detailed Specifications, and the plans herein referred to, to provide for and include all labor, power, light, water, materials, tools, scaffolding, machinery, plant transportation, insurance, permits, bonds, temporary protection, watchmen, and superintendence necessary to construct and complete all work, and to furnish all materials included in the contract, except those furnished by the District and as specifically mentioned in these specifications.

The contract documents are complementary, and the work called for by any one shall be as binding as if called for by all.

## 2.02 CONSTRUCTION SCHEDULE

The Contractor shall submit at such times as may be requested by the Engineer, a schedule which shall show the order and dates in which the Contractor proposes to carry on the various parts of the work; including estimated completion dates.

## 2.03 DRAWINGS AND SPECIFICATIONS ON THE WORK

The Contractor shall keep one copy of all drawings and specifications on the work, in good order, available to the Engineer and his representatives.

## 2.04 ESTIMATE OF QUANTITIES

The quantities of work to be done and the materials to be furnished under this contract are approximate only. The District is not to be held responsible for the accuracy of the estimate of quantities.

The Contractor shall judge for himself, after considering all circumstances and conditions, the costs and quantities of materials involved in the contract. The Contractor shall not at any time assert that there was any misunderstanding in regard to the depth or class of the excavations to be made, or the nature or kind or amount of materials to be furnished for the work.

The Contractor herewith agrees that he will not ask, demand, sue for, or seek to recover, for compensation in excess of the amounts payable for the various unit costs or lump sum charges for the work, as stipulated in the proposal, which he actually performs as specified.

## 2.05 PROTESTS

If the Contractor considers any work demanded of him to be outside of the requirements of the contract, or considers any record or ruling of the Engineer to be unfair, he shall immediately, upon such work being demanded or such record or ruling being made, ask, in writing, for written instructions covering protested items of work. Immediately on receipt of written instructions from the Engineer he shall proceed without delay to diligently perform the work in conformance with the written record or ruling. Within ten (10) calendar days after date of receipt of the written instructions or ruling, the Contractor shall file a written protest with the Engineer stating clearly and in detail the basis of his protest. Except for such protests as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions, or decisions of the Engineer shall be final and conclusive.

## 2.06 ALTERATIONS

It must be distinctly understood that such reasonable alterations and modifications may be made by the Chief Engineer, as may be deemed desirable, and that this may be done without notices to the Sureties on the Contractor's bonds. If such changes result in increased or decreased quantities under the items specified in the proposal, the Contractor will be paid on the basis of actual quantities as measured by the Engineer, and such changes shall not affect the unit prices bid by the Contractor. If, however, such changes result in delay to the work, the

Contractor will be given such extension of time on the completion of his contract as the Chief Engineer may deem equitable.

## 2.07 EXTRA WORK

### A. General

The District reserves and shall have the right, when confronted with unpredicted conditions, unforeseen events, or emergencies, to revise the details of the contemplated work, or to add work of a different character or function and have the Contractor perform such revised or added work as "Extra Work", when such extra work is considered by the Chief Engineer to be virtually appurtenant to the satisfactory completion of the project.

"Extra Work" is defined as added work of a different character or function and for which no basis for payment is prescribed; or that involving revisions of the details of the work in such manner as to render inequitable payment under items upon which the Contractor bid; or that work which is indeterminate at the time of advertising and is specifically designated as extra work in the plans and Special Provisions.

The signing of the contract by the Contractor will be deemed to be an agreement on his part to perform extra work, as and when ordered by the Chief Engineer. Notice to the Sureties on the Contractor's bonds will not be given unless the estimated total value of the contract, as changed or supplemented, shall exceed the original total bid price by more than 25 percent.

If required extra work results in delay to the work, the Contractor will be given an equivalent extension of time.

Approval of extra work shall be obtained from the Board of Supervisors before such work is authorized to be done, if:

- a. For contracts with a total contract price of \$250,000 or less, a change due to extra work exceeds ten percent (10%) of the original contract amount; or
- b. For contracts with a total contract price of more than \$250,000, a change due to extra work exceeds \$25,000 plus one percent (1%) of the original contract amount in excess of \$250,000; or
- c. An individual change exceeds \$100,000; or
- d. Cumulative contract changes exceed ten percent (10%) of the original contract amount.

Extra work specially authorized by the Board of Supervisors shall not be included in the cost limitations above stated.

## B. Procedure for Extra Work

1. Upon decision of the District to have extra work performed, the Chief Engineer will so inform the Contractor, acquainting him with the essential details of the new work. The Contractor shall thereupon prepare a price for said work based upon his estimate of cost and submit said price and estimate to the Chief Engineer whose approval shall be secured before work is started; excepting that the Chief Engineer may, when in the best interest of the District, order the Contractor to proceed with the extra work in advance of the submission of such prices, provided that preliminary estimates, as made by the District, show that the cost will not exceed \$1,000.

2. Prices for extra work shall be prepared by the Contractor on one or both of the following methods, as requested by the District, and submitted to the Chief Engineer for approval:

a. For a stated unit price or lump sum amount based upon current prevailing fair prices for materials, labor, plant, overhead and profit.

b. On a cost basis (force account by the Contractor). The cost of all work done by the Contractor will be computed in the manner described in Section 7.03, and the compensation thus provided shall be accepted as payment in full by the Contractor, and no additional payment will be allowed for the use of small tools, superintendent's services, timekeeper's services, pickup or yard trucks, except as specifically essential to the work, nor any other overhead expenses incurred in the prosecution of the force account work.

3. Upon receipt of the Contractor's price, the Chief Engineer will make an analysis thereof and adopt one of the following procedures:

a. Accept the Contractor's price for lump sum or unit price amount in the original or amended form and direct him to proceed with the work; or direct him to perform the work on a cost plus basis.

b. Have the work performed by District's forces or separate contract, without undue interference or hindrance to the Contractor and without claim or suit by the Contractor for damages on account thereof.

c. Direct the Contractor to proceed with the work and accept payment therefor in the amount as adjudicated later in a court of law.

### 2.08 PAYMENT FOR EXTRA WORK

At the end of each month the Contractor shall make and deliver to the Chief Engineer a statement of the cost of the extra work completed during the current month, itemized and in a form satisfactory to the Chief Engineer. Upon verification of said statement by the Chief Engineer, the Contractor's claim for the full amount, as shown on said statement, will be added to the monthly partial payment made in accordance with Paragraph 7.06 of the General Provisions.

## 2.09 RIGHTS OF WAY

The District shall provide the rights of way upon which the work under this contract is to be done, except that the Contractor shall provide land required for the erection of temporary construction facilities and storage of his material, together with right of access to same. The District will not be responsible for any delay in furnishing the rights of way and such delay shall not be made the basis for a claim for additional compensation by the Contractor. However, in case the failure of the District to furnish the required rights of way delays the prosecution of the work, the time allowed for completion will be extended by a period of time equal to that lost by the Contractor due to such delay.

## 2.10 CLEANING UP

The Contractor shall, as directed by the Engineer, remove from the District's right of way and from all public and private property, at his own expense, all temporary structures, rubbish and waste materials resulting from his operations.

### SECTION III - CONTROL OF THE WORK

## 3.01 AUTHORITY OF THE ENGINEER

The Engineer shall have general supervision and direction of the contract under authority of the Board of Supervisors. He has the authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the contract. The Engineer shall decide all questions which may arise as to the quality or acceptability of materials furnished, work performed, and rate or progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the Contractor; and all questions as to compensation.

His determination and decision thereon shall be final and conclusive; and such determination and decision, in case any question shall arise, shall be a condition precedent to the right of the Contractor to receive any money hereunder.

## 3.02 DETAIL DRAWINGS

The approved plans shall be supplemented by such working drawings as are necessary to control the work adequately. All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made of any plan or drawing after the same has been approved by the Engineer, except by his direction.

It is expressly understood, however, that approval by the Engineer of the Contractor's working drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of his working drawings with the approved plans and specifications.

Full compensation for furnishing all working drawings shall be considered as included in the prices paid for the various contract items of work, and no additional allowance will be made therefor.

### 3.03 CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS

Finished surfaces in all cases shall conform with the lines, grades, cross-sections, and dimensions shown on the approved plans. Deviations from the approved plans and working drawings, as may be required by the exigencies of construction, will in all cases be determined by the Engineer and authorized in writing.

### 3.04 INTERPRETATION OF PLANS AND SPECIFICATIONS

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these specifications and the Special Provisions, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to the same part of the contract, so far as may be consistent with the original specifications; and in the event of any doubt or questions arising respecting the true meaning of the specifications; reference shall be made to the Engineer, whose decision thereon shall be final.

In the event of any discrepancy between any drawings and the figures written thereon, the figures shall be taken as correct. The Contractor will not be allowed to take advantage of errors and omissions in the drawings and specifications. When errors or omissions are found, they will be corrected or supplied by the Engineer.

### 3.05 SUPERINTENDENCE

The Contractor shall keep on his work, continually during its progress, a competent Superintendent responsible for the construction of the work, and any necessary assistants; all satisfactory to the Engineer. The Superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor. Important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case.

### 3.06 LINES AND GRADES

The Contractor shall provide reasonable and necessary opportunities and facilities for setting points and making measurements. He shall not proceed until he has made timely demand upon the Engineer for, and has received from him, such lines and grades as may be necessary as the work progresses. The work shall be done in strict conformity with such lines and grades.

The Contractor shall carefully preserve benchmarks, reference points and stakes, and in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

### 3.07 INSPECTION OF WORK

The Engineer and his representatives shall at all times have access to the work during its construction, and shall be furnished with every reasonable facility for ascertaining that the stock and materials used and employed, and the workmanship, are in accordance with the requirements and intentions of these specifications. All work done and all materials furnished shall be subject to the Engineer's inspection and approval to ensure design objectives.



The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contracts as prescribed, and defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such defective work and materials have been previously overlooked by the Engineer and accepted or estimated for payment.

### 3.08 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK

All work which has been rejected shall be remedied, or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed him for such removal or replacement. Any work done beyond the lines and grades shown on the plans or established by the Engineer, or any extra work done without written authority, will be considered as unauthorized and will not be paid for. Work so done may be ordered removed at the Contractor's expense. Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this article, the Engineer shall have authority to cause defective work to be remedied, or removed and replaced, and unauthorized work to be removed and to deduct the costs for this work from any monies due or to become due the Contractor.

### 3.09 EQUIPMENT AND PLANT

Equipment not suitable to produce the quality of work required will not be permitted to operate on the project. Plants shall be designed and constructed in accordance with general practice for such equipment and shall be of sufficient capacity and of such character to ensure the production of sufficient material to carry the work to completion within the time limit.

The Contractor shall provide adequate and suitable equipment and plants to meet the above requirements and, when ordered by the Engineer, shall remove unsuitable equipment from the work and discontinue the operation of unsatisfactory plants. No worn or obsolete equipment shall be used, and in no case shall the maker's rating of the capacity for any equipment be exceeded.

All vehicles used to haul materials over existing highways shall be equipped with pneumatic tires.

### 3.10 FINAL INSPECTION

The Engineer will not make the final inspection until the work provided for and contemplated by the contract has been completed and the final cleaning up performed.

## SECTION IV - CONTROL OF MATERIAL

### 4.01 DISTRICT FURNISHED MATERIALS

The Contractor shall furnish all materials required to complete the work, except those specified in the Special Provisions to be furnished by the District. Materials furnished by the District will be delivered to the Contractor at the points specified in the Special Provisions.

The Contractor will be held responsible for all materials so delivered to him, and deductions will be made from any monies due him to make good any shortages and deficiencies,

from any cause whatsoever, which may occur after such delivery, or for any demurrage charges due to delinquency in unloading.

#### 4.02 SOURCE OF SUPPLY AND QUALITY OF MATERIALS

At the option of the Engineer the source of supply of each of the materials shall be approved by him before the delivery is started. Only materials conforming to the requirements of these specifications and approved by the Engineer shall be used in the work. All materials proposed for use may be inspected or tested at any time during their preparation and use. If, after trial, it is found that sources of supply which have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved material from other approved sources. No material which, after approval, subsequently becomes unfit for use shall be used in the work.

#### 4.03 SAMPLES AND TESTS

All tests of materials furnished by the Contractor shall be made by the District in accordance with commonly recognized standards of national organizations, and such special methods and tests as are in use at the District's approved laboratory and described in the Detailed Specifications.

Field tests of materials will also be made by the Engineer when deemed necessary and these tests shall be made in accordance with standard practices of the District.

The Contractor shall furnish such samples of all materials as are requested by the Engineer without charge. No material shall be used until it has been approved by the Engineer. Samples will be secured and tested whenever necessary to determine the quality of the material.

Promptly after the approval of the contract, the Contractor shall notify the Engineer of the proposed sources of supply of all materials to be furnished by him, using a form which will be supplied by the Engineer upon request.

Whenever reference is made in these specifications to standard tests or requirements of the laboratory of the District, the American Society for Testing Materials, the American Railway Engineering Association, or the American Association of State Highway Officials, the reference shall be construed to mean the standards that are in effect at the date of these specifications with subsequent amendments, changes, or additions as thereafter adopted and published by the organization referred to.

#### 4.04 STORAGE OF MATERIALS

Materials shall be so stored as to ensure the preservation of their quality and fitness for the work. When considered necessary by the Engineer, they shall be placed on wooden platforms or other hard, clean surfaces and not on the ground. They shall be placed under cover when so directed. Stored materials shall be so located as to facilitate prompt inspection.

#### 4.05 DEFECTIVE MATERIALS

All materials not conforming to the requirements of these specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise permitted by the Engineer. No rejected materials, the defects of which have been subsequently corrected, shall be used until approval in writing has been given by the Engineer. Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this article, the Engineer shall have authority to remove and replace defective material and to deduct the cost of removal and replacement from any monies due or to become due the Contractor.

#### 4.06 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 District 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 acknowledgment by the parties.

### SECTION V - LEGAL RELATIONS AND RESPONSIBILITY

#### 5.01 LAWS TO BE OBSERVED

(a) Compliance with Applicable Law. Reference to and/or incorporation into the Contract Documents of a particular law, statute, ordinance, rule or regulation is not, nor is it intended to be, a definitive statement of the law applicable to the Contract Documents and the accomplishment of the work. Contractor must keep informed as to all such applicable law - Federal, State, County, Municipal, District - as it affects the conduct of the work and comply with such law, including, but not limited to, having requisite licenses, obtaining necessary permits, paying necessary fees and taxes, posting notices and installing, operating and maintaining safety precautions and facilities. It is likewise Contractor's responsibility to see to it that his subcontractors also fully comply with such applicable law.

If at any time Contractor is of the opinion that there is a discrepancy or inconsistency in the plans, drawings, specifications or other Contract Documents, he shall immediately cease work involving such alleged discrepancies or inconsistencies and report the same in writing to the Chief Engineer and shall not proceed with such work until ordered so to do, and in the manner instructed by the Chief Engineer.

Contractor shall protect and defend District, its officers, agents and employees against any claim or liability arising from or based upon any alleged violation of such applicable law. See also Subsection 8.02.

(b) 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 with, among other things, discrimination, penalties and forfeitures, their disposition and enforcement, wages, working hours and securing workers' compensation insurance and directly affect 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 it 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 workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this contract." Contractor and its subcontractors shall comply with the provisions of S1777.5 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.

(c) Equal Employment Opportunity

General - Contractor shall not discriminate in its recruiting, hiring, promotion, demotion or termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age or physical handicap in the performance of this Contract and shall comply with the provisions of the Government Code Section (commencing with §12900 et seq.), 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 subcontracts 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 this contract.

Transactions of \$50,000 or more - If Contractor has 50 or more employees and a contract for \$50,000 or more, it shall develop and submit to Owner, within 30 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 50 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 12 month period immediately prior to award, or the total number of employees Contractor or its subcontractor will have when performing this contract, whichever is higher, shall be used.

Federally Assisted Construction - If this project is a Federally assisted construction project, then the contract provisions contained 41 CFR S60-1.4(b) are incorporated herein and Contractor shall likewise incorporate said provisions in each subcontract entered into by Contractor to perform the work. Federally assisted construction is identified as such in the Notice Inviting Bids.

(d) Registration of Contractors - In order to be considered a prospective bidder must be licensed in accordance with Division 3, Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

(e) Accident Prevention - Particular attention shall be given to relevant Division of Industrial Safety Construction and Electrical Safety Orders. Said Orders are contained in Title 8 of the California Administrative Code, Chapter 4, Subchapters 4 and 5. Specific attention shall be taken of the California Occupational Safety and Health Act of 1973 (commencing with Section 6300 of the Labor Code) and the Federal Occupational Safety and Health Act of 1970 (P.L. 91-596) and rules and regulations issued pursuant to said Acts. Specific reference is made to Article 6 of said Construction Safety Orders. Contractor shall submit to Engineer, who will

accept in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping of the sides of trenches, or other provisions to be made for protection of personnel during earthwork operations. In event the Contractor's plan does not conform with the shoring system requirements of Article 6, the Contractor's proposed shoring design shall be prepared and signed by a civil or structural engineer registered in the State of California.

The Contractor shall also impose the foregoing requirements on all subcontractors involved and enforce compliance therewith.

The duties here set forth are nondelegable by Contractor who shall protect and defend District, its officers, agents and employees in connection therewith. See Subsection 8.02.

#### 5.02 CONTRACTOR'S RESPONSIBILITY

Contractor is under the absolute duty in fulfilling its contractual obligations hereunder to proceed, and cause its subcontractors to proceed, in a safe, workmanlike manner, with adequate safeguards for the protection of the public, the workmen and persons from time to time inspecting the work. If at any time Contractor finds any of its subcontractors are allowing work to proceed in an unsafe manner and contrary to the intent of these Contract Documents, Contractor shall immediately cause such action to stop and immediately take all action necessary to protect workmen, inspectors and the general public and cause the work to proceed in a safe manner.

Contractor shall protect and defend District, its officers, agents and employees in reference to acts or omissions contrary to the above. See particularly Subsection 8.02.

District may withhold funds otherwise due Contractor whenever, in its judgment, this subsection is not being complied with.

#### 5.03 CONTRACTOR'S RESPONSIBILITY FOR WORK

Until the formal acceptance of the work by the District, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before its completion and acceptance and shall bear the expense thereof, except for such injuries or damages as are occasioned by acts of the Federal Government and the public enemy. In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials and shall properly store them if necessary and shall erect temporary structures where necessary.

#### 5.04 PROPERTY RIGHTS IN MATERIALS

Nothing in the contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil. All such materials shall become the property of the District upon being so attached or affixed.

#### 5.05 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work.

#### 5.06 ROYALTIES AND PATENTS

The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated on the work, and agrees to indemnify and save harmless the Riverside County Flood Control District, the Board of Supervisors, the Flood Control Engineer, and their duly authorized representatives, from all suits at law, or actions of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

#### 5.07 SANITARY PROVISIONS

Necessary conveniences, properly secluded from public observation shall be provided by the Contractor where needed for the use of laborers on the work. Their location, construction and maintenance shall be subject to the approval of the Engineer, and their use shall be strictly enforced. The Contractor shall obey and enforce such sanitary regulations as may be prescribed by the State Department of Health or other authorities having jurisdiction.

#### 5.08 PUBLIC SAFETY

The Contractor at his own expense shall furnish, erect, and maintain such fences, barriers, lights, and signs as are necessary to give adequate warning to the public at all times that the bridges, culverts, and work along public highways are under construction; and of any dangerous conditions to be encountered as a result thereof; and he shall erect such warning and directional signs and employ such flagmen as are required and maintain same throughout the construction period.

Full compensation for the work involved in carrying out the precautionary measures above specified shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefor.

#### 5.09 USE OF EXPLOSIVES

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property.

All explosives shall be stored in accordance with the provisions of Division II, Part I, Chapter 3, of the Health and Safety Code of the State of California.

#### 5.10 PROVISIONS FOR EMERGENCIES

Unusual conditions may arise on the work which will require that immediate and unusual provisions be made to protect the public from danger or loss or damage to life and property, due directly or indirectly to the prosecution of the work, and it is part of the service required of the Contractor to make such provisions and to furnish such protection.

The Contractor shall use such foresight and shall take such steps and precautions as his operations make necessary to protect the public from danger or damage, or loss of life or property, which would result from the interruption or contamination of public water supply, irrigation or other public service, or from the failure of partly completed work.

Whenever work is undertaken pursuant to the above provisions, Contractor shall promptly file with District a verified report setting forth the nature of the emergency and the action taken by the Contractor by reason of the emergency.

Whenever, in the opinion of the Engineer, an emergency exists against which the Contractor has not taken sufficient precaution for the safety of the public or the protection of utilities or of adjacent structures or property which may be injured by process of construction on account of such neglect; and whenever, in the opinion of the Engineer, immediate action shall be considered necessary in order to protect public or private, personal or real property interests, or prevent likely loss of human life or damage on account of the operations under the contract, then and in that event the Engineer may provide suitable protection to said interests by causing such work to be done and material to be furnished as, in the opinion of the Engineer, may seem reasonable and necessary.

The cost and expense of all such emergency work shall be borne by the Contractor, and if he shall not pay said cost and expense upon presentation of the bills therefor, duly certified by the Engineer, then said cost and expense will be paid by the District and shall thereafter be deducted from any amounts due, or which may become due said Contractor. Failure of the District, however, to take such precautionary measures, shall not relieve the Contractor of his full responsibility for public safety.

#### 5.11 UNFORESEEN DIFFICULTIES

All loss or damages, except as noted in Section 8.03, arising out of the nature of the work to be done under the contract, or from any unforeseen obstructions or difficulties which may be encountered during the progress of the work and in the prosecution of the same, or from the action of the elements, or from encumbrances in the line of work, shall be sustained by the Contractor.

#### 5.12 ACCESS TO THE WORK

Access to the work from existing roads shall be provided by the Contractor at his expense and maintained in a manner so as not to create a public nuisance. The Board of Supervisors, Flood Control District and Engineer assume no responsibility for the condition or maintenance of any existing road or structure thereon that may be used by the Contractor for performing the work under these specifications and for traveling to and from the site of the work. No direct payment will be made to the Contractor for constructing temporary roads used for construction operations or for improving, repairing, or maintaining any existing road or structure thereon that may be used by the Contractor for performance of the work under these specifications. The cost of all work described in this paragraph shall be included in the prices bid in the schedule for other items of construction work.



### 5.13 GUARANTEE OF WORK

All work is guaranteed by Contractor for a period of one year from the recordation of the Notice of Completion against defects resulting from the use of inferior materials, equipment, or workmanship. Upon notice from District, Contractor shall promptly remedy such defects at his expense, including payment to District of its expenses in connection with remedying such defects, otherwise District shall proceed to remedy such defects and Contractor shall upon demand reimburse District for its expenses in connection therewith.

The above one year guarantee is in addition to any specific guarantee(s) provided for elsewhere in the Contract Documents.

### 5.14 DAMAGES BY ACT OF GOD

If the construction of the project herein is damaged, which damage is determined to have been proximately cause 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 District, may, without prejudice to any other right or remedy, terminate the contract.

## SECTION VI - PROSECUTION AND PROGRESS

### 6.01 PROGRESS OF THE WORK

The Contractor shall begin the work within ten (10) calendar days after the date of the receipt by him of notice to proceed from the Chief Engineer and shall diligently prosecute the same to completion within the time limit provided in the Special Provisions.

### 6.02 OVERTIME WORK AND WORK AT NIGHT

It is intended that the Contractor prosecute the work on a five (5) day, forty (40) hour work week with no work on legal holidays. If the Contractor feels it is necessary to work more than the normal 40 hour work week, he will make a written request for permission from the Engineer, outlining the reasons for such request. The decision of granting permission for overtime work shall be made by the Engineer and shall be final. A condition will be imposed on the granting of a request to work overtime, requiring the Contractor to pay the District the cost incurred at overtime rates for additional inspection and engineering time required in connection with the overtime work.

When any work is performed at night, only such classes of work shall be done as can be properly inspected. Adequate light must be provided for the safety of the men and for proper inspection.

### 6.03 SUBCONTRACTING

Reference is made to the Subletting and Subcontracting Fair Practice Act contained in the Public Contract Code (commencing §4100). By this reference, said Act is incorporated herein with like effect as if it were here set forth in full and the parties shall abide by its terms and substitution shall be only as allowed by that Act.

Contractor shall be responsible for the acts and omissions of its subcontractors and shall make certain that at all times its subcontractors comply with the terms of the Contract Documents and applicable law insofar as such compliance relates to the work.

District reserves the right to approve all subcontractors whether or not they are required to be listed in the Contractor's Proposal. As used in this Section "subcontractor" includes any person who fabricates or manufactures any article for incorporation into the work whether or not they install or test after installation or contract to install or test after installation, but does not include suppliers of fungible goods for incorporation into the work unless such supplier also installs or tests or contracts to install or test.

The Contractor shall give his personal attention to the fulfillment of the contract and shall keep the work under his control. The Contractor shall perform with his own organization work of a value amounting to not less than 60 percent of the remainder obtained by subtracting from the total original contract value the sum of any item designated herein or in the Special Provisions as Specialty Items. The furnishing and placing of reinforcing steel, when placing is performed by the supplier, will be considered as a Specialty Item for this purpose; however, he shall be designated in the list of subcontractors. The value of the work subcontracted will be based on the contract item bid price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer.

Where a portion of the work which has been subcontracted by the Contractor is not being prosecuted in a manner satisfactory to the District, the subcontractor shall be removed immediately on the requisition of the Engineer and shall not again be employed on the work.

### 6.04 CHARACTER OF WORKMEN

If any subcontractor or person employed by the Contractor shall fail or refuse to carry out the directions of the Engineer or shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, he shall be discharged immediately on the requisition of the Engineer, and such person shall not again be employed on this work.

### 6.05 TEMPORARY SUSPENSION OF THE WORK

The Engineer shall have the authority to suspend the work wholly or in part, for such period as he may deem necessary, due to unsuitable weather, or to such other conditions as are

considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the contract. The Contractor shall immediately comply with the written order of the Engineer to suspend the work wholly or in part. The work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the Engineer.

#### 6.06 TIME OF COMPLETION AND DAMAGES

The Contractor shall complete the work called for under the contract in all parts and requirements within the number of working days specified in the Special Provisions.

A working day is hereby defined as any day; except Saturdays, Sundays, and legal holidays and days on which the Contractor is specifically required by the Special Provisions to suspend construction operations; on which the Contractor is not prevented by inclement weather or conditions resulting immediately therefrom adverse to the current controlling operation or operations, as determined by the Engineer, from proceeding with at least 60 percent of the normal labor and equipment force engaged in such operation or operations for at least five hours toward completion of such operation or operations.

The Engineer will furnish the Contractor a weekly statement showing the number of working days charged to the contract for the preceding week, the number of working days specified for completion of the contract, and the number of working days remaining to complete the contract. The Contractor will be allowed one week in which to file a written protest setting forth in what respects said weekly statement is incorrect, otherwise the statement shall be deemed to have been accepted by the Contractor as correct.

The following holidays will be considered as legal holidays: New Year's Day; Martin Luther King Jr.'s Birthday, Lincoln's Birthday; Washington's Birthday; Memorial Day; Independence Day; Labor Day; Columbus Day; Veteran's Day; Thanksgiving Day; Christmas; and such other days as are declared holidays by ordinance passed by the Board of Supervisors of Riverside County.

Contractor acknowledges that failure to perform in strict accordance with the Contract Documents and within the time limit specified in the Special Provisions will cause District 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, inspection expense, cost of maintaining or constructing alternate facilities and injury to the property of the District or others. The daily cost to the District for inspection and superintendence by the District shall be the amount specified in the Special Provisions. The District may withhold from any money due or that may become due the Contractor under the contract, such amount as the District may elect to offset the damages incurred and any withholding or failure to withhold shall not in any way limit recovery for damages actually incurred.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the time specified, the Board of Supervisors shall have the right to extend the time for completion or not, as may seem best to serve the interest of the District, and if it decides to extend the time limit for the completion of the contract, it shall further have the right to charge to the Contractor, his heirs, assigns or sureties and to deduct from the final payment for the work all or any part, as it may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the contract, and which accrue during the period of such extension, except that cost of final surveys and preparation of final estimate shall not be included in such charges.

The Contractor shall not be assessed damages nor the cost of engineering and inspection during any delay in the completion of the work caused by acts of God or of the public enemy, acts of the District, encountering unknown utility facilities, fire, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather or delays of subcontractors due to such causes, provided that the Contractor shall notify the Engineer in writing of the causes of delay within ten (10) days from the beginning of any such delay, and his findings of the facts thereon shall be final and conclusive. Contractor shall not be assessed damages for delay in the completion of the project, when such delay was caused by the failure of the District or the owner of the utility facilities.

The term "severe weather" shall be construed to mean only such weather as is unreasonable or extraordinary and in the opinion of the Engineer, the work could not be prosecuted by the Contractor during the period throughout which such weather prevailed.

#### 6.07 DELAYS AND EXTENSION OF TIME

If delays are caused by unforeseen causes beyond the control of either the Contractor or the District, such as war, strikes, fire, floods, or other action of the elements, such delays will entitle the Contractor to an equivalent extension of time for the completion of the contract, but the Contractor shall not be entitled to damages or additional payments over and above the contract price due to delay caused by any of the above-mentioned causes. Furthermore, if the Contractor suffers any delay caused by the failure of the District to furnish the necessary right of way or materials agreed to be furnished by it, or by failure to supply necessary plans or instructions concerning the work to be done after written request therefor has been made, the Contractor shall be entitled to an extension of time equivalent to the time lost for any of the above-mentioned reasons, but shall not be entitled to any damages for such delay.

#### 6.08 ASSIGNMENT

The contract may be assigned only upon written consent of the District. Such written consent to sublet, assign or otherwise dispose of any portion of the contract, shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the contract.

#### 6.09 TERMINATION OF CONTRACT

Subject to all applicable provisions of these specifications and/or the contract to be entered into hereunder, the Engineer is hereby empowered to direct the time and rate of delivery of materials at the site of work and to direct the time, rate and sequence of work. If the Contractor fails to begin delivery of material and equipment or to commence work within the

time specified herein, and/or in the contract, or to maintain the rates of delivery of materials, or to execute the work in the manner and at such locations as directed by the Engineer, or fails to maintain a program of work in such a manner as will, in the judgment of the Engineer inure to interests of the District, or, if in the judgment of the Engineer, the Contractor is not carrying out the provisions of the contract in their true intent and meaning, written notice by the Chief Engineer may be served upon him and the Surety on his faithful performance bond demanding a satisfactory compliance with the contract, and with these specifications. If the Contractor and/or his Surety refuses or neglects to comply with such notice within five (5) days after receiving same, or after commencing so to do, fails to continue so to do, or has assigned or sublet the contract without the consent of the District, then the District may exclude him from the premises and take possession thereof, together with all material and equipment thereon, and may complete the work itself, either by force account or by letting the unfinished portion of the work to another Contractor or by a combination of such methods. In any event, the cost of the completion of said work shall be a charge against the Contractor and his Surety and may be deducted from any money due or becoming due from the District, and if the sums due under the contract are insufficient, said Contractor and/or his Surety shall pay to the District within five (5) days after the completion of the work all of such cost in excess of the contract price.

The Surety, in the event that it assumes part of the work, shall take the Contractor's place in this contract in all respects for that part and shall be paid by the District for all work performed by it in accordance with the terms of this contract. If the Surety assumes the entire contract, all monies remaining due the Contractor at the time of his default shall be made payable to the Surety as the work progresses, subject to the terms of the contract.

## SECTION VII - PAYMENT

### 7.01 SCOPE OF PAYMENTS

The Contractor shall accept compensation, as herein provided, in full payment for furnishing all materials, labor, tools, and equipment necessary to the completed work and for performing all work contemplated and embraced under the contract; also for loss or damage arising from the nature of the work, or from the action of the elements, except as hereinbefore provided, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the Board of Supervisors; and for all risks of description connected with the prosecution of the work, also for all expenses incurred in consequence of the suspension or discontinuance of the work as herein specified; and for completing the work according to the plans and specifications. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

7.01A Measurement and Computation of Quantities - All items of the work to be paid for at a contract price per unit of measurement will be measured by the Engineer in accordance with United States Standard Measures. A ton shall mean 2,000 pounds, avoirdupois. Except as otherwise expressly provided in the specifications, the methods of measurement and computation of quantities of such items will be determined by the Engineer, taking into account the price of the item relative to its quantity and the costs of measurement.

The weights of metalwork, pipe, and other metal parts to be paid for by weight will be determined by the Engineer on the basis of handbook weights, scale weights, or manufacturer's

catalog weights, or in the absence of any of the foregoing, on the basis of estimated weights; provided, that weights of nonmetallic coatings will be excluded.

7.01B Payment at Contract Prices - The contract price for an item of the work shall include full compensation for all costs of that item, including the costs of any work, materials and equipment incidental to the item but not specifically shown or described in the drawings and specifications, subject only to such express limitations as may be stated in the specifications defining the item or prescribing payment therefor.

The contract prices shall include full compensation for all costs of any work, materials, and equipment required by the drawings and specifications at the time of contract award, but not covered by a contract price or otherwise expressly made the subject of direct payment.

## 7.02 PAYMENT AND COMPENSATION FOR ALTERED QUANTITIES

When alterations in plans or quantities of work are ordered and performed, the Contractor shall accept payment in full at the contract unit price for the actual quantities of work done and no allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

## 7.03 FORCE ACCOUNT PAYMENT

When extra work is to be paid for on a force account basis, compensation will be determined as follows:

7.03A Work Performed by Contractor - The Contractor will be paid for labor, materials, and equipment rental as hereinafter provided, except where agreement has been reached to pay in accordance with Section 7.03B. Only materials incorporated in the work will be paid for.

To the total computed as provided in Sections 7.03A(1), 7.03A(2) and 7.03A(3) will be added the following percentages:

Labor	-	24 percent
Materials	-	15 percent
Equipment Rental	-	15 percent

It is understood labor, materials, and equipment may be furnished by the Contractor or by the subcontractor or by others on behalf of the Contractor.

When extra work paid for on a force account basis is performed by forces other than the Contractor's organization, the Contractor shall reach agreement with such other forces as to the distribution of the payment made by the District for such work and no additional payment therefor will be made by the District.

7.03A(1) Labor - The Contractor will be paid the cost of labor for the workmen (including foremen when authorized by the Engineer), used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, subcontractor, or other forces, will be the sum of the following:

7.03A(1a) Actual Wages – The actual wages paid will be as published by the Director of Industrial Relations of the State of California for the region where work is performed and that are in effect at the time of award of the contract. The classification of workmen used shall not be in excess of the industry standard for the region where work is performed. Copies of the published labor rates are on file at the District office.

7.03A(1b) Labor Surcharge - To the actual wages as defined in Section 7.03A(1a), will be added a labor surcharge set forth in the Special Provisions, which labor surcharge shall constitute full compensation for all payments imposed by State and Federal laws and for all other payments made to, or on behalf of, the workmen, other than actual wages as defined in Section 7.03A(1a) and subsistence and travel allowance as specified in Section 7.03A(1c).

7.03A(1c) Subsistence and travel allowance paid to such workmen as required by collective bargaining agreements.

7.03A(2) Materials - The cost of materials incorporated in the work will be the cost to the purchaser, whether Contractor, subcontractor or other forces, from the supplier thereof, except as the following are applicable:

7.03A(2a) If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the District notwithstanding the fact that such discount may not have been taken.

7.03A(2b) If the materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the Engineer. No markup except for actual costs incurred in the handling of such materials will be permitted.

7.03A(2c) If the materials are obtained from a supply or source owned wholly or in part by the purchaser, payment therefor will not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or on the current wholesale price for such materials delivered to the job site whichever price is lower.

7.03A(2d) If the cost of such materials is, in the opinion of the Engineer, excessive, then the cost of such materials shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned delivered to the job site, less any discounts as provided in Section 7.03(2a).

7.03A(2e) If the Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, the cost shall then be determined in accordance with Section 7.03A(2d).

The District reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and profit on such materials.

7.03A(3) Equipment Rental - The Contractor will be paid for the use of equipment at the rental rates listed for such equipment in the Special Provisions, regardless of ownership and any rental or other agreement, if such may exist, for the use of such equipment entered into by the Contractor. If it is deemed necessary by the Engineer to use equipment not listed in the Special Provisions, a suitable rental rate for such equipment will be established by the Engineer. The Contractor may furnish any cost data which might assist the Engineer in the establishment of such rental rate.

The rental rates paid as above provided shall include the cost of fuel, oil, lubrication, supplies, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Operators of rented equipment will be paid for as provided under Section 7.03A(1).

All equipment shall, in the opinion of the Engineer, be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools having a replacement value of \$25.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

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

In computing the rental time of equipment, less than 30 minutes shall be considered ½ hour.

7.03A(3a) Equipment on the Work - The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed, and in addition, shall include the time required to move the equipment to location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

7.03A(3b) Equipment not on the Work - For the use of equipment moved in on the work and used exclusively for extra work paid for on a force account basis, the Contractor will be paid the rental rates listed in the Special Provisions or as agreed to as provided



in Section 7.03A(3) and for the cost of transporting the equipment to the location of the work and its return to its original location, all in accordance with the following provisions:

- (1) The original location of the equipment to be hauled to the location of the work shall be agreed to by the Engineer in advance.
- (2) The District will pay the costs of loading and unloading such equipment.
- (3) The cost of transporting equipment on low bed trailers shall not exceed the hourly rates charged by established haulers.
- (4) The cost of transporting equipment shall not exceed the applicable minimum established rates of the Public Utilities Commission.
- (5) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays, and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the Engineer directs the Contractor to discontinue the use of such equipment. The rental time to be paid per day will be in accordance with the following:

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

When hourly rates are listed, less than 30 minutes of operation shall be considered to be 1/2 hour of operation.

When daily rates are listed, payment for 1/2 day will be made if the equipment is not used. If the equipment is used, payment will be made for one day.

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

(6) Should the Contractor desire the return of the equipment to a location other than its original location, the District will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment to the work.

(7) Payment for transporting, loading and unloading equipment, as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

7.03B Work Performed by Special Forces or Other Special Services - When the Engineer and the Contractor, by agreement, determine that a special service or an item of extra work cannot be performed by the forces of the Contractor or those of any of his subcontractors, such service or extra work item may be performed by a specialist. Invoices for such service or item of extra work on the basis of the current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with the established practice of the special service industry to provide such complete itemization. In those instances wherein a Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the job site, the charges for that portion of the extra work performed in such facility may, by agreement, be accepted as a specialist billing.

To the specialist invoice price, less a credit to the District for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added 15 percent in lieu of the percentages provided in Section 7.03A.

7.03C Records - The Contractor shall maintain his records in such a manner as to provide a clear distinction between the direct costs of extra work paid for on a force account basis and the costs of other operations.

The Contractor shall furnish the Engineer report sheets in duplicate of each day's extra work paid for on a force account basis no later than the working day following the performance of said work. The daily report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor, or other forces, except for charges described in Section 7.03B. The daily report sheets shall provide names or identifications and classifications of workmen, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Material charges shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily report sheets, or if not available, they shall be submitted with subsequent daily report sheets. Should said vendor's invoices not be submitted within 15 days after acceptance of the work, the District reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials are available in the quantities concerned delivered to the location of the work, less any discounts provided in Section 7.03A(2a).

Said daily report sheets shall be signed by the Contractor or his authorized agent.

The Engineer will compare his records with the daily report sheets furnished by the Contractor, make any necessary adjustments, and compile the costs of work paid for on a force account basis on daily extra work report forms furnished by the District. When these daily extra work reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit.

The Contractor's cost records pertaining to work paid for on a force account basis shall be open to inspection or audit by representatives of the District, during the life of the contract and for a period of not less than 18 months after the date of acceptance thereof, and the Contractor shall retain such records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor expressly guarantees that the cost records of such other forces shall be open to inspection and audit by representatives of the District on the same terms and conditions as the cost records of the Contractor. If an audit is to be commenced more than 60 days after the acceptance date of the contract, the Contractor will be given a reasonable notice of the time when such audit is to begin.

7.03D - Payment as provided above in Sections 7.03A and 7.03B shall constitute full compensation to the Contractor for performance of work paid for on a force account basis and no additional compensation will be allowed therefor.

#### 7.04 ACCEPTANCE

The work shall be inspected for acceptance by the Engineer promptly upon receipt of notice in writing from the Contractor that the work is ready for such inspection.

The structures will not be finally accepted until the completion of the entire work under the contract.

#### 7.05 DEDUCTIONS FROM PAYMENTS

The Riverside County Flood Control and Water Conservation District, by and through the Board of Supervisors or other appropriate District officer or officers, may at its option and at any time retain out of any amounts due the Contractor sums sufficient to cover any unpaid claims, provided that sworn statements of said claims shall have been filed in the office of the District or in the office of any other District officer or officers having jurisdiction thereover.

#### 7.06 PARTIAL PAYMENTS

On or about the last day of each month, the Engineer shall make an estimate in writing of the total amount of work done by the Contractor to the time of such estimate and the value thereof. The District shall retain 10 percent (10%) of such estimated value of the work done as part security for the fulfillment of the contract by the Contractor, except that at any time after 50 percent (50%) of the work has been completed, if the District finds that satisfactory progress is being made, the District may make any of the remaining progress payments in full for actual work completed during such estimate period or may withhold any amount up to 10 percent (10%) thereof as the District may find appropriate based on the Contractor's progress. At no

time shall the amount retained by the District be less than 5 percent (5%) of the total value of the work completed at the time such payments are made.

After deducting all previous payments and all sums to be kept or retained under the provisions of the contract, the District shall make monthly progress payments to the Contractor. No such estimate or payment shall be required to be made when, in the judgment of the Chief Engineer, the work is not proceeding in accordance with the provisions of the contract.

In accordance with Public Contract Code Section 22300 and other applicable law, the Contractor may substitute securities for any monies withheld to ensure performance under the contract. Such substitution shall be made only upon a separate agreement between the District and the Contractor which contains terms and conditions in compliance with all laws applicable to monies withheld under the contract.

#### 7.07 DELAYED PAYMENTS

All the monies due the Contractor under the contract will be paid by demand on the Treasurer of the District, prepared and approved as required by law, and it is understood that any delay in the preparation, approval and payment of these demands will not constitute a breach of contract on the part of the District.

#### 7.08 FINAL PAYMENT

The Engineer, after the completion of the contract, shall make a final estimate in writing to the Board of Supervisors of the amount of work done thereunder, and the value of such work, and the District shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the contract. All prior partial estimates and payment shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of forty-five (45) days from the date of acceptance of the work by the Board of Supervisors.

It is mutually agreed between the parties to the contract that no certificate given or payments made under the contract, except the final payment, shall be conclusive evidence of the performance of the contract, either wholly or in part against any claim of the party of the first part, and no payment shall be construed to be an acceptance of any defective work or improper materials.

And the Contractor further agrees that the payment of the final amount due under the contract, and the adjustment and payment for any work done in accordance with any alterations of the same, shall release the Riverside County Flood Control and Water Conservation District, the Board of Supervisors, and the Engineer from any and all claims or liability on account of work performed under the contract or any alteration thereof.

#### 7.09 CLAIMS RESOLUTION

In accordance with Public Contract Code Section 20104 - 20104.6 and other applicable law, public works claims of \$375,000 or less which arise between the Contractor and the District shall be resolved following the statutory procedure unless the District has elected to resolve the dispute pursuant to Public Contract Code § 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 provided 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 District.

- (a) Claims under \$50,000. The District shall respond in writing to the claim within 45 days of receipt of the claim, or, the District 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 District may have. If additional information is needed thereafter, it shall be provided upon mutual agreement of the District and the claimant. The District'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 District 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 District may have against the claimant. If additional information is needed thereafter, it shall be provided pursuant to mutual agreement between the District and the claimant. The District'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 District's response, or if the District fails to respond within the statutory time period, the claimant may so notify the District 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 District 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 § 900 et seq. and Government Code § 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 § 20104.4 shall be followed, providing for nonbinding mediation and judicial arbitration.

## SECTION VIII - GENERAL

### 8.01 COOPERATION BETWEEN CONTRACTORS

The Contractor shall be required to cooperate fully with all utility and public agency representatives engaged in construction, relocation, altering or otherwise rearranging any facilities interfering with the progress of the work.

Full compensation for any delay or inconvenience to the Contractor's operation due to such operations as described above shall be considered included in the unit price paid for other items of work and no additional allowance will be made therefor.

### 8.02 INSURANCE - HOLD HARMLESS

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 District and has been approved as to form by Riverside County Counsel.

Compensation Insurance - Contractor shall procure and maintain during the life of the contract Workers' Compensation Insurance as required by the State of California. Contractor shall further require each of its subcontractors to procure Workers' Compensation Insurance as required by the State while working on the project.

Liability Insurance - Contractor shall take out and maintain during the course of the work combined single limit liability insurance covering bodily injury and property damage insurance and blanket contractual coverage as to the work and obligations covered hereunder in an amount not less than \$2,000,000, or the equivalent thereof. Said insurance must contain an endorsement that District, County of Riverside, and any municipal corporation in which the work is to be accomplished, are named as an additional insured as respects the work covered hereunder. 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 thirty (30) days written notice prior to cancellation of the insurance or a reduction in coverage; must state that the "x c u" exclusions are waived or do not exist in the policy(s); and that District, County of Riverside, and any municipal corporation in which the work is to be accomplished, are named as an additional insured as respects the work covered hereunder.

In the alternate to naming Owner and County of Riverside, and any municipal corporation in which the work is to be accomplished, as additional insured, Contractor may take out and maintain during the course of the work and until acceptance by Owner, Owner's Protective Liability Insurance amount not less than \$2,000,000 covering District, County of Riverside, and any municipal corporation in which the work is to be accomplished.

The cost of this insurance shall be included in the prices bid for the various items of work and no additional compensation will be made therefor.

Hold Harmless - Contractor shall hold District, County of Riverside and any municipal corporation in which the work is to be accomplished, together with the officers, agents and employees of each, 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 any way connected with or arising from the accomplishment of the work, whether or not in furtherance of the work; and Contractor agrees to protect and defend, including all attorney fees and other expenses, each of the foregoing bodies and persons in any legal action based or asserted upon any such acts or omissions.

Obligations - The obligations assumed by Contractor cover all obligations set forth in this Subsection and elsewhere in the Contract Documents, such as Subsections 5.01, 5.02, 5.05, 5.06, 5.08, 5.09, 5.10, 10.01, and 10.02.

### 8.03 PUBLIC UTILITIES

The locations of all pipelines, power lines, communication lines and other utility components known to District to exist within the limits of the work, are indicated on the drawings and may be the subject of a specific Special Provision(s). Size, location and characteristics of such utilities is based upon information made available to District - primarily from the owner of the utility in question. The exactness of such information is not guaranteed but may be assumed to have been accomplished with reasonable accuracy.

In addition to the drawings and any such provision regarding utilities, Contractor is under a duty to take into account the location of service laterals or other appurtenances which can be inferred from the presence of facilities such as buildings, meters and junction boxes in or about the limits of the work.

Unless otherwise directed by the Contract Documents, all existing utilities - where shown or described or not - shall be left in place and Contractor must conduct its operations so that such utilities are protected from damage at all times during the course of the work and the work must be accomplished so as to give such utilities proper protection and support upon completion of the work by Contractor.

If during the course of the work, Contractor discovers underground utility components not indicated in the drawings, the Special Provisions or elsewhere in the Contract Documents, Contractor must immediately notify, in writing, the Engineer and the utility company (public or private) involved, stating with exactness the condition found.

When Contractor encounters a utility not shown or described in the Contract Documents, Contractor shall cease all work which would disturb such utility and its support until given specific instructions as to how to proceed regarding such utility by Engineer. All work done by Contractor to protect existing utilities shown or described in the Contract Documents, or which can be reasonably inferred from the presence of other visible facilities, is at Contractor's expense, the cost of which is deemed included in Contractor's Proposal to do the work.

Contractor's cost of locating, repairing damage not due to the failure of Contractor to exercise reasonable care, and removing or relocating utility components and facilities not indicated in the drawings, specifications or elsewhere in the Contract Documents with reasonable accuracy, shall be paid Contractor as Extra Work as provided in Subsection 2.07 and Subsection 7.03 of the General Provisions. Compensation for idle time of equipment shall be paid as provided in Section 8-1.09, "Right of Way Delays", of the State Standard Specifications. No surcharge rates for equipment will be applied for idled equipment.

District may direct the Contractor to do such repair or relocation work as required. When such repair or relocation work is not elsewhere provided for in these Contract Documents, or reasonably inferred therefrom, a requirement of District that Contractor perform such work shall be compensated for as Extra Work pursuant to Subsections 2.07 and 7.03 of these General Provisions.

Contractor shall not be assessed liquidated damages for delay in completion of the project, if such delay is caused by failure of District, or the owner of the utility in question, to provide for removal or relocation of the utility involved.

#### 8.04 PROTECTION OF EXISTING STREET FACILITIES

The Contractor shall be responsible for the protection of existing signs, fences, concrete curbs, gutters and other facilities which may be encountered. The replacement or repair of any facilities which the District 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 Engineer.

Excavation within the street right of way shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the Contractor shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve pipe covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during construction.

#### 8.05 DIVERSION AND CONTROL OF WATER

Unless otherwise provided in the Proposal, no separate payment will be made for diversion and control of surface or groundwater. All costs incidental to maintaining dry working areas shall be included in the unit prices paid for other items of work in the schedule.

#### 8.06 DUST ABATEMENT

During the performance of all work included in the contract, the Contractor shall take the necessary precautions to save the District free and harmless from any loss or damage resulting from his operations that raise or produce dust in such amounts that will be objectionable, and/or cause damage to adjacent property or property owners.

The Contractor will be required to have a positive and continuous method of dust control which is satisfactory to the Engineer. The methods to be used for controlling dust in the



construction area and along haul roads shall be approved by the Engineer prior to starting any of the work included in the contract. All costs incidental to dust control shall be included in the unit prices paid for other items of work in the schedule.

#### 8.07 PROJECT SIGNS

The Contractor shall erect project signs at the locations designated by the Engineer.

No separate payment will be made for erecting the project signs and all costs in connection therewith will be considered a subsidiary obligation of the Contractor.

#### 8.08 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK

The bidder shall examine carefully the site of the work contemplated, the plans and specifications, and the proposal and contract forms therefor. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work to be performed, the quantities of materials to be furnished, and as to the requirements of the proposal, plans, specifications, and the contract.

Where the District has made investigations of subsurface conditions in areas where work is to be performed under the contract, or in other areas, some of which may constitute possible local material sources, such investigations are made only for the purpose of study and design. Where such investigations have been made, bidders or Contractors may, upon request, inspect the records of the District as to such investigations subject to and upon the conditions hereinafter set forth. Such inspection of records may be made at the office of the District.

The records of such investigations are not a part of the contract and are shown solely for the convenience of the bidder or Contractor. It is expressly understood and agreed that the District assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretations set forth therein or made by the District in its use thereof and there is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

When a log of test borings showing a record of the data obtained by the District's investigation or subsurface conditions is included with the contract plans, it is expressly understood and agreed that said log of test borings does not constitute a part of the contract, represents only the opinion of the District as to the character of the materials encountered by it in its test borings, is included in the plans only for the convenience of bidders and its use is subject to all of the conditions and limitations set forth in this Section 8.08.

No information derived from such inspection of records of investigations or compilation thereof made by the District or from the Engineer, or his assistants, will in any way relieve the bidder or Contractor from any risk or from properly fulfilling the terms of the contract.

## SECTION IX - WATERING

### 9.01 DESCRIPTION

This work shall consist of developing a water supply for all water required for the work. The application of the water shall be under the control of the Engineer at all times and shall be applied in the amounts and at the locations approved by the Engineer.

At least one mobile unit of at least 1,000-gallon capacity for applying water shall be available on the project at all times.

Water for compacting embankment material and for laying dust shall be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses with nozzles that will ensure a uniform application of water.

No separate payment or additional allowances will be made for this work and all costs in connection therewith will be considered as included in other items in the schedule.

## SECTION X - PUBLIC CONVENIENCE, TRAFFIC CONTROL AND DETOURS

### 10.01 GENERAL

The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to the public and he shall have under construction no greater length or amount of work than he can prosecute properly with due regard to the rights of the public.

Unless otherwise provided in the Special Provisions, all public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible.

Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately at the Contractor's expense.

Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

Convenient access to driveways, houses and buildings along the line of work shall be maintained and temporary approaches to crossings or intersecting highways shall be provided and kept in good condition.

### 10.02 SIGNS

It shall be the responsibility of the Contractor to provide and maintain all lights, barricades and signs, both on and off the site of work, as required by the Engineer, and all such devices shall be of a type approved by him.

If, in any case, the Engineer finds it necessary to replace, add to or erect said barricades, signs, or lights, when the Contractor fails to do so when informed, the Contractor shall be billed for all costs thereof including a daily rental fee for signs.

No separate payment, unless otherwise provided for under the Special Provisions, will be made for traffic control and detour signing and all costs incidental to these items shall be included in the unit prices paid for other items of work.

#### 10.03 MATERIALS STORAGE

Storing or stockpiling of excavated material, imported backfill material or construction materials on any street or highway will not be permitted except as approved in writing by the Engineer.

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SPECIAL PROVISIONS  
AND  
DETAILED SPECIFICATIONS

## SPECIAL PROVISIONS

### SECTION 1 - GENERAL

1.1 Drawings and Specifications - These documents are for the construction of **L.I.D. Testing & Demonstration Facility, Parking Lot Renovation 2010, and Water Efficient Landscape Conversion**, located at the Riverside County Flood Control and Water Conservation District Office, 1995 Market Street, Riverside, California. This work shall conform with the three (3) different sets of contract drawings included herewith.

Referenced standard drawings are available on the District web site.

The Contractor shall copy any of the referenced District standard drawings from <http://www.rcflood.org>.

The Contractor shall be responsible to obtain referenced standard plans/drawings of various agencies from their respective office or web site.

References made in these Special Provisions or Detailed Specifications to the "Standard Specifications" refer to the "Greenbook" Standard Specifications for Public Works Construction, current edition, including supplements. Standard Specifications of the American Society for Testing and Materials shall be designated by ASTM and the appropriate number of the standard. Unless otherwise specified, wherever the words "State Standard Specifications" are used in these Special Provisions or Detailed Specifications they shall mean the Standard Specifications of the State of California, Department of Transportation, current edition. Whenever the words "Caltrans Standards" are used they shall mean the Standard Plans of the State of California, Department of Transportation, 2006 edition.

In the event that discrepancies are encountered, the option that provides the method, item or material with the greatest strength or utility shall be chosen, as directed by the Engineer.

Requirements on the construction plans for Portland Cement Concrete are modified to the PCC Class designations, as described in Section 90-1.01 of the 2006 State Standard Specifications, as follows:

Class "A" shall mean Class "2"

Class "B" shall mean Class "3"

Class "C" shall mean Class "4"

Class "D" shall mean Class "1"

In case of conflict between the drawings and the specifications, the drawings shall govern; in case of conflict between the referenced specifications and these specifications, the latter shall govern.

## SECTION 2 - TIME OF COMPLETION, DAMAGES AND LEGAL HOLIDAYS

2.1 General - The Contractor shall begin work within ten (10) calendar days after the date of receipt of Notice to Proceed from the Engineer and shall diligently prosecute the same to completion before the expiration of

### **ONE HUNDRED EIGHTY (180) WORKING DAYS**

from the date of receipt of Notice to Proceed.

2.2 Damages - The Contractor and the District expressly agree that the cost to the District for inspection and superintendence of the work for this contract is **\$800.00** per working day.

2.3 Legal Holidays - The Contractor will not be permitted to work on Legal Holidays (Reference Sections 6.02 and 6.06 of the General Provisions), except in cases of emergency as directed by the Engineer.

## SECTION 3 - FORCE ACCOUNT PAYMENT

3.1 Labor Surcharge - Attention is directed to the provisions of Section VII, Article 7.03A (1b) of the General Provisions. The labor surcharge percentage to be applied to the actual wages paid as defined in Paragraph 7.03A (1a) will be twenty-four percent (24%).

3.2 Equipment Rental - Attention is directed to the provisions of Section VII, Article 7.03A (3) of the General Provisions. The equipment rental rates to be applied will be the rates published by the California Department of Transportation and in effect at the time of the award of the contract. A copy of said Equipment Rental Rates is on file at the District Office.

## SECTION 4 - PROTECTION OF EXISTING UTILITIES

4.1 General - All existing underground utility lines, power poles and overhead wiring shall be protected in place at all times, except as noted otherwise on the drawings. Any damage to utilities caused by the Contractor's operation shall be repaired or replaced at the Contractor's expense.

Prior to the commencement of any construction activities, the Contractor shall contact all utility companies and local municipalities servicing the project area to review as-built utility drawings and determine appropriate means of protecting utilities.

At the discretion of the Engineer, the Contractor may be required to verify, by potholing, the location of potentially affected utilities.

## SECTION 5 - PROJECT SITE MAINTENANCE

Through all phases of construction, the Contractor shall comply with the provisions of Section 7-8 of the Standard Specifications. Before final acceptance of the work, the Contractor shall clean the work and the site of the work of all falsework, temporary structures, other construction materials and equipment, excess materials and rubbish, and shall leave the work and the site in a neat and presentable condition. Such final cleanup work shall be performed within the time specified for completion of all of the work.

## SECTION 6 - SPECIAL REQUIREMENTS

6.1 National Pollutant Discharge Elimination System (NPDES) – The Contractor shall comply with the requirements of Board Order No. R8-2010-0033 (NPDES No. CAS618033), NPDES Area-Wide Municipal Stormwater Permit, hereafter referred to in this Section as the "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. The Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Section 29 "Stormwater and Non-Stormwater Pollution Control" of the Detailed Specifications.

**The Contractor's attention is directed to: 1) Section 29.2 "General Requirements" which allows the Engineer to withhold progress payments if the Contractor fails to fully implement Section 29 "Stormwater and Non-Stormwater Pollution Control" or is deemed to be in non-compliance with the provisions of the Permit; 2) Section 29.3 "Permit Registration Documents (PRDs) Preparation and Approval" which requires that the PRDs be prepared and approved prior to the Pre-Construction meeting; and 3) Section 29.6 "SWPPP Implementation" which allows the Engineer to suspend construction operations if the Contractor fails to implement the approved SWPPP and any amendments thereto.**

6.2 Sanitation - Sewage flows shall not be interrupted. Should the Contractor disrupt existing sewer facilities, sewage shall be conveyed in closed conduits and disposed of in a sanitary sewer system. If pumping is required it shall be done at the expense of the Contractor. A backup pumping system with equal capacity shall be provided at all times. Sewage shall not be permitted to flow in trenches or be covered by backfill.

6.3 Heavy Equipment Working Hours - Heavy construction equipment will not be allowed to commence construction work until 7:00 a.m. each normal working day, unless otherwise approved by the Engineer.

6.4 Encroachment Permits – The Contractor is required to obtain an encroachment permit from the City of Riverside for work within City right of way. The City of Riverside will not require the Contractor to pay a fee for the encroachment permit. A copy of the encroachment permit shall be provided to the Engineer prior to commencement of work.

6.5 Toxic Material Disposal - Toxic materials including oil, fuel oil, gasoline, coolant, fluid filters and other contaminants shall not be discharged within the project site. All such materials shall be transported offsite and disposed of at a County approved facility.

6.6 Survey Crew - The Contractor shall notify the Engineer in writing at least 48 hours prior to new construction staking.

Survey Crews will be available Monday through Thursday from 7:00 a.m. to 3:30 p.m., with a half-hour off for lunch. If the Contractor requires the Survey Crew to work beyond the specified time mentioned above, it shall be considered as overtime and shall be paid by the Contractor at 1.5 times the Survey Crew's hourly rates.

6.7 Survey Monuments - The Contractor shall salvage and give to the District all survey monuments and wells removed during construction. The District will reset monuments after construction.

6.8 Construction Tolerances – Variation in alignment, grade and dimensions of the structures and structural components from the established alignment, grade and dimensions shown on the drawings shall be within the tolerances specified in the following/tables:

Regardless of the construction tolerances specified, the excavation and grading shall be performed so that the finished surfaces are in uniform planes with no abrupt breaks in the surface.

Departure from established alignment		1 inch on tangents 2 inches on curves
Departure from established profile grade		0.1 inch
Inside dimensions		0.005 times specified dimension
Variation from the plumb or the specified batter in the lines and surfaces of walls, piers and in arises	Exposed, in 10 feet Backfilled, in 10 feet	½ inch 1 inch
Variation in cross-sectional dimensions		Minus ¼ inch Plus ½ inch
Variation in surfaces (gradual)	Invert Soffits, Walls, Sideslopes	¼ inch in 10 feet ½ inch in 10 feet
Variation in surfaces (abrupt)		¼ inch

Variance from indicated position	Spacing between adjacent bars and the distance between layers of bars	one bar diameter nor more than one inch
Concrete cover measured perpendicular to steel in the direction of tolerance		¼ inch



6.9 Surplus Excavated Material - Any stockpiling, grading or disposal of material outside of the project limits is not covered under the District's permits and is the sole responsibility of the Contractor.

6.10 Sewer Line Inspection - Prior to the commencement of construction, the Contractor is required to video record all sewer mains (4" diameter and larger) within the project limits. Additionally, the Contractor shall video record the sewer mains upon completion of the work. All costs associated with this requirement shall be included in the contract price bid for Clearing and Miscellaneous Work. The Contractor is required to replace and/or repair at his own expense, any sewers damaged or misaligned as a result of his construction activities.

6.11 Project Signs - Supplementing Section 8.07 of the General Provisions, the Contractor shall be required to provide one new project sign. The Contractor shall install and maintain the project sign at the location specified by the Engineer, with painting and lettering as shown in Appendix "B" of these Special Provisions. The sign shall be installed as directed by the Engineer within five (5) days after District issuance of the Notice to Proceed. Upon completion of construction, the sign shall be removed.

6.12 Liability Insurance – The Contractor's attention is directed to Section 8.02, Insurance Hold Harmless, of the General Provisions. The City of Riverside shall also be named as additional insured with the liability insurance coverage required to be maintained by the Contractor.

6.13 Pre-Bid Site Inspection Tour – The Contractor's attention is directed to Section 8.08 of the General Provisions. To facilitate the Contractor's site examination, the District has scheduled a Pre-Bid Site Inspection Tour on Thursday, August 19, 2010. The tour will begin at 9:00 a.m. at the entrance to the District office at 1995 Market Street, Riverside, CA 92501.

#### SECTION 7 - SOILS REPORT

In conjunction with the soils investigation report prepared by Leighton Consulting, the Contractor's attention is directed to Article 8.08 of the General Provisions. The logs of the soil borings for this report are included for the convenience of the bidders, in conformance with Section 8.08 of the General Provisions, as Appendix "C" of these specifications. The soils report is on file in the District office, 1995 Market Street, Riverside and is available for review upon request.

#### SECTION 8 - NOT USED

#### SECTION 9 - PAYMENT

The contract prices shall include full compensation for all costs incurred under these Special Provisions and Detailed Specifications.

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## DETAILED SPECIFICATIONS

### SECTION 10 - MOBILIZATION

10.1 Description - The contract item Mobilization shall consist of expenditures for all preparatory work and operations, including but not limited to, those costs necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, buildings, construction yards and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site as well as the related demobilization costs anticipated at the completion of the project.

10.2 Payment - The amount credited for Mobilization on each monthly progress payment shall be equal to the total of the amounts credited for work on all the other contract items for that monthly progress payment, up to a cumulative limit of eighty percent (80%) of the lump sum price bid for Mobilization. The remaining twenty percent (20%) of the lump sum price bid for Mobilization will be paid with the final payment.

Payment of the lump sum contract price for Mobilization shall constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to completion of this item of work.

The deletion of work or the addition of extra work as provided for herein shall not affect the price paid for Mobilization.

### SECTION 11 - WATER CONTROL

11.1 Description - This section covers the contract item Water Control. Watersheds and/or urban runoff areas are tributary to the project site at various locations, but do not necessarily follow the alignment of the project under current conditions. Surface water in varying quantities can be expected at any time of the year, and runoff can be expected during periods of rainfall. Groundwater was indicated at the time of the soils investigation for this project. All bidders shall make their own determination regarding what the surface and/or groundwater conditions will be at the time of construction, and their impact on the bidder's operations and construction phasing.

11.2 Water Control - The contract item Water Control includes the control and/or diversion of surface runoff as well as groundwater within the work area as required to complete the work. All work shall be carried on in areas free of water. Care should be exercised so that runoff or diversion flows do not erode, undermine or otherwise damage either facilities which have been constructed or adjacent private properties. The responsibility for the protection of all existing and proposed improvements lies with the Contractor.

11.3 Measurement and Payment - The methods of controlling both surface and groundwater will be the responsibility of the Contractor. The contract lump sum price paid for Water Control shall include full compensation for all direct and indirect costs incurred under this section, and

for doing all the work involved in controlling surface runoff and groundwater within the construction area, as specified in these Detailed Specifications, and as directed by the Engineer.

Payment will be made on a basis of the percentage of the work completed on the entire project.

## SECTION 12 - TRAFFIC CONTROL

12.1 Description - The contract item Traffic Control shall include preparation by Contractor of construction phasing, parking and circulation drawings, all temporary and permanent signage, striping and pavement markings, control of site vehicular and pedestrian access during and outside of business hours, and all labor, flagmen, lights, barricades, signs, materials, temporary bridges and equipment necessary to ensure that the vehicular and pedestrian traffic conforms to requirements as set forth in this section and as shown on the Contractor's prepared drawings.

12.2 Notification of Agencies - The Contractor shall notify the following agencies a minimum of 48 hours in advance of start of any street work and inform them of the proposed construction schedule and provide any additional pertinent information they may request:

City of Riverside Public Works (Philip Hannawi)	951.826.5706
City of Riverside Police Department	951.826.5700
Underground Service Alert	800.227.2600

The Contractor is not relieved of his responsibility of notifying the various departments and agencies mentioned above, even if their telephone numbers may have changed without notice.

The above agencies shall also be advised by the Contractor of any major change in the construction schedule that could restrict pedestrian or vehicular traffic.

12.3 Public Convenience and Access - The Contractor shall comply with the requirements of Section X of the General Provisions and shall prepare and submit for District approval a Construction Phasing, Parking and Circulation Plan prior to commencement of the work. No work shall be performed prior to District approval of this plan. The plan shall provide for public and employees vehicular access to the site and for pedestrian access to the main building entrance between the business hours defined here as 6:00 a.m. and 6:00 p.m. Monday through Friday and shall ensure that this access provides for Americans with Disabilities Act (ADA) compliant parking and building access during these business hours. The Contractor shall maintain a minimum 145 parking spaces (including 5 handicap parking spaces) available on the site at all times during business hours and these parking spaces must be depicted on the Construction Phasing, Parking and Circulation Plan. The Contractor shall at his own expense modify the plan as needed to meet field conditions as the project progresses.

Closures or partial closures of the traveled ways implemented by the Contractor shall be related to actual work being performed at the time. Closures shall not be maintained if work is not being performed. If the existing closure is not essential to the type of work being performed

at the time, the traveled way shall immediately be restored to a safe condition for public and employees use.

The Contractor shall provide temporary bridge crossings for all driveway entrances to be closed to vehicular access for any period exceeding 4 hours.

Temporary bridges shall have a minimum width of 24 feet, and shall be designed for an AASHTO H20 truck loading. Steel plates placed over the trench shall have a minimum thickness of 1.25" and the surface shall be roughened or coated to provide a non-skid surface. For spans greater than 4 feet, a structural design shall be prepared by a Registered Civil Engineer and submitted to the District for review and approval.

12.4 Construction Signs and Traffic Control Plans - All construction signs, barricades, delineators, etc., shall conform with the U.S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Part 6, latest edition", and the MUTCD California Supplement, Part 6 along with the Uniform Sign Chart as shown on the drawing.

12.5 Flaggers - All personnel utilized as flaggers must be trained in the proper fundamentals of flagging and signaling.

12.6 Striping and Pavement Marking – Temporary and permanent striping shall be performed by the Contractor at his expense as directed by the Engineer. All permanent parking signage, striping and pavement markings shall be installed by the Contractor as shown on the drawings. The Contractor shall restore the permanent striping immediately after resurfacing of the travel ways is completed.

All temporary traffic striping and pavement markings shall conform to Section 84 of the State Standard Specifications and shall be acceptable to the Engineer.

All pavement markings such as arrows, striping, "STOP", "ONLY", etc., shall be placed by the Contractor using white paint per State Standard Specification PTWB-01. All disabled persons pavement markings shall be placed by the Contractor using blue paint per Federal Specification TT-P-1952D.

Painted crosswalk, traffic stripes and pavement markings 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 Detailed Specifications.

12.7 Measurement and Payment - The contract lump sum price paid for Traffic Control shall include full compensation for all material and labor costs incurred under this section. Contractor's proposed Construction Phasing, Parking and Circulation Plan may be modified as field conditions require. No additional payment shall be made for modifications to the Contractor's traffic plan.

This payment will be made on a basis of the percentage of work completed on the entire project.

### SECTION 13 - CLEARING AND MISCELLANEOUS WORK

13.1 Description - This section covers the contract items Clearing and Miscellaneous Work; and Extra Directed Work as required for construction of the work. All objectionable materials shall be removed and disposed of offsite.

13.2 Clearing and Miscellaneous Work - The contract item Clearing and Miscellaneous Work includes any required saw cutting, any required sewer line video record and the removal and disposal of all vegetation, trees, roots, stumps, fences, pipes, culverts, rocks, structures, concrete curb, curb and gutter, sidewalks, paving, miscellaneous flatwork, footings, miscellaneous concrete, asphalt curb, paving and miscellaneous asphalt, all paving and flatwork aggregate base material down to the existing subgrade elevation, signage, and any required demolition as shown on the drawings.

Included in this item are the following:

1. Remove all existing sprinkler irrigation equipment no longer being used in the new system including valves, heads, controllers, risers and valve boxes.
2. Any holes caused from removal of any irrigation equipment shall be filled to match finished grade.
3. Abandon all wiring, piping and tubing to hydraulic remote control valves.
4. Return all irrigation equipment removed, including sprinklers, riser assemblies, remote control valves, valve boxes and controllers, to the District.
5. The temporary relocation of signs and their reinstallation.
6. The stenciling and signage on top of all catch basins and drop inlets. Stenciling and signage will be provided by the District.

Finally, included in this item are those types of work as shown on the drawings not specified for pay under any other individual contract item.

13.3 Extra Directed Work – The contract item Extra Directed Work shall consist of necessary work that is not included in other contract bid items and not shown on the drawings, as determined by the Engineer. All Extra Directed Work shall be performed as directed by the Engineer in accordance with all applicable standards and specifications.

13.4 Payment - The contract lump sum payment for Clearing and Miscellaneous Work shall include full compensation for all material and labor costs incurred under this section and will be made on a basis of the percentage of work completed on the entire project.

Full compensation for the contract item Extra Directed Work shall be made as "Extra Work" and shall be paid pursuant to Section 2.07 of the General Provisions. The total accumulated costs for Extra Directed Work shall not exceed the amount specified in the contract bid item unless otherwise increased by change order.

#### SECTION 14 - EARTHWORK

14.1 Description - This section covers the contract item Excavation.

14.2 General Excavation Requirements - Excavation shall be in conformance with Section 300-2 of the Standard Specifications, and Pipe Excavation shall be in conformance with Section 306 of the Standard Specifications. Access to trenches shall be in conformance with Section 306-1.1.4 and the manner of bracing excavations shall be in conformance with Section 306-1.1.6 of the Standard Specifications.

Excavation shall be kept to the minimum widths required for efficient placing of the various pavement subgrades, pipe or structure and the construction of the various other concrete structures. However, for pipes larger than 8 inches in diameter the minimum width of trench shall be 24 inches greater than the outside diameter of the pipe. The maximum length of open trench shall be in conformance with Section 306-1.1.2 of the Standard Specifications.

In excavating for surfaces against which concrete is to be placed, care shall be exercised in removing the final lift. Upon completion of excavation for structures and pipe, surfaces against which concrete is to be placed shall be free of debris, mud or ponded water.

The foundation for all concrete structures will be inspected and tested after excavation. The subgrade shall be compacted to ninety percent (90%) relative compaction prior to the placement of concrete.

Material which will not provide a suitable foundation shall be removed (over-excavated) and replaced with compacted select material as directed by the Engineer.

Any overexcavation shall be filled with select material compacted to ninety percent (90%) relative compaction and meeting the material requirements for backfill.

The Contractor shall remove slides and materials eroding into the work, and the slopes and grades refinished to original grades as specified.

The Contractor shall dispose of all surplus excavated material offsite.

The removal and disposal of all materials including asphalt, concrete, rubble, rock material, abandoned pipelines, structures and miscellaneous materials from within any excavation which requires the use of blasting or equipment beyond that normally necessary to accomplish the excavation (as determined by the Engineer) shall be paid for in accordance with Section VII, Article 7.03 of the General Provisions.

All asphalt and concrete shall be saw cut unless otherwise specified on the drawings or by the Engineer.

**To prevent compaction of the infiltration basin, the Contractor shall not drive with rubber tires at any time on any surface below elevation 797.0.**

14.3 General Embankment Requirements – All embankment material shall be constructed of approved material selected from the infiltration basin excavation as directed by the Engineer. The embankment material shall be free of sod, roots, brush, debris, trash, rocks over 6 inches in largest diameter, and other objectionable material. Clods or hard lumps over 6 inches in greatest dimension shall be broken up before compacting in embankments.

Embankment material shall be placed in horizontal layers not more than 6 inches in thickness before compaction. If any oversized rock is encountered, it shall be removed from the embankment before compacting. Material placed in the embankment shall be disked, harrowed or manipulated by other approved methods so as to obtain the best possible mixture and gradation, and shall be free from lenses, pockets, or streaks of material differing substantially in texture and gradation from the surrounding material.

Prior to and during the compaction operations, the material in each layer of the embankment shall, if necessary, be moistened and manipulated to attain moisture content within the range as determined by the Engineer. The moisture content shall be uniform throughout the layer. The moisture content of embankment soils at the time of compaction shall fall within the range from optimum moisture, to three percent (3%) above optimum. Embankment material which contains excessive moisture shall not be compacted until the material is sufficiently dry to comply with the specified moisture content. No separate payment will be made for any additional work involved in drying embankment material to the required moisture content. To obtain the specified moisture content, the Contractor will be required to perform such operations as are considered necessary by the Engineer.

Embankment compaction shall be done with a tamping roller, rubber-tired roller or other approved compaction equipment and be compacted to not less than ninety percent (90%) relative compaction.

The Contractor shall be entitled to no additional compensation above the unit prices named in the Contract Schedule for materials deposited in temporary storage piles prior to being placed in the embankments or other fill areas.

14.4 General Backfill Requirements - Backfill described in this section excludes that used for porous or pervious pavement base materials. Whenever backfill is specified or required (except for pipe backfill) the work shall be performed as set forth in Sections 300-4.1 to 300-4.8 of the Standard Specifications. Backfill for pipe shall conform to Section 306-1.3 of the Standard Specifications. Backfill includes all backfill and pipe bedding material compacted as specified around the various concrete structures and pipe within the paylines as shown on District Standard

Drawing No. M815 of the standard drawings. Backfill also includes all backfill required for non-porous asphalt or non-pervious concrete pavement repair as shown on the drawings.

No backfill materials shall be placed against the outside walls of cast-in-place concrete structures until the concrete has developed eighty percent (80%) of its design strength. No fill or traffic will be permitted on the top of any cast-in-place concrete structure until the concrete in the structure has attained its design strength. Compressive strength will be determined by test cylinders taken by the Engineer.

The Contractor is responsible for shoring all structures against movement during the placement of backfill materials adjacent to the structures. The Contractor is directed to pay particular attention to this matter in placement of backfill adjacent to deepened curbs as shown on the drawings. Regardless of the method of densification, backfill material shall not be placed against any reinforced concrete structure until the structure has been inspected and approved for backfilling by the Engineer.

Densification of backfill will be accomplished by either mechanical methods or water densification methods as described in (1) and (2) below. All relative compaction tests will be made by the Engineer in conformance with California Test 216. Whenever relative compaction is specified to be determined by California Test 216, the in-place density may be determined by California Test 231. The wet weight or dry weight basis and English units of measurement may be used at the option of the Engineer.

- (1) Mechanical Compaction - Backfill shall be mechanically compacted by means of tamping rollers or other mechanical tampers. Impact-type pavement breakers (stompers) will not be permitted unless otherwise approved by the Engineer.

All backfill material for structures shall be placed in uniform layers and shall be brought up uniformly on each side of the structure. The thickness of each layer of backfill shall not exceed 8 inches before compaction unless otherwise approved by the Engineer. For hand directed mechanical compactors, the thickness of each layer shall not exceed 4 inches before compaction.

- (2) Water Densification – Water Densification of bedding and backfill shall be by jetting and shall be used when approved by the Engineer. Jetting for bedding and backfill shall conform to Section 306-1.3.3 of the Standard Specifications except as modified as follows:
  - a. Jetting may be allowed for bedding, when approved by the Engineer, in conditions where soils of the trench walls have a sand equivalent less than 15, provided the Contractor takes appropriate action to drain the water.
  - b. Undensified lifts shall not exceed 4 feet.
  - c. Suitable backfill material to be jetted shall have a sand equivalent of 30 or greater.



- d. If cast-in-place concrete pipe is used, jetting will not be permitted.
- e. Jetting of the top 4 feet of backfill measured from the subgrade plane will not be permitted in roadway areas.

The work shall be performed in such a manner that water will not be impounded. Backfill shall be brought up uniformly on each side of the structure. Jetting methods shall be supplemented by the use of vibratory or other compaction equipment when necessary to obtain the required compaction.

Approval to use specific methods and compaction equipment shall not be construed as guaranteeing or implying that the use of such methods and equipment will not result in damage to adjacent ground, existing improvements or improvements installed under the contract, nor shall it be construed as guaranteeing proper compaction. The Contractor shall make his own determination in this regard.

All backfill and bedding around structures and pipe shall be compacted to not less than ninety percent (90%) relative compaction. Where such material is placed under existing or proposed paved roadways, the top 3 feet, measured from the subgrade plane, shall be compacted to ninety-five percent (95%) and shall be compacted by Method (1).

Trench bottoms for structures and pipe shall be graded to provide firm and uniform bearing throughout the entire length of the structures and pipe.

Pipe bedding shall consist of well graded granular material having a sand equivalent value of not less than 30 and be capable of being readily consolidated by jetting and vibrating. Jetting shall be as described by Method (2) Water Densification and the jet pipe shall be inserted at intervals of three (3) feet maximum continuous along each side of the pipe. Gravel of crushed aggregate shall not be used for bedding materials. Pipe bedding shall be placed to one foot above the top of the reinforced concrete pipe as shown on the drawings. The Contractor may use onsite material for pipe bedding subject to the approval of the Engineer and provided it meets the requirements as set forth above.

The Contractor shall make his own determination as to the availability of suitable onsite material. Should onsite material be unsatisfactory, the Contractor will be required to import suitable material.

Backfill material placed above the bedding shall consist of either select material from the excavation or imported material, as approved by the Engineer.

14.5 Subgrade Compaction – In areas where subgrade compaction for pavement is specified on the drawings the subgrade shall be compacted per this section. In areas where the subgrade for pavement is called out on the drawings as uncompacted the Contractor shall not compact the subgrade and shall not drive on the excavated area with rubber tires except during the excavation

operation when the existing surface at the existing surface elevation can be driven on. In all cases, the Contractor shall ensure that the subgrade is compacted below new concrete curbs.

Subgrade compaction for pavement areas where specified on the drawings, for all concrete sidewalks and flatwork, and for concrete curbs shall be performed in the following manner:

1. The subgrade shall be brought to proposed grade, moisture conditioned to or slightly above optimum moisture content, and the surface proof rolled to a minimum ninety-five percent (95%) relative compaction.
2. Subgrade compaction for all walls and miscellaneous concrete structures shall be per the soils report.

14.6 Excavation - The contract item Excavation includes excavation within the existing paved areas below the existing subgrade as required to obtain the new subgrade elevation, and excavation of all areas outside of existing paved areas as required to complete the work as shown on the drawings including and limited to all parking areas, all pedestrian trails, the infiltration basin (aka Lake Smithhammer), the landscape filter basin, and the grass swale, as well as disposal of all excavated materials. The contract item Excavation also includes removal and relocation of all utilities required to construct the improvements as shown on the drawings except those utilities to be removed, replaced, and/or relocated that are specifically covered in Section 32. The contract bid item Excavation also includes the removal from the site and disposal of all excavated materials including all soils, asphalt, concrete, rubble, rock material, abandoned pipelines, structures and miscellaneous materials. The contract bid item Excavation also includes any engineered fill required to obtain the finished grade and finished surface elevations as shown on the drawings. The contract bid item Excavation also includes subgrade and foundation soils compaction. The contract bid item Excavation also includes backfill except that used for pavement base or pipe bedding. The contract bid item Excavation excludes excavation for all conduits.

14.7 Testing – District personnel shall perform compaction tests as described below. These tests represent the minimum required. Additional tests may be taken at the Engineer's discretion.

1. A complete series of compaction tests will be taken for each 2-foot thickness of backfill placed. Each series will consist of tests taken at approximate maximum intervals of 300 feet. Each series will begin at the top of the bedding zone.
2. Any failed test will result in a retest.

When water densification is requested, sand equivalent tests representing foundation soils and proposed backfill material shall be obtained at approximate maximum intervals of 1,000 feet. Additional tests may be necessary to define limits of suitable backfill material.

14.8 Slurry Cement Backfill – Slurry Cement Backfill shall be in conformance with Section 19-3.062 of the State Standard Specifications.

A minimum of two (2) sacks of cement shall be used for each cubic yard of Slurry Cement Backfill produced.

14.9 Measurement – Excavation beyond the limits established by the drawings, unless ordered in writing by the Engineer, will not be measured for payment.

Excavated material shall be measured from the ground surface existing at the start of excavation, as determined from surveyed cross sections taken by the District, to the lines, grades and dimensions shown on the drawings. Where the existing surface is pavement or flatwork that is to be removed under contract item "Clearing and Miscellaneous Work", the excavated material shall be measured from the existing subgrade elevation, as determined from surveyed cross sections taken by the District, to the lines, grades and dimensions shown on the drawings.

Measurement for payment for the contract item Excavation will be the number of cubic yards of material excavated as shown on the drawings and includes Subgrade Compaction as described in this section.

No measurement for payment will be made for placement of Backfill or Slurry Cement Backfill. These items will be measured and paid under different sections.

No measurement for payment will be made for any fill required to obtain the finished grade and finished surface elevations as shown on the drawings.

14.10 Payment - The contract price paid for Excavation shall include full compensation for all costs incurred under this section.

## SECTION 15 - TRENCH SAFETY SYSTEM

15.1 Description - This section covers the contract item Trench Safety System and is defined as a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Trench safety systems include support systems, sloping and benching systems, shield systems and other systems that will provide necessary protection. For trench excavations 5 feet or more in depth, the Contractor shall furnish and implement a safety system as required by Section 306-1.1.6 of the Standard Specifications or as directed by the Engineer.

15.2 Trench Safety System - This item is only applicable for excavation for any trench five (5) feet or more in depth. Excavation for any trench five (5) feet or more in depth shall not begin until the Contractor has provided to the Engineer, a detailed plan for worker protection from the hazards of caving ground during the excavation of the trench. The plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection including any design calculations done in the preparation of the plan. No such plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal-OSHA). The plan shall be prepared and

signed by an engineer who is registered as a civil engineer in the State of California, and the plan and design calculations shall be submitted for review at least two (2) weeks before the Contractor intends to begin trenching operations.

All safety plans shall reflect surcharge loadings imparted to the side of the trench by equipment and stored materials. Surcharge loads shall be monitored to verify that such loads do not exceed the design assumptions for the system.

The Contractor should not assume that only one type of trench safety system such as a shield or "trench box" will be adequate for all trenching situations encountered on a given project. The Contractor should be prepared with alternative safety system designs (such as solid sheeting) should construction circumstances dictate the use of such.

Trench safety system designs for support systems, shield systems or other protective systems whether drawn from manufacturers' data, other tabulated data or designed for this particular project must be signed by a civil engineer registered in the State of California prior to submittal to the District for review. A shoring plan for the specific use of a shield shall be prepared. Catalogs or engineering data for a product should be identified in the plan as supporting data. All specific items or applicable conditions must be outlined on the submittal.

The State of California Department of Transportation "Trenching and Shoring Manual" will be used as a guide for plan review and approval.

Also included in this item is the fencing and barricading of the open trench as required for the safety of pedestrians and vehicular traffic as directed by the Engineer.

15.3 Measurement and Payment - The contract lump sum price paid for the item Trench Safety System shall include full compensation for all costs incurred under this section.

### SECTION 16 - CONCRETE CONSTRUCTION

16.1 Description - This section includes the contract items for the various classes of Concrete with the exception of the Pervious Concrete Pavement which is covered in Section 36.

16.2 General Requirements - Concrete for all purposes shall be composed of Portland cement, aggregates and water of the quantities and qualities herein specified, and in the required proportions. The ingredients are to be well mixed and brought to the proper consistency and to have a compressive strength at the age of 28 days of not less than the amount shown in the following tabulation for each type of work listed:

<u>CONCRETE CLASS</u>	<u>MINIMUM SACKS CEMENT/C.Y.</u>	<u>TYPE OF WORK</u>	<u>POUNDS PER SQUARE INCH</u>
A	6	Catch Basins, Junction and Transition Structures No. 3, Manholes, Wall Footings, Concrete Collars, and Headwalls	3250*

B	5	Encasements, Curbs, Curb and Gutter, Cross Gutters, Driveways, Sidewalk, and Miscellaneous Concrete not otherwise specified	3000*
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\*Note: Concrete for use in structures constructed from State of California, Department of Transportation Standard Plans shall have compressive strengths as called for on those plans.

16.3 Material and Methods - All concrete materials, methods, forms and proportioning shall conform to Sections 51 and 90, and additionally, curb construction shall conform to Section 73 of the State Standard Specifications. Concrete test specimens will be made in accordance with ASTM Designation C-31 and C172. Test for concrete compressive strengths will be performed in accordance with ASTM Designation C-39. Combined aggregate grading for all concrete shall be 1" maximum and in conformance with Section 90-3.04 of the State Standard Specifications.

Fly Ash, Class F may be substituted for cement, up to a maximum of fifteen percent (15%) by weight for all concrete. Fly Ash shall meet the standards of ASTM Designation: C-618. Water reducing agents meeting ASTM Designation: C-494 will be permitted in amounts recommended by the supplier and approved by the Engineer in writing.

No other admixture shall be used in any class of concrete without written permission from the Engineer.

Supplementing Section 90-1.01 of the State Standard Specifications, prior to placement of any concrete the Contractor shall submit mix designs, for all types of concrete to be placed, to the Engineer for approval. Supplementing Section 90-6.03 of the State Standard Specifications, concrete delivered to the job site shall be accompanied by a ticket containing the weight of each of the individual ingredients in the mix.

16.4 General Reinforcing Steel Requirements - Reinforcing steel for all reinforced concrete structures shall be Grade 60 Low-Alloy or Grade 60 Billet-Steel. The reinforcing steel for use in structures constructed from State of California, Department of Transportation Standard Plans shall be of Grade 60 or as called for on those plans. Cleaning, bending, placing and spacing of reinforcement shall conform to the applicable provisions of Section 52 of the State Standard Specifications and to the drawings. The Contractor shall furnish a "Certificate of Compliance" with the specification of ASTM Designation: A-706/A or A-615/A. All splices shall conform to the requirements of A.C.I. Manual, Standard 318, latest edition. Splices requested by the Contractor for his convenience shall be subject to approval by the Engineer. Longitudinal lap shall be as called out on the drawings or in cases where not called out 16 inches minimum for #4 bars and 19 inches minimum for #5 bars.

16.5 Consistency - The consistency of the concrete shall be such as to allow it to be worked into place without segregation. Unless otherwise specified, the slump shall be 3 inches plus or minus 1 inch for all concrete.

The slump test shall be performed in accordance with the requirements of ASTM Designation: C-143. Slumps greater than those specified may be cause for rejection of the concrete by the Engineer.

16.6 Placing - Supplementing Section 51-1.09 of the State Standard Specifications, concrete shall not be placed except in the presence of the Engineer. The Contractor shall give reasonable notice to the Engineer each time he intends to place concrete. Such notice shall be far enough in advance to give the Engineer adequate time to inspect the subgrade, forms, steel reinforcement and other preparations for compliance with the specifications before concrete is delivered for placing.

Formed concrete shall be placed in horizontal layers in lifts of not more than 20 inches. Hoppers and chutes, pipes and "elephant trunks" shall be used as necessary to prevent segregation of the concrete.

16.7 Form Removal and Finish - Forms shall be removed only when the Engineer has given his approval. Forms shall be removed in such a way as to prevent damage to the concrete. Supports shall be removed in a manner that will permit the concrete to take stresses due to its own weight uniformly.

Forms shall not be removed sooner than the following minimum time or strength after the concrete is placed. These times represent cumulative number of days and fractions of days, not necessarily consecutive, during which the temperature of the air adjacent to the concrete is above 50 degrees Fahrenheit. If the temperature falls below 50 degrees Fahrenheit at any time after the concrete is placed in the forms, the Engineer will advise the Contractor of additional time required before forms can be removed.

<u>Element</u>	<u>Strength or Time</u>
Retaining walls, planter walls, sampling basin structure, drain cleanout, and Transition Structure No. 3	3000 psi or 7 days
All other structures	16 hours

The finish on all exposed formed surfaces shall conform to Section 51-1.18B Class 1 Surface Finish of the State Standard Specifications. A tight wood float finish will be required on the surface of trapezoidal channels and bridge decks and excessive surface working will not be permitted. The exposed concrete surfaces shall be broomed in a transverse direction with a fine textured hair push broom to produce a uniform surface and eliminate float marks. Brooming shall be done when the surface is sufficiently set to prevent deep scarring. If directed by the Engineer, a fine spray of water shall be applied to the surface immediately in advance of brooming.

Exposed corners of all concrete structures shall be finished with a 3/4" chamfer.

Concrete flatwork shall match adjacent surfaces. The concrete shall be struck off and tamped or vibrated until a layer of mortar has been brought to the surface. The top surface and face of curbs, gutters, catch basins and sidewalks shall be finished to match adjacent surfaces.

16.8 Curing - All concrete shall be prevented from drying for a curing period of at least seven (7) days after it is placed. Surfaces exposed to air during the curing process shall be kept continuously moist for the entire period or until curing compound is applied.

Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged. Water for curing shall be clean and free from any substances that will cause discoloration of the concrete.

Concrete may be coated with curing compound in lieu of the continued application of moisture. The curing compound shall comply with the requirements of Section 90-7.01B of the State Standard Specifications. The curing compound shall be No. 5 White Pigmented Curing Compound conforming to the requirements of ASTM Designation: C-309, Type 2, Class B for all concrete surfaces other than for flatwork which shall be coated with a clear or translucent curing compound containing a red fugitive dye.

The curing compound shall be sprayed on the moist concrete surfaces as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs and finishing of that surface are completed. The curing compound shall be thoroughly mixed immediately before applying, and shall be applied at a uniform rate of not less than one gallon per 150 square feet of surface. No separate payment will be made for the curing compound or its application.

16.9 Joints - Joints shall be made at the locations shown on the drawings, per the appropriate standard drawings, or as approved by the Engineer. In cases where not otherwise specified on the drawings or standard drawings, maximum control joint spacing for all concrete flatwork shall be no greater than 10 feet on center. Weakened plane joints in curbs shall be per Riverside County Road Improvement Standards and Specifications Drawing Number 205 (Std. Dwg. 205) except that the joint depth shall be increased to twenty percent (20%) of the curb depth. Expansion joints in curbs shall be per Std. Dwg. 205 and shall be full depth for all curbs. All joints to be made by cutting the concrete must be made within 12 hours of pouring the concrete and must have rounded edges per Std. Dwg. 205. The Contractor shall consider potential structural effects on the formwork and bracing for all forms that must be cut through in making the joints.

16.10 Class "A" Concrete, 3'x3' Cleanout Structure - The contract item Class "A" Concrete, 3'x3' Cleanout Structure covers the complete construction of these structures including excavation, subgrade preparation, forming, concrete and reinforcing steel, backfill, and covers the procurement and installation of Inwesco 3636 Series Torsion Assist Frame and Cover Assemblies, or approved equal, as shown on the drawings and per manufacturer's specifications.

16.11 Class "A" Concrete, Transition Structure No. 3 - The contract item Class "A" Concrete, Transition Structure No. 3 covers the complete construction of these structures including excavation, subgrade preparation, forming, concrete and reinforcing steel, and backfill.

16.12 Class "A" Concrete, Under Sidewalk Drain - The contract item Class "A" Concrete, Under Sidewalk Drain covers the complete construction of these structures including excavation, subgrade preparation, forming, concrete and reinforcing steel, and backfill.

16.13 Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls - The contract item Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls covers the complete construction of these structures including excavation, subgrade preparation, footing forming, concrete and reinforcing steel, Concrete Masonry Units inclusive of all items in Section 34, water proofing of interior and backfill.

16.14 Class "A" Concrete, CMU Flow Through Planter Walls - The contract item Class "A" Concrete, CMU Flow Through Planter Walls covers the complete construction of these structures including excavation, subgrade preparation, footing forming, concrete and reinforcing steel, Concrete Masonry Units inclusive of all items in Section 34, waterproofing of interior and backfill.

16.15 Class "A" Concrete, Landscape Filter Basin Retaining Wall - The contract item Class "A" Concrete, Landscape Filter Basin Retaining Wall covers the complete construction of this structure per Caltrans Standard B3-3 Type 1A including excavation, subgrade preparation, footing and wall forming, concrete and reinforcing steel, backfill outside of the Landscape Filter Basin to the existing grade, and backfill inside of the Landscape Filter Basin up to the top of footing elevation.

16.16 Class "A" Concrete, Sampling Basin Structure - The contract item Class "A" Concrete, Sampling Basin Structure covers the complete construction of this structure including excavation, subgrade preparation, forming, concrete and reinforcing steel, and backfill.

16.17 Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9) - The contract item Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9) covers the complete construction of these structures including forming, concrete, and backfill. Excavation and subgrade preparation for this item is excluded here and is included in Section 14.

16.18 Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26) - The contract item Class "B" Concrete, Standard Curb (CD4, CD5, CD6, CD7, CD8, CD24, CD26) covers the complete construction of these structures including forming, concrete, concrete or slurry cement backfill, and backfill. Excavation and subgrade preparation for this item is excluded here and is included in Section 14.

16.19 Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31) - The contract item Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31) covers the complete construction of these structures including forming, reinforcing steel, concrete and/or



slurry cement backfill, and backfill. Excavation and subgrade preparation for this item is excluded here and is included in Section 14.

16.20 Class "B" Concrete, Miscellaneous - The contract item Class "B" Concrete, Miscellaneous covers the complete construction of the concrete cross gutters per Riverside County Std. Dwg. 209, 4" thick "V" gutters, PCC sidewalks per Riverside County Std. Dwgs. 400 and 401, miscellaneous PCC pads, slabs and walkways not included elsewhere, 2" high berms, and PCC steps, including excavation, subgrade preparation, forming, concrete and reinforcing steel, and backfill.

16.21 Class "B" Concrete, Planter and Building Slabs - The contract item Class "B" Concrete, Planter and Building Slabs covers the complete construction of the 8" thick concrete slabs at the two flow through planter structures, and the 6" thick concrete slab with concrete stem wall and perimeter footing for the prefabricated building including excavation, subgrade preparation, forming, concrete and reinforcing steel, and backfill.

16.22 Install Decorative Concrete Flatwork - The contract item Install Decorative Concrete Flatwork includes furnishing all materials, installing concrete flatwork and all specialist labor required to perform template sandblasting to produce a 6 foot diameter etched District emblem outside lobby entrance at location shown on drawings. The etched emblem shall be in color complementary to the modular pavers surrounding the emblem as approved by Engineer.

The District will provide Contractor with emblem design in digital format of Contractor's choice.

All decorative concrete flatwork designated in the drawings and specifications shall be etched using template sandblasting. Template materials shall be an adhesive backed rubber sandblast stencil.

Approved Products:

- a. 3M™ Sandblast Stencil 520T:

Industrial Business Industrial Adhesives and Tapes Division  
3M Center, Building 21-1W-10, 900 Bush Avenue  
St. Paul, MN 55144-1000  
800.362.3550 / 877.369.2923 (fax)  
[www.3M.com/industrial](http://www.3M.com/industrial)

- b. Or Approved Equal

Template material for emblem design is to be computer cut and installed by qualified personnel familiar with template sandblasting.

Special requirements: Proper application of Sandblast Stencils requires detail and planning. Special attention must be paid to the concrete mix design, placement and preparation

of the concrete to achieve the intended colors. Special considerations must be given to such items as the use of color admixtures and/or the use of specialty or decorative aggregates to be revealed as a result of sandblasting.

A minimum of two (2) weeks prior to installation of the flatwork concrete to be etched, Contractor shall submit a concrete mix design for the concrete flatwork and shall identify the specific person(s) that will be performing the template sandblasting for review and approval by the Engineer. Sandblasting equipment operator shall have demonstrated experience in template sandblasting and Contractor shall provide evidence of successful previous projects.

Contractor is encouraged to consult with specialists in decorative template concrete sandblasting prior to submitting bids.

16.23 Measurement - Measurement for payment for the contract items Class "A" Concrete, 3'x3' Cleanout Structure; Class "A" Concrete, Transition Structure No. 3; Class "A" Concrete, Under Sidewalk Drain; and Class "A" Concrete, Sampling Basin Structure will be the number of each item constructed as specified and shown on the drawings.

Measurement for payment for the contract items Class "A" Concrete, Footing and CMU Raised Planters and Entry Sign Walls; Class "A" Concrete, CMU Flow Through Planter Walls; Class "B" Concrete, Curb and Gutter (CD1, CD2, CD3, CD9); Class "B" Concrete, Standard Curb, (CD4, CD5, CD6, CD7, CD8, CD24, CD26); Class "B" Concrete, Deepened Curb (CD10, CD11, CD12, CD30, CD31), will be the number of lineal feet as measured along the centerline of each item constructed as specified and shown on the drawings.

Measurement for payment for the contract items Class "A" Concrete, Landscape Filter Basin Retaining Wall; Class "B" Concrete, Miscellaneous; and Class "B" Concrete, Planter and Building Slabs, will be the number of cubic yards placed as specified, and measured to the neat lines as shown on the drawings.

Measurement for the contract item Install Decorative Concrete Flatwork will be lump sum.

No measurement or payment will be made for dowels, tie bars, tie wires, blocks, chairs and other accessories for the construction of items in this section.

16.24 Payment - The contract prices paid for the various items in this section shall include full compensation for all costs incurred under this section and shall be paid upon completion of construction of each item.

## SECTION 17 - CONCRETE PIPE

17.1 Description - This section covers the contract item Reinforced Concrete Pipe as required for the work.

17.2 General Pipe Requirement - Pipe materials, manufacture and quality, shall conform to ASTM Designation: C-76 or C-655. The Engineer shall be furnished a "Certificate of Compliance" signed by the manufacturer of the pipe certifying that the pipe conforms to the ASTM requirements. All pipe and pipe material supplied by the Contractor shall be new.

Pipe shall be laid in a trench free of ponded water in conformance with Section 306-1.2.2, with joints in conformance with Section 306-1.2.4 of the Standard Specifications.

Pipe ends shall be cleaned and moistened prior to making up joint.

17.3 Reinforced Concrete Pipe - The contract item Reinforced Concrete Pipe includes the furnishing and installing of the pipe as specified and shown on the drawings, inclusive of earthwork, including excavation, subgrade compaction and backfill.

17.4 Pipe on Curves - Unsymmetrical closure of pipe joints shall not exceed 1 inch pull on the outside of the curve when pull is measured at the springline on the inside of the pipe. Mortar joints on curves shall conform in strength, texture of mortar finish and tightness to the joints for straight ended pipe.

When beveled pipe is used the maximum deflection angle shall not exceed 6 degrees unless shown on the drawings or approved by the Engineer.

17.5 Video Inspection - All concrete pipe with inside diameters of 30 inches or less shall be videotaped prior to final inspection. Copies of the videotapes shall be provided to the Engineer. For pipe placed within areas to be paved or finished with any surface other than soil, video inspection shall be performed and the results approved by the Engineer prior to paving or finishing.

17.6 Measurement - Measurement for payment of the contract item Reinforced Concrete Pipe will be the number of lineal feet installed as specified and shown on the drawings measured along the centerline of the pipe in place including curves.

17.7 Payment - The contract price paid for Reinforced Concrete Pipe shall include full compensation for all costs incurred under this section and shall be paid upon completion of construction of the pipe.

## SECTION 18 - NOT USED

## SECTION 19 - PAVING

19.1 Description - This section covers the contract items 3" Class 2 Aggregate Base Driveway and Access Ramp; Pervious Pavers over 2" #8 over 3" #57 over 13" #2 Stone; Pervious Pavers over 2" #8 over 10-7/8" #57 Stone; Pervious Pavers over 2" #8 over 3" #57 over 17" #2 Stone; Pervious Pavers over 1" #8 over 4" #57 Stone; 8.5" Pervious Concrete over 25" #57 Stone over Impermeable Composite Barrier; 8.5" Pervious Concrete over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier; 5" Porous

Asphalt over 25" #57 Stone over Impermeable Composite Barrier; 5" Porous Asphalt over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier; 4" AC over 6" Class 2 Aggregate Base and 4" AC over 11" Class 2 Aggregate Base; Variable Depth AC Overlay; Grind Existing AC Pavement; and Slurry Seal.

19.2 General Requirements, Asphalt Concrete (AC) Paving - The Contractor shall not pave any or start paving asphalt concrete until all compaction on the aggregate base is tested and approved by the Engineer.

With the exception of porous asphalt pavement which is covered in Section 37, the Asphalt Concrete shall be Type "B" and shall be proportioned, mixed, spread and compacted in accordance with the applicable provisions in Section 39 of the State Standard Specifications and these Special Provisions. The gradation of the mineral aggregate shall be one-half inch (1/2-inch) maximum, medium for final course and three-quarter inch (3/4-inch) maximum, coarse for base course.

The Contractor shall furnish and place the asphalt concrete with all asphaltic emulsions required. The asphalt binder to be mixed with aggregate shall conform to these Special Provisions and shall be of Performance Grade PG 64-10 or as determined by the Engineer.

The amount of asphalt binder to be mixed with the mineral aggregate shall be between three percent (3%) and seven percent (7%) by weight, of the dry mineral aggregate. The exact amount of asphalt binder to be mixed with the mineral aggregate will be determined by a special mix design.

Liquid asphalt for prime coat shall conform to the provisions in Section 93, "Liquid Asphalts", of the State Standard Specifications and shall be Grade PG 64-10.

Asphalt emulsion for paint binder (tack coat) shall conform to the provisions in Section 94, "Asphaltic Emulsions", of the State Standard Specifications for the rapid-setting or slow-setting type and shall be grade PG 64-10.

Paving asphalt for Asphalt Rubber Hot Mix (ARHM) shall be grade PG 64-16.

An asphalt emulsion fog seal coat shall be required on all new asphalt concrete surfaces, excluding porous asphalt paving. After fourteen (14) days following placement of the asphalt surfacing the fog seal coat shall be applied at a rate of 0.05 gallon per square yard. Asphalt emulsion shall conform to Sections 37, 39, and 94 of the State Standard Specifications. Paint binder shall be applied at a rate of approximately 0.02 to 0.10 gallon per square yard of surface covered. The location and the exact rate of application will be determined by the Engineer and be in conformance with Section 39-4 of the State Standard Specifications.

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

- A. Free from residues caused by the artificial distillation of coal, coal tar or paraffin.

- B. Free from water.
- C. Homogeneous.

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.

Performance grade paving asphalt shall conform to the testing requirements in the table below:

Performance Graded Asphalt Binder

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 %	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
Rolling Thin Film Oven (RTFO) Test, or ASTM D2827 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
Pressurized Aging Vessel (PAV) Aging, Temperature, °C	R28	100	100	110

RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*sin(delta), kPa	T315	31 5000	28 5000	34 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

Certificates of compliance shall be furnished to the Engineer certifying that the asphaltic emulsions and paving asphalts conform to the referenced standard specifications.

In lieu of the table of Section 39-6.01 of the State Standard Specifications, asphalt concrete shall be spread and compacted in the number of layers as outlined in the table below:

Total Thickness Shown on Plans	Minimum No. of Layers	Top Layer Thickness		Next Lower Layer Thickness		All Other Lower Layer Thickness	
		Min.	Max.	Min.	Max.	Min.	Max.
0.23' or less	1	-	-	-	-	-	-
0.24' through 0.44'	2	0.10'	0.21'	0.14'	0.23'	-	-
0.45' or more	3 or more	0.10'	0.20'	0.15'	0.23'	0.20'	0.23'

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

Pavement within any 330 foot section, containing high point areas with deviations in excess of 0.025 feet 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.

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 feet. Areas which have been subjected to abrasive grinding shall receive a fog seal coat. Deviations in excess of 0.025 feet which cannot be brought into specified tolerance by abrasive grinding shall be corrected by removal and replacement.

Slurry Seal shall be Type I asphalt emulsion slurry seal conforming to Sections 37, 39, and 94 of the State Standard Specifications.

19.3 General Requirements, Class 2 Aggregate Base - Class 2 Aggregate Base shall be clean and free from roots, vegetable matter and other deleterious substances, and be of such character that when wet it will compact to form a firm stable base. Material and placing shall be in accordance with Section 26 of the State Standard Specifications using 3/4-inch maximum size.

Class 2 Aggregate Base shall also have a sand equivalent value of not less than 35 when tested in conformance with California Test Method 217.

Class 2 Aggregate Base shall be spread as specified in Sections 26-1.035 and 26-1.04 of the State Standard Specifications. The material shall be compacted as specified in Section 26-1.05 of the State Standard Specifications.

19.4 3" Class 2 Aggregate Base Driveway and Access Ramp – The contract item 3" Class 2 Aggregate Base Driveway and Access Ramp includes furnishing and placing such material as specified and shown on the drawings.

19.5 Pervious Pavers over 2" #8 over 3" #57 over 13" #2 Stone - The contract item Pervious Pavers over 2" #8 over 3" #57 over 13" #2 Stone covers the complete construction of this item as specified and shown on the drawings for the traffic circle, rear parking area, entry walk, PPW1 and PPW2 including placement of Pervious Pavers inclusive of all items in Section 35. This item excludes excavation and subgrade compaction.

19.6 Pervious Pavers over 2" #8 over 10-7/8" #57 Stone - The contract item Pervious Pavers over 2" #8 over 10-7/8" #57 Stone covers the complete construction of this item as specified and shown on the drawings for PPW4 including placement of Pervious Pavers inclusive of all items in Section 35. This item excludes excavation and subgrade compaction.

19.7 Pervious Pavers over 2" #8 over 3" #57 over 17" #2 Stone - The contract item Pervious Pavers over 2" #8 over 3" #57 over 17" #2 Stone covers the complete construction of this item as specified and shown on the drawings for PPW3 including placement of Pervious Pavers inclusive of all items in Section 35. This item excludes excavation and subgrade compaction.

19.8 Pervious Pavers over 1" #8 over 4" #57 Stone - The contract item Pervious Pavers over 1" #8 over 4" #57 Stone covers the complete construction of this item as specified and shown on the drawings for the courtyard area and outdoor lunch area including placement of Pervious Pavers inclusive of all items in Section 35. This item excludes excavation and subgrade compaction.

19.9 8.5" Pervious Concrete over 25" #57 Stone over Impermeable Composite Barrier - The contract item 8.5" Pervious Concrete over 25" #57 Stone over Impermeable Composite Barrier covers the complete construction of this item as specified and shown on the drawings including placement of Pervious Concrete Paving inclusive of all items in Section 36. This item includes a leak test of the impermeable composite barrier and all penetrations prior to placement of the #57 Stone. The Contractor is to submit a testing method for Engineer approval prior to testing. This item excludes excavation and subgrade compaction.

19.10 8.5" Pervious Concrete over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier - The contract item 8.5" Pervious Concrete over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier covers the complete construction of this item as specified and shown on the drawings including placement of Pervious Concrete Paving inclusive of all items in Section 36.

This item includes a leak test of the impermeable composite barrier and all penetrations prior to placement of the #57 Stone. The Contractor is to submit a testing method for Engineer approval prior to testing. This item excludes excavation and subgrade compaction.

19.11 5" Porous Asphalt over 25" #57 Stone over Impermeable Composite Barrier - The contract item 5" Porous Asphalt over 25" #57 Stone over Impermeable Composite Barrier covers the complete construction of this item as specified and shown on the drawings including placement of Porous Asphalt Paving inclusive of all items in Section 37. This item includes a leak test of the impermeable composite barrier and all penetrations prior to placement of the #57 Stone. The Contractor is to submit a testing method for Engineer approval prior to testing. This item excludes excavation and subgrade compaction.

19.12 5" Porous Asphalt over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier - The contract item 5" Porous Asphalt over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier covers the complete construction of this item as specified and shown on the drawings including placement of Porous Asphalt Paving inclusive of all items in Section 37. This item includes a leak test of the impermeable composite barrier and all penetrations prior to placement of the #57 Stone. The Contractor is to submit a testing method for Engineer approval prior to testing. This item excludes excavation and subgrade compaction.

19.13 4" AC over 6" Class 2 Aggregate Base and 4" AC over 11" Class 2 Aggregate Base - The contract item 4" AC over 6" Class 2 Aggregate Base and 4" AC over 11" Class 2 Aggregate Base covers the complete construction of these items as specified and shown on the drawings. This item excludes excavation and subgrade compaction.

19.14 Variable Depth AC Overlay - The contract item Variable Depth AC Overlay covers the complete construction of this item as specified and shown on the drawings. This item excludes grinding existing AC pavement.

19.15 Grind Existing AC Pavement - The contract item Grind Existing AC Pavement covers the complete construction of this item as specified and shown on the drawings.

19.16 Slurry Seal - The contract item Slurry Seal covers the complete construction of this item as specified and shown on the drawings.

19.17 Measurement - Measurement for payment of the contract item 3" Class 2 Aggregate Base Driveway and Access Ramp will be the number of cubic yards placed to the lines, grades and dimensions shown on the drawings. **No allowance will be made for aggregate base placed outside said dimensions unless otherwise ordered by the Engineer.**

Measurement for payment of the contract items Pervious Pavers over 2" #8 over 3" #57 over 13" #2 Stone; Pervious Pavers over 2" #8 over 10-7/8" #57 Stone; Pervious Pavers over 2" #8 over 3" #57 over 17" #2 Stone; Pervious Pavers over 1" #8 over 4" #57 Stone; 8.5" Pervious Concrete over 25" #57 Stone over Impermeable Composite Barrier; 8.5" Pervious Concrete over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable



Composite Barrier; 5" Porous Asphalt over 25" #57 Stone over Impermeable Composite Barrier; 5" Porous Asphalt over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier; 4" AC over 6" Class 2 Aggregate Base and 4" AC over 11" Class 2 Aggregate Base; and Slurry Seal will be the number of square feet placed to the lines, grades and dimensions shown on the drawings. No measurement will be made for fog seal or paint binder where required for this portion of the work as these costs are to be included in the price paid for these items.

Measurement for payment of the contract item Variable Depth AC Overlay will be the number of tons placed to the lines, grades and dimensions shown on the drawings. The Variable Depth AC Overlay pay quantity shall be determined by using a conversion factor of 144 pounds per cubic foot. No measurement will be made for fog seal or paint binder required for this portion of the work. All charges for asphalt emulsions are included in the price paid for Variable Depth AC Overlay. **No allowance will be made for asphalt concrete placed outside said dimensions unless otherwise ordered by the Engineer.**

Measurement for payment of the contract item Grind Existing AC Pavement will be the number of square feet ground per the depths and dimensions shown on the drawings.

19.18 Payment - The contract prices paid for 3" Class 2 Aggregate Base Driveway and Access Ramp; Pervious Pavers over 2" #8 over 3" #57 over 13" #2 Stone; Pervious Pavers over 2" #8 over 10-7/8" #57 Stone; Pervious Pavers over 2" #8 over 3" #57 over 17" #2 Stone; Pervious Pavers over 1" #8 over 4" #57 Stone; 8.5" Pervious Concrete over 25" #57 Stone over Impermeable Composite Barrier; 8.5" Pervious Concrete over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier; 5" Porous Asphalt over 25" #57 Stone over Impermeable Composite Barrier; 5" Porous Asphalt over 25" #57 Stone Surrounding 9" Class 2 Aggregate Base and Filter Fabric over Impermeable Composite Barrier; 4" AC over 6" Class 2 Aggregate Base and 4" AC over 11" Class 2 Aggregate Base; Variable Depth AC Overlay; Grind Existing AC Pavement; and Slurry Seal shall include full compensation for all costs incurred under this section.

## SECTION 20 - FENCES

20.1 Description - This section covers the contract item Bollard as required for the work.

20.2 Bollard – The contract item Bollard includes furnishing all materials, equipment, tools, fittings and all labor required to perform the installation of bollards at locations shown on the drawings. **Contractor shall note that District may, at its sole discretion, reduce Bollard item quantity significantly. No adjustment in contract unit price will be made.**

Steel Posts shall be round schedule 40 or thicker steel with matching domed cap insert as indicated on the drawings. Dome insert shall be manufactured to fit the post diameter and shall be securely welded to post. Rebar footing anchor shall be securely welded to post to provide secure anchoring to the concrete footing. Post components and all welds shall be smooth to the touch and uniform in appearance. Drill holes shall be 3/8" diameter and smoothed to reduce

abrasion. Verify drill hole size with cable manufacturer. Steel posts shall be coated with uniform, factory applied powder coat finish. Color: Gloss Black.

Cable shall be a component system of 1/4" diameter 316 stainless steel twisted wire cable, 1x19 construction free of frayed or worn wires and sharp or rough aberrations. Cable shall be manufactured by Cable-Rail, Feeney Wire Rope and Rigging, 1.800.888.2418, Model No. 4118 or approved equivalent.

Fittings shall be 316 stainless steel, unless otherwise designated. All components shall be compatible with the cable. The Contractor shall verify the components required to construct the cable fence as indicated in the detail. Following is a guideline for components by Cable-Rail, Feeney Wire Rope and Rigging:

1. Quick Connect (Part No. 3148) to provide attachment at one end of each cable run.
2. Threaded terminal (Part No. 3249) at second end of each cable run.
3. Copper zinc stops (Part No. 1867) crimped onto cable at each side of each post to hold cable steady between posts with 4" maximum sag per plan.
4. All crimping shall be done using a swager cutter tool (Part No. 22187).

20.3 Measurement - Measurement for payment for the contract item Bollard will be the number of bollards installed. The cable connecting two consecutive bollards will not be measured separately for payment, but the cable cost and installation will be included in this section.

20.4 Payment - The contract price paid for Bollard shall include full compensation for all costs incurred under this section.

## SECTION 21 - MISCELLANEOUS

21.1 Description - This section covers the contract items 4" PVC Pipe; 6" PVC Pipe; 8" PVC Pipe; 12" PVC Pipe; 18" PVC Pipe; 10" Wide Slotted Drain; Precast Concrete Flow Detection Catch Basin; 9"x9" Plastic Catch Basin; 18"x18" Precast Concrete Catch Basin; 24"x24" Precast Concrete Catch Basin; 36"x36" Precast Concrete Catch Basin; Galvanized Steel Catch Basin Lid; PVC Pipe Stormwater Cleanout; Precast Concrete Headwall for 8" Pipe; 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure; New Wheel Stops; Signs Including Post and Footing; Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building; 3.5' High Metal Railing; Connection to Existing Building Roof Downdrains; Enhanced Grass Swale; Adjust Manhole and Vault to Grade; and Adjust Valve and Cleanout to Grade.

21.2 General Requirements, PVC Pipe, Fittings and Couplings, Excluding Electrical Conduit – All smooth (aka solid) walled and perforated PVC pipe, fittings and couplings, shall conform to

Standard Specifications Section 207-17 and other Standard Specifications sections referenced therein. All perforated PVC pipe shall have two rows of holes 1/2" in diameter on 5" centers, with allowable tolerances of plus 1/8" or minus 0" on the diameter and plus or minus 1/4" on the spacing. The two rows of holes shall be parallel to the axis of the pipe and 120 degrees plus or minus 5 degrees apart, with the pipe laid so each row of holes is located on the bottom half of the pipe and at an equal angle when measured from the pipe invert to the centerline of each row.

All PVC pipe, and fittings and couplings for PVC pipe, 15" or less in diameter shall be SDR-35 per ASTM D3034. All PVC pipe, and fittings and couplings for PVC pipe, greater than 15" in diameter shall be T-1 per ASTM D679.

All PVC Pipe shall have buried upstream terminal ends solid capped unless otherwise specified or shown on the drawings.

All PVC fittings and couplings shall be gasket style fittings and couplings. Gaskets shall be manufactured in accordance with ASTM F477 or ASTM F913. Gaskets shall be firmly seated in fitting in order to ensure proper installation and to prevent dislocation or misalignment during system assembly.

All PVC pipe shall be laid so that any naturally occurring bend in the pipe is oriented in the horizontal plain, thus minimizing the vertical variation from the elevations shown on the drawings and the likelihood that sag areas will develop over the pipe reach.

21.3 General Requirements, 2" Electrical Conduit from Pull Box to Prefabricated Building and 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure - All electrical conduit, bends, sweeps, elbows, fittings, and couplings shall be schedule 40 PVC approved for direct burial. All electrical conduit shall be assembled with solvent welded joints in accordance with the manufacturer's written instructions. All bends, sweeps, elbows, fittings, and couplings shall be factory-produced. The minimum depth from the finished surface to the top of conduit (electrical conduit burial depth) shall be 18".

21.4 4" PVC Pipe – The contract item 4" PVC Pipe covers the complete construction of this item as specified and shown on the drawings and includes all pipes, fittings, couplings, excavation, compaction, bedding and backfill. The contract item 4" PVC Pipe includes all 4" PVC Pipe either smooth walled or perforated.

21.5 6" PVC Pipe – The contract item 6" PVC Pipe covers the complete construction of this item as specified and shown on the drawings and includes all pipes, fittings, couplings, excavation, compaction, bedding and backfill. The contract item 6" PVC Pipe includes all 6" PVC Pipe either smooth walled or perforated.

21.6 8" PVC Pipe – The contract item 8" PVC Pipe covers the complete construction of this item as specified and shown on the drawings and includes all pipes, fittings, couplings, excavation, compaction, bedding and backfill. The contract item 8" PVC Pipe includes all 8" PVC Pipe either smooth walled or perforated.

21.7 12" PVC Pipe – The contract item 12" PVC Pipe covers the complete construction of this item as specified and shown on the drawings and includes all pipes, fittings, couplings, excavation, compaction, bedding and backfill.

21.8 18" PVC Pipe – The contract item 18" PVC Pipe covers the complete construction of this item as specified and shown on the drawings and includes all pipes, fittings, couplings, excavation, compaction, bedding and backfill.

21.9 10" Wide Slotted Drain - The contract item 10" Wide Slotted Drain covers the complete construction of this item as specified and shown on the drawings and includes all saw cutting, grinding, removals, excavation, compaction, forming, bedding, backfill, slurry, asphalt concrete paving, Portland cement concrete curb and gutter, slotted drain steel trough, slotted drain traffic rated grate, and slotted drain appurtenances.

21.10 Precast Concrete Flow Detection Catch Basin - The contract item Precast Concrete Flow Detection Catch Basin covers the complete construction of this item as specified and shown on the drawings and includes all Portland cement concrete, PVC pipe, forming, connections, neoprene stoppers, catch basins and appurtenances, and traffic rated grates.

21.11 9"x9" Plastic Catch Basin - The contract item 9"x9" Plastic Catch Basin covers the complete construction of this item as specified and shown on the drawings and includes all fine grading, excavation, bedding, backfill, pipes, couplings, fittings, catch basins and appurtenances, and grates.

21.12 18"x18" Precast Concrete Catch Basin - The contract item 18"x18" Precast Concrete Catch Basin covers the complete construction of this item as specified and shown on the drawings and includes all excavation, compaction, bedding, backfill, catch basins and appurtenances, connections, catch basin inserts, and traffic rated grates.

21.13 24"x24" Precast Concrete Catch Basin - The contract item 24"x24" Precast Concrete Catch Basin covers the complete construction of this item as specified and shown on the drawings and includes excavation, compaction, bedding, backfill, catch basins and appurtenances, connections, catch basin inserts, and traffic rated grates.

21.14 36"x36" Precast Concrete Catch Basin - The contract item 36"x36" Precast Concrete Catch Basin covers the complete construction of this item as specified and shown on the drawings and includes excavation, compaction, bedding, backfill, catch basins and appurtenances, connections, cutting of catch basins, Portland cement concrete and reinforcing, catch basin inserts, and traffic rated grates.

21.15 Galvanized Steel Catch Basin Lid - The contract item Galvanized Steel Catch Basin Lid covers the removal of the existing catch basin grate located in the new traffic circle as shown on the drawings and replacement of the grate with a new galvanized steel traffic rated lid, and includes all materials and labor to complete the work.

21.16 PVC Pipe Stormwater Cleanout - The contract item PVC Pipe Stormwater Cleanout covers the complete construction of this item as specified and shown on the drawings and includes all excavation, compaction, bedding, backfill, concrete, cast iron covers, pipes, forming, fittings, and couplings.

21.17 Precast Concrete Headwall for 8" Pipe - The contract item Precast Concrete Headwall for 8" Pipe covers the complete construction of this item as specified and shown on the drawings and includes excavation, compaction, bedding, backfill, headwall and appurtenances, mortar, and connection to the pipe.

21.18 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure - The contract item 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure covers the complete construction of this item as specified and shown on the drawings and includes all pipes, bends, sweeps, elbows, fittings, couplings, connections to structures, solvent weld cement, excavation, compaction, bedding and backfill. The Contractor shall place no electrical wires within the 3" electrical conduit.

21.19 New Wheel Stops - The contract item New Wheel Stops covers the complete construction of this item as specified and shown on the drawings and includes all wheel stops, anchoring dowels, drilling, and adhesive bonding systems.

21.20 Signs Including Post and Footing - The contract item Signs Including Post and Footing covers the complete construction of this item as specified and shown on the drawings and includes all excavation, concrete, posts, materials and signage.

21.21 Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building - The contract item Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building covers the complete construction of this item as specified and shown on the drawings and includes the building, windows, doors, interior and exterior finish, paint, all building appurtenances, 2" electrical conduit, electrical pull box, and includes any and all required building permits and inspections. This contract item excludes the concrete slab, but includes all required hold downs and connections to the slab.

21.22 3.5' High Metal Railing - The contract item 3.5' High Metal Railing covers the complete construction of this item as specified and shown on the drawings and includes all fabrication and installation of the railing.

21.23 Connection to Existing Building Roof Downdrains - The contract item Connection to Existing Building Roof Downdrains covers the complete construction of this item as specified and shown on the drawings and includes demolition of the existing exterior building wall sufficient to locate and create a water tight connection to the existing building roof drain downspout, placement of a ninety degree elbow supported from below so as to prevent separation of the new connection, placement of a smooth walled pipe extension from the elbow to the building exterior per the drawings, and repair of the building to its original structural integrity and appearance, including forming a waterproof seal around the new drain opening to

prevent water intrusion from the outside, and matching the color of the repair to the color of the existing building.

21.24 Enhanced Grass Swale - The contract item Enhanced Grass Swale (aka grass swale, swale) covers the complete construction of this item as specified and shown on the drawings and includes all cast-in-place concrete slabs, cast-in-place concrete collars, precast concrete flared end sections, forming, reinforcing steel, dowels, epoxy, 12" thick by 6' wide by 2' long cobble apron, filtration soil mixture, and #57 stone. Clearing and removals as shown on the drawings for the Enhanced Grass Swale shall be performed and paid per Section 13. Excavation as shown on the drawings for the Enhanced Grass Swale shall be performed and paid per Section 14.

21.25 Adjust Manhole and Vault to Grade – The contract item Adjust Manhole and Vault to Grade covers all labor, equipment, materials and incidentals required for the complete adjustment of all manholes and vaults within the limits of work to meet the finished grade. Adjustments shall be performed in accordance with Section 301.1.6 of the Standard Specifications.

21.26 Adjust Valve and Cleanout to Grade – The contract item Adjust Valve and Cleanout to Grade covers all labor, equipment, materials and incidentals required for the complete adjustment of all valves and cleanouts within the limits of work to meet the finished grade.

21.27 Measurement - Measurement for payment for the contract item 4" PVC Pipe; 6" PVC Pipe; 8" PVC Pipe; 12" PVC Pipe; 18" PVC Pipe; 10" Wide Slotted Drain; 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure; and 3.5' High Metal Railing will be the number of lineal feet as measured along the centerline of each item constructed as specified and shown on the drawings.

Measurement for payment for the contract item Precast Concrete Flow Detection Catch Basin; 9"x9" Plastic Catch Basin; 18"x18" Precast Concrete Catch Basin; 24"x24" Precast Concrete Catch Basin; 36"x36" Precast Concrete Catch Basin; Galvanized Steel Catch Basin Lid; PVC Pipe Stormwater Cleanout; Precast Concrete Headwall for 8" Pipe; New Wheel Stops; Signs Including Post and Footing; Connection to Existing Building Roof Downdrains; Adjust Manhole and Vault to Grade; and Adjust Valve and Cleanout to Grade will be the number of each item constructed as specified and shown on the drawings.

The contract lump sum payment price paid for the contract item Prefabricated 12'x22' Building; 2" Electrical Conduit from Pull Box to Prefabricated Building; and Enhanced Grass Swale shall include full compensation for all material and labor costs incurred for this bid item and will be made on a basis of the percentage of work completed for this bid item.

21.28 Payment - The contract prices paid for 4" PVC Pipe; 6" PVC Pipe; 8" PVC Pipe; 12" PVC Pipe; 18" PVC Pipe; 10" Wide Slotted Drain; Precast Concrete Flow Detection Catch Basin; 9"x9" Plastic Catch Basin; 18"x18" Precast Concrete Catch Basin; 24"x24" Precast Concrete Catch Basin; 36"x36" Precast Concrete Catch Basin; Galvanized Steel Catch Basin Lid; PVC Pipe Stormwater Cleanout; Precast Concrete Headwall for 8" Pipe; 3" Electrical Conduit from Prefabricated Building to Sampling Basin Structure; New Wheel Stops; Signs

Including Post and Footing; Prefabricated 12'x22' Building and 2" Electrical Conduit from Pull Box to Prefabricated Building; 3.5' High Metal Railing; Connection to Existing Building Roof Downdrains; Enhanced Grass Swale; Adjust Manhole and Vault to Grade; and Adjust Valve and Cleanout to Grade shall include full compensation for all costs incurred under this section.

## SECTION 22 THROUGH SECTION 25 – NOT USED

### SECTION 26 - STONEWORK

26.1 Description - This section covers the contract items Cobble Filled Trench; 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer; #57 Stone in Landscape Filter Basin and Flow Through Planters; Mirafi FW402 Filter Fabric; Mirafi NT100 Impermeable Barrier; and #2 Stone Energy Dissipaters.

26.2 General Requirements, Cobble and Stone – All cobble shall be washed rounded river rock 2" to 6" in diameter. Contractor shall submit sample of cobble for approval by the Engineer. All #2 stone, #8 stone and #57 stone shall conform to ASTM D448-08.

26.3 General Requirements, Filter Fabric – All filter fabric shall be furnished to the job site in protective covers capable of protecting the fabric from ultraviolet rays, abrasion and water. All filter fabric shall be placed per manufacturer's specifications unless otherwise noted and shall be cut neatly to match the finished surface. All filter fabric exposed to ultraviolet rays for more than 72 hours shall be treated or removed and replaced per Section 88-1.03 of the State Standard Specifications.

26.4 General Requirements, Impermeable Barrier - While unloading or transferring the impermeable barrier from one location to another, the Contractor shall prevent damage to the wrapping, core, label, and the impermeable barrier itself. If the impermeable barrier is to be stored for an extended period of time, it must be located and placed in a manner that ensures the integrity of the wrapping, core, and label as well as the physical properties of the impermeable barrier. During storage, the impermeable barrier must be adequately covered and protected from ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, fire or flames including welding sparks, temperatures in excess of 70°C (160°F), and human or animal destruction. At any time, the Contractor shall place only that amount of impermeable barrier required for immediately pending work to prevent undue damage. Damage that occurs during storage, handling or installation shall be repaired per manufacturer recommendations and as directed by the Engineer.

Prior to commencing work, the Contractor shall submit to the Engineer a specification for the asphalt emulsion to be utilized in splicing adjacent impermeable barrier panels together and for sealing all penetrations for PVC subdrains.

Subgrade soil must be excavated to the lines and grades as shown on the drawings or as directed by the Engineer. Over excavated areas should be filled with compacted backfill material. The subgrade soil surface must be smooth and level such that any shallow depressions and humps do not exceed one inch in depth and height. Any zones of non-compacted or

saturated soils should be removed and replaced with compacted soil prior to placement of the impermeable barrier. The subgrade must be proofrolled prior to impermeable barrier placement.

The Contractor shall install the impermeable barrier by rolling out by hand. While unrolling, the Contractor shall inspect the barrier for damage or defects. After the impermeable barrier has been laid in place it should be tensioned by hand until taut, free of wrinkles and lying flat. When placing an adjoining panel, an asphalt emulsion "seal" must be applied onto the outer 12 to 18" of the in-place panel in preparation for placing the next upstream panel. The upstream panel is placed to shingle water from the upstream panel to the downstream panel. All work with the impermeable barrier shall start at the downstream end and proceed in the upstream direction.

Impermeable barrier panels may be secured in-place with sand bags or as directed by the Engineer. The Contractor shall use no pins, stakes, staples, or anything that penetrates the impermeable barrier, except, where shown on the drawings PVC subdrain may penetrate the barrier.

In areas where the 6" PVC subdrain penetrates the impermeable barrier, the Contractor shall cut a circular hole in the impermeable barrier that is slightly smaller in diameter than the outside diameter of the subdrain in order to facilitate a tight fit. An asphalt emulsion shall be utilized to form a water tight seal between the PVC subdrain and the impermeable barrier at the penetration.

Fill materials must be placed, spread, and compacted in such a manner that minimizes the development of wrinkles in and/or movement of the impermeable barrier. Care should be taken to control the timing and rate of placement of fill material to ensure that damage does not occur due to compaction or site vehicles traveling on the exposed impermeable barrier. Vehicular traffic is not permitted to drive directly on the impermeable barrier. A minimum base thickness of six inches is required prior to operation of tracked vehicles over the impermeable barrier. Turning of tracked vehicles must be kept to a minimum to prevent tracks from displacing the base material and damaging the geosynthetic fabric. When pushing previously dumped base into position, care is required to not blade through the base material and into the impermeable barrier.

The Contractor shall ensure that at no location a concentrated load is applied to the impermeable barrier from above or below that could puncture or in any way compromise the integrity of the impermeable barrier.

The impermeable barrier shall be cut neat to the finished surface or location as shown on the drawings.

26.5 Cobble Filled Trench - The contract item Cobble Filled Trench covers the complete construction of this item as specified and shown on the drawings and includes excavation.

26.6 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer - The contract item 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer covers the complete construction of this item as specified and shown on the drawings, excluding excavation and filter fabric. Per Section 14



requirements, the Contractor shall not drive with rubber tires at any time on any surface below elevation 797.0.

26.7 #57 Stone in Landscape Filter Basin and Flow Through Planters - The contract item #57 Stone in Landscape Filter Basin and Flow Through Planters covers the complete construction of this item as specified and shown on the drawings, excluding excavation.

26.8 Mirafi FW402 Filter Fabric - The contract item Mirafi FW402 Filter Fabric covers the complete construction of this item as specified and shown on the drawings. The Contractor may utilize an equivalent filter fabric upon submittal to and approval of the Engineer of the equivalent fabric manufacturer's product specifications and a written comparison with the specified Mirafi product.

26.9 Mirafi NT100 Impermeable Barrier - The contract item Mirafi NT100 Impermeable Barrier covers the complete construction of this item as specified and shown on the drawings and includes the asphalt emulsion sealant and labor required for sealing the barrier around all penetrations. The Contractor may utilize an equivalent impermeable barrier upon submittal to and approval of the Engineer of the equivalent material manufacturer's product specifications and a written comparison with the specified Mirafi product.

26.10 #2 Stone Energy Dissipaters - The contract item #2 Stone Energy Dissipaters covers the complete construction of this item as specified and shown on the drawings and includes the excavation required to shape the energy dissipater as shown on the drawings. The surface of the energy dissipaters shall slope away from the pipe invert at a gradient equal to the finished surface slope as shown on the drawings.

26.11 Measurement - Measurement for payment for the contract items Cobble Filled Trench; and 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer will be the number of lineal feet as measured along the centerline of each item constructed as specified and shown on the drawings. Excavation for the contract item 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer will be measured and paid per Section 14. Filter fabric for the contract item 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer will be measured and paid per the contract item Mirafi FW402 Filter Fabric within this section.

Measurement for payment for the contract items #57 Stone in Landscape Filter Basin and Flow Through Planters; and #2 Stone Energy Dissipaters will be the number of cubic yards of material placed as specified and shown on the drawings. Excavation for the contract items #57 Stone in Landscape Filter Basin and Flow Through Planters, and #2 Stone Energy Dissipaters, will be measured and paid per Section 14.

Measurement for payment for the contract items Mirafi FW402 Filter Fabric; and Mirafi NT100 Impermeable Barrier will be the number of square feet of material placed as specified and shown on the drawings. Excavation and surface preparation for the contract items Mirafi FW402 Filter Fabric, and Mirafi NT100 Impermeable Barrier, will be measured and paid per Section 14.

26.12 Payment - The contract prices paid for Cobble Filled Trench; 4'x4' #2 Stone Infiltration Trench in Lake Smithhammer; #57 Stone in Landscape Filter Basin and Flow Through Planters; Mirafi FW402 Filter Fabric; Mirafi NT100 Impermeable Barrier; and #2 Stone Energy Dissipaters shall include full compensation for all costs incurred under this section except as noted in the measurement section above.

### SECTION 27 - DUST ABATEMENT

27.1 Description - This section covers the implementation of dust control measures necessary to prevent harm and nuisance from dust. Supplementing Section 8.06 of the General Provisions, the Contractor shall comply with all the provisions of the South Coast Air Quality Management District (SCAQMD) Rule 403 as described in Appendix "A". The Contractor shall carry out proper and efficient measures to prevent his operations from producing dust in amounts damaging to property or causing a nuisance, or harm to persons living nearby or occupying buildings in the vicinity of the work. The methods to be used for controlling dust in the construction area shall be approved by the Engineer prior to starting any work included in this contract. The Rule 403 Implementation Handbook published by the SCAQMD contains a detailed listing of reasonably available dust control measures and is available for inspection at the District office.

27.2 Measurement and Payment - No measurement will be made for items in this section. The contract lump sum price paid for Dust Abatement shall include full compensation for all direct and indirect costs incurred under this section.

This payment will be made on a basis of the percentage of work completed on the entire project.

### SECTION 28 – NOT USED

### SECTION 29 – STORMWATER AND NON-STORMWATER POLLUTION CONTROL

29.1 Description – This section covers the contract items Stormwater and Non-Stormwater Pollution; and the Non-Stormwater Discharge or Dewatering. The contract item Stormwater and Non-Stormwater Pollution Control shall include preparing, obtaining approval of, amending and implementing the Permit Registration Documents (PRDs) as required by the State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Board (CRWQCB) - Santa Ana Region. The contract item Non-Stormwater Discharge or Dewatering shall include compliance with the Santa Ana Regional Water Quality Board Order No. R8-2009-2003.

29.2 General Requirements – All activities performed by the Contractor for this project shall conform to the requirements of the State-wide National Pollutant Discharge Elimination System (NPDES) General Permit (Board Order No. 2009-0009-DWQ, NPDES No. CAS000002) for Stormwater Discharges Associated with Construction and Land Disturbance Activities, hereafter referred to as the "General Permit", issued by the SWRCB. This General Permit regulates both stormwater and non-stormwater discharges associated with Contractor's construction activities.

This General Permit can be downloaded at [http://www.swrcb.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml).

The PRDs mentioned above consist of:

1. Risk Assessment (Section VIII of the General Permit)
2. Site Map
3. Stormwater Pollution Prevention Plan (Section XIV of General Permit)
4. Signed Certification Statement

Risk Assessment – The Contractor shall calculate the project site's sediment risk and receiving water risk during periods of soil exposure (i.e. grading and site stabilization) and use the calculated risks to determine a Risk Level(s) using the methodology in Appendix 1 of the General Permit.

Site Map – The Contractor shall provide a site map of the project area.

Stormwater Pollution Prevention Plan (SWPPP) – The SWPPP shall identify site specific Best Management Practices (BMPs) to be implemented during and after construction to minimize the potential pollution of stormwater runoff and downstream receiving waters. The identified BMPs shall be practices designed to minimize or eliminate the discharge of pollutants from the construction site and Contractor's construction activities, including, but not limited to:

1. Good housekeeping practices for solid and sanitary/septic waste management, vehicle and equipment cleaning/maintenance, and material handling and storage.
2. Construction procedures such as stabilized construction access points, scheduling/phasing to minimize areas of soil disturbance, soil stabilization and erosion/sediment control.

The SWPPP shall also stipulate an ongoing program for monitoring and maintenance of all BMPs.

The SWPPP shall be designed to address the following objectives:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
2. Where not otherwise required to be under a Regional Water Board permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Conventional Technology (BAT/BCT) standard;

4. Calculations and design details as well as BMP controls for site run-on are complete and correct; and
5. Stabilization BMPs, installed to reduce or eliminate pollutants after construction, are completed.

To demonstrate compliance with requirements of the General Permit, the Qualified SWPPP Developer (QSD) shall include information in the SWPPP that supports the conclusions, selections, use, and maintenance of BMPs.

The Contractor shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Regional Board inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

Signed Certification Statement – The Contractor shall submit a signed certification (see Appendix "D") certifying the SWPPP was prepared under their direction and that the SWPPP is a true, accurate and complete representation of the proposed project and mitigation measures.

**In the event the District incurs any Administrative Civil Liability or Mandatory Minimum (fine) imposed by the CRWQCB - Santa Ana Region, as a result of Contractor's failure to fully implement the provisions of this section and permit requirements, "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 Civil Liability. Liability for "Negligent Violations" may be in an amount up to \$50,000 per day per deemed occurrence while "Knowing Violations" can result in fines as high as \$250,000 and imprisonment.**

Stormwater and Non-Stormwater Pollution Control work shall conform to the requirements in the latest version of the California Stormwater Quality Association (CASQA) Handbook, entitled "**California Stormwater BMP Handbook – Construction**" updated **November 2009**. A copy of the "California Stormwater BMP Handbook – Construction", updated November 2009, hereafter referred to as the "CASQA Handbook", may be obtained from CASQA, Post Office Box 2105, Menlo Park, California 94026-2105. Telephone: 650.366.1042. Copies of the handbook can also be downloaded from the CASQA Internet site at <http://www.cabmphandbooks.com/construction.asp>.

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 this section, "Stormwater and Non-Stormwater Pollution Control", including but not limited to, compliance with the applicable provisions of the CASQA Handbook, General Permit, General De Minimus Permit, Federal, State and local regulations. For the purpose of this paragraph, costs and liabilities include, but are not limited to, fines, penalties and damages whether assessed against the District or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Act.

The Contractor shall become fully informed of and comply with the applicable provisions of the CASQA Handbook, General Permit, General De Minimus Permit, and Federal, State and local regulations that govern the Contractor's activities and operation pertaining to both stormwater and non-stormwater discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall, at all times, keep copies of the General Permit, General De Minimus Permit, approved SWPPP and all amendments at the project site. The SWPPP shall be made available upon request of a representative of the SWRCB, CRWQCB, United States Environmental Protection Agency (USEPA) or local stormwater management agency. Requests by the public shall be directed to the Engineer.

The Contractor is solely and exclusively responsible for any arrangements made between the Contractor and other property owners or entities that result in disturbance of areas or construction activities being conducted outside limits of the designated rights-of-way and temporary construction easements as shown on the project drawings.

The Contractor shall, at reasonable times, allow authorized agents of the CRWQCB, SWRCB, USEPA or local stormwater management agency, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the construction site and the Contractor's facilities pertinent to the work;
2. Have access to and copy any records required to be kept as specified in the General Permit;
3. Inspect the construction site, including any offsite staging areas or material storage areas, and related soil stabilization practices and sediment control BMPs; and
4. Sample or monitor for the purpose of ensuring compliance with the General Permit.

The Contractor shall notify the Engineer immediately upon request from regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records.

**29.3 Permit Registration Documents (PRDs) Preparation and Approval** - The Contractor shall prepare and obtain approval of the PRDs as part of the Stormwater and Non-Stormwater Pollution Control work for this contract. The SWPPP shall include an appropriate Construction Site Monitoring Program (CSMP) as required by Section I, "Monitoring and Reporting Requirements" of Attachment C of the General Permit. A guidance document titled "Field Monitoring and Analysis Guidance Document" is available from the California Stormwater Quality Association internet site at <http://www.casqa.org/LeftNavigation/BMPHandbooksPortal/tabid/200/Default.aspx>. The Contractor shall prepare and implement the SWPPP in accordance with the CASQA Handbook and CSMP, the General Permit and these Detailed Specifications.

**In case of conflict between the CASQA Handbook and these Detailed Specifications, the Detailed Specifications shall govern; in case of conflict between these Detailed Specifications and the General Permit, the latter shall govern.**

Within five (5) working days after the award of the contract, the Contractor shall submit two (2) copies of the PRDs to the Engineer for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the PRDs. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the PRDs 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 SWPPP to the Engineer prior to the pre-construction meeting. **The Contractor must have approved PRDs prior to the pre-construction meeting.**

The SWPPP shall incorporate BMPs in each of the following categories:

1. Soil stabilization practices;
2. Sediment control practices;
3. Sediment tracking control practices;
4. Wind erosion control practices; and
5. Non-stormwater management, and waste management and disposal control practices.

Specific objectives and minimum requirements for each category of BMPs are described in the CASQA Handbook. The Contractor shall consider the objectives and minimum requirements presented in the CASQA Handbook for each of the above categories. When minimum requirements are listed for any category, the Contractor shall incorporate one or more of the listed minimum BMPs required into the SWPPP and implement them on the project to meet the pollution control objectives for the category. In addition, the Contractor shall consider other BMPs presented in the CASQA Handbook to supplement the minimum BMPs required when necessary to meet the objectives of the SWPPP and maintain compliance with the General Permit. The Contractor shall document the selection process in accordance with the procedure specified in the CASQA Handbook.

The Contractor should not assume that the minimum BMPs required for each category presented in the CASQA Handbook are adequate to meet the pollution control objectives. The Contractor may use other effective BMPs, as approved by the Engineer, in addition to the minimum as required in the CASQA Handbook to achieve the pollution control objectives.

The SWPPP shall include the following items as described in the CASQA Handbook, CSMP and General Permit:

**Section 1 - SWPPP Requirements:**

- 1.1 Introduction
- 1.2 Permit Registration Documents
- 1.3 SWPPP Availability and Implementation

- 1.4 SWPPP Amendments
- 1.5 Retention of Records
- 1.6 Required Non-Compliance Reporting
- 1.7 Annual Report
- 1.8 Changes to Permit Coverage
- 1.9 Notice of Termination

**Section 2 - Project Information:**

- 2.1 Project and Site Description
- 2.2 Stormwater Run-On From Offsite Areas
- 2.3 Findings of the Construction Site Sediment and Receiving Water Risk Determination
- 2.4 Construction Schedule
- 2.5 Potential Construction Site Pollutant Sources
- 2.6 Identification of Non-Stormwater Discharges

**Section 3 - Best Management Practices:**

- 3.1 Schedule for BMP Implementation
- 3.2 Erosion Control and Sediment Control
- 3.3 Non-Stormwater and Material Management
- 3.4 Post-Construction Stormwater Management Measures

**Section 4 - BMP Inspection, Maintenance, and Rain Event Action Plans:**

- 4.1 BMP Inspection and Maintenance
- 4.2 Rain Event Action Plans

**Section 5 – Training**

**Section 6 - Responsible Parties and Operators:**

- 6.1 Responsible Parties
- 6.2 Contractor List

**Section 7 - Construction Site Monitoring Program:**

- 7.1 Purpose
- 7.2 Applicability of Permit Requirements
- 7.3 Monitoring Locations
- 7.4 Safety
- 7.5 Visual Monitoring (Inspections)
- 7.6 Water Quality Sampling and Analysis
- 7.7 Watershed Monitoring Option
- 7.8 Quality Assurance and Quality Control

## 7.9 Reporting Requirements and Records Retention

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, individuals responsible for creating, revising, overseeing, and implementing the SWPPP should participate in applicable training programs and document such training in the SWPPP. A copy of the SWPPP should be located at the construction site.

The following notes (or notes of substantially similar intent) that address pollution prevention to the Maximum Extent Practicable during the construction phase of a project on a year-round basis need to be placed on the Stormwater and Non-Stormwater Pollution Control Drawings:

- ◆ Erosion control BMPs shall be implemented and maintained to minimize and/or prevent the entrainment of soil in runoff from disturbed soil areas on construction sites.
- ◆ Sediment control BMPs shall be implemented and maintained to prevent and/or minimize the transport of soil from the construction site.
- ◆ Stockpiles of soil shall be properly contained to eliminate or reduce sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.
- ◆ Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented to eliminate or reduce transport from the site to streets, drainage facilities or adjoining properties by wind or runoff.
- ◆ Runoff from equipment and vehicle washing shall be contained at construction sites and must not be discharged to receiving waters or the local storm drain system. Washwaters or rinsate from ready mix, concrete, or cement vehicles must be handled appropriately and may not be discharged to receiving waters or any storm drain system.
- ◆ All construction Contractor and subcontractor personnel are to be made aware of the required best management practices and good housekeeping measures for the project site and any associated construction staging areas.
- ◆ At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed in trash or recycle bins.
- ◆ Construction sites shall be maintained in such a condition that a storm does not carry wastes or pollutants off the site. Discharges other than stormwater (non-stormwater discharges) are prohibited, except as authorized by an individual NPDES permit or the State-wide General Permit for Storm Water Discharges Associated with Construction Activity. Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, solvents, detergents, glues, lime, pesticides, herbicides, fertilizers, wood preservatives and asbestos fibers; paint flakes or stucco fragments; fuels, oils, lubricants and hydraulic, radiator or battery fluids; concrete and related cutting or curing residues; floatable wastes; wastes from engine/equipment steam cleaning or chemical degreasing; wastes from street cleaning; and super-chlorinated potable water from line flushing and testing. During construction, disposal of



such materials should occur in a specified and controlled temporary area onsite physically separated from potential stormwater runoff, with ultimate disposal in accordance with local, State and Federal requirements.

- ◆ Discharging contaminated groundwater produced by dewatering groundwater that has infiltrated into the construction site is prohibited. Discharging of contaminated soils via surface erosion is also prohibited.
- ◆ The Contractor is required to notify and obtain approval from the District ten (10) days prior to any non-stormwater discharge or dewatering associated with Contractor's construction activities.
- ◆ Construction sites shall be managed to minimize the exposure time of disturbed soil areas through phasing and scheduling of grading to the extent feasible and the use of temporary and permanent soil stabilization.
- ◆ BMPs shall be maintained at all times. In addition, BMPs shall be inspected prior to predicted storm events and following storm events.

#### 29.4 Permit Registration Document (PRD) and Rain Event Action Plan (REAP) Amendments

- If the scope or schedule of the project changes, the Contractor shall immediately notify the Engineer. The Engineer will determine if the Contractor will be required to recalculate the Risk Assessment. If it is determined by the Engineer that a new Risk Assessment is required, the Engineer will notify the Contractor to resubmit amended PRDs and in the case that the risk level increases, the Contractor shall comply with additional applicable requirements of the General Permit, including preparation and implementation of REAPs, Construction Site Monitoring Program (CSMP), Numeric Action Level (NAL) Exceedance Reports, and annual reporting requirements. The Contractor shall also prepare amendments to the PRDs, both graphically and in narrative form, whenever there is a change in Contractor's construction activities or operations which may result in the discharge of pollutants to surface waters, groundwaters, municipal storm drain systems, or as deemed necessary by the Engineer. The Contractor shall also amend the PRDs if they are in violation of any condition of the General Permit, or has not effectively achieved the objective of reducing pollutants in stormwater discharges. Amendments shall show additional BMPs, revised Contractor's construction activities or operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to effectively control water pollution.

Amendments to the PRDs shall be submitted for review and approval by the Engineer in the same manner specified for the initial approval of the PRDs. The Contractor shall date and attach all approved amendments to any of the PRDs. Upon approval of the amendment, the Contractor shall implement the approved changes, revised construction activities or operations.

29.5 Non-Compliance Reporting - If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within two (2) calendar days of identification of non-compliance activities.

29.6 SWPPP Implementation - Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for placing, installing, constructing, inspecting and maintaining the BMPs as well as conducting the Construction Site Monitoring Program as included in the SWPPP and any amendments thereto, and for removing and disposing of

temporary BMPs. Unless otherwise directed by the Engineer or specified in these Detailed Specifications, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in accordance with Section 6.05, "TEMPORARY SUSPENSION OF THE WORK", of the General Provisions. Requirements for installation, construction, inspection, maintenance, removal and disposal of BMPs are specified in the Caltrans Handbooks and these Detailed Specifications.

**The Engineer may order the suspension of construction operations if the Contractor fails to comply with the requirements of this section, "Stormwater and Non-Stormwater Pollution Control", as determined by the Engineer.**

**The Contractor will not be compensated for sampling and analysis work because of the Contractor's failure to properly implement, inspect, maintain and repair BMPs in the approved SWPPP and any amendments thereto, or for failing to store construction materials or wastes in watertight containers.**

- (a) Stormwater Pollution Control - **The Contractor shall implement soil stabilization practices and sediment control BMPs, including minimum requirements as presented in the Caltrans Handbooks, on all disturbed areas of the project site during the rainy season, defined as between October 1<sup>st</sup> and May 31<sup>st</sup>.**

Implementation of soil stabilization practices and sediment control BMPs for soil-disturbed areas, including but not limited to, rough graded access roads, slopes, channel inverts, operational inlets and outlets of the project shall be completed no later than ten (10) calendar days prior to the start of the rainy season or upon start of applicable Contractor's construction activities for projects which begin either during or within ten (10) calendar days of the rainy season.

The Engineer may require the Contractor, on a case-by-case basis, to reduce the active, soil-disturbed area limit of the project. The Contractor shall demonstrate the ability and preparedness to fully deploy soil stabilization practices and sediment control BMPs to protect soil-disturbed areas of the project site by maintaining an adequate quantity of soil stabilization and sediment control materials onsite to protect exposed, soil-disturbed areas and a detailed plan for the mobilization of sufficient labor and equipment to fully deploy the required BMPs prior to the onset of precipitation and for the duration of the project.

Throughout the rainy season, soil-disturbed areas of the project site shall be considered to be nonactive whenever soil disturbing activities are expected to be discontinued for a period of fifteen (15) calendar days or more. Areas that will become nonactive either during the rainy season or within ten (10) calendar days thereof shall be fully protected with soil stabilization practices such as covering with mulch, temporary seeding, fiber rolls, blankets, etc., within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur. Areas that will become nonactive either

during the rainy season or within ten (10) calendar days thereof shall be fully protected with sediment control BMPs within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur.

Throughout the rainy season, active soil-disturbed areas of the project site shall be fully protected at the end of each day with soil stabilization practices and sediment control BMPs. The Contractor shall monitor the weather forecast on a daily basis. The National Weather Service forecast shall be used, or an alternative weather forecast proposed by the Contractor may be used if approved by the Engineer. If precipitation is predicted prior to the end of the following workday, construction scheduling shall be modified, as required, and the Contractor shall deploy functioning BMPs prior to the onset of the precipitation.

- (b) Non-Stormwater Pollution Control - **The Contractor shall implement, year-round and throughout the duration of the project, BMPs included in the SWPPP for sediment tracking, wind erosion, non-stormwater management, and waste management and disposal.**
- (c) Inspections and Reporting - The Contractor shall regularly inspect the construction site for BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. The Contractor shall identify corrective actions and time frames to address any damaged BMPs or reinstate any BMPs that have been discontinued.

At a minimum, the Contractor shall inspect the construction site as follows:

1. Prior to a forecast storm;
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hour intervals during extended precipitation events; and
4. At a regular interval of once every 2 weeks.

The construction site inspection checklist provided in the Caltrans Handbooks shall be used to ensure that the necessary BMPs are being properly implemented and are functioning adequately. The Contractor shall submit one copy of each site inspection record to the Engineer.

- (d) Maintenance - The Contractor shall maintain construction site BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of an identified BMP, the deficiency shall be corrected by the Contractor immediately, or by a later date and time if requested by the Contractor and approved by the Engineer in writing, but not later than the onset of subsequent precipitation events. The correction of deficiencies shall be at no additional cost to the District.

- (e) Training – The Contractor shall ensure that all persons responsible for implementing requirements of the General Permit shall be appropriately trained in accordance with Section VII "Training Qualifications and Certification Requirements" of the General Permit. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations.

The Contractor shall ensure that SWPPPs are written, amended and certified by a Qualified SWPPP Developer (QSD). The Contractor shall also ensure that all inspection, maintenance, repair and sampling activities shall be performed or supervised by a Qualified SWPPP Practitioner (QSP). A QSP is a person responsible for non-stormwater and stormwater visual observations, sampling and analysis.

**29.7 Rain Event Action Plan (REAP) – The REAP is applicable to Risk Level 2 construction sites only.** The Contractor shall ensure a QSP develop a REAP (see Appendix "E") and submit a copy to the Engineer for review 48 hours prior to any likely precipitation event. The Contractor shall amend and implement the REAP as directed by the Engineer. If no comments are received prior to the precipitation event, the REAP shall be implemented as proposed. A likely precipitation event is any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area. The discharger shall ensure a QSP obtain a printed copy of precipitation forecast information from the National Weather Service Forecast Office (e.g., enter the zip code of the project's location at <http://www.srh.noaa.gov/forecast>).

The Contractor shall ensure a QSP ensure that the REAP include, at a minimum, the following site information:

- a. Site Address
- b. Calculated Risk Level
- c. Site Storm Water Manager Information including the name, company and 24-hour emergency telephone number
- d. Erosion and Sediment Control Provider information including the name, company and 24-hour emergency telephone number
- e. Storm Water Sampling Agent information including the name, company and 24-hour emergency telephone number

**29.8 Water Quality Monitoring, Sampling and Analysis – The Water Quality Monitoring, Sampling and Analysis is applicable to Risk Level 2 construction sites only.** The Contractor shall be responsible for preparing a Construction Site Monitoring Program (CSMP) and implementing the monitoring, sampling and analysis requirements as described in Attachment D

of the General Permit. Records of all visual observations and sampling results required by the General Permit shall be kept using the forms contained in Appendix "F" and Appendix "G", respectively. Copies of the forms shall be maintained in the SWPPP and submitted to the Engineer within 24 hours of the visual observation or sampling event.

29.9 Numeric Action Level (NAL) Exceedance Report - **The NAL Exceedance Report is applicable to Risk Level 2 construction sites only.** The Contractor shall be responsible for submitting a NAL Exceedance Report to the Engineer in the event that any effluent sample exceeds an applicable NAL.

- a. The Contractor shall submit all storm event sampling results using the form in Appendix "G" for each discharge point to the Engineer no later than 24 hours after the conclusion of the storm event.
- b. The Contractor shall certify each NAL Exceedance Report in accordance with the Special Provisions for Construction Activity.
- c. The Contractor shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three years after the date the annual report is filed.
- d. The Contractor shall use the reporting form contained in Appendix "G" and include in the NAL Exceedance Report:
  - i. The analytical method(s), method reporting unit(s) and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit").
  - ii. The date, place, time of sampling, visual observation (inspections) and/or measurements, including precipitation.
  - iii. A description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

29.10 Non-Stormwater Discharge or Dewatering - **Dewatering activity should only be considered after other methods have been determined to be inadequate for storm drain construction by the Engineer.** If groundwater will be encountered during the project activities, the dewatering activity must be covered by the General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant Threat to Water Quality (De Minimus Permit), Santa Ana Regional Water Quality Control Board Order No. R8-2009-0003. The Contractor shall comply with this Order, and notify and obtain approval from the Engineer fifteen (15) days prior to any non-stormwater discharging of groundwater dewatering. If an emergency or unforeseen dewatering activity that will discharge to Waters of the United States occurs, the Contractor shall contact the Engineer immediately.

When discharging groundwater from dewatering activities to surface waters, the Contractor shall comply with and implement the Monitoring and Reporting Program required under Order No. R8-2009-0003. This Order can be downloaded at [http://www.waterboards.ca.gov/santaana/board\\_decisions/adopted\\_orders/orders/2009\\_orders.shtml](http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2009_orders.shtml). Under the Monitoring and Reporting Program, the Contractor shall prepare the monitoring report in accordance with the template included in Appendix "H". The Contractor must submit the Monitoring Reports to the Engineer by the 15<sup>th</sup> day of each month following the monitoring period. The District will submit the Monitoring Reports to the Santa Ana Regional Water Quality Control Board. The Monitoring Reports shall cover the previous month's monitoring activities.

If there is any other form of non-stormwater discharge from the project to surface waters, the Contractor shall immediately contact the Engineer to determine appropriate actions required for coverage under the De Minimus Permit.

**Failure of the Contractor to fully comply with this requirement may result in the suspension of construction operations and liability for any associated monitoring, fines, penalties and remediation activities related to the discharge.**

#### 29.11 Reports –

- (a) Annual Report - The Contractor shall be responsible for preparing an Annual Report to meet the requirements of Section XVI of the General Permit covering the preceding period of construction from July 1<sup>st</sup> to June 30<sup>th</sup>. The Annual Report shall be structured in accordance with the template included in Appendix "I". The Contractor shall submit two (2) copies of the Annual Report to the Engineer by July 15<sup>th</sup> of each year for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the Annual Report. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the Annual Report within three (3) working days of receipt of the Engineer's comments. The Contractor shall submit four (4) copies of the approved Annual Report to the Engineer prior to August 15<sup>th</sup> of each year. **The Contractor shall be responsible for providing an Annual Report to the Engineer for any construction occurring for part of the year after July 1<sup>st</sup> prior to receiving final payment on the project.**
- (b) Monthly Report – The Contractor shall prepare and submit to the Engineer a Monthly Report within five (5) working days of the end of the month including:
  - 1. All visual observation reports;
  - 2. All sampling and analysis reports;
  - 3. All NAL Exceedance Reports;
  - 4. Summary of changes to the SWPPP and or REAP based on inspection results for the preceding month.

29.12 Payment - The contract lump sum price paid for the Stormwater and Non-Stormwater Pollution Control work shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising and amending the PRDs, and installing, constructing, maintaining, removing and disposing of BMPs as shown in the SWPPP, as specified in the CASQA Handbooks and Sample Contractor's Water Quality CSMP, General Permit and these Detailed Specifications, and as directed by the Engineer.

The contract lump sum price paid for Non-Stormwater Discharge or Dewatering shall include full compensation for compliance of Section 29.10 "Non-Stormwater Discharge or Dewatering". **Contractor shall not be paid any portion of the contract lump sum if discharge of groundwater from dewatering activities to surface waters is avoided.**

Monthly payment will be made on a basis of the percentage of work completed on the entire project and subject to the submittal of a complete Monthly Report as specified in Section 29.11(b). Failure to complete or report required visual inspections, monitoring, sampling and analysis requirements, NAL Exceedance Reports, and/or other necessary follow-up actions to ensure that the project stays in compliance with the General Permit can be the basis for reducing monthly progress payments for the project. Monthly progress payments will be reduced by the amount of direct costs, overhead costs and engineering costs incurred by the Engineer to address compliance deficiencies, including costs to conduct inspections, monitoring, reporting and supplemental BMP implementation necessary to comply with the General Permit and costs incurred by the Engineer to address complaints, additional State inspections and violations and/or fines issued by the State or US EPA associated with failure to properly comply with the General Permit. Progress Payment reductions can exceed the monthly percentage or total contract lump sum price for Stormwater and Non-Stormwater Pollution Control work.

Payment will be made on a basis of the percentage of work completed on the entire project.

#### SECTION 30 AND SECTION 31 – NOT USED

#### SECTION 32 – PRIVATE UTILITY RELOCATION

32.1 Description – This section covers the contract items Removal and Replacement of Existing Utilities at New Landscape Filter Basin; and Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline. All utilities to be replaced must be replaced in kind or better. Potholing of a portion of the known existing utilities on the site has been performed, the results of which are included in the Parking Lot Renovation 2010 drawings. The Contractor is responsible for additional potholing as required to protect all existing utilities whether shown or not shown on the drawings and to perform the work.

32.2 Removal and Replacement of Existing Utilities at New Landscape Filter Basin – The Contractor shall remove and replace the existing concrete encased 2-inch waterline, 2-inch gas line and telephone line where they conflict with the landscape filter basin as shown on the LID

Testing and Demonstration Facility drawings. The Contractor shall obtain approval from the Engineer for the new location of these utilities prior to performing the work.

32.3 Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline – The Contractor shall remove and relocate the existing irrigation double check valve and remove and replace the associated existing 4-inch waterline as needed to accommodate the check valve relocation as shown on the Parking Lot Renovation 2010 drawings. The Contractor shall verify the alignment of the existing 4-inch waterline by potholing or whatever means necessary prior to performing the work and adjust the new location of the double check valve from that shown on the drawings in order to coincide with the 4-inch waterline alignment. The Contractor shall obtain approval from the District Engineer for the new location prior to performing the work.

32.4 Measurement and Payment – Payment for the Removal and Replacement of Existing Utilities at New Landscape Filter Basin shall be by the linear foot to be removed and will be paid upon completion of construction of the new lines. Payment for Removal and Relocation of Existing Irrigation Double Check Valve and Removal and Replacement of Existing 4-Inch Waterline shall be lump sum and will be paid upon completion of the relocation.

Payment of the contract items Removal and Replacement of Existing Utilities at New Landscape Filter Basin; Removal and Relocation of Existing Irrigation Double Check Valve; and Removal and Replacement of Existing 4-Inch Waterline shall constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to completion of this item of work.

### SECTION 33 – FILTRATION SOIL MIXTURE

33.1 Description - This section covers the contract item Filtration Soil Mixture which is to be used as backfill for the Landscape Filter Basin; Enhanced Grass Swale and Flow Through Planters.

33.2 General Requirements – The Filtration Soil Mixture shall be comprised of eighty-five percent (85%) mineral component and fifteen percent (15%) organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the gradation specified in Table 1 below. The organic component shall be nitrogen stabilized compost.

**Table 1: Mineral Component Range Requirements**

<b>Percent Range (by weight)</b>	<b>Component</b>
<b>70-80</b>	Sand (2.0 – 0.050mm)
<b>15-20</b>	Silt (0.050 – 0.002mm)
<b>5-10</b>	Clay (less than 0.002mm)



The Engineer shall be furnished a "Certificate of Compliance" signed by the manufacturer/supplier certifying that the Filtration Soil Mixture conforms to the specifications above.

33.3 Measurement - Measurement for payment for the contract item Filtration Soil Mixture will be the number of cubic yards of material placed as specified and shown on the drawings.

33.4 Payment - The contract price paid for Filtration Soil Mixture shall include full compensation for all costs incurred under this section.

#### SECTION 34 – CONCRETE MASONRY UNITS

34.1 Description - This section provides performance specifications for Concrete Masonry Units where specified and shown on the drawings.

34.2 Codes and Standards – Perform all work under this section with materials complying with ASTM, UBC and NCMA Specifications.

34.3 Submittals - Contractor shall submit copies of manufacturer's product information and installation instructions for each item and accessory.

Contractor shall submit samples of exposed masonry units, indicating special shapes, textures and colors.

Contractor shall submit samples and catalogue data for all expansion joint and control joint materials.

34.4 Job Conditions – Contractor shall not lay masonry when the ambient temperature is below 40 degrees Fahrenheit or when it is likely that the ambient temperature will fall below 40 degrees Fahrenheit during or within 24-hours after masonry laying operations. Masonry materials shall be stored so that at the time of use the materials are clean and structurally suitable for the intended use.

34.5 Quality Assurance –

- A. Subcontractor Qualifications: Only skilled, first class masons shall be employed for masonry work. The masonry subcontractor shall have a minimum of six (6) years experience in masonry work of the type indicated for this project.
- B. Coordination with other Trades: Contractor shall coordinate masonry work with other trades that interface with the masonry work or that require penetration through or attachment to masonry.

34.6 Concrete Masonry Unit – Concrete Masonry Units (CMUs) for wall sections shall be block split face one side, nominal dimensions 8"x8"x16", actual dimensions 7-5/8"x7-5/8"x15-5/8". Load bearing smooth face normal weight CMUs shall comply with ASTM C-90-96, UBC-

21-4 (Type I). Contractor shall provide required shapes such as corner, end units, radius bases, bond beams, lintels, etc., and units open one or both ends, as required. CMUs shall have a minimum net compressive strength of 1,900 psi.

Block color shall be gray with red and black aggregate. CMUs shall be split face block manufactured by Orco Block Company, Inc., or equal as approved by Engineer.

34.7 Caps for Walls – The cap for all CMU walls shall be flat, Stepstone, Inc., Classic or equal as approved by Engineer. The straight cap piece shall be bullnose two sides, length 24", thickness 2-1/2", width 10-1/4". Cap color shall be Stepstone, Inc., French Gray 504, stipple finish or equal approved by Engineer. The flat cap shall be included with the Flow Through Planters, Raised Planters and Entry Sign Walls.

34.8 Mortar and Grout Components –

- A. Cement: Cement shall be Portland cement conforming to ASTM C-150, Type I (UBC 19-1).
- B. Aggregates: Aggregates for mortar shall conform to ASTM C-144. Aggregates for grout shall conform to ASTM C-404.
- C. Lime: Hydrated lime shall conform to ASTM C-51 (UBC 21-13).
- D. Water: Clean and free from deleterious substances.
- E. Sand: Comply with the "Standard Specifications for Aggregate for Masonry Mortar", ASTM C-144, except provide natural sand graded from coarse to fine within the following passing limits:

No. 4 Sieve	100%
No. 8 Sieve	95% to 100%
No. 16 Sieve	70% to 100%
No. 30 Sieve	40% to 75%
No. 50 Sieve	10% to 35%
No. 100 Sieve	3% to 15%
- F. Pea Gravel: Graded with 100% passing the 3/8" sieve and not more than 5% passing the No. 8 Sieve.
- G. Contractor shall package materials to be delivered and stored in original packages until ready to use. Contractor shall store cement, lime and aggregates in a manner which prevents deterioration or contamination.
- H. Contractor shall not use material which is caked, lumpy, partially set or otherwise deteriorated.

34.9 Mortar and Grout Mixes –

- A. Mortar (ASTM C-270, UBC 21-15) - Type S Mortar: 1 part Portland cement; 1/4 to 1/2 part lime putty or hydrated lime; 2-1/4 to 3 times the sum of the volume of the cement and lime used of sand. (Average compressive strength at twenty-eight (28) days shall be 1,800 psi.)
- B. Grout (ASTM C-476, UBC 21-19) - 1 part Portland cement; 2-1/4 to 3 damp loose sand; 1 to 2 parts coarse aggregate.

Sufficient water shall be added to make a workable mix that will flow into joints of masonry without separation or segregation. When grout is to be placed in masonry units with typical rates of absorption the slump of the grout should be approximately 8 to 10 inches depending on temperature and humidity conditions.

34.10 Reinforcing Steel – Reinforcing bars shall comply with ASTM A-615, Grade 60.

34.11 General Workmanship – Contractor shall lay block in running bond with mortar for bed joints flattened; furrowing of bed joint mortar will not be permitted. Head joints solidly filled with mortar for a distance in from the face of the wall or unit not less than the thickness of the longitudinal face shell. Shove blocks into place to compact the head joint mortar and improve the bed joint. Vertical cells shall have vertical alignment sufficient to maintain clear, unobstructed and continuous vertical cells for grouting. Remove overhanging mortar and debris from cells before grouting.

Contractor shall accurately place reinforcing steel as shown on the drawings, positively secured and supported in such a manner that no movement occurs when the grout is poured. Reinforcing and tie wires shall be embedded in the grout. The thickness of the grout between masonry units and reinforcing steel shall be a minimum of one (1) bar diameter.

Contractor shall damp cure masonry work for a period of not less than seven (7) days after the work is completed. Contractor shall make provisions for curing on Saturdays, Sundays and Holidays.

Contractor shall replace any defective blocks and block cuts as indicated by the Engineer.

34.12 Joints – Exposed vertical and horizontal joints shall be solidly filled as the work progresses. After joints are thumb print firm, they shall be tooled to a tight, smooth concave surface with an approved tool. Joint width shall be 3/8", 1/2" for slump block.

Control of expansion joint shall be continuous through the mortar and masonry, at a maximum of 40' 0", unless shown otherwise.

34.13 Curing – Top of grout pour should be kept damp to prevent too rapid drying during hot or drying weather and drying winds.

34.14 Cleaning – Immediately after the wall has been fully grouted, the scum and stains which have percolated through the blocks and joints shall be hosed off with low pressure water through a jet nozzle.

Contractor shall keep area clean and neat. After completion of grouting, clean up and remove resultant debris from the site.

34.15 Measurement and Payment – No measurement or payment will be made per this section. Measurement and Payment for Concrete Masonry Units shall be per Section 16.

### SECTION 35 – PERVIOUS PAVERS

#### 35.1 Definitions -

- A. Base Course: Layer of open-graded aggregate beneath the bedding course layer comprised of #57 stone per ASTM D 448-08.
- B. Bedding Course: Layer of open-graded aggregate directly beneath the paver units comprised of #8 stone per ASTM D 448-08.
- C. Bundle: Several layers of paver clusters stacked vertically, packaged, and tagged for shipment, also commonly called a "cube".
- D. Chamfer: A 45 degree beveled edge around the top of a paver unit, usually 1/8" to 1/4" wide. The Chamfer helps prevent edge chipping, and delineates the individual paver unit.
- E. Flats: The portion of the vertical side faces of a paver other than the spacer bars.
- F. Laying Face: The working edge of the pavement where the laying of pavers is occurring.
- G. Method Statement: The paver installer's and manufacturer's plan for construction and quality control of the pavers.
- H. Spacer Bars: Small protrusions on each side of pavers which are used to keep them uniformly spaced while minimizing chipping and spalling.
- I. Subbase Course: Layer of open-graded aggregate beneath the base course layer comprised of #2 stone per ASTM D 448-08.
- J. Void Filler: ORCO Permeable Chips or approved equal. Open-graded aggregate used to fill the openings in the paver units.
- K. Wearing Course: The top surface of the paver surrounded by a chamfer.

35.2 General Requirements, Pervious Pavers - Contractor shall provide labor, materials, tools and equipment to furnish and install a permeable concrete paving stone system as indicated on the drawings and as specified herein. All drainpipes, observation wells, overflow pipes, geotextile (if applicable) and impermeable liner (if applicable) should be in place per the drawings prior to or during placement of the subbase and base, depending on their location.

Care must be taken not to damage drainpipes during compaction and paving. No mud or sediment can be left on the base or bedding aggregates. If they are contaminated, they must be removed and replaced with clean materials.

Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before application of the subbase materials.

Contractor shall keep the area where pavement is to be constructed free from sediment during entire job. Base and bedding materials contaminated with sediment shall be removed and replaced with clean materials.

Contractor shall not damage drainpipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Contractor shall report any damage immediately to the Engineer.

35.3 General Requirements, Pervious Paver Open-Graded Subbase and Base for Traffic Loading Areas Only – This section applies to any area where pervious pavers will be subjected to vehicular wheel loads. These areas are defined on the drawings as areas with compacted subgrade. Prior to subbase and base placement, Contractor shall verify that the subgrade has been shaped and compacted (where shown) in conformance to the lines, grades and cross-sections shown on the drawings, in order to provide for construction of the pavement structure. The Contractor shall moisten, spread and compact the #2 stone subbase in 4" to 6" lifts. For each lift, Contractor shall make at least two (2) passes in the vibratory mode then at least two (2) in the static mode with a minimum 10 ton vibratory roller until there is no visible movement of the #2 stone. Contractor shall not crush the aggregate with the roller. The surface tolerance of the compacted #2 stone shall be  $\pm 2 \frac{1}{2}$ " over a 10' straightedge. Contractor shall moisten, spread and compact #57 base in 4" to 6" lifts over the compacted #2 subbase with a minimum 10 ton vibratory roller until there is no visible movement of the #57 stone. Contractor shall not crush aggregate with the roller. The surface tolerance the compacted #57 base should not deviate more than  $\pm 1$ " over a 10' straightedge. In-place density of the base and subbase may be checked per ASTM D 4254 or as directed by the Engineer. Compacted density should be ninety-five percent (95%) of the laboratory index density established for the subbase and base stone.

35.4 General Requirements, Pervious Paver Open-Graded Subbase and Base for Non-Traffic Loading Areas Only – This section applies only to areas where pervious pavers will not be subjected to vehicular wheel loads. These areas are defined on the drawings as areas with uncompacted subgrade. The intent of the procedures in this section is to consolidate the subbase and base while minimizing compaction of the subgrade. The Contractor shall provide a

demonstration to the Engineer of the consolidation procedure prior to commencing this portion of the work.

Prior to subbase and base placement, Contractor shall verify that the subgrade has been shaped and compacted (where shown) in conformance to the lines, grades and cross-sections shown on the drawings, in order to provide for the construction of the pavement structure. The Contractor shall moisten, spread and consolidate the #2 stone subbase in up to 12" lifts with a lightweight vibration plate compaction machine. The surface tolerance of the compacted #2 stone shall be  $\pm 2\frac{1}{2}$ " over a 10' straightedge. The Contractor shall moisten, spread and consolidate the #57 stone base in up to 12" lifts over the consolidated #2 subbase with a lightweight vibration plate compaction machine. The surface tolerance of the consolidated #57 base should not deviate more than  $\pm 1$ " over a 10' straightedge.

35.5 General Requirements, Pervious Paver Open-Graded Bedding Course - The bedding course shall be spread loose in a uniform layer to give a depth after compaction of the paving units of 2". The bedding course (#8 stone) should be moist to facilitate movement into the base course (#57 stone). The Contractor shall screed the bedding course using either a mechanical screed beam apparatus or by the use of screed guides and boards. The surface tolerance of the screeded bedding course (#8 stone) should be  $\pm 1/2$  inch over 10 feet. The screed bedding aggregate shall not be subjected to any traffic by either mechanical equipment or pedestrian use prior to the installation of the paver units. The voids left after the removal of the screed rails shall be filled with loose aggregate as the paver bedding course proceeds.

35.6 General Requirements, Pervious Paver Void Filler - Pervious paver void filler shall be ORCO Permeable Chips or approved equal. Contractor shall spread dry chips evenly across pavement, sweep chips with a broom into joints, remove excess chips, and then vibrate surface with plate compactor. This process shall be repeated until joints are full. Permeable chips or approved equal may not be used as bedding material. Any pavers damaged or misaligned during this procedure must be replaced or realigned by the Contractor accordingly.

35.7 Submittals – The Contractor shall submit the following for approval by the Engineer prior to commencing work.

- A. The Method Statement.
- B. Material samples of pavers showing the range of variation within the selected color(s) for approval by the Engineer, void filler aggregate, bedding course aggregate, base and subbase course aggregate including a current sieve analysis of each showing conformance to the specifications.

35.8 Quality Control Plan – The Contractor and manufacturer shall establish, provide and maintain a quality control plan. The quality control plan shall provide reasonable assurance that the materials and completed construction submitted for acceptance will conform to the contract requirements. The Quality Control Plan shall contain at a minimum, but not be limited to, the following elements:

- A. The manufacturer's quality control procedures.

- B. The manufacturer's production records showing at a minimum the date of manufacture. Copies of such records shall be made available to the Engineer upon request.
- C. The Contractor's quality control procedures, including but not limited to, dimensional control methods, typical daily work schedule to ensure that all pavers placed on the bedding course on any given day are adjusted as required and vibrated, and installation of void filler completed at the end of that work day. (Exception: The installation of the void filler may not be installed for the first and second day due to start-up procedures.)

35.9 Sampling and Testing - Pavers shall be tested according to ASTM C140. Pavers shall be sound and free from defects that would interfere with the proper placing of the pavers or impair the strength or performance of the construction.

35.10 Method Statement - The Contractor shall prepare and provide to the Engineer prior to commencement of work a Method Statement describing the overall plan to complete the work. This plan shall include at a minimum:

- A. The quality control plan.
- B. Clear diagrams of the site showing the proposed starting points of the installation and the proposed directions of installation.
- C. A description of the personnel and equipment to be employed for each portion of the work including installation and quality control.
- D. Installer shall state the proposed daily installation rate.
- E. The installer's intention to machine-lay or hand-lay the pavers and provide qualifying experience to date for the appropriate method of proposed installation for the paver system.

35.11 Qualifications – The Contractor shall demonstrate that they have installed similar paver systems for projects of a similar nature, totaling at least 300,000 square feet. Qualifications shall be submitted at the time of bid, without exception.

Contractor's Qualifications:

Contractor shall provide installation history, including references in writing with contact information, demonstrating to the satisfaction of the District their ability to perform the paver installation and related work indicated in the drawings and specifications.

The Contractor shall have suitably experienced personnel and a management capability sufficient to execute the work shown on the drawings and specified herein.

The Contractor's foreman shall demonstrate, including references, a minimum of five (5) years experience in the installation of unit paver systems similar in size and nature to this project.

35.12 Delivery, Storage and Handling - Concrete paving units shall be delivered to the site, palletized in such a way that no damage occurs to the product during hauling and unloading. All pavers shall be delivered to the site in approximately the chronological order in which they were manufactured. They shall be staged on the site as per the method statement. Each bundle of pavers shall be marked with a weather-proof tag identifying at a minimum the manufacturer, type and size of paver.

35.13 Paver Units - All interlocking paving stones shall be rated for vehicular traffic loading and comply with the quality specifications for solid concrete interlocking paving units as required per ASTM C 936.

- A. Portland Cement: Conform to ASTM C 150.
- B. Aggregates: Conform to ASTM C 33 for normal weight concrete aggregate (no expanded shale or lightweight aggregate) except that grading requirements shall not necessarily apply.
- C. Water: Clean and free from any deleterious matter.
- D. Other Constituents: Air-entraining admixtures, integral water repellents and finely ground silica shall have a proven record of performance and shall conform to the relevant ASTM standards.
- E. Compressive Strength: At the time of delivery to the work site, the average compressive strength of the pavers shall not be less than 8,000 psi, with no individual unit less than 7,200 psi. Testing procedures shall be in accordance with ASTM C 140.
- F. Absorption: The average absorption shall not be greater than five percent (5%) with no individual unit result greater than seven percent (7%) per ASTM C 140.
- G. Dimensional Tolerances: Pavers shall be prismatic in plan and formed with straight, uniform edges. The tolerance for the flat portions of the sides shall not exceed 1/32" as measured with a steel straight edge. "Slumped" pavers exceeding this tolerance will be rejected. The length, width and thickness of the paving stones shall meet the allowable tolerances specified in ASTM C 936.
- H. Pigment: Conforming to ASTM C 979.
- I. Color: As specified on the drawings



J. Thickness: Minimum paver thickness shall be 3.125 inches

35.14 Visual Inspection - All units shall be sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction.

35.15 Aggregate Materials - All aggregate materials to conform to ASTM D 448-08. The bedding course and void filler aggregate shall be free of organics and soluble salts or other contaminants likely to cause efflorescence. This material shall be crusher run and washed. The base course aggregate shall be crusher run and washed. The subbase course aggregate shall be crusher run.

35.16 Paver Installation - All edge restraints shall be constructed as shown on the drawings and in place prior to the installation of the pavers, subbase, base and bedding courses. The Contractor shall lay pavers in the pattern as shown on the drawings. Lay pavers away from the existing laying face or edge restraint in such a manner as to ensure that the pattern remains square. Chalk lines shall be used upon the bedding course to maintain straight joint lines. Joint spacing between pavers shall be between 1/8" and 1/4", however, the joint width may be increased to 3/8" if necessary to maintain straight joint lines. Lines and grades shown on the drawings shall be established and maintained during the installation of the pavers.

Where cutting of the pavers is needed, pavers shall be cut using a masonry saw. Splitting shall not be permitted. All cut faces shall be vertical. Dry cutting of the pavers shall be performed utilizing a dust collection system.

Once the pavers have been placed upon the bedding course and all cut pavers have been inserted to provide a full and complete surface, the Contractor shall inspect the pavers for damaged units and remove and replace those units. Once all pattern lines have been straightened, the void filler shall then be placed into the paver openings to the top of the chamfer on the pavers and the surface swept broom clean.

The paver surface shall be compacted to achieve consolidation of the bedding course and paving stones and brought to design levels and profiles by two passes of a suitable plate compactor. Compaction of the pavers shall be accomplished by the use of a vibratory plate compactor capable of a minimum of 4,500 pounds of compaction force. No compaction shall be permitted within three feet of unrestrained edges of the pavement. After compaction, inspect the pavers for damaged units and remove and replace those units.

On completion of vibration after void filling, the surface tolerances shall be plus or minus 1/8" from finish levels. The pavers shall be flush to 1/8" above edge restraints. Additional void filler material shall be swept in the paver voids, as required, to within 1/4" from the bottom of the chamfer on the paving stones. Upon completion, the wearing course surface shall be swept clean of all excess materials. Remove from the site all surplus materials, equipment and debris resulting from these operations.

35.17 Measurement and Payment - No measurement or payment will be made per this section. Measurement and Payment for Pervious Pavers shall be per Section 19.

## SECTION 36 - PERVIOUS CONCRETE PAVEMENT

### 36.1 References -

- A. American Concrete Institute (ACI):
  - 1. ACI 522R-10 "Pervious Concrete"
  - 2. ACI522.1-08 "Specification for Pervious Concrete Pavement"
  - 3. ACI Field Technician Certification Program
- B. National Ready Mixed Concrete Association (NRMCA):  
NRMCA Pervious Concrete Contractor Certification
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM C 1688/1688M-08 "Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete"
  - 2. ASTM C 1116 "Standard Specification for Fiber-Reinforced Concrete"

36.2 General — Concrete materials and operations may be tested and inspected by Engineer as work progresses. Failure to detect defective work or material early will not prevent rejection if a defect is discovered later nor shall it obligate Engineer for final acceptance.

36.3 Contractor Qualification - Unless otherwise approved by Engineer, Contractor shall provide evidence of:

- A. Employment of one (1) NRMCA certified Pervious Concrete Craftsman who must be on site, overseeing each placement crew, during all concrete placement, or
- B. The Contractor shall provide evidence of employment of three (3) NRMCA certified Pervious Concrete Technicians, who have received hands-on training in the construction of pervious concrete pavements, and who must be on site, working as members of each placement crew, during all concrete placement, or
- C. With the approval of Engineer, Contractor may provide written evidence of project experience and proficiency in successfully completing pervious concrete pavement construction, and submit evidence of completion of a pervious concrete certification program, or

- D. The Contractor must obtain the services of a consultant who has the required NRMCA certification cited in A or B above and who will be on site throughout the concrete placement.

36.4 Concrete Producer Qualification – Unless otherwise approved by Engineer, ready mixed pervious concrete shall be produced and provided by an NRMCA Certified plant. If, rather than ready mixed pervious concrete, a volumetric mobile mixer is used to produce the pervious concrete, the mixer(s) must conform to the standards of the Volumetric Mixer Manufacturers Bureau (VMMB), to be verified by a current VMMB conformance plate affixed to the volumetric mixer equipment.

36.5 Special Equipment - Pervious concrete requires specific equipment for compaction and jointing. The concrete shall be jointed and compacted using the methods listed in this section, or alternatives, as demonstrated and approved by the Engineer.

Rolling compaction shall be achieved using a motorized or hydraulically actuated, rotating, weighted, tube screed that spans the width of the section placed and exerts a minimum vertical pressure of 10 psi on the concrete. Alternately, a steel pipe roller meeting the same criteria may be used. Plate compaction is not recommended, but may be necessary in small areas. When necessary, a standard soil plate compactor with a base area of at least two square feet that exerts a minimum of 10 psi vertical pressure on the pavement surface through a 3/4 inch minimum temporary plywood cover shall be used.

Cross rolling shall be performed using a roller specifically designed to smooth and compact pervious concrete. Lawn rollers are not allowed.

Contraction joints shall be constructed by rolling or forming. Sawed joints shall not be used. Rolled joints shall be formed using a "pizza cutter roller" to which a beveled fin with a minimum depth of 1/4 the thickness of the pavement has been attached around the circumference of the roller.

36.6 Submittals - Prior to commencement of the work the Contractor shall submit the following:

- A. Concrete Materials:
1. Proposed concrete mixture proportions including all material weights, volumes, density (unit weight), water-to-cement (cementitious) ratio, and void content.
  2. Aggregate type, source, and grading.
  3. Cement, supplementary cementitious materials, and chemical admixture manufacturer certifications.

- B. Aggregate base materials: washed aggregate type, source, grading, and void content (percent porosity).
- C. Project details including a jointing plan, construction details, schedule, construction procedures, and quality control plan.
- D. List of all subcontractors, materials suppliers, and testing laboratories to be used on the project.

36.7 Test Panel - Test panel shall be placed prior to construction of the pavement as shown on the drawings and must be approved by the Engineer. Test panel shall be constructed, cored, removed and disposed of at the Contractor's expense.

- A. Test panel shall be constructed in accordance with these specifications and shall be placed at a test location within the site as agreed to by the Engineer. Regardless of qualification, the Contractor is to place at minimum one test panel, a minimum of 225 square feet, 8-1/2 inches thick over 8 inches of #57 stone compacted per Section 36.10 of these detailed specifications. Test panel shall be configured such that at least one rolled or formed contraction joint will bisect panel. Test panel shall be consolidated, jointed and cured using materials, equipment, and personnel proposed for the project, to demonstrate to the Engineer's satisfaction that in-place densities can be achieved and a satisfactory pavement can be installed at the site location. In addition, the same ready-mix supplier must be used during the construction of the test panel and final paving to ensure proper delivery of a satisfactory pervious concrete mixture.
- B. Test panel shall have acceptable surface finish, joint details, thickness, porosity and curing procedures and shall comply with the testing and acceptance standards listed in this section. The test panel shall be cored by Contractor to obtain a minimum of six (6) testing samples to be provided to Engineer. Test panel will be tested for thickness in accordance with ASTM C 42; fresh density and void content in accordance with ASTM C 1688, and core density in accordance with ASTM C 140, paragraph 9.
- C. Satisfactory performance of the test panel shall be determined by:
  - 1. Test panel shall have acceptable surface finish, joint details and curing procedures.
  - 2. Concrete cores shall visually evidence both good adhesion of aggregate (there shall be minimal pop-out of aggregate) and interconnected pore structure.
  - 3. The average of three (3) cores shall show compacted thickness of no less than specified thickness minus 1/4 inch ( $T_{\text{compacted}} \geq T_{\text{specified}} - 1/4$  inch).

4. The average of three (3) core samples shall show void content fifteen percent (15%) minimum; twenty-five percent (25%) maximum.
5. The average of three (3) core samples shall show density  $\pm 5$  lb/cf of the design density in accordance with ASTM C 140.
6. Ability of panel to freely pass water in simulated rain event.

Failure of test panel to meet any of the criteria specified in this section shall result in Contractor removing and disposing of failed panel. Contractor shall then construct new panel for retesting. Contractor will not be allowed to construct pervious concrete within limits shown on drawings until test panel meets all acceptance criteria. No measurement or payment for the test panel will be made.

### 36.8 Project Conditions -

#### A. Weather Restrictions:

The Contractor shall not place pervious concrete pavement when the ambient temperature is predicted by the National Weather Service Point Forecast for the jobsite to rise above 90°F (32.2°C) during the seven days following placement, unless otherwise permitted in writing by the Engineer. If Contractor desires to place pervious concrete pavement when the seven (7) day forecast calls for any daily high temperatures to exceed 90°F maximum, Engineer's approval to proceed will be contingent on Contractor submitting viable plan (in advance of pre-paving conference) detailing what specific measures will be implemented to assure proper curing.

#### B. Pre-Paving Conference:

A pre-paving conference with the Engineer shall be held within one week prior to beginning placement of test panel. The pervious concrete supplier and the entire concrete crew that will form and place the concrete shall attend this meeting. Contractor shall provide documentation that crew has NRMCA certifications or experience as required in Section 36.3. Meeting emphasis will include how paving with pervious concrete differs from paving with conventional concrete. District will supply agenda at initial project preconstruction meeting. Meeting topics will include installation schedule for test panel and final paving, drawing review, base material compaction, concrete mix design, specifics of installation and curing methods proposed, testing and consequences of failed tests.

36.9 Isolation (Expansion) Joint Material – (See Section 36.14.E.4. for joint locations). Joint material shall be 1/4 inch flexible foam expansion joint with relative density of 1.7 or higher, meeting ASTM D 4819-88, or vinyl expansion joint in compliance with ASTM D 1751 or ASTM D 1752.

36.10 General Requirements, Pervious Concrete Open-Graded Base – Prior to base placement, the Contractor shall verify that the subgrade has been compacted, and the impermeable composite liner and PVC subdrain system has been placed, in conformance to the lines, grades and cross-sections shown on the drawings. Where the full thickness of the base material consists solely of #57 stone, the Contractor shall moisten, spread and compact the stone base in two equal lifts, with a third lift placed as needed and compacted to obtain the full required depth. Where the base material consists of a layer of #57 stone over a layer of Class 2 permeable base over a second layer of #57 stone, the Contractor shall moisten, spread and compact each layer as a single lift, topping off and compacting each layer as needed to obtain the full required layer depth. Compaction of the #57 stone and Class 2 permeable base shall be accomplished by at least 2 passes with a vibratory plate compactor applying approximately 4,500 pounds of compaction force. No compaction shall be permitted within six inches of the edge of the base material or over any PVC subdrain where the depth of base material cover over the top of the subdrain is less than 12". The surface tolerance of the compacted #57 stone shall be 1" over a 10' straightedge. In place density of the base may be checked per ASTM D 4254 or as directed by the Engineer. Compacted density should be ninety-five percent (95%) of the laboratory index density established for the base materials.

36.11 Curing Materials -

- A. Polyethylene sheeting - The primary method of curing pervious concrete shall be the placement of a ballasted waterproof covering consisting of a minimum of 6 mil thick polyethylene sheeting.
- B. Other moisture loss control - For prevention of moisture loss prior to the primary method of curing:
  - 1. Fogging equipment designed to raise the relative humidity of the ambient air over the slab and reduce evaporation from the concrete must be used. Equipment must include fog nozzles that atomize water using air pressure to create a fog blanket over the slab. Garden hose nozzles are not sufficient to create fog and may wash paste off the aggregate.
  - 2. Monomolecular film (Evaporation Retardant) applied per the manufacturer's instructions.
  - 3. A soybean oil based sealer/water repellent may reduce surface color markings from plastic sheeting, and can enhance strength and durability by preventing evaporation, but does not reduce porosity.

36.12 General Requirements, Pervious Concrete Pavement –

- A. Cement shall be Portland cement Type I or Type II conforming to ASTM C 150 or Portland cement Type IP or IS conforming to ASTM C 595.

- B. Supplementary Cementitious Materials: Fly ash conforming to ASTM C 618.
- C. Admixtures:
1. Air entraining admixtures meeting ASTM C 260.
  2. Chemical admixtures shall comply with ASTM C 494.
    - (a) Water reducing admixtures: Type A. Mid-range water reducing admixtures (MRWRA) or high range water reducing admixtures (HRWRA) Type F or G are permitted due to low water-to-cement (cementitious) ratios specified for pervious concrete.
    - (b) Hydration stabilizing admixtures meeting requirements of ASTM C 494 Type B Retarding or Type D Water Reducing/Retarding admixtures are required. This stabilizer suspends cement hydration by forming a protective barrier around the cementitious particles, delaying the initial set as the pervious concrete heats up in the truck. A standard retarder will not prevent premature hydration while the stabilizer will. The use of hot water during cold weather will require an increased dosage of Hydration Stabilizer.
- D. Aggregates:
1. Coarse Aggregate shall meet the grading and quality requirement of ASTM C 33 for Size 8 coarse aggregate (3/8" to No. 16). Data for proposed alternate material shall be submitted to Engineer for approval.
  2. Fine aggregate complying with ASTM C 33 shall provide  $6\% \pm 2\%$  of total aggregate weight.
  3. A combined coarse and fine aggregates gradation shall be provided and a minimum of ten percent (10%) of the material shall pass the #4 sieve.
  4. Well graded aggregates shall not be used.
  5. Natural rounded aggregate, where available, is recommended.
- E. Water shall be potable and comply with ASTM C 1602.
- F. The Contractor shall construct the fiber reinforced pervious concrete where specified on the drawings consistent with ASTM C1116 requirements for Type II Glass Fiber-Reinforced Concrete. Fiber reinforcement shall be alkali resistant (AR) chopped strand glass fibers per ASTM C1666. Contractor to submit to Engineer for approval recommended fiber length and percent fiber by volume of concrete prior to construction.

- G. Recommended Mixture Proportions - The Contractor shall furnish a proposed mixture design, with proportions of materials, or if mixture proportions are proprietary, a written submittal from the concrete supplier, prior to commencement of work. The data shall include densities determined in accordance with ASTM C 1688/C 1688M. The composition of the proposed concrete mixture shall be submitted to the Engineer for review and approval and shall comply with the following provisions unless an alternative composition is demonstrated to comply with the project requirements. Mixture performance will be affected by the properties of the particular materials used. Trial mixtures must be tested to establish proper proportions and determine expected behavior. Concrete producers may have mixture proportions for pervious concrete optimized for performance with local materials. Appendix 6 of ACI 211.3R and ACI 522R-10 provide a guide for pervious concrete mixture proportioning. General mixture recommendations are as follows:
1. Concrete mixture density: Range of 105 lb/cf to 130 lb/cf per ASTM C 1688/1688M.
  2. Concrete mixture void content: Range of 15% to 25%, per ASTM C 1688/1688M.
  3. Cementitious content: Range of 450 lbs/yd<sup>3</sup> to 700 lb/yd<sup>3</sup>.
  4. Supplementary cementitious content: Fly ash twenty percent (20%) maximum. Combined supplementary cementitious content twenty percent (20%) maximum.
  5. Water-to-cement (cementitious) ratio: Range from 0.27 to 0.34.
  6. Aggregate content: The bulk volume of aggregate per cubic yard shall be equal to 27 cubic feet (cf) when calculated from the density (unit weight) determined in accordance with ASTM C 29 Jigging Procedure.
  7. Admixtures: Admixtures shall be used in accordance with the manufacturers' instructions and recommendations.
  8. Mixture Water: The quantity of mixing water shall be established to produce a pervious concrete mixture of the desirable workability to facilitate placement, compaction, and finishing to the desired surface characteristics. Mixture water shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. (A cement paste with a dull-dry appearance has insufficient mixture water for hydration.) Insufficient mix water results in inconsistency in the mix and poor bond strength. High water content may result in the paste sealing



the void system primarily at the bottom and poor bond at the upper surface.

9. Air Entrainment: Not recommended for this climate.
10. Fiber Reinforcement: Will increase toughness, and may help prevent raveling, but may decrease workability.

36.13 Notification - The Engineer shall be notified at least 24 hours prior to all pervious concrete paving work.

36.14 Installation of Pervious Concrete Pavement –

- A. Pavement shall be a single-lift placement.
- B. Formwork materials are permitted to be of wood or steel and shall be the full depth of the pavement. Caution should be used to protect the impermeable membrane from puncture or tear when placing forms. Form pins shall not be placed into the pavement base material in order to avoid penetrating the impermeable membrane. Forms shall be of sufficient strength and stability to support mechanical equipment without deformation following spreading, strike-off and compaction operations. Forms may have a removable spacer of 1/2 inch to 3/4 inch thickness placed above the depth of pavement. The spacers shall be removed following placement and vibratory strike-off to allow roller compaction. (Removable spacers may not be necessary if other means of strike-off and consolidation are used, such as a motorized or hydraulically actuated weighted pipe roller screed.)
- C. Mixing and Transportation:
  1. Production: Pervious concrete shall be manufactured and delivered in accordance with ASTM C 94.
  2. Mixing: Pervious concrete shall be batched in central mixers or in transit (truck) mixers. When concrete is delivered in agitating or non-agitating units, the concrete shall be mixed in the central mixer for a minimum of 1 minute or until a homogenous mixture is achieved. Concrete mixed in transit mixers shall be mixed at the mixing speed designated by the manufacturer for 70 - 100 revolutions.
  3. Transportation: Pervious concrete may be transported or mixed on site and discharge of individual loads shall be completed within one (1) hour of the introduction of mixture water to the cement. Discharge times may be extended beyond one hour when an increased dosage of hydration stabilizer is used to maintain a wet metallic sheen.

4. Discharge: Each truckload shall be visually inspected for moisture consistency. Water addition shall be permitted at the point of discharge to obtain the required mixture consistency, and as needed to maintain a wet metallic sheen. A minimum of 30 revolutions at the manufacturer's designated mixing speed shall be required following the addition of any water to the mixture, prior to further discharge. If water is added more than three times to a load, the dosage rate of hydration stabilizing admixture should be increased in subsequent loads. Discharge shall be a continuous operation and shall be completed as quickly as possible. Concrete shall be deposited as close to its final position as practical and such that discharged concrete is incorporated into previously placed plastic concrete. If consolidation occurs during concrete discharge, placement shall be halted, the mixture shall be addressed, and the consolidated portion removed and replaced immediately.

D. Placing and Finishing:

1. The base shall be in a damp condition at time of concrete placement. Failure to provide a moist base will result in absorption of water from the pervious concrete into the base, consequently reducing the concrete strength and overall quality of the pavement.
2. Concrete may be deposited into the forms by mixer truck chute, conveyor or buggy.
3. Placing, finishing, and tooled jointing must be completed within 20 minutes from the time the pervious concrete is discharged from the truck.
4. Unless otherwise permitted, the Contractor shall utilize a mechanical vibratory screed to strike off the concrete 1/2 inch to 3/4 inch above final elevation, utilizing form spacers as described in this section. An alternative method of strike off and compaction is to use a motorized or hydraulically actuated weighted pipe roller screed, as described under the Special Equipment heading in this section. If approved by the Engineer in writing, the Contractor may place the pervious concrete with either slip form or vibratory form riding equipment followed by a compacting unit that will provide a minimum of 10 psi vertical force to the concrete.
5. Care must be taken to prevent closing the void structure of pervious concrete. Finishing operations not described in this section are not allowed. Internal vibration shall not be permitted. (If surface vibration is applied, it shall be shut off immediately when forward progress is halted for any reason.)
6. Placed concrete shall not be disturbed while in the plastic state including edging. Low spots after the screeding operation shall be over-filled for

surface repair and tamped to the desired elevation with hand tampers or re-screeded with the motorized or hydraulically actuated weighted pipe roller screed.

7. Following strike-off, remove spacers and compact the concrete to the form level utilizing a steel roller, a plate compactor on plywood or other method approved by the Engineer.
8. Freshly compacted concrete shall be protected from evaporation using one or more methods described in this section.
9. Cross rolling should be performed using the minimum number of passes required to achieve an acceptable surface. Over working the concrete surface will close voids and limit porosity.
10. Care shall be taken during compaction that sufficient compaction force is achieved without excessively working the concrete surface that might result in sealing surface porosity.
11. The pervious concrete pavement shall be compacted to the required cross-section and shall not deviate more than  $\pm 0.5$  inches in 10 feet from profile grade.

E. Jointing:

1. Contraction joints shall be installed at regular intervals not to exceed 20 feet. Slab length shall not exceed 1.5 times slab width. Transverse contraction joints shall be installed at 1/4 the depth of the thickness of the pavement. These joints are to be installed as quickly as possible in the plastic concrete.
2. Jointing plastic concrete: Joints installed in the plastic concrete may be constructed utilizing a small roller as described under the Special Equipment heading in this section. When this option is used it shall be performed immediately after roller compaction and prior to curing. Sawed joints shall not be used.
3. Transverse construction joints: Transverse construction joints shall be installed whenever placement is suspended for 30 minutes or whenever concrete is no longer workable.
4. Isolation joints: The Contractor shall isolate slabs from other structures, such as walls, curbs, footings, columns, valve and cleanout casings, slabs, light poles, and other points of restraint. Isolation joints shall permit independent vertical and horizontal movement between adjoining structures.

5. Edging shall be performed along isolation joints and construction joints in order to reduce potential for raveling under traffic.

F. Curing:

1. Curing procedures shall begin immediately but no later than 20 minutes from the time the pervious concrete is discharged from the truck. Placing, finishing, and tooled jointing must be completed within the 20 minute window after discharge. The pavement surface shall be covered with a minimum of 6 mil thick polyethylene sheet or other approved covering material. The cover shall overlap and be sealed at all edges and shall be secured (without using dirt or stone) to prevent uncovering due to winds or adjacent traffic conditions. For additional guidance on hot weather concreting, see ACI 305; for cold weather concreting see ACI 306.
2. Due to the low water-to-cement (cementitious) ratio and large areas of exposed surface, pervious concrete is especially susceptible to drying out. The surface shall be kept moist and evaporation prevented using some or all of the following methods:
  - (a) Fogging must start when the pervious concrete is deposited and must be continued until the plastic curing cover is placed.
  - (b) Application of spray applied curing compound, evaporation retarder, monomolecular film, or covering with .5 mil plastic sheet immediately after screeding. Note that .5 mil plastic sheet used to prevent evaporation is not a substitute for the 6 mil polyethylene sheet used for curing.
  - (c) Application of water under the plastic covering. If this method is implemented by loosening the edge of the plastic in order to spray water under the plastic cover, care must be taken to properly re-secure the plastic cover to prevent evaporation.
3. Immediately after each transverse jointing, the 6 mil polyethylene sheet curing shall be applied.
4. The curing cover shall remain securely in place, uninterrupted, until the concrete has reached a maturity equivalent to fourteen (14) days of curing at 70°F at ninety-five percent (95%) relative humidity. Maturity shall be determined by an independent testing laboratory. No vehicular traffic shall be permitted on the pavement until curing is complete without written permission from the Engineer.

5. If the polyethylene sheeting has been removed from the finished surface prior to completion of curing, the Contractor is responsible to re-cover the material immediately.

36.15 Measurement and Payment - No measurement or payment will be made per this section. Measurement and Payment for Pervious Concrete Pavement shall be per Section 19.

### SECTION 37 – POROUS ASPHALT PAVEMENT

37.1 General Requirements, Porous Asphalt Pavement - Porous asphalt pavement shall be constructed per State Standard Specifications Section 39 as specified for "open graded asphalt". The grade of asphalt binder shall be PG 76-22 or as submitted by Contractor and approved by the Engineer. The aggregate shall be 3/8" maximum per State Standard Specifications Section 39 as specified for "open graded asphalt". Liquid asphalt shall have a liquid anti-stripping agent additive at a concentration of 0.3% (Chevron Pave Bond Special), or equal, or as submitted by the Contractor and approved by the Engineer.

37.2 Contractor Quality Assurance - The Contractor shall provide staff that has performed two successful pervious asphalt pavement projects, each greater than 1,000 sf.

37.3 Submittals - Prior to commencement of the work the Contractor shall provide submittals per Section 39-3.03 of the State Standard Specifications. The Contractor shall provide the additional following submittals:

- A. Project details including a jointing plan, construction details, schedule, construction procedures, and quality control plan.
- B. List of all subcontractors, materials suppliers, and testing laboratories to be used on the project.

37.4 Test Panel - Test panel shall be placed a minimum of twenty-one (21) days prior to construction of the pavement as shown on the drawings and must be approved by the Engineer. Test panel shall be constructed, tested, removed and disposed of at the Contractor's expense.

- A. Test panel shall be constructed in accordance with these specifications and shall be placed at a test location within the site as agreed to by the Engineer. Regardless of qualification, the Contractor is to place at minimum one test panel, a minimum of 225 square feet, at the required project thickness. Test panel shall be consolidated, jointed and cured using materials, equipment, and personnel proposed for the project, to demonstrate to the Engineer's satisfaction that a satisfactory pavement can be installed at the site location. In addition, the same open graded asphalt supplier must be used during the construction of the test panel to ensure proper delivery of a satisfactory mixture.
- B. Test panel shall have acceptable surface finish, joint details, thickness, porosity and curing procedures.

- C. Satisfactory performance of the test panel shall be determined by:
1. Compacted thickness of no less than specified thickness minus 1/4 inch ( $T_{\text{compacted}} \geq T_{\text{specified}} - 1/4 \text{ inch}$ ).
  2. Ability of panel to freely pass water in simulated rain event.

37.5 General Requirements, Porous Asphalt Pavement Open-Graded Base – Prior to base placement, the Contractor shall verify that the subgrade has been compacted, and the impermeable composite liner and PVC subdrain system have been placed, in conformance to the lines, grades and cross-sections shown on the drawings. Where the full thickness of the base material consists solely of #57 stone, the Contractor shall moisten, spread and compact the stone base in two equal lifts, with a third lift placed as needed and compacted to obtain the full required depth. Where the base material consists of a layer of #57 stone over a layer of class II permeable base over a second layer of #57 stone, the Contractor shall moisten, spread and compact each layer as a single lift, topping off and compacting each layer as needed to obtain the full required layer depth. Compaction of the #57 stone and class II permeable base shall be accomplished by at least 2 passes with a vibratory plate compactor applying approximately 4,500 pounds of compaction force. No compaction shall be permitted within six inches of the edge of the base material or over any PVC subdrain where the depth of base material cover over the top of the subdrain is less than 12". The surface tolerance of the compacted #57 stone shall be 1" over a 10' straightedge. In place density of the base may be checked per ASTM D 4254 or as directed by the Engineer. Compacted density should be ninety-five percent (95%) of the laboratory index density established for the base materials.

37.6 Measurement and Payment - No measurement or payment will be made per this section. Measurement and Payment for Porous Asphalt Pavement shall be per Section 19.

## SECTION 38 – IRRIGATION SYSTEM

38.1 Description – This section covers the contract item Irrigation System as required for the construction of the project and as shown on the Water Efficient Landscape Conversion drawings.

38.2 Irrigation System – The contract item Irrigation System includes all materials, labor, equipment, installation, and fees required to complete the work required as shown on the irrigation drawings and the following work:

1. Contractor shall furnish and place the various items of the Irrigation System as shown on the drawings and as specified herein. This work shall include installation of the main and lateral piping with associated valves, components and fittings, sprinkler heads, pop-up heads, backflow preventers, master valves, remote control valves, ball valves, quick couplers, electrical wiring, fabrications, excavations, backfill, compaction, flushing, disinfecting, testing and connection to existing facilities and any other work associated with the Irrigation System installation. The Irrigation System is designed to operate with a maximum 3.64

gallons per minute (GPM) with thirty (30) pounds per square inch at the last spray head in each zone.

2. The irrigation plan is diagrammatic; the Contractor shall make the necessary adjustments in the field to provide proper spacing and guarantee one hundred percent (100%) coverage. Contractor shall be responsible for the layout and adjustments of all water irrigation sprinklers to eliminate overspray onto non-landscaped areas including, but not limited to, buildings, sidewalks, parking lots, travel ways (paved and unpaved), and trail systems.
3. Contractor shall schedule four (4) check inspections; the first to check layout for trenching; the second for pressure testing all pressure lines prior to trench backfilling; the third for lateral placement; and the fourth for performance coverage. Contractor to contact Engineer 48 hours in advance of required inspections.
4. Unless noted otherwise, all equipment and appurtenances shall be installed as per these drawings, specifications, manufacturer's instructions, and as required by local codes, and ordinances.
5. Connection to the water source shall be at a gate valve provided by the District at the approximate location indicated on the drawings. The Contractor shall be responsible for making the connection after the gate valve.

38.3 System Design – Pressure shall be verified by Contractor at the point of connection to main system and at the last head in the circuit.

Design location is approximate. Contractor shall make minor adjustments, as necessary, to avoid plantings and other obstructions with Engineer's approval. All adjustments shall be done at Contractor's expense. Water coverage for all planting areas shall be one hundred percent (100%). Layout may be modified by Contractor, if necessary, to obtain one hundred percent (100%) coverage to suit manufacturer's standard heads. Contractor shall notify the Engineer before making any changes.

38.4 Trenching and Backfilling - Trench excavation shall be straight and true with bottom uniformly sloped to low points. Provide the following minimum cover over top of installed piping:

- Main Lines, 18" minimum
- Lateral Lines, 12" minimum
- Piping under pavement, 24" minimum
- Sleeves, 18" minimum

Any backfill shall be made with clean material from the excavation, as approved by the Engineer. Contractor shall remove any organic material as well as rocks and debris larger than

1" diameter. Contractor shall place approved backfill material in 6" lifts, compacting each lift and flushing it with water to settle trench, except under pavement.

Where trenching is required across existing lawns, Contractor shall uniformly cut strips of sod 6" wider than the trench width. Contractor shall remove sod in rolls of suitable size for handling and keep them moistened until replanted.

Contractor shall backfill trench to within 6" of finished grade. Contractor shall continue fill with approved topsoil and shall compact it to bring sod even with existing lawn.

Contractor shall replant sod within seven (7) days after removal, roll and water generously.

Any sod areas not in healthy condition equal to adjoining lawns thirty (30) days after replanting shall be reseeded and restored to original condition by Contractor.

38.5 Installation – Unless otherwise indicated, Contractor shall comply with the requirements of the Uniform Plumbing Code.

Connection to existing gate valve is to be made at existing backflow preventer.

Contractor shall maintain uninterrupted water service to building during normal working hours. Contractor shall arrange for temporary water shutoff in consultation with the Engineer.

Existing backflow preventer on site and point of connection is to be made directly downstream (see drawings).

Contractor shall install in valve box, arranged for easy adjustment and removal.

Contractor shall adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

Contractor shall provide one remote control valve per box. No Exceptions.

Contractor shall lay pipe on solid subbase, uniformly sloped without humps or depressions and install PVC pipe in dry weather when temperature is above 40°F, in strict accordance with manufacturer's instructions. Contractor shall allow joints to cure at least 24 hours at a temperature above 40°F, before testing, unless otherwise recommended by manufacturer.

Contractor shall flush circuit lines with full head of water and install heads after hydrostatic test is completed.

Contractor shall:

- a. Install shrub heads at heights indicated;



- b. Locate part circle heads to maintain a minimum distance as shown on drawings to maintain a minimum distance from walls and other boundaries, unless otherwise indicated; and
- c. Check all sprinkler heads at corners of planters near pedestrian walkways and readjust location so that heads do not obstruct pedestrians cutting corners.

Contractor shall install controller and control wires per details on drawings. Control wiring shall be of the size, type and specification as recommended by the manufacturer of the controller and control valve and meet local requirements.

Contractor shall:

- a. Lay control wire from each remote control valve to the controller. Lay wiring from the remote control valve to the controllers beneath the mains where practicable and install control wiring in conduit when passing beneath paving. Tape wire together at 10 foot intervals. Provide an 18 inch expansion wire loop at each valve;
- b. Encase above ground control wiring in electrical conduit as required by local code (if necessary);
- c. Coat bare wire with an epoxy cement; wrap a minimum of two coats of vinyl electrical tape; apply a second coat of epoxy cement over all. Splices shall be protected in 10" round plastic box with locking lid; and
- d. Connect the remote valves to the controller in a clockwise sequence to correspond with the station beginning with Station 1, Station 2, Station 3, etc. Provide schedule in a watertight container showing valve connection to the controller.

Trenches for pipe lines shall be as specified on the drawings. Minor adjustments may be made to fit field conditions. All lateral irrigation pipe shall be installed at a minimum depth of 12" below grade. All pressure lines shall be installed a minimum depth of 18" below grade.

All pipes shall be placed as shown on drawings by dimensions or accurate scaling except where existing conditions require slight changes to better suit field conditions.

Contractor shall be responsible for pre-installing piping through or under structures where pipe is to extend from one planter to another. When pipe is to be installed after such walls and paving have been constructed, Contractor shall obtain approval from Engineer on the methods to be used in installing the pipe. Any damage to existing improvements as a result of Contractor's work shall be repaired or replaced free of cost to District.

Connections to existing facilities shall be scheduled and coordinated to result in a minimum interruption in functioning of existing facilities. The Engineer shall be notified a minimum of 48 hours in advance of such connections, and they shall be made at a time approved by the Engineer.

PVC pipe shall be installed as recommended by the pipe manufacturer. Plastic pipe shall be cut in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation. Use only the solvent supplied by or as recommended by the manufacturer. Clean pipe and fittings thoroughly of dirt, dust and moisture before applying solvent. Remove excess solvent from joint after joining.

When making plastic to steel connections, work steel connections first. Use Teflon tape on threaded plastic to steel joints.

Adjust all irrigation heads, valves, controller, and other appurtenances to ensure proper operation and coverage.

After installation and prior to backfilling, the sprinkler system including piping, fittings, sprinklers, valves and all appurtenances shall be flushed and tested in the presence of the Engineer.

The premises shall be clear of debris resulting from work at the end of each day. Upon completion of the installation, the project area shall be left in a broom clean manner.

38.6 Testing – Contractor shall notify Engineer at least 48 hours before testing will be conducted. Conduct tests in presence of Engineer.

Contractor shall test all mainline piping, before backfilling trenches, to a hydrostatic pressure of not less than 125 psi for four (4) hours. Piping may be tested in sections to expedite work. Remove and repair piping and connections which do not pass hydrostatic testing.

Contractor shall perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.

Pressure test and coverage test shall be completed and approved prior to soil preparation and planting tasks.

Contractor shall demonstrate to Engineer that the system meets coverage requirements and that all automatic controls function properly. Coverage requirements are based on operation of one circuit at a time.

38.7 Turnover Items and Products – At the completion of construction, prior to maintenance period beginning, Contractor shall supply the following items to the District:

- 1 remote control valve of each size and style
- 10 irrigation heads of each style with nozzle
- 3 quick coupler keys and swivels
- 2 keys for each controller

38.8 Miscellaneous - Contractor shall install in each controller a reduced drawing of the sprinkler plan showing each area operated by a remote control valve. Chart shall be laminated in 4 mil plastic and securely attached to irrigation controller inside lockable lid.

38.9 Measurement and Payment - For the lump sum contract item Irrigation System under this section the Contractor shall submit its Schedule of Values to the Engineer within ten (10) calendar days of issuance of the Notice to Proceed with a breakdown for each trade. Payment for the contract lump sum price for Irrigation System shall be based on the percentage of work completed according to the Schedule of Values and shall include full compensation for all material, labor, and incidental costs incurred under this section.

### SECTION 39 – SOIL TESTING AND SOIL PREPARATION

39.1 Description – This section covers the contract item Soil Testing and Soil Preparation as required for the construction of the project.

39.2 Soil Testing and Soil Preparation - The contract item Soil Testing and Soil Preparation includes all materials, labor, equipment, and fees required to complete the work described in this section.

39.3 Soil Analysis Report - Contractor shall provide a Soils Analysis Report for the project site addressing both onsite and any imported soils. The scope of supporting testing and analysis in the report shall include at minimum but not necessarily be limited to the items listed below:

1. Soil Fertility: Half-saturation percent, pH, salinity, nitrate, ammonium, phosphate, potassium, calcium, magnesium.
2. Agricultural Suitability: pH, salinity, boron, Sodium Absorption Ratio (SAR) using saturation paste extract.
3. Particle Size/Appraisal: pH, salinity, organic percent, USDA Particle size.
4. Germination (bio-assay) test.
5. Tendency toward compaction.

The Soil Analysis Report shall make specific quantitative recommendations for any soil amendments or physical processing required to ensure successful establishment of the proposed plantings.

The Soil Analysis Report shall include a statement that the laboratory has reviewed the planting drawings and the planting specifications, and that the supporting soil testing and recommendations therein respond to the specific needs of the project.

39.4 Soil Preparation - Contractor shall perform all site and soil preparation as shown on drawings and as specified herein:

1. Contractor shall provide soil amendments, chemicals, and fertilizers for both imported and approved onsite soils. These are minimum requirements. Provide such additional amendments and chemicals as are required by the Soil Analysis Report.
2. Contractor shall spread soil amendment and fertilizer evenly over all areas designated as "GROUNDCOVERS" by various hatching on Sheets 8 and 9 of the Water Efficient Landscape Conversion drawings at the following rates:
  - a. Soil Amendment: 4 cubic yards per 1,000 square feet
  - b. Fertilizer: 20 lbs. per 1,000 square feet of 6-20-20, (N-P-K)
3. After approval of amendment and fertilizer applications by the Engineer, Contractor shall apply soil amendments and fertilizers into the top 6 inches of soil by repeated rotary-hoe cultivation.
4. At completion of soil amendment and fertilizer installation, Contractor shall water the soil in all landscaped areas for a period of fourteen (14) days, maintaining sufficient soil moisture at all times to induce weed seed germination, but not to saturate the soil. Soil shall be moist to a minimum depth of 24 inches. In locations where irrigation is by drip or bubblers, the Contractor may, at its option and expense, install a temporary irrigation system to keep the soil moist.

39.5 Herbicide Application – Contractor shall at the end of the watering period, spray the area with an Engineer-approved herbicide. Apply herbicide according to the manufacturer's written application instructions. Alternate weeding methods may be used upon approval of the Engineer. Apply pre-emergent herbicide to all landscaped areas, including plant basins. Apply prior to any mulching. Pre-emergent herbicide shall be applied only when wind speed does not exceed five (5) miles per hour.

39.6 Finish Grading – When weeding and soil conditioning have been completed and soil has been thoroughly water settled all landscaped areas shall be finish graded for placement of plant materials. Grading shall be performed when the soil is at optimum moisture content for working.

Finished grades shall be in accordance with the Parking Lot Renovation drawings. All landscaped areas shall slope uniformly for positive drainage.

Grades not otherwise indicated shall be uniform levels or slopes between points where elevations are given, or between points established by walks, paving, curbs or catch basins. Finish grades shall be smooth, even, and on a uniform plane with no abrupt change of surface and no erosion scars.

Grading shall provide for natural runoff of water without low spots or pockets. Flow line grades shall be accurately set and shall be not less than two percent (2%) gradient unless otherwise indicated or approved by the Engineer.

Finish grade of earth in landscaped areas shall be one inch below the top of adjacent pavement, curbs or headers, with a gradual tapering away from these structures to a uniform depth of 3-1/2 inches below the top of adjacent pavement, curbs or headers, unless indicated otherwise on the drawings. Finish grade of earth shall be 3-1/2 inches below the top of pull and utility boxes or utility structures. Pull and utility boxes shall be adjusted by raising or lowering to conform to grading requirements in landscaped areas.

Tops and toes of all slopes shall be rounded to produce a gradual and natural appearing transition between relatively level areas and slopes.

Protect all areas against compaction by construction equipment.

39.7 Measurement – Measurement for payment for the contract item Soil Testing and Soil Preparation will be the number of square feet of treated soil in areas designated as "GROUNDCOVERS" by various hatching on Sheets 8 and 9 of the Water Efficient Landscape Conversion drawings and required by the Engineer. No separate measurement or payment will be made for the Soil Analysis Report or its supporting testing.

39.8 Payment - The contract price paid for Soil Testing and Soil Preparation shall include full compensation for all material, labor, and incidental costs incurred under this section.

Any change in type or amount of amendment from the amounts specified in this section, required per Soil Analysis Report, shall be considered "Extra Work" and shall be paid pursuant to Section 2.07 of the General Provisions.

#### SECTION 40 – PLANTING

40.1 Description – This section covers the contract items Mow Curbing; Wood Chips; Decomposed Granite; Crushed Rock; Drivable Grass; Synthetic Turf; Sod; Flats; 1-Gallon; 2-Gallon; 5-Gallon; 15-Gallon; 15-Gallon Citrus; 24" Box; 36" Box; 48" Box; and 6' Brown Trunk Palm as required for the construction of the project, as specified herein and as shown on the Water Efficient Landscape Conversion drawings.

40.2 Mow Curbing – The contract item Mow Curbing includes the complete construction of the concrete mow curbing at the location shown on the drawings and as specified in the details. Concrete shall be a minimum compressive strength of 2,500 psi. Included in the pay item is all earthwork, forming, and reinforcing steel required.

40.3 Wood Chips – The contract item Wood Chips includes the complete placement of "Walk On" wood chips as produced by Earth Works, Riverside, 951.782.0260, or approved equal. Wood Chips shall be placed in all shrub and groundcover areas at a minimum thickness of 3". Included in the pay item is all material, delivery, and installation of the wood chips at the locations shown on the drawings, and as required by the Engineer.

40.4 Decomposed Granite – The contract item Decomposed Granite includes the complete construction of the decomposed granite pathway at the location shown on the drawings and as specified in the details. Decomposed granite shall be California Gold Decomposed Granite (Stabilized) as supplied by Tri State Building Materials, or approved equal. Included in the pay item is all earthwork, mow curbing, and weed cloth required.

40.5 Crushed Rock – The contract item Crushed Rock includes the complete construction of the crushed rock pathway at the location shown on the drawings and as specified in the details. Crushed rock shall be 3/4" "Bark Brown" rock as supplied by Tri State Building Materials, or approved equal. Included in the pay item is all earthwork, mow curbing, and weed cloth required.

40.6 Drivable Grass – The contract item Drivable Grass includes the complete construction of the drivable grass pathway at the location shown on the drawings and as specified in the details. Drivable grass mats product shall be as manufactured by Soil Retention Systems, or approved equal. Included in the pay item are is earthwork, infill, non-woven filter fabric, bedding course, and 3" thick compacted Class 2 Aggregate Base required material.

40.7 Synthetic Turf – The contract item Synthetic Turf includes the complete construction of the synthetic turf adjacent to roadways and in the courtyard at the location shown on the drawings and as specified in the details. Install per drawings. Contractor shall install "Zoysia" synthetic turf as produced by West Coast Grass Distributers, 800.440.9243, or approved equal. Install per manufacturer's specifications. Synthetic turf paver mats (Turfstone) shall be as manufactured by ORCO, or approved equal. Included in the pay item are all earthworks, Class 2 Aggregate Base material, and crushed rock required.

40.8 Sod – The contract item Sod includes the complete installation of certified, machine cut, nursery grown sod at the location shown on the drawings, as specified herein, and as required by the Engineer. Sod specie shall be *Cynodon dactylon* (Hybrid Bermuda) and shall be genetically pure, free of weeds, pests, and disease, and capable of healthy vigorous growth. Prior to the commencement of the sodding operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. The prepared surface shall be a maximum 1 inch below the adjoining grade. New surfaces shall be blended to existing areas. Contractor shall place sod a maximum of 36 hours after initial harvesting. Included in the pay item is the supply, delivery, storage, handling, and installation of the required Bermuda grass.

40.9 Flats – The contract item Flats includes the complete installation of certified, nursery grown flats at the location shown on the drawings, as specified herein, and as required by the Engineer. Flats species shall be as indicated on the drawings and shall be sound, healthy, vigorous and free of insect pests, plant diseases, sun scalds or other objectionable disfigurements. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Flats of plants shall be grown and remain in the flats until transplanted at the

site. The soil and spacing of the plants in the flats shall ensure the minimum disturbance of the root system at the time of transplanting. Included in the pay item is the supply, delivery, handling, and installation of the required flats.

40.10 1-Gallon – The contract item 1-Gallon includes the complete installation of certified, nursery grown one (1) gallon shrubs and groundcover plants at the location shown on the drawings, as specified herein, and as required by the Engineer. One (1) gallon shrubs and groundcover plant species shall be as indicated on the drawings and shall be sound, healthy, vigorous and free of insect pests, plant diseases, sun scalds or other objectionable disfigurements. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Groundcover plants shall be grown and remain in the one (1) gallon until transplanted at the site. The soil and spacing of the plants in the one (1) gallon shall ensure the minimum disturbance of the root system at the time of transplanting. Included in the pay item is the supply, delivery, handling, and installation of the required one (1) gallon shrubs and groundcover plants.

40.11 2-Gallon - The contract item 2-Gallon includes the complete installation of certified, nursery grown two (2) gallon shrubs and groundcover plants at the location shown on the drawings, as specified herein, and as required by the Engineer. Two (2) gallon shrubs and groundcover plant species shall be as indicated on the drawings and shall be sound, healthy, vigorous and free of insect pests, plant diseases, sun scalds or other objectionable disfigurements. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Groundcover plants shall be grown and remain in the two (2) gallon until transplanted at the site. The soil and spacing of the plants in the two (2) gallon shall ensure the minimum disturbance of the root system at the time of transplanting. Included in the pay item is the supply, delivery, handling, and installation of the required two (2) gallon shrubs and groundcover plants.

40.12 5-Gallon - The contract item 5-Gallon includes the complete installation of certified, nursery grown five (5) gallon shrubs at the location shown on the drawings, as specified herein, and as required by the Engineer. Five (5) gallon shrub species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds or other objectionable disfigurements. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required five (5) gallon shrubs.

40.13 15-Gallon - The contract item 15-Gallon includes the complete installation of certified, nursery grown fifteen (15) gallon trees at the location shown on the drawings, as specified herein, and as required by the Engineer. Fifteen (15) gallon tree species shall be of the specified

type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required fifteen (15) gallon trees.

40.14 15-Gallon Citrus - The contract item 15-Gallon Citrus includes the complete installation of certified, nursery grown fifteen (15) gallon citrus trees at the location shown on the drawings, as specified herein, and as required by the Engineer. Fifteen (15) gallon citrus tree species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item has the supply, delivery, handling, and installation of the required fifteen (15) gallon citrus trees.

40.15 24" Box - The contract item 24" Box includes the complete installation of certified, nursery grown twenty-four (24) inch box trees at the location shown on the drawings, as specified herein, and as required by the Engineer. Twenty-four (24) inch box tree species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required twenty-four (24) inch box trees.

40.16 36" Box - The contract item 36" Box includes the complete installation of certified, nursery grown thirty-six (36) inch box trees at the location shown on the drawings, as specified herein, and as required by the Engineer. Thirty-six (36) inch box tree species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required thirty-six (36) inch box trees.



40.17 48" Box - The contract item 48" Box includes the complete installation of certified, nursery grown forty-eight (48) inch box trees at the location shown on the drawings, as specified herein, and as required by the Engineer. Forty-eight (48) inch box tree species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required forty-eight (48) inch box trees.

40.18 6' Brown Trunk Palm - The contract item 6' Brown Trunk Palm includes the complete installation of certified, nursery grown six foot brown trunk palm trees (*Trachycarpus fortunes*) at the location shown on the plans, as specified herein, and as required by the Engineer. Six foot brown trunk palm tree species shall be of the specified type as indicated on the drawings and shall be selected from high quality, well-shaped nursery stocks, vigorous and free of insect pests, plant diseases, sun scalds, fresh bark abrasions or other objectionable disfigurements. Tree trunks shall be sturdy with normal well-developed branch system. Prior to the commencement of the installation operation, Contractor shall verify that finished grades are as indicated on the drawings; soil has been prepared according to Section 39 of these specifications; and the placing of topsoil, smooth grading, and compaction requirements have been completed. Included in the pay item is the supply, delivery, handling, and installation of the required six foot brown trunk palm trees.

40.19 Planting - The contract items include all materials, labor, equipment, tools, delivery, installation and fees required to complete the work required as shown on the Water Efficient Landscape Conversion drawings and the following work.

40.20 Soil – Soil used within landscaped areas shall be a friable condition at time of displacement including during transportation, placement, cultivation, and planting.

Friable in these specifications refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain Engineer's determination of soil condition acceptability prior to installation and working of soils.

Soils in landscape areas that are worked when not friable shall be removed and replaced with the specifications for topsoil herein.

40.21 Submittals -

1. General: Submit shop drawings, product data, and samples for review and approval by the Engineer.

2. Soil Analysis Report: Submit a Soil Analysis Report of the proposed topsoil from a California-licensed soil-testing laboratory. The Soil Analysis Report shall include requirements as set forth in Section 39.3 and requirements of the Engineer. Topsoil shall not be incorporated in the landscape planting work until the Engineer has approved the Soil Analysis Report. Contractor shall be required to follow all recommendations in the Soil Analysis Report.
3. Submit manufacturer's product data for the following: Root barrier, tree stakes and ties.
4. Submit California-licensed Pest Control Advisor's program and manufacturer's literature, including toxicity levels for each pesticide and herbicide proposed for use in the landscape planting work.
5. Prior to delivery of materials, Contractor shall submit certificates of compliance attesting that materials meet the specified requirements. Submit three samples and manufacturer's guaranteed analysis and certified copies of the material certificates including the following:
  - a. Plant material: classification, botanical name, common name, size, quantity by species, and location where grown;
  - b. Imported topsoil, particle size, pH, organic matter content, textural class, soluble salts, chemical, mechanical and plant growth analyses, including source of topsoil;
  - c. Fertilizers, nitrogen stabilized organic amendment, and chemicals: chemical analysis, composition percent and source;
  - d. Top dressing: composition and source;
  - e. Root barrier: composition and source; and
  - f. Landscape fabric: composition and source.
6. Plant substitutions will not be permitted unless the Contractor furnishes the Engineer with written evidence from no less than three (3) nurseries that the plants specified are not obtainable. Such evidence shall be submitted within thirty (30) calendar days after the effective date of the Notice to Proceed.

#### 40.22 Quality Assurance -

1. Installer's Qualifications: Installer shall be a specialist in installing and planting landscape products, with documented experience in performing landscape work of comparable size, scope, and quality.
2. Supervision: Contractor shall provide the services of at least one qualified person who shall be present at all times during execution of the work of this section. That individual, who shall direct the work, shall be thoroughly familiar with the types of materials being installed and the proper methods for their installation.

3. Engineer's Observance: It is required that the work specified herein be observed by the Engineer. The Contractor shall request observance at least 24 hours in advance of the time such observance is required. Observance is required on the following portions of the work:
  - a. During preliminary grading and soil preparation;
  - b. When shrubs and trees are spotted for planting, before planting holes are excavated;
  - c. When finish grading has been completed, and before installation of plants; and
  - d. When planting and other work has been completed.

The Contractor shall require the supervisor of the landscape planting work to be on the site at the time of each such observance.

40.23 Product Delivery, Storage and Handling – A delivery schedule shall be provided by Contractor to the Engineer at least ten (10) calendar days prior to the first day of delivery.

Refer to Product Requirements per manufacturer and local laws/regulations.

Deliver fertilizer and soil conditioner to the site in original unopened containers bearing manufacturer's guaranteed chemical analysis, weight, manufacturer's name, trademark, and conformance with State law.

Deliver plant materials to the jobsite no earlier than three (3) calendar days prior to planting. Deliver plants with attached, durable, weather-resistant ink, waterproof legible identification labels, as follows:

- Label trees, evergreens, bundles, or containers of like species or groundcover plants
- State correct botanical plant name and size indicated on the plant list

Plant material shall be protected during delivery to prevent desiccation and damage to the branches, trunk, root system, or earth ball.

Transport plants in enclosed trucks. If trees are too large for enclosed trucks and are transported in open trucks, trees shall be wrapped to prevent damage and windburn. Adequate protection shall be placed between trees so that trunks are not scarred in transport and branches are not broken. Tree trunks shall be wrapped at the time of plant materials inspection at the job site.

Notify the Engineer at least five (5) days in advance of delivery of plant materials, and submit an itemized list of the plants in each delivery.

Exercise care in handling, loading, unloading, and storing of plant materials. Plant materials damaged in any way shall be discarded and replaced with undamaged materials.

Plant material shall not be stored longer than thirty (30) days. Storage of plant material shall consist of the following and any nursery/manufacturer's instructions:

1. Protect plant materials from wind, excessive sun, and drying out. All plant material shall be kept in a moist condition by watering with a fine spray until installed.
2. Fertilizer and lime shall not be stored with any other landscape material. Herbicides and pesticides shall not be stored with any other landscape material.

Plant material shall not be injured during handling. Cracking or breaking the earth ball of plant material shall be avoided. Plant material shall not be handled by the trunk or stems. Material shall not be dropped from vehicles.

40.24 Environmental Requirements - Planting shall not be performed during weather conditions that may adversely affect landscape materials, plants, and planting conditions.

40.25 Site Conditions and Scheduling - Landscape work shall not begin until structures, utilities, paving, and other improvements, which require access to or through planting areas, have been installed and accepted by the Engineer. Planting work shall not begin until the landscape irrigation system is installed in place, tested, and accepted by the Engineer.

40.26 Plant Establishment Period – The Plant Establishment Period shall be Type 1, as defined in the State Standard Specifications, Section 20-4.08, "Plant Establishment Work", except that it shall be for a period of ninety (90) calendar days following the Engineer's written acceptance of the work.

Upon completion of all planting and clean-up operations, notify the Engineer, in writing, a minimum of three (3) days in advance, to request a final inspection. The Plant Establishment Period may begin only after the Engineer has given written acceptance of the landscape irrigation system installation.

Calendar days during which no work will be required, as determined by the Engineer, will be credited as plant establishment calendar days, regardless of whether or not the Plant Establishment Work has been performed.

Calendar days when the Plant Establishment Work has not been adequately performed, including watering plants, replacing unsuitable plants, repairing erosion damage, and performing weed, rodent, and other pest control as determined necessary by the Engineer, will not be credited as plant establishment calendar days.

Upon completion of the Plant Establishment Period, submit a written request for inspection by the Engineer for job completion confirmation.

40.27 Guaranty – Guaranty that furnished trees, shrubs, groundcovers, and other plant materials will take root and grow vigorously within one (1) year after final acceptance of plantings, when such plants have received normal care and maintenance.

The Guaranty shall include replacement of trees and other plant materials that die back and lose the form and size as originally specified, even though they may have taken root and are growing after the die-back.

Corrective work shall include removal and replacement of all guaranteed plant materials which, for any reason, fail to meet the requirements of the Guaranty. Replacements shall meet the same requirements as specified for the original materials. Replacements shall carry the same Guaranty period that shall start from the time the replacements are planted and accepted.

40.28 Plant Stock – Plant Stock and materials are indicated in the Planting List or Schedule on the drawings. Provide trees and plants of the varieties, sizes, and quantities indicated. Provide nursery-grown stock only, which is free from insect pests and diseases.

Plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and the certificates shall be delivered to the Engineer. Plants shall be true to species, varieties, and the sizes indicated, and shall be labeled in accordance with the recommended practice of the American Association of Nurserymen.

Label trees and bundles, containers or flats of the same shrub, groundcover and vine with durable waterproof labels and weather resistant ink. Labels shall state the correct plant name and size as specified in the Plant List on the drawings, and shall be legible for sixty (60) days after delivery to the planting site. Plant material that is not labeled will be rejected.

Plants shall be healthy, shapely, and well-rooted. Roots shall show no evidence of having been root bound, restricted, or deformed. Plant material that has just been upgraded in container size will be rejected. Root condition of plants in containers will be inspected by the Engineer by removal of earth from the roots of not less than two plants of each species or variety from each source. Plant materials requiring inspection by the Engineer shall be assembled and available for such inspections. If the sample plants inspected are found to be defective, the Engineer reserves the right to reject the entire lot or lots of plants represented by the defective samples.

Trees shall have straight trunks with the leader intact, undamaged, and uncut. Old abrasions and cuts shall be completely calloused over. Trees shall be measured when their branches are in their normal position. The height of a tree shall be measured from root crown to top of plant. The width of a tree shall be measured at branching at the widest point. Sizes shown on the drawings are before pruning. Trees shall not be pruned prior to delivery except upon approval of the Engineer.

Trees shall be well tapered in the trunk so that when the nursery stake is removed, the tree supports itself upright without further staking. Trees shall have a main leader. The main

branches shall be spaced vertically and alternately along the trunk. Branching shall not be concentrated in one location and there shall be no severe crossing of branches. Branches shall be smaller in diameter than the trunk. Branch attachments shall be free of embedded bark. Branching along the lower two-thirds of the trunk shall have at least one half of the foliage of the tree.

Rejected plant materials shall be removed from the site and replaced with materials that conform to specified requirements.

Plant material shall be grown under similar climatic conditions to those found at the project site.

Groundcover and vines shall be rooted plants, grown in flats unless indicated otherwise on the drawings, or as approved by the Engineer.

40.29 Topsoil – Topsoil shall be obtained from sources within the site of the work, or shall consist of imported topsoil obtained from sources outside the site, or from both such sources. Stripped site soil, if used as topsoil, shall meet the requirements specified herein.

Topsoil shall consist of fertile, friable soil of loamy character, and shall contain organic matter in amounts normal to the region. Imported topsoil shall be obtained from well-drained arable and fertile agricultural land and shall be free from refuse, roots, heavy or stiff clay, stones larger than one inch in size, coarse sand, noxious seeds, sticks, brush, litter, grasses, weeds, toxic waste, and other deleterious substances detrimental to the health of plants, animals, and humans. Imported topsoil shall be capable of sustaining healthy plant life. Imported topsoil shall be delivered and amended as recommended by the soil test for the plant material specified.

Topsoil shall have no inherent tendency toward compaction due to texture or soil structure or both as indicated in the Soils Analysis Report.

40.30 Organic Soil Amendment – Organic Soil Amendment shall consist of Commercial fertilizer, uniform in composition, free-flowing, suitable for application with specified equipment, and delivered to the site in unopened containers, each fully labeled according to applicable fertilizer laws and bearing the name or mark of the manufacturer. Gro-Power Plus, or approved equal, shall consist of the following ingredients by weight:

- Nitrogen 5 percent
- Phosphoric Acid 3 percent
- Potash 1 percent
- Humus 50 percent
- Humic Acids 15 percent

40.31 Fertilizer – Fertilizer shall be a commercial inorganic fertilizer in a granular and pelleted form. Fertilizer shall be delivered to the site in containers labeled in accordance with the applicable State of California, Department of Agriculture regulations, bearing the warranty of the producer for the grade furnished.

Pelleted type, with analysis of 6-20-20 (N-P-K), and granular type 16-6- 8 (N-P-K) per manufacturer's recommendations.

Planting Holes: Agriform Tablets, 21-gram size, with an analysis of 20-10-5 (N-P-K) per manufacturer's recommendations.

Soil amendments and methods shall be determined by results from a Soil Suitability Test. Test shall be performed by Soil and Plant Lab of Santa Ana or Wallace Laboratories, Hawthorne.

40.32 Herbicides – Herbicides shall be environmentally friendly material such as "Treflan, Oust, and Casoram" or approved equal. Herbicide shall be currently registered and approved by the California State Department of Agriculture and the EPA.

Thoroughly water soak surface to be treated. Avoid excessive water runoff. Apply the specified herbicide over the entire area to be paved, in strict accordance with the manufacturer's recommendations after placement of aggregate base course. Apply in spray form at rate as allowable by State of California and recommended by the manufacturer.

Herbicides shall not sterilize the soil.

40.33 Top Dressing - Contractor shall provide and install a minimum of 3" of "walk on chips" as produced by Earthworks Soil Amendment, Inc., 951.782.0260 or approved equal.

40.34 Backfill - Backfill material for planting holes shall be topsoil or excavated soil that complies with topsoil specifications herein.

40.35 Tree Stakes and Ties – Tree Stakes to be treated 3-inch diameter by 10 feet, straight, close-grained, lodge pole pine, pointed at one end free from knots, rot, or other defects that would impair their strength. Tree ties shall be corded rubber tire strips – 1 inch wide by 1/4 inch to 1/2 inch thick by length as required. Strips shall not contain steel within or have wire tie ends.

Guy Wire No. 12 gage galvanized soft steel wire.

40.36 Root Barriers – Provide commercially available manufactured root barriers, consisting of polyvinyl chloride or polypropylene sheeting having ultraviolet inhibitors and a minimum thickness of 0.085 inch. Barriers shall be either factory preformed into the circular shape shown, or have an integrated joining system for instant assembly into the final shape. Glued joints will not be acceptable.

Root barrier sheeting shall have horizontal tabs to prevent root growth from lifting the barrier. These tabs shall be spaced vertically not less than 8 inches on centers, and horizontally not less than 8 inches on centers. Depth of these tabs shall not be less than 3/8 inch at its widest point.

Root barrier sheeting shall have vertical fins running the full length on the inside face of the barrier at 90 degrees to the inside face, to direct root growth downward. These fins shall not be less than 6 inches on center, and its width shall not be less than 1/2 inch.

Sheeting shall have continuously reinforced top no less than 3/8 inch wide.

40.37 Watering Holes - Provide schedule 40 polyvinyl-chloride (PVC) pipe as indicated for watering holes.

40.38 Landscape Filter Fabric - Geotechnical landscape filter fabric with ultraviolet ray protection. Landscape filter fabric shall provide soil stabilization and drainage through the fabric. Include steel or plastic soil anchorage staples for holding fabric in place during the Plant Establishment Period.

40.39 Decomposed Granite Mulch - Decomposed granite mulch shall be crushed granite rock screenings, graded from 1/4-inch particles to dust, with uniform tan or buff color.

The decomposed granite mulch shall be thoroughly blended with organic binder material at a rate of 10 pounds of binder material per ton of crushed granite screenings. Blending shall be done with a cement mixer, pug mill, or similar equipment prior to placing and spreading the blended decomposed granite mulch over the hand-compacted backfill.

The mulch shall be placed in two, 1-1/2-inch deep lifts compacted to a minimum 3-inch depth. Each lift shall be thoroughly moistened with water and then mechanically compacted to a minimum eight-five percent (85%) relative density, with the finish surface of decomposed granite flush with surrounding curb and sidewalk.

Do not install decomposed granite mulch in tree watering basins.

40.40 Vitamin B-1 Solution - Provide Vitamin B-1 solution for reducing shock to plants when transplanting.

40.41 Source Quality Control – The Engineer or his designee will inspect the source of supply (landscape nursery) of the proposed plant materials prior to shipment to the site. Trees must be tagged and pictures of shrubs supplied before shipment to site.

Plant materials shall be properly labeled as herein before specified, before the Engineer's inspection of proposed plant materials. Plant materials which do not conform with specified requirements will be rejected, and shall be replaced with Engineer approved plants.

Notify the Engineer at least five (5) days before shipment of any plant materials from the source of supply.

40.42 Coordination - Coordinate layout and installation of plant materials with installation of the irrigation system to ensure that there will be complete and full irrigation coverage of the



planted areas. Contractor shall protect in place tagged existing trees, shrubs, and plant beds that are to be preserved during planting operation.

40.43 Excavation and Backfill – Excavate and backfill areas to be landscaped as indicated and specified herein.

Excavation for soil removal shall be within 6 inches of back of curb or edge of walk. The Contractor shall be responsible for protecting and maintaining the integrity of compacted base rock and sub grade materials under paving and curbs, and for protecting all other structures in the excavated areas. Review with the Engineer, the distance to remain away from other structures within the excavated areas. Do not undercut sides of excavation. Damage to base rock, sub grade, paving, curbs or structures shall be repaired or replaced. Remove and dispose of asphalt debris, concrete, base rock, and existing soil in landscaped areas from the site.

In landscaped areas that were previously paved, excavate to a minimum depth of 24 inches measured from the former pavement surface, but not less than 18 inches below the indicated finish grade.

In planting areas not previously paved, excavate the existing soil to a depth of 18 inches and remove from the site. Measurement of depth is from the top of the adjacent curb or paving.

Backfill excavated tree and shrub planting areas with topsoil. Prior to installing topsoil, scarify the bottom of the excavation to a 6-inch depth. Do not scarify or undercut sides of excavations. The Contractor shall be responsible for protecting base rock and sub grade compaction under adjacent paving and curbs. Provide topsoil backfill in 6-inch lifts. Incorporate the first 6-inch lift of topsoil into the existing soil at the bottom of the excavation.

40.44 Rough Grading – Prior to any planting, grade all areas to be landscaped. Fill as needed or remove surplus dirt and float areas to a smooth uniform grade. Slope all planting areas to drain. Roll, scarify, rake, and level as necessary to obtain true, even planting surfaces. Rough grading shall be inspected and approved by the Engineer before any amendments and fertilizers are added.

Planting areas shall be thoroughly wetted down. Allow soil to dry so as to be workable, after which thoroughly cultivate to a depth of 6 inches using a rotary hoe.

Compact soil in planting beds to seventy-five percent (75%) relative compaction to prevent future settling.

40.45 Planting of Trees and Shrubs – Mark tree and shrub locations on site using stakes or similar means. Have approved by the Engineer before plant holes are dug.

Dig pits with vertical sides as indicated. After pits are dug, break the sides to open the wall of the pit for root penetration, and loosen the bottom of the pit to a depth of 3 inches. Perform a drainage test, as determined by the Engineer or his designee, where required. Construct foot-tamped mound in the bottom of the pit to support the plant at the proper level.

Install root barriers as indicated.

Install watering holes as indicated.

Install landscape filter fabric under all path areas. Secure against movement with jute pins at 2' on center.

Planting and placement of plant material shall be as follows and per nursery instruction:

1. Do not handle container plants by the tops, stems, or trunks at any time. Lift all plants so that the rootball is supported from the underside. Plants that do not have a satisfactory root system will be rejected.
2. Cut the rootball vertically in a few places to encourage new feeder root development along the perimeter of the rootball.
3. All plants shall be planted immediately after rootballs are cut.
4. Place each plant in an upright and plumb position. One (1) and five (5) gallon size plants shall be set so that the top of the rootball is one inch above the finish grade. Fifteen (15) gallon size plants shall be set so that the top of the rootball will be 2 inches above the finish grade. Twenty-four (24) inch and thirty-six (36) inch box size trees shall have the top of the rootball set 4 inches above the finish grade. Fifteen (15) gallon, twenty-four (24) inch box, and thirty-six (36) inch box trees in planting areas less than 6 feet wide shall have the top of the rootball set 2 inches above the finish grade.
5. Groundcover shall be installed at spacing indicated on the drawings, and shall be evenly spaced and staggered in rows. Place each plant in a pit so that the root system lies free without doubling and so that the roots are planted vertically. Firm the soil around each plant and water the area immediately to avoid drying out.

Place Agriform 21 gram fertilizer tablets in the following quantities around the perimeter of plant hole:

<u>Plant Size</u>	<u>Quantity Fertilizer</u>
1 gallon plant	2 tablets
5 gallon plant	5 tablets
15 gallon plant	5 tablets
24" box tree	8 tablets
36" box tree	12 tablets
48" box tree	16 tablets
6' b.t. palm	8 tablets

Backfill holes and pits with topsoil. Ensure that proper irrigation will be maintained to the rootball. Taper backfill around sides and up to the top of the rootball so that sides of the rootball are not exposed.

Backfill for planting in areas where topsoil has been placed earlier shall be topsoil excavated from the planting hole. Backfill for plants in areas where existing site soil remains shall be the topsoil amended in accordance with the soil report.

Construct a 4-inch high berm (watering basin) around plant holes and fill the watering basin with Vitamin B-1 solution. Mix and apply the Vitamin B-1 solution in accordance with the manufacturer's written instructions.

Backfill shall be watered until the backfill material is moist to the full depth of the hole.

Pruning shall not be performed unless specifically requested or approved by the Engineer. Examine trees requiring pruning with the Engineer. Trees that are damaged due to improper pruning or wind damage shall be replaced.

Staking of trees shall consist of the following:

1. Remove the nursery stakes and install specified tree stakes along the sides of the rootball and one foot into undisturbed ground. Stakes shall not go through the rootball.
2. Ties shall be placed as low on the trunk as possible, but high enough so that the tree will return to the upright position after deflection.
3. Ties shall form a loose loop around the tree trunk, and shall be staked so that the trunk cannot work toward the support stakes. Tree ties shall be secured in position in accordance with the manufacturer's recommendations.
4. Support stakes shall not be higher than 6 inches above the tie locations. A flexible auxiliary stake shall be attached to those trees needing extra trunk support as determined by the Engineer.
5. One tree of each size shall be staked and approved by the Engineer prior to continued staking.

Adjustment of Plants:

1. Plants that settle deeper than specified shall be raised to the correct level.
2. Plants that go out of plumb shall be straightened and re-staked.

3. Install a 3-inch layer of mulch in all landscaped areas. Mulch shall be kept away from stems and trunks of plants, and shall be kept off the foliage of groundcover, off buildings, sidewalks and other facilities. Install in tree watering basins. The placement of mulch shall occur a maximum 48 hours after planting.

40.46 Drainage Test and Auger Holes – After tree pits are dug and before planting operations, tree pits shall be water tested for drainage. One location per 80 square feet of tree pit shall be tested. In addition, test all tree pits in any area where a test tree pit does not drain within 24 hours, such as in hardpan areas, rocky ground, construction backfill, compacted areas, flat ground, low spots, and the like, in order to ensure that pits in those areas will drain properly.

Fill tree pits with water. Check holes after 24 hours to determine if water has drained out. If the water has not drained out, bring this to the attention of the Engineer for remedial course of action. Adjustment of pit size, adjustment of pit location, or addition of auger holes will be required by the Engineer if a drainage problem exists.

Auger one 6-inch diameter hole through the bottom of each excavated plant hole that does not drain within the specified 24-hour period. Depth of the drill measured from the bottom of the excavation to the bottom of the drill hole shall be 4 feet. Backfill auger holes with 3/4-inch diameter, well-graded drain rock up to bottom of the plant hole. Cover the drain rock in the auger hole with a 2 feet by 2 feet piece of landscape filter fabric.

40.47 Cleanup – Contractor to maintain cleanliness of all work areas on a daily basis. All debris shall be removed from site and disposed of in a legal manner. Contractor shall comply with General Conditions and all conditions as set forth by the Engineer.

Neatly dress and finish all landscaped areas.

Broom clean all pavements.

40.48 Preliminary to Final Inspection – At completion of Planting, the Contractor shall request a preliminary inspection to determine the condition of the landscaped areas. Inspection shall be requested two (2) working days in advance. The Contractor and Engineer shall be represented at the inspection.

Construction considered ready for inspection shall conform to the following requirements:

1. All planting shall be healthy and free of infestations.
2. All landscaped areas shall be free of weeds.
3. Stakes and ties shall be as specified.
4. Mulch shall be raked to a uniform surface.

Debris shall be removed from the landscaped area, pavements shall be broom clean, and foliage shall be washed clean.

All plants shall be installed in place as indicated and specified.

40.49 Final Inspection and Acceptance – Final inspection will be conducted at the end of the Plant Establishment Period. Notice requesting final inspection shall be submitted by the Contractor to the Engineer at least seven (7) calendar days prior to the anticipated date.

Five (5) days prior to the final inspection, 16-6-8 (N-P-K) granular form commercial fertilizer shall be applied to trees and shrubs, in the presence of the Engineer, as follows:

<u>Plant Size</u>	<u>Quantity Fertilizer</u>
Specimen, 24" and larger	6 tablespoons
15 gallon	4 tablespoons
3 and 5 gallon	2 tablespoons
1 and 2 gallon	1 tablespoon
Groundcover and vines	6 lbs. per 1,000 square feet

Care shall be taken to prevent the deposit of fertilizer on stems or leaves. Fertilizer shall be spread with a mechanical spreader wherever possible. Fertilizer shall be applied only during favorable weather conditions to prevent dissipation by wind. All plants shall be thoroughly watered after fertilizer has been applied.

Mulch shall be raked away from around plant bases. Fertilizer shall be spread around each plant base and worked into the top 2 inches of soil. Mulch shall then be replaced.

Prior to final inspection, the Contractor shall also have performed weeding and a thorough cleaning of the landscaped areas.

The irrigation system shall be tested at the final inspection.

At the final inspection, the Engineer will determine the condition of the plants and improvements. Acceptance of this work will be contingent upon proper maintenance and the establishment of vigorous plant materials. Plants which are dead, unhealthy, or missing, whether by disease, neglect, vandalism, or any other reason, shall be replaced with the same species and sizes originally specified and following these same specifications for installation.

Provide plant replacements within two (2) weeks after final inspection, and extend the Plant Establishment Period for an additional thirty (30) calendar days after replacement planting has been accepted by the Engineer. The Engineer will then repeat the final inspection for the replaced plants at the end of the extended Plant Establishment Period.

40.50 Measurement – Measurement for payment for the contract item Mow Curbing will be the number of lineal feet of constructed curb, measured parallel to the top of the curb.

Measurement for payment for the contract items Wood Chips; Decomposed Granite; Crushed Rock; Drivable Grass; and Synthetic Turf will be the number of square feet constructed as specified, measured to the neat lines as shown on the drawings.

Measurement for payment for the contract item Sod will be the number of square feet installed as specified, measured to the neat lines as shown on the drawings.

Measurement for payment for the contract items Flats; 1-Gallon; 2-Gallon; 5-Gallon; 15-Gallon; 15-Gallon Citrus; 24" Box; 36" Box; 48" Box; and 6' Brown Trunk Palm will be the number of each installed plant species as specified.

40.51 Payment - The contract prices paid for Mow Curbing; Wood Chips; Decomposed Granite; Crushed Rock; Drivable Grass; Synthetic Turf; Sod; Flats; 1-Gallon; 2-Gallon; 5-Gallon; 15-Gallon; 15-Gallon Citrus; 24" Box; 36" Box; 48" Box; and 6' Brown Trunk Palm shall include full compensation for all costs incurred under this section.

## SECTION 41 – AMENITIES

41.1 Description – This section covers the contract items Tree Grate; Picnic Table; Waste Container; Fountain; Flag Pole; various classes of Concrete Pot; and the various classes of Concrete Bench.

41.2 Tree Grate – The contract item Tree Grate includes the furnishing and complete installation of the tree grate at the location shown on the drawings, as specified herein, and as required by the Engineer. Tree grate shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Burrs, rough and sharp edges, and other flaws shall be removed. Tree grate product shall be as manufactured by South Bay Foundry, Inc., or approved equal. Included in the pay item is the supply, delivery, handling, and installation of the required tree grate.

41.3 Picnic Table – The contract item Picnic Table consist of furnishing and installing picnic tables as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Picnic tables shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Picnic table product shall be as manufactured by Quick Crete Products Corporation, or approved equal. Included in the pay item is the supply, delivery, handling, and installation of the required picnic tables.

41.4 Waste Container – The contract item Waste Container consist of furnishing and installing waste containers as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Waste containers shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Waste container product shall be as manufactured by Quick Crete Products Corporation, or approved equal. Included in the pay item is the supply, delivery, handling, and installation of the required waste containers.

41.5 Fountain – The contract item Fountain consist of furnishing and installing fountain as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Fountain shall conform to the following dimensions: 40 inches in height, 40 inches in diameter, basin width 40 inches, and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Fountain product shall be as manufactured by Al's Garden Art; Dealer: Unique Designs, 2000 W. Frontage Road, Corona, CA 92882, or approved equal. Style: Jardine Fountain with Basin; color: Chateau (CU). Included in the pay item is the supply, delivery, handling, and installation of the required fountain.

41.6 Flag Pole - The contract item Flag Pole consist of furnishing and installing two (2) flag poles as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Flag poles shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Flag pole product shall be as manufactured by Jon's Flags & Poles, or approved equal. Included in the pay item is the supply, accessories, and installation of the required flag poles.

41.7 Concrete Pot - The contract item Concrete Pot consist of furnishing and installing concrete pots of the various classes as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Concrete pots shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Concrete pot product shall be as manufactured by Quick Crete Products Corporation, or approved equal. Included in the pay item is the supply, delivery, handling, and installation of the required concrete pots.

41.8 Concrete Bench - The contract item Concrete Bench consist of furnishing and installing concrete benches of the various classes as shown on the drawings or as directed by the Engineer, and as specified in these specifications and the manufacturer specifications. Concrete benches shall conform to the dimensions shown on the drawings and shall be fabricated in a workmanlike manner according to practice in modern commercial shops. Concrete bench product shall be as manufactured by Quick Crete Products Corporation, or approved equal. Included in the pay item is the supply, delivery, handling, and installation of the required concrete benches.

41.9 Measurement - Measurement for payment for the contract items Tree Grate; Picnic Table; Waste Container; Fountain; Flag Pole; various classes of Concrete Pot; and the various classes of Concrete Bench will be the number of each product installed as specified.

41.10 Payment - The contract prices paid for Tree Grate; Picnic Table; Waste Container; Fountain; Flag Pole; various classes of Concrete Pot; and the various classes of Concrete Bench shall include full compensation for all costs incurred under this section.

## SECTION 42 – LANDSCAPE MAINTENANCE

42.1 Description – The contract item Landscape Maintenance covers all labor, materials and equipment necessary to maintain the landscaped area, within the project limits of work, for the specified duration period. This work shall start upon final inspection and written approval by Engineer of the irrigation system and planting work as specified in Section 3.10 of the General Provisions.

42.2 General - The following work is required to complete the contract item Landscape Maintenance:

1. Contractor shall maintain plant materials from the time of planting until the plant materials are well established and are exhibiting a vigorous growth. Landscape maintenance shall continue until the end of the Plant Establishment Period specified in Section 40.26 of these specifications.
2. Landscape maintenance shall include watering, cultivating, weeding, re-mulching, repair of stakes, fertilizing, cultivation, spraying, and pruning as required to keep the plant material in a healthy growing condition and to keep the planted areas neat and attractive in appearance throughout the maintenance period. Landscape Maintenance shall also include treatment for fungus, diseases, rodents, insects, and repair of vandalism.
3. All plants shall be watered not less than twice a week. Each watering shall be of such quantity as to provide optimum growing conditions. Rinse foliage of all plant materials as often as necessary to keep foliage free of dust.
4. Rocks, clods, and debris that appear on the surface shall be removed. Heaved, settled, or eroded areas shall be restored by excavating, addition of topsoil, filling, finish grading, and rolling as required.
5. Gravel, surplus earth, papers, trash and debris, which accumulate in the landscaped areas and the areas directly adjacent to the paved areas, shall be removed and disposed of weekly. Such areas shall be cared for as required to present a neat and clean condition at all times.
6. Provide weeding of all areas, at intervals of not more than fourteen (14) days, as follows:
  - a. Weeds which appear in asphalt, concrete, or paved areas within contract limits shall be killed before they exceed 2 inches in height or spread, by spraying with a contact herbicide which shall not stain the surfacing.
  - b. Weeds in groundcover shall be killed by spraying with a contact herbicide, approved by the Engineer, before they exceed 2 inches in height or spread,



- or shall be removed by pulling with roots intact before they exceed 4 inches in height or spread.
- c. Weeds between basins in areas planted with trees and shrubs shall be removed by pulling before they exceed 4 inches in height or spread. Weeds shall be removed from within basins, including basin walls, and from within planter boxes. Any weed not killed by spraying shall be pulled with its roots intact.
  - d. Before using any herbicide or pesticide, the Contractor shall obtain approval from the Engineer for the proposed material and for the rate of application.
7. The Contractor shall submit for approval by the Engineer material safety data sheets for all herbicides and pesticides with a listing of all product requirements.
  8. The Contractor shall be responsible for protecting all plants, on or off the site, from damage by spraying operations. Weed control shall be performed as often as required to maintain the project in a neat and weed-free condition at all times.
  9. Watering shall be adequate to provide maintenance of healthy plant growth, and shall be controlled to prevent over saturation of soil leading to plant failure. Basins, where required, and basin walls shall be kept well formed.
  10. Trees, shrubs, and groundcover shall be maintained by regular watering, cultivating, and weeding. Stakes and ties shall be repaired as needed. Plants shall be sprayed for insect pests and pruned as necessary or when requested by the Engineer. All damaged, unhealthy or dead trees, shrubs and groundcover shall, upon discovery of loss or damage, be replaced immediately with new stock of a size to match the remaining healthy plants of the same variety.
  11. Until the end of the Plant Establishment Period, any plants which are damaged by herbicide, diseased, dead, or which are in an unhealthy condition exhibiting weakness and the probability of dying, shall be replaced within two (2) weeks after notification from the Engineer. Replacements of plants shall be made in the same manner as specified for the original planting.
  12. On the last day of the Plant Establishment Period, complete the weeding and raking of all planting areas. The site shall be cleared of debris and presented in a neat and orderly condition. All plants shall be in a healthy, thriving condition. Stakes shall be vertical. Paved areas shall be broom cleaned, and areas damaged by erosion shall be repaired, including the replacement of plants.
  13. During the Plant Establishment Period, Contractor shall maintain one (1) full size set of drawings and upon which Contractor will record and annotate:

- a) all modifications and/or adjustments or irrigation system during Plant Establishment Period;
- b) any plant materials replaced in-kind or with substitutions during Plant Establishment Period;
- c) any other modifications relevant to District's future maintenance effort. Original copy of the annotated drawings shall be turned over to the engineer at conclusion of the Plant Establishment Period;

Final payment of this contract item will not be made until satisfactorily annotated drawings are delivered to the Engineer.

42.3 Payment - The contract lump sum price paid for Landscape Maintenance shall include full compensation for all costs incurred under this section.

Landscape Maintenance work shall be subject to monthly progress payments.

### SECTION 43 – ELECTRICAL

43.1 Description – This section covers the contract items Electrical Lighting Fixture A; Electrical Lighting Fixture B; Electrical Lighting Fixture C; Electrical Lighting Fixture D; Electrical Lighting Fixture E; and Electrical Conduit and Wire as required for the construction of the project.

43.2 Electrical Lighting Fixture A – The contract item Electrical Lighting Fixture A consists of furnishing and installing electrical lighting as shown on the drawings or as directed by the Engineer, and as specified on the drawings, these specifications and the manufacturer specifications. Electrical lighting product shall be of the exterior grade mount landscape floodlight type, or approved equal. Included in the pay item is the labor, material, equipment, accessories, and installation required.

43.3 Electrical Lighting Fixture B – The contract item Electrical Lighting Fixture B consists of furnishing and installing electrical lighting as shown on the drawings or as directed by the Engineer, and as specified on the drawings, these specifications and the manufacturer specifications. Electrical lighting product shall be of the exterior grade mount architectural floodlight type, or approved equal. Included in the pay item is the labor, material, equipment, accessories, and installation required.

43.4 Electrical Lighting Fixture C – The contract item Electrical Lighting Fixture C consists of furnishing and installing electrical lighting as shown on the drawings or as directed by the Engineer, and as specified on the drawings, these specifications and the manufacturer specifications. Electrical lighting product shall be of the exterior pole mount decorative "shoebox" type fixture, or approved equal. Included in the pay item is the labor, material, equipment, accessories, and installation required.

43.5 Electrical Lighting Fixture D – The contract item Electrical Lighting Fixture D consists of furnishing and installing electrical lighting as shown on the drawings or as directed by the Engineer, and as specified on the drawings, these specifications and the manufacturer specifications. Electrical lighting product shall be of the high exterior pole mount high intensity discharge "shoebox" type area lights, or approved equal. Included in the pay item is the labor, material, equipment, accessories, and installation required.

43.6 Electrical Lighting Fixture E – The contract item Electrical Lighting Fixture E consists of furnishing and installing electrical lighting as shown on the drawings or as directed by the Engineer, and as specified on the drawings, these specifications and the manufacturer specifications. Electrical lighting product shall be of the exterior grade mount landscape sign/wall lighter, or approved equal. Included in the pay item is the labor, material, equipment, accessories, and installation required.

43.7 Electrical Conduit and Wire – The contract item Electrical Conduit and Wire consists of furnishing and installing all required conduits, wires, device and junction boxes as shown on the drawings or as directed by the Engineer, and as specified on the drawings and these specifications. Electrical conduits and fittings shall be galvanized by the hot-dip, electrodepositing, or metalizing process and shall be of the sizes indicated on the drawings. Wires shall be copper and the sizes as specified by American Wire Gauge (AWG). Wire sizes #10 and smaller shall be solid conductor. Included in the pay item is all labor, material, tools, fittings, equipment and installation required.

43.8 Measurement – Measurement for payment for the contract items Electrical Lighting Fixture A; Electrical Lighting Fixture B; Electrical Lighting Fixture C; Electrical Lighting Fixture D; and Electrical Lighting Fixture E will be the number of each lighting fixture as specified.

Measurement for payment for the contract item Electrical Conduit and Wire will be the number of lineal feet of installed conduits and wires as specified.

43.9 Payment - The contract prices paid for Electrical Lighting Fixture A; Electrical Lighting Fixture B; Electrical Lighting Fixture C; Electrical Lighting Fixture D; Electrical Lighting Fixture E; and Electrical Conduit and Wire shall include full compensation for furnishing all material, labor, tools, equipment and incidental costs incurred under this section, including any necessary pull boxes; excavation and backfill; concrete foundations and making all required tests.

Full compensation for all additional materials and labor, not shown on the drawings or specified, which are necessary to complete the installation of the various fixtures, shall be considered as included in the prices paid for the fixtures, or units thereof, and no additional compensation will be allowed.

APPENDIX "A"

SOUTH COAST AIR QUALITY  
MANAGEMENT DISTRICT

RULE 403

(Adopted May 7, 1976) (Amended November 6, 1992)  
(Amended July 9, 1993) (Amended February 14, 1997)  
(Amended December 11, 1998)(Amended April 2, 2004)  
(Amended June 3, 2005)

**RULE 403. FUGITIVE DUST**

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

- (1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.
- (2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.
- (3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.
- (4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.
- (5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

- (6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.
- (7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.
- (8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.
- (9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.
- (10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.
- (11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.
- (12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.
- (13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

- (14) **DISTURBED SURFACE AREA** means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:
- (A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;
  - (B) been paved or otherwise covered by a permanent structure; or
  - (C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.
- (15) **DUST SUPPRESSANTS** are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.
- (16) **EARTH-MOVING ACTIVITIES** means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.
- (17) **DUST CONTROL SUPERVISOR** means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.
- (18) **FUGITIVE DUST** means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.
- (19) **HIGH WIND CONDITIONS** means that instantaneous wind speeds exceed 25 miles per hour.
- (20) **INACTIVE DISTURBED SURFACE AREA** means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.
- (21) **LARGE OPERATIONS** means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

- meters (5,000 cubic yards) or more three times during the most recent 365-day period.
- (22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.
  - (23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.
  - (24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.
  - (25) PM<sub>10</sub> means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.
  - (26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.
  - (27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.
  - (28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.
  - (29) SIMULTANEOUS SAMPLING means the operation of two PM<sub>10</sub> samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.
  - (30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange



County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

- (31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.
  - (32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.
  - (33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.
  - (34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.
  - (35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.
  - (36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.
  - (37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.
- (d) Requirements
- (1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

- (A) the dust remains visible in the atmosphere beyond the property line of the emission source; or
  - (B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.
- (2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.
- (3) No person shall cause or allow PM<sub>10</sub> levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM<sub>10</sub> monitoring. If sampling is conducted, samplers shall be:
- (A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM<sub>10</sub>.
  - (B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.
- (4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.
- (5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.
- (A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

- (B) Pave the surface extending at least 100 feet and at least 20 feet wide.
  - (C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.
  - (D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.
  - (E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).
- (6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.
- (e) Additional Requirements for Large Operations
- (1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:
    - (A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;
    - (B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;
    - (C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

- (D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;
  - (E) identify a dust control supervisor that:
    - (i) is employed by or contracted with the property owner or developer;
    - (ii) is on the site or available on-site within 30 minutes during working hours;
    - (iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;
    - (iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and
  - (F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).
- (2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).
- (f) **Compliance Schedule**  
The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

- (1) The provisions of this Rule shall not apply to:
  - (A) Dairy farms.
  - (B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.
  - (C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.
  - (D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:
    - (i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;
    - (ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and
    - (iii) makes the completed self-monitoring form available to the Executive Officer upon request.
  - (E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:
    - (i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and
    - (ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and
    - (iii) makes the completed self-monitoring form available to the Executive Officer upon request.

- (F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.
  - (G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.
  - (H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.
  - (I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.
  - (J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:
    - (i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and
    - (ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.
  - (K) sandblasting operations.
- (2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:
- (A) When wind gusts exceed 25 miles per hour, provided that:

- (i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;
    - (ii) records are maintained in accordance with subparagraph (e)(1)(C).
  - (B) To unpaved roads, provided such roads:
    - (i) are used solely for the maintenance of wind-generating equipment; or
    - (ii) are unpaved public alleys as defined in Rule 1186; or
    - (iii) are service roads that meet all of the following criteria:
      - (a) are less than 50 feet in width at all points along the road;
      - (b) are within 25 feet of the property line; and
      - (c) have a traffic volume less than 20 vehicle-trips per day.
  - (C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.
- (3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.
  - (4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:
    - (A) Blasting operations which have been permitted by the California Division of Industrial Safety; and
    - (B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.
  - (5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

- (6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.
- (7) The provisions of subdivision (e) shall not apply to:
  - (A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.
  - (B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.
  - (C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.
- (8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for PM<sub>10</sub> pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).



**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	<ul style="list-style-type: none"> <li>✓ Mix backfill soil with water prior to moving</li> <li>✓ Dedicate water truck or high capacity hose to backfilling equipment</li> <li>✓ Empty loader bucket slowly so that no dust plumes are generated</li> <li>✓ Minimize drop height from loader bucket</li> </ul>
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	<ul style="list-style-type: none"> <li>✓ Maintain live perennial vegetation where possible</li> <li>✓ Apply water in sufficient quantity to prevent generation of dust plumes</li> </ul>
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	<ul style="list-style-type: none"> <li>✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements</li> </ul>
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	<ul style="list-style-type: none"> <li>✓ Follow permit conditions for crushing equipment</li> <li>✓ Pre-water material prior to loading into crusher</li> <li>✓ Monitor crusher emissions opacity</li> <li>✓ Apply water to crushed material to prevent dust plumes</li> </ul>

**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	<p>09-1 Stabilize material while loading to reduce fugitive dust emissions; and</p> <p>09-2 Maintain at least six inches of freeboard on haul vehicles; and</p> <p>09-3 Stabilize material while transporting to reduce fugitive dust emissions; and</p> <p>09-4 Stabilize material while unloading to reduce fugitive dust emissions; and</p> <p>09-5 Comply with Vehicle Code Section 23114.</p>	<ul style="list-style-type: none"> <li>✓ Use tarps or other suitable enclosures on haul trucks</li> <li>✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage</li> <li>✓ Comply with track-out prevention/mitigation requirements</li> <li>✓ Provide water while loading and unloading to reduce visible dust plumes</li> </ul>
Landscaping	10-1 Stabilize soils, materials, slopes	<ul style="list-style-type: none"> <li>✓ Apply water to materials to stabilize</li> <li>✓ Maintain materials in a crusted condition</li> <li>✓ Maintain effective cover over materials</li> <li>✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes</li> <li>✓ Hydroseed prior to rain season</li> </ul>
Road shoulder maintenance	<p>11-1 Apply water to unpaved shoulders prior to clearing; and</p> <p>11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.</p>	<ul style="list-style-type: none"> <li>✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs</li> <li>✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs</li> </ul>

**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	<ul style="list-style-type: none"> <li>✓ Dedicate water truck or high capacity hose to screening operation</li> <li>✓ Drop material through the screen slowly and minimize drop height</li> <li>✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point</li> </ul>
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	<ul style="list-style-type: none"> <li>✓ Limit size of staging area</li> <li>✓ Limit vehicle speeds to 15 miles per hour</li> <li>✓ Limit number and size of staging area entrances/exists</li> </ul>
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	<ul style="list-style-type: none"> <li>✓ Add or remove material from the downwind portion of the storage pile</li> <li>✓ Maintain storage piles to avoid steep sides or faces</li> </ul>

**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

**TABLE 1**  
**BEST AVAILABLE CONTROL MEASURES**  
**(Applicable to All Construction Activity Sources)**

Source Category	Control Measure	Guidance
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

**Table 2**  
**DUST CONTROL MEASURES FOR LARGE OPERATIONS**

<b>FUGITIVE DUST SOURCE CATEGORY</b>	<b>CONTROL ACTIONS</b>
<b>Earth-moving (except construction cutting and filling areas, and mining operations)</b>	<p>(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</p> <p>(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.</p>
<b>Earth-moving: Construction fill areas:</b>	<p>(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.</p>

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS
<b>Earth-moving: Construction cut areas and mining operations:</b>	(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.
<b>Disturbed surface areas (except completed grading areas)</b>	(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 percent of the unstabilized area.
<b>Disturbed surface areas: Completed grading areas</b>	(2c) Apply chemical stabilizers within five working days of grading completion; OR  (2d) Take actions (3a) or (3c) specified for inactive disturbed surface areas.
<b>Inactive disturbed surface areas</b>	(3a) Apply water to at least 80 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 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.



Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS
<b>Unpaved Roads</b>	<p>(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</p> <p>(4b) Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR</p> <p>(4c) Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.</p>
<b>Open storage piles</b>	<p>(5a) Apply chemical stabilizers; OR</p> <p>(5b) Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR</p> <p>(5c) Install temporary coverings; OR</p> <p>(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. This option may only be used at aggregate-related plants or at cement manufacturing facilities.</p>
<b>All Categories</b>	<p>(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.</p>

**TABLE 3**  
**CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS**

<b>FUGITIVE DUST SOURCE CATEGORY</b>	<b>CONTROL MEASURES</b>
<b>Earth-moving</b>	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
<b>Disturbed surface areas</b>	(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.
<b>Unpaved roads</b>	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice per hour during active operation; OR (3C) Stop all vehicular traffic.
<b>Open storage piles</b>	(1D) Apply water twice per hour; OR (2D) Install temporary coverings.
<b>Paved road track-out</b>	(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.
<b>All Categories</b>	(1F) 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.

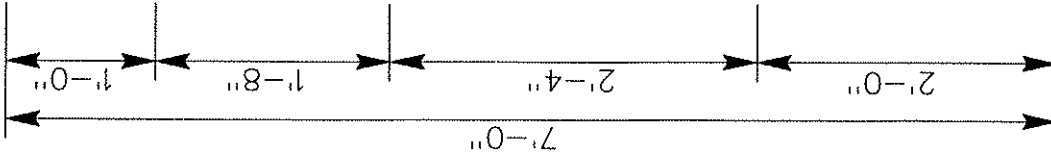
**Table 4**  
**(Conservation Management Practices for Confined Animal Facilities)**

<b>SOURCE CATEGORY</b>	<b>CONSERVATION MANAGEMENT PRACTICES</b>
<b>Manure Handling</b>  <b>(Only applicable to Commercial Poultry Ranches)</b>	(1a) Cover manure prior to removing material off-site; AND (1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND (1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d). (1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material.
<b>Feedstock Handling</b>	(2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins.
<b>Disturbed Surfaces</b>	(3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR (3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR (3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
<b>Unpaved Roads</b>	(4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR (4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR (4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface.
<b>Equipment Parking Areas</b>	(5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches).

## APPENDIX "B"

### PROJECT SIGN

8'-0"



RIVERSIDE COUNTY FLOOD CONTROL <sup>①</sup>  
 AND  
 WATER CONSERVATION DISTRICT

**L.I.D. TESTING & DEMONSTRATION FACILITY,  
 PARKING LOT RENOVATION 2010, AND <sup>②</sup>  
 WATER EFFICIENT LANDSCAPE CONVERSION.**

FUNDED BY RIVERSIDE COUNTY FLOOD CONTROL AND  
 WATER CONSERVATION DISTRICT

PROPOSITION 13: SAFE DRINKING WATER, CLEAN WATER,  
 WATERSHED PROTECTION AND FLOOD PROTECTION <sup>④</sup>  
 BOND ACT.

SANTA ANA WATERSHED PROJECT AUTHORITY.

START DATE: ✖ <sup>④</sup> APPROX. COMPLETION DATE: ✖

ENGINEER: <sup>④</sup> CONTRACTOR: ✖

WARREN D. WILLIAMS  
 GENERAL MANAGER-CHIEF ENGINEER <sup>⑤</sup>  
 RIVERSIDE COUNTY FLOOD CONTROL  
 AND WATER CONSERVATION DISTRICT  
 RIVERSIDE, CALIFORNIA  
 (951) 955-1200

LETTER SCHEDULE

	<u>SIZE</u>	<u>COLOR</u>
①	2"	BLACK
②	4"	ROYAL
③	3"	ROYAL
④	2"	ROYAL
⑤	2"	BLACK

$\frac{3}{4}$ " CDX GRADE  
 PLYWOOD

NOTES:

1. MINIMUM SPACING BETWEEN LINES 1".
2. ✖ -INFO. FURNISHED BY ENGINEER
3. ALL LETTERS FILLED AND CENTERED
4. THE STRIPES ARE GOLD AND BLACK ON WHITE BACKGROUND.

6x6 POSTS SHALL  
 BE BURIED 3' MINIMUM  
 WITH 5' FROM GROUND  
 TO BOTTOM OF SIGN

APPENDIX "B" PROJECT SIGN

## APPENDIX "C"

### LOG OF SOIL BORINGS

# GEOTECHNICAL BORING LOG B-1

Project No.	602540-001	Date Drilled	3-25-09
Project	RCFC & WCD	Logged By	JDH
Drilling Co.	Whitcomb Drilling	Hole Diameter	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	Ground Elevation	787'
Location	Retention basin	Sampled By	JDH

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0	N W							Grass at surface. <u>Quaternary Alluvium (Qal)</u>	
785		•••••		R-1	4 4 5			SP	SAND (SP), loose, light brown, moist, fine to medium sand, friable	
	5			R-2	1 2 3			ML	SILT (ML), soft, olive, wet	
780		•••••		R-3	1 2 4			ML SM	SILT (ML), soft, dark olive gray, moist to wet SILTY SAND (SM), very loose, dark olive gray, moist, fine sand	
	10	•••••		R-4	2 2 3			ML	SANDY SILT (ML), soft, dark olive gray, wet	
775		△△△△△		R-5	5 11 17			SP	SAND with Gravel (SP), medium dense, light olive brown, wet, fine gravel	
	15	▽		R-6	13 16 19			SW	SAND (SW), medium dense, light olive brown, wet	
770									Total depth of boring 16.5 feet. Groundwater encountered at 15.0 feet during drilling. Boring backfilled with native cuttings. 3/25/09.	
	20									
765										
	25									
760										
	30									

<b>SAMPLE TYPES:</b> S SPLIT SPOON    G GRAB SAMPLE R RING SAMPLE    C CORE SAMPLE B BULK SAMPLE T TUBE SAMPLE	<b>TYPE OF TESTS:</b> DS DIRECT SHEAR    SA SIEVE ANALYSIS    -200 % FINES PASSING MD MAXIMUM DENSITY    SE SAND EQUIVALENT    AL ATTERBERG LIMITS CN CONSOLIDATION    EI EXPANSION INDEX    CO COLLAPSE CR CORROSION    RV R VALUE    PP POCKET PENETROMETER	
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**Riverside County Flood Control**

Logged By: JDH  
 Sampled By: JDH

Project No. 602540-001

**Test Pit TP-1**

Date Excavated: 03/26/2005

Location: Retention basin, near double ring infiltrometer testing

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Grass, abundant rootlets	
0.0	2.0	SP	POORLY GRADED SAND with SILT (5-10%), light gray, moist to very moist, friable, few rootlets, trace pockets of silty sand	Qal
2.0	2.2	SM	SILTY SAND	
2.2	3.0	SP	POORLY GRADED SAND, trace silt, tan, moist to very moist, friable, fine grained sand	
3.0	3.5	ML	SANDY SILT, dark olive, very moist	
3.5	4.0	SW	WELL GRADED SAND, fine to coarse grained sand, very moist	
4.0	6.0	ML	SILT, some fine grained sand, dark olive, wet, soft, mottled	
6.0	8.0	ML	SANDY SILT, nonplastic	
8.0	11.0	SM	SILTY SAND, very fine grained sand, layers of sandy silt	
12.0	+/-		Groundwater encountered during excavation	
11.0	13.0	ML	SILT, dark olive, wet	
13.0	13.2	SW	WELL GRADED SAND, cannot dig deeper due to caving.	
Total Depth (ft): 13.2 Groundwater encountered at 12' +/- during excavation. Rose to 10.3 feet after 1.5 hrs. Continual caving of walls covered groundwater after 2 hrs. Test pit backfilled with native soil				

**Test Pit TP-2**

Date Excavated: 03/26/2005

Location: by traffic circle

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Grass	
0.0	2.0	ML	SANDY SILT, fine grained sand, 75% fines, moist, brown, rootlets	Qal
Total Depth (ft): 2 No ground water encountered. Test pit backfilled with native soil				

(note: percent fines is visual estimate)





**Riverside County Flood Control**

Logged By: JDH  
 Sampled By: JDH

**Project**

**Test Pit TP-3**

Date Excavated: 03/26/2009

Location: Eastern corner of site

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Grass	
0.0	3.0	SM	SILTY SAND, fine grained sand, ~20% fines, moist, light gray, rootlets down to 1', roots down to 4'	
3.0	4.0	SM	SILTY SAND, olive gray, moist to very moist, soft to medium stiff	
4.0	4.3	SP	POORLY GRADED SAND, tan, friable	
4.3	4.5	ML	SANDY SILT, olive gray	
4.5	5.0	SM	SILTY SAND, fine grained sand, dark gray, moist	
Total Depth (ft): 5.0 No ground water encountered. Test pit backfilled with native soil				

**Test Pit TP-4**

Date Excavated: 03/26/2009

Location: Adjacent to Market Street, in front of entrance

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Dirt area	
0.0	1.0	SM	SILTY SAND, brown, moist, medium dense to dense	Afu
1.0	3.0	SM	SILTY SAND, fine grained sand, light brown, moist, medium dense, ~40% fines	Qal
3.0	3.5	ML	SANDY SILT, fine grained sand, light brown, moist, medium dense, less fines	
3.5	5.0	SW	WELL GRADED SAND with gravel, light grayish brown, gravel to 1", clean river sand and gravel	
Total Depth (ft): 5.0 No ground water encountered. Test pit backfilled with native soil				

(note: percent fines is visual estimate)

**Riverside County Flood Control**

Logged By: JDH  
 Sampled By: JDH

**Test Pit TP-5**

Date Excavated: 03/26/2009

Location: south of office bldg

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Grass	
0.0	2.0	ML	SANDY SILT or SANDY CLAY, fine grained sand, 70% fines, moist, brown, rootlets	Qal
Total Depth (ft): 2 No ground water encountered. Test pit backfilled with native so				

**Test Pit TP-6**

Date Excavated: 03/26/2009

Location: East side of retention basin

Depth		Soil symbol (USCS)	Description	Geologic Unit
Top (ft)	Bottom (ft)			
SURFACE			Grass, rootlets	
0.0	1.0	SP	POORLY GRADED SAND, tan, very moist, friable	Qal
1.0		ML	SANDY SILT, very fine grained sand, olive brown, mottled, ~50-60% fines	
2.0	2.3	ML	SANDY SILT, very fine grained sand, olive brown, mottled, ~80% fines	
2.3	3.0	SM	SILTY SAND, orange brown with blue, very moist	
3.0	3.5	SP	POORLY GRADED SAND, fine to medium grained sand, light brown, very moist, friable	
3.5	4.0	ML	SANDY SILT, very fine grained sand, dark olive, very moist, ~80% fines	
4.0	6.5	CL	CLAY, olive brown, very moist to wet, so	
6.5	6.6	ML	SILT, wet	
Total Depth (ft): 6.6 No ground water encountered. Test pit backfilled with native soil				

(note: percent fines is visual estimate)



## APPENDIX "D"

### SWPPP CERTIFICATION

SWPPP Certification

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

\_\_\_\_\_

\_\_\_\_\_  
Contractor's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Contractor's Name and Title

\_\_\_\_\_  
Telephone Number

## APPENDIX "E"

### RAIN EVENT ACTION PLAN (REAP)

# Rain Event Action Plan (REAP)

<b>Date:</b>	<b>WDID Number:</b>	
<b>Date Rain Predicted to Occur:</b>	<b>Predicted % chance of rain:</b>	

**Site Information:**

Site Name, City and Zip Code \_\_\_\_\_ Project Risk Level:  Risk Level 2  Risk Level 3

**Site Stormwater Manager Information:**

Name, Company, Emergency Phone Number (24/7) \_\_\_\_\_

**Erosion and Sediment Control Contractor – Labor Force contracted for the site:**

Name, Company, Emergency Phone Number (24/7) \_\_\_\_\_

**Stormwater Sampling Agent:**

Name, Company, Emergency Phone Number (24/7) \_\_\_\_\_

**Current Phase of Construction**

*Check ALL the boxes below that apply to your site.*

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Grading and Land Development | <input type="checkbox"/> Vertical Construction                    | <input type="checkbox"/> Inactive Site |
| <input type="checkbox"/> Streets and Utilities        | <input type="checkbox"/> Final Landscaping and Site Stabilization | <input type="checkbox"/> Other:        |

**Activities Associated with Current Phase(s)**

*Check ALL the boxes below that apply to your site (some apply to all Phases).*

**Grading and Land Development:**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Demolition                 | <input type="checkbox"/> Vegetation Removal            | <input type="checkbox"/> Vegetation Salvage-Harvest |
| <input type="checkbox"/> Rough Grade                | <input type="checkbox"/> Finish Grade                  | <input type="checkbox"/> Blasting                   |
| <input type="checkbox"/> Soil Amendment(s):         | <input type="checkbox"/> Excavation (_____ ft)         | <input type="checkbox"/> Soils Testing              |
| <input type="checkbox"/> Rock Crushing              | <input type="checkbox"/> Erosion and Sediment Control  | <input type="checkbox"/> Surveying                  |
| <input type="checkbox"/> Equip. Maintenance/Fueling | <input type="checkbox"/> Material Delivery and Storage | <input type="checkbox"/> Other:                     |

**Streets and Utilities:**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Finish Grade                  | <input type="checkbox"/> Utility Install: water-sewer-gas | <input type="checkbox"/> Paving Operations           |
| <input type="checkbox"/> Equip. Maintenance/Fueling    | <input type="checkbox"/> Storm Drain Installation         | <input type="checkbox"/> Material Delivery & Storage |
| <input type="checkbox"/> Curb and Gutter/Concrete Pour | <input type="checkbox"/> Masonry                          | <input type="checkbox"/> Other:                      |

**Vertical Construction:**

- |   |                                     |  |
|---|-------------------------------------|--|
| <input type="checkbox"/> Framing                    | <input type="checkbox"/> Carpentry  | <input type="checkbox"/> Concrete/Forms/Foundation |
| <input type="checkbox"/> Masonry                    | <input type="checkbox"/> Electrical | <input type="checkbox"/> Painting                  |
| <input type="checkbox"/> Drywall/Interior Walls     | <input type="checkbox"/> Plumbing   | <input type="checkbox"/> Stucco                    |
| <input type="checkbox"/> Equip. Maintenance/Fueling | <input type="checkbox"/> HVAC       | <input type="checkbox"/> Tile                      |
| <input type="checkbox"/> Exterior Siding            | <input type="checkbox"/> Insulation | <input type="checkbox"/> Landscaping & Irrigation  |
| <input type="checkbox"/> Flooring                   | <input type="checkbox"/> Roofing    | <input type="checkbox"/> Other:                    |

**Final Landscaping & Site Stabilization:**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Stabilization           | <input type="checkbox"/> Vegetation Establishment       | <input type="checkbox"/> E&S Control BMP Removal   |
| <input type="checkbox"/> Finish Grade            | <input type="checkbox"/> Storage Yard/ Material Removal | <input type="checkbox"/> Landscape Installation    |
| <input type="checkbox"/> Painting and Touch-Up   | <input type="checkbox"/> Irrigation System Testing      | <input type="checkbox"/> Other:                    |
| <input type="checkbox"/> Drainage Inlet Stencils | <input type="checkbox"/> Inlet Filtration               | <input type="checkbox"/> Perm. Water Quality Ponds |
| <input type="checkbox"/> Other:                  | <input type="checkbox"/> Other:                         | <input type="checkbox"/> Other:                    |

**Inactive Construction Site:**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> E & S Control Device Installation | <input type="checkbox"/> Routine Site Inspection | <input type="checkbox"/> Trash Removal |
| <input type="checkbox"/> E & S Control Device Maintenance  | <input type="checkbox"/> Street Sweeping         | <input type="checkbox"/> Other:        |

# Rain Event Action Plan (REAP)

<b>Date:</b>		<b>WDID Number:</b>	
<b>Trades Active on Site during Current Phase(s)</b>			
<i>Check ALL the boxes below that apply to your site</i>			
<input type="checkbox"/> Storm Drain Improvement	<input type="checkbox"/> Grading Contractor	<input type="checkbox"/> Surveyor- Soil Technician	
<input type="checkbox"/> Street Improvements	<input type="checkbox"/> Water Pipe Installation	<input type="checkbox"/> Sanitary Station Provider	
<input type="checkbox"/> Material Delivery	<input type="checkbox"/> Sewer Pipe Installation	<input type="checkbox"/> Electrical	
<input type="checkbox"/> Trenching	<input type="checkbox"/> Gas Pipe Installation	<input type="checkbox"/> Carpentry	
<input type="checkbox"/> Concrete Pouring	<input type="checkbox"/> Electrical Installation	<input type="checkbox"/> Plumbing	
<input type="checkbox"/> Foundation	<input type="checkbox"/> Communication Installation	<input type="checkbox"/> Masonry	
<input type="checkbox"/> Demolition	<input type="checkbox"/> Erosion and Sediment Control	<input type="checkbox"/> Water, Sewer, Electric Utilities	
<input type="checkbox"/> Material Delivery	<input type="checkbox"/> Equipment Fueling/Maintenance	<input type="checkbox"/> Rock Products	
<input type="checkbox"/> Tile Work- Flooring	<input type="checkbox"/> Utilities, e.g., Sewer, Electric	<input type="checkbox"/> Painters	
<input type="checkbox"/> Drywall	<input type="checkbox"/> Roofers	<input type="checkbox"/> Carpenters	
<input type="checkbox"/> HVAC installers	<input type="checkbox"/> Stucco	<input type="checkbox"/> Pest Control: e.g., termite prevention	
<input type="checkbox"/> Exterior Siding	<input type="checkbox"/> Masons	<input type="checkbox"/> Water Feature Installation	
<input type="checkbox"/> Insulation	<input type="checkbox"/> Landscapers	<input type="checkbox"/> Utility Line Testers	
<input type="checkbox"/> Fireproofing	<input type="checkbox"/> Riggers	<input type="checkbox"/> Irrigation System Installation	
<input type="checkbox"/> Steel Systems	<input type="checkbox"/> Utility Line Testers	<input type="checkbox"/> Other:	
<b>Trade Contractor Information Provided</b>			
<i>Check ALL the boxes below that apply to your site.</i>			
<input type="checkbox"/> Educational Material Handout	<input type="checkbox"/> Tailgate Meetings	<input type="checkbox"/> Training Workshop	
<input type="checkbox"/> Contractual Language	<input type="checkbox"/> Fines and Penalties	<input type="checkbox"/> Signage	
<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	
<b>Continued on next page.</b>			

# Rain Event Action Plan (REAP)

**Date of REAP**

**WDID Number:**

**Date Rain Predicted to Occur:**

**Predicted % chance of rain:**

## Predicted Rain Event Triggered Actions

Below is a list of suggested actions and items to review for this project. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to perform / item(s) to review prior to rain event
<input type="checkbox"/> Information & Scheduling	<input type="checkbox"/> Inform trade supervisors of predicted rain <input type="checkbox"/> Check scheduled activities and reschedule as needed <input type="checkbox"/> Alert erosion/sediment control provider <input type="checkbox"/> Alert sample collection contractor (if applicable) <input type="checkbox"/> Schedule staff for extended rain inspections (including weekends & holidays) <input type="checkbox"/> Check Erosion and Sediment Control (ESC) material stock <input type="checkbox"/> Review BMP progress map <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Material storage areas	<input type="checkbox"/> Material under cover or in sheds (ex: treated woods and metals) <input type="checkbox"/> Perimeter control around stockpiles <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Waste management areas	<input type="checkbox"/> Dumpsters closed <input type="checkbox"/> Drain holes plugged <input type="checkbox"/> Recycling bins covered <input type="checkbox"/> Sanitary stations bermed and protected from tipping <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Trade operations	<input type="checkbox"/> Exterior operations shut down for event (e.g., no concrete pours or paving) <input type="checkbox"/> Soil treatments (e.g., fertilizer) ceased within 24 hours of event <input type="checkbox"/> Materials and equipment (ex: tools) properly stored and covered <input type="checkbox"/> Waste and debris disposed in covered dumpsters or removed from site <input type="checkbox"/> Trenches and excavations protected <input type="checkbox"/> Perimeter controls around disturbed areas <input type="checkbox"/> Fueling and repair areas covered and bermed <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Site ESC BMPs	<input type="checkbox"/> Adequate capacity in sediment basins and traps <input type="checkbox"/> Site perimeter controls in place <input type="checkbox"/> Catch basin and drop inlet protection in place and cleaned <input type="checkbox"/> Temporary erosion controls deployed <input type="checkbox"/> Temporary perimeter controls deployed around disturbed areas and stockpiles <input type="checkbox"/> Roads swept; site ingress and egress points stabilized <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Concrete rinse out area	<input type="checkbox"/> Adequate capacity for rain <input type="checkbox"/> Wash-out bins covered <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Spill and drips	<input type="checkbox"/> All incident spills and drips, including paint, stucco, fuel, and oil cleaned <input type="checkbox"/> Drip pans emptied <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____



Other / Discussion /  
Diagrams

<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
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<input type="checkbox"/>	_____
<input type="checkbox"/>	_____

**Attach a printout of the weather forecast from the NOAA website to the REAP.**

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

\_\_\_\_\_  
Qualified SWPPP Practitioner (Use ink please) Date: \_\_\_\_\_

## APPENDIX "F"

### RISK LEVEL 1 AND 2 VISUAL INSPECTION FIELD LOG SHEET

**Risk Level 1 and 2  
Visual Inspection Field Log Sheet**

Date and Time of Inspection:	Report Date:
------------------------------	--------------

Inspection Type:	<input type="checkbox"/> Weekly	<input type="checkbox"/> Before predicted rain	<input type="checkbox"/> During rain event	<input type="checkbox"/> Following qualifying rain event	<input type="checkbox"/> Contained stormwater release	<input type="checkbox"/> Quarterly non-stormwater
------------------	---------------------------------	--	--	--	---	---

**Site Information**

Construction Site Name:

Construction stage and completed activities:	Approximate area of exposed site:
--	-----------------------------------

**Weather and Observations**

Date Rain Predicted to Occur:	Predicted % chance of rain:
-------------------------------	-----------------------------

Estimate storm beginning: _____	Estimate storm duration: _____	Estimate time since last storm: _____	Rain gauge reading: _____
(date and time)	(hours)	(days or hours)	(inches)

Observations: If yes identify location

Odors	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Floating material	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Suspended Material	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Sheen	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Discolorations	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Turbidity	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**Site Inspections**

Outfalls or BMPs Evaluated	Deficiencies Noted
(add additional sheets or attached detailed BMP Inspection Checklists)	

Photos Taken:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Photo Reference IDs:
---------------	------------------------------	-----------------------------	----------------------

**Corrective Actions Identified (note if SWPPP/REAP change is needed)**

**Inspector Information**

Inspector Name:	Inspector Title:
-----------------	------------------

Signature:	Date:
------------	-------

### **Summary of Risk Level 1 and 2 Monitoring Requirements for Visual Inspections**

<b>Type of Monitoring</b>	<b>When</b>
Non-stormwater inspection	Quarterly for each drainage area.
Qualifying rain event: Pre-rain inspection	All drainage areas, BMPs, and stormwater containments within two business days of each qualifying rain event.
Qualifying rain event: Post-rain inspection	All discharge locations within two business days after each qualifying rain event.  Visually observe discharge of contained stormwater when discharged.
During rain inspection	See BMP inspection below.
BMP	Weekly and every 24 hours during extended storm events.

## APPENDIX "G"

### RISK LEVEL 2 EFFLUENT SAMPLING FIELD LOG SHEETS

**Risk Level 2  
Effluent Sampling Field Log Sheets**

Construction Site Name:	Date:	Time Start:
-------------------------	-------	-------------

Sampler:

Sampling Event Type:	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Non-stormwater	<input type="checkbox"/> Non-visible pollutant
----------------------	-------------------------------------	---	--

**Field Meter Calibration**

pH Meter ID No./Desc.:	Turbidity Meter ID No./Desc.:
Calibration Date/Time:	Calibration Date/Time:

**Field pH and Turbidity Measurements**

Discharge Location Description	pH	Turbidity	Time

**Grab Samples Collected**

Discharge Location Description	Sample Type	Time

Additional Sampling Notes:

Time End:

## **Summary of Risk Level 2 Monitoring Requirements**

<b>Type of Monitoring</b>	<b>When</b>
Effluent sampling: Turbidity	<p>Collect a minimum of three samples per day.</p> <p>Collect runoff samples representative of site discharges.</p>
Effluent sampling: pH	<p>During construction phases with high risk of high pH discharge.</p> <p>Collect a minimum of three samples per day.</p> <p>Collect runoff samples representative of site discharges.</p>
Non-visible pollutants: spill/BMP failure based on pollutant source assessment	<p>Within first two hours of discharge from site.</p> <p>Collect samples of runoff affected by the spilled or released material(s) and runoff unaffected by the spilled or released material(s).</p>
Contained rain water	At time of discharge.
Non-stormwater	At locations where discharged off the site.
Particle size	<p>When sediment basins are used.</p> <p>If needed to justify site specific sediment risk using RUSLE.</p>
Other	Other

APPENDIX "H"

MONITORING REPORT TEMPLATE  
FOR  
ORDER NO. R8-2009-0003  
(DE MINIMUS PERMIT)



**MONITORING REPORT FOR  
ORDER NO. R8-2009-0003  
GENERAL WASTE DISCHARGE REQUIREMENTS FOR  
DISCHARGES TO SURFACE WATERS THAT POSE AN  
INSIGNIFICANT THREAT TO WATER QUALITY  
(DE MINIMUS PERMIT)**

**PROJECT NAME**  
**PROJECT ADDRESS**

Submitted to:  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3348

Prepared by:  
**Contractor's Name**  
**Contractor's Address**  
**Contractor's Address**  
**Contractor's Contact Person**  
**Contractor's Contact Phone Number**

Prepared for:  
Riverside County Flood Control and Water Conservation District  
1995 Market Street  
Riverside, California 92501  
**Contact Person**  
**Contact Phone Number**

**Date**

## CONTRACTOR'S CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [40 CFR Section 122.22(d)].

**Contractor's Name**

**Contractor's Title**

Name: \_\_\_\_\_

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

Signature: \_\_\_\_\_

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

## OWNER'S CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [40 CFR Section 122.22(d)].

Signed: \_\_\_\_\_

Jason E. Uhley  
Chief of Watershed Protection Division  
Riverside County Flood Control  
and Water Conservation District

## MONITORING RESULTS:

Monitoring results are reported at the intervals specified in the Monitoring and Reporting Program of the De Minimus Permit. Seven days prior to discharging, contact your contract manager at the District, so they can call the RWQCB with the following information:

1. Specific type of the proposed wastewater discharge
2. The estimated average and maximum daily flow rates
3. The frequency and duration of the discharge
4. The affected receiving water
5. A description of the path from the point of the initial discharge to the ultimate location of discharge (fax map if possible)

The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions and to allow ongoing characterization of discharges to determine potential adverse impacts and to determine continued suitability for coverage under the General Permit.

Contractor conducting work for the District must be familiar with the De Minimus Permit and its monitoring requirements and comply with them. **Please be aware that there are different Monitoring Reporting Requirements which are dependent on the amount of flow that is being discharged per day.**

Calculations for all limitations, which require averaging of measurements, utilize an arithmetic mean unless otherwise specified in the De Minimus Permit.

Contractor, acknowledge that samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [40 CFR §122.41(j)(1)]. Also, Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in the General Permit [40 CFR §122.41(j)(4)] [40 CFR §122.44(i)(1)(iv)]. You also acknowledge that records shall be retained for a period of at least five years. Sample results are hereby reported per the requirements of the General Permit.

## SUMMARY OF MONITORING RESULTS:

Samples are collected for the following constituents and measured against the following maximum limits. All laboratory analyses are performed in accordance with test procedures under 40 CFR 136 (revised April 11, 2007) "Guidelines Establishing Test Procedures for the Analysis of Pollutants", promulgated by the United States Environmental Protection Agency. In the case of sludge use or disposal, will have used test procedures approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [40 CFR §122.41(j)(4)] [40 CFR §122.44(i)(1)(iv)].

Chemical, bacteriological, and bioassay analyses are conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with the provision of Water Code Section 13176, or conducted at a laboratory certified for such analyses by the EPA or at laboratories approved by the Regional Water Board's Executive Officer.

In conformance with federal regulations 40 CFR 122.45(c), analyses to determine compliance with the effluent limitations for metals are conducted using the total recoverable method. For Chromium (VI), the dissolved method in conformance with 40 CFR 136 may be used to measure compliance with the Chromium (VI) limitation.

Organic pollutants are analyzed using EPA Method 8260, as appropriate, and results are reported with ML or PQL and MDL. A chain of custody and sample information record are included in Appendix B of this report. The complete monitoring results are included in Appendix C of this report. Monitoring results are summarized in attached Tables.

Monitoring results are reported at the intervals specified in the Monitoring and Reporting Program (MRP).

Results are reported of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- Must use ML minimum levels for sample results as specified in Attachment H of the General Permit. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- Sample results less than the reported ML, but greater than or equal to the laboratory's current Method Detection Limit (MDL)<sup>4</sup>, shall be reported as "Detected, but Not Quantified," or "DNQ." The estimated chemical concentration of the sample shall also be reported.
- Sample results not detected above the laboratory's MDL shall be reported as "not detected" or "ND."

For every item of monitoring data where the requirements are not met, this monitoring report shall include a statement discussing the reasons for noncompliance, the actions undertaken or proposed that will bring the discharge into full compliance with requirements at the earliest time, and an estimate of the date when you will be in compliance. The Contractor shall notify the Regional Water Board by letter when compliance with the time schedule has been achieved.

### **Effluent Limitations and Discharge Specifications**

The Contractor will maintain compliance with the following effluent limitations at approved compliance point monitoring locations:

**Table 1 - Effluent Limitations Applicable to All Receiving Waters**

Constituent	Maximum Daily Concentration Limit in milligrams per liter (mg/L)
Total Dissolved Solids (TDS)	See Sections 4 and 5 below
Total Inorganic Nitrogen (TIN)	See Sections 4 and 5 below
Total Petroleum Hydrocarbons	0.1 mg/L
Total Residual Chlorine <i>(If chlorine is used for treatment or disinfection of wastes)</i>	0.1 mg/L
Suspended Solids	75 mg/L
Sulfides	0.4 mg/L
Oil and Grease	15 mg/L

1. The pH of the discharge shall be within 6.5 and 8.5 pH units (see also Receiving Water Limitations B.2.g.).
2. There shall be no visible oil and grease in the discharge.
3. The discharge of decanted filter backwash wastewater and/or sludge dewatering filtrate water from water treatment facilities shall not contain a total suspended solids maximum daily concentration in excess of 30 mg/L.
4. For discharges to surface waters where groundwater will not be affected by the discharge, the TDS and/or TIN of the effluent shall not exceed the water quality objectives for the receiving surface water where the effluent is discharged, as specified in Table 4-1 of the Basin Plan for the Santa Ana Region.
5. For discharges to surface waters where the groundwater will be affected by the discharge, the TDS and/or TIN concentrations of the effluent shall not exceed the water quality objectives for the surface water where the effluent is discharged nor the affected groundwater management zone, as specified in Table 4-1 of the Basin Plan for the Santa Ana Region. The more restrictive water quality objectives shall govern. However, treated effluent exceeding the groundwater management zone water quality objectives may be returned to the same management zone from which it was extracted without reduction of the TDS or TIN concentrations so long as the concentrations of those constituents are no greater than when the groundwater was first extracted. Incidental increases in the TDS and TIN concentrations (such as may occur during air stripping) of treated effluent will not be considered increases for the purposes of determining compliance with this discharge specification.

6. Should any of the weekly, bi-monthly, monthly, quarterly or annual monitoring for a specific constituent show effluent concentrations above the effluent limit, the frequency of monitoring for that constituent shall be increased to weekly or as directed by the Executive Officer. To return to the monitoring frequency specified, the Discharger shall request and receive approval from the Regional Water Board's Executive Officer or designee. (See also Provision VII.C.6.a. of the Order regarding conditions that necessitate termination of the discharge.)
7. Should the annual monitoring for a specific constituent show effluent concentrations above the values specified in Attachment I, the monitoring frequency for that constituent shall be increased to weekly for one quarter or as directed by the Executive Officer. To return to the monitoring frequency specified, the Discharger shall request and receive approval from the Regional Water Board's Executive Officer or designee. (See also Provision VII.C.6.a. of the Order regarding conditions that necessitate termination of the discharge.)
8. Should two consecutive annual monitoring results for all the constituents specified in Attachment I show values below those listed in Attachment "I", the Discharger may stop monitoring for the pollutants listed in Attachment I.
9. If the discharge does not last for more than a day, one composite sample shall be taken for the duration of the discharge and shall be analyzed.

**Records of monitoring information shall include:**

- a. **The date, exact place, and time of sampling or measurements;**
- b. **The individual(s) who performed the sampling or measurements;**
- c. **The date(s) analyses were performed;**
- d. **The laboratory and individual(s) who performed the analyses;**
- e. **The analytical techniques or methods used, including any modification(s) to analytical techniques or methods used;**
- f. **The results of such analyses, including measurement used and the minimum level for the analysis, results less than the reporting level but above the method detection limit (MDL), data qualifiers and a description of the qualifiers, quality control test results (and a written copy of the laboratory quality assurance plan), dilution factors, if used, and sample matrix type; and**
- g. **Other requirements as specified in the De Minimus Order's Monitoring and Reporting Program.**

Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by your District Contract Manager for reporting results of monitoring of sludge use or disposal practices.

Noncompliance Reporting

The discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided to the Executive Officer (951.782.4130) and the Office of Emergency Services (1.800.852.7550) orally within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

Any unanticipated bypass that exceeds effluent limitations, or any upset that exceeds any effluent limitation, or any violation of a maximum daily discharge limitation for any of the pollutants listed in the General Permit shall be reported within 24 hours to the RWQCB.

**PROJECT INFORMATION:**

**Type of discharge (place check):**

\_\_\_\_\_ **Construction Groundwater Dewatering**

\_\_\_\_\_ **Other Non-stormwater Dewatering**

**Date of initial discharge(s):**

**Duration/Frequency of discharge(s) (for example daily during working hours):**

**Estimated maximum daily flow:**

**Estimated average daily flow:**

**Sampling Point Location(s):** (Identify on exhibit in Appendix A)

**Receiving Water:**

**Summary of the month's activities including a report detailing compliance or noncompliance with the task for the specific schedule date:**

**Treatment System** (if a constituent exceeded an allowable maximum describe additional BMPs that will be deployed to mitigate contaminant and the dates the BMPs are expected to be operational). **BMPs used to mitigate discharged pollutants, if applicable:**  
**Description, as applicable**

**Report for (month, year):**

The Contractor shall collect samples within 30 minutes of the initiation of a discharge to determine potential constituents. The Contractor will then sample once a month for reporting purposes for the duration of the discharge.

\_\_\_\_\_ **This is the first report for this project**

\_\_\_\_\_ **This is the \_\_\_\_\_ report for this project**

\_\_\_\_\_ **This is the final report for this project**

If no discharge occurs during the monthly monitoring period, the contractor shall check the line below.

\_\_\_\_\_ **There was no discharge during this reporting period**



**SUMMARY OF FLOW DATA AND VOLUME OF DISCHARGE**

**SAMPLE STATION # \_\_\_\_\_**

	<b>Date</b>	<b>Flow rate (gpd)</b>	<b>Volume of Daily Discharge</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

gpd = gallons per day

## SUMMARY OF MONITORING RESULTS

A. For intermittent (less than daily) discharge flow of less than 25,000 gallons per day (gpd), effluent monitoring is as follows:

Date and Time of Sample: \_\_\_\_\_

Parameter	Unit	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and Minimum Level, Units, Respectively	Sample Results
Flow	GPD	Measured	Each discharge event	See Section I.A.2. of the MRP	
Total Petroleum Hydrocarbons	µg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	EPA Method 8015 Modified	
Oil and Grease	mg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
Total Residual Chlorine (unless it is known that chlorine is not in the discharge)	mg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
Total Suspended Solids (not applicable if all wastewater will percolate prior to reaching receiving waters)	mg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
Total Inorganic Nitrogen (TIN)	mg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
Sulfate	mg/L	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
pH	Std. Units	Grab	Once monthly or as directed by the Executive Officer thereafter; see also Section IV.A.3.	See Section I.A.2. of the MRP	
Total Dissolved Solids	Mg/L	Grab	Annually see also Section IV.A.3.	See Section I.A.2. of the MRP	
Hardness	µg/L	Grab	Annually see also Section IV.A.3.	See Section I.A.2. of the MRP	

**For discharge flow of less than 25,000 gpd the following pollutants also were sampled:**

**Date and Time of Sample:** \_\_\_\_\_

<b>CONSTITUENT</b>	<b>SAMPLE RESULT (ug/L)</b>
Antimony	
Arsenic	
Cadmium	
Chromium III (only necessary to sample if the discharge is going to freshwater that is not designated at MUN)	
Chromium VI	
Copper	
Lead	
Mercury	
Nickel	
Selenium	
Silver	
Thallium	
Zinc	
Cyanide	
1,1,2-Trichloroethane	
1,1-Dichloroethane	
1,1-Dichloroethylene	
1,2-Dichloroethane	
1,2-Dichloroethylene(cis)	
1,2-Dichloroethylene(trans)	
1,4-Dioxane	
Benzene	

<b>CONSTITUENT</b>	<b>SAMPLE RESULT (ug/L)</b>
Carbon Tetrachloride	
Dibromochloropropane (DBCP)	
Dichlorobromomethane	
Ethylbenzene	
Methyl Isobutyl Ketone	
Methyl Tertiary Butyl Ether (MTBE)	
Naphthalene	
Perchlorate	
Tert Butyl Alcohol (TBA)	
Tetrachloroethylene (PCE)	
Toluene	
Trichloroethylene (TCE)	
Vinyl Chloride	
1,2,3-Trichloropropane (1,2,3- TCP)	
1,3-Dichloropropylene	
1,1,2,2-Tetrachloroethane	
1,2-Dichlorobenzene 600	
1,4-Dichlorobenzene	
1,2,4 -Trichlorobenzene	

**B. For discharge flow of 25,000 gpd or more, effluent monitoring is as follows:**

**Date and Time of Sample:** \_\_\_\_\_

<b>Parameter</b>	<b>Unit</b>	<b>Sample Type</b>	<b>Minimum Sampling Frequency</b>	<b>Required Analytical Test Method and Minimum Level, Units, Respectively</b>	<b>Sample Results</b>
Flow	GPD	Measured	Daily	See Section I.A.3. of the MRP	
Total Petroleum Hydrocarbons	µg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	EPA Method 8015 Modified	
Oil and Grease	mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Total Residual Chlorine (unless it is known that chlorine is not in the discharge)	mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Total Suspended Solids (not applicable if all wastewater will percolate prior to reaching receiving waters)	mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Total Inorganic Nitrogen (TIN)	mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Sulfate	mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
pH	Std. Units	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Temperature	Degrees F	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Total Dissolved Solids	Mg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	
Hardness	µg/L	Grab	During the first 30 minutes of the discharge, then monthly see also Section IV.A.3.	See Section I.A.3. of the MRP	

**For discharge flow of 25,000 gpd or more, the following pollutants also were sampled:**

**Date and Time of Sample:** \_\_\_\_\_

<b>CONSTITUENT</b>	<b>SAMPLE RESULT (ug/L)</b>
Antimony	
Arsenic	
Cadmium	
Chromium III (only necessary to sample if the discharge is going to freshwater that is not designated at MUN)	
Chromium VI	
Copper	
Lead	
Mercury	
Nickel	
Selenium	
Silver	
Thallium	
Zinc	
Cyanide	
1,1,2-Trichloroethane	
1,1-Dichloroethane	
1,1-Dichloroethylene	
1,2-Dichloroethane	
1,2-Dichloroethylene(cis)	
1,2-Dichloroethylene(trans)	
1,4-Dioxane	
Benzene	

<b>CONSTITUENT</b>	<b>SAMPLE RESULT (ug/L)</b>
Carbon Tetrachloride	
Dibromochloropropane (DBCP)	
Dichlorobromomethane	
Ethylbenzene	
Methyl Isobutyl Ketone	
Methyl Tertiary Butyl Ether (MTBE)	
Naphthalene	
Perchlorate	
Tert Butyl Alcohol (TBA)	
Tetrachloroethylene (PCE)	
Toluene	
Trichloroethylene (TCE)	
Vinyl Chloride	
1,2,3-Trichloropropane (1,2,3- TCP)	
1,3-Dichloropropylene	
1,1,2,2-Tetrachloroethane	
1,2-Dichlorobenzene 600	
1,4-Dichlorobenzene	
1,2,4 -Trichlorobenzene	

**C. The following shall constitute the effluent monitoring program for discharges from water treatment plants of decant filter backwash wastewater and/or sludge dewatering filtrate water:**

**Date and Time of Sample:** \_\_\_\_\_

<b>Parameter Unit Sample</b>	<b>Type</b>	<b>Minimum Sampling</b>	<b>Frequency</b>	<b>Required Analytical Test</b>	
Flow	gpd	Measured	Daily	See Section I.A.3. above, of MRP	
Total Residual Chlorine (unless it is known that chlorine is not in the discharge)	mg/L	Grab	During the first 30 minutes of each discharge event	See Section I.A.3. above, of MRP	
Total Suspended Solids  (not applicable if all wastewater will percolate prior to reaching receiving waters)	mg/L	Grab	During the first 30 minutes of each discharge event	See Section I.A.3. above, of MRP	
Aluminum	µg/L	Grab	During the first 30 minutes of each discharge event	See Section I.A. 3. above, of this MRP; RL is 50 µg/L	
Iron	µg/L	Grab	During the first 30 minutes of each discharge event	See Section I.A.3. above, of this MRP; RL is 100 µg/L	
Manganese	µg/L	Grab	During the first 30 minutes of each discharge event	See Section I.A.3. above, of this MRP; RL is 20 µg/L	



**D. For Dischargers discharging at a volume equal to or greater than 150,000 gallons per day, the Discharger shall submit semi-annual reports that tabulate all measured flows and measured parameters within the most recent six month period. Where discharges associated with these projects last less than 6 months, a report covering the period of discharges shall be submitted.**

Copies of these monitoring reports shall be submitted to the Regional Water Board and to the Water Quality Director of the Orange County Water District at Post Office Box 8300, Fountain Valley, CA 92728-8300.

**OTHER PERTINENT INFORMATION:**

# **APPENDIX A**

## **PROJECT MAP**

Project Map shall include the following:

- Sampling point location;
- Initial discharge point;
- Ultimate discharge location;
- Path from the point of initial discharge to the ultimate receiving water;
- Treatment system location (as applicable); and
- Any other pertinent information.

Please try to limit your maps to a size of 8.5" x 11".

## **APPENDIX B**

### **CHAIN OF CUSTODY AND SAMPLE INFORMATION RECORD**

## **APPENDIX C**

### **MONITORING DATA**

**APPENDIX D**

**NOTICE OF INTENT  
TO ACCOMPANY  
INITIAL MONITORING REPORT**



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SANTA ANA REGION  
NOTICE OF INTENT  
TO COMPLY WITH THE TERMS AND CONDITIONS OF THE**

- |  |   |
|--|---|
| <input type="checkbox"/> Riverside County MS4 Permit | <input type="checkbox"/> San Bernardino County MS4 Permit |
| ORDER NO. R8-2010-0033                               | ORDER NO. R8-2010-0036                                    |
| NPDES NO. CAS 618033                                 | NPDES NO. CAS618036                                       |

**GENERAL WASTE DISCHARGE REQUIREMENTS FOR DISCHARGE TO  
SURFACE WATERS  
THAT POSE INSIGNIFICANT (DE MINIMUS) THREAT TO WATER QUALITY**

**I. PERMITTEE** *(Person/Agency Responsible for the Discharge)*

Agency/Company \_\_\_\_\_

Name: \_\_\_\_\_

Address/Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_ Contact Person: \_\_\_\_\_

Phone: (\_\_\_\_\_) \_\_\_\_\_; Email: \_\_\_\_\_

**II. FACILITY**

Name: \_\_\_\_\_

Address/Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_ Contact Person: \_\_\_\_\_

Phone: (\_\_\_\_\_) \_\_\_\_\_; Email: \_\_\_\_\_

a. Projected Flow Rate (gpd): \_\_\_\_\_,

b. Receiving Water (identify): \_\_\_\_\_

**III. INDICATE EXISTING PERMIT NUMBER:** *(if applicable)*

a. Individual Permit Order No. \_\_\_\_\_ NPDES No. \_\_\_\_\_

b. General Permit Order No. R8-2010-003- \_\_\_\_\_

c. Others (specify) \_\_\_\_\_



#### IV. CERTIFICATION:

*I certify under penalty of law that I am an authorized representative of the permittee and that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the permittee will comply with the terms and conditions stipulated in Orders No. R8-2009-0003 and (R8-2010-0033 or R8-2010-0036, as applicable) including the monitoring and reporting program issued by the Executive Officer of the Regional Board.*

Name: \_\_\_\_\_ Title: \_\_\_\_\_  
(type or print)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Email: \_\_\_\_\_

*Remarks: If changes to facility ownership and/or treatment processes were made after the issuance of the existing permit, please provide a description of such changes on another sheet and submit it with this Notice of Intent.*

#### V. OTHER REQUIRED INFORMATION - FOR NEW DISCHARGERS AND FOR NEW DISCHARGES AND LOCATIONS NOT PREVIOUSLY REPORTED BY EXISTING DISCHARGERS.

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to:

- a. A list of constituents and the discharge concentration of each constituent;
- b. The estimated average and maximum daily flow rates at unit of gallons per day(gpd); the frequency and duration of the discharge and the date(s) when discharge will start;
- c. The proposed discharge location(s) as latitude and longitude for each discharge point;
- d. A description of the proposed treatment system (if appropriate);
- e. The affected receiving water; the receiving water(s) shall be
  - 1) receiving storm drain/creek, and/or
  - 2) the ultimate receiving water, such as Santa Ana River, San Jacinto River, Lake Elsinore, Prado Park Lake, etc.;
- f. A map showing the path from the point of initial discharge to the ultimate receiving water. Please try to limit your maps to size of 8.5" x 11".
- g. A list of known or suspected leaking underground tanks and other facilities or operations that have, or may have impacted the quality of the underlying groundwater within 200 feet of the site property lines for projects with expected discharge flow rates of less than 100,000 gallons per day and within 500 feet of the site property lines for projects with expected discharge flow rates of greater than 100,000 gallons per day.
- h. Any other information deemed necessary by the Executive Officer.

## **VI. OTHER**

Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:

You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your application, pursuant to Division 7, Section 13260 of the California Water Code.

De Minimus Permit Discharge Characterization Summary  
Construction Groundwater Dewatering Projects

District Project Name: \_\_\_\_\_

District Project No: \_\_\_\_\_

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

- a. A list of constituents and the discharge concentration of each constituent;

Source of water (groundwater, potable water, raw water): \_\_\_\_\_

Is the project discharging groundwater that is known to be contaminated (y/n): \_\_\_\_\_

If yes, what pollutants are contaminating the water: \_\_\_\_\_

Is there a known or suspected leaking underground storage tank, or other facilities or operations within 200 feet of rising groundwater that will be discharged?

If yes, what pollutants are associated with these facilities and/or operations?

Are there any other pollutants that may be discharged? \_\_\_\_\_

For each identified pollutant, collect a groundwater sample and attach monitoring results for those pollutant(s) consistent with the requirements of the monitoring section of the District's De Minimus Template Guidance Document. If an unexpected dewatering activity has occurred, this De Minimus NOI should be submitted immediately without the data. The data shall be provided in a follow up report as soon as possible.

- b. The estimated average and maximum daily flow rates at unit of gallons per day(gpd); the frequency and duration of the discharge and the date(s) when discharge will start;

Discharge Start Date: \_\_\_\_\_

Average Flow Rate (gpd): \_\_\_\_\_

Maximum Flow Rate (gpd): \_\_\_\_\_

Frequency and Duration of Discharge: \_\_\_\_\_

- c. The proposed discharge location(s) as latitude and longitude for each discharge point;

Discharge Location Name	Latitude	Longitude

- d. A description of the proposed treatment system or applicable BMPs (if appropriate);

\_\_\_\_\_

De Minimus Permit Discharge Characterization Summary  
Construction Groundwater Dewatering Projects

District Project Name: \_\_\_\_\_

District Project No: \_\_\_\_\_

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

- e. The affected receiving water;
  - 1) Direct receiving storm drain/creek: \_\_\_\_\_
  - 2) Circle the ultimate receiving water, (Reach 3 of Santa Ana River, Lake Elsinore);
- f. Please attach a map showing the path from the point of initial discharge to the ultimate receiving water. Please try to limit your maps to size of 8.5" X 11".
- g. A list of known or suspected leaking underground tanks and other facilities or operations that have, or may have impacted the quality of the underlying groundwater within 200 feet of the site property lines for projects with expected discharge flow rates of less than 100,000 gallons per day and within 500 feet of the site property lines for projects with expected discharge flow rates of greater than 100,000 gallons per day.

Tank / Facility or Operation within 200/500 feet of the project, as appropriate	Approximate location relative to the discharge point (project station, address, other) and relative distance to dewatering activity.

- h. Any other information deemed necessary by the Executive Officer.

APPENDIX "I"

ANNUAL REPORT TEMPLATE  
FOR  
ORDER NO. 2009-0009-DWQ

**ANNUAL REPORT FOR  
ORDER NO. 2009-0009-DWQ  
GENERAL PERMIT FOR STORMWATER DISCHARGES  
ASSOCIATED WITH CONSTRUCTION AND LAND  
DISTURBANCE ACTIVITIES**

**PROJECT NAME**  
**PROJECT ADDRESS**

Submitted to:  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3348

Prepared by:  
**Contractor's Name**  
**Contractor's Address**  
**Contractor's Address**  
**Contractor's Contact Person**  
**Contractor's Contact Phone Number**

Prepared for:  
Riverside County Flood Control and Water Conservation District  
1995 Market Street  
Riverside, California 92501  
**Contact Person**  
**Contact Phone Number**

**July 1, 20\_\_ to June 30, 20\_\_**

## CONTRACTOR'S CERTIFICATION

“I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

**Contractor's Name**

**Contractor's Title**

Name: \_\_\_\_\_

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

Signature: \_\_\_\_\_

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

## OWNER'S CERTIFICATION

“I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Signed: \_\_\_\_\_

Jason E. Uhley

Chief of Watershed Protection Division  
Riverside County Flood Control  
and Water Conservation District

## SUMMARY OF SAMPLING AND ANALYSIS RESULTS

Include a summary and evaluation of all sampling and analysis results, including copies of laboratory reports.



## ANALYTICAL METHOD RESULTS

Include the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit").

## CORRECTIVE ACTIONS

Summarize all corrective actions taken during the compliance year. Also identify any compliance activities or corrective action that were not implemented.

## VIOLATIONS

Summarize all violations of the General Permit.

## INSPECTIONS

### Provide:

1. The names of individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements;
2. The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge); and
3. The visual observation and sample collection exception records and reports

## TRAINING

Provide training information consisting of:

1. Documentation of all training for individuals responsible for all activities associated with compliance with this General Permit;
2. Documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair; and
3. Documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

# RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

## LID TESTING AND DEMONSTRATION FACILITY

### INDEX

#### RCFC&WCD STANDARD DRAWINGS

STD. DWG. NO. M803 CONCRETE COLLAR FOR PIPE  
12 INCHES THROUGH 66 INCHES

#### RCTD ORDINANCE NO. 461 STANDARD DRAWINGS

STD. NO. 200 TYPE A-6 CURB AND GUTTER  
STD. NO. 204 6" TYPE 'D' CURB

#### WMWD STANDARD DRAWINGS

STD. NO. W-1160 SEWER ON-SITE CLEANOUT  
(LID TO BE MARKED 'STORM DRAIN')

#### CALTRANS STANDARDS





D-94B CONCRETE FLARED END SECTION  
B3-3 RETAINING WALL TYPE 1A

#### SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (SDRSD)

(AUGUST 2009, WWW.REGIONAL-STDS.COM)

M-24 PEDESTRIAN PROTECTIVE RAILING, DETAILS NO. 1  
M-26 CONCRETE STEPS

#### SYMBOLS

PVC PIPE STORMWATER CLEANOUT   
(SEE DETAIL ON SHEET 10)  
CURB COURSE DATA   
STORM DRAIN COURSE DATA   
SURFACE DRAINAGE PATTERN 

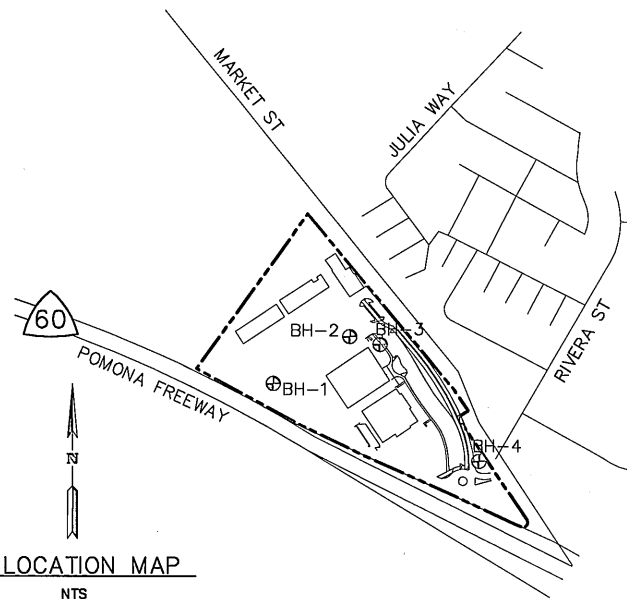
#### ABBREVIATIONS

BC BEGINNING OF CURVE  
EC END OF CURVE  
EX EXISTING  
FG FINISH GRADE  
FL FLOWLINE  
FS FINISH SURFACE  
IE INVERT ELEVATION  
PCC POINT OF COMPOUND CURVE  
PRC POINT OF REVERSE CURVE  
SG SUBGRADE  
TC TOP OF CURB  
TF TOP OF FOOTING  
TG TOP OF GRATE  
TW TOP OF WALL  
TYP TYPICAL

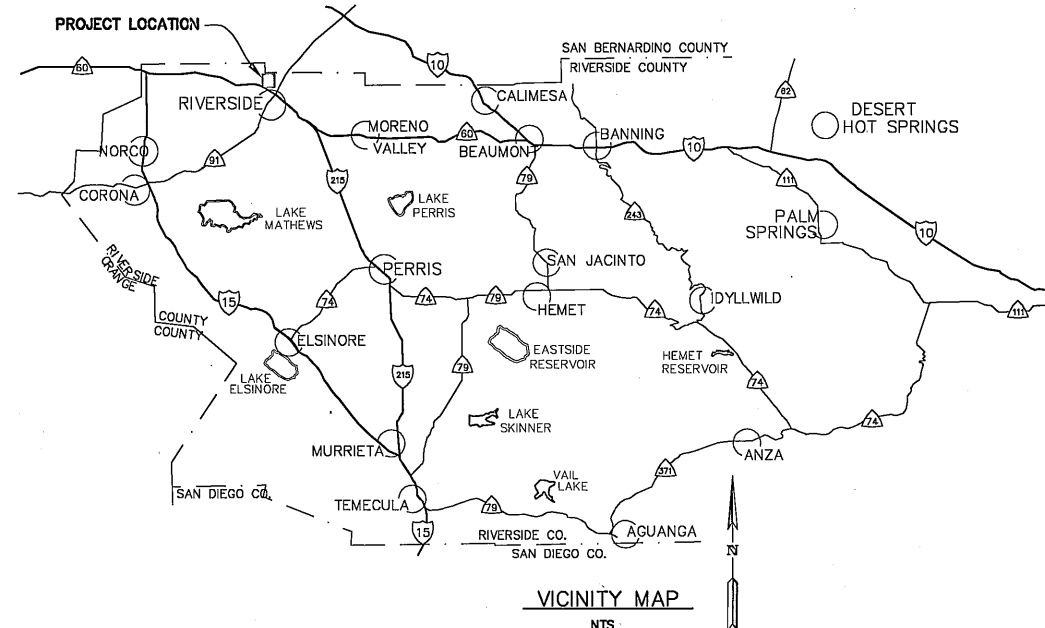
#### SHEET INDEX

(SEE SHEET 2 FOR INDEX MAP)

SHEET	DESCRIPTION
1	TITLE
2	SITE PLAN AND SHEET INDEX MAP
3	POROUS PAVEMENT AND SITE DRAINAGE
4	POROUS PAVEMENT AND SITE DRAINAGE
5	LANDSCAPE FILTER BASIN
6	SITE DRAINAGE AND FLOW THROUGH PLANTERS
7	INFILTRATION BASIN AND SAMPLING SYSTEM PLAN
8	ENHANCED GRASS SWALE AND DETAILS
9	FLOW THROUGH PLANTER SYSTEM DETAILS
10	POROUS PAVEMENT, FLOW DETECTION CATCH BASIN, DEEPENED CURB AND PVC PIPE CLEANOUT DETAILS
11	SAMPLING SYSTEM DETAILS
12	MISCELLANEOUS DETAILS
13	SLURRY SEAL AND STRIPING PLAN



LOCATION MAP  
NTS  
SEE SHEET 2 FOR INDEX MAP



VICINITY MAP  
NTS

#### GENERAL

- ALL GRADING SHALL CONFORM TO THE UNIFORM BUILDING CODE APPENDIX CHAP. 33 AS AMENDED BY ORD. 457.
- ALL WORK PER THIS PLAN SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT-OF-WAY WILL REQUIRE SEPARATE PLANS AND A SEPARATE REVIEW/APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
- ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH RECOMMENDATIONS OF THE SOILS INVESTIGATION BY LEIGHTON AND ASSOCIATES DATED \_\_\_\_\_
- CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. CONTACT HENRY OLIVO AT 951/955-1288.
- FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-422-4133.
- ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON U.S.C. & G.S. DATUM.
- ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
- OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
- PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 AND BACKFILL PER CALTRANS SECTION 19.
- BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED \_\_\_\_\_. LOCATIONS SHOWN ARE APPROXIMATE.
- ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
- STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO RCTD STANDARD DRAWINGS, WMWD STANDARD DRAWINGS, CALTRANS STANDARDS, SAN DIEGO REGIONAL STANDARD DRAWINGS OR RCFC&WCD STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
- CONTRACTOR TO ADJUST ALL EXISTING VALVE, MANHOLE, CLEANOUT AND MISCELLANEOUS UTILITY COVERS WITHIN THE CONSTRUCTION LIMITS FLUSH TO THE FINISHED SURFACE ELEVATION UNLESS NOTED OTHERWISE.
- LANDSCAPING, LIGHTING AND IRRIGATION PER LANDSCAPE PLANS (RCFCWCD DRAWING 9-120).

#### CUT/FILL

- MAXIMUM CUT AND FILL SLOPE = 2:1.
- NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, DEBRIS, TOPSOIL AND OTHER DELETERIOUS MATERIAL. FILLS SHOULD BE PLACED IN THIN LIFTS (8-INCH MAX OR AS RECOMMENDED IN SOILS REPORT), COMPACTED AND TESTED AS GRADING PROCESS UNTIL FINAL GRADES ARE ATTAINED. ALL FILLS ON SLOPES STEEPER THAN 5 TO 1 (H/V) AND A HEIGHT GREATER THAN 5 FEET SHALL BE KEYED AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. THE BENCH UNDER THE TOE MUST BE 10 FEET WIDE MIN.

#### DRAINAGE AND EROSION/DUST CONTROL

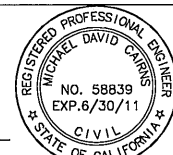
- MINIMUM BUILDING PAD DRAINAGE GRADIENT SHALL BE = 1%, UNLESS SHOWN OTHERWISE ON THE PLAN.
- DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL (BEST MANAGEMENT PRACTICES, BMPs) SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
- DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
- ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
- FINISH GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR WALLS AT NOT LESS THAN 1/2" PER FOOT FOR A MINIMUM OF 3'.

CVALDO CORPORATION  
CIVIL ENGINEERING  
4901 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
(619) 859 0129 (F) 859 866 0131

Don't Dig...Until You Call U.S.A. Toll Free  
1-800-227-2600  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.  
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/22/10

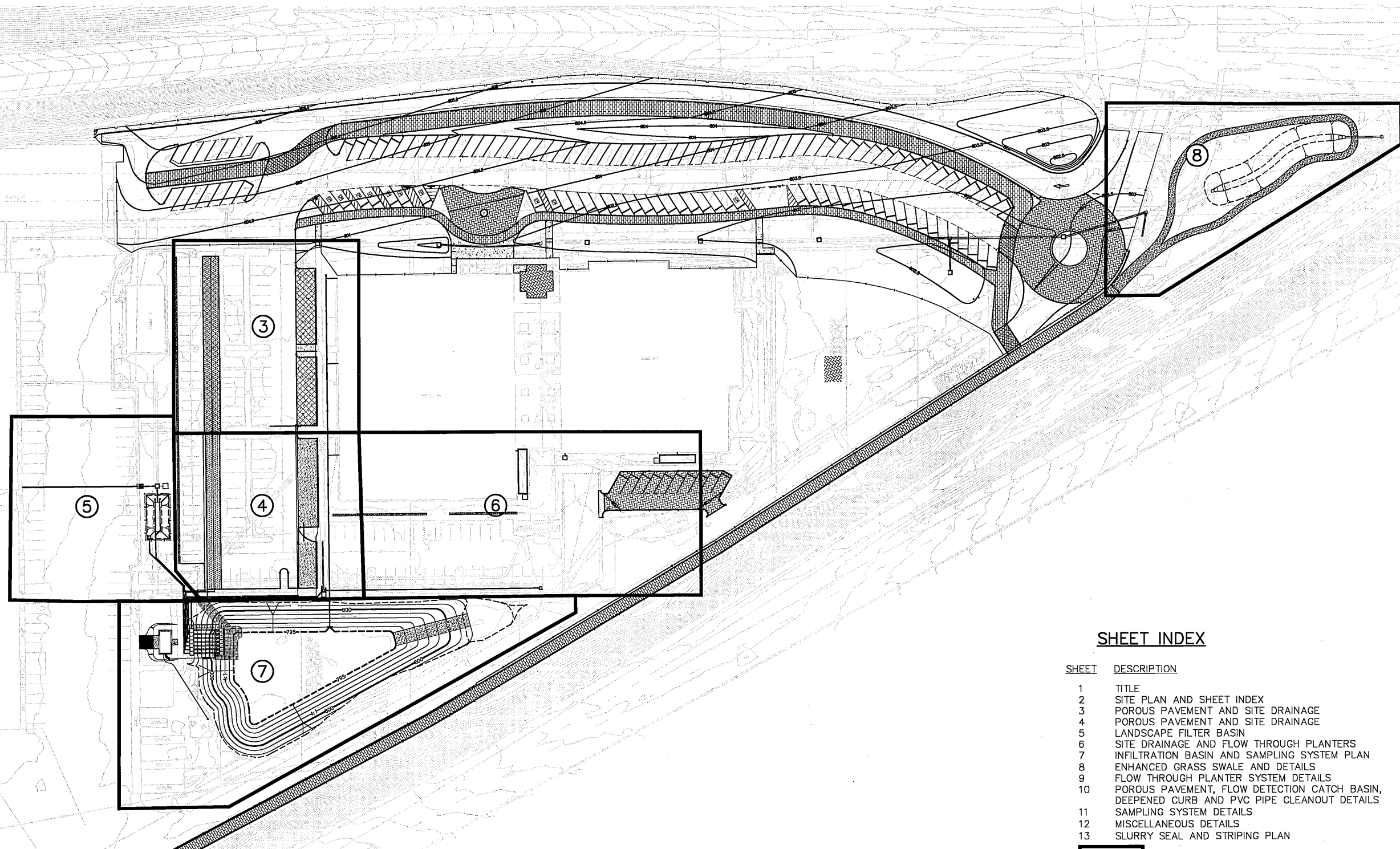


REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
LID TESTING AND DEMONSTRATION FACILITY  
TITLE SHEET

PROJECT NO.  
1-0-00001  
DRAWING NO.  
9-118  
SHEET NO.  
1 OF 13

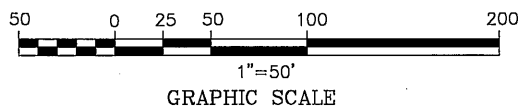


**SHEET INDEX**

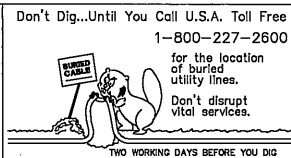
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13	SLURRY SEAL AND STRIPING PLAN



INDICATES SHEET NUMBER AND LIMITS



**CVALDO CORPORATION**  
 CIVIL ENGINEERING  
 4501 MORENA BLVD. SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 858 856 0128 (F) 858 856 0131



**BENCH MARK**  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
 THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
 E: 6219063.81  
 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10



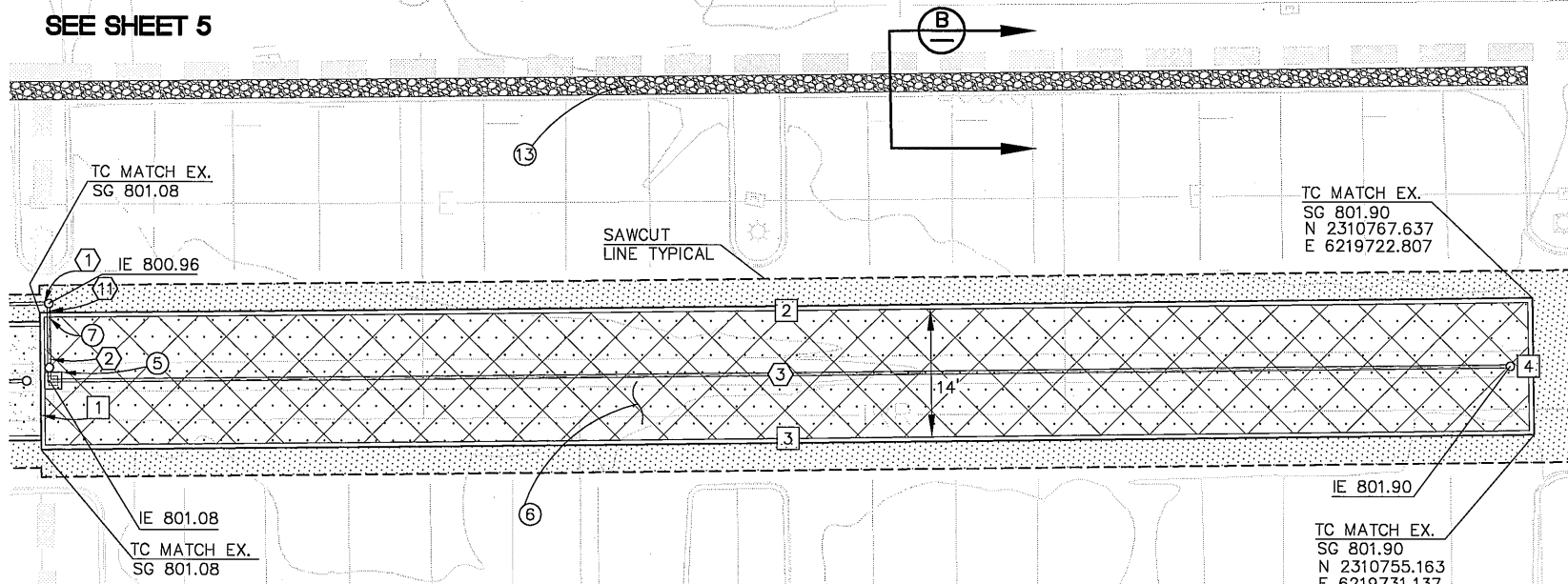
REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
RECOMMENDED FOR APPROVAL BY:	APPROVED BY:
<i>[Signature]</i>	<i>[Signature]</i>
DATE: July 1, 2010	DATE: 1-10-2010

**LID TESTING AND DEMONSTRATION FACILITY**  
 SITE PLAN AND SHEET INDEX

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-118  
 SHEET NO. 2 OF 13

SEE SHEET 5



STORM DRAIN DATA					
NO.	BEARING/Delta	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N56°16'01"E	---	0.50'	---	6" SOLID PVC (SDR-35) @ 2.000%
(2)	N33°43'58"W	---	7.00'	---	6" PERF PVC (SDR-35) @ 1.412%
(3)	N56°16'01"E	---	159.57'	---	6" PERF PVC (SDR-35) @ 0.514%
(4)	N56°16'01"E	---	6.62'	---	6" SOLID PVC (SDR-35) @ 0.755%
(5)	N33°41'47"W	---	1.50'	---	6" SOLID PVC (SDR-35) @ 0.737%
(6)	N33°41'47"W	---	17.50'	---	6" PERF PVC (SDR-35) @ 0.737%
(7)	N56°16'01"E	---	62.34'	---	6" PERF PVC (SDR-35) @ 0.513%
(8)	N56°16'01"E	---	12.10'	---	6" SOLID PVC (SDR-35) @ 0.496%
(9)	N56°16'01"E	---	66.86'	---	6" PERF PVC (SDR-35) @ 0.509%
(10)	N33°43'58"W	---	25.90'	---	(1)
(11)	N33°43'58"W	---	1.50'	---	6" SOLID PVC (SDR-35) @ 1.412%
(12)	N56°17'21"E	---	19.57'	---	8" SOLID PVC (SDR-35) @ 1.175%
(13)	N56°17'21"E	---	34.25'	---	8" SOLID PVC (SDR-35) @ 1.022%
(14)	N56°17'21"E	---	9.13'	---	8" SOLID PVC (SDR-35) @ 0.986%
(15)	N33°42'39"W	---	10.30'	---	(1)
(16)	N56°17'21"E	---	35.95'	---	8" SOLID PVC (SDR-35) @ 1.029%
(17)	N56°17'21"E	---	41.89'	---	8" SOLID PVC (SDR-35) @ 1.000%
(18)	N56°17'21"E	---	2.75'	---	8" SOLID PVC (SDR-35) @ 1.009%
(19)	N33°42'39"W	---	10.31'	---	(1)

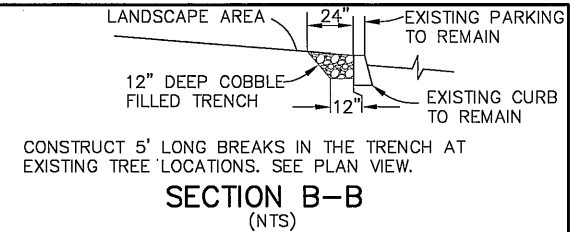
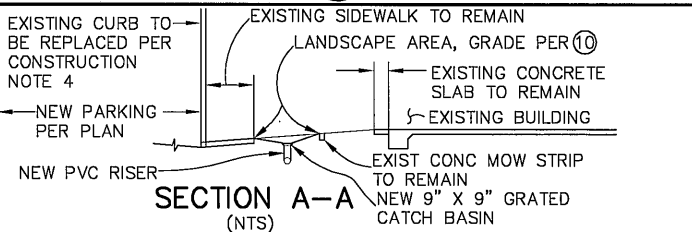
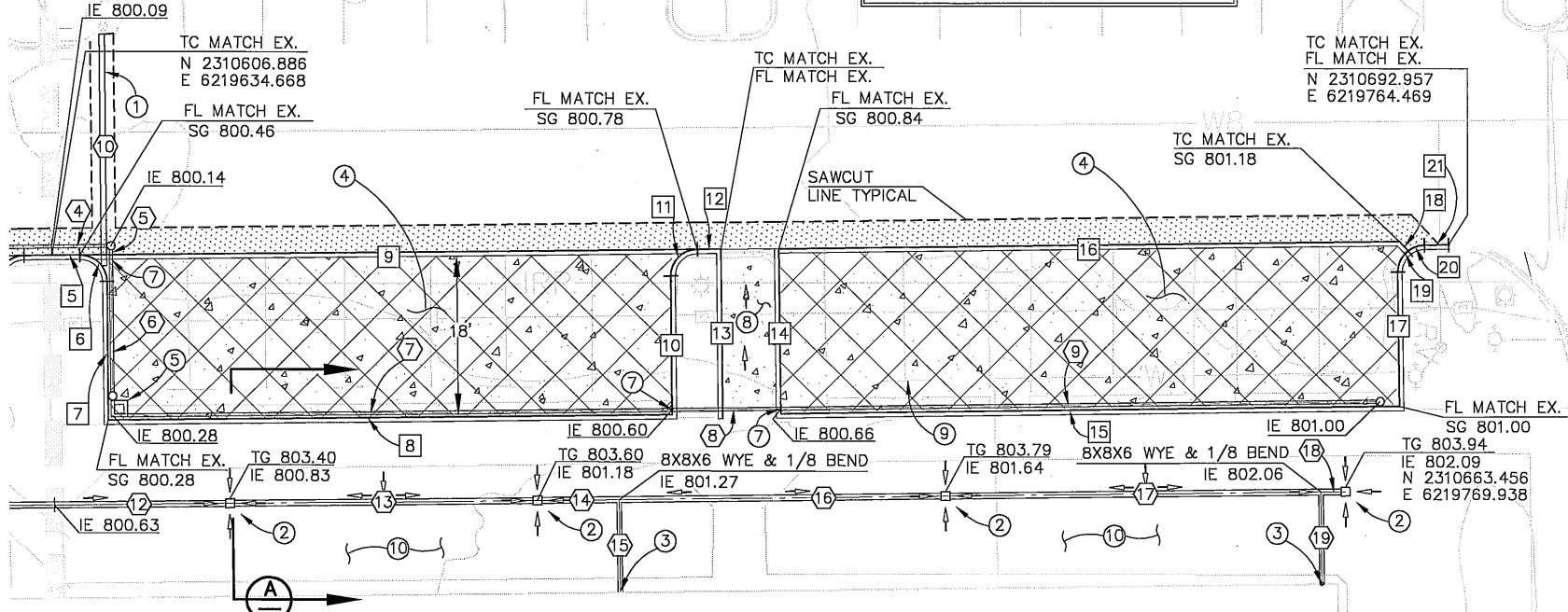
FOR 12"x12" CATCH BASINS, PIPE LENGTHS ARE TO THE CENTER OF THE CATCH BASIN.  
FOR CLEANOUTS, PIPE LENGTHS ARE TO CENTER OF CLEANOUT.

CURB DATA					
NO.	BEARING/Delta	RADIUS	LENGTH	TANGENT	REMARKS
1	N33°43'58"W	---	15.00'	---	CD24
2	N56°16'02"E	---	163.07'	---	CD30
3	N56°16'02"E	---	163.07'	---	"
4	N33°43'58"W	---	15.00'	---	"
5	N56°18'35"E	---	3.09'	---	CD31
6	D=89°59'38"	3.00'	4.71'	3.00'	"
7	N33°41'47"W	---	15.51'	---	"
8	N56°18'13"E	---	62.84'	---	"
9	N56°18'13"E	---	68.64'	---	CD30
10	N33°41'47"W	---	15.50'	---	CD31
11	D=90°00'00"	3.00'	4.71'	3.00'	"
12	N56°18'13"E	---	2.63'	---	CD24
13	N33°37'31"W	---	19.00'	---	"
14	N33°45'02"W	---	18.50'	---	TAPER FROM CD30 TO CD31 (12)
15	N56°14'58"E	---	69.03'	---	CD31
16	N56°14'58"E	---	69.25'	---	CD30
17	N33°45'02"W	---	15.07'	---	CD31
18	N75°58'16"W	---	1.42'	---	CD30
19	D=52°33'34"	3.00'	2.75'	1.48'	CD31
20	D=37°31'14"	3.00'	1.97'	1.02'	CD24
21	N56°19'46"E	---	2.70'	---	"

SEE PAVEMENT DETAILS ON SHEET 10 FOR PCC EXTENSION BELOW CURB  
ALL CURBS TO MATCH EXISTING GRADE  
EXIST CURB, OR EXIST CURB AND GUTTER TO BE REMOVED  
IN LOCATIONS WHERE NEW CURB IS TO BE CONSTRUCTED

NOTE: ALL PERVIOUS PAVEMENT IMPROVEMENTS ON THIS SHEET TO BE CONSTRUCTED AFTER THE INSTALLATION OF ADJACENT LANDSCAPING AND IRRIGATION

SEE SHEET 4



CONSTRUCTION NOTES

- CONSTRUCT SLOTTED DRAIN AND DISCHARGE TO PERVIOUS CONCRETE BASE AT DOWNSTREAM END, PER DETAIL ON SHEET 12. SAWCUT 1' OUTSIDE OF SLOT DRAIN. BACKFILL WITH SLURRY TO BASE OF EXISTING AC. THEN PAVE WITH AC PAVEMENT TO MATCH EXISTING PER SAWCUT REPAIR DETAIL 5 ON SHEET 10. USE ALHAMBRA FOUNDRY 10" A-2423 GRATE WITH NON-GALVANIZED STEEL TROUGH PER ALHAMBRA FOUNDRY A-2446 OR APPROVED NON-GALVANIZED EQUAL.
- CONSTRUCT 9" X 9" CATCH BASIN WITH SQUARE GRATE (NDS 932 CB, NDS 980 GRATE, OR APPROVED EQUAL) AND INSTALL 8"x8"x6" SDR-35 COMBO WYE AND 1/8 BEND (PLASTIC TRENDS G1658-6.D01 OR APPROVED EQUAL). INSTALL 6" PVC RISER CUT TO LENGTH FROM TEE TO CATCH BASIN.
- CONNECT EXISTING 5" DIA. ROOF DRAIN TO NEW 6" PVC (SDR-35) PIPE. 6" PIPE TO GO BELOW GRADE AS CLOSE TO THE BUILDING AS POSSIBLE WITHOUT DISTURBING THE EXISTING CONCRETE FLATWORK. CONTRACTOR TO COORDINATE CONNECTION DESIGN WITH THE DISTRICT ENGINEER PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE AND INSTALL ALL ADAPTERS AND FITTINGS AS NEEDED. SEE ROOF DRAIN CONNECTION DETAIL ON SHEET 12.
- REMOVE EXISTING ASPHALT PAVEMENT, BASE, CONCRETE CURB AND CONCRETE GUTTER. CONSTRUCT PERVIOUS CONCRETE PAVEMENT SYSTEM PER PAVEMENT DETAIL 2 ON SHEET 10
- CONSTRUCT PRECAST FLOW DETECTION BASIN PER DETAIL ON SHEET 10.
- REMOVE EXISTING CONCRETE RIBBON GUTTER, ASPHALT PAVEMENT AND BASE. CONSTRUCT POROUS ASPHALT PAVEMENT SYSTEM PER PAVEMENT DETAIL 1 ON SHEET 10.
- PROVIDE WALL PENETRATION FOR PVC DRAIN PER DETAIL ON SHEET 12. TRANSITION FITTING FROM PERFORATED TO SOLID PVC TO BE AT PERVIOUS PAVEMENT FACE OF WALL. MAINTAIN PIPE SLOPE THROUGH PENETRATION LOCATIONS. IF NECESSARY WARP THE SUBGRADE AND BOTTOM OF CURB DOWNWARD TO MATCH THE INVERT OF THE PERFORATED SUB DRAIN.
- CONSTRUCT 4" THICK PCC RAMP FROM EXISTING SIDEWALK TO AC PAVING.
- IN AREAS TO BE REPAVED, REMOVE EXISTING WHEEL STOPS. SEE SHEET 13 FOR NEW WHEEL STOP LOCATIONS.
- UNDER THE SUPERVISION OF THE DISTRICT INSPECTOR, REMOVE EXISTING LANDSCAPING AND IRRIGATION. GRADE AREA FOR POSITIVE DRAINAGE TO NEW CATCH BASINS. VERIFY TOP OF GRATE ELEVATION AND ADJUST AS NECESSARY. (FOR ATRIUM GRATES TOP OF GRATE=TOP OF CATCH BASIN). INSTALL NEW LANDSCAPING AND IRRIGATION PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).
- FOR STORM DRAIN COURSE 15 AND 19 SEE ROOF DRAIN CONNECTION DETAIL ON SHEET 12
- THE NORTHERLY ENDPPOINTS OF CURB COURSES 13 AND 14 ARE ON THE SAME LINE
- CONSTRUCT COBBLE FILLED TRENCH PER SECTION B-B ON THIS SHEET.

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CIVIL ENGINEERING  
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SAN DIEGO, CA 92117  
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BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/29/10

REGISTERED PROFESSIONAL ENGINEER  
MICHAEL DAVID CAIRNS  
NO. 58839  
EXP. 6/30/11  
STATE OF CALIFORNIA

REVISIONS	ENGINEER	RCFC&WCD

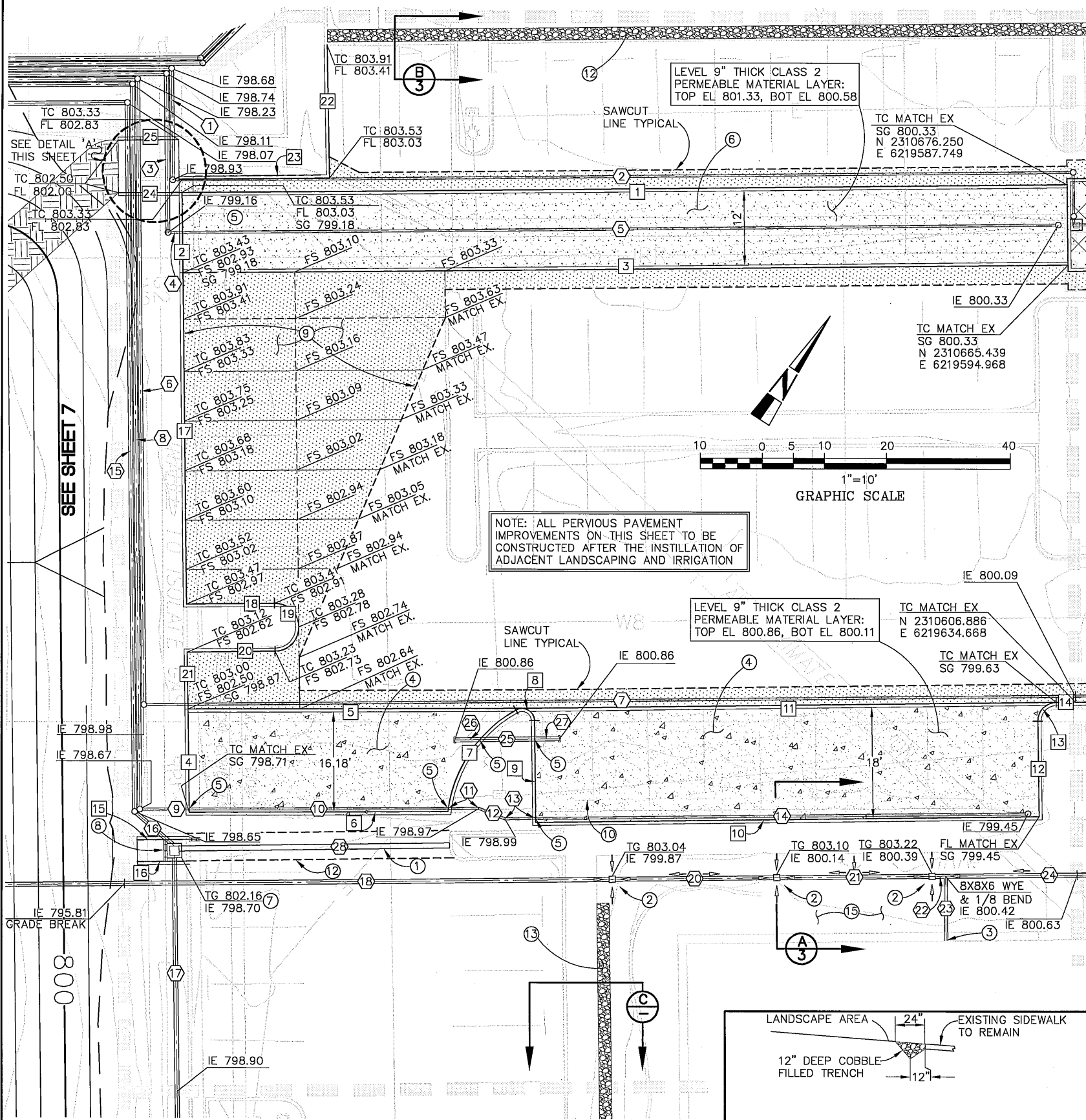
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
APPROVED BY: *[Signature]*  
DATE: July 1, 2010  
DATE: 1-29-2010

LID TESTING AND DEMONSTRATION FACILITY  
POROUS PAVEMENT AND SITE DRAINAGE

PROJECT NO.  
1-0-0001  
DRAWING NO.  
9-118  
SHEET NO.  
3 OF 13



SEE SHEET 5

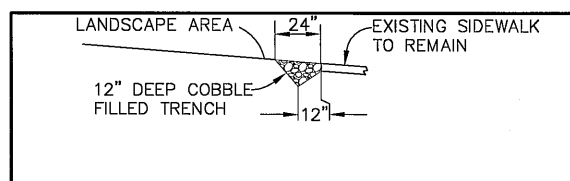


NOTE: ALL PERVIOUS PAVEMENT IMPROVEMENTS ON THIS SHEET TO BE CONSTRUCTED AFTER THE INSTALLATION OF ADJACENT LANDSCAPING AND IRRIGATION

LEVEL 9" THICK CLASS 2 PERMEABLE MATERIAL LAYER: TOP EL 800.86, BOT EL 800.11

SEE SHEET 6

SECTION C-C (NTS)



SEE SHEET 3

CURB DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
1	N56°16'02"E	---	142.58'	---	CD30
2	N33°44'43"W	---	13.00'	---	CD31
3	N56°16'02"E	---	142.58'	---	CD30
4	N33°48'54"W	---	16.68'	---	CD31
5	N56°37'41"E	---	53.75'	---	CD30
6	N56°37'41"E	---	41.62'	---	CD31
7	D=53°23'49"	22.00'	20.50'	11.06'	"
8	D=118°59'29"	2.00'	4.15'	3.39'	"
9	N33°50'21"W	---	16.52'	---	"
10	N56°09'39"E	---	81.10'	---	"
11	N56°09'39"E	---	85.85'	---	CD30
12	N33°50'21"W	---	15.50'	---	CD31
13	D=90°08'56"	3.00'	4.72'	3.01'	"
14	N56°18'35"E	---	3.09'	---	CD24
15	N56°17'21"W	---	8.42'	---	"
16	N56°17'21"W	---	8.42'	---	"
17	N33°49'40"W	---	53.56'	---	"
18	N56°10'20"E	---	14.12'	---	"
19	D=180°00'00"	3.88'	12.17'	---	"
20	N56°10'20"E	---	14.12'	---	"
21	N33°49'40"W	---	9.23'	---	"
22	S34°08'13"E	---	21.59'	---	CD26
23	S55°59'31"W	---	24.24'	---	"
24	S56°16'02"W	---	10.22'	---	CD24
25	S56°16'02"W	---	9.72'	---	"

SEE PAVEMENT DETAILS ON SHEET 10 FOR PCC EXTENSION BELOW CURB

ALL CURBS TO MATCH EXISTING GRADE EXCEPT COURSES 2, 4 AND 15 THROUGH 21

EXIST CURB, OR EXIST CURB AND GUTTER TO BE REMOVED IN LOCATIONS WHERE NEW CURB IS TO BE CONSTRUCTED

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	REMARKS	
1	N33°45'16"W	---	18.08'	6" SOLID PVC (SDR-35) @ 1.383%	
2	N56°16'01"E	---	144.58'	6" SOLID PVC (SDR-35) @ 1.397%	
3	N33°45'16"W	---	25.75'	6" SOLID PVC (SDR-35) @ 1.631%	
4	N56°16'01"E	---	2.33'	6" SOLID PVC (SDR-35) @ 0.858%	
5	N56°16'01"E	---	141.08'	6" PERF PVC (SDR-35) @ 0.815%	
6	N33°45'16"W	---	101.17'	6" SOLID PVC (SDR-35) @ 0.741%	
7	N56°16'01"E	---	150.02'	6" SOLID PVC (SDR-35) @ 0.739%	
8	N33°45'16"W	---	117.28'	6" SOLID PVC (SDR-35) @ 0.477%	
9	N56°37'41"E	---	7.94'	6" SOLID PVC (SDR-35) @ 0.487%	
10	N56°37'41"E	---	41.70'	6" PERF PVC (SDR-35) @ 0.552%	
11	N56°37'41"E	---	4.96'	6" SOLID PVC (SDR-35) @ 0.563%	
12	N79°07'41"E	---	4.46'	6" SOLID PVC (SDR-35) @ 0.563%	
13	N56°16'01"E	---	4.97'	6" SOLID PVC (SDR-35) @ 0.563%	
14	N56°16'01"E	---	79.32'	6" PERF PVC (SDR-35) @ 0.542%	
15	N33°45'16"W	---	114.63'	6" SOLID PVC (SDR-35) @ 0.508%	
16	N81°49'54"W	---	8.51'	6" SOLID PVC (SDR-35) @ 0.549%	
17	N33°45'16"W	---	38.10'	6" SOLID PVC (SDR-35) @ 0.515%	
18	N56°17'21"E	---	78.48'	8" SOLID PVC (SDR-35) @ 5.173%	
19				NOT USED	
20	N56°17'21"E	---	26.47'	8" SOLID PVC (SDR-35) @ 1.020%	
21	N56°17'21"E	---	25.03'	8" SOLID PVC (SDR-35) @ 0.999%	
22	N56°17'21"E	---	2.21'	8" SOLID PVC (SDR-35) @ 1.357%	
23	N33°42'39"W	---	10.35'		(1)
24	N56°17'21"E	---	21.22'	8" SOLID PVC (SDR-35) @ 0.990%	
25	N56°16'01"E	---	8.83'	8" SOLID PVC (SDR-35) @ 0.00%	
26	N56°16'01"E	---	4.00'	8" PERF PVC (SDR-35) @ 0.00%	
27	N56°16'01"E	---	4.00'	8" PERF PVC (SDR-35) @ 0.00%	
28	N56°04'17"E	---	43.51'		(1)

FOR CATCH BASINS LARGER THAN 12"x12", PIPE LENGTHS ARE TO INSIDE FACE OF CATCH BASIN, OR CENTER OF CLEANOUT.

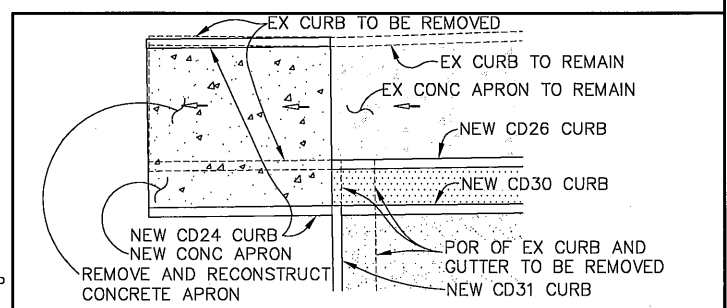
CATCH BASIN INVERT ELEVATION IS GIVEN AT CENTER OF BOX, PIPE SLOPE IS TO CONTINUE THROUGH THE CATCH BASINS.

FOR 12"x12" CATCH BASINS, PIPE LENGTHS ARE TO THE CENTER OF THE CATCH BASIN.

FOR CLEANOUTS, PIPE LENGTHS ARE TO CENTER OF CLEANOUT.

CONSTRUCTION NOTES

- CONSTRUCT SLOTTED DRAIN AND DISCHARGE TO 18" CATCH BASIN, PER DETAIL ON SHEET 12. SAWCUT 1" OUTSIDE OF SLOT DRAIN. BACKFILL WITH SLURRY TO BASE OF EXISTING AC. THEN PAVE WITH AC PAVEMENT TO MATCH EXISTING. USE ALHAMBRA FOUNDRY 10" A-2423 GRATE WITH NON-GALVANIZED STEEL TROUGH PER ALHAMBRA FOUNDRY A-2446 OR APPROVED NON-GALVANIZED EQUAL.
- CONSTRUCT 9" X 9" CATCH BASIN WITH SQUARE GRATE (NDS 932 CB, NDS 980 GRATE, OR APPROVED EQUAL) AND INSTALL 8"x8"x6" SDR-35 COMBO WYE AND 1/8 BEND (PLASTIC TRENDS G1658-6.D01 OR APPROVED EQUAL). INSTALL 6" PVC RISER CUT TO LENGTH FROM TEE TO CATCH BASIN.
- CONNECT EXISTING 5" DIA. ROOF DRAIN TO NEW 6" PVC (SDR-35) PIPE. 6" PIPE TO GO BELOW GRADE AS CLOSE TO THE BUILDING AS POSSIBLE WITHOUT DISTURBING THE EXISTING CONCRETE FLATWORK. CONTRACTOR TO COORDINATE CONNECTION DESIGN WITH THE DISTRICT ENGINEER PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE AND INSTALL ALL ADAPTERS AND FITTINGS AS NEEDED. SEE ROOF DRAIN CONNECTION DETAIL ON SHEET 12.
- REMOVE EXISTING ASPHALT PAVEMENT AND BASE. CONSTRUCT PERVIOUS CONCRETE PAVEMENT SYSTEM PER PAVEMENT DETAIL 4 ON SHEET 10
- PROVIDE WALL PENETRATION FOR PVC DRAIN PER DETAIL ON SHEET 12. TRANSITION FITTING FROM PERFORATED TO SOLID PVC TO BE AT PERVIOUS PAVEMENT FACE OF WALL. MAINTAIN PIPE SLOPE THROUGH PENETRATION LOCATIONS. IF NECESSARY WARP THE SUBGRADE AND BOTTOM OF CURB DOWNWARD TO MATCH THE INVERT OF THE PERFORATED SUB DRAIN.
- REMOVE EXISTING CONCRETE RIBBON GUTTER, ASPHALT PAVEMENT AND BASE. CONSTRUCT POROUS ASPHALT PAVEMENT SYSTEM PER PAVEMENT DETAIL 3 ON SHEET 10.
- CONSTRUCT 18" X 18" PRECAST CONCRETE GRATED CATCH BASIN WITH TRAFFIC RATED GRATE (BROOKS 1818 CB OR APPROVED EQUAL) CATCH BASIN FLOOR TO BE 8" THICK MINIMUM POURED CONCRETE. CONCRETE FLOOR TO BE HAND TROWELED WITH A SMOOTH FINISH TO PROVIDE POSITIVE DRAINAGE. GRATE TO BE CAST IRON OR BARE STEEL (NON-GALVANIZED). INSTALL FLOGARD FF-18D CATCH BASIN FILTER INSERT BY KRISTAR ENTERPRISES INC. W/O FILTRATION MEDIA, OR APPROVED EQUAL. SEE PCC APRON AND CATCH BASIN DETAIL ON SHEET 12.
- SAWCUT AND REMOVE EXISTING CURB AND GUTTER. CONSTRUCT 4" THICK CONCRETE APRON BETWEEN CURB COURSES 15 AND 16 AND FORM 2" HIGH CONCRETE BERMS TO ISOLATE CATCH BASIN PER PCC APRON AND CATCH BASIN DETAIL ON SHEET 12.
- SAWCUT AND REMOVE EXISTING CURB AND GUTTER. CONSTRUCT NEW CURB PER PLAN AND DATA TABLE. CONSTRUCT NEW AC PAVEMENT ABOVE EXISTING PAVEMENT. GRIND EXISTING AC PAVEMENT AS NECESSARY TO ACHIEVE A MINIMUM OVERLAY THICKNESS OF 1.5".
- IN AREAS TO BE REPAVED, REMOVE EXISTING WHEEL STOPS. SEE SHEET 13 FOR NEW WHEEL STOP LOCATIONS.
- FOR STORM DRAIN COURSE 23 SEE ROOF DRAIN CONNECTION DETAIL ON SHEET 12
- CONSTRUCT COBBLE FILLED TRENCH PER SECTION B-B ON SHEET 3.
- CONSTRUCT COBBLE FILLED TRENCH PER SECTION C-C ON THIS SHEET.
- SAWCUT 4" WIDE SECTION OF AC AND CONCRETE CURB AND GUTTER AND RECONSTRUCT BY BACKFILLING AROUND SLOTTED DRAIN CHANNEL WITH SLURRY TO BASE OF AC, THEN PAVE WITH AC PAVEMENT TO MATCH EXISTING PER SAWCUT REPAIR DETAIL 5 ON SHEET 10. RECONSTRUCT CONCRETE GUTTER PER PCC APRON AND CATCH BASIN DETAIL ON SHEET 12.
- UNDER THE SUPERVISION OF THE DISTRICT INSPECTOR, REMOVE EXISTING LANDSCAPING AND IRRIGATION. GRADE AREA FOR POSITIVE DRAINAGE TO NEW CATCH BASINS. VERIFY TOP OF GRADE ELEVATION AND ADJUST AS NECESSARY. (FOR ATRIUM GRATES TOP OF GRADE=TOP OF CATCH BASIN). INSTALL NEW LANDSCAPING AND IRRIGATION PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).



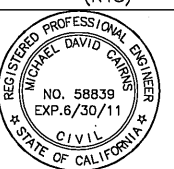
DETAIL 'A' (NTS)

**CVALDO CORPORATION**  
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BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/29/10

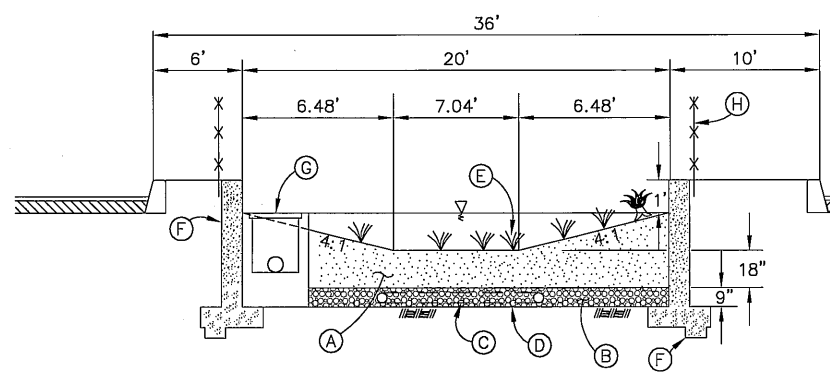


REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *Michael D. Cairns*  
DATE: July 1, 2010  
APPROVED BY: *Michael D. Cairns*  
DATE: 1-10-2010

LID TESTING AND DEMONSTRATION FACILITY  
POROUS PAVEMENT AND SITE DRAINAGE  
PROJECT NO. 1-0-00001  
DRAWING NO. 9-118  
SHEET NO. 4 OF 13

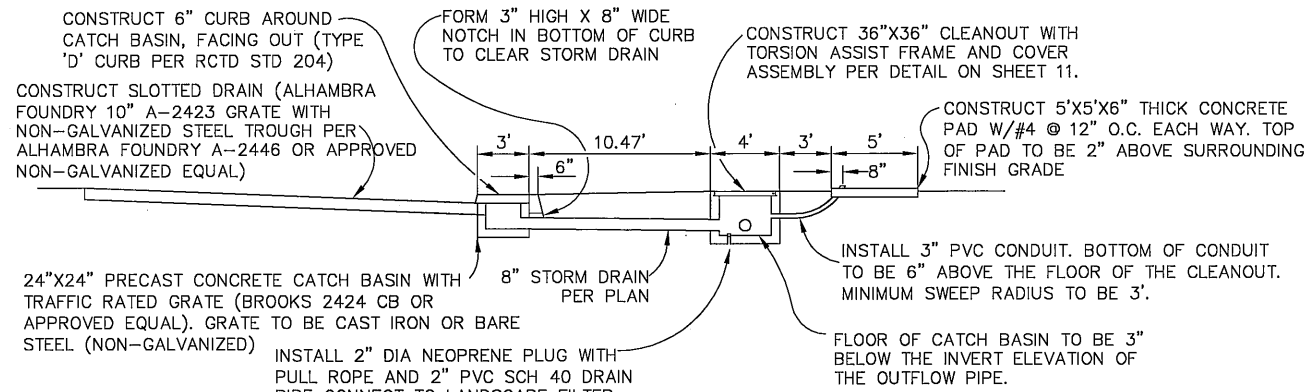
- LANDSCAPE FILTER BASIN DETAIL NOTES**
- (A) LANDSCAPE FILTER BASIN FILTRATION SOIL MIXTURE PER PROJECT SPECIFICATIONS
  - (B) GRAVEL LAYER #57 STONE
  - (C) 6" DIA. PERFORATED PIPE UNDER DRAIN CONNECTED TO OUTLET DRAIN.
  - (D) MIRAFI NT100 IMPERMEABLE COMPOSITE BARRIER. ATTACH LINER TO RETAINING WALL ALONG ENTIRE PERIMETER WITH APPROVED ADHESIVE.
  - (E) LANDSCAPING AND IRRIGATION PER LANDSCAPE PLAN.
  - (F) RETAINING WALL TYPE 1A PER CALTRANS STANDARD B3-3. (TOP OF FOOTING (TF) EQUALS INVERT OF GRAVEL LAYER).
  - (G) 24"x24" CATCH BASIN WITH PARKWAY GRATE (BROOKS 2424 CB OR APPROVED EQUAL). GRATE TO BE CAST IRON OR BARE STEEL (NON-GALVANIZED)
  - (H) INSTALL PERIMETER BOLLARD FENCE PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).



**SECTION A-A**  
(NTS)  
LANDSCAPE FILTER BASIN

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N11°24'47"E	---	43.18'	---	6" PVC (SDR-35) @ 0.926%
(2)	N11°24'47"E	---	36.13'	---	6" PVC (SDR-35) @ 1.003%
(3)	N56°00'18"E	---	17.35'	---	6" PVC (SDR-35) @ 0.922%
(4)	N56°00'18"E	---	13.19'	---	6" PVC (SDR-35) @ 0.834%
(5)	N56°00'18"E	---	3.49'	---	6" PERF PVC (SDR-35) @ 0.860%
(6)	N56°00'18"E	---	28.87'	---	6" PERF PVC (SDR-35) @ 0.485%
(7)	N11°00'18"E	---	6.18'	---	6" PERF PVC (SDR-35) @ 0.485%
(8)	N56°00'18"E	---	33.23'	---	6" PERF PVC (SDR-35) @ 0.512%
(9)	N33°42'39"W	---	107.30'	---	SLOT DRAIN PER NOTES
(10)	N34°05'14"W	---	12.39'	---	8" PVC (SDR-35) @ 1.049%
(11)	S55°54'46"W	---	13.41'	---	8" PVC (SDR-35) @ 1.001%

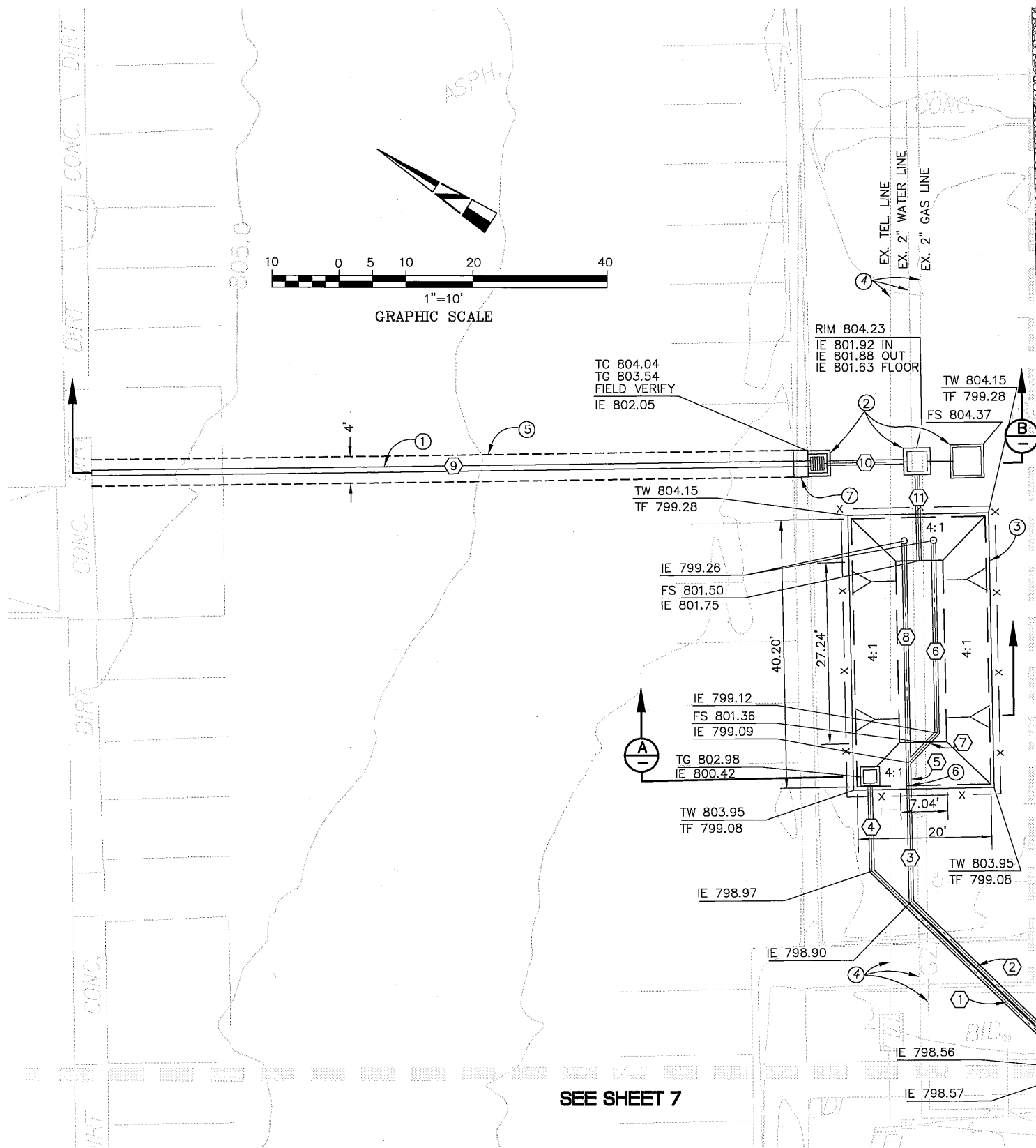
PIPE LENGTHS ARE TO INSIDE FACE OF CATCH BASIN, OR CENTER OF CLEANOUT. CATCH BASIN INVERT ELEVATION IS GIVEN AT CENTER OF BOX, PIPE SLOPE IS TO CONTINUE THROUGH THE CATCH BASINS



**SECTION B-B**  
(NTS)

**CONSTRUCTION NOTES**

- (1) CONSTRUCT SLOTTED DRAIN (ALHAMBRA FOUNDRY 10" A-2423 GRATE WITH NON-GALVANIZED STEEL TROUGH PER ALHAMBRA FOUNDRY A-2446 OR APPROVED NON-GALVANIZED EQUAL) AND CONNECT TO CATCH BASIN AT DOWNSTREAM END. SEE SECTION B-B THIS SHEET AND DETAIL ON SHEET 12. TOP OF SLOTTED DRAIN GRATE TO BE 0.05' BELOW EXISTING AC FS.
- (2) CONSTRUCT 24"x24" CATCH BASIN WITH TRAFFIC RATED GRATE, AND 36"x36" CLEANOUT W/ TORSION ASSIST FRAME AND COVER ASSEMBLY, AND 5'x5'x6" THICK CONCRETE PAD PER SECTION B-B ON THIS SHEET.
- (3) CONSTRUCT LANDSCAPE FILTER BASIN WITH BOLLARD FENCE, SUBDRAIN AND IMPERVIOUS LINER PER WQ510 MODIFIED PER SECTION A-A ON THIS SHEET. BOLLARD FENCE TO BE PER LANDSCAPE PLAN (RCFCWCD DWG 9-120).
- (4) CONTRACTOR TO COORDINATE WITH THE DISTRICT ENGINEER TO RELOCATE THE EXISTING 2" GAS, 2" WATER AND TELEPHONE UTILITIES THAT CONFLICT WITH THE PROPOSED LANDSCAPE FILTER BASIN.
- (5) SAWCUT 4' ± WIDE SECTION OF AC. RECONSTRUCT BY BACKFILLING AROUND SLOTTED DRAIN CHANNEL WITH SLURRY TO BASE OF EXISTING AC. THEN THEN PAVE WITH AC PAVEMENT TO MATCH EXISTING PER SAWCUT REPAIR DETAIL 5 ON SHEET 10. FINISHED SURFACE TO BE SLOPED TOWARD SLOTTED DRAIN.
- (6) WALL PENETRATION FOR 6" PVC. TRANSITION FROM PERFORATED TO SOLID PVC ON LANDSCAPE FILTER BASIN SIDE OF WALL.
- (7) SAWCUT AND REMOVE 4' SECTION OF CONCRETE CURB AND GUTTER. CONSTRUCT NEW GUTTER WITH FINISHED SURFACE SLOPED TO DRAIN TO SLOTTED DRAIN.



SEE SHEET 4

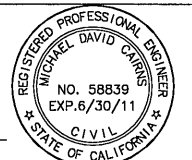
SEE SHEET 7

**CVALDO CORPORATION**  
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**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: \_\_\_\_\_



REVISIONS	ENGINEER	RCFC&WCD	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
DATE: July 1, 2010  
APPROVED BY: *[Signature]*  
DATE: 1-10-2010

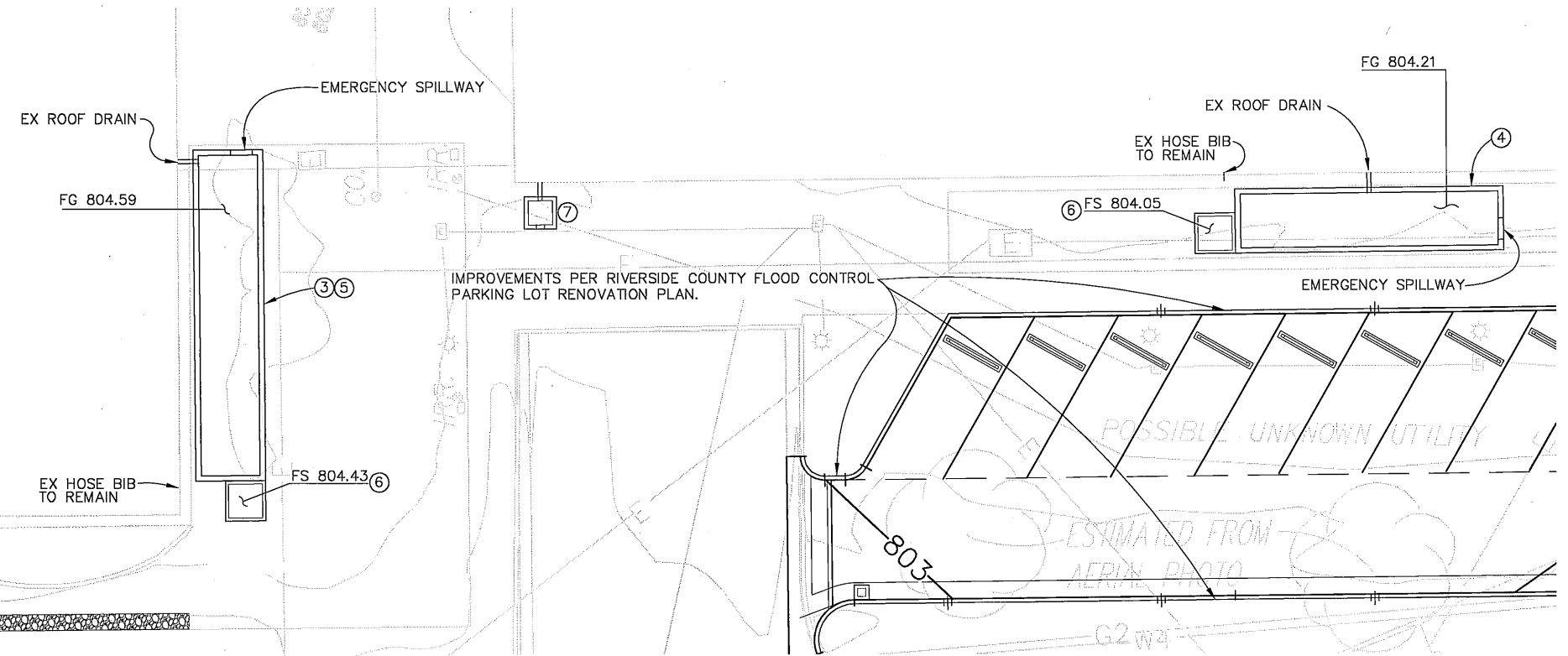
**LID TESTING AND DEMONSTRATION FACILITY**  
LANDSCAPE FILTER BASIN

PROJECT NO.  
1-0-00001  
DRAWING NO.  
9-118  
SHEET NO.  
5 OF 13

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N33°45'16"W	---	100.00'	---	6" PVC (SDR-35) @ 0.504%
(2)	N33°45'16"W	---	58.71'	---	6" PVC (SDR-35) @ 0.504%

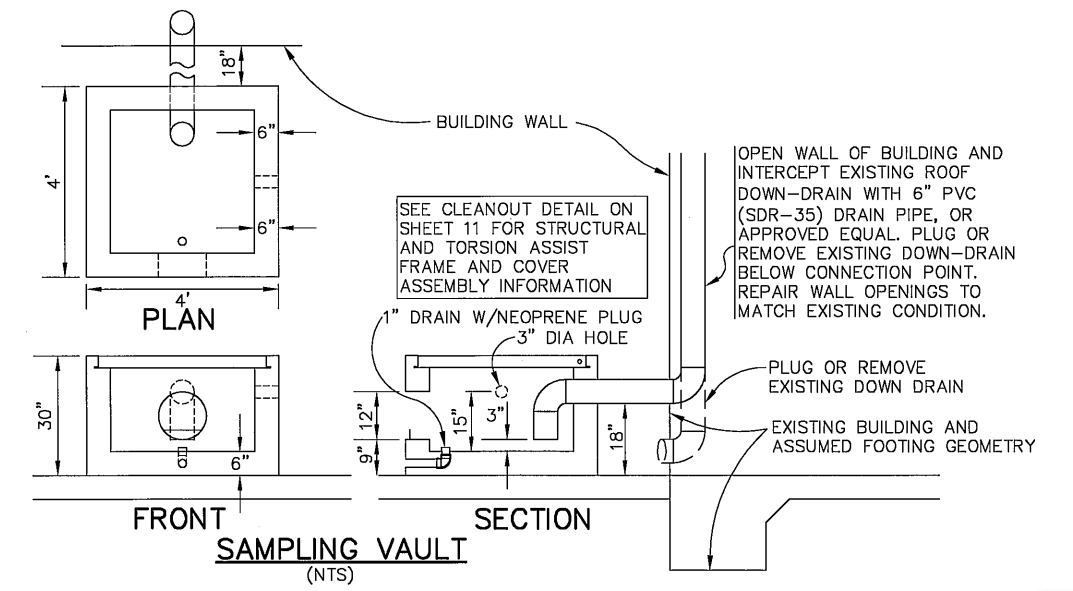
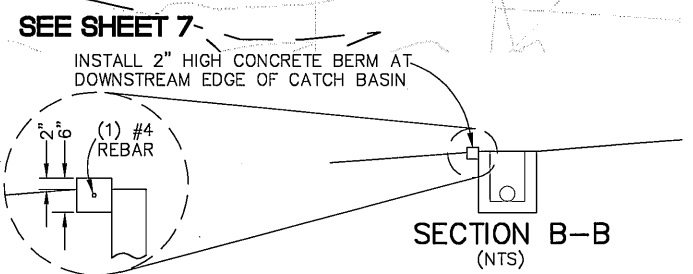
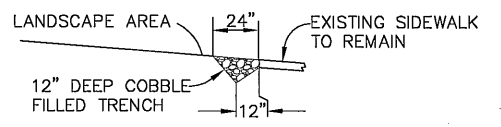
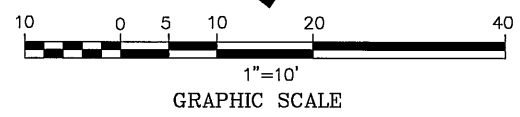
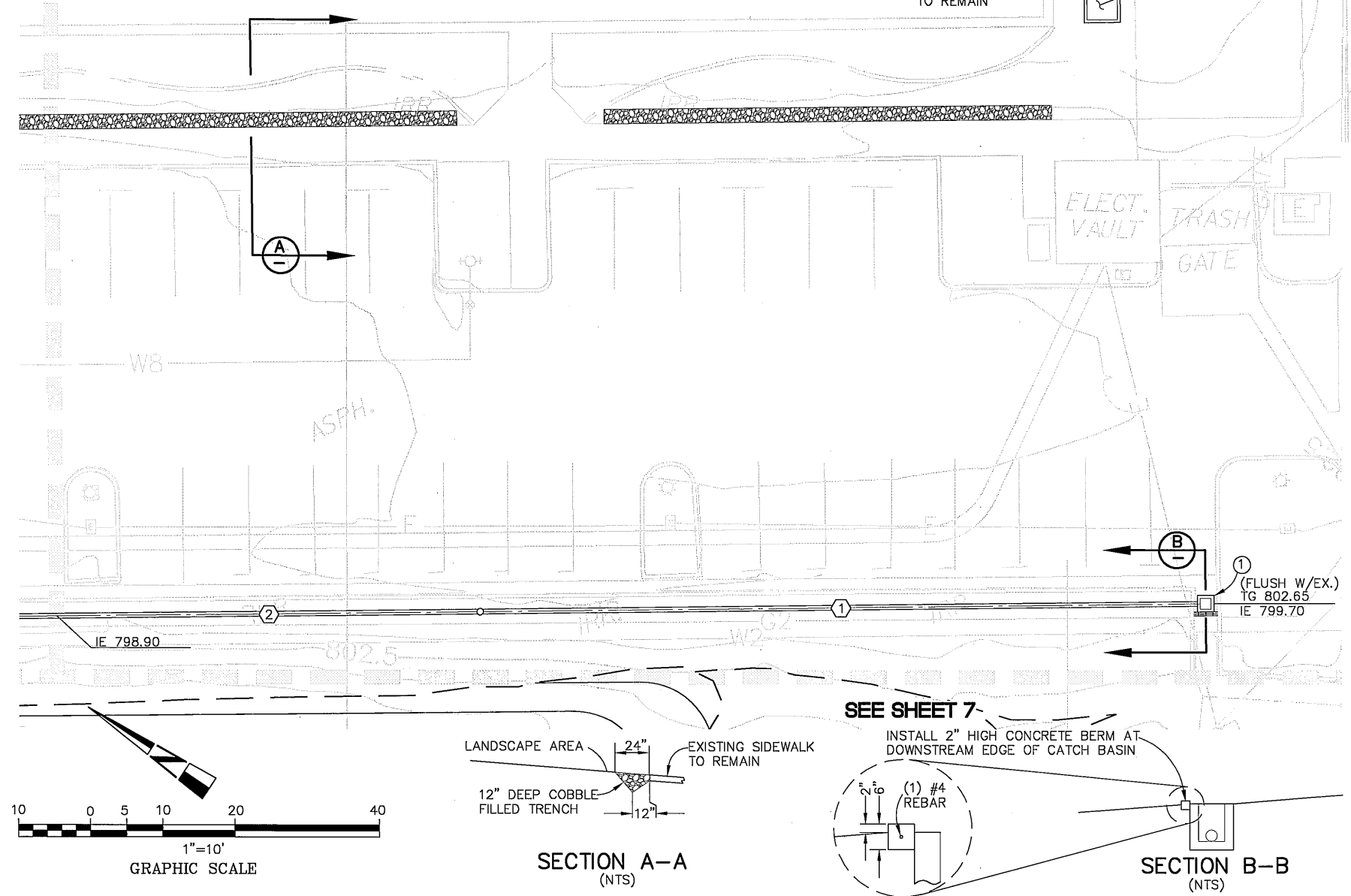
FOR CATCH BASINS LARGER THAN 12"X12", PIPE LENGTHS ARE TO INSIDE FACE OF CATCH BASIN, OR CENTER OF CLEANOUT. CATCH BASIN INVERT ELEVATION IS GIVEN AT CENTER OF BOX, PIPE SLOPE IS TO CONTINUE THROUGH THE CATCH BASINS.

FOR 12"X12" CATCH BASINS, PIPE LENGTHS ARE TO THE CENTER OF THE CATCH BASIN. FOR CLEANOUTS, PIPE LENGTHS ARE TO CENTER OF CLEANOUT.



- CONSTRUCTION NOTES**
- CONSTRUCT 18" X 18" PRECAST CONCRETE GRATED CATCH BASIN WITH TRAFFIC RATED GRATE (BROOKS 1818 CB OR APPROVED EQUAL). CATCH BASIN FLOOR TO BE 8" THICK POURED CONCRETE WITH SMOOTH HAND TROWELED FINISH TO PROVIDE POSITIVE DRAINAGE. GRATE TO BE CAST IRON OR BARE STEEL (NON-GALVANIZED). INSTALL FLOGARD FF-18D CATCH BASIN FILTER INSERT BY KRISTAR ENTERPRISES INC. W/O FILTRATION MEDIA, OR APPROVED EQUAL.
  - CONSTRUCT 12" X 12" CATCH BASIN WITH ATRIUM GRATE (NDS 1221 CB, NDS 1280 GRATE, OR APPROVED EQUAL) INSTALL 8"X8"X8" "T" WITH 8" PVC RISER CUT TO LENGTH, OR 8"X8" ELBOW AT UPSTREAM END.
  - REMOVE EXISTING LANDSCAPING. CONSTRUCT FLOW-THROUGH PLANTER SYSTEM "A" AND CONCRETE PAD FOR MONITORING STATION. INSIDE PLANTER DIMENSIONS ARE 7'-4" X 40'. SEE PLANTER DETAILS ON SHEET 9.
  - REMOVE EXISTING LANDSCAPING. CONSTRUCT FLOW-THROUGH PLANTER SYSTEM "B" AND CONCRETE PAD FOR MONITORING STATION. INSIDE PLANTER DIMENSIONS ARE 7'-4" X 32'. SEE PLANTER DETAILS ON SHEET 9.
  - REMOVE EXISTING TREES. (3) WHERE THEY CONFLICT WITH NEW PLANTER.
  - CONSTRUCT 5'X5'X8" THICK PCC SLAB AND COLLECTION BAY W/#4 @ 12" O.C. EACH WAY. SEE PLANTER DETAILS ON SHEET 9
  - CONSTRUCT SAMPLING VAULT PER DETAIL ON THIS SHEET.

SEE SHEET 4

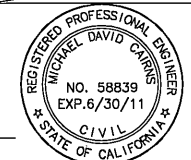


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*Michael David Cairns* 6/29/10  
 MICHAEL DAVID CAIRNS, RCE 58839 DATE:



REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 APPROVED BY: *[Signature]*  
 DATE: July 1, 2010 DATE: 1-17-2010

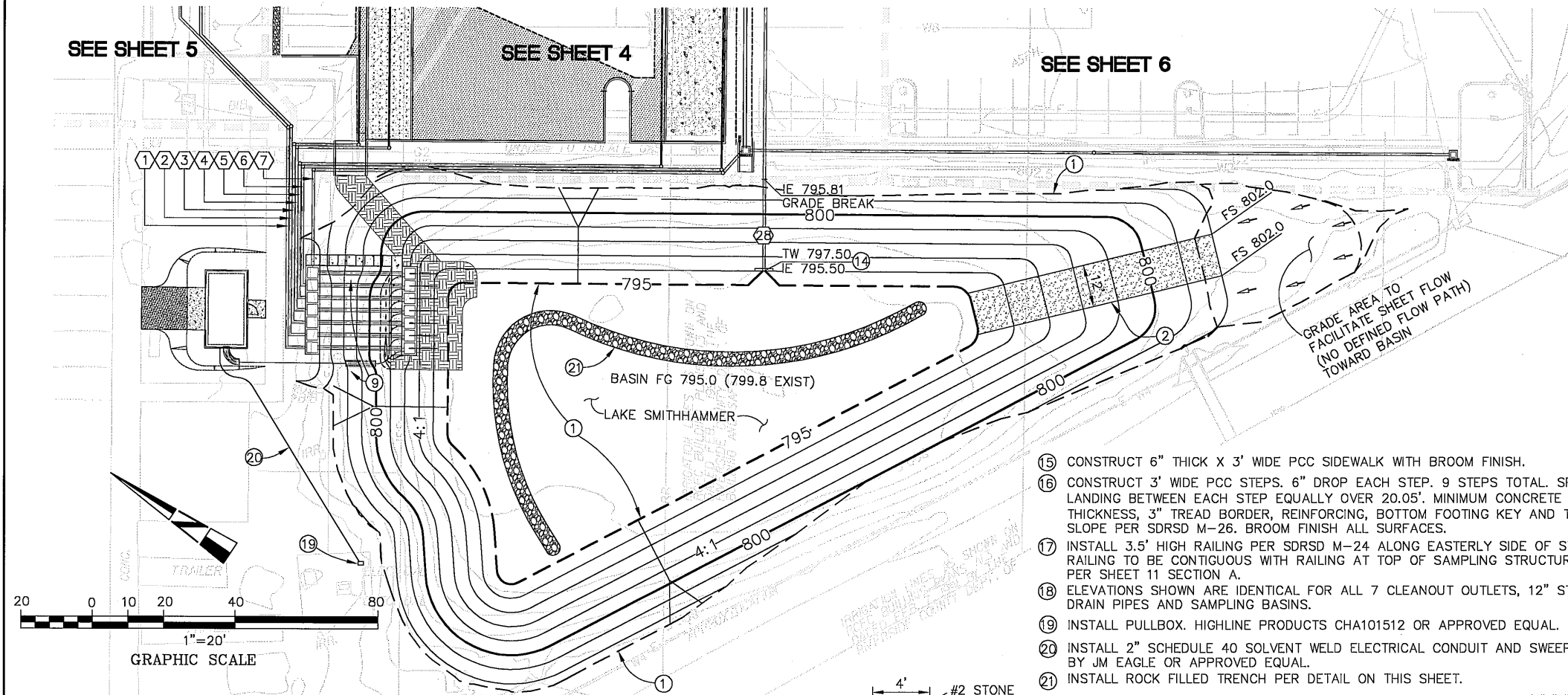
LID TESTING AND DEMONSTRATION FACILITY  
 SITE DRAINAGE AND FLOW THROUGH PLANTERS

PROJECT NO. 1-0-0001  
 DRAWING NO. 9-118  
 SHEET NO. 6 OF 13

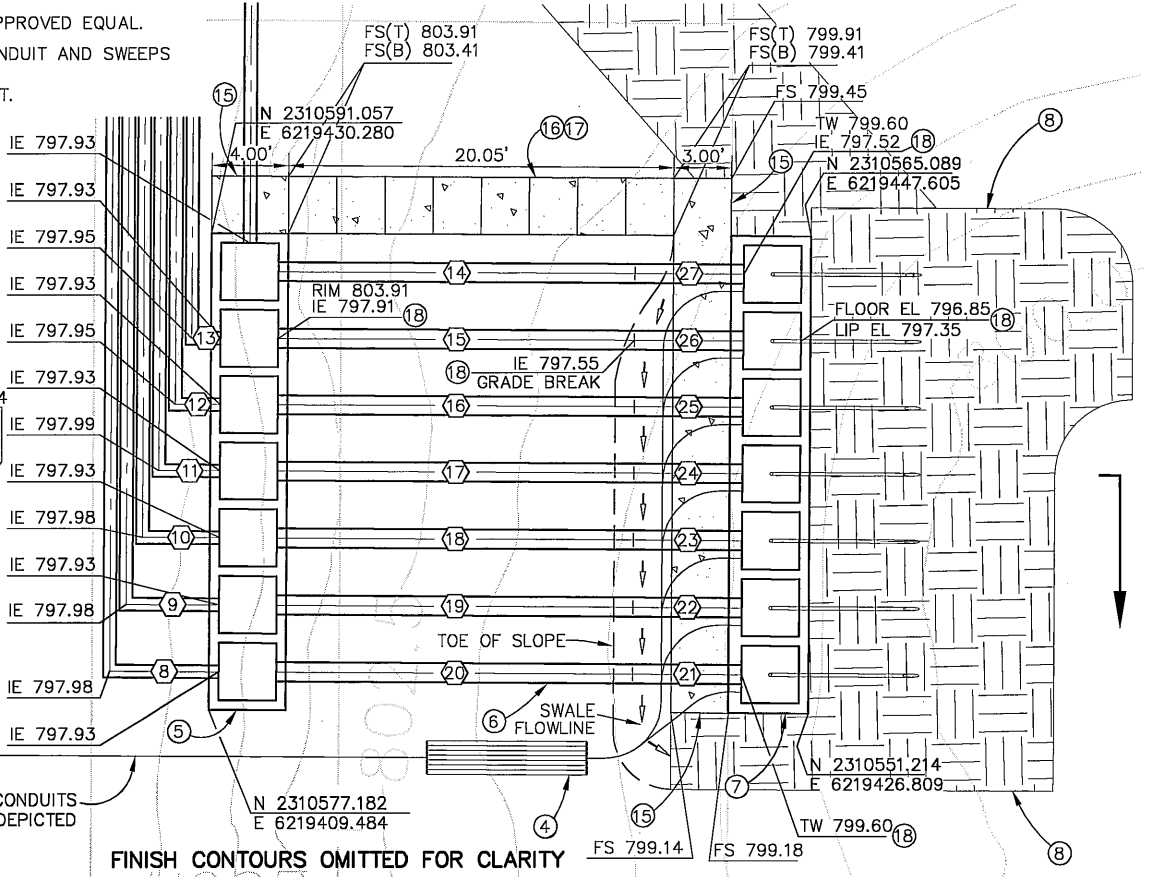
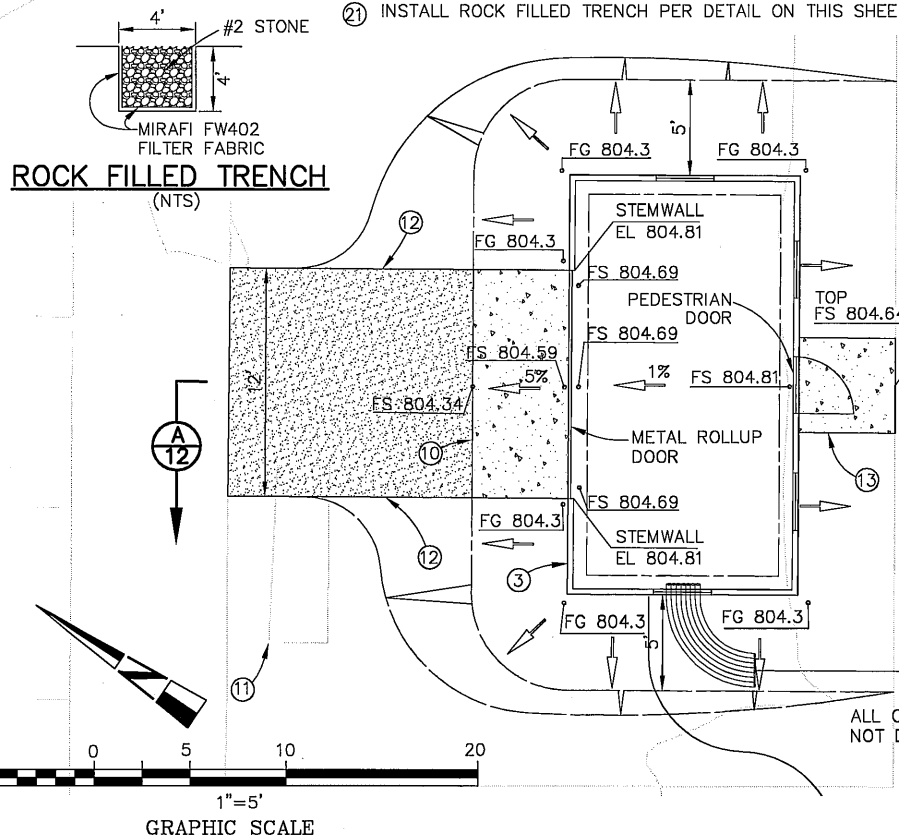
**CONSTRUCTION NOTES**

- ① EXCAVATE AND DEEPEN EXISTING INFILTRATION BASIN. REMOVE EXISTING TURF AND INSTALL NEW LANDSCAPING AND IRRIGATION PER LANDSCAPE PLANS (RCFCWCD DWG 9-120). COMPACT SUBGRADE TO 95% RELATIVE COMPACTION UNDER ALL STRUCTURES. CONSTRUCTION EQUIPMENT MAY NOT BE DRIVEN ON ANY SURFACE BELOW ELEVATION 797.00.
- ② CONSTRUCT 3" THICK CLASS 2 BASE ACCESS RAMP
- ③ CONTRACTOR TO PROVIDE 12' X 22' PREFABRICATED BUILDING ON CONCRETE SLAB. BUILDING TO INCLUDE 12' WIDE METAL ROLLUP DOOR WITH LOCK, 3' WIDE HINGED PEDESTRIAN DOOR WITH LOCK AND FOUR WINDOWS (3' X 5'). (SHED WORLD SUPERSHED 12X22, TALL PEAK ROOF OR APPROVED EQUAL). CONCRETE SLAB TO SLOPE AT 1% TO THE ROLLUP DOOR. OUTER 6" PERIMETER OF SLAB TO BE CONSTRUCTED LEVEL AT ELEVATION 804.81 (EXCEPT AT ROLLUP DOOR). PERIMETER FOOTING TO BE 12" X 12" WITH 2-#4 REBAR TOP AND BOTTOM. SLAB TO BE 6" THICK, CENTER REINFORCED WITH #4 @ 12" EACH WAY. CONTRACTOR IS RESPONSIBLE FOR ALL BUILDING PERMITS AND REQUIRED INSPECTIONS. CONTRACTOR TO PAINT THE SHED AS SPECIFIED BY THE DISTRICT ENGINEER.
- ④ CONSTRUCT 3" SCHEDULE 40 SOLVENT WELD ELECTRICAL CONDUIT AND SWEEPS BY JM EAGLE OR APPROVED EQUAL FROM EACH SAMPLING STATION TO THE MONITORING BUILDING. BUNDLE CONDUITS IN ONE PLANE AS SHOWN. BRING CONDUIT INTO BUILDING THROUGH BOTTOM OF SLAB. CONDUIT TO CLEAR THE INTERIOR BUILDING WALL BY 3". EXTEND CONDUIT 3" ABOVE THE TOP SURFACE OF THE SLAB. NO ELECTRICAL WIRES PERMITTED WITHIN THIS CONDUIT.
- ⑤ CONSTRUCT 7 CONTIGUOUS 36" X 36" DRAIN CLEANOUTS PER DETAIL ON SHEET 11.
- ⑥ CONSTRUCT 7 - 12" PVC DRAIN PIPES CONNECTING THE CLEANOUTS AND SAMPLING STATIONS.
- ⑦ CONSTRUCT CONCRETE SAMPLING BASIN STRUCTURE PER DETAIL ON SHEET 11.
- ⑧ CONSTRUCT GRASSCRETE PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).
- ⑨ REMOVE 2 EXISTING TREES.
- ⑩ CONSTRUCT 12'X5'X6" THICK PCC SLAB W/#4 @ 12" O.C. EACH WAY.
- ⑪ REMOVE EXISTING CONCRETE.
- ⑫ CONSTRUCT 12' WIDE 3" THICK CLASS 2 BASE DRIVEWAY TO MATCH EXISTING GRADES.
- ⑬ CONSTRUCT 5'X5'X6" THICK PCC SLAB W/#4 @ 12" O.C. EACH WAY.
- ⑭ PRECAST HEADWALL: JENSEN PRECAST SINGLE PIPE HEADWALL D=8", H=2'-8", L=5' (OR APPROVED EQUAL). MORTAR HEADWALL OPENING TO FIT PIPE.

- ⑮ CONSTRUCT 6" THICK X 3' WIDE PCC SIDEWALK WITH BROOM FINISH.
- ⑯ CONSTRUCT 3' WIDE PCC STEPS. 6" DROP EACH STEP. 9 STEPS TOTAL. SPACE LANDING BETWEEN EACH STEP EQUALLY OVER 20.05'. MINIMUM CONCRETE THICKNESS, 3" TREAD BORDER, REINFORCING, BOTTOM FOOTING KEY AND TREAD SLOPE PER SDRSD M-26. BROOM FINISH ALL SURFACES.
- ⑰ INSTALL 3.5' HIGH RAILING PER SDRSD M-24 ALONG EASTERLY SIDE OF STEPS. RAILING TO BE CONTIGUOUS WITH RAILING AT TOP OF SAMPLING STRUCTURE PER SHEET 11 SECTION A.
- ⑱ ELEVATIONS SHOWN ARE IDENTICAL FOR ALL 7 CLEANOUT OUTLETS, 12" STORM DRAIN PIPES AND SAMPLING BASINS.
- ⑲ INSTALL PULLBOX. HIGHLINE PRODUCTS CHA101512 OR APPROVED EQUAL.
- ⑳ INSTALL 2" SCHEDULE 40 SOLVENT WELD ELECTRICAL CONDUIT AND SWEEPS BY JM EAGLE OR APPROVED EQUAL.
- ㉑ INSTALL ROCK FILLED TRENCH PER DETAIL ON THIS SHEET.



STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
①	N56°17'21"E	---	61.85'	---	6" PVC (SDR-35) @ 0.954%
②	N56°17'21"E	---	58.69'	---	6" PVC (SDR-35) @ 0.988%
③	N56°17'21"E	---	50.18'	---	6" PVC (SDR-35) @ 1.395%
④	N56°17'21"E	---	45.84'	---	6" PVC (SDR-35) @ 1.636%
⑤	N56°17'21"E	---	37.68'	---	6" PVC (SDR-35) @ 0.743%
⑥	N56°17'21"E	---	33.35'	---	6" PVC (SDR-35) @ 0.480%
⑦	N56°17'21"E	---	27.52'	---	6" PVC (SDR-35) @ 0.509%
⑧	N33°42'39"W	---	5.67'	---	6" PVC (SDR-35) @ 0.882%
⑨	N33°42'39"W	---	4.83'	---	6" PVC (SDR-35) @ 1.035%
⑩	N33°42'39"W	---	4.00'	---	6" PVC (SDR-35) @ 1.250%
⑪	N33°42'39"W	---	3.17'	---	6" PVC (SDR-35) @ 1.893%
⑫	N33°42'39"W	---	2.33'	---	6" PVC (SDR-35) @ 0.858%
⑬	N33°42'39"W	---	1.50'	---	6" PVC (SDR-35) @ 1.333%
⑭	N33°42'39"W	---	18.55'	---	12" PVC (SDR-35) @ 1.941%
⑮	N33°42'39"W	---	18.55'	---	"
⑯	N33°42'39"W	---	18.55'	---	"
⑰	N33°42'39"W	---	18.55'	---	"
⑱	N33°42'39"W	---	18.55'	---	"
⑲	N33°42'39"W	---	18.55'	---	"
⑳	N33°42'39"W	---	18.55'	---	"
㉑	N33°42'39"W	---	5.67'	---	12" PVC (SDR-35) @ 0.500%
㉒	N33°42'39"W	---	5.67'	---	"
㉓	N33°42'39"W	---	5.67'	---	"
㉔	N33°42'39"W	---	5.67'	---	"
㉕	N33°42'39"W	---	5.67'	---	"
㉖	N33°42'39"W	---	5.67'	---	"
㉗	N33°42'39"W	---	5.67'	---	"
㉘	N56°17'21"W	---	25.86'	---	8" PVC (SDR-35) @ 1.012%



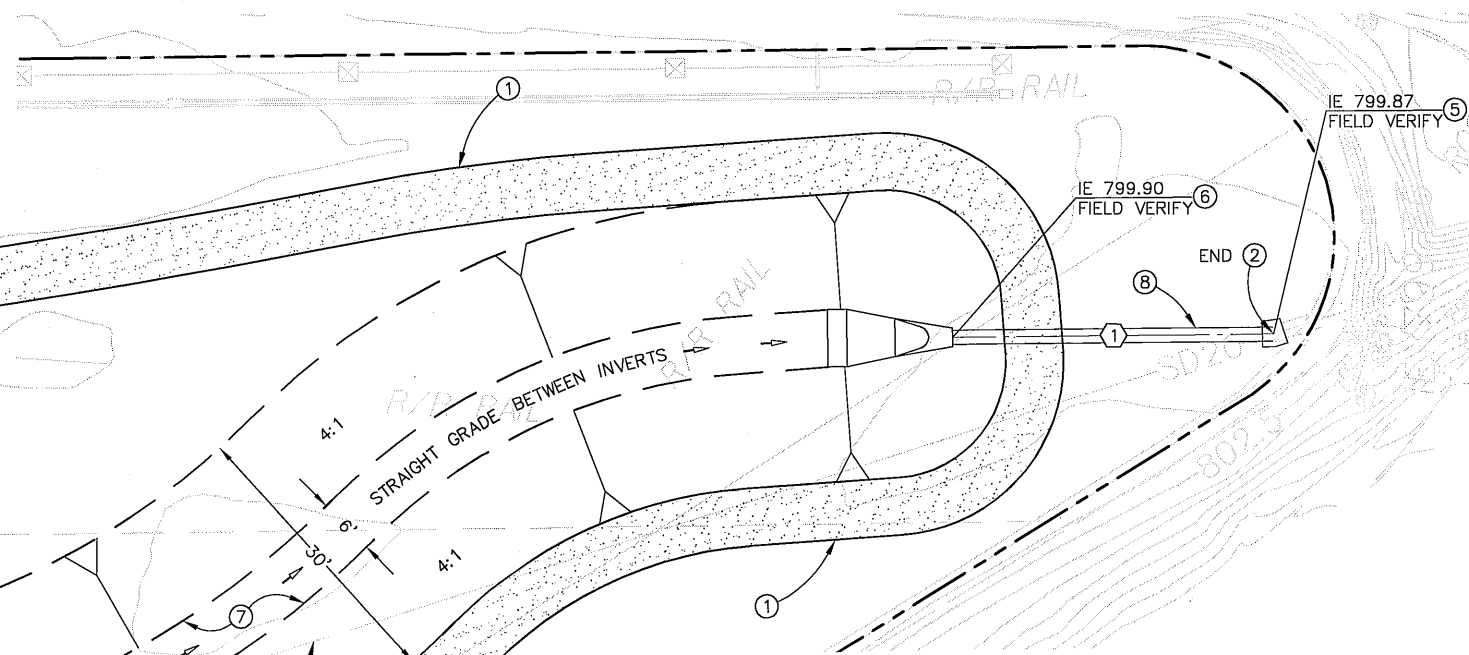
<p>CVALDO CORPORATION CIVIL ENGINEERING 4901 MORENA BLVD, SUITE 1110 SAN DIEGO, CA 92117 (619) 559-0126 (F) 619-559-0131</p>	<p>Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600</p> <p>for the location of buried utility lines.</p> <p>Don't disrupt vital services.</p> <p>TWO WORKING DAYS BEFORE YOU DIG</p>	<p>BENCH MARK 3" BRASS DISC, DOWN 0.31' STAMPED RCFC&amp;WCD CLSA LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER ELEV. 815.71 N: 2310679.73 E: 6219063.81 NAVD 88</p> <p><i>Michael David Cairns</i> MICHAEL DAVID CAIRNS, RCE 58839 DATE: _____</p>		<p>REVISIONS</p>	<p>ENGINEER</p>	<p>RCFC&amp;WCD</p>	<p>RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT</p>	<p>PROJECT NO. 1-0-00001</p>
				<p>DATE: July, 2010</p>	<p>DATE: 1-17-2010</p>	<p>APPROVED FOR APPROVAL BY: <i>[Signature]</i></p>	<p>APPROVED BY: <i>[Signature]</i></p>	<p>DRAWING NO. 9-118</p>
<p>INFILTRATION BASIN AND SAMPLING SYSTEM</p>								<p>SHEET NO. 7 OF 13</p>

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N33°32'19"W	---	33.40	---	18" PVC (T-1)

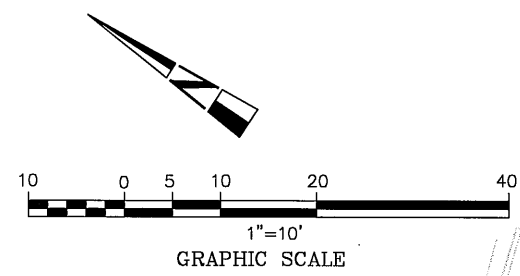
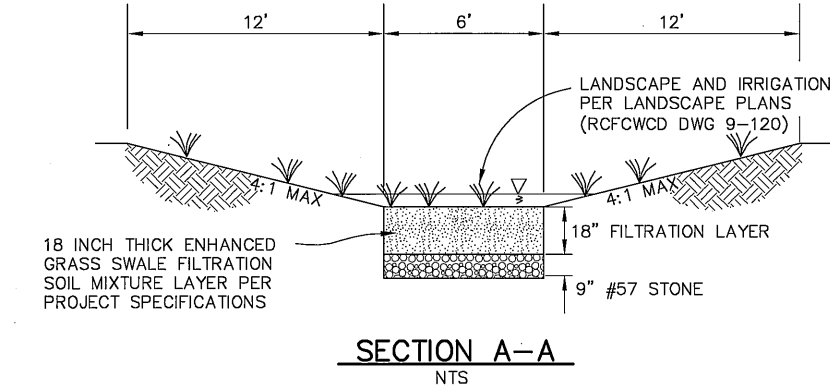
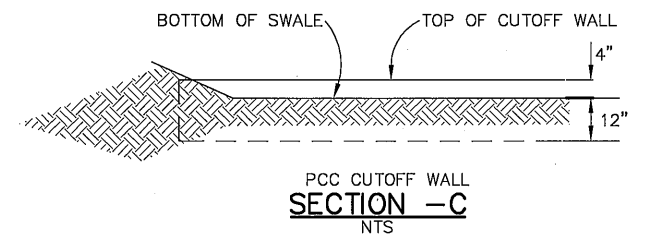
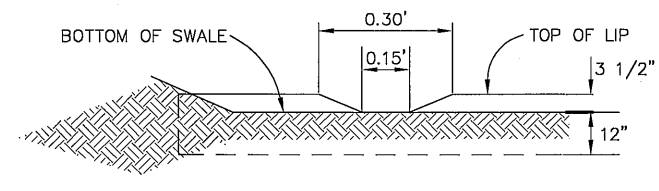
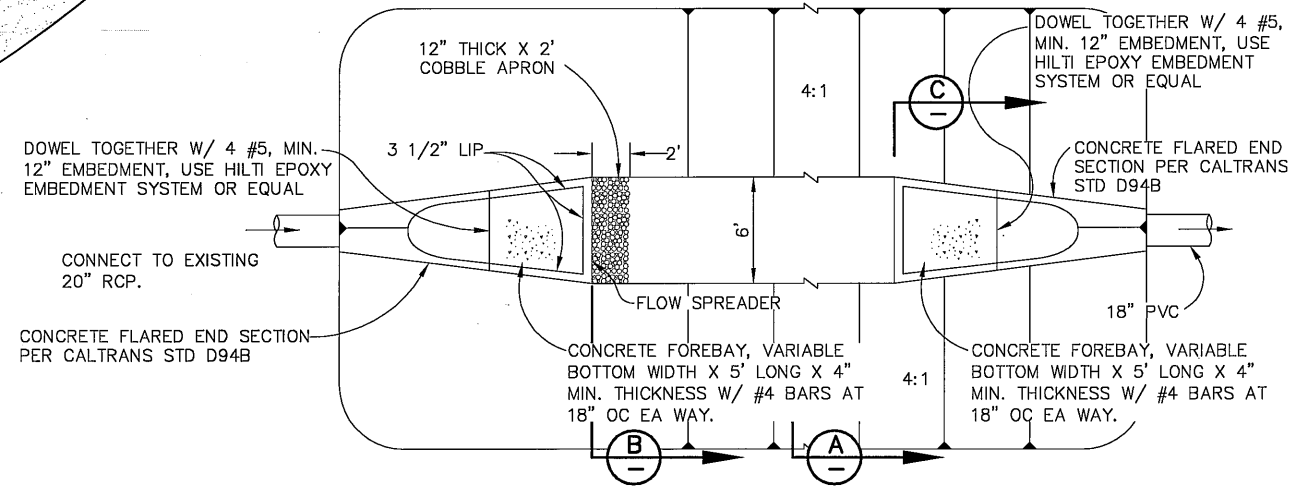
**CONSTRUCTION NOTES**

PRIOR TO CONSTRUCTING THE WORK DESCRIBED IN CONSTRUCTION NOTES 4,5,6 AND 7 BELOW, CONTRACTOR TO VERIFY INVERT ELEVATION OF EXISTING 20" RCP AT POINT OF CONNECTION (NOTE 4). THE GRASS SWALE, STORM DRAIN AND FLARED END SECTIONS ARE TO BE CONSTRUCTED AT A CONTINUOUS POSITIVE SLOPE FROM THE POINT OF CONNECTION WITH THE EXISTING 20" RCP (NOTE 4) TO THE EXISTING HEADWALL (NOTE 5).

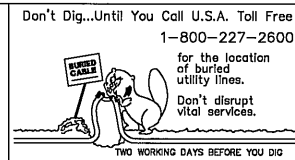
- ① REMOVE ALL LANDSCAPING WITHIN LIMITS OF SWALE AND D.G. PATH. OTHER LANDSCAPE REMOVALS PER LANDSCAPE PLANS (RCFCWCD DWG 9-120). SEE ENHANCED GRASS SWALE DETAILS THIS SHEET. SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR D.G. PATH DETAILS.
- ② REMOVE 164' OF EXISTING 20" RCP STORM DRAIN.
- ③ REMOVE 93' OF EXISTING 12" RCP STORM DRAIN.
- ④ CONSTRUCT NEW 18" DIA. CONCRETE FLARED END SECTION PER CALTRANS D94B AND CONNECT TO EXISTING 20" RCP. MATCH EXISTING INVERT ELEVATION (ESTIMATED 800.04) AND CONSTRUCT CONCRETE COLLAR PER RCFCWCD STD DWG M803 TO JOIN THE EXISTING 20" RCP TO THE 18" DIA. FLARED END SECTION..
- ⑤ CONNECT NEW 18" PVC STORM DRAIN TO EXISTING 20" RCP WITH CONCRETE COLLAR PER RCFCWCD STD DWG M803. MATCH NEW PIPE INVERT TO EXISTING INVERT.
- ⑥ CONSTRUCT NEW CONCRETE FLARED END SECTION PER CALTRANS D94B
- ⑦ CONSTRUCT ENHANCED GRASS SWALE. TOP OF SWALE SLOPE TO DAYLIGHT AT EXISTING GRADE.
- ⑧ CONSTRUCT 18" PVC (T-1)



**ENHANCED GRASS SWALE INLET/OUTLET DETAILS**  
NTS

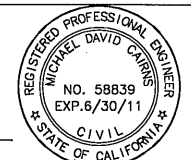


**QUALDO CORPORATION**  
CIVIL ENGINEERING  
4901 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
(P) 858 868 0128 (F) 858 866 0131



**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 59839  
DATE: 6/29/10

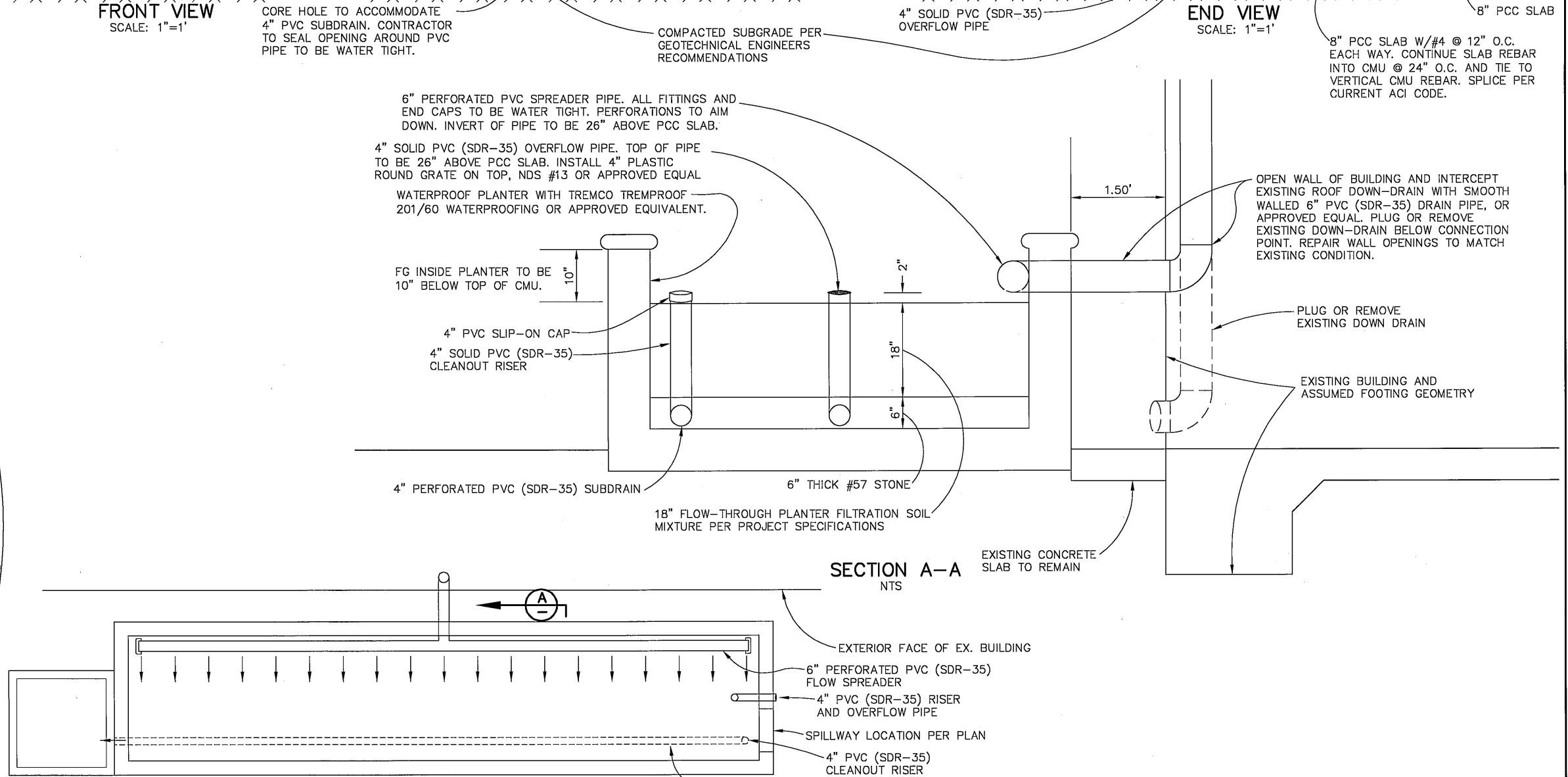
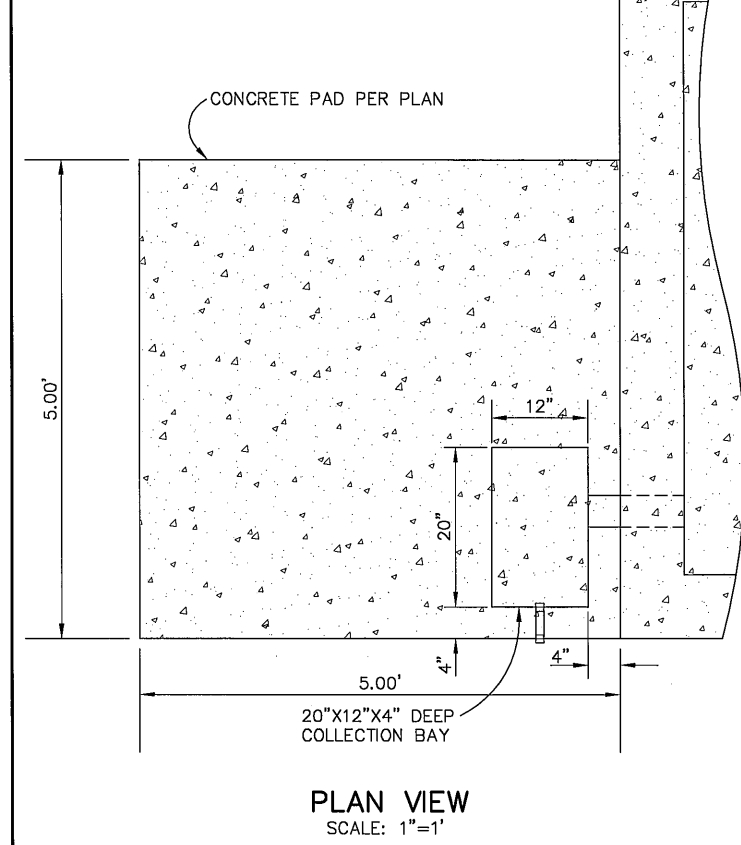
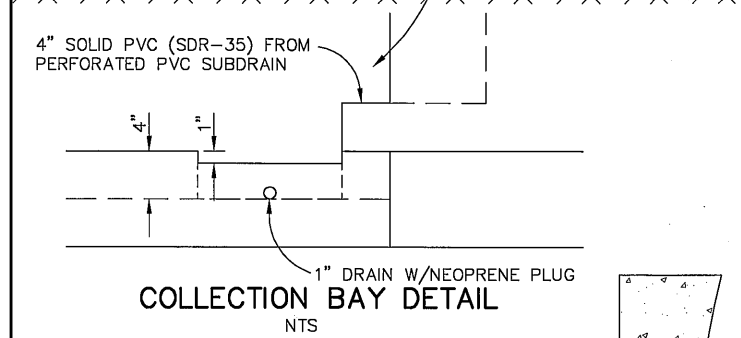
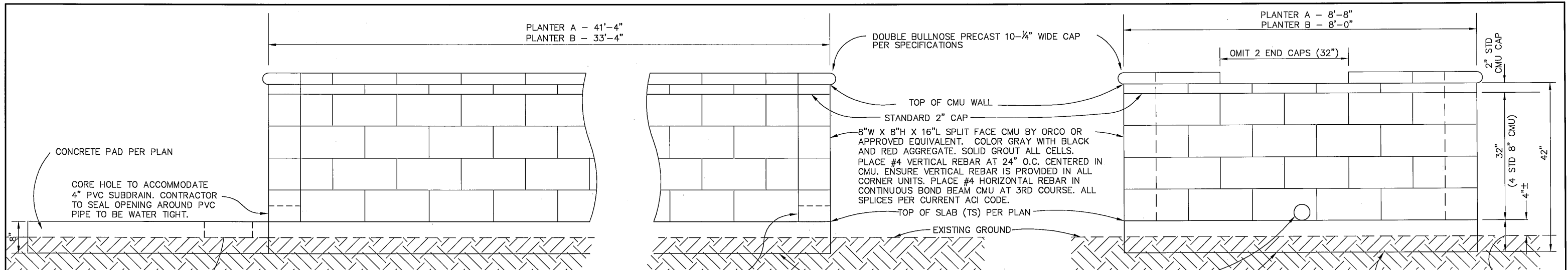


REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
DATE: July 1, 2010  
APPROVED BY: *[Signature]*  
DATE: 7-1-2010

**LID TESTING AND DEMONSTRATION FACILITY**  
ENHANCED GRASS SWALE AND DETAILS

PROJECT NO. 1-0-00001
DRAWING NO. 9-118
SHEET NO. 8 of 13



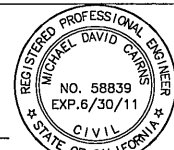
PLANTER AND FLOW SPREADER SCHEMATIC PLAN  
NTS

**CVALDO CORPORATION**  
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DATE: 01/29/10



REVISIONS	ENGINEER	RCFC&WCD

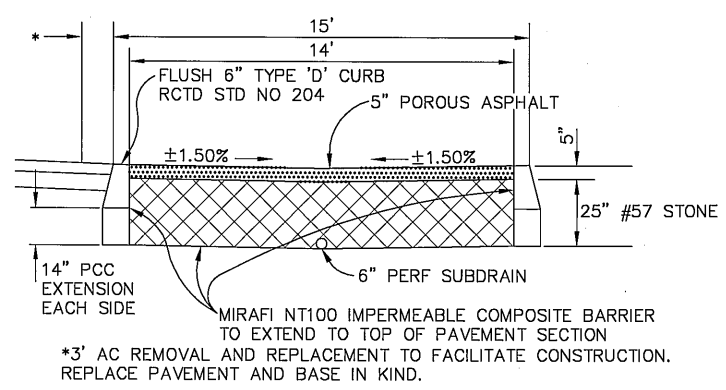
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
APPROVED BY: *[Signature]*  
DATE: July 1, 2010  
DATE: 1-10-2010

LID TESTING AND DEMONSTRATION FACILITY  
FLOW THROUGH PLANTER DETAILS

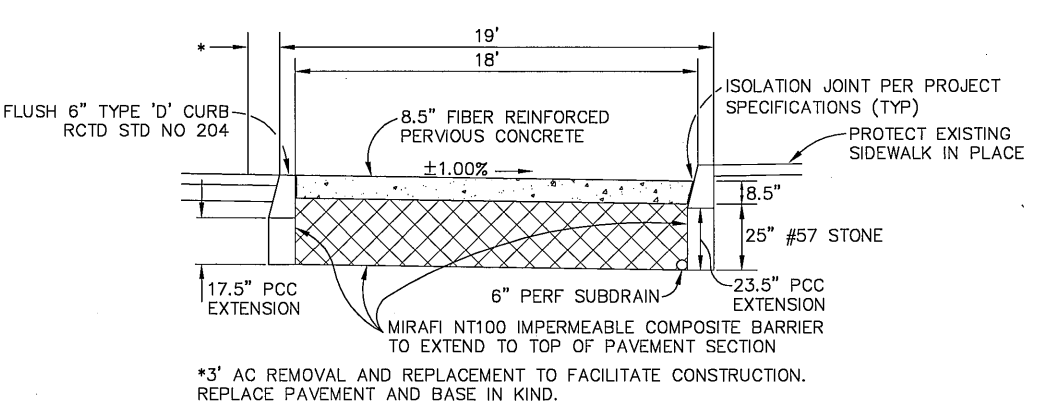
PROJECT NO. 1-0-0001  
DRAWING NO. 9-118  
SHEET NO. 9 OF 13

ALL DEEPEENED CURBS REQUIRE LATERAL BRACING DURING BACKFILL AND COMPACTION. ALL CURBS TO BE PER SPECIFICATIONS.  
 \* CONTROL POINT FOR HORIZONTAL AND VERTICAL DATA SHOWN ON PLAN  
 \*\* SLURRY SHALL BE 2000 PSI - 2 SACK MIX

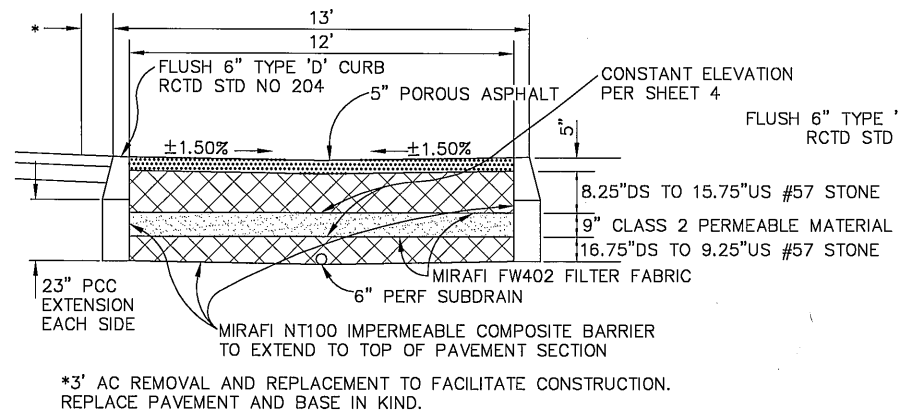
CD24	6" TYPE 'D' CURB PER RCTD STD 204	
CD26	6" TYPE 'D' CURB PER RCTD STD 204. BACK OF CURB IS ADJACENT TO EXISTING CONCRETE GUTTER	
CD30	MODIFIED 6" TYPE 'D' CURB PER RCTD STD 204. (MODIFICATION—CONSTRUCT WITH TOP OF CURB FLUSH WITH FINISH GRADE) 10" WIDE SLURRY** OR CONCRETE EXT. TO DEPTH SHOWN IN PAVEMENT DETAILS, THIS SHEET.	
CD31	6" TYPE 'D' CURB PER RCTD STD 204 10" WIDE SLURRY** OR CONCRETE EXT. TO DEPTH SHOWN IN PAVEMENT DETAILS, THIS SHEET.	



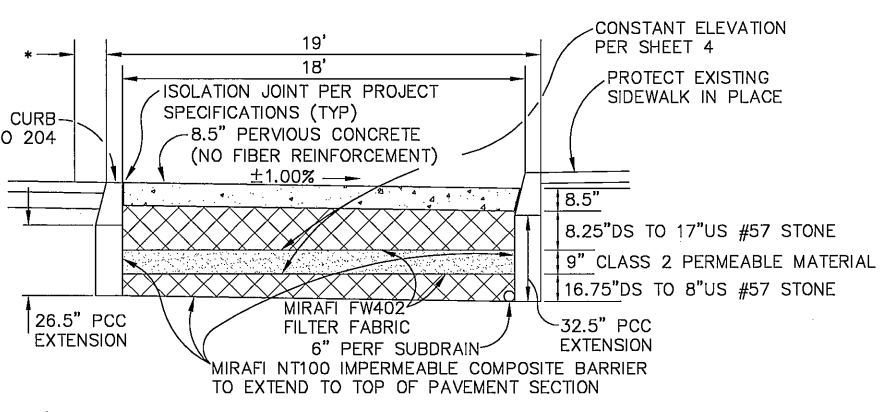
**PAVEMENT DETAIL 1**  
 POROUS ASPHALT  
 30" TOTAL SECTION  
 NTS



**PAVEMENT DETAIL 2**  
 PERVIOUS CONCRETE  
 33.5" TOTAL SECTION  
 NTS



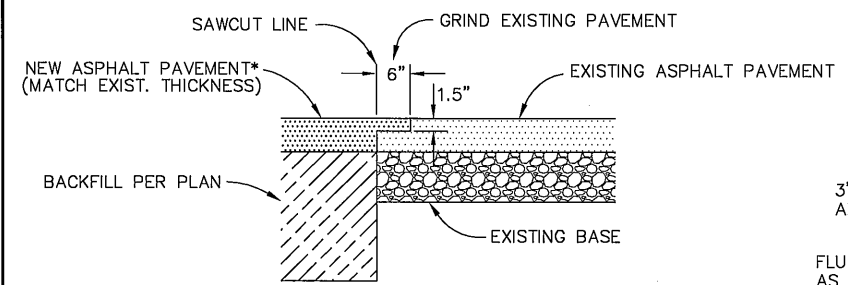
**PAVEMENT DETAIL 3**  
 POROUS ASPHALT WITH CLASS 2 PERMEABLE MATERIAL FILTER LAYER  
 39" TOTAL SECTION  
 NTS



**PAVEMENT DETAIL 4**  
 PERVIOUS CONCRETE WITH CLASS 2 PERMEABLE MATERIAL FILTER LAYER  
 42.5" TOTAL SECTION  
 NTS

**PAVEMENT DETAIL NOTES**

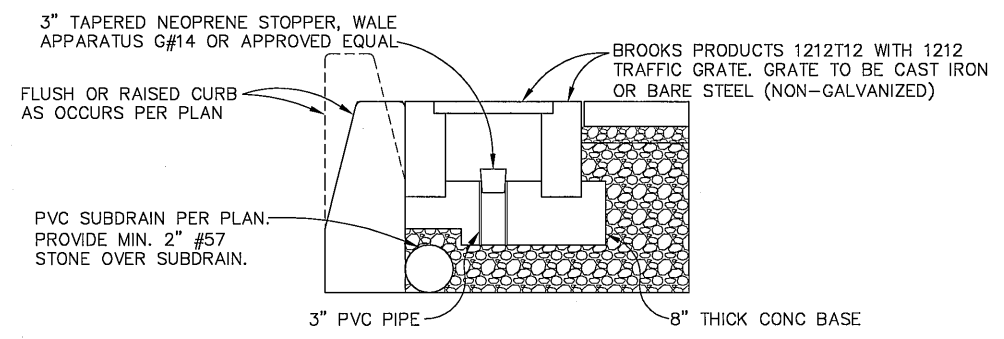
DS = DOWNSTREAM END  
 US = UPSTREAM END  
 ALL DEPTHS REFERENCED AT SUBDRAIN LOCATION (FLOWLINE ALIGNMENT)



**SAWCUT REPAIR DETAIL 5**  
 NTS

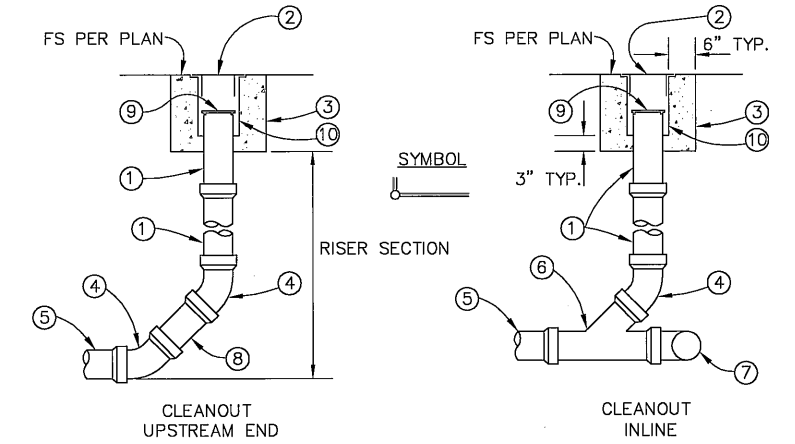
\*A TAC COAT OF EMULSIFIED ASPHALT (GRADE SS-1H OR RS-1) SHALL BE APPLIED TO ALL SURFACES WHICH WILL BE IN CONTACT WITH THE REPLACEMENT ASPHALT PAVEMENT

PLACE CATCH BASIN FLUSH WITH THE FINISH SURFACE AND SLOPED TO MATCH SURROUNDING GRADE. POUR 8" THICK CONCRETE BASE AROUND 3" DIA. ABS PIPE. EMBED CATCH BASIN 2" INTO CONCRETE BASE. THE BOTTOM OF THE CATCH BASIN IS TO BE FINISHED LEVEL. TOP OF ABS PIPE TO MATCH BOTTOM OF CATCH BASIN TO ALLOW COMPLETE DRAINAGE WHEN STOPPER IS REMOVED.



**FLOW DETECTION CATCH BASIN DETAIL**  
 NTS

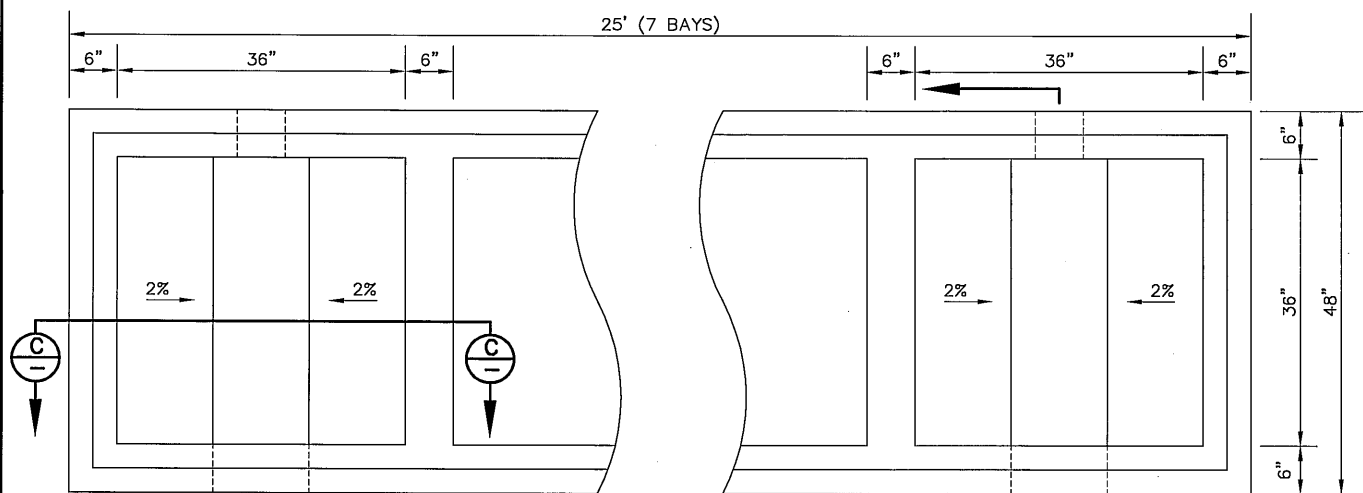
CLEANOUTS TO BE INSTALLED WHERE INDICATED ON PLANS. (SEE SYMBOL BELOW) WHERE CONCRETE RING CONFLICTS WITH ADJACENT STRUCTURES, CONTRACTOR TO ADJUST HORIZONTAL LOCATION OF RING AND CLEANOUT AS APPROVED BY THE ENGINEER. ACCOMMODATE OFFSET FROM PVC DRAINAGE PIPE WITHIN RISER SECTION BY ADJUSTING FITTINGS.



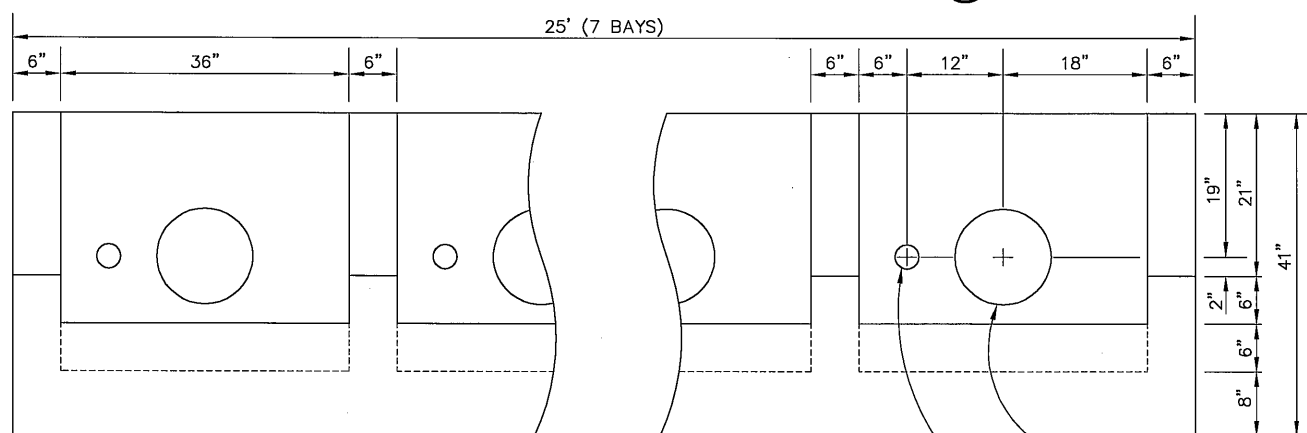
**PVC PIPE CLEANOUT DETAIL**  
 NTS

- ① CLEANOUT PIPE DIAMETER TO BE SAME SIZE AS MAIN LINE (IF MAIN LINE > 6", USE 6")
- ② 10" CAST IRON BOX COVER MARKED "STORM WATER" FLUSH WITH FINISHED SURFACE
- ③ CONCRETE RING, 22" DIA X 12" DEEP
- ④ 45° PVC ELBOW
- ⑤ PVC SUBDRAIN PER PLAN
- ⑥ STANDARD PVC WYE BRANCH
- ⑦ PVC ELBOW WHERE OCCURS
- ⑧ SIZE PER NOTE 1 X REQUIRED LENGTH PVC PIPE
- ⑨ PRESS FIT PVC END CAP (FEMALE)
- ⑩ 10" PVC, C-900 (CLEANOUT BOX)

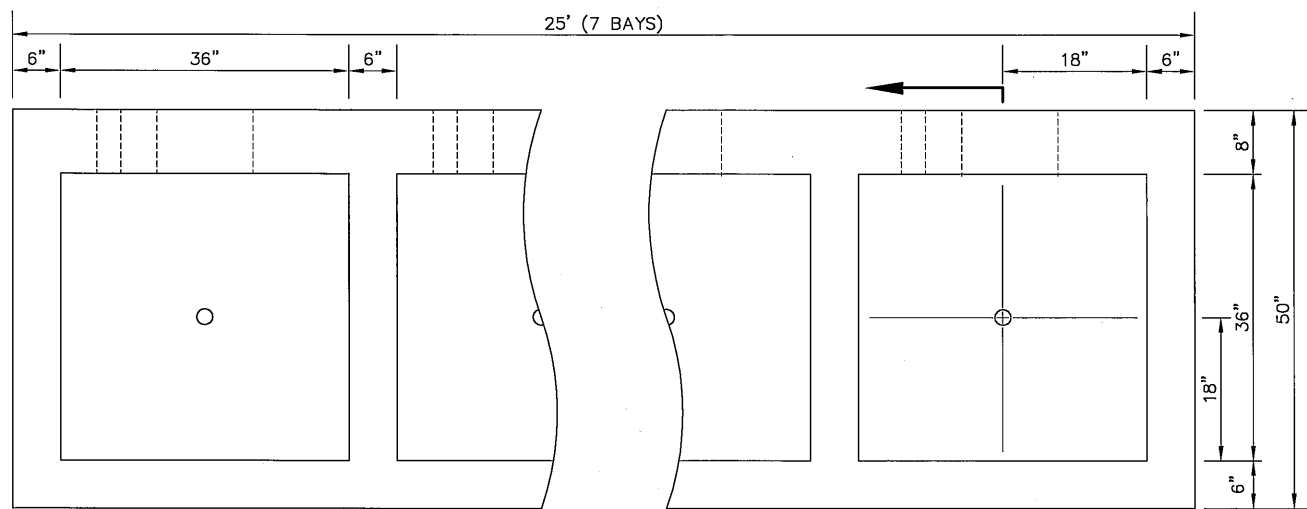
 CVALDO CORPORATION CIVIL ENGINEERING 4901 MORENA BLVD, SUITE 1110 SAN DIEGO, CA 92117 (P) 858 856 0128 (F) 858 856 0131	Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG	BENCH MARK 3" BRASS DISC, DOWN 0.31' STAMPED RCFC&WCD CLSA LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER ELEV. 815.71 N: 2310679.73 E: 6219063.81 NAVD 88	 MICHAEL DAVID CAIRNS, P.E. 58839 DATE: 6/29/10	REVISIONS ENGINEER RCFC&WCD	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT RECOMMENDED FOR APPROVAL BY: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: July 1, 2010 DATE: 1-17-2010	LID TESTING AND DEMONSTRATION FACILITY POROUS PAVEMENT, FLOW DETECTION CATCH BASIN, DEEPEENED CURB AND PVC PIPE CLEANOUT DETAILS	PROJECT NO. 1-0-00001 DRAWING NO. 9-118 SHEET NO. 10 OF 13
				REF. DESCRIPTION APPR. DATE APPR. DATE	DATE: July 1, 2010	DATE: 1-17-2010	SHEET NO. 10 OF 13
				REF. DESCRIPTION APPR. DATE APPR. DATE	DATE: July 1, 2010	DATE: 1-17-2010	SHEET NO. 10 OF 13



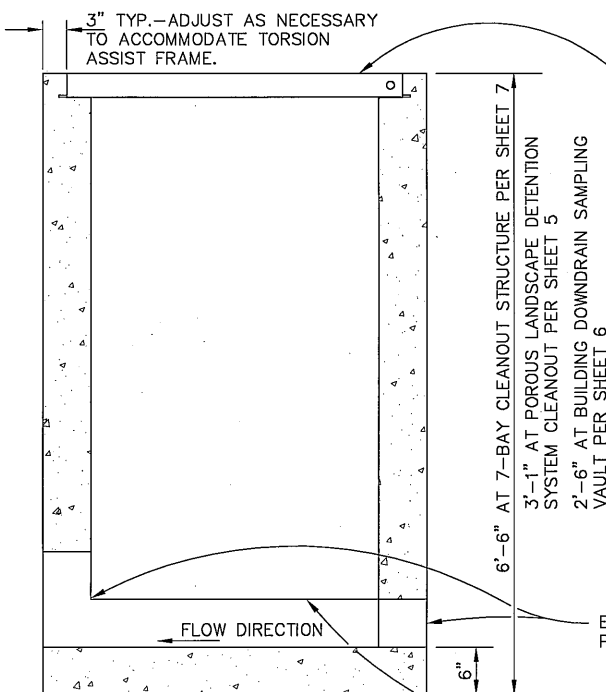
**MULTIPLE 36" X 36" CLEANOUT STRUCTURE DETAIL**  
**PLAN VIEW**  
 SCALE: 1"=1'



**FRONT VIEW**  
 (KEY NOT SHOWN)  
 SCALE: 1"=1'



**SAMPLING BASIN STRUCTURE DETAIL**  
**PLAN VIEW**  
 SCALE: 1"=1'



3'X3' TORSION ASSIST FRAME AND COVER ASSEMBLY INWESCO INCORPORATED 3636 SERIES OR APPROVED EQUAL

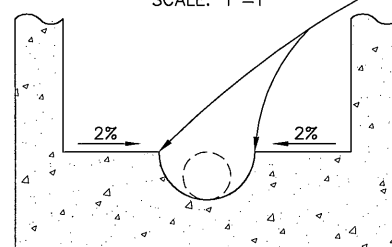
LOADING: HS-10  
 MATERIAL: GALVANIZED STEEL  
 FRAME STYLE: WATER RESISTANT (INTEGRATED CHANNEL WITH DRAIN OPENING) 42"X42" MAX OUTSIDE DIMENSION  
 HINGE STYLE: 90° TORSION ASSIST  
 FASTENING MECHANISM: SWING LOCK ASSEMBLY WITH PENTA HEAD SLAM-LOCK  
 TOP PLATE SURFACE: DIAMOND PATTERN  
 MARKINGS: WELDED LETTERING 'STORMWATER'  
 FINISH: HOT DIPPED GALVANIZED  
 PROVIDE EMBEDMENT TABS ON HINGE SIDE AND OPPOSITE SIDE ONLY. MOUNT EMBEDMENT TABS AT BOTTOM OF FRAME. HINGE TO BE ON THE NORTHWESTERLY EDGE OF BOX.

**STRUCTURAL NOTES**

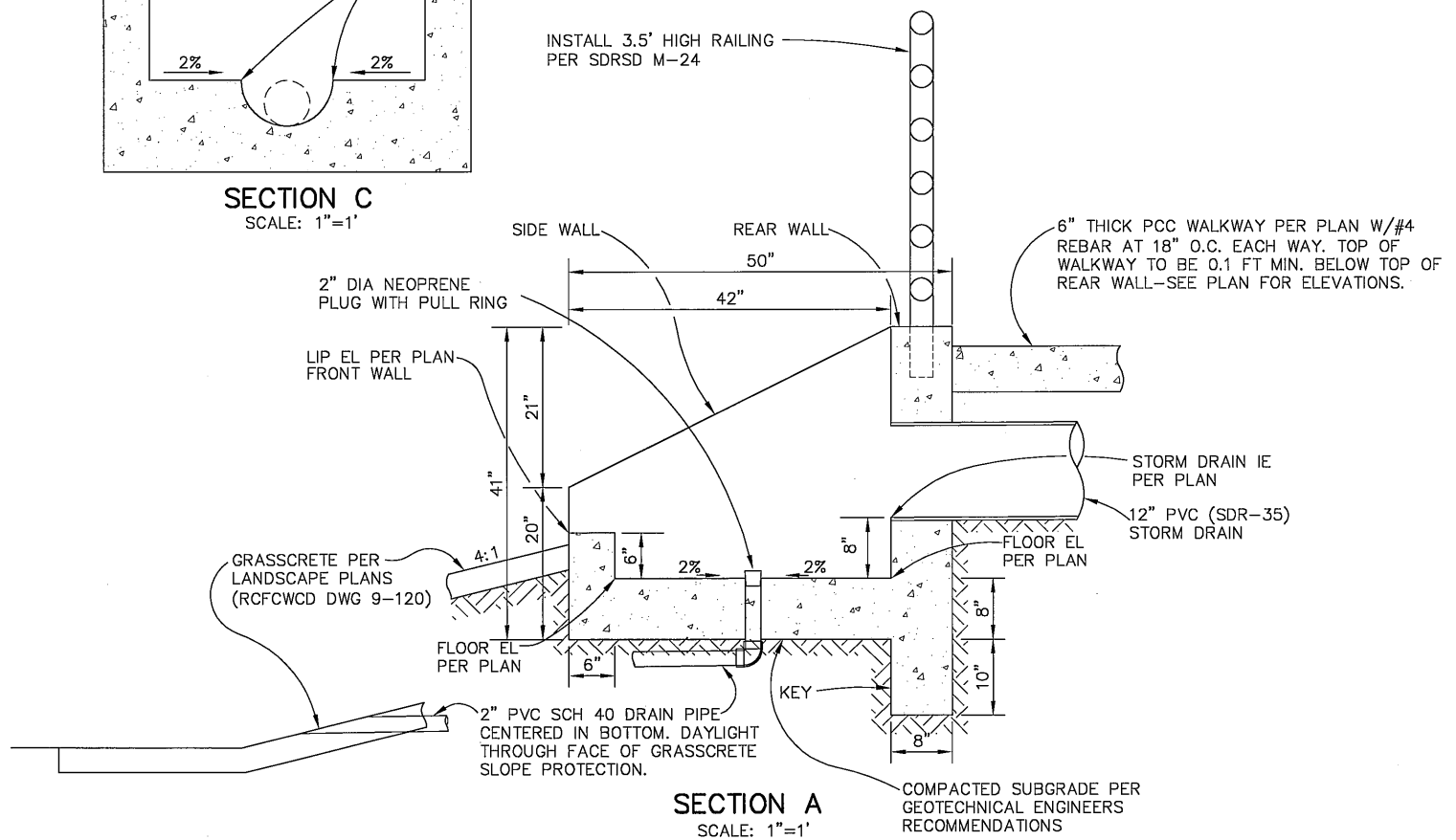
- PLACE #4 HORIZONTAL REBAR AT 12" O.C. EACH WAY IN FLOOR SLAB OF ALL CLEANOUTS AND SAMPLING STRUCTURES. BEND REBAR AND CONTINUE UP SIDEWALLS, FRONT WALL AND REAR WALL TO OBTAIN #4 VERTICAL REBAR AT 12" O.C. SPLICES WHERE NECESSARY TO BE PER CURRENT ACI CODE (OR 35 BAR DIA. MIN). ALL BENDS TO BE PER CURRENT ACI CODE. PLACE #4 HORIZONTAL REBAR AT 12" O.C. IN ALL SIDE WALLS. PLACE #4 VERTICAL BAR IN SAMPLING STRUCTURE KEY AT 24" O.C.
- PROVIDE 3" CLEAR MIN. FOR ALL REBAR WHERE CONCRETE IS POURED AGAINST EARTH. IN ALL OTHER CASES CENTER REBAR IN CONCRETE.

EXAMPLE LOCATION FOR INFLOW AND OUTFLOW PIPES. SEE PLAN VIEW FOR ACTUAL ELEVATIONS FOR EACH CLEANOUT.

EXTEND 12" PVC PIPE TO UPSTREAM END OF CLEANOUT. POUR CONCRETE TO PIPE SPRINGLINE. SLOPE FINISHED SURFACE AT 2% TOWARD PIPE. CUT PIPE AT SPRINGLINE AND REMOVE TOP HALF.



INSTALL 3.5' HIGH RAILING PER SDRSD M-24



**CVALDO CORPORATION**  
 CIVIL ENGINEERING  
 4909 MORONA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 858 668 0128 (F) 858 666 0131

Don't Dig...Until You Call U.S.A. Toll Free  
 1-800-227-2600  
 for the location of buried utility lines.  
 Don't disrupt vital services.  
 TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310879.73  
 E: 6219063.81  
 NAVD 88

*Michael David Cairns* 6/29/10  
 MICHAEL DAVID CAIRNS, RCE 58839  
 REGISTERED PROFESSIONAL ENGINEER  
 MICHAEL DAVID CAIRNS  
 NO. 58839  
 EXP. 6/30/11  
 CIVIL  
 STATE OF CALIFORNIA

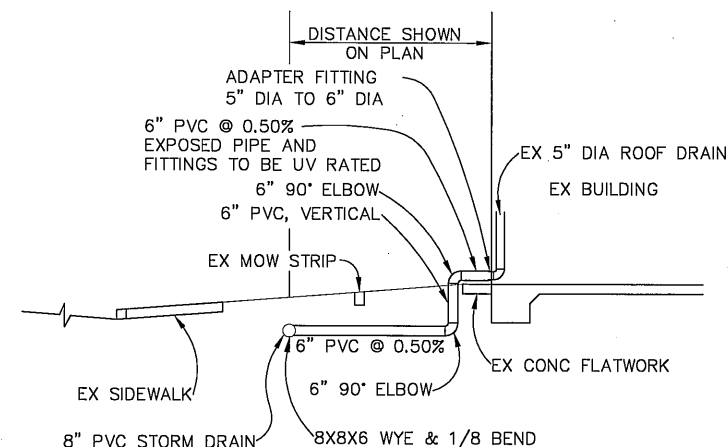
REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 APPROVED BY: *[Signature]*  
 DATE: July 1, 2010  
 DATE: 1-10-2010

LID TESTING AND DEMONSTRATION FACILITY  
 SAMPLING SYSTEM DETAILS

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-118  
 SHEET NO. 11 OF 13

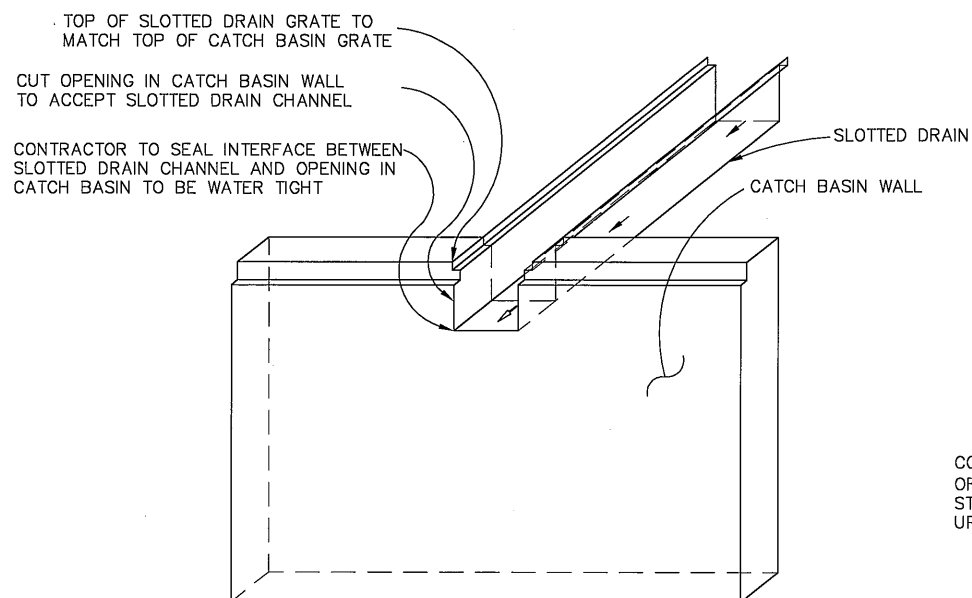




CONNECT EXISTING 5" DIA. ROOF DRAIN TO NEW 6" PVC (SDR-35) PIPE. 6" PIPE TO GO BELOW GRADE AS CLOSE TO THE BUILDING AS POSSIBLE WITHOUT DISTURBING THE EXISTING CONCRETE FLATWORK. CONTRACTOR TO COORDINATE CONNECTION DESIGN WITH THE DISTRICT ENGINEER PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE AND INSTALL ALL ADAPTERS AND FITTINGS AS NEEDED. ALL CONNECTIONS TO BE WATER TIGHT.

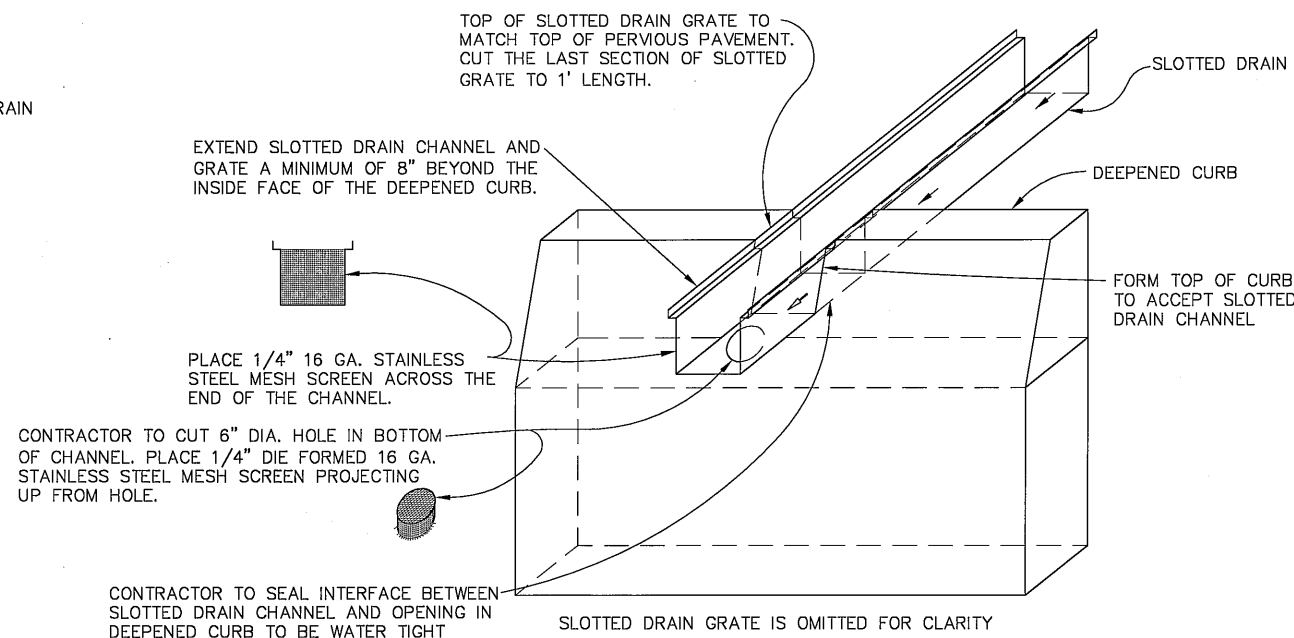
**ROOF DRAIN CONNECTION DETAIL**

NTS  
(SEE SHEET 3 AND 4 FOR PLAN VIEW)



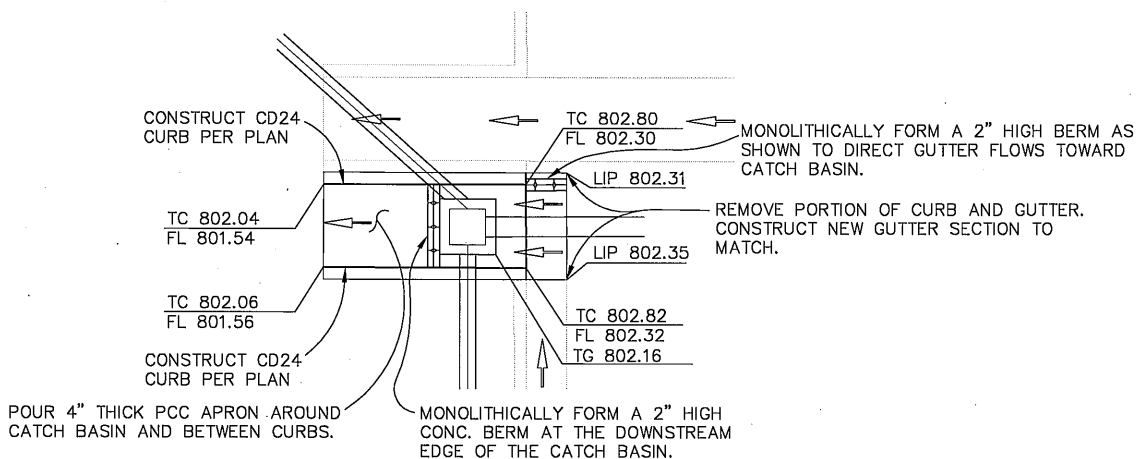
**SLOTTED DRAIN PENETRATION DETAIL 1**  
(WITH DISCHARGE TO CATCH BASIN)

NTS  
GRATES ARE OMITTED FOR CLARITY



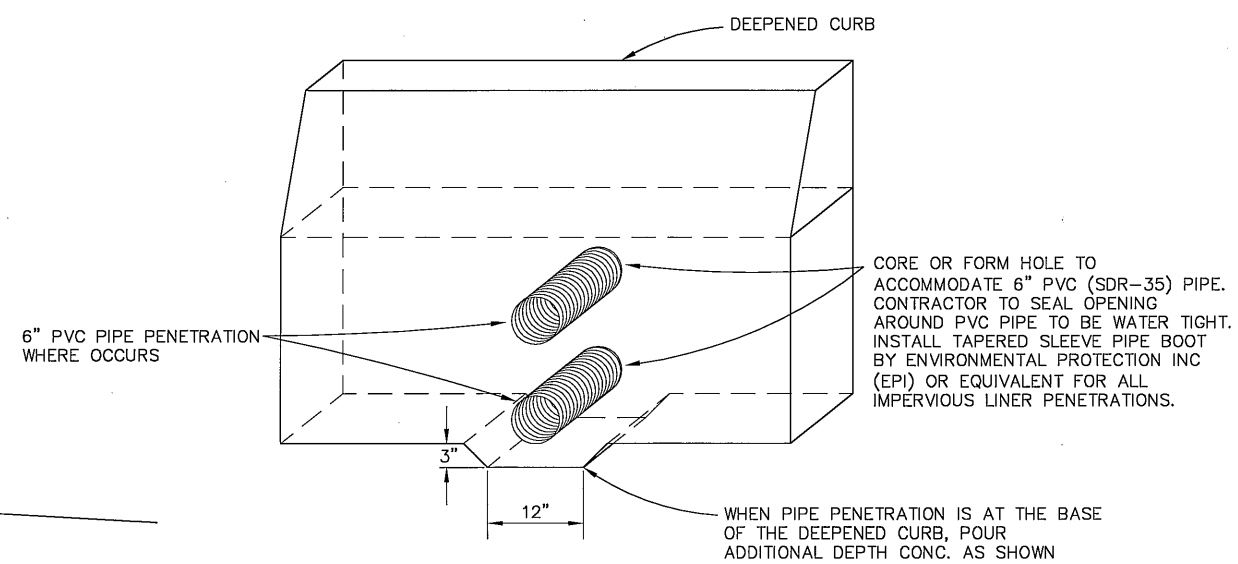
**SLOTTED DRAIN PENETRATION DETAIL 2**  
(WITH DISCHARGE TO PERVIOUS PAVEMENT AGGREGATE BASE)

NTS  
SLOTTED DRAIN GRATE IS OMITTED FOR CLARITY



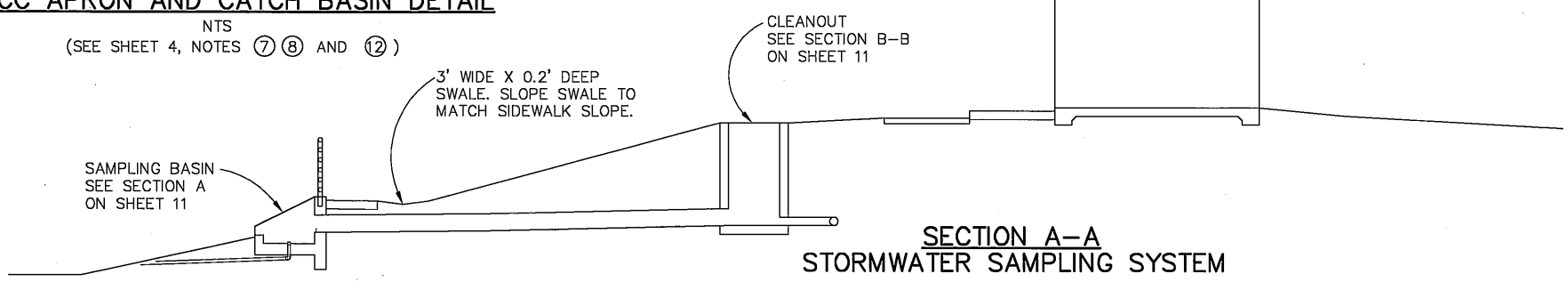
**PCC APRON AND CATCH BASIN DETAIL**

NTS  
(SEE SHEET 4, NOTES 7, 8 AND 12)



**6" PVC PIPE PENETRATION DETAIL**

NTS



**SECTION A-A  
STORMWATER SAMPLING SYSTEM**

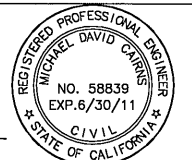
(SEE SHEET 7 FOR PLAN VIEW)  
SCALE: 1"=5'

**CVALDO CORPORATION**  
CIVIL ENGINEERING  
4801 MORENA BLVD. SUITE 1110  
SAN DIEGO, CA 92117  
(P) 858 886 0128 (F) 858 886 0131

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**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839 DATE: 6/24/10

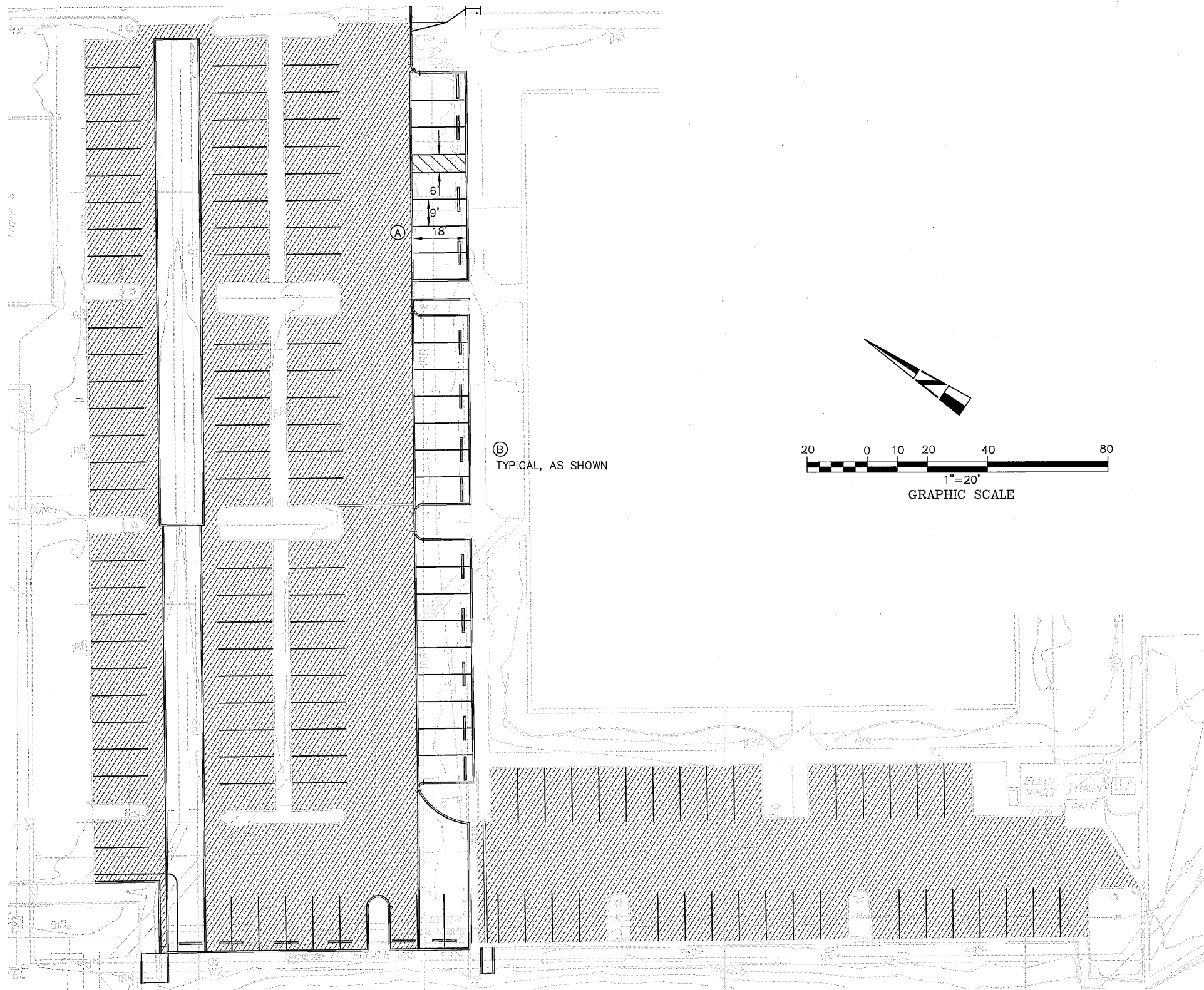


REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]* DATE: July 1, 2010  
APPROVED BY: *[Signature]* DATE: 1-12-2010

LID TESTING AND DEMONSTRATION FACILITY  
MISCELLANEOUS DETAILS

PROJECT NO. 1-0-00001  
DRAWING NO. 9-118  
SHEET NO. 12 OF 13

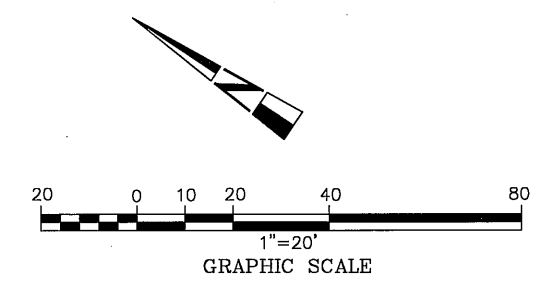


**CONSTRUCTION NOTES**

- Ⓐ ALL PARKING STALLS ARE 9' WIDE X 18' DEEP. STRIPES TO BE 4" WIDE PER CALTRANS STANDARD SPECIFICATIONS SECTION 84. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- Ⓑ NEW WHEEL STOPS TO BE PRECAST, AIR-ENTRAINED CONCRETE, 2500 PSI MINIMUM COMPRESSIVE STRENGTH, 6" HIGH X 9" WIDE X 8' LONG. PROVIDE HOLES FOR ANCHORING TO PAVEMENT. ANCHORING DOWELS TO BE HOT DIPPED GALVANIZED STEEL, 3/4" DIAMETER AND 12" MINIMUM LENGTH. IF THE DISTRICT INSPECTOR PERMITS, AN ADHESIVE BONDING SYSTEM AS APPROVED BY THE DISTRICT INSPECTOR MAY BE USED IN LIEU OF DOWELS. THE FACE OF THE WHEEL STOP IS TO BE LOCATED 3' FROM THE FACE OF CURB.

**LEGEND**

SYMBOL	DESCRIPTION
	SLURRY SEAL



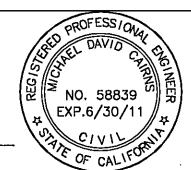
Ⓑ TYPICAL, AS SHOWN

**CVALDO CORPORATION**  
 CIVIL ENGINEERING  
 4901 MORENA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 619 856 0128 (F) 619 856 0131



**BENCH MARK**  
 3" BRASS DISC, DOWN 0.31'  
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*Michael David Cairns* 6/29/10  
 MICHAEL DAVID CAIRNS, RCE 58839 DATE:



REVISIONS	ENGINEER	RCFC&WCD			
REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]* DATE: July 1, 2010  
 APPROVED BY: *[Signature]* DATE: 1-14-2010

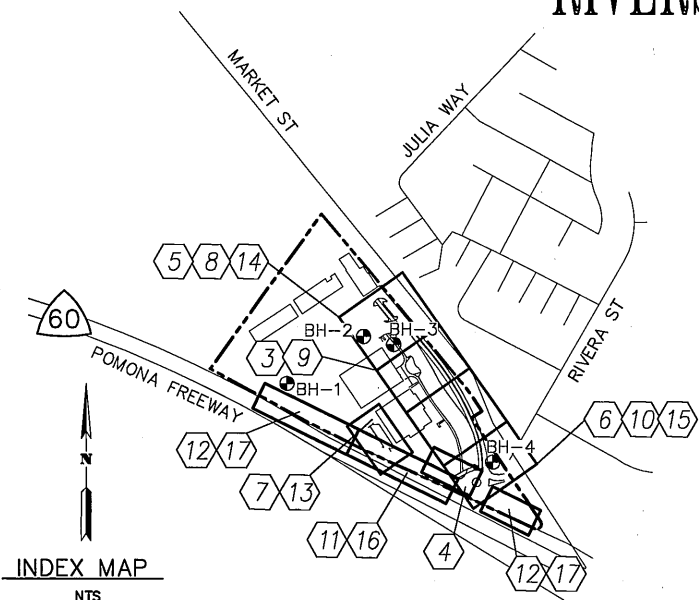
LID TESTING AND DEMONSTRATION FACILITY  
 SLURRY SEAL AND STRIPING PLAN

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-118  
 SHEET NO. 13 OF 13

# RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

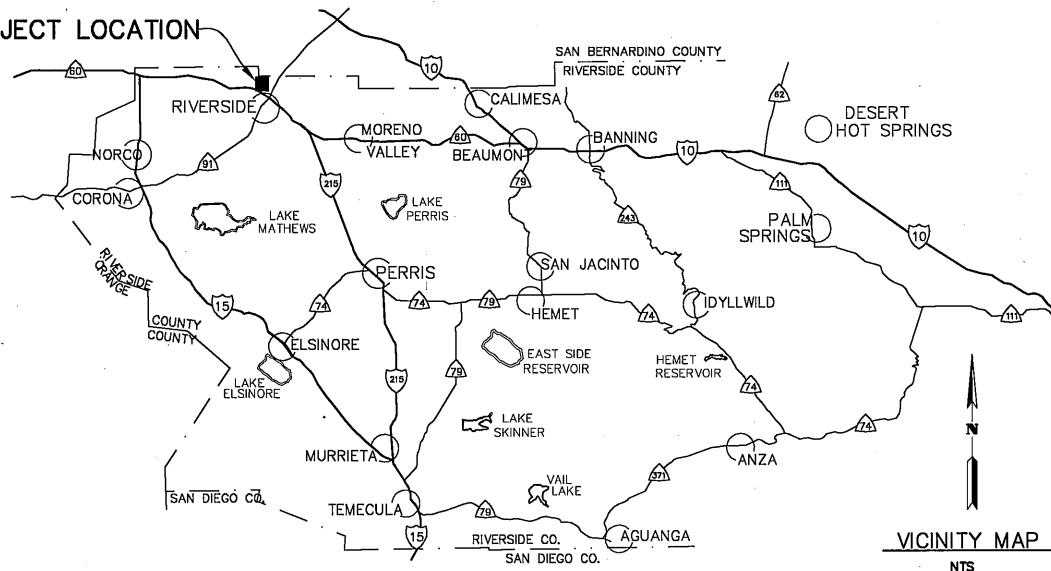
## PARKING LOT RENOVATION 2010

STANDARD DRAWINGS



INDEX MAP  
NTS

PROJECT LOCATION



VICINITY MAP  
NTS

### RCFC&WCD STANDARD DRAWINGS

STANDARD DRAWING	DESCRIPTION	NOTES
STD. DWG. NO. TS303	TRANSITION STRUCTURE NO. 3	
STD. DWG. NO. M815	BEDDING AND PAY LINES	

### RCTD ORDINANCE NO. 461 STANDARD DRAWINGS

STANDARD DRAWING	DESCRIPTION	NOTES
STD. NO. 200	TYPE A-6 CURB AND GUTTER	(SEE SHEET 2 FOR DETAILS)
STD. NO. 204	6" TYPE 'D' CURB	(SEE SHEET 2 FOR DETAILS)
STD. NO. 310	3" DRAIN THROUGH CURB	

### WMWD STANDARD DRAWINGS

STANDARD DRAWING	DESCRIPTION	NOTES
STD. DWG. NO. W-0530p1	DOUBLE CHECK ALTERNATE FIRE DEPARTMENT CONNECTION / DETECTOR ASSEMBLY	(SEE SHEET 4 FOR DETAILS)
STD. DWG. NO. W-1570	THRUST BLOCK	(SEE SHEET 4 FOR DETAILS)
STD. DWG. NO. W-1568	PIPE SUPPORT	(SEE SHEET 4 FOR DETAILS)

### CALTRANS STANDARDS

STANDARD DRAWING	DESCRIPTION	NOTES
STD. NO. A87A	TYPE D-6 CURB	CONTROL LINE IS 5" FROM BACK OF CURB (SEE SHEET 2 FOR DETAILS)

### GENERAL

- ALL GRADING SHALL CONFORM TO THE UNIFORM BUILDING CODE APPENDIX CHAP. 33 AS AMENDED BY ORD. 457.
- ALL WORK PER THIS PLAN SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT-OF-WAY WILL REQUIRE SEPARATE PLANS AND A SEPARATE REVIEW/APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
- ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH RECOMMENDATIONS OF THE SOILS INVESTIGATION BY LEIGHTON AND ASSOCIATES DATED \_\_\_\_\_.
- CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. CONTACT HENRY OLIVO AT 951/955-1288.
- FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-422-4133.
- ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON U.S.C. & G.S. DATUM.
- ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
- OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
- PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 AND BACKFILL PER CALTRANS SECTION 19.
- BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED \_\_\_\_\_. LOCATIONS SHOWN ARE APPROXIMATE.
- ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
- STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO RCTD STANDARD DRAWINGS, WMWD STANDARD DRAWINGS, CALTRANS STANDARDS, SAN DIEGO REGIONAL STANDARD DRAWINGS OR RCFC&WCD STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
- CONTRACTOR TO ADJUST ALL EXISTING VALVE, MANHOLE, CLEANOUT AND MISCELLANEOUS UTILITY COVERS WITHIN THE CONSTRUCTION LIMITS FLUSH TO THE FINISHED SURFACE ELEVATION UNLESS NOTED OTHERWISE.
- LANDSCAPING, LIGHTING AND IRRIGATION PER LANDSCAPE PLANS (RCFCWCD DRAWING 9-120).

### CUT/FILL

- MAXIMUM CUT AND FILL SLOPE = 2:1.
- NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, DEBRIS, TOPSOIL AND OTHER DELETERIOUS MATERIAL. FILLS SHOULD BE PLACED IN THIN LIFTS (8-INCH MAX OR AS RECOMMENDED IN SOILS REPORT), COMPACTED AND TESTED AS GRADING PROCESS UNTIL FINAL GRADES ARE ATTAINED. ALL FILLS ON SLOPES STEEPER THAN 5 TO 1 (H/V) AND A HEIGHT GREATER THAN 5 FEET SHALL BE KEYED AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. THE BENCH UNDER THE TOE MUST BE 10 FEET WIDE MIN.

### DRAINAGE AND EROSION/DUST CONTROL

- MINIMUM BUILDING PAD DRAINAGE GRADIENT SHALL BE = 1%, UNLESS SHOWN OTHERWISE ON THE PLAN.
- DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL (BEST MANAGEMENT PRACTICES, BMPs) SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
- DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
- ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
- FINISH GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR WALLS AT NOT LESS THAN 1/2" PER FOOT FOR A MINIMUM OF 3'.

### INDEX

SHEET	DESCRIPTION
1	TITLE
2	NOTES AND DETAILS
3	DEMOLITION PLAN
4	WATER VALVE RELOCATION PLAN
5	GRADING AND DRAINAGE
6	GRADING AND DRAINAGE
7	REAR PERVIOUS PAVEMENT PARKING AREA GRADING AND CURB IMPROVEMENTS
8	CURB IMPROVEMENTS AND MISC. SURFACE IMPROVEMENTS
9	CURB IMPROVEMENTS AND MISC. SURFACE IMPROVEMENTS
10	CURB IMPROVEMENTS AND MISC. SURFACE IMPROVEMENTS
11	CURB IMPROVEMENTS AND MISC. SURFACE IMPROVEMENTS
12	CURB IMPROVEMENTS AND MISC. SURFACE IMPROVEMENTS
13	PAVEMENT, SIGNAGE AND STRIPING PLAN
14	PAVEMENT, SIGNAGE AND STRIPING PLAN
15	PAVEMENT, SIGNAGE AND STRIPING PLAN
16	PAVEMENT PLAN
17	PAVEMENT PLAN AND RAISED PLANTER DETAIL
18	MISCELLANEOUS SURFACE IMPROVEMENTS
19	POTHOLE FIELD DATA

### ABBREVIATIONS

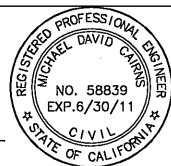
BC	BEGINNING OF CURVE
EC	END OF CURVE
EX	EXISTING
FG	FINISH GRADE
FL	FLOWLINE
FS	FINISH SURFACE
IE	INVERT ELEVATION
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
SG	SUBGRADE
TC	TOP OF CURB
TF	TOP OF FOOTING
TG	TOP OF GRATE
TW	TOP OF WALL
TYP	TYPICAL

**CVALDO CORPORATION**  
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SAN DIEGO, CA 92117  
(P) 858 866 0128 (F) 858 866 0131



BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839 DATE: 6/29/10



REVISIONS	ENGINEER	RCFC&WCD	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
			RECOMMENDED FOR APPROVAL BY: <i>[Signature]</i>	APPROVED BY: <i>[Signature]</i>
			DATE: 7-1-2010	DATE: 7/1/10
			CHIEF, DESIGN & CONSTRUCTION	CHIEF ENGINEER
REF.	DESCRIPTION	APPR.	DATE	APPR.

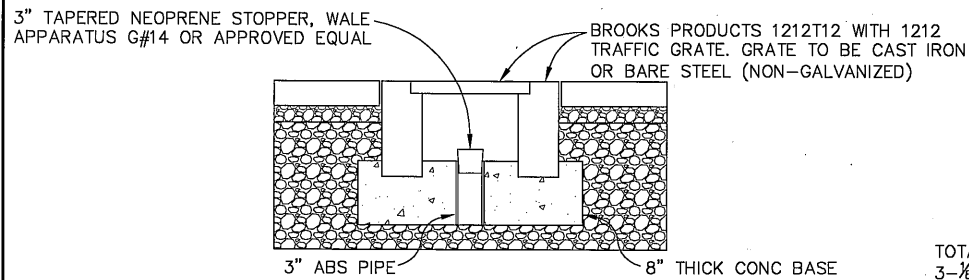
PARKING LOT RENOVATION 2010

TITLE SHEET

PROJECT NO.	1-0-00001
DRAWING NO.	9-119
SHEET NO.	1 OF 19

ALL DEEPEENED CURBS REQUIRE LATERAL BRACING DURING BACKFILL AND COMPACTION.  
 ALL CURBS TO BE PER SPECIFICATIONS.  
 \* CONTROL POINT FOR HORIZONTAL AND VERTICAL DATA SHOWN ON PLAN  
 \*\* SLURRY SHALL BE 2000 PSI - 2 SACK MIX

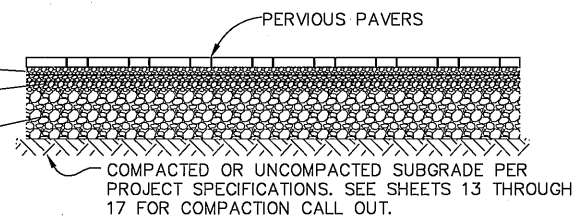
PLACE CATCH BASIN FLUSH WITH THE FINISH SURFACE AND SLOPED TO MATCH SURROUNDING GRADE. POUR 8" THICK CONCRETE BASE AROUND 3" DIA. ABS PIPE. EMBED CATCH BASIN 2" INTO CONCRETE BASE. THE BOTTOM OF THE CATCH BASIN IS TO BE FINISHED LEVEL. TOP OF ABS PIPE TO MATCH BOTTOM OF CATCH BASIN TO ALLOW COMPLETE DRAINAGE WHEN STOPPER IS REMOVED.



**FLOW DETECTION CATCH BASIN DETAIL**

NTS

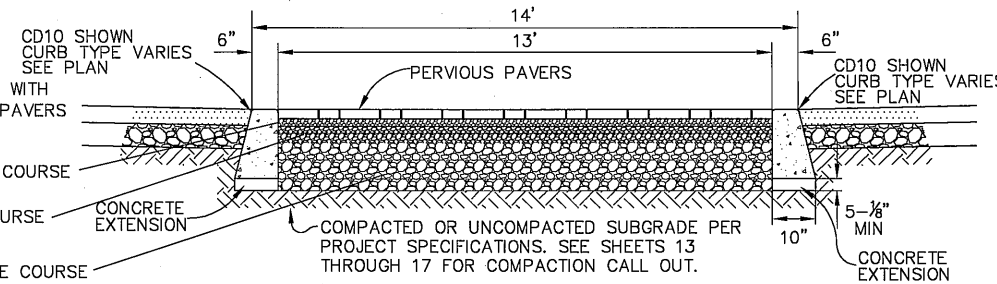
TOTAL SECTION IS 21-<sup>1</sup>/<sub>8</sub>" WITH 3-<sup>3</sup>/<sub>8</sub>" ORCO AQUA-BRIC PAVERS  
 2" BEDDING COURSE #8 STONE  
 3" BASE COURSE #57 STONE  
 13" SUBBASE COURSE #2 STONE



**PERVIOUS PAVER DETAIL**

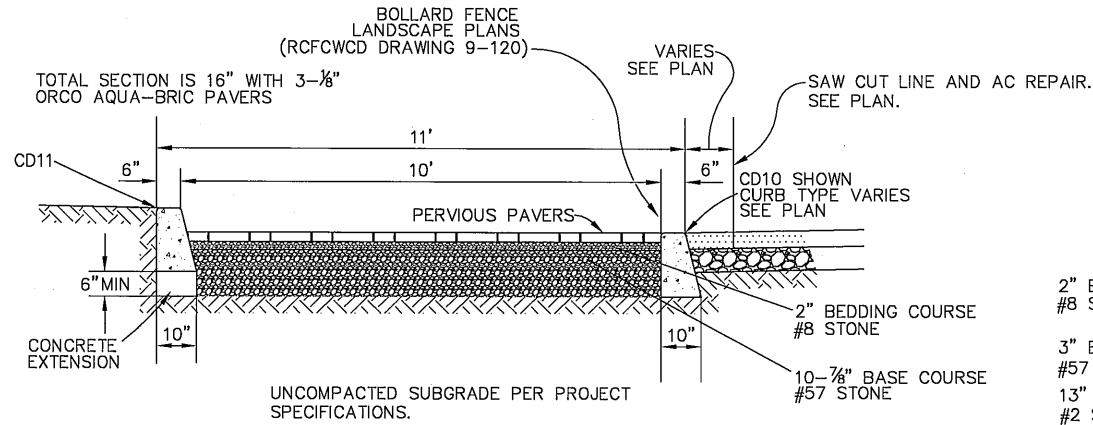
TRAFFIC CIRCLE, REAR PARKING AREA AND ENTRY WALK NTS

TOTAL SECTION IS 21-<sup>1</sup>/<sub>8</sub>" WITH 3-<sup>3</sup>/<sub>8</sub>" ORCO AQUA-BRIC PAVERS  
 2" BEDDING COURSE #8 STONE  
 3" BASE COURSE #57 STONE  
 13" SUBBASE COURSE #2 STONE



**PERVIOUS PAVER WALKWAY DETAIL PPW1**

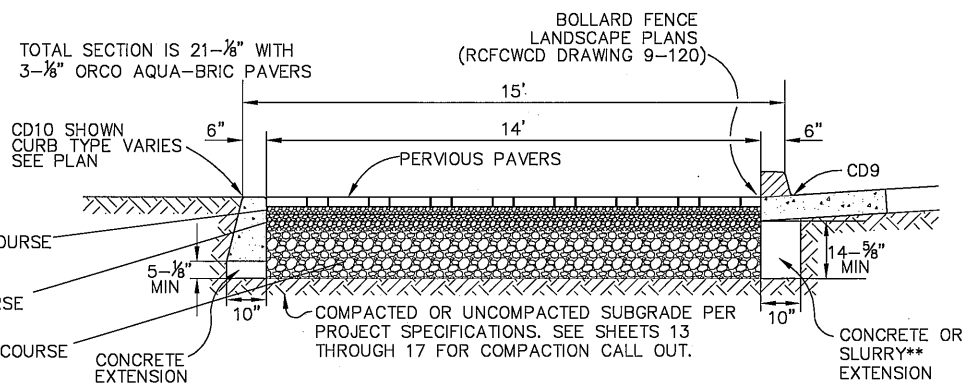
NTS



**PERVIOUS PAVER WALKWAY DETAIL PPW4**

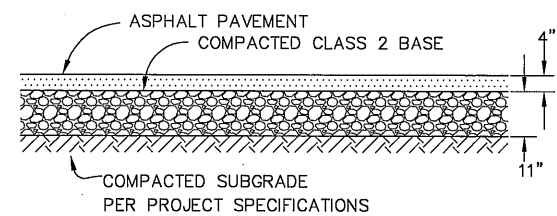
NTS

TOTAL SECTION IS 21-<sup>1</sup>/<sub>8</sub>" WITH 3-<sup>3</sup>/<sub>8</sub>" ORCO AQUA-BRIC PAVERS  
 2" BEDDING COURSE #8 STONE  
 3" BASE COURSE #57 STONE  
 13" SUBBASE COURSE #2 STONE



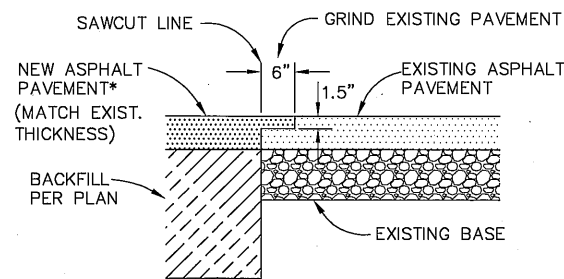
**PERVIOUS PAVER WALKWAY DETAIL PPW2**

NTS



**ASPHALT PAVEMENT DETAIL**

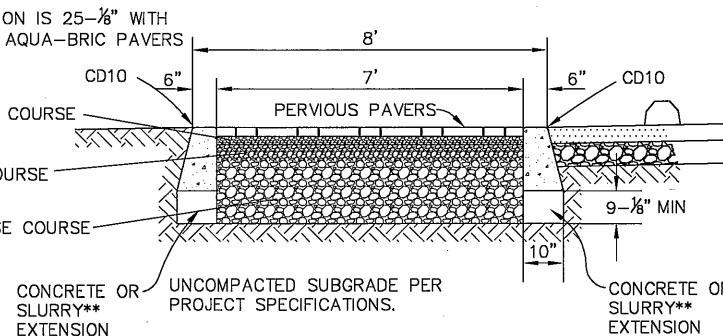
NTS



**SAWCUT REPAIR DETAIL**

NTS

TOTAL SECTION IS 25-<sup>1</sup>/<sub>8</sub>" WITH 3-<sup>3</sup>/<sub>8</sub>" ORCO AQUA-BRIC PAVERS  
 2" BEDDING COURSE #8 STONE  
 3" BASE COURSE #57 STONE  
 17" SUBBASE COURSE #2 STONE



**PERVIOUS PAVER WALKWAY DETAIL PPW3**

NTS

CD1	TYPE 'A-6' CURB AND GUTTER PER RCTD STD 200	
CD2	MODIFIED TYPE 'A-6' CURB AND GUTTER PER RCTD STD 200 (MODIFICATIONS, GUTTER SLOPE AND GRADE BEHIND CURB TO MATCH ADJACENT CROSSFALL AND FORM 3' WIDE OPENINGS AT 40' INTERVALS, OR AS SHOWN ON PLAN)	
CD3	TYPE 'D-6' CURB AND GUTTER PER CALTRANS STD. NO. A87A	
CD4	6" TYPE 'D' CURB PER RCTD STD 204	
CD5	MODIFIED 6" TYPE 'D' CURB PER RCTD STD 204 (MODIFICATIONS-GRADE BEHIND CURB TO MATCH ADJACENT CROSSFALL AND FORM 3' WIDE OPENINGS AS SHOWN ON PLAN)	
CD6	6" TYPE 'D' CURB PER RCTD STD 204 (FINISH GRADE BEHIND CURB TO MATCH ADJACENT CROSSFALL.)	
CD7	6" TYPE 'D' CURB PER RCTD STD 204 (MODIFICATIONS-GRADE BEHIND CURB TO MATCH ADJACENT CROSSFALL AND PLACE 3" SCHEDULE 40 PVC DRAIN THROUGH CURB AT THE LOW POINT)	
CD8	MODIFIED 6" TYPE 'D' CURB PER RCTD STD 204. (MODIFICATION-CONSTRUCT WITH TOP OF CURB FLUSH WITH FINISH GRADE)	
CD9	MODIFIED TYPE 'A-6' CURB AND GUTTER PER RCTD STD 200 (MODIFICATIONS-GUTTER SLOPE AND GRADE BEHIND CURB TO MATCH ADJACENT CROSSFALL AND FORM 3' WIDE OPENINGS AS SHOWN ON PLAN)	
CD10	MODIFIED 6" TYPE 'D' CURB PER RCTD STD 204. (MODIFICATION-CONSTRUCT WITH TOP OF CURB FLUSH WITH FINISH GRADE)	
CD11	6" TYPE 'D' CURB PER RCTD STD 204	
CD12	6" TYPE 'D' CURB PER RCTD STD 204 (FINISH GRADE BEHIND CURB TO MATCH FINISH SURFACE AT FACE OF CURB)	

**NOTE**

- FINISH SURFACE OUTSIDE OF CURBS MAY DIFFER FROM THAT SHOWN. REFER TO PLAN.
- IN ALL CASES SLURRY OR CONC. EXT. SHALL EXTEND TO AT LEAST DEPTH OF PAVEMENT SUBGRADE SECTION.

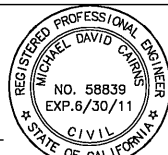
\*A TAC COAT OF EMULSIFIED ASPHALT (GRADE SS-1H OR RS-1) SHALL BE APPLIED TO ALL SURFACES WHICH WILL BE IN CONTACT WITH THE REPLACEMENT ASPHALT PAVEMENT

CVALDO CORPORATION  
 CIVIL ENGINEERING  
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 SAN DIEGO, CA 92117  
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BENCH MARK  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
 THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
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 NAVD 88

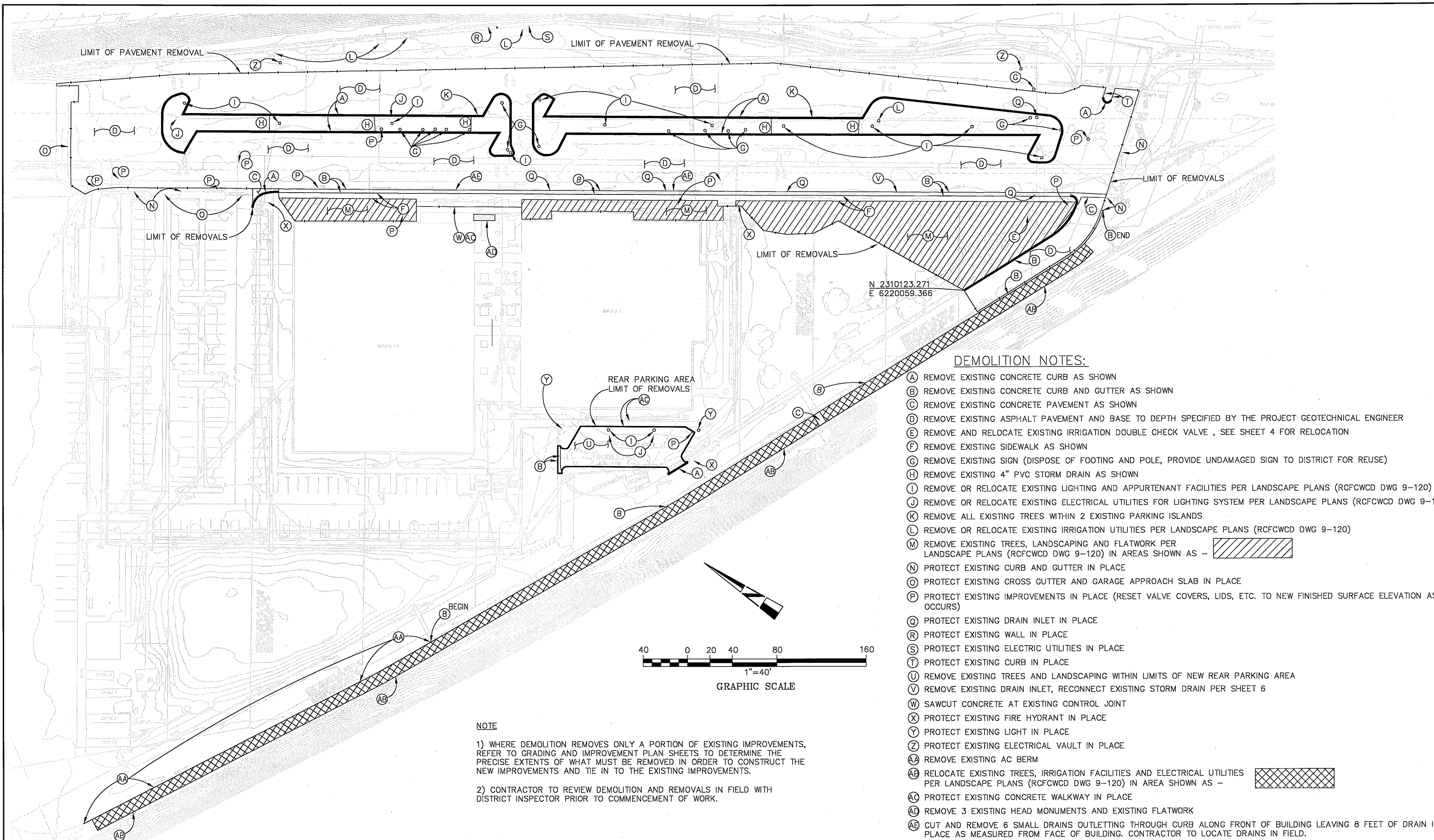
MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10



REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 APPROVED BY: *[Signature]*  
 DATE: July 1, 2010  
 DATE: 7-1-2010

PARKING LOT RENOVATION 2010  
 PROJECT NO. 1-0-0001  
 DRAWING NO. 9-119  
 SHEET NO. 2 OF 19  
 NOTES AND DETAILS

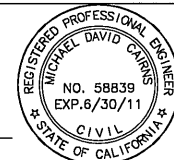


- DEMOLITION NOTES:**
- (A) REMOVE EXISTING CONCRETE CURB AS SHOWN
  - (B) REMOVE EXISTING CONCRETE CURB AND GUTTER AS SHOWN
  - (C) REMOVE EXISTING CONCRETE PAVEMENT AS SHOWN
  - (D) REMOVE EXISTING ASPHALT PAVEMENT AND BASE TO DEPTH SPECIFIED BY THE PROJECT GEOTECHNICAL ENGINEER
  - (E) REMOVE AND RELOCATE EXISTING IRRIGATION DOUBLE CHECK VALVE, SEE SHEET 4 FOR RELOCATION
  - (F) REMOVE EXISTING SIDEWALK AS SHOWN
  - (G) REMOVE EXISTING SIGN (DISPOSE OF FOOTING AND POLE, PROVIDE UNDAMAGED SIGN TO DISTRICT FOR REUSE)
  - (H) REMOVE EXISTING 4" PVC STORM DRAIN AS SHOWN
  - (I) REMOVE OR RELOCATE EXISTING LIGHTING AND APPURTENANT FACILITIES PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)
  - (J) REMOVE OR RELOCATE EXISTING ELECTRICAL UTILITIES FOR LIGHTING SYSTEM PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)
  - (K) REMOVE ALL EXISTING TREES WITHIN 2 EXISTING PARKING ISLANDS
  - (L) REMOVE OR RELOCATE EXISTING IRRIGATION UTILITIES PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)
  - (M) REMOVE EXISTING TREES, LANDSCAPING AND FLATWORK PER LANDSCAPE PLANS (RCFCWCD DWG 9-120) IN AREAS SHOWN AS -
  - (N) PROTECT EXISTING CURB AND GUTTER IN PLACE
  - (O) PROTECT EXISTING CROSS GUTTER AND GARAGE APPROACH SLAB IN PLACE
  - (P) PROTECT EXISTING IMPROVEMENTS IN PLACE (RESET VALVE COVERS, LIDS, ETC. TO NEW FINISHED SURFACE ELEVATION AS OCCURS)
  - (Q) PROTECT EXISTING DRAIN INLET IN PLACE
  - (R) PROTECT EXISTING WALL IN PLACE
  - (S) PROTECT EXISTING ELECTRIC UTILITIES IN PLACE
  - (T) PROTECT EXISTING CURB IN PLACE
  - (U) REMOVE EXISTING TREES AND LANDSCAPING WITHIN LIMITS OF NEW REAR PARKING AREA
  - (V) REMOVE EXISTING DRAIN INLET, RECONNECT EXISTING STORM DRAIN PER SHEET 6
  - (W) SAWCUT CONCRETE AT EXISTING CONTROL JOINT
  - (X) PROTECT EXISTING FIRE HYDRANT IN PLACE
  - (Y) PROTECT EXISTING LIGHT IN PLACE
  - (Z) PROTECT EXISTING ELECTRICAL VAULT IN PLACE
  - (AA) REMOVE EXISTING AC BERM
  - (AB) RELOCATE EXISTING TREES, IRRIGATION FACILITIES AND ELECTRICAL UTILITIES PER LANDSCAPE PLANS (RCFCWCD DWG 9-120) IN AREA SHOWN AS -
  - (AC) PROTECT EXISTING CONCRETE WALKWAY IN PLACE
  - (AD) REMOVE 3 EXISTING HEAD MONUMENTS AND EXISTING FLATWORK
  - (AE) CUT AND REMOVE 6 SMALL DRAINS OUTLETTING THROUGH CURB ALONG FRONT OF BUILDING LEAVING 8 FEET OF DRAIN IN PLACE AS MEASURED FROM FACE OF BUILDING. CONTRACTOR TO LOCATE DRAINS IN FIELD.

**NOTE**

1) WHERE DEMOLITION REMOVES ONLY A PORTION OF EXISTING IMPROVEMENTS, REFER TO GRADING AND IMPROVEMENT PLAN SHEETS TO DETERMINE THE PRECISE EXTENTS OF WHAT MUST BE REMOVED IN ORDER TO CONSTRUCT THE NEW IMPROVEMENTS AND TIE IN TO THE EXISTING IMPROVEMENTS.

2) CONTRACTOR TO REVIEW DEMOLITION AND REMOVALS IN FIELD WITH DISTRICT INSPECTOR PRIOR TO COMMENCEMENT OF WORK.



MICHAEL DAVID CAIRNS, RCE 58839 DATE: 6/29/10

REVISIONS	ENGINEER	RCFC&WCD			
REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
RECOMMENDED FOR APPROVAL BY:	APPROVED BY:
DATE: _____	DATE: _____

PARKING LOT RENOVATION 2010

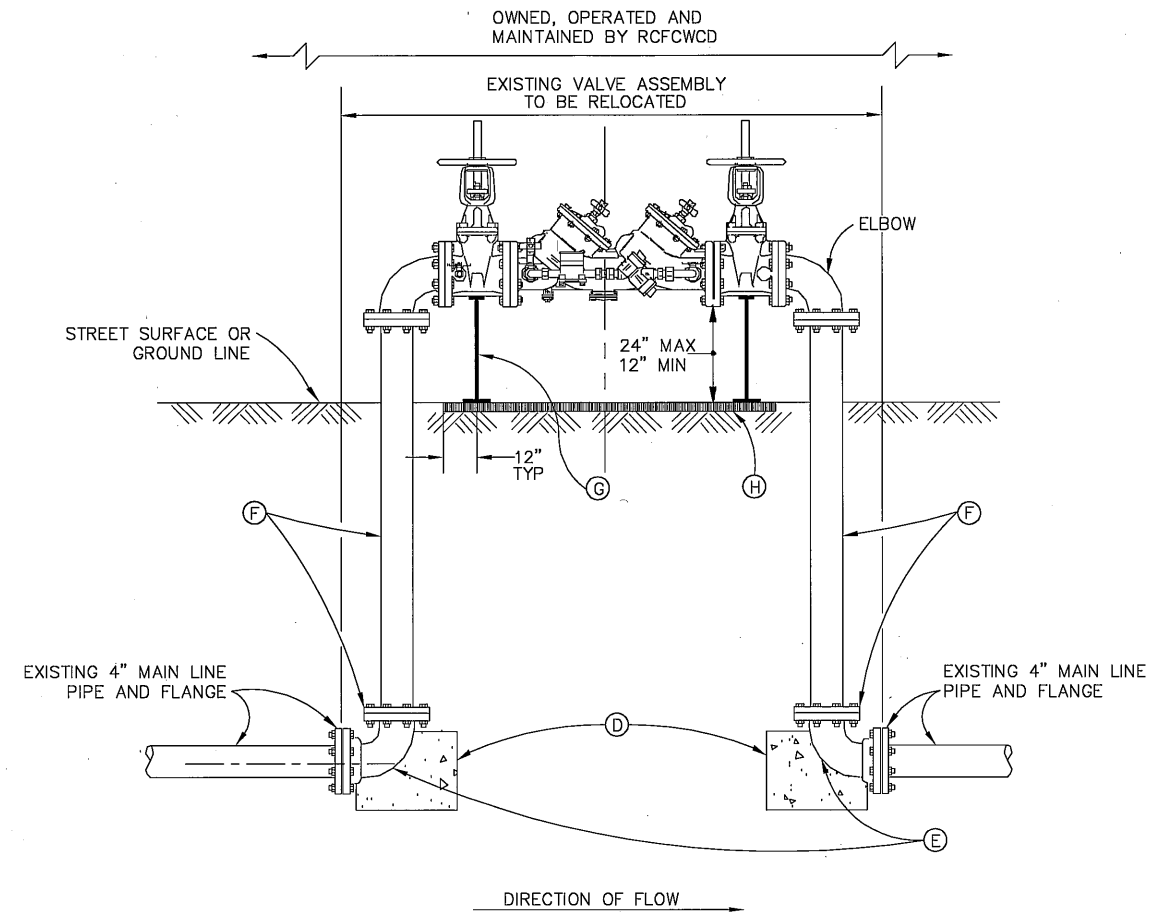
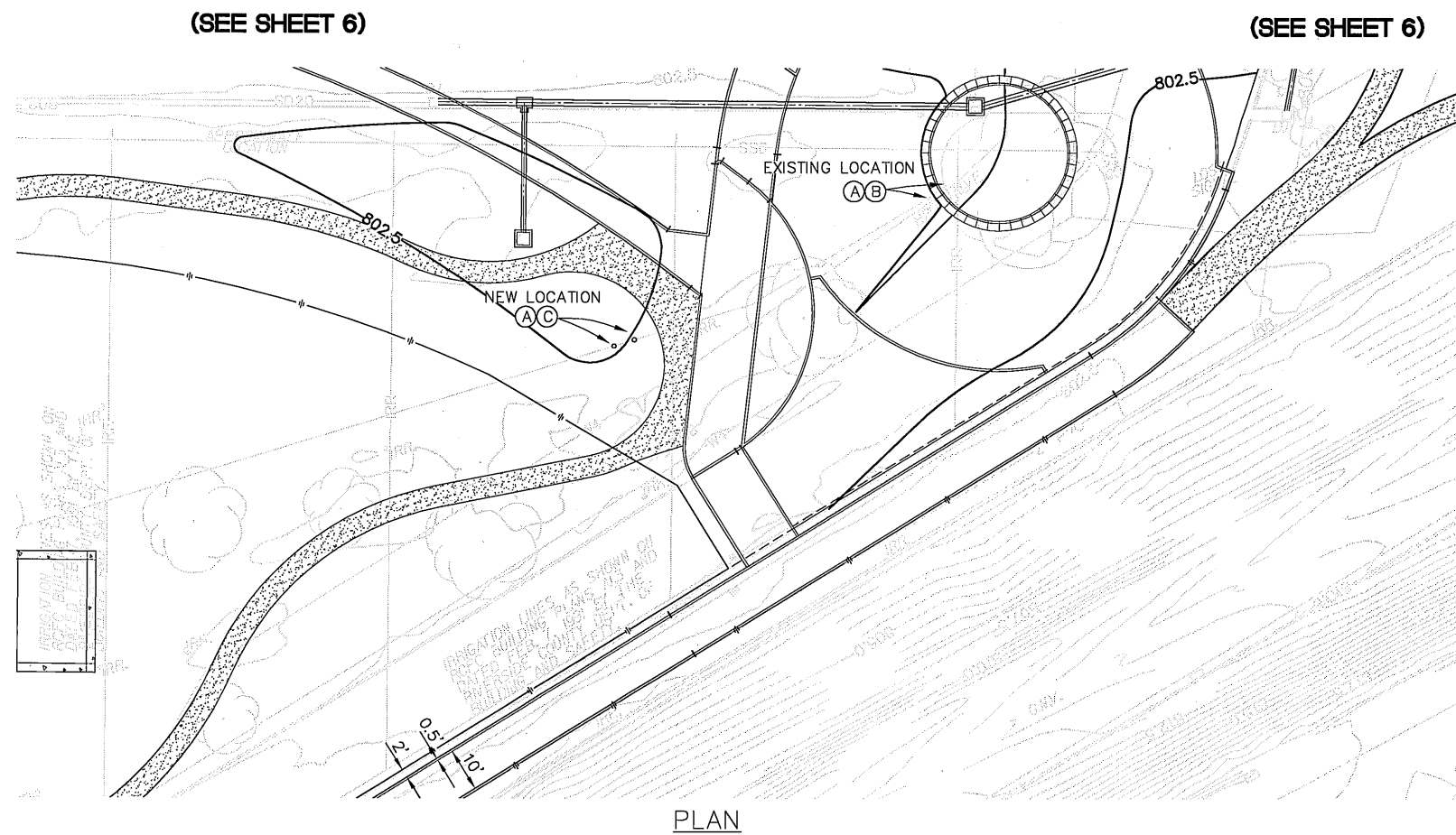
DEMOLITION PLAN

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 3 OF 19

CVALDO CORPORATION CIVIL ENGINEERING  
 4801 MORENA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 858 866 0128 (F) 858 866 0131



BENCH MARK  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
 THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
 E: 6219063.81  
 NAVD 88



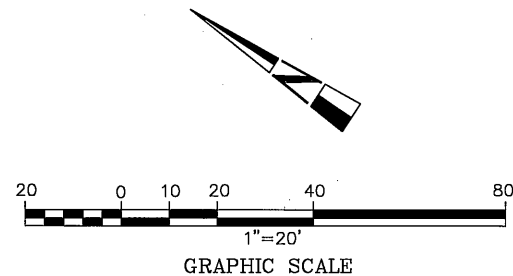
**IRRIGATION DOUBLE CHECK VALVE ASSEMBLY DETAIL**  
(NTS)

**CONSTRUCTION NOTES**

- (A) REMOVE EXISTING IRRIGATION DOUBLE CHECK VALVE ASSEMBLY AND RELOCATE AS SHOWN ON PLAN VIEW AND PER DETAIL THIS SHEET. CONTRACTOR TO VERIFY NEW LOCATION OF VALVE ASSEMBLY WITH RCFCWCD INSPECTOR PRIOR TO CONSTRUCTION.
- (B) IN THE EXISTING LOCATION, PROTECT AND REMOVE EXISTING VALVE ASSEMBLY. REMOVE EXISTING RISERS, ELBOWS AND THRUST BLOCKS TAKING CARE NOT TO DAMAGE THE FLANGES ON THE MAIN LINE. CLEAN THE FLANGES ON THE MAIN LINE FOR RE-USE. RECONNECT THE MAIN LINE USING A NEW SECTION OF THE SAME TYPE OF PIPE WITH WELDED FLANGE FITTINGS.
- (C) IN THE NEW LOCATION, CUT AND REMOVE A SUFFICIENT LENGTH OF PIPE TO FIT THE RELOCATED VALVE ASSEMBLY. FIELD WELD NEW FLANGES TO EACH OF THE CUT ENDS. INSTALL THE EXISTING VALVE ASSEMBLY IN THE NEW LOCATION. RE-USE ALL UNDAMAGED EXISTING COMPONENTS.
- (D) CONSTRUCT THRUST BLOCKS PER WMWD STANDARD W-1570. SAFE SOIL BEARING CAPACITY TO BE DETERMINED BY THE PROJECT GEOTECHNICAL ENGINEER.
- (E) SALVAGE AND REUSE EXISTING 90° ELBOW AND FLANGE ASSEMBLY. IF EXISTING ASSEMBLY IS DAMAGED, REPLACE IN KIND. (TYP BOTH ELBOWS)
- (F) UTILIZE EXISTING PIPE AND FLANGE IF SALVAGEABLE. REVIEW CONDITION WITH DISTRICT INSPECTOR PRIOR TO REUSE.
- (G) CONSTRUCT PIPE SUPPORT (2) PER WMWD STD DWG W-1568.
- (H) CONSTRUCT 18" WIDE BY 6" THICK CONCRETE SUPPORT PAD W/ 3 #4 REBAR SPACED @ 4" OC IN LONGITUDINAL DIRECTION.

**GENERAL NOTE FOR VALVE ASSEMBLY RELOCATION**

- 1 ALL PIPES AND FITTINGS SHALL BE DESIGNED FOR MORE THAN 175 P.S.I. (COLD) WATER WORKING PRESSURE.
- 2 ALTERNATE MATERIALS MAY BE USED ONLY WITH DISTRICT APPROVAL.
- 3 ALL BARE METAL TO BE PRIMED AND WRAPPED PER WMWD SPECIFICATIONS.
- 4 ALL WELDS TO BE FULL WELD, DOUBLE-PASS.
- 5 ALL WORK AND MATERIALS TO BE PER WMWD STANDARDS.
- 6 CHECK BOLT HOLE PATTERN AND ALIGNMENT PRIOR TO WELDING ALL FLANGES.

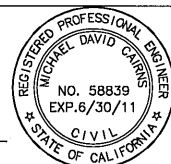


**OSVALDO CORPORATION**  
CIVIL ENGINEERING  
4801 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
(P) 858 866 0128 (F) 858 866 0131



**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
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*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/29/10

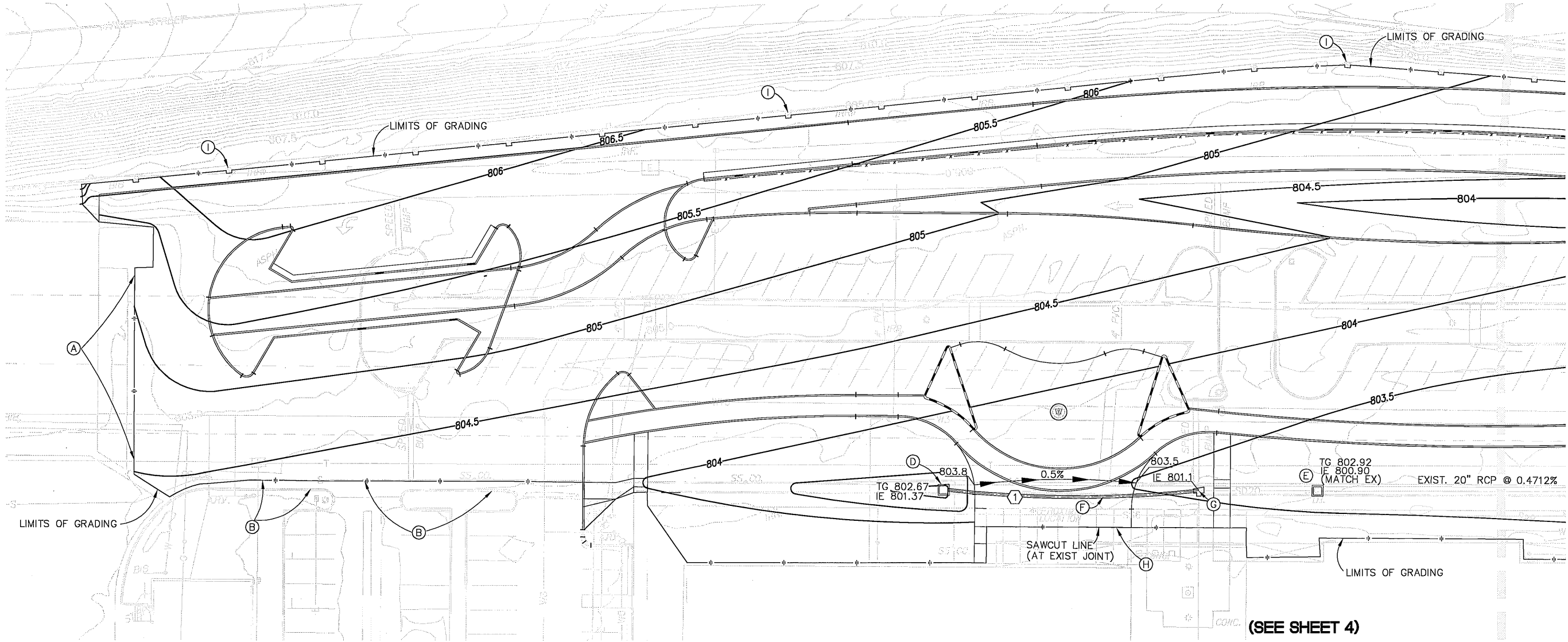


REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
DATE: July 1, 2010  
APPROVED BY: *[Signature]*  
DATE: 1-1-2010

PARKING LOT  
RENOVATION 2010  
WATER VALVE RELOCATION PLAN

PROJECT NO.  
1-0-0001  
DRAWING NO.  
9-119  
SHEET NO.  
4 OF 19



(SEE SHEET 6)

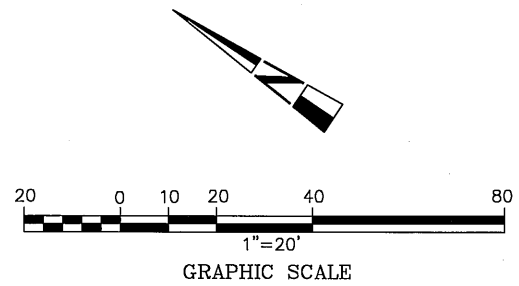
(SEE SHEET 4)

**CONSTRUCTION NOTES**

- (A) PROTECT EXISTING CONCRETE RIBBON GUTTER AND GARAGE APPROACH SLAB IN PLACE
- (B) PROTECT EXISTING CONCRETE CURB AND CROSS GUTTER IN PLACE
- (C) GRADE SITE WITHIN LIMITS OF GRADING AS SHOWN. NOTE THAT ELEVATIONS SHOWN ARE FINISHED SURFACE. CONTRACTOR TO ACCOUNT FOR PAVEMENT SECTION AND OTHER SURFACE IMPROVEMENTS WHEN GRADING SITE
- (D) INSTALL US CONCRETE PRECAST 3636V-24 CATCH BASIN WITH PARKWAY GRATE AND POURED CONCRETE FLOOR, OR APPROVED EQUAL. MODIFY BOTTOM OF CATCH BASIN AS NECESSARY FOR SHALLOW INSTALLATION.
- (E) REPLACE EXIST. CATCH BASIN WITH NEW US CONCRETE PRECAST 3636V-24 CATCH BASIN WITH PARKWAY GRATE AND POURED CONCRETE FLOOR, OR APPROVED EQUAL. MODIFY BOTTOM OF CATCH BASIN AS NECESSARY FOR SHALLOW INSTALLATION. (PROTECT AND REUSE EXIST. 20" RCP)
- (F) CONSTRUCT NEW 12" PVC (SDR-35) STORM DRAIN
- (G) CONNECT NEW 12" PVC TO EXIST. 20" RCP AT EXIST. ANGLE POINT. USE TRANSITION STRUCTURE NO. 3 PER RCFC STD DWG NO. TS303. A=84.5'; B=12", C=12", D1=12", D2=20". (ELEV R AND S WILL BE DETERMINED AFTER EXCAVATION OF EXISTING STORM DRAIN).
- (H) PROTECT EXISTING CONCRETE WALKWAY IN PLACE
- (I) PROTECT EXISTING WALL IN PLACE

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	D=12°26'19"	420'	91.18'	45.77'	12" PVC (SDR-35) @ 0.30%

NOTE: ALL ELEVATIONS ARE TO FINISH SURFACE. SEE SHEET 2 FOR PAVEMENT AND CURB DETAILS. SEE SHEETS 8 AND 9 FOR CURB DATA.

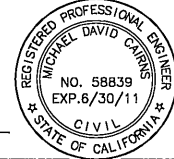


**CVALDO CORPORATION**  
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 4901 MORENA BLVD. SUITE 1110  
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 (P) 858 886 0128 (F) 858 886 0131

Don't Dig...Until You Call U.S.A. Toll Free  
 1-800-227-2600  
 for the location of buried utility lines.  
 Don't disrupt vital services.  
 TWO WORKING DAYS BEFORE YOU DIG

**BENCHMARK**  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER  
 ELEV. 815.71  
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 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839 DATE: 6/29/10



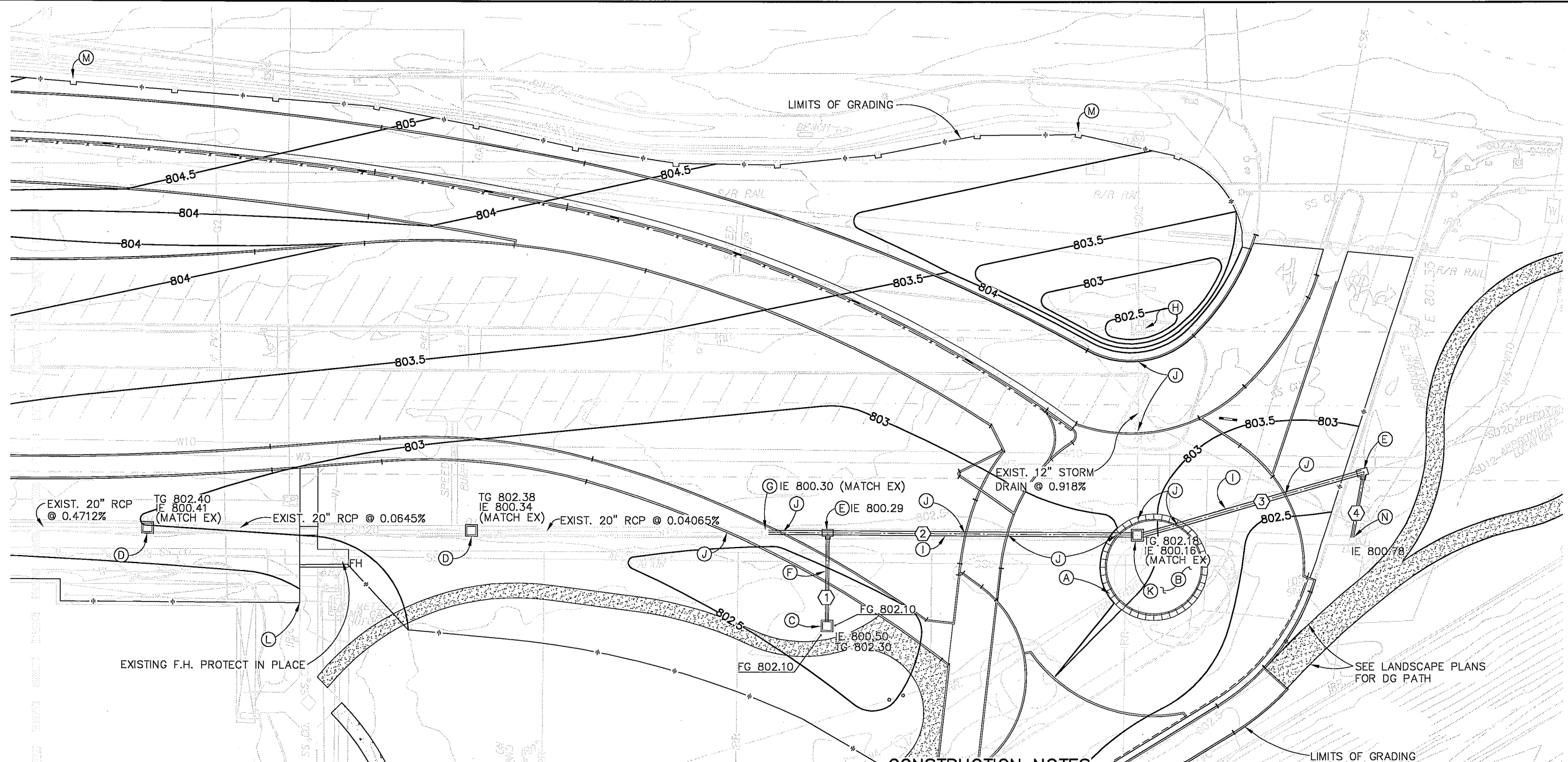
REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 DATE: July 1, 2010  
 APPROVED BY: *[Signature]*  
 DATE: 1-1-2010

**PARKING LOT RENOVATION 2010**  
 GRADING AND DRAINAGE PLAN

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 5 OF 19

(SEE SHEET 5)

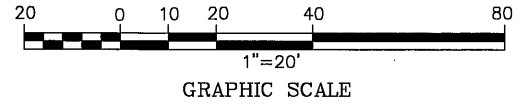


**CONSTRUCTION NOTES**

- (A) EXISTING IRRIGATION DOUBLE CHECK VALVE ASSEMBLY TO BE RELOCATED. SEE SHEET 4 FOR DETAILS.
- (B) FINISH GRADE AT BACK OF CURB TO BE 0.2' BELOW THE TOP OF CURB.
- (C) U.S. CONCRETE PRECAST 3636V-24 CATCH BASIN WITH PARKWAY GRATE AND POURED CONCRETE FLOOR, OR APPROVED EQUAL. CUT BOTTOM OF CATCH BASIN AS NECESSARY FOR SHALLOW INSTALLATION.
- (D) REPLACE EXIST. CATCH BASIN WITH NEW US CONCRETE PRECAST 3636V-24 CATCH BASIN WITH PARKWAY GRATE AND POURED CONCRETE FLOOR, OR APPROVED EQUAL. CUT BOTTOM OF CATCH BASIN AS NECESSARY FOR SHALLOW INSTALLATION. (PROTECT AND REUSE EXIST. 20" RCP PIPE)
- (E) CONNECT NEW 12" PVC TO EXIST. RCP. USE TRANSITION STRUCTURE NO. 3 PER RCFC STD DWG NO. TS303. NL'Y CONNECTION A=90°, B=12", C=12", D1=20", D2=15", (ELEV R AND S WILL BE DETERMINED AFTER EXCAVATION OF EXISTING STORM DRAIN). SL'Y CONNECTION A=82.25°, B=12", C=12", D1=15", D2=20", (ELEV R AND S WILL BE DETERMINED AFTER EXCAVATION OF EXISTING STORM DRAIN). MODIFY CD10 CURB AS NECESSARY TO CLEAR THE STORM DRAIN. PIPE TO BE SLURRY BACKFILLED WITHIN PAVEMENT AND TO THE BASE OF THE 2" LEVELING MATERIAL BELOW THE PERVIOUS PAVERS.
- (F) CONSTRUCT 12" PVC STORM DRAIN PRIOR TO CD10 CURB. MODIFY CD10 CURB AS NECESSARY TO CLEAR THE STORM DRAIN. PIPE TO BE SLURRY BACKFILLED WITHIN PAVEMENT AND TO THE BASE OF THE 2" LEVELING MATERIAL BELOW THE PERVIOUS PAVERS.
- (G) EXISTING CURB INLET REMOVED PER DEMOLITION PLAN ON SHEET 3. RECONNECT EXISTING STORM DRAIN WITH SIMILAR PIPE MATERIAL TO THE SATISFACTION OF THE DISTRICT INSPECTOR.
- (H) PROTECT AND REUSE EXISTING INLET IN PLACE. GRADE ADJACENT AREA TO DRAIN TO INLET.
- (I) REPLACE EXISTING 20" RCP WITH 15" RCP, D-2400. (HOLD EXISTING INVERT ELEVATIONS) PIPE TO BE SLURRY BACKFILLED.
- (J) POT HOLE UTILITY AT CROSSING WITH CURB. IF UTILITY CONFLICTS WITH THE CURB, CONTRACTOR TO FORM THE BOTTOM OF THE CURB SUFFICIENT TO ALLOW 3" OF VERTICAL CLEARANCE BETWEEN THE TOP OF THE UTILITY AND THE BOTTOM OF THE CURB. UTILITY TO BE SLURRY BACKFILLED FROM THE SPRINGLINE TO THE BOTTOM OF THE CURB. CONTRACTOR TO PLACE A CONTROL JOINT IN THE CURB WHERE CROSSES WITH THE SLURRY BACKFILL. (TYPICAL FOR ALL UTILITY CROSSINGS WITH CURB ADJACENT TO PERVIOUS PAVERS).
- (K) REPLACE EXIST. CATCH BASIN WITH NEW US CONCRETE PRECAST 3636V-24 CATCH BASIN WITH PARKWAY GRATE AND POURED CONCRETE FLOOR, OR APPROVED EQUAL. CUT BOTTOM OF CATCH BASIN AS NECESSARY FOR SHALLOW INSTALLATION. ADJUST GRADE ADJACENT TO BASIN TO DRAIN.
- (L) PROTECT EXISTING CONCRETE WALKWAY IN PLACE
- (M) PROTECT EXISTING WALL IN PLACE
- (N) CONNECT 12" PVC PIPE TO EXISTING CATCH BASIN. ALIGN PIPE WITH INVERT ELEVATION OF CATCH BASIN. MODIFY THE FLOOR IF NECESSARY TO INSURE THERE WILL BE NO PONDING WITHIN THE CATCH BASIN. PIPE TO CATCH BASIN CONNECTION TO BE WATER TIGHT. (NOTE THAT THE EXISTING 12" OUTFLOW PIPE IS TO BE REMOVED BY SEPARATE PLAN.)

STORM DRAIN DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N56°21'54"E	---	30.00'	---	12" PVC (SDR-35) @ 0.70%
(2)	S33°38'06"E	---	122.27'	---	(1) 15" RCP (D-2400) @ 0.114%
(3)	S50°02'15"E	---	77.42'	---	(1) 15" RCP (D-2400) @ 0.103%
(4)	S66°15'17"W	---	22.42'	---	12" PVC (SDR-35) @ 0.31%

NOTE: ALL ELEVATIONS ARE TO FINISH SURFACE. SEE SHEET 2 FOR PAVEMENT AND CURB DETAILS. SEE SHEETS 9 AND 10 FOR CURB DATA.

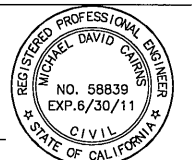


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 4901 MORENA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
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 for the location of buried utility lines.  
 Don't disrupt vital services.  
 TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
 E: 6219063.81  
 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10



REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 DATE: July 1, 2010  
 APPROVED BY: *[Signature]*  
 DATE: 7-1-2010

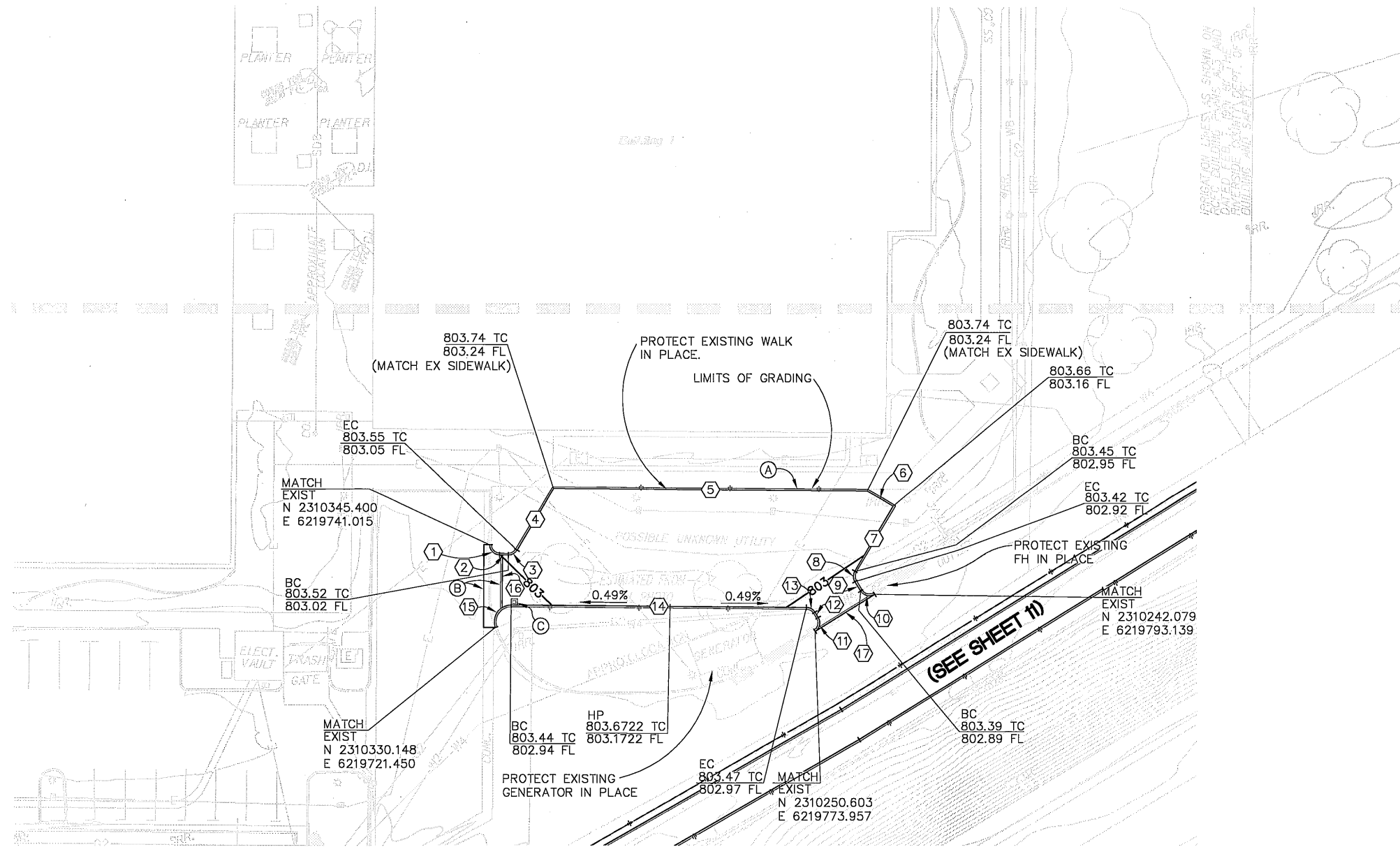
**PARKING LOT RENOVATION 2010**  
 GRADING AND DRAINAGE PLAN

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 6 OF 19



(SEE SHEET 9)

(SEE SHEET 10)

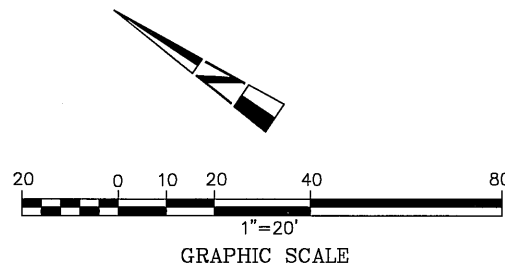


CURB DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	D=90°00'03"	3.00'	4.71'	3.00'	CD11
(2)	N33°39'37"W	---	2.58'	---	"
(3)	D=60°00'00"	3.00'	3.14'	1.73'	"
(4)	N86°20'23"E	---	21.46'	---	"
(5)	N33°39'37"W	---	93.53'	---	"
(6)	N03°39'37"W	---	9.00'	---	"
(7)	N86°20'23"E	---	22.66'	---	"
(8)	D=62°24'17"	3.00'	3.27'	1.82'	"
(9)	N23°56'07"E	---	3.33'	---	"
(10)	D=89°49'15"	3.00'	4.70'	2.99'	"
(11)	D=90°00'00"	3.00'	4.71'	3.00'	"
(12)	N23°56'07"E	---	1.88'	---	"
(13)	D=57°35'43"	3.00'	3.02'	1.65'	"
(14)	N33°39'37"W	---	88.01'	---	"
(15)	D=110°20'32"	5.00'	9.63'	7.19'	"
(16)	N56°16'32"E	---	15.79'	---	CD10
(17)	N66°02'17"W	---	20.99'	---	"

REMARKS: SEE CURB DETAILS ON SHEET 2

**CONSTRUCTION NOTES**

- (A) CONSTRUCT 6" TYPE 'D' CURB PER RCTD STD 204 & 205, ADJOINING EXISTING CONCRETE SIDEWALK
- (B) REMOVE EXISTING CONCRETE CURB AND GUTTER AND REPLACE WITH NEW 3' WIDE CONCRETE CROSS GUTTER TO MATCH EXISTING GUTTER GRADES AND GEOMETRY AT BOTH ENDS. NEW CROSS GUTTER TO BE CONSTRUCTED PER RCTD STD NO. 209 WITH THE EXCEPTION OF WIDTH.
- (C) CONSTRUCT FLOW DETECTION BASIN PER DETAIL ON SHEET 2.

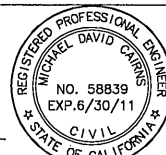


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 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
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 ELEV. 815.71  
 N: 2310679.73  
 E: 6219063.81  
 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839 DATE: 6/23/10



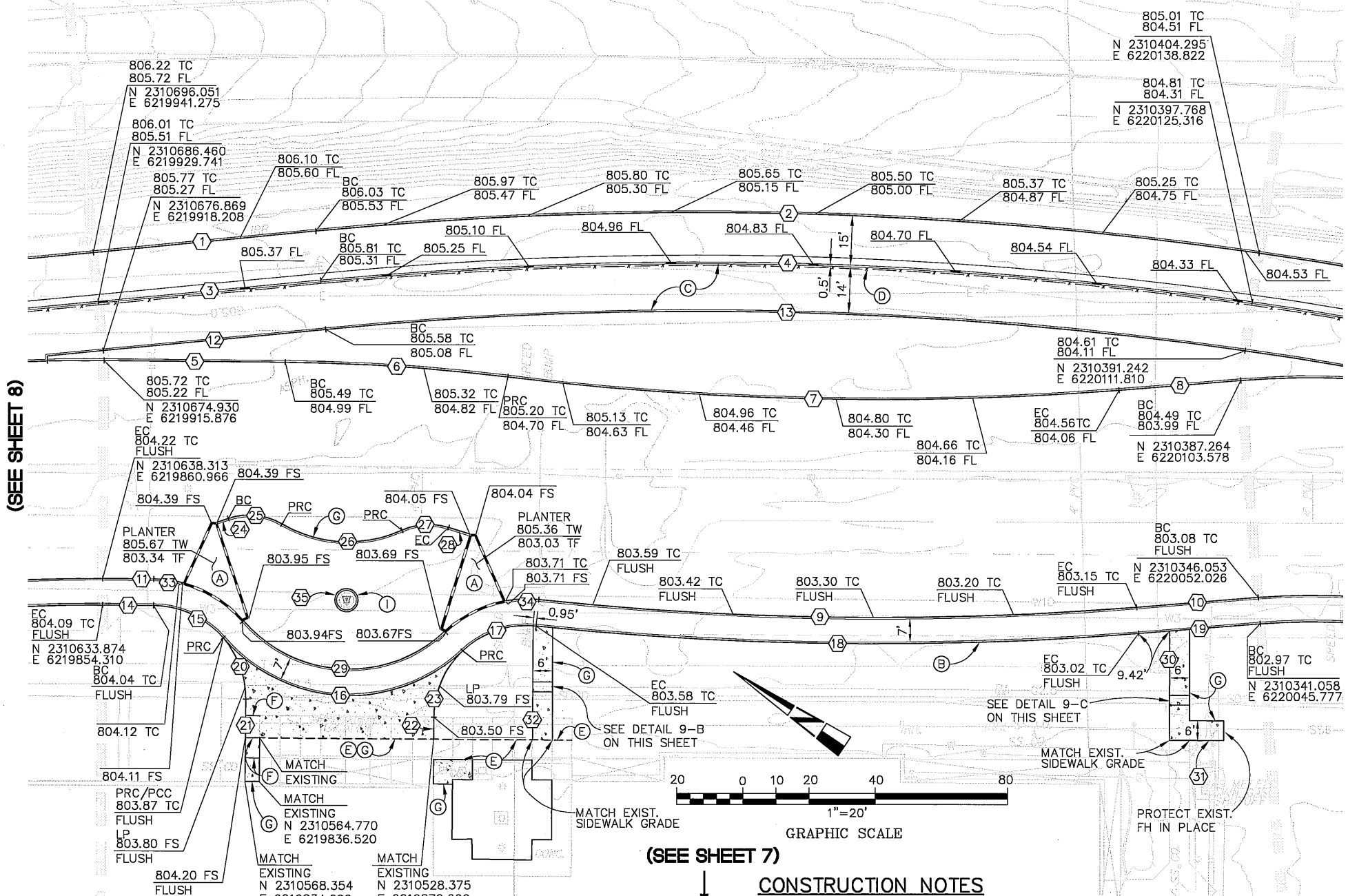
REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 DATE: July 1, 2010  
 APPROVED BY: *[Signature]*  
 DATE: 1-Jul-2010

**PARKING LOT RENOVATION 2010**  
 REAR PERVIOUS PAVER PARKING AREA GRADING AND CURB IMPROVEMENTS

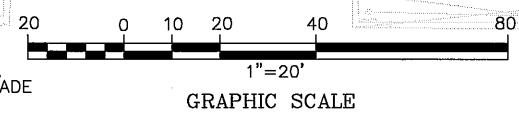
PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 7 OF 19





(SEE SHEET 8)

(SEE SHEET 10)



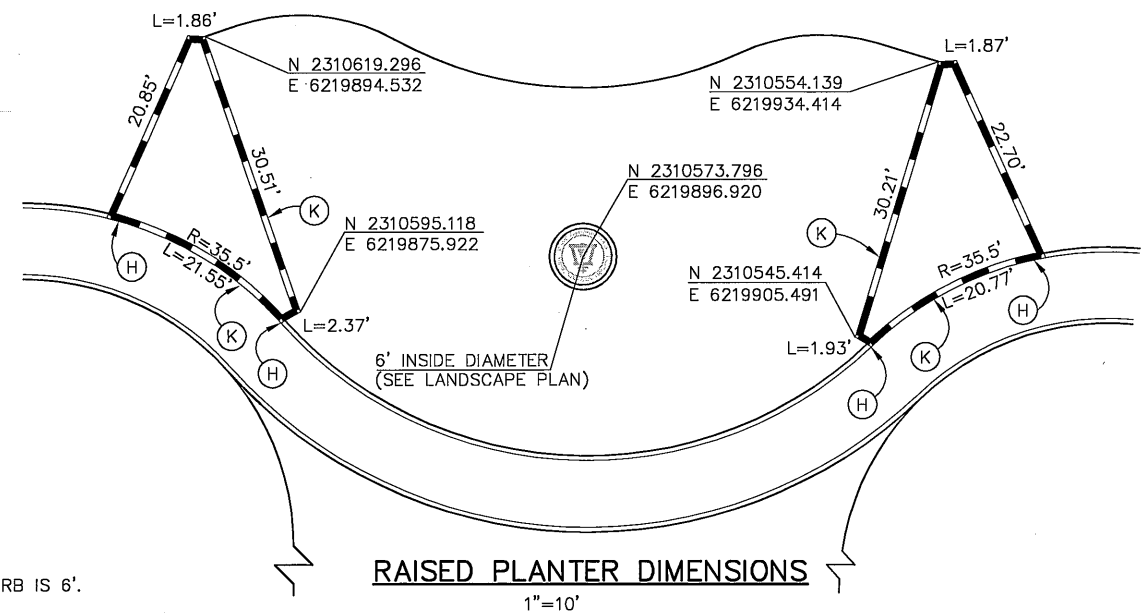
(SEE SHEET 7)

**CONSTRUCTION NOTES**

- (A) CONSTRUCT RAISED PLANTER PER STRUCTURAL DETAIL ON SHEET 17. (SEE DIMENSION DETAIL ON THIS SHEET)
- (B) 7' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW3 ON SHEET 2.
- (C) 14' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW2 ON SHEET 2.
- (D) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR BOLLARD FENCE DETAILS.
- (E) SAWCUT LINE PER DEMOLITION PLAN ALONG EXISTING CONTROL JOINT.
- (F) EXTEND CONTROL JOINT IN NEW PCC TO MATCH EXISTING ADJACENT CONTROL JOINTS.
- (G) CONSTRUCT 5' PCC SIDEWALK PER RCTD STD NO. 400 AND NO. 401.
- (H) INSIDE FACE OF FLUSH CURB IS IN LINE WITH OUTSIDE FACE OF PLANTER WALL.
- (I) CONSTRUCT ENTRY LOGO PER SPECIFICATIONS. INSIDE DIAMETER OF CD10 BOUNDING CURB IS 6'.
- (J) CONSTRUCT SIDEWALK UNDERDRAIN PER DETAIL 9-A ON THIS SHEET.
- (K) SPECIAL FOOTING DESIGN FOR PORTIONS OF PLANTER WALL ADJACENT TO PERVIOUS PAVER WALKWAY PER DETAIL ON SHEET 17.

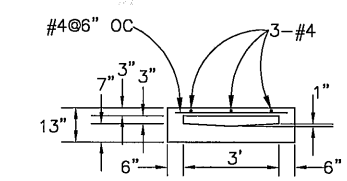
CURB DATA					
NO.	BEARING/Delta	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N39°44'44"W	---	67.52'	---	CD4
(2)	D=13°57'18"	1174.00'	285.94'	143.68'	"
(3)	N39°44'44"W	---	67.52'	---	CD9
(4)	D=13°57'18"	1159.00'	282.29'	141.84'	"
(5)	N33°41'51"W	---	54.62'	---	CD6
(6)	D=06°37'37"	583.00'	67.43'	33.75'	"
(7)	D=11°34'06"	917.00'	185.15'	92.89'	"
(8)	N38°38'20"W	---	36.90'	---	"
(9)	D=10°32'49"	983.00'	180.95'	90.73'	CD10
(10)	N38°38'20"W	---	36.90'	---	"
(11)	N33°41'51"W	---	15.39'	---	"
(12)	N39°44'44"W	---	67.52'	---	CD8
(13)	D=13°57'18"	1144.00'	278.63'	140.01'	"
(14)	N33°41'51"W	---	15.39'	---	CD10
(15)	D=48°59'02"	28.00'	23.94'	12.76'	"
(16)	D=92°44'26"	50.00'	80.93'	52.45'	"
(17)	D=49°21'43"	28.00'	24.12'	12.87'	"
(18)	D=10°32'49"	991.00'	182.42'	91.47'	"
(19)	N38°38'20"W	---	36.90'	---	"
(20)	D=41°13'52"	28.00'	20.15'	10.53'	EDGE OF CONCRETE
(21)	N56°31'02"E	---	25.06'	---	"
(22)	N56°18'09"E	---	6.76'	---	"
(23)	D=46°14'36"	28.00'	22.60'	11.96'	"
(24)	N52°24'53"W	---	3.55'	---	"
(25)	D=48°06'28"	20.00'	16.79'	8.93'	"
(26)	D=53°50'49"	40.00'	37.59'	20.31'	"
(27)	D=41°22'01"	20.00'	14.44'	7.55'	"
(28)	N16°47'14"W	---	6.75'	---	"
(29)	D=92°25'39"	42.00'	67.75'	43.82'	CD10
(30)	N56°02'53"E	---	33.22'	---	EDGE OF SIDEWALK
(31)	N33°57'07"W	---	16.30'	---	"
(32)	N56°10'44"E	---	34.70'	---	"
(33)	D=14°41'50"	36.00'	9.01'	4.53'	CD10
(34)	D=16°02'15"	36.00'	10.08'	5.07'	"
(35)	D=360°00'00"	3.50'	21.98'	---	"

REMARKS: SEE CURB DETAILS ON SHEET 2



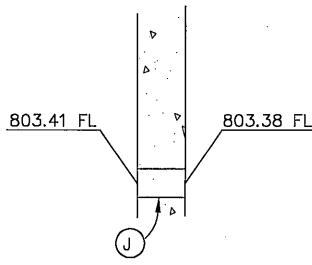
**RAISED PLANTER DIMENSIONS**

1"=10'



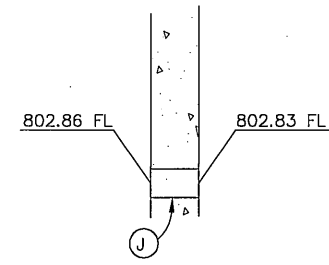
**DETAIL 9-A**

SIDEWALK UNDERDRAIN NTS



**DETAIL 9-B**

NTS



**DETAIL 9-C**

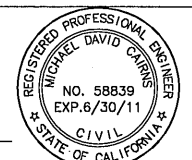
NTS

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*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/22/10



REVISIONS	ENGINEER	RCFC&WCD

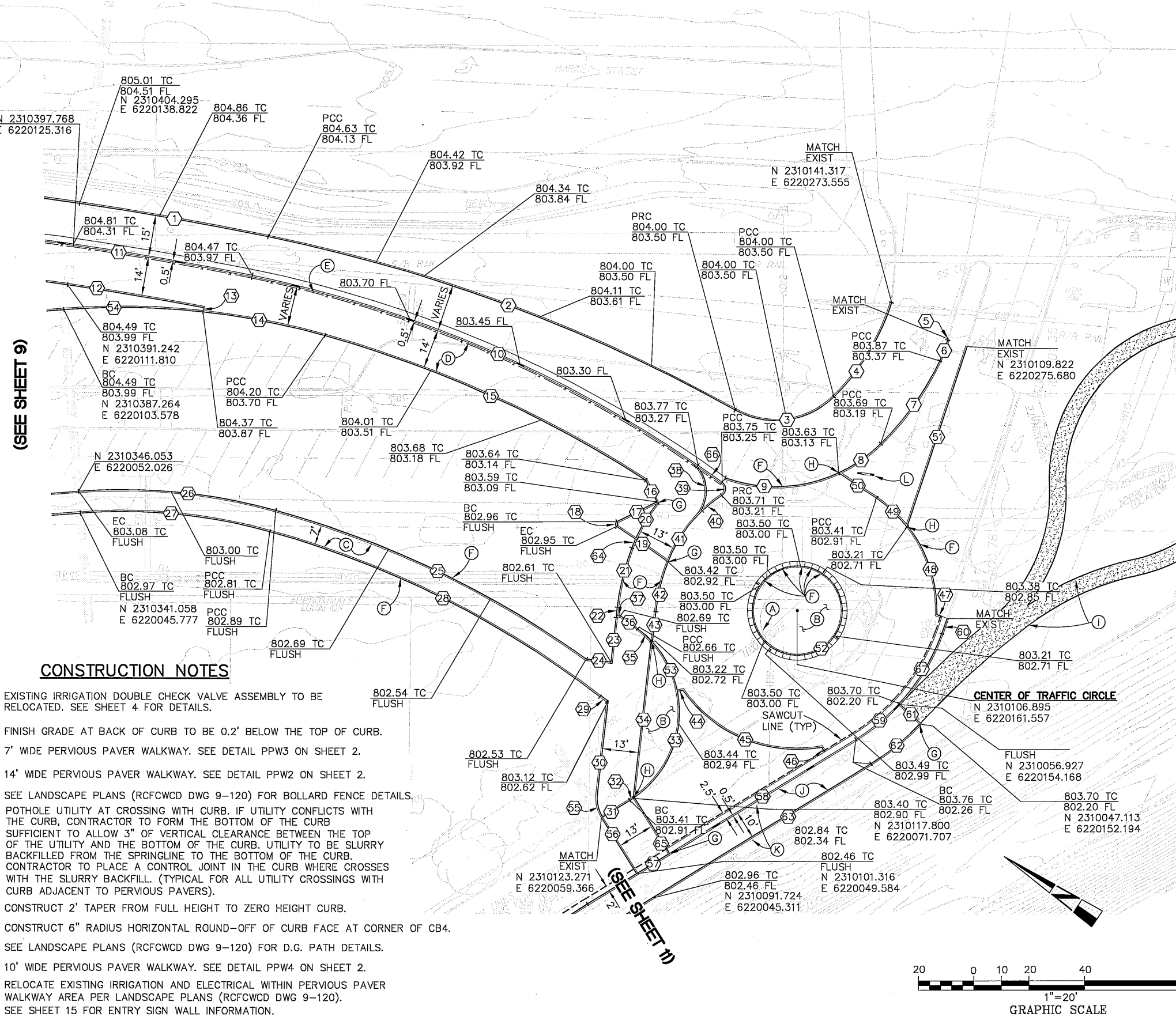
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
APPROVED BY: *[Signature]*  
DATE: July 1, 2010

PARKING LOT RENOVATION 2010  
CURB AND MISCELLANEOUS SURFACE IMPROVEMENTS

PROJECT NO. 1-0-0001  
DRAWING NO. 9-119  
SHEET NO. 9 of 19

CURB DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	D=03'22'29"	1174.00'	69.15'	34.59'	CD4
(2)	D=17'32'13"	590.00'	180.59'	91.00'	"
(3)	D=73'56'41"	30.00'	38.72'	22.58'	"
(4)	D=27'33'44"	84.00'	40.41'	20.60'	"
(5)	N72'16'38"E	---	0.47'	---	"
(6)	D=09'13'29"	50.00'	8.05'	4.03'	"
(7)	D=19'40'29"	108.00'	37.09'	18.73'	"
(8)	D=19'47'40"	54.00'	18.66'	9.42'	"
(9)	D=44'42'02"	54.00'	42.13'	22.20'	CD10
(10)	D=23'11'35"	435.00'	176.09'	89.27'	CD9
(11)	D=03'14'16"	1159.00'	65.49'	32.76'	"
(12)	D=02'29'24"	1144.00'	49.71'	24.86'	CD10
(13)	N62'01'36"E	---	1.00'	---	"
(14)	D=20'10'59"	270.00'	95.11'	48.05'	CD12
(15)	D=17'24'17"	420.00'	127.58'	64.29'	"
(16)	N29'28'50"E	---	9.34'	---	"
(17)	N60'31'10"W	---	16.16'	---	CD8
(18)	D=120'28'26"	1.00'	2.10'	1.75'	"
(19)	D=03'13'56"	400.00'	22.57'	11.29'	"
(20)	D=13'19'35"	64.00'	14.89'	7.48'	CD10
(21)	D=14'19'46"	88.88'	22.23'	11.17'	"
(22)	N62'24'48"E	---	3.81'	---	"
(23)	N62'24'48"E	---	16.17'	---	"
(24)	N27'35'12"W	---	9.00'	---	"
(25)	D=20'14'18"	354.00'	125.04'	63.18'	"
(26)	D=20'10'59"	204.00'	71.86'	36.31'	"
(27)	D=20'10'59"	196.00'	69.04'	34.88'	"
(28)	D=22'13'42"	346.00'	134.23'	67.97'	"
(29)	D=00'29'48"	346.00'	3.00'	1.50'	TRANSITION CD11 TO CD10
(30)	N62'24'48"E	---	44.56'	---	CD11
(31)	N65'59'10"W	---	11.63'	---	CD10
(32)	D=02'04'21"	38.00'	1.37'	0.69'	"
(33)	D=67'22'55"	38.00'	44.69'	25.33'	CD4
(34)	N62'24'48"E	---	57.81'	---	CD11
(35)	D=09'47'26"	38.00'	6.49'	3.25'	CD10
(36)	D=01'11'31"	374.00'	7.78'	3.89'	"
(37)	D=119'29'22"	1.00'	2.09'	1.71'	"
(38)	D=69'29'21"	14.00'	16.98'	9.71'	CD10
(39)	D=110'46'48"	3.00'	5.80'	4.35'	CD12
(40)	D=10'14'56"	50.00'	8.94'	4.48'	CD12***
(41)	D=25'50'15"	50.00'	22.55'	11.47'	CD12***
(42)	D=14'19'46"	74.88'	18.73'	9.41'	CD10
(43)	N62'24'48"E	---	11.05'	---	"
(44)	N45'26'26"W	---	2.00'	---	"
(45)	D=65'06'42"	50.50'	57.39'	32.24'	CD10***
(46)	N24'09'28"E	---	2.00'	---	CD10*
(47)	N14'19'04"W	---	2.00'	---	CD10*
(48)	D=39'31'01"	50.50'	34.83'	18.14'	CD10***
(49)	D=17'27'10"	50.00'	15.23'	7.67'	CD11***
(50)	D=01'36'42"	590.00'	16.60'	8.30'	"
(51)	N74'18'08"E	---	69.27'	---	CD4
(52)	D=360'00'00"	16.25'	102.10'	0.00'	CALTRANS D-6**
(53)	D=31'40'26"	38.00'	21.01'	10.78'	CD11
(54)	D=10'39'56"	270.00'	50.26'	25.20'	CD6
(55)	D=38'23'58"	13.07'	8.76'	4.55'	CD11
(56)	N24'00'50"E	---	24.04'	---	CD10
(57)	N65'50'32"W	---	14.00'	---	"
(58)	N65'50'32"W	---	79.22'	---	CD9
(59)	D=15'39'10"	75.00'	20.49'	10.31'	"
(60)	N75'40'56"E	---	5.93'	---	"
(61)	N08'30'17"E	---	10.50'	---	CD10
(62)	D=15'19'04"	85.50'	22.86'	11.50'	CD11
(63)	N65'50'32"W	---	93.19'	---	"
(64)	D=03'12'44"	64.00'	3.59'	1.79'	CD10
(65)	N24'00'50"E	---	24.10'	---	"
(66)	D=01'24'31"	435.00'	10.70'	5.35'	CD1
(67)	D=22'49'22"	75.00'	29.88'	15.14'	CD9

REMARKS: SEE CURB DETAILS ON SHEET 2  
 \*EXTEND THE BASE OF THE CD10 CURB COURSE 46 & 47 TO MEET THE FACE OF THE BASE SECTION OF THE CD9 CURB COURSE 58 & 60  
 \*\* SCORE THE CALTRANS D-6 CURB AT 2.55' INTERVALS MEASURED AT THE CURB CONTROL LINE. FOR LOCATION OF CONTROL LINE SEE SHEET 2.  
 \*\*\* CURB IS CENTERED ON THE CENTER OF THE TRAFFIC CIRCLE (NOTE THAT CONTROL SIDE OF CURB MAY DIFFER BETWEEN COURSES)



**CONSTRUCTION NOTES**

- (A) EXISTING IRRIGATION DOUBLE CHECK VALVE ASSEMBLY TO BE RELOCATED. SEE SHEET 4 FOR DETAILS.
- (B) FINISH GRADE AT BACK OF CURB TO BE 0.2' BELOW THE TOP OF CURB.
- (C) 7' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW3 ON SHEET 2.
- (D) 14' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW2 ON SHEET 2.
- (E) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR BOLLARD FENCE DETAILS.
- (F) POTHOLE UTILITY AT CROSSING WITH CURB. IF UTILITY CONFLICTS WITH THE CURB, CONTRACTOR TO FORM THE BOTTOM OF THE CURB SUFFICIENT TO ALLOW 3" OF VERTICAL CLEARANCE BETWEEN THE TOP OF THE UTILITY AND THE BOTTOM OF THE CURB. UTILITY TO BE SLURRY BACKFILLED FROM THE SPRINGLINE TO THE BOTTOM OF THE CURB. CONTRACTOR TO PLACE A CONTROL JOINT IN THE CURB WHERE CROSSES WITH THE SLURRY BACKFILL. (TYPICAL FOR ALL UTILITY CROSSINGS WITH CURB ADJACENT TO PERVIOUS PAVERS).
- (G) CONSTRUCT 2' TAPER FROM FULL HEIGHT TO ZERO HEIGHT CURB.
- (H) CONSTRUCT 6" RADIUS HORIZONTAL ROUND-OFF OF CURB FACE AT CORNER OF CB4.
- (I) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR D.G. PATH DETAILS.
- (J) 10' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW4 ON SHEET 2.
- (K) RELOCATE EXISTING IRRIGATION AND ELECTRICAL WITHIN PERVIOUS PAVER WALKWAY AREA PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).
- (L) SEE SHEET 15 FOR ENTRY SIGN WALL INFORMATION.

**CVALDO CORPORATION**  
 CIVIL ENGINEERING  
 4901 MORENA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 619 856 0129 (F) 619 856 0131

Don't Dig...Until You Call U.S.A. Toll Free  
 1-800-227-2600  
 for the location of buried utility lines.  
 Don't disrupt vital services.  
 TWO WORKING DAYS BEFORE YOU DIG

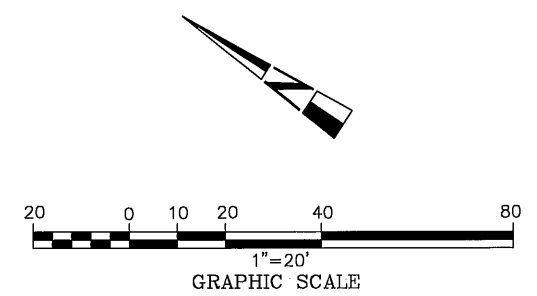
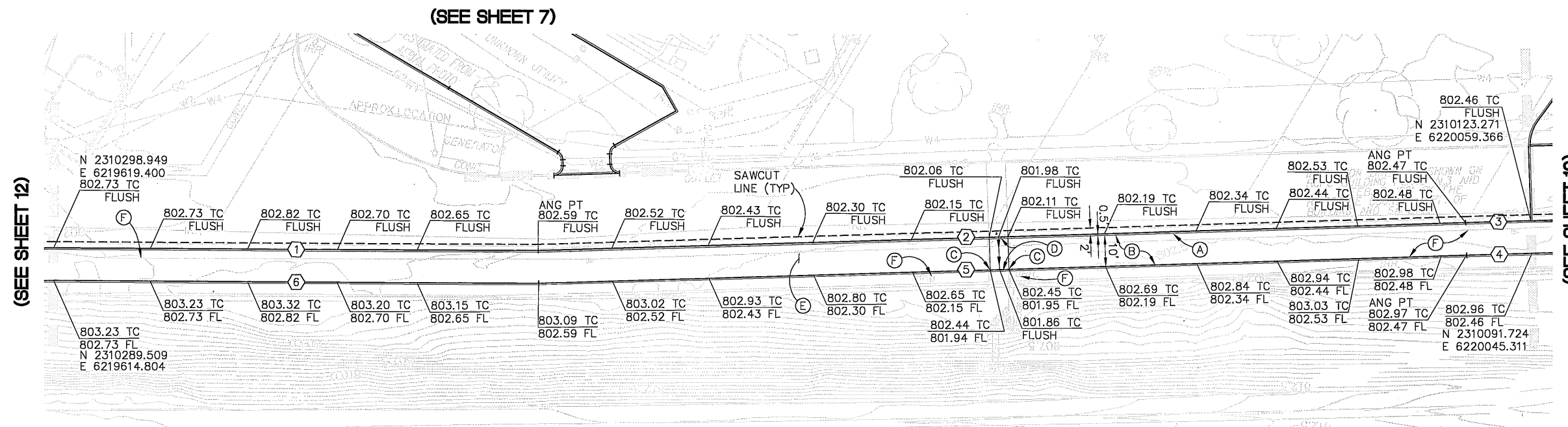
BENCH MARK  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
 THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
 E: 6219063.81  
 NAVD 88

MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10  
 REGISTERED PROFESSIONAL ENGINEER  
 MICHAEL DAVID CAIRNS  
 NO. 58839  
 EXP. 6/30/11  
 CIVIL  
 STATE OF CALIFORNIA

REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 APPROVED BY: *[Signature]*  
 DATE: July 1, 2010  
 DATE: 7-1-2010

PARKING LOT RENOVATION 2010  
 CURB AND MISCELLANEOUS SURFACE IMPROVEMENTS  
 PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 10 OF 19



**CONSTRUCTION NOTES**

- (A) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR BOLLARD FENCE DETAILS.
- (B) 10' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW4 ON SHEET 2.
- (C) CONSTRUCT 2' TAPER FROM FULL HEIGHT TO ZERO HEIGHT CURB.
- (D) CONSTRUCT CURBS TO MATCH EXISTING GRADE OF CROSS GUTTER AND CONCRETE APRON FOR PROPER DRAINAGE
- (E) RELOCATE EXISTING TREES WITHIN PERVIOUS PAVER WALKWAY AREA PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)
- (F) RELOCATE EXISTING IRRIGATION AND ELECTRICAL WITHIN PERVIOUS PAVER WALKWAY AREA PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).

CURB DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	N64°02'37"W	---	155.19'	---	CDB
(2)	N65°57'27"W	---	297.40'	---	"
(3)	N65°50'32"W	---	20.88'	---	"
(4)	N65°50'32"W	---	20.89'	---	CD11
(5)	N65°57'27"W	---	297.56'	---	"
(6)	N64°02'37"W	---	155.37'	---	"

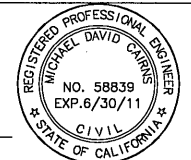
REMARKS: SEE CURB DETAILS ON SHEET 2

**CVALDO CORPORATION**  
CIVIL ENGINEERING  
4901 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
(P) 858 866 0128 (F) 858 866 0131

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1-800-227-2600  
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TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/29/10

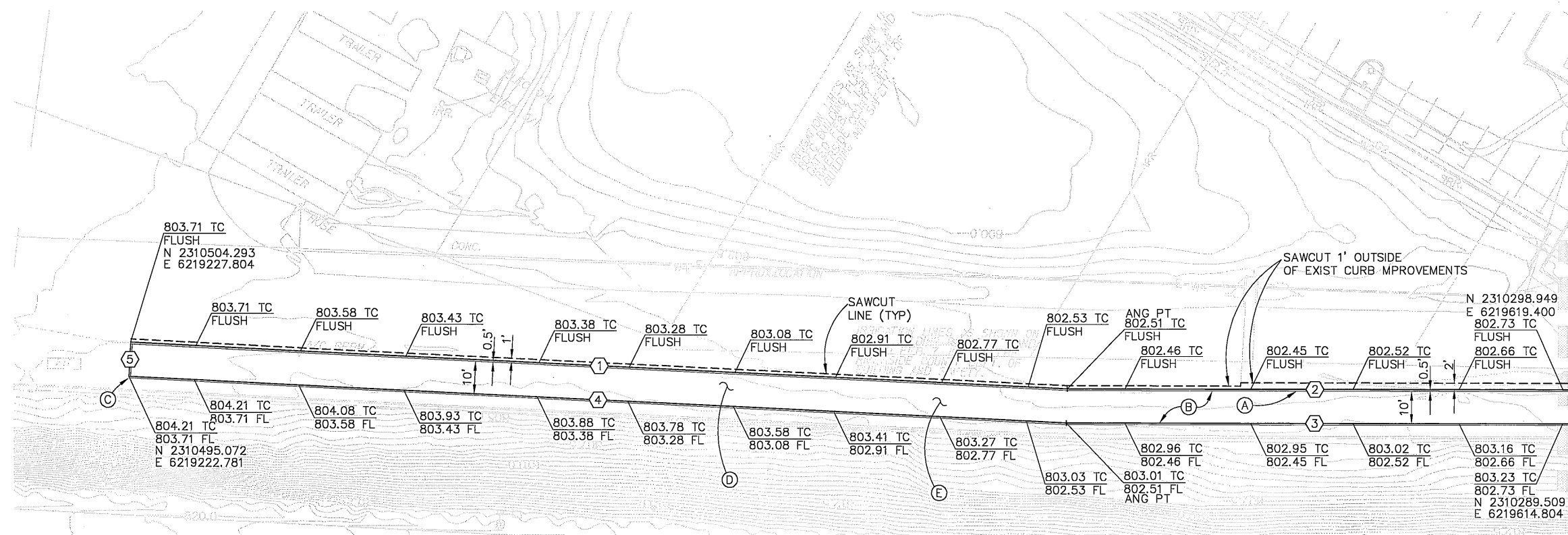


REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *Delgadillo*  
DATE: July 1, 2010  
APPROVED BY: *[Signature]*  
DATE: 1- July - 2010

**PARKING LOT RENOVATION 2010**  
CURB AND MISCELLANEOUS SURFACE IMPROVEMENTS

PROJECT NO. 1-0-00001  
DRAWING NO. 9-119  
SHEET NO. 11 OF 19



(SEE SHEET 11)

**CONSTRUCTION NOTES**

- (A) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR BOLLARD FENCE DETAILS.
- (B) 10' WIDE PERVIOUS PAVER WALKWAY. SEE DETAIL PPW4 ON SHEET 2.
- (C) CONSTRUCT 2' TAPER FROM FULL HEIGHT TO ZERO HEIGHT CURB.
- (D) RELOCATE EXISTING TREES WITHIN PERVIOUS PAVER WALKWAY AREA PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)
- (E) RELOCATE EXISTING IRRIGATION AND ELECTRICAL WITHIN PERVIOUS PAVER WALKWAY AREA PER LANDSCAPE PLANS (RCFCWCD DWG 9-120).

CURB DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
1	N61°25'21"W	---	289.36'	---	CDB
2	N64°02'37"W	---	152.92'	---	"
3	N64°02'37"W	---	153.16'	---	CD11
4	N61°25'21"W	---	289.60'	---	"
5	N28°34'39"E	---	10.00'	---	CDB

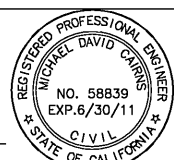
REMARKS: SEE CURB DETAILS ON SHEET 2

**CV ALDO CORPORATION**  
 CIVIL ENGINEERING  
 4501 MORENA BLVD., SUITE 1110  
 SAN DIEGO, CA 92117  
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 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310679.73  
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 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10



REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

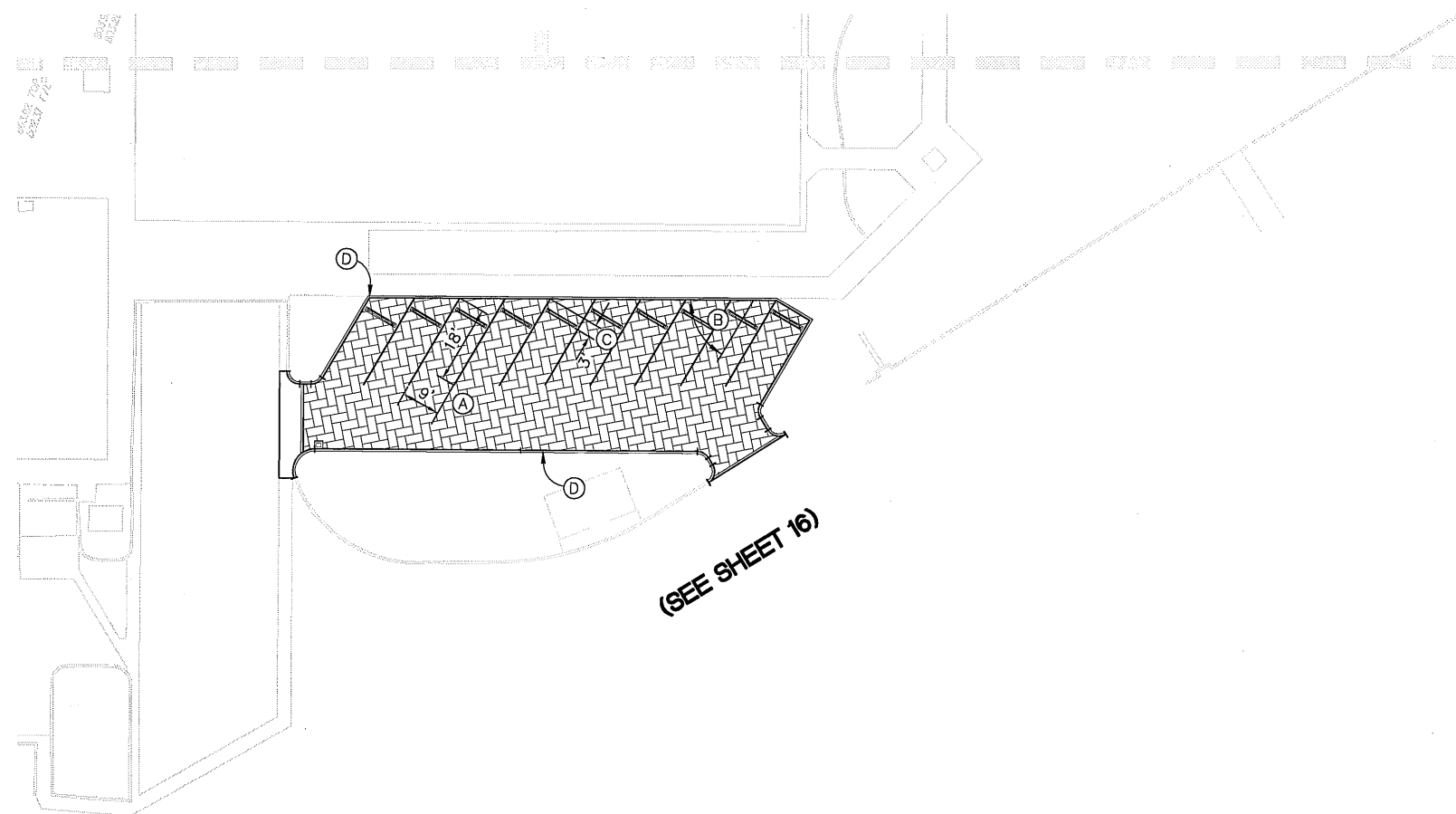
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 DATE: July 1, 2010  
 APPROVED BY: *[Signature]*  
 DATE: 1-19-2010

**PARKING LOT RENOVATION 2010**  
 CURB AND MISCELLANEOUS SURFACE IMPROVEMENTS

PROJECT NO. 1-0-0001  
 DRAWING NO. 9-119  
 SHEET NO. 12 OF 19

(SEE SHEET 14)

(SEE SHEET 15)



(SEE SHEET 16)

### CONSTRUCTION NOTES

- (A) ALL PARKING STALLS ARE 9' WIDE X 18' DEEP. STRIPES TO BE 4" WIDE PER CALTRANS STANDARD SPECIFICATIONS SECTION 84. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- (B) UNLESS CALLED OUT OTHERWISE, ALL STALLS ARE AT 60' TO THE CURB (MEASURED AT THE CENTERLINE OF EACH PARKING STALL).
- (C) INSTALL ANCHORED WHEEL STOPS IN PARKING SPACES WHERE SHOWN. WHEEL STOPS TO BE PRECAST, AIR-ENTRAINED CONCRETE, 2500 PSI MINIMUM COMPRESSIVE STRENGTH, 6" HIGH X 9" WIDE X 8' LONG. PROVIDE HOLES FOR ANCHORING TO PAVEMENT. ANCHORING DOWELS TO BE HOT DIPPED GALVANIZED STEEL, 3/4" DIAMETER AND 12" MINIMUM LENGTH. IF THE DISTRICT INSPECTOR PERMITS, AN ADHESIVE BONDING SYSTEM AS APPROVED BY THE DISTRICT INSPECTOR MAY BE USED IN LIEU OF DOWELS. EACH WHEEL STOP IS TO BE CENTERED IN THE PARKING STALL WITH THE FACE OF THE WHEEL STOP LOCATED 3' FROM THE END OF THE STALL.
- (D) CONSTRUCT PERVIOUS PAVER PARKING AREA WITH COMPACTED SUBGRADE PER DETAIL ON SHEET 2.

### LEGEND

SYMBOL

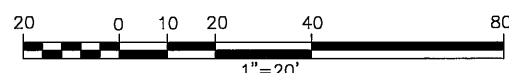


DESCRIPTION

TRAFFIC CIRCLE & REAR PARKING  
 ORCO AQUA-BRIC OR APPROVED EQUIVALENT  
 PERVIOUS PAVERS W/COMPACTED SUBGRADE  
 COLOR: CHATEAU (B9), PATTERN: HERRINGBONE

NOTES

(SEE SHEET 2 FOR DETAILS)



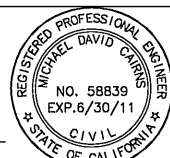
GRAPHIC SCALE

**CVALDO CORPORATION**  
 CIVIL ENGINEERING  
 4301 MORENA BLVD, SUITE 1110  
 SAN DIEGO, CA 92117  
 (P) 619 866 0128 (F) 619 866 0131



**BENCH MARK**  
 3" BRASS DISC, DOWN 0.31'  
 STAMPED RCFC&WCD CLSA  
 LOCATED ON SOUTHERN LEVEE ON  
 THE SANTA ANA RIVER  
 ELEV. 815.71  
 N: 2310579.73  
 E: 6219063.81  
 NAVD 88

*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839 DATE: 4/29/10



REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

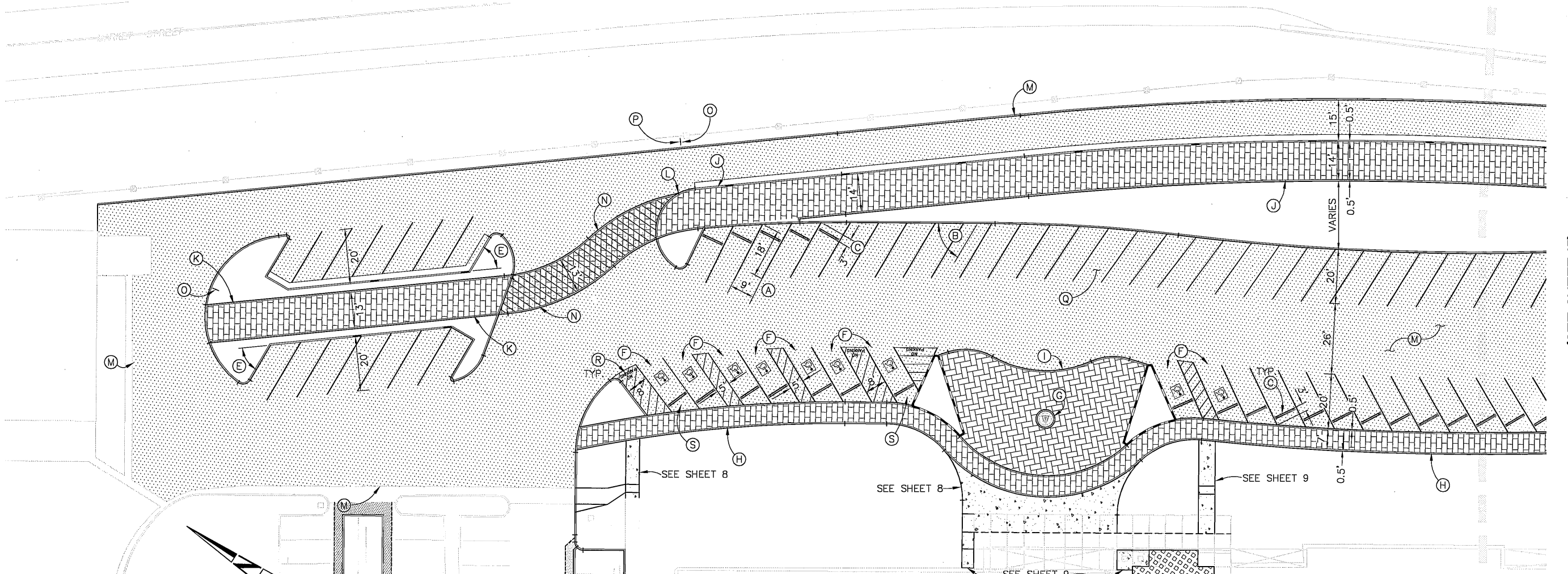
REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]*  
 DATE: July 1, 2010  
 APPROVED BY: *[Signature]*  
 DATE: 1-27-2010

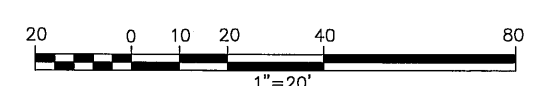
**PARKING LOT  
 RENOVATION 2010**

PAVEMENT, SIGNAGE AND STRIPING PLAN

PROJECT NO.  
 1-0-00001  
 DRAWING NO.  
 9-119  
 SHEET NO.  
 13 OF 19



(SEE SHEET 15)



GRAPHIC SCALE

LEGEND

SYMBOL	DESCRIPTION	NOTES
	ASPHALT PAVEMENT	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/UNCOMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	CONCRETE PAVEMENT	(PER RCTD STD NO. 400 AND NO. 401)
	ENTRY WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: HERRINGBONE	(SEE SHEET 2 FOR DETAILS)

CONSTRUCTION NOTES

- (A) ALL PARKING STALLS ARE 9' WIDE X 18" DEEP. STRIPES TO BE 4" WIDE PER CALTRANS STANDARD SPECIFICATIONS SECTION 84. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- (B) UNLESS CALLED OUT OTHERWISE, ALL STALLS ARE AT 60' TO THE CURB (MEASURED AT THE CENTERLINE OF EACH PARKING STALL).
- (C) INSTALL ANCHORED WHEEL STOPS IN PARKING SPACES WHERE SHOWN. WHEEL STOPS TO BE PRECAST, AIR-ENTRAINED CONCRETE, 2500 PSI MINIMUM COMPRESSIVE STRENGTH, 6" HIGH X 9" WIDE X 8" LONG. PROVIDE HOLES FOR ANCHORING TO PAVEMENT. ANCHORING DOWELS TO BE HOT DIPPED GALVANIZED STEEL, 3/4" DIAMETER AND 12" MINIMUM LENGTH. IF THE DISTRICT INSPECTOR PERMITS, AN ADHESIVE BONDING SYSTEM AS APPROVED BY THE DISTRICT INSPECTOR MAY BE USED IN LIEU OF DOWELS. EACH WHEEL STOP IS TO BE CENTERED IN THE PARKING STALL WITH THE FACE OF THE WHEEL STOP LOCATED 3' FROM THE END OF THE STALL.
- (D) NOT USED
- (E) IN THIS PARKING ISLAND ONLY, STALLS ARE AT 53'5" TO THE CURB.
- (F) ALL DISABLED PARKING, SIGNAGE AND PAVEMENT PAINTING TO BE PER CITY OF RIVERSIDE BUILDING AND SAFETY DIVISION DISABLED ACCESS STANDARDS, DRAWING RDA-1.0
- (G) ENTRY LOGO PER PROJECT SPECIFICATIONS.
- (H) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW3 ON SHEET 2.
- (I) CONSTRUCT PERVIOUS PAVER ENTRY WALK WITH COMPACTED SUBGRADE PER DETAIL ON SHEET 2.

CONSTRUCTION NOTES CONTINUED

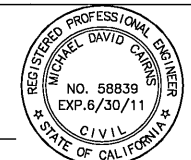
- (J) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW2 ON SHEET 2.
- (K) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW1 ON SHEET 2.
- (L) CURB FORMS BOUNDARY BETWEEN 13' AND 14' WIDE PAVER SECTION. TRANSITION IS MADE ALONG NORTHEASTERLY CURB. (COURSE 43 ON SHEET 8)
- (M) CONSTRUCT AC PAVEMENT PER AC PAVEMENT DETAIL ON SHEET 2. CONTRACTOR TO ENSURE ALL UTILITY COVERS ARE ADJUSTED TO FINISHED SURFACE ELEVATION PRIOR TO PAVING.
- (N) CONSTRUCT PERVIOUS PAVER WALKWAY WITH COMPACTED SUBGRADE PER DETAIL PPW1 ON SHEET 2.
- (O) SIGNAGE FACING SOUTH-EAST, FHA W11-2 (24") "PEDESTRIAN TRAFFIC". MOUNTED PER CITY OF RIVERSIDE STANDARD DRAWING NO. 666.
- (P) SIGNAGE FACING NORTH-WEST, FHA R5-1 (30") "DO NOT ENTER". MOUNTED PER CITY OF RIVERSIDE STANDARD DRAWING NO. 666, WITH THE EXCEPTION THAT THE BOTTOM OF THE SIGN IS TO BE 2' ABOVE THE TOP OF CURB. MOUNT SIGN ON SAME POLE AS "PEDESTRIAN TRAFFIC" SIGN.
- (Q) WHEEL STOPS NOT REQUIRED WHERE NOT SHOWN.
- (R) LETTERING TO BE 1' HIGH PER CALTRANS STANDARD PLAN A24E. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- (S) VAN ACCESSIBLE SPACE.
- (T) INSTALL SYNTHETIC TURF AND PAVERS PER SPECIFICATIONS AND DETAIL 15 ON SHEET 16 OF WATER EFFICIENT LANDSCAPING CONVERSION DRAWINGS.

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SAN DIEGO, CA 92117  
(P) 659 866 0128 (F) 659 866 0131



BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839 DATE: *6/21/10*



REVISIONS	ENGINEER	RCFC&WCD

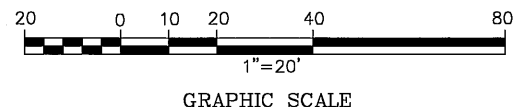
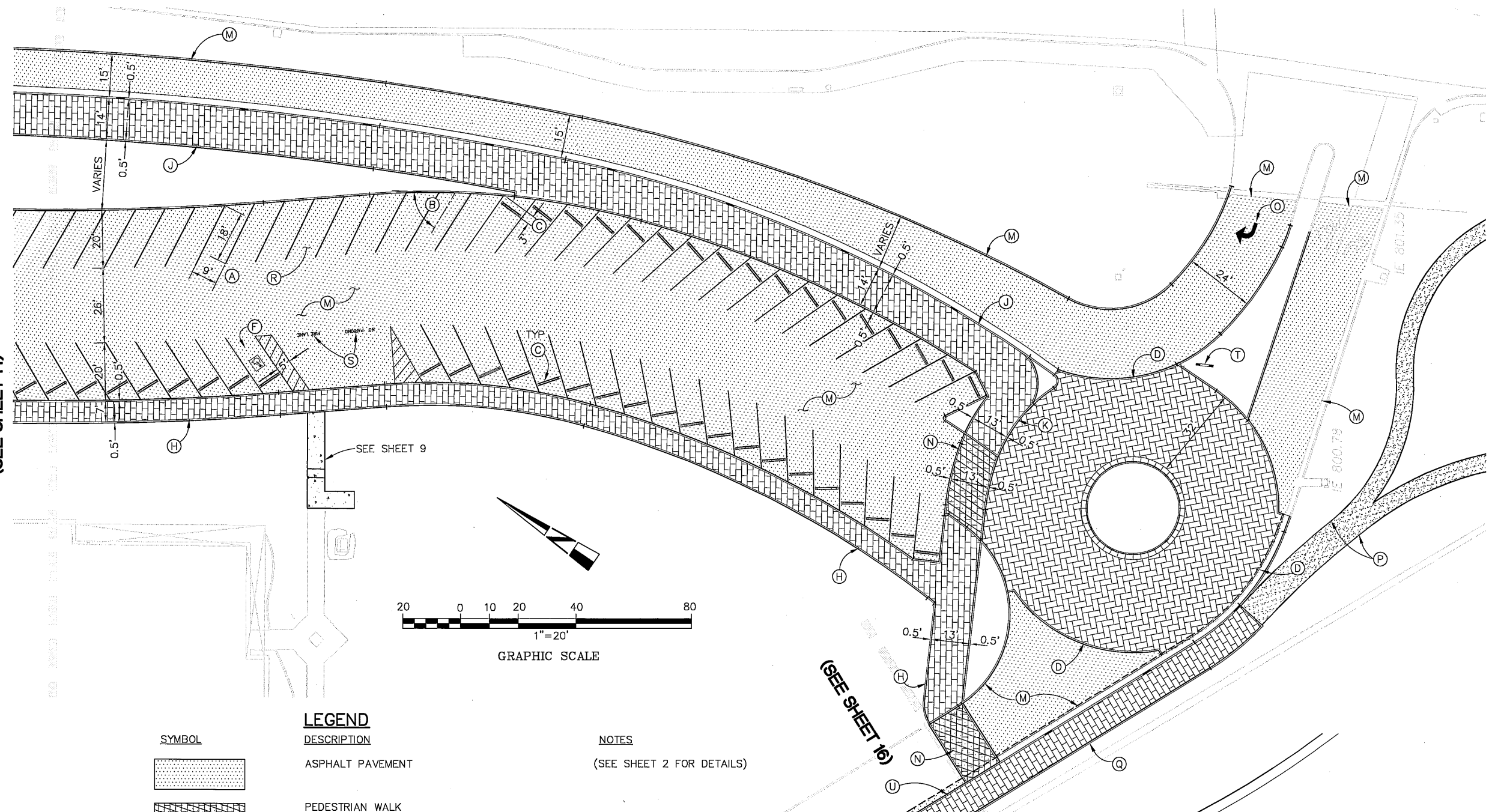
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
APPROVED BY: *[Signature]*  
DATE: *July 1, 2010* DATE: *6 July 2010*

PARKING LOT  
RENOVATION 2010  
PAVEMENT, SIGNAGE AND STRIPING PLAN

PROJECT NO.  
1-0-00001  
DRAWING NO.  
9-119  
SHEET NO.  
14 OF 19



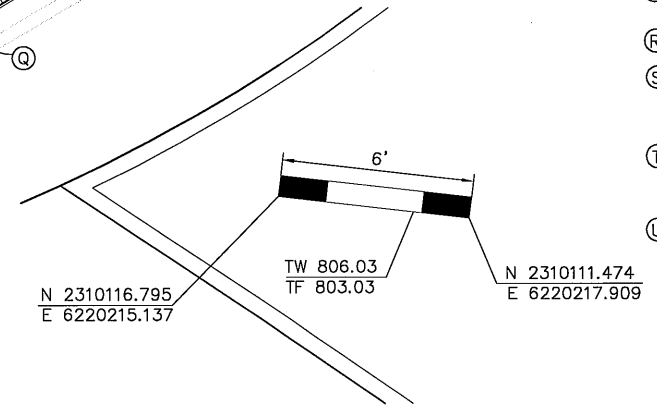
(SEE SHEET 14)



(SEE SHEET 16)

**CONSTRUCTION NOTES**

- (A) ALL PARKING STALLS ARE 9' WIDE X 18' DEEP. STRIPES TO BE 4" WIDE PER CALTRANS STANDARD SPECIFICATIONS SECTION 84. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- (B) UNLESS CALLED OUT OTHERWISE, ALL STALLS ARE AT 60' TO THE CURB (MEASURED AT THE CENTERLINE OF EACH PARKING STALL).
- (C) INSTALL ANCHORED WHEEL STOPS IN PARKING SPACES WHERE SHOWN. WHEEL STOPS TO BE PRECAST, AIR-ENTRAINED CONCRETE, 2500 PSI MINIMUM COMPRESSIVE STRENGTH, 6" HIGH X 9" WIDE X 8' LONG. PROVIDE HOLES FOR ANCHORING TO PAVEMENT. ANCHORING DOWELS TO BE HOT DIPPED GALVANIZED STEEL, 3/4" DIAMETER AND 12" MINIMUM LENGTH. IF THE DISTRICT INSPECTOR PERMITS, AN ADHESIVE BONDING SYSTEM AS APPROVED BY THE DISTRICT INSPECTOR MAY BE USED IN LIEU OF DOWELS. EACH WHEEL STOP IS TO BE CENTERED IN THE PARKING STALL WITH THE FACE OF THE WHEEL STOP LOCATED 3' FROM THE END OF THE STALL.
- (D) CONSTRUCT PERVIOUS PAVER TRAFFIC CIRCLE WITH COMPACTED SUBGRADE PER DETAIL ON SHEET 2.
- (E) ALL DISABLED PARKING, SIGNAGE AND PAVEMENT PAINTING TO BE PER CITY OF RIVERSIDE BUILDING AND SAFETY DIVISION DISABLED ACCESS STANDARDS, DRAWING RDA-1.0
- (H) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW3 ON SHEET 2.
- (I) NOT USED
- (J) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW2 ON SHEET 2.
- (K) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW1 ON SHEET 2.
- (M) CONSTRUCT AC PAVEMENT PER AC PAVEMENT DETAIL ON SHEET 2. CONTRACTOR TO ENSURE ALL UTILITY COVERS ARE ADJUSTED TO FINISHED SURFACE ELEVATION PRIOR TO PAVING.
- (N) CONSTRUCT PERVIOUS PAVER WALKWAY WITH COMPACTED SUBGRADE PER DETAIL PPW1 ON SHEET 2.
- (O) CONSTRUCT RIGHT TURN ARROW PER CALTRANS STANDARD PLAN A24A, TYPE IV (R) ARROW. CONTRACTOR TO VERIFY ARROW LOCATION IN FIELD WITH ENGINEER PRIOR TO PAINTING.
- (P) SEE LANDSCAPE PLANS (RCFCWCD DWG 9-120) FOR D.G. PATH DETAILS.
- (Q) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW4 ON SHEET 2.
- (R) WHEEL STOPS NOT REQUIRED WHERE NOT SHOWN.
- (S) LETTERING TO BE 1" HIGH PER CALTRANS STANDARD PLAN A24E. USE WHITE PAINT PER STATE SPECIFICATION NO. PTWB-01.
- (T) CONSTRUCT ENTRY SIGN WALL PER STRUCTURAL DETAIL ON SHEET 17. (SEE DIMENSION DETAIL ON THIS SHEET)
- (U) BOLLARD FENCE PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)



**ENTRY SIGN WALL DIMENSIONS**

1"=3'

SYMBOL	DESCRIPTION	NOTES
	ASPHALT PAVEMENT	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/UNCOMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	TRAFFIC CIRCLE & REAR PARKING ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: CHATEAU (B9), PATTERN: HERRINGBONE	(SEE SHEET 2 FOR DETAILS)
	CONCRETE PAVEMENT	(PER RCTD STD NO. 400 AND NO. 401)

**CVALDO CORPORATION**  
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4601 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
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Don't disrupt vital services.  
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD OLSA  
LOCATED ON SOUTHERN LEVEE ON THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310879.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns* 6/29/10  
MICHAEL DAVID CAIRNS, RCE 58839 DATE:



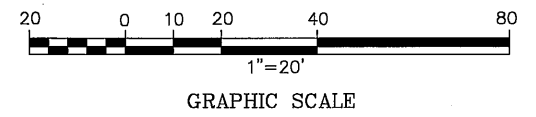
REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
DATE: July 1, 2010  
APPROVED BY: *[Signature]*  
DATE: 7-1-2010

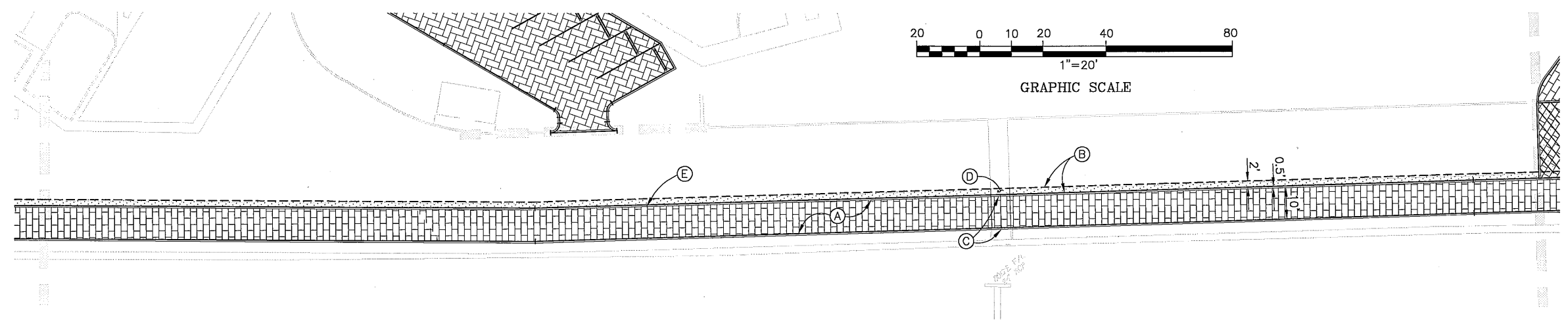
**PARKING LOT RENOVATION 2010**  
PAVEMENT, SIGNAGE AND STRIPING PLAN

PROJECT NO. 1-0-00001  
DRAWING NO. 9-119  
SHEET NO. 15 OF 19

(SEE SHEET 13)



(SEE SHEET 17)



(SEE SHEET 15)

**LEGEND**

SYMBOL	DESCRIPTION	NOTES
	ASPHALT PAVEMENT	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/UNCOMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)
	TRAFFIC CIRCLE & REAR PARKING ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/COMPACTED SUBGRADE COLOR: CHATEAU (B9), PATTERN: HERRINGBONE	(SEE SHEET 2 FOR DETAILS)

**CONSTRUCTION NOTES**

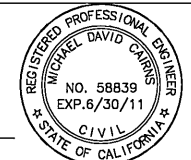
- (A) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW4 ON SHEET 2.
- (B) REPAIR ASPHALT PAVEMENT AND BASE BETWEEN NEW CURB AND SAWCUT LINE. MINIMUM STRUCTURAL SECTION TO BE 4" AC ON 6" CLASS 2 BASE.
- (C) CONSTRUCT PERVIOUS PAVERS TO MATCH EXISTING GRADE OF CROSS GUTTER AND CONCRETE APRON FOR PROPER DRAINAGE
- (D) CONSTRUCT PCC PAVEMENT PER DETAIL ON SHEET 2 TO MATCH EXISTING GRADE OF CROSS GUTTER AND NEW FLUSH CURB FOR PROPER DRAINAGE
- (E) BOLLARD FENCE PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)

**CVALDO CORPORATION**  
CIVIL ENGINEERING  
4901 MORENA BLVD, SUITE 1110  
SAN DIEGO, CA 92117  
(619) 858-0128 (F) 858-866-0131



**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310679.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 7/1/2010



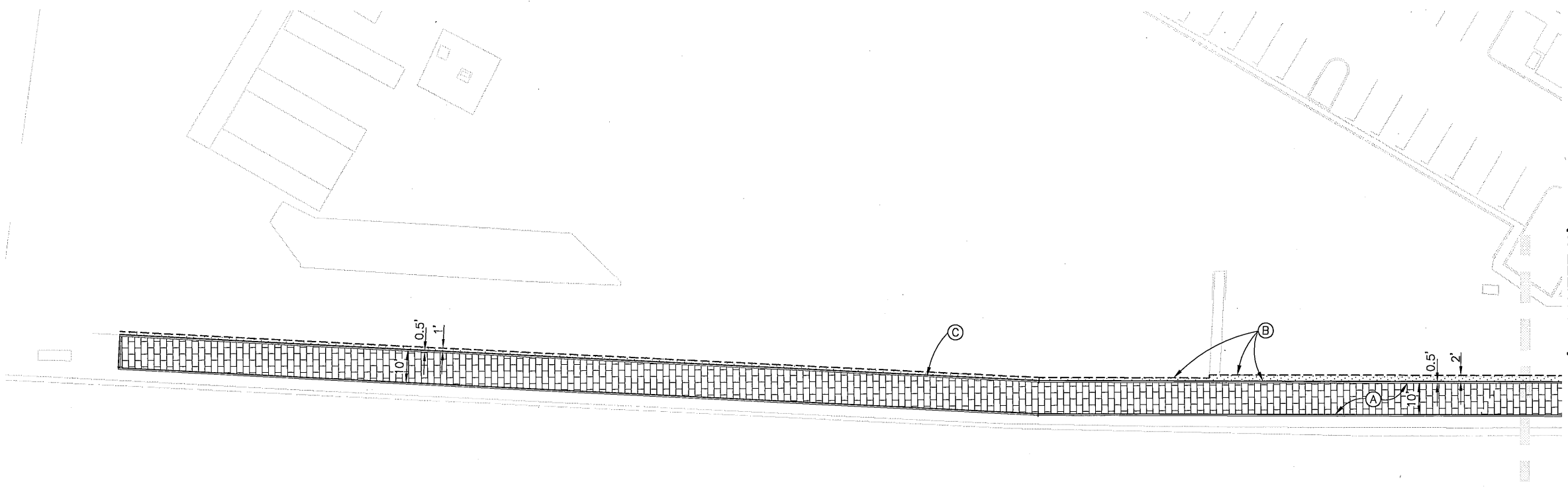
REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]*  
APPROVED BY: *[Signature]*  
DATE: 7/1, 2010  
DATE: 1-1-2010

PARKING LOT  
RENOVATION 2010  
  
PAVEMENT PLAN

PROJECT NO.  
1-0-00001  
DRAWING NO.  
9-119  
SHEET NO.  
16 OF 19

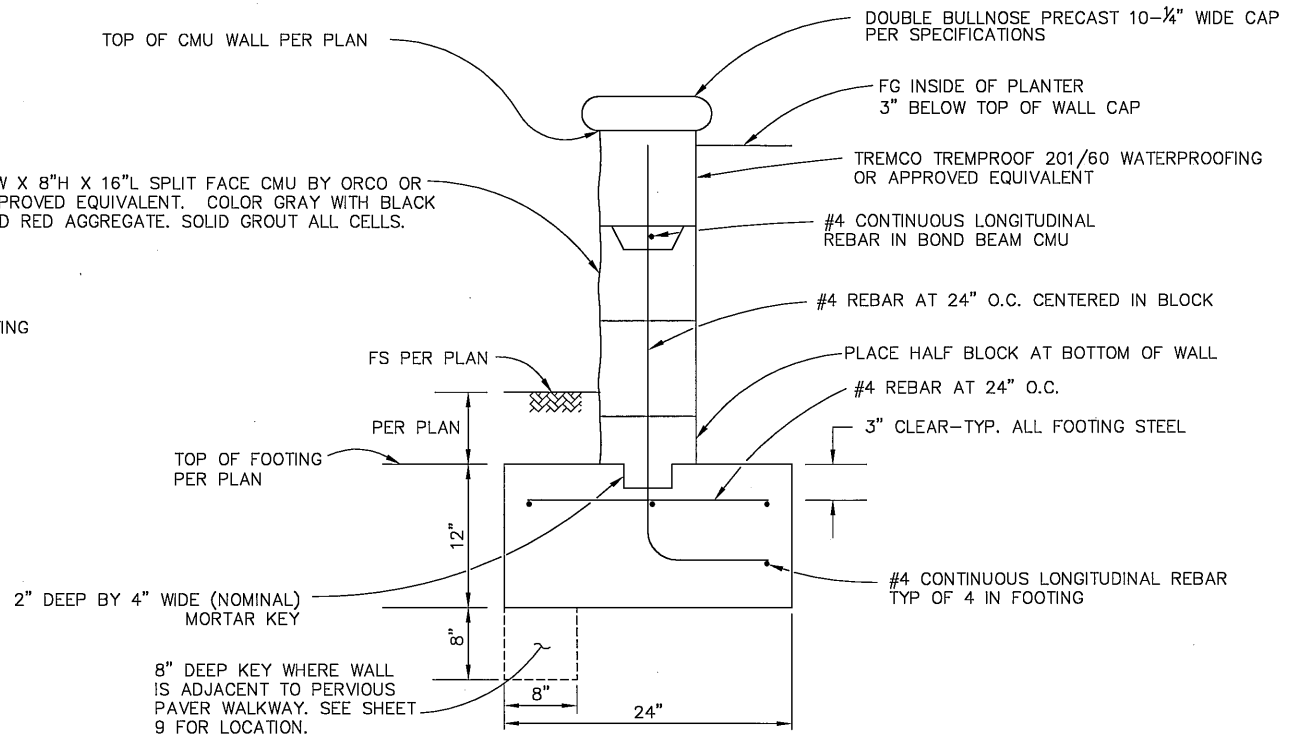
(SEE SHEET 16)



**CMU WALL NOTES**

- 1 f'c=3,000 psi, f'm=600 psi, fs=40,000 psi
- 2 ALL LAP SPLICES TO BE 40 BAR DIAMETERS
- 3 ALL BENDS PER CURRENT ACI CODE
- 4 DO NOT BACKFILL PLANTER FOR 28 DAYS AFTER GROUTING WALL
- 5 INSPECTION REQUIRED PRIOR TO POURING FOOTING AND GROUTING CMU CELLS
- 6 DAMPEN SOIL PRIOR TO POURING FOOTING

8"W X 8"H X 16"L SPLIT FACE CMU BY ORCO OR APPROVED EQUIVALENT. COLOR GRAY WITH BLACK AND RED AGGREGATE. SOLID GROUT ALL CELLS.

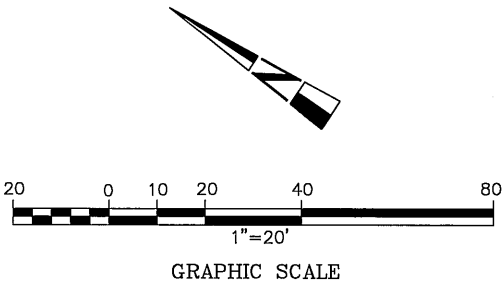


**CONSTRUCTION NOTES**

- (A) CONSTRUCT PERVIOUS PAVER WALKWAY WITH UNCOMPACTED SUBGRADE PER DETAIL PPW4 ON SHEET 2.
- (B) REPAIR ASPHALT PAVEMENT AND BASE BETWEEN NEW CURB AND SAWCUT LINE. MINIMUM STRUCTURAL SECTION TO BE 4" AC ON 6" CLASS 2 BASE.
- (C) BOLLARD FENCE PER LANDSCAPE PLANS (RCFCWCD DWG 9-120)

**LEGEND**

SYMBOL	DESCRIPTION	NOTES
	PEDESTRIAN WALK ORCO AQUA-BRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS W/UNCOMPACTED SUBGRADE COLOR: ORCOTTA (B2), PATTERN: RUNNING BOND	(SEE SHEET 2 FOR DETAILS)



**RAISED PLANTER AND ENTRY SIGN WALL DETAIL**

NOTE: FOR ENTRY SIGN, CMU TO BE SPLIT FACE BOTH SIDES & OMIT WATERPROOFING AND BACKFILL  
(SEE SHEET 9 FOR PLAN VIEW OF PLANTER WALL)  
(SEE SHEET 15 FOR PLAN VIEW OF ENTRY SIGN WALL)

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(P) 659 866 0128 (F) 659 866 0131



**BENCH MARK**  
3" BRASS DISC, DOWN 0.31'  
STAMPED RCFC&WCD CLSA  
LOCATED ON SOUTHERN LEVEE ON  
THE SANTA ANA RIVER  
ELEV. 815.71  
N: 2310579.73  
E: 6219063.81  
NAVD 88

*Michael David Cairns*  
MICHAEL DAVID CAIRNS, RCE 58839  
DATE: 6/29/10

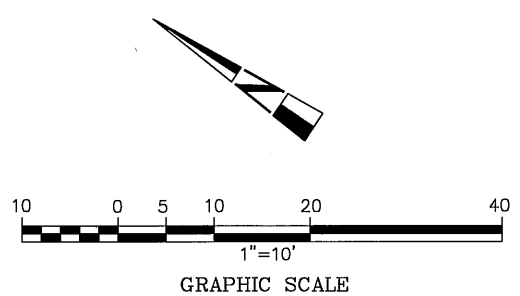
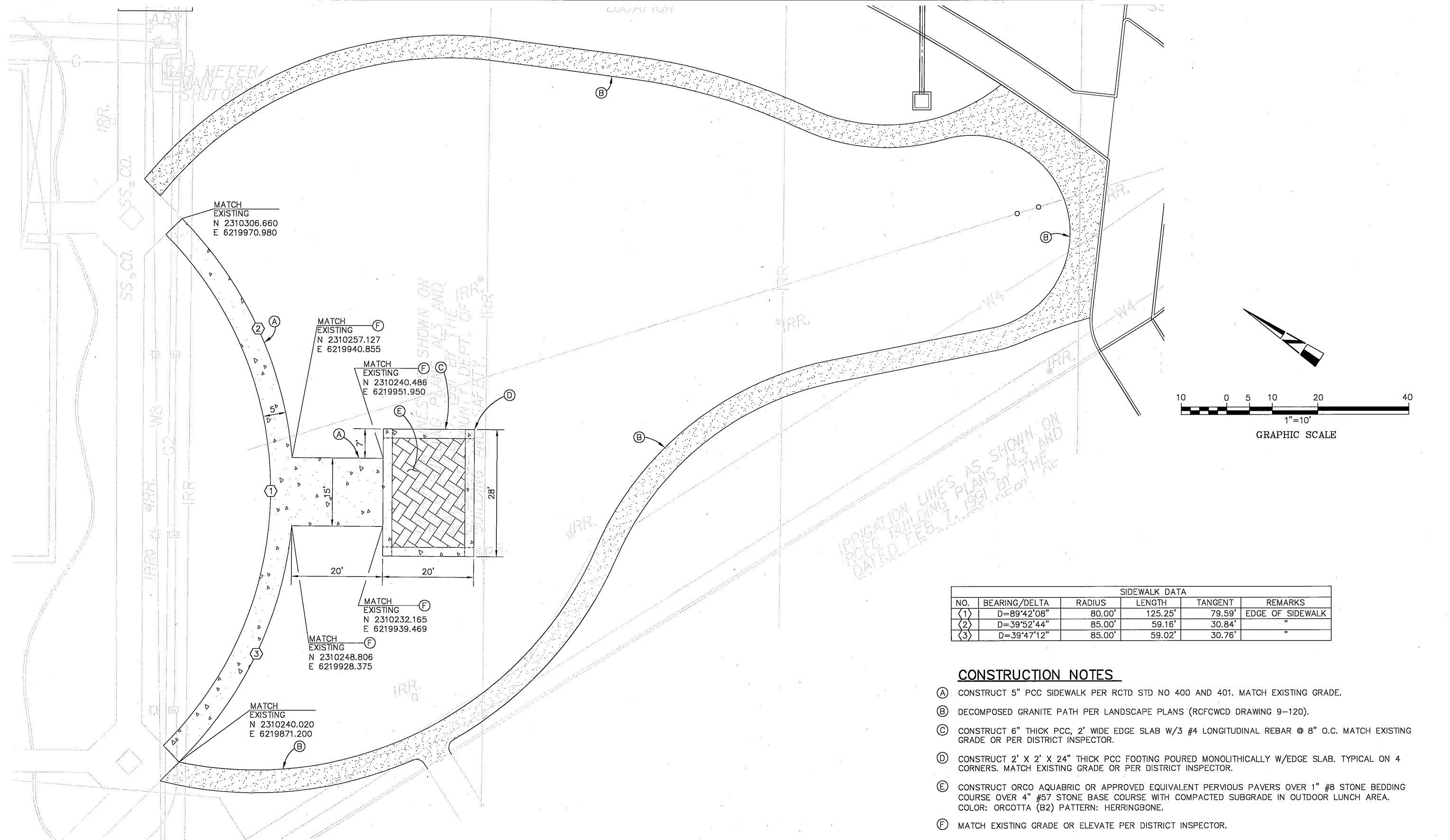


REVISIONS	ENGINEER	RCFC&WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
RECOMMENDED FOR APPROVAL BY: *[Signature]* DATE: July 1, 2010  
APPROVED BY: *[Signature]* DATE: 7-1-2010

**PARKING LOT RENOVATION 2010**  
PAVEMENT PLAN AND RAISED PLANTER DETAIL

PROJECT NO. 1-0-00001  
DRAWING NO. 9-119  
SHEET NO. 17 OF 19



IRRIGATION LINES AS SHOWN ON  
 RCFC BUILDING PLANS A13 AND  
 DATED FEB. 7, 1991 BY THE  
 COUNTY DEPT. OF WATER

SIDEWALK DATA					
NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT	REMARKS
(1)	D=89°42'08"	80.00'	125.25'	79.59'	EDGE OF SIDEWALK
(2)	D=39°52'44"	85.00'	59.16'	30.84'	"
(3)	D=39°47'12"	85.00'	59.02'	30.76'	"

**CONSTRUCTION NOTES**

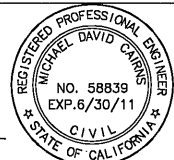
- (A) CONSTRUCT 5" PCC SIDEWALK PER RCFC STD NO 400 AND 401. MATCH EXISTING GRADE.
- (B) DECOMPOSED GRANITE PATH PER LANDSCAPE PLANS (RCFCWD DRAWING 9-120).
- (C) CONSTRUCT 6" THICK PCC, 2' WIDE EDGE SLAB W/3 #4 LONGITUDINAL REBAR @ 8" O.C. MATCH EXISTING GRADE OR PER DISTRICT INSPECTOR.
- (D) CONSTRUCT 2' X 2' X 24" THICK PCC FOOTING POURED MONOLITHICALLY W/EDGE SLAB. TYPICAL ON 4 CORNERS. MATCH EXISTING GRADE OR PER DISTRICT INSPECTOR.
- (E) CONSTRUCT ORCO AQUABRIC OR APPROVED EQUIVALENT PERVIOUS PAVERS OVER 1" #8 STONE BEDDING COURSE OVER 4" #57 STONE BASE COURSE WITH COMPACTED SUBGRADE IN OUTDOOR LUNCH AREA. COLOR: ORCOTTA (B2) PATTERN: HERRINGBONE.
- (F) MATCH EXISTING GRADE OR ELEVATE PER DISTRICT INSPECTOR.

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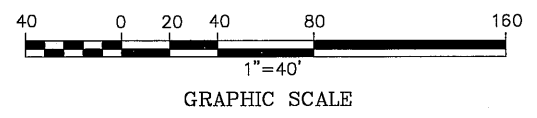
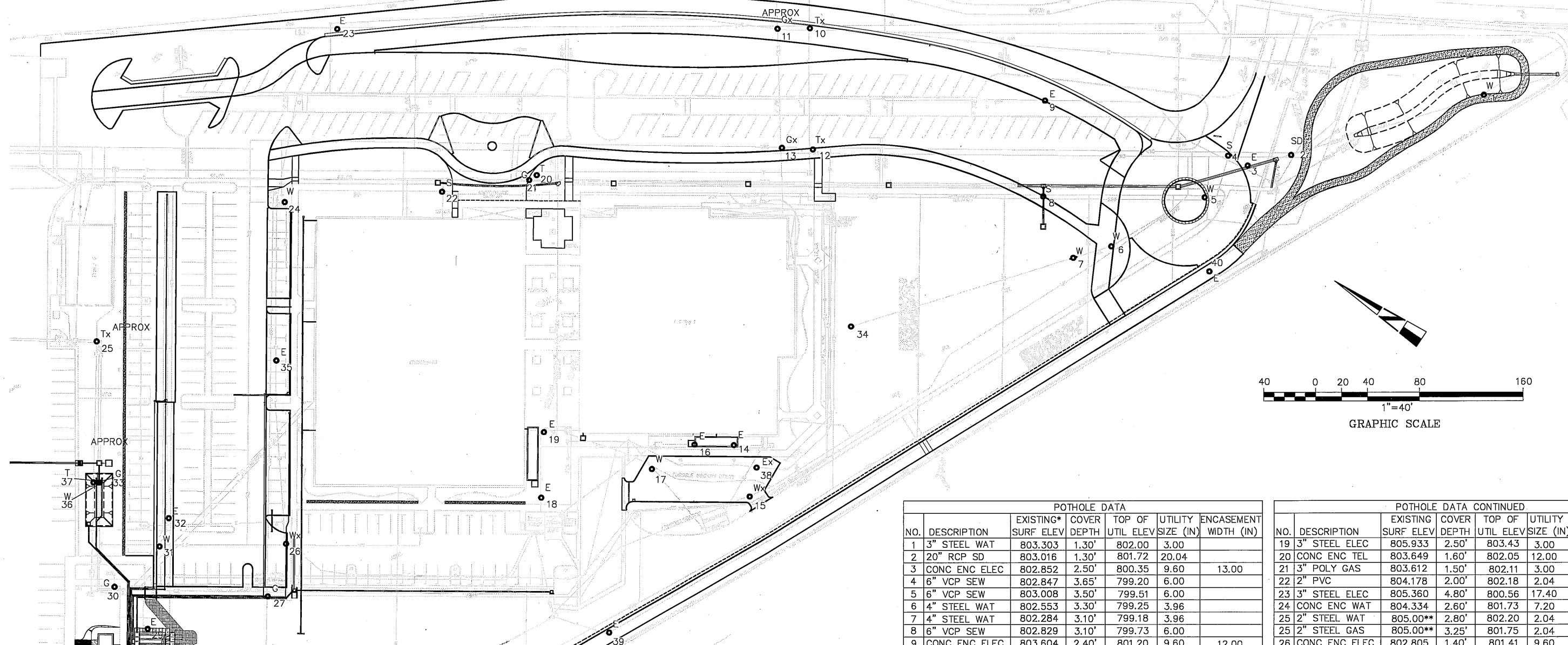


REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: *[Signature]* DATE: July 1, 2010  
 APPROVED BY: *[Signature]* DATE: 1-14-2010

**PARKING LOT RENOVATION 2010**  
 MISCELLANEOUS SURFACE IMPROVEMENTS

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-119  
 SHEET NO. 18 OF 19



**PLAN LEGEND**  
 E = ELECTRICAL  
 W = WATER  
 G = GAS  
 S = SEWER  
 SD = STORM DRAIN  
 T = TELEPHONE  
 x = MULTIPLE CROSSING UTILITIES FOUND

**TABLE LEGEND**  
 WAT = WATER  
 RCP = REINFORCED CONCRETE PIPE  
 SD = STORM DRAIN  
 CONC = CONCRETE  
 ENC = ENCASEMENT  
 ENCASE = ENCASEMENT  
 ELEC = ELECTRICAL  
 VCP = VITRIFIED CLAY PIPE  
 SEW = SEWER  
 TEL = TELEPHONE  
 PVC = POLY VINYL CHLORIDE  
 POLY = POLYETHYLENE

POTHOLE DATA						
NO.	DESCRIPTION	EXISTING* SURF ELEV	COVER DEPTH	TOP OF UTIL ELEV	UTILITY SIZE (IN)	ENCASEMENT WIDTH (IN)
1	3" STEEL WAT	803.303	1.30'	802.00	3.00	
2	20" RCP SD	803.016	1.30'	801.72	20.04	
3	CONC ENC ELEC	802.852	2.50'	800.35	9.60	13.00
4	6" VCP SEW	802.847	3.65'	799.20	6.00	
5	6" VCP SEW	803.008	3.50'	799.51	6.00	
6	4" STEEL WAT	802.553	3.30'	799.25	3.96	
7	4" STEEL WAT	802.284	3.10'	799.18	3.96	
8	6" VCP SEW	802.829	3.10'	799.73	6.00	
9	CONC ENC ELEC	803.604	2.40'	801.20	9.60	12.00
10	2" PVC ELEC	804.325	2.60'	801.73	2.04	
10	CONC ENC TEL	804.325	2.90'	801.43	8.40	12.00
10	CONC ENC ELEC	804.325	4.60'	799.73	21.60	24.00
11	1.5" STEEL GAS	804.49**	3.60'	800.89	7.20	
11	CONC ENC ELEC	804.49**	4.00'	800.49	12.00	12.00
12	CONC ENC TEL	803.115	2.10'	801.02	7.80	12.00
12	3" PVC WAT	803.115	2.90'	800.22	3.00	
13	1.5" STEEL GAS	803.195	2.35'	800.85	1.44	
13	10" PVC WAT	803.195	3.00'	800.20	9.96	
14	CONC ENC ELEC	803.981	3.40'	800.58	13.20	24.00
15	3" PVC ELEC	803.204	2.30'	800.90	3.00	
15	CONC ENC GAS	803.204	2.60'	800.60	10.80	24.00
15	CONC ENC WAT	803.204	2.60'	800.60	10.80	24.00
16	CONC ENC ELEC	804.021	3.40'	800.62	10.80	24.00
17	CONC ENC ELEC	803.600	2.10'	801.50	13.20	12.00
18	3" STEEL ELEC	804.118	2.20'	801.92	3.00	
18	1" COPPER WAT	804.118	2.00'	802.12	0.96	
19	6" PVC ELEC	805.933	1.40'	804.53	6.00	

POTHOLE DATA CONTINUED						
NO.	DESCRIPTION	EXISTING SURF ELEV	COVER DEPTH	TOP OF UTIL ELEV	UTILITY SIZE (IN)	ENCASEMENT WIDTH (IN)
19	3" STEEL ELEC	805.933	2.50'	803.43	3.00	
20	CONC ENC TEL	803.649	1.60'	802.05	12.00	12.00
21	3" POLY GAS	803.612	1.50'	802.11	3.00	
22	2" PVC	804.178	2.00'	802.18	2.04	
23	3" STEEL ELEC	805.360	4.80'	800.56	17.40	
24	CONC ENC WAT	804.334	2.60'	801.73	7.20	12.00
25	2" STEEL WAT	805.00**	2.80'	802.20	2.04	
25	2" STEEL GAS	805.00**	3.25'	801.75	2.04	
26	CONC ENC ELEC	802.805	1.40'	801.41	9.60	20.00
26	8" PVC WAT	802.805	3.80'	799.01	8.04	
27	2" POLY GAS	802.292	2.30'	799.99	2.04	
28	CONC ENC ELEC	801.756	3.30'	798.46	8.40	24.00
29	CONC ENC ELEC	802.078	4.40'	797.68	7.20	24.00
30	UNKNOWN DUCT	803.912	1.30'	802.61	6.00	12.00
30	2" STEEL GAS	803.912	3.90'	800.01	2.04	
31	8" PVC WAT	803.262	3.70'	799.56	8.04	
32	CONC ENC ELEC	803.306	2.30'	801.01	13.20	12.00
33	CONC ENC GAS	804.16**	1.50'	802.66	13.20	27.00
34	4" STEEL WAT	803.358	3.70'	799.66	3.96	
35	CONC ENC ELEC	803.581	2.50'	801.08	9.60	12.00
36	CONC ENC WAT	804.16**	1.50'	802.66	13.20	27.00
37	CONC ENC TEL	804.16**	1.50'	802.66	13.20	27.00
38	CONC ENC ELEC	803.577	1.70'	801.88	15.60	12.00
38	CONC ENC ELEC	803.577	3.00'	800.58	15.60	24.00
39	ELECTRICAL	802.810	RECORD UTILITY NOT FOUND			
40	CONC ENC ELEC	802.489	2.40'	800.09	9.60	12.00

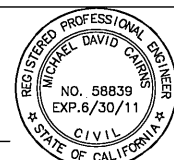
\* ELEVATIONS IN THIS COLUMN ARE FROM FIELD SURVEY UNLESS SHOWN OTHERWISE.  
 \*\* ELEVATION INTERPOLATED FROM TOPO.  
 CONTRACTOR TO VERIFY UTILITY TYPE AND DEPTH

**CVALDO CORPORATION**  
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*Michael David Cairns*  
 MICHAEL DAVID CAIRNS, RCE 58839  
 DATE: 6/29/10



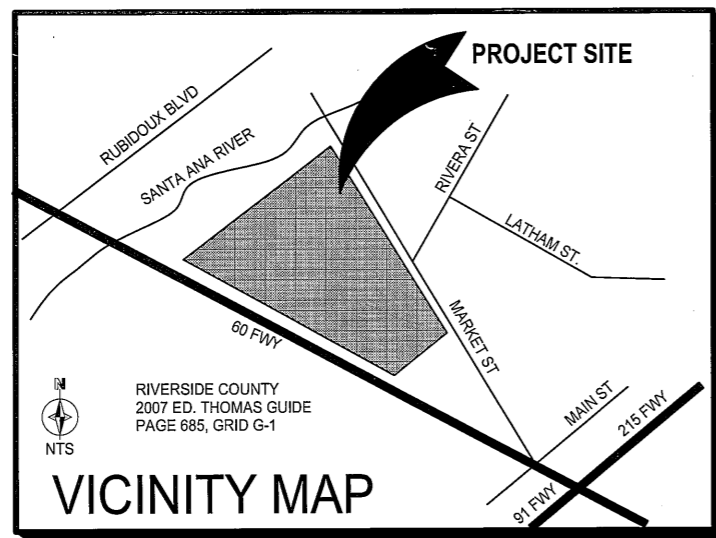
REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 RECOMMENDED FOR APPROVAL BY: [Signature]  
 APPROVED BY: [Signature]  
 DATE: July 1, 2010  
 DATE: 1-14-2010

**PARKING LOT RENOVATION 2010**  
 POT HOLE FIELD DATA

PROJECT NO. 1-0-0001  
 DRAWING NO. 9-119  
 SHEET NO. 19 OF 19

# WATER EFFICIENT LANDSCAPE CONVERSION FOR RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



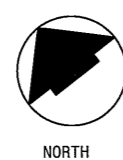
### SPECIAL NOTES

1. CONTRACTOR SHALL REFER TO ENTIRE PACKAGE AS PREPARED BY FLOOD CONTROL DISTRICT AND CIVIL ENGINEER. THESE SCOPES OF WORK WILL AFFECT THE METHODS AND PHASES OF ALL PORTIONS OF LANDSCAPE AND IRRIGATION RENOVATION WORK. CONTRACTOR SHALL INCLUDE ALL NECESSARY COSTS AND DELAYS IN PRICING.
2. CONTRACTOR SHALL VISIT SITE AND FAMILIARIZE HIM / HERSELF WITH ALL EXISTING SITE CONDITIONS.
3. THIS PROJECT ENTAILS A GREAT DEAL OF CONSTRUCTION TASKS. COORDINATION OF ALL TRADES IS IMPERATIVE.
4. CONTRACTOR SHALL VERIFY WITH INSPECTOR THAT LOCATION OF IRRIGATION WORK, PIPING, AND PLANTING TASKS IS NOT IN CONFLICT WITH OTHER TASKS.

### SHEET INDEX

1. TITLE SHEET
2. DEMOLITION PLAN - 1
3. DEMOLITION PLAN - 2
4. CONSTRUCTION PLAN - 1
5. CONSTRUCTION PLAN - 2
6. SLEEVING PLAN - 1
7. SLEEVING PLAN - 1
8. PLANTING PLAN - TREES & GROUNDCOVER-1
9. PLANTING PLAN - TREES & GROUNDCOVER-2
10. PLANTING PLAN - SHRUBS - 1
11. PLANTING PLAN - SHRUBS - 2
12. IRRIGATION PLAN - 1
13. IRRIGATION PLAN - 2
14. PLANTING BLOWUP DETAILS
15. PLANTING DETAILS
16. CONSTRUCTION AND IRRIGATION DETAILS ELECTRICAL DRAWINGS
17. TITLE 24, PANEL SCHEDULES, SINGLE LINE DIAGRAM
18. ELECTRICAL SITE PLAN
19. ELECTRICAL SITE POINT BY POINT PLAN
20. SPECIFICATIONS

TITLE PAGE



**RCB & Sons**  
LANDSCAPE ARCHITECT  
LANDSCAPE CONTRACTOR  
11807 Monella Avenue  
Riverside, CA 92504  
(951) 508-5377  
Landscape Architect License No. 3345  
Landscape Contractor License No. 348819



BENCH MARK

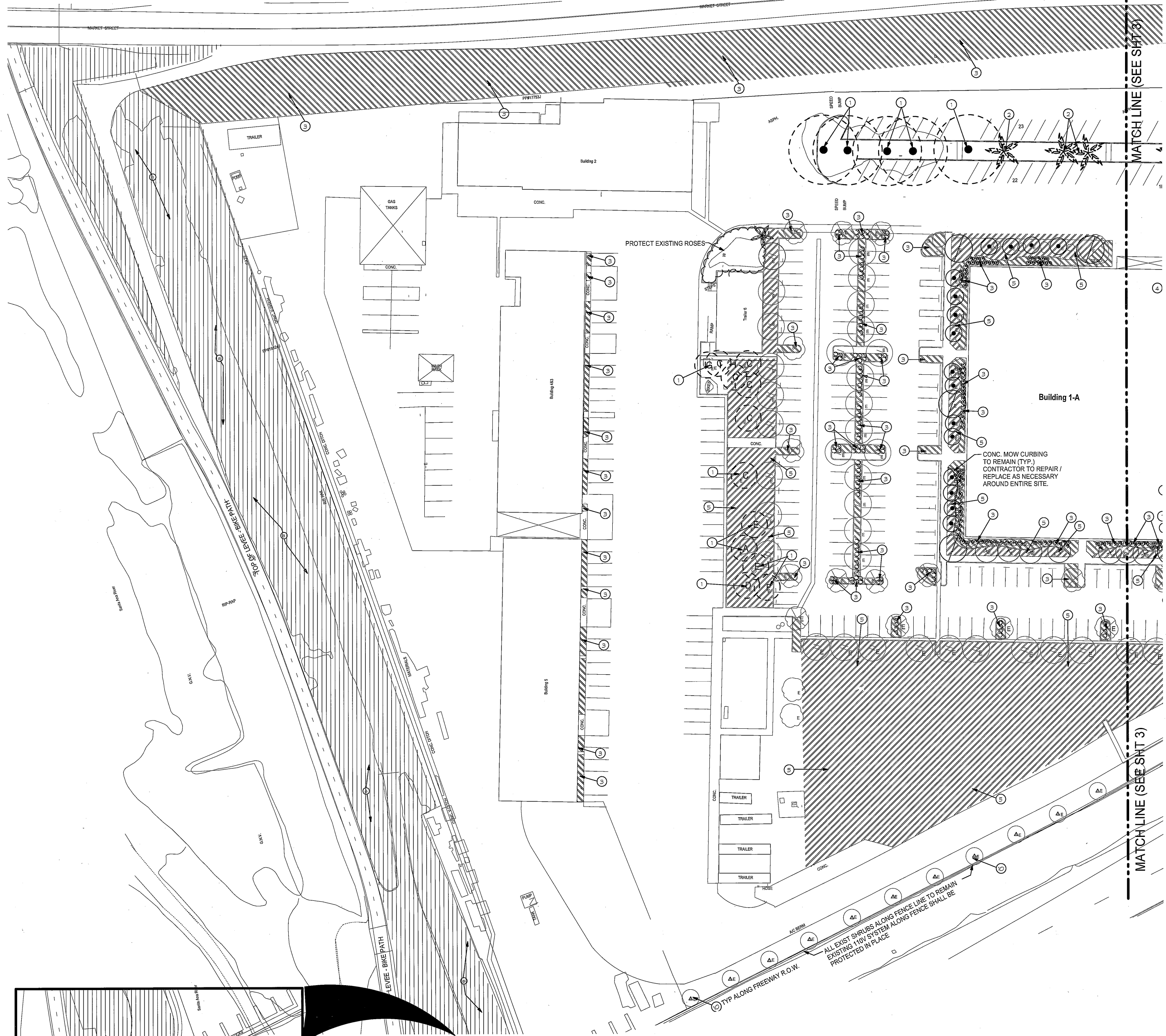
REF.	DESCRIPTION	APPR.	DATE

WATER EFFICIENT LANDSCAPE CONVERSION

DESIGNED BY:	RECOMMENDED FOR APPROVAL BY:	APPROVED BY:
DRAWN BY:	<i>Steve Thomas</i>	<i>[Signature]</i>
DATE DRAWN: 04/14/10	DATE: 06-27-10	DATE: 6-30-10

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

PROJECT NO.	1-0-00001
DRAWING NO.	9-120
SHEET NO.	1 OF 20



- ### DEMOLITION LEGEND
- 1 Remove Tree
    - Remove tree
    - Grind stump 18" below grade
  - 2 Remove Palm
    - Remove palm
    - Remove entire stump.
  - 3 Remove Plant Material
    - Remove all plants and root systems
  - 4 Flagpole - Existing. REMOVE AND DELIVER TO FLOOD CONTROL DISTRICT
  - 5 Eradicate Weeds/Turf
    - Eradicate weeds and turf by applying systemic herbicide a minimum of 2 times
    - Remove vegetation and dead root system
  - 6 Prune tree (ALL TREES ON SITE)
    - Thin and shape trees using currently accepted horticultural and Arborist standards
    - Work shall be performed by a Certified Arborist
  - 7 Concrete plaque bases - WORK BY OTHERS
  - 8 Vegetation to remain
    - Existing vegetation and root system to remain
  - 9 Remove existing (2) Floodlights - CONTRACTOR TO "ABANDON AND/OR MODIFY ALL EXISTING WIRES AND CONDUIT AS NECESSARY TO ALLOW FOR NEW SYSTEM AS SHOWN ON PAGE 14, DETAIL #10. INCLUDE WIRE AND CONDUIT FOR SOLAR PANEL TO BE INSTALLED BY THE DISTRICT
  - 10 TREE RELOCATION
    1. Existing Lagerstroemia indica trees shall be relocated closer to fence, approximately 3' from existing location to accommodate new paver system.
    2. Contractor shall refer to Civil Plans for specific location of pavers.
    3. Trunk of tree shall be approximately 3' from edge of pavers.
    4. All trees shall be installed with 24" deep Bio Barrier for 7' on either side of trunk (14' total)
- TREE TO BE REMOVED

TREE TO REMAIN
- Notes:
1. All work shall adhere to local, state, federal and Cal Osha laws and regulations
  2. All debris shall be removed from the site and disposed of in a legal manner
  3. All greenwaste shall be taken to a certified greenwaste disposal location for recycling
  4. See electrical plan for scope of work.
  5. Weed Abatement Program
- A weed abatement program shall be administered and signed off by Landscape Architect prior to planting. All planting areas shall undergo a minimum of two (2) herbicide application cycles by a Certified Pesticide Applicator.
- Step #1. Irrigate areas for a minimum of 2 weeks after grading has occurred.
- Step #2. Apply systemic herbicide to all weeds
- Step #3. Resume watering after four (4) day water hiatus
- Step #4. Repeat steps #1 through #3
- Step #5. Repeat steps #1 through #3 if weeds are still present.
6. Site shall be walked with owner and landscape architect to identify treatment (removal, protection, pruning) of all trees and plant material prior to commencing work.

### EXISTING PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME		
<b>TREES</b>				
(A)	AVOCADO	AVACADO	-	-
(C)	CASSIA LEPTOPHYLLA	GOLD MEDALLION TREE	-	-
(L)	CITRUS - LEMON	LEMON TREE	-	-
(L)	CITRUS - LIME	LIME TREE	-	-
(O)	CITRUS - ORANGE	ORANGE TREE	-	-
(C)	CUPANOPSIS ANACARDIODES	CARROT WOOD TREE	-	-
(C)	CUPRESSUS	CYPRESS	-	-
(E)	EUCALYPTUS CAMALDULENSIS	RED GUM	-	-
(F)	FRAXINUS UHDEI	SHAMEL ASH	-	-
(L)	LAGERSTROEMIA INDICA	CREPE MYRTLE 'LAVENDER'	-	-
(M)	MAGNOLIA GRANDIFLORA	MAGNOLIA	-	-
(M)	MAGNOLIA SOULANGIANA	SAUCER MAGNOLIA	-	-
(M)	MELALEUCA LEUCADENDRA	CAJUPUT TREE	-	-
(M)	MORUS ALBA	WHITE MULBERRY TREE	-	-
(P)	PEACH	PEACH	-	-
(P)	PRUNUS CERSAFERA 'ATROPURPARCA'	PURPLE LEAF PLUM	-	-
(P)	PODOCARPUS GRACILLIOR	FERN PINE	-	-
(P)	PYRUS KAWAKAMII	EVERGREEN PEAR	-	-
(W)	WASHINGTONIA ROBUSTA	MEXICAN FAN PALM	-	-
<b>SHRUBS</b>				
(A)	AGAPANTHUS AFRICANUS	LILY-OF-THE-NILE	-	-
(B)	BOUGAINVILLEA	BOUGAINVILLEA	-	-
(C)	CLIMBING ROSES	-	-	-
(E)	ESCALLONIA FRADESII	NON	-	-
(L)	LIRIOPE MUSCARI	BIG BLUE LILLY TURF	-	-
(O)	OPHIOPOGON JAPONNICUS	MONDO GRASS	-	-
(P)	PITTIOSPORUM TOBIRA 'WHEELER'	DWARF MOCK ORANGE	-	-
(P)	RAPHIOLEPIS BALLERINA	INDIAN HAWTHORN	-	-
<b>GROUNDCOVERS</b>				
(T)	TURF	TALL PESCUE TURF	-	-

## DEMOLITION PLAN - 1

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT 438-8937



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11987 Sepulveda Avenue,  
 Riverside California 92503  
 (951) 518-0277

Don't Dig...Until You Call U.S.A. Toll Free  
 1-800-227-2600  
 for the location  
 of buried  
 utility lines.  
 Don't dig  
 until you  
 call.

REF	DESCRIPTION	APPR.	DATE

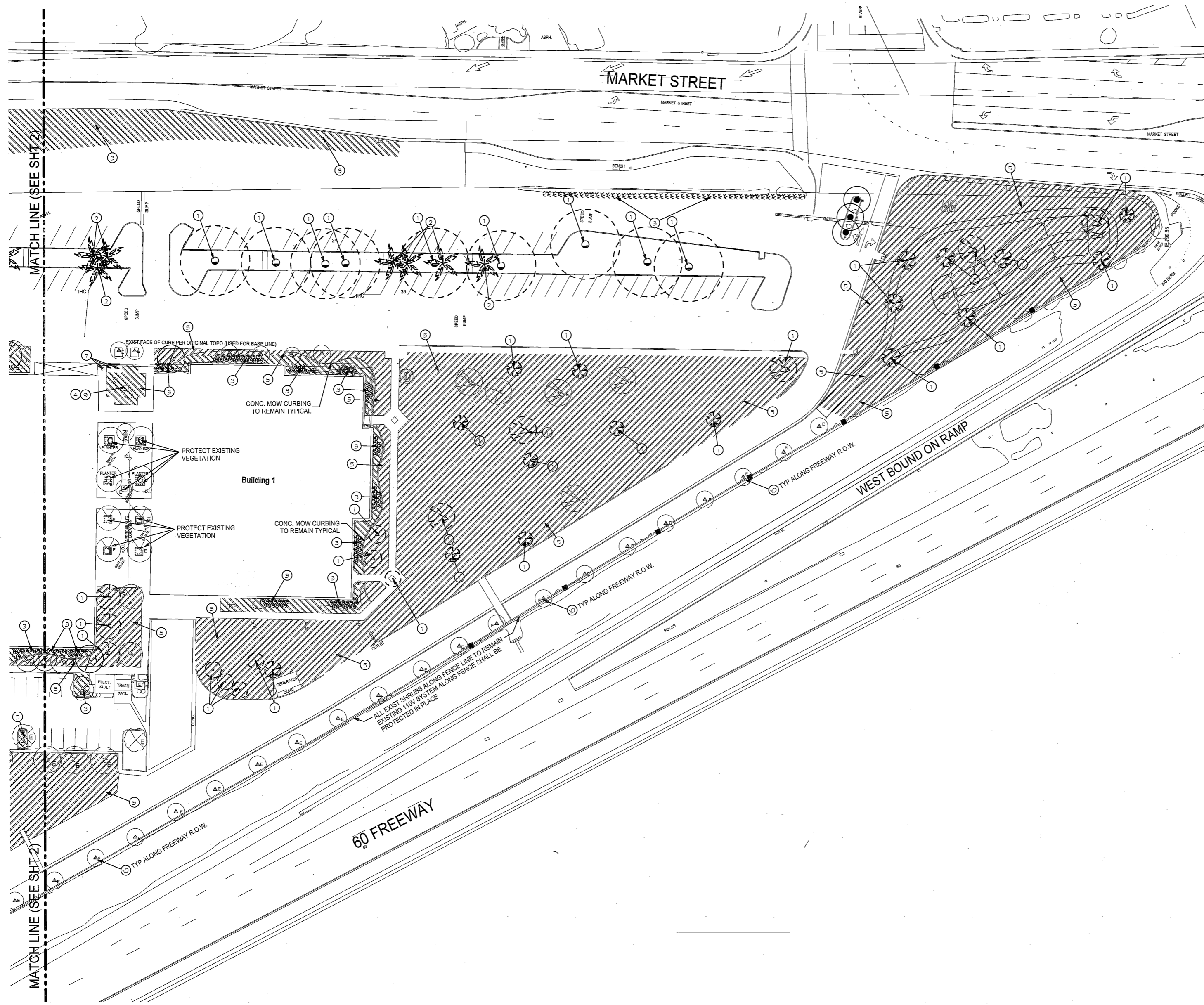
DESIGNED BY:	DATE DRAWN:
	04/14/10

WATER EFFICIENT LANDSCAPE CONVERSION

APPROVED BY: *Steve Thomas*  
 DATE: 06-29-10

RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **2** OF **20**

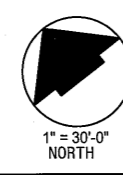


- ### DEMOLITION LEGEND
- 1 Remove Tree
    - Remove tree
    - Grind stump 18" below grade
  - 2 Remove Palm
    - Remove palm
    - Remove entire stump.
  - 3 Remove Plant Material
    - Remove all plants and root systems
  - 4 Flagpole - Existing. REMOVE AND DELIVER TO FLOOD CONTROL DISTRICT
  - 5 Eradicate Weeds/Turf
    - Eradicate weeds and turf by applying systemic herbicide a minimum of 2 times
    - Remove vegetation and dead root system
  - 6 Prune tree (ALL TREES ON SITE)
    - Thin and shape trees using currently accepted horticultural and Arborist standards
    - Work shall be performed by a Certified Arborist
  - 7 Concrete plaque bases - WORK BY OTHERS
  - 8 Vegetation to remain
    - Existing vegetation and root system to remain
  - 9 Remove existing (2) Floodlights - CONTRACTOR TO 'ABANDON AND/OR MODIFY ALL EXISTING WIRES AND CONDUIT AS NECESSARY TO ALLOW FOR NEW SYSTEM AS SHOWN ON PAGE 14, DETAIL #10. INCLUDE WIRE AND CONDUIT FOR SOLAR PANEL TO BE INSTALLED BY THE DISTRICT
  - 10 TREE RELOCATION
    1. Existing Lagerstroemia indica trees shall be relocated closer to fence, approximately 3' from existing location to accommodate new paver system.
    2. Contractor shall refer to Civil Plans for specific location of pavers.
    3. Trunk of tree shall be approximately 3' from edge of pavers.
    4. All trees shall be installed with 24" deep Bio Barrier for 7' on either side of trunk (14' total)
- Notes:
1. All work shall adhere to local, state, federal and Cal Osha laws and regulations
  2. All debris shall be removed from the site and disposed of in a legal manner
  3. All greenwaste shall be taken to a certified greenwaste disposal location for recycling
  4. See electrical plan for scope of work.
  5. Weed Abatement Program
- A weed abatement program shall be administered and signed off by Landscape Architect prior to planting. All planting areas shall undergo a minimum of two (2) herbicide application cycles by a Certified Pesticide Applicator.
- Step #1. Irrigate areas for a minimum of 2 weeks after grading has occurred.
- Step #2. Apply systemic herbicide to all weeds
- Step #3. Resume watering after four (4) day water hiatus
- Step #4. Repeat steps #1 through #3
- Step #5. Repeat steps #1 through #3 if weeds are still present.
6. Site shall be walked with owner and landscape architect to identify treatment (removal, protection, pruning) of all trees and plant material prior to commencing work.

### EXISTING PLANTING LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME		
<b>TREES</b>				
⊙	AVOCADO	AVOCADO	-	-
⊙	CASSIA LEPTOPHYLLA	GOLD MEDALLION TREE	-	-
⊙	CITRUS - LEMON	LEMON TREE	-	-
⊙	CITRUS - LIME	LIME TREE	-	-
⊙	CITRUS - ORANGE	ORANGE TREE	-	-
⊙	CUPANIOPSIS ANACARDIODES	CARROT WOOD TREE	-	-
⊙	CUPRESSUS	CYPRESS	-	-
⊙	EUCALYPTUS CAMALDULENSIS	RED GUM	-	-
⊙	FRAXINUS UHDEI	SHAMEL ASH	-	-
⊙	LAGERSTROEMIA INDICA	CREPE MYRTLE 'LAVENDER'	-	-
⊙	MAGNOLIA GRANDIFLORA	MAGNOLIA	-	-
⊙	MAGNOLIA SOULANGIANA	SAUCER MAGNOLIA	-	-
⊙	MELALEUCA LEUCADENDRA	CAJEPUT TREE	-	-
⊙	MORUS ALBA	WHITE MULBERRY TREE	-	-
⊙	PEACH	PEACH	-	-
⊙	PRUNUS CERASAFERA 'ATROPURPARCA'	PURPLE LEAF PLUM	-	-
⊙	PODOCARPUS GRACILLIOR	FERN PINE	-	-
⊙	PYRUS KAWAKAMI	EVERGREEN PEAR	-	-
⊙	WASHINGTONIA ROBUSTA	MEXICAN FAN PALM	-	-
<b>SHRUBS</b>				
⊙	AGAPANTHUS AFRICANUS	LILY-OF-THE-NILE	-	-
⊙	BOUGAINVILLEA	BOUGAINVILLEA	-	-
⊙	CLIMBING ROSES	-	-	-
⊙	ESCALLONIA FRADESII	NCN	-	-
⊙	LIROPE MUSCARI	BIG BLUE LILLY TURF	-	-
⊙	OPHIPOGON JAPONNICUS	MONDO GRASS	-	-
⊙	PITTOSPORUM TOBIRA 'WHEELER'	DWARF MOCK ORANGE	-	-
⊙	RAPHIOLEPIS BALLERINA	INDIAN HAWTHORN	-	-
<b>GROUNDCOVERS</b>				
⊙	TURF	TALL FESCUE TURF	-	-

## DEMOLITION PLAN - 2



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 1197 Magnolia Avenue,  
 Riverside California 92503  
 (951) 508-6277  
 Landscape Architect License No. 3245  
 Landscape Contractor License No. 34911



NO.	REVISIONS	DATE

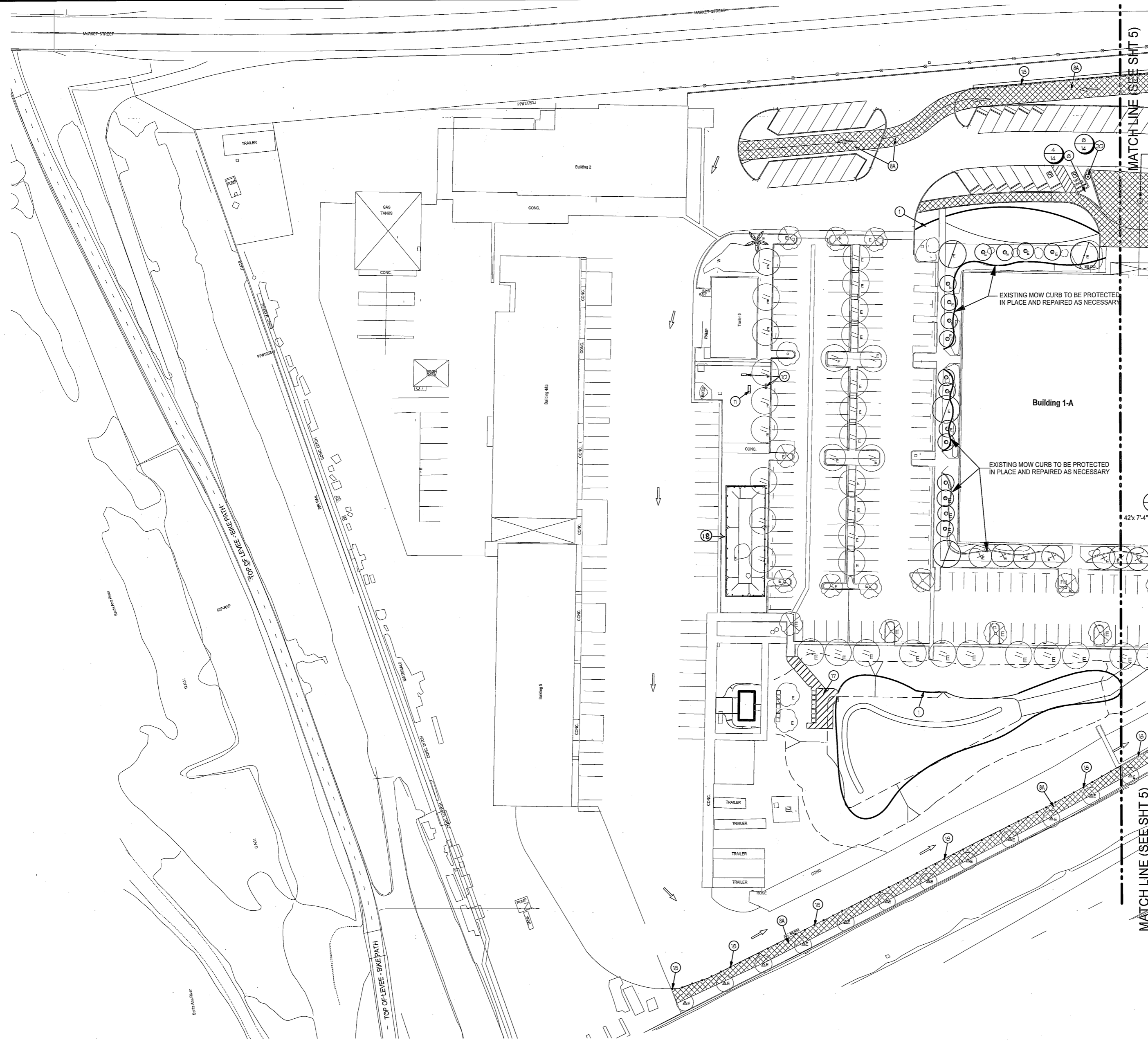
NO.	DESCRIPTION	DATE

DESIGNED BY:		RECOMMENDED FOR APPROVAL BY:		APPROVED BY:	

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **3** OF **20**

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501





**CONSTRUCTION NOTES**

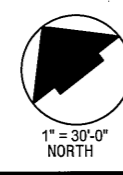
1. CONSTRUCT CONCRETE MOW CURB (PER DETAIL 14 SHT 16) LAYOUT TO BE APPROVED BY DISTRICT ENGINEER.
2. CONSTRUCT DECOMPOSED GRANITE PATH "CALIFORNIA GOLD" COLOR: SLOAN SUPPLIED BY TRI STATE MATERIALS CONTACT JESSIE 951-840-8275 (PER DETAIL 13 SHT 16)
3. INSTALL TREE GRATE MANUFACTURER: SOUTH BAY FOUNDRY, INC 619-956-2780 MODEL: CNK D04 GRATE W/ FRAME 4' x 4'
4. TRAFFIC DIRECTIONAL SIGN SEE CIVIL PLANS
5. CONSTRUCT CONCRETE - 4" THICK @ 3000 PSI MINIMUM - MEDIUM SANDBLAST LAYOUT LOCATION SHALL BE APPROVED BY DISTRICT ENGINEER
6. RAISED PLANTER (SEE CIVIL PLANS)
7. RAISED PLANTER (SEE CIVIL PLANS)
8. BLOCK PAVERS (SEE CIVIL PLANS)
- 8A. BLOCK PAVERS (SEE CIVIL PLANS)
- 8B. BLOCK PAVERS (SEE CIVIL PLANS)
9. CONSTRUCT 4' WIDE CRUSHED ROCK PATH STYLE: 3/4" CRUSHED "BARK BROWN" SUPPLIED BY TRI STATE MATERIALS CONTACT JESSIE 951-840-8275 (PER DETAIL 12 SHT 16)
10. CONCRETE BENCH MANUFACTURER: QUICK CRETE MODEL: Q2CLS72B COLOR: C-11 (ADOBE TAUPE) TEXTURE: T-7 (ACID ETCH)
11. PICNIC TABLE MANUFACTURER: QUICK CRETE MODEL #: Q-LBT-96 PT MATERIAL: SRC COLOR C-11 TEXTURE: T-7 UMBRELLA HOLE: YES
12. WASTE CONTAINER MANUFACTURER: QUICK CRETE MODEL #: QR-MS2736W COLOR: TERRA COTTA TEXTURE: T-7 LID: A-21
13. CONCRETE POT MANUFACTURER: QUICK CRETE MODEL #: QR-MAL3636P COLOR: ADOBE SAND TEXTURE: T-7 NO DRAIN HOLE
- 13B. CONCRETE POT MANUFACTURER: QUICK CRETE MODEL #: QR-MAL2020P COLOR: DOVE SAND TEXTURE: T-7 NO DRAIN HOLE
- 13A. CONCRETE POT MANUFACTURER: QUICK CRETE MODEL #: QR-MAL4242P COLOR: CYPRESS SAND TEXTURE: T-7 NO DRAIN HOLE
14. FOUNTAIN - INSTALL PER LOCAL CODE MANUFACTURER: MALAYSIAN CONCRETE POTS MODEL #: QR-MAL4242P AND LAPAZ QR-LP6016P COLOR: DOVE
15. BENCH MANUFACTURER: QUICK CRETE MODEL #: Q2CLS72B COLOR: CLASSIC CONCRETE COLOR TEXTURE: T-7
16. NOT USED
17. INSTALL DRIVABLE GRASS AS MADE BY SOIL RETENTION SYSTEMS 800-346-7995 (SEE DETAIL 3 SHT 15)
18. BOLLARDS @ 8' O.C. MAX (PER DETAIL 6 SHT 15)
19. INSTALL SYNTHETIC TURF (PER DETAIL 15 SHEET 16)
20. FLAG POLE (PER DETAIL 6 SHT 14)

**NOTES:**

1. ALL WORK SHALL ADHERE TO LOCAL, STATE, FEDERAL, AND CAL OSHA LAWS AND REGULATIONS
2. ALL DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANNER.
3. CONTRACTOR IS RESPONSIBLE FOR THE PROCUREMENT OF ALL REQUIRED PERMITS AND LICENSES.
4. SEE ENGINEERING PLANS FOR ALL GRADING, DRAIN INSTALLATION, PAVER INSTALLATION, RAISED BLOCK WALLS AND BEDS, CONCRETE AND OTHER RELATED HARDSCAPE.

SOIL RETENTION SYSTEMS DRIVABLE GRASS WITH 3" CLASS II BASE FOUNDATION. MANUFACTURER: SOIL RETENTION SYSTEMS  
 DETAIL REFERENCE  
 X - DETAIL NUMBER  
 Y - DRAWING SHEET NUMBER

**CONSTRUCTION PLAN - 1**



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11897 Magnolia Avenue  
 Riverside California 92503  
 (951) 508-0277  
 Landscape Architect License No. 5340  
 Landscape Contractor License No. 53681

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 for the location of buried utility lines.  
 Don't dig until you call U.S.A. Toll Free 1-800-227-2600

REF.	DESCRIPTION	APPR.	DATE

REVISIONS	

**WATER EFFICIENT LANDSCAPE CONVERSION**

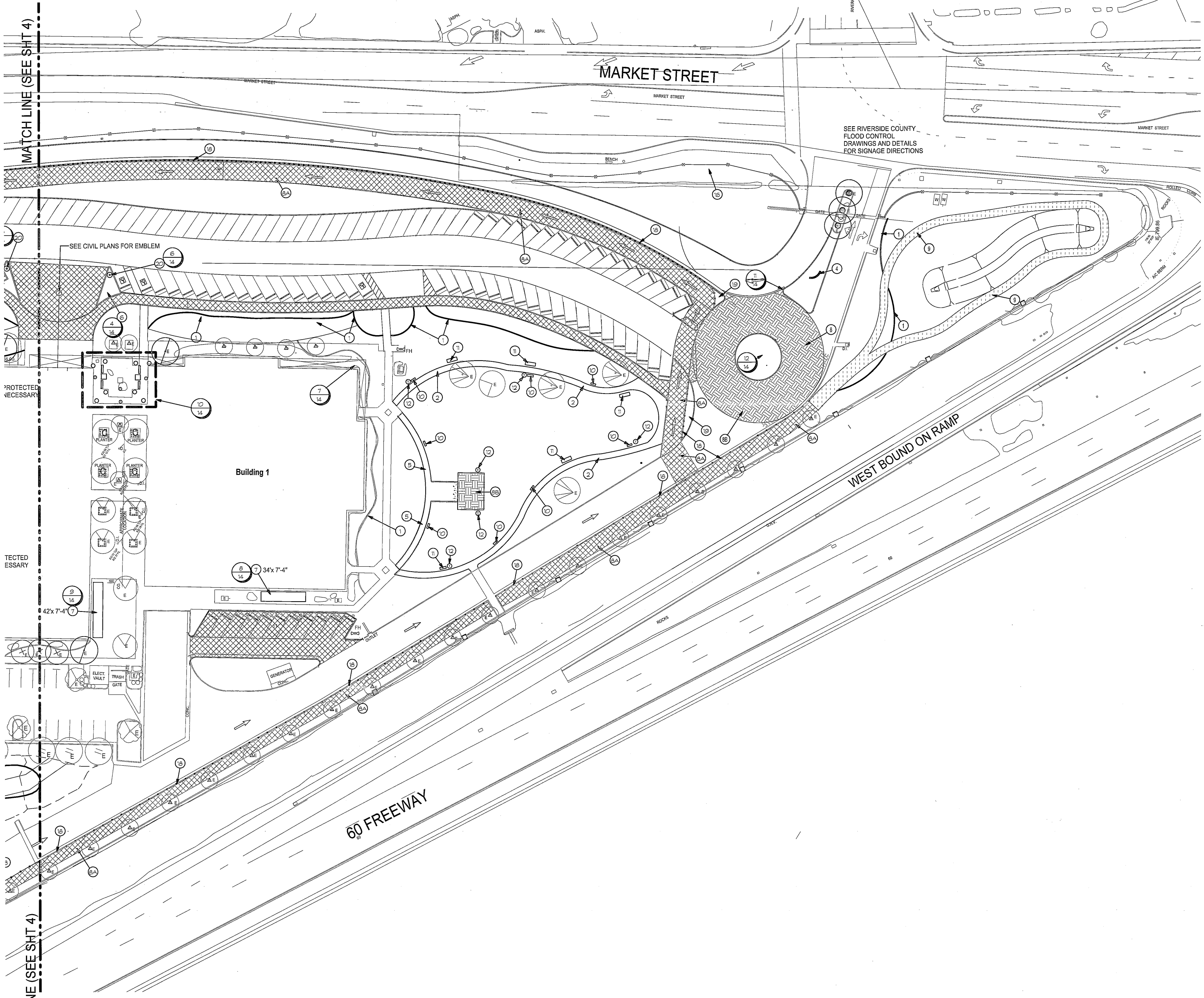
DESIGNED BY: *Small*  
 DRAWN BY: *Small*  
 DATE DRAWN: 04/14/10  
 DATE: 6/29/10

RECOMMENDED FOR APPROVAL BY: *Small*  
 APPROVED BY: *See Thomas*  
 DATE: 06-29-10

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **4** OF **20**

R:\PROJECTS\1-0-00001\CONSTRUCTION\CONSTRUCTION PLAN - 1.dwg



**CONSTRUCTION NOTES**

1. CONSTRUCT CONCRETE MOW CURB (PER DETAIL 14 SHT 16) LAYOUT TO BE APPROVED BY DISTRICT ENGINEER.
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18. BOLLARDS @ 8' O.C. MAX (PER DETAIL 6 SHT 15)
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20. FLAG POLE (PER DETAIL 6 SHT 14)

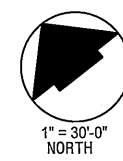
NOTES:

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3. CONTRACTOR IS RESPONSIBLE FOR THE PROCUREMENT OF ALL REQUIRED PERMITS AND LICENSES.
4. SEE ENGINEERING PLANS FOR ALL GRADING, DRAIN INSTALLATION, PAVEMENT INSTALLATION, RAISED BLOCK WALLS AND BEDS, CONCRETE AND OTHER RELATED HARDSCAPE.

SOIL RETENTION SYSTEMS DRIVABLE GRASS WITH 3" CLASS 11 BASE FOUNDATION. MANUFACTURER: SOIL RETENTION SYSTEMS  
 DETAIL REFERENCE  
 DETAIL NUMBER  
 DRAWING SHEET NUMBER

**CONSTRUCTION PLAN - 2**

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11807 Magnolia Avenue  
 Riverside, California 92503  
 (951) 583-6277  
 License No. 33883

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BENCH MARK

NO.	DESCRIPTION	APPR.	DATE

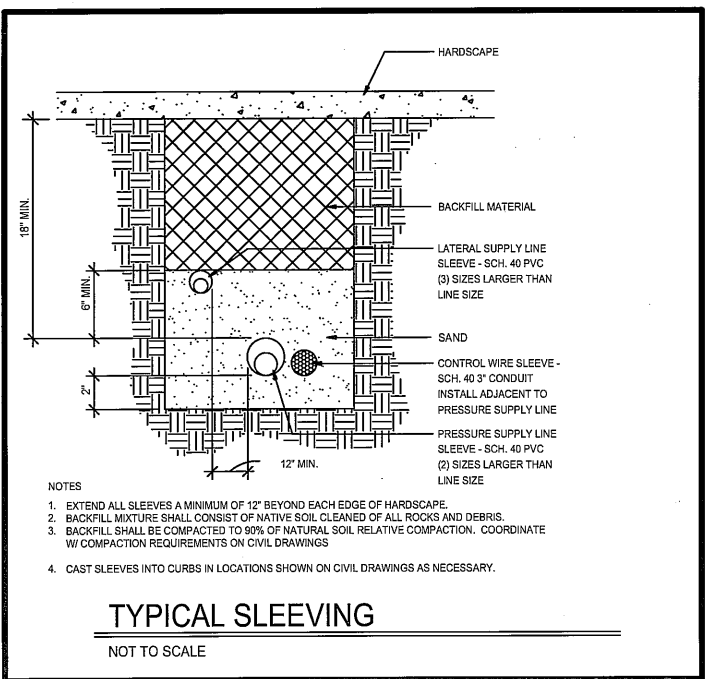
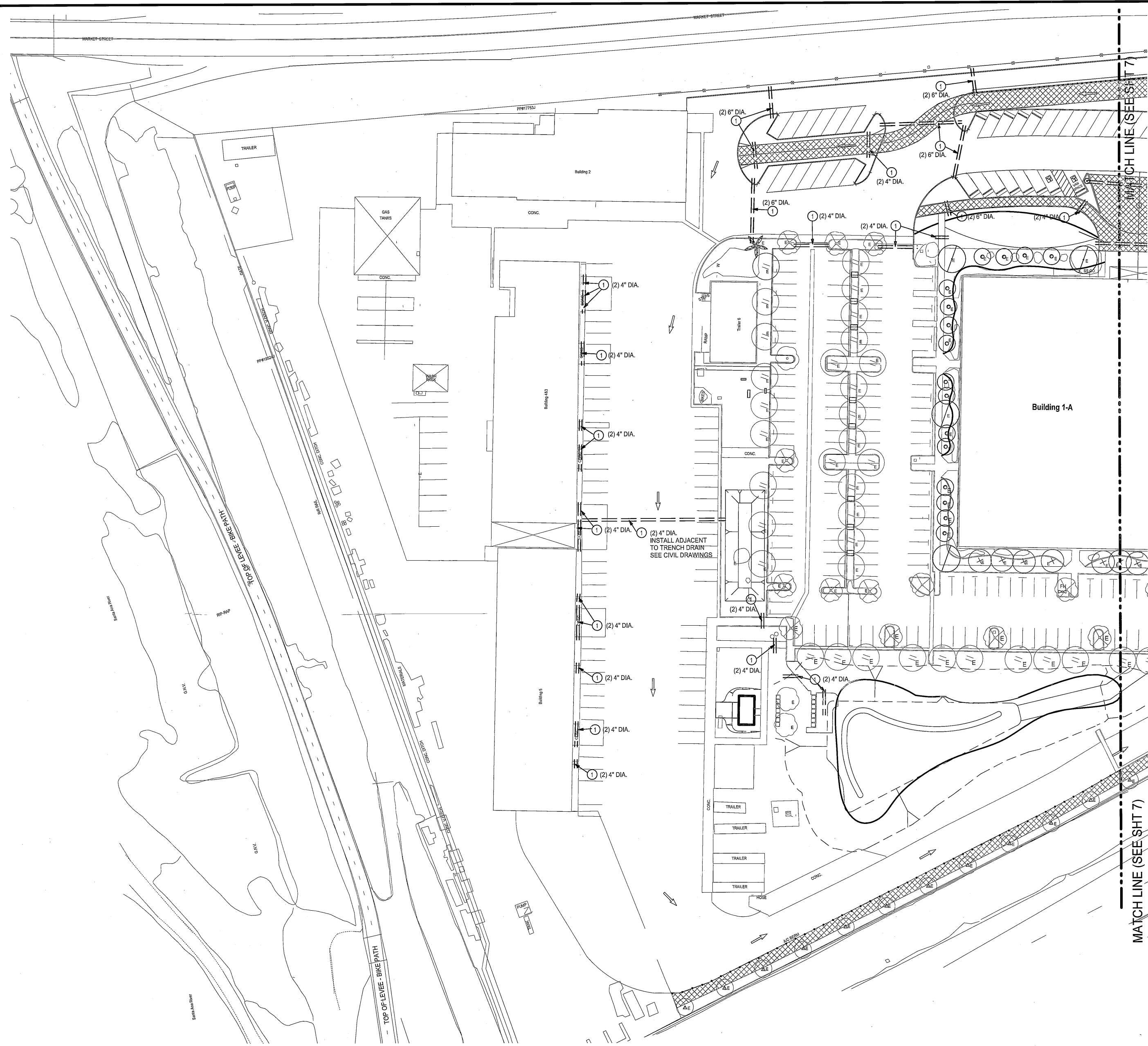
**WATER EFFICIENT LANDSCAPE CONVERSION**

DESIGNED BY: *Smadhi Gungis*  
 DRAWN BY: *Smadhi Gungis*  
 DATE DRAWN: 04/14/10

RECOMMENDED FOR APPROVAL BY: *Smadhi Gungis*  
 APPROVED BY: *Steve Ramos*  
 DATE: 06/29/10

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **5** OF **20**



- SLEEVING LEGEND**
- == SCHEDULE 40 - SLEEVE  
\* (2 PIPES PER LOCATION MINIMUM)  
\* DOUBLE SLEEVING SHALL BE DONE IN IDENTIFIED AREAS ONLY
- NOTES:
- 1 ALL SLEEVE INSTALLATIONS SHALL BE APPROVED BY DISTRICT ENGINEER.
  - 2 ALL SLEEVES TO BE INSTALLED A MINIMUM OF 18" BELOW FINISH GRADE TO TOP OF SLEEVE.
  - 3 SEE PLAN FOR SIZING AND QUANTITY.
  - 4 ALL PIPES UNDER HARDSCAPE SURFACES SHALL BE SLEEVED WITH SCHEDULE 40 PIPE (2 TIMES PIPE SIZE)
  - 5 MINIMALLY, ALL CROSSINGS SHALL RECEIVE 2-4" SCHEDULE 40 SLEEVES.
  - 6 CONTRACTOR SHALL REFER TO CIVIL DRAWINGS AND SHALL COORDINATE SLEEVE LOCATIONS WITH GENERAL CONTRACTOR AND ALL IMPROVEMENTS.

**SLEEVING PLAN - 1**



**RCB & Sons**  
LANDSCAPE ARCHITECT  
LANDSCAPE CONTRACTOR  
11897 Magnolia Avenue  
Riverside, California 92505  
(951) 509-5277  
Landscape Architect License No. 34893  
Landscape Contractor License No. 34893



BENCH MARK

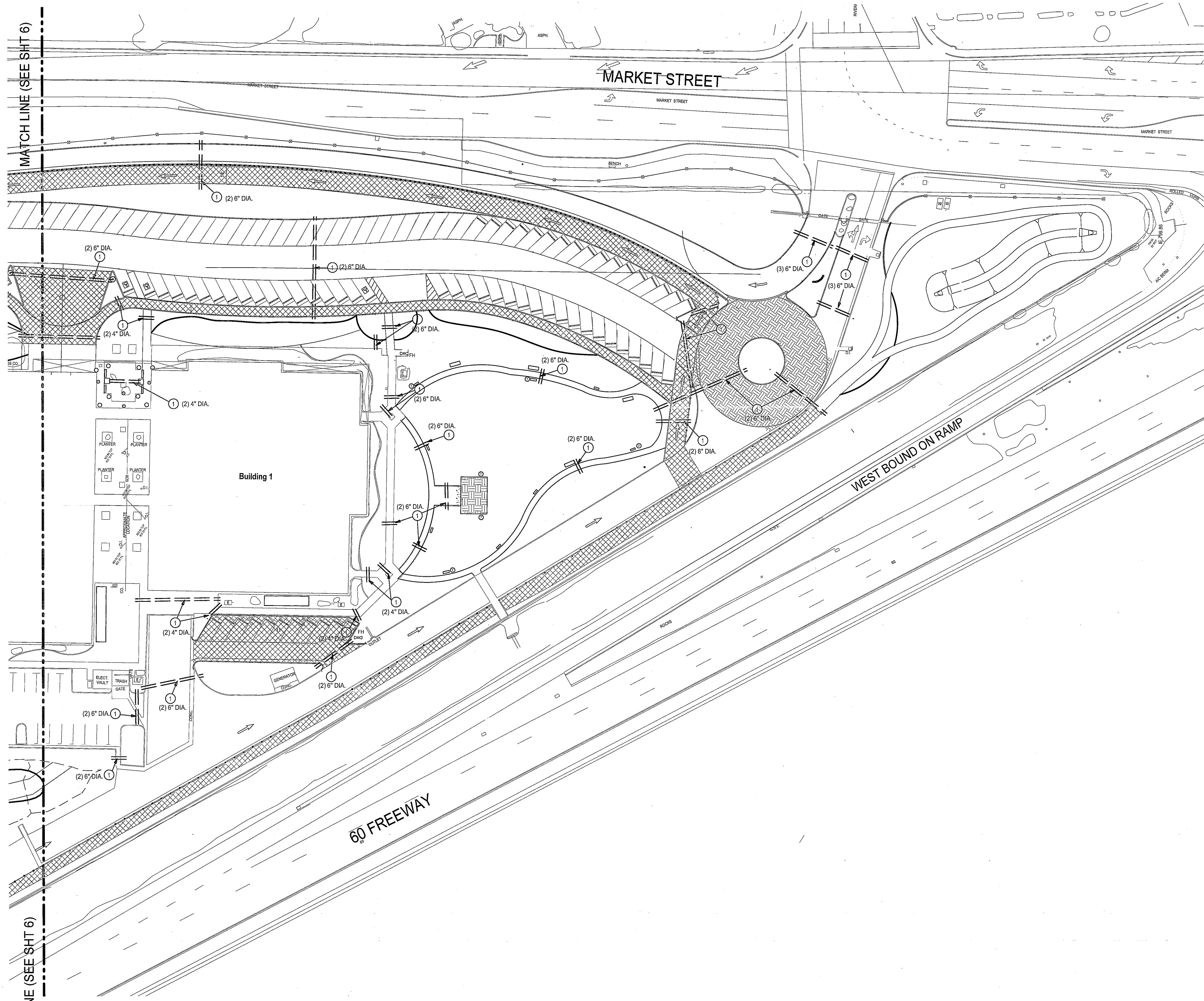
REF.	DESCRIPTION	APPR.	DATE

DESIGNED BY:		RECOMMENDED FOR APPROVAL BY:		APPROVED BY:	
DRAWN BY:		<i>Franklin Rungis</i>		<i>Steve Thomas</i>	
DATE DRAWN: 04/14/10		DATE: 6/29/10		DATE: 06-29-10	

WATER EFFICIENT LANDSCAPE CONVERSION  
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
DRAWING NO. 9-120  
SHEET NO. 6 OF 20

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT, 6/29/10



**SLEEVING LEGEND**

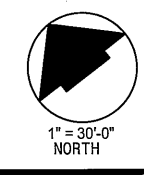
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 \* (2 PIPES PER LOCATION MINIMUM)  
 \* DOUBLE SLEEVING SHALL BE DONE IN IDENTIFIED AREAS ONLY

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- 6 CONTRACTOR SHALL REFER TO CIVIL DRAWINGS AND SHALL COORDINATE SLEEVE LOCATIONS WITH GENERAL CONTRACTOR AND ALL IMPROVEMENTS.

MATCH LINE (SEE SHT 6)

**SLEEVING PLAN - 2**



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11997 Magnolia Avenue,  
 Riverside, California 92503  
 (951) 509-0377  
 Landscape Architect License No. 34815



REF.	DESCRIPTION	APPR.	DATE

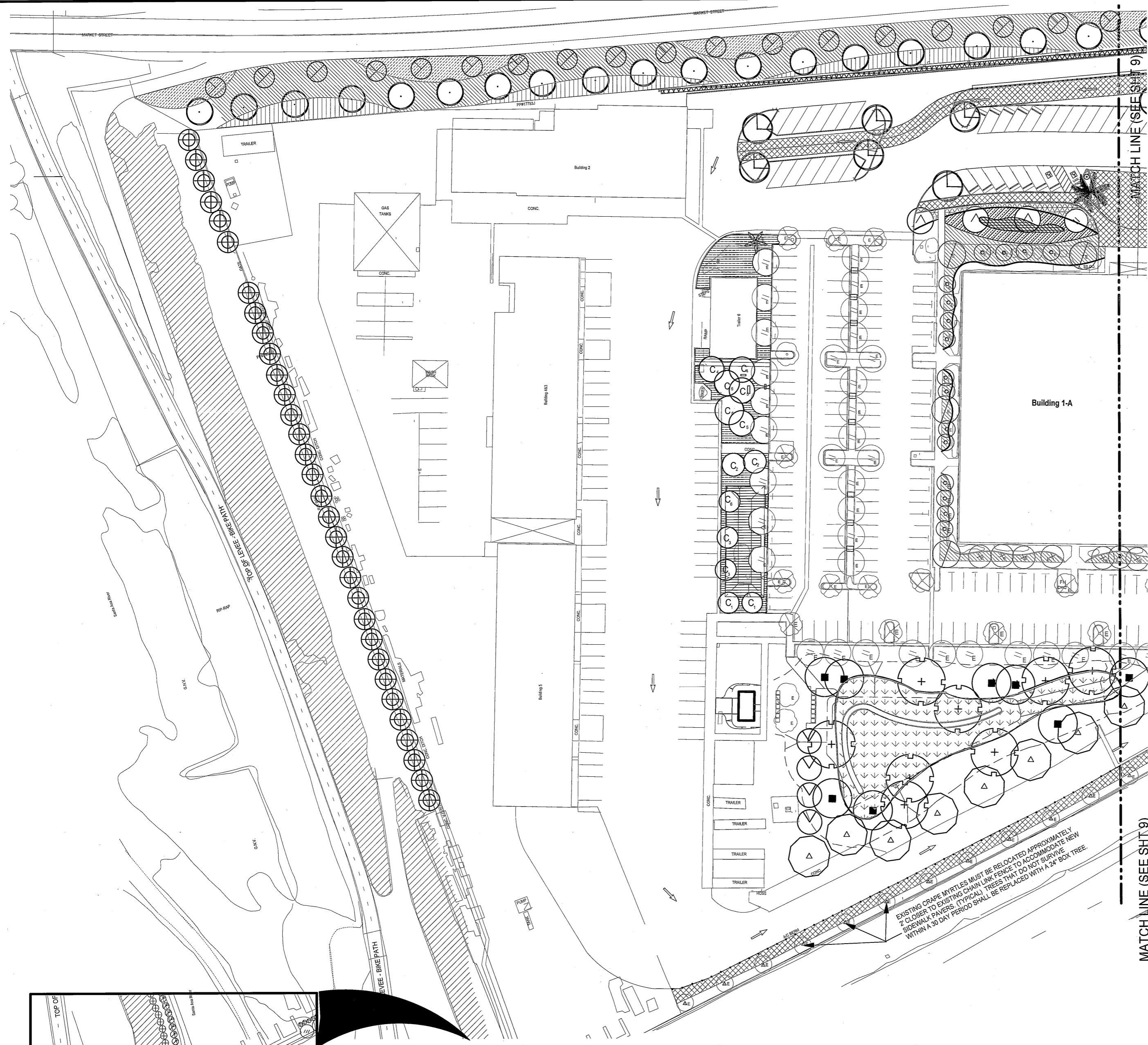
REVISIONS			

DESIGNED BY:		RECOMMENDED FOR APPROVAL BY:		APPROVED BY:	
DRAWN BY:		<i>Stacy G...</i>		<i>Ken Thomas</i>	
DATE DRAWN: 04/14/10		DATE: 6/29/10		DATE: 6-29-10	

WATER EFFICIENT LANDSCAPE CONVERSION  
 RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-120  
 SHEET NO. 7 OF 20

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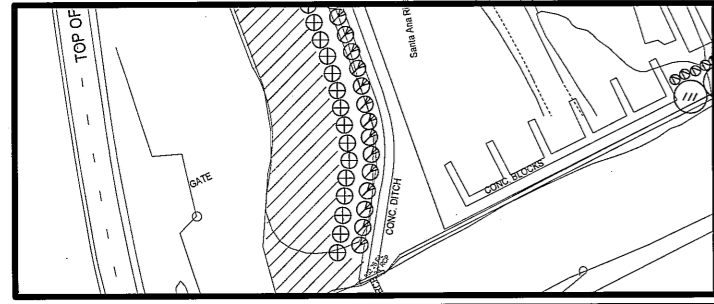
PLANTING LEGEND				
TREES				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
(Symbol)	ARBUS UNEDO	STRAWBERRY TREE	24" BOX	11
(Symbol)	CAESALPINIA PULCHERRINIA	RED BIRD OF PARADISE	15 GAL	12
(Symbol)	CASSIA LEPTOPHYLLA	GOLDEN MEDALLION TREE	24" BOX	33
(Symbol)	CERCIS CANADENSIS 'FOREST PANSY'	EASTERN REDBUD	24" BOX	4
(Symbol)	CHAMAEROPS HUMILIS	MEDITERRANEAN FAN PALM	36" BOX	2
(Symbol)	CHILOPSIS LINEARIS	DESERT WILLOW	24" BOX	2
(Symbol)	CHITALPA TASHKENTENSIS	NCN	24" BOX	13
(Symbol)	CITRUS-KUMQUAT 'NAGAMI'	KUMQUAT	15 GAL	3
(Symbol)	CITRUS-LEMON	LEMON	15 GAL	2
(Symbol)	CITRUS-LIME	LIME	15 GAL	2
(Symbol)	CITRUS-NAVAL	NAVAL ORANGE	15 GAL	2
(Symbol)	CITRUS-TANGELO	ORANGE	15 GAL	2
(Symbol)	CITRUS-VALENCIA	VALENCIA ORANGE	15 GAL	2
(Symbol)	CUPANIOPSIS ANACARDIODES	CARROT WOOD TREE	EXISTING	-
(Symbol)	EUPHORBIA COTINIFOLIA	CARIBBEAN COPPER PLANT	15 GAL	8
(Symbol)	FORTUNELLA MARGARITA	NAGAMI KUMQUAT	15 GAL	4
(Symbol)	GINKO BILOBA	MAIDENHAIR TREE	24" BOX	7
(Symbol)	KOELREUTERIA BIPINNATA	CHINESE FLAME TREE	24" BOX	2
(Symbol)	KOELREUTERIA PANICULATA	GOLDENRAIN TREE	24" BOX	8
(Symbol)	LAGERSTROEMIA INDICA	CRAPE MYRTLE 'LAVENDER'	24" BOX	9
(Symbol)	MELALEUCA LEUCADENDRA	CAJEPUT TREE	15 GAL	6
(Symbol)	MAGNOLIA GRANDIFLORA	MAJESTIC BEAUTY	EXISTING	-
(Symbol)	MAGNOLIA SOULANGIANA	SAUCER MAGNOLIA	EXISTING	-
(Symbol)	QUERCUS AGRIFOLIA	COAST LIVE OAK	48" BOX	1
(Symbol)	PINUS CANARIENSIS	CANARY ISLAND PINE	24" BOX	32
(Symbol)	PISTACHE CHINESIS	CHINESE PISTACHE	24" BOX	11
(Symbol)	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	15 GAL	8
(Symbol)	PYRUS CALLERYANA 'BRADFORD'	ORNAMENTAL PEAR	24" BOX	6
(Symbol)			36" BOX	2
(Symbol)	QUERCUS LOBATA	VALLEY OAK	24" BOX	7
(Symbol)	RHUS LANCEA	AFRICAN SUMAC	15 GAL	9
(Symbol)	TRISTANIA COFERTA	BRISBANE BOX	15 GAL	12
(Symbol)	TRACHYCARPUS FORTUNES	WINDMILL PALM	6' B.T.	2
(Symbol)	UMBELLULARIA CALIFORNICA	CALIFORNIA BAY TREE	15 GAL	8
(Symbol)	VITEX AGNUS-CASTUS	CHASTE TREE	15 GAL	27
(Symbol)	WASHINGTONIA ROBUSTA	MEXICAN FAN PALM	EXISTING	-

- NOTES:**
- "E" DESIGNATION NEXT TO TREES INDICATES AN EXISTING TREE THAT IS TO BE PROTECTED
  - CONTRACTOR TO PERFORM GRADING SO AS TO CREATE SWALE APPROXIMATELY 5' EAST OF NEW WALL AT THE BASE OF THE SLOPE. THE INTENT IS TO CONCENTRATE WATER IN DEPRESSED BASINS TO ALLOW PERCOLATION PRIOR TO FLOWING THROUGH WALL'S WEEP HOLES.
  - GROUNDCOVERS SHALL EXTEND UNDER ALL TREES AND SHRUBS.
  - PLANT COUNTS ARE FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ALL PLANT COUNTS.
  - SOIL PREP SHALL BE SPECIFIED AS EARTHWORKS: NCP-33. FOR BIDDING PURPOSES, CONTRACTOR SHALL USE 4 CUBIC YARDS PER 1,000 S.F. SOIL TEST RESULTS WILL PREVAIL.
  - WOOD CHIPS SHALL BE SPECIFIED AS EARTH WORKS: "WALK ON CHIPS" AT 3" THICK IN ALL SHRUB AREAS.

PLANTING LEGEND				
GROUNDCOVERS				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
(Symbol)	BARK MULCH (ALL SHRUB AREAS)	BARK MULCH 3" THICK	FLAT	10' O.C.
(Symbol)	AEONIUM ARBOREUM	BLACK AEONIUM	FLAT	10' O.C.
(Symbol)	CYNODON DACTYLON- 'TIF DWARF'	HYBRID BERMUDA	SOD	
(Symbol)	DROSANTHEMUM HISPIDUM	N.C.N.	FLAT	12" O.C.
(Symbol)	ECHEVERIA AGAVOIDES	N.C.N.	1 GAL	10" O.C.
(Symbol)	ERIGERON KARVINSKIANUS	SANTA BARBARA DAISY	1 GAL	18" O.C.
(Symbol)	FESTUCA OVINA GLAUCA	SHEEP'S FOOT	1 GAL	12" O.C.
(Symbol)	GAILLARDIA GRANDIFLORA	BLANKET FLOWER 'GOBLIN'	1 GAL	18" O.C.
(Symbol)	LANTANA MONTEVIDENSIS 'SPREADING SUNSHINE'	SPREADING SUNSHINE	1 GAL	36" O.C.
(Symbol)	LONICERA JAPONICA 'HALLYENA'	HONEYSUCKLE	FLAT	10" O.C.
(Symbol)	MYOPORUM PARVIFOLIUM	N.C.N.	1 GAL	18" O.C.
(Symbol)	ROSA 'CARPET ROSE' RED	CARPET ROSE - RED	2 GAL	30" O.C.
(Symbol)	ROSMARINUS OFFICINALIS	ROSEMARY	1 GAL	24" O.C.
(Symbol)	SEDUM RUBROTINCTUM	PORK AND BEANS	FLAT	10" O.C.
(Symbol)	VERBENA PERUVIANA 'PURPLE'	N.C.N.	FLAT	10" O.C.
(Symbol)	SYNTHETIC TURF			

**PLANTING PLAN - TREE & GROUNDCOVER-1**

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT SHEET NO. 1-0-00001



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 1987 Magnolia Avenue  
 Riverside California 92503  
 (951) 944-0377  
 Landscape Architect License No. 3345  
 Landscape Contractor License No. 34815

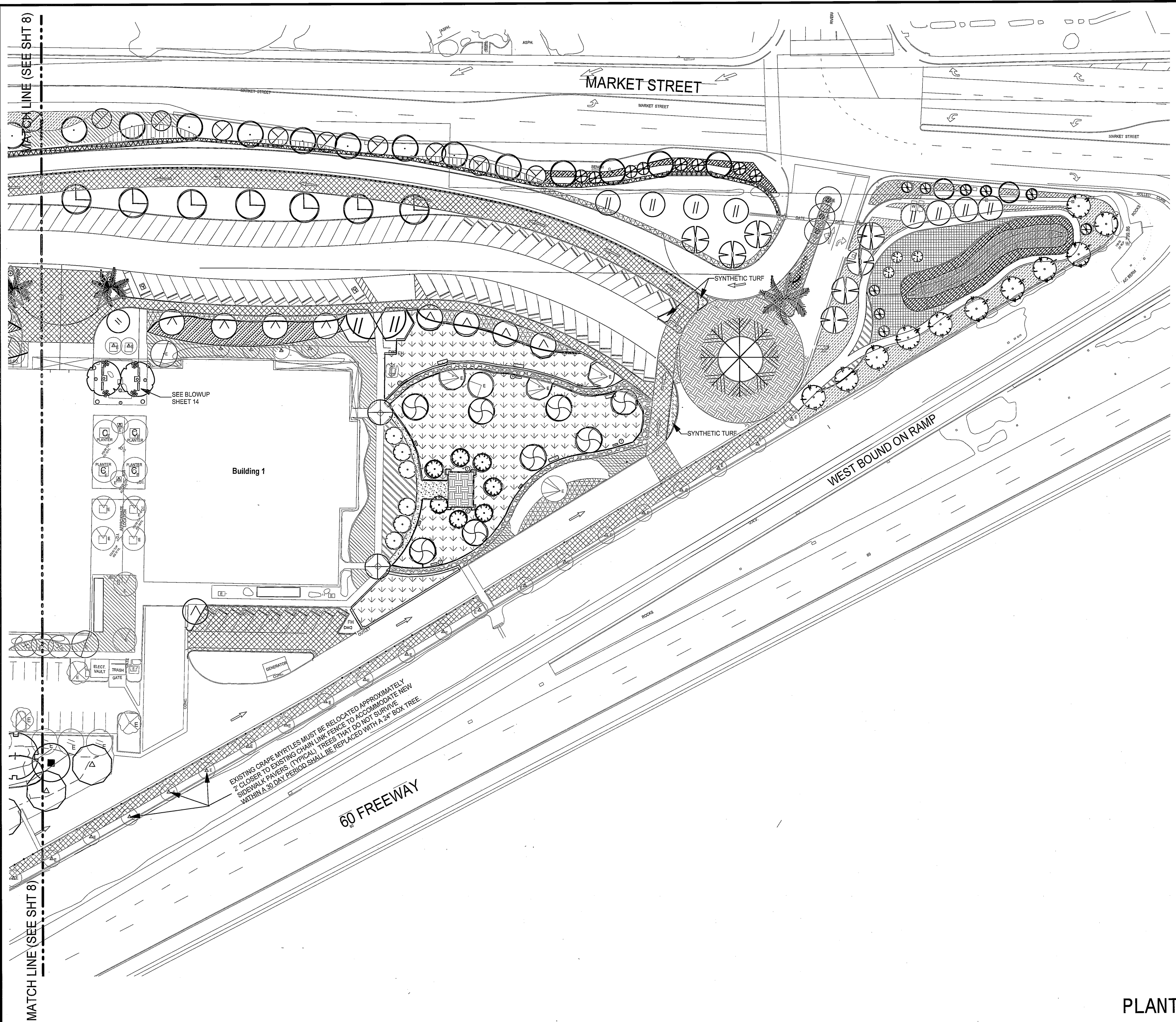
Don't Dig... Until You Call U.S.A. Toll Free  
 1-800-227-2600  
 for the location of buried utility lines.  
 Don't dig and  
 Visit services.  
 TWO WORKING DAYS BEFORE YOU DIG

NO.	REVISIONS	DATE

DESIGNED BY:		RECOMMENDED FOR APPROVAL BY:	
DRAWN BY:		APPROVED BY:	
DATE DRAWN:	DATE:	DATE:	DATE:
04/14/10	6/29/10	6/29/10	6/29/10

**WATER EFFICIENT LANDSCAPE CONVERSION**  
 RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO.  
**1-0-00001**  
 DRAWING NO.  
**9-120**  
 SHEET NO.  
**8** OF **20**



PLANTING LEGEND

TREES				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
⊗	ARBUS UNEDO	STRAWBERRY TREE	24" BOX	11
⊗	CAESALPINIA PULCHERRIMA	RED BIRD OF PARADISE	15 GAL	12
⊗	CASSIA LEPTOPHYLLA	GOLDEN MEDALLION TREE	24" BOX	33
⊗	CERCIS CANADENSIS 'FOREST PANSY'	EASTERN REDBUD	24" BOX	4
⊗	CHAMAEROPS HUMILIS	MEDITERRANEAN FAN PALM	36" BOX	2
⊗	CHILOPSIS LINEARIS	DESERT WILLOW	24" BOX	2
⊗	CHITALPA TASHKENTENSIS	NCN	24" BOX	13
⊗	CITRUS-KUMQUAT 'NAGAMI'	KUMQUAT	15 GAL	3
⊗	CITRUS-LEMON	LEMON	15 GAL	2
⊗	CITRUS-LIME	LIME	15 GAL	2
⊗	CITRUS-NAVAL	NAVAL ORANGE	15 GAL	2
⊗	CITRUS-TANGELO	ORANGE	15 GAL	2
⊗	CITRUS-VALENCIA	VALENCIA ORANGE	15 GAL	2
⊗	CUPANIOPSIS ANACARDIODES	CARROT WOOD TREE	EXISTING	-
⊗	EUPHORBIA COTINIFOLIA	CARRIBEAN COPPER PLANT	15 GAL	8
⊗	FORTUNELLA MARGARITA	NAGAMI KUMQUAT	15 GAL	4
⊗	GINKO BILOBA	MAIDENHAIR TREE	24" BOX	7
⊗	KOELREUTERIA BIPINNATA	CHINESE FLAME TREE	24" BOX	2
⊗	KOELREUTERIA PANICULATA	GOLDENRAIN TREE	24" BOX	8
⊗	LAGERSTROEMIA INDICA	CRAPE MYRTLE 'LAVENDER'	24" BOX	9
⊗	MELALEUCA LEUCADENDRA	CAJEPUT TREE	15 GAL	6
⊗	MAGNOLIA GRANDIFLORA	MAJESTIC BEAUTY	EXISTING	-
⊗	MAGNOLIA SOULANGIANA	SAUCER MAGNOLIA	EXISTING	-
⊗	QUERCUS AGRIFOLIA	COAST LIVE OAK	48" BOX	1
⊗	PINUS CANARIENSIS	CANARY ISLAND PINE	24" BOX	32
⊗	PISTACHE CHINESIS	CHINESE PISTACHE	24" BOX	11
⊗	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	15 GAL	8
⊗	PYRUS CALLERYANA 'BRADFORD'	ORNAMENTAL PEAR	24" BOX 36" BOX	6 2
⊗	QUERCUS LOBATA	VALLEY OAK	24" BOX	7
⊗	RHUS LANCEA	AFRICAN SUMAC	15 GAL	9
⊗	TRISTANIA COFERTA	BRISBANE BOX	15 GAL	12
⊗	TRACHYCARPUS FORTUNES	WINDMILL PALM	6" B.T.	2
⊗	UMBELLULARIA CALIFORNICA	CALIFORNIA BAY TREE	15 GAL	8
⊗	VITEX AGNUS-CASTUS	CHASTE TREE	15 GAL	27
⊗	WASHINGTONIA ROBUSTA	MEXICAN FAN PALM	EXISTING	-

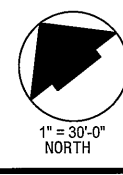
NOTES:

1. "E" DESIGNATION NEXT TO TREES INDICATES AN EXISTING TREE THAT IS TO BE PROTECTED
2. CONTRACTOR TO PERFORM GRADING SO AS TO CREATE SWALE APPROXIMATELY 5' EAST OF NEW WALL AT THE BASE OF THE SLOPE. THE INTENT IS TO CONCENTRATE WATER IN DEPRESSED BASINS TO ALLOW PERCOLATION PRIOR TO FLOWING THROUGH WALL'S WEEP HOLES.
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6. WOOD CHIPS SHALL BE SPECIFIED AS EARTH WORKS: "WALK ON CHIPS" AT 3" THICK IN ALL SHRUB AREAS.

PLANTING LEGEND

GROUNDCOVERS				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
⊗	BARK MULCH (ALL SHRUB AREAS)	BARK MULCH 3" THICK		
⊗	AEONIUM ARBOREUM	BLACK AEONIUM	FLAT	10" O.C.
⊗	CYNODON DACTYLON- 'TIF DWARF'	HYBRID BERMUDA	SOD	
⊗	DROSANTHEMUM HISPIDUM	N.C.N.	FLAT	12" O.C.
⊗	ECHIVERIA AGAVOIDES	N.C.N.	1 GAL	10" O.C.
⊗	ERIGERON KARVINSKIANUS	SANTA BARBARA DAISY	1 GAL	18" O.C.
⊗	FESTUCA OVINA GLAUCA	SHEEP'S FOOT	1 GAL	12" O.C.
⊗	GAILLARDIA GRANDIFLORA	BLANKET FLOWER 'GOBLIN'	1 GAL	18" O.C.
⊗	LANTANA MONTEVIDENSIS 'SPREADING SUNSHINE'	SPREADING SUNSHINE	1 GAL	36" O.C.
⊗	LONICERA JAPONICA 'HALLYENA'	HONEYSUCKLE	FLAT	10" O.C.
⊗	MYOPORUM PARVIFOLIUM	N.C.N.	1 GAL	18" O.C.
⊗	ROSA 'CARPET ROSE' RED	CARPET ROSE - RED	2 GAL	30" O.C.
⊗	ROSMARINUS OFFICINALIS	ROSEMARY	1 GAL	24" O.C.
⊗	SEDUM RUBROINCTUM	PORK AND BEANS	FLAT	10" O.C.
⊗	VERBENA PERUVIANA 'PURPLE'	N.C.N.	FLAT	10" O.C.
⊗	SYNTHETIC TURF			

PLANTING PLAN - TREE & GROUNDCOVER-2



**RCB & Sons**  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11887 Rapolla Avenue,  
 Riverside California 92505  
 (951) 881-8377

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 for the location  
 of buried  
 utility lines.  
 Don't disrupt  
 vital services.

REF.	DESCRIPTION	APPR.	DATE

DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 DATE DRAWN: 04/14/10

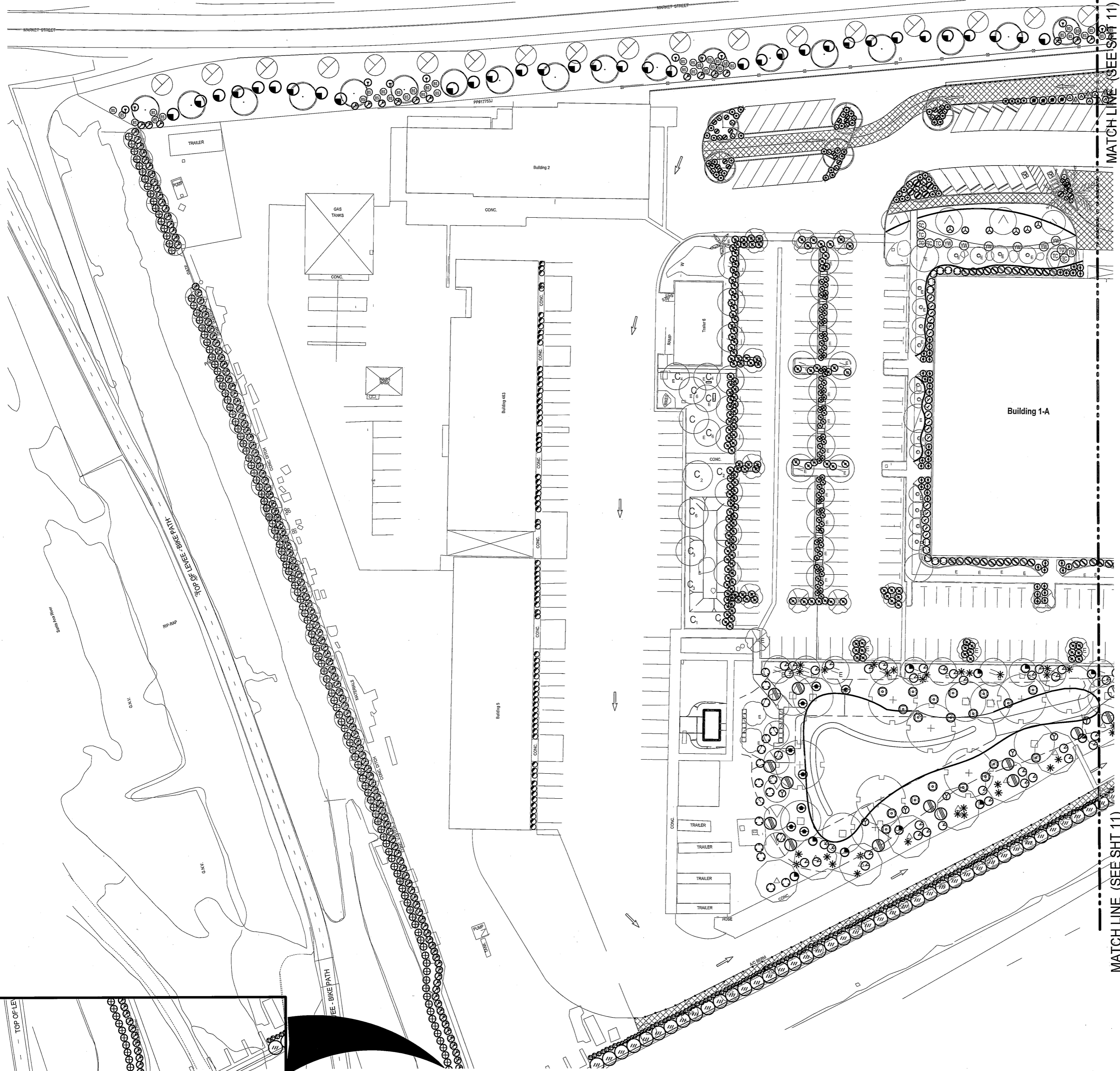
RECOMMENDED FOR APPROVAL BY: *Shachal Riquis*  
 DATE: 4/29/10

APPROVED BY: *Steve Thomas*  
 DATE: 06-29-10

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **9** OF **20**

WATER EFFICIENT LANDSCAPE CONVERSION  
 RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT, 4/29/10, 9:120



MATCH LINE (SEE SHT 11)

MATCH LINE (SEE SHT 11)

PLANTING LEGEND				
SHRUB				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
(A1)	ACHILLEA TOMENTOSA	WOOLLY YARROW	1 GAL	-
(A2)	ACHILLEA CLAVENNAE	SILVERY YARROW	1 GAL	-
(A3)	AEONIUUM 'ZWARTKOP'	N.C.N.	1 GAL	40
(A4)	AGAVE AMERICANA 'VARIGATED'	CENTURY PLANT	5 GAL	13
(A5)	AGAVE ATTENUATA	N.C.N.	5 GAL	-
(A6)	AGAVE PARRYI	N.C.N.	5 GAL	45
(A7)	AGAVE STRIATA	N.C.N.	5 GAL	-
(A8)	AGAVE VILMORINIANA	N.C.N.	5 GAL	11
(A9)	ALOE ARBORESCENS	TREE ALOE	5 GAL	38
(A10)	ALOE STRIATA	CORAL ALOE	5 GAL	31
(A11)	ANIGONANTHOS FLAVIDS (ALT. MARROW & YELLOW)	KANGAROO PAW	5 GAL	29
(A12)	AQUILEGIA FORMOSA	COLUMBINE	1 GAL	17
(A13)	ARTEMISIA 'POWIS CASTLE'	N.C.N.	1 GAL	-
(A14)	BOUGAINVILLEA SPECTABILIS	BOUGAINVILLEA 'SAN DIEGO RED'	1 GAL	53
(A15)	BUDDLEIA DAVIDII	BUTTERFLY BUSH	5 GAL	10
(A16)	CALYLOPHUS DRUMMONDIANUS	N.C.N.	1 GAL	38
(A17)	CISTUS PURPUREUS	ROCKROSE	1 GAL	10
(A18)	CISTUS SALVIFOLIUS	SAGE LEAF ROCK ROSE	5 GAL	26
(A19)	COTINUS COGGYGRIA 'ROYAL PURPLE'	SMOKE TREE	5 GAL	9
(A20)	CALLISTEMON VIMINALIS 'LITTLE JOHN'	WEEPING BOTTLEBRUSH	3" O.C.	5 GAL 279
(A21)	CASSIA ARTEMISIODIDES	FEATHERY CASSIA	5 GAL	12
(A22)	COTONEASTER DAMMERI 'LOWFAST'	BEARBERRY COTONEASTER	5 GAL	33
(A23)	DIETES IRIDIOIDES	FORTNIGHT LILY, ARICAN IRIS	5 GAL	-
(A24)	ECHVEERIA HYBRIDS	N.C.N.	12" O.C.	1 GAL 120
(A25)	ECHVEERIA AGAVOIDES	N.C.N.	12" O.C.	1 GAL -
(A26)	ECHIUUM CANDICANS (E. FASTUOSUM)	PRIDE OF MADEIRA	5 GAL	73
(A27)	ERIGERON KARVINSKIANUS	MEXICAN DAISY, SANTA BARBARA DAISY	1 GAL	34
(A28)	EUPHORBIA COTINIFOLIA	CARIBBEAN COPPER PLANT	15 GAL	7
(A29)	GALLARDIA X GRANDIFLORA 'GOBLIN'	BLANKET FLOWER	1 GAL	-
(A30)	GAURA LINDHEIMERI	WAND FLOWER	3" O.C.	1 GAL 140
(A31)	GERANIUM 'JOHNSON BLUE'	N.C.N.	1 GAL	16" O.C.
(A32)	HEMEROCALLIS SPP. 'SALMON'	SALMON DAYLILY	1 GAL	-
(A33)	HEMEROCALLIS HYBRIDS 'STELLA DE ORO'	DAYLILY	1 GAL	-
(A34)	HESPERALOE PARVIFLORA	RED YUCCA	5 GAL	16
(A35)	HETEROMELES ARBUTIFOLIA	TOYON	5 GAL	162
(A36)	HEUCHERA SANGUINEA	CORAL BELLS	1 GAL	43
(A37)	LAGERSTROEMIA INDICA 'DWARF PURPLE'	CRAPE MYRTLE	5 GAL	38
(A38)	LANTANA MONTEVIDENSIS	N.C.N.	1 GAL	142
(A39)	LANTANA 'SPREADING SUNSHINE'	LANTANA	5 GAL	12
(A40)	LAVANDULA STOECHAS	SPANISH LAVENDAR	5 GAL	15
(A41)	LEONOTIS LEONURUS	LION'S TAIL	5 GAL	7
(A42)	LIRIOPE MUSCARI	BIG BLUE LILY TURF	1 GAL	18" O.C.
(A43)	LIRIOPE MUSCARI	BIG BLUE LILY TURF 'SILVERY SUNPROOF'	5 GAL	45
(A44)	MAHONIA REPENS	CREeping MAHONIA	5 GAL	18
(A45)	MIMULUS HYBRIDUS 'ORANGE'	GERANIUM	1 GAL	5
(A46)	MUHLENBERGIA CAPILLARIS	PINK MUHLY	1 GAL	66
(A47)	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	19
(A48)	NANDINA DOMESTICA 'HARBOUR DWARF'	HEAVENLY BAMBOO, SACRED BAMBOO	5 GAL	17
(A49)	PENNISETUM SETACEUM 'RUBRUM'	FOUNTAIN GRASS	1 GAL	44
(A50)	PENSTEMON SPECTABILIS	ROYAL BEARD TONGUE	1 GAL	6
(A51)	PHILODENDRON 'XANADU'	XANADU PHILODENDRON	5 GAL	10
(A52)	PHORMIUM TENAX 'MAORI CHIEF'	NEW ZEALAND FLAX	5 GAL	6
(A53)	PHORMIUM TENAX 'YELLOW WAVE'	NEW ZEALAND FLAX	5 GAL	13
(A54)	PHORMIUM HYBRIDS 'MAORI MADEN'	NEW ZEALAND FLAX	5 GAL	7
(A55)	PHORMIUM RUBRUM	FLAX	5 GAL	7
(A56)	PITTIOSPORUM VARIGATA	MOCK ORANGE	5 GAL	100
(A57)	PUNICIA GRANTUM 'CHICO'	'DWARF CARNATION' FLOWERED POMEGRANITE	5 GAL	28
(A58)	ROMNEYA COULTERI	MATILIA POPPY	1 GAL	13
(A59)	ROSA 'CARPET ROSE'	RED CARPET ROSE	2 GAL	4
(A60)	ROSA 'ICEBERG'	ROSE	5 GAL	23
(A61)	ROSA RUGOSA	RAMANAS ROSE, SEA TOMATO	5 GAL	18
(A62)	ROSEMARINUS 'KEN TAYLOR'	ROSEMARY	5 GAL	10
(A63)	SALVIA LEUCOPHYLLA	PURPLE SAGE, GRAY SAGE	1 GAL	-
(A64)	SALVIA GREGGII	AUTUMN SAGE	5 GAL	25
(A65)	SALVIA MELLIFERA	BLACK SAGE, HONEY SAGE	5 GAL	9
(A66)	SALVIA OFFICINALIS 'TRICOLOR'	GARDEN SAGE, COMMON SAGE	1 GAL	13
(A67)	TAGETES PATULA	FRENCH MARGOLD	5 GAL	3
(A68)	TEUCRIUM CHAMAEDRY'S	GERMANDER	5 GAL	18
(A69)	VERBENA PERUVIANA	N.C.N.	1 GAL	19
(A70)	WESTRINGIA ROSMARINIFORMIS	'WYNYABBIE GEM'	5 GAL	-
(A71)	XYLOSMA CONGESTUM	SHINY CONGESTUM	5 GAL	108

PLANTING PLAN - SHRUBS 1

1" = 30'-0" NORTH

REGISTERED LANDSCAPE ARCHITECT  
RIVERSIDE COUNTY, CALIFORNIA

**RCB & Sons**  
LANDSCAPE ARCHITECT  
LANDSCAPE CONTRACTOR  
11997 Agapella Avenue,  
Riverside, California 92503  
(951) 509-4377  
Landscape Architect  
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BENCH MARK

REVISIONS

DESIGNED BY: *Shawn Owens*

DATE DRAWN: 04/14/10

DATE: 6/29/10

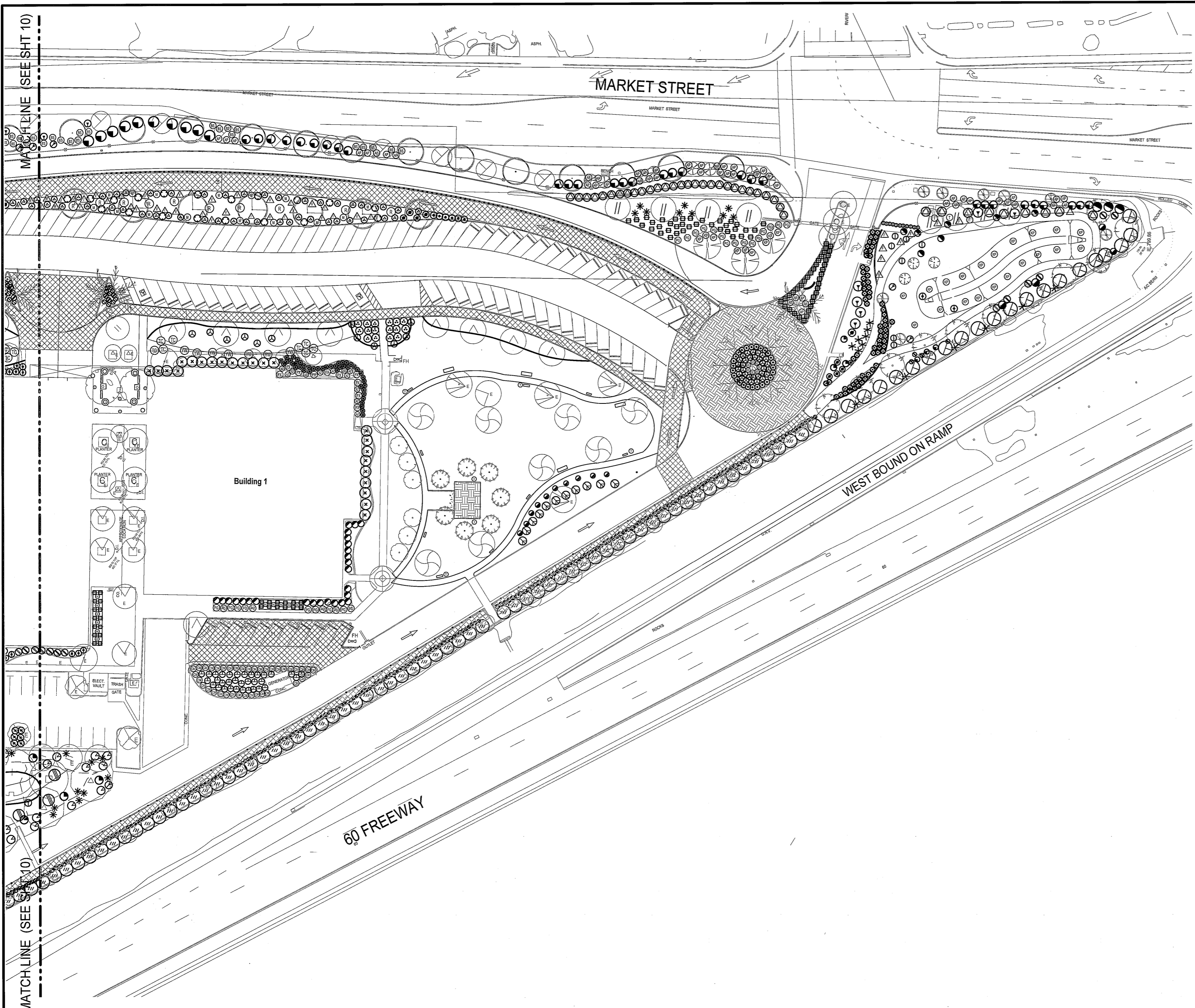
APPROVED BY: *Shawn Owens*

DATE: 6-29-10

WATER EFFICIENT LANDSCAPE CONVERSION

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
DRAWING NO. 9-120  
SHEET NO. 10 OF 20



PLANTING LEGEND				
SHRUB				
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY.
(1)	ACHILLEA TOMENTOSA	WOOLLY YARROW	1 GAL	-
(2)	ACHILLEA CLAVENNAE	SILVERY YARROW	1 GAL	-
(A2)	AEONIUM 'ZWARTKOP'	N.C.N.	1 GAL	40
(3)	AGAVE AMERICANA 'VARIGATED'	CENTURY PLANT	5 GAL	13
(4)	AGAVE ATTENUATA	N.C.N.	5 GAL	-
(AP)	AGAVE PARRYI	N.C.N.	5 GAL	45
(A)	AGAVE STRIATA	N.C.N.	5 GAL	-
(AV)	AGAVE VILMORINIANA	N.C.N.	5 GAL	11
*	ALOE ARBORESCENS	TREE ALOE	5 GAL	38
(P)	ALOE STRIATA	CORAL ALOE	5 GAL	31
(NP)	ANGONANTHOS FLAVIDUS (ALT. MARRON & YELLOW)	KANGAROO PAW	5 GAL	29
(5)	AQUILEGIA FORMOSA	COLUMBINE	1 GAL	17
(6)	ARTEMISIA 'POWIS CASTLE'	N.C.N.	1 GAL	-
(BS)	BOUGAINVILLEA SPECTABILIS	BOUGAINVILLEA 'SAN DIEGO RED'	1 GAL	53
(7)	BUDDLEIA DAVIDII	BUTTERFLY BUSH	5 GAL	10
(8)	CALYLOPHUS DRUMMONDIANUS	N.C.N.	1 GAL	38
(9)	CISTUS PURPUREUS	ROCKROSE	1 GAL	10
(10)	CISTUS SALVIFOLIUS	SAGE LEAF ROCK ROSE	5 GAL	26
(11)	COTINUS COGUYGRIA 'ROYAL PURPLE'	SMOKE TREE	5 GAL	9
(12)	CALLISTEMON VIMINALIS 'LITTLE JOHN'	WEeping BOTTLEBRUSH	3" O.C.	5 GAL 279
(13)	CASSIA ARTEMISIODIDES	FEATHERY CASSIA	5 GAL	12
(14)	COTONEASTER DAMMERI 'LOWFAST'	BEARBERRY COTONEASTER	5 GAL	33
(15)	DIETES IRIDIODES	FORTNIGHT LILY, ARICAN IRIS	5 GAL	-
(16)	ECHVEERIA HYBRIDS	N.C.N.	12" O.C.	1 GAL 120
(17)	ECHVEERIA AGAVOIDES	N.C.N.	12" O.C.	1 GAL -
(18)	ECHIUM CANDICANS (E. FASTUOSUM)	PRIDE OF MADEIRA	5 GAL	73
(19)	ERIGERON KARVINSKIANUS	MEXICAN DAISY, SANTA BARBARA DAISY	1 GAL	34
(20)	EUPHORBIA COTINIFOLIA	CARIBBEAN COPPER PLANT	15 GAL	7
(21)	GALLARDIA X GRANDIFLORA 'GOBLIN'	BLANKET FLOWER	1 GAL	-
(22)	GAURA LINDHEIMERI	WAND FLOWER	3" O.C.	1 GAL 140
(23)	GERANIUM 'JOHNSON BLUE'	N.C.N.	1 GAL	16" O.C.
(24)	HEMEROCALLIS SPP. 'SALMON'	SALMON DAYLILY	1 GAL	-
(25)	HEMEROCALLIS HYBRIDS 'STELLA DE ORO'	DAYLILY	1 GAL	-
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(39)	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	19
(40)	NANDINA DOMESTICA 'HARBOR DWARF'	HEAVENLY BAMBOO, SACRED BAMBOO	5 GAL	17
(41)	PENNISETUM SETACEUM 'RUBRUM'	FOUNTAIN GRASS	1 GAL	44
(42)	PENSTEMON SPECTABILIS	ROYAL BEARD TONGUE	1 GAL	6
(43)	PHILODENDRON 'XANADU'	XANADU PHILODENDRON	5 GAL	10
(44)	PHORMIUM TENAX 'MAORI CHIEF'	NEW ZEALAND FLAX	5 GAL	6
(45)	PHORMIUM TENAX 'YELLOW WAVE'	NEW ZEALAND FLAX	5 GAL	13
(46)	PHORMIUM HYBRIDS 'MAORI MADEN'	NEW ZEALAND FLAX	5 GAL	7
(47)	PHORMIUM RUBRUM	FLAX	5 GAL	7
(48)	PITTOSPORUM VARIGATA	MOCK ORANGE	5 GAL	100
(49)	PUNICIA GRANTUM 'CHICO'	'DWARF CARNATION' FLOWERED POMEGRANITE	5 GAL	28
(50)	ROMNEYA COULTERI	MATILJA POPPY	1 GAL	13
(51)	ROSA 'CARPET ROSE'	RED CARPET ROSE	2 GAL	4
(52)	ROSA 'ICEBERG'	ROSE	5 GAL	23
(53)	ROSA RUGOSA	RAMANAS ROSE, SEA TOMATO	5 GAL	18
(54)	ROSEMARINUS 'KEN TAYLOR'	ROSEMARY	5 GAL	10
(55)	SALVIA LEUCOPHYLLA	PURPLE SAGE, GRAY SAGE	1 GAL	-
(56)	SALVIA GREGGII	AUTUMN SAGE	5 GAL	25
(57)	SALVIA MELLIFERA	BLACK SAGE, HONEY SAGE	5 GAL	9
(58)	SALVIA OFFICINALIS 'TRICOLOR'	GARDEN SAGE, COMMON SAGE	1 GAL	13
(59)	TAGETES PATULA	FRENCH MARIGOLD	5 GAL	3
(60)	TEUCRUM CHAMAEDRYS	GERMANDER	5 GAL	18
(61)	VERBENA PERUVIANA	N.C.N.	1 GAL	19
(62)	WESTRINGIA ROSMARINIFORMIS	'WYNYABBIE GEM'	5 GAL	-
(63)	XYLOSMA CONGESTUM	SHINY CONGESTUM	5 GAL	108

PLANTING PLAN - SHRUBS 2

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT, 9/24/01



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 Don't disrupt vital services.  
 Call before you dig.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

**WATER EFFICIENT LANDSCAPE CONVERSION**

DESIGNED BY: *Steve Thomas*  
 DRAWN BY: *Steve Thomas*  
 DATE DRAWN: 04/14/10

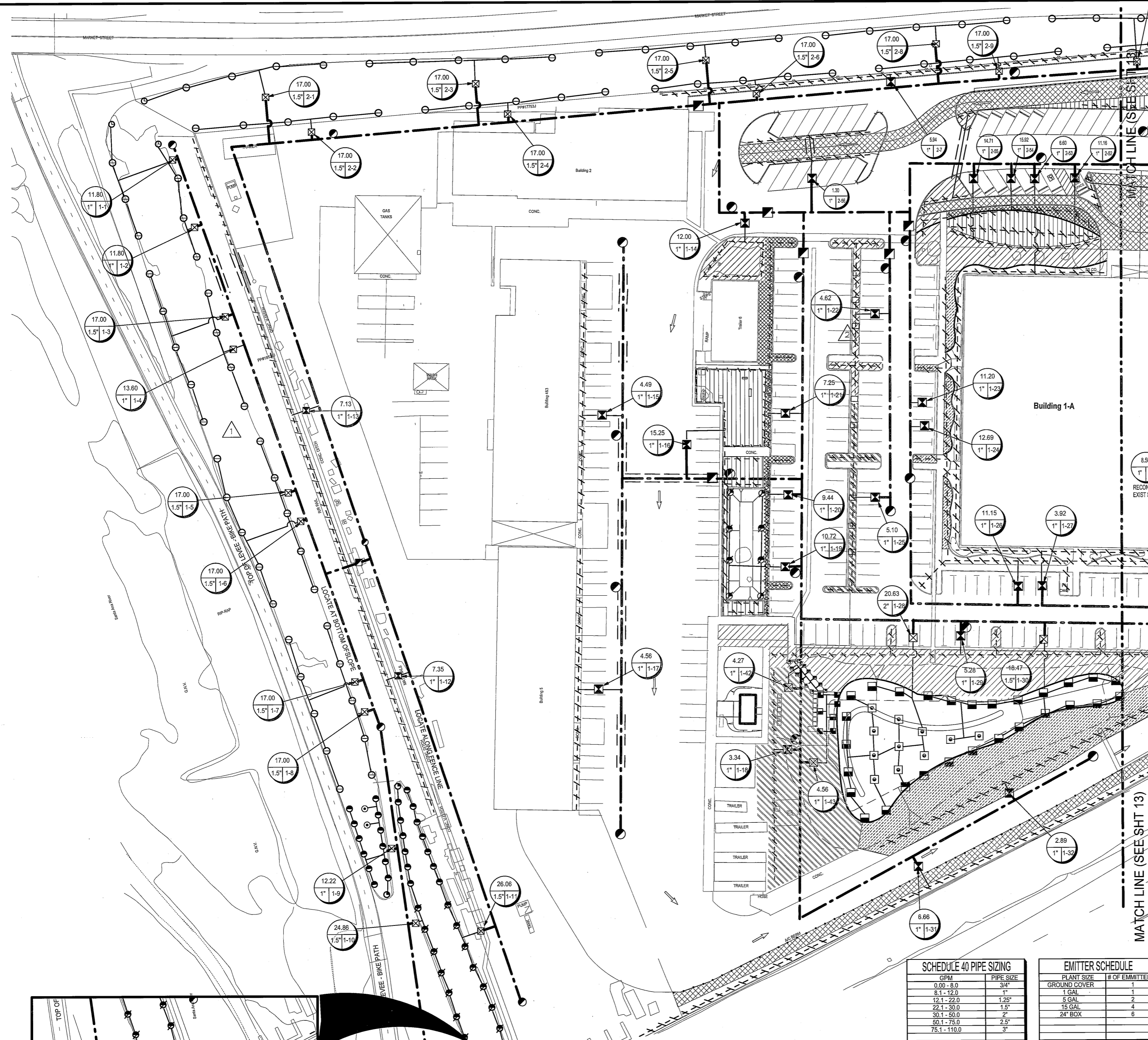
RECOMMENDED FOR APPROVAL BY: *Steve Thomas*  
 DATE: 6/29/10

APPROVED BY: *Steve Thomas*  
 DATE: 6-29-10

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-120  
 SHEET NO. 11 OF 20



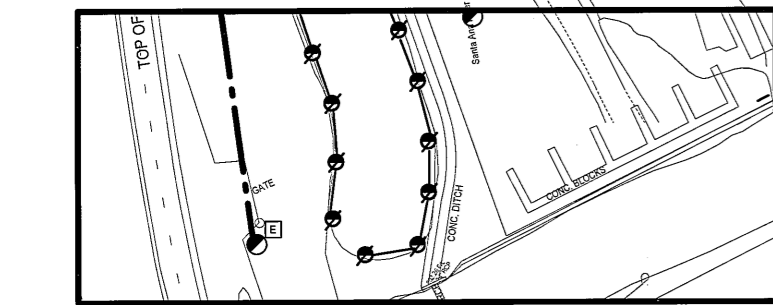


### IRRIGATION LEGEND

SYMBOLS	DESCRIPTION	GALLONS PER MIN.			PSI	RADIUS
		Q	H	F		
⊠	HUNTER INST-06-CV-R-8" SERIES	.24	.47	.97	30	8'
⊡	HUNTER I-20HP-ARS	1.60	3.40	7.60	50	45'
⊢	HUNTER INST-12-CV-R-MP-2000 ROTOR	.40	.74	1.47	30	19'
⊣	RAINBIRD 1401	.50	-	-	30	30'
⊤	HUNTER INST-06-CV-R-MP-2000 ROTOR	.40	.74	1.47	30	20'
⊥	HUNTER INST-12-CV-R-MP-3000 ROTOR	.86	1.82	3.64	30	30'
⊦	FEBCO 825 YA (BACKFLOW PREVENTER)	-	-	-	-	-
⊧	WILKINS 500-2.5" PRESSURE REGULATOR (SET TO 85 PSI)	-	-	-	-	-
⊨	WATER METER BY OTHERS	-	-	-	-	-
⊩	HUNTER ACC-99D IN LEMEUR SG-LT-SS WITH OPTION "A" STAINLESS STEEL CABINET	-	-	-	-	-
⊪	HUNTER RAIN CLIK	-	-	-	-	-
⊫	GRISWOLD DW-DWS-3" (MASTER VALVE)	-	-	-	-	-
⊬	HUNTER HFS FLOW CLIK WITH FCT 308 SCH 80 BODY	-	-	-	-	-
⊭	IRROMETER WEM-DC-T	-	-	-	-	-
⊮	LOCATION #1 - NORHEAST LEVEE SLOPE	-	-	-	-	-
⊯	LOCATION #2 - NORTH PARKING LOT BED	-	-	-	-	-
⊰	LOCATION #3 - EAST OFFICE	-	-	-	-	-
⊱	LOCATION #4 - SOUTH TURF	-	-	-	-	-
⊲	NIBCO T-580 2-1/2" (BALL VALVE)	-	-	-	-	-
⊳	RAINBIRD EFB-CP-NP-PRS-D-HAN (SIZE PER PLAN) (REMOTE CONTROL VALVE)	-	-	-	-	-
⊴	RAINBIRD XCZ-B-COM-NP (CONTROL VALVE)	-	-	-	-	-
⊵	RAINBIRD 33DNP (QUICK COUPLER)	-	-	-	-	-
⊶	SCH 40 LATERAL ALERT LINE (SIZE PER SCHEDULE)	-	-	-	-	-
⊷	SCH 40 LATERAL (SIZE PER SCHEDULE) ALERT LINE	-	-	-	-	-
⊸	SCH 40 MAINLINE (ALERT LINE) 2-1/2"	-	-	-	-	-
⊹	SCH 40 SLEEVE (3 TIMES PIPE SIZE)	-	-	-	-	-
⊺	NOT SHOWN	-	-	-	-	-
⊻	DECODER WIRE - PAIGE # IDS 14/2 DECODER WIRE	-	-	-	-	-
⊼	RB LDP-09-12 DRIP HOSE @ 12" O.C. (NON POTABLE) SEE NOTES THIS PAGE AND DETAIL SHT 16	-	-	-	-	-

- ### IRRIGATION NOTES
- It is the intent to prepare this system for Reclaimed Water. All new irrigation construction and components shall adhere to current reclaimed water guidelines as determined by City of Riverside, State of California and any other local codes. Eastern Municipal guidelines shall be used as a minimum standard.
  - All Junction boxes, valve boxes, wire splices, filters, regulators, quick couplers ... shall be purple plastic with bolting lid.
  - All valves shall be in a standard 11 x 17 valve box with bolting lid. There shall be only 1 valve per box.
  - Some spray heads may require the use of Rainbird PCS screens to attain proper coverage. This shall be the contractor's responsibility to install.
  - Drawings are schematic. Mainline, laterals and other symbols may be shown in hardscape areas for clarity. All irrigation components shall be located in landscape areas.
  - There shall be no turf valves located in turf areas
  - All pipe under hardscape areas shall be sleeved with Schedule 40 pipe, 2 times the size of the pipe. See sleeving plan for additional directions.
  - All systems shall be operated, adjusted and repaired as necessary
  - There may be some existing systems that need modifying in order to accommodate new areas.
  - All valves shall be identified by Christy Reclaimed Valve I.D. tags by controller and valve number.
  - As built drawings: RCFCD shall perform all services for GPS AS-BUILDING. It is the contractor's responsibility to notify RCFCD 72 hours in advance for work task. No trenches or components shall be backfilled prior to GPS work. Components that are to be located by GPS are: VALVES, QUICK COUPLERS, MAINLINE AND CONTROL WIRE, CONTROLLERS, AND SLEEVING. Contractor shall receive written authorization by RCFCD before proceeding with backfilling.
  - Special Note: This is a 2 Wire Decoder system.
  - Each valve shall have a Hunter ICD-100 Decoder with surge protector.
  - DRIP EMMITTERS:  
In cases where Rainbird LDL drip hose is not designated, the following criteria shall be used. Rainbird XB-10-PC emitters shall be installed into 1/2" p.o. hose. Refer to emitter legend for quantities per plant.
  - EQUIPMENT RETURN - contractor shall remove and return to owner all equipment not being used (clocks, heads, valves, etc.).
  - DRIP IRRIGATION
  - It is the intent of these plans to designate valve separation by the use of various group symbols. That is, each valve is encapsulated with a different line pattern.
  - Contractor to maintain a minimum of 18" between separate valve systems.
  - Contractor is to submit a colored schematic prior to pipe installation. Schematic must be approved prior to piping.
  - All valves shall receive the following:  
1. Heat brand clock number and valve number on lid. Letters shall be a minimum of 3" in height.  
2. "Purple" valve cattle tag affixed to control wire inside box (Christy or equal)  
3. "Warning" - Non potable safety cattle tag affixed to control wire inside box (Christy or equal).
  - It will be the landscape contractor's responsibility to maintain irrigation to all "Protected" plant material (plants not being removed) during construction.
  - The landscape contractor is responsible for connecting new supplies to systems that are to be protected and are not a part of the new construction area.
  - The location of drip hose shall be in coordination with the type of plant in that zone. Hoses shall be located so emission of water from emitters is at a higher elevation of the plant it is irrigating. Contractor shall install hose so as to adequately provide water to all plants within each zone.
  - Each drip valve shall have 1 - NETA-FIM TLF 1G8 air relief valve installed at the highest elevation point of that system. Valve shall be installed in 7" round reclaimed RCV box (RB VB 7RNDP).
  - Each drip valve shall have 1 NETA-FIM TL050 MIFV flush valve installed at the lowest elevation point of that system. Valve shall be installed in 7" round Reclaimed RCV Box (RB VB 7RNDP). Drain valve shall remain exposed and have 1/2 c.f. of 3/4" crushed rock as drain material below it.
  - Contractor shall consult with Irrometer prior to bidding and installation. Affected items are: sensor wire, sensor locations and sequencing of valves with respect to controller and microzones.

SCHEDULE 40 PIPE SIZING		EMITTER SCHEDULE	
GPM	PIPE SIZE	PLANT SIZE	# OF EMMITTERS
0.00 - 8.0	3/4"	GROUND COVER	1
8.1 - 12.0	1"	1 GAL	1
12.1 - 22.0	1.25"	5 GAL	2
22.1 - 30.0	1.5"	15 GAL	4
30.1 - 50.0	2"	24" BOX	6
50.1 - 75.0	2.5"		
75.1 - 110.0	3"		



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 Don't dig until you know.

REV.	DESCRIPTION	DATE

**WATER EFFICIENT LANDSCAPE CONVERSION**

DESIGNED BY: *Shad M. Ringis*  
 DRAWN BY: *Shad M. Ringis*  
 DATE DRAWN: 04/14/10

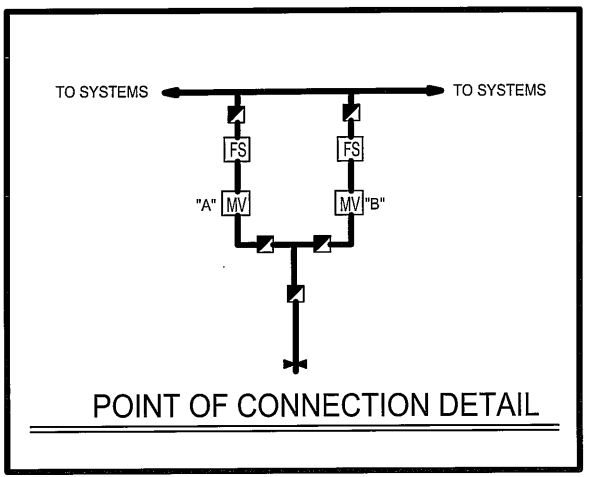
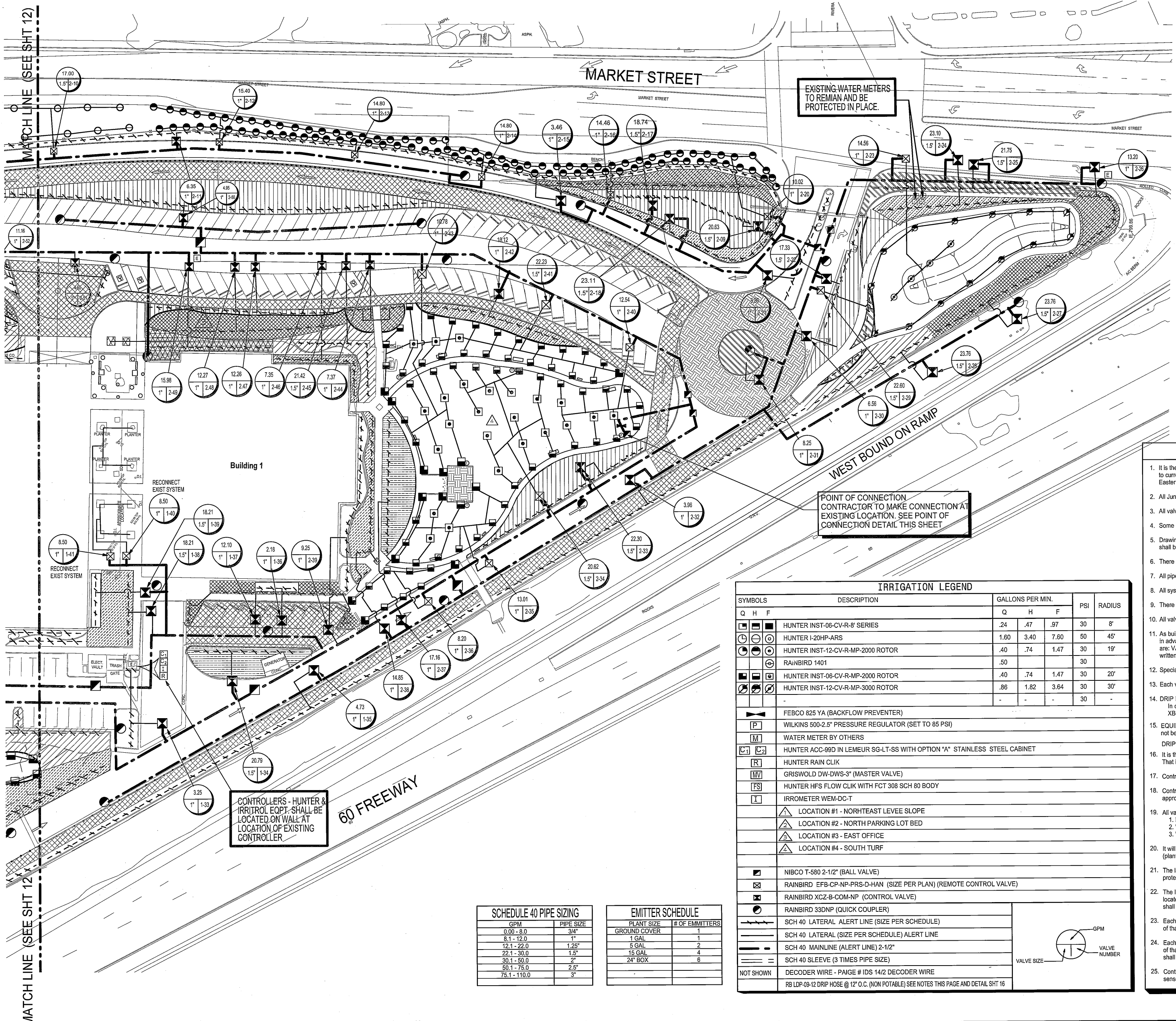
RECOMMENDED FOR APPROVAL BY: *Shad M. Ringis*  
 DATE: 6/29/10

APPROVED BY: *Shad M. Ringis*  
 DATE: 6/29/10

**IRRIGATION PLAN - 1**

RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
 DRAWING NO. **9-120**  
 SHEET NO. **12 OF 20**



WORSE CASE VALVE CONDITION	VALVE #	SIZE	GPM	
	RCV # 2-29	1.5"	22.60	
LOSSES				SUMMARY
METER	1.5"	-1.5		STATIC PRESSURE 85
BACKFLOW		-11		SYSTEM LOSSES -21.62
MASTER VALVE		-0.6		AVAILABLE 63.38
FLOW SENSOR		-1.25		HEAD REQUIREMENT -30
MAINLINE (7.32')		-1.24		SAFETY FACTOR 33.38
FITTINGS (10% OF MAIN)		-0.13		
LATERALS		-3.5		
RCV		-2.4		
TOTAL LOSSES		-21.62		

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### IRRIGATION LEGEND

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[Symbol]	HUNTER INST-12-CV-R-MP-2000 ROTOR	.40	.74	1.47	30	19"
[Symbol]	RAINBIRD 1401	.50			30	
[Symbol]	HUNTER INST-06-CV-R-MP-2000 ROTOR	.40	.74	1.47	30	20"
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[Symbol]	WILKINS 500-2.5" PRESSURE REGULATOR (SET TO 85 PSI)					
[Symbol]	WATER METER BY OTHERS					
[Symbol]	HUNTER ACC-99D IN LEMEURE SG-LT-SS WITH OPTION "A" STAINLESS STEEL CABINET					
[Symbol]	HUNTER RAIN CLIK					
[Symbol]	GRISWOLD DW-DWS-3" (MASTER VALVE)					
[Symbol]	HUNTER HFS FLOW CLIK WITH FCT 308 SCH 80 BODY					
[Symbol]	IRROMETER WEM-DC-T					
[Symbol]	LOCATION #1 - NORHTEAST LEEVEE SLOPE					
[Symbol]	LOCATION #2 - NORTH PARKING LOT BED					
[Symbol]	LOCATION #3 - EAST OFFICE					
[Symbol]	LOCATION #4 - SOUTH TURF					
[Symbol]	NIBCO T-580 2-1/2" (BALL VALVE)					
[Symbol]	RAINBIRD EFB-CP-NP-PRS-D-HAN (SIZE PER PLAN) (REMOTE CONTROL VALVE)					
[Symbol]	RAINBIRD XCZ-B-COM-NP (CONTROL VALVE)					
[Symbol]	RAINBIRD 33DNP (QUICK COUPLER)					
[Symbol]	SCH 40 LATERAL ALERT LINE (SIZE PER SCHEDULE)					
[Symbol]	SCH 40 LATERAL (SIZE PER SCHEDULE) ALERT LINE					
[Symbol]	SCH 40 MAINLINE (ALERT LINE) 2-1/2"					
[Symbol]	SCH 40 SLEEVE (3 TIMES PIPE SIZE)					
[Symbol]	NOT SHOWN					
[Symbol]	DECODER WIRE - PAIGE # IDS 14/2 DECODER WIRE					
[Symbol]	RB LDP-09-12 DRIP HOSE @ 12" O.C. (NON POTABLE) SEE NOTES THIS PAGE AND DETAIL SHT 16					

GPM	PIPE SIZE
0.00 - 8.0	3/4"
8.1 - 12.0	1"
12.1 - 22.0	1.25"
22.1 - 30.0	1.5"
30.1 - 50.0	2"
50.1 - 75.0	2.5"
75.1 - 110.0	3"

PLANT SIZE	# OF EMMITTERS
GROUND COVER	1
1 GAL	1
5 GAL	2
15 GAL	4
24" BOX	6

MATCH LINE (SEE SHT 12)

1" = 30'-0" NORTH

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REVISIONS

NO.	DESCRIPTION	APPR.	DATE

DESIGNED BY: *Small*  
DRAWN BY: *Small*  
DATE DRAWN: 04/14/10

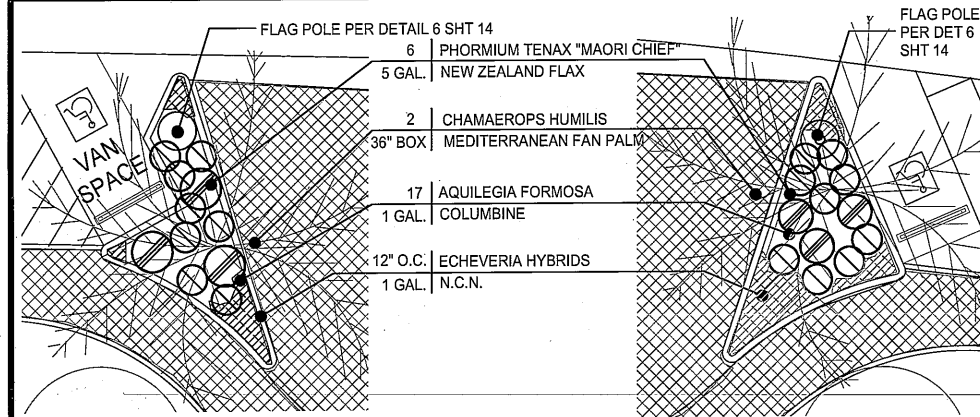
APPROVED BY: *Small*  
DATE: 6/29/10

APPROVED BY: *Small*  
DATE: 06-29-10

**WATER EFFICIENT LANDSCAPE CONVERSION**

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

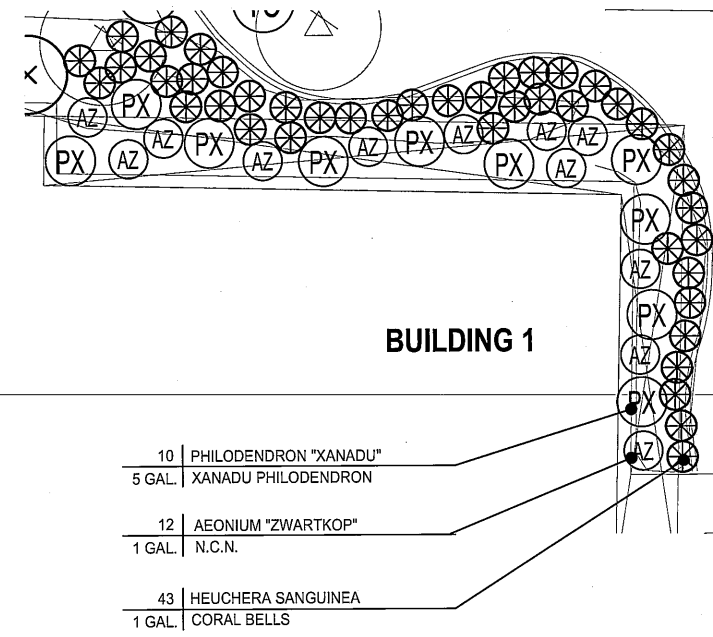
PROJECT NO. **1-0-00001**  
DRAWING NO. **9-120**  
SHEET NO. **13** OF **20**



**RAISED PLANTERS @ BUILDING 1A ENTRANCE**

1" = 10'-0"

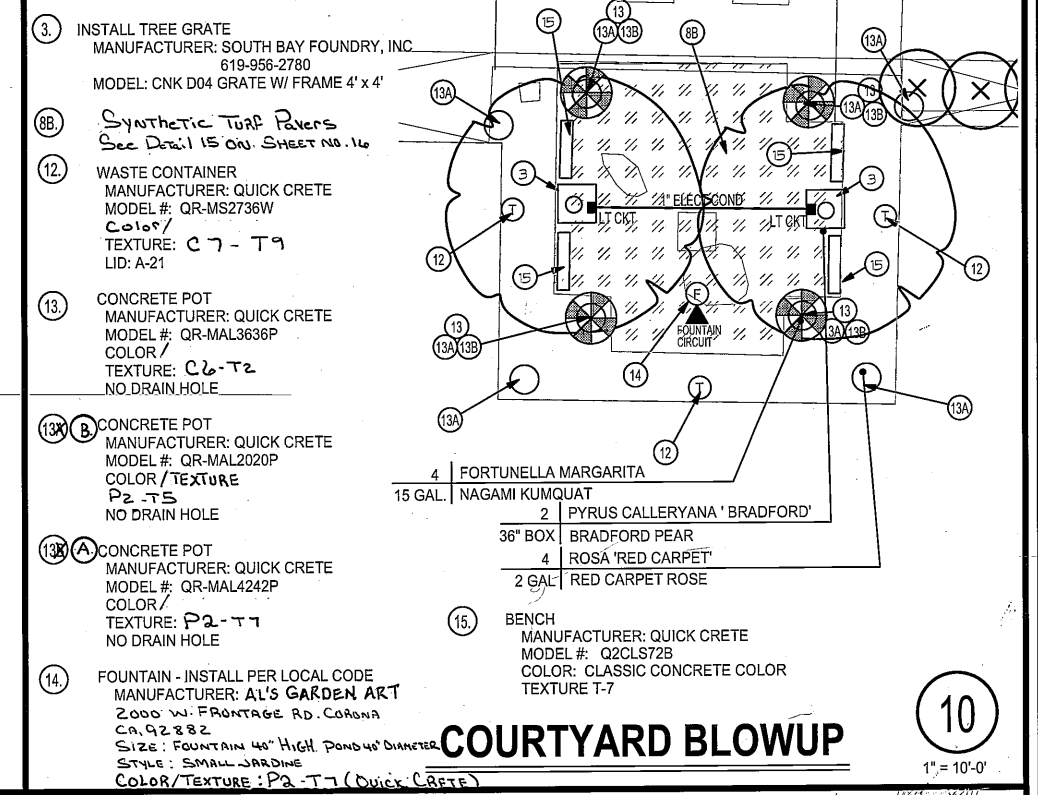
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**SOUTH EAST CORNER BUILDING 1 PLANTER**

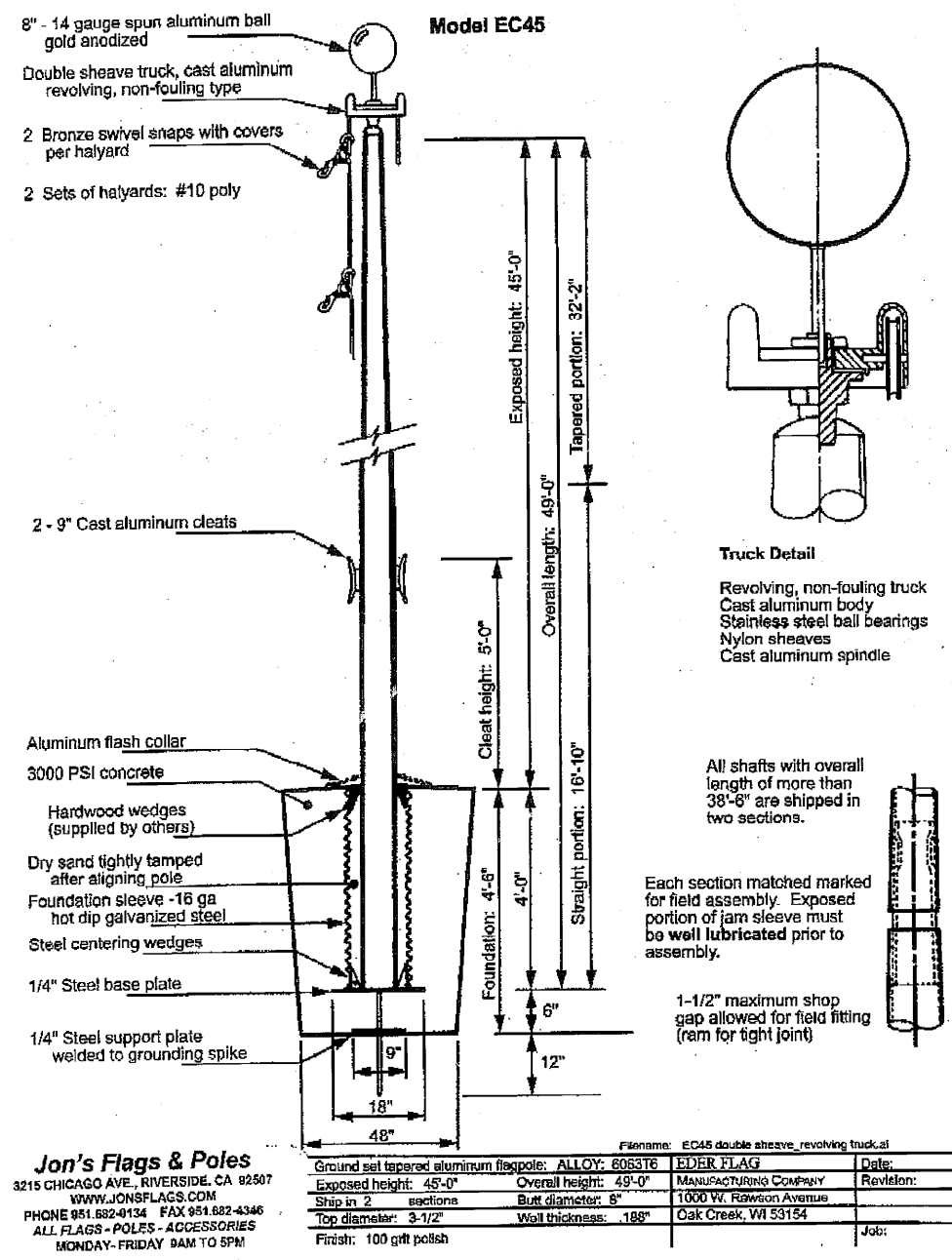
1" = 10'-0"

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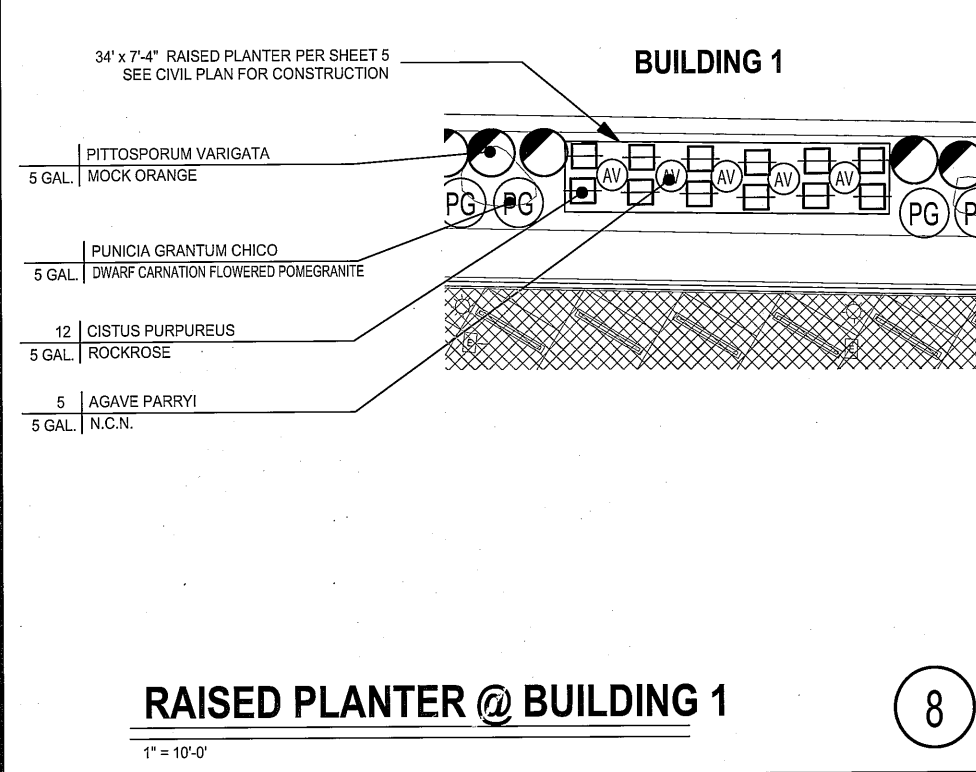


**COURTYARD BLOWUP**

10



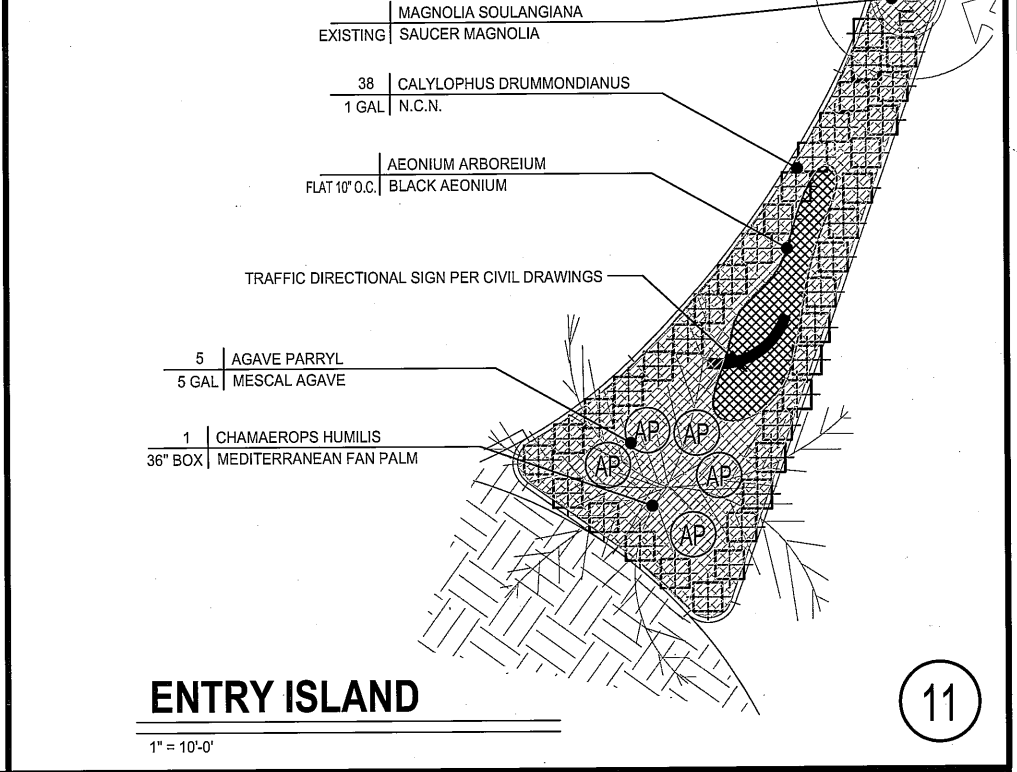
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**RAISED PLANTER @ BUILDING 1**

1" = 10'-0"

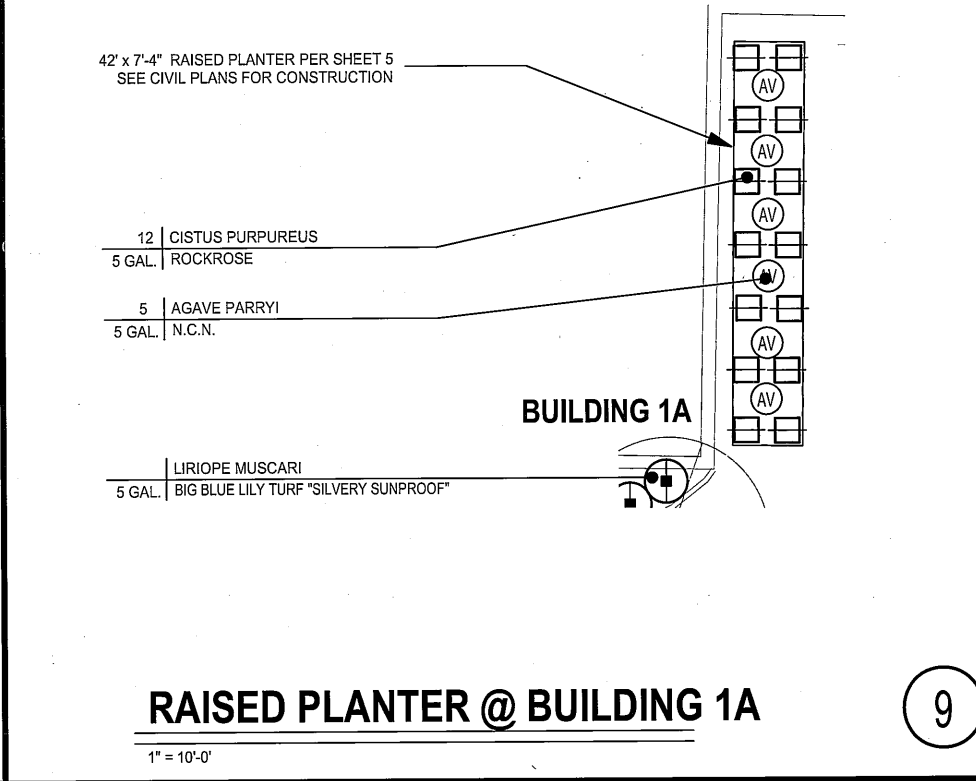
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**ENTRY ISLAND**

1" = 10'-0"

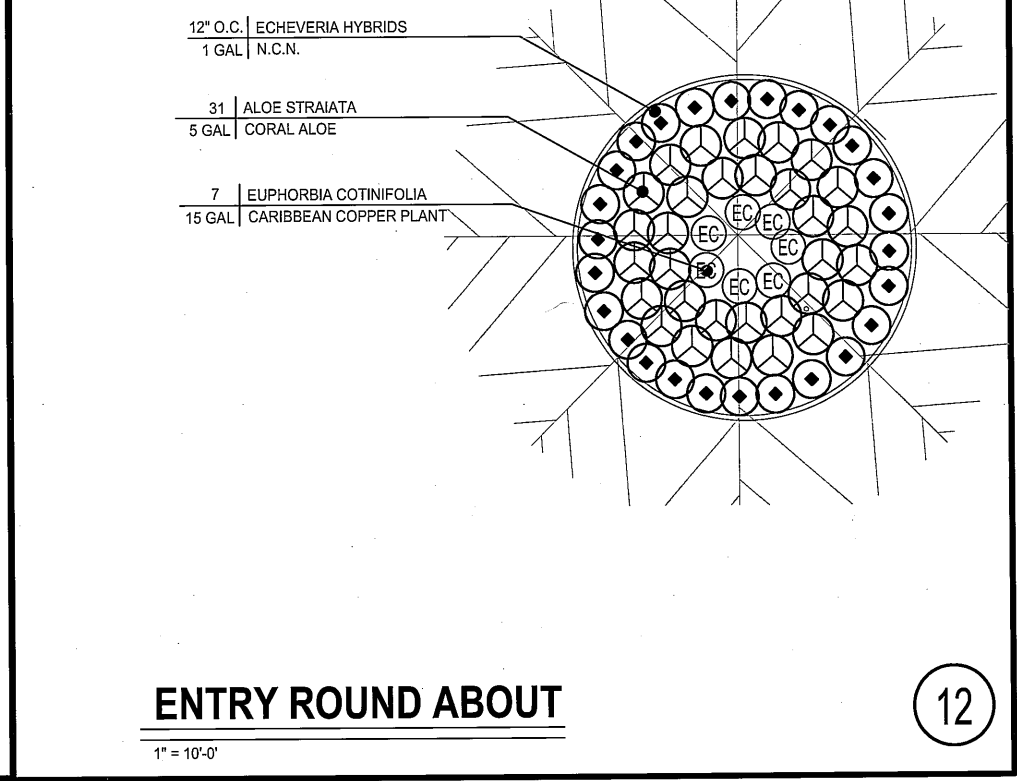
11



**RAISED PLANTER @ BUILDING 1A**

1" = 10'-0"

9



**ENTRY ROUND ABOUT**

1" = 10'-0"

12

REFER TO THE FOLLOWING SHEETS CORRESPONDING LEGENDS  
 CONSTRUCTION - SHEET 4  
 TREE AND GROUND COVER - SHEET 8  
 SHRUBS - SHEET 10

**PLANTING BLOWUP DETAILS**

NORTH

RCB & Sons  
 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11801 Rappahannock Avenue,  
 RIVERSIDE CALIFORNIA 92503  
 (951) 939-8977  
 License No. 3299

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 BENCH MARK  
 Don't dig until you call U.S.A. Toll Free

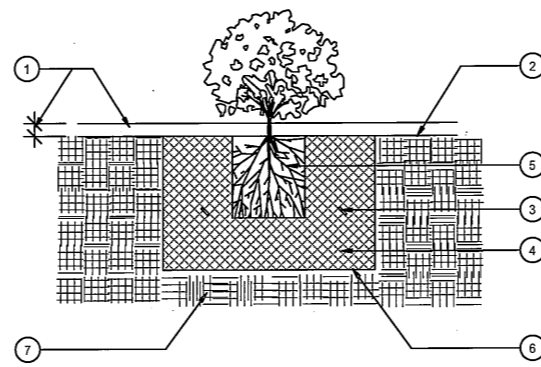
REVISIONS	DATE	DESCRIPTION

WATER EFFICIENT LANDSCAPE CONVERSION

DESIGNED BY: *Steve Thomas*  
 DRAWN BY: *Steve Thomas*  
 DATE DRAWN: 04/14/10  
 DATE: 6/29/10  
 APPROVED BY: *Steve Thomas*  
 DATE: 06-29-10

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-120  
 SHEET NO. 14 OF 20

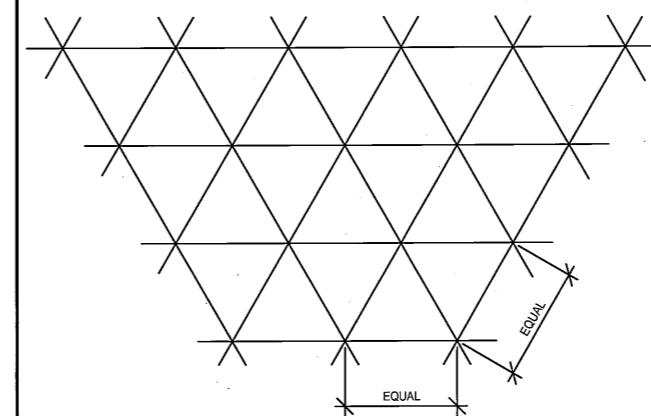


**LEGEND:**  
 1. SHREDDED BARK MULCH PER DETAIL  
 2. FINISH GRADE  
 3. FERTILIZER TABLETS PER SPECIFICATIONS  
 4. BACKFILL MIX AND METHOD PER SPECIFICATIONS AND/OR NOTES  
 5. SHRUB ROOTBALL  
 6. PLANTING PIT SHALL BE TWO TIMES THE DIAMETER OF ROOTBALL  
 7. UNDISTURBED NATIVE SOIL

**NOTES:**  
 1. UNTANGLE MATTED ROOTS BY LOOSENING ALL ROOTS AT EDGE OF ROOTBALL WITH WATER FROM HOSE. DO NOT CRACK ROOTBALL.

**SHRUB PLANTING**  
 NOT TO SCALE

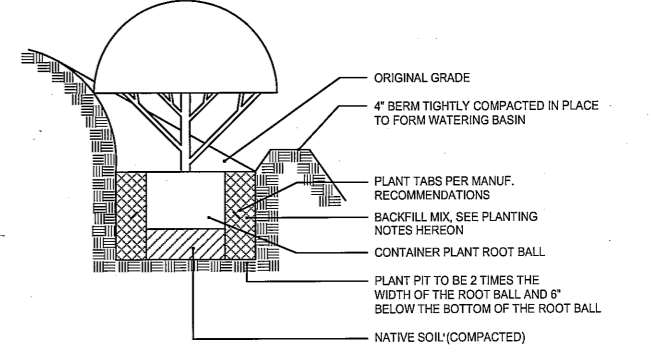
7



**NOTES:**  
 ALL SHRUBS AND GROUNDCOVER SHALL BE PLANTED AT EQUAL TRIANGULAR SPACING UNLESS OTHERWISE INDICATED ON PLANS.

**GROUNDCOVER SPACING**  
 NOT TO SCALE

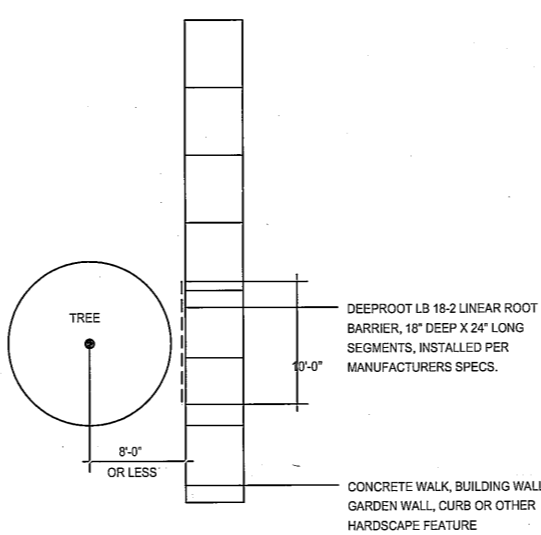
4



**NOTE:**  
 UNTANGLE MATTED ROOTS BY LOOSENING ALL ROOTS AT EDGE OF ROOT BALL WITH WATER FROM HOSE. DO NOT CRACK ROOT BALL.

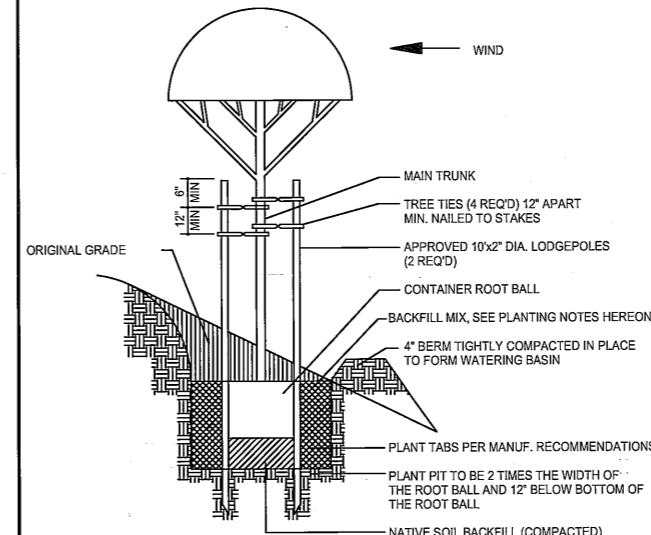
**SHRUB INSTALLATION ON SLOPE**  
 NOT TO SCALE

1



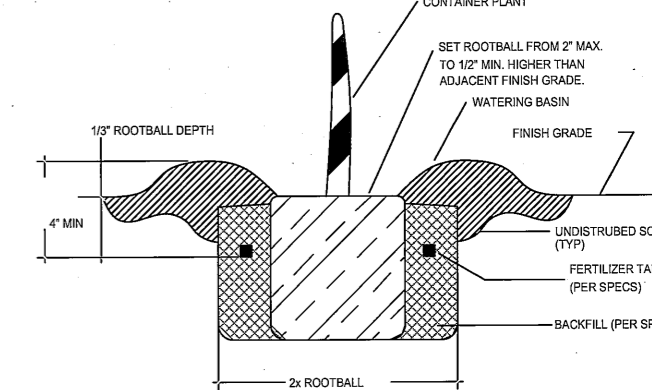
**ROOT BARRIER DETAIL**  
 NOT TO SCALE

8



**TREE INSTALLATION ON SLOPE**  
 NOT TO SCALE

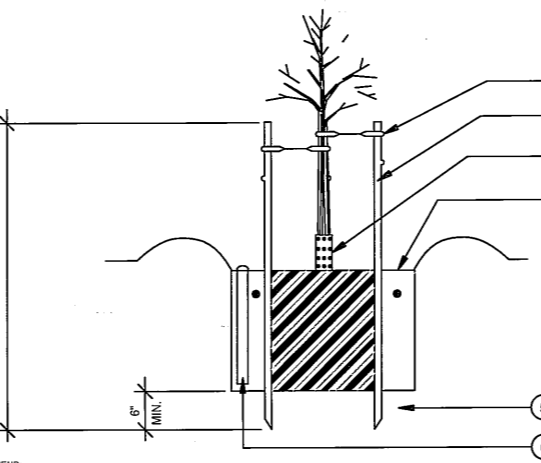
5



1. CONTACT THE STREET TREE INSPECTOR AT 351-6126 TWO WORKING DAYS (48 HOURS) PRIOR TO INSTALLING ANY PLANT MATERIAL.  
 2. TREES PLANTED IN TRUFF AREAS SHALL BE MAINTAINED WITH A MINIMUM 12" RADIUS AROUND THE TREE FREE OF TRUFF THROUGHOUT THE MAINTENANCE PERIOD.  
 3. WATERING BASINS MAY BE REMOVED AFTER THE MAINTENANCE PERIOD.  
 4. FOR STAKING INFORMATION AS APPLICABLE, REFER TO STANDARD DETAIL 1002.  
 5. FOR GUTTING INFORMATION AS APPLICABLE, REFER TO STANDARD DETAIL 1003.  
 6. FOR SPECIFICATION INFORMATION, REFER TO CITY OF RIVERSIDE PARK AND RECREATION DEPARTMENT STANDARD SPECIFICATIONS, SECTION 02460 PLANTING.  
 7. PROVIDE FERTILIZER TABLETS AS FOLLOWS:  
 1 GALLON PLANT 2 TABLETS  
 5 GALLON PLANT 5 TABLETS  
 15 GALLON PLANT 5 TABLETS  
 20" BOX PLANT 8 TABLETS

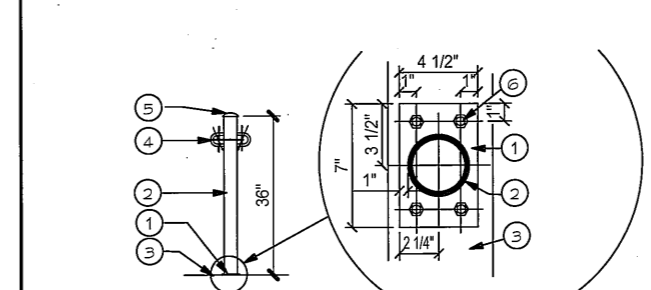
**PLANTING DETAIL**  
 NOT TO SCALE

2



**DOUBLE STAKING DETAIL**  
 NOT TO SCALE

9

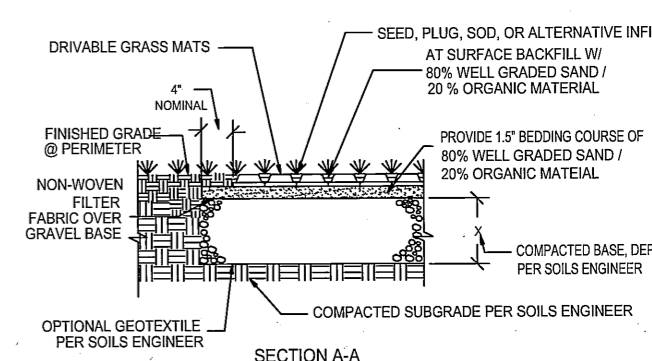
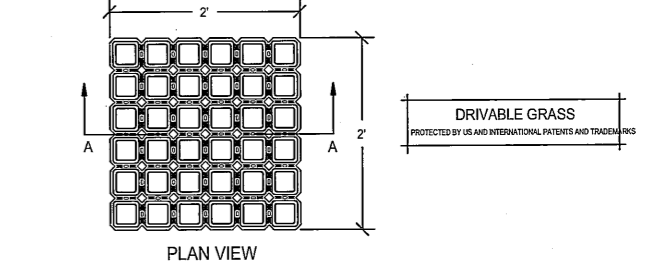


1. 1/4" BASE PLATE (4 1/4" x 7") WELDED TO PIPE  
 2. 3" PIPE BOLLARD  
 3. CONCRETE CURB  
 4. 1/2" EYELET See Specs for Cable Design & Installation  
 5. STEEL CAP WELDED TO PIPE  
 6. BOLTS 4 PER BASE 3/8" x 5" REDHEAD CONCRETE ANCHOR

BOLLARDS TO BE MAXIMUM 8' O.C. (SEE PLAN)  
 POWDER COATING: ALL NEW TUBULAR STEEL SHALL BE FINISHED POWDER COATED "GLOSS BLACK" TO ENSURE MAXIMUM CORROSION PROTECTION. ALL COMPONENTS ARE GIVEN A 4 STAGE "POWER WASH" PRETREATMENT PROCESS THAT CLEANS AND PREPARES THE GALVANIZED SURFACE TO ENSURE COMPLETE ADHESION OF THE FINISH COAT. ALL METAL IS THEN GIVEN A POLYESTER RESIN BASED POWDER COATING APPLIED BY THE ELECTROSTATIC SPRAY PROCESS TO A MINIMUM THICKNESS OF 2.5 MILS. THE FINISH IS THEN BAKED IN A 450 DEGREE F OVEN FOR 20 MINUTES. PROCESS AS STATED OR EQUIVALENT AS APPROVED BY THE ENGINEER.

**PIPE BOLLARDS**

6



**TYPICAL COMMERCIAL DRIVABLE GRASS DETAIL**  
 NTS

3

**PLANTING DETAILS**



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 LANDSCAPE ARCHITECT  
 LANDSCAPE CONTRACTOR  
 11907 Regatta Avenue  
 Riverside California 92503  
 (951) 509-2577



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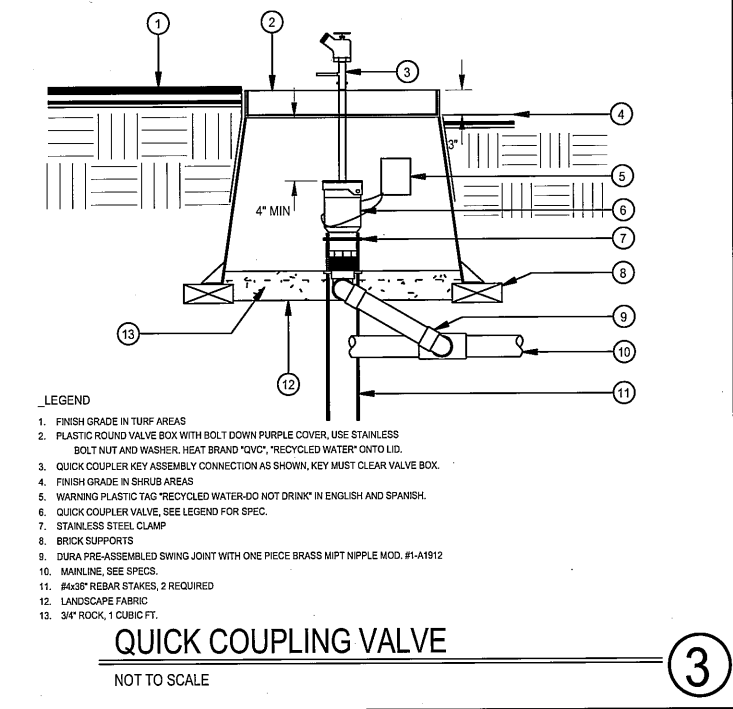
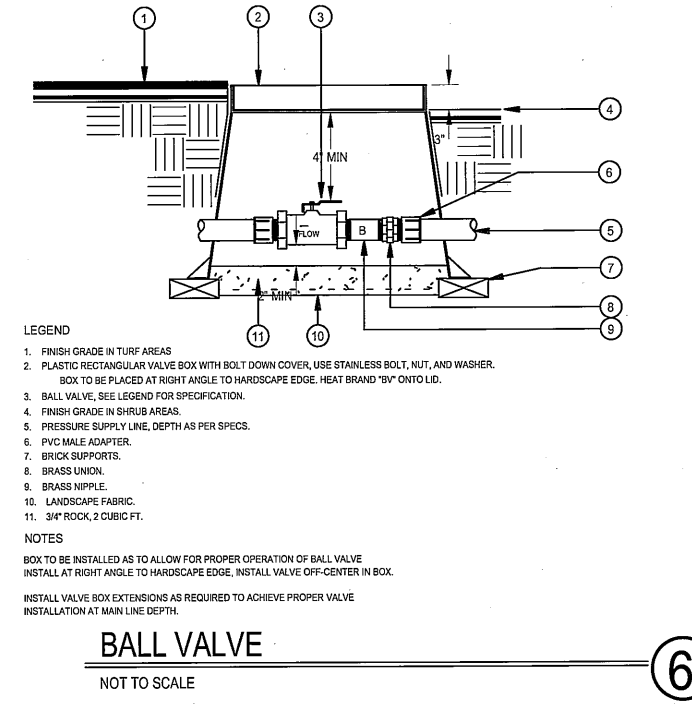
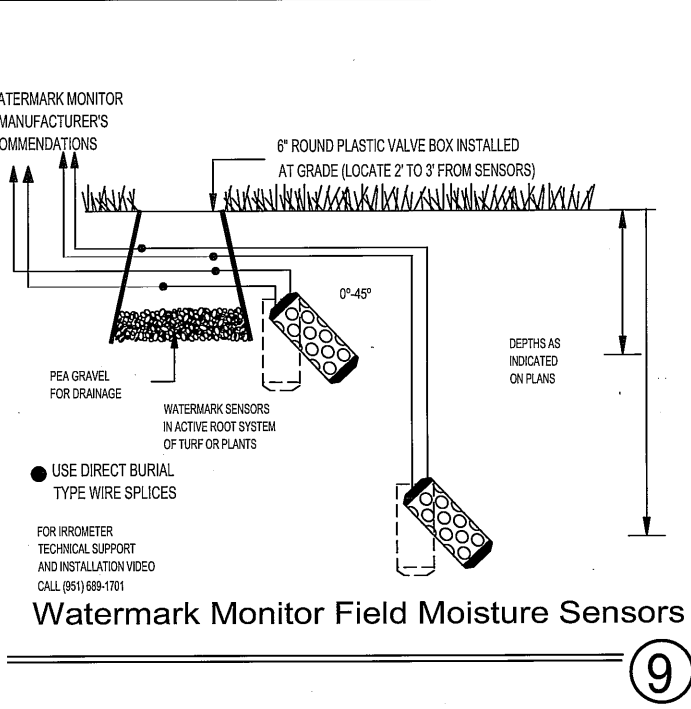
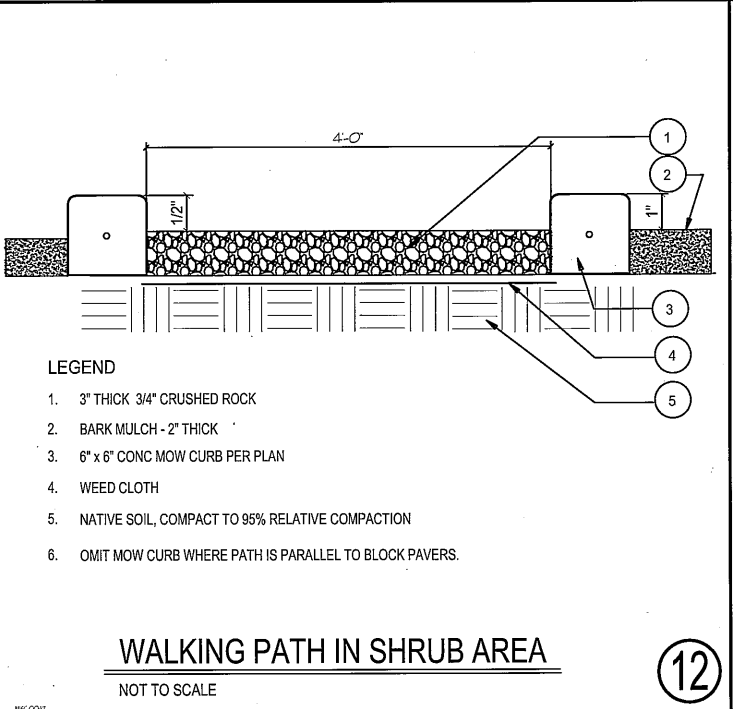
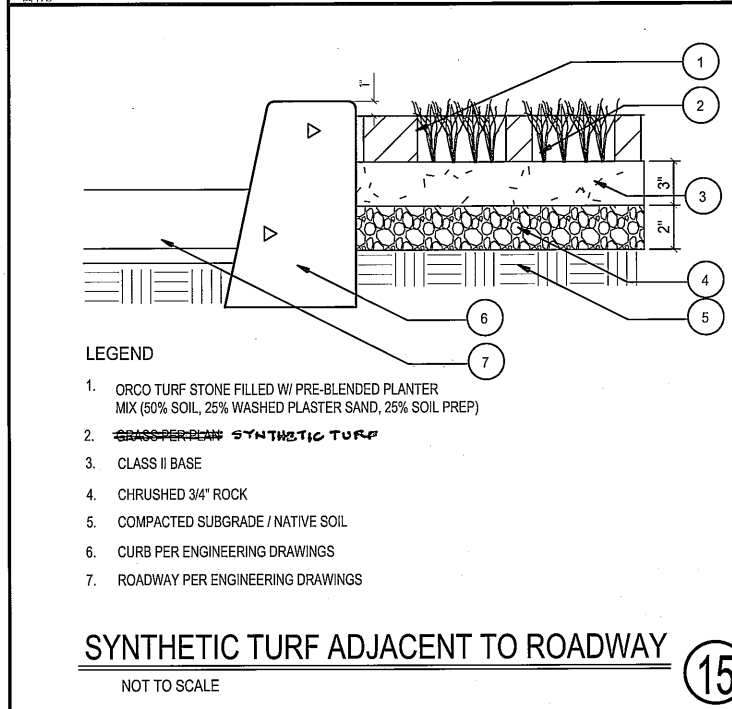
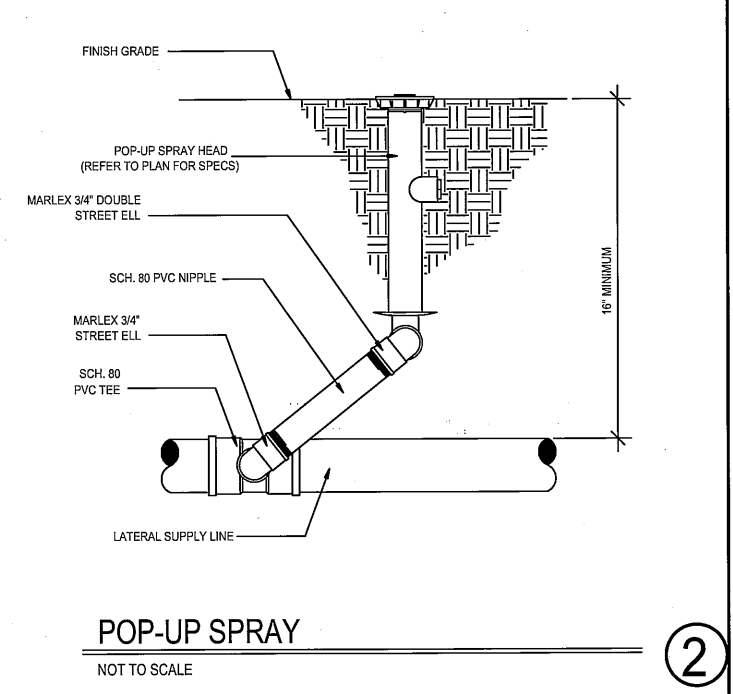
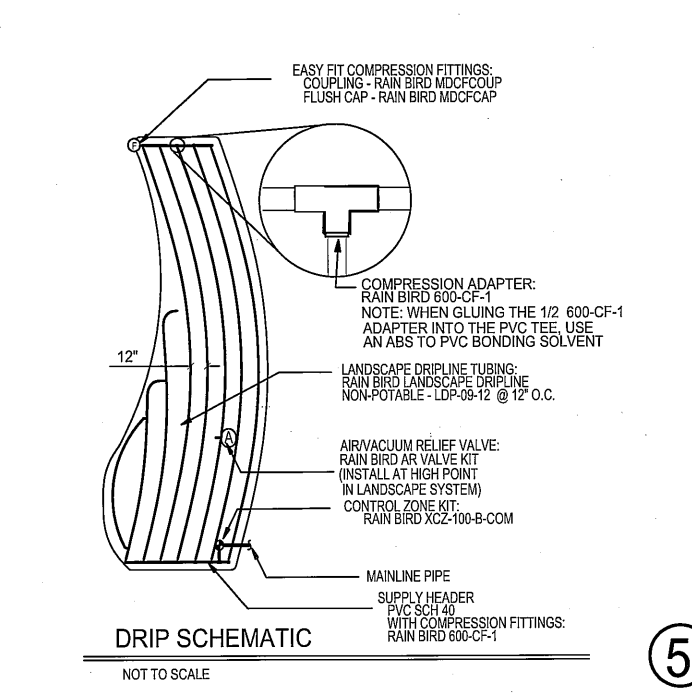
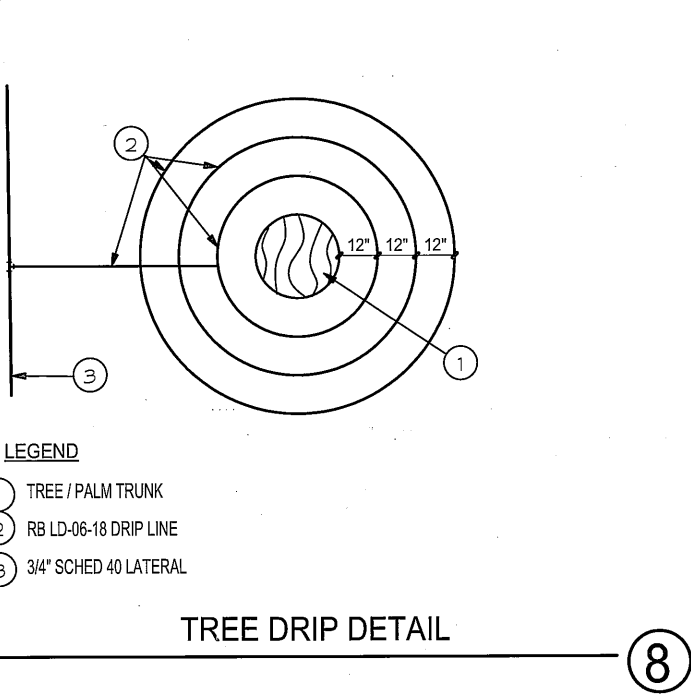
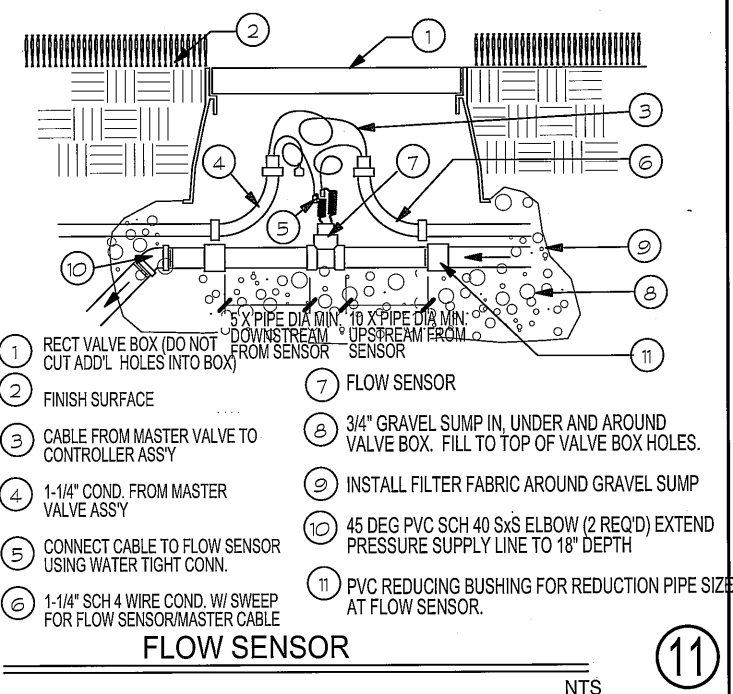
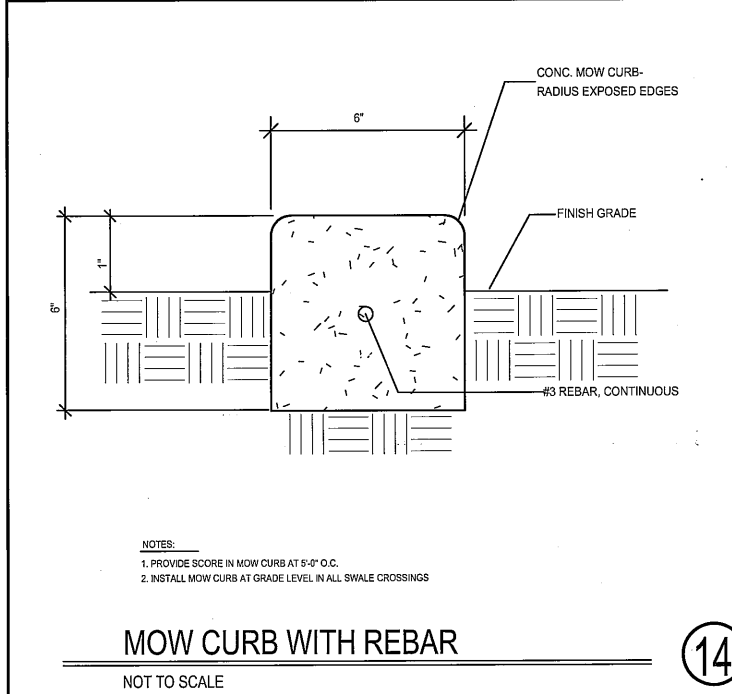
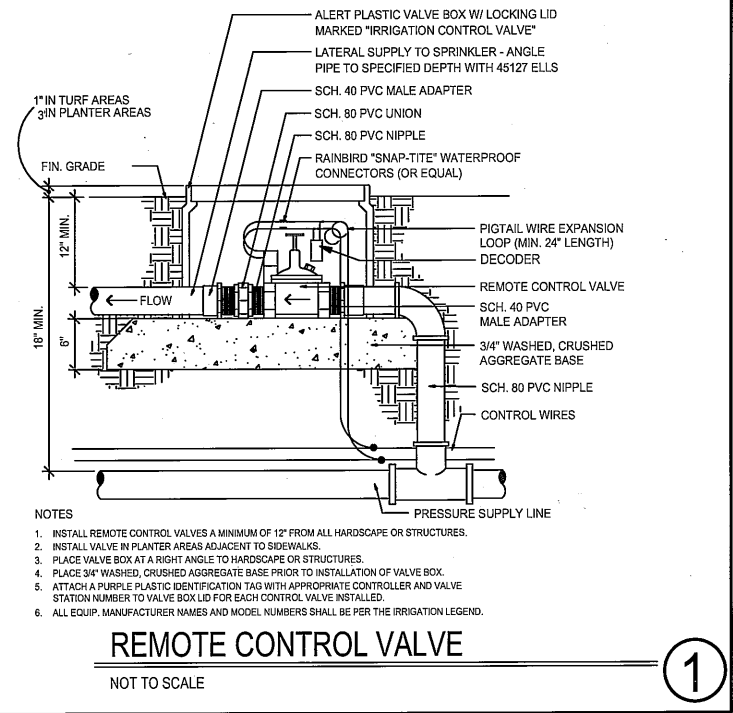
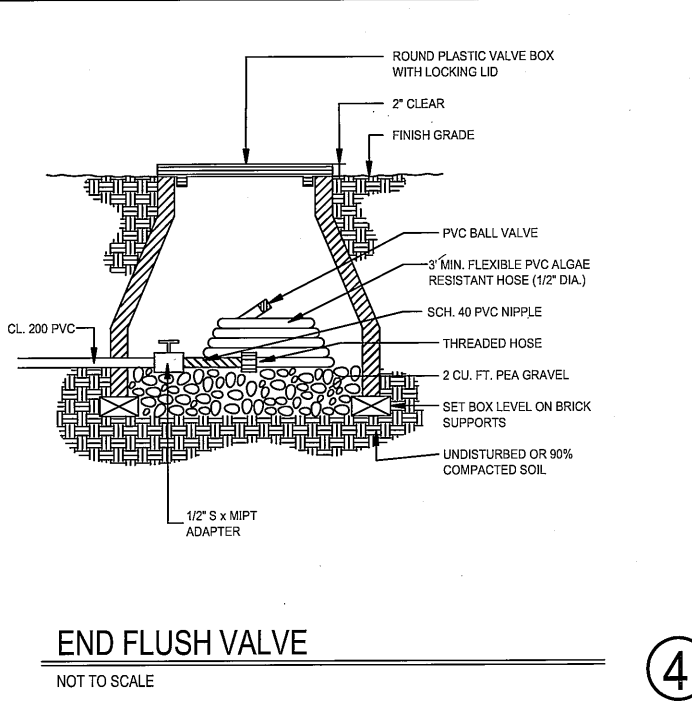
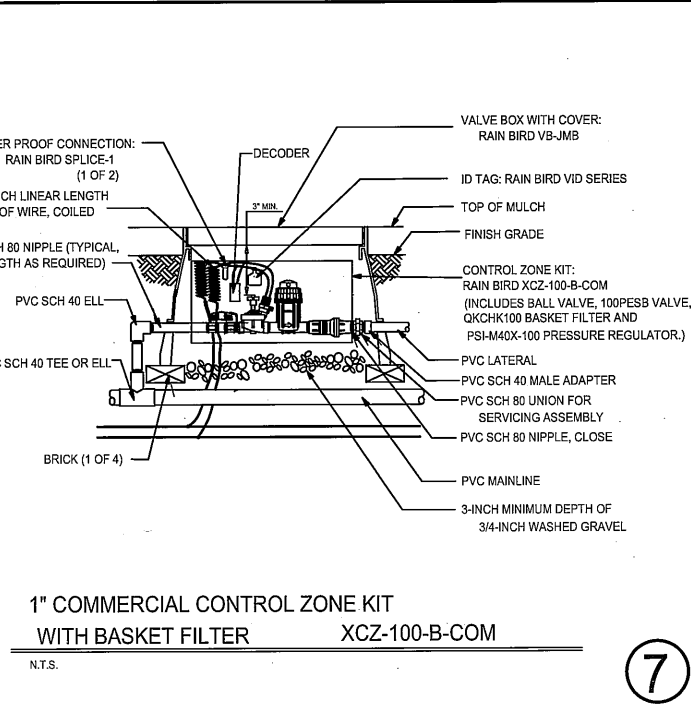
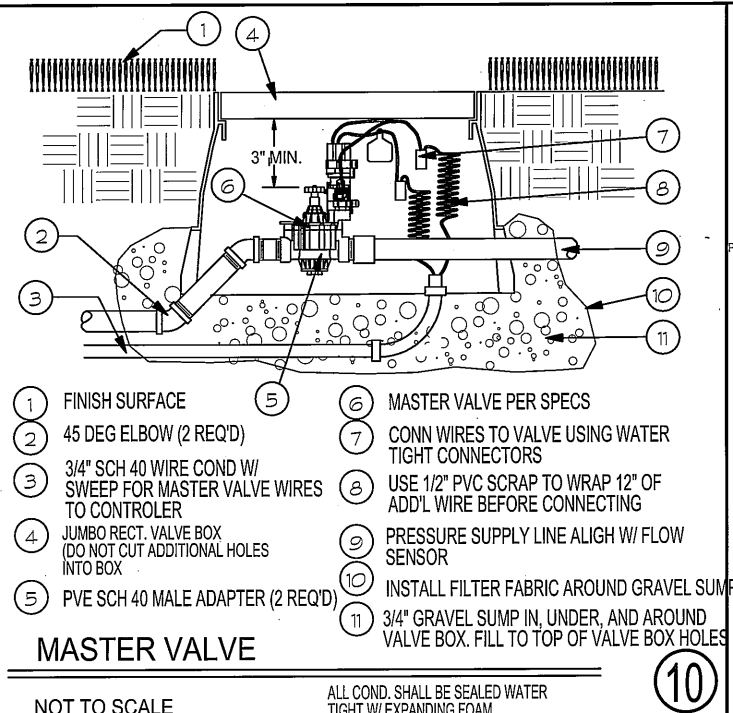
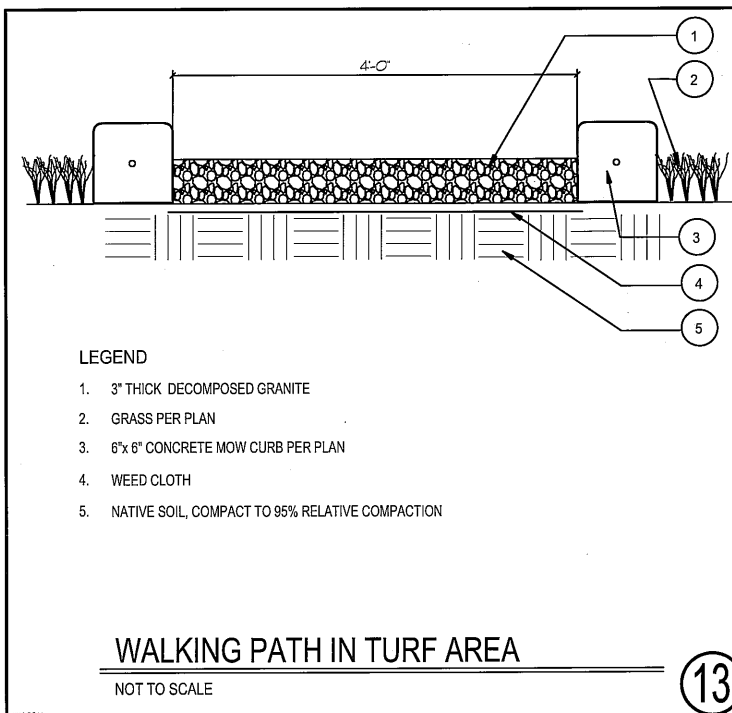
NO.	REVISIONS	DATE

DESIGNED BY:		RECOMMENDED FOR APPROVAL BY:		APPROVED BY:	
DRAWN BY:		<i>Small Signature</i>		<i>Steve Thomas</i>	
DATE DRAWN: 04/14/10		DATE: 6/29/10		DATE: 6-29-10	

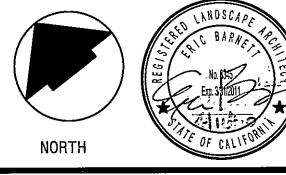
WATER EFFICIENT LANDSCAPE CONVERSION  
 RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
 1995 MARKET STREET  
 RIVERSIDE, CALIFORNIA 92501

PROJECT NO. 1-0-00001  
 DRAWING NO. 9-120  
 SHEET NO. 15 OF 20

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT, 438-58-02



**CONSTRUCTION AND IRRIGATION DETAILS**



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LANDSCAPE CONTRACTOR  
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Riverside, CA 92504  
(951) 889-8377  
Landscape Architect License No. 33465  
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for the location of buried utility lines. Don't dig until you've called. Call (951) 889-1701

NO.	REVISIONS	DATE

**WATER EFFICIENT LANDSCAPE CONVERSION**

DESIGNED BY: [Signature]  
DATE DRAWN: 04/14/10

RECOMMENDED OR APPROVED BY: [Signature]  
DATE: 6/29/10

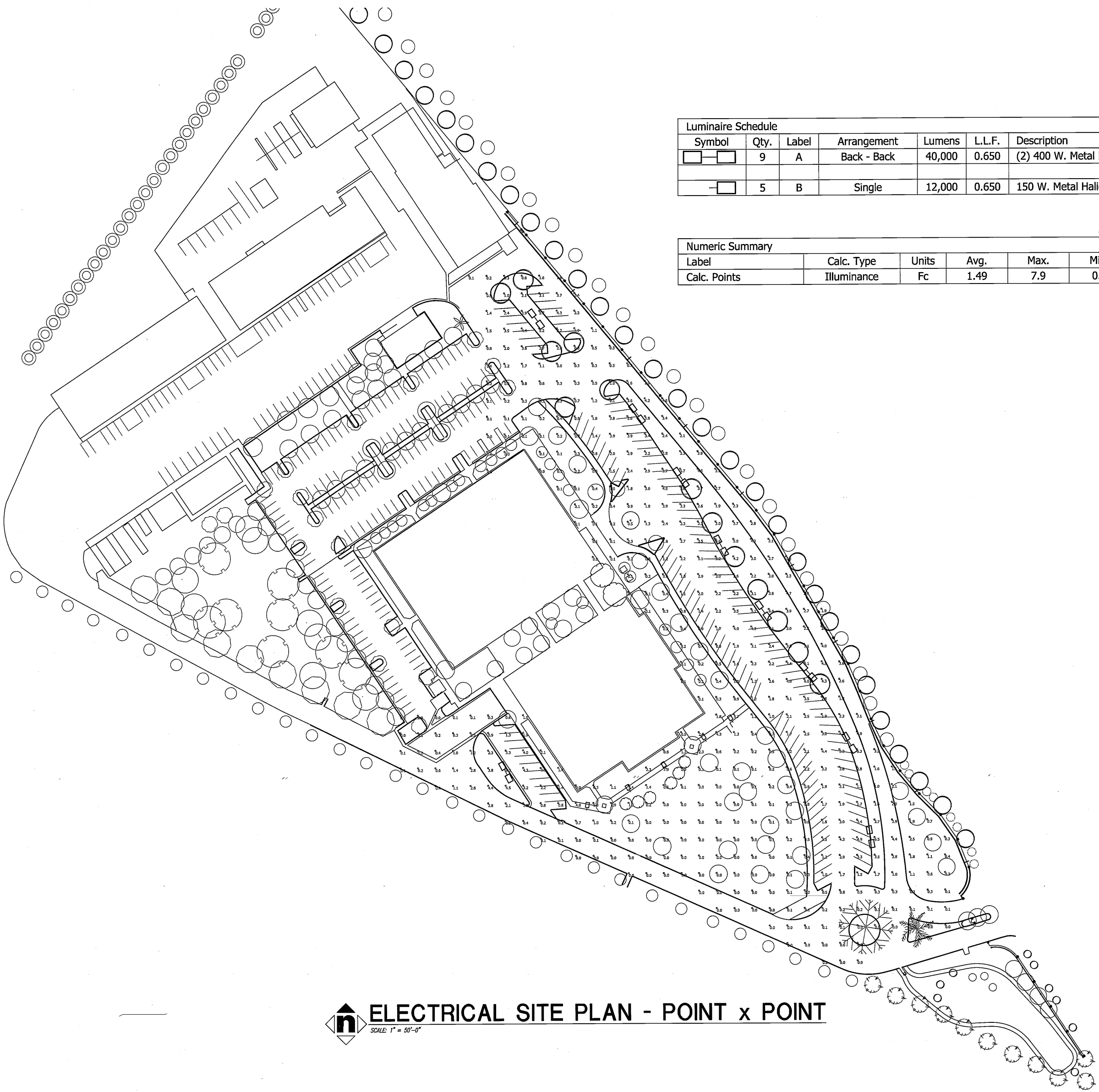
APPROVED BY: [Signature]  
DATE: 06-29-10

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
DRAWING NO. **9-120**  
SHEET NO. **16** OF **20**







Luminaire Schedule						
Symbol	Qty.	Label	Arrangement	Lumens	L.L.F.	Description
	9	A	Back - Back	40,000	0.650	(2) 400 W. Metal Halide
	5	B	Single	12,000	0.650	150 W. Metal Halide

Numeric Summary							
Label	Calc. Type	Units	Avg.	Max.	Min.	Avg./Min.	Max./Min.
Calc. Points	Illuminance	Fc	1.49	7.9	0.0	N.A.	N.A.

**ELECTRICAL SITE PLAN - POINT x POINT**  
SCALE: 1" = 50'-0"

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**REDLANDS ENGINEERING COMPANY, INC.**  
CONSULTING ENGINEERS  
ELECTRICAL • MECHANICAL • PLUMBING  
1740 ZENITH DRIVE, SUITE 101  
REDLANDS, CALIFORNIA 92374  
PHONE: (909) 772-4611 FAX: (909) 772-4508

02: VEC010007010005 (C)2010 DME  
 PLOT SCALE: 1" = 600'  
 REF: AK2309C x 600, AK2307B x 600, AK2309P x 1 DATE: 01-09-10



**RCB & Sons**  
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LANDSCAPE CONTRACTOR  
11807 Magnolia Avenue  
Riverside California 92503  
(951) 505-0257

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TWO WORKING DAYS BEFORE YOU DIG

REVISIONS	BENCH MARK

DESCRIPTION	APPR.	DATE

**WATER EFFICIENT LANDSCAPE CONVERSION**

DESIGNED BY: AWH  
DRAWN BY: AWH  
DATE DRAWN: 6/29/10

RECOMMENDED FOR APPROVAL BY: *Amad M. Omgiri*  
DATE: 6/29/10

APPROVED BY: *Ken Thomas*  
DATE: 06-29-10

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**  
1995 MARKET STREET  
RIVERSIDE, CALIFORNIA 92501

PROJECT NO. **1-0-00001**  
DRAWING NO. **9-120**  
SHEET NO. **19 OF 20**



# ELECTRICAL SPECIFICATIONS

## BASIC ELECTRICAL REQUIREMENTS

- 1.01 DESCRIPTION:  
A. THE GENERAL CONDITIONS, THE SUPPLEMENTARY GENERAL CONDITIONS AND DIVISION 1 GENERAL REQUIREMENTS APPLY TO THIS SECTION.  
B. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.  
1.02 LISTINGS AND CODES: ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND BEAR THEIR LABELS, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS, WHERE APPLICABLE, OF THE DESIGNATED EDITION OF THE FOLLOWING:  
A. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)  
B. AMERICAN STANDARD ASSOCIATION (ASA)  
C. NATIONAL FIRE PROTECTION AGENCY (NFPA-70)  
D. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)  
E. CALIFORNIA CODE OF REGULATION, TITLE 24 (CCR)  
F. NATIONAL ELECTRICAL CODE (NEC)  
G. ALL LOCAL AND STATE CODES HAVING JURISDICTION  
IN THE CASE WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, THE MOST STRINGENT RULE SHALL APPLY.  
1.03 SHOP DRAWINGS:  
A. CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL SIX (6) SETS OF A COMPLETE LIST AND CATALOG CUTS OF ALL MATERIALS HE PROPOSES TO PROVIDE FOR THE ELECTRICAL SYSTEMS COVERED BY THESE DRAWINGS. EACH ELECTRICAL ITEM SHALL BE IDENTIFIED BY THE MANUFACTURER AND TRADE NAME OF THE ITEM AS WELL AS THE DESCRIPTION GIVEN ON THE ELECTRICAL ENGINEERS PLANS. UNLESS OTHERWISE SPECIFICALLY AUTHORIZED BY THE ELECTRICAL ENGINEER, MAKE ALL SUBMITTALS IN GROUPS CONTAINING ALL ASSOCIATED ITEMS. THE ELECTRICAL ENGINEER MAY REJECT PARTIAL SUBMITTALS AS NOT COMPLYING WITH THE PROVISIONS OF THIS SECTION. NO MATERIALS SHALL BE DELIVERED TO THE JOB UNTIL THE LIST HAS BEEN APPROVED BY THE ARCHITECT. ACCEPTANCE OR REJECTION OF SUBSTITUTE MATERIALS SHALL BE AT THE DISCRETION OF THE ARCHITECT.  
B. MAKE ALL SUBMITTALS IN ACCORDANCE WITH THE GENERAL CONTRACTOR'S SCHEDULE OF SHOP DRAWINGS AND FAR ENOUGH IN ADVANCE OF SCHEDULED DATES OF INSTALLATION TO PROVIDE REQUIRED TIME FOR REVIEWS, SECURING NECESSARY APPROVALS, POSSIBLE REVISION AND RESUBMITTAL, INCLUDING PLACING ORDERS AND SECURING DELIVERY.  
1.04 LOCATIONS AND ACCESSIBILITY: WORK SPECIFIED AND NOT CLEARLY DEFINED BY THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ELECTRICAL ENGINEER, IN WRITING, PRIOR TO INSTALLATION SO THAT IT MAY BE INSTALLED AND ARRANGED TO MEET THE INTENT OF THE DESIGN.  
1.05 TESTING AND ADJUSTMENT: UPON COMPLETION OF ELECTRICAL WORK, ADJUST AND TEST CIRCUITS, LIGHTS AND OTHER ELECTRICAL ITEMS TO INSURE PROPER OPERATION OF ALL ELECTRICAL EQUIPMENT.  
A. CHECK SERVICE VOLTAGES UNDER MAXIMUM OBTAINABLE LOADS. EQUIPMENT, FIXTURES, OR PARTS FOUND TO BE IN NEED OF CORRECTION DURING SUCH TESTING SHALL BE IMMEDIATELY REPAIRED OR REPLACED WITH NEW EQUIPMENT AND THAT PART OF THE SYSTEM SHALL BE RE-TESTED. SUCH REPLACEMENT OR REPAIR SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.  
B. ALL FAILURES SHALL BE CORRECTED IN A MANNER SATISFACTORY TO THE ENGINEER. THE CONTRACTOR SHALL FURNISH ALL NECESSARY COSTS OF RE-TESTING EQUIPMENT AND CORRECTING FAILURES.  
C. ALL ELECTRICAL TESTS SHALL BE WITNESSED BY AN INSPECTOR THAT SHALL HAVE EXPERIENCE IN ELECTRICAL WORK, EQUAL TO THAT OF AN ELECTRICIAN HAVING AT LEAST FIVE (5) YEARS EXPERIENCE AS AN I.B.E.W. JOURNEYPERMAN.  
1.06 LAYOUT AND INSTALLATION:  
A. LAYOUT AND INSTALLATION OF ELECTRICAL WORK SHALL BE COORDINATED WITH THE OVERALL CONSTRUCTION SCHEDULE AND WORK SCHEDULE OF VARIOUS TRADES, TO PREVENT DELAY IN THE COMPLETION OF THE PROJECT. COMPLETE DRAWINGS AND SPECIFICATIONS FOR THE ENTIRE PROJECT SHALL BE AVAILABLE AT THE JOB SITE. IT SHALL BE OBLIGATORY TO THOROUGHLY CHECK THESE DOCUMENTS BEFORE ORGANIZING THE ELECTRICAL WORK SCHEDULE OR INSTALLING MATERIAL AND EQUIPMENT.  
1. MAKE SERVICE OUTLETS BE PLACED IN A WALL, THEY SHALL BE LOCATED AT THE SAME HEIGHT WITH RESPECT TO EACH OTHER AND OTHER FEATURES AND/OR FINISHES ON THE WALL.  
2. LOCATIONS SHOWN ON ARCHITECTURAL REFLECTED CEILING PLANS, OR ON WALL ELEVATIONS SHALL TAKE PRECEDENCE OVER ELECTRICAL PLAN LOCATIONS.  
3. REVIEW EXACT LOCATIONS OF EACH OUTLET INDICATED AND COORDINATE WITH THE ARCHITECTURAL DRAWINGS. MINOR RELOCATIONS SHALL BE MADE WITHOUT INCURRING ADDITIONAL COST TO OWNER.  
4. THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, PLUMBING AND MECHANICAL DRAWINGS AND SPECIFICATIONS, TAKEN TOGETHER INDICATE THE WORK TO BE DONE UNDER THIS PROJECT. THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THESE DRAWINGS AND ANY DETAIL SCALE DRAWINGS WHICH MAY BE FURNISHED BY THE ARCHITECT DURING THE PROGRESS OF THE WORK. THE CONTRACTOR SHALL EXAMINE ALL ARCHITECTURAL, STRUCTURAL, ELECTRICAL, PLUMBING AND MECHANICAL DRAWINGS IN ORDER TO BE DULY INFORMED AS TO THE SCOPE AND DETAIL OF THE WORK WHICH WILL BE REQUIRED.  
5. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE PREFERRED LOCATIONS OF OUTLETS AND EQUIPMENT, AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. IT IS NOT WITHIN THE SCOPE OF THE DRAWINGS TO SHOW ALL BENDS, OFFSETS, PULLBOCKS AND OBSTRUCTIONS AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INCLUDE SUCH IN THE BID. THE DRAWINGS ARE NOT INTENDED TO BE SCALED, AND THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND LIMITATIONS OF THE BUILDING STRUCTURE, AND TO THE MECHANICAL DRAWINGS FOR THE LOCATION OF EQUIPMENT REQUIRING ELECTRICAL SERVICE AND CONNECTIONS.  
6. IN THE EVENT THAT CHANGES IN THE INDICATED LOCATIONS OR ARRANGEMENTS ARE NECESSARY DUE TO FIELD CONDITIONS, SUCH CHANGES SHALL BE MADE BY THE CONTRACTOR WITHOUT EXTRA COSTS, PROVIDING THE CHANGE HAS BEEN APPROVED BY THE ARCHITECT BEFORE THE WORK HAS BEEN COMMENCED AND NO ADDITIONAL MATERIALS ARE REQUIRED. THE CONTRACTOR SHALL ADVISE THE ARCHITECT OF ANY REQUIRED ADDITIONAL COSTS AND HAVE APPROVAL OF SAME BEFORE PROCEEDING.  
1.07 OPERATION AND MAINTENANCE INSTRUCTIONS: FULLY INSTRUCT AND DEMONSTRATE TO THE OWNER'S OPERATING PERSONNEL THE PERFORMANCE, OPERATION AND MAINTENANCE OF EQUIPMENT. THE TIME ALLOWED FOR SAID INSTRUCTION SHALL BE INCLUDED AS PART OF THESE CONTRACT DOCUMENTS.  
1.08 WARRANTY: ALL MATERIALS AND EQUIPMENT FURNISHED AND INSTALLED UNDER THIS SECTION SHALL BE WARRANTED IN WRITING BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR (EXCEPT BALLASTS FOR LIGHTING FIXTURES SHALL HAVE A TWO YEAR GUARANTEE) FROM DATE OF ACCEPTANCE OF THE WORK. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD, DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP, THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR AND MATERIALS TO CORRECT THE TROUBLE AT NO EXTRA COST TO THE OWNER.  
1.09 FINAL REVIEW AND ACCEPTANCE: UPON STATED COMPLETION OF CONTRACT, WORK SHALL BE SUBJECT TO REVIEW BY REPRESENTATIVES OF OWNER, ARCHITECT OR ENGINEER FOR ADHERENCE TO CONTRACT DRAWINGS AND SPECIFICATIONS. ANY CHANGES REQUIRED TO BRING WORK INTO SUBSTANTIAL CONFORMANCE WITH DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.  
1.10 RECORD DRAWINGS: PROVIDE AND MAINTAIN IN GOOD ORDER A COMPLETE SET OF ELECTRICAL CONTRACT PRINTS. ALL CHANGES SHALL BE CLEARLY RECORDED ON THIS SET OF PRINTS. AT THE END OF THE PROJECT, THE CONTRACTOR SHALL TRANSFER ALL CHANGES TO ONE SET OF MILLAR TRANSPARENTS FOR SUBMISSION TO THE ARCHITECT. MILLARS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ARCHITECT WHEN REQUESTED AND AT COST OF PRINTING. UPON COMPLETION OF THE WORK DELIVER TO THE ARCHITECT ONE COMPLETE SET OF FINAL PRINTS OF THE MILLARS AND THE MILLARS THEMSELVES, WITH COMPLETE INSTALLATION AND CHANGES IN THE WORK INDICATED THEREON. ALL SHEETS SHALL BE INITIALED BY THE CONTRACTOR AS BEING A CORRECT AND ACCURATE RECORD OF THE INSTALLATION.  
END OF SECTION

## GENERAL MATERIALS FOR ELECTRICAL WORK

- 1.01 MAIN SERVICE EQUIPMENT AND PANELBOARDS: MAIN SERVICE SHALL CONSIST OF PULL METER AND MAIN SECTIONS PER REQUIREMENTS OF THE SERVING UTILITY COMPANY AND RATED AS INDICATED ON THE DOCUMENTS.  
A. MAIN DISCONNECT SWITCHES SHALL BE SIZED AS INDICATED ON THE DRAWINGS, HEAVY DUTY TYPE WITH CLASS R REJECTING CLIPS. SWITCHES SHALL BE UL APPROVED FOR USE AS A SERVICE ENTRANCE.  
B. FUSES, IF SPECIFIED SHALL BE DUAL-ELEMENT, CURRENT LIMITING TYPE, UNLESS NOTED OTHERWISE.  
C. SERVICE ENTRANCE EQUIPMENT SHALL BE ADEQUATE FOR A SHORT CIRCUIT TYPE AVAILABLE AT THE SITE AS VERIFIED BY THE SERVING UTILITY COMPANY.  
D. PANELBOARDS AND LOAD CENTERS SHALL BE FLUSH OR SURFACE MOUNTED AS INDICATED ON PLANS AND SHALL CONFORM TO THE REQUIREMENTS OF THE U.L. FRONT SHALL BE FINISHED TO RESIST CORROSION WITH NOT LESS THAN ONE PRIMUM COAT AND ONE FINISHING COAT. EXPOSED PARTS OF TRIM AND DOORS SHALL BE PAINTED BY OTHERS AFTER INSTALLATION. ALL BRANCH CIRCUIT PANELBOARD LOOKS SHALL BE "LIKE KEYS" WITH THREE KEYS FURNISHED TO OWNER. ADJACENT POLES OF SINGLE POLE DEVICES SHALL BE OF A DIFFERENT PHASE WITH SPILT PHASE BUSSING. CIRCUITS SHALL BE NUMBERED FROM TOP TO BOTTOM WITH ODD NUMBERS ON THE LEFT AND EVEN NUMBERS ON THE RIGHT. A NEATLY TYPED CIRCUIT DIRECTORY WITH A PLASTIC COVER SHALL BE PROVIDED IN A HOLDER MOUNTED INSIDE THE CABINET DOOR. BREAKERS SHALL BE ON/OFF OR PUSH-IN TYPE AS INDICATED ON PANEL SCHEDULES WITH RATINGS AS SHOWN ON THE DRAWINGS WITH A MINIMUM SHORT CIRCUIT RATING OF 10,000 AMPS SWIMMER. THE FRONT SHALL INCLUDE FLUSH HINGED DOOR WITH LOCK, COVERING ALL BREAKERS.  
E. IDENTIFICATION NAMEPLATES SHALL BE PROVIDED OF MCARTA 1/8" THICK, OF APPROVED SIZE, WITH BEVELLED EDGES AND ENGRAVED WHITE LETTERS 1/4" HIGH MINIMUM ON BLACK BACKGROUND. THESE NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION AND POWER DISTRIBUTION BOARDS, MOTOR CONTROL CENTERS, LIGHTING DISTRIBUTION PANELBOARDS, SEPARATE SWITCHES, DISCONNECT SWITCHES, MOTOR CONTROL, PUSH-BUTTON STATIONS, SELECTOR SWITCHES, TRANSFORMERS, TERMINAL CABINETS, TELEPHONE CABINETS, ETC. THESE NAMEPLATES SHALL HAVE THE SAME IDENTIFICATION NAMES AS INDICATED ON THE PLANS.  
1.02 CONDUITS AND RACEWAYS: ALL CONDUITS AND RACEWAYS SHALL CONFORM TO U.L. STANDARDS AS APPLICABLE.  
A. ELECTRICAL METALLIC TUBING (EMT), NO LESS THAN 1/2" TRADE SIZE, 2" MAXIMUM TRADE SIZE. E.M.T. MAY BE USED IN DRY LOCATIONS ONLY.  
B. RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE STEEL, GALVANIZED OR ZINC COATED FULL WEIGHT, NO LESS THAN 1/2" TRADE SIZE.  
C. LIQUID-TIGHT FLEXIBLE CONDUIT, NO LESS THAN 1/2" TRADE SIZE, FLEXIBLE, GALVANIZED STEEL CORE COMPLETELY ENCASED IN A POLYETHYLENE CHLORIDE JACKET.  
D. NON-METALLIC POLYVINYL CHLORIDE (PVC), NO LESS THAN 3/4" TRADE SIZE, SCHEDULE #40 UNLESS NOTED OTHERWISE. SUNLIGHT RESISTANT AND RATED FOR 90° C. CONDUITS.  
E. FLEXIBLE METALLIC CONDUIT, NO LESS THAN 1/2" TRADE SIZE, STEEL, FORMED FROM CONTINUOUS STRIP AND ZINC COATED. COATED.  
1.03 FITTINGS: FITTINGS AND OUTLETS FOR CONDUIT SYSTEMS SHALL CONFORM TO THE FOLLOWING:  
A. FITTINGS FOR ELECTRICAL METALLIC TUBING (EMT) FOR SIZES 1/2" THROUGH 2" SHALL BE WRENCH TIGHTENED COMPRESSION TYPE WHICH SHALL PROVIDE PULL-ON FORCE RESISTANCE AND ELECTRICAL CONTINUITY AS REQUIRED BY U.L. NO INDENTING FITTINGS OR ADJUSTABLE SET SCREW TYPE FITTINGS SHALL BE USED.  
B. FITTINGS FOR RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE STEEL, THREADED FITTINGS ONLY. SPILT AND "SET SCREW" TYPE FITTINGS ARE NOT ACCEPTABLE.  
C. FITTINGS FOR LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE OF THE COMPRESSION TYPE WITH THREADED FERRULE, SEALING RING AND SUITABLE FOR WET LOCATIONS.  
D. FITTINGS FOR PVC SHALL BE NON-METALLIC, SUNLIGHT RESISTANT, AND OF THE SAME COMPOUND AS THE CONDUITS WHICH THEY ARE BEING UTILIZED WITH.  
E. FITTINGS FOR FLEXIBLE METALLIC CONDUIT SHALL BE OF THE "SQUEEZE" TYPE WITH EITHER ONE (1) OR TWO (2) SCREWS, CAST OR MALLEABLE STEEL, CADMIUM OR ZINC COATED.  
1.04 CONDUCTORS: CONDUCTOR SIZES ARE SPECIFIED BY AMERICAN WIRE GAUGE (AWG). CONDUCTORS SHALL BE COPPER. WIRE SIZES #10 AND SMALLER SHALL BE SOLID CONDUCTOR. HOWEVER, CONTROL AND SIGNAL SYSTEMS MAY BE WIRED WITH #14 STRANDED. INSULATION FOR WIRING SHALL BE 600 VOLT TYPE "THIN", 75° C. RATED FOR DRY OR WET LOCATIONS OR TYPE "THIN", 90° C. RATED FOR DRY LOCATIONS. ALUMINUM CONDUCTORS SHALL BE RATED FOR MAIN SERVICE FEEDERS ONLY.  
A. CONDUCTOR SIZES SHALL BE AS INDICATED; WHERE SIZES ARE NOT INDICATED THEY SHALL BE AS REQUIRED BY CODE. ALL WIRING SHALL BE COLOR CODED FOR PHASE IDENTIFICATION AS FOLLOWS:  
120/208V 3Ø 4W      277/480V 3Ø 4W  
PHASE A = BLACK      PHASE A = BROWN  
PHASE B = RED      PHASE B = ORANGE  
PHASE C = BLUE      PHASE C = YELLOW  
NEUTRAL = WHITE      NEUTRAL = WHITE  
GROUND = GREEN      GROUND = GREEN  
B. MAKE SPLICES FOR CONDUCTORS #8 AND SMALLER WITH STEEL OR COPPER SPRING INSULATED WIRE NUTS. SPLICES FOR CONDUCTORS #6 OR LARGER SHALL BE WITH SPILT BOLTS OR "KARNETYS" WHICH WHEN USED SHALL BE THOROUGHLY INSULATED.  
C. THE GREEN GROUND WIRE SHOWN ON CONDUIT RUNS SHALL RUN CONTINUOUS FROM PANEL TO LAST OUTLET. THIS WIRE SHALL BE INSTALLED IN EACH OUTLET FOR CONNECTION TO BOX AND DEVICE SO THAT IF THE DEVICE IS REMOVED, THE GROUND WILL NOT BE INTERRUPTED.  
1.05 BOXES: ALL BOXES SHALL BE SIZED FOR THE NUMBER AND SIZE OF CONDUCTORS AND CONDUITS ENTERING THE BOX AND EQUIPPED WITH PLASTER/EXTENSION RINGS WHERE REQUIRED. ALL BOXES SHALL BE LABELED TO INDICATE PANEL AND CIRCUIT NUMBER OF CONDUCTORS CONTAINED WITHIN. IN NO CASE SHALL ANY BOX BE LESS THAN 4" ROUND OR SQUARE, UNLESS SPECIFICALLY NOTED OTHERWISE. OUTLET BOXES FOR CONCEALED WIRING SHALL BE GALVANIZED OR SHERARDIZED, ONE PIECE, PRESSED STEEL, WITH LOCKOUTS AS REQUIRED.  
A. LIGHT OUTLETS SHALL BE 4" OCTAGON 4" SQUARE OR LARGER IN ACCORDANCE WITH NEC 370-6(G) AND 314, TABLE 314.16(G), AND SHALL BE EQUIPPED WITH A RASSED PLASTER RING OF DEPTH REQUIRED TO PROVIDE A FLUSH MOUNTING CONDITION. PLASTER RING SHALL HAVE A 3" ROUND OPENING WITH TWO THREADED MOUNTING HOLES.  
B. SWITCH OUTLETS SHALL BE 4" SQUARE BOX FOR SINGLE AND TWO GANG APPLICATIONS. SPECIAL MULTI-GANG BOXES SHALL BE UTILIZED FOR MORE THAN TWO SWITCHES COMPLETE WITH PLASTER RING FOR MOUNTING SWITCHES.  
C. RECEPTACLE, TELEPHONE AND COMPUTER/DATA OUTLETS SHALL BE 4" SQUARE, OR LARGER BOX IN ACCORDANCE WITH NEC 370-6(G) AND 314, TABLE 314.16(G), WITH SINGLE GANG OR LARGER PLASTER RING TO SUIT THE DEVICE(S) INSTALLED, UNLESS SPECIAL BOXES ARE SPECIFIED (FLUSH CLOCK, ETC.) OR OTHERWISE REQUIRED FOR A PARTICULAR DEVICE.  
D. FLOOR BOXES, MOUNTED IN CONCRETE, FOR RECEPTACLE, TELEPHONE AND COMPUTER/DATA OUTLETS SHALL BE ROUND OR SQUARE, SINGLE OR MULTI-GANG AS REQUIRED. BOXES SHALL BE PRESSED STEEL OR CAST IRON AS SPECIFIED ON DRAWINGS, BUT IN NO CASE OF LESS THAN 20 CUBIC INCH OF CAPACITY. BOXES SHALL HAVE THE CAPABILITY OF VERTICAL AND ANGULAR ADJUSTMENT OF THE DEVICE MOUNTING PLATE AFTER POWER. PRE-FOUR ADJUSTING LEGS SHALL BE PROVIDED ON ALL FOUR CORNERS. INTERNAL BARRIERS SHALL BE PROVIDED WHERE BOTH LINE AND LOW VOLTAGE SYSTEMS ARE IN THE SAME BOX.  
E. WHERE INDICATED BY "WP," THE CONTRACTOR SHALL PROVIDE CAST METAL BOXES AND COVERPLATES WITH GASKETS(S) AS REQUIRED TO OBTAIN A "WEATHERPROOF" INSTALLATION.  
1.06 PULL BOXES: SIZES AS INDICATED ON THE DRAWINGS AND PER UTILITY COMPANY REQUIREMENTS, BUT IN NO CASE OF LESS SIZE OR MATERIAL THICKNESS THAN REQUIRED BY THE GOVERNING CODE. PULL BOXES LOCATED IN OR AROUND VEHICULAR TRAFFIC AREAS SHALL BE PROVIDED WITH TRAFFIC RATED COVERS. ALL COVERS SHALL BE PERMANENTLY IDENTIFIED AS TO THE TYPE OF SERVICE CONTAINED THEREIN (IE. SIGNAL, COMMUNICATIONS, ETC.) BOXES LOCATED IN DAMP OR WET AREAS SHALL BE RATED NEMA 3R. EXTERIOR PULL BOXES SHALL BE PLACED TO AVOID SURFACE WATER FLOW AREAS.  
1.07 SWITCHES: LIGHTING SWITCHES SHALL BE SPECIFICATION GRADE, SINGLE POLE, OR 3-WAY TOGGLE TYPE AS INDICATED, 20 AMP, 120/277V. A.C. RATING FOR FULL CAPACITY OF CONTACTS FOR LAMP LOADS.  
1.08 DISCONNECTS:  
A. MANUAL MOTOR STARTER SWITCHES SHALL BE TOGGLE TYPE ON/OFF, AS REQUIRED FOR CONTROL OF SINGLE AND THREE PHASE MOTORS AND RESISTANCE HEATER LOADS. SWITCHES SHALL BE SIDE WIRED AND BE COMPLETE WITH OVERSIZE SILVER CONTACTS.  
B. SAFETY SWITCHES SHALL BE HEAVY-DUTY INDUSTRIAL TYPE. SWITCHES SHALL BE FUSED OR NONFUSED AS INDICATED ON THE DRAWINGS. ENCLOSURES SHALL BE RATED EITHER NEMA 1 OR NEMA 3R AS REQUIRED BY INSTALLATION. UNITS SHALL BE QUICK MAKE, QUICK BREAK WITH OPERATING HANDLE WHICH CAN BE PARALLELED IN THE "OFF" POSITION. FINISH SHALL BE A STANDARD LIGHT GRAY ENAMEL. SWITCHES SHALL HAVE AFFIXED TO COVERS, A NAMEPLATE INDICATING WHAT ITEM IS CONTROLLED BY SWITCH.  
1. FUSES SHALL BE OF CORRECT RATING FOR EACH INSTALLATION, AND SHALL BE EITHER CURRENT LIMITING OR MULTI-ELEMENT TIME DELAY AS REQUIRED BY EQUIPMENT MANUFACTURERS RECOMMENDATION.  
1.09 RECEPTACLES:  
A. DUPLEX RECEPTACLES SHALL BE RATED 20 AMP, 125V, A.C., 3 WIRE GROUNDING TYPE UNLESS OTHERWISE INDICATED. CONNECTION SHALL BE NEMA 5-20. A GROUNDING LEAFER SHALL BE PROVIDED FOR GROUND BETWEEN THE GROUNDING OUTLET BOX AND THE RECEPTACLE GROUND TERMINAL. GROUNDING THROUGH THE RECEPTACLE MOUNTING STRAPS IS NOT ACCEPTABLE.  
B. CLOCK OUTLETS SHALL BE 20 AMP, 125V, A.C. 3 WIRE GROUNDING TYPE RECESSED RECEPTACLES WITH CLOCK HANGER SUPPORT AND INTEGRAL PLASTIC PLATE.  
C. GROUND FAULT TYPE DUPLEX RECEPTACLE SHALL PROVIDE 20A. FEED THROUGH RATING AND 0.025 SECOND, NOMINAL TRIP TIME PER U.L. STANDARD.  
D. ISOLATED GROUND RECEPTACLES SHALL BE 20 AMP, 125V, 3 WIRE GROUNDING TYPE, ORANGE IN COLOR. RECEPTACLE SHALL NOT GROUND THROUGH MOUNTING STRAP, BUT ONLY THROUGH THE GROUND SCREW WHEN CONNECTED TO AN INDEPENDENT GROUNDING CONDUCTOR.

- 1.10 PLATES: PROVIDE PLATES FOR EVERY SWITCH, RECEPTACLE, AND TELEPHONE/DATA OUTLET.  
A. ALL INTERIOR PLATES SHALL BE IVORY COLORED SMOOTH NYLON OR PHENOLIC PLASTIC FOR ALL OUTLET LOCATIONS, UNLESS SPECIFICALLY NOTED OTHERWISE.  
B. ALL EXTERIOR COVERS SHALL BE WEATHERPROOF PER NEC 314.16(d) THERMOPLASTIC, WITH CLEAR POLYCARBONATE TOP HINGED COVER AND PLATE GASKET.  
C. PLATES FOR ISOLATED GROUND RECEPTACLES SHALL BE ORANGE COLORED, SMOOTH NYLON OR PHENOLIC PLASTIC, UNLESS NOTED OTHERWISE.  
1.11 LIGHT FIXTURES: FURNISH ALL LIGHT FIXTURES, LIGHTING EQUIPMENT AND COMPONENTS SHOWN ON THE PLANS, LISTED IN THE "FIXTURE SCHEDULE" AND SPECIFIED HEREIN.  
A. BALLASTS FOR FLUORESCENT FIXTURES SHALL BE HIGH POWER FACTOR, ENERGY SAVING TYPE, COMPATIBLE WITH LAMPS AND THEIR DESIGN. CONSTRUCTION SHALL CONFORM TO C.E.C. OR OTHER LOCAL STANDARDS WHERE APPLICABLE.  
B. FLUORESCENT LAMPS SHALL BE ENERGY SAVING, COOL WHITE AND OF THE LENGTH AND WATTAGE TO FIT THE FIXTURE IN WHICH USED. ALL 4" RAPID START LAMPS SHALL BE 32W.  
C. INCANDESCENT LAMPS SHALL BE OF THE INSIDE FROSTED TYPE, WITH A RATING OF 120V, AND SCREW BASE, UNLESS NOTED OTHERWISE.  
D. HIGH INTENSITY DISCHARGE (HID) BALLASTS SHALL BE HIGH POWER FACTOR AND RATED AT START-UP AT 20° F. ON ALL OUTDOOR FIXTURES. LAMPS AND BALLASTS SHALL BE COMPATIBLE WITH BALLASTS MULTI-VOLTAGE RATED.  
E. LIGHTING FIXTURE DIFFUSERS: ALL PLASTIC DIFFUSERS FOR FLUORESCENT FIXTURES SHALL BE ACRYLIC. THEY SHALL BE 100% PURE VIRGIN ACRYLIC, MINIMUM THICKNESS .125" OVERALL.  
1.12 PULL LINE: INSTALL AN UNSPLICED PULL LINE IN ALL EMPTY CONDUITS. PULL LINE SHALL BE A 3/16" BRAIDED POLY-PROPYLENE LINE.  
1.13 GROUND RODS: PROVIDE STEEL CENTERED COPPER CLAD GROUND RODS IN ACCORDANCE WITH SECTION 250 OF THE NEC. MINIMUM LENGTH SHALL BE 3/4" X 8", DRIVEN NEARLY FULL LENGTH INTO THE EARTH WITH NO MORE THAN 2" LEFT ABOVE GRADE FOR PROPER CONNECTION TO THE GROUNDING CONDUCTOR(S).  
1.14 TRANSFORMERS: TRANSFORMERS SHALL BE DRY-TYPE, NEMA-1 FOR DRY LOCATIONS OR NEMA-3R FOR WET OR DAMP LOCATIONS. TRANSFORMERS SHALL HAVE VENTILATED CORE AND COIL ASSEMBLIES MOUNTED ON RUBBER ISOLATION PADS TO MINIMIZE THE SOUND LEVEL. (1) 2-1/2" PASS CAPACITY TAPS WITH (2) ABOVE AND (4) BELOW SHALL BE PROVIDED AT 150° C. RISE, UNLESS NOTED OTHERWISE.  
1.15 TIME SWITCHES:  
A. TIME SWITCH(ES) FOR CONTROLLING MECHANICAL EQUIPMENT, SIGNS, DISPLAYS, ETC. SHALL BE A 7 DAY TYPE, SPD, ADJUSTABLE WITH RESERVE POWER. 120V/277V.  
B. TIME SWITCHES FOR CONTROLLING EXTERIOR LIGHTING, OUT CYCLING, VENTILATING FANS, ETC. SHALL BE A 7 DAY TYPE, 3PS, WITH MANUAL BY-PASS SWITCHES, RESERVE POWER 120V, WITH (3) 20 AMP CONTACTS.  
1.16 PHOTOCONTROLS: PHOTOCONTROLS SHALL BE OUTDOOR TYPE, 120V/277V, CURRENT RATING, ADJUSTABLE.  
1.17 LOCATIONS: EQUIPMENT OUTLETS, LIGHTING FIXTURES, CONDUIT, WIRE, AND CONNECTION METHODS IN HVAC AIR-PLenums SHALL BE PROVIDED FOR SUCH USE.  
END OF SECTION

## INSTALLATION OF ELECTRICAL WORK

- 1.01 GENERAL: ANY CUTTING, PATCHING OR FINISH REPAIR OF THE WORK OR WORK OF OTHER TRADES NECESSARY FOR THE INSTALLATION OF THE ELECTRICAL WORK SHALL BE PROVIDED UNDER THIS SECTION.  
1.02 MISCELLANEOUS:  
A. PROVIDE TRENCHING, CONCRETE ENCASEMENT WHEN REQUIRED, BACKFILLING AND COMPACTION FOR ALL UNDERGROUND CONDUITS AND/OR STRUCTURES.  
B. PROVIDE FOOTINGS FOR ALL POST AND/OR POLE-MOUNTED LIGHTING FIXTURES.  
C. STRUCTURAL AND MISCELLANEOUS STEEL USED IN CONNECTION WITH ELECTRICAL WORK AND LOCATED OUTDOOR OR IN DAMP LOCATIONS, SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. INCLUDED ARE UNDERGROUND PULLBOX COVERS, UNBENT BRACING AND SIMILAR ELECTRICAL ITEMS.  
D. FLASHINGS SHALL BE PROVIDED AT ALL POINTS WHERE CONDUIT OR OTHER ELECTRICAL COMPONENTS PENETRATE THE ROOF. FLASHINGS SHALL EXTEND A MINIMUM OF 5" ABOVE THE SURROUNDING ROOF SURFACE WITH WEATHERPROOF MASTIC APPLIED, TO PREVENT MOISTURE OR DUST FROM ENTERING THE OPENING. FLASHINGS SHALL BE DELIVERED TO THE ROOFING CONTRACTOR FOR INSTALLATION. THE CORRECT LOCATION OF ALL SUCH PENETRATIONS SHALL BE VERIFIED BY THE CONTRACTOR.  
E. PROVIDE SLEEVES UNDER WALLS, CONCRETE FOOTINGS AND FOUNDATIONS. SLEEVES SHALL HAVE AN INSIDE DIAMETER OF NOT LESS THAN 1" LARGER THAN THE OUTSIDE DIAMETER OF CONDUIT CONTAINED THEREIN.  
1.03 CONDUIT: CONDUIT FOR LINE VOLTAGE WIRING SHALL BE CONCEALED WITHIN FINISHED WALLS, CEILINGS AND UNDER/IN FLOORS. EXPOSED CONDUITS ABOVE CEILINGS AND SURFACE MOUNTED IN MECHANICAL AND SERVICE AREAS SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO THE BUILDING WALLS. RIGHT ANGLE BURNS SHALL CONSIST OF CONDUIT BODIES OR SYMMETRICAL BENDS. ALL CONDUITS SHALL BE PROPERLY SECURED WITH COMPONENTS SPECIFICALLY MANUFACTURED FOR THIS USE. ALL CONDUITS SHALL BE SIZED IN ACCORDANCE WITH FULL CAPACITIES SET FORTH IN ARTICLE 310 - GENERAL WIRING AND COMPACT STRANDED CONDUITS, AND FOR ARTICLE 402 - FIXTURE WIRING OF THE NEC. ALL CONDUIT RUNS SHALL BE INSTALLED TO AVOID TRAPPED CONDENSATION.  
A. ELECTRICAL METALLIC TUBING (EMT) DO NOT EMBED EMT IN CONCRETE OR BELOW GRADE. EMT MAY BE USED WHERE CONCEALED OR WHERE NOT SUBJECT TO DAMAGE.  
B. RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE USED IN MECHANICAL ROOMS, WHERE CONDUIT PASSES THROUGH CONCRETE SLABS ON GRADE OR WHERE SUBJECT TO PHYSICAL DAMAGE.  
C. FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR PULL CONNECTIONS TO ALL VIBRATING AND MECHANICAL EQUIPMENT. A CODE GAUGE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN SUCH CONDUITS. FLEXIBLE METALLIC CONDUIT MAY BE USED IN LENGTHS OF LESS THAN 6' FOR CONNECTING FIXTURES. PROVIDED THAT A CODE GAUGE INSULATED GROUNDING CONDUCTOR IS PROVIDED. LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE USED FOR ALL DAMP OR WET LOCATIONS.  
D. POLYVINYL CHLORIDE CONDUIT (PVC) SHALL ONLY BE USED UNDERGROUND AT A MINIMUM OF 30" BELOW FINISHED GRADE. WHEN NOT INSTALLED UNDER A CONCRETE SLAB OR FOOTING, PROVIDE A CODE GAUGE GREEN GROUND WIRE IN ALL PULLED ALL UNDERGROUND CONDUIT RUNS SHALL SLOPE TO DRAIN TO EACH END AND TERMINATE WITH TAPER-MANUFACTURED BELL ENDS AT ALL MANHOLES AND PULL BOXES.  
E. CONDUIT ENDS SHALL BE CUT SQUARE AND SHALL BE CAREFULLY REAMED OUT TO FULL SIZE WITH A TAPERED BURRING REAMER AND SHOULDERS TO THE FITTINGS.  
F. BENDS IN CONDUIT SHALL BE MADE IN ACCORDANCE WITH SECTION 300.34 OF NEC SO THAT THE CONDUIT WILL NOT BE DAMAGED, AND THAT THE INTERNAL DIAMETER OF THE CONDUIT WILL NOT BE EFFECTIVELY REDUCED.  
G. CONDUIT SUPPORTS SHALL BE PROVIDED FOR ALL ABOVE GROUND SYSTEMS. CONDUIT SHALL BE SECURELY SUPPORTED AND FASTENED WITHIN 3' OF ANY TERMINATION POINT AND AT A MAXIMUM OF EVERY 10 FEET ALONG LENGTH OF RUN.  
H. CLEARANCE: CONDUIT SHALL NOT RUN CLOSER THAN 6" TO ANY HOT WATER PIPE, STEAM PIPE, HEATER FLUE, OR VENT.  
I. CONDUITS SHALL BE USED WHERE CONDUIT RUNS MUST GO AROUND OUTSIDE CORNERS OF WALLS, BEAMS, EQUIPMENT, ETC. ALL CONDUIT COVERS SHALL BE ACCESSIBLE.  
1.04 CONDUCTORS AND TERMINATIONS: WIRE AND CABLE SHALL BE CONTINUOUS FROM OUTLET TO OUTLET, WITH THE SPLICES ONLY IN JUNCTION BOXES, GUTTERS, EQUIPMENT OR OTHER APPROVED LOCATIONS.  
A. MAKE SPLICES, JOINTS, TAPS AND CONNECTIONS TO EQUIPMENT WITH APPROVED SOLDERLESS LIUGS SIZED FOR THE WIRE OR CONDUIT INVOLVED.  
B. IDENTIFY POWER AND LIGHTING FEEDERS WITH PERMANENT TAGS AT PANELS, PULL BOXES AND POINTS WHERE CONDUIT RUN IS BROKEN.  
C. INSTALLATION: THOROUGHLY CLEAN CONDUIT AND WIREWAYS TO INSURE ALL PARTS ARE PERFECTLY DRY BEFORE PULLING WIRES. USE APPROVED WIRE PULLING COMPOUND FOR SIZES #2 OR LARGER, AND ON LONG RUNS.  
D. WIRE OR CABLE BENDS IN JUNCTION AND/OR PULLBOXES SHALL BE MADE WITH A LONG RADIUS. BENDS FOR CABLE SHALL HAVE A RADIUS OF NOT LESS THAN 6 TIMES THE DIAMETER OF THE CABLE, IN ACCORDANCE WITH SECTION 300.34 OF THE NEC.  
E. CONDUCTORS #12 AND SMALLER SHALL BE PROVIDED WITH EYE OR FORKED TYPE COMPRESSION SET CONNECTORS WHEN CONDUCTORS ARE TERMINATED ON A SET SCREW TYPE TERMINAL.  
1.05 DEVICE AND JUNCTION BOXES:  
A. CONCEALED OUTLET BOXES SHALL BE ACCURATELY PLACED, FLUSH WITH THE FINISHED SURFACE OF WALL OR CEILING, UNLESS OTHERWISE INDICATED. THEY SHALL BE PLUMB AND RIGIDLY FASTENED TO THE STRUCTURE, INDEPENDENT OF THE CONDUIT, BY A BAR TYPE HANGER OR STRAP APPROVED FOR THAT PARTICULAR USE.  
B. OUTLET BOXES IN FURRED CEILING SHALL BE RIGIDLY FASTENED TO THE SUPPORTING STRUCTURE BY AN APPROVED BAR TYPE HANGER OR BLOCKING.  
C. CONTROL APPARATUS, OUTLET BOXES, JUNCTION AND/OR PULLBOXES, AND OTHER SIMILAR EQUIPMENT SHALL BE INSTALLED AND MAINTAINED IN ACCESSIBLE POSITIONS AND LOCATIONS.  
D. WALL OUTLETS SHALL NOT BE WIRED BACK-TO-BACK. BOXES ON OPPOSITE SIDES OF A COMMON WALL SHALL BE SEPARATED BY A SPACE OF AT LEAST 6". PROVIDE A MINIMUM OF 24" OF SEPARATION IN ACUSTIC AND FIRE RATED WALLS.  
E. CAST STEEL OR ALUMINUM OUTLET BOXES SHALL BE USED FOR ALL SURFACE MOUNTING IN DAMP OR WET LOCATIONS. BOXES SHALL BE COMPLETE WITH THREADED HUBS AND WEATHERPROOF COVERS.  
F. PROVIDE MULTI-GANG BOXES WHERE REQUIRED. SECTIONAL OR GANGABLE BOXES SHALL NOT BE PERMITTED.  
1.06 LIGHTING FIXTURES: FURNISH ALL LABOR AND MATERIALS TO INSTALL SPECIFIED EQUIPMENT IN THE MANNER INDICATED. ALL FIXTURES AND LIGHTING EQUIPMENT SHALL BE DELIVERED TO THE SITE COMPLETE WITH SUSPENSION ACCESSORIES, CANOPIES, CASTINGS, SOCKETS, REFLECTORS, BALLASTS, DIFFUSERS, LOUVERS, PLASTER FRAMES, RECESSED BOXES, ETC. WIRE AND ASSEMBLE AS DIRECTED BY MANUFACTURER.  
A. FLUORESCENT FIXTURES SHALL NOT BE USED AS A RACEWAY FOR BRANCH CIRCUIT CONDUCTORS EXCEPT WHERE INSTALLED END-TO-END TO FORM A CONTINUOUS ASSEMBLY.  
B. CEILING MOUNTED FIXTURES WHICH ARE INSTALLED DIRECTLY ON COMBUSTIBLE OR FLAMMABLE CEILING MATERIAL, SHALL BE RATED AND APPROVED BY UL FOR SUCH INSTALLATION.  
C. RECESSED MOUNTED FIXTURES WHICH ARE INSTALLED IN GYPSUM BOARD OVER SUSPENDED WOOD CEILING SHALL BE COMPLETE WITH TWO (2) 1" X 1-5/8" STEEL CHANNELS MOUNTED ON TOP OF AND PERPENDICULAR TO STRUCTURAL WOOD MEMBERS AND SECURED WITH FOUR (4) 1/4" X 1" LAG BOLTS(S) AND WASHERS. THERE SHALL BE FOUR (4) 3/8" BY REQUIRED LENGTH THREADED RODS WITH WASHERS AND LOCKWASHERS SECURING FIXTURE TO CHANNEL AT FOUR (4) CORNERS.  
D. RECESSED MOUNTED FIXTURES IN SUSPENDED "T-BAR" TYPE CEILING SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH A #10 AWG WIRE AT EACH OF FOUR (4) CORNERS. SUPPORT WIRES SHALL ONLY BE TIGHTENED ENOUGH TO ALLOW FIXTURE TO FULLY SEAT WITH GRID.  
E. WHERE NUMBER OF WIRES INDICATED ON DRAWINGS EXCEED THE LOCAL CODE REQUIREMENTS FOR FIXTURE JUNCTION BOXES THE CONTRACTOR AT HIS OPTION SHALL:  
1. IN DEMOUNTABLE ACUSTIC TILE CEILING: INSTALL A JUNCTION BOX ABOVE CEILING, SIZED FOR NUMBER OF WIRES INVOLVED, AND PROVIDE FLEXIBLE CONDUIT WITH CONDUCTORS FROM JUNCTION BOX TO FIXTURE (NOT TO EXCEED 6'). COVER PLATE TO BE FINISHED AS DIRECTED BY ARCHITECT.  
2. IN PLASTERED OR OTHER FIRED CEILING: ADJUSTMENT TO THE FIXTURE, INSTALL A JUNCTION BOX (SIZED FOR NUMBER OF WIRES INVOLVED) WITH PLASTER RING AND PLATE FLUSH WITH FINISHED CEILING AND PROVIDE FLEXIBLE CONDUIT WITH CONDUCTORS TO RECESSED FIXTURE FROM JUNCTION BOX. COVER PLATE TO BE FINISHED AS DIRECTED BY ARCHITECT.  
F. EXTERIOR ADJUSTABLE LIGHTING FIXTURES SHALL BE ADJUSTED AFTER DARK IN THE PRESENCE OF THE ARCHITECT OR OWNER IN ORDER TO PROVIDE THE MAXIMUM ACHIEVABLE LIGHTING DISTRIBUTION WITHOUT CREATING LIGHT TRESPASS.  
1.07 GROUNDING: GROUNDING SHALL BE IN ACCORDANCE WITH ARTICLE 250 OF THE NEC, IN ITS ENTIRETY.  
A. PROVIDE AND INSTALL GROUND RODS AS REQUIRED, FULL LENGTH AND WITH MECHANICAL TYPE CONNECTORS OF THE CORRECT SIZE AND APPLICATION, SUITABLE FOR THE FULL RATED CURRENT OF THE CONDUCTORS.  
B. PROVIDE GROUNDING CONDUCTOR(S) IN ACCORDANCE WITH ARTICLE 250 (1) OF THE NEC. EQUIPMENT GROUNDING CONDUCTOR(S) SHALL BE IN ACCORDANCE WITH ARTICLE 250 (9) OF THE NEC.  
1.08 CONNECTIONS TO EQUIPMENT: THE CONTRACTOR SHALL CONNECT ALL OWNER, MECHANICAL AND PLUMBING CONTRACTOR SUPPLIED EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS THROUGHOUT THE BUILDING.  
1.09 PROTECTION AND RESPONSIBILITY: THE CONTRACTOR SHALL PROTECT ALL WORK, MATERIALS, AND EQUIPMENT OF THIS DISCIPLINE FROM DAMAGE. PROVIDE ADEQUATE AND PROPER STORAGE FACILITIES DURING PROGRESS OF WORK AND BE FULLY RESPONSIBLE FOR ALL INJURY OR DAMAGE THAT MAY OCCUR FROM ANY PART OF WORK FUNCTION.  
1.10 CLEAN-UP: UPON COMPLETION OF WORK, AND PERIODICALLY AS REQUIRED FOR SAFETY AND SANITATION, REMOVE ALL TRASH AND DEBRIS RESULTING FROM WORK UNDER THIS SECTION.  
END OF SECTION

1.01 REDLANDS ENGINEERING CO., INC. PROJECT NO. 1-0-00001  
DATE: 03-09-10



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REF.	DESCRIPTION	APPR.	DATE

REVISIONS	

DESIGNED BY: AMW  
DRAWN BY: AMW  
DATE DRAWN: 6/29/10  
RECOMMENDED FOR APPROVAL BY: Shadell Singsis  
APPROVED BY: Glen Thomas  
DATE: 6/29/10  
DATE: 06-29-10

### WATER EFFICIENT LANDSCAPE CONVERSION



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PROJECT NO. 1-0-00001  
DRAWING NO. 9-120  
SHEET NO. 20 OF 20