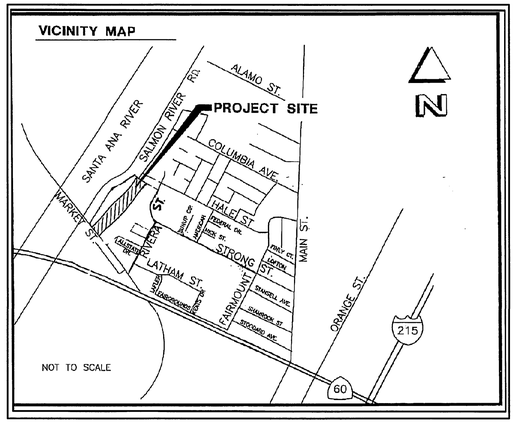
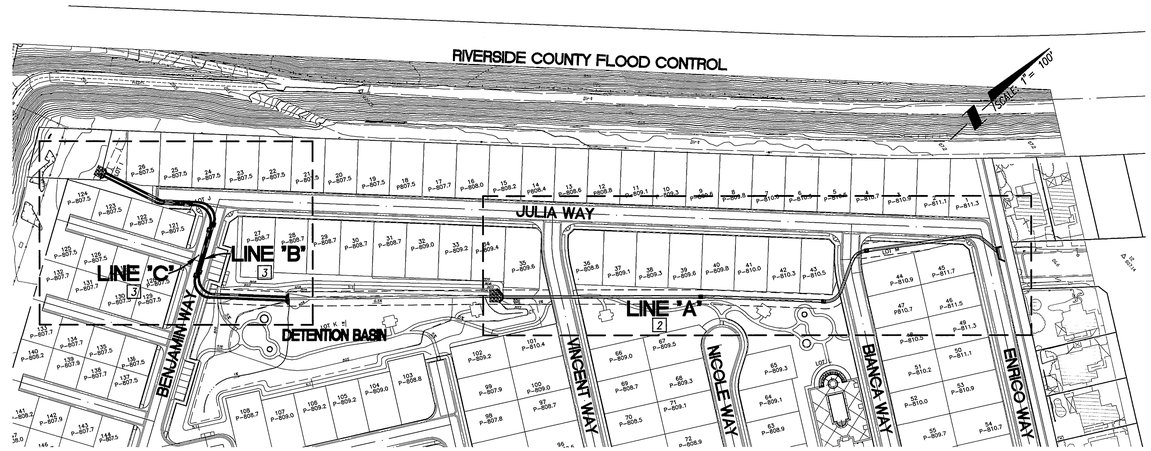
# STORM DRAIN IMPROVEMENT PLAN
# TRACT NO. 30922-3
# STORM DRAIN LINES "A", "B" AND "C"




**INDEX MAP**
SCALE: 1"=100'

[#] STORM DRAIN SHEET NO.

## GENERAL NOTES

1. NO PERSON SHALL PERFORM ANY CONSTRUCTION ACTIVITY OR INSTALL ANY OBJECTS WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS OF THE CITY OF RIVERSIDE WITHOUT A VALID CONSTRUCTION PERMIT, OR A STREET OPENING PERMIT OR AN ENCROACHMENT PERMIT ISSUED BY THE CITY'S PUBLIC WORKS DEPARTMENT.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CLEAR THE RIGHT-OF-WAY IN ACCORDANCE WITH THE PROVISIONS OF LAW AS IT AFFECTS EACH UTILITY INCLUDING IRRIGATION LINES AND APPURTENANCES AND AT NO COST TO THE CITY.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF RIVERSIDE DEPARTMENT OF PUBLIC WORKS STANDARD DRAWINGS AND ITS SUPPLEMENTAL NOTES AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION.
4. THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE WORK HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.
5. THE DEVELOPER SHALL BE RESPONSIBLE FOR PRESERVING OR REESTABLISHING AND REFERENCING SURVEY MONUMENTS DESTROYED, DISTURBED OR BURIED AS A RESULT OF CONSTRUCTION HEREON.
6. ALL FLAGGED ELEVATIONS SHALL BE STAKED IN THE FIELD BY THE PRIVATE ENGINEER.
7. THE CONTRACTOR SHALL CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (USA), PHONE # 1-800-227-2600, TWO WORKING DAYS BEFORE DIGGING; NO CONSTRUCTION PERMIT WILL BE ISSUED BY THE PUBLIC WORKS DEPARTMENT INVOLVING EXCAVATION FOR UNDERGROUND FACILITIES UNLESS THE APPLICANT HAS BEEN PROVIDED AN INQUIRY IDENTIFICATION NUMBER BY U.S.A.
8. DEVELOPER/CONTRACTOR TO GIVE CITY WATER DIVISION FIVE (5) WORKING DAYS WRITTEN NOTICE PRIOR TO START OF CONSTRUCTION AND TO ALLOW CITY TEN (10) WORKING DAYS FOR COMPLETION OF WORK. (909) 351-6150.
9. QUANTITIES SHOWN ARE FOR INFORMATION ONLY AND THE CITY OF RIVERSIDE IS NOT RESPONSIBLE FOR THEIR ACCURACY.
10. BEFORE THE RIP-RAP AT THE OUTLET OF ANY DRAINAGE STRUCTURE IS ACCEPTED BY THE CITY, IT SHALL BE TESTED UNDER FLOWS AS CLOSE AS POSSIBLE TO DESIGN CONDITIONS WITH WATER OBTAINED FROM FIRE HYDRANTS IN THE IMMEDIATE AREA.

## CONSTRUCTION NOTES / QUANTITY

| | Note | Quantity | Unit |
|---|---|---|---|
| 1 | CONSTRUCT 24" RCP (D-LOAD PER PLAN) BEDDING PER C.O.R. STD 452 (CASE I) WITH CONCRETE BACKFILL PER PROFILE & DETAIL ON SHEET 4 | 771 | L.F. |
| | | 392 | L.F. |
| 2 | CONSTRUCT 42" RCP (D-LOAD PER PLAN) BEDDING PER C.O.R. STD 452 (CASE I) WITH CONCRETE BACKFILL PER PROFILE & DETAIL ON SHEET 4 | 728 | L.F. |
| | | 187 | L.F. |
| 3 | CONSTRUCT MANHOLE "EZ" PER C.O.R. STD. 431 | 4 | EA. |
| 4 | CONSTRUCT MANHOLE "AX" PER C.O.R. STD. 430 | 3 | EA. |
| 5 | CONSTRUCT HEADWALL AND WINGWALLS PER CAL TRANS STD. D89 AND D90 DETAILS ON SHEET 4 AND DETAIL ON PLAN | 4 | EA. |
| 6 | CONSTRUCT TRASHRACK PER APWA STD 361 (CASE A) | 2 | EA. |
| 7 | CONSTRUCT PROTECTION BARRIER PER APWA STD 360 | 2 | EA. |
| 8 | CONSTRUCT CATCH BASIN PER C.O.R. STD 405 | 1 | EA. |
| 9 | CONSTRUCT 6" THICK PCC SLAB W/ #4 BARS 18" O.C. EACH WAY | 527 | S.F. |
| 10 | CONSTRUCT LIGHT WEIGHT RIP RAP PER DETAIL ON SHEET NO. 4 | 450 | S.F. |

## BENCHMARK

CITY OF RIVERSIDE BENCHMARK GPS-51: 2-½" BRASS DISK STAMPED "CITY OF RIVERSIDE GPS STATION 51 1991 CADME" SET IN THE TOP OF A CATCH BASIN ALONG THE NORTHERLY CURB OF COLUMBIA AVENUE, 4 FEET EAST OF THE BCR OF THE NORTHEAST OF MAIN STREET AT COLUMBIA AVE.

ELEV.: 813.66

PW04-0857

Underground Service Alert
Call: TOLL FREE
1-800-227-2600
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

Prepared Under The Supervision Of:
SCOTT M. WILSON
REGISTERED CIVIL ENGINEER NO. 49884
REGISTRATION EXPIRES: 09/30/06
Date: 1/4/05

CITY OF RIVERSIDE BENCHMARK GPS-51: 2-½" BRASS DISK STAMPED "CITY OF RIVERSIDE GPS STATION 51 1991 CADME" SET IN THE TOP OF A CATCH BASIN ALONG THE NORTHERLY CURB OF COLUMBIA AVENUE, 4 FEET EAST OF THE BCR OF THE NORTHEAST OF MAIN STREET AT COLUMBIA AVE. ELEV.: 813.66

REGISTERED PROFESSIONAL ENGINEER SCOTT M. WILSON No. 49884 Exp. 09/30/06 CIVIL STATE OF CALIFORNIA

WILSON MIKAMI CORPORATION
3 PETERS CANYON, SUITE 110
IRVINE, CA 92606
T: 949-679-0090
F: 949-679-0091

Bench Mark: GPS-51 SEE THIS SHEET

Scale: SEE PLAN
Date: 12-27-04

RIVERA VILLAS

REVISIONS:

| REMARK | DESCRIPTION: | APR.: | DATE: |
|---|---|---|---|
| | | | |

DESIGNED: MKW DRAWN: MKW CHECKED: SMW

CITY OF RIVERSIDE ELECTRICAL DEPARTMENT — APPROVED BY 1/19/05
CITY OF RIVERSIDE WATER DEPARTMENT — APPROVED BY MK 1/7/05

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

| Approved By: | BY: | Date: |
|---|---|---|
| PRINCIPAL ENG. | | 1/25/05 |
| PARK DEPARTMENT | | |
| TRAFFIC DIVISION | | |
| STREET SERVICES | | 1/11/05 |

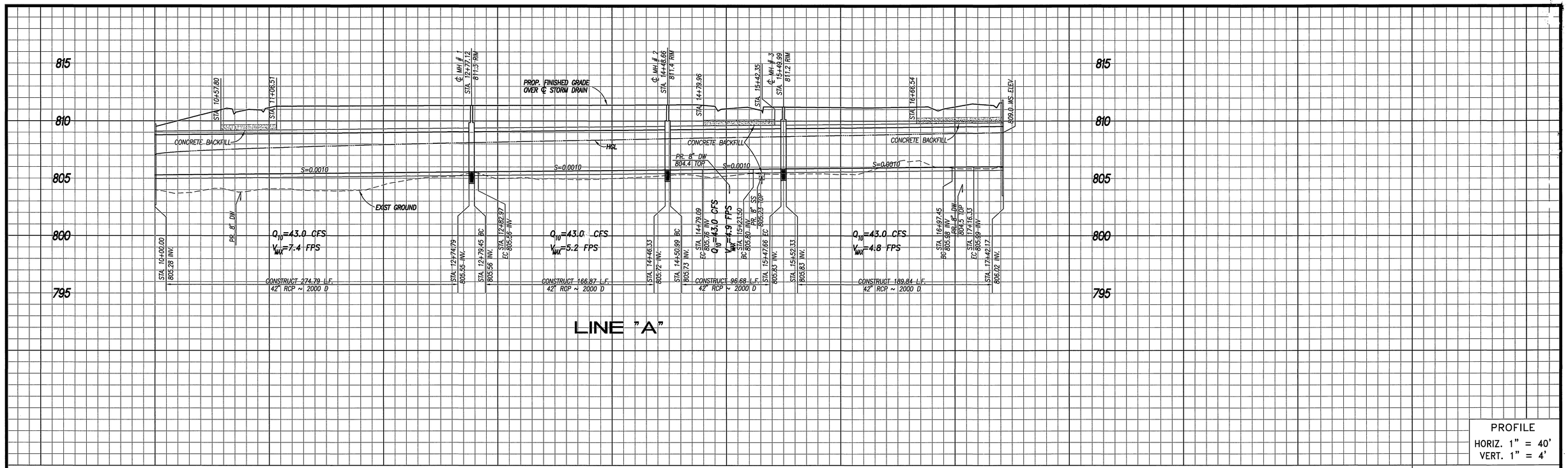
APPROVED BY — CITY ENGINEER — DATE 1/27/05

TRACT 30922-3
STORM DRAIN IMPROVEMENT PLANS
TITLE SHEET

D-744
Sheet 1 OF 4 SHEETS
FILE NO. 03-026

File name: S:\10012.10\dwg\prsd0001.dwg

INDEXED 2-8-05




LINE "A"

PROFILE
HORIZ. 1" = 40'
VERT. 1" = 4'

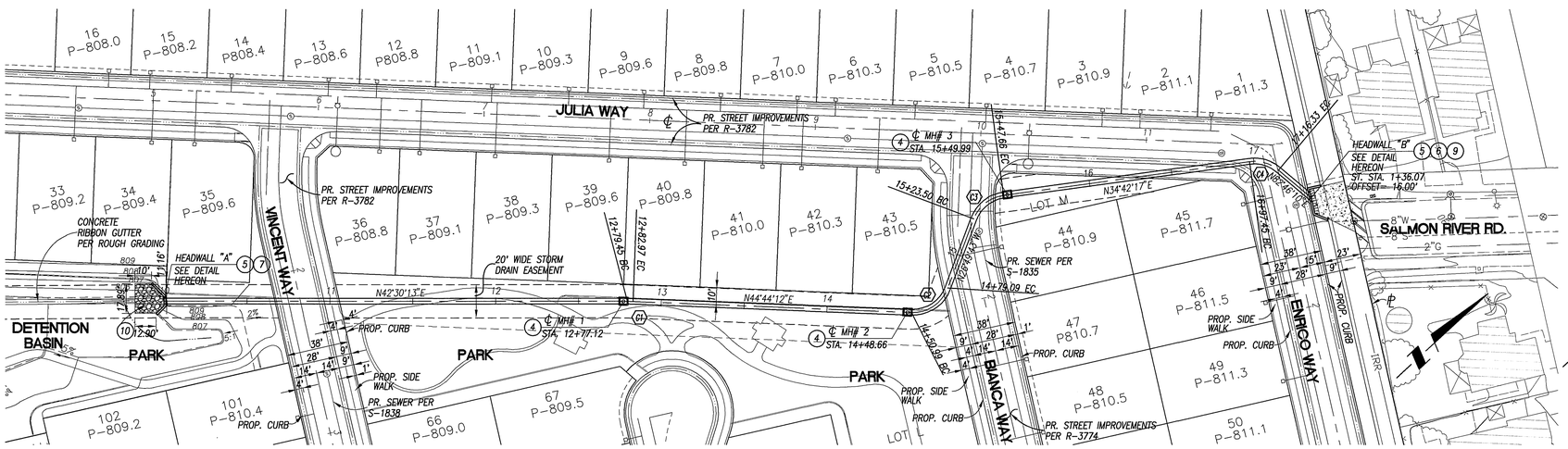
## CONSTRUCTION NOTES

(2) CONSTRUCT 42" RCP (D-LOAD PER PLAN) BEDDING PER C.O.R. STD 452 (CASE I) WITH CONCRETE BACKFILL PER PROFILE & DETAIL ON SHEET 4
(4) CONSTRUCT MANHOLE "AX" PER C.O.R. STD. 430
(5) CONSTRUCT HEADWALL AND WINGWALLS PER CAL TRANS STD. D89 AND D90 ON SHEET 4 AND DETAIL HEREON
(6) CONSTRUCT TRASHRACK PER APWA STD 361 (CASE A)
(7) CONSTRUCT PROTECTION BARRIER PER APWA STD 360
(9) CONSTRUCT 6" THICK PCC SLAB W/ #4 BARS 18" O.C. EACH WAY W/HEAVY BROOM FINISH (NON-SLIP FOR TRAIL)
(10) CONSTRUCT LIGHT WEIGHT RIP RAP PER DETAIL ON SHEET 4

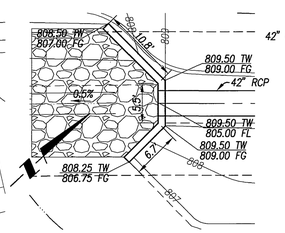
1. CONTRACTOR SHALL POTHOLE AND VERIFY THE EXISTING ELEVATION OF UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

CURVE TABLE

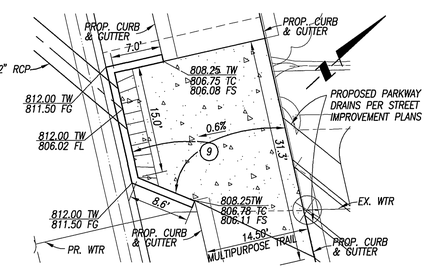
| CURVE | LENGTH | RADIUS | DELTA | TANGENT |
|---|---|---|---|---|
| C1 | 3.51' | 90.00' | 2°14'00" | 1.75' |
| C2 | 28.10' | 22.50' | 71°33'55" | 16.22' |
| C3 | 24.16' | 22.50' | 61°32'00" | 13.39' |
| C4 | 18.87' | 22.50' | 48°03'53" | 10.03' |




LINE "A"




HEADWALL "A" DETAIL
SCALE: 1"=10'




HEADWALL "B" DETAIL
SCALE: 1"=10'

## BENCHMARK

CITY OF RIVERSIDE BENCHMARK GPS-51: 2-½" BRASS DISK STAMPED "CITY OF RIVERSIDE GPS STATION 51 1991 CADME" SET IN THE TOP OF A CATCH BASIN ALONG THE NORTHERLY CURB OF COLUMBIA AVENUE, 4 FEET EAST OF THE BCR OF THE NORTHEAST OF MAIN STREET AT COLUMBIA AVE.

ELEV.: 813.66

GRAPHIC SCALE
40 0 20 40 80 160
( IN FEET )
1 inch = 40 ft.

PW04-0857

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Prepared Under The Supervision Of:
Date: 1/4/05
SCOTT M. WILSON
REGISTERED CIVIL ENGINEER NO. 49884
REGISTRATION EXPIRES: 09/30/06

REGISTERED PROFESSIONAL ENGINEER SCOTT M. WILSON No. 49884 Exp. 09/30/06 CIVIL STATE OF CALIFORNIA

WILSON MIKAMI CORPORATION
3 PETERS CANYON, SUITE 110
IRVINE, CA 92606
T: 949-679-0090
F: 949-679-0091

Scale: SEE PLAN
Date: 12-27-04

RIVERA VILLAS

Bench Mark:
GPS-51
SEE THIS SHEET

REVISIONS:

| REMARK | DESCRIPTION: | APR.: | DATE: |
|---|---|---|---|
| | | | |

DESIGNED: MKW DRAWN: MKW CHECKED: SMW

CITY OF RIVERSIDE ELECTRICAL DEPARTMENT
APPROVED BY 01/19/05

CITY OF RIVERSIDE WATER DEPARTMENT
APPROVED BY 1/1/05

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

| Approved By: | BY: | Date: |
|---|---|---|
| PRINCIPAL ENG. | | 1/25/05 |
| PARK DEPARTMENT | | 01/14/05 |
| TRAFFIC DIVISION | | |
| STREET SERVICES | | 1/11/05 |

APPROVED BY
CITY ENGINEER
DATE 1/27/05

# TRACT 30922-3 STORM DRAIN IMPROVEMENT PLANS

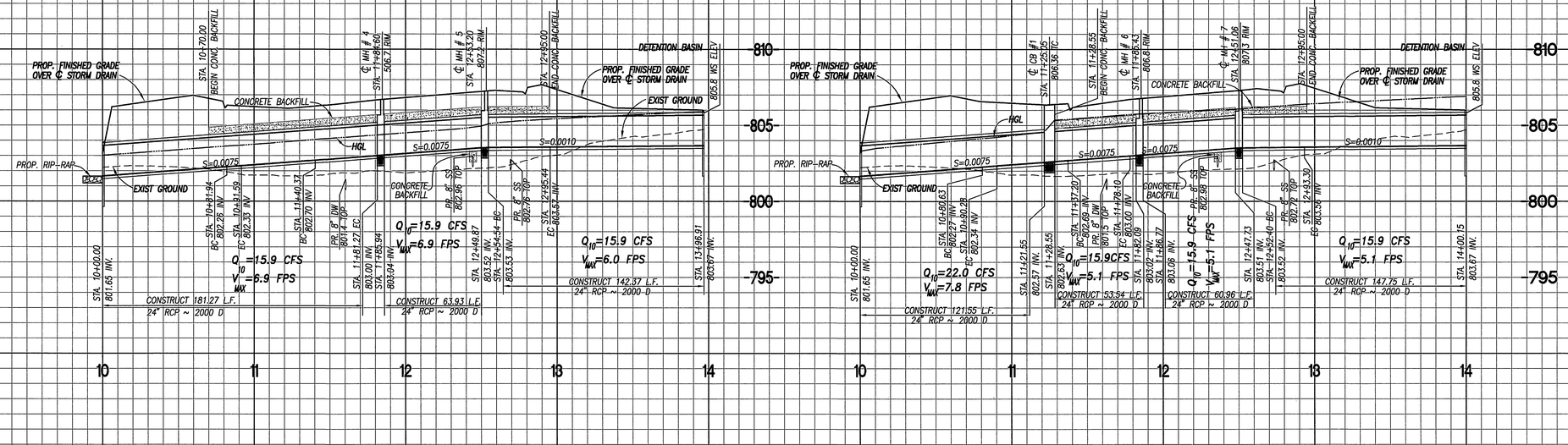
## LINE "A"

## STA 10+00 TO STA 17+42.17

D-744
Sheet 2 OF 4 SHEETS
FILE NO. 03-026

File name: S:\10012.10\dwg\prsd0002.dwg 1/4/2005 10:31:23 AM PST

INDEXED 2-8-05




PROFILE
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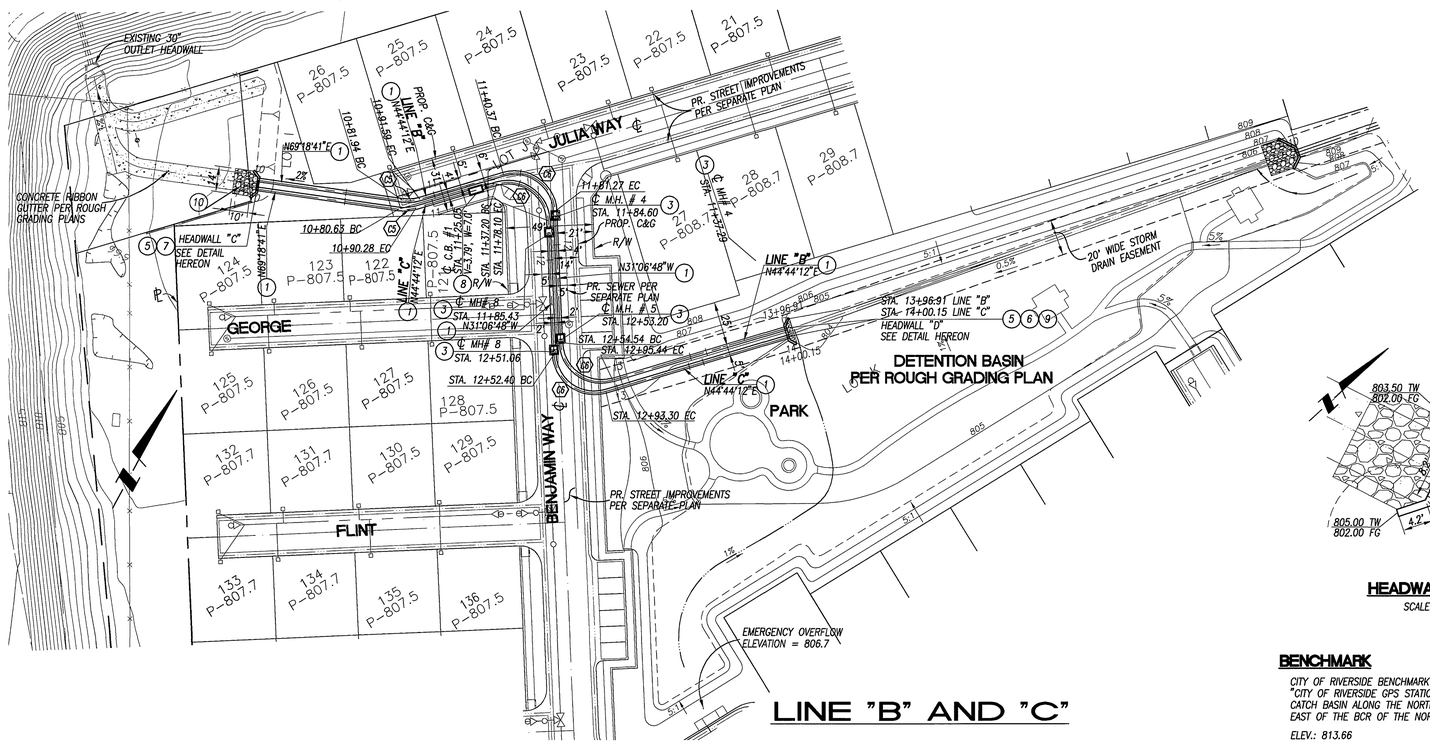


LINE "B" AND "C"

1. CONTRACTOR SHALL POTHOLE AND VERIFY THE EXISTING ELEVATION OF UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

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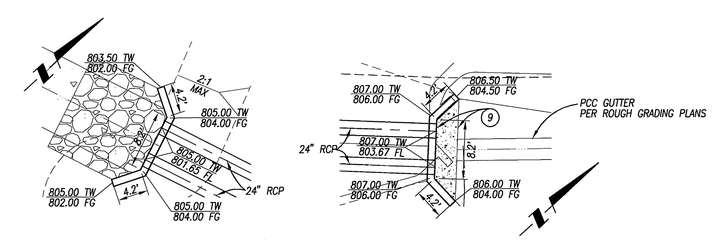
7. CONSTRUCT PROTECTION BARRIER PER APWA STD 360
8. CONSTRUCT CATCH BASIN PER C.O.R. STD 405 & STENCILING PER DETAIL ON SHEET 4
9. CONSTRUCT 6" THICK PCC SLAB W/ #4 BARS 18" O.C. EACH WAY
10. CONSTRUCT LIGHT WEIGHT RIP RAP PER DETAIL ON SHEET NO. 4

| CURVE TABLE | | | | |
|---|---|---|---|---|
| CURVE | LENGTH | RADIUS | DELTA | TANGENT |
| C3 | 9.65' | 22.50' | 24°34'29" | 4.90' |
| C6 | 40.90' | 22.50' | 104°09'00" | 28.88' |




HEADWALL "C" DETAIL
SCALE: 1"=10'

HEADWALL "D" DETAIL
SCALE: 1"=10'

## BENCHMARK

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PW04-0857

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Prepared Under The Supervision Of:
Date: 1/4/05
SCOTT M. WILSON
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REGISTRATION EXPIRES: 09/30/06

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3 PETERS CANYON, SUITE 110
IRVINE, CA 92606
T: 949-679-0090
F: 949-679-0091

Bench Mark:
GPS-51
SEE THIS SHEET

Scale: SEE PLAN
Date: 12-27-04

RIVERA VILLAS

REVISIONS:

| REMARK | DESCRIPTION: | APR.: | DATE: |
|---|---|---|---|
| | | | |

DESIGNED: MKW DRAWN: MKW CHECKED: SMW

CITY OF RIVERSIDE ELECTRICAL DEPARTMENT
APPROVED BY 1/19/05

CITY OF RIVERSIDE WATER DEPARTMENT
APPROVED BY 1/7/05

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

| Approved By: | BY: | Date: |
|---|---|---|
| PRINCIPAL ENG. | | 1/25/05 |
| PARK DEPARTMENT | | |
| TRAFFIC DIVISION | | |
| STREET SERVICES | | 1/11/05 |

APPROVED BY
CITY ENGINEER
DATE 1/27/05

# TRACT 30922-3 STORM DRAIN IMPROVEMENT PLANS

LINES "B" AND "C"
STA 10+00 TO STA 14+08.33

D-744
Sheet 3 OF 4 SHEETS
FILE NO. 03-026

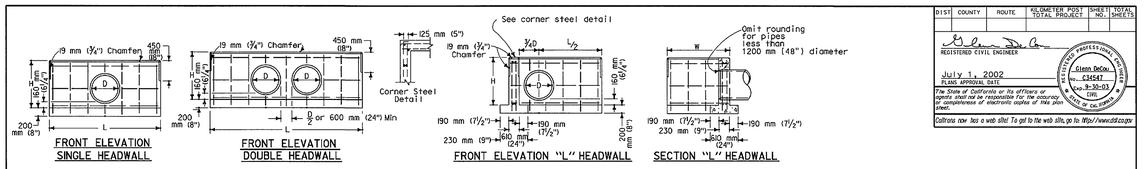
File name: S:\10012.10\dwg\prsd0003.dwg 1/4/2005 10:07:39 AM PST

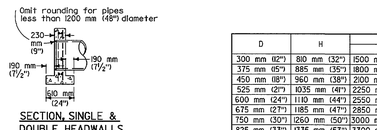
RNZ

INDEXED 2-8-05 JH

| DIST | COUNTY | ROUTE | KILOMETER POST TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| | | | | | |

REGISTERED CIVIL ENGINEER
July 1, 2002
PLANS APPROVAL DATE
Glenn DeOre C34547 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov




SECTION, SINGLE & DOUBLE HEADWALLS

| D | H | SINGLE L | SINGLE Steel | SINGLE Conc | DOUBLE L | DOUBLE Steel | DOUBLE Conc |
|---|---|---|---|---|---|---|---|
| 300 mm (12") | 810 mm (32") | 1500 mm (5.0') | 16 kg (35 lb) | 0.45 m³ (0.60 CY) | 2500 mm (8.0') | 24 kg (50 lb) | 0.74 m³ (0.94 CY) |
| 375 mm (15") | 885 mm (35") | 1800 mm (6.0') | 18 kg (40 lb) | 0.56 m³ (0.75 CY) | 2950 mm (9.5') | 28 kg (60 lb) | 0.9 m³ (1.17 CY) |
| 450 mm (18") | 960 mm (38") | 2100 mm (7.0') | 22 kg (50 lb) | 0.68 m³ (0.9 CY) | 3250 mm (10.5') | 34 kg (75 lb) | 1.04 m³ (1.35 CY) |
| 525 mm (21") | 1035 mm (41") | 2250 mm (7.5') | 26 kg (60 lb) | 0.76 m³ (1.02 CY) | 3550 mm (11.5') | 40 kg (90 lb) | 1.18 m³ (1.52 CY) |
| 600 mm (24") | 1110 mm (44") | 2550 mm (8.5') | 34 kg (75 lb) | 0.90 m³ (1.20 CY) | 3850 mm (12.5') | 46 kg (100 lb) | 1.32 m³ (1.72 CY) |
| 675 mm (27") | 1185 mm (47") | 2850 mm (9.5') | 38 kg (85 lb) | 1.04 m³ (1.39 CY) | 4300 mm (14.0') | 52 kg (115 lb) | 1.53 m³ (2.00 CY) |
| 750 mm (30") | 1260 mm (50") | 3000 mm (10.0') | 40 kg (85 lb) | 1.13 m³ (1.52 CY) | 4600 mm (15.0') | 54 kg (120 lb) | 1.69 m³ (2.21 CY) |
| 825 mm (33") | 1335 mm (53") | 3300 mm (11.0') | 44 kg (100 lb) | 1.29 m³ (1.73 CY) | 4900 mm (16.0') | 58 kg (130 lb) | 1.86 m³ (2.42 CY) |
| 900 mm (36") | 1410 mm (56") | 3600 mm (12.0') | 46 kg (105 lb) | 1.46 m³ (1.95 CY) | 5200 mm (17.0') | 66 kg (145 lb) | 2.03 m³ (2.65 CY) |
| 975 mm (39") | 1485 mm (59") | 3750 mm (12.5') | 58 kg (130 lb) | 1.57 m³ (2.09 CY) | 5500 mm (18.0') | 78 kg (170 lb) | 2.21 m³ (2.88 CY) |
| 1050 mm (42") | 1560 mm (62") | 4050 mm (13.5') | 62 kg (140 lb) | 1.75 m³ (2.34 CY) | 5800 mm (19.0') | 84 kg (185 lb) | 2.39 m³ (3.13 CY) |
| 1125 mm (45") | 1635 mm (65") | 4350 mm (14.5') | 66 kg (150 lb) | 1.94 m³ (2.60 CY) | 6100 mm (20.0') | 88 kg (195 lb) | 2.58 m³ (3.38 CY) |
| 1200 mm (48") | 1710 mm (68") | 4500 mm (15.0') | 70 kg (160 lb) | 2.06 m³ (2.75 CY) | 6400 mm (21.0') | 90 kg (200 lb) | 2.78 m³ (3.64 CY) |
| 1275 mm (51") | 1785 mm (71") | 4800 mm (16.0') | 80 kg (180 lb) | 2.26 m³ (3.03 CY) | 6850 mm (22.5') | 102 kg (225 lb) | 3.06 m³ (4.02 CY) |
| 1350 mm (54") | 1860 mm (74") | 5100 mm (17.0') | 84 kg (190 lb) | 2.47 m³ (3.31 CY) | 7150 mm (23.5') | 108 kg (240 lb) | 3.27 m³ (4.30 CY) |

STRAIGHT HEADWALLS

| D | H | L/2 | LENGTH OF W 1000 mm (40") Steel | 1000 mm (40") Conc | 1450 mm (58") Steel | 1450 mm (58") Conc | 1900 mm (76") Steel | 1900 mm (76") Conc | 2350 mm (94") Steel | 2350 mm (94") Conc | 2800 mm (112") Steel | 2800 mm (112") Conc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300 mm (12") | 810 mm (32") | 750 mm (30") | 22 kg (50 lb) | 0.59 m³ (0.79 CY) | 26 kg (60 lb) | 0.73 m³ (0.98 CY) | --- | --- | --- | --- | --- | --- |
| 375 mm (15") | 885 mm (35") | 900 mm (36") | 24 kg (55 lb) | 0.68 m³ (0.91 CY) | 28 kg (65 lb) | 0.83 m³ (1.11 CY) | --- | --- | --- | --- | --- | --- |
| 450 mm (18") | 960 mm (38") | 1050 mm (42") | 28 kg (65 lb) | 0.78 m³ (1.04 CY) | 32 kg (75 lb) | 0.94 m³ (1.25 CY) | --- | --- | --- | --- | --- | --- |
| 525 mm (21") | 1035 mm (41") | 1125 mm (45") | 32 kg (75 lb) | 0.86 m³ (1.15 CY) | 40 kg (90 lb) | 1.02 m³ (1.36 CY) | --- | --- | --- | --- | --- | --- |
| 600 mm (24") | 1110 mm (44") | 1275 mm (51") | 38 kg (85 lb) | 0.96 m³ (1.29 CY) | 44 kg (100 lb) | 1.13 m³ (1.51 CY) | 48 kg (110 lb) | 1.30 m³ (1.74 CY) | --- | --- | --- | --- |
| 675 mm (27") | 1185 mm (47") | 1425 mm (57") | 40 kg (90 lb) | 1.07 m³ (1.44 CY) | 46 kg (105 lb) | 1.25 m³ (1.67 CY) | 50 kg (115 lb) | 1.43 m³ (1.91 CY) | --- | --- | --- | --- |
| 750 mm (30") | 1260 mm (50") | 1500 mm (60") | 42 kg (95 lb) | 1.16 m³ (1.55 CY) | 48 kg (110 lb) | 1.34 m³ (1.80 CY) | 52 kg (120 lb) | 1.53 m³ (2.05 CY) | 60 kg (135 lb) | 1.72 m³ (2.29 CY) | --- | --- |
| 825 mm (33") | 1335 mm (53") | 1650 mm (66") | 46 kg (105 lb) | 1.28 m³ (1.71 CY) | 52 kg (120 lb) | 1.47 m³ (1.97 CY) | 60 kg (135 lb) | 1.67 m³ (2.23 CY) | 66 kg (150 lb) | 1.86 m³ (2.48 CY) | --- | --- |
| 900 mm (36") | 1410 mm (56") | 1800 mm (72") | 48 kg (110 lb) | 1.40 m³ (1.88 CY) | 54 kg (125 lb) | 1.61 m³ (2.15 CY) | 62 kg (140 lb) | 1.81 m³ (2.41 CY) | 68 kg (155 lb) | 2.01 m³ (2.68 CY) | 74 kg (170 lb) | 2.21 m³ (2.95 CY) |
| 975 mm (39") | 1485 mm (59") | 1875 mm (75") | --- | --- | 66 kg (150 lb) | 1.71 m³ (2.28 CY) | 74 kg (170 lb) | 1.92 m³ (2.56 CY) | 80 kg (185 lb) | 2.13 m³ (2.84 CY) | 88 kg (200 lb) | 2.33 m³ (3.12 CY) |
| 1050 mm (42") | 1560 mm (62") | 2025 mm (81") | --- | --- | 68 kg (155 lb) | 1.85 m³ (2.42 CY) | 76 kg (175 lb) | 2.07 m³ (2.76 CY) | 84 kg (190 lb) | 2.28 m³ (3.05 CY) | 92 kg (200 lb) | 2.50 m³ (3.34 CY) |
| 1125 mm (45") | 1635 mm (65") | 2175 mm (87") | --- | --- | --- | --- | 78 kg (180 lb) | 2.22 m³ (2.97 CY) | 88 kg (200 lb) | 2.45 m³ (3.27 CY) | 94 kg (215 lb) | 2.67 m³ (3.57 CY) |
| 1200 mm (48") | 1710 mm (68") | 2250 mm (90") | --- | --- | --- | --- | 84 kg (190 lb) | 2.34 m³ (3.13 CY) | 94 kg (216 lb) | 2.57 m³ (3.44 CY) | 100 kg (230 lb) | 2.81 m³ (3.75 CY) |
| 1275 mm (51") | 1785 mm (71") | 2400 mm (96") | --- | --- | --- | --- | --- | --- | 96 kg (220 lb) | 2.73 m³ (3.67 CY) | 102 kg (235 lb) | 2.98 m³ (3.99 CY) |
| 1350 mm (54") | 1860 mm (74") | 2550 mm (102") | --- | --- | --- | --- | --- | --- | 102 kg (235 lb) | 2.92 m³ (3.91 CY) | 110 kg (250 lb) | 3.17 m³ (4.24 CY) |

"L" HEADWALLS

CIRCULAR PIPE CULVERT HEADWALLS

NOTES

1. No deduction made in quantities for thickness of pipe walls.
2. All reinforcing steel #13M (#4) bars. All vertical and horizontal tie bars 450 mm (18") maximum spacing.
3. Length of wall "W" may be varied to suit conditions encountered in the field, and straight line interpolation may be used to calculate quantities.
4. Quantities are for design purposes only.
5. Cable railing to be installed on top of headwall when shown on Project Plans. See Standard Plan B8-47 for cable railing details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# PIPE HEADWALLS

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

D89

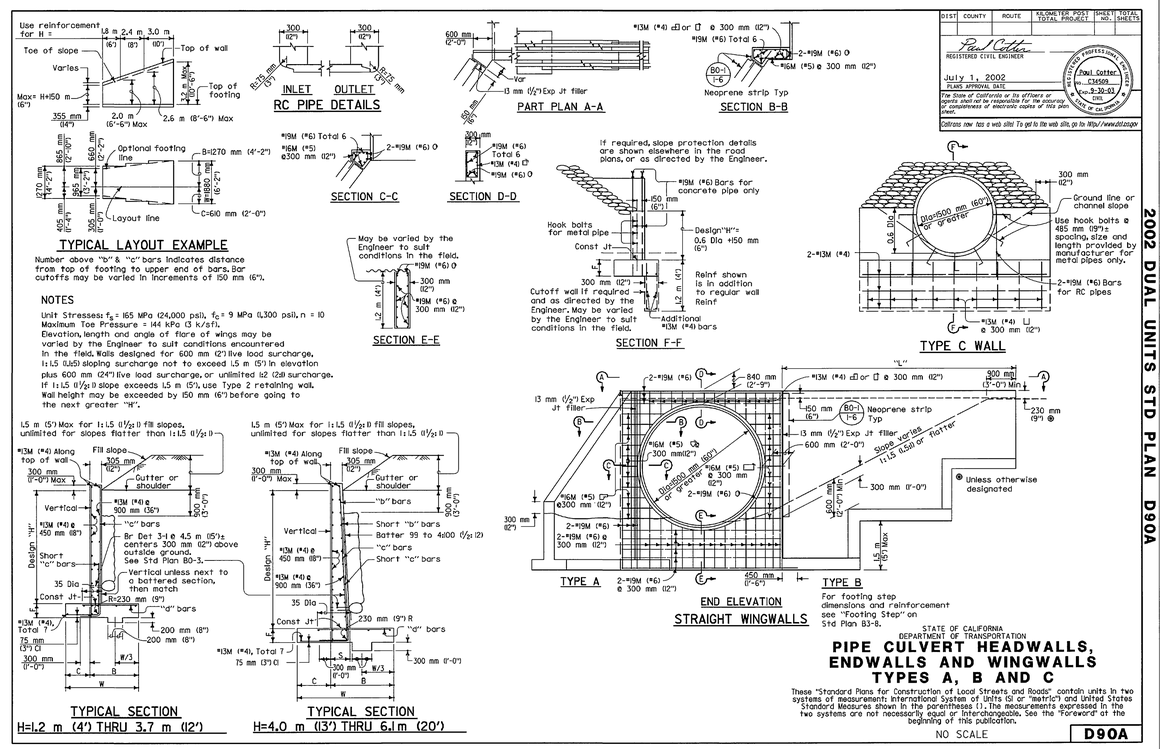
THIS STANDARD PLAN D89 INCLUDES CHANGES THAT WERE INCORPORATED IN REVISED STANDARD PLAN RSP D89, DATED OCTOBER 26, 2000, AND ISSUED AS A PART OF ERRATUM NO. 99-1 FOR THE 1999 METRIC STANDARD PLANS.





| DIST | COUNTY | ROUTE | KILOMETER POST TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| | | | | | |

REGISTERED CIVIL ENGINEER
July 1, 2002
PLANS APPROVAL DATE
Paul Cotter C34599 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov



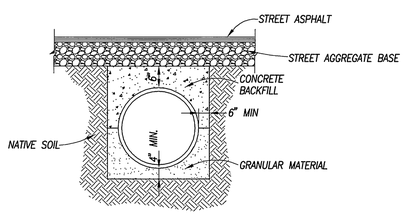

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# PIPE CULVERT HEADWALLS, ENDWALLS AND WINGWALLS TYPES A, B AND C

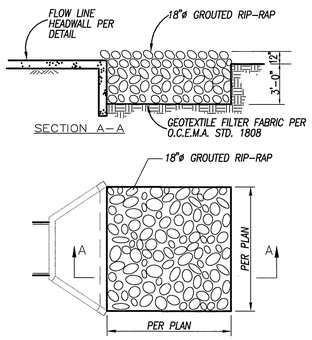
These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

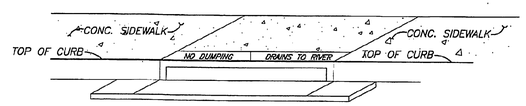
D90A




CONCRETE BACKFILL DETAIL
N.T.S.




LIGHT CLASS RIP RAP PAD DETAIL
N.T.S.




(A) STENCILS TO HAVE 2" LETTERS AS FOLLOWS :
NO DUMPING
DRAINS TO RIVER
(B) PLACE BOTH STENCILS CENTERED WITHIN THE CATCHBASIN OPENING AND WITHIN THE TOP OF CURB.
(C) SPRAY BOTH STENCILS WITH WHITE PAINT.
(D) REMOVE STENCILS WHEN PAINT IS DRY.

CATCH BASIN STENCILING DETAIL
N.T.S.

PW04-0857

Underground Service Alert
Call: TOLL FREE 1-800-227-2600
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

Prepared Under The Supervision Of:
Date 1/4/05 SCOTT M. WILSON
REGISTERED CIVIL ENGINEER NO. 49884
REGISTRATION EXPIRES: 09/30/06

REGISTERED PROFESSIONAL ENGINEER SCOTT M. WILSON No. 49884 Exp. 09/30/06 CIVIL STATE OF CALIFORNIA

WILSON MIKAMI CORPORATION
3 PETERS CANYON, SUITE 110
IRVINE, CA 92606
T: 949-679-0090
F: 949-679-0091

Scale: SEE PLAN
Date: 12-27-04

RIVERA VILLAS

Bench Mark:

REVISIONS:

| REMARK | DESCRIPTION: | APR.: | DATE: |
|---|---|---|---|
| | | | |

DESIGNED: MKW DRAWN: MKW CHECKED: SMW

CITY OF RIVERSIDE ELECTRICAL DEPARTMENT
APPROVED BY 1/19/05
CITY OF RIVERSIDE WATER DEPARTMENT
APPROVED BY 1/7/05

CITY OF RIVERSIDE, CALIFORNIA
PUBLIC WORKS DEPARTMENT

| Approved By: | BY: | Date: |
|---|---|---|
| PRINCIPAL ENG. | | 1/25/05 |
| PARK DEPARTMENT | | |
| TRAFFIC DIVISION | | |
| STREET SERVICES | | 1/11/05 |

APPROVED BY
CITY ENGINEER
DATE 1/27/05

# TRACT 30922-3 STORM DRAIN IMPROVEMENT PLANS

DETAILS SHEET

D-744
Sheet 4 OF 4 SHEETS
FILE NO. 03-026

File name: S:\10012.10\dwg\prsd0004.dwg 1/4/2005 10:13:28 AM PST

INDEXED 2-8-05