STORM DRAIN PLANS FOR:

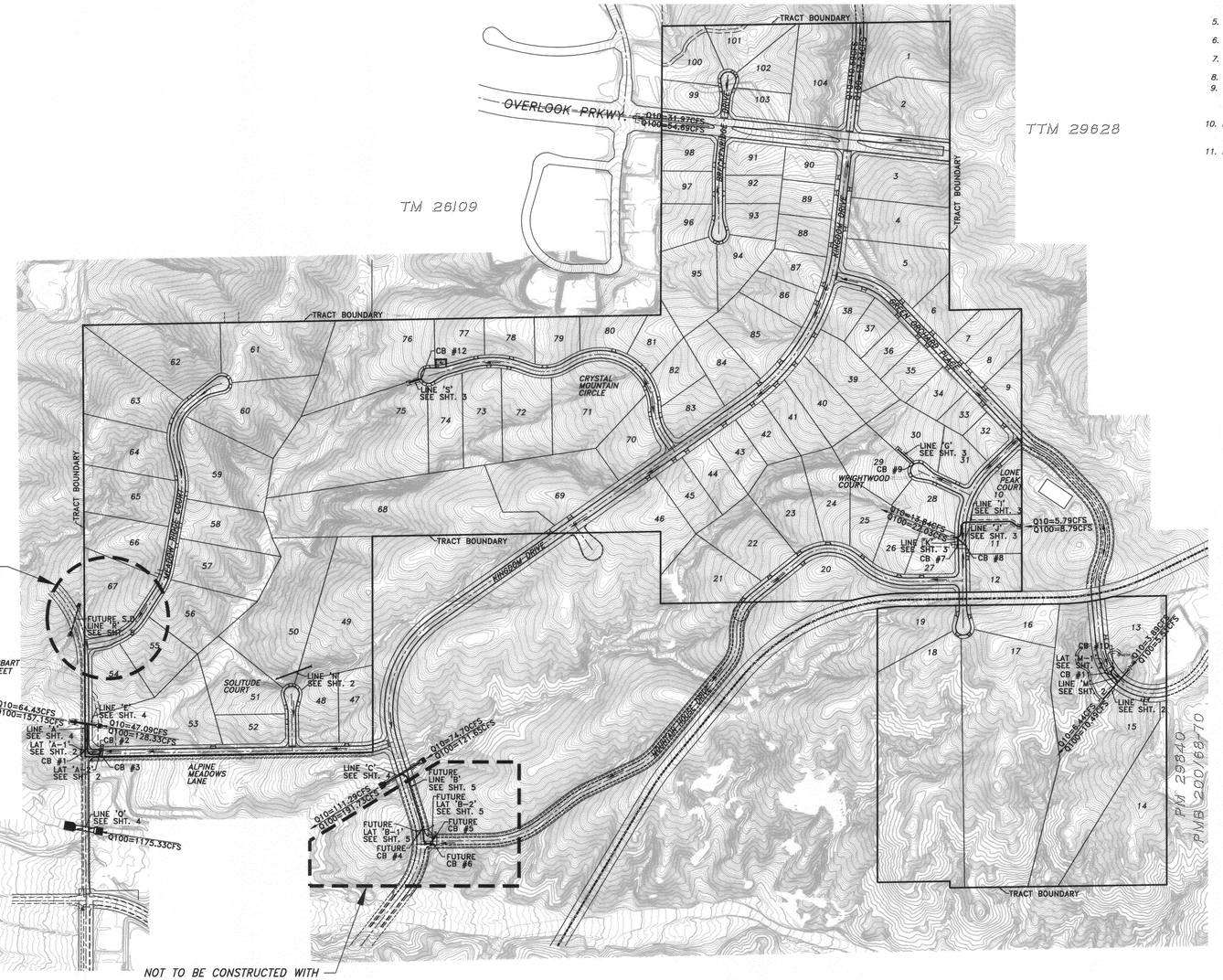
TRACT No. 29515

RIVERSIDE, CA.

CONSTRUCTION NOTES AND QUANTITY ESTIMATE

THE QUANTITIES SHOWN BELOW ARE FOR BONDING INFORMATION ONLY. THE CONTRACTOR IS TO CONSTRUCT PROJECT PER THESE PLANS AND SUBMIT CONSTRUCTION BID BASED ON THEIR OWN QUANTITY "TAKE-OFF".

1	CONSTRUCT CONCRETE SLOPE ANCHORS PER DETAIL ON SHEET ~~8~~ 7	5	EA
2	INSTALL 18" R.C.P.-D PER PROFILE	~~435~~ 279	LF
3	INSTALL 24" R.C.P.-D PER PROFILE	755	LF
4	INSTALL 36" R.C.P.-D PER PROFILE	~~344~~ 274	LF
~~5~~	~~INSTALL 60" R.C.P.-D PER PROFILE~~	~~89~~	~~LF~~
6	INSTALL ~~8'~~ 10' x ~~3'~~ 6.5' ARCH CULVERT PER HYDRO-ARCH DESIGN SEE DETAIL ON SHEET ~~4~~ 4	180	LF
7	CONCTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424	5	EA
8	INSTALL 2'x2' ADS CURB INLET STRUCTURE FILLED WITH "CATCH IT" STRAINER BASKET REFER TO REPORT FOR CALCS	13	EA
9	CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG DB9	6	EA
9A	CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG DB4	1	EA
10	CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET 8	9	EA
11	CONSTRUCT MANHOLE EZ PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 431	2	EA
12	CONSTRUCT MANHOLE JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 432	~~1~~ 2	EA
13	CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & H PER PLAN)	8	EA
14	INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET ~~8~~ 7	12	EA
15	INSTALL RIP-RAP PER DETAIL ON SHEET ~~8~~ 7 (QUANTITIES PER SHEET ~~8~~ 7)	987	TON
16	CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422	6	EA
17	INSTALL 20' X 6'-6" ARCH CULVERT PER HYDRO-ARCH DESIGN SEE DETAIL ON SHEET ~~4~~ 4	~~96~~ 173	LF
18	INSTALL 6" CLEANOUT PER SHEET ~~6~~ 6	9	EA
19	CONSTRUCT GRATING CATCH BASIN PER A.P.W.A. STD DWG 304-2 (W & V PER PLAN)	1	EA
20	INSTALL 6" ADS PIPE PER SHEET ~~6~~ 6	207	LF
21	INSTALL 4" ADS PIPE PER SHEET ~~6~~ 6	300	LF
22	CONSTRUCT MANHOLE PER DETAIL ON SHEET ~~8~~ 7	1	EA
23	CONSTRUCT JUNCTION STRUCTURE ~~#1 PER RCFC & WCD STANDARD DWG NO. JS5226~~ PER DETAIL ON SHEET 8A	~~2~~ 1	EA



NOT TO BE CONSTRUCTED WITH TRACT 29515. STORM DRAIN IS SHOWN FOR DESIGN PURPOSES ONLY.

NOT TO BE CONSTRUCTED WITH TRACT 29515. STORM DRAIN IS SHOWN FOR DESIGN PURPOSES ONLY.

STORM DRAIN GENERAL NOTES

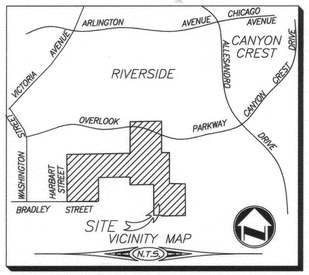
1. NO PERSON SHALL PERFORM ANY CONSTRUCTION ACTIVITY OR INSTALL ANY OBJECTS WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS OF THE CITY OF RIVERSIDE WITHOUT A VALID CONSTRUCTION PERMIT OR, A STREET OPENING PERMIT OR AN ENCROACHMENT PERMIT ISSUED BY THE CITY'S PUBLIC WORKS DEPARTMENT.
2. IT SHALL BE THE RESPONSIBILITY 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, 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. QUANTITIES SHOWN ARE FOR INFORMATION ONLY AND THE CITY OF RIVERSIDE IS NOT RESPONSIBLE FOR THEIR ACCURACY.
6. THE DEVELOPER SHALL BE RESPONSIBLE FOR PRESERVING OR REESTABLISHING AND REFERENCING SURVEY MONUMENTS DESTROYED, DISTURBED OR BURIED AS A RESULT OF CONSTRUCTION SHOWN HEREON.
7. THE CONTRACTOR SHALL COORDINATE TRENCHING FOR CABLE TELEVISION WITH OTHER TRENCHING WITHIN THE PROJECT.
8. ALL FLAGGED ELEVATIONS SHALL BE STAKED IN THE FIELD BY THE PRIVATE ENGINEER.
9. THE CONTRACTOR SHALL CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (USA), PHONE # 1-800-227-2500, 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.
10. DEVELOPER AND/OR CONTRACTOR TO GIVE RCFC 5-DAYS WRITTEN NOTICE PRIOR TO STARTING WORK ON STORM DRAIN (OR DOING AND WORK WITHIN RCFC EASEMENTS). RCFC ENCROACHMENT. PERMIT NO. _____
11. 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 CONDITIONED WITH WATER OBTAINED FROM FIRE HYDRANTS IN THE IMMEDIATE AREA.

CATCH BASIN SUMMARY

CB #	WIDTH	Q10	Q100	V DEPTH
1	21'	4.48	7.435	6.04
2	7'	8.695	14.41	7.02
3	3' X 2'	4.215	6.975	5.67
4	7'	0.86	1.26	5.96
5	7'	15.21	23.90	6.12
6	7'	7.51	11.79	5.38
7	7'	4.025	6.62	6.71
8	7'	4.025	6.62	5.85
9	7'	5.67	9.11	5.01
10	7'	1.525	2.49	7.48
11	7'	1.525	2.49	7.07
12	14'	3.66	11.47	3.96

LEGEND

CB	CATCH BASIN
C&G	CURB AND GUTTER
C.L.	CENTERLINE
D/W	DRIVEWAY
FL	FLOW LINE
INV.	INVERT OF PIPE
MH	MAN HOLE
SD	STORM DRAIN
TC	TOP OF CURB
TW	TOP OF WALL



300 0 300 600 900

Scale 1" = 300'

INDEX

TITLE SHEET.....SHEET 1
STORM DRAIN.....SHEET 2-5
STORM DRAIN.....SHEET 6
DETAILS.....SHEET 7

REGISTERED PROFESSIONAL ENGINEER CHARISSA J.A. LEACH NO. 53390 EXP. 6-30-07 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/07

CITY OF RIVERSIDE WATER DEPT. — REVIEWED FOR CONFLICTS BY — DATE 6/6/06

CITY OF RIVERSIDE ELECTRICAL DEPT. — REVIEWED FOR CONFLICTS BY — DATE

Underground Service Alert — Call: TOLL FREE 1-800 227-2600 — TWO WORKING DAYS BEFORE YOU DIG

PLANS PREPARED BY: adkan ENGINEERS — Civil Engineering · Surveying · Planning — 6820 Airport Drive, Riverside, CA 92504 — Tel:(951) 688-7241 Fax(951) 688-0599 — Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date: 6/2/06

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7.
PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE. TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
3	REVISED D#	RJZ	12-7-06
2	ARCH CULVERT REDESIGN REVISIONS	RJZ	10-19-06
1	ADDED SHTS. 10&11	RJZ	5-11-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE — PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER	6/5/06	RJZ
~~PARK DEPARTMENT~~		
~~TRAFFIC DIVISION~~		
~~STREET SERVICES~~		

APPROVED BY: CITY ENGINEER — DATE 6/5/06

STORM DRAIN PLAN — TRACT 29515 — COVER SHEET

APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649 — ACCOUNT NO. 787 — D-738 — SHEET 1 OF 11 — J.N. 6500

*AS-BUILT 2-27-08 LH

INDEXED 1-29-07 LH

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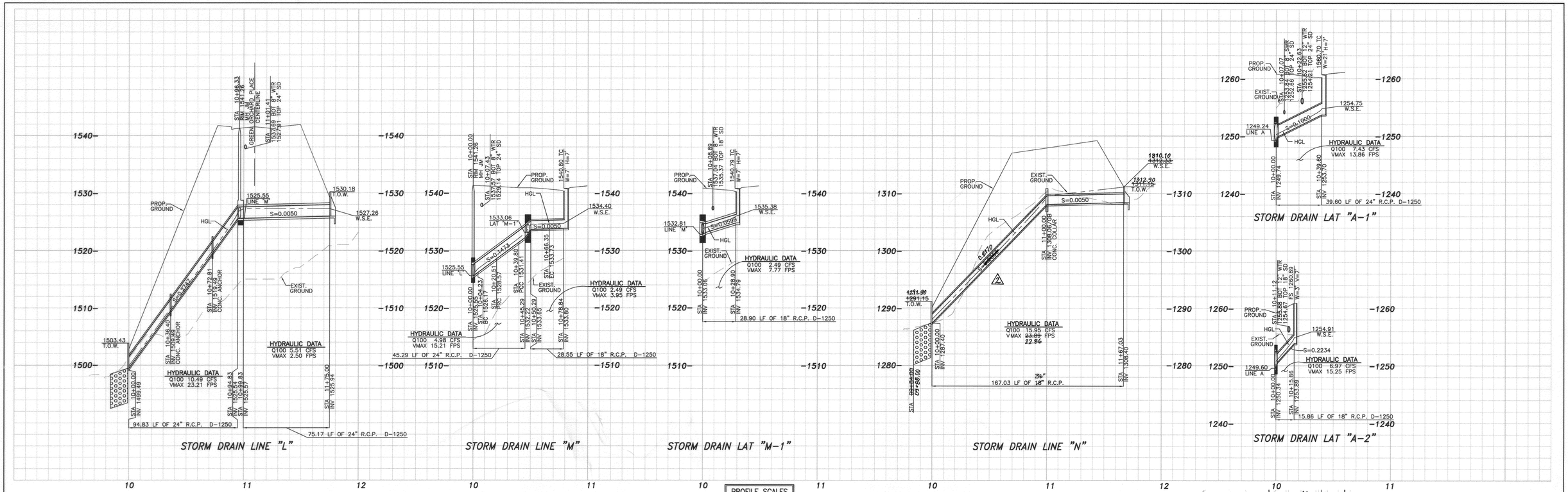
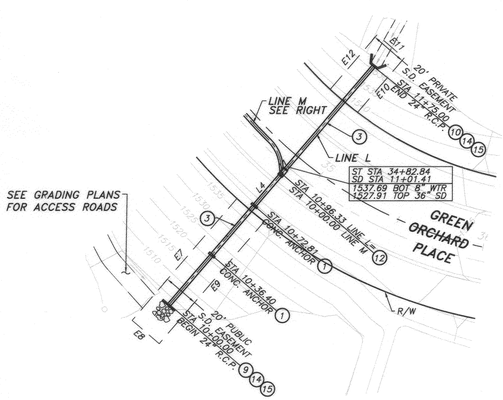
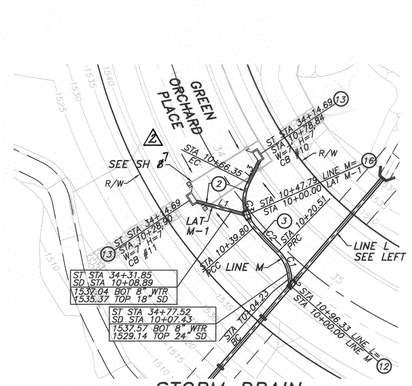
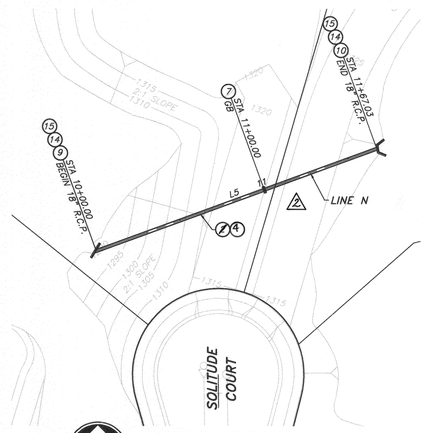




STORM DRAIN LINE 'L'



STORM DRAIN LINE 'M' & LAT 'M-1'



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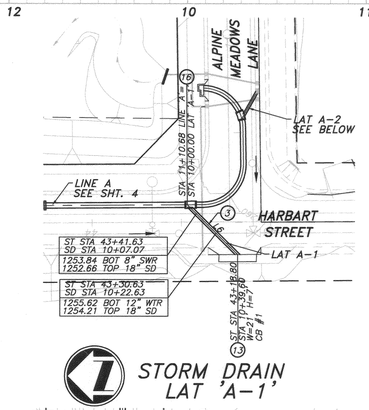
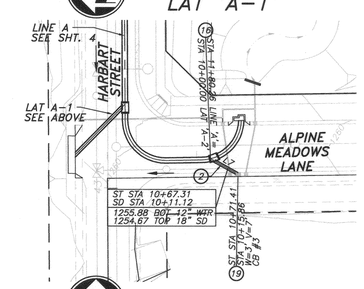


STORM DRAIN LAT 'A-1'



STORM DRAIN LINE 'A-2'

40 0 40 80 120

Scale 1" = 40'

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SLOPE ANCHORS PER DETAIL ON SHEET # 7
2. INSTALL 18" R.C.P-D PER PROFILE
3. INSTALL 24" R.C.P-D PER PROFILE
7. CONCTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
9. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D89
10. CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET # 7
12. CONSTRUCT MANHOLE JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 432
13. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405
14. INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET # 7
15. INSTALL RIP-RAP PER DETAIL ON SHEET # 7
16. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422
19. CONSTRUCT GRATING CATCH BASIN PER A.P.W.A. STD DWG 304-2 (W & V PER PLAN)
4. INSTALL 36" R.C.P-D PER PROFILE

LINE TABLE		
LINE	LENGTH	BEARING
L1	28.90	N75°00'03"W
L2	4.23	N04°20'23"W
L3	12.49	N26°21'09"E
L4	184.30	N40°39'37"E
L5	167.03	N69°54'03"E
L6	39.60	N44°37'26"E
L7	15.86	N60°54'57"W

CURVE TABLE				
CURVE	DELTA	TAN	RAD	LEN
C1	41°27'14"	8.51	22.50	16.28
C2	4°31'47"	9.65	244.00	19.29
C3	67°36'59"	15.07	22.50	26.55

EASEMENT LINE TABLE		
LINE	LENGTH	BEARING
E7	86.81	N40°39'37"E
E8	20.00	N49°20'23"W
E9	89.98	N40°39'37"E
E10	39.97	N40°39'37"E
E11	20.00	N49°20'23"W
E12	40.21	N40°39'37"E

JUNCTION STRUCTURE STA 10+00.00 LAT A-1								
A	B	C	D1	D2	E	L	EL. R	EL. S
45'	2.0'	5.18'	3.0'	3.0'	4.98'	6.00'	1249.79	1249.74

JUNCTION STRUCTURE STA 10+00.00 LAT A-2								
A	B	C	D1	D2	E	L	EL. R	EL. S
45'	1.5'	5.02'	3.0'	3.0'	3.67'	3.2'	1251.46	1250.34

MANHOLE JM STA 10+00.00 LINE M								
A	B	C	D1	D2	E	L	EL. R	EL. S
45'	2.0'	4.35'	2.0'	2.0'	4.48'	6.00'	1526.19	1525.55

JUNCTION STRUCTURE STA 10+00.00 LAT M-1								
A	B	C	D1	D2	E	L	EL. R	EL. S
54'	1.5'	3.35'	1.5'	2.0'	3.29'	4.70'	1533.26	1533.06

REGISTERED PROFESSIONAL ENGINEER CHARISSA J.A. LEACH NO. 53390 EXP. 6-30-07 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT. #0588833. EXP. 1/1/07

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Tel:(951) 688-7824 Fax:(951) 688-0599
Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date: 6/2/06

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ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
3	REVISED D#4	RRZ	12-7-06
2	ARCH CULVERT & DESIGN REVISIONS	RRZ	10-15-06
1	ADDED SHTS. 10 & 11	RRZ	8-19-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

	APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		6/5/06	
PARK DEPARTMENT			
TRAFFIC DIVISION			
STREET SERVICES			

APPROVED BY: CITY ENGINEER
DATE 6/5/06

STORM DRAIN PLAN
TRACT 29515
LINE 'L', LINE 'M', LAT 'M-1', LINE 'N'
LAT 'A-1', LAT 'A-2'
APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
D-738
SHEET 2 OF 9
J.N. 6500

*AS-BUILT 2-27-08 LH

INDEXED 1-29-07 LH

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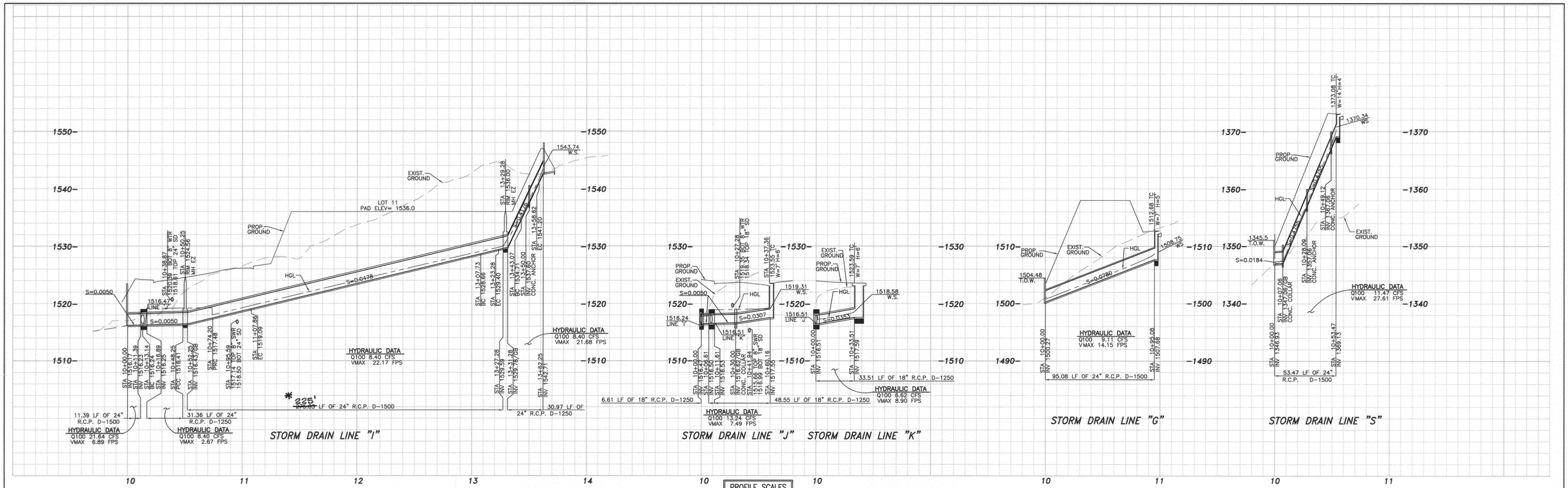
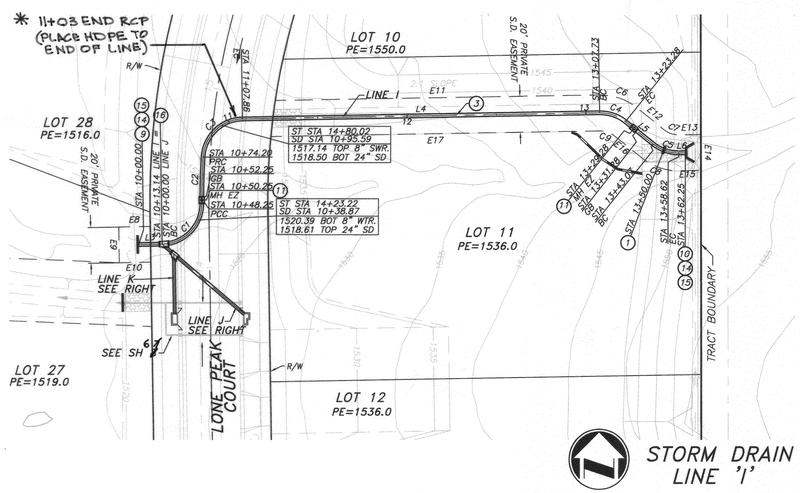
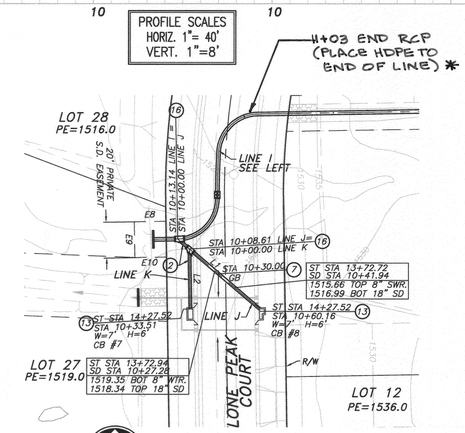
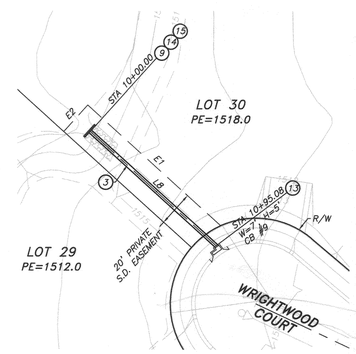




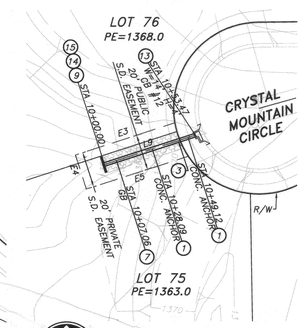
STORM DRAIN LINE 'I'



STORM DRAIN LINE 'J' & LINE 'K'



STORM DRAIN LINE "G"



STORM DRAIN LINE "S"

EASEMENT LINE TABLE		
LINE	LENGTH	BEARING
E1	100.42	N47°52'45"W
E2	20.00	N42°07'15"E
E3	58.54	N72°05'00"E
E4	20.00	N17°51'28"W
E5	59.84	N72°08'32"E
E8	17.62	N89°03'45"E
E9	20.00	N00°56'15"W
E10	17.62	N89°03'45"E
E11	181.33	N89°03'24"E
E12	19.79	N51°20'43"W
E13	12.48	N89°03'03"E
E14	20.00	N00°09'03"W
E15	12.20	N89°03'03"E
E16	19.79	N51°20'43"W
E17	184.14	N89°03'24"E

EASEMENT CURVE TABLE				
CURVE	DELTA	TAN	RAD	LEN
C6	39°35'53"	11.70	32.50	22.46
C7	39°36'14"	4.50	12.50	8.64
C8	39°36'14"	11.70	32.50	22.46
C9	39°35'53"	4.50	12.50	8.64

LINE TABLE		
LINE	LENGTH	BEARING
L1	60.16	N49°34'37"W
L2	33.51	N00°56'15"W
L3	13.14	N89°03'45"E
L4	199.87	N89°03'24"E
L5	19.79	N51°20'43"W
L6	3.63	N89°03'03"E
L7	95.76	N47°52'45"W
L8	53.47	N72°08'32"E

CURVE TABLE				
CURVE	DELTA	TAN	RAD	LEN
C1	89°24'10"	22.27	22.50	35.11
C2	3°40'47"	12.98	404.00	25.95
C3	85°43'01"	20.88	22.50	33.66
C4	39°35'53"	8.10	22.50	15.55
C5	39°36'14"	8.10	22.50	15.55

40 0 40 80 120

Scale 1" = 40'

JUNCTION STRUCTURE STA 10+13.14 LINE I								
A	B	C	D1	D2	E	L	EL. R	EL. S
44'	1.5'	4.64'	2.0'	2.0'	4.53'	5.56'	1516.26	1516.24

JUNCTION STRUCTURE STA 10+00.00 LINE K								
A	B	C	D1	D2	E	L	EL. R	EL. S
49'	1.5'	3.50'	1.5'	1.5'	3.50'	5.01'	1516.63	1516.51

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SLOPE ANCHORS PER DETAIL ON SHEET # 7
2. INSTALL 18" R.C.P-D PER PROFILE
3. INSTALL 24" R.C.P-D PER PROFILE
7. CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
9. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D89
10. CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET # 7
11. CONSTRUCT MH EZ PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 431
12. CONSTRUCT MANHOLE JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 432
13. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405
14. INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET # 7 (2)
15. INSTALL RIP-RAP PER DETAIL ON SHEET # 7
16. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422
19. CONSTRUCT GRATING CATCH BASIN PER A.P.W.A. STD DWG 304-2 (W & V PER PLAN)

REGISTERED PROFESSIONAL ENGINEER CHARISSA J.A. LEACH NO. 53390 EXP. 6-30-07 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/07

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adkan ENGINEERS
Civil Engineering · Surveying · Planning
6820 Airport Drive, Riverside, CA 92504
Tel:(951) 688-7241 Fax:(951) 688-0599
Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date: 6/2/06

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MARK	REVISIONS	APPR.	DATE
3	REVISED D7	RJZ	12-7-06
2	MECH CULVERT REDESIGN REVISIONS	RJZ	10-18-06
1	ADDED SHTS. 10 & 11	RJZ	7-13-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER	6/5/06	RH
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY
CITY ENGINEER
DATE 6/5/06

* AS-BUILT 2-27-08 LH

STORM DRAIN PLAN
TRACT 29515
LINE 'I', LINE 'J', LINE 'K', LINE 'G', LINE 'S'
APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO. 787
D-738
SHEET 3 OF 9
J.N. 6500

INDEXED 1-29-07 LH

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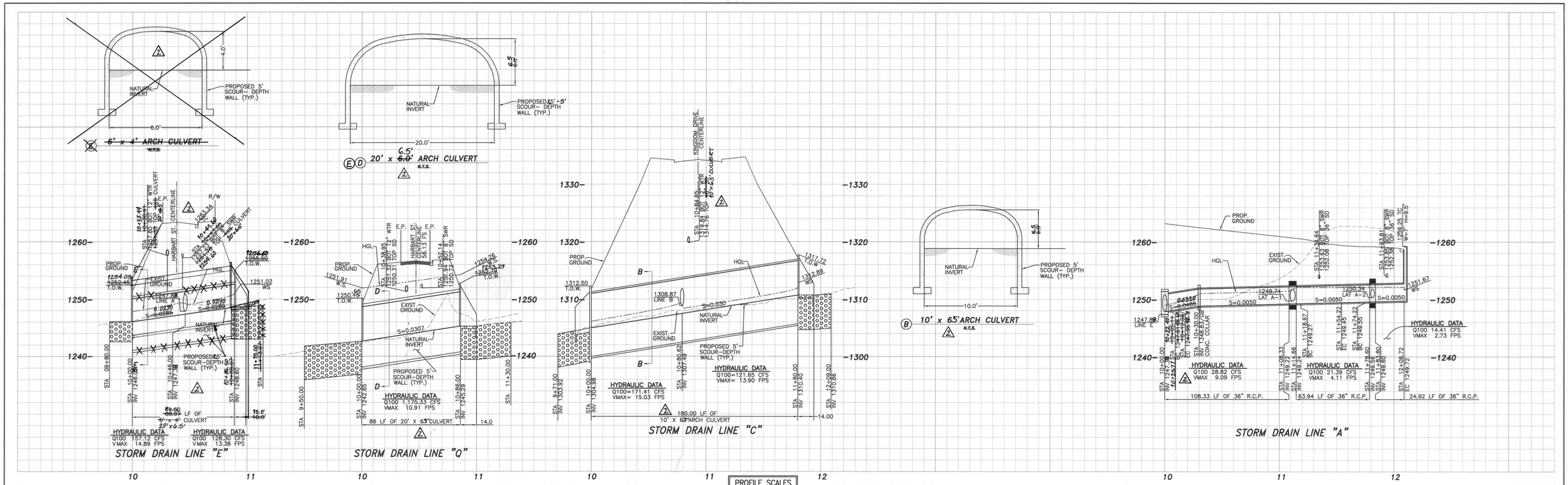

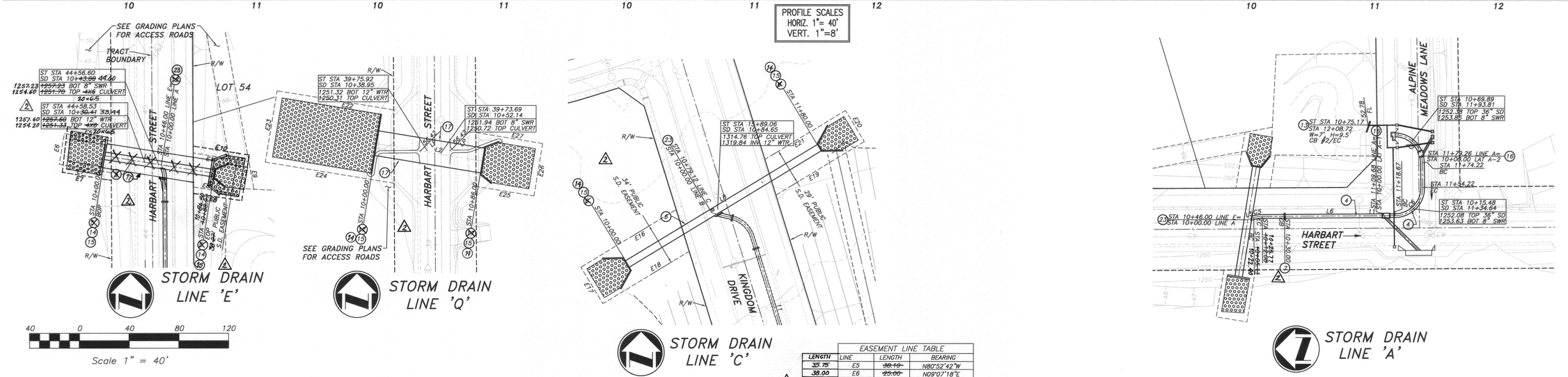

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SLOPE ANCHORS PER DETAIL ON SHEET 7
3. INSTALL 24" R.C.P.-D PER PROFILE
4. INSTALL 36" R.C.P.-D PER PROFILE
5. ~~INSTALL 6' X 4' ARCH CULVERT PER HYDRO-ARCH DESIGN, SEE DETAIL ON SHEET 10~~
6. INSTALL 10' X 6.5' ARCH CULVERT PER HYDRO-ARCH DESIGN, SEE DETAIL ON SHEET 10
7. CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
9. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D89
9A. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D84
10. CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER CALTRANS STD DWG D90
12. CONSTRUCT MANHOLE JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 432
13. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & H PER PLAN)
14. INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET 7
15. INSTALL RIP-RAP PER DETAIL ON SHEET 7
17. INSTALL 20' X 6.5' ARCH CULVERT PER HYDRO-ARCH DESIGN SEE DETAIL ON SHEET 9
23. CONSTRUCT JUNCTION STRUCTURE ~~#1 PER RCFD & WCD STANDARD DWG NO. JS2220~~ PER DETAIL ON SHEET 8A

~~MANHOLE JM STA 10+00.00 LINE A~~								
~~A~~	~~B~~	~~C~~	~~D1~~	~~D2~~	~~E~~	~~L~~	~~EL. R~~	~~EL. S~~
~~60'~~	~~3.0'~~	~~5.60'~~	~~5.0~~	~~5.0'~~	~~5.14'~~	~~0.50~~	~~1248.46~~	~~1248.36~~

~~JUNCTION STRUCTURE STA 10+00.00 LINE B~~								
~~A~~	~~B~~	~~C~~	~~D1~~	~~E~~	~~L~~	~~EL. R~~	~~EL. S~~
~~45'~~	~~3.0'~~	~~11.03'~~	~~10' x 6'~~	~~5.71'~~	~~7.00'~~	~~1308.87~~	~~1308.18~~

REGISTERED PROFESSIONAL ENGINEER GARY L. AKERS NO. 23713 EXP. 12-31-07 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/07

EASEMENT LINE TABLE			
LENGTH	LINE	LENGTH	BEARING
35.75'	E5	~~35.10'~~	N80°52'42"W
38.00	E6	~~25.00'~~	N09°07'18"E
10.04	E7	~~12.28'~~	N80°52'42"W
39.15	E8	~~26.07'~~	N80°52'42"W
38.00	E9	~~22.39'~~	~~N10°27'28"W~~
45.50	E10	~~45.34'~~	N80°52'42"W
	E16	89.43	N58°42'55"E
	E17	34.00	N31°17'05"W
	E18	80.91	N58°42'55"E
	E19	83.02	N58°42'55"E
	E20	29.00	N31°17'05"W
	E21	75.75	N58°42'55"E
	E22	95.25	N80°39'28"W
	E23	58.00	N09°20'32"E
	E24	104.69	N80°39'28"W
	E25	47.36	N80°39'28"W
	E26	42.70	N09°20'32"E
	E27	54.16	N80°39'28"W

N09°07'18"E

LINE TABLE		
LINE	LENGTH	BEARING
~~L1~~	~~88.97~~	N80°52'42"W
L2	86.00	N80°39'28"W
L3	95.76	N47°52'45"W
L4	53.47	N72°08'32"E
L5	~~5.11~~	N18°07'22"W
L6	~~104.10~~	N00°22'34"W
L7	20.00	N89°05'03"E
L8	180.00	N58°42'55"E

LINE TABLE	
LINE	LENGTH
L1	86.50
L5	22.40
L6	92.90

CURVE TABLE				
CURVE	DELTA	TAN	RAD	LEN
~~C5~~	~~47°44'47"~~	~~3.51~~	~~22.50~~	~~6.97~~
C6	90°32'23"	22.71	22.50	35.55
C7	87°50'32"	21.67	22.50	34.50
C5	8°34'32"	1.69	22.50	3.37

*AS-BUILT 2-27-08 HI

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6820 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599
Under the Supervision of: Gary Akers 7/19/06
Gary Akers, R.C.E. 23713 Exp. 12.31.07 Date:

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7.
PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	ARCH CULVERT REDESIGN REVISIONS	RVZ	10-19-06
1	REVISED D-738	RVZ	12-7-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

	DATE	BY
APPROVED BY		
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY: Glen Boyd
CITY ENGINEER
DATE 7/19/06

STORM DRAIN PLAN
TRACT 29515
LINE 'E', LINE 'Q', LINE 'C, LINE 'A'
APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024
HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
787
D-738
SHEET 4 OF 11
J.N. 6500

INDEXED 1-29-07 HI

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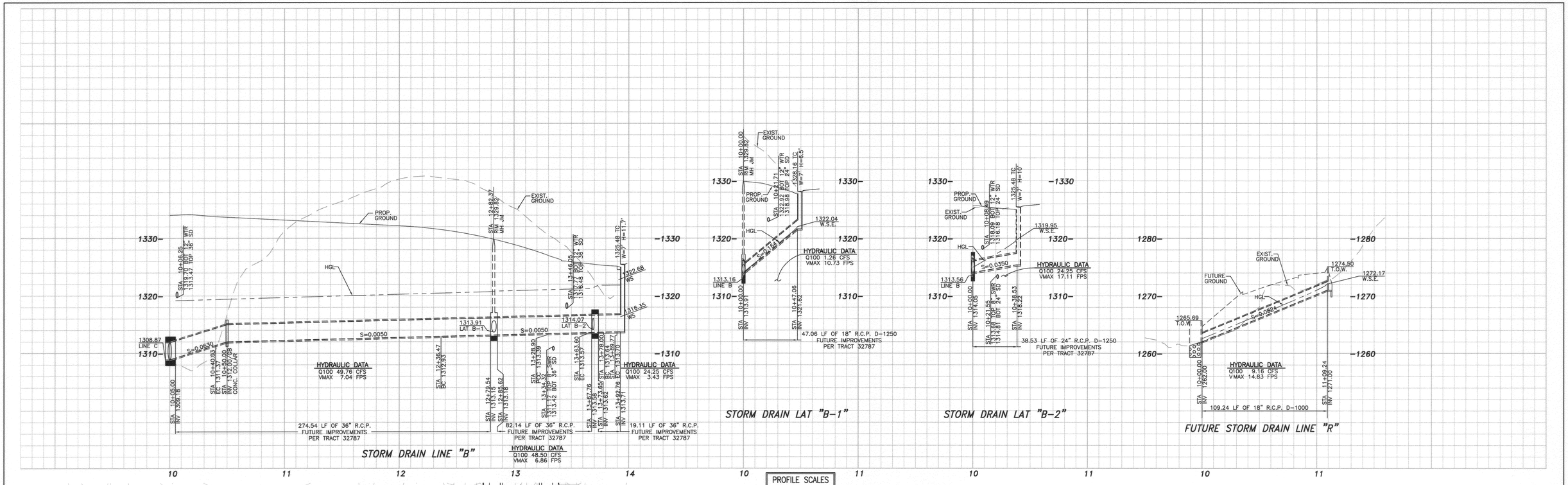

CONSTRUCTION NOTES

4. INSTALL 36" R.C.P-D PER PROFILE
6. ~~INSTALL 6' X 4' ARCH CULVERT PER HYDRO ARCH DESIGN, SEE DETAIL ON SHEET 10~~
7. CONCTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
9. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG DB9
10. CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET 7
12. CONCTRUCT MH JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 432
13. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & H PER PLAN)
14. INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET 7
15. INSTALL RIP-RAP PER DETAIL ON SHEET 7
16. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422
22. CONSTRUCT MANHOLE PER DETAIL ON SHEET 7
23. CONSTRUCT JUNCTION STRUCTURE #1 PER RCFC & WCD STD DWG NO. JS5226

REGISTERED PROFESSIONAL ENGINEER GARY L. ACKER NO. 23713 EXP. 12-31-07 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/07

MANHOLE JM STA 10+00.00 LINE B								
A	B	C	D1	D2	E	L	EL. R	EL. S
45'	3.0'	6.22'	4.0'	4.0'	5.71'	7.00'	1311.31	1310.74

EASEMENT LINE TABLE		
LINE	LENGTH	BEARING
E18	43.31	N16°23'33"E
E19	20.00	N73°36'27"W
E20	15.86	N16°23'33"E
E21	23.69	N16°23'33"E
E22	20.00	N73°36'27"W
E23	3.65	N16°23'33"E

STORM DRAIN CURVE TABLE				
CURVE	DELTA	TAN	RAD	LEN
C1	59°00'09"	23.17	22.50	12.73
C2	14°37'42"	92.42	362.00	46.46
C3	88°21'38"	34.70	22.50	21.87
C4	44°57'04"	11.77	15.00	6.21

STORM DRAIN LINE TABLE		
LINE	LENGTH	BEARING
L1	16.85	N76°17'05"W
L2	196.45	N17°16'54"W
L3	14.40	N89°09'47"E
L4	2.99	N45°53'09"W
L5	47.06	N35°31'13"E
L6	38.53	N39°11'40"E
L7	109.24	N16°23'33"E

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Under the Supervision of: Gary Acker, R.C.E. 23713 Exp. 12.31.07 Date: 7/19/06

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7.
PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	REVISED D#	GVZ	12-7-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY: Vincent Bell
CITY ENGINEER
DATE 2/19/06

* AS-BUILT 2-27-08 GH

STORM DRAIN PLAN
TRACT 29515
LINE 'B', LAT 'B-1', LAT 'B-2', LINE 'R'
APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
787
D-738
SHEET 5 OF 11
J.N. 6500

INDEXED 1-29-07 GH

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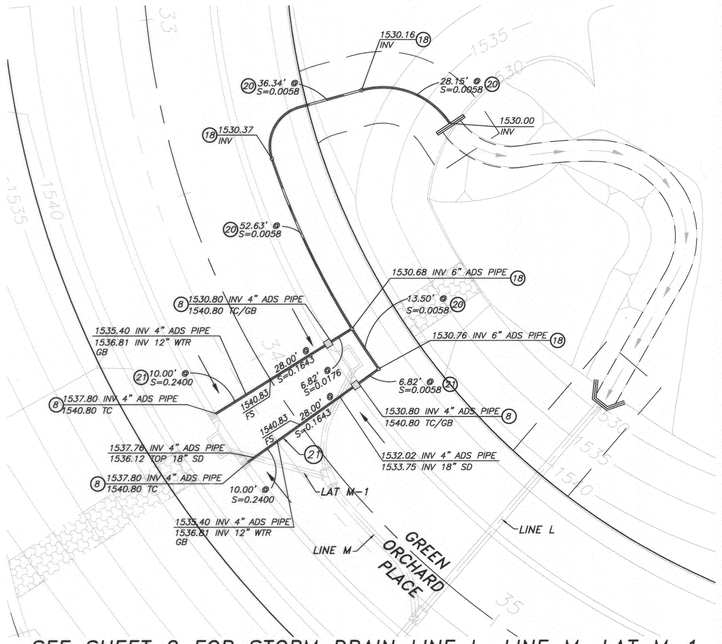
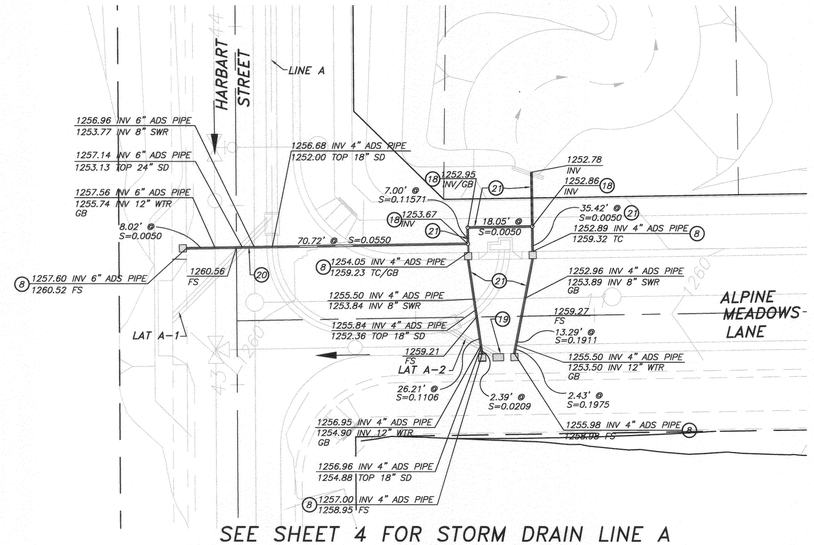


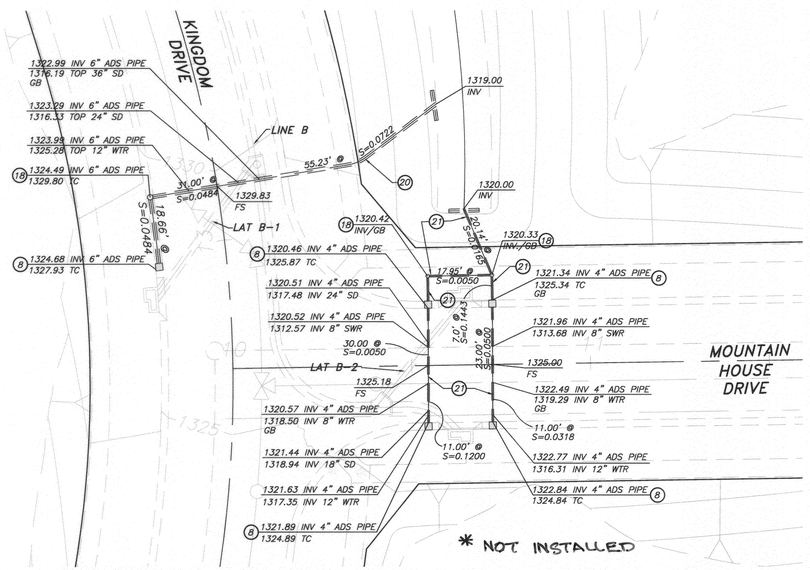
SEE SHEET 2 FOR STORM DRAIN LINE L, LINE M, LAT M-1



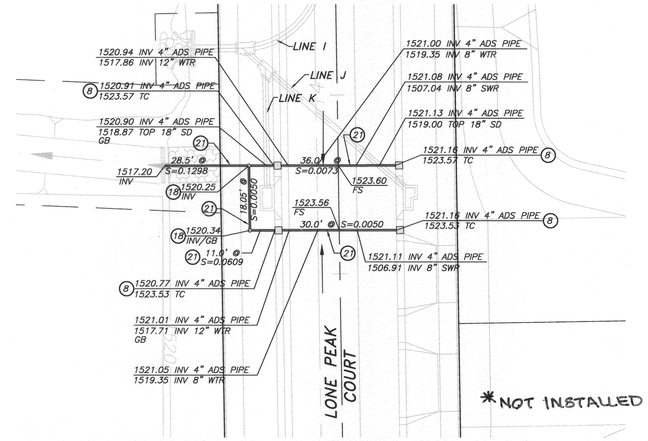
SEE SHEET 4 FOR STORM DRAIN LINE A
SEE SHEET 2 FOR STORM DRAIN LAT A-1 & LAT A-2

CONSTRUCTION NOTES

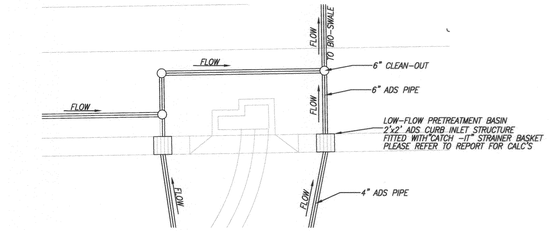
(8) INSTALL 2'x2' ADS CURB INLET STRUCTURE FILLED WITH "CATCH IT" STRAINER BASKET
(18) INSTALL 6" CLEANOUT
(19) CONSTRUCT GRATING CATCH BASIN PER A.P.W.A. STD DWG 304-2 (W & V PER PLAN)
(20) INSTALL 6" ADS PIPE
(21) INSTALL 4" ADS PIPE



SEE SHEET 5 FOR STORM DRAIN LINE B, LAT B-1 & LAT B-2
FUTURE IMPROVEMENTS PER TRACT 32787



SEE SHEET 3 FOR STORM DRAIN LINE I, LINE J, LINE K



TYPICAL LOW-FLOW INLET
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NTS

REGISTERED PROFESSIONAL ENGINEER
CHARISSA J.A. LEACH
NO. 53390
EXP. 6-30-07
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STATE OF CALIFORNIA

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Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date: 6/2/06

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7.
PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	REVISED D#	RJZ	12-7-06
1	ADDED SHTS. 10&11	RJZ	7-13-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

	DATE	BY
APPROVED BY		
PRINCIPAL ENGINEER	6/5/06	DR
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY
CITY ENGINEER
DATE 6/5/06

* AS-BUILT 2-27-08 GH

STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024
HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
3 787
D-738
SHEET 6 OF 8
J.N. 6500

RJZ

INDEXED 1-29-07 GH

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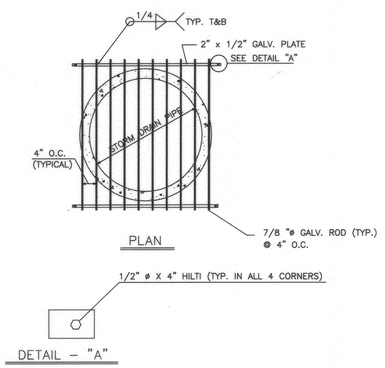

TRASH RACK DETAIL

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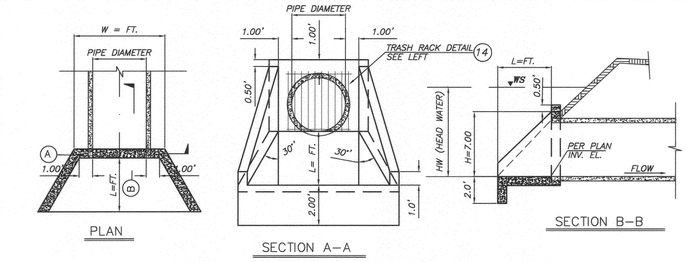

INLET DETAIL

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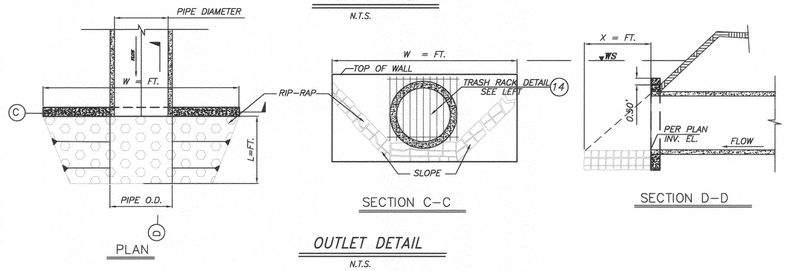

OUTLET DETAIL

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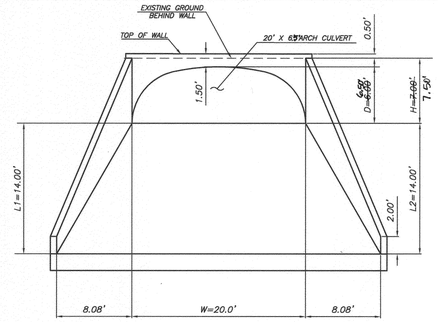
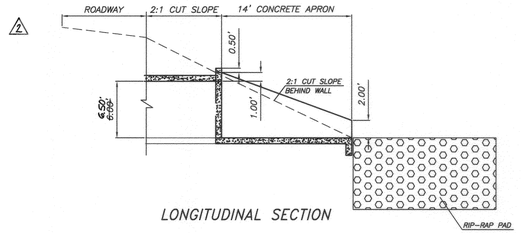
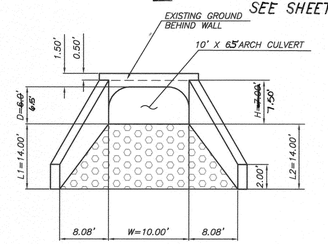




20' X 6.5' CONCRETE ARCH CULVERT INLET DETAILS

2 ~~PER CALTRANS D-90 STANDARD DRAWING~~

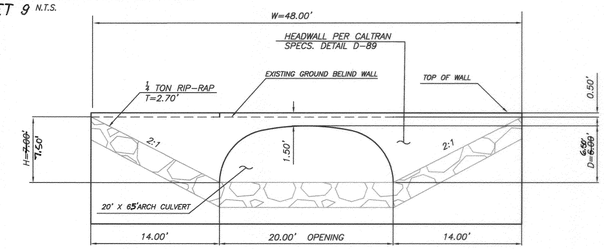
SEE SHEET 9 N.T.S.



LINE 'C' INLET & OUTLET STRUCTURE

N.T.S.

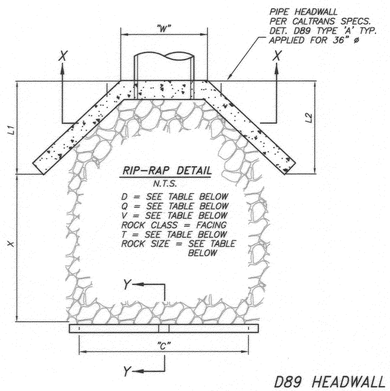
SEE SHEET 10



20' X 6.5' CONCRETE ARCH CULVERT OUTLET DETAILS

2 ~~PER CALTRANS D-89 STANDARD DRAWING~~

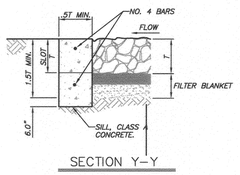
SEE SHEET 9 N.T.S.



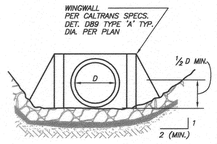
D89 HEADWALL

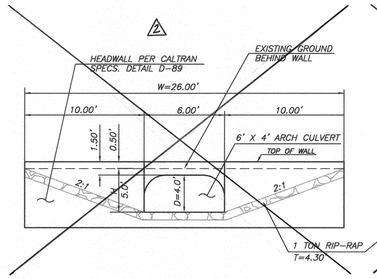
N.T.S.

9



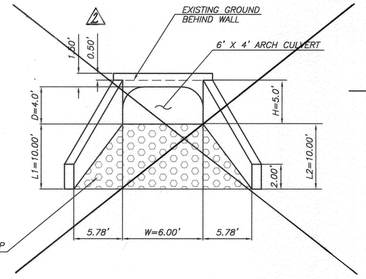
PIPE WINGWALL





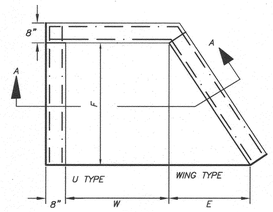
~~LINE 'E' OUTLET STRUCTURE~~

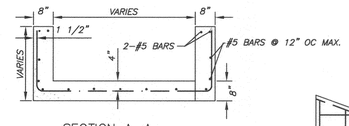
N.T.S.

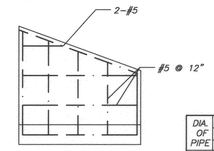


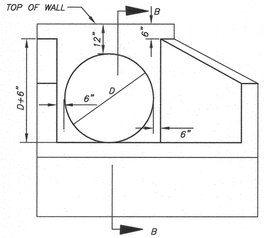
~~LINE 'E' INLET STRUCTURE~~

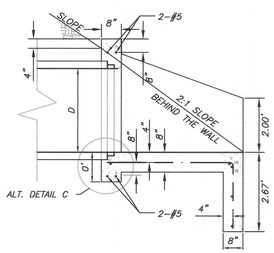
N.T.S.

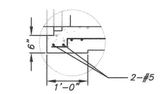




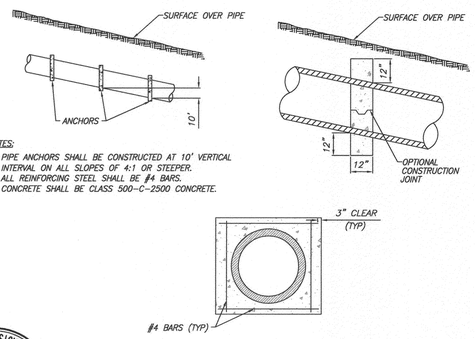








DIA. OF PIPE	DIMENSIONS 30 DEGREES E	F	W D+12"
INCH			
18	2'3"	4'-0"	2'6"
24	2'9"	5'-0"	3'0"
30	3'7"	6'-0"	3'6"
36	4'0"	7'-0"	4'0"
42	4'8"	8'-0"	4'6"
48	5'3"	9'-0"	5'0"
54	5'9"	10'-0"	5'6"
60	6'4"	11'-0"	6'0"
66	7'0"	12'-0"	6'6"
72	7'6"	13'-0"	7'0"
78	8'1"	14'-0"	7'6"
84	8'8"	15'-0"	8'0"



CONCRETE PIPE SLOPE ANCHOR

N.T.S.

1

DIA. OF PIPE	DIMENSIONS E	F	W
INCH			
18	1'7"	2'-6"	2'6"
24	1'9"	3'-0"	3'0"
30	2'3"	3'-6"	3'6"
36	2'9"	4'-0"	4'0"
42	3'3"	4'-6"	4'6"
48	3'9"	5'-6"	5'0"
54	4'3"	6'-0"	5'6"
60	4'9"	6'-6"	6'0"
66	5'3"	7'-0"	6'6"
72	5'9"	8'-0"	7'0"
78	6'3"	9'-0"	7'6"
84	6'9"	10'-0"	8'0"

NOTES:

1. CONCRETE SHALL BE 560-C-3250
2. EXPOSED CORNERS TO BE CHAMFERED 3/4".
3. MULTIPLE PIPES TO BE SET A DISTANCE OF D/2, WITH A 1' MINIMUM BETWEEN OUTSIDE DIAMETERS OF PIPES.
4. TOP OF HEADWALL SHALL BE PLACED APPROXIMATELY PARALLEL TO PROFILE GRADE WHEN THE GRADE IS 3% OR MORE.
5. SKEWED PIPES: DIMENSION W TO BE INCREASED IN WIDTH OR LENGTH DUE TO SKEW OR MULTIPLE PIPES.
6. FOR PIPE WALL THICKNESS GREATER 3" USE ALTERNATE DETAIL-C.

WING AND U TYPE HEADWALLS

N.T.S.

10

HEADWALL & WINGWALL TABLE

2

LINE	PIPE SIZE	L1=FT	L2=FT	W=FT	H=FT	X=FT
C(OUT)	~~10'X6'CULVERT~~	~~12.00~~	~~12.00~~	~~10.00'~~	~~7.0~~	15.00
C(IN)	~~10'X6'CULVERT~~	~~12.00~~	~~12.00~~	~~10.00'~~	~~7.0~~	15.00
~~D(OUT)~~	~~48~~	~~–~~	~~–~~	~~11.00'~~	~~5.0~~	~~–~~
~~D(IN)~~	~~48~~	~~18.0~~	~~18.0~~	~~7.60'~~	~~5.0~~	~~–~~
E(OUT)	~~6'X4'CULVERT~~	~~–~~	~~–~~	~~26.00'~~	~~5.0~~	~~–~~
E(IN)	~~6'X4'CULVERT~~	~~10.0~~	~~10.0~~	~~6.00'~~	~~5.0~~	15.00
Q(OUT)	20'X6'CULVERT	–	–	48.00'	~~7.0~~ 6.5	–
Q(IN)	20'X6'CULVERT	14.00'	14.00'	~~23.00~~ 22.00'	~~7.0~~ 6.5	30.00
G(OUT)	24	–	–	9.0	3.0	–
S(OUT)	24	–	–	9.0	3.0	–
I(OUT)	36	–	–	10.0	4.0	–
I(IN)	24	4.0	4.0	6.0	3.0	4.61
R(OUT)	18	–	–	8.5	2.5	–
R(IN)	18	9.2	9.2	4.7	2.5	8.23
L(OUT)	24	–	–	9.0	3.0	–
L(IN)	18	5.3	5.3	5.1	2.5	4.91
O(OUT)	36	–	–	10.0	4.0	–
O(IN)	36	8.0	8.0	6.2	4.0	–
P(OUT)	18	–	–	8.5	2.5	–
P(IN)	18	8.6	8.6	4.7	2.5	–
T(OUT)	18	–	–	9.4	2.5	–
T(IN)	18	4.8	4.8	4.8	2.5	–
U(OUT)	18	–	–	9.0	2.5	–
C(OUT)	10'X6.5'CULVERT	14.00	14.00	16.50	6.5	15.00
C(IN)	10'X6.5'CULVERT	14.50	14.50	11.15	6.5	15.00
E(OUT)	20'X6.5'CULVERT	–	–	32.00	6.5	–
E(IN)	20'X6.5'CULVERT	10.06	10.06	22.15	6.5	15.00
N(IN)	36	4.04	4.04	4.25	3.0	–
N(OUT)	36	–	–	9.36	3.0	10.00

RIP-RAP TABLE

'LINE	X	Y	DIA	"Q"	"V"	"T"	ROCK CLASS
C	14'	20'	10' X 6.5' ARCH CULVERT	171.41	15.03	4.30'	1 TON
~~E~~	~~20'~~	~~10'~~	~~6' X 4' ARCH CULVERT~~	~~157.12~~	~~9.44~~	~~4.30'~~	~~1 TON~~
G	10'	20'	24" PIPE	12.87	15.43	4.30'	1 TON
I	10'	20'	24" PIPE	17.50	5.57	2.70'	½ TON
L	15'	10'	36" PIPE	5.60	19.78	5.40'	2 TON
O	15'	10'	36" PIPE	28.56	19.56	5.40'	2 TON
Q	50'	40'	20' X 6.5' ARCH CULVERT	1175.33	10.91	2.70'	½ TON
R	15'	10'	36" PIPE	7.91	14.32	4.30'	1 TON
S	10'	20'	24" PIPE	22.24	31.27	5.40'	2 TON
N	8'	12'	36" PIPE	15.95	22.86	5.40'	2 TON
E	20'	10'	20' X 6.5' ARCH CULVERT	157.12	14.89	4.30'	1 TON

2

2

NOTES:

1. PIPE ANCHORS SHALL BE CONSTRUCTED AT 10' VERTICAL INTERVAL ON ALL SLOPES OF 4:1 OR STEEPER.
2. ALL REINFORCING STEEL SHALL BE #4 BARS.
3. CONCRETE SHALL BE CLASS 500-C-2500 CONCRETE.

REGISTERED PROFESSIONAL ENGINEER
CHARISSA J.A. LOCH
NO. 53390
EXP. 6-30-07
CIVIL
STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/07

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Under the Supervision of: Charissa Loch, R.C.E. 53390 Exp. 06.30.07 Date: 6/16/06

BENCHMARK: F7 - K3

CITY OF RIVERSIDE REFERENCE LL47/7.

PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.

ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	REVISED D#.	RVC	12-7-06
1	ARCH CULVERT REDESIGN REVISIONS	RVC	10-18-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

RVC

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY: [signature]

CITY ENGINEER

DATE 7/18/06

* AS-BUILT 2-27-08 LH

STORM DRAIN PLAN

TRACT 29515

APN 243-200-007, 243-220-001, 011, 015, 017
APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649

ACCOUNT NO.

2 787

D-738

SHEET 7 OF 11

J.N. 6500

INDEXED 1-29-07 LH

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GENERAL STRUCTURAL NOTES

GENERAL REQUIREMENTS

1. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEERS IN THIS OR SIMILAR LOCALITIES. THEY NECESSARILY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKMEN WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, IT IS UNDERSTOOD THAT THE CONTRACTOR WILL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR ALL MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
2. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND PROVIDE ADEQUATE SHORING, BRACING, FORM-WORK, ETC... AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS STATED HEREIN IS NOT EXCEEDED. VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT. ALL WORK OR CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATIONS AND SAFETY REQUIREMENTS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH CIVIL DRAWINGS PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEER AND/OR STRUCTURAL ENGINEER IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS. ANY SUCH DISCREPANCY, OMISSION, OR VARIATION NOT REPORTED BEFORE START OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. WHERE DISCREPANCIES OCCUR IN THESE DRAWINGS, NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.
5. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA.
6. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF ANY OPTION IS USED, THE CONTRACTOR SHALL USE THE LATEST EDITION AND/OR ADDENDA.
7. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR CIVIL AND ELECTRICAL REQUIREMENTS WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
8. OWNER SHALL BE RESPONSIBLE FOR THE COSTS OF ALL INSPECTIONS WHETHER PERFORMED BY AN AGENCY, INDEPENDENT CONSULTANT OR STRUCTURAL ENGINEER ALL INSPECTIONS REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS OR BY THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN INSPECTION, UNLESS SPECIFICALLY CONTRACTED FOR.
9. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL ITEMS. SHOP DRAWINGS ARE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE STRUCTURAL DRAWINGS. REVIEW DOES NOT INDICATE THAT THE SHOP DRAWINGS ARE CORRECT OR COMPLETE. RESPONSIBILITY FOR CORRECTNESS SHALL REST WITH THE CONTRACTOR. ANY CHANGES, SUBSTITUTIONS, OR DEVIATIONS FROM CONTRACT DRAWINGS SHALL BE CLOUDED. ANY OF THE AFOREMENTIONED SHALL NOT BE CONSIDERED APPROVED AFTER ENGINEERS REVIEW UNLESS SPECIFICALLY NOTED ACCORDINGLY. THE SHOP DRAWINGS DO NOT SUPERSEDE OR REPLACE THE ORIGINAL CONTRACT DRAWINGS. ANY ENGINEERING PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF AN APPROPRIATELY REGISTERED ENGINEER. SEDCO SHALL NOT BE RESPONSIBLE FOR THE ADEQUACY OF ENGINEERING DESIGNS PERFORMED BY THE OTHERS. ALLOW 5 WORKING DAYS FOR THE ENGINEER OF RECORD'S REVIEW. ONE COPY OF EACH SUBMITTAL WILL BE RETAINED BY THE ENGINEER OF RECORD.

DESIGN BASIS

1. TRACT 29515: 20'-0"x6'-6", $\frac{10'-0"x6'-6"}{6'-0"x3'-0"}$ CULVERTS △3
2. CODE: 2004 CALTRANS BRIDGE STANDARD SPECIFICATIONS
3. DEAD LOAD: STRUCTURE SELF WEIGHT CONCRETE = 150 pcf
   VARYING COVER WITH A SOIL BACKFILL DENSITY = 120pcf
4. LIVE LOAD: HS20-44 LOADING

FOUNDATION

1. THE FOUNDATIONS FOR THE ABOVE REFERENCED PROJECT ARE DESIGNED WITH RECOMMENDATIONS FROM LEIGHTON AND ASSOCIATES, INC., PROJECT NO. 111232-004 DATED NOVEMBER 29, 2004. ALL RECOMMENDATIONS LISTED WITH IN THIS REPORT REGARDING SITE PREPARATION, GRADING, COMPACTION TESTS, INSPECTIONS ETC. SHALL BE FOLLOWED WITH STRICT ADHERENCE AND SHALL BE COMPLETED PRIOR TO CONSTRUCTION.

CONCRETE

1. MIN. 28 DAY COMPRESSIVE STRENGTH, f'c, SHALL BE 4000 PSI.
2. CEMENT SHALL BE TYPE II AND MAX W/C RATIO SHALL BE 0.45
3. CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM C 42 SPECIFICATION.
4. ALL CONCRETE SHALL BE NORMAL WEIGHT USING HARDROCK AGGREGATES.
5. CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY AND APPROVED BY SEDCO.
6. ALL CONCRETE SHALL BE REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT USING HARDROCK AGGREGATES CONFORMING TO TO ASTM C33. WATER SHALL BE CLEAN AND POTABLE.
7. CONCRETE FOR SLABS ON GRADE SHALL BE CONSOLIDATED USING SURFACE VIBRATION METHODS. ALL OTHER CONCRETE SHALL BE CONSOLIDATED USING INTERNAL VIBRATION METHODS. REMOVE ALL DEBRIS FROM FORMS BEFORE PLACING CONCRETE. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET.
8. ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, SLEEVES, ETC., SHALL BE SECURELY POSITIONED PRIOR TO CONCRETE PLACEMENT.
9. SHOTCRETE PROPORTIONS SHALL BE SELECTED THAT ALLOW SUITABLE PLACEMENT PROCEDURES USING THE DELIVERY EQUIPMENT SELECTED AND SHALL RESULT IN FINISHED IN-PLACE HARDENED SHOTCRETE MEETING THE STRENGTH REQUIREMENTS STATED HERE-IN. COARSE AGGREGATE, IF USED, SHALL NOT EXCEED 3/8 INCH. ANY REBOUND OR ACCUMULATED LOOSE AGGREGATE SHALL BE REMOVED FROM THE SURFACES TO BE COVERED PRIOR TO PLACING THE INITIAL OR ANY SUCCEEDING LAYERS OF SHOTCRETE. REBOUND SHALL NOT BE REUSED AS AGGREGATE.
10. SHOTCRETE PLACEMENT SHALL BE PLACED ACCORDING TO ACI 506R-90. PRE-CONSTRUCTION TESTING OF SHOTCRETE IS NOT REQUIRED PROVIDED THE CONTRACTOR DEMONSTRATES TO THE BUILDING OFFICIAL, BY MEANS APPROVED BY THE BUILDING OFFICIAL, ACCEPTED SHOTCRETE WORK USING SIMILAR EQUIPMENT UNDER SIMILAR CIRCUMSTANCES WITH THE SAME PERSONNEL.
11. · FINISHING

    ACCORDING TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS RIVERSIDE COUNTY, ONLY SURFACES EXPOSED TO VIEW AFTER BACKFILL IS PLACED REQUIRE FINISHING (EITHER ORDINARY OR FINE). HOWEVER, IT IS REQUIRED THAT THE EXTERIOR SHOTCRETE SURFACE IS MADE SMOOTH WITH A STEEL TROWEL OR FRESNO TO FACILITATE THE APPLICATION OF WATERPROOFING. THIS FINISH SHALL HAVE NO REQUIREMENTS FOR FLATNESS. HOWEVER, THE SURFACE SHALL BE FREE FROM STONE POCKETS, DEPRESSIONS OR PROJECTIONS IN EXCESS OF 1/4 INCH BEYOND THE SURFACE. INVERT EXPOSED SURFACE SHALL BE ORDINARY BROOM FINISH.

    · ADMIXTURES

    ONLY ADMIXTURES PERMITTED BY THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS RIVERSIDE COUNTY SHALL BE ALLOWED.

    · CURING

    CURING ON THE OUTSIDE SURFACE AND INSIDE SURFACE AFTER FORM REMOVAL SHALL BE BY MEANS OF LIQUID MEMBRANE-FORMING COMPOUND MEETING THE REQUIREMENTS OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS RIVERSIDE COUNTY. A APPROVAL OF SHOTCRETE FOR REINFORCING BAR EMBEDMENT, VOIDS, ROCK POCKETS, SAND STREAKS AND SIMILAR DEFICIENCIES.
12. COMPLETED SHOTCRETE WORK SHALL BE CHECKED VISUALLY DURING CONSTRUCTION AND PRIOR TO FINAL BULKHEAD SHALL BE PLACED AT THE END OF THE CULVERT TO STOP WIND MOVEMENT THROUGH THE CULVERT IMMEDIATELY AFTER CONCRETE PLACEMENT.
13. SURFACES OF STEEL FORMS SHALL BE COATED W/ AN ICC APPROVED FORM RELEASE OIL.
14. SHOTCRETE NOZZLEMAN SHALL BE CERTIFIED PER ACI 506.3R-91.
15. SHOTCRETE MAY BE USED IN LIEU OF POURED IN PLACE CONCRETE ON ALL ARCHES, WALLS, MANHOLE BASES (ATTACHED DIRECTLY TO ARCH).
16. SLABS SHALL BE POURED IN PLACE.
17. AT CONTRACTORS OPTION CUT OFF WALLS MAY UTILIZE A 3/8" MINUS AGGREGATE IN MIX DESIGN.

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615. REINFORCING SHALL BE GRADE 60 (FY = 60 KSI) DEFORMED BARS FOR ALL BARS #4 AND LARGER AND ALL BARS USED FOR CONCRETE WALLS. REINFORCING MAY BE GRADE 40 (FY = 40 KSI) DEFORMED BARS FOR ALL BARS #3 AND SMALLER UNLESS NOTED OTHERWISE ON PLANS OR DETAILS. ALL REINFORCING TO BE WELDED SHALL BE ASTM A706, GRADE 60 ALLOY WELDABLE STEEL.
2. ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" OR "CLR" ARE TO CENTER OF STEEL. MINIMUM COVER FOR NON-PRESTRESSED CONCRETE REINFORCING SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:

EXPOSURE CONDITION:	COVER:	TOLERANCES: (+/-)
FOOTINGS & SLABS ON GRADE:	3"	3/8"
WALLS & SLABS EXPOSED TO EARTH OR WEATHER:	1 1/2"	1/2"
#6 BAR OR LARGER:	2"	1/2"
INTERIOR SLABS:	1 1/2"	1/2"

3. LAP SPLICES OF REINFORCING STEEL IN CONCRETE BEAMS, SLABS AND FOOTINGS SHALL BE ACCORDING TO ACI 318-99 CPT 12 OR LAP SCHEDULE WHERE PRESENT, UNLESS NOTED OTHERWISE. CONTACT OR NON-CONTACT SPLICES ALLOWED. NO TACK WELDING OF REINFORCING BARS ALLOWED. LATEST ACI CODE AND DETAILING MANUAL APPLY. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT ALL CORNERS AND INTERSECTIONS PER TYPICAL DETAILS. VERTICAL WALL BARS SHALL BE SPLICED AT OR NEAR FLOOR LINES. SPLICE BARS TOP BARS AT CENTER LINE OF SPAN AND BOTTOM BARS AT THE SUPPORT IN SPANDRELS, BEAMS, GRADE BEAMS, ETC..., UNLESS NOTED OTHERWISE

REBAR LAP SCHEDULE

BAR	LAP
#3	31"
#4	31"
#5	39"
#6	48"

4. ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UNBENT AND RE-BENT EXCEPT AS NOTED ON PLAN. FIELD BENDING OF REBAR SHALL NOT BE ALLOWED EXCEPT AS NOTED ON PLAN. BENDS AND HOOKS SHALL CONFORM TO ACI STANDARD 315-80.
5. WELDING OF REINFORCING BARS, METAL INSERTS, AND CONNECTIONS SHALL CONFORM WITH ACI 318 CHAPTER 12, AND SHALL BE MADE ONLY AT LOCATIONS SHOWN ON PLANS OR DETAILS. ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UN-BENT AND RE-BENT.
6. REINFORCING BAR SPACING SHOWN ON PLANS ARE MAXIMUM ON CENTERS. ALL BARS SHALL BE DETAILED AND PLACED PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERTICAL REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE.

INSPECTIONS

1. THE SPECIAL INSPECTORS SHALL PROVIDE INSPECTIONS DURING PLACEMENT OF BACKFILL, REINFORCEMENT, SHOTCRETING, CONCRETE, AND EPOXY DOWELING. THE INSPECTOR SHALL SUBMIT A STATEMENT TO THE OWNER, HYDRO ARCH, AND SEDCO INDICATING COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.
2. SPECIAL INSPECTION OF THE FILL AROUND THE CULVERT SHALL BE PROVIDED AT A FREQUENCY AS NECESSARY TO ENSURE THAT PROPER FILL AND COMPACTION IS ACHIEVED. COMPACTION TESTS FOR EACH LIFT SHALL BE TAKEN PER EVERY 2500 SQUARE FEET PLACED AS A MINIMUM. THE SPECIAL INSPECTOR SHALL SUBMIT A COMPLIANCE REPORT TO THE OWNER, HYDRO ARCH, AND SEDCO DOCUMENTING FILL TYPE AND PROCEDURES OF PLACEMENT.

DEFERRED SUBMITTALS

1. ALL ITEMS CONSIDERED IN THESE DESIGN DOCUMENTS AS BY OTHERS ARE NOTED AS DEFERRED SUBMITTALS. THE FOLLOWING WILL INCLUDE BUT NOT BE LIMITED TO:
   - CONCRETE MIX DESIGN
   - REINFORCING SHOP DRAWING
2. PRIOR TO SUBMITTAL OF DEFERRED ITEMS TO PLAN REVIEW, THEY SHALL BE SUBMITTED TO OUR OFFICE FOR REVIEW.

WATER PROOFING

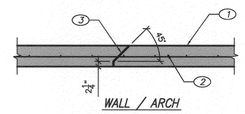
1. THE EXTERIOR SURFACE OF THE CONCRETE ARCH SHALL BE WATERPROOFED W/ AN EPRO ECOBASED II PRODUCT. INSTALLATION SHALL BE IN ACCORDANCE W/ MANUFACTURE RECOMMENDATIONS FOR SPECIFICATIONS SEE EPRO WEB SITE EPROSERV.COM/PSI_SET.HTM

SHEET INDEX

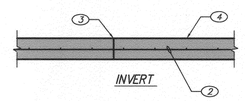
SHEET NO.	SHEET TITLE	SHEET NO.	SHEET TITLE
8	GSN, STD ABBREVIATIONS, SHEET INDEX	11	SECTIONS
9	PLAN VIEW		
10	SECTIONS		

STANDARD ABBREVIATIONS

ACI	AMERICAN CONCRETE INSTITUTE	FLR	FLOOR	PSI	POUNDS PER SQUARE INCH
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	FTG	FOOTING	REQ'D	REQUIRED
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	GSN	GENERAL STRUCTURAL NOTES	SIM	SIMILAR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIAL	KSI	KIPS PER SQUARE INCH	T&B	TOP AND BOTTOM
℄	CENTER LINE	MFR	MANUFACTURER	TOF	TOP OF FOOTING
CLR	CLEAR	MAX	MAXIMUM	TOPC	TOP OF PILECAP
CONC	CONCRETE	MECH	MECHANICAL	TOW	TOP OF WALL
CONT	CONTINUOUS	MIN	MINIMUM	UBC	UNIFORM BUILDING CODE
DIA OR ø	DIAMETER	MISC	MISCELLANEOUS	UNO	UNLESS NOTED OTHERWISE
DWG	DRAWING	NTS	NOT TO SCALE	VERT	VERTICAL
EF	EACH FACE	OC	ON CENTER	W/	WITH
ELEV	ELEVATION	OPP	OPPOSITE	W/O	WITHOUT
EQ	EQUAL	PSF	POUNDS PER SQUARE FOOT	WT	WEIGHT



WALL / ARCH

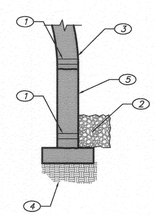


INVERT

KEYNOTES:

1. CONCRETE WALL OR ARCH
2. REINF PER DETAILS
3. CONSTRUCTION JOINT
4. INVERT

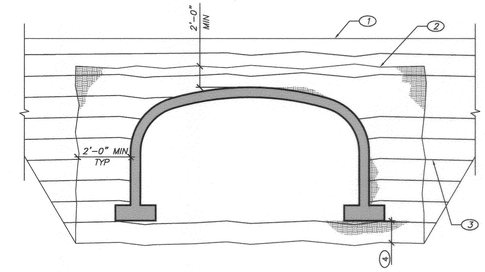
3 CONSTRUCTION JOINT IN WALL, ARCH, OR CONCRETE SLAB
NO SCALE



KEYNOTES:

1. 2"ø WEEP HOLE EACH SIDE OF CULVERT, SEE PLANS AND DETAILS FOR SPACING
2. (1) CUBIC FOOT OF FREE DRAIN MATERIAL WRAPPED IN FILTER FABRIC AT EACH WEEP HOLE
3. CONCRETE WALL OR ARCH
4. COMPACT BACKFILL, SEE GEOTECHNICAL REPORT
5. REMOVE WATER PROOFING AS OCCURS AT AREAS WHERE DRAIN ROCK TOUCHES CULVERT WALL

4 WEEP HOLE DRAIN REQUIREMENTS
NO SCALE



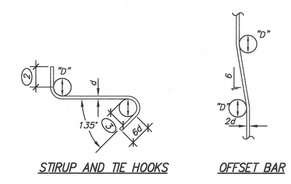
KEYNOTES:

1. FINISHED GRADE
2. MIN LIMITS OF STRUCTURAL BACKFILL ZONE (SEE NOTES BELOW FOR STRUCTURAL BACKFILL REQUIREMENTS). FOR FILL HEIGHT LESS THAN 2'-0" THE FINISH GRADE SHALL BE THE BOUNDARY LINE FOR THE BACKFILL ZONE.
3. BACKFILLING OPERATIONS OUTSIDE THE STRUCTURAL BACKFILL ZONE SHALL BE PER THE GEOTECHNICAL REPORT.
4. SCARIFY 12" MIN AND COMPACT PER NOTE B

NOTES:

A. THE MIN REQUIREMENTS FOR SUBBASE PREP AND BACKFILL ARE LISTED BELOW. GEOTECHNICAL ENGINEER MAY REQUIRE ADDITIONAL
B. BACKFILL WITHIN 2'-0" OF ARCH OR STEM WALLS SHALL CONSIST OF WELL GRADED 3" MINUS GRANULAR MATERIAL OF A MIN SOIL CLASS OF SM OR SP PER THE UNIFIED CLASSIFICATION SYSTEM, ASTM D-2487-69 AND COMPACTED TO 95% OF DRY DENSITY. WHERE SUB BASE PREPARATION IS NOT SPECIFIED BY THE GEOTECHNICAL REPORT EXISTING SUBASE SHALL BE SCARIFIED FOR 1'-0" DEPTH. FREE IF CLAY AND SILT DEPOSITS, AND COMPACTED TO 95% OF DRY DENSITY. 6" OF WELL GRADED 3" MINUS GRANULAR MATERIAL IS TO BE PLACED ON EXISTING COMPACTED SUBASE AND PROPERLY COMPACTED TO 95% OF DRY DENSITY.
C. PLACEMENT OF THE FILL AT THE STEM WALLS AND OVER THE ARCH MAY BEGIN WHEN THE CONCRETE STRENGTH HAS REACHED 2800 psi COMPRESSIVE STRENGTH. FILL SHALL BE PLACED IN 8" MAXIMUM VERTICAL LIFTS AND COMPACTED TO 95% OF DRY DENSITY. LIFTS SHALL BE PLACED SYMMETRICALLY EACH SIDE ALONG THE FULL LENGTH OF CULVERT WITH A MAXIMUM BACKFILL LIFT HEIGHT DIFFERENTIAL OF 1'-0". MAXIMUM DRY DENSITY SHALL BE DETERMINED PER THE GEOTECHNICAL REPORT. BACKFILL SHALL BE COMPACTED PER GEOTECHNICAL REPORT.
D. NO EQUIPMENT WEIGHING MORE THAN A 3 YARD RUBBER TIRE LOADER (928 CATERPILLAR OR EQUIVALENT) SHALL BE ALLOWED TO PASS OVER THE STRUCTURE UNTIL THE SPECIFIED FILL IS IN PLACE. HEAVY EQUIPMENT SUCH AS SCRAPERS AND CRANES SHALL NOT BE ALLOWED TO PASS OVER THE STRUCTURE UNLESS SPECIFIC WRITTEN PERMISSION IS OBTAINED BY THE STRUCTURAL ENGINEER.

1 BACKFILL REQUIREMENTS (ELEVATION)
NO SCALE



STIRUP AND TIE HOOKS

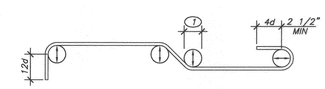
OFFSET BAR

KEYNOTES:

1. D = 6d FOR #3 THRU #8
   D = 8d FOR #9, 10 AND 11
   D = 10d FOR #14 AND #18
2. 6"d" FOR #5 AND SMALLER
   12"d" FOR #6 THRU #8
3. MINIMUM FINISHED BEND DIA FOR STIRRUPS AND TIES ONLY
   4"d" FOR #5 AND SMALLER
   6"d" FOR #6 THRU #8
   8"d" FOR #9 THRU #11

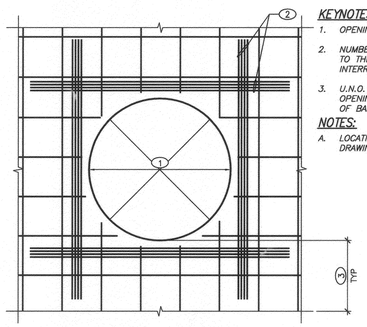
NOTES:

A. "d" = BAR DIA
B. ALL REINFORCEMENT SHALL BE BENT COLD UNLESS NOTED OTHERWISE ON PLANS OR DETAILS



ALL OTHER REINFORCING

2 STANDARD REBAR BENDING DETAILS
NO SCALE



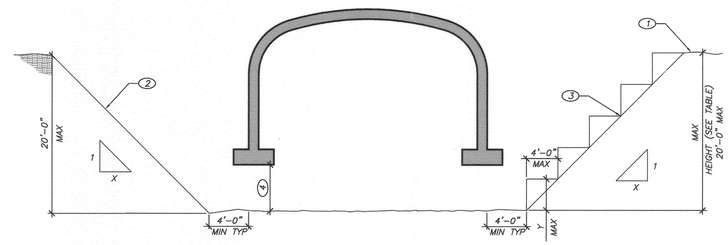
KEYNOTES:

1. OPENING DIAMETER 4'-0" MAX UNO
2. NUMBER OF ADDED BARS EQUAL TO THE NUMBER OF BARS INTERRUPTED BY OPENING.
3. U.N.O. EXTEND BARS PAST EDGE OF OPENING EQUAL TO LAP LENGTH OF BAR PER LAP SCHEDULE

NOTES:

A. LOCATION AS SHOWN PER CIVIL DRAWINGS AS OCCURS

6 TYPICAL OPENING IN CHANNEL WALL OR CULVERT
NO SCALE



KEYNOTES:

1. FINISHED GRADE
2. SIMPLE SLOPE EXCAVATION
3. MULTIPLE BENCH EXCAVATION
4. OVER EXCAVATE AS REQUIRED FOR FILL PLACEMENT
5. COORDINATE EXCAVATION SOIL WITH OSHA 29 CFR 1926 SUBPART P TO DETERMINE SOIL TYPE A, B OR C.
6. THE INFORMATION PRESENTED IS A GUIDELINE TO EXCAVATION BASED ON OSHA 29 CFR 1926 SUBPART P. TO DETERMINE WHERE SHORING IS REQUIRED AND FOR FURTHER INFORMATION SEE OSHA 29 CFR 1926

SOIL TYPE	(X) HORIZONTAL	(Y) MULT BENCH
A	3/4	5'-0"
B	1	4'-0"
C	1 1/2	NA

RECOMMEND EXCAVATION GUIDELINES PER OSHA 29 CFR 1926 SUBPART P

5 TYPICAL EXCAVATION REQUIREMENTS
NO SCALE

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REGISTERED PROFESSIONAL ENGINEER JASON SOUTH C59678 EXP. DEC. 31, 2007 CIVIL STATE OF CALIFORNIA
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Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date:

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7.
PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
1	REVISED D#	RZ	12-7-06
2	ARCH CULVERT REDESIGN REVISIONS	RZ	2-8-07

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-
RZ

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

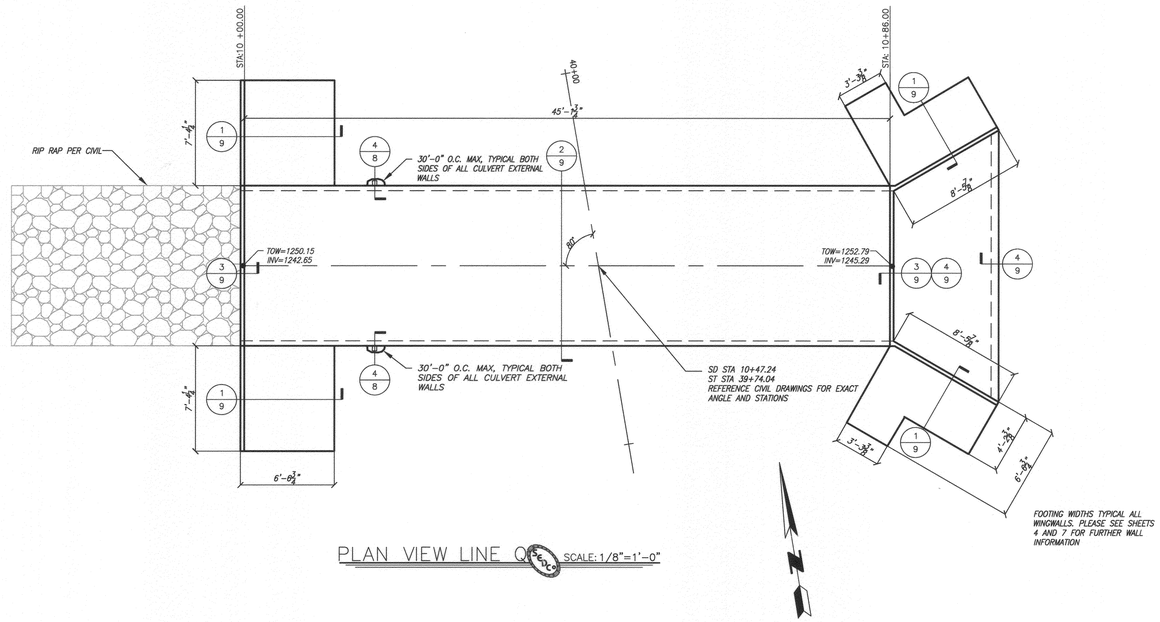
APPROVED BY
CITY ENGINEER
DATE 2/19/06

* AS-BUILT 2-27-08 JH

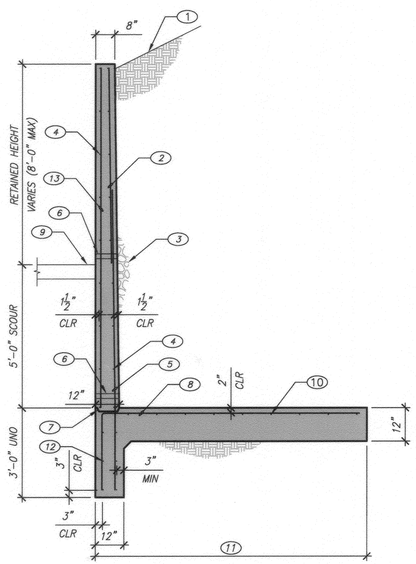
STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017, APN 243-230-001, 002, 021, 022, 024
HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
△3 787
D-738
SHEET 8 OF 11
J.N. 6500

INDEXED 1-29-07 JH



PLAN VIEW LINE Q SCALE: 1/8"=1'-0"



1 WING WALL SECTION
NO SCALE

KEYNOTES:

1. FINAL GRADE PER CIVIL 2:1 MAX SLOPE
2. #4 VERT AT 18" O.C. INSIDE FACE
3. BACKFILL MATERIAL AND PROCEDURE PER GEOTECHNICAL REPORT AND PROVIDE 12" MIN FREE DRAINAGE GRANULAR BACKFILL FULL HEIGHT OF WALL
4. #4 HORIZ AT 18" O.C. EF
5.

RETAINED HEIGHT	VERTICAL REINFORCING
UP TO 5'-0"	#4 VERT x5'-6" AT 6" O.C.
5'-1" – 8'-0"	#5 VERT x9'-6" AT 4" O.C.

6. 2"ø WEEP HOLE AT 4'-0" O.C. MAX
7.

RETAINED HEIGHT	KEY SIZE
UP TO 5'-0"	1 1/2" DEEP X 6 1/2"
5'-1" – 8'-0"	1 1/2" DEEP X 9"

8.

RETAINED HEIGHT	MAIN TRANS FTG REINF
UP TO 5'-0"	#4 TRANS AT 6" O.C.
5'-1" – 8'-0"	#5 TRANS AT 4" O.C.

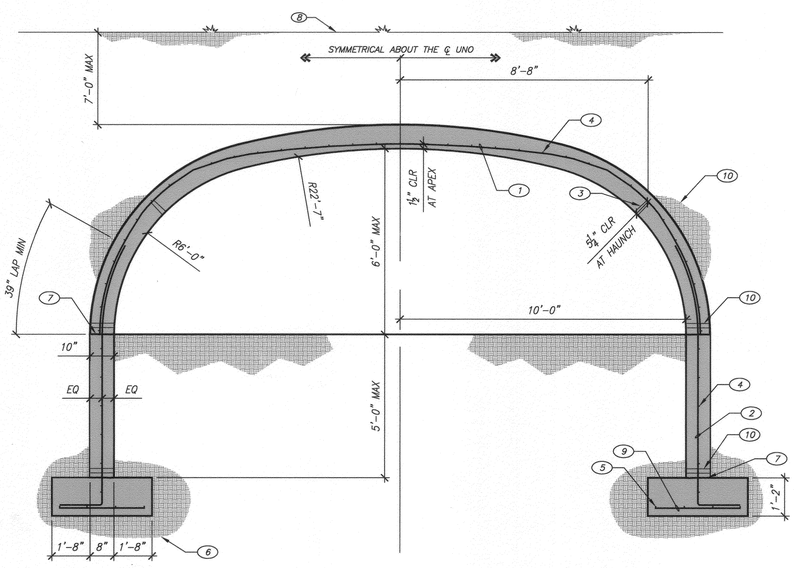
9. SLAB ON GRADE OR RIP RAP PER CIVIL BOND BREAKER TAPE REQUIRED BETWEEN SLAB AND WALL
10. #5 CONT AT 12" O.C.
11.

RETAINED HEIGHT	FOOTING WIDTH
UP TO 5'-0"	8'-0"
5'-1" – 8'-0"	12'-6"

12. #4 CONT AT 12" O.C. EA FACE
13. #4 VERT AT 18" O.C.

NOTE:

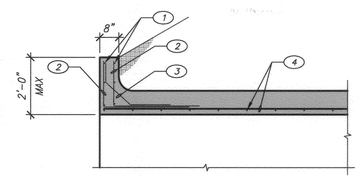
A. AT CONTRACTOR'S OPTION, VERT REINF PER KEYNOTE 5 MAY BE EXTENDED FULL WALL HEIGHT AND VERT REINF PER KEYNOTE 2 MAY BE ELIMINATED



2 CULVERT CULVERT SECTION
NO SCALE

KEYNOTES:

1. #5 AT 8" O.C. TRANSVERSE
2. #5 DOWEL AT 8" O.C. W/ 20" HOOK AT BASE
3. REBAR CHAIR POINT
4. #4 AT 12" O.C. LONGITUDINAL LAP 18" MIN
5. (4) #5 LONGITUDINAL EQ SPACED, LAP 18" MIN
6. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS
7. ROUGHEN CONSTRUCTION JOINT, PER GSN
8. FINAL GRADE
9. #5 AT 8" O.C. TRANSVERSE
10. 2"ø WEEP HOLE PER PLAN



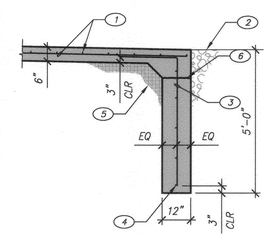
3 HEADWALL DETAIL
NO SCALE

KEYNOTES:

1. #5 HORIZ EA FACE AT 12" O.C.
2. #4 VERT DOWEL AT 12" O.C. W/ 36" LONG HOOK AT BASE
3. #4 AT 12" O.C. PLACE RADIALLY AROUND ARCH
4. CULVERT REINFORCING, PER SECTION

KEYNOTES:

1. #4 AT 12" O.C. EACH WAY
2. RIP RAP CHANNEL AS OCCURS
3. #4 BENT DOWEL AT 12" O.C.
4. #4 AT 12" O.C. HORIZ
5. COMPACTED SUB GRADE PER GSN
6. ROUGHEN CONSTRUCTION JOINT, AT CONTRACTORS OPTION (TYP)



4 DETAIL AT CUT OFF WALL AND RIP RAP CHANNEL
NO SCALE

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ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	REVISED D#6	RJZ	12-7-06
1	SUPERCEDED BY SHEET 9A	RJZ	10-18-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-
RJZ

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY
CITY ENGINEER
DATE 7/19/06

* AS-BUILT 2-27-08 LFH

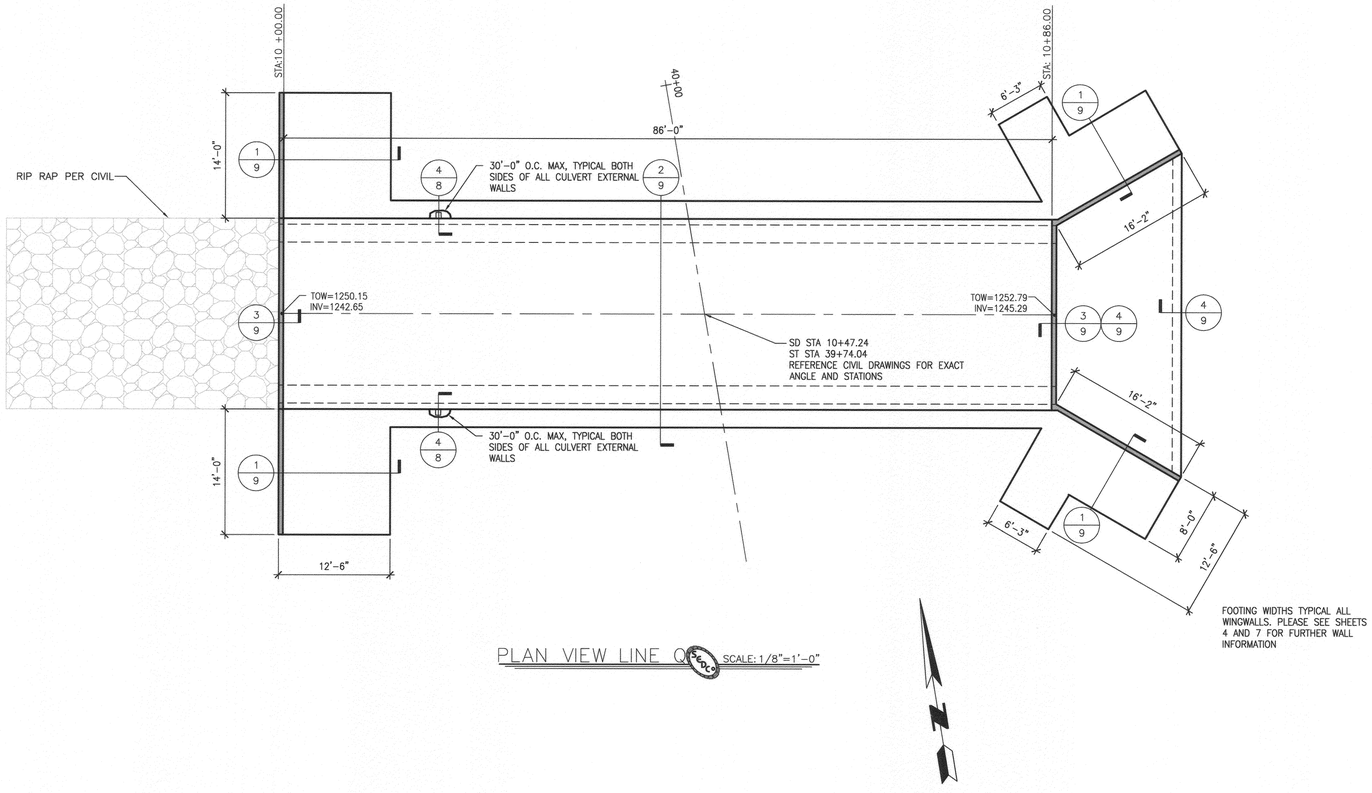
STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017, APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

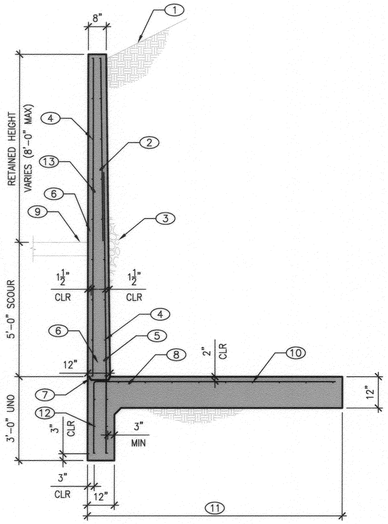
PW 04-0649
ACCOUNT NO.
2 787
D-738
SHEET 9 OF 11
J.N. 6500

INDEXED 1-29-07 LFH

* DIMENSIONS SHOWN ARE APPROXIMATED BASED ON THE CIVIL DRAWINGS. REFERENCE SHEETS 2 AND 3 OF THE CIVIL DRAWINGS FOR EXACT DIMENSIONS AND STATIONS.



PLAN VIEW LINE Q SCALE: 1/8"=1'-0"



1 WING WALL SECTION
NO SCALE

KEYNOTES:

1. FINAL GRADE PER CIVIL 2:1 MAX SLOPE
2. #4 VERT AT 18" O.C. INSIDE FACE
3. BACKFILL MATERIAL AND PROCEDURE PER GEOTECHNICAL REPORT AND PROVIDE 12" MIN FREE DRAINAGE GRANULAR BACKFILL FULL HEIGHT OF WALL
4. #4 HORIZ AT 18" O.C. EF
5.

RETAINED HEIGHT	VERTICAL REINFORCING
UP TO 5'-0"	#4 VERT x5'-6" AT 6" O.C.
5'-1" – 8'-0"	#5 VERT x9'-6" AT 4" O.C.

6. 2"ø WEEP HOLE AT 4'-0" O.C. MAX
7.

RETAINED HEIGHT	KEY SIZE
UP TO 5'-0"	1 1/2" DEEP X 6 1/2"
5'-1" – 8'-0"	1 1/2" DEEP X 9"

8.

RETAINED HEIGHT	MAIN TRANS FTG REINF
UP TO 5'-0"	#4 TRANS AT 6" O.C.
5'-1" – 8'-0"	#5 TRANS AT 4" O.C.

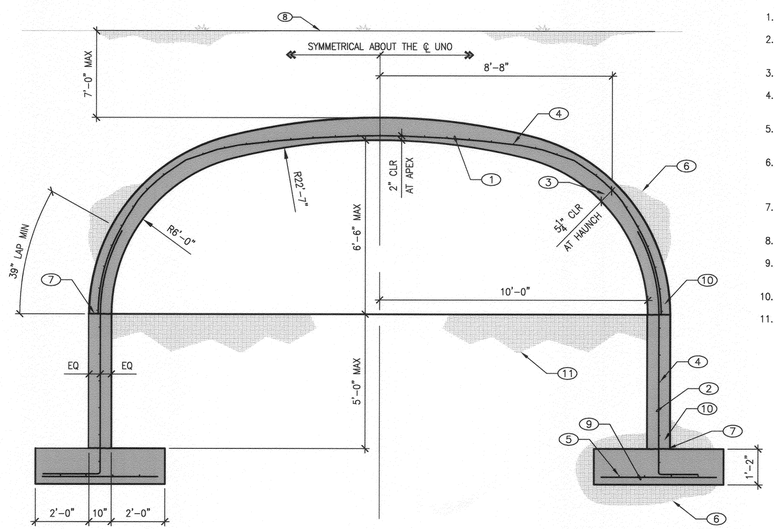
9. SLAB ON GRADE OR RIP RAP PER CIVIL BOND BREAKER TAPE REQUIRED BETWEEN SLAB AND WALL
10. #5 CONT AT 12" O.C.
11.

RETAINED HEIGHT	FOOTING WIDTH
UP TO 5'-0"	8'-0"
5'-1" – 8'-0"	12'-6"

12. #4 CONT AT 12" O.C. EA FACE
13. #4 VERT AT 18" O.C.

NOTE:

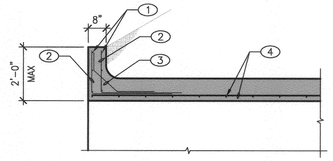
A. AT CONTRACTOR'S OPTION, VERT REINF PER KEYNOTE 5 MAY BE EXTENDED FULL WALL HEIGHT AND VERT REINF PER KEYNOTE 2 MAY BE ELIMINATED



2 20'-0" x 6'-6" CULVERT SECTION
NO SCALE

KEYNOTES:

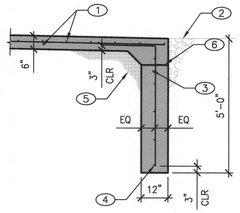
1. #5 AT 8" O.C. TRANSVERSE
2. #5 DOWEL AT 8" O.C. W/ 20" HOOK AT BASE
3. REBAR CHAIR POINT
4. #4 AT 12" O.C. LONGITUDINAL LAP 18" MIN
5. (4) #5 LONGITUDINAL EQ SPACED, LAP 18" MIN
6. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS
7. ROUGHEN CONSTRUCTION JOINT, PER GSN
8. FINAL GRADE
9. #5 AT 8" O.C. TRANSVERSE
10. 2"ø WEEP HOLE PER PLAN
11. BACKFILL INVERT PER GEOTECH



3 HEADWALL DETAIL
NO SCALE

KEYNOTES:

1. #5 HORIZ EA FACE AT 12" O.C.
2. #4 VERT DOWEL AT 12" O.C. W/ 36" LONG HOOK AT BASE
3. #4 AT 12" O.C. PLACE RADIALLY AROUND ARCH
4. CULVERT REINFORCING, PER SECTION



4 DETAIL AT CUT OFF WALL AND RIP RAP CHANNEL
NO SCALE

KEYNOTES:

1. #4 AT 12" O.C. EACH WAY
2. RIP RAP CHANNEL AS OCCURS
3. #4 BENT DOWEL AT 12" O.C. 24"
4. #4 AT 12" O.C. HORIZ
5. COMPACTED SUB GRADE PER GSN
6. ROUGHEN CONSTRUCTION JOINT, AT CONTRACTORS OPTION (TYP)

* AS-BUILT 2-27-08 LH

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Under the Supervision of: Charissa Leach, R.C.E. 53390 Exp. 06.30.07 Date:

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE LL47/7. PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
2	REVISED D#	RR	12-7-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY
CITY ENGINEER
DATE 10/18/06

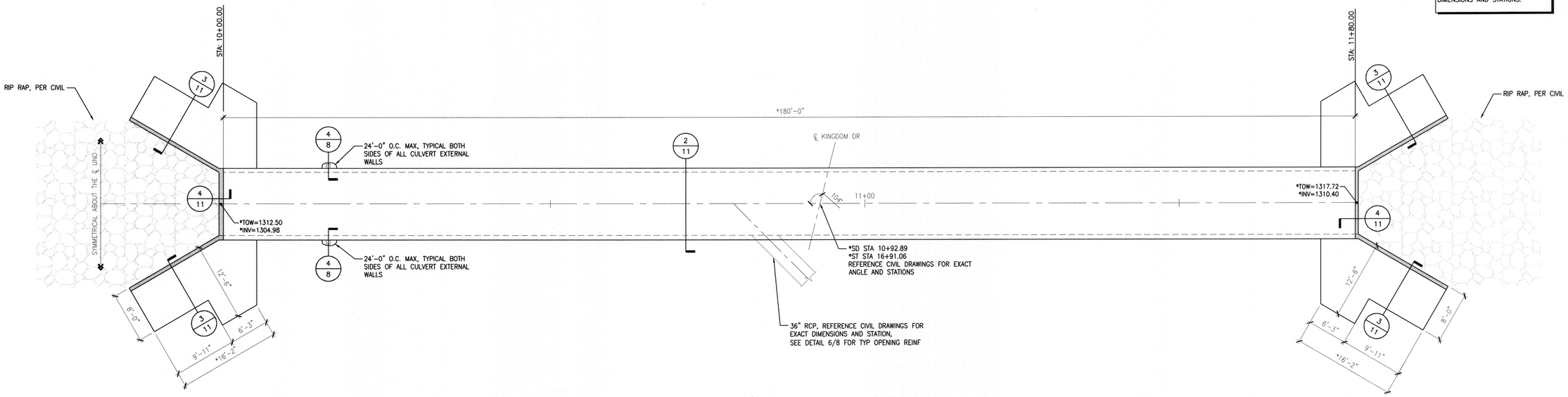
STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017, APN 243-230-001, 002, 021, 022, 024

PW 04-0649
ACCOUNT NO.
2 787
D-738
SHEET 9A OF 11
HORIZ. SCALE: VERT. SCALE: J.N. 6500

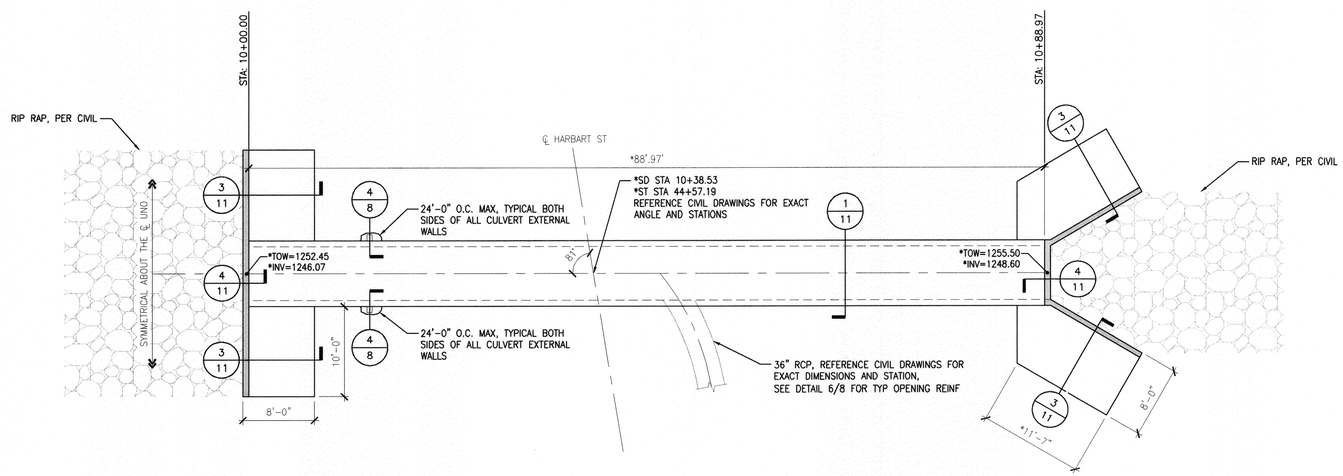
RR

INDEXED 1-29-07 LH

* DIMENSIONS SHOWN ARE APPROXIMATED BASED ON THE CIVIL DRAWINGS. REFERENCE SHEET 4 OF THE CIVIL DRAWINGS FOR EXACT DIMENSIONS AND STATIONS.



PLAN VIEW LINE C SCALE: 1/8"=1'-0"



PLAN VIEW LINE E SCALE: 1/8"=1'-0"

* AS-BUILT 2-27-08 LH
INDEXED 1-29-07 LH

HYDRO-ARCH
980 MARY CREST ROAD, UNIT B
HENDERSON, NV 89014

SEDCO ENGINEERING
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IDAHO FALLS, IDAHO 83401
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BENCHMARK: F7 - K3
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PK NAIL AND CITY ENGINEER TAG IN THE BASE OF A STREET LIGHT ALONG THE SOUTHERLY CURB OF OVERLOOK PARKWAY 175 FEET EAST OF CHATEAU RIDGE DRIVE, TRANSFER FROM F7-C2 BY CITY SURVEY CREW 6/10/2002.
ELEVATION: 1426.960

MARK	REVISIONS	APPR	DATE
2	REVISED D#	KJF	12-7-05
1	SUPERCEDED BY SH.10A	BRZ	10-18-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

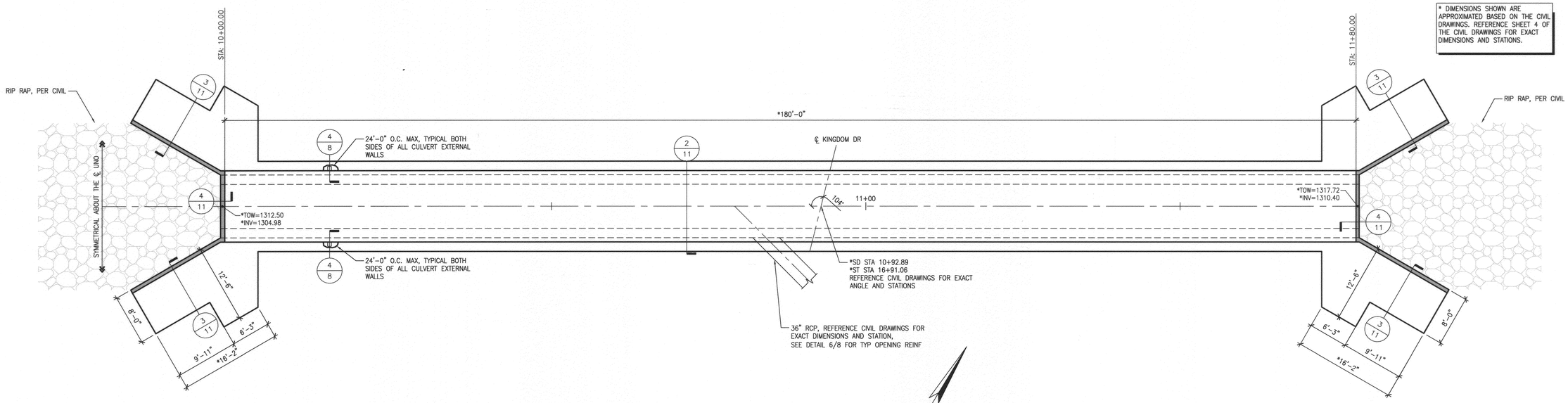
APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		KVZ

APPROVED BY
CITY ENGINEER
DATE 7/19/06

STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017, APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
3 787
D-738
SHEET 10 OF 11
J.N. 6500



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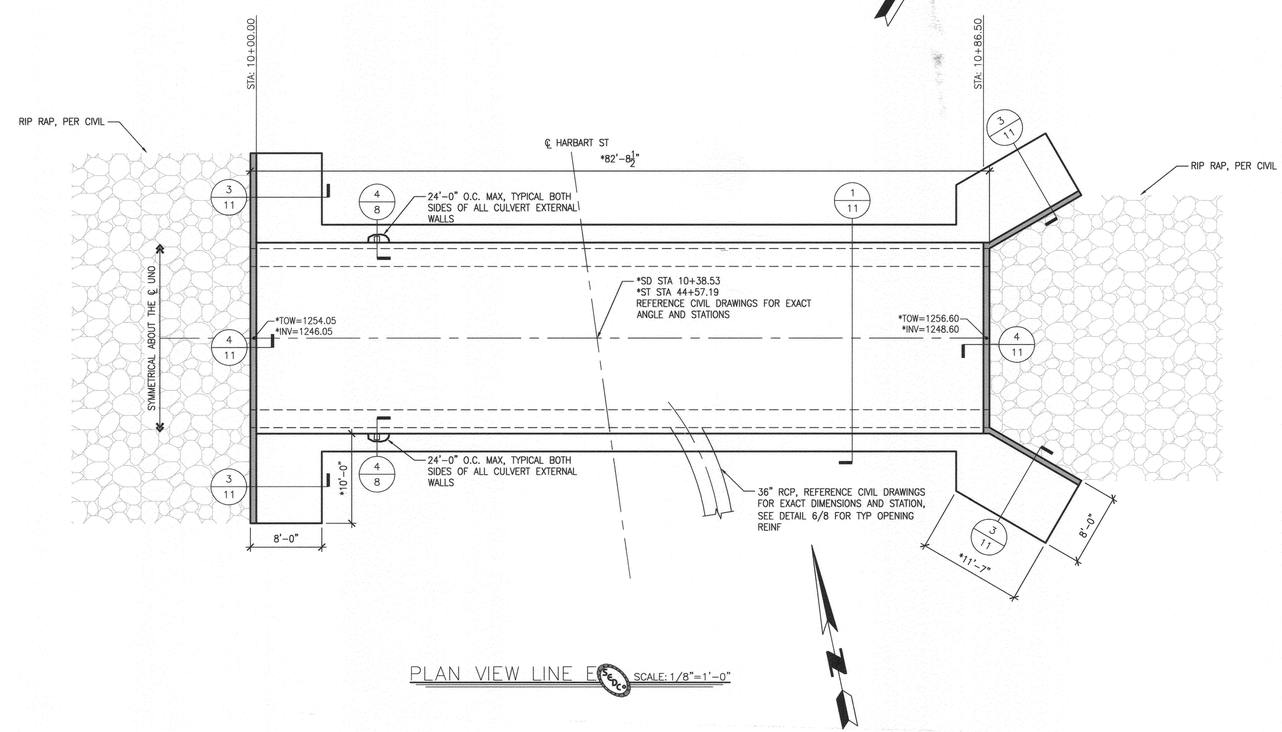
PLAN VIEW LINE C SCALE: 1/8"=1'-0"



PLAN VIEW LINE E SCALE: 1/8"=1'-0"

* AS-BUILT 2-27-08 GH

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ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE
1	REVISED DTM	RTL	12-7-06

DESIGNED BY: ROBERT DRAWN BY: CECILIA CHECKED BY: C-

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

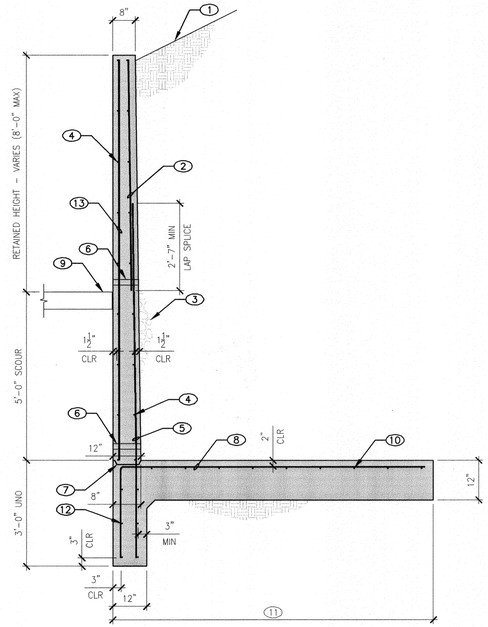
APPROVED BY: [signature]
CITY ENGINEER
DATE 10/18/06

STORM DRAIN PLAN
TRACT 29515
APN 243-200-007, 243-220-001, 011, 015, 017, APN 243-230-001, 002, 021, 022, 024

HORIZ. SCALE: VERT. SCALE:

PW 04-0649
ACCOUNT NO.
787
D-738
SHEET 10A OF 11
J.N. 6500

INDEXED 1-29-07 GH



KEYNOTES:

1. FINAL GRADE PER CIVIL 2:1 MAX SLOPE
2. #4 VERT AT 18" O.C. INSIDE FACE
3. BACKFILL MATERIAL AND PROCEDURE PER GEOTECHNICAL REPORT AND PROVIDE 12" MIN FREE DRAINAGE GRANULAR BACKFILL FULL HEIGHT OF WALL
4. #4 HORIZ AT 18" O.C. EF
5.

RETAINED HEIGHT	VERTICAL REINFORCING
UP TO 5'-0"	#4 VERT x5'-6" AT 6" O.C.
5'-1" – 8'-0"	#5 VERT x9'-6" AT 4" O.C.

6. 2"ø WEEP HOLE AT 4'-0" O.C. MAX
7.

RETAINED HEIGHT	KEY SIZE
UP TO 5'-0"	1 1/2" DEEP X 6 1/2"
5'-1" – 8'-0"	1 1/2" DEEP X 9"

8.

RETAINED HEIGHT	MAIN TRANS FTG REINF
UP TO 5'-0"	#4 TRANS AT 6" O.C.
5'-1" – 8'-0"	#5 TRANS AT 4" O.C.

9. SLAB ON GRADE OR RIP RAP PER CIVIL BOND BREAKER TAPE REQUIRED BETWEEN SLAB AND WALL
10. #5 CONT AT 12" O.C.
11.

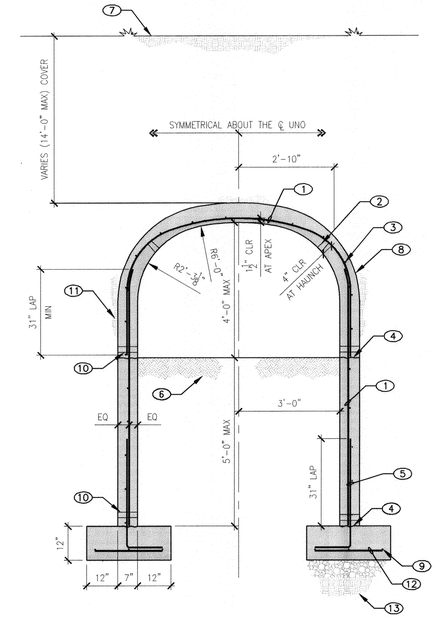
RETAINED HEIGHT	FOOTING WIDTH
UP TO 5'-0"	8'-0"
5'-1" – 8'-0"	12'-6"

12. #4 CONT AT 12" O.C. EA FACE
13. #4 VERT AT 18" O.C.

NOTE:

A. AT CONTRACTOR'S OPTION, VERT REINF PER KEYNOTE 5 MAY BE EXTENDED FULL WALL HEIGHT AND VERT REINF PER KEYNOTE 2 MAY BE ELIMINATED

3 WING WALL SECTION
NO SCALE



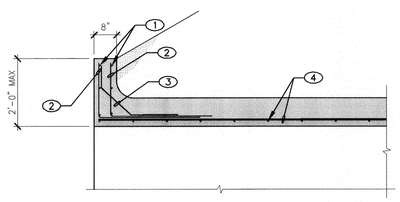
KEYNOTES:

1. #4 AT 10" O.C. TRANSVERSE
2. REBAR CHAIR POINT
3. #4 LONGITUDINAL AT 12" O.C. LAP 18" MIN
4. ROUGHEN CONSTRUCTION JOINT, AT CONTRACTORS OPTION
5. #4 DOWEL AT 10" O.C. W/ 12" HOOK AT BASE
6. BACKFILL INVERT PER GEOTECH
7. FINAL GRADE
8. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
9. (3) #5 LONGITUDINAL MIN 18" LAP
10. 2"ø WEEP HOLE PER PLAN
11. BACKFILL PER GSN
12. #4 AT 12" O.C. TRANSVERSE
13. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS

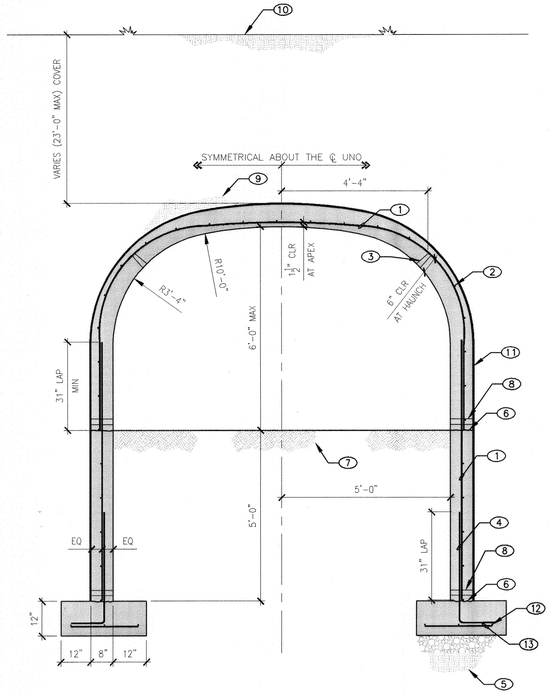
1 6'-0" x 4'-0" CULVERT SECTION
NO SCALE

KEYNOTES:

1. #5 HORIZ EA FACE AT 12" O.C.
2. #4 VERT DOWEL AT 12" O.C. W/ 36" LONG HOOK AT BASE
3. #4 AT 12" O.C. PLACE RADIALLY AROUND ARCH
4. CULVERT REINFORCING, PER SECTION



4 HEADWALL DETAIL
NO SCALE



KEYNOTES:

1. #4 AT 8" O.C. TRANSVERSE
2. #4 LONGITUDINAL AT 12" O.C. LAP 18" MIN
3. REBAR CHAIR POINT
4. #4 DOWEL AT 8" O.C. W/ 12" HOOK AT BASE
5. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS
6. ROUGHEN CONSTRUCTION JOINT, AT CONTRACTORS OPTION
7. BACKFILL INVERT PER GEOTECH
8. 2"ø WEEP HOLE PER PLAN
9. BACKFILL PER GSN
10. FINAL GRADE
11. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
12. (3) #5 LONGITUDINAL MIN 18" LAP
13. #5 AT 6" O.C. TRANSVERSE

2 10'-0" x 6'-0" CULVERT SECTION
NO SCALE

HYDRO-ARCH
980 MARY CREST ROAD, UNIT B
HENDERSON, NV 89014

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ELEVATION: 1426.960

MARK	REVISIONS	APPR	DATE
2	REVISED DTE	RYZ	2-7-06
1	SUPERCEDED BY SH-11A		

DESIGNED BY ROBERT DRAWN BY CECILIA CHECKED BY C-

*AS-BUILT 2-27-08 LH

INDEXED 1-29-07 LH

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		
RYZ		

APPROVED BY
CITY ENGINEER
DATE 7/19/06

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HORIZ. SCALE: VERT. SCALE:

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ACCOUNT NO.
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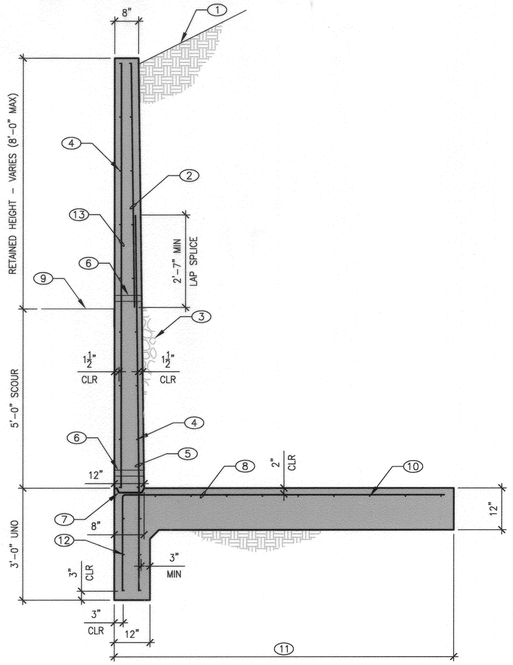
J.N. 6500



3 WING WALL SECTION
NO SCALE

KEYNOTES:

1. FINAL GRADE PER CIVIL 2:1 MAX SLOPE
2. #4 VERT AT 18" O.C. INSIDE FACE
3. BACKFILL MATERIAL AND PROCEDURE PER GEOTECHNICAL REPORT AND PROVIDE 12" MIN FREE DRAINAGE GRANULAR BACKFILL FULL HEIGHT OF WALL
4. #4 HORIZ AT 18" O.C. EF
5.

RETAINED HEIGHT	VERTICAL REINFORCING
UP TO 5'-0"	#4 VERT x5'-6" AT 6" O.C.
5'-1" - 8'-0"	#5 VERT x9'-6" AT 4" O.C.

6. 2"ø WEEP HOLE AT 4'-0" O.C. MAX
7.

RETAINED HEIGHT	KEY SIZE
UP TO 5'-0"	1 1/2" DEEP X 6 1/2"
5'-1" - 8'-0"	1 1/2" DEEP X 9"

8.

RETAINED HEIGHT	MAIN TRANS FTG REINF
UP TO 5'-0"	#4 TRANS AT 6" O.C.
5'-1" - 8'-0"	#5 TRANS AT 4" O.C.

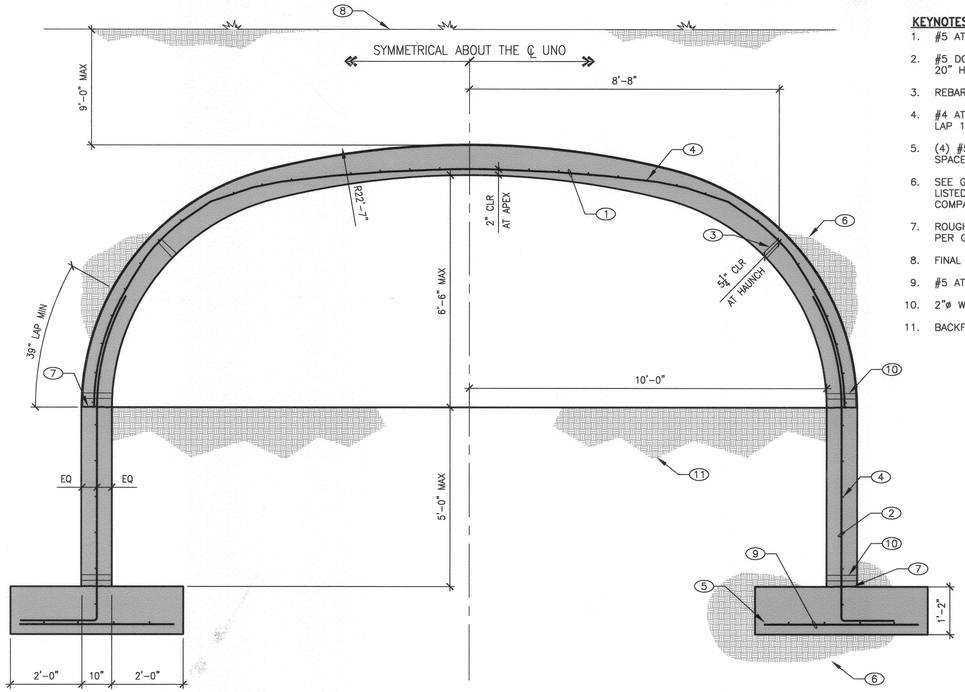
9. RIP RAP PER CIVIL
10. #5 CONT AT 12" O.C.
11.

RETAINED HEIGHT	FOOTING WIDTH
UP TO 5'-0"	8'-0"
5'-1" - 8'-0"	12'-6"

12. #4 CONT AT 12" O.C. EA FACE
13. #4 VERT AT 18" O.C.

NOTE:

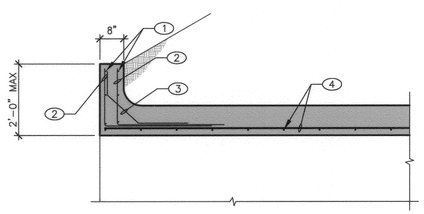
A. AT CONTRACTOR'S OPTION, VERT REINF PER KEYNOTE 5 MAY BE EXTENDED FULL WALL HEIGHT AND VERT REINF PER KEYNOTE 2 MAY BE ELIMINATED



1 20'-0" x 6'-6" CULVERT SECTION
NO SCALE

KEYNOTES:

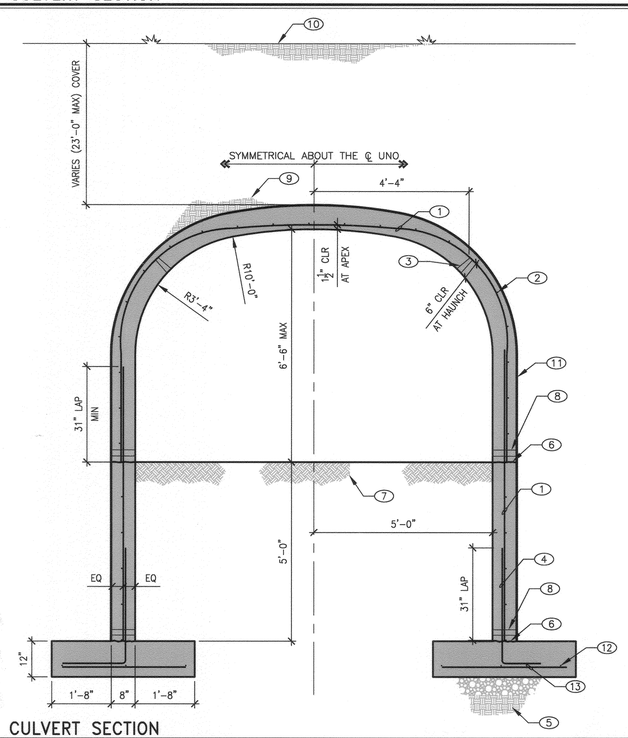
1. #5 AT 8" O.C. TRANSVERSE
2. #5 DOWEL AT 8" O.C. W/ 20" HOOK AT BASE
3. REBAR CHAIR POINT
4. #4 AT 12" O.C. LONGITUDINAL LAP 18" MIN
5. (4) #5 LONGITUDINAL EQ SPACED, LAP 18" MIN
6. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS
7. ROUGHEN CONSTRUCTION JOINT, PER GSN
8. FINAL GRADE
9. #5 AT 7" O.C. TRANSVERSE
10. 2"ø WEEP HOLE PER PLAN
11. BACKFILL INVERT PER GEOTECH



4 HEADWALL DETAIL
NO SCALE

KEYNOTES:

1. #5 HORIZ EA FACE AT 12" O.C.
2. #4 VERT DOWEL AT 12" O.C. W/ 36" LONG HOOK AT BASE
3. #4 AT 12" O.C. PLACE RADIALLY AROUND ARCH
4. CULVERT REINFORCING, PER SECTION



2 10'-0" x 6'-6" CULVERT SECTION
NO SCALE

KEYNOTES:

1. #4 AT 8" O.C. TRANSVERSE
2. #4 LONGITUDINAL AT 12" O.C. LAP 18" MIN
3. REBAR CHAIR POINT
4. #4 DOWEL AT 8" O.C. W/ 12" HOOK AT BASE
5. SEE GEOTECHNICAL REPORT LISTED IN THE GSN FOR COMPACTED FILL REQUIREMENTS
6. ROUGHEN CONSTRUCTION JOINT, AT CONTRACTORS OPTION
7. BACKFILL INVERT PER GEOTECH
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11. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
12. (3) #5 LONGITUDINAL MIN 18" LAP
13. #5 AT 6" O.C. TRANSVERSE

*AS-BUILT 2-27-08 LH

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STREET SERVICES		

APPROVED BY: CITY ENGINEER
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