STORM DRAIN PLANS FOR: TRACT No. 32787

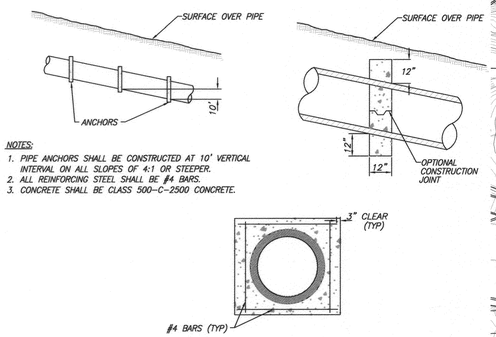
CONSTRUCTION NOTES AND QUANTITY ESTIMATE

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	INSTALL 24" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)	191	LF
2	INSTALL 36" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452) ~~446~~ 350		LF
3	CONCTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424	1	EA
4	INSTALL 2'x2' ADS CURB INLET STRUCTURE FITTED WITH "CATCH IT" STRAINER BASKET. REFER TO REPORT FOR CALCS (PRIVATE)	5	EA
5	CONSTRUCT MANHOLE JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 432	1	EA
6	CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & V PER PLAN)	7	EA
7	CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422	4	EA
8	INSTALL 18" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452) ~~198~~ 143		LF
9	CONSTRUCT SLOPE ANCHOR PER DETAIL HEREON	2	EA
10	CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D89	5	EA
11	CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET 4	2	EA
12	INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET 4	7	EA
13	INSTALL RIP-RAP PER DETAIL ON SHEET 4	80	CY
14	CONSTRUCT HYDRO ARCH & WING WALLS PER DETAILS ON SHEETS 5-7.	1	EA
15	INSTALL 18" HDPE STORM DRAIN (CASE III BEDDING) PER CITY OF RIVERSIDE STD DWG NO. 452 (INSTALLATION PERFORATED PER MANUFACTURER SPECIFICATION)	150	LF
16	INSTALL 24" HDPE STORM DRAIN (CASE III BEDDING) PER CITY OF RIVERSIDE STD DWG NO. 452 (INSTALLATION PER MANUFACTURER SPECIFICATION)	87	LF

INDEX

TITLE SHEET ..... SHEET 1
STORM DRAIN SYSTEM ..... SHEET 2
CULVERT & STORM DRAIN SYSTEM ..... SHEET 3
DETAILS ..... SHEET 4
HYDRO ARCH CULVERT DETAILS ..... SHEETS 5-7



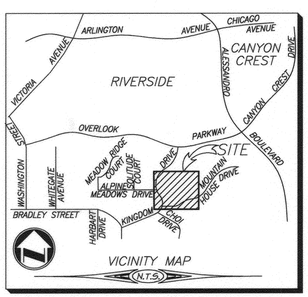
NOTES:
1. PIPE ANCHORS SHALL BE CONSTRUCTED AT 10' VERTICAL INTERVAL ON ALL SLOPES OF 4:1 OR STEEPER.
2. ALL REINFORCING STEEL SHALL BE #4 BARS.
3. CONCRETE SHALL BE CLASS 500-C-2500 CONCRETE.

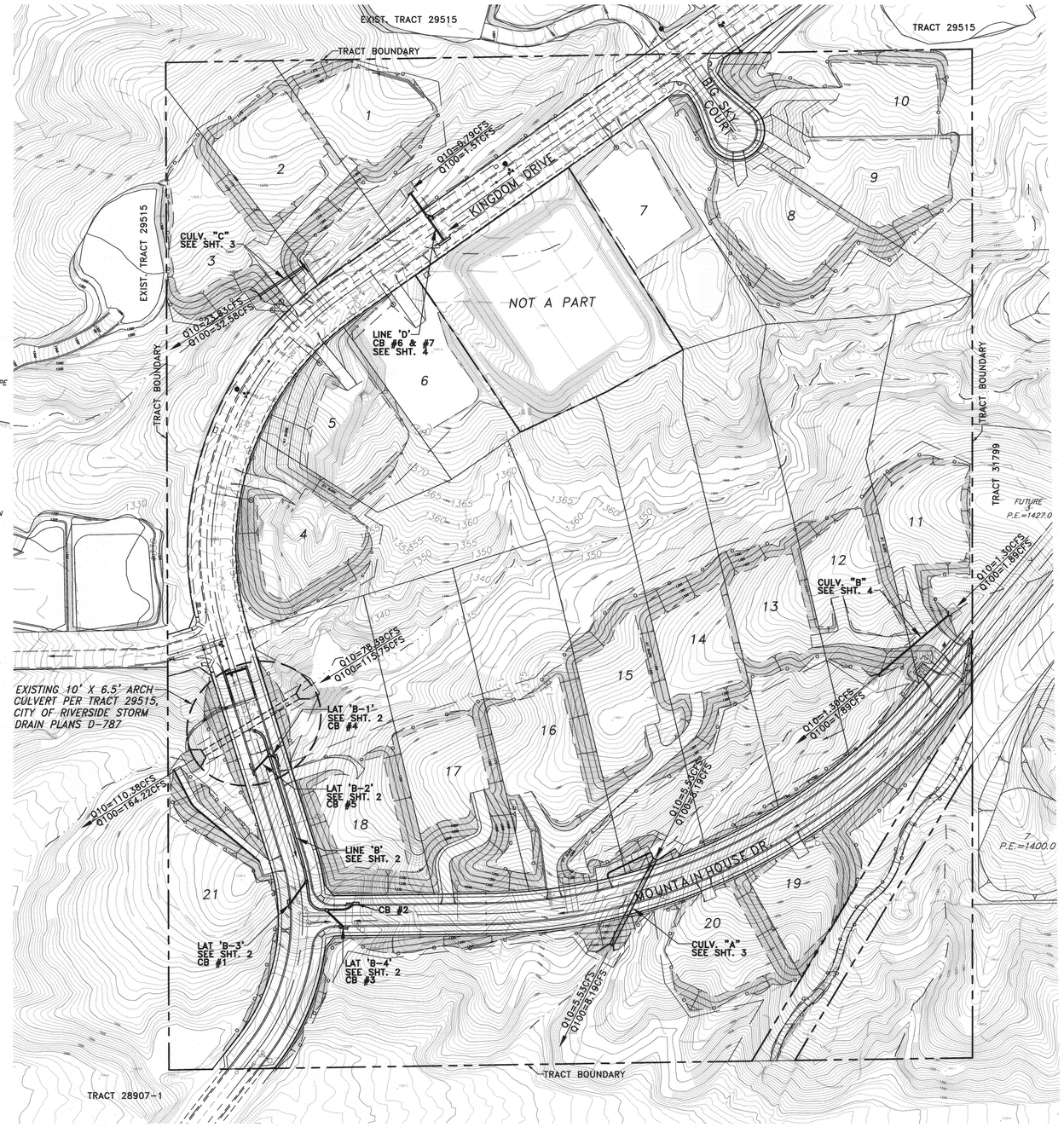
CONCRETE PIPE SLOPE ANCHOR (9)

N.T.S.

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
RCP	REINFORCED CONCRETE PIPE
ADS	ADVANCED DRAINAGE SYSTEMS





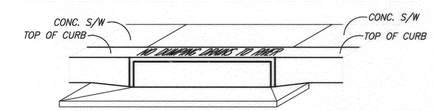
STORM DRAIN GENERAL NOTES

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 DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR PERFORMING A VIDEO INSPECTION OF ALL NEW SEWER AND STORM DRAIN FACILITIES TO BE PUBLICLY OWNED AND MAINTAINED PRIOR TO FINAL ACCEPTANCE OF THE WORK. THE VIDEO INSPECTION MUST BE PERFORMED IN THE PRESENCE OF THE PUBLIC WORKS INSPECTOR. A RECORDING OF THE VIDEO INSPECTION MUST BE SUBMITTED TO THE CITY FOR REVIEW AND ACCEPTANCE.
8. BEFORE THE RIP-RAP AT THE OUTLET OF ANY DRAINAGE STRUCTURE IS ACCEPTED BY THE CITY, IT SHALL TESTED UNDER FLOWS AS CLOSE AS POSSIBLE TO DESIGN CONDITIONS WITH WATER OBTAINED FROM FIRE HYDRANTS IN THE IMMEDIATE AREA.
9. ALL FLAGGED ELEVATIONS SHALL BE STAKED IN THE FIELD BY THE PRIVATE ENGINEER.
10. 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.

REFERENCE DRAWINGS:

PW13-0525
S-1939
D-787
R-3892

CATCH BASIN SUMMARY				
CB #	WIDTH	Q10	Q100	V DEPTH
1	7'	1.07	1.52	7.55'
2	21'	8.52	12.41	8.24'
3	7'	3.06	4.44	8.19'
4	14'	4.82	8.29	11.53'
5	14'	2.57	3.66	8.19'
6	21'	7.93	11.73	11.90'
7	21'	13.85	18.85	7.76'



1. STENCILS TO HAVE 2" LETTERS AS FOLLOWS: "NO DUMPING" "DRAINS TO RIVER"
2. PLACE BOTH STENCILS CENTERED WITHIN THE CATCH BASIN OPENING & WITHIN THE TOP OF CURB
3. SPRAY BOTH STENCILS WITH WHITE PAINT
4. REMOVE STENCILS WHEN PAINT IS DRY

CATCH BASIN STENCILING DETAIL

N.T.S.

100 0 100 200 300

Scale 1" = 100'

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/15

CITY OF RIVERSIDE WATER DEPT.
Matthew Bates 8-21-2014
REVIEWED FOR CONFLICTS BY DATE

CITY OF RIVERSIDE ELECTRICAL DEPT.
REVIEWED FOR CONFLICTS BY DATE

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER MITCHELL JAY ADKISON NO. 75731 EXP. 6-30-16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY: adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599
Under the Supervision of: Mitchell J. Adkison, R.C.E. 75731 Date: 8-20-14

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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE
1	ADDED SHEETS 3A, 4A, 7A AND 8		

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

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

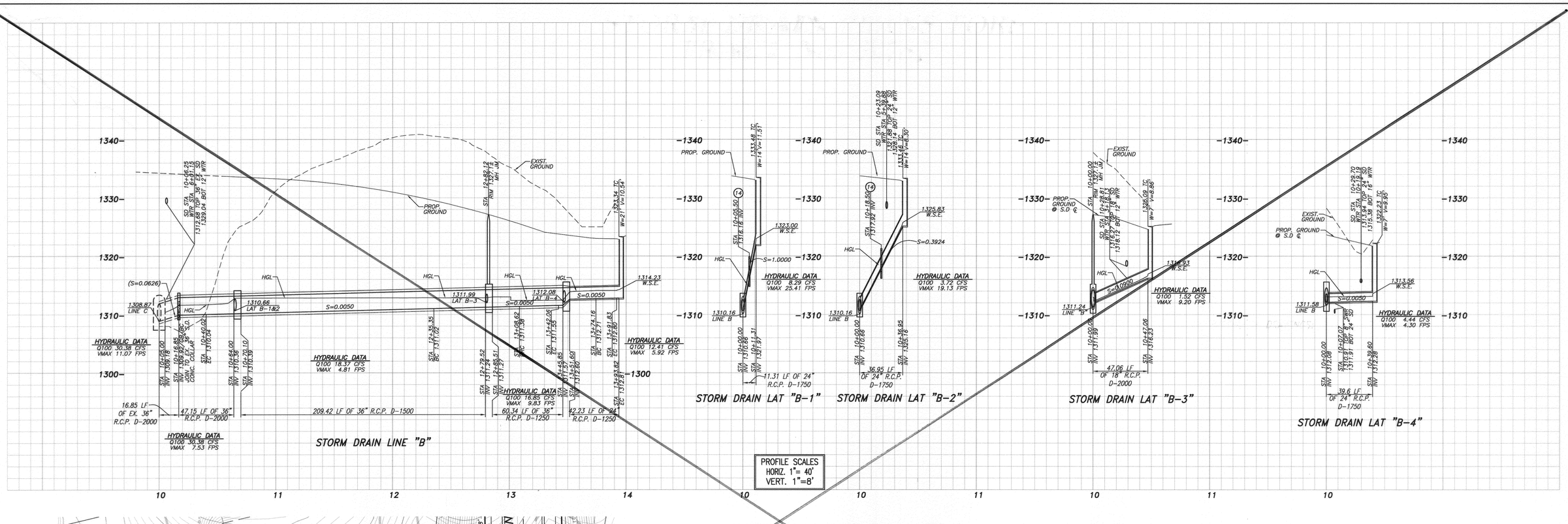
APPROVED BY	DATE	BY
ENGINEERING MANAGER	8/21/14	PM

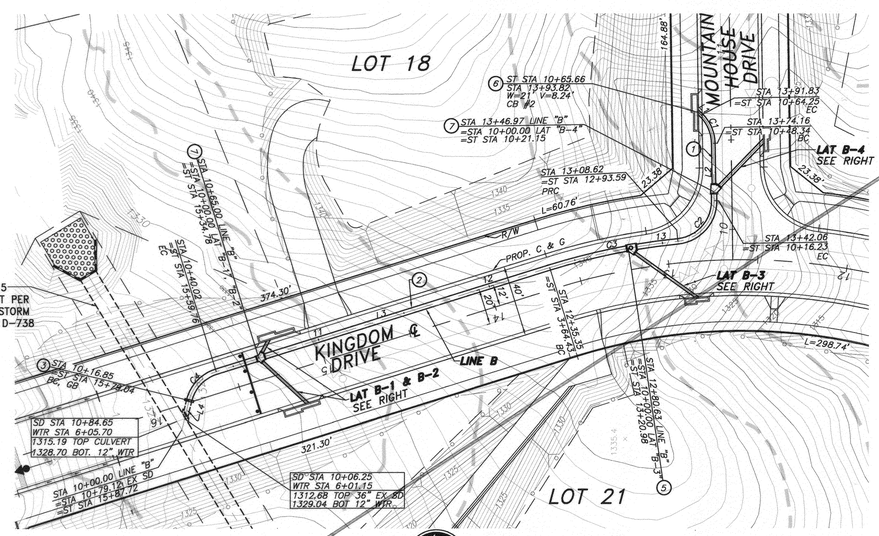
APPROVED BY: CITY ENGINEER / PW DIRECTOR
DATE 8/22/2014

STORM DRAIN PLAN
TRACT 32787
COVER SHEET
APN 243-230-015, 243-230-016

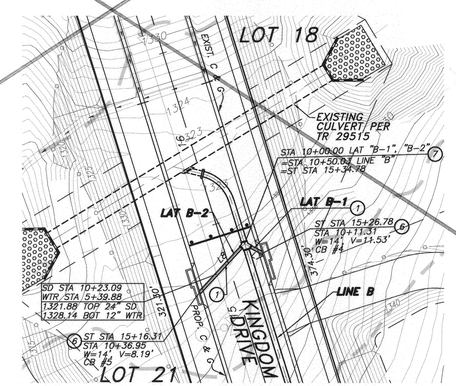
HORIZ. SCALE: AS NOTED VERT. SCALE: N/A

PW 05-0768
ACCOUNT NO.
D-788
SHEET 1 OF 78
J.N. 8499
Plot Date: 8/21/2014

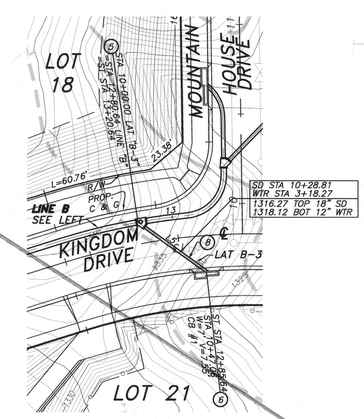




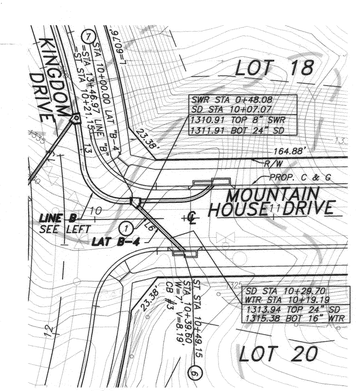
STORM DRAIN LINE 'B'



STORM DRAIN LAT "B-1" LAT "B-2"



STORM DRAIN LAT "B-3"



STORM DRAIN LAT "B-4"

Scale 1" = 40'

CONSTRUCTION NOTES

1. INSTALL 24" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
2. INSTALL 36" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
3. CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
5. CONSTRUCT MH JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 432
6. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & V PER PLAN)
7. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422
8. INSTALL 18" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
9. CONSTRUCT SLOPE ANCHOR PER DETAIL ON SHEET 1

LINE TABLE		
LINE	LENGTH	BEARING
L1	1.99	S44°09'47"W
L2	32.10	S89°09'47"W
L3	195.33	N17°16'56"W
L4	16.85	N76°12'05"W
L5	47.06	S35°31'14"W
L6	39.60	N45°50'13"W
L7	11.31	S62°16'56"E
L8	36.95	S42°43'04"W

CURVE TABLE				
CURVE	DELTA	RADIUS	LENGTH	TAN.
C1	45°00'00"	22.50	17.67	9.32
C2	85°09'05"	22.50	33.44	20.67
C3	11°35'48"	362.00	73.27	36.76
C4	59°00'09"	22.50	23.17	12.73

JUNCTION STRUCTURE C STA 10+00.00 LAT B-1 & B-2

LAT	A	B	C	D1	D2	E	L	EL. R	EL. S
B-1	45'	2.0'	5.45'	3.0'	3.0'	5.10'	6.10'	1312.10	1310.66
B-2	60'	2.0'	4.20'	3.0'	3.0'	3.90'	4.90'		1310.66

MANHOLE JM STA 10+00.00 LAT B-3

A	B	C	D1	D2	E	L	EL. R	EL. S
46'	1.9'	4.93'	3.0'	3.0'	4.54'	5.14'	1312.43	1311.99

JUNCTION STRUCTURE C STA 10+00.00 LAT B-4

A	B	C	D1	D2	E	L	EL. R	EL. S
45'	2.0'	4.17'	2.0'	3.0'	4.04'	5.43'	1312.10	1312.08

CITY OF RIVERSIDE BUSINESS TAX ACCT. #058833 EXP. 1/1/15

CITY OF RIVERSIDE WATER DEPT.
Matthew Bates 8-21-2014
REVIEWED FOR CONFLICTS BY DATE

CITY OF RIVERSIDE ELECTRICAL DEPT.
REVIEWED FOR CONFLICTS BY DATE

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER MITCHELL JAY ADKISON NO. 75731 EXP. 6-30-16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY: adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-7070 Fax:(951) 688-0599
Under the Supervision of: Mitchell J. Adkison, R.C.E. 75731 Date: 8-20-14

BENCHMARK: F7 - K3
CITY OF RIVERSIDE REFERENCE L147/7.
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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE
1	REPLACED BY SHEET 2A ADDED SHEETS 3A, 6A, 7A AND 8		8/21/14

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

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

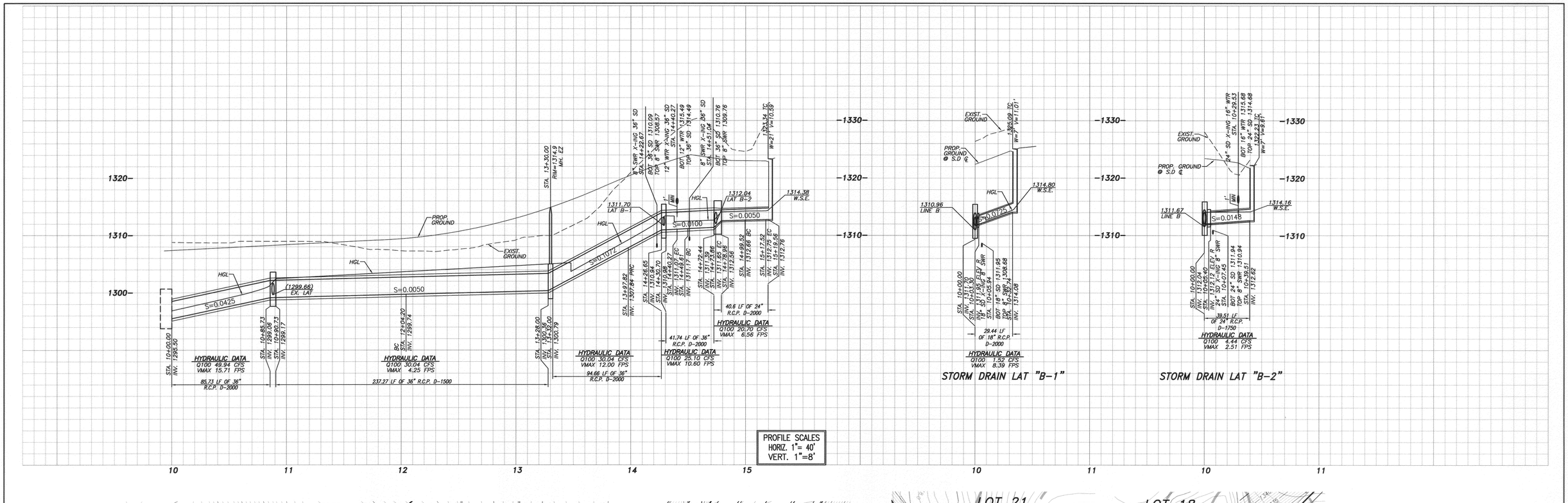
APPROVED BY	DATE	BY
ENGINEERING MANAGER	8/21/14	FM

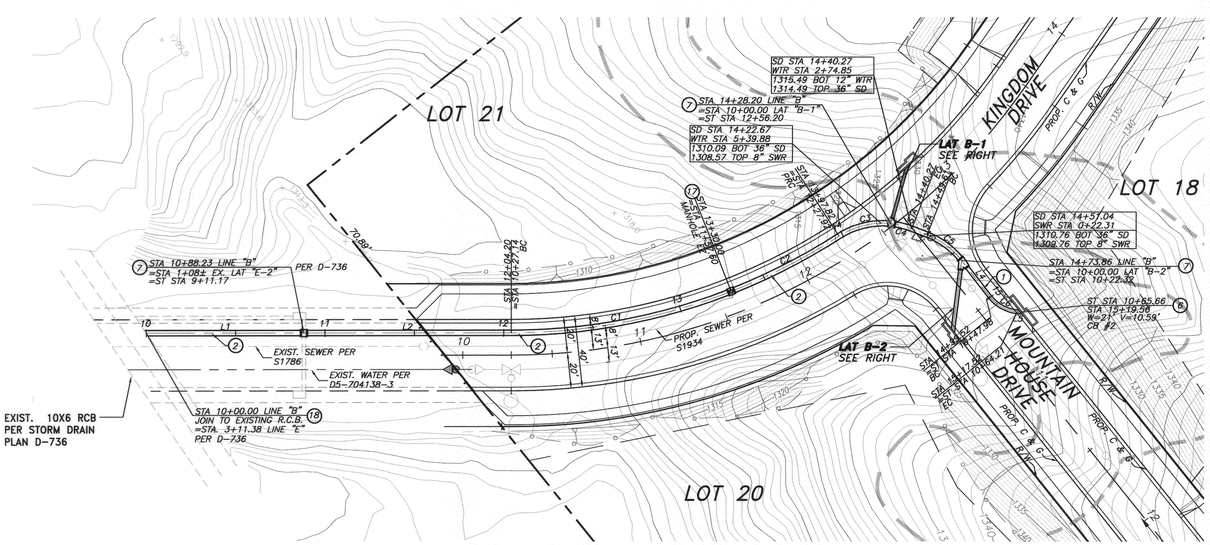
APPROVED BY: [signature]
CITY ENGINEER / PW DIRECTOR
DATE 8/22/2014

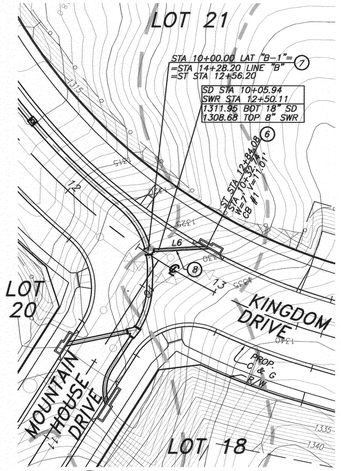
STORM DRAIN PLAN
TRACT 32787
LINE 'B', LAT 'B-1' - LAT 'B-4'
KINGDOM DRIVE
APN 243-230-015, 243-230-016

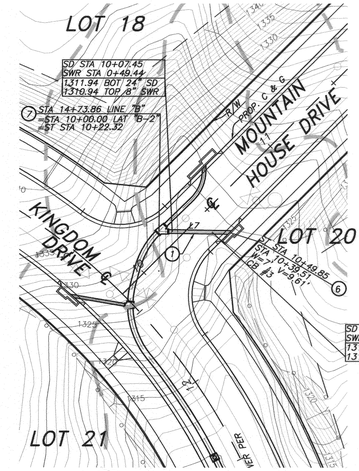
HORIZ. SCALE: 1"=40' VERT. SCALE: 1"=8'

PW 05-0768
ACCOUNT NO.
D-788
SHEET 2 OF 8
J.N. 8499
Plot Date: 8/21/2014









LINE TABLE		
LINE #	LENGTH	BEARING
L1	88.23'	N37°55'58"E
L2	115.97	N37°55'58"E
L3	9.33'	N59°07'12"E
L4	25.66'	N90°00'00"E
L5	1.99'	S44°09'47"E
L6	32.74'	S36°14'46"E
L7	39.51'	S45°00'00"E

CURVE TABLE				
CURVE #	LENGTH	RADIUS	DELTA	TANGENT
C1	125.80'	337.50'	21°21'21"	63.64'
C2	67.82	337.50'	11°30'46"	34.02'
C3	30.39'	45.00'	38°41'23"	15.80'
C4	12.07'	45.00'	15°21'58"	6.07'
C5	24.25'	45.00'	30°52'48"	12.43'
C6	18.00'	22.50'	45°50'13"	9.51'

JUNCTION STRUCTURE C STA 10+00.00 LAT B-1 & B-2								
A	B	C	D1	D2	E	L	EL. R	EL. S
80'	1.5'	3.0'	3.0'	3.0'	2.5'	3.5'	1312.10	1311.11
45'	2.0'	5.4'	2.0'	3.0'	5.1'	6.1'	1312.20	1311.67

CONSTRUCTION NOTES

1. INSTALL 24" R.C.P–D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
2. INSTALL 36" R.C.P–D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
3. CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD–ENGINEERING DIV. STD DWG NO. 424
5. CONSTRUCT MH JM PER CITY OF RIVERSIDE PWD–ENGINEERING DIV. STD DWG NO. 432
6. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & V PER PLAN)
7. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD–ENGINEERING DIV. STD DWG NO 422
8. INSTALL 18" R.C.P–D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
9. CONSTRUCT SLOPE ANCHOR PER DETAIL ON SHEET 1
17. INSTALL MH EZ PER CITY OF RIVERSIDE STD DWG NO. 431
18. INSTALL JS NO 1 PER RCFC&WCD STD DWG JS226

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 6/10/15

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

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER CHARISSA J.A. LEACH NO. 53390 EXP. 6-30-17 CIVIL STATE OF CALIFORNIA

CITY OF RIVERSIDE BUSINESS TAX ACCT. No. 058833 EXP. 1/1/16

PLANS PREPARED BY: adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599
Under the Supervision of Charissa J.A. Leach, R.C.E. 53390 — Date 6/10/15

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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE
A	REALIGNED LINE B, LAT B-1 AND LAT B-2		

DESIGNED BY: CECILIA DRAWN BY: CECILIA CHECKED BY: C–

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

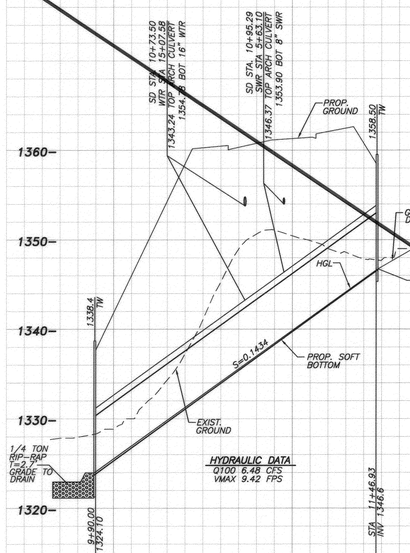
APPROVED BY	DATE	BY	APPROVED BY
ENGINEERING MANAGER	6/10/15	F.M.	CITY ENGINEER / PW DIRECTOR
			DATE 6/12/2015

STORM DRAIN PLAN
TRACT 32787
LINE 'B', LAT 'B-1' – LAT 'B-4'
KINGDOM DRIVE
APN 243-230-015, 243-230-016

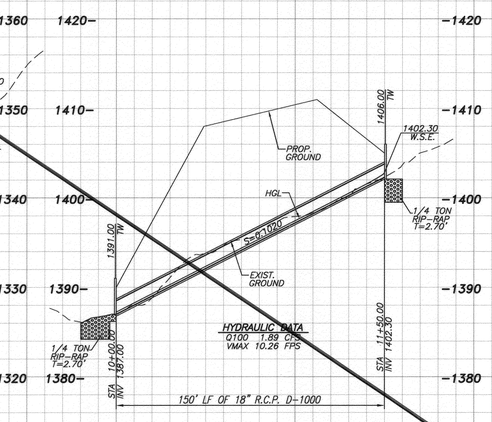
HORIZ. SCALE: 1"=40' VERT. SCALE: 1"=8'

PW 05-0768
ACCOUNT NO.
D-788
SHEET 2A OF 8
J.N. 8499

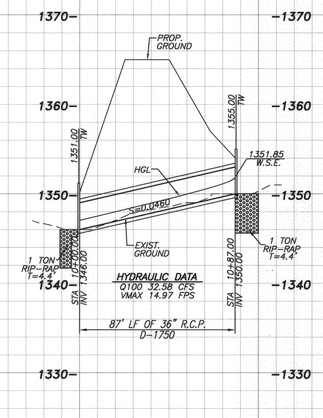
Plot Date: 6/10/2015



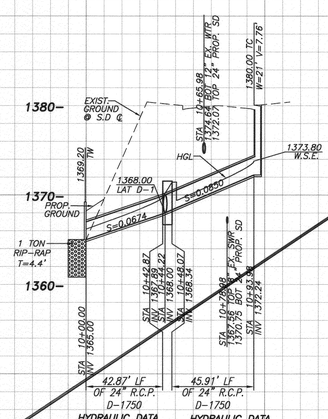
STORM DRAIN ARCH CULVERT "A"
PUBLIC



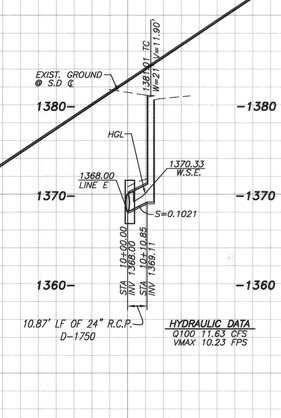
STORM DRAIN LINE "B"
PRIVATE



STORM DRAIN LINE "C"
PRIVATE

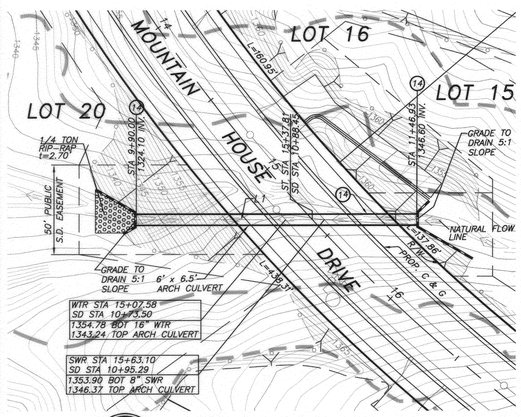


STORM DRAIN LINE "D"
PUBLIC

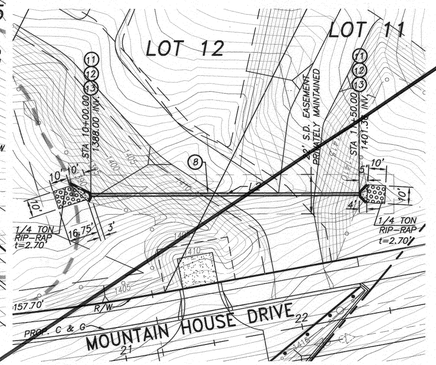


STORM DRAIN LAT "D-1"
PUBLIC

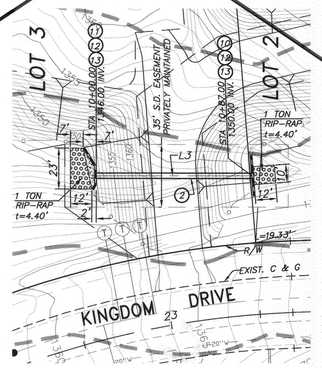
PROFILE SCALES
HORIZ. 1"= 40'
VERT. 1"=8'



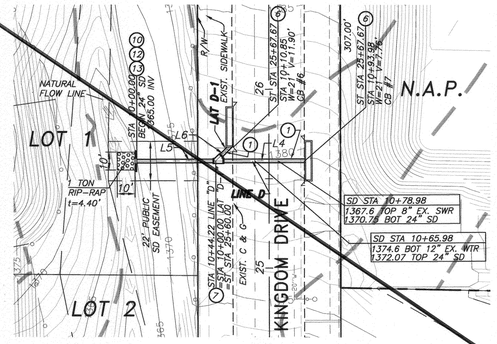
STORM DRAIN ARCH CULVERT "A"
PUBLIC



STORM DRAIN LINE "B"
PRIVATE



STORM DRAIN LINE "C"
PRIVATE



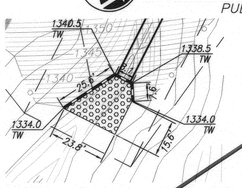
STORM DRAIN LINE "D", LAT "D-1"
PUBLIC

CONSTRUCTION NOTES

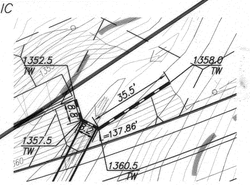
1. INSTALL 24" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
2. INSTALL 36" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
3. CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 424
5. CONSTRUCT MH JM PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO. 432
6. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD DWG NO. 405 (W & V PER PLAN)
7. CONSTRUCT JUNCTION STRUCTURE "C" PER CITY OF RIVERSIDE PWD-ENGINEERING DIV. STD DWG NO 422
8. INSTALL 18" R.C.P-D PER PROFILE, (CASE III BEDDING PER CITY OF RIV. STD DWG NO. 452)
10. CONSTRUCT PIPE HEAD WALL PER CALTRANS STD DWG D89
11. CONSTRUCT PIPE HEAD WALL, ENDWALLS AND WINGWALLS PER DETAIL ON SHEET 4
12. INSTALL TRASH RACK AT INLET PER DETAIL ON SHEET 4
13. INSTALL RIP-RAP PER DETAIL ON SHEET 4
14. CONSTRUCT HYDRO ARCH & WING WALLS PER DETAILS ON SHEETS 5-7

LINE TABLE

LINE	LENGTH	DIRECTION
L1	156.93'	S27°00'52"W
L2	150.00'	N49°52'11"E
L3	87.00'	S57°00'56"W
L4	49.75'	S35°08'45"E
L5	44.22'	S35°08'45"E
L6	10.85'	S80°08'45"E



STORM DRAIN OUTLET
SCALE 1"=30'



STORM DRAIN INLET
SCALE 1"=30'

40 0 40 80 120
Scale 1" = 40'

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/15

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 8-21-2014

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

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER MITCHELL JAY ADKISON NO. 75731 EXP. 6-30-16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY: adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-7824 Fax:(951) 688-0599
Under the Supervision of: Mitchell J. Adkison, R.C.E. 75731 Date: 8-2014

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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE
1	REPLACED BY SHEET 3A		

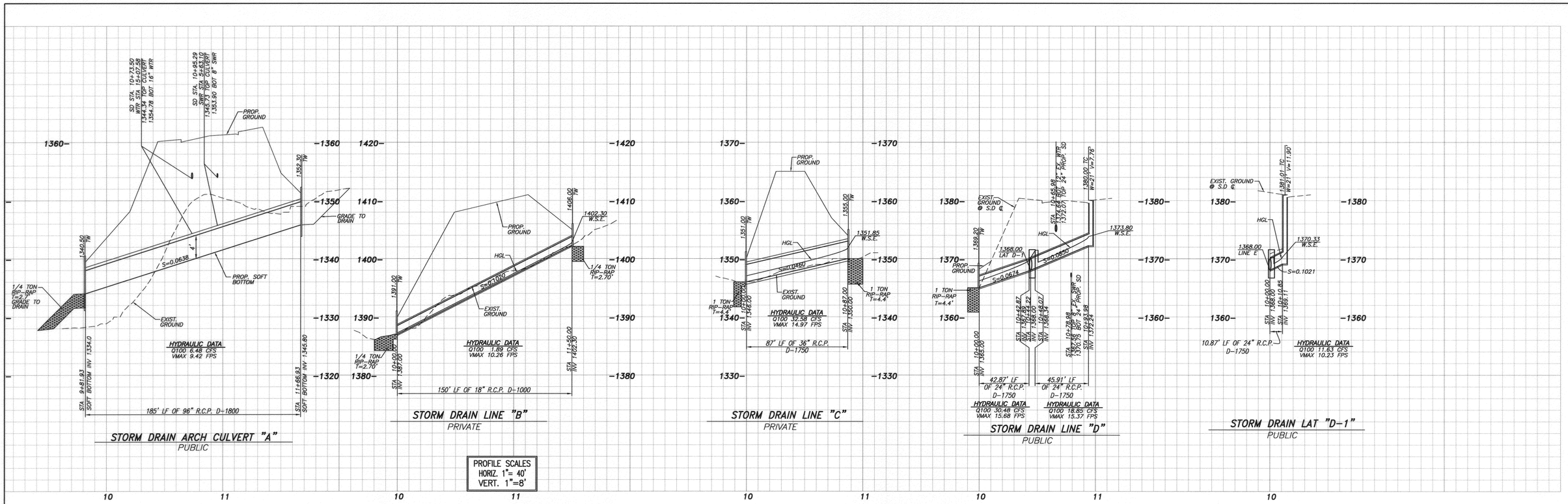
DESIGNED BY: CECILIA DRAWN BY: CECILIA CHECKED BY: C-

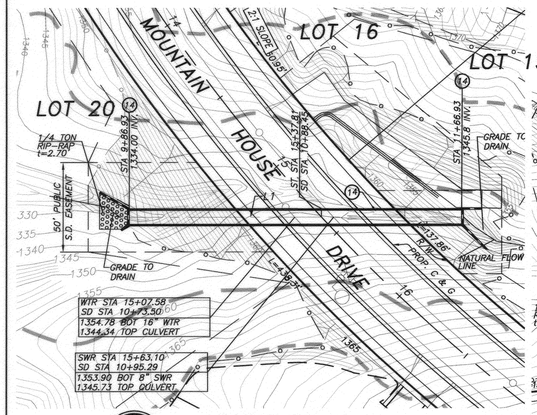
CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

	APPROVED BY	DATE	BY
ENGINEERING MANAGER		8/21/14	
CITY ENGINEER / PW DIRECTOR		DATE 8/22/2014	

STORM DRAIN PLAN
TRACT 32787
LINE 'A', LINE 'B', LINE 'C'
LINE 'D', LAT 'D-1'
APN 243-230-015, 243-230-016
HORIZ. SCALE: 1"=40' VERT. SCALE: 1"=8'

PW 05-0768
ACCOUNT NO.
D-788 1
SHEET 3 OF 8
J.N. 8499
Plot Date: 8/21/2014





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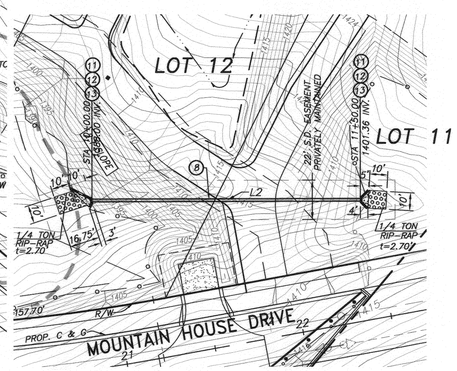
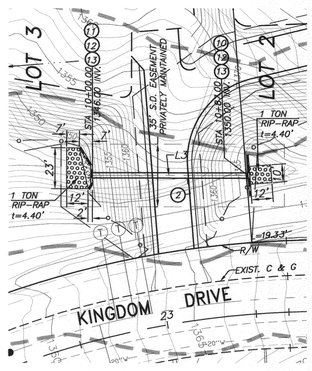
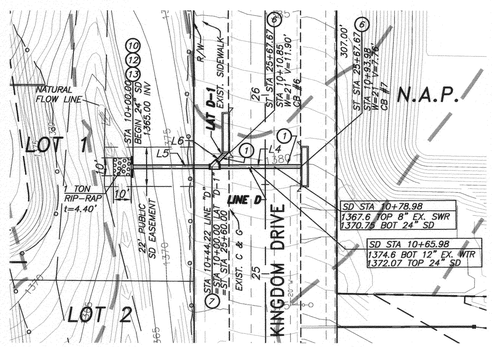
PUBLIC



STORM DRAIN LINE "B"
PRIVATE



STORM DRAIN LINE "C"
PRIVATE



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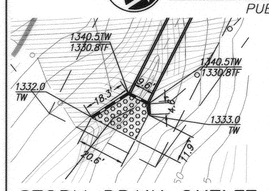
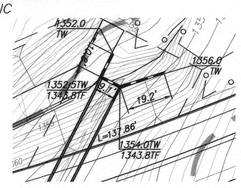


STORM DRAIN OUTLET
SCALE 1"=30'



STORM DRAIN INLET
SCALE 1"=30'

40 0 40 80 120
Scale 1" = 40'

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP. 1/1/15

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PLANS PREPARED BY: adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599
Under the Supervision of: Mitchell J. Adkison, R.C.E. 75731 Date: 11-13-14

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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE

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

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
ENGINEERING MANAGER	11/19/14	

APPROVED BY
CITY ENGINEER / PW DIRECTOR
DATE 11/19/2014

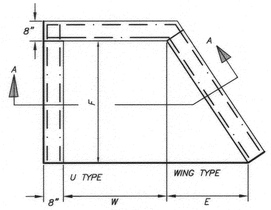
STORM DRAIN PLAN
TRACT 32787
LINE 'A', LINE 'B', LINE 'C'
LINE 'D', LAT 'D-1'
APN 243-230-015, 243-230-016

PW 05-0768
ACCOUNT NO.
D-788
SHEET 3A OF 8

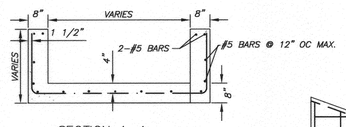
HORIZ. SCALE: 1"=40' VERT. SCALE: 1"=8'
J.N. 8499
Plot Date: 11/13/2014

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY 11-13-14 DATE

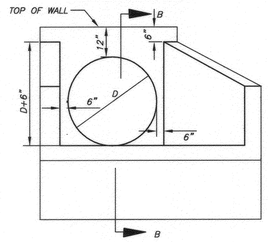
CITY OF RIVERSIDE ELECTRICAL DEPT.
REVIEWED FOR CONFLICTS BY DATE



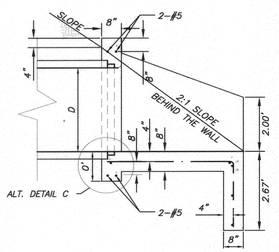
PLAN



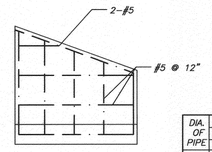
SECTION A-A



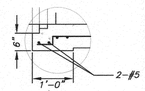
ELEVATION



SECTION B-B



WING WALL REINFORCING



ALT. DETAIL C

DIA. OF PIPE	DIMENSIONS 30 DEGREES E	F	W
INCH			D+12"
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"

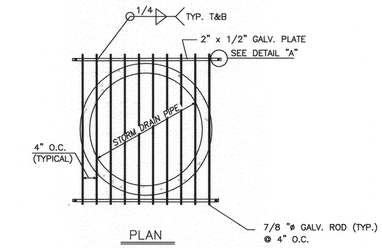
DIA. OF PIPE	DIMENSIONS E	F	W
INCH			
18	1'3"	2'-6"	2'6"
24	1'9"	3'-0"	3'0"
30	2'3"	3'-6"	3'6"
36	2'9"	4'-0"	4'0"
42	3'3"	4'-6"	4'6"
48	3'9"	5'-6"	5'0"
54	4'3"	6'-0"	5'6"
60	4'9"	6'-6"	6'0"
66	5'3"	7'-0"	6'6"
72	5'9"	8'-0"	7'0"
78	6'3"	9'-0"	7'6"
84	6'9"	10'-0"	8'0"

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 (11)

N.T.S.

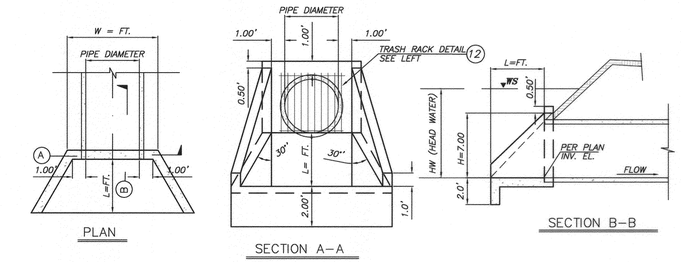


PLAN

DETAIL - "A"

TRASH RACK DETAIL (12)

N.T.S.



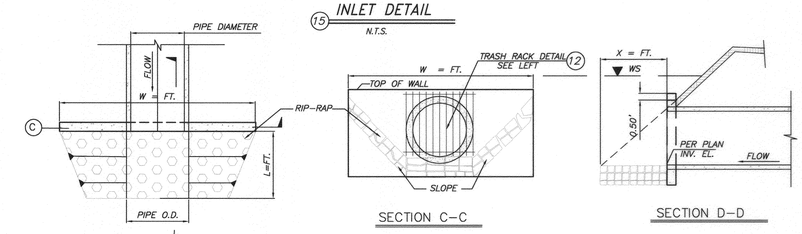
PLAN

SECTION A-A

SECTION B-B

INLET DETAIL (15)

N.T.S.



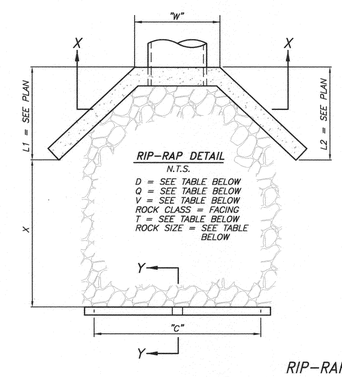
PLAN

SECTION C-C

SECTION D-D

OUTLET DETAIL (16)

N.T.S.



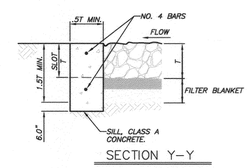
RIP-RAP DETAIL

N.T.S.

D = SEE TABLE BELOW
Q = SEE TABLE BELOW
V = SEE TABLE BELOW
ROCK CLASS = FACING
T = SEE TABLE BELOW
ROCK SIZE = SEE TABLE BELOW

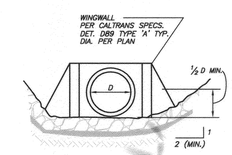
RIP-RAP DETAIL (13)

N.T.S.



SECTION Y-Y

PIPE WINGWALL



SECTION X-X

RIP-RAP TABLE							
LINE	X	Y	DIA	"Q"	"V"	"T"	ROCK CLASS
A	35'	24"	6' X 6.5' ARCH CULVERT	6.48	9.42	2.70'	¼ TON
B	10'	10'	18" PIPE	1.89	10.26	2.70'	¼ TON
C	12'	23'	36" PIPE	32.94	15.00	4.40'	1 TON
D	10'	10'	24" PIPE	30.48	15.68	4.40'	1 TON

CITY OF RIVERSIDE BUSINESS TAX ACCT.#058833 EXP.1/1/15

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 8-21-2014

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PLANS PREPARED BY: adkan ENGINEERS
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Tel:(951) 688-0241 Fax:(951) 688-0599
Under the Supervision of: Mitchell J. Adkison, Reg. 75731 — Date: 8-20-14

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ELEVATION: 1426.960
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE
1	ADDED SHEETS 3A, 6A, 7A AND 8	FM	12/11/14

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

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
ENGINEERING MANAGER		

APPROVED BY: CITY ENGINEER / PW DIRECTOR
DATE 8/20/2014

STORM DRAIN PLAN
TRACT 32787
DETAILS
APN 243-230-015, 243-230-016
HORIZ. SCALE: 1"=20' VERT. SCALE: N/A

PW 05-0768
ACCOUNT NO.
D-788 (1)
SHEET 4 OF 8
J.N. 8499
Plot Date: 8/21/2014

GENERAL NOTES

I. GENERAL:

A. DESIGN SPECIFICATIONS:
1. GENERAL: "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH ED.," 2012.

B. CONSTRUCTION SPECIFICATIONS: CALTRANS STANDARD SPECIFICATIONS 2010 UNLESS NOTED OTHERWISE.

C. DESIGN METHODOLOGY: REINFORCED CONCRETE ARCH DESIGN IS BASED ON FINITE ELEMENT, SOIL–STRUCTURE INTERACTION COMPUTER MODEL ANALYSIS.

D. DESIGN LOADS:
1. DEAD LOADS: SELF WEIGHT OF STRUCTURE CONCRETE = 150 PCF SOIL BACKFILL = 140 PCF.
2. LIVE LOADS: HL–93 TRUCK LOAD

E. VERIFY ALL CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO START OF WORK. ESTABLISH AND VERIFY ALL OPENINGS, BLOCKOUTS, AND INSERTS. RESOLVE ALL DISCREPANCIES PRIOR TO START OF CONSTRUCTION.

F. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.

G. DETAILS ON CONSTRUCTION DRAWINGS ARE TYPICAL WHETHER SPECIFICALLY INDICATED BY CUTS, REFERENCES, TITLES, OR NOT. IN CASE OF CONFLICTS, CONTACT THE ENGINEER FOR DIRECTION BEFORE PROCEEDING.

II. FOUNDATIONS AND EARTHWORK:

A. EXCAVATION:
1. INSTALL CRIBBING, SHEATHING, AND SHORING TO SAFELY RETAIN ALL EARTH EMBANKMENTS PER OSHA.
2. ALL FOOTINGS SHALL BE FOUNDED AT THE DEPTHS INDICATED ON CONSTRUCTION DRAWINGS. BOTTOM OF FOOTING ELEVATION TOLERANCE SHALL BE +0" AND –1/2".
3. PROVIDE POSITIVE, TEMPORARY DRAINAGE AWAY FROM THE CULVERT CONSTRUCTION SITE.

B. WATER SOFTENED MATERIALS MUST BE REMOVED FROM BENEATH ALL FOUNDATIONS AND SLABS.

C. BACKFILLING (ARCH ONLY)
1. ARCH BACKFILLING MAY TAKE PLACE WHEN THE CONCRETE HAS REACHED A MINIMUM STRENGTH OF F'C = 2800 PSI.
2. BACKFILL SHALL BE PLACED IN ONE FOOT MAXIMUM LIFTS AND IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT. BACKFILL SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D698.
3. MATERIALS USED FOR BACKFILL SHALL BE NATIVE OR IMPORTED GRANULAR SOILS WITH A MAXIMUM P.I.=15 AND A MAXIMUM PARTICLE SIZE OF 3".
4. ARCH BACKFILL SHALL BE BROUGHT UP EVENLY WITH BOTH SIDES OF THE ARCH BEING BACKFILLED. ELEVATIONS ON EITHER SIDE SHALL AT NO TIME HAVE A GREATER DIFFERENTIAL THAN ONE FOOT BETWEEN THEM.
5. BACKFILL EQUIPMENT THAT WILL PASS OVER THE ARCH SHALL NOT BE HEAVIER THAN A THREE–YARD CAPACITY, RUBBER TIRED FRONT END LOADER UNTIL ALL THE SPECIFIED BACKFILL MATERIAL IS COMPLETELY IN PLACE. SCRAPERS AND OTHER HEAVY CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED TO PASS OVER THE ARCH UNLESS SPECIFIC PERMISSION IS ISSUED IN WRITING BY THE ENGINEER.
6. FOR DETAILS SEE EXCAVATION & BACKFILL DIAGRAM, ON THIS SHEET.

D. GEOTECHNICAL REPORT:
1. REFER TO PROJECT GEOTECHNICAL LETTER BY EARTH–STRATA INC JOB NO. 13387–10C DATED DECEMBER 17, 2013.

III. CONCRETE AND SHOTCRETE:

A. CONCRETE AND SHOTCRETE
1. SHOTCRETE: FC' = 4,500 PSI @ 28 DAYS MIXED FOR AND PLACED BY THE WET MIX PLACEMENT PROCESS. SEE SECTION J TO THE RIGHT FOR SHOTCRETE REQUIREMENTS.
2. FLOOR/FOOTING CONCRETE: FC' = 4,500 PSI @ 28 DAYS

B. CONCRETE FOOTINGS MAY BE PLACED AGAINST NEAT EXCAVATIONS, PROVIDED PLAN DIMENSIONS ARE ADHERED TO.

C. REINFORCING STEEL (MATERIALS):
1. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.

GENERAL NOTES CONT:

D. REINFORCING STEEL (PLACEMENT & INSTALLATION):
1. ALL REINFORCING SHALL BE PLACED AND INSTALLED IN ACCORDANCE WITH ACI 318.
2. ALL BENDS AND HOOKS SHALL CONFORM TO ACI 315 U.N.O. BEND DIMENSIONS ARE MEASURED FROM OUT TO OUT. BARS SHALL NOT BE UNBENT AND RE–BENT EXCEPT AS NOTED.
3. REINFORCING BARS SHALL BE CONTINUOUS OR LAPPED NOT LESS THAN 40 BAR DIAMETERS. LAPS SHALL BE STAGGERED A MINIMUM OF ONE LAP LENGTH U.N.O.
4. MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE SHOWN ON DRAWINGS:
   a. CONCRETE PLACED DIRECTLY AGAINST EARTH 3 INCHES.
   b. FORMED CONCRETE 2 INCHES.

E. ALL REINFORCING BARS, ANCHOR BOLTS, LIGHTING CONDUITS, AND CONCRETE INSERTS SHALL BE SECURED IN POSITION PRIOR TO PLACING CONCRETE.

F. FINISHING
1. CHAMFER EXPOSED CORNERS 3/4" U.N.O.

G. CURING (LIQUID–MEMBRANE METHOD)
1. CONCRETE SURFACES SHALL BE CURED USING LIQUID–MEMBRANE CURING COMPOUND, TYPE I, CONFORMING TO THE REQUIREMENTS OF ASTM C 309.
2. APPLICATION RATE SHALL BE 100 SQUARE FEET (MIN) PER GALLON.
3. CURE ALL UNFORMED SURFACES IMMEDIATELY AFTER ANY REQUIRED SURFACE FINISHING HAS TAKEN PLACE.
4. CURE ALL FORMED CONCRETE SURFACES IMMEDIATELY AFTER FORM REMOVAL HAS TAKEN PLACE, UNLESS A SEVEN– DAY FORM CURE HAS TAKEN PLACE.
5. CURING COMPOUND SHALL FORM A CONTINUOUS, UNBROKEN MEMBRANE. IF THE MEMBRANE FILM IS BROKEN DURING THE CURING PERIOD IT SHALL BE RESTORED TO ORIGINAL REQUIREMENTS.
6. PROVIDE AN AIR TIGHT BULKHEAD TO PREVENT "WIND TUNNEL DRYING EFFECT" AT ONE END OF ARCH AT ALL TIMES UNTIL COMPLETION OF CURING PROCESS.

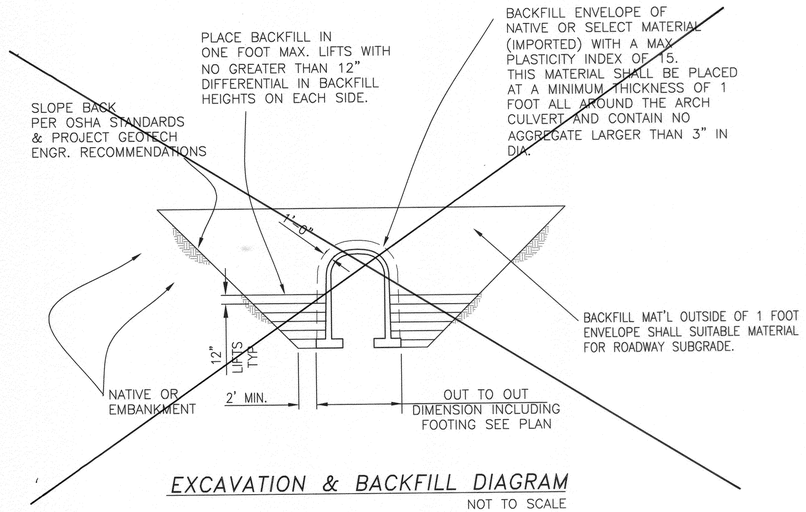
H. STRIPPING
1. STRIPPING OF ARCH CULVERT FORMS MAY PROCEED WHEN CONCRETE TEST SAMPLES HAVE REACHED F'c=2000 PSI.

J. SHOTCRETE REQUIREMENTS

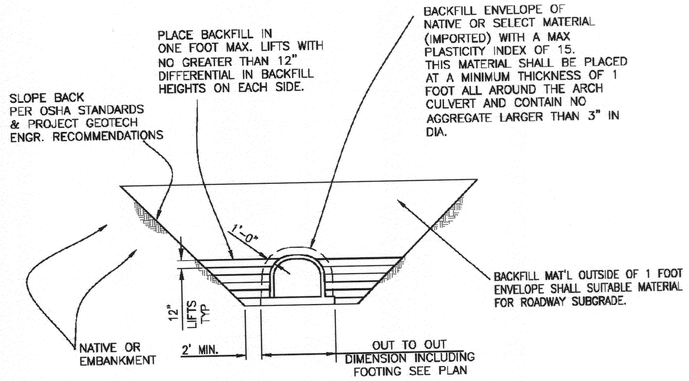
A. GENERAL:
1. SHOTCRETE SHALL COMPLY WITH THE RECOMMENDATIONS OF ACI "GUIDE TO SHOTCRETE." AND THE REQUIREMENTS OF ACI 506.2 "SPECIFICATION FOR MATERIALS, PROPORTIONING, AND APPLICATION OF SHOTCRETE." PARTICULAR ATTENTION SHALL BE PAID TO THE FOLLOWING PARTS OF THE SHOTCRETE REQUIREMENTS.

B.) WORKER QUALIFICATIONS: WORKERS, INCLUDING FOREMAN, NOZZLEMEN, AND SHOTCRETE PUMP OPERATOR, SHALL BE FULLY QUALIFIED TO PERFORM THE WORK. THE NOZZLEMEN SHALL HAVE HAD A MINIMUM OF TWO YEARS CONTINUOUS EXPERIENCE ON SIMILAR STRUCTURAL SHOTCRETE WORK AND SHALL DEMONSTRATE THEIR ABILITY TO SATISFACTORILY PLACE SHOTCRETE IN ACCORDANCE WITH THE RECOMMENDATIONS OF ACI 506.3R "GUIDE TO CERTIFICATION OF SHOTCRETE NOZZLEMEN."

C.) THE CONTRACTOR SHALL SUPPLY FOR REVIEW DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, MATERIAL SPECIFICATIONS, MIX DESIGN, PLACEMENT PROCEDURES, AND FIELD QUALITY CONTROL PROGRAM. A TENTATIVE SHOTCRETE MIX SHALL BE DESIGNED AND TESTED FOR EACH TYPE, SIZE, AND GRADATION OF AGGREGATES: AND FOR EACH CONSISTENCY INTENDED FOR THE USE OF THE PROJECT.



EXCAVATION & BACKFILL DIAGRAM
NOT TO SCALE



EXCAVATION & BACKFILL DIAGRAM
NOT TO SCALE

NOTE: VIBRATORY COMPACTORS LARGER THAN THE WALK BEHIND TYPE SHALL NOT BE USED DURING THE CULVERT BACKFILLING PROCESS UNTIL A MINIMUM 18" OF BACKFILL IS IN PLACE COMPLETELY AROUND THE CULVERT.

SEAL PERTAINS ONLY TO WORK RELATED TO HYDRO–ARCH STRUCTURE. SURVEY DATA, INVERT ELEVATIONS AND TOP OF WALLS PROVIDED BY OTHERS.

8/15/14 1343

811 Know what's below. Call before you dig.

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 8-21-2014

REGISTERED PROFESSIONAL ENGINEER ALLEN THOMAS SACRA No. RCE 72857 CIVIL STATE OF CALIFORNIA

SACRA ENGINEERING
CONSULTING ENGINEERS
65141 E DIAMOND RIDGE COURT
TUCSON, ARIZONA 85739
PH: (520) 444–4501
Under the Supervision of: Allen Sacra — Allen Sacra 72857 Exp. 06.30.16 — Date: 8/20/14

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 DIAGRAM		

DESIGNED BY: ATS DRAWN BY: ATS CHECKED BY: ATS

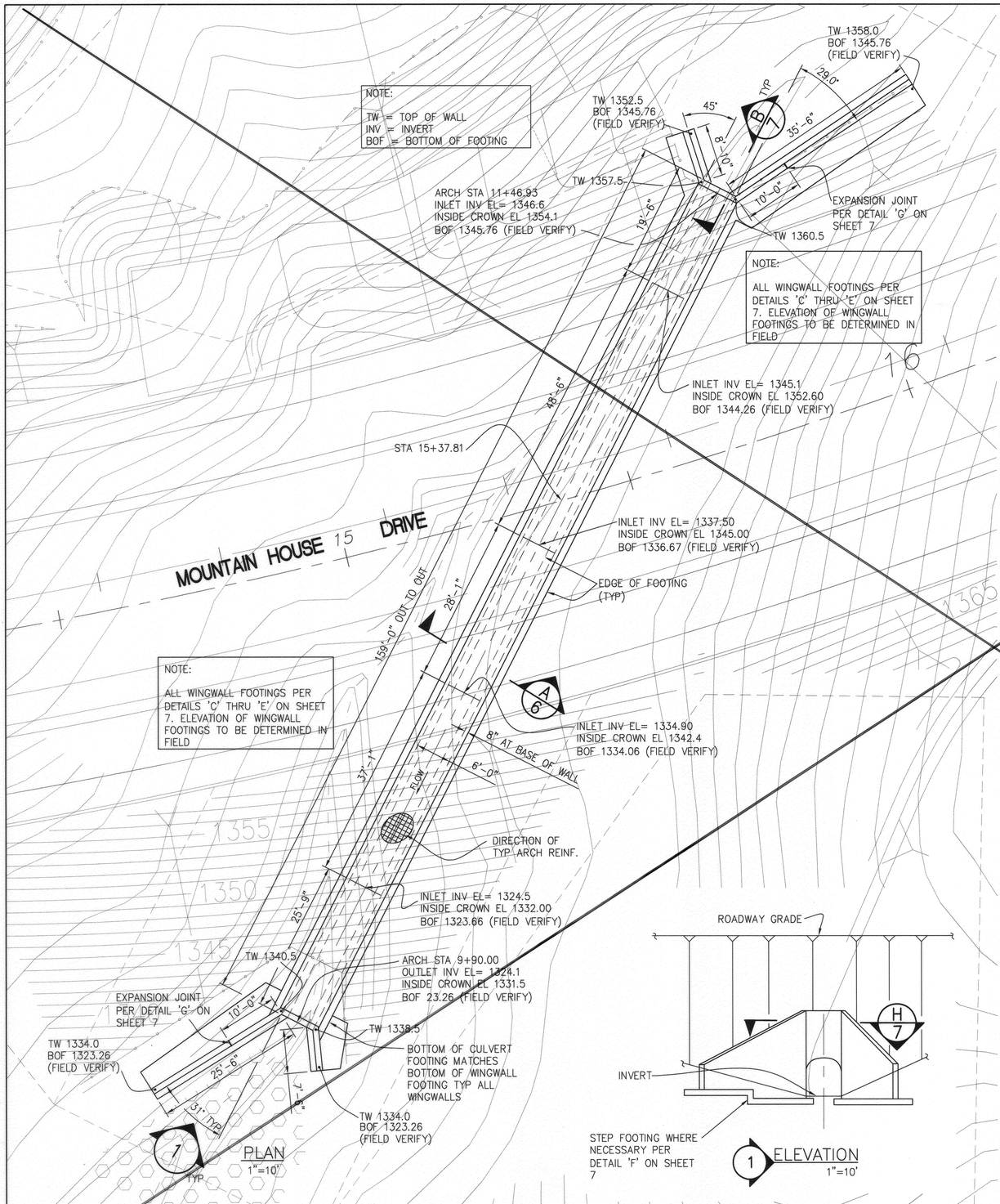
CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

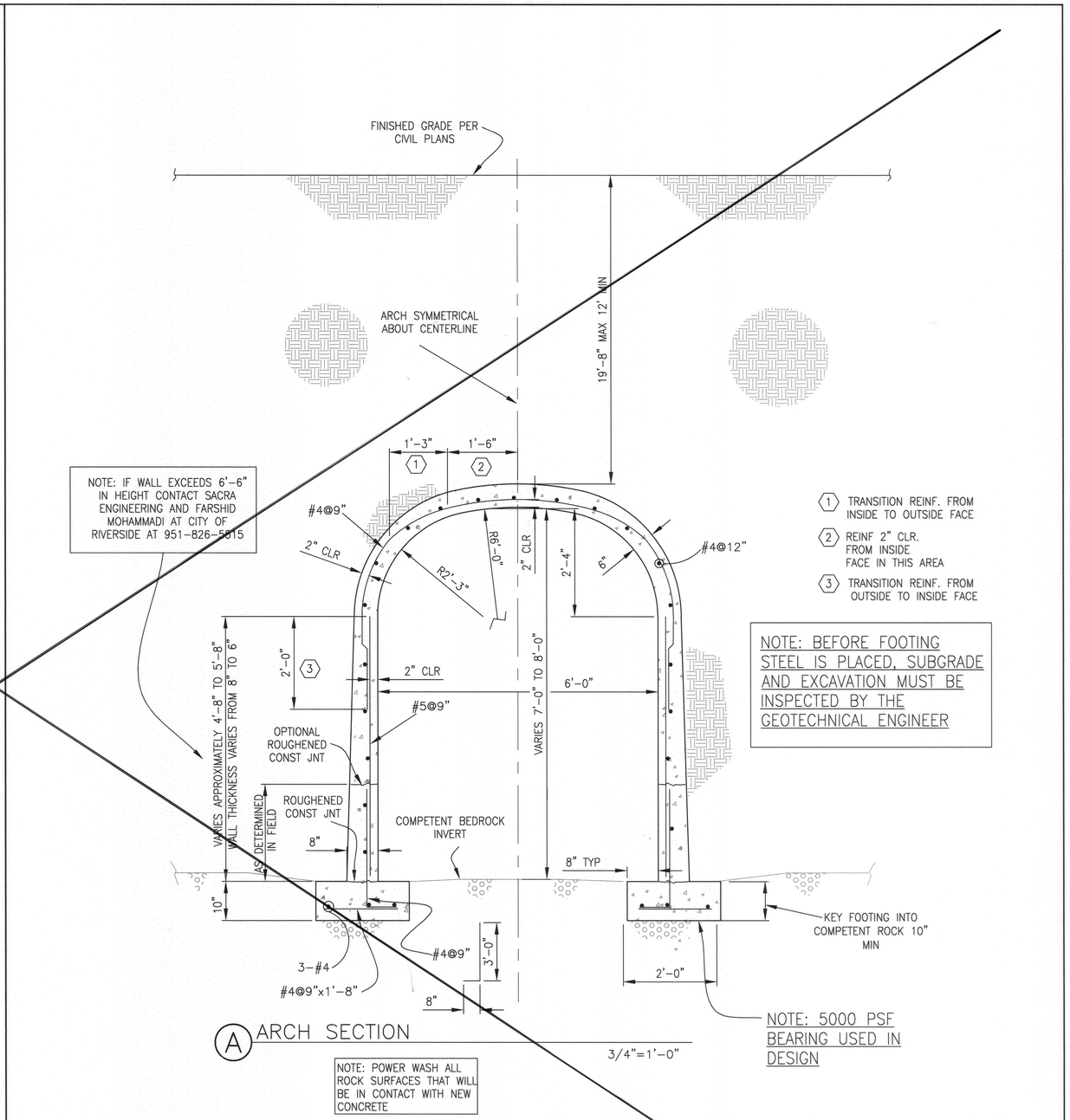
	APPROVED BY	DATE	BY
PRINCIPAL ENGINEER		8/21/14	FM
PARK DEPARTMENT			
TRAFFIC DIVISION			
STREET SERVICES			

APPROVED BY: CITY ENGINEER — DATE 8/22/2014

STORM DRAIN PLAN
TRACT 32787
APN 243–230–015, 243–230–016
HORIZ. SCALE: VERT. SCALE:

PW 05–0768
ACCOUNT NO.
D–788 1
SHEET 5 OF 18
J.N. 8499





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8/15/14 1343

811 Know what's below. Call before you dig.

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR COMPLYCE BY — DATE 8-21-2014

REGISTERED PROFESSIONAL ENGINEER ALLEN THOMAS SACRA No. RCE 72857 CIVIL STATE OF CALIFORNIA

SACRA ENGINEERING
CONSULTING ENGINEERS
65141 E DIAMOND RIDGE COURT
TUCSON, ARIZONA 85739
PH: (520) 444-4501
Under the Supervision of: Allen Sacra — Allen Sacra 72857 Exp. 06.30.15 — Date: 8/22/14

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	REPLACED BY SHEET 6A		

DESIGNED BY: ATS DRAWN BY: ATS CHECKED BY: ATS

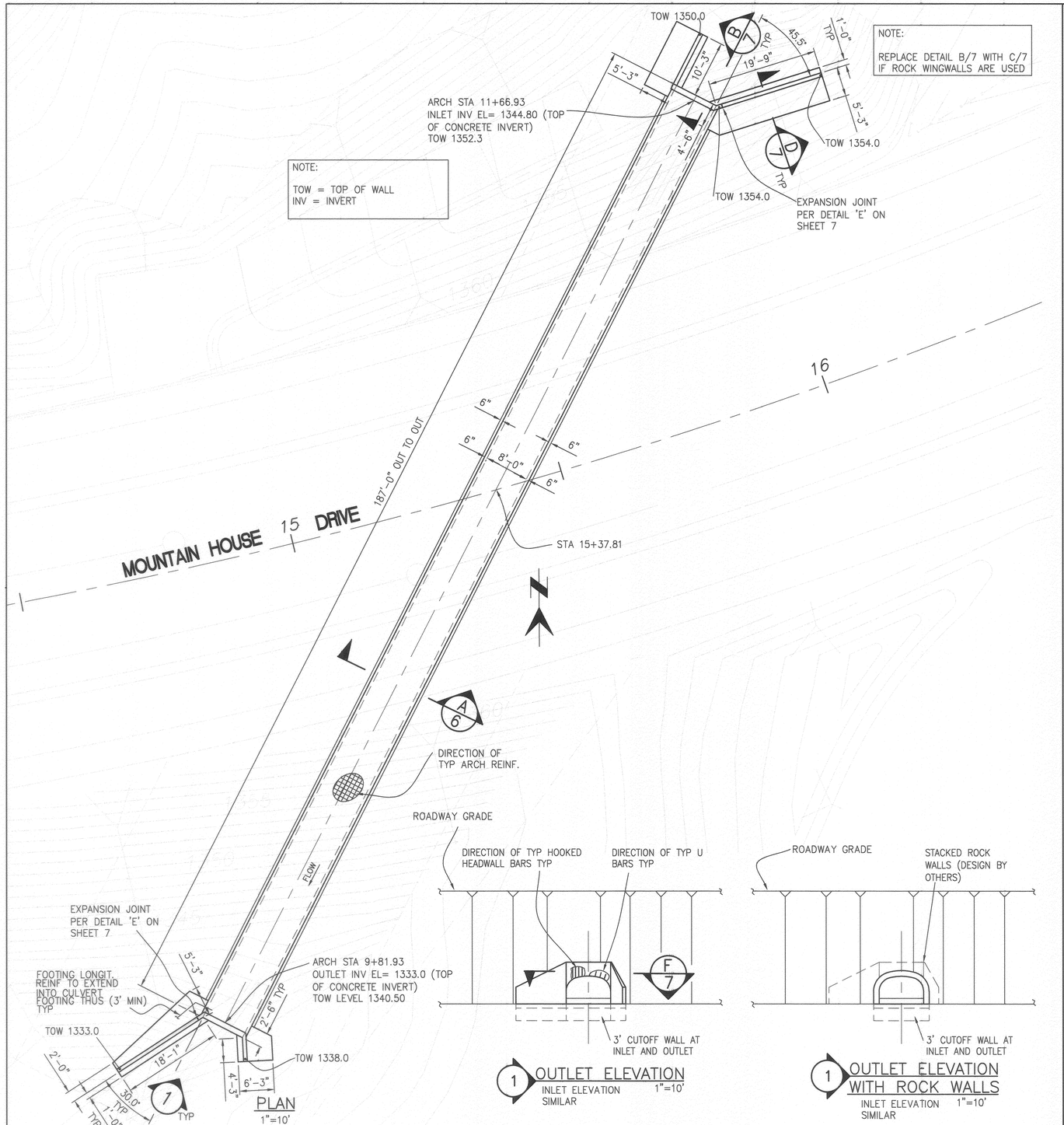
CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

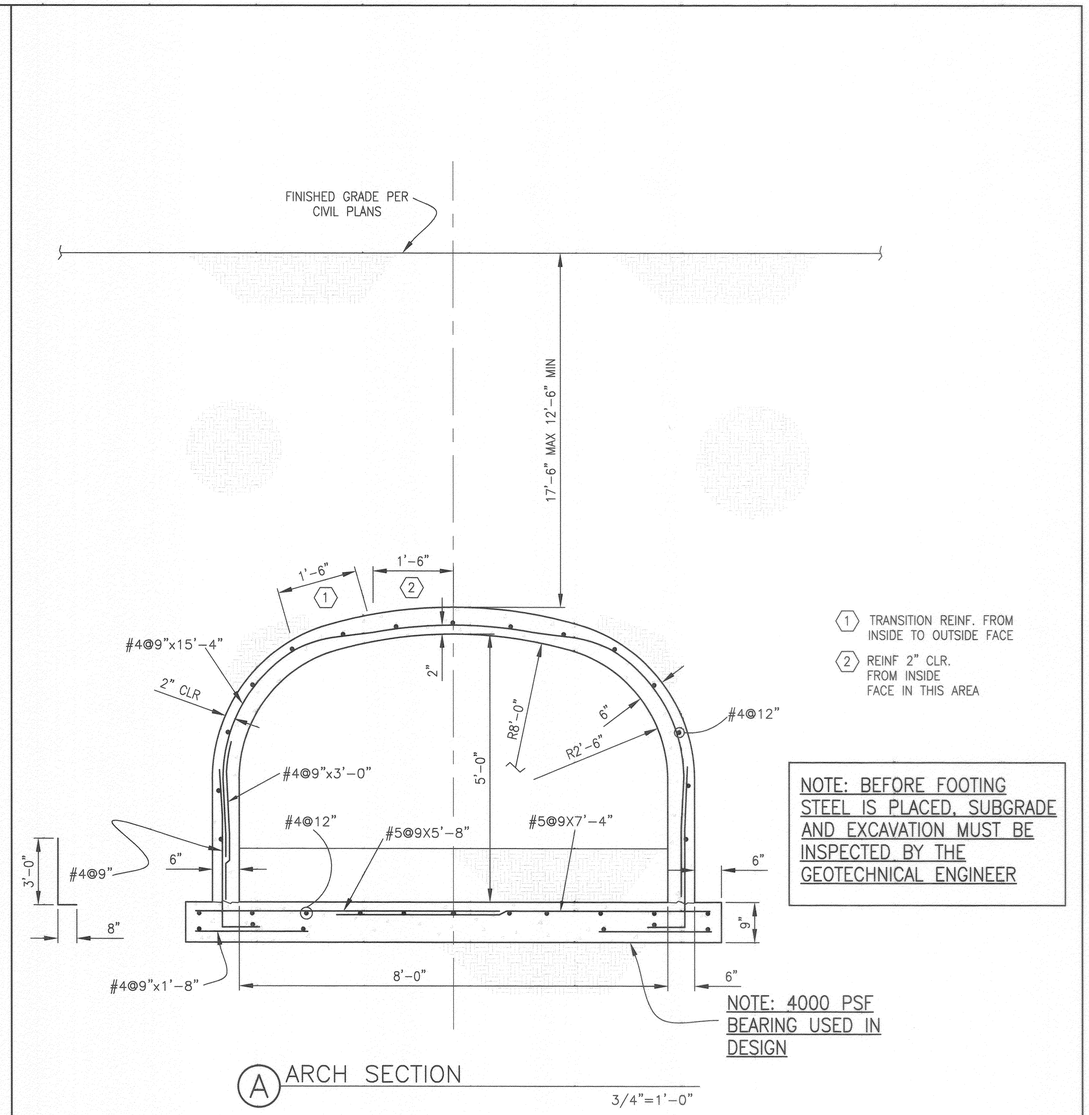
	DATE	BY
PRINCIPAL ENGINEER	8/21/14	PM
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

APPROVED BY — CITY ENGINEER — DATE 8/22/2014

STORM DRAIN PLAN
TRACT 32787
APN 243-230-015, 243-230-016
HORIZ. SCALE: VERT. SCALE:

PW 05-0768
ACCOUNT NO.
D-788 1
SHEET 6 OF ~~8~~ 8
J.N. 8499





A ARCH SECTION
3/4"=1'-0"

SEAL PERTAINS ONLY TO WORK RELATED TO HYDRO-ARCH STRUCTURE. SURVEY DATA, INVERT ELEVATIONS AND TOP OF WALLS PROVIDED BY OTHERS.

11/7/14 1447

811 Know what's below. Call before you dig.

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY 11-13-14 DATE

REGISTERED PROFESSIONAL ENGINEER ALLEN THOMAS SACRA No. RCE 72857 CIVIL STATE OF CALIFORNIA
11/12/14

SACRA ENGINEERING
CONSULTING ENGINEERS
65141 E DIAMOND RIDGE COURT
TUCSON, ARIZONA 85739
PH: (520) 444-4501
Under the Supervision of: Allen Sacra 72857 Exp. 06.30.16 Date: 11/12/14

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ELEVATION: 1426.960

MARK	REVISIONS	APPR.	DATE

DESIGNED BY: ATS DRAWN BY: ATS CHECKED BY: ATS

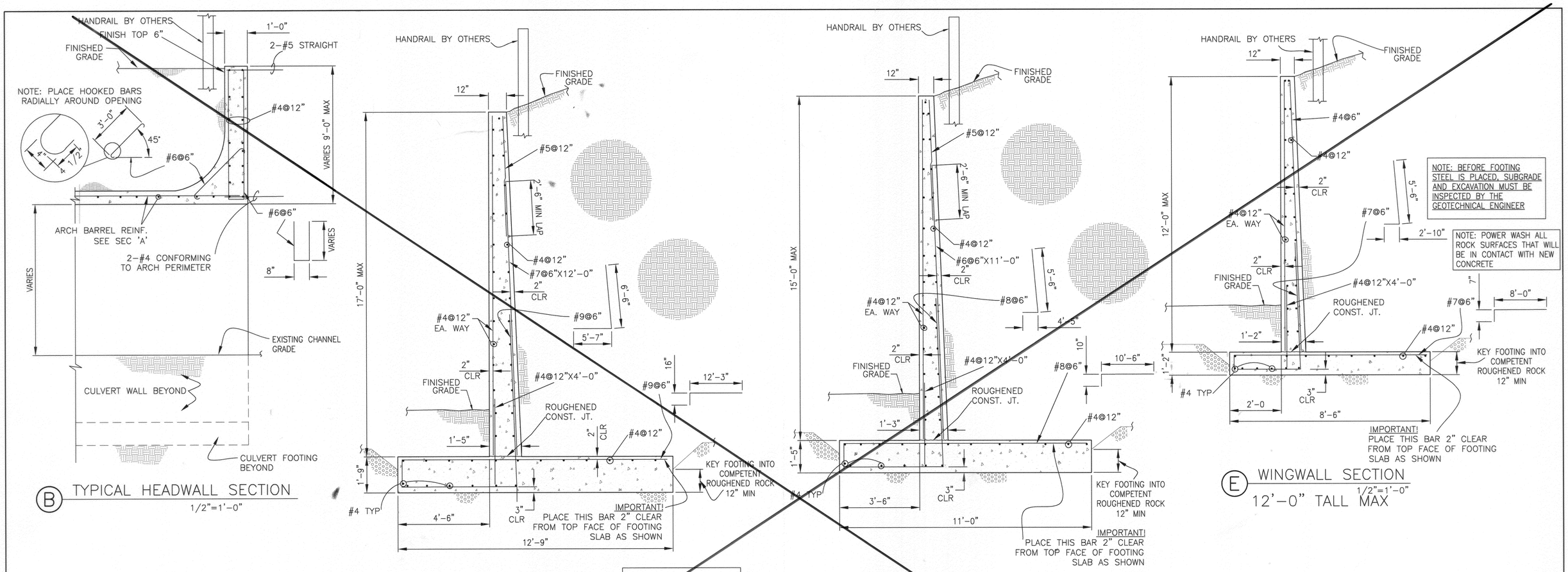
CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
ENGINEERING MANAGER	11/17/14	

APPROVED BY: CITY ENGINEER/PW DIRECTOR
DATE 11/19/2014

STORM DRAIN PLAN
TRACT 32787
APN 243-230-015, 243-230-016
HORIZ. SCALE: VERT. SCALE:

PW 05-0768
ACCOUNT NO.
D-788
SHEET 6A OF 8
J.N. 8499



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8/15/14 1343

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CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY 8-21-2014 DATE

REGISTERED PROFESSIONAL ENGINEER ALLEN THOMAS SACRA No. RCE 72857 CIVIL STATE OF CALIFORNIA

SACRA ENGINEERING
CONSULTING ENGINEERS
65141 E DIAMOND RIDGE COURT
TUCSON, ARIZONA 85739
PH: (520) 444-4501

Under the Supervision of: Allen Sacra Allen Sacra 72857 Exp. 06.30.16 Date: 8/20/14

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	REPLACED BY SHEET 7A		

DESIGNED BY: ATS DRAWN BY: ATS CHECKED BY: ATS

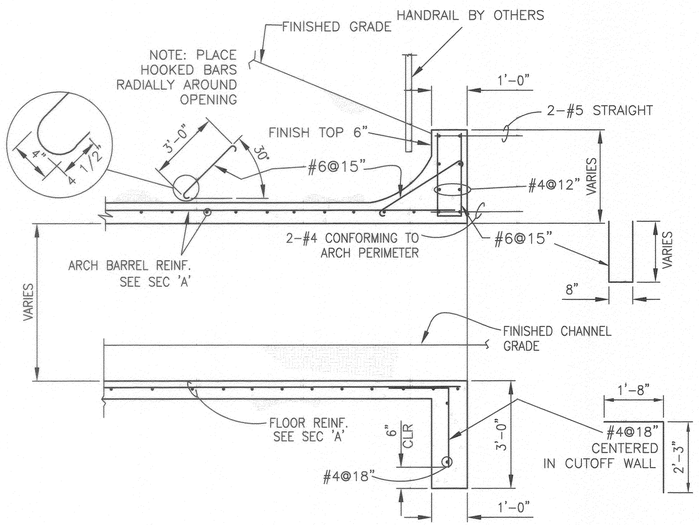
CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

	DATE	BY
APPROVED BY		
PRINCIPAL ENGINEER	7/21/14	FM
PARK DEPARTMENT		
TRAFFIC DIVISION		
STREET SERVICES		

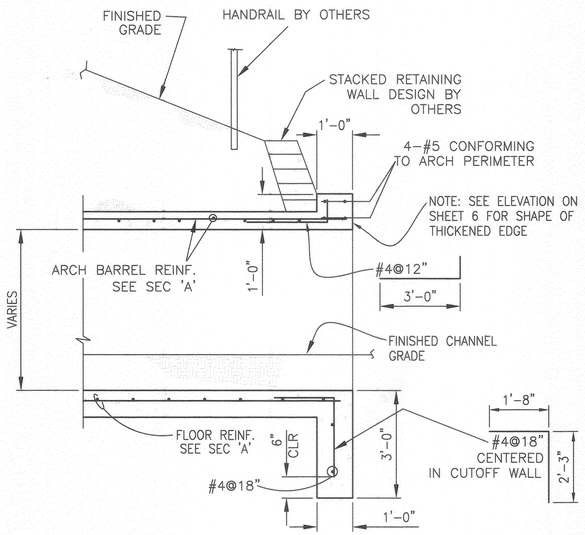
APPROVED BY: CITY ENGINEER
DATE 8/22/2014

STORM DRAIN PLAN
TRACT 32787
APN 243-230-015, 243-230-016
HORIZ. SCALE: VERT. SCALE:

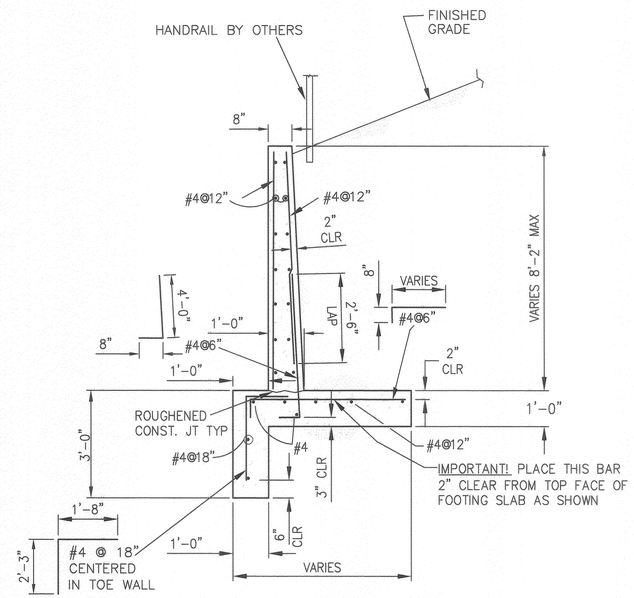
PW 05-0768
ACCOUNT NO.
D-788 1
SHEET 7 OF 8
J.N. 8499



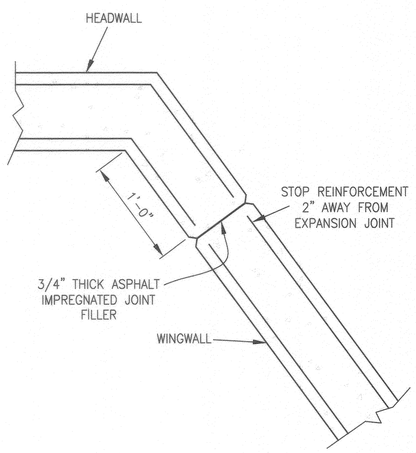
B HEADWALL SECTION
1/2"=1'-0"



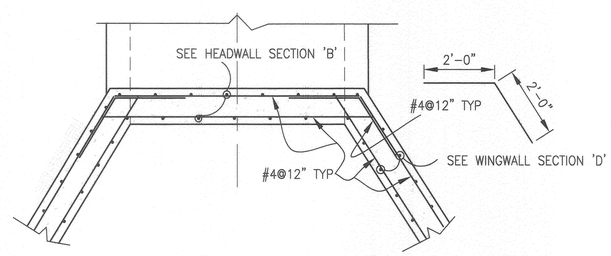
C TYPICAL HEADWALL SECTION
ROCK WALL OPTION
1/2"=1'-0"



D WINGWALL SECTION TYP
1/2"=1'-0"



E EXPANSION JOINT PLAN DETAIL
1"=1'-0"



F HEADWALL SECTION PLAN VIEW
WHERE EXPANSION JOINT NOT PRESENT
1/2"=1'-0"

SEAL PERTAINS ONLY TO WORK RELATED TO HYDRO-ARCH STRUCTURE. SURVEY DATA, INVERT ELEVATIONS AND TOP OF WALLS PROVIDED BY OTHERS.

11/7/14 1447

Know what's below. Call before you dig.

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 11-13-14

REGISTERED PROFESSIONAL ENGINEER ALLEN THOMAS SACRA No. RCE 72857 Civil STATE OF CALIFORNIA 11/12/14

SACRA ENGINEERING
CONSULTING ENGINEERS
65141 E DIAMOND RIDGE COURT
TUCSON, ARIZONA 85739
PH: (520) 444-4501

Under the Supervision of: Allen Sacra — Allen Sacra 72857 Exp. 06.30.15 — 11/12/14 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

DESIGNED BY: ATS DRAWN BY: ATS CHECKED BY: ATS

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
ENGINEERING MANAGER	11/17/14	FTA

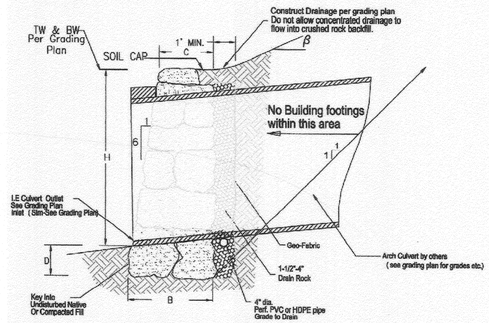
APPROVED BY: CITY ENGINEER/PW DIRECTOR
DATE 12/29/2014

STORM DRAIN PLAN
TRACT 32787
APN 243-230-015, 243-230-016
HORIZ. SCALE: VERT. SCALE:

PW 05-0768
ACCOUNT NO.
D-788
SHEET 7A OF 8
J.N. 8499

Harlan Fricke Consulting
P.O.Box 33533
Reno, NV 89533-3533
Phone
(775) 691-3878

PROJECT Stellan Ridge Culvert Headwalls
JOB NO. 1001.02 SHEET 9 OF 10 SHEETS
CALCULATED BY HFF DATE 10/17/14



Typical Wall Cross Sections - Outlet
Inlet side similar (except for elevations)

H	B	C	D	β
6.5'	6'	4.75'	2' *	26.6°
4'	4.17'	3.33'	2' *	26.6°

* Depth of embedment –min. of 1' – extend to 2' for scour protection or as directed by Geotechnical Engineer

Harlan Fricke Consulting
P.O.Box 33533
Reno, NV 89533-3533
Phone
(775) 691-3878

PROJECT Stellan Ridge Culvert Headwalls
JOB NO. 1001.02 SHEET 10 OF 10 SHEETS
CALCULATED BY HFF DATE 10/17/14

SPECIFICATIONS

1. Rock shall be dense, angular and hand selected for each tier.
2. Rock shall be keyed in to undisturbed native earth or compacted engineered fill to the depth indicated.
3. Maximum backfill slope shall be 2 : 1 or as indicated in the calculations.
4. Each rock shall be fitted in place and checked for stability.
5. Front face of wall shall have a batter of approx. 1 : 6.
6. Rocks shall be place such that there are no continuous joint planes either horizontally or vertically. Each rock should bear on two or more rocks maximizing rock to rock contact.
7. Size of rocks will vary, however, the larger rocks shall be placed in the lower courses.
8. No rockery shall be constructed where footing loads from structures can surcharge any portion of the rockery.
9. There shall be no chinking in the front face of the wall.
10. Cap rocks shall weigh 150#- 200# and shall be checked for stability.
11. Filter fabric shall be Mirafi 140 N or approved equal.
12. Backfill and compact front of wall (toe) to 90% ± M.D.D..
13. Grading shall be the responsibility of others.
14. Construction Observation shall be provided by me or my representative.

For Rock Walls Only
REGISTERED PROFESSIONAL ENGINEER
HARLAN F. FRICKE
No. 32652
Exp. 12-31-15
CIVIL
STATE OF CALIFORNIA
11/10/14

CITY OF RIVERSIDE WATER DEPT.
REVIEWED FOR CONFLICTS BY — DATE 11-13-14

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

811 Know what's below. Call before you dig.

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
DATUM: NGVD29

MARK	REVISIONS	APPR.	DATE

DESIGNED BY: ____ DRAWN BY: ____ CHECKED BY: ____

CITY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

APPROVED BY	DATE	BY
ENGINEERING MANAGER	11/13/14	FM

APPROVED BY
CITY ENGINEER / PW DIRECTOR
DATE 11/19/2014

STORM DRAIN PLAN
TRACT 32787
CULVERT HEADWALL DETAILS
APN 243-230-015, 243-230-016
HORIZ. SCALE: 1"=20' VERT. SCALE: N/A

PW 05-0768
ACCOUNT NO.
D-788
SHEET 8 OF 8
J.N. 8499
Plot Date: 11/6/2014