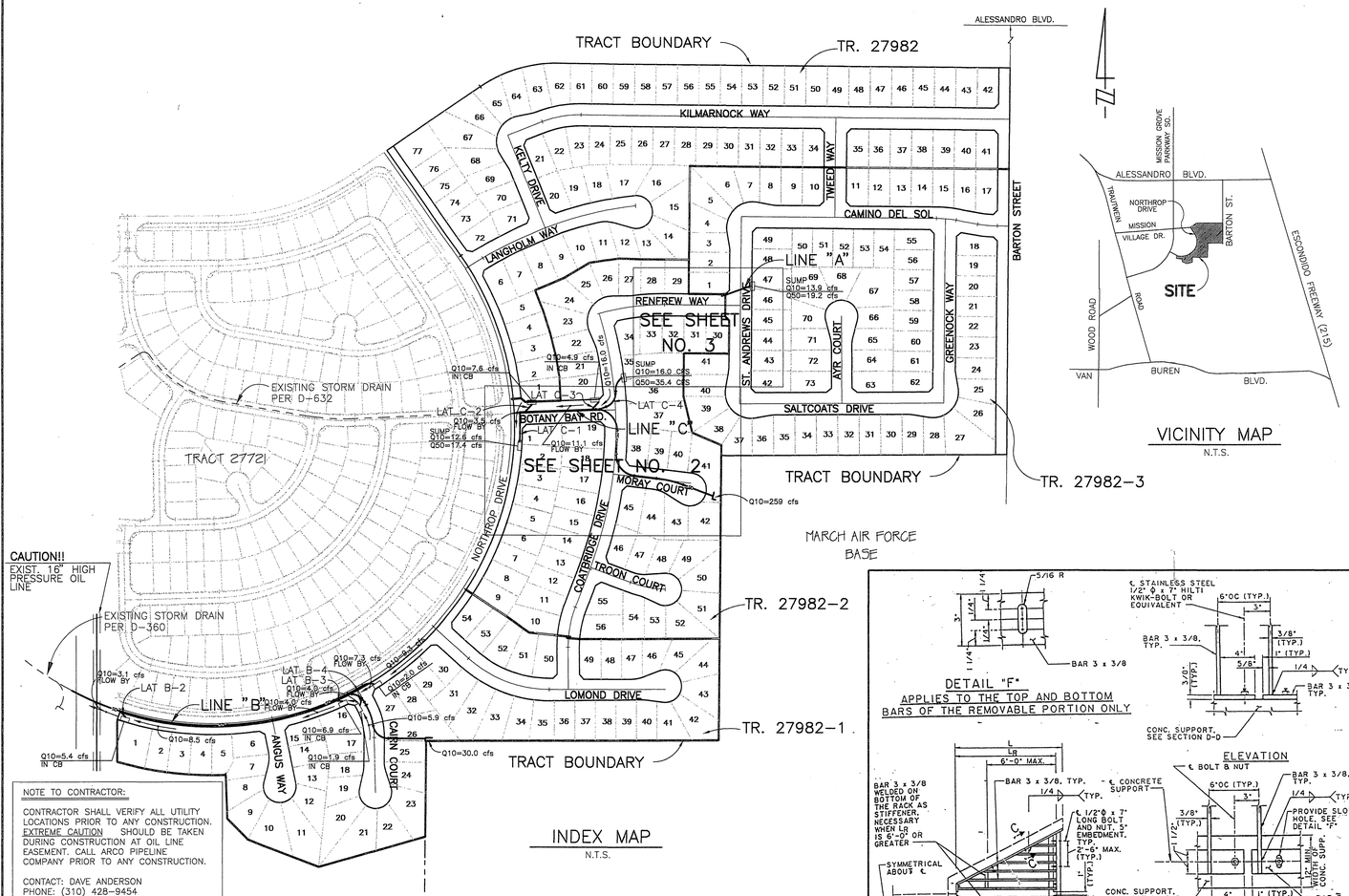


INDEX MAP
N.T.S.

VICINITY MAP
N.T.S.

CONSTRUCTION NOTES

		QUANTITIES
1	CONSTRUCT 18" RCP (D-2000)	51 LF
2	CONSTRUCT 24" RCP (D-1350)	204 LF
6	CONSTRUCT 72" RCP (D-800)	413 LF
7	CONSTRUCT 84" RCP (D-800)	279 LF
8	CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD. DWG. NO 405.	4 EA
9	CONSTRUCT CURB OUTLET PER CITY OF RIVERSIDE STD. DWG. NO. 410 (MODIFIED)	1 EA
11	CONSTRUCT JUNCTION STRUCTURE NO. 4 PER CITY OF RIVERSIDE STD. DWG NO. 423.	2 EA
12	CONSTRUCT CONCRETE COLLAR PER CITY OF RIVERSIDE STD. DWG. NO. 424.	2 EA
13	CONSTRUCT MANHOLE "AX" PER CITY OF RIVERSIDE STD. DWG NO. 430	2 EA
16	CONSTRUCT STANDARD PIPE BEDDINGS PER CITY OF RIVERSIDE STD. DWG. NO. 452.	——
18	CONSTRUCT HEADWALL & WINGWALL PER CALTRANS STD. DWG. D-90 PER DETAIL ON SHEET. 3	34 C.Y.
19	CONSTRUCT 1/4 TON GROUTED RIP-RAP AS SHOWN ON PLAN.	110 C.Y.
20	CONSTRUCT TRASH RACK PER DETAIL ON THIS SHEET.	1 EA.
21	CONSTRUCT CHAINLINK FENCE (6' HIGH) PER CITY OF RIVERSIDE STD. DWG. NO. 380.	145 LF
22	CONSTRUCT CONCRETE PAD PER DETAIL ON THIS SHEET.	3.7 C.Y.
23	CONSTRUCT TRANSITION STRUCTURE WITHOUT LATERAL PER DETAIL ON THIS SHEET	1 EA
24	CONSTRUCT 3'W x 1'H RCB PER L.A. COUNTY DEPT. OF PUBLIC WORKS STD. PLAN 3053-0 PER DETAIL ON SHEET 5.	17 C.Y.

STORM DRAIN NOTES

1. Quantities shown are for information only and the City of Riverside is not responsible for their accuracy.
2. Construction shall be in accordance with City of Riverside Dept. of Public Works Standard Drawings, Std. Dwg. No. 10 and the Standard Specifications for Public Works Construction, Current Edition.
3. 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 utilit including irrigation lines and appurtenances and at no cost to the Cit
4. Notice to contractor. The existence and location of any underground utility pipes or structures shown on these plans were obtained by a search of the available records. To the best of our knowledge there are no existing utilities exept as shown on these plans. The contractor is required to take precautionary measures to protect the utility lines shown and any other lines not of record or not shown on these plans.
5. 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.
6. The contractor shall call in a locations request to UNDERGROUND SERVIC ALERT (USA), Phone No. 1-800-422-4133, 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.
7. The developer preparing these plans shall be responsible for preservin or re-establishing and referencing survey monuments destroyed, disturb or buried as a result of construction shown hereon.
8. All embankment fill shall be compacted to minimum of 90% maximum dry density and shall be of an approved quality.
9. Before the Rip-Rap is accepted, as placed, at the outlet of any draina structure, it shall be tested under flows as close as possible to desi conditions with water obtained from fire hydrants in the immediate are
10. All flagged elevations shall be staked in the field by the private engineer.
11. Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the contractor shall defend, indemnify and hold the owner and the engineer harmless from any and all liability, real or alleged, in connection with performance of work on this project, excepting for liability arising from the sole negligence of the owner or the engineer.
12. The concrete cover on the inside of all concrete pipe must be increased to provide a min. of 1.5" over the reinforcing when the design velocities exceed 20 fps. The concrete design strength in these reaches shall be: fc = 5000 psi. for velocities exceeding 20 fps. and fc = 6000 psi. for velocities exceeding 30 fps.

CAST-IN-PLACE REQUIREMENTS

1 FOR QUALITY CONTROL DURING PLACEMENT, EMPLOY AN EXPERIENCED R.C.E OR TECHNICIAN HAVING SUITABLE C.I.P.P. EXPERIENCE.

2 CONTROL CONCRETE BY MEANS OF 6"x12" TTEXT CYLINDERS MINIMUM OR 1 SET OF FOUR (4) CYLINDERS/100 C.Y. AND NOT LESS THAN TWO (2) SETS CYLINDERS PER EACH DAY'S POUR.

3 SUPPLYING BATCH PLANT SHALL BE INSPECTED AT THE START OF CONSTRUCTION AND NOT LESS THAN ONCE EACH WEEK THEREAFTER TO OBSERVE PLANT OPERATIONS BATCH WEIGHTS AND OTHER CONCRETE CONTROL MEASURES.

4 CONCRETE MIXES SHALL NOT HAVE LESS THAN SIX (6) SACKS OF PORTLAND CEMENT/C.U. YD.

5 CONCRETE MIX DESIGNS SHALL BE SUBMITTED BY CONTRACTOR FOR APPROVAL PRIOR TO START OF CONSTRUCTION.

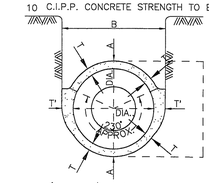
6 IF AND WHEN FLOW VELOCITY EXCEEDS 10 F.P.S. A 140° SEGMENT OF THE INVERT SHALL BE THICKENED 2 INCHES IN WALL THICKNESS AS "SACRIFICIAL CONCRETE" TO RESIST ABRASION. COMPRESSIVE STRENGTH OF CONCRETE FOR DESIGN VELOCITIES ≥ 20 F.P.S. SHALL BE Fc=4000 PSI FOR DESIGN VELOCITIES ≥ 30 F.P.S. Fc=5000 P.S.I. SHALL BE PROVIDED.

7 MAXIMUM PERMISSIBLE CONCRETE SLUMP SHALL BE 2 1/2", 1 1/2" MIN. TO 2 1/2" MAX.

8 CONTRACTOR SHALL ALLOW INSPECTOR INTO PIPE WHILE UNDER CONSTRUCTION AND "ROD" FOR WALL THICKNESS AT A MIN. OF 25 C.Y. OF THE POUR.

9 AT THE END OF ALL POURS AND AT THE END OF EACH WORKING DAY THE CONTRACTOR SHALL INSTALL #4 DOWELS 24" LONG 12" INTO LAST POUR AT 12" CENTERS AROUND THE CIRCUMFERENCE OF CAST-IN-PLACE PIPE.

10 C.I.P.P. CONCRETE STRENGTH TO BE MINIMUM 3250 P.S.I.



DIA.	A	MIN. B	T	MIN. T
72"	86"	87"	7"	7"
84"	100"	101"	8"	8"

NOTE TO CONTRACTOR:

CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO ANY CONSTRUCTION. EXTREME CAUTION SHOULD BE TAKEN DURING CONSTRUCTION AT OIL LINE EASEMENT. CALL ARCO PIPELINE COMPANY PRIOR TO ANY CONSTRUCTION.

CONTACT: DAVE ANDERSON
PHONE: (310) 428-9454

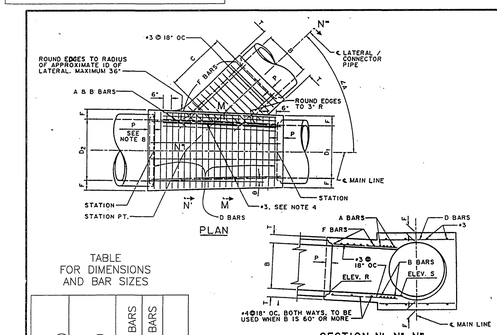


TABLE FOR DIMENSIONS AND BAR SIZES

D OR B (INCHES)	F OR T (INCHES)	A OR B BARS	D OR F BARS	P (RCP)
72	11 3/4	#6 @ 3" O.C.	#5 @ 6" O.C.	5"
84	12 1/2			

NOTES:

1 THE HORIZONTAL ANGLE OF CONVERGENCE OR DIVERGENCE, θ, SHALL NOT EXCEED 5°45'.

2 VALUES FOR A, B, C, D_1 AND D_2 ARE SHOWN ON THE PROJECT DRAWINGS, ELEVATION R AND ELEVATION S ARE SHOWN WHEN REQUIRED BY NOTE 10.

3 FLOOR OF STRUCTURE SHALL BE STEEL TROWELED TO SPRING LINE.

4 REINFORCEMENT STEEL SHALL CONFORM TO ASTM A 615, GRADE 40, AND SHALL TERMINATE 1 1/2" CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN. LONGITUDINAL BARS SHALL BE #3 SPACED 18" OC OR LESS.

5 ELEVATION S APPLIES AT INSIDE WALL OF STRUCTURE.

6 TRANSITION STRUCTURE SHALL BE POURED IN ONE CONTINUOUS OPERATION. EXCEPT THAT THE CONTRACTOR SHALL HAVE THE OPTION OF PLACING AT THE SPRING LINE A CONSTRUCTION JOINT LONGITUDNAL KEYWAY.

7 THE LENGTH OF THE STRUCTURE MAY BE INCREASED AT THE OPTION OF THE CONTRACTOR TO MEET RCP ENDS, USING D BARS, LONGITUDNAL AND BOTTOM REINFORCEMENT IN EXTENDED PORTION OF SAME DIAMETER AND SPACING AS SPECIFIED IN THE TABLE, BUT ANY CHANGE IN THE LOCATION OF SPUR MUST BE APPROVED BY THE ENGINEER.

8 EMBEDMENT P SHALL BE AS SPECIFIED IN THE TABLE, UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS.

9 WHEN THERE IS NO SPUR REQUIRED, A & B BARS SHALL BE OMITTED.

10 WHEN ELEVATION R AND ELEVATIONS S ARE NOT SHOWN ON PROJECT DRAWINGS, INLET PIPE SHALL ENTER MAIN LINE RADIALLY. WHEN INLET PIPE ENTERS MAIN LINE OTHER THAN RADIALLY, ELEVATON S SHALL BE SHOWN ON THE PROJECT DRAWINGS, AND INLET PIPE SHALL BE LAID ON THE STRAIGHT GRADE FROM ELEVATION S TO CATCH BASIN OR GRADE BREAK IN INLET LINE. ELEVATION R SHALL BE SHOWN ON PROJECT DRAWINGS ONLY WHEN STUB IS TO BE PROVIDED IN MAIN LINE FOR FUTURE CONSTRUCTION OF INLET PIPE.

11 THE MAXIMUM COVER ABOVE THS STRUCTURE SHALL BE 25'. IF THE COVER EXCEEDS 25' A SPECIAL STRUCTURE SHALL BE DESIGNED FOR THE COVER AND DETAILED ON THE PROJECT DRAWINGS.

TRANSITION STURCTURE DETAIL (23)
N.T.S.

NOTES:

1 MAXIMUM SIZE OF OUTLET TO BE USED WITH THIS RACK IS 48" PIPE OR 48" WIDE RCB. MAXIMUM LENGTH OF RACK L_R IS 10'-0"

2 L_R CAN BE ADJUSTED SO THAT THE SLOPE OF THE RACK IS APPROXIMATELY 2 HORIZONTAL TO 1 VERTICAL.

3 THE CONCRETE SUPPORT IS NOT NECESSARY IS EXISTING OR PROPOSED INLET STRUCTURE HAS ADEQUATE SUPPORT CUTOFF WALL. IT DOES NOT ELIMINATE THE NEED FOR A CUTOFF WALL BUT CAN BE INTEGRATED WITH ONE WHEN REQUIRED AT A PARTICULAR INSTALLATION.

4 GALIVANIZE ALL EXPOSED FERROUS PARTS AFTER FABRICATION.

5 IF FIELD WELDS ARE NECESSARY, USE GALVICON, GALVALLOY OR DEPARTMENT APPORVED EQUAL FOR COATING.

6 ALL BOLTS SHALL BE 1/2" IN DIAMETER AND 7" IN LENGTH. ON REMOVABLE PORTION OF THE RACK, USE 300 SERIES STAINLESS STEEL BOLTS AND NUTS. WHERE HEADWALL AND WINGWALL ARE EXISTING, HILTI KWIK-BOLT OR EQUIVALENT CAN BE USED.

TRASH RACK (INCLINED) FOR STORM DRAIN (20)
N.T.S.

CONCRETE PAD DETAIL (22)
N.T.S.

REVIEWED BY W.M.W.D.
SHEETS 1 THROUGH 3
FOR NON-INTERFERENCE COMPLIANCE ONLY

12/30/97
CIVIL ENGINEER RCE #46212

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

PRIVATE ENGINEERING NOTE

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

REGISTERED PROFESSIONAL ENGINEER — TECK C. LOH No. 50293 Exp. 6-30-01 CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECTION OF:
REGISTERED CIVIL ENGINEER NO. 50293
EXPIRATION DATE: 6-30-01 DATE: 2-13-95

CANTY ENGINEERING GROUP, INC.
CIVIL ENGINEERING - PLANNING - SURVEYING
3120 CHICAGO AVENUE, SUITE 180, P.O. BOX 52050, RIVERSIDE, CA 92517
TEL (909) 683 - 5234 FAX (909) 683 - 5301
CITY OF RIV. BUSINESS TAX ACCT. NO. 69372 EXP. DATE 04-07-98

SCALE: AS SHOWN
DATE: 9-21-94

BENCH MARK: CITY OF RIVERSIDE "FB-A" P.K. NAIL AND TAG ON TOP OF 35 X 50' X 20" HIGH GRANITE BOULDER, 100' W'LY OF TRAUTWEIN ROAD AND 0.3 MILE N'LY OF WOOD ROAD. FB 735/74 ELEV: 1588.453

MARK	REVISIONS	APPR.	DATE

DESIGNED BY T.C.L. DRAWN BY J.W./C.C. CHECKED BY D.J.E.

CITY OF RIVERSIDE, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

	BY	DATE
APPROVED BY		
PRINCIPAL ENGR.		1/30/98
PARK DEPARTMENT	——	——
TRAFFIC DIVISION	——	——
DEP. P.W. DIRECTOR	——	——
STREET SERVICES		1/30/98

APPROVED BY
DIRECTOR OF PUBLIC WORKS
DATE 2-10-98

TRACT NO. 27982-2
STORM DRAIN PLANS
TITLE SHEET
FOR: REGIONAL PROPERTIES

PROJECT NO. PROJECT_NO.
D-636A
SHEET 1 OF 3
FILE NO.: 9413168

INDEXED 4-30-98 LH

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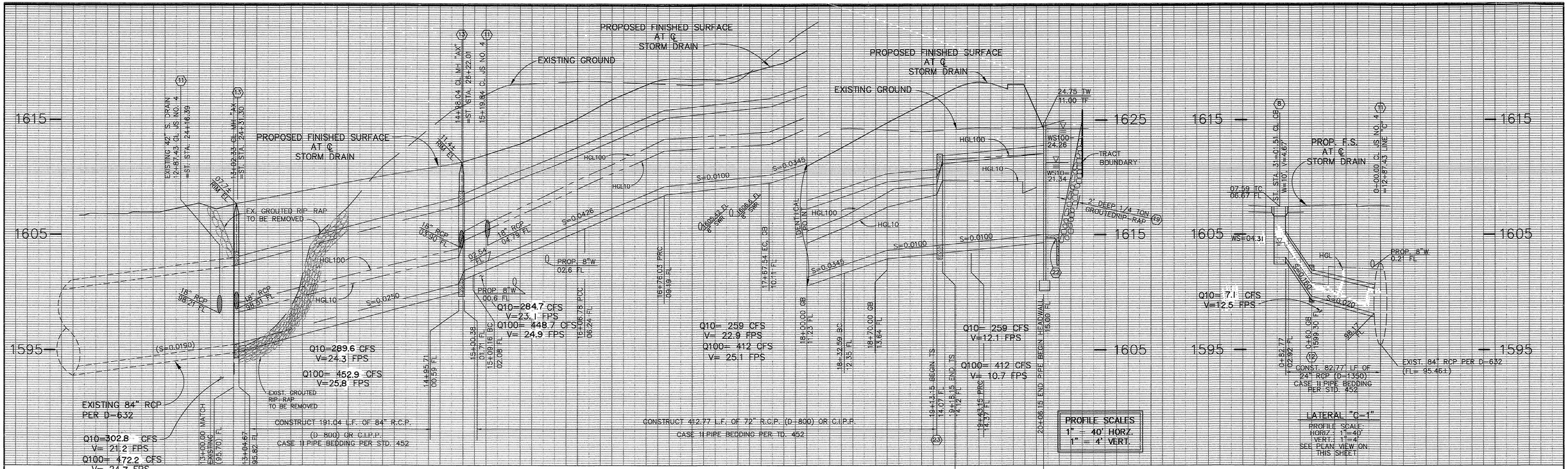
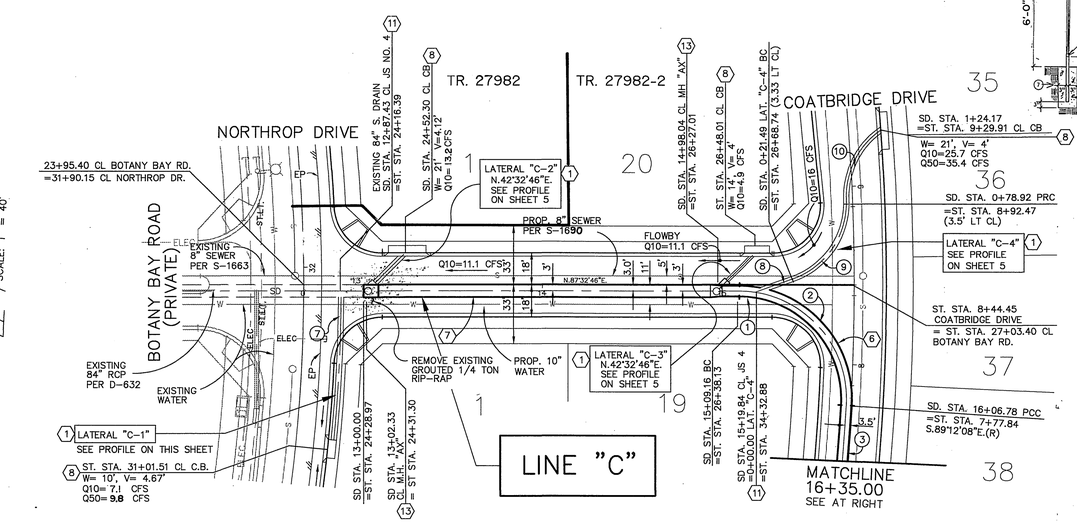
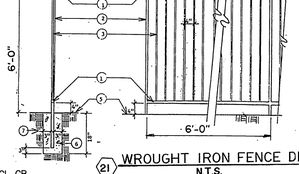
PLOT DATE: 2-13-94



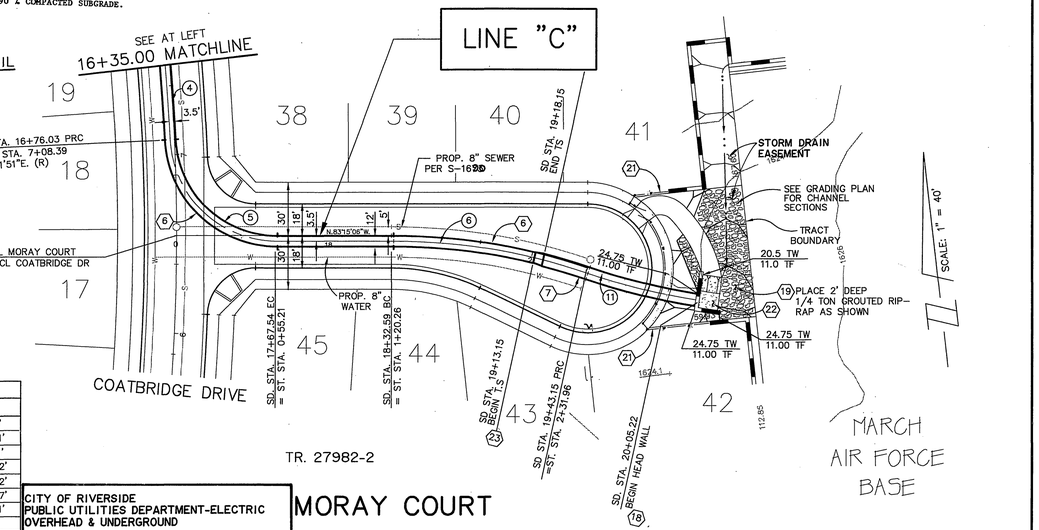


CL CURVE DATA				
NO.	Δ/BEARING	R	L/ DIST.	T
(1)	10°11'48"	60.00'	10.68'	5.35'
(2)	83°01'46"	60.00'	86.95'	53.11'
(3)	01°22'15"	1179.50'	28.22'	14.11'
(4)	01°59'35"	1179.50'	41.03'	20.52'
(5)	87°23'14"	60.00'	91.51'	57.32'
(6)	18°37'48"	340.00'	111.56'	55.77'
(7)	05°17'33"	896.00'	82.77'	41.41'
(8)	67°44'34"	–	21.49'	–
(9)	72°31'20"	45.37'	57.43'	33.28'
(10)	57°36'59"	45.00'	45.25'	24.75'
(11)	9°53'49"	364.72'	63.00'	31.58'



WROUGHT IRON FENCE DETAIL N.T.S.

LEGEND:
1. 1 1/2" SQ. TUBULAR STEEL RAIL (TOP AND BOTTOM).
2. 1 1/2" SQ. TUBULAR STEEL POST AT 6'- 0" O.C.
3. 5/8" SQ. STEEL PICKETS AT 4" O.C.
5. FINISH GRADE.
6. CONC. FOOTING.
7. 90 % COMPACTED SUBGRADE.



CITY OF RIVERSIDE
PUBLIC UTILITIES DEPARTMENT-ELECTRIC
OVERHEAD & UNDERGROUND

William F. Morrison 5/18/95
APPROVED BY DATE

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

PRIVATE ENGINEERING NOTE

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REGISTERED PROFESSIONAL ENGINEER TEDK C. LOH No. 50293 Exp. 6-30-01 CIVIL STATE OF CALIFORNIA

PREPARED UNDER THE DIRECTION OF: Ted Loh
REGISTERED CIVIL ENGINEER NO. 50293
EXPIRATION DATE: 6-30-01 DATE: 2-18-96

CANTY ENGINEERING GROUP, INC.
CIVIL ENGINEERING - PLANNING - SURVEYING
3120 CHICAGO AVENUE, SUITE 180, P.O. BOX 52050, RIVERSIDE, CA 92517
TEL (909) 683 - 5234 FAX (909) 683 - 5301

SCALE: 1"=40'
DATE: 9-21-94

BENCH MARK: CITY OF RIVERSIDE "EE-A" P.K. NAIL AND TAG ON TOP OF 35 X 50' X 20' HIGH GRANITE BOULDER, 100' W'LY OF TRAUTWEIN ROAD AND 0.3 MILE N'LY OF WOOD ROAD. EB 735/74 ELEV: 1588.453

MARK	REVISIONS	APPR.	DATE

DESIGNED BY T.C.L. DRAWN BY J.W./C.C. CHECKED BY D.J.E.

CITY OF RIVERSIDE, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

APPROVED BY	BY	DATE
PRINCIPAL ENGR.	[illegible]	2/16/96
PARK DEPARTMENT	—	—
TRAFFIC DIVISION	—	—
DEP. P.W. DIRECTOR	—	—
STREET SERVICES	[illegible]	2/16/96

APPROVED BY R. McGrath
DIRECTOR OF PUBLIC WORKS
DATE 2-20-96

TRACT NO. 27982-2
STORM DRAIN PLANS
LINE "C"
LATERAL "C-1"

FOR: FIESTA HOMES

PROJECT NO. D-636A
SHEET 2 OF 3
FILE NO.: 9413168

INDEXED 4-30-98 GH

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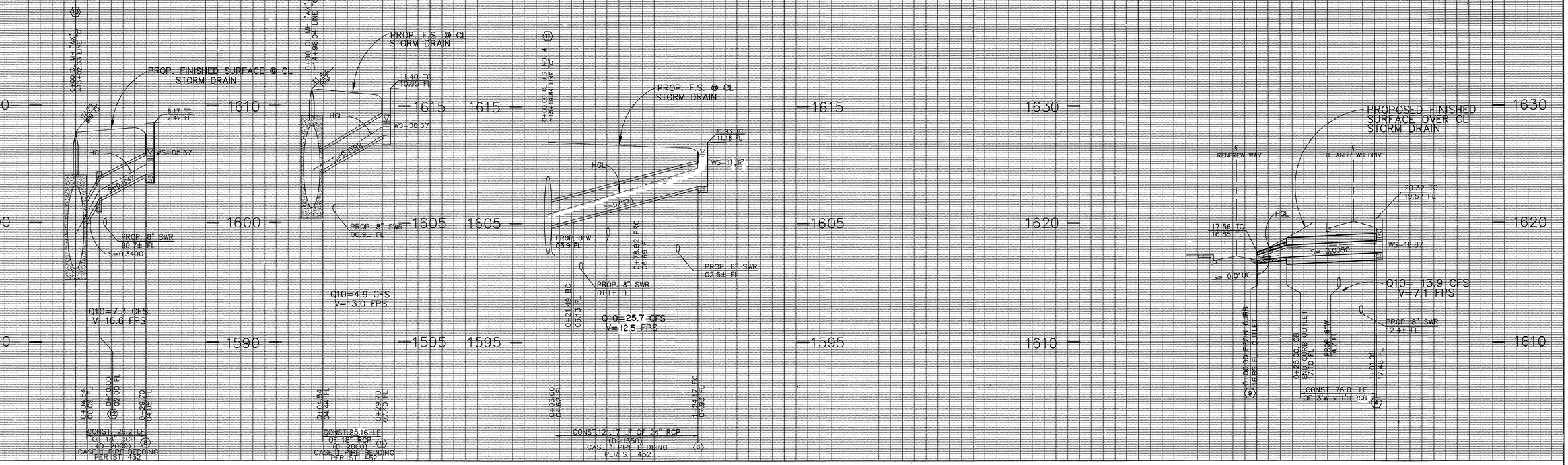
PLOT DATE: 2-10-94



LATERAL "C-2"

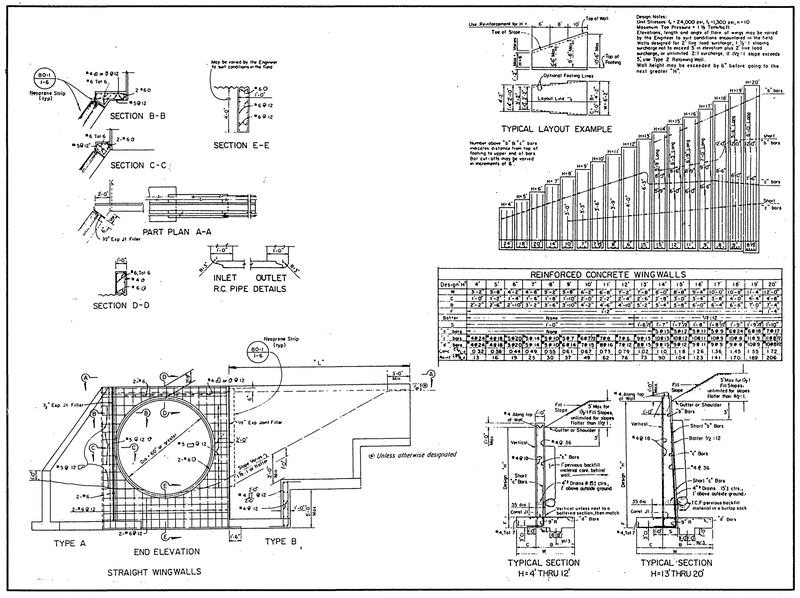
PROFILE SCALE:
HORIZ: 1"=20'
VERT. 1"=4'
SEE PLAN VIEW
ON SHEET 4

LATERAL "C-3"

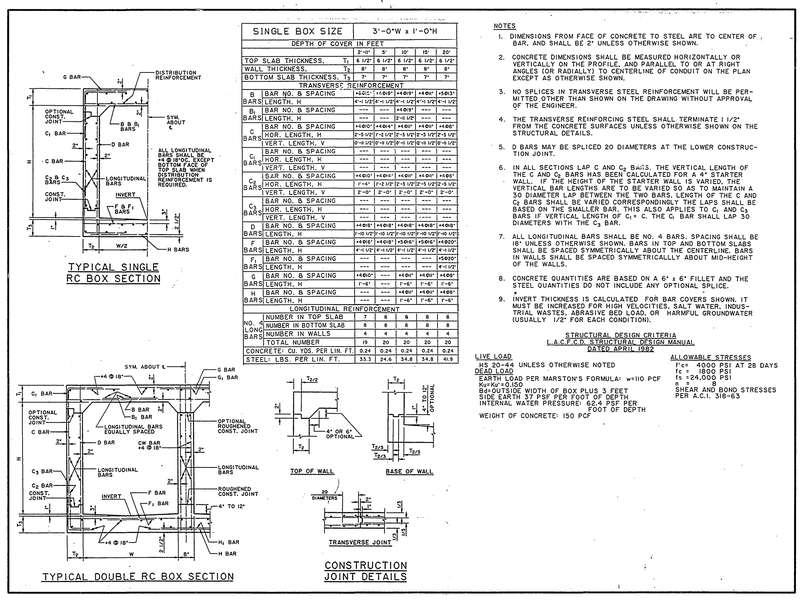
PROFILE SCALE:
HORIZ: 1"=20'
VERT. 1"=4'
SEE PLAN VIEW
ON SHEET 4

LATERAL "C-4"

PROFILE SCALE:
HORIZ: 1"=40'
VERT. 1"=4'
SEE PLAN VIEW
ON SHEET 4



HEADWALL & WINGWALL DETAIL (18)



SINGLE BOX SIZE	3'-0"W x 1'-0"H

DEPTH OF COVER IN FEET	2'-10"	5'	10'	15'	20'
TOP SLAB THICKNESS, T_1	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"
WALL THICKNESS, T_2	8"	8"	8"	8"	8"
BOTTOM SLAB THICKNESS, T_3	7"	7"	7"	7"	7"
TRANSVERSE REINFORCEMENT					
B BARS LENGTH, H	1'-6"@12" / 1'-4"@18"	1'-6"@12" / 1'-4"@18"	1'-6"@12" / 1'-4"@18"	1'-6"@12" / 1'-4"@18"	1'-6"@12" / 1'-4"@18"
B_1 BAR NO. & SPACING	----	----	#4@9"	#4@9"	#4@9"
B_1 LENGTH, H	----	----	2'-10 1/2"	----	----
C BARS BAR NO. & SPACING	#4@10"	#4@4"	#4@4"	#4@9"	#4@6"
C BARS HOR. LENGTH, H	3'-5 1/2"	3'-5 1/2"	3'-5 1/2"	3'-5 1/2"	3'-5 1/2"
C BARS VERT. LENGTH, V	1'-0 1/2"	1'-0 1/2"	1'-0 1/2"	1'-0 1/2"	1'-0 1/2"
C_1 BARS BAR NO. & SPACING	----	----	----	----	----
C_1 BARS HOR. LENGTH, H	----	----	----	----	----
C_1 BARS VERT. LENGTH, V	----	----	----	----	----
C_2 BARS BAR NO. & SPACING	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"
C_2 BARS HOR. LENGTH, H	1'-4"	1'-4"	1'-5 1/2"	1'-5 1/2"	1'-5 1/2"
C_2 BARS VERT. LENGTH, V	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"
C_3 BARS BAR NO. & SPACING	----	----	----	----	----
C_3 BARS HOR. LENGTH, H	----	----	----	----	----
C_3 BARS VERT. LENGTH, V	----	----	----	----	----
D BARS BAR NO. & SPACING	#4@6"	#4@6"	#4@6"	#4@6"	#4@6"
D BARS LENGTH, H	3'-0 1/2"	3'-0 1/2"	3'-0 1/2"	3'-0 1/2"	3'-0 1/2"
F BARS BAR NO. & SPACING	#4@6"	#4@18"	#5@6"	#5@6"	#6@6"
F BARS LENGTH, H	4'-1 1/2"	4'-1 1/2"	4'-1 1/2"	4'-1 1/2"	4'-1 1/2"
F_1 BAR NO. & SPACING	----	----	----	----	#5@6"
F_1 BARS LENGTH, H	----	----	----	----	4'-1 1/2"
G BAR NO. & SPACING	#4@6"	----	#4@6"	#4@6"	#4@6"
G BARS LENGTH, H	1'-6"	----	1'-6"	1'-6"	1'-6"
H BAR NO. & SPACING	----	----	#4@6"	#4@6"	#4@6"
H BARS LENGTH, H	----	----	1'-6"	1'-6"	1'-6"
LONGITUDINAL REINFORCEMENT					
NO. LONG. BARS NUMBER IN TOP SLAB	5	5	5	5	5
NO. LONG. BARS NUMBER IN BOTTOM SLAB	5	5	5	5	5
NO. LONG. BARS NUMBER IN WALLS	4	4	4	4	4
TOTAL NUMBER	19	20	20	20	20
CONCRETE: CU. YDS. PER LIN. FT.	0.24	0.24	0.24	0.24	0.24
STEEL: LBS. PER LIN. FT.	33.3	34.6	34.8	34.8	41.9

NOTES

1. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER OF BAR, AND SHALL BE 2" UNLESS OTHERWISE SHOWN.
2. CONCRETE DIMENSIONS SHALL BE MEASURED HORIZONTALLY OR VERTICALLY ON THE PROFILE, AND PARALLEL TO OR AT RIGHT ANGLES (OR RADIALLY) TO CENTERLINE OF CONDUIT ON THE PLAN EXCEPT AS OTHERWISE SHOWN.
3. NO SPLICES IN TRANSVERSE STEEL REINFORCEMENT WILL BE PERMITTED OTHER THAN SHOWN ON THE DRAWING WITHOUT APPROVAL OF THE ENGINEER.
4. THE TRANSVERSE REINFORCING STEEL SHALL TERMINATE 1 1/2" FROM THE CONCRETE SURFACES UNLESS OTHERWISE SHOWN ON THE STRUCTURAL DETAILS.
5. D BARS MAY BE SPLICED 20 DIAMETERS AT THE LOWER CONSTRUCTION JOINT.
6. IN ALL SECTIONS LAP C AND C_2 BARS. THE VERTICAL LENGTH OF THE C AND C_2 BARS HAS BEEN CALCULATED FOR A 4" STARTER WALL. IF THE HEIGHT OF THE STARTER WALL IS VARIED, THE VERTICAL BAR LENGTHS ARE TO BE VARIED SO AS TO MAINTAIN A 30 DIAMETER LAP BETWEEN THE TWO BARS. LENGTH OF THE C AND C_2 BARS SHALL BE VARIED CORRESPONDINGLY THE LAPS SHALL BE BASED ON THE SMALLER BAR. THIS ALSO APPLIES TO C_1 AND C_3 BARS IF VERTICAL LENGTH OF C_1 + C THE C_3 BAR SHALL LAP 30 DIAMETERS WITH THE C_3 BAR.
7. ALL LONGITUDINAL BARS SHALL BE NO. 4 BARS. SPACING SHALL BE 18" UNLESS OTHERWISE SHOWN. BARS IN TOP AND BOTTOM SLABS SHALL BE SPACED SYMMETRICALLY ABOUT THE CENTERLINE. BARS IN WALLS SHALL BE SPACED SYMMETRICALLY ABOUT MID-HEIGHT OF THE WALLS.
8. CONCRETE QUANTITIES ARE BASED ON A 6" x 6" FILLET AND THE STEEL QUANTITIES DO NOT INCLUDE ANY OPTIONAL SPLICE.
9. INVERT THICKNESS IS CALCULATED FOR BAR COVERS SHOWN. IT MUST BE INCREASED FOR HIGH VELOCITIES, SALT WATER, INDUSTRIAL WASTES, ABRASIVE BED LOAD, OR HARMFUL GROUNDWATER (USUALLY 1/2" FOR EACH CONDITION).

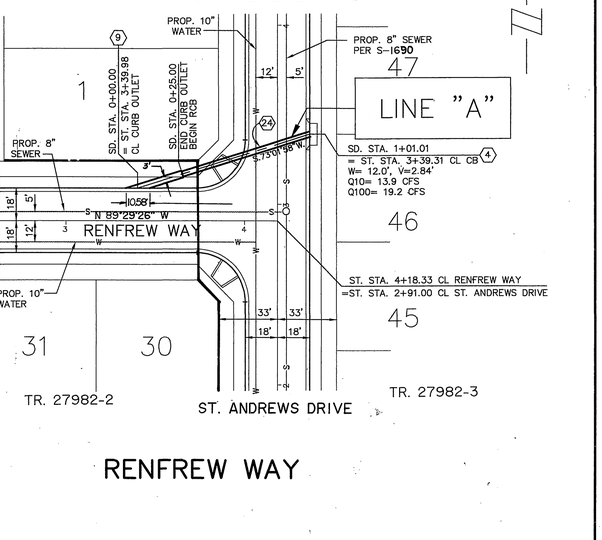
STRUCTURAL DESIGN CRITERIA
L.A.C.F.C.D. STRUCTURAL DESIGN MANUAL
DATED APRIL 1982

LIVE LOAD
HS 20-44 UNLESS OTHERWISE NOTED

DEAD LOAD
EARTH LOAD PER MARSTON'S FORMULA: w=110 PCF
Kw=Ku'+0.150
B=OUTSIDE WIDTH OF BOX PLUS 3 FEET
H=DEPTH OF BOX PLUS DEPTH OF SOIL
INTERNAL WATER PRESSURE: 62.4 PSF PER FOOT OF DEPTH
WEIGHT OF CONCRETE: 150 PCF

ALLOWABLE STRESSES
f'c= 4000 PSI AT 28 DAYS
fc = 1800 PSI
fs =24,000 PSI
n=8
SHEAR AND BOND STRESSES PER A.C.I. 318-63

REINFORCED CONCRETE BOX CULVERT DETAIL (24)



SCALE: 1" = 40'

SCALE IN FEET

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

PRIVATE ENGINEERING NOTE

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

REGISTERED PROFESSIONAL ENGINEER — TEDK C. LOH — No. 50293 — Exp. 6-30-01 — CIVIL — STATE OF CALIFORNIA

PREPARED UNDER THE DIRECTION OF: Ted Loh
REGISTERED CIVIL ENGINEER NO. 50293
EXPIRATION DATE: 6-30-01 DATE: 11-17-94

CEG CANTY ENGINEERING GROUP, INC.
CIVIL ENGINEERING - PLANNING - SURVEYING
3120 CHICAGO AVENUE, SUITE 180, P.O. BOX 52050, RIVERSIDE, CA 92517
TEL (909) 683 - 5234 FAX (909) 683 - 5301

SCALE: 1"= 40'
DATE: 11-3-94

BENCH MARK: CITY OF RIVERSIDE "EB-A"
P.K. NAIL AND TAG ON TOP OF 35 X 50° X 20' HIGH GRANITE BOULDER, 100' W'LY OF TRAUTWEIN ROAD AND 0.3 MILE N'LY OF WOOD ROAD. FB 735/74 ELEV: 1588.453

MARK	REVISIONS	APPR.	DATE

DESIGNED BY T.C.L. DRAWN BY S.L.C. CHECKED BY D.J.E.

CITY OF RIVERSIDE, CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

	BY	DATE
APPROVED BY		
PRINCIPAL ENGR.		2/9/98
PARK DEPARTMENT	—	—
TRAFFIC DIVISION	—	—
DEP. P.W. DIRECTOR	—	—
STREET SERVICES		2/10/98

APPROVED BY R. McGrath
DIRECTOR OF PUBLIC WORKS
DATE 2-10-98

TRACT NO. 27892-2
STORM DRAIN PLANS
LINE "A"
LAT. "C-2","C-3","C-4"

FOR: FIESTA HOMES

PROJECT NO. D-636A
SHEET 3 OF 3
FILE NO.: 9413168

INDEXED 4-30-98 LH

11-16-94
K:\TR27982\STORM\3168SD05.DWG