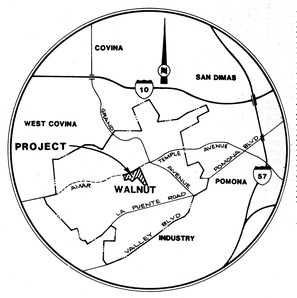
STORM DRAIN PLANS IN TRACT No. 41991 MTD 1105

BASIS OF BEARINGS:
THE BEARING N 46°31'47"E FOR THE CENTERLINE OF AMAR ROAD AS SHOWN ON MAP OF TRACT NO. 35644, M.B. 988/37-41 WAS USED AS THE BASIS OF BEARINGS SHOWN HEREON.

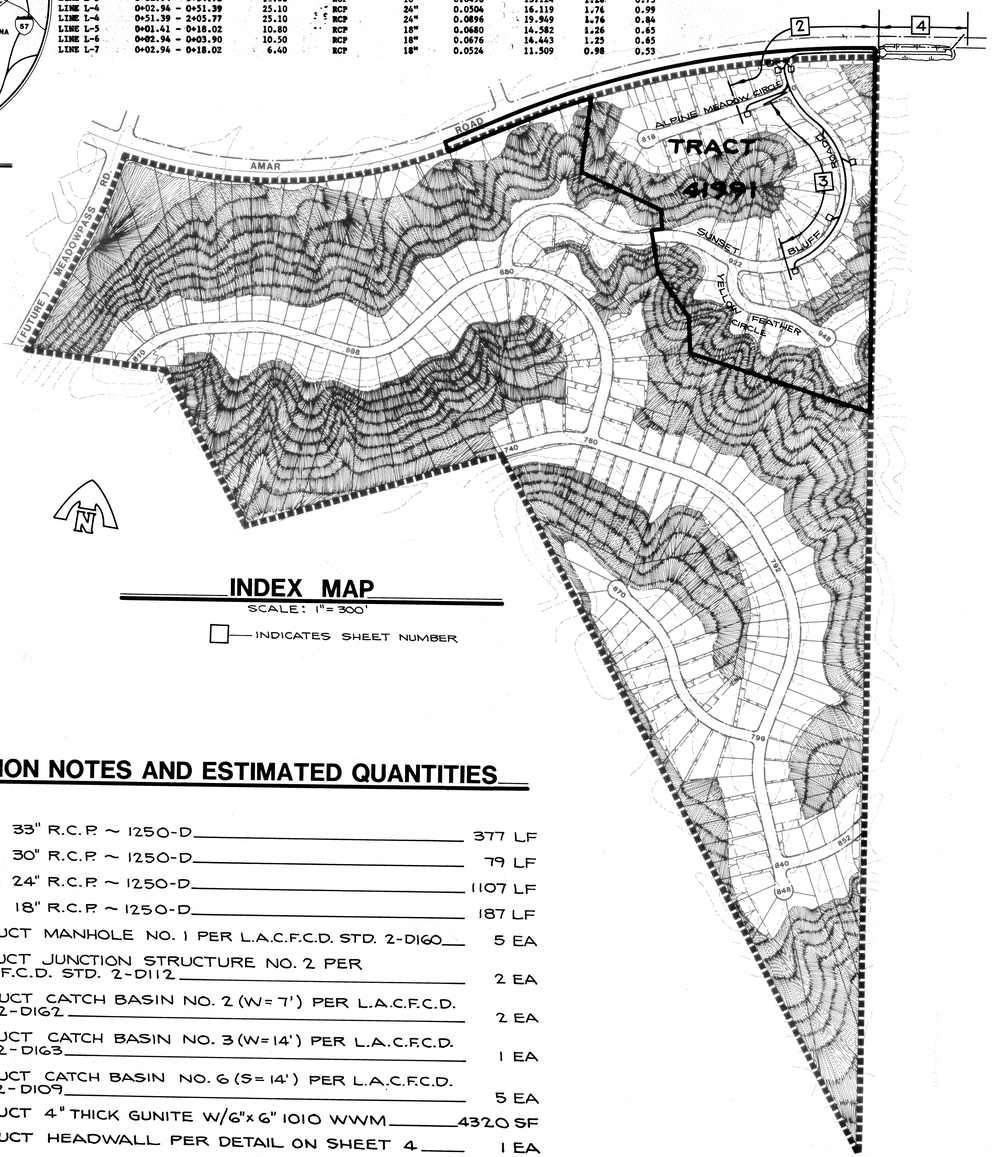
BENCH MARK: C.G. 2710
C.S.B.M. IN 2ND LIGHT STD. OF MT. SAC PARKING LOT, 75 FT. EAST AND 900 FT. NORTH OF CENTERLINE INT. OF GRAND AVE. AND TEMPLE AVE. MARKED CBM 17-31 1963
COVINA 1975 ELEV. 732.057

HYDRAULIC DATA - 25 YEAR STORM FREQUENCY

LOCATION	REACH STA TO STA	Q_{25} CFS	STRUCTURE	SIZE	FRICTION SLOPE	VELOCITY F.P.S	D_R	D_C
LINE L	7+02.58 - 10+00.00	88.40	GUNITE CHANNEL		0.0120	6.31	1.38	1.83
LINE L	10+00.00 - 12+50.00	88.40	RCP	33"	0.0436	20.659	1.86	2.68
LINE L	12+50.00 - 13+60.47	88.40	RCP	33"	0.0376	19.423	1.97	2.68
LINE L	13+64.59 - 13+73.58	83.00	RCP	33"	0.0376	19.222	1.88	2.66
LINE L	13+77.70 - 13+84.67	77.10	RCP	33"	0.0376	18.958	1.78	2.64
LINE L	13+89.34 - 14+67.57	65.80	RCP	30"	0.0524	20.701	1.54	2.42
LINE L	14+72.24 - 16+58.43	44.40	RCP	24"	0.1500	27.983	1.01	1.97
LINE L	16+58.43 - 17+31.06	44.40	RCP	24"	0.1520	28.122	1.00	1.97
LINE L	17+35.68 - 18+58.88	33.60	RCP	24"	0.1520	26.172	0.86	1.91
LINE L	18+63.47 - 21+22.65	23.10	RCP	24"	0.1520	23.641	0.71	1.71
LINE L	21+27.32 - 23+25.00	16.70	RCP	24"	0.1520	21.583	0.59	1.47
LINE L	23+25.00 - 23+90.22	16.70	RCP	24"	0.1112	19.293	0.64	1.47
LINE L-1	0+01.95 - 0+77.80	5.40	RCP	18"	0.0648	11.847	0.90	0.46
LINE L-2	0+01.95 - 0+21.03	5.30	RCP	18"	0.1048	14.430	0.94	0.42
LINE L-3	0+02.94 - 0+34.78	11.30	RCP	18"	0.0496	13.124	1.28	0.73
LINE L-4	0+02.94 - 0+51.39	25.10	RCP	24"	0.0504	16.119	1.76	0.99
LINE L-4	0+51.39 - 2+05.77	25.10	RCP	24"	0.0896	19.969	1.76	0.84
LINE L-5	0+01.41 - 0+18.02	10.80	RCP	18"	0.0680	14.582	1.26	0.65
LINE L-6	0+02.94 - 0+03.90	10.50	RCP	18"	0.0676	14.443	1.25	0.65
LINE L-7	0+02.94 - 0+18.02	6.40	RCP	18"	0.0524	11.509	0.98	0.53



VICINITY MAP
NOT TO SCALE



INDEX MAP
SCALE: 1"= 300'
□ — INDICATES SHEET NUMBER

CONSTRUCTION NOTES AND ESTIMATED QUANTITIES

(1)	INSTALL 33" R.C.P. ~ 1250-D	377 LF
(2)	INSTALL 30" R.C.P. ~ 1250-D	79 LF
(3)	INSTALL 24" R.C.P. ~ 1250-D	1107 LF
(4)	INSTALL 18" R.C.P. ~ 1250-D	187 LF
(5)	CONSTRUCT MANHOLE NO. 1 PER L.A.C.F.C.D. STD. 2-D160	5 EA
(6)	CONSTRUCT JUNCTION STRUCTURE NO. 2 PER L.A.C.F.C.D. STD. 2-D112	2 EA
(7)	CONSTRUCT CATCH BASIN NO. 2 (W=7') PER L.A.C.F.C.D. STD. 2-D162	2 EA
(8)	CONSTRUCT CATCH BASIN NO. 3 (W=14') PER L.A.C.F.C.D. STD. 2-D163	1 EA
(9)	CONSTRUCT CATCH BASIN NO. 6 (S=14') PER L.A.C.F.C.D. STD. 2-D109	5 EA
(10)	CONSTRUCT 4" THICK GUNITE W/6"x6" 10/10 WWM	4320 SF
(11)	CONSTRUCT HEADWALL PER DETAIL ON SHEET 4	1 EA
(12)	CONSTRUCT PROTECTION BARRIER NO.1 PER L.A.C.F.C.D. STD. 2-D261.1 & 2-D261.2	1 EA

GENERAL NOTES (Cont'd)

23. A SOILS ENGINEER SHALL CERTIFY THAT ALL FILLS AND BACKFILLS OVER UNDERGROUND STORM DRAINS OUTSIDE OF ST. R/W HAVE BEEN COMPACTED OR CONSOLIDATED TO A 90% DENSITY. THIS CERTIFICATION SHALL BE SUBMITTED TO THE CITY ENGINEER PRIOR TO ACCEPTANCE OF THE WORK BY THE CITY.
24. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10. 4.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION IN REGARD TO SAFETY ORDERS.
25. THE CONTRACTOR SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENTS" AS SHOWN ON LOS ANGELES COUNTY ENGINEER STANDARD S-2.
26. ALL PIPE SHALL BE PLACED IN A TRENCH IN NATURAL GROUND AND/OR COMPACTED FILL. THE GROUND LEVEL BEFORE THE TRENCHING SHALL BE AT LEAST 3 FEET ABOVE TOP OF PIPE ELEVATION, OR AT FINISH SURFACE ELEVATION, WHICHEVER IS LESS. ALL BACKFILL IN EASEMENTS SHALL BE COMPACTED TO THE DENSITY REQUIRED BY THE GRADING PLAN.
27. THE INSPECTOR MAY HAVE THE OPTION TO REQUIRE CONCRETE BACKFILL DURING CONSTRUCTION WHEN THE PIPE HAS LESS THAN ONE FOOT OF COVER AND IS SUBJECTED TO HEAVY EQUIPMENT TRAFFIC. THE CONCRETE BACKFILL SHALL CONSIST OF 1:3.5 MIX CEMENT CONCRETE POURED FROM WALL TO WALL OF TRENCH AND FROM BOTTOM OF TRENCH TO A MINIMUM DEPTH OF 4 INCHES OVER TOP OF PIPE.
28. THE PIPE SHALL BE MANUFACTURED WITH 1/2" OR 1" ADDITIONAL COVER OVER THE INVERT REINFORCING IN THE REACHS INDICATED IN THE PROFILE.
29. AN INSPECTION PERMIT SHALL BE OBTAINED FROM THE D.P.W.~ FLOOD CONTROL PRIOR TO COMMENCING ANY WORK ON THIS PROJECT. CONTACT FLOOD CONTROL AT 213-226-4206 TO OBTAIN FURTHER INFORMATION ON THE INSPECTION DEPOSIT AND PERMIT APPLICATION.
30. NOTIFY THE FLOOD CONTROL AREA INSPECTOR AT 213-226-4206 24 HOURS PRIOR TO COMMENCING ANY WORK.

LIST OF STANDARD PLANS

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT	
MANHOLE NO. 1	2-D160
MANHOLE NO. 2	2-D184
MANHOLE SHAFT	2-D107
MANHOLE FRAME & COVER	2-D472
JUNCTION STRUCTURE NO. 2	2-D112
JUNCTION STRUCTURE NO. 4	2-D191
CATCH BASIN NO. 1	2-D160
CATCH BASIN NO. 2	2-D162
CATCH BASIN NO. 3	2-D163
CATCH BASIN NO. 6	2-D109
CATCH BASIN PROTECTION BAR	2-D175
CATCH BASIN OPENING DETAIL	2-D232
CONNECTION TO CATCH BASINS	2-D224
CATCH BASIN REINFORCEMENT	2-D172
STANDARD A-615 REINFORCING BARS	2-D171
CATCH BASIN MANHOLE FRAME & COVER	2-D156
CATCH BASIN MANHOLE REINFORCEMENT	2-D157
TYPICAL HEADWALL FENCE, ETC.	2-D180
TRANSITION STRUCTURE NO. 1	2-D235
TRANSITION STRUCTURE NO. 3	2-D188
CONCRETE COLLAR	2-D393
CATCH BASIN NO. 5A	2-D195
LOCAL DEPRESSION NO. 2	2-D88
PROTECTION BARRIER	2-D261.1 & 2-D261.2
LOS ANGELES COUNTY ENGINEER	
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
PIPE BEDDING	D-54
LOS ANGELES COUNTY ROAD DEPARTMENT	
CURB & GUTTER TRANSITION	66-03
LOCAL DEPRESSION NO. 1	68-01

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. MEAN SEA LEVEL DATUM OF 1929. ALL WORK SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 1982 EDITION," INCLUDING SUPPLEMENTS AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE CITY ENGINEER.
2. APPROVAL OF THIS PLAN BY THE CITY OF WALNUT DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL SHEETS.
3. APPLICATION FOR INSPECTION BY THE CITY ENGINEER SHALL BE MADE BY THE CONTRACTOR AT LEAST FORTY-EIGHT (48) HOURS BEFORE THE SERVICES THEREOF WILL BE REQUIRED. PHONE (714) 594-9702.
4. ALL CONSTRUCTION JOINTS IN THE FOOTING OF SLABS AND WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.
5. NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCING STEEL HAS BEEN PLACED, INSPECTED AND APPROVED.
6. TRANSVERSE REINFORCEMENT AND TRANSVERSE JOINTS SHALL BE PLACED AT RIGHT ANGLES (OR RADIAL) TO CONDUIT CENTERLINE EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
7. ALL CONCRETE SHALL BE PORTLAND CEMENT CONCRETE WITH AN ULTIMATE 28 DAYS COMPRESSIVE STRENGTH OF p.s.i.
8. ALL EXPOSED EDGES SHALL BE FINISHED WITH A 3/4" CHAMFER.
9. ALL STEEL ADJACENT TO FACE OF CONCRETE SHALL HAVE 2" CLEARANCE UNLESS OTHERWISE SPECIFIED.
10. REINFORCEMENT SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE STEEL AS PER A.S.T.M. A-615-GRADE 60
11. ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE".
12. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTERLINE OF STEEL UNLESS OTHERWISE NOTED.
13. ALL BACKFILLS AND FILLS TO BE USED AS SUBGRADE SHALL BE COMPACTED TO A RELATIVE DENSITY OF 90% UNLESS OTHERWISE SPECIFIED.
14. ALL STEEL THAT IS TO BE CONTINUOUS SHALL HAVE A MINIMUM LAP OF 30 BAR DIAMETERS OR 18", WHICHEVER IS GREATER.
15. ALL CATCH BASINS AND CONNECTOR PIPES BETWEEN CATCH BASINS TO BE INSPECTED BY THE CITY ENGINEER.
16. PIPE SHALL BE EMBEDDED 5 INCHES INTO ALL STRUCTURES INCLUDING INLET & HEADWALLS, UNLESS OTHERWISE SPECIFIED.
17. WHERE PIPE IS TO BE PLACED IN FILL, THE FILL SHALL BE COMPACTED TO A MINIMUM DEPTH OF 3 FEET ABOVE THE TOP OF PIPE PRIOR TO TRENCHING.
18. ALL BACKFILL AND FILL AROUND CLOSED CONDUIT IN STREET RIGHTS OF WAY SHALL BE BROUGHT UP TO SUBGRADE OF THE ROAD OR TO 2 FEET ABOVE THE TOP OF THE CONDUIT, WHICHEVER IS LESS.
19.
20. ALL REINFORCED CONCRETE PIPE SHALL BE BEDDED IN ACCORDANCE WITH LOS ANGELES COUNTY STD. PLAN NO. D-54, CASE A-d
21. UNLESS OTHERWISE SHOWN, CONCRETE DIMENSIONS SHALL BE MEASURED VERTICALLY OR HORIZONTALLY AND PARALLEL OR AT RIGHT ANGLES (OR RADIAL) TO THE CENTER LINE OF CONSTRUCTION.
22. THIS STORM DRAIN WILL NOT BE ACCEPTED FOR MAINTENANCE UNTIL THE STREETS HAVE BEEN PAVED, MANHOLES BROUGHT TO GRADE, AND THE SYSTEM IS CLEANED TO THE SATISFACTION OF THE CITY ENGINEER.

RIPRAP NOTES

1. ROCKS FOR GROUTED RIPRAP SHALL BE GOOD QUALITY BROKEN CONCRETE AND/OR RIVER RUN ROCK. THE SMALLEST DIMENSION SHALL EXCEED 3 INCHES AND THE LARGEST DIMENSION SHALL NOT EXCEED 18 INCHES. THE LARGEST DIMENSION SHALL NOT EXCEED 4 TIMES THE SMALLEST DIMENSION.
2. THERE SHALL BE A GROUT BED OF AT LEAST 2 INCHES BENEATH THE FIRST LAYER OF ROCK. ALL THE VOIDS BETWEEN THE ROCKS SHALL BE FILLED WITH GROUT. MAXIMUM SPACING BETWEEN ROCKS SHALL BE 2 INCHES.
3. SURFACE ROCKS SHALL BE IMBEDDED FROM 1/2 TO 2/3 OF THEIR MAXIMUM DIMENSION.

NOTE: CONCRETE MAY BE SUBSTITUTED FOR THE GROUT.

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP.
THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING.

Stanley C. Morse — Aug. 8, 1984
REGISTERED CIVIL ENGINEER No. 20596 — DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

Stanley C. Morse
Consulting Civil Engineers, Inc.
Planning • Engineering • Surveying
4860 Irvine Boulevard, Irvine, California 92714-1299 — Suite 201, (714) 730-7117
Irvine — Palm Desert

IF CONSTRUCTION OF IMPROVEMENTS AS SHOWN HEREON ARE NOT INITIATED WITHIN 18 MONTHS OF APPROVAL DATE, THESE PLANS ARE SUBJECT TO REVIEW BY THE CITY.

PLANS PREPARED UNDER THE SUPERVISION OF:
Stanley C. Morse — Aug. 8, 1984
STANLEY C. MORSE, R.C.E. 20596 — DATE

CITY OF WALNUT
RONALD L. KRANZER — CITY ENGINEER

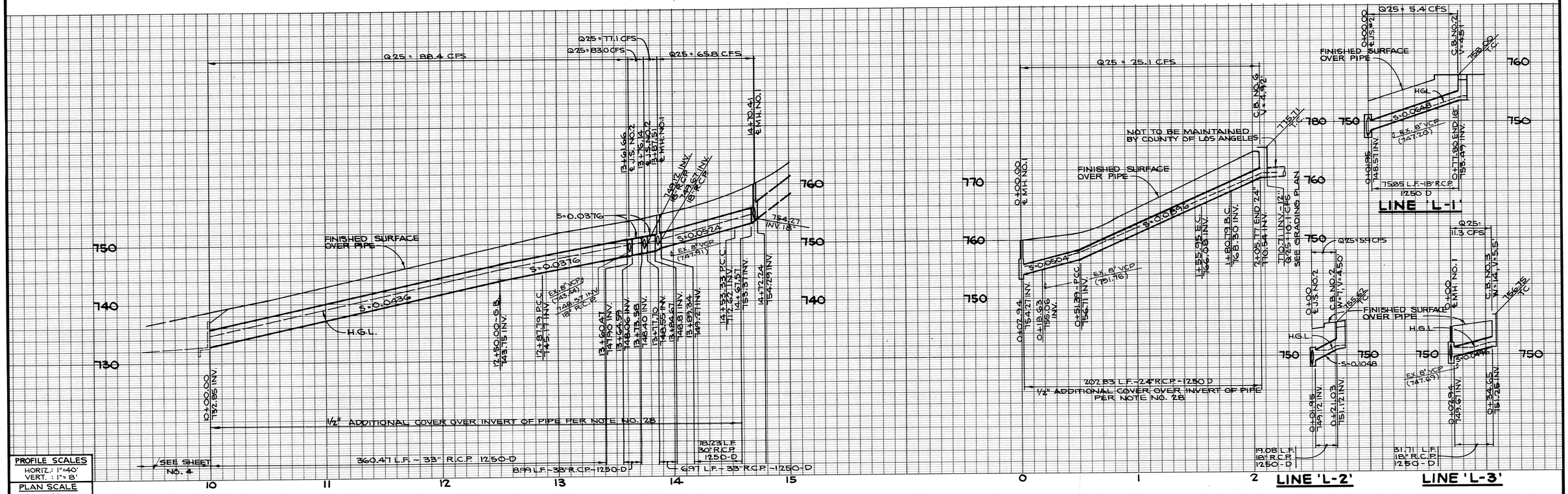
APPROVED BY: Ronald L. Kranzer — DATE: 5-6-85
RONALD L. KRANZER, R.C.E. 18503

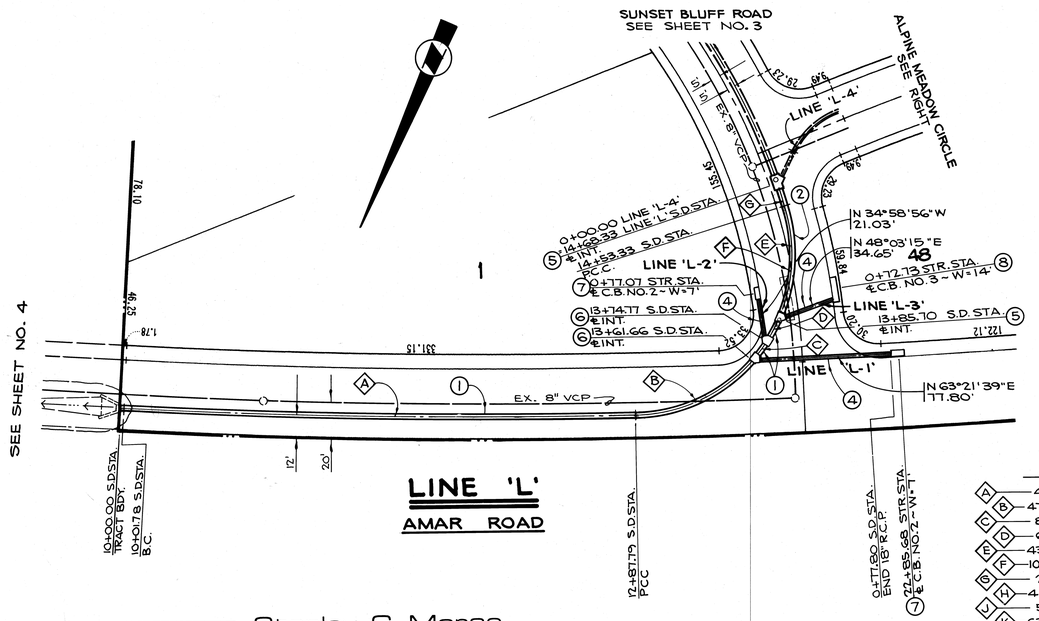
SHT 1 OF 4 SHTS

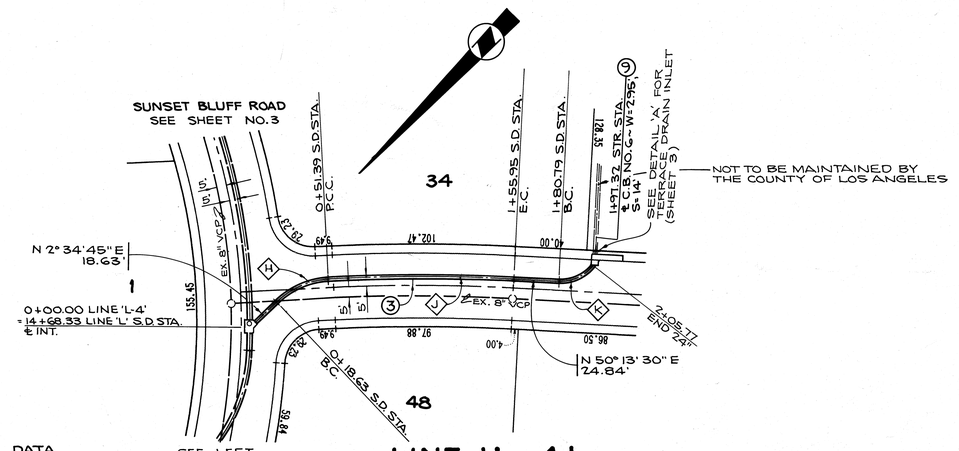
STORM DRAIN PLANS IN TRACT No. 41991 MTD 1105

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

PLAN SCALE
1"= 40'







CURVE DATA

	Δ	R	L	T
A	4°06'33"	3988.00'	286.01'	143.07'
B	47°01'40"	90.00'	73.87'	39.16'
C	8°20'35"	90.00'	13.11'	6.56'
D	6°47'18"	90.00'	10.66'	5.34'
E	43°13'45"	90.00'	67.90'	35.66'
F	105°23'18"	90.00'	165.54'	118.12' TOTAL CURVE
G	2°25'16"	355.00'	15.00'	7.50'
H	41°42'52"	45.00'	32.76'	17.15'
J	5°55'54"	1010.00'	104.56'	52.33'
K	63°36'44"	22.50'	24.98'	13.95'

NO.	REVISION	REVISED BY	APPROVED BY	DATE

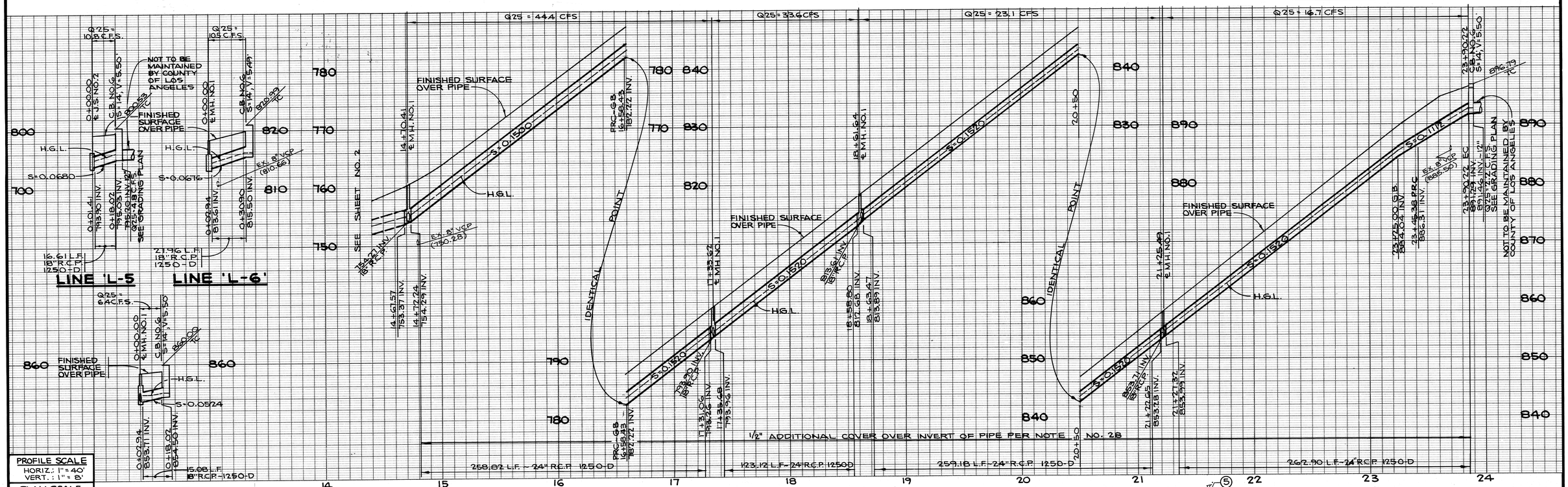
Stanley C. Morse
Consulting Civil Engineers, Inc.
Planning • Engineering • Surveying
4860 Irvine Boulevard, Suite 201, Irvine, California 92714-1299, (714) 730-7117
Irvine, Palm Desert

PLANS PREPARED UNDER THE SUPERVISION OF:
Stanley C. Morse AUG 8, 1984
STANLEY C. MORSE, R.C.E. 20696 DATE

CITY OF WALNUT
RONALD L. KRANZER CITY ENGINEER

APPROVED BY: Ronald L. Kranzer DATE: 5-6-85
RONALD L. KRANZER, R.C.E. 18503

STORM DRAIN PLANS IN
TRACT No. 41991 MTD 1105

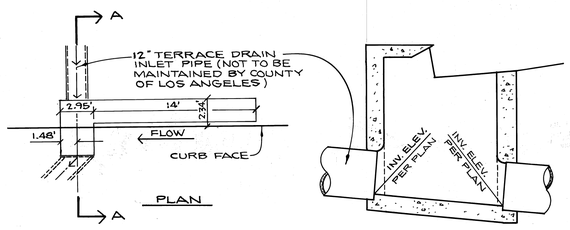


PROFILE SCALE
HORIZ.: 1" = 40'
VERT.: 1" = 8'

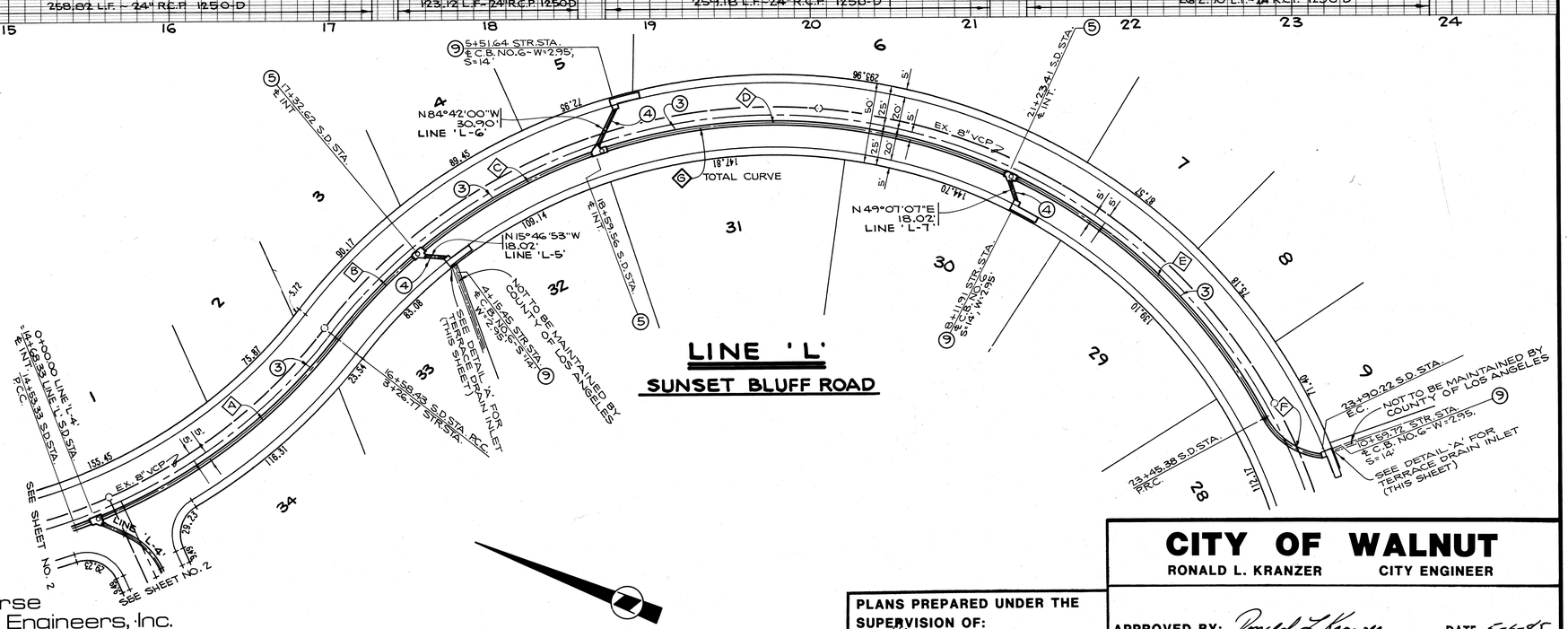
PLAN SCALE
1" = 40'

℄ PIPE CURVE DATA

	Δ	R	L	T	
A	30°40'54"	355.00'	190.10'	97.39'	
B	12°19'16"	345.00'	74.19'	37.24'	
C	21°04'53"	345.00'	126.94'	64.20'	
D	43°49'07"	345.00'	263.85'	138.75'	
E	36°51'49"	345.00'	221.97'	114.98'	
F	57°05'37"	45.00'	44.84'	24.48'	
G	114°05'05"	345.00'	686.95'	582.11'	TOTAL CURVE



DETAIL 'A'
NOT TO SCALE



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Irvine Palm Desert

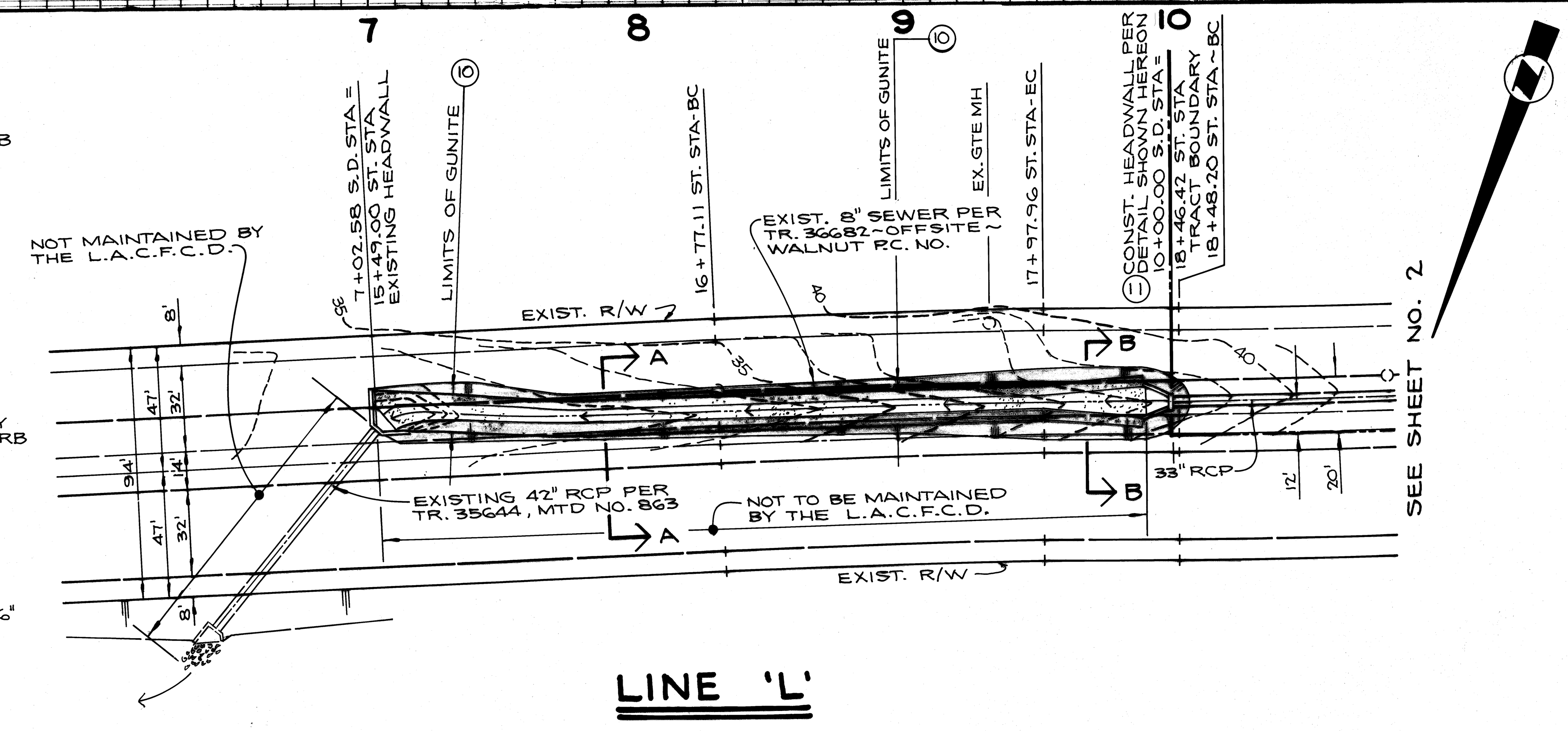
PLANS PREPARED UNDER THE SUPERVISION OF:
STANLEY C. MORSE, R.C.E. 20596 — DATE: AUG. 8, 1984

CITY OF WALNUT
RONALD L. KRANZER CITY ENGINEER

APPROVED BY: Ronald L. Kranzer DATE: 5-6-85
RONALD L. KRANZER, R.C.E. 18503

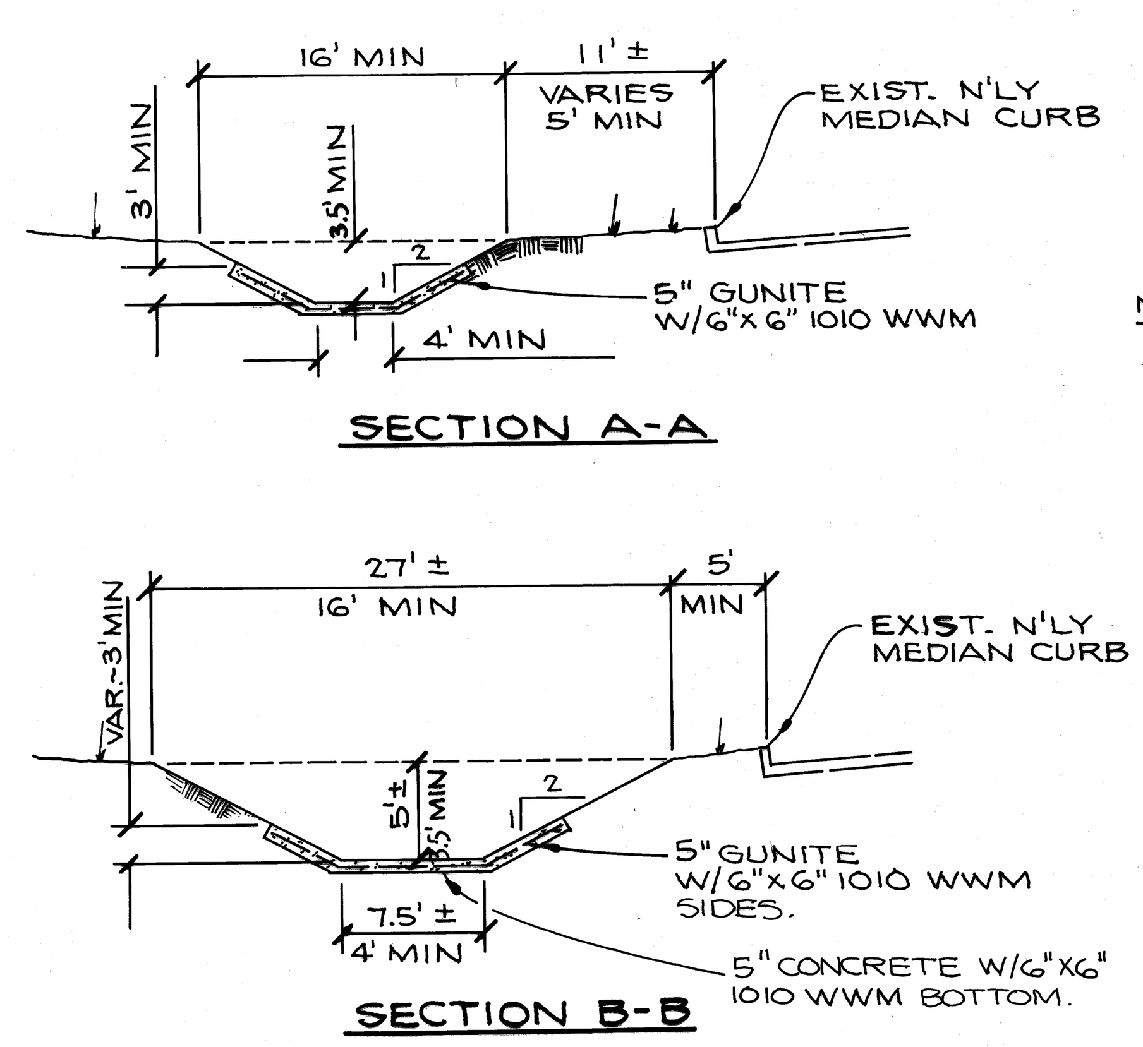
1490

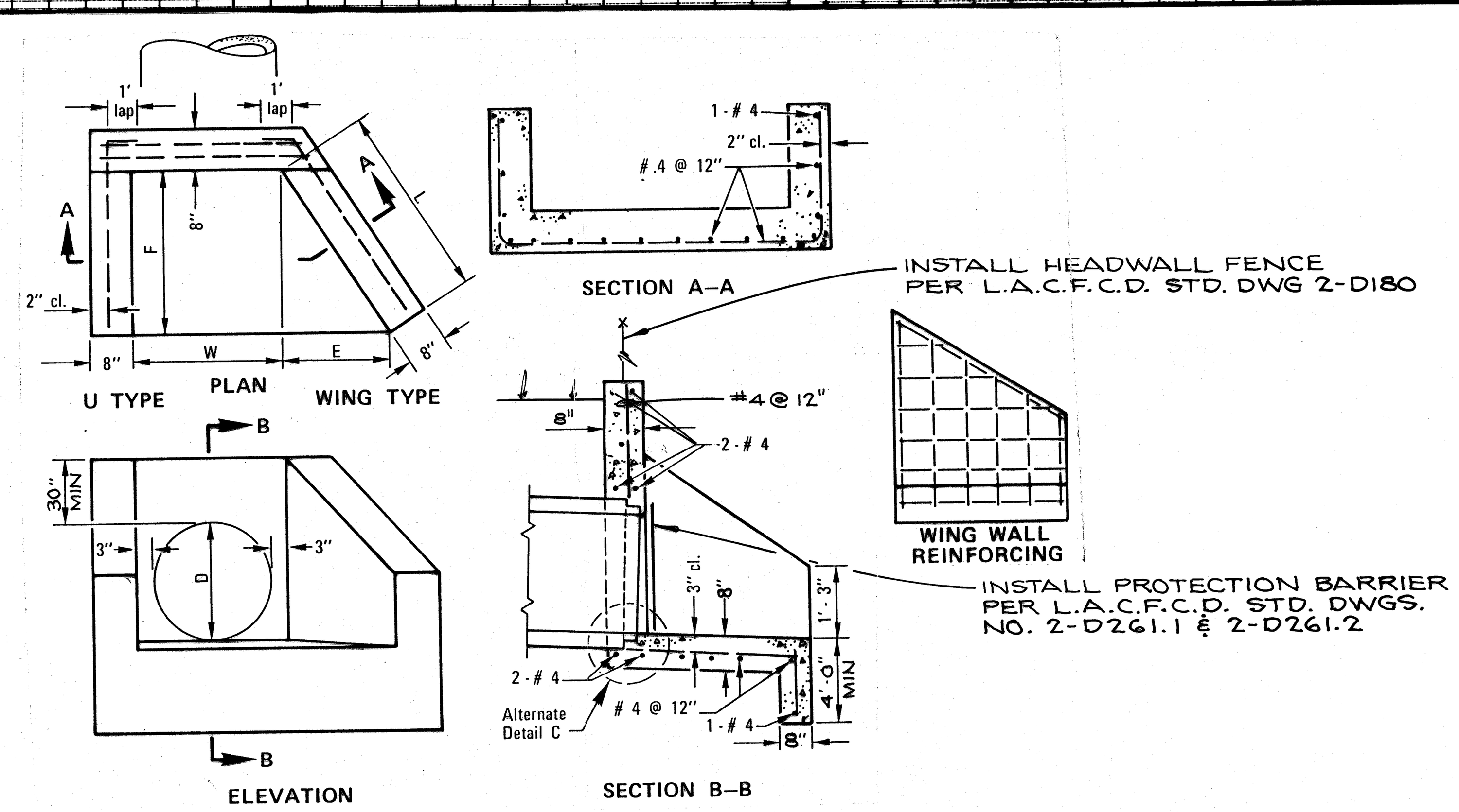
STORM DRAIN PLANS IN
TRACT No. 41991 MTD 1105



LINE 'L'

AMAR ROAD





DIA OF PIPE	DIMENSIONS				SINGLE PIPE			
					U TYPE		WING TYPE	
					CONC	STEEL	CONC	STEEL
	L	E	F	W	C. Y.	LBS.	C. Y.	LBS.
18"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36"	4'-11 1/2"	2'-9"	4'-1 1/2"	3'-6"	1.33	88	1.69	114

NOTES:

1. Concrete shall be 564 - 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.

HEADWALL DETAIL

NO.	REVISION	REVISED BY	APPROVED BY	DATE

Stanley C. Morse
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Irvine, California 92714-1299 (714) 730-7117
Irvine Palm Desert

PLANS PREPARED UNDER THE SUPERVISION OF:
Stanley C. Morse AUG. 8, 1984
STANLEY C. MORSE, R.C.E. 20566 DATE

CITY OF WALNUT
RONALD L. KRANZER CITY ENGINEER

APPROVED BY: Ronald L. Kranzer DATE: 5-6-85
RONALD L. KRANZER, R.C.E. 18503