

PHASE I CONSTRUCTION
GOLF COURSE ROAD
AT
ARROYO DE LAS CALABACILLAS
FEDERAL AID URBAN
PROJECT M-4079(1)

APPROVED DA Lanning DATE 1/21/85
CHIEF HIGHWAY ADMINISTRATOR
P.E. NO. 5403

APPROVED Harry E. Kinner DATE 12-10-84
MAYOR

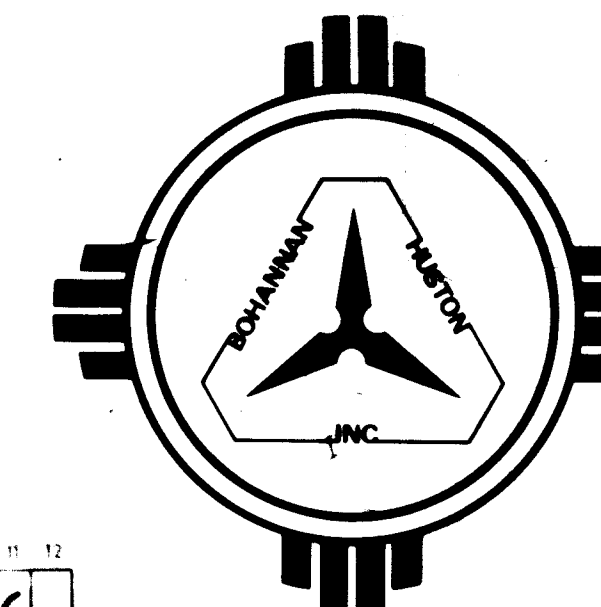
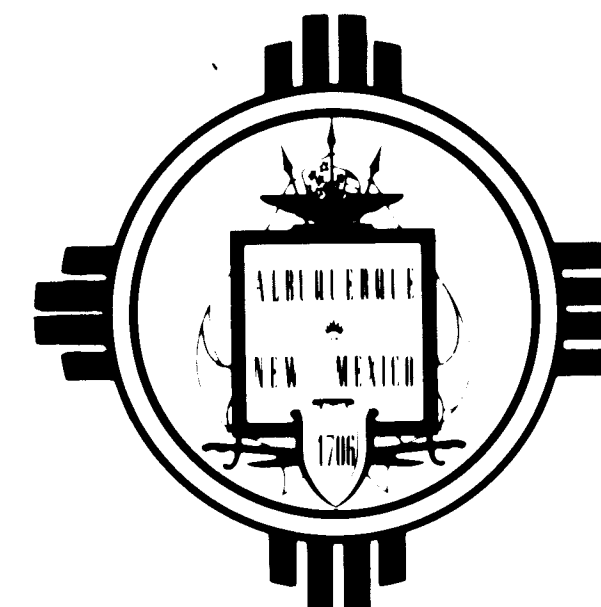
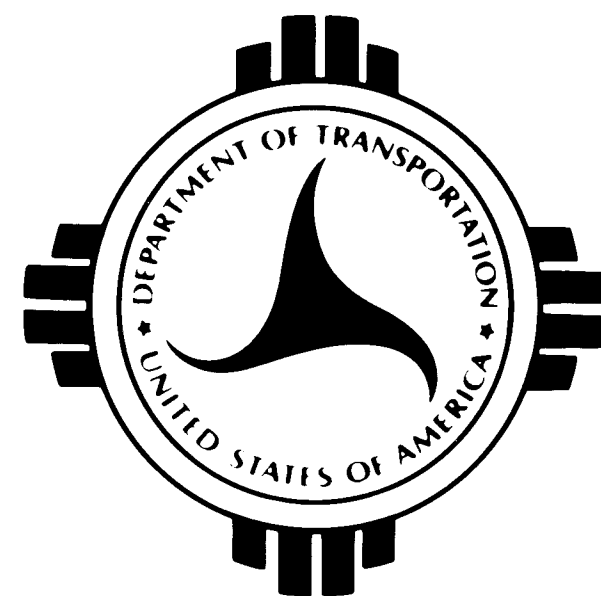
APPROVED Joseph A. Mott DATE 12-6-84
DIRECTOR, TRANSPORTATION

APPROVED Carl A. Ambrester DATE 2/26/85
for: DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION

APPROVED C. J. Hannon DATE 12/2/84
CITY ENGINEER

PREPARED UNDER THE DIRECTION OF:

M. D. Dahlberg
P.E. NO. 8485
BOHANNAN-HUSTON INC.



1 2 3 4 5 6 7 8 9 10 11 12
26 21950186

REPRODUCTION OF AS BUILT DRAWINGS
DATE 12-18-86

RECORD DRAWINGS
DATE 12/4/86

BOHANNAN-HUSTON INC.
4125 CARLISLE BLVD. N.E.
ALBUQUERQUE, NEW MEXICO 87107
DRAWING NO. 2195

PLAN SET NO. _____

F.H.W.A. Region No.		M-4079(1)	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		1-2	

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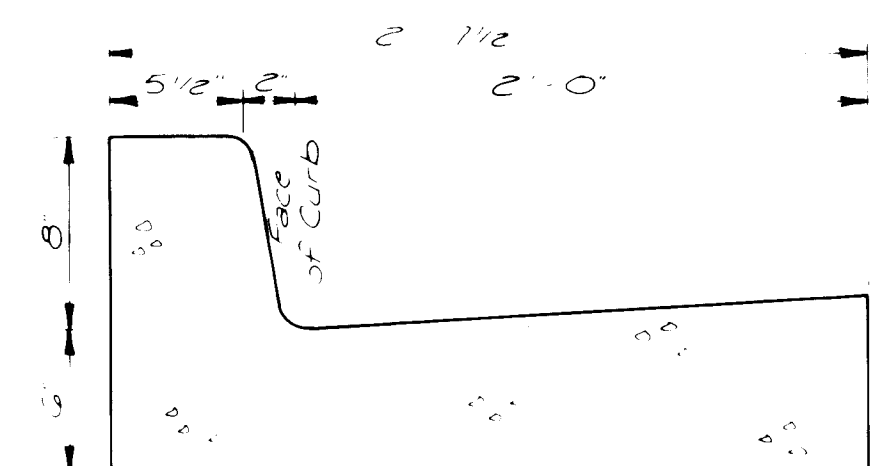
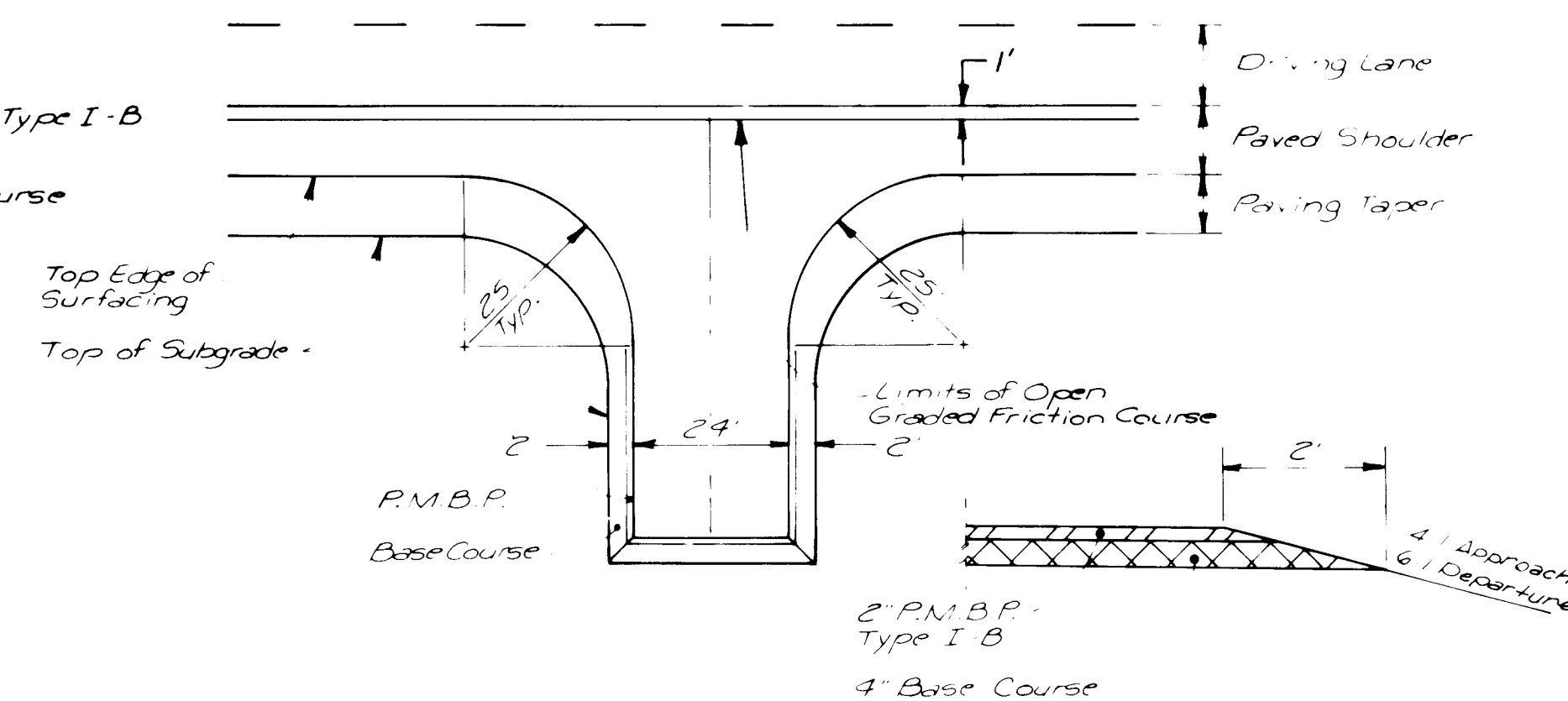
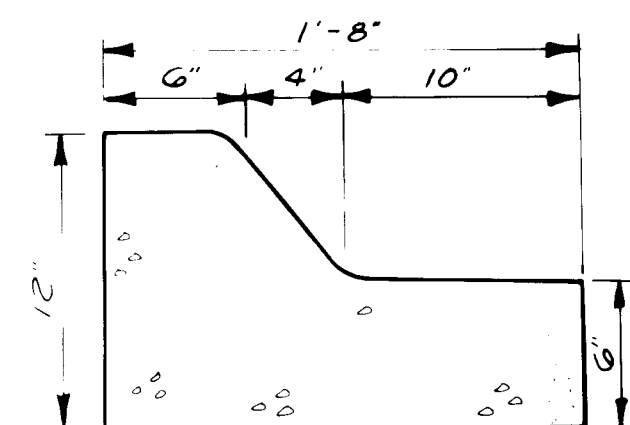
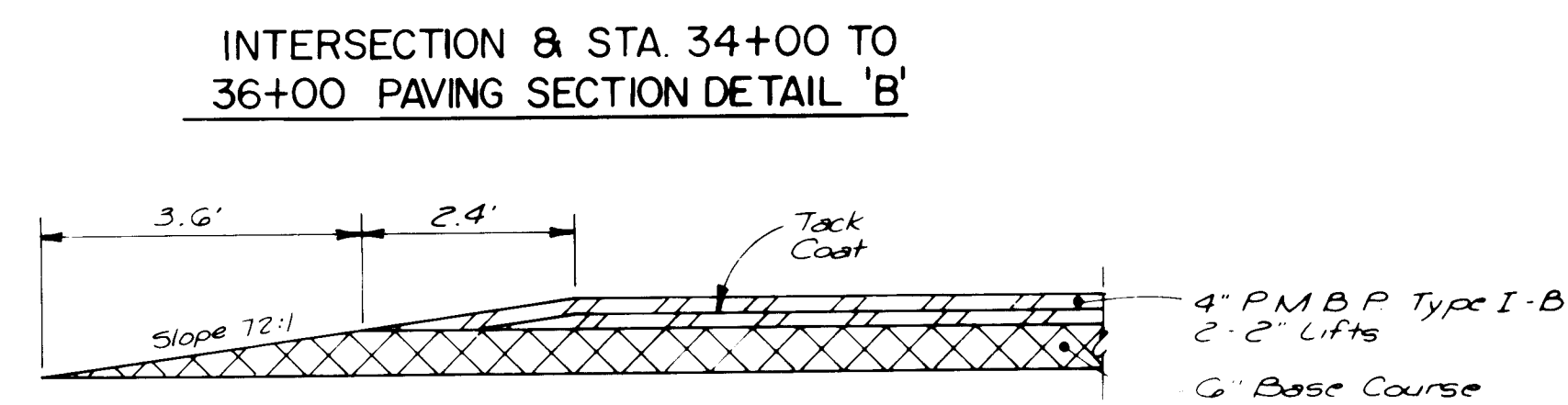
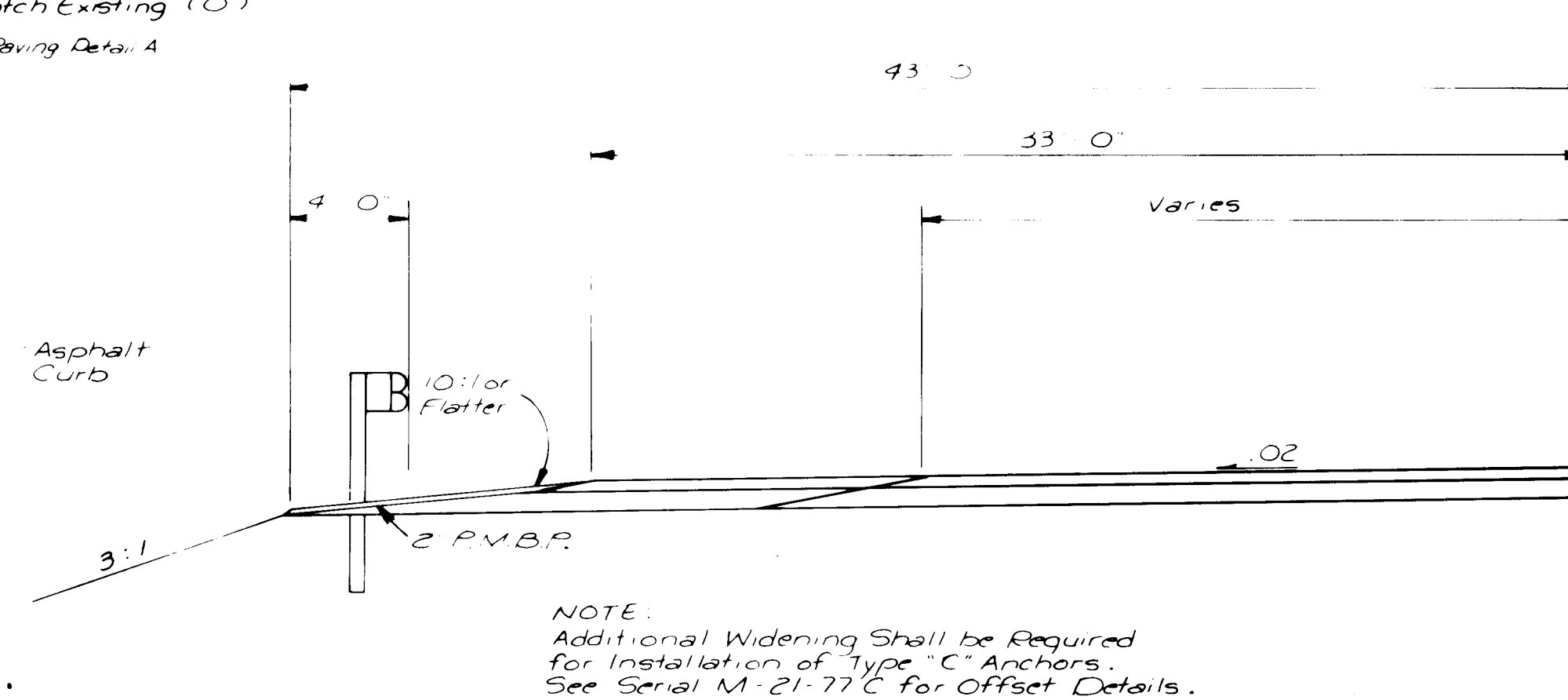
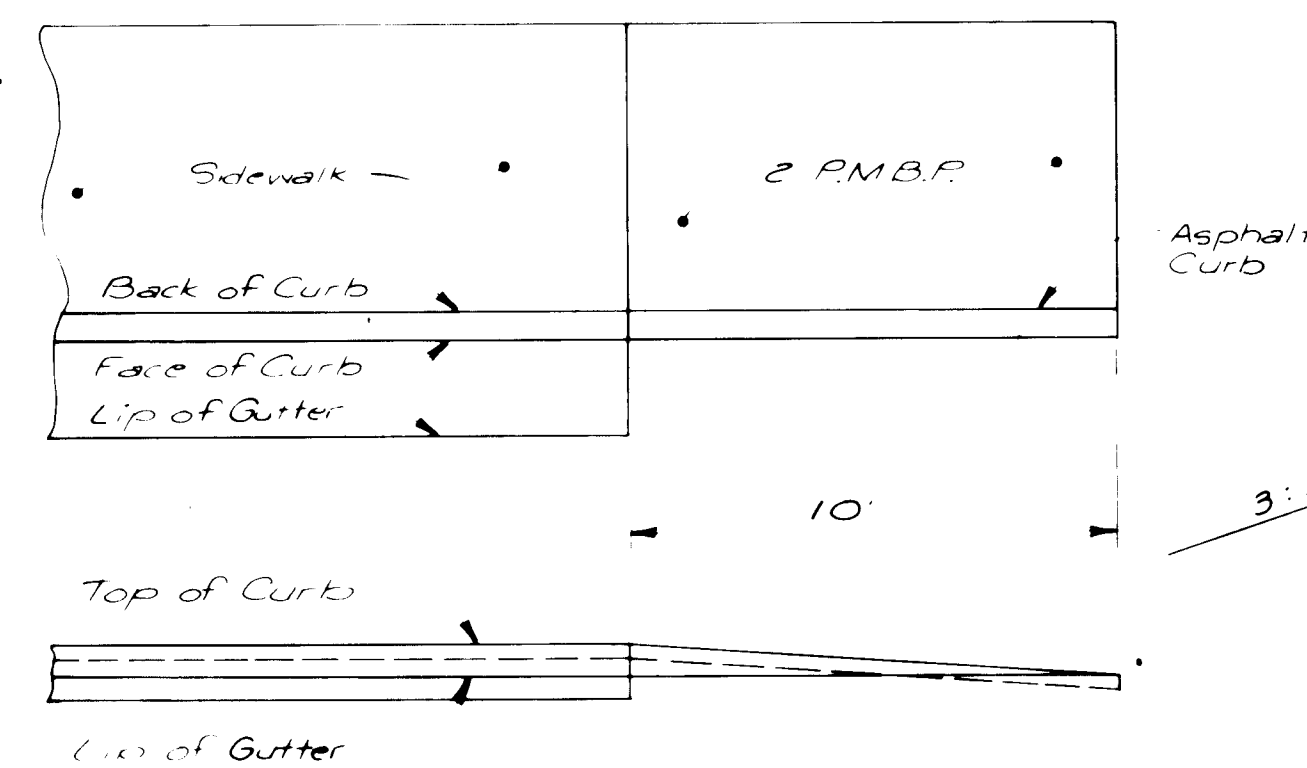
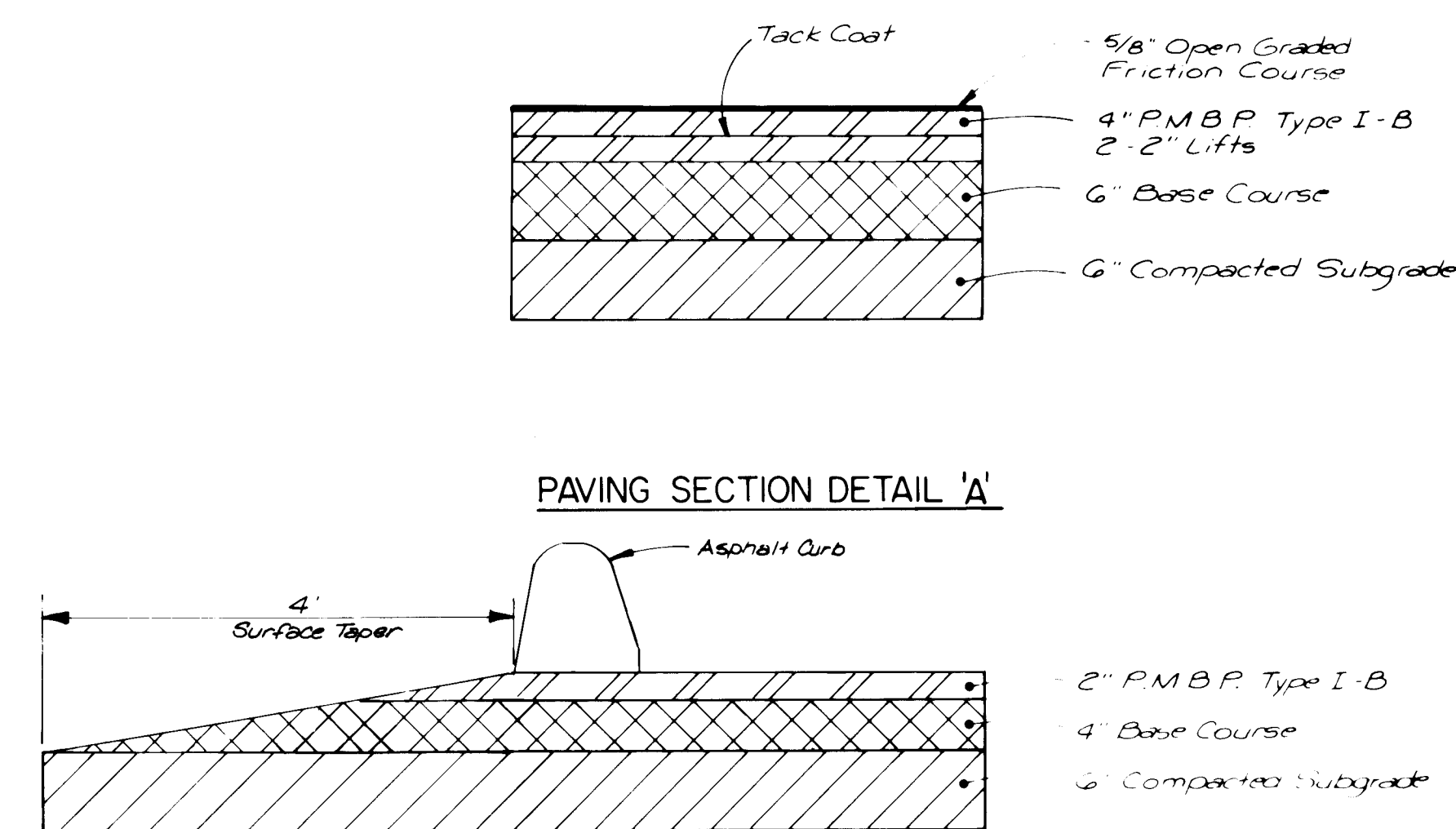
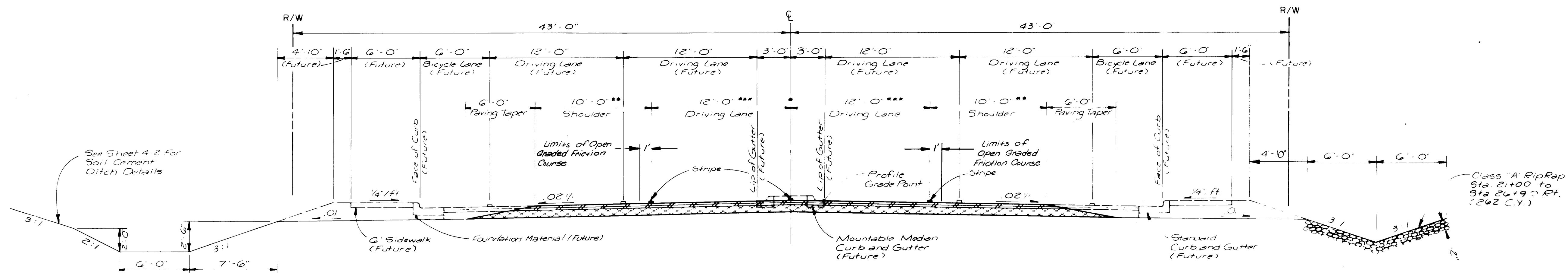
PROJECT M-4079(I)

LOS RANCHOS DE ALBUQUERQUE

NO SCALE

1	2	3	4	5	6	7	8	9	10	11	12
26	21	95	02	86							

RECORD DRAWINGS
DATE 12/4/86



WIDENED SECTION
FOR GUARDRAIL PLACEMENT

AVERAGE DAILY TRAFFIC (1981) ACTUAL	3,300	
AVERAGE DAILY TRAFFIC (2005)	15,300	DHV (2005) 1,224
% HEAVY COMMERCIAL (1981) ACTUAL	2.0	
% HEAVY COMMERCIAL (2005)	2.0	
% HEAVY COMMERCIAL DURING DHV	2.0	
ADL	68(FLEXIBLE)	20 YEARS

1	2	3	4	5	6	7	8	9	10	11	12
2	6		2	1	9	5	0	4	8	6	

RECORD DRAWINGS
DATE 12/4/86

DATE	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
by Engineer	<i>C. S. Duggan</i>	<i>1/17/88</i>	and Waste		
A. E. Long	<i>A. E. Long</i>	<i>11/6/89</i>	Trails	<i>Daniel W. Thomas</i>	<i>11/23/89</i>
A. E. Hydrogr.	<i>A. E. Long</i>	<i>12/6/89</i>	Water		

DRAWING NO	2195	MAP NO B-12	SHEET 2-1
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SUMMARY OF QUANTITIES

FHWA Region No.	NEW MEXICO	M-4079(1)	SHEET NO.	TOTAL SHEETS
6			2-2	

ITEM NO.	ROADWAY (PART)				BRIDGE		CHANNEL				PROJECT TOTAL		UNIT	ROADWAY ITEMS
	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL		
201002	L.S.	L.S.									L.S.	L.S.	L.S.	Clearing and Grubbing
202001	L.S.	L.S.									L.S.	L.S.	L.S.	Removal of Structures and Obstructions
203001	44,600	48,484									44,600	48,484	Cu.Yd.	Unclassified Excavation
207001	11,300	12,757									11,300	12,757	Sq.Yd.	Subgrade Preparation
212001	2.5	7.94									2.5	7.94	Acre	Class A Seeding
212009	2.5	8.00									2.5	8.00	Acre	Class I Temporary Soil Stabilant
213001	0.07	0.066									0.07	0.066	Mile	Obliterating Old Road
304002	6,660	6660									6,660	6660	Sq.Yd.	Base Course - 6"
304021	3,360	3684									3,360	3684	Sq.Yd.	Base Course - 4"
306100	970	1055					2,930	2873			3,900	3928	Cu.Yd.	Soil Cement
401107	600	3434									600	3434	Sq.Yd.	Plant Mix Bituminous Pavement Type I Grade B-1 1/2" (Temporary)
401108	3,230	3547									3,230	3547	Sq.Yd.	Plant Mix Bituminous Pavement Type I Grade B-2"
401116	5,960										5,960		Sq.Yd.	Plant Mix Bituminous Pavement Type I Grade B-4" (2-2" Lifts)
404002	4,680	4587									4,680	4587	Sq.Yd.	Open - Graded Friction Course - 5/8"
407012	5	1.25									5	1.25	Ton	Asphalt For Tack Coat
501818	5	5									5	5	Each	18" End Section
501495	118	118									118	118	Lin.Ft.	42"x 29" R (Nominal) Culvert Pipe Arch
501496	2	2									2	2	Each	42"x 29" R (Nominal) Culvert Pipe End Section
501618	178	178									178	178	Lin.Ft.	18" Culvert Pipe
504010					1,596	1596					1,596	1596	Lb.	Reinforcing Bars Grade 40
504015					51,846	57215					51,846	57215	Lb.	Reinforcing Bars Grade 60
504019					37,386	37407					37,386	37407	Lb.	Epoxy-Coated Reinforcing Bars Grade 60
504024					111	169					111	169	Lb.	Welded Wire Fabric
505009					648	669					648	669	Lin.Ft.	Structural Steel Piling (HP 12 x 53)
505012					559	572					559	572	Lin.Ft.	Structural Steel Piling (HP 14 x 73)
506300					1278	1278					1278	1278	Lin.Ft.	Prestressed Concrete Bridge Member Type 45
507005					5370	6164					5370	6164	Lb.	Structural Steel For Concrete Bridges AASHTO M 183
509030					126.7	130.71					126.7	130.71	Cu.Yd.	Structural Concrete, Class A
509080					361.9	412.72					361.9	412.72	Cu.Yd.	Superstructure Concrete, Class A
509095					175.6	150.42					175.6	150.42	Cu.Yd.	Substructure Concrete, Class A
510009					333	333					333	333	Lin.Ft.	Metal Railing, Type B
603005	270	334									270	334	Cu.Yd.	Dry Riprap Class A
606005	150	150									150	150	Lin.Ft.	Metal Barrier W-Beam
606051	2	2									2	2	Each	Guardrail Anchorage Type C
606405	900	313									900	313	Lin.Ft.	Hauling of Precast Concrete Wall Barrier
606410	450	450									450	450	Lin.Ft.	Resetting of Precast Concrete Wall Barrier
608005	34	33									34	33	Sq.Yd.	Concrete Sidewalk - 4"
608032	10	7			48	37					58	44	Sq.Yd.	Concrete Median Pavement - 4" (Colored & Patterned)
609000	562	723									562	723	Lin.Ft.	Asphalt Curb
609015	78	78									78	78	Lin.Ft.	Curb and Gutter - 8" Face
609030	56	56									56	56	Lin.Ft.	Concrete Mountable Curb and Gutter Type A (6" x 18")
621001	L.S.	L.S.									L.S.	L.S.	L.S.	Mobilization
623072	2	2									2	2	Each	Drop Inlet Single "C"

FOR INFORMATION TO THE CONTRACTOR ONLY

CITY OF ALBUQUERQUE GOLF COURSE RD					
TITLE: SUMMARY OF QUANTITIES					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/86	liquid Waste		
A.C.E. Design	<i>[Signature]</i>	12/4/86	Traffic	NA DWH	
A.C.E. Hydrology	<i>[Signature]</i>	12/4/86	Water		
DRAWING NO. 2195		MAP NO. B-12		SHEET 2-2	

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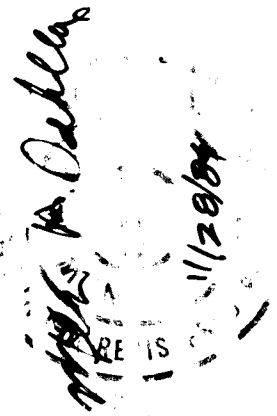
RECORD DRAWINGS
DATE 12/4/86

SUMMARY OF QUANTITIES

FHWA Region No.	NEW MEXICO	M-4079(1)	SHEET NO.	TOTAL SHEETS
6			2-3	

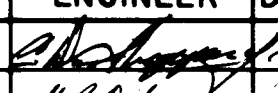
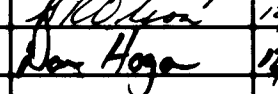
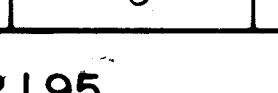
ITEM NO.	ROADWAY (PART)						UTILITIES						PROJECT TOTAL		UNIT	ROADWAY ITEMS
	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL	ESTIMATE	FINAL		
702000	368	480											368	480	Sq. Ft.	Construction Signing
702003	592	564											592	564	Lin. Ft.	Steel Post and Base Post for Construction Signing
702015	4	4											4	4	Each	Barricade, Type III - 8'
702045	12	8											12	8	Each	Portable Sign Support
702050	40	71											40	71	Each	Channelization Devices (Barrels) Type B
703210	10	5											10	5	Each	Reflective Barrier Delineator
870001	L.S.	L.S.											L.S.	L.S.	L.S.	Construction Staking By Contractor
900000	1500	43											1500	43	Hour	On-The-Job Training
UTILITY ITEMS																
660001					1400	1421							1400	1421	Lin. Ft.	12" Waterline, 0'-6' Depth Complete In Place
660002					274	164							274	164	Lin. Ft.	Waterline Extra Depth, 6' - 8' Depth
660003					225	223							225	223	Lin. Ft.	Waterline Extra Depth, 8' - 14' Depth
660004					26	13							26	13	Lin. Ft.	Waterline Extra Depth, 14' - 18' Depth
660005					125	115							125	115	Lin. Ft.	Waterline Extra Depth, 18' and Over
660006					2	2							2	2	Each	Non-Pressurized Connection to Existing W.L.
660007					1	0							1	0	Each	10" Gate Valves, Complete In Place
660008					3	3							3	3	Each	12" Gate Valves, Complete In Place
660009					3	3							3	3	Each	Valve Boxes, Type B, in Place
660010					5	2							5	2	Lin. Ft.	Valve Box Extension, Complete in Place
660011					8	1.8							8	1.8	Lin. Ft.	Valve Stem Extension, Complete in Place
660012					1	1							1	1	Each	2" Air Release Valve, including all fittings, pipe, box cover & lid, and other material, in Place
660013					2310	2220							2310	2220	Lb.	C.I. fittings, M.U. 4" through 14", Class 250, with all jointing material, in Place
660014					825	850							825	850	Lin. Ft.	Remove and Dispose of Existing 12" W.L.
660015					5	4.18							5	4.18	Cu. Yd.	Portland Cement Reinforced Concrete, in Place, for Pipe Bedding or Encasement
660016					1	1							1	1	Each	Remove Existing Air Release Valve
660017					3	2.49							3	2.49	Cu. Yd.	Blocking for Water Pipe, Portland Cement Plain
664075					1	1							1	1	Each	Adjust Water Valve Box to Grade

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL	
CONTRACTOR	DATE	BY	DATE	NO.	DATE	BY	DATE
WORK STAKED BY	DATE	ADJUSTED BY	DATE	REMARKS	DESIGN	DESIGNED BY	DATE
FIELD ADJUSTMENT BY	DATE	RECORDED BY	DATE	NO.	DATE	DRAWN BY	DATE
RECORDED BY	DATE	NO.	DATE	NO.	DATE	CHECKED BY	DATE



11/20/84

FOR INFORMATION TO THE CONTRACTOR ONLY

CITY OF ALBUQUERQUE GOLF COURSE RD					
TITLE: SUMMARY OF QUANTITIES					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer		11/20/84	Liquid Waste		
A.C.E. Design		11/20/84	Traffic	NR DWH	11/20/84
A.C.E. Hydrology		11/20/84	Water		
RECORD DRAWINGS		DRAWING NO.		SHEET 2-3	
DATE 12/4/86		2195		B-12	

REMOVAL OF STRUCTURES AND OBSTRUCTIONS

STATION TO STATION	LOCATION	REMARKS
26+05 to 28+80	Lt.	Guardrail
22+40 to 26+05	Lt. & Rt.	Concrete Curb & Gutter
As Required	Lt.	Exist 12" Waterline See Sht 3U-1

All removals shall be disposed of at a location provided by the Contractor and approved by the Project Manager.

METAL BARRIER W-BEAM

STATION TO STATION	LOCATION	TYPE	ANCHOR	REMARKS
		METAL BEAM LIN. FT.	C EACH	
26+10.425 to 26+85.425	Rt. (SHLDR.)	75'	1	Bridge Approach / Roadside
28+34.583 to 29+09.583	Lt. (SHLDR.)	75'	1	Bridge Approach / Roadside
Total		150'	2	

SIDEWALK AND MEDIAN PAVEMENT

STATION TO STATION	LOCATION	4" CONCRETE SIDEWALK	4" CONC. PVMT. (COL. & PAT.)*	REMARKS
26+73.925 to 26+87.925	Rt.	8.36 S.Y.		
26+73.925 to 26+87.925	Lt.	8.36 S.Y.		
28+32.083 to 28+46.083	Rt.	8.36 S.Y.		
28+32.083 to 28+46.083	Lt.	8.36 S.Y.		
26+73.925 to 26+87.925	Median		4.67 S.Y.	
28+32.083 to 28+46.083	Median		4.67 S.Y.	

* 4"x8" Running Bond Brick-Tile Red in Color.

CURB AND GUTTER

STATION TO STATION	LOCATION	TYPE	LIN. FT.	REMARKS
26+73.925 to 26+87.925	Rt.	Standard	14	
26+73.925 to 26+87.925	Lt.	Standard	14	
28+32.083 to 28+57.083	Rt.	Standard	25	
28+32.083 to 28+57.083	Lt.	Standard	25	
26+73.925 to 26+87.925	Median	Mountable Median	28	
28+32.083 to 28+46.083	Median	Mountable Median	28	

OBLITERATING OLD ROAD

STATION TO STATION	LOCATION	LIN. FT.
27+00 to 30+50	Lt.	350

ASPHALT CURB

LOCATION	LIN. FT.
Golf Course @ Irving	
S.W. Quadrant	165 51
N.W. Quadrant	125 147
S.E. Quadrant	220 21-
26+73.925 to 26+73.925 Lt. & Rt.	20 12-
26+71.925 to 26+73.925 Median	6
28+46.083 to 28+48.083 Median	6
28+57.083 to 28+67.083 C Outside	20 45
Total - 562	

ESTIMATED STRUCTURE QUANTITIES

STATION	STRUCTURE	SK	SERIAL	18" Culvert Pipe Item No. 501618	42"x29"CPA Item No. 501495	18" End Section Item No. 501818	42"x29" End Section Item No. 501496	Drop Inlet Single "C" Item No. 623072
28+52.583	Build Drop Inlets Lt & Rt Build 18"x22" Pipe Culvert w/ end section Lt			22		1		2
	Build 18"x62" Pipe Culvert between Drop Inlets			62				
33+20 Rt	Build 18"x54" Pipe Culvert w/ end sections			54		2		
33+30 Lt	Build 18"x40" Pipe Culvert w/ end sections			40		2		
33+25	Build 42" span x 29" Rise x 11' 0" pipe arch with end sections		BMC-002, BMC-003, M16-T1A, M17, 70, ES-1					
TOTALS				178		5	2	2

EARTHWORK SUMMARY

STATION TO STATION	EXCAVATION	BORROW	EMBANKMENT	SHRINK	1/4 MI. YDS.	REMARKS
19+76 to 36+00	36,734	0	21,266	6,380	All Haul Less Than 1/4 Mi.	
Turn Outs	0		900	90		9,983 C.Y. Waste to be Used for Filling of Low Areas as Directed by the Project Manager.
Channel Work & Dikes	7,850		5050	1515		
Totals	44,584		26,616	7,985		

EROSION CONTROL PLAN

A. ERODIBLE SURFACE AREA

THERE IS NO LIMIT TO ERODIBLE SURFACE AREA EXPOSED AT ONE TIME FOR THIS PROJECT.

B. TEMPORARY SOIL STABILANT

TEMPORARY SOIL STABILANT PER ACRE SHALL CONSIST OF 100 POUNDS OF DRY POWDERED MUCILOID DERIVED FROM SEED HUSKS AND 150 POUNDS OF VIRGIN WOOD CELLULOSE MULCH MIXED UNIFORMLY WITH 700 GALLONS OF WATER, OR 90 POUNDS OF SEMIREFINED SEAWEED EXTRACT AND ITS GELLING AGENT MIXED WITH 200 POUNDS OF VIRGIN WOOD CELLULOSE MULCH COMBINED WITH 1,100 GALLONS OF WATER AND MIXED ACCORDING TO MANUFACTURERS' DIRECTIONS, EITHER TO BE APPLIED UNIFORMLY.

C. PERMANENT MEASURES

ALL SOIL AREAS EXPOSED DURING CONSTRUCTION WITHIN PROJECT LIMITS SHALL BE TREATED WITH CLASS A SEEDING. HAY MULCH FOR CLASS A SEEDING SHALL BE BARLEY STRAW AT THE RATE OF 1 1/2 TONS PER ACRE.

CONTRACTORS' CAMPSITES, STOCKPILE AREAS AND ANY OTHER NONDESIGNATED HAUL ROAD OR DISTURBED AREA SHALL BE TREATED WITH CLASS A SEEDING, AND NO MEASUREMENT OR PAYMENT WILL BE MADE THEREFOR.

SEED MIX

SPECIES	ORIGIN	LBS. PURE LIVE SEED PER ACRE
BLUE GRAMA	HACHITA OR LOVINGTON	1
SIDE-OATS GRAMA	VAUGHN	4
SAND DROPSEED	NEW MEXICO REGION	1
INDIAN RICEGRASS	PALOMA	3
GALLETA	VIVA	3
BLACK GRAMA	NEW MEXICO REGION	1
TOTAL		13
		BULK LBS. PER ACRE
PENSTEMON AMBIGUUS	NEW MEXICO REGION	0.5
ZINNIA GRANDIFLORA	NEW MEXICO REGION	0.5
TOTAL		1.0

FERTILIZER REQUIREMENTS

CHEMICAL	ACTUAL MINIMUM POUNDS/ACRE
SLOW RELEASE NITROGEN (I.E., UREA FORMALDEHYDE)	38
FAST RELEASE NITROGEN (I.E., AMMONIUM SULFATE)	40
PHOSPHORUS, AS P ₂ O ₅	46
SULPHUR (IN A WATER SOLUBLE FORM)	48

SEED DATES

- * A. PERIOD A TO B - MAY 1 THROUGH MAY 31
B. PERIOD B TO E - JUNE 1 THROUGH AUGUST 15
C. PERIOD C TO D - JUNE 15 THROUGH AUGUST 1
D. PERIOD E TO A - AUGUST 16 THROUGH APRIL 30

* WATER FOR PERIOD A TO B SHALL BE APPLIED ACCORDING TO SECTION 212.039 OF THE STANDARD SPECIFICATIONS AT THE FOLLOWING RATES AND SHALL BE CONTINUED UNTIL JUNE 14:

FIRST TWO WEEKS - FOUR APPLICATIONS ON ONE INCH EACH, TIMED THREE DAYS APART

ONE APPLICATION OF ONE INCH EACH WEEK THEREAFTER.

1 2 3 4 5 6 7 8 9 10 11 12
26 21950786

FHWA Region No. 6	NEW MEXICO	M-4079(1)	SHEET NO. 2-4	TOTAL SHEETS
AS-BUILT INFORMATION		BENCH MARKS		
CONTRACTOR		DATE		
INSPECTOR'S		DATE		
ACCEPTANCE BY		DATE		
VERIFICATION BY		DATE		
CORRECTIONS TO BE MADE		DATE		
MICRO-FILM INFORMATION		RECORDED BY		
NO.		NO.		
SURVEY INFORMATION		FIELD NOTES		
NO.		BY		
DATE		DATE		
ENGINEER'S SEAL		BY		
NO.		DATE		
REVISIONS		DESIGN		
NO.		DATE		
DATE		DATE		
DATE		DATE		
DATE		DATE		
CITY OF ALBUQUERQUE		GOLF COURSE RD.		
TITLE: MISCELLANEOUS QUANTITIES				
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER
City Engineer	26/06/04	12/6/04	Liquid Waste	
A.C.E. Design	11/06/04	12/6/04	Traffic	MA DWH
A.C.E. Hydrology	12/6/04	12/6/04	Water	
DRAWING NO. 2195	MAP NO. B-12	SHEET 2-4		

F.H.W.A. Region No.		M-4079(1)	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		2-5	

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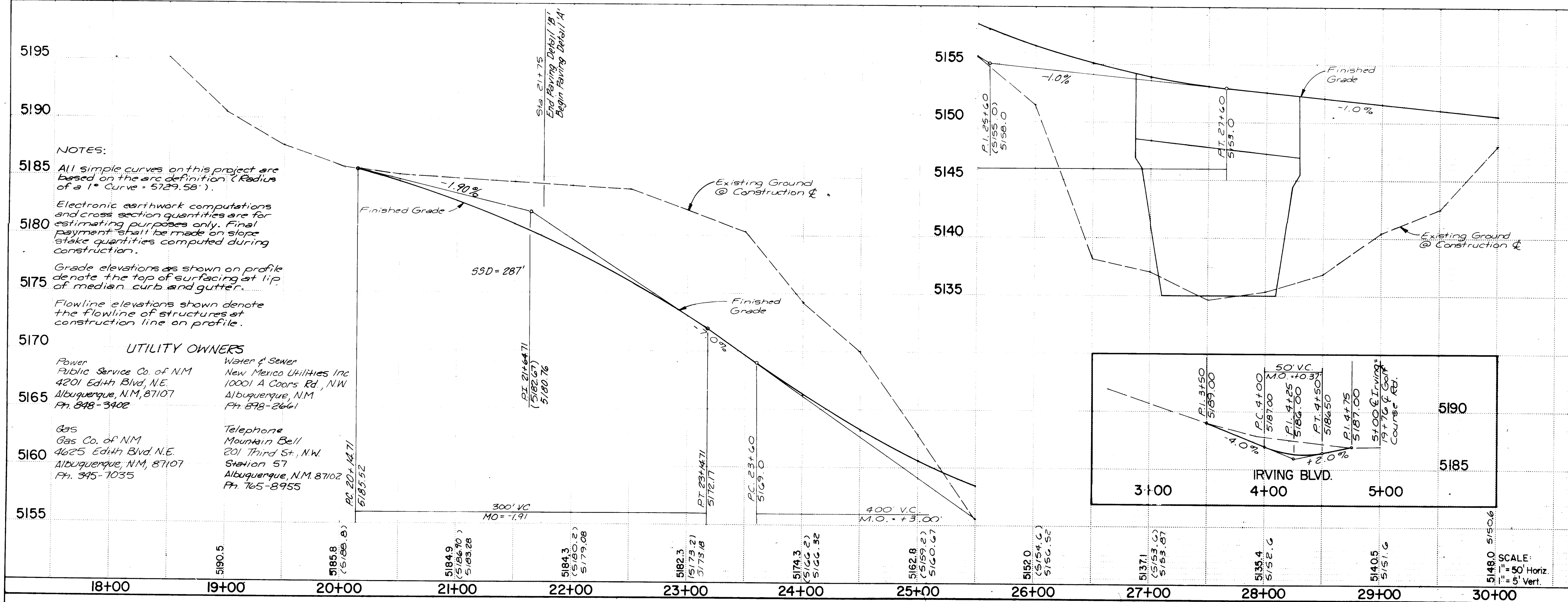
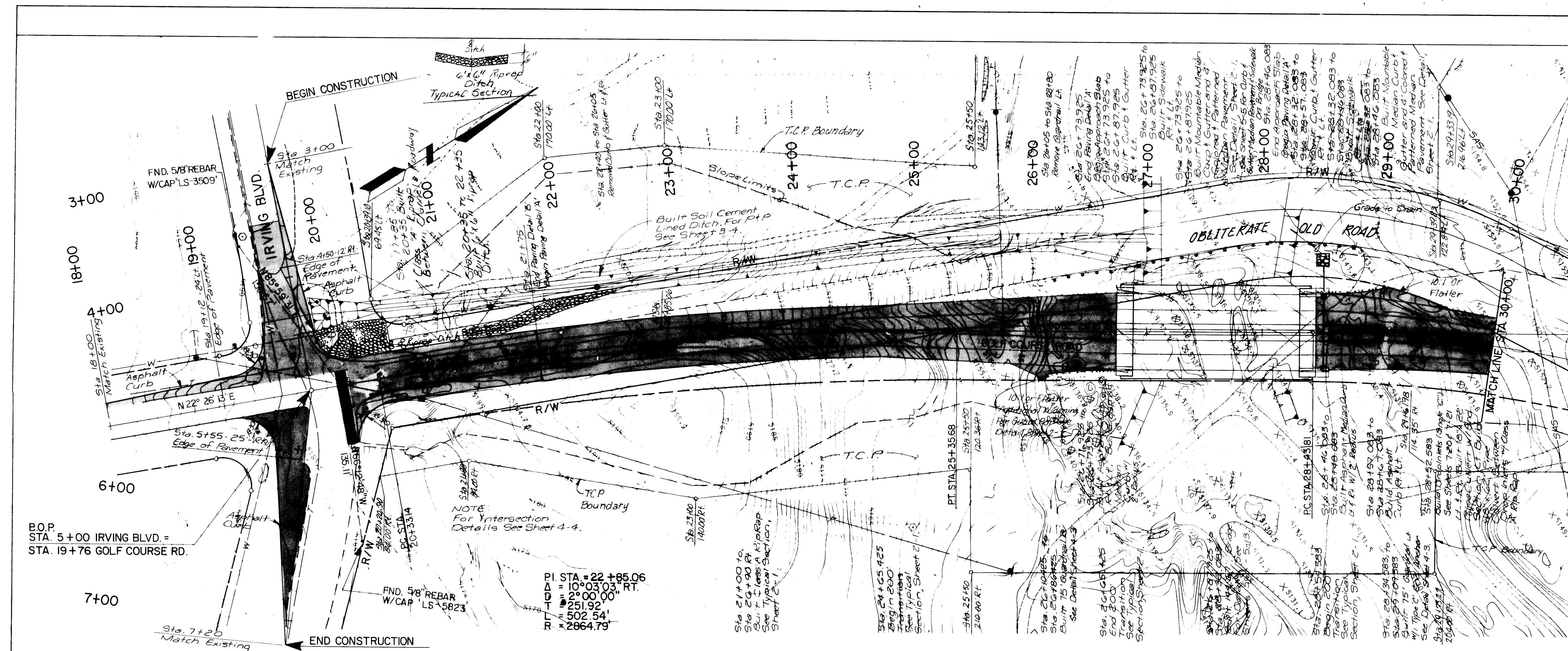
— NOTES —

The liquid limit and sand equivalent of the asphalt concrete aggregate will be determined from representative samples taken after the aggregate materials have been blended and prior to mixing with Bituminous materials.

REQUIREMENTS FOR TREATED & UNTREATED SURFACING				
Additives Req.	Mixing Asph. — %	Sealing Asph. — %	Conc. Gr.	Heat Stable
Estimate for Prime Coat, use	Gals.		Per Sq. Yd.	
Estimated for Tack Coat use	0.01 to 0.05	Gals.	85–100	Pen Per Sq. Yd.

Cement Treat	Class	est. using	% Type	Cement by Weight
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		CITY OF ALBUQUERQUE GOLF COURSE RD.				
TITLE: SURFACING SCHEDULE						
APPROVALS		ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer		<i>C.H. Hagen</i>	<i>12/1/84</i>	liquid Waste		
A.C.E. Design		<i>A.C.E. [Signature]</i>	<i>12/4/84</i>	traffic	<i>NA Don H</i>	<i>12/1/84</i>
A.C.E. Hydrology		<i>Don Hagen</i>	<i>12/1/84</i>	Water		
DRAWING NO.		2195		MAP NO.	B-12	
				SHEET	2-5	



NOTES:

5185 All simple curves on this project are based on the arc definition (Radius of a 1° Curve = 5729.58').

5180 Electronic earthwork computations and cross section quantities are for estimating purposes only. Final payment shall be made on slope stake quantities computed during construction.

5175 Grade elevations as shown on profile denote the top of surfacing at 1' lip of median curb and gutter.

5170 Flowline elevations shown denote the flowline of structures at construction line on profile.

UTILITY OWNERS

Power
Public Service Co. of NM
4201 Edith Blvd. N.E.
Albuquerque, N.M. 87107
Ph. 848-3402

Water & Sewer
New Mexico Utilities Inc.
10001 A Coors Rd. N.W.
Albuquerque, N.M.
Ph. 878-2661

Gas
Gas Co. of NM
4625 Edith Blvd. N.E.
Albuquerque, N.M. 87107
Ph. 395-1035

Telephone
Mountain Bell
201 Third St. N.W.
Albuquerque, N.M. 87102
Ph. 765-8955

AS-BUILT INFORMATION			BENCH MARKS			SURVEY INFORMATION			ENGINEER'S SEAL		
CONTRACTOR	DATE	INSPECTOR'S DATE	5/8" Rebar w/ plastic cap, L.S. 6544' Elev. = 5159.95	DATE	NO.	BY	DATE	NO.	BY	DATE	NO.
STATIONED BY	DATE	INSPECTOR'S DATE	Location approximately 510' NE from the intersection of Irving Blvd. & Golf Course Rd.	DATE	NO.	BY	DATE	NO.	BY	DATE	NO.
FIELD VERIFICATION BY	DATE	FIELD VERIFICATION BY		DATE	NO.	BY	DATE	NO.	BY	DATE	NO.
CORRECTED BY	DATE	CORRECTED BY		DATE	NO.	BY	DATE	NO.	BY	DATE	NO.
RECORDED BY	DATE	RECORDED BY		DATE	NO.	BY	DATE	NO.	BY	DATE	NO.

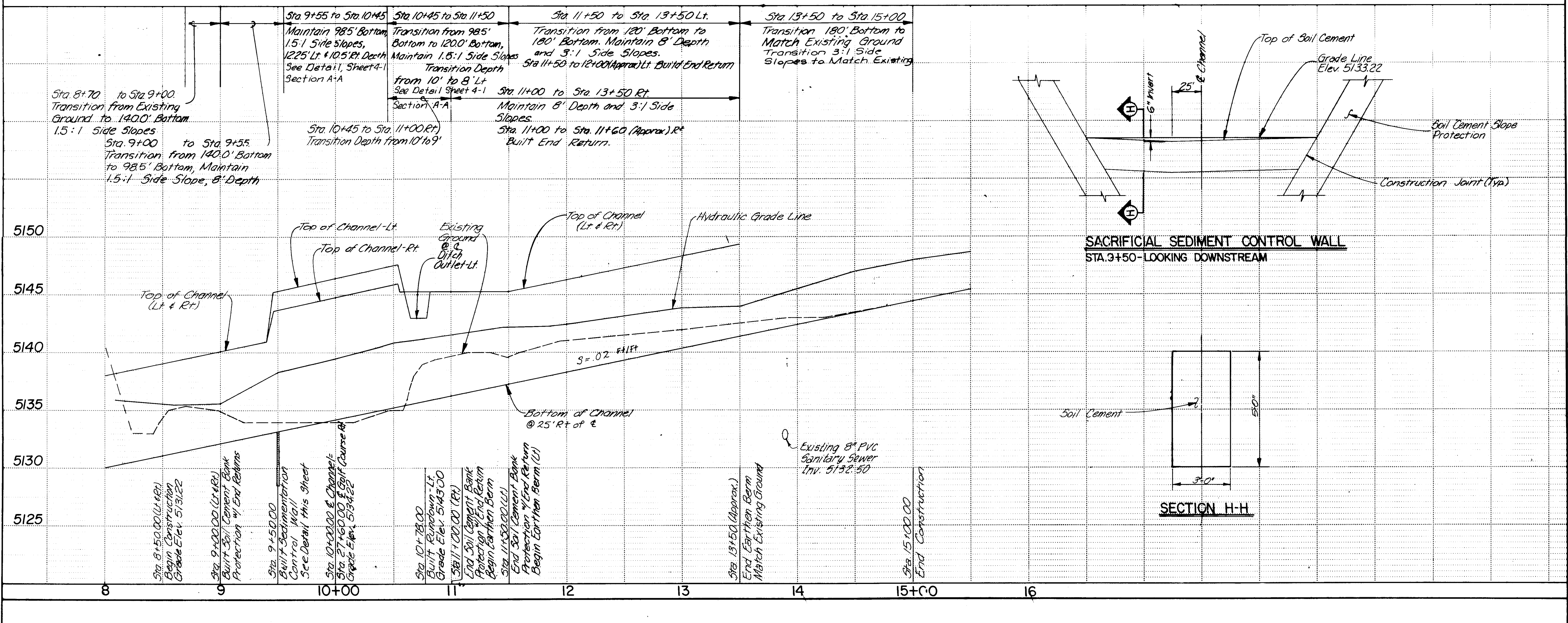
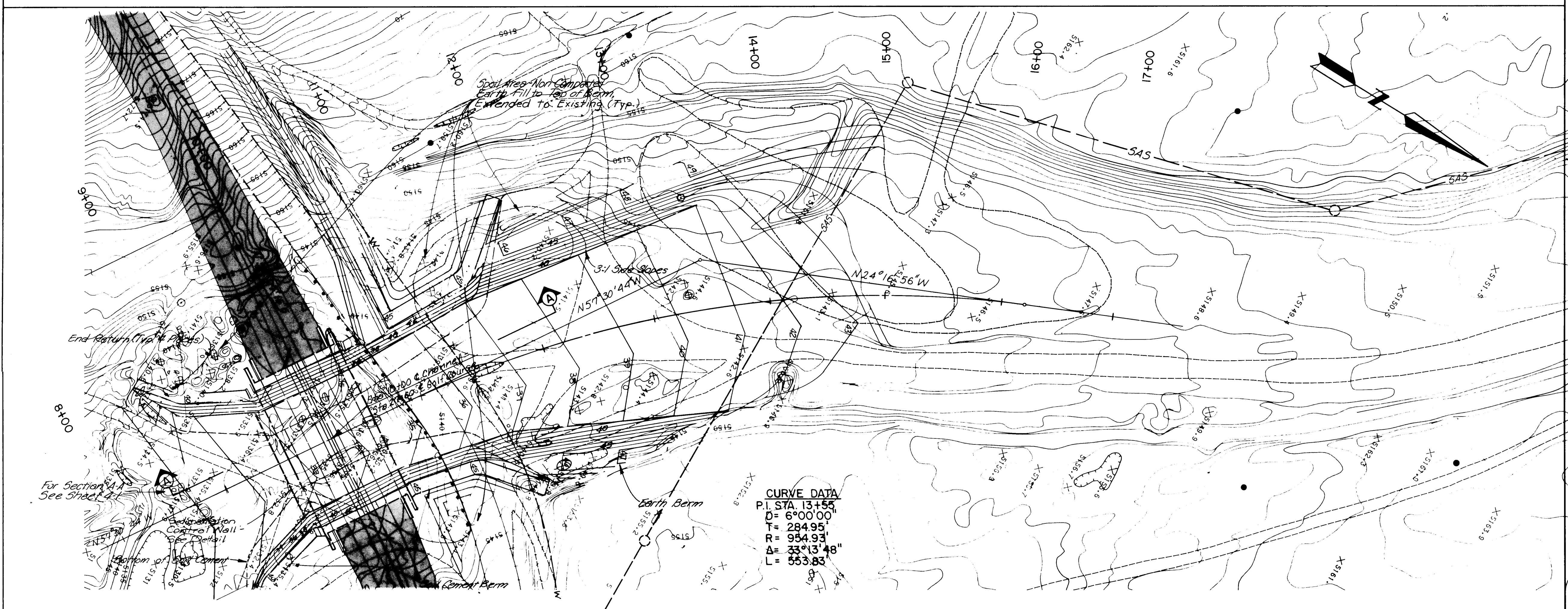
RECORD DRAWINGS
DATE 12/4/84

CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: PLAN & PROFILE

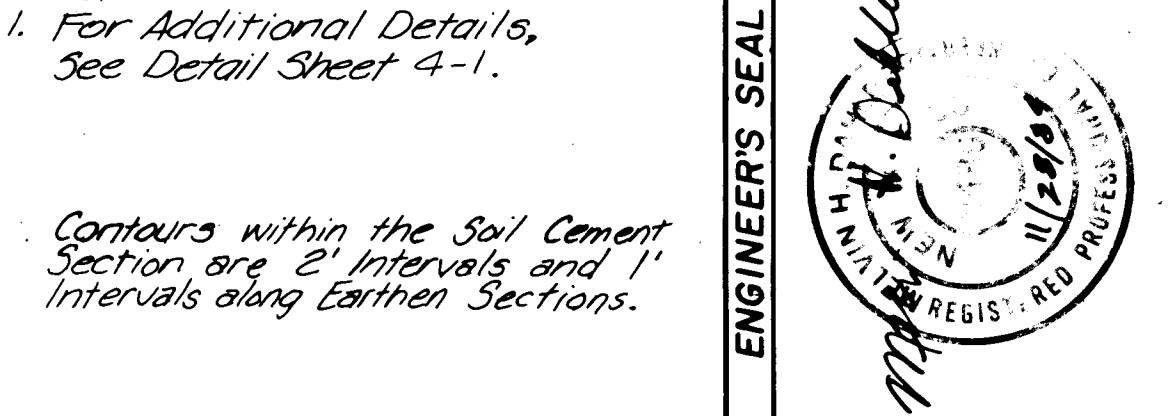
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/84	Liquid Waste	<i>[Signature]</i>	12/4/84
A.C.E. - Design	<i>[Signature]</i>	12/4/84	Traffic	<i>[Signature]</i>	12/4/84
A.C.E. - Hydrology	<i>[Signature]</i>	12/4/84	Water	<i>[Signature]</i>	12/4/84

DRAWING NO. 2195 MAP NO. B-12 SHEET 3-1



Note:
1. For Additional Details,
See Detail Sheet 4-1.

Contours within the Soil Cement
Section are 2' Intervals and 1'
Intervals along Earthen Sections.

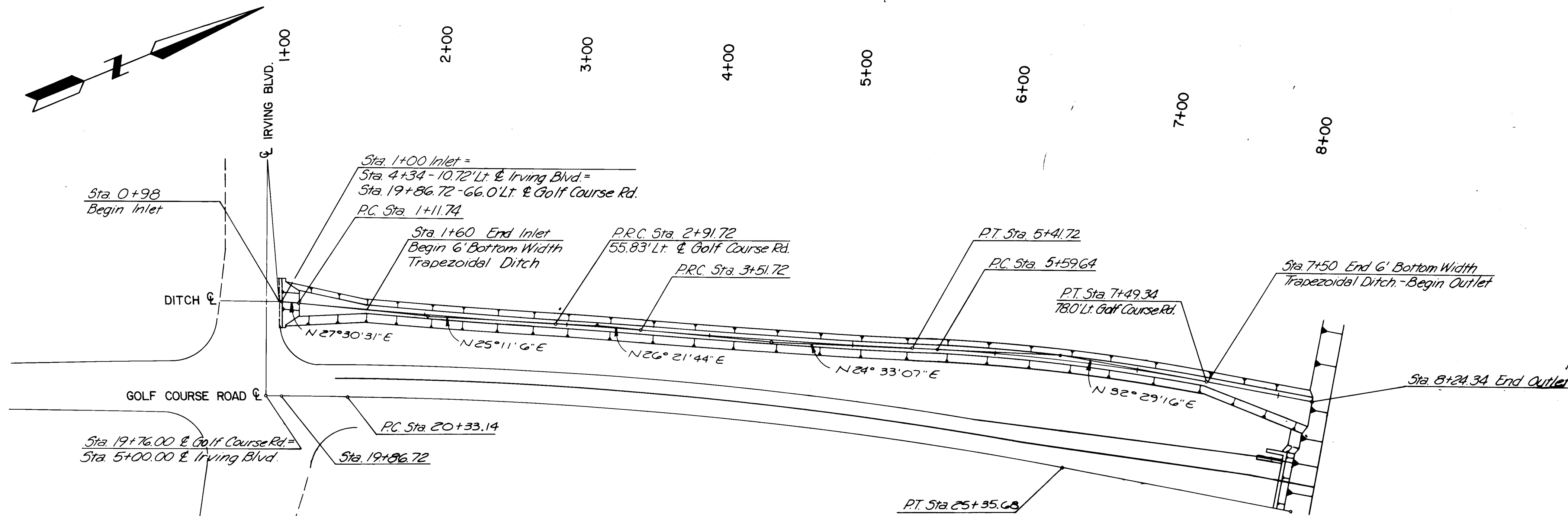


NO.	DATE	REVISIONS	BY
1	12/4/86	DESIGN	

RECORD DRAWINGS
DATE 12/4/86

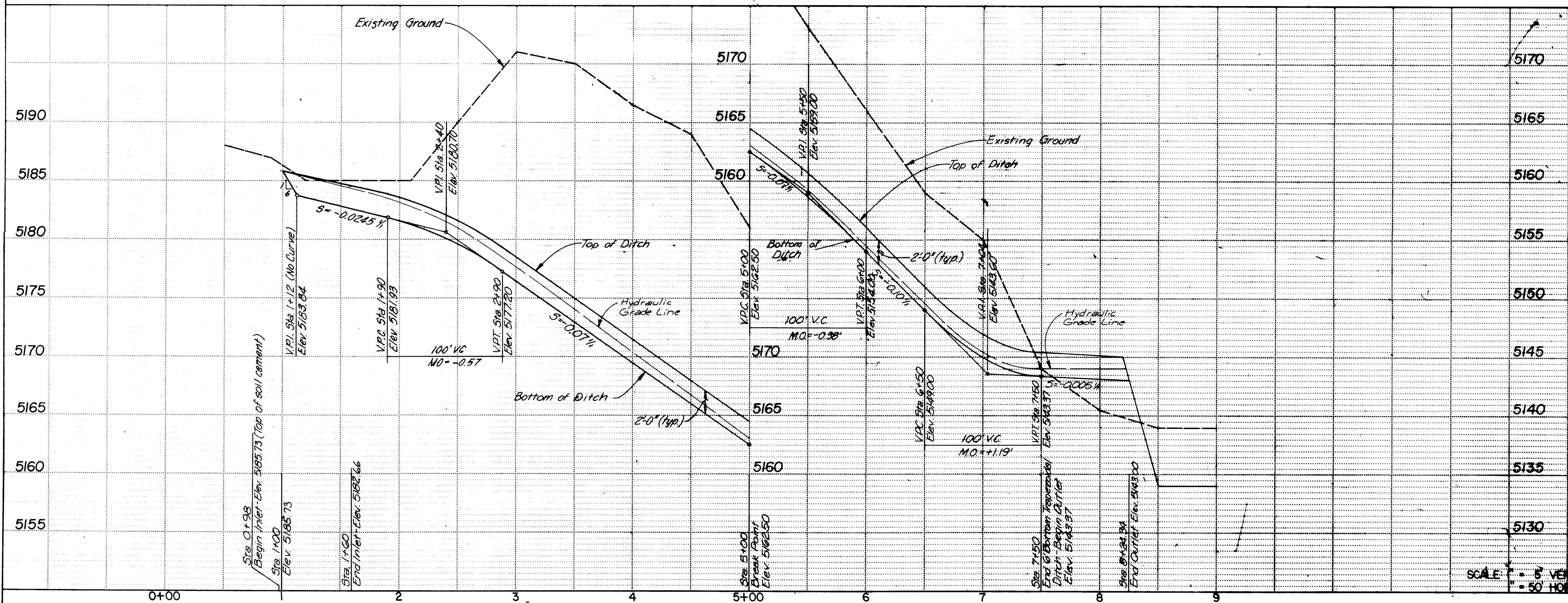
DESIGNED BY T.L.H. DATE 9-84
DRAWN BY N.A.W. DATE 9-84
CHECKED BY P.L.S. DATE 9-84

CITY OF ALBUQUERQUE			
TITLE: GOLF COURSE ROAD CALABACILLAS CHANNEL IMPROVEMENTS STA. 8+00.00 TO STA. 15+00.00			
APPROVALS	ENGINEER	DATE	APPROVALS
City Engineer	C. J. D. D. D.	12/4/86	Liquid Waste
A.C.E. - Design	A. J. D. D. D.	12/4/86	Traffic
A.C.E. - Hydrology	N. A. W.	12/4/86	Water
DRAWING NO. 2195		MAP NO. B-12	SHEET 3-3



SURVEY CURVE DATA	SURVEY CURVE DATA	SURVEY CURVE DATA	SURVEY CURVE DATA
P.I. STA. 2+01.74	P.I. STA. 3+21.72	P.I. STA. 4+46.72	P.I. STA. 6+54.64
R = 4437.71	R = 2920.77	R = 6013.55	R = 1369.53
D = 1° 17' 28"	D = 1° 57' 42"	D = 0° 57' 10"	D = 4° 11' 01"
Δ = 2° 19' 25"	Δ = 1° 10' 38"	Δ = 1° 48' 37"	Δ = 7° 56' 10"
T = 90.00'	T = 30.00'	T = 95.00'	T = 95.00'
L = 179.97'	L = 60.00'	L = 190.00'	L = 189.70'

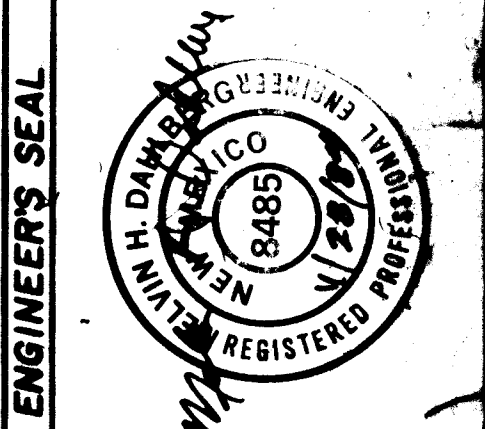
Design Flow: 280 cfs (100 yr.)
Max. Velocity: 25 ft./s



NOTE:
1. Soil Cement Ditch Detail
See Sheet 4-2

RECORD DRAWINGS
DATE 12/4/86

CITY OF ALBUQUERQUE					
TITLE: GOLF COURSE ROAD PLAN & PROFILE OF ROADSIDE DITCH STA. 0+98.00 TO STA. 8+24.34					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>		Liquid Waste		
A.C.E. Design	<i>[Signature]</i>		Traffic	<i>[Signature]</i>	
A.C.E. Hydrology	<i>[Signature]</i>		Water	<i>[Signature]</i>	
DRAWING NO.	2195	MAP NO.	B-12	SHEET	3-4
JOB NO. 41614					



REVISIONS	DATE	BY
DESIGNED BY	DATE	
DRAWN BY	DATE	
CHECKED BY	DATE	

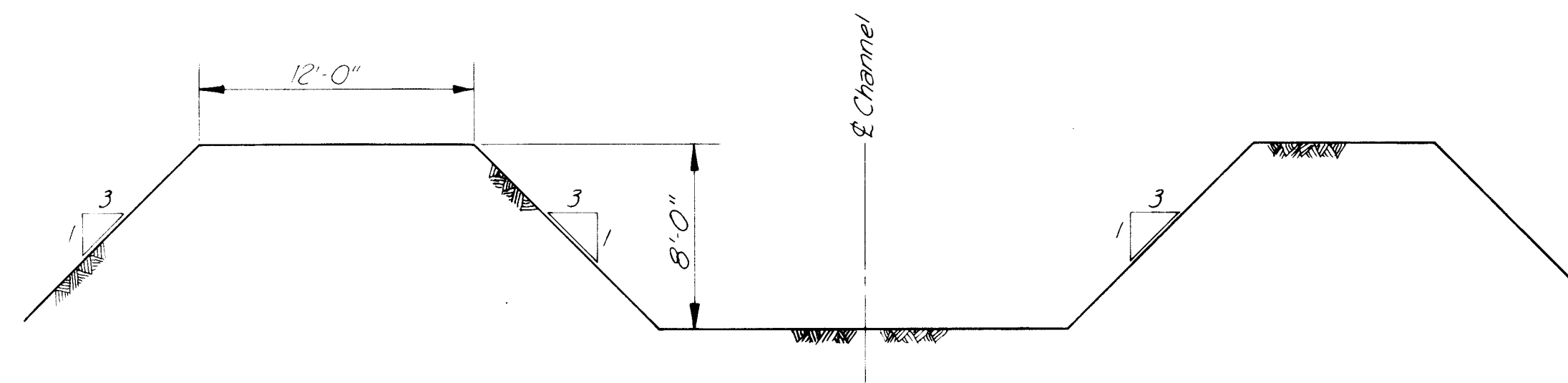
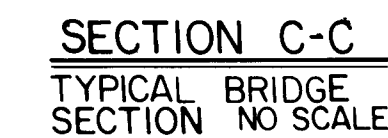
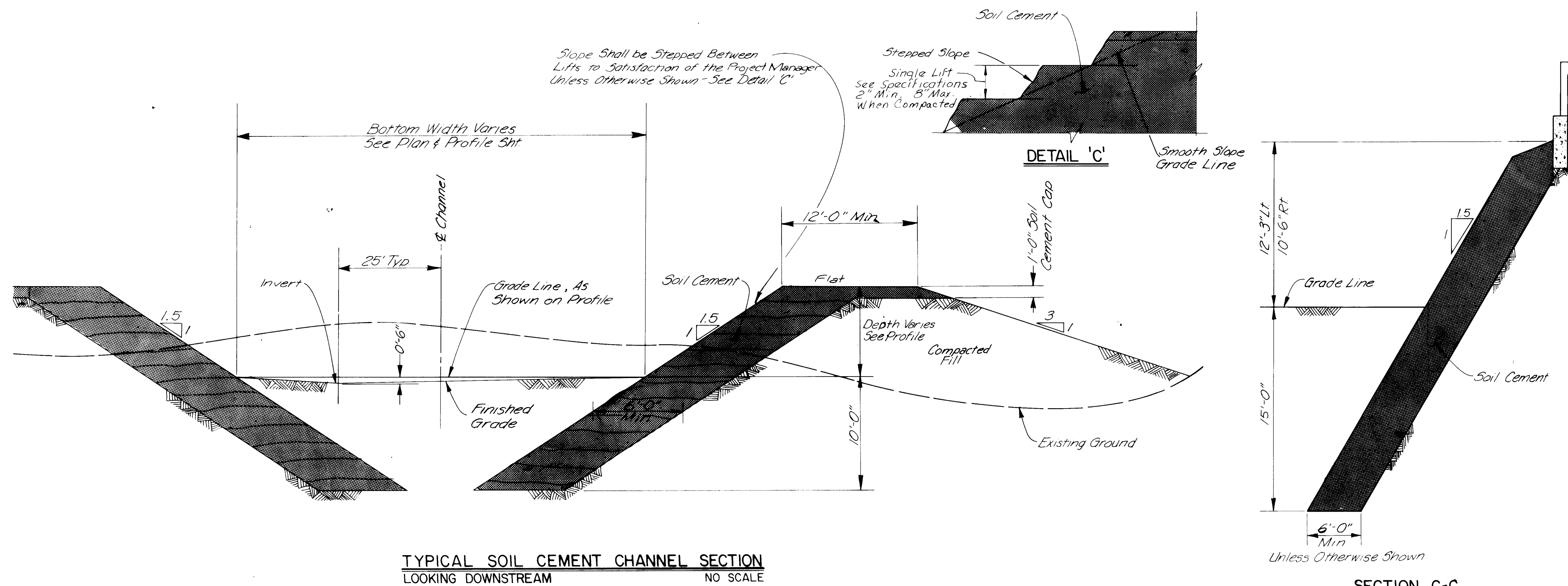
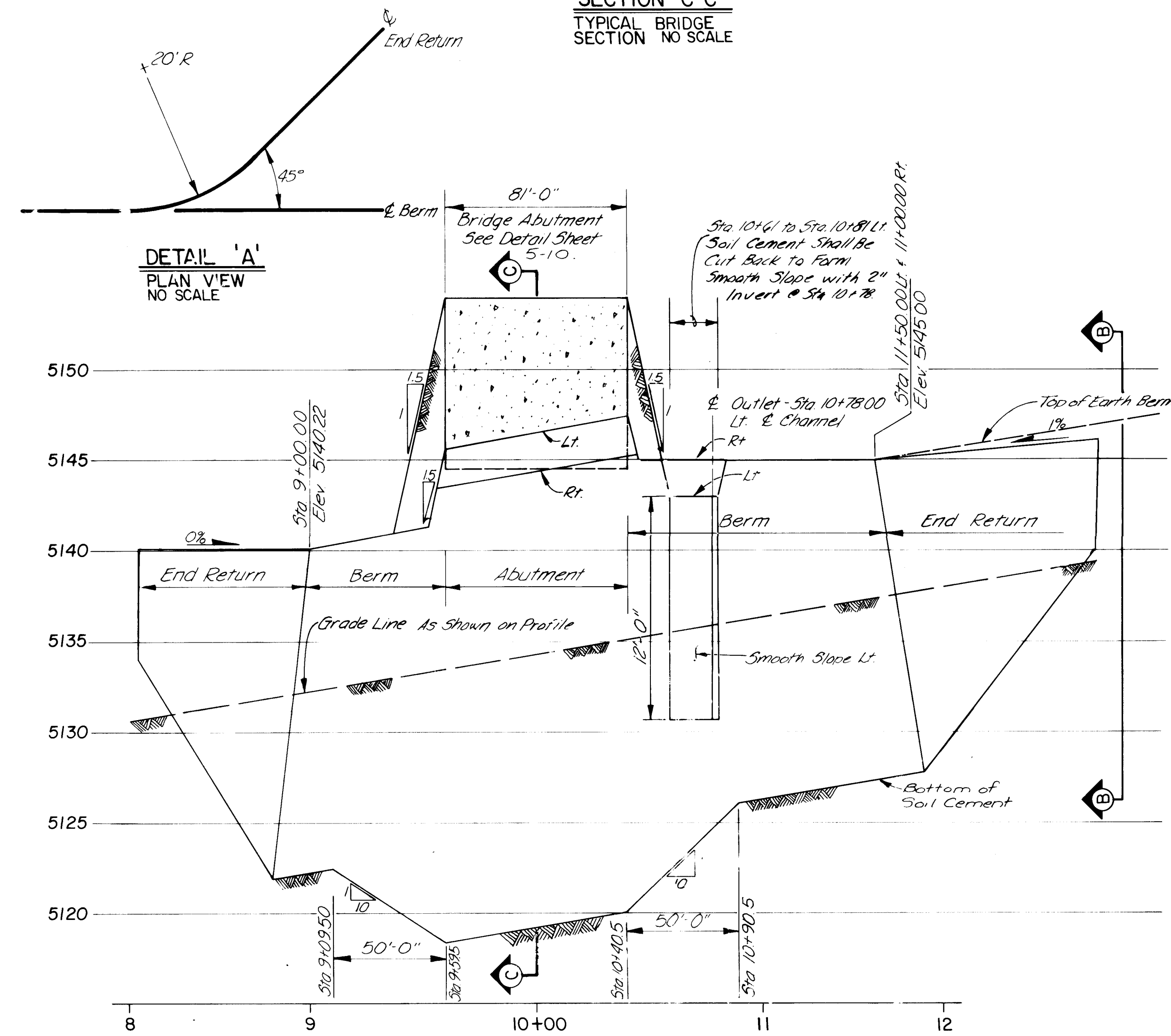
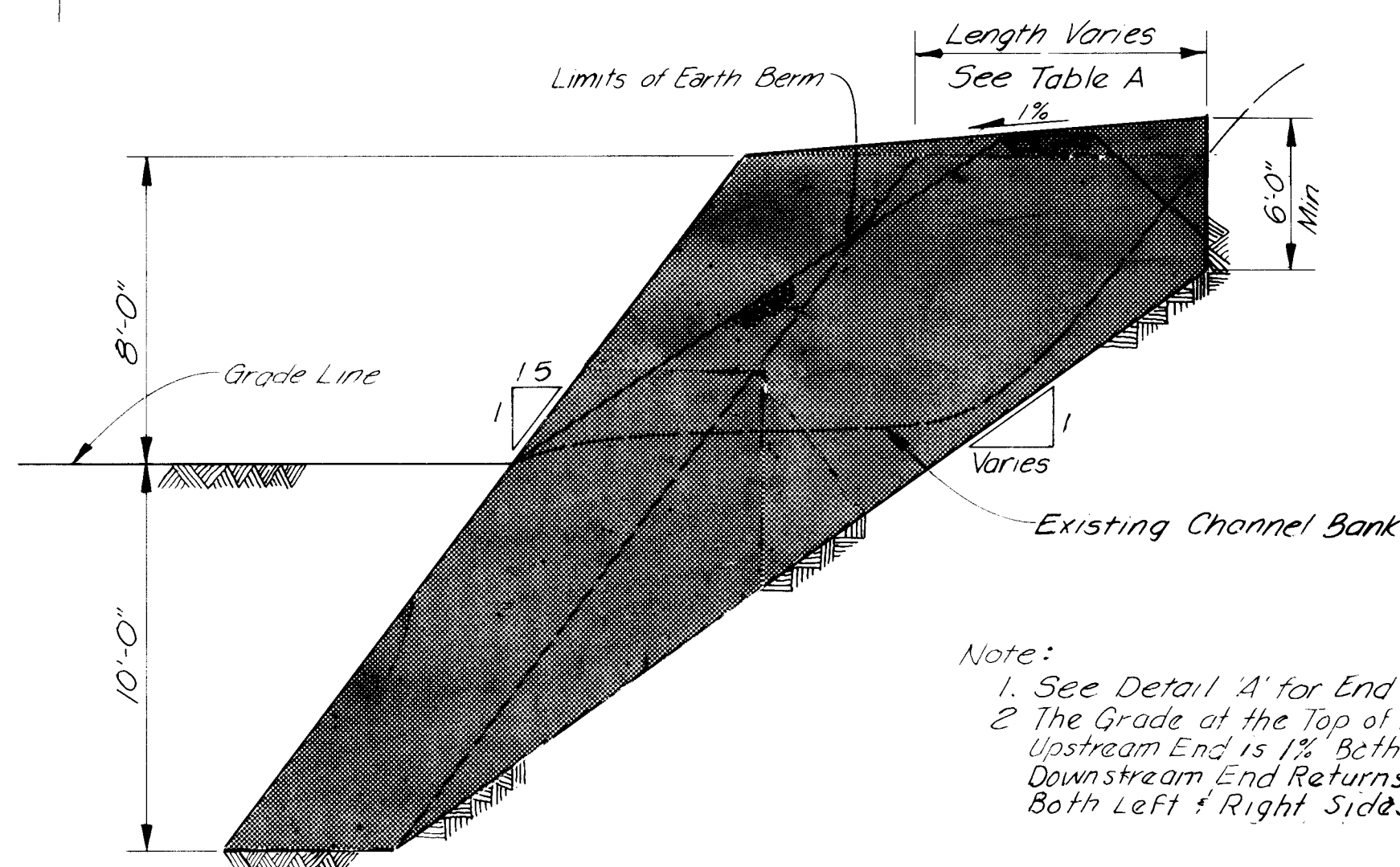


TABLE A

Length of End Returns

<u>Approx Location</u>	<u>Length</u>
Sta 9+00 Lt	40'
Sta 9+00 Rt	40'
Sta 11+00 Rt	60'
Sta 11+50 Lt	70'

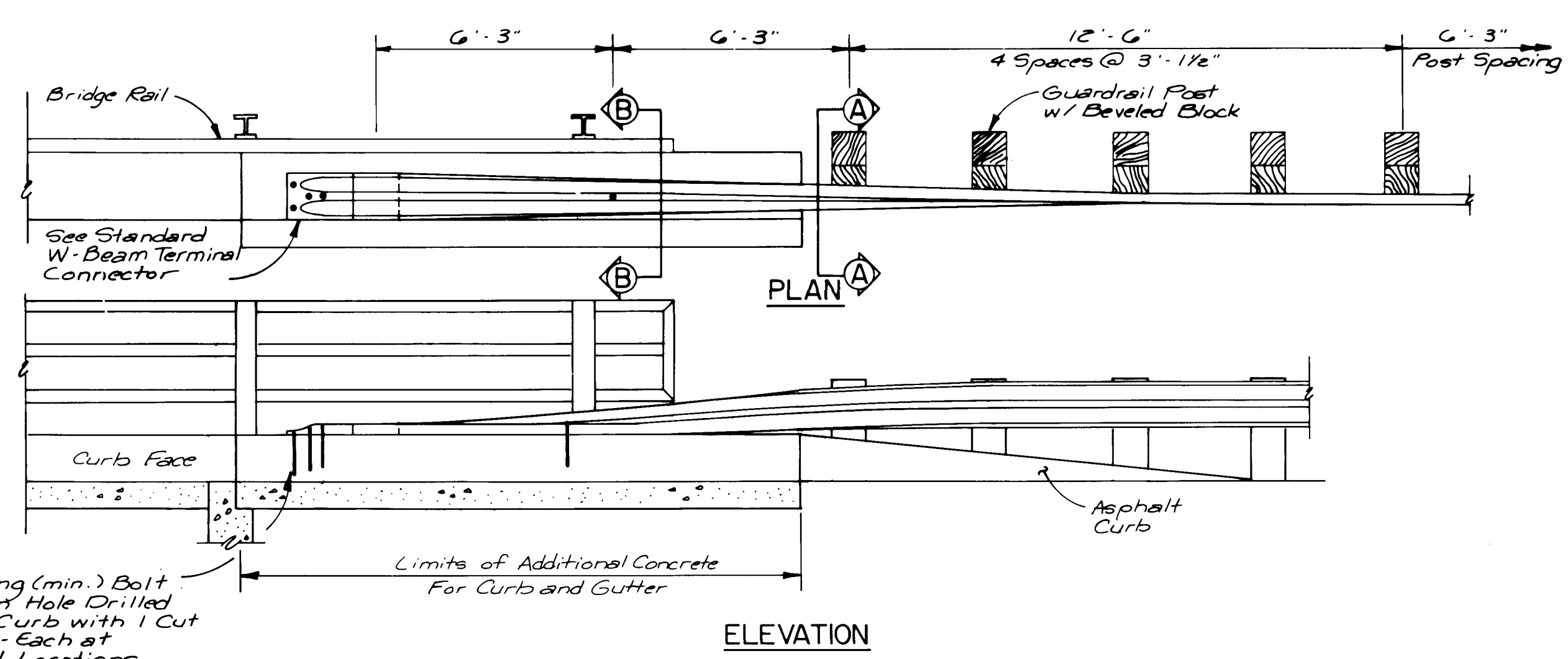
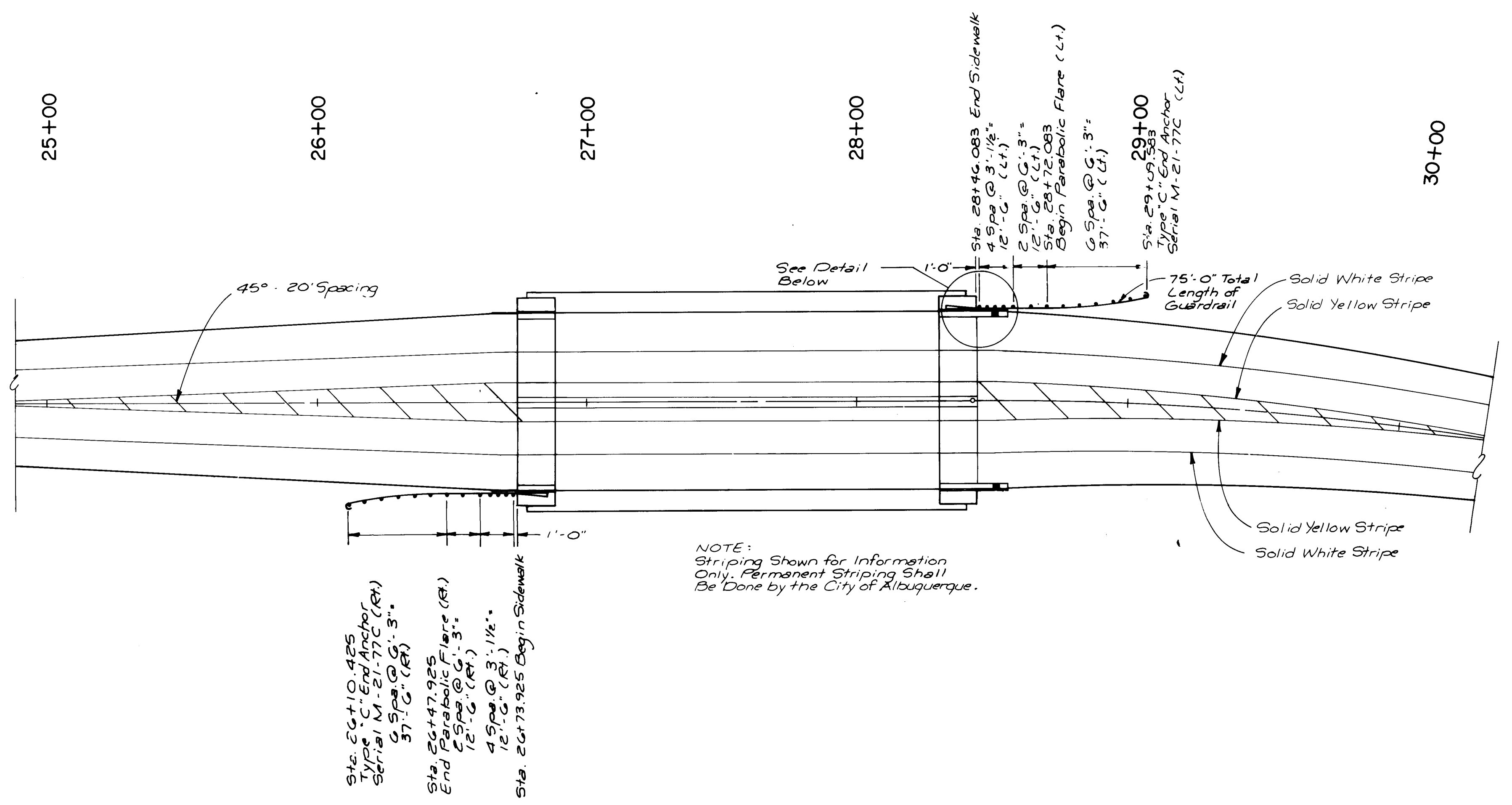


SCALE 1" = 5' VERTICAL
1" = 100' HORIZONTAL

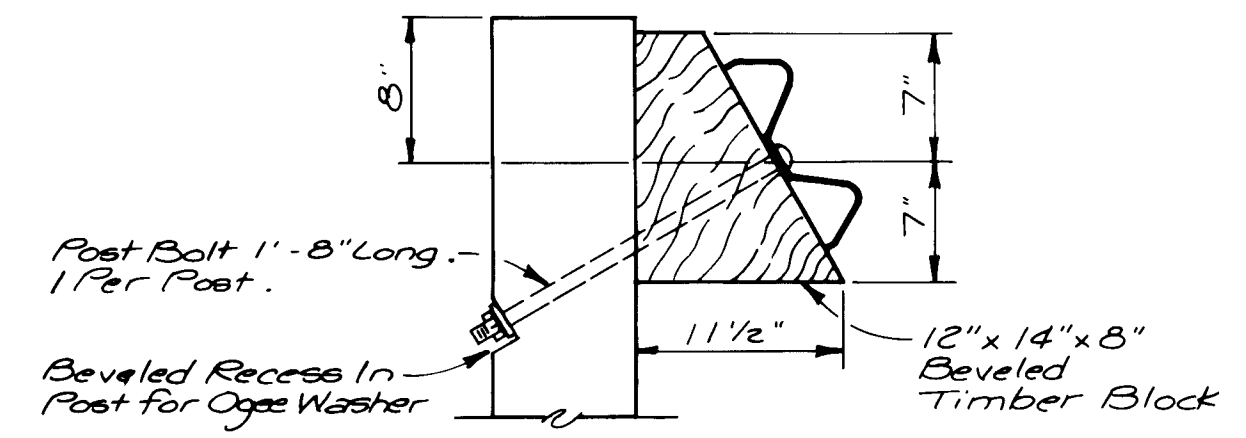
Note: Lt. & Rt Profiles Similar Unless Otherwise Shown.

SCALE: AS SHOWN
JOB NO. 41614

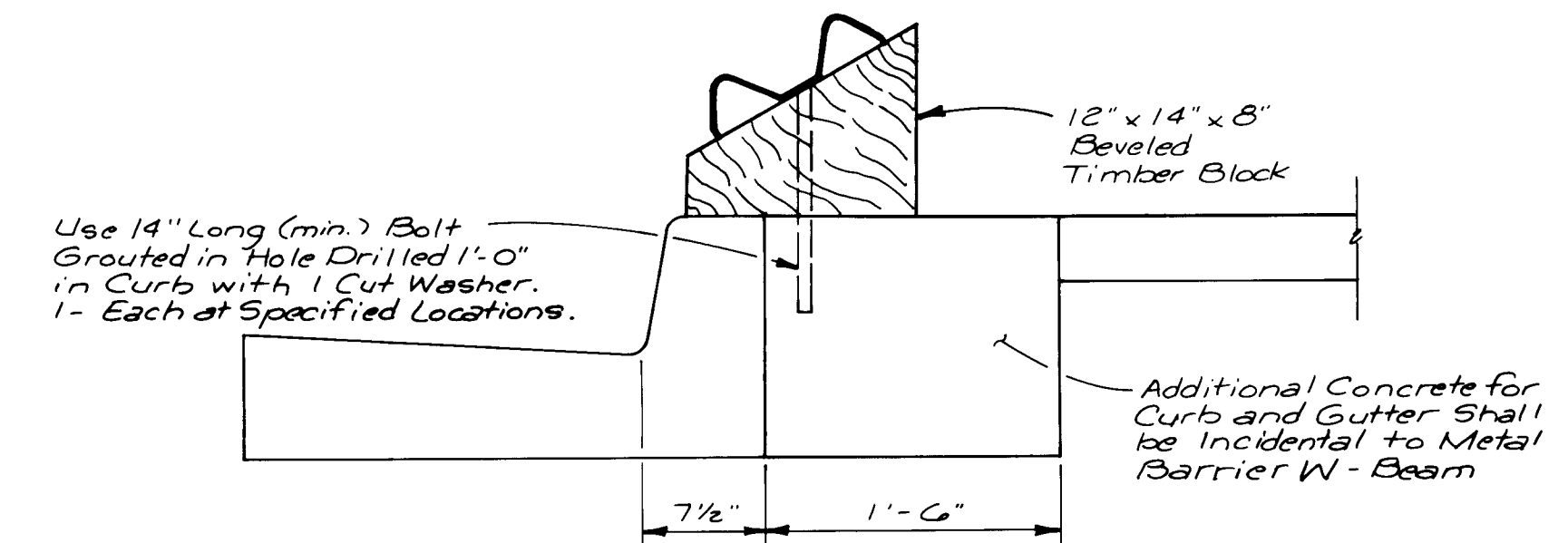
		CITY OF ALBUQUERQUE			
TITLE: GOLF COURSE ROAD TYPICAL CHANNEL DETAILS & SECTIONS					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/1/84	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/1/84	Traffic	<i>NA Deth</i>	12/1/84
A C E - Hydrology	<i>[Signature]</i>	12/1/84	Water		
DRAWING NO		2195	MAP NO		B-12
			SHEET		4-1



TRANSITION TYPE GR-1
NO SCALE



SECTION A-A



SECTION B-B

- NOTES:
- Guardrail Should Be Placed So That The Inside Face Of The Curb Is Vertically Aligned With The Face Of The Guardrail At The Beginning Of The Structure.
 - See Standard M-21-62 For Additional Details.
 - The Quantity Of W-Beam Guardrail Shown For Each Transition Is To Be Paid For Under Item GOG005, Metal Barrier W-Beam.

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		REMARKS	
CONTRACTOR	DATE	STAKED BY	DATE	NO.	BY	NO.	DATE	NO.	DATE	NO.	DATE
INSPECTOR'S	DATE	INSPECTOR'S	DATE	NO.	BY	NO.	DATE	NO.	DATE	NO.	DATE
VERIFICATION BY	DATE	VERIFICATION BY	DATE	NO.	BY	NO.	DATE	NO.	DATE	NO.	DATE
COMPILED BY	DATE	COMPILED BY	DATE	NO.	BY	NO.	DATE	NO.	DATE	NO.	DATE
MICRO-FILM INFORMATION	DATE	MICRO-FILM INFORMATION	DATE	NO.	BY	NO.	DATE	NO.	DATE	NO.	DATE

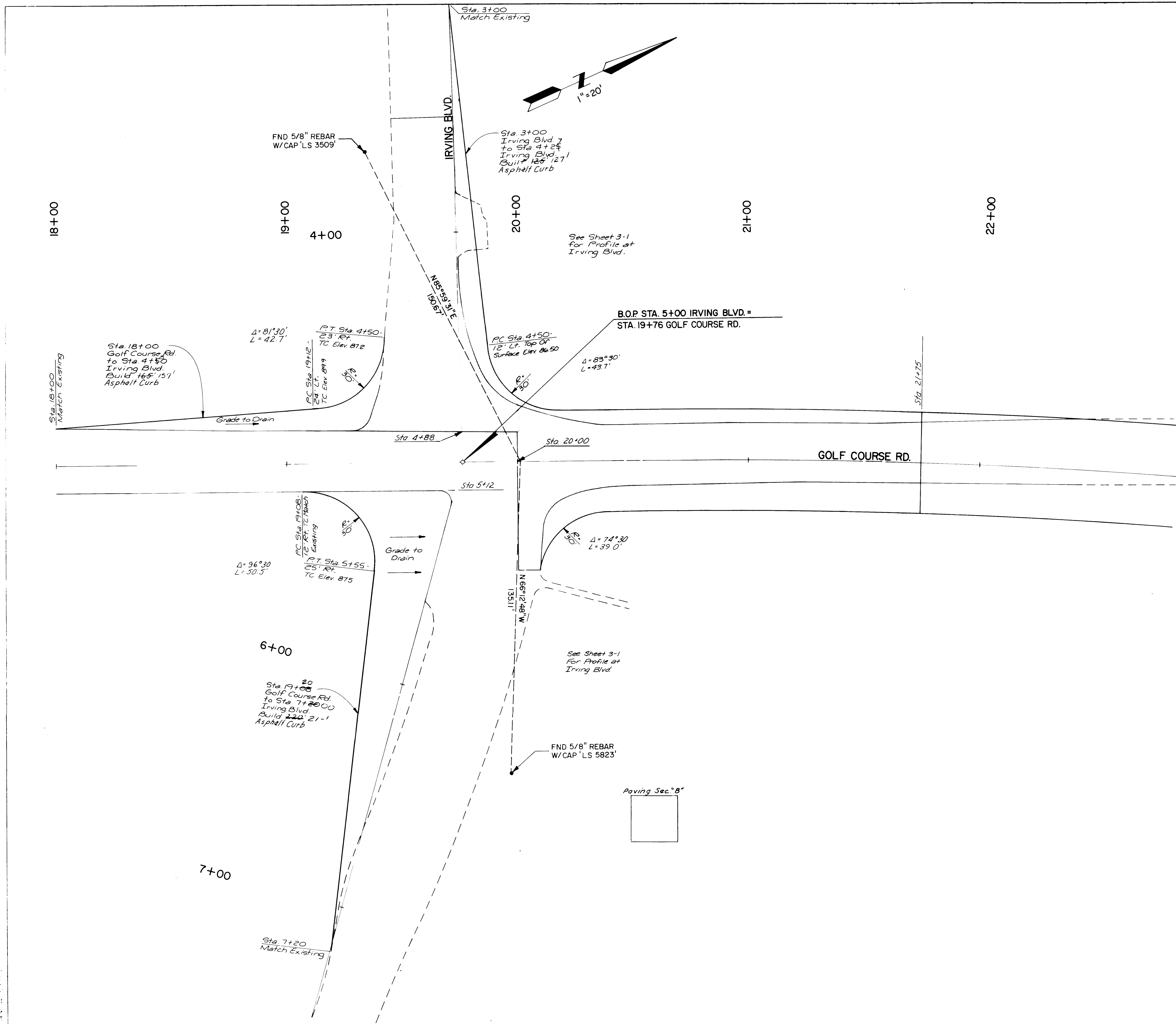
RECORD DRAWINGS
DATE 12/4/86

CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: GUARDRAIL LAYOUT DETAILS

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer		12/4/86	Liquid Waste		
A.C.E. - Design		12/4/86	Traffic		11/2/86
A.C.E. - Hydrology		12/4/86	Water		

DRAWING NO. 2195 MAP NO. B-12 SHEET 4-3



FHWA Region No.	NEW MEXICO	M-4079(1)	SHEET NO.	TOTAL SHEETS
6			4-4	

ENGINEER'S SEAL				SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
				NO.	BY	DATE	5/8" Rebar w/Plastic Cap L S 6544 Elev. -5159.95	CONTRACTOR	
							Location Approximately 510' NE From The Intersection Of Irving Blvd. & Golf Course Rd.	STARTED BY	
								INSPECTOR'S ACCEPTANCE BY	DATE
								DATE	
								VERIFICATION BY	DATE
								DATE	
								COMPLETED BY	DATE
								MICRO-FILM INFORMATION	
								RECORDED BY	DATE
								NO.	
								</	

1 2 3 4 5 6 7 8 9 10 11 12
26 21951886

RECORD DRAWING
DATE 12/4/84

CITY OF ALBUQUERQUE GOLF COURSE RD.					
TITLE: INTERSECTION PAVING DETAILS					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	11/2/84	Liquid Waste		
A.C.E. - Design	<i>[Signature]</i>	11/2/84	Traffic	<i>[Signature]</i>	11/2/84
A.C.E. - Hydrology	<i>[Signature]</i>	12/4/84	Water		
DRAWING NO.	2195	MAP NO.	B-12	SHEET	4-4

DRAWINGS REQUIRED

GENERAL NOTES AND QUANTITIES	5-1
STRUCTURE LOCATION & TEST HOLE DATA PLAN	5-2
STRUCTURE LOCATION & TEST HOLE DATA PROFILE	5-3
DECK SLAB AND DIAPHRAGMS	5-4
BRIDGE SECTIONS	5-5
TOP OF SLAB ELEVATIONS	5-6
PRESTRESSED BEAMS	5-7
BEARINGS	5-8
SUBSTRUCTURE DETAILS PIER	5-9
SUBSTRUCTURE DETAILS ABUTMENT N° 1	5-10&5-11
SUBSTRUCTURE DETAILS ABUTMENT N° 2	5-12&5-13

CAPACITY RATINGS

INVENTORY	HS-20
OPERATING	HS-33

INCIDENTAL ITEMS

BRIDGE NUMBER PLATES

ESTIMATED QUANTITIES

GOLF COURSE RD. BRIDGE									
			APPROACH SLAB	ABUT #1	PIER	ABUT #2	APPROACH SLAB		
PRESTRESSED CONCRETE BRG. MEMBER TYPE 45	LIN. FT	1278						1278	
SUPERSTRUCTURE CONCRETE - CLASS A	CU. YD	365.72						365.72	
SUBSTRUCTURE CONCRETE - CLASS A	CU. YD	40.40						40.40	
STRUCTURAL CONCRETE - CLASS A	CU. YD	33.8						33.8	
REINFORCING BARS - GRADE 60	LB.	36,240						36,240	
EPOXY COATED REINF. BARS GRADE 60	LB.	36,240						36,240	
REINFORCING BARS - GRADE 40	LB.	46						46	
STRUCT. STEEL FOR CONC. BRIDGES AASHTO M-183	LB.	333						333	
STRUCTURAL STEEL PILING - HP 12 X 53	LIN. FT	324						324	
STRUCTURAL STEEL PILING - HP 14 X 73	LIN. FT	324						324	
METAL RAILING - TYPE B	LIN. FT	333						333	
WELDED WIRE FABRIC	LB.	11,167						11,167	
CONC. MEDIAN PAVT. - 4" (COLORED & PATTERNED)	SQ. YD	40.37						40.37	

GENERAL NOTES

- WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 1984 EDITION AND SPECIAL PROVISIONS TO DATE.
- CONCRETE FOR STRUCTURAL CAST-IN-PLACE CONCRETE SHALL BE CLASS A.
- CHAMFER ALL EXPOSED EDGES OF CONCRETE STRUCTURES 3/4 INCH UNLESS NOTED OTHERWISE ON DETAILS.
- REINFORCING BARS SHALL CONFORM TO AASHTO SPECIFICATION M31, GRADE 60 UNLESS NOTED OTHERWISE ON THE DETAILS. DIMENSIONS REFER TO THE CENTERLINE OF BARS UNLESS NOTED OTHERWISE.
- STRUCTURAL STEEL TO BE CARBON STEEL CONFORMING TO AASHTO SPECIFICATION M-183, UNLESS NOTED OTHERWISE ON THE DETAILS. SHOP PLANS MUST BE APPROVED BY THE ENGINEER BEFORE FABRICATION IS STARTED.
- STRAIGHTENING. AFTER FABRICATION, SOLE PLATES AND SHOE PLATES SHALL BE STRAIGHTENED OR FINISHED TOP AND BOTTOM. THE THICKNESS OF SUCH PLATES SHOWN ON THE DETAILS SHALL BE THE FINISHED THICKNESS.
- ANCHOR BOLTS FOR GIRDERS SHALL BE PLACED IN DRILLED HOLES AND GROUTED IN THE EXACT POSITION AS SHOWN ON THE PLANS.
- VERIFICATION OF BEAM CAMBER. AFTER BEAMS ARE PLACED AND BEFORE SCREEDS ARE SET, A PROFILE SHALL BE TAKEN ALONG EACH COMPLETE LINE OF BEAMS. IF ACTUAL CAMBER DIFFERS FROM THAT SHOWN ON THE PLANS SO THAT A DEFICIENT SLAB THICKNESS WOULD RESULT, ADJUSTMENTS MUST BE MADE BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
- BRIDGE SEATS. AFTER COMPLETION OF THE BRIDGE AND APPROACH ROADWAYS, TOP SURFACES OF ALL BRIDGE SEATS SHALL BE THOROUGHLY CLEANED OF ALL DIRT, CONCRETE AND OTHER DEPOSITED MATERIAL.
- CONCRETE DECK PLACEMENT. THE CONTRACTOR SHALL PLACE AND MACHINE FINISH THE CONCRETE DECK SLAB IN ACCORDANCE WITH THE DIAGRAM SHOWN ON SHEET 5-6.
- CORED HOLES IN EXTERIOR BEAMS. AFTER COMPLETION OF THE SUPERSTRUCTURE ALL UNUSED CORED HOLES ARE TO BE PACKED WITH GROUT.
- FOUNDATION DATA SHOWN ON THE PLANS ARE FOR DESIGNERS ONLY. THE HIGHWAY DEPARTMENT IS NOT RESPONSIBLE FOR ANY INTERPRETATIONS OR ASSUMPTIONS MADE BY THE CONTRACTOR BASED ON THIS INFORMATION.
- SOME EPOXY COATED REBAR ARE DETAILED OVER 40 FEET LONG. CONTRACTOR MAY FURNISH SUCH LONGER BARS IN TWO SECTIONS WITH LAP SPLICES. THE LOCATION AND LENGTH OF LAP MUST BE SUBMITTED IN WRITING 2 WEEKS PRIOR TO FABRICATION FOR APPROVAL BY THE ENGINEER.
- THE CONTRACTOR SHALL COORDINATE WITH THE GAS CO OF NEW MEXICO FOR SUPPLYING THE PIPE HANGER INSERTS.

SPECIAL PROVISIONS

SPECIAL PROVISION:	MODIFYING SECTION 106 - CONTROL OF MATERIALS (9-21-84)
SPECIAL PROVISION:	MODIFYING SECTION 505 - BEARING PILES (10-25-84)
SPECIAL PROVISION:	MODIFYING SECTION 509 - CONCRETE STRUCTURES (10-25-84)

DESIGN DATA

DESIGN IS IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS 1983 EDITION.

DESIGN STRESSES: STRUCTURAL STEEL - AASHTO M-183, FS=20,000 PSI

REINFORCED CONCRETE:
SUPERSTRUCTURE: F'C=3,000. PSI AT 28 DAYS
FC=1,200. PSI FS=24,000. PSI
SUBSTRUCTURE: F'C=3,000. PSI AT 28 DAYS
FC=1,200. PSI FS=24,000. PSI GRADE 60
FS=20,000. PSI GRADE 40
PRESTRESSED CONCRETE: SEE SHEET 5-7.

LIVE LOAD: HS-20-44

WEARING SURFACE: 30 PSF ALLOWANCE FOR FUTURE WEARING SURFACE AND 1/4" MONOLITHIC CONCRETE

HORIZONTAL EARTH PRESSURE: 36 LBS./CU. FT. EQUIVALENT FLUID PRESSURE AND 2 FT. SURCHARGE

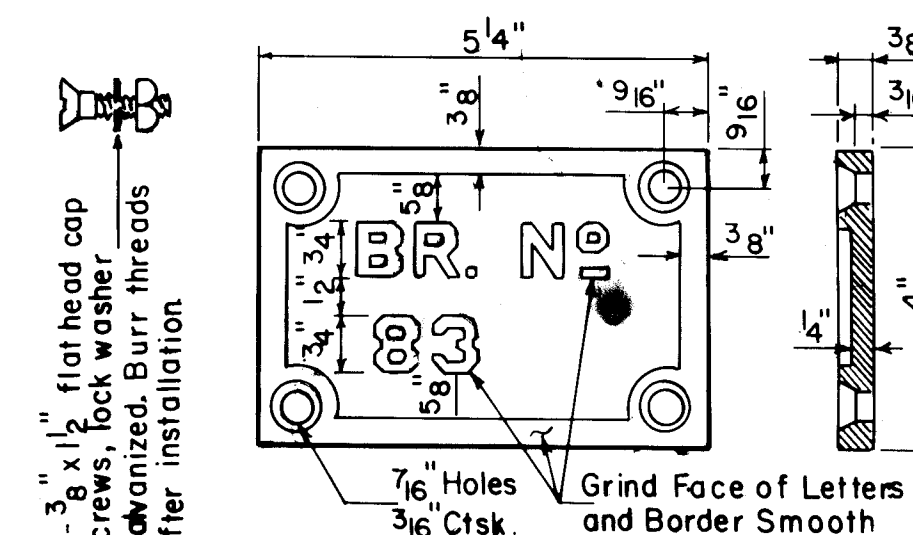
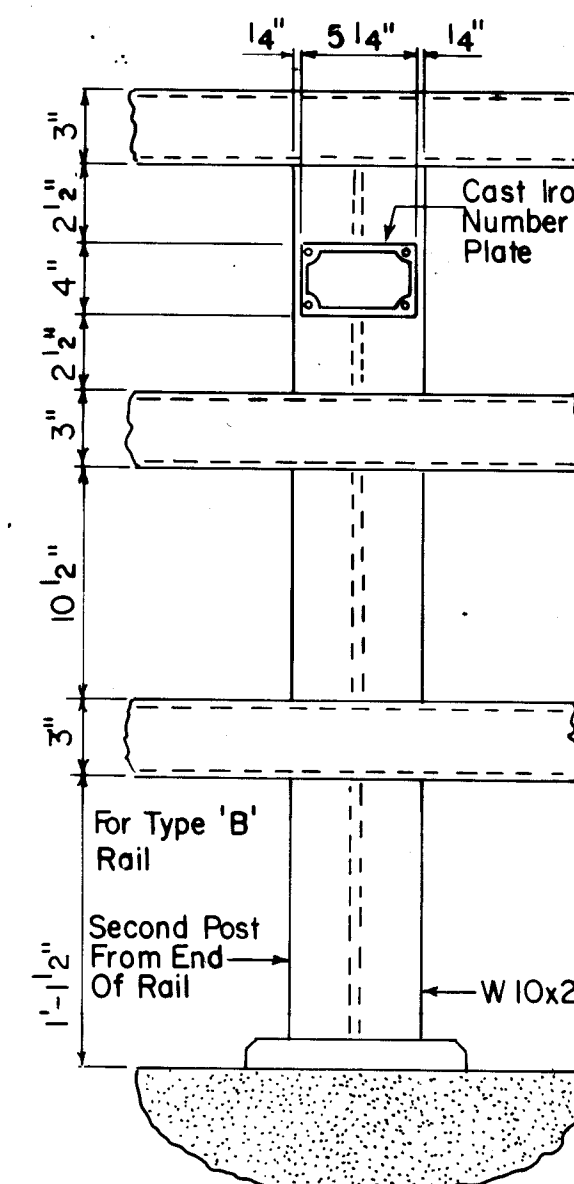
WIND VELOCITY: 80 MPH

MAXIMUM COMPUTED PILE LOAD:

ABUT. NO.1 75 TONS / PILE

PIER 77.5 TONS / PILE

ABUT. NO.2 75 TONS / PILE



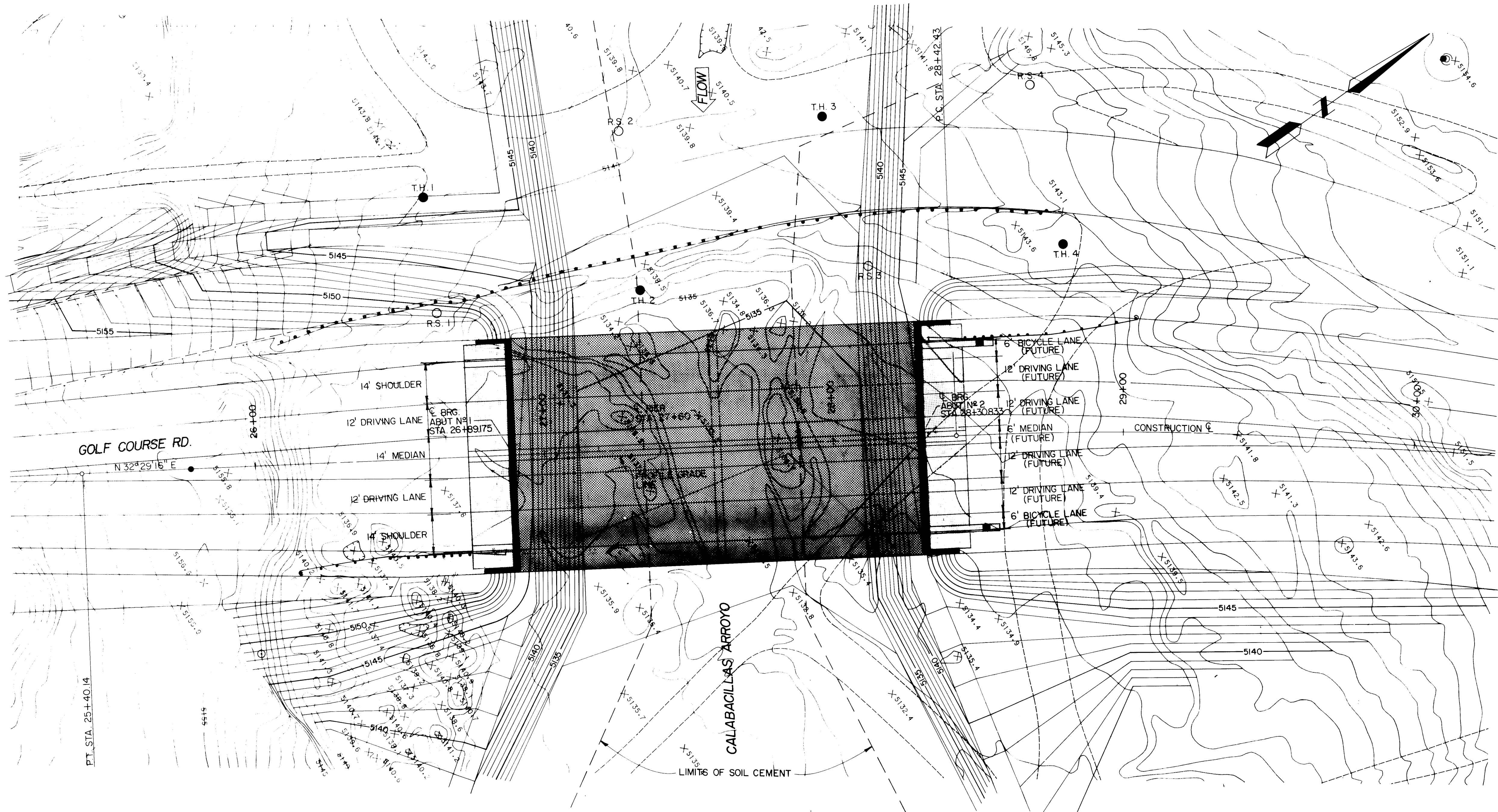
- Notes:
- plate with bolts required for each bridge. Material - Cast Iron. Raised block letters of neat square cut design. Grind face, and not dipped galvanized.
 - One number plate to be placed near each end of the bridge on roadway face of second rail post on right side as one approaches bridge.
 - Bronze plate and bolts may be substituted for galvanized cast iron.

BRIDGE NUMBER PLATES DETAILS

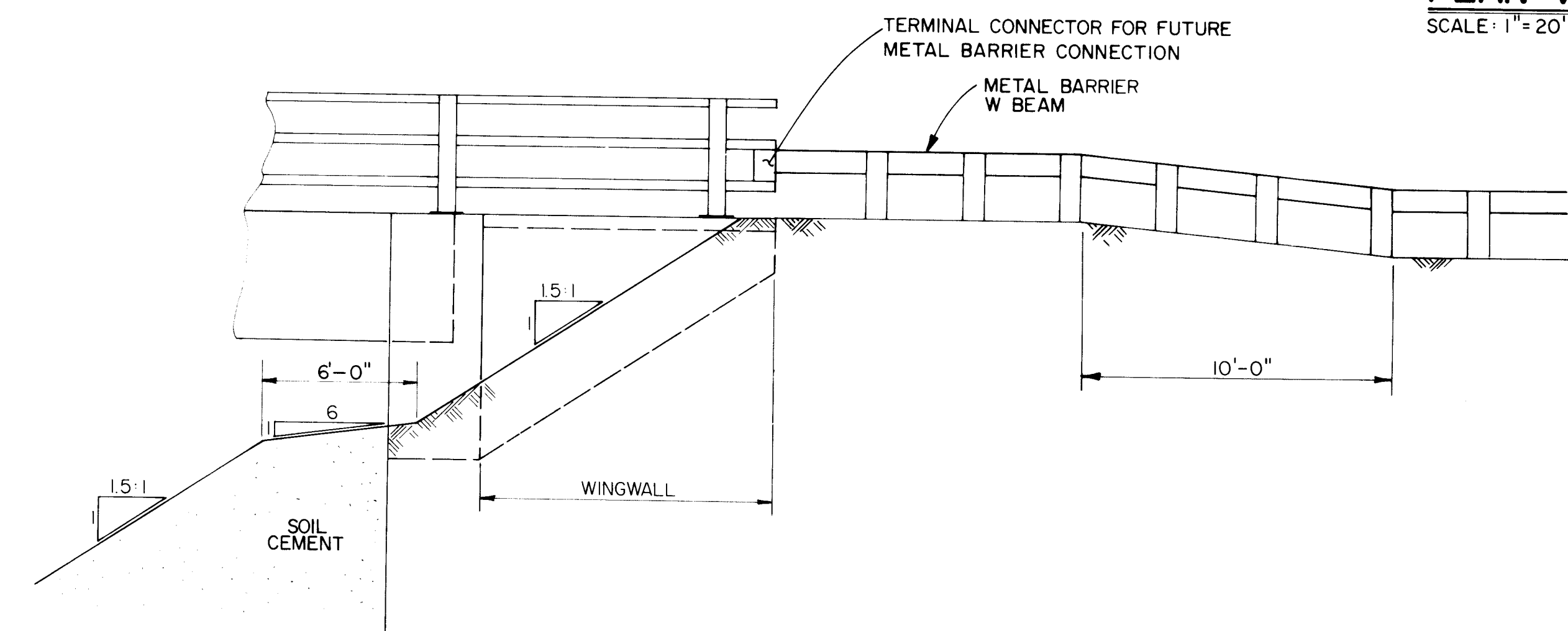
RECORD DRAWINGS
DATE 12/4/84

BRIDGE No. 8577

CITY OF ALBUQUERQUE		GOLF COURSE RD.	
TITLE: GOLF COURSE RD. BRIDGE			
GENERAL NOTES AND QUANTITIES			
APPROVALS	ENGINEER	DATE	APPROVALS
City Engineer	12/4/84	12/4/84	Liquid Waste
A.C.E. - Design	12/4/84	12/4/84	Traffic
A.C.E. - Hydrology	12/4/84	12/4/84	Water
DRAWING NO.	2193	MAP NO.	B-12
SHEET 5-1			



PLAN VIEW
SCALE: 1" = 20'



EARTHWORK AT ABUTMENT
NO SCALE

WATERWAY DATA
ESTIMATED Q 100 = 11900 CFS
VELOCITY = 20 FPS
DEPTH 100 = 5 1/2 FT.
DRAINAGE AREA = 85 SQ. MILES
DEBRIS = MISC. REFUSE
SCOUR = 15 FT.

- INDICATES TEST HOLE
○ INDICATES ROD SOUNDING HOLE

- NOTES:
1. FOR ROADWAY DETAILS
SEE P&P SHEETS
2. FOR GUARDRAIL DETAILS
SEE SHEET 4-3.

FHWA Region No.	NEW MEXICO	M-4079(I)	SHEET NO.	TOTAL SHEETS
6			5-2	

AS-BUILT INFORMATION	
CONTRACTOR	WORK
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE

BENCH MARKS

SURVEY INFORMATION

ENGINEER'S SEAL

REVISIONS

DESIGN

DATE

DATE

DATE

DATE

DATE

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BRIDGE No. 8577



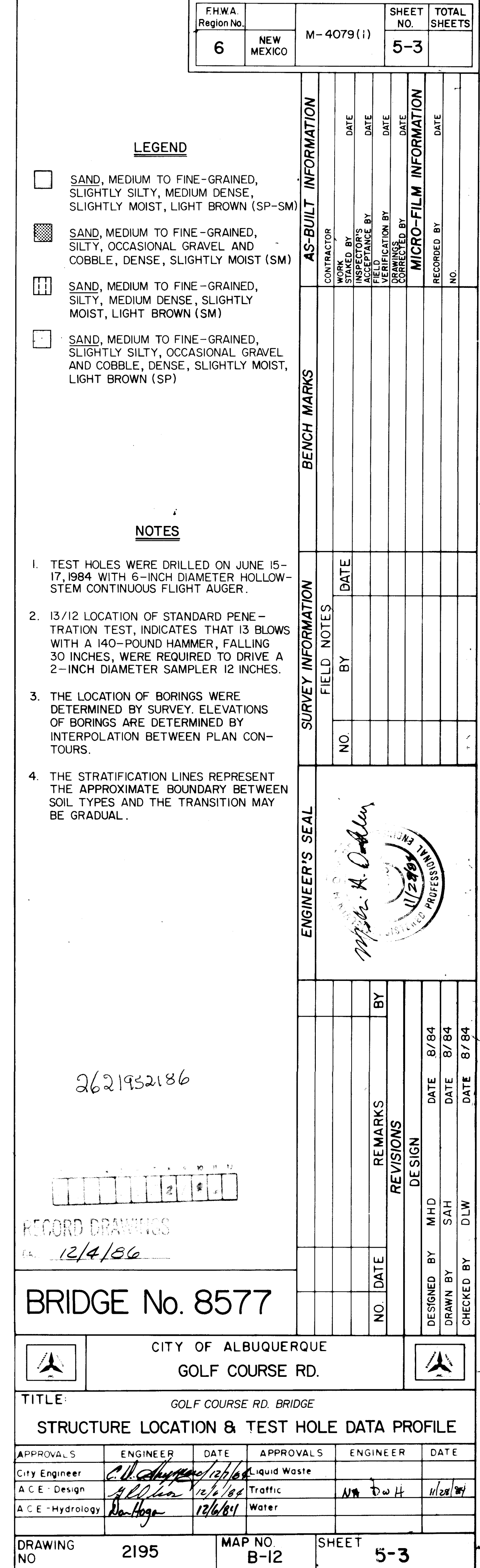
CITY OF ALBUQUERQUE
GOLF COURSE RD.

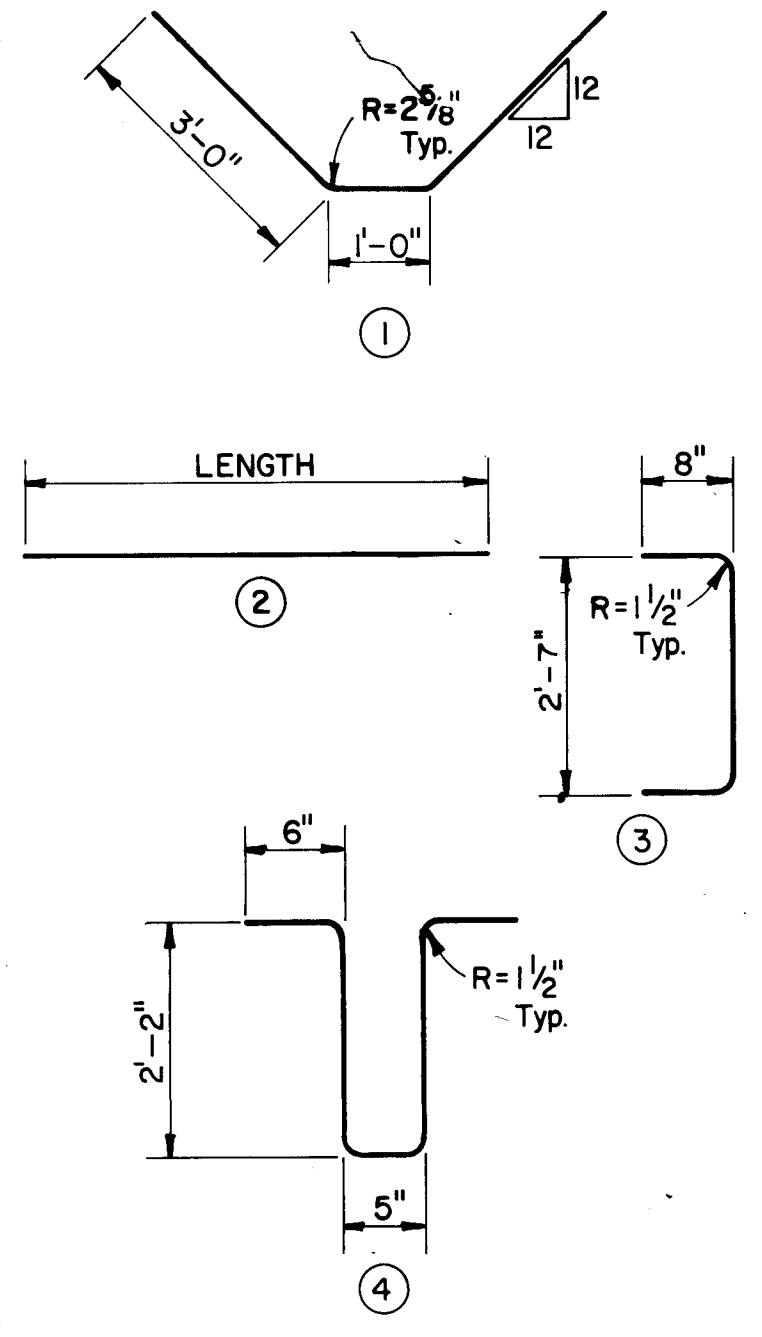
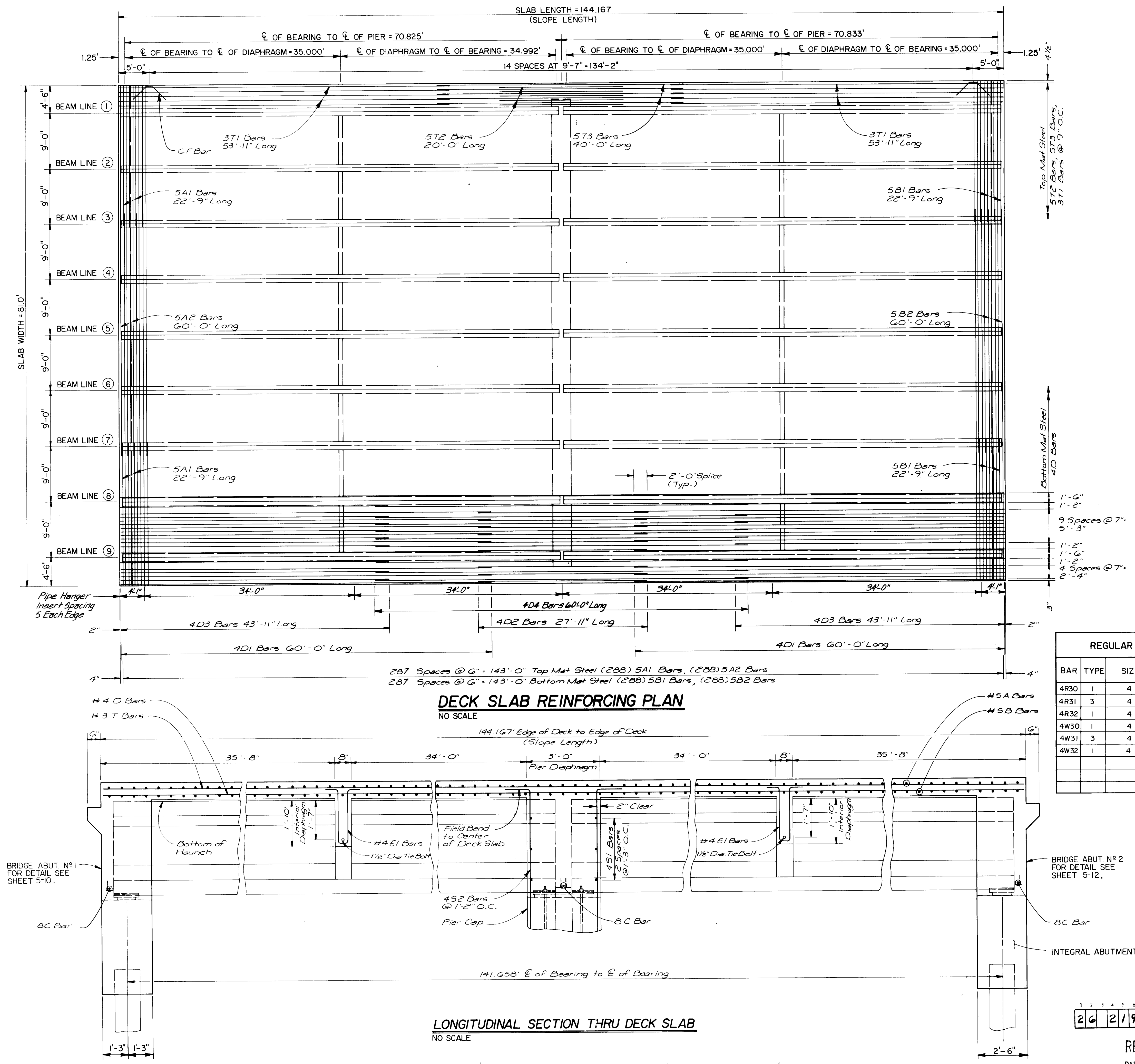


TITLE: GOLF COURSE RD. BRIDGE
STRUCTURE LOCATION & TEST HOLE DATA PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/84	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/4/84	Traffic	<i>[Signature]</i>	11/23/84
A C E - Hydrology	<i>[Signature]</i>	12/4/84	Water		

DRAWING NO.	2195	MAP NO.	B-12	SHEET	5-2
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BAR BENDING DIAGRAM
NO SCALE

REINFORCING STEEL FOR SUPERSTRUCTURE

3T1	2	3	53'-11"	216
5T2	2	5	20'-0"	107
5T3	2	5	40'-0"	108
5A1	2	5	22'-9"	288
5A2	2	5	60'-0"	288

4D1	2	4	60'-0"	108
4D2	2	4	27'-5 1/2"	54
4D3	2	4	43'-11"	108
4D4	2	4	60'-0"	54
5B1	2	5	22'-9"	288
5B2	2	5	60'-0"	288
4S1	2	4	6'-10"	48
4S2	2	4	8'-10"	100
4S3	3	4	3'-10"	6
4E1	4	4	5'-6"	112
8C1	2	8	60'-0"	3
8C2	2	8	22'-6"	3

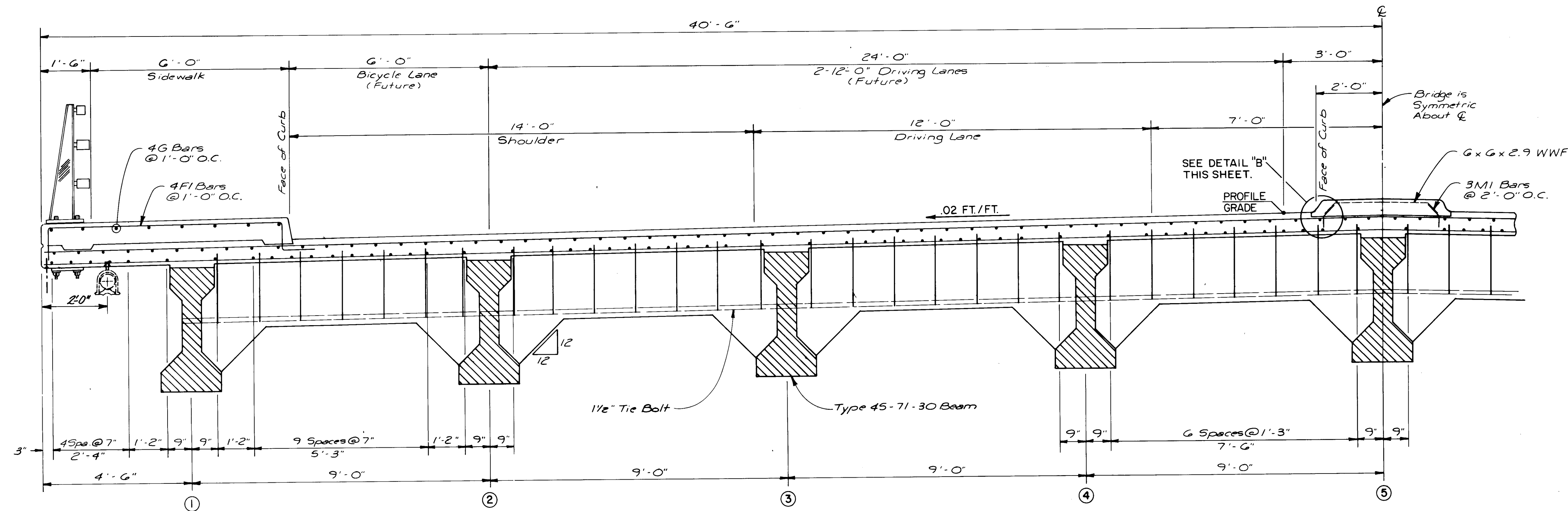
REGULAR GRADE 60 BARS				
BAR	TYPE	SIZE	LENGTH	NO. REQ'D
4R30	1	4	12'-4"	4
4R31	3	4	13'-4"	8
4R32	1	4	60'-0"	6
4W30	1	4	12'-4"	4
4W31	3	4	13'-4"	8
4W32	1	4	60'-0"	6

CITY OF ALBUQUERQUE
GOLF COURSE RD.
TITLE: GOLF COURSE RD. BRIDGE
DECK SLAB AND DIAPHRAGMS

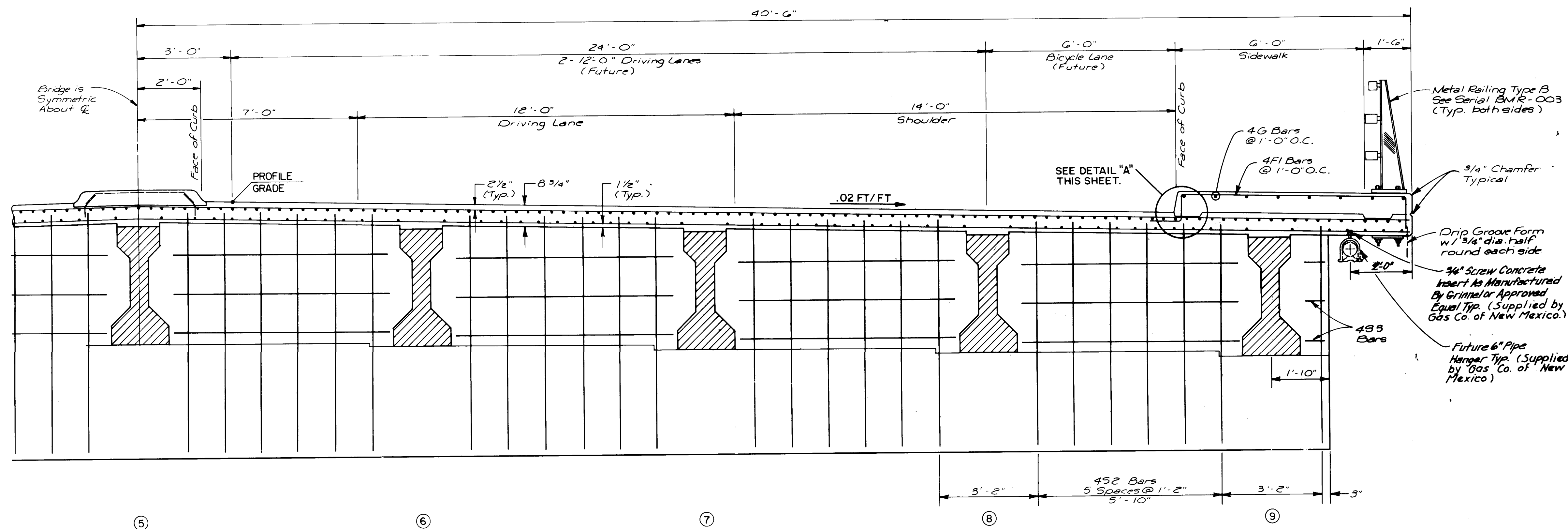
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/86	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/4/86	Traffic	N A D W H	12/28/84
A C E - Hydrology	<i>[Signature]</i>	12/4/84	Water		

DRAWING NO. 2195 MAP NO. B-12 SHEET 5-4

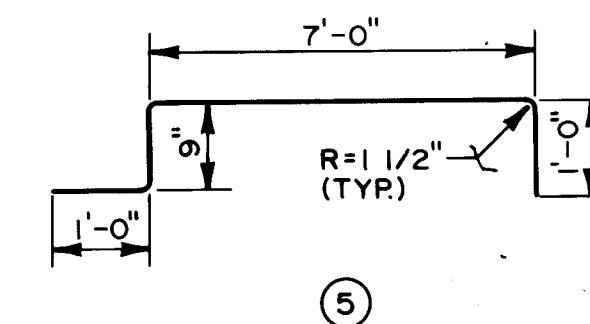
RECORD DRAWINGS
DATE 12/4/86



TYPICAL HALF SECTION AT INTERIOR DIAPHRAGM
NO SCALE

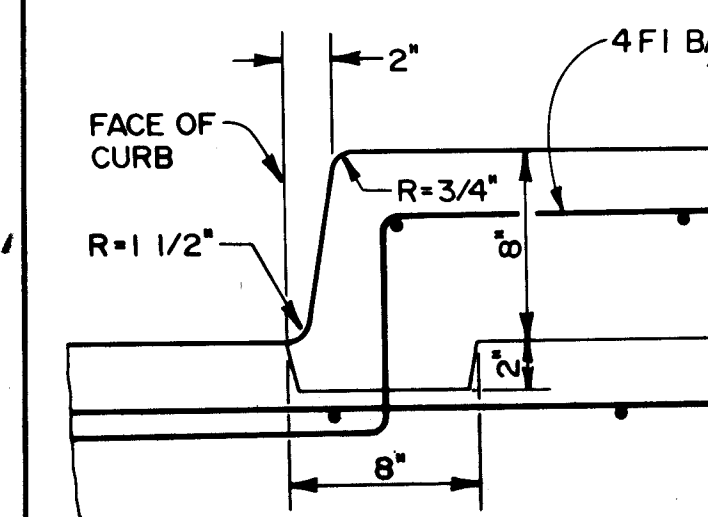


TYPICAL HALF SECTION AT PIER DIAPHRAGM
NO SCALE

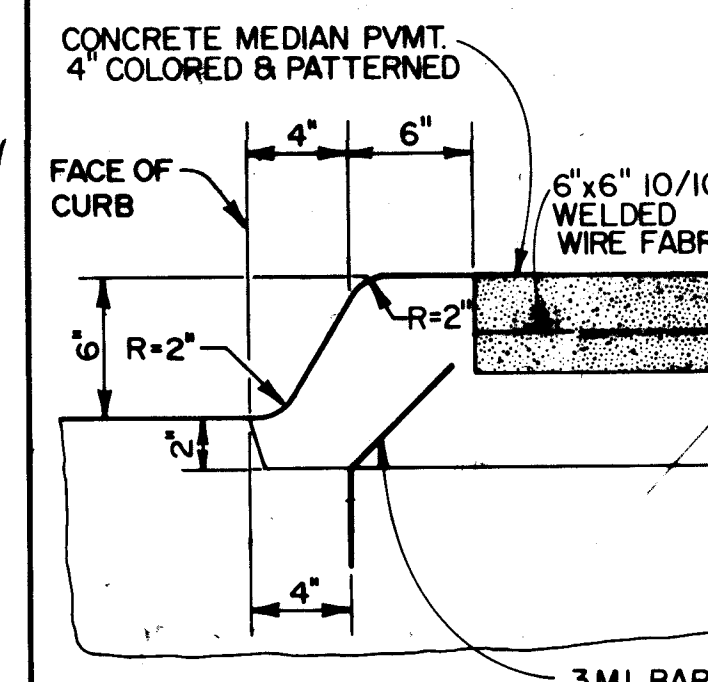


BAR BENDING DIAGRAM
NO SCALE

4F1	5	4	9'-8"	288
4G1	2	4	60'-0"	32
4G2	2	4	27'-10"	16
3M1	6	3	0'-10"	146



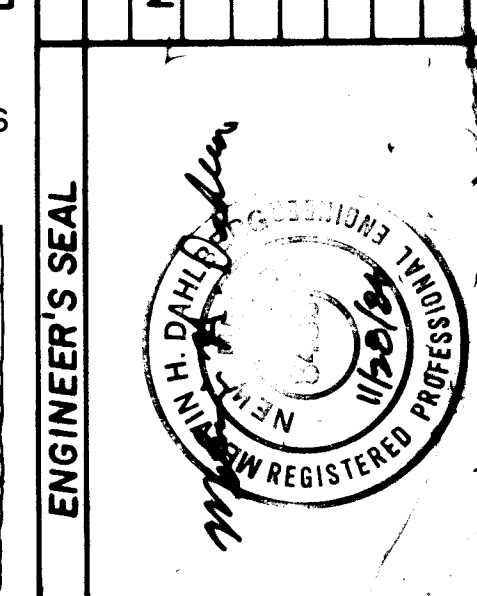
DETAIL "A"



DETAIL "B"

CONTRACTOR	DATE	INSPECTOR'S	DATE	VERIFICATION	DATE	CORRECTION	DATE	RECORDED	DATE

NO.	BY	NO.	BY	NO.	BY



REVISIONS	DATE	BY	REMARKS

CITY OF ALBUQUERQUE GOLF COURSE RD.			SHEET 5-5		
TITLE: GOLF COURSE RD. BRIDGE BRIDGE SECTIONS					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E. Design			Traffic	N.A.P.W.H.	
A.C.E. Hydrology			Water		
DRAWING NO.	2195	MAP NO.	B-12	SHEET	5-5

RECORD DRAWINGS
DATE 12/4/86

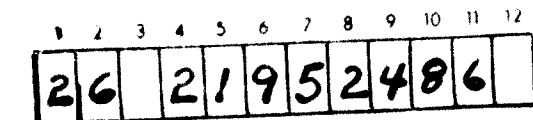
AS-BUILT INFORMATION	
CONTRACTOR	
WORK	
STARTED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
PERMITS / SPECIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE
MICRO-FILM INFORMATION	
RECORDED BY	DATE
NO.	

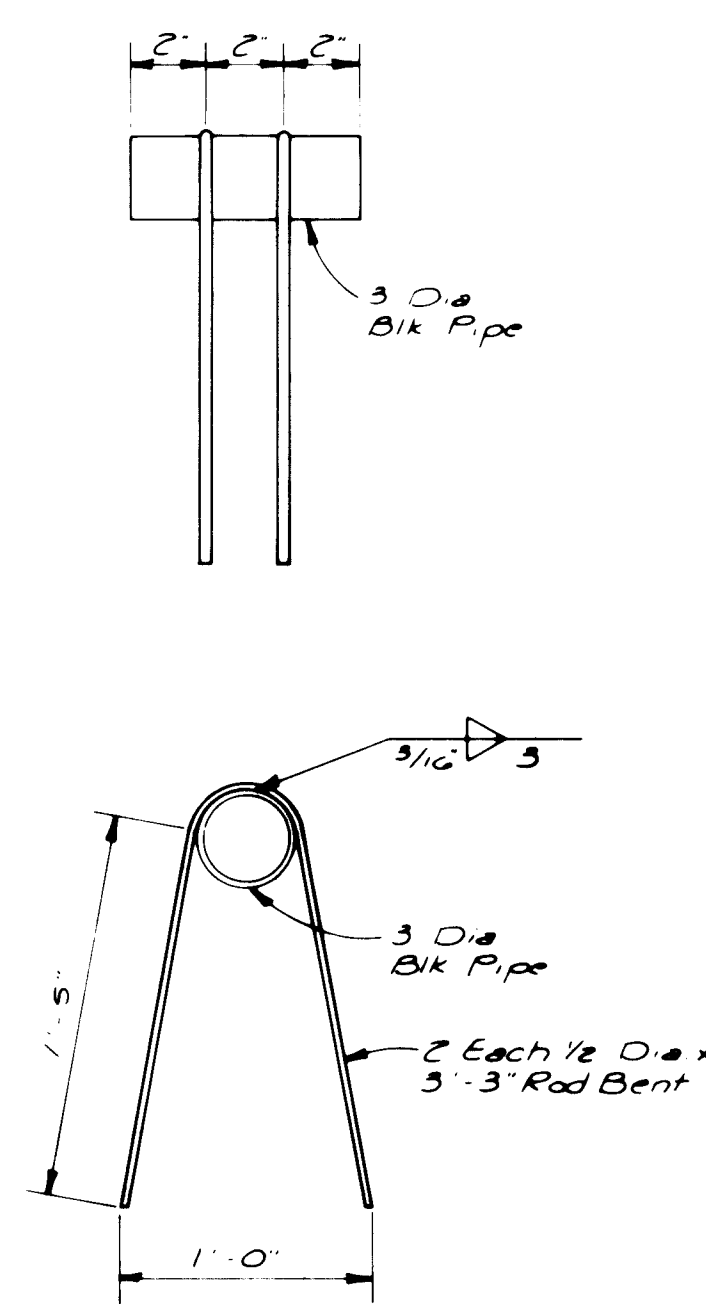
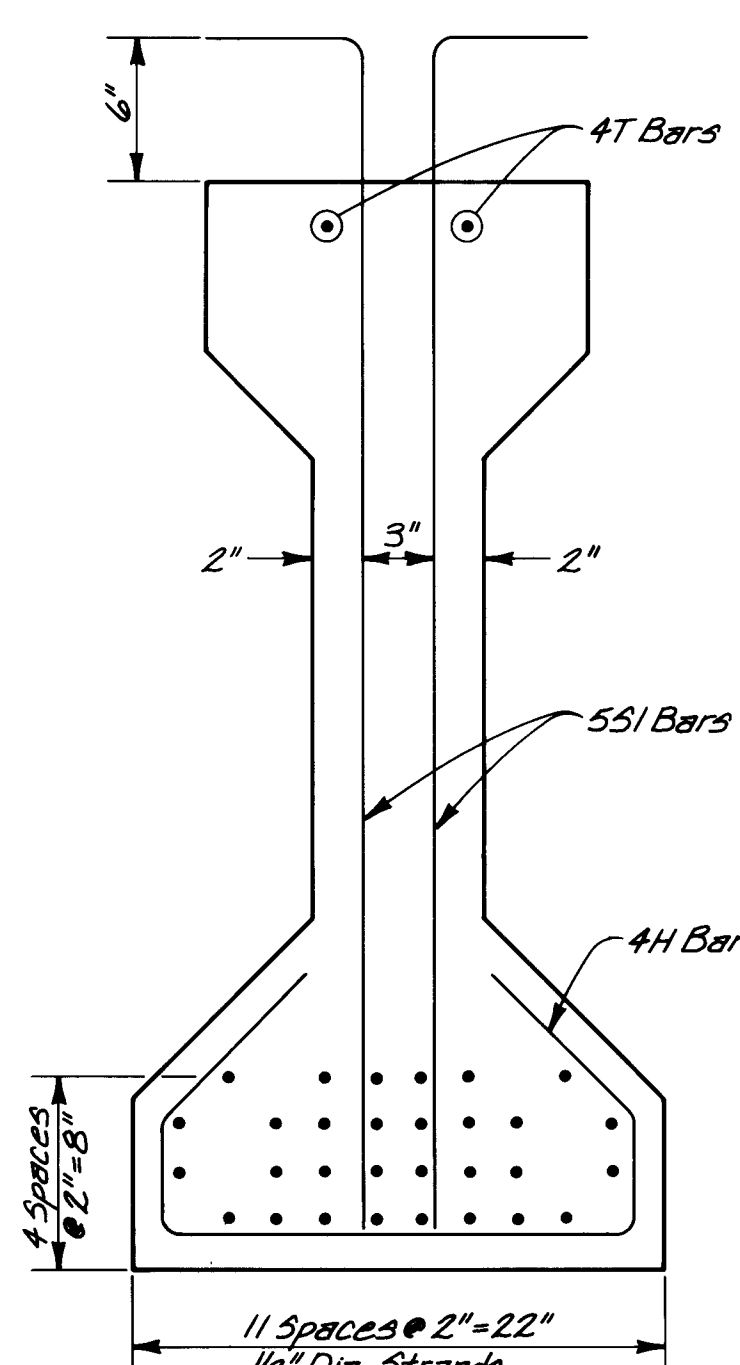
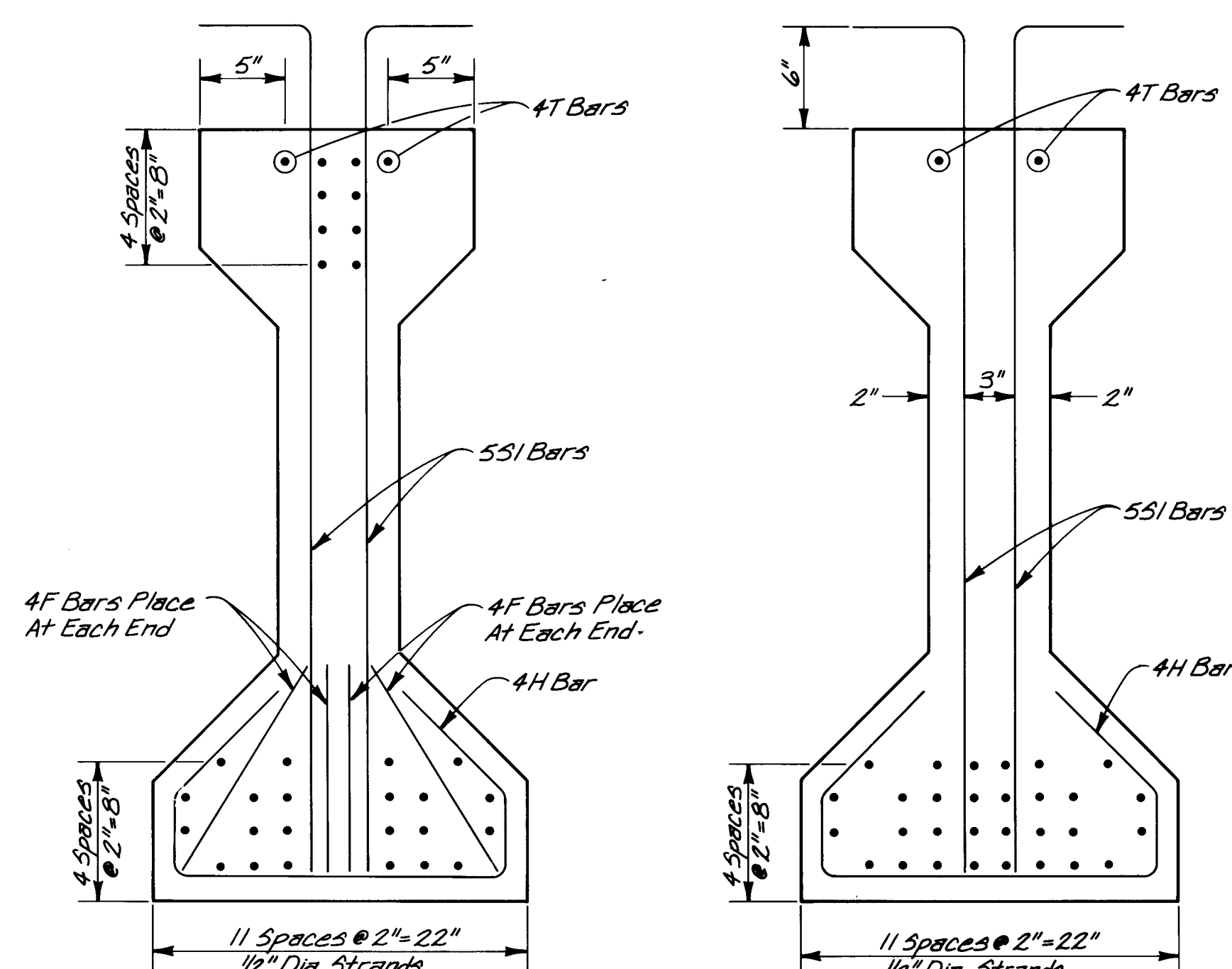
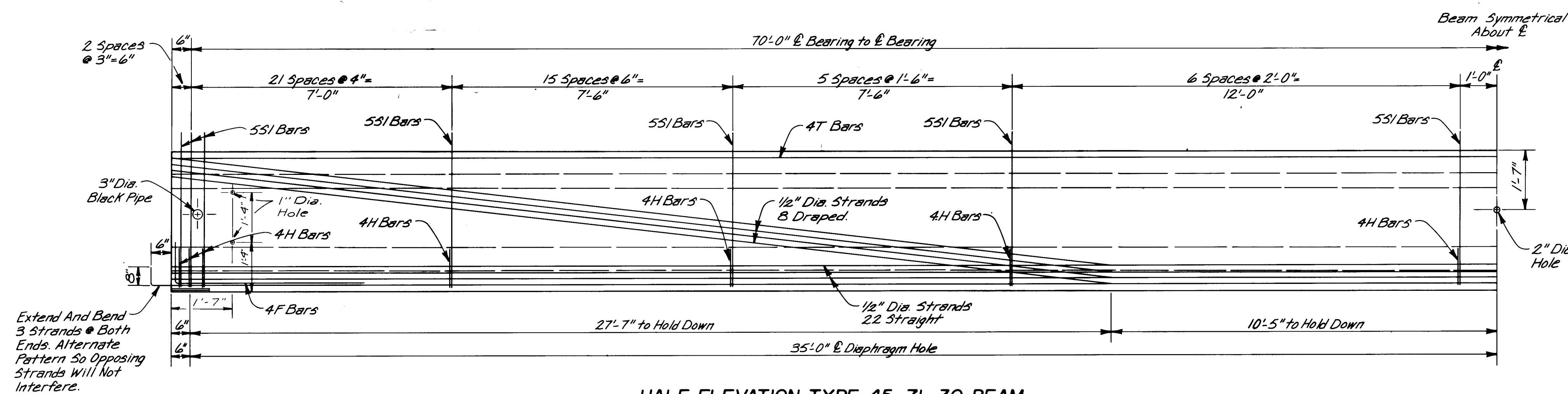
[illegible][illegible]

11/20/84

[illegible]

		CITY OF ALBUQUERQUE GOLF COURSE RD.			
TITLE:		GOLF COURSE RD. BRIDGE			
TOP OF SLAB ELEVATIONS					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>C.H. Hagan</i>	<i>12/16/94</i>	Liquid Waste		
A C E - Design	<i>12/22/94</i>	<i>12/16/94</i>	Traffic	<i>NA DWH</i>	<i>11/28/94</i>
A C E - Hydrology	<i>Don Hagan</i>	<i>12/16/94</i>	Water		
DRAWING NO.		MAP NO.		SHEET	
2195		B-12		5-6	





GENERAL NOTES

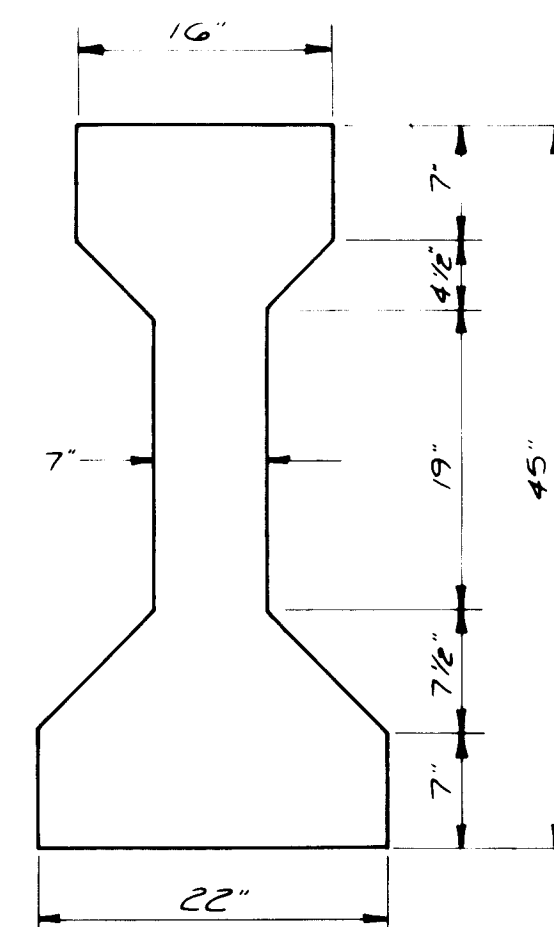
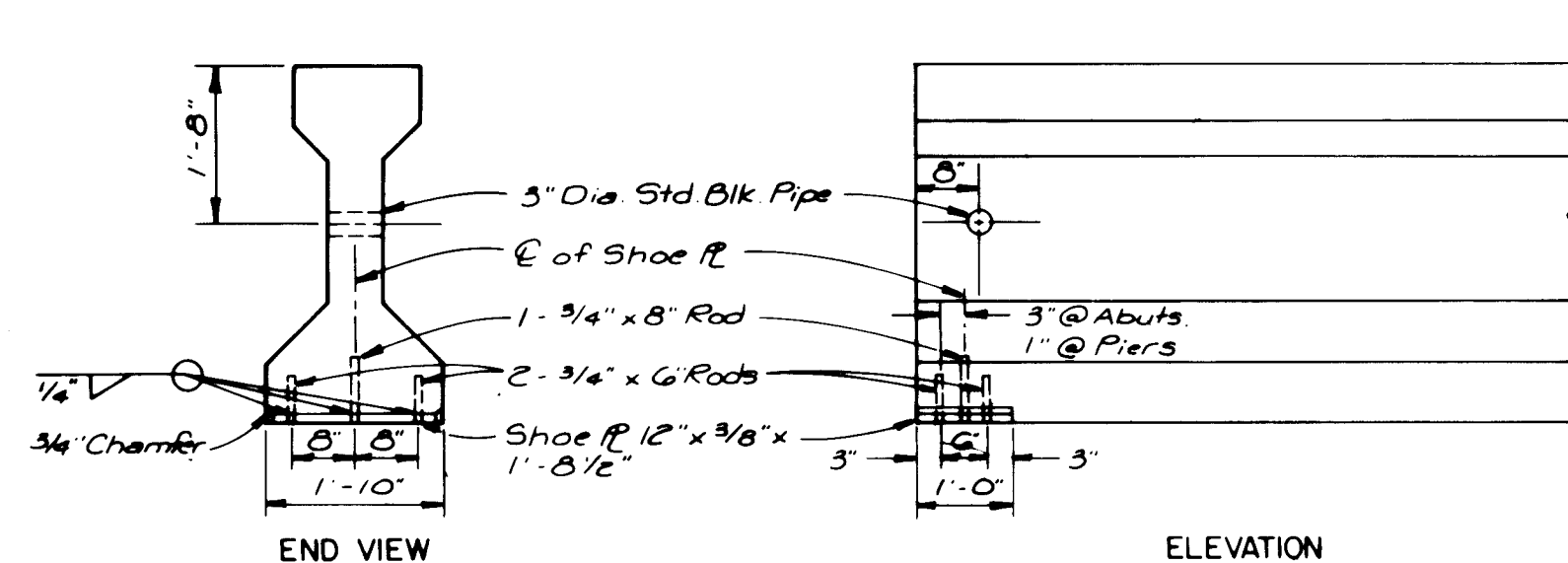
- 1 WORKMANSHIP AND MATERIALS SHALL CONFORM TO NEW MEXICO STATE HIGHWAY DEPARTMENT SPECIFICATIONS
- 2 COST OF REINFORCING STEEL AND STRUCTURAL STEEL EMBEDDED IN BRIDGE BEAMS IS TO BE INCLUDED IN THE UNIT BID PRICE FOR PRESTRESSED CONCRETE BRIDGE MEMBER - TYPE 45.
- 3 BEAMS SHALL BE LIFTED BY MEANS OF DEVICES SATISFACTORY TO THE ENGINEER, INSERTED THRU THE 3" DIA PIPE AT THE ENDS. BEAMS ARE TO BE CAST, STORED AND HAULED IN UPRIGHT POSITION. ALTERNATE LIFTING DEVICES MUST BE APPROVED BY THE ENGINEER PRIOR TO USE.
- 4 THE TOP SURFACE OF THE BEAM IS TO BE THOROUGHLY WIRE BRUSHED AFTER INITIAL SET TO PROVIDE A ROUGH SURFACE AND REMOVE L'AITANCE. SCORE TRANSVERSE 1/4" DEEP ENTIRE FLANGE WIDTH.
- 5 BEAM CAMBER IS COMPUTED NET UPWARD DEFLECTION AT CENTER LINE OF BEAM DUE TO PRESTRESSING, WITH WEIGHT OF BEAM ACTING.
- 6 DEAD LOAD DEFLECTION IS THE COMPUTED DEFLECTION DUE TO WEIGHT OF SLAB, DIAPHRAGMS AND SUPERIMPOSED DEAD LOADS.
- 7 IF CONTRACTOR CHOOSES TO USE UNCOATED SEVEN WIRE STRESS RELIEVED STRANDS HAVING PROPERTIES OTHER THAN THOSE SHOWN IN DESIGN DATA, REVISED DETAILS SHOWING NUMBER AND ARRANGEMENT OF STRANDS SHALL BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL, (PRIOR TO FABRICATION).
- 8 STIRRUPS MAY BE WELDED INTO A "CAGE" AT THE FABRICATOR'S OPTION.
- 9 TYPE 3 CEMENT MAY BE USED AT THE FABRICATOR'S OPTION.
- 10 SHOE PLATE MUST BE STRAIGHTENED PRIOR TO CASTING INTO BEAM.
- 11 ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" OR ROUNDED TO 3/4" RADIUS. ANGLES OF INTERSECTION BETWEEN FLANGES AND WEBS SHALL BE ROUNDED TO NOT LESS THAN 3/4" RADIUS.
- 12 PRESTRESSING TENDONS FOR PRETENSIONED BEAMS SHALL CONSIST OF HIGH TENSILE STRENGTH SEVEN WIRE STEEL STRANDS CONFORMING TO REQUIREMENTS OF THE NEW MEXICO STATE HIGHWAY DEPARTMENT SPECIFICATIONS. DETAILS OF HOLD-DOWNS FOR DRAPED STRANDS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OF THE PRESTRESSED BEAMS.

DESIGN DATA

DESIGN ACCORDING TO AASHTO STANDARD SPECIFICATIONS DATED 1983.

DESIGN STRESSES:

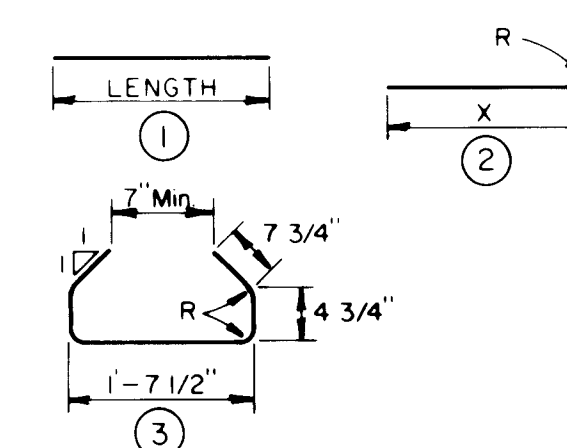
BEAMS: FC1 (MIN. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF INITIAL PRESTRESS) = 4750 PSI
FC = 5500 PSI, $N_u = 6$, 1/2" DIA. HIGH TENSILE STRENGTH 7 WIRE STRANDS
INITIAL PRESTRESS = 28,910 LBS/STRAND, $F_s = 41,300$ LBS/STRAND, $F_y = 35100$ LBS/STRAND
CONVENTIONAL REINFORCING STEEL $F_s = 20,000$ PSI, $F_y = 40,000$ PSI $F_{se} = 19775$ LBS/STRAND
COMPOSITE SLAB: $F'_c = 3,000$ PSI, $N = 9$, $F_s = 24,000$ PSI PRESTRESS LOSS = 9135 LBS
ALLOWABLE FOR FUTURE WEARING SURFACE = 30 LBS/SQ.FT.
LIVE LOAD = HS-20-44



ESTIMATED QUANTITIES FOR ONE BEAM AND BEAM DATA

45-71-30	10.21 CY	1135 LBS.	1319 LBS.	82 LBS.	20.70 TONS	13'6"	1"	

REINFORCING STEEL REQUIRED FOR ONE BEAM

[illegible]

RECORD DRAWINGS

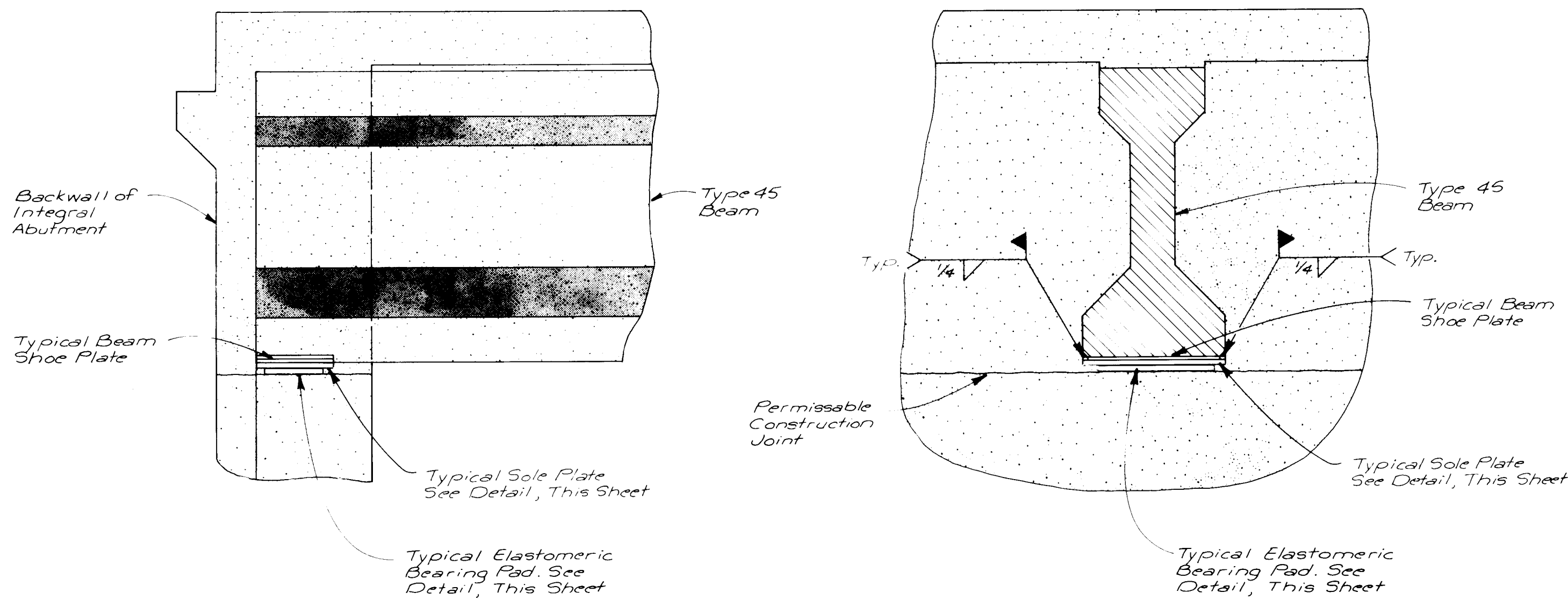
DATE 12/4/86

CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: *GOLF COURSE RD. BRIDGE*
PRE-STRESSED BEAMS

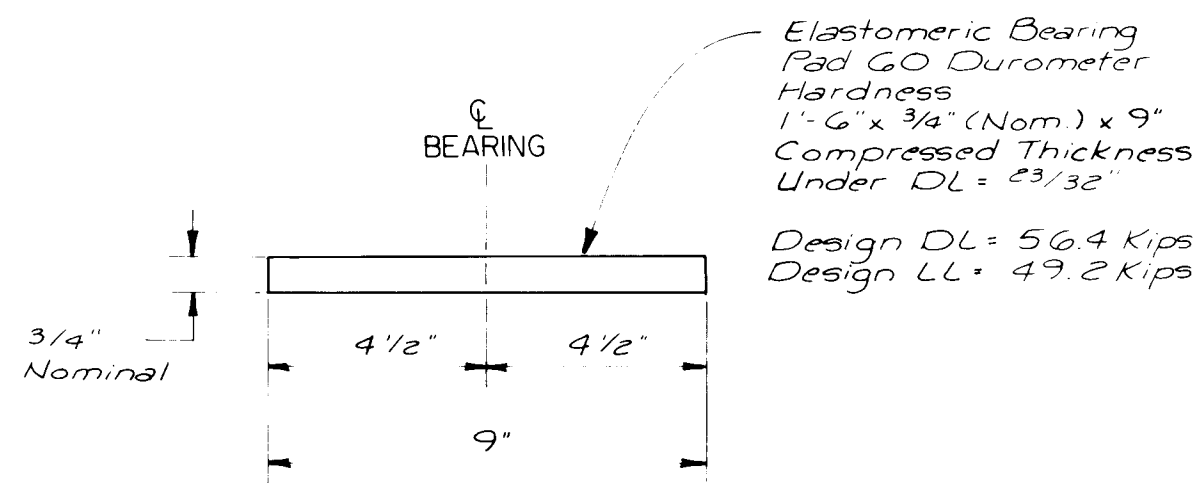
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/26/84	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/26/84	Traffic	NADWH	1/23/85
A C E - Hydrology	<i>[Signature]</i>	12/26/84	Water		

DRAWING NO	2195	MAP NO. B-12	SHEET 5-7
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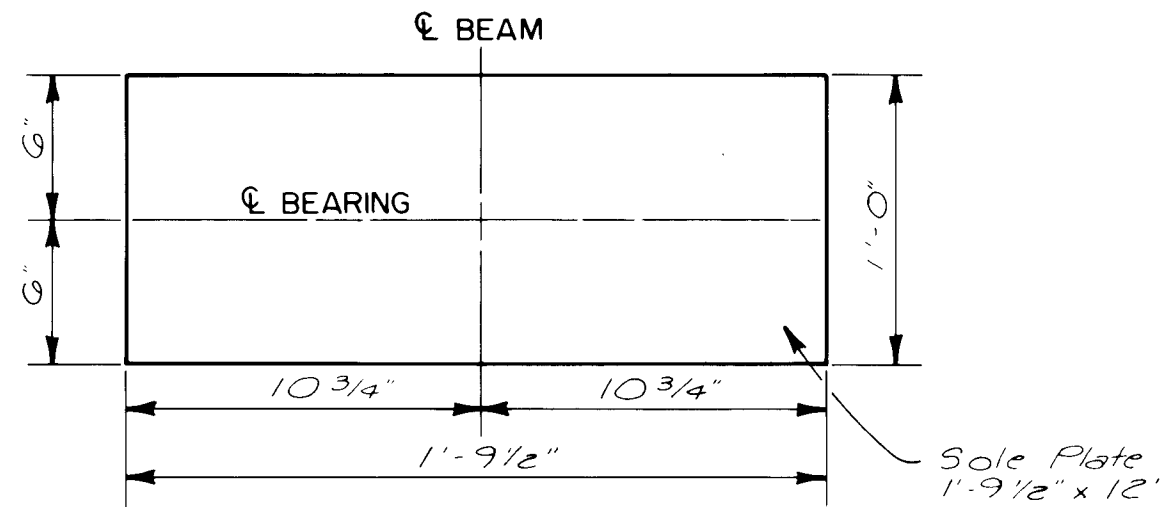


ELEVATION AT INTEGRAL ABUTMENT
NO SCALE

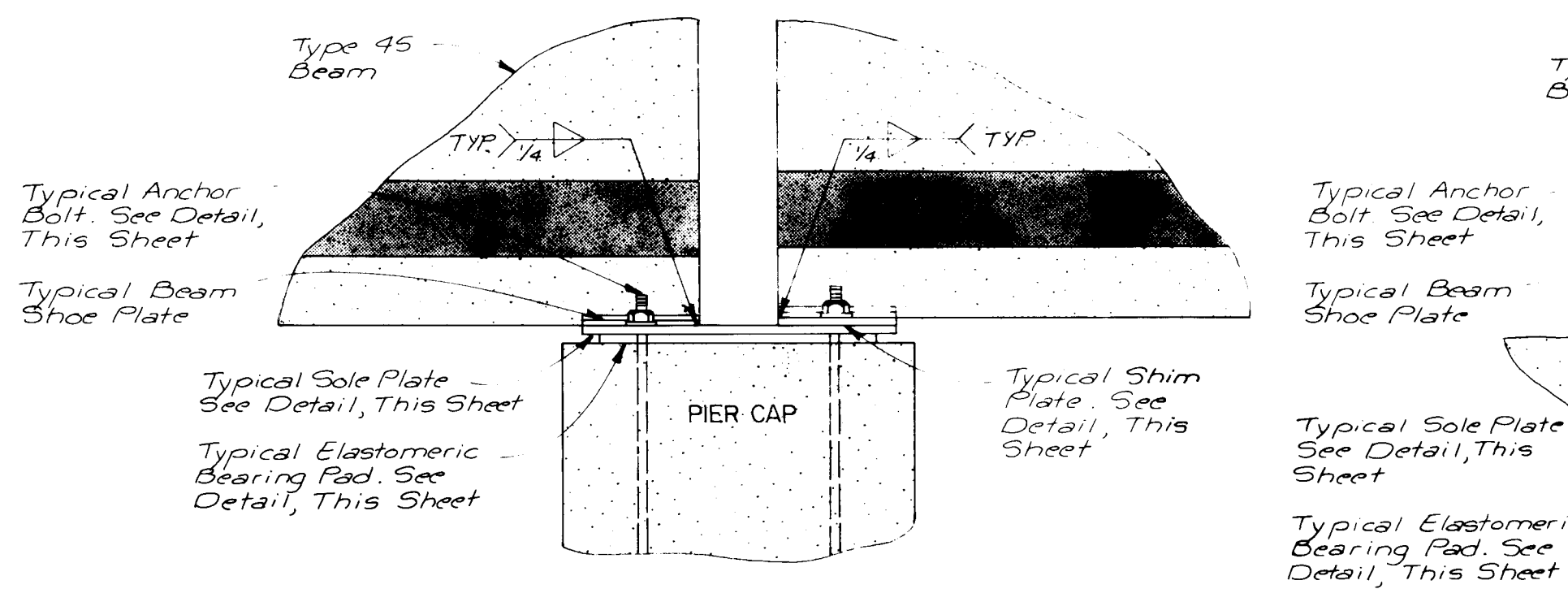
SECTION AT INTEGRAL ABUTMENT
NO SCALE



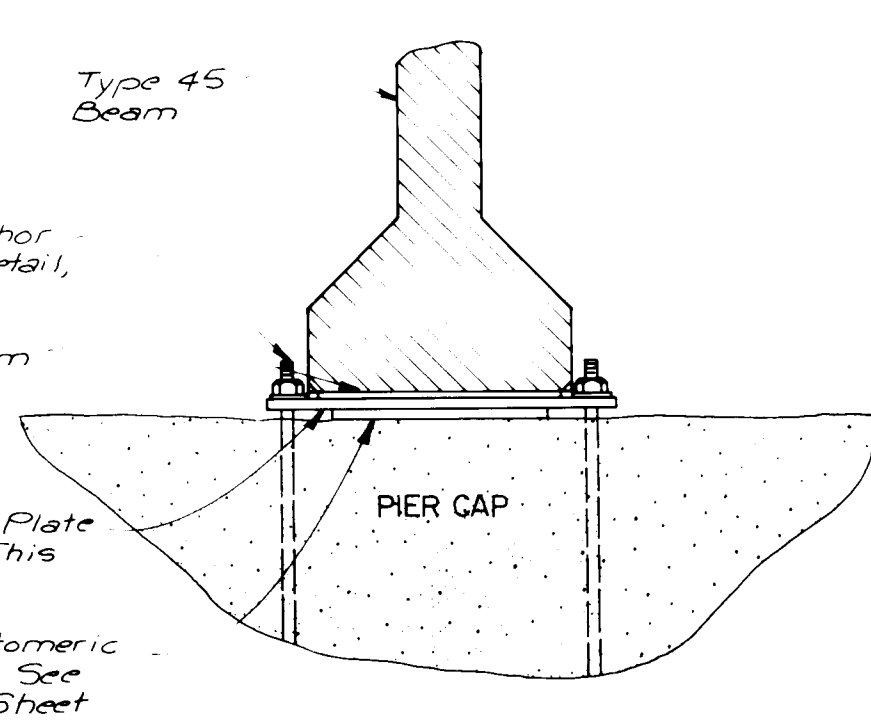
ELASTOMERIC BEARING PAD DETAIL
(AT ABUTMENTS)



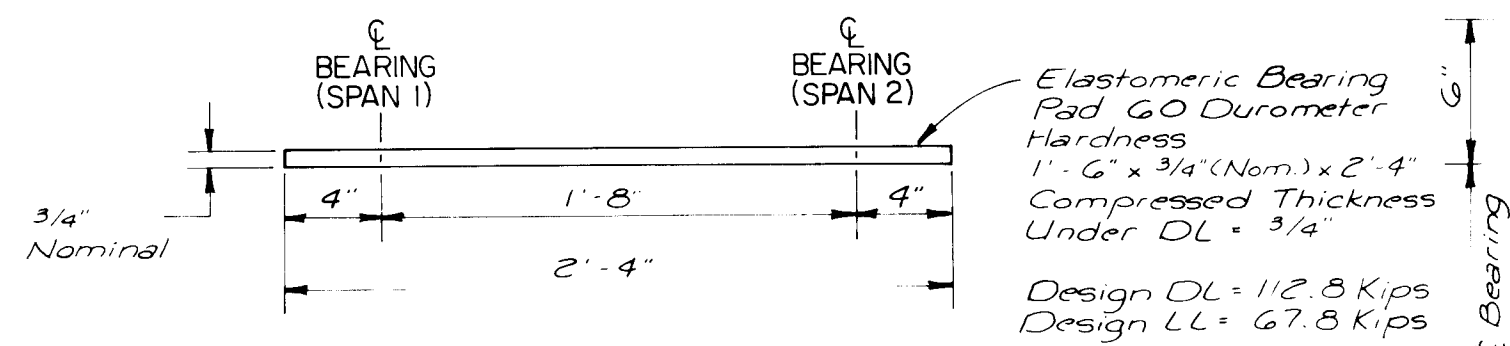
SOLE PLATE DETAIL
(AT ABUTMENTS)



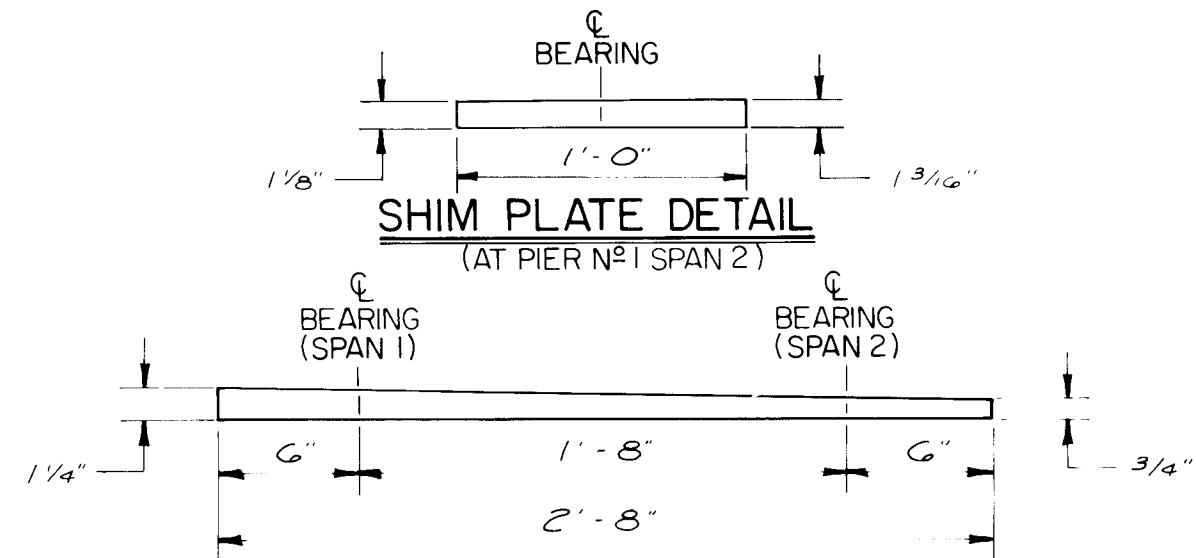
ELEVATION AT PIER
NO SCALE



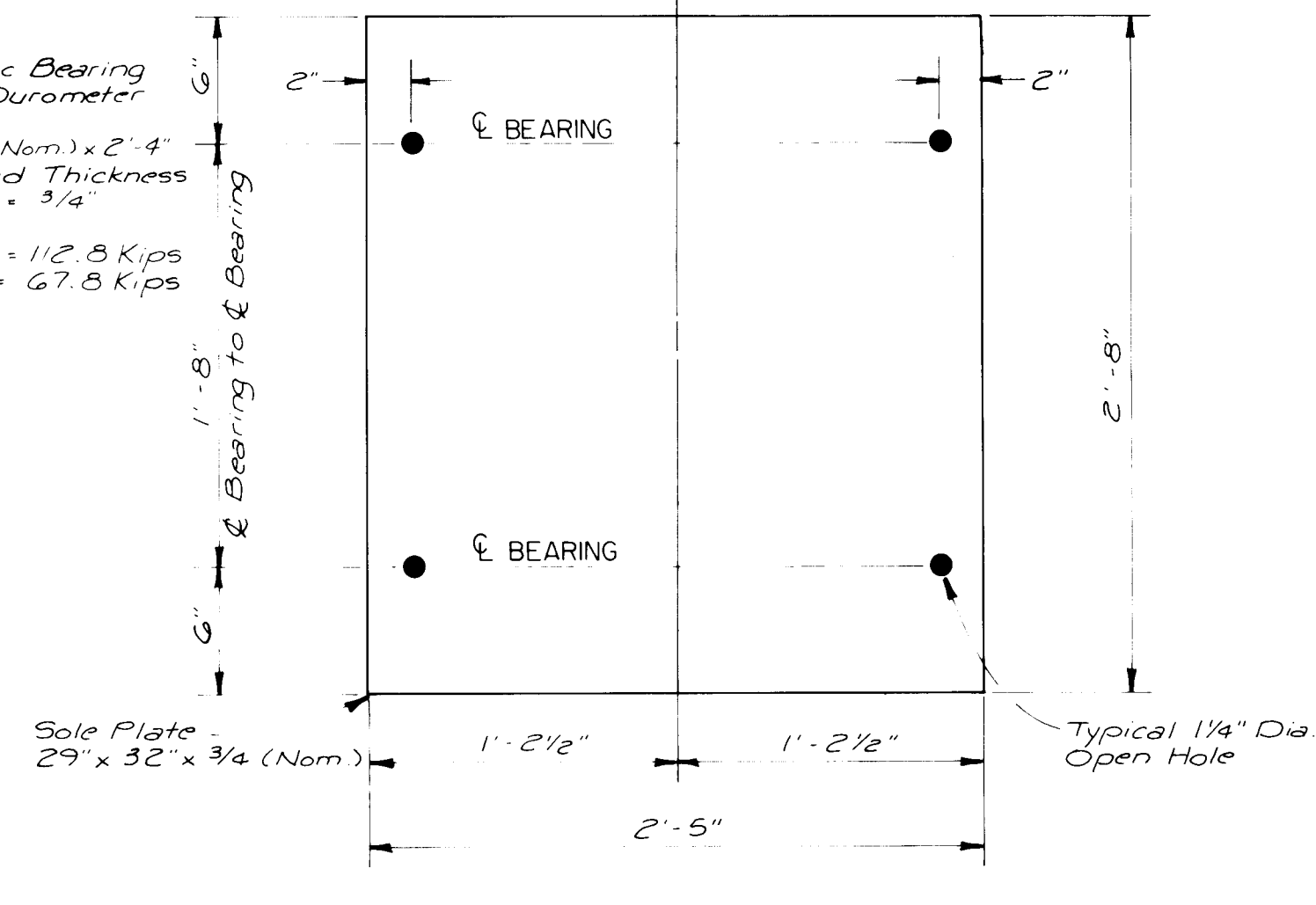
SECTION AT PIER
NO SCALE



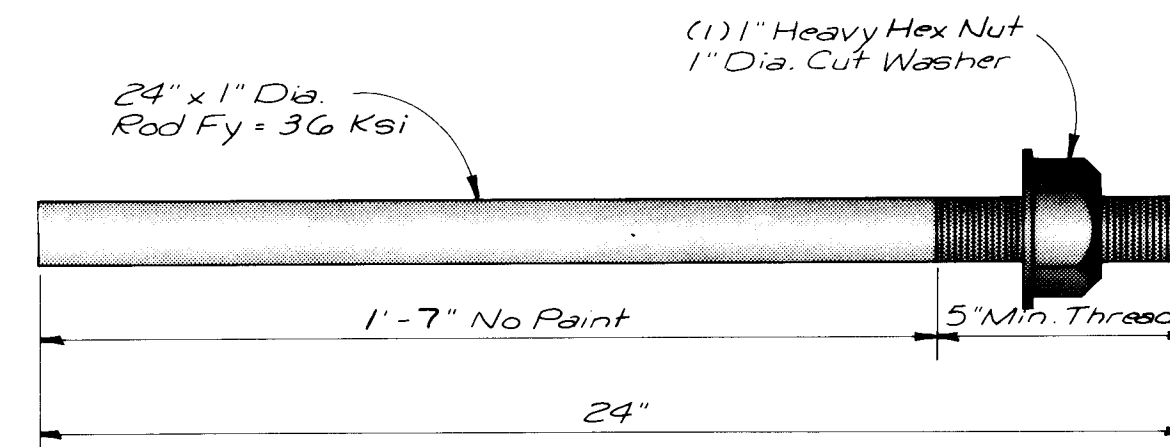
ELASTOMERIC BEARING PAD DETAIL
(AT PIER)



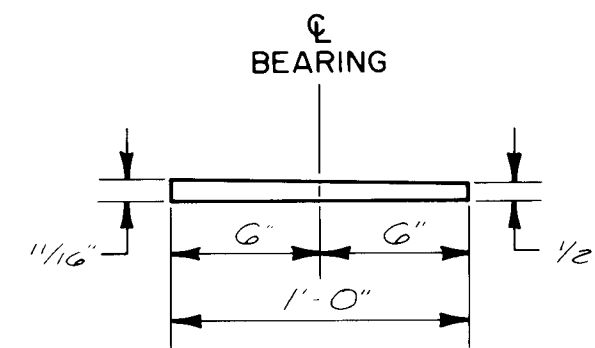
SOLE PLATE SECTION
(AT PIER)



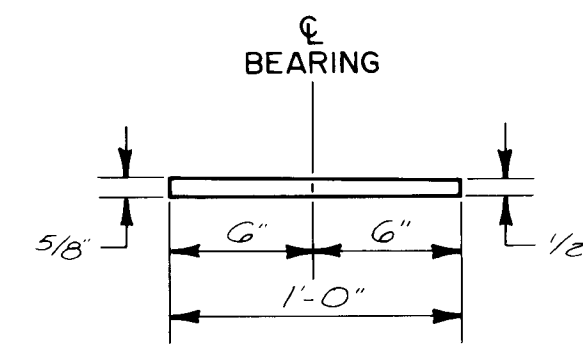
SOLE PLATE DETAIL
(AT PIER)



ANCHOR BOLT DETAIL
NO SCALE



SOLE PLATE SECTION
(AT ABUT. N° 1)



SOLE PLATE SECTION
(AT ABUT. N° 2)

SEAT ELEVATIONS

LOCATION	DESCRIPTION	1	2	3	4	5	6	7	8	9
ABUT. N° 1	SLAB ELEV.	5153.424	5153.604	5153.785	5153.964	5154.145	5153.964	5153.785	5153.604	5153.424
	SLAB Th.	.729								.729
	DELTA E	.013								.013
	HAUNCH	.204								.204
	BEAM	3.75								3.75
	SOLE PL.	.049								.049
	BEARING	.063								.063
	SEAT ELEV.	5148.616	5148.796	5148.977	5149.156	5149.337	5149.156	5148.977	5148.796	5148.616

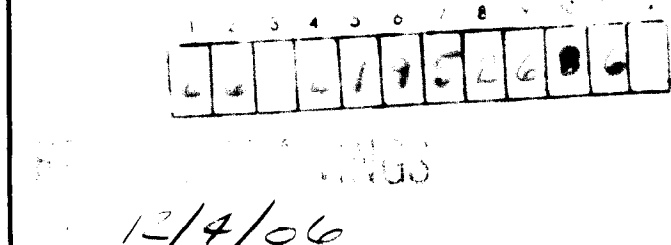
LOCATION	DESCRIPTION	1	2	3	4	5	6	7	8	9
PIER N° 1 SPAN 1	SLAB ELEV.	5152.348	5152.528	5152.708	5152.888	5153.068	5152.888	5152.708	5152.528	5152.348
	SLAB Th.	.729								.729
	DELTA E	.013								.013
	HAUNCH	.204								.204
	BEAM	3.75								3.75
	SOLE PL.	.096								.096
	BEARING	.063								.063
	SEAT ELEV.	5147.498	5147.678	5147.858	5148.038	5148.218	5148.038	5147.858	5147.678	5147.498

LOCATION	DESCRIPTION	1	2	3	4	5	6	7	8	9
PIER N° 1 SPAN 2	SLAB ELEV.	5152.332	5152.512	5152.692	5152.872	5153.052	5152.872	5152.692	5152.512	5152.332
	SLAB Th.	.729								.729
	DELTA E	.013								.013
	HAUNCH	.113								.113
	BEAM	3.75								3.75
	SHIM PL.	.096								.096
	SOLE PL.	.070								.070
	BEARING	.063								.063
	SEAT ELEV.	5147.498	5147.678	5147.858	5148.038	5148.218	5148.038	5147.858	5147.678	5147.498

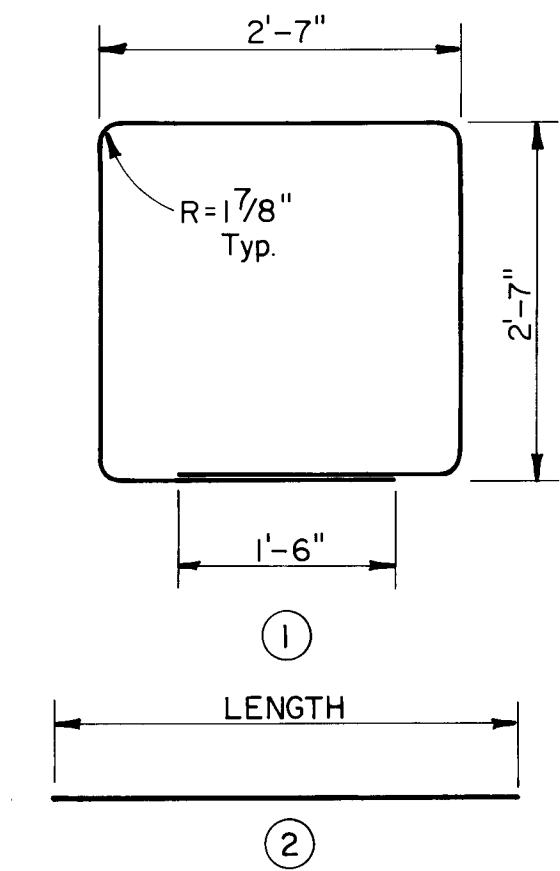
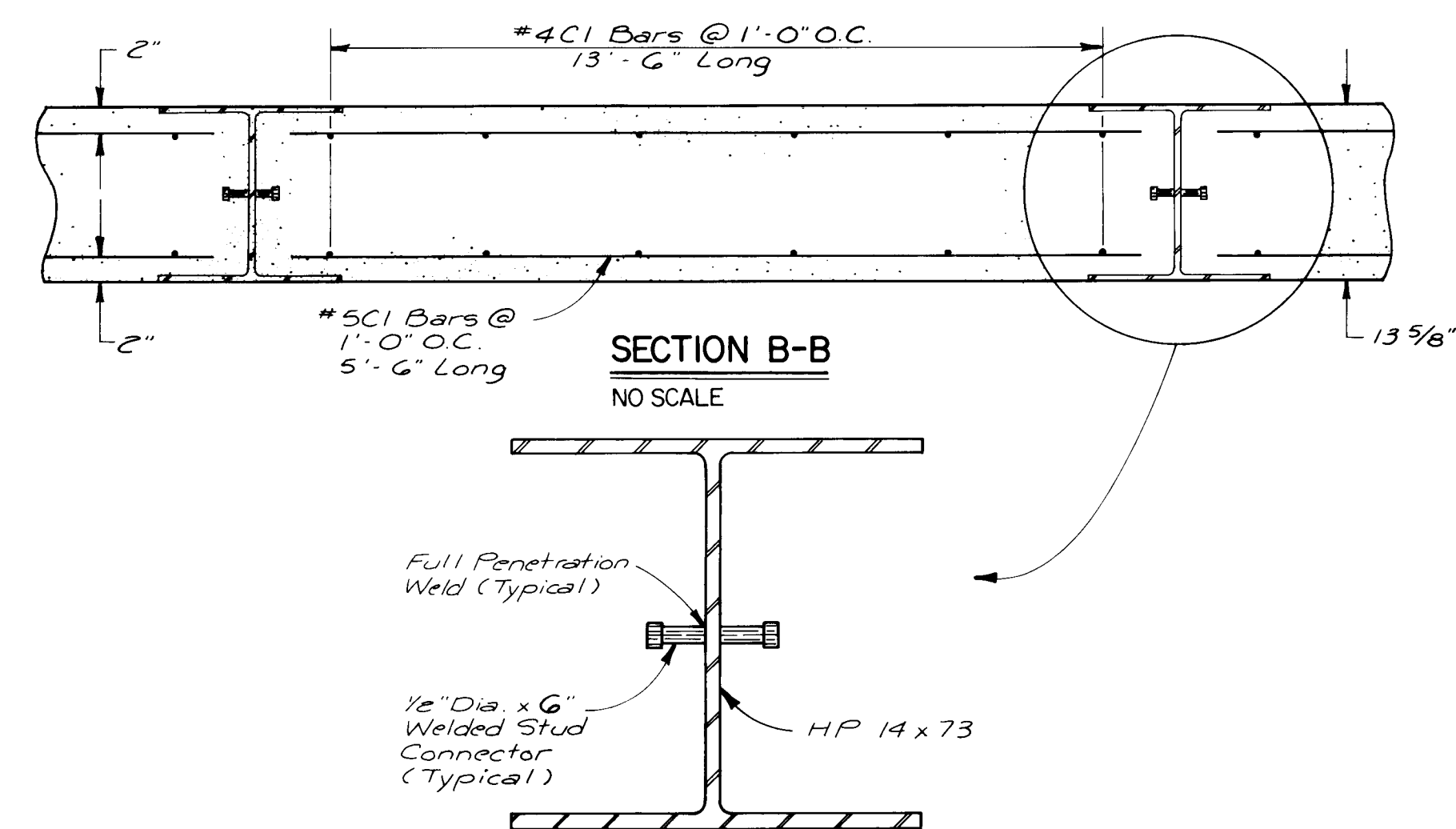
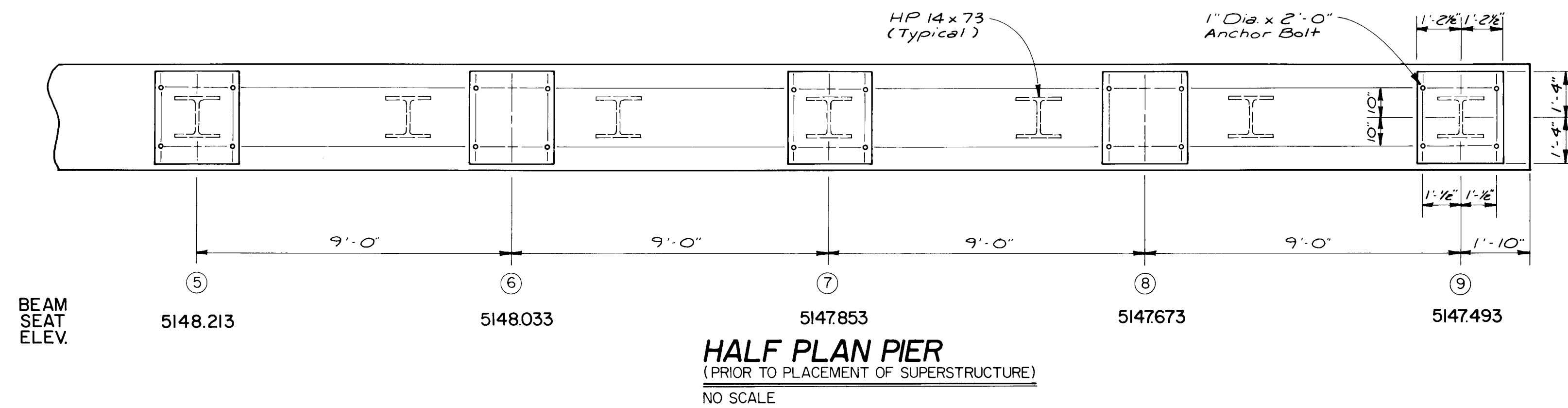
LOCATION	DESCRIPTION	1	2	3	4	5	6	7	8	9
ABUT. N° 2	SLAB ELEV.	5151.631	5151.812	5151.992	5152.171	5152.352	5152.171	5151.992	5151.812	5151.631
	SLAB Th.	.729								.729
	DELTA E	.013								.013
	HAUNCH	.113								.113
	BEAM	3.75								3.75
	SOLE PL.	.047								.047
	BEARING	.063								.063
	SEAT ELEV.	5146.916	5147.097	5147.277	5147.457	5147.637	5147.456	5147.277	5147.097	5146.916

NOTE: ALL EMPTY SPACES IN ROWS 2 THRU 8 HAVE THE SAME DATA AS ROWS 1 AND 9.

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		DESIGN	
CONTRACTOR	WORK	STAKED BY	DATE	FIELD	NO.	BY	DATE	NO.	DATE	DESIGNED BY	DATE
INSPECTOR	DATE	FIELD	DATE	NO.	DATE	NO.	DATE	NO.	DATE	DRAWN BY	DATE
VERIFICATION BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	CHECKED BY	DATE
CORRECTED BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
RECORDED BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE



CITY OF ALBUQUERQUE GOLF COURSE RD.					
TITLE: GOLF COURSE RD. BRIDGE					
BEARINGS					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/16/04	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/16/04	Traffic	N.A.D.W.H.	11/28/04
A C E - Hydrology	<i>[Signature]</i>	12/16/04	Water		
DRAWING NO.	2195	MAP NO.	B-12	SHEET	5-8



BAR BENDING DIAGRAM
NO SCALE

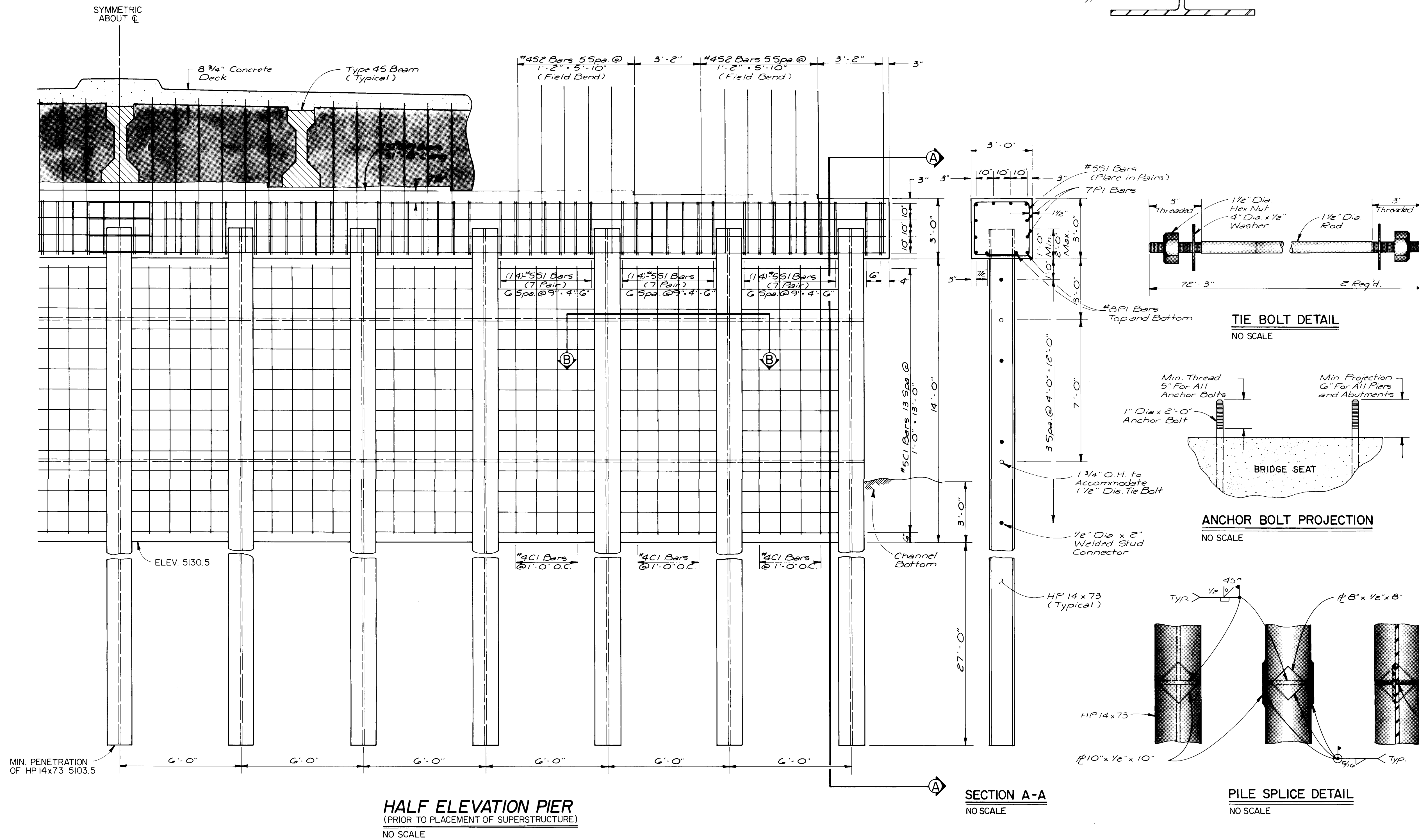
REINFORCING STEEL FOR PIER

#5SI	1	5	11'-7"	176
#5PI	2	5	31'-0"	3
#7PI	2	7	39'-2"	8
#8PI	2	8	39'-2"	16
#4CI	2	4	13'-6"	144
#5CI	2	5	5'-6"	336

ENGINEER'S SEAL

Mr. H. Oakley

11/28/84



SECTION A-A
NO SCALE

PILE SPLICE DETAIL
NO SCALE

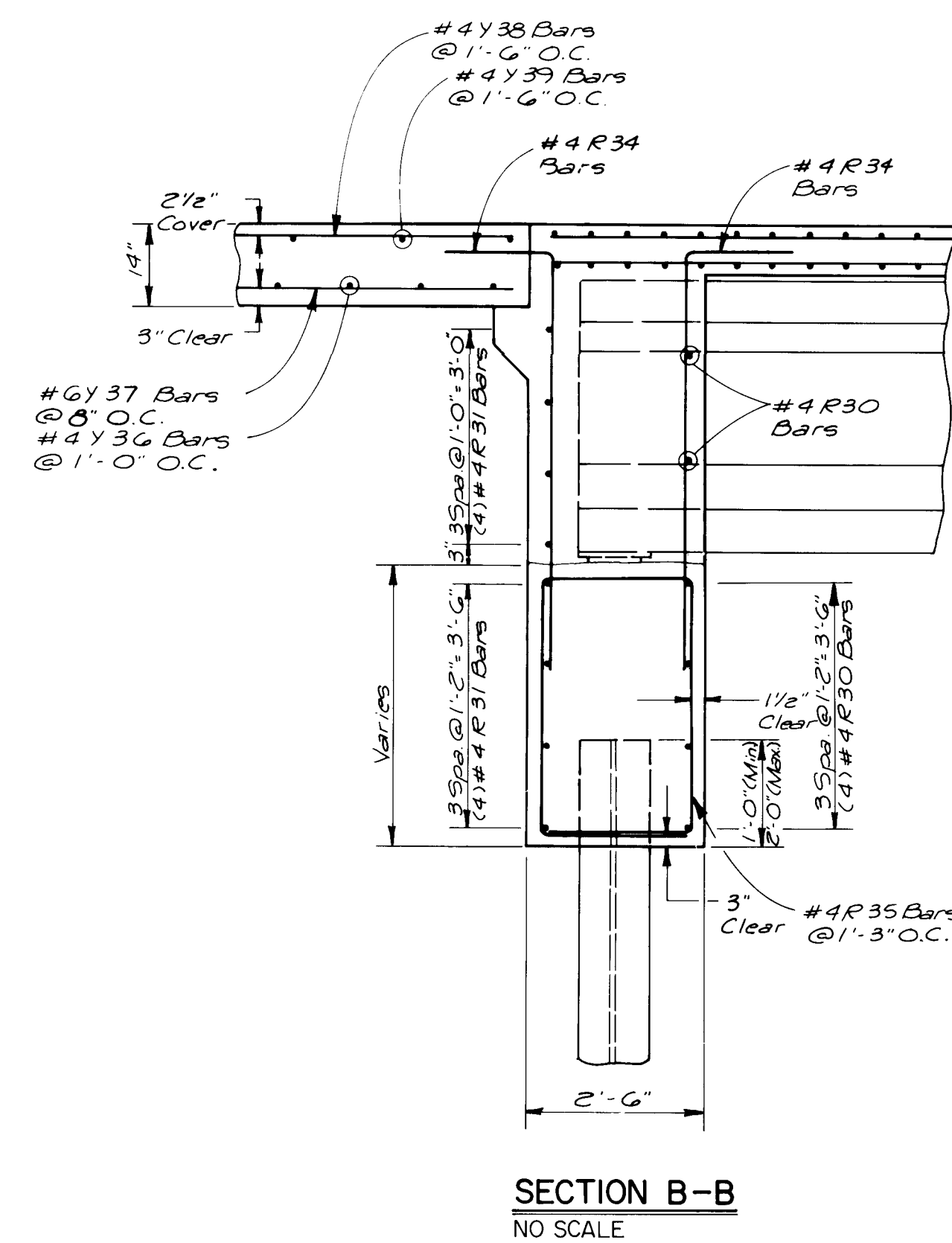
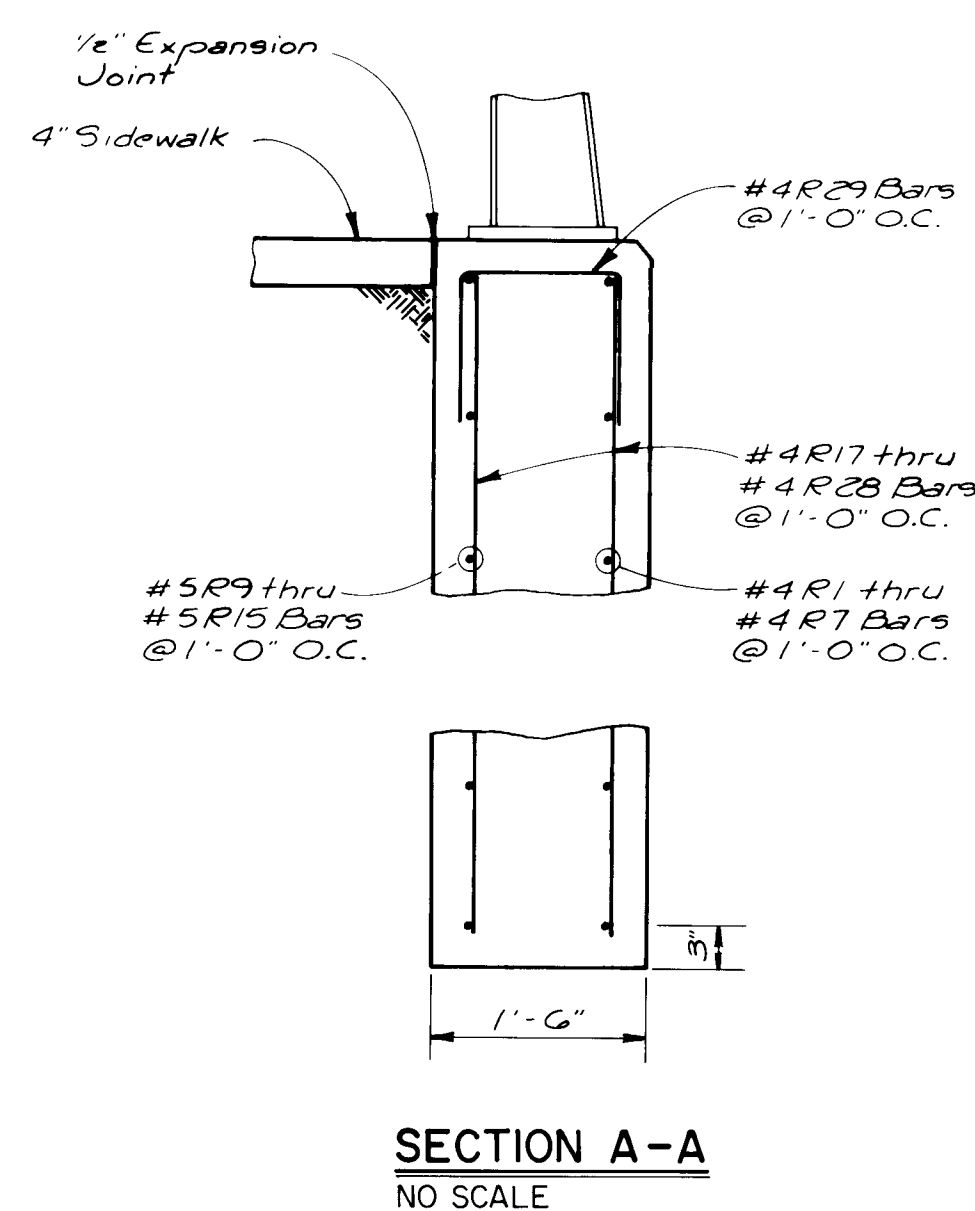
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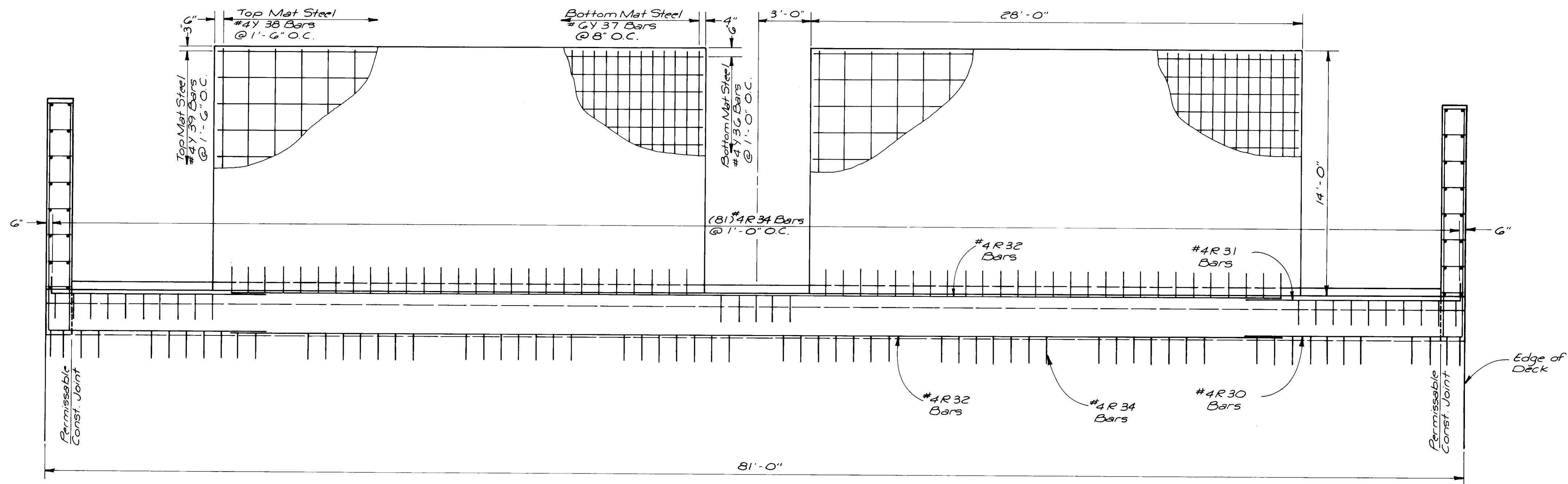
	CITY OF ALBUQUERQUE GOLF COURSE RD.	
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TITLE:		GOLF COURSE RD. BRIDGE
		SUBSTRUCTURE DETAIL S PIER

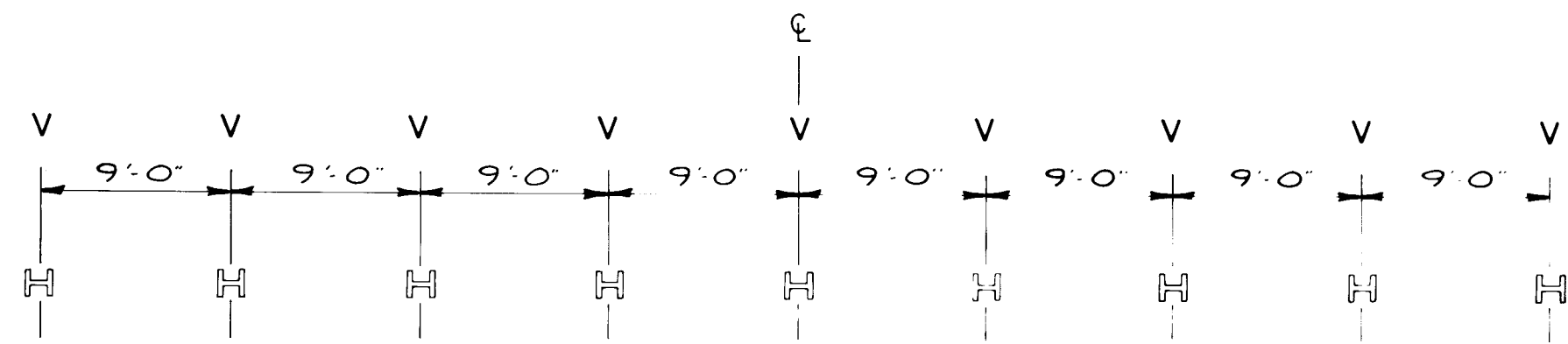
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	1/7/84	Liquid Waste		
A C E - Design	<i>[Signature]</i>	1/6/84	Traffic	NA DWH	1/28/84
A C E - Hydrology	<i>[Signature]</i>	12/6/84	Water		

DRAWING NO.	2195	MAP NO. B-12	SHEET 5-9
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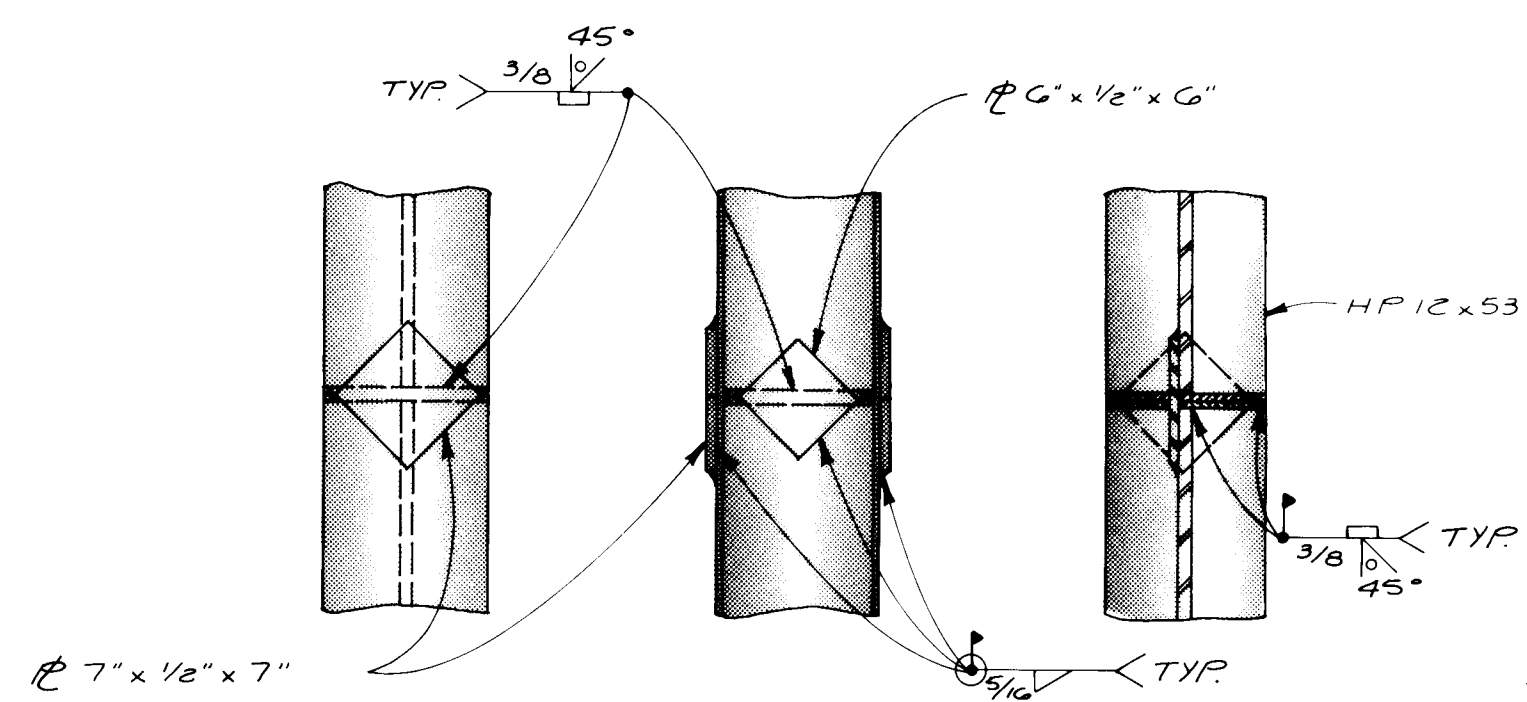
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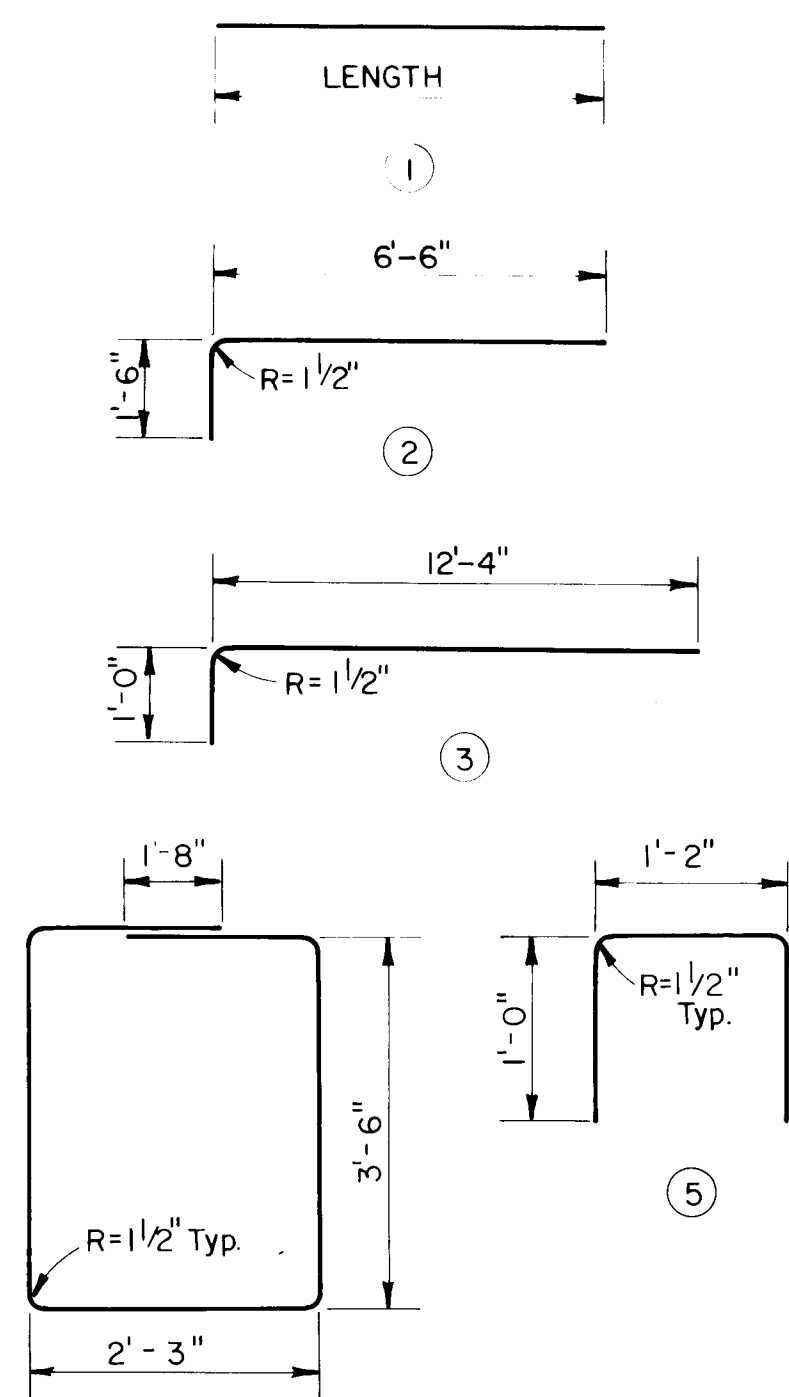
PLAN ABUTMENT N^o 1
NO SCALE



PILE LAYOUT
NO SCALE



PILE SPLICE DETAIL
NO SCALE



BAR BENDING DIAGRAM
NO SCALE

LENGTH					
#4R34	2	#4	8'-0"	145	64FE 81BF
#4Y38	1	#4	13'-8"	38	19 EACH SLAB
#4Y39	1	#4	27'-8"	20	10 EACH SLAB

#4R1	1	#4	3'-10"	2	1 EACH WING
THRU	1	Inc. 1'-6 3/8"	AVE 8'-5"	10	5 EACH WING
#4R7	1	#4	13'-0"	2	1 EACH WING
#4R8	1	#4	13'-5"	4	2 EACH WING
#5R9	1	#5	3'-10"	2	1 EACH WING
THRU	1	Inc. 1'-6 3/8"	AVE 8'-5"	10	5 EACH WING
#5R15	1	#5	13'-0"	2	1 EACH WING
#5R16	1	#5	13'-5"	4	2 EACH WING
#4R17	1	#4	1'-9"	4	2 EACH WING
THRU	1	Inc. 0'-7 3/4"	AVE 5'-4"	40	20 EACH WING
#4R28	1	#4	8'-11"	4	2 EACH WING
#4R29	5	#4	3'-11"	24	12 EACH WING
#4R30	1	#4	12'-4"	±12	6 EACH END
#4R31	3	#4	13'-4"	±16	8 EACH END
#4R32	1	#4	60'-0"	±14	6 FE 8 BF
#4R33	1	#4	32'-0"	2	1 BF
#4R35	4	#4	13'-0"	64	
#4Y36	1	#4	27'-8"	28	14 EACH SLAB
#6Y37	1	#6	13'-8"	84	42 EACH SLAB

F.F. FRONT FACE OF ABUTMENT
B.F. BACK FACE OF ABUTMENT

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL	
CONTRACTOR	DATE	NO.	BY	NO.	DATE	NO.	DATE
INSPECTOR'S	DATE						
ACCEPTANCE BY	DATE						
VERIFICATION BY	DATE						
RECORDED BY	DATE						
NO.							

MICRO-FILM INFORMATION		REVISIONS		DESIGN	
CONTRACTOR	DATE	NO.	DATE	NO.	DATE
INSPECTOR'S	DATE				
ACCEPTANCE BY	DATE				
VERIFICATION BY	DATE				
RECORDED BY	DATE				
NO.					

ENGINEER'S SEAL		REVISIONS		DESIGN	
NO.		DATE		DATE	
BY		DATE		DATE	
DESIGNED BY		DATE		DATE	
DRAWN BY		DATE		DATE	
CHECKED BY		DATE		DATE	

1 2 3 4 5 6 7 8 9 10 11 12
26 1952906



CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: GOLF COURSE RD. BRIDGE

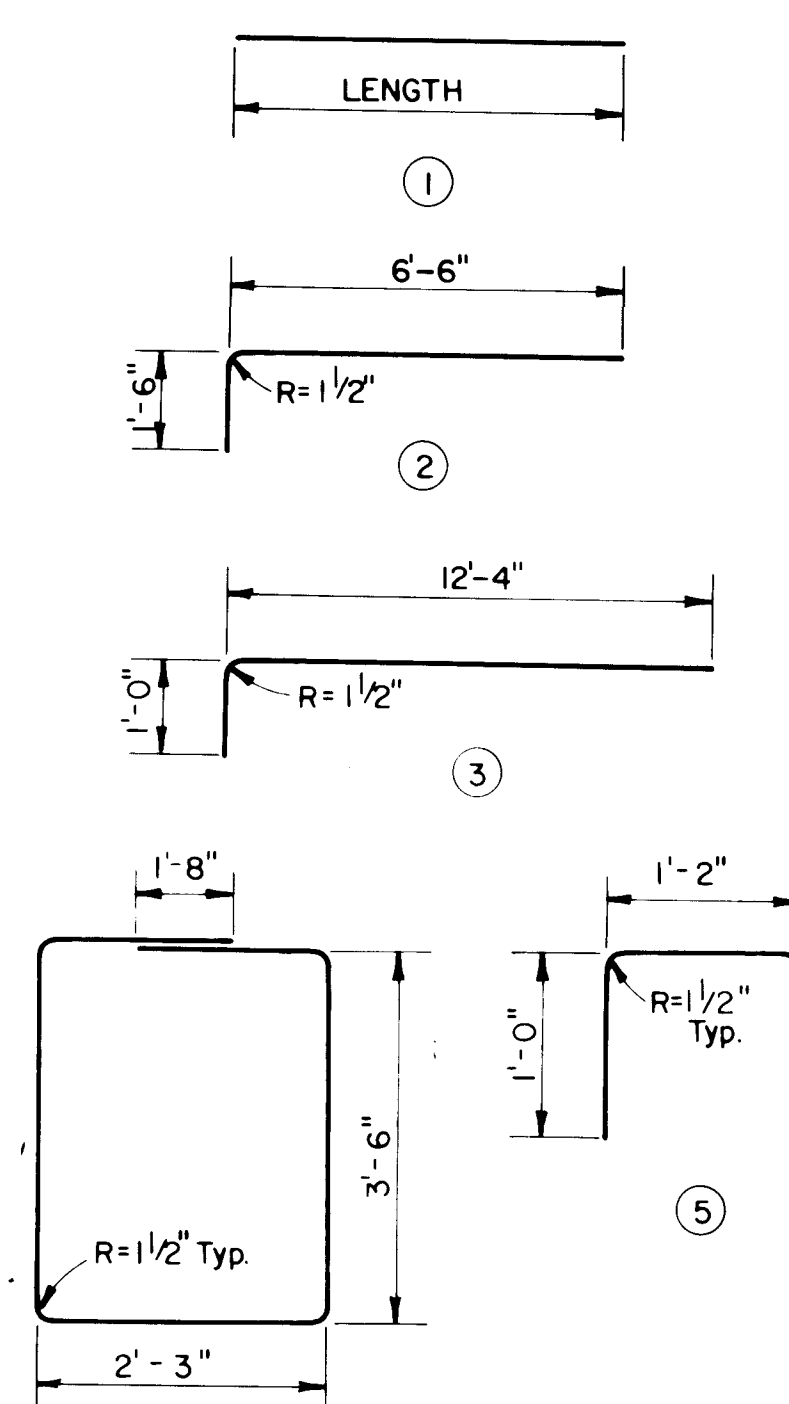
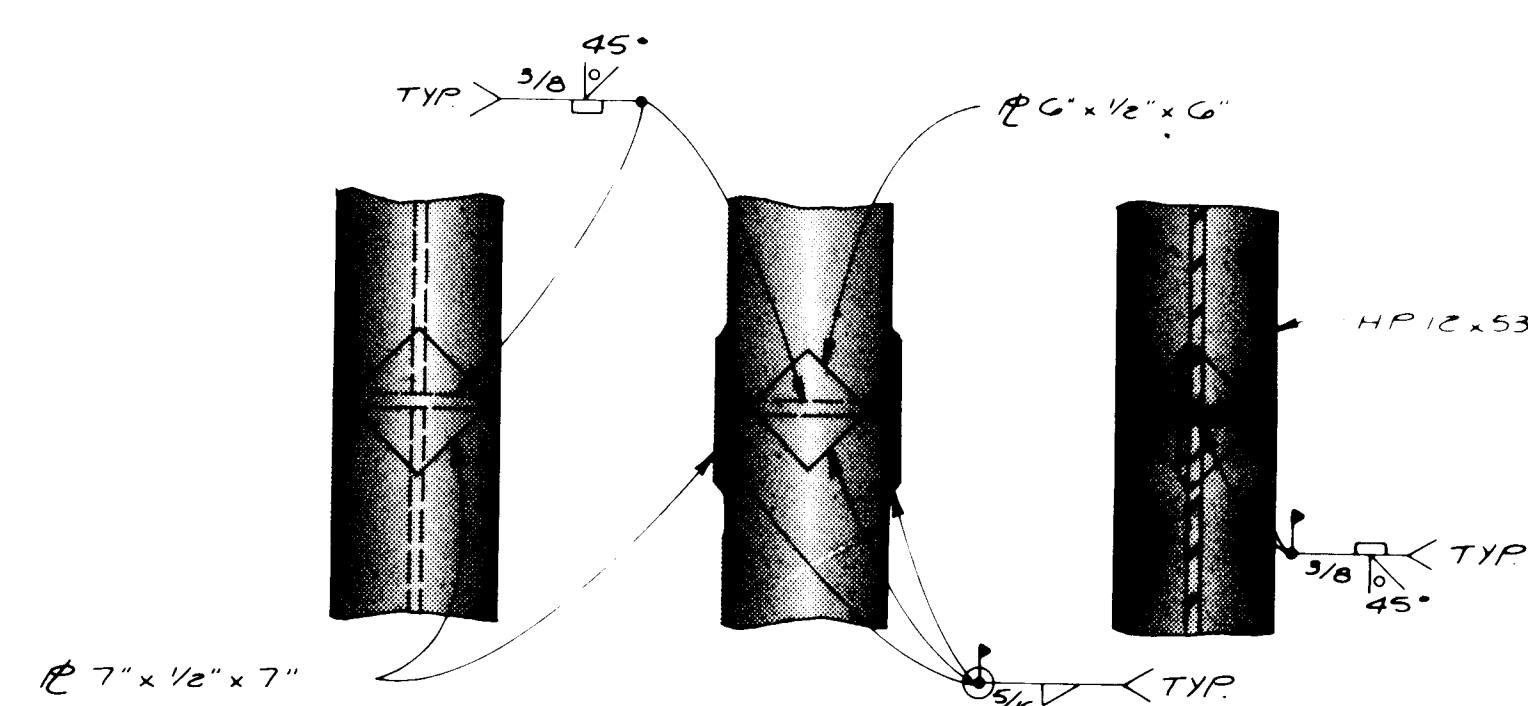
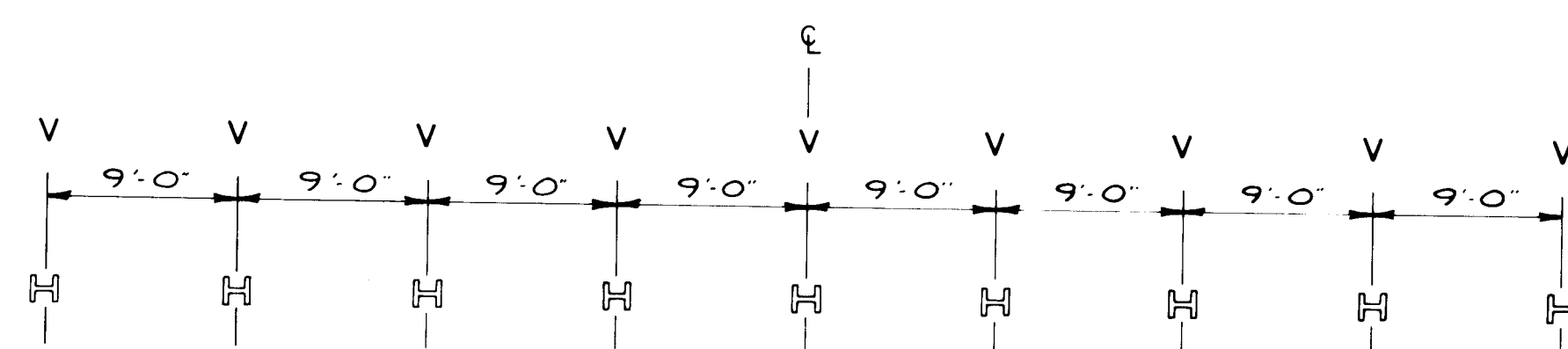
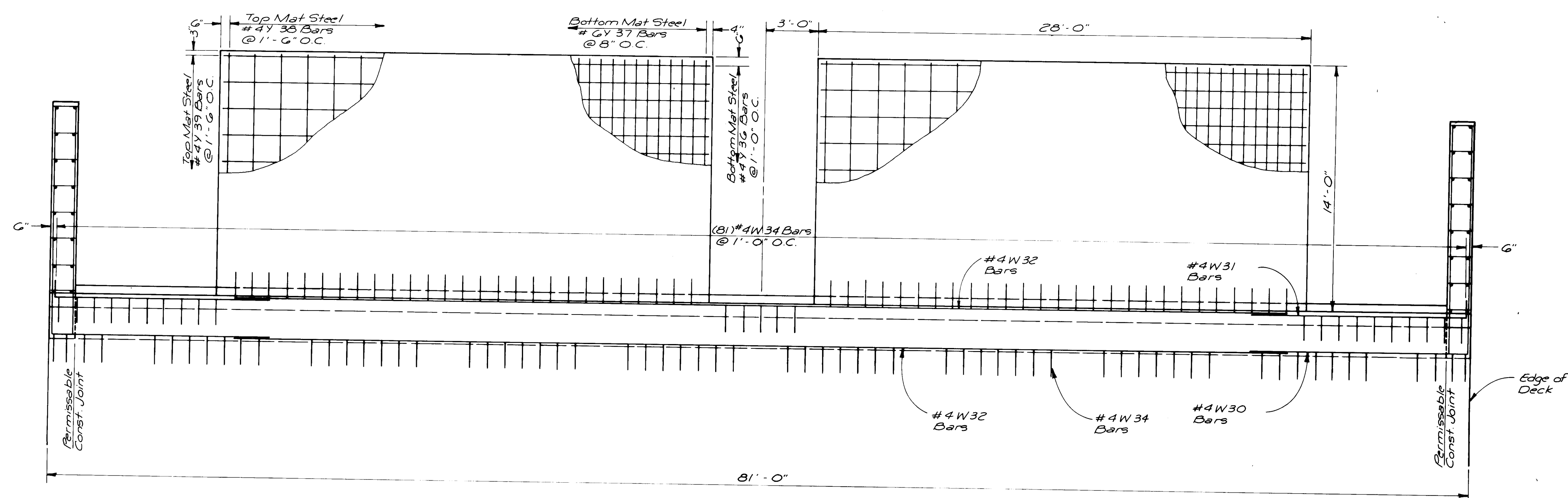
SUBSTRUCTURE DETAILS ABUTMENT N^o 1

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer		12/1/84	Liquid Waste		
A.C.E. - Design		12/6/84	Traffic	NA DWH	11/28/84
A.C.E. - Hydrology		12/6/84	Water		

DRAWING NO.	2195	MAP NO. B-12	SHEET 5-11
----------------	------	-----------------	---------------



		CITY OF ALBUQUERQUE GOLF COURSE RD.			
TITLE:		GOLF COURSE RD. BRIDGE			
SUBSTRUCTURE DETAILS ABUTMENT Nº 2					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	<i>12/16/04</i>	Liquid Waste		
A C E - Design	<i>[Signature]</i>	<i>12/16/04</i>	Traffic	<i>WA DWH</i>	<i>11/23/04</i>
A C E - Hydrology	<i>[Signature]</i>	<i>12/16/04</i>	Water		
DRAWING NO.		MAP NO.		SHEET	
2195		B-12		5-12	

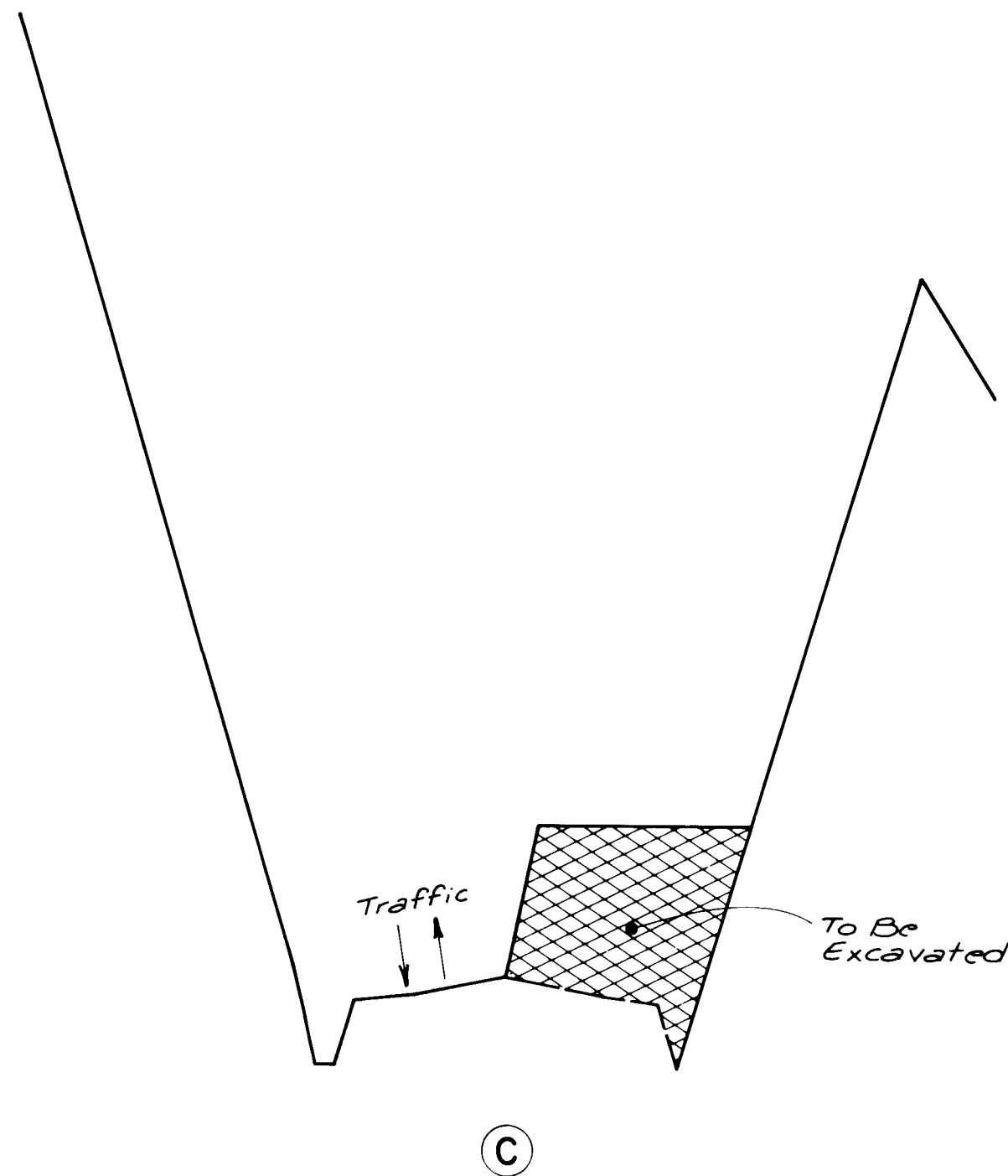
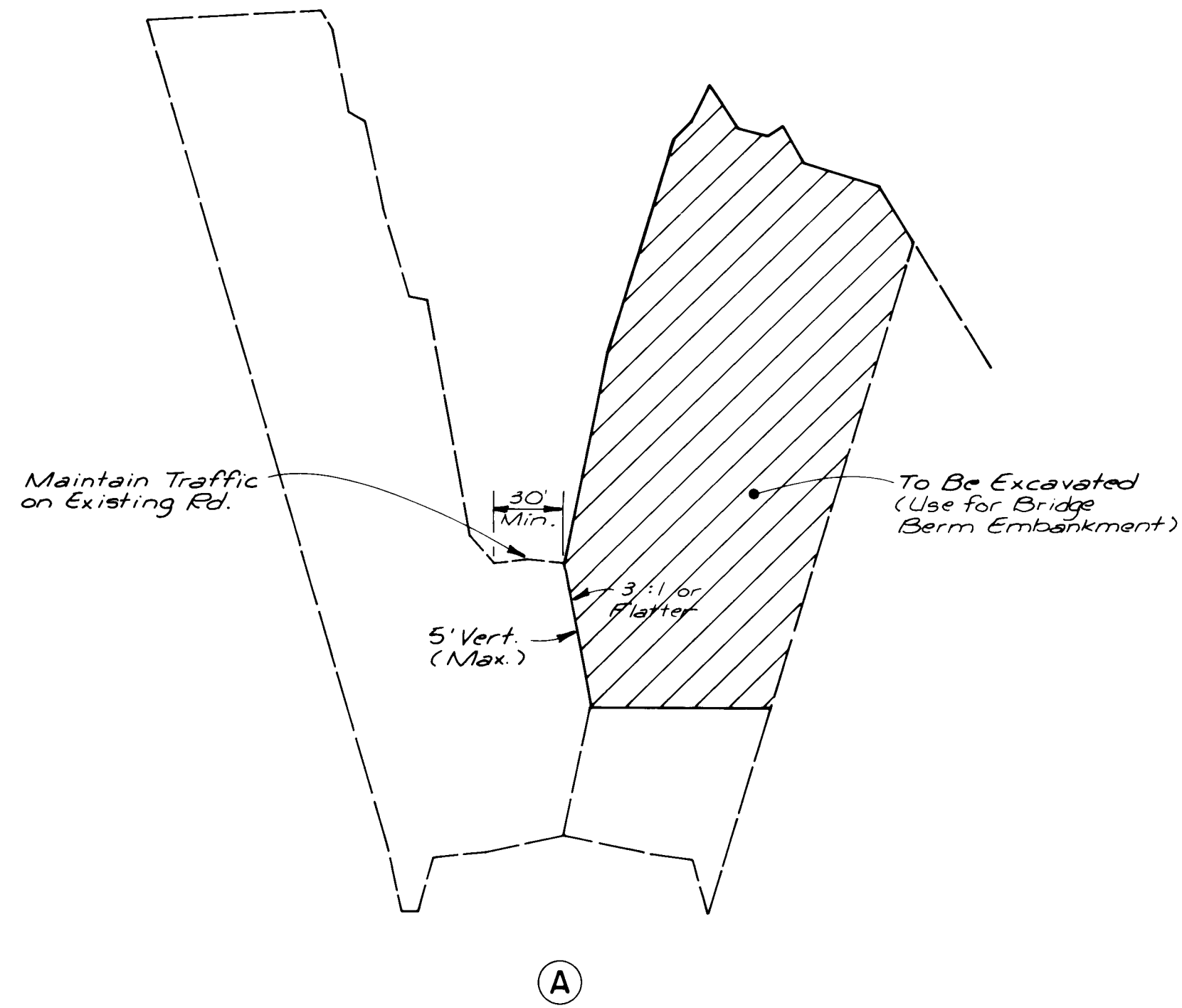


#4W34	2	#4	8'-0"	145	64F 816

#4W1	I	#4	3'-6"	2	1 EACH
THRU	I	Inc. 1'-6"	AVE 8'-0"	10	5 EACH WING
#4W7	I	#4	12'-6"	2	WING
#4W8	I	#4	12'-9"	4	2 EACH WING
#5W9	I	#5	3'-6"	2	1 EACH WING
THRU	I	Inc. 1'-6"	AVE 8'-0"	10	5 EACH WING
#5W15	I	#5	12'-6"	2	1 EACH WING
#5W16	I	#5	12'-9"	4	2 EACH WING
#4W17	I	#4	1'-9"	2	2 EACH WING
THRU	I	Inc. 0'-8"	AVE 5'-11 1/2"	36	18 EACH WING
#4W27	I	#4	8'-6"	4	2 EACH WING
#4W28	NOT USED				
#4W29	5	#4	3 1/2'-1"	22	11 EACH WING
#4W30	I	#4	12'-4"	8+2	6 EACH END
#4W31	3	#4	13'-4"	8+6	8 EACH
#4W32	I	#4	60'-0"	8+4	6 EFF 8 EFF
#4W33	I	#4	32'-0"	2	1 EFF
#4W35	4	#4	13'-0"	64	
#4Y36	I	#4	27'-8"	28	14 EACH SLAB
#6Y37	I	#6	13'-8"	84	42 EACH SLAB

F.F. FRONT FACE OF ABUTMENT
B.F. BACK FACE OF ABUTMENT

[illegible]



CONSTRUCTION SEQUENCE

PHASE 1: Build bridge berms. See detail below for placement of concrete wall barrier. Maintain traffic on existing road. Obtain excavation from area A. (See detail below.)

PHASE 2: Build bridge. Maintain traffic on existing road.

PHASE 3: Build roadway. See sequence below for areas with more than 5' difference between existing and proposed grade (Sta. 22+00 ± to Sta. 24+25 ±).
Construct waterline.

PHASE 4: Excavate channel.

PHASE 5: Build soil cement.

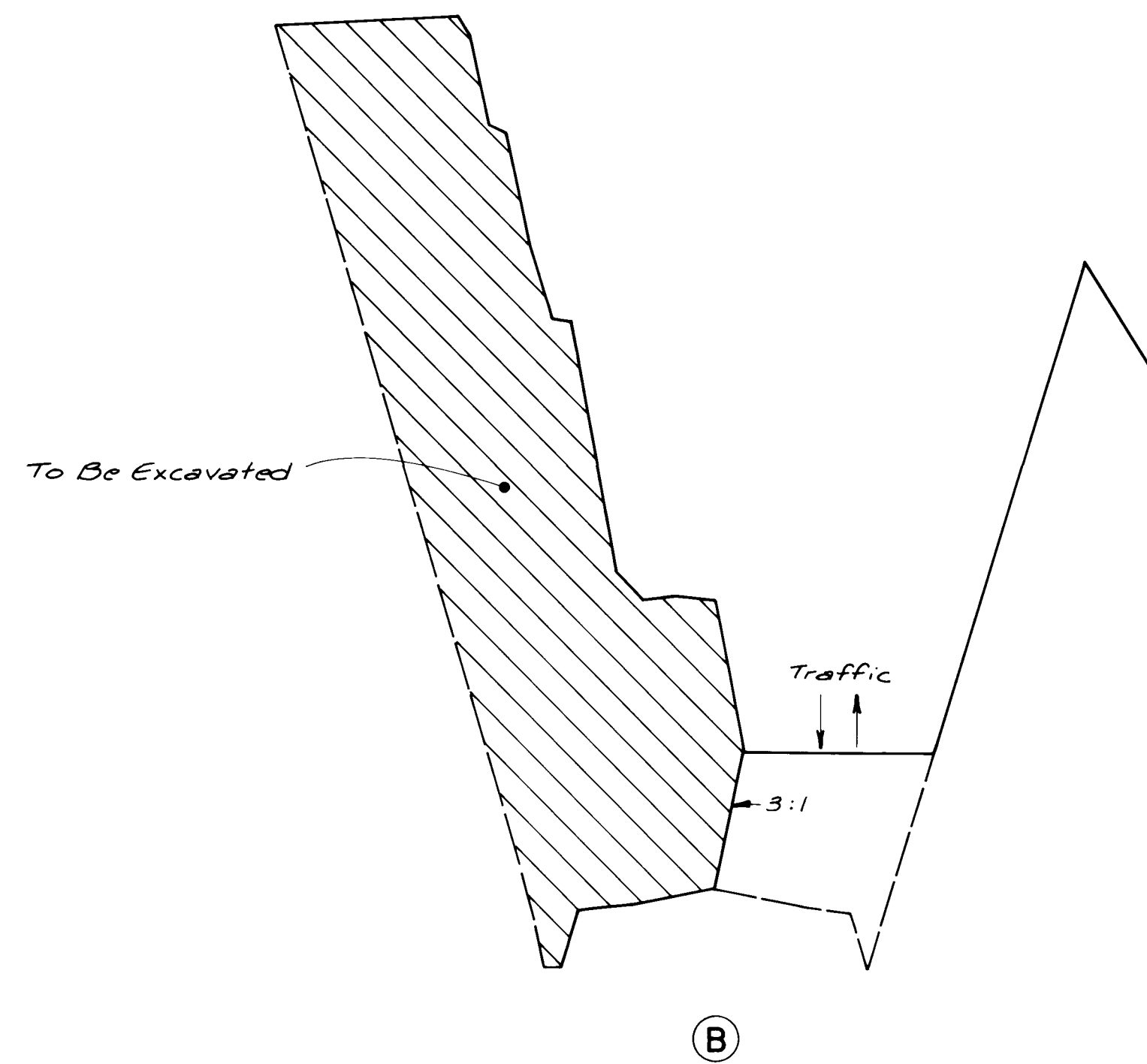
PHASE 6: Build intersection modifications. (Irving Blvd. & Golf Course Rd.).
All open graded friction course shall be done in Phase 6.

NOTES: Construction sequence is general. Typical signing diagrams have been included for all anticipated construction activities.

2-way traffic must be maintained at all times.

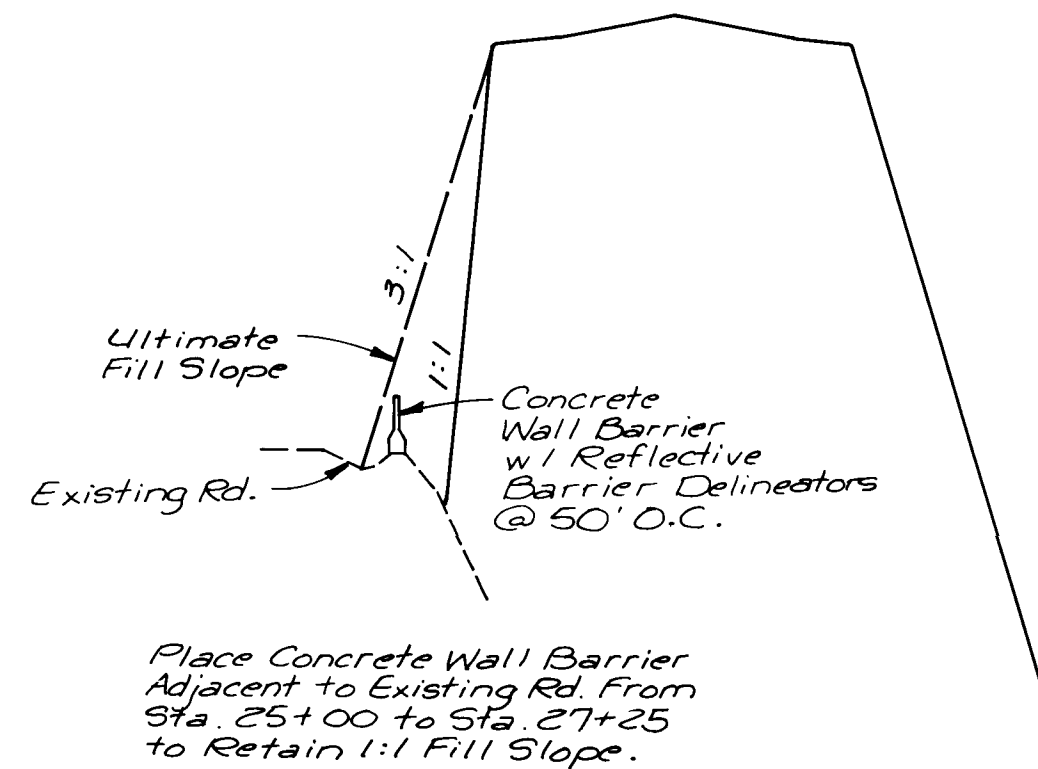
The Contractor may propose alternative construction sequences. Alternate sequences must be submitted 10 days in advance of construction. Alternative sequences must be approved by the Project Manager.

Pick up and return concrete wall barrier at West Mesa Patrol Yard.

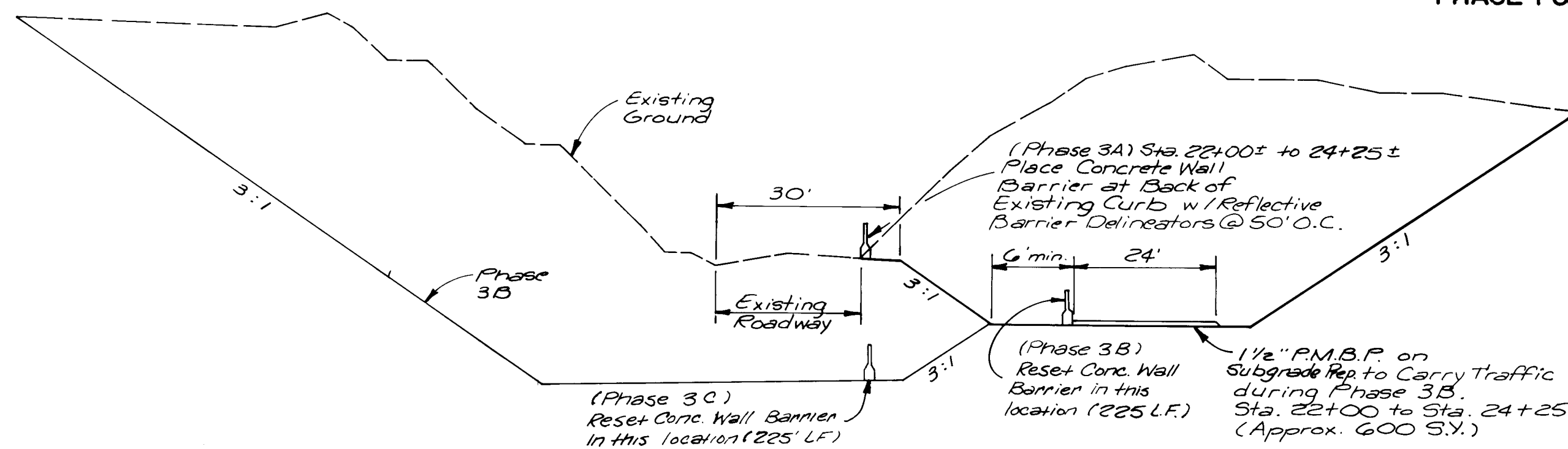


PHASE 3

- A.) • Traffic on existing roadway
• Excavate right side (east)
- B.) • Temporary traffic on right
• Excavate left side (west)
• Pave left side
- C.) • Traffic on left side
• Remaining excavation
• Pave right side



PHASE 1 & PHASE 2



PLACEMENT OF CONCRETE WALL BARRIER & SURFACING FOR TRAFFIC CONTROL

SCALE: 1" = 20' Horiz.
1" = 10' Vert.

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		DESIGN	
CONTRACTOR	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
WORKED BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
INSPECTOR'S	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
ACCEPTANCE BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
VERIFICATION BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
DESIGNED BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
DRAWN BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
CHECKED BY	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE

1 2 3 4 5 6 7 8 9 10 11 12
2 6 2 1 9 5 3 2 0 6

REVISIONS
DATE 12/4/06

CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: CONSTRUCTION SEQUENCING

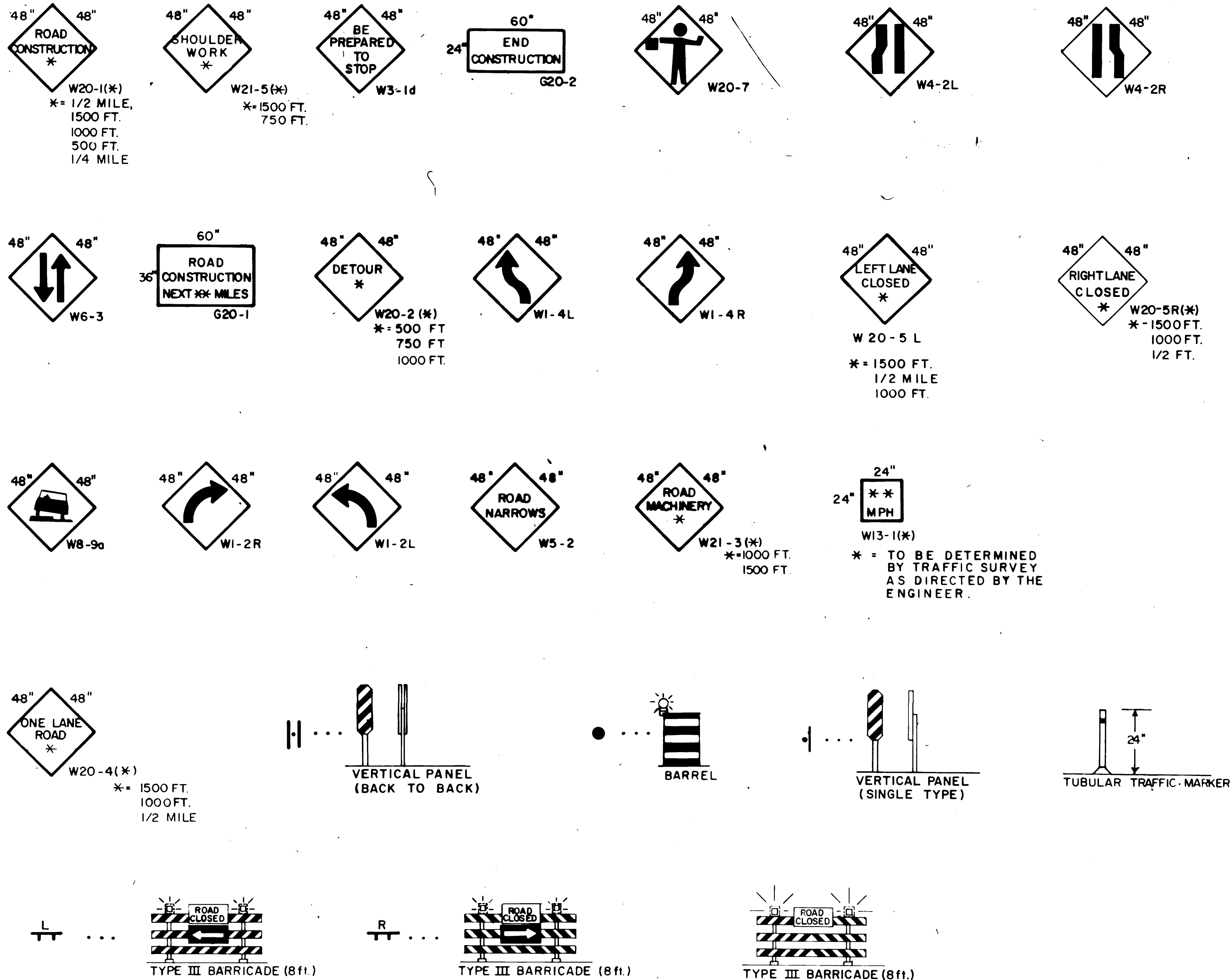
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/06	Liquid Waste		
A C E - Design	<i>[Signature]</i>	12/4/06	Traffic	<i>[Signature]</i>	12/4/06
A C E - Hydrology	<i>[Signature]</i>	12/4/06	Water		

DRAWING NO. 2195 MAP NO. B-12 SHEET 6-1

F.A.M.A. Project No.	STATE	M-4079(I)	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		6-2	

SIGN FACE DETAILS*

* - NOT ALL SIGNS ARE UTILIZED IN THESE PLANS.



NEW MEXICO
STATE HIGHWAY DEPARTMENT
TRAFFIC DESIGN SECTION
CONST. TRAFFIC CONTROL PLAN
SIGN FACE DETAILS AND
SEQUENCE OF CONSTRUCTION

26 21953306

RECORD DRAWINGS
DATE 12/4/86

2195

SHEET 6-2

DESIGNED BY I.G.M.
DRAWN BY I.G.M.
CHECKED BY I.G.M.

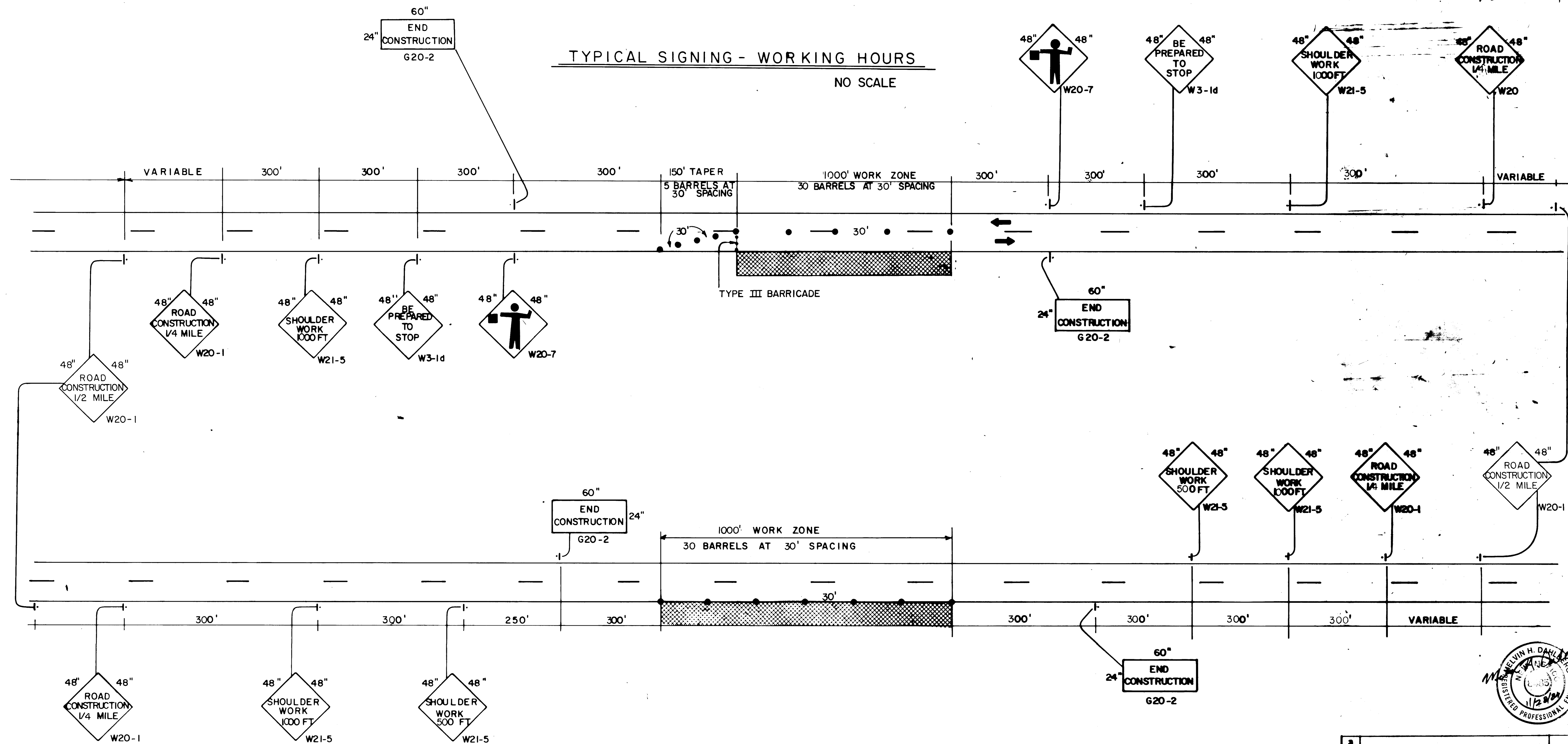
BRUNING

DESIGNED BY DRAWN BY L. Sanchez

CHECKED BY

BRUNING 44 132 436 (3-1)

SHEET NO.	TOTAL SHEETS
M-4079(I) 6-3	



No.	DESCRIPTION	DATE	BY
1	REVISIONS OR CHANGE NOTICES		

NEW MEXICO
STATE HIGHWAY DEPARTMENT
TRAFFIC DESIGN SECTION
CONST. TRAFFIC CONTROL PLAN

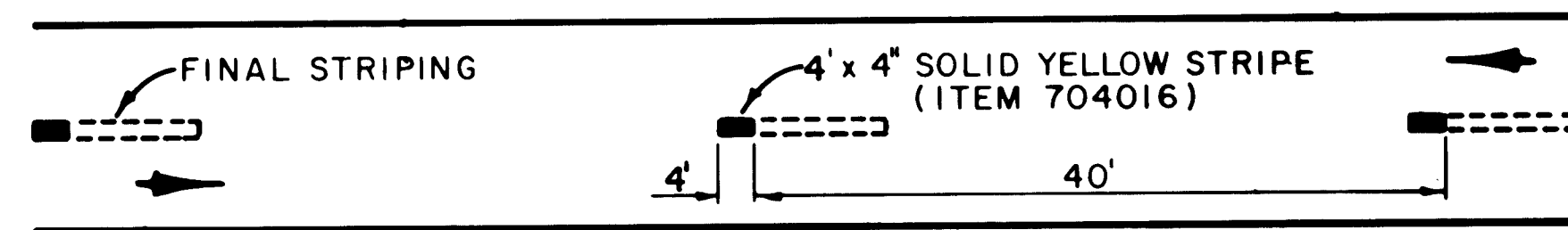
26 21953486

RECORD DRAWINGS
DATE 12/4/86

2195

SHEET 6-3

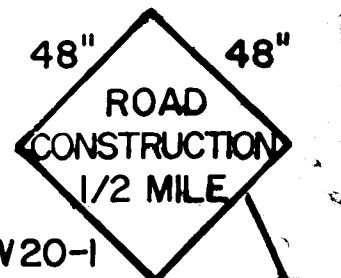
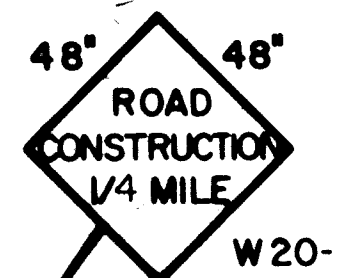
F.H.R.A. Region No.	STATE	N. M. P. M-4079(1)	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		6-4	



INTERIM STRIPING
ITEM N° 704016 LN. FT.

60"
24" END
CONSTRUCTION
G 20-2

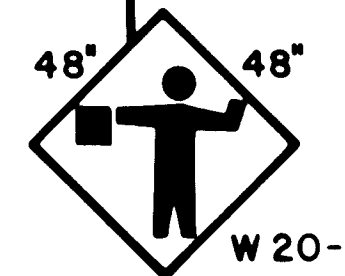
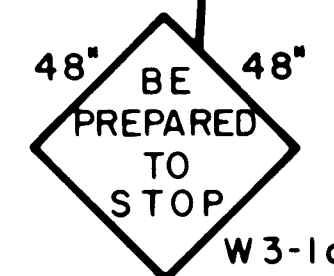
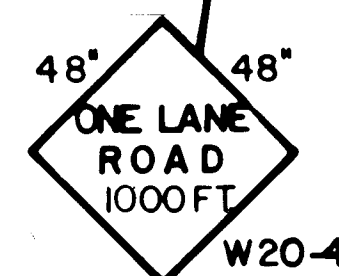
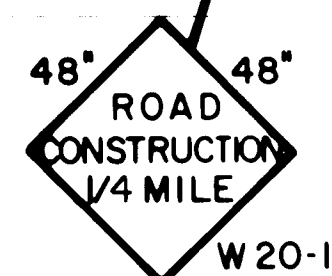
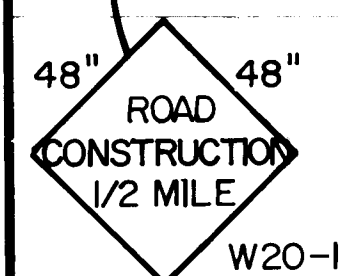
1000' WORK ZONE, 30 BARRELS AT 30'
SPACING
150' TAPER, 5 BARRELS
AT 30' SPACING



TO BE PLACED
AS DIRECTED BY
THE ENGINEER

TYPE III BARRICADE

60"
24" END
CONSTRUCTION
G 20-2



TO BE PLACED
AS DIRECTED BY
THE ENGINEER.

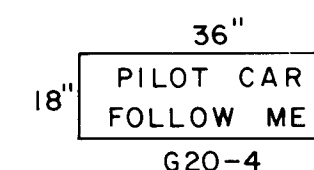


NOTES..

- ALL SIGNS SHALL BE MOUNTED ON APPROVED PORTABLE SIGN SUPPORTS.
- PAVING OPERATIONS ARE ASSUMED TO CLOSE 1000 FEET OF ONE LANE SIGNING BARRICADING AND CHANNELIZATION ARE TO BE RELOCATED AT REGULAR INTERVALS AS PAVING PROGRESSES ALONG THE ROADWAY.

- ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS AND RELOCATED A MINIMUM 36' FROM THE EDGE OF THE TRAVELED WAY.

- DURING CONSTRUCTION OPERATION TRAFFIC MAY WITH THE APPROVAL OF THE PROJECT MANAGER BE MOVED THROUGH THE WORK ZONE USING PILOT CARS. ALL PILOT CARS SHALL BE EQUIPPED WITH THE FOLLOWING SIGNS:



THE PILOT CAR, APPLICABLE SIGN, AND OTHER ITEMS RELATED TO THE USE OF THE PILOT CAR SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION. NO PAYMENT OR MEASUREMENT WILL BE MADE THEREFORE.

RECORD DRAWINGS
DATE 12/4/86

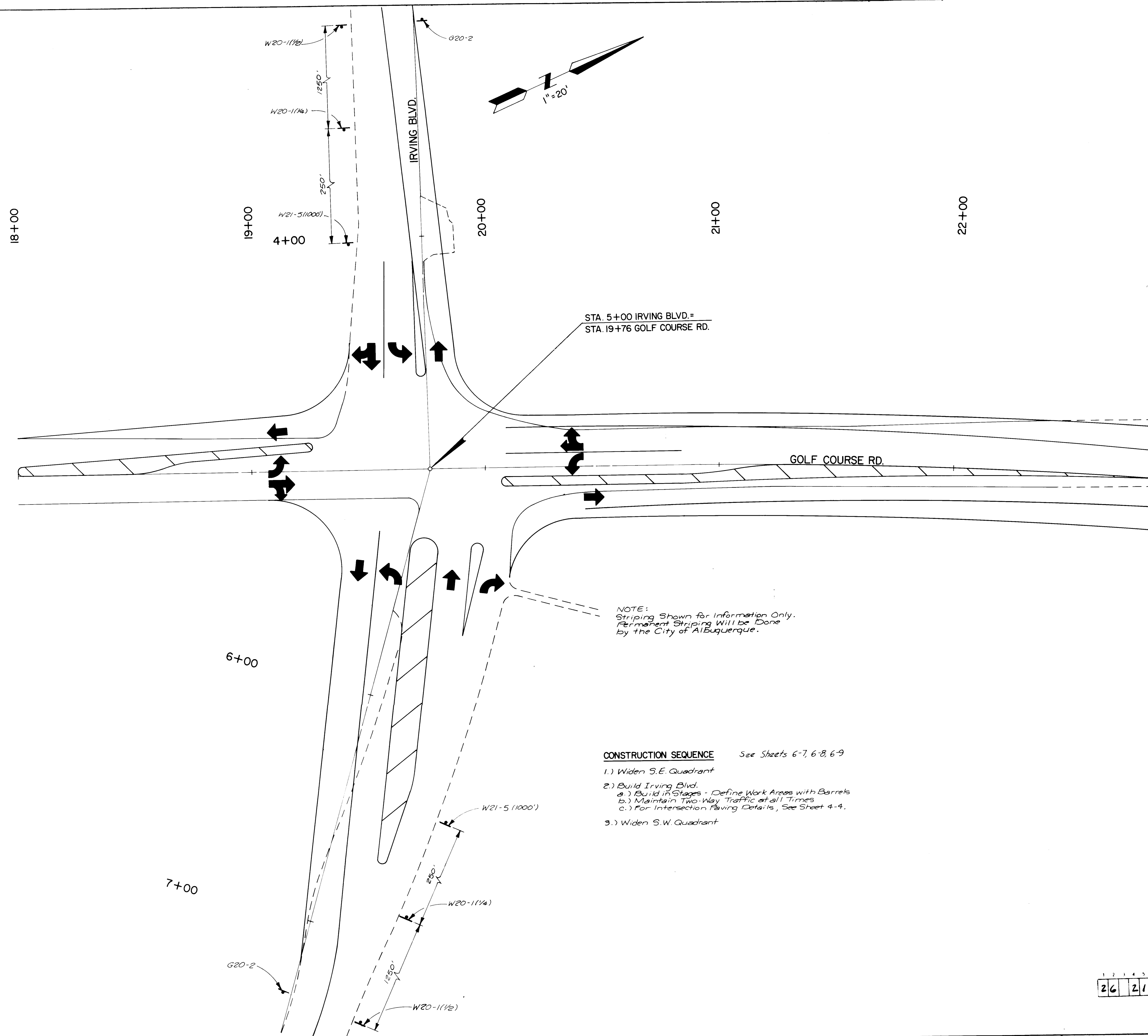
1	2	3	4	5	6	7	8	9	10	11	12
2	6	2	1	9	5	3	5	8	6		

NO.	DESCRIPTION	DATE	BY
1	REVISIONS (OR CHANGE NOTICES)		

NEW MEXICO
STATE HIGHWAY DEPARTMENT
TRAFFIC DESIGN SECTION
CONST. TRAFFIC CONTROL PLAN
SURFACING OPERATIONS-2 LANE

2195

SHEET 6-4



F.H.W.A. Region No.		M-4079(1)	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		6-6	

[illegible]

RECORD DRAWINGS
DATE 12/4/86

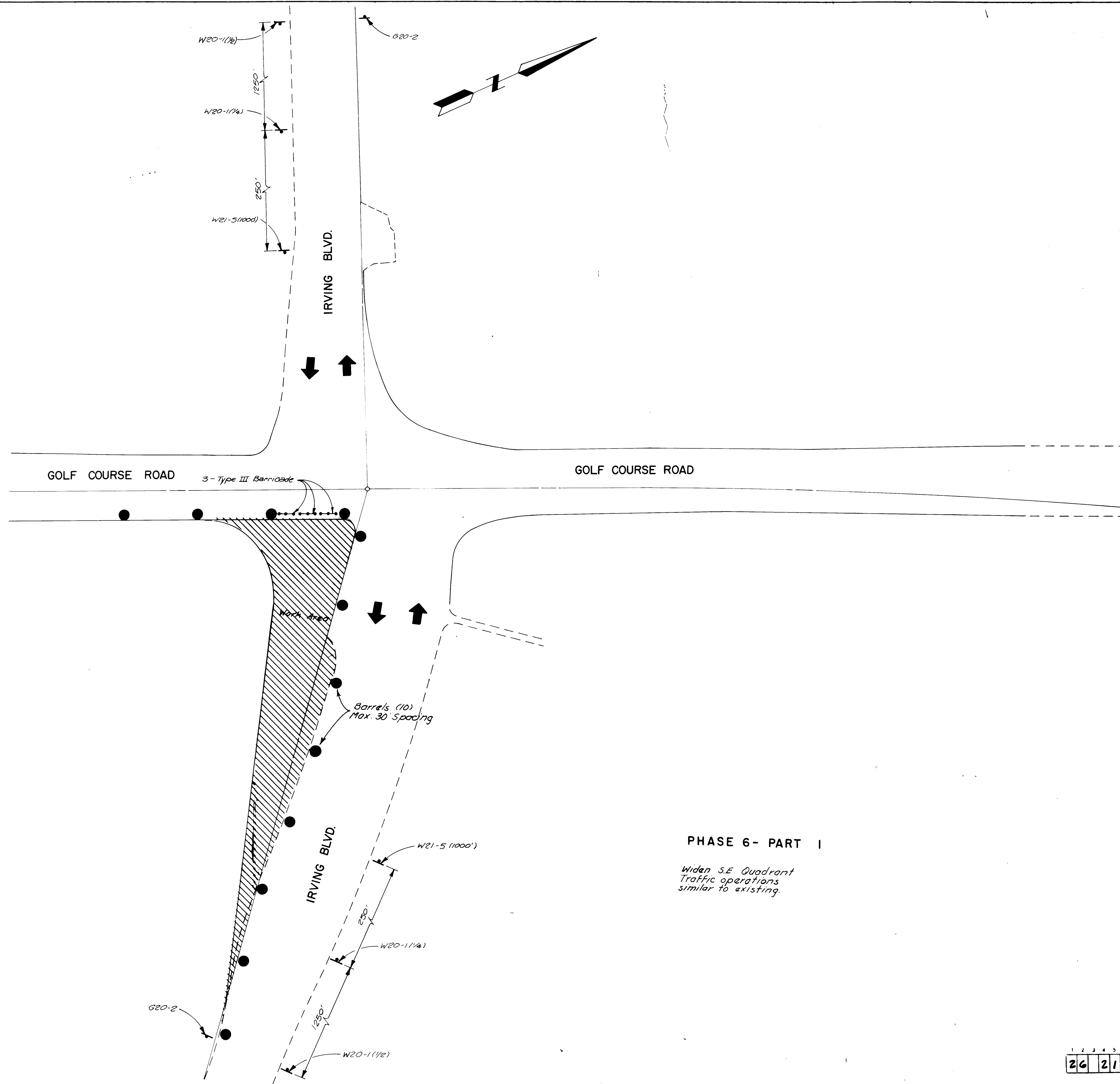
CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE: INTERSECTION CONSTRUCTION SEQUENCE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>P. J. Thompson</i>	<i>12/1/84</i>	Liquid Waste		
A C E - Design	<i>J. C. Jones</i>	<i>12/1/84</i>	Traffic	<i>Davidson (Hansen)</i>	<i>12/1/84</i>
A C E - Hydrology	<i>Don Hoge</i>	<i>12/1/84</i>	Water		

DRAWING NO.	2195	MAP NO. B-12	SHEET 6-6
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DISCUSSION 44 • 42 • 40 • 38 • 36 • 34 • 32 • 30 • 28 • 26 • 24 • 22 • 20 • 18 • 16 • 14 • 12 • 10 • 8 • 6 • 4 • 2 • 0



ENRMA Project No.	NEW MEXICO	M-4079(1)	SHEET NO.	TOTAL SHEETS
6			6-7	

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		FIELD NOTES	
CONTRACTOR	DATE	NO.	DATE	NO.	DATE	NO.	DATE



REMARKS	BY	DATE
DESIGN		DATE 11/84
DESIGNED BY M.O.		DATE 11/84
DRAWN BY		DATE 11/84
CHECKED BY		DATE 11/84

RECORD DRAWING
DATE 12/4/86

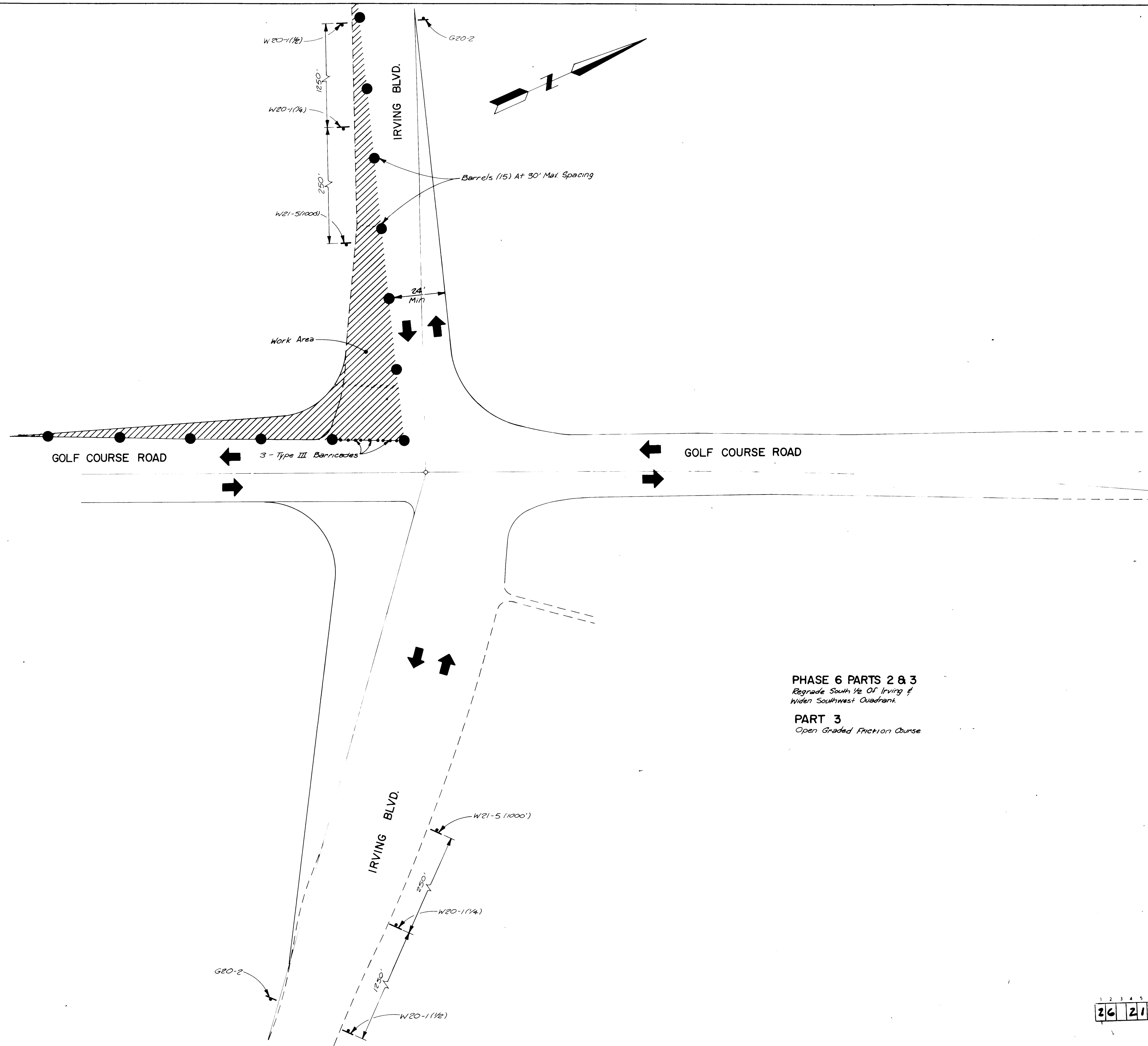
CITY OF ALBUQUERQUE
GOLF COURSE RD.

TITLE
INTERSECTION CONSTRUCTION SEQUENCE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/86	Liquid Waste		
A.C.E. Design	<i>[Signature]</i>	12/4/86	Traffic		
A.C.E. Hydrology	<i>[Signature]</i>	12/4/86	Water		

DRAWING NO. 2195 MAP NO. B-12 SHEET 6-7 OF 6-7

26 21953886



PHASE 6 PARTS 2 & 3
Regrade South 1/2 Of Irving &
Widen Southwest Quadrant.

PART 3
Open Graded Friction Course

26 21954086

FHWA Region No.	NEW MEXICO	M-4079(1)	SHEET NO.	TOTAL SHEETS
6			6-9	

SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
NO.	BY	DATE	NO.	CONTRACTOR	DATE
				INSPECTOR'S	DATE
				FIELD	DATE
				VEHICLE	DATE
				COMPLETED BY	DATE
				RECORDED BY	DATE
				NO.	

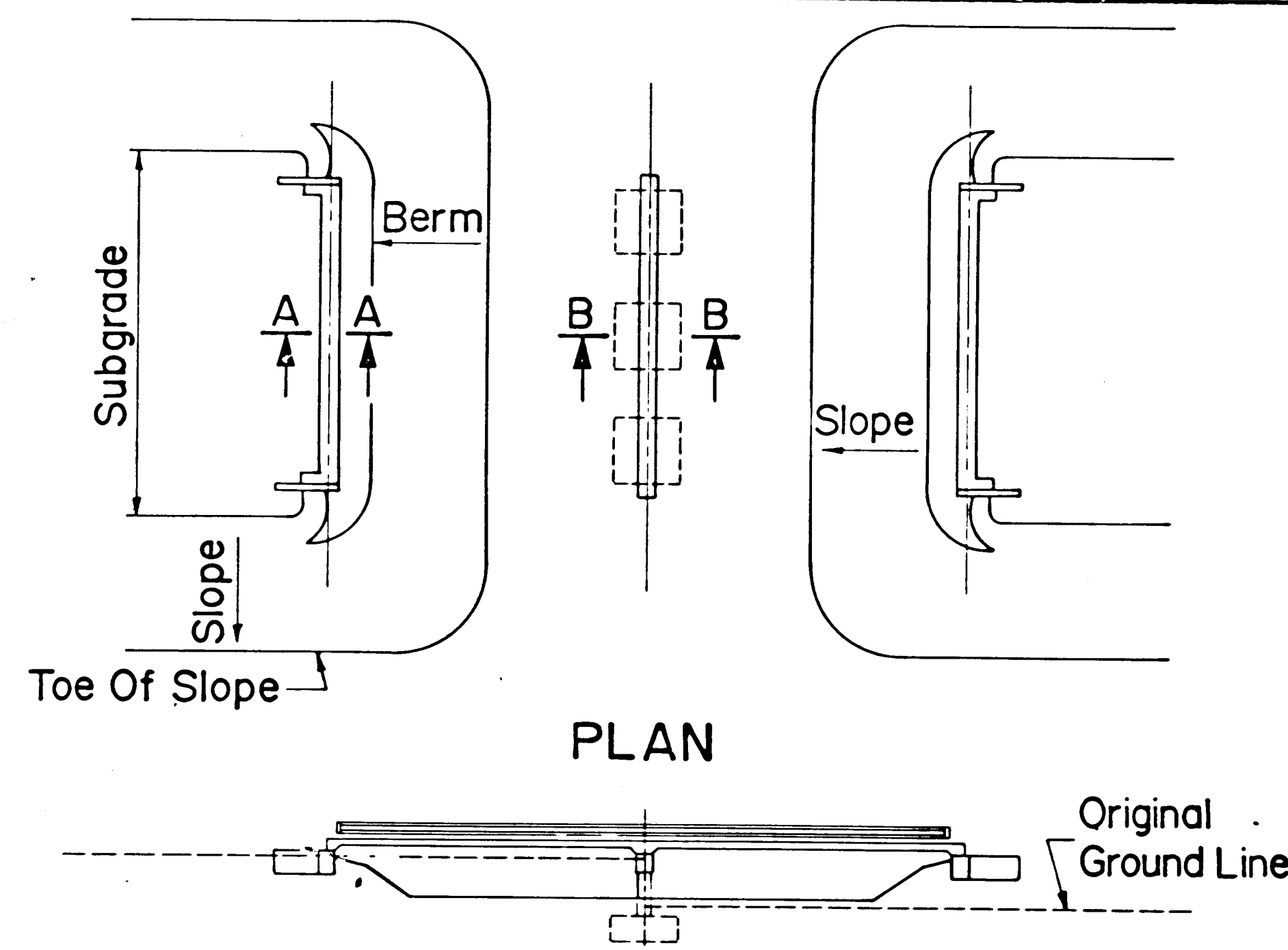


RECORD DRAWINGS
DATE 12/4/86

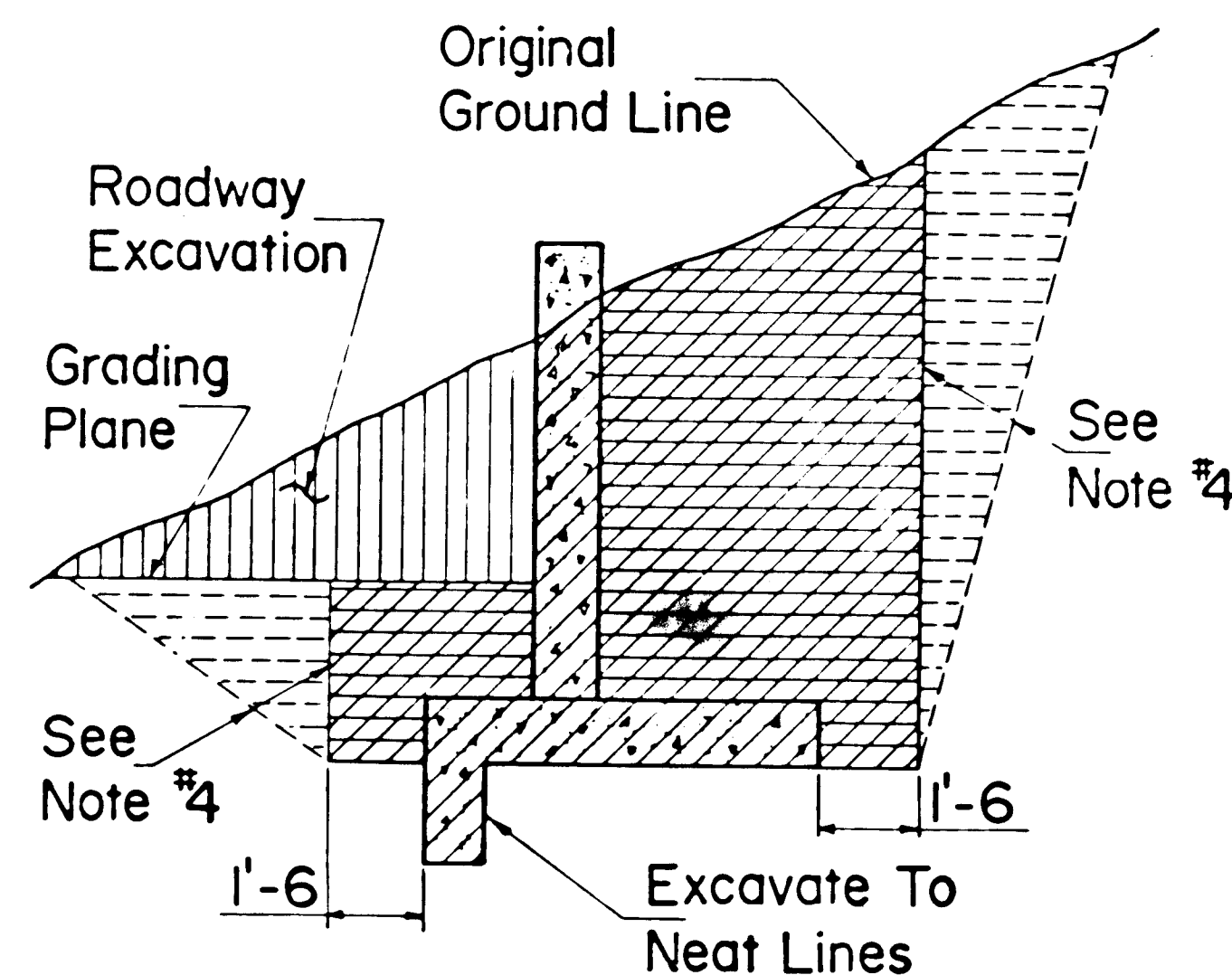
CITY OF ALBUQUERQUE GOLF COURSE RD.					
TITLE: INTERSECTION CONSTRUCTION SEQUENCE					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	<i>[Signature]</i>	12/4/86	Liquid Waste		
A.C.E. - Design	<i>[Signature]</i>	12/4/86	Traffic		
A.C.E. - Hydrology	<i>[Signature]</i>	12/4/86	Water		
DRAWING NO.	2195	MAP NO. B-12	SHEET	6-9	

*SEE NOTE #3

6	15
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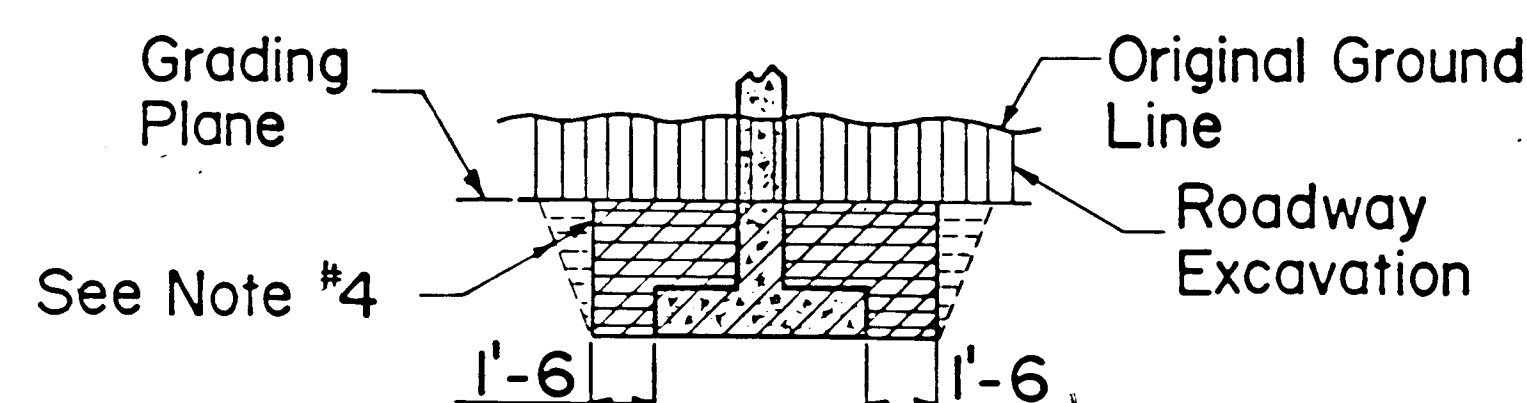
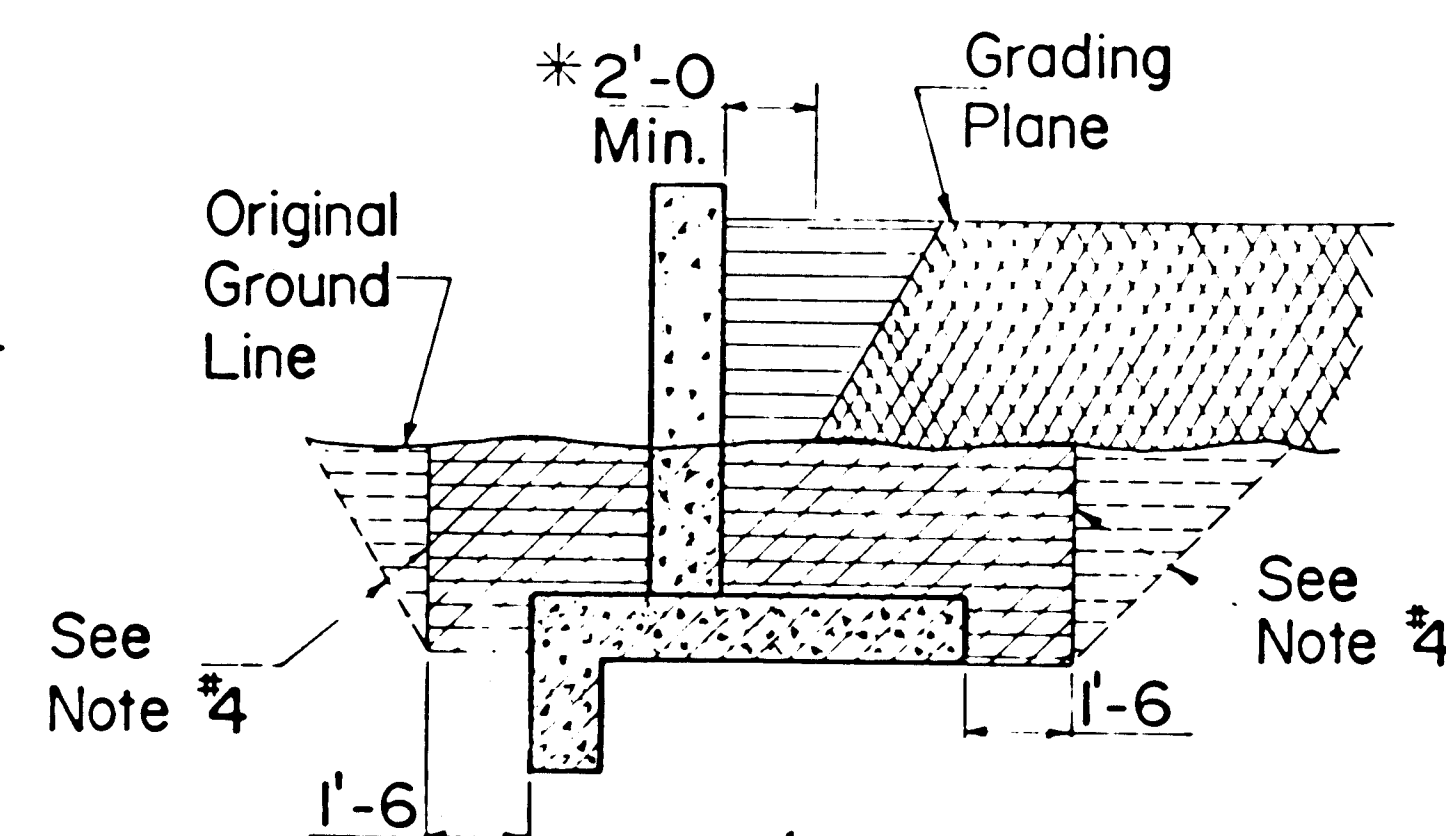


HALF ELEVATION
IN CUT SECTION
PROFILE

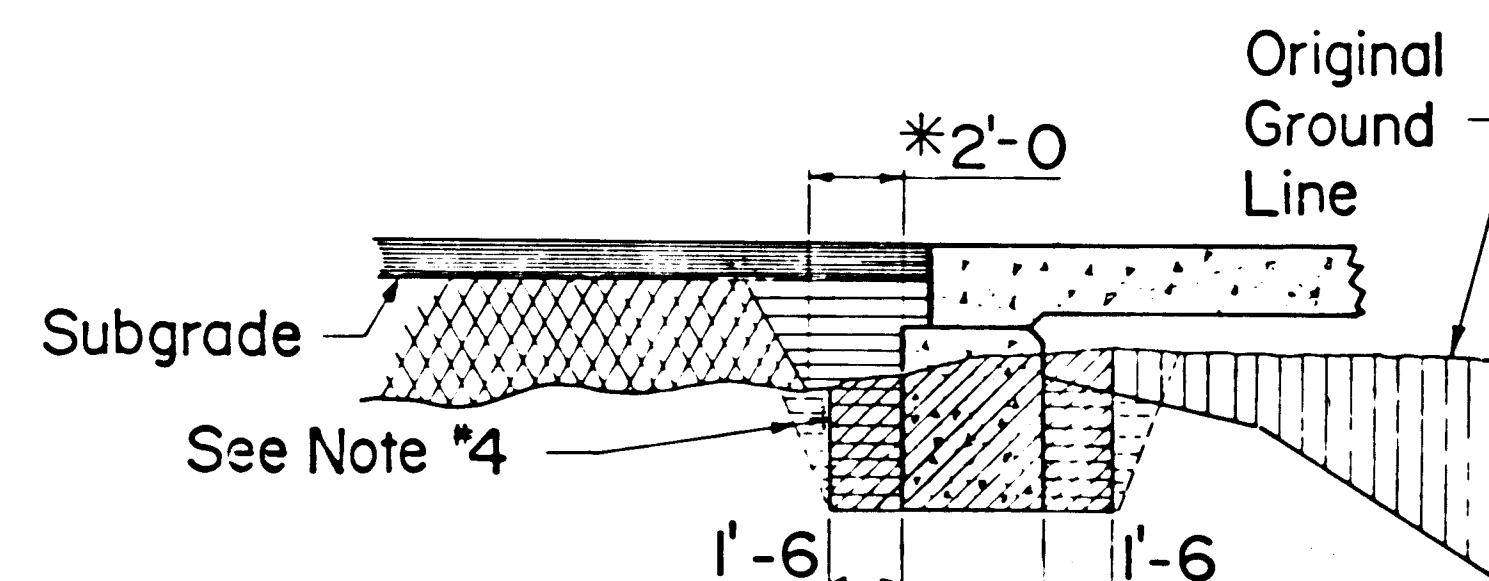


RETAINING WALLS

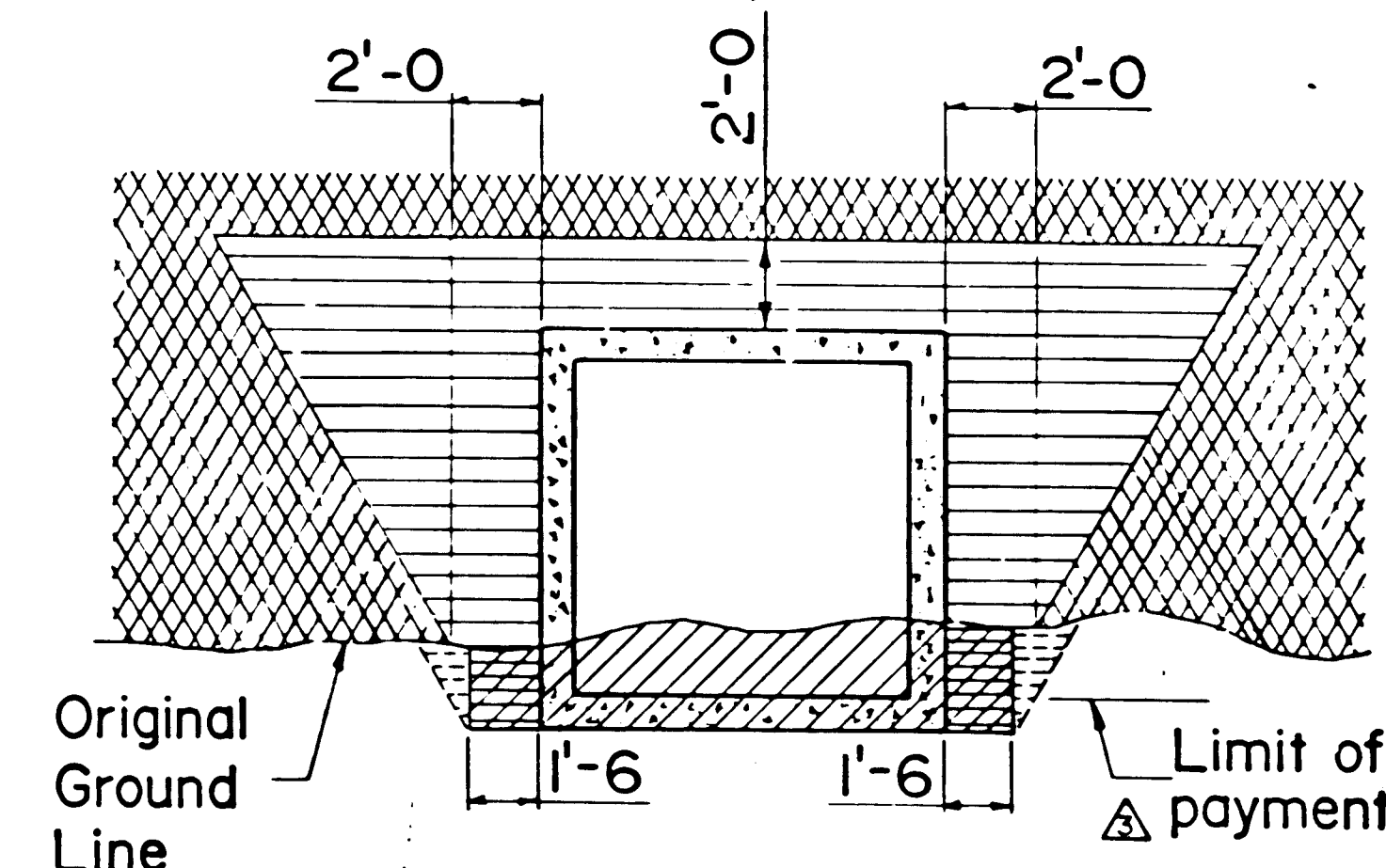
Note: Earthwork for CBC's to be in accordance with
Section 206 of the Specifications.



IN CUT SECTION
SECTION B-B

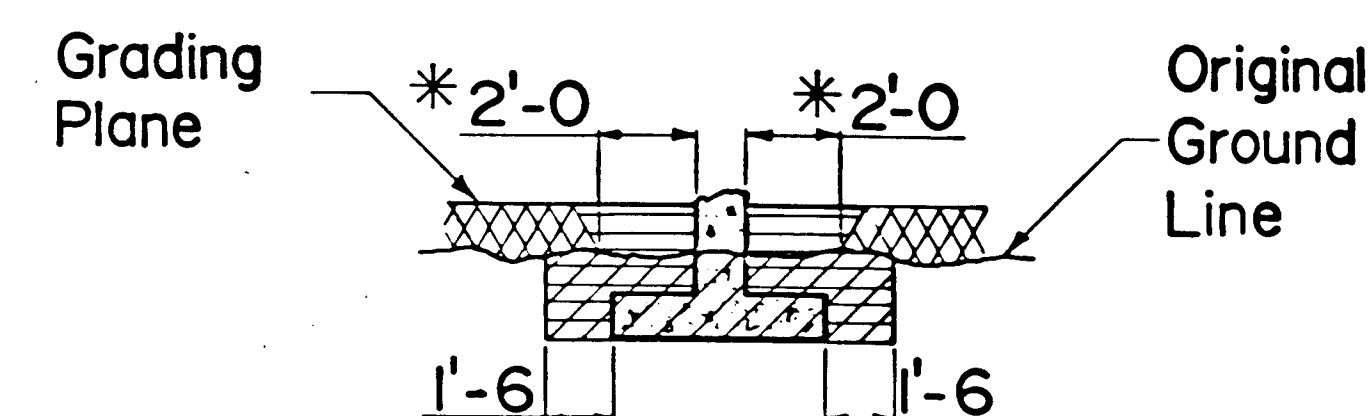


EXCAVATION NORMAL
SECTION A-A



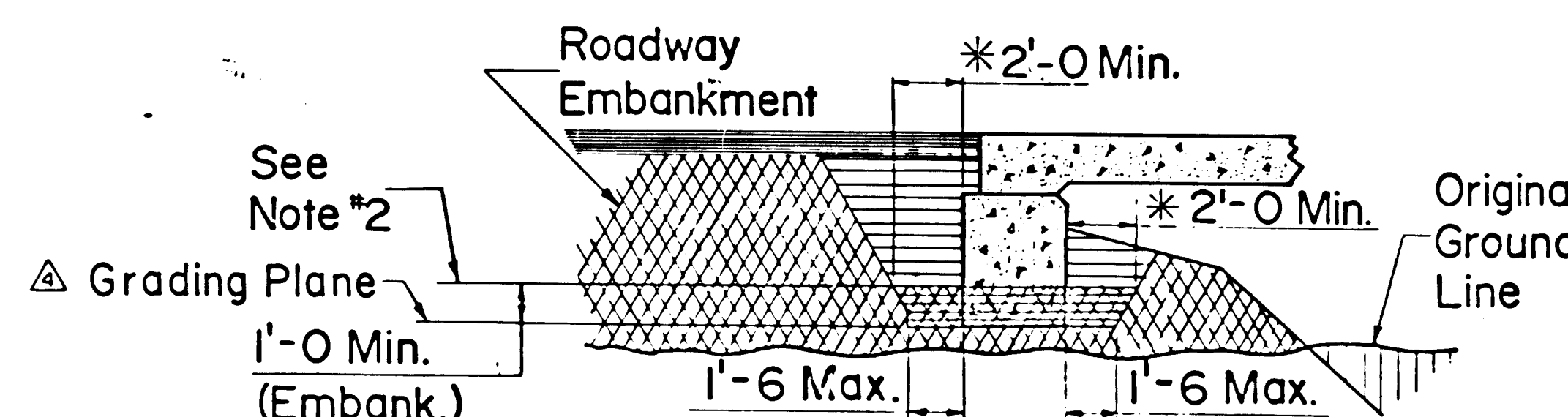
Horizontal Lined Areas Indicate Backfill For
The Full Length Of CBC's.

METHOD OF PLACING BACKFILL AROUND CBC's

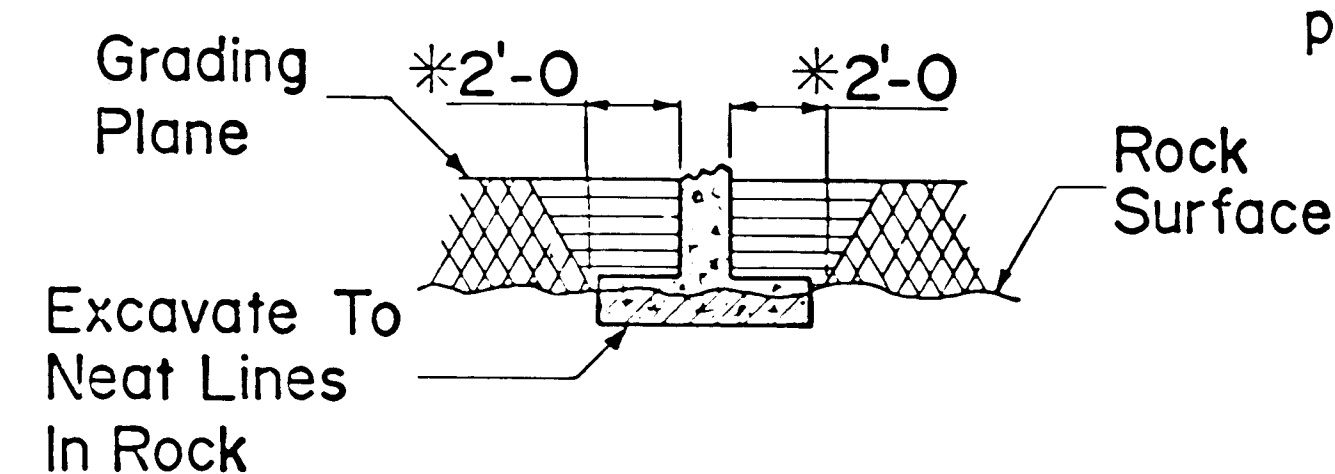


IN FILL SECTION
SECTION B-B

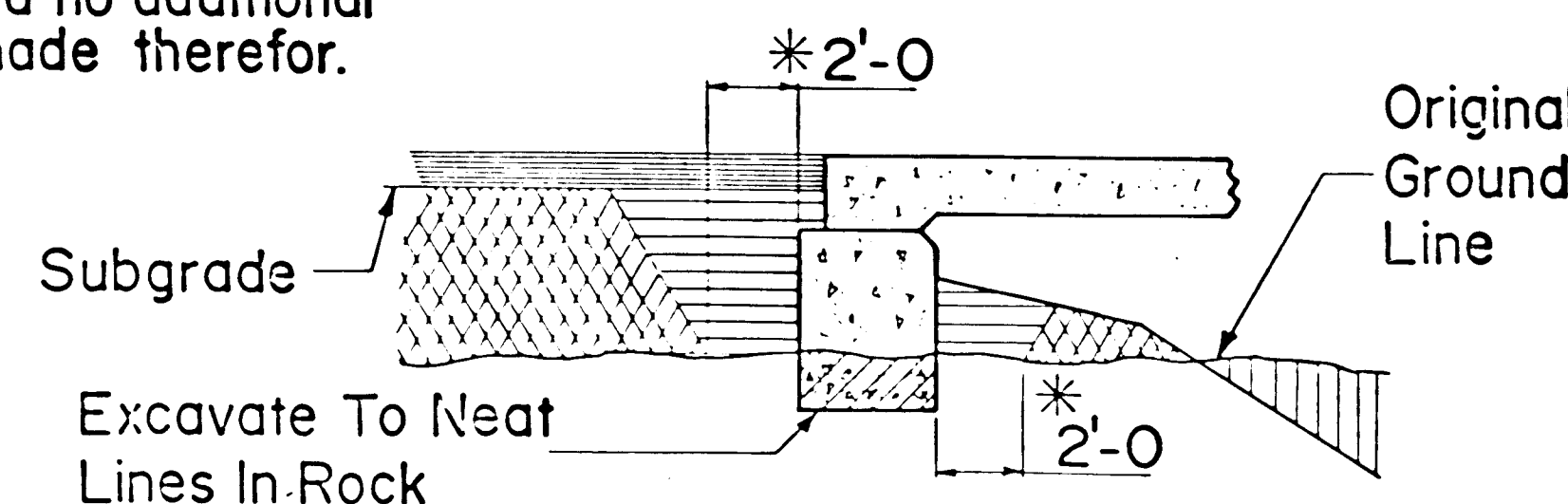
Note: The 1'-0 excavation back down
to grading plane is incidental to
the construction and no additional
payment shall be made therefor.



EXCAVATION IN FILL SECTION
SECTION A-A



EXCAVATION IN ROCK
SECTION B-B



EXCAVATION IN ROCK
SECTION A-A

LEGEND	
	Roadway Excavation
	Roadway Embankment
	Structure Backfill
	Structure Excavation

RECORD DRAWINGS
DATE 12/4/86

- GENERAL NOTES**
- Earthwork shall be in accordance with Section 210 of the Specifications unless otherwise noted.
 - Compact Roadway Embankment 1.0' (Min.) above bottom of abutment. Excavation to bottom of abutment elevation shall be delayed until the contractor is ready to place the abutment forms and concrete.
 - All Details are shown with the Roadway Embankment placed first and the structural backfill material placed on top of it. The contractor shall use this placement order so the structural backfill can be compacted to the maximum density required. No embankment material shall be within 2'-0 of the concrete structure.
 - Where the site of work or character of material to be excavated requires a slope less than vertical and the contractor obtains approval from the Engineer to make a cut less than vertical, instead of using cofferdams, the slope of the cut shall not be steeper than the stability of the material permits. This additional excavation and backfill, beyond a vertical cut, shall be considered incidental to the completion of the work and no additional payment will be made therefor.
 - Grading Plane is the surface to which precise grading is finished such as subgrade under the template section of a road, roadway side slopes, ditches adjacent to piers, ditch slopes at wingwalls, subgrade under abutments and retaining walls.

6	FILL SECTION A-A ~ GENERAL NOTE 5	11-7-80	E.R.D.
4	ADDED NOTES TO CBC DETAIL	1-4-80	E.R.D.
3	REVISED GENERAL NOTE #1	1-4-80	E.R.D.
2	REVISED TITLE	1-4-80	E.R.D.
1	DESIGN TITLE	DATE	BY
REVISIONS OF PREVIOUS EDITIONS			
NEW MEXICO STATE HIGHWAY DEPARTMENT			
EXCAVATION AND BACKFILL FOR BRIDGES, WALLS AND CBC's			
DESIGNED BY	J.D.G.	APPROVAL	BRIDGE ENGINEER
DRAWN BY	A.J.S.	RECOMMENDED	DATE
CHECKED BY	E.R.D.	APPROVED	DIRECTOR PROJ. DEVELOPMENT DIVISION
SERIAL BEB-001-04		2/95	

TABLE 1							
2 ² / ₃ " x 1 ¹ / ₂ " CORRUGATIONS, RIVETED, WELDED, HELICAL							
Pipe Diam.	Min. Cover	Maximum Fill Height (in feet)					
		—	16 Ga. .064"	14 Ga. .079"	12 Ga. .109"	10 Ga. .138"	8 Ga. .168"
12"	12"	—	92	101	130	136	142
15"	12"	—	74	80	104	108	113
18"	12"	—	61	67	86	90	94
21"	12"	—	53	57	74	77	81
24"	12"	—	46	50	65	68	71
30"	12"	—	37	40	52	54	56
36"	12"	—	30	33	43	45	47
42"	12"	—	34	44 (47)	46 (74)	47 (77)	49 (81)
48"	12"	—	30	41	44 (65)	45 (68)	46 (71)
54"	12"	—	—	36	43 (57)	44 (60)	45 (63)
60"	12"	—	—	—	42 (52)	43 (54)	44 (57)
66"	12"	—	—	—	42 (47)	42 (49)	43 (51)
72"	12"	—	—	—	—	42 (45)	42 (47)
78"	15"	—	—	—	—	—	42 (43)
84"	15"	—	—	—	—	—	40
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

TABLE 3									
6" x 2" CORRUGATIONS, BOLTED									
Pipe Diam.	Min. Cover	Maximum Fill Height (in feet)							
		4 Bolts/Ft				6 Bolts/Ft.			
		12 Ga. .109"	10 Ga. .138"	8 Ga. .168"	7 Ga. .188"	5 Ga. .218"	3 Ga. .249"	1 Ga. .280"	1 Ga. .280"
60'	12"	46	68	90	96 (103)	106 (124)	116 (146)	126 (160)	126 (192)
72'	12"	38	57	69 (75)	73 (86)	78 (103)	84 (122)	90 (133)	90 (160)
84'	15"	33	49	59 (64)	61 (73)	64 (86)	68 (104)	72 (114)	72 (137)
96'	18"	29	43	53 (56)	54 (64)	57 (77)	59 (91)	61 (100)	61 (120)
108'	18"	25	38	49	50 (57)	52 (69)	53 (81)	55 (88)	55 (106)
120"	24"	23	34	45	48 (51)	49 (62)	50 (73)	51 (80)	51 (96)
132"	24"	21	31	40	46	47 (56)	48 (66)	49 (72)	49 (87)
144"	24"	19	28	37	43	45 (51)	46 (61)	47 (66)	47 (80)
156'	30"	17	26	34	39	44 (47)	45 (56)	45 (61)	45 (73)
168'	30"	16	24	32	36	44 (52)	44 (57)	44 (57)	44 (68)
180'	30"	15	23	30	34	41	43 (48)	44 (53)	44 (64)
192'	36"	14	21	28	32	38	43 (45)	43 (50)	43 (60)
204'	36"	—	20	26	30	36	43 (47)	43 (56)	43 (56)
216'	36"	—	19	25	28	34	40	42 (44)	42 (53)
228'	42'	—	—	23	27	32	38	42	42 (50)
240'	42'	—	—	22	25	31	36	40	42 (48)
252'	42'	—	—	—	24	29	34	39	42 (45)
264'	48'	—	—	—	—	28	33	36	42 (43)
276'	48'	—	—	—	—	27	31	34	41
288'	48'	—	—	—	—	—	30	33	40
300'	52'	—	—	—	—	—	—	32	38
312'	52'	—	—	—	—	—	—	30	37

TABLE 2						
3" x 1" or 5" x 1" CORRUGATIONS, RIVETED, WELDED, HELICAL						
Pipe Diam.	Min. Cover	Maximum Fill Height (in feet)				
		16 Ga. .064"	14 Ga. .079"	12 Ga. .109"	10 Ga. .138"	8 Ga. .168"
36"	12"	53	66	77 (98)	89 (118)	100 (130)
42"	12"	45	56	64 (84)	71 (101)	78 (112)
48"	12"	39	49	56 (73)	61 (88)	66 (98)
54"	12"	35	44	51 (65)	55 (78)	58 (87)
60"	12"	31	39	49 (58)	51 (70)	53 (78)
66"	12"	29	36	47 (53)	48 (64)	50 (71)
72"	12"	26	33	45 (49)	47 (59)	48 (65)
78"	15"	24	30	44 (45)	45 (54)	46 (60)
84"	15"	22	28	42	44 (50)	45 (56)
90"	15"	21	26	39	44 (47)	44 (52)
96"	18"	—	24	36	43 (44)	44 (49)
102"	18"	—	23	34	41	43 (46)
108"	18"	—	—	32	39	43
114"	21"	—	—	31	37	41
120"	21"	—	—	29	35	39
126"	21"	—	—	—	33	37
132"	24"	—	—	—	32	35
138"	24"	—	—	—	30	34
144"	24"	—	—	—	—	32

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

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TABLE 5 ▲▲						
2 ² / ₃ " x 1 ¹ / ₂ " CORRUGATIONS, RIVETED, WELDED, HELICAL						
Span x Rise Inches	Dia. Of Equivalent Round Pipe Inches	Min. * Corner Radius	Minimum Thickness		3 Tons/Sq. Ft. Corner Footing Pressure	
			Inches	Ga.	Min. Cover (Inches) *	Max. Fill Height In Ft.
17" x 13"	15	3 ¹ / ₂ "	0.064	16	13	20
21" x 15"	18	4 ¹ / ₈ "	↑	↑	13	19
24" x 18"	21	4 ⁷ / ₈ "	↑	↑	13	19
28" x 20"	24	5 ¹ / ₂ "	↑	↑	13	18
35" x 24"	30	6 ⁷ / ₈ "	↑	↑	13	18
42" x 29"	36	8 ¹ / ₄ "	0.064	16	13	15
49" x 33"	42	9 ⁵ / ₈ "	0.079	14	13	14
57" x 38"	48	11"	0.109	12	13	14
64" x 43"	54	12 ³ / ₈ "	0.109	12	13	14
71" x 47"	60	13 ³ / ₄ "	0.138	10	13	14
77" x 52"	66	15 ¹ / ₈ "	0.168	8	13	14
83" x 57"	72	16 ¹ / ₂ "	0.168	8	13	15
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—

* See Note #9

TABLE 7 ▲▲						
6" x 2" CORRUGATIONS, STRUCTURAL PLATE ~ BOLTED						
Span x Rise		Min. * Corner Radius	3 Tons/Sq. Ft. Corner Footing Pressure			
In Inches	In Feet & Inches		Min. Thickness		Min. Cover (Inches) *	Max. Fill Height In Ft.
			Inches	Ga.		
73" x 55"	6'-1 x 4'-7	18"	0.109	12	12	24
84" x 61"	7'-0 x 5'-1	↑	↑	↑	13	21
95" x 67"	7'-11 x 5'-7	↑	↑	↑	13	18
106" x 73"	8'-10 x 6'-1	↑	↑	↑	15	17
117" x 79"	9'-9 x 6'-7	↑	↑	↑	16	15
131" x 85"	10'-11 x 7'-1	↑	↑	↑	18	13
142" x 91"	11'-10 x 7'-7	↑	↑	↑	19	12
154" x 100"	12'-10 x 8'-4	18"	↑	↑	21	11
159" x 112"	13'-3 x 9'-4	31"	↑	↑	20	18
169" x 105"	14'-1 x 8'-9	18"	↑	↑	24	10
170" x 118"	14'-2 x 9'-10	31"	↑	↑	22	16
184" x 111"	15'-4 x 9'-3	18"	↑	↑	25	9
184" x 124"	15'-4 x 10'-4	31"	↑	↑	23	15
190" x 118"	15'-10 x 9'-10	18"	↑	↑	25	9
195" x 130"	16'-3 x 10'-10	31"	↑	↑	25	14
199" x 121"	16'-7 x 10'-1	18"	↑	↑	27	9
206" x 136"	17'-2 x 11'-4	31"	↑	↑	26	13
217" x 142"	18'-1 x 11'-10	↑	0.109	12	27	13
231" x 148"	19'-3 x 12'-4	↑	0.138	10	29	13
239" x 154"	19'-11 x 12'-10	↑	0.138	10	30	12
247" x 158"	20'-7 x 13'-2	31"	0.138	10	31	12
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—

TABLE 6 ▲▲						
3" x 1" or 5" x 1" CORRUGATIONS, RIVETED, WELDED, HELICAL						
Span x Rise Inches	Dia. Of Equivalent Round Pipe Inches	Min. * Corner Radius	Minimum Thickness		3 Tons/Sq. Ft. Corner Footing Pressure	
			Inches	Ga.	Min. Cover (Inches) *	Max. Fill Height In Ft.
40" x 31"	36	12 ¹ / ₂ "	0.079	14	12	21
46" x 36"	42	14 ¹ / ₂ "	↑	↑	12	21
53" x 41"	48	16 ⁵ / ₈ "	↑	↑	12	21
60" x 46"	54	18 ³ / ₄ "	↑	↑	12	21
66" x 51"	60	20 ³ / ₄ "	↑	↑	12	21
73" x 55"	66	22 ⁷ / ₈ "	↑	↑	12	28
81" x 59"	72	20 ⁷ / ₈ "	↑	↑	12	26
87" x 63"	78	22 ⁵ / ₈ "	↑	↑	12	24
95" x 67"	84	24 ³ / ₈ "	↑	↑	12	22
103" x 71"	90	26 ¹ / ₈ "	↑	↑	18	20
112" x 75"	96	27 ³ / ₄ "	0.079	14	18	18
117" x 79"	102	29 ¹ / ₂ "	0.109	12	18	18
128" x 83"	108	31 ¹ / ₄ "	0.109	12	24	16
137" x 87"	114	33"	0.109	12	24	15
142" x 91"	120	34 ³ / ₄ "	0.138	10	24	15
—	—	—	—	—	—	—
—	—	—	—	—	—	—

▲ NOTE: CORRUGATED METAL AND STRUCTURAL PLATE PIPE ARCHES WHICH HAVE SLIGHTLY DIFFERENT SPAN AND RISE DIMENSIONS THAN THOSE CALLED FOR ON THE PLANS MAY BE SUBSTITUTED FOR THE SIZES SPECIFIED ON THE PLANS PROVIDED THEY MEET THE MINIMUM AND MAXIMUM FILL HEIGHT REQUIREMENTS WITHOUT CHANGING THE INVERT ELEVATION AND THAT CORRUGATED METAL PIPE ARCHES ARE FORMED FROM THE SAME SIZE ROUND PIPE AND STRUCTURAL PLATE PIPE ARCHES PROVIDE THE SAME OR LARGER OPENING AREA.

1 2 3 4 5 6 7 8 9 10 11 12
26 21950306

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F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETE
6	NEW MEXICO		

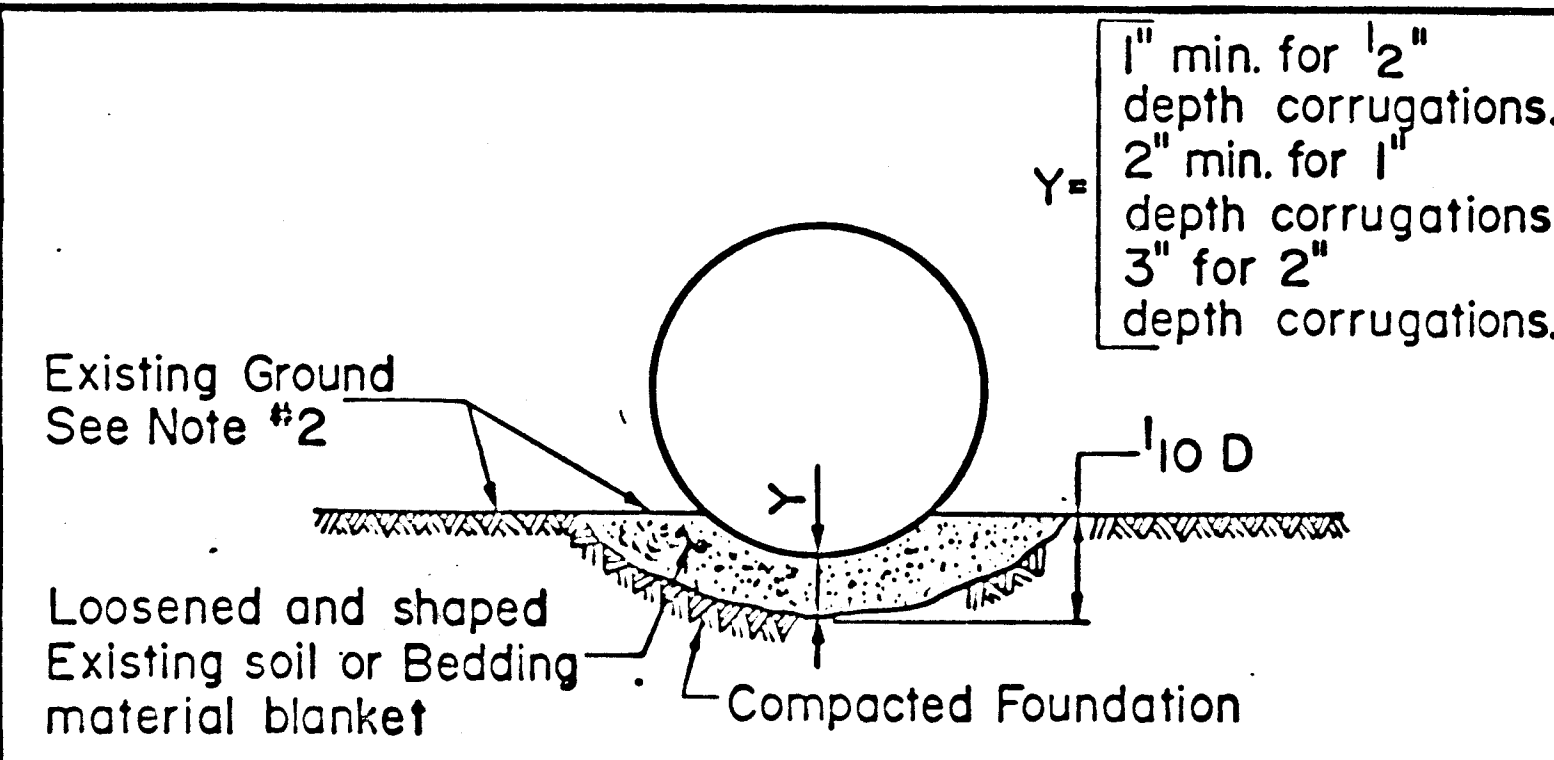
GENERAL NOTES

- Where abrasive or corrosive conditions exist, heavier gages or protective coatings may be required.
- The contractor may furnish heavier gage metal than the minimum shown in the tables at no additional cost to the State.
- During constr., all pipes shall be protected by a min. cover equal to one-fifth of the span or 4", whichever is greater, before permitting heavy constr. traffic.
- Maximum fill heights and minimum covers shown in tables are from top of pipe to top of finished surface as measured at time of project completion. A minimum 6" cushion (fine granular material) shall be provided below bottom of rigid pavements.
- DELETED
- For pipe-arch sizes not shown, use minimum cover and maximum fill height and minimum thickness for next larger size with same corner radius shown in tables.
- Marginally stable or compressible foundation will require special investigation.
- Minimum cover shown in the tables shall be increased if necessary to provide a cover of span/8 but not less than 12" measured from top of pipe to bottom of flexible pavement.
- Higher maximum fill heights can be reviewed for possible approval when a larger than minimum corner radius is supplied.
- Gages shown are "U.S. Std. Gage" for uncoated steel sheets and plates. Thicknesses shown in inches include galvanized coating.

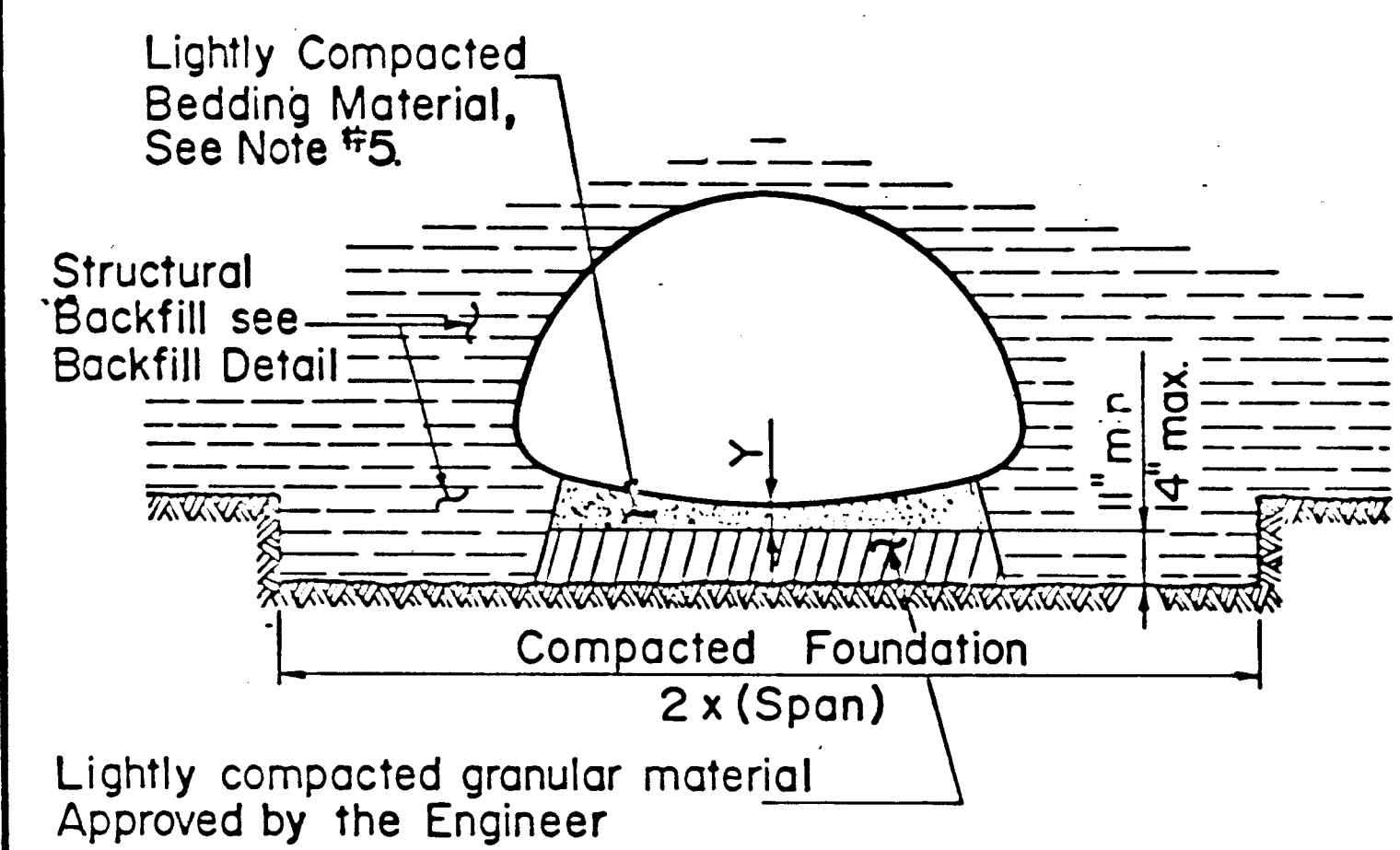
DESIGN DATA

- ▲ Specifications A.A.S.H.T.O. Standard Specifications for Highway Bridges 1981 Interim.
- Dead Load: 120 pounds per cu. ft.
- Live Load: HS-20-44
- Safety Factors: 3.0 for longitudinal seam strength
2.0 for pipe wall buckling. See A.A.S.H.T.O. Specification for flexibility factors and seam strength.
- Backfill: Soil Stiffness coefficient (k)=0.22.
- Corner Footing Pressure: The confining backfill must be capable of supporting a corner pressure of 3 tons per square foot.

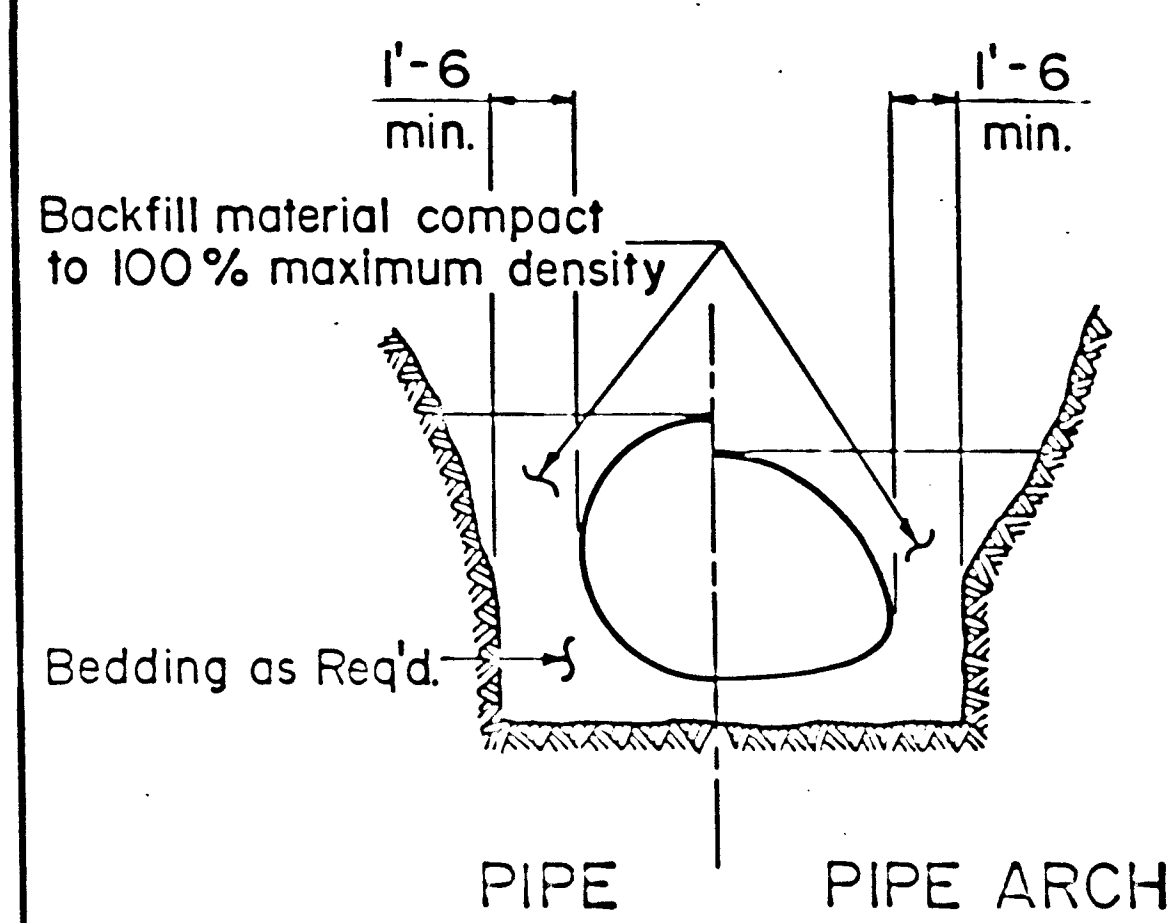
▲ REV. TABLES - ADD NOTE - DEL. NOTE 5	6-20-83 R.S.B.
REVISED TABLES AND DESIGN DATA	
COMPLY W/1981 A.A.S.H.T.O. SPECIFICATIONS	9-14-81 E.R.D.
REVISED GENERAL NOTES 3, 4, 5 & 8	9-14-81 E.R.D.
REVISED THE SHEET TITLE	9-14-81 E.R.D.
REVISED GENERAL NOTE 3 & DESIGN DATA	7-28-83 E.R.D.
IDENT. NO. DESCRIPTION	DATE BY
REVISIONS (OR CHANGE NOTICES)	
NEW MEXICO STATE HIGHWAY DEPARTMENT	
~STEEL~ PIPE ARCHES~ FILL HEIGHTS CORR. METAL & STRUCT. PLATE	
DESIGNED BY J.D.G.	APPROVAL
DRAWN BY A.J.S.	RECOMMENDED BY BRIDGE ENGINEER DATE
CHECKED BY E.R.D.	APPROVED BY DIRECTOR PROJ. DEVELOPMENT DIVISION DATE
SERIAL BMC-002-06 2195	



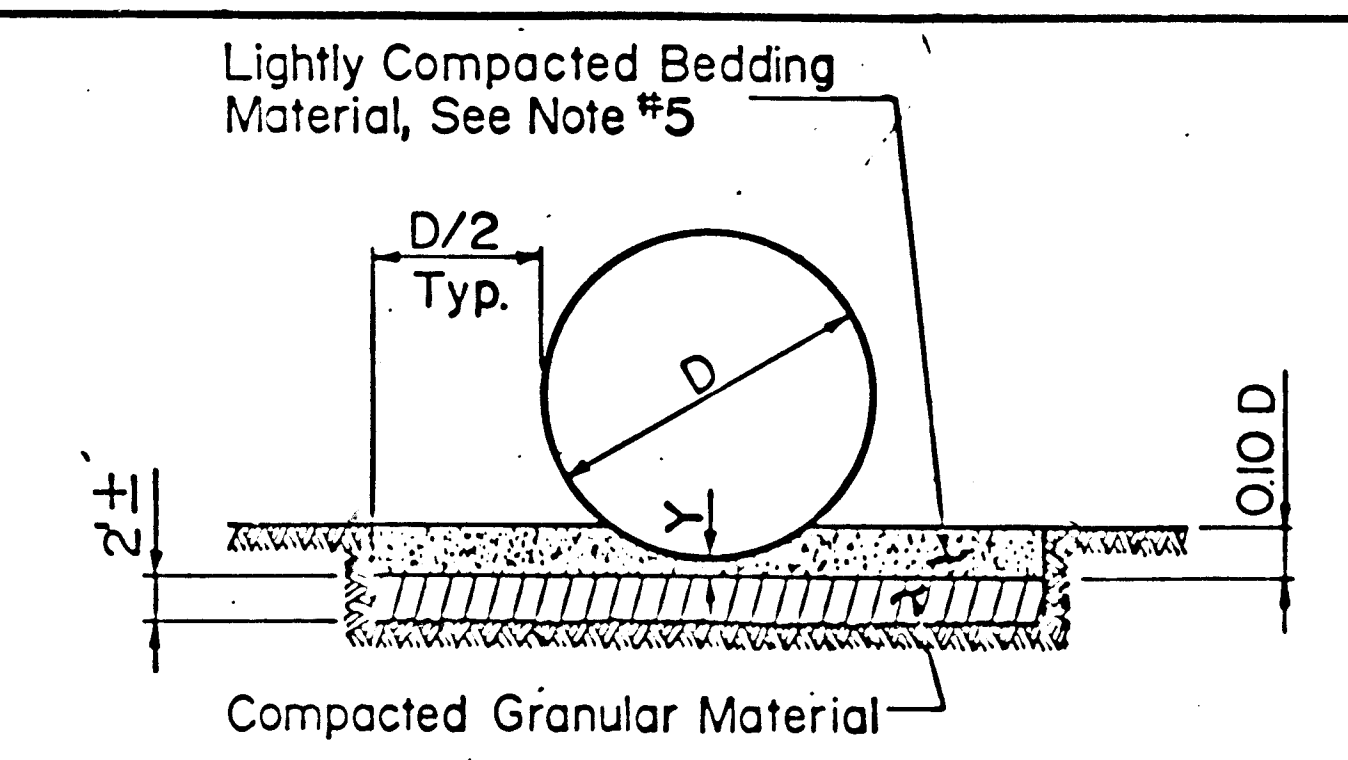
SUITABLE EXISTING GROUND FOUNDATION



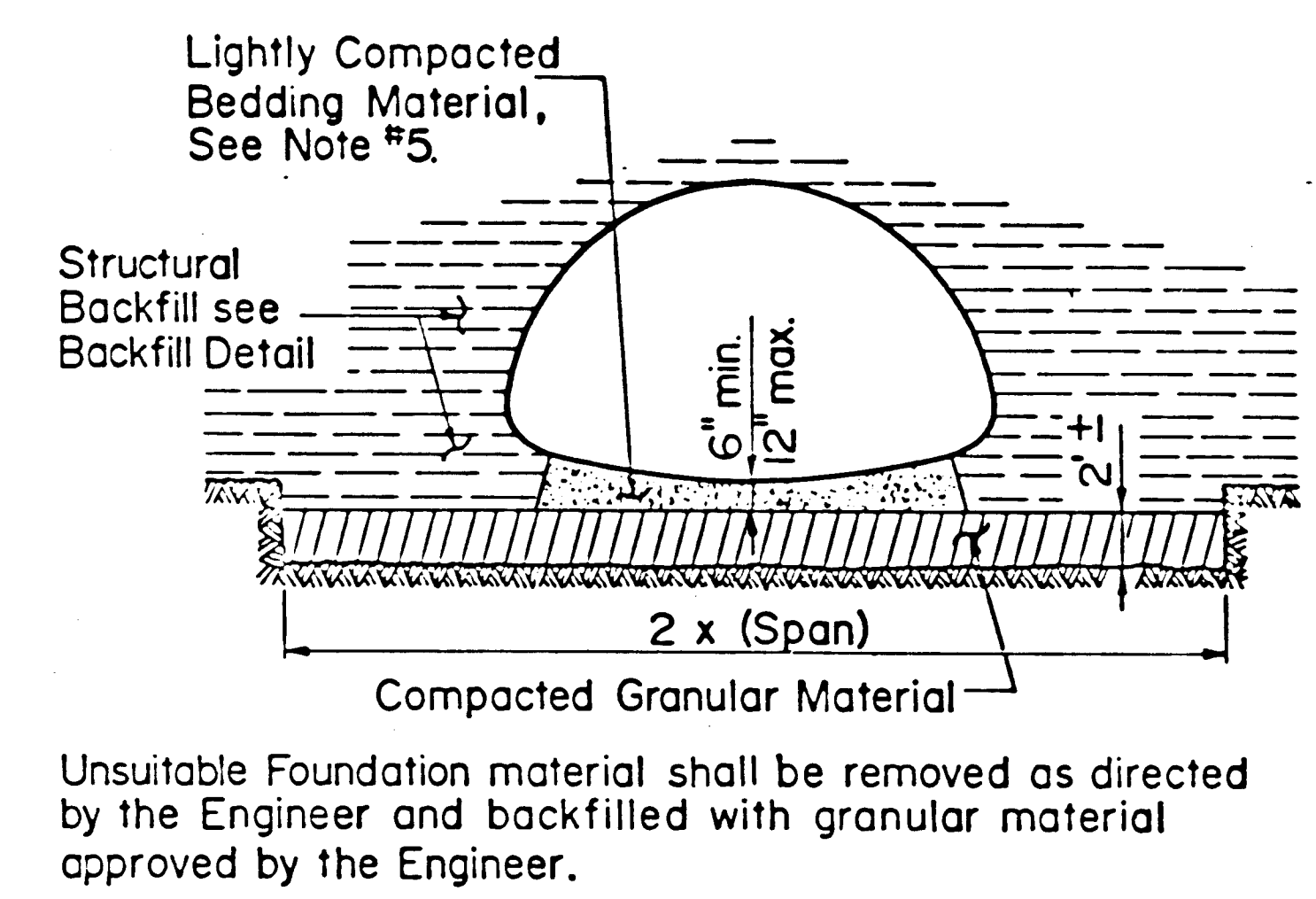
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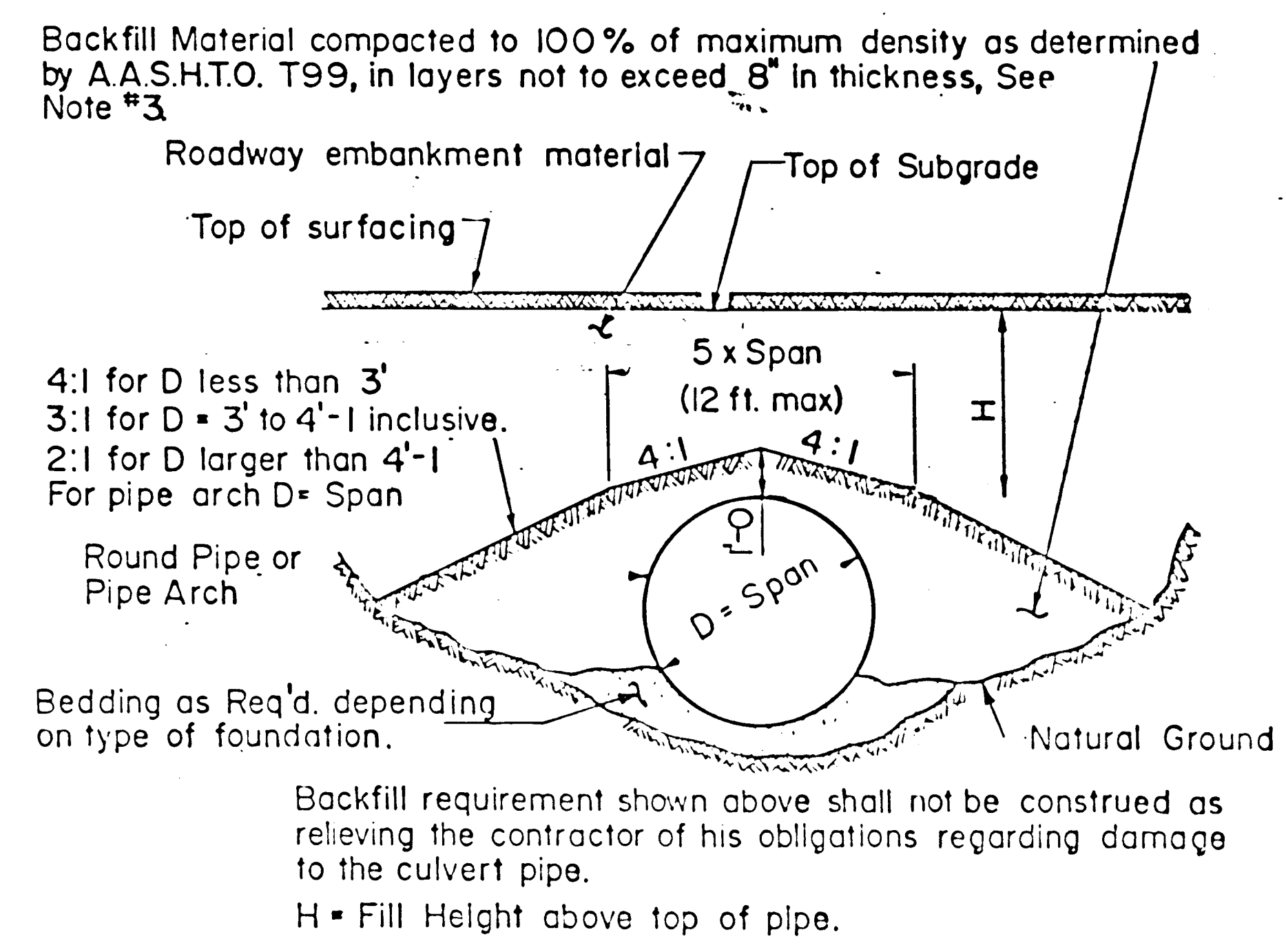
TRENCH CONDITION



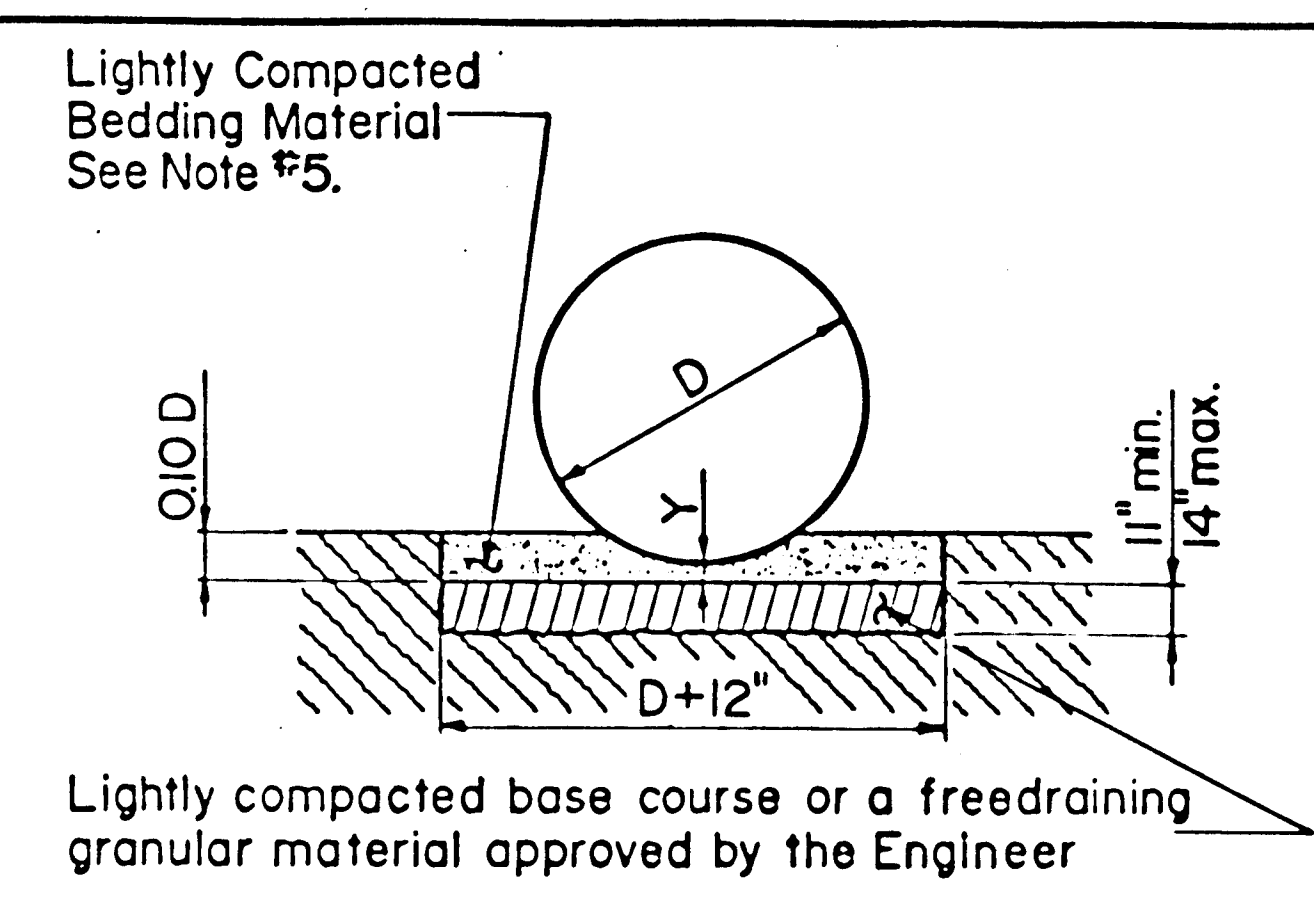
UNSUITABLE FOUNDATION



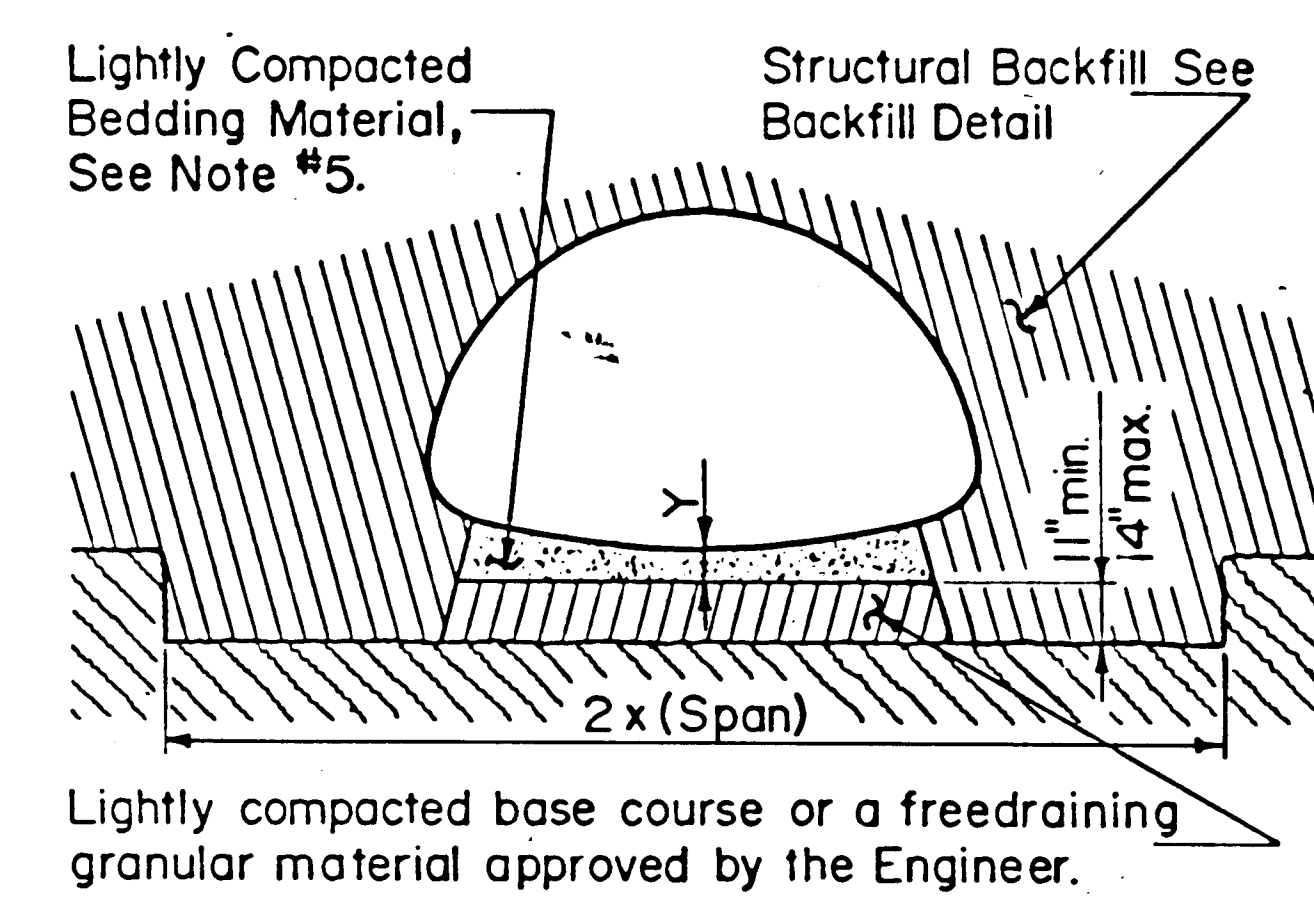
UNSUITABLE FOUNDATION



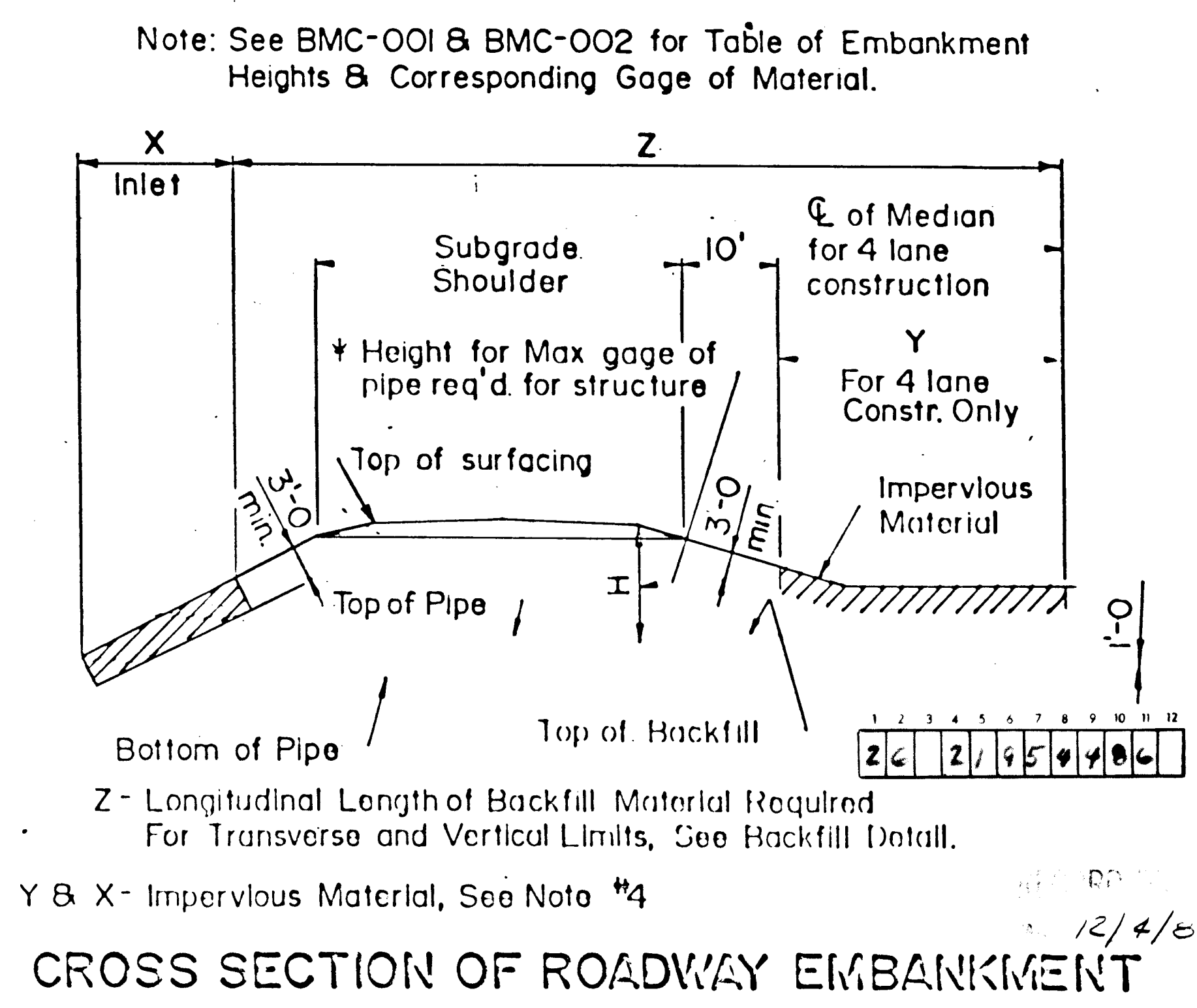
BACKFILL DETAIL



ROCK OR UNYIELDING FOUNDATION



ROCK OR UNYIELDING FOUNDATION



CROSS SECTION OF ROADWAY EMBANKMENT

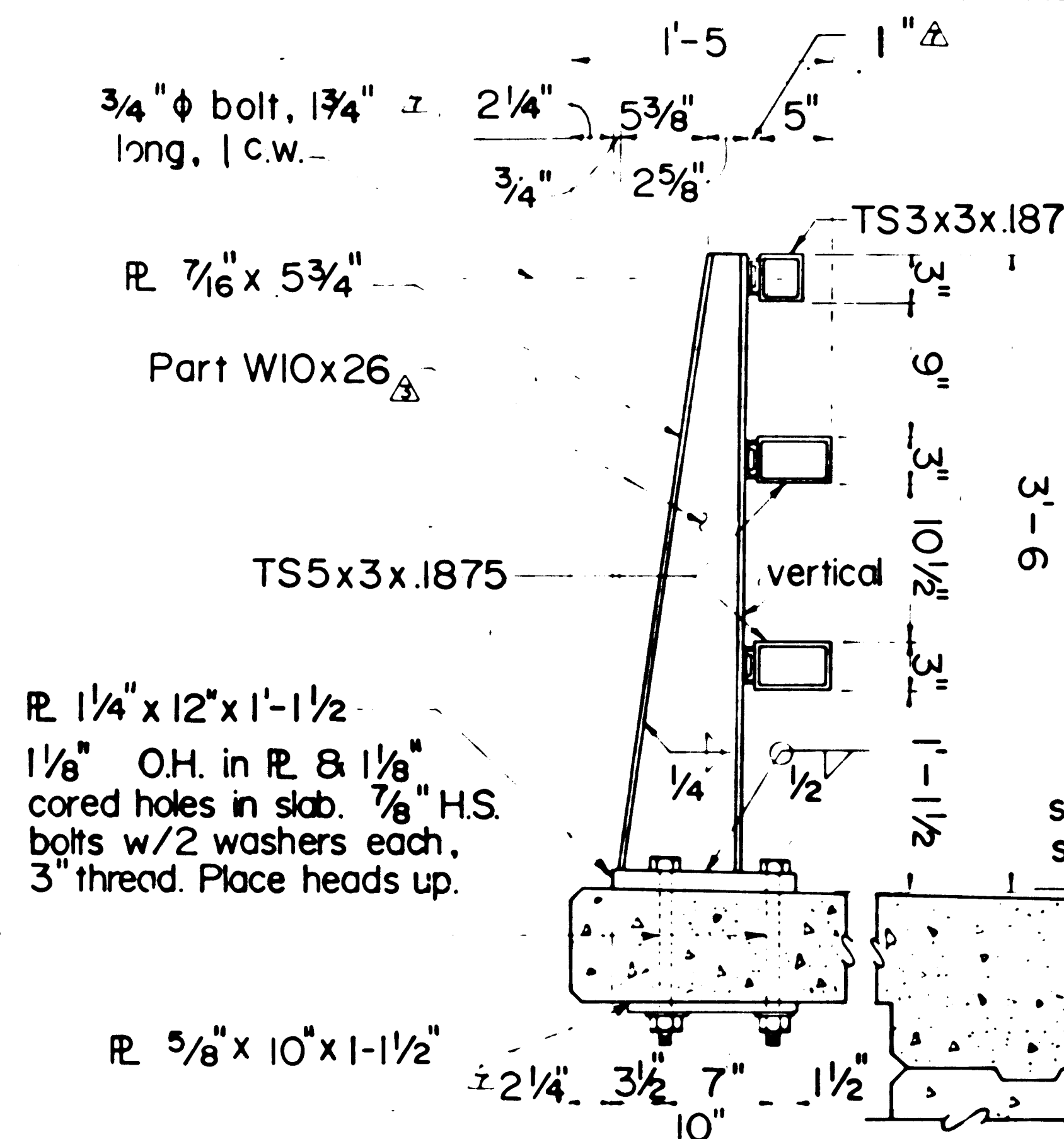
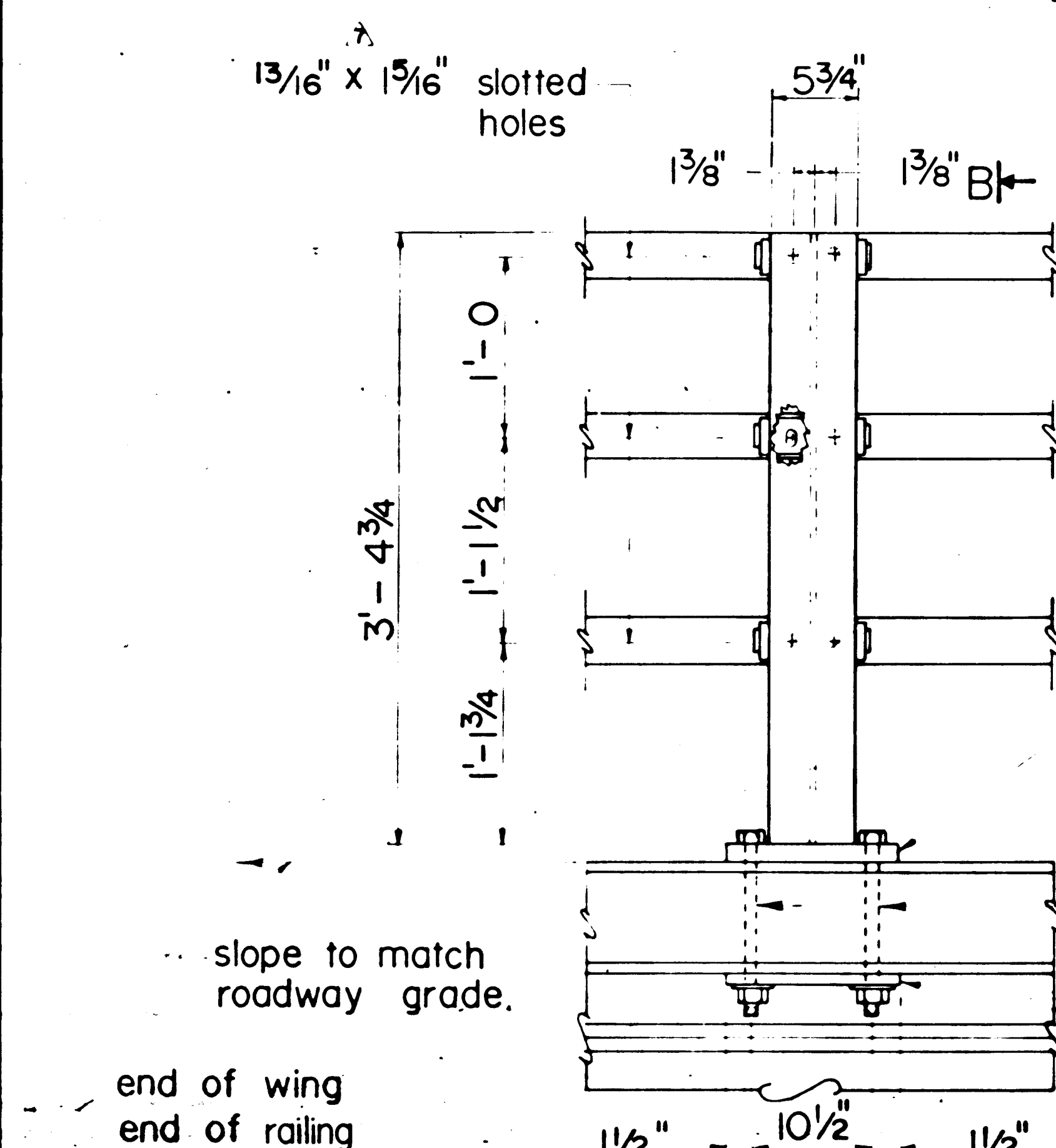
F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

GENERAL NOTES

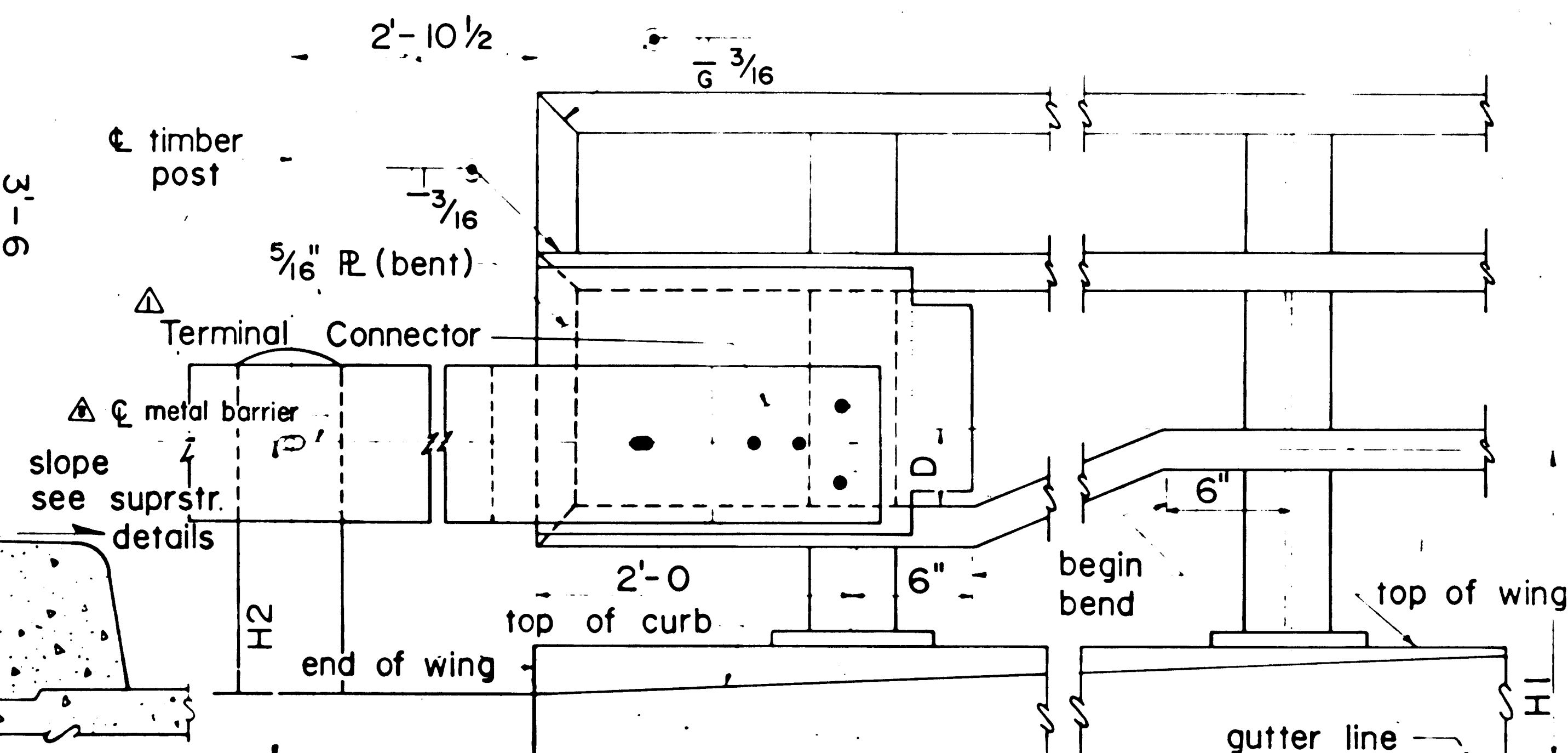
- Riveted or welded metal pipe & pipe arches shall be placed with the inside circumferential laps pointing downstream & with longitudinal laps at side or quarter points, not top or bottom. Structural plate pipe & pipe arch culverts shall be erected as shown on erection diagrams furnished by the supplier.
- The Existing Ground Foundation Material under pipes shall be broken up and compacted to 95% of maximum density by A.A.S.H.T.O. T99.
- Backfill material shall conform to an A.A.S.H.T.O. M-145 Soil or better, with maximum size of 2" and not more than 20% passing a No. 200 Sieve.
- Impervious material shall be placed longitudinally along the pipe to the elevations and limits shown on the Cross Section of Roadway Embankment, and transversely around the pipe to the density and slopes shown for backfilled material on the Backfill Detail. Unless otherwise designated on the plans or directed by the Engineer, impervious material shall conform to A-1, A-2 & A-4 plastic soils or better grades of A-6 & A-7.
- Bedding Material shall be roughly shaped to fit bottom of pipes & then compacted at haunches and sides of pipe. Material shall conform to Article 206.032(C) N.M.S.H.D. Standard Specifications. For pipe arch the width of bedding need not exceed the width of the bottom arc.
- Where multiple lines of pipes or pipe arches greater than 48 inches in diameter or span are used, they shall be spaced so that adjacent sides of the pipe shall be at least one-half diameter or 3 feet apart whichever is less, to permit adequate compaction of backfill material. For diameters up to 48 inches, the minimum spacing shall be not less than 24 inches. See Serial ES-1 for flared end sections.
- A continuous concrete cradle shall be used only when shown on the plans.

DESIGNED BY	JDG	APPROVAL	RECOMMENDED	BRIDGE ENGINEER	6-13-60
DRAWN BY	AJS	APPROVED			DATE
CHECKED BY	IRD	DIRECTOR PROJ. DEVELOPMENT DIVISION			DATE
SERIAL BMC-003 2195					

FHWA Region No	STATE		SHEET NO.	TOTAL SHEET
6	NEW MEXICO		29	

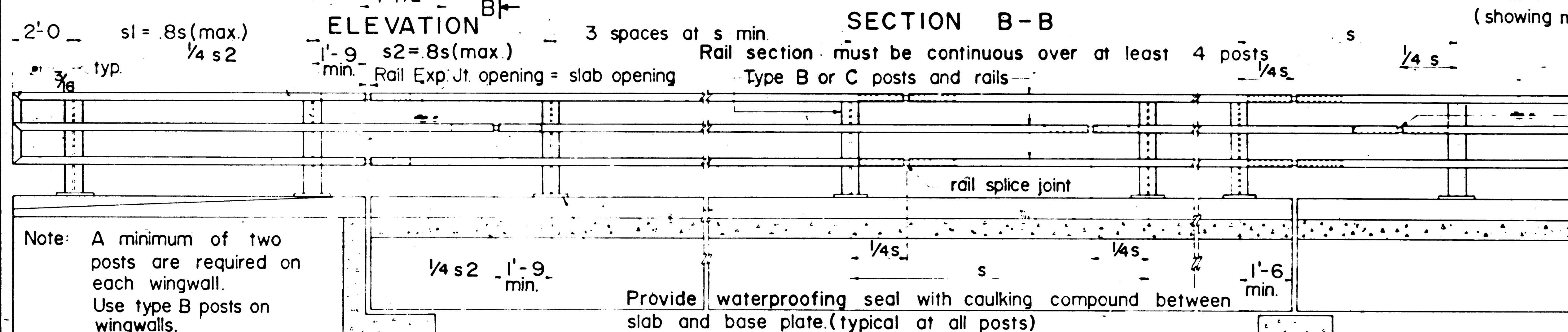


△ Note: Use bevel washers with 5% slope when top and bottom of concrete diverge by more than 3%. If the divergence exceeds 7%, special details will be shown on bridge plans.



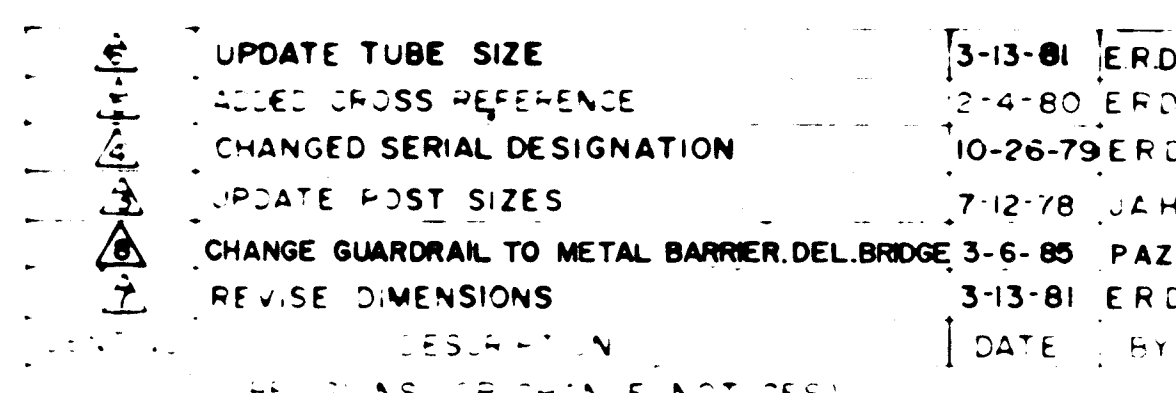
ELEVATION AT ABUTMENTS

(showing metal barrier connection) For details not shown see Sh.#1.



Rail expansion joint. Place near all piers in simple span bridges. Place at ends of continuous span units.

Serial BMR-001 must accompany this sheet. 3



* Basis for spacing shown on plans
See note 5.

Max. Δ	Type of Steel	ASTM Desig.
S	TS5 x 3 x 1875	TS3 x 3 x 1875 ⁶
7'-8	A501	A500 or A501
8'-4	A500 Grade A	A500 or A501
9'-10*	A500 Grade B	A500 or A501

1 1/8" Ø OH.
slot out

1 1/2" Q

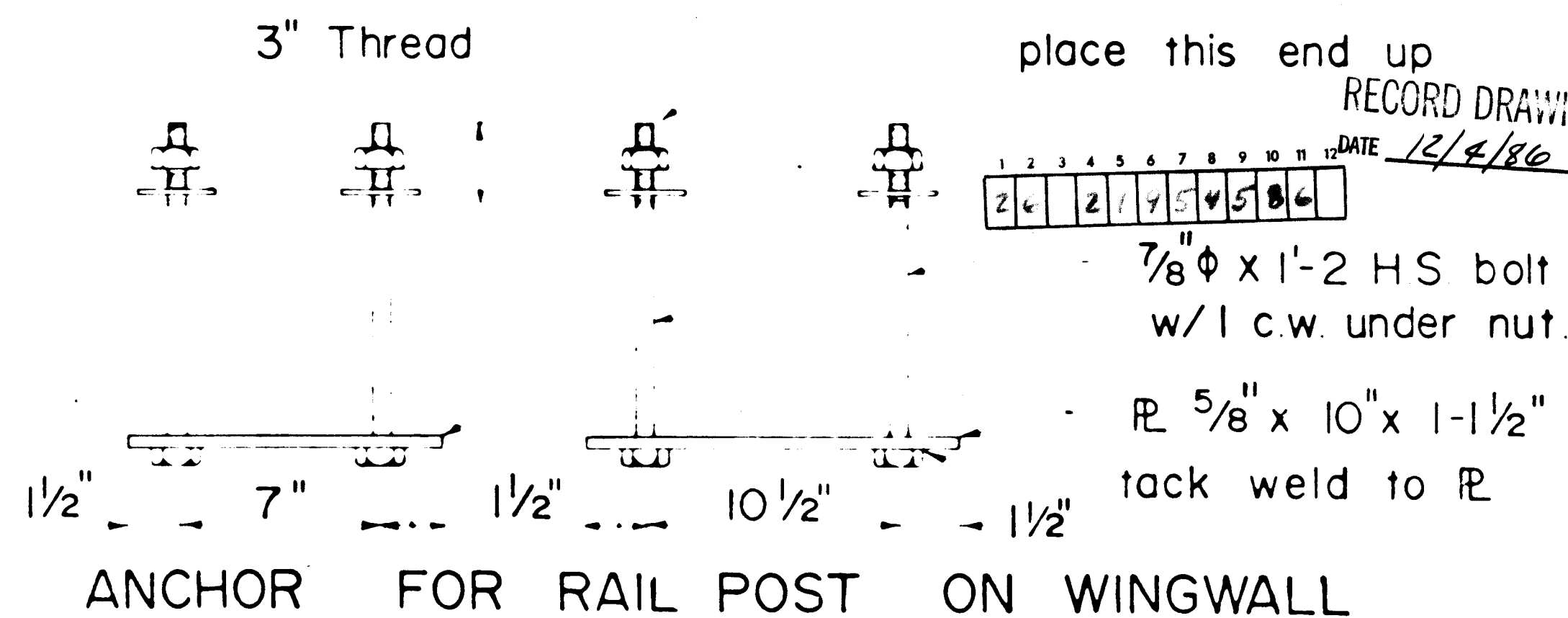
2 1/2"

4" 1/4"

Bar 4" x 1/16"

POST SHIMS ~ TYPE B RAIL

P = 1'-1 1/2" & 1'-0" ~ Q = 10 1/2" & 7'. One shim P = 1'-1 1/2" & one shim P = 1'-0" for each Type B rail post. Post shims are to be used between post and concrete where necessary.



RECORD DRAWINGS

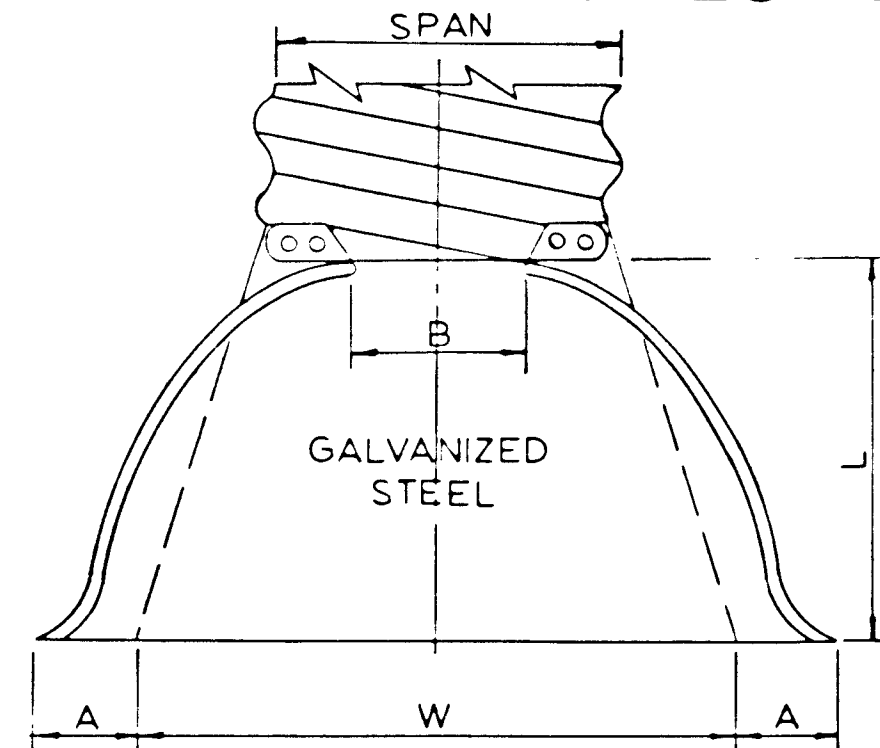
12 DATE 12/4/86

NEW MEXICO STATE HIGHWAY DEPARTMENT

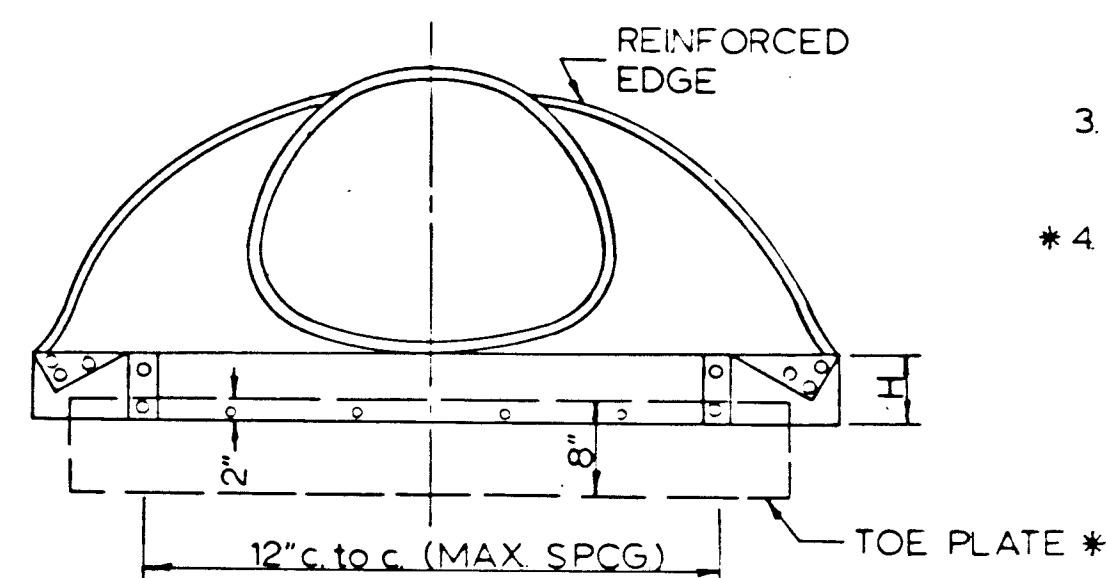
△ METAL RAILING
TYPE B

4 SERIAL BMR-003-08 2195

STANDARD END SECTIONS FOR PIPE-ARCH STEEL PIPE

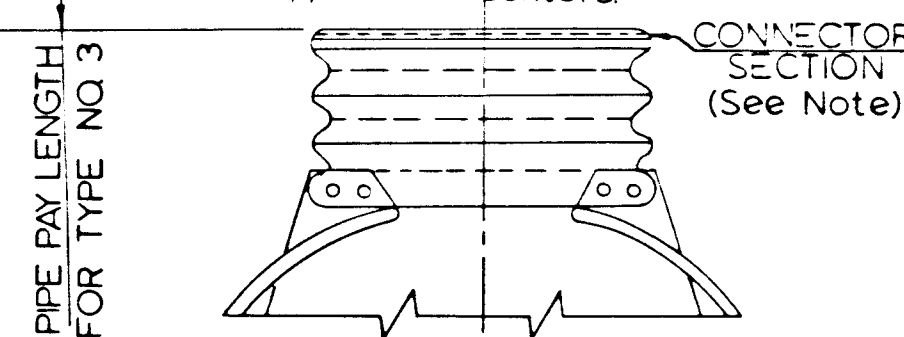


PLAN



ELEVATION

NOTE:
Type No. 3 connection includes one foot of the PIPE LENGTH for 64"x43" thru 83"x57" sizes as a connector section. The connector section will be attached to the END SECTION by 3/8" galvanized rivets or bolts approx. 6" centers.

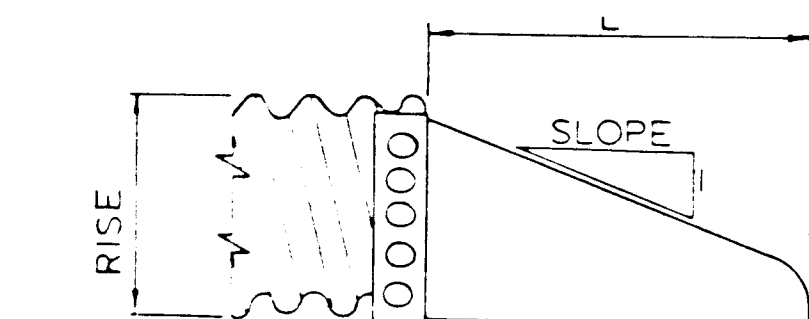
TYPE No. 3
FOR 64"x43" THRU 83"x57" ONLY

PIPE ARCH DIMENSIONS	SPAN	ARCH RISE	GA.	DIMENSIONS						APPROX SLOPE	BODY
				A 1/2"	B 1/2"	H 1/2"	L 1/2"	W 7/8"			
17	13	16	7	9	6	19	30	2 1/2	1pc		
21	15	16	7	10	6	23	36	2 1/2	1pc		
24	18	16	9	12	6	28	42	2 1/2	1pc		
28	20	16	9	14	6	32	48	2 1/2	1pc		
35	24	14	10	16	6	39	60	2 1/2	1pc		
42	29	14	12	18	8	45	75	2 1/2	1pc		
49	33	12	13	21	9	53	85	2 1/2	2pc		
57	38	12	15	25	12	63	90	2 1/2	2pc		
64	43	12	16	30	12	70	102	2 1/2	2pc		
71	47	12	18	33	12	77	114	2 1/2	3pc		
77	52	12	18	35	12	77	126	2	3pc		
83	57	12	18	39	12	77	138	2	3pc		

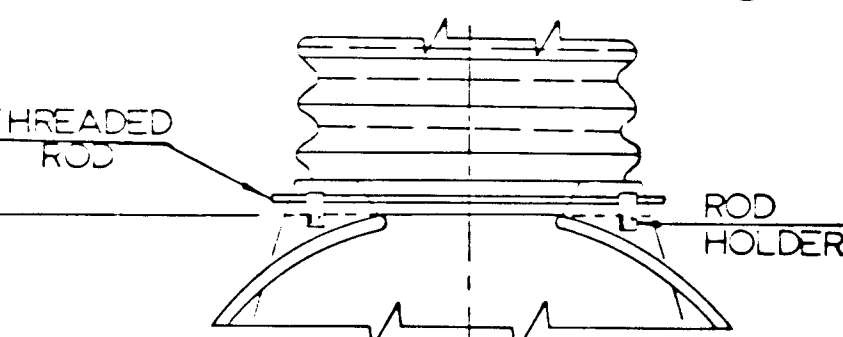
NOTE:
Sizes equivalent to the above, using 3"x1" corrugations, may be used providing that they meet the sizes shown under table 4 of spec. M-17-70.

NOTES:

- All 3 pc. bodies to have 12 Ga. sides and 10 Ga. center panels. Width of center panels to be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams which are to be tightly joined by 3/8" galvanized rivets or bolts.
- For the 77"x52" and 83"x57" sizes, reinforced edge to be supplemented by 2"x2"x1/4" galvanized angles. The angles to be attached by 3/8" galvanized nuts and bolts.
- Angle reinforcement will be placed under the center panel seams on the 77"x52" and 83"x57" sizes.
- Toe plate to be constructed where shown on plans.



TYPICAL CROSS SECTION

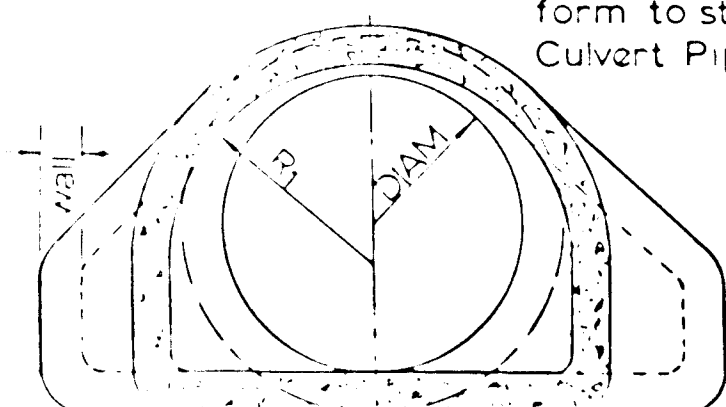
TYPE No. 2
FOR 17"x13" THRU 57"x38" ONLY

STANDARD CONNECTIONS

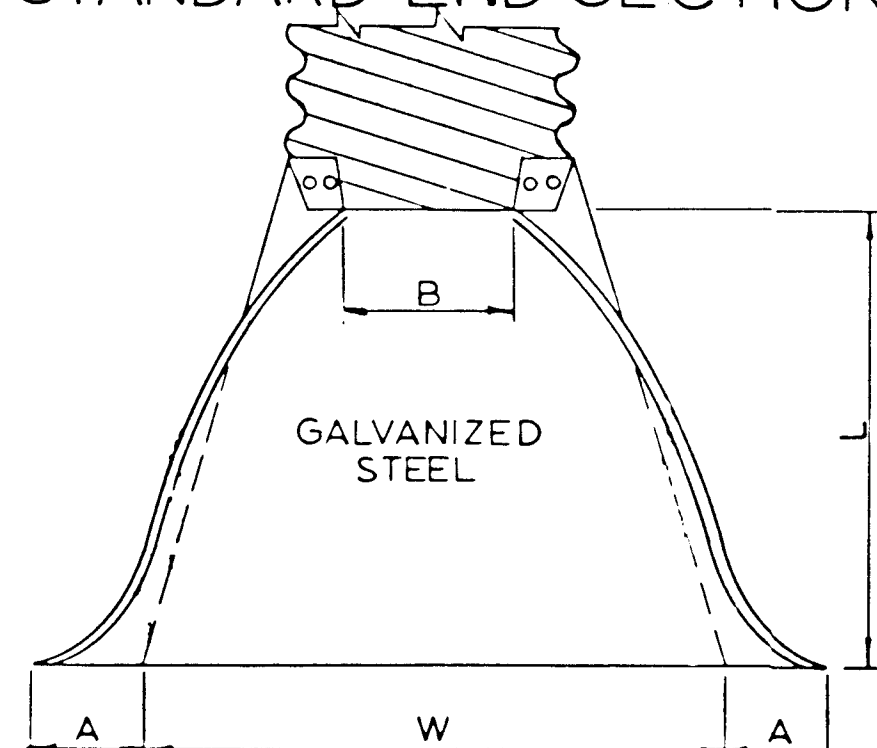
FLARED END SECTIONS FOR REINFORCED CONCRETE CULVERT PIPE

DIAM.	WALL	G or T	WEIGHT	SLOPE	A	B	C	D	E	DIAM. +1"
12	2	1 1/2	530	3:1	4"	2-0	4-0 7/8	6-0 7/8	2-0	13
15	2 1/4	2	740	3:1	6"	2-3	3-10	6-1	2-6	16
18	2 1/2	2 1/2	930	3:1	9"	2-3	3-10	6-1	3-0	19
21	2 3/4	2 1/2	1280	3:1	9"	2-11	3-2	6-1	3-6	22
24	3	2 1/2	1520	3:1	9 1/2"	3-7 1/2	2-6	6-1 1/2	4-0	25
27	3 1/4	2 1/2	1930	3:1	10 1/2"	4-0	2-11 1/2	6-1 1/2	4-6	28
30	3 1/2	3	2190	3:1	11-0"	4-6	1-7 3/4	6-13 1/4	5-0	31
33	3 3/4	3 3/8	2150	3:1	11-1 1/2"	4-10 1/2	3-3 1/4	8-13 1/4	5-6	34
36	4	3 1/2	4100	3:1	1-3"	5-3	2-10 3/4	8-13 1/4	6-0	37
42	4 1/2	3 3/4	5380	3:1	1-9"	5-3	2-11	8-2	6-6	43
48	5	4 1/4	6550	3:1	2-0"	6-0	2-2	8-2	7-0	49
54	5 1/2	4 3/4	8040	24:1	2-3"	5-5	2-11	8-4	7-6	55
60	6	5	8750	2:1	2-6"	5-0	3-3	8-3	8-0	61
66	6 1/2	5 1/2	10530	2:1	2-8"	6-6	1-9	8-3	8-6	67
72	7	6	12520	2:1	2-10"	6-6	1-9	8-3	9-0	73
78	7 1/2	6 1/2	14420	2:1	3-1"	6-6	1-9	8-3	9-6	79
84	8	7	18320	2:1	3-5"	6-6	1-9	8-3	10-0	85

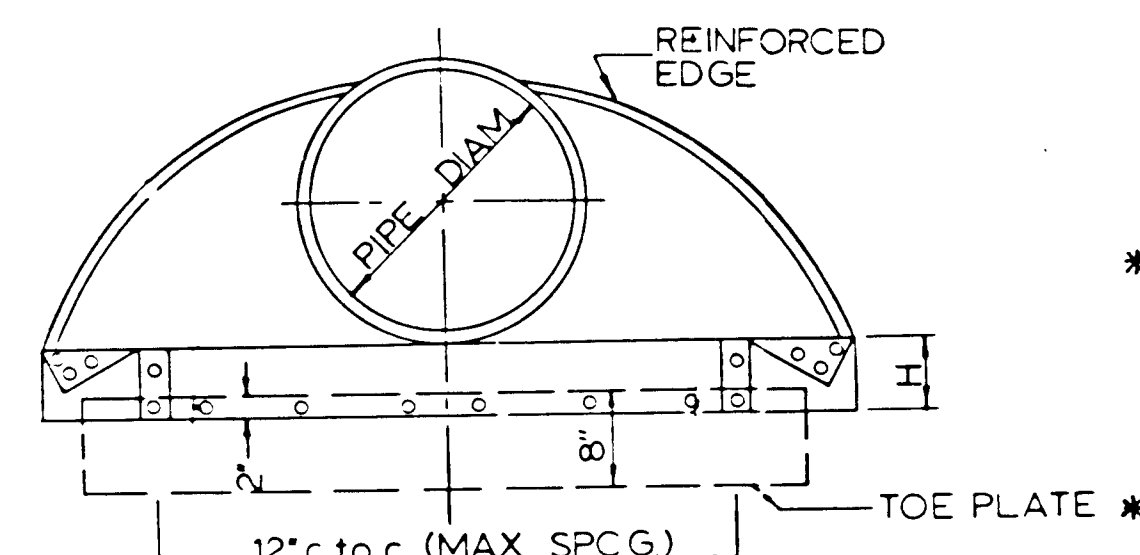
NOTE: Design of End Section shall conform to standard reinforced concrete Culvert Pipe.

END VIEW
Y-Y SECTION

STANDARD END SECTIONS FOR ROUND STEEL PIPE

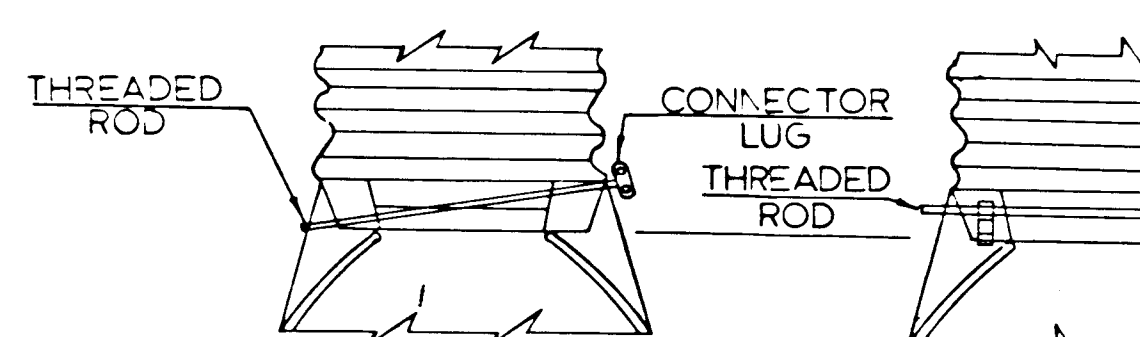


PLAN



ELEVATION

NOTE:
Type No. 3 connection includes one foot of PIPE LENGTH for 42" thru 64" diam. as a connector section. The connector section will be attached to the END SECTION by 3/8" galvanized rivets or bolts approx. 6" centers.

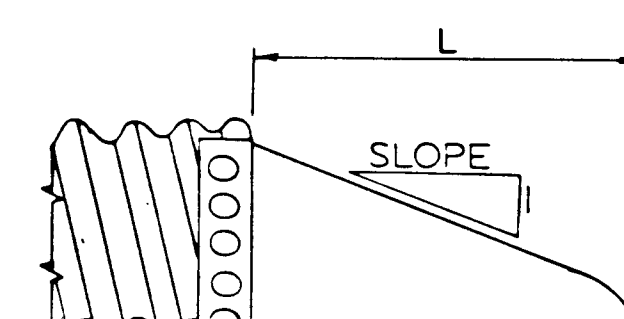
TYPE No. 1
FOR 12" THRU 24" ONLYTYPE No. 2
FOR 30" & 36" ONLYTYPE No. 3
FOR 42" THRU 84" ONLY

STANDARD CONNECTIONS

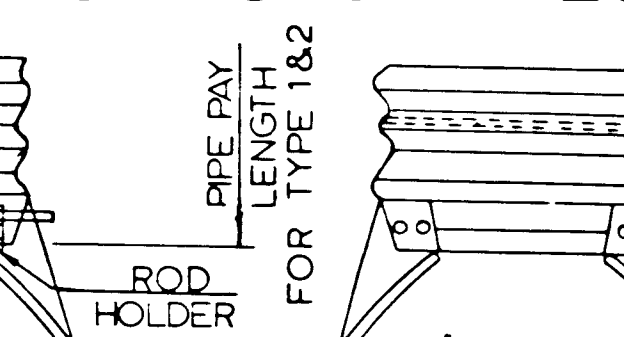
PIPE DIAM.	GA.	A	B	H	L	W	APPROX SLOPE	BODY
12	16	6	6	6	21	24	2-1/2	1 pc
15	16	7	8	6	26	30	2-1/2	1 pc
18	16	8	10	6	31	36	2-1/2	1 pc
21	16	9	12	6	36	42	2-1/2	1 pc
24	16	10	13	6	41	48	2-1/2	1 pc
30	14	12	16	8	51	60	2-1/2	1 pc
36	14	14	19	9	60	72	2-1/2	2 pc
42	12	16	22	11	69	84	2-1/2	2 pc
48	12	18	27	12	78	90	2-1/4	2 pc
54	12	18	30	12	84	102	2	2 pc
60	12	18	33	12	87	114	1-3/4	3 pc
66	12	18	36	12	87	120	1-1/2	3 pc
72	12	18	39	12	87	126	1-1/3	3 pc
78	12	18	42	12	87	132	1-1/4	3 pc
84	12	18	45	12	87	138	1-1/6	3 pc

NOTES:

- All 3 pc. bodies to have 12 Ga. sides and 10 Ga. center panels. Width of center panels to be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams which are to be tightly joined by 3/8" galvanized rivets or bolts.
- For 60" thru 84" sizes, reinforced edges to be supplemented with galvanized stiffener angles. The angles will be 2"x2"x1/4" for 60" thru 72" diam. and 2 1/2"x2 1/2"x1/4" for 78" and 84" diam. The angles to be attached by 3/8" galvanized nuts and bolts.
- Toe plate to be constructed where shown on plans.

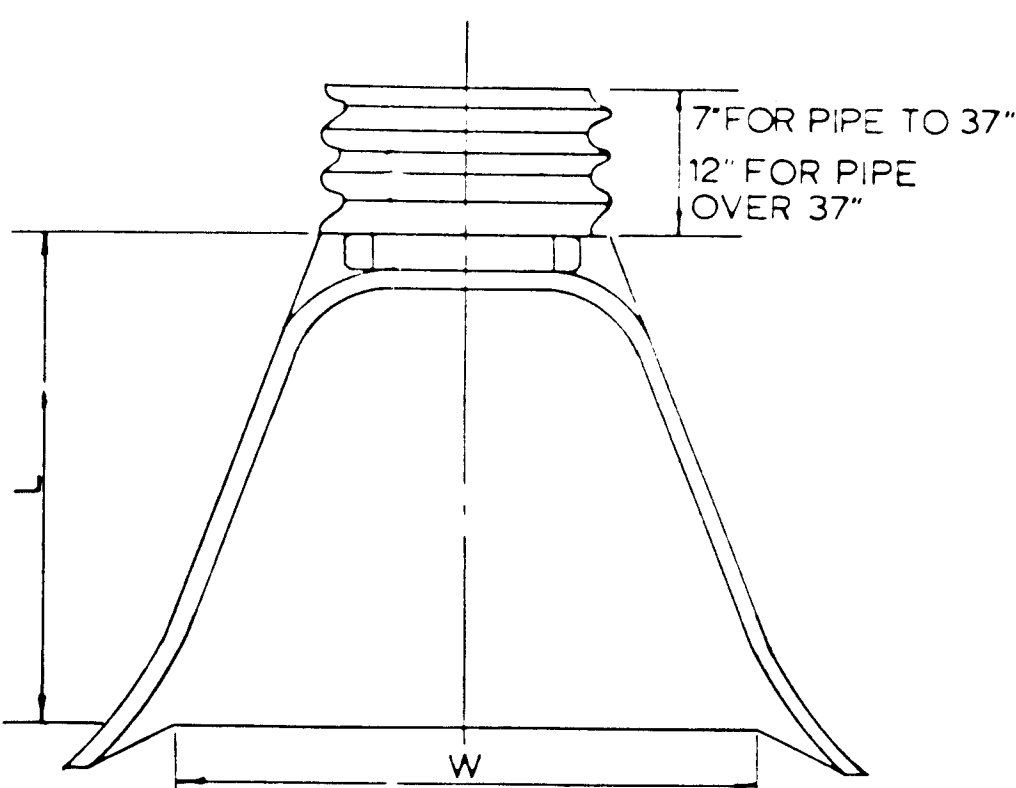


TYPICAL CROSS SECTION



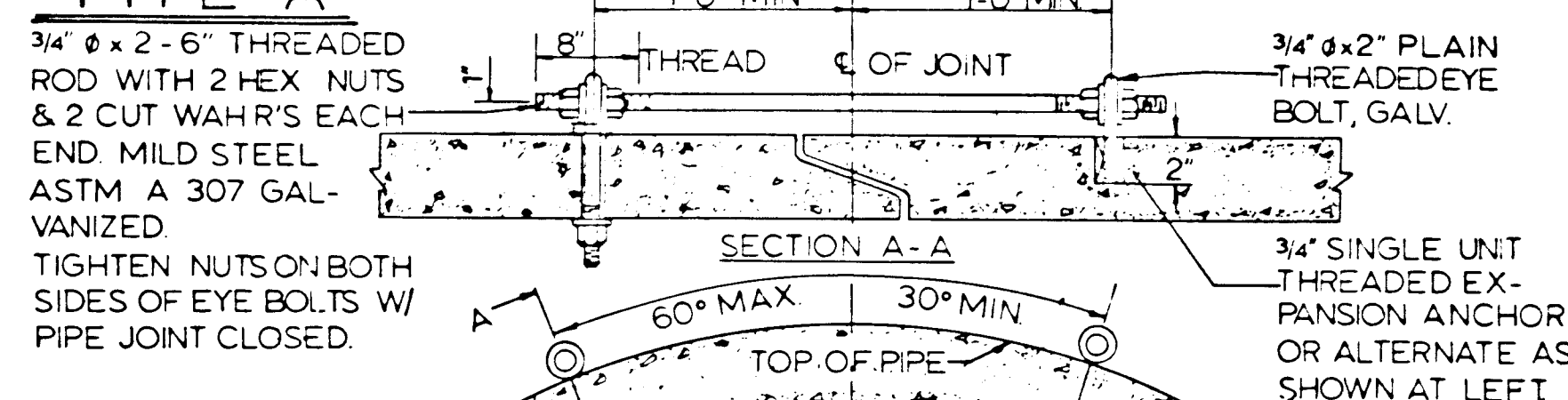
CORR. ALUMINUM PIPE END SECTION

FHWA PROJECT NO.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

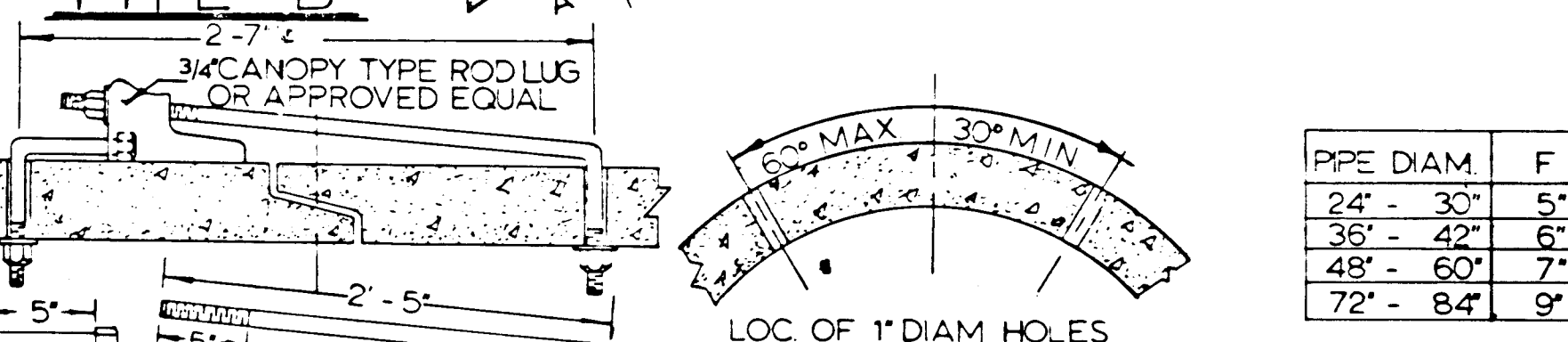


PIPE DIAM. INCHES	APRONS L INCHES	W INCHES
18	19	30
21	23	36
24	28	42
30	31 1/2	48
36	38 1/2	60
42	47	75
48	54	85
60	63	96
66	70	112
72	77	128

TYPE "A"



TYPE "B"



- Fasteners shall be used only where called for on Plans.
- Type 'A', Type 'B', or approved equal may be used for pipe diameters of 24" thru 84".
- Cost of Fasteners to be considered incidental to completion of construction and no direct payment shall be made therefore.

DETAIL OF FASTENER FOR END SEC. FOR CONC. PIPE

GENERAL NOTES.

- For multiple installation of all types, a minimum of a 2 foot spacing measured along the horizontal between Flared End Sections at their widest Cross Section shall be used.
- Welding will not be permitted in connecting end sections to connector sections or connector sections to pipe.
- Type No. 1, Type No. 2, and Type No. 3 connections may be used with welded seam Helically Corrugated Pipe with re-rolled ends. Re-rolled ends shall include a minimum of 2 annular corrugations of the same size as the pipe corrugations.

RECORDED

DATE 12/4/86

26 21954606

GENERAL NOTE NO. 2 ADDED 8/22/87
GENERAL NOTE NO. 2 REV. (10-26-76) PR

NO.	DESCRIPTION	DATE	BY
7	ADDED GENERAL NOTE NO. 2	11/14/75	RFR
6	REV. PIPE ARCH. DIM.	12/10/74	RAH
5	REV. NOTE FOR CORR. HELI. CORR. PIPE	6/7/74	RFR
4	ADDED NOTE RE: TOE PLATE	8/22/72	RFR
3	ADDED ALTERNATE TO EXPANSION ANCHOR	11/13/69	MAM
2	ADDED TYPE 'B' FASTENER, CPC END SEC.	11/13/69	MAM
1	REDRAWN	10/17/69	MAM

REVISIONS OR CHANGE NOTICES

2/95

ES - 1

NEW MEXICO
STATE HIGHWAY DEPARTMENT
STANDARD
CULVERT PIPE
END SECTIONS

S - SUBGRADE OF STRUCTURE

Impervious material at inlet may be placed to dotted line for min. dimensions shown or for entire shaded area at contractors option.

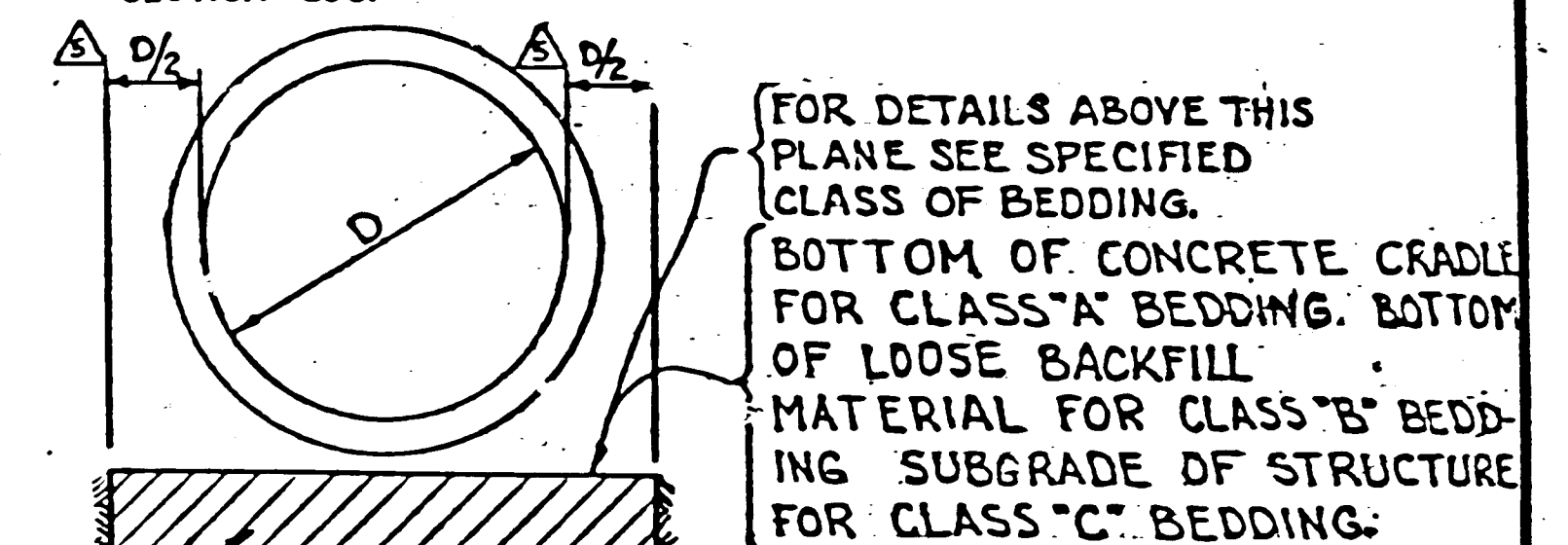
DESIGN DATA

Design according to U.S.B.P.R. Circular Memorandum dated April 4, 1957
and A.A.S.H.T.O. Spec. M-170.
Weight of fill material = 120 lbs./ft.³
Factor of safety = 1.33 applied to ultimate 3 edge bearing load.
Settlement Ratio = 0.7

FHWA Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

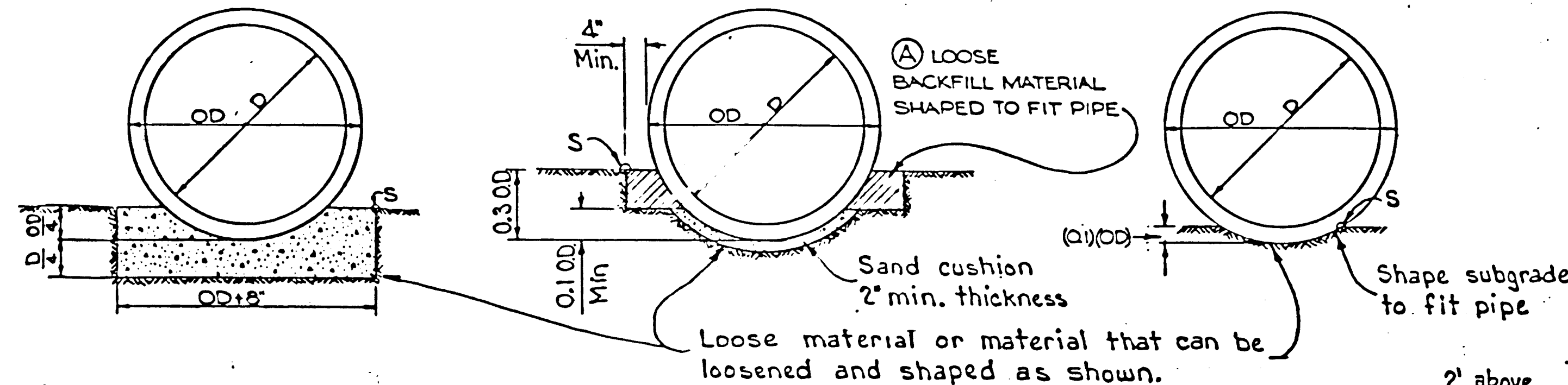
GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO N.M.S.H. DEPT. SPECIFICATIONS.
2. CONCRETE PIPE SHALL CONFORM TO ALL REQUIREMENTS OF AASHTO SPECIFICATION M-170
3. THE MINIMUM HEIGHT OF FILL BETWEEN TOP OF PIPE AND FINISHED GRADE OF THE ROADWAY SHALL BE 175 FT. FOR UNPAVED AND BITUMINOUS PAVED ROADS AND 125 FT. FOR CONCRETE PAVED ROADS.
SAND CUSHION FOR CLASS "B" BEDDING TO BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE PIPE.
4. SUITABLE MATERIAL FOR STABILIZING THE CULVERT FOUNDATION SHALL CONSIST OF MATERIAL APPROVED BY THE ENGINEER. THE MATERIAL MAY BE OBTAINED FROM THE ROADWAY OR STRUCTURE EXCAVATION OR FROM BORROW, AS DIRECTED BY THE ENGINEER. THE DEPTH OF SUCH MATERIAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD AFTER EXAMINATION OF THE NATURAL FOUNDATION MATERIAL, CONSIDERING THE DIAMETER OF THE PIPE AND HEIGHT OF COVER.
5. FOR MULTIPLE INSTALLATIONS, PIPES SHALL BE SPACED TO PROVIDE TWO FEET CLEAR DISTANCE BETWEEN END SECTIONS, SEE SERIAL ES-1. WHERE SERIAL ES-1 DOES NOT LIST END SECTIONS FOR THE SIZE OF PIPE TO BE USED, THE CENTER TO CENTER SPACING OF PIPES SHALL BE THE OUTSIDE DIAMETER PLUS THREE FEET.
6. EXISTING GROUND UNDER PIPE BEDDING SHALL BE BROKEN UP & COMPACTED TO A MINIMUM DEPTH OF 6 INCHES REGARDLESS OF FILL HEIGHT. COMPACTION SHALL BE 95% OF MAXIMUM DENSITY BY AASHTO T99.
7. BACKFILL MATERIAL SHALL CONFORM TO SPECIAL PROVISION MODIFYING SECTION 206.



FOUNDATION STABILIZATION

UNSUITABLE FOUNDATION MATERIAL SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND THE EXCAVATED AREA BACKFILLED AS SHOWN.



CLASS "A"

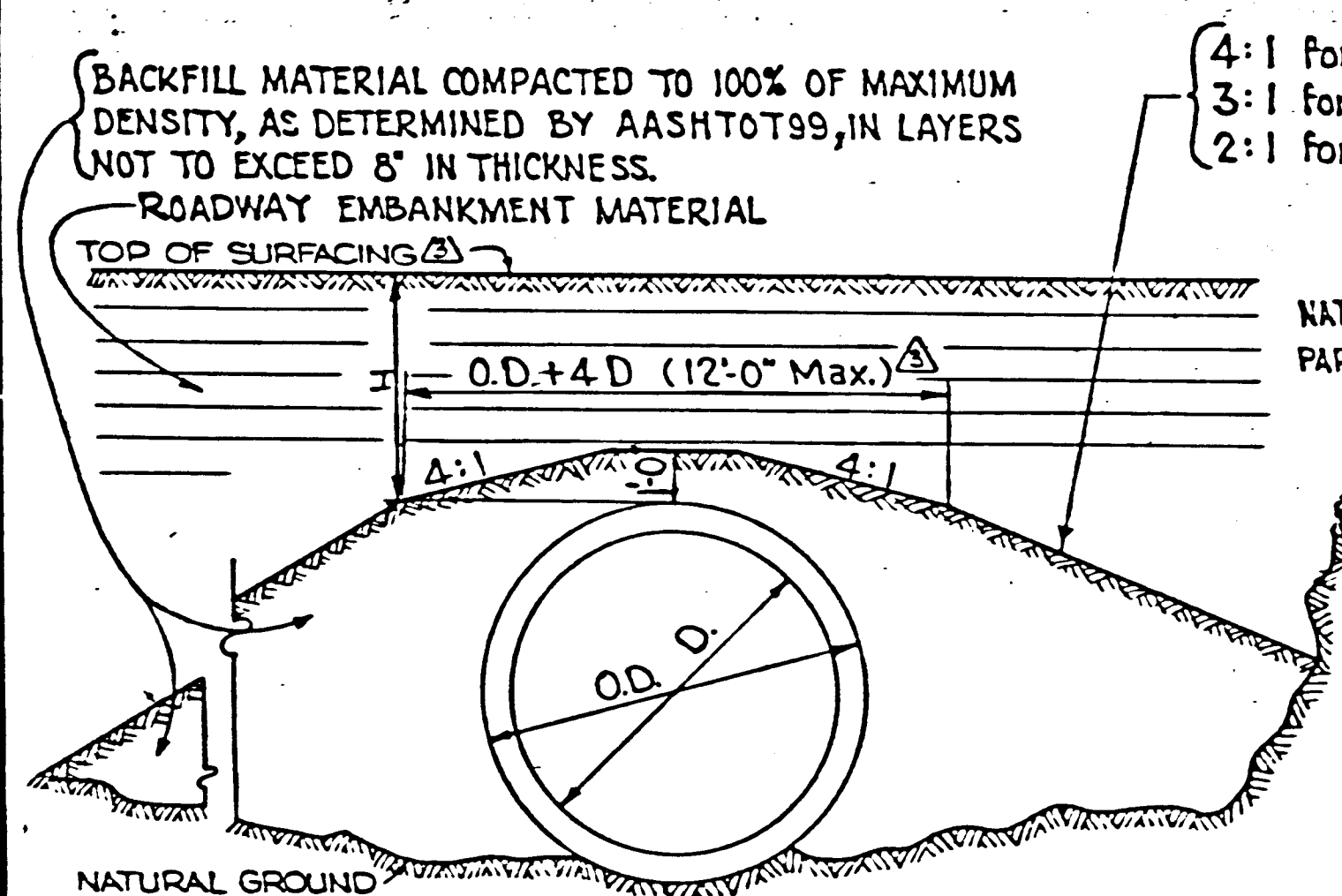
CLASS "A" BEDDING SHALL CONSIST OF A CONTINUOUS CONCRETE CRADLE AND SHALL BE USED ONLY WHEN SHOWN ON THE PLANS.

VOLUME OF CRADLE
 $0.0156 D^2 + 0.0163 D + 0.0011 = \text{CU. YDS./FT.}$
D IS IN FEET.

CLASS "B"

See detail below for bedding in rock or other incompressible foundation.

CLASS "C"

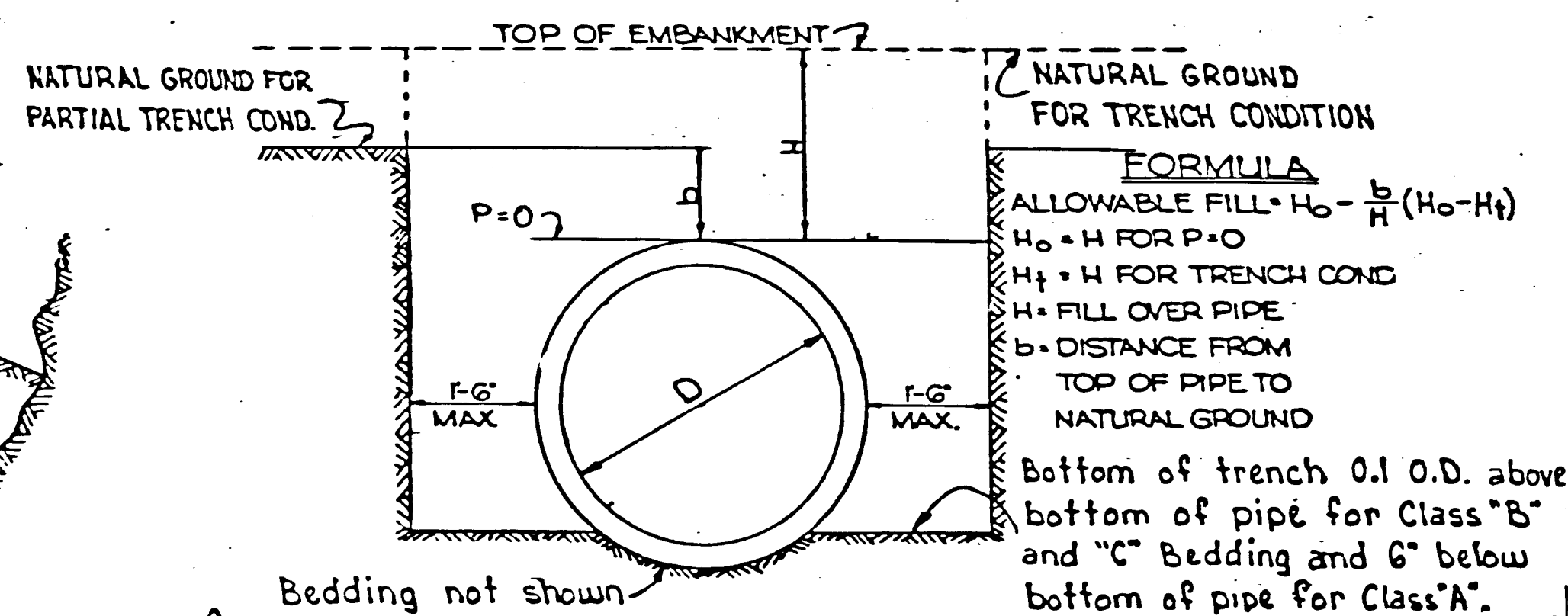


BACKFILL DETAIL

BACKFILL REQUIREMENTS SHOWN ABOVE SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS OBLIGATIONS REGARDING DAMAGE TO CULVERT PIPE.
H = FILL HEIGHT ABOVE TOP OF PIPE.

- 4:1 for D less than 3'
- 3:1 for D = 3' to 4'-1" inclusive
- 2:1 for D larger than 4'-1"

(A) LOOSE BACKFILL MATERIAL ROUGHLY SHAPED TO FIT BOTTOM OF PIPE AND THEN COMPACTED AT WAUNCHES AND SIDES OF PIPE.



METHOD OF INTERPOLATION FOR ALLOWABLE FILL WHEN NATURAL GROUND LIES BETWEEN TOP OF PIPE AND TOP OF EMBANKMENT (PARTIAL TRENCH CONDITION)

MAXIMUM HEIGHT OF FILL

INSIDE DIAMETER INCHES	CLASS II PIPE									CLASS III PIPE									CLASS IV PIPE									CLASS V PIPE									INSIDE DIAMETER INCHES
	CLASS "A" BEDDING			CLASS "B" BEDDING			CLASS "C" BEDDING			CLASS "A" BEDDING			CLASS "B" BEDDING			CLASS "C" BEDDING			CLASS "A" BEDDING			CLASS "B" BEDDING			CLASS "C" BEDDING			CLASS "A" BEDDING			CLASS "B" BEDDING			CLASS "C" BEDDING			
	P=0	P=1.0	TRENCH	P=0	P=0.7	TRENCH	P=0	P=0.9	TRENCH	P=0	P=1.0	TRENCH	P=0	P=0.7	TRENCH	P=0	P=0.9	TRENCH	P=0	P=1.0	TRENCH	P=0	P=0.7	TRENCH	P=0	P=0.9	TRENCH	P=0	P=1.0	TRENCH	P=0	P=0.7	TRENCH	P=0	P=0.9	TRENCH	
18	24	19	24	16	13	16	13	11	13	32	25	32	22	18	22	18	15	18	47	38	56	32	25	32	27	21	27	55	45	110	37	30	37	32	26	32	18
24																																					24
30																																					30
36																																					36
42																																					42
48																																					48
54																																					54
60																																					60
66																																					66
72																																					72
78																																					78
84																																					84
90																																					90
96																																					96
102																																					102
108	24	19	24	16	13	16	13	11	13	32	25	34	22	18	22	18	15	18	47	38	68	32	25	34	27	21	27	55	45	110	37	30	37	32	26	32	72

NOTE: FOR PROJECTION RATIOS WHEN P IS GREATER THAN ZERO AND LESS THAN ONE, ALLOWABLE FILL MAY BE DETERMINED BY INTERPOLATION. WHEN NATURAL GROUND IS ABOVE TOP OF PIPE AND BELOW TOP OF EMBANKMENT, ALLOWABLE NATURAL HEIGHTS OF FILL ARE SHOWN IN PARENTHESIS.

ADDITIONAL CUSHION FOR ROCK OR OTHER INCOMPRESSIBLE FOUNDATION

NOTE: FOR PROJECTION RATIOS WHEN P IS GREATER THAN ZERO AND LESS THAN ONE, ALLOWABLE FILL MAY BE DETERMINED BY INTERPOLATION. WHEN NATURAL GROUND IS ABOVE TOP OF PIPE AND BELOW TOP OF EMBANKMENT, ALLOWABLE FILL HEIGHTS ARE COMPUTED FROM SKETCH AND FORMULA SHOWN ABOVE.

NO.	DESCRIPTION	DATE	BY
1	REDRAWN	11-4-70	H.H.Y.
2	NOTE #6	8-4-71	H.H.Y.
3	Changes marked	10-20-71	W.L.J.
4	ADDED NOTE #2	11-4-71	W.L.J.
5	Revised Width of Subgrade Stabilization	11-22-71	W.L.J.
6	Minor revisions	11-23-71	W.L.J.
7	Miscellaneous revisions	4-23-74	W.L.J.
8	Minor corrections	6-21-74	W.L.J.
9	Rev. Note 7 & Backfill Note	9-9-74	W.L.J.

NEW MEXICO
STATE HIGHWAY DEPARTMENT
FILL HEIGHTS AND
BEDDING DETAILS
FOR
CONCRETE PIPE CULVERTS

2195

SERIAL M-16-71

APPROVED: *[Signature]* 2-2-71
BRIDGE ENGINEER

26 21954706

~~CORRUGATED STEEL PIPE-ARCH ~ RIVETED, WELDED OR HELICAL~~

GENERAL NOTES

4.2.1. Gages shown are minimum required. Gages heavier than shown may be furnished at contractors option at no additional cost to the state.

4.2.2. When pipes are elongated 5% they shall be installed with the larger axis truly vertical

4.2.3. During construction, all pipes shall be protected by a minimum cover equal to one-fourth of the span or 4' whichever is greater, before permitting heavy construction traffic.

△* When Extending existing corrugated steel Pipe Arches (built before 1973) Span/Rise dimension may vary from those shown in table 3 and are to be verified in the field, by the Engineer.

② ROUND CORRUGATED ALUMINUM PIPE

Pipe Dia. (inches)	Minimum Cover (inches)	Maximum Fill Heights in Feet:							
		Metal Thickness (inches) & Aluminum Bolts	Metal Thickness (inches) & Steel Bolts	Metal Thickness (inches) & Aluminum Bolts	Metal Thickness (inches) & Steel Bolts	Metal Thickness (inches) & Aluminum Bolts	Metal Thickness (inches) & Steel Bolts	Metal Thickness (inches) & Aluminum Bolts	Metal Thickness (inches) & Steel Bolts
72	12	25	38	50	59	68	77	86	
84	12	22	32	42	50	58	66	73	
96	12	19	28	37	44	51	57	64	
108	14	17	25	33	39	45	51	57	
120	15	15	22	30	35	40	46	51	
132	17	14	20	27	32	37	42	47	
144	18	13	19	25	29	34	38	43	
156	20		17	23	27	31	35	39	
168	21			21	25	29	33	36	
180	23				23	27	30	34	
192						25	28	32	
204						24	27	30	

DESIGN DATA

~~② All pipe shown on Table 8 to be elongated 5%.~~
~~* Check Fabrication sizes for availability.~~

CORRUGATED ALUMINUM PIPE ARCHES
(TABLE 11) ~ BOLTED ~ 9"x2½" CORRUGATIONS

Span x Rise	Corner Radius (inches)	Min. Cover 3 Tons/ft. ² (inches)*	Minimum Thickness (inches)	Max. Fill Height in feet for Corner Press. of
				2 Tons/ft. ² 3 Tons/ft. ²
6'-2" x 5'-0"	27	12	100	25
6'-7" x 4'-11"	27	12		23
6'-11" x 5'-9"	31.8	12		22
7'-9" x 6'-0"		13		20
8'-5" x 6'-3"		14		18
9'-3" x 6'-5"		15		16
9'-11" x 6'-8"		15		15
10'-9" x 6'-10"		17		14
11'-5" x 7'-1"		18		13
12'-3" x 7'-3"		19		12
12'-11" x 7'-6"		20		12
13'-1" x 8'-5"		22	100	11
14'-11" x 9'-10"		23	125	15
15'-7" x 10'-2"		24	125	14
16'-4" x 10'-3"		25	150	15
17'-0" x 10'-10"		26	175	15
17'-9" x 11'-2"		27	175	14
18'-5" x 11'-6"		28	175	13
19'-2" x 11'-9"		29	200	13
19'-10" x 12'-1"		30	200	12
20'-10" x 12'-7"	51.8	32	225	12

NOTE: Aluminum pipe and pipe arches having 9" x 2 1/2" corrugations shall conform to A.A.S.H.T.O. M-219.

NEW MEXICO
STATE HIGHWAY DEPARTMENT
FILL HEIGHTS
FOR
CORRUGATED METAL PIPE
& PIPE ARCHES
&
STRUCTURAL PLATE PIPE
& PIPE ARCHES

2195

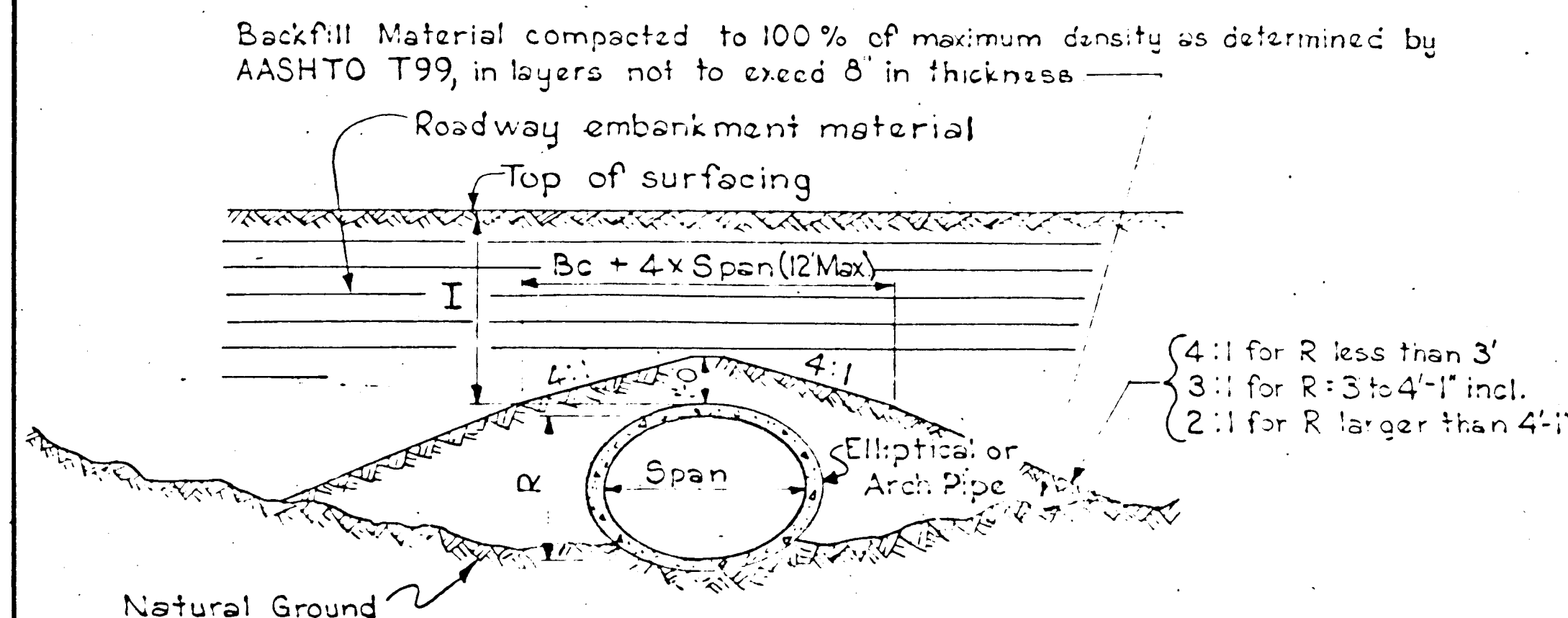
NO. _____ SHEET NO. 7-8

Designed By: PM Checked By: WLD
Detailed By: AIS 474 Checked By: RLAT

F.H.W.A. REGION NO.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO	77	

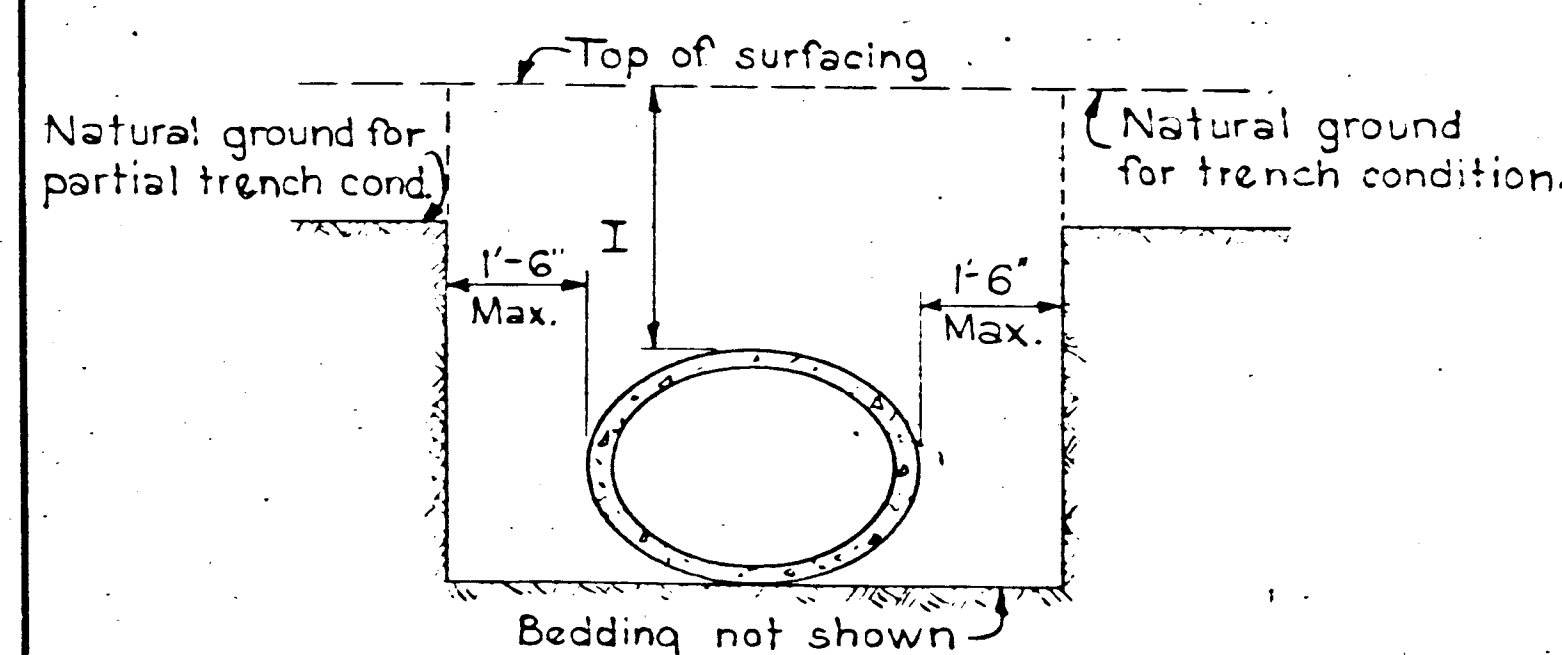
GENERAL NOTES

- WORKMANSHIP AND MATERIALS SHALL CONFORM TO N.M.S.H.D. SPECIFICATIONS.
- CONCRETE PIPE SHALL CONFORM TO ALL REQUIREMENTS OF A.A.S.H.T.O. SPECIFICATION M 206 FOR ARCH PIPE AND M 207 FOR ELLIPTICAL PIPE.
- THE MINIMUM HEIGHT OF FILL BETWEEN TOP OF PIPE AND FINISHED GRADE OF THE ROADWAY SHALL BE 1.75 FT. FOR UNPAVED ROADS AND BITUMINOUS PAVED ROADS AND 1.25 FT. FOR CONCRETE PAVED ROADS.
- SAND CUSHION FOR CLASS "B" BEDDING TO BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE PIPE OF THE TYPE USED.
- MATERIAL FOR STABILIZING THE CULVERT FOUNDATION SHALL CONSIST OF MATERIAL APPROVED BY THE ENGINEER. THE MATERIAL MAY BE OBTAINED FROM ROADWAY OR STRUCTURE EXCAVATION OR FROM BORROW, AS DIRECTED BY THE ENGINEER. THE DEPTH OF SUCH MATERIAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD AFTER EXAMINATION OF THE NATURAL FOUNDATION MATERIAL CONSIDERING THE SIZE OF THE PIPE AND HEIGHT OF COVER.
- FOR MULTIPLE INSTALLATIONS, PIPES SHALL BE SPACED TO PROVIDE TWO FEET CLEAR DISTANCE BETWEEN END SECTIONS; SEE SERIAL ES-2. WHERE END SECTIONS ARE NOT LISTED FOR THE SIZE OF PIPE TO BE USED, THE CENTER TO CENTER SPACING OF PIPES SHALL BE THE OUTSIDE SPAN PLUS THREE FEET.
- EXISTING GROUND UNDER PIPE BEDDING SHALL BE BROKEN UP AND COMPACTED TO A MINIMUM DEPTH OF 6 INCHES REGARDLESS OF FILL HEIGHT. COMPACTION SHALL BE 95% OF MAXIMUM DENSITY BY A.A.S.H.T.O. T99.
- PIPE BEDDING DETAILS ARE SHOWN FOR ELLIPTICAL PIPE. ARCH PIPE DETAILS ARE SIMILAR.
- BACKFILL MATERIAL SHALL CONFORM TO SPECIAL PROVISION MODIFYING SECTION 206.
- IMPERVIOUS MATERIAL AT INLET MAY BE PLACED TO DOTTED LINE FOR MINIMUM DIMENSION SHOWN OR FOR ENTIRE SHADED AREA AT CONTRACTOR'S OPTION.

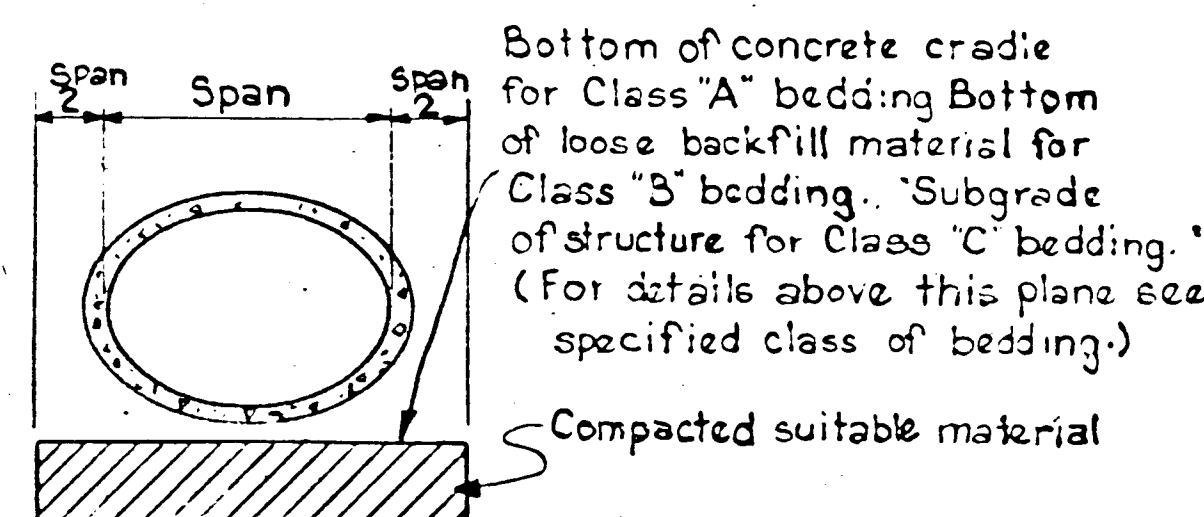


BACKFILL DETAIL

Backfill requirement shown above shall not be construed as relieving the contractor of his obligations regarding damage to culvert pipe.
H: Fill Height above top of pipe.



SKETCH SHOWING TRENCH AND PARTIAL TRENCH CONDITION

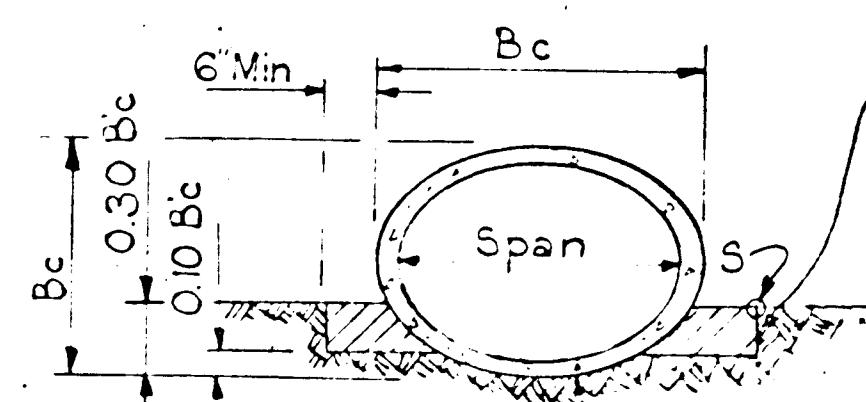


FOUNDATION STABILIZATION

Unsuitable foundation material shall be removed as directed by the Engineer and the excavated area backfilled as shown.

NOTE: 'P' is the ratio of the pipe projection above natural ground to Bc.
When natural ground is at the top of the pipe p=0
When natural ground is at the bottom of the pipe p=1.0
When natural ground is above the top of the pipe, the installation is full or partial trench condition.

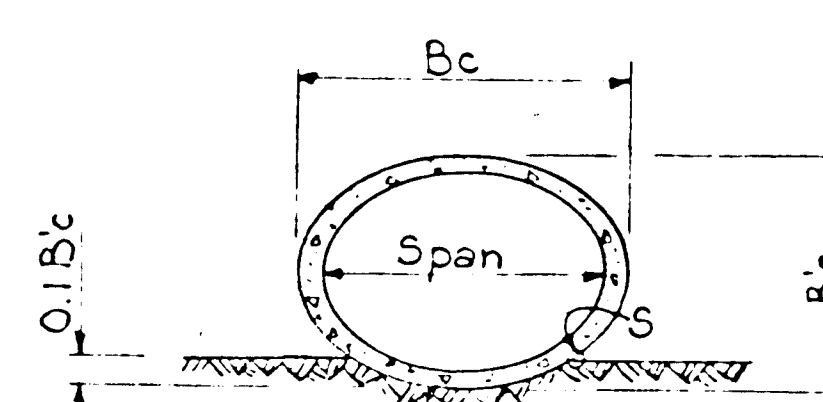
Loose backfill material roughly shaped to fit haunches of pipe and then compacted at haunches and sides of pipe



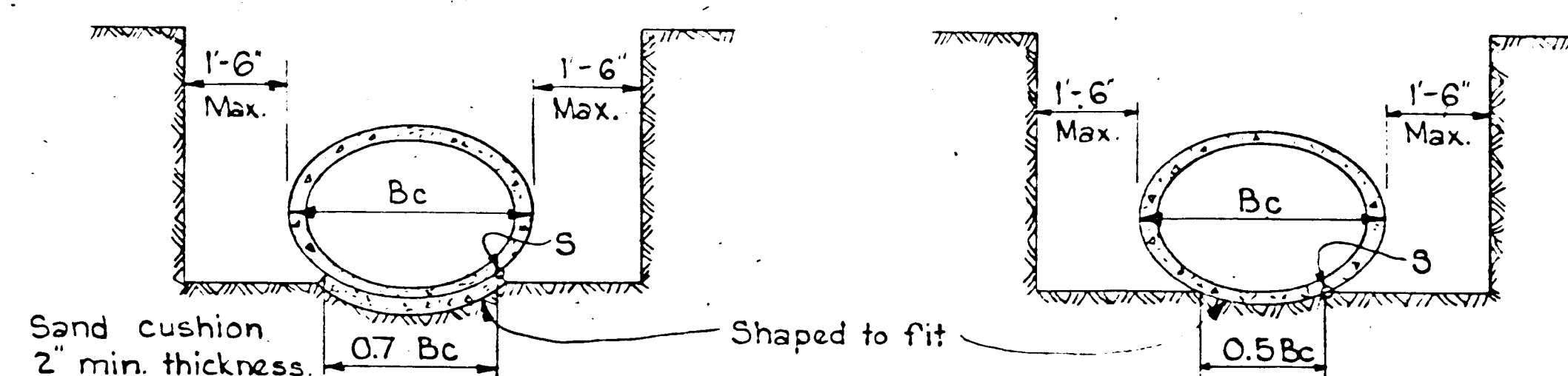
CLASS "B"

See detail below for bedding in rock or other incompressible foundation.

Note: Class "A" bedding shall consist of a continuous concrete cradle and shall be used only when shown on plans.



CLASS "C"

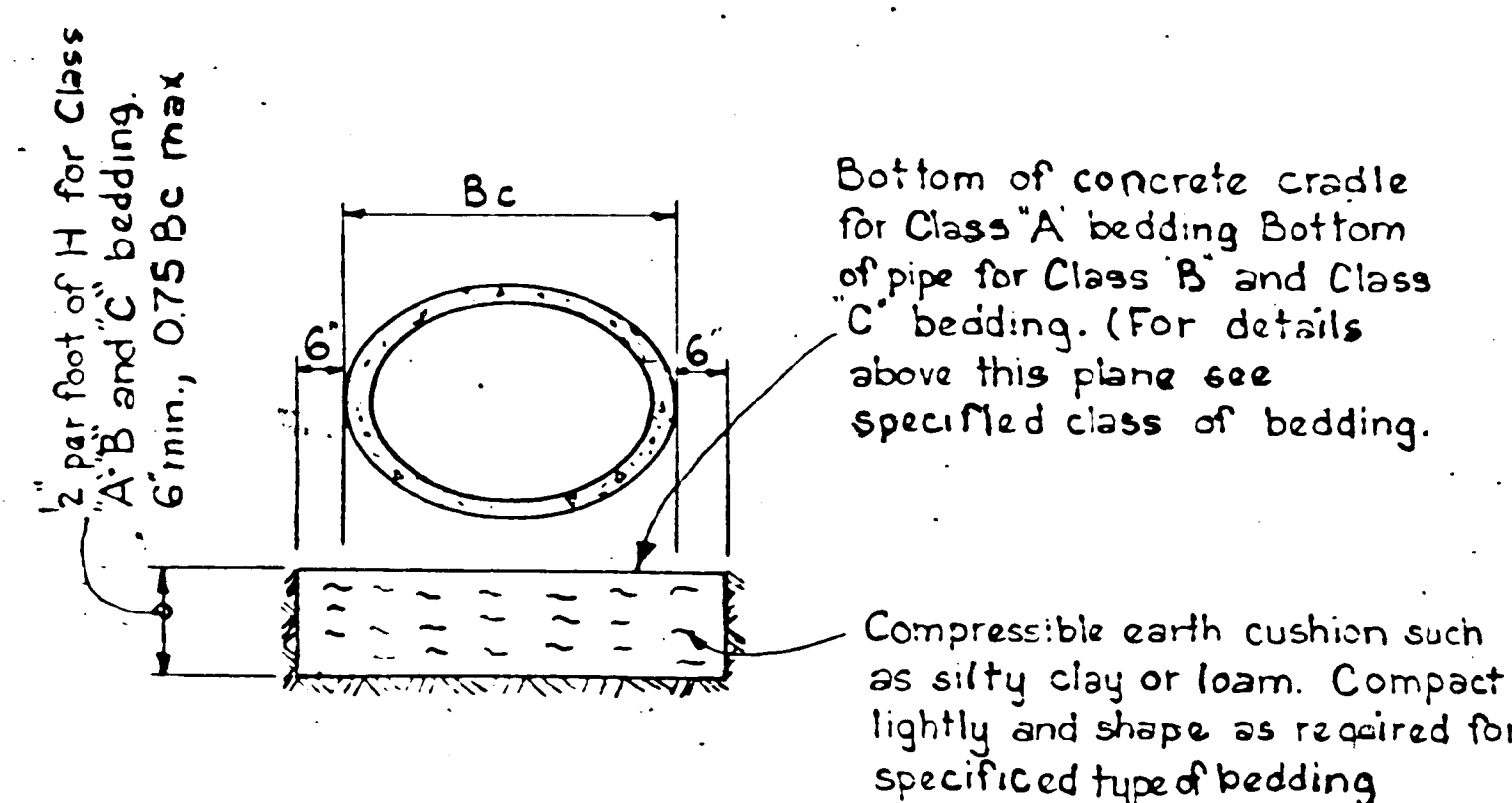


CLASS "B"

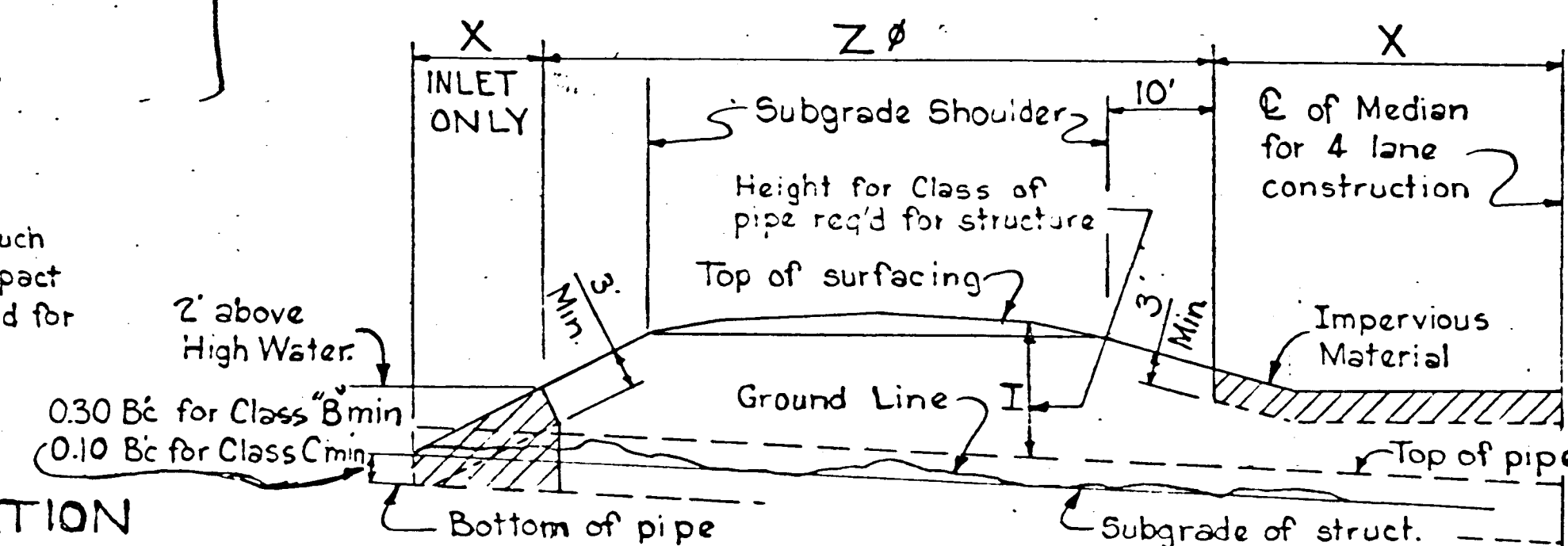
CLASS "C"

BEDDING DETAILS FOR PIPE IN TRENCH OR PARTIAL TRENCH

See detail below for bedding in rock or other incompressible foundation.



ADDITIONAL CUSHION FOR ROCK OR OTHER INCOMPRESSIBLE FOUNDATION



CROSS SECTION OF ROADWAY EMBANKMENT

Z - Backfill Material Required
X - Impervious Mat'l. If req'd. by plans
Backfill Material shall not be placed within 3' of the intersection of the pipe and the roadway slope.

DESIGN DATA

DESIGN ACCORDING TO CONCRETE PIPE DESIGN MANUAL AND A.A.S.H.T.O. SPECIFICATIONS M 206 AND M 207.
WEIGHT OF FILL MATERIAL = 120 LBS./FT³
FACTOR OF SAFETY = 1.33 APPLIED TO ULTIMATE 3 EDGE BEARING LOAD.
SETTLEMENT RATIO = 0.7

MAXIMUM HEIGHT OF FILL OVER REINFORCED CONCRETE ELLIPTICAL AND ARCH PIPE

PIPE CLASS	HE-A (Elliptical)									HE-I (Elliptical)									HE-II (Elliptical) & A-II (Arch)									HE-III (Elliptical) & A-III (Arch)								
	A			B			C			A			B			C			A			B			C			A			B			C		
INSTALLATION CONDITION	P=0.0	P=1.0	Trench	P=0.0	P=0.7	Trench	P=0.0	P=0.9	Trench	P=0.0	P=1.0	Trench	P=0.0	P=0.7	Trench	P=0.0	P=0.9	Trench	P=0.0	P=1.0	Trench	P=0.0	P=0.7	Trench	P=0.0	P=0.9	Trench	P=0.0	P=1.0	Trench	P=0.0	P=0.9	Trench	P=0.0	P=0.9	Trench
MAXIMUM FILL HEIGHT	14'	11'	14'	10'	8'	10'	8'	6'	8'	19'	15'	19'	13'	10'	13'	11'	8'	11'	16'	13'	16'	13'	10'	13'	18'	13'	18'	14'	11'	14'	10'	8'	10'	8'	6'	8'

Note: For projection ratio when P is greater than zero and less than one, allowable fill heights may be determined by interpolation.

26 21954986

No.	DESCRIPTION	DATE	BY
1	REVISIONS (OR CHANGE NOTICES)		

NEW MEXICO
STATE HIGHWAY DEPARTMENT
FILL HEIGHTS AND BEDDING DETAILS
FOR
ELLIPTICAL CONCRETE PIPE
AND CONCRETE ARCH PIPES

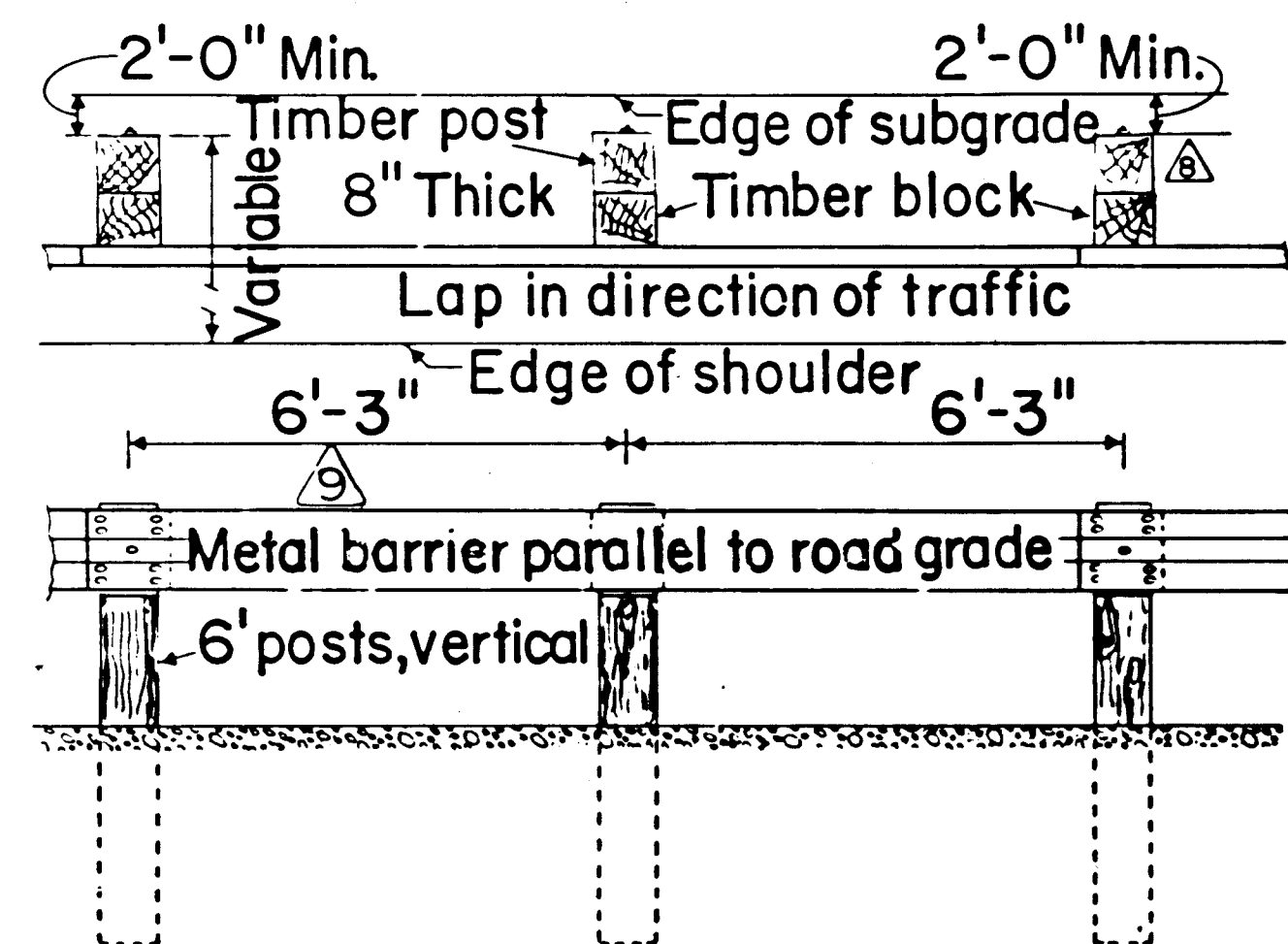
2195 SERIAL M-13-71-A

APPROVED: H. T. Tatum 9-30-74

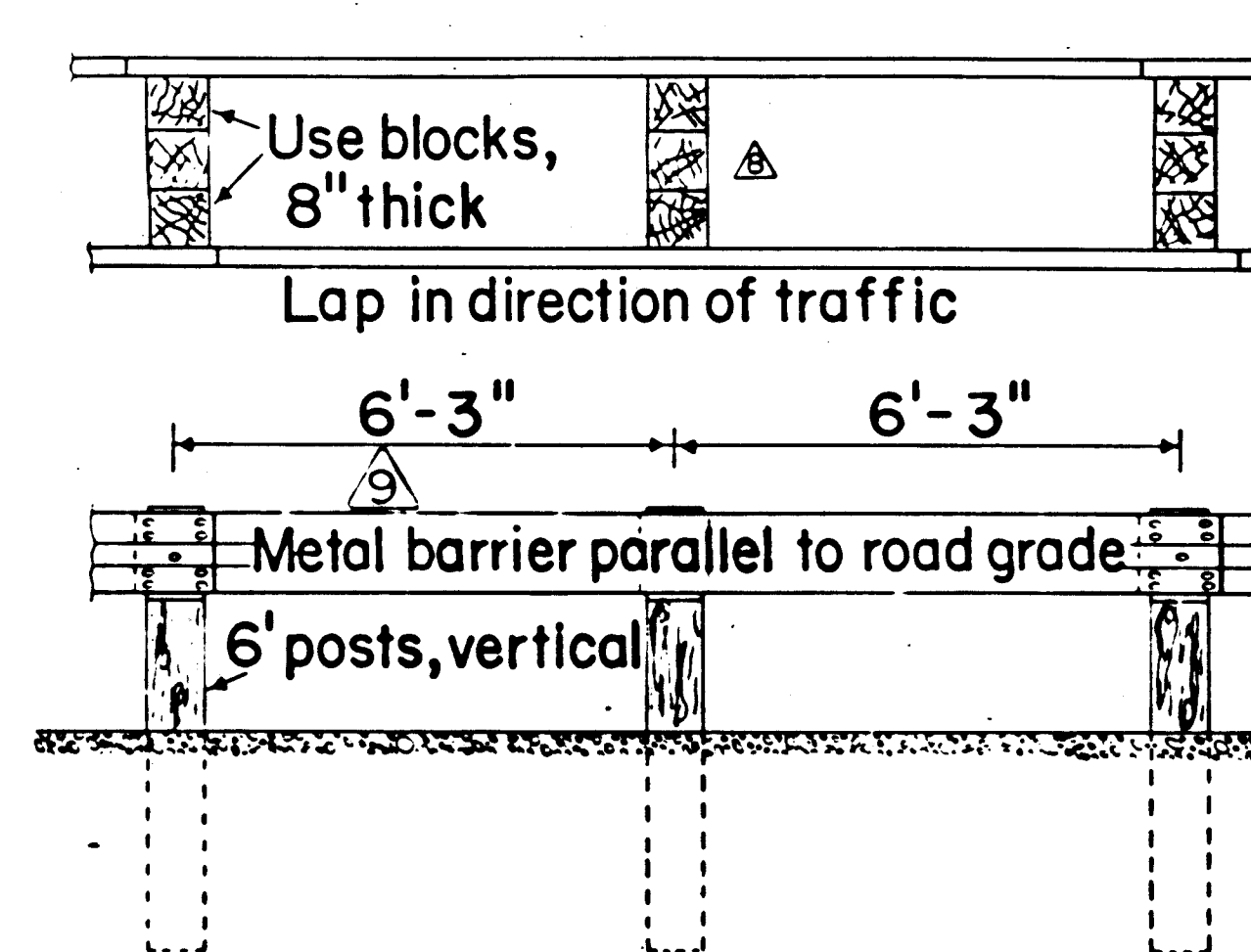
Bridge Engineer

NO. SHEET NO. 2-9

F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
8	NEW MEXICO		

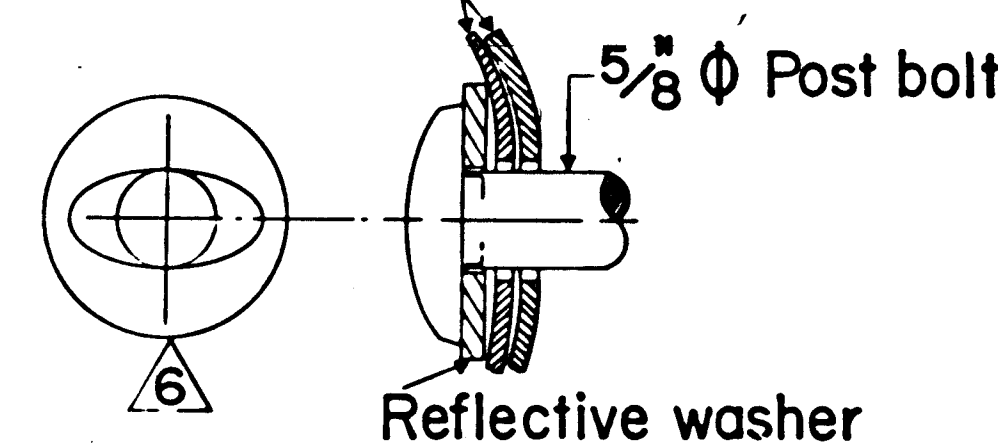


ROADSIDE INSTALLATION

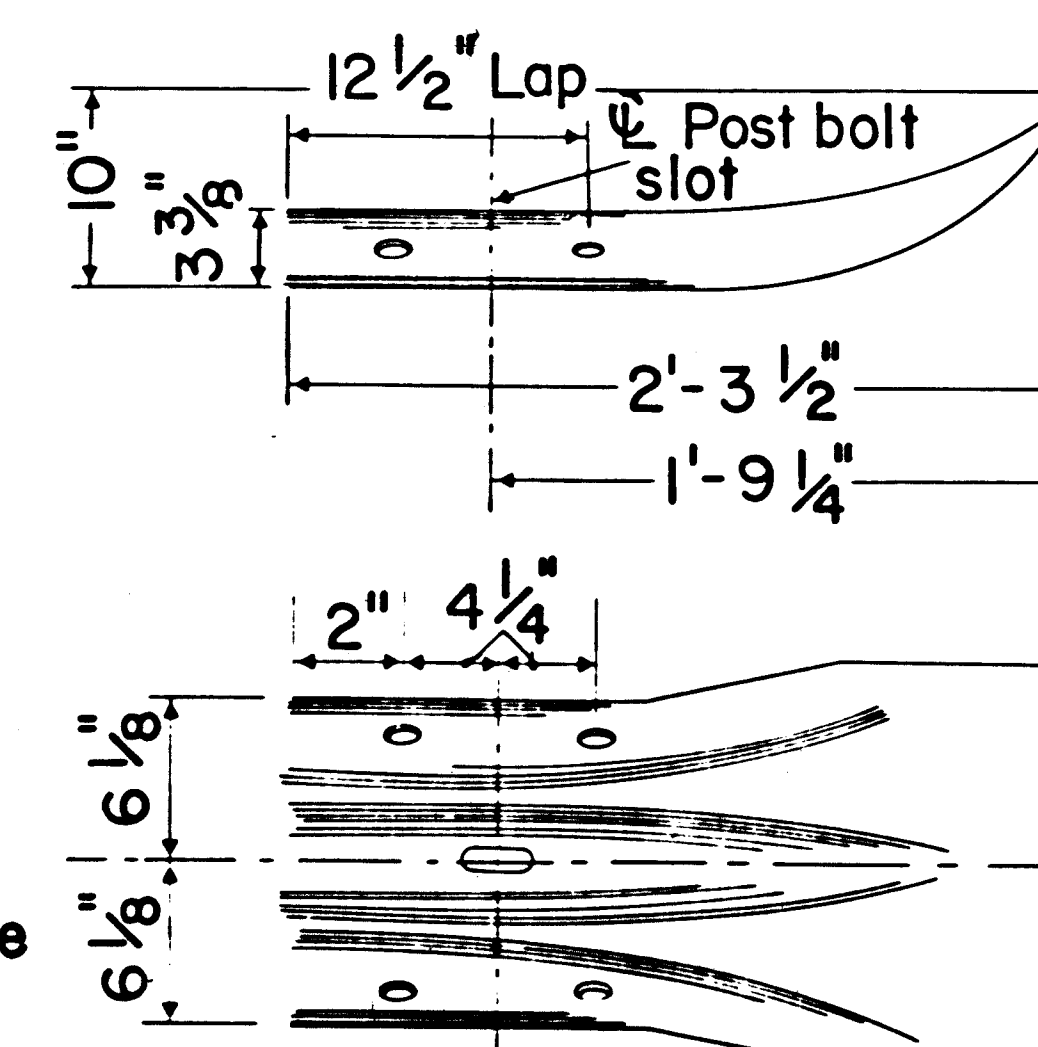


METAL BEAM RIGID BARRIER
INSTALLATION

△ Metal barrier elements

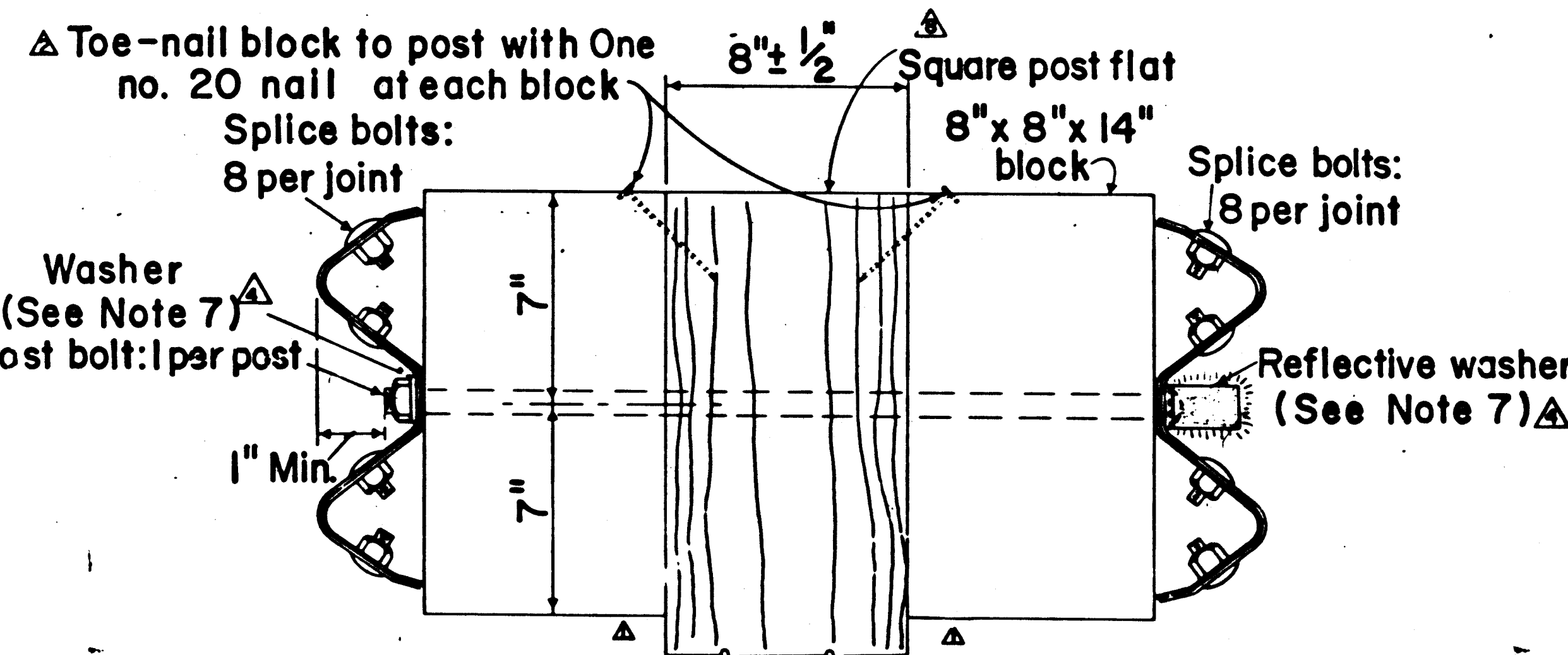


2 1/4" x 1 3/4" Reflective sheeting
(one side) silver per Spec. Sec. 701.
(See Note 8) △

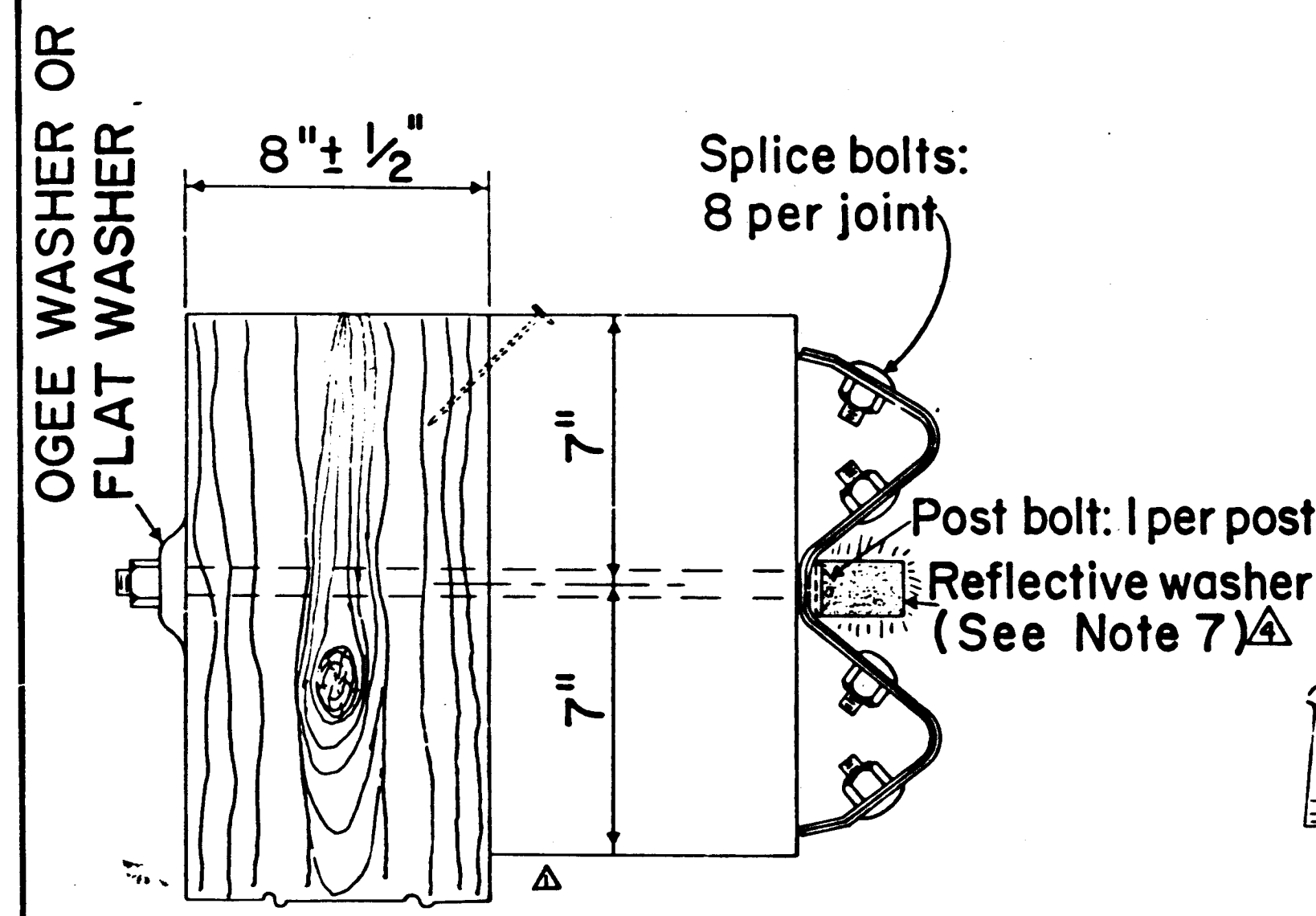


STANDARD TERMINAL
SECTION

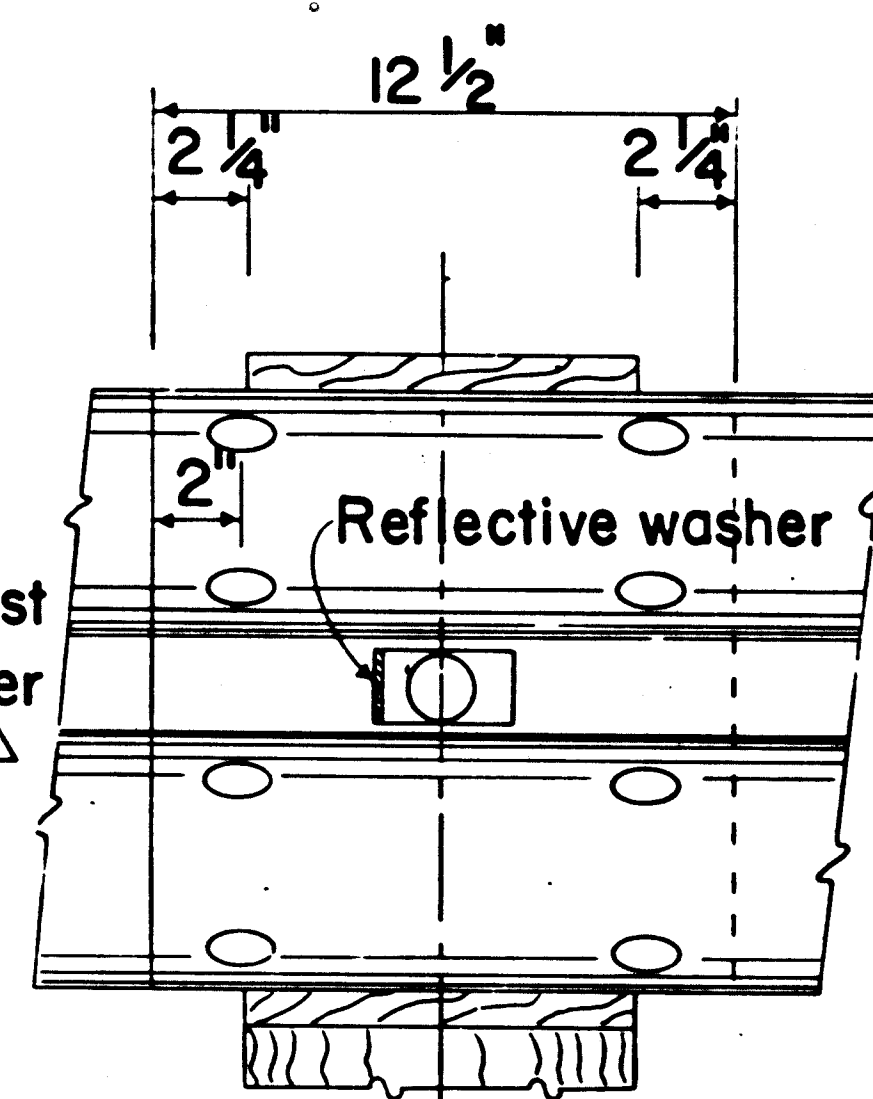
REFLECTIVE WASHER DETAIL



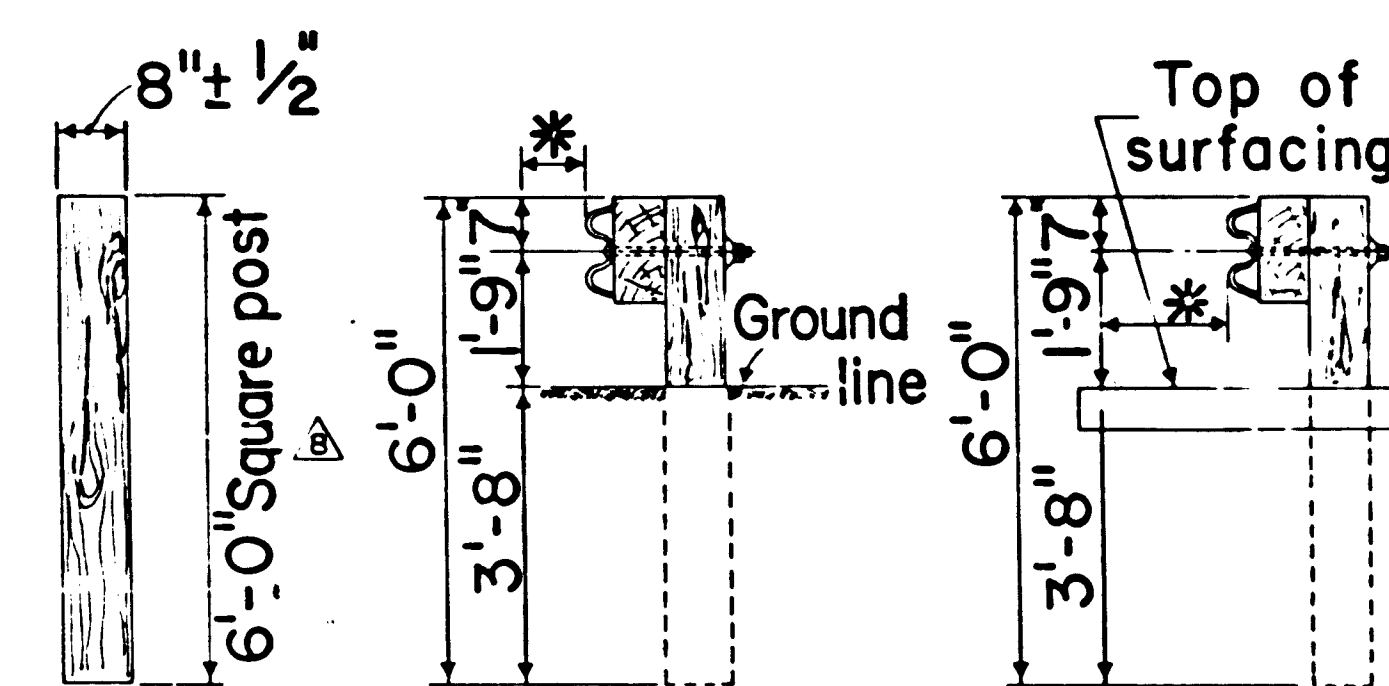
SECTION AT JOINT, METAL RIGID BARRIER



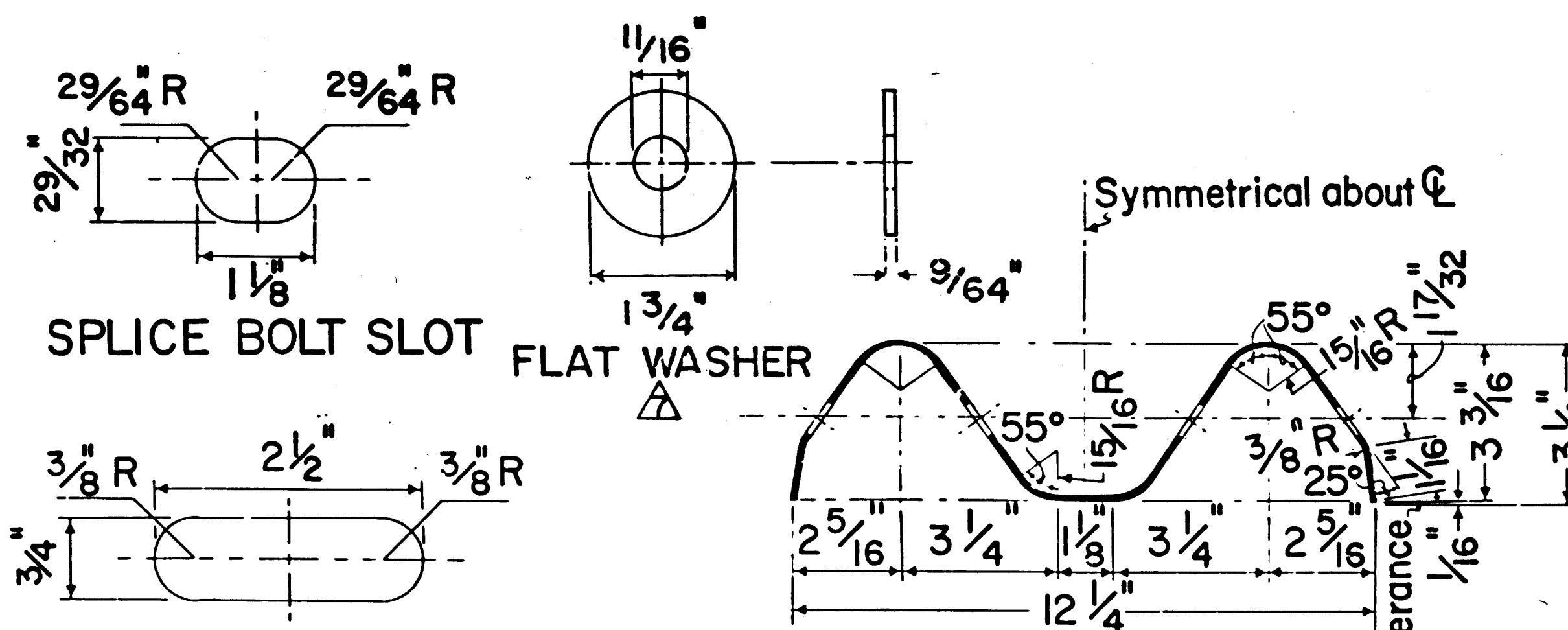
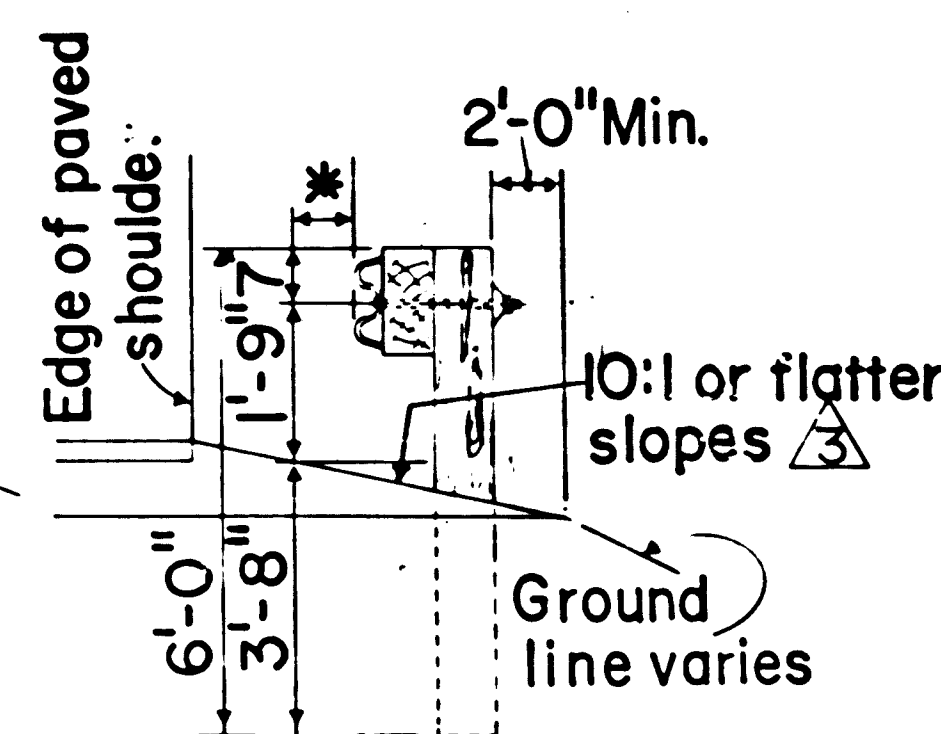
SECTION AT JOINT, SINGLE RAIL



JOINT ASSEMBLY



PLACEMENT PROCEDURES



POST BOLT SLOT

SECTION THRU METAL BARRIER ELEMENT

NOTES

- Top of posts shall be flat.
- Unless otherwise provided, rail elements and terminal sections shall be .105 inch thick. Rail elements may be furnished in 12 1/2 ft. or 25 ft. lengths.
- Where the radius of curved alignment is 150 ft. or less, the individual railing sections shall be shop-formed by the manufacturer to fit the curvature.
- Timber blocks to be 8" x 8" x 14" high, except where otherwise noted. Blocks and posts may be rough or S4S.
- Contractor to use 8" square post.
- Rail element shall conform to AASHTO Spec M180, Class A, Type I., unless otherwise specified.
- Reflective washers shall be placed facing approaching traffic at 25 ft intervals on one-way and divided roadways. On two-way roadways, reflective washers shall be placed at 12 1/2 ft. intervals with every 2nd washer facing opposing traffic. Rectangular flat washers to be placed at all other post bolts.
- Amber reflective washers in lieu of silver shall be used when the metal barrier is on the left side to approaching traffic on multi-lane facilities.

IDENT NO.	DESCRIPTION	DATE	BY
1	CHANGED GUARDRAIL TO METAL BARRIER	2-1-95	D.R.A.
2	Added flat washer note read square	2-1-95	F.V.L.
3	ADDED NOTE 8 - ADDED NEW DOLT FIGURE (lost bolt)	2-1-95	F.V.L.
4	REVISED SLOPES - ADDED NOTE 7	8-29-77	J.R.
5	REMOVED LOWER NAILS - REVISED NAILING NOTE	8/2/77	TOM.

REVISIONS (OR CHANGE NOTICES)

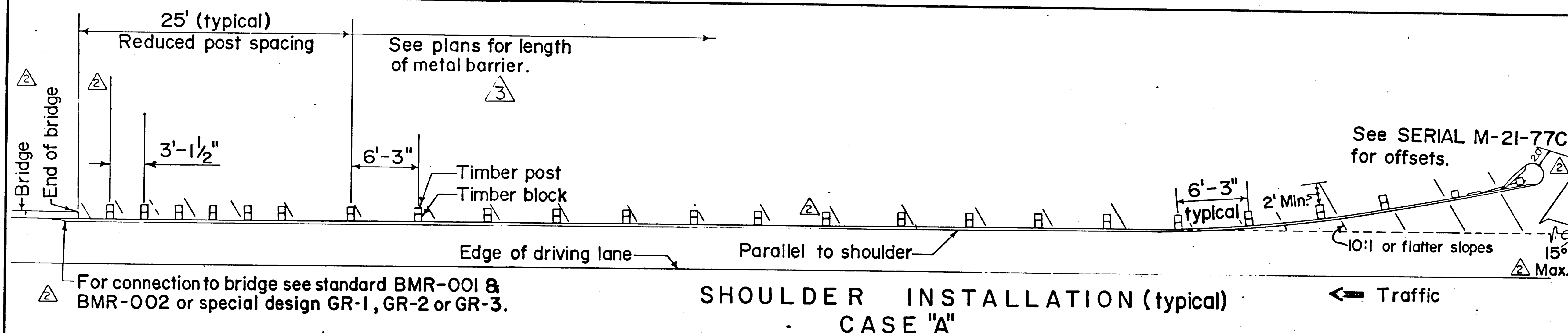
NEW MEXICO
STATE HIGHWAY DEPARTMENT

METAL BARRIER MATERIALS
AND PLACEMENT PROCEDURES

DESIGNED BY L.A.L.	APPROVAL	DATE
DRAWN BY J.L.M.	RECOMMENDED - TRAFFIC ENGINEER	
CHECKED BY L.A.L.	APPROVED	DATE
	ENGINEER OF DESIGN	

SERIAL M-21-62 SHEET 1 OF 1

F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		



- GENERAL NOTES**
1. Build metal barrier at structures when noted on plans.
 2. For metal barrier details, see New Mexico Standard M-21-62.
 3. For special installations, Project Engineer will determine the exact radius of rail and location of posts and notify contractor before material is fabricated.
 4. At the discretion of the designer, the metal barrier may be installed parallel to the shoulder (CASE "A") or with a flare rate (CASE "B").
 5. See SERIAL M-21-77C for anchorage details.

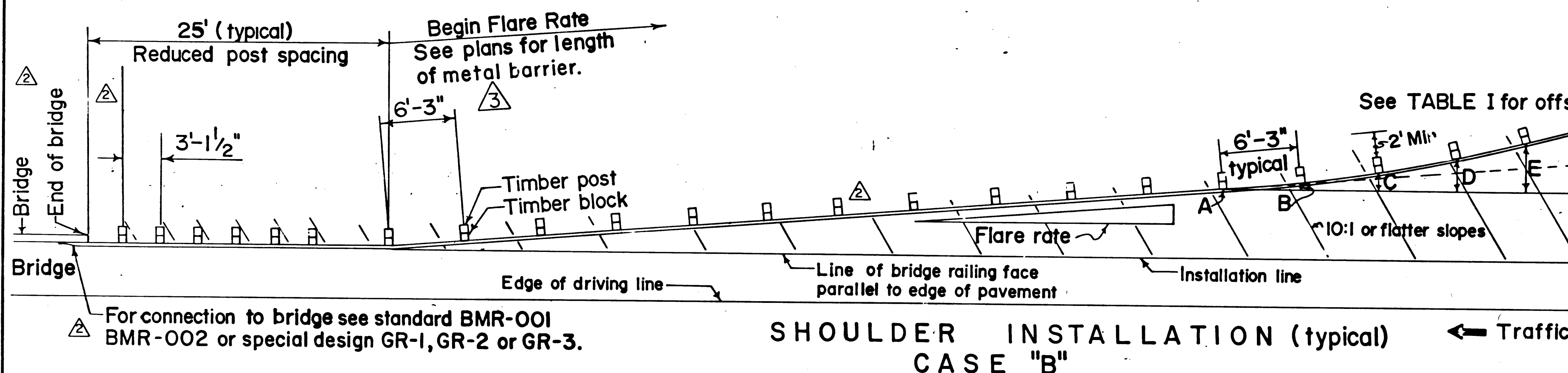
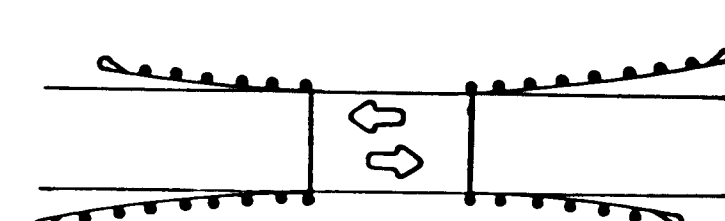
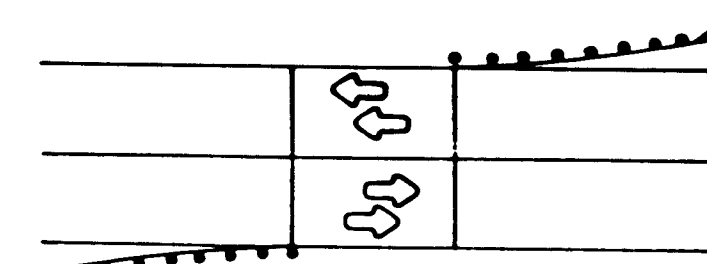


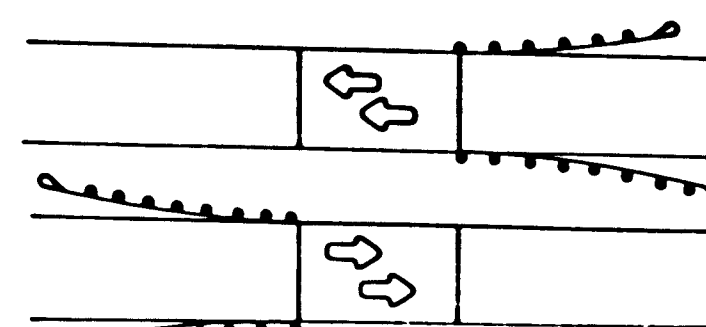
TABLE I CASE "B"		
FLARE RATE		
	50:1	25:1
A	0.0'	0.0'
B	0.24'	0.36'
C	0.69'	0.94'
D	1.38'	1.75'
E	2.30'	2.80'
F	3.43'	4.05'
G	4.75'	5.50'



Two-Lane Highway



Multi-Lane
Single-Structure



Multi-Lane
Double Structure

APPLICATION

26 21955186

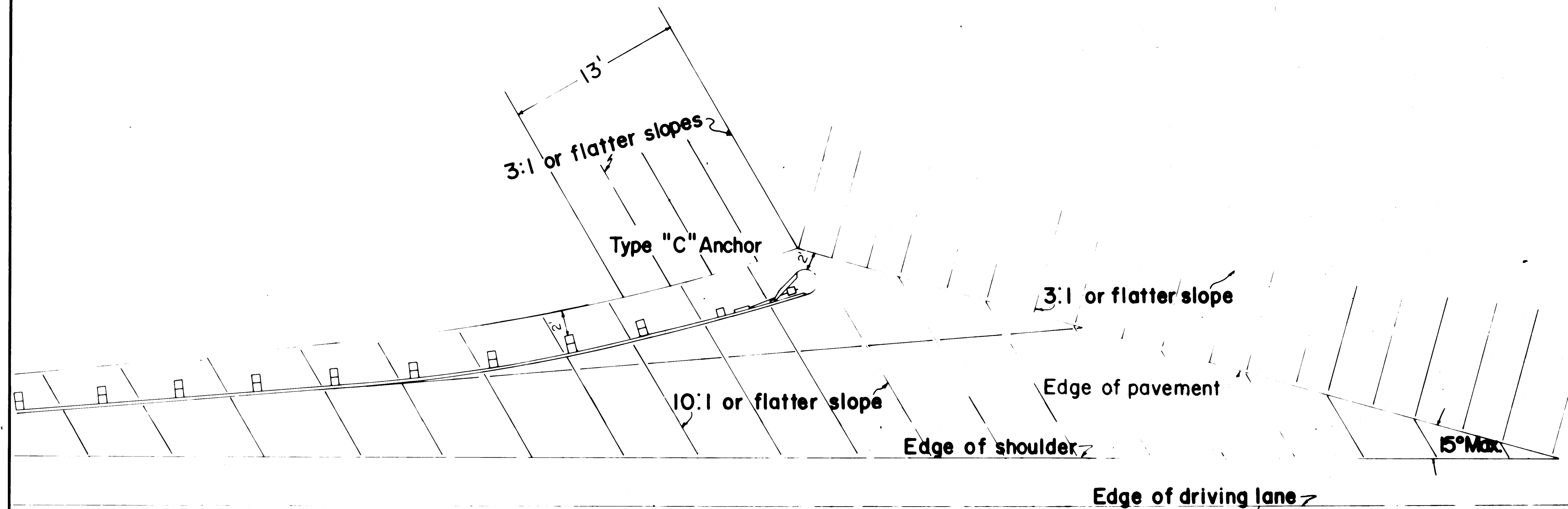
2195

NEW MEXICO STATE HIGHWAY DEPARTMENT	
METAL BARRIER AT BRIDGE APPROACHES	
DESIGNED BY J.R.	APPROVAL
DRAWN BY G.O.	RECOMMENDED
CHECKED BY	APPROVED
ENGINEER OF DESIGN	
DATE	
SERIAL M-21-77	
SHEET 1 OF 2	

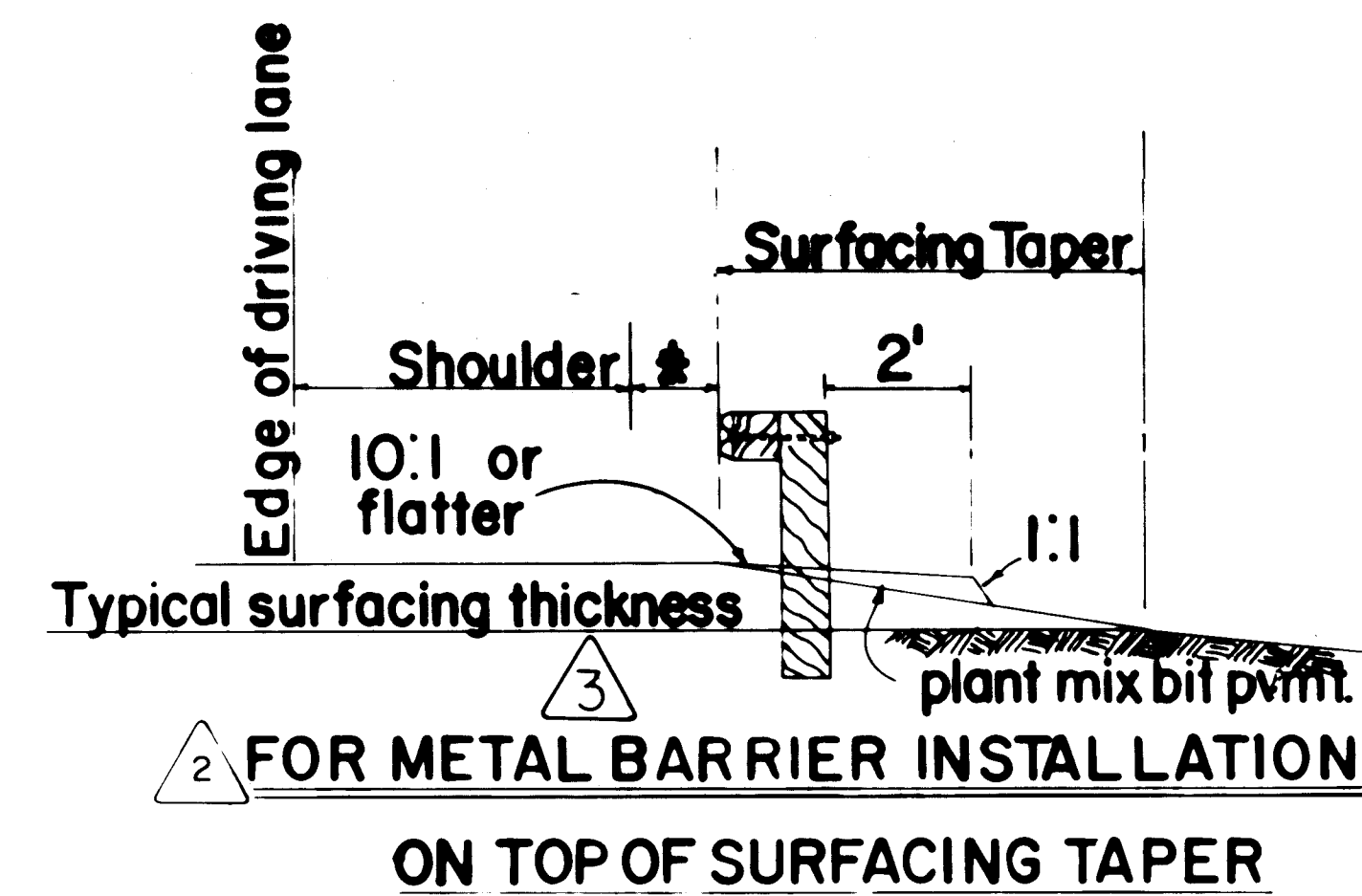
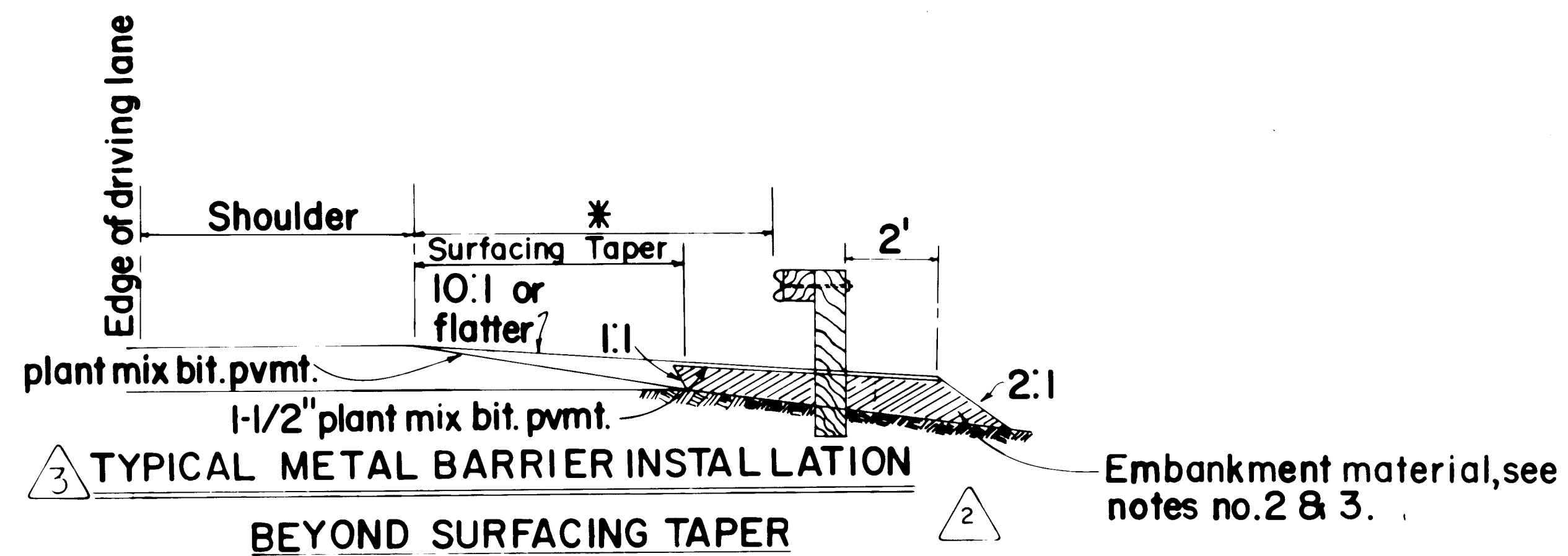
F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

GENERAL NOTES

1. For additional details see Serials M-21-62, M-21-77 sheet 1 of 2 and M-21-77C.
2. The embankment material shall be compacted to 95 percent of maximum density.
3. Unless otherwise specified on the plans, the cost of the embankment material and the placing thereof shall be included in the unit bid price for metal barrier.



SLOPE DETAIL 2



* See plans for offset distance.

IDENT. NO.	DESCRIPTION	DATE	BY
6	CHANGED GUARDRAIL TO METAL BARRIER	2/7/85	DRR
5	DETAIL LABELS WERE CHANGED	3/20/84	CV T
4	REVISED GENERAL NOTES	3/20/84	C.V.T.

NEW MEXICO
STATE HIGHWAY DEPARTMENT

APPROACH SLOPE PREPARATION METAL BARRIER INSTALLATION

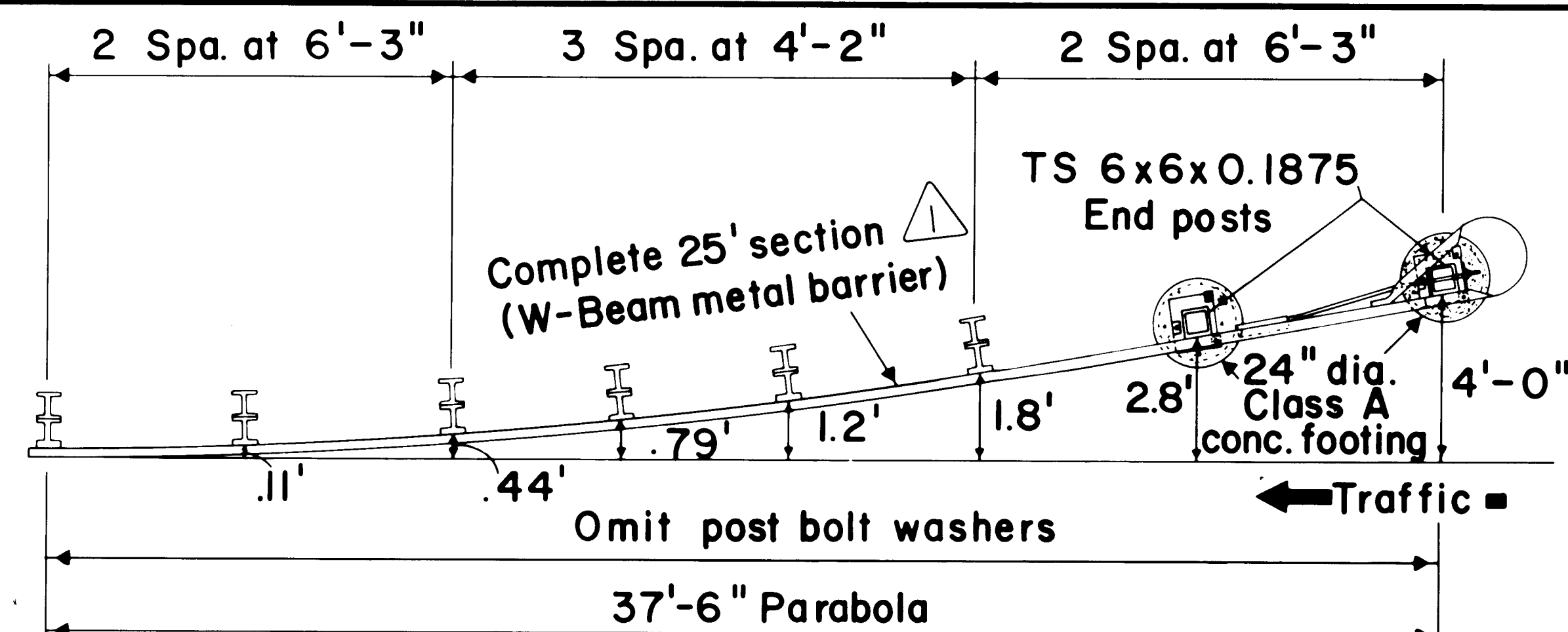
DESIGNED BY P.L.	APPROVAL	DATE
DRAWN BY F.L.P.	RECOMMENDED - TRAFFIC ENGINEER	DATE
CHECKED BY P.L.	APPROVED	DATE

SERIAL M-21-77 SHEET 2 OF 2

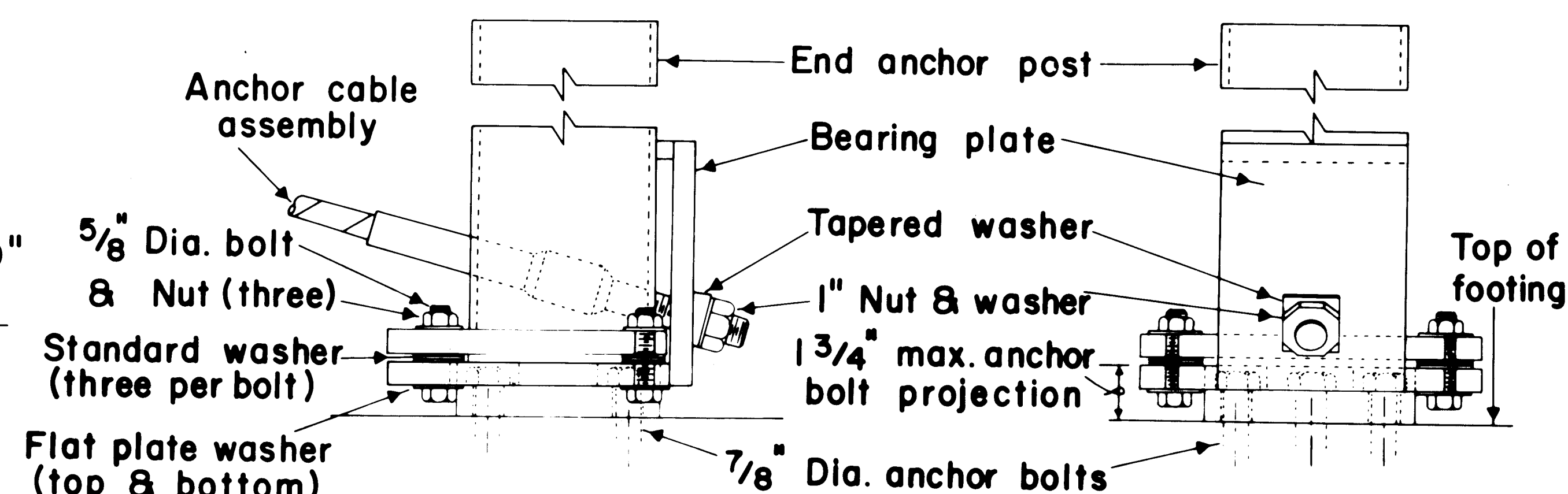
26 21955286

2195

F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEET
6	NEW MEXICO		



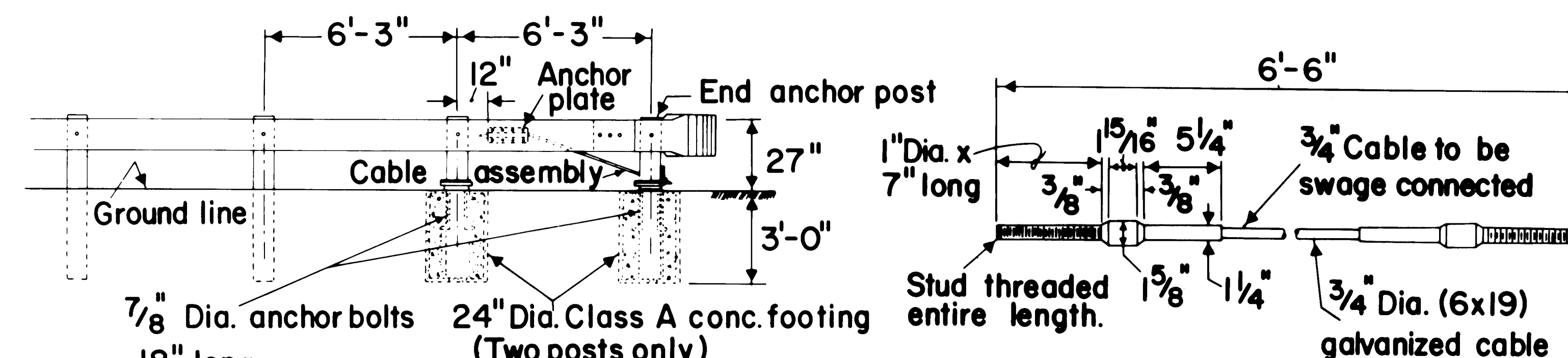
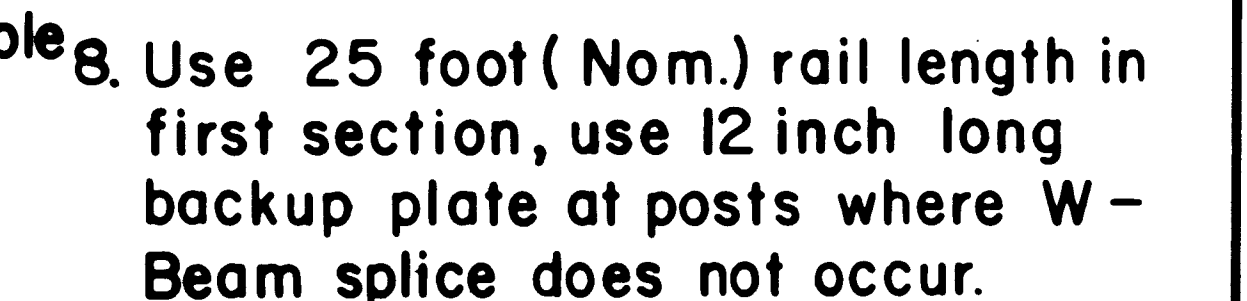
PLAN



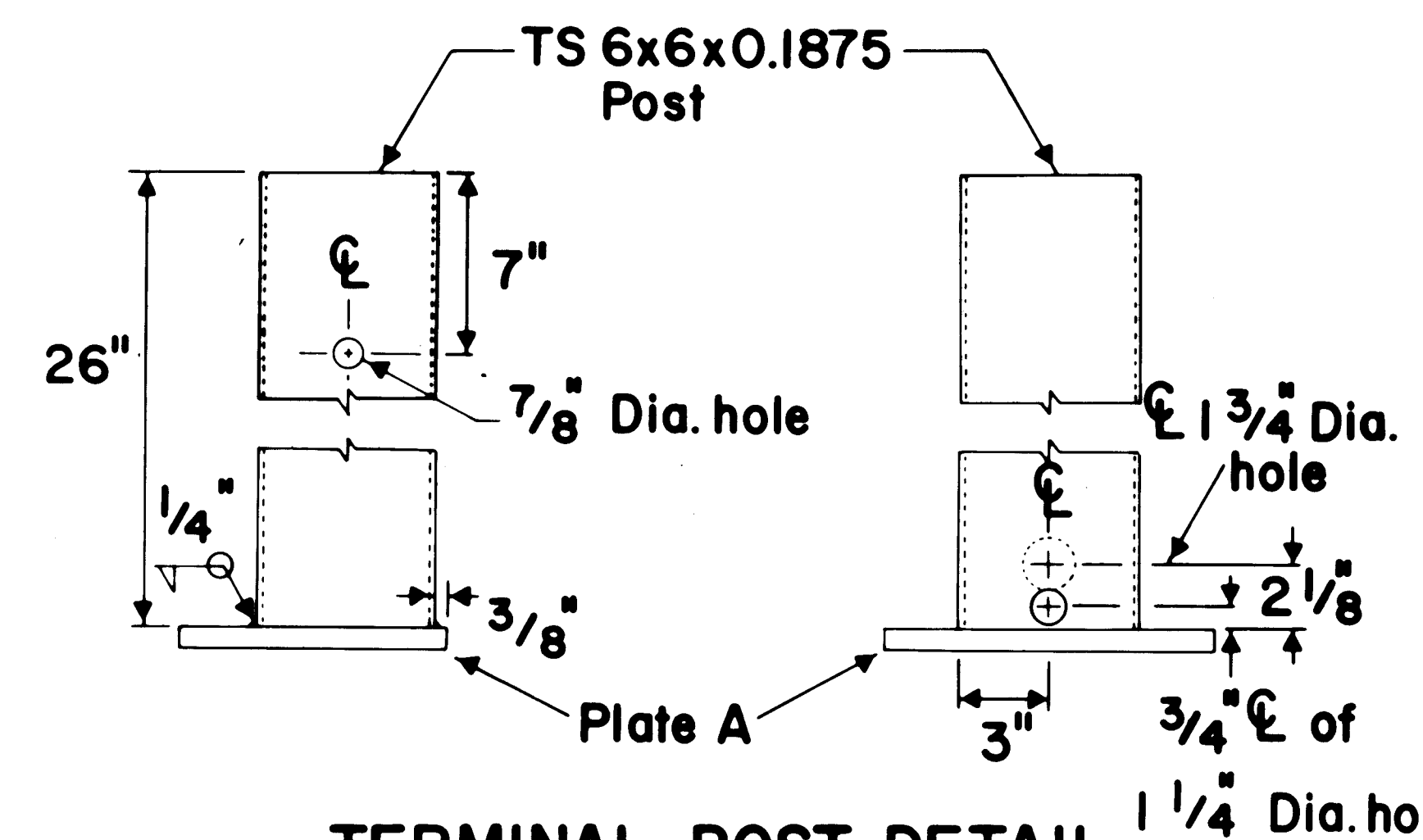
BREAKAWAY CABLE TERMINAL ASSEMBLY



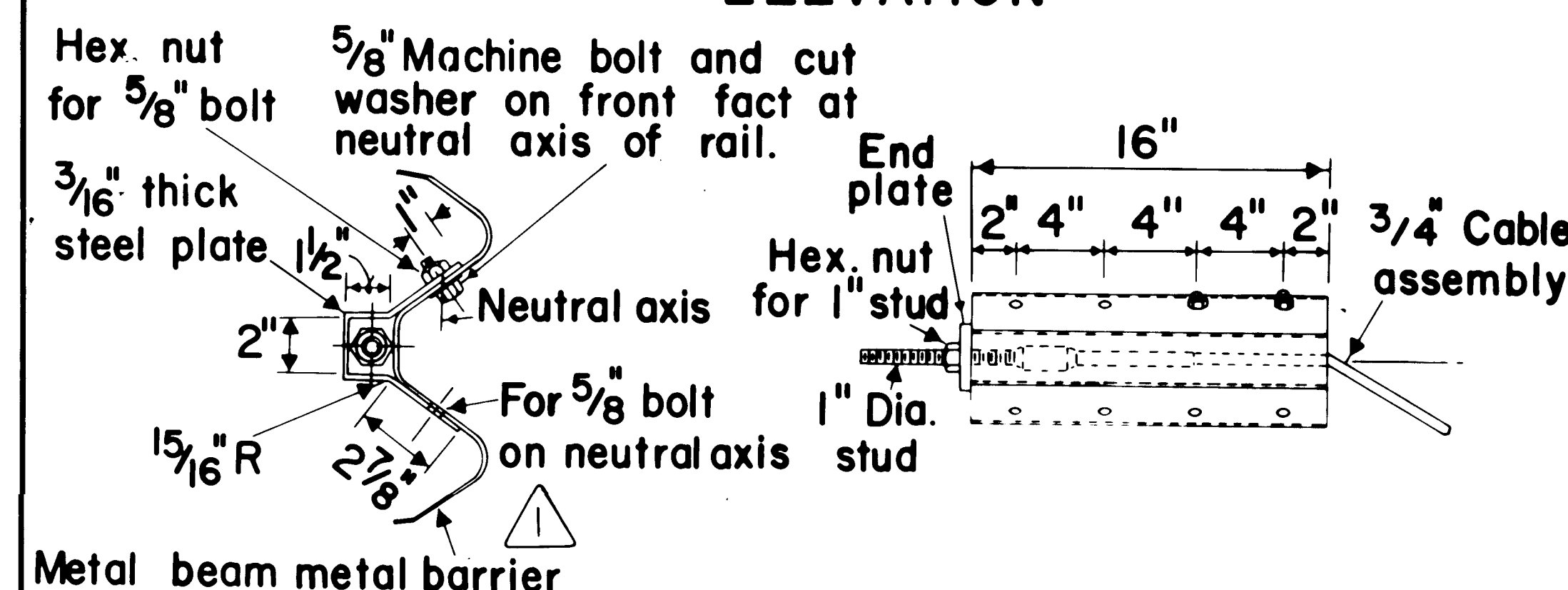
1. A 25' section may be be 2'-12'-6" rails or 1-25' rail.
2. The second B.C.T. steel post does not require holes to accommodate anchor cable.
3. Anchor Plate may be formed in single unit or welded fabrication.
4. Anchor Cable Assembly shall conform to AASHTO M-30 with Type II wire rope.
5. Torque slip plate bolts to be 155-170 ft. lbs.
6. Anchor bolts and slip plate bolts, nuts and washers shall conform to ASTM A-325 and galvanized in accordance with ASTM A-153.
7. B.C.T. must be installed on level surface (10:1 or flatter) with metal barrier system for optimum performance.



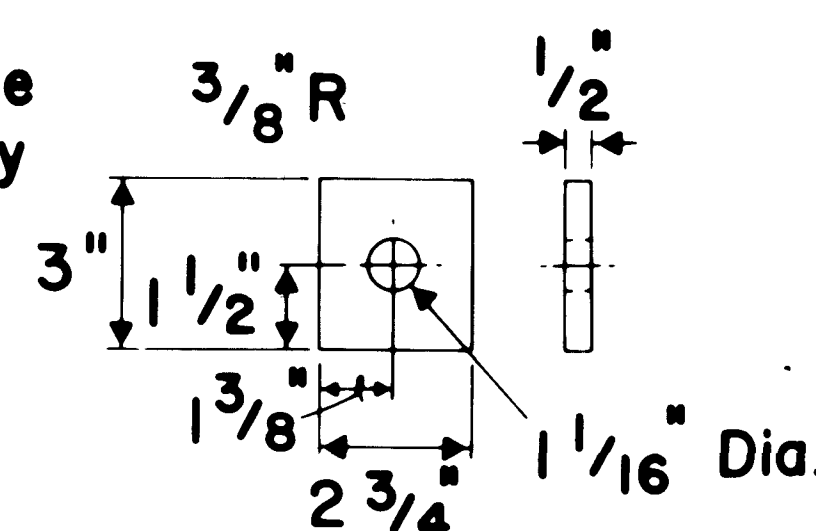
CABLE ASSEMBLY



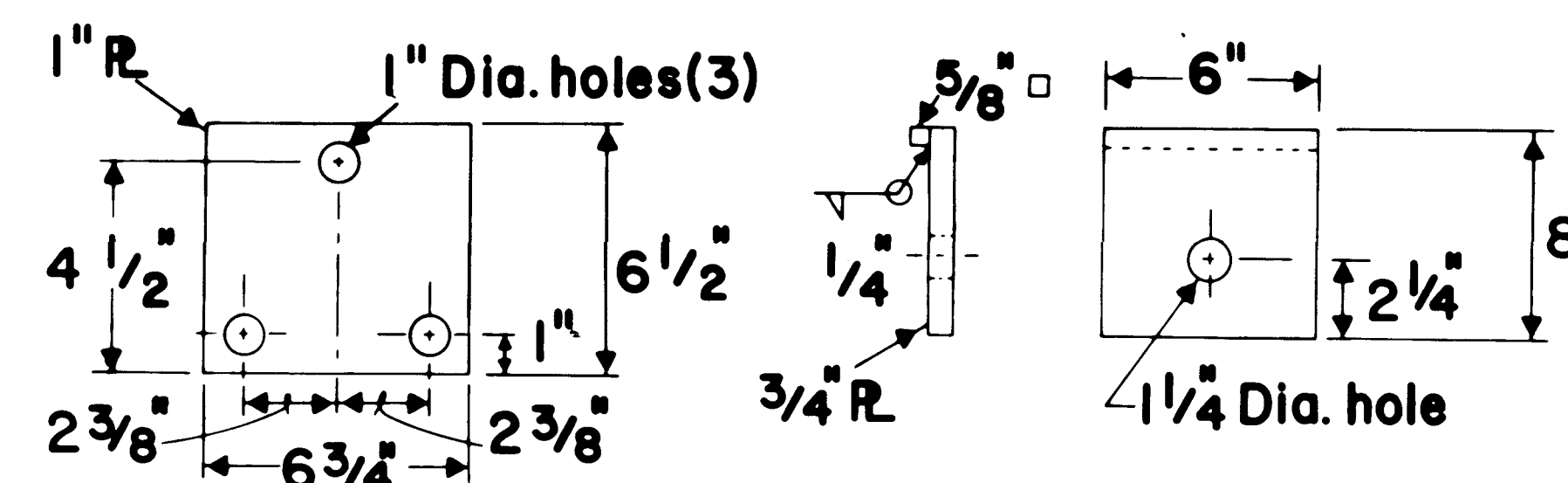
TERMINAL POST DETAIL



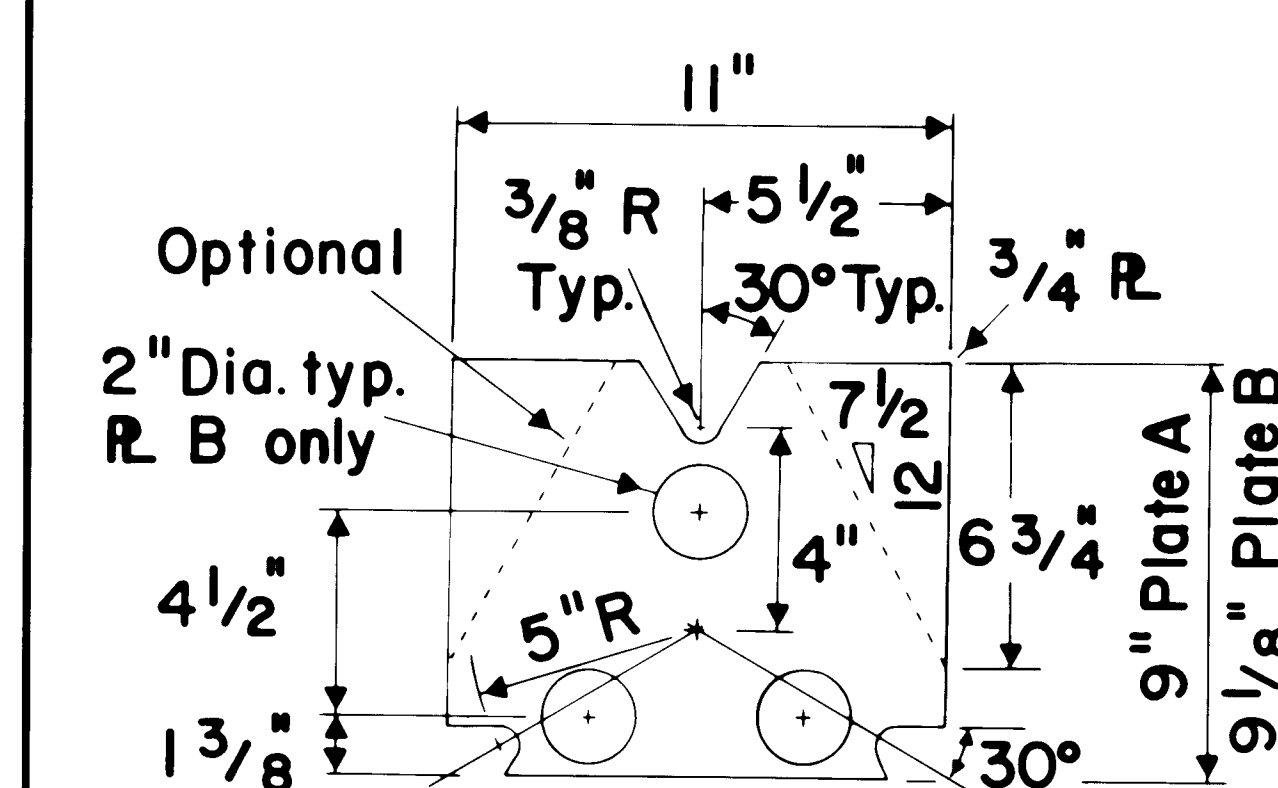
ANCHOR PLATE DETAILS



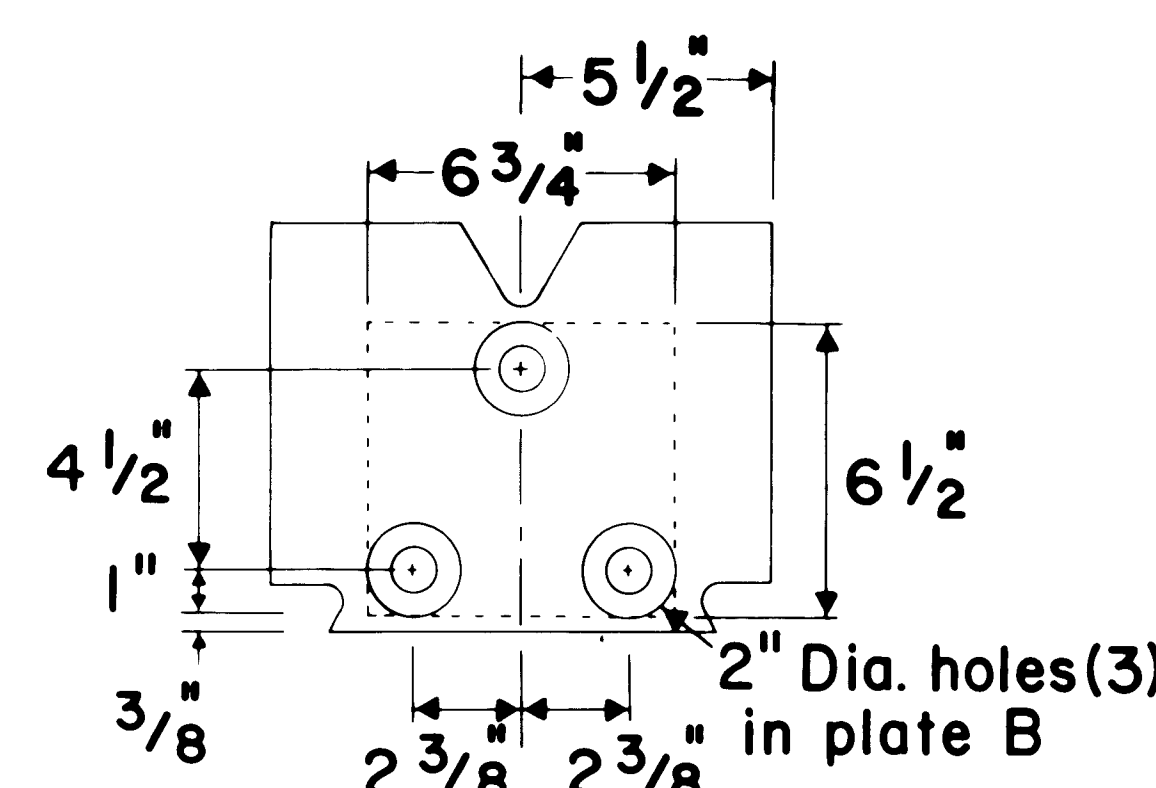
END PLATE



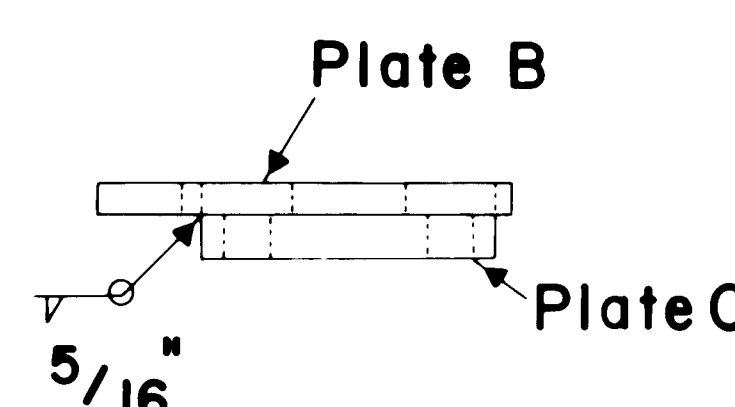
BASE PLATE C



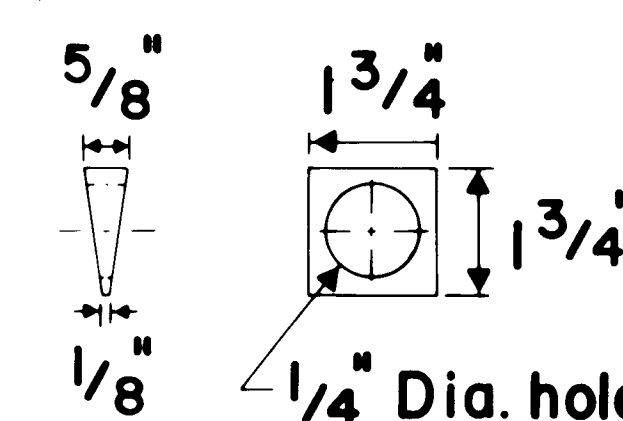
SLIP BASE PLATES A & B



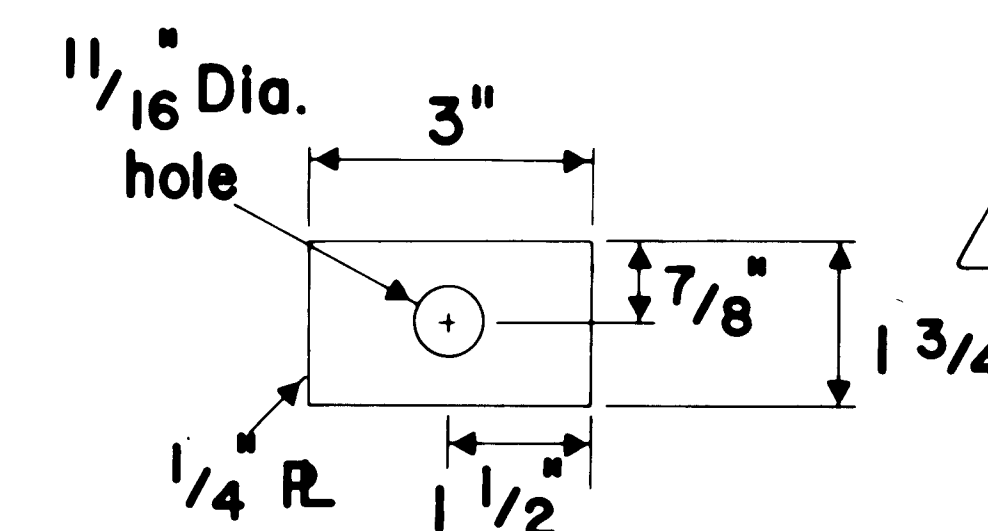
POST & PLATE FABRICATION



TAPERED WASHER



FLAT PLATE WASHER



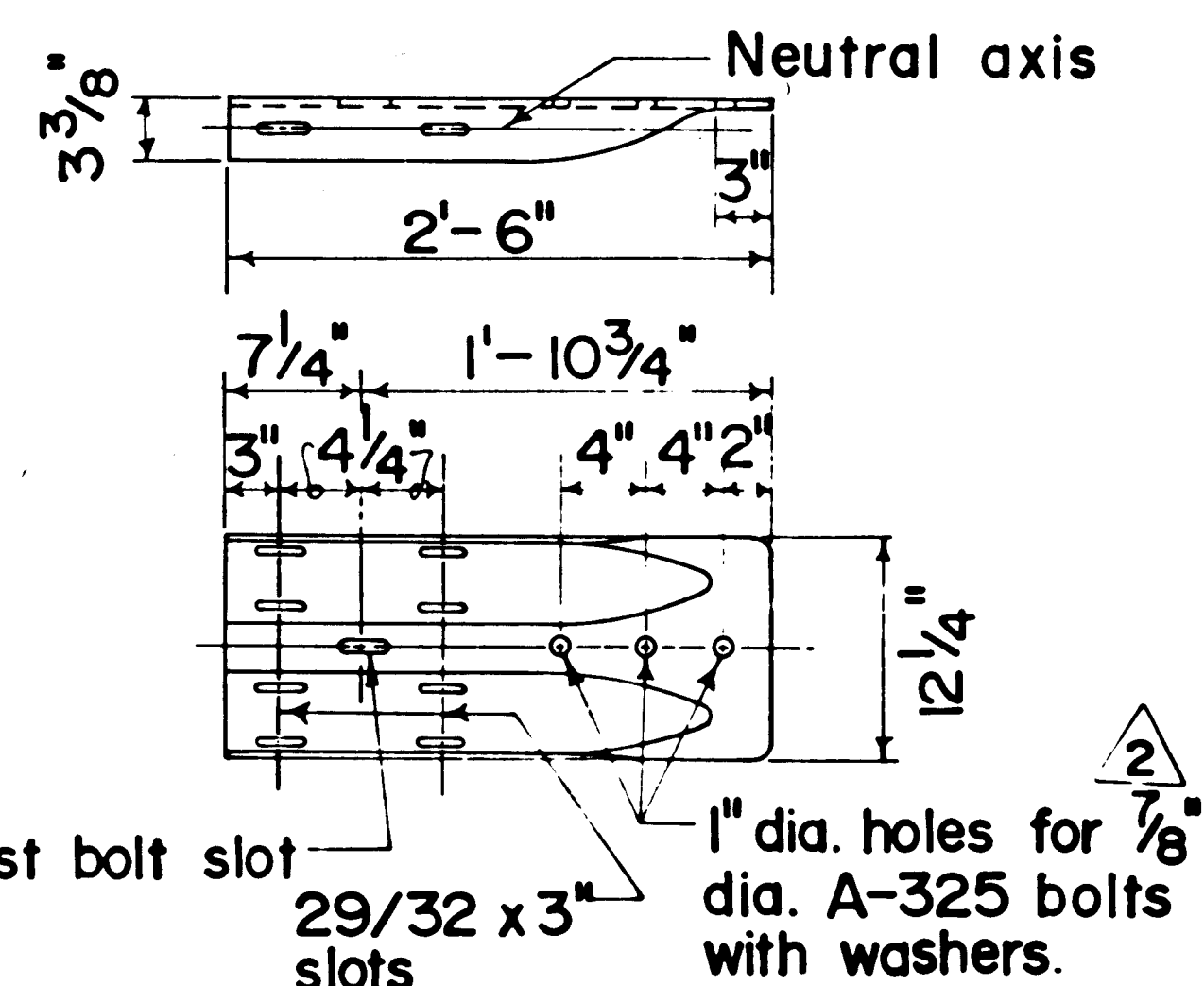
1	2	3	4	5	6	7	8	9	10	11
26			21	95	53	86				

[illegible]

NEW MEXICO STATE HIGHWAY DEPARTMENT
METAL BARRIER (BREAKAWAY, TYPE "C" END ANCHORAGE (STEEL POSTS))

DESIGNED BY J.R.	APPROVAL <i>G. J. Lewis</i>	DATE <i>8-14-74</i>
DRAWN BY J.L.M.	RECOMMENDED - TRAFFIC ENGINEER	DATE
CHECKED BY J.R.	APPROVED <i>Carl S. Lewis</i>	DATE <i>8-14-74</i>
	DIV. PROJ. DEV. DIV.	DATE

SERIAL M-21-77C SHEET 2 OF 3



FHWA Region No	STATE		SHEET NO	TOTAL SHEET
6	NEW MEXICO			

1. Unless otherwise provided, rail elements shall be .105 inch thick.

2. Structural steel items in anchor system shall be AASHTO M-183 or equal.

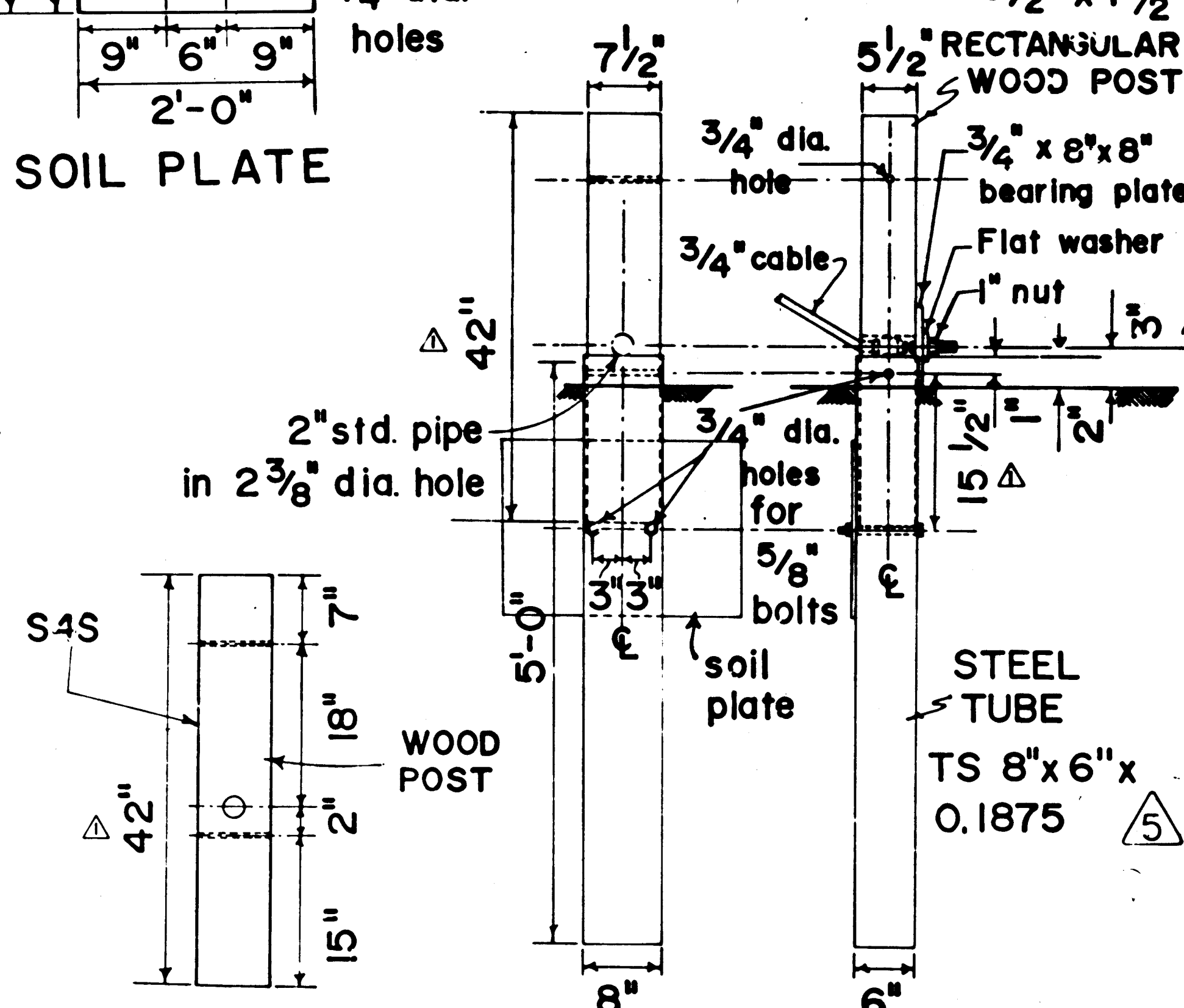
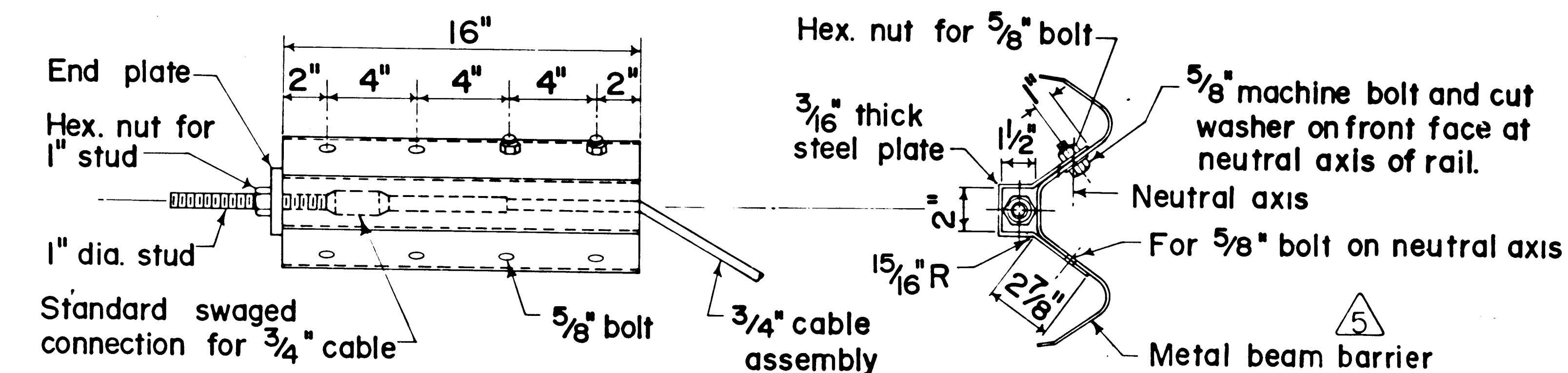
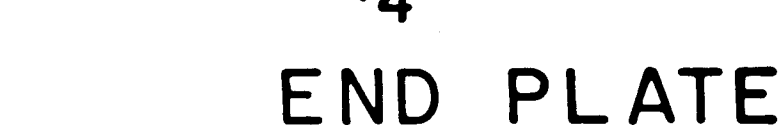
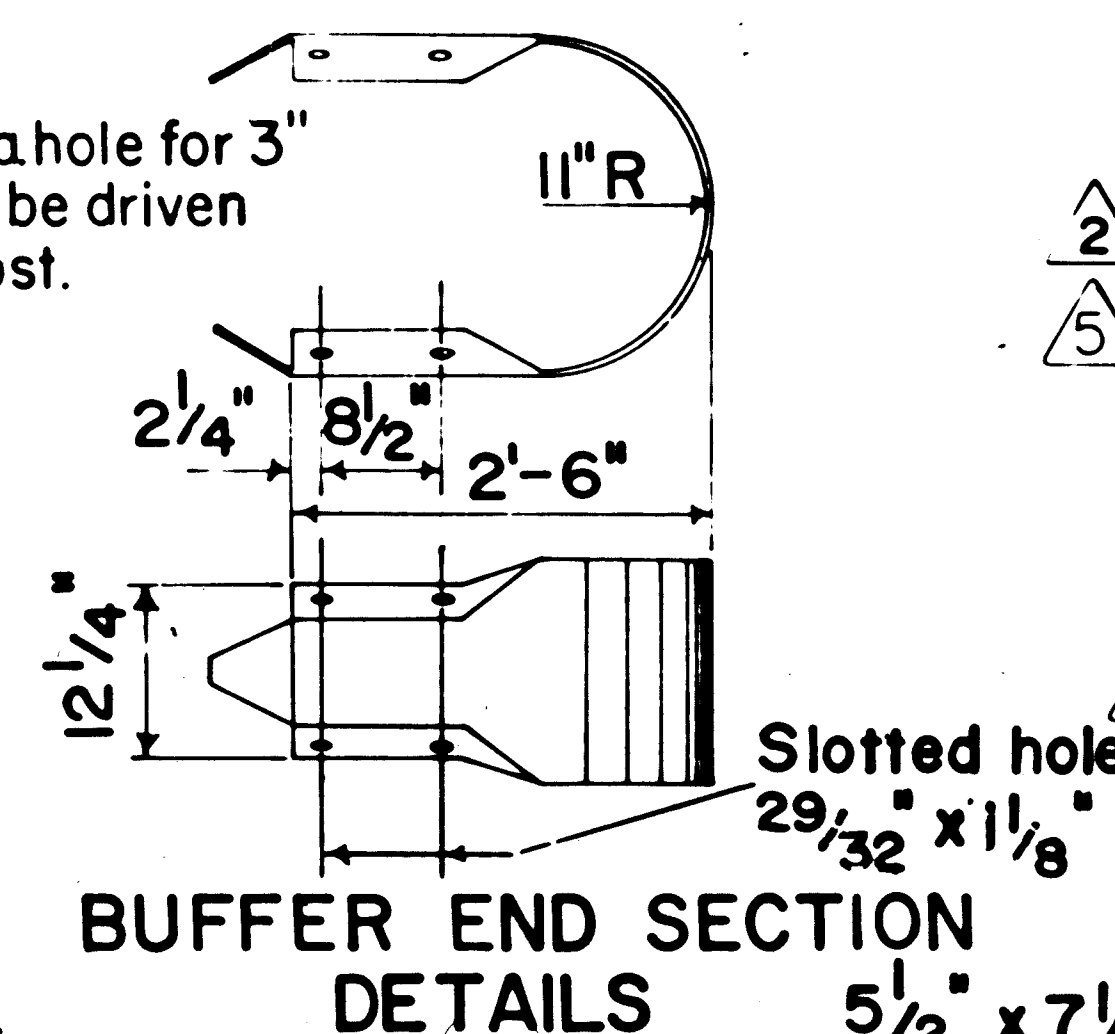
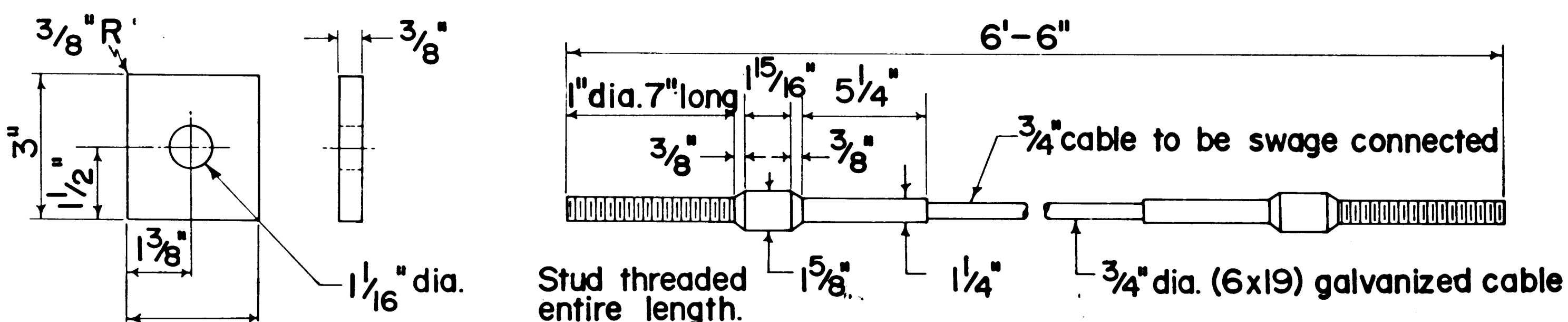
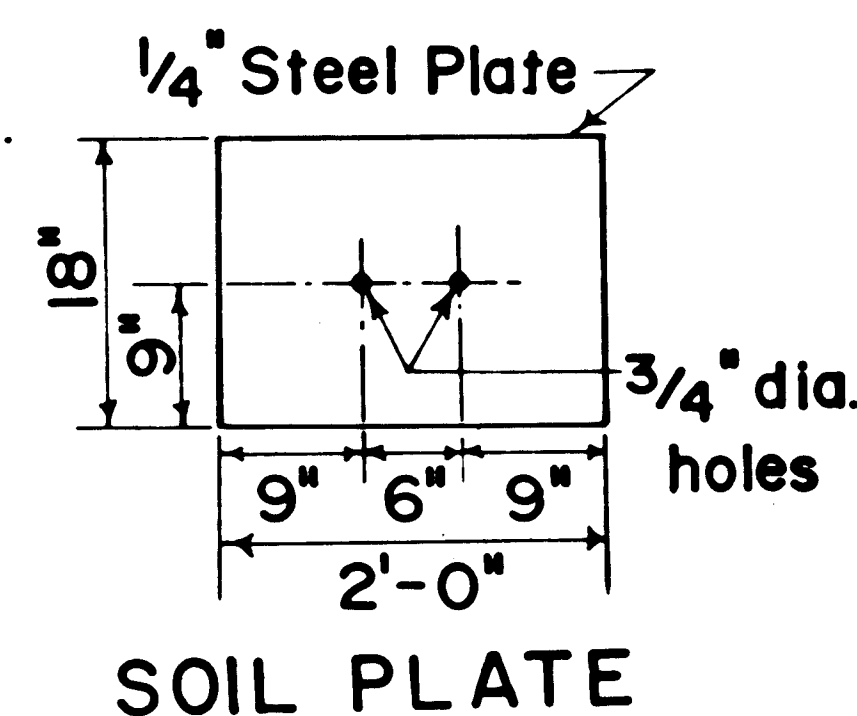
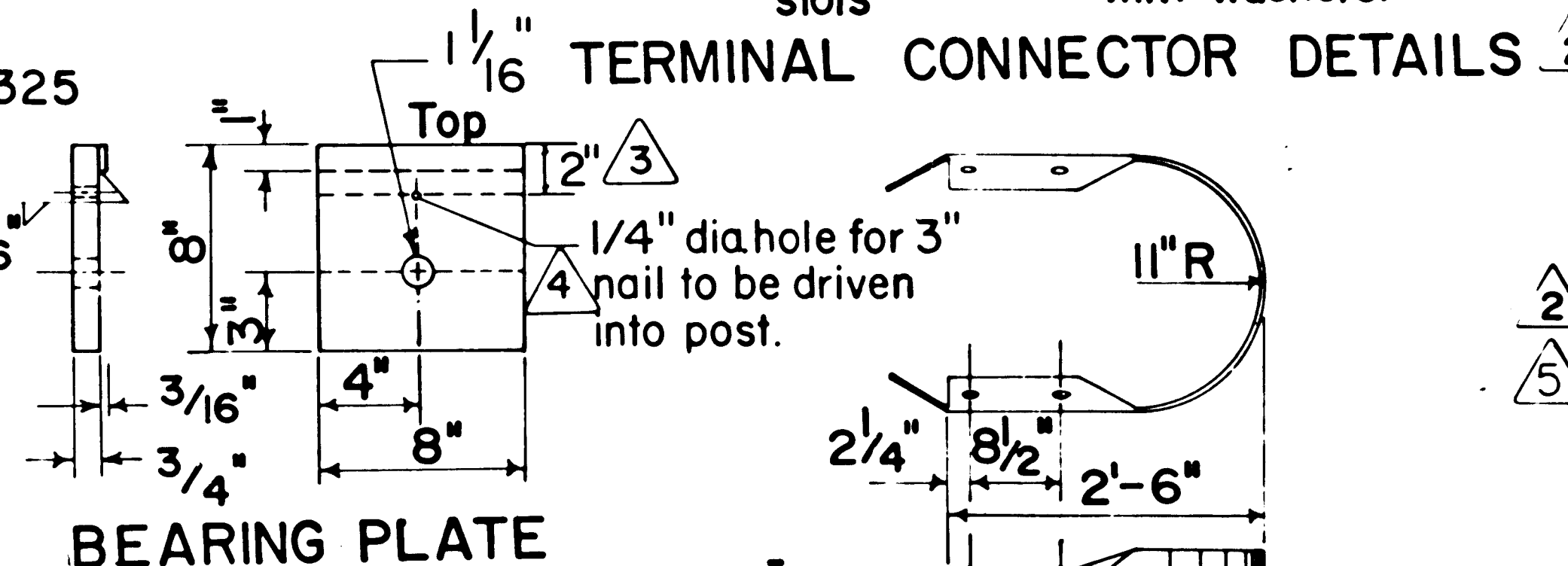
3. Bolts, washers, nuts and other fittings shall be galvanized steel in accordance with ASTM A-153.

2 4. Washers between the mounting bolts head and W-Beam shall be omitted on all seven posts for the type "C" installation.

5. See standard M-21-77 for offsets when metal barrier in advance of the anchorage is installed with a flare rate. (e.g. 25:1 or 50:1)

6. To provide a parabolic flare, the posts in the last 37.5' feet of metal barrier shall be completely backfilled and tamped before the w-beam rail is attached. In addition, the last two posts (steel tubes) shall be embedded by layering the backfill material in twelve-inch increments with compaction applied to each layer through the use of a pneumatic device until maximum density is achieved to the satisfaction of the engineer for the type of backfill material used.

7. Cable tension at B.C.T. shall be snug with no visible slack.



ANCHOR PLATE DETAILS

DETAILS BREAKAWAY POST AND STEEL TUBE 2/195

6		
5	CHANGE GUARDRAIL TO METAL BARRIER	2-7-85 D.R.
4	Changed 1/8" To 1/4"	6-11-84 P.
3	Added note 7, Bearing plate nail hole	2-9-84 P.
2	Revised notes 4 & 5, Posts and bolt A-325	11-18-82 P.
1	CHANGED LENGTH OF WOOD POST	0-2-81 J.R.
IDENT. NO.	DESCRIPTION	DATE BY
REVISIONS (OR CHANGE NOTICES)		
NEW MEXICO STATE HIGHWAY DEPARTMENT		
METAL BARRIER (BREAKAWAY TYPE "C" END ANCHORAGE (WOOD POSTS))		
DESIGNED BY J.R.	APPROVAL	
DRAWN BY G.O.	RECOMMENDED	ENGINEER DATE
CHECKED BY J.R.	APPROVED	ENGINEER OF DESIGN DATE
SERIAL M-21-77C		SHEET 1 OF 3

CHART TO DETERMINE POST SIZE

		H in feet												
Post Size	H	5	6	7	8	9	10	11	12	13	14	15	16	
1½" x 1½"	4.9	4.1	3.5	3.0	2.7	2.4	2.2	2.0	1.9	1.7				
1¾" x 1¾"	7.5	6.2	5.3	4.7	4.1	3.7	3.4	3.1	2.9	2.7				
2" x 2"	10.5	8.8	7.5	6.6	5.8	5.3	4.8	4.4	4.0	3.8				
2¼" x 2¼"	14.0	11.7	10.0	8.8	7.7	7.1	6.4	5.9	5.3	5.1				
2⅜" x 2⅜"	16.7	13.9	11.9	10.4	9.3	8.3	7.6	7.0	6.4	6.0	5.6	5.2		
2½" x 2½"	22.2	18.5	15.8	13.8	12.3	11.1	10.1	9.2	8.5	7.9	7.4	6.9		

1046" THICK

1345" THICK

EXAMPLE:

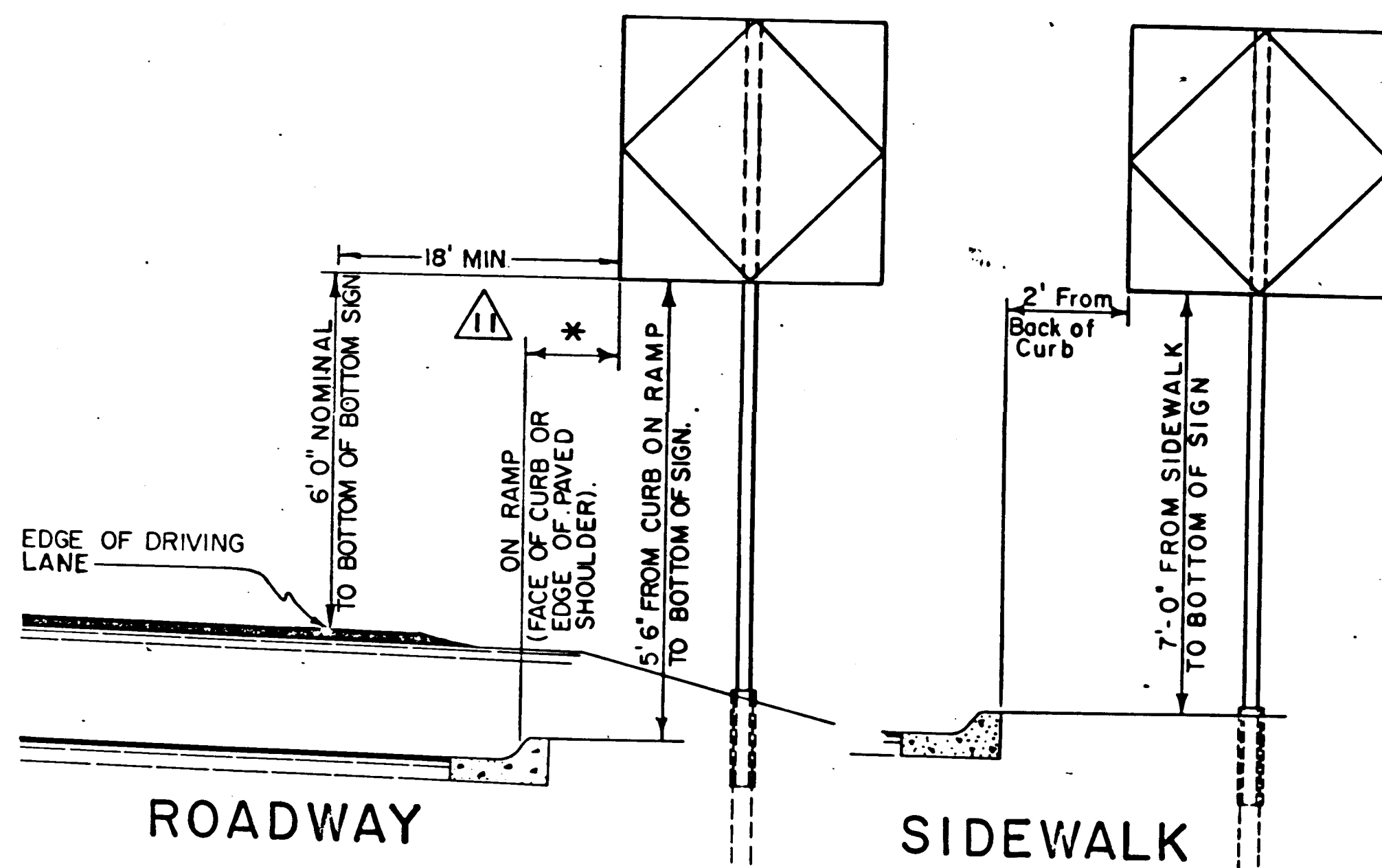
DETERMINE SIZE AND NUMBER OF POSTS TO USE WITH SIGN 4'x4' AREA = 16'.
DETERMINE DESIGN HEIGHT FROM ROADWAY CROSS SECTION IN CONJUNCTION WITH SIGN SIZE.
(DESIGN HEIGHT (H) IS FROM THE GROUND ELEVATION AT THE BASE OF THE LONGEST POST TO CENTER OF SIGN).

SOLUTION:

FROM ROADWAY CROSS SECTION, CLEARANCE TO BOTTOM OF SIGN = 9.5'
SIGN DEPTH IS 4'.
 $d/2 = 4/2 = 2$

DESIGN HEIGHT 11.5' SAY 12'
NUMBER OF POSTS (n) NEEDED FOR A=16' WOULD BE $n=2$ (NORMALLY NOT OVER 10 TO 12 SQ. FT. PER POST). SIGN AREA PER POST $A_n = 16/2 = 8$ SQ. FT. PER POST.

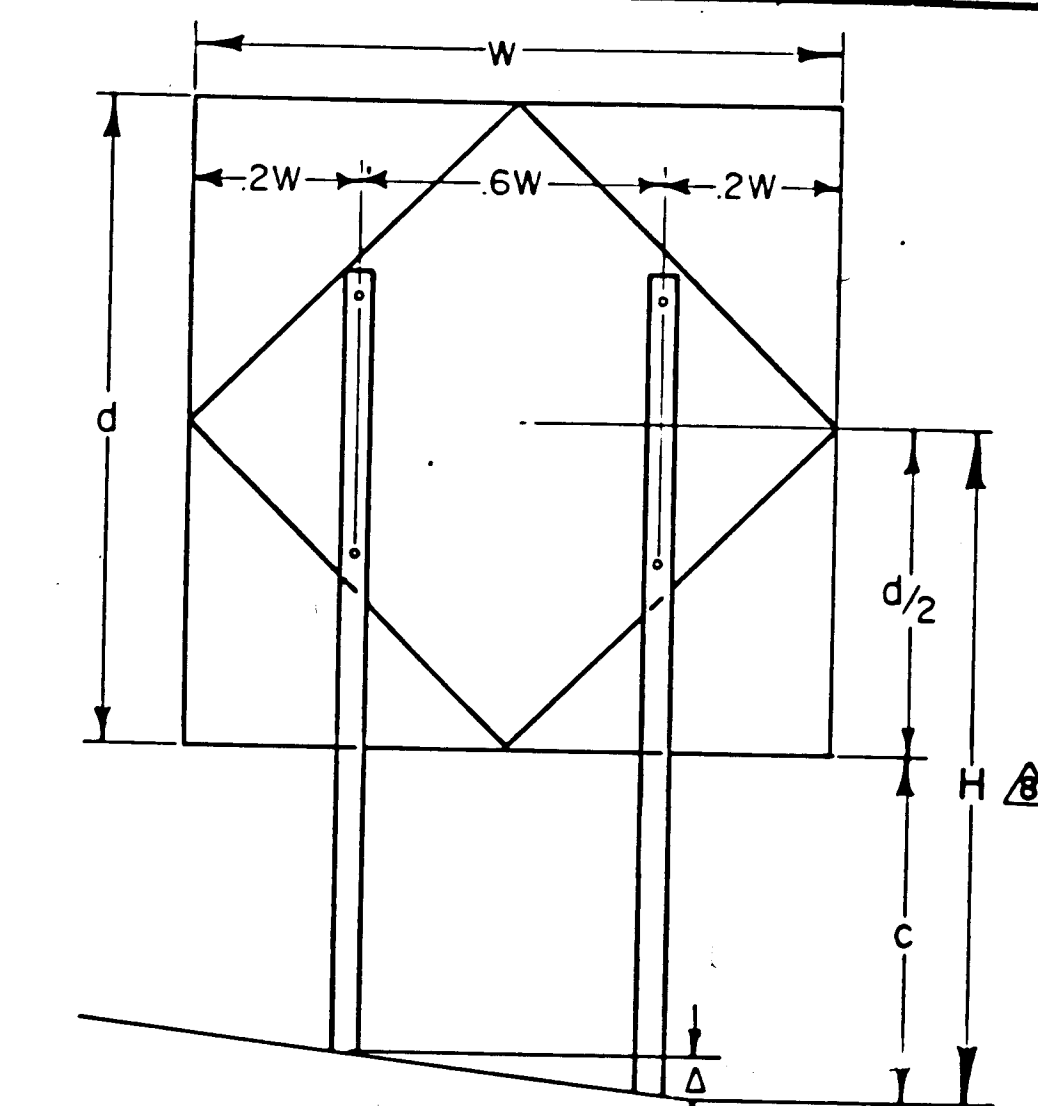
- ENTER CHART AT TOP WHERE H=12.0' PROCEED DOWNWARD TO AN AREA EQUAL TO OR GREATER THAN SIGN AREA PER POST, THEN PROCEED TO THE LEFT TO FIND THE REQUIRED POST SIZE. THIS COMES OUT TO BE A 2 1/2" x 2 1/2" 10 GA. POST.
- THE LENGTH OF THE LONGER POST WILL THEN BE THE 9.5' FROM GROUND LINE TO BOTTOM OF SIGN PLUS THE SIGN HEIGHT (5.0' IN THIS CASE) PLUS THE 1.5' IN THE GROUND FOR A TOTAL OF 16.0'. THE OTHER POST LENGTH WILL BE 16.0' MINUS THE DIFFERENCE "A" (IN THIS CASE 16.0'-0.4' OR 15.6').



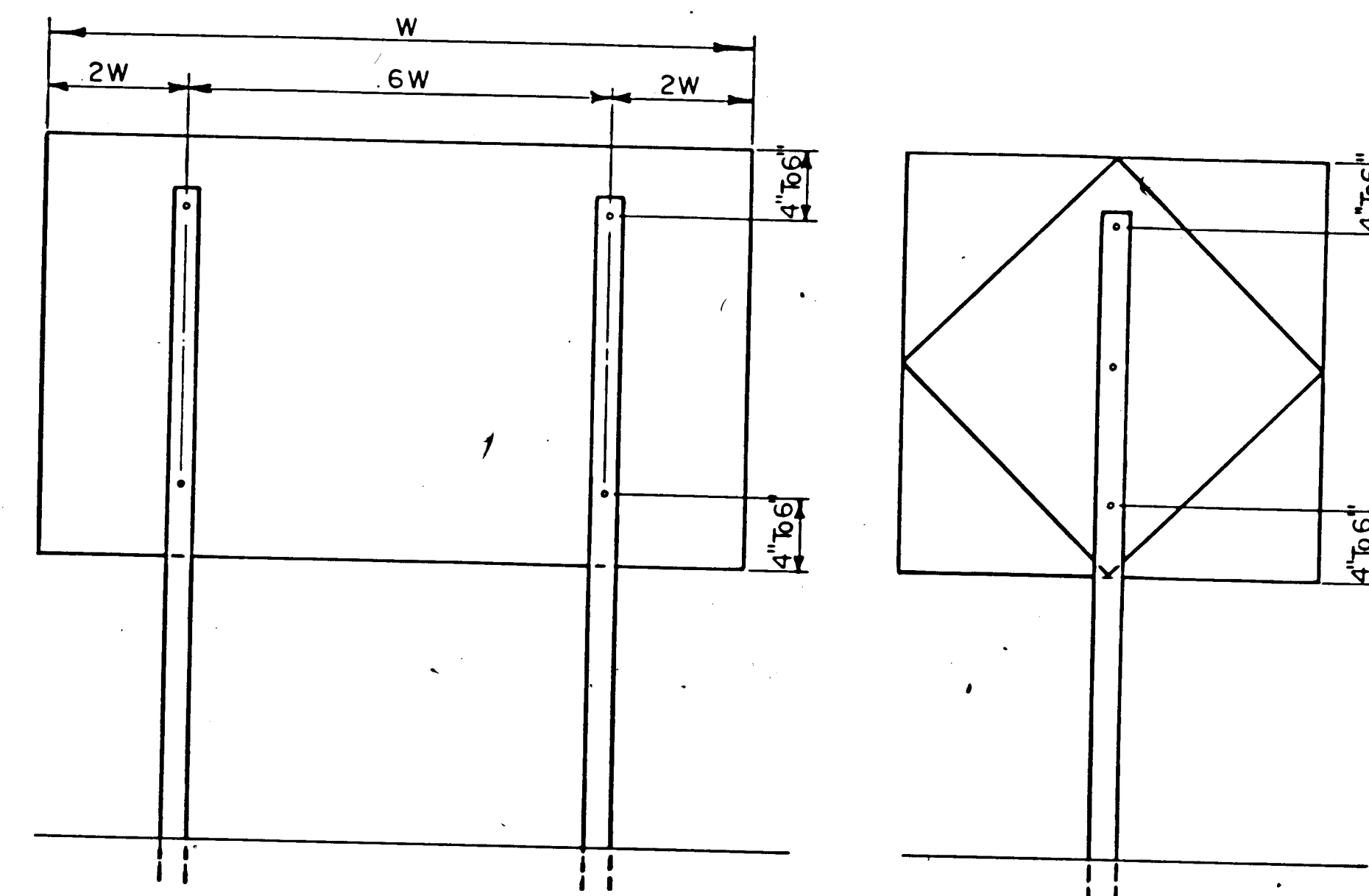
ROADWAY

POST INSTALLATION

- * 3' MIN. FROM FACE OF CURB OR
6' MIN. FROM EDGE OF PAVED SHOULDER



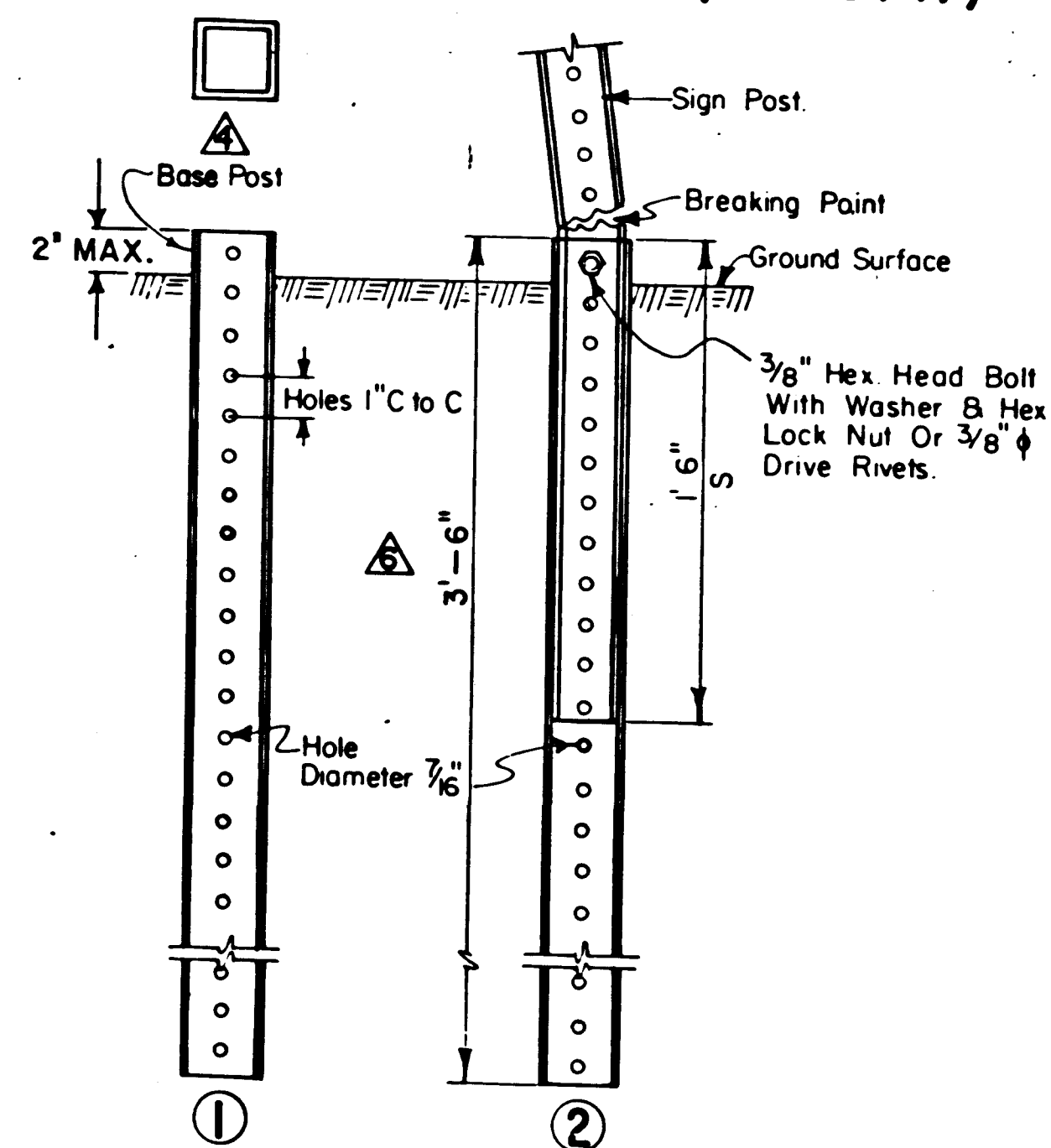
POST SIZE CALCULATION



POST SPACING & SIGN MOUNTING

NOTE: WHERE 3 POSTS ARE USED SPACING SHOULD BE
.15W - .35W - .35W - .15W.

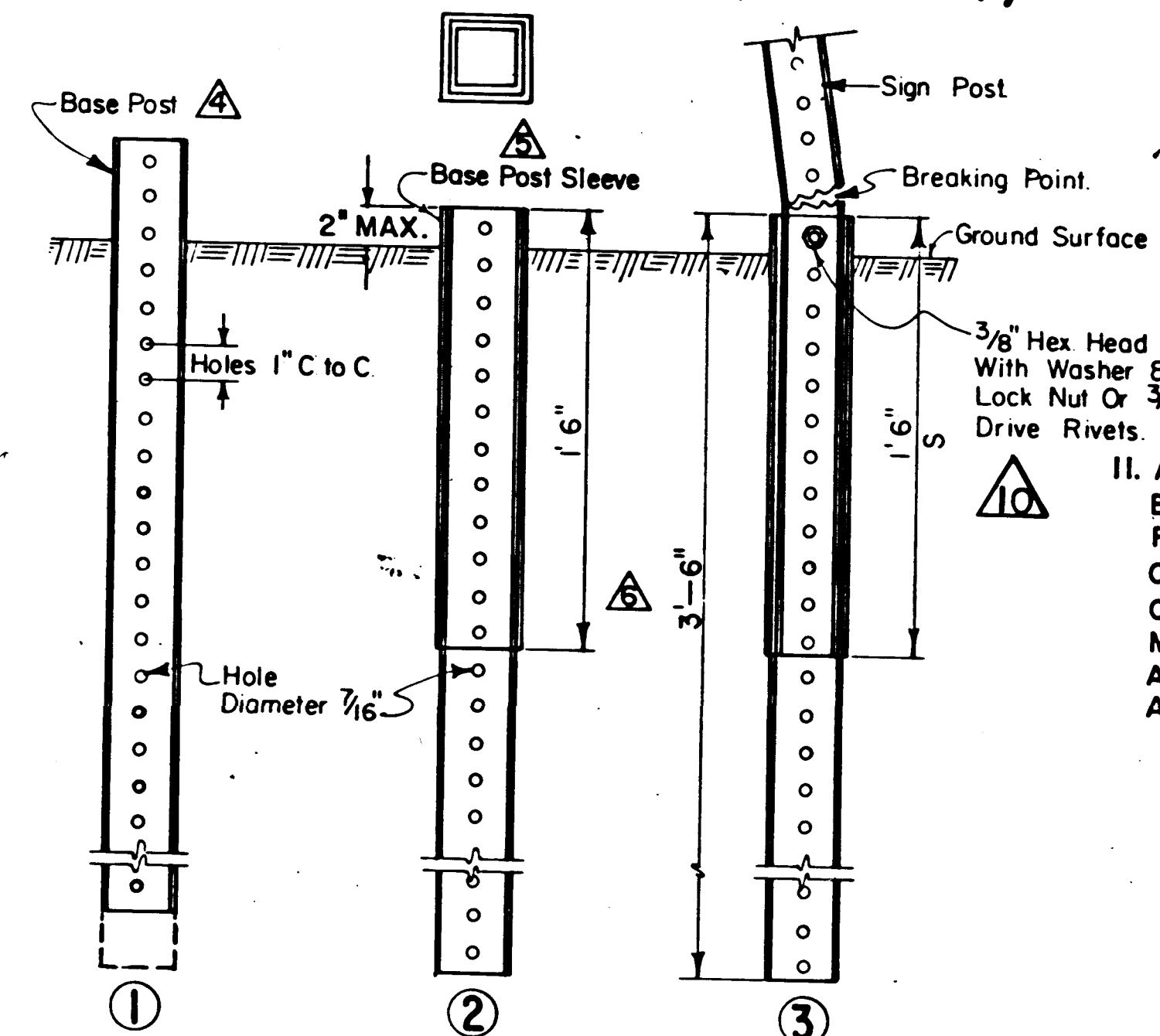
POSTS
0.1345" THICK (10 GA.)



GROUND INSTALLATION

1. DRIVE BASE POST UNTIL ONE HOLE IS EXPOSED ABOVE GROUND FOR RIVET OR BOLT INSTALLATION.
2. INSERT SIGN POST 1'-6" AND FASTEN WITH 2 EACH 3/8" ϕ DRIVE RIVET OR A 3/8" ϕ BOLT.
3. THE HOLE PATTERN SHOWN IS ONLY REQUIRED IN THE AREA OF THE BREAKAWAY INFLUENCE AND AT THE SIGN PANEL LOCATION (HOLES MAY BE FIELD DRILLED).

POSTS
0.1046" THICK (12 GA.)



GROUND INSTALLATION

1. DRIVE BASE POST TO WITHIN THREE OR FOUR INCHES OF SURFACE. BASE POST IS NEXT SIZE LARGER SECTION THAN SIGN POST.
2. PRE-CUT BASE POST SLEEVE (of next size larger tube) SO THAT THE HOLES WILL MATCH AND STILL BE FLUSH WITH TOP OF THE BASE POST. DRIVE BASE POST SLEEVE UNTIL HOLES MATCH AS NOTED ABOVE, THEN DRIVE BOTH THE BASE POST SLEEVE AND THE BASE POST UNTIL ONE HOLE IS EXPOSED ABOVE GROUND FOR BOLT CONNECTION.
3. INSERT SIGN POST 1'-6" FASTEN WITH 2 EACH 3/8" ϕ DRIVE RIVETS OR A 3/8" ϕ BOLT.
4. THE HOLE PATTERN SHOWN IS ONLY REQUIRED IN THE AREA OF THE BREAKAWAY INFLUENCE AND AT THE SIGN PANEL LOCATION (HOLES MAY BE FIELD DRILLED).

F.N.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

NOTES:

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. BREAKAWAY SIGN SUPPORTS SHALL BE FABRICATED FROM PERFORATED STEEL AND SHALL CONFORM TO THE BREAKAWAY DESIGN SHOWN ON THIS SHEET. ALL HOLES TO BE 7/16" ϕ .
3. THE STEEL POSTS SHALL CONFORM TO COMMERCIAL QUALITY ASTM DESIGNATION A 446 GRADE A ZINC COATED (G 90) ASTM A 525. THE CROSS SECTION OF THE POST SHALL BE SQUARE TUBE FORMED OF 0.1046" THICK OR 0.1345" THICK. ROLL FORMED CARBON STEEL WELDED DIRECTLY IN THE CORNER BY HIGH FREQUENCY RESISTANCE WELDING OR EQUAL AND EXTERNALLY SCARFED TO AGREE WITH CORNER RADIUS. STANDARD OUTSIDE CORNER RADIUS SHALL BE 5/32" PLUS OR MINUS 1/64".
4. BOLTS AND NUTS SHALL BE CARBON STEEL A-307 OR STAINLESS STEEL A-193.
5. DRIVING CAPS MUST BE USED TO DRIVE POSTS 1'-6".
6. BASE POST SLEEVE IS REQUIRED WITH 0.1046" THICK POST, BUT NOT WITH 0.1345" THICK.
7. 3" x 3" x 4' 0" BASE POST OF 3/16" WALL THICKNESS TO BE USED WITH 2 1/2" x 2 1/2" 0.1345 POST.
8. POSTS SHALL HAVE A MINIMUM COLD FORMED YIELD STRESS OF 40,000 PSI.
9. DESIGN IS IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1976.
WIND LOAD: 19 LBS./SQ.FT. (70 MPH).
SOIL BEARING CAPACITY: 3 K/SQ.FT.
10. CARBON STEEL NUTS, BOLTS AND WASHERS SHALL BE HOT DIP GALVANIZED A-153 CLASS D, ZINC COATED A-164, TYPE LS (0.0005 THICKNESS), OR CADMIUM COATED A 165, TYPE OS (0.0003 THICKNESS).
11. AS AN ALTERNATE TO GALVANIZING, STEEL POSTS AND BASE POSTS MAY BE PAINTED WITH A GREEN MODIFIED POLYESTER PAINT MEETING THE COLOR REQUIREMENTS OF FS 595-A (COLOR NO. 14109). METHOD OF APPLICATION SHALL BE BY ELECTRODEPOSITION TO A MINIMUM 1 MIL THICKNESS. FINISHED POSTS SHALL HAVE A SMOOTH, UNIFORM FINISH FREE FROM DEFECTS AFFECTING STRENGTH OR APPEARANCE.

IDENT. NO.	DESCRIPTION	DATE BY
10	ADDED NOTE No. 11	8/6/81 T.M.
9	REVISED NOTE No. 9	9/24/79 T.M.
8	CORRECTED LETTER REFERENCE	7-24/79 T.M.
7	ADDED LARGER POST SIZE TO CHART	2-28/78 T.M.
6	REV. BASE POST DIMENSION	12-5/77 T.M.
5	ANCHOR SLEEVE TO BASE POST SLEEVE	12-5/77 T.M.
4	SIGN POST ANCHOR TO BASE POST	12-5/77 T.M.
3	Rev. Note 4 & Add Note 10	6-6/77 J.G.
2	Rev. Note 4	5/3/77 T.M.
1	Rev. Offset Distance	5/14/81 T.M.

NEW MEXICO
STATE HIGHWAY DEPARTMENT

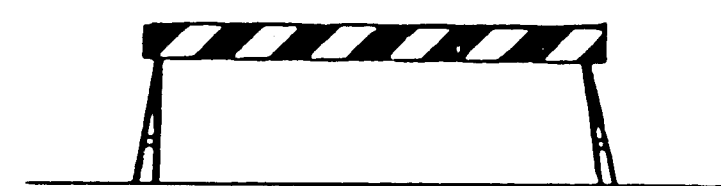
DESIGN LOADS FOR
SQUARE TUBING POSTS

DESIGNED BY JG	APPROVAL
DRAWN BY JP	RECOMMENDED - TRAFFIC ENGINEER DATE
CHECKED BY JG	APPROVED
	ENGINEER OF DESIGN DATE

SERIAL Sn 75-1 SHEET 1 OF 9

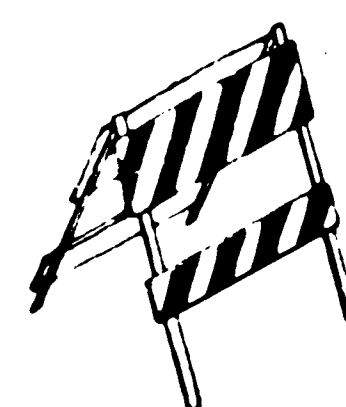
1 2 3 4 5 6 7 8 9 10 11 12
26 21 9 5 6 5 8 6

2195



Stands may be detachable for portability. Type "I" Barricades have two (2) reflectorized rail faces (one in each direction). The stand materials may be metal, wood or other suitable light weight materials of structural soundness.

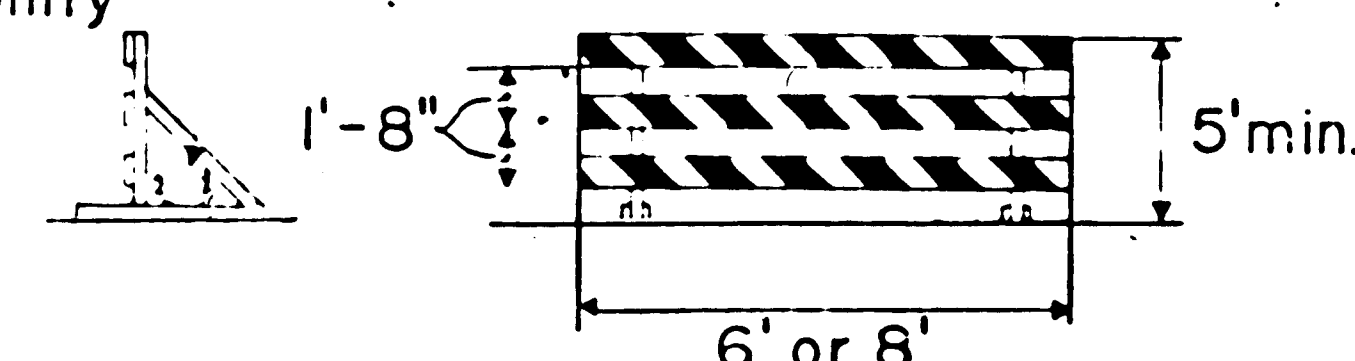
TYPICAL
TYPE "I" BARRICADE



Type "II" Barricades have four (4) reflectorized rail faces (two in each direction). Folding stands shall be of materials similar to Type "I" Barricade stands.

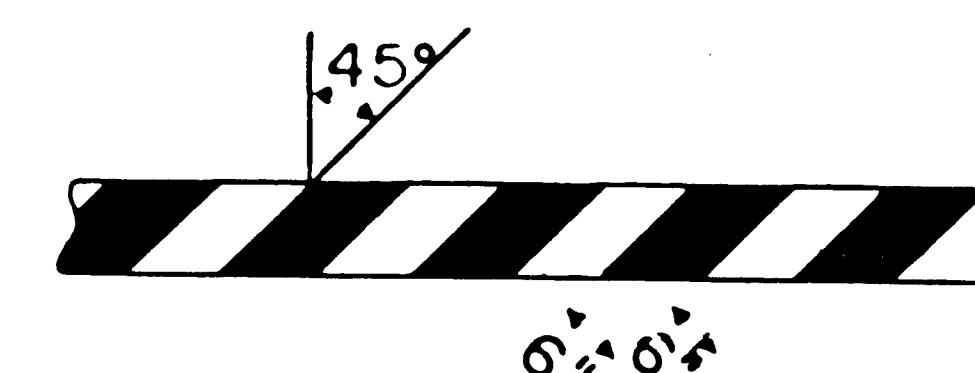
TYPICAL
TYPE "II" BARRICADE

Sand bags for added stability



Type "III" Barricade framing and supports shall be 2"x2" min. - 12Ga., square metal tubing or driven down posts.

TYPICAL
MOVABLE TYPE "III" BARRICADE

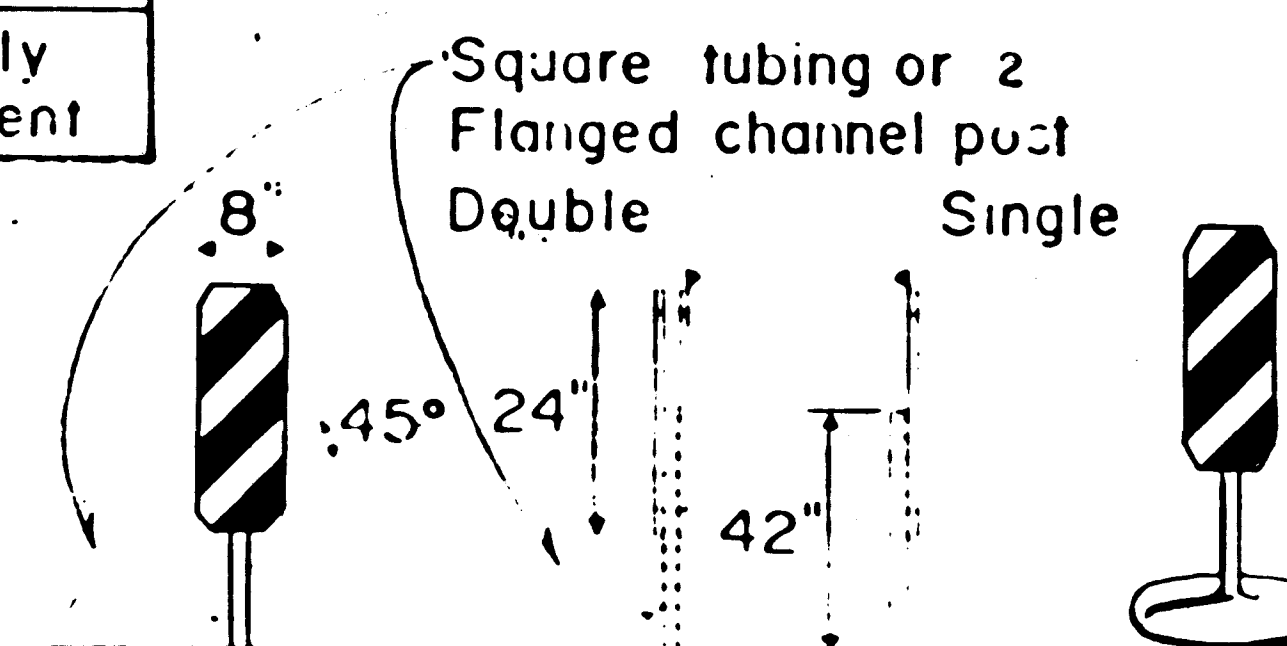


BARRICADES - CHARACTERISTICS

	I	II	III
WIDTH OF RAIL	8" min. - 12" max.	8" min. - 12" max.	8" min. - 12" max.
LENGTH OF RAIL	6' to 8'	3' min. - 4' max.	6' or 8'
WIDTH OF STRIPES	6 ins.	6 ins.	6 ins.
HEIGHT	3 ft. min.	3 ft. min.	5 ft. min.
TYPE OF FRAME	Demountable or heavy "A" frame	Light "A" frame	Posts or skids
FLEXIBILITY	Essentially movable	Portable	Essentially permanent

Rail shall be 1/2" min. 5 ply sign grade plywood or 2" x 8" S4S quality wood. On Types "I" and "II", metal rails, if used, must be light weight material, commensurate with structural soundness. Stripes shall slant downward at 45° toward the side which traffic is to pass.

DETAIL OF BARRICADE RAIL STRIPING



Panels to be 0.060 min., 6061-T6, or 5052-H38 aluminum alloy mounted on 1 1/2" min. square steel tubing post or 1 3/4" min. flanged channel post. Stripes shall slant downward at 45° toward the side which traffic is to pass. For temporary installation the post may be set to 3 ft. below ground or the panels may be mounted on stanchions.

CHANNELIZATION DEVICES (VERTICAL PANELS)

26 21 9 5 5 6 0 6

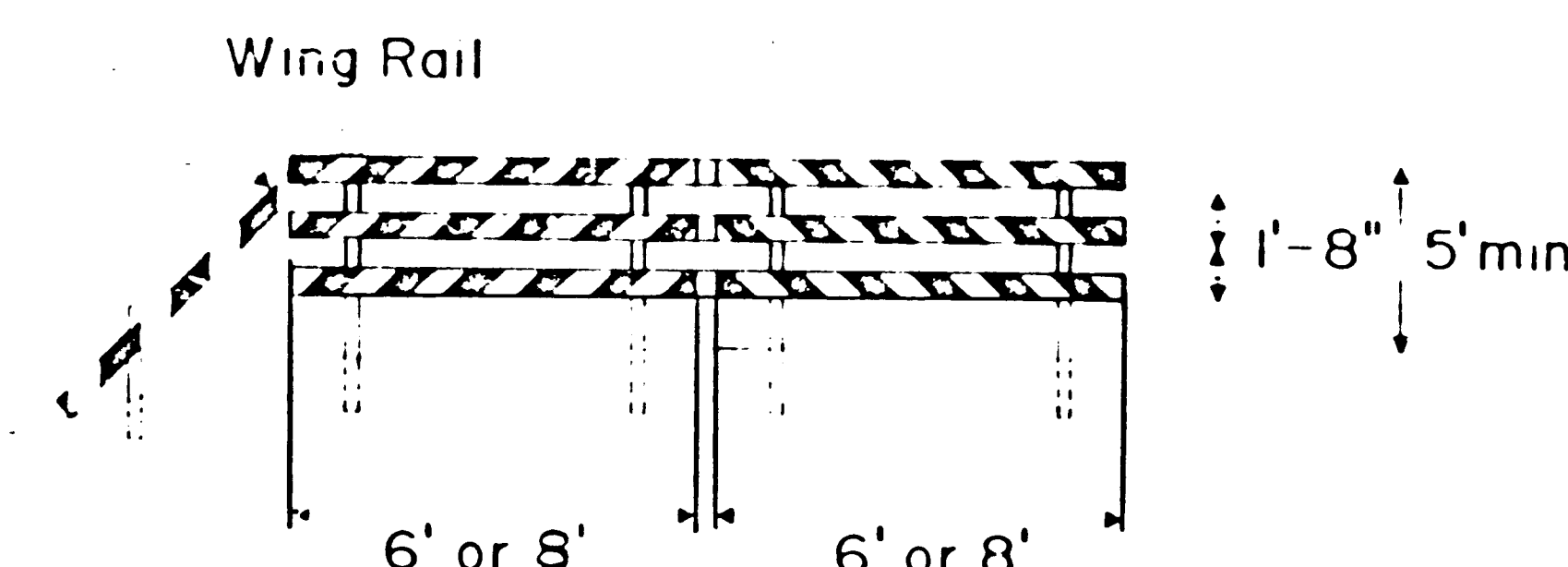
GENERAL NOTES

- All signs, sign materials, beacons, and barricade warning lights shall conform to the standards set forth in the M.U.T.C.D. 1978 edition.
- The entire area of orange and white stripes shall be reflectorized on all barricades, barrels, vertical panels or other channelization devices when used on construction, detours, or participating connections, by use of reflective sheeting or tape.
- Red and white barricades may be used to mark the end of a road, street, or highway where there is no crossroad or outlet at locations considered permanent and semi-permanent closures or termination of roadways.
- Flashing beacons or steady burn lights, when used on barricades, shall be positioned above the top rail of the barricade, facing traffic.
- High intensity flashing beacons shall be used to mark obstructions or hazards. Type "C" steady burn light may be used for delineation at night.
- All barricade framing and supports, other than galvanized metal, shall be painted white.

REVISION	DESCRIPTION	DATE	BY
1	REVISED PORT SIGN SUPPORT DETAILS	3/15/80	T.G.M.
2	REVISED PORT SIGN SUPPORT DETAILS	1/31/80	T.G.M.
3	REVISED NOTE No. 1	9/24/79	T.G.M.
4	ADDED 5052 - H38 ALUMINUM ALLOY	5-9-78	T.G.M.
5	ADDED FLANGED CHANNEL POST	5-4-78	T.G.M.
6	REMOVED SIGN CLEARANCE DIMENSION	12-8-77	T.M.

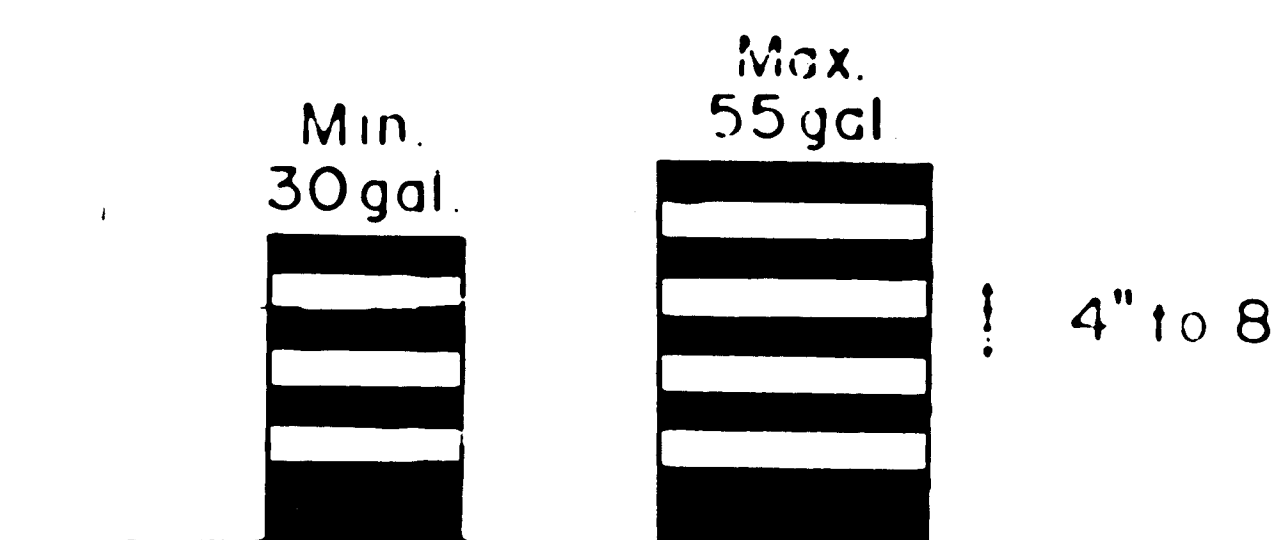
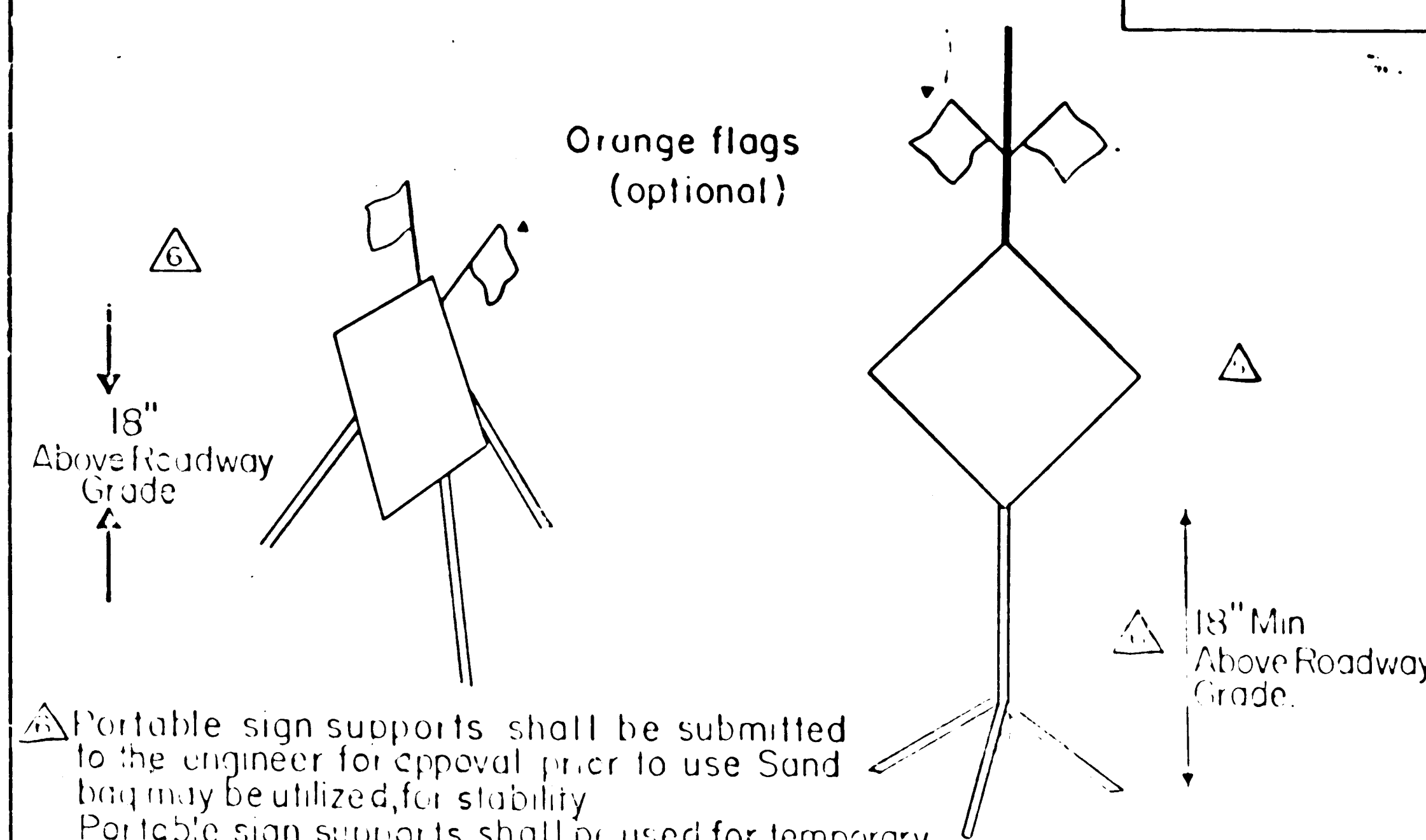
NEW MEXICO STATE HIGHWAY DEPARTMENT BARRICADES AND CHANNELIZATION DEVICES

DESIGNED BY	TRAFIC ENGINEER	12-9-77
CHECKED BY	TRAFIC ENGINEER	
APPROVED BY	TRAFIC ENGINEER	
DATE		
SERIAL	Sn 77-9	SHEET 9 of 9



Type "III" Barricades have 3 reflectorized rail faces when facing traffic in one direction; 6 if facing traffic in two directions. Wing Rail may be fitted to the back of the top rail attached by two 5/16" bolts, nuts, and washers.

TYPICAL
FIXED TYPE "III" BARRICADE



With three (3) orange stripes minimum and alternating white stripes, all reflective tape or sheeting.

CHANNELIZATION DEVICES (BARRELS)

PORTABLE SIGN SUPPORT (TYPICAL)

2195

CHART TO DETERMINE SINGLE POST SIZE Δ

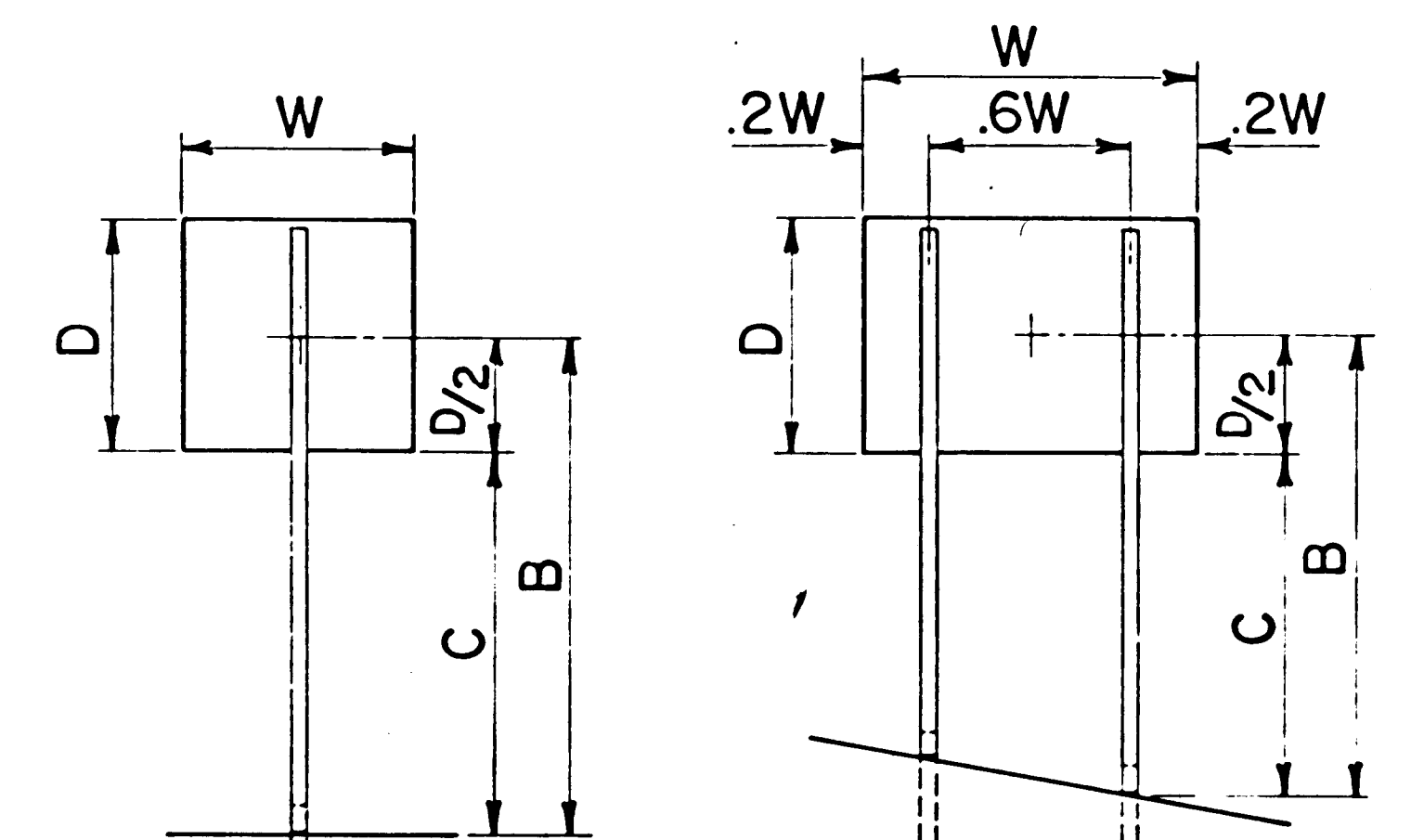
POST SIZE	K FACTOR (B x A)	B DIMENSION (FT.)												A(FT ²) SIGN AREA
		5	6	7	8	9	10	11	12	13	14	15	16	
2.00 LB/FT	DOES NOT APPLY	←			3.9				3.7	3.4	3.2	2.9	2.8	
2.25 LB/FT		←			5.1			4.6	4.2	3.9	3.6	3.4	3.2	
2.75 LB/FT		←			6.7			6.0	5.5	5.1	4.7	4.4	4.1	
3.00 LB/FT		←			7.3			6.7	6.2	5.6	5.1	5.0		
4.00 LB/FT		←			9.4				8.6	8.0	7.5	7.0		

CHART TO DETERMINE DOUBLE POST SIZE Δ

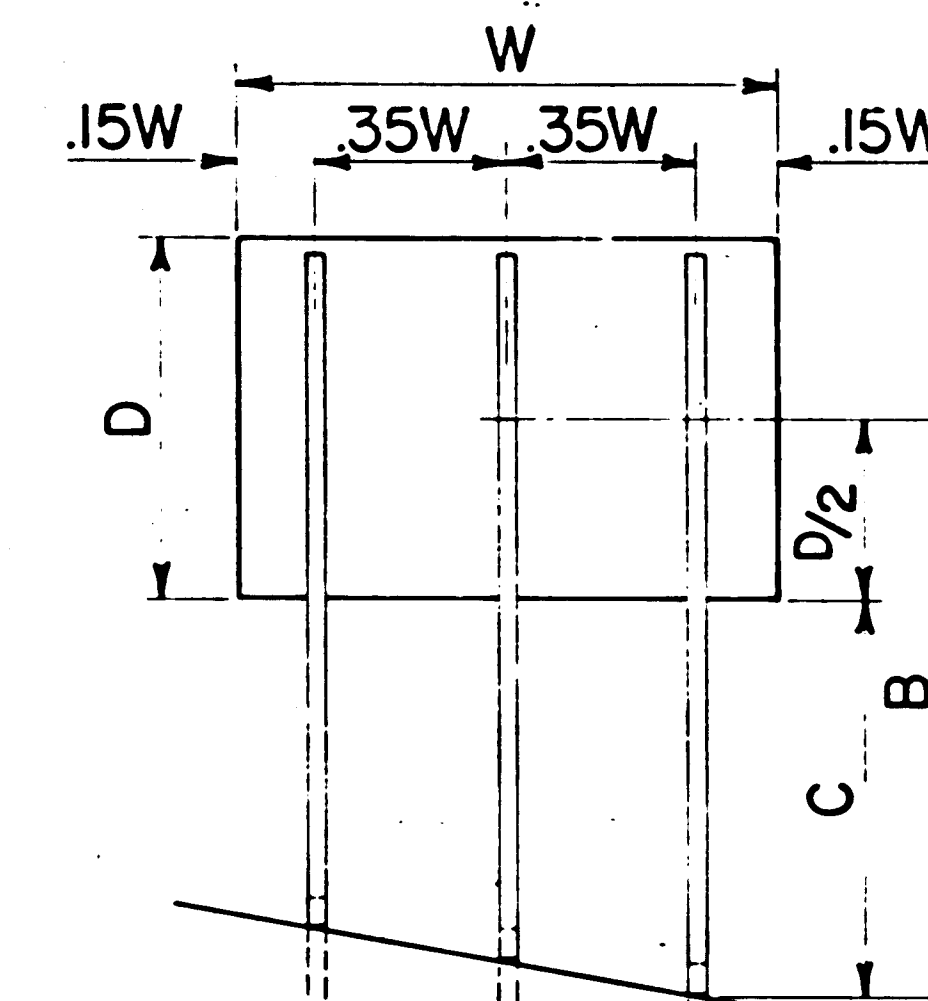
POST SIZE	K FACTOR (B x A)	B DIMENSION (FT.)												A(FT ²) SIGN AREA
		5	6	7	8	9	10	11	12	13	14	15	16	
2.00 LB/FT	97.00	19.4	16.1	13.8	12.1	10.8	9.7	8.8	8.1	7.5	6.9	6.5	6.1	
2.25 LB/FT	109.00	21.9	18.2	15.6	13.7	12.2	10.9	9.9	9.1	8.4	7.8	7.3	6.8	
2.75 LB/FT	142.00	28.4	23.7	20.3	17.8	15.8	14.2	12.9	11.8	10.9	10.1	9.5	8.9	
3.00 LB/FT	174.00	34.8	29.0	24.9	21.8	19.3	17.4	15.8	14.5	13.4	12.4	11.6	10.9	
4.00 LB/FT	241.00	48.2	40.2	34.4	30.1	26.8	24.1	21.9	20.1	18.5	17.2	16.1	15.1	

CHART TO DETERMINE THREE POST SIZE Δ Δ

POST SIZE	K FACTOR (B x A)	B DIMENSION (FT.)												A(FT ²) SIGN AREA
		5	6	7	8	9	10	11	12	13	14	15	16	
2.00 LB/FT	145.00	29.0	24.2	20.7	18.1	16.1	14.5	13.2	12.1	11.2	10.4	9.7	9.1	
2.25 LB/FT	164.00	32.8	27.3	23.4	20.5	18.2	16.4	14.9	13.7	12.6	11.7	10.9	10.3	
2.75 LB/FT	213.00	42.6	35.5	30.4	26.6	23.6	21.3	19.3	17.7	16.3	15.2	14.2	13.3	
3.00 LB/FT	261.00	52.2	43.5	37.3	32.6	29.0	26.1	23.7	21.7	20.0	18.6	17.4	16.3	
4.00 LB/FT	361.00	72.2	60.1	51.5	45.1	40.1	36.1	32.8	30.0	27.7	25.8	24.0	22.5	



SINGLE POST SIZE DOUBLE POST SIZE



THREE POST SIZE

F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

EXAMPLE

Required: Determine post requirement for a 5' wide, 4' high sign Located on a rural highway

Given: W = 5'
D = 4'

Solution: 1. For a rural location.

C (min) = 5'

2. $D/2 = 4/2 = 2$

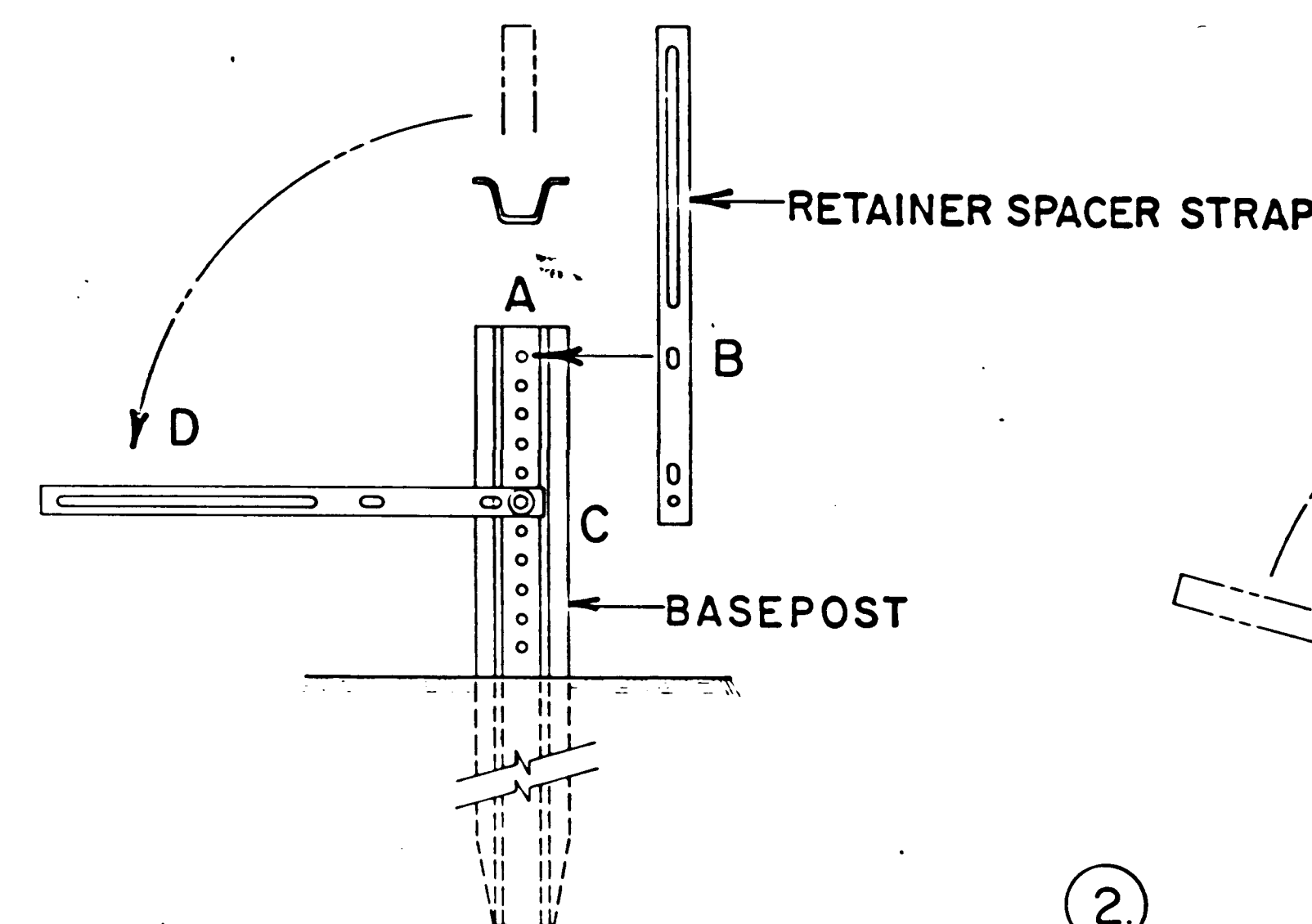
3. $B = C + D/2 = 5' + 2' = 7'$

4. $A = W \times D = 5' \times 4' = 20.00 \text{ sq. ft.}$

5. Enter the column for B=7 and continue down the B column until the "A" factor equals or exceeds 20 sq. ft. 2 posts of 2.75 lb/ft yields a factor of 20.3 which is optimum.

Example:

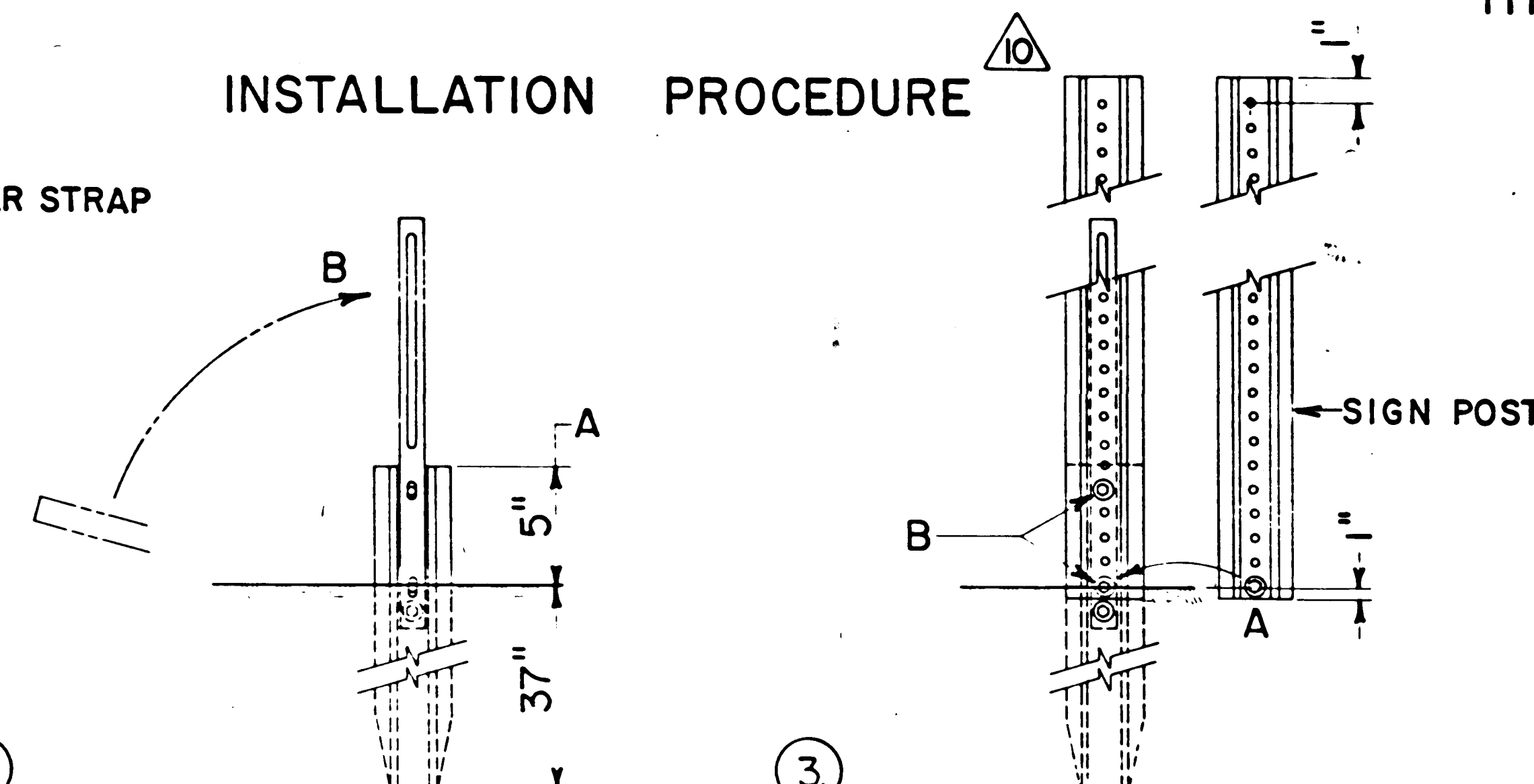
POST	B=7
2.75 LB/FT	20.3
3.00 LB/FT	24.9
4.00 LB/FT	34.4



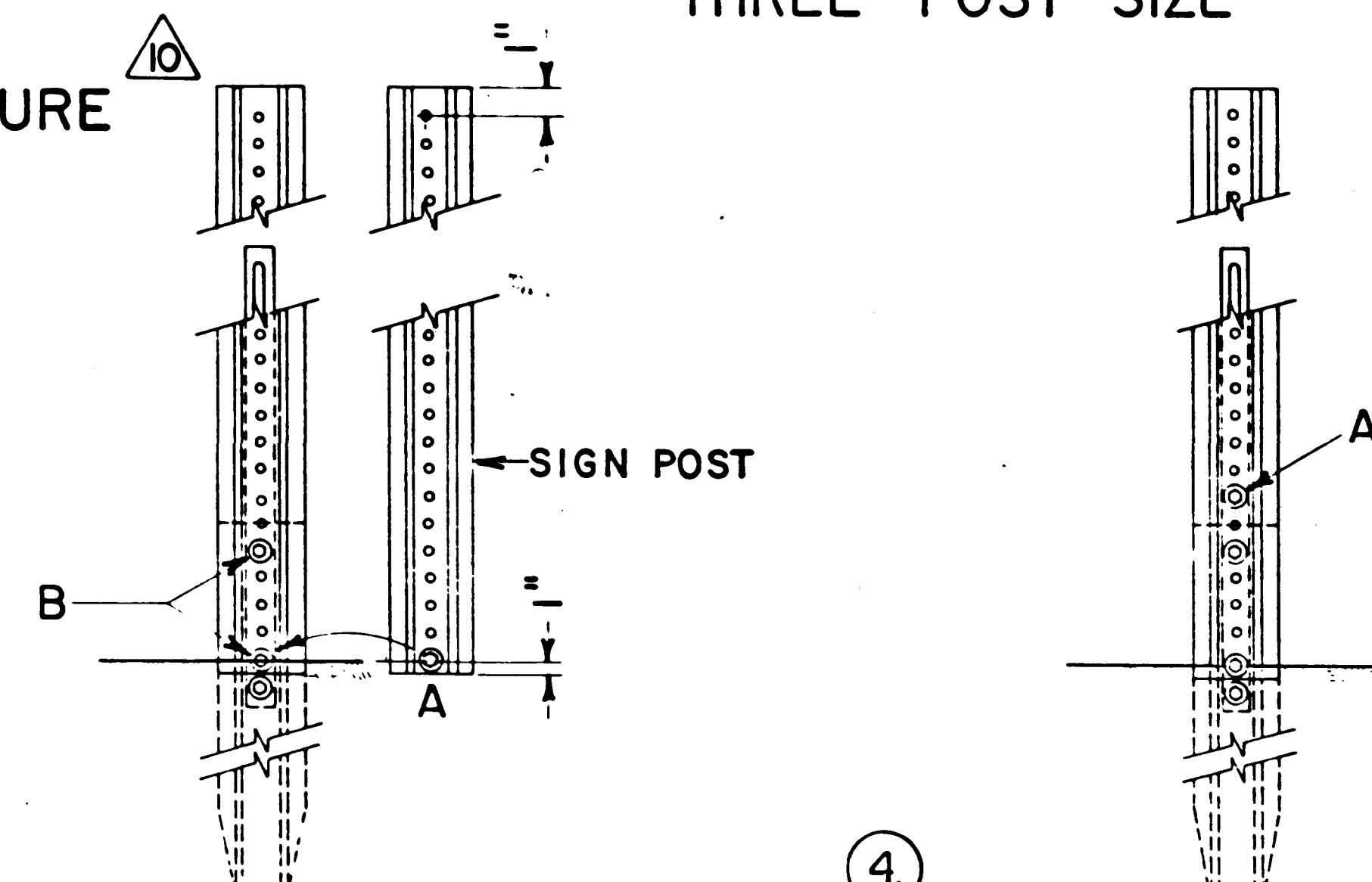
1. A-Drive basepost to within 12" of ground level.
B-Proper assembly established by lining up top 3/4" slot of retainer spacer strap with top hole of basepost.
C-Assemble strap to basepost.

D-Rotate strap 90° to left.

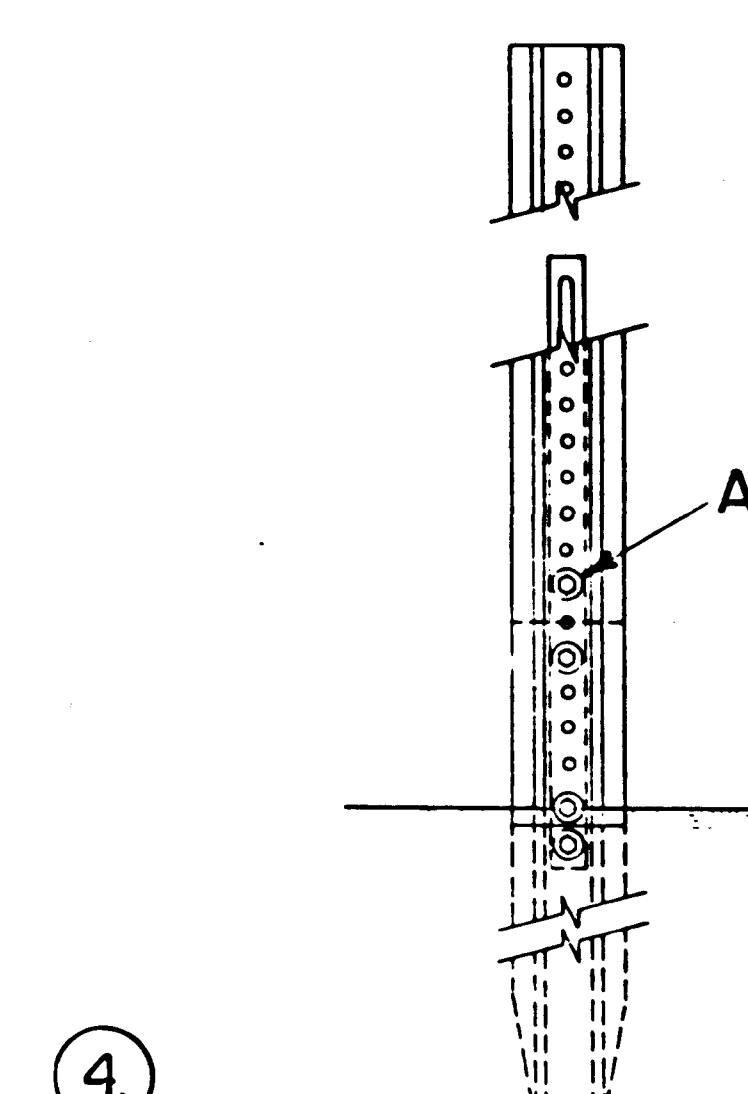
INSTALLATION PROCEDURE



2. A-Drive basepost to 5" dimension.
B-Rotate strap to vertical position.



3. A-Place 3/8-16 UNC x 2.0" bolt in bottom of sign post to facilitate alignment of sign post with proper hole in base post. (This coincides with bottom 3/4" slot in strap).
B-Alternately tighten two connector bolts.



4. A-Complete assembly by tightening retainer bolt. (This fastens sign post to retainer spacer strap).

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REVISOR	REVISION	DATE
1	REVISOR	DATE
2	REVISOR	DATE
3	REVISOR	DATE
4	REVISOR	DATE
5	REVISOR	DATE
6	REVISOR	DATE
7	REVISOR	DATE
8	REVISOR	DATE
9	REVISOR	DATE
10	REVISOR	DATE
11	REVISOR	DATE
12	REVISOR	DATE

NEW MEXICO
STATE HIGHWAY DEPARTMENT

DESIGN LOADS FOR BREAKAWAY FLANGED CHANNEL POSTS

DESIGNED BY	APPROVAL	DATE
DRAWN BY	RECOMMENDED	DATE
CHECKED BY	APPROVED	DATE

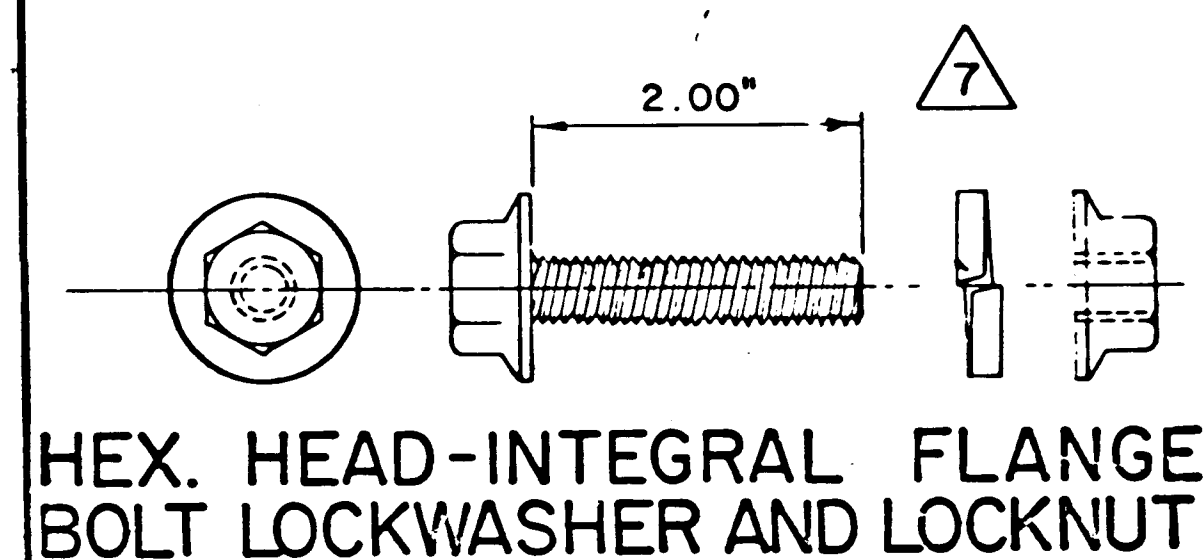
SERIAL TBAC-001-10

FLANGED CHANNEL PROPERTIES

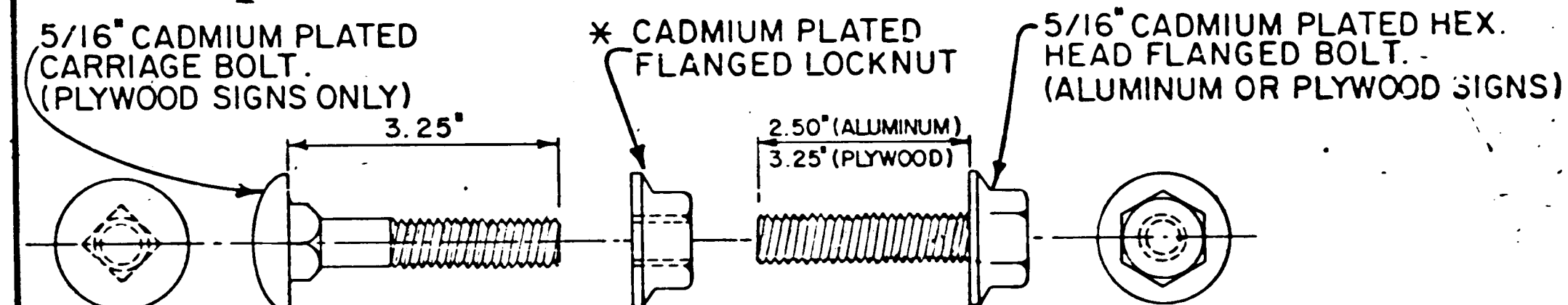
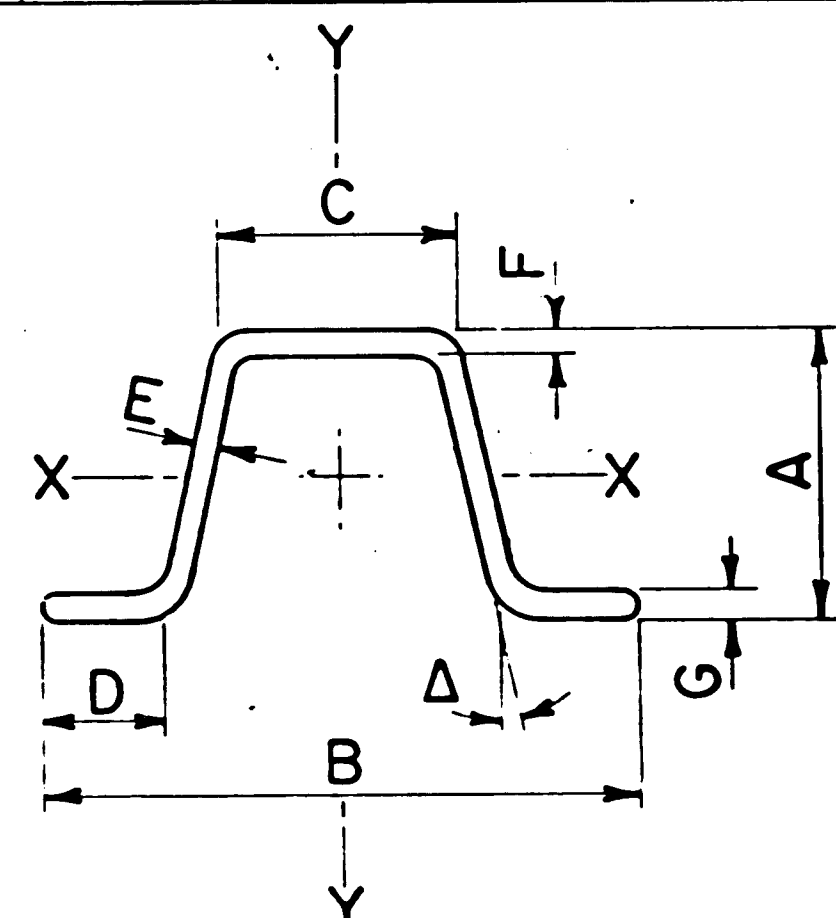
WEIGHT PER FOOT	DIMENSIONS								AREA IN ²	X-X AXIS		Y-Y AXIS	
	A	B	C	D	E	F	G	Δ		I (in ⁴)	S (in ³)	I (in ⁴)	S (in ³)
2.00	1.516	3.125	1.250	.625	.116	.104	.113	12 1/2°	.590	.179	.225	.442	.283
2.25	1.532	3.125	1.250	.625	.124	.113	.132	12 1/2°	.648	.201	.254	.474	.303
2.50	1.562	3.125	1.250	.625	.132	.149	.164	12 1/2°	.748	.233	.289	.551	.353
2.75	1.578	3.125	1.250	.625	.140	.170	.185	12 1/2°	.819	.271	.329	.607	.389
3.00	1.750	3.500	1.625	.718	.150	.165	.160	11 1/2°	.918	.372	.403	.870	.497
4.00	1.750	3.500	1.671	.718	.175	.230	.250	11 1/2°	1.190	.500	.560	1.190	1.090

GENERAL NOTES

- Base post and sign post shall be flanged channel section, hot rolled from high strength steel meeting requirements of ASTM A499 specification modified in that material shall meet minimum yield stress of 60,000 psi and minimum tensile of 90,000 psi or equal.
- The finish for base post and sign post shall be hot dip galvanizing meeting requirements of ASTM A-123 specifications or flow coated with a green enamel paint meeting the color requirements of FS-595A (color no. 14062) to a minimum 1 mil thickness.
- The weight of each base post, before punching, shall be 2.75, 3.0 and 4.0 lb/ft. Weight tolerance shall be plus or minus 3 1/2%. Punching shall be eighteen .438" dia. holes on 1 inch centers, except the first and fifth are .438"x.500" slots, beginning 1" from the top. The length of each base post shall be 3.5' plus or minus 1 inch.
- The weight of each sign post before punching shall be 2.0, 2.25, 2.5, 2.75, 3.0 and 4.0 lb/ft. Weight tolerance shall be plus or minus 3 1/2%. Punching shall be full length .375 dia. holes, 1 inch centers. First hole 1 inch from top and last hole .50 inch from bottom. Lengths shall be to increments of 6 inches length tolerance and shall be plus or minus 1.5 inches.
- The finished posts shall be machine straightened and have a smooth uniform finish free from injurious defects affecting strength or appearance. Bolt holes and slots shall be carefully spaced vertically and horizontally so that holes will align for easy assembly. All holes, slots and sheared ends shall be free from burrs.
- Retainer spacer strap material shall be steel AISI 1020. The strap for all posts shall be 1 inch wide x 17 inches long x .25 inch thick with a .375 inch offset. Straps shall be hot dip galvanized meeting requirements of ASTM A-123 specifications.
- Bolts shall be 3/8" x 16 UNC x 2.0" long hex. Integral flange conforming to ASTM A-354 grade BD. Nuts shall be 3/8" x 16 UNC hex head, integral flange conforming to ASTM A-563 grade DH. Lockwashers shall be 3/8" extra duty helical spring. Bolts, nuts and lockwashers shall mechanically galvanized to ASTM B454 76, class 25.
- For sidewalk and roadway post installation see standard Sn75-1.
- Assemblies are as follows: 2.0, 2.25, 2.50 and 2.75 lb/ft. sign post with 2.75 lb/ft. base post. 3.0 lb/ft. sign post with 3.0 lb/ft. base post. 4.0 lb/ft. sign post with 4.0 lb/ft. base post.
- Bolts and locknut hardware for sign attachment shall be carriage or hex. head flange type, size shall be 5/16"-18 UNC. Bolts and nuts shall be cadmium plated to ASTM A 165 specification.



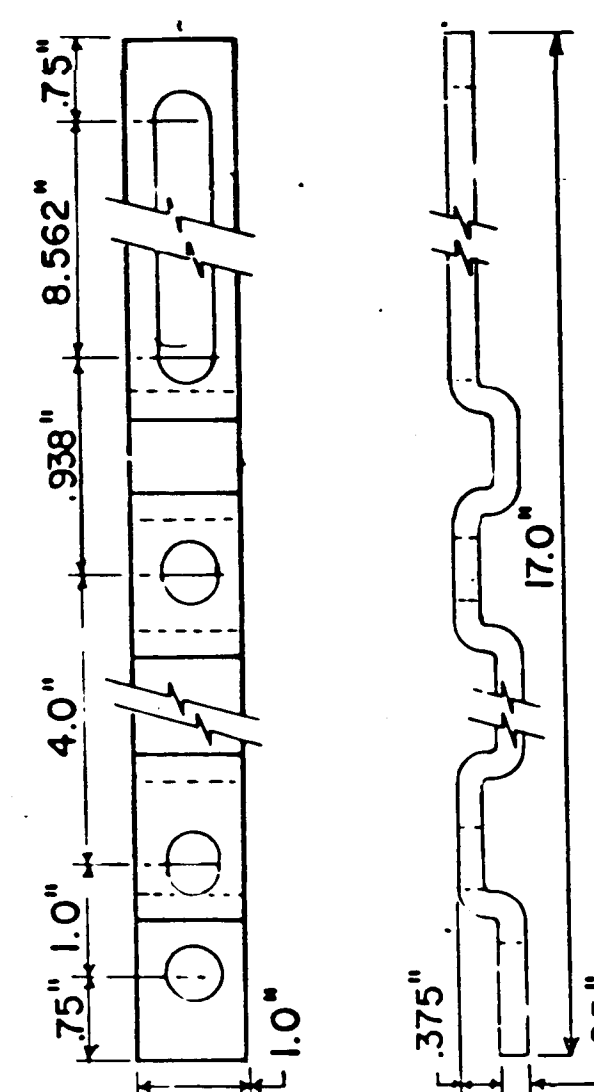
HEX. HEAD-INTEGRAL FLANGE BOLT LOCKWASHER AND LOCKNUT



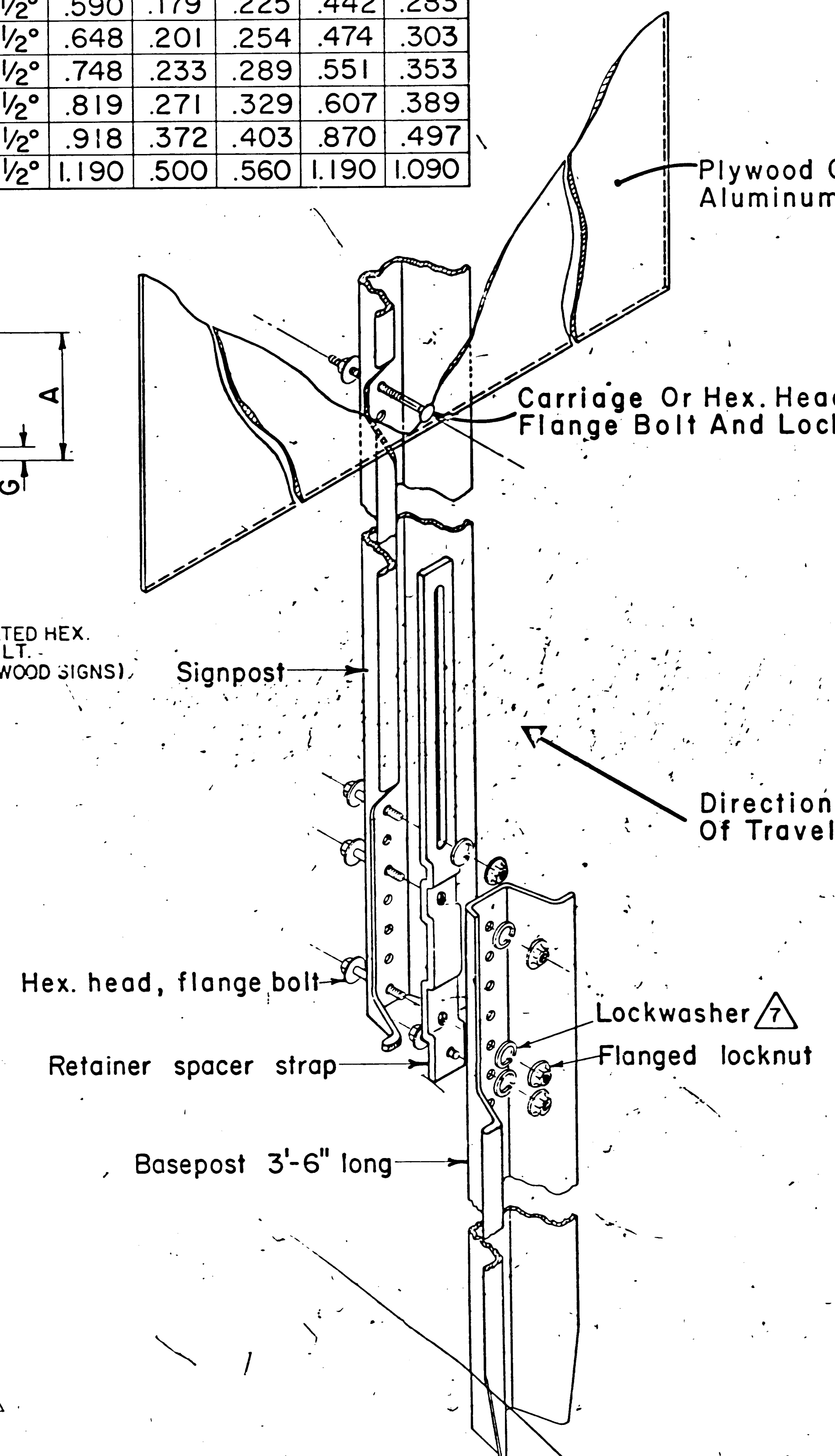
BOLTS AND LOCKNUT-SIGN ATTACHMENT

* FLANGED LOCKNUT REQUIRED FOR CARRIAGE AND HEX. HEAD FLANGE BOLT.

RETAINER SPACER STRAP



BASE POST SIGN POST



SIGN POST ASSEMBLY

IDENT. NO.	DESCRIPTION	DATE
5	REVISED NOTE 2	8/6/80 T.G.
6	REVISED SIGN POST DETAIL	6-29-82 T.G.
7	REVISED STRAP DETAIL	6-29-82 T.G.
8	REVISED SIGN POST ASSEMBLY DETAIL	6-29-82 T.G.
9	REVISED NOTES 3, 5, 6, 7	6-29-82 T.G.
10	REVISED BOLT LENGTH, ADDED LOCKWASHER	6-29-82 T.G.

REVISIONS (OR CHANGE NOTICES)

NEW MEXICO
STATE HIGHWAY DEPARTMENT

DESIGN DETAILS FOR
BREAKAWAY FLANGED
CHANNEL POST & HARDWARE

DESIGNED BY: GPB
DRAWN BY: IPH
CHECKED BY: GPB
APPROVAL
RECOMMENDED - TRAFFIC ENGINEER
APPROVED
ENGINEER OF DESIGN

SERIAL TBAC-002-II 2/95

F.H.W.A. Region No.	STATE	SHEET NO.	TOTAL SHEETS
6	NEW MEXICO		

GENERAL NOTES

1. Steel posts and steel blocks shall be fabricated from material conforming to AASHTO M-183 (ASTM A-36) and shall be galvanized after fabrication in accordance with AASHTO M-III (ASTM A-123).

2. Either steel posts and steel blocks or wood posts and wood blocks may be used at the option of the Contractor except that only one type of post and block shall be used on any one installation including anchorage.

3. All bolts shall conform to ASTM-A307 and nuts to ASTM A 563, Grade A. Washers shall be steel. All bolts, nuts and washers shall be galvanized in accordance with ASTM A 153.

4. When steel posts and steel blocks are used, a "W" section back-up plate, 1 foot in length must be placed behind rail elements at intermediate posts (non-splice-posts).

5. Block mounts to post with 2 bolts staggered. Lower bolt on approaching traffic side of block and post web.

6. If alternate type post system such as "C" post is proposed for use, details must be submitted to Traffic Design for approval.

1	ADDED W6x8.5 AND STEEL POST AGAINST PIER	1/30/78 J.R.
2	Added Note 6, Changed Post To W6x9	7/18/78 J.R.
3	Location of hex head nuts and bolts	9/28/77 P.B.
4	Added note 5	9/28/77 P.B.
5	Revised slopes	9/28/77 P.B.
6	CHANGED GUARDRAIL TO METAL BARRIER	2-5-85 D.R.R.
7	Revised note 2	6-25-80 J.R.
8	Revised Ser Number	1-2-80 A.O.
IDENT. NO.	DESCRIPTION	DATE BY

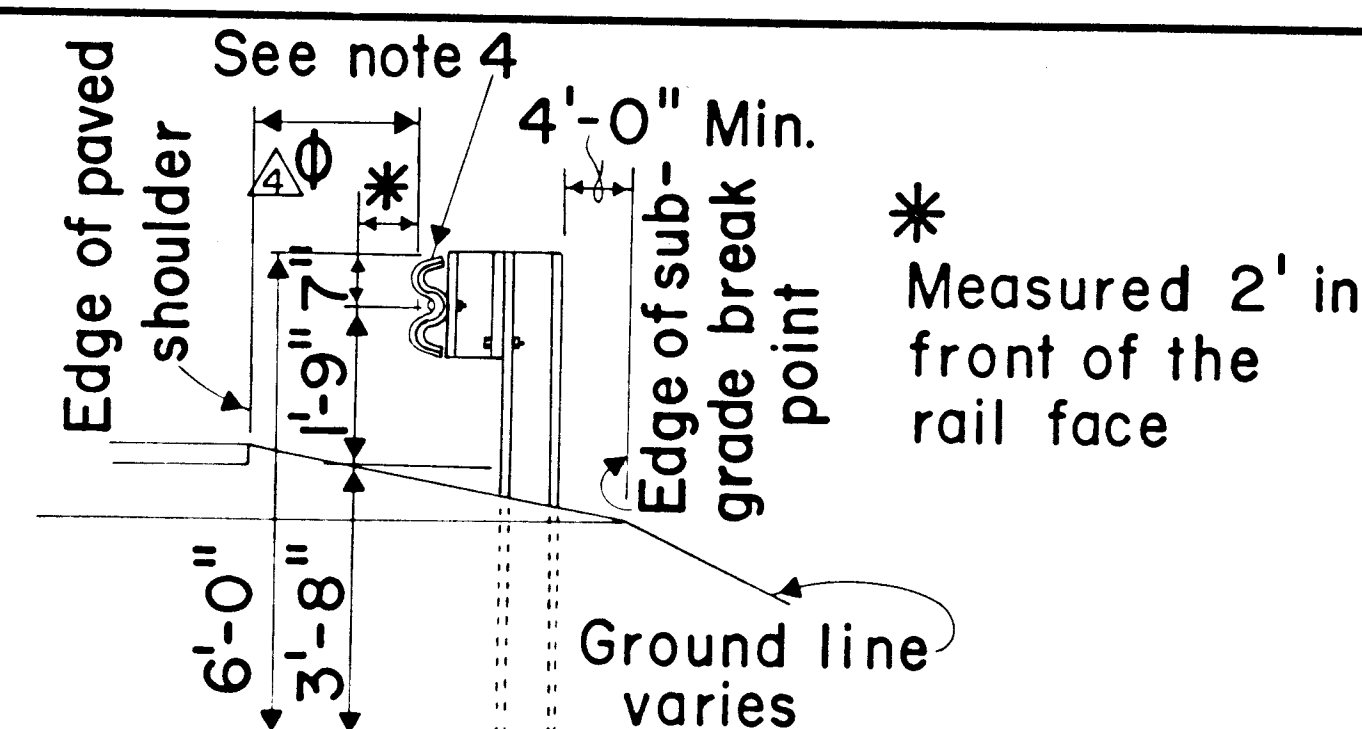
REVISIONS (OR CHANGE NOTICES)

NEW MEXICO
STATE HIGHWAY DEPARTMENT

STEEL METAL BARRIER POSTS

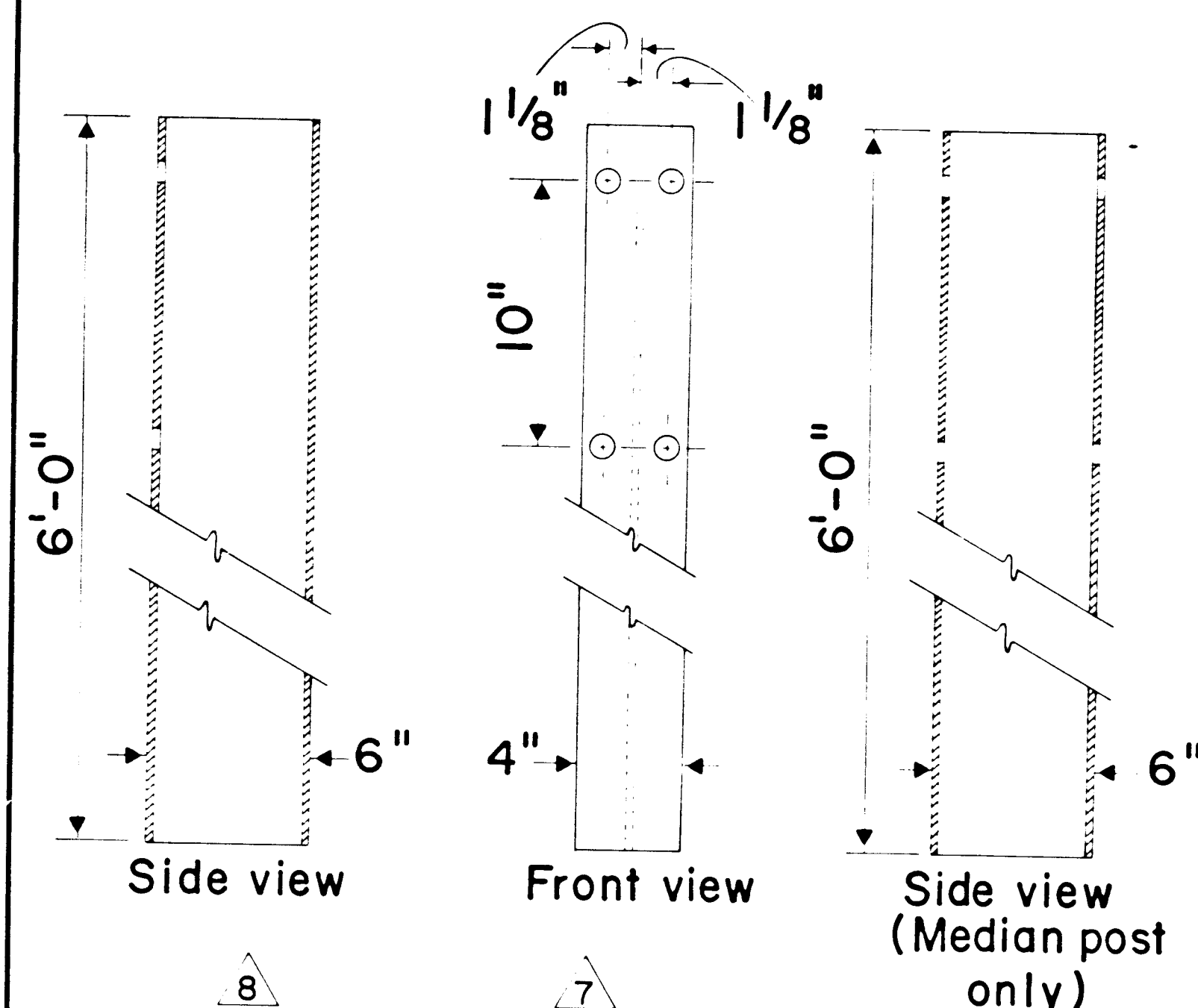
DESIGNED BY J.R.	APPROVAL	3-77
DRAWN BY J.L.M.	RECOMMENDED - TRAFFIC ENGINEER	DATE
CHECKED BY J.R.	APPROVED	3-77
	ENGINEER OF DESIGN	DATE
SERIAL TSGP-001-11		

2195

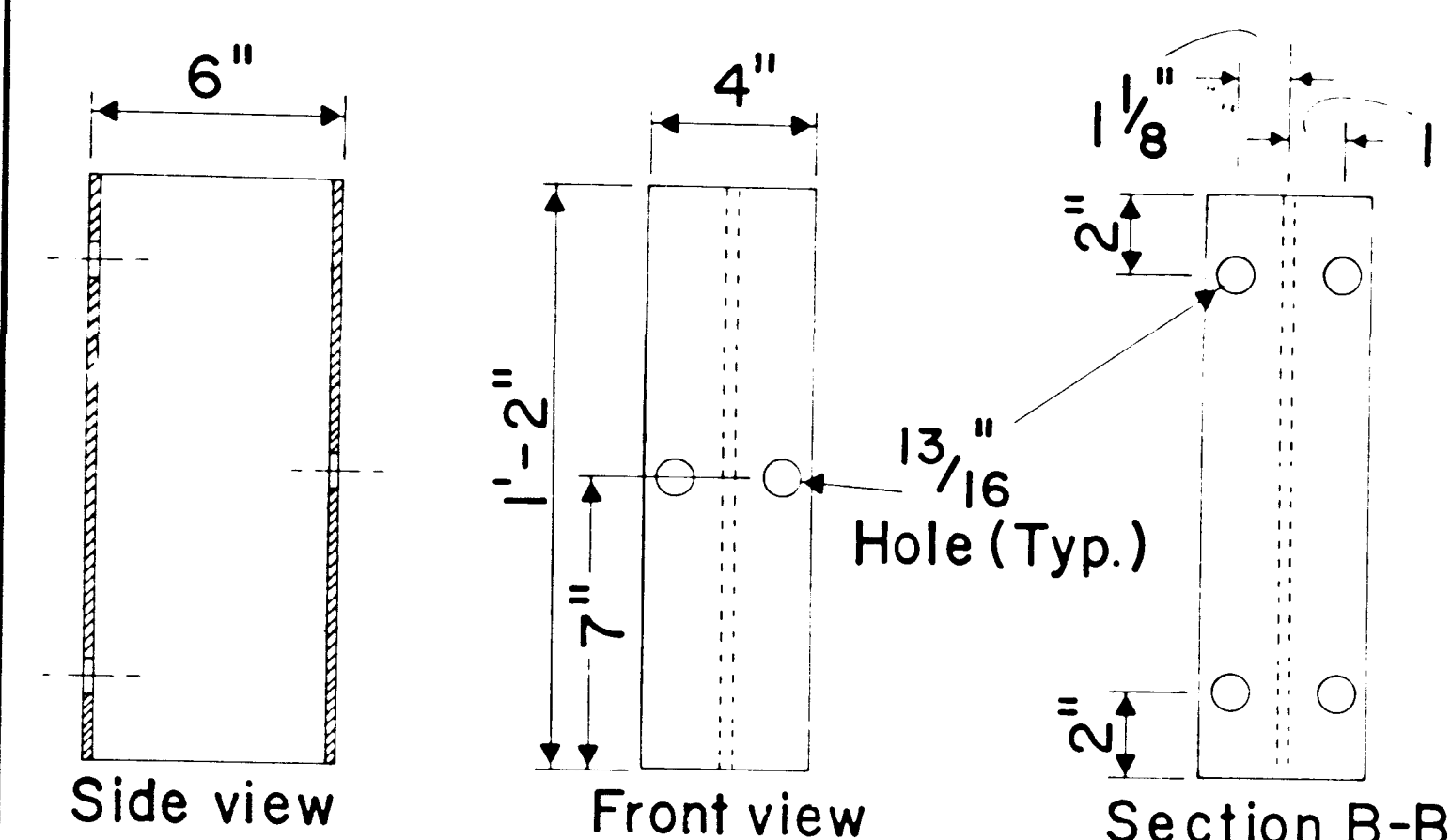


4' 2' min.

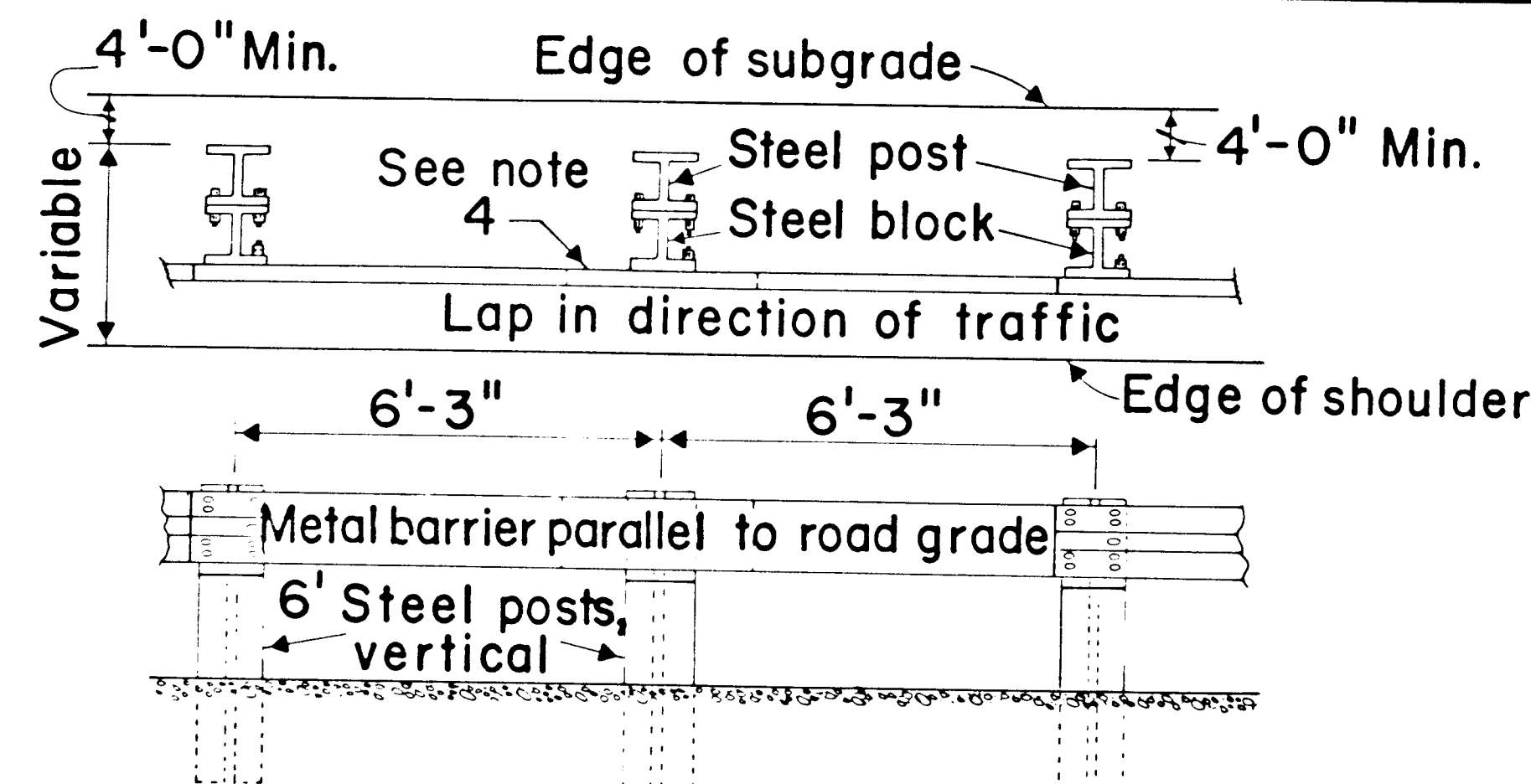
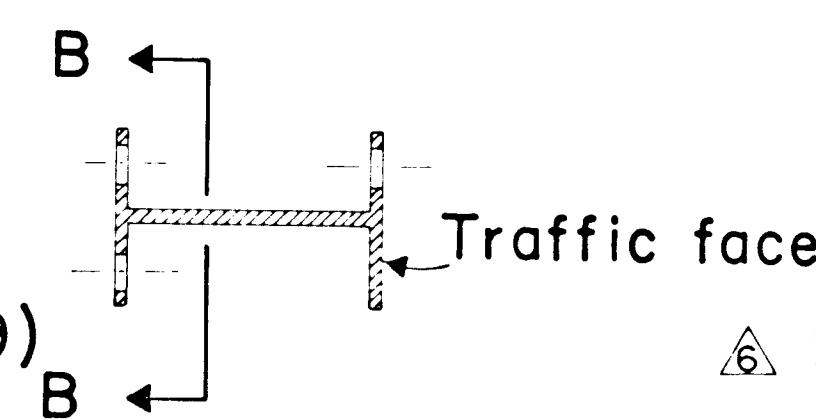
PLACEMENT PROCEDURE



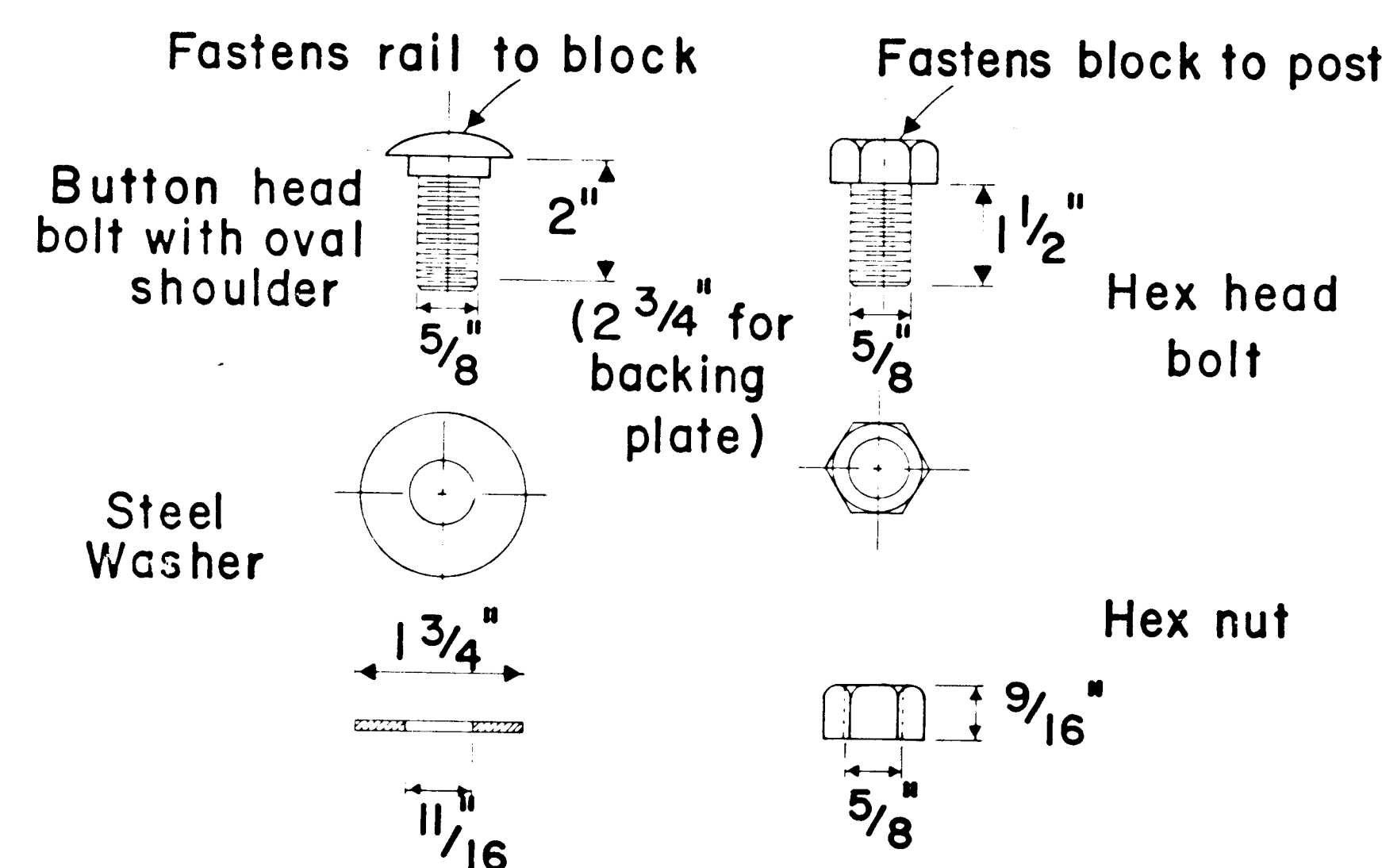
W6 x 8.5 OR W6 x 9 STEEL POST



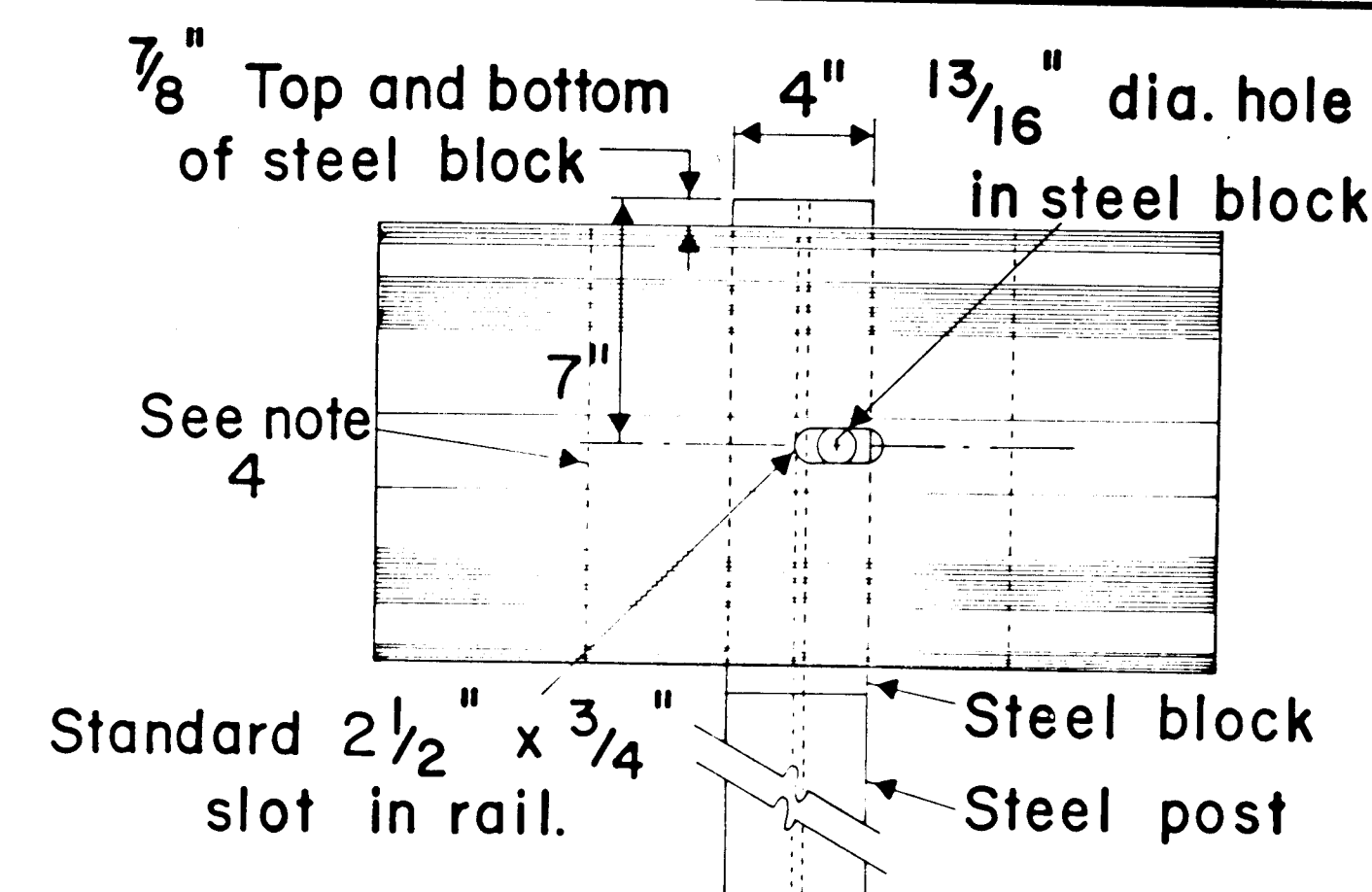
OFFSET STEEL
BLOCK
(W6 x 8.5 OR W6 x 9)



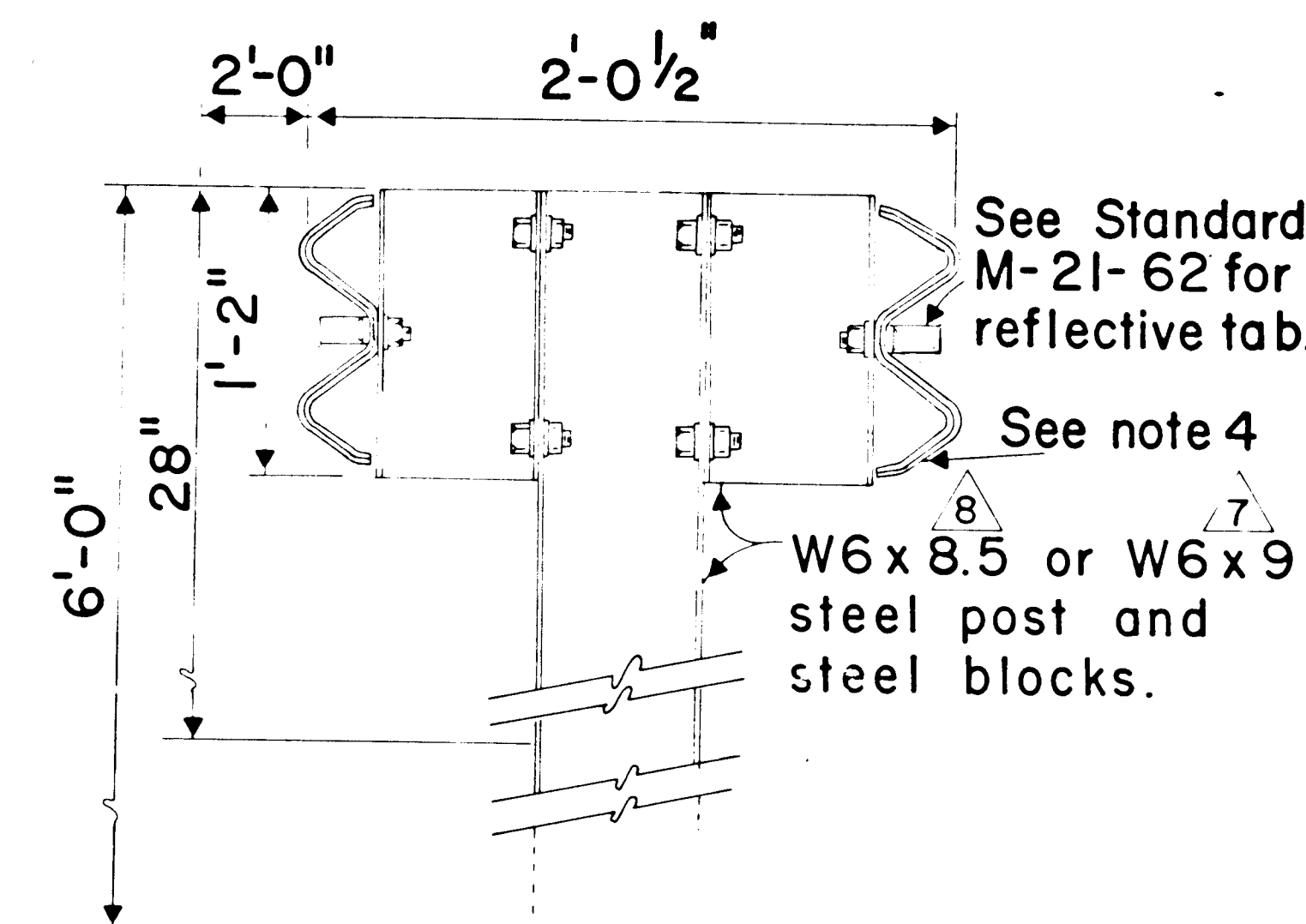
ROADSIDE INSTALLATION



FASTENERS FOR STEEL POSTS

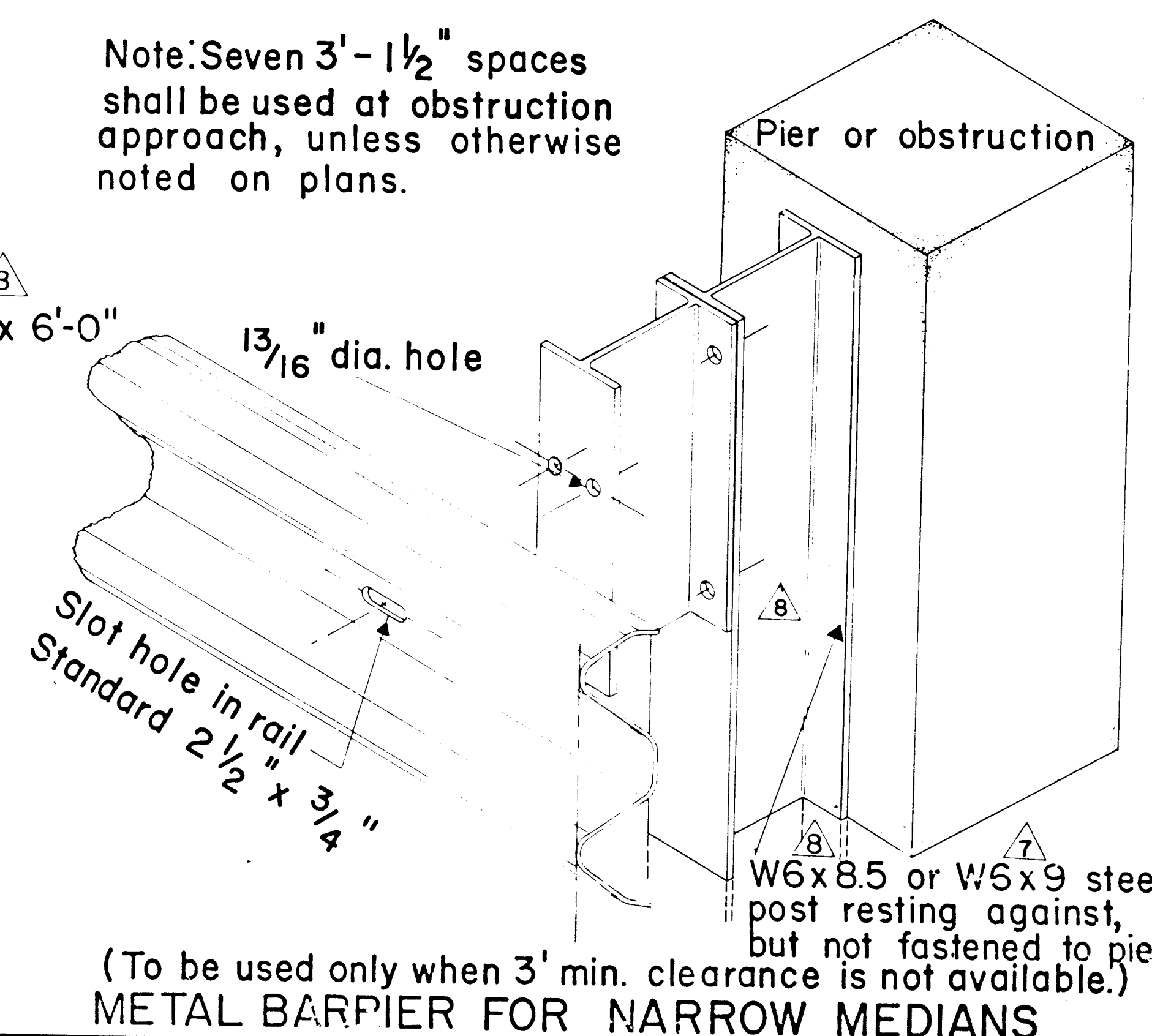


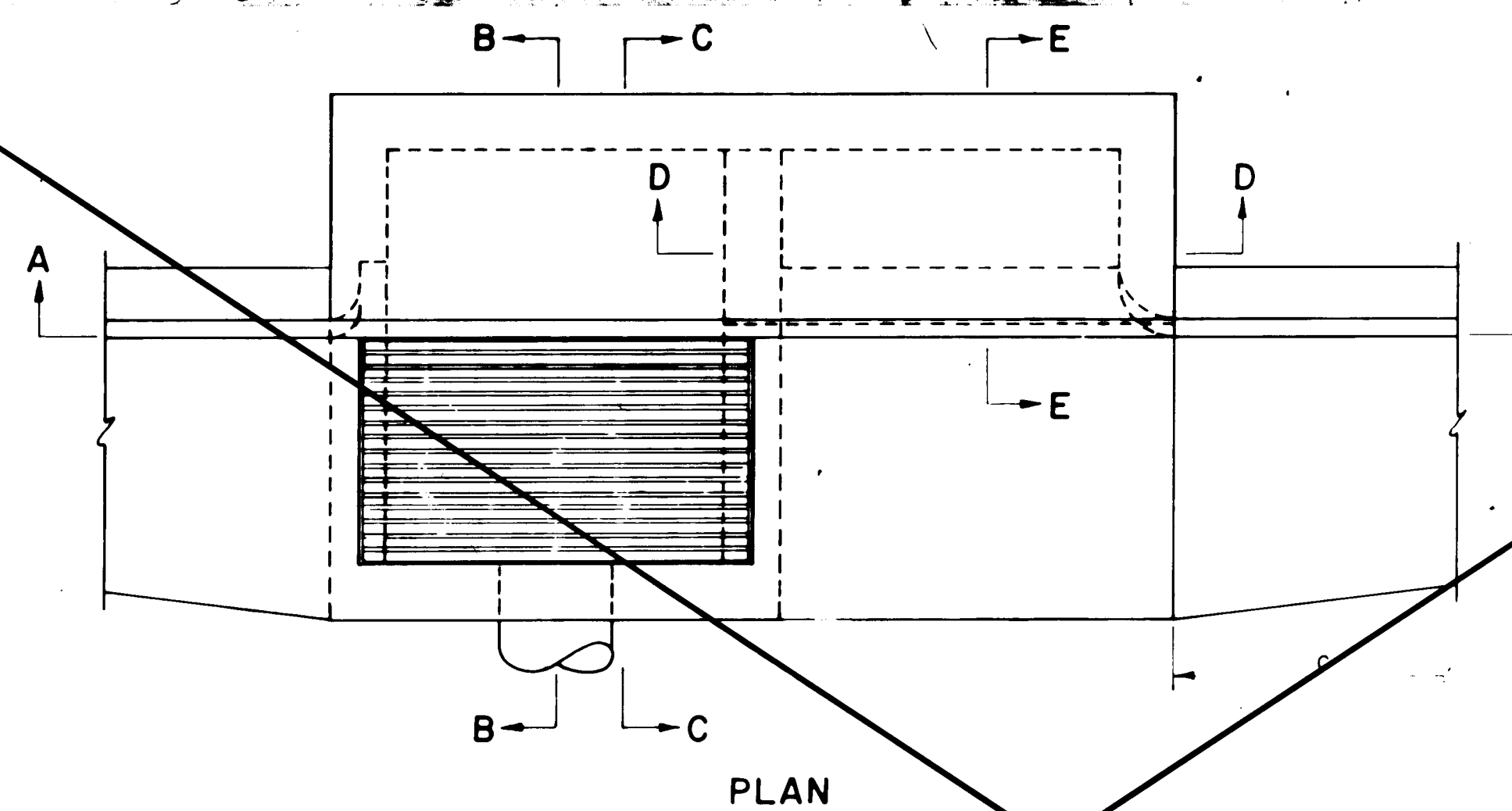
METAL BARRIER AT STEEL POST



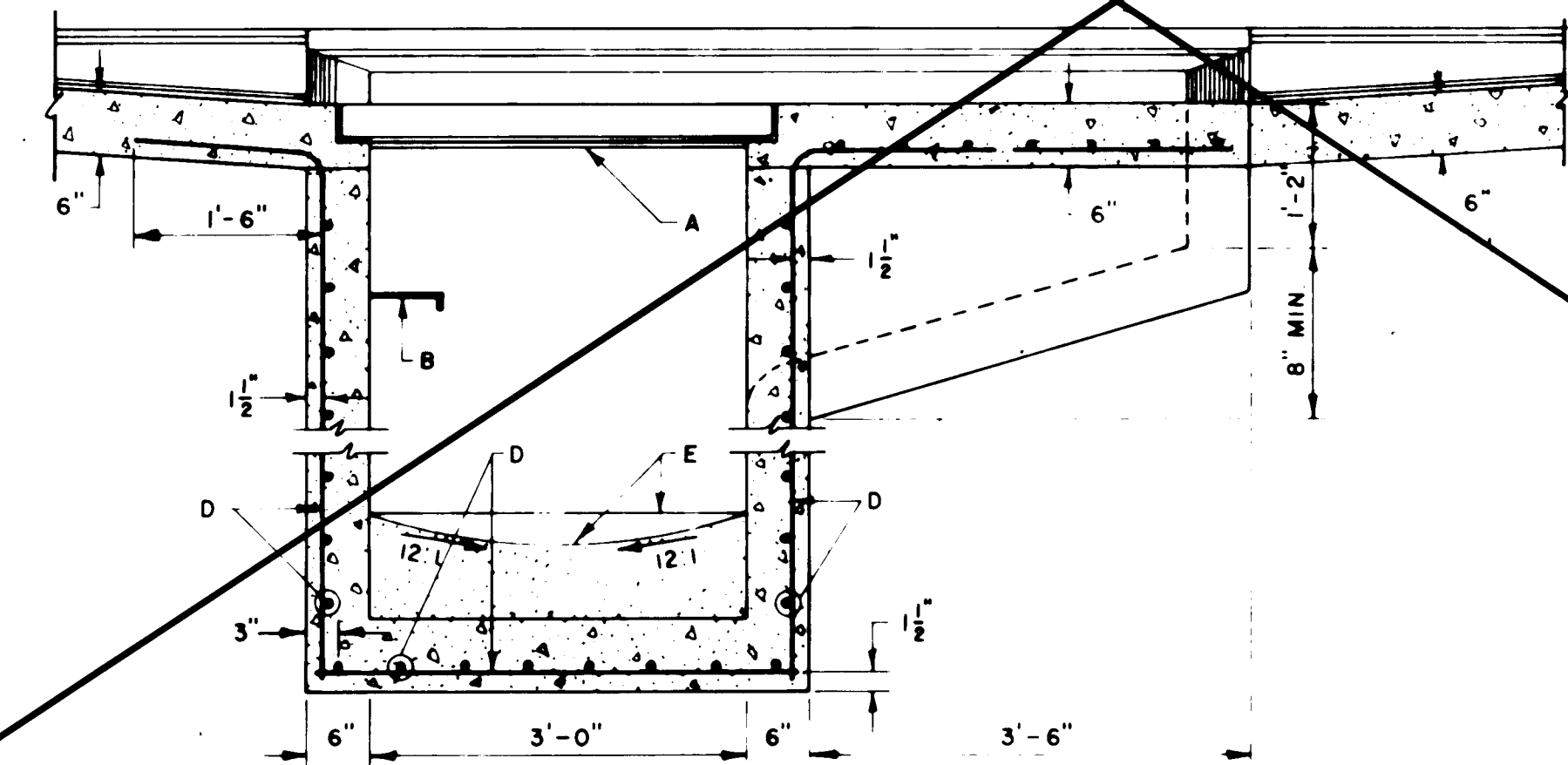
MEDIAN METAL BARRIER WITH STEEL POST

Note: Seven 3'-1 1/2" spaces shall be used at obstruction approach, unless otherwise noted on plans.





PLAN



SECTION A-A

GENERAL NOTES:

1. FRAME OF GRATING SHALL BE WELDED AND/OR RIVETED.
2. AFTER CLEANING SURFACE OF SCALE, RUST ETC., GRATING FRAME AND CENTER SUPPORT TO BE PAINTED WITH ONE SHOP COAT RED OXIDE. TWO FINISH COATS ALUMINUM PAINT (AASHO M69).
3. SEE DWG. K-2 FOR SECTIONS B-B, C-C, D-D & E-E.

CONSTRUCTION NOTES:

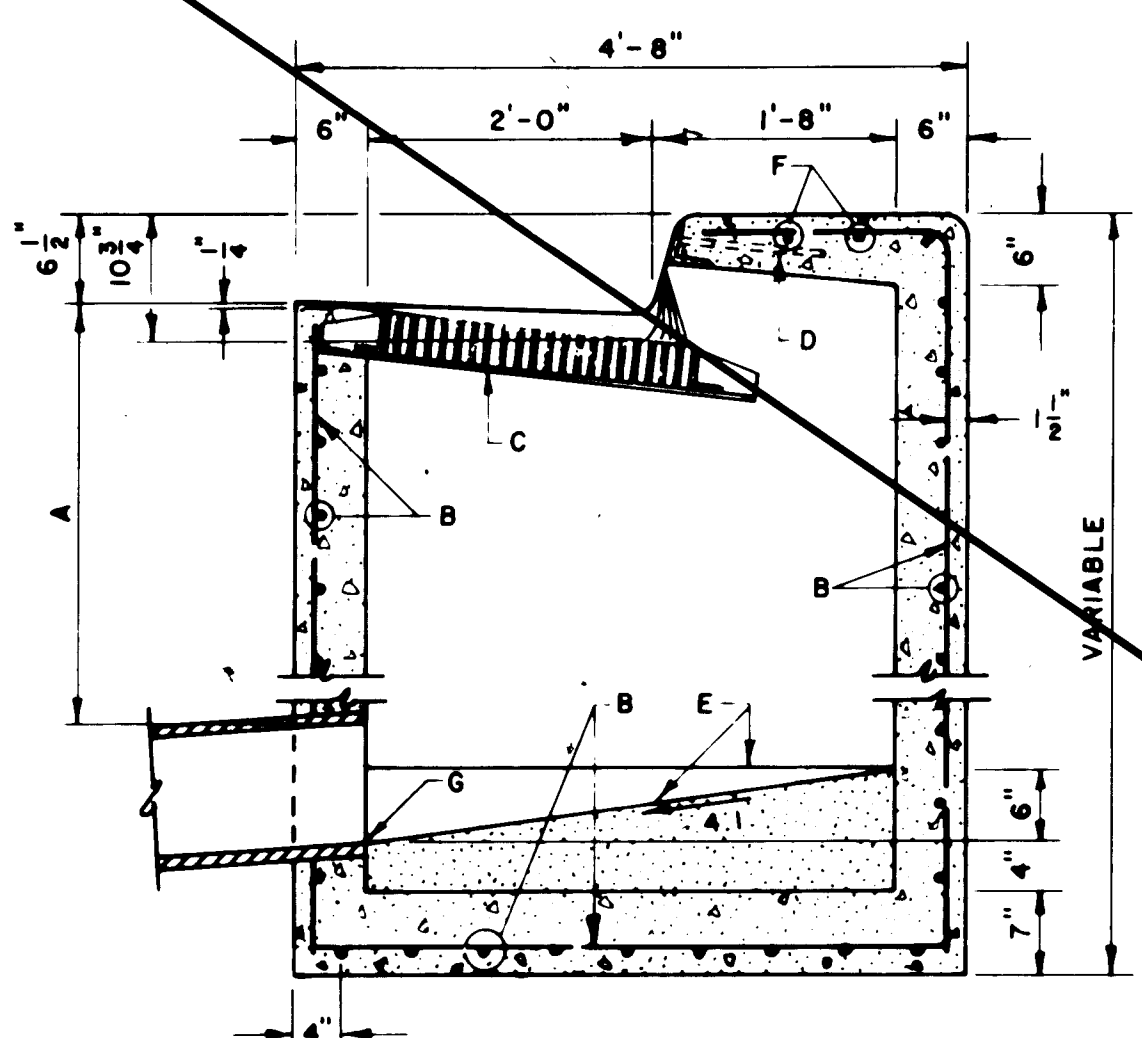
- A. SEE DWG. K-8 FOR FRAME & GRATING DETAILS.
- B. USE STANDARD CHANNEL STEPS, SEE DWG. K-18 FIRST STEP TO BE 18" FROM TOP OF GRATE & SHALL PROTRUDE 7" SPACING BETWEEN STEPS TO BE AT 12" O.C., LAST STEP 18" MAX. FROM BOTTOM.
- C. 3' OR 5' TRANSITION. SEE DWG. K-7.
- D. NO. 4 BARS AT 6" O.C. EACH WAY.
- E. CONC. FILL, MIN. 4:1 SLOPE TOWARD OUTLET, 12:1 TRANSVERSE.

CITY OF ALBUQUERQUE

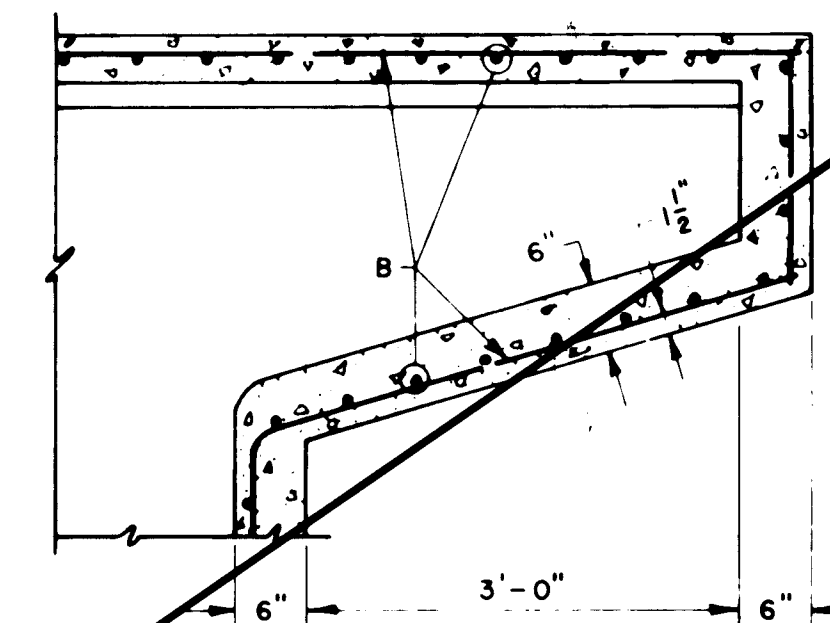
DRAINAGE
CATCH BASIN TYPE "A"
PLAN & SECTION A-A
DWG. K-1-2

REVISIONS
1-26-81
6-10-82

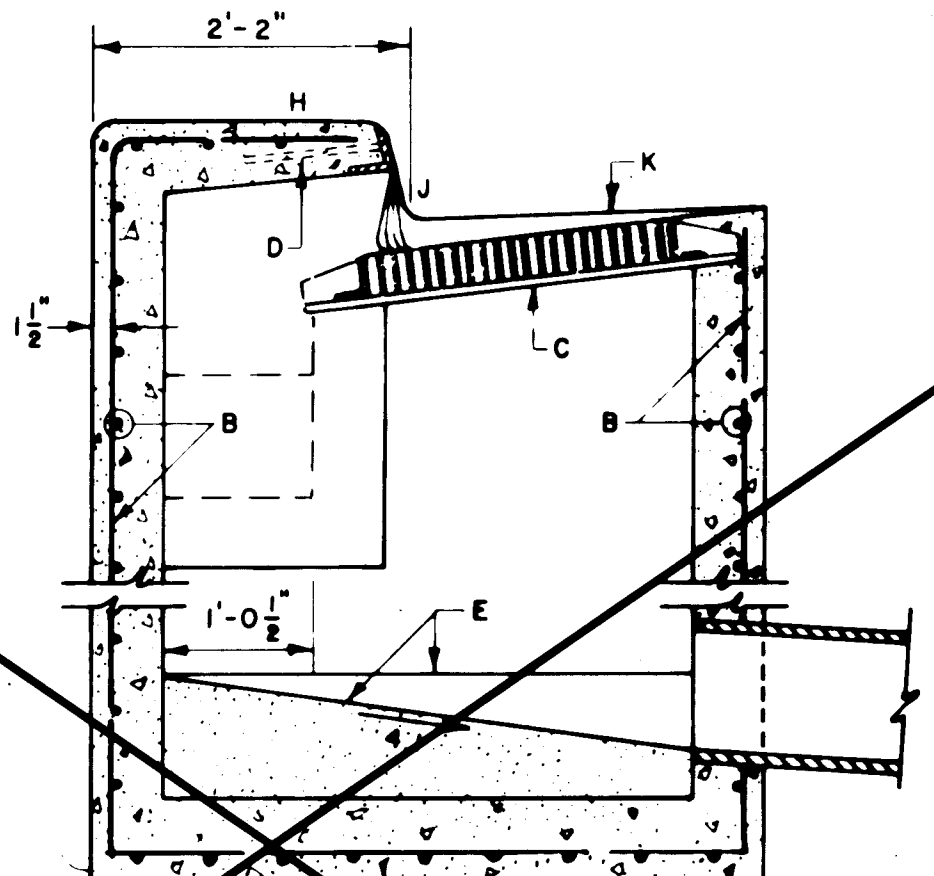
NOV. 1979



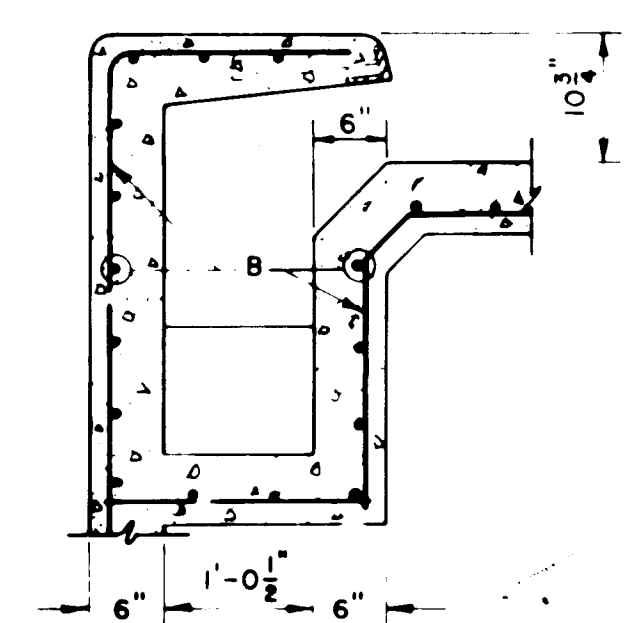
SECTION B-B



SECTION D-D



SECTION C-C



SECTION E-E

GENERAL NOTES:

1. FRAME OF GRATING SHALL BE WELDED AND/OR RIVETED.
2. AFTER CLEANING SURFACE OF SCALE, RUST ETC., GRATING FRAME AND CENTER SUPPORT TO BE PAINTED WITH ONE SHOP COAT RED OXIDE. TWO FINISH COATS ALUMINUM PAINT (AASHO M69).

CONSTRUCTION NOTES:

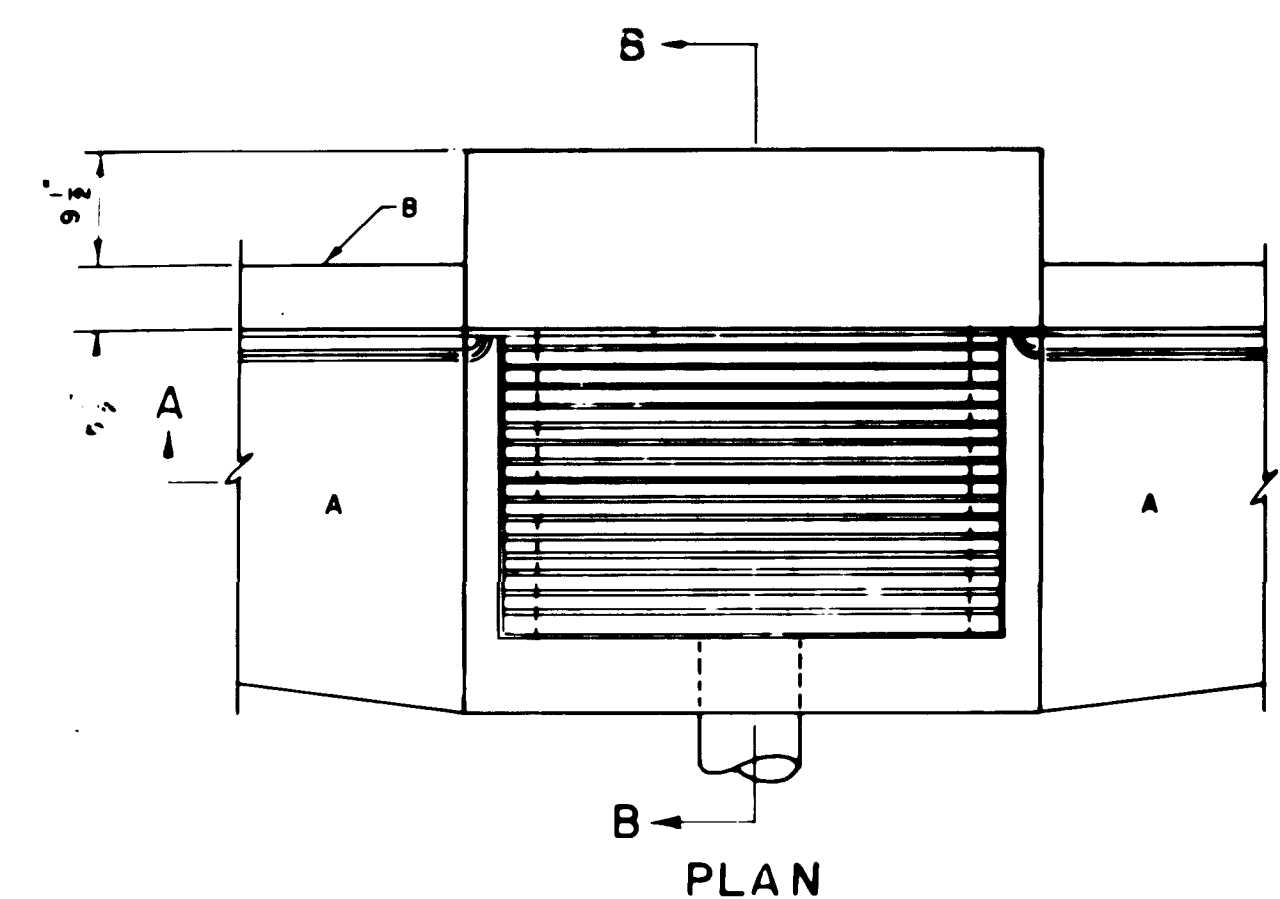
- A. 1'-10" MIN. UNLESS OTHERWISE DIRECTED.
- B. NO. 4 BARS AT 6" O.C. EACH WAY.
- C. SEE DWG. K-8 FOR FRAME & GRATING DETAILS.
- D. SEE DWG. K-4 FOR ANCHOR DETAIL.
- E. CONC. FILL, SEE NOTE E, DWG. K-1.
- F. EXTEND NO. 4 BARS 18" INTO CURB ON EACH SIDE OF CATCH BASIN.
- G. INVERT PER DESIGN.
- H. TOP OF CURB.
- J. FLOWLINE.
- K. NORMAL GUTTER LINE.

CITY OF ALBUQUERQUE

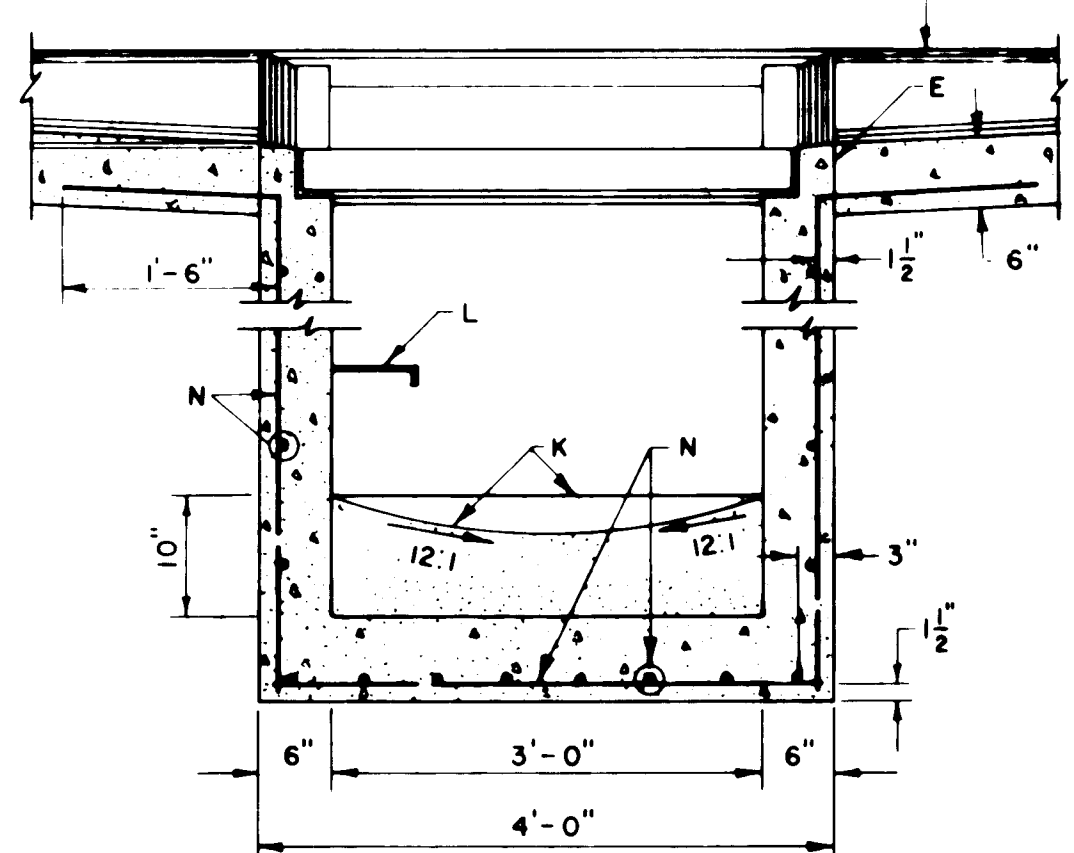
DRAINAGE
CATCH BASIN TYPE "A"
SECTIONS B-B, C-C, D-D & E-E
DWG. K-2-2

REVISIONS
1-26-81
6-28-82

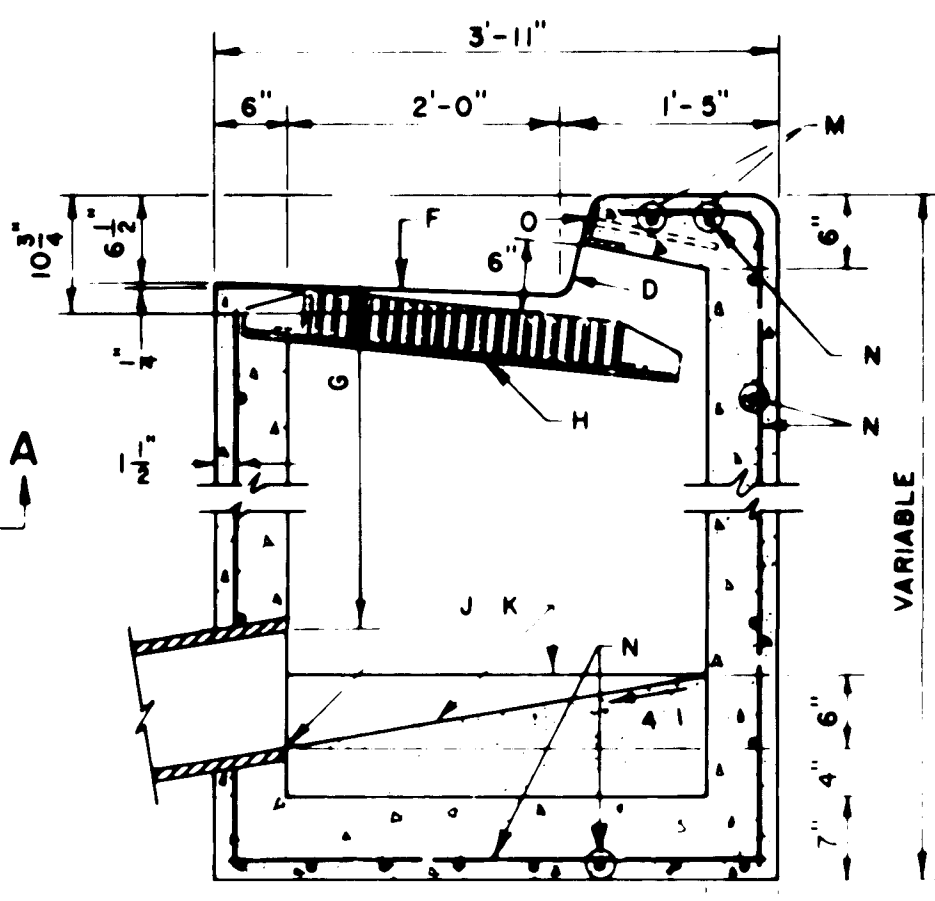
NOV. 1979



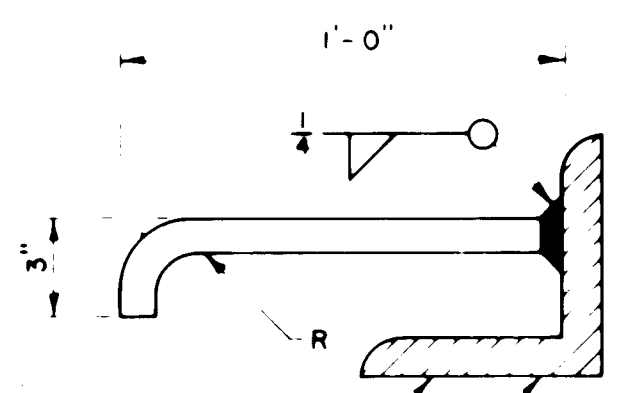
PLAN



SECTION A-A



SECTION B-B



ANCHOR DETAIL

GENERAL NOTES:

1. OUTLET PIPE SIZE PER DESIGN REQUIREMENT.

CONSTRUCTION NOTES:

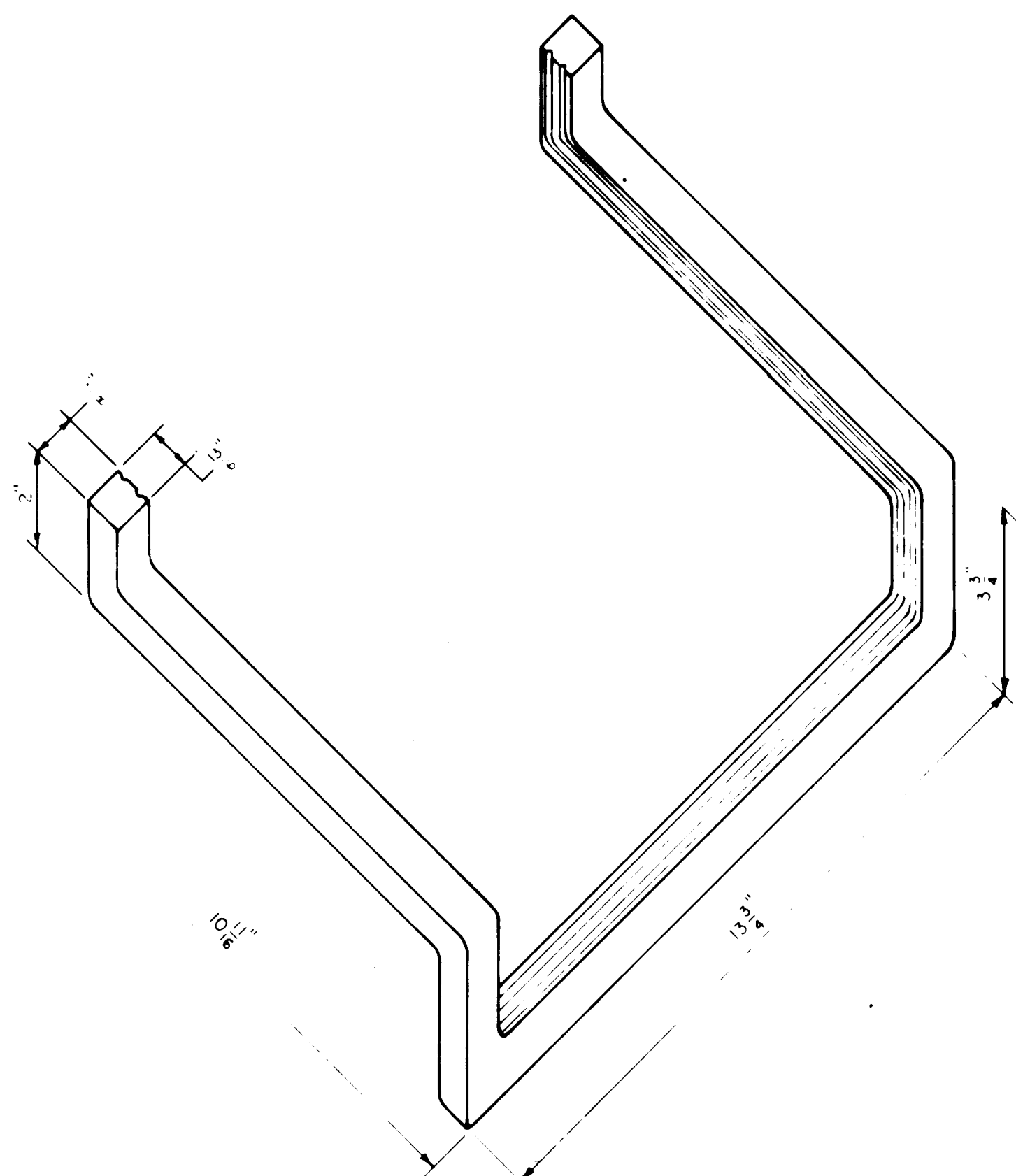
- A. FOR GUTTER TRANSITION, SEE DWG. K-7 CATCH BASIN LOCATION.
- B. BACK OF CURB.
- C. TOP OF CURB.
- D. FLOWLINE.
- E. CONSTRUCTION JOINT.
- F. NORMAL GUTTER LINE.
- G. 1'-10" MIN UNLESS OTHERWISE DIRECTED.
- H. SEE DWG. K-8 FOR FRAME AND GRATING DETAILS.
- J. INVERT PER DESIGN.
- K. CONC. FILL, SEE NOTE E, DWG. K-1.
- L. USE STD. CHANNEL STEPS, SEE DWG. K-18 FIRST STEP SHALL BE 18" FROM TOP OF GRATE AND SHALL PROTRUDE 7" SPACING AT 12" O.C. LAST STEP 18" MAX. FROM BOTTOM.
- M. EXTEND NO. 4 BARS 18" INTO CURB ON EACH SIDE OF CATCH BASIN.
- N. NO. 4 BARS AT 6" O.C. EACH WAY.
- O. SEE ANCHOR DETAIL, THIS DWG.
- P. 3 1/2" x 3 1/2" x 1/2" x 4'-0" FOR SINGLE GRATE C CATCH BASIN.
- Q. 3 1/2" x 3 1/2" x 1/2" x 7'-6" FOR DOUBLE GRATE C CATCH BASIN.
- R. NO. 4-1'-3" ANCHOR AT 1'-9" O.C.

CITY OF ALBUQUERQUE

DRAINAGE
CATCH BASIN SINGLE "C"
DWG. K-4-2

REVISIONS
1-26-81
6-4-82

NOV. 1979



TYPICAL CHANNEL STEP DETAIL

GENERAL NOTES:

1. ALUMINUM STEP, ALCOA NO. 12653A OR APPROVED EQUAL. STEPS TO BE PLACED AS NOTED ON PLANS.

CITY OF ALBUQUERQUE

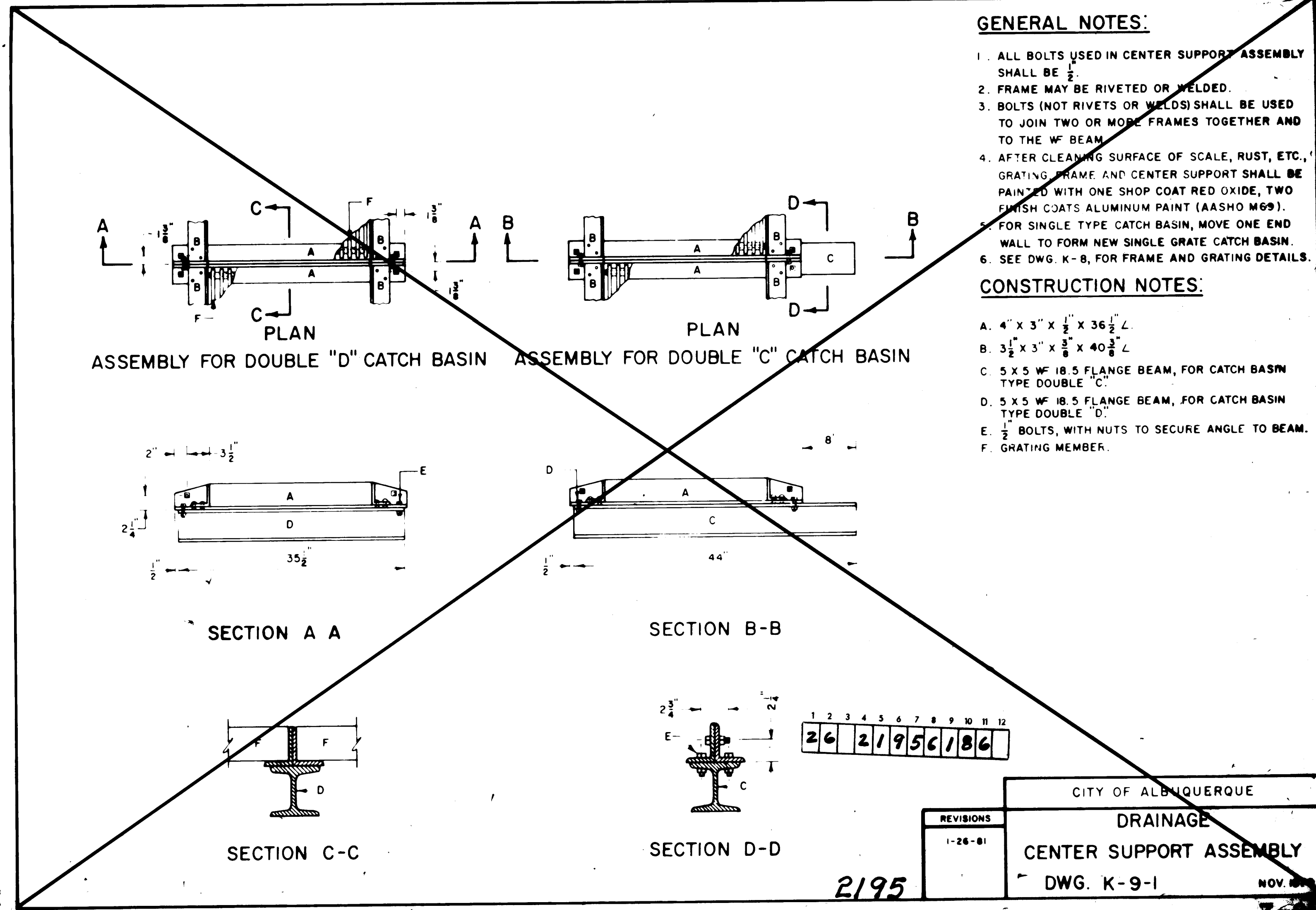
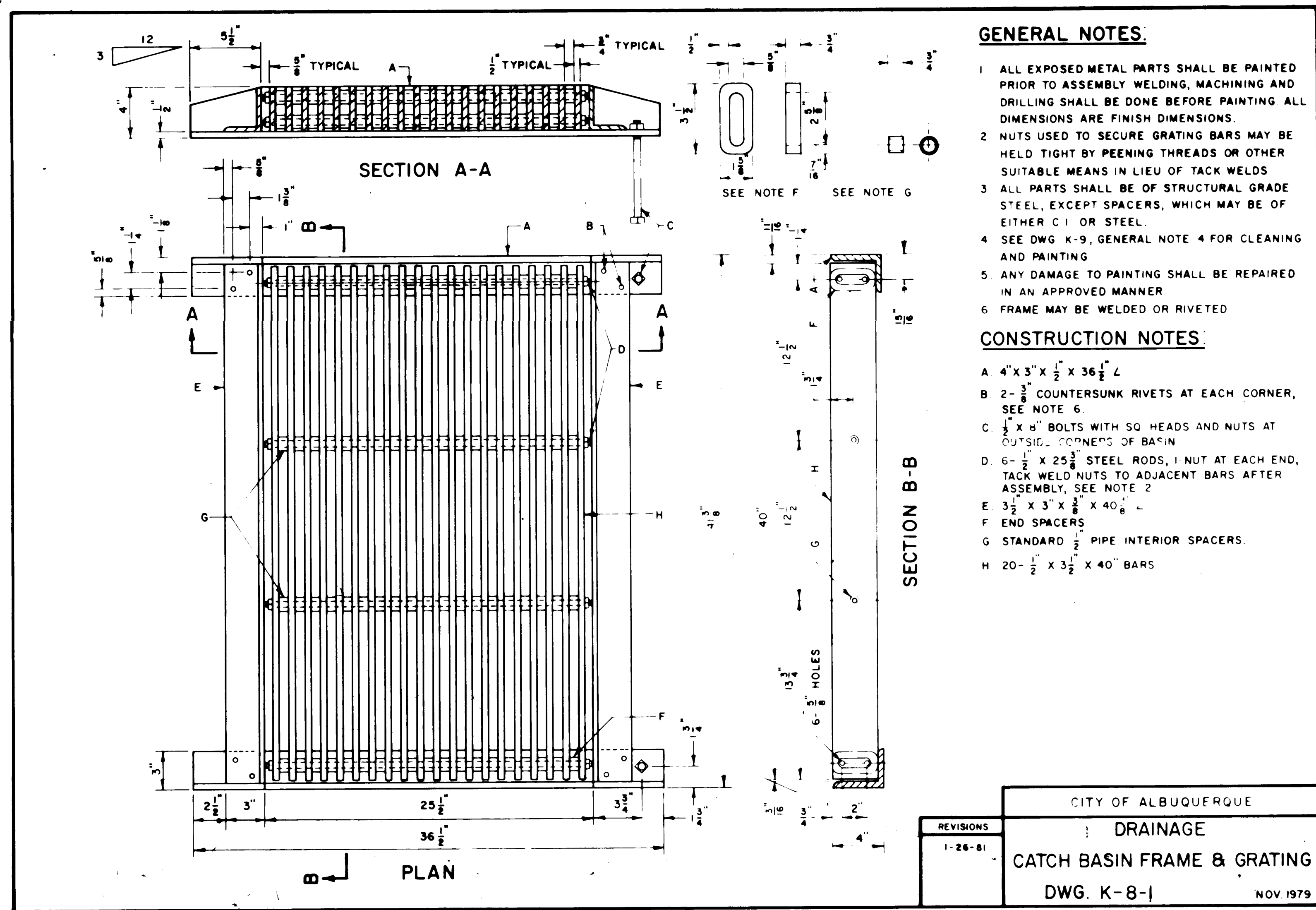
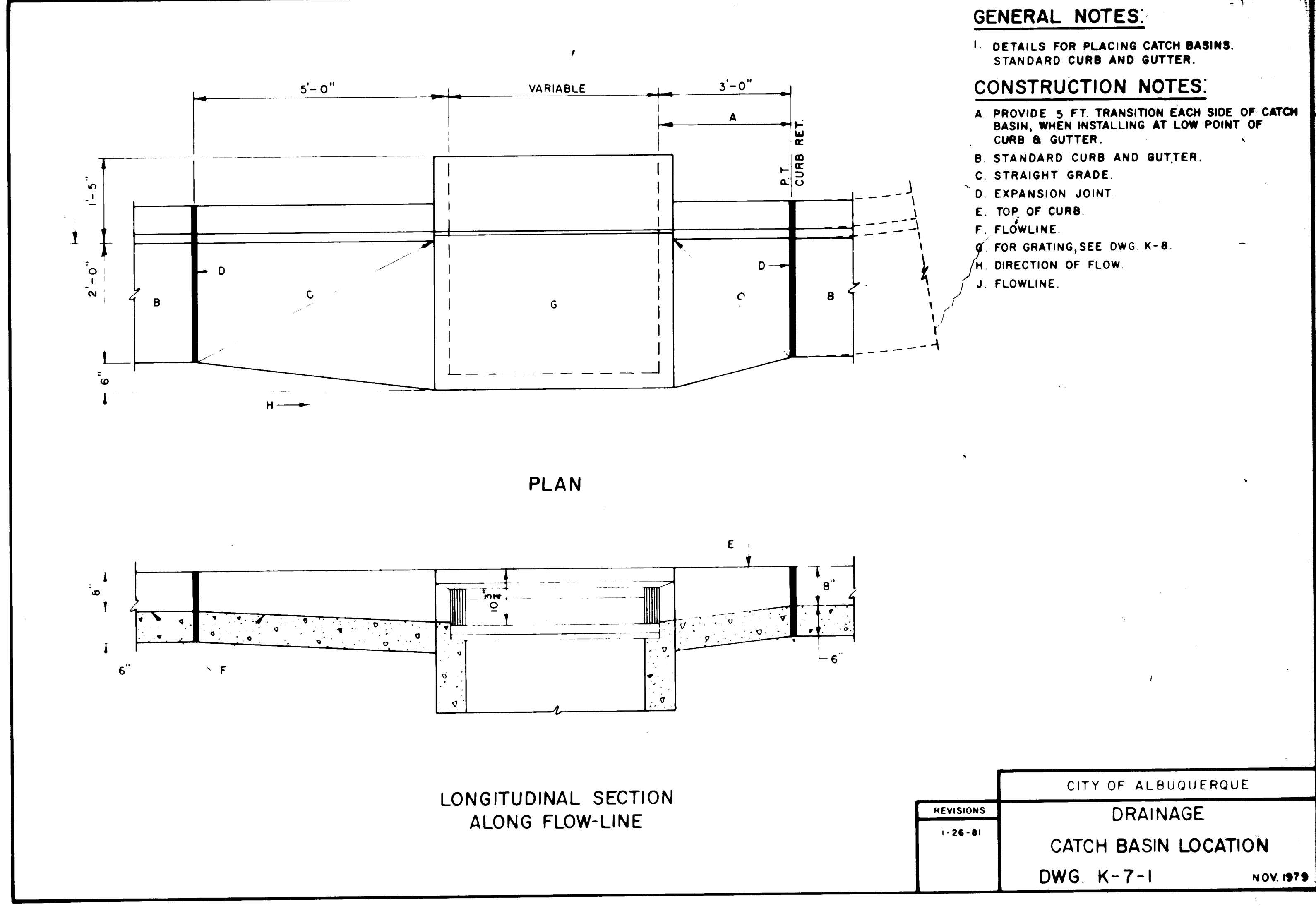
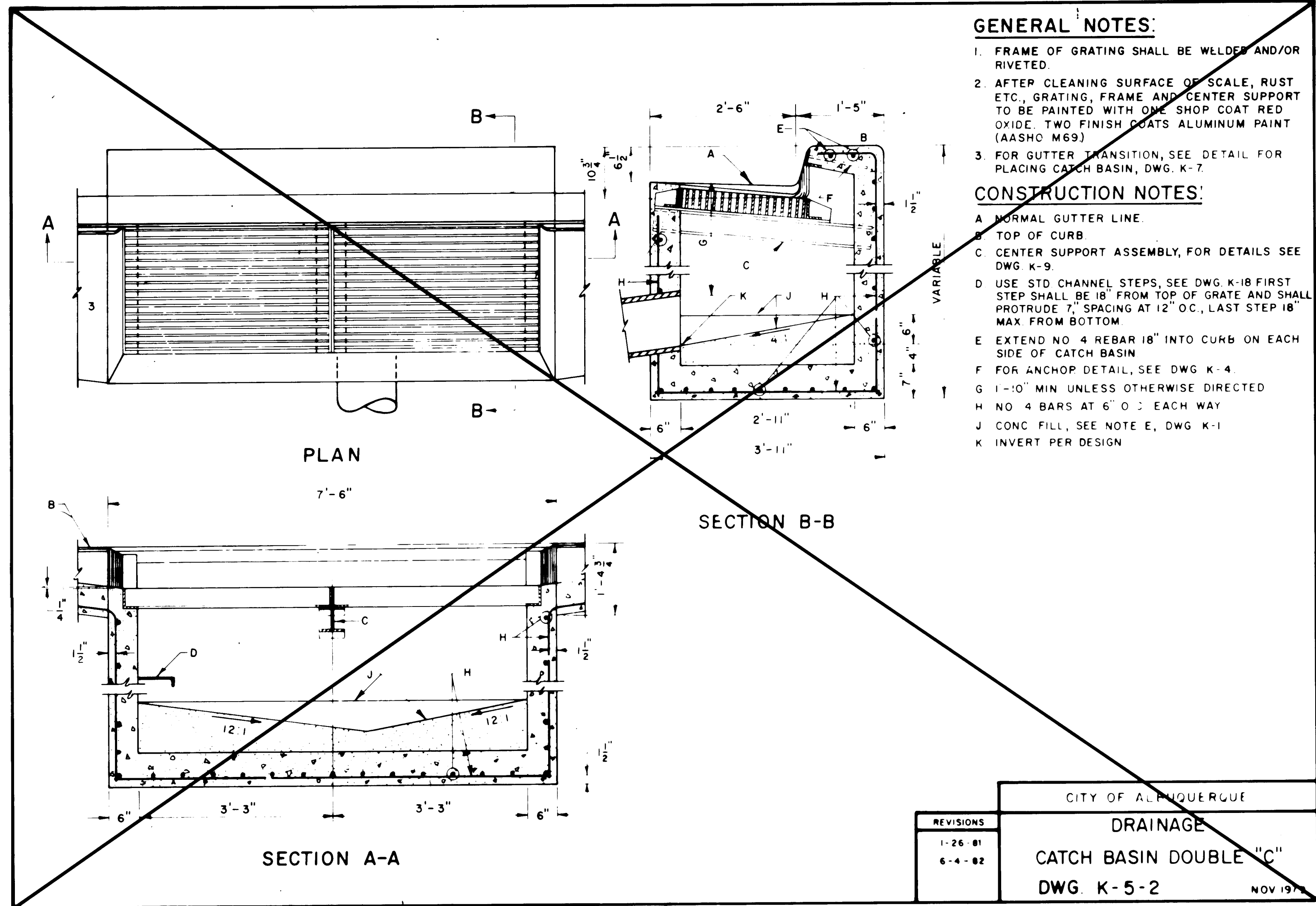
DRAINAGE
CHANNEL STEP DETAIL
DWG. K-18-1

REVISIONS
6-10-82

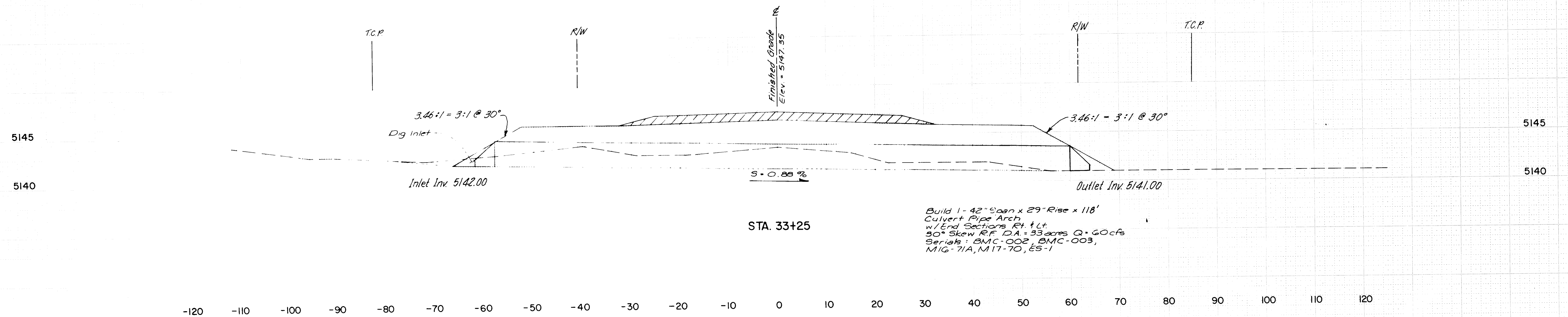
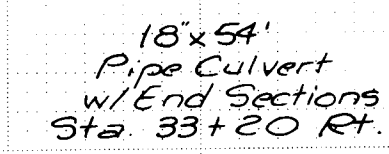
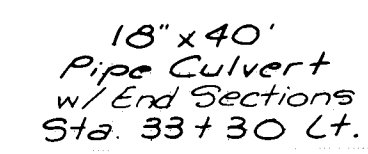
JAN. 1980

26 21956086

2195



ORIGINAL	BY _____	DATE _____
SURVEY		
NOTED		
BOOK		



Build 1-42" Span x 29" Rise x 118'
Culvert Pipe Arch
w/End Sections Rt. & Lt.
50° Skew R.F. D.A. = 33 acres Q = 60 cfs
Serials: BMC-002, BMC-003,
MIG-71A, M17-70, ES-1

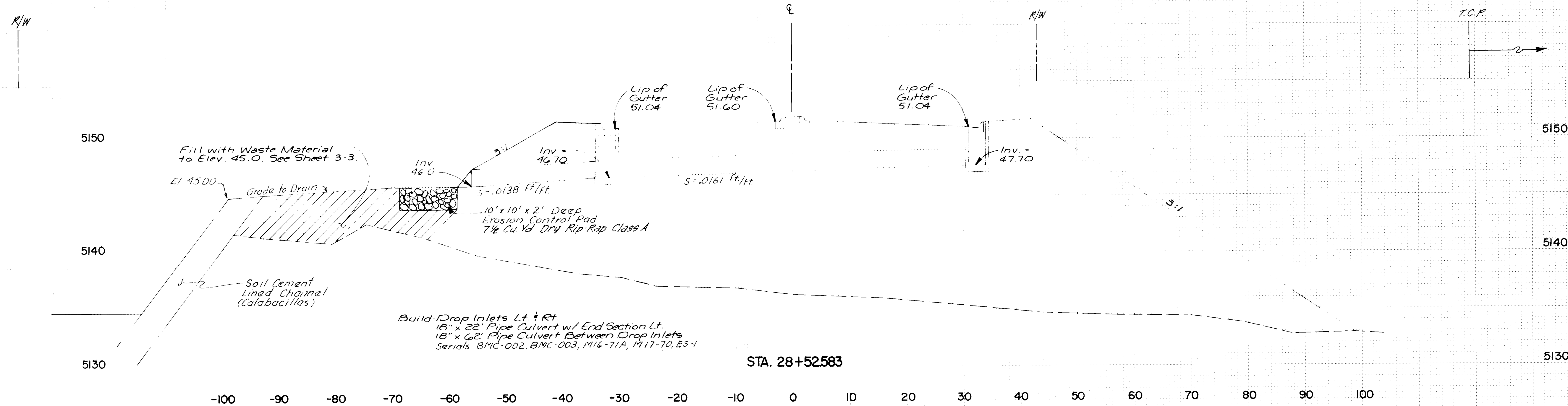
SCALE: $1'' = 5'$ Vert.
 $1'' = 10'$ Horiz.

Walter H. Dahlen
11/20/84

1	2	3	4	5	6	7	8	9	10	11	
2	6			2	1	9	5	6	2	8	6

FINAL SURVEY	SURVEYED PLOTTER	DATE
NO.	AREAS CHECKED	

ORIGINAL SURVEY	SURVEYED PLOTTER	DATE
NO.	AREAS CHECKED	



RECORD DRAWINGS
12/4/84

M. A. D. D. D.

11/28/84

SCALE: 1" = 5' Vert.
1" = 10' Horiz.

26 21956306

FINAL SURVEY	SURVEYED _____		BY _____	DATE _____
	NOTE BOOK	PLOTTED _____ TEMPLATE _____ AREAS _____ AREAS CHECKED _____		
NO _____				

GRID PAPER



FINAL SURVEY	NO.	SURVEYED PLOTTED CHECKED AREAS CHECKED	BY	DATE

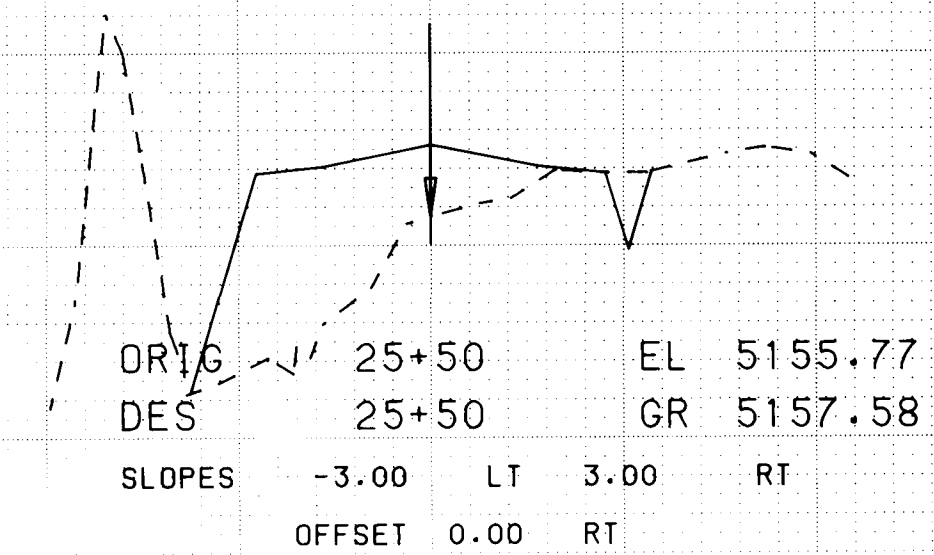
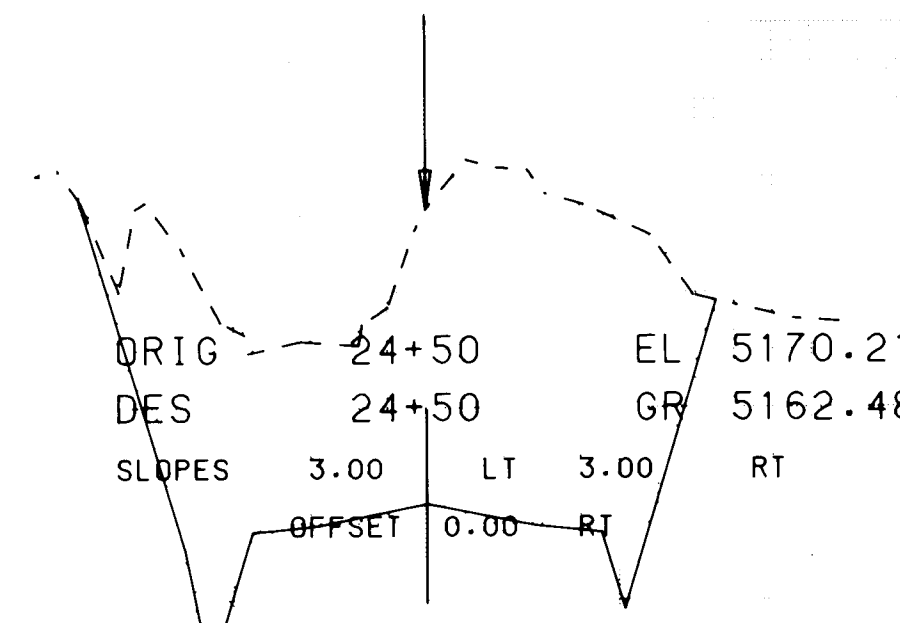
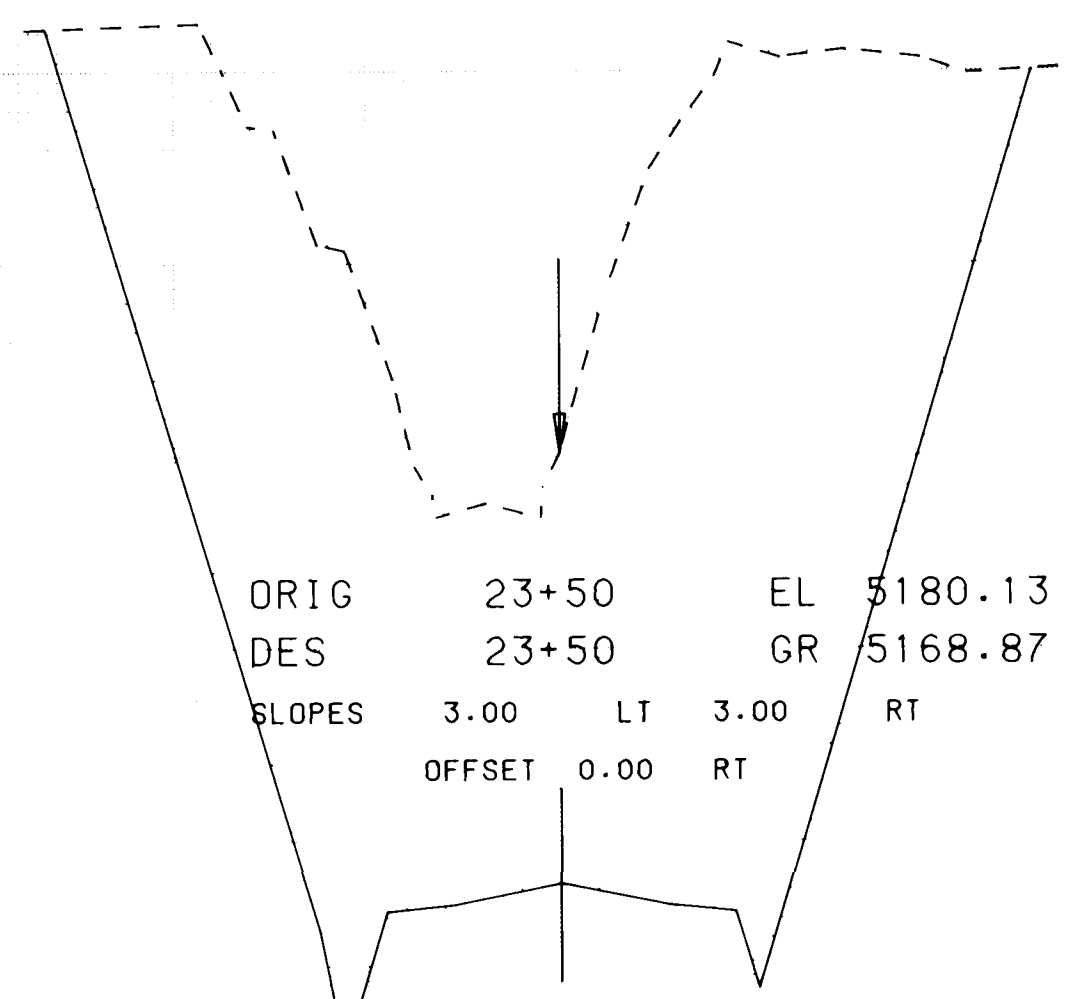
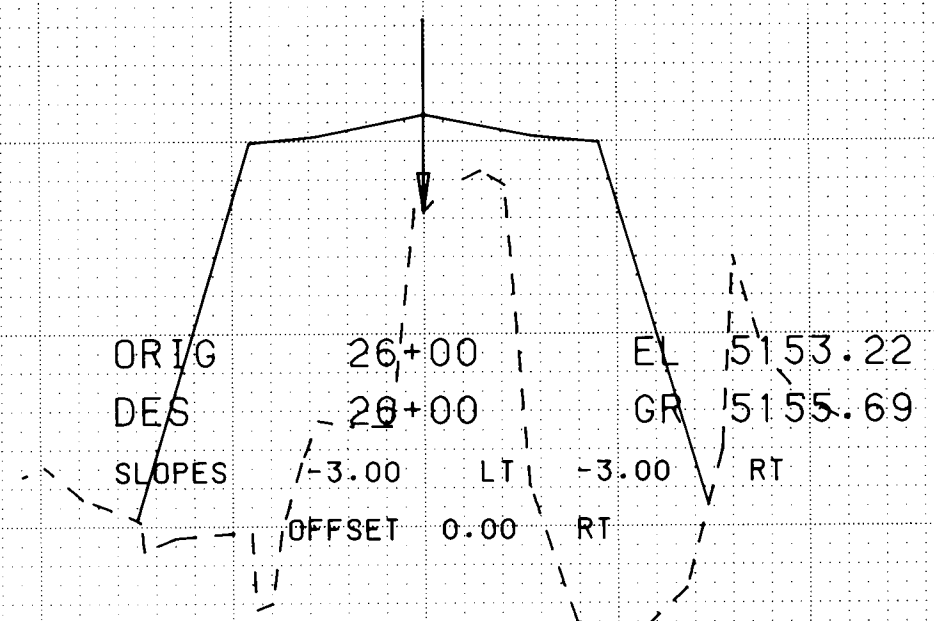
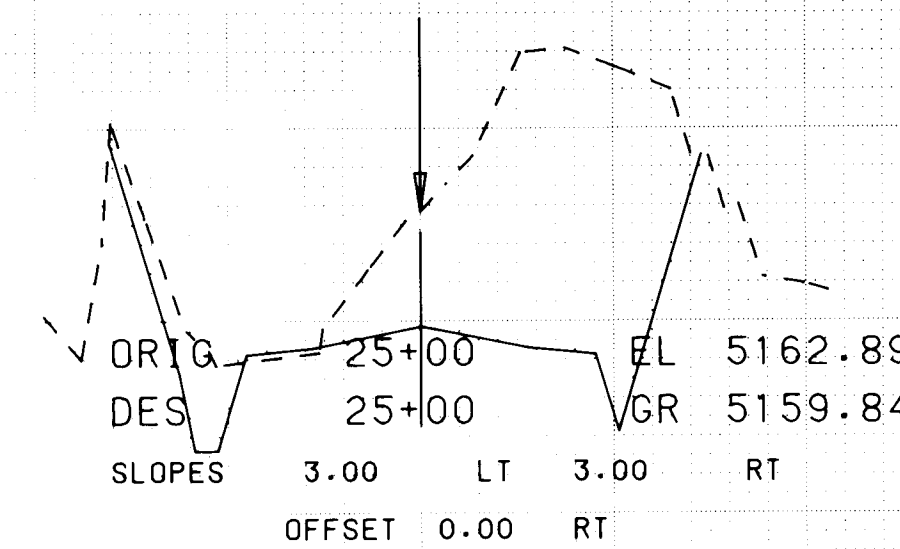
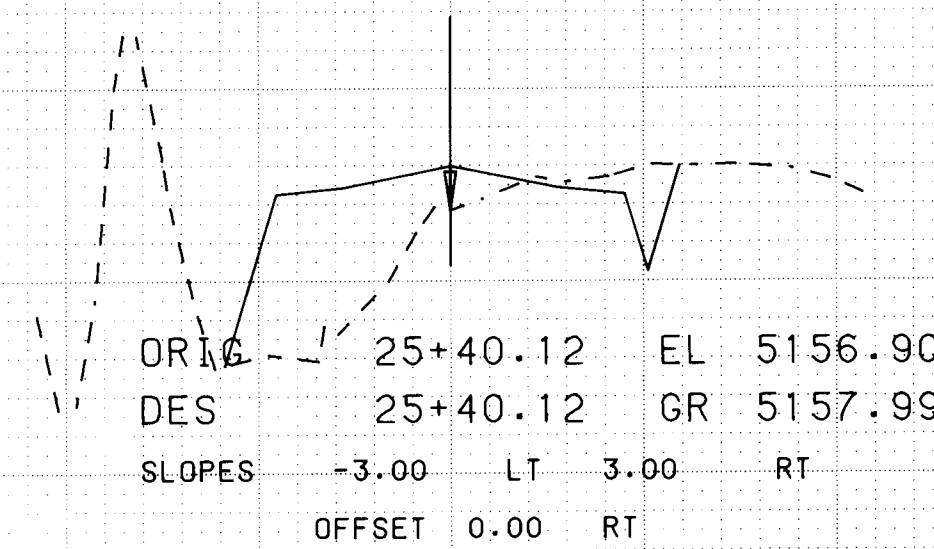
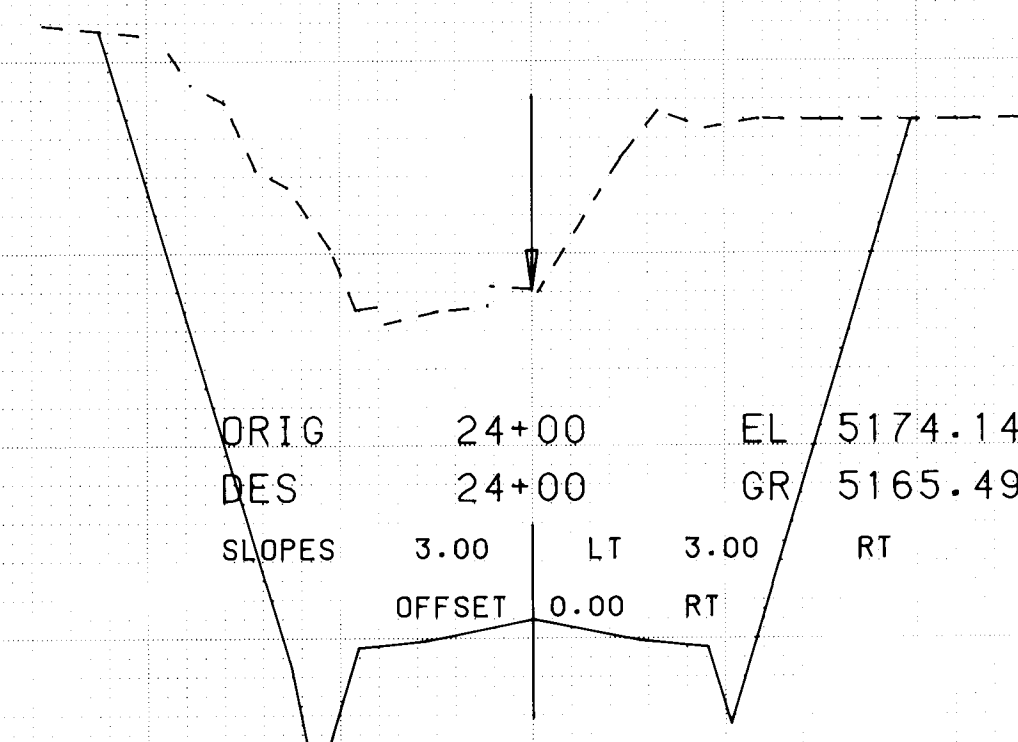
ORIGINAL SURVEY	NO.	SURVEYED PLOTTED CHECKED AREAS CHECKED	BY	DATE

GRID PAPER

JOB NO. GOLF
SCALE

H = 1 INCH = 50.0 FEET
V = 1 INCH = 5.0 FEET

-200 -100 0 100 200 -200 -100 0 100 200 -200 -100 0 100 200



26 21956586

FINAL	SURVEYED	DATE
SURVEY	PLOTTED	BY
NOTE BOOK	DATE	
NO	AREAS CHECKED	

ORIGINAL	SURVEYED	DATE
SURVEY	PLOTTED	BY
NOTE BOOK	DATE	
NO	AREAS CHECKED	

GRID PAPER

JOB NO. GOLF

SCALE

H = 1 INCH = 50.0 FEET

V = 1 INCH = 5.0 FEET

-200

-100

0

100

200

-100

0

100

200

-200

-100

0

100

200

1 2 3 4 5 6 7 8 9 10 11 12
26 21956686

ORIG 26+50 EL 5138.09
DES 26+50 GR 5154.18
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

ORIG 28+00 EL 5135.34
DES 28+00 GR 5151.77
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

ORIG 29+00 EL 5140.10
DES 29+00 GR 5150.77
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

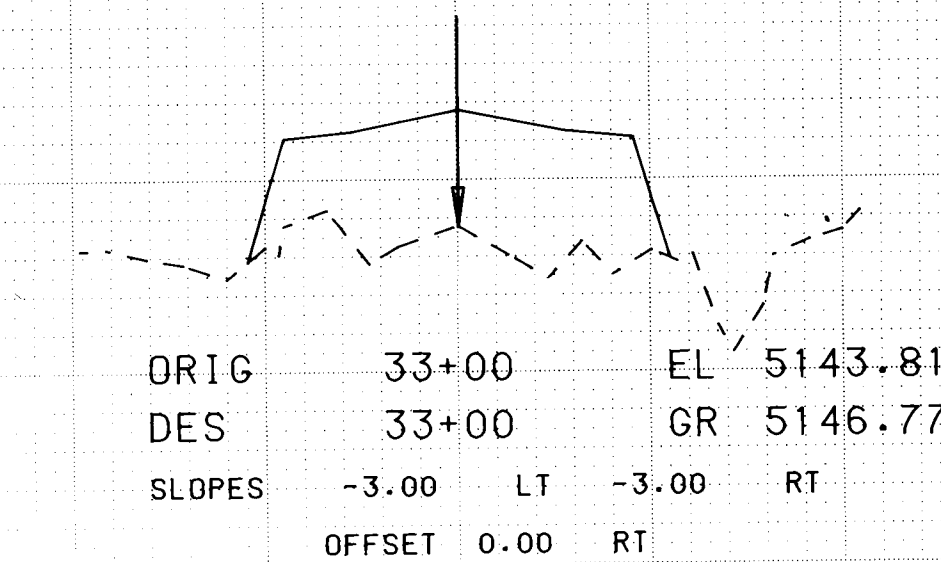
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DES 26+18 GR 5155.10
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

ORIG 27+00 EL 5136.79
DES 27+00 GR 5153.04
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

ORIG 28+50 EL 5136.50
DES 28+50 GR 5151.27
SLOPES -3.00 LT -3.00 RT
OFFSET 0.00

ORIGINAL SURVEY NOTE BOOK	SURVEYED		BY	DATE
	PLOTTED			
	TEMPLATE			
	AREAS			

2004



SHEET 8-5

FINAL	SURVEYED	DATE
NO	PLOTTED	BY
	DATE	
	AREAS CHECKED	

ORIGINAL	SURVEYED	DATE
NO	PLOTTED	BY
	DATE	
	AREAS CHECKED	

GRID PAPER

JOB NO. GOLF

SCALE

H = 1 INCH = 50.0 FEET

V = 1 INCH = 5.0 FEET

-200

-100

0

100

200

-200

-100

0

100

200

ORIG 35+50 EL 5146.25
DES 35+50 GR 5145.59
SLOPES 3.00 LT 3.00 RT
OFFSET 0.00 RT

ORIG 35+00 EL 5145.22
DES 35+00 GR 5145.19
SLOPES 3.00 LT 3.00 RT
OFFSET 0.00 RT

ORIG 34+50 EL 5144.44
DES 34+50 GR 5145.29
SLOPES 3.00 LT 3.00 RT
OFFSET 0.00 RT

ORIG 36+00 EL 5147.46
DES 36+00 GR 5146.47
SLOPES 3.00 LT 3.00 RT
OFFSET 0.00 RT

1 2 3 4 5 6 7 8 9 10 11 12
20 21 22 23 24 25 26 27 28 29 30 31 32

RECORDS DEPARTMENT
DATE 12/4/86