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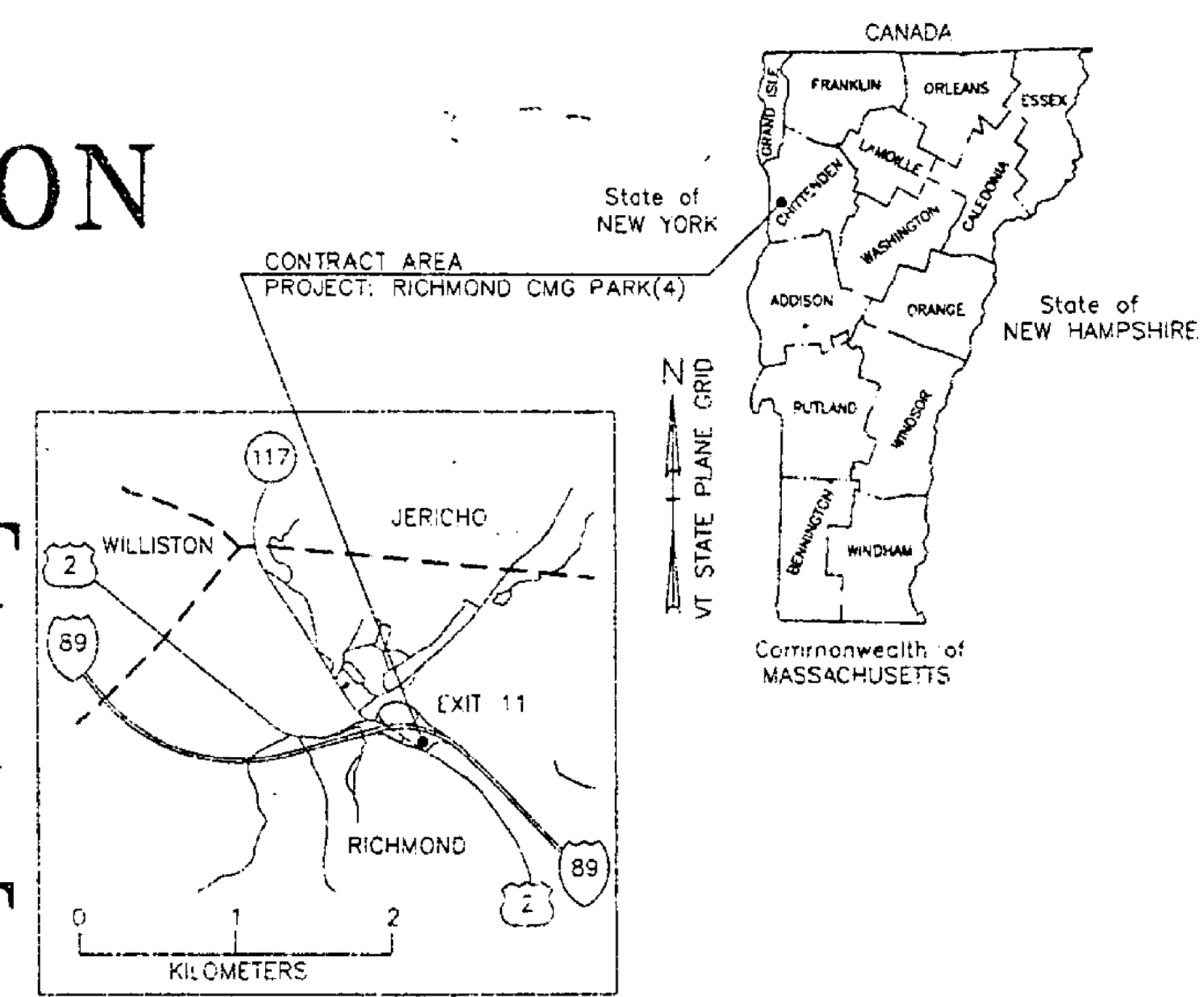
STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT TOWN OF RICHMOND COUNTY OF CHITTENDEN COMMUTER PARKING LOT

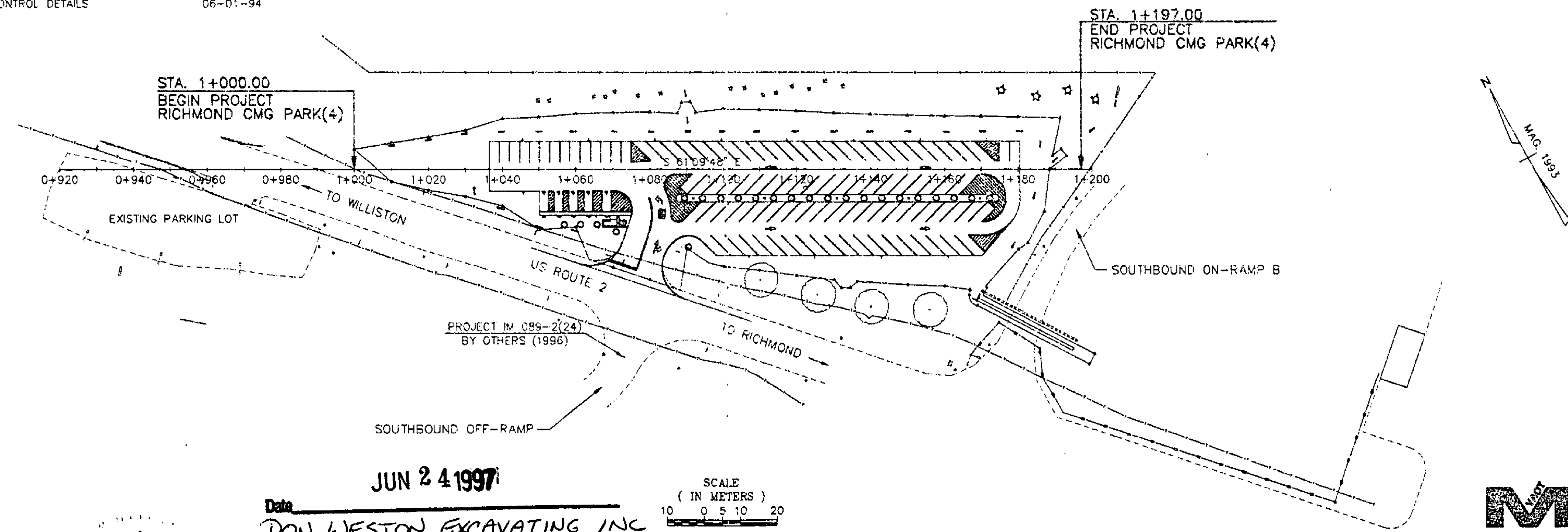
THIS PROJECT IS LOCATED ON US RTE. 2, IN THE TOWN OF RICHMOND, APPROXIMATELY 250 m SOUTHERLY OF THE VT. RTE. 117/US RTE. 2 INTERSECTION, ON THE EASTERLY SIDE OF US RTE 2, AT I-89 (INTERCHANGE #11).

WORK ON THIS PROJECT CONSISTS OF CONSTRUCTION OF A NEW LOT, WHICH WILL INCLUDE SUBBASE, PAVEMENT, PAVEMENT MARKINGS, STREET LIGHTING, AND MISCELLANEOUS APPURTENANCES.



CONTRACT PLANS

THESE PLANS DO NOT REFLECT CHANGES MADE ON THE PROJECT.

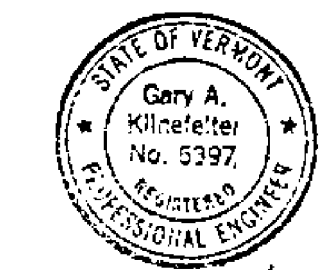
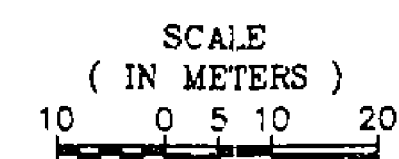


CONVENTIONAL SIGNS

COUNTY LINE	---
TOWN LINE	---
LIMITS OF ACCESS	---
POINT OF ACCESS	---
FENCE LINE	---
STONE WALL	---
TRAVELED WAY	---
GUARD RAIL	---
RAILROAD	---
SURVEY LINE	---
CULVERT	---
POWER POLE	---
TELEPHONE POLE	---
TREES	---
CONTROL OF ACCESS	---
PROPERTY LINE	---
R.O.W. TAKING LINE	---
SLOPE RIGHTS	---
TOP OF CUT	---
TOE OF SLOPE	---

DATUM	NAVD88 (meters)
VERTICAL	N/A
HORIZONTAL	N/A

Date JUN 24 1997
 DON WESTON EXCAVATING INC
 Contractor
 Don Weston
 Signature
 PRG
 Signature
 Secretary of Transportation's Signature



Nancy A. Klinefelter
 Vermont Survey and Engineering, Inc.
 79 RIVER STREET - MONTPELIER, VT

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE CHIEF ENGINEER. CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1995, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON AUGUST 21, 1995 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

Metric	
APPROVED <i>[Signature]</i> DATE 4/1/97	DIRECTOR OF ENGINEERING
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED <i>[Signature]</i> DATE	DIVISION ADMINISTRATOR
PROJECT RICHMOND CMG PARK(4)	
SHEET 1 OF 22 SHEETS	

TYPICAL SECTIONS

50 mm BITUMINOUS CONCRETE PAVEMENT (1 LIFT = TYPE III)
380 mm SUBBASE OF DENSE GRADED CRUSHED STONE
500 mm SAND BORROW



NOTES

- PAVEMENT TOLERANCE = ± 5 mm. (TOTAL DEPTH)
DENSE GRADED CRUSHED STONE = ± 30 mm (TOTAL DEPTH ALL LAYERS)
SAND BORROW = ± 30 mm (TOTAL DEPTH ALL LAYERS)

RURAL AREA SEED FORMULA

% MASS	kg/ha	NAME	PUR %	GERM %
37.1	26	CREeping RED FESCUE	98	85
37.1	26	TALL FESCUE	95	90
5.7	4	RED TOP	95	90
14.4	10	BIRDFOOT TREFOIL	98	85
5.7	4	ANNUAL RYE GRASS	95	85
100.0	70			

SEED MIXTURE:
SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY MASS
AND SHALL BE FREE OF ALL NOXIOUS SEED.

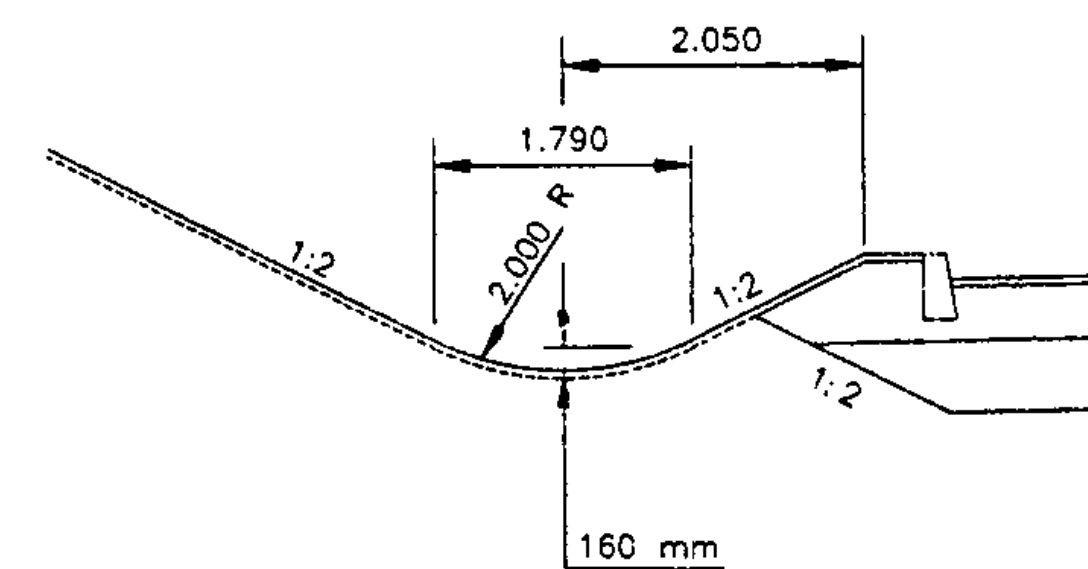
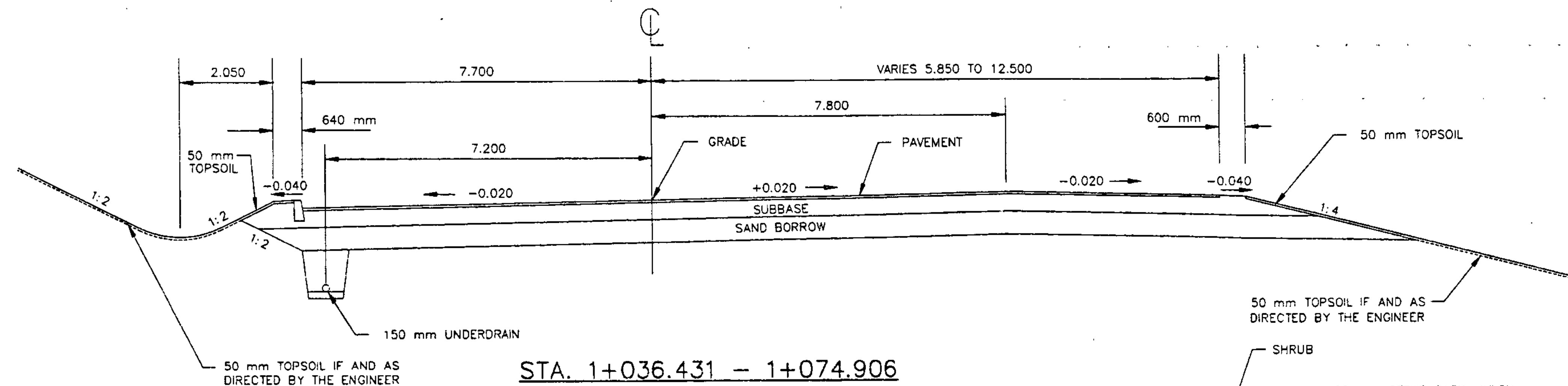
SEED:
TO BE APPLIED PER SEEDING FORMULA OR AS DIRECTED BY THE ENGINEER.

FERTILIZER:
FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO-SEEDERS MAY USE 19-19-19 FORMULA)

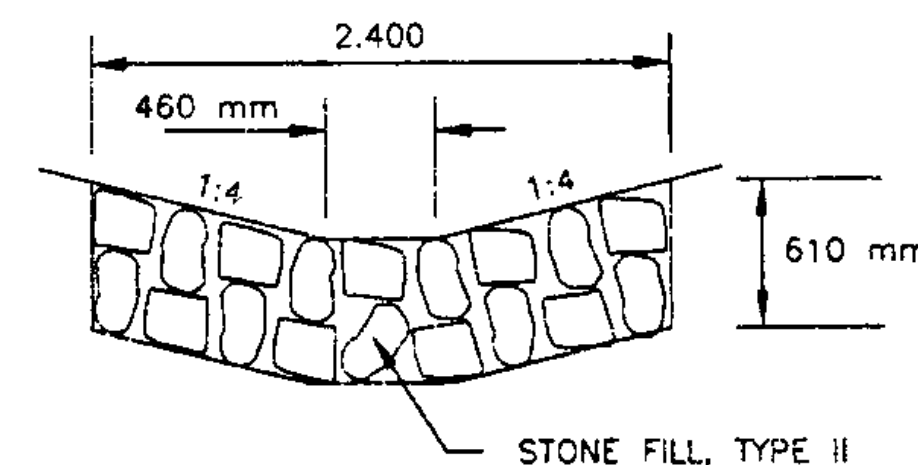
AGRICULTURAL LIME:
TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH:
TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

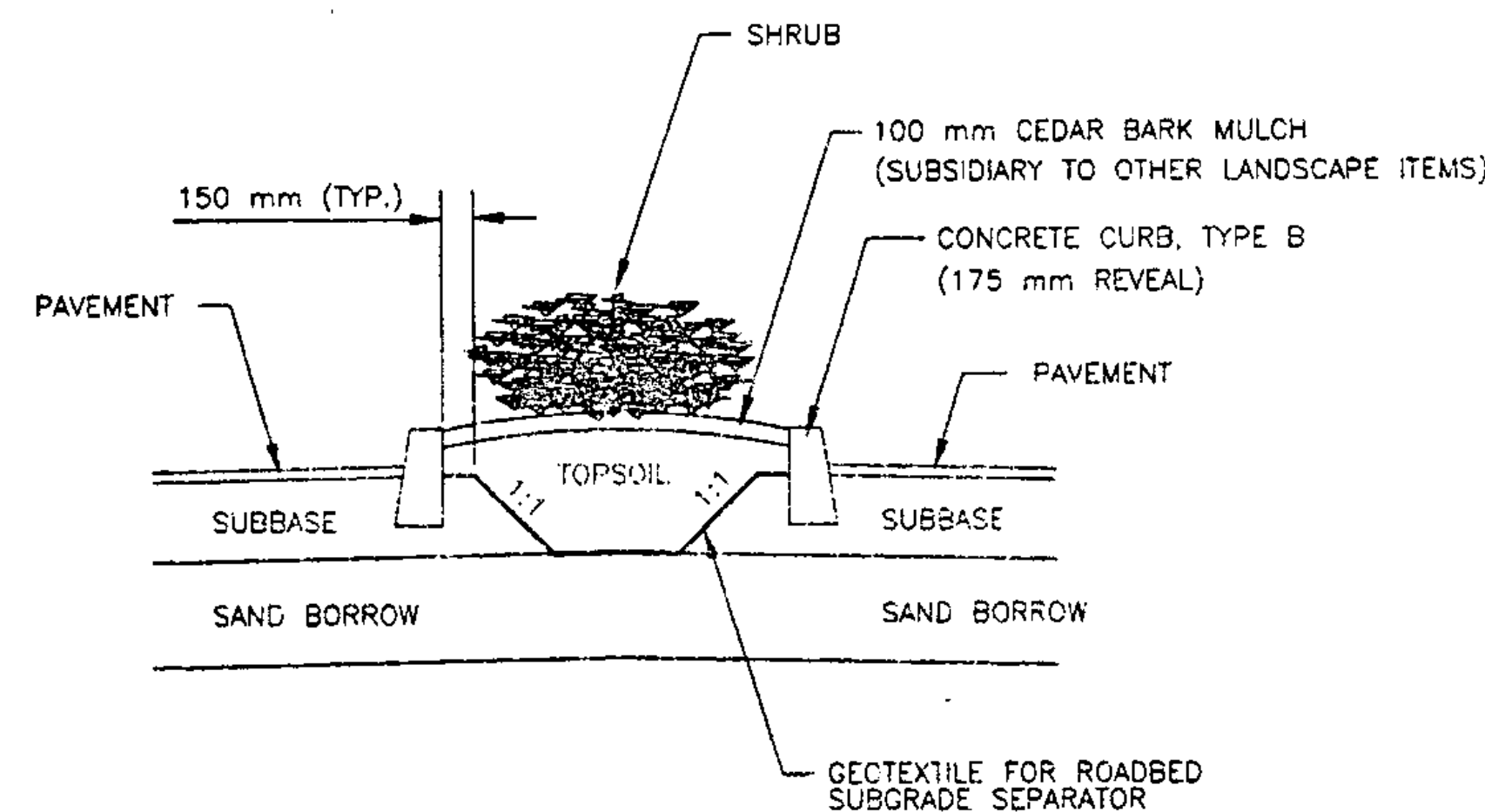
TOPSOIL:
TO BE USED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.



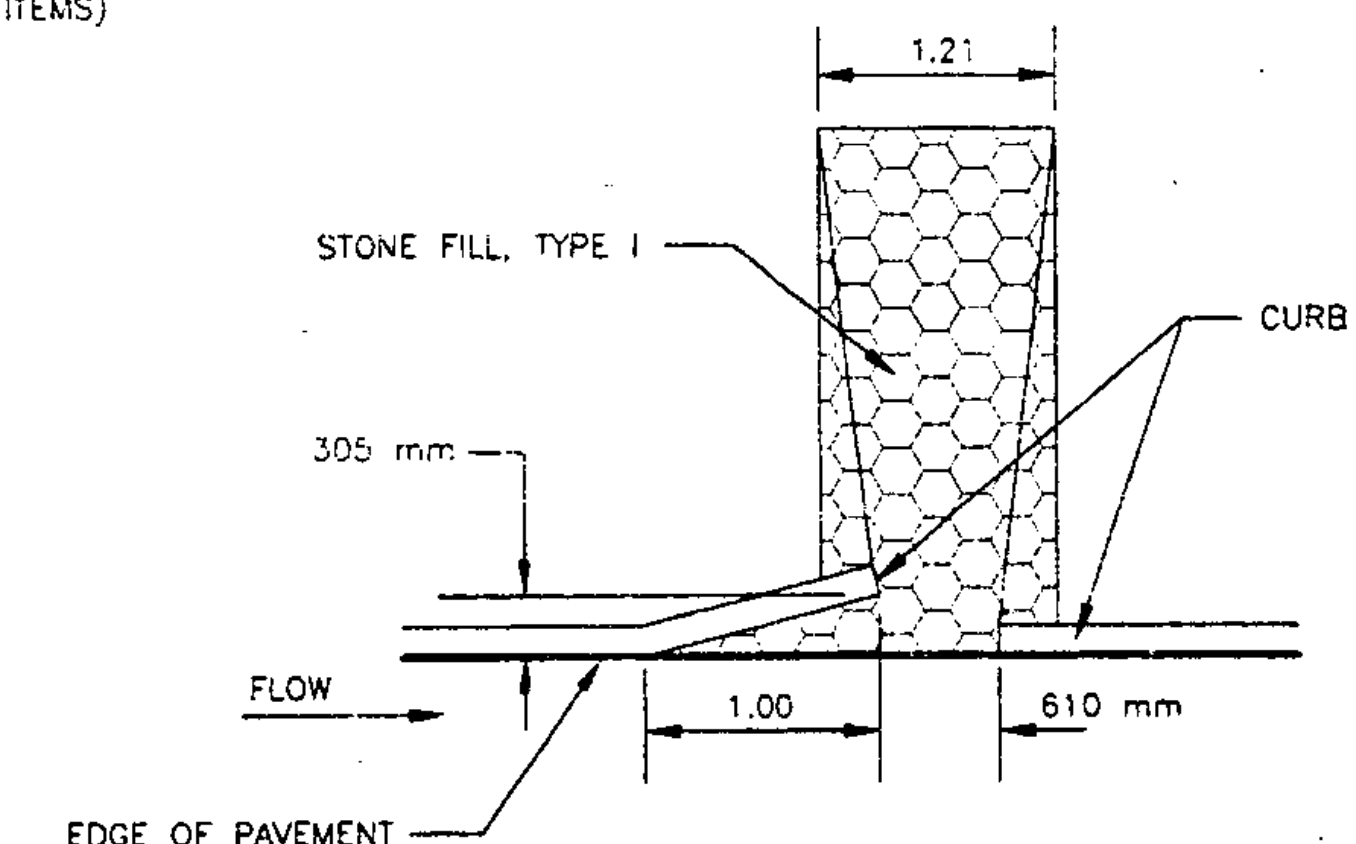
DITCH ROUNDING DETAIL



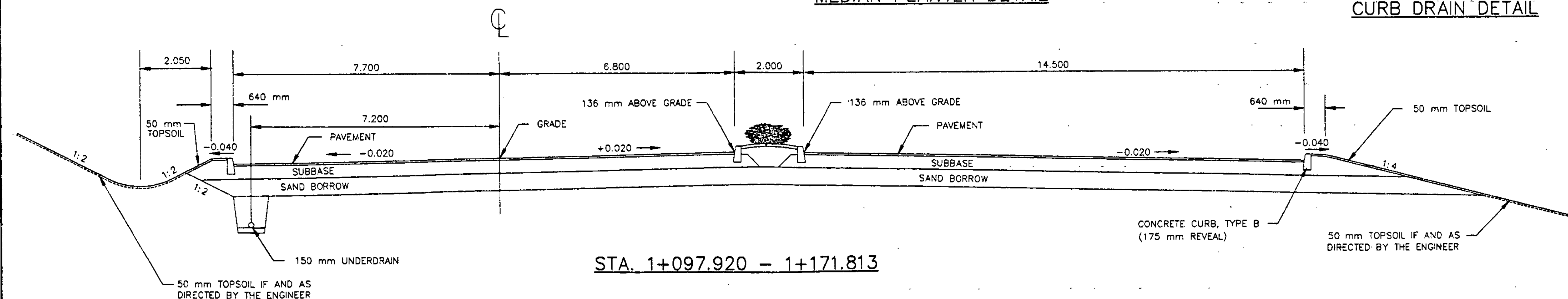
DITCH TYPICAL
STA. 1+166.6 RT - 1+186.3 LT



MEDIAN PLANTER DETAIL



CURB DRAIN DETAIL



ALL DIMENSIONS IN METERS
UNLESS OTHERWISE NOTED

TYPICAL
SECTIONS

PREPARED BY VSE DATE 11/95
CHECKED BY VSE DATE 11/95
DESIGN SUPERVISOR GAK DATE 11/95
PROJ. RICHMOND CMG PARK(4).
SHEET 2 OF 22 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET



APPROXIMATE SUMMARY OF QUANTITIES

EROSION CONTROL	EXISTING LOT	EROSION CONTROL	NEW LOT	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NO.	ROUNDING
			3	3	EACH	REMOVING MEDIUM TREES	201.15	
			3230	3230	m³	COMMON EXCAVATION	203.15	73
			70	70	m³	EARTH BORROW	203.30	EST.
			2460	2460	m³	SAND BORROW	203.31	50
			4680	4680	m²	FINE GRADING-SUBGRADE	203.40	30
			280	280	m³	TRENCH EXCAVATION OF EARTH	204.20	6
			10	10	m³	TRENCH EXCAVATION OF ROCK	204.21	EST.
			1700	1700	m³	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	10
			455	455	T	BITUMINOUS CONCRETE PAVEMENT	406.25	2.2
			3	3	m³	CONCRETE CLASS B	501.25	0.6
			173	173	kg	REINFORCING STEEL	507.15	1.6
			3.5	3.5	m³	CEMENT RUBBLE MASONRY	602.15	0.4
			150	150	m	150 mm UNDERDRAIN	605.10	3
			40	40	m	150 mm UNDERDRAIN CARRIER PIPE	605.20	1
			2	2	EACH	UNDERDRAIN FLUSHING BASINS	605.95	
	0.5		0.5	1	HR	BULLDOZER RENTAL, TYPE I (NABI)	608.10	
	0.5		0.5	1	HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I (NABI)	608.25	
	0.5		0.5	1	HR	TRUCK RENTAL (NABI)	608.37	
			900	900	m³	DUST CONTROL WITH WATER	609.10	25
			26	26	m³	STONE FILL, TYPE I	613.10	2
			78	78	m³	STONE FILL, TYPE II	613.11	3
			390	390	m	CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B	616.28	5
			5	5	EACH	STEEL MARKER POSTS	619.16	
			310	310	m	CHAIN-LINK FENCE, 1.8 m (BLACK VINYL COATED)	620.12	6
			8	8	EACH	BRACING ASSEMBLY FOR CHAIN-LINK FENCE, 1.8 m	620.21	
	50			50	m	STEEL BEAM GUARDRAIL	621.20	4
	1			1	EACH	MODIFIED ECCENTRIC LOADER TERMINAL	621.54	
	8			8	m	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	0.4
			6	6	m	STEEL WATER PIPE, GALVANIZED (MOD.) - BIKE RACK	629.34	
			40	40	HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST.
			120	120	HR	FLAGGERS	630.15	EST.
			1	1	LS	FIELD OFFICE, ENGINEERS	631.10	
			1	1	LS	TESTING EQUIPMENT-CONCRETE	631.16	
			1	1	LS	TESTING EQUIPMENT-BITUMINOUS	631.17	
			1	1	LS	FIELD OFFICE TELEPHONE (NABI)	631.25	
			1	1	LS	MOBILIZATION	635.10	
			30	30	m	JACKING OR BORING WELDED STEEL PIPE	643.20	
			1400	1400	m	DURABLE 100 mm WHITE LINE	646.40	33
			42	42	m	DURABLE 100 mm YELLOW LINE	646.41	3
			8.1	8.1	m	DURABLE 600 mm STOP BAR	646.46	
			16	16	EACH	DURABLE LETTER OR SYMBOL	646.50	
			3	3	m²	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	

APPROXIMATE SUMMARY OF QUANTITIES

EROSION CONTROL	EXISTING LOT	EROSION CONTROL	NEW LOT	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NO.	ROUNDING
			170	170	m²	GEOTEXTILE FOR ROADBED SUBGRADE SEPARATOR	649.11	2
	11		9	20	kg	SEED	651.15	1
	90		70	160	kg	FERTILIZER	651.18	8
	0.9		0.6	1.5	T	AGRICULTURAL LIMESTONE	651.20	0.3
	0.9		0.6	1.5	T	HAY MULCH	651.25	0.3
	15		55	70	EACH	HAY BALES FOR EROSION CONTROL	651.26	11
		165	115	280	m³	TOPSOIL	651.35	6
						EVERGREEN TREES		
			4	4	EACH	(PICEA ABIES) NORWAY SPRUCE	656.20	
						EVERGREEN SHRUBS		
			23	23	EACH	(JUNIPERUS CHINENSIS SARGENTII) SARGENT JUNIPER	656.25	
						DECIDUOUS TREES		
			4	4	EACH	(ACER SACCHARUM) SUGAR MAPLE	656.30	
			1	1	EACH	REST AREA BENCH (MODIFIED) - SHELTER	658.20	
			3.33	3.33	m²	TRAFFIC SIGNS, TYPE A	675.20	0.02
			160	160	kg	FLANGED CHANNEL SIGN POSTS	675.30	1
			9	9	EACH	REMOVING SIGNS	675.50	
			3	3	EACH	ERECTING SALVAGED SIGNS	675.60	
			2	2	EACH	SETTING SALVAGED POSTS	675.61	
			6	6	m	ELECTRICAL CONDUIT (51 mm PVC SCH. 40)	678.21	
			380	380	m	WIRED CONDUIT (51 mm PVC SCH. 40)	678.23	12
			155	155	m	ELECTRICAL WIRING (3-#4 CU. & 1-#6 CU. GRD.)	678.24	5
			60	60	m	ELECTRICAL CONDUIT SLEEVE (152 mm)	678.30	3
			19	19	EACH	LIGHT POLE BASE	679.21	
			19	19	EACH	LIGHT POLE	679.45	
			14	14	EACH	BRACKET ARM	679.47	
			19	19	EACH	LUMINAIRE	679.50	

QUANTITY SHEET

PROJECT NAME RICHMOND
PROJECT NUMBER CMG PARK(4)

SHEET 3 OF 22 SHEETS

PROJECT NAME RICHMOND
PROJECT NUMBER CMG PARK(4) SHEET 4 OF 22 SHEETS

PROJECT NAME RICHMOND
PROJECT NUMBER CMG PARK(4) SHEET 5 OF 22 SHEETS



CONSTRUCT SPECIAL DITCH
1+000.0 - 1+036.4 LT

150 mm UNDERDRAIN
1+035.0 - 1+060.0 LT

CAST-IN-PLACE CEMENT
CONCRETE CURB TYPE B
1+036.4 - 1+060.0 LT

REMOVAL AND DISPOSAL
OF GUARDRAIL
0+953.1 LT - 0+960.0 RT

UNDERDRAIN FLUSHING BASINS
1+035 LT

STEEL MARKER POSTS
1+035 LT

STEEL BEAM GUARDRAIL
0+953.1 LT - 0+996.6 RT

MODIFIED ECCENTRIC
LOADER TERMINAL
0+996.6 - 1+007.0 RT

CHAIN-LINK FENCE 1.8 m
0+990± LT - 1+060 LT
(BLACK VINYL COATING ON ALL FABRIC)
(SEE SHEET 13 FOR APPROX. LOCATION)

BRACING ASSEMBLY FOR
CHAIN-LINK FENCE 1.8 m
0+990± LT (BLACK VINYL COATING ON
1+004± LT ALL FABRIC)
1+057± LT

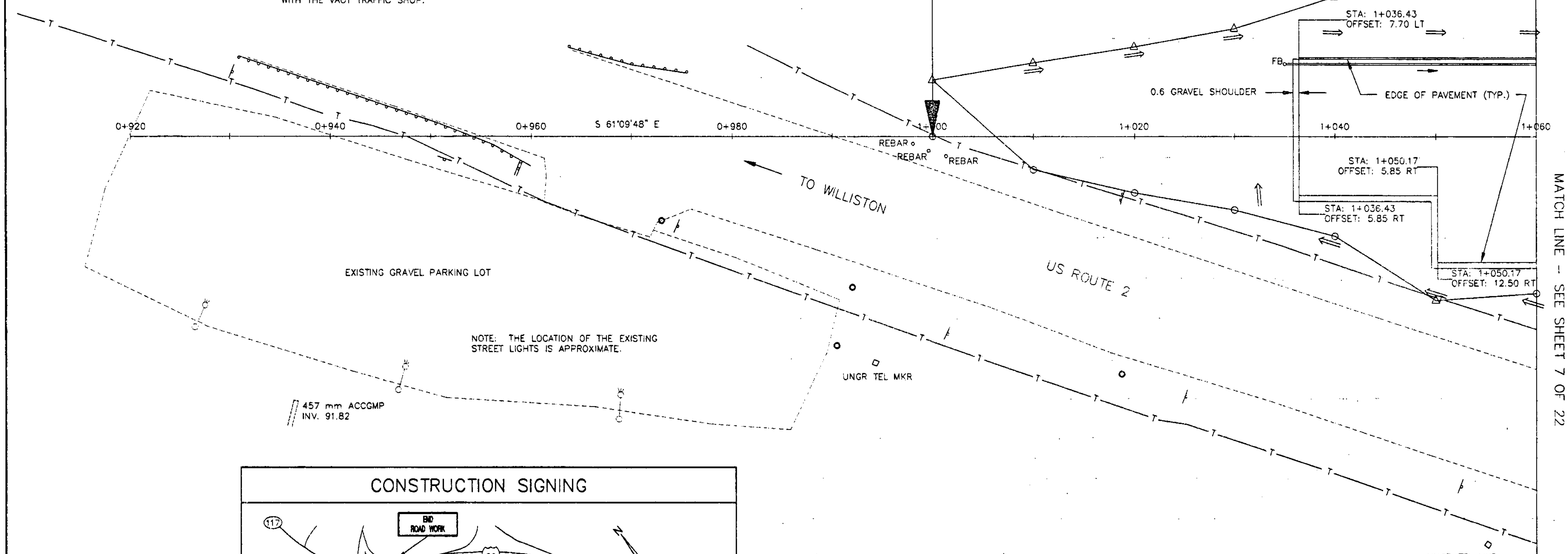
CLOSURE OF EXISTING PARKING LOT

UPON COMPLETION OF THE NEW PARKING LOT, THE EXISTING LOT WILL BE CLOSED AND LANDSCAPED AS DIRECTED BY THE ENGINEER. AS A MINIMUM, THE SURFACE SHALL BE GRADED TO DRAIN TO THE EXISTING CULVERT AT STA. 0+937± RT, LOOSENE TO A DEPTH OF APPROXIMATELY 100 mm, AND THEN COVERED WITH 100 mm OF TOPSOIL. THE ENTIRE AREA SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH THE SEED FORMULA AND APPLICATION RATES NOTED ON THE TYPICAL SHEET.

THE EXISTING STREET LIGHTS WILL BE REMOVED BY OTHERS, HOWEVER THE CONTRACTOR SHALL COORDINATE REMOVAL WITH THE VDOT TRAFFIC SHOP.

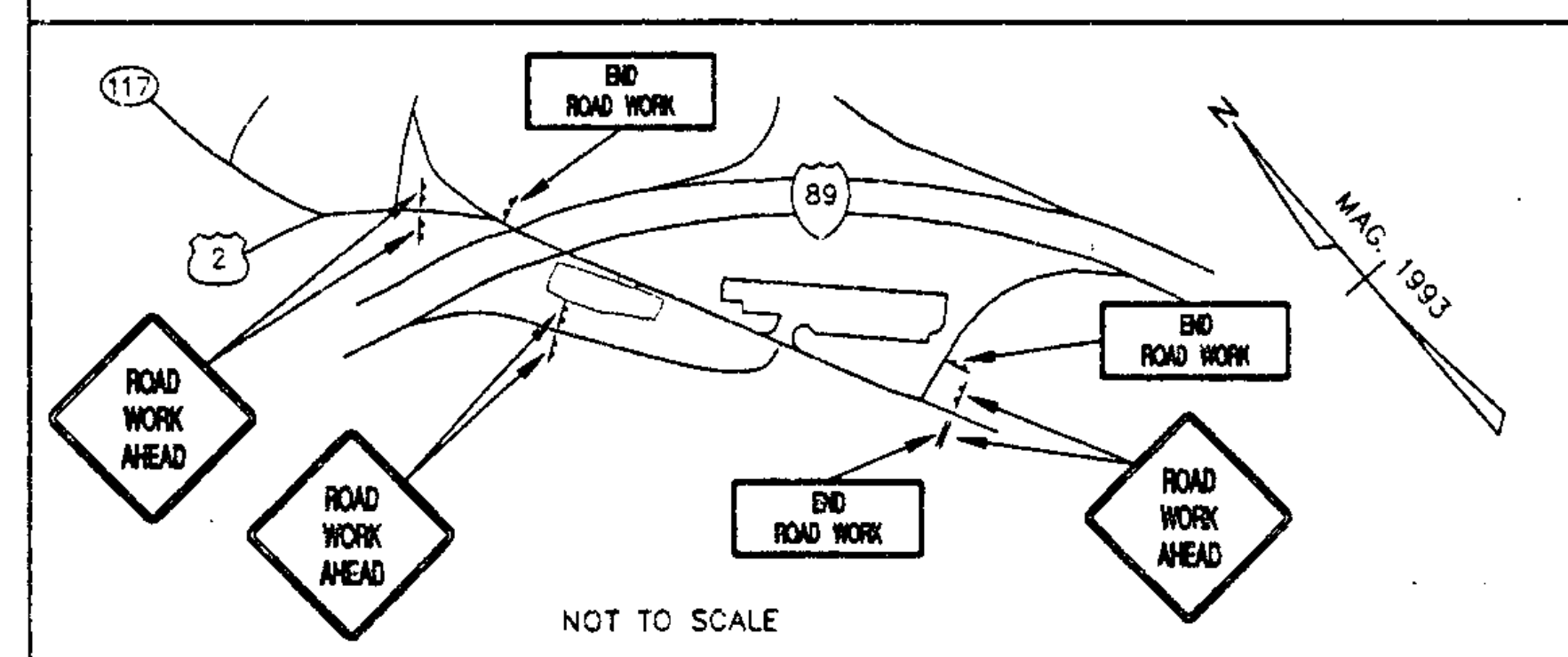
P.O.T. 1+000.00
BEGIN PROJECT
RICHMOND CMG PARK(4)

MED. SPRUCE
MED. SPRUCE

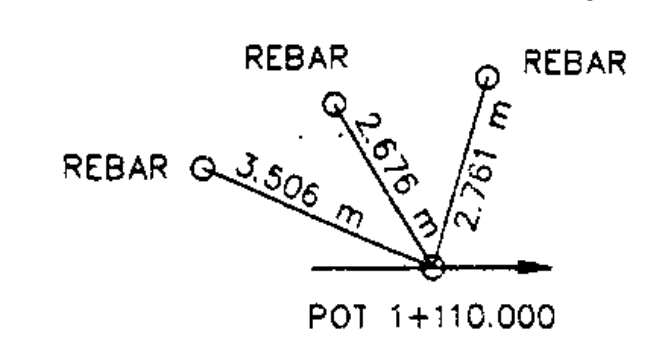
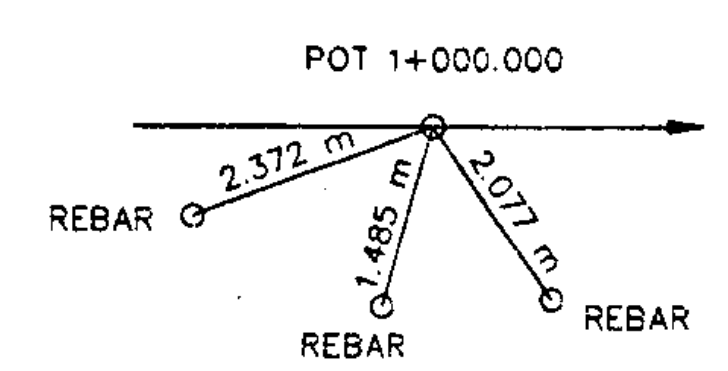


MATCH LINE - SEE SHEET 7 OF 22

CONSTRUCTION SIGNING



SURVEY TIES



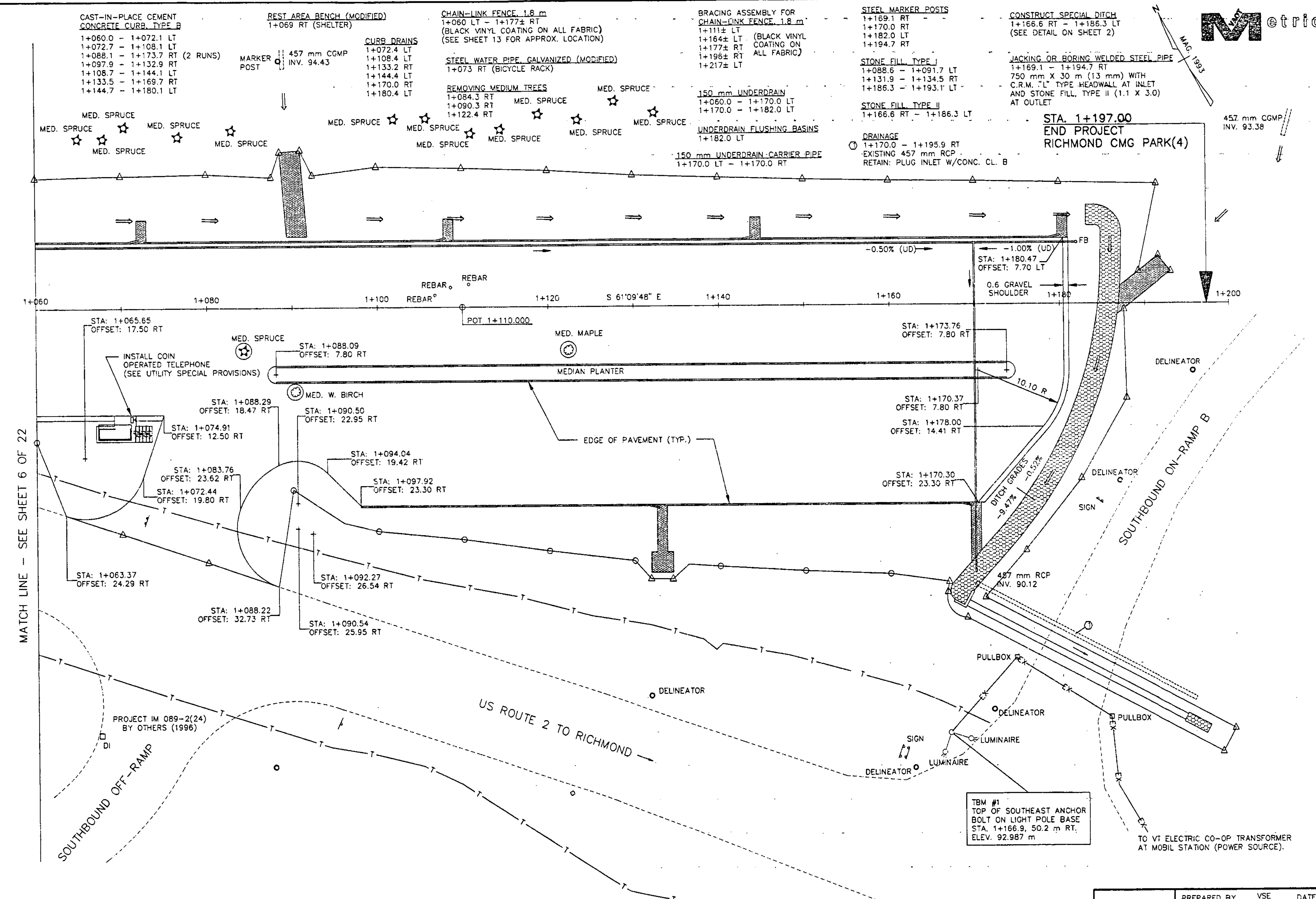
DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A



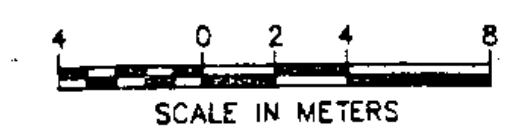
ALL DIMENSIONS IN METERS
UNLESS OTHERWISE NOTED

PROJECT PLAN

PREPARED BY VSE DATE 11/95
CHECKED BY VSE DATE 11/95
DESIGN SUPERVISOR GAK DATE 11/95
PROJ. RICHMOND CMG PARK(4)
SHEET 6 OF 22 SHEETS



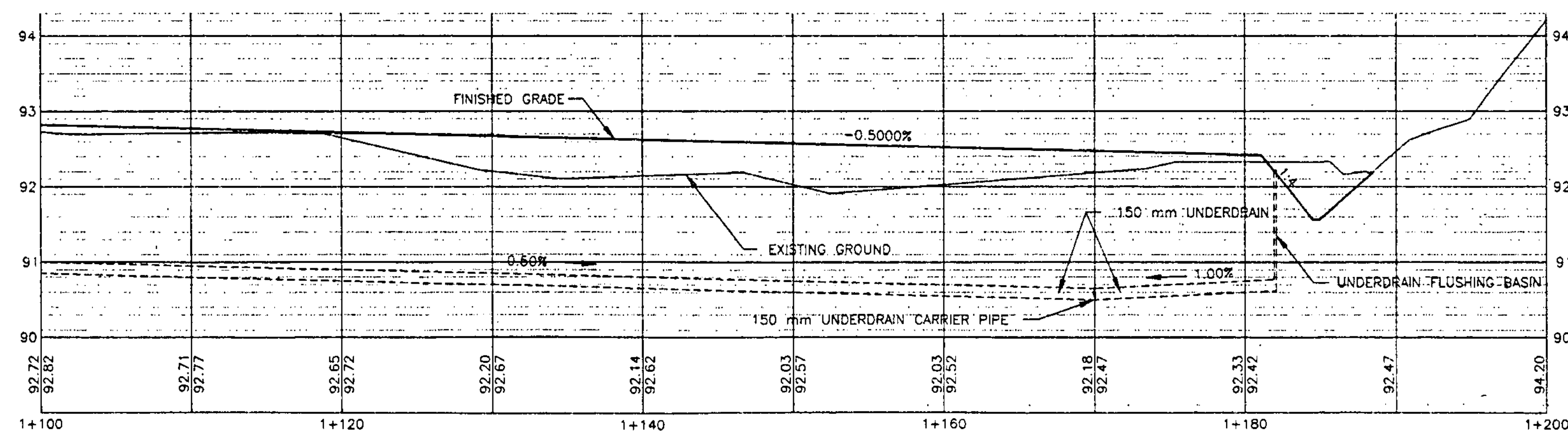
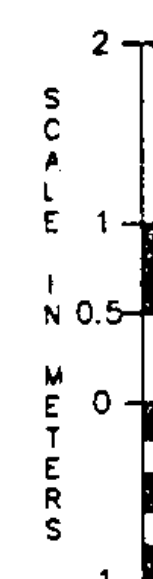
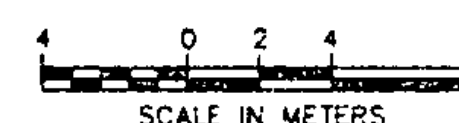
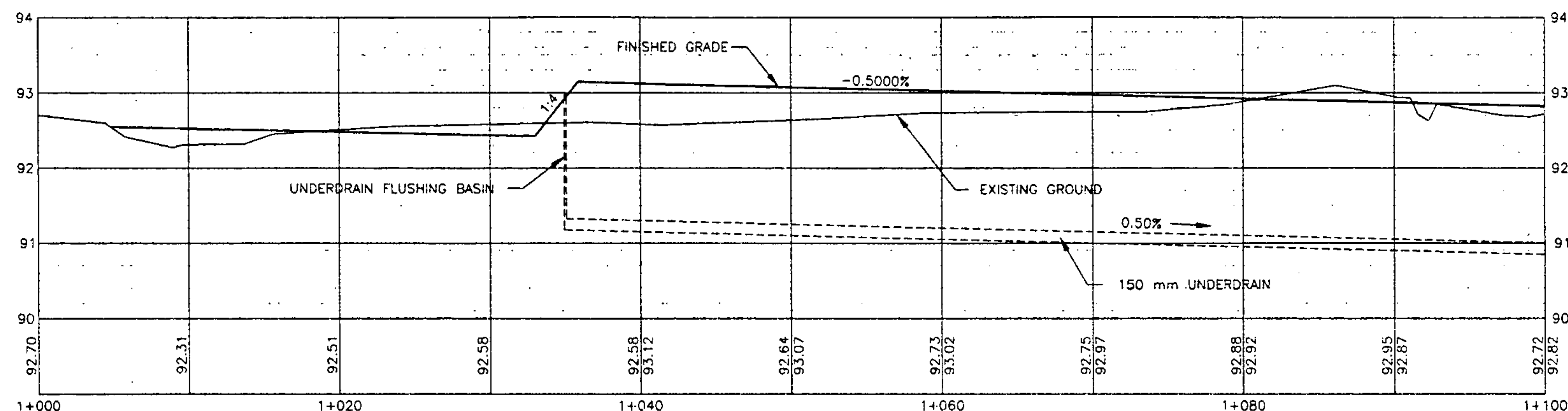
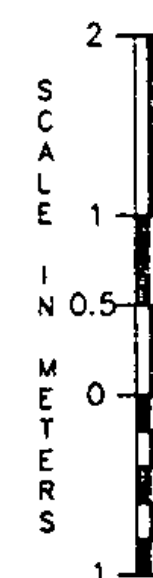
DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A



ALL DIMENSIONS IN METERS
UNLESS OTHERWISE NOTED

PROJECT
PLAN

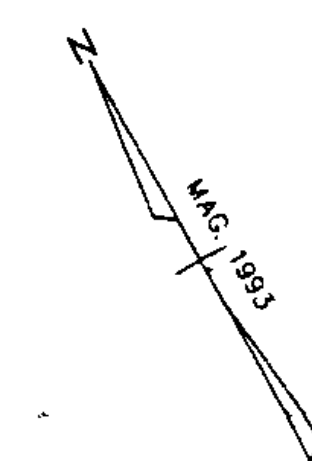
PREPARED BY VSE DATE 11/95
CHECKED BY VSE DATE 11/95
DESIGN SUPERVISOR GAK DATE 11/95
PROJ. RICHMOND CMG PARK(4)
SHEET 7 OF 22 SHEETS



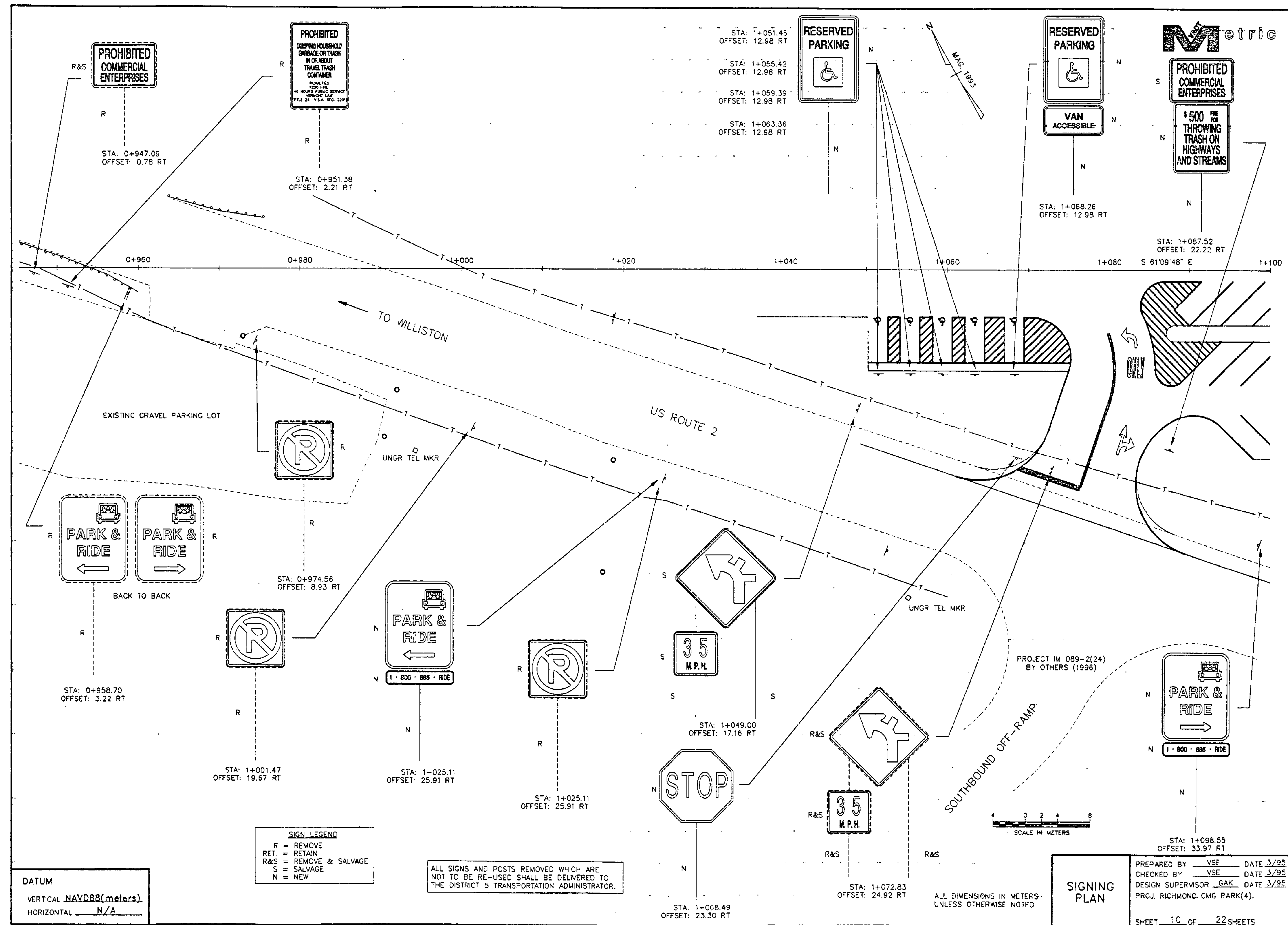
DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A

PROJECT
PROFILE

PREPARED BY VSE DATE 11/95
CHECKED BY VSE DATE 11/95
DESIGN SUPERVISOR GAK DATE 11/95
PROJ. RICHMOND CMG PARK(4)
SHEET 8 OF 22 SHEETS



DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A



Metric

PROHIBITED
COMMERCIAL
ENTERPRISES
\$500 FINE
FOR
THROWING
TRASH ON
HIGHWAYS
AND STREAMS

RESERVED
PARKING
VAN
ACCESSIBLE

RESERVED
PARKING

PROHIBITED
DUMPING HOUSEHOLD
GARBAGE OR TRASH
IN OR ABOUT
TRAVEL TRASH
CONTAINER
PENALTIES
\$200 FINE
40 HOURS PUBLIC SERVICE
VERMONT LAW
TITLE 24 V.S.A. SEC. 3201

PROHIBITED
COMMERCIAL
ENTERPRISES

STA: 1+087.52
OFFSET: 22.22 RT
S 61°09'48" E

STA: 1+068.26
OFFSET: 12.98 RT

STA: 1+051.45
OFFSET: 12.98 RT

STA: 1+055.42
OFFSET: 12.98 RT

STA: 1+059.39
OFFSET: 12.98 RT

STA: 1+063.36
OFFSET: 12.98 RT

STA: 0+951.38
OFFSET: 2.21 RT

STA: 0+947.09
OFFSET: 0.78 RT

0+960

0+980

1+000

1+020

1+040

1+060

1+080

1+100

TO WILLISTON

US ROUTE 2

EXISTING GRAVEL PARKING LOT

PARK &
RIDE
←

PARK &
RIDE
→

BACK TO BACK

STA: 0+958.70
OFFSET: 3.22 RT

STA: 0+974.56
OFFSET: 8.93 RT

STA: 1+001.47
OFFSET: 19.67 RT

STA: 1+025.11
OFFSET: 25.91 RT

STA: 1+025.11
OFFSET: 25.91 RT

STA: 1+049.00
OFFSET: 17.16 RT

35
M.P.H.

STOP

35
M.P.H.

STA: 1+072.83
OFFSET: 24.92 RT

STA: 1+068.49
OFFSET: 23.30 RT

PARK &
RIDE
→
1-800-688-RIDE

STA: 1+098.55
OFFSET: 33.97 RT

PROJECT IM 089-2(24)
BY OTHERS (1996)

SOUTHBOUND OFF-RAMP

SCALE IN METERS
0 2 4 8

SIGN LEGEND
R = REMOVE
RET = RETAIN
R&S = REMOVE & SALVAGE
N = NEW

ALL SIGNS AND POSTS REMOVED WHICH ARE
NOT TO BE RE-USED SHALL BE DELIVERED TO
THE DISTRICT 5 TRANSPORTATION ADMINISTRATOR.

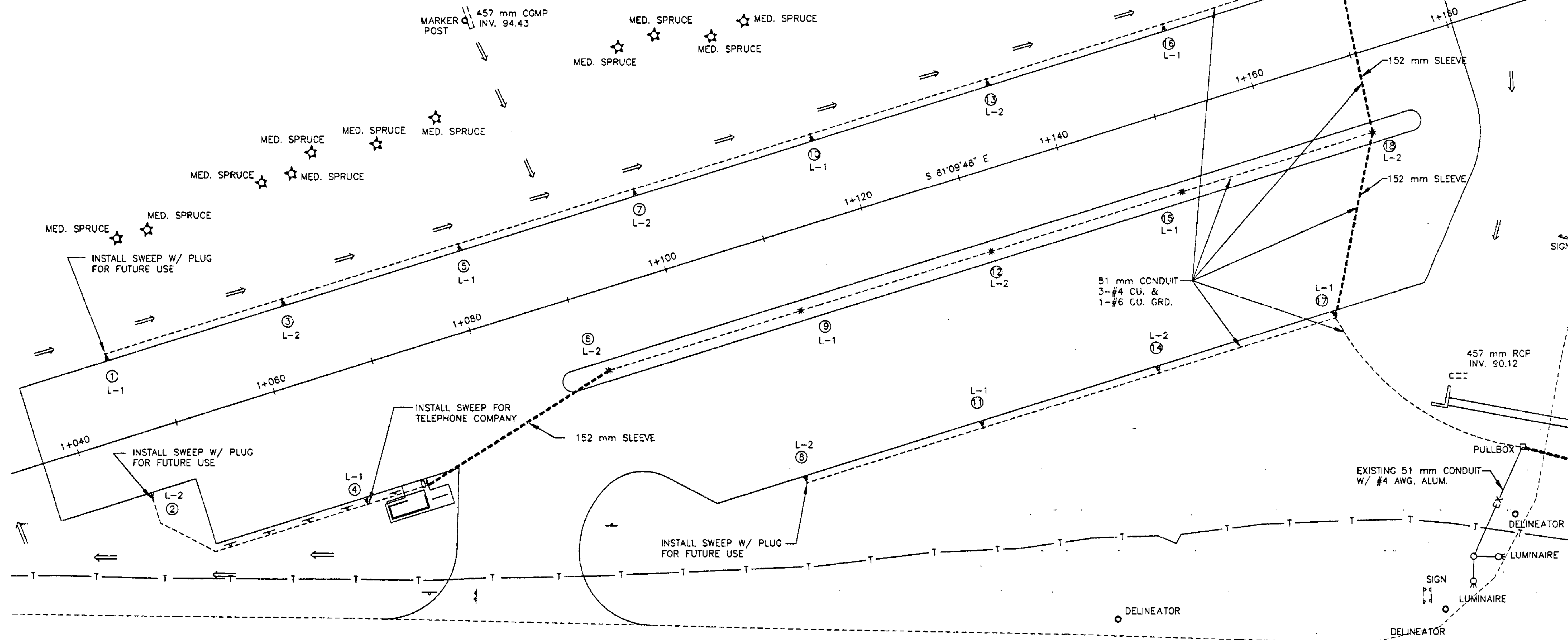
DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A

SIGNING
PLAN

PREPARED BY: VSE DATE 3/95
CHECKED BY: VSE DATE 3/95
DESIGN SUPERVISOR: GAK DATE 3/95
PROJ. RICHMOND CMG PARK(4).
SHEET 10 OF 22 SHEETS

ALL DIMENSIONS IN METERS
UNLESS OTHERWISE NOTED

STREET LIGHTING LOCATIONS									
POLE NO.	LOCATION	OFFSET	LENGTH OF POLE, ARM	BRK-AWAY	LUMINAIRE WATTS, TYPE	MOUNT. HEIGHT	CONCRETE BASE	REMARKS	
1	1+045.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
2	1+045.6 RT.	6.6 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
3	1+063.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
4	1+065.4 RT.	13.2 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
5	1+081.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
6	1+091.8 RT.	7.8 m	5.7 m	NO	100 V	6.1 m	0.6 m X 1.8 m		
7	1+099.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
8	1+106.9 RT.	24.0 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
9	1+111.3 LT.	7.8 m	5.7 m	NO	100 V	6.1 m	0.6 m X 1.8 m		
10	1+117.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
11	1+124.9 RT.	24.0 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
12	1+130.8 LT.	7.8 m	5.7 m	NO	100 V	6.1 m	0.6 m X 1.8 m		
13	1+135.4 RT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
14	1+142.9 RT.	24.0 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
15	1+150.3 RT.	7.8 m	5.7 m	NO	100 V	6.1 m	0.6 m X 1.8 m		
16	1+153.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
17	1+160.9 RT.	24.0 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		
18	1+169.8 RT.	7.8 m	5.7 m	NO	100 V	6.1 m	0.6 m X 1.8 m		
19	1+171.4 LT.	8.4 m	6.1 m, 0.2 m	NO	100 III	6.1 m	0.6 m X 1.8 m		



WIRED CONDUIT (51 mm PVC SCH. 40)
 1+045.4 - 1+171.4 LT. = 126 m
 1+045.6 - 1+169.8 RT. = 129 m
 1+106.9 - 1+160.9 RT. = 54 m
 1+160.9 - 1+169.8 RT. = 19 m
 1+160.9 - 1+174.7 RT. = 23 m
 1+169.8 RT. - 1+171.4 LT. = 17 m

ELECTRICAL CONDUIT (51 mm PVC SCH. 40 SWEEPS)
 1+045.4 LT., 1+045.6 RT., 1+065.4 RT. AND 1+106.9 RT.
 4 SWEEPS @ 1.5 m EACH = 6.0 m

ELECTRICAL WIRING (3-#4 CU. & 1-#6 CU. GRD.)
 1+174.7 RT. TO POWER SOURCE = 150 m

ELECTRICAL CONDUIT SLEEVE (152 mm)
 1+065.4 - 1+091.8 RT. = 21 m
 1+160.9 - 1+169.8 RT. = 19 m
 1+169.8 RT. - 1+171.4 LT. = 17 m

US ROUTE 2 TO RICHMOND

MONTHLY CHARGES FOR METERED SYSTEM SHALL BE BILLED TO:
 VERMONT AGENCY OF TRANSPORTATION
 DISTRICT 5 TRANSPORTATION ADMINISTRATOR
 EAAFB, BLDG. 2000
 COLCHESTER, VT 05446

EXISTING	NEW	LEGEND
○	●	STREET LIGHT POLE
○	★	LUMINAIRE
✱	✱	STREET LIGHT POLE W/ YOKE MOUNT LUMINAIRE
□	□	PULLBOX OR JUNCTION BOX
—	—	CONDUIT
—	—	SLEEVE
—	—	UTILITY POLE
—	—	POWER DROP STANCHION
L-1 = ONE LEG OF THREE WIRE CIRCUIT		
① = LIGHT POLE NUMBER		
□ = PULLBOX NUMBER		

SCALE IN METERS
 0 2 4 8

DATUM

VERTICAL NAVD88(meters)
 HORIZONTAL N/A

STREET
 LIGHTING
 PLAN

PREPARED BY VSE DATE 12/95
 CHECKED BY VSE DATE 12/95
 DESIGN SUPERVISOR GAK DATE 12/95
 PROJ. RICHMOND CMG PARK(4)

SHEET 11 OF 22 SHEETS

MATCH LINE - SEE SHEET 12 OF 22

HAY BALES FOR EROSION CONTROL
59 AS SHOWN

EVERGREEN SHRUBS

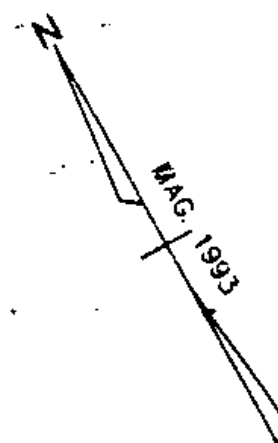
1+056.8, 14.9 RT.
1+061.2, 14.9 RT.
1+065.6, 14.9 RT.
1+070.8, 16.9 RT.
1+089.4, 7.8 RT.
1+090.4, 21.0 RT.
1+094.3, 7.8 RT.
1+099.2, 7.8 RT.
1+104.0, 7.8 RT.
1+108.9, 7.8 RT.
1+113.8, 7.8 RT.
1+118.7, 7.8 RT.
1+123.5, 7.8 RT.
1+128.4, 7.8 RT.
1+133.2, 7.8 RT.
1+138.2, 7.8 RT.
1+143.1, 7.8 RT.
1+147.9, 7.8 RT.
1+152.7, 7.8 RT.
1+157.6, 7.8 RT.
1+162.5, 7.8 RT.
1+167.4, 7.8 RT.
1+172.3, 7.8 RT.

EVERGREEN TREES

1+175.5, 21.5 LT.
1+185.1, 19.9 LT.
1+193.4, 21.5 LT.
1+201.0, 19.0 LT.

DECIDUOUS TREES

1+110.1, 29.9 RT.
1+125.6, 34.0 RT.
1+139.9, 37.3 RT.
1+155.8, 38.0 RT.

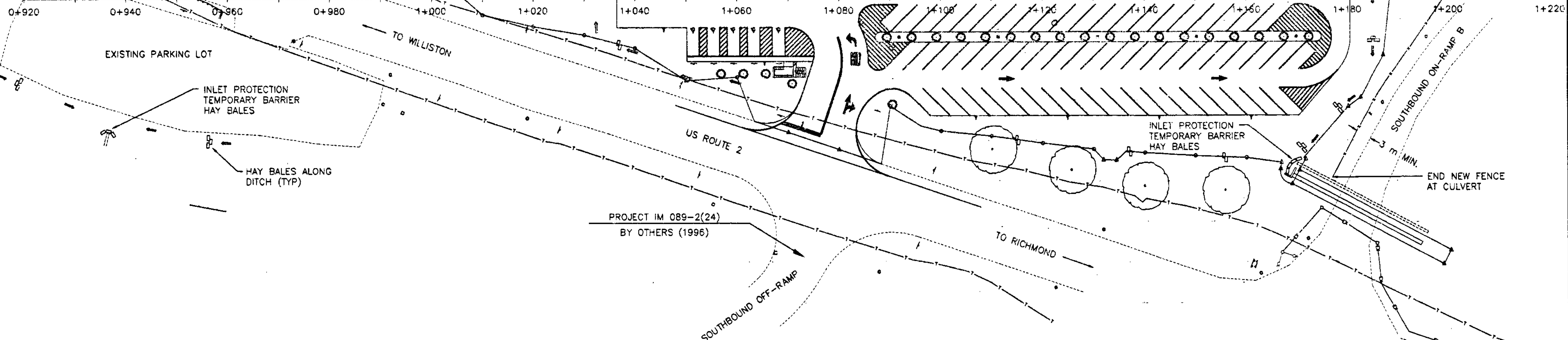


BEGIN NEW FENCE AT
BRIDGE ABUTMENT

APPROXIMATE LOCATION OF NEW CHAIN-LINK FENCE.
ACTUAL LOCATION TO BE DETERMINED BY THE ENGINEER

HAY BALES ALONG
DITCH (TYP)

BALED HAY EROSION
CHECKS (TYP)



NOTES:

1. UPON COMPLETION OF THE GRADING OPERATIONS FOR EARTH SIDESLOPE AREAS, THE CONTRACTOR SHALL IMMEDIATELY ESTABLISH VEGETATION IN ACCORDANCE WITH THE SEEDING REQUIREMENTS ON SHEET 2.
2. SEE VAOT STANDARD DRAWING T-2 FOR TEMPORARY EROSION CONTROL DETAILS.

4 0 2 4 8 12 16
SCALE IN METERS

ALL DIMENSIONS IN METERS
UNLESS OTHERWISE NOTED

DATUM
VERTICAL NAVD88(meters)
HORIZONTAL N/A

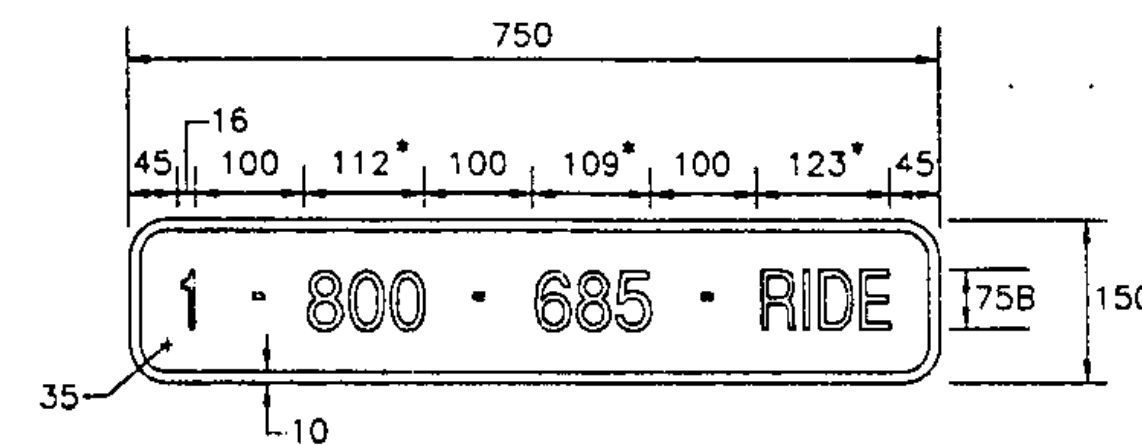
LANDSCAPING
AND
EROSION
CONTROL
PLAN

PREPARED BY VSE DATE 3/95
CHECKED BY VSE DATE 3/95
DESIGN SUPERVISOR GAK DATE 3/95
PROJ. RICHMOND CMG PARK(4)
SHEET 13 OF 22 SHEETS

TRAFFIC SIGN SUMMARY SHEET



KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS	NEW AND SALVAGED SIGNS				EXISTING POSTS		NEW SIGN POSTS															REMARKS	SIGN ID CODE	SIGN DETAIL					
			"A"	"B"	SALV. SIGN	SALV. T.I.S.	RET.	SALV.	NUMBER OF POSTS	FLANGED CHANNEL kg/m			TUBULAR ALUMINUM		TUBULAR STEEL					W SHAPED STEEL		FTG. SIZE				SIGN FRAME	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER			
										1.7	3.0	4.5	75 mm Ø	100 mm Ø	FOUND- ATION	75 mm Ø	88 mm Ø	100 mm Ø	125 mm Ø	POST SIZE	WEIGHT	600 mm	750 mm								
1+025.11 RT.		750 X 900	0.675						1			X															D4-2L	15			
		750 X 150	0.113																									15			
1+049.00 RT.					1				2																	SALVAGED SIGN TO BE MOUNTED ON SALVAGED POSTS					
					1																					SALVAGED SIGN TO BE MOUNTED ON SALVAGED POSTS					
1+051.45 RT.		300 X 450	0.135							1		X															R7-8	15			
1+055.42 RT.		300 X 450	0.135							1		X															R7-8	15			
1+059.39 RT.		300 X 450	0.135							1		X															R7-8	15			
1+063.36 RT.		300 X 450	0.135							1		X															R7-8	15			
1+068.26 RT.		300 X 450	0.135							1		X															R7-8	15			
		300 X 150	0.045																								R7-8A		E-132		
1+068.49 RT.		750 X 750	0.563							1		X															R1-1		E-143		
1+087.52 RT.					1					1		X														SALVAGED SIGN TO BE MOUNTED ON NEW POST					
		600 X 750	0.450																								VR-023b		E-144		
1+098.55 RT.		750 X 900	0.675							1		X															D4-2R	15			
		750 X 150	0.113																									15			
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S " SIGN POST DESIGN GUIDELINE ". TOTALS			m ² 3.309	m ²	EA. 3	m ²				kg	kg	kg	kg	kg	EA.	kg	kg	kg	kg		kg	EA.	EA.				TRAFFIC SIGN SUMMARY SHEET		PREPARED BY VSE DATE 12/95 CHECKED BY VSE DATE 12/95 DESIGN SUPERVISOR GAK DATE 12/95 PROJ. RICHMOND.CMG PARK(4)		SHEET 14 OF 22 SHEETS



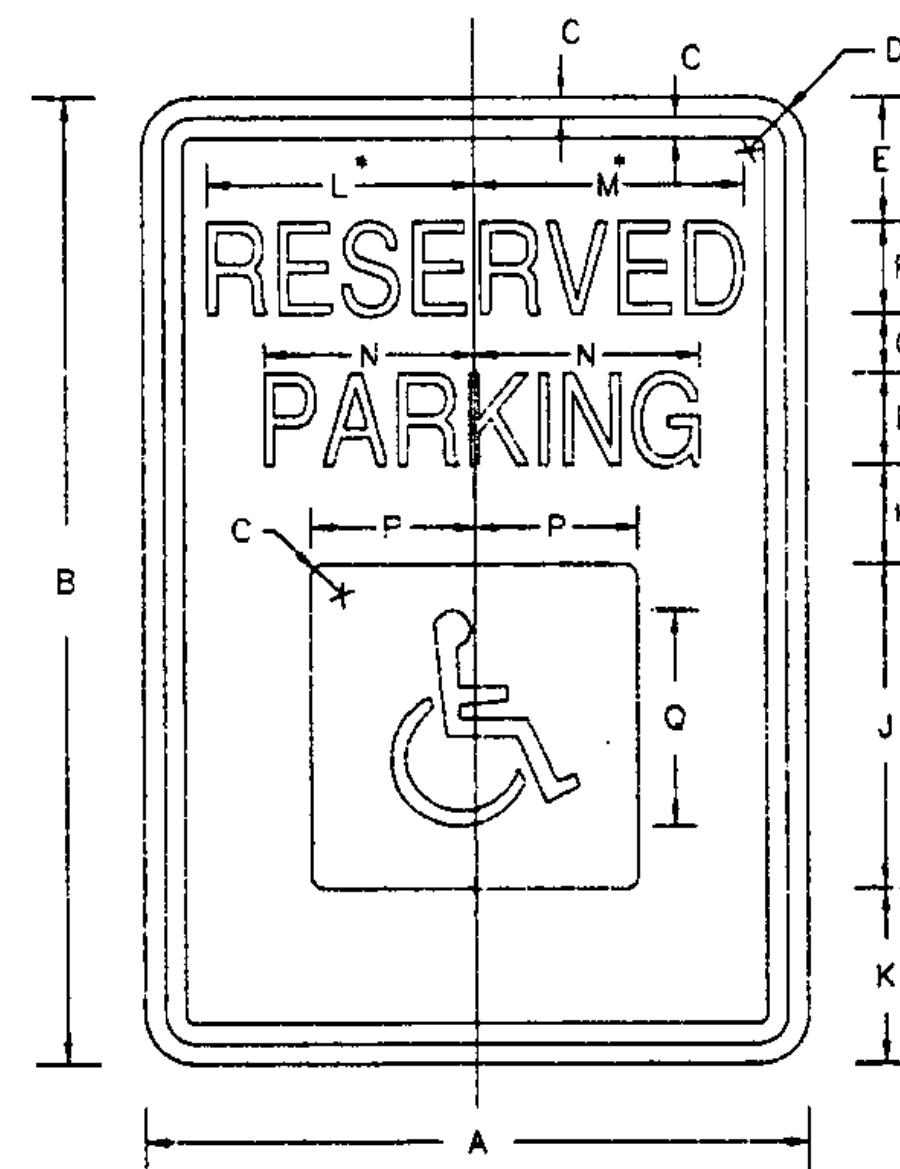
DIMENSIONS IN MILLIMETERS

COLORS
LEGEND AND BORDER - WHITE
BACKGROUND - BLUE

• REDUCE SPACING 50%

THE SIGN BASE MATERIAL USED FOR THIS SIGN MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED.

FLAT SHEET ALUMINUM - 1.52 mm
HIGH DENSITY OVERLAID PLYWOOD - 12.7 mm
GALVANIZED FLAT SHEET STEEL - 16 GAGE



R7-8

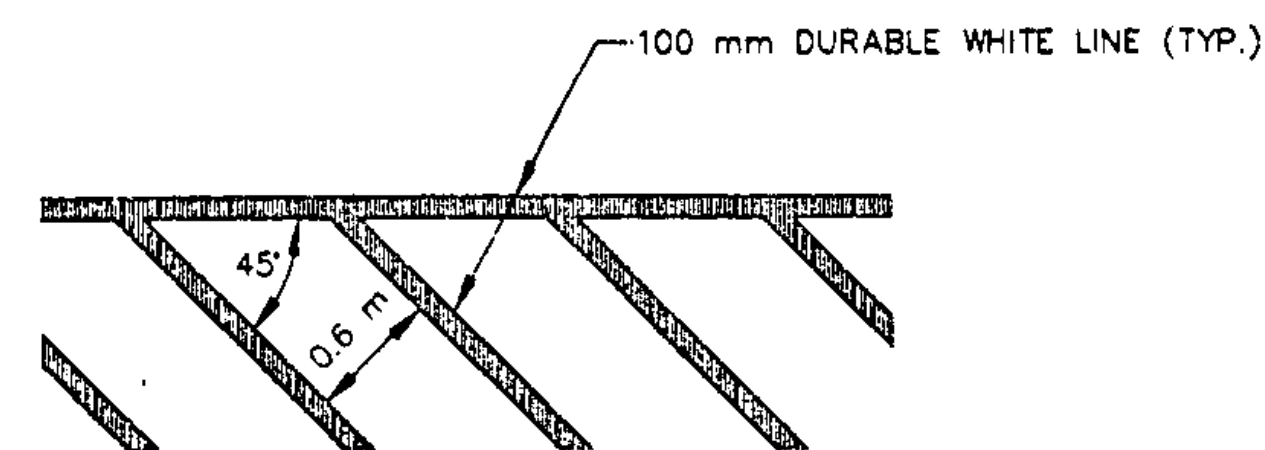
SIGN	DIMENSIONS (MILLIMETERS)														
STD.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
STD.	300	450	10	40	60	50C	25	50	150	65	124	127	108	75	100

COLORS
LEGEND AND BORDER - GREEN
WHITE SYMBOL ON BLUE BACKGROUND
BACKGROUND - WHITE

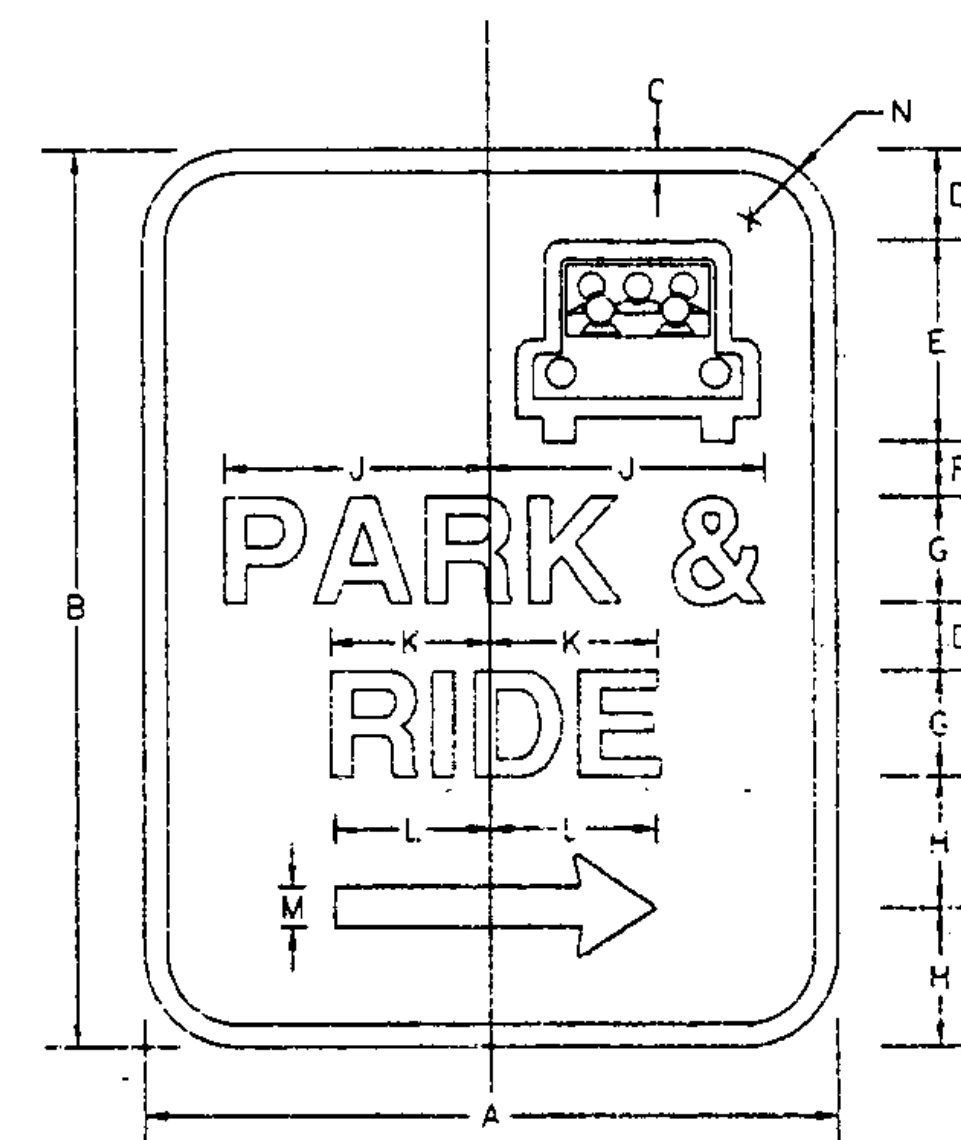
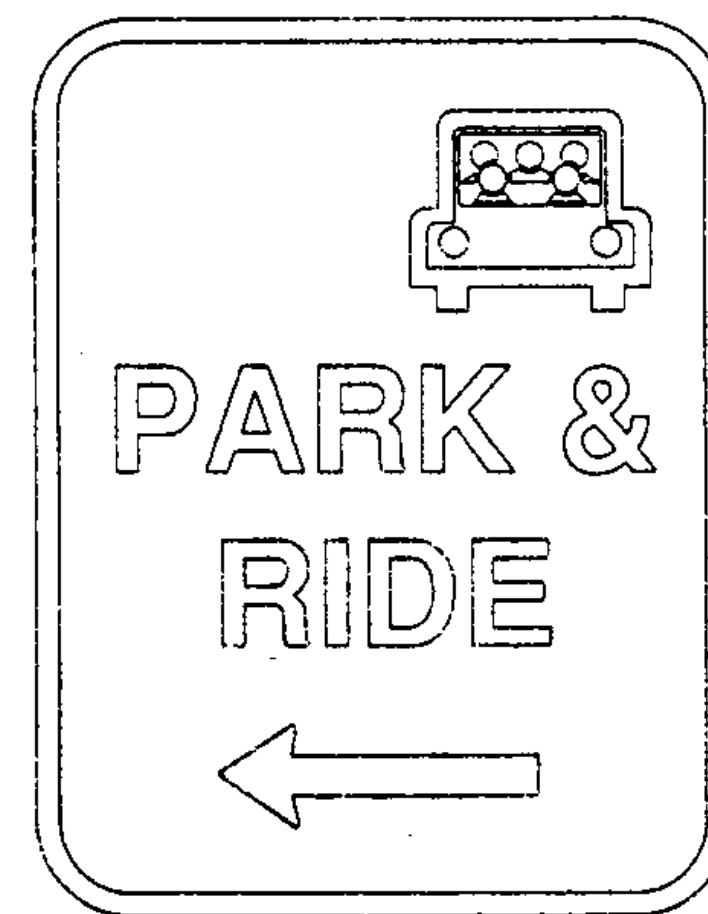
• REDUCE SPACING 50%
• SEE STD E-191 FOR SYMBOL DESIGN

THE SIGN BASE MATERIAL USED FOR THIS SIGN MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED.

FLAT SHEET ALUMINUM - 1.52 mm
HIGH DENSITY OVERLAID PLYWOOD - 12.7 mm
GALVANIZED FLAT SHEET STEEL - 16 GAGE



DIAGONAL STRIPING DETAIL



D4-2

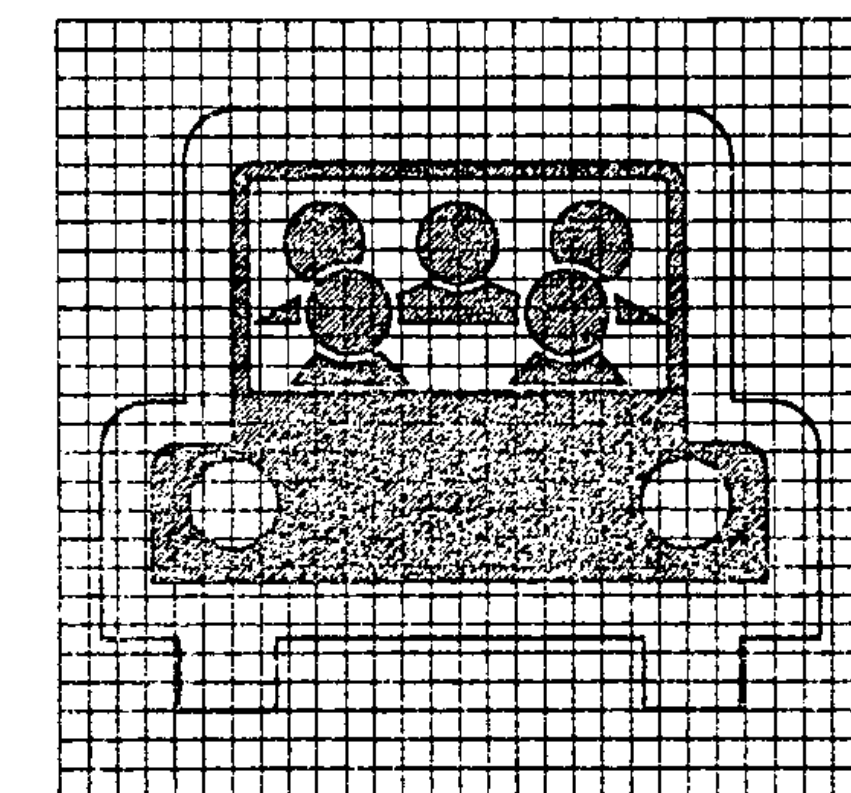
SIGN	DIMENSIONS (MILLIMETERS)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
STD.	750	900	20	75	225	75	100D	125	279	152	175	35	45	

COLORS

LEGEND, ARROW, & BORDER - WHITE
SYMBOL - WHITE & GREEN
BACKGROUND - GREEN

THE SIGN BASE MATERIAL USED FOR THIS SIGN MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED.

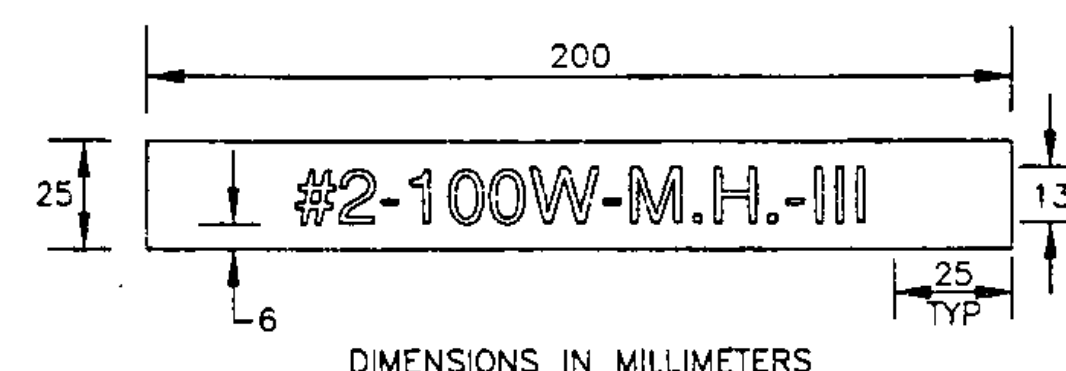
FLAT SHEET ALUMINUM - 2.54 mm
HIGH DENSITY OVERLAID PLYWOOD - 15.9 mm
GALVANIZED FLAT SHEET STEEL - 14 GAGE



PAVEMENT
MARKING
AND
SIGNING
DETAILS

PREPARED BY VSE DATE 12/95
CHECKED BY VSE DATE 12/95
DESIGN SUPERVISOR GAK DATE 12/95
PROJ. RICHMOND CMG PARK (4).
SHEET 15 OF 22 SHEETS

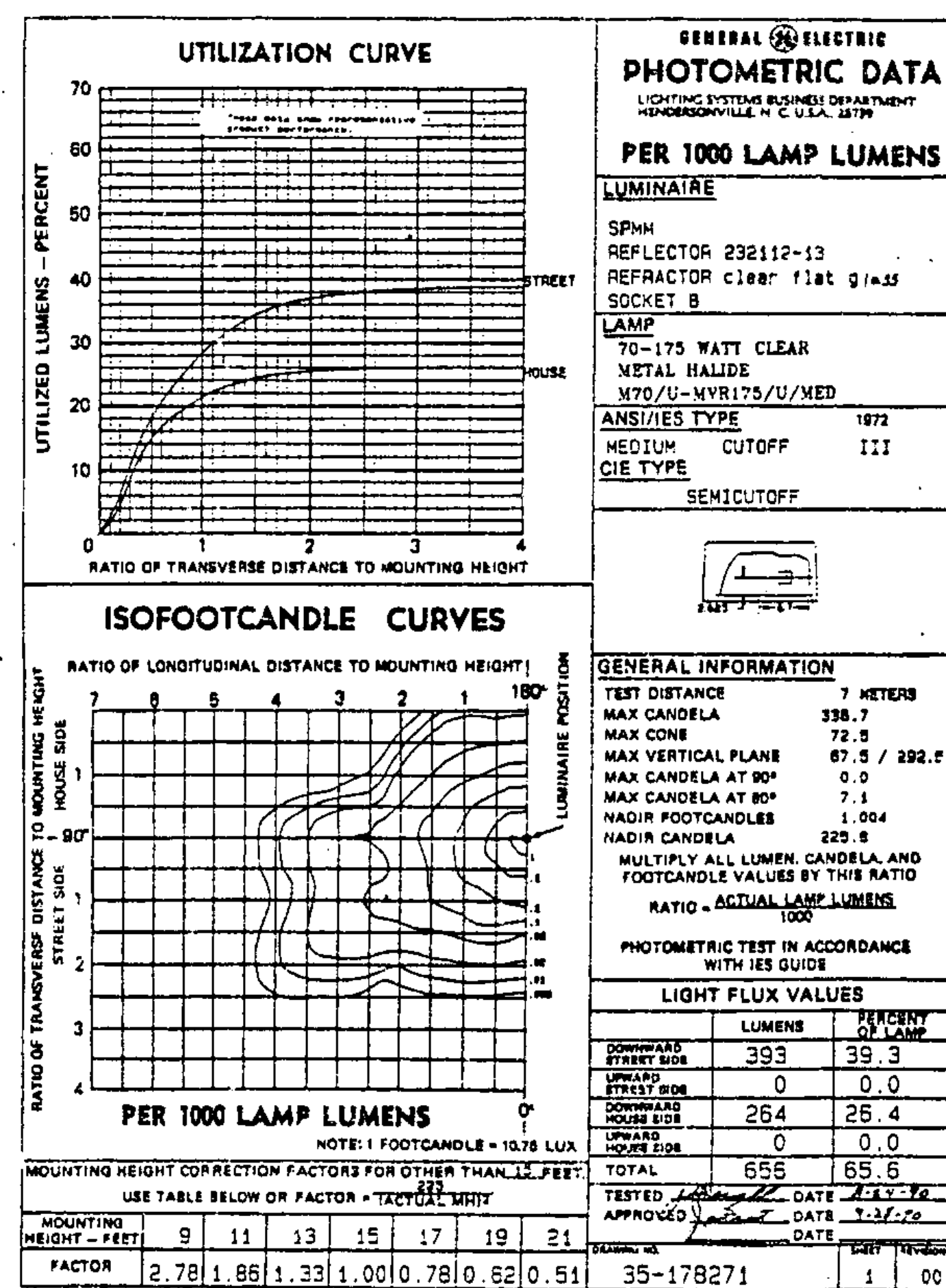
DETAILS FOR TAGS ATTACHED TO STREET LIGHT POLES



LEGEND: BLACK OR WHITE (NON-REFL.) - STAMPED
PRIOR TO PRINTING/PAINTING.
BACKGROUND: NATURAL ALUMINUM OR SAME AS
POLE FINISH.

NOTES:

1. THE TAG SHALL BE MOUNTED ON ALL STREET LIGHT POLES IN SUCH A MANNER AS NOT TO BE EASILY REMOVED, SUCH AS WELDED, RIVETED, OR BOLTED WITH VANDAL PROOF BOLTS.
2. THE LETTERS SHALL BE PUNCHED, STAMPED, ENGRAVED, OR PHOTO-ETCHED. PUNCHING, STAMPING OR ENGRAVING SHALL PENETRATE AT LEAST 50% OF THE BASE MATERIAL THICKNESS.
3. THE BASE MATERIAL FOR THE TAG SHALL BE ALUMINUM WITH A MINIMUM THICKNESS OF 2.5 mm.
4. THE TAG SHALL BE ATTACHED TO THE POLE ABOVE THE HANDHOLE, 15 mm MAXIMUM. IF THE POLE HAS A TRANSFORMER BASE, ATTACH TAG TO COVER.



GENERAL STREET LIGHT NOTES

CONCRETE BASES

THE OFFSET FOR CONCRETE BASES (FACE OF CURB OR EDGE OF PAVEMENT TO CENTER OF CONCRETE BASE) TO BE A MINIMUM OF 0.7 m OR AS OTHERWISE NOTED ON THE PLANS.

WHEN CONCRETE BASES ARE INSTALLED IN SLOPING GROUND, THE GREATEST EXPOSED HEIGHT TO KEEP ALL OF THE TOP ABOVE GROUND MUST BE DOUBLED AND THEN ADDED TO THE MINIMUM DEPTH FOR THE TOTAL BASE HEIGHT.

CARE SHOULD BE TAKEN WHERE CONCRETE BASES, DRAINAGE STRUCTURES OR UTILITIES ARE CLOSE TOGETHER.

POLES, ANCHOR BASES AND ARMS

ALUMINUM STREET LIGHT POLE SHAFT WALL THICKNESS SHALL BE AS NOTED IN THE SPEC. BOOK OR ON STANDARD SHEETS OR WILL BE GOVERNED BY MOUNTING HEIGHT, ARM LENGTH, NUMBER OF ARMS AND LUMINAIRE WEIGHT, AND EFFECTIVE PROJECTED AREA.

ALL NEW STREET LIGHT POLES AND LUMINAIRE ARMS FOR THIS PROJECT SHALL BE ALUMINUM IN ACCORDANCE WITH SUBSECTION 753.01 (B).

LUMINAIRES

LIGHT DISTRIBUTION IS BASED ON GENERAL ELECTRIC PHOTOMETRIC DATA DRAWINGS #35-178271, MEDIUM CUT-OFF, TYPE III DISTRIBUTION DATED 08-28-90 AND #35-178523, SHORT CUT-OFF, TYPE V DISTRIBUTION DATED 04-29-91.

THE ABOVE PHOTOMETRIC DATA DRAWINGS WERE USED FOR DESIGN PURPOSES ON THIS PROJECT. OTHER MANUFACTURER'S PRODUCTS MAY BE SUBSTITUTED IF THE INSTALLED LUMINAIRE LIGHT UTILIZATION AND MINIMUM LUX ON THE PARKING AREA ARE AT LEAST AS GREAT AS THAT INDICATED BY THE ABOVE PHOTOMETRICS.

CONDUIT

A 51 mm (ID) MINIMUM CONDUIT SHALL BE USED AT ALL LOCATIONS UNLESS OTHERWISE NOTED ON THE PLANS. ALL CONDUIT SHALL BE AT LEAST SCHEDULE 40 P.V.C. OR RIGID GALVANIZED STEEL ELECTRICAL CONDUIT (AND CONFORM TO THE REQUIREMENTS OF UL-6), TYPE OF CONDUIT (P.V.C. OR STEEL) SHALL BE NOTED ON THE PLANS.

CONDUIT SLEEVE

MINIMUM WALL THICKNESS FOR RIGID PLASTIC PIPE SLEEVES SHALL BE 2.9% OF THE DIAMETER. ALL CONDUIT RUNS UNDER ROADWAY SHALL BE INSTALLED IN RIGID PLASTIC OR STEEL PIPE SLEEVES. THE SLEEVES SHALL EXTEND TO WITHIN 0.6 m OF THE SIDE OF A CONCRETE BASE OR PULLBOX. WHERE NO CONCRETE BASE OR PULLBOX IS PRESENT, THE SLEEVE SHALL EXTEND 1.2 m BEYOND THE OUTSIDE EDGE OF SHOULDER OR FACE OF CURB. BACKFILLING AROUND A SLEEVE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

WIRE

ALL WIRING BETWEEN THE METER AND/OR POWER SOURCE AND THE FIRST POLE AND/OR PULLBOX AND BETWEEN POLES AND/OR PULLBOXES SHALL BE COPPER AND SIZED AS SPECIFIED ON THE PLANS. ALL WIRE TO HAVE TYPE XHHW INSULATION OR EQUIVALENT.

GROUNDING

ALL CONDUIT MUST INCLUDE A GROUNDING CONDUCTOR, AND RIGID STEEL CONDUIT SHALL BE PROPERLY CONNECTED AT THE JOINT SO AS TO BE WATER TIGHT AND MAINTAIN ELECTRICAL CONTINUITY AND HAVE GROUNDING BUSHINGS SO AS TO ACT AS A GROUND CONDUCTOR.

ALUMINUM WIRE SHALL NOT BE USED FOR GROUND WIRE.

THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS, NO SPLICES, BUT MAY HAVE TAPS CONNECTED TO IT AT THE SERVICE CENTER AND POLE BASES.

GENERAL

THE LOAD ON EACH BRANCH OF A THREE WIRE CIRCUIT SHALL BE AS BALANCED AS POSSIBLE, LOAD TO NEUTRAL.

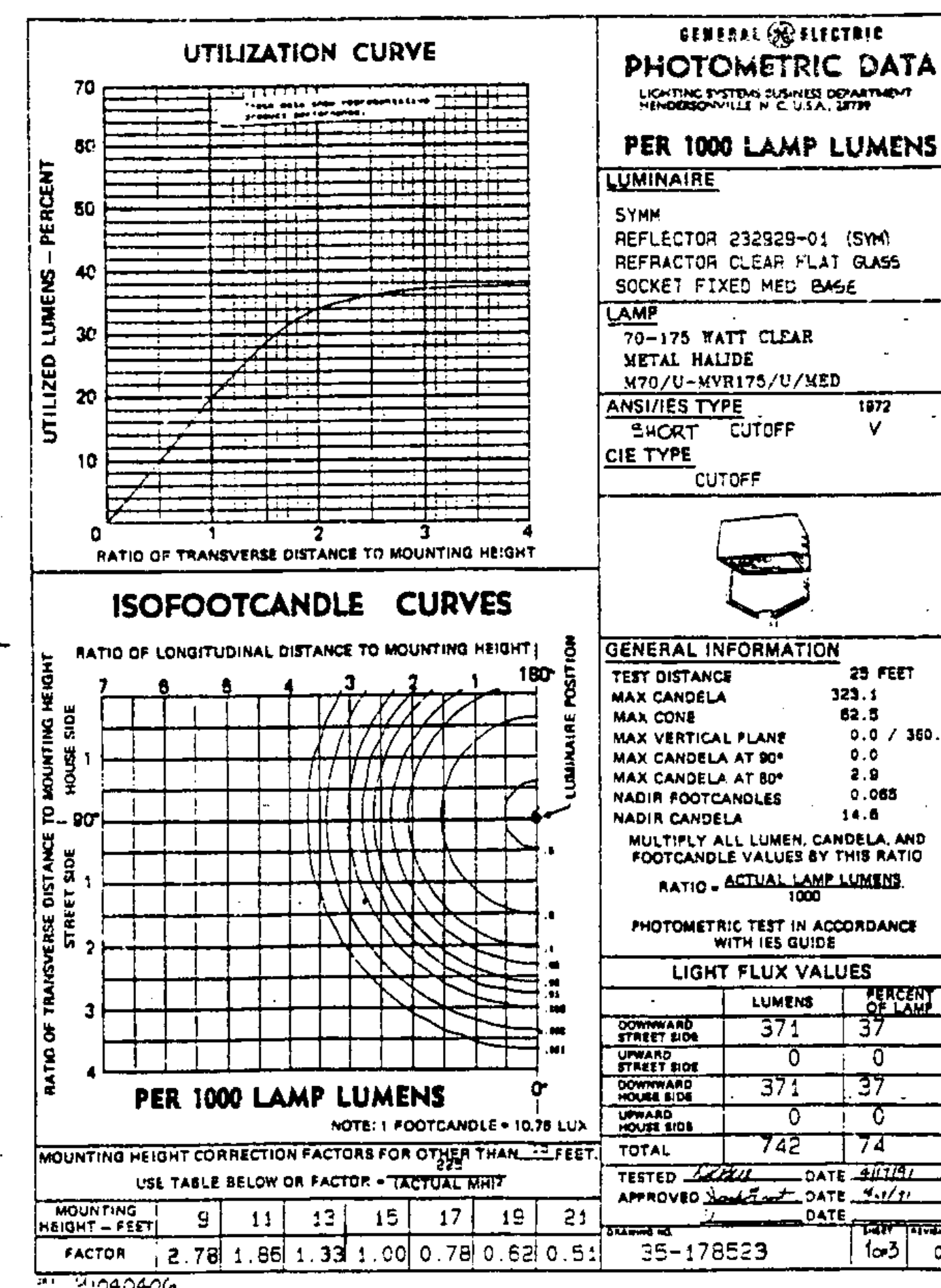
THE LAST CONCRETE POLE BASE AT THE END OF EACH CIRCUIT SHALL HAVE A CONDUIT SWEEP WITH CAP INSTALLED FOR FUTURE USE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY ELECTRICAL PERMITS.

STREET LIGHTING DESIGN PARAMETERS

AVERAGE MAINTAINED HORIZONTAL ILLUMINATION (IN LUX)
PARKING AREA
REQUIRED MIN. 10.76
ACTUAL 11.51

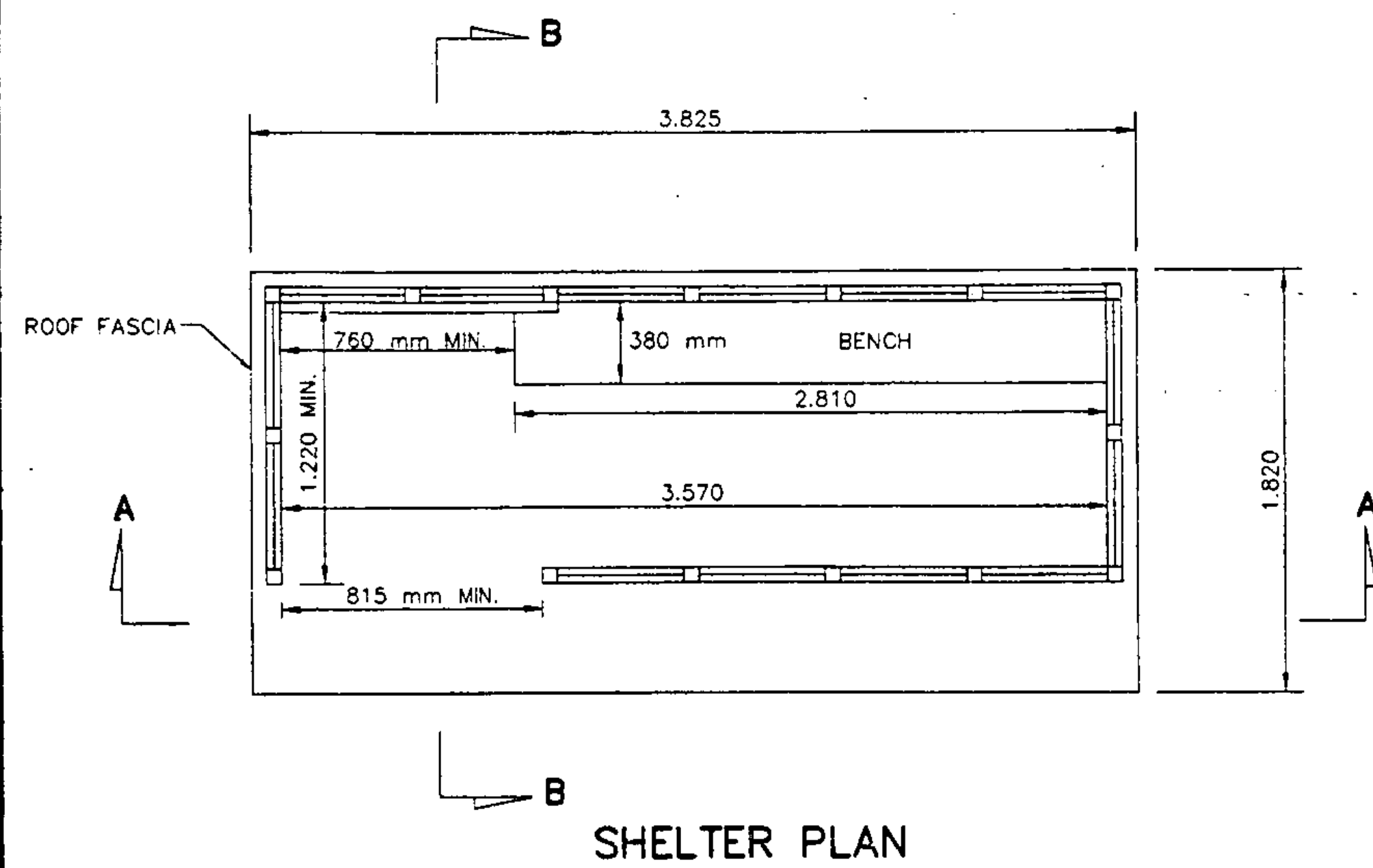
LUMINAIRE DIRT DEPRECIATION 0.90
LAMP LUMEN DEPRECIATION 0.65
COMBINED LAMP OR MAINT. FACTOR 0.59
COEFFICIENT OF UTILIZATION 0.46
UNIFORMITY RATIO 4 : 1
MIN. LUX ON PARKING AREA 2.15 3.01



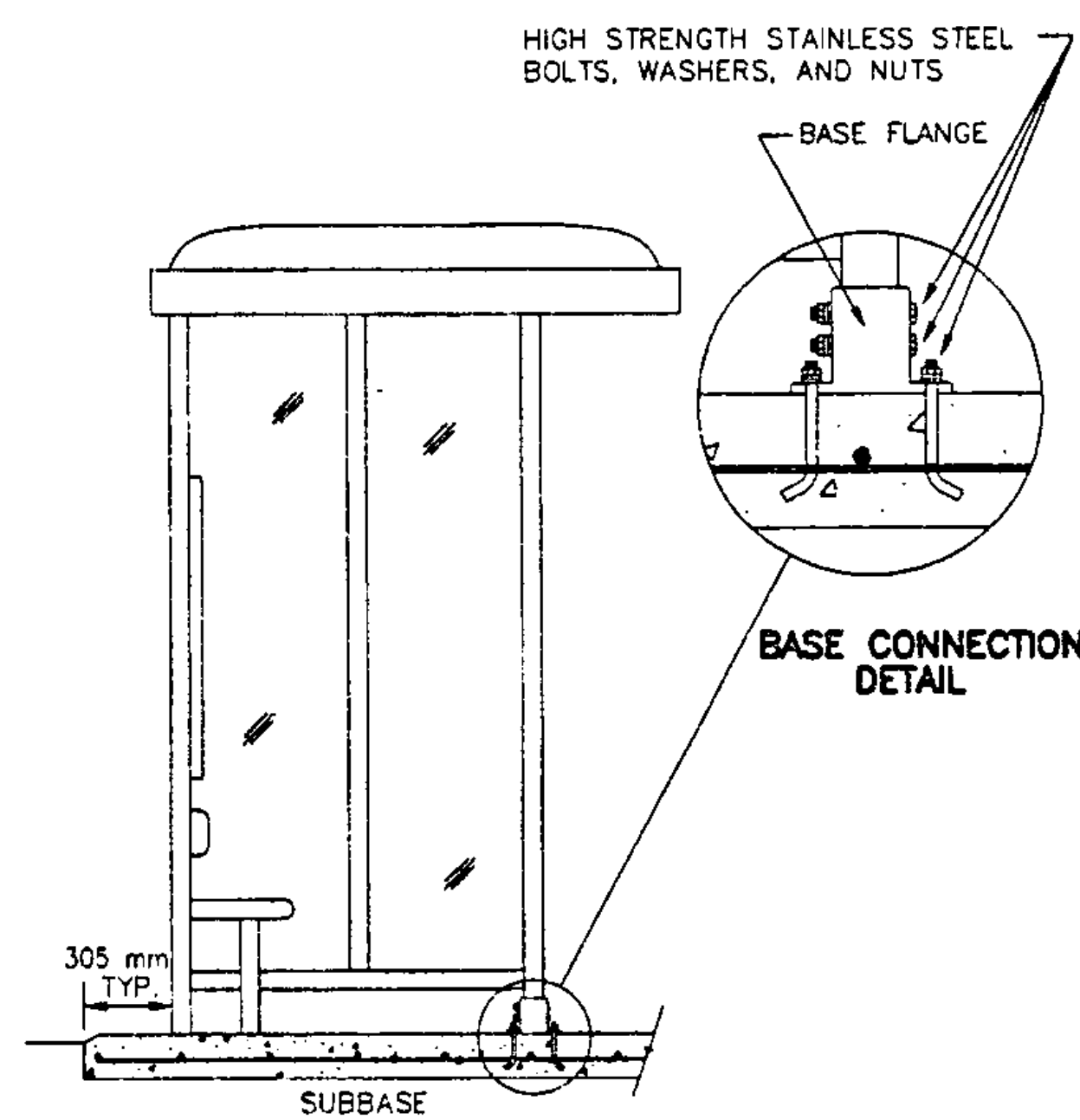
STREET
LIGHTING
NOTES AND
DETAILS

PREPARED BY VSE DATE 1/96
CHECKED BY VSE DATE 1/96
DESIGN SUPERVISOR GAK DATE 1/96
PROJ. RICHMOND CMG PARK(4)

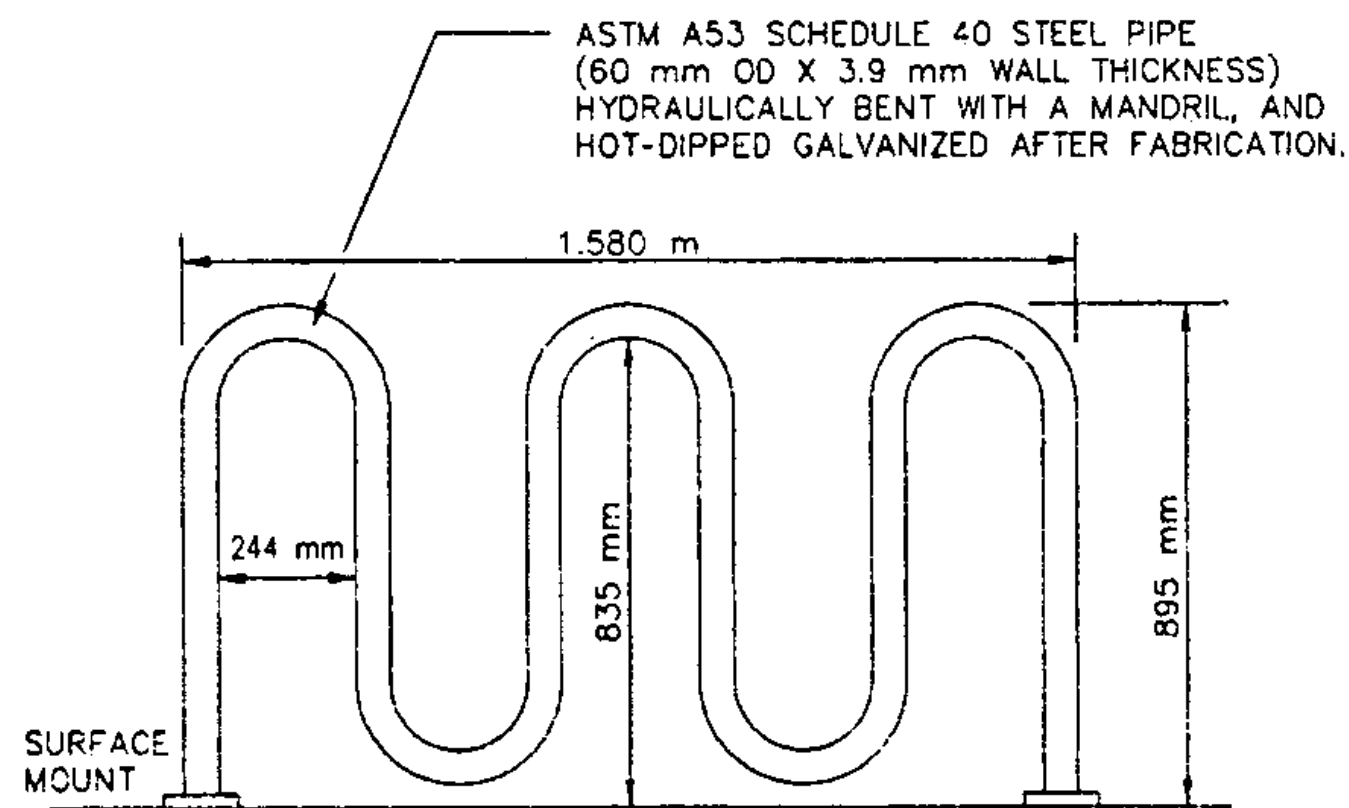
SHEET 16 OF 22 SHEETS



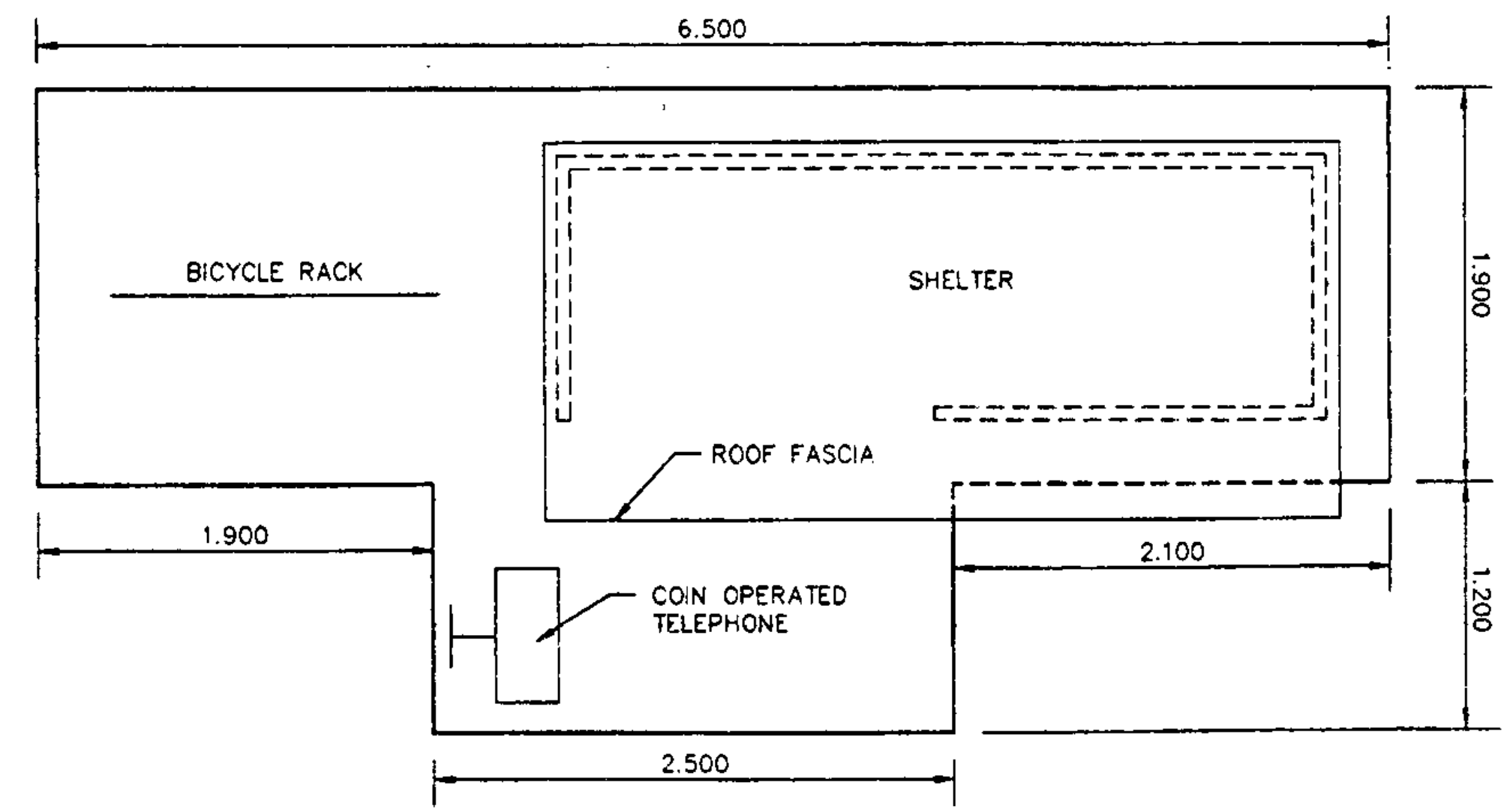
SHELTER PLAN



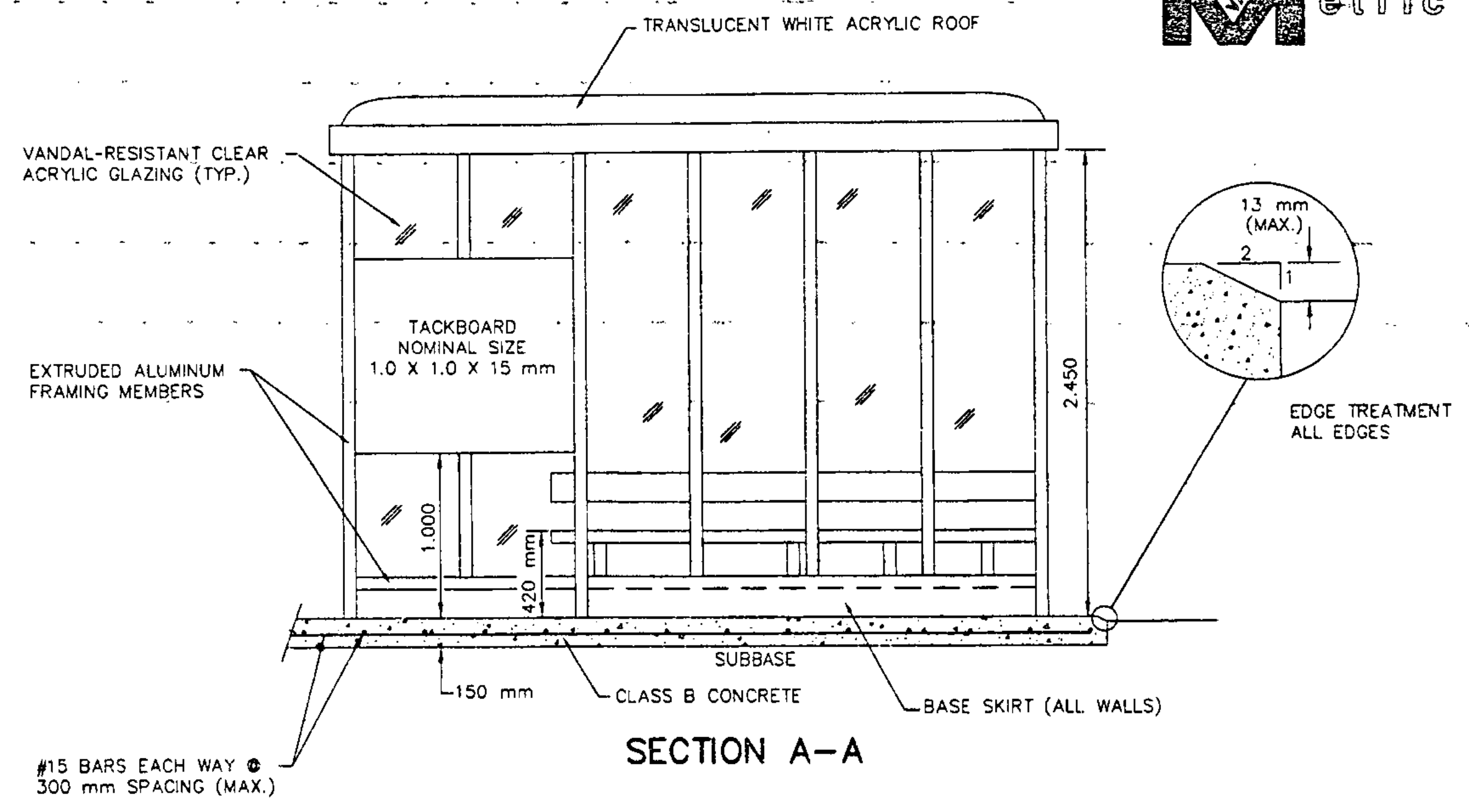
SECTION B-B



BICYCLE RACK ELEVATION



PLAN OF CONCRETE SLAB



SECTION A-A

SHELTER SPECIFICATIONS AND GENERAL NOTES

GENERAL:
THE WORK SPECIFIED INCLUDES THE FABRICATION, DELIVERY, AND ERECTION OF THE SHELTER COMPONENTS INCLUDING WALL FRAME, ROOF AND GLAZING PANELS, AND ALL REQUIRED ACCESSORIES AND HARDWARE FOR INSTALLATION. SHELTER SHALL BE STABLE WITH ALL WINDOWS, ROOF, FASCIA, AND GROUND FASTENINGS REMOVED. SHELTER SHALL BE VANDAL-RESISTANT, MAINTENANCE FREE AND COMPLETELY WEATHERPROOF. SHELTER SHALL BE PREFABRICATED IN FOUR OR FIVE PREGLAZED CAULKED AND GASKETED WALL AND ROOF SECTIONS.

STANDARDS:
ALL ALUMINUM SHALL CONFORM TO THE STANDARDS OF THE ALUMINUM ASSOCIATION. SHELTER CONSTRUCTION SHALL CONFORM TO THE STANDARDS OF ASCE. SHELTER SHALL BE ABLE TO WITHSTAND A MINIMUM DEAD LOAD OF 1.92 kPa AND A MINIMUM WIND LOAD OF 130 km/h.

CONSTRUCTION:
SHELTER SHALL BE CONSTRUCTED OF MODULAR INTERCHANGEABLE COMPONENTS. ALL STRUCTURAL FRAMING MEMBERS AND MULLIONS SHALL BE ONE-PIECE SEAMLESS EXTRUDED ALUMINUM TUBES OF 6061T6 OR 6063T6 ALLOY. SNAP TOGETHER OR TWO-PIECE TUBES WILL NOT BE ACCEPTED. WINDOW FRAMES, FASCIA, AND ROOF "HOLD DOWNS" SHALL BE MULTI-FUNCTION EXTRUSIONS OF 6063T52 OR T6 ALLOY. WINDOW FRAMES AND FASCIA SHALL PERMIT USE OF VARIOUS INTERCHANGEABLE GLAZING AND ROOFING MATERIALS. FRAMING MEMBER CONNECTIONS SHALL BE CONCEALED UTILIZING 57 mm X 57 mm X 6.4 mm OR 57 mm X 32 mm X 6.4 mm THICK ALUMINUM "U" CHANNELS WITH INTEGRAL WEEP SYSTEM AND TAPERED EDGES. MAIN STRUCTURAL JOINTS SHALL BE FASTENED WITH TWO HIGH STRENGTH 6.4 mm STAINLESS STEEL BOLTS WITH WASHERS, LOCK WASHERS, AND NUTS, AND 6.4 mm STRUCTURAL ALUMINUM DRIVE RIVETS. SELF TAPPING CONNECTORS WILL NOT BE ACCEPTED. SHELTER BASE CONNECTIONS SHALL BE ADJUSTABLE TO VARYING MOUNTING CONDITIONS WITH A CHOICE OF INTERNAL OR EXTERNAL FLANGE DETAILS. FINISH OF EXTERNAL FLANGES SHALL MATCH SHELTER FINISH. ALL JOINTS SHALL BE NEAT AND CLEAN AND ALL EDGES FREE OF BURRS.

FRAMING MEMBERS:
ALL MAIN STRUCTURAL FRAMING, BOTH VERTICAL AND HORIZONTAL - SHALL BE THE SAME SIZE, A MINIMUM OF 64 mm X 64 mm X 3.2 mm THICK. MULLIONS SHALL BE 38 mm X 64 mm X 3.2 mm THICK RECTANGULAR ALUMINUM TUBES.

WINDOW FRAMING:
WINDOW FRAMES SHALL BE "F" SHAPED EXTRUDED SECTIONS WITH INTEGRAL ALIGNMENT LIP WITH BEVELED EDGE, AND SCREW BOSS OR CORNER KEY SLOT. ALL CORNERS SHALL BE MITERED AND FASTENED INTERNALLY WITH CONCEALED STAINLESS STEEL SCREWS. EACH WINDOW FRAME UNIT, WITH WINDOW, SHALL BE INDEPENDENT OF THE STRUCTURAL FRAME. TAMPERPROOF 4.8 mm SHALLOW HEAD ALUMINUM RIVETS (FINISHED TO MATCH SHELTER) SHALL BE USED TO FASTEN WINDOW FRAMES TO STRUCTURAL FRAME AT APPROXIMATELY 335 mm O.C. WINDOW FRAMES SHALL PERMIT GLAZING TO BE ENGAGED UP TO 20 mm TO PREVENT "POP OUT".

FINISHES:
ALL ALUMINUM FRAMING AND FASCIA MEMBERS SHALL HAVE A CLEAR ANODIZED FINISH CONFORMING TO THE "ALUMINUM ASSOCIATION STANDARDS FOR ANODICALLY COATED ALUMINUM ALLOYS FOR ARCHITECTURAL APPLICATIONS".

GLAZING:
GLAZING SHALL BE 6.4 mm CLEAR VANDAL-RESISTANT ACRYLIC SHEET. ALL GLAZING SHALL BE GASKETED WITH CONTINUOUS EXTRUDED PVC DRY-SET SPLINES.

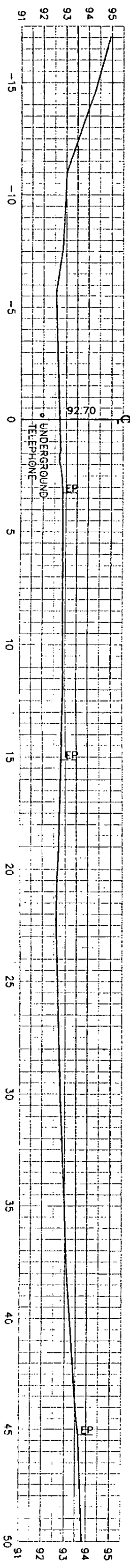
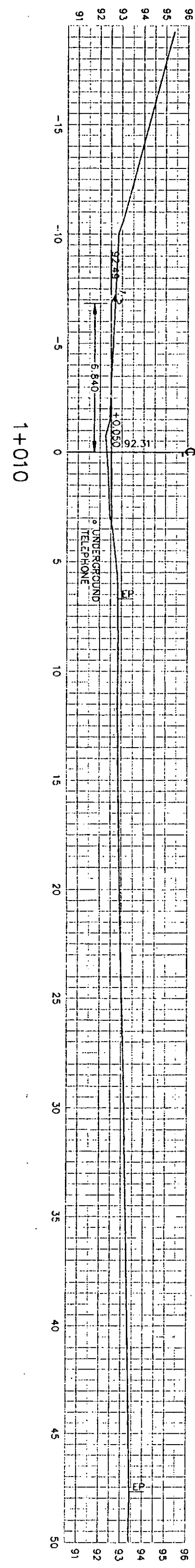
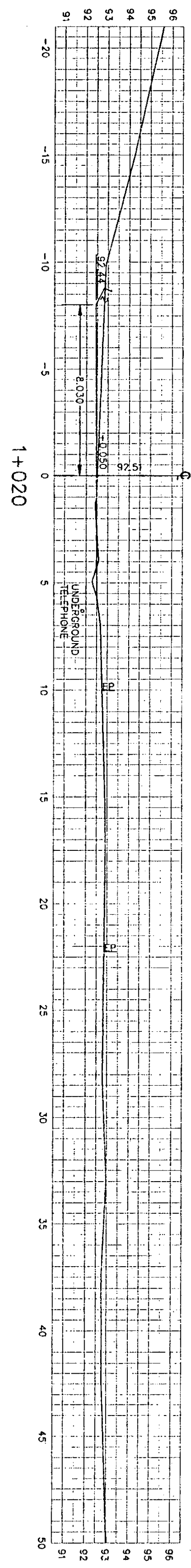
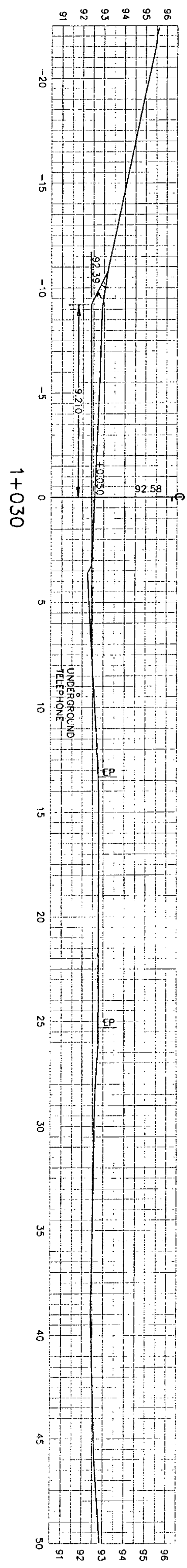
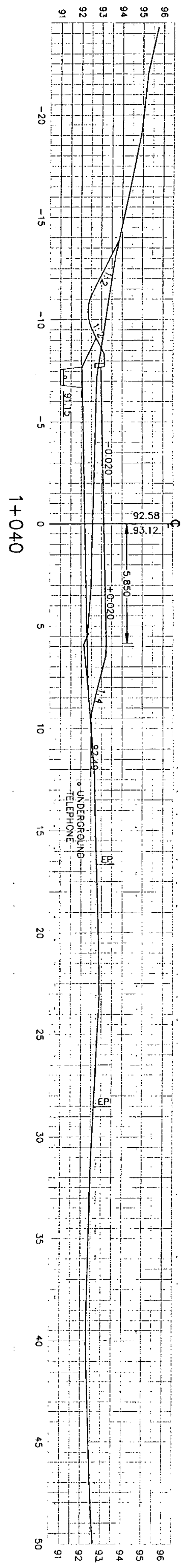
ROOF:
ROOF SHALL BE ONE-PIECE MOLDED SKYLIGHT DOME OF 6.4 mm TRANSLUCENT WHITE ACRYLIC. ROOF SHALL BE TRIPLE SEALED WITH CONTINUOUS COMPRESSED EPT GASKETS WITH ADHESIVE BACKING, ON BOTH TOP AND BOTTOM EDGES OF DOME, CONTINUOUS CAULKING BEAD INTEGRAL WITH "HOLD DOWN", AND CONTINUOUS PREMIUM GRADE SILICONE SEALS AROUND ALL EDGES AND JOINTS. ROOF DOMES SHALL BE FACTORY MOUNTED INTO FASCIA/GUTTER ASSEMBLY AND SHALL BE REMOVABLE WITHOUT REMOVING FASCIA. ROOFS SHALL BE LEAK AND CONDENSATION PROOF.

ROOF FASCIA:
ALL FASCIA SHALL BE ONE-PIECE 152 mm HIGH (MINIMUM) EXTRUDED ALUMINUM MEMBERS WITH MITERED CORNERS, SELF ALIGNMENT LIPS, DOUBLE CORNER-KEY SLOTS, INTEGRAL GUTTER WITH HIDDEN DRAINAGE REVEAL AND DRIP MOLDING. TOP EDGES SHALL BE ROUNDED FOR SAFETY. FASCIA MEMBERS SHALL HAVE NO EXPOSED FASTENINGS. EACH CONNECTION BETWEEN FASCIA MEMBERS SHALL BE WITH TWO 6.4 mm THICK ALUMINUM ANGLE CORNER KEYS AND FOUR THREADED STAINLESS STEEL ALLENHEAD SET SCREWS.

SHELTER AND BICYCLE RACK DETAILS	PREPARED BY	VSE	DATE	2/96
	CHECKED BY	VSE	DATE	2/96
	DESIGN SUPERVISOR	GAK	DATE	2/96
	PROJ.	RICHMOND CMG PARK(4)		
	SHEET	17	OF	22 SHEETS

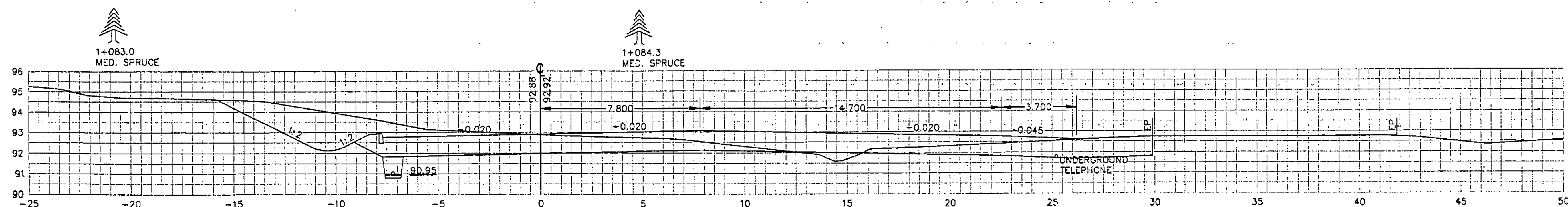
ALL DIMENSIONS IN METERS UNLESS NOTED OTHERWISE

Metric

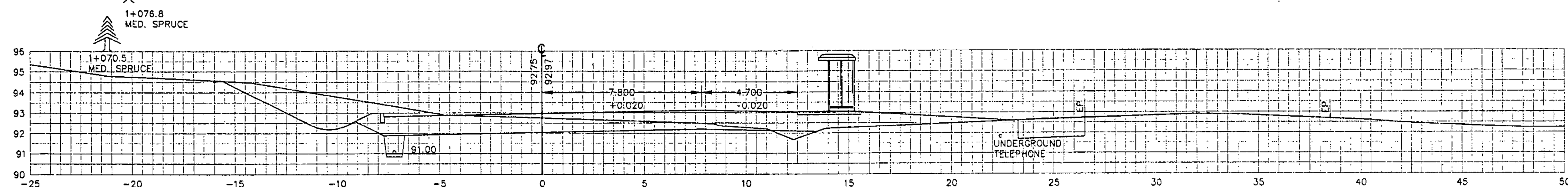


CROSS SECTIONS

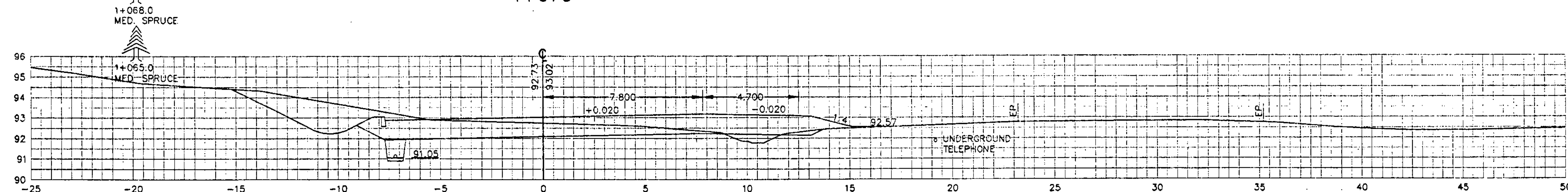
FROM STA. 1+000 TO STA. 1+040
SURVEY BY: R.C. DATE: 12/93
PROJ. RICHMOND CIRC PARK(4)
SHEET 18 OF 22 SHEETS



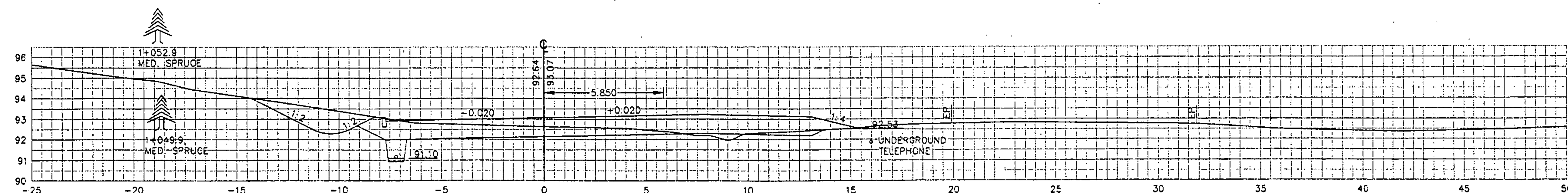
1+080



1+070



1+060

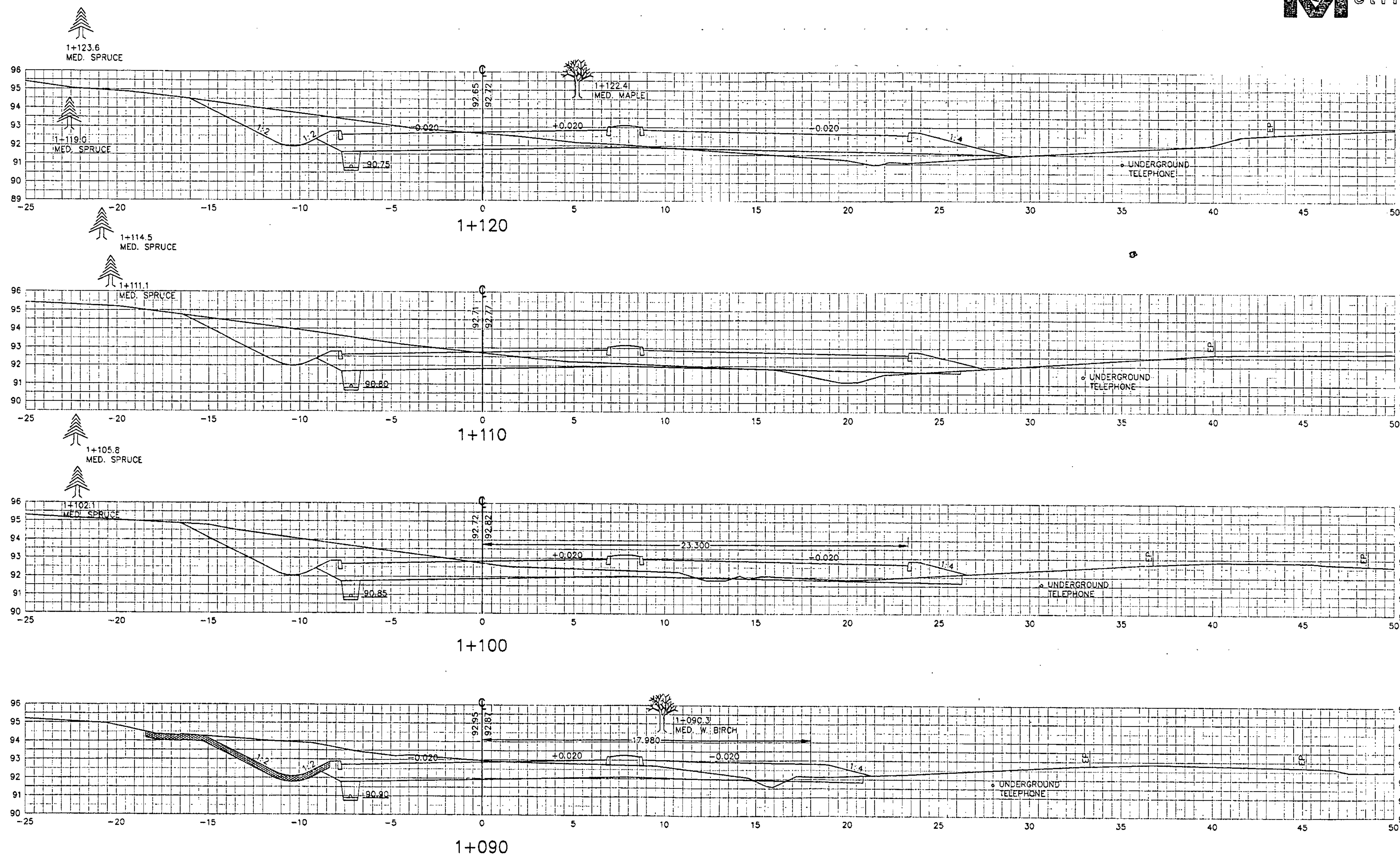


1+050

5 m

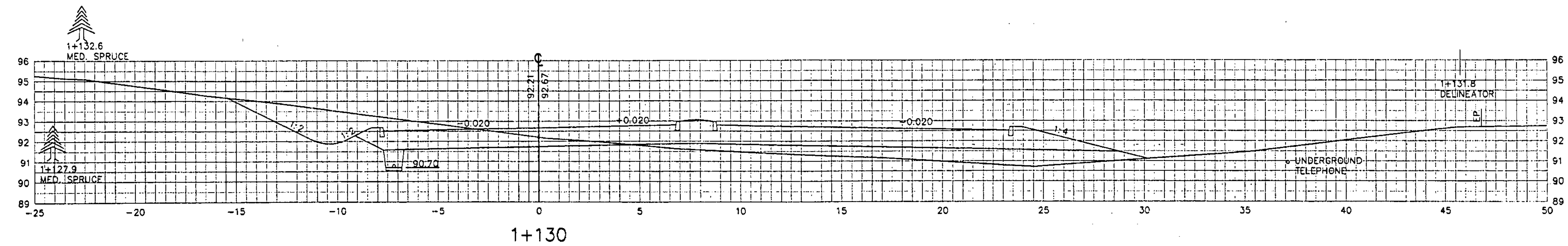
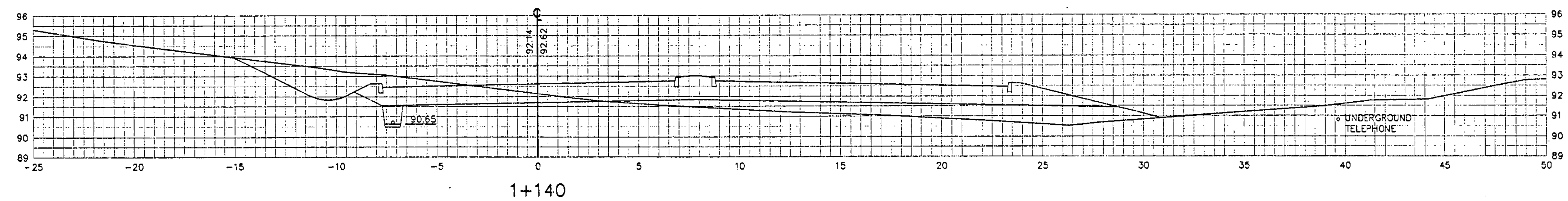
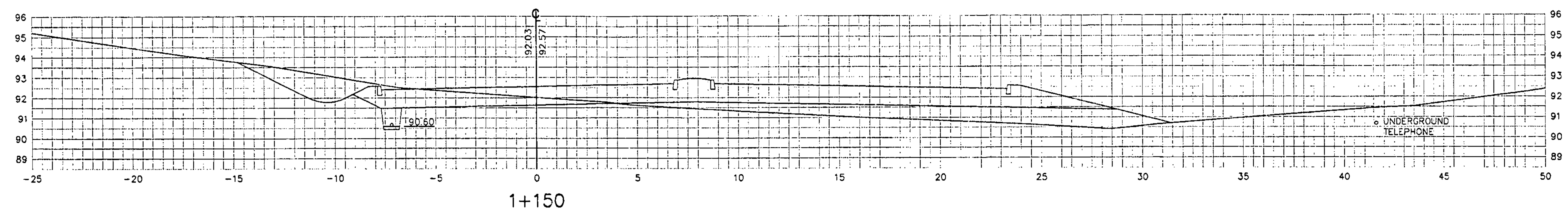
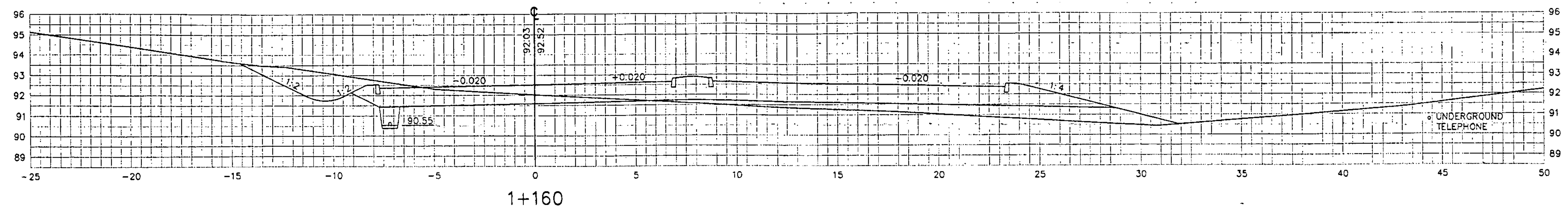
CROSS
SECTIONS

FROM STA. 1+050 TO STA. 1+080
SURVEY BY RDC DATE 12/93
PROJ. RICHMOND CMG PARK(4)
SHEET 19 OF 22 SHEETS



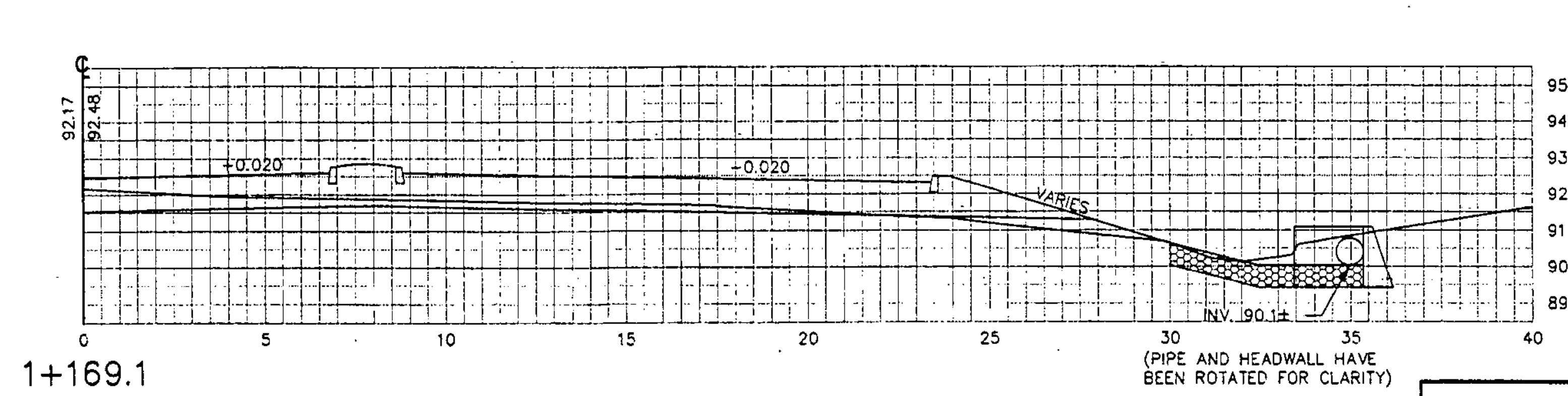
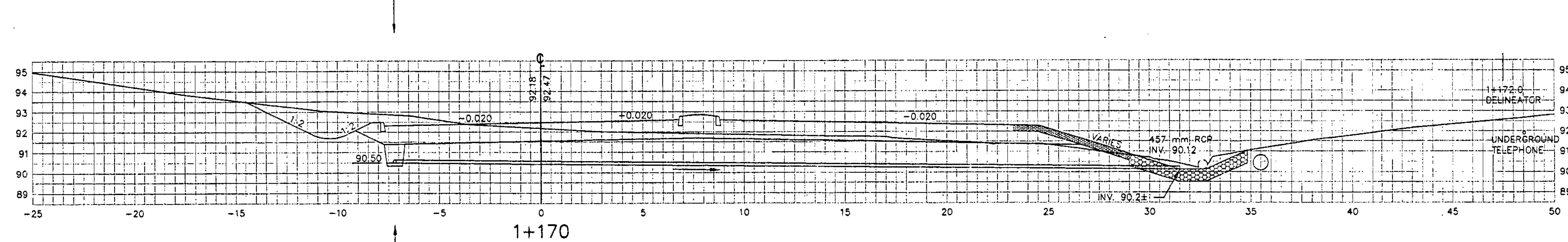
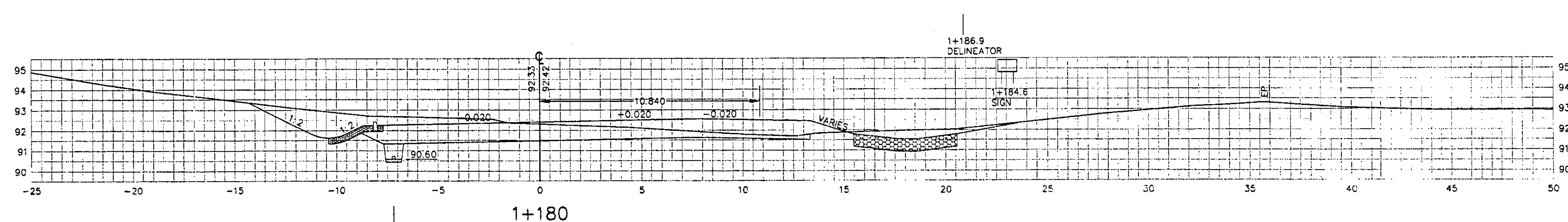
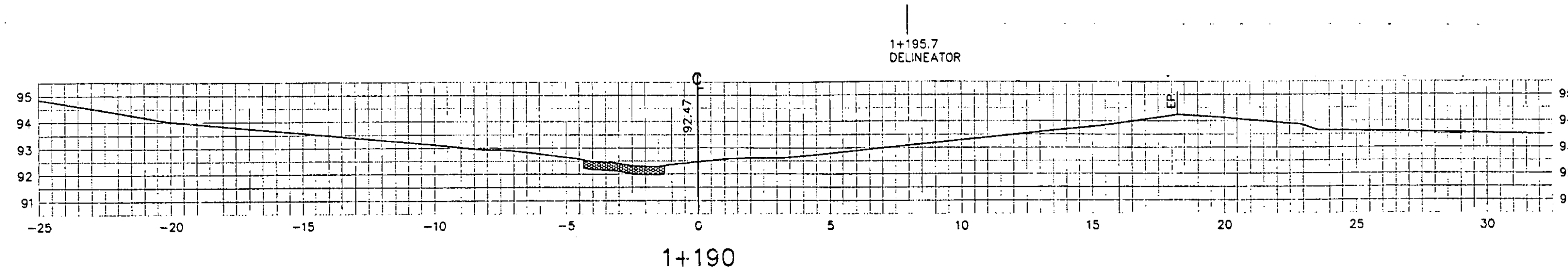
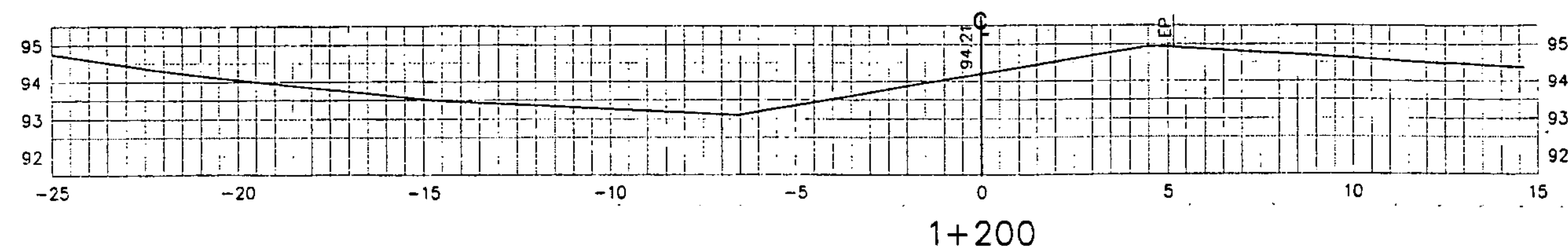
CROSS SECTIONS	FROM STA. 1+090 TO STA. 1+120
	SURVEY BY RDC DATE 12/93
	PROJ. RICHMOND CMG PARK(4)
	SHEET 20 OF 22 SHEETS

5 m



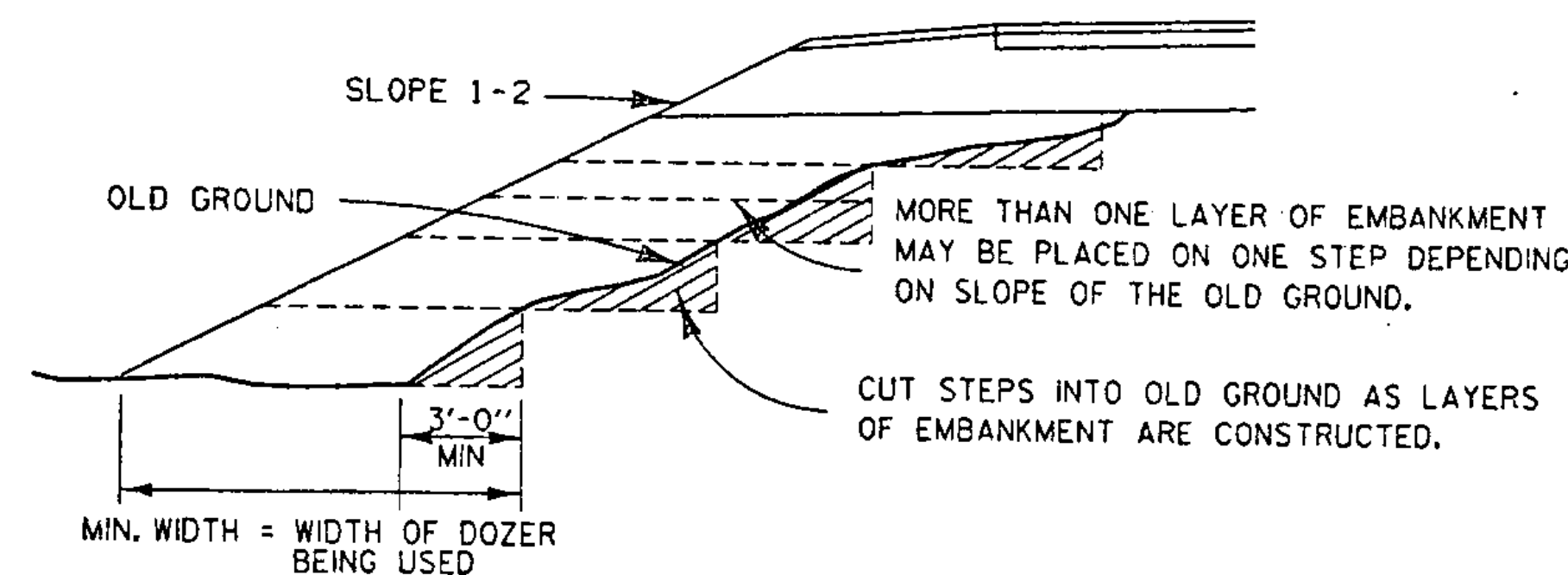
CROSS SECTIONS	FROM STA. 1+130 TO STA. 1+160
	SURVEY BY ROC DATE 12/93
	PROJ. RICHMOND CMG PARK(4)
	SHEET 21 OF 22 SHEETS

5 m

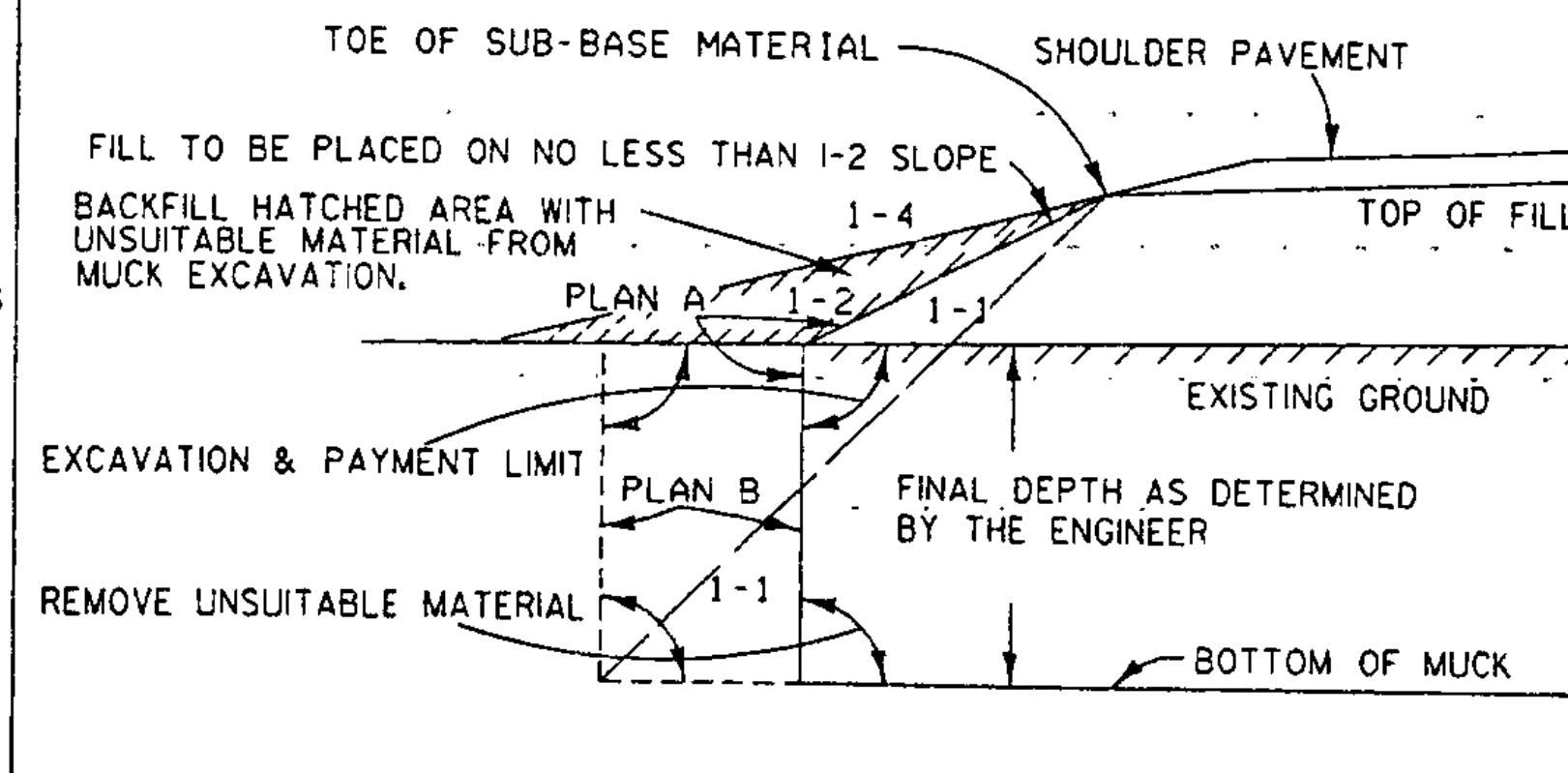


CROSS SECTIONS	FROM STA. 1+169.1 TO STA. 1+200
	SURVEY BY RDC DATE 12/93
	PROJ. RICHMOND CMG PARK(4)
	SHEET 22 OF 22 SHEETS

5 m

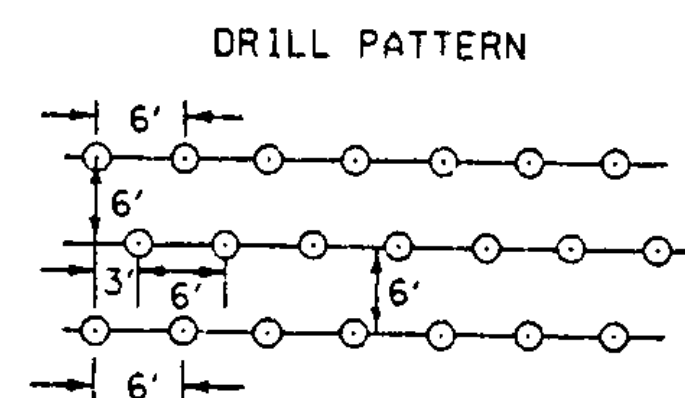
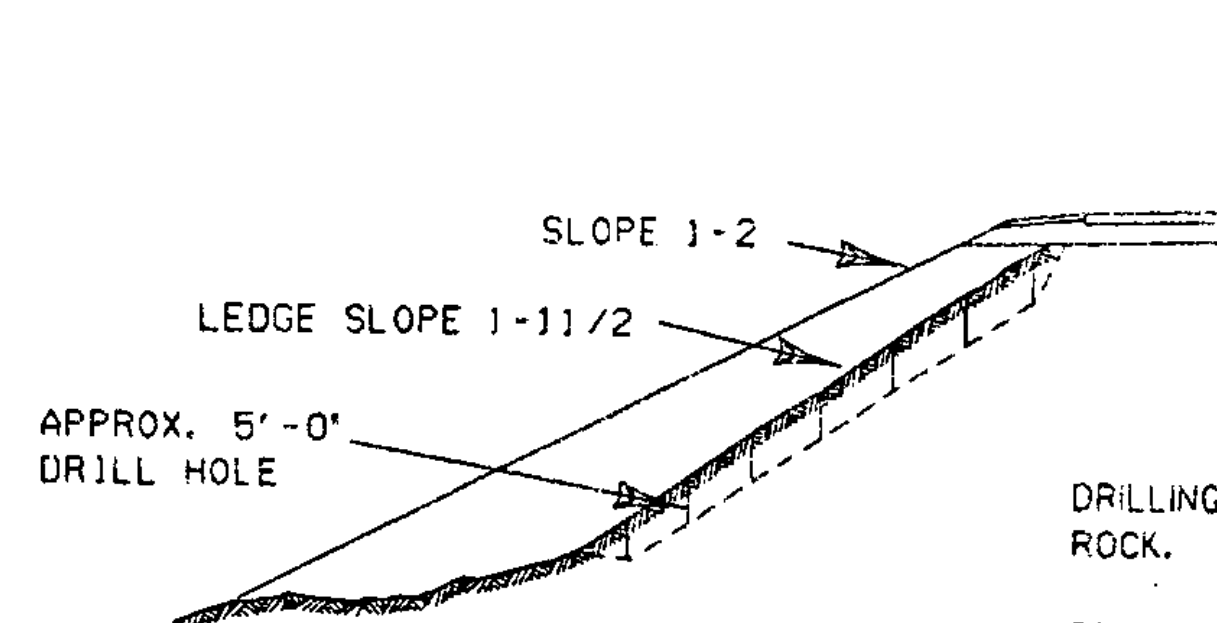


METHOD FOR CONSTRUCTING AN EMBANKMENT ON EARTH SLOPE



GENERAL NOTES:
THE MUCK OR UNSUITABLE MATERIAL SHALL BE EXCAVATED TO THE NEAT LINES SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.
EXCAVATION AND PAYMENT LIMIT WILL BE DETERMINED FROM EITHER PLAN 'A' OR PLAN 'B', WHICHEVER PRODUCES THE GREATER WIDTH IN A GIVEN MUCK AREA.
BACKFILL MATERIAL MUST MEET THE REQUIREMENTS SET FORTH UNDER MUCK EXCAVATION, SECTION 203

TYPICAL NEAT PAY LINES FOR MUCK EXCAVATION

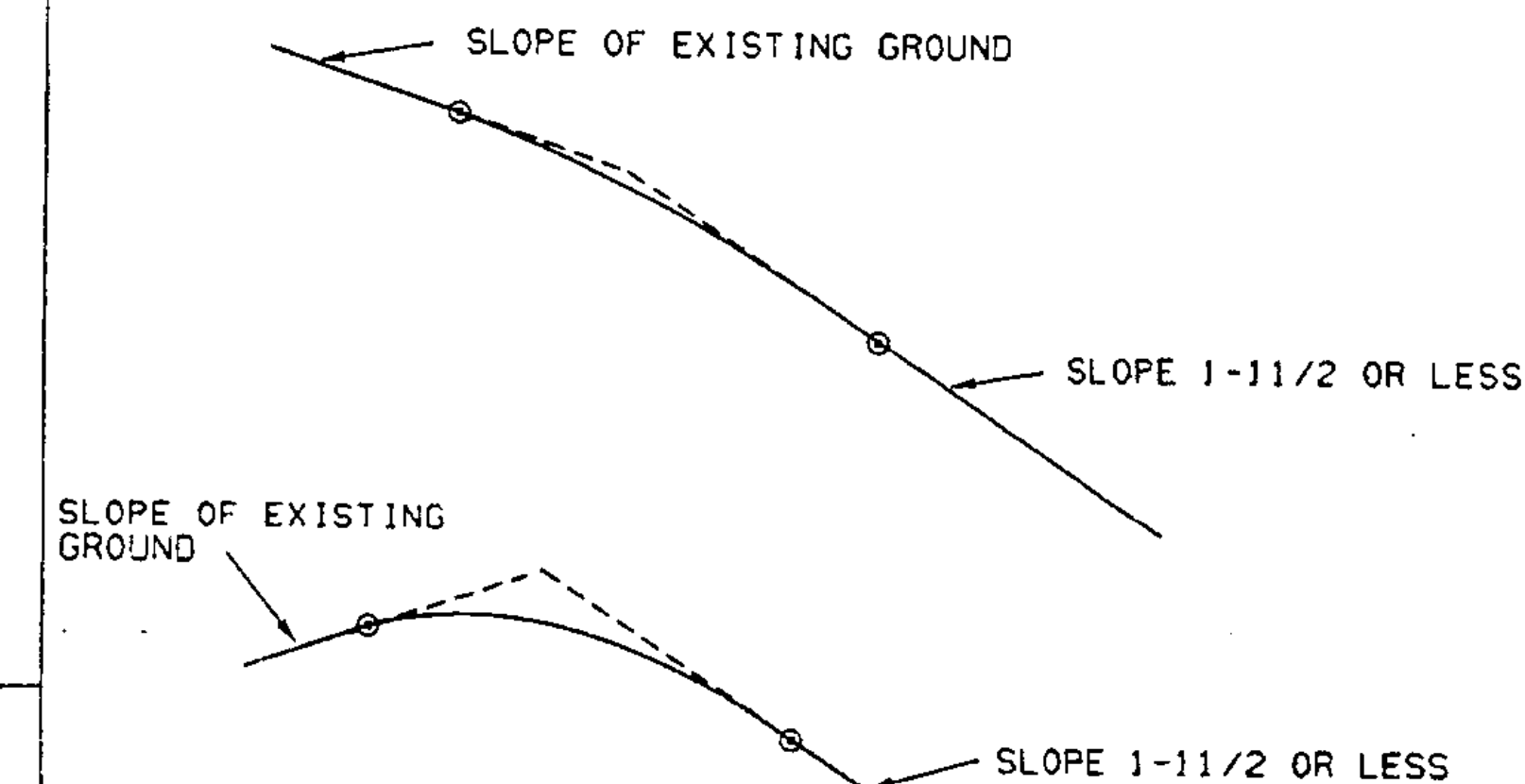
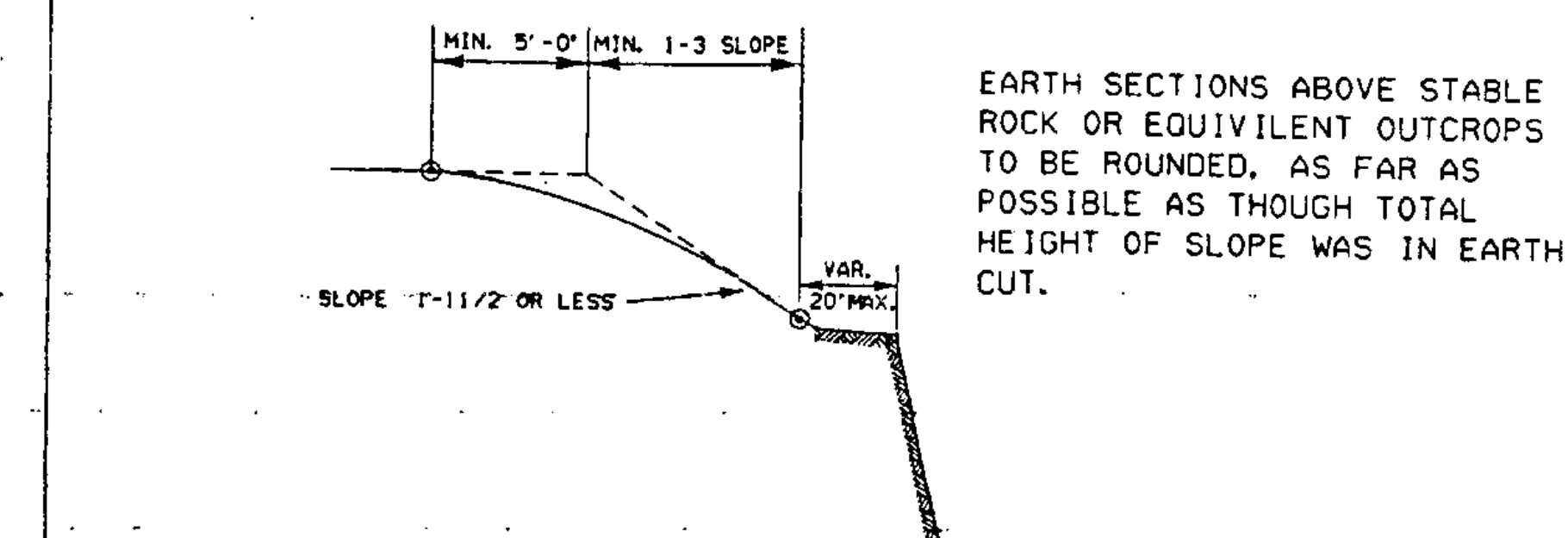


DRILLING AND BLASTING OF SOLID ROCK.

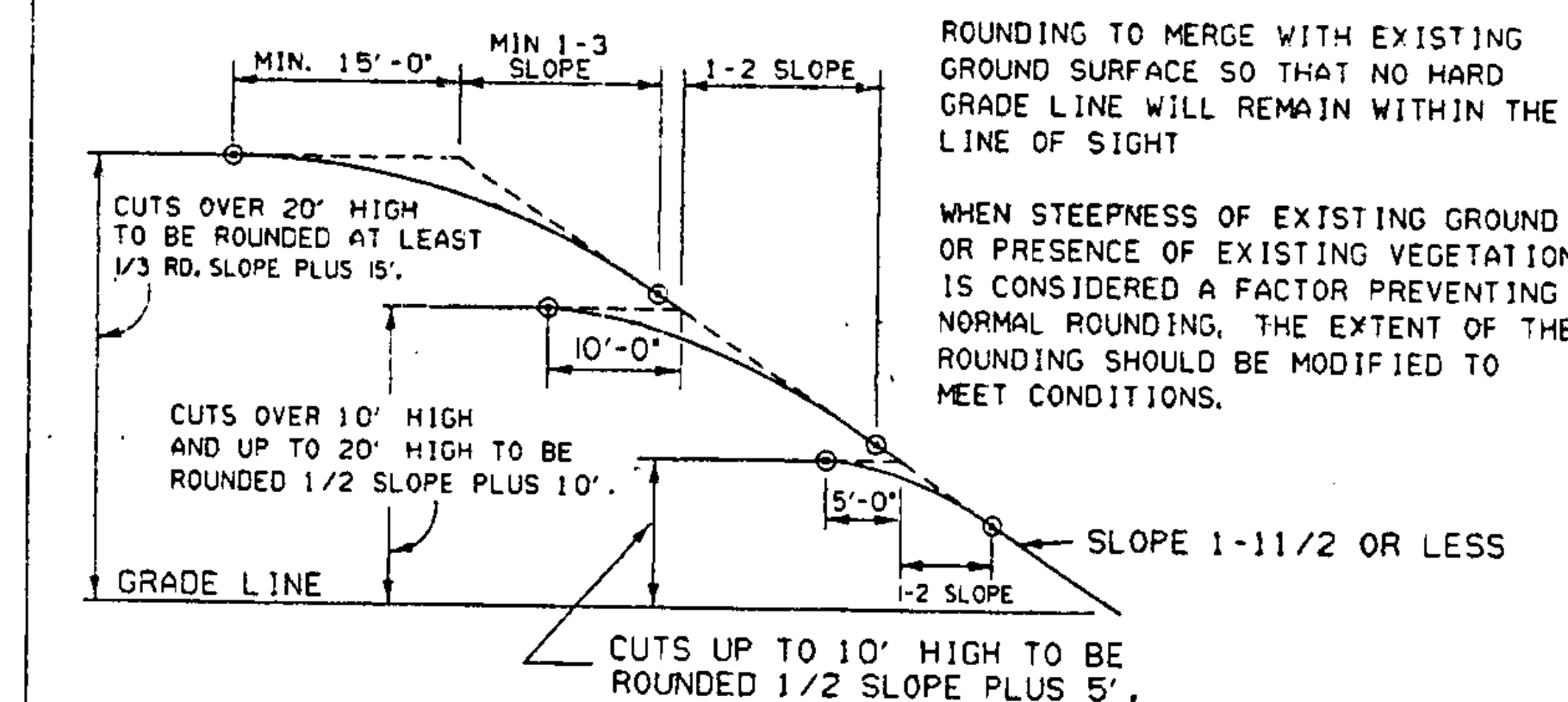
PROCEDURE TO BE FOLLOWED WHEN LEDGE SLOPE ON OLD GROUND IS BETWEEN A 1-1 AND A 1-5 SLOPE.

ALL HOLES TO BE APPROXIMATELY 5'-0" DEEP. HOLES TO BE IN ROWS, SPACED AND STAGGERED AS SHOWN IN DRILL PATTERN, OR AS DIRECTED BY THE ENGINEER, SEE SECTION 205

A METHOD FOR PREPARING LEDGE SLOPE BEFORE CONSTRUCTING AN EMBANKMENT



SLOPES TO BE ROUNDED AS SHOWN IN ORDER TO ALLOW FOR PERSPECTIVE FORESHORTENING AS SEEN FROM THE ROAD AND SO THAT FINISHED SLOPES WILL BETTER SUPPORT VEGETATIVE COVER.



TYPICAL SLOPE ROUNDED

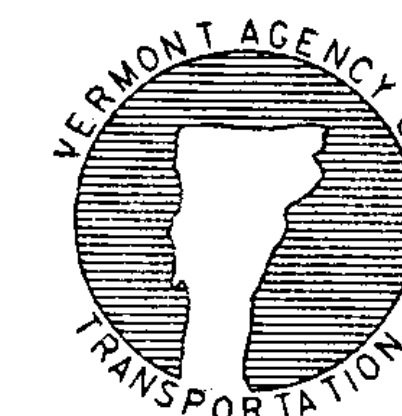
REVISIONS AND CORRECTIONS
DEC. 6, 1971 - ORIGINAL APPROVAL DATE
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

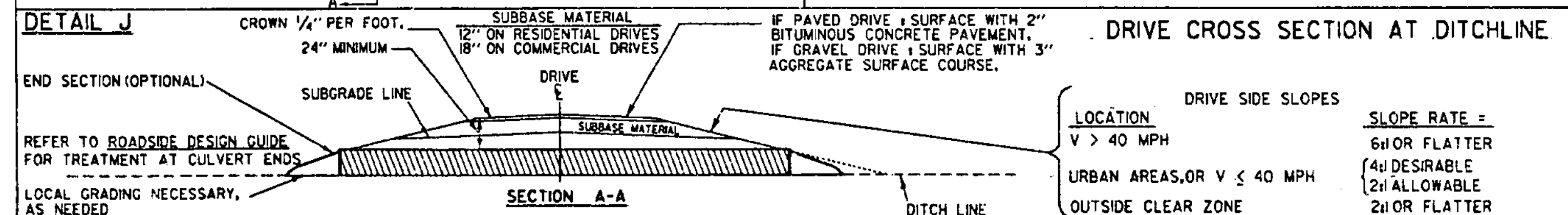
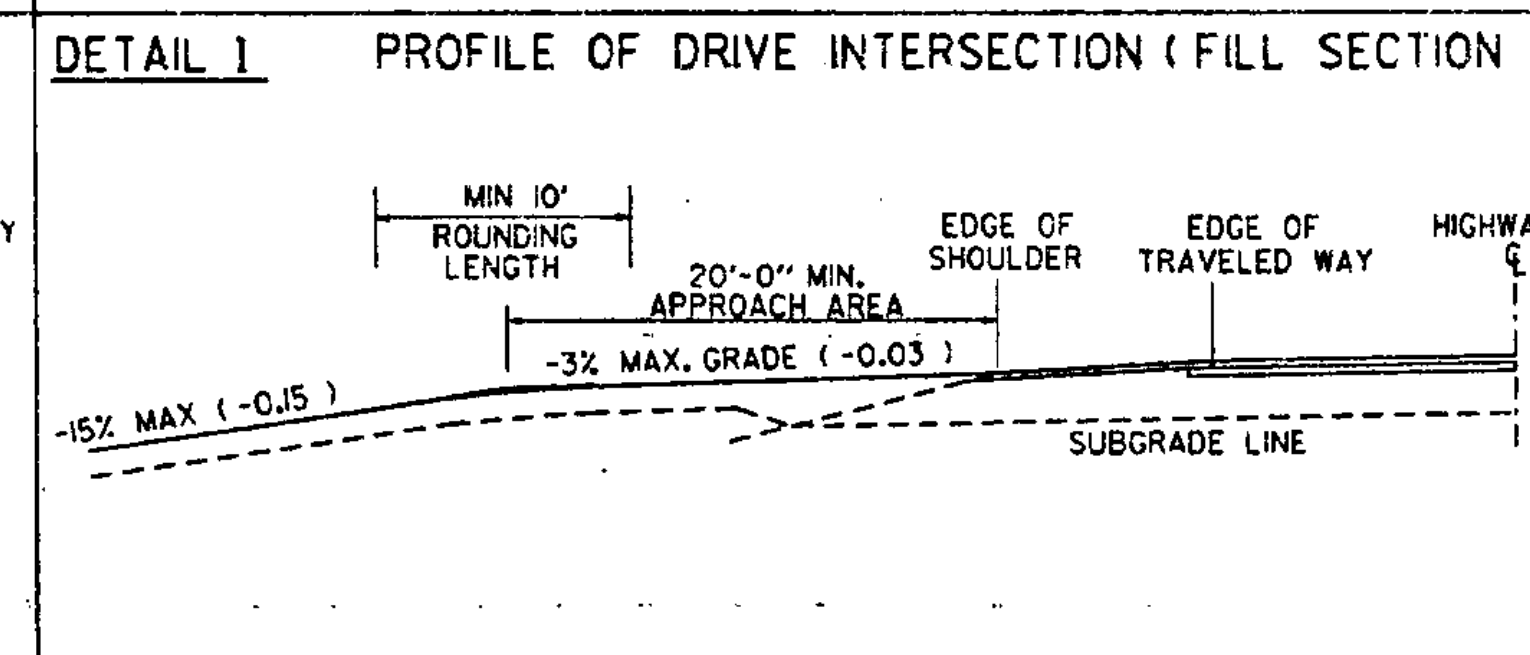
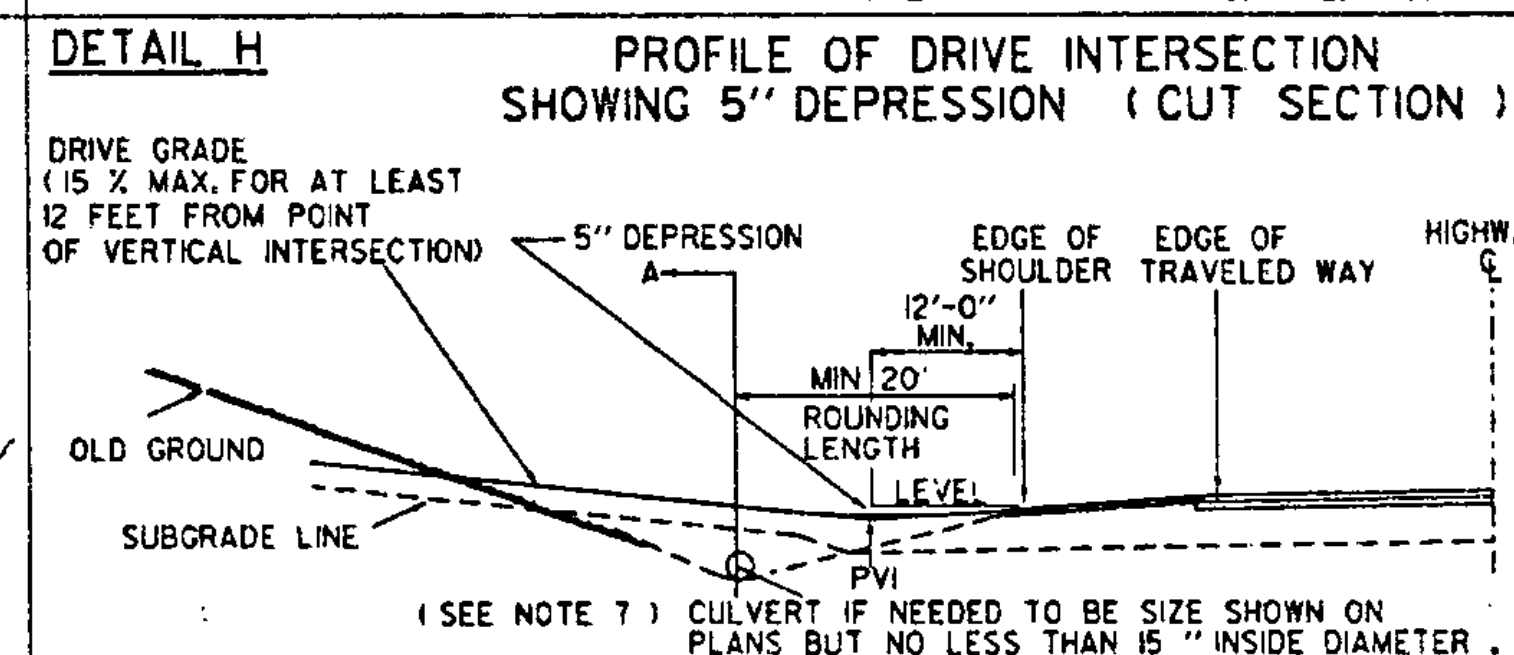
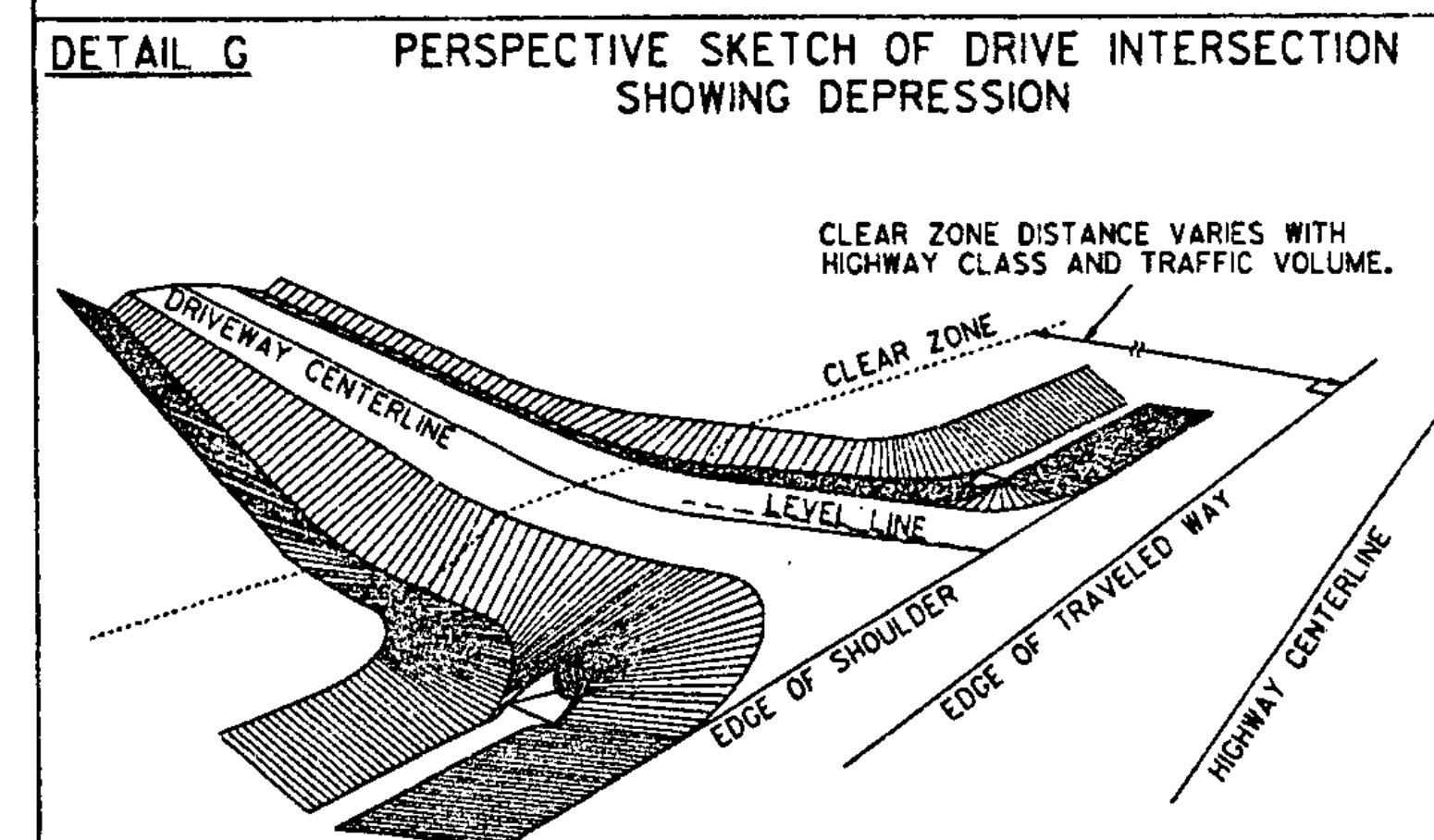
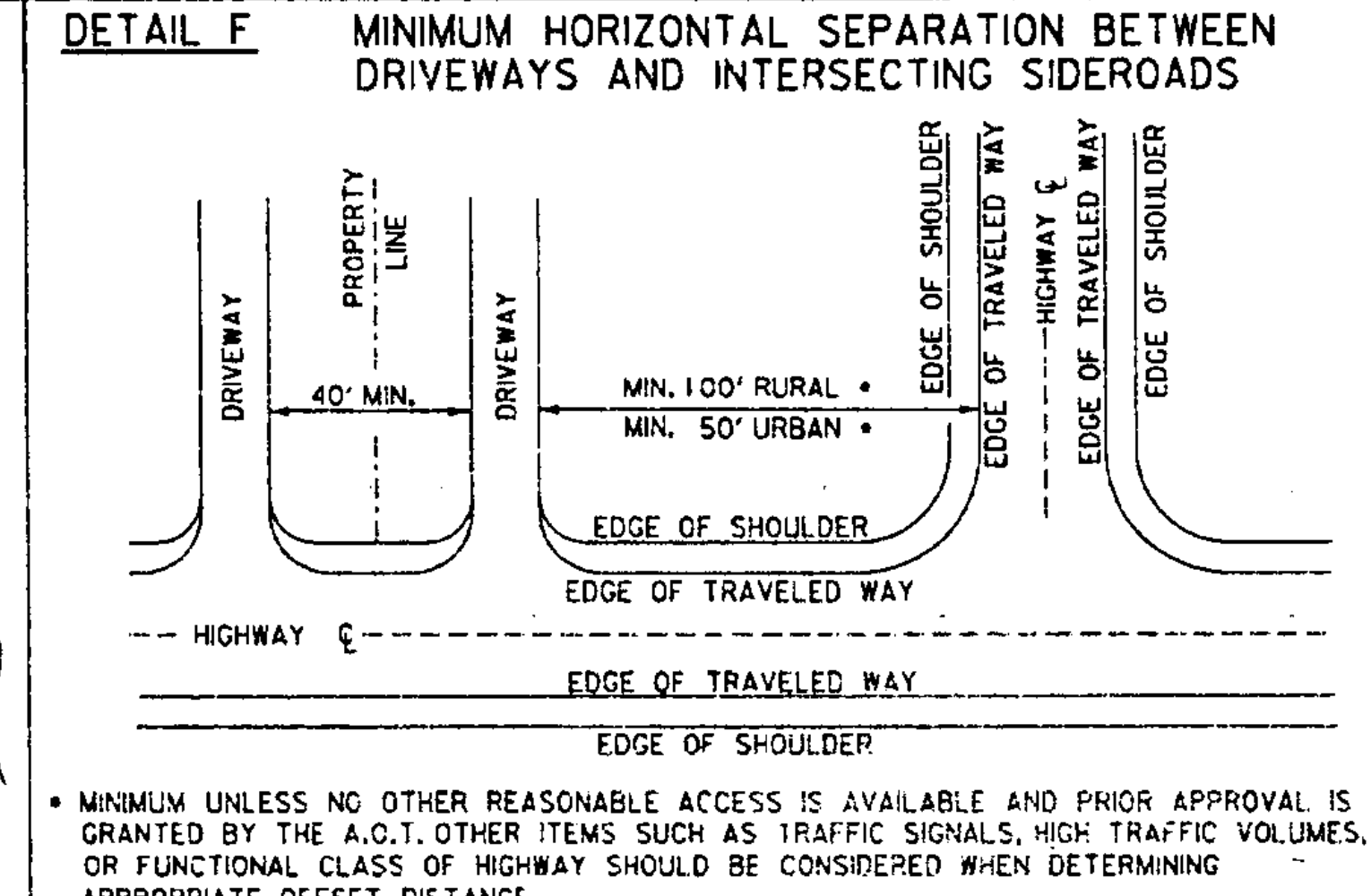
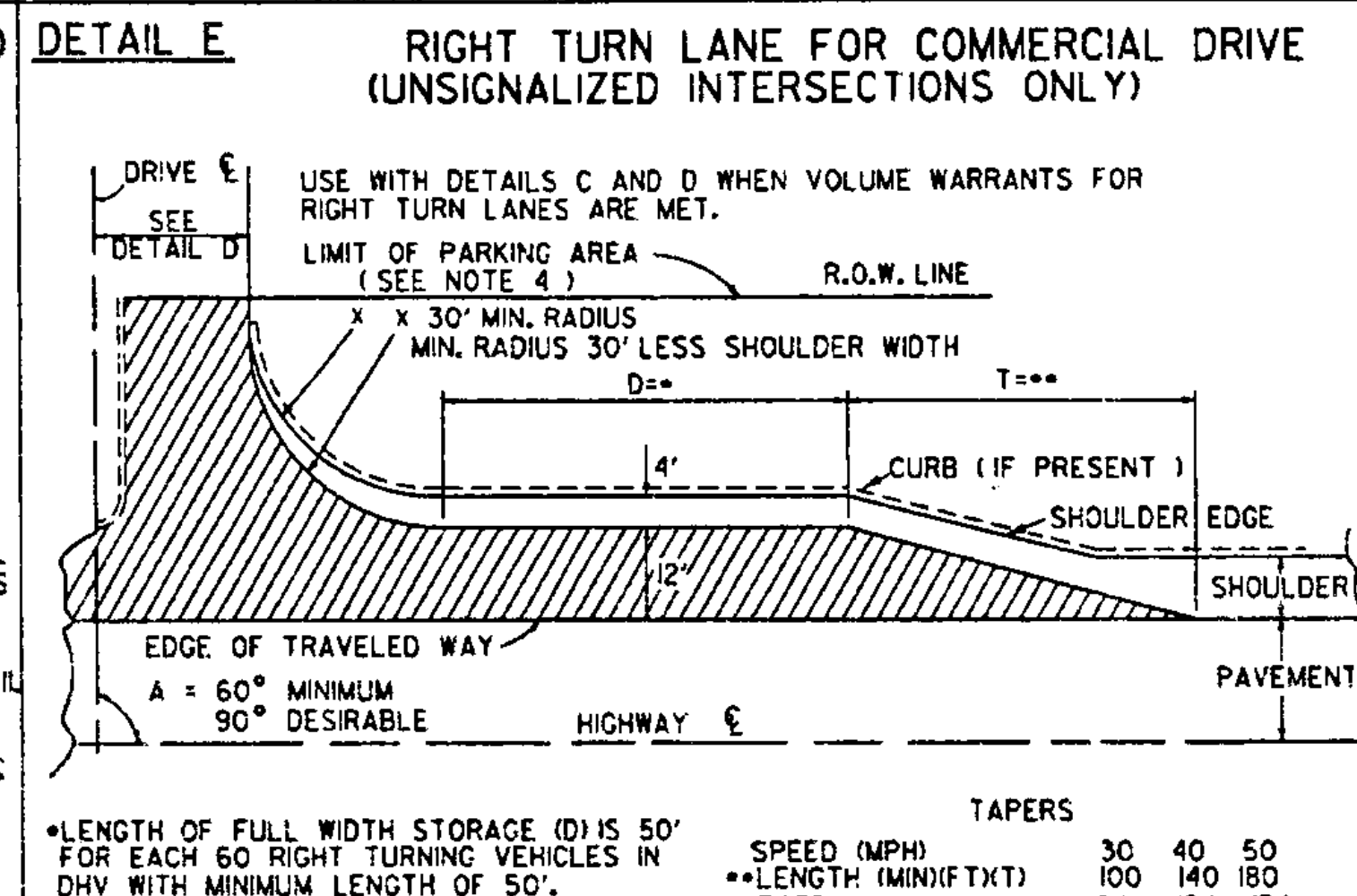
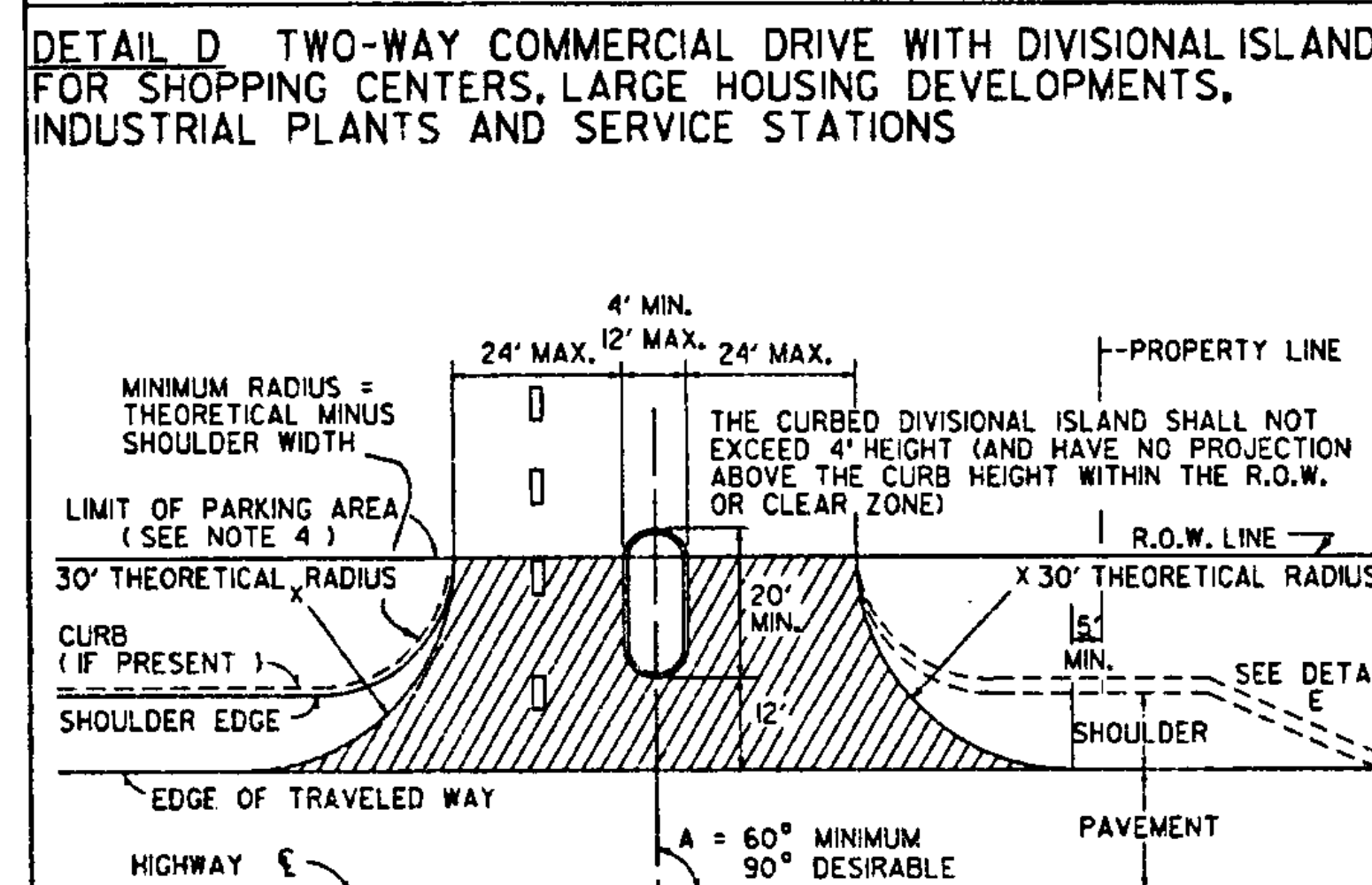
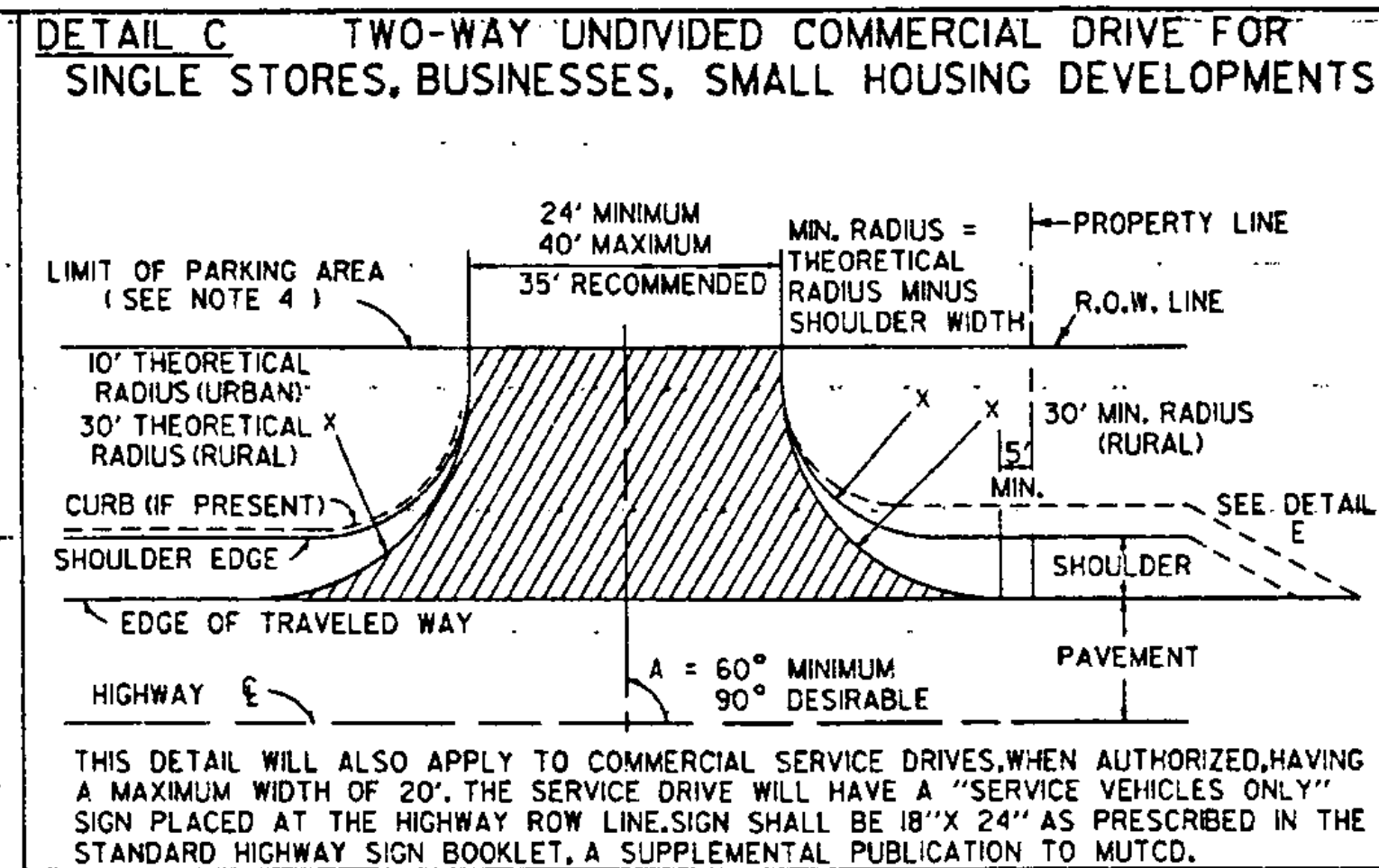
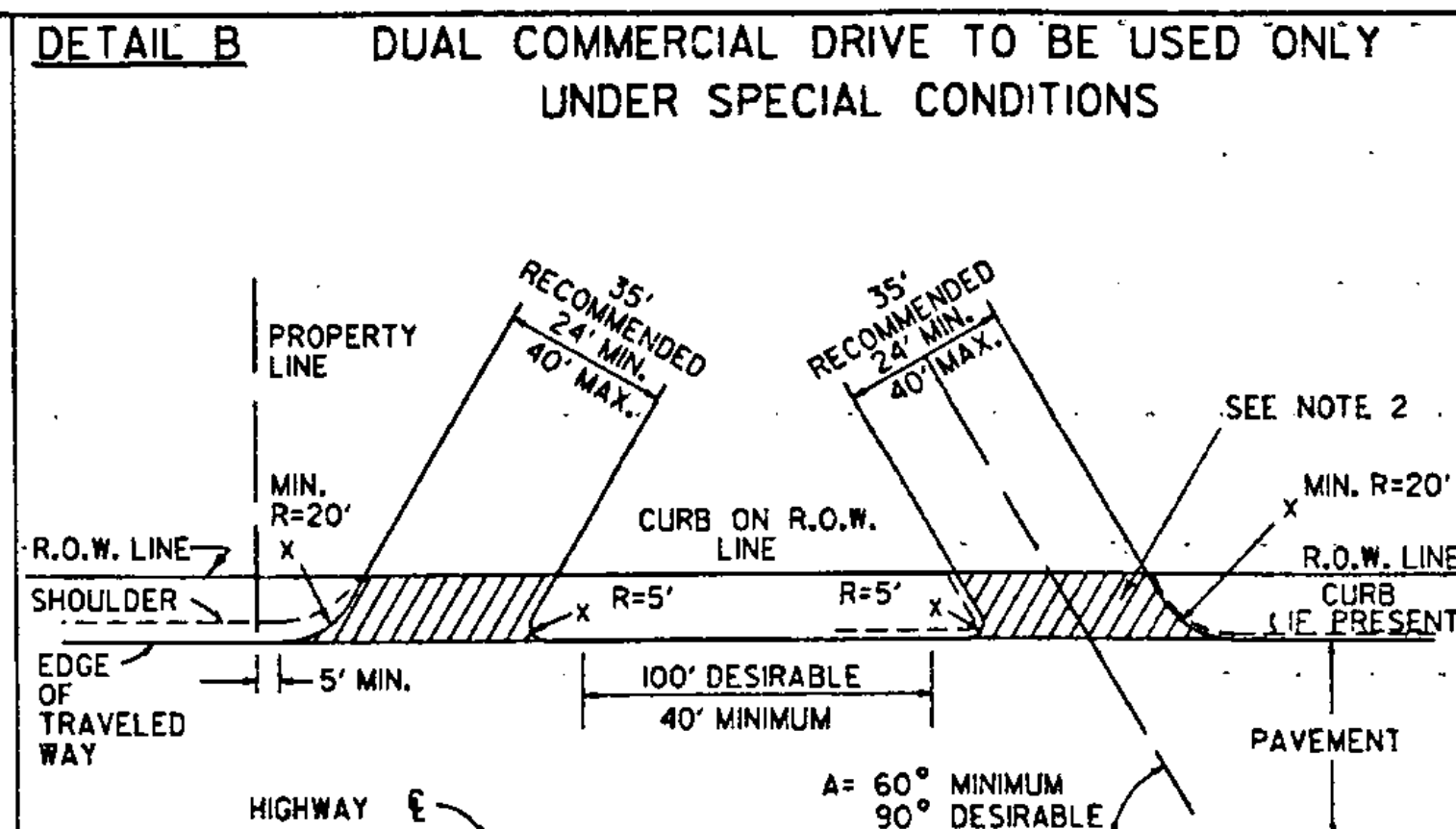
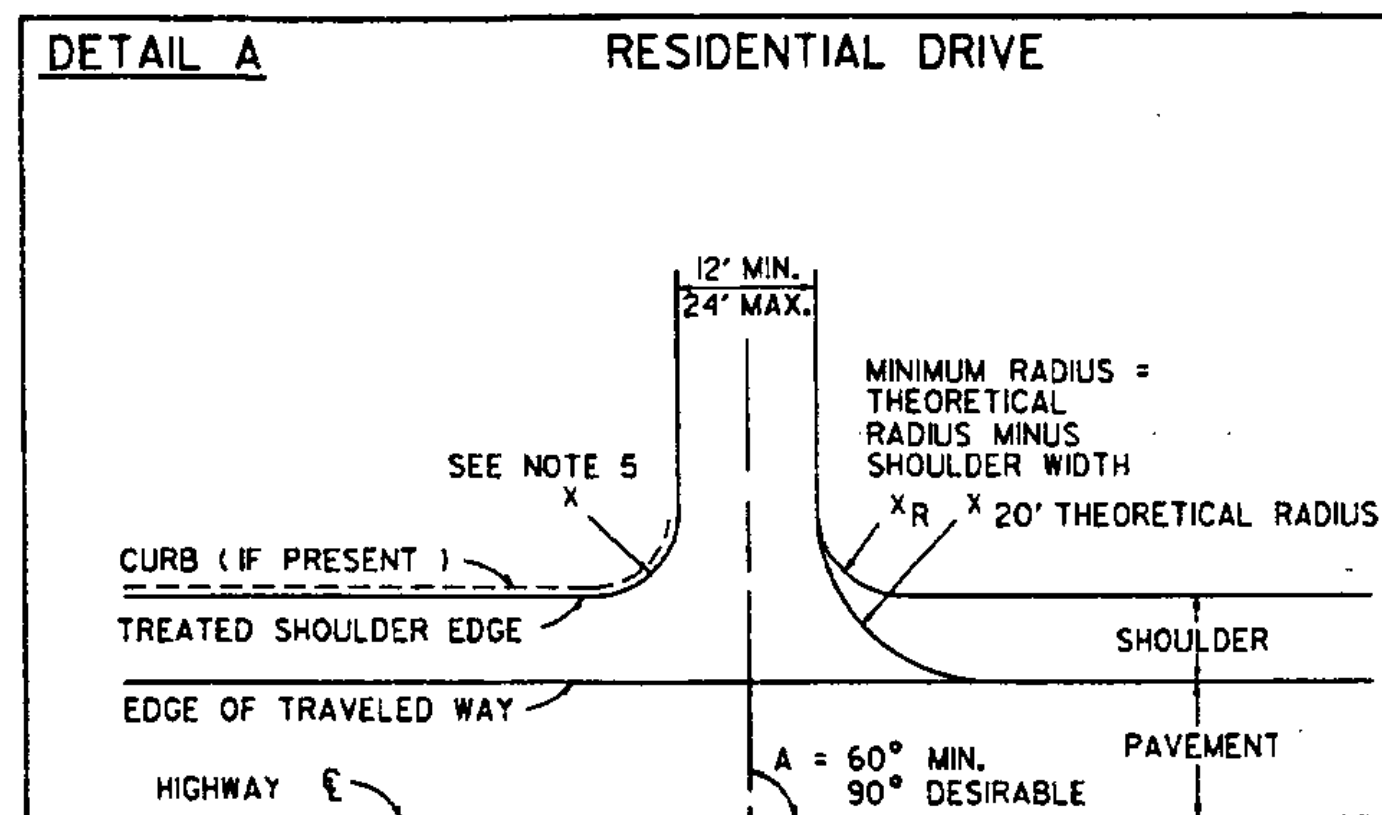
APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION
FHWA FINAL APPROVAL PENDING.

James R. MacArthur, P.E.
DIRECTOR OF ENGINEERING
John M. Murphy, P.E.
DESIGN ENGINEER

EMBANKMENT ON EARTH SLOPE
EMBANKMENT ON ROCK SLOPE
MUCK EXCAVATION
TYPICAL SLOPE ROUNDED



STANDARD
B-5



- NOTES:
1. THIS SHEET IS INTENDED FOR USE BY DESIGNERS ON HIGHWAY PROJECTS IN CONJUNCTION WITH A PERMIT FOR WORK WITHIN HIGHWAY RIGHTS OF WAY (FOOTING 210). ALL CONSTRUCTION REQUIRED BY THE PERMIT AND INDICATED ON THIS SHEET SHALL BE THE RESPONSIBILITY OF THE APPLICANT AND IS SUBJECT TO THE APPROVAL OF THE VT. AGENCY OF TRANSPORTATION, WHEN USED WITH THE PLANS FOR A HIGHWAY CONSTRUCTION PROJECT. THIS SHEET IS INTENDED TO BE A GUIDE FOR THE DESIGNER CONCERNING MIN/MAX DRIVE WIDTHS AND OTHER VERTICAL AND GEOMETRIC CHARACTERISTICS.
 2. ALL COMMERCIAL DRIVES SHALL BE PAVED FROM THE EDGE OF THE TRAVELED WAY TO THE HIGHWAY RIGHT-OF-WAY, TO THE FARTHEST POINT OF CURVATURE ON THE DRIVEWAY EDGE OR AS DIRECTED BY THE DISTRICT TRANSPORTATION ADMINISTRATOR. THIS PAVING IS INDICATED IN THE DETAILS BY CROSS-HATCHING.
 3. DEPTH OF SUB-BASE, BASE, AND PAVEMENT TO BE THE SAME AS HIGHWAY OR MINIMUM AS SHOWN IN DETAIL J. WITHIN THE LIMITS OF THE HIGHWAY RIGHT-OF-WAY.
 4. VEHICULAR ACCESS FROM PARKING AREAS TO THE RIGHT-OF-WAY AT OTHER THAN APPROVED ACCESS POINTS WILL BE PREVENTED BY THE CONSTRUCTION OF CURBING OR OTHER SUITABLE PHYSICAL BARRIER.
 5. IF CURB IS PRESENT, SEE APPROPRIATE CURB DETAIL STANDARD OR MATCH TOWN/CITY STANDARD CURB TREATMENT.
 6. WHERE THE DESIGN HOUR VOLUME OF LEFT TURNING TRAFFIC FROM THE DRIVEWAY INTO THE DRIVEWAY IS SUBSTANTIALLY GREATER, THE AGENCY OF TRANSPORTATION MAY REQUIRE SPECIAL LEFT-TURN TREATMENT AND/OR TRAFFIC SIGNALS. THE AGENCY WILL DETERMINE THE SPECIFIC TREATMENT TO BE USED, AND WILL WORK WITH THE DEVELOPER IN REGARD TO IMPLEMENTATION OF CHANGES ON STATE HIGHWAYS.
 7. CIRCULAR DRAINAGE CULVERTS UNDER DRIVES SHALL HAVE A MINIMUM INSIDE DIAMETER (I.D.) OF 15" PIPE ARCHES USED UNDER DRIVES SHALL HAVE A MINIMUM INSIDE CROSS-SECTIONAL AREA EQUIVALENT TO THAT PROVIDED BY A 15" CIRCULAR PIPE.
 8. THE OFFSET BETWEEN THE PROPERTY LINE AND THE EDGE OF THE DRIVEWAY MAY BE GOVERNED BY LOCAL ZONING LAWS. DRIVEWAY WIDTH RESTRICTIONS SHOWN PERTAIN ONLY TO THE AREA WITHIN THE HIGHWAY R.O.W..
 9. DRIVEWAY GRADES STEEPER THAN THOSE SHOWN MAY BE ALLOWED AS LONG AS A 20' APPROACH AREA IS ACHIEVED FOR THE VEHICLE TO PAUSE BEFORE ENTERING THE HIGHWAY.
 10. CORNER SIGHT DISTANCES, EQUAL TO OR GREATER THAN THOSE SHOWN BELOW, SHALL BE PROVIDED IN BOTH DIRECTIONS FOR ALL DRIVES ENTERING ON PUBLIC HIGHWAYS, UNLESS OTHERWISE APPROVED BY THE AGENCY OF TRANSPORTATION. CORNER SIGHT DISTANCE IS MEASURED FROM A POINT ON THE DRIVE AT LEAST 5 FEET FROM THE EDGE OF TRAVELED WAY OF THE ADJACENT ROADWAY AND MEASURED FROM A HEIGHT OF EYE OF 3.5 FEET ON THE DRIVE TO A HEIGHT OF 4.25 FEET ON THE ROADWAY.

POSTED SPEED OR DESIGN SPEED (M.P.H.)	MINIMUM STOPPING SIGHT DISTANCE (FT)	MINIMUM CORNER SIGHT DISTANCE ** (1950 AASHTO) (FT)
25	150	275
30	200	355
35	225	445
40	275	560
45	325	660
50	400	770
55	450	935

NOTE : ADVANCE WARNING SIGNS WILL BE REQUIRED IF OBTAINABLE
CORNER SIGHT DISTANCES ARE BELOW MINIMUM STOPPING
SIGHT DISTANCES.

**ASSUMES AN APPROACHING VEHICLE WILL REDUCE ITS SPEED (BY CONSTANT
 DECELERATION) TO 85% OF THE POSTED OR DESIGN SPEED OF THE HIGHWAY
 BEFORE OVERTAKING A VEHICLE ENTERING THE TRAFFIC STREAM. IT FURTHER
 ASSUMES THE VEHICLE ENTERING THE TRAFFIC STREAM WILL ACCELERATE
 AS SOON AS POSSIBLE TO THE SPEED OF THE APPROACHING VEHICLE.
 WHEN CONSIDERING ACCESSES ONTO EXISTING HIGHWAYS THERE MAY BE
 SITUATIONS WHEN A DRIVER WILL NOT HAVE THE MINIMUM CLEAR VISION
 DISTANCE REQUIRED TO RECOGNIZE A VEHICLE RUNNING SPEED
 TO A LOW AN ENTERING VEHICLE UNTO ENTER THE STREAM OF TRAFFIC.

REVISIONS AND CORRECTIONS	
DEC. 11, 1992	- THIS STANDARD SUPERCEDES B-71 (7/23/80R), B-71A (3/12/90), AND B-13 (12/14/71).
JUNE 1, 1994	- REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.
MAR. 10, 1995	- REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

Ernesto R. McArthur
DIRECTOR OF ENGINEERING

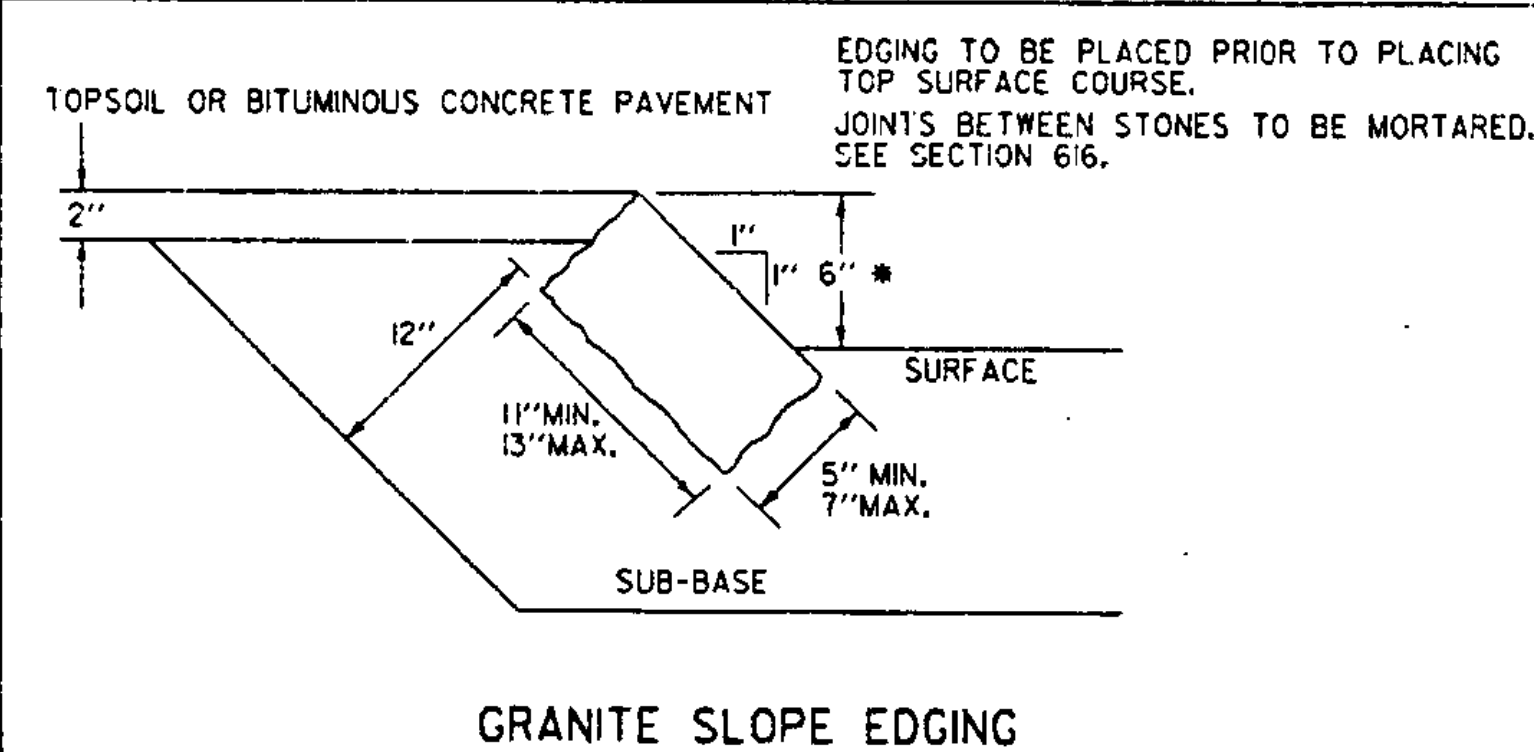
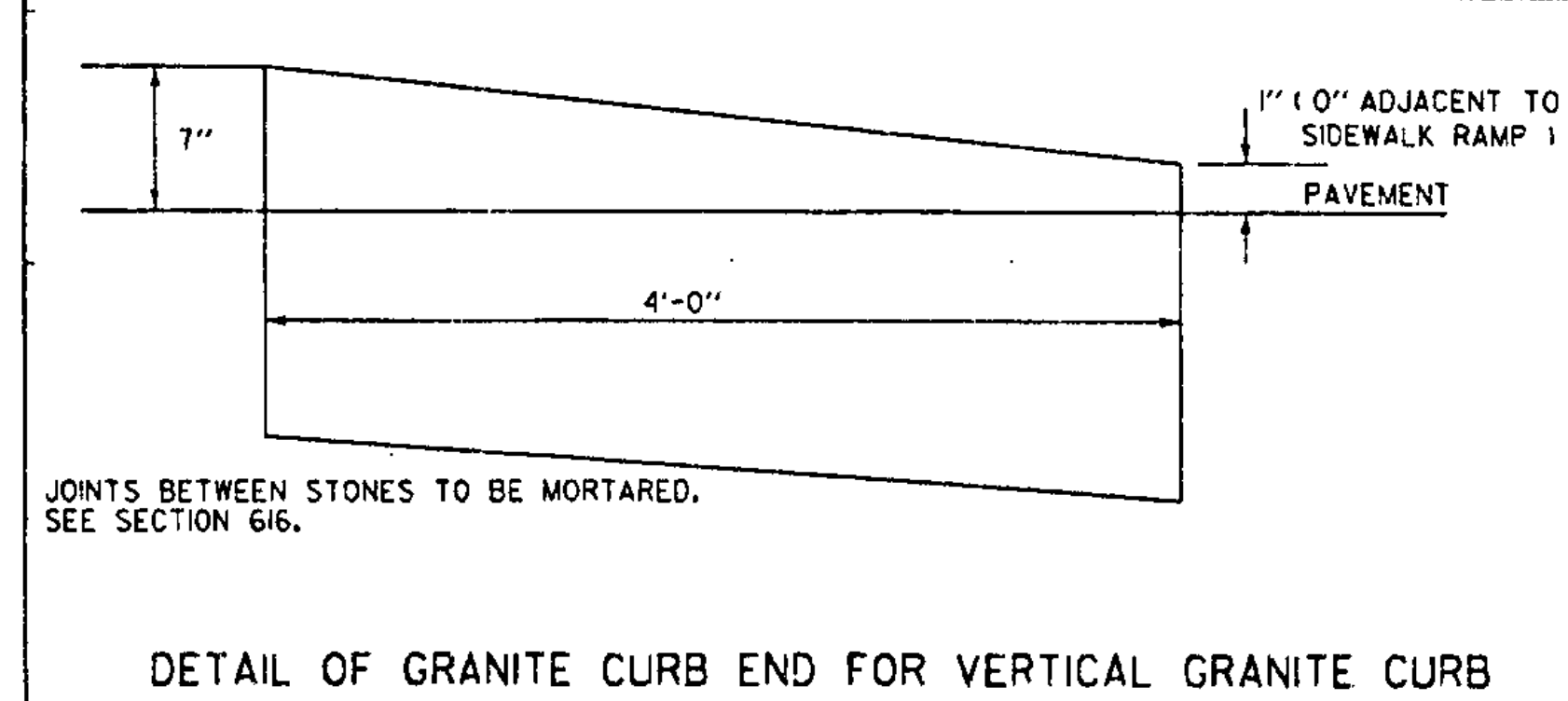
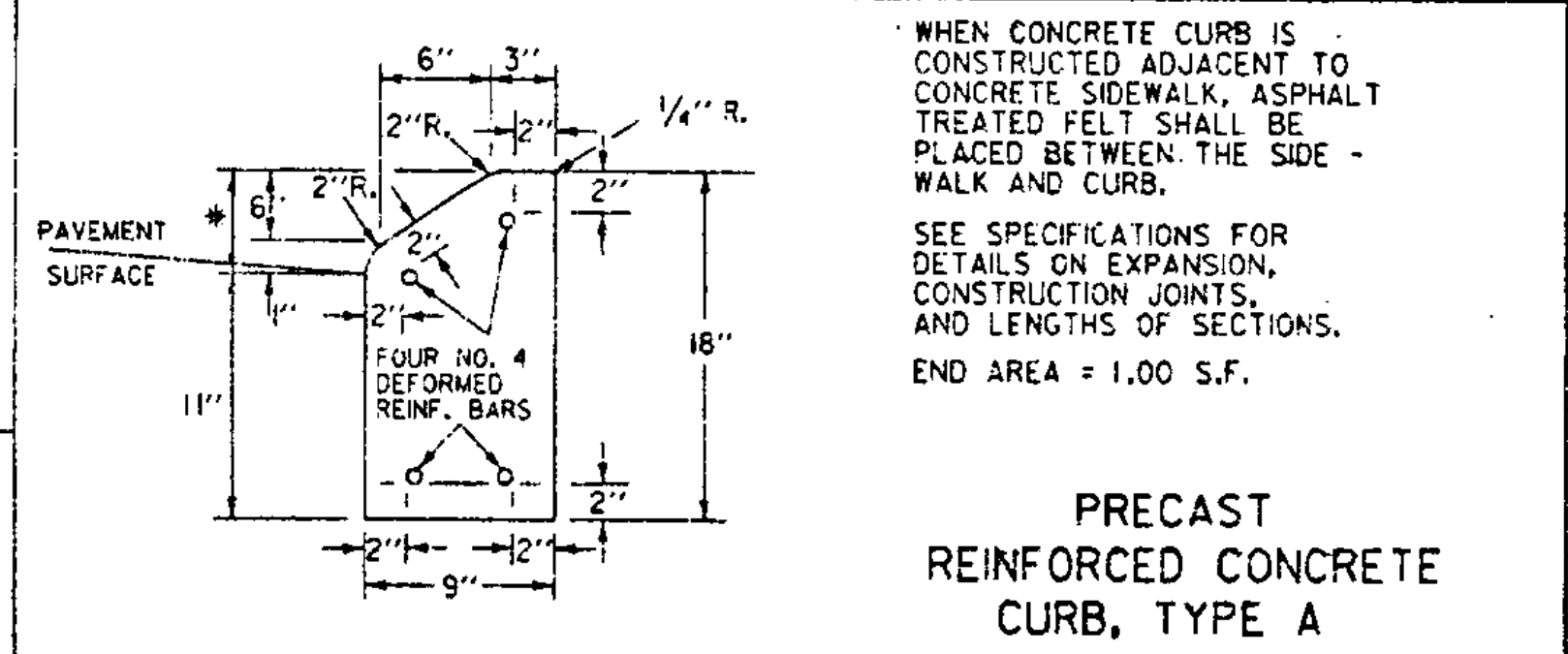
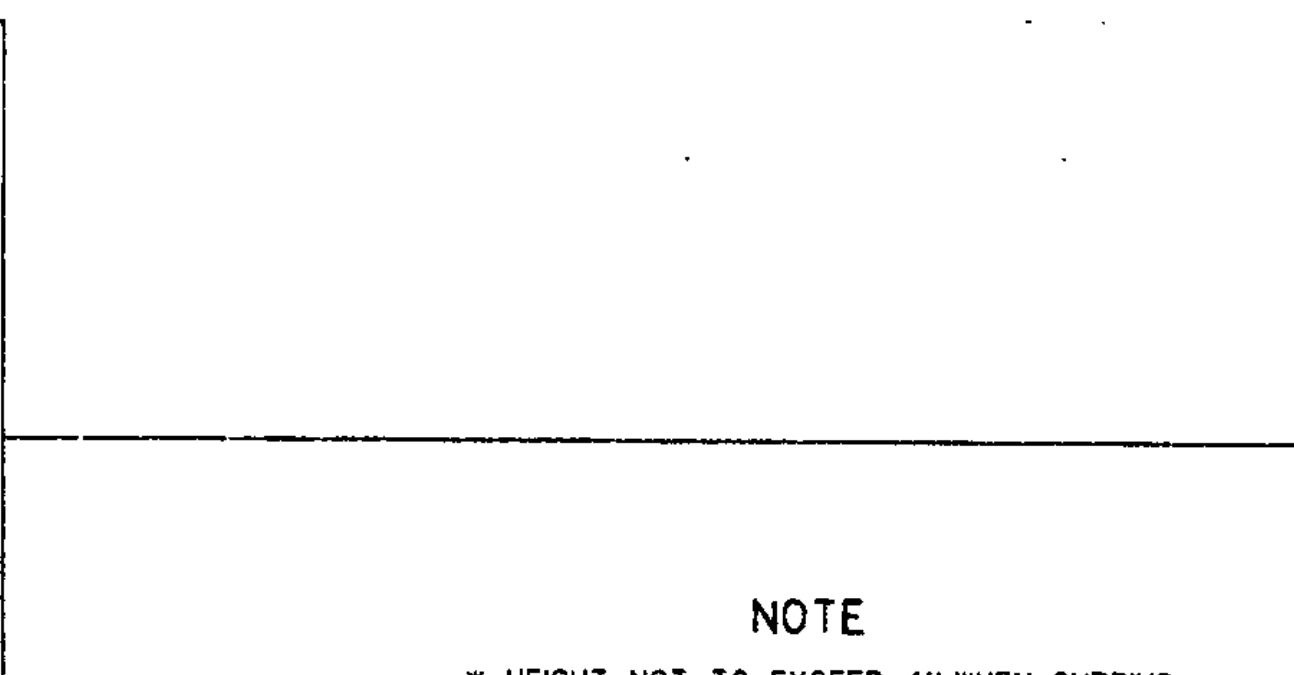
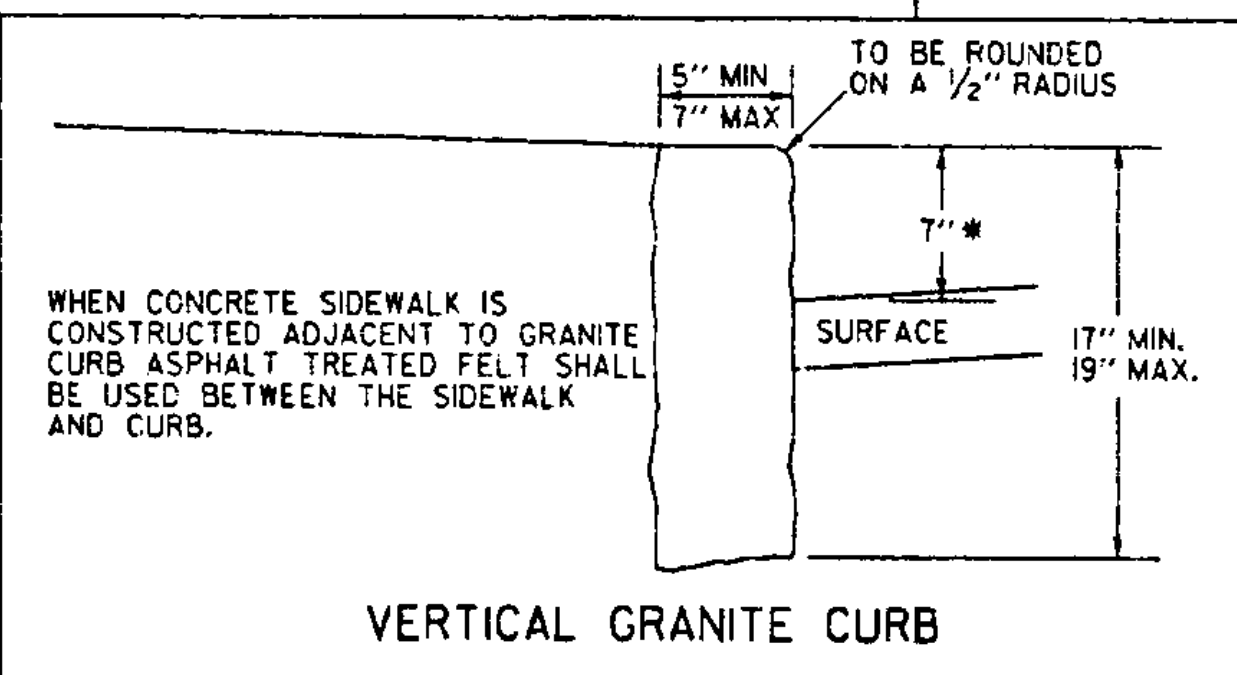
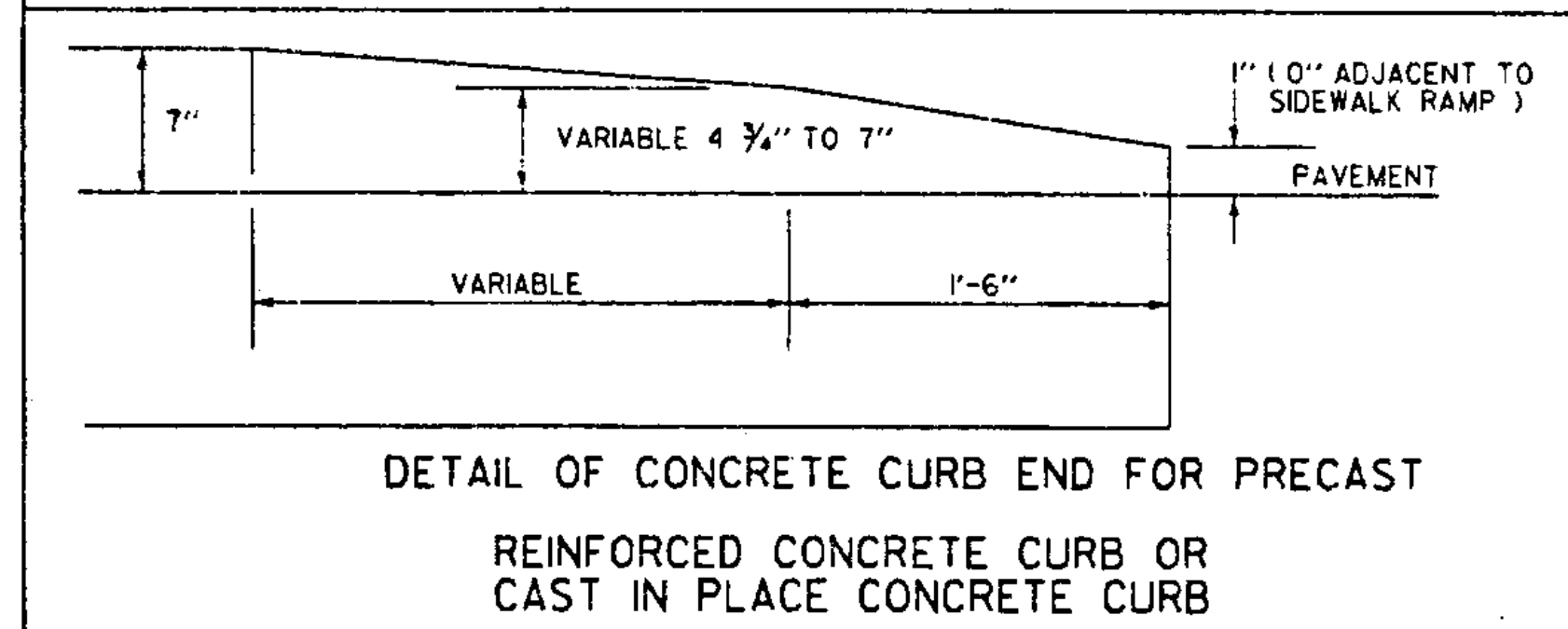
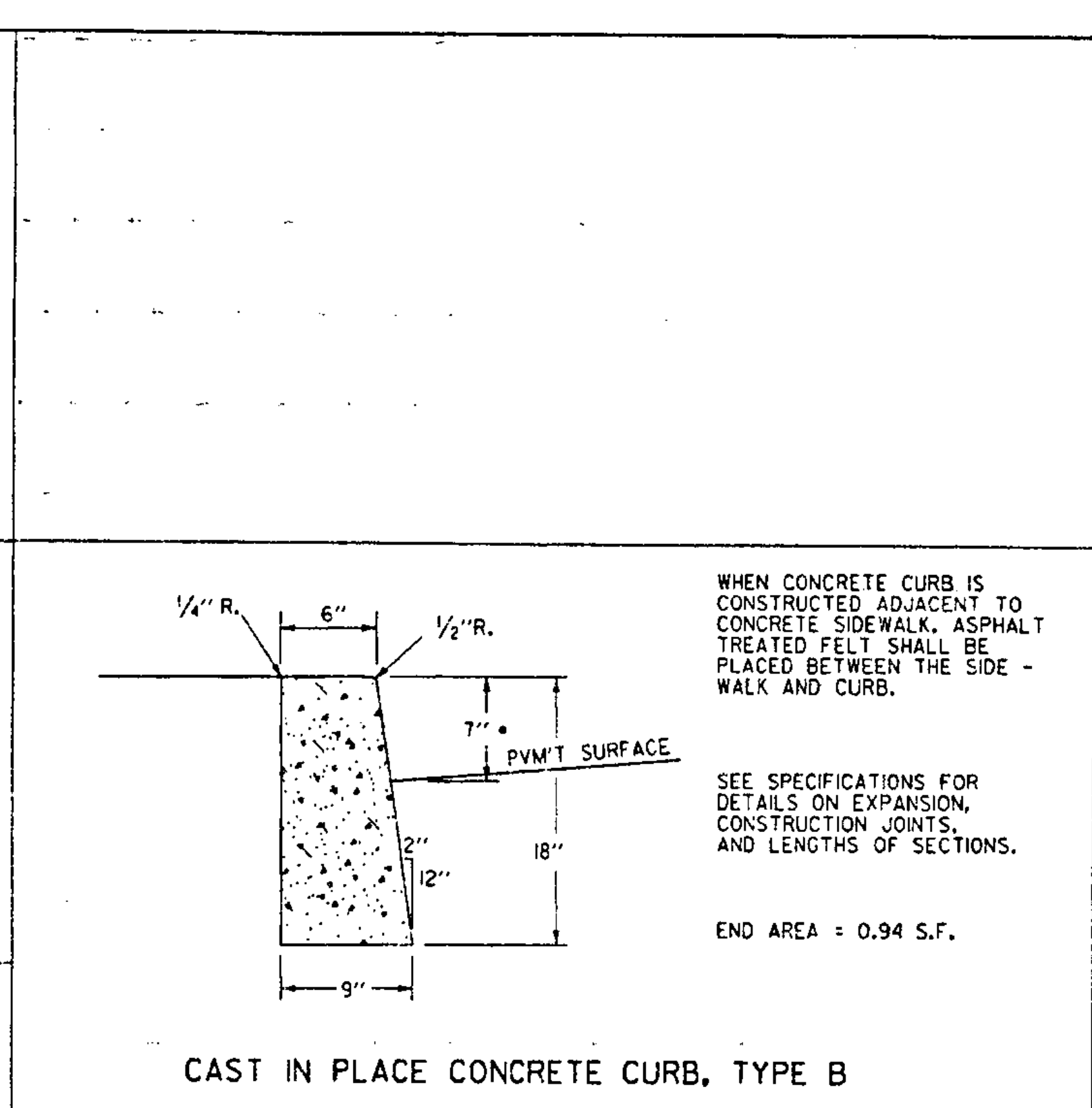
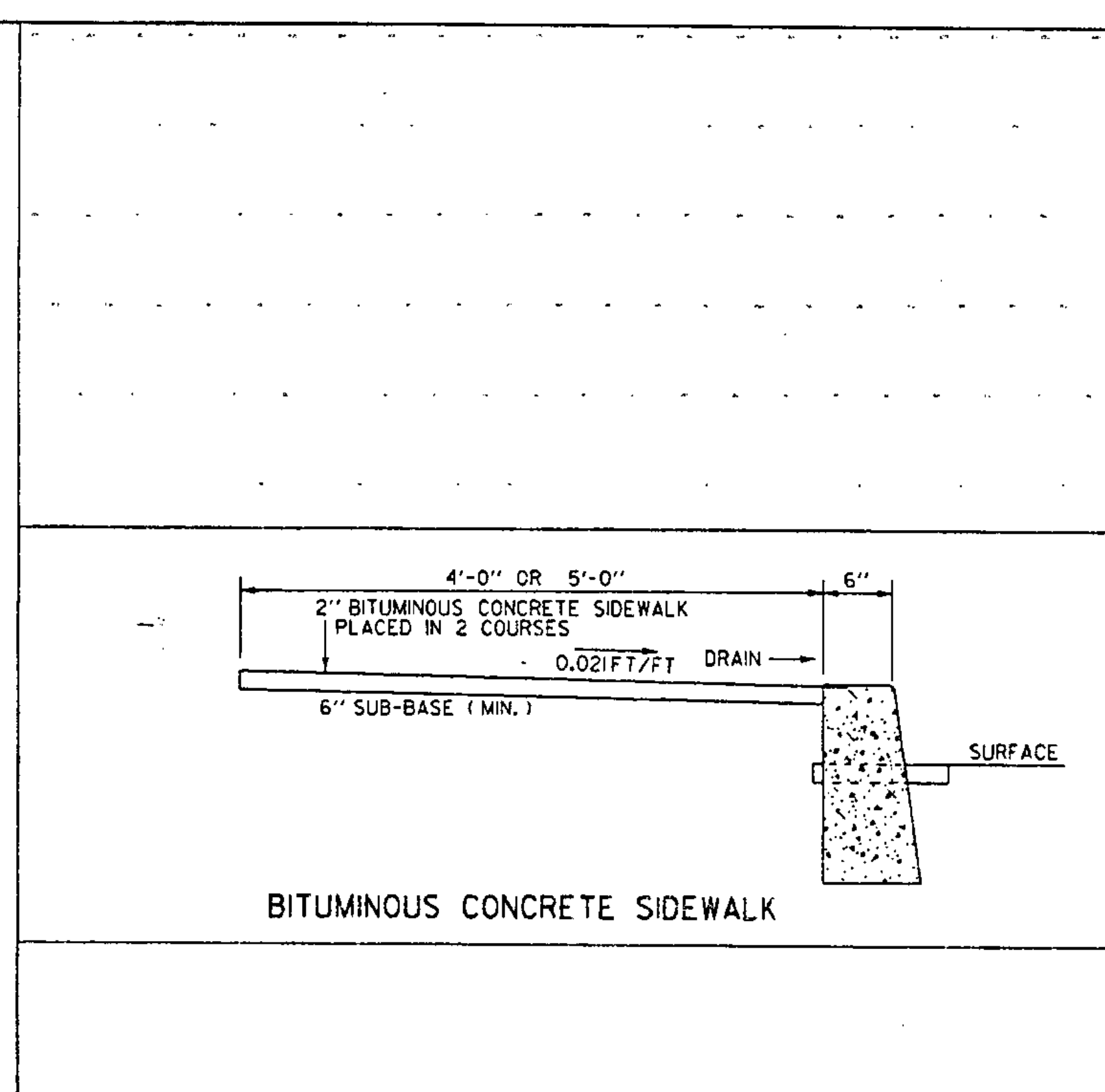
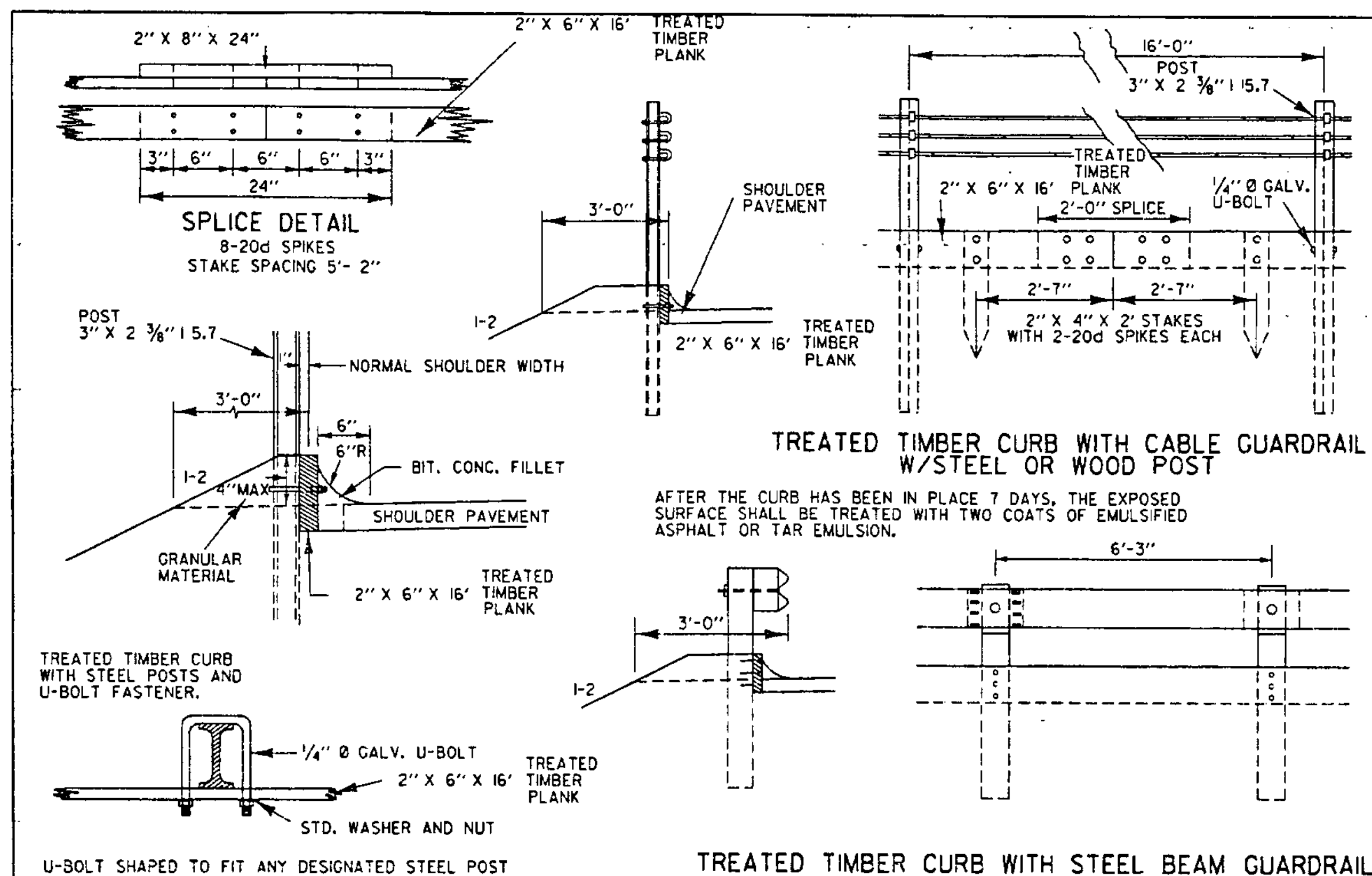
Thomas Page
UTILITIES ENGINEER

STANDARDS FOR RESIDENTIAL AND COMMERCIAL DRIVES

GREATER THAN MINIMUM VALUES TO BE USED WHENEVER FEASIBLE

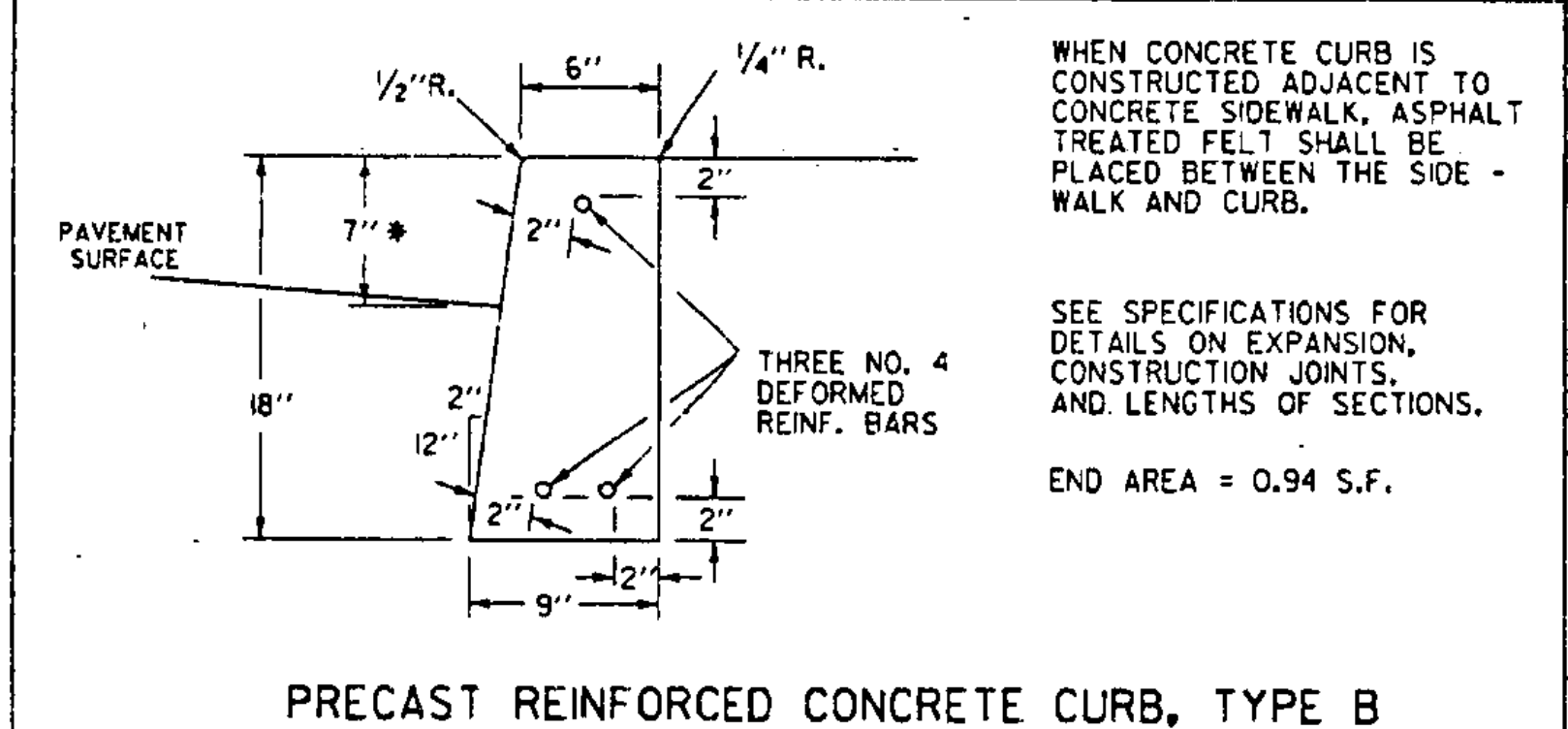


STANDARD B-7 1



NOTE

* HEIGHT NOT TO EXCEED 4" WHEN CURBING IS INSTALLED ADJACENT TO GUARDRAIL (STANDARD SHAPE TO BE BURIED TO THIS DEPTH)



REVISIONS AND CORRECTIONS

DEC. 8, 1971 - ORIGINAL APPROVAL DATE
NOV 16, 1992 - CHANGED 6" CURB TO 4"
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

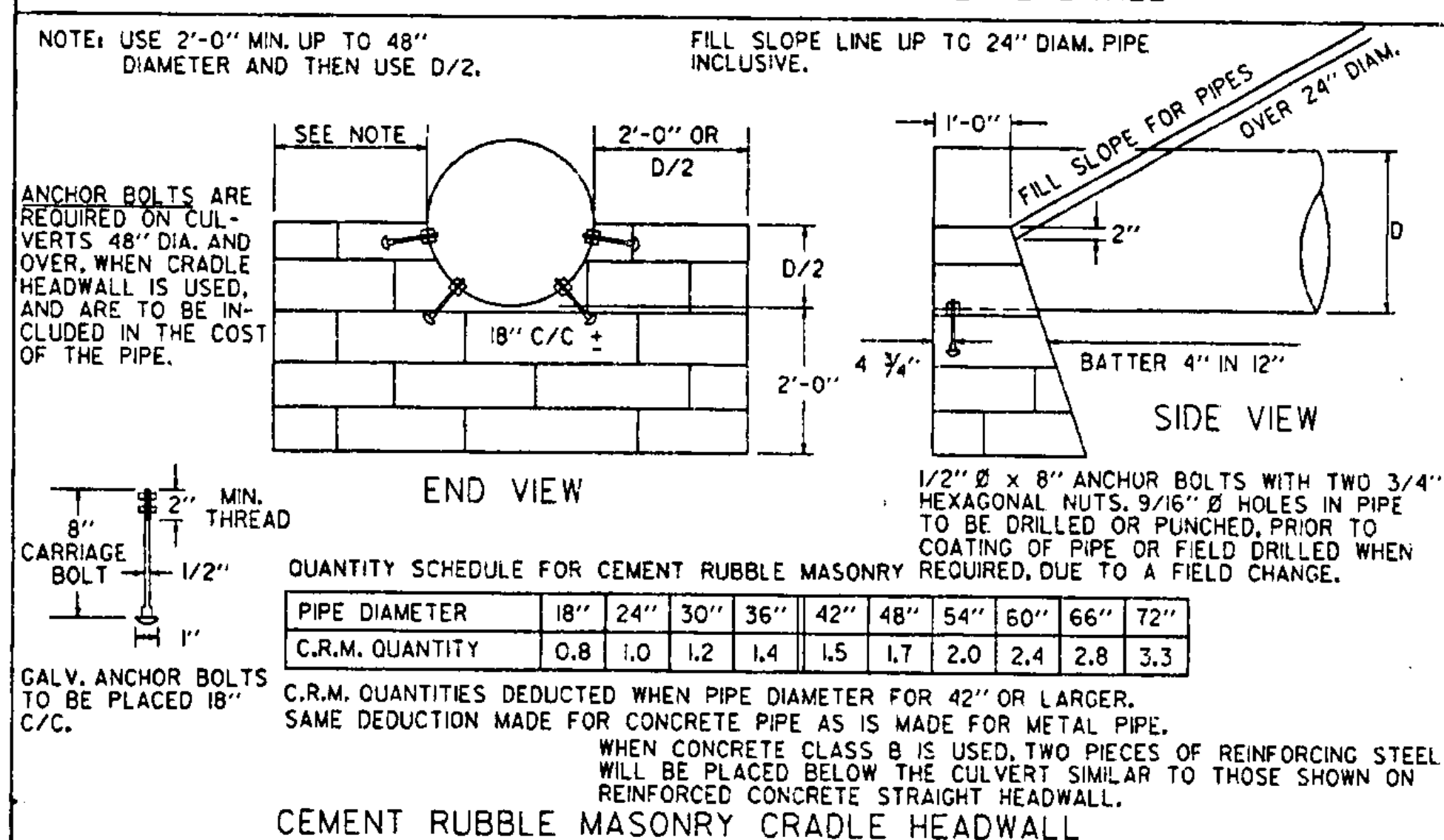
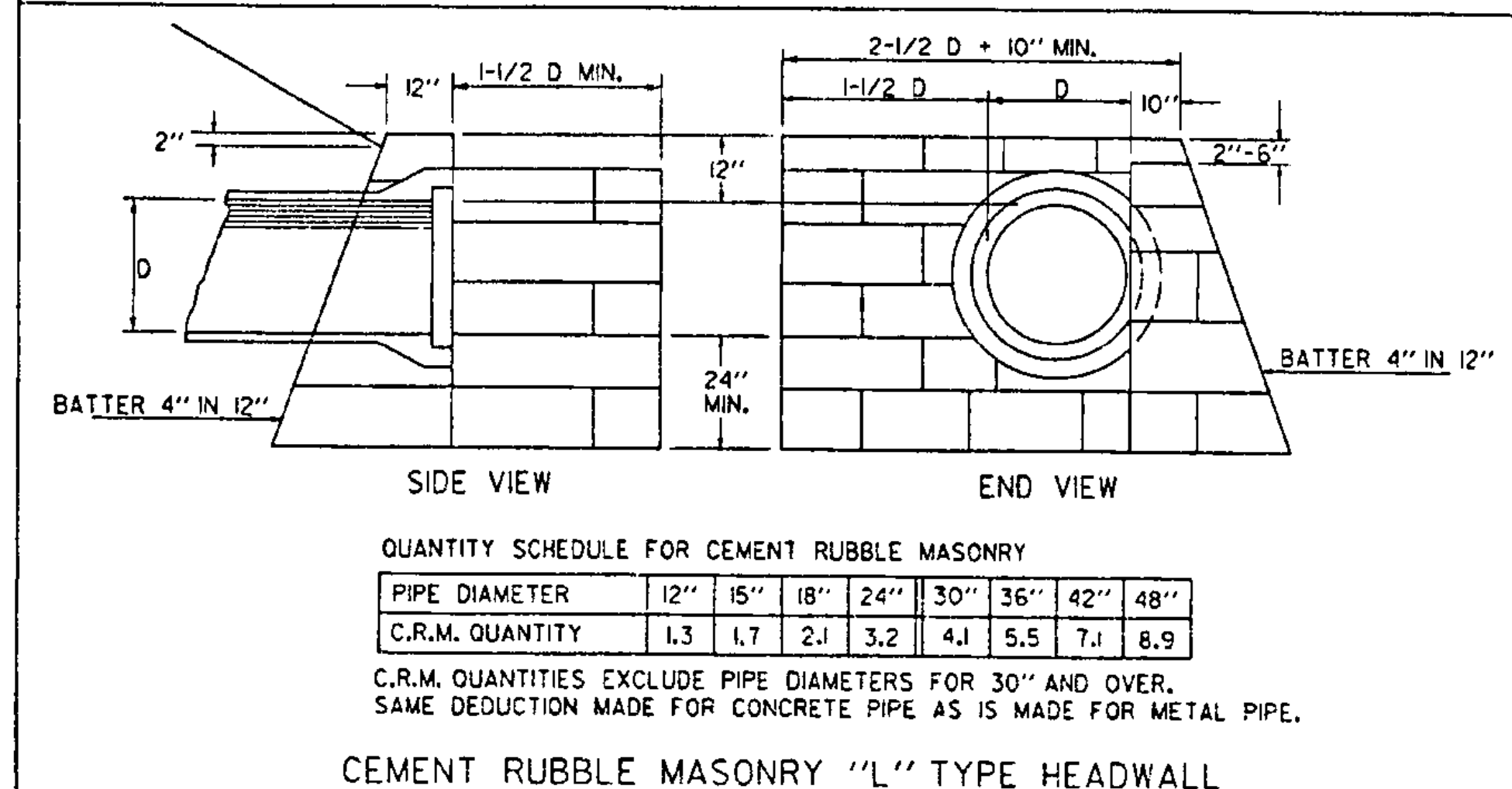
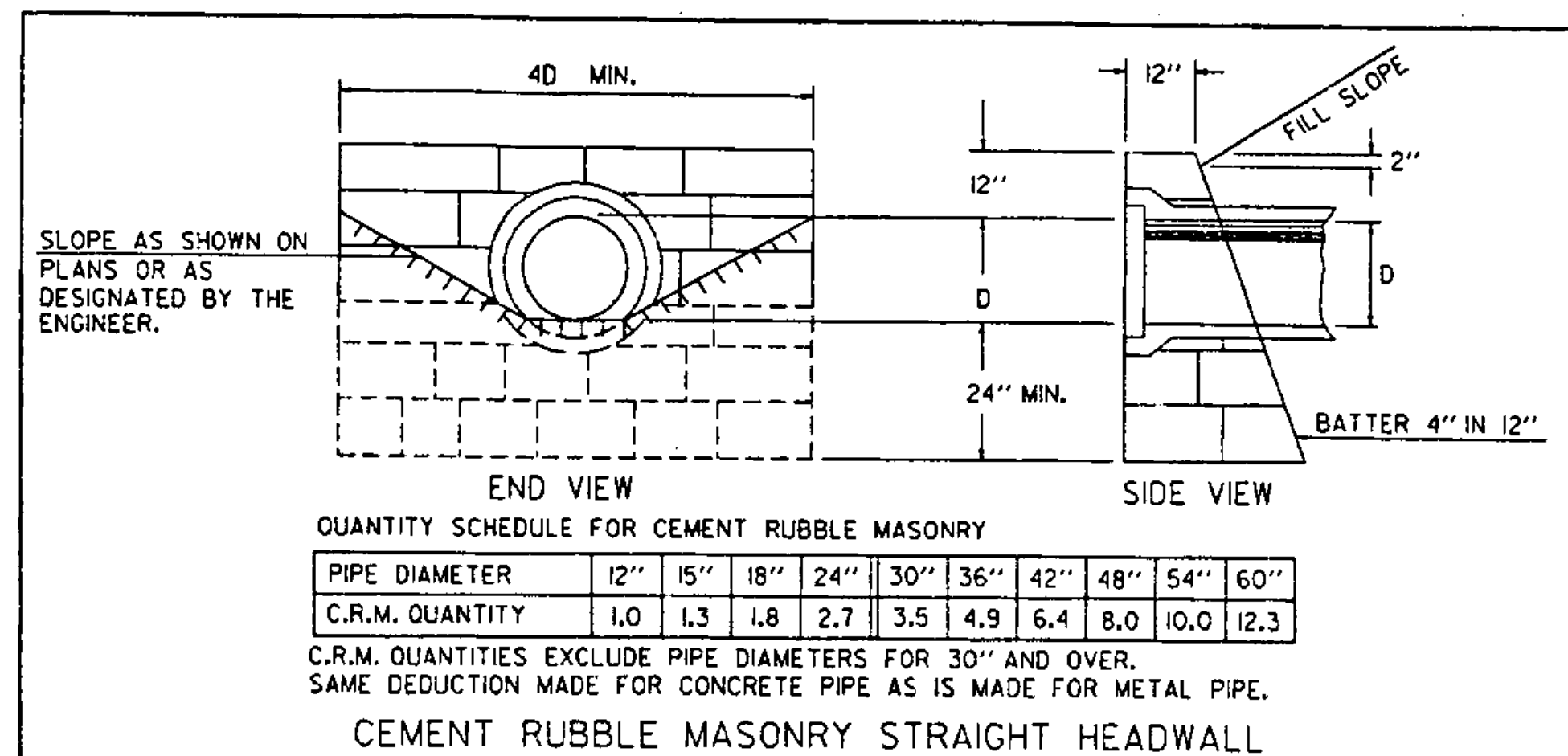
Stephen D. McArthur, P.E.
DIRECTOR OF ENGINEERING

John D. Murphy, P.E.
DESIGN ENGINEER

GRANITE SLOPE EDGING
VERTICAL GRANITE CURB
PRECAST REINFORCED CONCRETE CURB
CAST IN PLACE CONCRETE CURB
TREATED TIMBER CURB

VERMONT AGENCY OF TRANSPORTATION

STANDARD C-1



REVISIONS AND CORRECTIONS

DEC. 6, 1971 - ORIGINAL APPROVAL DATE

MAR. 8, 1972 - CHANGED ANCHOR BOLTS FROM 10" L TO 8" CARRIAGE

DEC. 16, 1976 - NOTE ADDED ON REINFORCING STEEL FOR CRADLE HEADWALLS

OCT. 30, 1985 - REVISED TO CONFORM TO 1986 SPECIFICATIONS

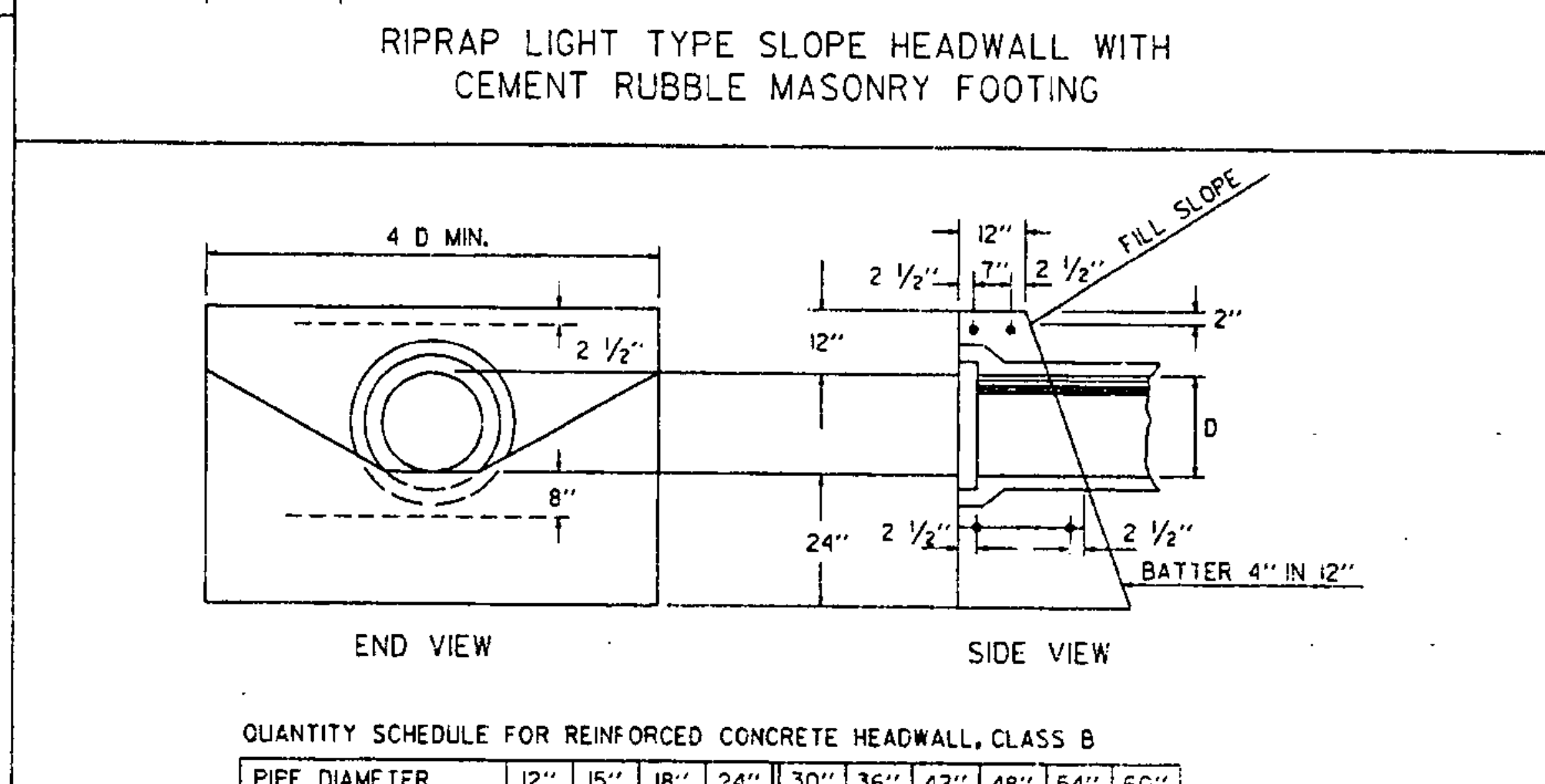
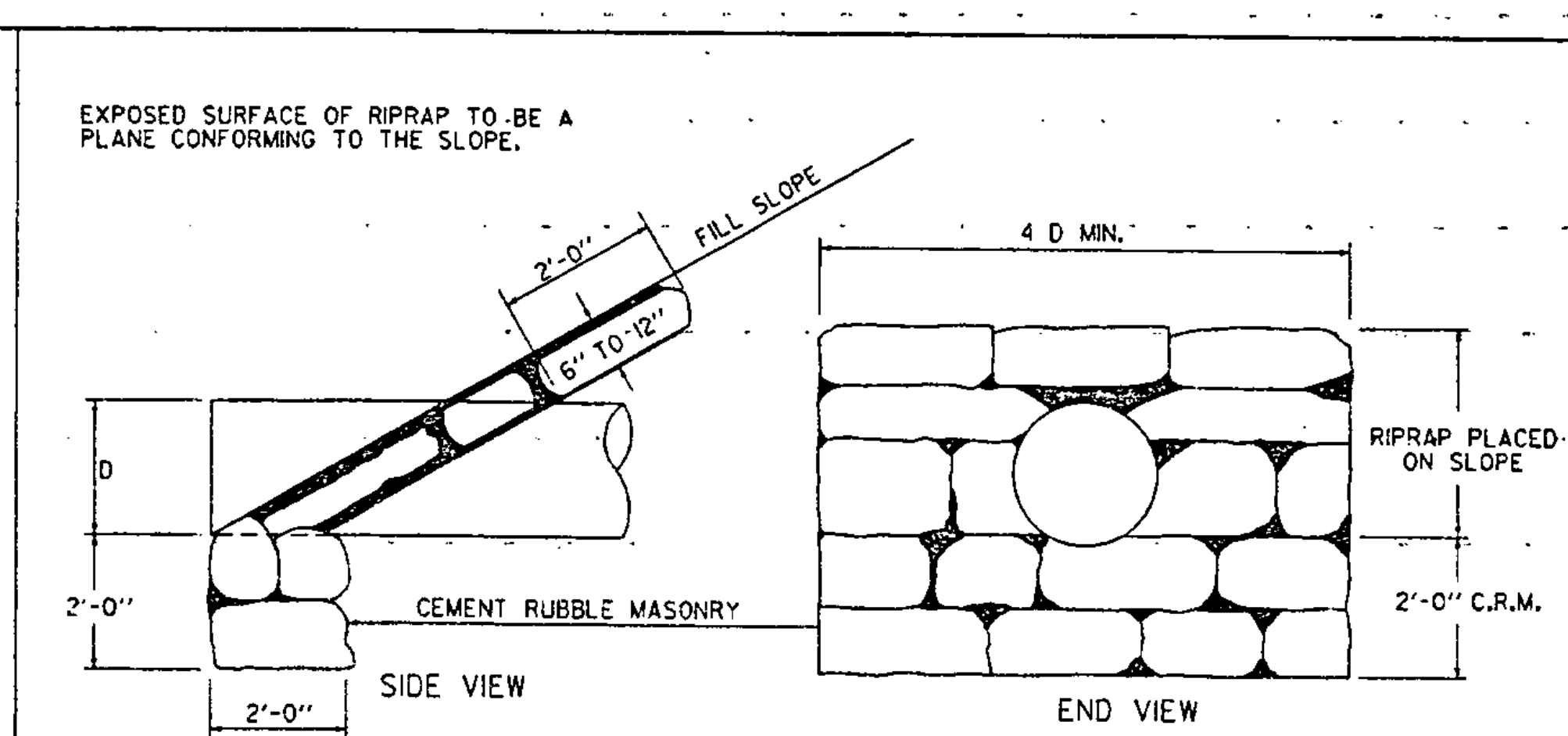
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION, FHWA FINAL APPROVAL PENDING.

George S. McArthur, PE
DIRECTOR OF ENGINEERING

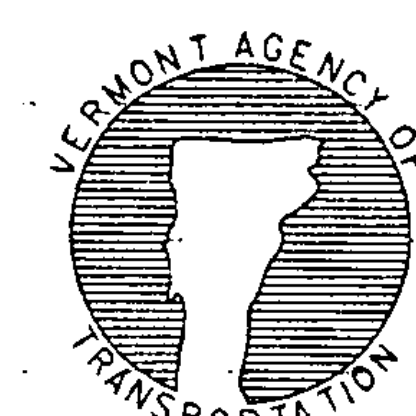
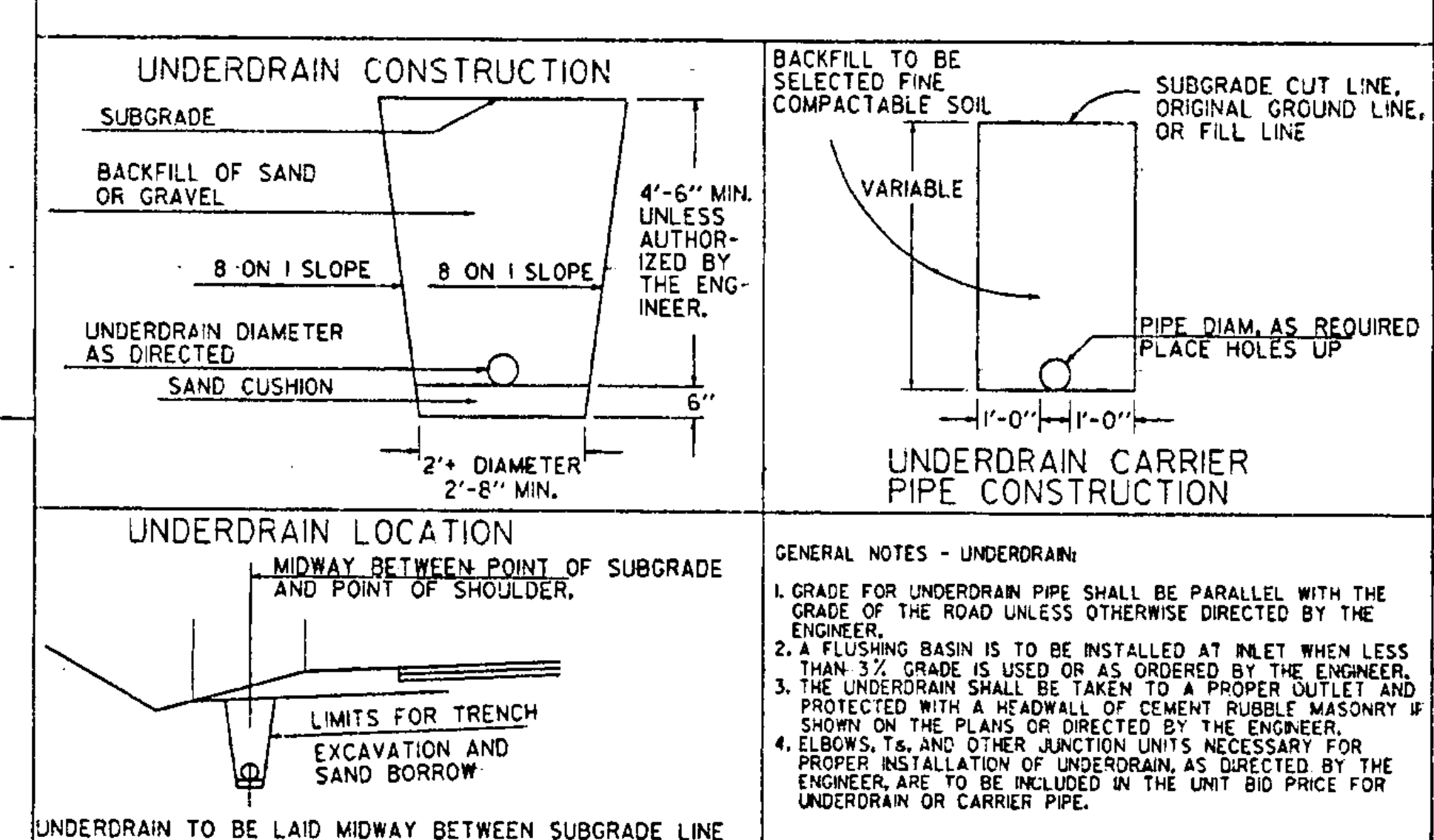
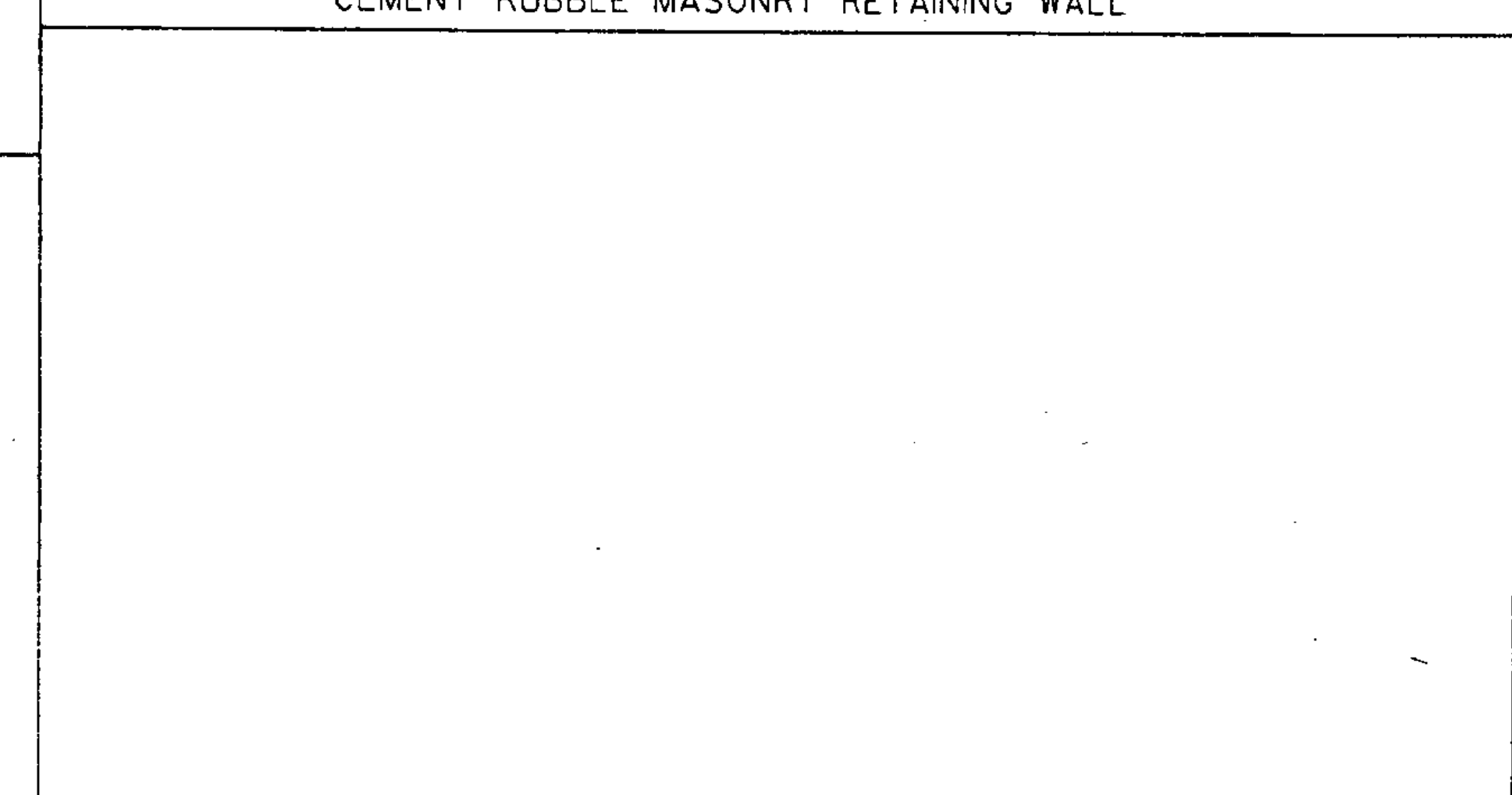
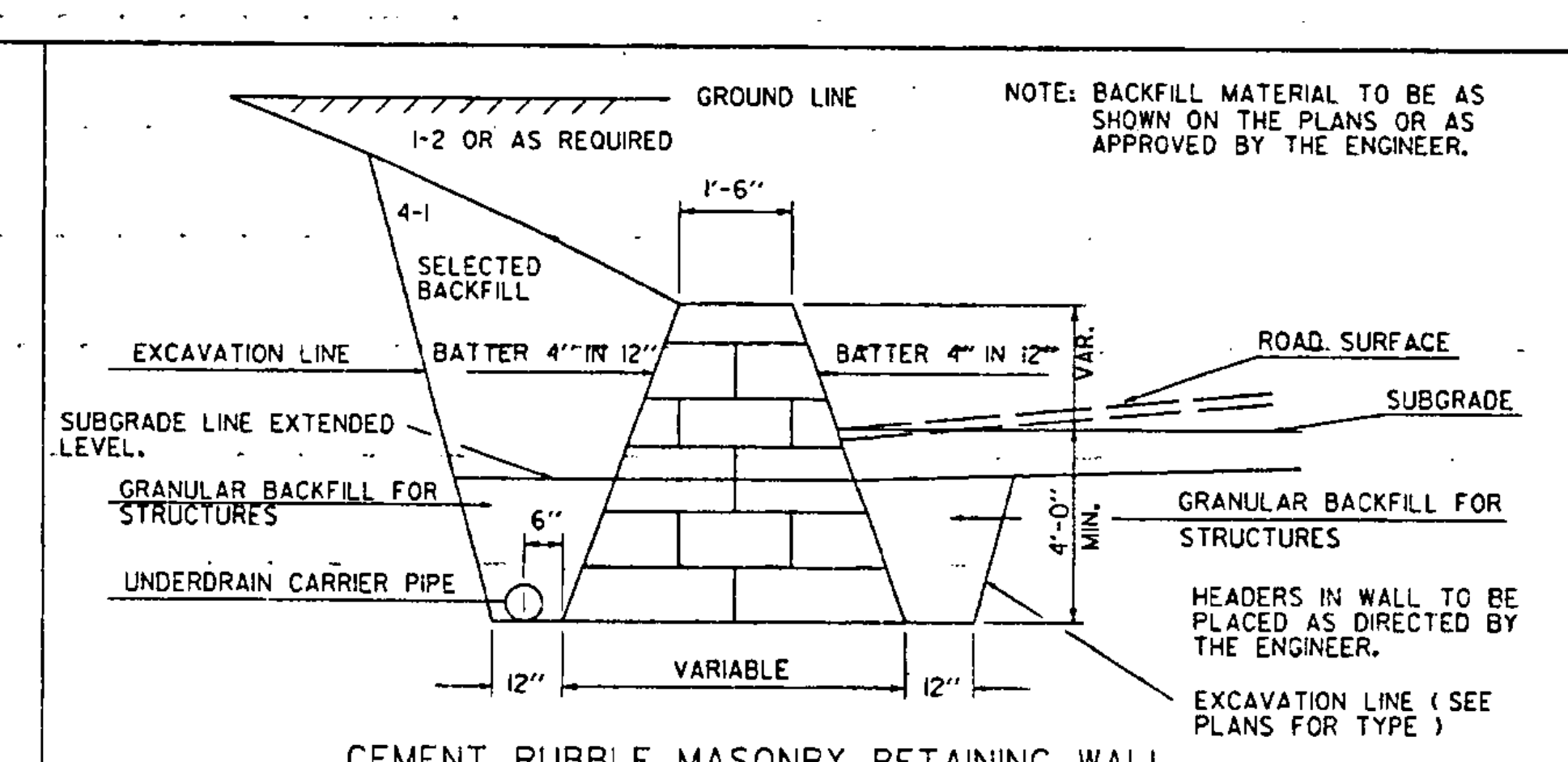
John M. Murphy, PE
DESIGN ENGINEER



GENERAL NOTES - HEADWALLS:

1. THE HEIGHT OF HEADWALLS ON DRIVEWAY PIPES IS TO BE REDUCED TO 6" ABOVE THE TOP OF PIPE.
2. BELL AND SPIGOT PIPE IS TO BE LAID WITH THE BELL UPSTREAM.
3. HEADWALL QUANTITIES, FOR THE SAME TYPE HEADWALLS ON PIPES OF EQUAL DIAMETER, ARE THE SAME FOR BOTH CONCRETE AND METAL PIPE. LENGTH OF HEADWALLS ARE BASED ON INSIDE DIAMETER OF PIPES.
4. THE NECESSITY OF CONSTRUCTING A FLOOR AT THE ENTRANCE TO AN L TYPE HEADWALL SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER AND ANY INSTALLATION THEREOF SHALL BE AT HIS DIRECTION.

CEMENT RUBBLE MASONRY HEADWALLS & RETAINING WALL
RIPRAP LIGHT TYPE SLOPE HEADWALL
REINFORCED CONCRETE HEADWALL
UNDERDRAIN & CARRIER PIPE CONSTRUCTION DETAILS



STANDARD
D-2

EDGE OF PAVEMENT

4'-0" MIN

2'-0" MIN

4'-0"

EXTEND BEYOND BOTTOM OF DITCH

PLAN VIEW

ANGLE VARIES

MOUNTABLE CURB

I-1

CUTOFF WALL

I-4 MAX

ELEVATION

4'-0"

2'-0" MIN

4'-0"

12"

4"

6"

MOUNTABLE CURB

MINIMUM 2" BITUMINOUS CONCRETE GUTTERS AND TRAFFIC ISLANDS

SECTION A-A

NOT TO BE USED ON ROADWAY GRADES EXCEEDING 2%
A 6" DEPTH OF COARSE SAND OR GRAVEL SHALL BE USED TO REPLACE UNSUITABLE MATERIAL ENCOUNTERED BELOW SUBGRADE AT THE DIRECTION OF THE ENGINEER.

Diagram illustrating the dimensions and components of a Type "A" RCDI with frame, showing the outlet pipe and frame structure.

Dimensions shown:

- MINIMUM 8'-0"
- 4'-0"
- 2'-0"
- MIN. 12"

Labels:

- 1-4
- OUTLET PIPE
- TYPE "A" RCDI WITH FRAME, SEE STANDARD SHEET D-6

Diagram illustrating the minimum dimensions and requirements for a sod joint:

- MINIMUM 6'-0" (Length of the joint)
- MIN 12" (Minimum width of the joint)
- 2" MINIMUM SOD THICKNESS
- 2" TOPSOIL WHEN DIRECTED BY THE ENGINEER.
- ALL SOD JOINTS TO BE STAGGERED.

Diagram illustrating the placement of geotextile fabric for filter fabric (if designed on plans or ordered by the engineer.)

Key dimensions and components shown:

- MINIMUM 8'-0"
- MIN. 12"
- STONE FILL TYPE I (MIN. THICKNESS 12")
- STONE FILL TYPE II (MIN. THICKNESS 24")
- Labels 1-2, 1-4, and 1-4 indicating specific areas or sections.

EXCAVATION PAID FOR AS COMMON EXCAVATION.

The diagram illustrates a cross-section of a bridge deck. It features a central layer of structural concrete, indicated by a stippled pattern, with a minimum thickness of 6 inches. Below this concrete layer is a layer of gravel or sand, with a minimum depth of 12 inches. The total width of the deck is labeled as a minimum of 6 feet 0 inches. The diagram also shows the deck's profile, with a 1-2 slope on the left and a 1-4 slope on the right. A note specifies that the 6-inch depth of gravel or sand should be directed by the engineer.

1-2

MINIMUM 6'-0"

1-4

MIN 12"

6" STRUCTURAL CONCRETE

6" DEPTH OF GRAVEL OR SAND IF DIRECTED BY THE ENGINEER

Diagram illustrating a typical flat bottom ditch layout. The layout shows a grid pattern with dimensions and labels:

- Grid Dimensions:** The grid is defined by dimensions of 1'-9" MINIMUM, 3'-0" C/C, 18", and 1'-9" MINIMUM.
- Labels:**
 - PLACE STAPLES 3'-0" C/C
 - VARIES
 - 1'-9" MINIMUM
 - 18"
 - 3'-0" C/C
- Inset:** A circular inset provides a detailed view of the grid pattern, showing dimensions of 8" and 3'-0".

DETAILS OF PLACING EROSION MATTING

Diagram illustrating the installation of a geotextile matting system, showing typical overlap and overlap at all ends and edges.

Typical Overlap: The diagram shows a rectangular matting system with dimensions: PLACE STAPLES 3'-0" C/C, 1'-9" MIN, and 1'-9" MIN. The typical overlap is 6".

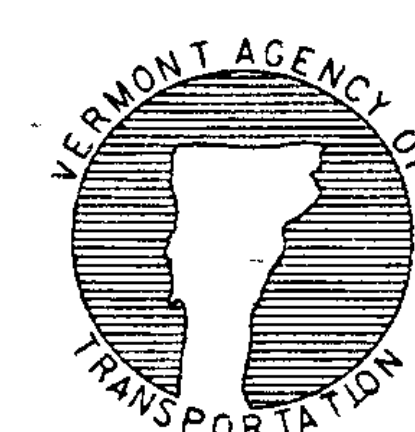
Typical Overlap at All Ends and Edges: The diagram shows the overlap at the ends and edges, which is 4".

REVISIONS AND CORRECTIONS
APR. 2, 1986 - ORIGINAL APPROVAL DATE
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE,
UNDER NEW SIGNATURES.

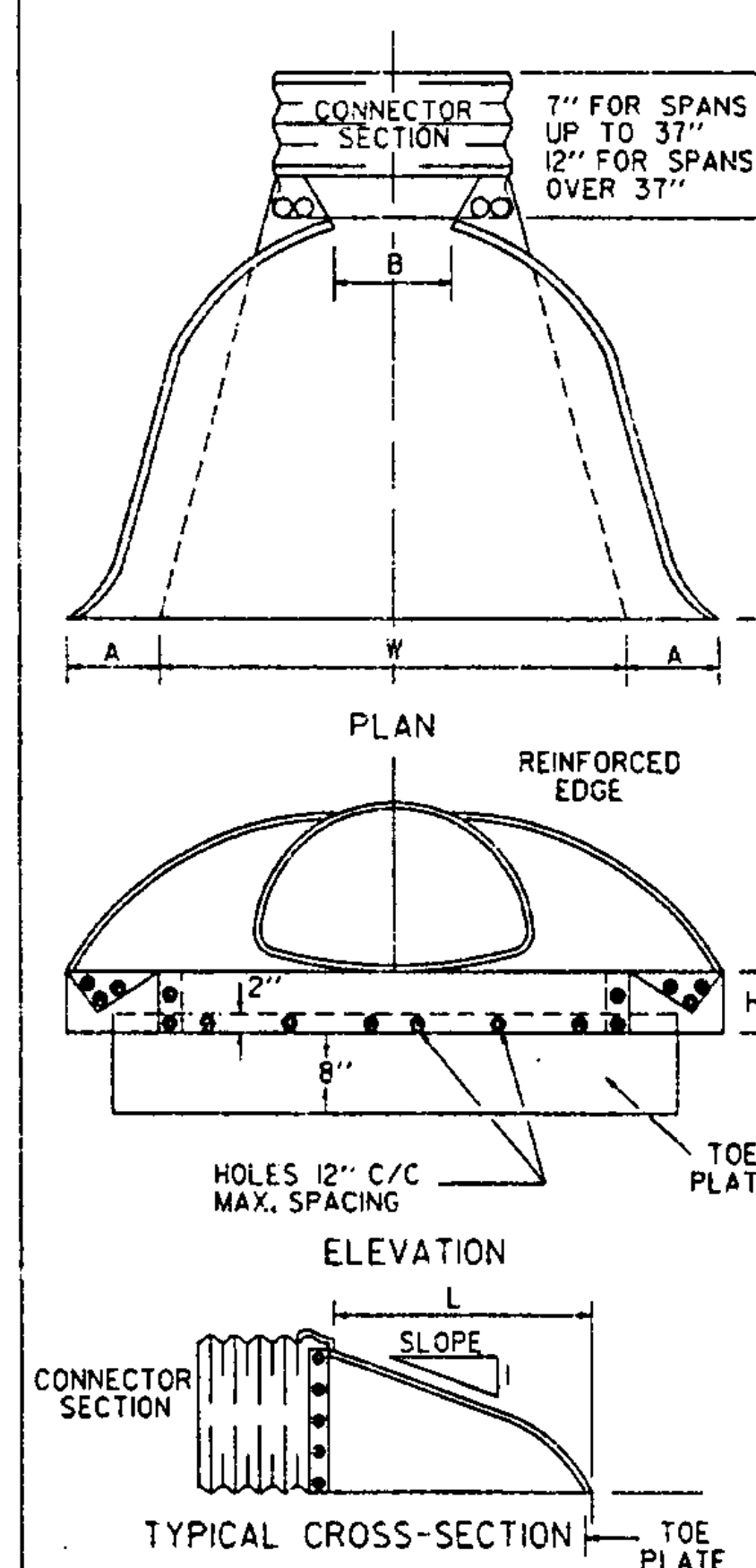
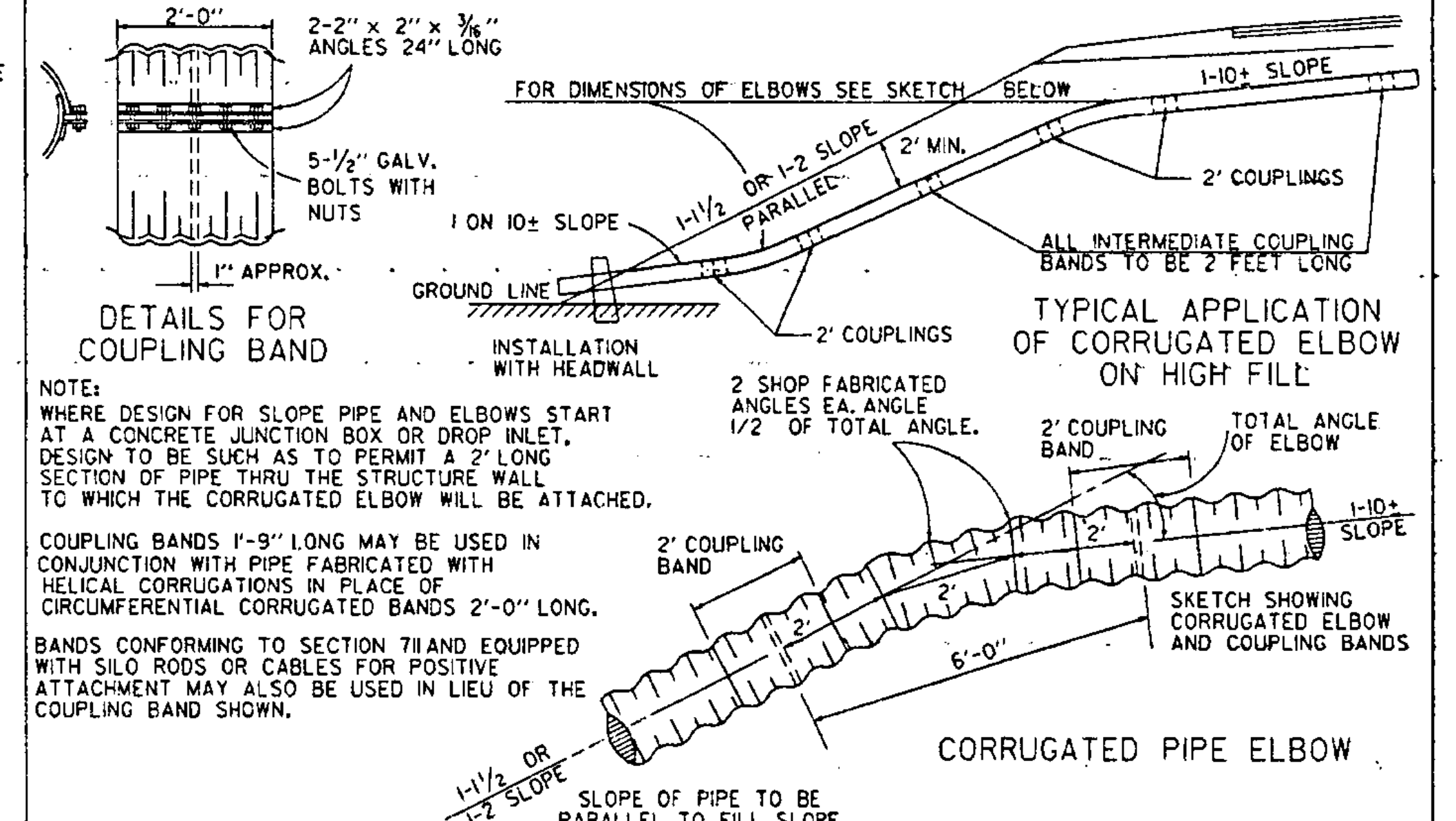
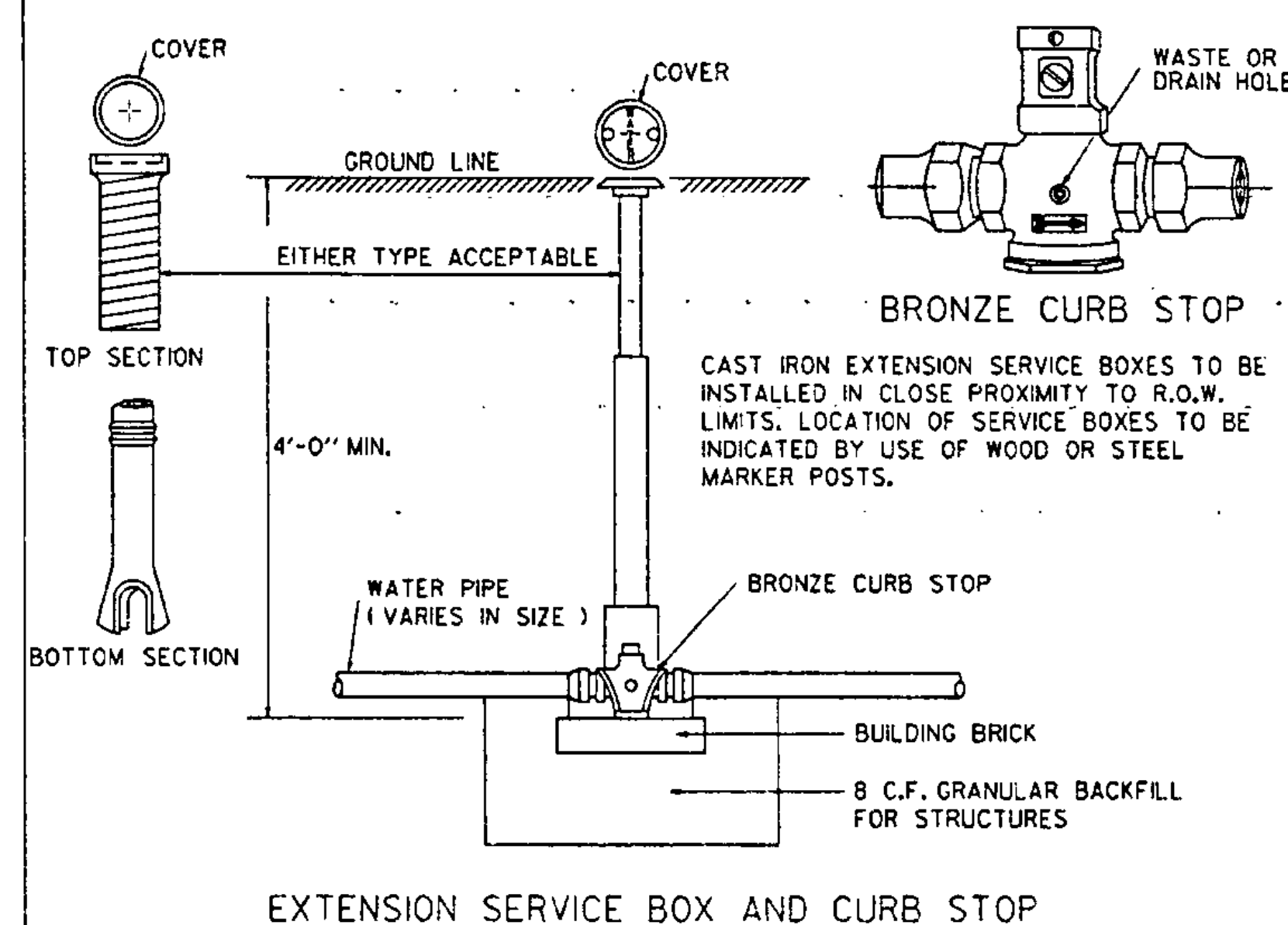
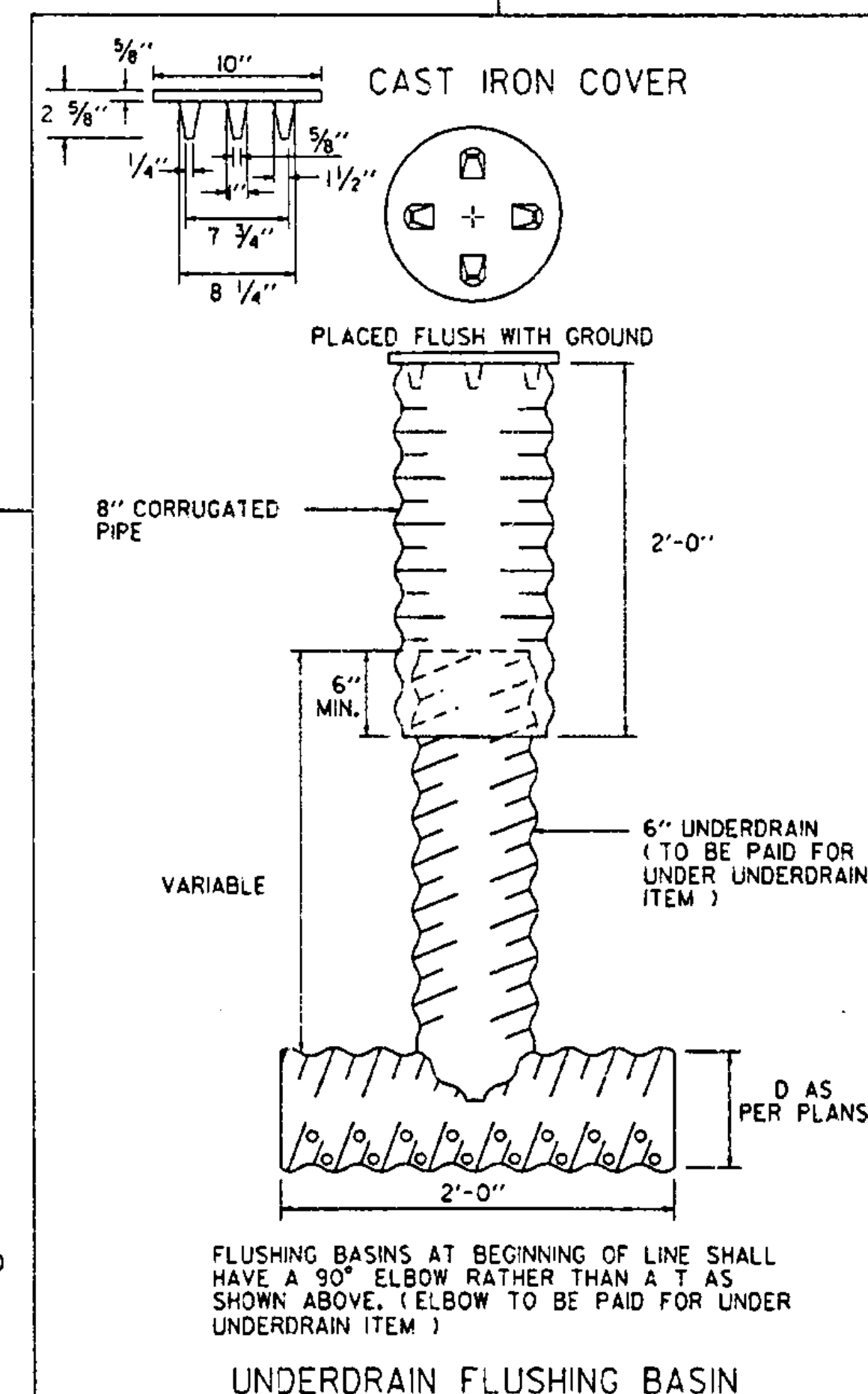
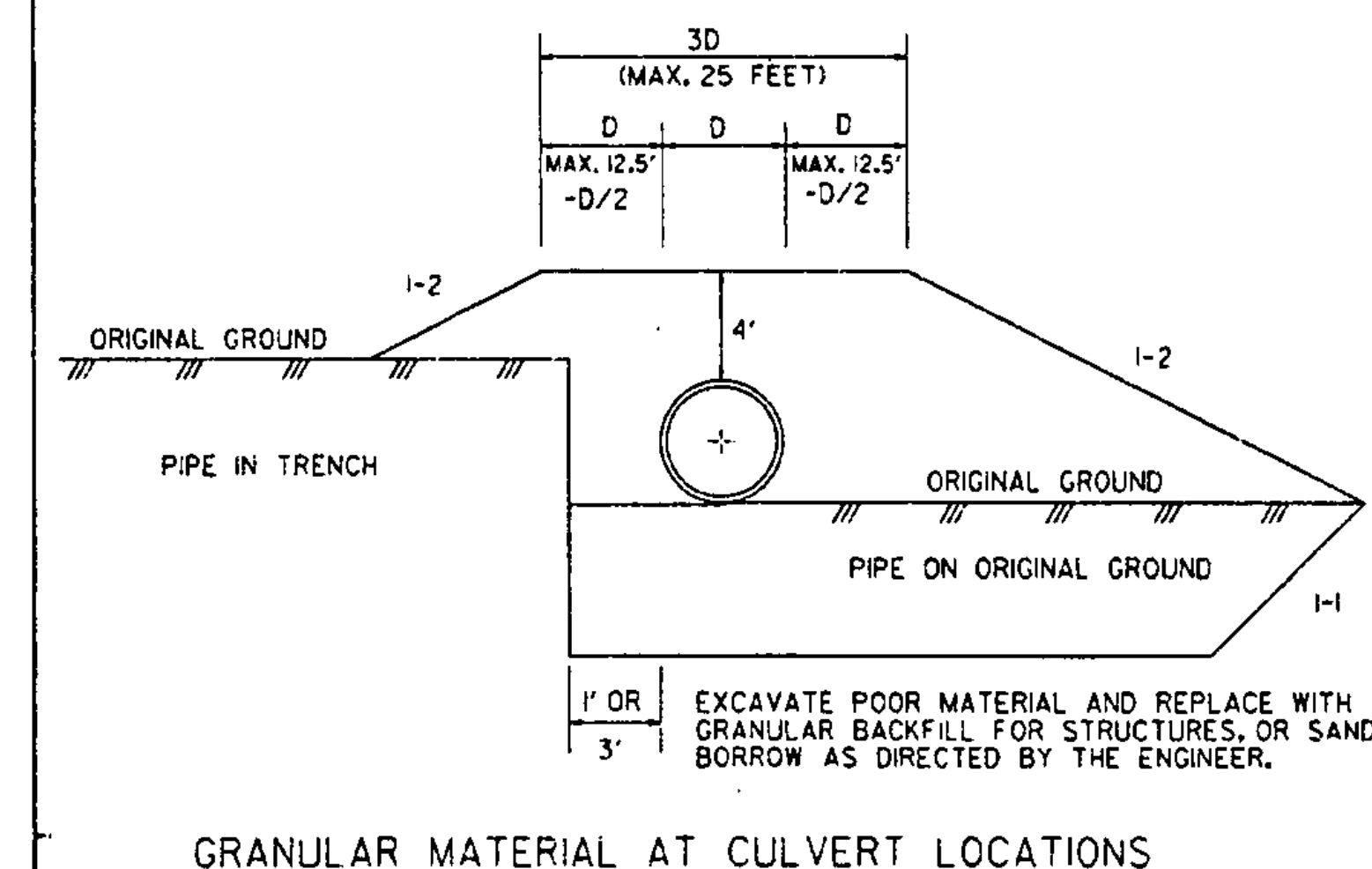
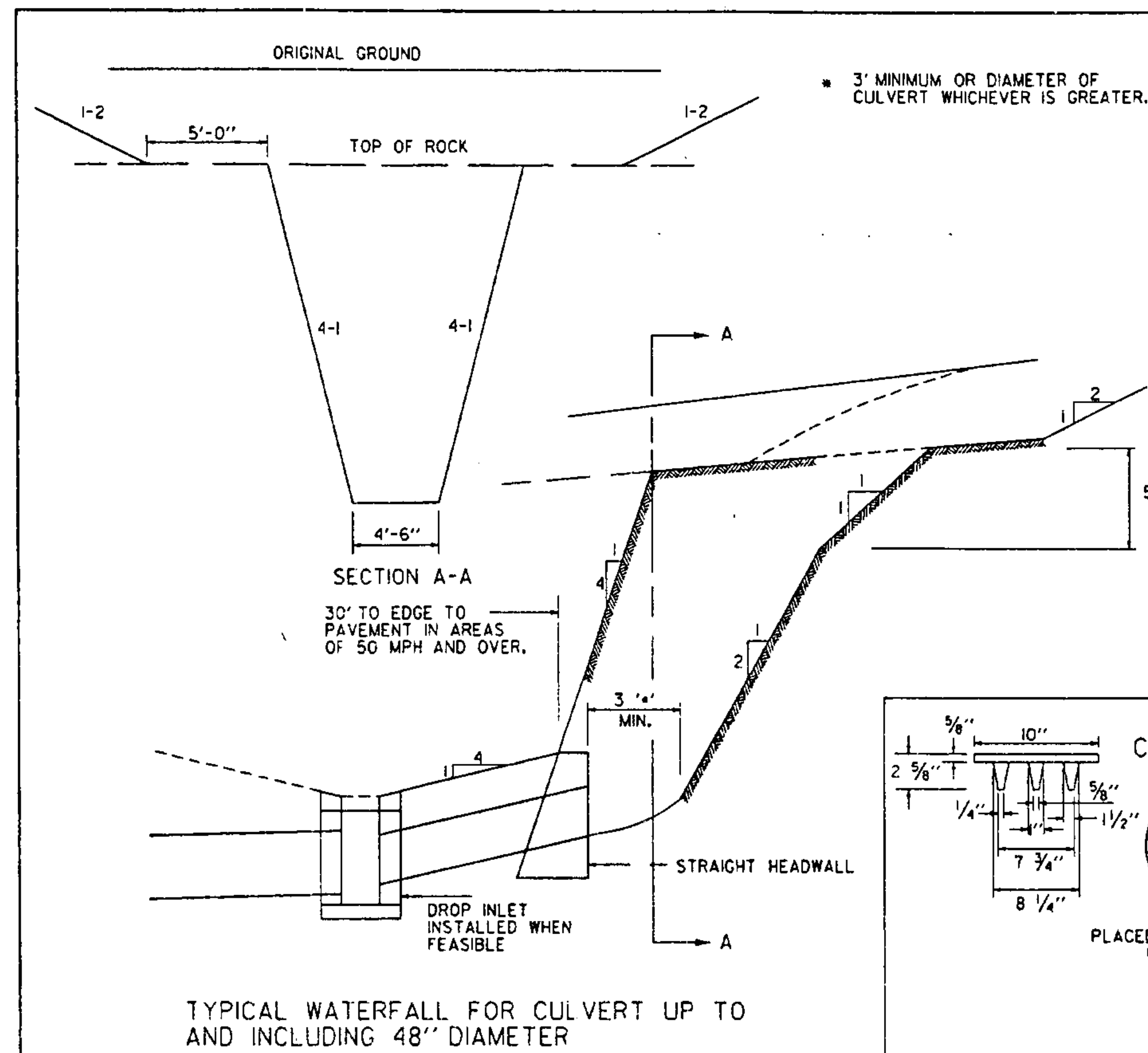
APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

Franklin W. McArthur P.E.
DIRECTOR OF ENGINEERING

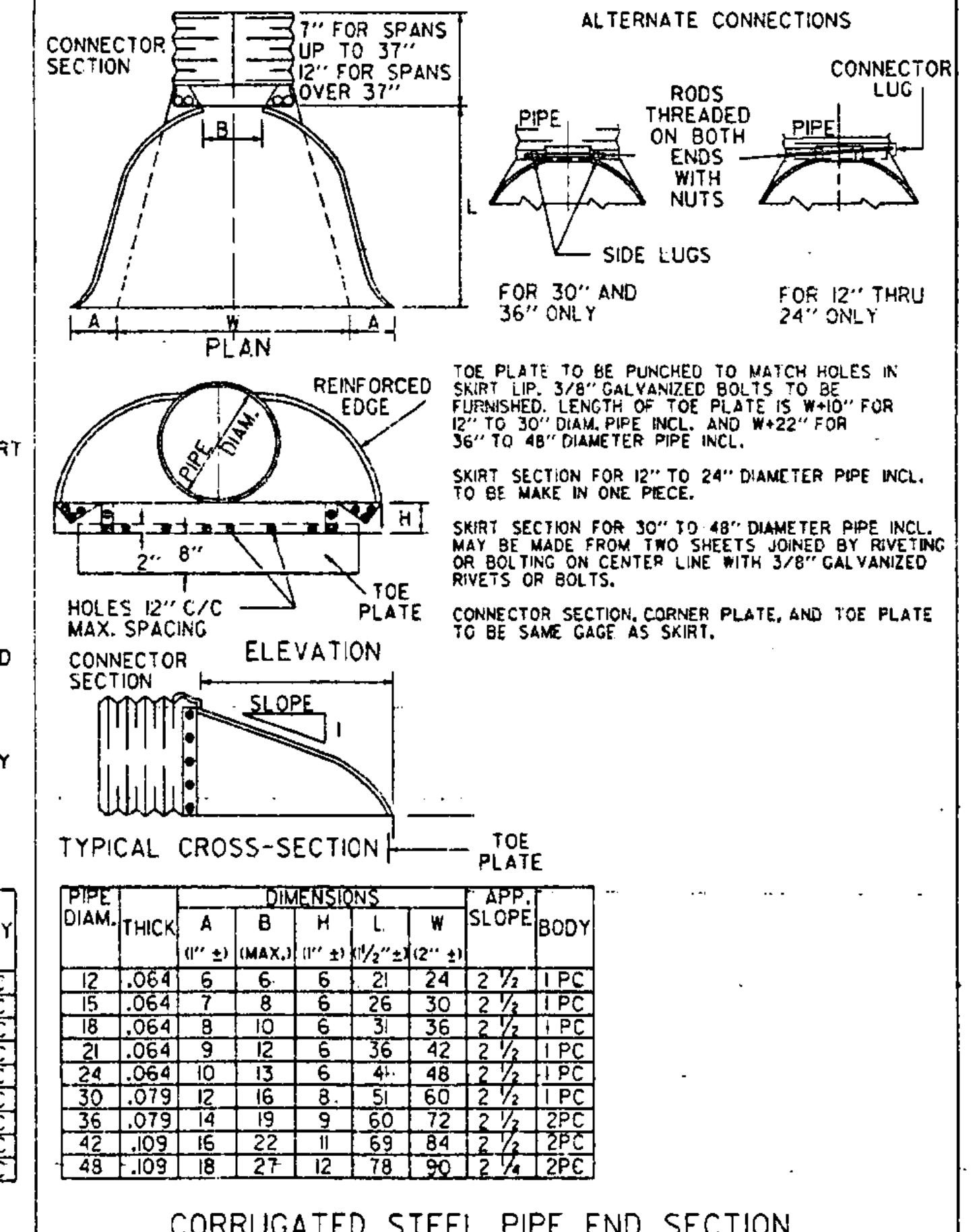
John M. Murphy PE
DESIGN ENGINEER



STANDARD
D-3



PIPE ARCH DIMENSIONS		DIMENSIONS						APPROX. SLOPE	BODY
SPAN	RISE	THICK	A (1" ±)	B (1" ±)	H (1" ±)	L (1" ±)	W (1" ±)		
18	11	.064	7	9	6	19	30	2 1/2	1 PC
22	13	.064	7	10	6	23	36	2 1/2	1 PC
29	18	.064	9	14	6	32	48	2 1/2	1 PC
36	22	.079	10	16	6	39	60	2 1/2	1 PC
43	27	.079	12	18	8	46	75	2 1/2	1 PC
50	31	.109	13	21	9	53	85	2 1/2	2 PC
58	36	.109	18	26	12	63	90	2 1/2	2 PC
65	40	.109	18	30	12	70	102	2 1/2	2 PC
72	44	.109	18	33	12	77	114	2 1/2	3 PC



PIPE DIAM.	THICK	A	B	H	L	W	APPROX. SLOPE	BODY
12	.064	6	6	6	21	24	2 1/2	1PC
15	.064	7	8	6	26	30	2 1/2	1PC
18	.064	8	10	6	31	36	2 1/2	1PC
21	.064	9	12	6	36	42	2 1/2	1PC
24	.064	10	13	6	41	48	2 1/2	1PC
30	.079	12	16	8	51	60	2 1/2	1PC
36	.079	14	19	9	60	72	2 1/2	2PC
42	.109	16	22	11	69	84	2 1/2	2PC
48	.109	18	27	12	78	96	2 1/2	2PC

REVISIONS AND CORRECTIONS

DEC. 6, 1971 - ORIGINAL APPROVAL DATE

JULY 17, 1972 - HELICAL CORRUGATED COUPLING NOTE ADDED

JULY 24, 1975 - GRANULAR MATERIAL AT CULVERT LOCATIONS CORRECTED

OCT. 30, 1985 - REVISED TO CONFORM TO 1986 SPECIFICATIONS

JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

George D. The Collins, P.E.
DIRECTOR OF ENGINEERING

John Murphy, P.E.
DESIGN ENGINEER

TYPICAL WATERFALL FOR CULVERTS UP TO AND INCLUDING 48" DIAMETER

EXTENSION SERVICE BOX AND CURB STOP

CORRUGATED PIPE ELBOW

GRANULAR BORROW AT CULVERT LOCATIONS

UNDERDRAIN FLUSHING BASIN

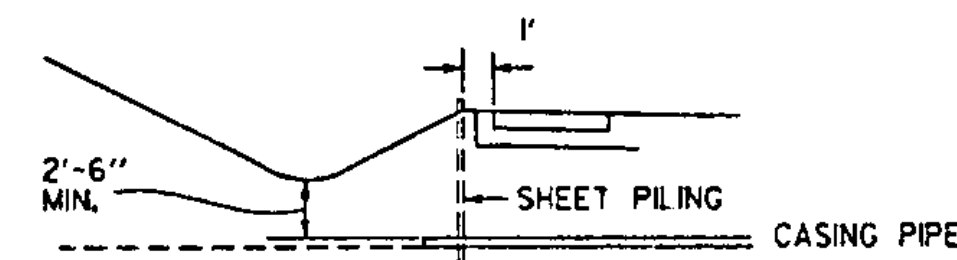
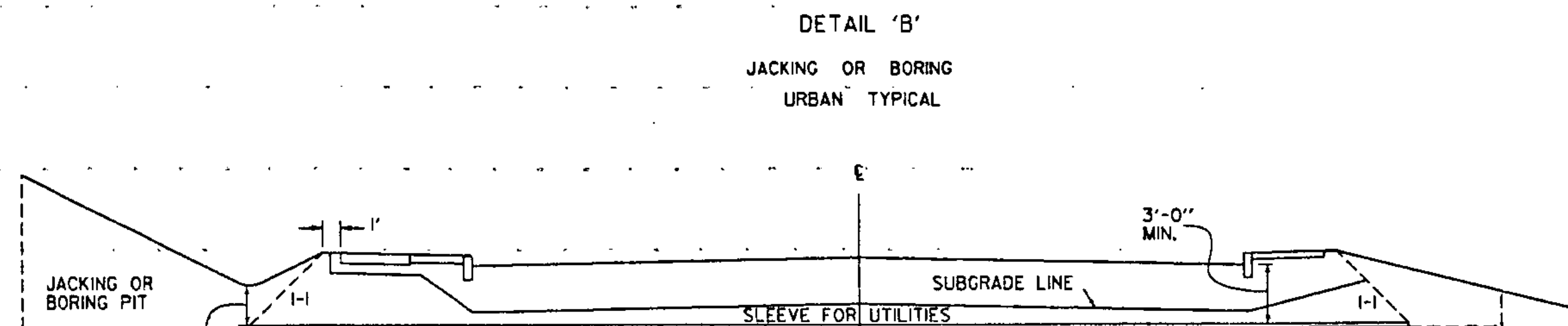
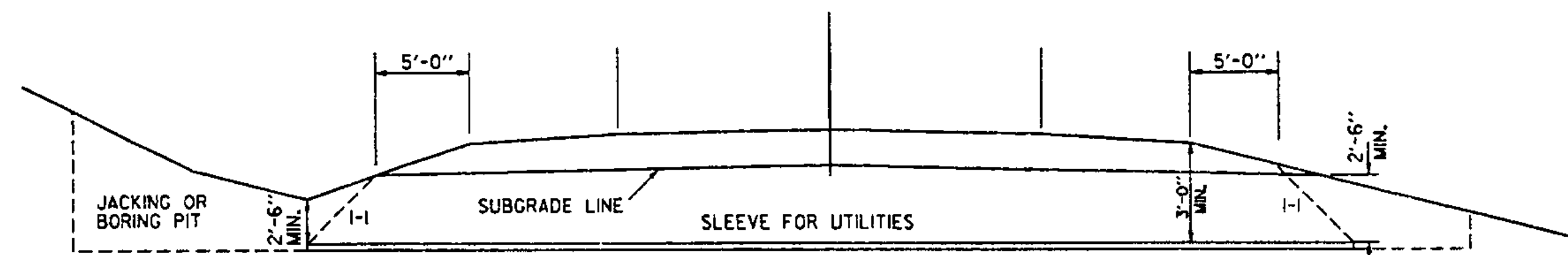
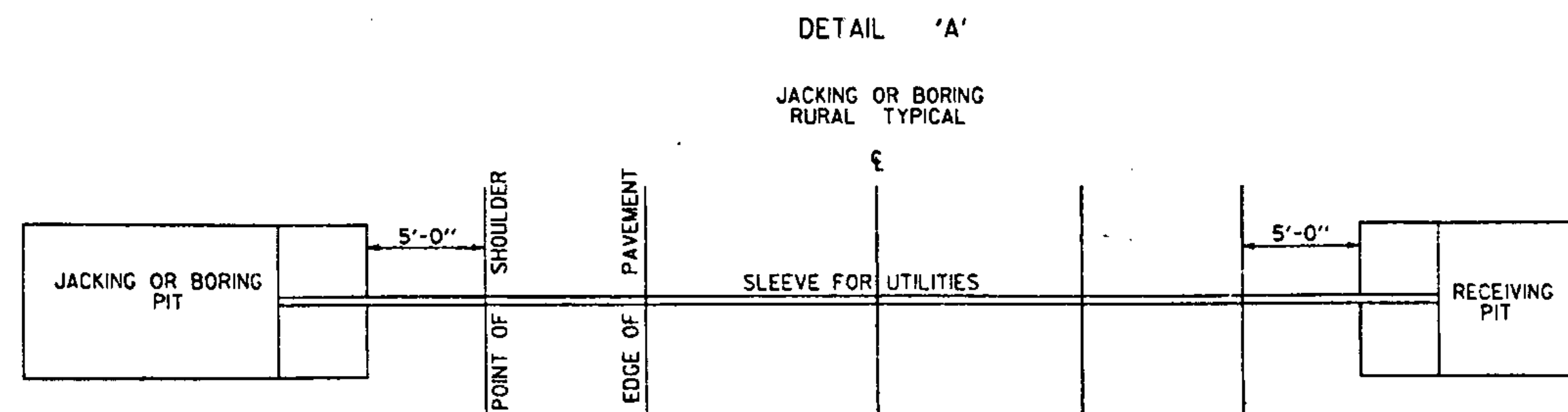
CORRUGATED STEEL PIPE ARCH END SECTION

CORRUGATED STEEL PIPE END SECTION

VERMONT AGENCY OF TRANSPORTATION

STANDARD

D-4



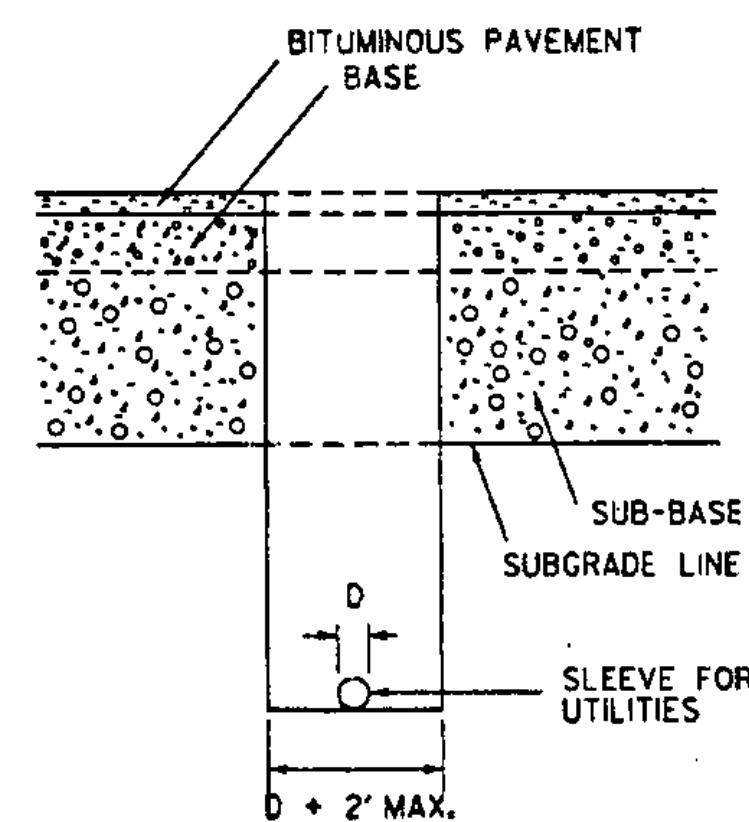
USING SHEET PILING

OPEN CUT AND PAVEMENT REPLACEMENT
APPLICABLE ONLY WHEN SPECIFICALLY AUTHORIZED BY HIGHWAY PERMIT

DETAIL 'C'

OPEN CUT WITH
BITUMINOUS CONCRETE PAVEMENT

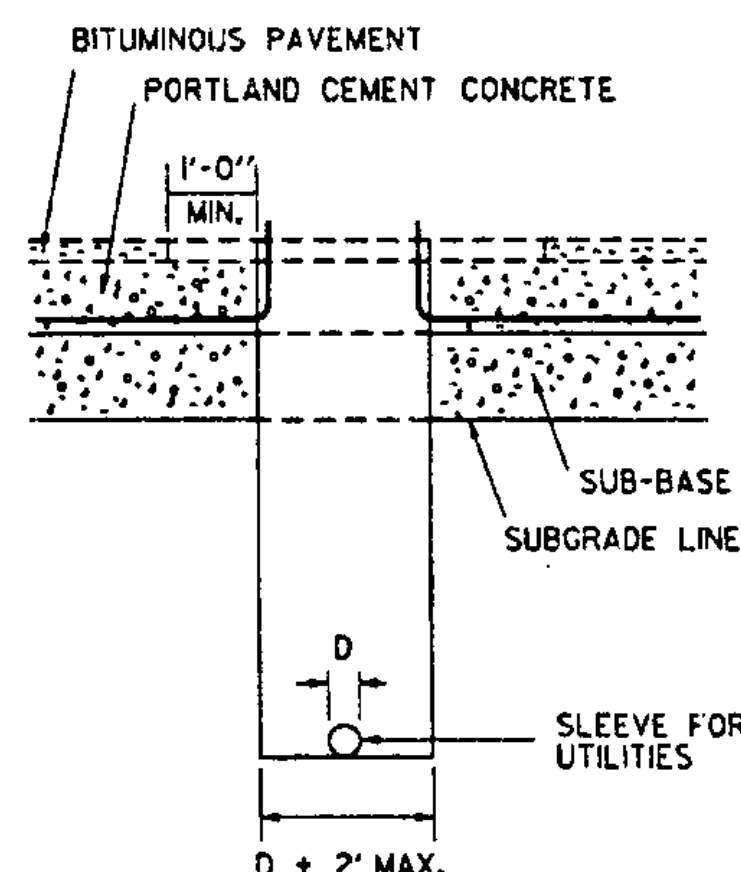
BITUMINOUS TREATED BASE MATERIALS TO BE
REPLACED WITH BITUMINOUS CONCRETE



DETAIL 'D'

OPEN CUT WITH
PORTLAND CEMENT CONCRETE PAVEMENT

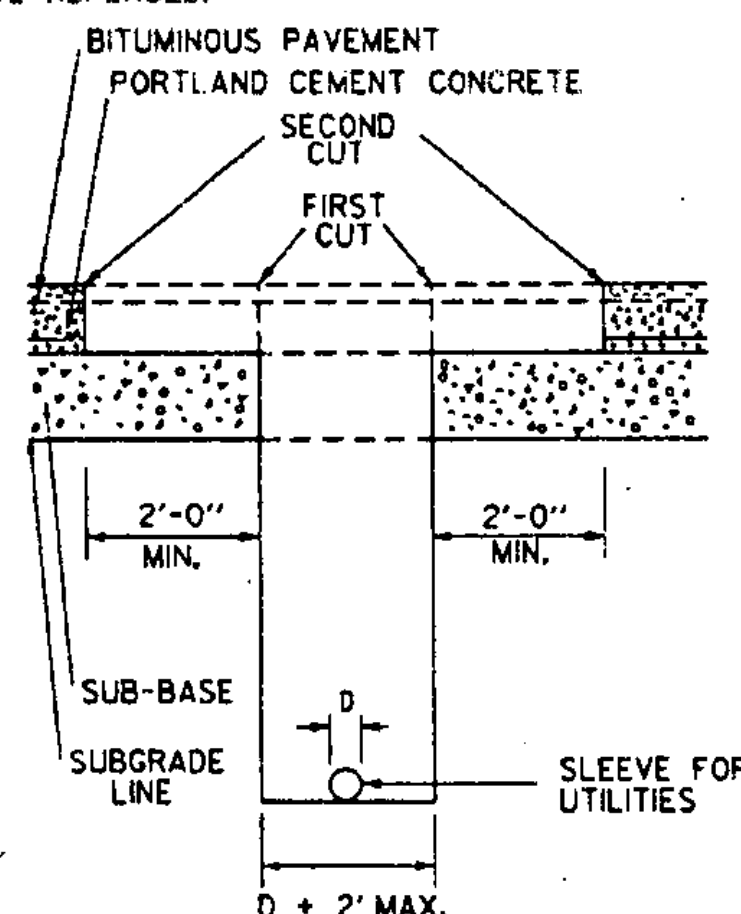
LONGITUDINAL STEEL TO BE CUT AND BENT BACK
TO ALLOW FOR TRENCH EXCAVATION. REINFORCING
BARS TO BE BENT BACK IN PLACE, SPLICED, AND
NEW CROSS REINFORCING STEEL TO BE TIED TO
THE LONGITUDINAL BARS PRIOR TO REPLACING
THE PORTLAND CEMENT CONCRETE.



DETAIL 'E'

OPEN CUT WITH
PORTLAND CEMENT CONCRETE PAVEMENT

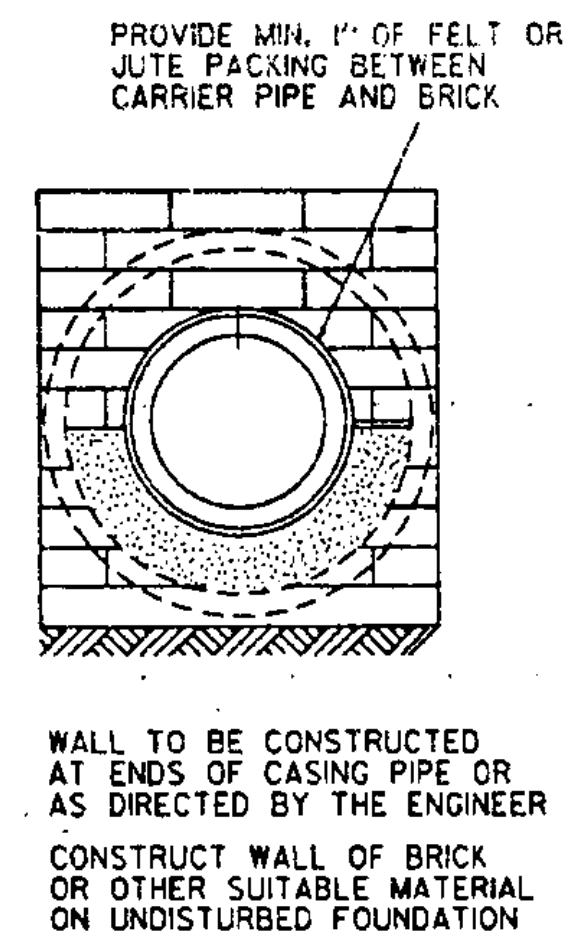
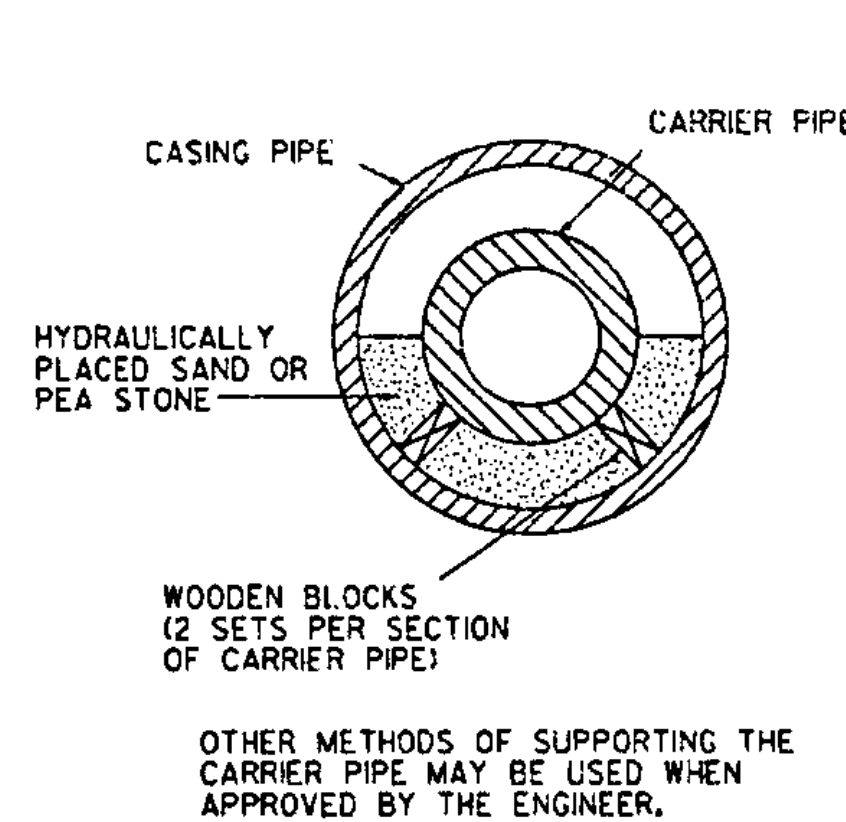
THE FIRST CUT WILL BE TO THE DESIRED WIDTH OF
THE TRENCH. BACKFILL IS TO BE MADE TO THE ROAD
SURFACE. THE SECOND CUT WILL THEN BE MADE AND
ALL MATERIAL REMOVED TO THE BOTTOM ELEVATION
OF THE CONCRETE SLAB. THE SUB-BASE WILL THEN
BE RE-COMPACTED AND THE PORTLAND CEMENT CON-
CRETE REPLACED.



IN THE EVENT THAT AN ADJACENT TRANSVERSE
JOINT IS LESS THAN FOUR FEET FROM THE FIRST
CUT, THE PAVEMENT SHALL BE REMOVED TO
THAT JOINT.

DETAIL 'F'

CASING AND CARRIER PIPE
(SLEEVE FOR UTILITIES)



NOTE: MEASUREMENT FOR PAYMENT OF THIS COMPOSITE SLEEVE
IS THE NUMBER OF LINEAR FEET OF THE COMPLETED
INSTALLATION

GENERAL NOTES

1. SHEET PILING MAY BE DRIVEN VERTICALLY FIVE (5) FEET OUTSIDE THE SHOULDER POINT, OR ONE (1) FOOT BACK OF THE SIDEWALK, TO ALLOW FOR A SHORTER SLEEVE.
2. EARTH BACKFILL, TO BE MADE IN SIX (6) INCH LIFTS AND COMPACTED TO NOT LESS THAN 95% MAX. DRY DENSITY.
3. SEE DETAIL 'A' OR 'B' FOR DETERMINING SLEEVE LENGTH.
4. IN THE EVENT THAT PERMISSION IS GRANTED TO CUT AN EXISTING PORTLAND CEMENT CONCRETE OR BITUMINOUS PAVEMENT, ALL CUTS, IF POSSIBLE, SHALL BE MADE WITH A SAW TO A MINIMUM OF 1/2".
5. BITUMINOUS PAVEMENTS TO BE REPLACED WITH BITUMINOUS CONCRETE. PORTLAND CEMENT CONCRETE AND SUB-BASE TO BE REPLACED IN KIND. MATERIAL BELOW SUBGRADE TO BE REPLACED WITH EXCAVATED MATERIAL OR AS DIRECTED BY THE HIGHWAY ENGINEER.
6. SUB-BASE TO BE REPLACED IN SIX (6) INCH COMPACTED LAYERS.
7. PORTLAND CEMENT CONCRETE PATCHES SHALL BE PROPERLY CURED FOR SEVEN (7) DAYS BEFORE BEING SUBJECTED TO TRAFFIC LOADS. WHEN HIGH EARLY STRENGTH CEMENT IS USED, PROPER CURING FOR THREE (3) DAYS SHALL BE REQUIRED BEFORE BEING SUBJECTED TO TRAFFIC LOADS. WHEN A HIGH STRENGTH, QUICK SETTING CONCRETE PATCHING COMPOUND IS APPROVED, IT SHALL BE PROPERLY CURED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS BEFORE BEING SUBJECTED TO TRAFFIC LOADS.

REVISIONS AND CORRECTIONS

DEC. 23, 1974 - ORIGINAL APPROVAL
SEPT. 9, 1975 - CARRIER PIPE AND PORTLAND CEMENT
NOTES REVISED
OCT. 30, 1985 - REVISED TO CONFORM WITH
1986 SPECIFICATIONS
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE,
UNDER NEW SIGNATURES.
MAR. 10, 1995 - REISSUED, WITHOUT CHANGE,
UNDER NEW SIGNATURES.

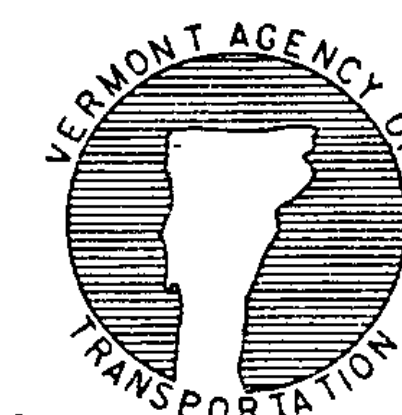
APPROVED

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION
FIVE FINAL APPROVAL PENDING.

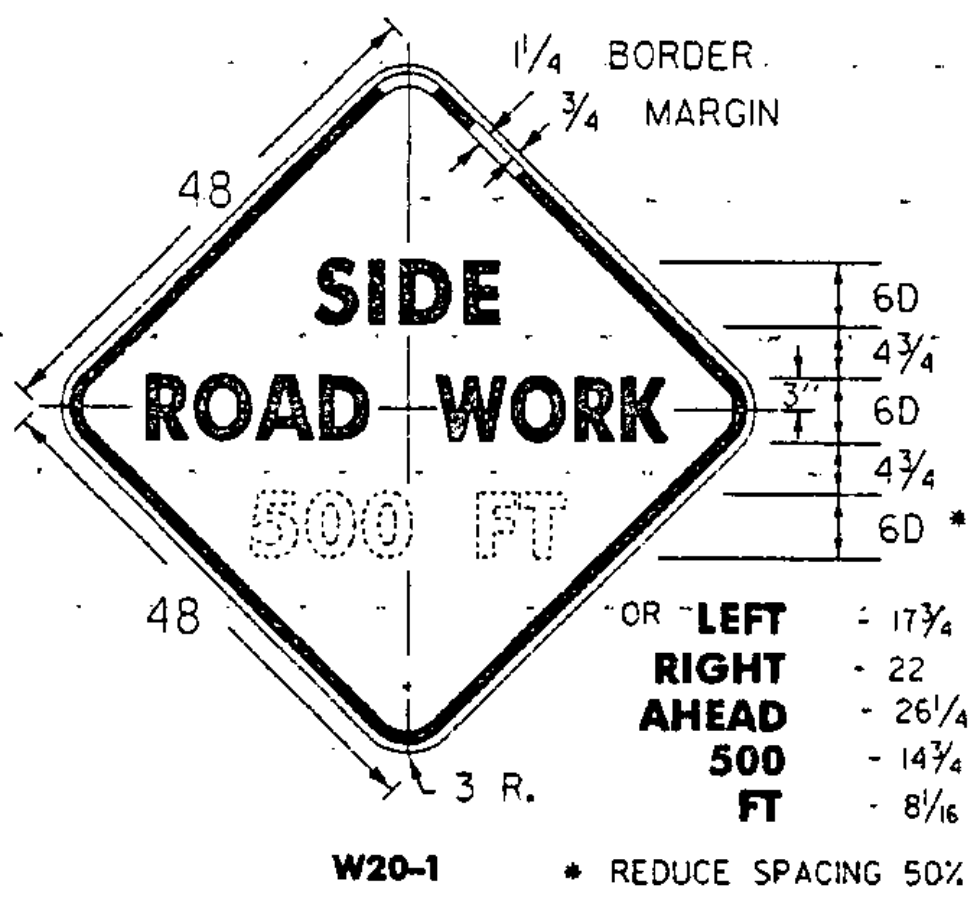
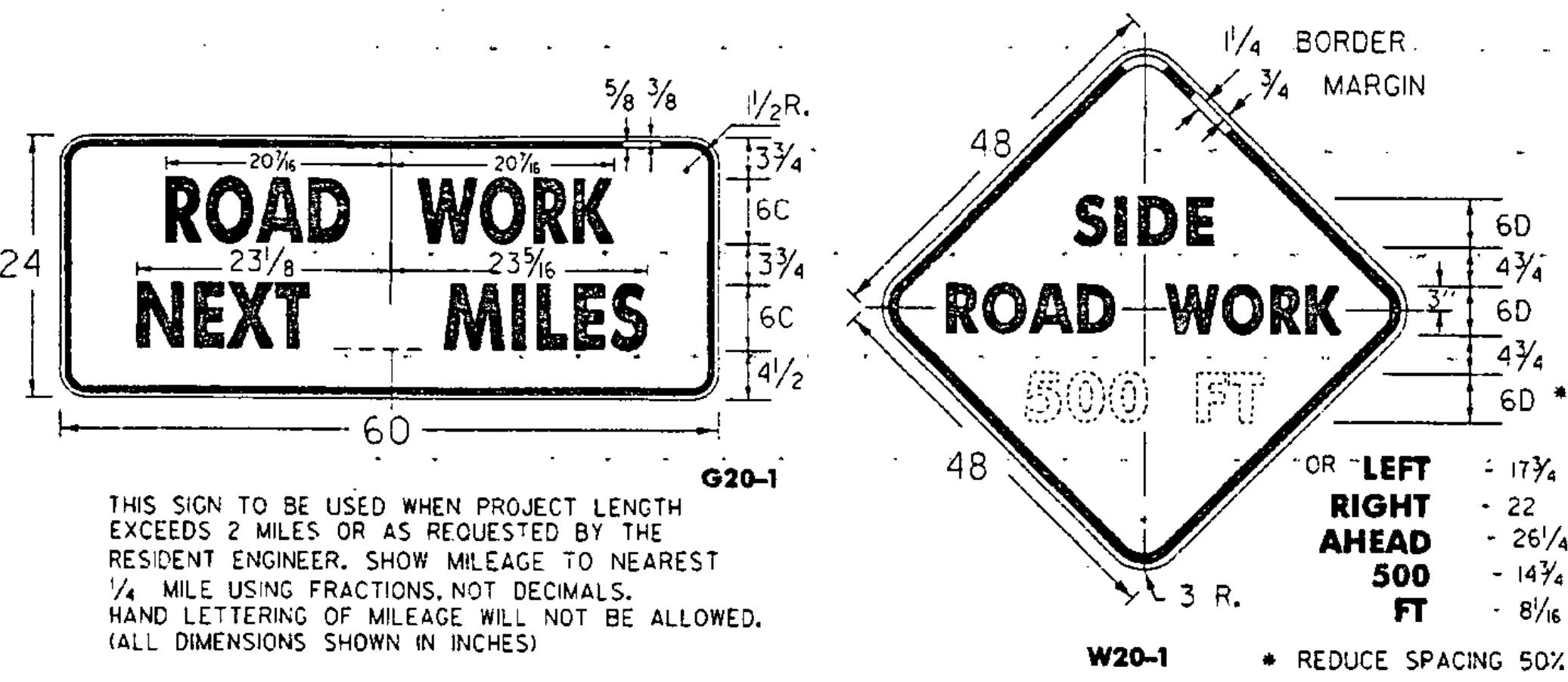
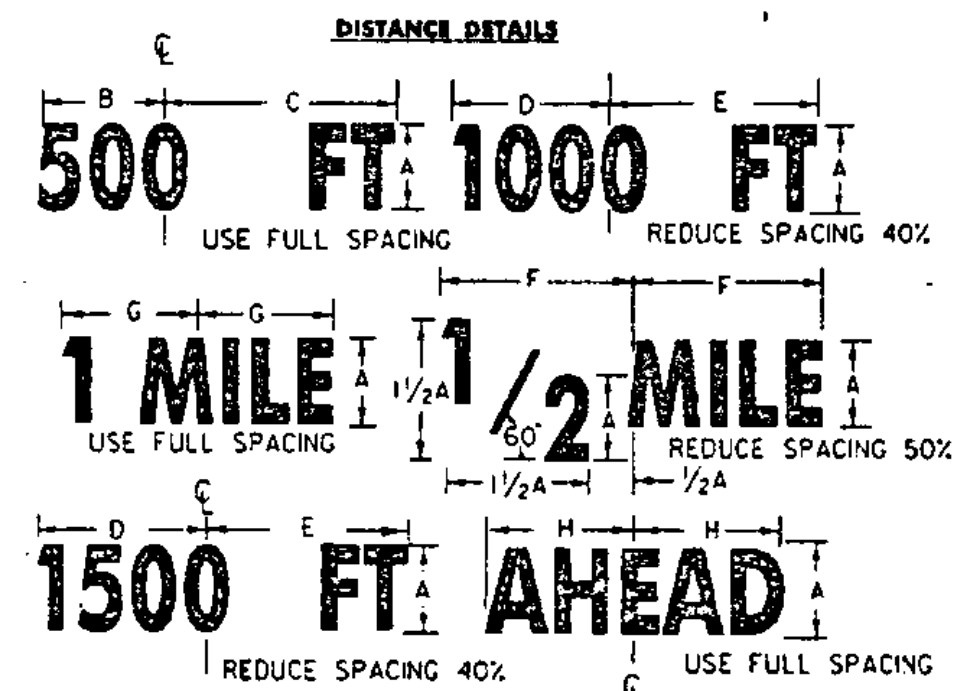
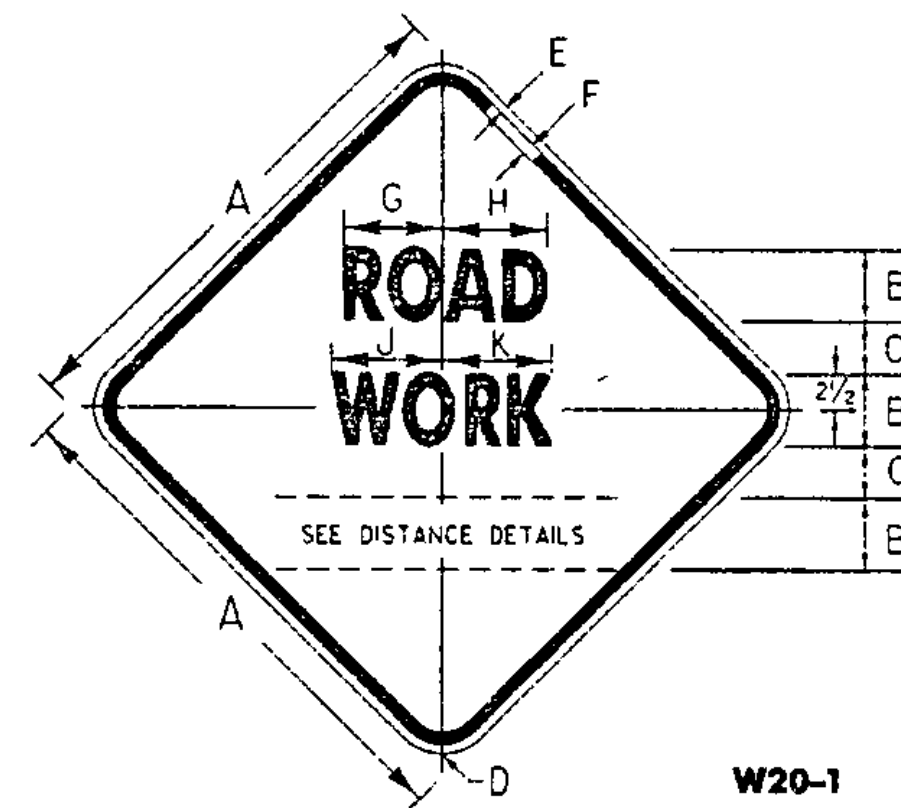
Thomas D. McArthur
DIRECTOR OF ENGINEERING

Thomas Page
UTILITIES ENGINEER

HIGHWAY CROSSING SLEEVES FOR UNDERGROUND UTILITIES

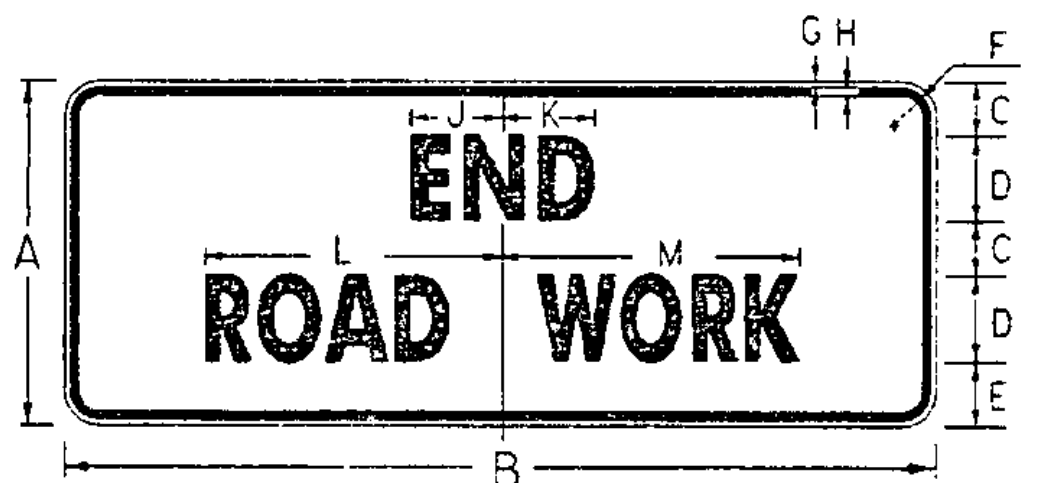


STANDARD
D-20



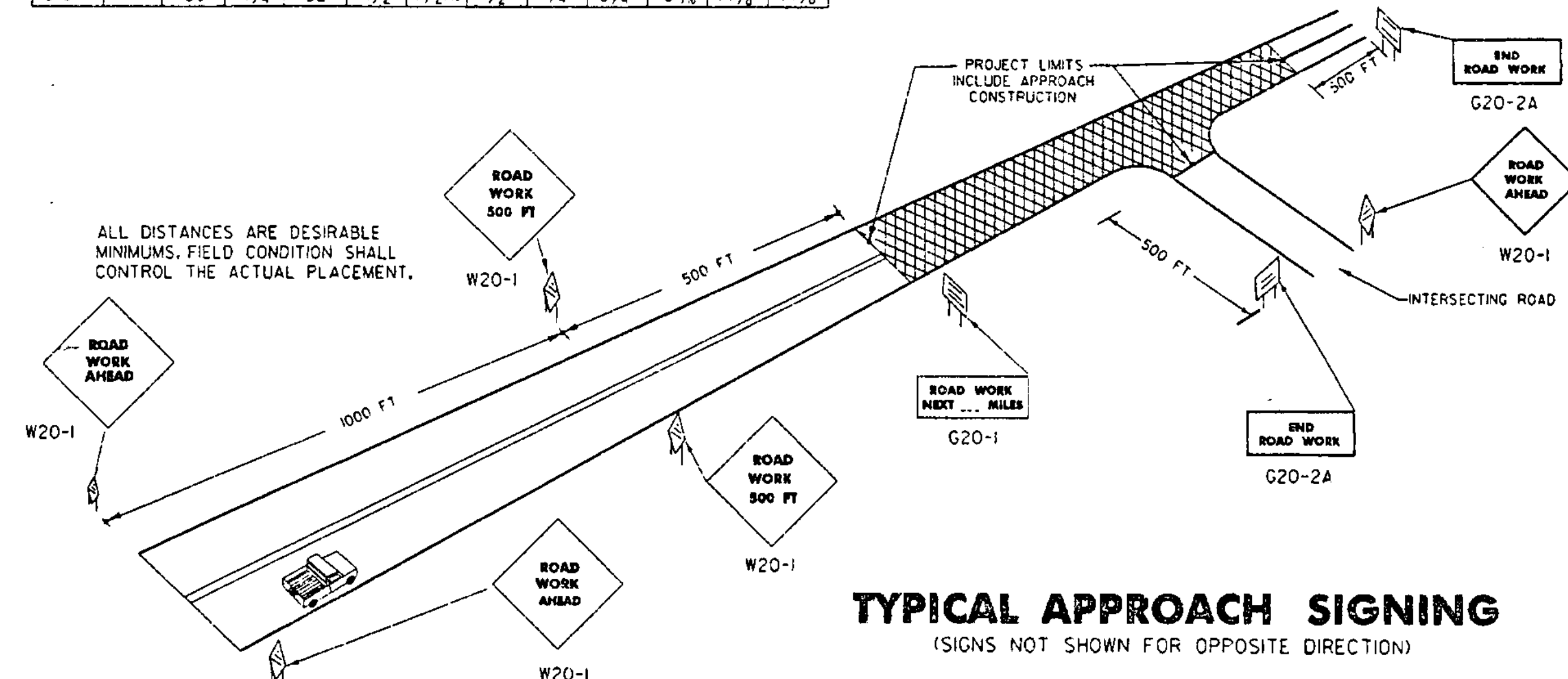
DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K
STD.	48	7C	4 1/4	3" R.	3/4	1 1/4	9 1/2	9 1/2	10 1/2	10 1/2
URBAN	36	5C	3 3/8	2 1/4 R.	5/8	7/8	6 3/8	7 1/8	7 1/2	7 1/2

DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G
5D	10 3/4	10 3/4	11 3/4	11 1/4	11 1/4	9 1/2	10 1/4
6C	10 3/8	10 1/2	11 1/4	12	12 1/2	9 1/8	10 1/2
7C	12	12 3/8	13 3/8	14	14 3/8	10 3/8	12 1/4
8D	16 1/4	17 1/4	17	18	18	14 3/8	17 3/8



DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M
STD.	24	60	3 3/4	6C	4 1/2	1 1/2 R.	3/8	3/8	6 1/4	6 3/8	20 1/8	20 1/8
URBAN	24	36	4 1/4	5B	4 1/2	1 1/2 R.	1/2	3/4	3 3/4	3 3/8	14 3/8	14 3/8

(ALL DIMENSIONS SHOWN IN INCHES UNLESS OTHERWISE NOTED)



TYPICAL APPROACH SIGNING
(SIGNS NOT SHOWN FOR OPPOSITE DIRECTION)

NOTES

THE SIGNS SHOWN ON THIS SHEET ARE INTENDED FOR USE IN PROVIDING ADVANCE WARNING AND INFORMATION ON CONSTRUCTION PROJECTS OVER WHICH TRAFFIC WILL BE MAINTAINED. WHEN ADDITIONAL APPROACH SIGNS OR OTHER TYPES OF ADVANCE WARNING OR CONTROL ARE NECESSARY, THE PLANS AND/OR THE SPECIFICATIONS FOR THAT PROJECT WILL GIVE THE DETAILS OF THE SIGNS AND DEVICES REQUIRED. FOR ON-PROJECT CONSTRUCTION SIGNS, REFER TO APPROPRIATE STANDARD SHEETS.

APPLICATION OF STANDARDS

SINCE IT IS NOT POSSIBLE TO PRESCRIBE DETAILED STANDARDS OF APPLICATION FOR ALL OF THE SITUATIONS THAT MAY CONCEIVABLY ARISE ON A CONSTRUCTION PROJECT, REFERENCE SHALL BE MADE TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR THE PRINCIPLES, PROCEDURES, AND STANDARDS THAT WILL BE REQUIRED IN CONNECTION WITH ADVANCED WARNING AND ON-PROJECT CONSTRUCTION SIGNS AND BARRICADES. THE SIGNS SHOWN IN E-101 AND E-102 REPRESENT A SAMPLE OF THOSE MORE COMMONLY USED.

LOCATION

THE SIGNS SHALL BE LOCATED AS DETAILED ON THIS SHEET OR AS OTHERWISE SHOWN ON THE PLANS. THEY SHALL APPEAR AT EACH END OF THE HIGHWAY UNDER CONSTRUCTION AND ON ALL INTERSECTING PUBLIC HIGHWAYS. THE EXACT PLACEMENT OF ANY SIGN WILL DEPEND UPON THE ALIGNMENT INTENDED TO INDICATE THE SEQUENCE TO BE FOLLOWED, AND THE APPROXIMATE SPACING TO BE OBSERVED. THE ENGINEER SHALL DETERMINE THE EXACT LOCATIONS.

DESIGN

THE DESIGN OF THE SIGNS SHALL CONFORM WITH THE DETAILS SHOWN ON THIS SHEET AND WITH THE STANDARDS PRESCRIBED IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

MATERIALS

THE SIGN BASE MATERIAL USED FOR THE SIGNS ON THIS SHEET MAY BE ANY OF THE FOLLOWING, WITH MINIMUM THICKNESS AS NOTED.
FLAT SHEET ALUMINUM 0.125 INCHES
HIGH DENSITY OVERLAYED PLYWOOD 1/2, 5/8, OR 3/4 INCHES
GALVANIZED SHEET STEEL 12 GAUGE

REFLECTORIZATION

ALL REFLECTORIZED MATERIAL SHALL CONSIST OF TYPE 11B OR TYPE 111 SHEETING.

COLORS

THE COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION. COLORS SHOWN ON THIS SHEET CONSIST OF BLACK TEXT AND BORDER ON A REFLECTORIZED ORANGE BACKGROUND.

INSTALLATION

THE SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES. DURING PERIODS OF INACTIVITY, OR UPON COMPLETION OF THE WORK, SIGNS MAY BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER ON POSTS SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST 7 FEET ABOVE THE EDGE OF PAVEMENT, 4 FEET OUTSIDE GUARD RAIL, OR 2 FEET OUTSIDE CURBING, OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST 7 FEET ABOVE THE SIDEWALK.

MAINTENANCE

SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED, OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.

NOTES CONT.

GENERAL

THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING ALL CONSTRUCTION APPROACH SIGNS WILL BE CONSIDERED SUBSIDIARY WORK PERTAINING TO THE PROJECT AS A WHOLE AND SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR VARIOUS ITEMS INVOLVED IN THE CONTRACT, DURING ALL PHASES OF CONSTRUCTION. THE REQUIREMENTS SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE MET. WHEN THE PROJECT IS CLOSED DOWN FOR TEMPORARY PERIODS THE SIGNS SHALL BE COVERED IN A WORKMANLIKE MANNER.

SIGN COVERS

SIGN COVERS SHALL CONSIST OF A PANEL PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

CONTRACTORS SHALL COORDINATE THEIR SIGNING ACTIVITIES WITH OTHER CONTRACTORS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE REGIONAL CONSTRUCTION ENGINEER.

SIGN POSTS

WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARD RAIL OR OTHER APPROVED TRAFFIC BARRIERS, THE POSTS ON WHICH THE SIGNS ARE MOUNTED SHALL BE YIELDING METAL POSTS AS DESIGNATED IN THE E SERIES OF STANDARD DRAWINGS OR YIELDING WOODEN POSTS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

WOODEN POSTS ARE ACCEPTABLE FOR USE WITH CONSTRUCTION SIGNS. THESE POSTS SHALL HAVE UNIFORM CROSS-SECTION AND SHALL BE MADE FROM GRADE 2 AIR-DRIED SOUTHERN YELLOW PINE OR ANOTHER EQUIVALENT SOFTWOOD, AN ACCEPTABLE EQUIVALENT SOFTWOOD SHALL HAVE AN EXTREME FIBER IN BENDING "FB" DESIGN VALUE NOT TO EXCEED 1400 PSI AND HORIZONTAL SHEAR "FV" DESIGN VALUE NOT TO EXCEED 90 PSI. SPECIFICATION "DESIGN VALUES FOR WOOD CONSTRUCTION" AND RELATED SUPPLEMENT, DATED 1985.

AS ESTABLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION IN THEIR NATIONAL DESIGN THE FOLLOWING ARE CONSIDERED TO BE ACCEPTABLE WOODEN POSTS:

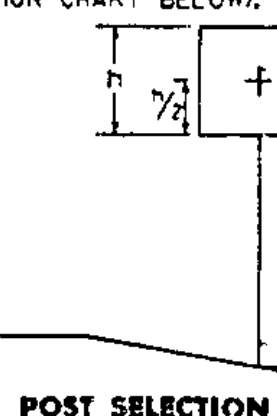
- 4" X 4" (ACTUAL DIMENSIONS ARE 3.5" X 3.5")
A) ACCEPTABLE FOR SINGLE OR DUAL POSTS INSTALLATION WITH NO MODIFICATIONS.
B) ACCEPTABLE FOR THREE POSTS (OR MORE) INSTALLATION ONLY WHEN THERE ARE NO MORE THAN TWO POSTS IN A 7 FOOT PATH.
- 4" X 6" (ACTUAL DIMENSIONS ARE 3.5" X 5.5")
A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 1 1/2" DIAMETER HOLES, ONE AT 4" AND THE OTHER 18" ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
B) ACCEPTABLE FOR MULTIPLE POSTS (TWO OR MORE) INSTALLATIONS ONLY WHEN MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 7 FEET.
- 6" X 6" (ACTUAL DIMENSIONS ARE 5.5" X 5.5")
A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 2" DIAMETER HOLES, ONE AT 4" AND THE OTHER AT 18" ABOVE THE GROUND LINE AND PERPENDICULAR TO ROADWAY CENTERLINE.
B) ACCEPTABLE FOR MULTIPLE POST INSTALLATION ONLY WHEN MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 7 FEET.
- 6" X 8" (ACTUAL DIMENSIONS ARE 5.5" X 7.5")
A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 3" DIAMETER HOLES, ONE AT 4" AND THE OTHER AT 18" ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
B) ACCEPTABLE FOR MULTIPLE POST INSTALLATIONS ONLY WHEN MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 7 FEET.

ADDITIONAL DESIGN CRITERIA

THE LONGER DIMENSION OF THE POST(S), SUCH AS THE 6" DIMENSION OF THE 4" X 6" POST, SHALL BE PLACED PARALLEL TO THE ROADWAY CENTERLINE. ALL WOODEN POSTS SHALL HAVE AN EMBEDMENT DEPTH OF 4 FEET. NO CROSS-BRACING OR BACK-BRACING TO KEEP THE POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS COLLARS OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO OR MORE POSTS WHEN ANY OF THE FOLLOWING CONDITIONS GOVERN:

- THE SIGN WIDTH (HORIZONTAL DIMENSIONS FOR DIAMOND SHAPED SIGNS) EXCEEDS 3 1/2 FEET.
- THE EXPOSED SIGN AREA OF ANY SINGLE SIGN OR ASSEMBLY EXCEEDS 12 1/2 SQ. FEET.
- THE SV OF A SINGLE POST IS EXCEEDED. (SEE THE POST SELECTION CHART BELOW).

WOOD POST SELECTION CHART		
SIGN AREA (FT ²) X HEIGHT (FT) < SV (SELECTION VALUE)		
POST SIZE	SV	DESIGN CRITERIA
4" X 4"	64	WIND SPEED = 60 MPH (10-YEAR MEAN OCCURRENCE INTERVAL)
4" X 6"	147	WIND PRESSURE = 13 psf
6" X 6"	216	ALLOWABLE BENDING STRESS
6" X 8"	389	



OTHER STDS. REQUIRED:

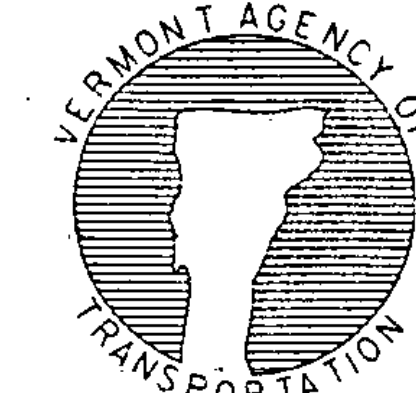
REVISIONS AND CORRECTIONS

MAY 26, 1989 - DATE OF ORIGINAL ISSUE
OCT 21, 1992 - REVISED WOOD POST REQUIREMENTS, ADDED SIGN DETAILS, & REVISED TITLE BLOCK
AUG 08, 1995 - MINOR NOTE REVISIONS

APPROVED

Stephen D. MacArthur
DIRECTOR OF ENGINEERING
David A. Ross
TRAFFIC AND SAFETY ENGINEER

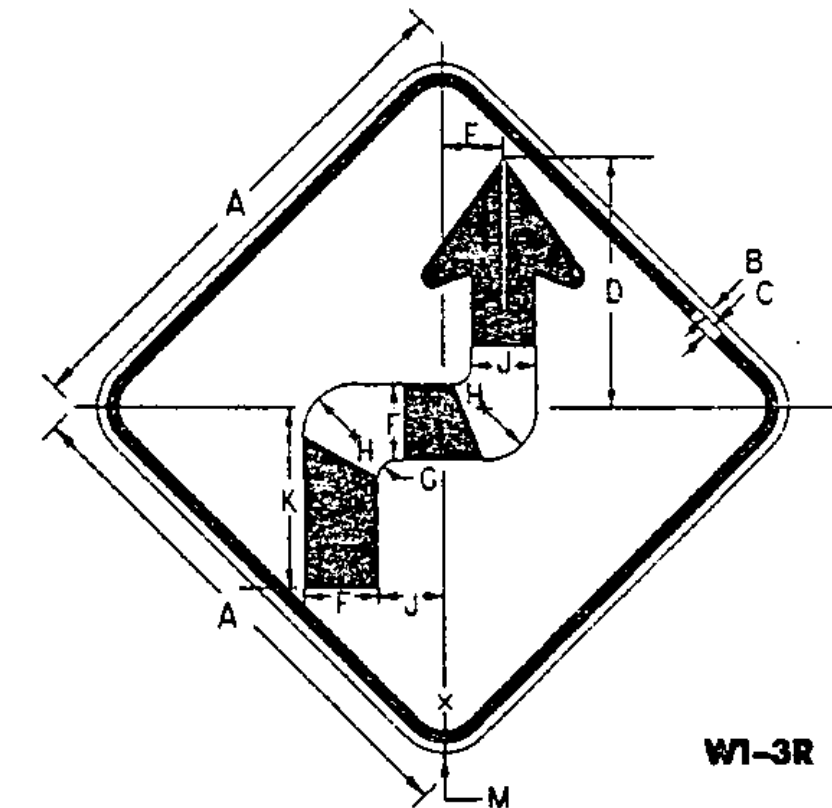
CONSTRUCTION APPROACH SIGNS



STANDARD
E-100

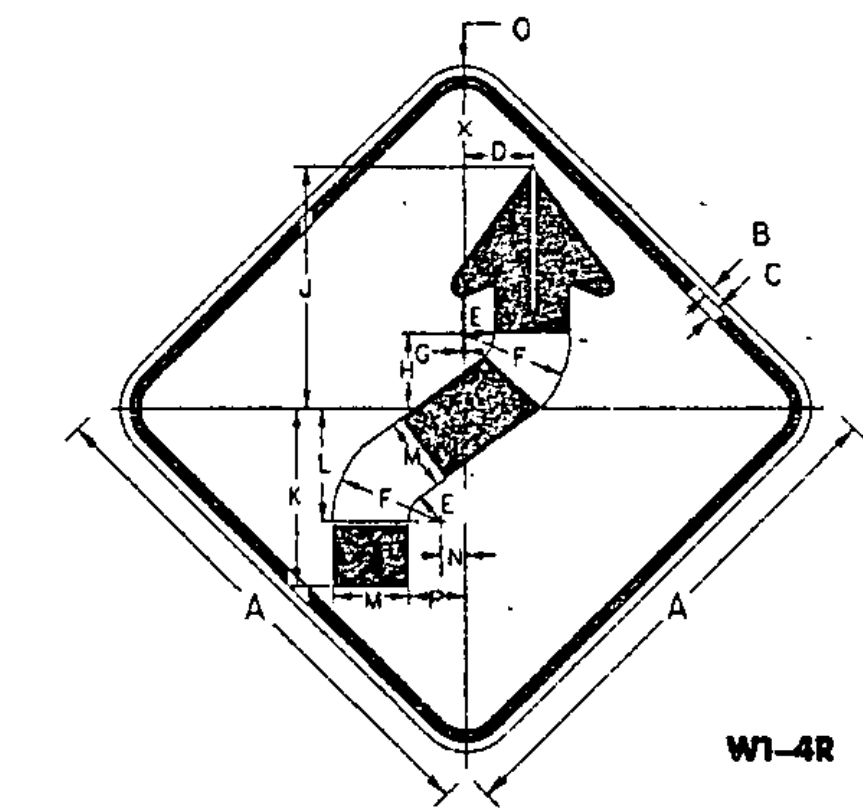
APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

\\traf\std\stdel00.dgn : stdel00.i



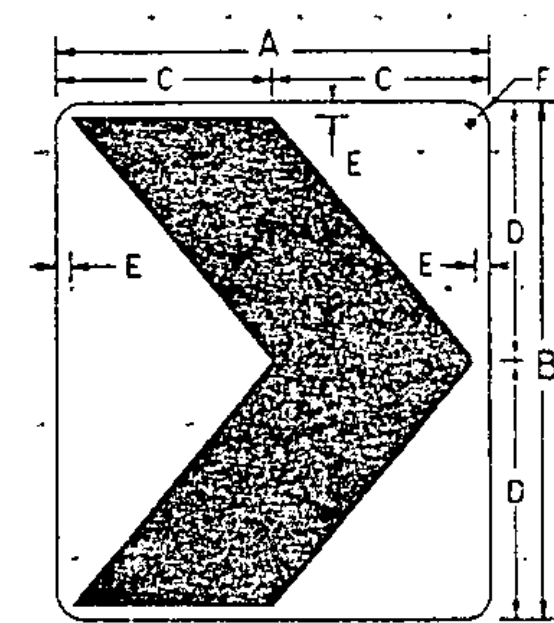
W1-3R

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	
STD. & MIN.	36	5/8	7/8	17 1/2	4 1/2	5 1/4	1 1/4	3 5/8	4 1/2	12 5/8	1 7/8	2 1/4	
SPECIAL	48	3/4	1 1/4	23 3/4	5 5/8	7	1 5/8	4 7/8	6	16 5/8	2 3/8	3	



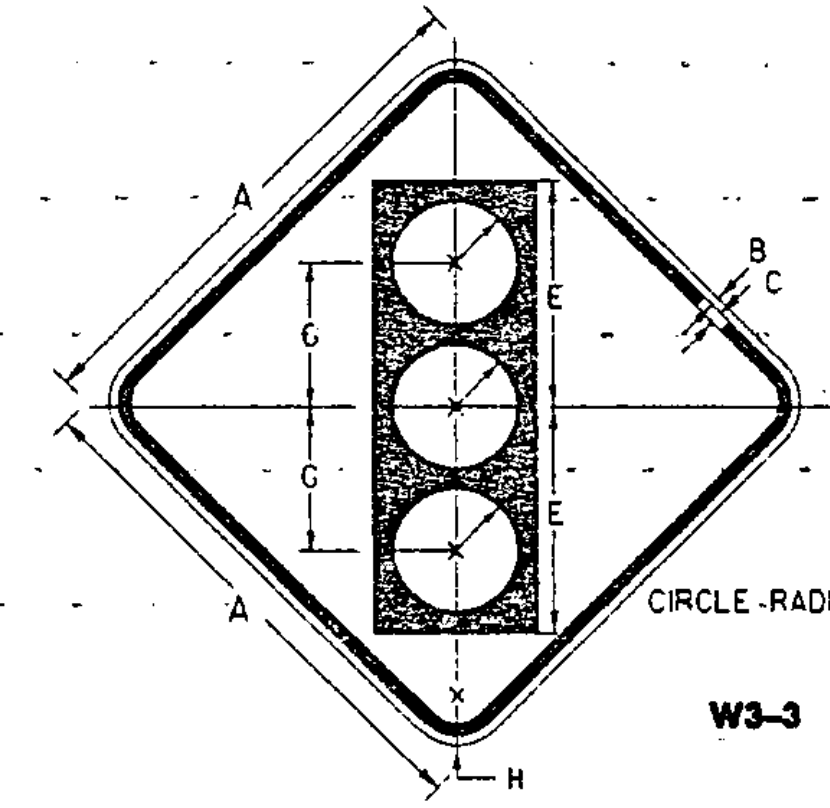
W1-4R

SIGN	DIMENSIONS (INCHES)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	O
STD. & MIN.	36	5/8	7/8	4 1/2	2 1/4	7 1/2	3/8	5 1/4	16 3/8	12 3/8	7 1/8	5 1/4	1 1/8	3 3/8	2 1/4
SPECIAL	48	3/4	1 1/4	6 5/8	3	10	3/8	7	22 1/2	16 1/2	10 1/2	7	2 1/4	5 1/4	3



W1-5

SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
STD.	18	24	9	12	3/4	1 1/2
SPECIAL	24	30	12	15	1	1 1/2
EXPWY.	30	36	15	18	1	1 1/2
FRWY.	36	48	18	24	1 1/8	2 1/4

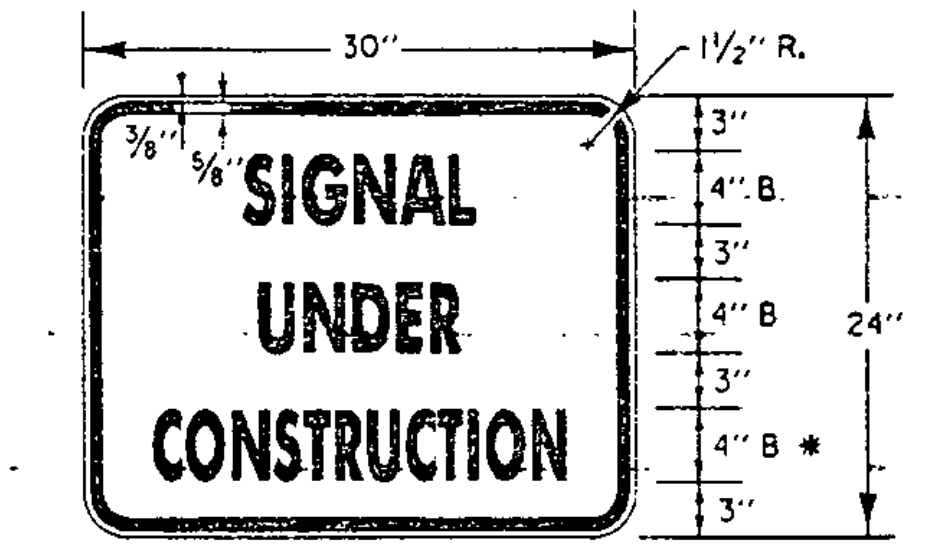


W3-3

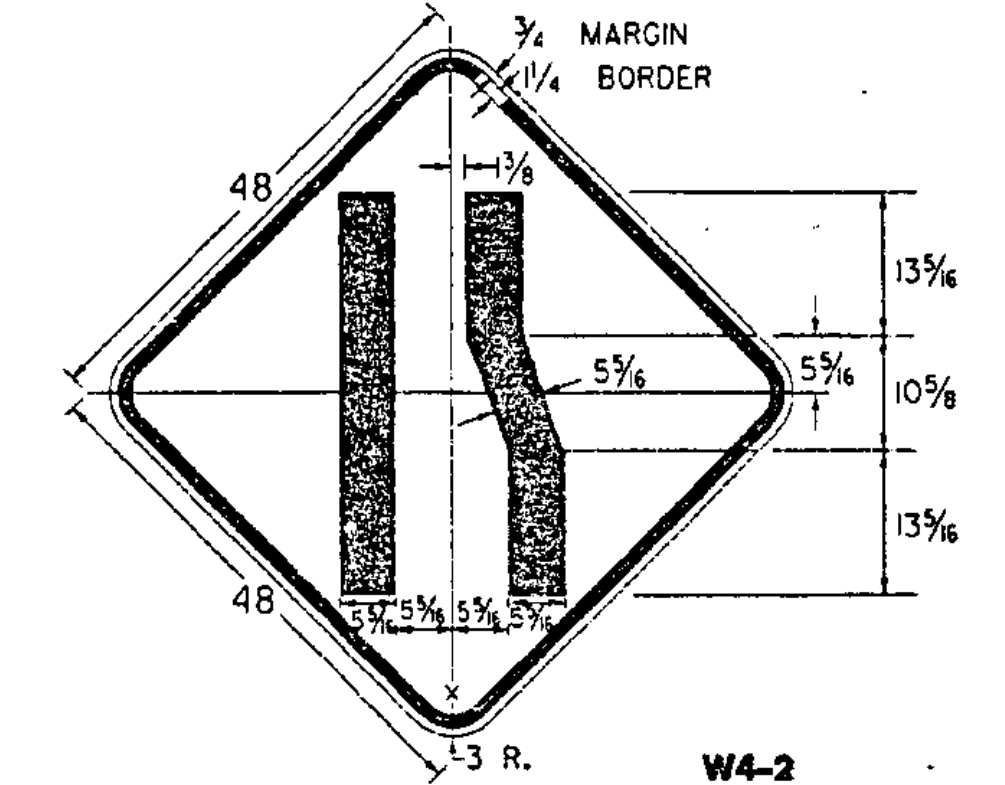
SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
STD. & MIN.	36	5/8	7/8	5 3/4	15 3/4	4 1/4	10	2 1/4
SPECIAL	48	3/4	1 1/4	7 1/2	20	5	12 1/2	3

COLORS

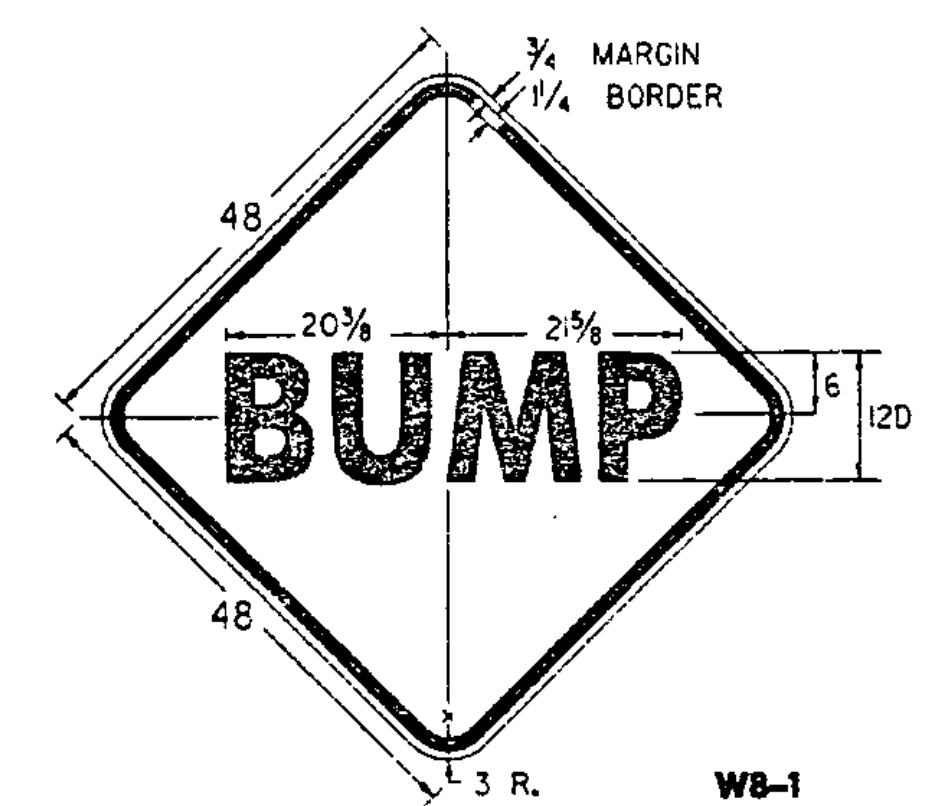
SYMBOL & LEGEND - BLACK (NON-REFL)
BACKGROUND - ORANGE (REFL)
TOP CIRCLE - RED (REFL)
MIDDLE CIRCLE - YELLOW (REFL)
BOTTOM CIRCLE - GREEN (REFL)



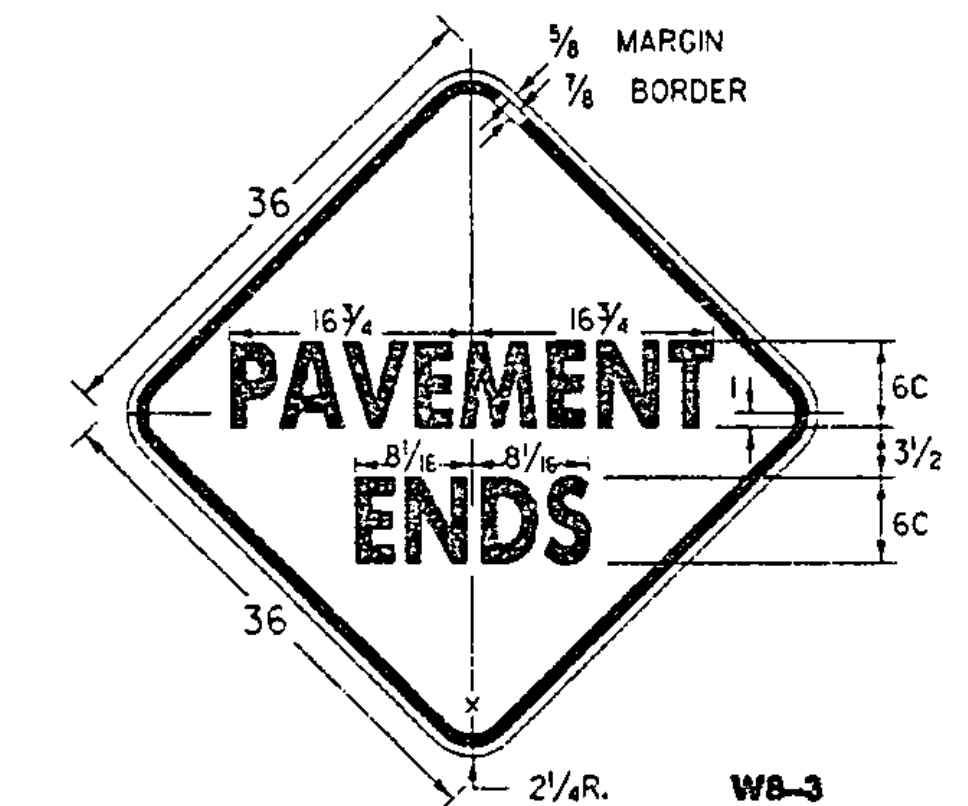
* REDUCE SPACING 50%



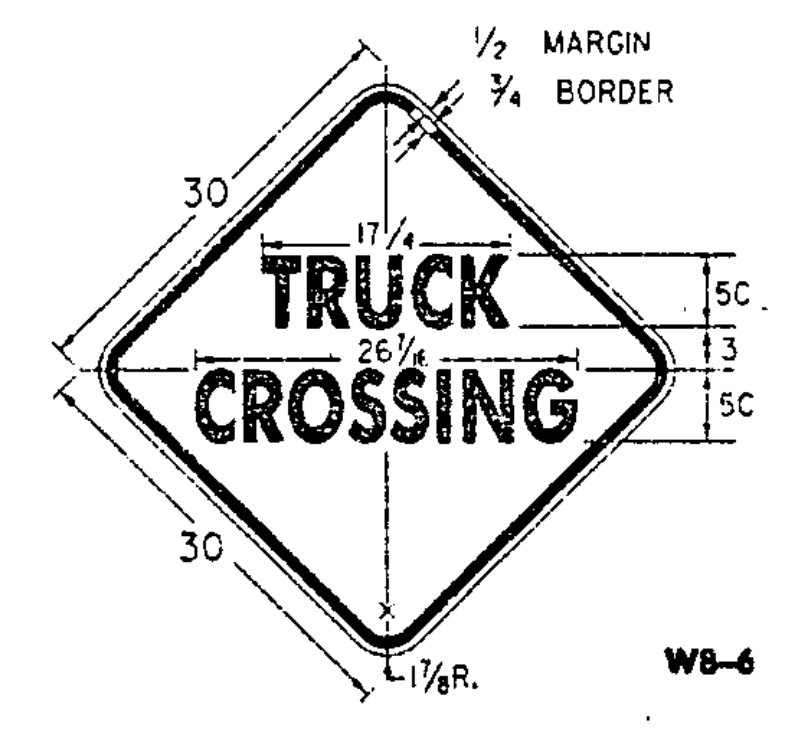
W4-2



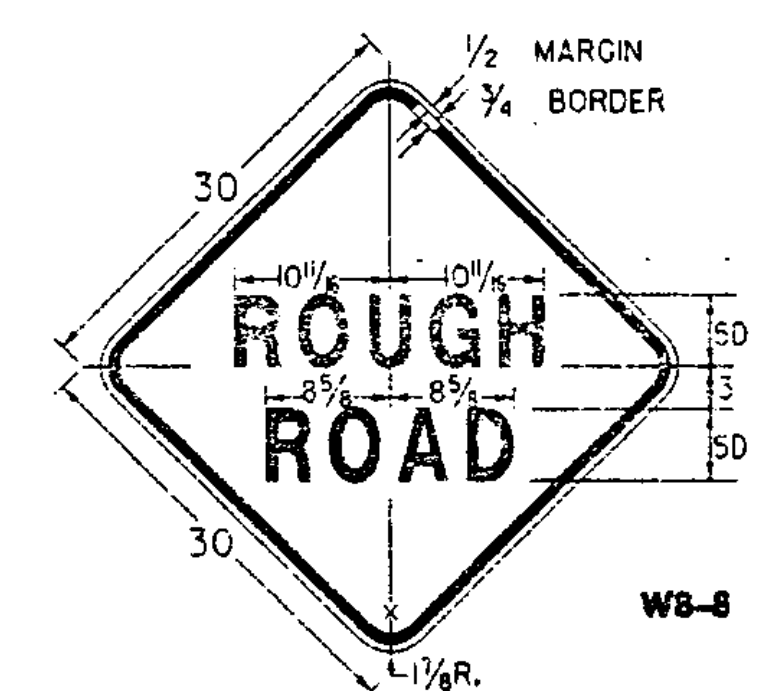
W8-1



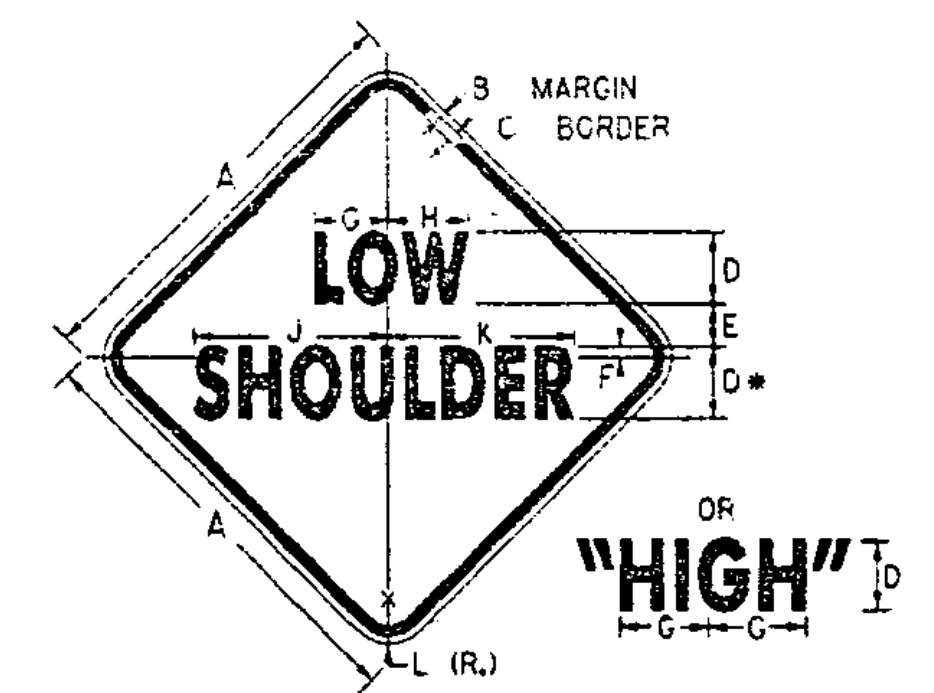
W8-3



W8-6



W8-8

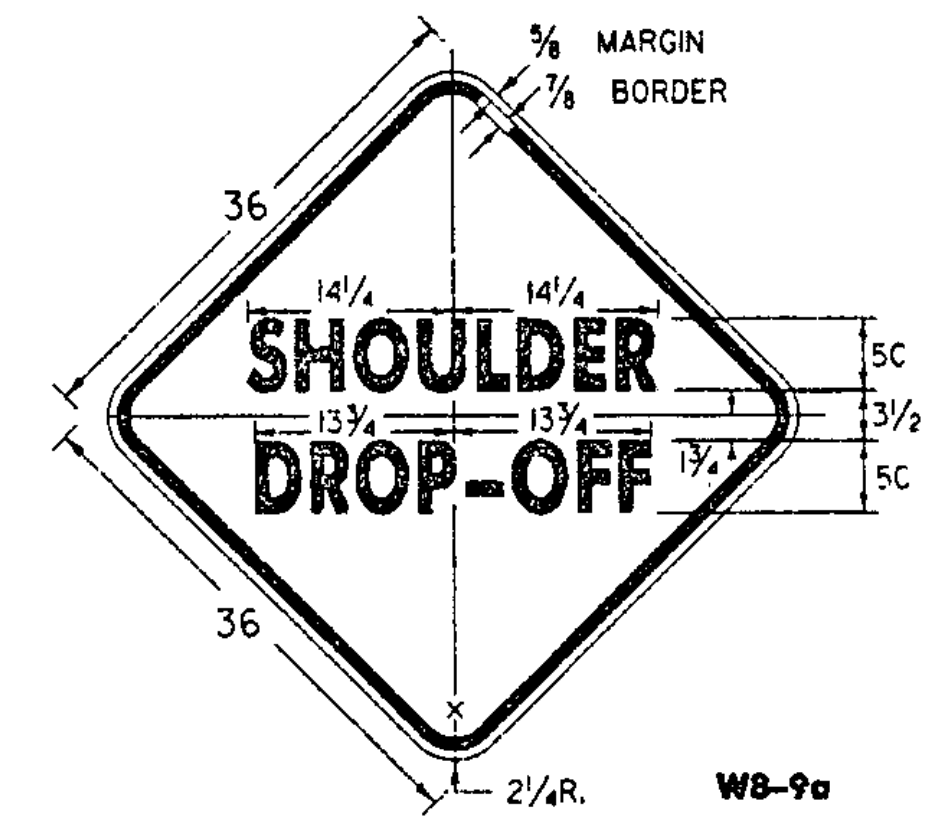


W8-9

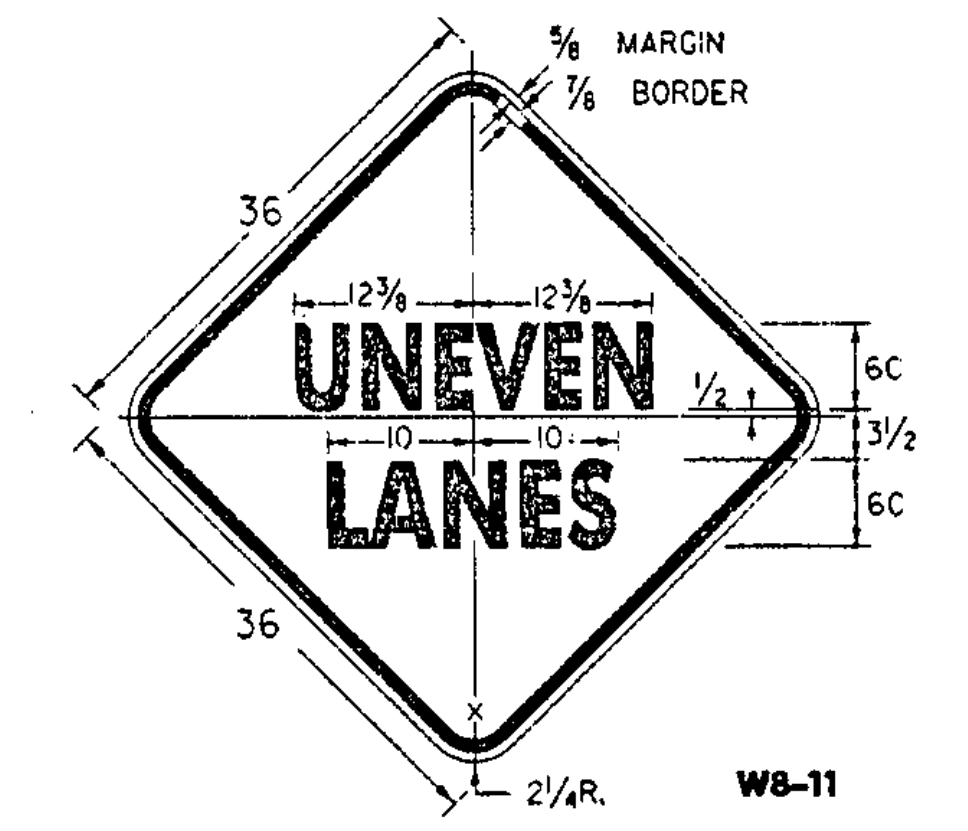
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD.	30	1 1/2	3/4	5C	3 1/2	5 3/8	5 3/8	13 3/8	13 3/8	1 1/2	
FRWY.	48	3/4	1 1/4	8C	5 1 1/2	8 3/4	9	21 1/2	20 3/4		3

NOTES

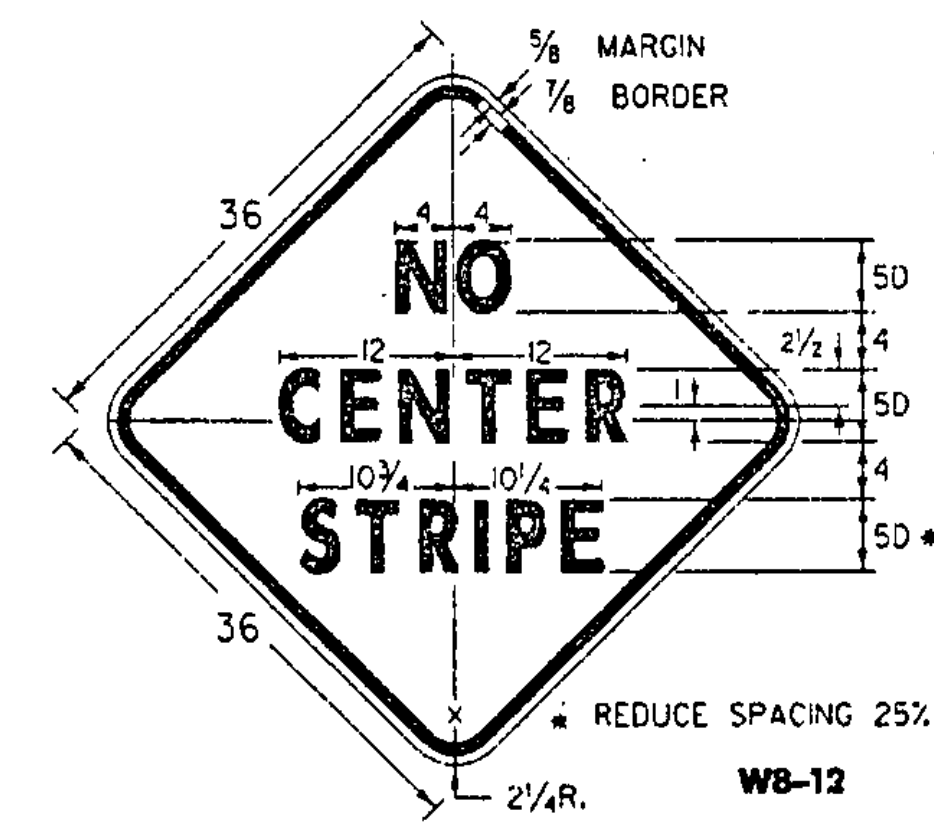
SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON A REFLECTORIZED TYPE II B OR TYPE III ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.
SIGNS USED ONLY FOR DAYTIME MAINTENANCE OPERATIONS DO NOT NEED TO BE REFLECTORIZED, HOWEVER, THESE SIGNS SHALL BE LABELED "DAYTIME USE ONLY" ON THE BACK OF THE SIGN PANEL WITH 3" SERIES C LETTERS.



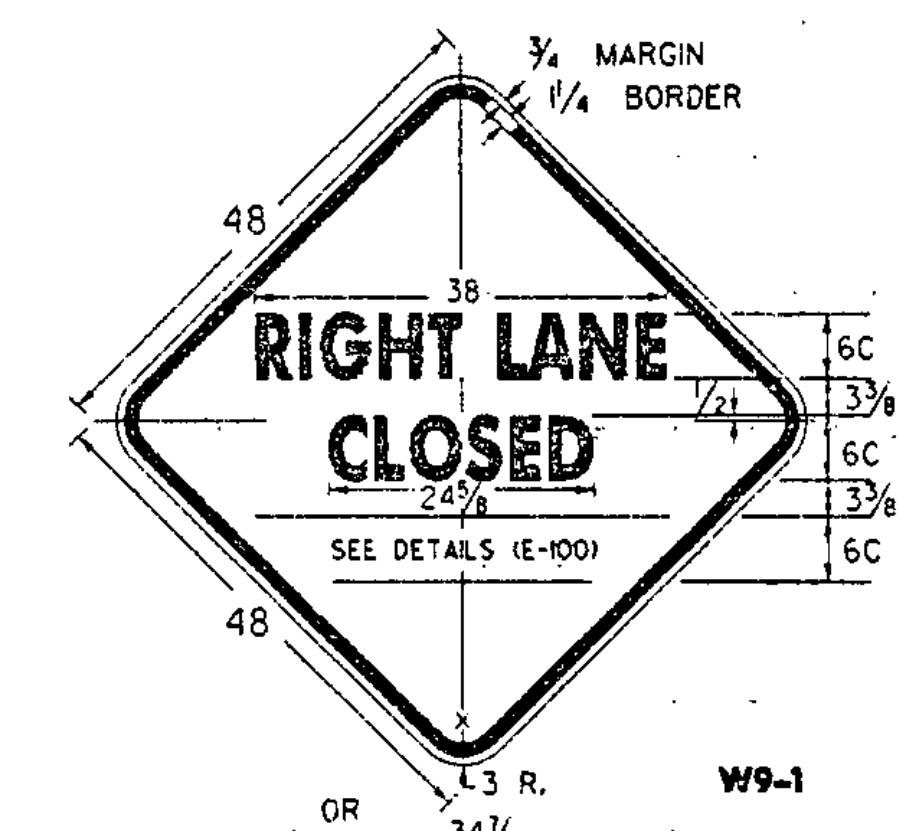
W8-9a



W8-11



W8-12



W9-1

(ALL DIMENSIONS SHOWN IN INCHES)

LEFT LANE

REVISIONS AND CORRECTIONS

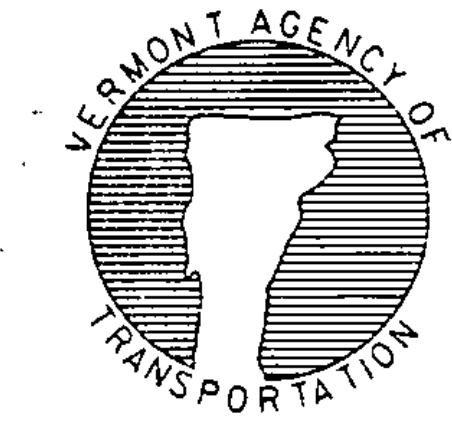
OCT. 30, 1987 - DATE OF ORIGINAL ISSUE
OCT. 21, 1992 - ADDED ADDITIONAL SIGN DIMENSIONS, REVISED CHEVRON BACKGROUND TO ORANGE, & REVISED TITLE BLOCK
AUG. 08, 1995 - ADDED AND DELETED VARIOUS SIGN DETAILS

APPROVED

Stephen A. McArthur
DIRECTOR OF ENGINEERING
David A. Ross
TRAFFIC AND SAFETY ENGINEER

CONSTRUCTION SIGN DETAILS

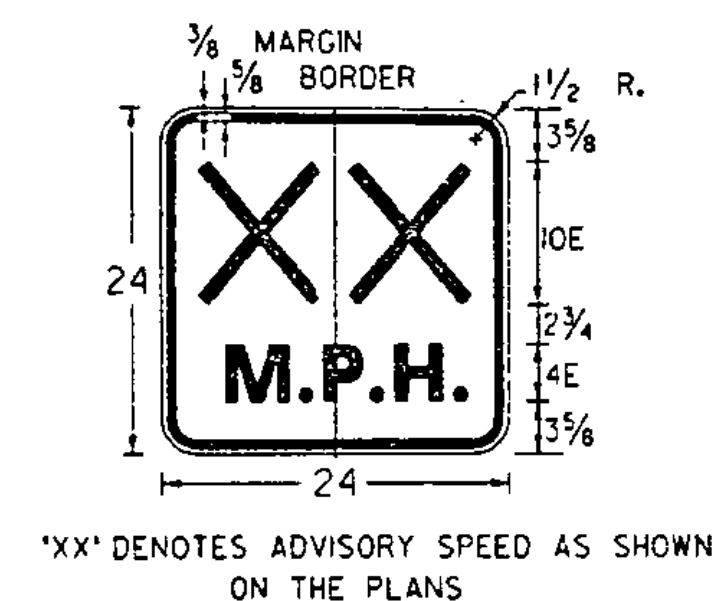
OTHER STDS. E-100 REQUIRED:



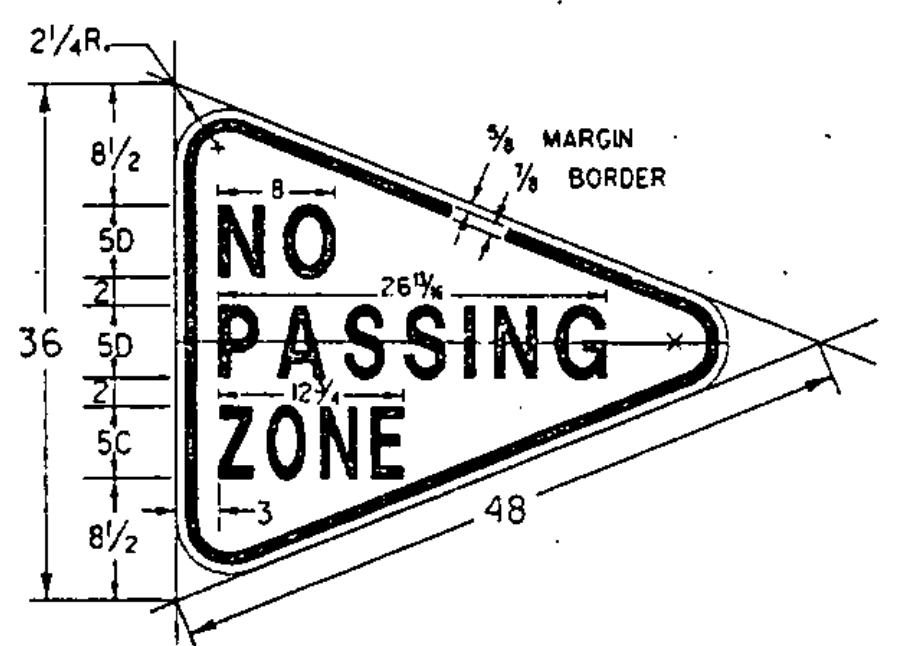
STANDARD E-101

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION, FHWA FINAL APPROVAL PENDING.

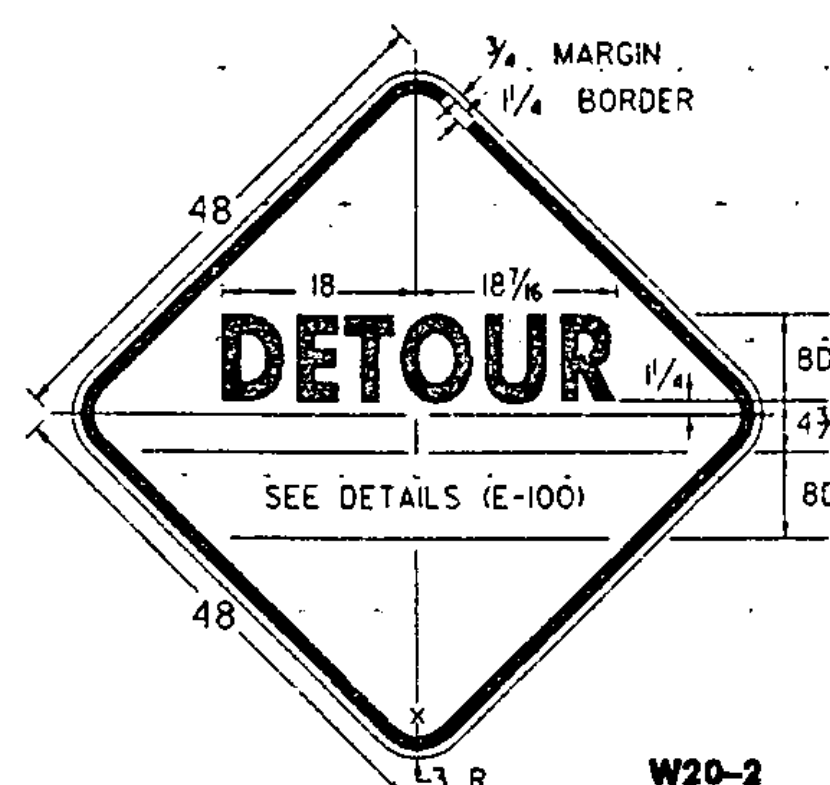
\\trcf/std/stcel01.dgn : stcel01



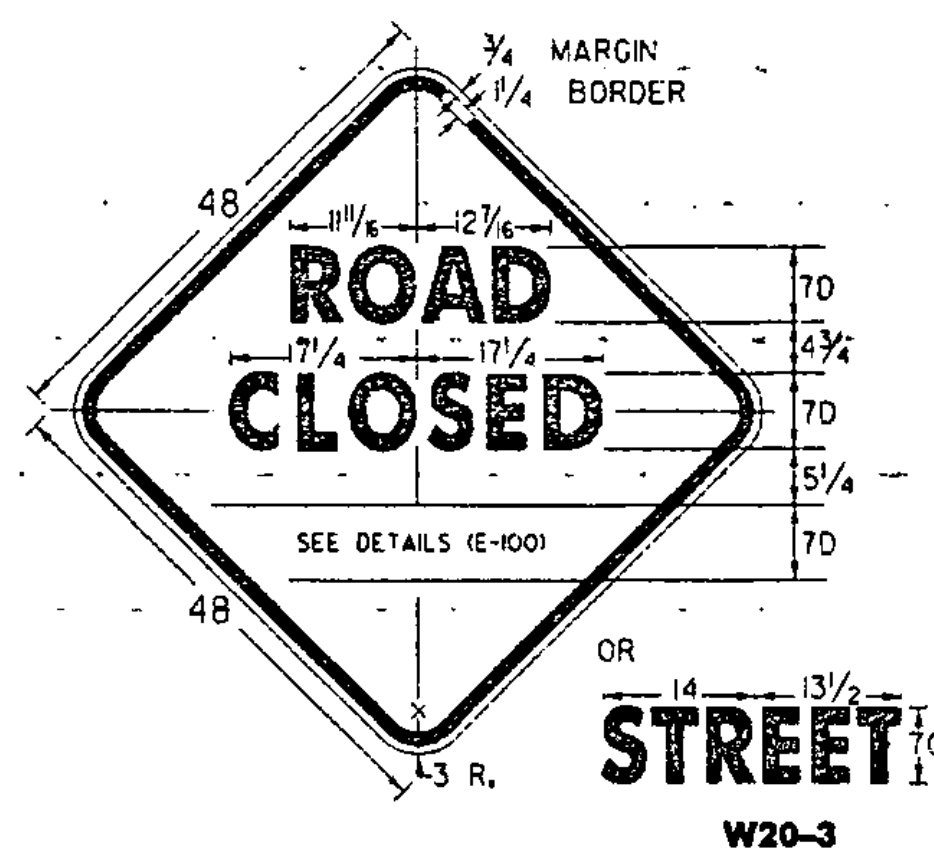
W13-1



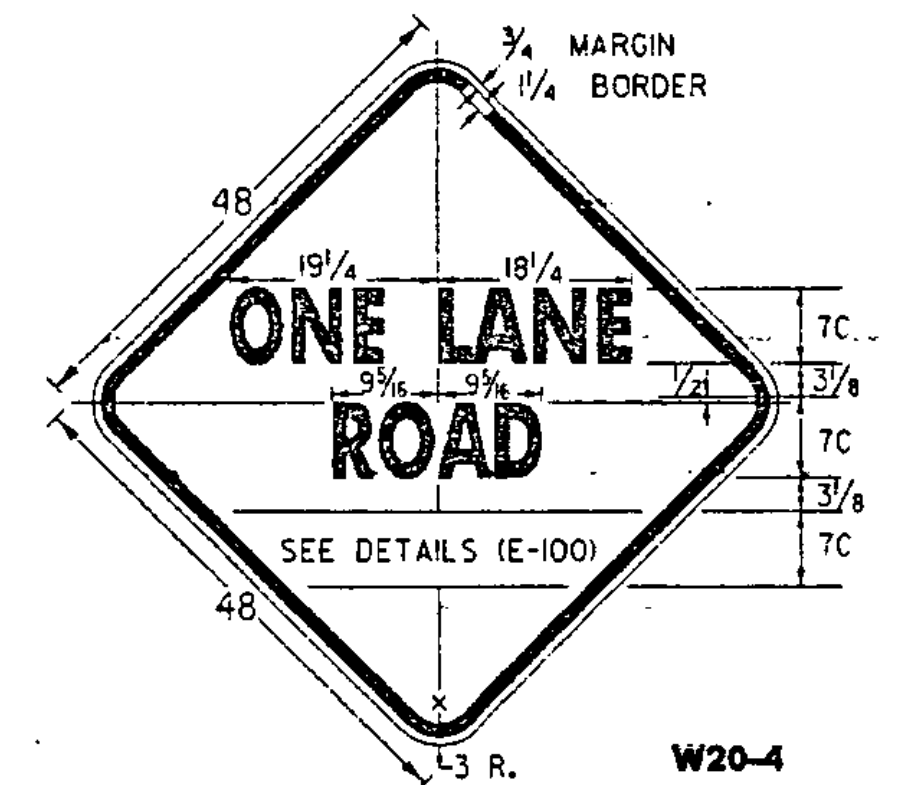
W14-3



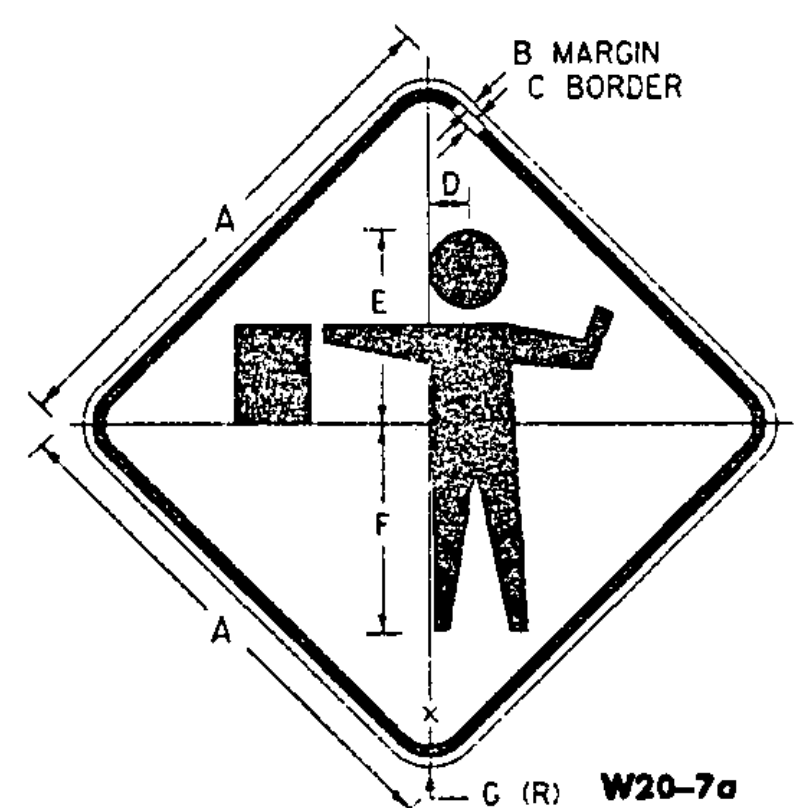
W20-2



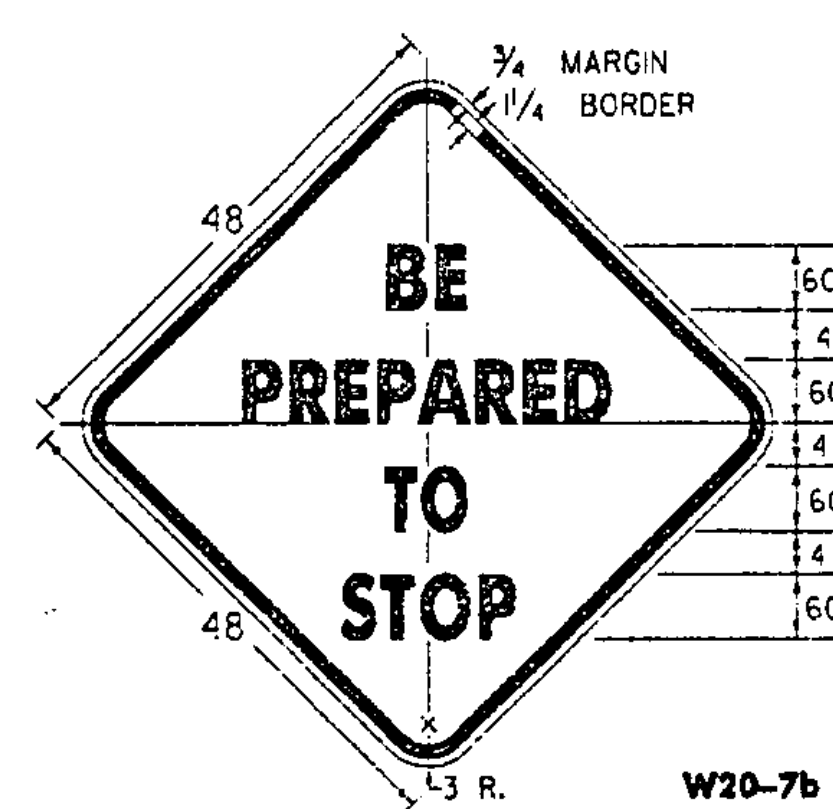
W20-3



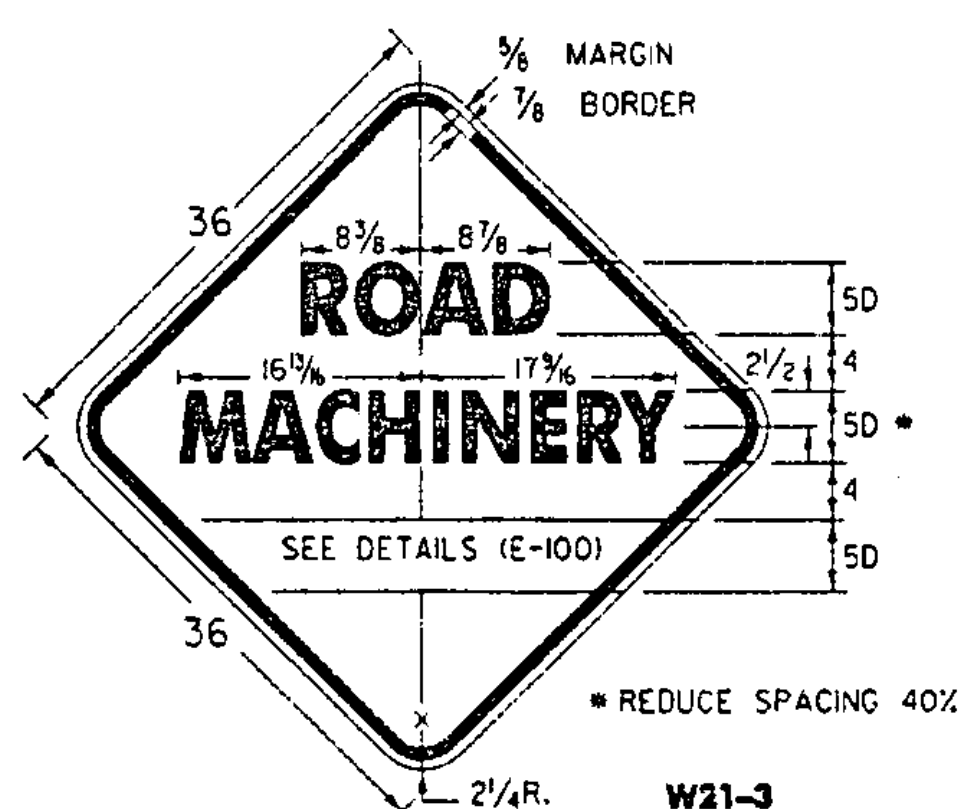
W20-4



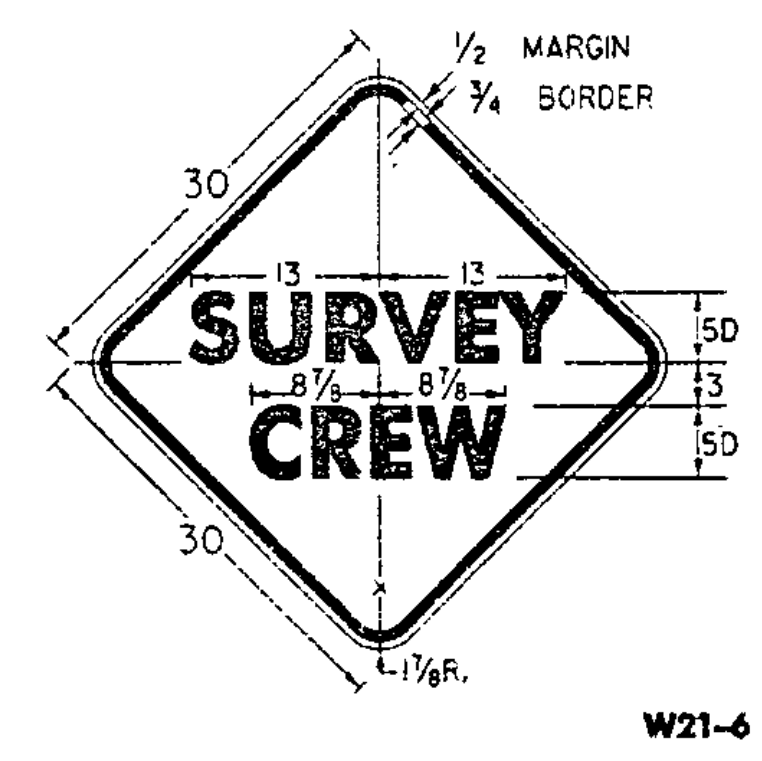
W20-7a



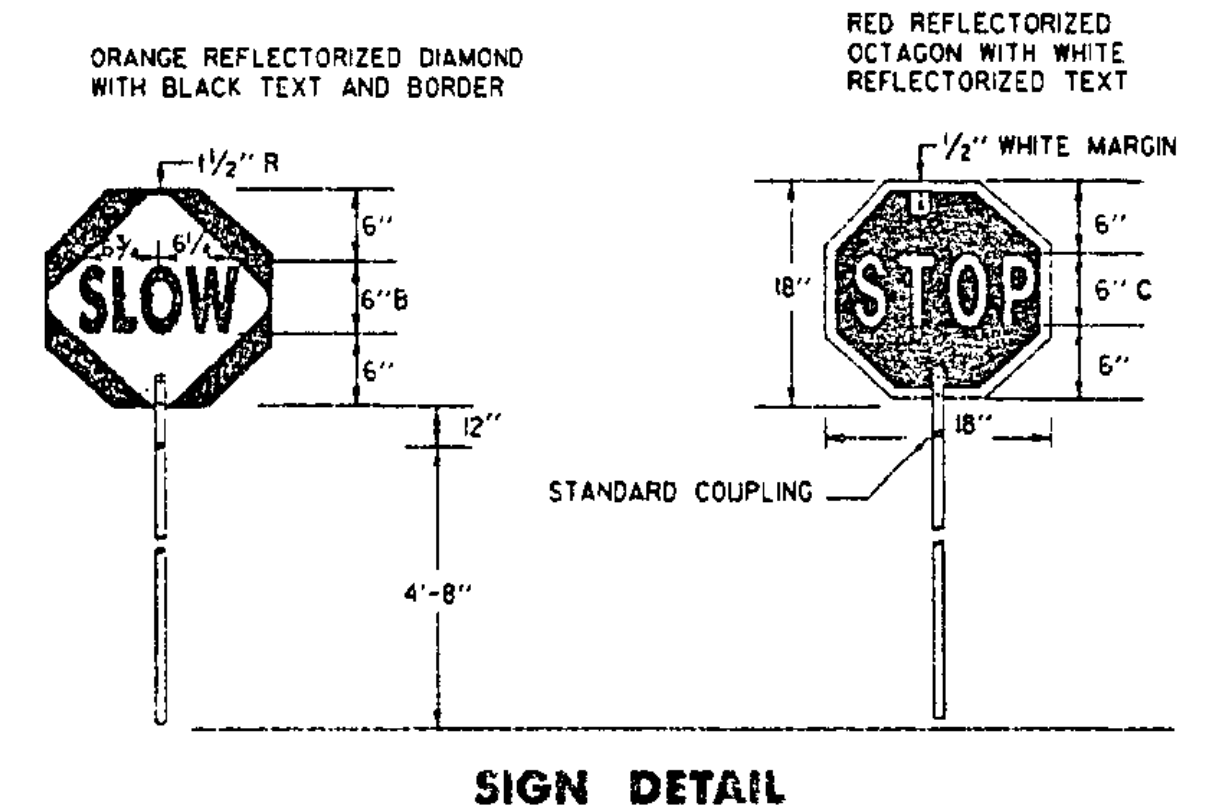
W20-7b



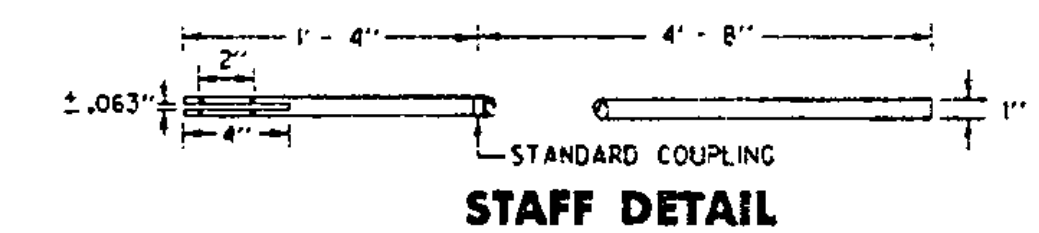
W21-3



W21-6



SIGN DETAIL



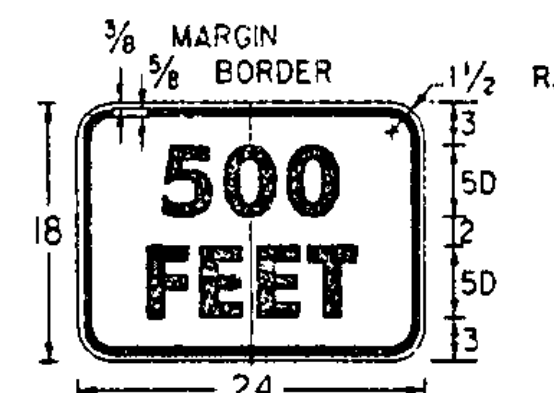
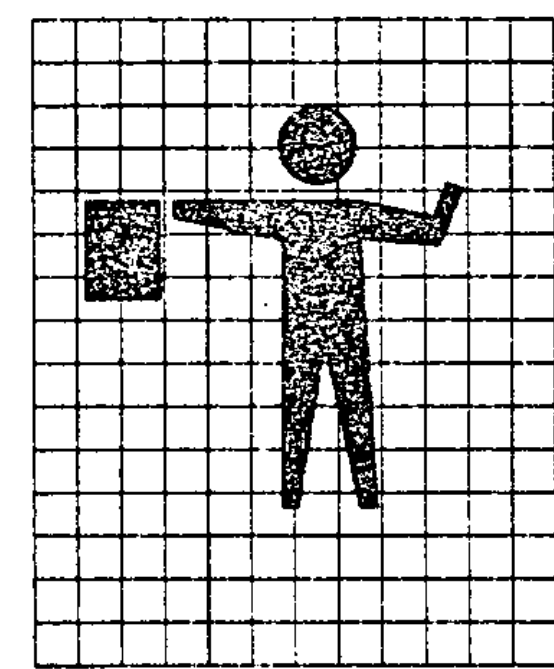
STAFF DETAIL

MATERIALS
THE SIGN MATERIALS SHALL BE 0.063" ALUMINUM WITH COLORS AS INDICATED ON DETAILS.
THE STAFF SHALL BE 1/2" TO 1/4" DIAMETER RIGID ALUMINUM CONDUIT/TUBING WITH A WALL THICKNESS OF 0.025", OR 1" TO 1/2" DIAMETER RIGID PVC CONDUIT/TUBING WITH 0.025" WALL THICKNESS.
MOUNTING
THE STAFF SHALL BE MOUNTED WITH EITHER TWO 1/4" DIAMETER ALUMINUM BOLTS OR TWO 1/4" DIAMETER ALUMINUM RIVETS.

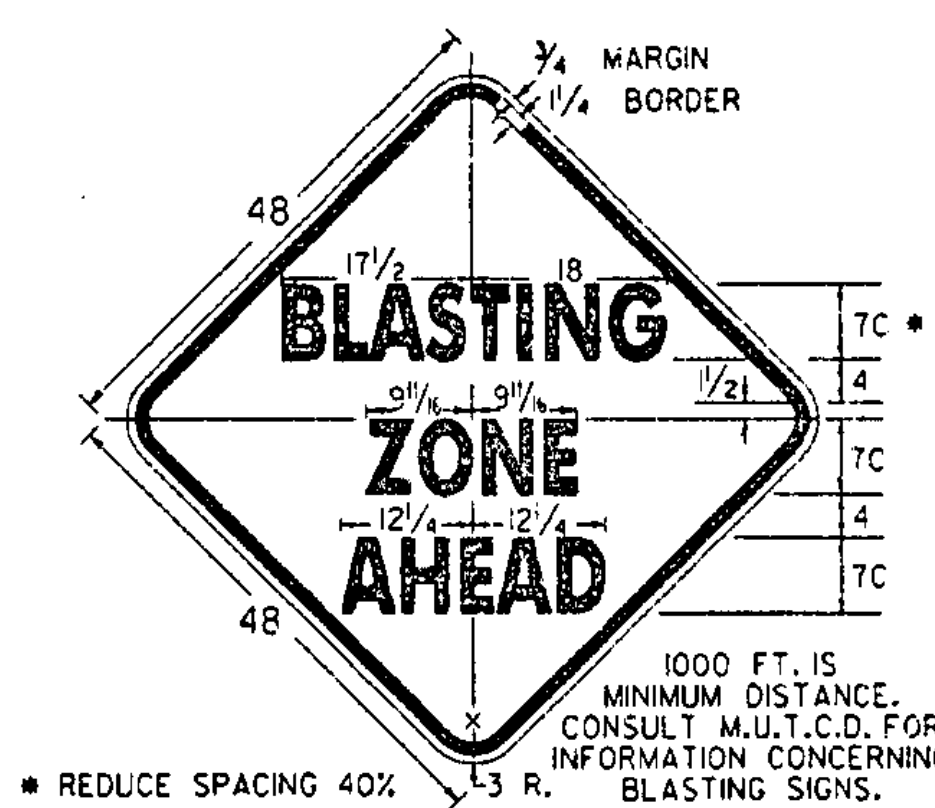
SIGN PADDLE FOR FLAGPERSON

NOTES

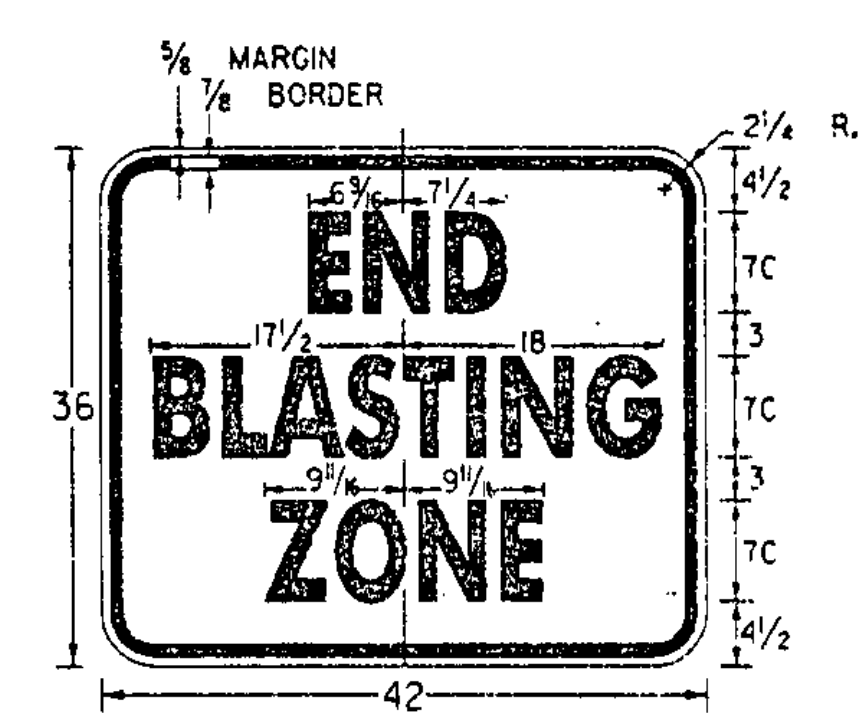
SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS.
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS SHALL BE ON A REFLECTORIZED ORANGE BACKGROUND OF TYPE II-B OR TYPE III REFLECTIVE SHEETING, UNLESS OTHERWISE NOTED. THE EXCEPTION IS THE PADDLE SIGN.
SIGN DETAILS INDICATE THE APPROPRIATE COLOR.
SIGNS USED ONLY FOR DAYTIME MAINTENANCE OPERATIONS DO NOT NEED TO BE REFLECTORIZED, HOWEVER, THESE SIGNS SHALL BE LABELED "DAYTIME USE ONLY" ON THE BACK OF THE SIGN PANEL WITH 3" SERIES C LETTERS.



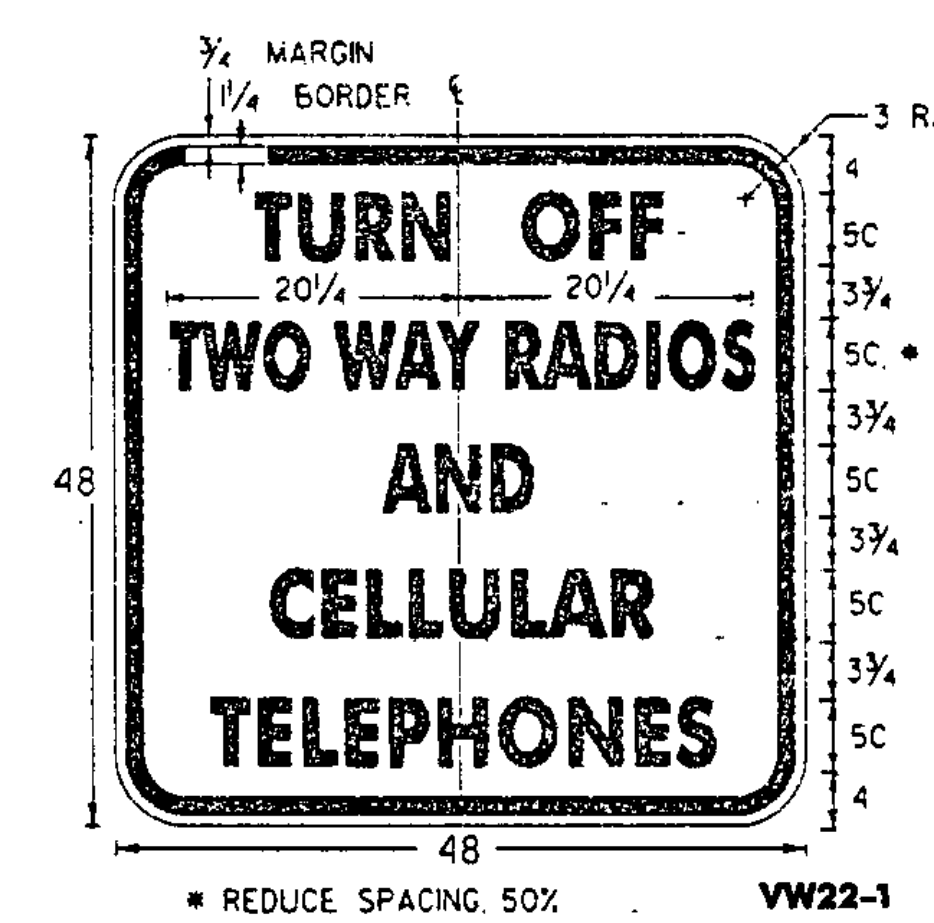
W22-1



W22-3



W22-3



VW22-1

DIMENSIONS (INCHES)							
SIGN	A	B	C	D	E	F	G
STD.	36	3/8	1/4	2 3/4	13 1/2	14 3/8	2 1/4
FWY.	48	3/4	1 1/4	3 3/4	18	19 1/2	3

(ALL DIMENSIONS SHOWN IN INCHES)

REVISIONS AND CORRECTIONS

OCT. 30, 1987 - DATE OF ORIGINAL ISSUE
JAN. 23, 1989 - DELETE MOTORCYCLE SYMBOL SIGN AND SPEED SIGN, ADDED TWO SIGNS
OCT. 21, 1992 - ADDED A SIGN, REVISED A SIGN DIMENSION & TYPE ERROR & REVISED TITLE BLOCK
AUG. 08, 1995 - ADDED FLAGGER GRID

APPROVED

Stephen D. MacAllen
DIRECTOR OF ENGINEERING

David A. Ross
TRAFFIC AND SAFETY ENGINEER

CONSTRUCTION SIGN DETAILS

OTHER STDS. E-100 REQUIRED:



STANDARD E-102

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION, FHWA FINAL APPROVAL PENDING.

/traf/std/stdel02.dgn : stdel02.i



MAINLINE LANE CLOSURE AT AN EXIT RAMP

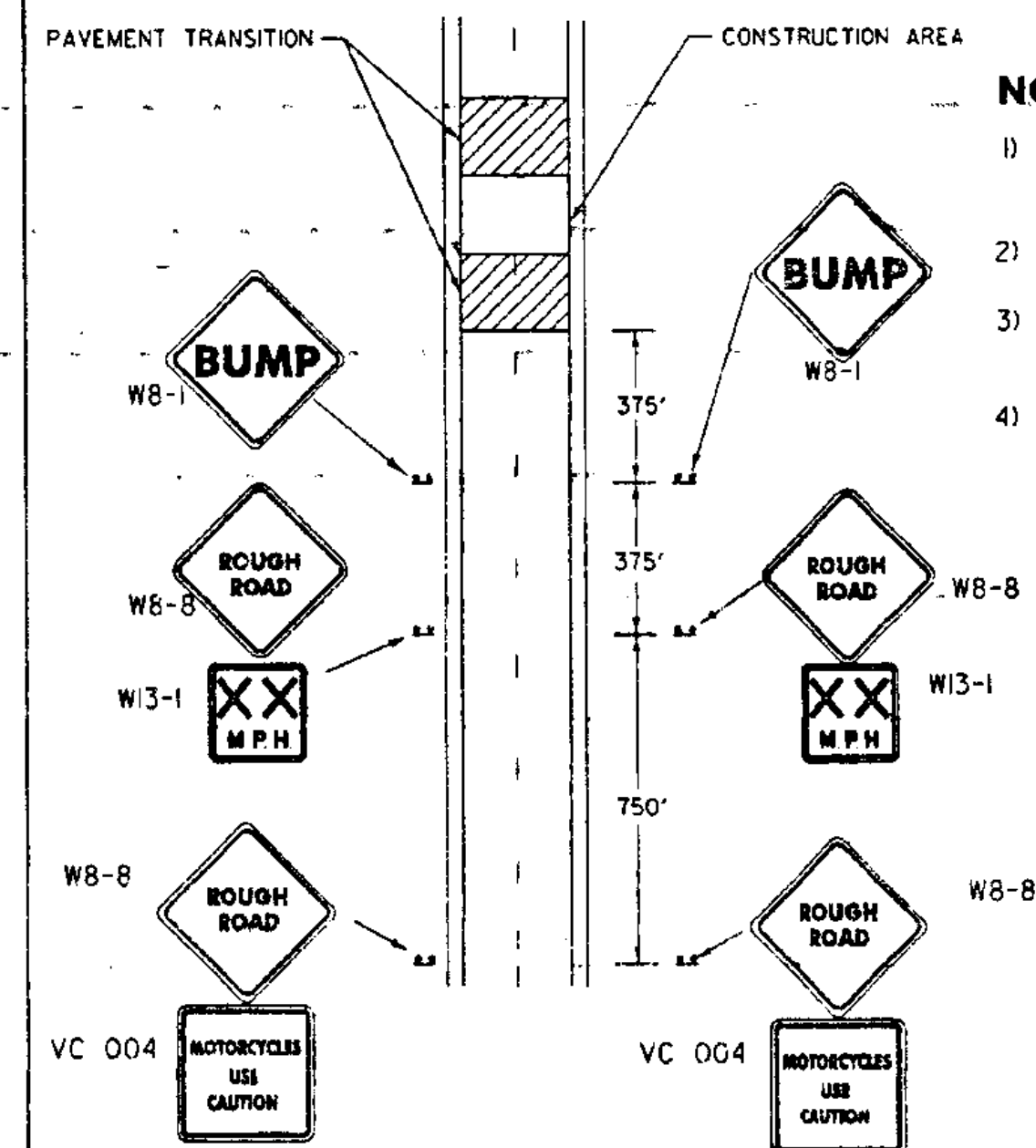
THIS DETAIL SHALL BE USED WHEN THE WORK ZONE BEGINS AT THE GORE OR THE MAINLINE LANE CLOSURE DRUM PLACEMENT INTERFERES WITH THE EXIT RAMP.

- 1) ALL SIGNS SHALL BE MOUNTED ON FIXED POSTS (YIELDING TYPE) UNLESS OTHERWISE NOTED.
- 2) CHANNELIZING DEVICES SHALL BE PLACED AS FOLLOWS:
TAPERS - DEVICES SHALL BE SPACED A MAXIMUM OF "S" (THE SPEED LIMIT IN FEET) APART.
TANGENT - DEVICES SHALL BE SPACED 2 X "S" (THE SPEED LIMIT IN FEET) APART.
- 3) ALL DISTANCES ARE DESIRABLE MINIMUMS FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
- 4) TAPER RATES ARE BASED ON THE POSTED MAILINE AND EXIT SPEEDS.
- 5) TEMPORARY PAVEMENT MARKINGS ARE REQUIRED WHEN THE LAYOUT IS TO BE IN EFFECT FOR THREE DAYS OR MORE.
- 6) LANE CLOSURES AND TAPER LENGTHS, L, AS DETAILED ON STANDARD E-103.
- 7) EXIT SIGN SHALL BE MOUNTED A MINIMUM OF 3' ABOVE THE GROUND AND HIGH ENOUGH TO BE SEEN ABOVE CHANNELIZING DEVICES.

- REF. 28" CONES
- REF. PLASTIC DRUMS
- PAVEMENT MARKING REMOVAL
- ↑ INDICATES TRAFFIC FLOW
- WORK AREA
- FLASHING ARROW PANEL
- TYPE III BARRICADES
- TYPE III BARRICADES (MOD.)



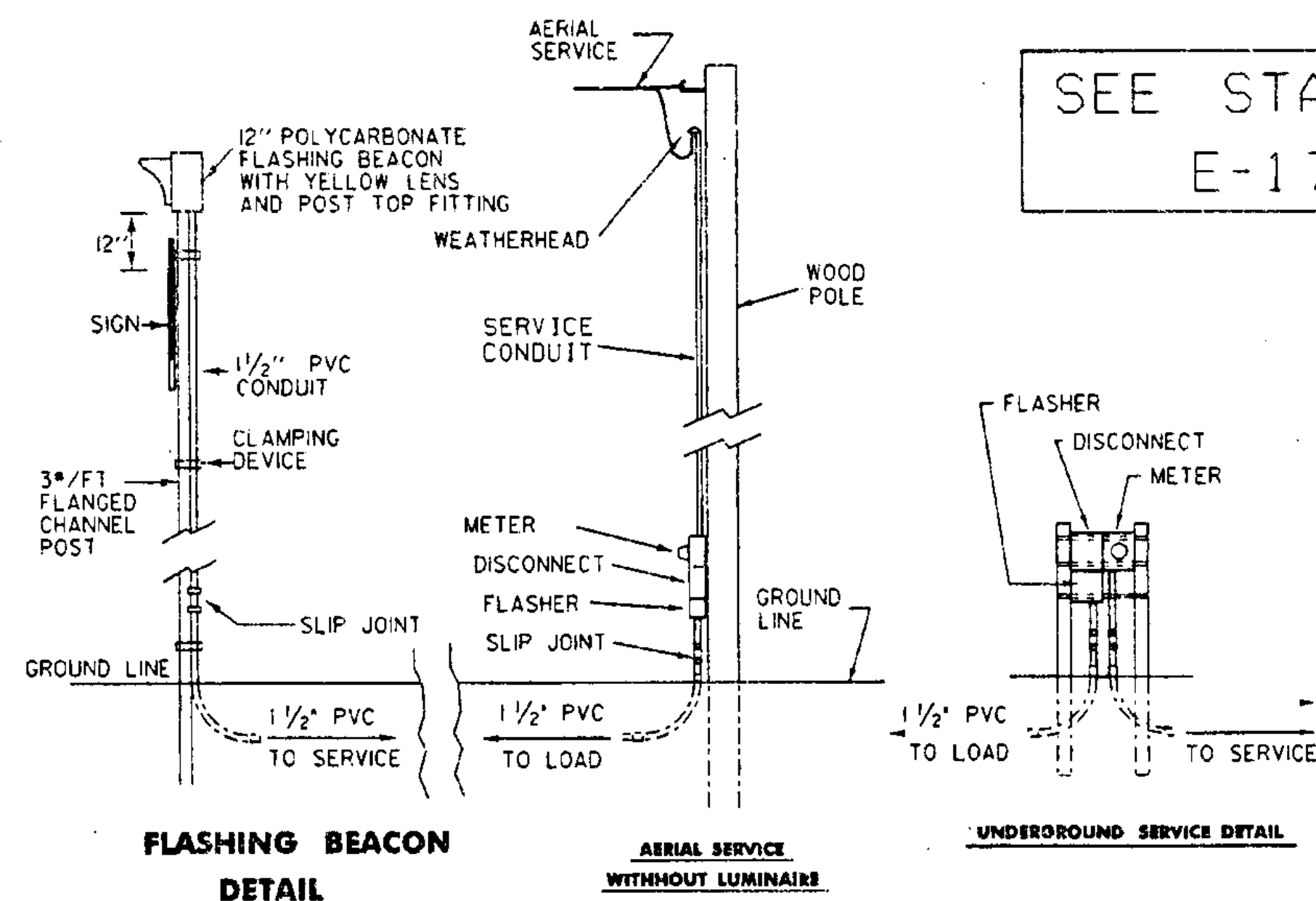
THIS DETAIL SHALL BE USED WHEN THE WORK ZONE BEGINS AT
AT THE END OF THE ACCELERATION LANE OR THE MAINLINE
LANE CLOSURE DRUM PLACEMENT INTERFERES WITH THE
ON-RAMP TRAFFIC.
IF THE LENGTH OF THE ACCELERATION LANE IS NOT ADEQUATE,
THE YIELD SIGN SHALL BE REPLACED WITH A STOP SIGN. IF A
STOP SIGN IS USED, IT SHOULD BE ACCOMPANIED BY A STOP BAR.



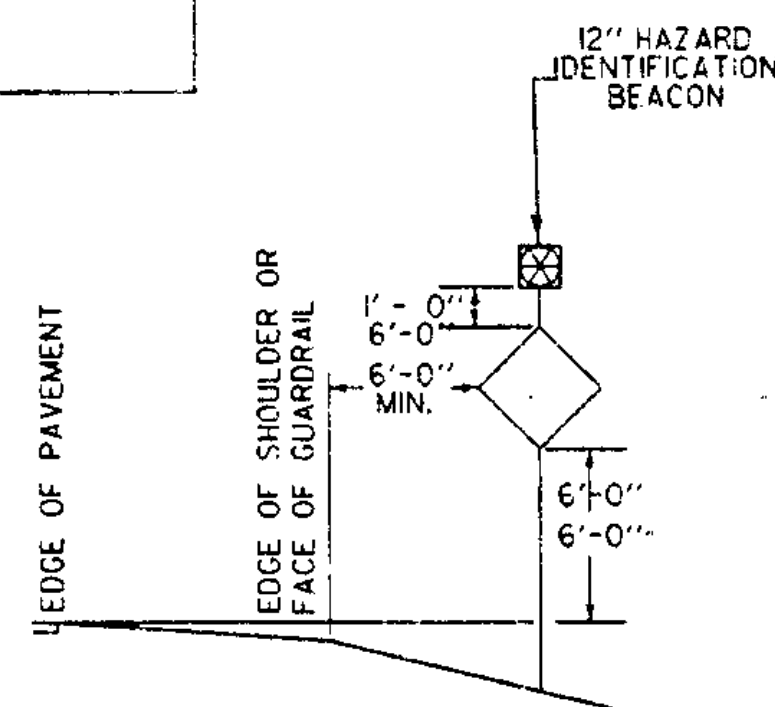
- 1) ADVISORY SPEED AS DETERMINED BY THE RESIDENT ENGINEER (40 M.P.H. MINIMUM RECOMMENDED)
- 2) SIGNS MOUNTED ON FIXED POSTS. (YIELDING TYPE)
- 3) ALL DISTANCES ARE DESIRABLE MINIMUMS. FIELD CONDITION SHALL CONTROL THE ACTUAL PLACEMENT.
- 4) THE BUMP SIGN MAY BE ELIMINATED WHEN THERE IS NO BUMP. WHEN THE CONTRACTOR IS WORKING IN THE CONSTRUCTION AREA THE APPROPRIATE ADVANCED WARNING SIGN PACKAGE SHALL BE USED. SEE STD.E-103.

NOT TO SCALE

**ADVANCED WARNING SIGN PACKAGE FOR
COLD PLANED (SCARIFIED) SURFACES.**

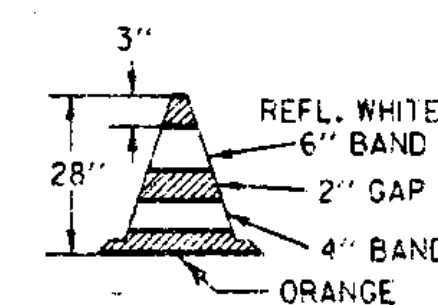


SEE STANDARD
E-175



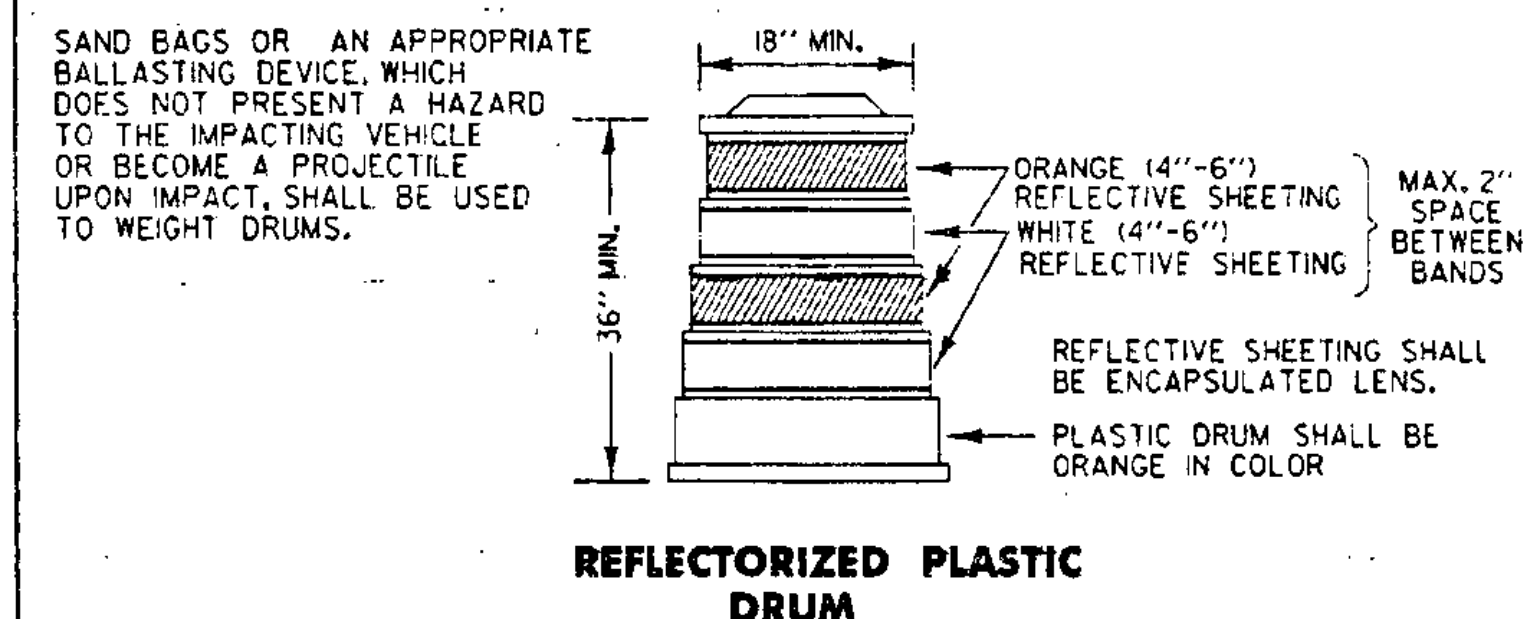
SIGN PLACEMENT DETAIL

- 1.) AT THE CONTRACTOR'S OPTION:
 - A. THE POWER SUPPLY MAY BE AERIAL OR UNDERGROUND (SEE DETAIL).
 - B. POWER FOR A FLASHING BEACON MAY BE COMBINED WITH POWER FOR A TRAFFIC SIGNAL OR THEY MAY HAVE SEPARATE POWER SOURCES.
 - C. THE FLASHER MAY BE INSTALLED ON A STANCHION NEAR THE SIGN, ON A UTILITY POLE (WITH UTILITY COMPANY APPROVAL) OR AT THE SAME LOCATION AS A TRAFFIC SIGNAL CONTROLLER.
- 2.) THE FLASHER UNIT SHALL BE ONE CIRCUIT AND INCLUDE A RADIO INTERFERENCE FILTER.
- 3.) BATTERY OPERATED FLASHERS WILL NOT BE ALLOWED.
- 4.) BOTTOM OF THE BEACON SHALL BE A MIN. OF 8'-0" AND A MAX. OF 12'-0" ABOVE THE EDGE OF THE PAVEMENT.
- 5.) FOR URBAN AREA PLACEMENT SEE STD. E-121.



- 1.) 28" CONES SHALL BE USED ON ROADWAYS WITH SPEED LIMITS OF 35 MPH OR MORE AND ON ALL ROADWAYS DURING HOURS OF DARKNESS.
- 2.) CONES MAY BE WEIGHTED TO PREVENT OVERTURNING, HOWEVER THE WEIGHTS SHALL NOT PRESENT A HAZARD IF THE CONE IS STRUCK.
- 3.) REFLECTIVE SHEETING SHALL BE ENCAPSULATED LENS.

28" REFLECTORIZED CONE



OTHER STDS.	E-101	E-102A	E-107A	E-150
REQUIRED:	E-102	E-103	E-136	E-175

APR 12, 1988 - DATE OF ORIGINAL ISSUE
JAN 23, 1989 - REVISED EXIT SIGN - CLARIFIED
EXIT TAPER
SEPT 20, 1993 - REVISED RAMP CLOSURES,
FLASHING BEACON DETAILS AND MOVED
TYPE III BARRICADE (MOD) TO STD-107A
AUG 08, 1995 - REVISED BEACON SIZE

Ernest B. MacArthur
DIRECTOR OF ENGINEERING

David A. Ross
TRAFFIC AND SAFETY ENGINEER

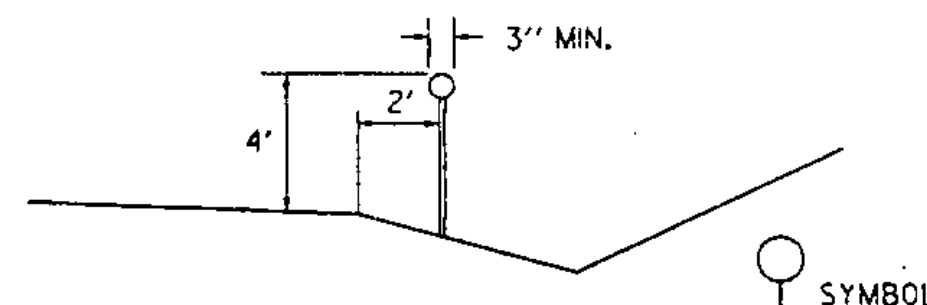
TRAFFIC CONTROL MISCELLANEOUS DETAILS

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/trgf/std/stdel06.dgn : stdel06.i
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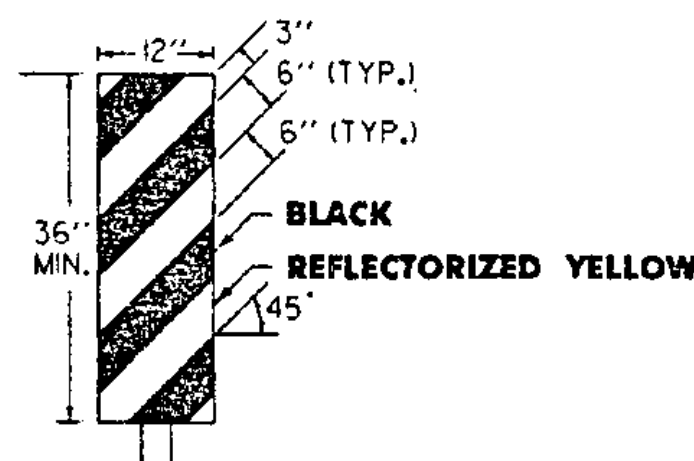
STANDARD
E-106

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.



DELINEATOR TYPICAL

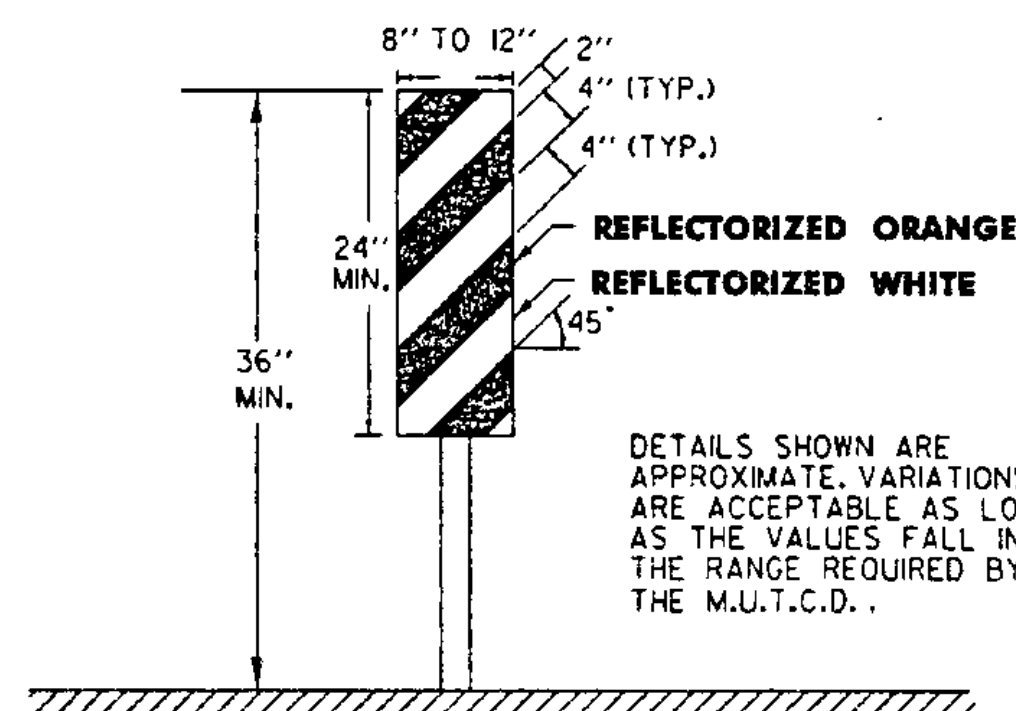
DELINEATORS SHALL BE REFLECTORIZED WHITE IN COLOR. THEY SHALL HAVE A MINIMUM OF 7 SQUARE INCHES. THEY MAY BE ROUND, SQUARE, OR OBLONG.



OBJECT MARKER TYPICAL

OBJECT MARKERS ARE USED TO MARK OBSTRUCTIONS WITHIN OR ADJACENT TO THE ROADWAY. IN SOME CASES THERE MAY NOT BE A PHYSICAL OBJECT INVOLVED, BUT OTHER ROADSIDE CONDITIONS SUCH AS NARROW SHOULDER DROP-OFFS, GORES, D.I. EXCAVATIONS, AND ABRUPT CHANGES IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE OBJECT MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHENEVER POSSIBLE.

OBJECT MARKERS SHALL HAVE ALTERNATING BLACK AND REFLECTORIZED YELLOW STRIPES. (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS),

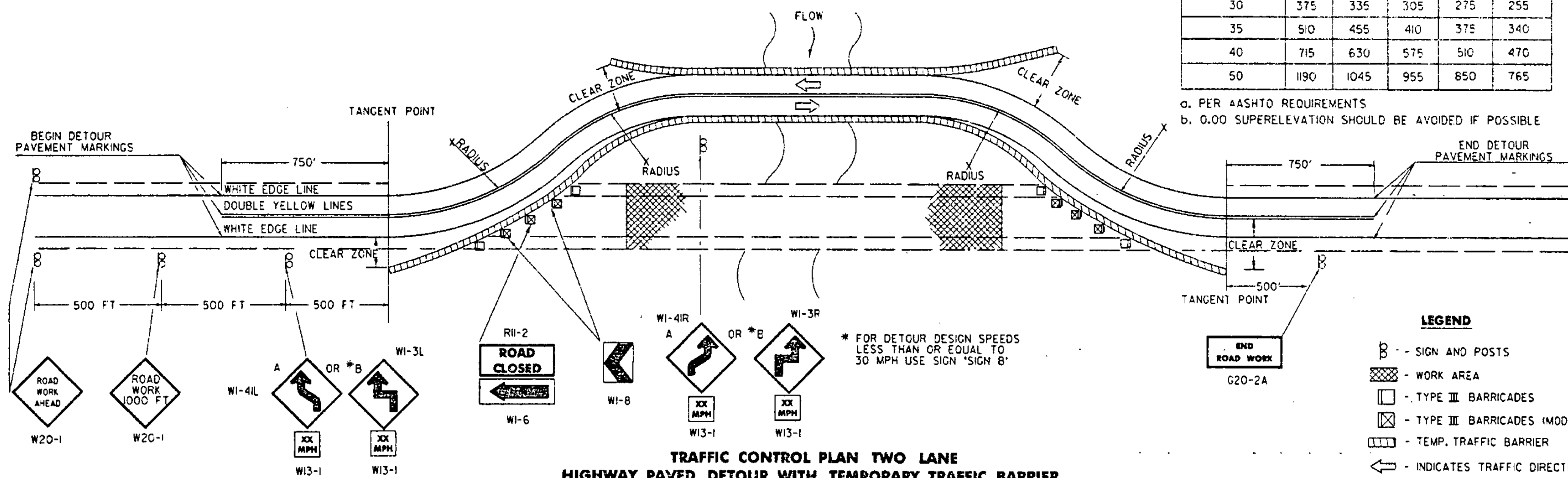


VERTICAL PANEL

VERTICAL PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE REFLECTORIZED STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS). THESE DEVICES MAY BE USED FOR TRAFFIC SEPARATION, CHANNELIZING OR BARRICADING WHERE SPACE IS AT A MINIMUM.

DELINEATOR, VERTICAL PANEL AND OBJECT MARKER DETAILS FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED

ALL SIGN PLACEMENT DISTANCES ARE DESIRABLE SPECIFICATIONS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT. PROJECT CONSTRUCTION APPROACH SIGNING PLACEMENT SHALL TAKE INTO CONSIDERATION SPACING REQUIREMENTS FOR THE DETOUR SIGN LAYOUT REQUIREMENTS.



TRAFFIC CONTROL PLAN TWO LANE HIGHWAY PAVED DETOUR WITH TEMPORARY TRAFFIC BARRIER

REVISIONS AND CORRECTIONS

SEPT. 10, 1987 - DATE OF ORIGINAL ISSUE
APRIL 29, 1988 - FHWA REVIEW COMMENTS
SEPT. 20, 1993 - NEW RADIUS CHART, BARRICADE ALIGN-
MENT AND USE OF TEMPORARY TRAFFIC
BARRIER
AUG. 08, 1995 - REVISED SIGNING PER MUTCD

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA-FINAL APPROVAL PENDING.

APPROVED

Ernest S. MacArthur
DIRECTOR OF ENGINEERING

David A. Ross
TRAFFIC AND SAFETY ENGINEER

DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS

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/trac/std/stdel07.dcn : stdel07.i
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BARRICADES

APPLICATION NOTES

TYPE 1 BARRICADES SHALL BE USED ON CONVENTIONAL ROADS OR URBAN STREETS AND ARTERIALS TO MARK A SPECIFIC HAZARD.

TYPE 11 BARRICADES SHALL BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS TYPE I BARRICADES.

TYPE 111 BARRICADES (SEE STD. E-107A) SHALL ONLY BE USED WHEN A ROAD SECTION OR LANE IS CLOSED TO TRAFFIC AND ARE TO BE ERECTED AT THE POINT OF CLOSURE.

MATERIALS

THE BARRICADES SHOWN ON THIS SHEET SHOULD BE OF LIGHTWEIGHT MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY:

1. WOODEN BARRICADES (TYPE I AND II):
- A) SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 M.P.H. ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
 - B) MAY BE USED WHERE OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED.

COLORS

THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE AN ALTERNATING REFLECTORIZED WHITE AND ORANGE STRIATIONS. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION ENGINEERS. THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, THE BARRICADE COMPONENTS SHALL BE WHITE UNLESS UNPAINTED METAL OR ALUMINUM IS USED.

REFLECTORIZATION

THE REFLECTIVE SHEETING ON BARRICADE PANELS SHALL BE TYPE ☐.

LOCATION

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE RESIDENT ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", OR AS OTHERWISE NOTED.

MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN CLEAN CONDITION, SATISFACTORY TO THE RESIDENT ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO THE APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFACED, OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED, OR REPLACED AS ORDERED BY THE RESIDENT ENGINEER.

DETOUR NOTES

- 1.) SIGNS AND DELINEATION SHOWN FOR ONE DIRECTION OF TRAFFIC ONLY.
- 2.) THE CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
- 3.) ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER.
- 4.) UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS FROM EXISTING PAVEMENT.
- 5.) THE NUMBER OF CHANNELIZING DEVICES, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
- 6.) AASHTO CLEAR ZONE REQUIREMENTS SHOULD BE MET. IF NOT THEN AN APPROVED ENERGY ABSORPTION ATTENUATOR IS SUITABLE FOR THE TEMPORARY TRAFFIC BARRIER USED AND FOR THE DESIGN SPEED SHALL BE INSTALLED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
- 7.) THE DETOUR DESIGN SPEED SHOULD BE NO LESS THAN 10 M.P.H. BELOW THE POSTED SPEED LIMIT, UNLESS PHYSICAL RESTRICTIONS PREVENT THIS.
- 8.) SEE STANDARD SHEETS E-100, E-101 AND E-102 FOR SIGN DETAIL AND MATERIAL REQUIREMENTS.
- 9.) IF THE USE OF TEMPORARY TRAFFIC BARRIER IS NOT REQUIRED, THEN REFLECTORIZED PLASTIC DRUMS SHALL BE USED.

OTHER STDS.	E-100	E-102	E-107a
REQUIRED:	E-101	E-102a	



STANDARD E-107

NOTES

REFLECTORIZATION
ALL SIGNS USED DURING THE HOURS OF DARKNESS SHALL BE REFLECTORIZED (TYPE II OR III). CONES USED FOR TRAFFIC CONTROL AT NIGHT SHALL COMPLY WITH STANDARD E-106.

COLORS
THE WARNING SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT, BORDER, AND SYMBOLS ON AN ORANGE BACKGROUND. THE TEXT AND BORDERS MAY BE SCREENED, LETTERING FILM, OR HAND PAINTED. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

TEXT DESIGN
LETTERS, DIGITS, SPACING, AND TEXT DIMENSIONS SHALL CONFORM WITH THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS" AS REFERENCED IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

SPECIFICATIONS
WARNING SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

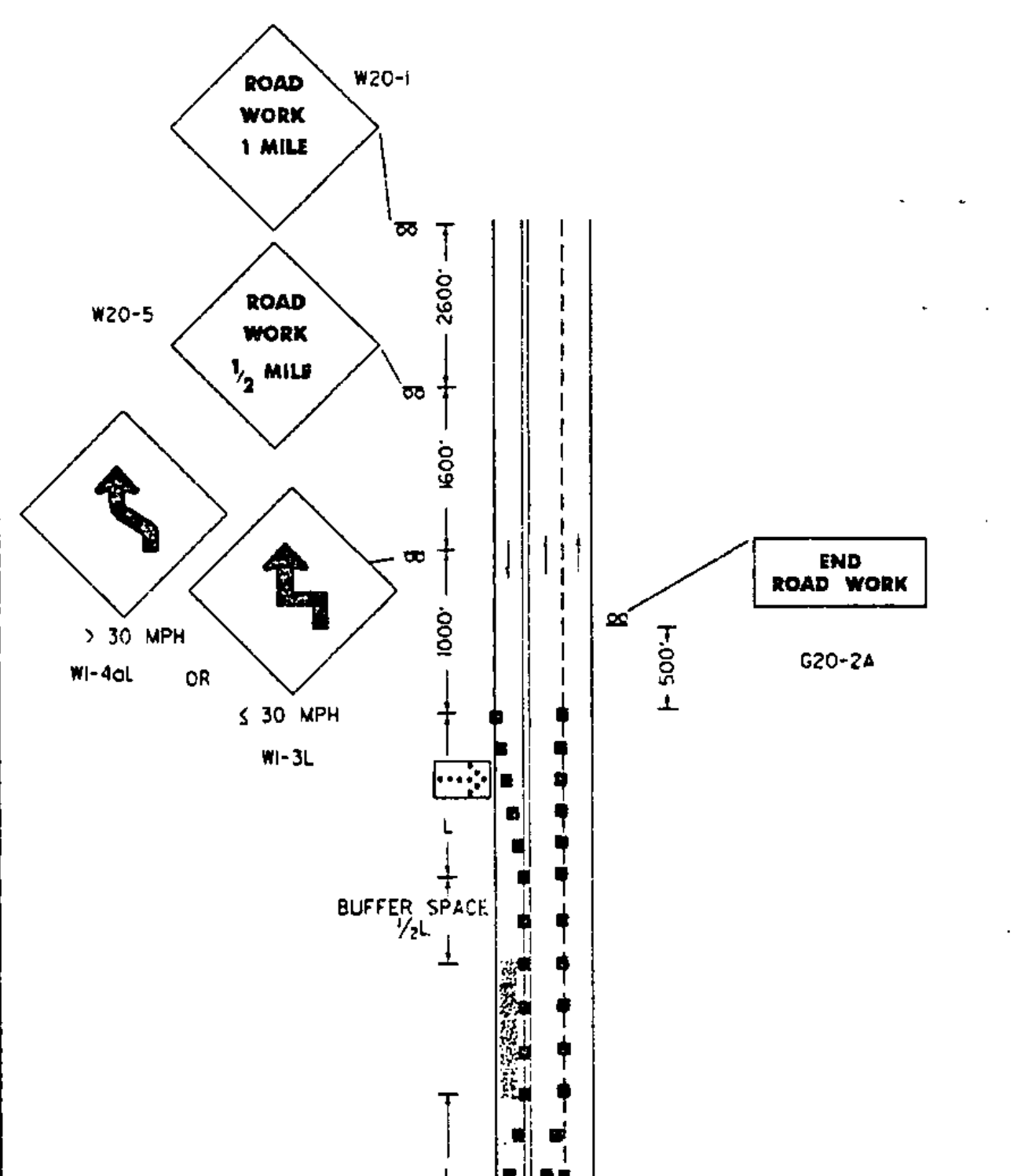
SIGN BASE MATERIAL
THE SIGN BASE MATERIAL USED FOR THE WARNING SIGNS ON THIS SHEET MAY BE OF ANY OF THE FOLLOWING, WITH MINIMUM THICKNESS AS NOTED:
FLAT STEEL OR ALUMINUM 0.125 INCHES
HIGH DENSITY OVERLAYED PLYWOOD 1/2, 5/8, OR 3/4 INCHES
GALVANIZED SHEET STEEL 12 GAUGE

1. SIGNS WITH "ROAD WORK 1500 FT." AND "END ROAD WORK" TEXT SHALL BE USED WHEN THE WORK IS NOT COMPLETE AND A HAZARD REMAINS OVERNIGHT.
2. THE FLAGPERSON SHALL USE THE SIGN PADDLE DETAILED ON STANDARD SHEET E-102.
3. ALL SIGNS SHALL BE COVERED OR REMOVED AT THE END OF THE WORKING DAY UNLESS REQUIRED FOR THE PROTECTION AND SAFETY OF THE TRAVELING PUBLIC.
4. INSTALLATION: SIGNS AND BARRICADES SHALL BE IN PLACE PRIOR TO THE START OF THE MAINTENANCE OPERATION TO WHICH THEY APPLY AND SHALL BE REMOVED PROMPTLY WHEN THE NEED NO LONGER EXISTS. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER ON YIELDING WOOD OR METAL POSTS SET SECURELY IN THE GROUND (IN ACCORDANCE WITH STD. E-121), OR ON PORTABLE SUPPORTS WHEN APPROPRIATE. THE INSTALLATION OF SIGNS AND BARRICADES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
5. ALTHOUGH LISTED AS A MAINTENANCE OPERATION STANDARD SIGN SHEET, THE APPROACH SIGNS SHOWN SHALL BE USED BY CONTRACTORS WHEN WORKING WITHIN OR OUTSIDE PROJECT LIMITS.
6. ALL DISTANCES ARE DESIRABLE SPECIFICATIONS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
7. SIGN DETAILS NOT SHOWN ON THIS SHEET CAN BE FOUND ON STANDARD SHEETS E-100, E-101, AND E-102.
8. TAPER FORMULA
 $L = \frac{SW}{60}$ FOR SPEEDS OF 45 OR MORE
 $L = \frac{SW}{60}$ FOR SPEEDS OF 40 OR LESS
WHERE:
L = MINIMUM LENGTH OF TAPER
S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED
W = WIDTH OF OFFSET.
9. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT IN M.P.H., ON TANGENT SECTIONS THE MAXIMUM SPACING SHOULD BE APPROXIMATELY EQUAL TO TWICE THE POSTED SPEED LIMIT.
10. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK THE FLAGPERSON STATIONS AT NIGHT AS NEEDED.
11. AT SHORT WORK ZONES WHERE ADEQUATE SIGHT DISTANCE IS AVAILABLE FOR THE SAFE HANDLING OF TRAFFIC ONE FLAGGER MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
12. CHANNELIZING DEVICES SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
13. THE NUMBER OF CHANNELIZING AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).

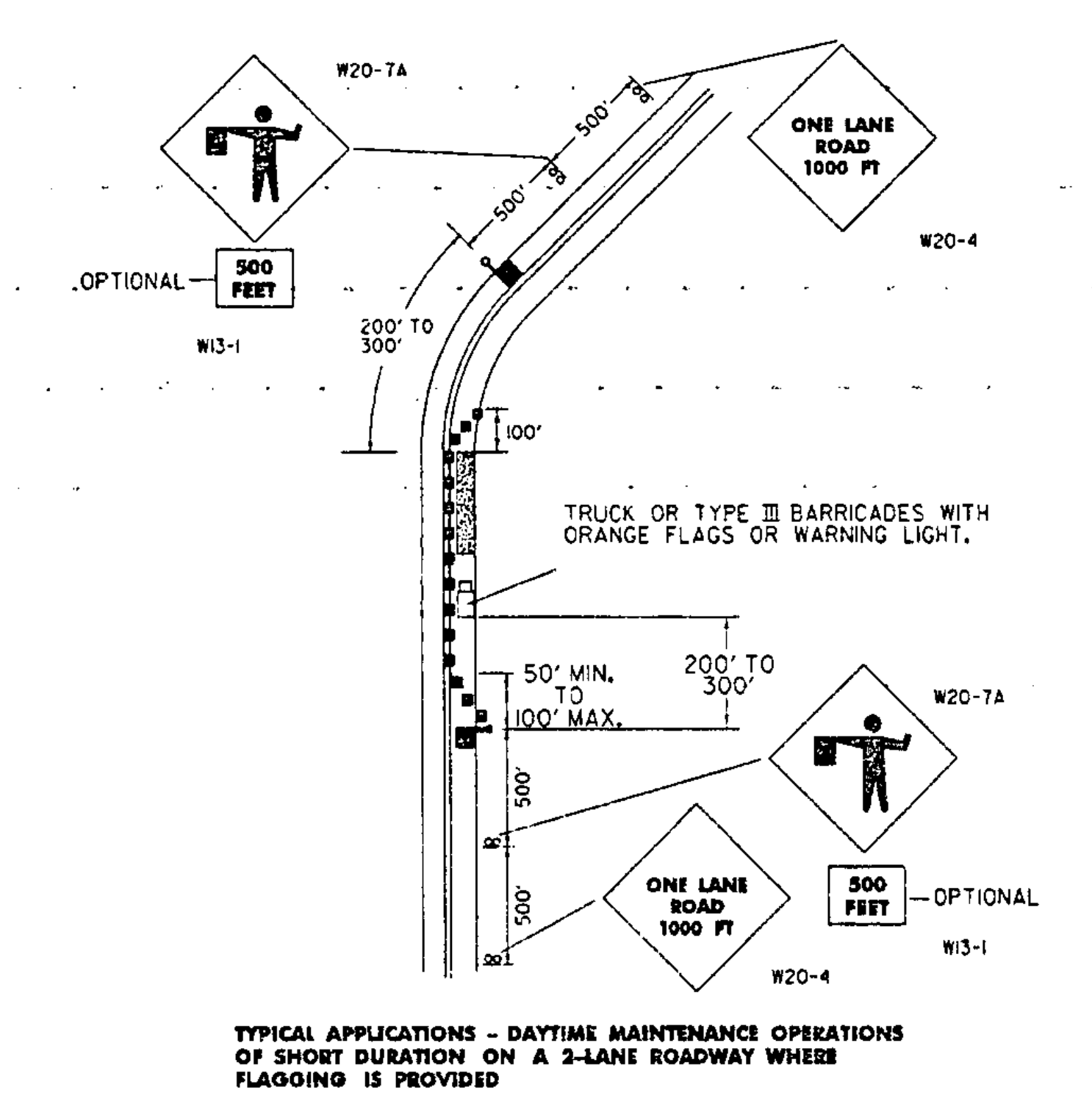
LEGEND:

- | | |
|---------------------------------------|---------------------|
| FLAGPERSON | WORK AREA |
| CHANNELIZING DEVICES (CONES OR DRUMS) | SIGN & POSTS |
| FLASHING ARROW PANEL | TYPE III BARRICADES |

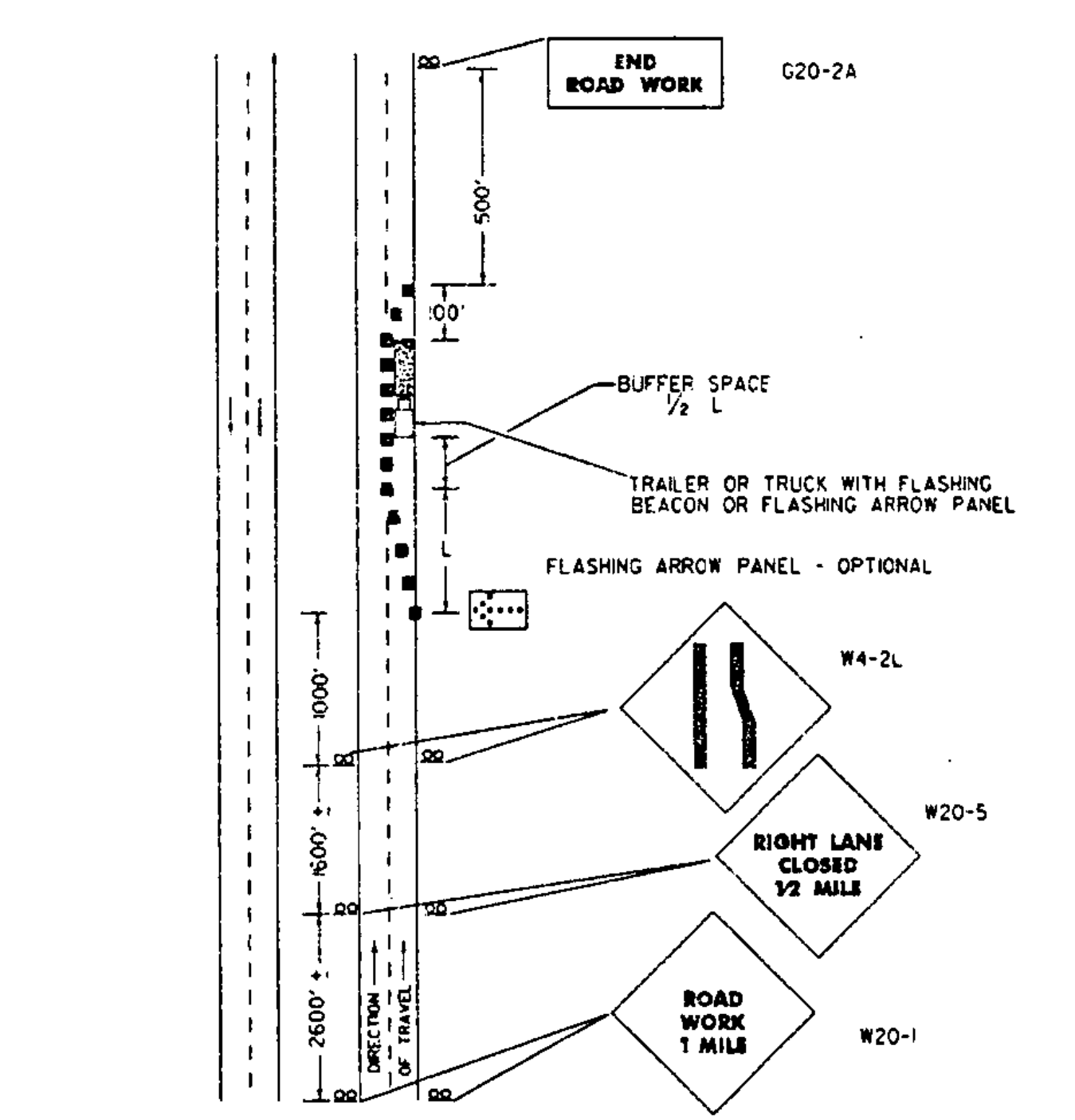
OTHER STDS. E-100 E-102
REQUIRED: E-101 E-106



TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATION OF SHORT DURATION ON A 2-LANE ROADWAY WHERE FLAGGING IS PROVIDED



TYPICAL APPLICATIONS - TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.

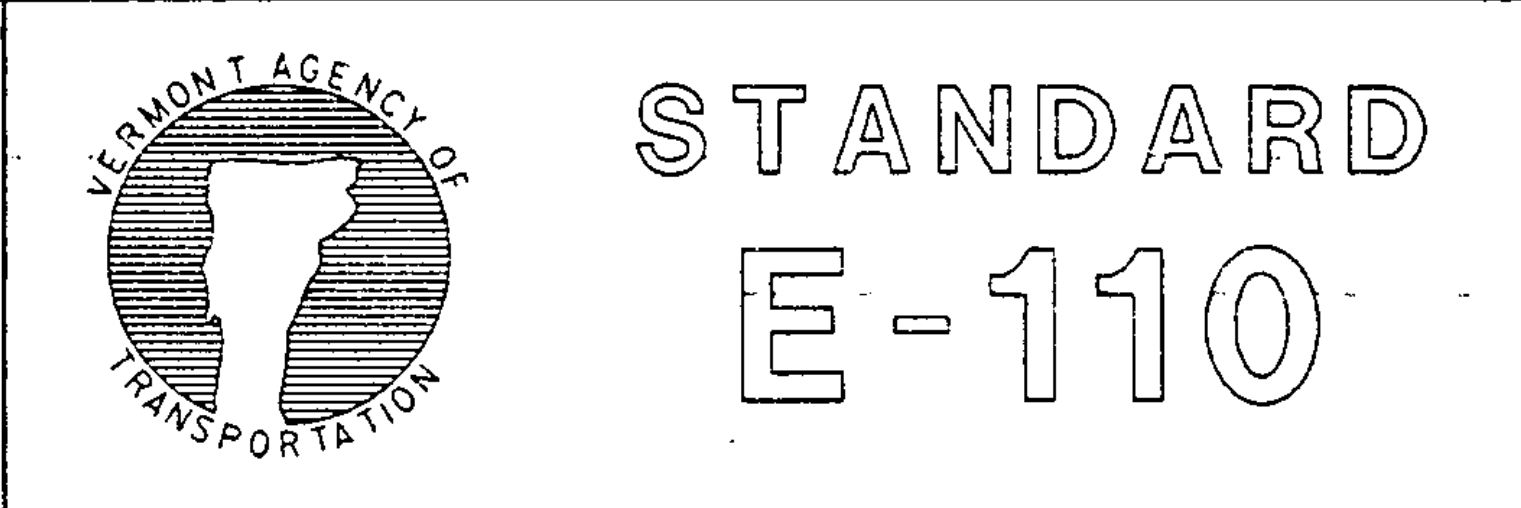


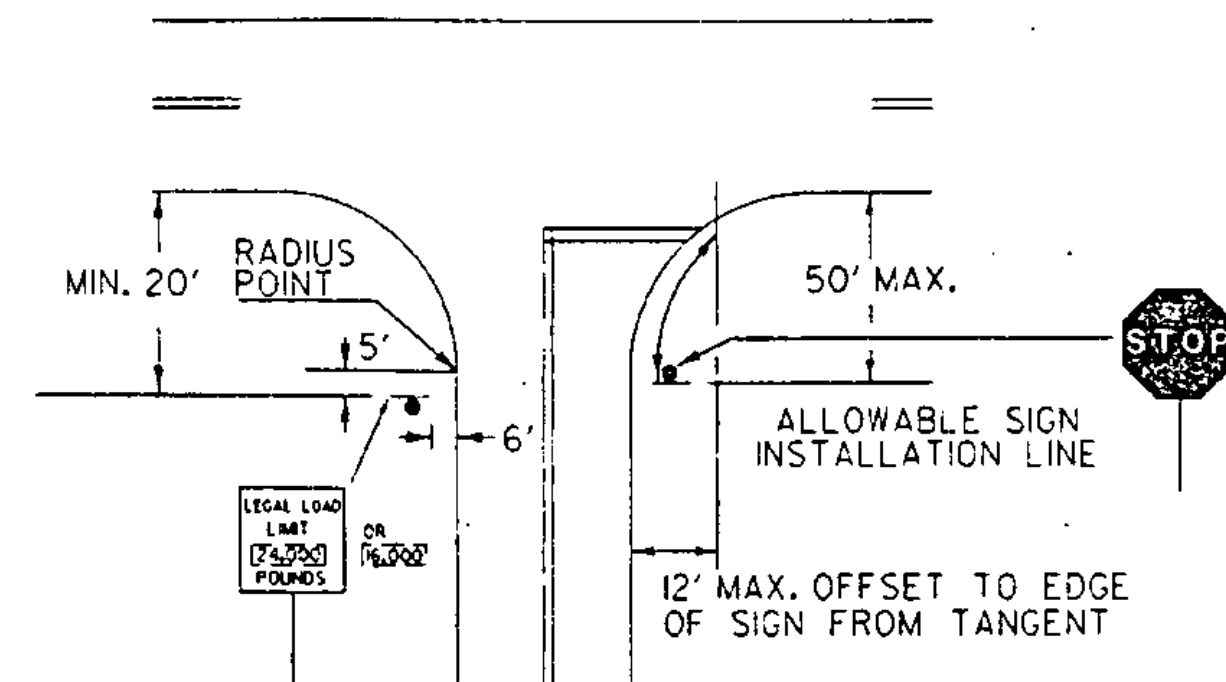
TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF ROADWAY IS CLOSED.

REVISIONS AND CORRECTIONS
SEPT 10, 1987 - DATE OF ORIGINAL ISSUE
MAR 01, 1988 - FHWA REVIEW COMMENTS
SEP 20, 1993 - REVISED NOTES & MISC. DETAILS
AUG 08, 1995 - DELETED SIGN DETAILS
APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION, FHWA FINAL APPROVAL PENDING.

APPROVED
Steven D. McArthur
DIRECTOR OF ENGINEERING
David A. Ross
TRAFFIC AND SAFETY ENGINEER

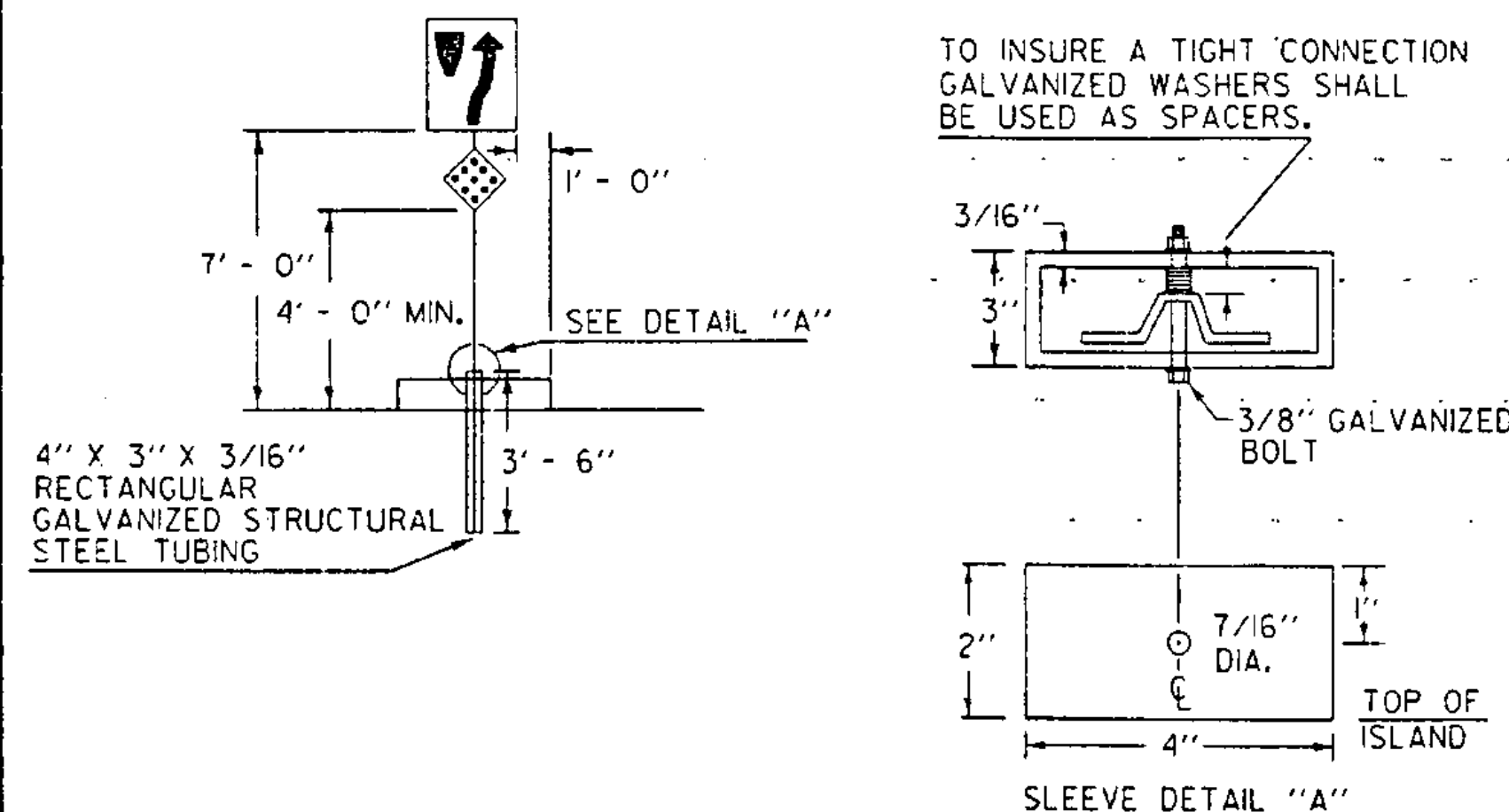
MAJOR MAINTENANCE OPERATION LANE CLOSURE





LEGAL LOAD LIMIT AND STOP SIGNS AT INTERSECTIONS WITH TOWN HIGHWAYS

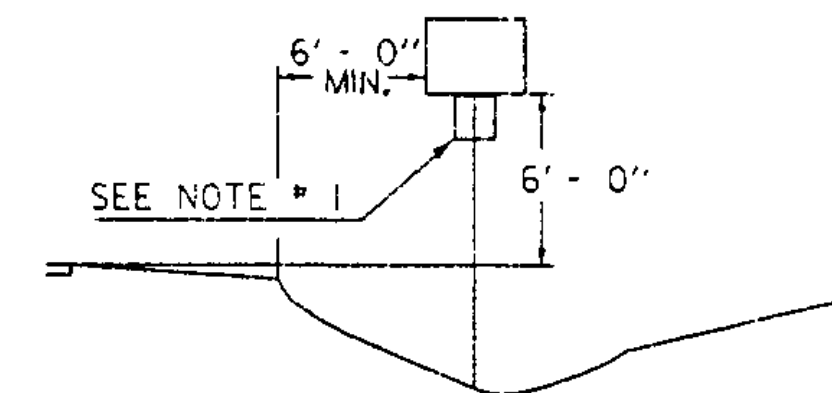
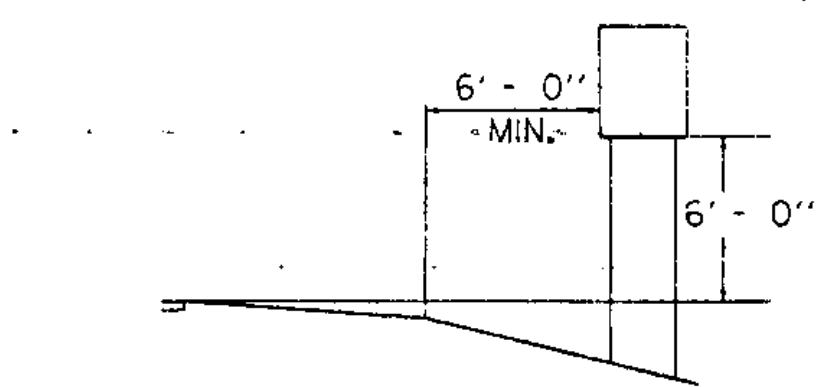
STOP SIGN SHALL BE PLACED ON DRIVERS RIGHT, MAINTAINING MAXIMUM VISIBILITY. CLEARANCE SHALL BE A MINIMUM OF 6' AND A MAXIMUM OF 50' FROM EDGE LINE OF INTERSECTING ROADWAY AND DOES NOT HAVE TO BE ADJACENT TO THE STOP BAR.



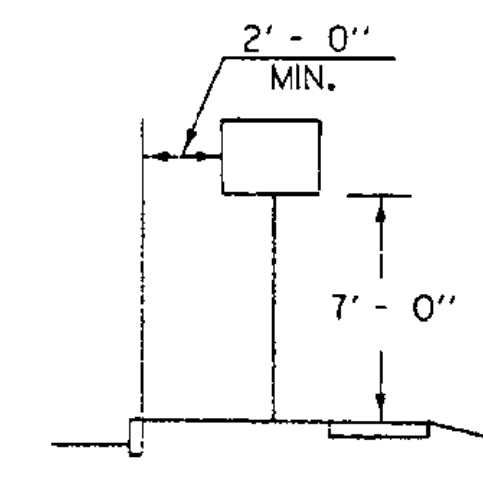
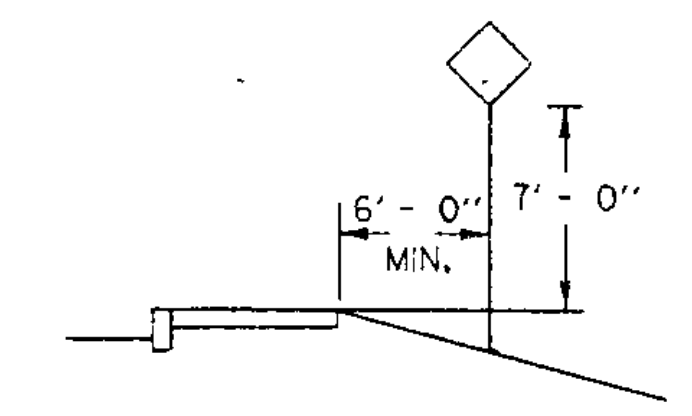
SIGNS ON MEDIAN ISLANDS IN THE LINE OF TRAFFIC

TO INSURE A TIGHT CONNECTION GALVANIZED WASHERS SHALL BE USED AS SPACERS.

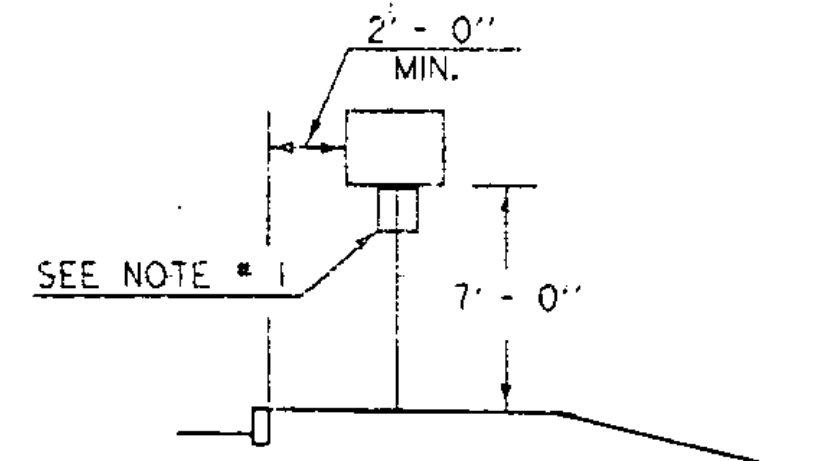
INCREASE VERTICAL CLEARANCE TO 7' IN AREAS OF FREQUENT ROADSIDE PARKING OR PEDESTRIAN ACTIVITY



RURAL



IF SUFFICIENT CLEARANCE IS NOT AVAILABLE BETWEEN CURB AND SIDEWALK MOUNT SIGN BEHIND SIDEWALK AS SHOWN AT TOP. CHECK FOR ADEQUATE R.O.W..



URBAN

NOTES:

1. IN BOTH RURAL AND URBAN LOCATIONS, IF A SECONDARY SIGN IS MOUNTED BELOW ANOTHER SIGN, THE MINIMUM CLEARANCE MAY BE REDUCED BY ONE FOOT.
 2. IN RURAL AREAS WITH NO OR MINIMAL SHOULDER, THE LATERAL CLEARANCE TO THE EDGE OF A SIGN SHOULD BE A MINIMUM OF 12' FROM THE EDGE OF THE TRAVELED WAY.
 3. ALSO SEE OTHER STANDARD SHEETS FOR MOUNTING CLEARANCE AND SPACING OF DESTINATION AND ROUTE MARKER ASSEMBLIES AND TOWN LINE SIGNS.
- POST REFERENCE:
REFER TO THE DETAILS ON THE APPROPRIATE STANDARD DRAWING FOR INFORMATION CONCERNING THE PROPER MOUNTING OF SIGNS ON APPROPRIATE POSTS.

OTHER STDS. E-160 E-161 E-162 E-163 E-164
REQUIRED:

REVISIONS AND CORRECTIONS
JAN. 23, 1995 - DATE OF ORIGINAL ISSUE
AUG. 08, 1995 - VARIOUS MINOR NOTE REVISIONS

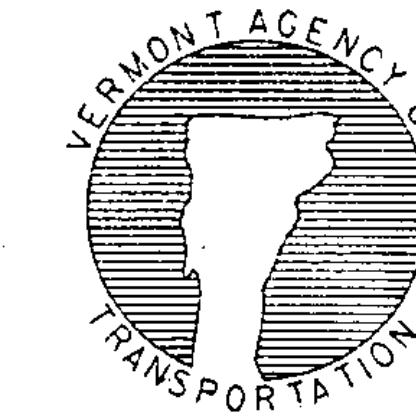
APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

APPROVED

Stephen D. McArthur
DIRECTOR OF ENGINEERING

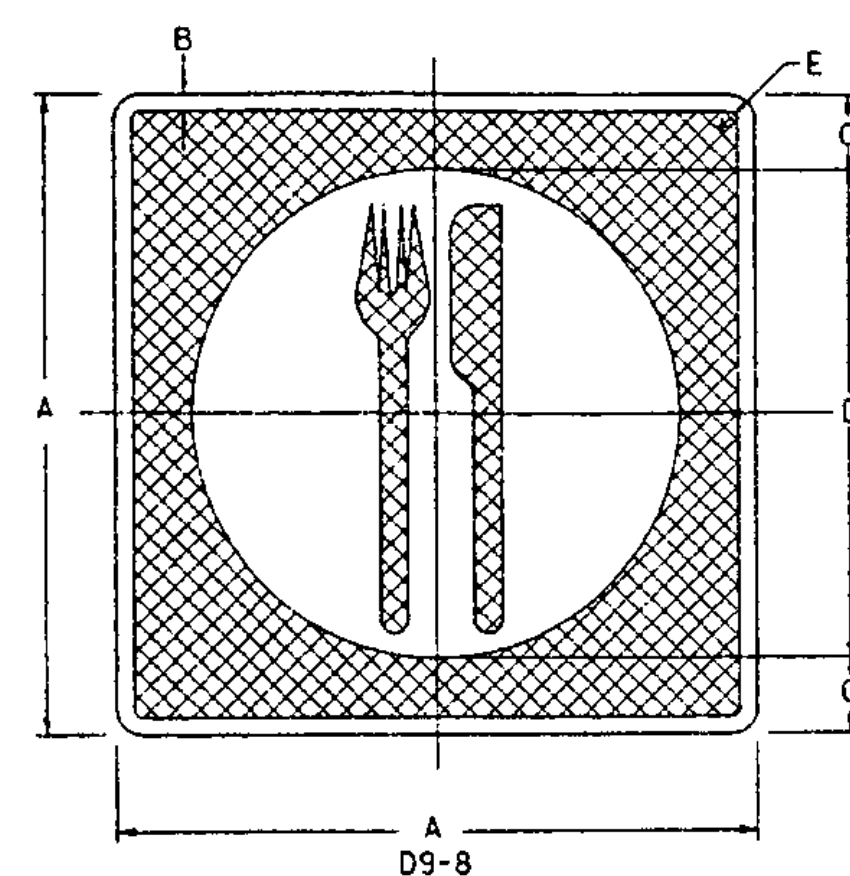
David A. Ross
TRAFFIC AND SAFETY ENGINEER

**STANDARD SIGN PLACEMENT
CONVENTIONAL ROAD**

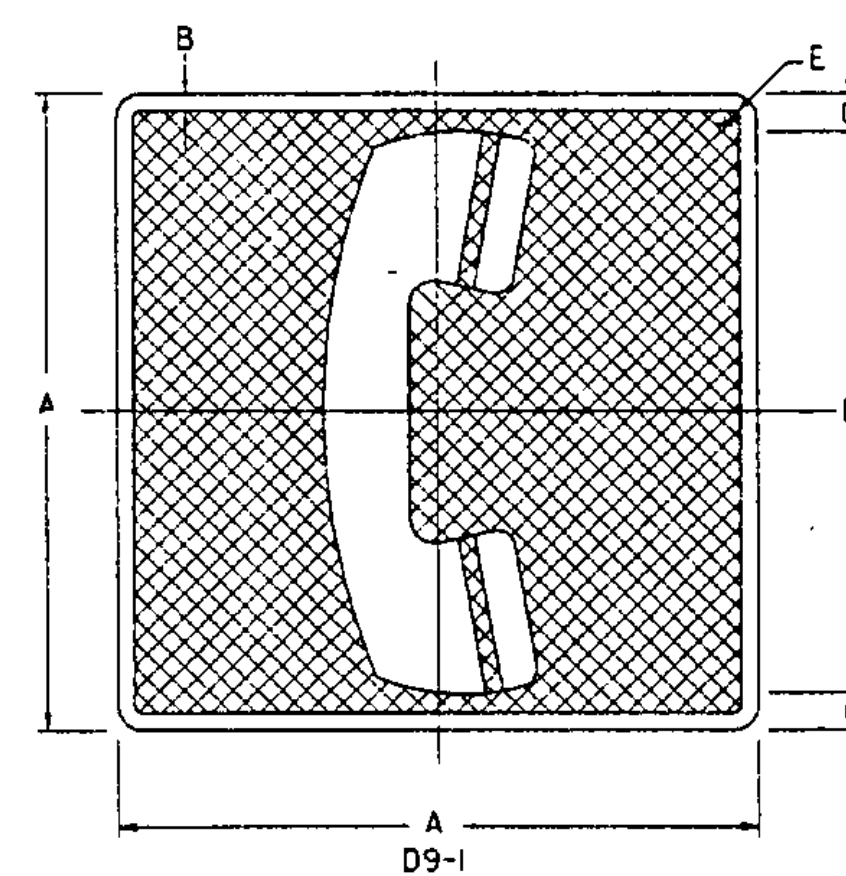


**STANDARD
E-121**

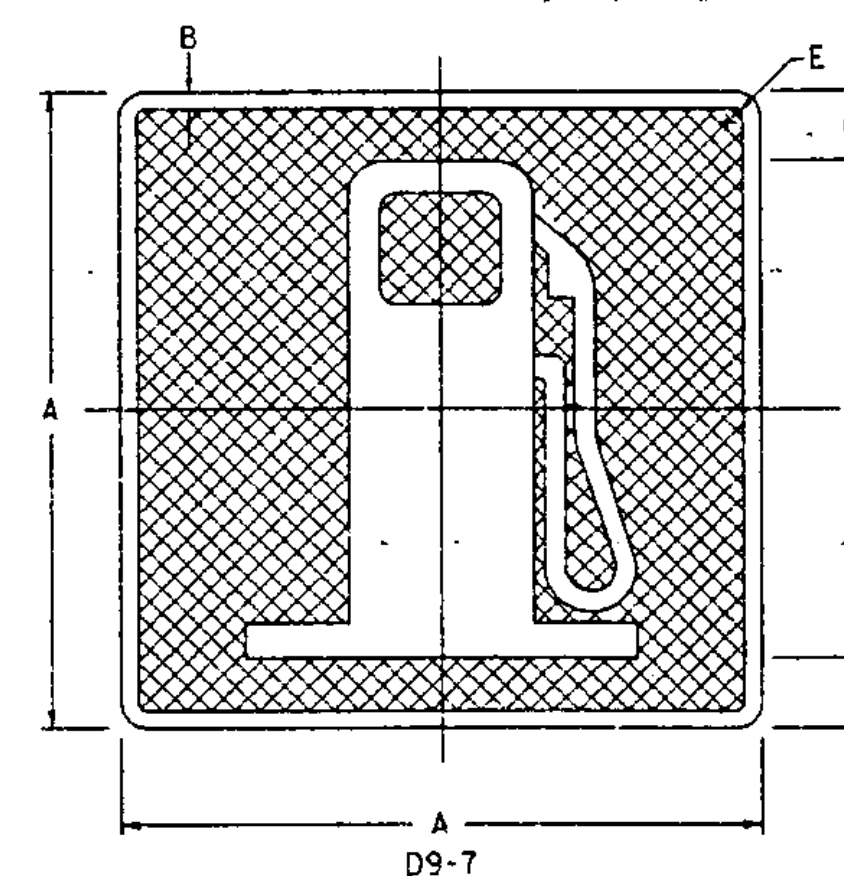
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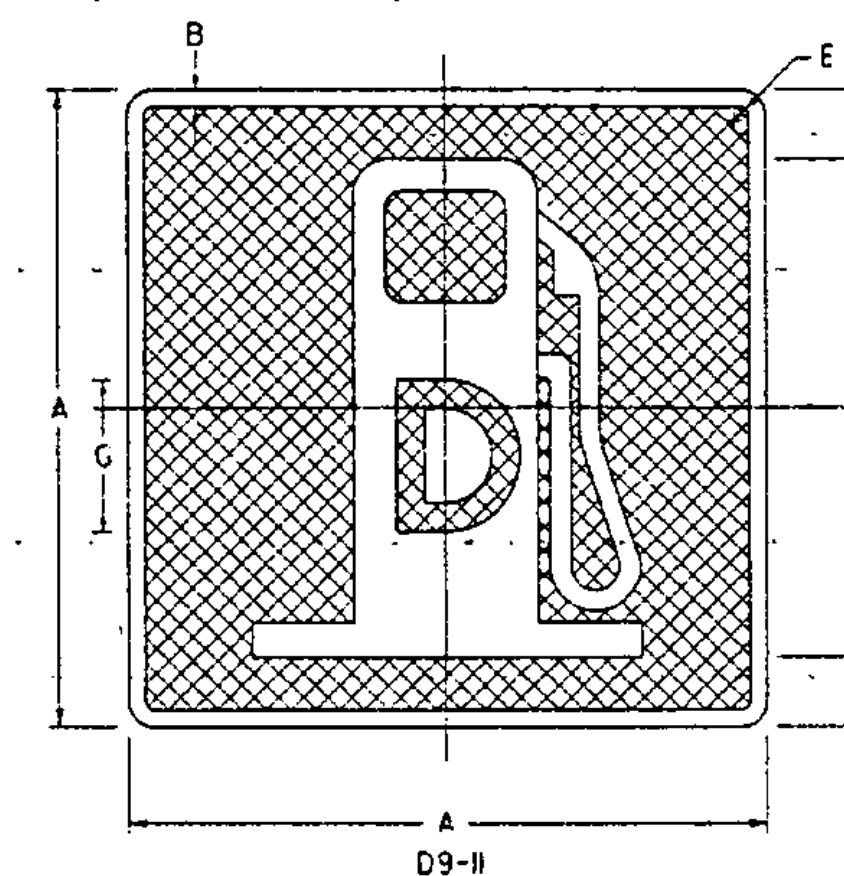
SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN	18	1/2	1/2	15	1/2
STD	24	1/2	2	20	1/2
SPECIAL	30	3/4	2 1/2	25	1 1/8



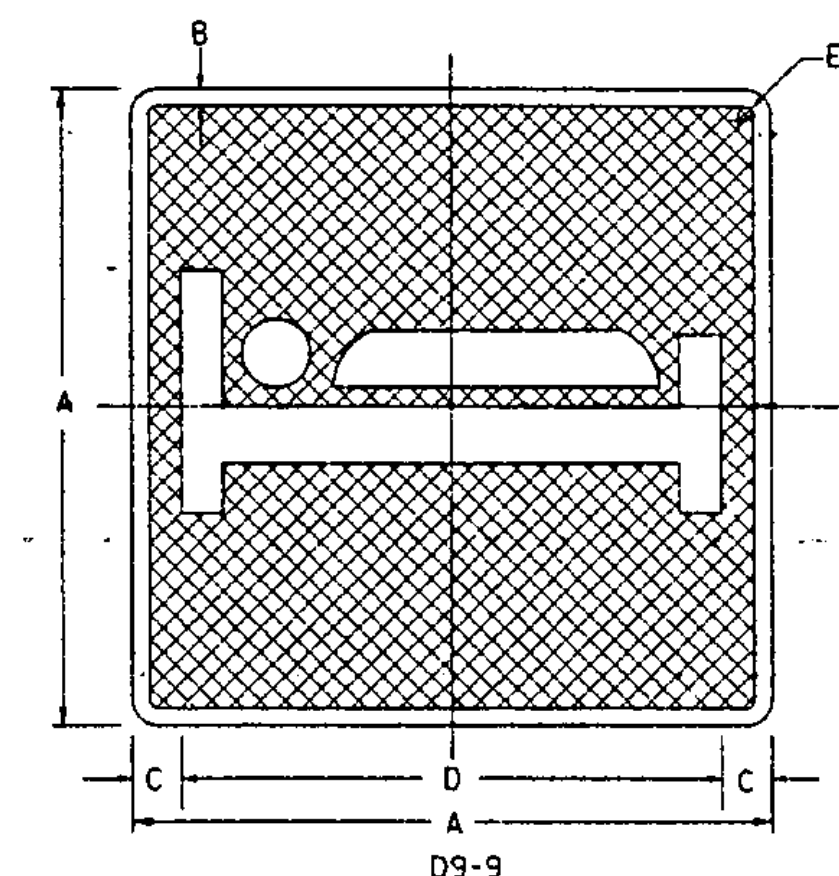
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MIN	18	1/2	1/2	15	1/2
STD	24	1/2	2	20	1/2
SPECIAL	30	3/4	2 1/2	25	1 1/8



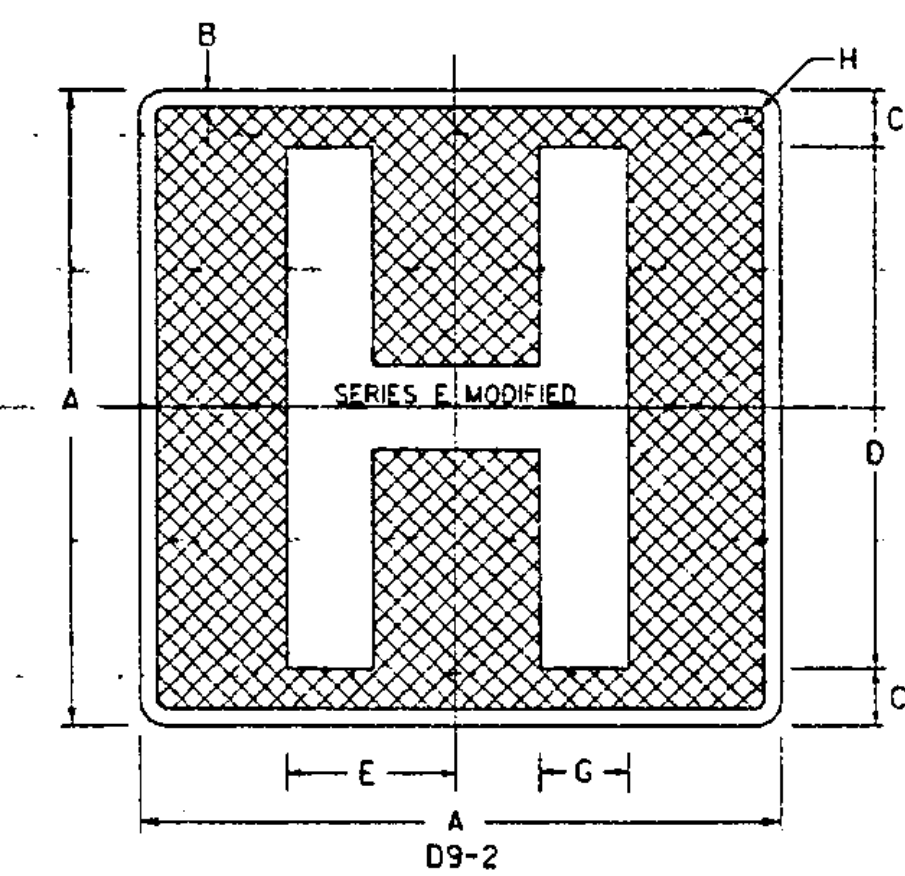
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	A	B	C	D	E
MIN	18	1/2	3	6	1/2
STD	24	1/2	3	9	1 1/2
SPECIAL	30	3/4	3 3/4	11 1/4	1 7/8



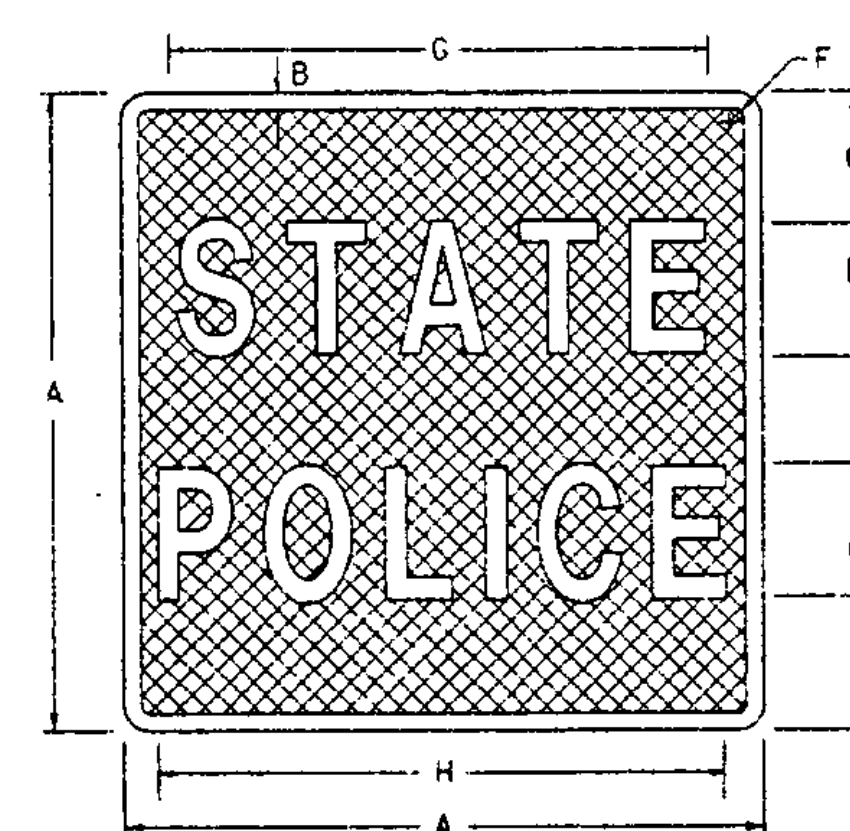
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	A	B	C	D	E	G
MIN	18	1/2	1 1/2	15	1 1/2	4E(M)
STD	24	1/2	2	20	1 1/2	6E(M)
SPECIAL	30	3/4	2 1/2	25	1 7/8	8E(M)



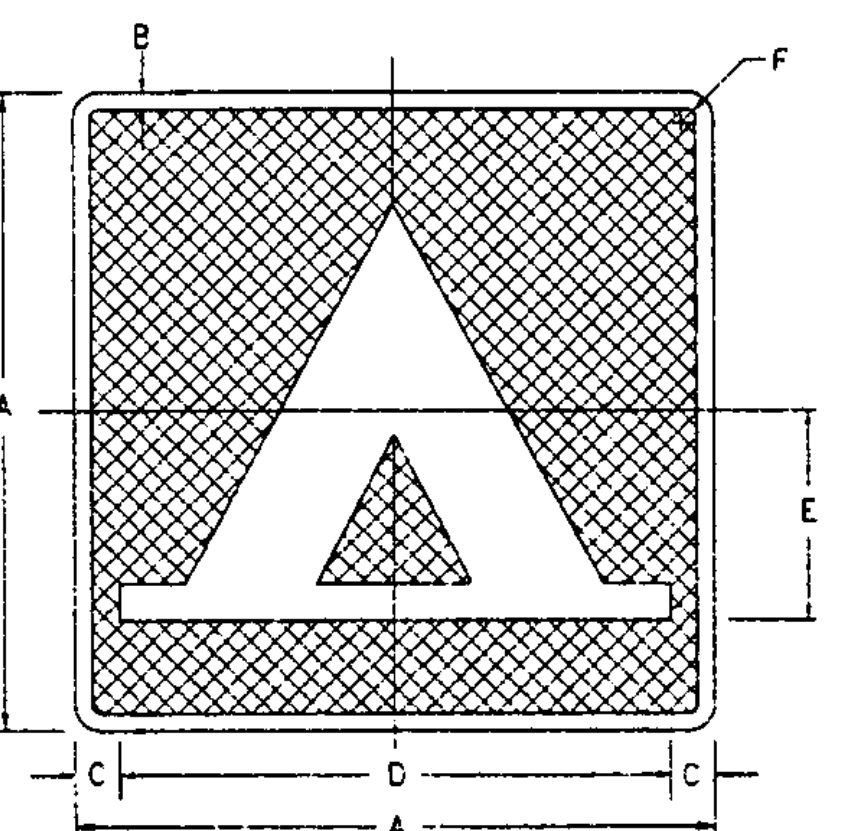
SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN	18	1/2	1 1/2	15	1 1/2
STD	24	1/2	2	20	1 1/2
SPECIAL	30	3/4	2 1/2	25	1 7/8



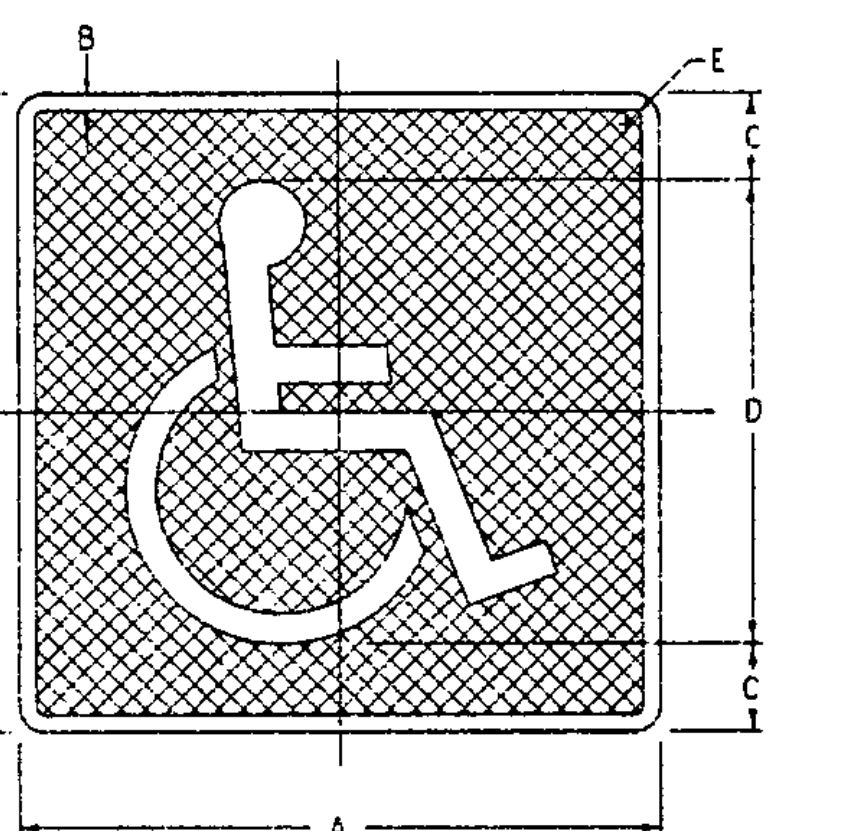
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	A	B	C	D	E	G	H
MIN	18	1/2	1 1/2	15			1 1/2
STD	24	1/2	2	20	6 3/8	3 1/8	1 1/2
SPECIAL	30	3/4	2 1/2	25	8	4	1 7/8



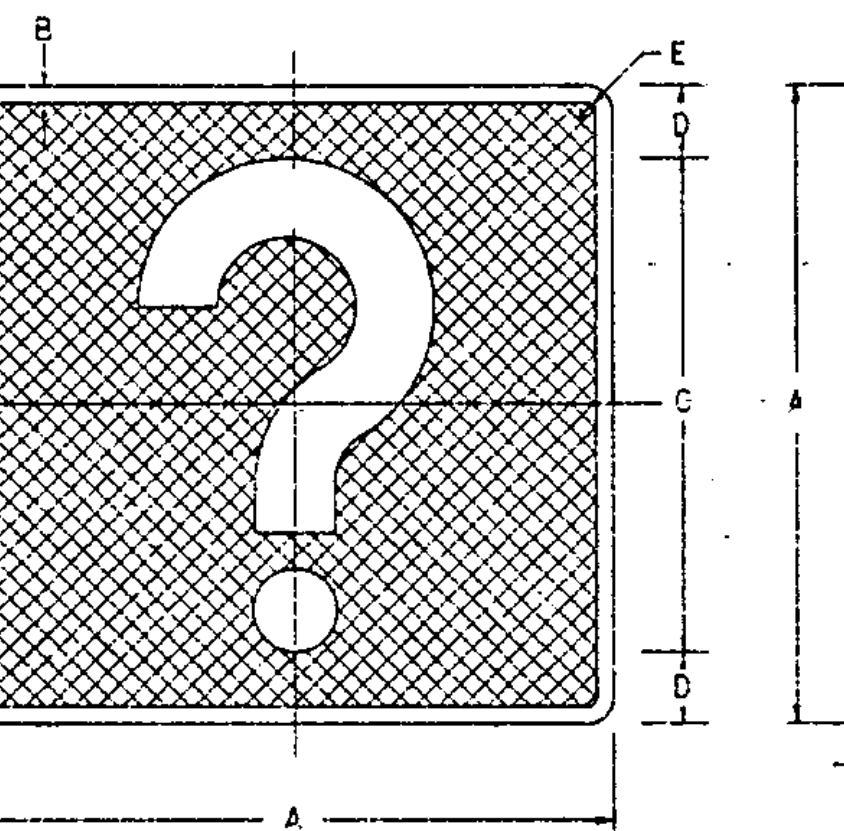
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	A	B	C	D	E	F	G	H
MIN AND STD	24	1/2	5	5C	4	1 1/2	14 3/8	18
SPECIAL	30	1/2	6	6C	6	1 1/2	18 3/4	22 7/8



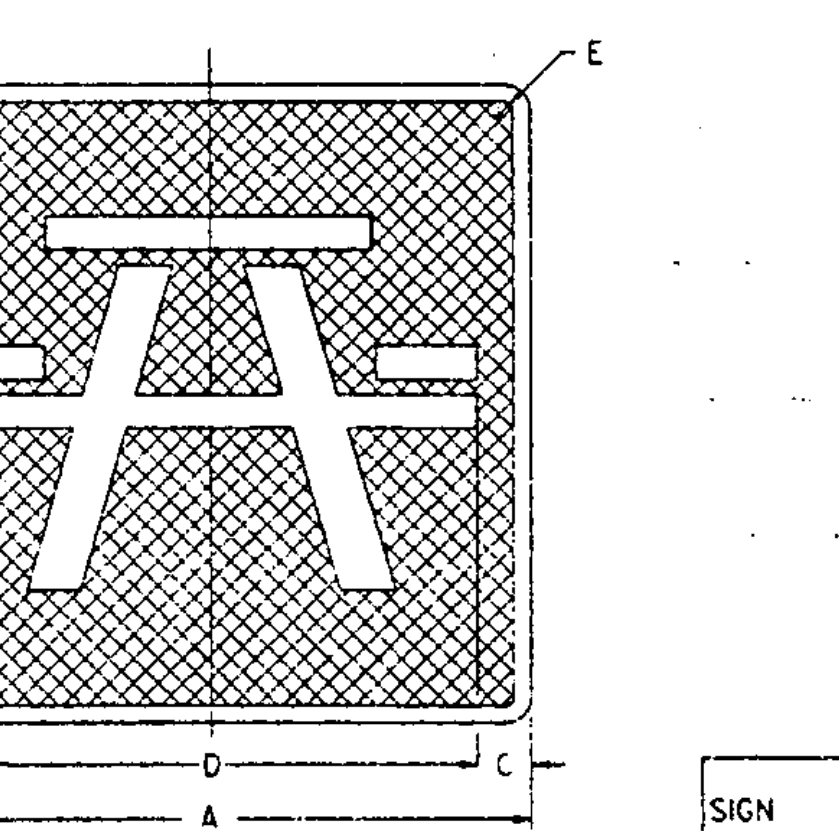
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MIN	18	1/2	1 1/2	15	6	1 1/2
STD	24	1/2	2	20	8	1 1/2
SPECIAL	30	3/4	2 1/2	25	10	1 7/8



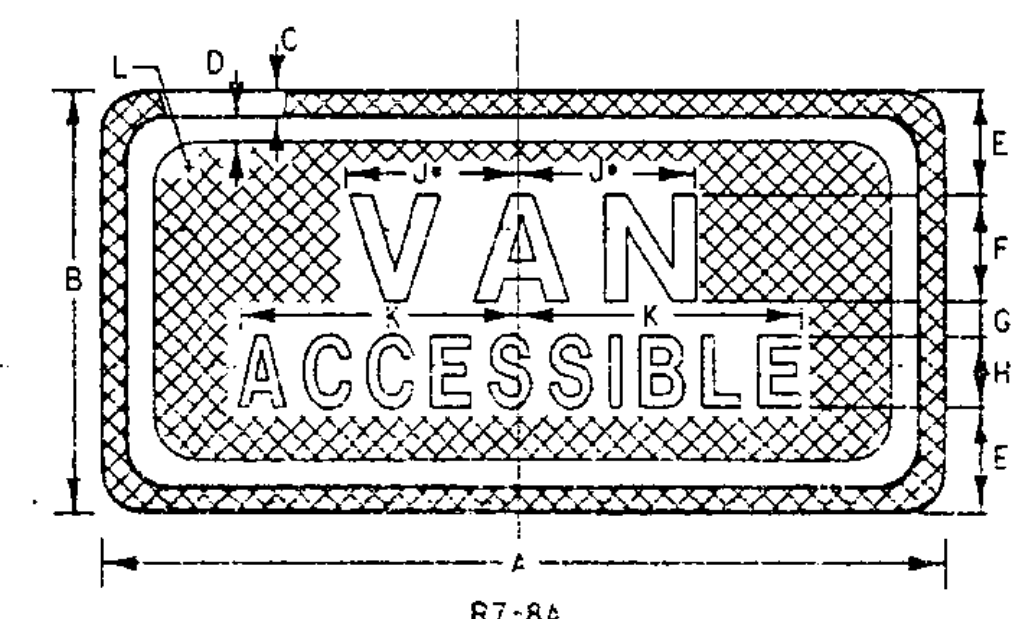
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MIN	18	1/2	1 1/2	15	1 1/2
STD	24	1/2	2	20	1 1/2
SPECIAL	30	3/4	2 1/2	25	1 7/8



SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN	18	1/2	1 1/2	15	1 1/2
STD	24	1/2	2	20	1 1/2
SPECIAL	30	3/4	2 1/2	25	1 7/8

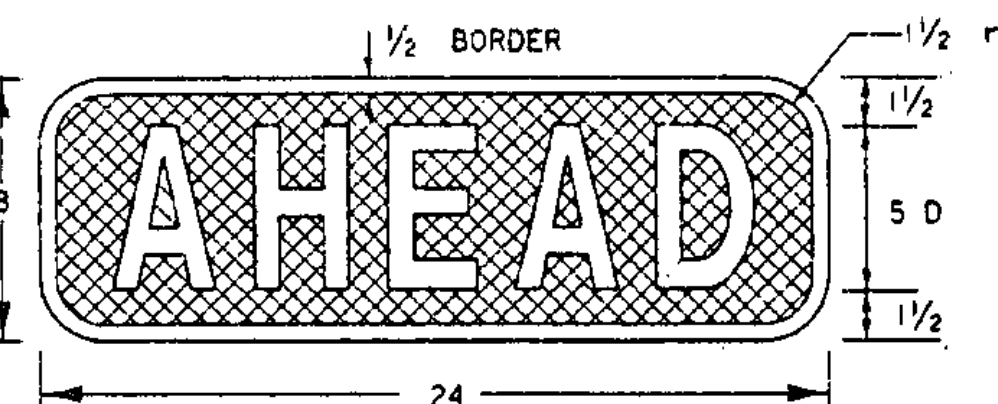
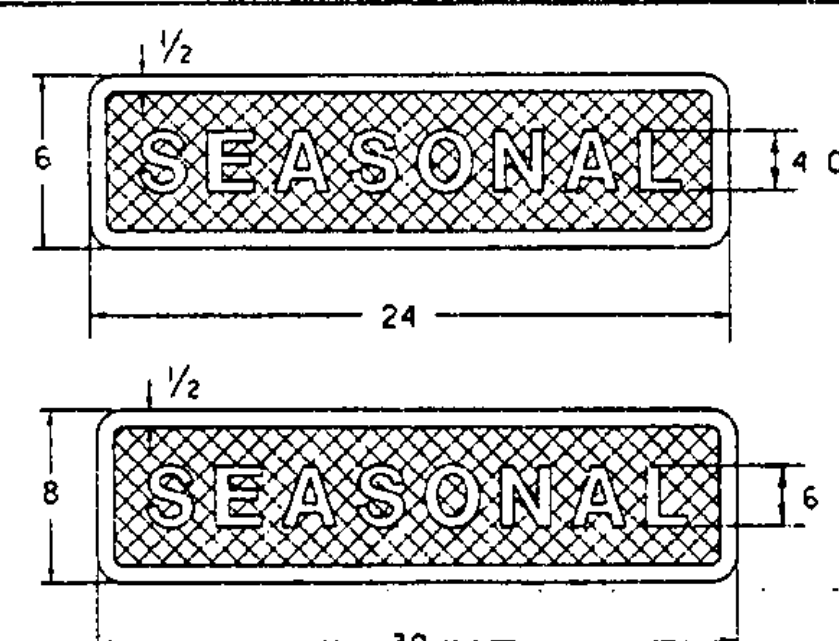
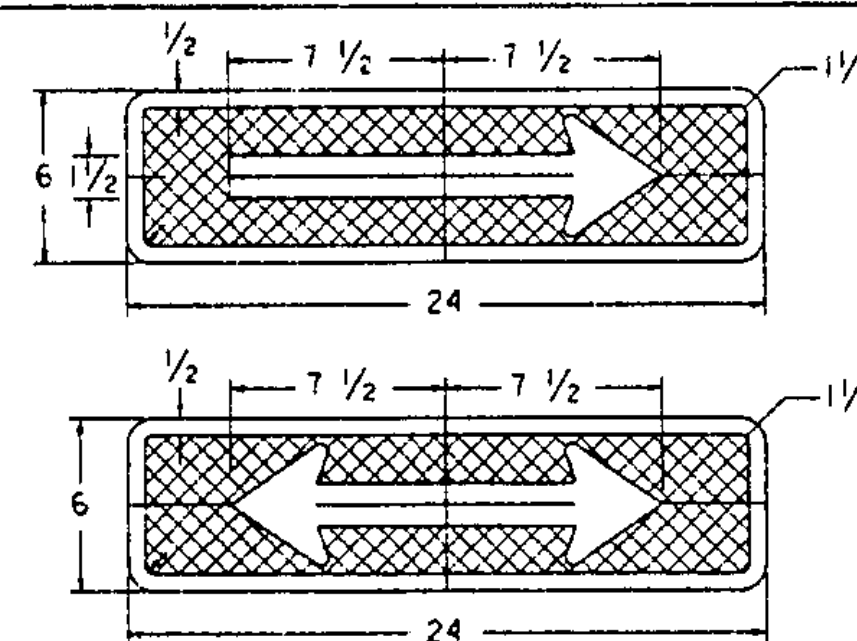


SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN	18	1/2	1 1/2	15	1 1/2
STD	24	1/2	2	20	1 1/2
SPECIAL	30	3/4	2 1/2	25	1 7/8



SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD	12	6	3/8	3/8	1/2	1 1/2	1/2	10	2 1/4	4	1 1/2
SPECIAL	18	9	3/8	3/8	2 1/4	20	1	1 1/2	2 3/4	7	1 1/2

NOTE:
ALL DIMENSIONS SHOWN IN INCHES



NOTES

MATERIALS

THE SIGN BASE MATERIAL USED FOR THE GUIDE SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED.

- A - FLAT SHEET ALUMINUM - 0.060
- B - HIGH DENSITY OVERLAP PLYWOOD - 1/2"
- C - GALVANIZED FLAT SHEET STEEL - 16 GA.

COLORS

THE SIGNS SHALL BE WHITE OR SILVER REFLECTORIZED SHEETING WITH A REVERSE SCREENED BLUE BACKGROUND. THE BLUE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS AND APPROVED BY THE U.S. DEPT. OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

LETTERING

LETTERS SHALL CONFORM WITH THE REQUIREMENTS FOUND IN THE PUBLICATION "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" PRINTED BY THE FEDERAL HIGHWAY ADMINISTRATION.

DESIGN

THE DESIGN OF THESE SIGNS SHALL CONFORM WITH THE DETAILS SET FORTH IN THE MANUAL "STANDARD HIGHWAY SIGNS" AS SPECIFIED IN "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," LETTER-NUMERAL DESIGNATION UNDER EACH SYMBOL IS IDENTIFICATION IN MANUAL.

THESE SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR "TRAFFIC SIGNS."

OTHER STDS. REQUIRED:

REVISIONS AND CORRECTIONS

SEPT. 10, 1987 - DATE OF ORIGINAL ISSUE
DEC. 18, 1989 - DELETED SERVICE MOUNTING DETAIL
REVISED "STATE POLICE" SIGN
ADDED "AHEAD" SIGN
AUG. 18, 1995 - SIGN DETAIL REVISIONS PER STANDARD HIGHWAY SIGNS MANUAL

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

APPROVED

Stephen J. MacArthur
DIRECTOR OF ENGINEERING

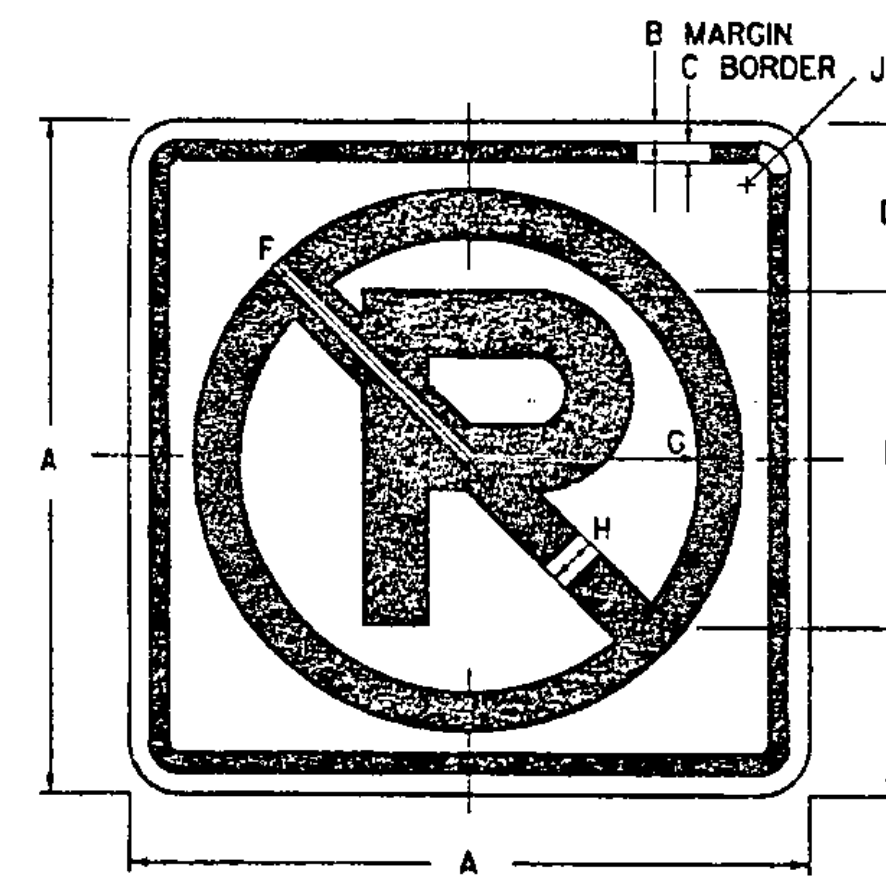
David A. Ross
TRAFFIC AND SAFETY ENGINEER

GENERAL MOTORIST SERVICES SIGN DETAILS

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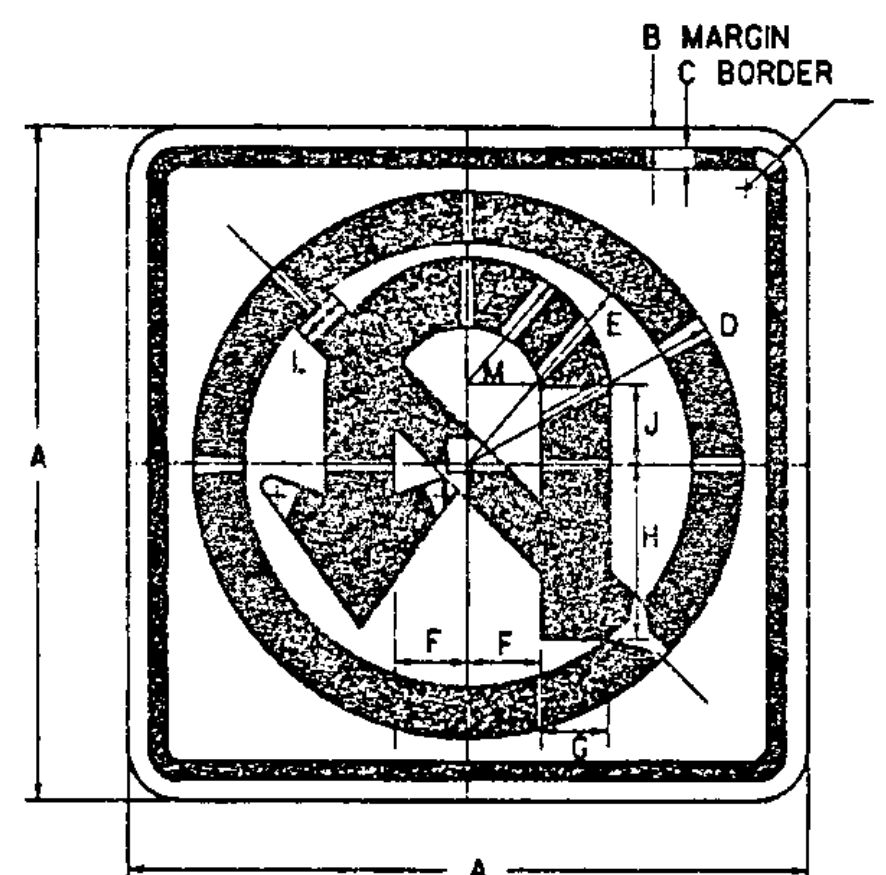
STANDARD
E-132



COLOURS
CIRCLE AND DIAGONAL - RED (REFL - RURAL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL - RURAL)

R2-3A

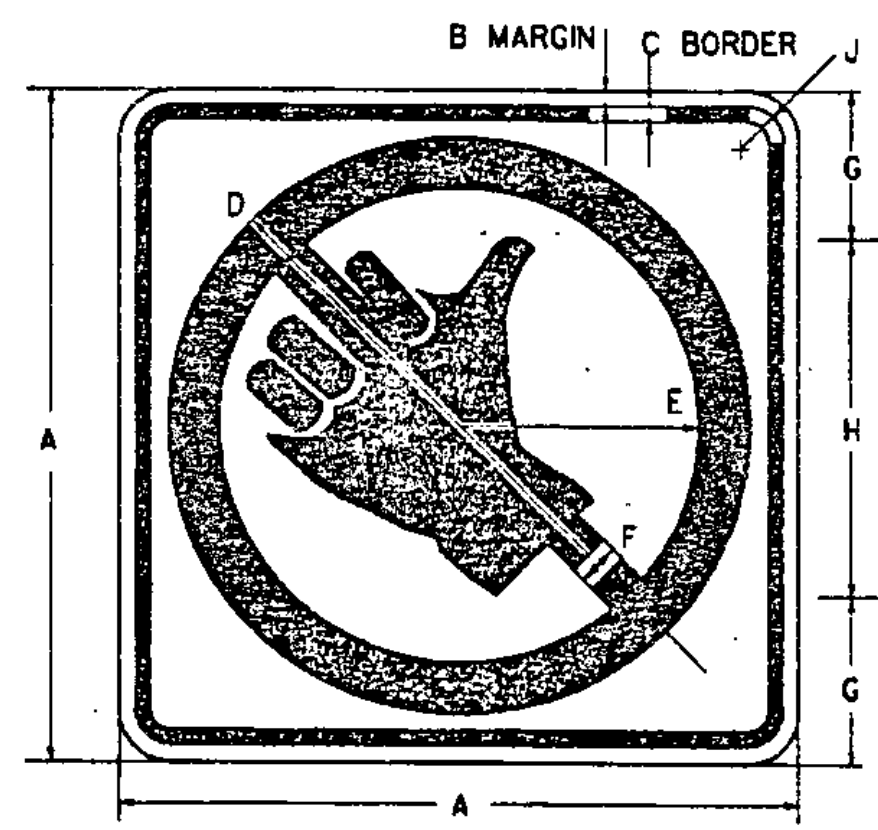
SIGN	A	B	C	D	E	F	G	H	J
URBAN MIN. AND STD.	12	3/8	3/8	3	6E(M)	4 7/8	3 7/8	1	1 1/2
RURAL MIN. AND STD.	24	3/8	3/8	6	12E(M)	10 1/2	8 1/2	2	1 1/2
EXPWY.	36	3/8	3/8	9	18E(M)	15 3/4	12 3/4	3	2 1/4
FWY.	48	3/4	1 1/4	12	24E(M)	21	17	4	3



COLOURS
CIRCLE AND DIAGONAL - RED (REFL)
ARROW AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

R3-4

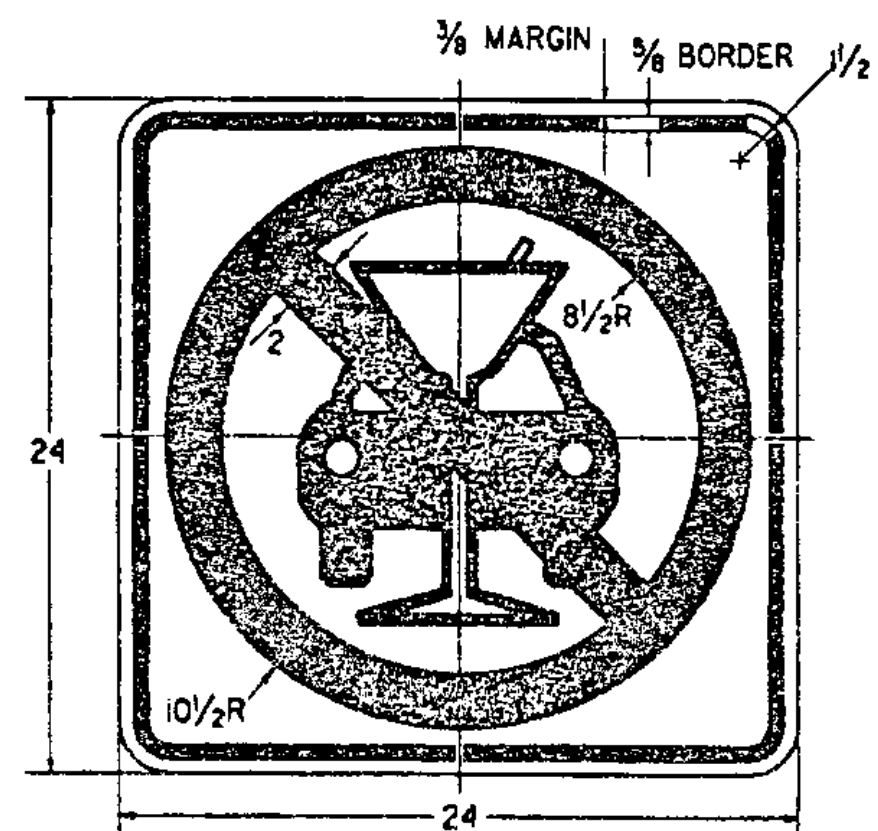
SIGN	A	B	C	D	E	F	G	H	J	K	L	M
MIN. AND STD.	24	3/8	3/8	10 1/2	8 1/2	2 1/2	2 1/2	6	2 1/4	1 1/2	2	5
SPECIAL	30	1/2	3/4	13 3/8	10 3/8	3 3/8	3 3/8	7 1/2	2 3/4	1 3/4	2 3/4	6 1/4
EXPWY.	36	3/8	3/8	15 3/4	12 3/4	3 3/4	3 3/4	9	3 3/8	2 1/4	3	7 1/2
SPECIAL	48	3/4	1 1/4	21	17	5	5	12	4 1/2	3	4	10



COLOURS
CIRCLE AND DIAGONAL - RED (REFL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

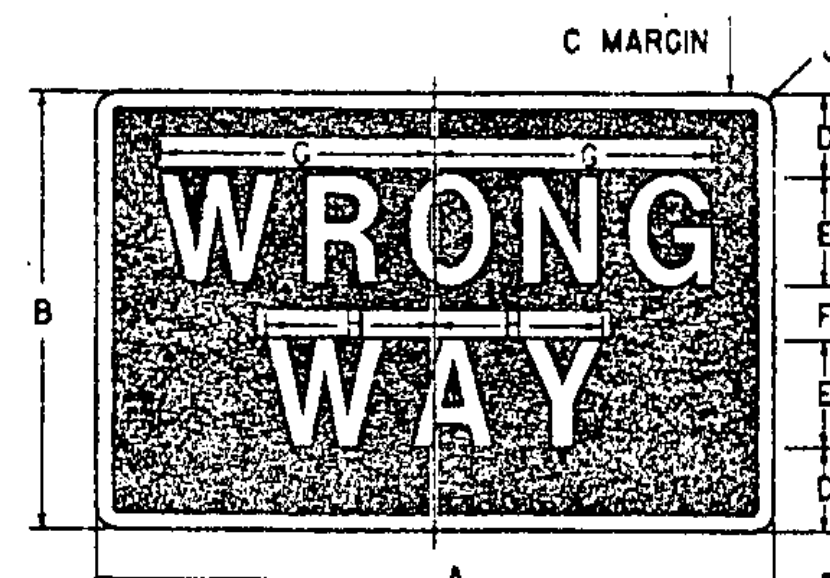
R9-4A

SIGN	A	B	C	D	E	F	G	H	J
MIN.	18	3/8	3/8	7 1/8	6 3/8	1 1/2	3 3/4	10 1/2	1 1/2
STD.	24	3/8	3/8	10 1/2	8 1/2	2	5	14	1 1/2



COLOURS
CIRCLE AND DIAGONAL - RED (REFL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

VR-634

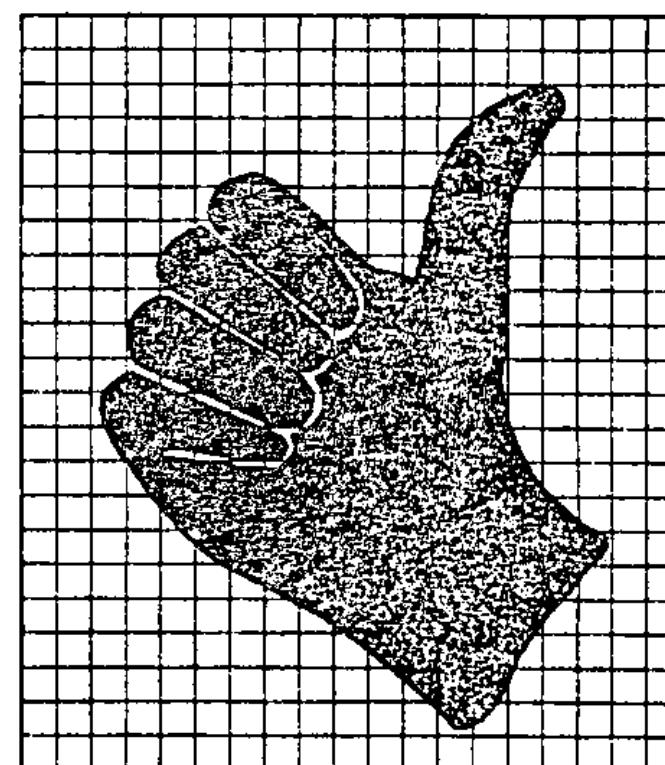


R5-1A

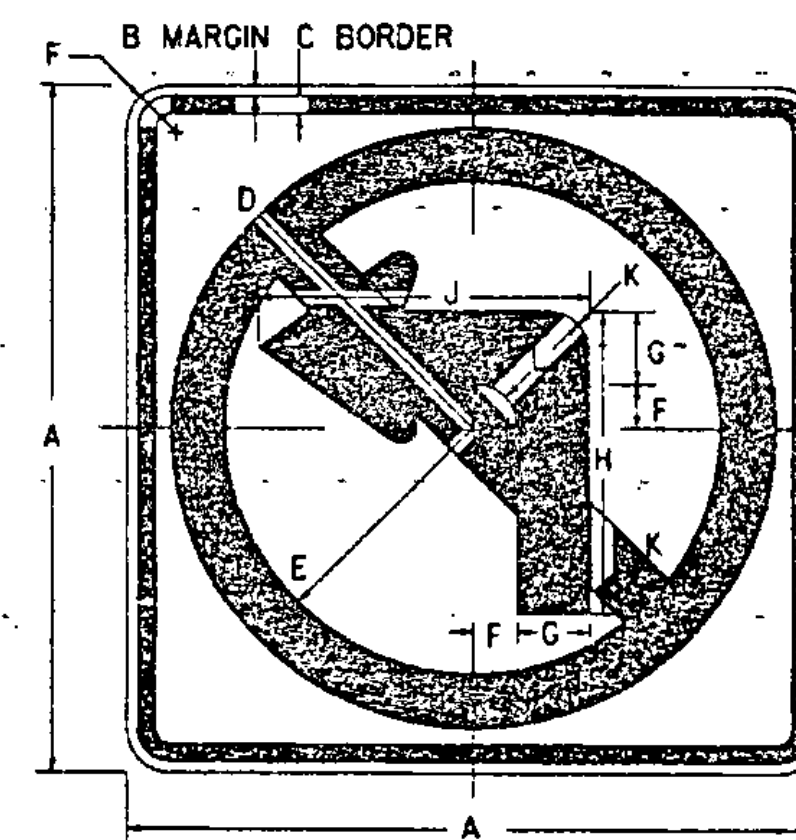
"WRONG WAY"

COLOURS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)
ENCAPSULATED LENS

SIGN	A	B	C	D	E	F	G	H	J
MIN.	30	18	3/8	3	50	2	11 1/8	6 1/4	1 1/2
STD.	36	24	3/4	4 1/2	60	3	13 3/8	8 1/8	1 1/2
SPECIAL	42	30	3/4	5	80	4	17 1/4	10 3/4	1 1/2



R3-2

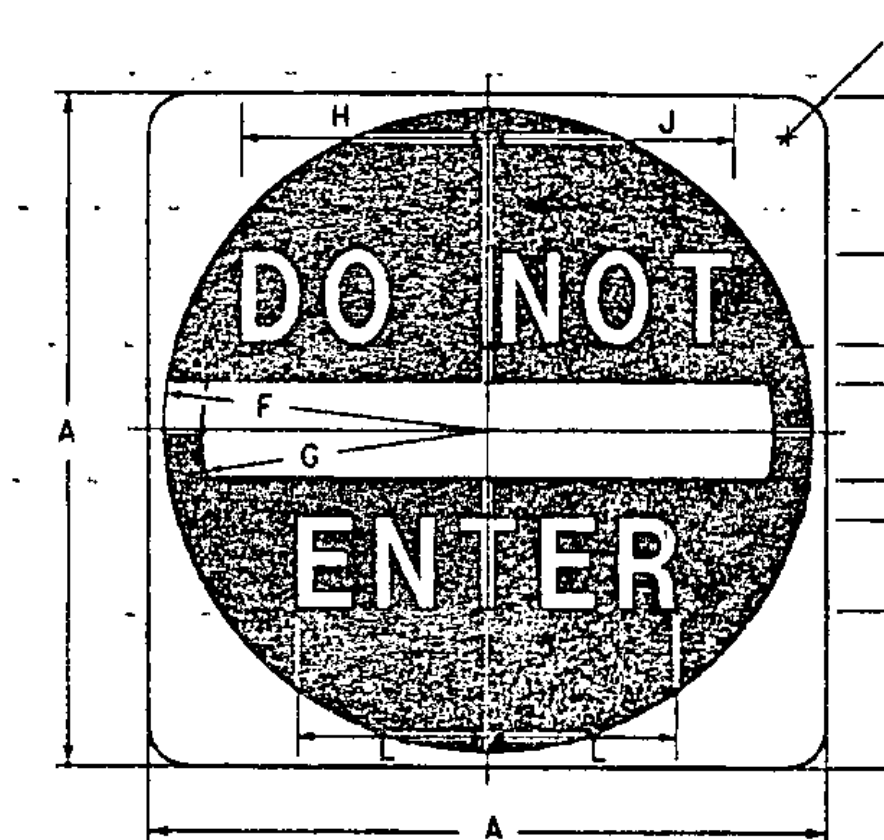


R3-1

NOTE:
USE SAME ARROW DETAIL FOR R3-1 AND R3-2

COLOURS
CIRCLE AND DIAGONAL - RED (REFL)
ARROW AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

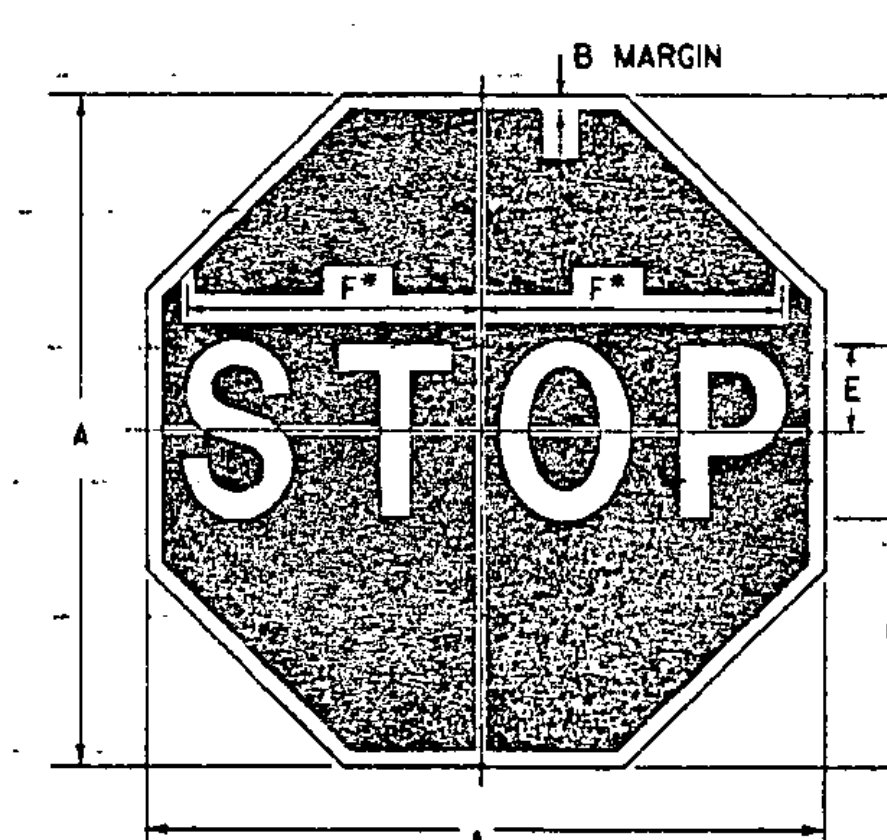
SIGN	A	B	C	D	E	F	G	H	J	K	L
MIN. AND STD.	24	3/8	3/8	10 1/2	8 1/2	1 1/2	2 1/2	10 1/2	11 1/2	2	1 1/2
SPECIAL	30	1/2	3/4	13 3/8	10 3/8	1 1/2	3 3/8	13 3/8	14 1/2	2 1/2	3/4
EXPWY.	36	3/8	3/8	15 3/4	12 3/4	2 1/4	3 3/4	15 3/4	17 1/4	3	3/4
SPECIAL	48	3/4	1 1/4	21	17	3	5	21	23	4	1



R5-1

COLOURS
SYMBOL - RED (REFL)
LEGEND AND BACKGROUND - WHITE (REFL)
ENCAPSULATED LENS

SIGN	A	B	C	D	E	F	G	H	J	K	L
MIN. AND STD.	30	6 1/2	4D	2	5	14 1/2	12 1/2	9 3/4	10	1 1/8	7 1/8
EXPWY.	36	7 1/2	5D	2 1/2	6	17 1/2	15	12 1/2	12 3/8	2 1/4	9 1/4
SPECIAL	48	11	6D	3	8	23 1/2	20	14 1/2	15	3	11 3/4



R1-1

COLOURS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)
ENCAPSULATED LENS

SIGN	A	B	C	D	E	F
BIKE	18	3/8	6	6C	3	7 3/4
MIN.	24	3/8	8	8C	4	10
STD.	30	3/4	10	10C	5	12 1/2
EXPWY.	36	3/8	12	12C	6	15
SPECIAL	48	1 1/4	16	16C	8	20

GENERAL:

- ALL DIMENSIONS IN INCHES.
- SEE STANDARD E-144 FOR ARROWHEAD DETAILS.

COLOURS:

THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT ON REFLECTORIZED THE COLOURS SHALL CONFORM WITH THE COLOURS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

MATERIALS:

THE SIGN BASE MATERIALS USED FOR REGULATORY SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING OF THE MINIMUM THICKNESS NOTED.

12' x 12'	24' x 24'	36' x 24'
18' x 18'	30' x 18'	36' x 36'
	30' x 30'	42' x 30'
		48' x 48'

FLAT SHEET ALUMINUM
HIGH DENSITY OVERLAP PLYWOOD
GALVANIZED FLAT SHEET STEEL

0.060"
1/2"
18 GAGE

0.080"
1/2"
16 GAGE

0.100"
5/8"
14 GAGE

THE REFLECTIVE MATERIAL SHALL BE AASHTO TYPE II OR III WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. THE BLACK PORTIONS OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. HAND PAINTING MUST BE COMPARABLE IN QUALITY TO THE RESULTS OBTAINED BY SILK SCREENING. ENCAPSULATED LENS REFLECTIVE SHEETING SHALL BE USED FOR THE SIGN BACKGROUND WHERE NOTED.

SPECIFICATIONS:

REGULATORY SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR TRAFFIC SIGNS.

TEXT DESIGN:

LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM WITH THE "STANDARD ALPHABET FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND DESIGNS PRESCRIBED IN THE STANDARD HIGHWAY SIGNS AS SPECIFIED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

REVISIONS AND CORRECTIONS

OCT. 30, 1987 - DATE OF ORIGINAL ISSUE
SEPT. 20, 1995 - ADDED AND DELETED SIGN DETAILS,
ADDED SIGN ID NUMBERS, MINOR NOTE
REVISIONS.

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION,
FHWA FINAL APPROVAL PENDING.

APPROVED

Stephen R. McArthur
DIRECTOR OF ENGINEERING

David J. Parn
TRAFFIC AND SAFETY ENGINEER

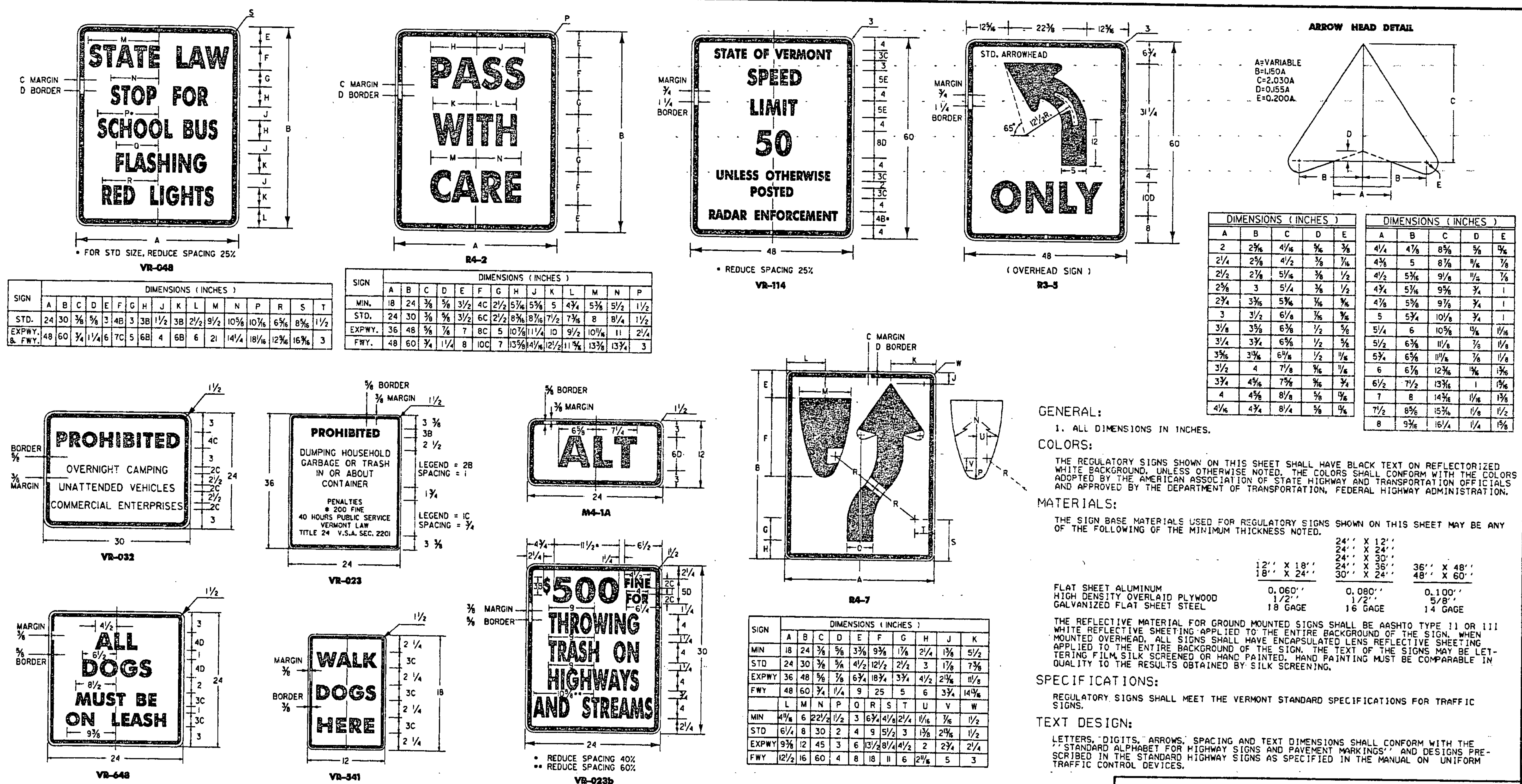
REGULATORY SIGN DETAILS

/traf/std/stdel43.dgn :stdel43.i

OTHER STDS.: E-144
REQUIRED



STANDARD
E-143



REVISIONS AND CORRECTIONS

JAN. 23, 1989 - DATE OF ORIGINAL ISSUE
SEPT. 20, 1995 - ADDED AND DELETED SIGN DETAILS,
ADDED SIGN ID NUMBERS, MINOR NOTE
REVISIONS

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION,
FHWA FINAL APPROVAL PENDING.

APPROVED

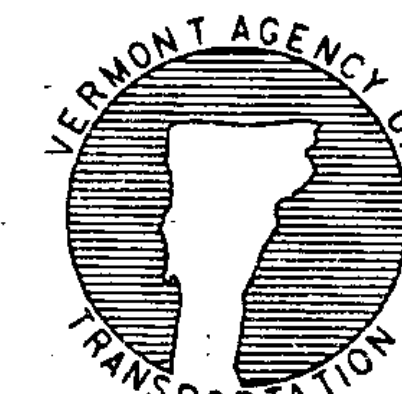
Signature
DIRECTOR OF ENGINEERING

Signature
TRAFFIC AND SAFETY ENGINEER

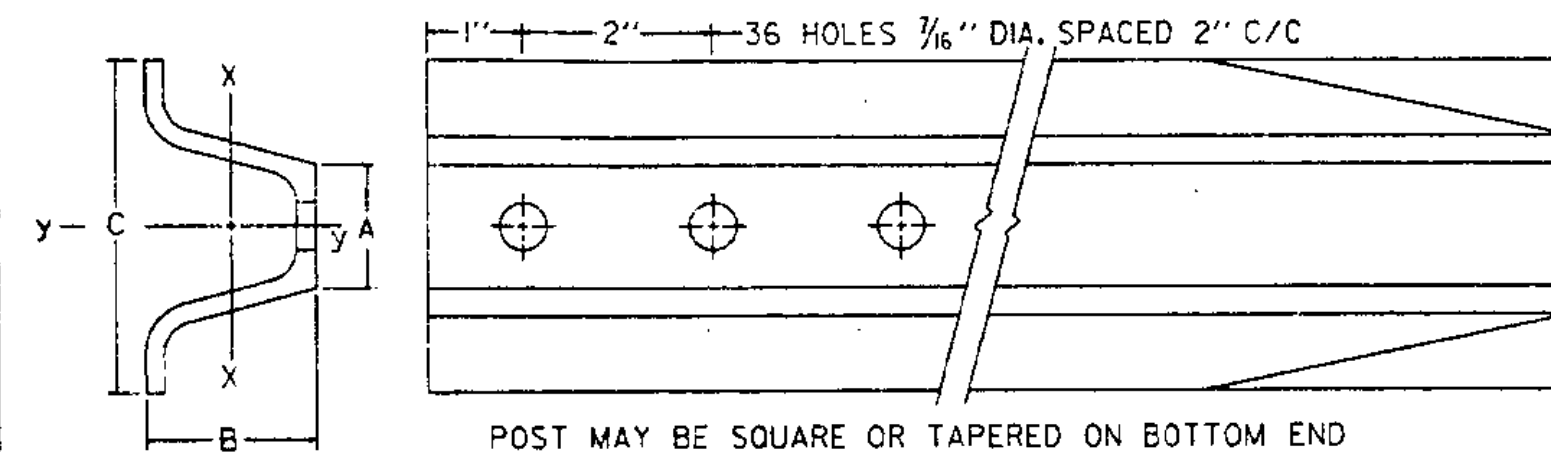
REGULATORY SIGN DETAILS

/traf/std/stdel44.dgn: stdel44.1

OTHER STDS. 1 NONE
REQUIRED

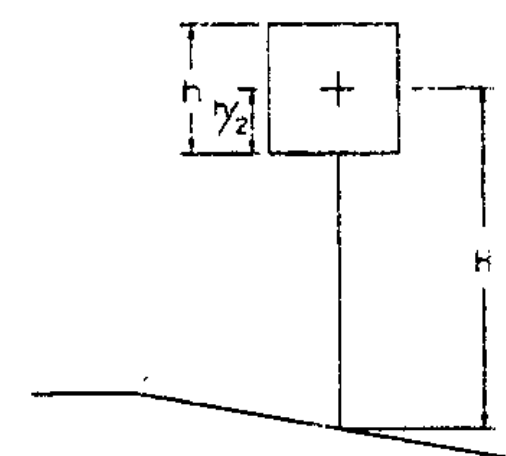


STANDARD
E-144



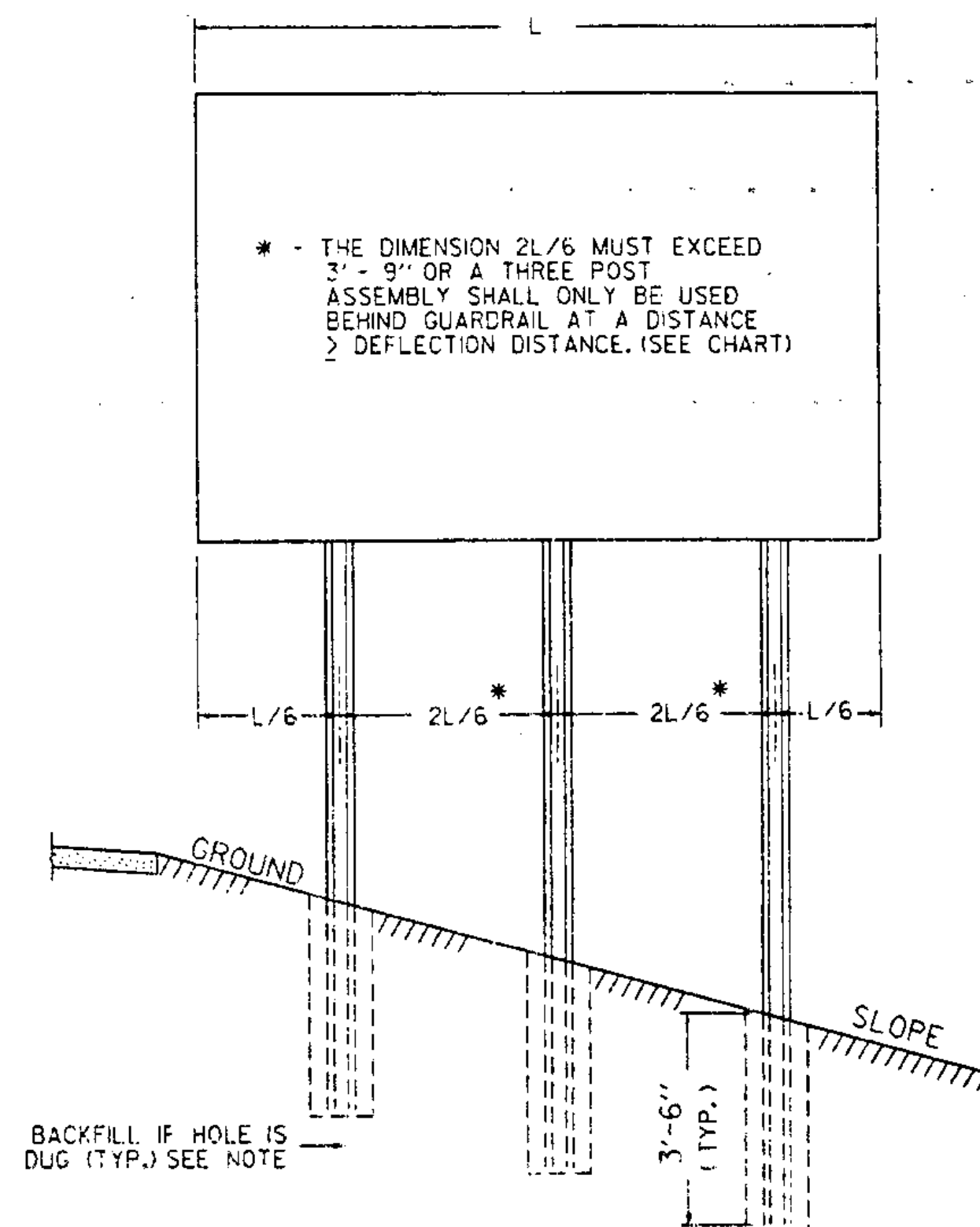
POST SIZE (LB/FT.)	DIMENSIONS			SECTION MODULUS, X-X
	A	B	C	
2	1 1/2"	1 3/4"	3 1/16"	0.225 IN. ³
3	1 5/8"	1 7/8"	3 1/2"	0.403 IN. ³

SIMILAR DIMENSIONS ARE ACCEPTABLE, HOWEVER
SECTION MODULUS VALUES SHALL NOT BE EXCEEDED.



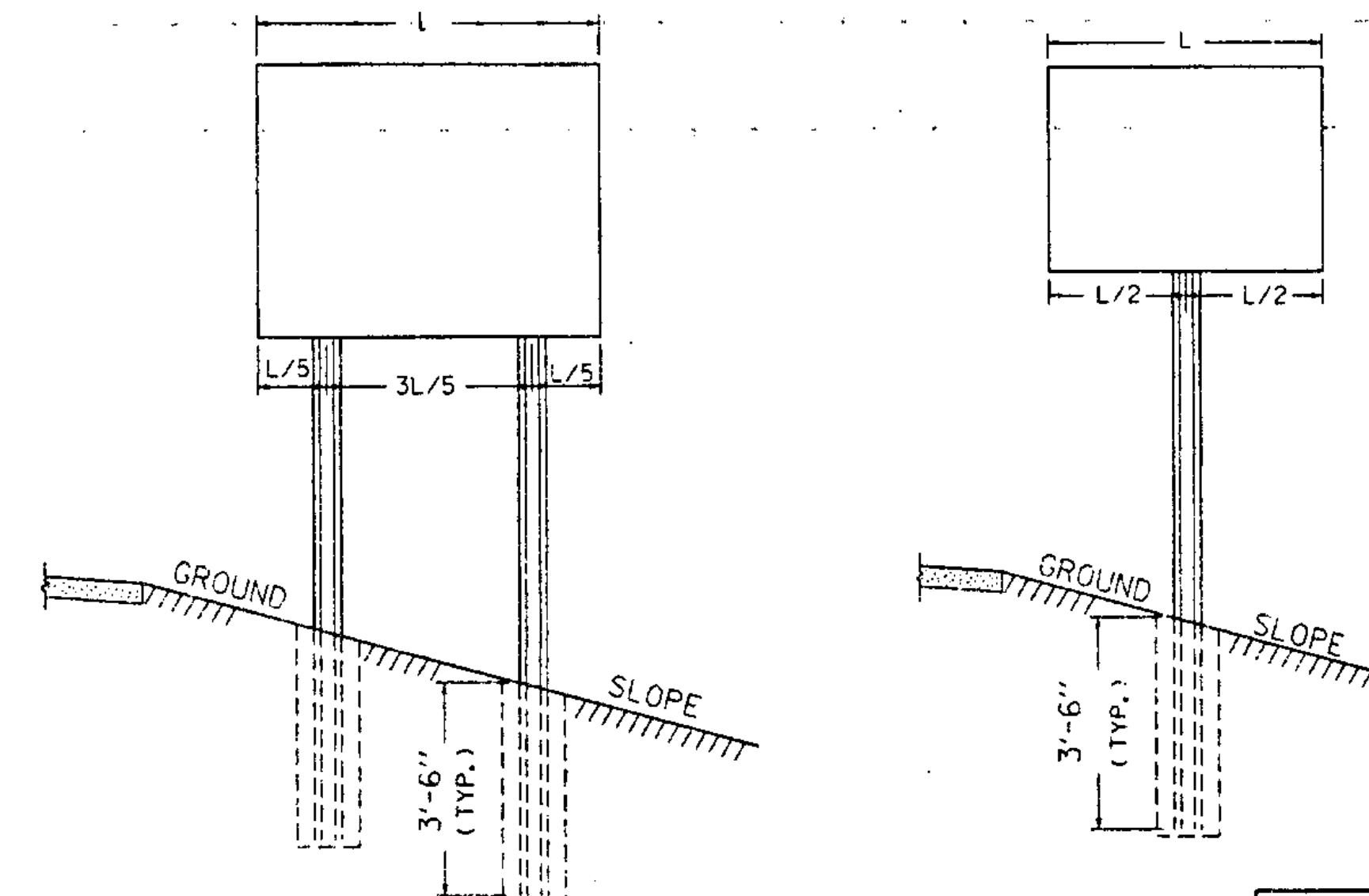
POST SELECTION CHART		
SIGN AREA (FT ²) x H (FT) ≤ SV (SELECTION VALUE)		
POST SIZE	SV	DESIGN CRITERIA
2 LB/FT. (ONE POST INSTALLATION)	32	WIND SPEED = 60 MPH (10-YEAR MEAN RECURRENCE INTERVAL)
2 LB/FT. (TWO POST INSTALLATION)	62	WIND PRESSURE = 13 PSF
3 LB/FT.	107	STEEL MIN YIELD F _y = 50,000 PSI ALLOWABLE STRESS = (1.4) 0.60 F _y

SINGULAR 2 LB./FT. POSTS SHALL ONLY TO BE USED IN URBAN AREAS.

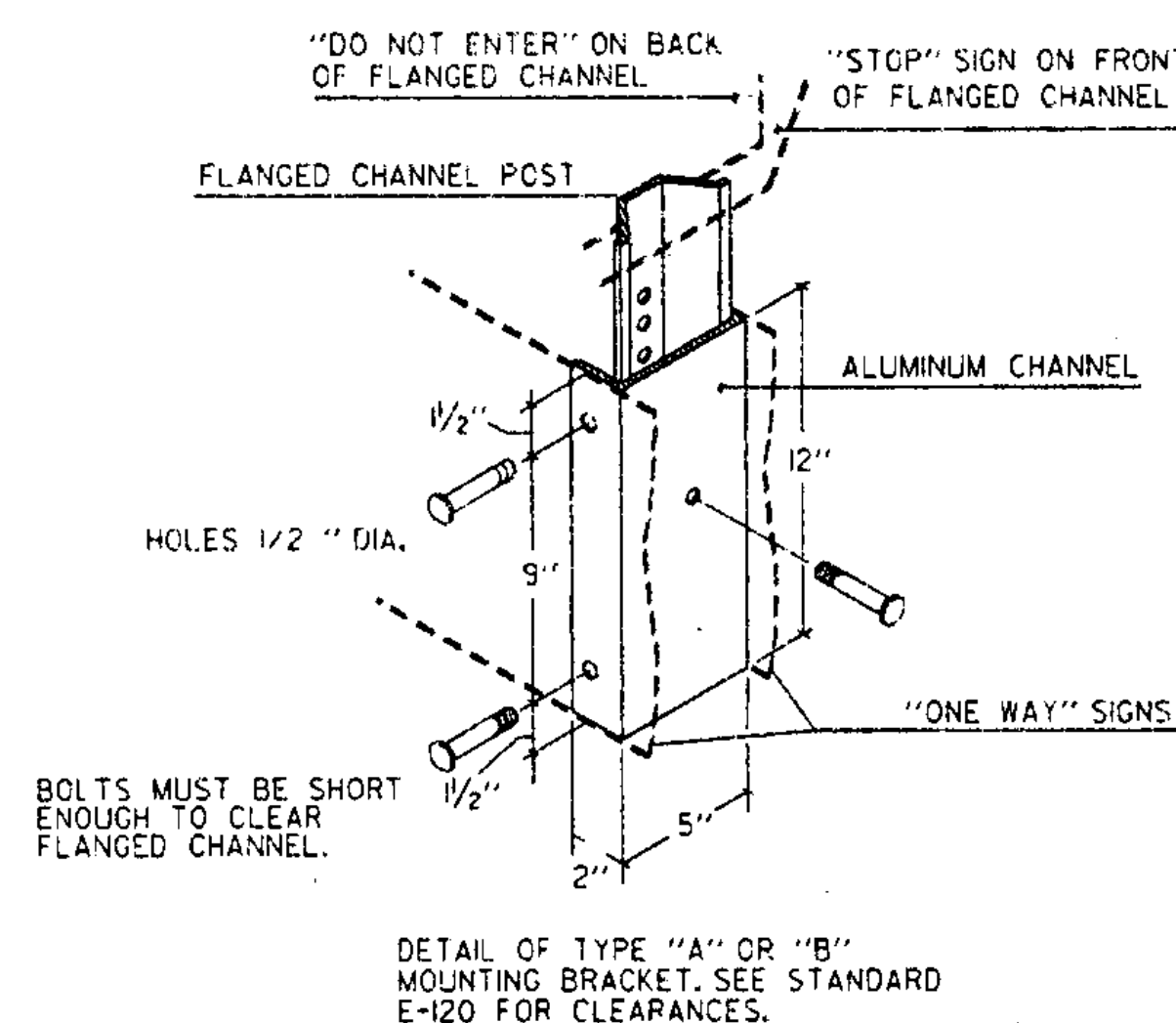


MULTI-POST INSTALLATIONS

WHEN SIGN POSTS ARE INSTALLED WITH A POST
SPACING OF LESS THAN 8 FEET, POST SIZES MUST
BE SELECTED TO INSURE THAT WHEN ACTING TOGETHER
THE POSTS DO NOT CREATE A HAZARD. REFER TO V.A.O.T.
SIGN POST DESIGN GUIDELINE FOR ADDITIONAL DETAILS.



POST SPACING DETAILS



GUARDRAIL DEFLECTION CHART (PER AASHTO - ROADSIDE DESIGN GUIDE - 1988)		
TYPE	GR POST SPACING	DEFLECTION
THREE CABLE W/STEEL POSTS	16' - 0"	12'
W/WOODEN POSTS	12' - 6"	12'
W-BEAM W/WEAK POST	12' - 6"	7'
W/STRONG POST	6' - 3"	3'
BOX BEAM	6' - 0"	5'
THREE BEAM W/WEAK POST	12' - 6"	4'
W/STRONG POST	6' - 3"	2'

THIS CHART LISTS THE THEORETICAL DEFLECTION DISTANCE
UPON IMPACT OF VARIOUS GUARDRAIL WITH DIFFERENT TYPES
AND SPACING OF POSTS.

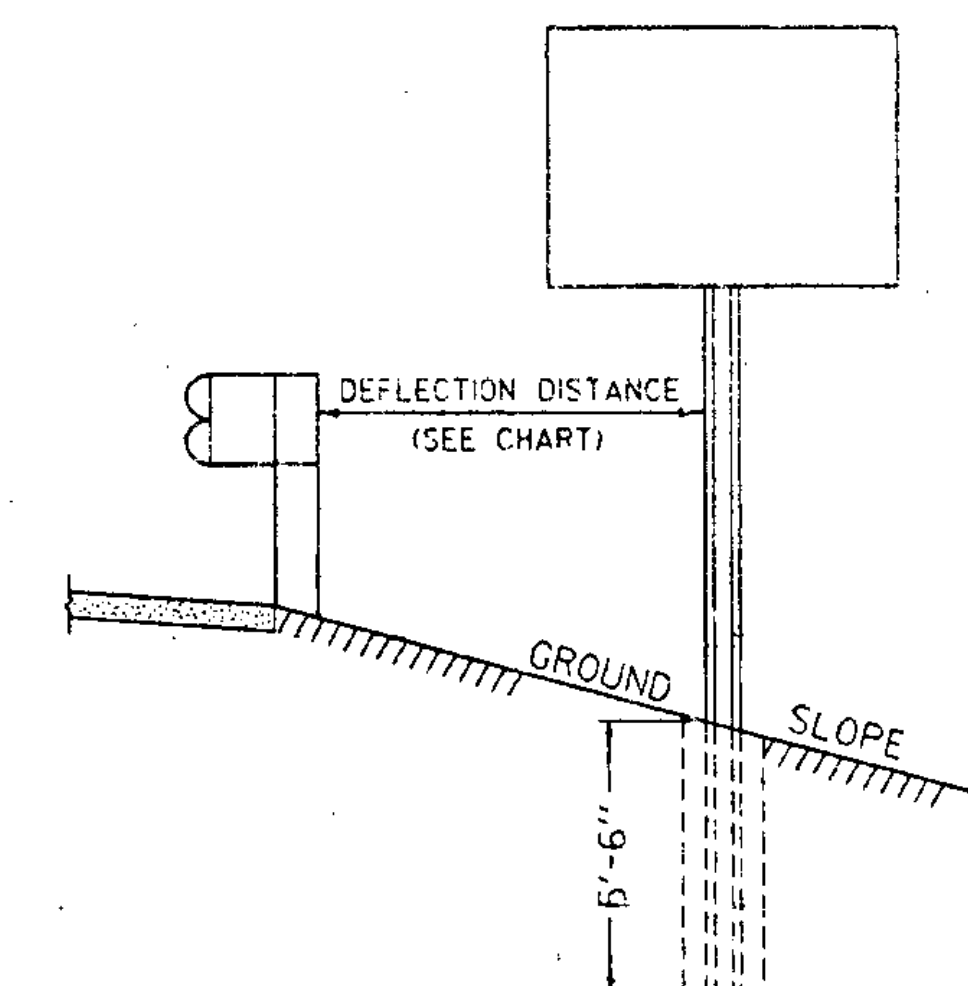
GENERAL NOTES

CONSTRUCTION METHODS - POSTS MAY BE
DRIVEN OR SET IN A DUG HOLE AND BACKFILLED.
IF DRIVEN, A DRIVING CAP SHALL BE USED.
THE DUG HOLE INSTALLATION SHALL BE USED IN
AREAS OF POOR SOIL CONDITIONS OR AS
DIRECTED BY THE RESIDENT ENGINEER. BACKFILL
SHALL BE COMPACTED AS DIRECTED BY THE
RESIDENT ENGINEER.

IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED,
POSTS WILL BE SET IN A HOLE WITH 2'
CLEARANCE AND GROUTED WITH TYPE 4 MORTAR
24" BELOW THE SURFACE OF THE SOLID ROCK,
UNLESS THE POSTS PENETRATE THE GROUND A
MINIMUM OF 3'-6". THE PORTION OF THE POST
IN CONTACT WITH THE MORTAR SHALL BE COATED
WITH AN APPROVED COATING.

SIGN CLEARANCES - HORIZONTAL AND VERTICAL
SIGN CLEARANCES SHALL BE SHOWN ON THE PLANS
OR THE APPROPRIATE STD. SHEETS.

SINGLE POST INSTALLATIONS SHALL BE LIMITED
TO A SIGN AREA OF 12-1/2 SQ. FT. OR LESS.



WHEN USING FLANGED CHANNEL POSTS ON STEEP SLOPES
(1 ON 2 OR STEEPER FILL SLOPES BEHIND GUARDRAIL),
ADD 2' EMBEDDMENT TO THE POST LENGTH TO GIVE THE
ASSEMBLY MORE STABILITY. HOWEVER IF SIGN POST IS
LOCATED INSIDE THE DEFLECTION DISTANCE, THE SIGN POST
SHALL BE SET AT A DEPTH OF 3' - 6".

OTHER STDS.
REQUIRED:

REVISIONS AND CORRECTIONS

SEP. 10, 1987 - DATE OF ORIGINAL ISSUE
MAR. 01, 1988 - FHWA REVIEW COMMENTS
OCT. 21, 1992 - ADDED DETAILS, REVISED NOTES &
REVISED TITLE BLOCK
AUG. 18, 1995 - DELETION OF 2.5 "/FT. POST AND TWO-
RAIL ALUMINUM, ADDED ADDITIONAL NOTE.

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

APPROVED

Robert H. McArthur
DIRECTOR OF ENGINEERING

David C. Ross
TRAFFIC AND SAFETY ENGINEER

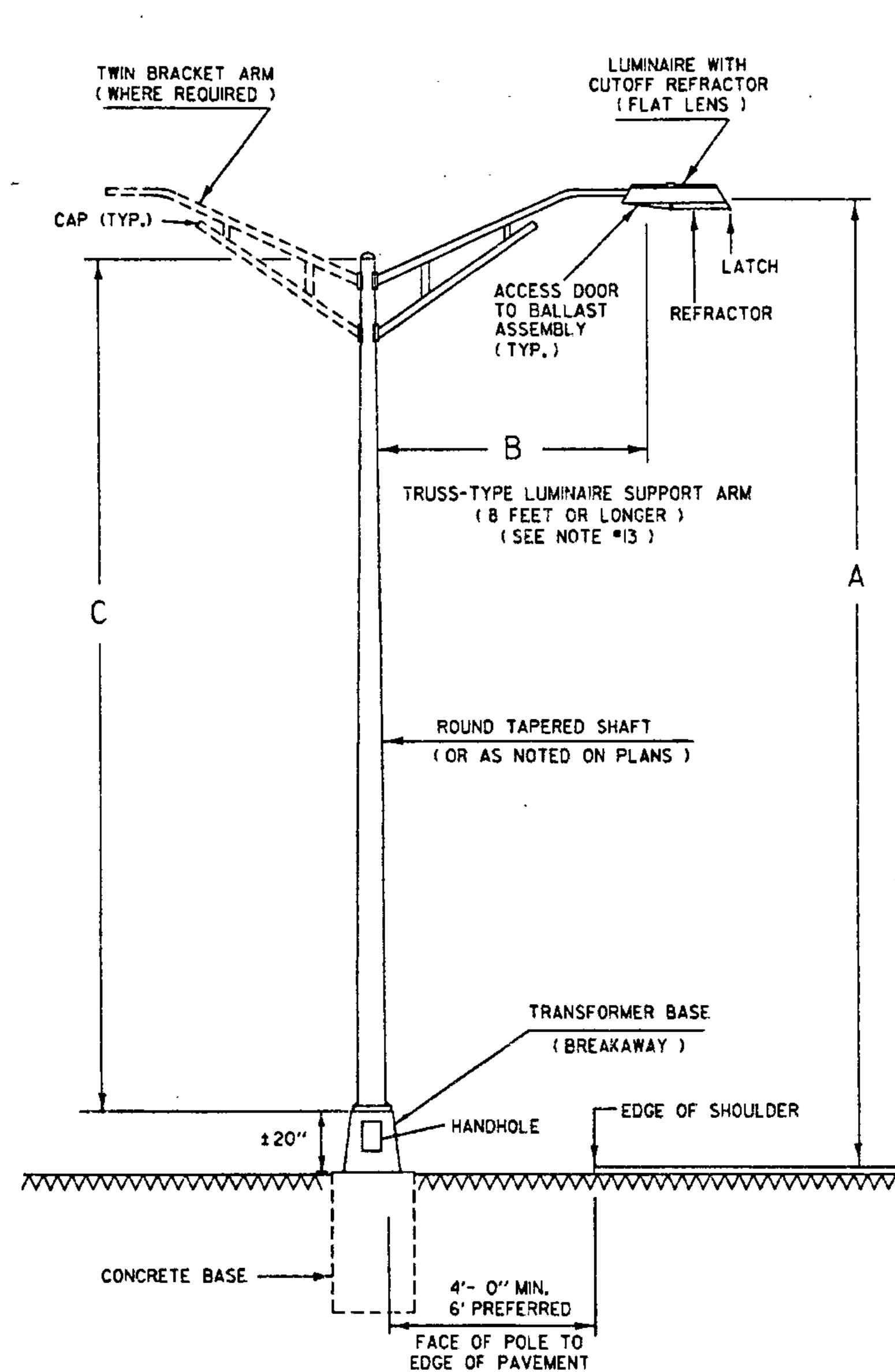
FLANGED CHANNEL STEEL SIGN POST

/traf/std/stdel60.dgn : stdel60.1



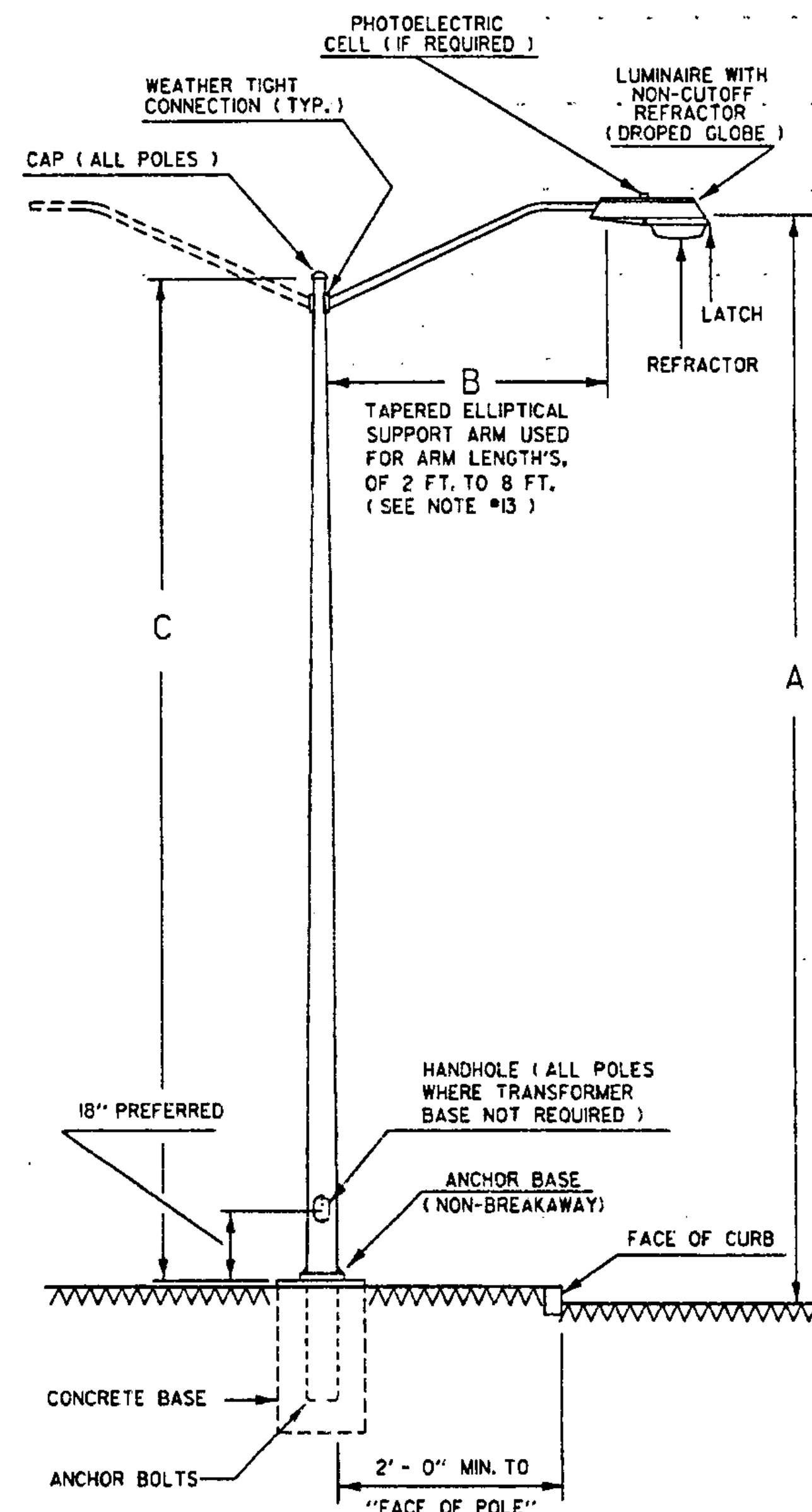
STANDARD
E-160

ROUND - TAPERED, ALUMINUM OR STEEL POLES



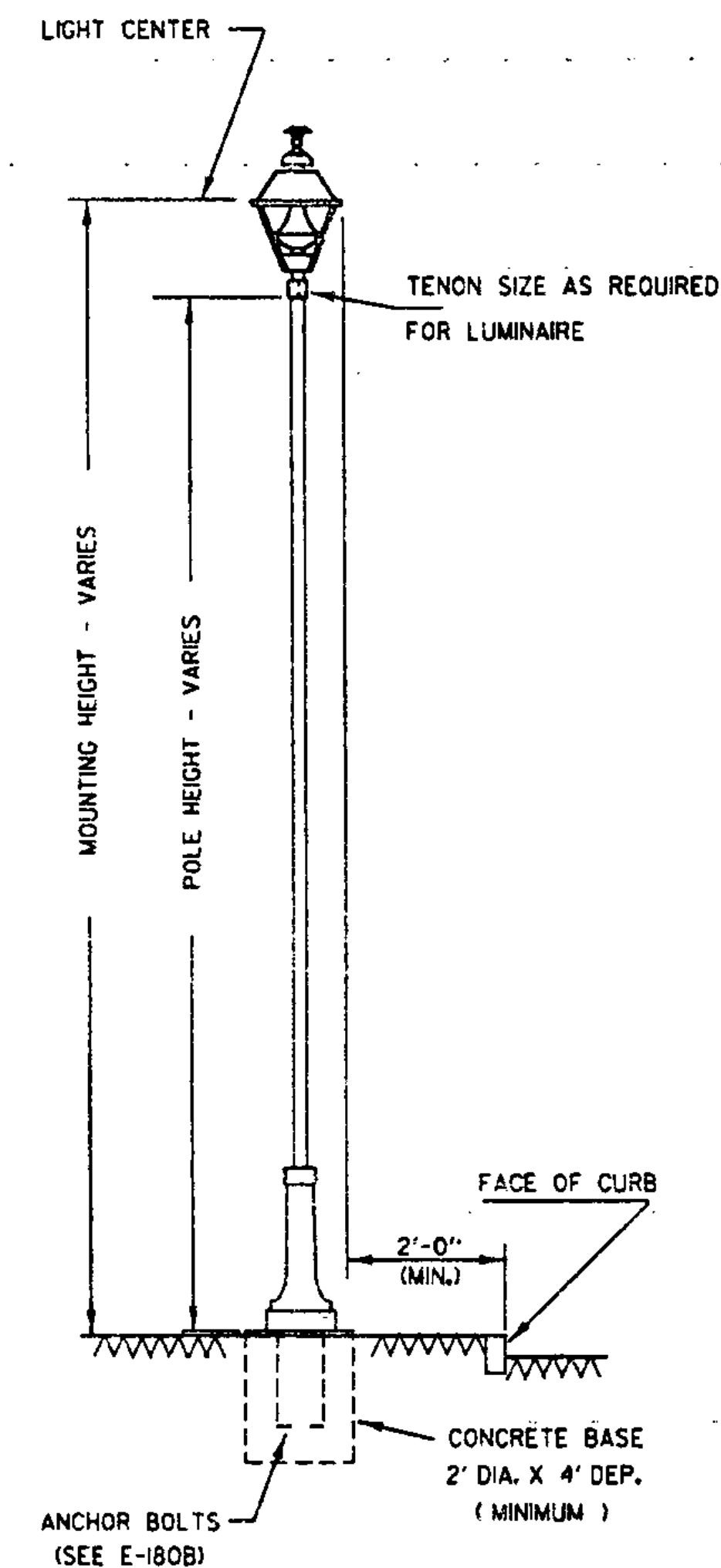
DIMENSIONS:
A = MOUNTING HEIGHT
B = LUMINAIRE SUPPORT ARM LENGTH
C = POLE HEIGHT

FOR OTHER BREAKAWAY SUPPORTS SEE STANDARD SHEET E-180B



NOTES:
ALL SUPPORT ARMS TO BE EQUIPPED WITH 2" SLIPFITTER FOR MOUNTING LUMINAIRE UNLESS OTHERWISE INDICATED.

NON-BREAKAWAY SUPPORTS ARE APPROPRIATE IN SOME URBAN AREAS AS OUTLINED IN THE AASHTO "ROADSIDE DESIGN GUIDE".



ORNAMENTAL LIGHTING

POLES, ANCHOR BASES, ARMS, AND LUMINAIRES. GENERAL NOTES

1. NO POLE SHALL BE INSTALLED WITHOUT A LUMINAIRE ALREADY ATTACHED.
2. ANCHOR BASE AND ANCHOR BOLT DIMENSIONS ARE SHOWN ON STANDARD SHEET E-180B.
3. ALL LIGHT POLES WHICH ARE PROVIDED WITH A BREAKAWAY FEATURE SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO 1985 STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, SECTION 7 AND SUBSEQUENT REVISIONS.
4. A 12 FOOT OR LONGER ARM REQUIRES A 6 INCH OUTSIDE DIAMETER POLE TOP.
5. LUMINAIRES SHALL MEET SPECIFICATIONS AS SHOWN ON THE PLANS.
6. ALL ELECTRICAL MATERIAL AND ELECTRICAL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE AREA ELECTRICAL INSPECTOR AND/OR THE POWER COMPANY WITH JURISDICTION IN THE PROJECT AREA.
7. ALL WORK MUST MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, AS WELL AS LOCAL AND STATE CODES.
8. ALL STREET LIGHT POLES (EXCEPT ORNAMENTAL POLES) SHALL HAVE A METAL TAG ATTACHED TO THE POLE, SEE PLAN DETAIL SHEET. PAYMENT FOR TAGS WILL BE SUBSIDIARY TO OTHER STREET LIGHTING ITEMS.
9. POLES, BASE PLATES, AND ARMS SHALL MEET THE SPECIFICATION OF THE LATEST EDITION OF AASHTO-AGC-ARTBA'S "GUIDE TO STANDARDIZED HIGHWAY LIGHTING POLE HARDWARE" OR AS OTHERWISE NOTED ON THE PLANS.
10. ANCHOR BOLTS WILL BE ACCEPTABLE WITH EITHER ROLLED OR CUT-IN THREADS WITH MINOR VARIATIONS FROM THE SPECIFIED DIAMETER.
11. ALL LIGHT POLES SHALL HAVE A BREAKAWAY DESIGN FEATURE UNLESS OTHERWISE NOTED ON THE PLANS.
12. ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL BEING WELDED.
13. LUMINAIRE SUPPORT ARMS IN A LENGTH OF 8 FEET ARE AVAILABLE IN EITHER SINGLE MEMBER OR TRUSS TYPE. PLAN SHEET SHALL SPECIFY WHICH IS TO BE USED. IF NOT SPECIFIED, OPTIONAL, OR IF REPLACEMENT, MATCH EXISTING OR SURROUNDING TYPE.
14. POLE OFFSET (FACE OF POLE TO BACK OF GUARDRAIL) SHALL BE EQUAL TO OR GREATER THAN THE DEFLECTION DISTANCE SHOWN IN THE CHART, (SEE E-180B).
15. POLES FOR ORNAMENTAL LIGHTING ARE AVAILABLE IN MANY MATERIALS, SHAPES, STYLES AND LENGTHS, PLANS SHALL SPECIFY.

THIS SHEET
NOT TO SCALE

OTHER STDS.
REQUIRED
E-180B, E-181

REVISIONS AND CORRECTIONS

AUG. 9, 1995 - DATE OF ORIGINAL ISSUE

APPROVED

Stephen D. MacArthur
DIRECTOR OF ENGINEERING

David A. Rose
TRAFFIC AND SAFETY ENGINEER

STREET LIGHTING DETAILS

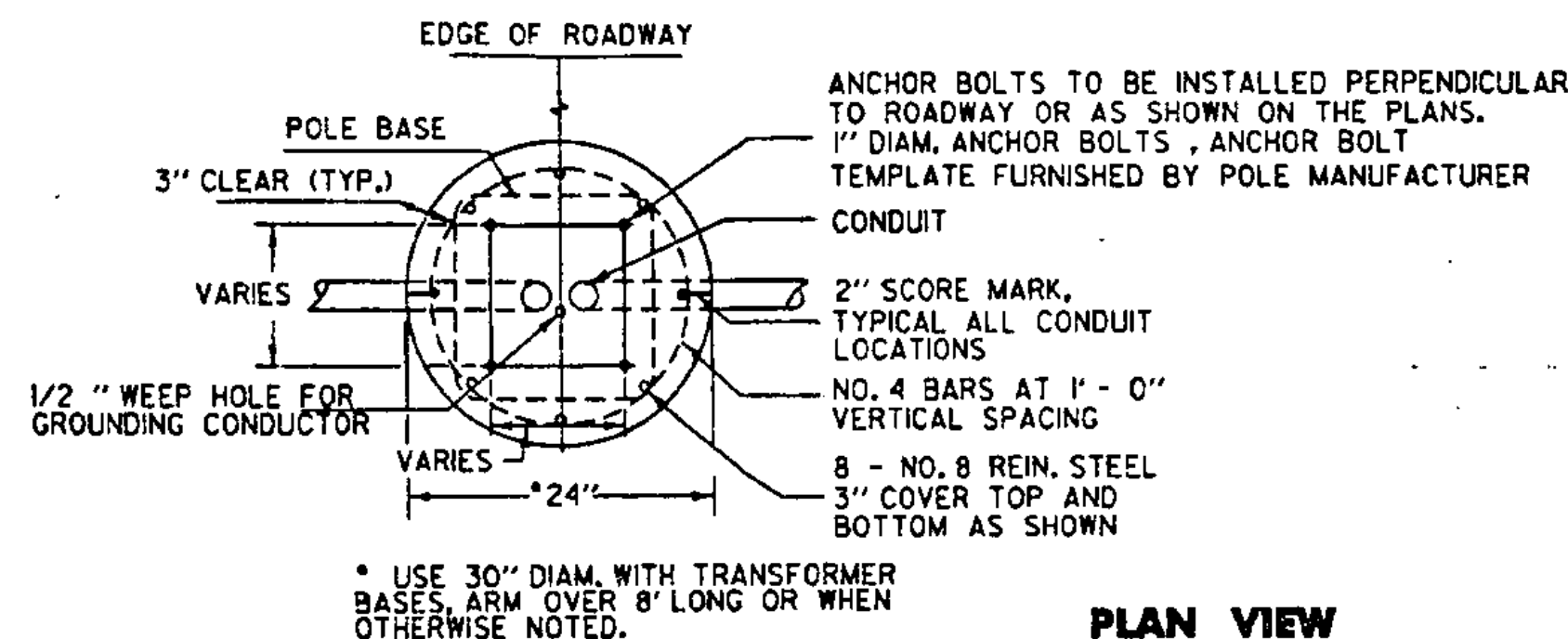


STANDARD
E-180A

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

/traf/std/stdel80a.dgn/stdel80a.t

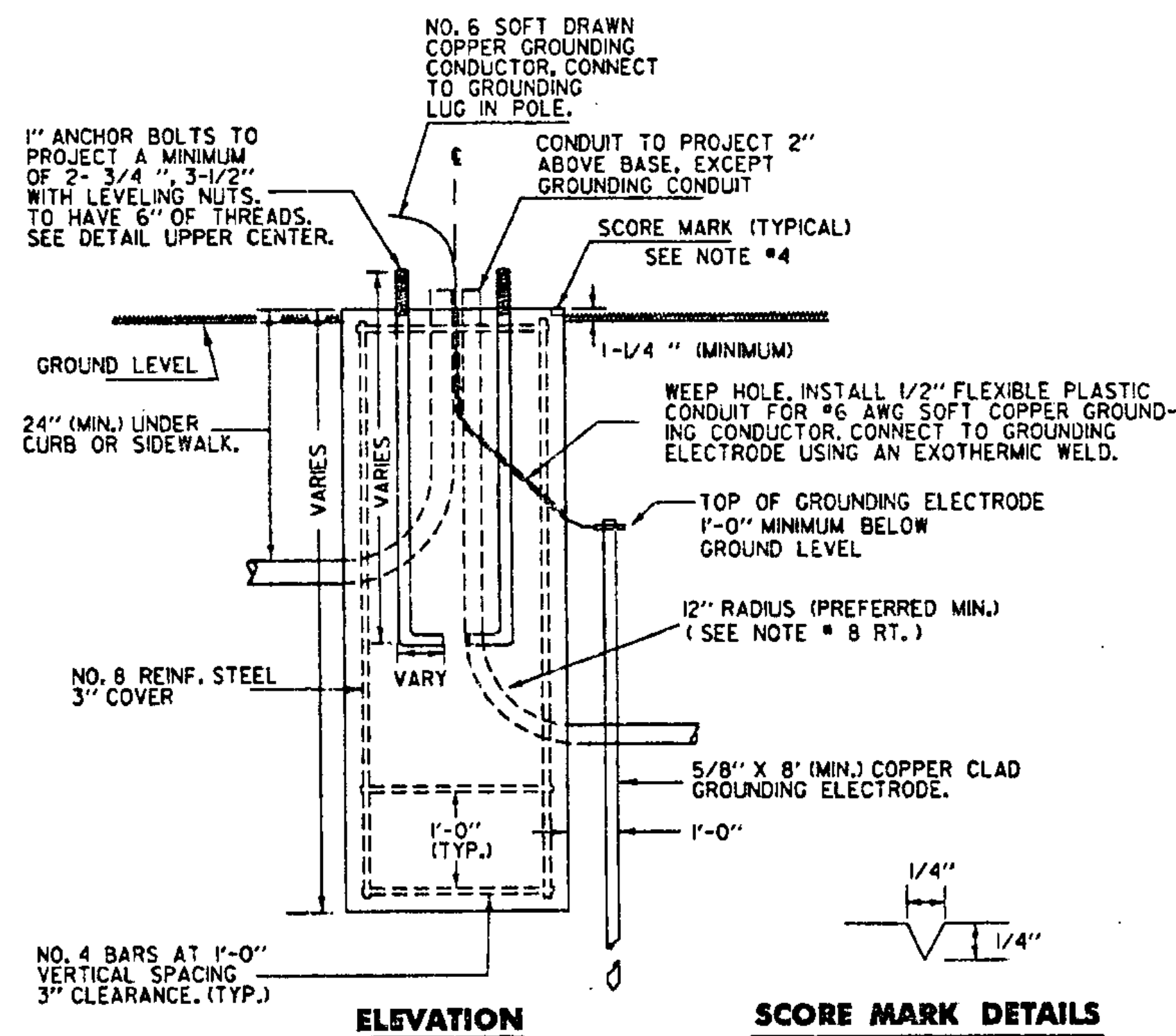
CONCRETE BASE



* USE 30\"/>

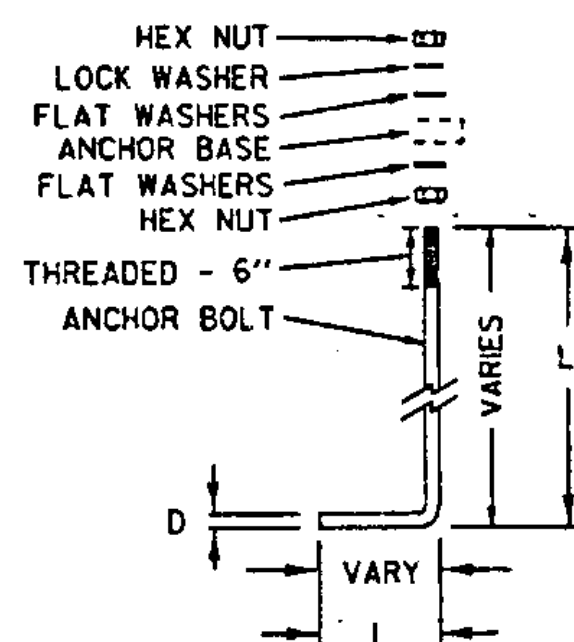
PLAN VIEW

NOTE: SEE CHART AT RIGHT AND NOTE BELOW CHART FOR OTHER ANCHOR BOLT DIMENSIONS.



NOTES:

THERE ARE FOUR BASIC SIZES FOR CONCRETE BASES, 2 FEET X 4 FEET TO BE USED WITH POLE TOP MOUNTED LUMINAIRES WITH A MOUNTING HEIGHT OF LESS THAN 20 FEET. A CONCRETE BASE SIZE OF 2 FEET X 6 FEET FOR POLES WITH LESS THAN 40 FOOT MOUNTING HEIGHT AND ARMS UP TO 8 FEET IN LENGTH. THIRD, A BASE SIZE OF 2-1/2 FEET X 6 FEET FOR POLES WITH LESS THAN 40 FOOT MOUNTING HEIGHT AND ARMS LESS THAN 10 FEET IN LENGTH WHICH WILL BE INSTALLED ON A TRANSFORMER BASE. FORTH, A BASE SIZE 2-1/2 FEET X 8 FEET FOR A 40 FOOT OR GREATER MOUNTING HEIGHT, A 10 FOOT OR GREATER ARM LENGTH WITH OR WITHOUT TRANSFORMER BASE.



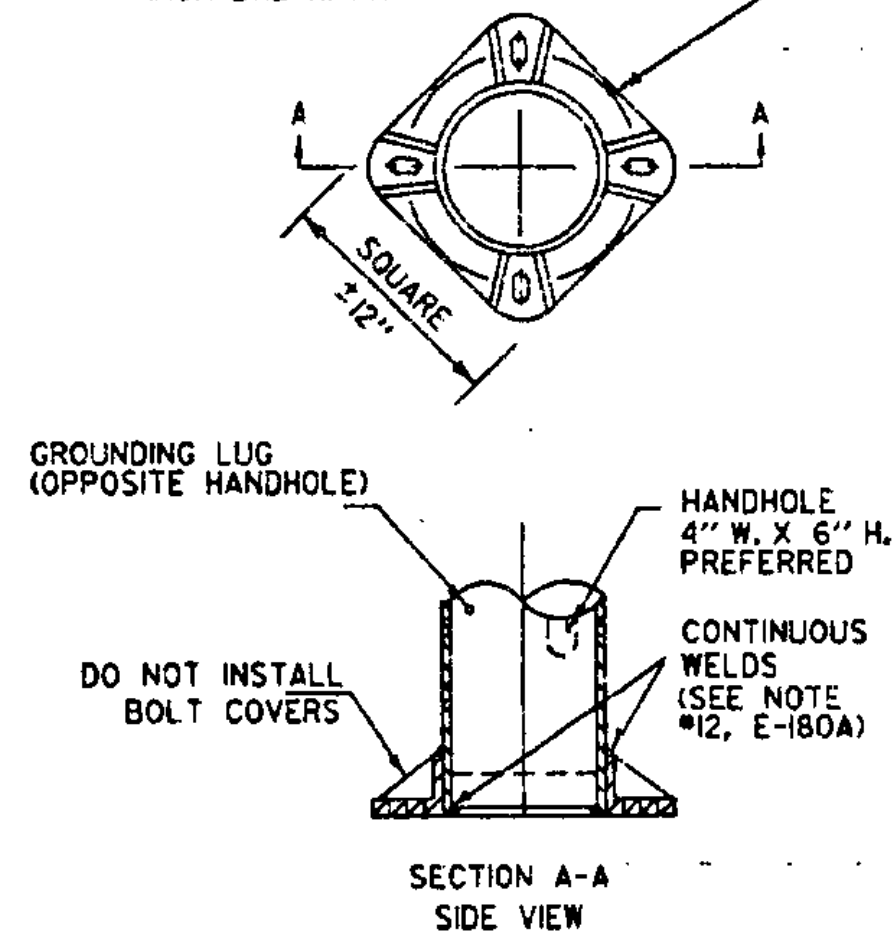
ALL ANCHOR BOLTS TO BE STAINLESS STEEL

MOUNTING HEIGHT	NO. OF ARMS	ANCHOR BASE				SLIP BASE			
		D	L	I	UNC	D	L	I	UNC
30	2	1	36	4	8	1-1/4	42	6	7
35	2	1	36	4	8	1-1/4	42	6	7
40	2	1	36	4	8	1-1/4	42	6	7

NOTE:

FOR MOUNTING HEIGHTS LESS THAN 30 FEET, USE THE ANCHOR BOLT DIMENSIONS AS RECOMMENDED BY THE POLE MANUFACTURER, LENGTH, HOOK, DIAMETER AND BOLT PROJECTION.

TOP VIEW OF ANCHOR BASE (NON-BREAKAWAY)

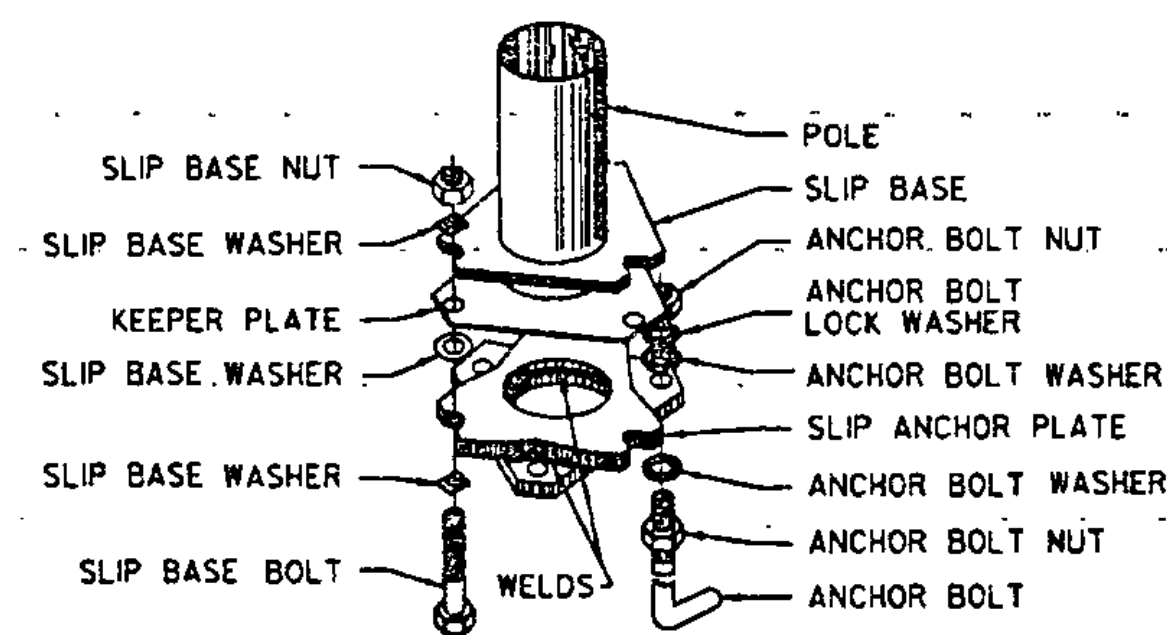


ANCHOR BASE

NOTES:

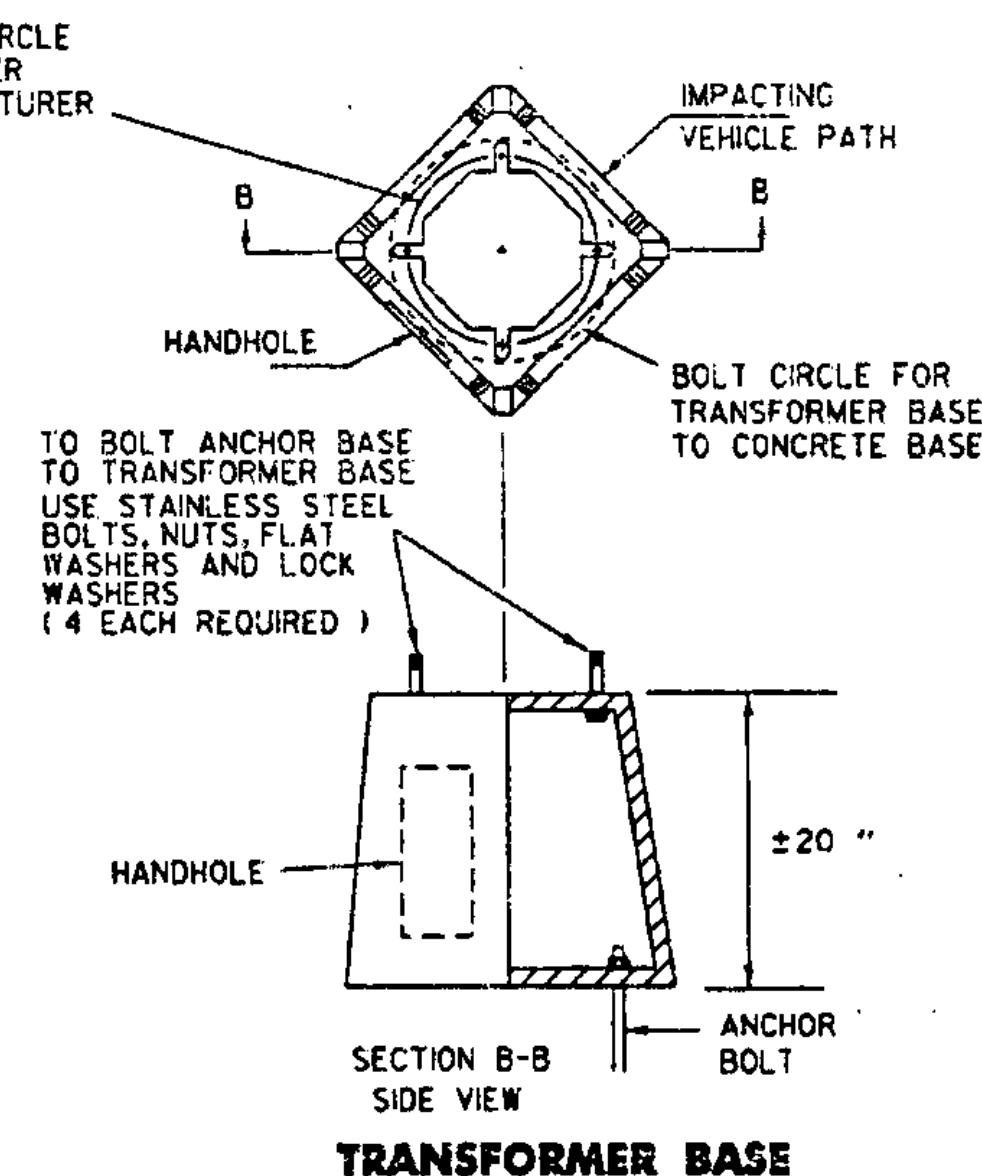
- DIMENSIONS SHOWN FOR ANCHOR BASE AND TRANSFORMER BASE MAY VARY SLIGHTLY WITH DIFFERENT MANUFACTURERS.
- ANCHOR BOLT TEMPLATE FURNISHED BY POLE MANUFACTURER.

VARIOUS BREAKAWAY OPTIONS TYPE SHALL BE SPECIFIED ON PROJECT PLANS



SLIP BASE ASSEMBLY (BREAKAWAY)

TOP VIEW OF TRANSFORMER BASE (RECOMMENDED BREAKAWAY FEATURE)



TRANSFORMER BASE

- FOR BREAKAWAY DESIGN A TRANSFORMER BASE, BREAKAWAY COUPLINGS, SLIP BASE OR OTHER APPROVED METHOD SHALL BE INSTALLED BETWEEN THE ANCHOR BASE AND THE CONCRETE BASE.

CONCRETE BASE AND GENERAL NOTES

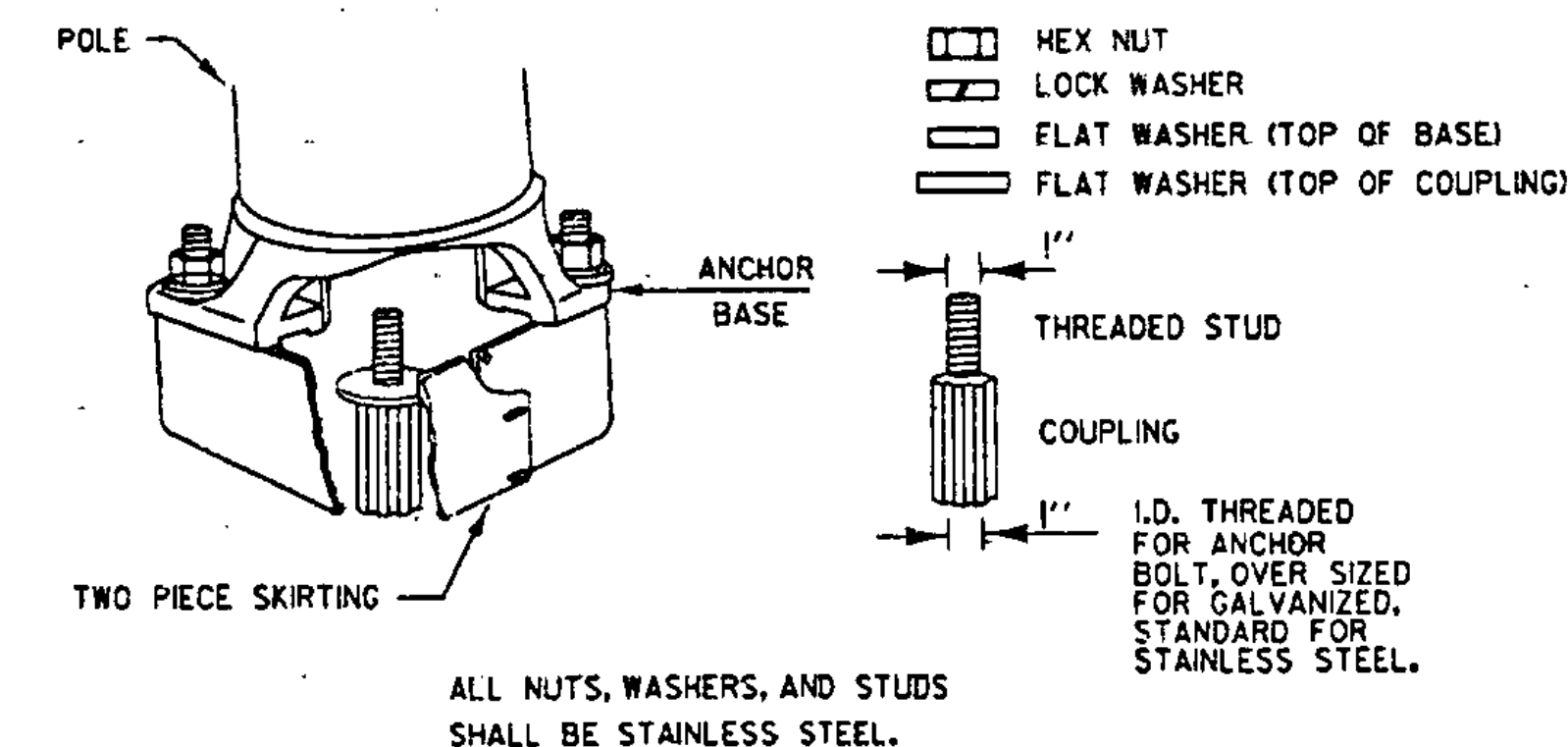
- ALL CONCRETE BASES TO BE CONCRETE, CLASS B, AND SHALL HAVE A SMOOTH LEVEL TOP SURFACE FINISHED WITH A 1/2 INCH RADIUS EDGING TOOL.
- ALL REINFORCING STEEL TO CONFORM TO THE REQUIREMENTS FOR "REINFORCING STEEL."
- TEMPLATE FOR ANCHOR BOLTS, STAINLESS STEEL ANCHOR BOLTS, NUTS, AND WASHERS TO BE OBTAINED BY CONTRACTOR PRIOR TO CONSTRUCTION OF BASES.
- SCORE TOP OF CONCRETE BASE TO SHOW LOCATION OF CONDUIT(S).
- CONDUIT SIZE - AS SHOWN ON THE PLANS.
- ALL EXPOSED METAL HARDWARE SHALL BE GALVANIZED OR STAINLESS STEEL.
- IF THE ELECTRICAL CONDUIT IN THE CONCRETE BASE IS GALVANIZED STEEL, GROUNDING BUSHINGS SHALL BE USED.
- THE MINIMUM RADIUS FOR RIGID METALLIC OR NON-METALLIC ELECTRICAL CONDUIT SHALL BE SIX TIMES THE INSIDE DIAMETER OF THE CONDUIT.
- SEE STANDARD SHEET E-173 FOR PULL BOX DETAIL.
- ANY BREAKAWAY FEATURE WHICH HAS BEEN APPROVED FOR USE ON FEDERAL AID HIGHWAY PROJECTS AND MEET THE 1985 "AASHTO" REQUIREMENT FOR A BREAKAWAY FEATURE MAY BE USED UNLESS A SPECIFIC TYPE IS STATED ON THE PLANS.

GUARDRAIL DEFLECTION CHART
PER AASHTO - ROADSIDE DESIGN GUIDE 1988

TYPE	GR POST SPACING	DEFLECTION
THREE CABLE W/STEEL POSTS	16' - 0"	12'
	W/WOODEN POSTS	12' - 6"
W-BEAM	W/WEAK POST	12' - 6"
	W/STRONG POST	6' - 3"
BOX BEAM	6' - 0"	5'
THREE BEAM	W/WEAK POST	12' - 6"
	W/STRONG POST	6' - 3"

THIS CHART LISTS THE THEORETICAL DEFLECTION DISTANCE UPON IMPACT OF VARIOUS GUARDRAIL WITH DIFFERENT TYPES AND SPACINGS OF POSTS.

STAINLESS STEEL BREAKAWAY SUPPORT COUPLINGS



ALL NUTS, WASHERS, AND STUDS SHALL BE STAINLESS STEEL.

THIS SHEET
NOT TO SCALE

OTHER STDs. REQUIRED
E-173, E-180A, E-181

REVISIONS AND CORRECTIONS

AUG. 9, 1995 - DATE OF ORIGINAL ISSUE

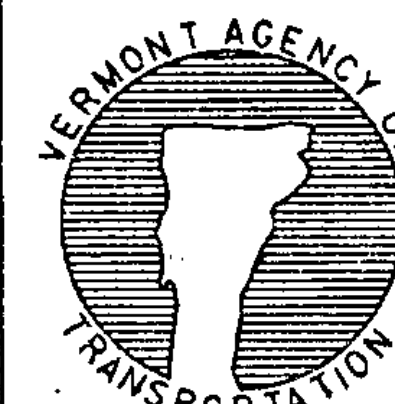
APPROVED

Stephen M. McArthur
DIRECTOR OF ENGINEERING

David A. Ross
TRAFFIC AND SAFETY ENGINEER

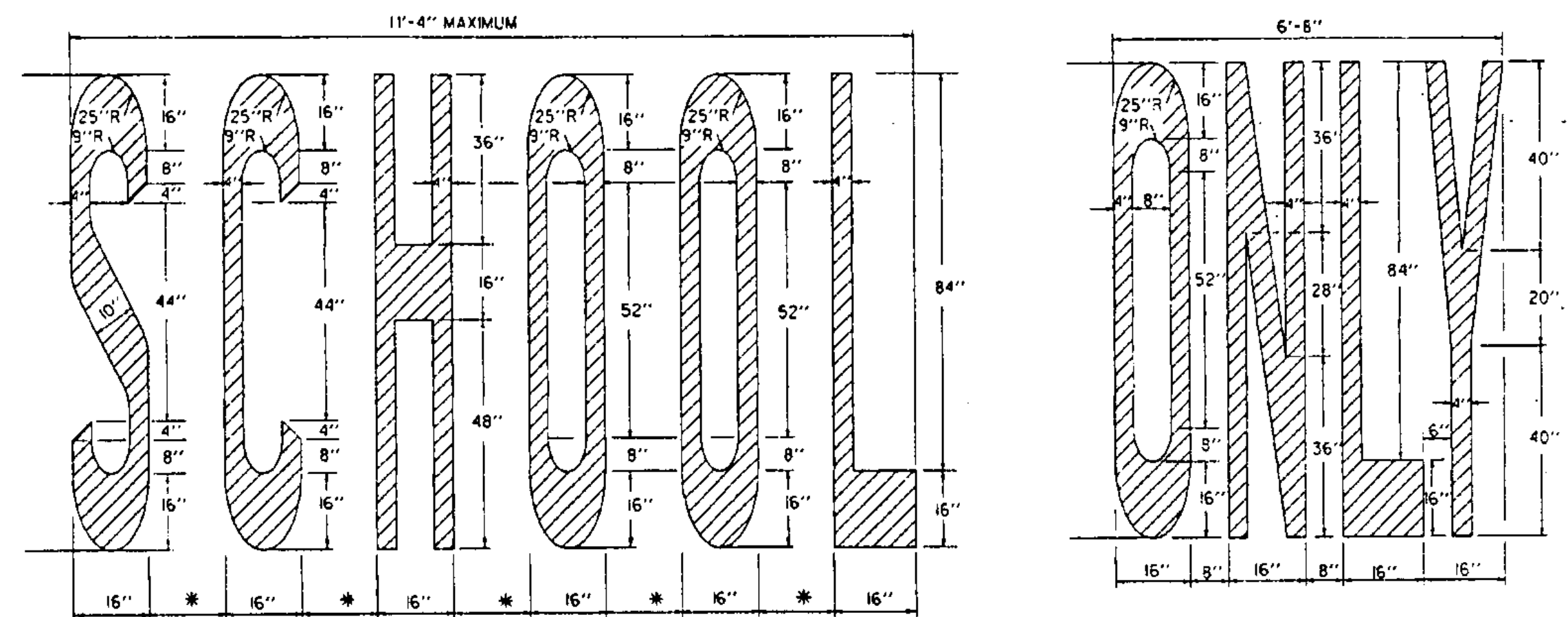
APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

STREET LIGHTING DETAILS

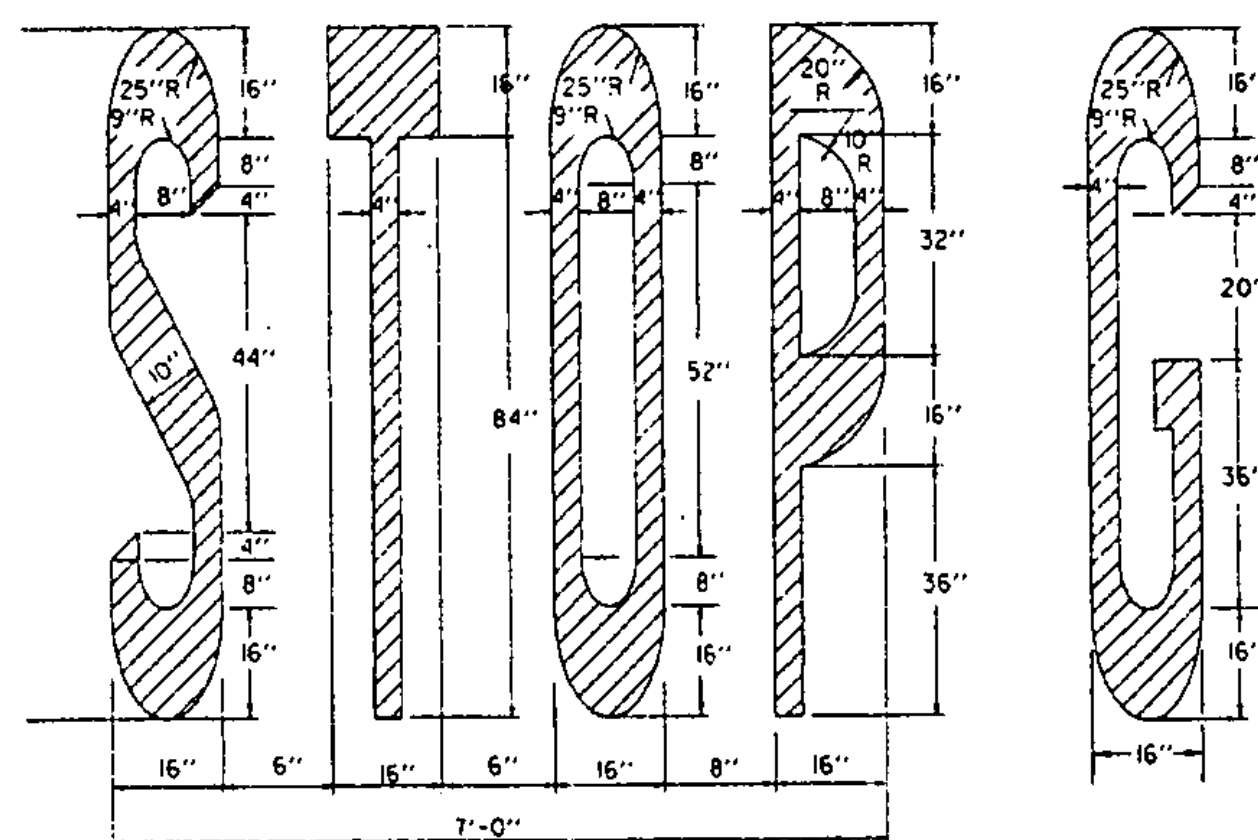
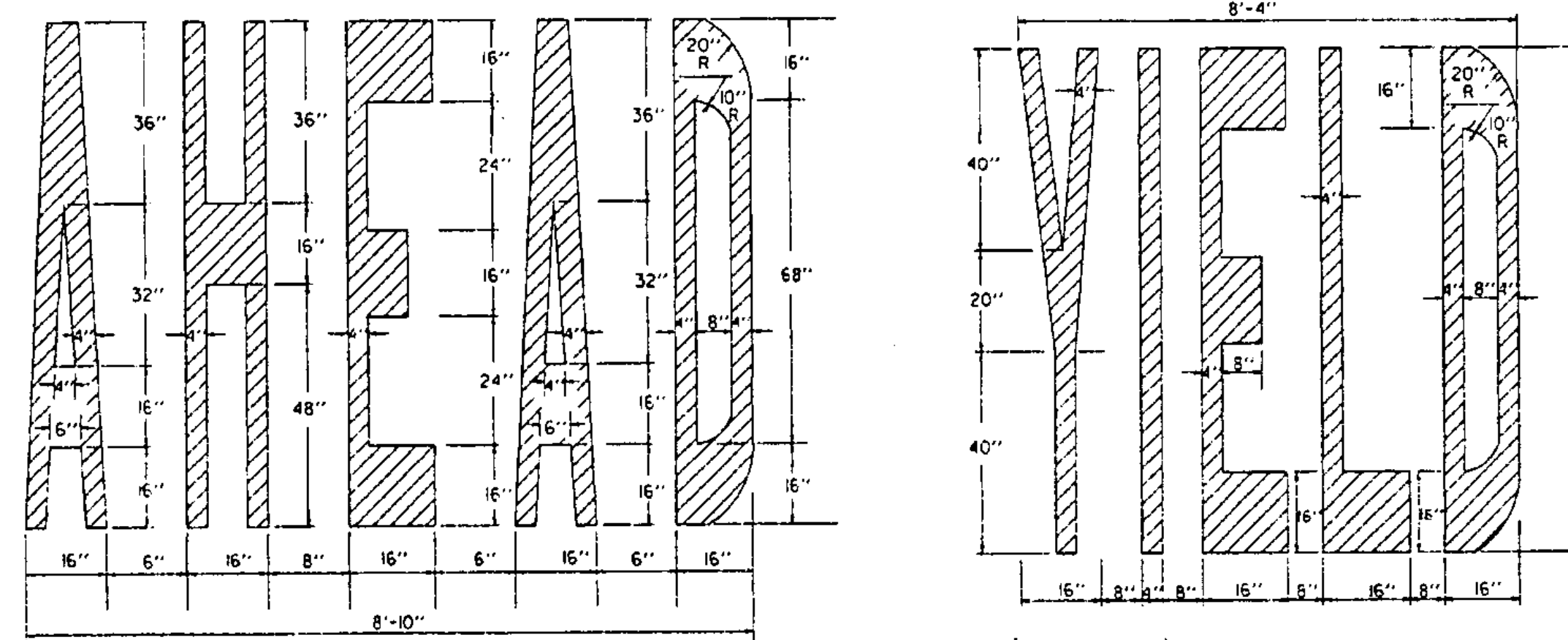


STANDARD
E-180B

/trcf/std/stcd180b.dgn/stcd180b.i



* (4'-8'') - ADJUST TO AVAILABLE PAVEMENT WIDTH

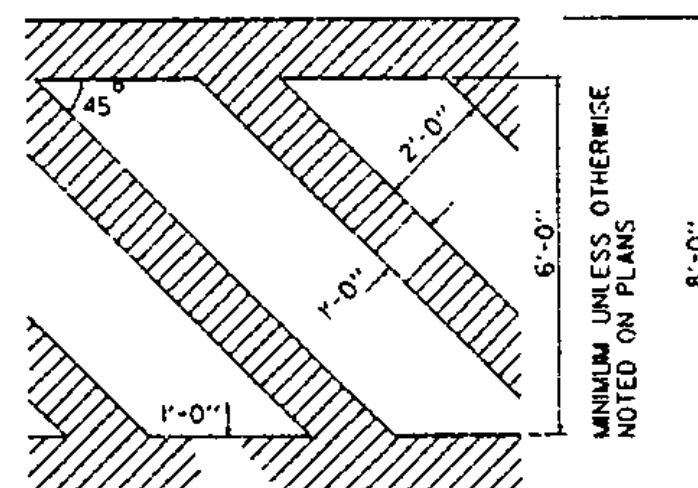


THE LETTER "G" PERTAINS TO THE WORD "SIGNAL" FOR OTHER LETTERS, SEE ABOVE.

SIGNAL
6" LETTER SPACING

LETTER HEIGHT

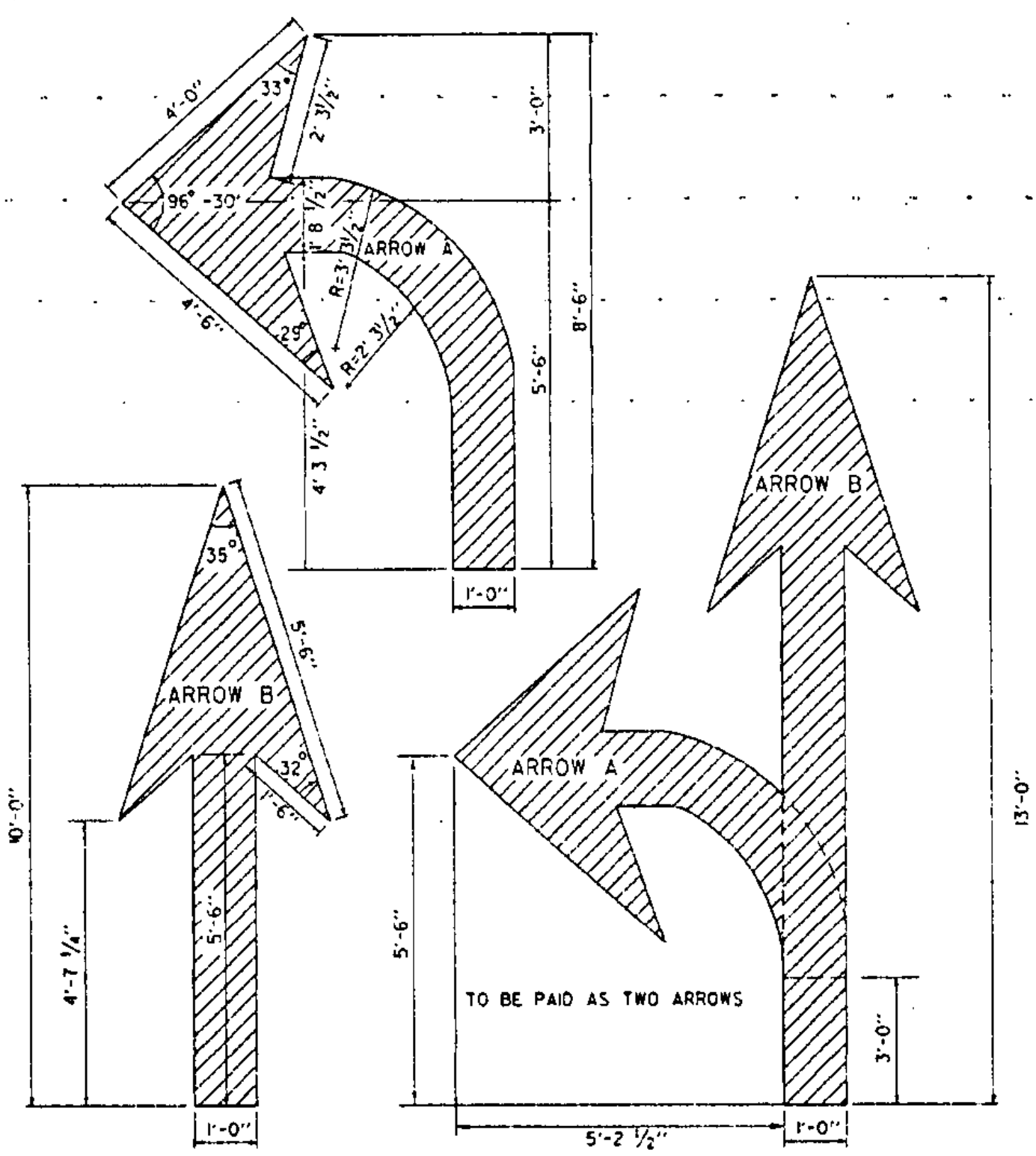
DIMENSIONS ARE FOR 8" - 4" LETTER HEIGHTS, A LESSER HEIGHT OF 8" - 0" IS ACCEPTABLE AS LONG AS THE DIMENSIONS ARE PROPORTIONAL TO THE DETAILS SHOWN. SEE NOTE BELOW.



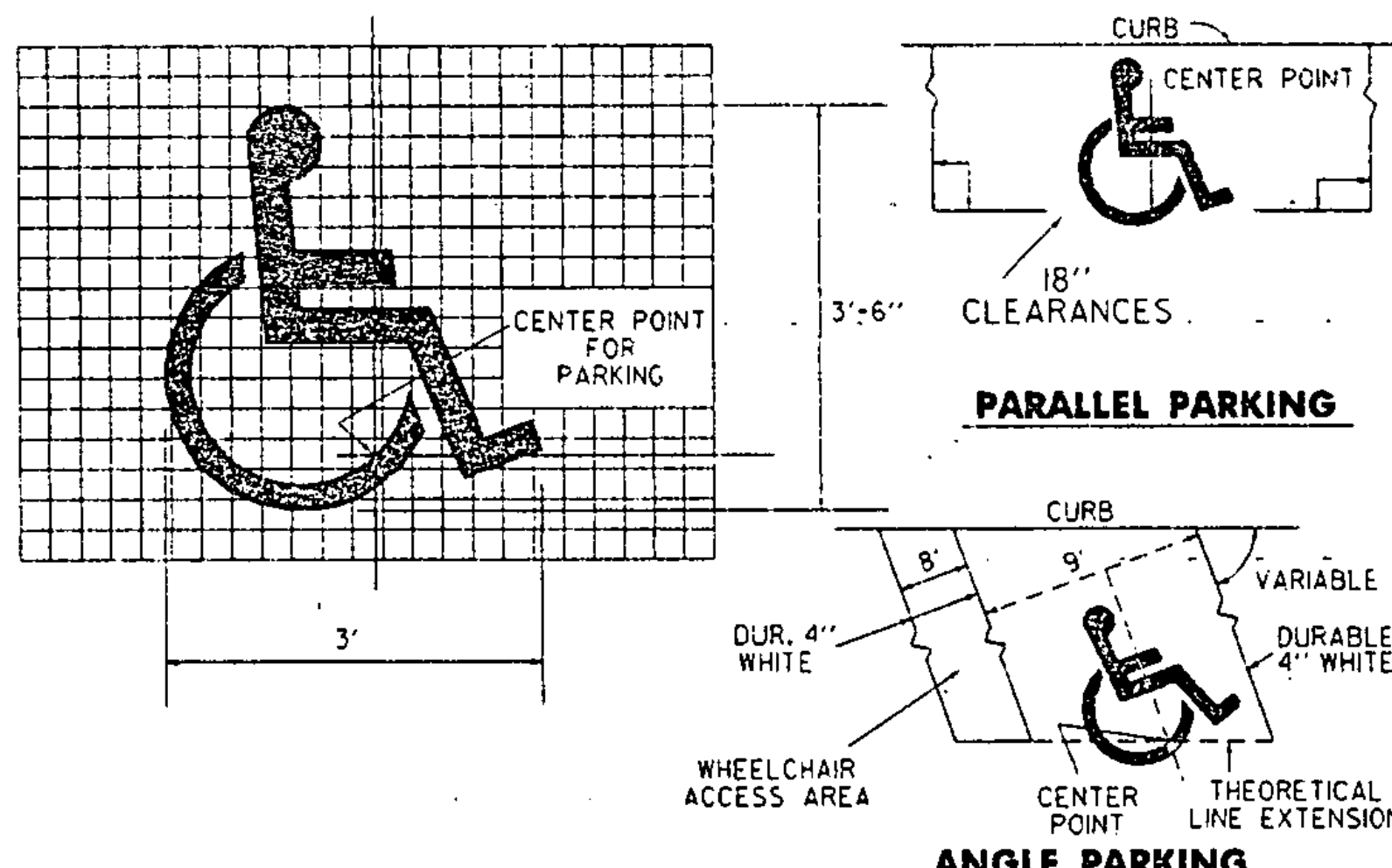
MINIMUM UNLESS OTHERWISE NOTED ON PLANS

ARROWS AND WORD MARKINGS THAT CONFORM TO THE DIMENSIONS SHOWN ON THIS SHEET OR AS DETAILED IN THE BOOKLET ENTITLED "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (CURRENT EDITION) PREPARED BY THE FEDERAL HIGHWAY ADMINISTRATION WILL BE ACCEPTABLE.

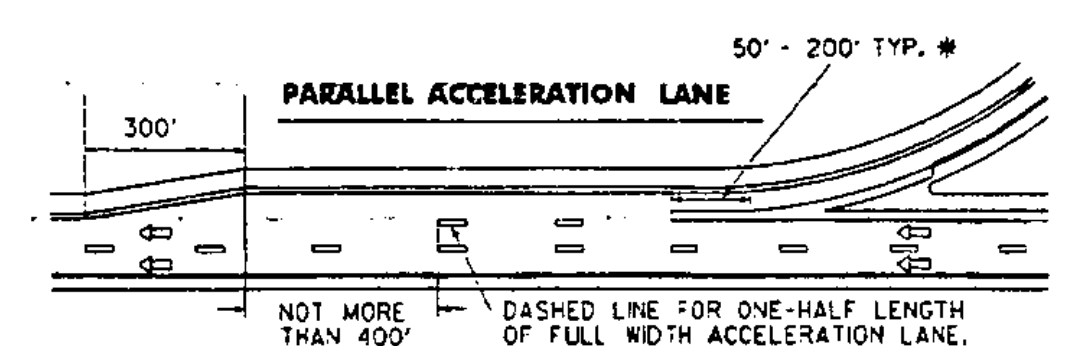
LETTER IN WORD MARKING AND CROSSWALK DETAILS



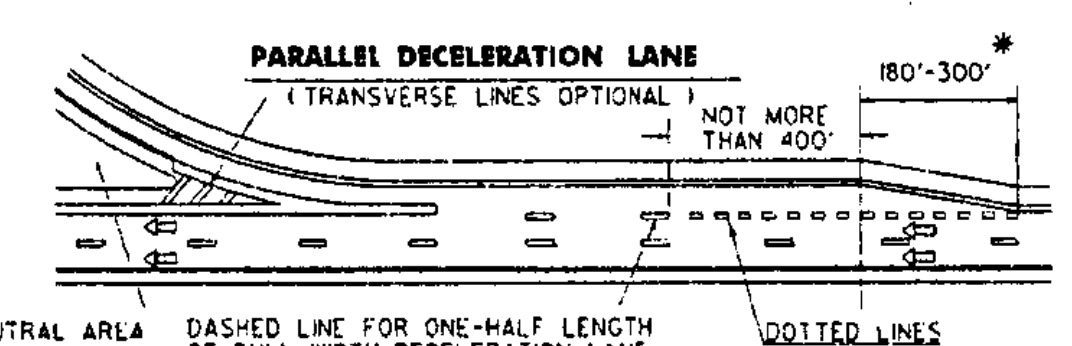
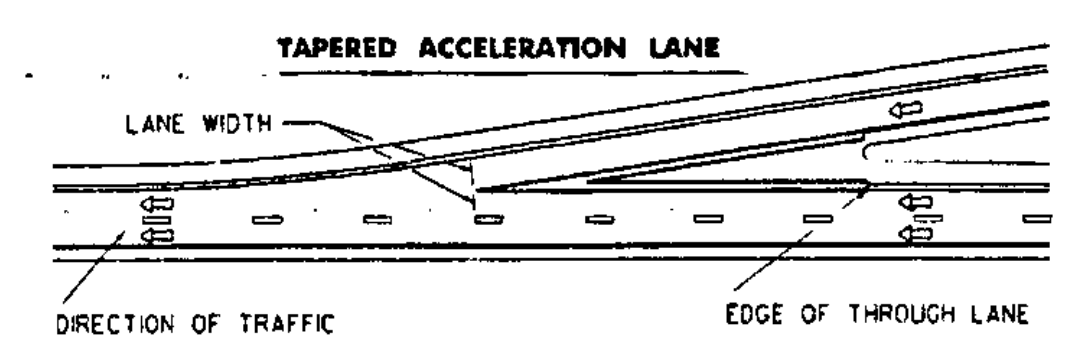
ARROW DETAILS



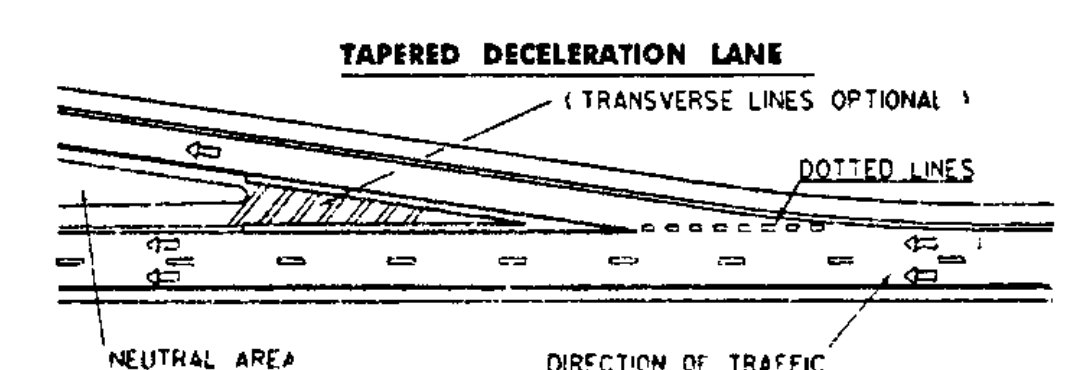
HANDICAPPED PAVEMENT MARKING DETAILS



USE LONGER LENGTH TO EMPHASIZE SITUATIONS WHERE THE CROSSING REQUIRES UNUSUAL CARE SUCH AS HIGH VOLUME MERGE AREAS.



SHORTER TAPERS GIVE A BETTER TARGET VALUE, HOWEVER ALIGNMENT MAY DICTATE A LONGER TAPER. RESIDENT ENGINEER SHALL ESTIMATE LENGTH.



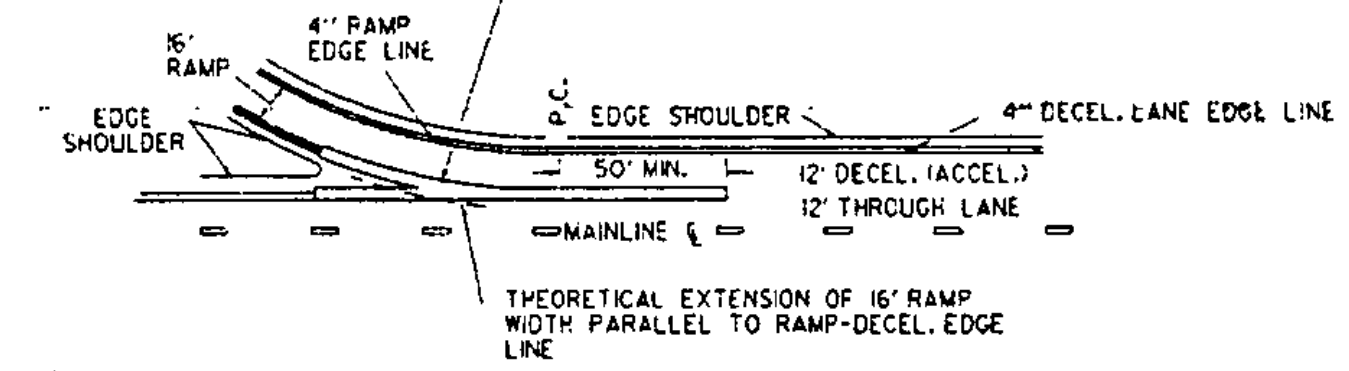
TRANSVERSE LINES SHALL CONSIST OF 8" WHITE LINES SPACED 5'-0" C-C AND SET AT 45° TO MAIN LINE EDGE LINES. THESE MARKINGS SHALL BE USED TO INCREASE VISIBILITY DUE TO DIFFICULT VERTICAL OR HORIZONTAL ALIGNMENT, AS DIRECTED BY THE RESIDENT ENGINEER.

LEGEND

RAMP MARKINGS

- 4" WHITE LINES
- 4" YELLOW LINES
- 8" CHANNELIZATION WHITE LINES
- 4" WHITE DOTTED LINES (2" SOLID - 4" GAP)
- DIRECTION OF TRAFFIC FLOW

IMPORTANT NOTE
ACTUAL LOCATION OF 8" GORE MARKING TRANSITION CURVE MUST BE OFFSET FROM THE THEORETICAL RAMP EXTENSION LINE TO PROVIDE A VISUALLY SMOOTH RAMP ENTRANCE.



DETAIL - GORE MARKING TRANSITION CURVE

THIS SHEET IS NOT TO SCALE

OTHER STDS. REQUIRED

REVISIONS AND CORRECTIONS

- SEPT. 10, 1987 - DATE OF ORIGINAL ISSUE
- JAN. 23, 1989 - ADDED DOTTED LINES, "SIGNAL" DIMENSIONS, CLARIFIED LETTER HEIGHT.
- AUG. 18, 1995 - MISC. NOTE CHANGES

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

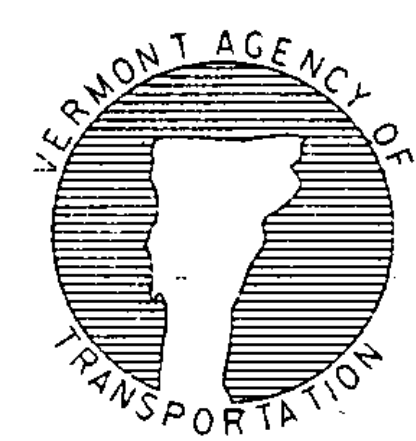
APPROVED

Seamus P. McElhinney
DIRECTOR OF ENGINEERING

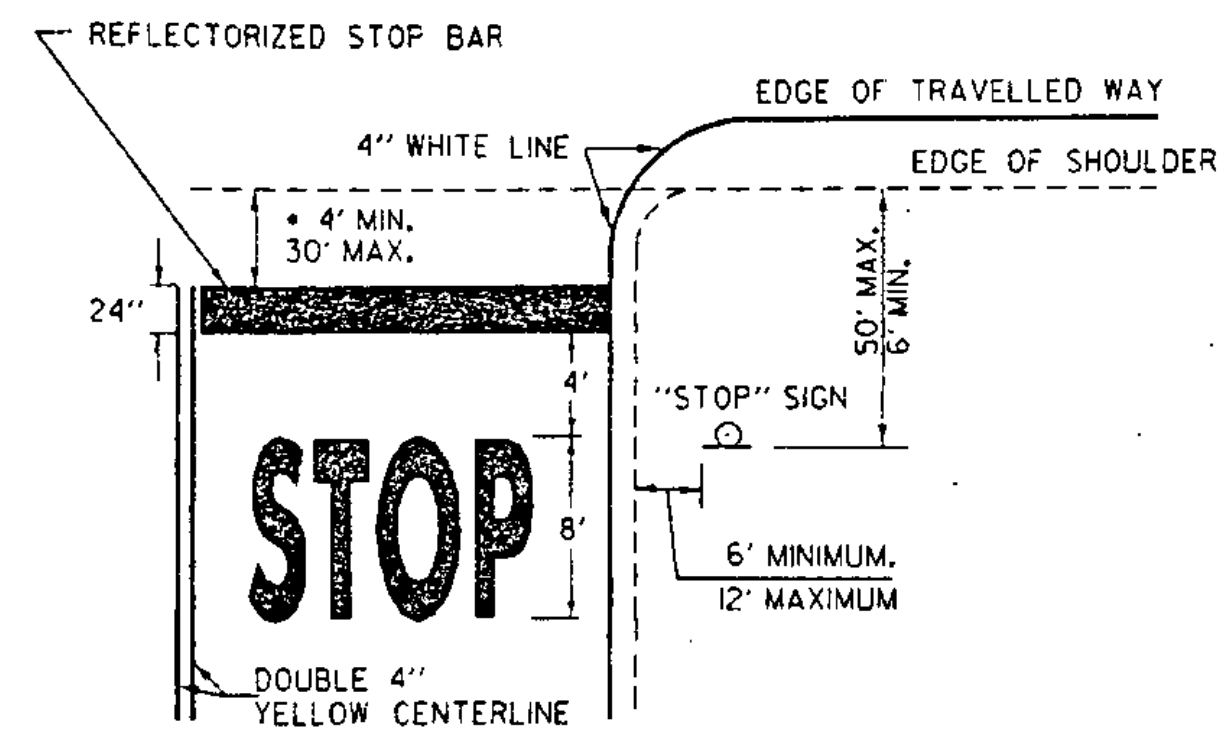
Joe A. Ross
TRAFFIC AND SAFETY ENGINEER

PAVEMENT MARKING DETAILS

/traf/std/stdel9l.dgn/stdel9l.l

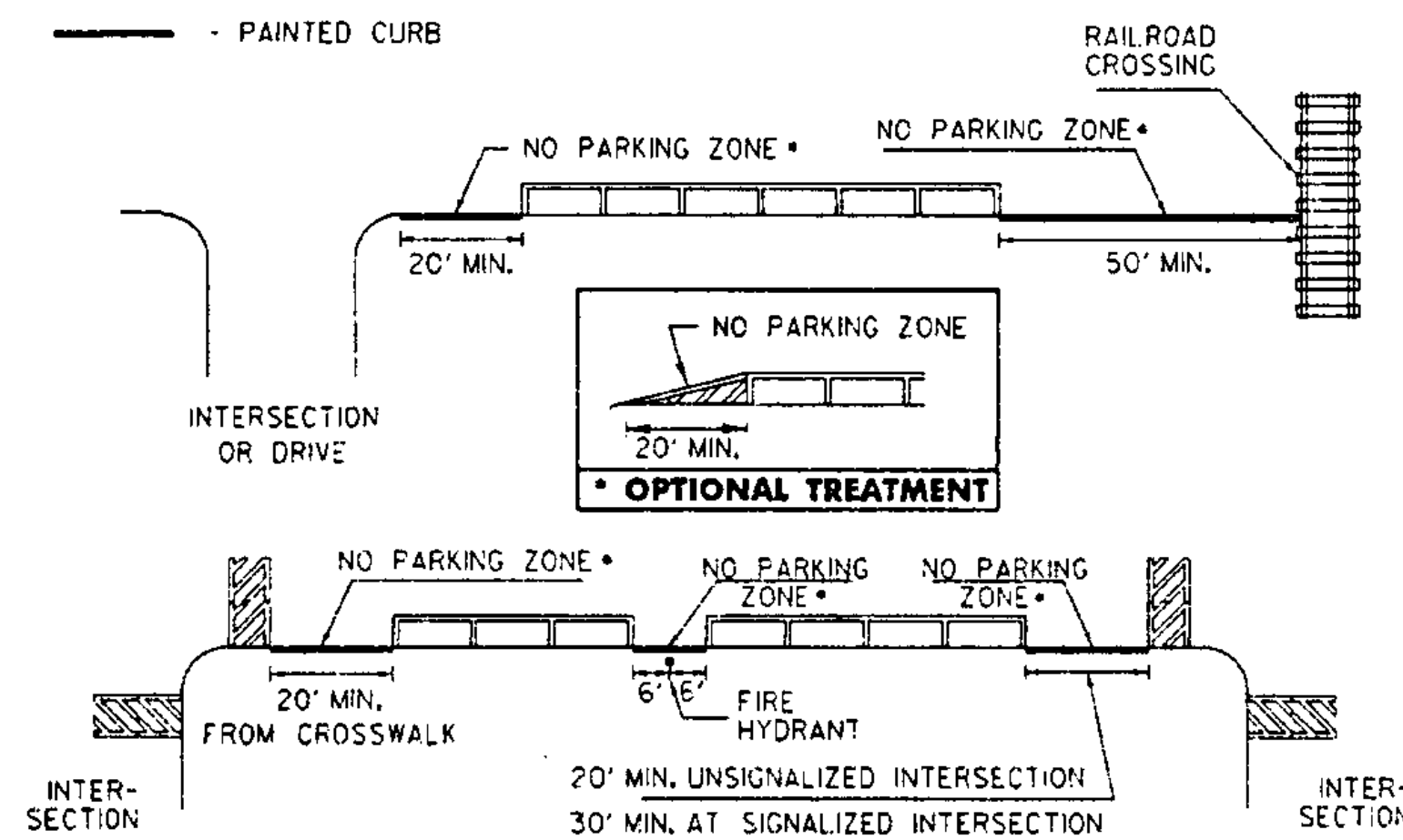


STANDARD E-191

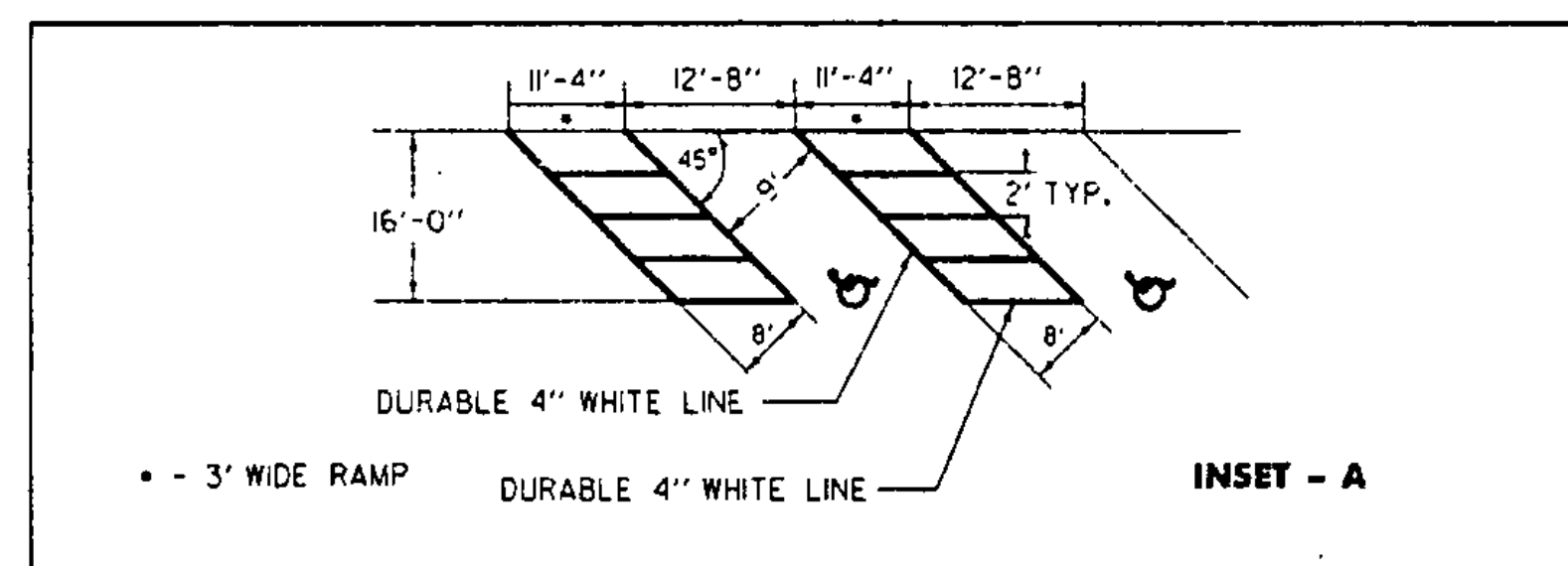


* THE "DESIRED STOPPING POINT" IS THE LOCATION BASED ON SITE CONDITIONS THAT BEST ALLOWS THE STOPPED VEHICLE TO VIEW THE APPROACHING TRAFFIC.

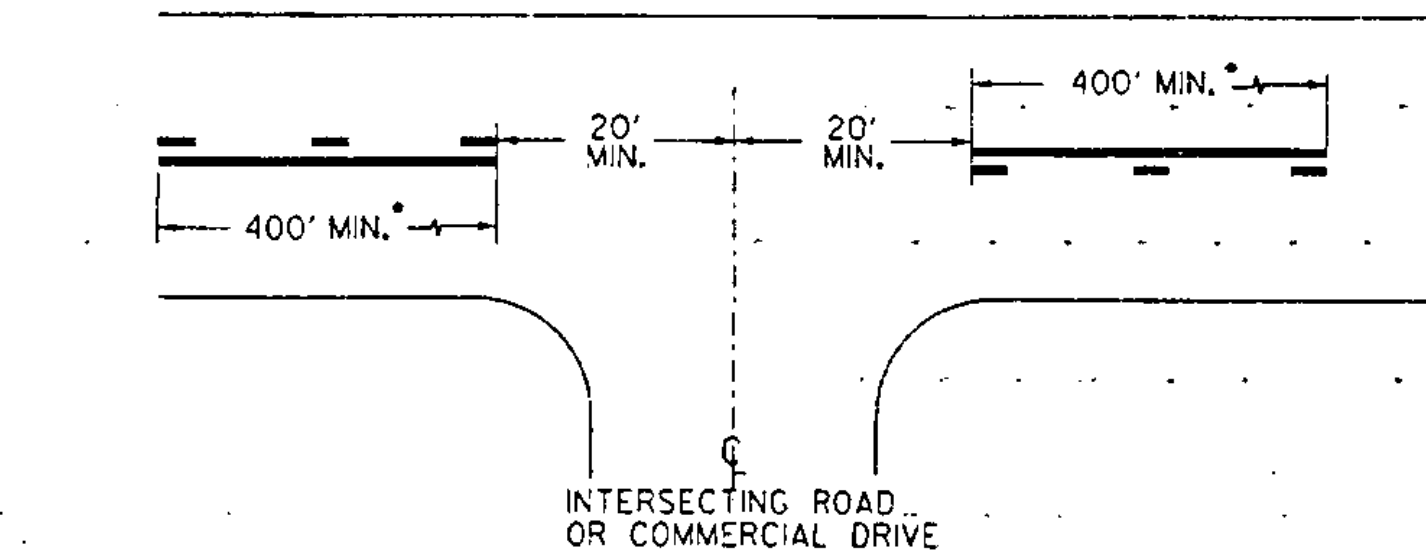
STOP BAR LAYOUT



NO PARKING LAYOUT DETAILS



NOTE:
SEE STANDARD SHEET E-191 FOR
HANDICAP SYMBOL POSITIONING AND DETAIL.



* THE SOLID LINE SHALL BE PAIRED WITH EITHER A SOLID OR DASHED LINE DEPENDING ON SIGHT DISTANCE AVAILABILITY IN THE OPPOSING DIRECTION. ADJUSTMENTS TO THE 40 FOOT CENTERLINE OPENING MAY BE MADE TO ACCOMMODATE SKEWED INTERSECTIONS.

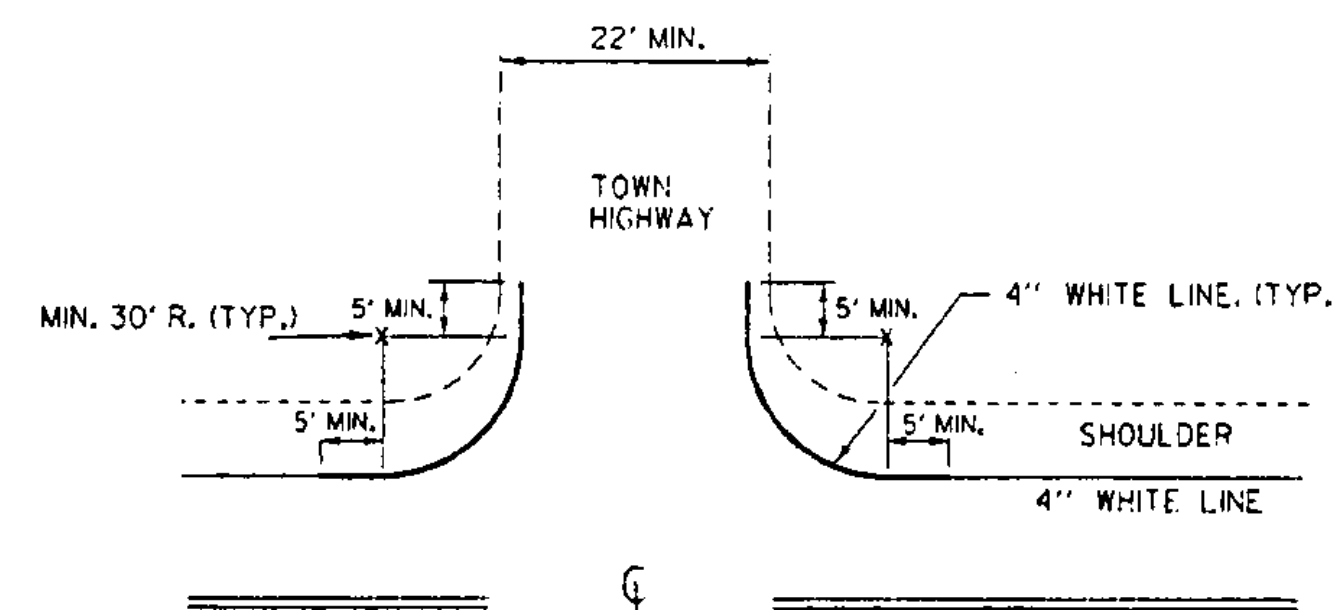
CENTERLINE BREAKS:

A. AT ALL STATE HIGHWAYS AND TOWN HIGHWAYS, INCLUDING CLASS 4 TH'S, THAT HAVE STOP AND LEGAL LOAD LIMIT SIGNS INSTALLED

B. COMMERCIAL DRIVES:

1. WHERE A SEPARATE TURN LANE EXISTS ON THE MAIN LINE (LT. OR RT.)
2. SIGNIFICANT TRAFFIC VOLUMES EXISTS.
3. IF MOTORISTS NEED ASSISTANCE TO DEFINE ENTRANCE POINTS.

CENTERLINE LAYOUT

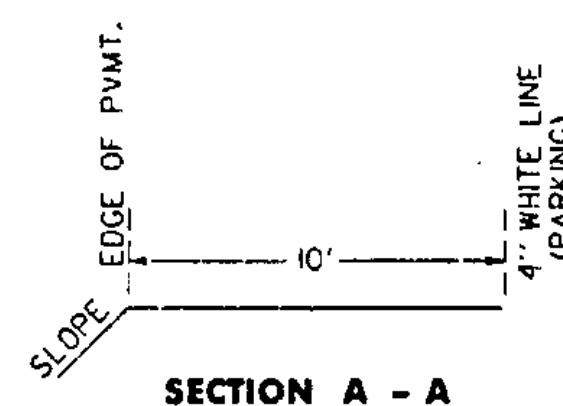


EDGE LINES SHALL BE APPLIED TO ALL STATE HIGHWAYS AND SHOULD BE MAINTAINED AT A CONSTANT DISTANCE FROM THE CENTERLINE UNLESS PAVEMENT WIDTH INCREASES TO ALLOW WIDER LANES.

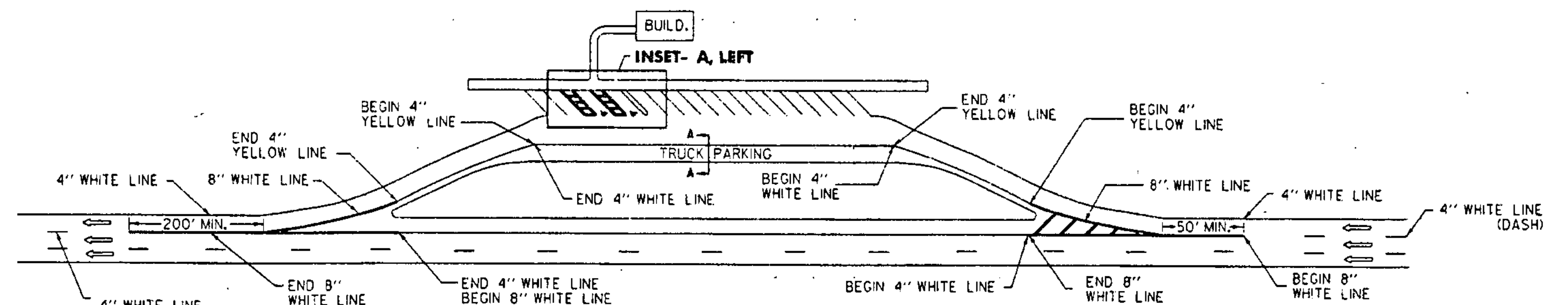
APPLY EDGE LINE AS DETAILED ON ALL PAVED CLASS 1 & CLASS 2 TOWN HIGHWAYS AND ANY CLASS 3 TOWN HIGHWAY 22 FEET OR MORE IN WIDTH.

IF MIN. 30 FOOT RADIUS CANNOT BE OBTAINED, OR THE TOWN HIGHWAY IS NOT PAVED, BREAK THE EDGE LINE USING AN 80 FOOT GAP AT INTERSECTION.

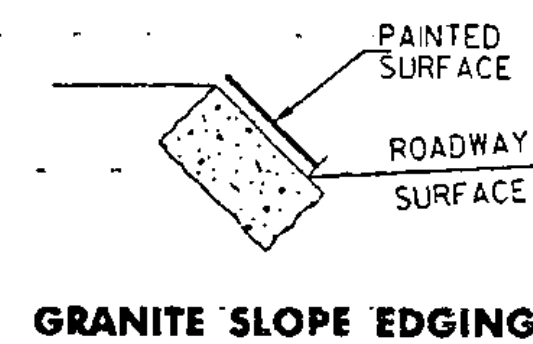
EDGE LINE LAYOUTS



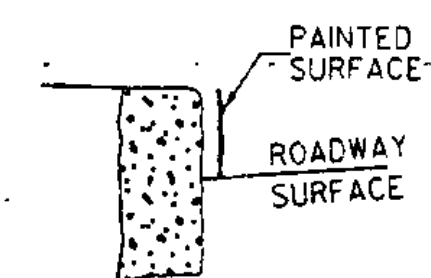
TRUCK PARKING DETAIL



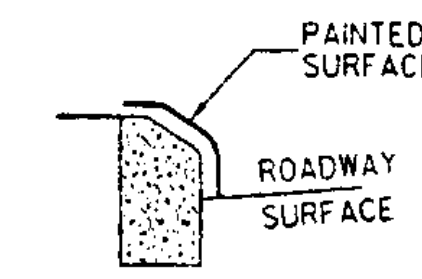
REST AREA PARKING DETAILS



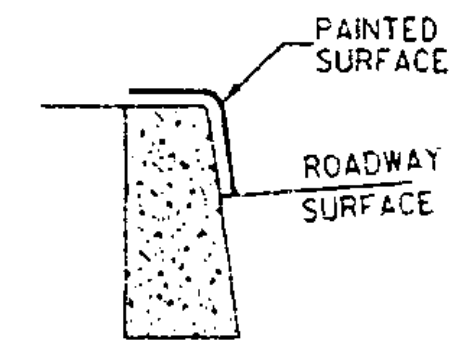
GRANITE SLOPE EDGING



VERTICAL GRANITE CURB

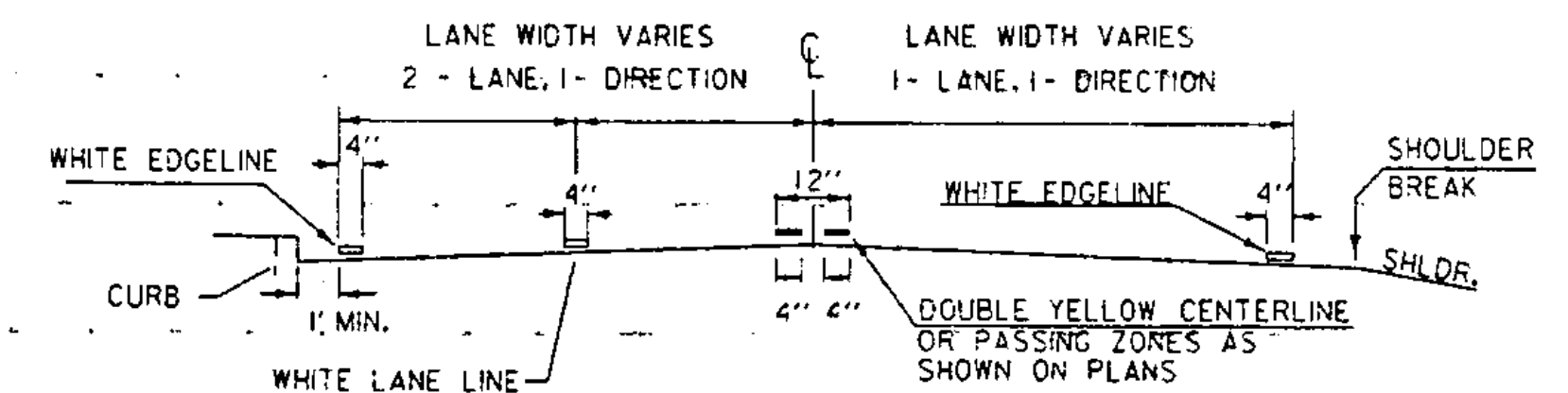


TYPE A (CONCRETE)

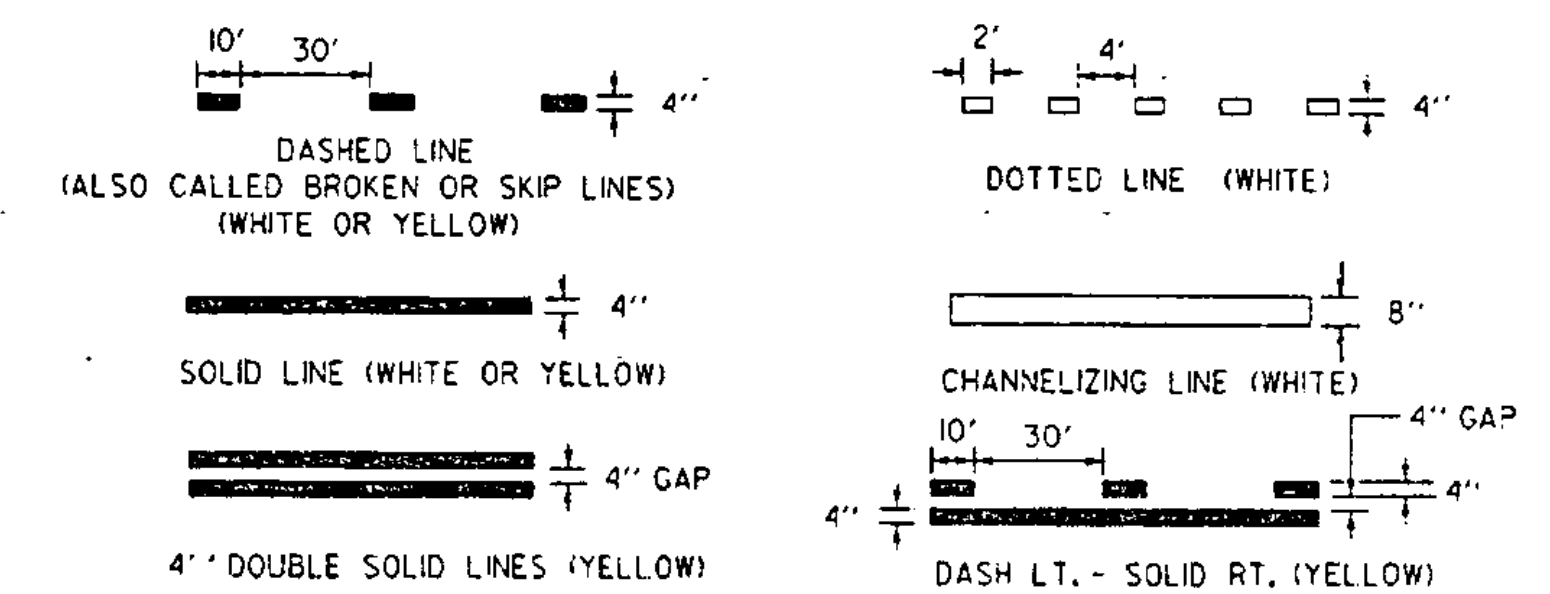


TYPE B (CONCRETE)

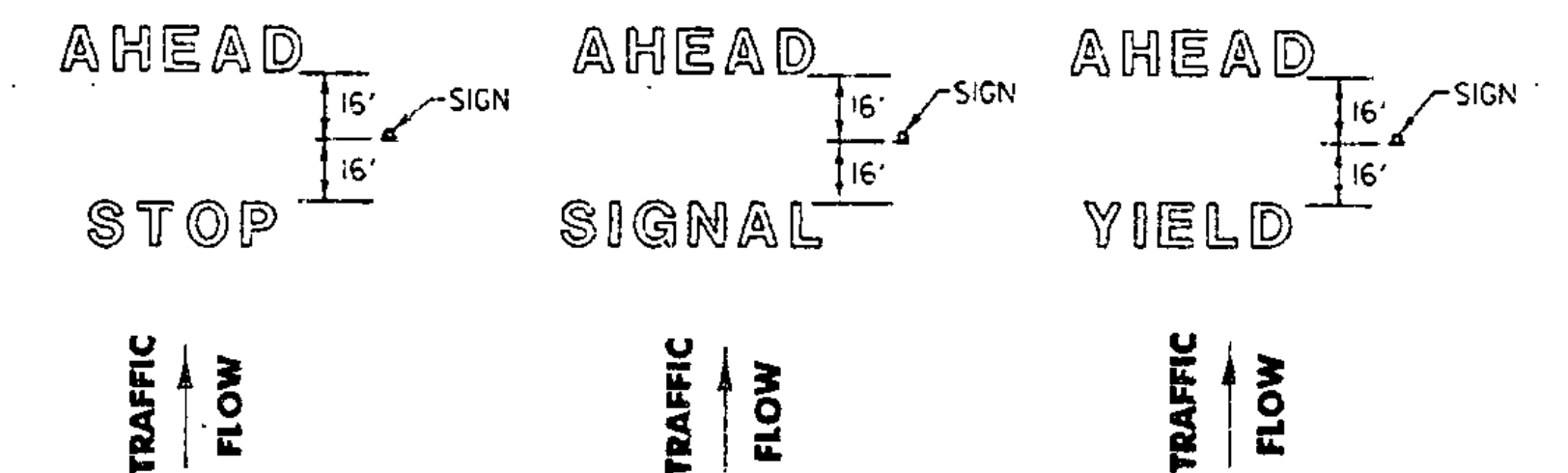
PAINTED CURB



PAVEMENT MARKING PLACEMENT DETAIL



PAVEMENT MARKING LINE DETAILS



NOTE: SINGLE WORDS CENTERED ON SIGN. 10: SCHOOL OR YIELD

REVISIONS AND CORRECTIONS
AUG. 18, 1995 - DATE OF ORIGINAL ISSUE

APPROVED

Samuel D. McArthur
DIRECTOR OF ENGINEERING

David A. Ross
TRAFFIC AND SAFETY ENGINEER

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

PAVEMENT MARKING DETAILS

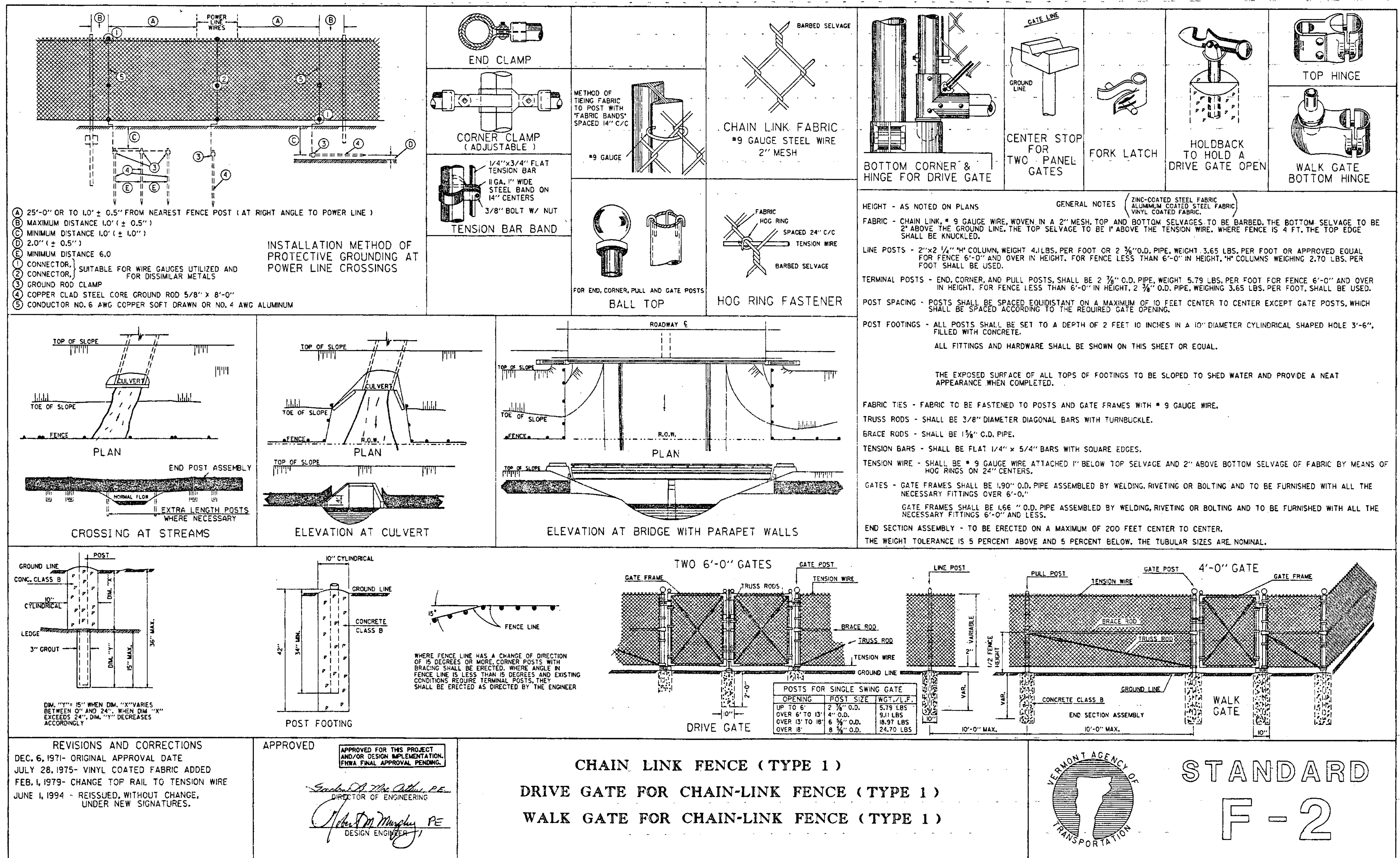
THIS SHEET IS
NOT TO SCALE

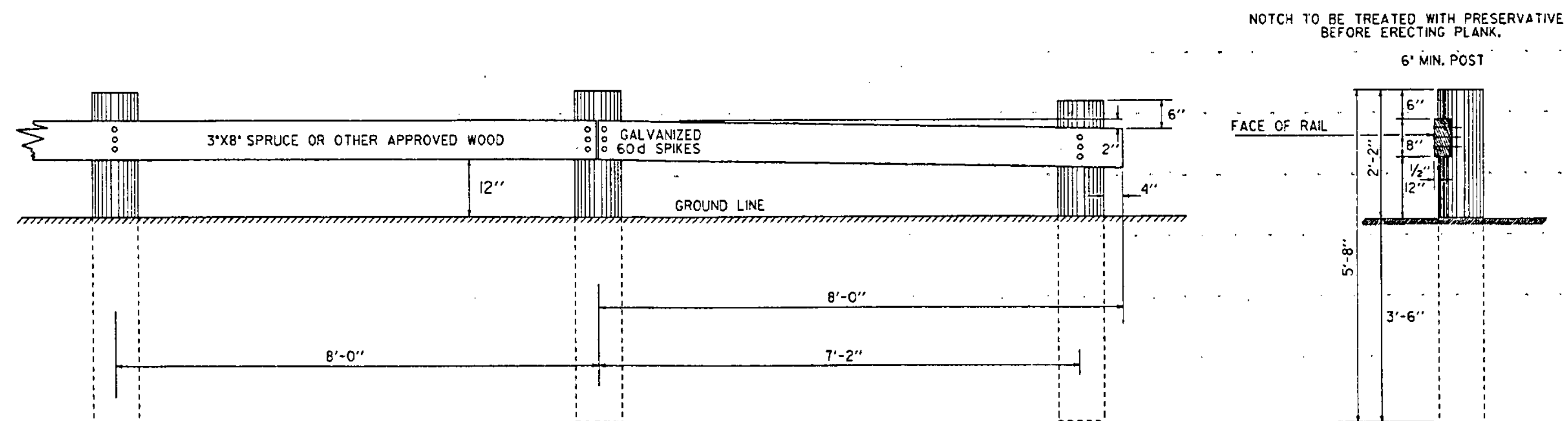
OTHER STDs. E - 191, E - 192
REQUIRED



STANDARD
E-193

/traf/std/stdel93.dgn/stdel93.1





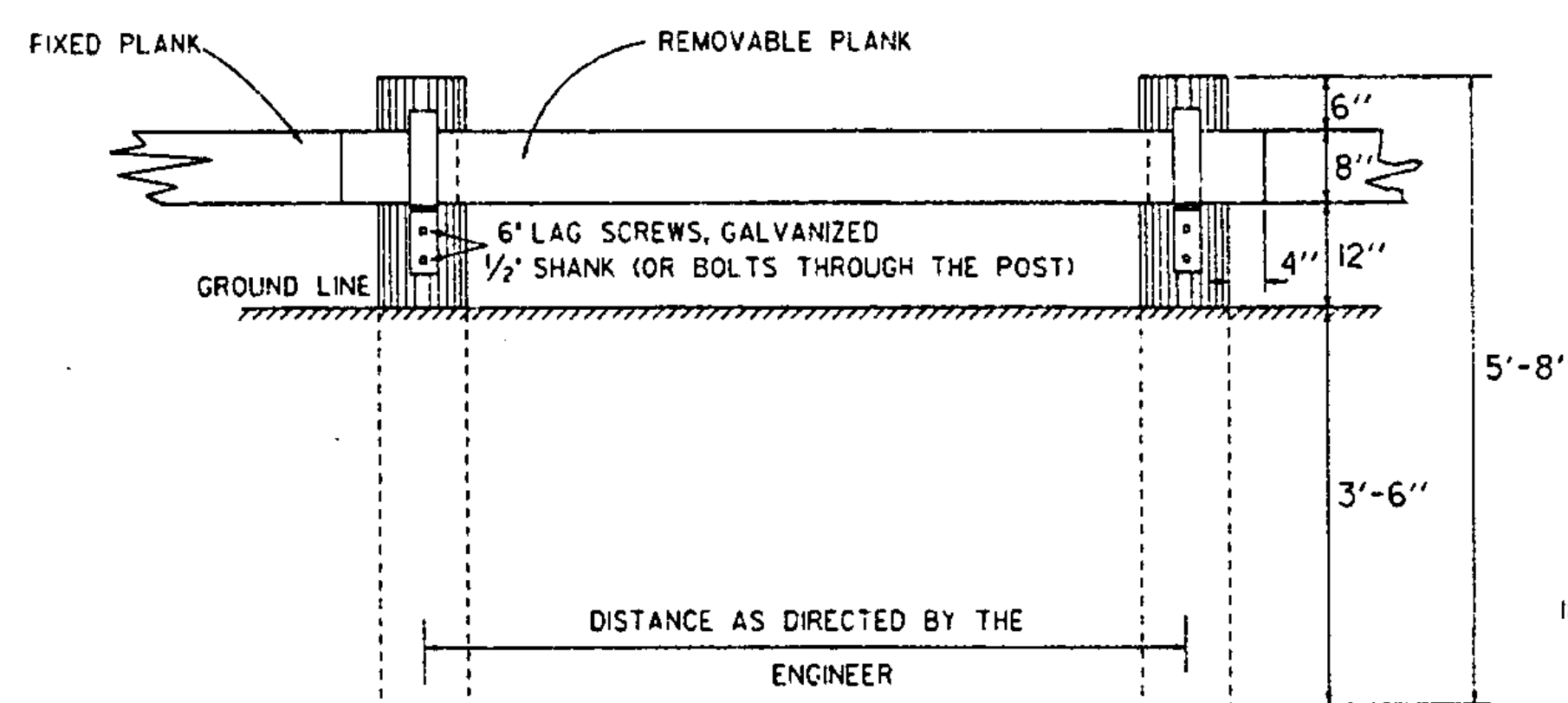
PLANK SIXTEEN FEET IN LENGTH TO BE USED WHEREVER POSSIBLE.
POSTS 16 INCHES SQUARE MAY BE USED IN PLACE OF ROUND POSTS.
FIRST AND LAST POSTS OF EACH SECTION TO BE SET BACK TWELVE INCHES FROM
THE GENERAL LINE OF POSTS, WHEN FOUR OR MORE POSTS ARE REQUIRED.
REFLECTIVE MATERIAL TO BE PLACED AS DIRECTED BY THE ENGINEER.
ALL WOOD MEMBERS SHALL BE GIVEN A PRESERVATIVE TREATMENT.

PLANK RAIL
TO BE USED AS A BARRICADE OFF THE HIGHWAY

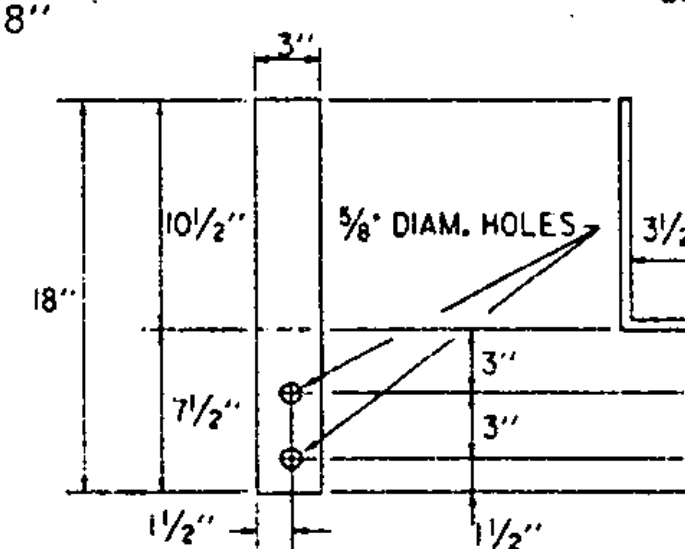
3' x 1 1/2' REFLECTIVE ALUMINUM STRIP TO BE PLACED ON EVERY OTHER WOOD POST IN A LINE OF POSTS AND CLEARLY VISIBLE TO APPROACHING TRAFFIC.
STRIPS TO BE ATTACHED TO THE DESIGNATED RAIL POSTS ON BOTH SIDES OF THE ROAD AND VISIBLE TO TRAFFIC IN BOTH DIRECTIONS.

REFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.09 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER.

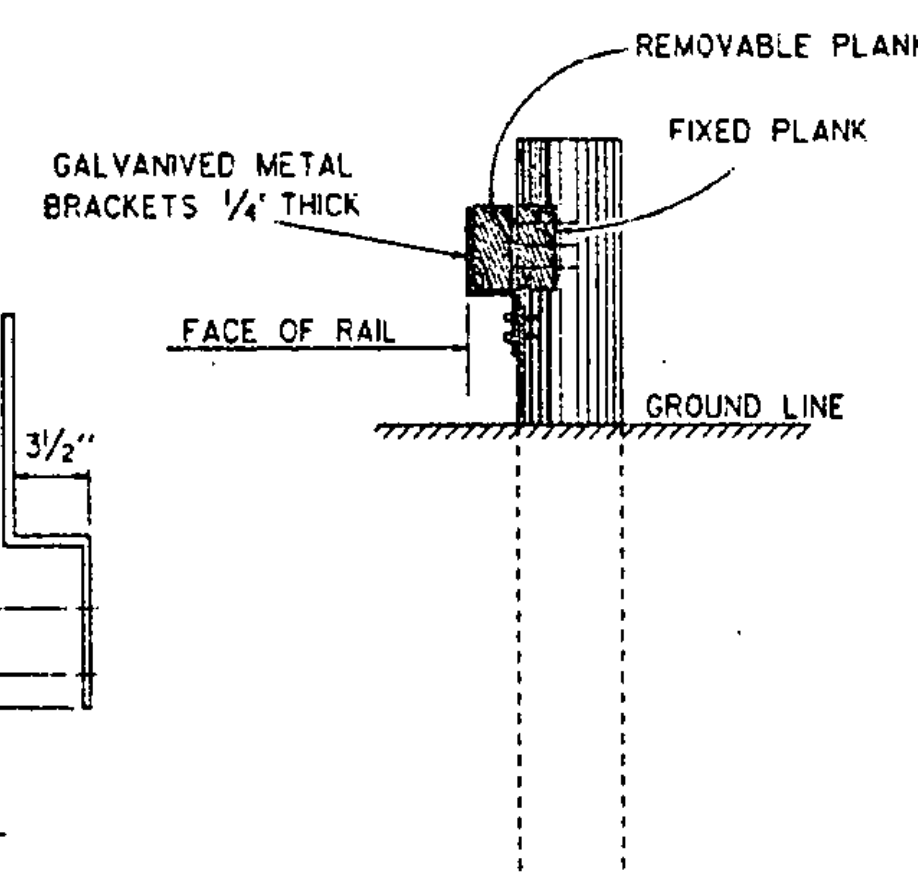
DELINEATION OF WOOD RAIL AND GUIDE POSTS



ENTRANCE THROUGH PLANK RAIL



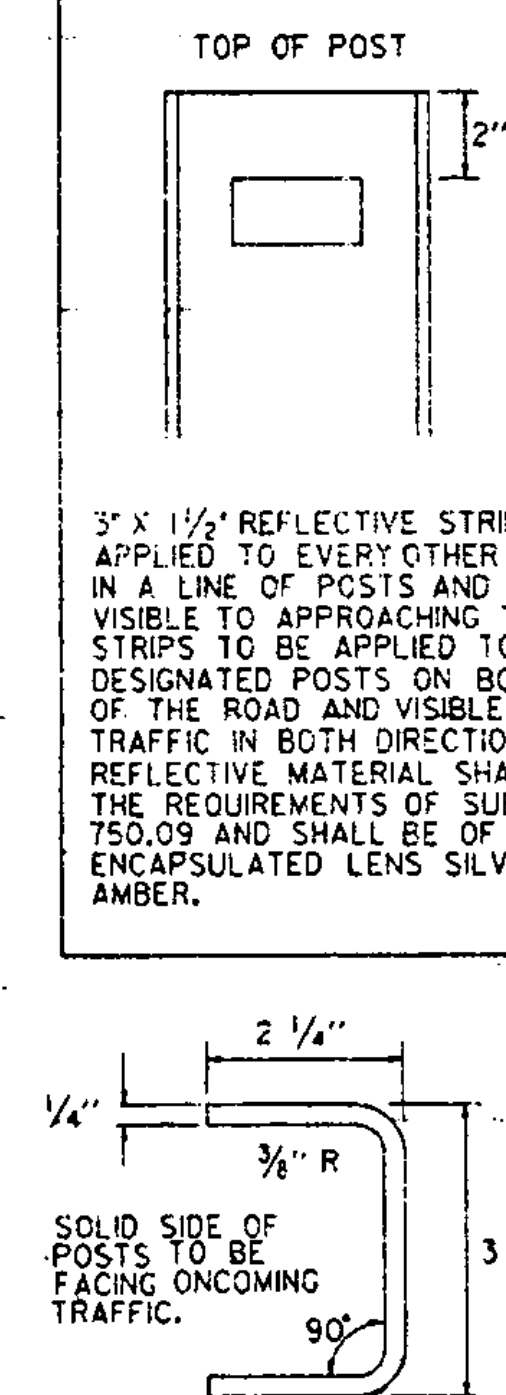
GALVANIZED METAL BRACKETS ARE TO BE INCLUDED
IN THE UNIT BID PRICE FOR PLANK RAIL.



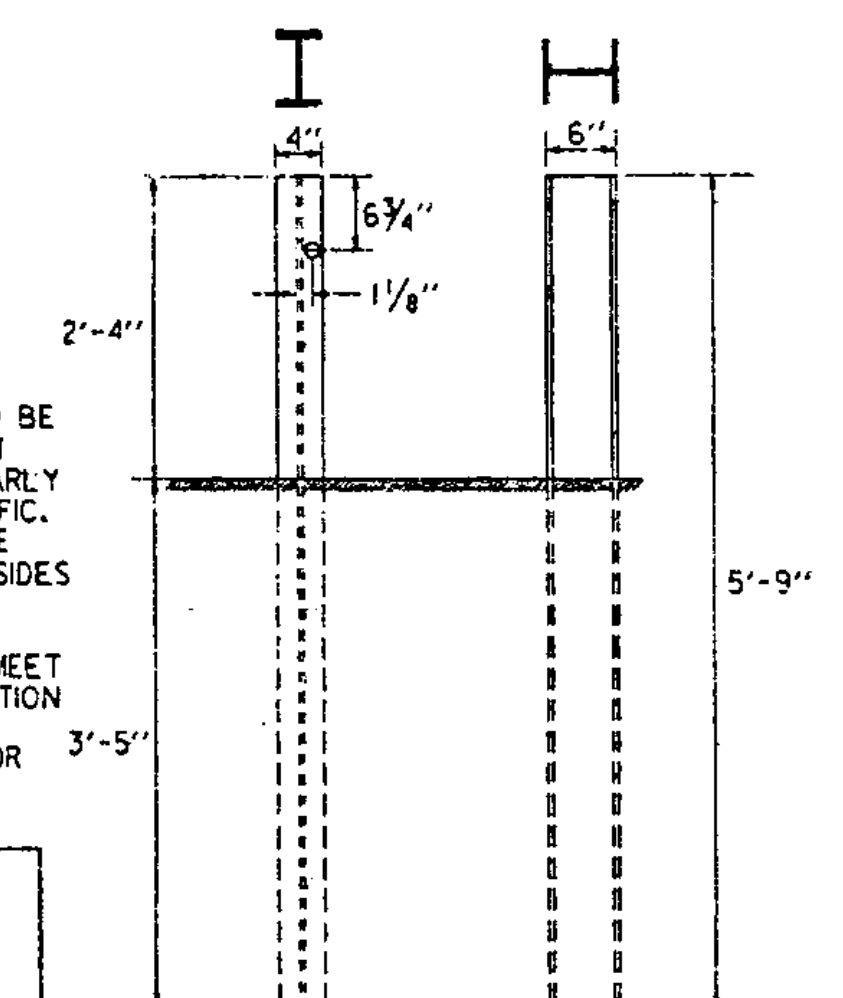
ALL STEEL MARKER POSTS
TO BE GALVANIZED.
STEEL MARKER POSTS TO
BE PLACED AS DIRECTED
BY THE ENGINEER.

POSTS ARE TO BE AMERICAN
STANDARD CHANNEL 5'-9" X 3".
(4.1 LBS. PER FT.)

STEEL MARKER POSTS



ALTERNATE POST



ALL STEEL GUIDE POSTS TO BE GALVANIZED.
REFLECTIVE MATERIAL TO BE PLACED AS DIRECTED BY THE ENGINEER.
POSTS ARE TO BE 5'-9" X 6" X 4" (8.5 LBS. PER FT.).

ALL POSTS IN A GIVEN RUN OF
BARRIER TO BE UNIFORM.

STEEL GUIDE POSTS™

REVISIONS AND CORRECTIONS

DEC. 8, 1971- ORIGINAL APPROVAL DATE

MAY 23, 1974 - ALTERNATE POST ADDED

MAY 29, 1979 - NOTE ON REFLECTIVE MATERIAL
CHANGED

JULY 23, 1980 - CHANGED DIAMETER OF WOOD
MARKER POST & WOOD GUIDE POST

MAY 25, 1982- REMOVED ALTERNATE POST DETAIL

OCT. 31, 1985- REVISED TO CONFORM TO
1986 SPECIFICATIONS

JUNE 1, 1994 - REISSUED, WITHOUT CHANGE,
UNDER NEW SIGNATURES.

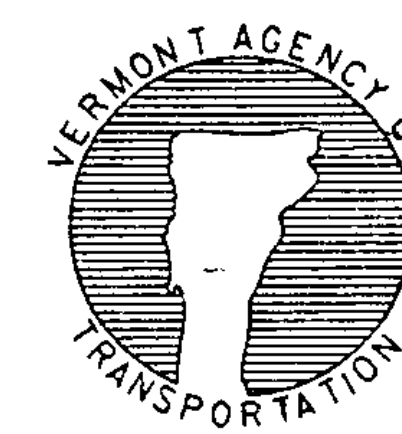
APPROVED

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

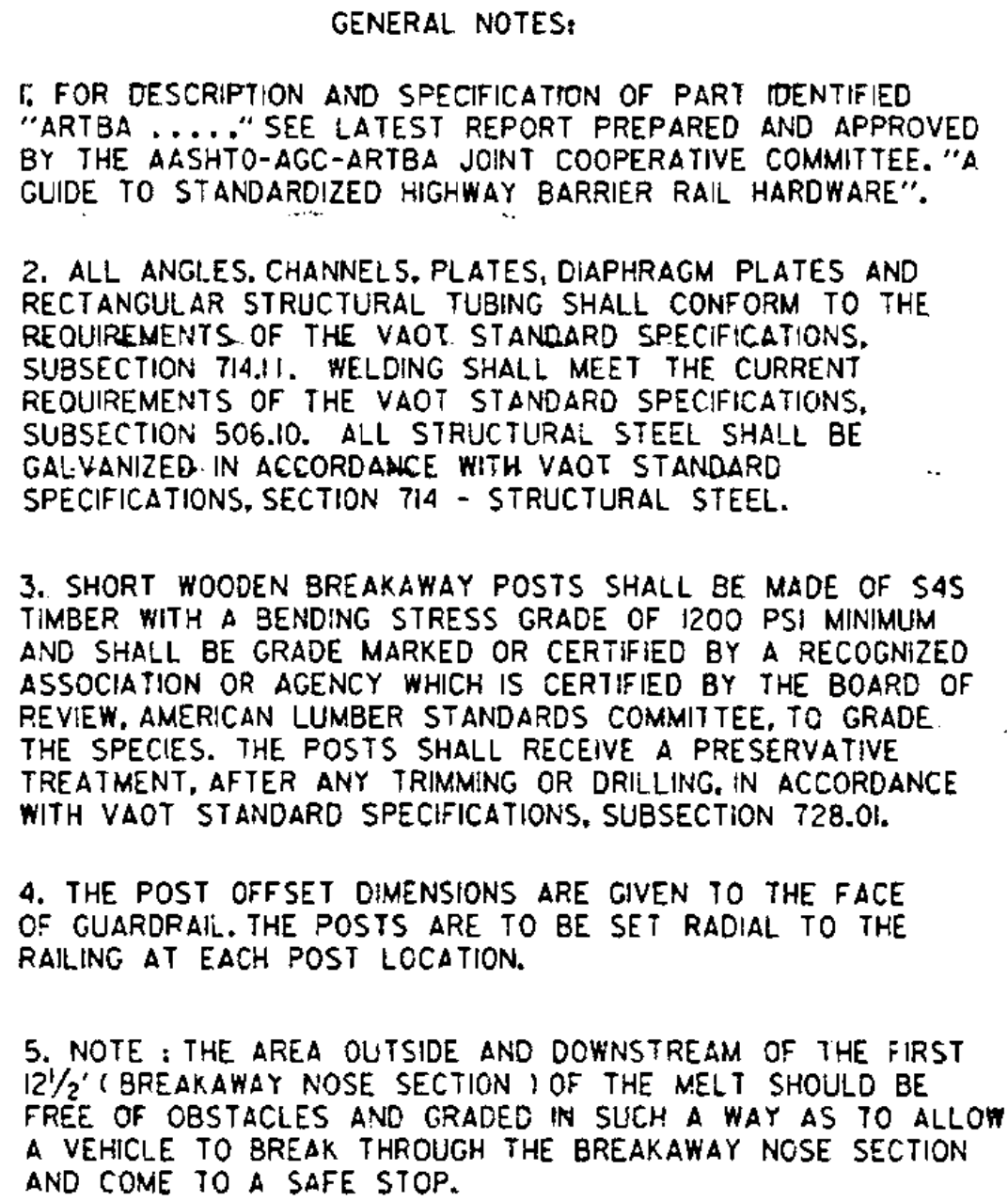
James B. MacArthur, P.E.
DIRECTOR OF ENGINEERING

Robert D. Murphy, P.E.
DESIGN ENGINEER

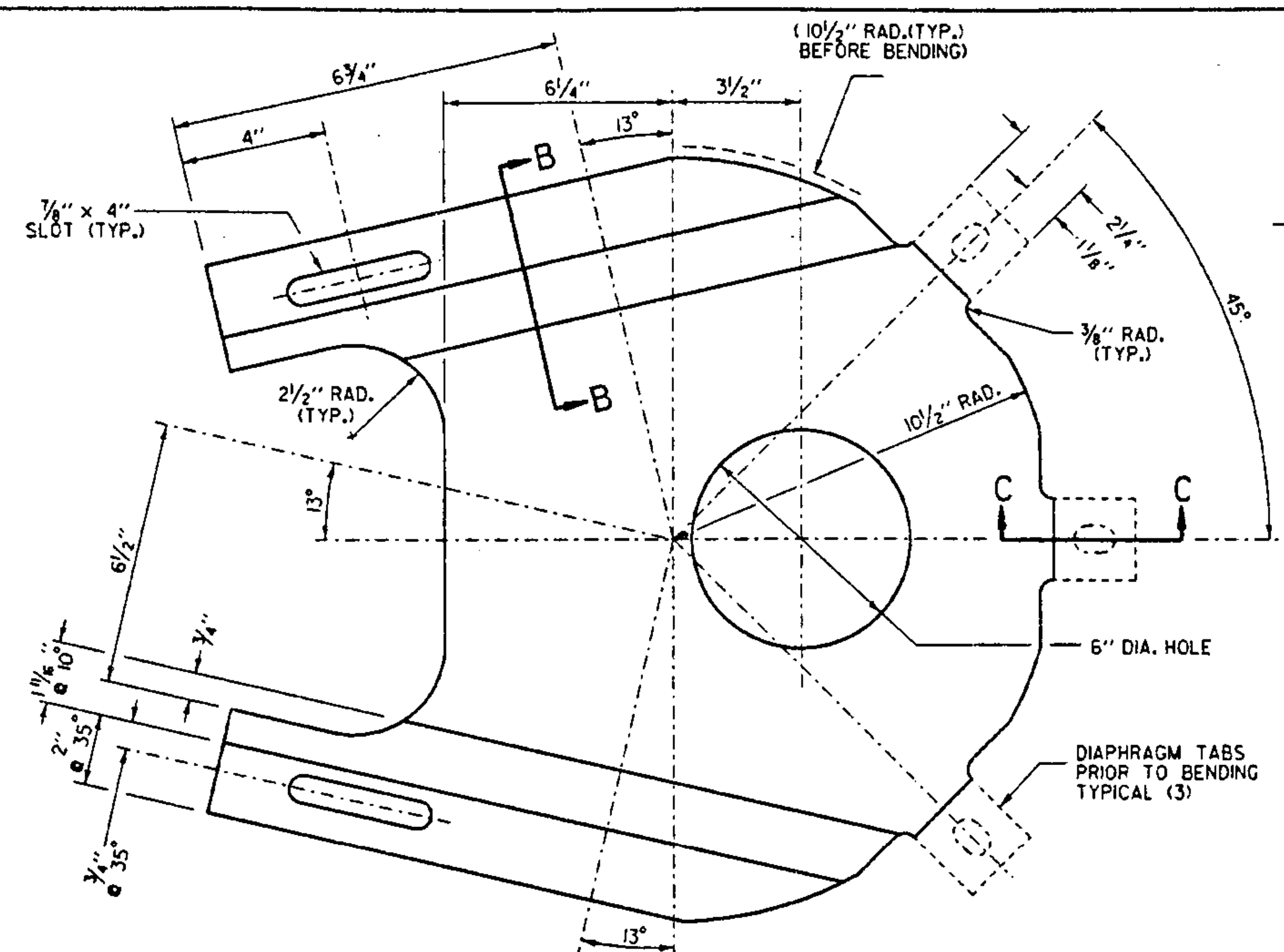
PLANK RAIL
GUIDE POSTS
WOOD MARKER POSTS
STEEL MARKER POSTS



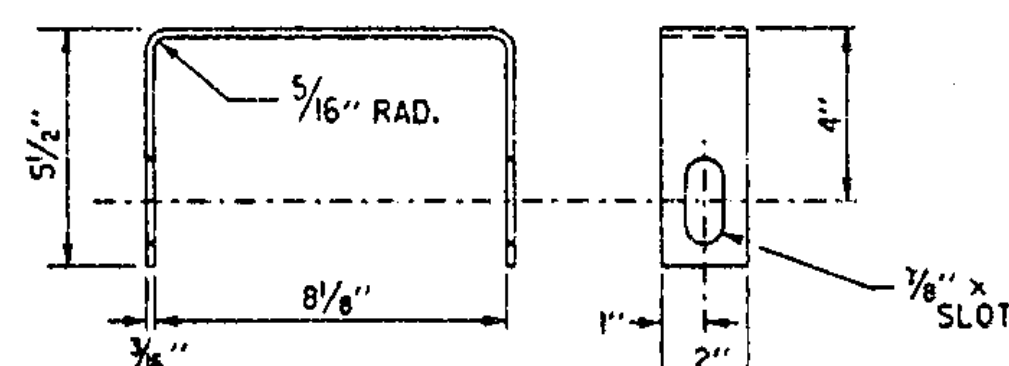
STANDARD G-4



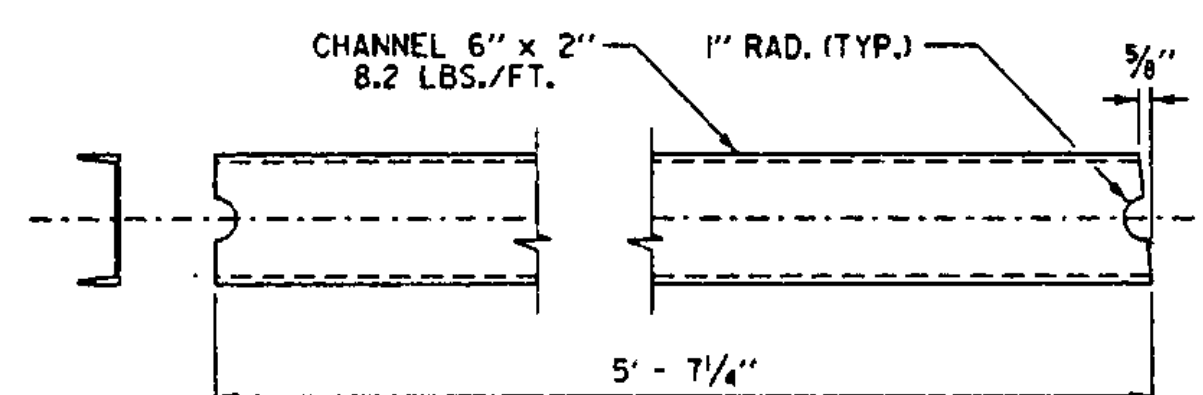
STANDARD G-17 a



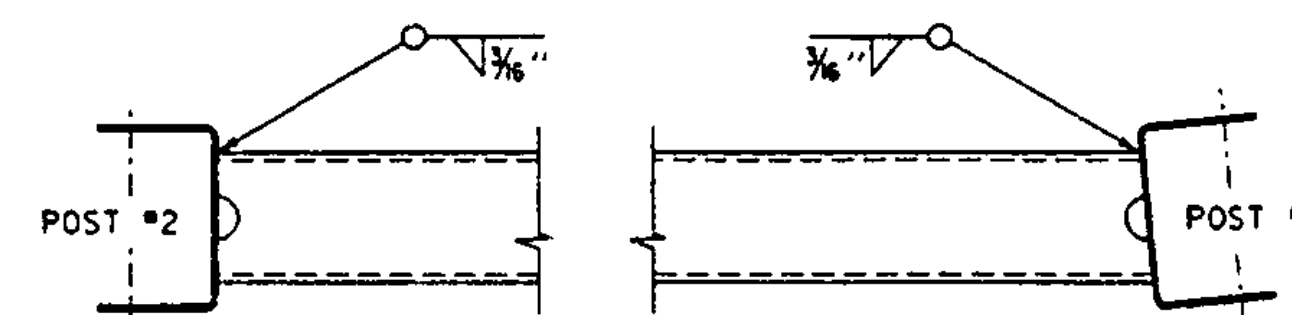
DIAPHRAGM PLATE DETAIL
12 GAGE - (2 REQUIRED EACH TERMINAL)



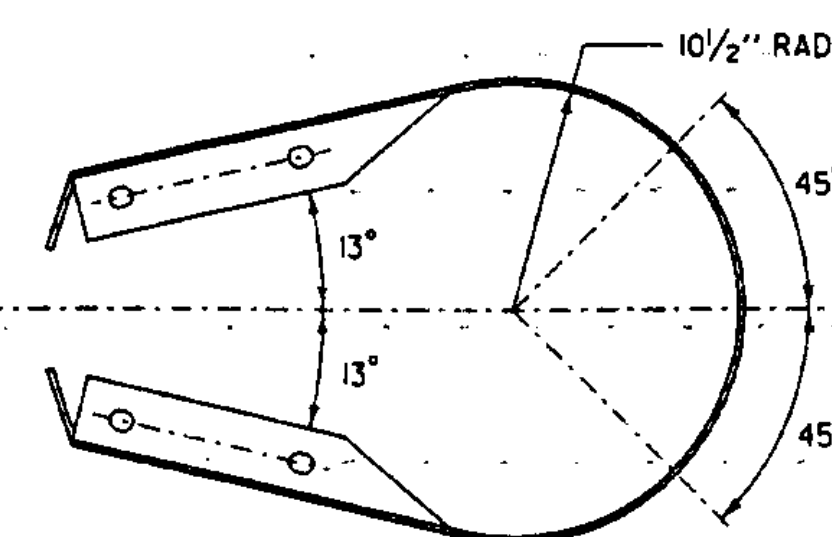
YOKE DETAILS



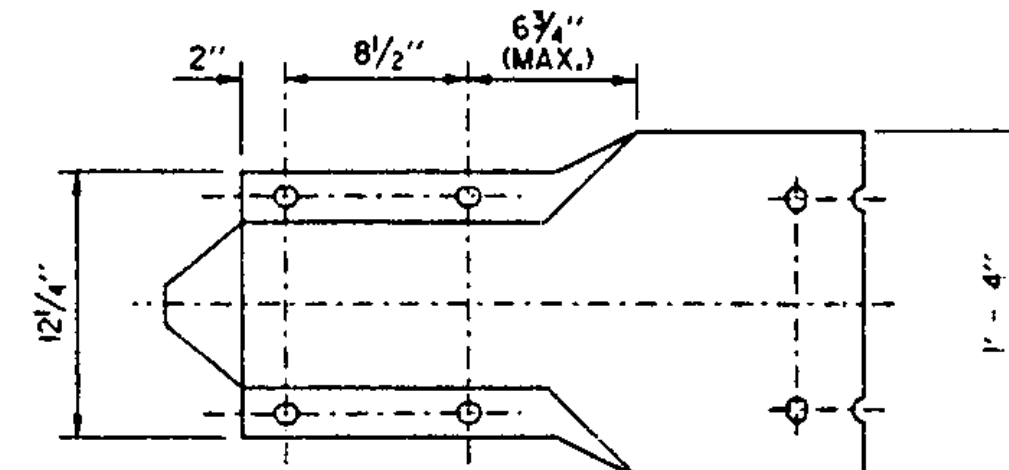
STRUT DETAILS



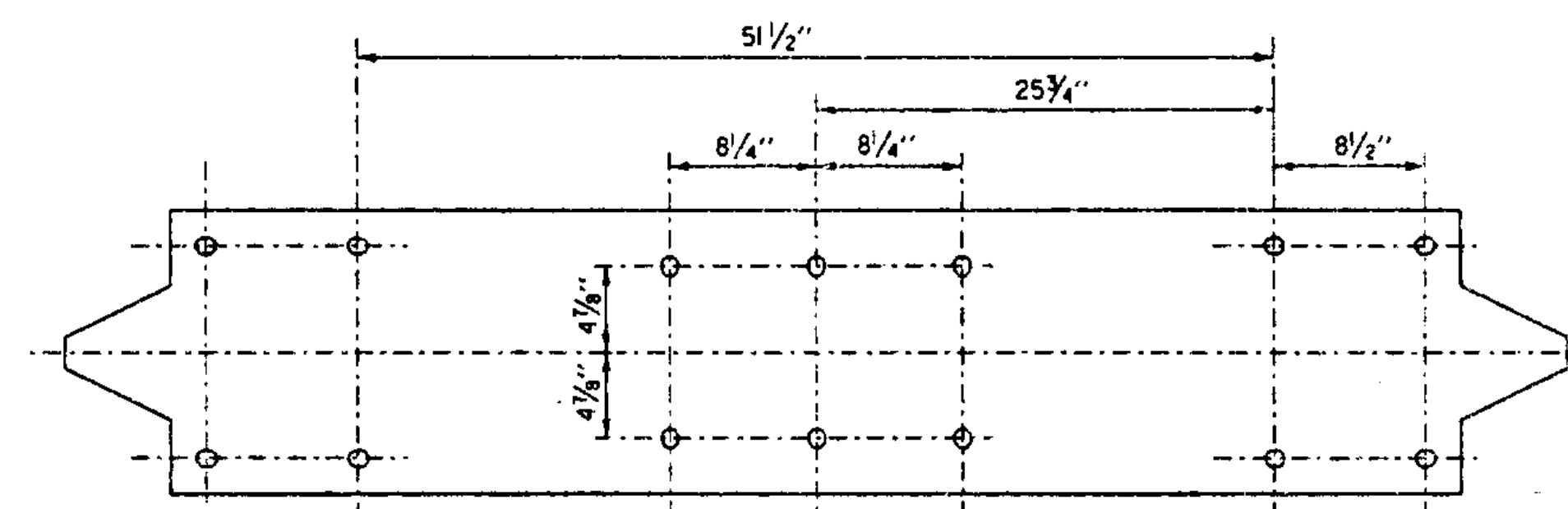
STRUT AND YOKE ASSEMBLY
SHOWN LEGS DOWN FOR OPPOSITE
HAND, INSTALL LEGS UP



BUFFERED END SECTION
PLAN

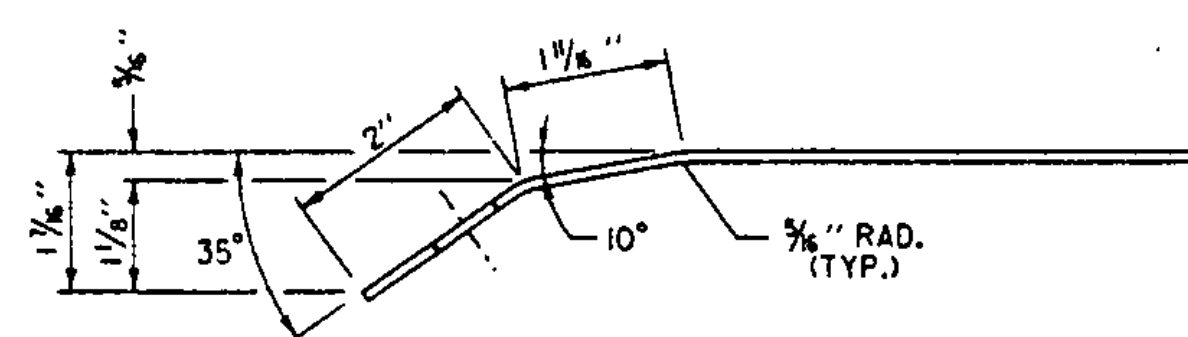


BUFFERED END SECTION
ELEVATION

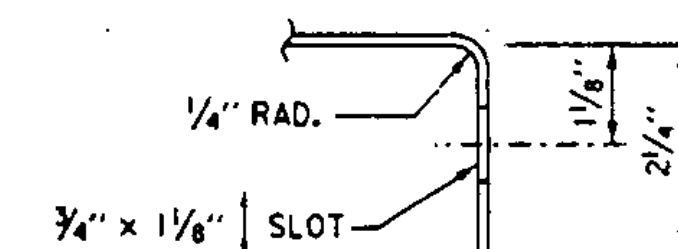


BUFFERED END SECTION
FLAT PLATE LAYOUT
(MODIFIED ARTBA RE-7(21)3-79)

ALL SLOTS 3/32" x 1 1/8"
ALL BOLTS ARTBA F-3(11/4)3-76



DIAPHRAGM PLATE DETAIL
SECTION B-B

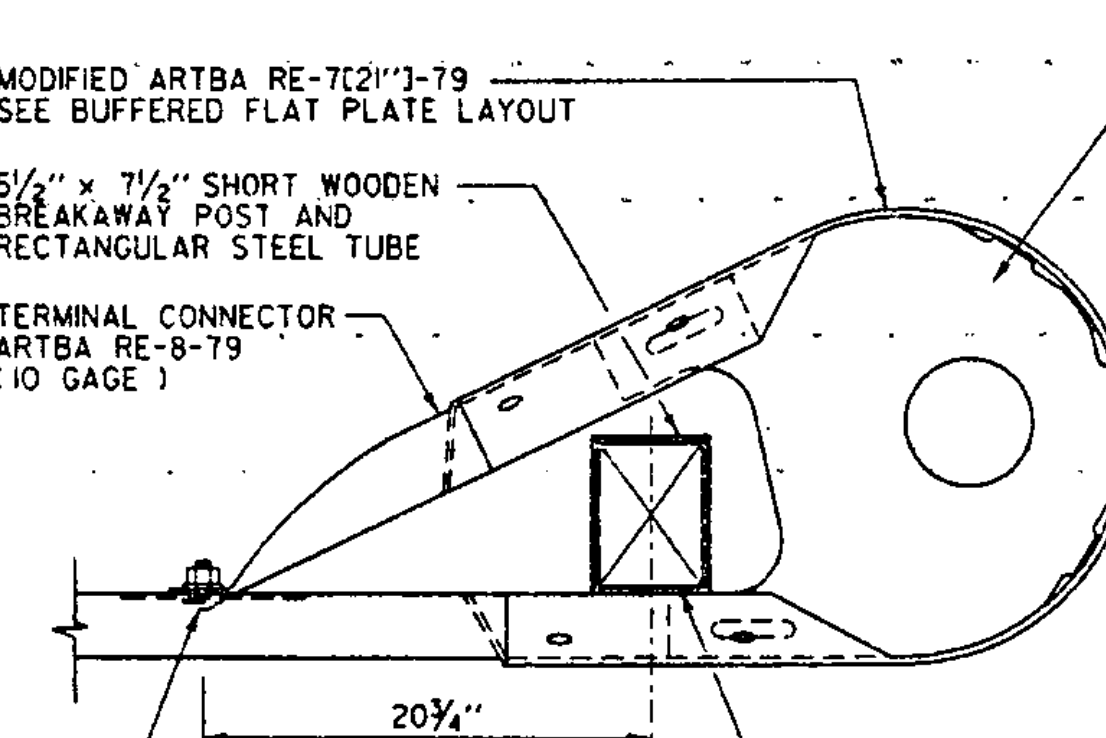


DIAPHRAGM PLATE DETAIL
SECTION C-C

MODIFIED ARTBA RE-7(21)3-79
SEE BUFFERED FLAT PLATE LAYOUT

5/8" x 7/8" SHORT WOODEN
BREAKAWAY POST AND
RECTANGULAR STEEL TUBE

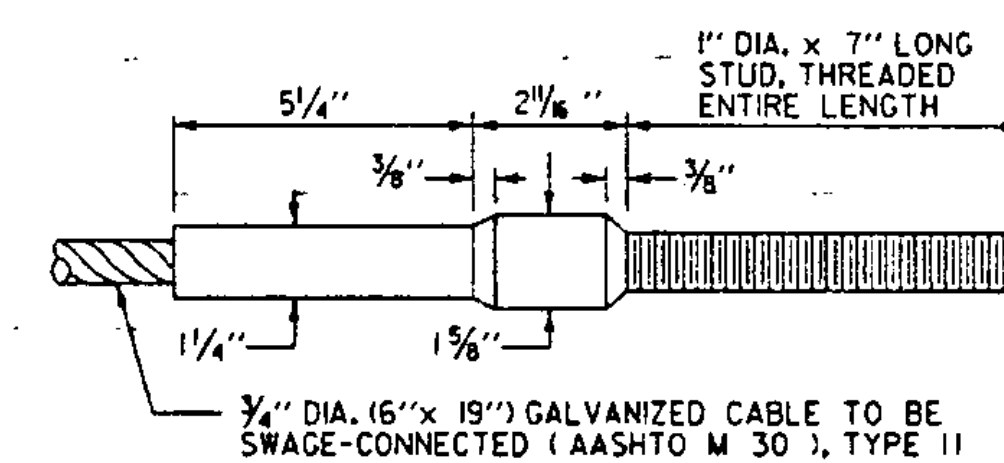
TERMINAL CONNECTOR
ARTBA RE-8-79
(10 GAGE)



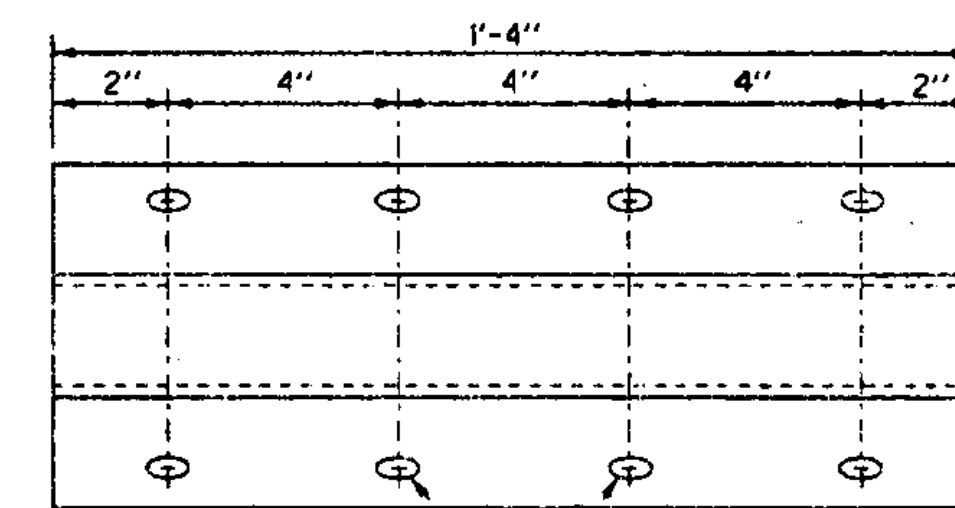
BUFFERED END ASSEMBLY

BOLT ARTBA F-3(11/4)3-76 AND
ARTBA F-12-73 WASHER UNDER
THE BOLT HEAD AND NUT.

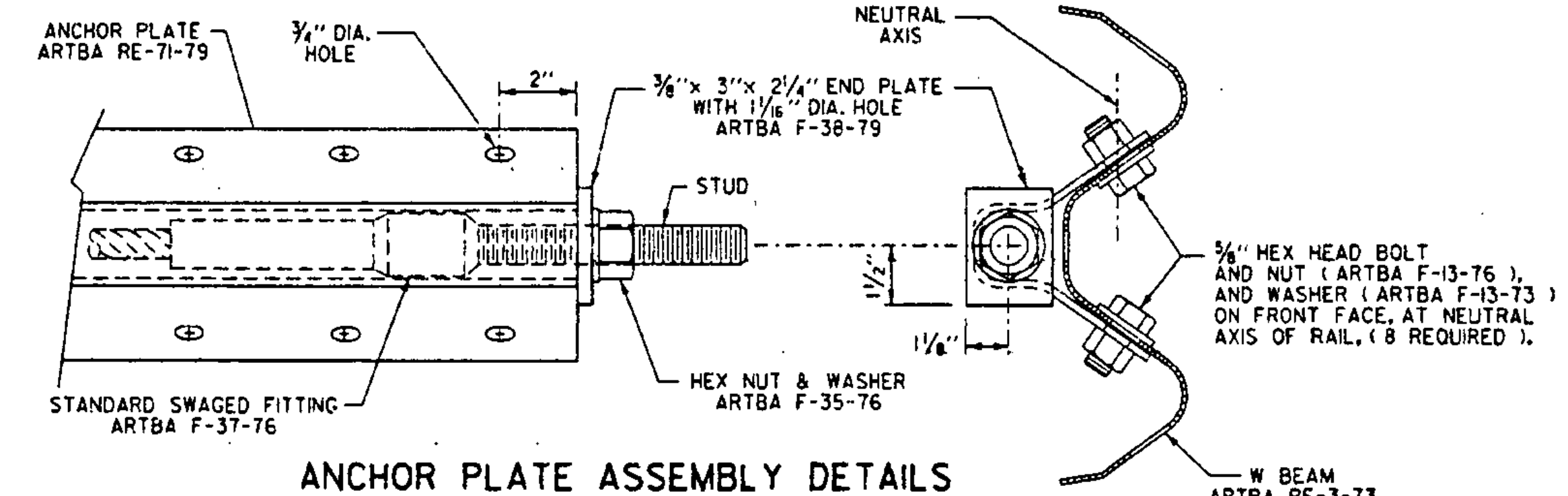
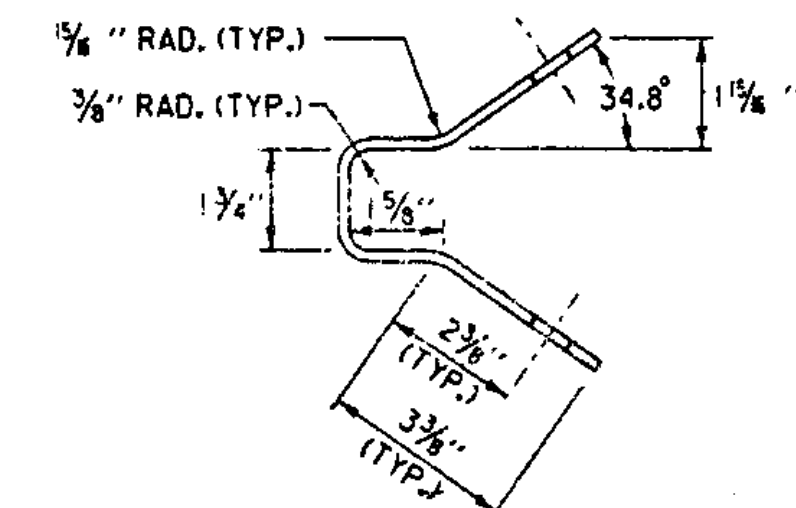
MODIFIED ARTBA F-3(11/4)3-73
ARTBA F-13-73



STANDARD SWAGED FITTING AND STUD
CABLE ASSEMBLY ARTBA F-37-76



ANCHOR PLATE
ARTBA RE-71-79



ANCHOR PLATE ASSEMBLY DETAILS

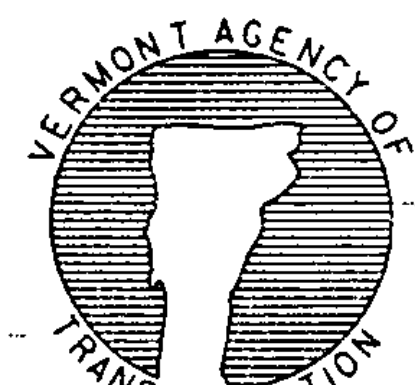
REVISIONS AND CORRECTIONS
JUNE 30, 1995 ORIGINAL APPROVAL

APPROVED

APPROVED FOR THIS PROJECT
AND/OR DESIGN IMPLEMENTATION.
FHWA FINAL APPROVAL PENDING.

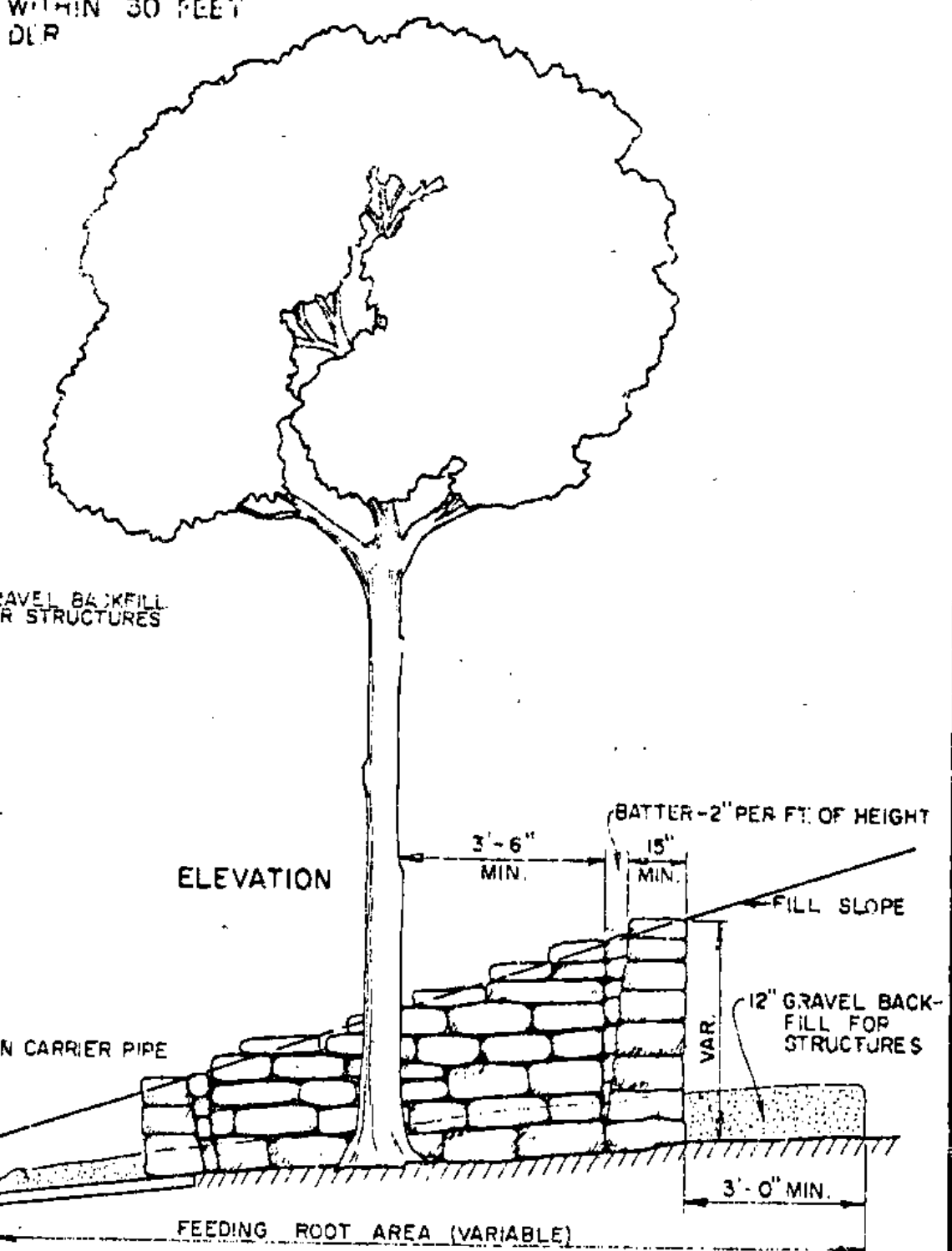
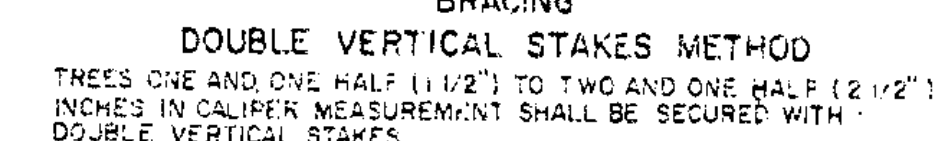
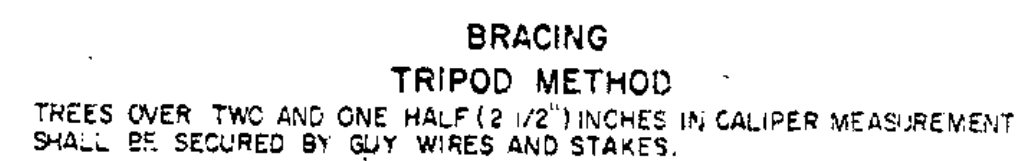
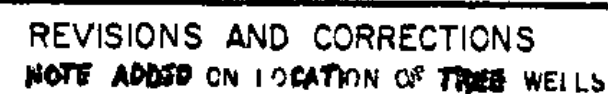
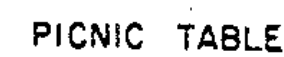
Stephen J. MacArthur
DIRECTOR OF ENGINEERING
John D. Mung
DESIGN ENGINEER

MODIFIED ECCENTRIC LOADER TERMINAL WITH WOOD POSTS (MELT)



STANDARD
G-17 b

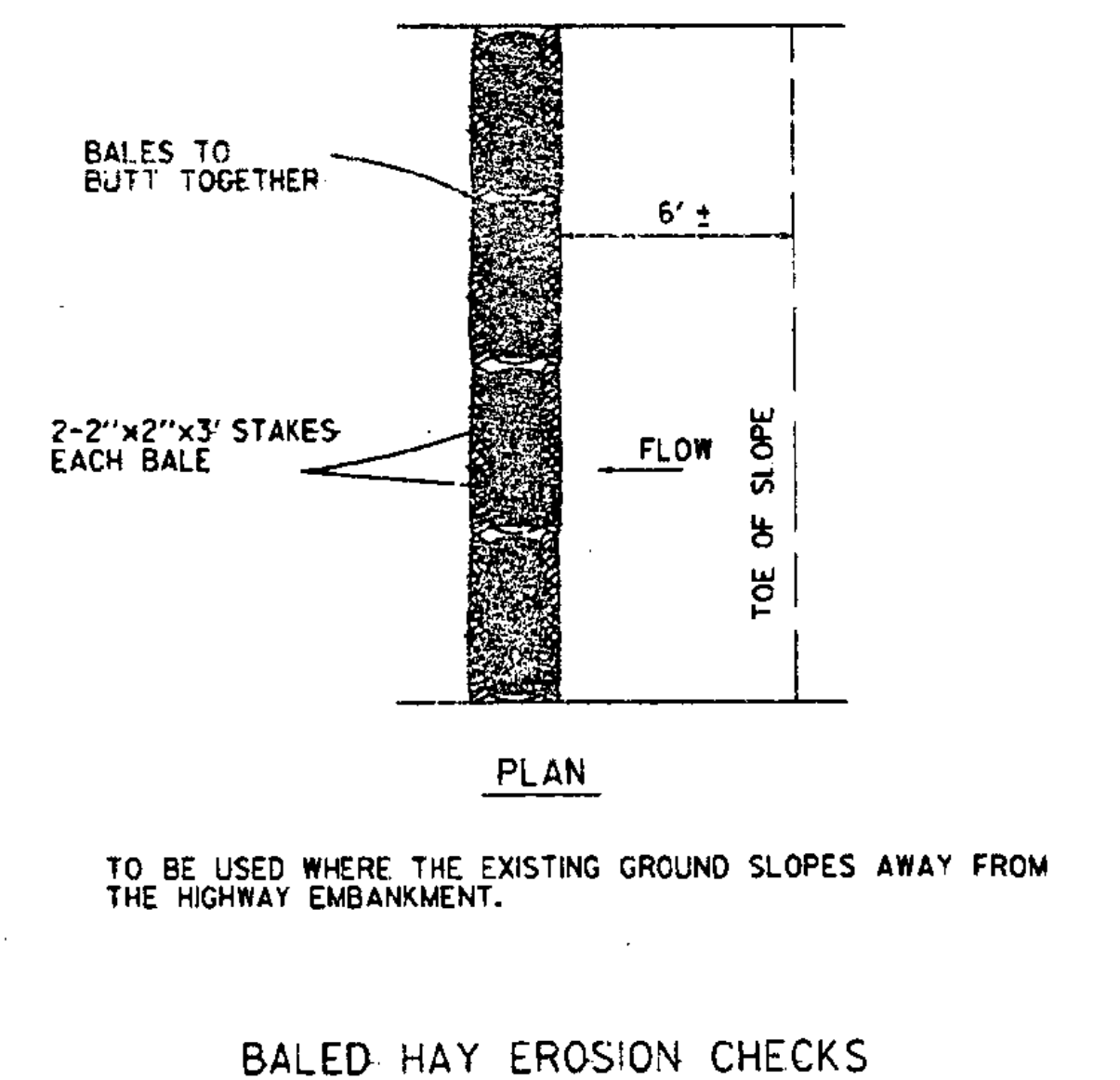
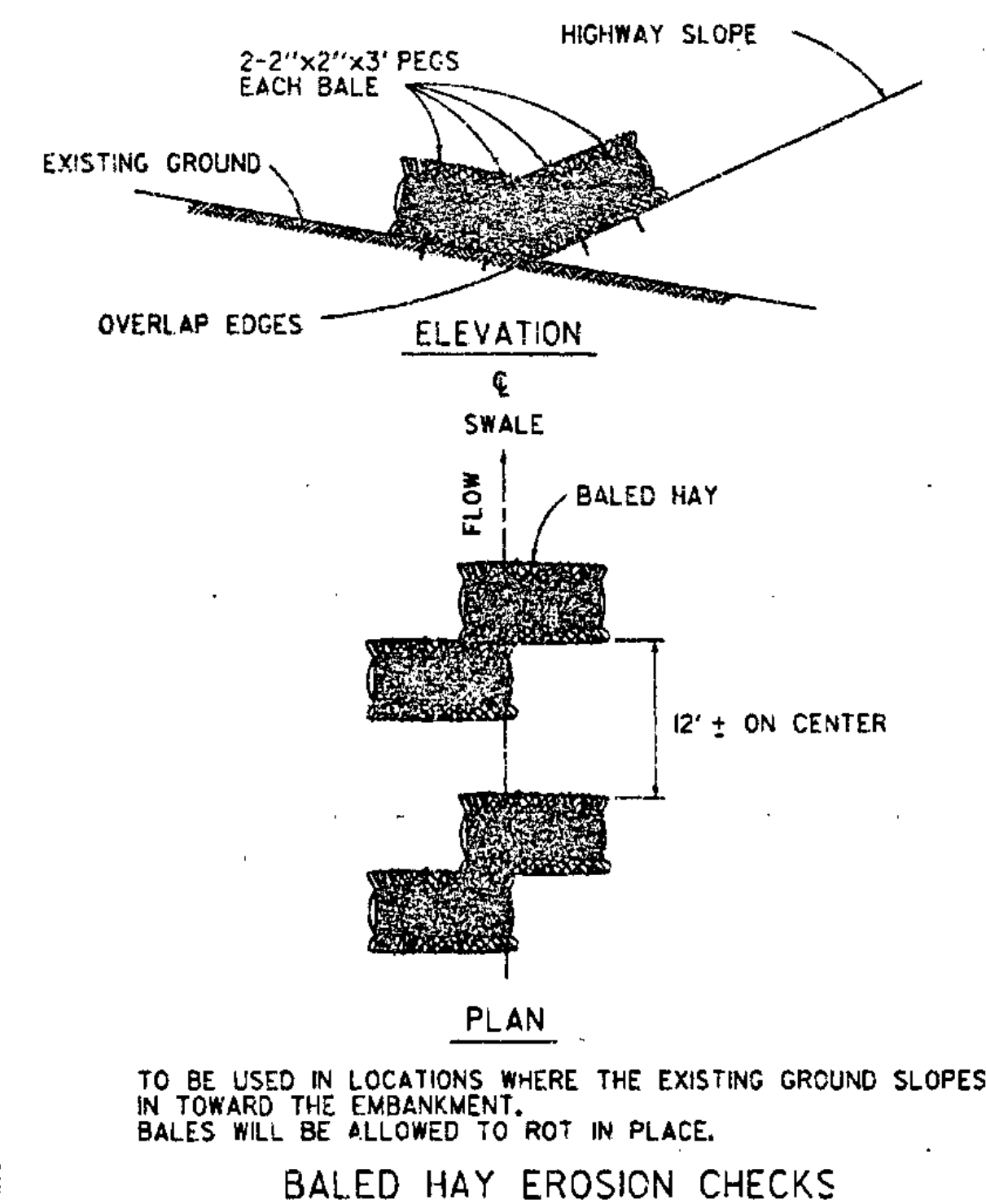
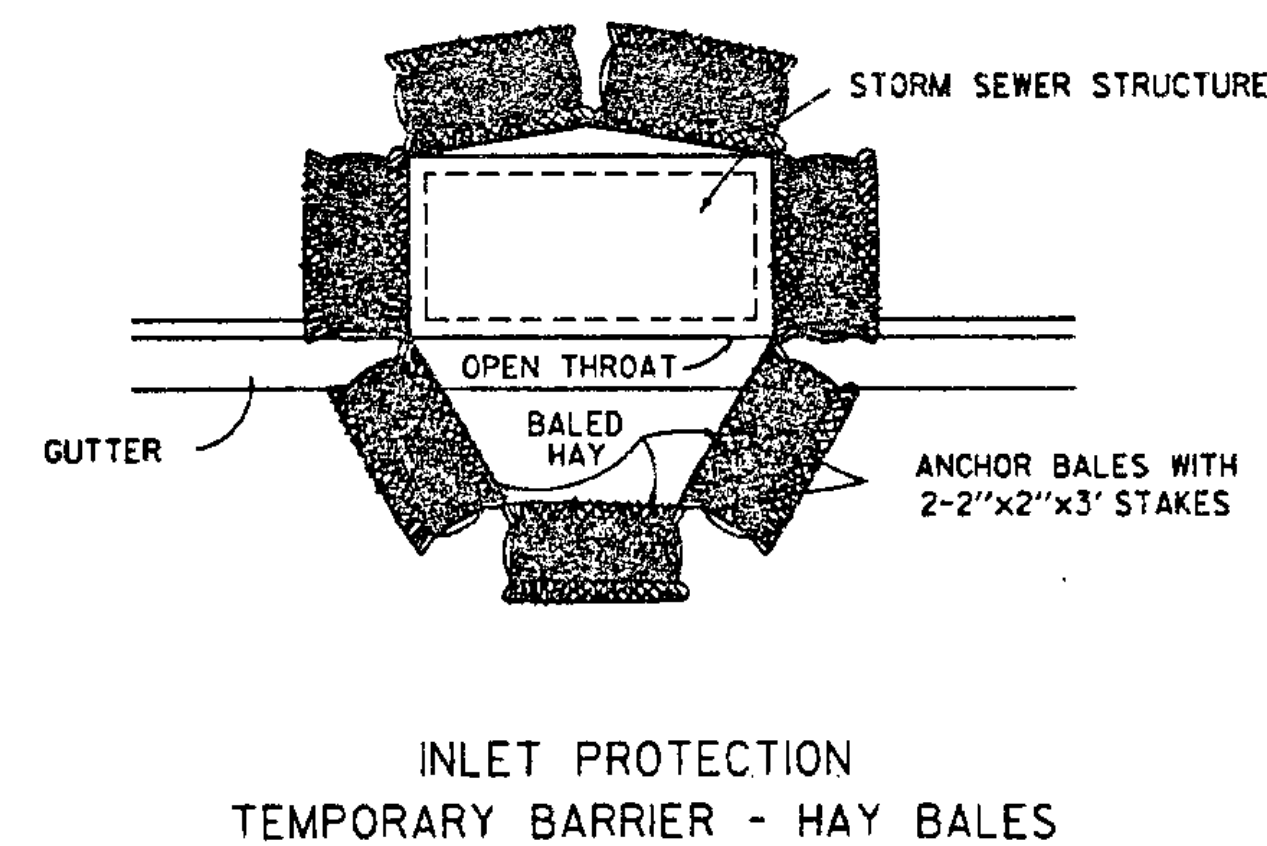
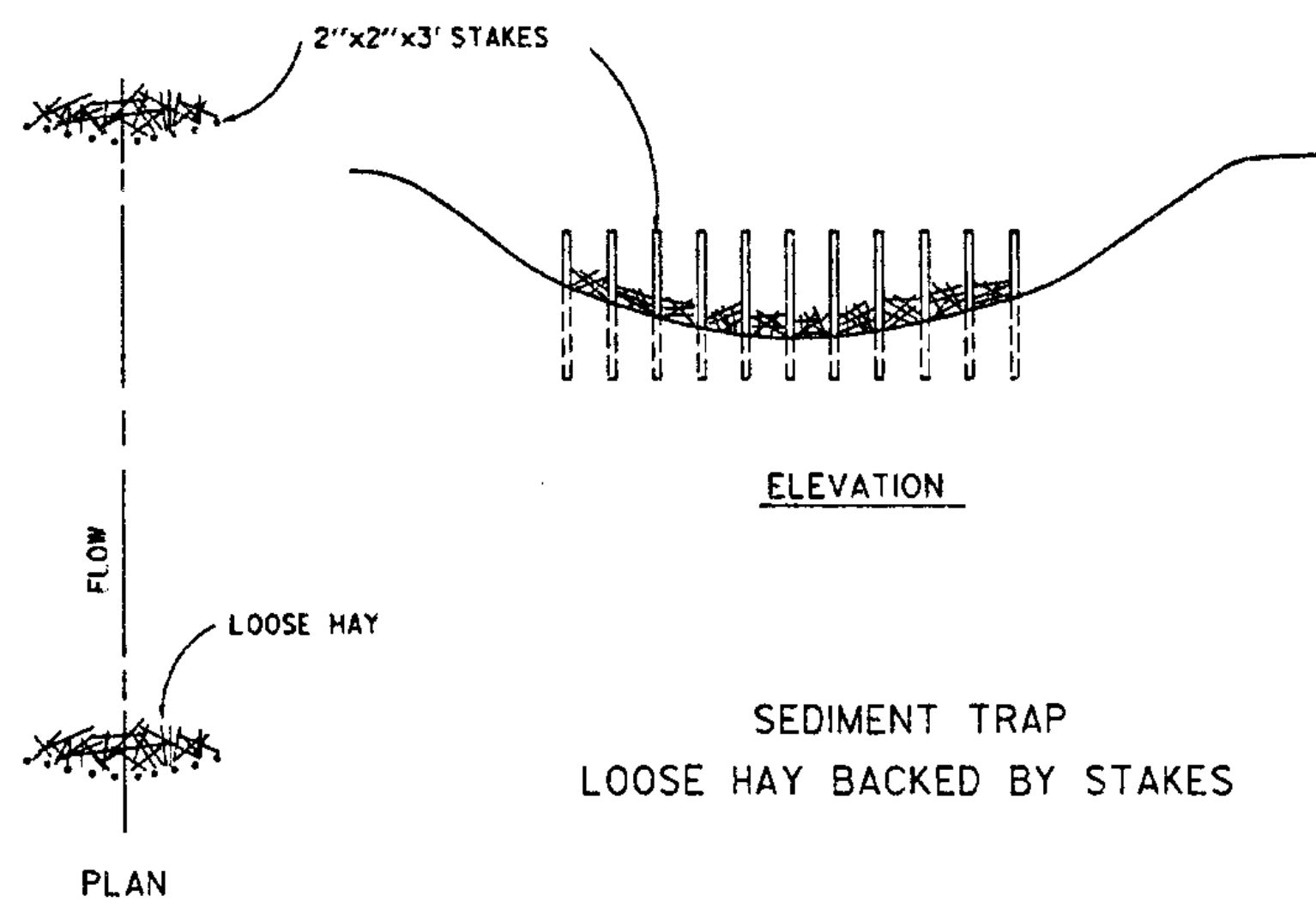
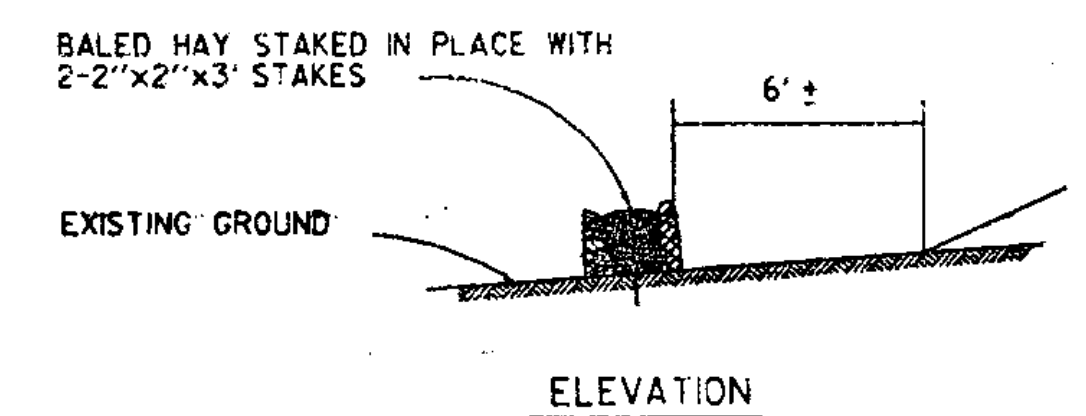
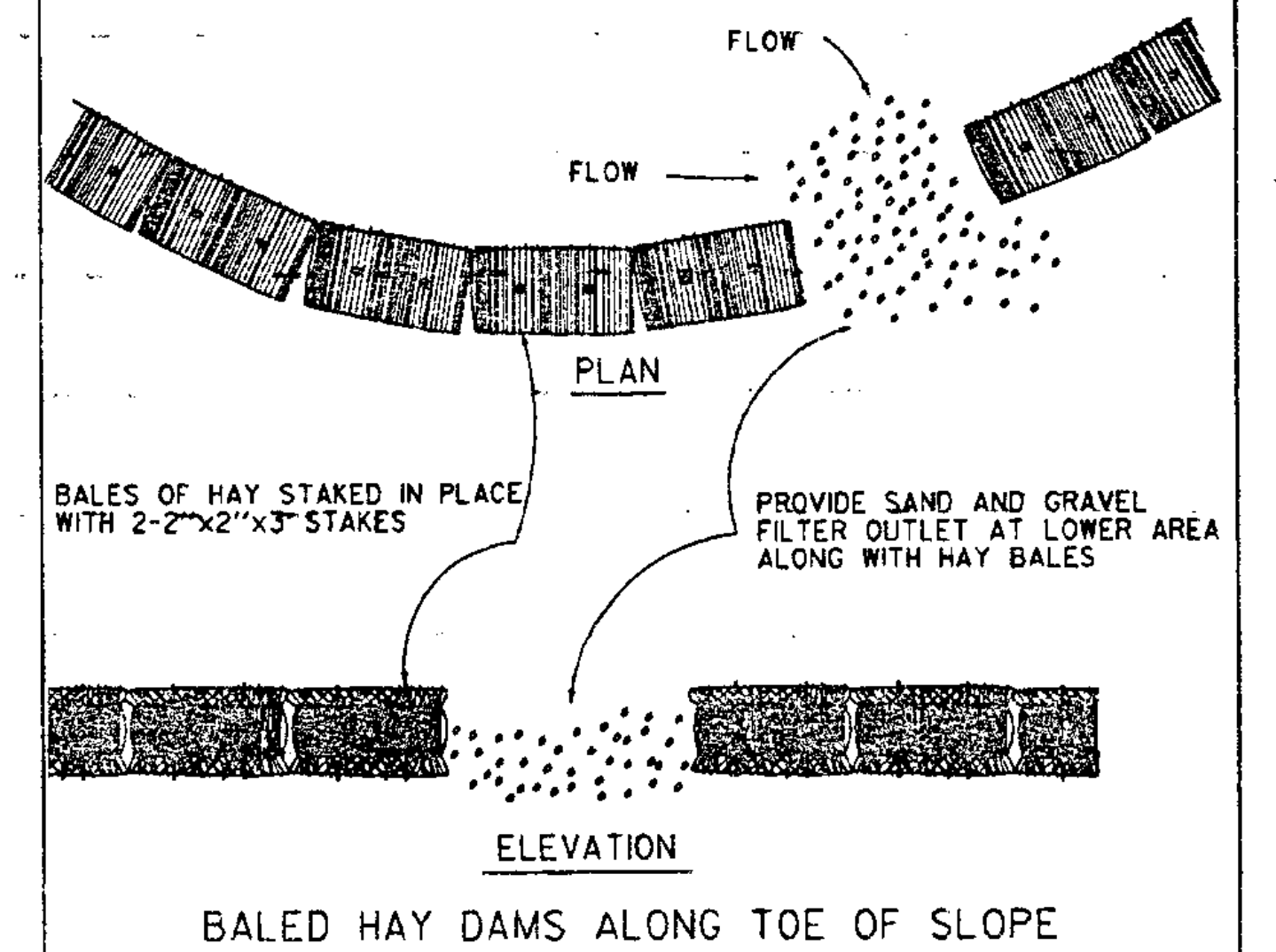
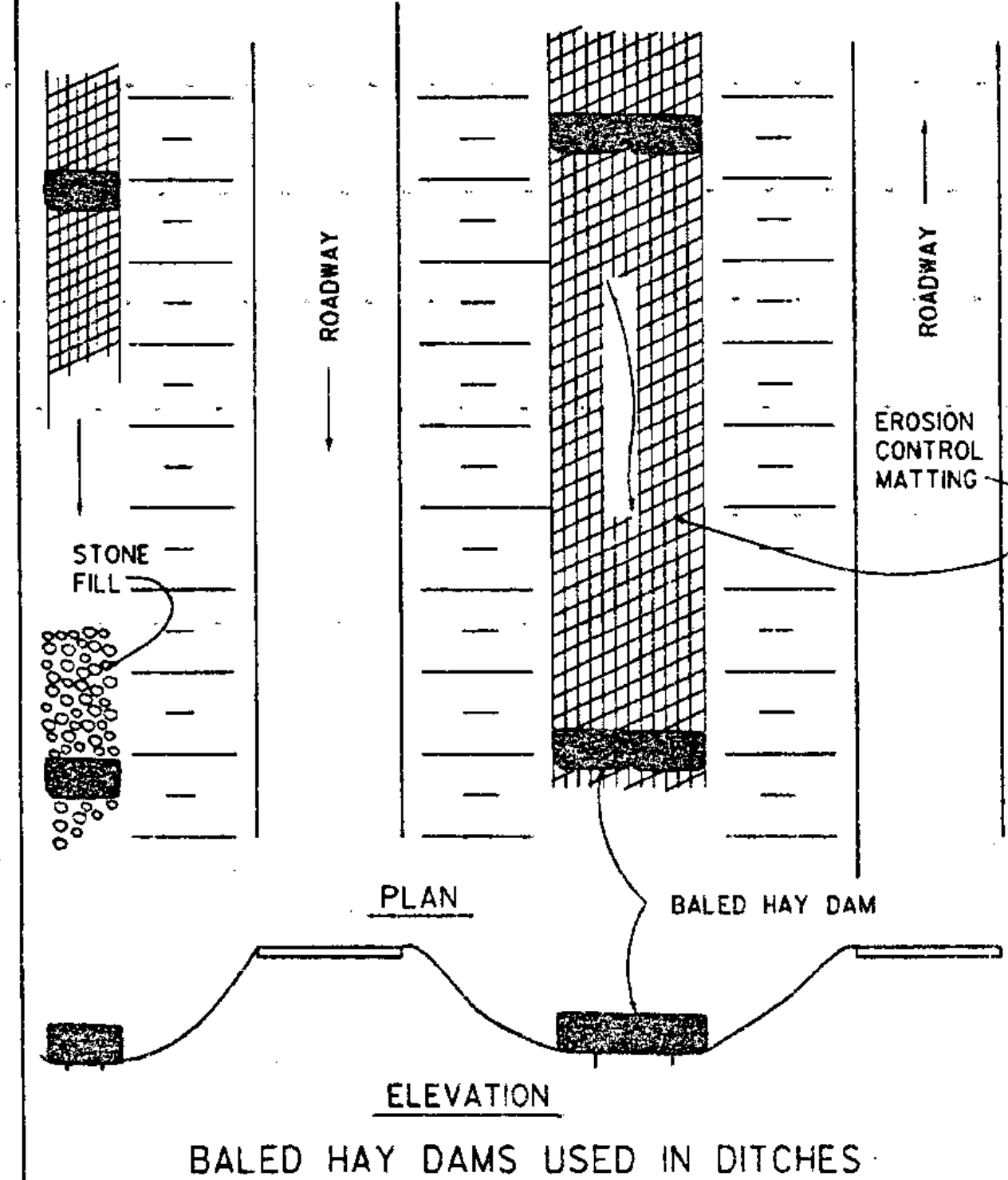
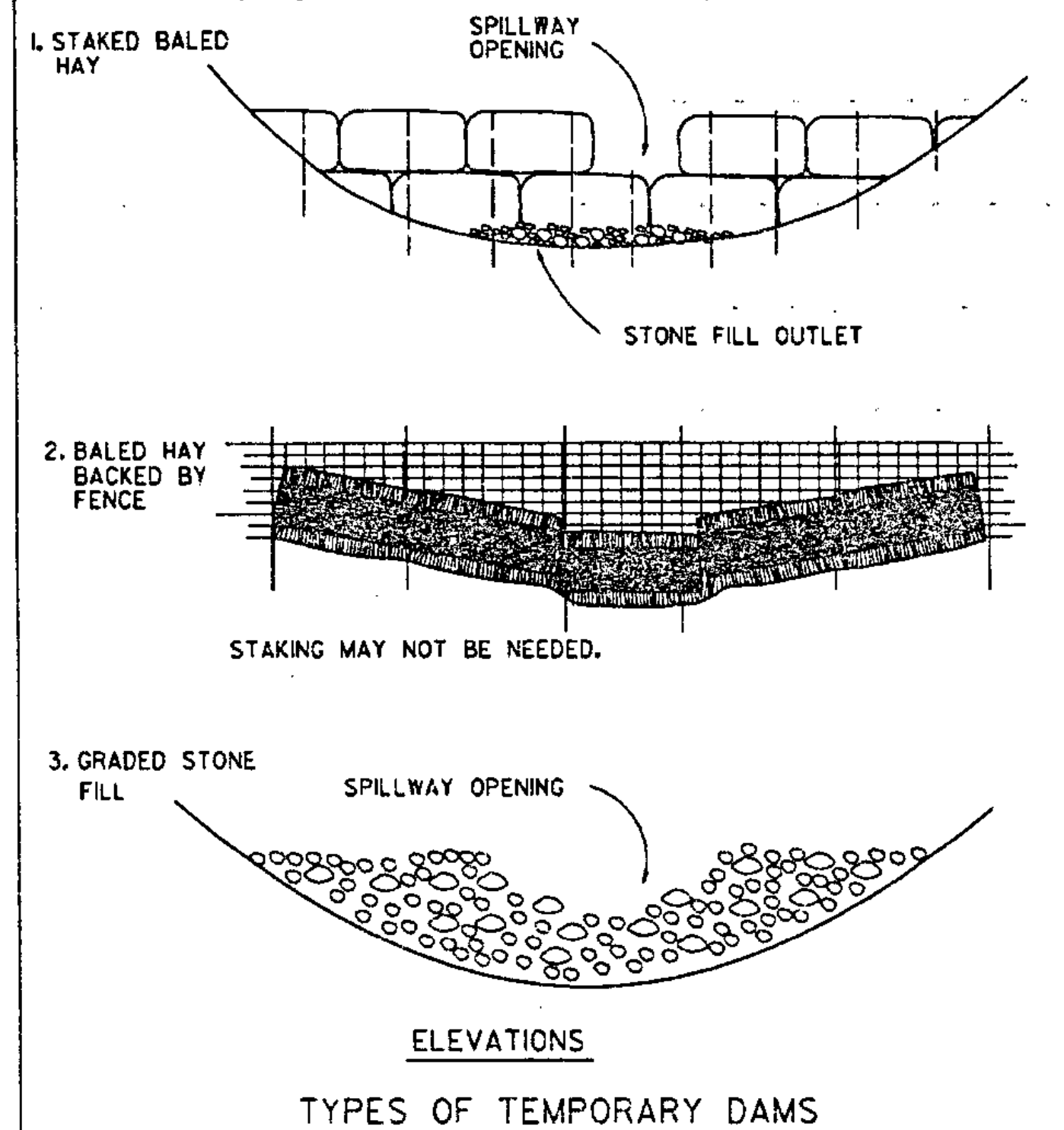
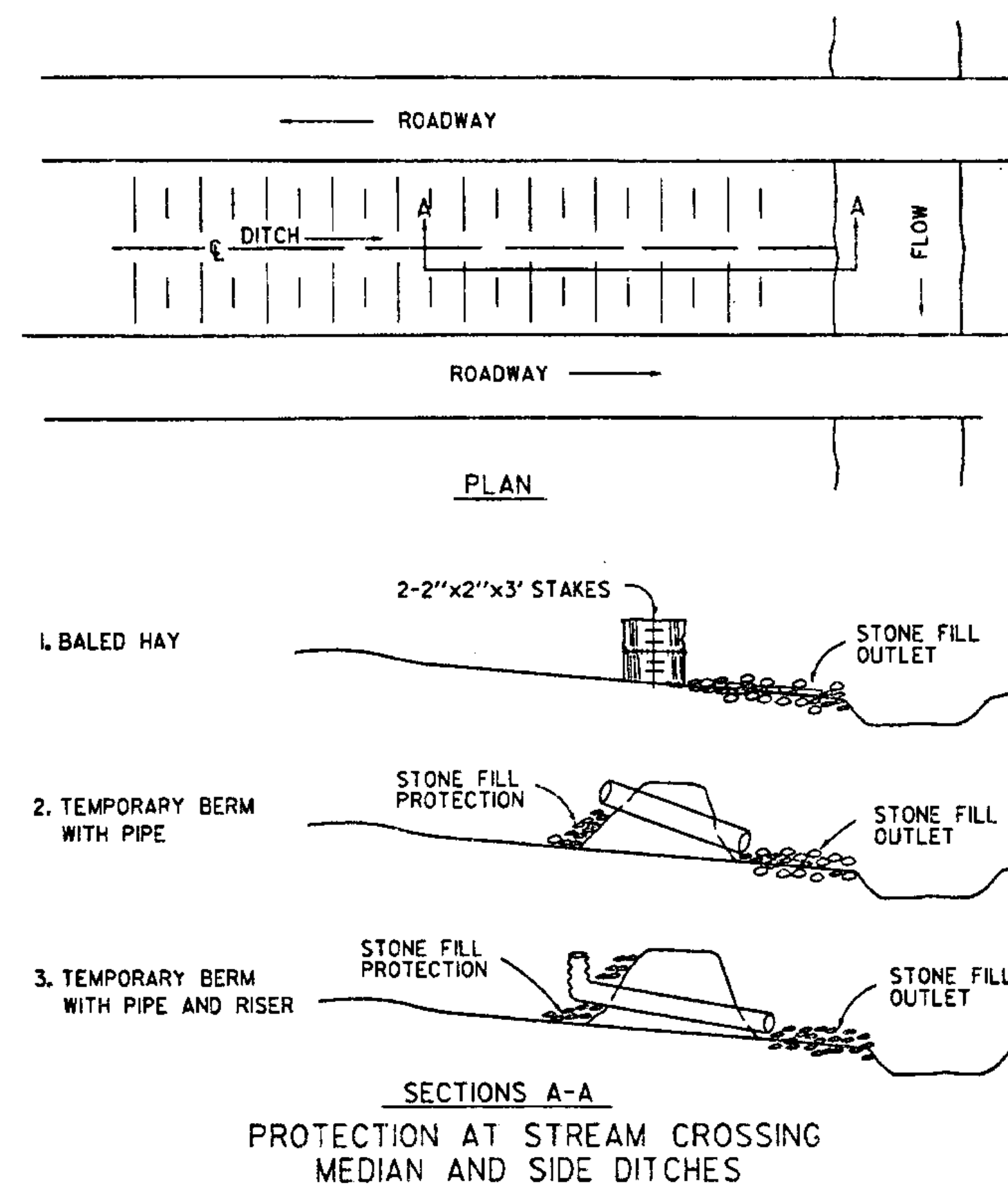
SIZES INDICATED TO BE NOMINAL



TREE WELLS ARE NOT TO BE
CONSTRUCTED WITHIN 30 FEET
OF THE SHOULDER

J-5

VERMONT
DEPARTMENT
OF HIGHWAYS
STANDARD



REVISIONS AND CORRECTIONS

JUL. 5, 1972 - ORIGINAL APPROVAL

JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

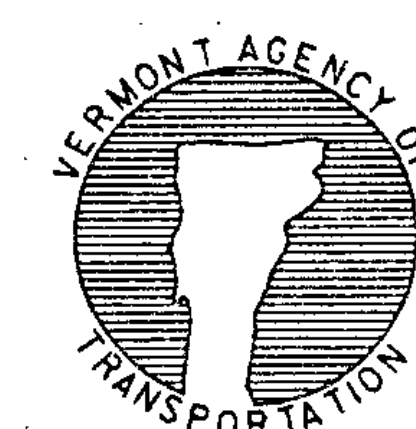
APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

Stephen R. MacCallister
DIRECTOR OF ENGINEERING

Robert M. Murphy
DESIGN ENGINEER

TEMPORARY EROSION CONTROL DETAILS



STANDARD

T-2