WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

STANDARD DETAILS BOOK

VOLUME II

SIGNING, SIGNALS, LIGHTING AND MARKING

ISSUE DATE: JANUARY 1, 1994

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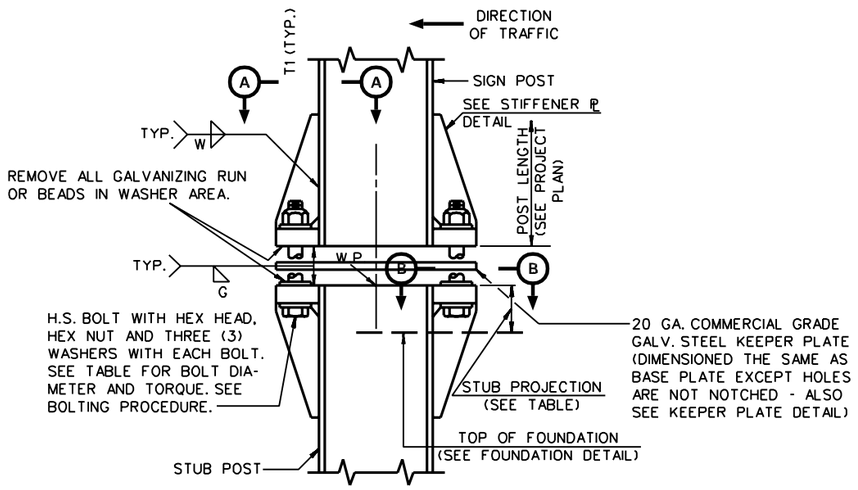
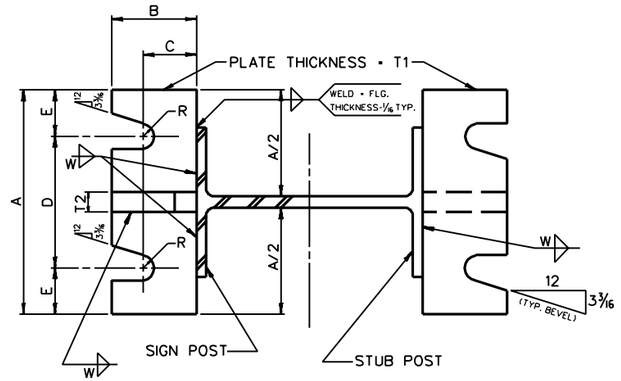
TABLE OF CONTENTS

No additions, deletions or revisions are to be made on these Standards on a job-to-job basis.
Any changes are to be made by the proper authority named by the Director of Traffic Engineering Division.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



SIGN POST AND STUB POST ELEVATION
(FOR W SHAPES)

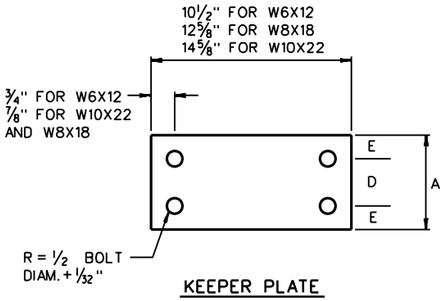


SECTION A-A SECTION B-B

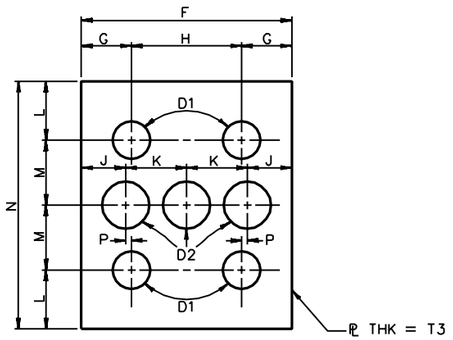
(SEE TABLE FOR DIMENSIONS)

SECTIONS SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE HAND FROM THAT SHOWN FOR INSTALLATIONS ON LEFT SHOULDER.

⚠ WHEN LOCATION IS FOR SIGN FOR SIDEROAD, BUT THE SUPPORT LOCATION IS WITHIN MAINLINE CLEAR ZONE, THE BREAKAWAY POSITION SHALL BE ALIGNED FOR THE MAINLINE, OR SHALL BE AN OMNI-DIRECTIONAL BREAKAWAY DEVICE AS APPROVED BY THE ENGINEER.



KEEPER PLATE



HINGE PLATE DETAIL

H.S. BOLT WITH HEX. HEAD, HEX NUT AND 3 WASHERS WITH EACH BOLT. SEE TABLE FOR BOLT DIAMETER AND TORQUE. SEE BOLTING PROCEDURE.

SIGN POST AND STUB POST ELEVATION
(FOR S SHAPES)

"S" SHAPES IN MEDIAN SHALL HAVE A FLAT CONNECTION (WITH NO BEVEL), AND HINGE PLATES ON THE FRONT AND BACK.

SECTION C-C SECTION D-D

SECTIONS SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE HAND FROM THAT SHOWN FOR INSTALLATIONS ON LEFT SHOULDER.

⚠ WHEN LOCATION IS FOR SIGN FOR SIDEROAD, BUT THE SUPPORT LOCATION IS WITHIN MAINLINE CLEAR ZONE, THE BREAKAWAY POSITION SHALL BE ALIGNED FOR THE MAINLINE, OR SHALL BE AN OMNI-DIRECTIONAL BREAKAWAY DEVICE AS APPROVED BY THE ENGINEER.

FOUNDATION DETAIL

SEE TABLE FOR DIMENSIONS AND WEIGHT

FURNISH 2-.012± THICK AND 2-.032± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO A.S.T.M.-B 36.

SHIM DETAIL

NOTES:

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. ASSEMBLE POST TO STUB WITH BOLTS AND WITH ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.
2. SHIM AS REQUIRED TO PLUMB POST.
3. BASE PLATE BOLTS ARE TO BE TORQUED USING THE CALIBRATED WRENCH PROCEDURE OF THE A.I.S.C. SPECIFICATIONS FOR STRUCTURAL CONNECTIONS.

SEE TE1-3B FOR POLE SELECTION

BASE CONNECTION DATA TABLE

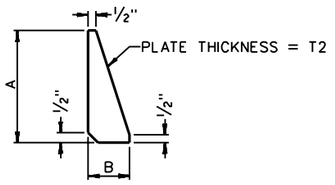
	POST SIZE \ DIMENSION	BOLT SIZE AND TORQUE	A	B	C	D	E	T1	T2	W	R
	S4 x 7.7	1/2" Ø x 2 1/2" TORQUE ⚠ 8 TO 11 FT-LBS	SEE DETAIL								
⚠	W6 x 9	5/8" Ø x 2 3/4" TORQUE ⚠ 19 TO 28 FT-LBS	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	11/32 "
	W6 x 12										
	W6 x 15										
⚠	W8 x 18	3/4" Ø x 3 1/2 TORQUE ⚠ 31 TO 46 FT-LBS	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	13/32 "
⚠	W8 x 21										
	W10 x 22										
	W12 x 26										
	W12 x 30										

HINGE PLATE DATA TABLE

F	G	H	J	K	L	M	N	P	T3	D1	D2		BOLT SIZE
2 3/4	5/8	1 1/2	3/16	11/16	7/8	1 1/8	4	1/16	1/4	9/16	5/8		1/2 Ø
4	7/8	2 1/4	29/32	1 17/32	1 1/4	1 1/4	5	3/32	1/4	13/16	7/8	-	3/4 Ø
5 1/4	1 1/4	2 3/4	1	1 3/8	1 1/2	1 1/2	6	1/4	3/8	15/16	1 1/4	-	7/8 Ø
5 3/4	1 1/2	2 3/4	1 1/4	1 3/8	1 1/2	1 1/2	6	1/4	3/8	15/16	1 1/4	-	7/8 Ø

FOUNDATION DATA

STUB LENGTH	STUB PROJECTION	SHAFT DIAMETER	BARS
1'-6"	3 1/2"	FOR DEPTH, DIAMETER AND BAR SIZE OF FOOTINGS, SEE FOUNDATION DETAIL SHEET TE1-3C.	
2'-0"	3"		
2'-0"	3"		
2'-6"	3"		
2'-6"	3"		
3'-0"	2 1/2"		
3'-0"	2 1/2"		
3'-0"	2 1/2"		
3'-0"	2 1/2"		



STIFFENER PLATE DETAIL
(SEE TABLE FOR DIMENSIONS)

⚠ DELETED SQ. HINGE PLATE FOR S SHAPES
⚠ SLIGHT REVISIONS - NEW W SHAPES
⚠ REVISED ASSEMBLY OF BASE CONNECTION PROCEDURE.
⚠ CHANGED TORQUE, FOUNDATION DETAIL, S HINGE PLATE, ADDED KEEPER PLATE
⚠ ADDED POSITION ALIGNMENT NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ROADSIDE SIGN SUPPORTS BREAKAWAY TYPE

PREPARED: 09/19/74

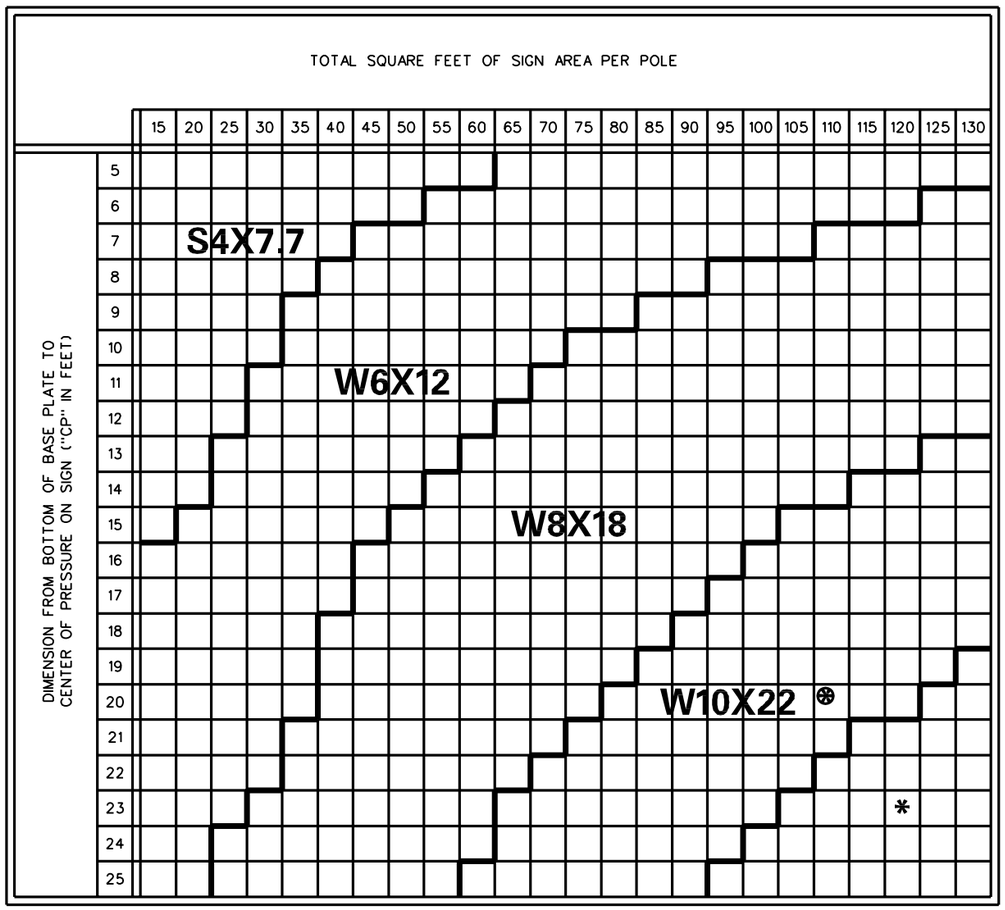
REVISIONS
09-19-74
⚠ 11-08-76
⚠ 11-17-78
⚠ 03-03-93
⚠ 09-10-93
⚠ 01-04-96

STANDARD SHEET TE1-3A

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

SECTION MODULUS REQUIRED PER POLE



* REDESIGN USING ADDITIONAL SUPPORT

GENERAL NOTES:

MATERIALS AND FABRICATION SHALL CONFORM TO THE REQUIREMENTS OF THE WEST VIRGINIA DIVISION OF HIGHWAYS SPECIFICATIONS.
ALL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM-A572, GRADE 50. ASTM A588 MAY BE SUBSITITUTED WHEN APPROVED BY THE ENGINEER.
FLANGE HOLES FOR HINGE BOLTS SHALL BE DRILLED.
ALL HOLES SHALL BE DRILLED. ALL PLATE CUTS SHALL BE SAW CUTS. FLAME CUTTING WILL BE PERMITTED PROVIDED
ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE TOLERATED.

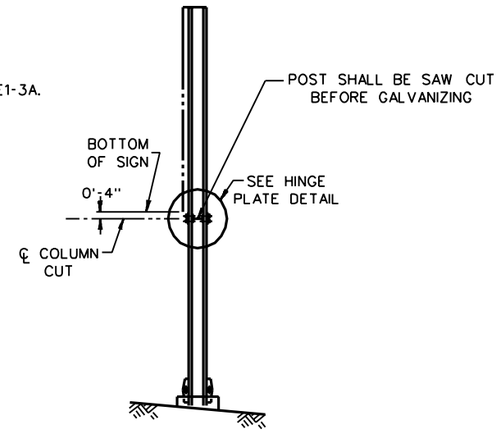
ALL HIGH STRENGTH BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM-A325. NUTS AND WASHERS SHALL BE THOSE RECOMMENDED IN ASTM A325.
HIGH STRENGTH BOLTS IN THE BASE CONNECTION SHALL BE TIGHTENED ONLY TO THE TORQUE SPECIFIED IN THE TABLE ON SHEET TE1-3A. DO NOT OVERTIGHTEN.
ALL SHAPES AND PLATES SHALL BE GALVANIZED PER ASTM A123 AND ALL BOLTS SHALL BE GALVANIZED PER ASTM A153.

FABRICATOR NOTE: IMPORTANT-ALL HINGE BOLTS SHALL BE TIGHTENED IN THE SHOP FOLLOWING METHOD IN NOTE 1 BELOW.
TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN THE FOLLOWING MINIMUM RESIDUAL TENSIONS ON EACH BOLT (SEE TABLE 615.5.6.3 A).

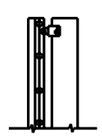
BOLT SIZE	MINIMUM RESIDUAL BOLT TENSION
½" Ø	12,000 LBS.
⅝" Ø	19,000 LBS.
¾" Ø	28,000 LBS.
⅞" Ø	39,000 LBS.

FOR BASE CONNECTIONS TO BE USED IN CONJUNCTION WITH THE POLE SELECTION CHART SHOWN, SEE SHEET TE1-3A.

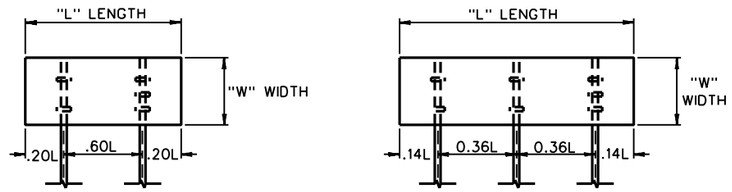
⊛ CAN BE USED IF THE SUPPORTS ARE LOCATED BEHIND GUARDRAIL (OR ON BENCH).



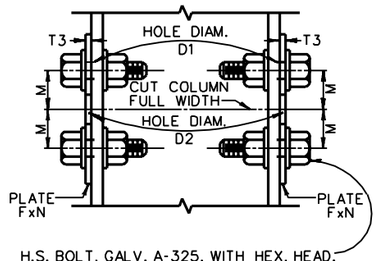
FOR W AND S SHAPES



NOTE:
POST SHALL NOT EXTEND ABOVE TOP OF SIGN.



POST SPACING AND CLAMP SPACING DETAIL



H.S. BOLT, GALV. A-325, WITH HEX. HEAD, HEX. NUT AND WASHERS TYP. (USE BEVELED WASHERS WHERE NECESSARY) FOR TIGHTENING PROCEDURE SEE NOTE 1.

HINGE PLATE DETAIL
S AND W SHAPES (SIDE VIEW)

NOTE:

1. PROCEDURE FOR ASSEMBLY OF HINGE PLATE
   A. TIGHTEN BOLTS IN SYSTEMATIC ORDER TO THE PRESCRIBED TENSION.
   B. CONNECTING BOLTS ARE TO BE TENSIONED (TIGHTENED) USING THE TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

⚠1 BEVEL WASHER
⚠2 CHART
⚠3 RESIDUAL TENSION
⚠4 SAW CUT DETAIL
⚠5 AASHTO NOTE, A572 GRADE 50 STEEL
⚠6 REVISED ALLOWABLE LOADS - NEW W SHAPES
⚠7 W10 BEHIND GR, DELETED S3, DELETED BURR NOTE, SUBSTITUTED A572 GR50 NOTES, SUBSITUTED 615 NOTE FOR HINGE PLATE
⚠8 CHANGED NOTES 2, 4 AND 7, REVISED LAST NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ROADSIDE SIGN SUPPORTS BREAKAWAY TYPE

PREPARED: 05/00/67

REVISIONS	
⚠1	03-19-69
⚠2	04-07-70
⚠3	04-01-71
⚠4	04-19-72
⚠5	09-19-74
⚠6	11-08-76
⚠7	11-17-78
⚠8	03-02-93
⚠9	09-10-93

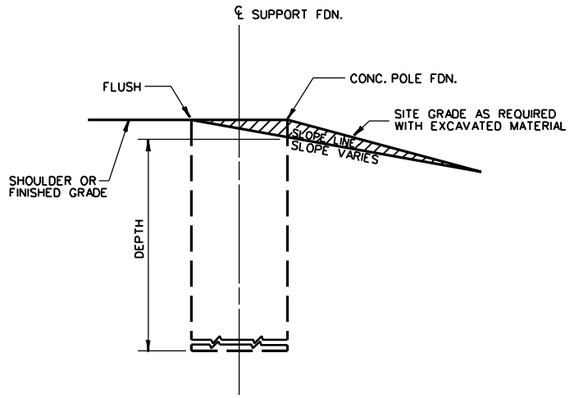
STANDARD SHEET TE1-3B

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

FOOTING REQUIRED PER POLE

BEAM SIZE	DIMENSION W	DIMENSION H	CUBIC YARDS OF CONCRETE	VERTICAL STEEL
S4X7.7	1'-6"	4'-0"	0.3	6-#4
W6X12	2'-6"	4'-0"	0.7	6-#4
W8X18	2'-6"	5'-6"	1.0	6-#6
W10X22	2'-6"	6'-6"	1.2	6-#8



FOOTER IN SLOPE

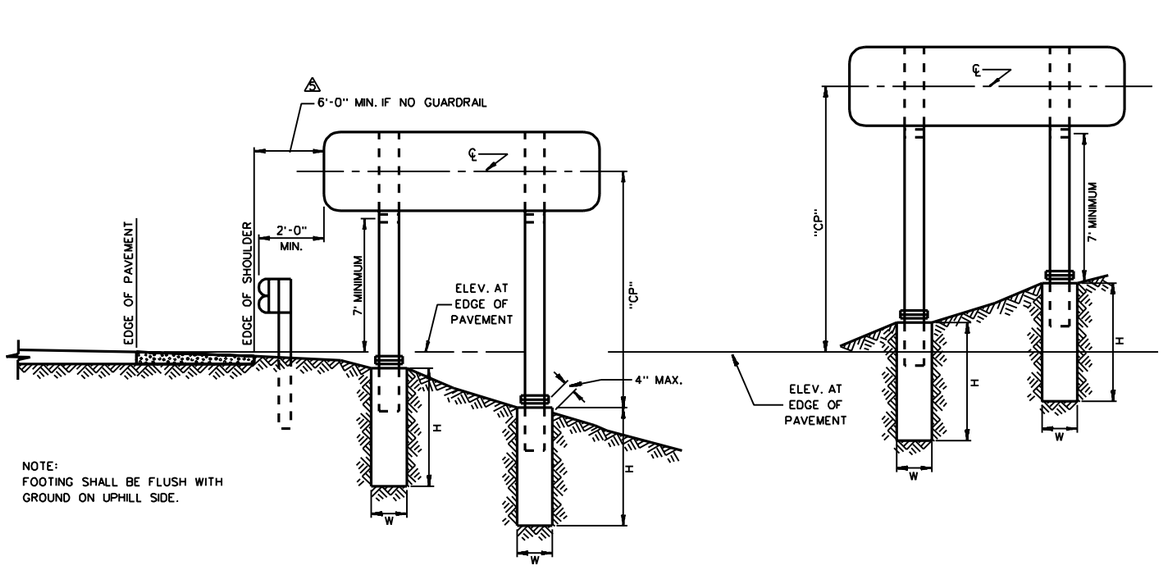
SITE GRADE OPTION SHOWN, OR USE CONFORM TO SLOPE OPTION AS SHOWN ON TE1-3A

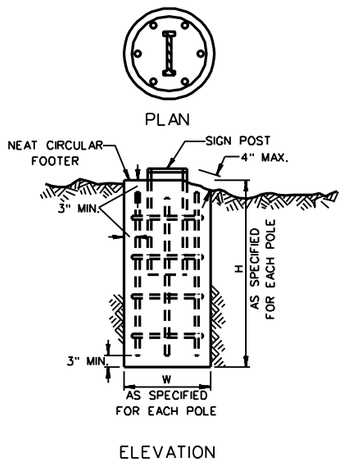
GENERAL NOTES

DEPTH OF FOUNDATIONS IS BASED ON AN ASSUMED SOIL SUCH AS MEDIUM CLAY OR SANDY CLAY. THESE FOUNDATIONS MAY BE USED IN OTHER TYPE SOILS PROVIDING THAT THE SOILS RESISTANCE TO LATERAL LOADS IS NOT LESS THAN THAT OF MEDIUM CLAY, OR A MAXIMUM BEARING OF 3000 LBS/SQ. FT. FOOTINGS SHALL BE DEEPENED AS DIRECTED BY THE ENGINEER TO ADAPT TO LOCAL SOIL CONDITIONS.

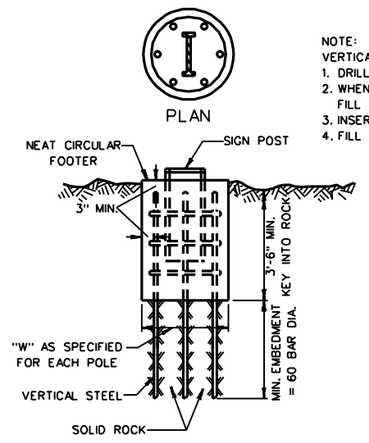
DEPTH OF FOOTINGS SHALL BE MEASURED FROM THE DOWNHILL SIDE OF THE SLOPE AS SHOWN ON THE DRAWING.

VERTICAL BARS SHALL BE EQUALLY SPACED AROUND THE CIRCUMFERENCE OF THE FOUNDATION WITH 3" MINIMUM CLEARANCE FROM FACE OF CONCRETE TO VERTICAL BARS. VERTICAL BARS SHALL BE TIED WITH #4 HOOP BARS AT 1'-0" CENTERS. THE #4 HOOP BARS SHALL HAVE A 1'-0" MINIMUM LAP.





FOOTING DETAIL



NOTE:
VERTICAL BARS IN SOLID ROCK SHALL BE SET AS FOLLOWS:
1. DRILL HOLE TWICE BAR DIAMETER AND FILL WITH WATER.
2. WHEN HOLE IS FULLY SATURATED, BLOW WATER OUT AND FILL 2/3 DEPTH WITH SAND CEMENT MORTAR.
3. INSERT BAR AND CONSOLIDATE MORTAR.
4. FILL HOLE TO TOP WITH MORTAR.

ALTERNATE DESIGN

FOOTING DETAIL

IN SOLID ROCK

△1 ADDED HORIZONTAL CLEARANCES, CHANGED TITLE
△2 REVISED FOOTER DIMENSIONS AND REINFORCING
△3 SLIGHT REVISIONS - NEW W SHAPES
△4 REVISED CLEARANCE NOTES, ADDED UPHILL ROMNTS, DELETED CONC. AND REBAR NOTES
△5 CHANGED CLEARANCE 4' TO 6'

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
BREAKAWAY SIGN SUPPORTS
FOUNDATIONS

PREPARED: 06/00/67

REVISIONS
04-10-75
△1 10-22-75
△2 11-08-76
△3 11-17-78
△4 01-04-93
△5 09-10-93

STANDARD SHEET TE1-3C

TRAFFIC ENGINEERING DIVISION

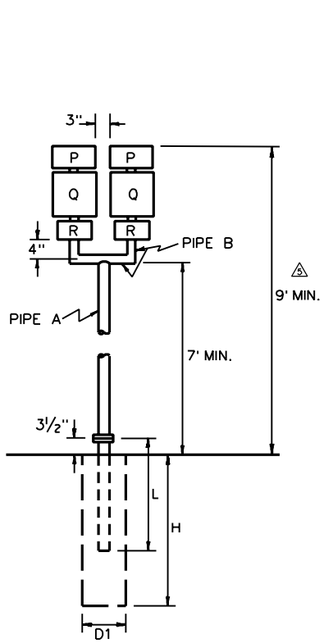
MARKER	DESCRIPTION	
P	24" x 12" 24" x 12" 21" x 15"	CARDINAL TO JCT
Q	24" x 24" OR 30" x 24"	US OR STATE OR INTERSTATE ROUTE MARKER
R	21" x 15"	DIRECTIONAL ARROW

△ NOTES: MINIMUM DISTANCE FROM GROUND TO TOP OF SIGN(S) (ALL 5 TYPES) IS NINE (9) FEET.

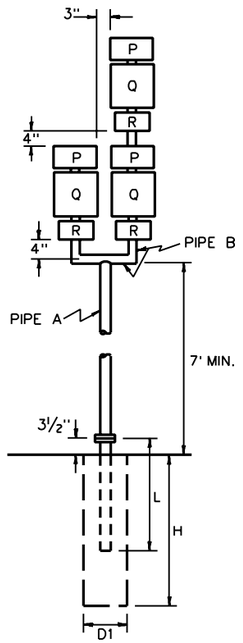
VERTICAL SPACING BETWEEN P & Q AND Q & R PANELS SHALL BE ONE INCH (1").

TYPE OF SUPPORT TO BE DETERMINED BY NUMBER OF ROUTE MARKER SHIELDS

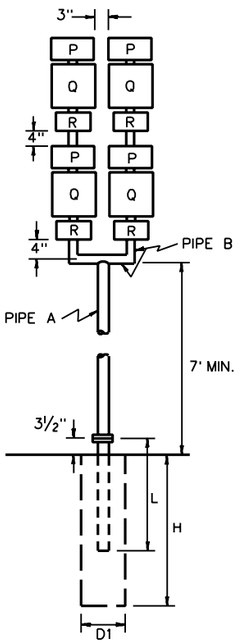
NOTE: TYPE 4 SUPPORT TO HAVE CROSS-ARM (E.G. 2.00 LB. U-CHANNEL, TELESPAR) AT TOP, AND BOTTOM AS APPROPRIATE.



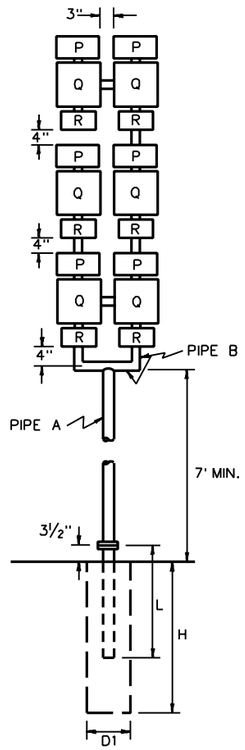
TYPE 1



TYPE 2

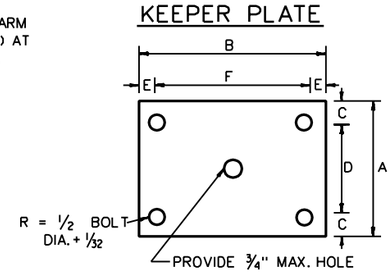


TYPE 3

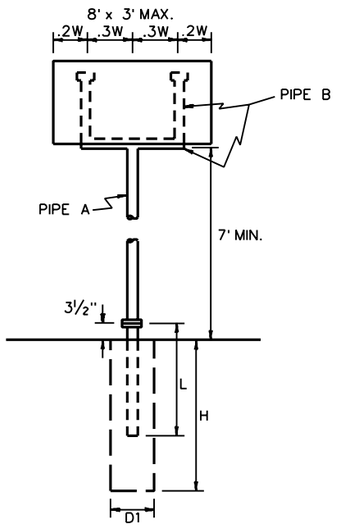


TYPE 4

KEEPER PLATE



KEEPER PLATE SHALL BE FABRICATED FROM 28 GUAGE COMMERCIAL GRADE SHEET STEEL (GALV.).



TYPE 5

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES:

PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-53, TYPE E OR S, GRADE B. HYDROSTATIC TESTS ARE NOT REQUIRED.

PLATES FOR BASE CONNECTION SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36.

△5 ALL HIGH STRENGTH BOLTS, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. NUTS AND WASHERS SHALL BE AS RECOMMENDED IN ASTM A325.

ALL SHAPES AND PLATES SHALL BE GALVANIZED PER ASTM A123. ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED PER ASTM 153.

SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO THE REQUIREMENTS OF ASTM B-36. FURNISH 2⁻.012"± THICK AND 2⁻.032"± THICK SHIMS PER POST.

BASE CONNECTION

TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION TO THE TORQUES AS FOLLOWS:

△5 ½" DIAMETER, TORQUE 8 TO 11 FT-LBS.
⅝" DIAMETER, TORQUE 19 TO 28 FT-LBS.

DO NOT OVERTIGHTEN

FRICTION CAPS

CAPS MAY BE FABRICATED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS. FOR PIPE SIZES 3" AND SMALLER THE MINIMUM SHEET METAL THICKNESS SHALL BE 24 GAUGE.

THE RIM EDGES SHALL BE REASONABLY STRAIGHT AND SMOOTH.

CAPS SHALL BE SIZED AND FORMED IN SUCH A MANNER AS TO PRODUCE A DRIVE-ON FRICTION FITAND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST THE ENTRANCE OF RAINWATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATIONS AND SHOW NO EVIDENCE OF METAL FAILURE.

△5 CAPS SHALL HAVE AN ELECTRODEPOSITED COATING OF ZINC IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM B 633, CLASS 12..

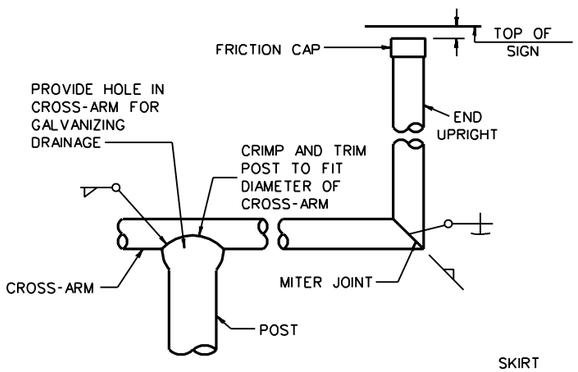
FOOTINGS

ALL FOOTINGS SHALL BE CONCRETE IN ACCORDANCE WITH SECTION 657 AND ARTICLE 657.5.1 OF THE SPECIFICATIONS.

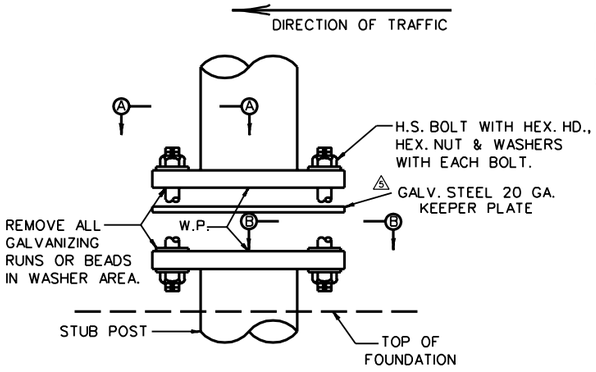
PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

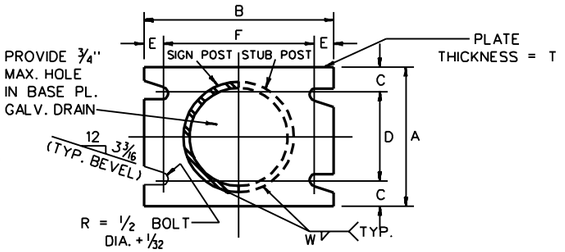
1. ASSEMBLY POST TO STUB WITH BOLTS AND ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.
2. SHIM AS REQUIRED TO PLUMB POST.
3. BASE PLATE BOLTS ARE TO BE TORQUED (TENSIONED) USING THE CALIBRATED WRENCH PROCEDURE OF THE A.I.S.C. SPECIFICATIONS FOR STRUCTURAL CONNECTIONS.

WELDED PIPE MOUNT DETAILS



SIGN POST AND STUB POST ELEVATION

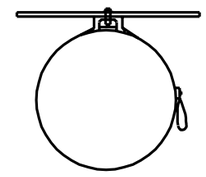




SECTION A - A SECTION B - B

(SEE TABLE FOR DIMENSIONS)

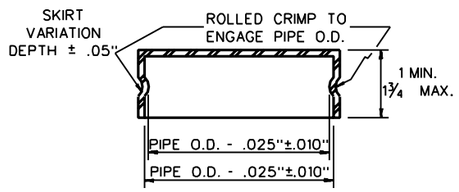
SECTIONS SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE HAND FROM THAT SHOWN FOR INSTALLATIONS ON LEFT SHOULDER.



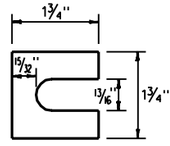
CLAMP DETAIL

(STAINLESS STEEL BANDING)

TYPE OF MOUNT	PIPE A		PIPE B		FOUNDATION		STUB POST
	DIA.	SCH.	DIA.	SCH.	D1	H	L
1	3	40	1½	40	1'-0"	4'-6"	4'-3½"
2	4	40	2	40	1'-6"	5'-6"	5'-3½"
3	6	40	3	40	2'-0"	4'-6"	4'-6½"
4	6	40	3	80	2'-0"	4'-6"	4'-6½"
5	4	40	2	40	1'-6"	5'-6"	5'-3½"



FRICTION CAP DETAIL



SHIM DETAIL

× BASE CONNECTION DATA TABLE

PIPE SIZE	BOLT SIZE	A	B	C	D	E	F	T	W
3	½x2½	4½	7	1	2½	¾	5½	¾	5/16
4	½x2½	5½	7¾	1	3½	¾	6¼	¾	⅜
6	⅝x2¼	8	10	1¼	5½	1	8	¾	7/16

× DIMENSIONS A,B,C,D,E & F ALSO APPLY TO KEEPER PLATE.

△1 NOTES, MAX. ON TYPE 5
△2 DELETED SIGNATURE BLOCK
△3 NOTES, MODIFIED BASE CONNECTION DATA TABLE
△4 REVISED TORQUE NOTE, TYPE 5 MAX. LOAD, TYPE 4 CROSS-ARMS, AND DESCRIPTION
△5 ADDED 9' NOTE, KEEPER PLATE INFO., REVISED H.S. BOLTS NOTES, TORQUE, CAPS ASTM

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL PIPE POSTS BREAKAWAY

PREPARED: 02/25/72

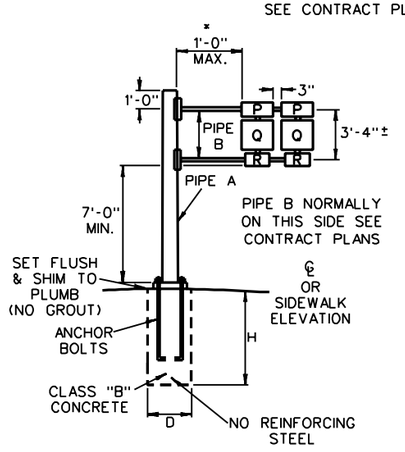
REVISIONS
△1 02-06-76
△2 11-08-76
△3 07-07-89
△4 03-02-93
△5 09-10-93

STANDARD SHEET TE1-5A

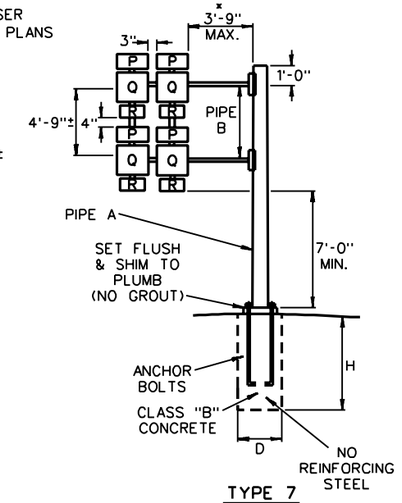
MARKER	DESCRIPTION	
P	24"x12" 24"x12" 21"x15"	CARDINAL TO JCT
Q	24"x24" OR 30"x24"	U.S. OR STATE OR INTERSTATE RTE. MARKER
R	21"x15"	DIRECTIONAL ARROW

LOCATION NOTES:
1. VERTICAL SPACING BETWEEN SIGN PANELS SHALL BE 0'-1".
2. WHEN THE VERTICAL SUPPORT POLE IS MOUNTED AT THE BACK EDGE OF A SIDEWALK, THE SIGNS SHALL NOT PROJECT CLOSER THAN 6" FROM THE FRONT EDGE OF THE SIDEWALK.
3. TYPES 6, 7, 8 AND 9 PIPE POSTS ARE TO BE PROTECTED (E.G. GUARDRAIL) OR USED IN LOW SPEED ENVIRONMENTS.

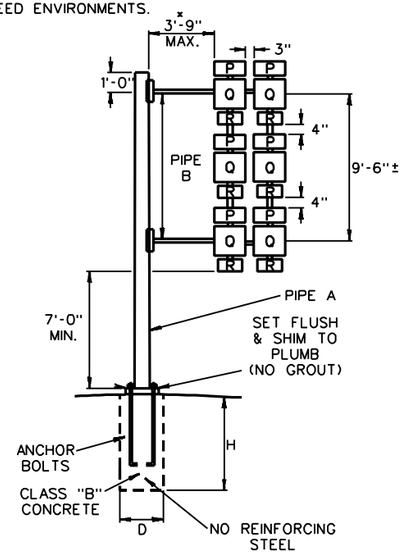
* - NORMALLY CLOSER SEE CONTRACT PLANS



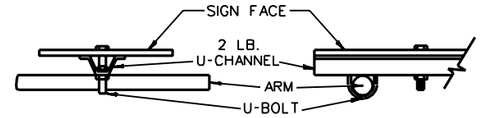
TYPE 6



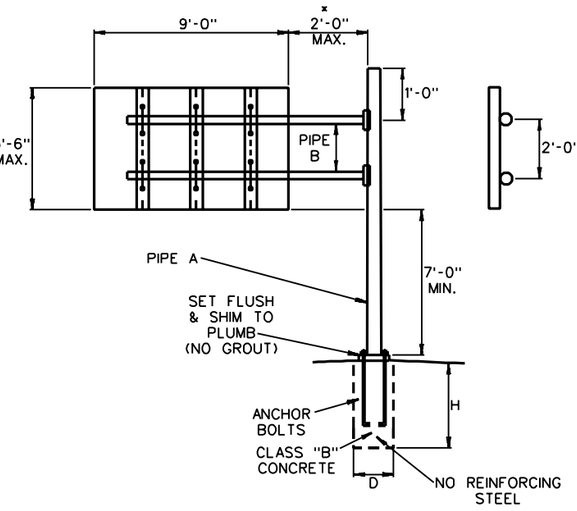
TYPE 7



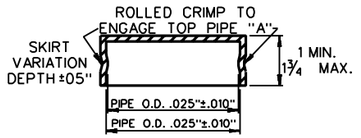
TYPE 8



- PLAN - - ELEVATION -



TYPE 9

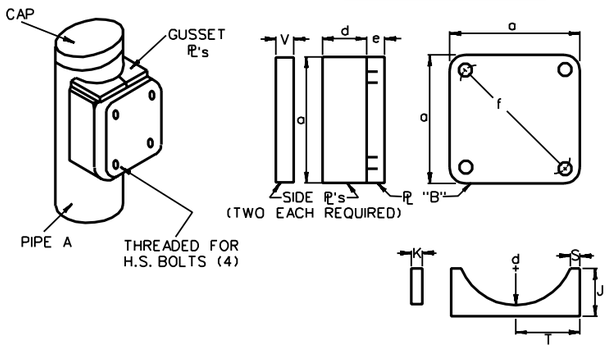


FRICTION CAP DETAIL

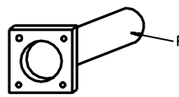
POST TYPE	a	d	e	V	GUSSETS J	K	S	T
6	4½	1¾	¾	½	2⅛	½	¼	2
7 & 9	6 9/16	2⅛	¾	½	3¼	½	¼	3⅛
8	7⅝	3⅜	¾	½	3¾	½	¼	3⅝

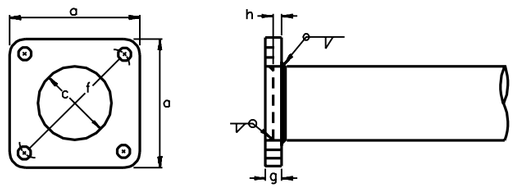
POLE ATTACHMENT SCHEDULE

(INCHES)



TYPICAL POLE ATTACHMENT DETAILS FOR CANTILEVER ARM





POST TYPE	a	c	g	h	f	ATTACHMENT BOLTS(HEX. HEAD)
6	4½	2	¾	½	4	⅝ x 1¾
7 & 9	6 9/16	2 15/16	¾	½	6	¾ x 1¾
8	7½	3 9/16	¾	½	6	⅞ x 1¾

ARM PLATE SCHEDULE

(INCHES)

POST TYPE	PIPE A DIA.	PIPE A SCH.	PIPE B DIA.	PIPE B SCH.	FOUNDATION D	FOUNDATION H	ANCHOR BOLT DIA.	ANCHOR BOLT L	ANCHOR BOLT H	ANCHOR BOLT U	ANCHOR BOLT G	BASE PLATE A	BASE PLATE C	BASE PLATE F	BASE PLATE G	BASE PLATE H
6	3	40	1½	40	12	36	¾	33	3	3	6	7	3 9/16	6	1	¾
7 & 9	5	40	2½	40	18	54	1	44	4	6	8 MIN.	12	5⅝	10	1	¾
8	6	40	3	40	18	66	1¼	54	6	6TO 8	10 MIN.	12	6¾	10	1	¾

SUPPORT AND BASE PLATE SCHEDULE

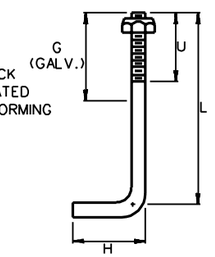
(INCHES)

FURNISH 2~.012"± THICK AND 2~.032"± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM-B36.

TYPE	a	b	c	d
6	1¾	1¾	13/16	15/32
8	2 29/32	2 29/32	1 11/32	49/64
7 & 9	2 31/64	2 31/64	1 51/64	5/8

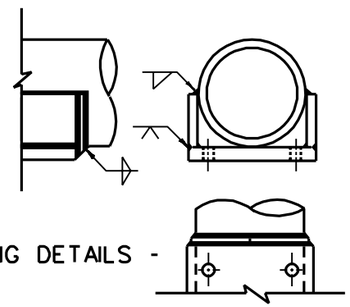
SHIM DETAIL & SCHEDULE

(INCHES)



TYPICAL ANCHOR BOLT

- WELDING DETAILS -



PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES:

⚠ PIPE POSTS SHALL BE PLACED FOUR (4) FEET BEHIND GUARDRAIL, OR TWO (2) FEET BEHIND CURB, OR OUTSIDE THE CLEAR ZONE AS DEFINED IN TABLES 3.1 AND 3.2 OF THE "ROADSIDE DESIGN GUIDE" (UNLESS OPERATING SPEED LESS THAN 35 MPH.).

PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-53, TYPE E OR S, GRADE B. HYDROSTATIC TESTS ARE NOT REQUIRED.

PLATES FOR BASE CONNECTION SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36.

⚠ ALL HIGH STRENGTH BOLTS, NUTS, AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. NUTS AND WASHERS SHALL BE AS RECOMMENDED IN ASTM A325.

TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

ALL SHAPES AND PLATES SHALL BE GALVANIZED PER ASTM A173. ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AS PER ASTM A153.

WELDING:

ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE WELDING SPECIFICATIONS OF SECTION 658, OVERHEAD SIGN STRUCTURES. ALL WELDS SHALL DEVELOP 100 % STRENGTH OF THE MATERIAL BEING JOINED.

FRICTION CAPS:

CAP MAY BE FABRICATED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS. FOR PIPE SIZES 3" AND SMALLER THE MINIMUM SHEET METAL THICKNESS SHALL BE 24 GUAGE.

THE RIM EDGES SHALL BE REASONABLY STRAIGHT AND SMOOTH.

CAPS SHALL BE SIZED AND FORMED IN SUCH A MANNER AS TO PRODUCE A DRIVE-ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST THE ENTRANCE OF RAINWATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATIONS AND SHOW NO EVIDENCE OF METAL FAILURE.

⚠ CAPS SHALL HAVE AN ELECTRODEPOSITED COATING OF ZINC IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM B633, CLASS 12..

FOOTINGS:

ALL FOOTINGS SHALL BE CONCRETE IN ACCORDANCE WITH SECTION 657, AND ARTICLE 657.5.1 OF THE SPECIFICATIONS.

MATERIAL:

ALL PLATES, ETC. TO BE A-36. ANCHOR BOLTS SHALL MEET SUBARTICLE 657.2.2.9 OF THE SPECIAL PROVISIONS.

⚠1 WHOLE SHEET GENERALLY
⚠2 NOTE 2 - 6
⚠3 CHANGE GENERAL NOTE
⚠4 REVISED DESCRIPTION AND MAX. CRITERIA
⚠5 ADDED CLEARENCE NOTE, REVISED H.S. BOLTS NOTES, CAPS NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

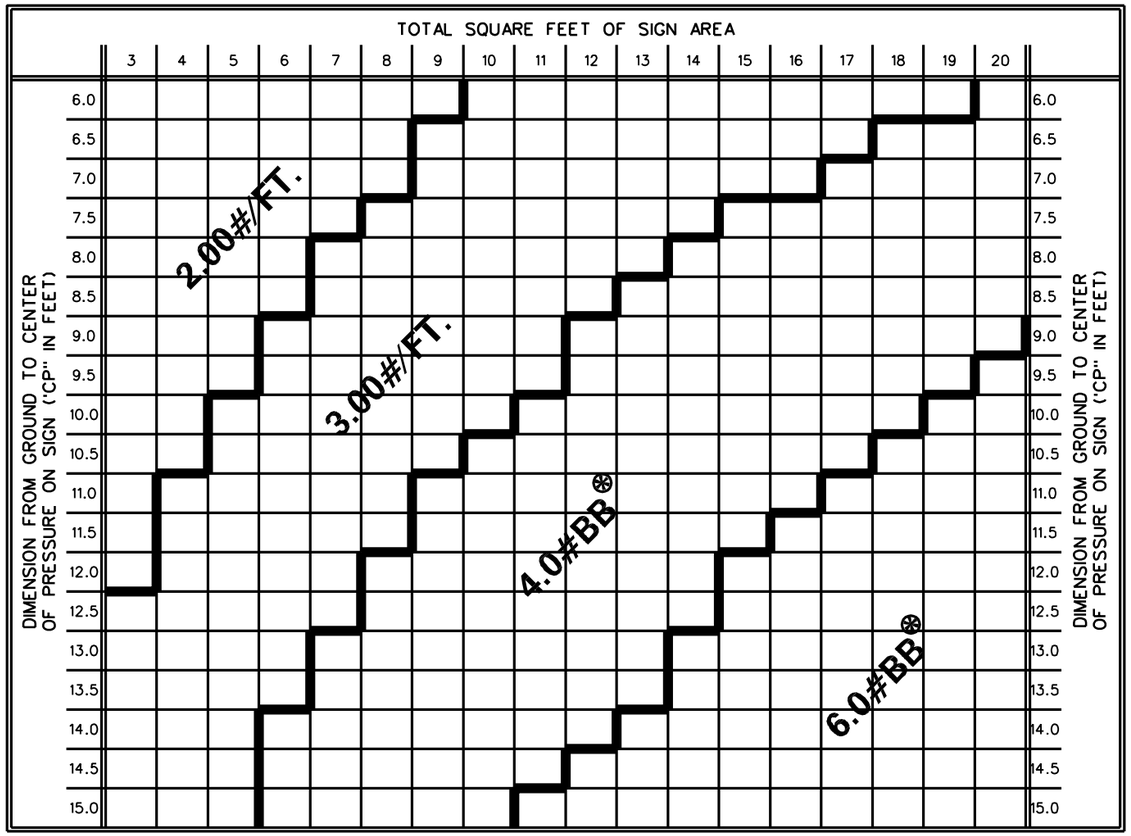
STANDARD DETAIL PIPE POSTS CANTILEVER

PREPARED: 11/00/73

REVISIONS	
⚠1	02-06-76
⚠2	11-08-76
⚠3	07-07-89
⚠4	03-03-93
⚠5	09-10-93

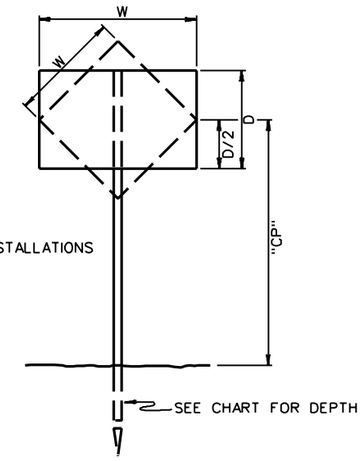
STANDARD SHEET TE1-5B

SIGN POST SECTION REQUIRED (ONE SUPPORT)



PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

POST SECTION	DEPTH DRIVEN
2.00#/FT.	3.0'
3.00#/FT.	3.5'
4.00#BB/FT.	3.5'
6.00#BB/FT.	3.5'



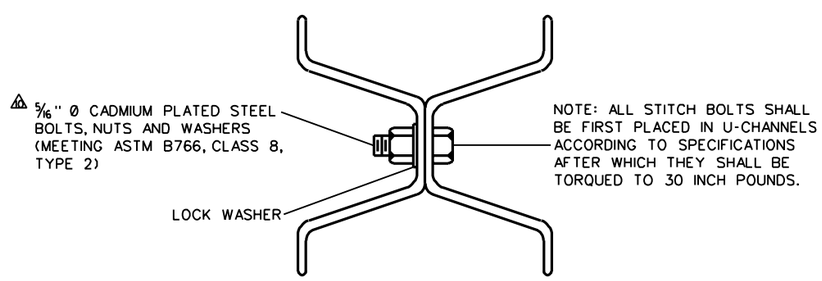
SEE TP3-1 FOR TYPICAL INSTALLATIONS

NOTES:

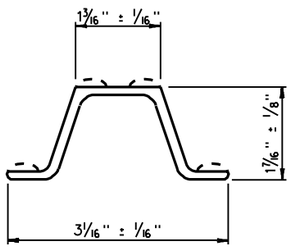
ALL SUPPORTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-123.

DEPTHS DRIVEN ARE BASED ON AVERAGE SOIL CONDITIONS. DEPENDING UPON ACTUAL SOIL BEARING IN THE FIELD, THE ENGINEER MAY REQUIRE THAT THE DEPTH DRIVEN BE INCREASED TO 5 FEET. WHEN THE POST(S) ARE BEHIND GUARDRAIL, THE DEPTH DRIVEN MAY BE INCREASED UP TO 5 FEET.

⊛ CAN BE USED IF THE SUPPORTS ARE LOCATED OUTSIDE OF THE CLEAR ZONE AS DEFINED IN TABLES 3.1 AND 3.2 OF THE "ROADSIDE DESIGN GUIDE". IF USED INSIDE OF THE CLEAR ZONE, THE SUPPORTS MUST BE EITHER BEHIND GUARDRAIL, CURB, OR THE OPERATING SPEED MUST BE LESS THAN 35 MPH.

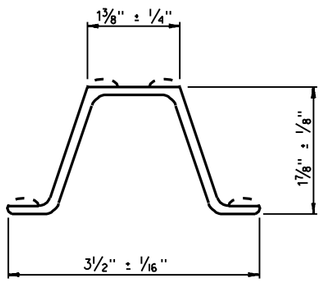


STITCH BOLT INSTALLATION ILLUSTRATION



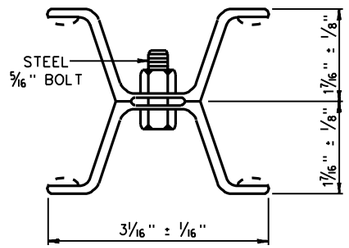
SIGN POST 2.00

WT./FT. = 2.00#
SEC. MOD. X-X=.215±5%
SEC. MOD. Y-Y=.277±5%



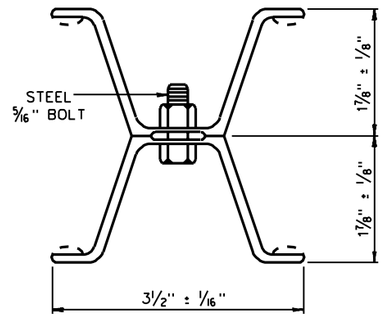
SIGN POST 3.00

WT./FT. = 3.00#
SEC. MOD. X-X=.406±5%
SEC. MOD. Y-Y=.508±5%



SIGN POST 4.0 BB

WT./FT. = 4.0#BB
SEC. MOD. X-X=.684±5%
SEC. MOD. Y-Y=.515±5%



SIGN POST 6.0 BB

WT./FT. = 6.0#BB
SEC. MOD. X-X=1.32±10%
SEC. MOD. Y-Y=1.004±5%

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ROADSIDE SIGN SUPPORTS U-CHANNEL

PREPARED: / /

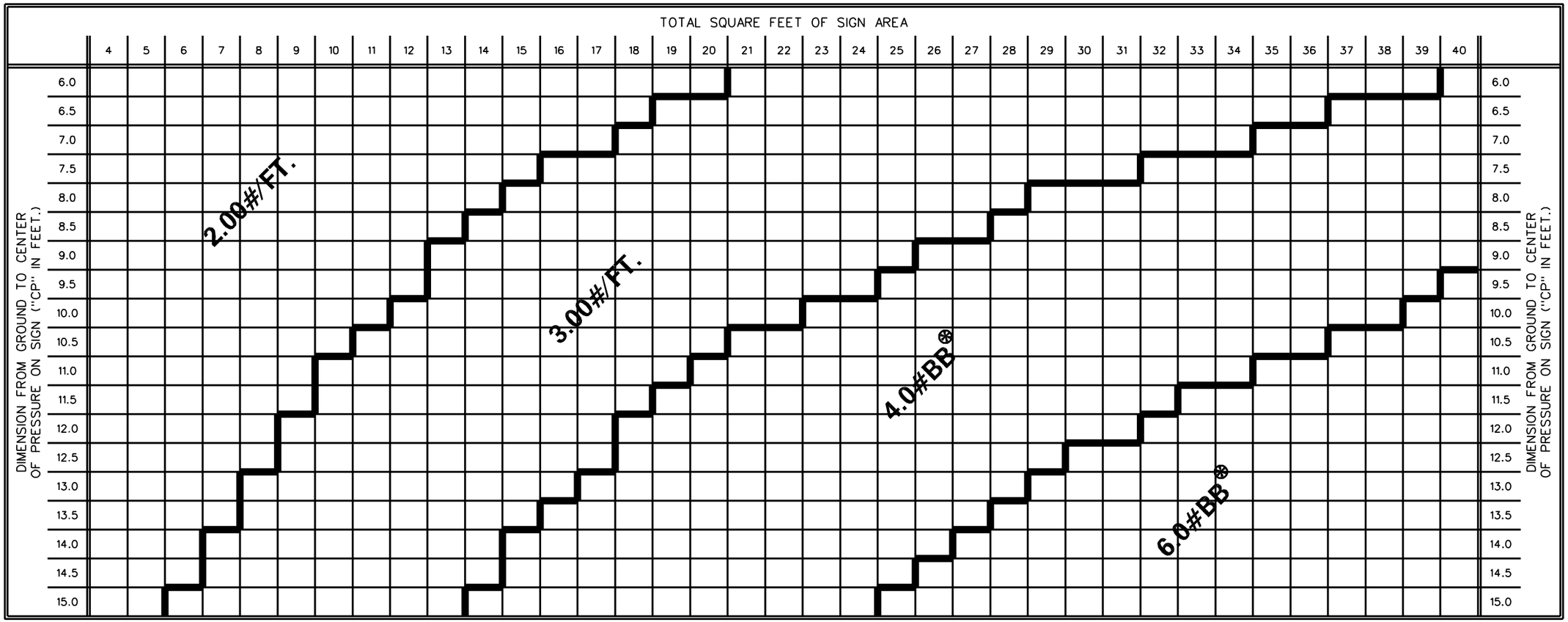
REVISIONS	
⚠1 REVISION OF NOTES	04-23-69
⚠2 REVISION OF NOTES	05-21-69
⚠3 WIND PRESSURE REDUCTION	11-25-70
⚠4 EMBEDMENT	04-01-71
⚠5 POST SECTION	11-19-73
⚠6 DEPTH, CONC., NOTES	11-09-76
⚠7 REV. OF SEC. MOD.	10-24-78
⚠8 DELETED G.R. FOR 6.0	11-30-84
⚠9 4.0BB AND 6.0BB BEHIND GR	01-05-93
⚠10 REVISED CLEAR NOTE ADDED BOLT SPECS	09-13-93

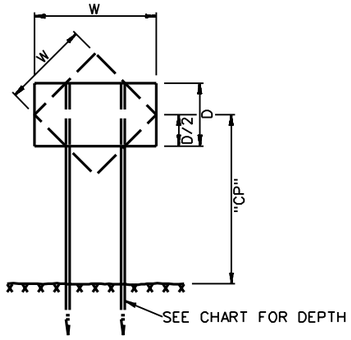
STANDARD SHEET TE1-7A

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

SIGN POST SECTION REQUIRED (TWO SUPPORTS)





SEE TP3-1 FOR TYPICAL INSTALLATIONS

NOTES:

SEE SHEET TE1-7A FOR U-CHANNEL SECTIONS.
ALL SUPPORTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-123.

DEPTHS DRIVEN ARE BASED ON AVERAGE SOIL CONDITIONS. DEPENDING UPON ACTUAL SOIL BEARING IN THE FIELD, THE ENGINEER MAY REQUIRE THAT THE DEPTH DRIVEN BE INCREASED TO 5 FEET. WHEN THE POST(S) ARE BEHIND GUARDRAIL, THE DEPTH DRIVEN MAY BE INCREASED UP TO 5 FEET.

⊛ CAN BE USED IF THE SUPPORTS ARE LOCATED OUTSIDE OF THE CLEAR ZONE AS DEFINED IN TABLES 3.1 AND 3.2 OF THE "ROADSIDE DESIGN GUIDE". IF USED INSIDE OF THE CLEAR ZONE, THE SUPPORTS MUST BE EITHER BEHIND GUARDRAIL, CURB, OR THE OPERATING SPEED MUST BE LESS THAN 35 MPH. △4

POST SECTION	DEPTH DRIVEN
2.00#FT.	3.0'
3.00#FT.	3.5'
4.00#BB/FT.	3.5'
6.0#BB/FT.	3.5'

△1 REVISION OF NOTES
△2 WIND PRESSURE REDUCTIONS
△3 GENERAL NOTES
△4 EMBEDMENT
△5 POST SECTION
△6 DEPTH, CONC., NOTES
△7 REV. OF SEC. MOD.
△8 CHANGED 4.0# RQMTS. & NOTE
△9 REVISED CLEAR. NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ROADSIDE SIGN SUPPORT U-CHANNEL

PREPARED: / /

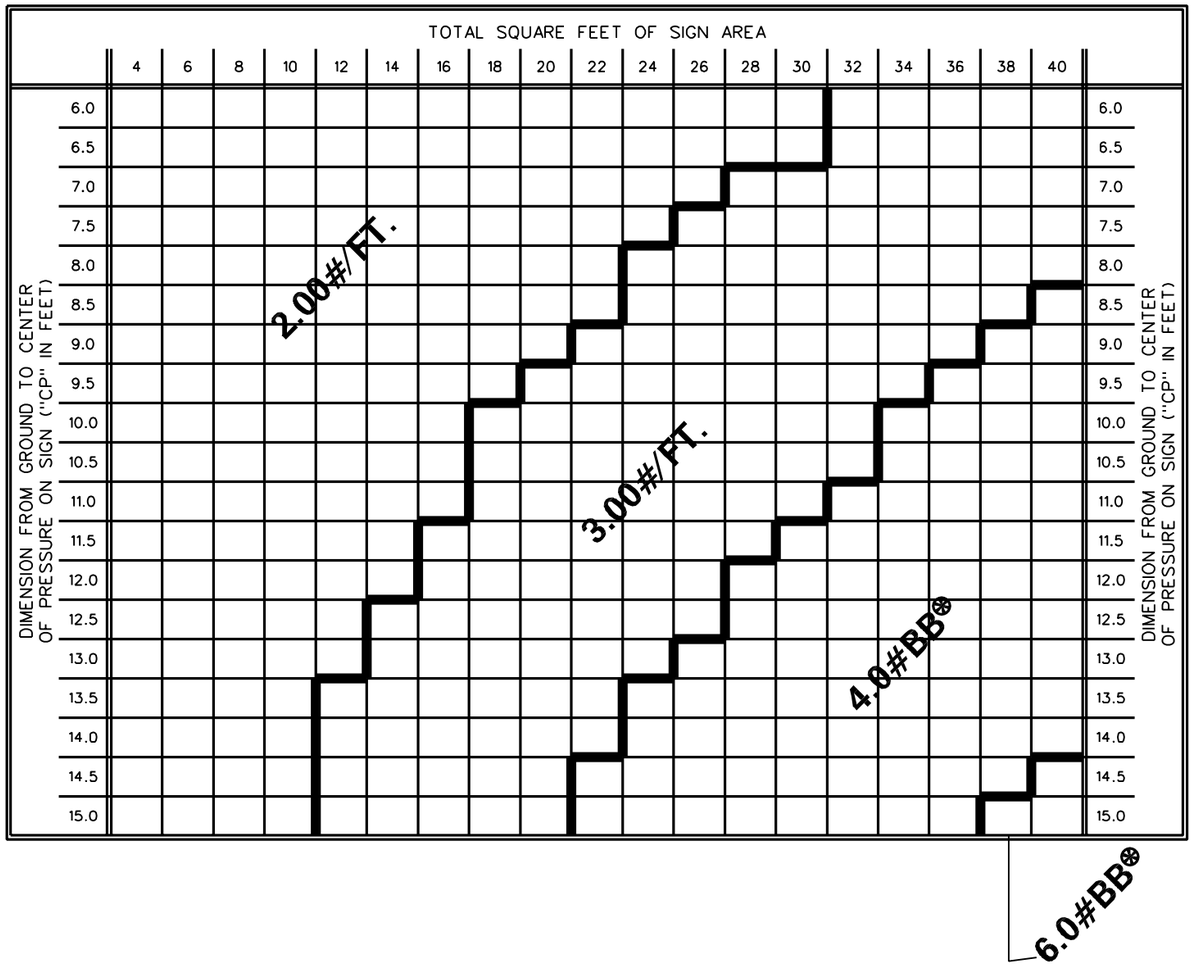
REVISIONS	
△1	01-21-69
△2	11-25-70
△3	01-04-71
△4	04-01-71
△5	11-19-73
△6	11-09-76
△7	10-24-78
△8	11-30-84
△9	09-13-93

STANDARD SHEET TE1-7B

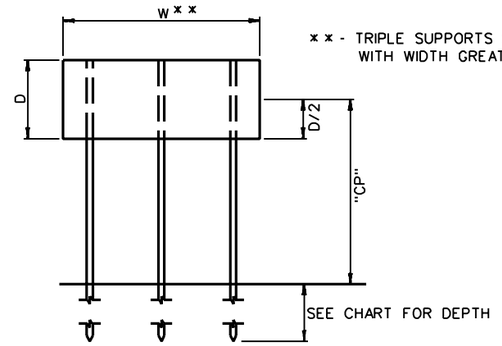
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

SIGN POST SECTION REQUIRED (THREE SUPPORTS)



POST SECTION	DEPTH DRIVEN
2.00#/FT.	3.0'
3.00#/FT.	3.5'
4.0#BB/FT.	3.5'
6.0#BB/FT.	3.5'



✕ ✕ - TRIPLE SUPPORTS SHALL BE USED FOR SIGNS WITH WIDTH GREATER THAN 6 FEET.

SEE TP3-1 FOR TYPICAL INSTALLATIONS

NOTES:

SEE SHEET TE1-7A FOR U-CHANNEL SECTIONS.
ALL SUPPORTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-123.

DEPTHS DRIVEN ARE BASED ON AVERAGE SOIL CONDITIONS. DEPENDING UPON ACTUAL SOIL BEARING IN THE FIELD, THE ENGINEER MAY REQUIRE THAT THE DEPTH DRIVEN BE INCREASED TO 5 FEET. WHEN THE POST(S) ARE BEHIND GUARDRAIL, THE DEPTH DRIVEN MAY BE INCREASED UP TO 5 FEET.

⊛ CAN BE USED IF THE SUPPORTS ARE LOCATED OUTSIDE OF THE CLEAR ZONE AS DEFINED IN TABLES 3.1 AND 3.2 OF THE "ROADSIDE DESIGN GUIDE". IF USED INSIDE OF THE CLEAR ZONE, THE SUPPORTS MUST BE EITHER BEHIND GUARDRAIL, BARRIER CURB, OR THE ROADWAY OPERATING SPEED MUST BE LESS THAN 35 MPH.

⚠1 REVISION OF NOTES
⚠2 WIND PRESSURE REDUCTION
⚠3 GENERAL NOTE
⚠4 EMBEDMENT
⚠5 POST SECTION
⚠6 DEPTH, CONC., NOTES
⚠7 REV. OF SEC. MOD.
⚠8 CHANGED 3.0* RQMTS. & NOTE
⚠9 REVISED CLEAR. NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ROADSIDE SIGN SUPPORTS U–CHANNEL

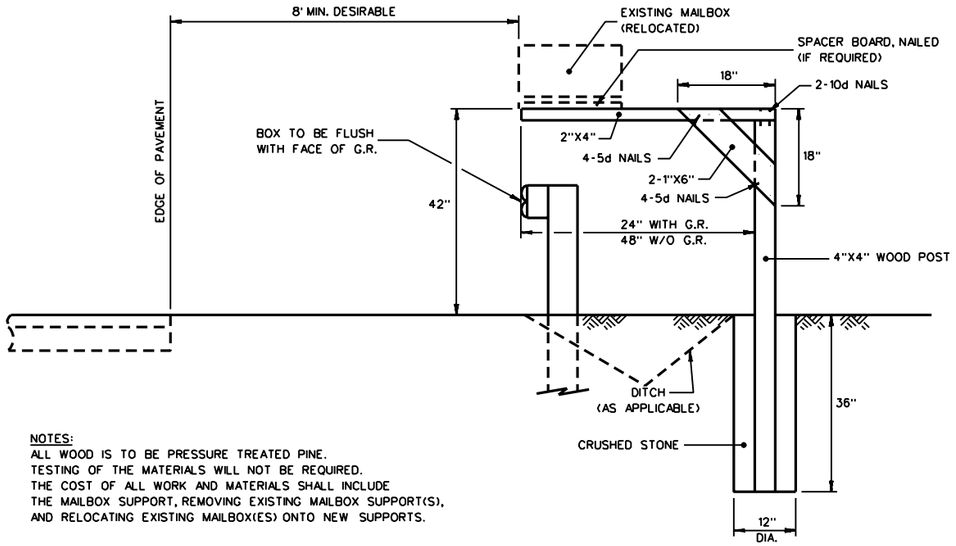
PREPARED: / /

REVISIONS
⚠1 05-21-69
⚠2 11-25-70
⚠3 01-04-71
⚠4 04-01-71
⚠5 11-19-73
⚠6 11-09-76
⚠7 10-24-78
⚠8 11-30-84
⚠9 09-13-93

STANDARD SHEET TE1–7C

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



NOTES:
ALL WOOD IS TO BE PRESSURE TREATED PINE.
TESTING OF THE MATERIALS WILL NOT BE REQUIRED.
THE COST OF ALL WORK AND MATERIALS SHALL INCLUDE THE MAILBOX SUPPORT, REMOVING EXISTING MAILBOX SUPPORT(S), AND RELOCATING EXISTING MAILBOX(ES) ONTO NEW SUPPORTS.

WEST VIRGINIA DIVISION OF HIGHWAYS

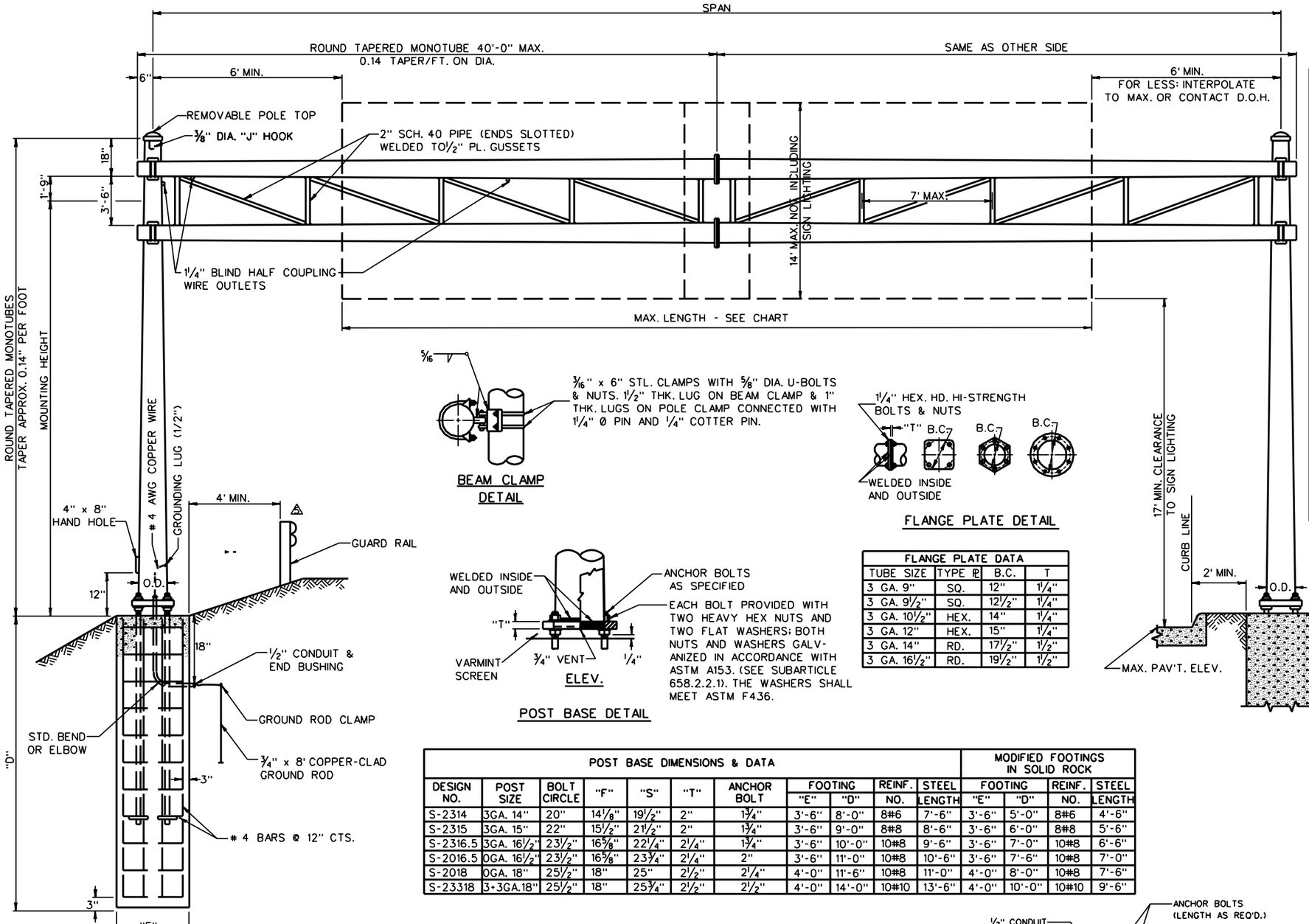
STANDARD DETAIL
CANTILEVER MAILBOX SUPPORT

PREPARED: 09/20/93

REVISIONS

STANDARD SHEET TE1-9

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



5/16

3/16" x 6" STL. CLAMPS WITH 5/8" DIA. U-BOLTS & NUTS. 1 1/2" THK. LUG ON BEAM CLAMP & 1" THK. LUGS ON POLE CLAMP CONNECTED WITH 1 1/4" Ø PIN AND 1/4" COTTER PIN.

BEAM CLAMP DETAIL

FLANGE PLATE DETAIL

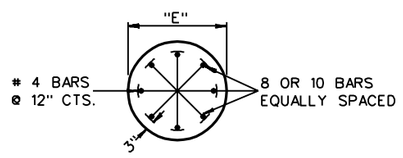
FLANGE PLATE DATA			
TUBE SIZE	TYPE PL	B.C.	T
3 GA. 9"	SQ.	12"	1 1/4"
3 GA. 9 1/2"	SQ.	12 1/2"	1 1/4"
3 GA. 10 1/2"	HEX.	14"	1 1/4"
3 GA. 12"	HEX.	15"	1 1/4"
3 GA. 14"	RD.	17 1/2"	1 1/2"
3 GA. 16 1/2"	RD.	19 1/2"	1 1/2"

POST BASE DETAIL

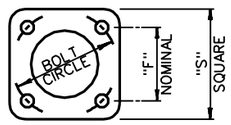
ANCHOR BOLTS AS SPECIFIED

EACH BOLT PROVIDED WITH TWO HEAVY HEX NUTS AND TWO FLAT WASHERS; BOTH NUTS AND WASHERS GALV-ANIZED IN ACCORDANCE WITH ASTM A153. (SEE SUBARTICLE 658.2.2.1). THE WASHERS SHALL MEET ASTM F436.

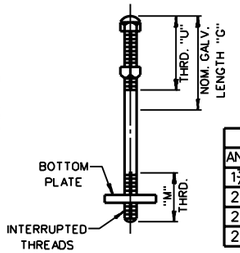
POST BASE DIMENSIONS & DATA											MODIFIED FOOTINGS IN SOLID ROCK			
DESIGN NO.	POST SIZE	BOLT CIRCLE	"F"	"S"	"T"	ANCHOR BOLT	FOOTING "E"	FOOTING "D"	REINF. NO.	STEEL LENGTH	FOOTING "E"	FOOTING "D"	REINF. NO.	STEEL LENGTH
S-2314	3GA. 14"	20"	14 1/8"	19 1/2"	2"	1 3/4"	3'-6"	8'-0"	8#6	7'-6"	3'-6"	5'-0"	8#6	4'-6"
S-2315	3GA. 15"	22"	15 1/2"	21 1/2"	2"	1 3/4"	3'-6"	9'-0"	8#8	8'-6"	3'-6"	6'-0"	8#8	5'-6"
S-2316.5	3GA. 16 1/2"	23 1/2"	16 5/8"	22 1/4"	2 1/4"	1 3/4"	3'-6"	10'-0"	10#8	9'-6"	3'-6"	7'-0"	10#8	6'-6"
S-2016.5	0GA. 16 1/2"	23 1/2"	16 5/8"	23 3/4"	2 1/4"	2"	3'-6"	11'-0"	10#8	10'-6"	3'-6"	7'-6"	10#8	7'-0"
S-2018	0GA. 18"	25 1/2"	18"	25"	2 1/2"	2 1/4"	4'-0"	11'-6"	10#8	11'-0"	4'-0"	8'-0"	10#8	7'-6"
S-23318	3+3GA.18"	25 1/2"	18"	25 3/4"	2 1/2"	2 1/2"	4'-0"	14'-0"	10#10	13'-6"	4'-0"	10'-0"	10#10	9'-6"



PLAN
FOOTINGS

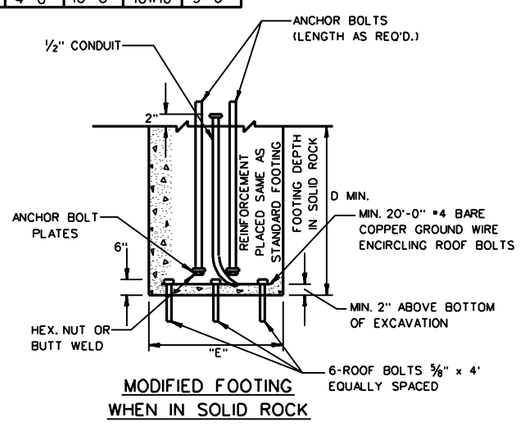


PLAN
POST BASE DETAIL



ANCHOR BOLT DETAIL

ANCHOR BOLT CHART				
ANCHOR BOLT	"M"	"U"	"G"	BOTTOM PLATE
1 3/4" x 84"	2 3/4"	9"	14"	6 3/4" x 6 3/4" x 2"
2" x 90"	3"	9"	15"	7 3/4" x 7 3/4" x 2 1/4"
2 1/4" x 96"	3 1/4"	10"	16"	9" x 9" x 2 1/2"
2 1/2" x 114"	3 3/4"	10"	16"	10" x 10" x 3"



MODIFIED FOOTING
WHEN IN SOLID ROCK

ALLOWABLE SIGN SIZES CHART
FOR VARIOUS BEAM SIZE - SPAN COMBINATIONS

SPAN (FT.)	CHORD SIZE WALL THICKNESS & DIAMETER @ ℄	MAX. SIGN LENGTH "L" (FT) & CORRESPONDING END POST SIZE HT. SHOWN BELOW ✱ SIGN HT. "H" (FT) (UNLIGHTED) 6	8	10	12	14
40	3 GA. 9	28	28	28 3 GA. 16 1/2	28 3 GA. 16 1/2	28 3 GA. 16 1/2
45	3 GA. 9.0	33	33	33 3 GA. 16 1/2	29 3 GA. 16 1/2	21 3 GA. 15
	3 GA. 9.5	33	33	33 3 GA. 16 1/2	33 0 GA. 16 1/2	29 0 GA. 16 1/2
	3 GA. 10.5	33	33	33 3 GA. 16 1/2	33 0 GA. 16 1/2	33 0 GA. 16 1/2
50	3 GA. 9.0	38	38 3 GA. 14	26 3 GA. 14	22 3 GA. 14	18 3 GA. 14
	3 GA. 9.5	38	38 3 GA. 14	34 3 GA. 15	26 3 GA. 15	22 3 GA. 15
	3 GA. 10.5	38	38 3 GA. 14	38 3 GA. 15	38 0 GA. 16 1/2	30 0 GA. 16 1/2
	3 GA. 12.0	38	38 3 GA. 14	38 3 GA. 15	38 0 GA. 16 1/2	38 0 GA. 18
55	3 GA. 9.0	43 3 GA. 14	27 3 GA. 14	19 3 GA. 14	19 3 GA. 14	15 3 GA. 14
	3 GA. 9.5	43 3 GA. 14	35 3 GA. 14	27 3 GA. 14	19 3 GA. 14	19 3 GA. 14
	3 GA. 10.5	43 3 GA. 14	43 3 GA. 16 1/2	39 3 GA. 16 1/2	27 3 GA. 16 1/2	23 3 GA. 16 1/2
	3 GA. 12.0	43 3 GA. 14	43 3 GA. 16 1/2	43 3 GA. 16 1/2	43 0 GA. 18	39 0 GA. 18
	3 GA. 14.0	43 3 GA. 14	43 3 GA. 16 1/2	43 3 GA. 16 1/2	43 0 GA. 18	43 3•3 GA. 18
60	3 GA. 10.5	48 3 GA. 15	40 3 GA. 15	28 3 GA. 15	24 3 GA. 15	20 3 GA. 15
	3 GA. 12.0	48 3 GA. 15	48 3 GA. 15	48 0 GA. 16 1/2	40 0 GA. 16 1/2	28 0 GA. 16 1/2
	3 GA. 14.0	48 3 GA. 15	48 3 GA. 15	48 0 GA. 16 1/2	48 3•3 GA. 18	48 3•3 GA. 18
65	3 GA. 12.0	53	53 3 GA. 16 1/2	41 3 GA. 16 1/2	29 3 GA. 16 1/2	25 3 GA. 16 1/2
	3 GA. 14.0	53	53 3 GA. 16 1/2	53 3•3 GA. 18	45 3•3 GA. 18	
	3 GA. 16.5	53	53 3 GA. 16 1/2	53 3 GA. 16 1/2	53 3•3 GA. 18	53 3•3 GA. 18
70	3 GA. 12.0	58 3 GA. 16 1/2	46 3 GA. 16 1/2	34 3 GA. 16 1/2	26 3 GA. 16 1/2	22 3 GA. 16 1/2
	3 GA. 14.0	58 3 GA. 16 1/2	58 3 GA. 16 1/2	58 0 GA. 18	46 0 GA. 18	38 0 GA. 18
	3 GA. 16.5	58 3 GA. 16 1/2	58 3 GA. 16 1/2	58 0 GA. 18	58 0 GA. 18	58 3•3 GA. 18
75	3 GA. 14.0	63	63 0 GA. 16 1/2	51 0 GA. 16 1/2	39 0 GA. 16 1/2	31 0 GA. 16 1/2
	3 GA. 16.5	63	63 0 GA. 16 1/2	63 0 GA. 16 1/2	63 3•3 GA. 18	59 3•3 GA. 18
79	3 GA. 14.0	67 0 GA. 16 1/2	59 0 GA. 16 1/2	43 0 GA. 16 1/2	35 0 GA. 16 1/2	27 0 GA. 16 1/2
	3 GA. 16.5	67 0 GA. 16 1/2	67 0 GA. 16 1/2	67 0 GA. 16 1/2	67 3•3 GA. 18	47 3•3 GA. 18

✱ INTERPOLATE: BETWEEN CHARTED VALUES FOR GAP OR UNSYMMETRICAL LOADING FOR MOUNTING HEIGHTS ABOVE 25' - CONTACT D.O.H.

NOTES:

SIGN BRACKETS AND/OR SIGN LIGHTING
FOR DETAILS SEE TE6-3D.

HI-STRENGTH BOLTS
HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

STEEL CLAMPS
SHALL BE ASTM-A 606 TYPE

GUAGE OF POST INDICATES
7 = 7 GA. (.1793") 77 = 7•7 GA. (.3586")
3 = 3 GA. (.2500") 33 = 3•3 GA. (.5000")
0 = 0 GA. (.3125") 00 = 0•0 GA. (.6250")

SIGNS
ALL SIGNS CENTERED VERTICALLY EXCEPT WITH LIGHTING FIXTURES THE CENTER OF THE SIGN IS 3" ABOVE THE CENTER OF THE TRUSS.

⚠1 GUARDRAIL SPACING
⚠2 WHOLE SHEET GENERALLY
⚠3 CHANGED HI-STRENGTH BOLTS NOTE
⚠4 CHANGED GUARDRAIL OFFSET AND ADDED H.S. BOLTS NOTE
⚠5 REVISED GUARDRAIL CLEARANCE

WEST VIRGINIA DIVISION OF HIGHWAYS

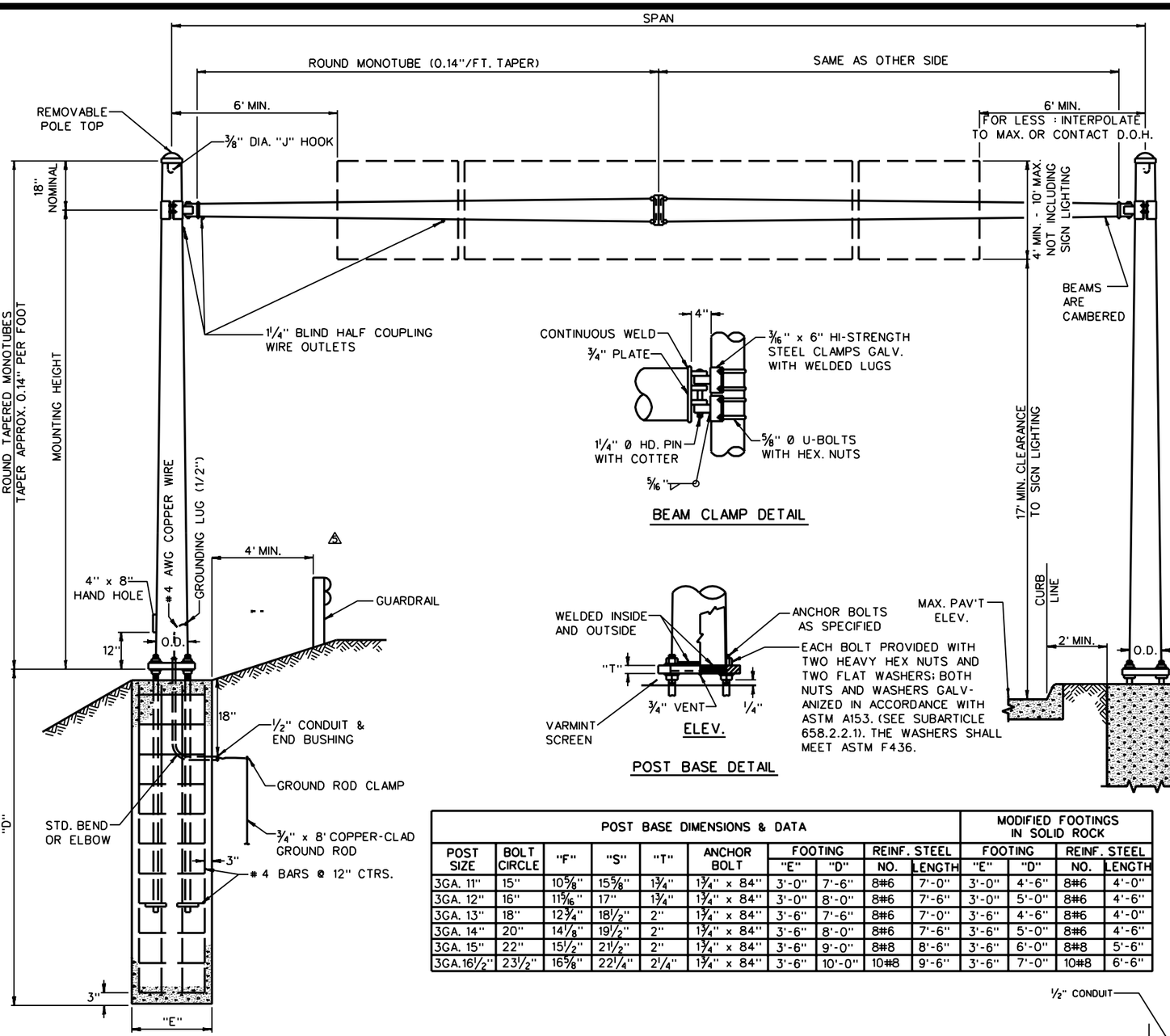
STANDARD DETAIL
OVERHEAD SIGN SUPPORT–STEEL
TWO TUBE SPAN

PREPARED: 02/03/75

REVISIONS
⚠1 10-22-75
⚠2 11-04-77
⚠3 07-07-89
⚠4 02-23-93
⚠5 09-13-93

STANDARD SHEET TE3-1

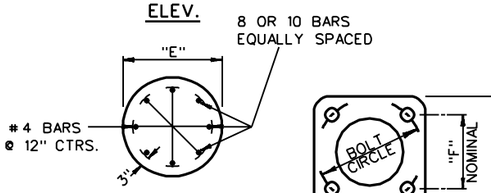
TRAFFIC ENGINEERING DIVISION



BEAM CLAMP DETAIL

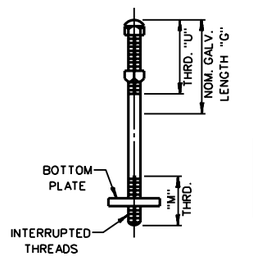
POST BASE DETAIL

POST BASE DIMENSIONS & DATA									MODIFIED FOOTINGS IN SOLID ROCK			
POST SIZE	BOLT CIRCLE	"F"	"S"	"T"	ANCHOR BOLT	FOOTING		REINF. STEEL	FOOTING		REINF. STEEL	
						"E"	"D"	NO. LENGTH	"E"	"D"	NO.	LENGTH
3GA. 11"	15"	10 5/8"	15 5/8"	1 3/4"	1 3/4" x 84"	3'-0"	7'-6"	8#6 7'-0"	3'-0"	4'-6"	8#6	4'-0"
3GA. 12"	16"	11 5/16"	17"	1 3/4"	1 3/4" x 84"	3'-0"	8'-0"	8#6 7'-6"	3'-0"	5'-0"	8#6	4'-6"
3GA. 13"	18"	12 3/4"	18 1/2"	2"	1 3/4" x 84"	3'-6"	7'-6"	8#6 7'-0"	3'-6"	4'-6"	8#6	4'-0"
3GA. 14"	20"	14 1/8"	19 1/2"	2"	1 3/4" x 84"	3'-6"	8'-0"	8#6 7'-6"	3'-6"	5'-0"	8#6	4'-6"
3GA. 15"	22"	15 1/2"	21 1/2"	2"	1 3/4" x 84"	3'-6"	9'-0"	8#8 8'-6"	3'-6"	6'-0"	8#8	5'-6"
3GA.16 1/2"	23 1/2"	16 5/8"	22 1/4"	2 1/4"	1 3/4" x 84"	3'-6"	10'-0"	10#8 9'-6"	3'-6"	7'-0"	10#8	6'-6"



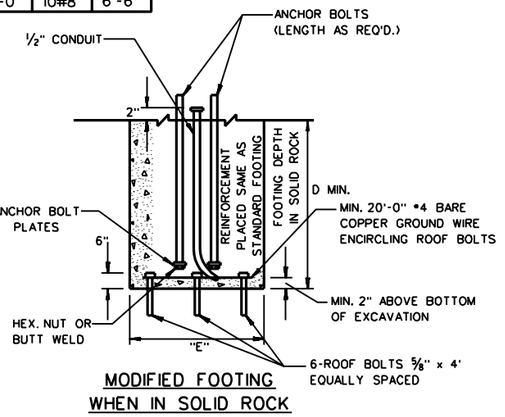
PLAN
FOOTINGS

PLAN
POST BASE DETAIL



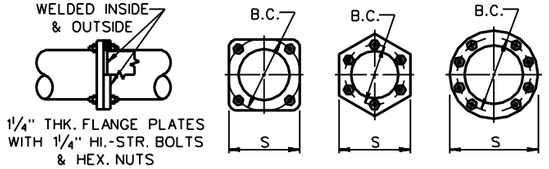
ANCHOR BOLT DETAIL

ANCHOR BOLT CHART				
ANCHOR BOLT	"M"	"U"	"G"	BOTTOM PLATE
1 1/2" x 54"	2 1/2"	9"	14"	6" x 6" x 1 3/4"
1 3/4" x 84"	2 3/4"	9"	14"	6 3/4" x 6 3/4" x 2"



MODIFIED FOOTING
WHEN IN SOLID ROCK

TYPE NO.	SPAN	NORMAL BEAM SIZE	END POSTS	
			GUAGE	O.D.
30445	31'-6" THRU 41'-3"	3 GA. 9.0"	3 GA.	10"
30446	41'-6" THRU 51'-3"	3 GA. 9.5"	3 GA.	10"
30447	51'-6" THRU 61'-3"	3 GA. 10.5"	3 GA.	10"
30448	61'-6" THRU 71'-3"	7 GA. 14"	3 GA.	12"
30449	71'-6" THRU 81'-3"	7 GA. 16"	3 GA.	12"



FLANGE SPLICE DETAIL

FLANGE DATA			
BEAM SIZE	TYPE FL	B.C.	S
3 GA. 9"	SQ.	12"	11"
3 GA. 9 1/2"	SQ.	12 1/2"	11 1/2"
3 GA. 10 1/2"	HEX.	14"	14 5/8"
7 GA. 14"	HEX.	17"	17 1/4"
7 GA. 16"	HEX.	19"	19"
3 GA. 16"	RD.	19"	22"

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES:

SIGN BRACKETS AND/OR SIGN LIGHTING
FOR DETAILS SEE TE6-3D.

HI-STRENGTH BOLTS
HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

STEEL CLAMPS
SHALL BE ASTM-A 606 TYPE

GUAGE OF POST INDICATES
7 - 7 GA. (.1793") 77 - 7-7 GA. (.3586")
3 - 3 GA. (.2500") 33 - 3-3 GA. (.5000")
0 - 0 GA. (.3125") 00 - 0-0 GA. (.6250")

SIGNS
ALL SIGNS CENTERED VERTICALLY EXCEPT WITH LIGHTING FIXTURES THE CENTER OF THE SIGN IS 3" ABOVE THE CENTER OF THE TRUSS.

ALLOWABLE SIGN SIZES CHART
FOR VARIOUS BEAM SIZE - SPAN COMBINATIONS

SPAN (FT.)	CHORD SIZE WALL THICKNESS & DIAMETER @ ℄	MAX. SIGN LENGTH "L" (FT) & CORRESPONDING END POST SIZE HT. SHOWN BELOW *			
		SIGN HT. "H" (FT) (UNLIGHTED)			
		4	6	8	10
35	3 GA. 9.0	23	23	23 3 GA. 12	23 3 GA. 12
40	3 GA. 9.0	28	28	28 3 GA. 12	20 3 GA. 12
	3 GA. 9.5	28	28	28 3 GA. 12	24 3 GA. 13
	3 GA. 10.5	28	28	28 3 GA. 12	28 3 GA. 14
45	3 GA. 9.5	33	33 3 GA. 12	25 3 GA. 12	17 3 GA. 12
	3 GA. 10.5	33	33 3 GA. 12	33 3 GA. 13	25 3 GA. 13
	7 GA. 14.0	33	33 3 GA. 12	33 3 GA. 13	33 3 GA. 15
50	3 GA. 9.5	38 3 GA. 11	26 3 GA. 11	18 3 GA. 11	14 3 GA. 11
	3 GA. 10.5	38 3 GA. 11	38 3 GA. 12	26 3 GA. 12	18 3 GA. 12
	7 GA. 14.0	38 3 GA. 11	38 3 GA. 12	38 3 GA. 14	30 3 GA. 14
	7 GA. 16.0	38 3 GA. 11	38 3 GA. 12	38 3 GA. 14	38 3 GA. 16 1/2
55	3 GA. 10.5	43 3 GA. 11	31 3 GA. 11	19 3 GA. 11	15 3 GA. 11
	7 GA. 14.0	43 3 GA. 11	43 3 GA. 13	31 3 GA. 13	23 3 GA. 13
	7 GA. 16.0	43 3 GA. 11	43 3 GA. 13	43 3 GA. 15	31 3 GA. 15
60	3 GA. 10.5	40 3 GA. 11	24 3 GA. 11	16 3 GA. 11	0
	7 GA. 14.0	48 3 GA. 12	40 3 GA. 13	24 3 GA. 12	20 3 GA. 12
	7 GA. 16.0	48 3 GA. 12	48 3 GA. 14	36 3 GA. 14	28 3 GA. 14
65	7 GA. 14.0	53 3 GA. 12	33 3 GA. 12	21 3 GA. 12	17 3 GA. 12
	7 GA. 16.0	53 3 GA. 12	49 3 GA. 14	33 3 GA. 14	25 3 GA. 14
70	7 GA. 14.0	42 3 GA. 11	26 3 GA. 11	18 3 GA. 11	0
	7 GA. 16.0	58 3 GA. 13	38 3 GA. 13	26 3 GA. 13	22 3 GA. 13
75	7 GA. 16.0	51 3 GA. 13	31 3 GA. 13	23 3 GA. 13	19 3 GA. 13
80	7 GA. 16.0	48 3 GA. 13	28 3 GA. 13	20 3 GA. 13	16 3 GA. 13

* INTERPOLATE: BETWEEN CHARTED VALUES FOR GAP OR UNSYMMETRICAL LOADING

FOR MOUNTING HEIGHTS ABOVE 23' - CONTACT D.O.H.

1 GUARDRAIL SPACING
2 WHOLE SHEET GENERALLY
3 CHANGED HI-STRENGTH BOLTS NOTE
4 CHANGED GUARDRAIL OFFSET AND ADDED H.S. BOLTS NOTE
5 REVISED GUARDRAIL CLEARANCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL OVERHEAD SIGN SUPPORT–STEEL ONE TUBE SPAN

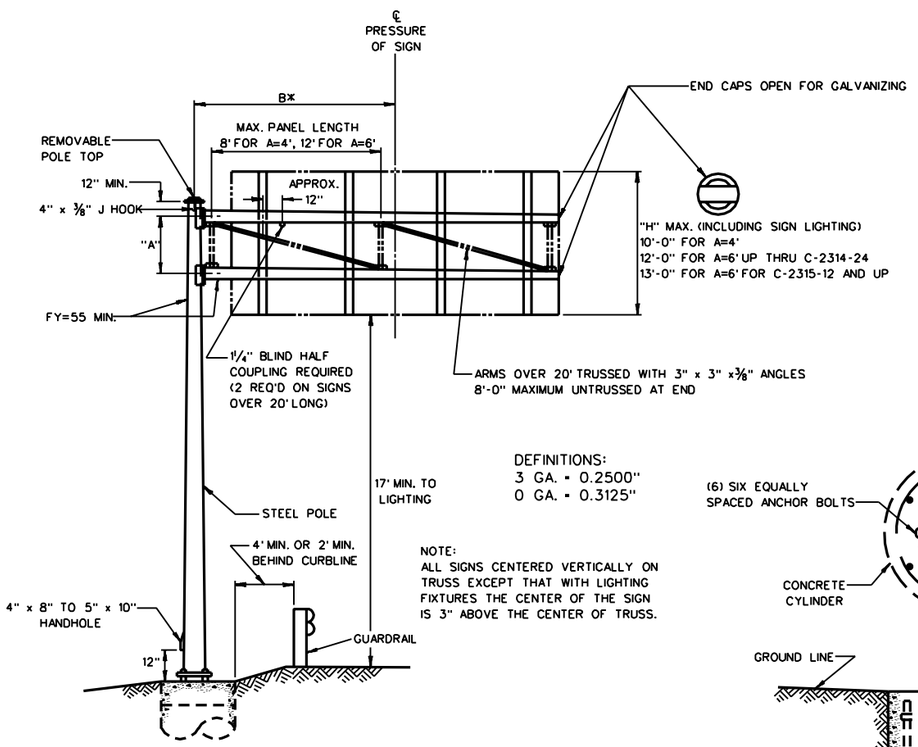
PREPARED: 02/03/75

REVISIONS
1 10-22-75
2 03-01-78
3 07-07-89
4 02-23-93
5 09-13-93

STANDARD SHEET TE3–2

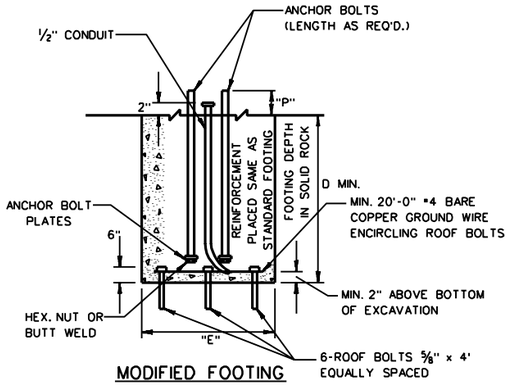
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



DEFINITIONS:
3 GA. = 0.2500"
0 GA. = 0.3125"

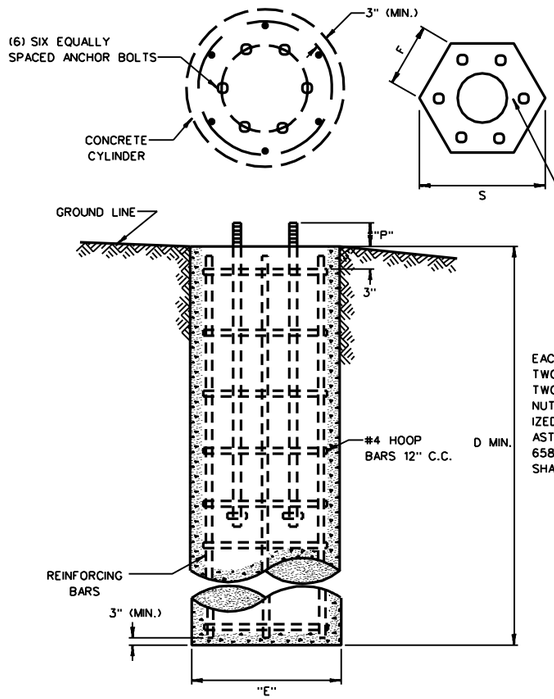
NOTE:
ALL SIGNS CENTERED VERTICALLY ON TRUSS EXCEPT THAT WITH LIGHTING FIXTURES THE CENTER OF THE SIGN IS 3" ABOVE THE CENTER OF TRUSS.



MODIFIED FOOTING WHEN IN SOLID ROCK

MODIFIED FOOTING IN SOLID ROCK

"E"	D MIN.	POLE DIA.
3'	5'	3 GA. 12"
3½'	5'	3 GA. 14"
3½'	6'	3 GA. 15"
3½'	7½'	3 GA. 18"
4'	8'	0 GA. 18"



NOTE: MIN. CLEARANCE FACE OF POLE TO OUTERMOST POINT OF HEX NUT SHALL BE 1.50 INCH.

FOOTING DETAIL
(SHOWING REINFORCEMENT)

POST BASE DETAIL

"E"	D MIN.	POLE DIA.	"S" MIN.	"F" APPROX	"BC"	"P"	"T"	ANCHOR BOLTS
3'	8'	3 GA. 12"	25"	12.5"	19"	7½"	1¾"	1½" DIA.
3½'	8'	3 GA. 14"	28"	14.0"	21"	7½"	2"	1¾" DIA.
3½'	9'	3 GA. 15"	29"	14.5"	23½"	7½"	2"	1¾" DIA.
3½'	11'	3 GA. 18"	34"	17.0"	25½"	8½"	2¼"	2" DIA.
4'	11½'	0 GA. 18"	35"	17.5"	25½"	9½"	2½"	2¼" DIA.

GROUNDING DETAIL

SUPPORT SELECTION CHART

DESIGN NUMBER	POLE DIA.	B *	ARM DIMENSION	AREA (SQ. FT. MAX) (INCLUDING SIGN LIGHTING)
C-2312-12	3GA.12"	8'	7GA.6.0"x4.32"x12'	105
C-2312-16	3GA.12"	12'	7GA.7.0"x4.76"x16'	95
C-2312-20	3GA.12"	16'	7GA.8.0"x5.20"x20'	90
C-2312-24	3GA.12"	20'	7GA.8.0"x4.64"x24'	70
C-2314-12	3GA.14"	8'	7GA.7.0"x5.32"x12'	155
C-2314-16	3GA.14"	12'	7GA.8.0"x5.76"x16'	130
C-2314-20	3GA.14"	16'	7GA.9.0"x6.20"x20'	120
C-2314-24	3GA.14"	20'	7GA.9.0"x5.64"x24'	100
C-2315-12	3GA.15"	8'	7GA.7.0"x5.32"x12'	140
C-2315-16	3GA.15"	12'	7GA.8.0"x5.76"x16'	135
C-2315-20	3GA.15"	16'	7GA.9.0"x6.20"x20'	130
C-2315-24	3GA.15"	20'	7GA.10.0"x6.64"x24'	105
C-2318-18	3GA.18"	10'	7GA.10.0"x7.48"x18'	235
C-2318-22	3GA.18"	14'	3GA.9.0"x5.92"x22'	200
C-2318-26	3GA.18"	18'	3GA.10.0"x6.36"x26'	180
C-2018-24	0GA.18"	14'	3GA.10.0"x6.64"x24'	260
C-2018-28	0GA.18"	18'	3GA.11.0"x7.08"x28'	230
C-2018-32	0GA.18"	24'	3GA.12.0"x7.52"x32'	190

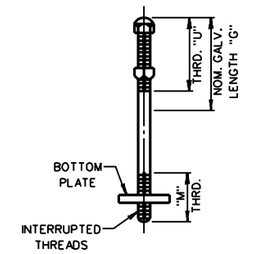
DESIGN NOTES:
1. IF HEIGHT OF MAJOR SIGN IS 9' OR LESS A=4'
   IF HEIGHT OF MAJOR SIGN IS OVER 9' A=6'
2. IF ACTUAL VALUE AT B EXCEEDS ABOVE VALUE, REDUCE SIGN AREA AS FOLLOWS:
   AREA OF SIGN = AREA FROM TABLE X (B TABLE / B ACTUAL)

NOTES:

SIGN BRACKETS AND/OR SIGN LIGHTING
FOR DETAILS SEE TE6-3D.

HI-STRENGTH BOLTS
HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

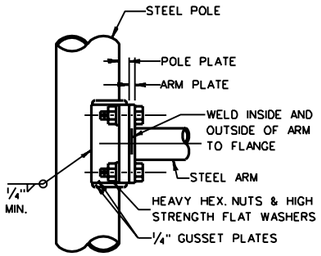
TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

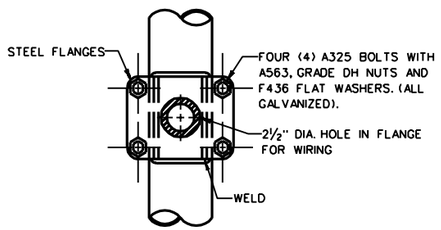


ANCHOR BOLT DETAIL

ANCHOR BOLT CHART

ANCHOR BOLTS	"M"	"U"	"G"	BOTTOM PLATE
1¼"x42"	2¼"	8"	14"	5"x5"x1/2"
1½"x54"	2½"	9"	14"	6"x6"x1¾"
1¾"x84"	2¾"	9"	14"	6¾"x6¾"x2"
2"x90"	3"	9"	15"	7¾"x7¾"x2¼"
2¼"x96"	3¼"	10"	16"	9"x9"x2½"





FLANGE DATA			
ARM SIZE	BOLT DIAM.	POLE PLATE	ARM PLATE
7 GA. 6"	1"	1"	1¼"
7 GA. 7"	1"	1"	1½"
7 GA. 8"	1"	1¼"	1½"
7 GA. 9"	1"	1¼"	1¾"
7 GA. 10"	1"	1¼"	1¾"
3 GA. 9"	1"	1¼"	1¾"
3 GA. 10"	1¼"	1½"	1¾"
3 GA. 11"	1¼"	1½"	2"
3 GA. 12"	1¼"	1¾"	2"

REINFORCEMENT SCHEDULE				
POLE DIA.	STANDARD FOOTING		MODIFIED FOOTING	
	NO.	LENGTH	NO.	LENGTH
3 GA. 12	8 # 6	7'-6"	8 # 6	4'-6"
3 GA. 14	8 # 6	7'-6"	8 # 6	4'-6"
3 GA. 15	8 # 8	8'-6"	8 # 8	5'-6"
3 GA. 18	10 # 8	10'-6"	10 # 8	7'-0"
0 GA. 18	10 # 8	11'-0"	10 # 8	7'-6"

⚠1 WHOLE SHEET GENERALLY
⚠2 ANCHOR BOLTS & FOUNDATIONS
⚠3 DELETED LOCK WASHERS
⚠4 CHANGE HI-STRENGTH BOLTS NOTE
⚠5 ADDED GR AND CURB CLEAR. MODIFIED NO. OF ANCHOR BOLTS FROM FOUR TO SIX
⚠6 CHANGED FROM 4 TO 6 ANCHOR BOLTS AND "S" "F", BC AND A.B. FOR 3GA12" AND BC FOR 3GA14".

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

OVERHEAD SIGN SUPPORT – STEEL DOUBLE ARM CANTILEVER

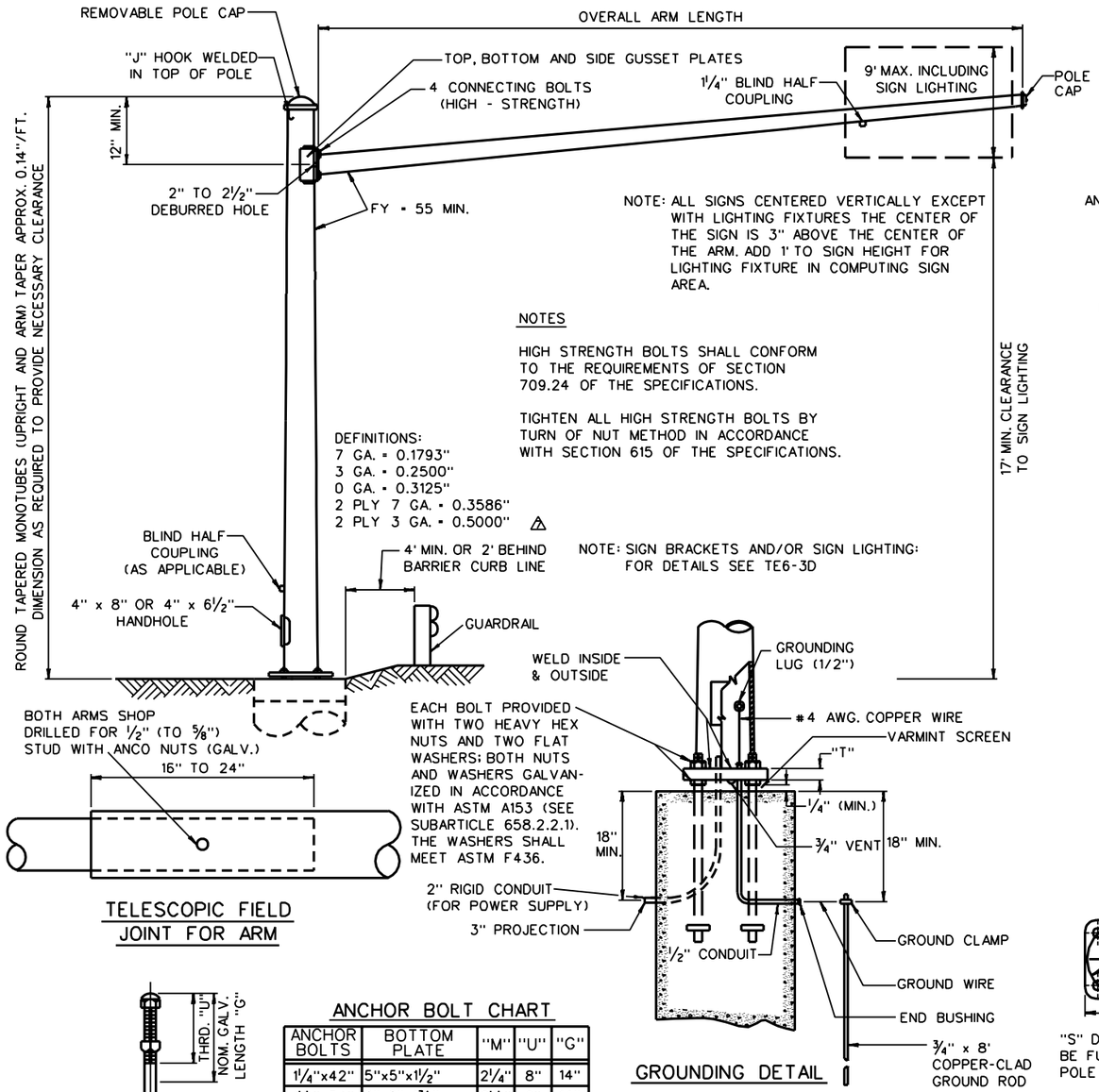
PREPARED: 02/03/75

REVISIONS
⚠1 02-24-77
⚠2 11-04-77
⚠3 09-25-84
⚠4 07-07-89
⚠5 09-13-93
⚠6 09-20-93

STANDARD SHEET TE4-3

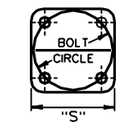
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

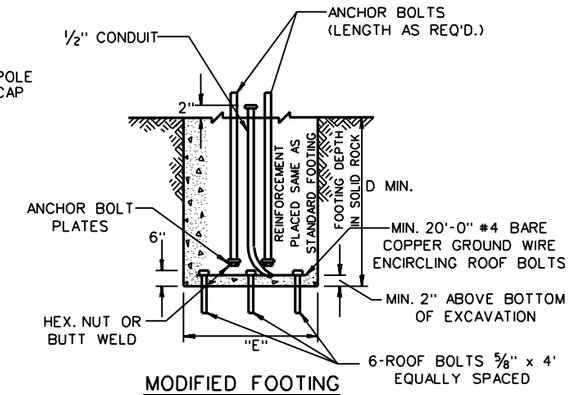


TELESCOPIC FIELD JOINT FOR ARM

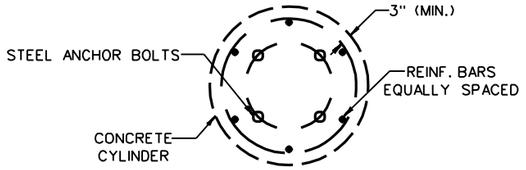
GROUNDING DETAIL

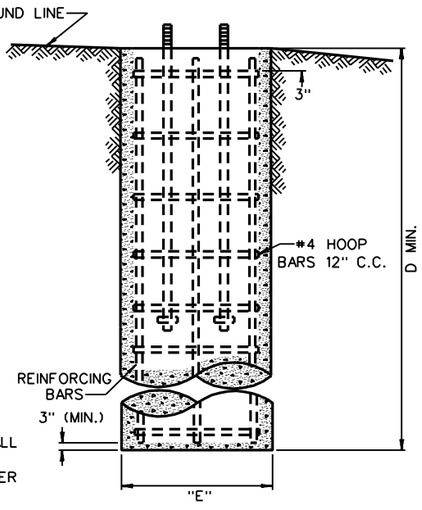


"S" DIMENSION SHALL BE FURNISHED BY POLE MANUFACTURER



MODIFIED FOOTING WHEN IN SOLID ROCK

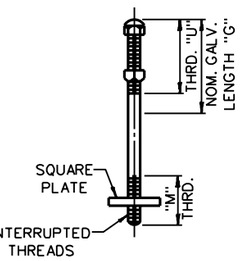




FOOTING DETAIL (SHOWING REINFORCEMENT)

SUPPORT SELECTION CHART

DESIGN NUMBER	POLE DIAMETER	ARM DIAMETER AND SUPPORTING DATA	ARM LENGTH	TOTAL MOMENT (FT.-SQ.FT.)
C-179	7 GA. 9.0	7 GA. 6.0 x 3.20 FOR 20'	14.0 THRU 20.0	480
C-1710	7 GA. 10.0	7 GA. 7.0 x 3.36 FOR 26'	21.0 THRU 26.0	610
C-1711	7 GA. 11.0	7 GA. 8.0 x 3.52 FOR 32'	27.0 THRU 32.0	740
C-1712	7 GA. 12.0	7 GA. 9.0 x 3.40 FOR 40'	33.0 THRU 40.0	920
C-1312	3 GA. 12.0	3 GA. 9.0 x 3.40 FOR 40'	33.0 THRU 40.0	1320
C-1713(2)	2 PLY 7 GA. 13.0	2 PLY 7 GA. 10.0 x 7.87 x 15.25	40.0	1670
		AND 3 GA. 8.61 x 26.25 FOR 40'		
C-1313	3 GA. 13.0	3 GA. 10.0 x 15.75	41.0 THRU 45.0	1390
		AND 7 GA. 8.44 x 31.00 FOR 45'		
C-1713(2)	2 PLY 7 GA. 15.0	2 PLY 7 GA. 12.00 x 9.31 x 19.25	41.0 THRU 45.0	1690
		AND 7 GA. 9.94 x 27.50 FOR 45'		
C-1313	3 GA. 13.0	3 GA. 10.00 x 15.75	46.0 TO 50.0	1290
		AND 7 GA. 8.44 x 36.00 FOR 50'		
C-1016	0 GA. 16.0	0 GA. 13.00 x 10.27 x 19.50	46.0 TO 50.0	1920
		AND 7 GA. 10.95 x 32.50 FOR 50'		
C-1314	3 GA. 14.0	3 GA. 11.00 x 19.00	51.0 TO 55.0	1550
		AND 7 GA. 8.94 x 37.75 FOR 55'		

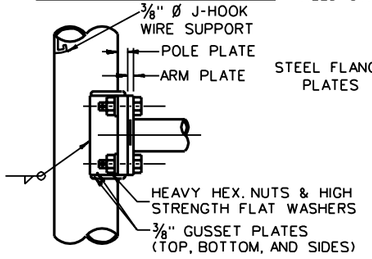


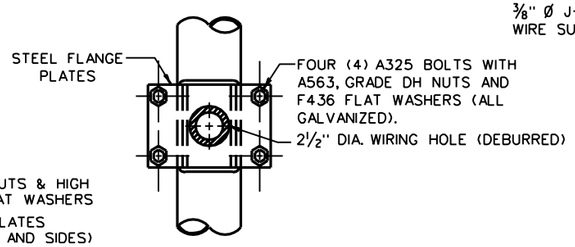
ANCHOR BOLT DETAIL

ANCHOR BOLT CHART

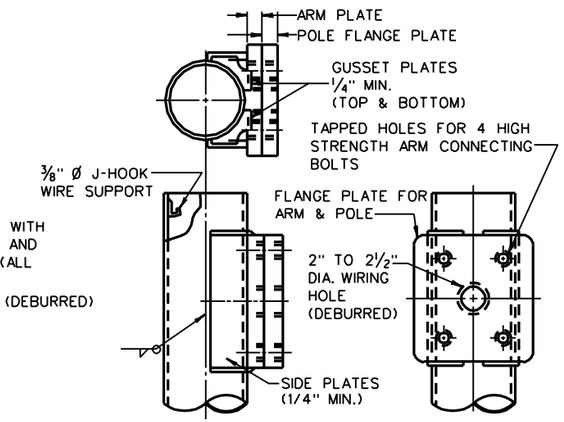
ANCHOR BOLTS	BOTTOM PLATE	"M"	"U"	"G"
1¼"x42"	5"x5"x1½"	2¼"	8"	14"
1½"x54"	6"x6"x1¾"	2½"	9"	14"
1¾"x84"	6¾"x6¾"x2"	2¾"	9"	14"
2"x90"	7¾"x7¾"x2¼"	3"	9"	15"
2¼"x96"	9"x9"x2½"	3¼"	10"	16"

NOTE: ANCHOR BOLTS SHALL CONFORM TO SUBARTICLE 658.2.2.1 OF THE SPECIFICATIONS, EXCEPT THE MINIMUM YIELD STRENGTH SHALL BE 55,000 P.S.I.





ARM ATTACHMENT - ALT.



ARM ATTACHMENT

REINFORCEMENT SCHEDULE

TYPE NO.	STANDARD FOOTING REINF.	STANDARD FOOTING LENGTH	MODIFIED FOOTING REINF.	MODIFIED FOOTING LENGTH
C-179	6 # 6	5'-0"	6 # 6	3'-6"
C-1710	6 # 6	5'-6"	6 # 6	3'-6"
C-1711	6 # 6	6'-0"	6 # 6	3'-6"
C-1712	8 # 6	6'-0"	8 # 6	4'-0"
C-1311	8 # 6	6'-6"	8 # 6	4'-6"
C-1312	8 # 6	7'-0"	8 # 6	4'-6"
C-1313	8 # 6	7'-0"	8 # 6	5'-0"
C-1314	8 # 6	7'-6"	8 # 6	5'-6"
C-1713(2)	8 # 8	9'-0"	8 # 8	6'-0"
C-1715(2)	10 # 8	10'-0"	10 # 8	6'-6"
C-1016	10 # 8	10'-0"	10 # 8	6'-6"

POST BASE DETAIL

TYPE NUMBER	B.C.	T	ANCHOR BOLTS	FOOTING "E"	FOOTING D MIN.
C-179	12½"	1¼"	1.25"x42	2.5	5.5
C-1710	13½"	1¼"	1.25"x48	2.5	6.0
C-1711	15"	1¼"	1.50"x60	2.5	6.5
C-1712	16"	1¼"	1.50"x60	3.0	6.5
C-1311	15"	1½"	1.75"x90	3.0	7.0
C-1312	16"	1½"	1.75"x90	3.0	7.5
C-1313	18"	1½"	1.75"x90	3.5	7.5
C-1314	20"	1¾"	1.75"x90	3.5	8.0
C-1713(2)	20"	2"	2.00"x90	3.5	9.5
C-1715(2)	22"	2½"	2.25"x96	3.5	10.5
C-1016	23½"	2½"	2.25"x96	3.5	10.5

MODIFIED FOOTING IN SOLID ROCK

TYPE NUMBER	"E"	D MIN.	ANCHOR BOLTS
C-179	2.5	4.0	1¼" x 42
C-1710	3.0	4.0	1¼" x 42
C-1711	3.0	4.0	1½" x 42
C-1712	3.0	4.5	1½" x 48
C-1311	3.0	5.0	1¾" x 54
C-1312	3.0	5.0	1¾" x 54
C-1313	3.5	5.5	1¾" x 60
C-1314	3.5	6.0	1¾" x 66
C-1713(2)	3.5	6.5	2" x 72
C-1715(2)	3.5	7.0	2¼" x 84
C-1016	3.5	7.0	2¼" x 84

1 ENTIRE SHEET
2 REINF. STEEL
3 ANCHOR BOLTS & FOUNDATIONS
4 DELETED LOCK WASHERS
5 ANCHOR BOLT NOTE & HIGH - STRENGTH BOLTS
6 COMPLETE CHART REVISION AND ATTENDANT DETAILS
7 ADDED GR AND CURB CLEAR. CHANGED ANCHOR BOLTS TO DECIMAL

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

OVERHEAD SIGN SUPPORT – STEEL SINGLE ARM CANTILEVER

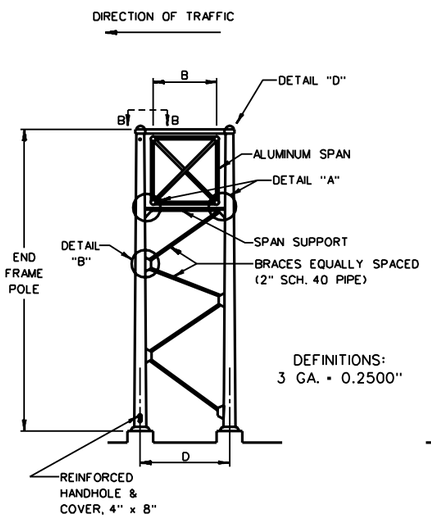
PREPARED: 02/03/75

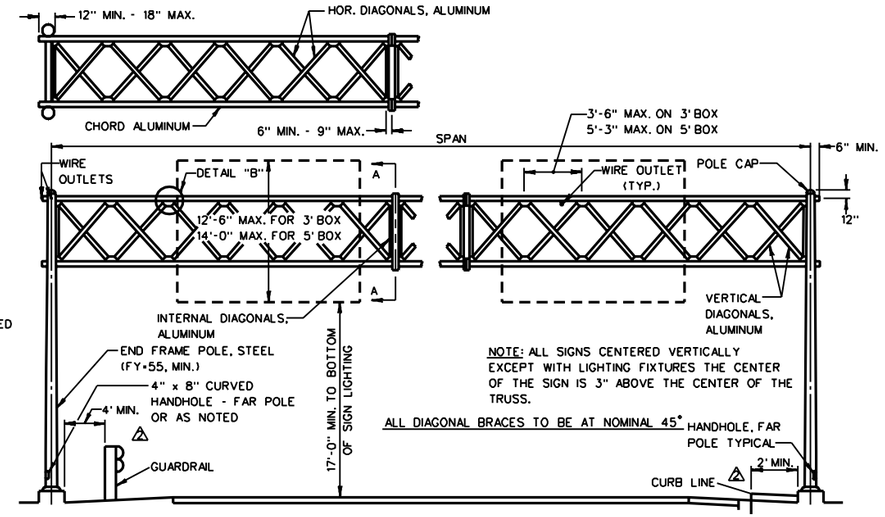
REVISIONS
1 10-23-75
2 02-24-77
3 11-04-77
4 09-25-84
5 07-07-89
6 01-06-93
7 09-13-93

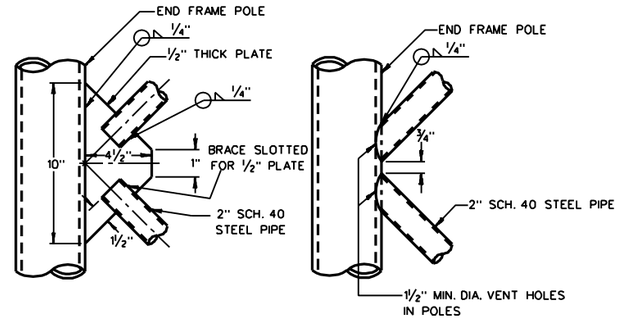
STANDARD SHEET TE4-4

TRAFFIC ENGINEERING DIVISION

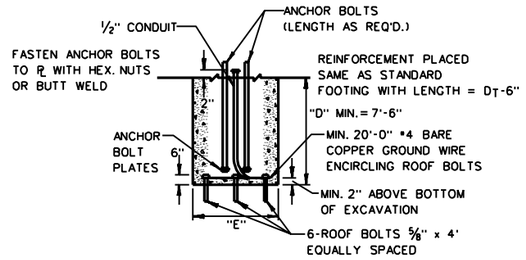
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



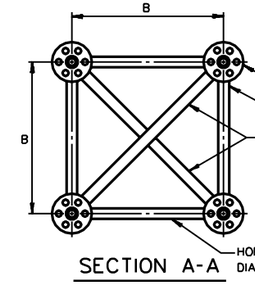




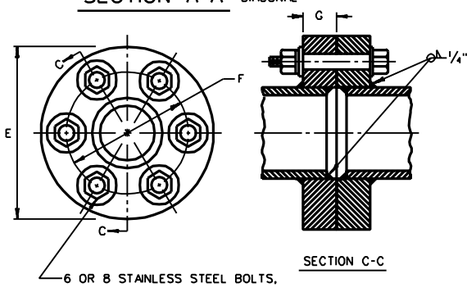
DETAIL "B"



MODIFIED FOOTING WHEN IN SOLID ROCK

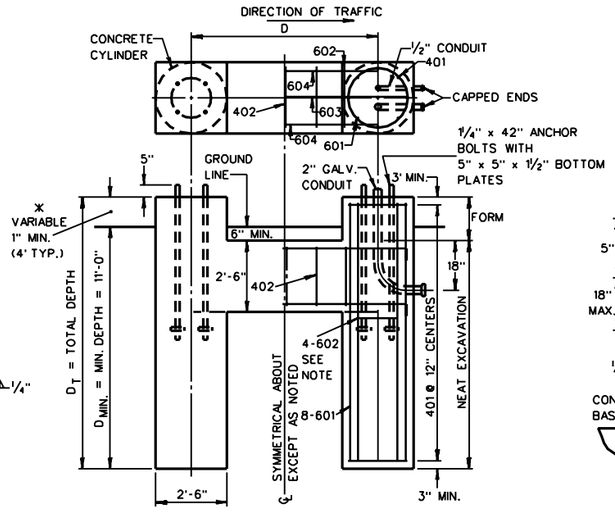


SECTION A-A



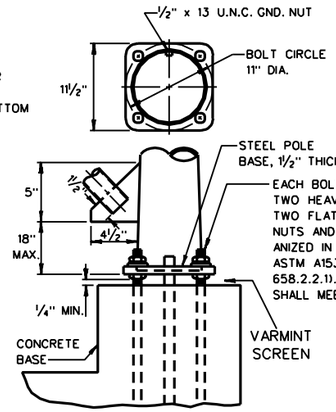
SECTION C-C

FLANGE DETAIL

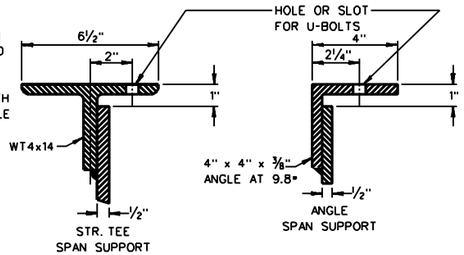


FOUNDATION DETAIL

(RIGHT HAND SHOWN - LEFT HAND OPPOSITE)

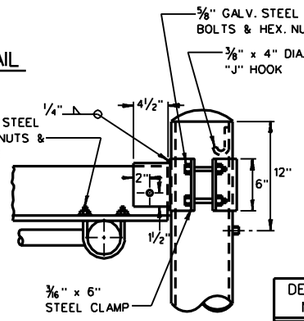


POLE BASE DETAIL



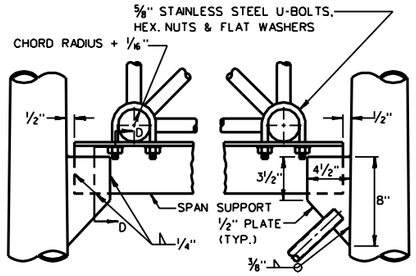
SECTION D-D

VIEW B-B (ALTERNATE)



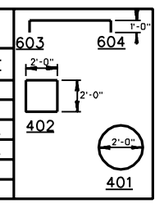
DETAIL "D" (REVERSED VIEW)

UPPER SPAN SUPPORT



DETAIL "A" LOWER SPAN SUPPORT

REINFORCEMENT SCHEDULE (FOR EACH FOUNDATION)			
MARK	NO	LENGTH	TYPE
401	12"C/C-#4	7'-6"	401
402	12"C/C-#4	8'-6"	402
601	16-#6	DT-6"	STR.
602	8-#4	2'-0"	STR.
603	2-#4	D-4'-0"	603
604	4-#6	D-2'-0"	604



DESIGN NO.	B	D	END SHAFT	SPLICING FLANGE E	F	G	BOLT NO.	BOLT SIZE	CHORDS	DIAGONALS	ALLOWABLE SIGN AREA
1	3'-0"	4'-5"	3GA. 8"x26'-0" NOM.	9"	7 1/2"	1 3/8"	8	5/8" x 4"	4 1/2" x .237	1.900x.200	UP TO 55' SPAN, AREA = 600 FT.² AT 80' SPAN, AREA = 350 FT.² PROPORTION ACCORDINGLY, IN BETWEEN
2	5'-0"	6'-7"	3GA. 8"x27'-6" NOM.	10"	8 1/2"	1 1/2"	6	3/4" x 4 1/2"	5 5/16" x .258	2 3/8" x .218	UP TO 75' SPAN, AREA = 650 FT.² AT 120' SPAN, AREA = 550 FT.² PROPORTION ACCORDINGLY, IN BETWEEN

NOTES

MATERIALS
THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM (ROUND STRAIGHT TUBES) AND THE END FRAMES SHALL BE STEEL.
SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS, UNLESS OTHERWISE NOTED.
STEEL POLE BASES AND GUSSETS SHALL AS A MINIMUM CONFORM TO THE REQUIREMENTS OF ASTM A-36.

FABRICATION
THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED MAXIMUM LENGTH OF SPAN SECTION IS 30 FT.

WELDING
CONNECTIONS SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS, BUT NOT LESS THAN 75 PERCENT OF THE STRENGTH OF THE MEMBERS. MINIMUM WELD 3/16 INCHES.

ERECTION
USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD 1/4 INCHES OF CAMBER FOR EACH 5 FOOT OF INCREASE IN SPAN OVER 50'.

* FOUNDATION ELEVATIONS
THE TOPS OF FOUNDATIONS SHALL BE CONSTRUCTED SO THAT THE 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

GROUNDING
FOR GROUNDING DETAILS SEE TE6-3A. GROUNDING ALWAYS REQUIRED, IRREGARDLESS IF SIGN LIGHTING REQUIRED OR NOT.

SIGN BRACKETS AND/OR SIGN LIGHTING
FOR DETAILS SEE TE6-3A.

WIRE OUTLETS
ONE THREADED STEEL 1 1/4" PIPE COUPLING OR SHORT NIPPLE SHALL BE WELDED TO THE REAR POLE OF EACH END FRAME. THREADED ALUMINUM 1 1/4" PIPE COUPLINGS OR SHORT NIPPLES SHALL BE WELDED TO THE FRONT TOP CHORD OF TRUSS APPROXIMATELY 12" OUTBOARD OF THE FIRST SIGN BRACKET AND AT OTHER LOCATIONS AS PORTRAYED ON TE6-3A FOR EACH SIGN. ALL SHARP EDGES INSIDE THE POLES, CHORDS AND PIPES OR COUPLINGS SHALL BE REMOVED.

HI-STRENGTH BOLTS
HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

⚠1 DELETED LOCK WASHERS & ADDED GROUNDING NOTE
⚠2 ADDED GUARDRAIL AND CURB CLEAR.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
OVERHEAD SIGN SUPPORT, STEEL–ALUMINUM COMBINATION (TRUSS)

PREPARED: 11/03/76

REVISIONS
⚠1 09-25-84
⚠2 09-13-93

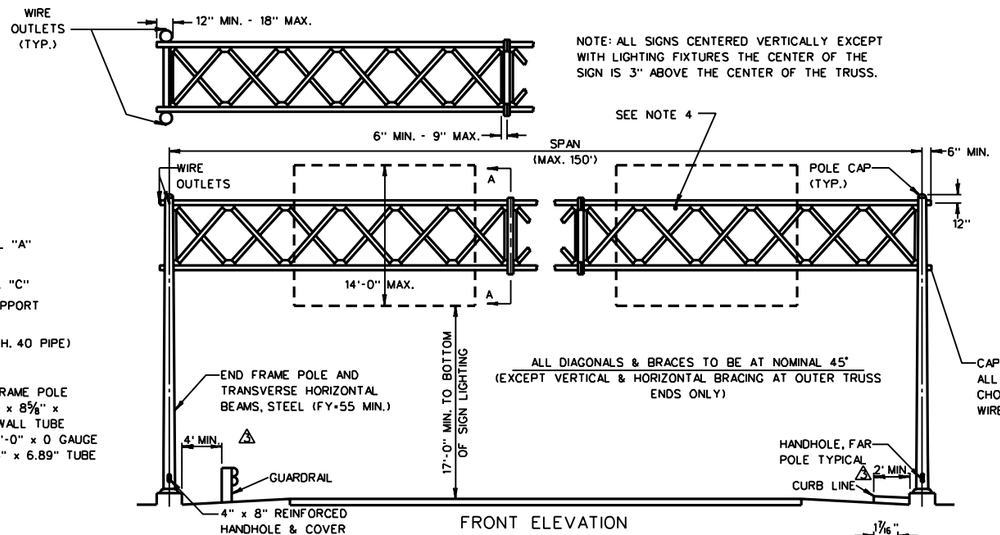
STANDARD SHEET TE5-1

TRAFFIC ENGINEERING DIVISION

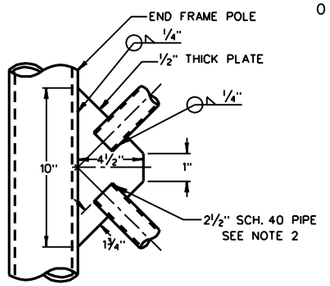
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES

1. FOR SIGN BRACKETS TO BE FURNISHED WITH THIS STRUCTURE, CONSTRUCTION DETAILS AND LOCATION OF HANDHOLES AND SWITCH ENCLOSURE MOUNTING BRACKETS, SEE STANDARD DRAWINGS TE6-3A, TE6-3B, TE6-3C, TE6-3D.
2. NOMINAL 2" SCHEDULE 40 PIPE IS TO BE USED FOR BRACING MEMBERS IN THE TRUSS. ONE INTERNAL DIAGONAL IS REQUIRED AT EACH END OF EACH SECTION.
3. ONE THREADED STEEL 1¼" PIPE COUPLING OR SHORT NIPPLE SHALL BE WELDED TO THE REAR POLE OF EACH END FRAME. THREADED ALUMINUM 1¼" PIPE COUPLINGS OR SHORT NIPPLES SHALL BE WELDED TO THE FRONT TOP CHORD OF TRUSS APPROXIMATELY 12" OUTBOARD OF THE FIRST SIGN BRACKET AND AT OTHER LOCATIONS AS PORTRAYED ON TE6-3A FOR EACH SIGN. ALL SHARP EDGES INSIDE THE POLES, CHORDS AND PIPES OR COUPLINGS SHALL BE REMOVED.
4. THE TRUSS SHALL BE CAMBERED A MINIMUM OF 1" FOR SPAN OF 50' OR LESS. THE CAMBER SHALL BE INCREASED ¼" FOR EACH 5' OF SPAN OVER 50'.
5. INTERNAL DIAGONALS ONLY MAY BE RELOCATED FROM THE INDICATED POSITION TO AVOID WELD JOINT OVERLAP.
6. ⚠ FOR GROUNDING DETAILS SEE TE6-3A. GROUNDING ALWAYS REQUIRED, IRREGARDLESS IF SIGN LIGHTING REQUIRED OR NOT.
7. FOR SIGN LIGHTING DETAILS, SEE STANDARD DRAWING TE6-3A.
8. HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.
9. TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

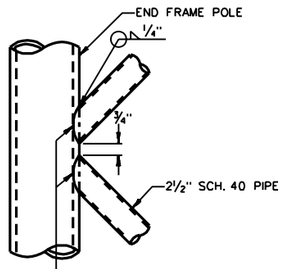


DEFINITIONS:
3 GA. = 0.2500"
0 GA. = 0.3125"

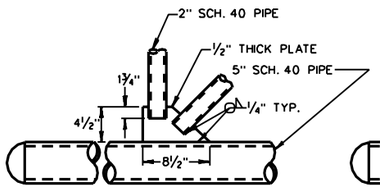


END FRAME AND TRUSS JOINT DETAILS

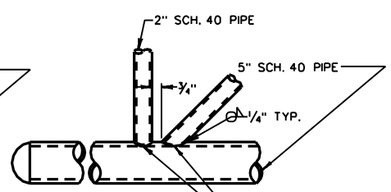
DETAIL "B"



ALTERNATE JOINT (SEE NOTE 2)



(SIDE VIEW)



ALTERNATE JOINT (SIDE VIEW)

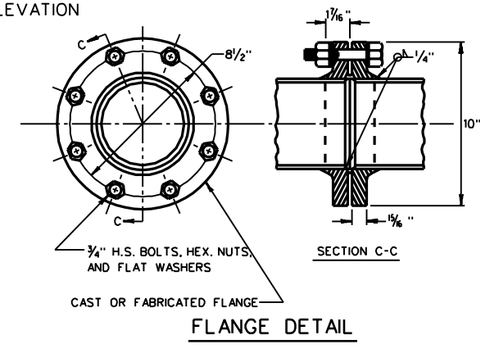
(DOTTED LINES OF HORIZONTAL MEMBERS OMITTED FOR CLARITY)

ALTERNATE JOINT

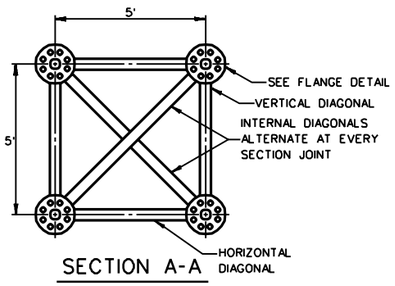
TRUSS END JOINT DETAILS

DETAIL "C"

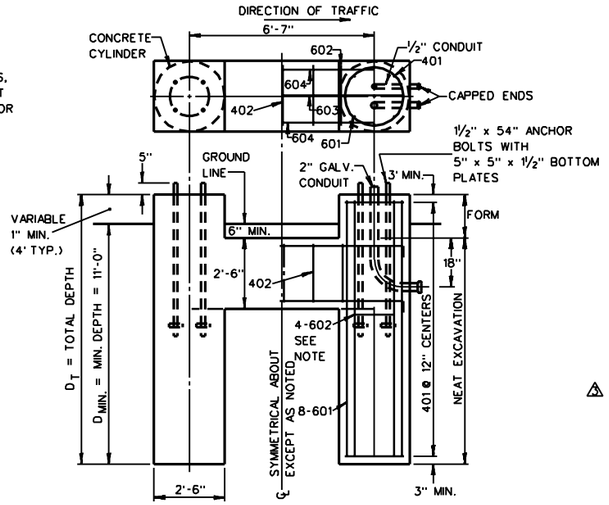
ALLOWABLE LOAD
UP TO 130 FT. SPAN, ALLOWABLE = 1150 FT.²
130 FT. TO 150 FT. SPAN, PROPORTION DOWN TO 1000 FT.²



FLANGE DETAIL



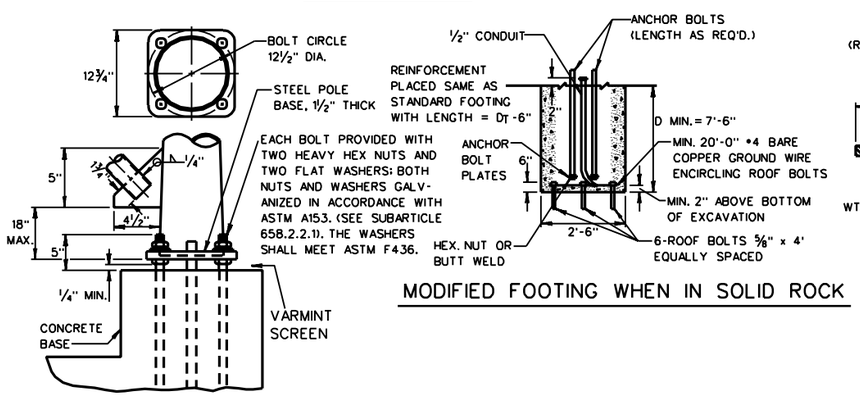
SECTION A-A



NOTE: TIE ANCHOR BOLTS TO REBAR CAGE NEAR TOP AND BOTTOM OF ANCHOR BOLTS.

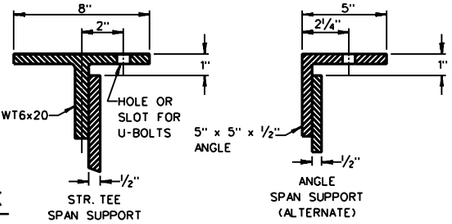
FOUNDATION DETAIL

(RIGHT HAND SHOWN - LEFT HAND OPPOSITE)



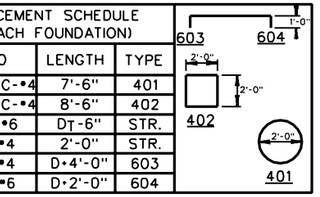
POLE BASE DETAIL

MODIFIED FOOTING WHEN IN SOLID ROCK

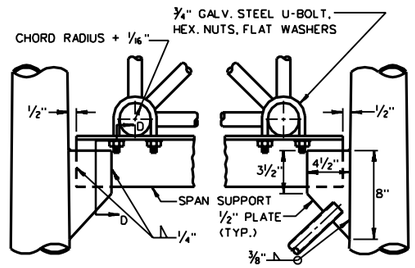


SECTION A-A

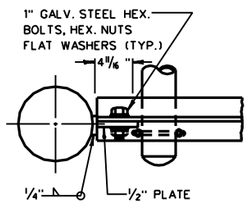
REINFORCEMENT SCHEDULE (FOR EACH FOUNDATION)			
MARK	NO	LENGTH	TYPE
401	12"C/C-#4	7'-6"	401
402	12"C/C-#4	8'-6"	402
601	16-#6	D_T-6"	STR.
602	8-#4	2'-0"	STR.
603	2-#4	D+4'-0"	603
604	4-#6	D+2'-0"	604



⚠ DELETED GROUT, LOCKWASHERS
⚠ ADDED H.S. BOLTS
⚠ ADDED GR AND CURB CLEAR. DELETED FY NOTE

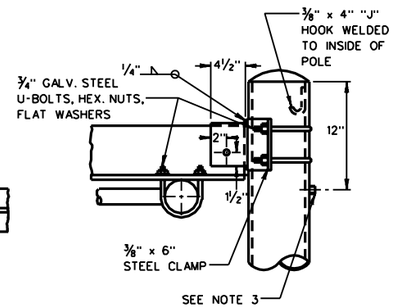


DETAIL "A" LOWER SPAN SUPPORT



VIEW B-B

(DETAIL "D" ALTERNATE)



DETAIL "D"

(REVERSED VIEW)

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
OVERHEAD SIGN SUPPORT – STEEL BOX TRUSS SPAN

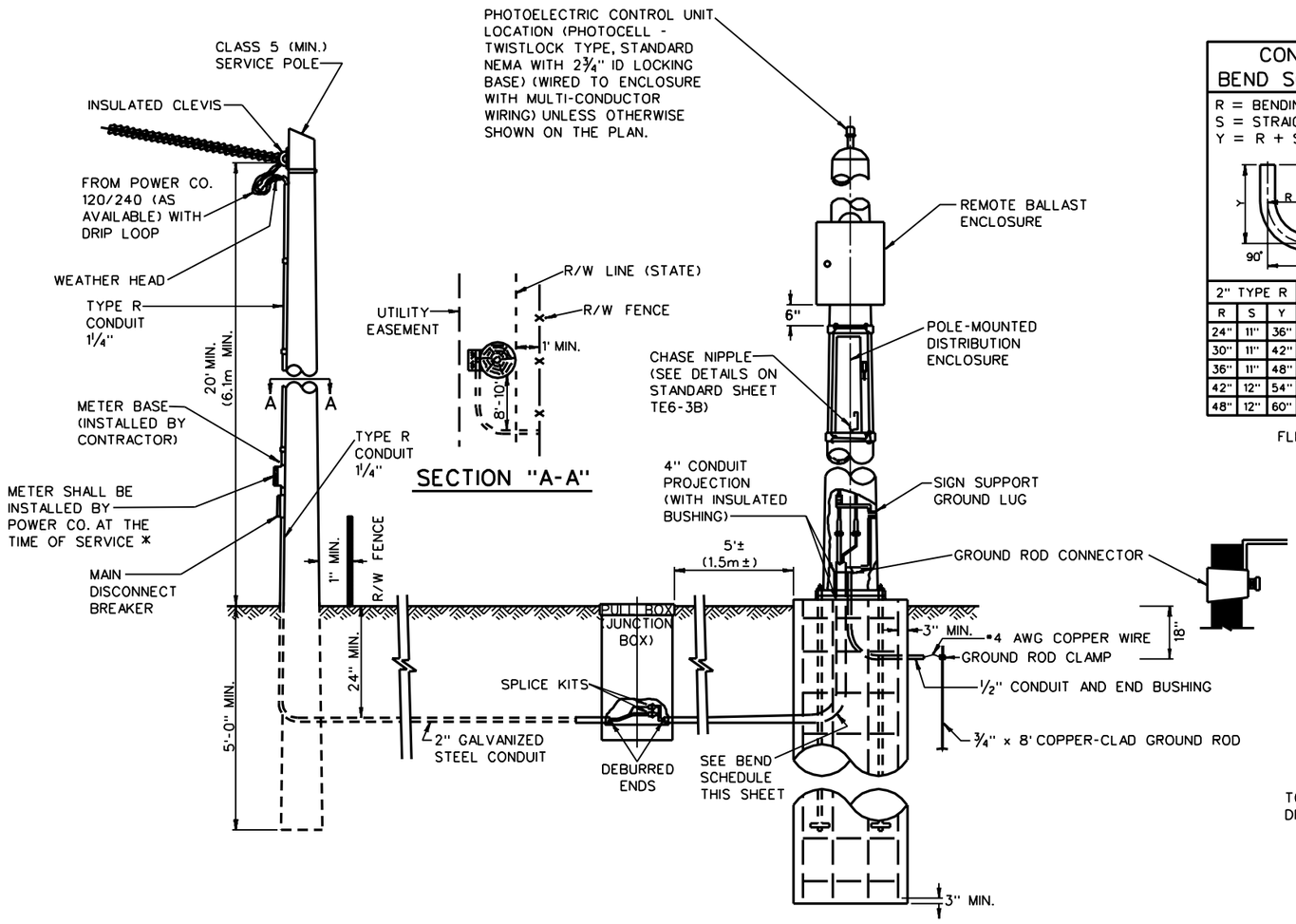
PREPARED: 06/02/89

REVISIONS
⚠ 01-07-93
⚠ 03-03-93
⚠ 09-13-93

STANDARD SHEET TE5-7

TRAFFIC ENGINEERING DIVISION

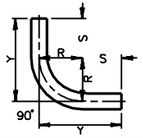
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



SECTION "A-A"

CONDUIT BEND SCHEDULE

R = BENDING RADIUS
S = STRAIGHT SECTION
Y = R + S



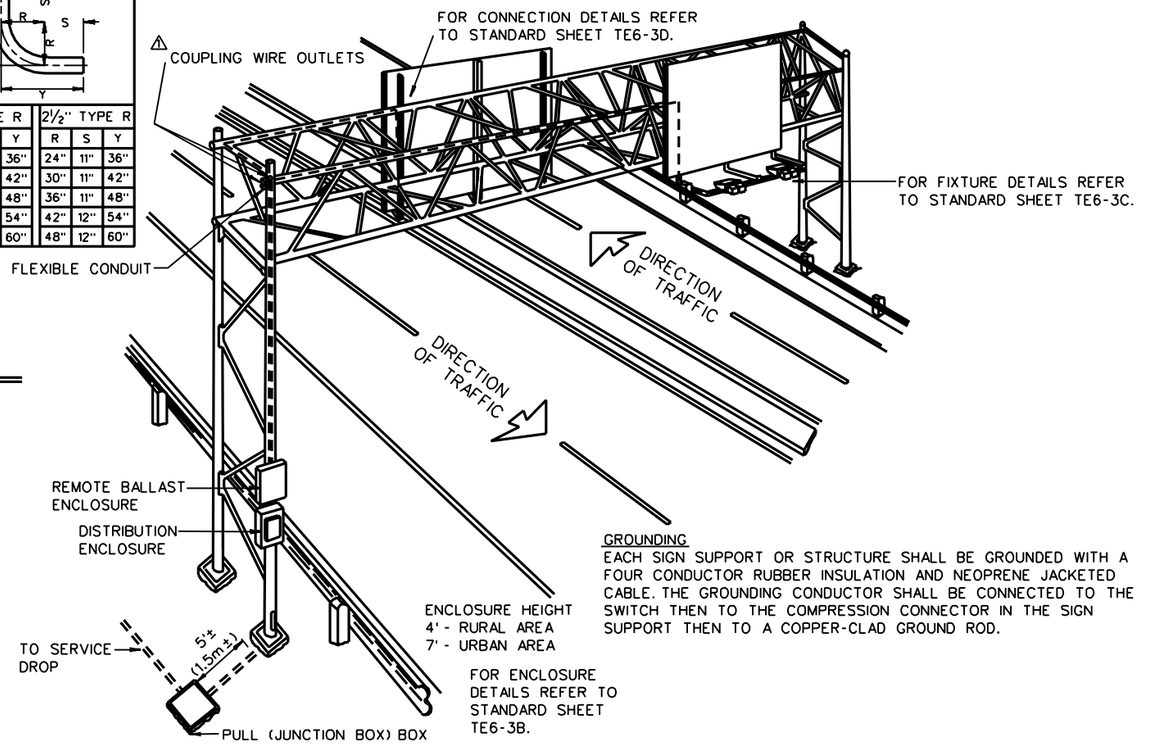
2" TYPE R			2½" TYPE R		
R	S	Y	R	S	Y
24"	11"	36"	24"	11"	36"
30"	11"	42"	30"	11"	42"
36"	11"	48"	36"	11"	48"
42"	12"	54"	42"	12"	54"
48"	12"	60"	48"	12"	60"

GENERAL NOTES:

DETAILS OF THIS SHEET SHALL APPLY TO EACH OVERHEAD SIGN STRUCTURE THAT SUPPORTS EXTERNALLY ILLUMINATED SIGNS (WHEN SIGN LIGHTING PART OF ROADWAY LIGHTING SEE TEL-06).

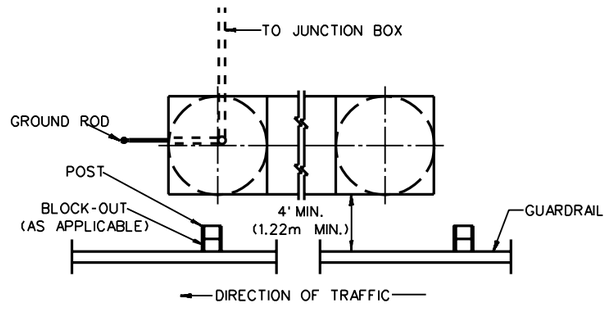
WHERE SPECIAL SIGN MOUNTS, FABRICATED FROM STRUCTURAL STEEL, ARE USED TO ATTACH SIGNS AND SIGN LIGHTING TO THE SUPERSTRUCTURE, PARAPET WALLS, OR PLATE GIRDERS OF ROADWAY BRIDGES OVERPASSING THE SIGNED ROUTE, THE PHOTOELECTRIC CONTROL UNIT SHALL BE INSTALLED AS INDICATED ON THE PLANS.

FOR ADDITIONAL NOTES APPLICABLE TO THIS SHEET REFER TO STANDARD SHEET TE6-3D.



GROUNDING
EACH SIGN SUPPORT OR STRUCTURE SHALL BE GROUNDED WITH A FOUR CONDUCTOR RUBBER INSULATION AND NEOPRENE JACKETED CABLE. THE GROUNDING CONDUCTOR SHALL BE CONNECTED TO THE SWITCH THEN TO THE COMPRESSION CONNECTOR IN THE SIGN SUPPORT THEN TO A COPPER-CLAD GROUND ROD.

* NOTE: WHEN NOTED SPECIFICALLY ON THE PLANS (URBAN AREAS WHERE IT IS NOT FEASIBLE TO INSTALL A SERVICE POLE), EXISTING POWER COMPANY POLES MAY BE USED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER WITH METER BASE, METER, AND MAIN DISCONNECT CO-LOCATED WITH POLE-MOUNTED ENCLOSURE (90° OPPOSITE).



SECTION "B-B"

TYPICAL TRUSS - MOUNTED SERVICE

⚠1 DELETED UNIVERSAL QUICK DISCONNECT
⚠2 MOVED WIRING TO TOP
⚠3 DELETED FUSED CONNECTORS
⚠4 REARRANGED PE NOTES, OTHER NOTES
⚠5 REVISED SVC POLE AND FIRST POLE PE AND NOTES, REVISED URBAN AREA AND GENERAL NOTES AND CHANGED MASTER SWITCH TO MAIN DISCONNECT
⚠6 CHANGED JB OFFSET FROM 10' MIN. TO 5'±.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
SIGN LIGHTING – SERVICE

PREPARED: 04/13/73

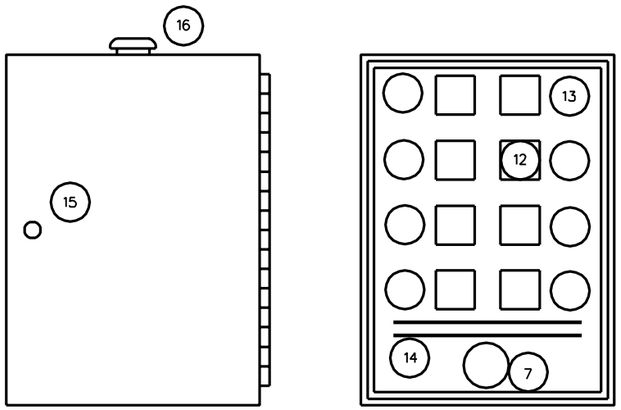
REVISIONS
02-00-75
⚠1 07-22-76
⚠2 02-15-77
⚠3 05-12-78
⚠4 12-22-92
⚠5 02-22-93
⚠6 09-13-93

STANDARD SHEET TE6-3A

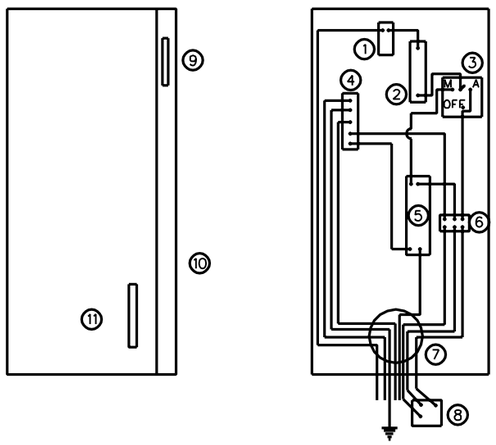
TRAFFIC ENGINEERING DIVISION

SIGN LIGHTING ENCLOSURE WIRING DIAGRAM FOR USE WITH SEPARATE LIGHTING POWER SOURCE

(SEE TEL-06 FOR DETAILS WHEN SIGN LIGHTING IS INCLUDED WITH ROADWAY LIGHTING CIRCUITS.)



REMOTE BALLAST ENCLOSURE



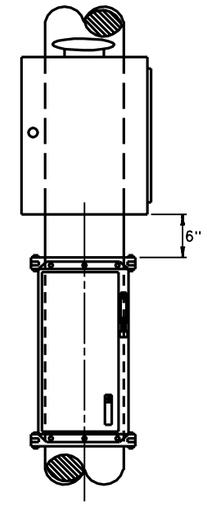
120 OR 240 VOLT DISTRIBUTION ENCLOSURE WIRING DIAGRAM

(120 VOLT SYSTEM SHOWN)

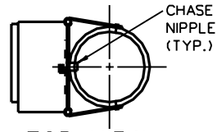
LEGEND

1 BARRIER TYPE TERMINAL BLOCK
2 MAIN CIRCUIT BREAKER
3 MANUAL-OFF-AUTOMATIC SELECTOR SWITCH
4 SOLID NEUTRAL GROUNDED
5 120 VOLT CONTACTOR
6 P.E. UNIT TERMINAL STRIP
7 CHASE NIPPLE *
8 120 VOLT P.E. UNIT (PHOTOCELL-TWISTLOCK TYPE, STANDARD NEMA WITH 2¾" ID LOCKING BASE)
9 LOCKABLE SAFETY SWITCH
10 NEMA R S.S. ENCLOSURE
11 ENCLOSURE DOOR INTERLOCK
12 BALLAST
13 CAPACITOR
14 TERMINAL STRIPS
15 'CORBIN' TYPE LOCK SERIES #R357SGS
16 VENT

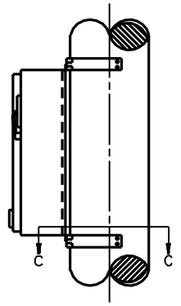
(*) WHEN USED ON WOOD POLE, APPROPRIATE CONDUIT HUBS SHALL BE INSTALLED ON BOTTOM AS NECESSARY TO FOLLOW CONDUIT ON POLE.



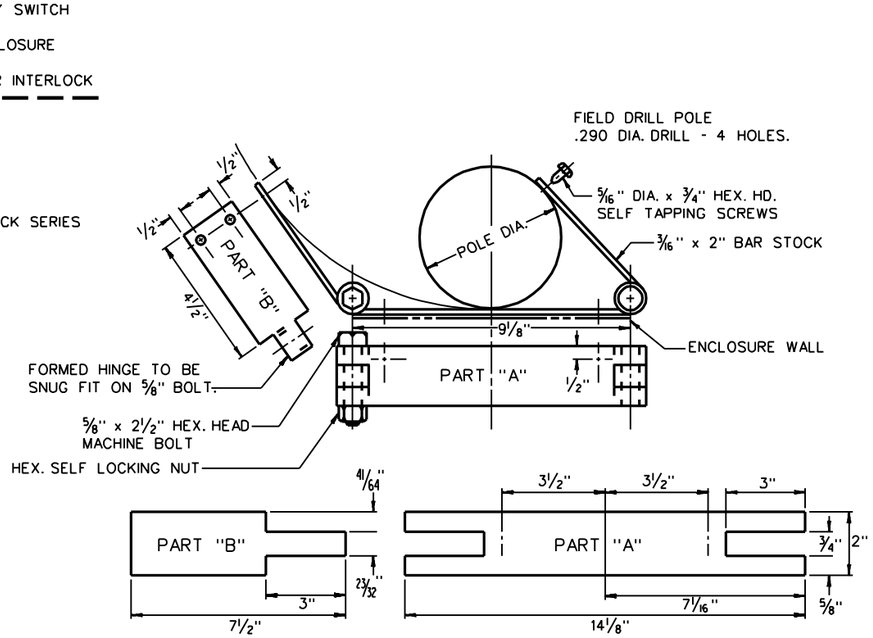
FRONT VIEW



TOP VIEW



SIDE VIEW



ENCLOSURE MOUNTING BRACKET

THE ENCLOSURE MOUNTING BRACKET MAY BE FABRICATED FROM EITHER GALVANIZED STEEL OR ALUMINUM. THE BRACKET SHALL BE FIELD MOUNTED WITH 5/16" HEX HEAD SCREWS (SELF-TAPPING FOR ATTACHING TO STEEL OR ALUM.). STEEL NUTS, BOLTS, AND SCREWS SHALL BE CADMIUM PLATED. ALUMINUM NUTS, BOLTS, AND SCREWS SHALL HAVE AN ANODIC COATING AT LEAST 0.0002 INCH IN THICKNESS AND SHALL BE CHROMATE SEALED.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

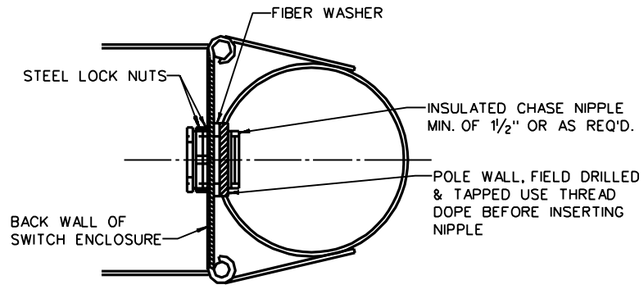
REMOTE BALLAST ENCLOSURE:

THIS SHALL BE NEMA 3R OF MINIMUM OUTSIDE DIMENSIONS OF 26" x 17" AND MUST MEET REQUIREMENTS OF POLE MOUNTED DETECTOR AND FLASHER UNIT CABINETS WITH EXCEPTION TO SIZE. SEE STANDARD SPECIFICATIONS SECTION 715.42.8. MOUNT APPROXIMATELY SIX (6) INCHES ABOVE DISTRIBUTION ENCLOSURE.

EACH SIGN LIGHTING FIXTURE MUST BE ON A SEPARATELY WIRED CIRCUIT FROM THE REMOTE BALLAST ASSEMBLY. A MINIMUM OF EIGHT (8) FUSED TERMINALS MUST BE PROVIDED ON THE REMOTE BALLAST BACK PANEL FOR FUSING THE LINE SIDE OF EACH BALLAST. NO FUSING IS TO BE INSTALLED IN THE SIGN LIGHTING FIXTURE BETWEEN THE FIXTURE AND THE BALLAST ASSEMBLY.

DISTRIBUTION ENCLOSURE:

THE ENCLOSURE SHALL BE NEMA #4 WATERTIGHT .074 MIN. GAUGE STAINLESS STEEL AISI 302-303. A DISCONNECT HANDLE SHALL BE FLANGE MOUNTED AND CAPABLE OF BEING LOCKED IN EITHER POSITION. THE ENCLOSURE SHALL BE EQUIPPED WITH A DOOR LOCKING MECHANISM WITH A DEFEATER THAT NECESSITATES TWO HANDS TO OPERATE MECHANISM WITH THE SWITCH IN OFF POSITION. SPACE FOR AN INSULATED CHASE NIPPLE SHALL BE PROVIDED APPROXIMATELY 2¼" ABOVE THE CENTER LINE OF THE LOWER MOUNTING SLOT. THIS ENCLOSURE AND STRUCTURE SHALL BE SHOP DRILLED AND TAPPED FOR THE REQUIRED NIPPLE AS SHOWN ON THE DETAIL ON THIS SHEET. THIS ENCLOSURE SHALL BE FLANGE MOUNTED ON BRACKETS WHICH ARE ATTACHED TO POLE AS SHOWN ON THIS SHEET ON THE MOUNTING BRACKET DETAIL.



CHASE NIPPLE WIRE INLET DETAIL

1 DELETED SIGNATURE BLOCK
2 DELETED 2" SIZING FOR WIRE INLET
3 ADDED MAIN CKT. BKR. AND M-O-A SWITCH
4 ADDED NOTE - SEE TEL-06
5 ADDED REMOTE BALLAST AND ENCLOSURE DETAILS AND NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

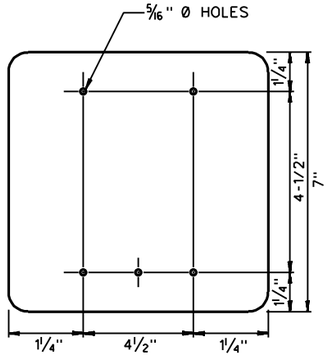
STANDARD DETAIL SIGN LIGHTING – ENCLOSURES WITH REMOTE BALLAST

PREPARED: / /

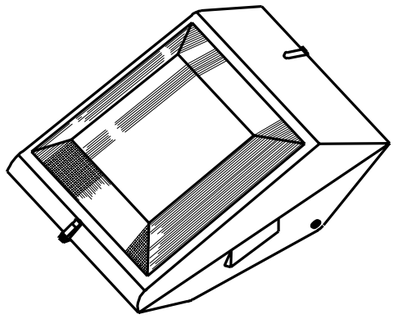
REVISIONS
1 07-22-76
2 02-15-77
3 05-12-78
4 06-30-89
5 02-22-93

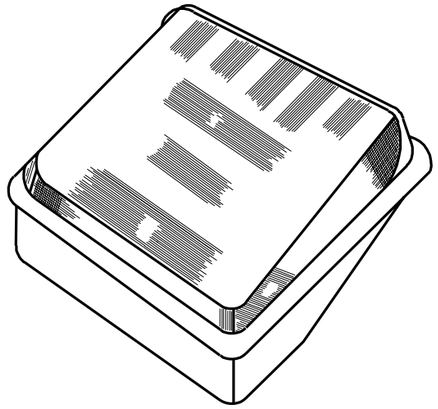
STANDARD SHEET TE6-3B

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

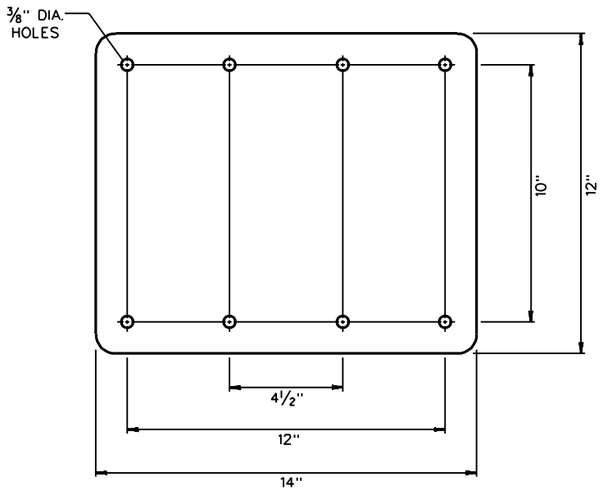


LUMINAIRE MOUNTING PLATE

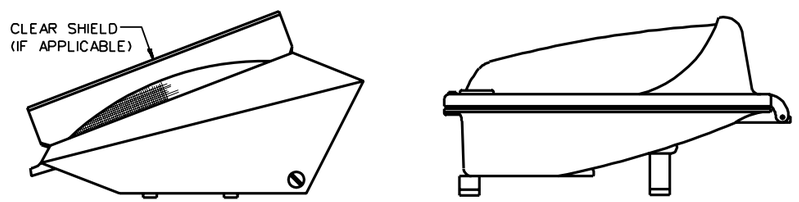




¾ FRONT VIEW (TILTED FORWARD)

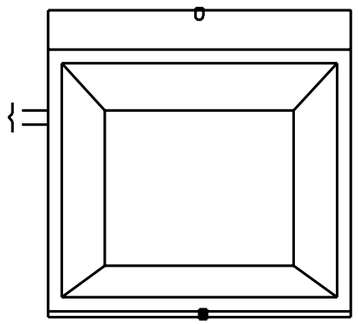


LUMINAIRE MOUNTING PLATE (ALT.)

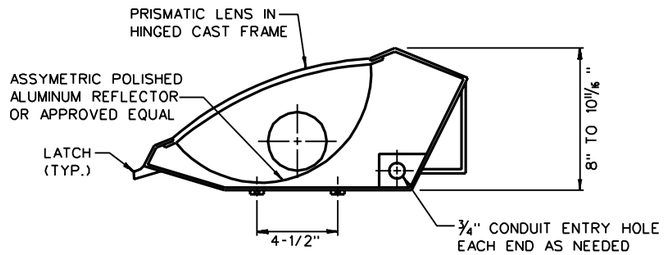


(ALT.)

END VIEW WITH IMPACT SHIELD
(AS REQUIRED)



TOP VIEW



SECTIONAL END VIEW

GENERAL NOTES

SIGN ILLUMINATION

SIGN ILLUMINATION SHALL BE BY ATTACHED EXTERNAL MERCURY VAPOR FIXTURES AS SHOWN ON SIGN ILLUMINATION DETAIL SHEET TE6-3D.

GENERALLY, THE LUMINAIRE SHALL BE OF THE INTEGRAL BALLAST TYPE, COMPLETE WITH HOUSING, MOUNTING BRACKET REFLECTOR, LENSE REFRACTOR, FUSE HOLDER, FUSE, LAMP SOCKET, BALLAST AND LAMP.

LAMPS

LAMPS SHALL BE 100, 175 OR 250 WATT DELUXE WHITE MERCURY VAPOR (AS INDICATED ON THE PLANS) HEAVY GLASS TYPE WITH RATED LIFE OF 24,000 HOURS MINIMUM A.N.S.I. CODE H38T-100, H39KB-175, OR H37KB-250.

LAMP FIXTURE

LUMINAIRE HOUSING SHALL BE CAST ALUMINUM WITH CAPTIVE CLOSED CELL NEOPRONE GASKET. CLOSURE SHALL BE POSITIVE BY THE USE OF STAINLESS STEEL PRESSURE LATHES AND STAINLESS STEEL HINGES.

LENSE REFRACTOR SHALL BE MOLDED PRISMATIC THERMAL SHOCK RESISTANT BOROSILICATE GLASS.

LAMP SOCKET SHALL BE OF A HEAVY DUTY MOGUL TYPE AND BE PROVIDED WITH ADJUSTABLE SETTINGS OR POSITIONS FOR VARYING THE BEAM PATTERN.

FINAL FIELD AIMING (ADJUSTING AIMING ANGLE) OF FIXTURE SHALLL BE DONE AT NIGHT ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONNS.

REMOTE BALLAST

BALLASTS FOR LUMINAIRES SHALL BE 250 WATT (UNLESS OTHERWISE INDICATED), HIGH POWER FACTOR CONSTANT WATTAGE, AUTO TRANSFORMER TYPE FOR USE WITH APPROPRIATE LINE VOLTAGE, 60 HERTZ, OUTDOOR ENCLOSED SYSTEM AND SHALL PROVIDE FOR LAMP OPERATION THROUGHOUT AN AMBIENT TEMPERATURE RANGE OF -20° F TO +150° F. BALLASTS SHALL BE MOUNTED. REMOTE AS SHOWN ON STANDARD DETAILS.

⚠1 ADDED 100W AND 175W LAMPS
⚠2 SPELLING OF BALLASTS
⚠3 ADDED ALT LUM. AND PLATE, REVISED TO REMOTE BALLAST, UPDATED LUMINAIRE NOMENCLATURE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
SIGN LIGHTING – FIXTURE
TYPE 3

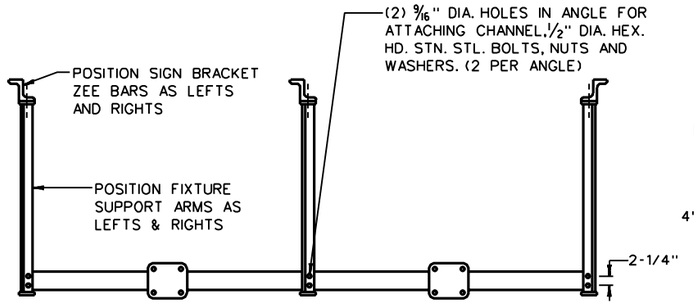
PREPARED: 04/00/73

REVISIONS
01-00-74
01-00-75
⚠1 07-22-76
⚠2 02-15-77
⚠3 02-22-93

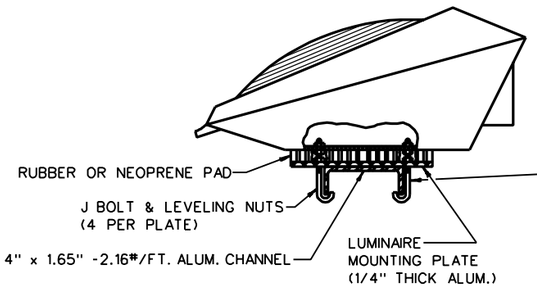
STANDARD SHEET TE6-3C

TRAFFIC ENGINEERING DIVISION

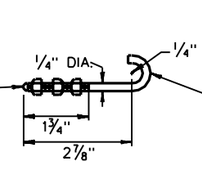
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



SECTION "B"-"B"

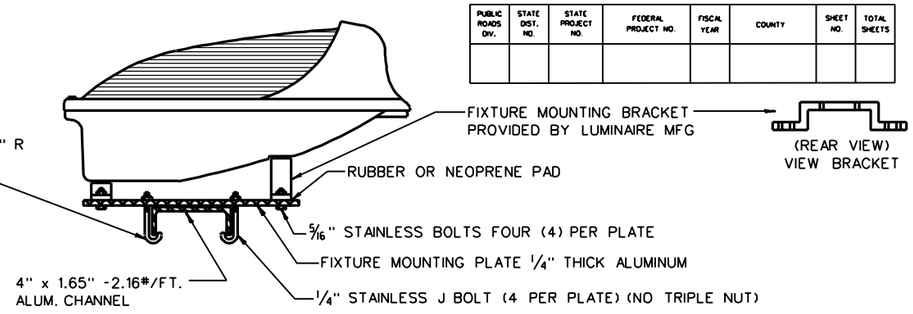


LUMINAIRE MOUNT DETAIL

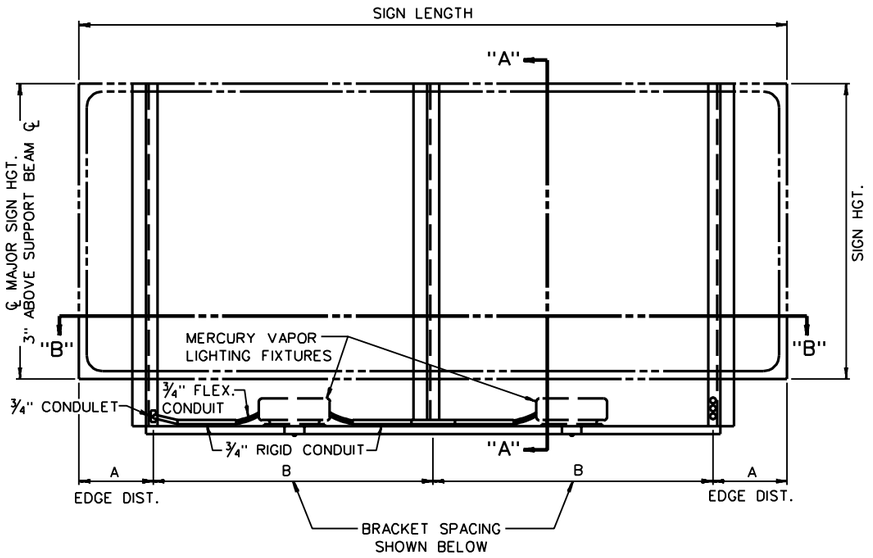


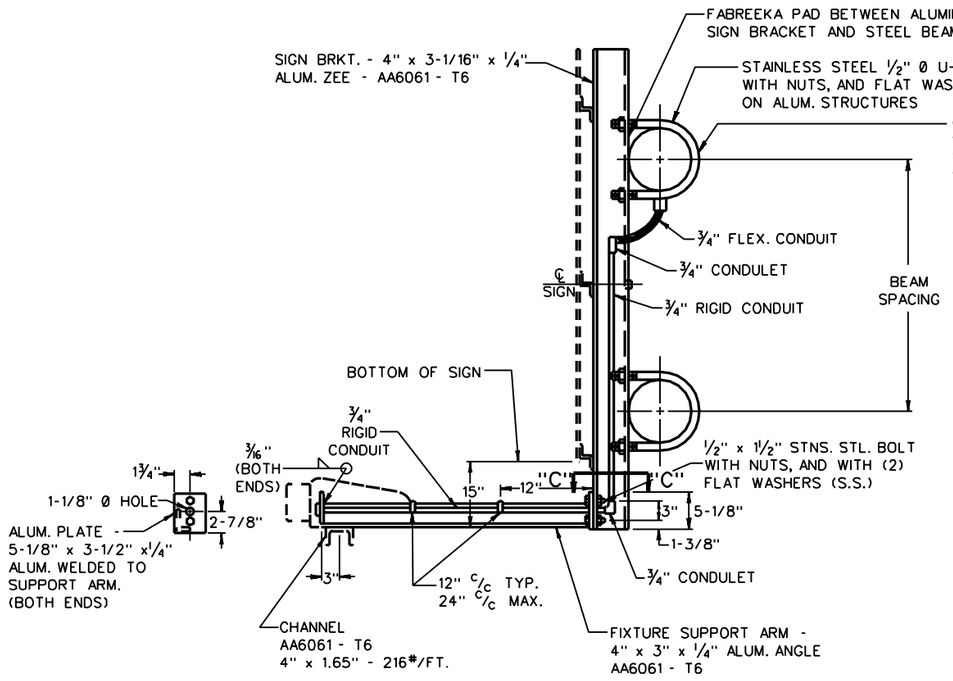
J-BOLT

(STAINLESS STEEL BOLTS, NUTS, AND WASHERS)

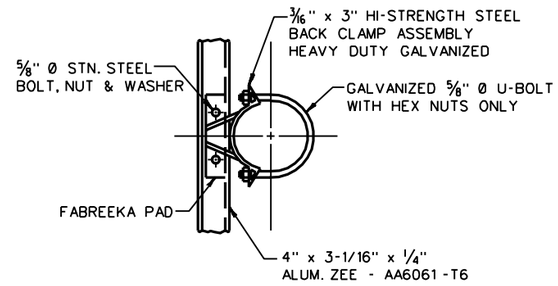


LUMINAIRE MOUNT DETAIL (ALT.)

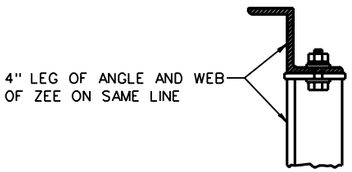




SECTION "A"-"A"



METHOD OF ATTACHMENT ON SINGLE BEAM STRUCTURES



SECTION "C"-"C"

SIGN LENGTH	QUANTITY OF FIXTURES	SIGN BRACKET	BRACKET SPACING A	BRACKET SPACING B
4'-0"	1	2	12"	1@24"
4'-6"	1	2	13"	1@28"
5'-0"	1	2	15"	1@30"
5'-6"	1	2	16"	1@34"
6'-0"	1	2	18"	1@36"
6'-6"	1	2	19"	1@40"
7'-0"	1	2	21"	1@42"
7'-6"	1	2	22"	1@46"
8'-0"	1	2	24"	1@48"
8'-6"	1	2	25"	1@52"
9'-0"	1	2	27"	1@54"
9'-6"	1	2	28"	1@58"
10'-0"	1	2	30"	1@60"
10'-6"	2	3	21"	2@42"
11'-0"	2	3	22"	2@44"
11'-6"	2	3	23"	2@46"
12'-0"	2	3	24"	2@48"
12'-6"	2	3	25"	2@50"
13'-0"	2	3	26"	2@52"

SIGN LENGTH	QUANTITY OF FIXTURES	SIGN BRACKET	BRACKET SPACING A	BRACKET SPACING B
13'-6"	2	3	27"	2@54"
14'-0"	2	3	28"	2@56"
14'-6"	2	3	29"	2@58"
15'-0"	2	3	30"	2@60"
15'-6"	2	3	30"	2@63"
16'-0"	2	3	30"	2@66"
16'-6"	2	3	30"	2@69"
17'-0"	2	3	30"	2@72"
17'-6"	2	3	30"	2@75"
18'-0"	2	3	30"	2@78"
18'-6"	2	3	30"	2@81"
19'-0"	2	4	24"	3@60"
19'-6"	2	4	24"	3@62"
20'-0"	2	4	24"	3@64"
20'-6"	3	4	9"	3@76"
21'-0"	3	4	12"	3@76"
21'-6"	3	4	15"	3@76"
22'-0"	3	4	18"	3@76"
22'-6"	3	4	21"	3@76"

SIGN LENGTH	QUANTITY OF FIXTURES	SIGN BRACKET	BRACKET SPACING A	BRACKET SPACING B
23'-0"	3	4	24"	3@76"
23'-6"	3	4	27"	3@76"
24'-0"	3	4	30"	3@76"
24'-6"	3	4	30"	3@78"
25'-0"	3	4	30"	3@80"
25'-6"	3	4	30"	3@82"
26'-0"	3	4	30"	3@84"
26'-6"	3	4	30"	3@86"
27'-0"	3	4	30"	3@88"
27'-6"	3	4	30"	3@90"
28'-0"	3	4	30"	3@92"
28'-6"	3	5	27"	4@72"
29'-0"	3	5	24"	4@75"
29'-6"	4	5	9"	4@84"
30'-0"	4	5	12"	4@84"
30'-6"	4	5	13"	4@85"
31'-0"	4	5	14"	4@85"
31'-6"	4	5	17"	4@86"
32'-0"	4	5	18"	4@87"

TOTAL SIGN HEIGHT	FIXTURE SUPPORT ARM LENGTH	LAMP A.N.S.I. WATTS CODE	LAMP A.N.S.I. WATTS CODE	LAMP A.N.S.I. WATTS CODE
3'-0" TO 5'-0"	2'-9"	100 H38HT-100 (H38-4HT)	175 H39KB-175 (H39-22KB)	250 H37KB-250 (H37-5KB)
5'-1" TO 6'-6"	3'-3"			
6'-7" TO 10'-0"	4'-3"			
10'-1" TO 14'-0"	5'-9"			

SIGN LENGTH	QUANTITY OF FIXTURES	SIGN BRACKET	BRACKET SPACING A	BRACKET SPACING B
32'-6"	4	5	19"	4@88"
33'-0"	4	5	22"	4@88"
33'-6"	4	5	23"	4@89"
34'-0"	4	5	24"	4@90"
34'-6"	4	5	25"	4@91"
35'-0"	4	5	28"	4@91"
35'-6"	4	5	29"	4@92"
36'-0"	4	5	30"	4@93"

⚠1 ADDED 100W AND 175W LAMPS
⚠2 MOVED WIRING TO TOP
⚠3 ADDED ALT LUM. & PLATE, AND BRACKET, UPDATED LUM. NOMENCLATURE, ADDED LUMS TO 36'-0"

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL SIGN LIGHTING – MOUNTING TYPE 3

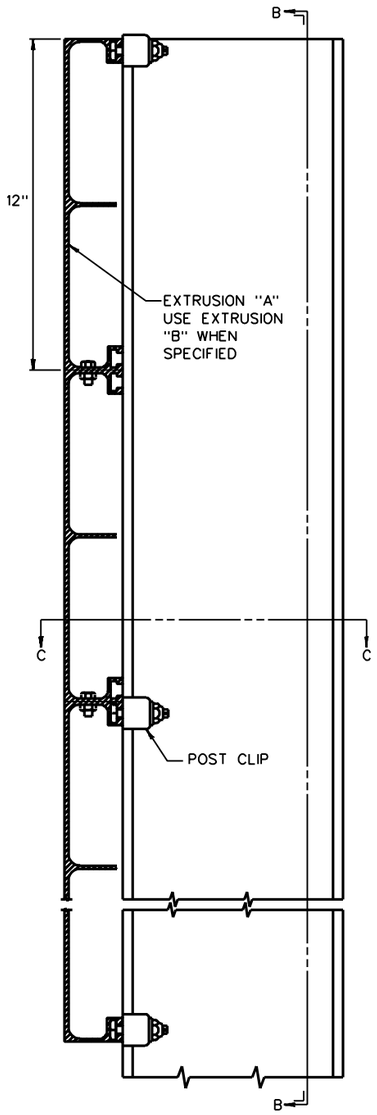
PREPARED: 02/00/75

REVISIONS
⚠1 07-22-76
⚠2 02-15-77
⚠3 ~~02-22-93~~

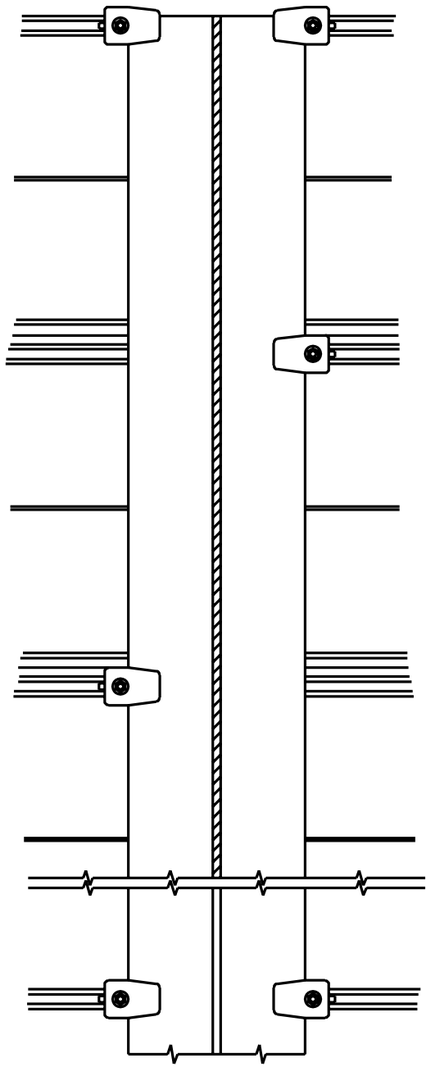
STANDARD SHEET TE6-3D

TRAFFIC ENGINEERING DIVISION

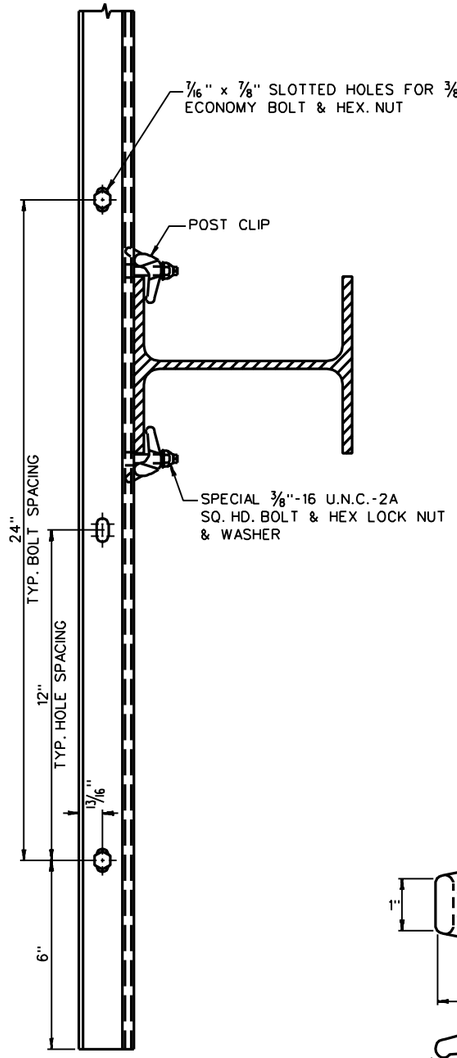
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



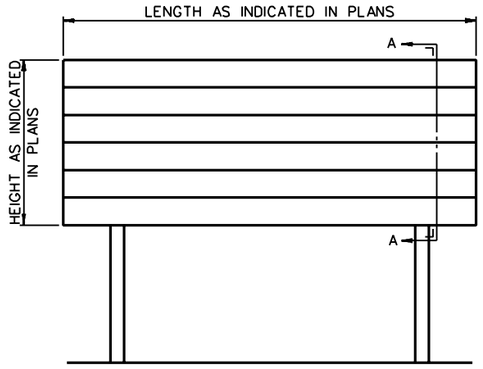
SECTION A-A

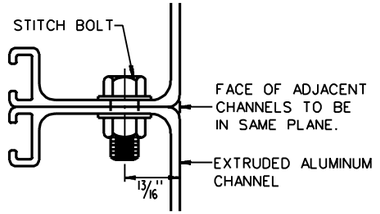


SECTION B-B

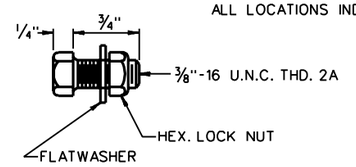


SECTION C-C



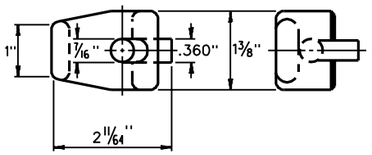


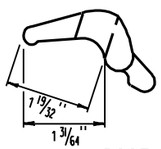
STITCH BOLT DETAIL



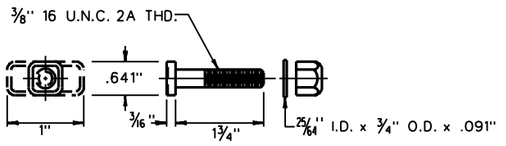
NOTES

FOR SIGNS UP TO 24' LONG, CLIP ARRANGEMENT SHOWN IN SECTION B-B SHALL BE USED. FOR SIGNS OVER 24' LONG USE DOUBLE CLIPS AT ALL LOCATIONS INDICATED.

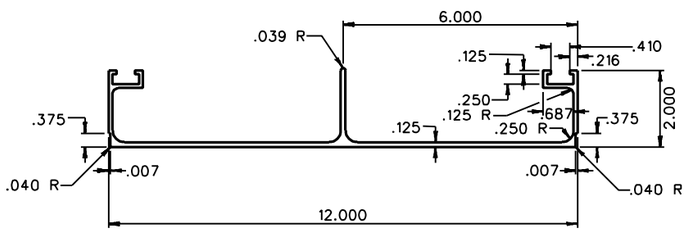




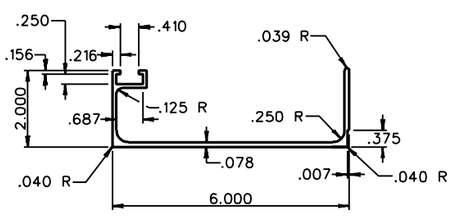
POST CLIP



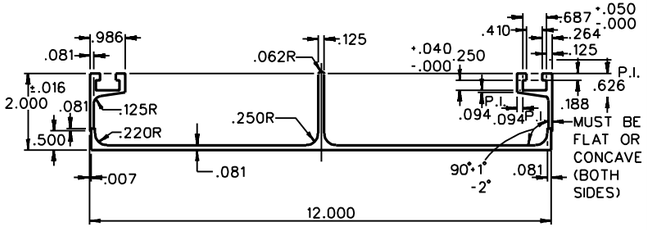
POST CLIP BOLT, NUT AND WASHER



EXTRUSION "A"



EXTRUSION "B"



EXTRUSION "C"

NOTE:
.031R ON ALL
INSIDE & OUTSIDE
CORNERS UNLESS
SPECIFIED OTHERWISE.

△ STITCH BOLT DETAIL ADDED
△ EXTRUSION REVISED TO INCLUDE REFLECTIVE SHEETING OVERLAP
△ HEX. LOCK NUT AND SIGNATURE BLOCK
△ ADDED EXTRUSION C, REVISED EXTRUSION B, POST CLIP AND BOLT

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL EXTRUDED SIGN PANEL ALUMINUM

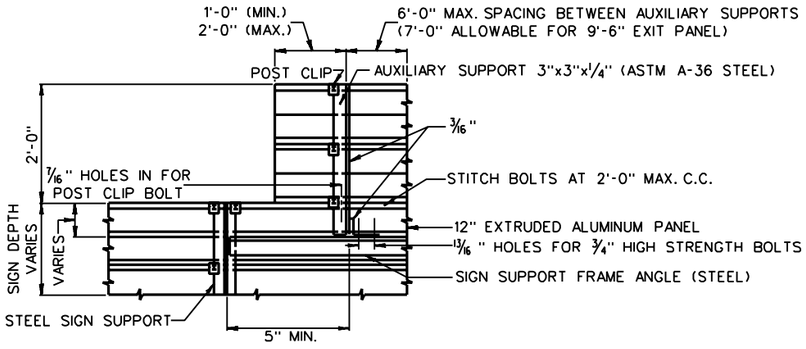
PREPARED: 03/20/67

REVISIONS
△ 03-06-68
△ 05-22-68
△ 10-21-76
△ 09-16-87

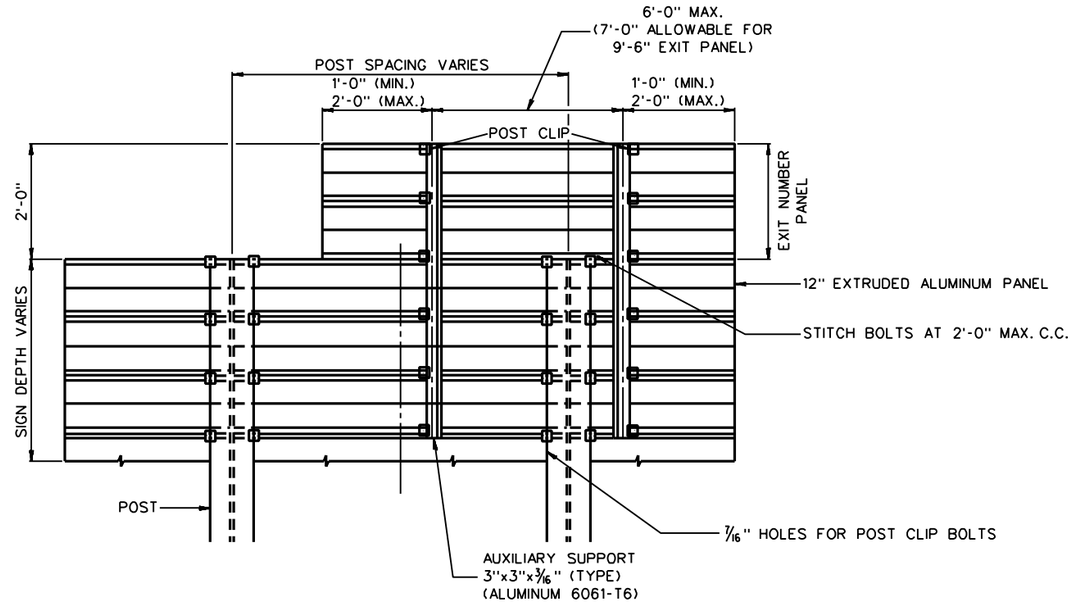
STANDARD SHEET TE7-1

TRAFFIC ENGINEERING DIVISION

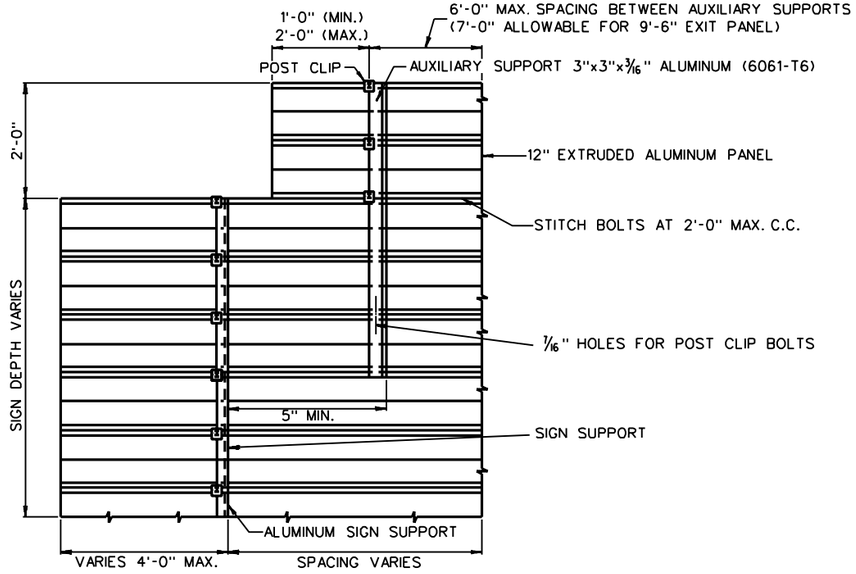
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



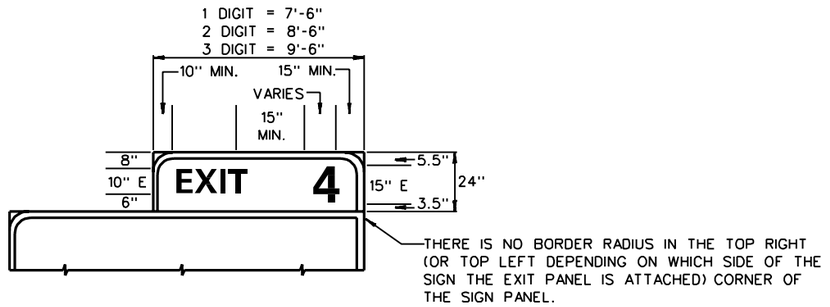
OVERHEAD SIGN WITH STEEL FRAME



GROUND MOUNT SIGN SHOWING ATTACHMENT OF AUXILIARY SUPPORTS



OVERHEAD SIGN WITH ALUMINUM FRAME



NOTE: USE 2" BORDER AND 3" BORDER RADIUS ON ALL EXIT PANELS.

NOTE: RIGHT EXIT SHOWN USE OPPOSITE FOR LEFT EXIT.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL EXIT NUMBER PANEL ALUMINUM

PREPARED: 03/29/67

REVISIONS
1 05-28-69
2 04-01-71
3 04-11-75
4 10-21-76
5 05-15-79

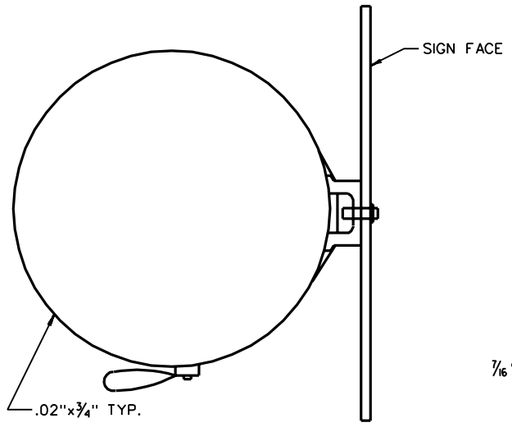
1. LEGEND HEIGHT
2. LEGEND HEIGHT & AUXILIARY SUPPORT
3. LEGEND SIZE ON EXIT PANEL.
4. LENGTH OF AUXILIARY SUPPORTS
5. MOVED EXIT PANEL

STANDARD SHEET TE8-1

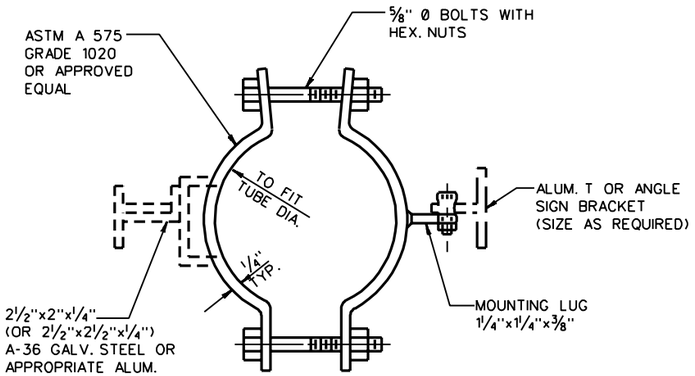
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES:

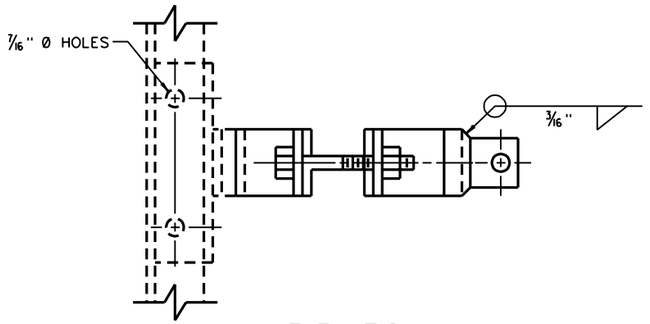
1. NORMALLY THERE WILL BE 2 CLAMPS (BRACES) PER SIGN. FOLLOW PUNCHING AND MOUNTING AS DETAILED IN THE TP SERIES.
2. TYPE I-A CLAMPS SHALL BE USED WITH EXTRUDED PANEL SIGNS. FOR BRACKET ATTACHMENT TO EXTRUDED PANEL SIGNS SEE SHEET TE7-1.
3. TYPE I-B CLAMPS SHALL BE USED WITH FLAT SHEET SIGNS.
4. WHEN ONLY ONE TYPE I CLAMP IS NECESSARY FOR LONG NARROW SIGNS A 12" ANGLE, MOUNTED VERTICALLY SHALL BE SUBSTITUTED FOR THE MOUNTING LUG.
5. CONTACT BETWEEN ALUMINUM AND GALVANIZED PARTS SHALL BE PREVENTED WITH A MINIMUM 1/16" INCH THICK CHLOROPRENE GASKET OR APPROVED SUBSITUTE. GASKETS ARE NOT REQUIRED BETWEEN STAINLESS STEEL AND ALUMINUM.
6. U-BOLTS, OTHER BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL FOR USE WITH ALUMINUM MEMBERS. WHEN USED WITH GALVANIZED STEEL MEMBERS, THE U-BOLTS, NUTS AND WASHERS MAY BE GALVANIZED STEEL.



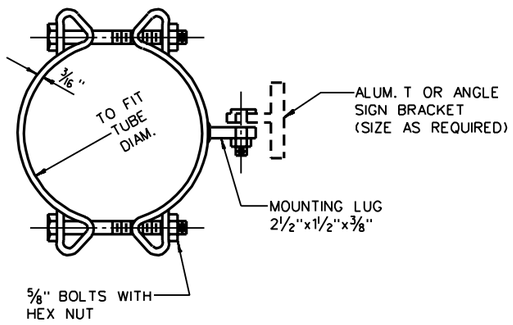
ELEVATION
STAINLESS STEEL BANDING TYPE
(MAX.-9 SQ. FT.)



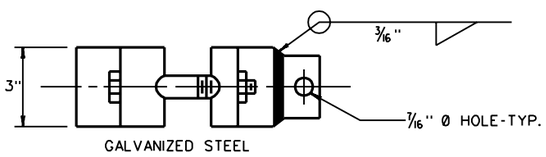
PLAN



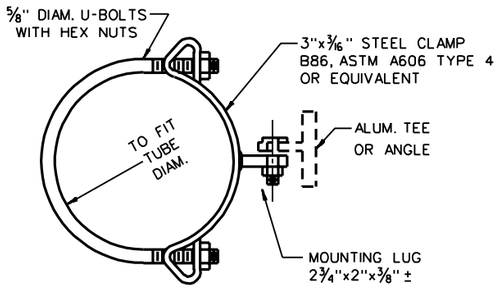
ELEVATION
TYPE I-A
(MAX.-20 SQ. FT.)



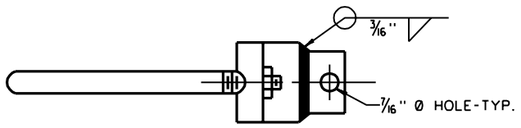
PLAN



ELEVATION
TYPE II

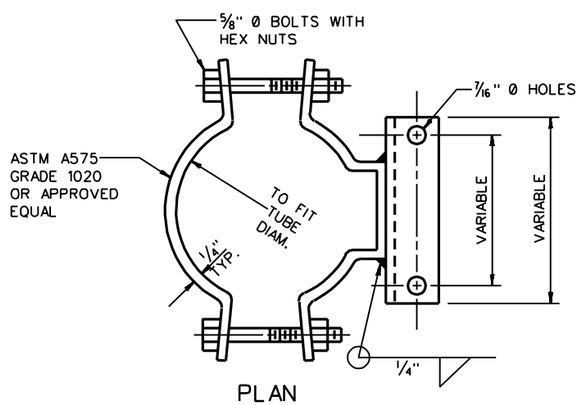


PLAN

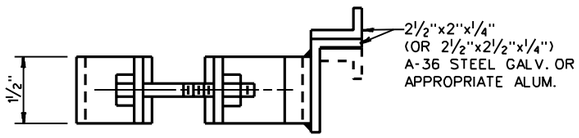


ELEVATION
TYPE II (ALT. 1)

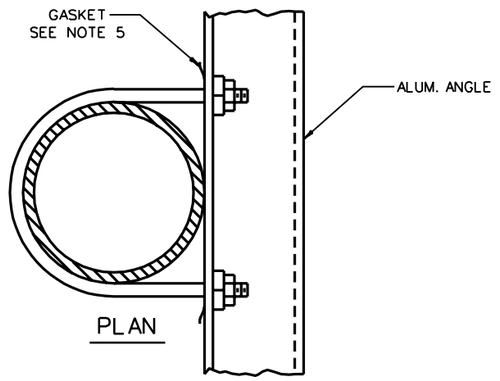
TYPICAL CLAMPS FOR TUBULAR SUPPORTS
(GALVANIZED)



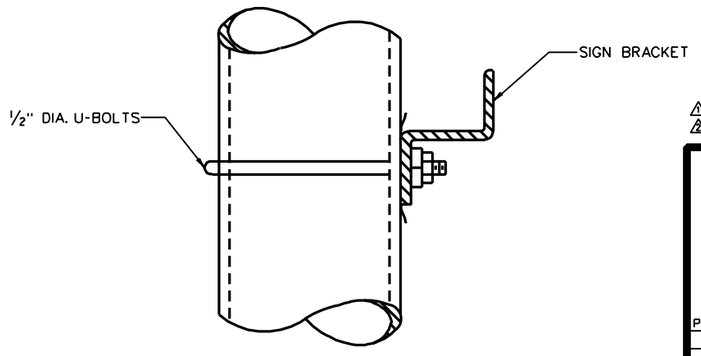
PLAN



ELEVATION
TYPE I-B
(MAX.-20 SQ. FT.)



PLAN



ELEVATION
TYPE II (ALT. 2)

⚠1 WHOLE SHEET GENERALLY
⚠2 ADDED TYPE II ALTERNATES

WEST VIRGINIA DIVISION OF HIGHWAYS

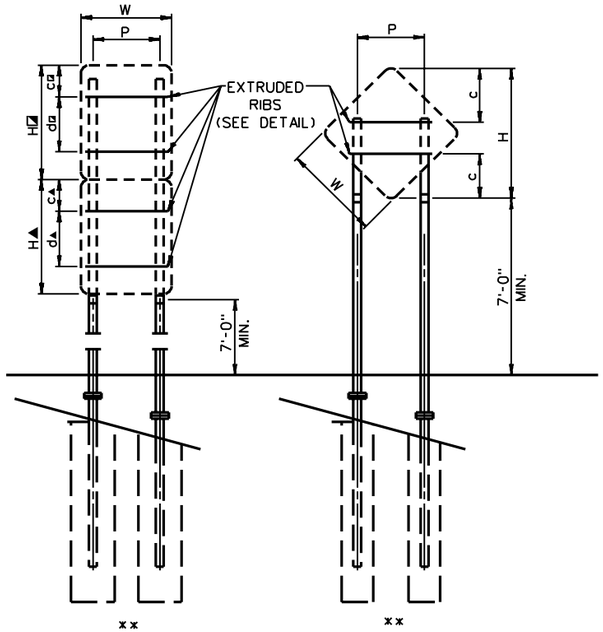
STANDARD DETAIL
ROADSIDE SIGN SUPPORTS–CLAMPS TUBULAR

PREPARED: 05/00/67

REVISIONS
⚠1 11-06-78
⚠2 03-10-93

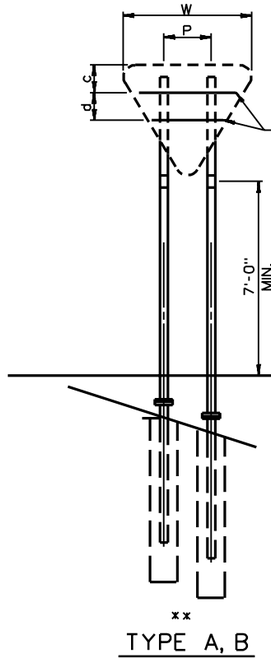
STANDARD SHEET TE9-1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

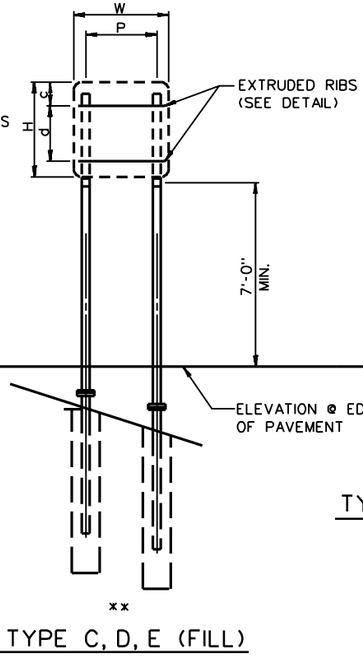


TYPE G

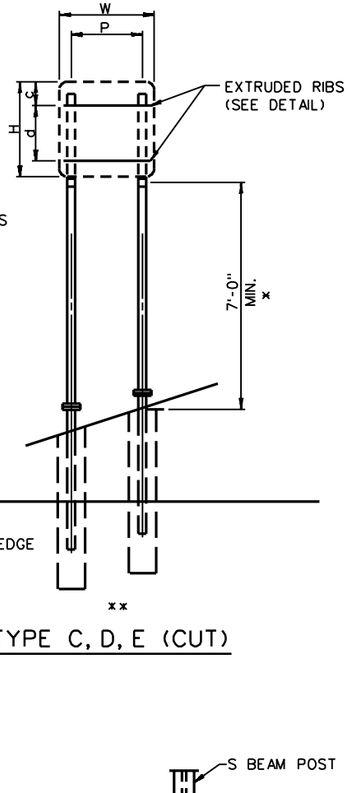
TYPE F



TYPE A, B



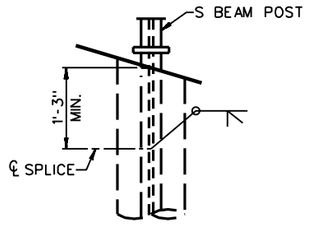
TYPE C, D, E (FILL)



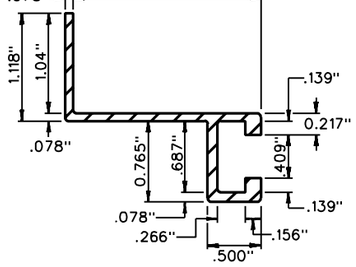
TYPE C, D, E (CUT)

* - NOTE - SAME CRITERIA APPLY FOR TYPES A, B, G, AND F FOR CUT SECTIONS

** - FOR FOOTING DETAILS SEE TE1-3C

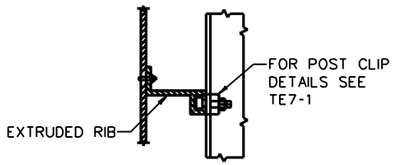


PERMISSIBLE SHOP SPLICE



EXTRUDED RIB DETAIL

POST SPACING	
TYPE SIGN	P
A	2'-6"
B	2'-0"
C	2'-6"
D	2'-6"
E	2'-6"
F	2'-6"
G	2'-6"



ELEVATION
TYPICAL WIDE FLANGE
&
RIB ASSEMBLY

FOR SIGN PLACEMENT SEE CONTRACT PLANS OR TE1-3C OR TP3-1

SIGN STRUC. TYPE	SIGN PANEL W	H		c	d	CLAMPS	ZEE SECTION OR EXTRUDED RIB NO.	LENGTH
A	5'			6"	13"	4	2	3'-2"
B	4'			6"	8"	4	2	2'-8"
C	4'	4'		14"	20"	4	2	3'-2"
D	4'	5'		15"	30"	4	2	3'-2"
E	4'	3'		12"	12"	4	2	3'-2"
F	4'			20"		4	2	3'-2"
G	4'	5'		◪15"	◪30"	4	2	3'-2"
	4'	4'		▲14"	▲20"			

⚠ DELETED SIGN PLACEMENT AND SHIM DETAIL
⚠ ADDED EXTRUDED RIB DETAIL
⚠ ADDED UPHILL ROMNTS, REVISED RIB

WEST VIRGINIA DIVISION OF HIGHWAYS

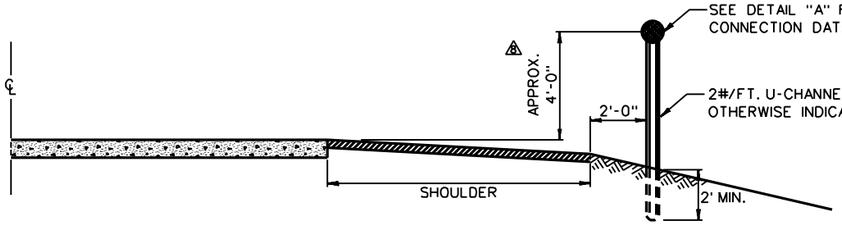
STANDARD DETAIL FLAT SHEET SIGNS ON BREAKAWAY SUPPORTS

PREPARED: 09/18/74

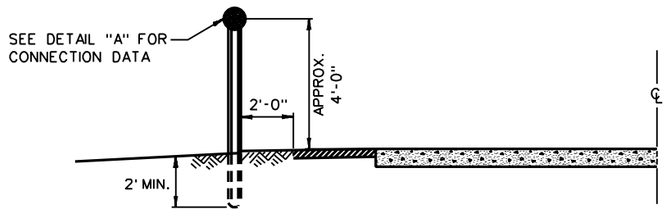
REVISIONS
⚠ 06-01-76
⚠ 10-21-76
⚠ 12-18-87
⚠ 01-13-93

STANDARD SHEET TE10-2

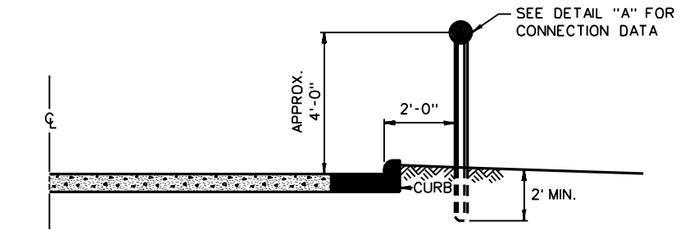
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



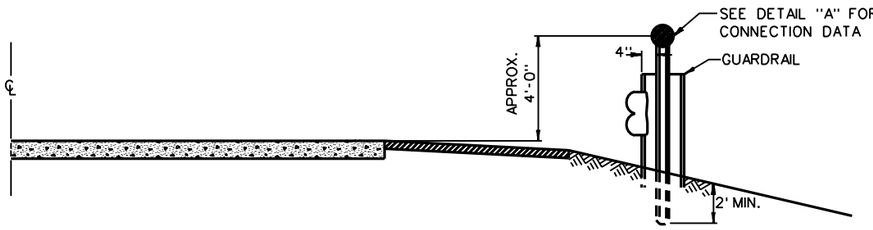
DELINEATOR PLACEMENT
TYPICAL SECTION



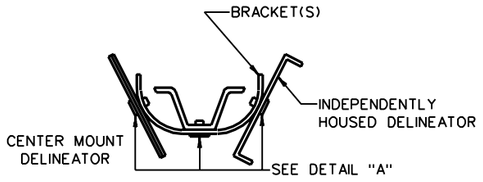
DELINEATOR PLACEMENT
TYPICAL SECTION - LEFT EDGE OF RAMP



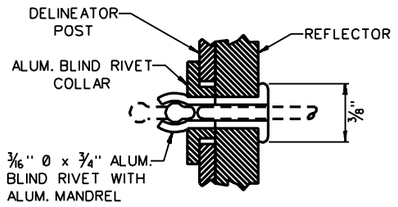
DELINEATOR PLACEMENT
TYPICAL SECTION WITH CURBING



DELINEATOR PLACEMENT
TYPICAL SECTION WITH GUARDRAIL



WINGED CHANNEL
BIDIRECTIONAL MOUNTING
DELINEATORS (WHEN NOTED ON PLANS FOR 2-LANE ROADWAYS)



DETAIL "A"
DELINEATOR ATTACHMENT

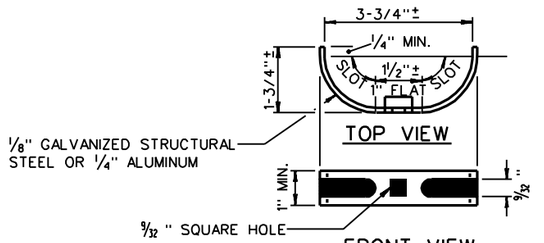
SPACING FOR HIGHWAY DELINEATORS

DEGREE OF CURVE	RADIUS IN FEET	SPACING ON CURVE	SPACING IN ADVANCE & BEYOND CURVE 1ST SPACE	2ND SPACE	3RD SPACE
0 TO 1.5	>10,000 TO 3,821	300	300	300	300
1.5-1.7	3,820-3,400	185	300	300	300
1.8-2.2	3,399-2,600	160	300	300	300
2.3-2.7	2,599-2,100	140	280	300	300
2.8-3.2	2,099-1,800	130	260	300	300
3.3-3.8	1,799-1,500	120	240	300	300
3.9-4.5	1,499-1,300	110	220	300	300
4.6-5.4	1,299-1,100	100	200	300	300
5.5-6.7	1,099-850	90	180	270	300
6.8-8.5	849-670	80	160	240	300
8.6-11.0	669-520	70	140	210	300
11.1-14.9	519-390	60	120	180	300
15.0-21.0	389-270	50	100	150	300
21.1-31.0	269-180	40	80	120	240
31.1-48.0	179-120	30	60	90	180
48.1-75.0	119-75	20	40	60	120
> 75	> 75	20	20	30	60

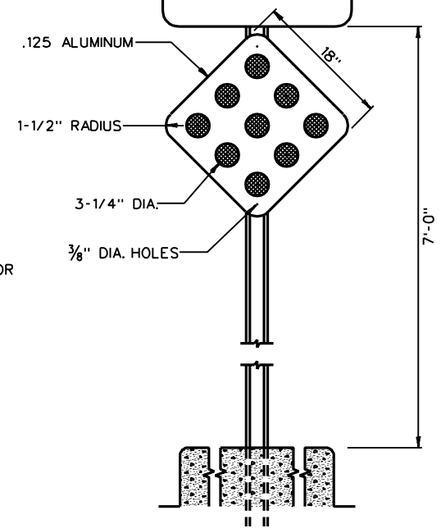
NOTES

DELINEATOR SPACING SHALL BE MEASURED AT THE EDGE OF PAVEMENT NEAREST TO THE LOCATION OF DELINEATOR. SPACING SHALL BE DETERMINED FROM THE CURVE DATA SHOWN ON THE CURVE DATA SHEET OF THE PLANS. SPACING ON TANGENTS SHALL BE 300 FEET.

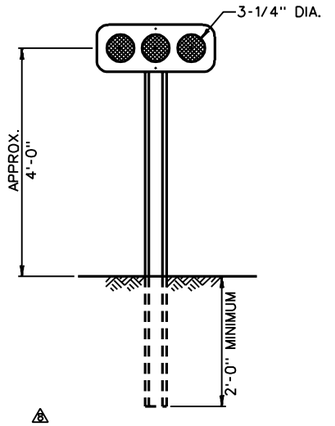
THE SPACING S ON THE CURVE IS FOUND FROM THE FORMULA $S=3\sqrt{R-50}$, WHERE R IS THE RADIUS OF THE CURVE IN FEET. THE SPACING TO THE FIRST DELINEATOR IN ADVANCE OF AND BEYOND THE CURVE IS 2 S, TO THE NEXT DELINEATOR 3S, AND TO THE NEXT 6S, BUT NOT TO EXCEED 300 FEET. MINIMUM SPACING IS 20 FEET.



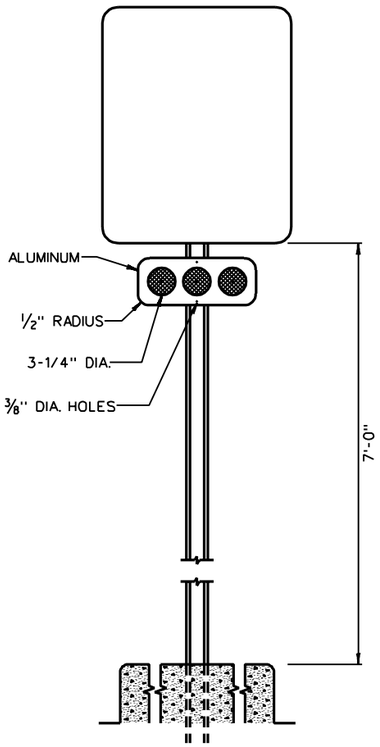
FRONT VIEW
BIDIRECTIONAL BRACKET
FOR DELINEATORS



TYPICAL XR-9 INSTALLATION



TYPICAL XR-3 INSTALLATION



TYPICAL XR-3 INSTALLATION

1. XR-9 FROM .064 TO .125, SPACING FORMULA ADDED, MEDIAN DETAIL.
2. DELINEATOR PLACEMENT ON RAMP
3. XR-3 CONNECTION DETAIL.
4. BIDIRECTIONAL MOUNTS
5. XR-3, XR-9
6. DELINEATOR CHART
7. DELETED REDUCED SPACING BELOW 1.5°
8. CHANGED 4'-0" TO APPROX. 4'-0", CORRECTED XR-3

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
HIGHWAY DELINEATORS–GENERAL

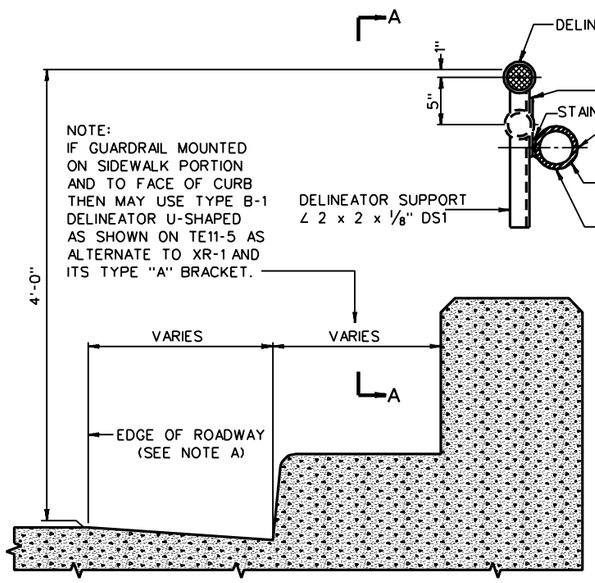
PREPARED: 03/00/67

REVISIONS
1 04-22-68
2 06-06-68
3 09-09-69
4 11-25-69
5 04-01-71
6 11-15-76
7 10-06-77
8 09-13-93

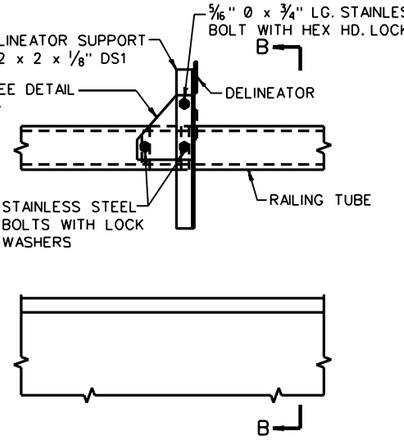
STANDARD SHEET TE11-1

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

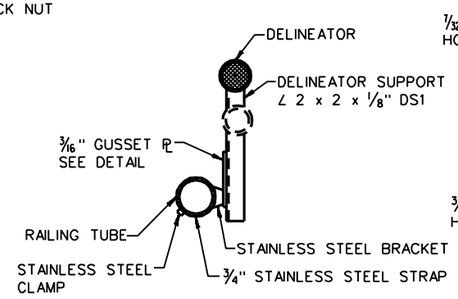


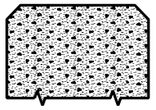
DETAIL SHOWING DELINEATOR ASSEMBLY ATTACHED TO ROADWAY SIDE OF TUBE RAILING



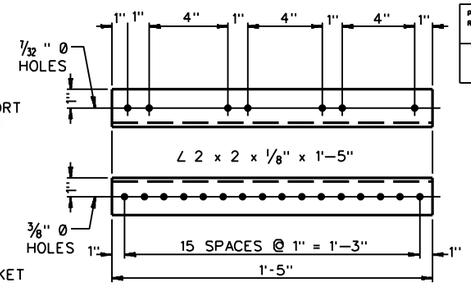
VIEW A-A

TYPE "A"

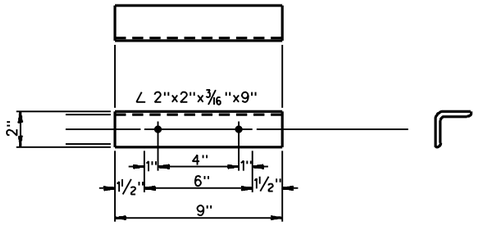




SECTION B-B SHOWING ATTACHMENT TO FASCIA SIDE OF RAILING

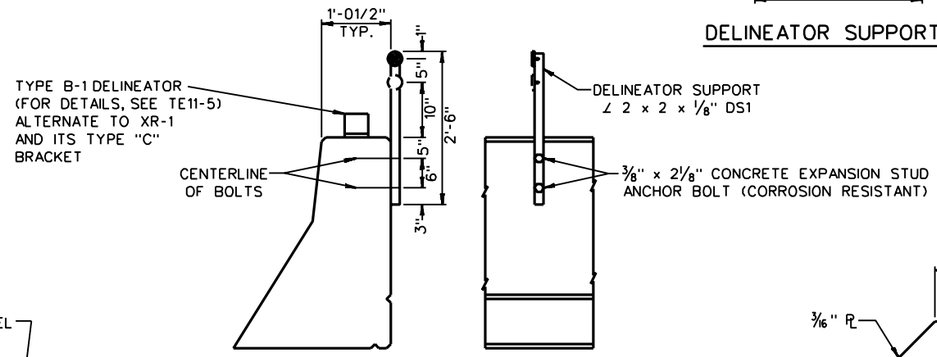


DELINEATOR SUPPORT DS1



DELINEATOR SUPPORT DS2

NOTE A
EDGE OF ROADWAY ON BRIDGE IS THIS PROJECTION OF THE EDGE OF ROADWAY ON ADJACENT FILL SECTION OR AS INDICATED BY THE PAVEMENT EDGE MARKINGS.

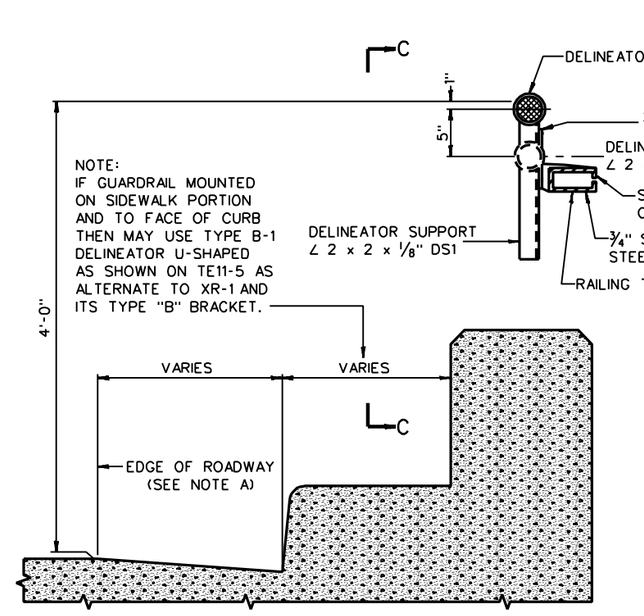


TYPE "C"

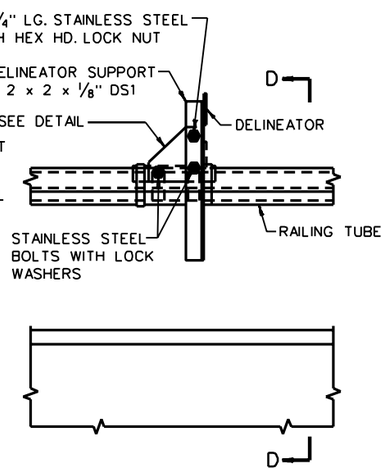
NOTE

DELINEATOR ASSEMBLY SHALL BE ATTACHED TO ROADWAY OR FASCIA SIDE OF RAILING IN ACCORDANCE WITH THE SPECIFICATIONS.

GUSSET PLATE SHALL BE MADE OF THE SAME MATERIAL AS THE DELINEATOR SUPPORT.

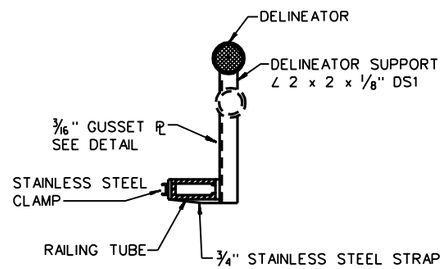


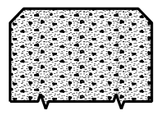
DETAIL SHOWING DELINEATOR ASSEMBLY ATTACHED TO ROADWAY SIDE OF RECTANGULAR TUBE RAILING



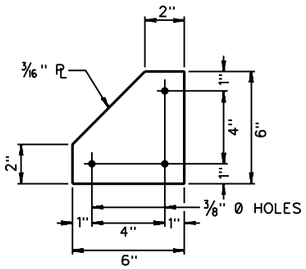
VIEW C-C

TYPE "B"





SECTION D-D SHOWING ATTACHMENT TO FASCIA SIDE OF RAILING



GUSSET PLATE

1. ALUMINUM BOLTS TO STAINLESS STEEL BOLTS.
2. DELINEATOR SUPPORTS
3. TYPE "B" BRACKETS
4. SIGNATURE BLOCK
5. ADDED TYPE B-1 DELINEATOR ALTERNATES

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL HIGHWAY DELINEATORS BRACKETS ON STRUCTURES

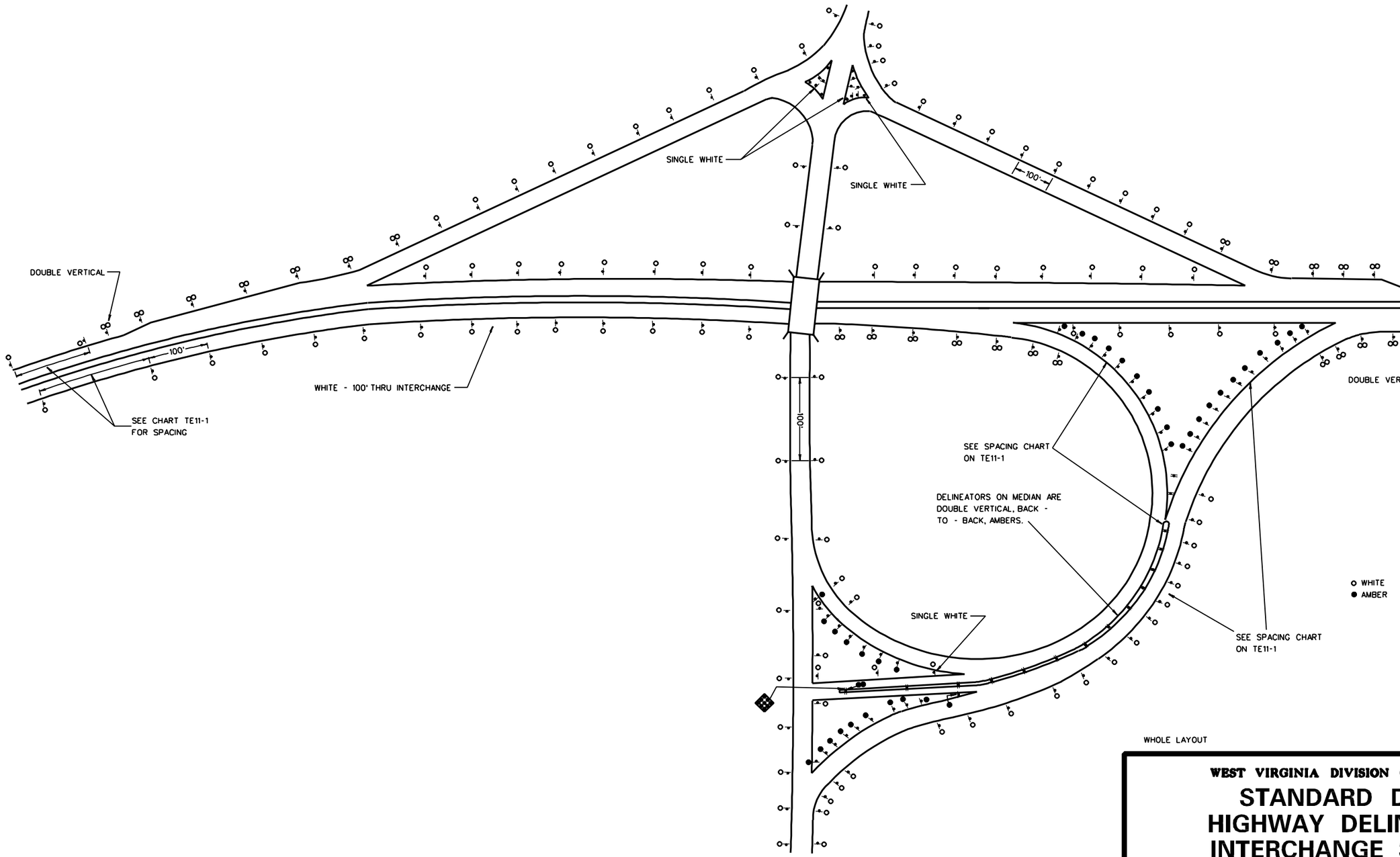
PREPARED: 03/22/67

REVISIONS
1 04-08-69
2 09-10-69
3 08-07-70
4 11-15-76
5 02-26-93

STANDARD SHEET TE11-2

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



WHOLE LAYOUT

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
HIGHWAY DELINEATORS
INTERCHANGE SPACING

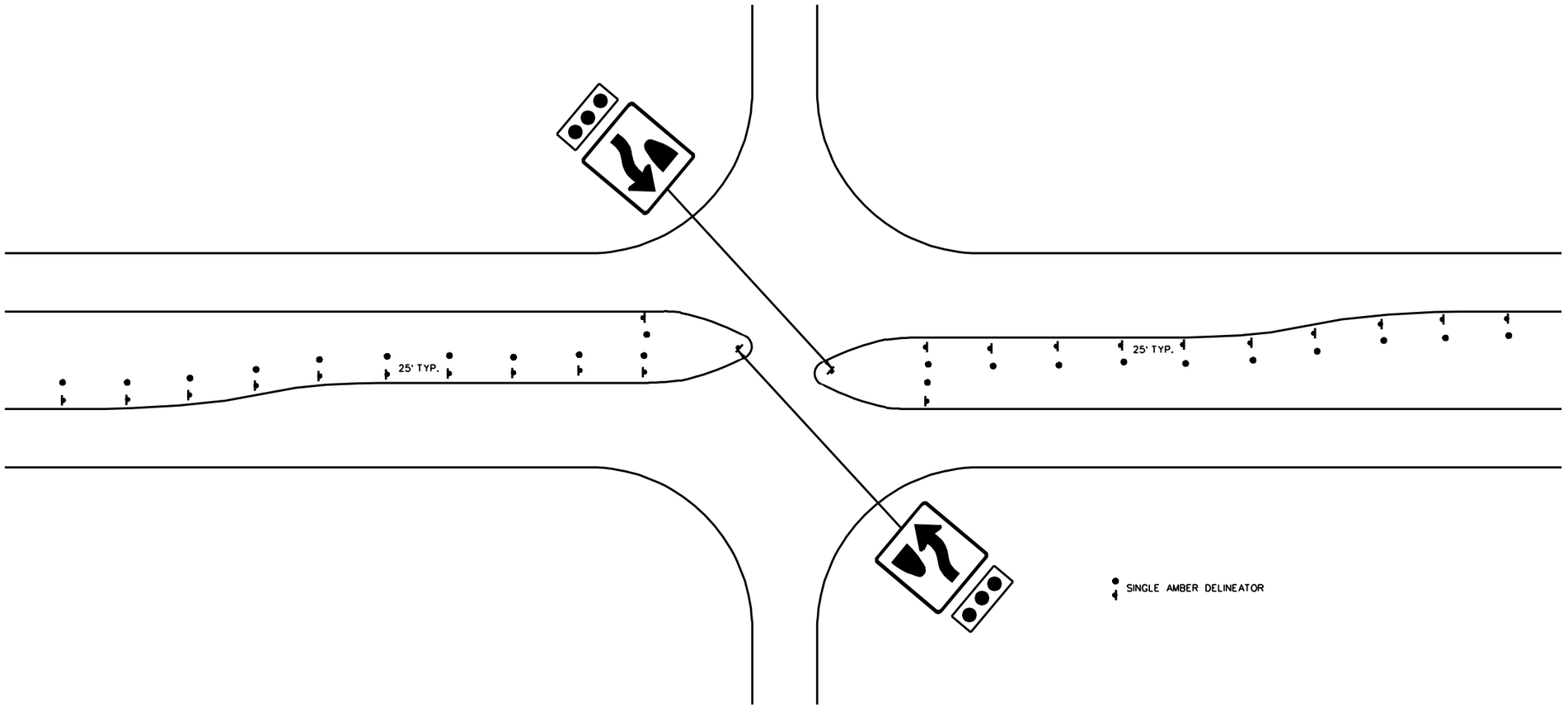
PREPARED: 08/ /64

REVISIONS
11-15-76

STANDARD SHEET TE11-3

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
HIGHWAY DELINEATORS
SPACING FOR LEFT TURN LANES

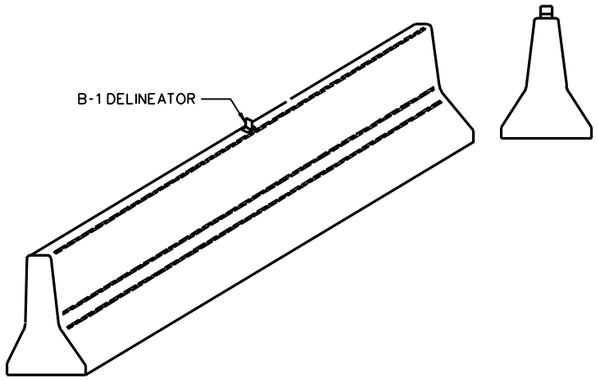
PREPARED: 09/15/70

REVISIONS
4-22-75
⚠ 11-15-76

STANDARD SHEET TE11-4

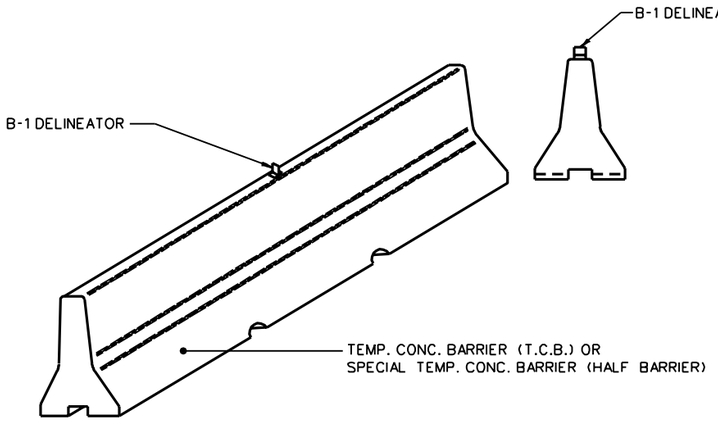
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



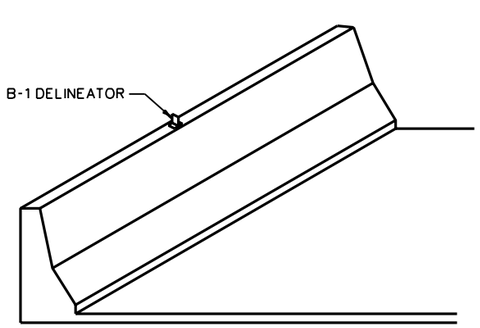
PERMANENT MEDIAN BARRIER

TYPE AND COLOR	YELLOW (AMBER) B-1S, TWO SIDED, MOUNTED ATOP THE BARRIER AS SHOWN ABOVE AND NOTE E. ADDITIONAL SITUATION: WHERE PERMANENT MEDIAN BARRIER IS USED AS A FINAL RETAINING WALL, INSTALL WHITE B-1S AS SHOWN ABOVE AND NOTE E, PAYMENT PART OF NORMAL 661 DELINEATOR BID ITEM.
HEIGHT	B-1 MOUNTED ATOP BARRIER.
SPACING	SEE TE11-1.
ATTACHMENT	B-1 MOUNTED ATOP BARRIER AS DETAILED AND NOTE E.
BID ITEM	NORMAL 661 DELINEATOR BID ITEM.
OTHER	INSTALLATION BID INCIDENTAL TO DELINEATOR BID ITEM.



TEMPORARY CONCRETE BARRIER

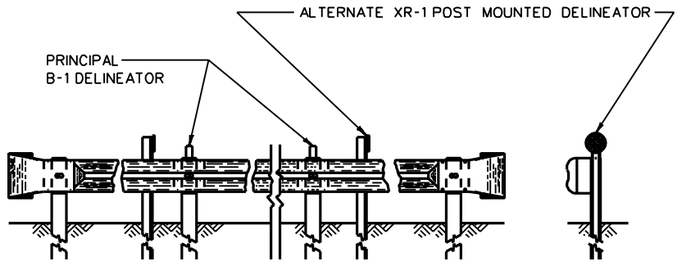
TYPE AND COLOR	AMBER B-1S, TWO SIDED, MOUNTED AS SHOWN ON TEMPORARY CONCRETE BARRIER ABOVE AND NOTE E. EXCEPTION: SUBSTITUTE EITHER OF ABOVE WITH SINGLE CRYSTALS (WHITES) ONE SIDED WHEN NOT SEPARATING OPPOSING TRAFFIC.
HEIGHT	B-1 MOUNTED ON FLAT PORTION OF TOP AS SHOWN ON TEMPORARY CONCRETE BARRIER ABOVE AND NOTE E.
SPACING	20' OR AS NOTED ON PLANS (MAXIMUM IS 100' ON TANGENTS - 50' ON CURVES).
ATTACHMENT	B-1: SEE DETAIL AS SHOWN ON TEMPORARY CONCRETE BARRIER ABOVE AND NOTE E.
BID ITEM	DELINEATOR BRACKET AND ATTACHMENT BID INCIDENTAL TO TEMPORARY CONCRETE BARRIER.
OTHER	INSTALLATION, MAINTENANCE, CLEANING AND REMOVAL BID INCIDENTAL TO TEMPORARY CONCRETE BARRIER.



MEDIAN OR LEFT BRIDGE PARAPETS

WHERE PERMANENT GUARDRAIL MEDIAN BARRIER OR PERMANENT CONCRETE MEDIAN BARRIER IS IN EXISTENCE ON THE ADJACENT ROADWAY SECTIONS.

TYPE AND COLOR	YELLOW (AMBER) B-1, MOUNTED ATOP THE BARRIER AS SHOWN ABOVE AND NOTE E.
HEIGHT	4' CONFORMING TO TE11-1 AND SECTION 661 OF SPECIFICATIONS. B-1 MOUNTED ATOP PARAPET AS SHOWN ABOVE AND NOTE E.
SPACING	SEE TE11-1.
ATTACHMENT	B-1 MOUNTED ATOP BARRIER AS DETAILED AND NOTE E.
BID ITEM	NORMAL 661 DELINEATOR BID ITEM.
OTHER	INSTALLATION BID INCIDENTAL TO DELINEATOR BID ITEM.



TEMPORARY GUARDRAIL BARRIER

TYPE AND COLOR	PRINCIPAL AMBER B-1S AS SHOWN ON TEMPORARY GUARDRAIL BARRIER ABOVE AND NOTE E OR USE ALTERNATE YELLOW (AMBER) XR-1S BACK-TO-BACK CONFORMING TO SECTION 661 OF SPECIFICATIONS WHEN SEPARATING OPPOSING TRAFFIC. EXCEPTION: SUBSTITUTE EITHER OF ABOVE WITH SINGLE CRYSTALS (WHITES) ONE SIDED WHEN NOT SEPARATING OPPOSING TRAFFIC.
HEIGHT	PRINCIPAL B-1 MOUNTED ATOP THE I-BEAM PORTION OF THE GUARDRAIL ELEMENT AS SHOWN IN DETAILS FOR TYPE B-1 DELINEATOR OR USE ALTERNATE XR-1(S) AT 4' CONFORMING TO TE11-1 AND SECTION 661 OF SPECIFICATIONS..
SPACING	100' ON TANGENTS, 50' ON CURVES, OR AS NOTED ON THE PLANS.
ATTACHMENT	PRINCIPAL B-1S, SEE DETAILS FOR TYPE B-1 DELINEATOR OR FOR ALTERNATE XR-1S, SEE TE11-1.
BID ITEM	DELINEATOR, BRACKET AND ATTACHMENT BID INCIDENTAL TO TEMPORARY GUARDRAIL BARRIER.
OTHER	INSTALLATION, MAINTENANCE, CLEANING AND REMOVAL BID INCIDENTAL TO TEMPORARY GUARDRAIL BARRIER.

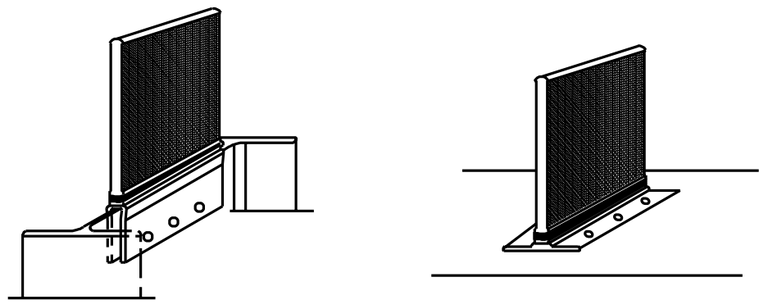
-GENERAL NOTES-

1. THE TYPE DELINEATOR (XR-1 OR B-1) AND TYPE ATTACHMENT FOR XR-1 (DETAIL 'A' OR 'B') SHALL BE CONSISTENT THROUGHOUT THE PROJECT.

-NOTES FOR TYPE B-1 DELINEATORS-

GENERAL DESCRIPTION:

1. DELINEATORS SHALL CONSIST OF REFLECTOR UNITS CAPABLE OF CLEARLY REFLECTING LIGHT UNDER NORMAL ATMOSPHERIC CONDITIONS FROM A DISTANCE OF 1,000 FEET WHEN ILLUMINATED BY THE UPPER BEAM OF STANDARD AUTOMOBILE LIGHTS.
2. THE DELINEATOR SHALL CONSIST OF AN UPRIGHT PANEL (FOR REFLECTING), A CO-EXTRUDED FLEXIBLE HINGE, AND A T-SHAPED BASE OR U-CHANNEL SHAPED BASE AS APPROPRIATE.
3. DETAILED SPECIFICATIONS:
   - A. UPRIGHT PANEL:
     THE REFLECTING SURFACE (4" x 4") - CAPABLE OF REFLECTING LIGHT FROM WIDE ANGLES. NOMINAL DIMENSIONS ARE:
     1. FOR T-SHAPED 4½" HEIGHT x 4" WIDE x 0.100"
     2. FOR U-CHANNEL 4½" HEIGHT x 4" WIDE x 0.095".
   - B. HINGE:
     A POLYURETHANE/VINYL COMPOUND DESIGNED TO WITHSTAND REPEATED IMPACTS AFTER WHICH IT RETURNS TO ITS FUNCTIONING POSITION.
   - C. BASE:
     1. T-SHAPED
        A RIGID PVC COMPOUND DESIGNED FOR MOUNTING AT TOP OR SIDE OF BARRIER OR PARAPET AS APPROPRIATE.
     2. U-CHANNEL
        A RIGID PVC COMPOUND DESIGNED TO MOUNT (SNAP) OVER THE GUARDRAIL I-BEAM SUPPORT.
   - D. OPTICAL PERFORMANCE:
     MUST MEET THE REQUIREMENTS OF ASTM-D4956 TYPE IV OR TYPE V.
   - E. MOUNTING:
     THE UNIT SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER AND THE ADHESIVE SHALL BE APPLIED TO THE BASE OF THE DELINEATOR FOR BONDING TO CONCRETE BARRIER OR TO THE U-SHAPED BASE PORTION OF THE DELINEATOR FOR BONDING TO GUARDRAIL. DO NOT INSTALL WHEN TEMPERATURES LESS THAN 50° FAHRENHEIT.
   - F. THE COLOR SHALL BE WHITE OR YELLOW AS APPROPRIATE (OR AS NOTED) AND THE REFLECTING SURFACE SHALL BE TWO SIDED OR ONE SIDED AS APPROPRIATE (OR AS NOTED).



TYPE B-1 DELINEATOR

SHAPE NOMINAL, PROVIDED MEETS MINIMUM DESIGN SPECIFICATIONS AS OUTLINED ON THIS SHEET.

DEFINITIONS:
XR-1: NORMAL DELINEATOR, REFLEX REFLECTOR, CONFORMING TO SECTION 661 OF SPECIFICATIONS, THAT IS MOUNTED ON A POST OR BRACKET.
B-1: SPECIAL DELINEATOR AS DESCRIBED IN DETAIL ON THIS SHEET.

⚠1 MODIFY TYPE B-1 DEL. DETAIL, T.C.B. & T.G.B. NOTES AND DETAIL
⚠2 COMPLETELY REVISED B-1 DETAILS AND NOTES, MADE IT THE PRINCIPAL FOR ALL FOUR SITUATIONS, DELETED DETAILS 'A', 'B', AND 'C'.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL HIGHWAY DELINEATORS FOR:

PERMANENT MEDIAN BARRIER
TEMPORARY CONCRETE BARRIER
TEMPORARY GUARDRAIL BARRIER
MEDIAN OR LEFT BRIDGE PARAPETS WHERE APPLICABLE

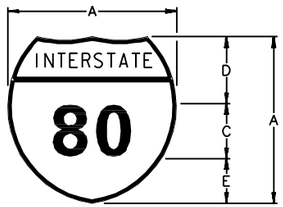
PREPARED: 04/16/82

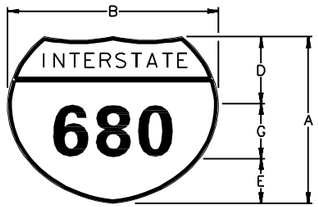
REVISIONS
⚠1 07-10-89
⚠2 02-26-93

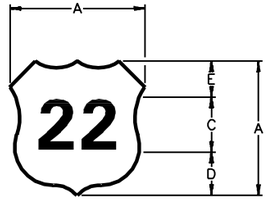
STANDARD SHEET TE11-5

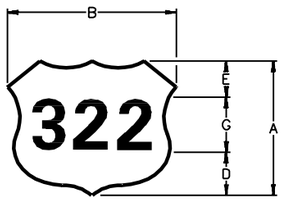
TRAFFIC ENGINEERING DIVISION

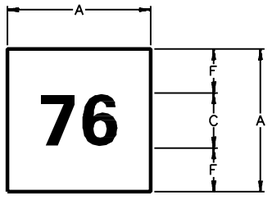
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

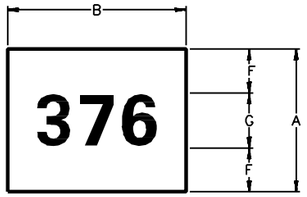








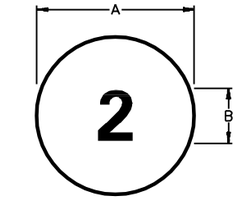


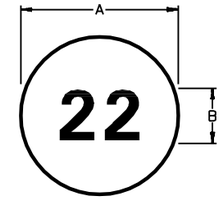


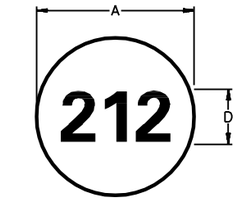
LEGEND SIZE	DIMENSION (INCHES)														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
12	24	30	12-D	6.5	5.5	6	12-C									
18	36	45	18-D	9.75	8.25	9	18-C									
24	48	60	24-D	13	11	12	24-C									

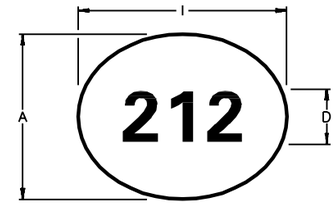
U.S. & W.VA. SHIELDS: SILVER ENCAPSULATED LENS WITH BLACK NUMERALS.

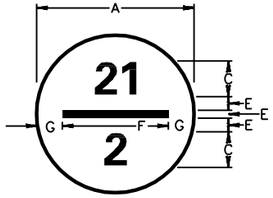
INTERSTATE SHIELDS: UPPER SECTION, RED ENCAPSULATED LENS BACKGROUND.
LOWER SECTION, BLUE ENCAPSULATED LENS BACKGROUND.
NUMERALS, SILVER ENCAPSULATED LENS.

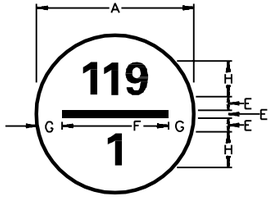












	SHIELD SIZE	DIMENSION (INCHES)														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
**	6	6	3"-C	2"-C	2"C	.25"	5"	.50"	1½"C								
**	12	12	6"-C	4"-C	4"C	.50"	10"	1"	3"C								
**	24	24	12"-D	8"-C	12"C	1"	20"	2"	6"C	30"							
**	36	36	18"-D	12"-C	18"C	1.50"	30"	3"	9"C	45"							

** SILVER ENCAPSULATED LENS SHEETING WITH BLACK DIRECT APPLY COPY.

1 SIGNATURE BLOCK
2 ADDED DETAIL (OVAL) SHIELD

WEST VIRGINIA DIVISION OF HIGHWAYS

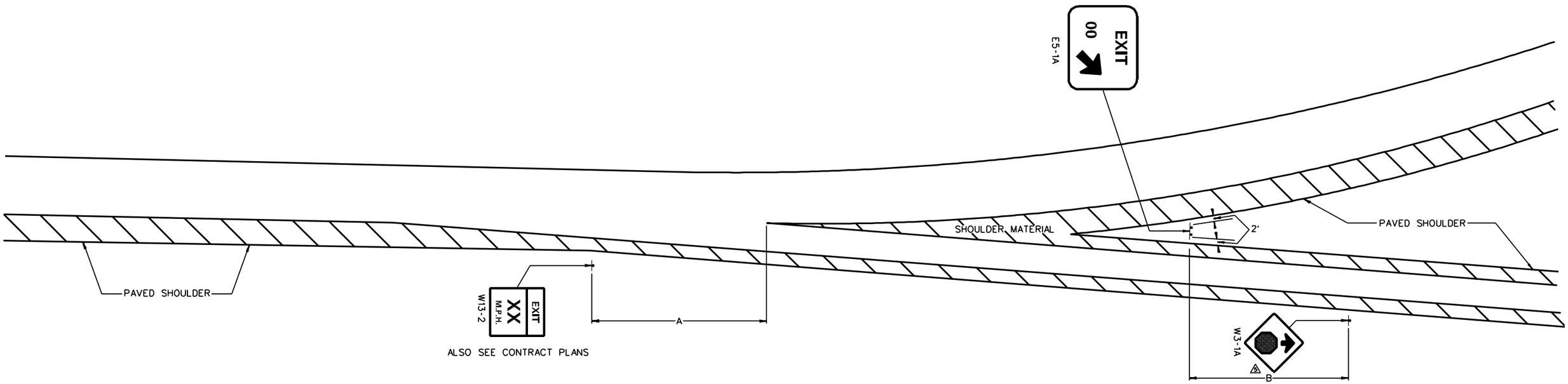
STANDARD DETAIL
SHIELD DETAILS
FOR GUIDE SIGNS

PREPARED: / /

REVISIONS
04-22-75
1 11-15-76
2 09-30-77

STANDARD SHEET TE12-1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



ALSO SEE CONTRACT PLANS

ALSO SEE CONTRACT PLANS

	SIGN *	A	B
	W13-2	0' - 100'	
5	W3-1A		100' - 200'

* NOTE:
ONLY ONE SIGN TO BE USED AT ANY OFF-RAMP.

1 DIM. A LOCATION
2 DIM. A LOCATION
3 SIGN NUMBERS
4 SUBSTITUTED W3-1A FOR W3-1, ADDED NOTE TO SEE CONTRACT PLANS
5 CORRECTED B DIST. AND W3-1A

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
EXIT SIGN LOCATION

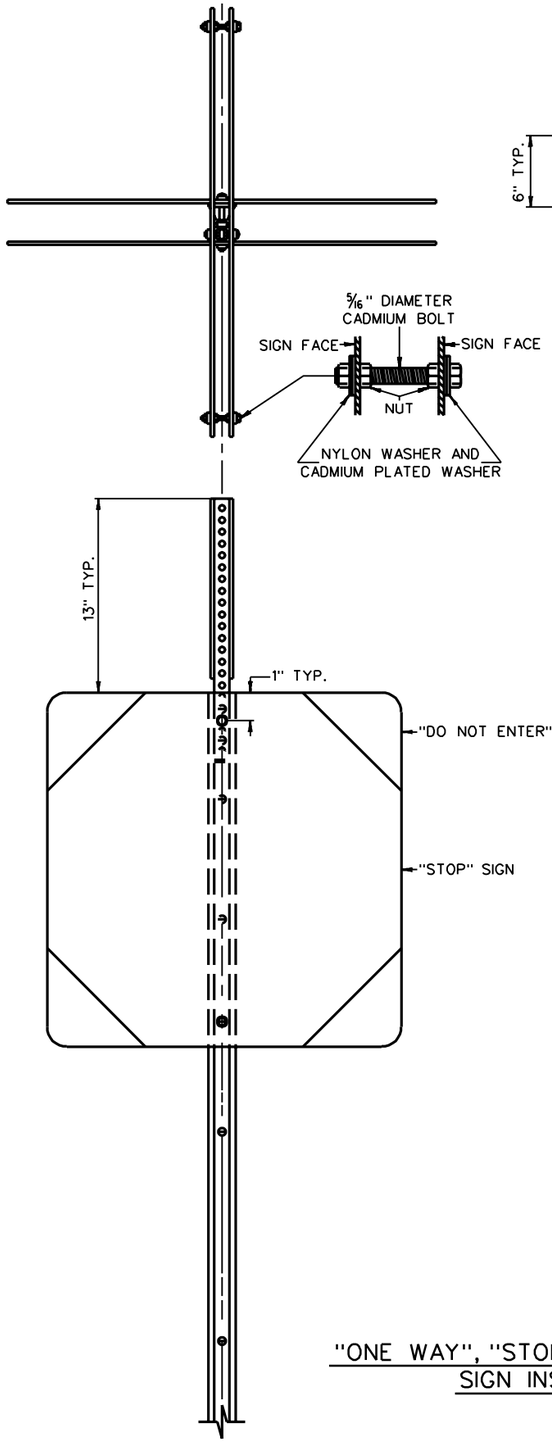
PREPARED: / /

REVISIONS
1 11-10-70
2 01-19-71
3 11-15-76
4 03-11-93
5 09-13-93

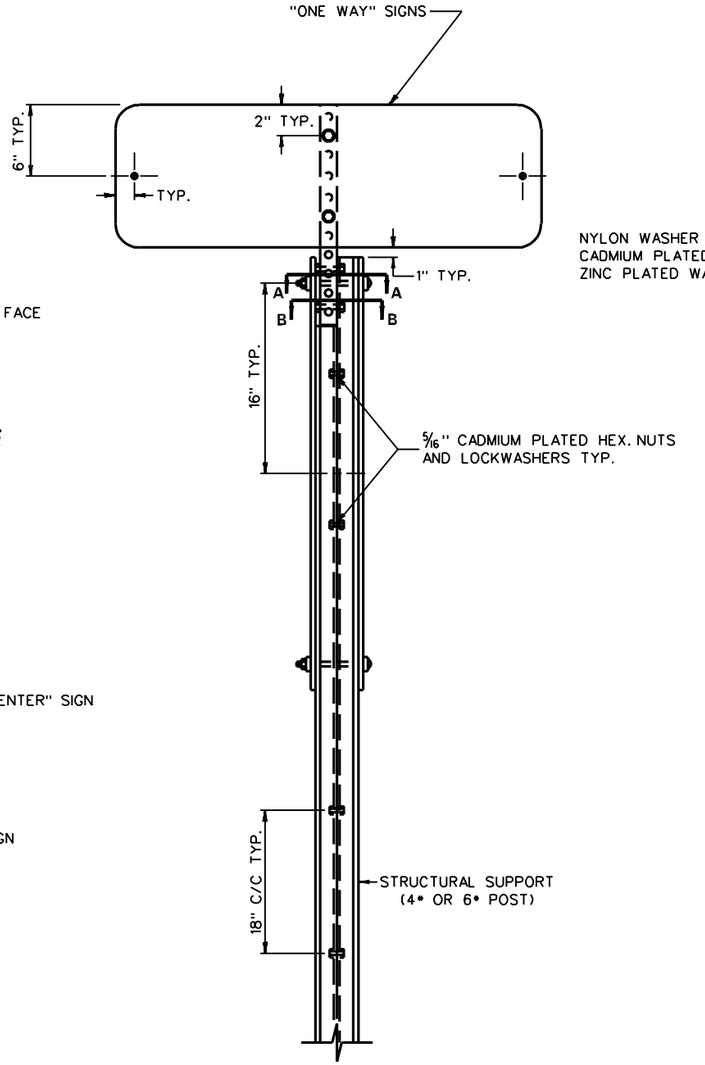
STANDARD SHEET TE15-1

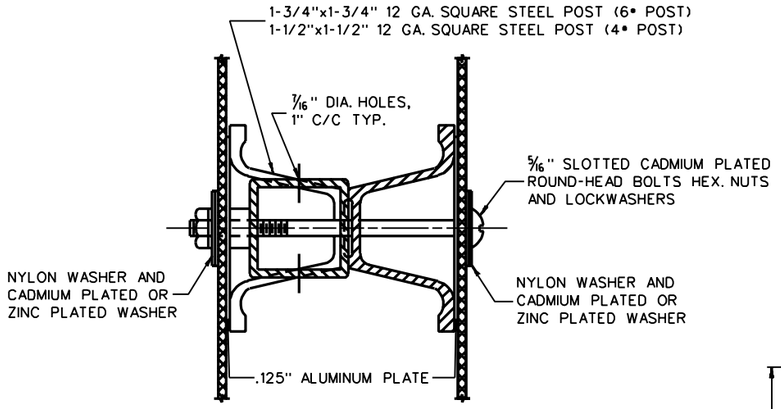
CATALOG:dit standa FILENAME:te151.dgn DATE:03/11/93 TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

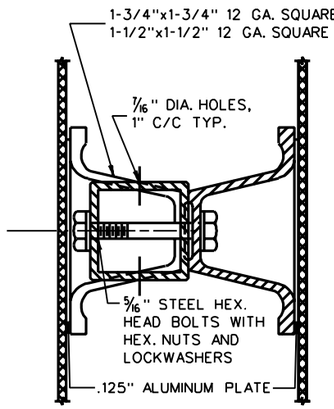


"ONE WAY", "STOP", "DO NOT ENTER", SIGN INSTALLATION





SECTION A-A



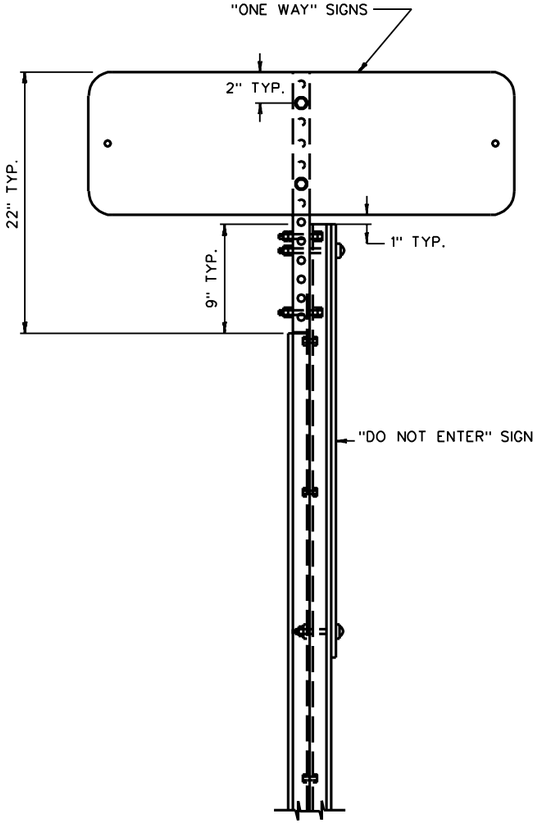
SECTION B-B

NOTES:

MATERIALS

ALL SIGN MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 661.

ALL STRUCTURAL MATERIALS SHALL BE IN ACCORDANCE WITH SPECIAL PROVISIONS SECTION 657, EXCEPT SQUARE TUBULAR SUPPORTS WHICH SHALL BE AS NOTED BELOW.



"ONE WAY", "DO NOT ENTER" SIGN INSTALLATION

TUBULAR SUPPORTS

TUBULAR SUPPORTS SHALL BE FABRICATED FROM COLD ROLLED STEEL CONFORMING TO C-1010. THE CROSS SECTION OF THE POST SHALL BE A SQUARE TUBE FORMED OF 12 GAUGE STEEL ROLLED TO SIZE AND WELDED IN THE CORNER. THE MEMBERS SHALL BE STRAIGHT AND HAVE A SMOOTH UNIFORM FINISH. NOMINAL SIZE OF TUBE SHALL BE 1-3/4"x1-3/4". TUBES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-525 COATING DESIGNATION G90.

CADIUM PLATED BOLTS SHALL MEET THE REQUIREMENTS OF ASTM B766, CLASS 8, TYPE 2.

BRACKETS (T, L, AND SQUARE) SHALL BE FABRICATED FROM STEEL CONFORMING TO C-1010. GALVANIZATION SHALL BE IN ACCORDANCE WITH ASTM A-525 COATING DESIGNATION G90.

PAYMENT FOR TUBULAR SUPPORTS SHALL BE INCIDENTAL TO THE AMOUNT BID FOR CHANNEL POSTS.

1 DELETED 8" BB
2 DELETED GALV. BOLT, GAVE CADMIUM PLATED SPEC.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL "ONE WAY" SIGN SUPPORT DETAILS

PREPARED: 04/00/73

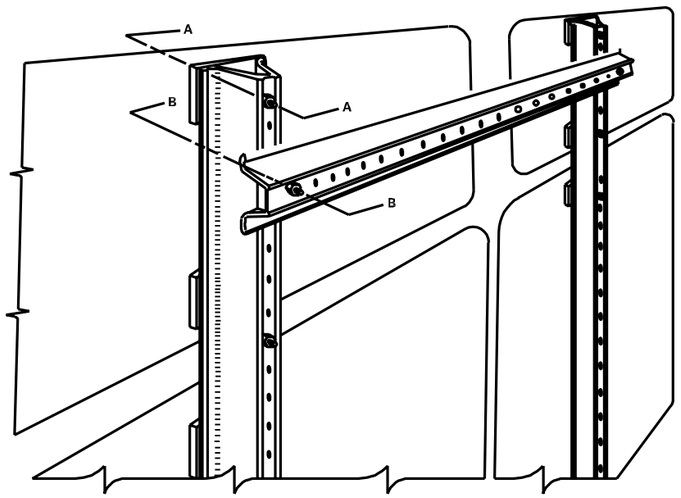
REVISIONS
1 11-15-76
2 09-21-93

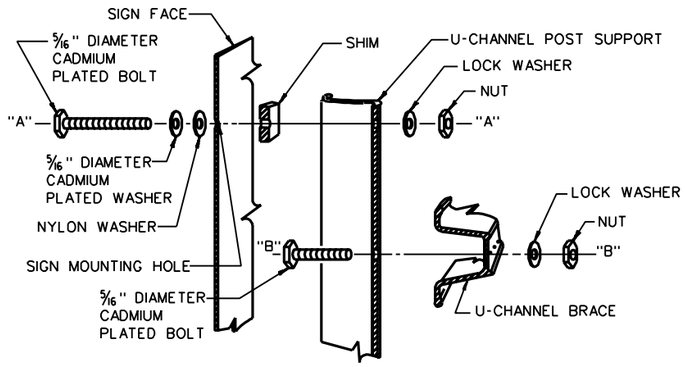
STANDARD SHEET TE16-1

CATALOG\tt standa FILENAME\te161.dgn DATE\03/11/93

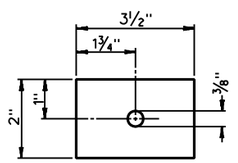
TRAFFIC ENGINEERING DIVISION

FRAMING (BRACING) FOR ROUTE MARKER ASSEMBLIES AND BACK-TO-BACK MOUNTINGS



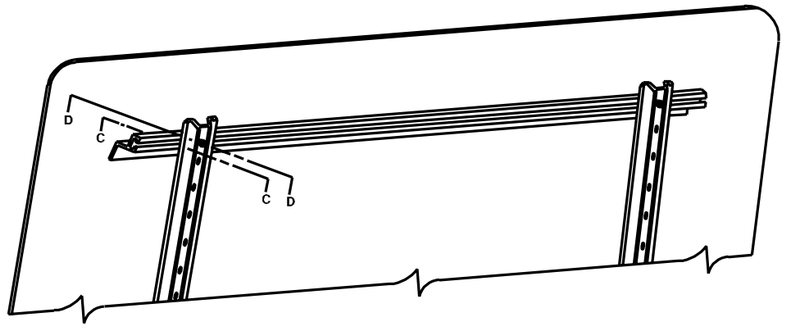


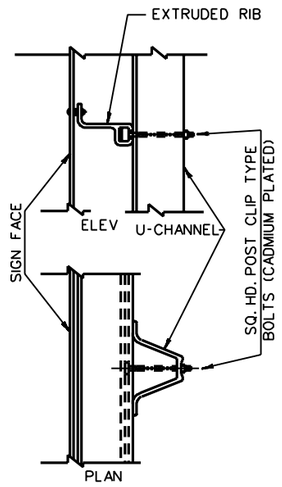
3½" x 2" x ⅛" ALUMINUM ALLOY (6061-T6) SHIM. SHIMS TO BE USED ON ALL SIGNS ERECTED ON "U" CHANNEL POSTS AT EACH SIGN-HOLDING BOLT.



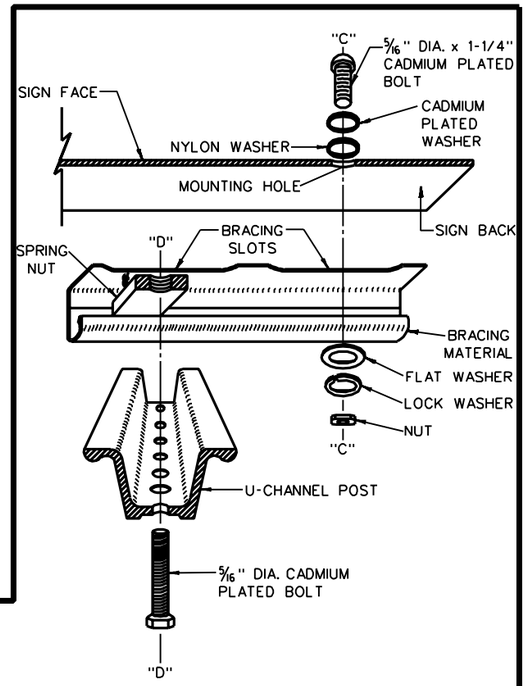
SHIM DETAIL

FRAMING (BRACING) FOR ALL OTHER SIGNING





TYPICAL U-CHANNEL AND RIB ASSEMBLY

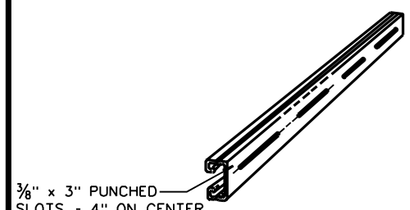


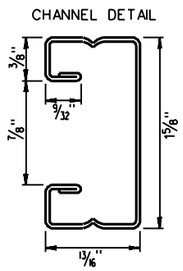
CHANNEL MATERIAL

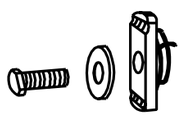
16 GA. (.06 THICK) STRIP STEEL

HOT-DIPPED GALVANIZED CONFORMING TO A.S.T.M.

SPEC. NO. A-153







5/16" DIAMETER CADMIUM PLATED BOLT

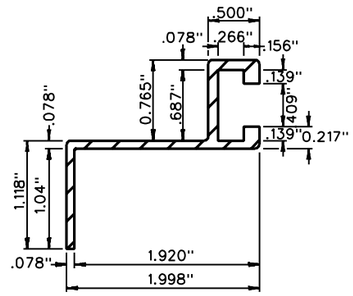
5/16" I.D. x 1" O.D. x 1/16" THK. WASHER

5/16" SPRING NUT

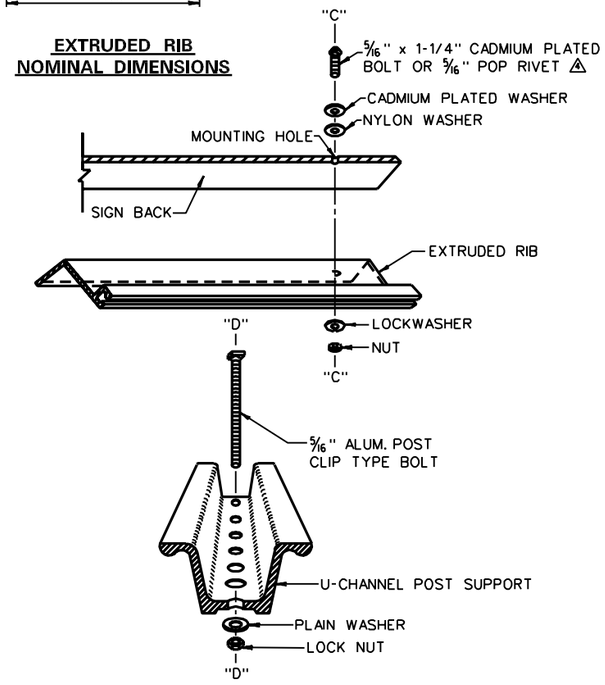
ALTERNATE 1

NOTE: CADMIUM PLATED BOLTS SHALL MEET THE REQUIREMENTS OF ASTM B766, CLASS 8, TYPE 2.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



EXTRUDED RIB NOMINAL DIMENSIONS



ALTERNATE 2

NOTE: THE U-CHANNEL SUPPORT MAY ALSO BE ATTACHED TO THE EXTRUDED RIB BY USE OF POST CLIPS AND POST CLIP BOLTS AS DETAILED ON TE7-1.

△1 ADDITION OF ALTERNATE SIGN BRACING
△2 ADDITION OF EXTRUDED RIB
△3 ADDITION OF POP RIVET, DELETION OF SPACING NUT
△4 CHANGED BOLT, WASHER AND NUT FOR ALT. 2
△5 ADDED CADMIUM PLATED BOLT SPEC

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL SIGN ASSEMBLY BOLTING DETAILS

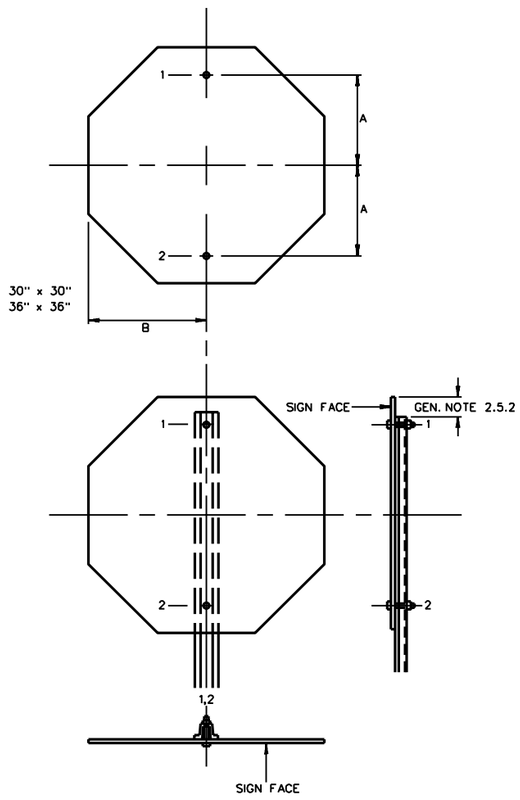
PREPARED: 10/01/69

REVISIONS	
△1	12-09-69
△2	05-01-70
△3	12-13-73
△4	10-23-75
△5	06-01-76
△6	10-21-76
△7	12-18-87
△8	09-21-93

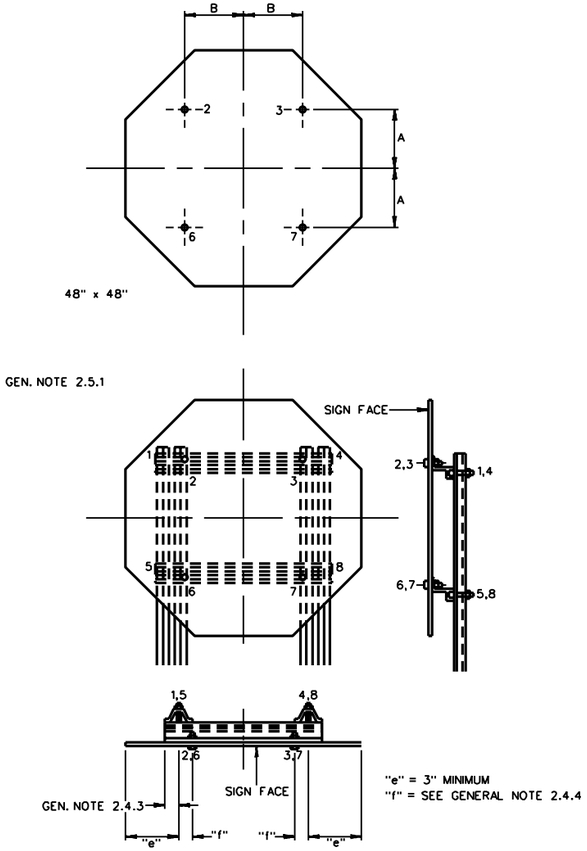
STANDARD SHEET TP-A

TRAFFIC ENGINEERING DIVISION

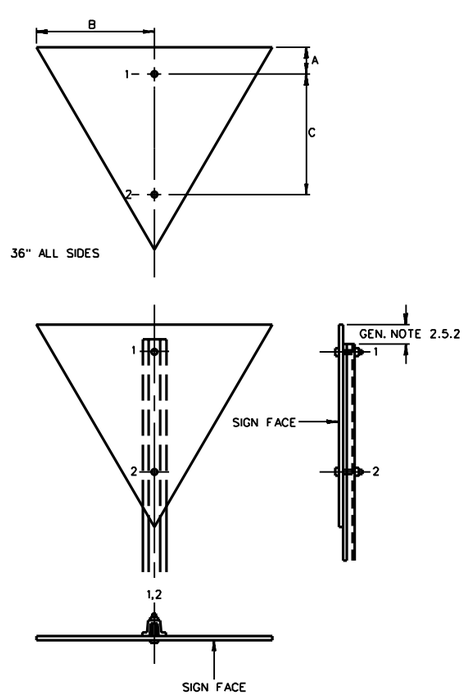
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



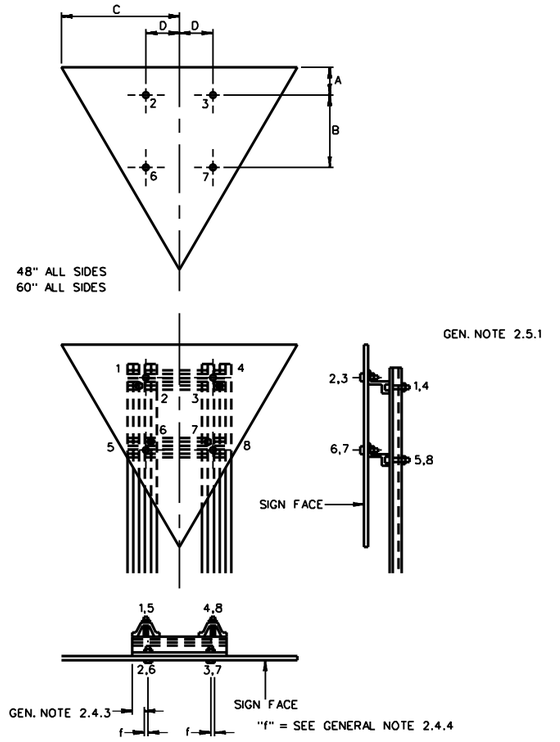
R1-1



R1-1



R1-2



R1-2

GENERAL NOTES

1. PUNCHING DETAILS

   1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE ACCOMPANYING TABLE AND DETAILED DRAWINGS.

   1.2 ALL PUNCHED HOLES IN THE SIGNS SHALL BE ⅜" DIAMETER, UNLESS OTHERWISE SPECIFIED.

2. MOUNTING DETAILS

   2.1 SIGNS IN THE SHAPE OF AN OCTAGON OR EQUILATERAL TRIANGLE WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS. ⚠2

   2.2 THE MOUNTINGS SHOWN FOR THESE SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN.

   2.3 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLY WILL BE ⅝" DIAMETER.

   2.4 BRACING ON SIGNS SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A.

   2.4.1 ON ALL BRACED SIGNS, THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.

   2.4.2 ON ALL BRACED SIGNS, THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE FLANGE OF THE POST SUPPORT.

   2.4.3 ON ALL BRACED SIGNS, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1¾" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

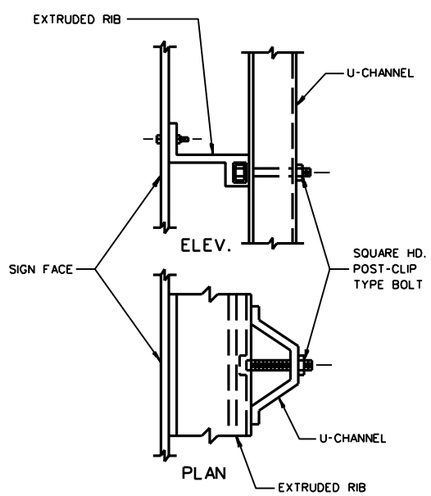
   2.4.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 3" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.

   2.5 POST SUPPORT

   2.5.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.

   2.5.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

3. CORNER RADIUS FOR SIGN BLANK MATERIAL SHALL BE 1.5" (EXCEPT R1-1 WHICH WILL HAVE NO RADIUS).



TYPICAL U-CHANNEL AND RIB ASSEMBLY

SIGN SHAPE	SIZE HEIGHT	SIZE WIDTH	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	DIMENSION "D"
OCTAGON (R1-1)	30"	30"	12"	15"	———	———
	36"	36"	16"	18"	———	———
	48"	48"	15"	15"	———	———
EQUILATERAL TRIANGLE (R1-2)	36" ALL SIDES		2"	18"	24"	———
	48" ALL SIDES		3"	21"	24"	7½"
	60" ALL SIDES		6"	24"	30"	9"

⚠2 ADDITION OF EXTRUDED RIB
⚠3 ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

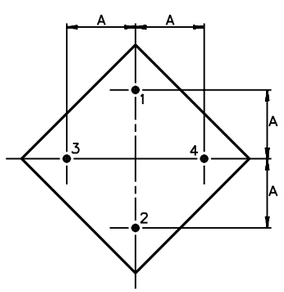
STANDARD DETAIL PUNCHING AND MOUNTING FOR R1–1 AND R1–2 SIGNS

PREPARED: 10/01/69

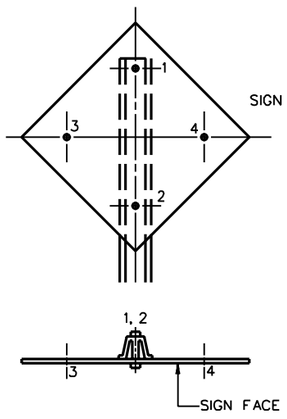
REVISIONS
⚠1 05-01-70
⚠2 12-00-73
06-01-76
⚠3 09-13-93

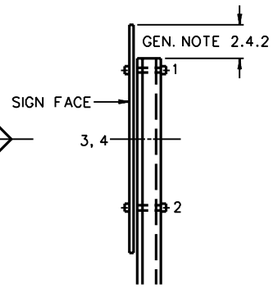
STANDARD SHEET TP1–1

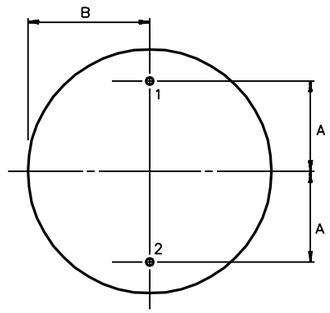
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



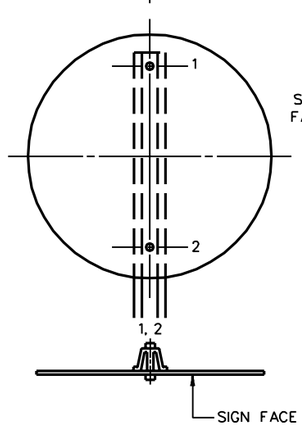
30" ALL SIDES
36" ALL SIDES

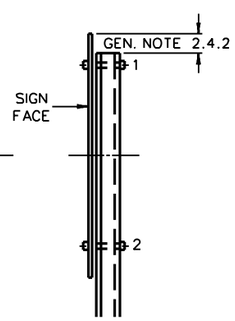


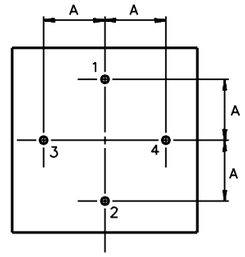




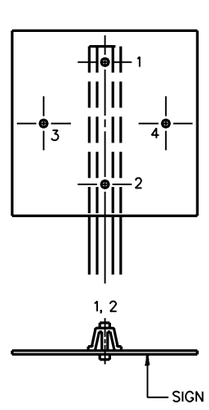
36" DIA.

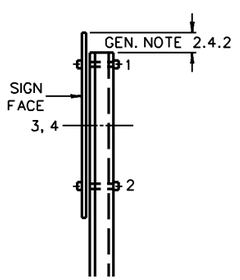


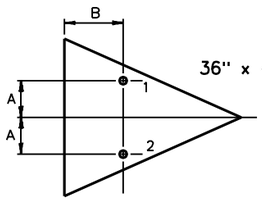




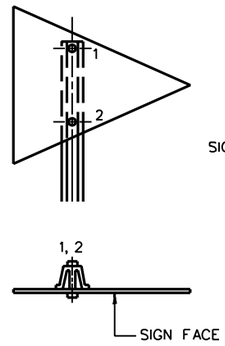
6" x 6"
18" x 18"
24" x 24"
30" x 30"
36" x 36"

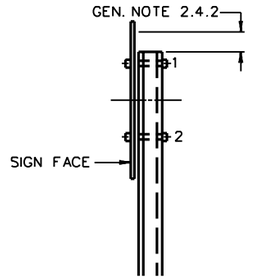




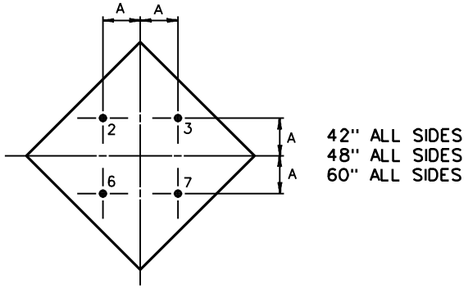


36" x 48"

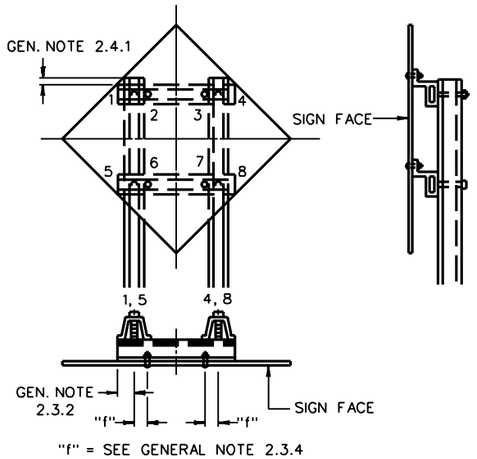




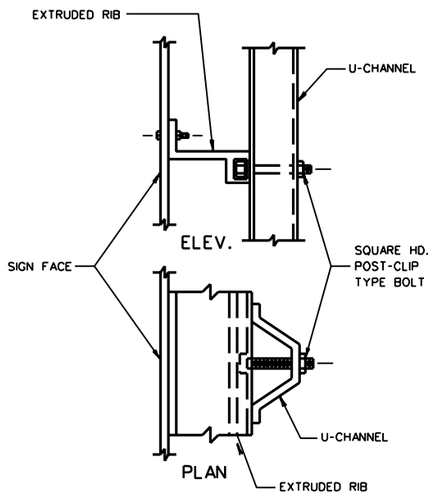
SIGN SHAPE	SIGN SIZE HEIGHT	SIGN SIZE WIDTH	DIMENSION A	DIMENSION B
DIAMOND	30" ALL SIDES		15"	
	36" ALL SIDES		18"	
	42" ALL SIDES		10"	
	48" ALL SIDES		12"	
	60" ALL SIDES		17"	
CIRCLE	36" DIA.		15"	18"
SQUARE	6"	6"	2½"	
	18"	18"	7½"	
	24"	24"	10½"	
	30"	30"	13½"	
	36"	36"	16"	
	42"	42"	15"	
	48"	48"	18"	
PENNANT	36"	44.5"	9"	15"



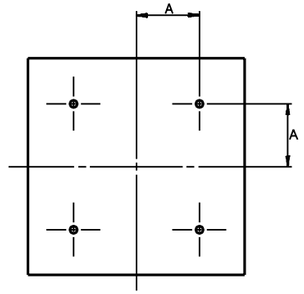
42" ALL SIDES
48" ALL SIDES
60" ALL SIDES



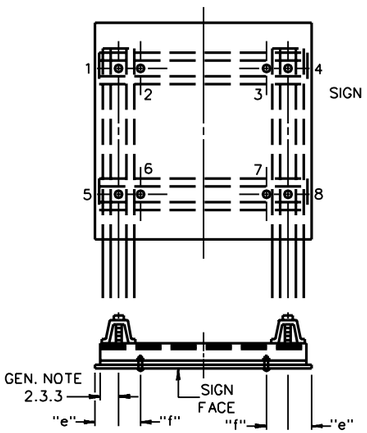
"f" = SEE GENERAL NOTE 2.3.4

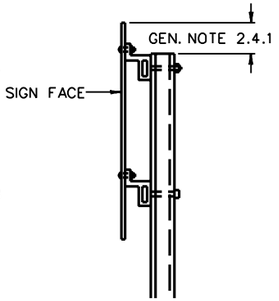


TYPICAL U-CHANNEL AND RIB ASSEMBLY



42" x 42"
48" x 48"





"e" = 3" MINIMUM
"f" = SEE GENERAL NOTE 2.3.4

⚠ ADDITION OF EXTRUDED RIB

GENERAL NOTES

1. PUNCHING DETAILS
   - 1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE ABOVE TABLE AND ACCOMPANYING DETAILED DRAWINGS.
   - 1.2 ALL PUNCHED HOLES WILL BE ⅜" DIAMETER, UNLESS OTHERWISE SPECIFIED.

2. MOUNTING DETAILS
   - 2.1 SIGN SHAPES SHOWN WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAIL DRAWINGS ⚠ AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.
   - 2.1.1 THE MOUNTINGS SHOWN FOR THE DIAMOND SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN.
   - 2.1.2 THE MOUNTINGS SHOWN FOR THE CIRCULAR SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN.
   - 2.1.3 THE MOUNTING SHOWN FOR SQUARE SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN. OTHER ASSEMBLIES USING SQUARE SHAPED SIGNS ARE TO BE FOUND ON STANDARD SHEET(S): TP4-1A, TP4-1B, TP4-1C, TP4-2.
   - 2.2 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.
   - 2.3 BRACING ON SIGN SHAPES SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A.
   - 2.3.1 ON ALL BRACED SIGNS THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.
   - 2.3.2 ON ALL BRACED SIGNS THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE FLANGE OF THE POST SUPPORT.
   - 2.3.3 ON ALL BRACED SIGNS, THE END OF THE OVERHANGING LEHGTH OF THE BRACE SHALL BE AT LEAST 1-3/4" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.
   - 2.3.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 3" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.
   - 2.4 POST SUPPORT
   - 2.4.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.
   - 2.4.2 THE TOP OF THE POST SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

3. CORNER RADIUS FOR SIGN BLANK MATERIAL SHALL BE 1.5".

⚠ ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
PUNCHING AND MOUNTING FOR DIAMOND, CIRCLE, SQUARE AND PENNANT SIGNS

PREPARED: 10/01/69

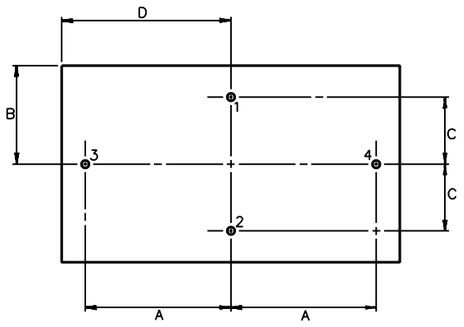
REVISIONS
⚠ 05-01-70
⚠ 12-13-73
⚠ 06-01-76
⚠ 09-13-93

STANDARD SHEET TP1-2

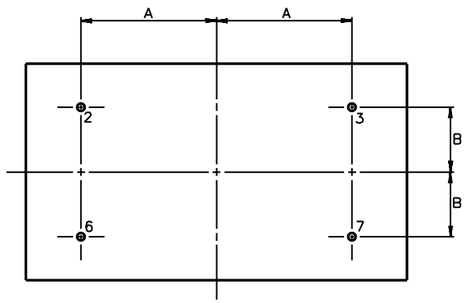
CATALOG=st standa FILENAME=tp12.dgn DATE=03/18/93

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

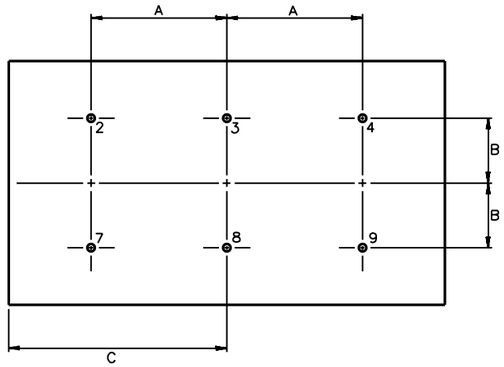


LESS THAN 42" WIDTH



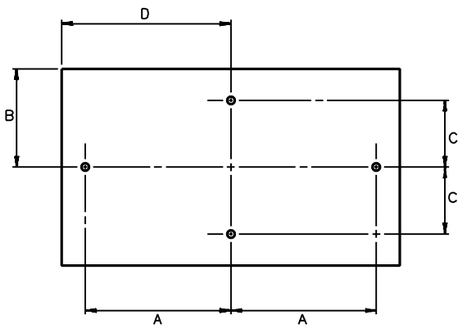
42" – 72" WIDTHS *

* EXCLUDING: (a) SIGNS WITH WIDTHS OF 42" – 48" AND HEIGHT OF 9".
(b) "M" SERIES SIGNS WITH 45" WIDTH.



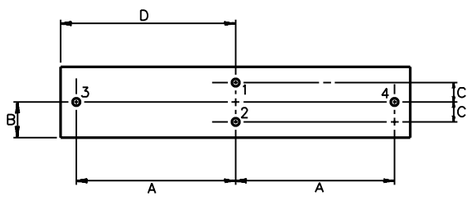
MORE THAN 72" WIDTH

PUNCHING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS



"M" SERIES 45" WIDTHS ONLY

SINGLE POST MOUNT



D16–1 42" – 48" WIDTHS ONLY

SIGN SHAPE	SIGN SIZE		DIMENSION			
	HEIGHT	WIDTH	A	B	C	D
* HORIZONTAL RECTANGLE	6" OR OVER BUT UNDER 36"	LESS THAN 42"	WIDTH – 3" / 2	HEIGHT / 2	HEIGHT – 3" / 2	WIDTH / 2
	6" OR OVER BUT UNDER 18"	42"–72"	WIDTH – 6" / 2	HEIGHT – 3" / 2	——	——
	18" OR OVER BUT UNDER 30"		WIDTH – 6" / 2	HEIGHT – 6" / 2	——	——
	30" OR MORE		WIDTH – 12" / 2	HEIGHT – 12" / 2	——	——
	UNDER 30"	MORE THAN 72"	WIDTH – 24" / 2	HEIGHT – 6" / 2	WIDTH / 2	——
	30" OR MORE		WIDTH – 24" / 2	HEIGHT – 12" / 2	WIDTH / 2	——

* EXCLUDING: (a) D16–1 SIGNS WITH WIDTHS OF 42" – 48".
(b) "M" SERIES SIGNS WITH 45" WIDTH.

D16–1	9"	42" – 48"	WIDTH – 3" / 2	HEIGHT / 2	HEIGHT – 3" / 2	WIDTH / 2
"M" SERIES	36"	45"	WIDTH – 4" / 2	HEIGHT / 2	HEIGHT – 4" / 2	WIDTH / 2

NOTES:

1. PUNCHING DETAILS

   1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWINGS.

   1.2 ALL HOLES WILL BE 3/8" DIAMETER, UNLESS OTHERWISE SPECIFIED.

   1.3 ALL HORIZONTAL RECTANGLES DESIGNATED AS D16-1 SIGNS AND HAVING WIDTHS OF 42" OR 48" SHALL BE PUNCHED IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWING DESIGNATED "D16-1".

   1.4 ALL HORIZONTAL RECTANGLES DESIGNATED AS A "M" SERIES SIGN WITH A WIDTH OF 45" SHALL BE PUNCHED IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWING.

2. CORNER RADIUS FOR SIGN BLANK MATERIAL SHALL BE 1.5".

⚠ CHANGED 9" TO 6"

WEST VIRGINIA DIVISION OF HIGHWAYS

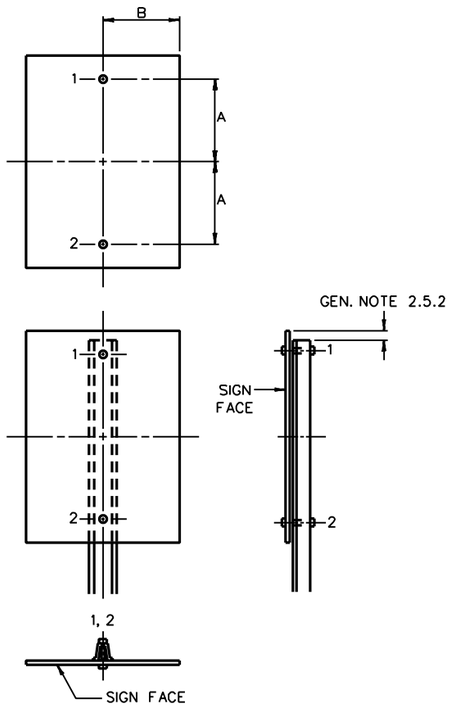
STANDARD DETAIL PUNCHING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS

PREPARED: 10/01/69

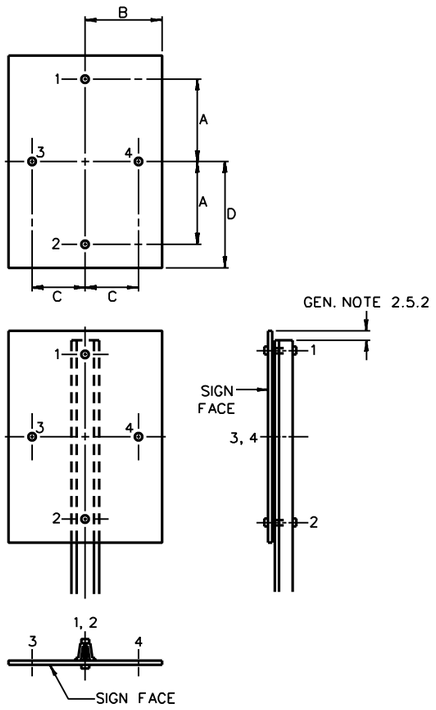
REVISIONS
05-01-70
⚠ 11-03-76

STANDARD SHEET TP1–3

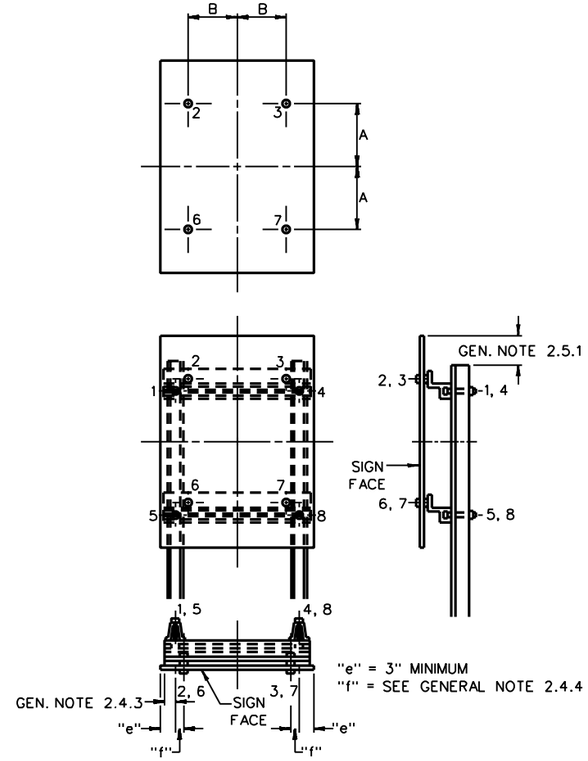
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



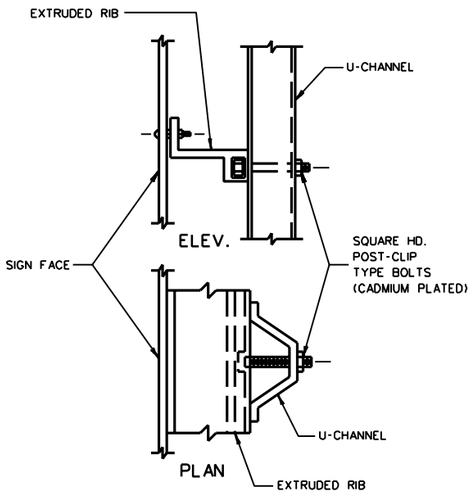
LESS THAN 9" WIDTH



9" OR OVER, BUT UNDER 36" WIDTH



36" OR GREATER WIDTH



TYPICAL U-CHANNEL AND RIB ASSEMBLY

SIGN SHAPE	SIGN SIZE		DIMENSION			
	HEIGHT	WIDTH	A	B	C	D
VERTICAL RECTANGLE	GREATER THAN WIDTH	LESS THAN 9"	HEIGHT−1" / 2	WIDTH / 2	—	—
	LESS THAN 54"	9" OR OVER BUT UNDER 24"	HEIGHT−3" / 2	WIDTH / 2	WIDTH−3" / 2	HEIGHT / 2
		24" OR OVER BUT UNDER 36"	HEIGHT−6" / 2	WIDTH / 2	WIDTH−6" / 2	HEIGHT / 2
	42" TO 78"	36" TO 66"	HEIGHT−12" / 2	WIDTH−12" / 2	—	—
	GREATER THAN WIDTH	MORE THAN 66"	HEIGHT−24" / 2	WIDTH−24" / 2	—	—

GENERAL NOTES

1. PUNCHING DETAILS

   1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE ACCOMPANYING TABLE AND DETAILED DRAWINGS.

   1.2 ALL PUNCHED HOLES IN THE SIGNS SHALL BE 3/8" DIAMETER, UNLESS OTHERWISE SPECIFIED.

2. MOUNTING DETAILS

   2.1 SIGNS IN THE SHAPE OF VERTICAL RECTANGLES WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS. △4

   2.2 THE MOUNTING SHOWN FOR THESE SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN.

   2.3 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.

   2.4 BRACING ON SIGNS SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A.

      2.4.1 ON ALL BRACED SIGNS, THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.

      2.4.2 ON ALL BRACED SIGNS, THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE FLANGE OF THE POST SUPPORT.

      2.4.3 ON ALL BRACED SIGNS, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1-3/4" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

      2.4.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 3" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.

   2.5 POST SUPPORT

      2.5.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.

      2.5.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

3. CORNER RADIUS FOR SIGN BLANK MATERIAL SHALL BE 1.5".

△1
△2 ADDITION OF EXTRUDED RIB
△3
△4 ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL PUNCHING AND MOUNTING FOR VERTICAL RECTANGULAR SIGNS

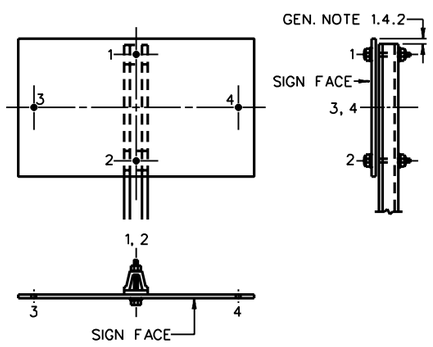
PREPARED: 10/01/69

REVISIONS
△1 05-01-70
△2 12-13-73
△3 06-01-76
△4 09-13-93

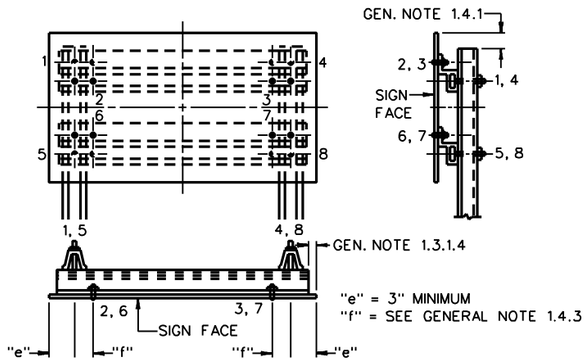
STANDARD SHEET TP1-4

MOUNTING DETAILS FOR SINGLE–MOUNTED HORIZONTAL RECTANGULAR SIGNS *

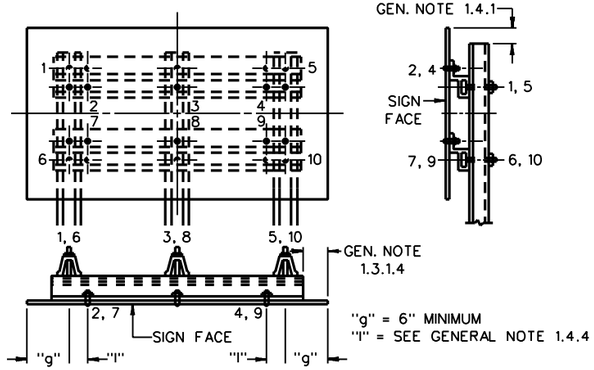
* EXCEPT D16–1 SIGNS (42" – 48" WIDTHS ONLY)



LESS THAN 42" WIDTH



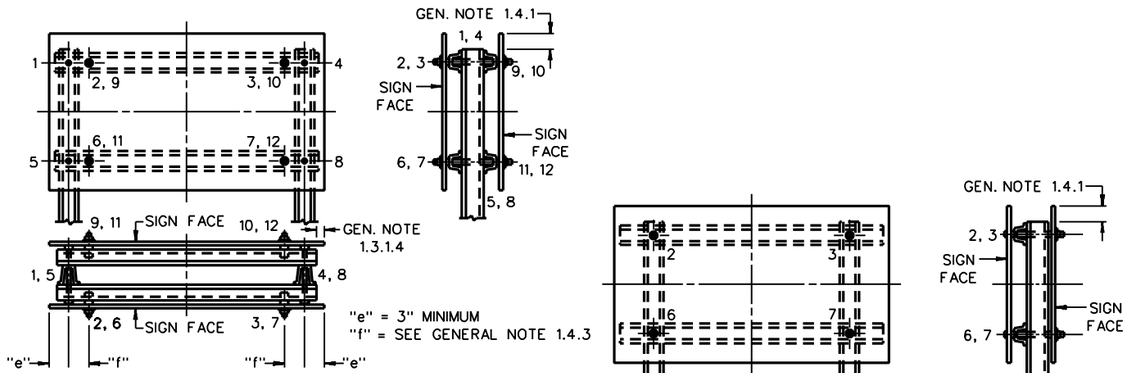
42" – 72" WIDTHS



MORE THAN 72" WIDTH

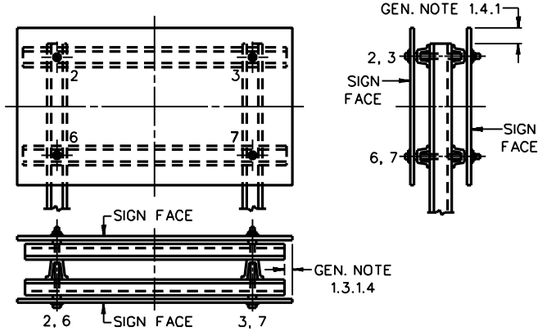
MOUNTING DETAILS FOR BACK–TO–BACK MOUNTED HORIZONTAL RECTANGULAR SIGNS *

* EXCEPT D16–1 SIGNS (42" – 48" WIDTHS ONLY)



(a)

(c)

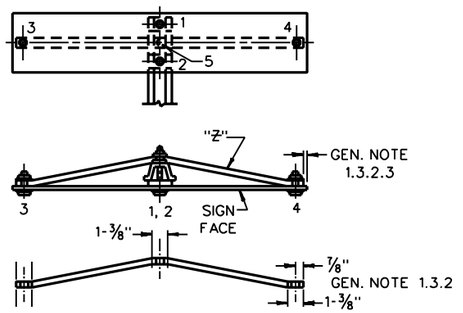


(b)

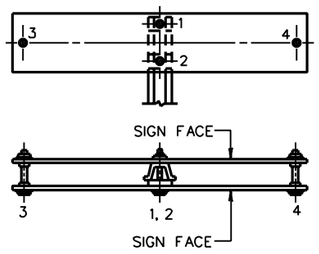
EXCEPTIONS TO STANDARD MOUNTING DETAILS *

* EXCEPT D16–1 SIGNS (42" – 48" WIDTHS ONLY)

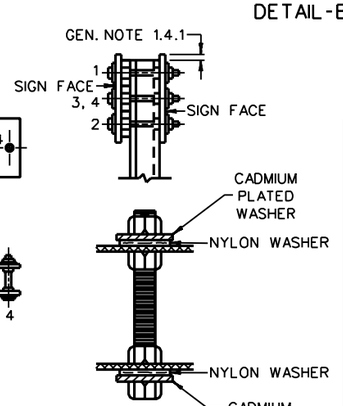
GEN. NOTE 1.4.2



SINGLE–MOUNTING

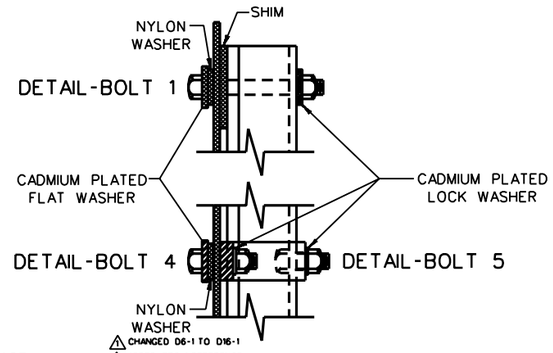


BACK–TO–BACK MOUNTING



GENERAL NOTES

1. MOUNTING DETAILS
   - 1.1 HORIZONTAL RECTANGULAR SHAPED SIGNS WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAIL DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS FOR SINGLE-MOUNTED SIGN ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.
   - 1.2 SIGN ASSEMBLY
     - 1.2.1 ALL MOUNTINGS SHOWN ARE FOR ASSEMBLIES CONSISTING OF SINGLE-MOUNTED OR BACK-TO-BACK MOUNTED SIGNS.
     - 1.2.2 BACK-TO-BACK MOUNTINGS FOR ALL ASSEMBLIES (EXCEPT D16-1 SIGNS WITH 42" - 48" WIDTHS) AS SHOWN IN DETAIL "A" IS RECOMMENDED. HOWEVER, DETAIL "B" AND/OR "C" MAY BE USED.
     - 1.2.3 MOUNTING DETAILS FOR "M" SERIES SIGNS WITH 45" WIDTH ARE SHOWN ON STANDARD DETAIL SHEET TP4-1A, B, C.
     - 1.2.4 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLIES WILL BE 5/16" DIAMETER.
   - 1.3 BRACING
     - 1.3.1 SINGLE-MOUNTED AND BACK-TO-BACK MOUNTED HORIZONTAL RECTANGULAR SIGNS, EXCEPT D16-1 SIGNS WITH 42" AND 48" WIDTHS.
       - 1.3.1.1 BRACING ON SIGNS SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A EXCEPT BACK-TO-BACK MOUNTINGS WILL CONSIST OF 2LB. CHANNEL POST.
       - 1.3.1.2 ON ALL BRACED SIGNS THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.
       - 1.3.1.3 ON ALL BRACED SIGNS THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE POST SUPPORT.
       - 1.3.1.4 ON ALL BRACED SIGNS THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1-3/4" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.
     - 1.3.2 D16-1 SIGNS WITH 42" - 48" WIDTHS.
       - 1.3.2.1 STRAP-BRACING FOR SINGLE-MOUNTED 42" WIDTH D16-1 SIGN ASSEMBLIES SHALL BE A GALVANIZED STEEL BRACE 1/4" x 1" x 40-1/2". HOLES IN THE STRAP-BRACING SHALL BE 3/8" DIAMETER AND CAN EITHER BE PUNCHED AS SHOWN OR BE PUNCHED AT 1" INTERVALS.
       - 1.3.2.2 STRAP-BRACING FOR SINGLE-MOUNTED 48" WIDTH D16-1 SIGN ASSEMBLIES SHALL BE A GALVANIZED STEEL BRACE 1/4" x 1" x 40-1/2". HOLES IN THE STRAP-BRACING SHALL BE 7/8" DIAMETER AND CAN BE PUNCHED AS SHOWN OR BE PUNCHED AT 1" INTERVALS.
       - 1.3.2.3 ON ALL SINGLE-MOUNTED D16-1 (42" - 48" WIDTH) SIGN ASSEMBLIES THE ENDS OF THE STRAP-BRACING SHALL EXTEND 1" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.
   - 1.4 POST SUPPORT
     - 1.4.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.
     - 1.4.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.
     - 1.4.3 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 3" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.
     - 1.4.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 6" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.



⚠1 CHANGED D6-1 TO D16-1
⚠2 ADDED TP3-1 REFERENCE

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL MOUNTING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS

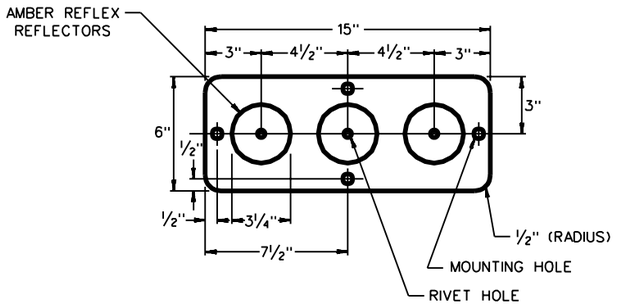
PREPARED: 10/01/69

REVISIONS
05-10-70
06-10-76
⚠1 11-03-76
⚠2 09-13-93

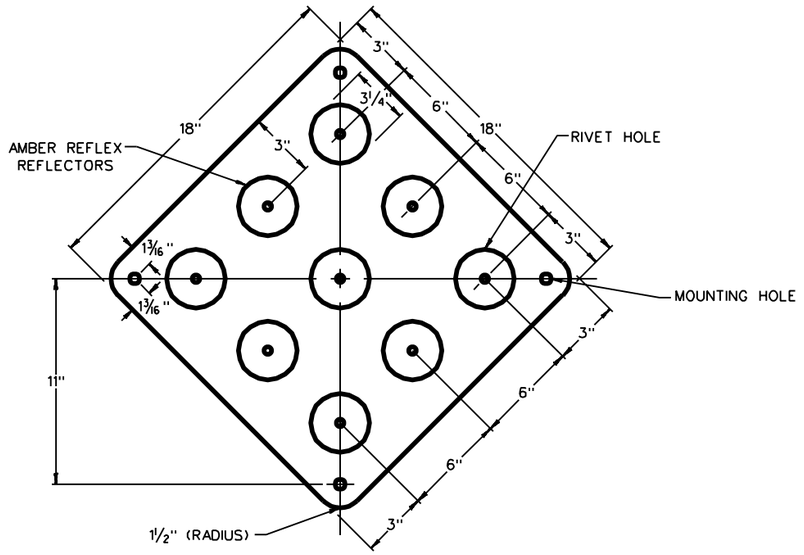
STANDARD SHEET TP1–5

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

PUNCHING DETAILS FOR DELINEATOR MOUNTING PLAQUES



XR-3
6" x 15"



XR-9
18" x 18"

GENERAL NOTES

1. PUNCHING DETAILS

   1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS.

   1.2 ALL MOUNTING HOLES WILL BE ⅜" DIAMETER.

   1.3 ALL RIVET HOLES USED TO MOUNT REFLEX REFLECTORS TO PLAQUE WILL HAVE A DIAMETER NO GREATER THAN ¼".

   1.4 ALL REFLEX REFLECTORS WILL BE MOUNTED WITH RIVETS.

⚠1 DELETED FABRICATION SHEETS
⚠2 ROTATED DETAIL XR-3 90 DEGREES

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
PUNCHING FOR XR-3 AND XR-9
DELINEATOR MOUNTING PLAQUES

PREPARED: 10/01/69

REVISIONS
05-01-70
⚠1 11-03-76
⚠2 10-26-93

STANDARD SHEET TP2-1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES

1. HORIZONTAL SIGN CLEARANCE DISTANCE.

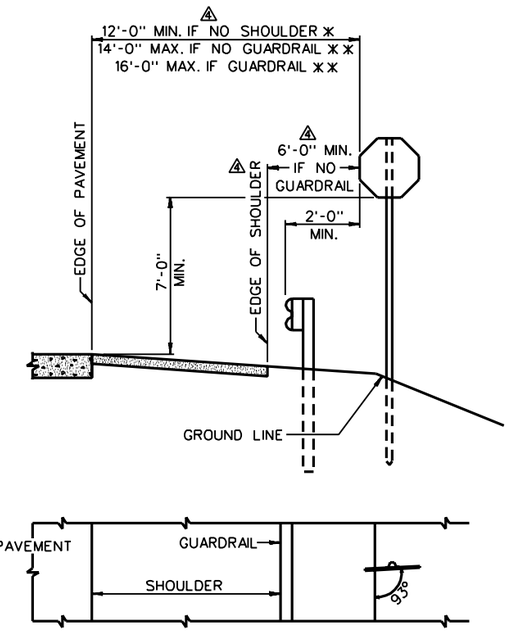
   1.1 CUT SECTIONS:
   △4 SIGNS SHALL BE NORMALLY PLACED BEHIND ROADWAY DITCH. THE NEAREST EDGE OF A SIGN SHALL NOT BE CLOSER THAN 6 FEET NOR MORE THAN 14 / 16 FEET FROM THE EDGE OF PAVEMENT (SEE DRAWING).

   1.2 FILL SECTION WITHOUT GUARDRAIL:
   △4 SIGNS SHALL BE PLACED AT EDGE OF ROADWAY SHOULDER. THE NEAREST EDGE OF A SIGN SHALL NOT BE CLOSER THAN 6 FEET NOR GREATER THAN 14 / 16 FEET FROM EDGE OF PAVEMENT (SEE DRAWING).

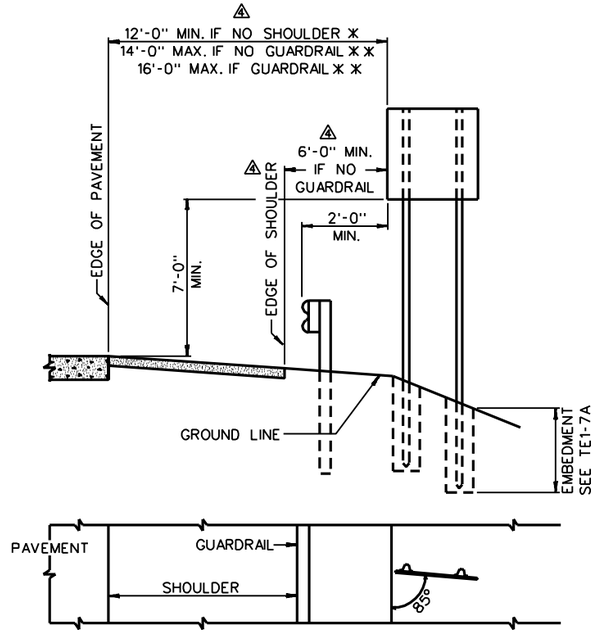
   1.3 FILL SECTION WITH GUARDRAIL:
   △4 SIGNS SHALL BE PLACED WITH THEIR NEAREST EDGE AT LEAST 2 FEET OUTSIDE SUCH GUARDRAIL. THE NEAREST EDGE OF SIGN SHALL NOT BE CLOSER THAN 6 FEET NOR GREATER THAN 14 / 16 FEET FROM EDGE OF PAVEMENT (SEE DRAWING).

2. TWO PIECE POST ALTERNATIVE.

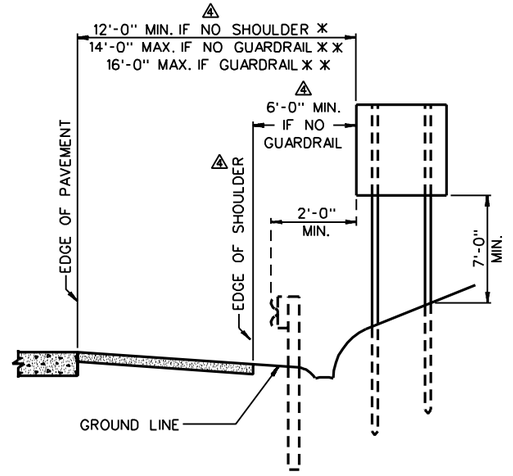
   THE CONTRACTOR MAY DRIVE A BASE POST AND BOLT ON AN UPPER POST TO ACHIEVE THE REQUIRED HEIGHT. THE BASE POST SHALL BE THE SAME SIZE AS THE UPPER POST AND SHALL BE 4 FT. 8 INCHES LONG FOR THE TWO (2) LB. POSTS AND 5 FT. 2 INCHES LONG FOR THE THREE (3) LB. POSTS. MINIMUM OVERLAP PROVISIONS SHOWN ON THE DRAWING BELOW SHALL BE USED. NO EXTRA COMPENSATION FOR THIS METHOD SHALL BE ALLOWED.



TANGENT SECTION - FILL



CURVE SECTION - FILL

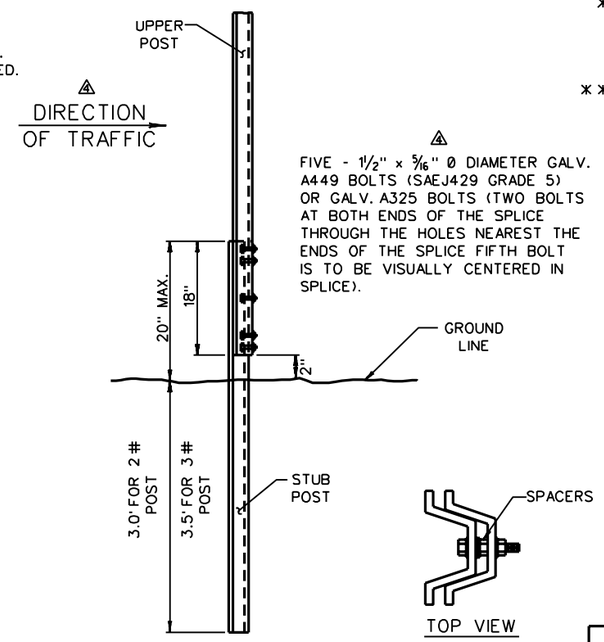


TANGENT OR CURVE SECTION - CUT

(SIGN ROTATION CRITERIA FOR CUT SECTION SHALL BE THE SAME AS THAT FOR FILL SECTIONS)

△4
* MAY BE DECREASED DOWN TO TWO (2) FOOT FOR URBAN TYPE FACILITIES. A CLEARANCE OF ONE (1) FOOT FROM THE CURB FACE IS PERMISSIBLE WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.

** MAY BE INCREASED UP TO THIRTY (30) FEET FOR LARGE GUIDE SIGNS FOR EXPRESSWAY/FREEWAY TYPE FACILITIES (DEPENDING UPON FIELD CONDITIONS).



SPLICE CONNECTION FOR U-CHANNEL POST

SPACER CHART		
FABRICATOR	U-CHANNEL	SPACERS
STEEL-M	2#&3#	2 WASHERS - 1 NUT
STEEL-F	2#	3 WASHERS - 1 NUT
STEEL-F	3#	1 WASHER - 2 NUTS

△5 ADDED UPHILL ROWNTS, COMPLETE REVISION OF SPLICE AND ATTENDANT NOTES
△4 CHANGED CLEARANCE AND THREE NOTES ON LEFT. CHANGED 1' TO 2' NOTE. CORRECTED SPLICE BOLT SPEC.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
TYPICAL SIGN PLACEMENT

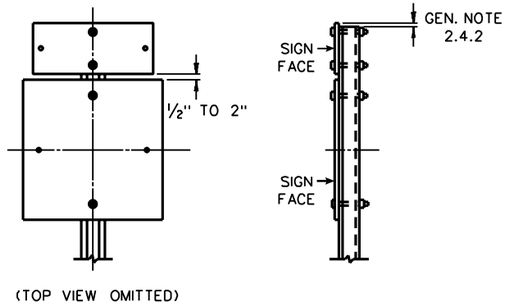
PREPARED: 10/01/69

REVISIONS
△1 05-01-70
△2 06-01-76
△3 01-14-93
△4 09-13-93

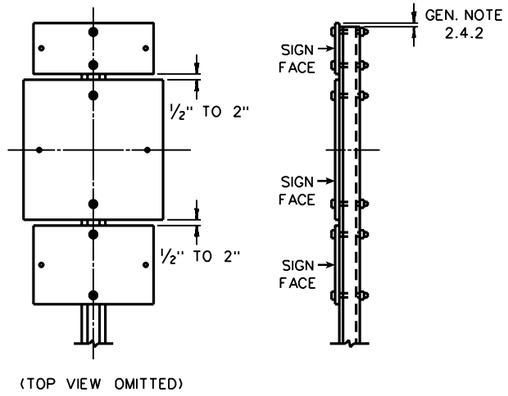
STANDARD SHEET TP3-1

TRAFFIC ENGINEERING DIVISION

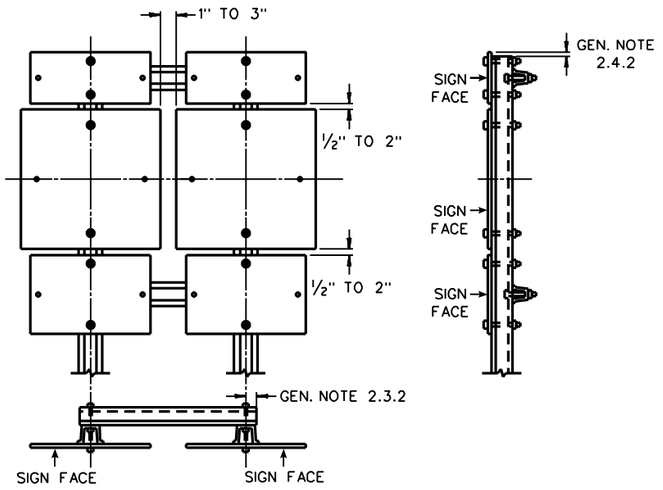
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



GSA-1



GSA-2



GSA-3

GENERAL NOTES

1. GUIDE SIGN ASSEMBLY ARRANGEMENTS.

   1.1 ALL GUIDE SIGN ASSEMBLIES SHOWN ON THIS SHEET ARE TYPICAL ASSEMBLIES CONSISTING OF TWO (2) OR MORE SIGNS.

   1.2 GUIDE SIGN ASSEMBLY ARRANGEMENTS SHOWN ON THIS SHEET ARE TYPICAL. THE ARRANGEMENTS SHOWN SHOULD BE USED FOR ALL GUIDE SIGN ASSEMBLIES, EXCEPT WHERE CONDITIONS DO NOT WARRANT. ANY DEVIATIONS TO THE SHOWN ARRANGEMENTS SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.

2. GUIDE SIGN ASSEMBLY MOUNTING DETAILS. ⚠

   2.1 GUIDE SIGN ASSEMBLIES SHOWN SHOULD BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.

   2.2 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGNS AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.

   2.3 BRACING ON ALL SIGN ASSEMBLIES SHOWN SHALL CONSIST OF CHANNEL POST OF A WEIGHT NOT LESS THAN 2 LBS. PER LINEAR FOOT.

      2.3.1 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE WEB OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE FLANGE OF THE BRACING.

      2.3.2 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1¾" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO (2) OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

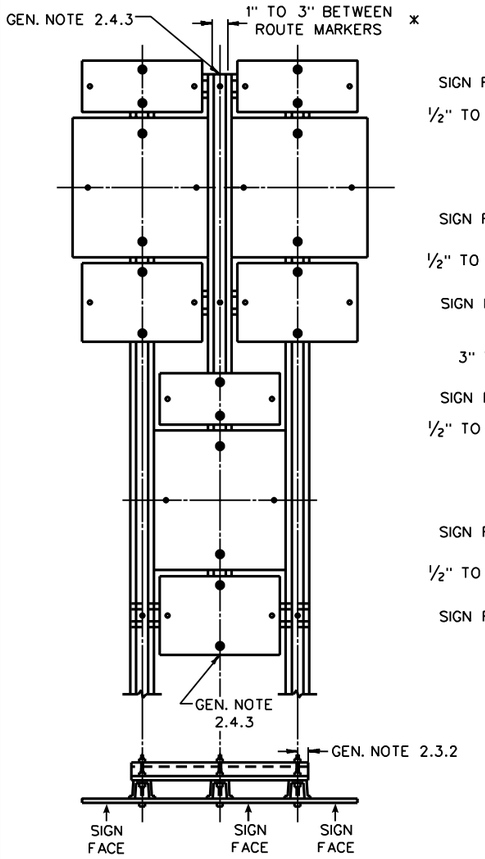
   2.4 POST SUPPORT

      2.4.1 ON ALL GUIDE SIGN ASSEMBLIES THE FLANGE OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE BACK OF THE SIGNS.

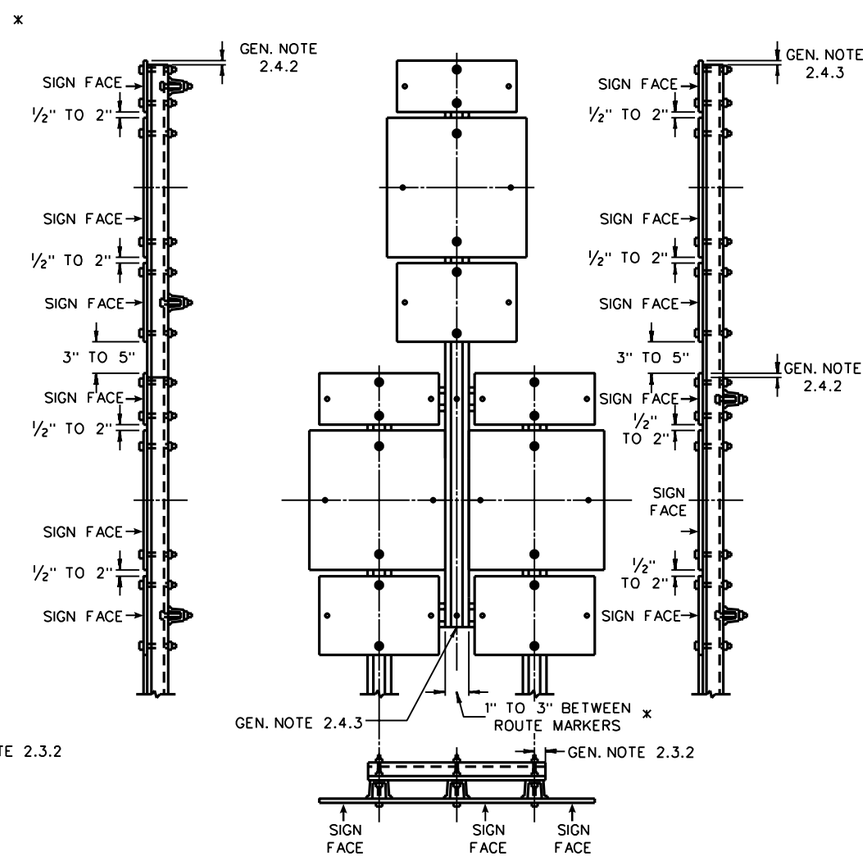
      2.4.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

      2.4.3 THE ENDS OF THE CENTER POST, AS SHOWN IN ARRANGEMENTS GSA-4A AND GSA-4B, SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGNS MOUNTED ON IT, NOR SHALL IT EXTEND BEYOND THE EDGE OF THE SECOND BRACE TO WHICH IT IS MOUNTED.

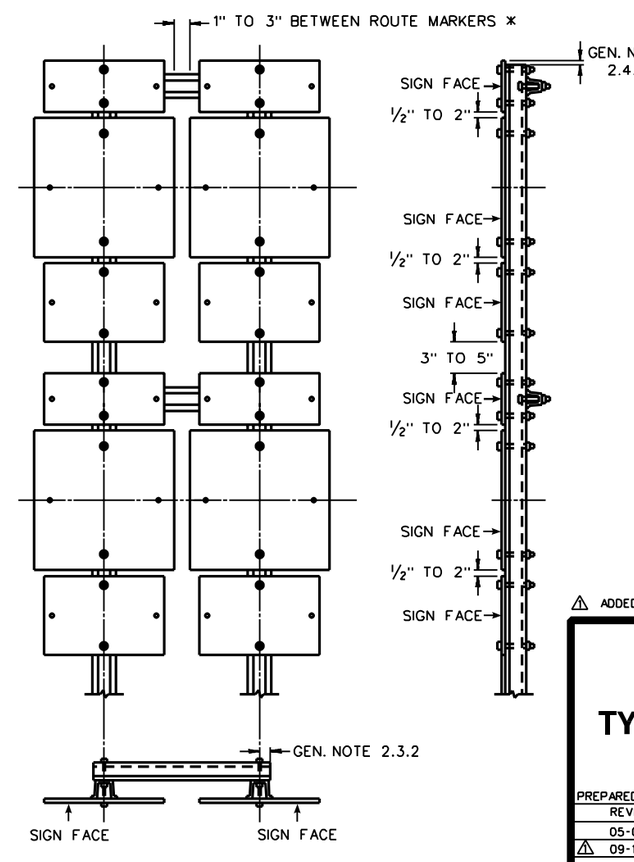
* WHEN ROUTE MARKERS OF VARYING WIDTHS ARE USED, THE SPACING SHALL BE BETWEEN THE TWO WIDEST ROUTE MARKERS.



GSA-4A



GSA-4B



GSA-5

⚠ ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

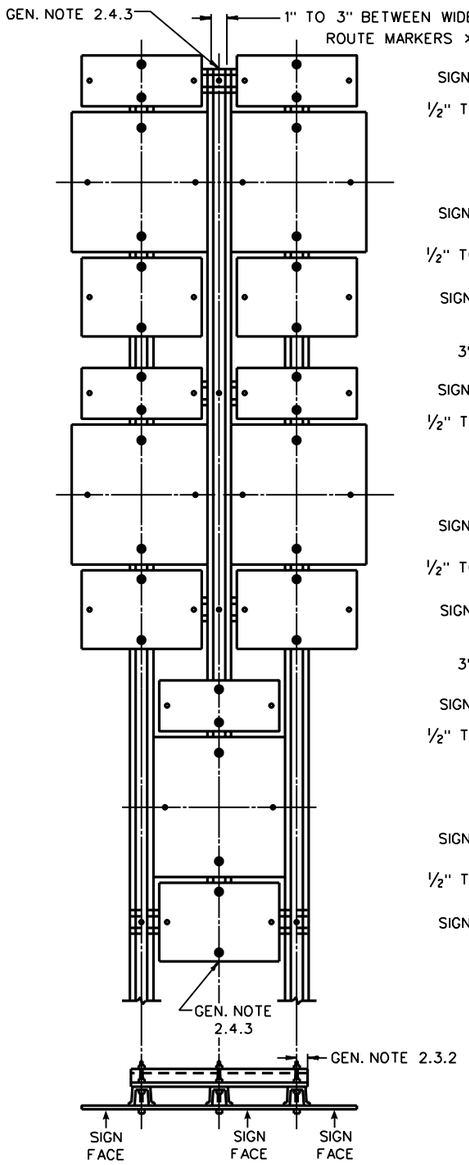
STANDARD DETAIL
TYPICAL GUIDE SIGN ARRANGEMENTS AND MOUNTINGS

PREPARED: 10/01/69

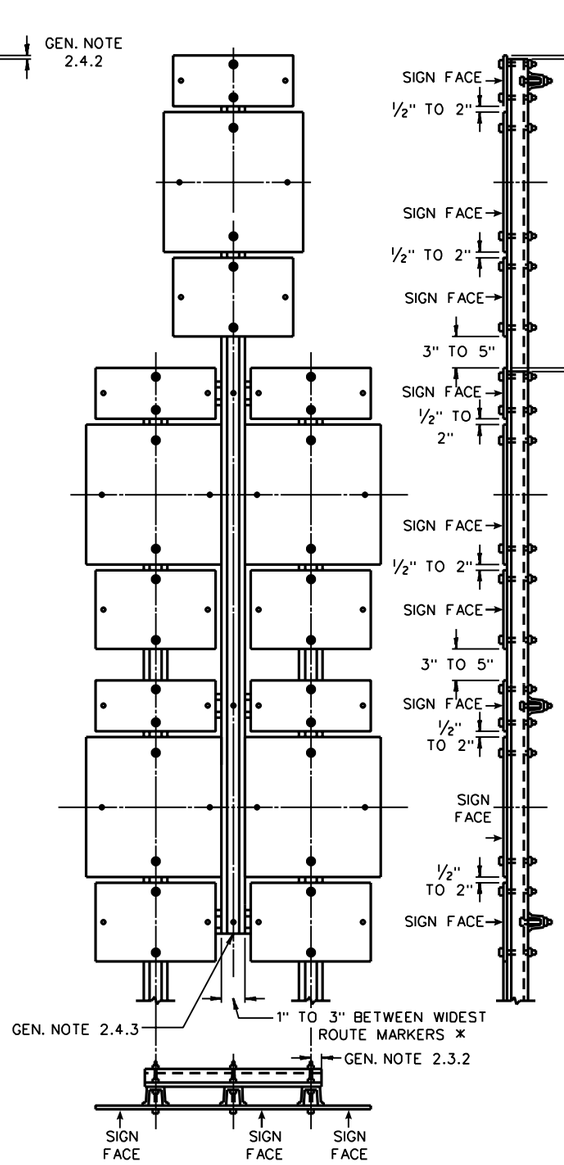
REVISIONS
05-01-70
⚠ 09-13-93

STANDARD SHEET TP4-1A

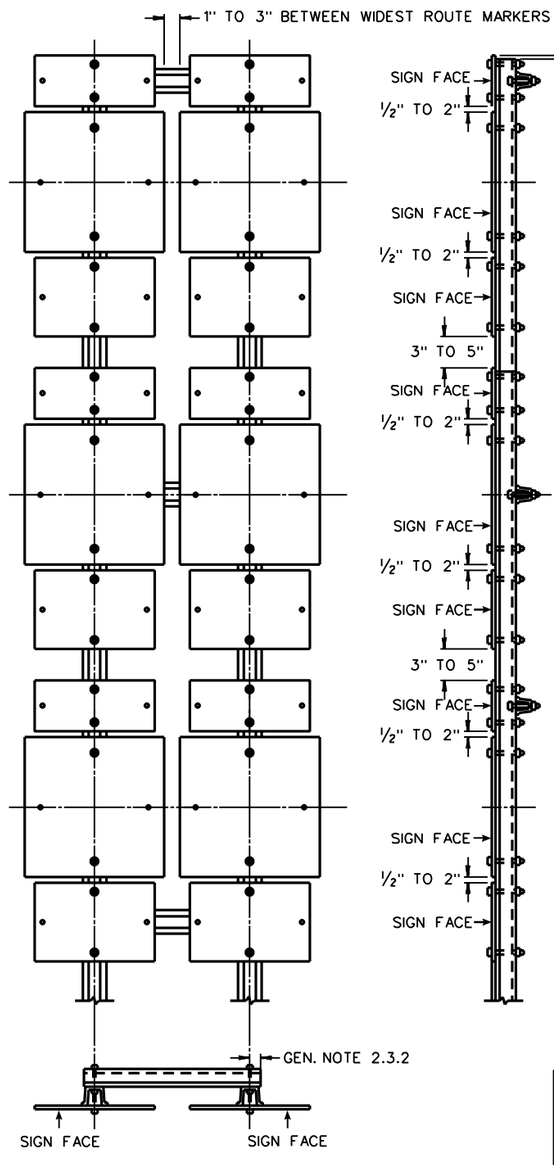
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



GSA-6A



GSA-6B



GSA-7

GENERAL NOTES

1. GUIDE SIGN ASSEMBLY ARRANGEMENTS.

   1.1 ALL GUIDE SIGN ASSEMBLIES SHOWN ON THIS SHEET ARE TYPICAL ASSEMBLIES CONSISTING OF THREE (3) OR MORE GUIDE SIGNS.

   1.2 GUIDE SIGN ASSEMBLY ARRANGEMENTS SHOWN ON THIS SHEET ARE TYPICAL. THE ARRANGEMENTS SHOWN SHALL BE USED FOR ALL GUIDE SIGN ASSEMBLIES, EXCEPT WHERE CONDITIONS DO NOT WARRANT. ANY DEVIATIONS TO THE SHOWN ARRANGEMENTS SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.

2. GUIDE SIGN ASSEMBLY MOUNTING DETAILS.

   2.1 GUIDE SIGN ASSEMBLIES SHOWN SHOULD BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.

   2.2 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGNS AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.

   2.3 BRACING ON SIGN ASSEMBLIES SHOWN SHALL CONSIST OF CHANNEL POST OF A WEIGHT NOT LESS THAN 2 LBS. PER LINEAR FOOT.

      2.3.1 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE WEB OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE FLANGE OF THE BRACING

      2.3.2 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1¾" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO (2) OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

   2.4 POST SUPPORT

      2.4.1 ON ALL GUIDE SIGN ASSEMBLIES THE FLANGE OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE BACK OF THE SIGNS.

      2.4.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

      2.4.3 THE ENDS OF THE CENTER POST, AS SHOWN IN ARRANGEMENTS GSA-6A AND GSA-6B, SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGNS MOUNTED ON IT NOR SHALL IT EXTEND BEYOND THE EDGE OF THE THIRD BRACE TO WHICH IT IS MOUNTED.

* WHEN ROUTE MARKERS OF VARYING WIDTHS ARE USED, THE SPACING SHALL BE BETWEEN THE TWO WIDEST ROUTE MARKERS.

⚠2 ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

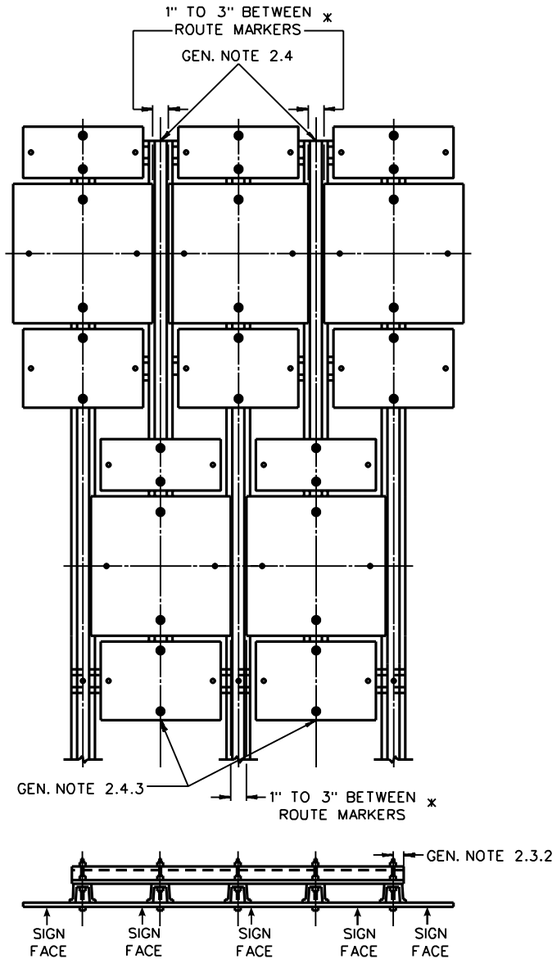
STANDARD DETAIL
TYPICAL GUIDE SIGN ARRANGEMENTS AND MOUNTINGS

PREPARED: 10/01/69

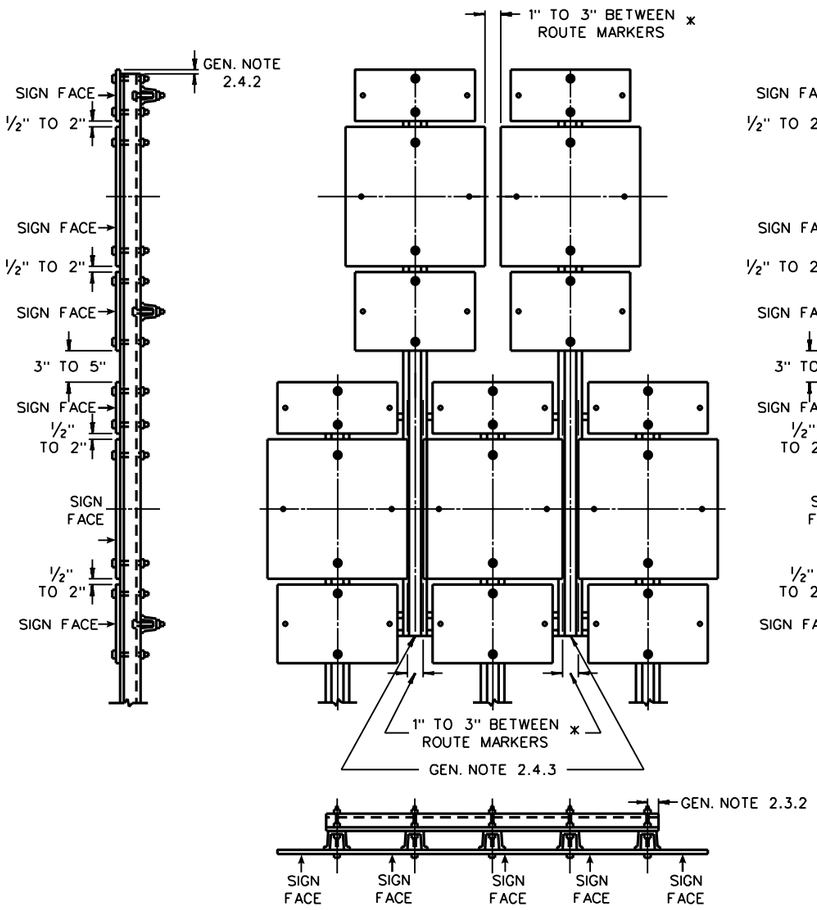
REVISIONS
05-01-70
⚠2 09-13-93

STANDARD SHEET TP4-1B

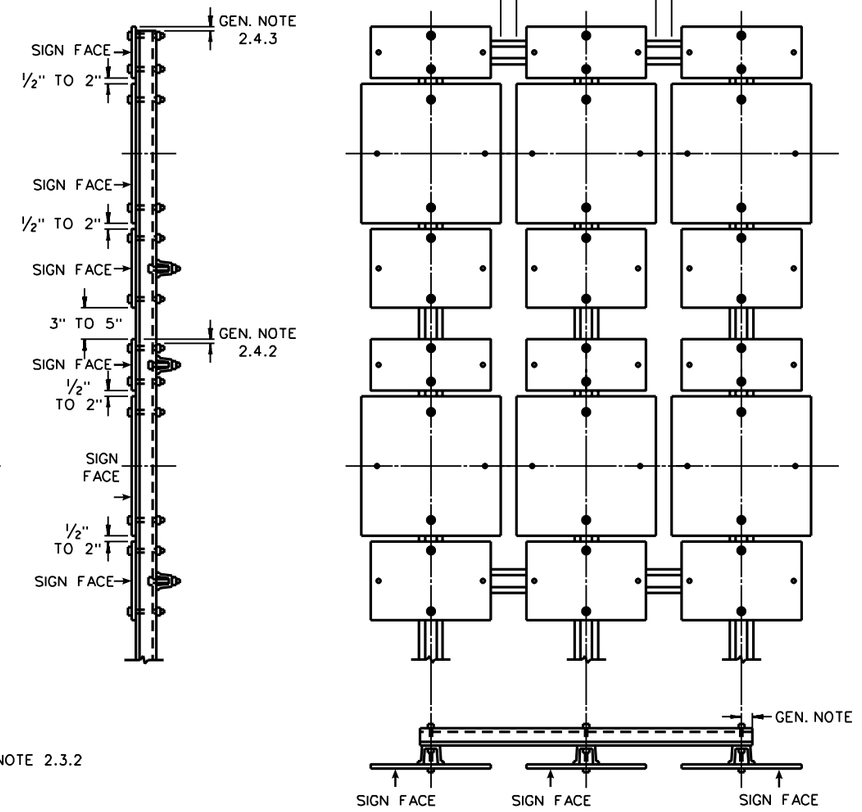
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



GSA-8A



GSA-8B



GSA-9

GENERAL NOTES

1. GUIDE SIGN ASSEMBLY ARRANGEMENTS.

   1.1 ALL GUIDE SIGN ASSEMBLIES SHOWN ON THIS SHEET ARE TYPICAL ASSEMBLIES CONSISTING OF THREE (3) OR MORE GUIDE SIGNS.

   1.2 GUIDE SIGN ASSEMBLY ARRANGEMENTS SHOWN ON THIS SHEET ARE TYPICAL. THE ARRANGEMENTS SHOWN SHOULD BE USED FOR ALL GUIDE SIGN ASSEMBLIES, EXCEPT WHERE CONDITIONS DO NOT WARRANT. ANY DEVIATIONS TO THE SHOWN ARRANGEMENTS SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO THE INSTALLATION.

2. GUIDE SIGN ASSEMBLY MOUNTING DETAILS. ⚠

   2.1 GUIDE SIGN ASSEMBLIES SHOWN SHOULD BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.

   2.2 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGNS AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.

   2.3 BRACING ON ALL SIGN ASSEMBLIES SHOWN SHALL CONSIST OF CHANNEL POST OF A WEIGHT NOT LESS THAN 2 LBS. PER LINEAR FOOT.

   2.3.1 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE WEB OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE FLANGE OF THE BRACING.

   2.3.2 ON ALL GUIDE SIGN ASSEMBLIES REQUIRING BRACING, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1¾" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO THE EDGE OF THE SIGN. THE TWO (2) OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

   2.4 POST SUPPORT

   2.4.1 ON ALL GUIDE SIGN ASSEMBLIES THE FLANGE OF THE POST SUPPORT SHALL BE IN CONTACT WITH THE BACK OF THE SIGNS.

   2.4.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 2" OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

   2.4.3 THE ENDS OF THE CENTER POST, AS SHOWN IN ARRANGEMENTS GSA-8A AND GSA-8B, SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGNS MOUNTED ON IT, NOR SHALL IT EXTEND BEYOND THE EDGE OF THE SECOND BRACE TO WHICH IT IS MOUNTED.

* WHEN ROUTE MARKERS OF VARYING WIDTHS ARE USED, THE SPACING SHALL BE BETWEEN THE TWO WIDEST ROUTE MARKERS.

⚠ ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
TYPICAL GUIDE SIGN ARRANGEMENTS AND MOUNTINGS

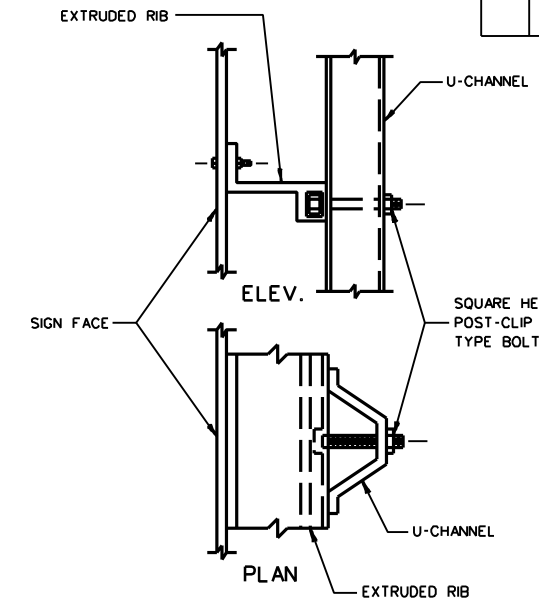
PREPARED: 10/01/69

REVISIONS
05-01-70
⚠ 09-13-93

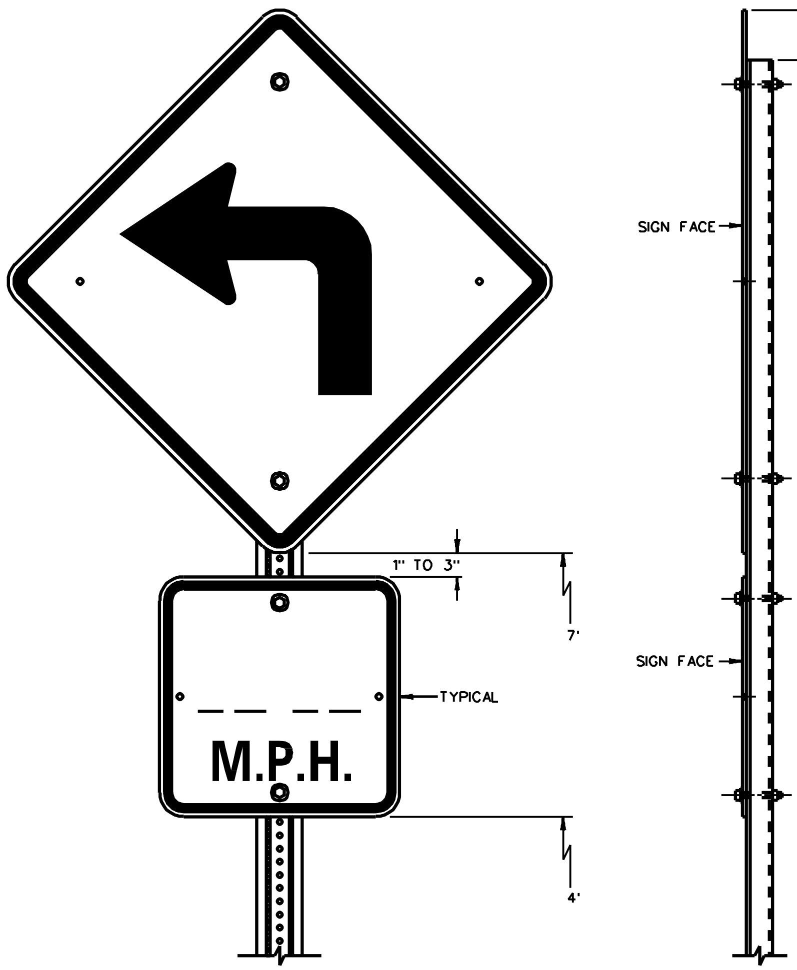
STANDARD SHEET TP4-1C

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

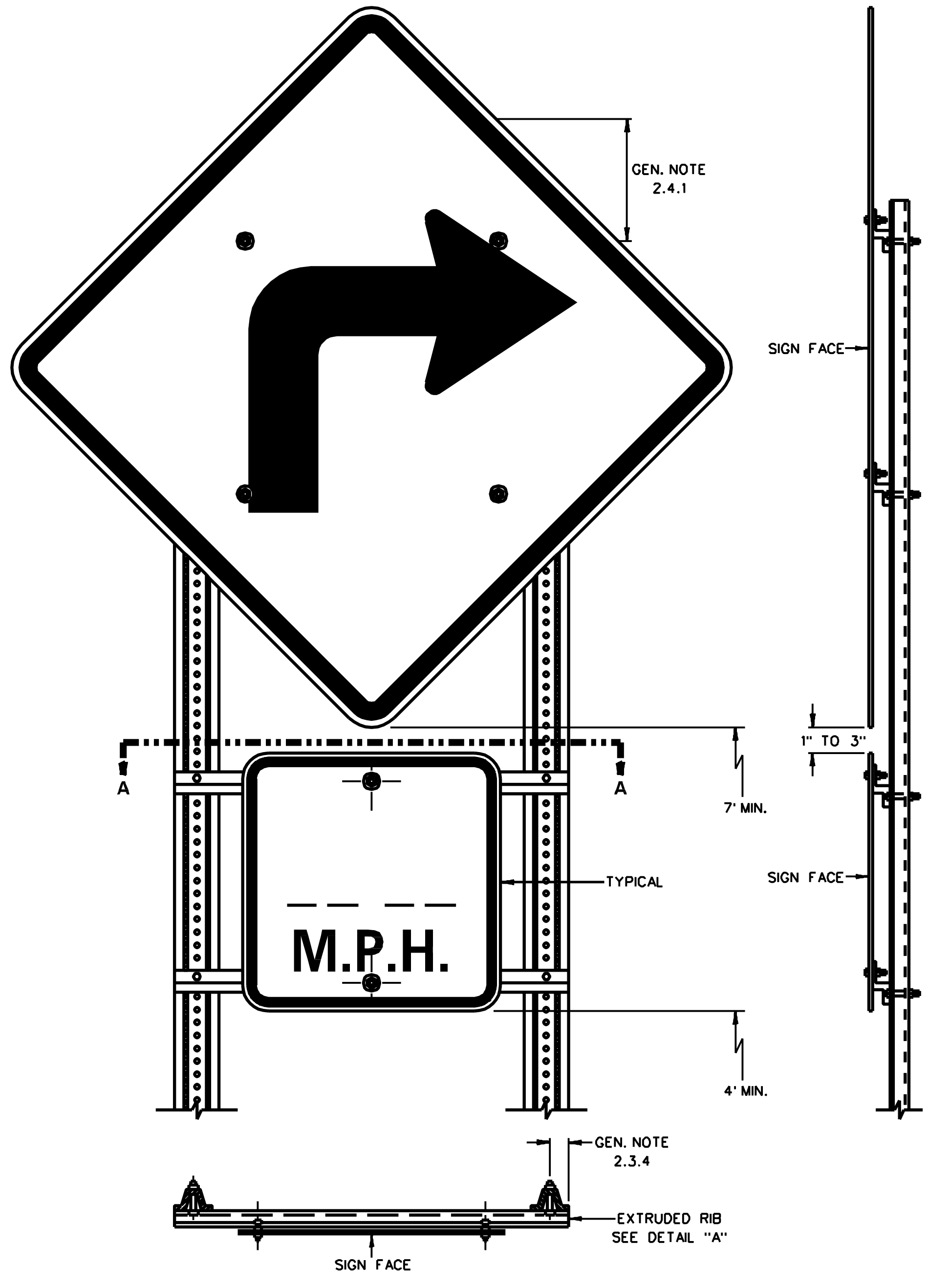
DETAIL "A"



TYPICAL U-CHANNEL AND EXTRUDED RIB ASSEMBLY



TYPICAL SINGLE-POST MOUNTING FOR WARNING SIGN ASSEMBLY



TYPICAL TWO-POST MOUNTING FOR WARNING SIGNS

GENERAL NOTES

1. WARNING SIGN ASSEMBLY ARRANGEMENT

1.1 ALL WARNING SIGN ASSEMBLIES SHOWN ON THIS SHEET ARE FOR ASSEMBLIES CONSISTING OF ONLY TWO (2) SIGNS.

1.2 WARNING SIGN ASSEMBLY ARRANGEMENTS SHOWN ON THIS SHEET ARE TYPICAL. THE ARRANGEMENTS SHOWN SHOULD BE USED FOR ALL WARNING SIGN ASSEMBLIES CONSISTING OF TWO (2) SIGNS, EXCEPT WHERE CONDITIONS DO NOT WARRANT. ANY DEVIATIONS TO THE SHOWN ARRANGEMENTS SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.

2. WARNING SIGN ASSEMBLY MOUNTING DETAILS

2.1 WARNING SIGN ASSEMBLIES SHOWN SHOULD BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS (4) AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.

2.2 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGNS AND SIGN ASSEMBLY WILL BE 5/16" DIAMETER.

2.3 BRACING ON THE TYPICAL TWO-POST MOUNTING WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A.

2.3.1 ON ALL BRACED SIGNS, THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.

2.3.2 ON ALL BRACED SIGNS, THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE FLANGE OF THE POST SUPPORT.

2.3.3 ON ALL BRACED DIAMOND SHAPED SIGNS, IN TYPICAL ASSEMBLY SHOWN, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 1-3/4" FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 1" TO ANY EDGE OF THE SIGN. THE TWO (2) OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

2.3.4 ON ALL BRACED SQUARE SHAPED SIGNS, ON THE WARNING SIGN ASSEMBLY SHOWN, THE END OF THE BRACE SHALL BE FLUSH WITH THE OUTER EDGE OF THE POST SUPPORT FLANGE.

2.3.5 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 3" (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.

2.4 POST SUPPORT

2.4.1 THE TOP OF THE POST SUPPORTS SHALL BE NO CLOSER THAN 1" TO THE EDGE OF THE DIAMOND SIGN.

(2) ADDITION OF EXTRUDED RIB
(4) ADDED TP3-1 REFERENCE AND MIN. HEIGHTS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
TYPICAL WARNING SIGN ASSEMBLY ARRANGEMENTS AND MOUNTINGS

PREPARED: 10/01/69

REVISIONS
(1) 05-01-70
(2) 12-27-73
(3) 06-01-76
(4) 09-13-93

STANDARD SHEET TP4-2

CATALOG:dl stando FILENAME:tp42.dgn DATE:03/29/93 TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
WV							

GENERAL NOTES

1. HAZARD MARKERS AND DELINEATION ARE DETERMINED BY THE WIDTH OF THE PAVED ROADWAY ON THE BRIDGE.

   1.1 BRIDGES WITH STRAIGHT ROADWAY APPROACHES: USE ACTUAL PAVED ROADWAY WIDTH ON BRIDGE.

   1.2 BRIDGES WITH CURVED ROADWAY APPROACHES: USE PAVED ROADWAY WIDTH ON BRIDGE THAT IS USED BY VEHICLES (HEREBY DESIGNATED "EQUIVALENT" WIDTH).

   THE "EQUIVALENT" WIDTH WILL EITHER BE EQUAL TO OR LESS THAN THE ACTUAL BRIDGE ROADWAY WIDTH, BUT WILL NEVER EXCEED THE ACTUAL ROADWAY WIDTH OF THE BRIDGE. THE "EQUIVALENT" WIDTH IS DETERMINED BY FIELD OBSERVATION SURVEY.

2. STANDARD DRAWINGS

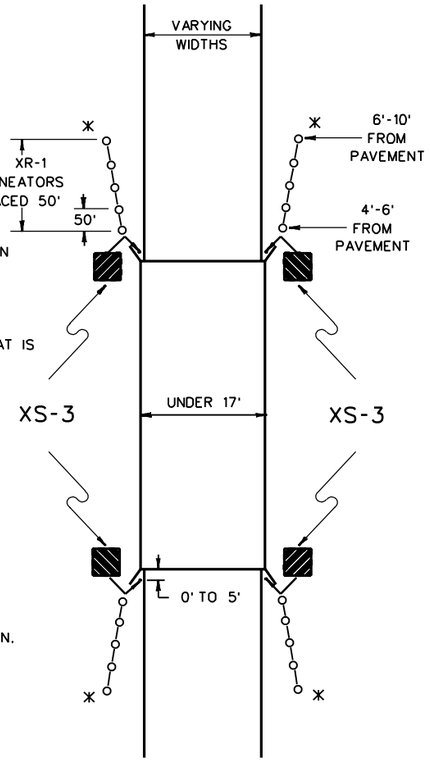
   2.1 DRAWING TO BE USED: SEE TABLE BELOW

   2.2 HAZARD MARKER PLACEMENT DETAIL: THIS DRAWING SHOWS THE RECOMMENDED HORIZONTAL PLACEMENT OF BOTH XS-2 AND XS-3 HAZARD MARKERS. VERTICAL PLACEMENT SHALL BE 1.2m FROM BOTTOM OF HAZARD MARKER TO RIGHT EDGE PAVEMENT ELEVATION.

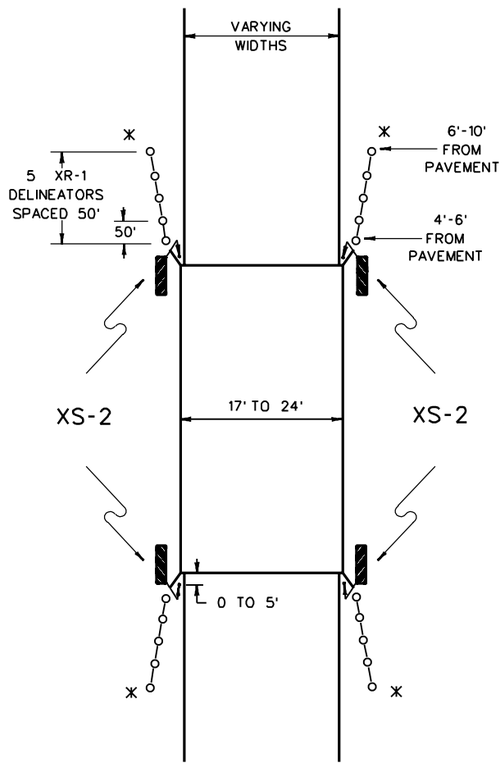
   IF A SEPERATE POST IS UNFEASIBLE TO ERECT AS SHOWN, THEN AND ONLY THEN MAY THE HAZARD MARKER BE CONSIDERED TO BE PLACED ON THE BRIDGE STRUCTURE.

   2.3 DELINEATORS SHALL BE PLACED IN AN ALIGNMENT IN ACCORDANCE WITH DRAWINGS AS SHOWN. THE DELINEATOR MOUNTING DETAILS ARE SHOWN ON STANDARD DETAIL SHEETS TE11-1 AND TE11-2.

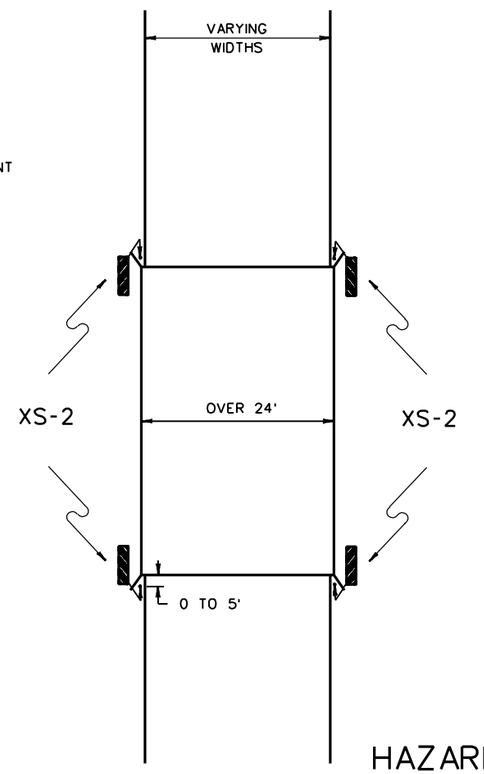
DRAWING TO BE USED		
ROADWAY WIDTH	EQUIVALENT WIDTH	DRAWING
VARIES	LESS THAN 17	B - 1
VARIES	17 TO 24	B - 2
VARIES	GREATER THAN 24	B - 3
GREATER THAN 24	17 TO 24	B - 2



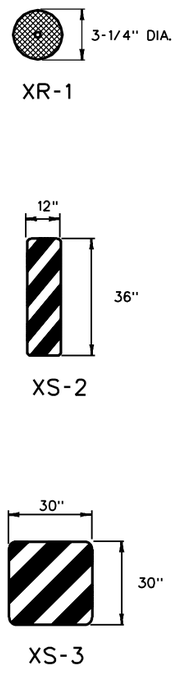
B-1



B-2



B-3



HAZARD MARKER DETAILS

* — WHERE APPROACH GUARDRAIL IS PRESENT, XR-1 DELINEATORS SHALL BE PLACED IN THE GUARDRAIL LINE.

HAZARD MARKER PLACEMENT DETAILS

⚠ DELETED SIGNATURE BLOCK
⚠ REV. NOTE 2, ADDED DWG. TABLE, GR
⚠ DELETED OLD NOTE 2.1, SUBSTITUTED DRAWING TABLE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

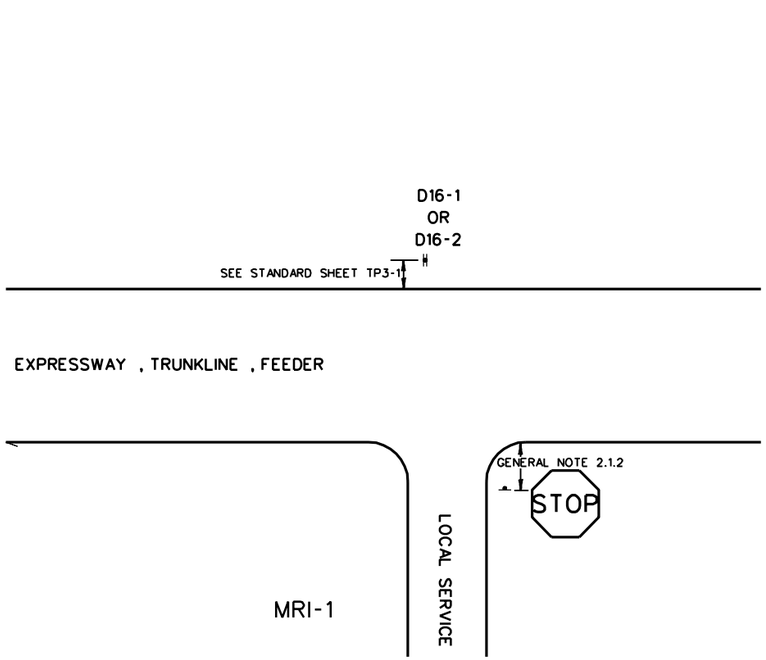
TYPICAL HAZARD MARKER AND DELINEATOR LAYOUT FOR BRIDGES AND UNDERPASSES

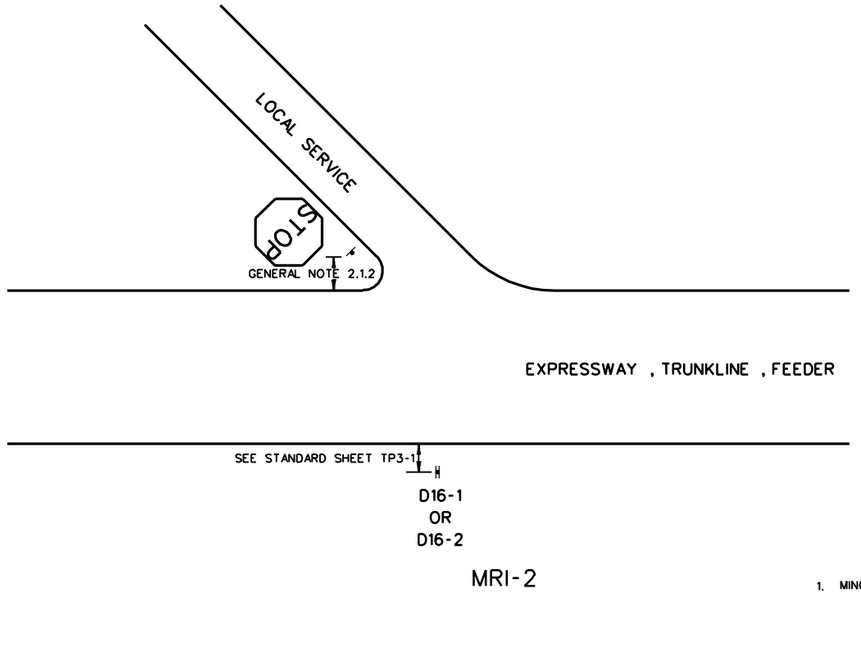
PREPARED: 10/01/69

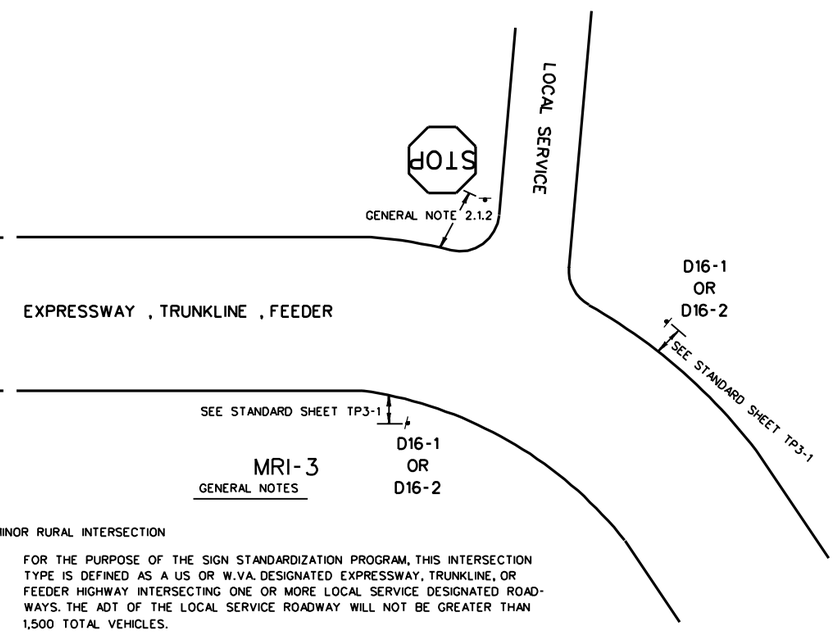
REVISIONS
05/01/70
⚠ 11/03/76
⚠ 04/30/92
⚠ 01/15/93

STANDARD SHEET TP5-2

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS







GENERAL NOTES

1. MINOR RURAL INTERSECTION

   FOR THE PURPOSE OF THE SIGN STANDARDIZATION PROGRAM, THIS INTERSECTION TYPE IS DEFINED AS A US OR W.VA. DESIGNATED EXPRESSWAY, TRUNKLINE, OR FEEDER HIGHWAY INTERSECTING ONE OR MORE LOCAL SERVICE DESIGNATED ROADWAYS. THE ADT OF THE LOCAL SERVICE ROADWAY WILL NOT BE GREATER THAN 1,500 TOTAL VEHICLES.

2. PLACEMENT OF SIGNS

   2.1 STOP SIGNS

   2.1.1 STOP SIGNS SHALL BE SITUATED IN SUCH A MANNER THAT THE SIGN MESSAGE SHALL NOT BE VISIBLE FROM THE EXPRESSWAY, TRUNKLINE,OR FEEDER HIGHWAY.

   2.1.2 STOP SIGNS SHALL BE LOCATED A RECOMMENDED DISTANCE OF NINE (9) FEET FROM THE PAVEMENT EDGE OF THE EXPRESSWAY, FEEDER, OR TRUNKLINE, BUT CAN BE A MAXIMUM OF FIFTY (50) FEET IF CONDITIONS MAKE SUCH NECESSARY.

   2.1.3 STOP SIGNS MAY BE LOCATED IN POSITIONS OTHER THAN THOSE SHOWN ON THE DRAWINGS, ONLY IF IT CAN BE ADEQUATELY JUSTIFIED.

   2.2 D16 SERIES SIGNING

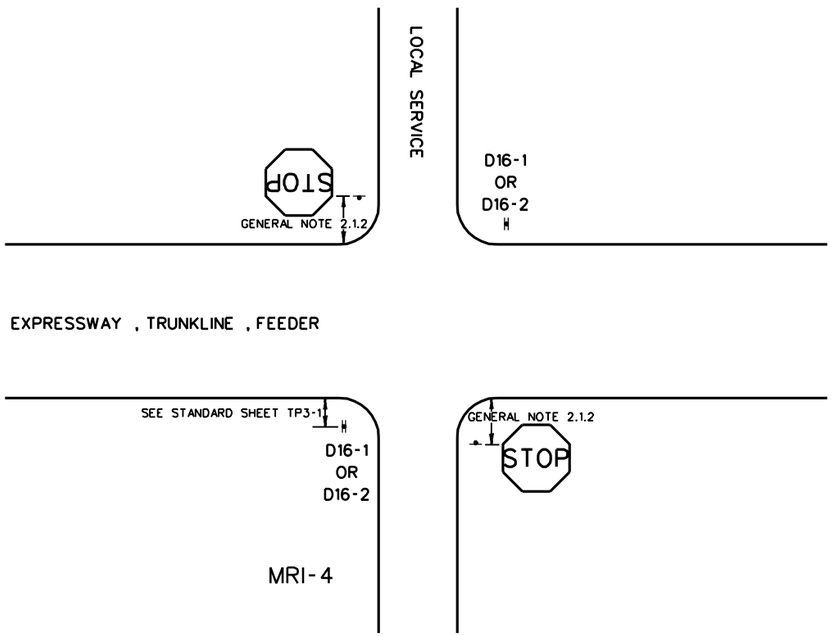
   2.2.1 D16 SERIES SIGNS SHALL BE SITUATED IN SUCH A MANNER THAT THE SIGN MESSAGE SHALL BE SEEN AS FAR IN ADVANCE AS POSSIBLE BY VEHICLES ON THE EXPRESSWAY, FEEDER, OR TRUNKLINE.

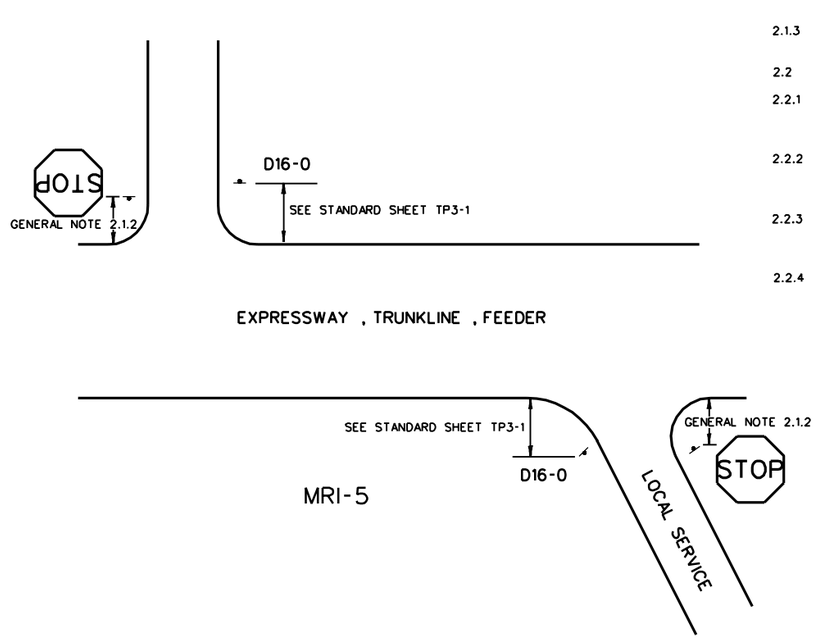
   2.2.2 D16 SERIES SIGNS THAT ARE MOUNTED BACK TO BACK ARE TO BE LOCATED IN POSITIONS SHOWN ON DRAWINGS, UNLESS OTHER POSITIONING CAN BE ADEQUATELY JUSTIFIED.

   2.2.3 DRAWINGS MRI-1, MRI-2, AND MRI-3 AND MRI-4 SHOW THE PROPER RELATIONSHIP OF THE LOCATION OF D16 SIGNS TO "STOP" SIGNS. ANY EXCEPTIONS WILL HAVE TO BE ADEQUATELY JUSTIFIED.

   2.2.4 DRAWING MRI-5 SHOWS THE PROPER PLACEMENT OF D16-0 SIGNS. D16-0 SIGNS ARE TO BE ERECTED ONLY IF D16-1 OR D16-2 SIGNS ARE NOT ERECTED AT THE INTERSECTION IN QUESTION.

⚠ DELETED OLD NOTES 1.2 AND 2.1





WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

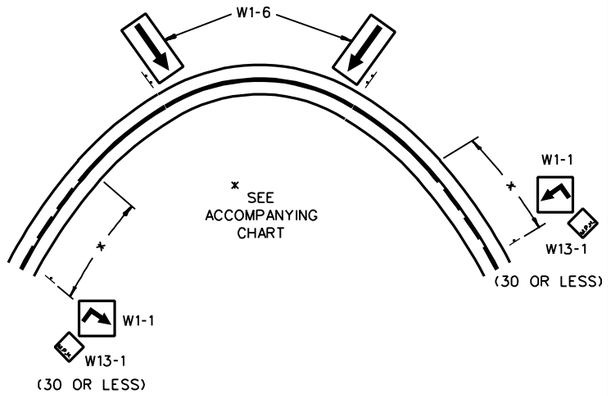
TYPICAL SIGNING LAYOUT FOR
MINOR RURAL INTERSECTIONS

PREPARED: 10/01/69

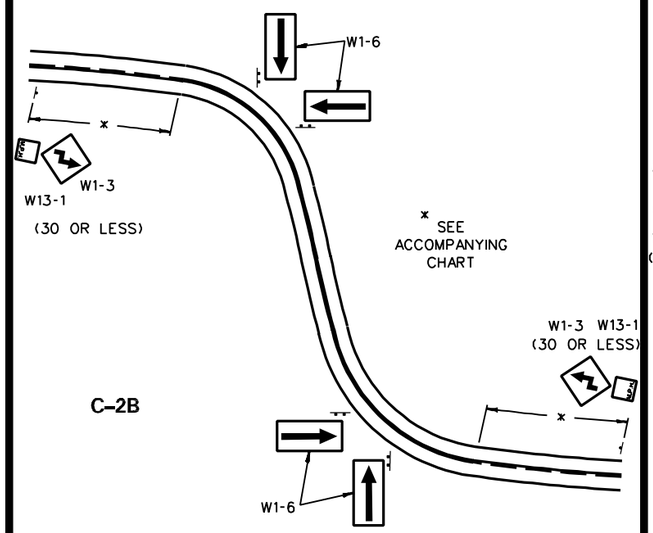
REVISIONS
5/1/70
⚠ 11/3/76

STANDARD SHEET TP5-3

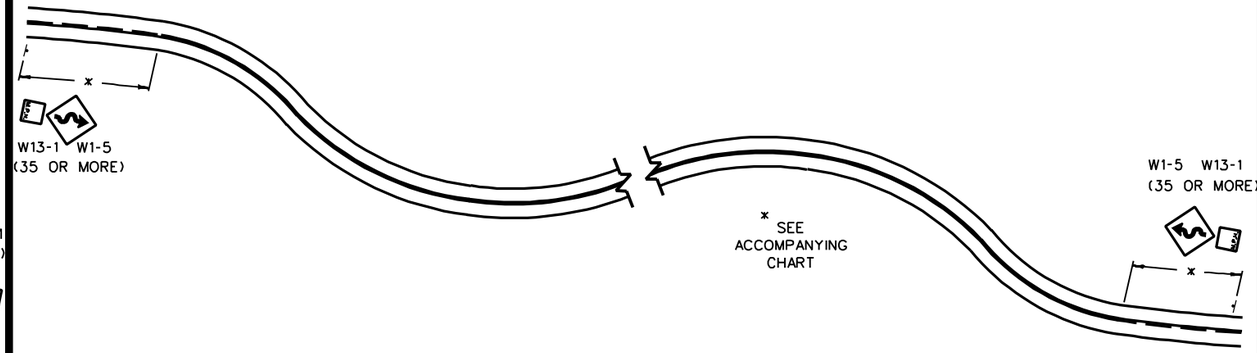
TRAFFIC ENGINEERING DIVISION



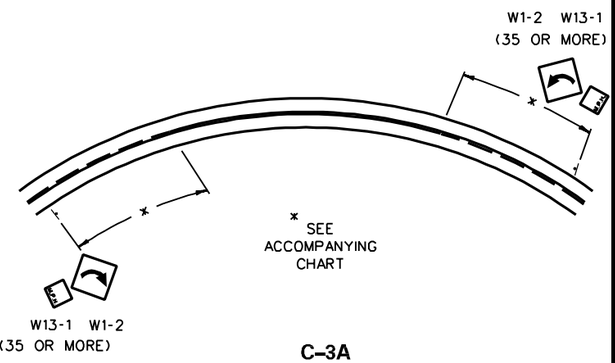
C–2A



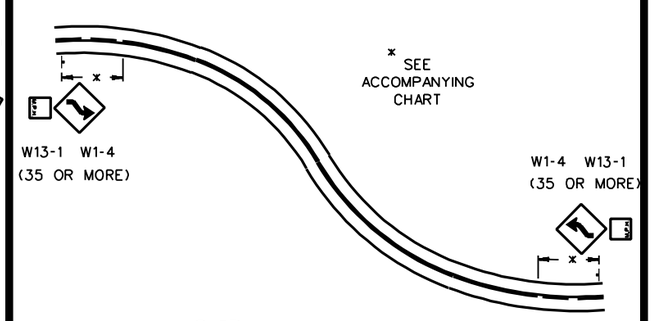
C–2B



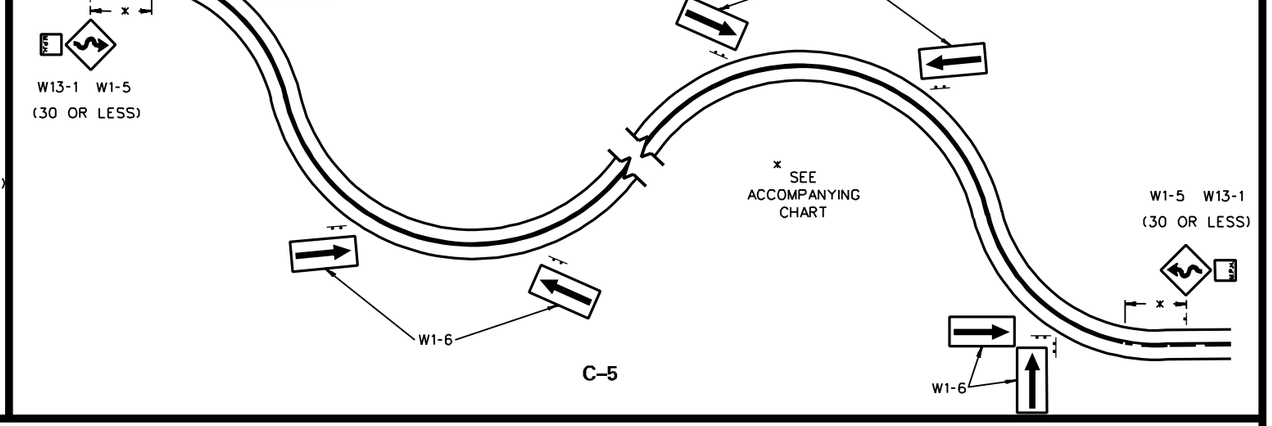
C–4



C–3A



C–3B



C–5

GENERAL NOTES

1. STANDARD DRAWING C-2A AND C-2B

   1.1 THIS STANDARD IS TO BE USED FOR ADVISORY CURVE SPEEDS OF 30 MPH OR LESS, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   1.2 THE SIGNS SHALL BE A STANDARD SIZE W1-1 OR W1-3, W1-6 AND W13-1, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   1.3 THE STANDARD W1-6 SIGNS SHALL BE ERECTED ON THE OUTSIDE OF A TURN IN LINE WITH, AND AT RIGHT ANGLES TO, APPROACHING TRAFFIC. NO EXACT SPECIFICATIONS CAN BE GIVEN FOR THE PLACEMENT OF THE W1-6. ITS LOCATION IS TO BE DETERMINED AT THE TIME THE SIGNS ARE TO BE ERECTED.

2. STANDARD DRAWING C-3A AND C-3B

   2.1 THIS STANDARD IS TO BE USED FOR ADVISORY CURVE SPEEDS OF 35 MPH OR MORE, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   2.2 THE SIGNS SHALL BE A STANDARD SIZE W1-2 OR W1-4 AND W13-1, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

3. STANDARD DRAWING C-4

   3.1 THIS STANDARD IS USED FOR A SERIES OF CURVES, 35 MPH OR MORE, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   3.2 THE SIGNS SHALL BE A STANDARD SIZE W1-2, W1-5 AND W13-1, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

4. STANDARD DRAWING C-5

   4.1 THIS STANDARD IS USED FOR A SERIES OF CURVES, 30 MPH OR LESS, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   4.2 THE SIGNS SHALL BE A STANDARD SIZE W1-1 OR W1-5, AND W1-6 AND W13-1, UNLESS SPECIFICALLY NOTED OTHERWISE IN THE SIGN PLANS.

   4.3 THE STANDARD W1-6 SIGNS SHOULD BE ERECTED ON THE OUTSIDE OF A TURN, IN LINE WITH, AND AT RIGHT ANGLES TO, APPROACHING TRAFFIC. NO EXACT SPECIFICATIONS CAN BE GIVEN FOR THE PLACEMENT OF THE W1-6. ITS LOCATION IS TO BE DETERMINED AT THE TIME THE SIGNS ARE TO BE ERECTED.

CHART FOR ADVISORY CURVE DRAWINGS

POSTED SPEED LIMIT (MPH)	ADVISORY SPEED (MPH)	DESIRABLE DISTANCE FROM START OF CURVE TO ADVISORY CURVE SIGN (FEET)
25	10	100
	15	100
	20	100
30	10	150
	15	125
	20	100
	25	100
35	10	200
	15	185
	20	175
	25	160
	30	150
40	10	275
	15	265
	20	250
	25	210
	30	175
	35	150

POSTED SPEED LIMIT (MPH)	ADVISORY SPEED (MPH)	DESIRABLE DISTANCE FROM START OF CURVE TO ADVISORY CURVE SIGN (FEET)
45	10	350
	15	325
	20	300
	25	275
	30	250
	35	225
	40	200
50	10	425
	15	415
	20	400
	25	375
	30	325
	35	285
	40	225
	45	200
55	10	500
	15	480
	20	475
	25	450
	30	400
	35	360
	40	300
	45	275
	50	250

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

△ DELETED SIGNATURE BLOCK
△ CHANGED CHART

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
TYPICAL LAYOUT FOR ADVISORY CURVE SIGNING

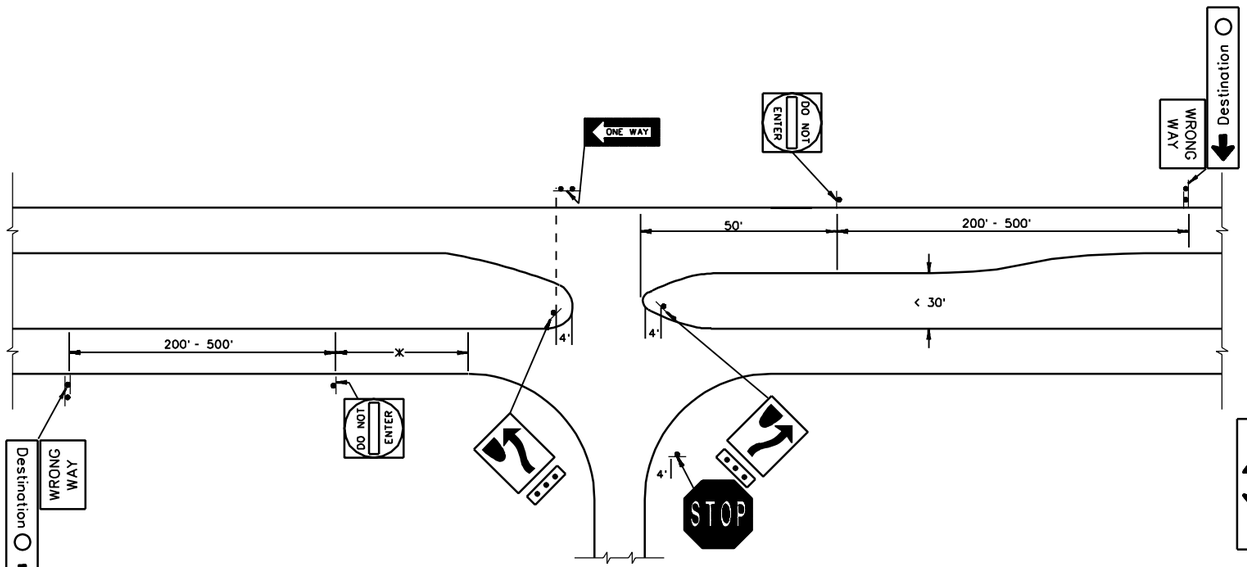
PREPARED: 10/01/69

REVISIONS
05-01-70
01-28-73
△ 11-03-76
△ 09-30-84

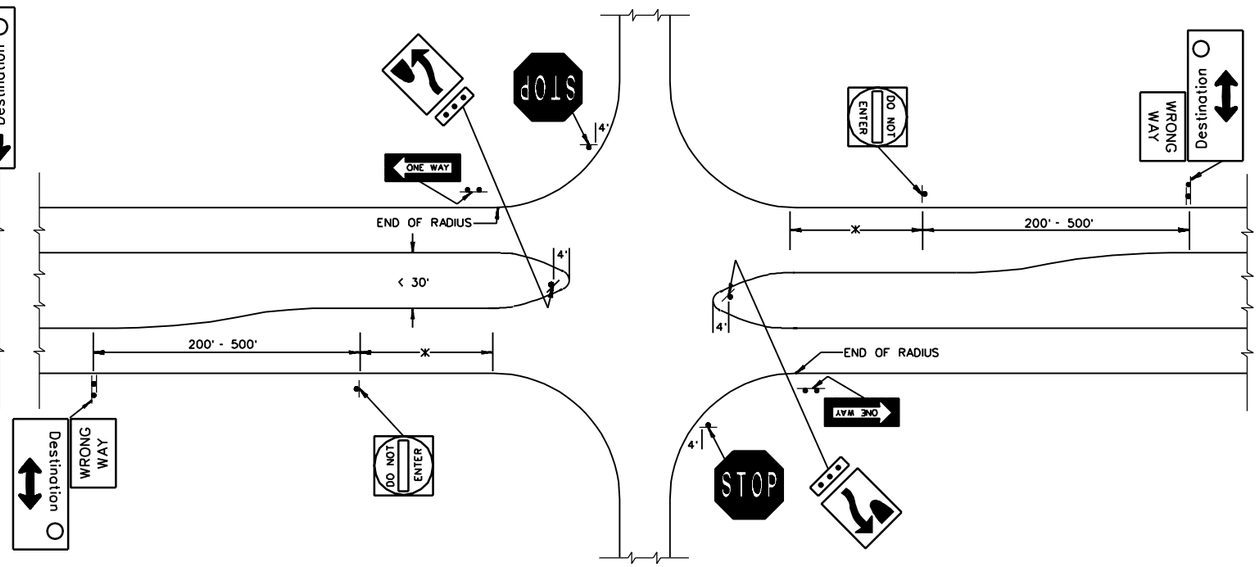
STANDARD SHEET TP5–4

CATALOG:dl standa FILENAME:tp54.dgn DATE:03/30/93 TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



DETAIL "A"



DETAIL "B"

SIGN NO.	SIZE	LOCATION
R1-1	36"x36"	See Detail A-B
R4-7 XR-3	24"x30" 15"x6"	See Detail A-B
R5-1a	36"x24"	200'-500'
R6-1L	48"x18"	See Detail A-B
R5-1	36"x36"	See Detail A-B

NOTE: ⚠2
ALL SIGNS ARE 6 FEET MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER.

X - 50' FROM END OF RADIUS

⚠1 COMPLETE REVISION DUE TO NEW U-CHANNEL RESTRICTIONS
⚠2 CHANGED CLEAR FROM 4' TO 6'

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

REGULATORY SIGN PLACEMENT
FOR DIVIDED HIGHWAYS

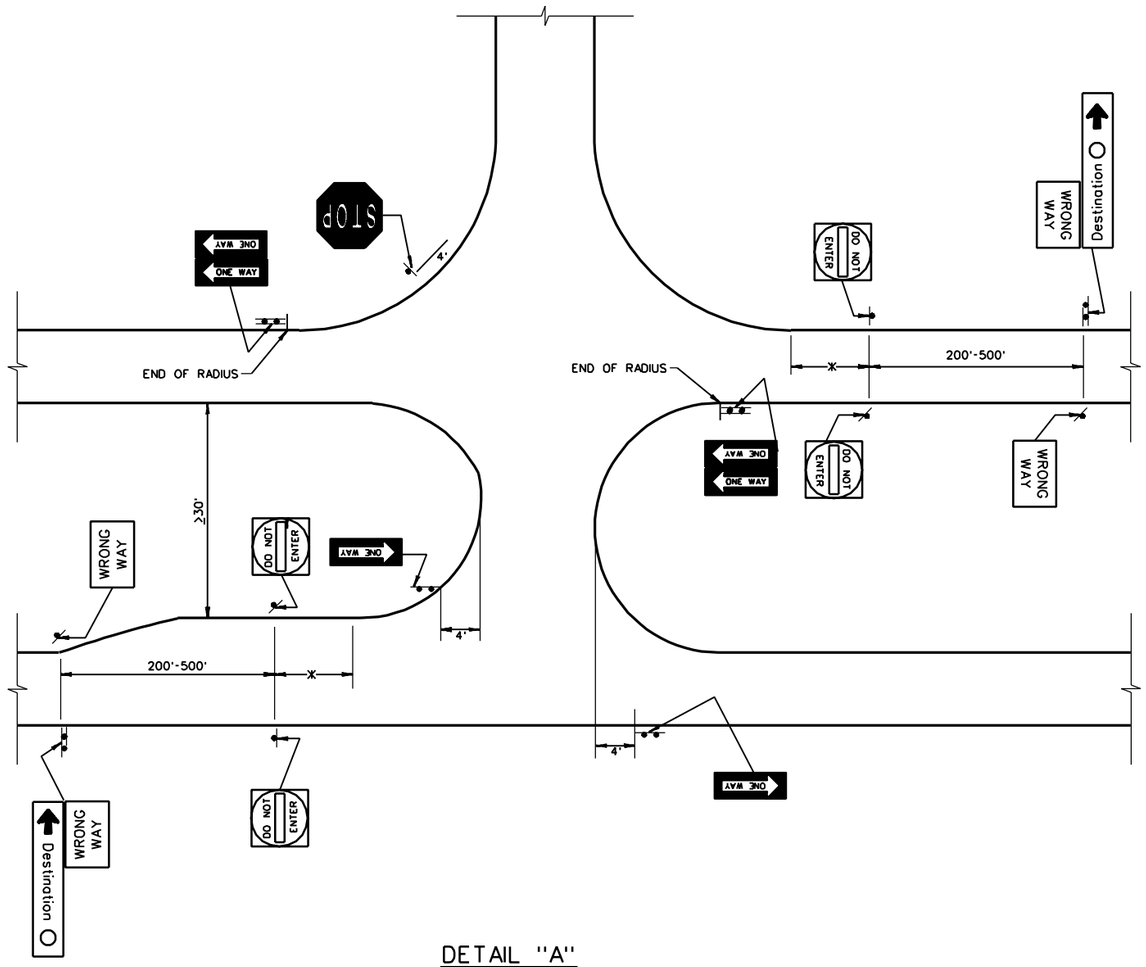
PREPARED: 01/08/70

REVISIONS
04-22-75
05-21-76
12-19-88
⚠1 04-23-92
⚠2 09-13-93

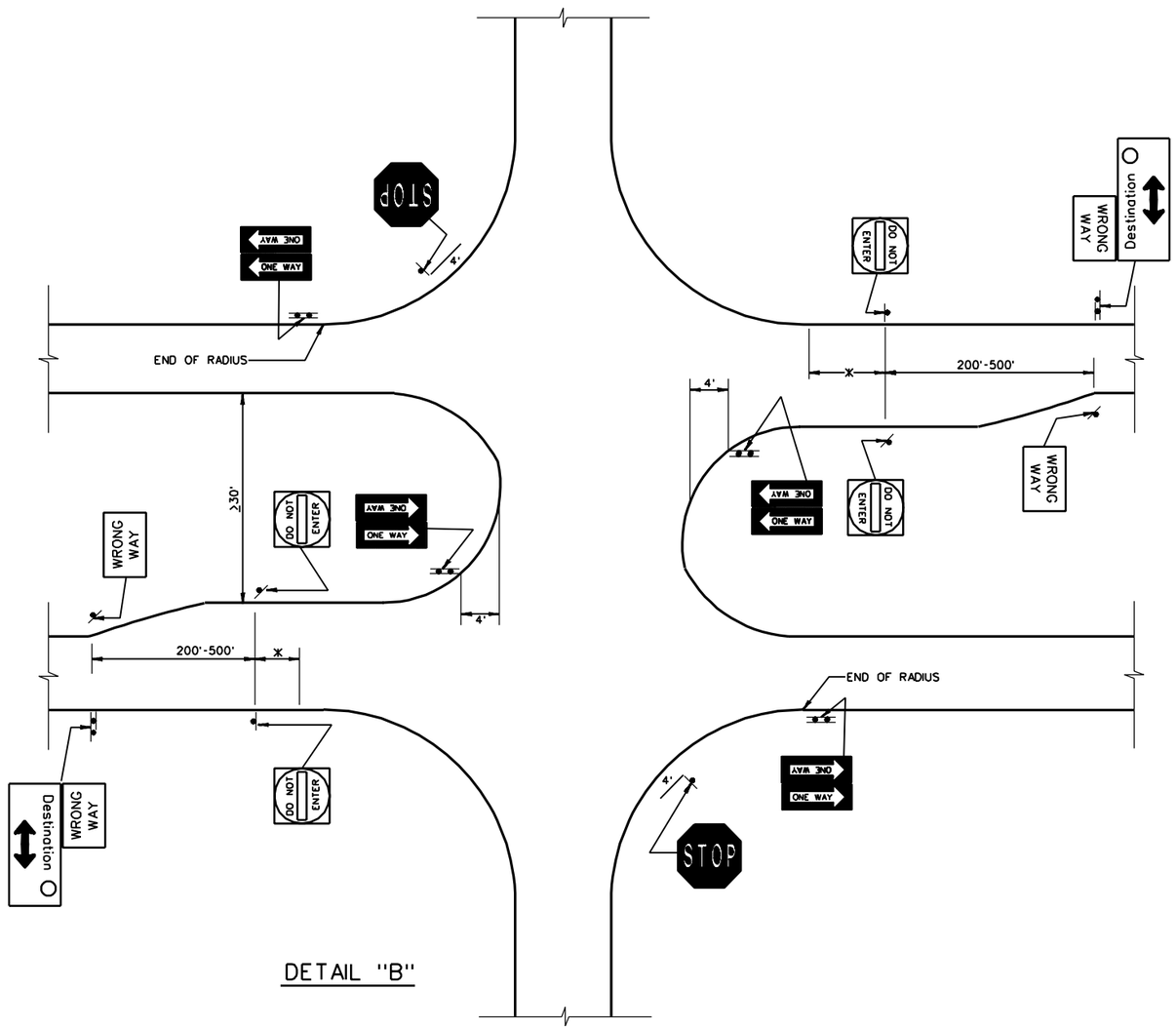
STANDARD SHEET TP5-6A

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



DETAIL "A"



DETAIL "B"

SIGN NO.	SIZE	LOCATION
R1-1	36"x36"	See Detail A-B
R5-1a	24"x36"	200'-500'
R6-1R	48"x18"	See Detail A-B
R6-1L	48"x18"	See Detail A-B
R5-1	36"x36"	See Detail A-B

NOTE: ⚠2
ALL SIGNS ARE 6 FEET MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER.

✳ - 50' FROM END OF RADIUS

⚠1 COMPLETE REVISION DUE TO NEW U-CHANNEL RESTRICTIONS
⚠2 CHANGED CLEAR FROM 4' TO 6'

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

REGULATORY SIGN PLACEMENT
FOR DIVIDED HIGHWAYS

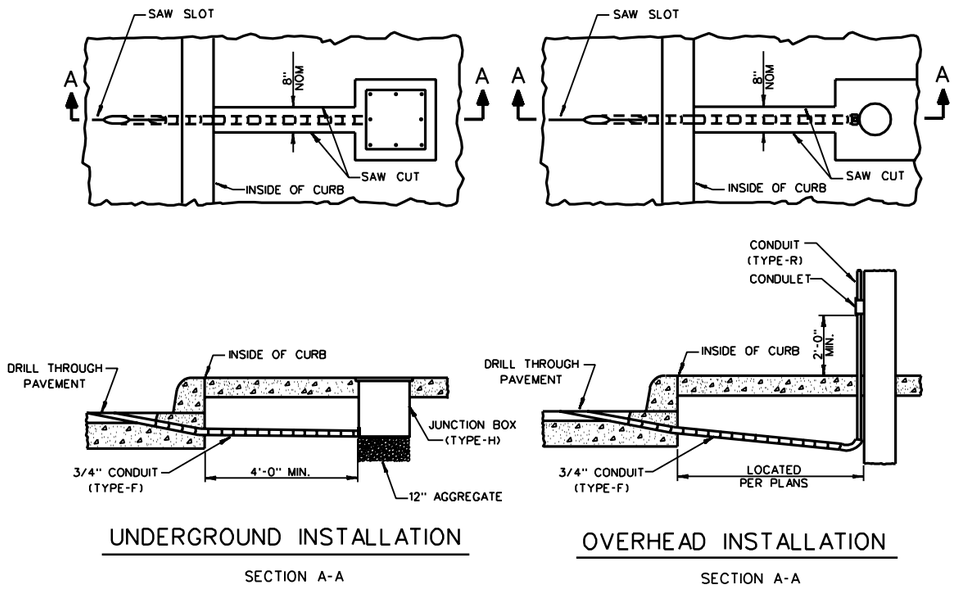
PREPARED: 01/08/70

REVISIONS
4-22-75
5-21-75
5-21-76
⚠1 4-23-92
⚠2 09-13-93

STANDARD SHEET TP5-6B

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



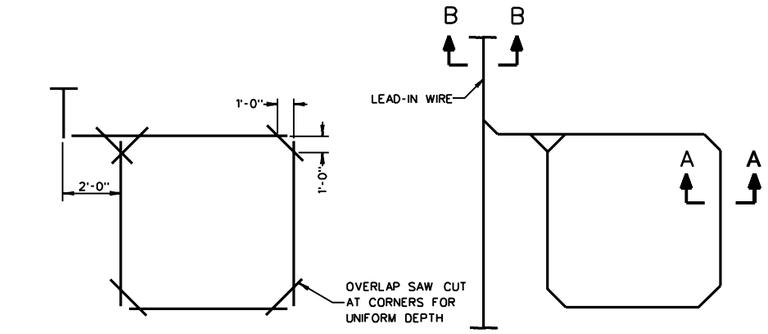
UNDERGROUND INSTALLATION

SECTION A-A

OVERHEAD INSTALLATION

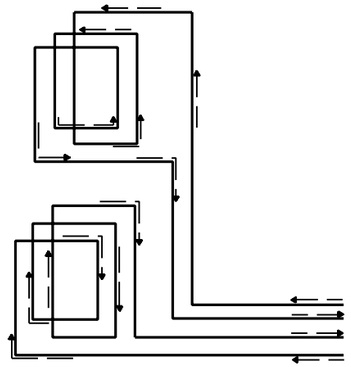
SECTION A-A

TYPICAL SECTION IN GUTTER AND SIDEWALK

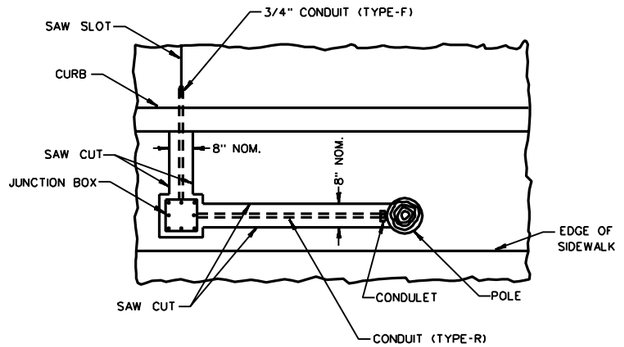


SAW CUT DIAGRAM

LOOP WIRE PLAN

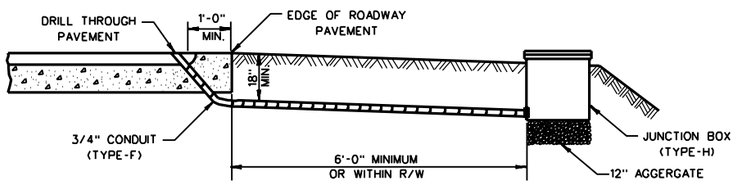


ADJACENT LOOP WINDING

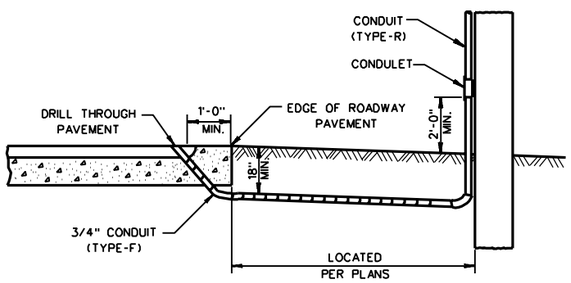


WHEN UNDERGROUND CONDUIT IS GREATER THAN 10' USE JUNCTION BOX

TYPICAL PLAN IN GUTTER AND SIDEWALK

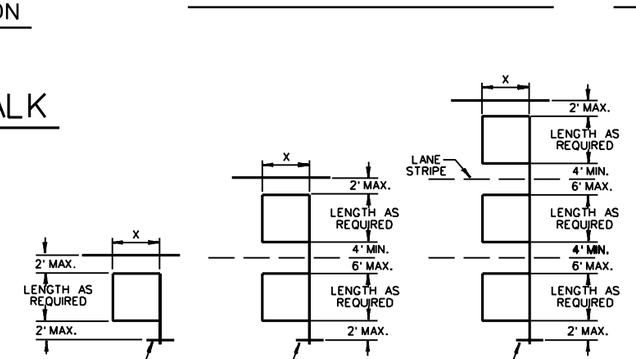


UNDERGROUND INSTALLATION



OVERHEAD INSTALLATION

TYPICAL SECTION IN BERM



ONE LANE COVERAGE

TWO LANE COVERAGE *

THREE LANE COVERAGE *

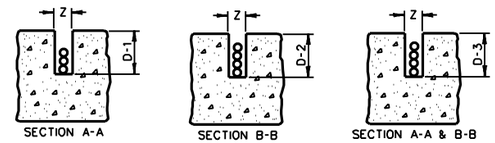
TYPICAL LANE COVERAGE DIAGRAM

*-SEE WINDING DETAIL ABOVE

GENERAL NOTES:

1. JUNCTION BOXES:
   WHEN TYPE H JUNCTION BOXES ARE SPECIFIED ON THE CONTRACT PLANS, THE COVER ELEVATION SHALL BE THE SAME AS THE EXISTING GRADE OR IMPROVED SHOULDER GRADE.
2. SAW SLOT AND LOOP WIRE:
   A. THE "Z" DIMENSION SHALL BE LARGE ENOUGH TO ACCOMODATE THE LOOP WIRE WITHOUT CHAFING THE INSULATION WITH A MAXIMUM DIMENSION OF 3/16".
   B. ALL CORNERS OF THE LOOP SHALL BE CUT AT A 45° ANGLE AND HAVE A MINIMUM DIAGONAL LENGTH OF 16".
   C. ALL WIRE SHALL BE PUSHED INTO THE SAW CUT WITH WOOD STICKS TO INSURE THE INSULATION IS NOT SCARRED. THE USE OF METAL TOOLS IS NOT PERMITTED.
   D. THE NUMBER OF TURNS OF LOOP WIRE IS SPECIFIED ON THE CONTRACT PLANS FOR EACH INDIVIDUAL LOOP.
   E. THE "X" DIMENSION SHALL BE 6 FOOT UNLESS OTHERWISE SPECIFIED ON THE CONTRACT PLANS.

DEPTH	NO. OF WIRES				
	1	2	3	4	6
D-1	1.5"	2.0"	2.0"	2.5"	3.0"
D-2	—	2.0"	2.0"	2.5"	3.0"
D-3	2.0"	2.0"	2.5"	3.0"	3.0"



LOOP IN CONCRETE

LOOP IN ASPHALT

SAW SLOT DETAIL

⚠ REMOVE SIGN ON TYPE R CONDUIT ON TYPICAL GUTTER AND SIDEWALK PLAN.
⚠ SIGNATURE BLOCK
⚠ ADDED ADJACENT LOOP WINDING

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL LOOP DETECTOR TYPE III INSTALLATION

PREPARED: 05/00/67

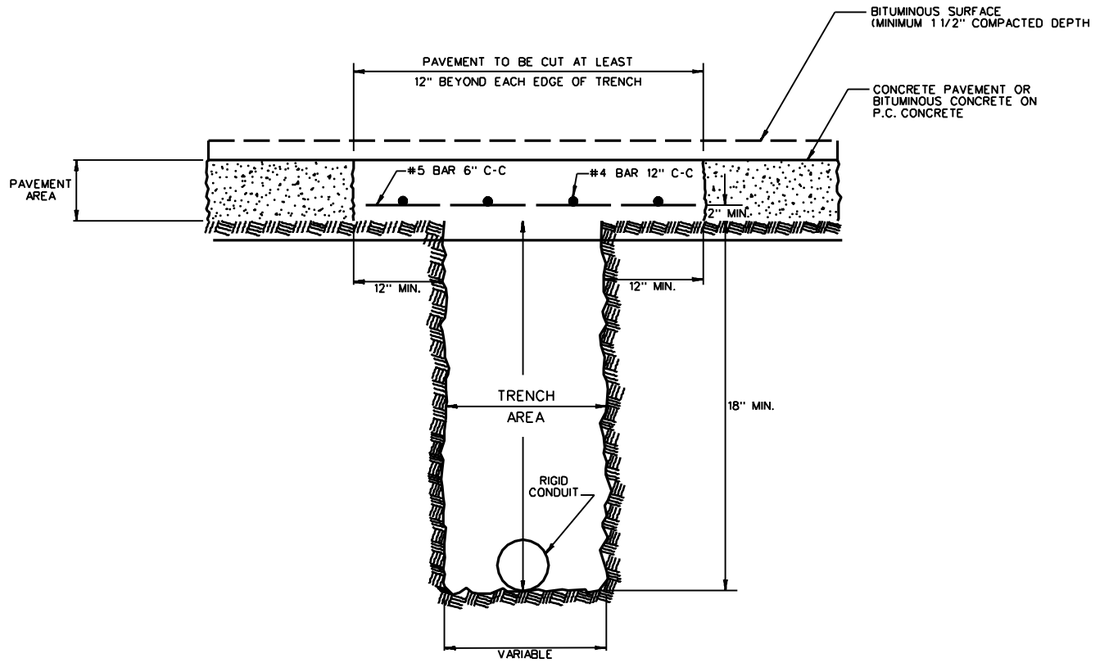
REVISIONS
11-29-67
6-28-68
5-2-69
9-30-69
1-1-70
11-0-70
12-0-73
⚠ 3-23-77
⚠ 01-19-93

STANDARD SHEET TES-01

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

MINIMUM REPLACEMENT REQUIREMENT FOR RIGID OR FLEXIBLE PAVEMENT CUTS (INCLUDING BASE & SUB-BASE)



NOTES:

REPLACING TRENCH AREA

THE TRENCH AREA SHALL BE BACKFILLED WITH CLASS 1 AGGREGATE BASE COURSE MATERIAL IN FOUR INCH COMPACTED LAYERS.
(SEE W.VA. STANDARD SPECIFICATIONS SECTION 307).

REPLACING PAVEMENT AREA

CONCRETE USED TO REPLACE PAVEMENT AREA OF CUT SHALL BE CLASS B PORTLAND CEMENT CONCRETE.

IN REPLACING CONCRETE PAVEMENTS WHICH HAVE BEEN BITUMINOUS SURFACED, THE PORTLAND CEMENT CONCRETE SHALL BE REPLACED TO AN ELEVATION ONE AND A HALF (1 1/2") BELOW THE FINISHED GRADE OF THE EXISTING BITUMINOUS SURFACE. BITUMINOUS CONCRETE SHALL BE USED TO COMPLETE THE PAVEMENT REPLACEMENT TO EXISTING SURFACE ELEVATION.
(W.VA. STANDARD SPECIFICATION DIVISION 400).

IN ADDITION TO THE NEW REINFORCING BARS SHOWN: IF THERE IS EXISTING REINFORCING IN THE PAVEMENT IT SHALL BE BENT UP AND THEN BACK INTO THE NEW CONCRETE.

⚠ REVISED REPLACING TRENCH AREA NOTES

WEST VIRGINIA DIVISION OF HIGHWAYS

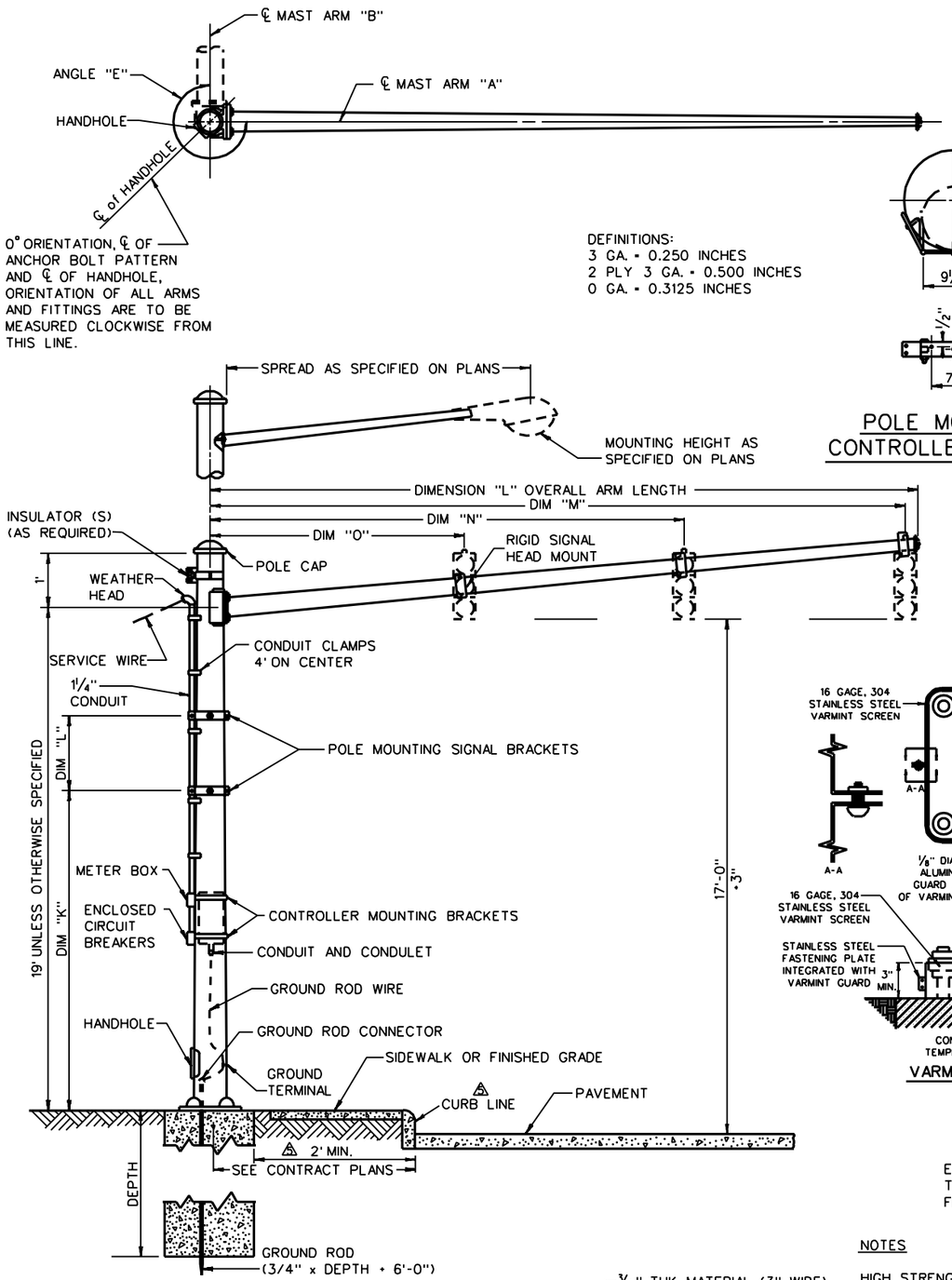
STANDARD DETAIL
PAVEMENT REPLACEMENT

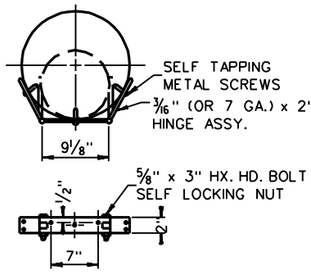
PREPARED: 07/09/74

REVISIONS
⚠ 01-19-93

STANDARD SHEET TES-04

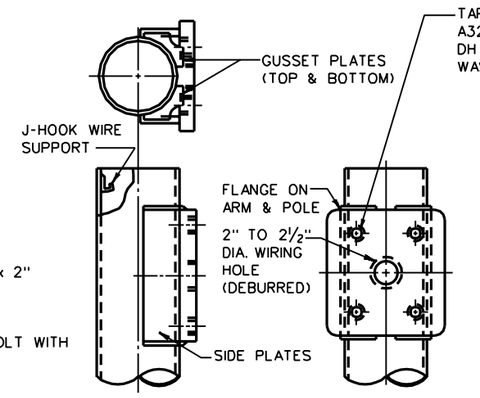
TRAFFIC ENGINEERING DIVISION



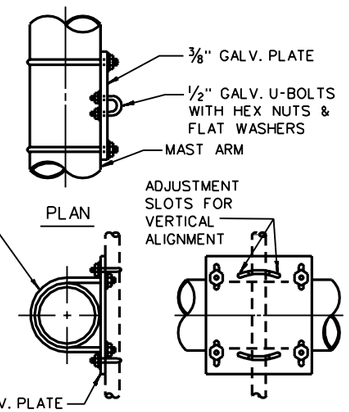


DEFINITIONS:
3 GA. = 0.250 INCHES
2 PLY 3 GA. = 0.500 INCHES
0 GA. = 0.3125 INCHES

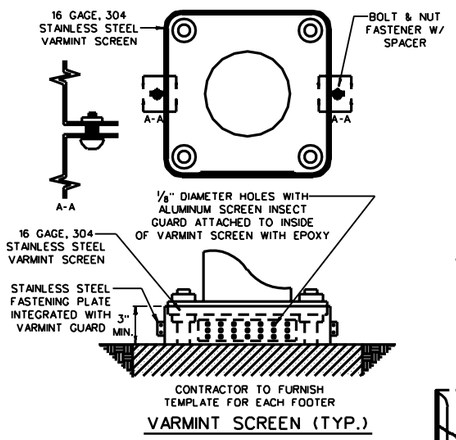
POLE MOUNTING BRACKET FOR CONTROLLER & DETECTOR CABINETS



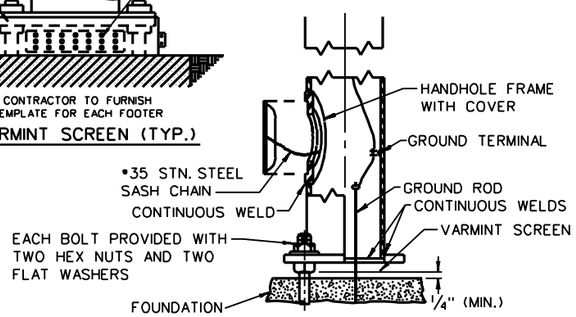
ARM ATTACHMENT

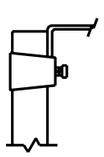


RIGID MOUNTING SIGNAL BRACKET

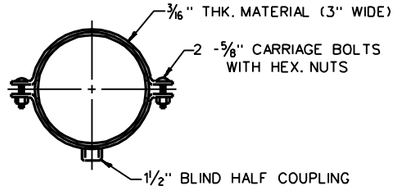


VARMINT SCREEN (TYP.)





GROUND ROD CONNECTOR

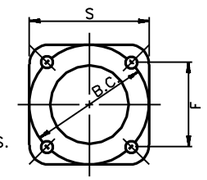


POLE MOUNTING SIGNAL BRACKET

NOTES

HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.



F, S, & B.C. DIMENSIONS SHALL BE FURNISHED BY POLE MANUFACTURER

POLE BASE

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES

1. SIGNAL HEADS:
   A. ALL SIGNALS ON A SINGLE MAST ARM SHALL HAVE THE RED SECTIONS LEVEL. ALL SIGNAL HEADS SHALL BE 17 FEET (PLUS OR MINUS 3 INCHES) ABOVE THE PAVEMENT DIRECTLY BELOW IT, UNLESS OTHERWISE SPECIFIED.
   B. POST MOUNTED SIGNAL HEADS SHALL BE MOUNTED AT A HEIGHT SPECIFIED ON THE CONTRACT PLANS.
2. POLE:
   A. EACH POLE SHALL BE COMPLETE WITH TWO POLE CAPS, J-HOOK, AND A HANDHOLE.
   B. POLE DIMENSIONS ARE NOTED ON THE CONTRACT PLANS.
   C. SEE TES-40 FOR FOUNDATION DETAILS.
3. CONDUIT:
   A. CONDUIT FOR THE POWER SUPPLY SHALL BE FASTENED TO THE POLE WITH CONDUIT CLAMPS 4 FEET C.C.
   B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF TAPPING SCREWS.
4. CONTROLLER MOUNTING BRACKET:
   A. WHEN CONTROLLER CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   B. THE HEIGHT OF THE CONTROLLER CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR THE SELF-TAPPING SCREWS AFTER FINAL POSITION HAS BEEN DETERMINED.
5. HAND HOLES:
   A. THE HAND HOLE IN THE BASE SHALL BE A MINIMUM SIZE OF 4" x 6½".
   B. THE HAND HOLE AT THE MAST ARM (FOR POLE HEIGHTS GREATER THAN 20' FEET) SHALL BE A MINIMUM SIZE OF 3"x5".
   C. THE HAND HOLE SHALL BE LOCATED 180° FROM MAST ARM "A" OR AT ONE HALF THE ANGLE "E" WHEN TWO MAST ARMS ARE USED. THIS HOLE MAY BE SHOP DRILLED BY THE MANUFACTURER.
6. SIGNAL HEAD MOUNTING BRACKET:
   A. WHEN POST MOUNT SIGNALS ARE CALLED FOR ON CONTRACT PLANS, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER SIGNAL CONFIGURATION.
   B. THE ONE (1) INCH HOLE FOR THE SIGNAL HEAD MOUNTING BRACKET SHALL BE DRILLED AND DEBURRED AFTER THE FINAL POSITION OF THE SIGNAL HEAD HAS BEEN DETERMINED. THIS HOLE MAY BE DRILLED BY THE MANUFACTURER.
7. SIGNAL HANGER:
   A. ONE SIGNAL HEAD HANGER IS REQUIRED FOR EACH SUSPENDED SIGNAL HEAD.
   B. EACH WIRE OUTLET SHALL BE DEBURRED AND BE PROTECTED BY A RUBBER GROMMET.
8. ANCHOR BOLTS:
   A. ANCHOR BOLT DETAILS ARE NOTED ON TES-40.
   B. EACH ANCHOR BOLT SHALL HAVE A BOLT COVER.
9. WELDING:
   CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS BUT NOT LESS THAN 100 PERCENT OF THE STRENGTH OF THE MEMBERS.
10. INSULATORS:
    INSULATORS SHALL BE INSTALLED WHEN SECONDARY POWER IS CARRIED PAST THE SIGNAL POLE INSTALLATION SINGLE INSULATORS SHALL ALSO BE USED TO CARRY INTER-CONNECT WIRE PAST THE INSTALLATION THE INSULATOR ALSO MAY BE MOUNTED ON EITHER SIDE OF THE POLE.
11. LUMINAIRE MOUNTING BRACKET:
    A. SPREAD IS SPECIFIED ON THE CONTRACT PLANS.
    B. LUMINAIRE SHALL BE CONNECTED TO THE BRACKET WITH A SLIP FIT TYPE CONNECTION.
    C. BRACKET SHALL BE CONNECTED TO THE POLE SO THE STRENGTH OF THE CONNECTION EXCEEDS THE STRENGTH OF THE BRACKET.

⚠ DELETED CAST STEEL BASE AND MODIFIED GROUND TERMINAL

⚠ CHANGED GROUND ROD TO ¾"

⚠ NOTE: HIGH STRENGTH BOLTS

⚠ DELETED GROUT AND CABLE MOUNTING

⚠ ADDED 2' MIN., CURB LINE, VARMINT SCREEN

WEST VIRGINIA DIVISION OF HIGHWAYS

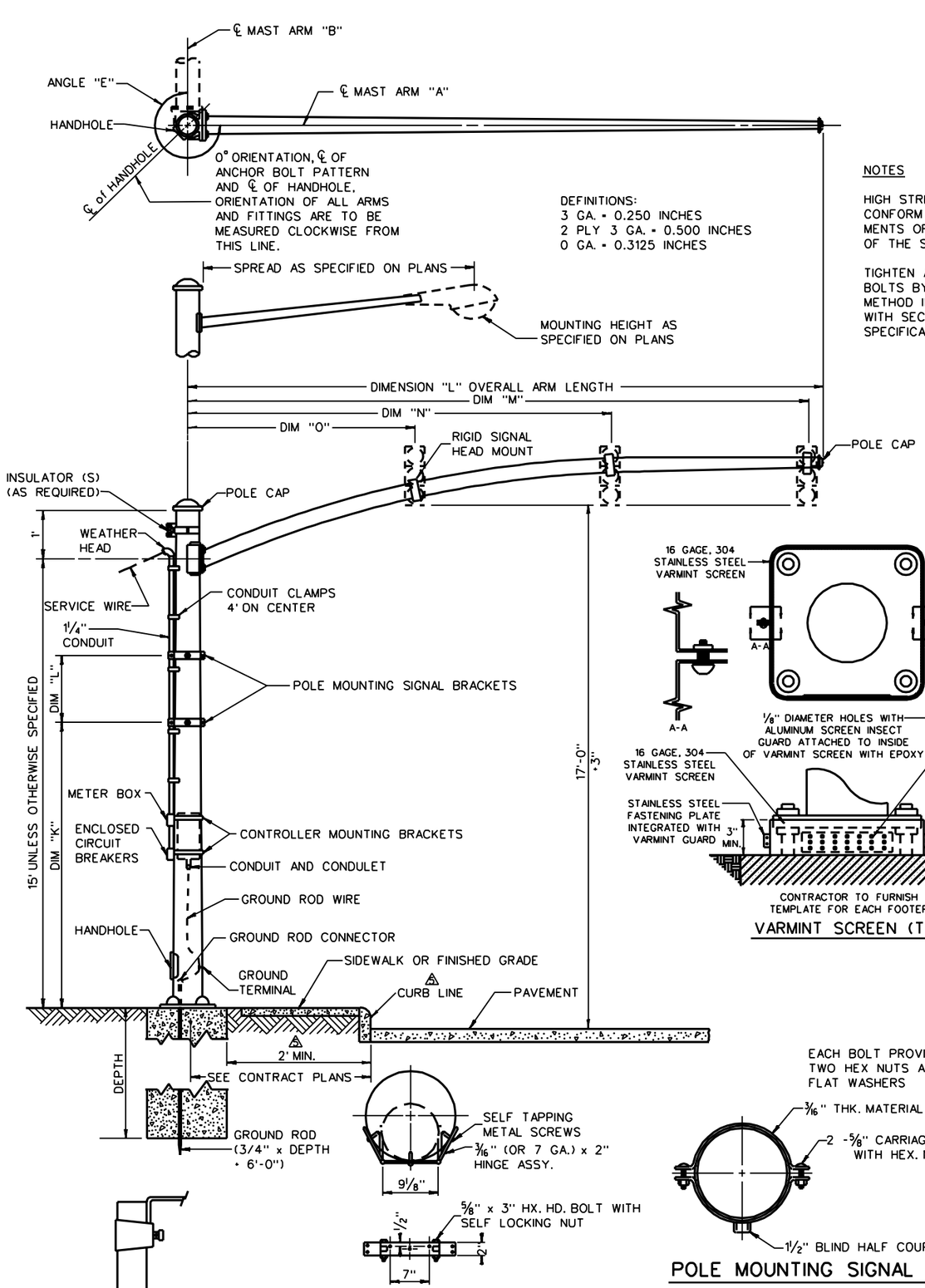
STANDARD DETAIL
MAST ARM
TYPES A1, A1L, A2 and A2L

PREPARED: 08/00/74

REVISIONS
6-18-76
⚠ 10-5-77
⚠ 9-20-84
⚠ 7-7-89
⚠ 01-20-93
⚠ 09-13-93

STANDARD SHEET TES-10

TRAFFIC ENGINEERING DIVISION



GROUND ROD CONNECTOR

POLE MOUNTING BRACKET FOR CONTROLLER & DETECTOR CABINETS

DEFINITIONS:
3 GA. - 0.250 INCHES
2 PLY 3 GA. - 0.500 INCHES
0 GA. - 0.3125 INCHES

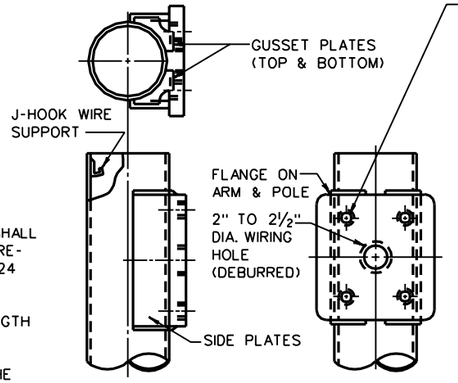
NOTES

HIGH STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 709.24 OF THE SPECIFICATIONS.

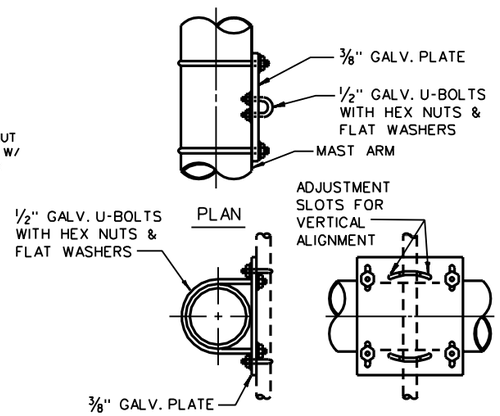
TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.

VARMINT SCREEN (TYP.)

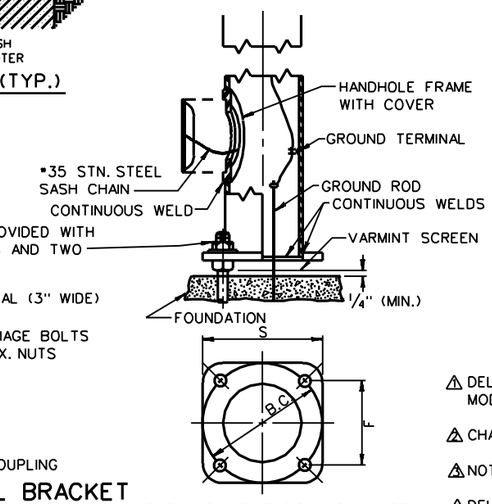
POLE MOUNTING SIGNAL BRACKET



ARM ATTACHMENT



RIGID MOUNTING SIGNAL BRACKET



POLE BASE

F, S, & B.C. DIMENSIONS SHALL BE FURNISHED BY POLE MANUFACTURER

⚠ DELETED CAST STEEL BASE AND MODIFIED GROUND TERMINAL

⚠ CHANGED GROUND ROD TO ¾"

⚠ NOTE: HIGH STRENGTH BOLTS

⚠ DELETED GROUT AND CABLE MOUNTING

⚠ ADDED 2' MIN., CURB LINE, VARMINT SCREEN

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

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   C. SEE TES-40 FOR FOUNDATION DETAILS.
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WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL MAST ARM TYPES B1 AND B1L

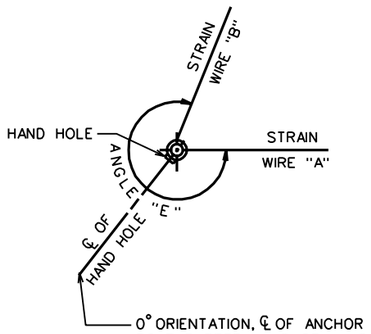
PREPARED: 08/00/74

REVISIONS
6-18-76
⚠ 10-5-77
⚠ 9-20-84
⚠ 7-7-89
⚠ 01-20-93
⚠ 09-13-93

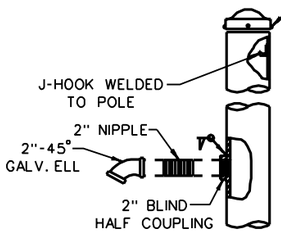
STANDARD SHEET TES-13

TRAFFIC ENGINEERING DIVISION

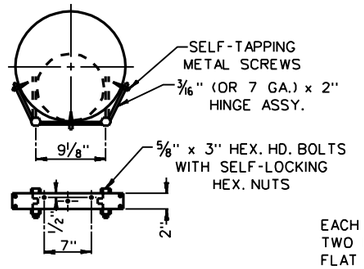
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



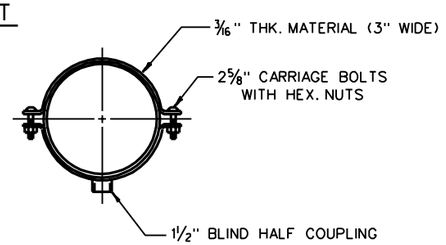
DEFINITIONS:
3 GA. - 0.250 INCHES
2 PLY 3 GA. = 0.500 INCHES
0 GA. = 0.3125 INCHES



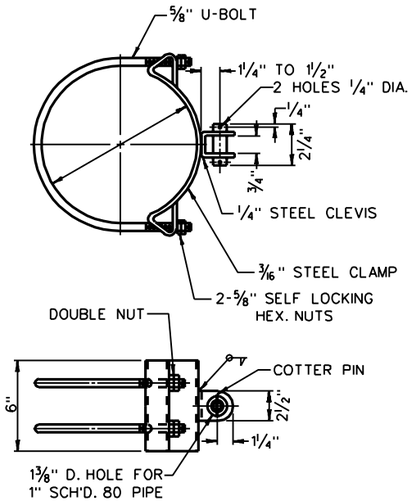
POLE WIRE INLET AND POLE CAP



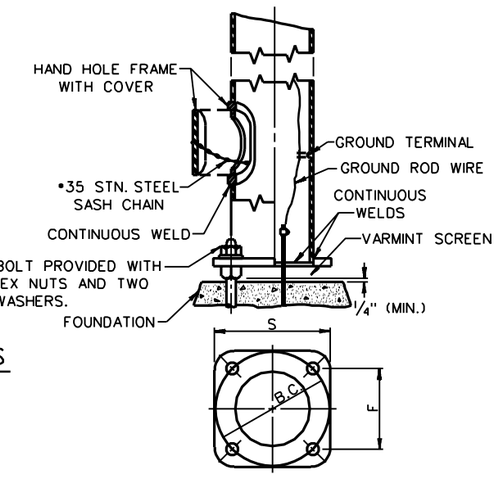
POLE MOUNTING BRACKET FOR CONTROLLER & DETECTOR CABINETS



POLE MOUNTING SIGNAL BRACKET

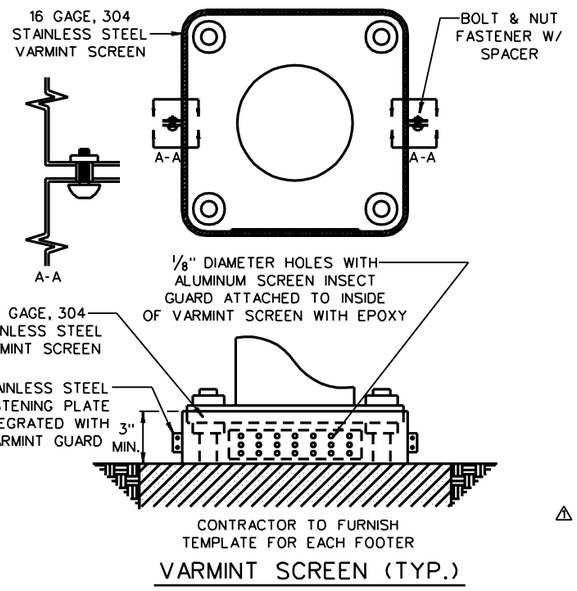


SPAN WIRE CLAMP

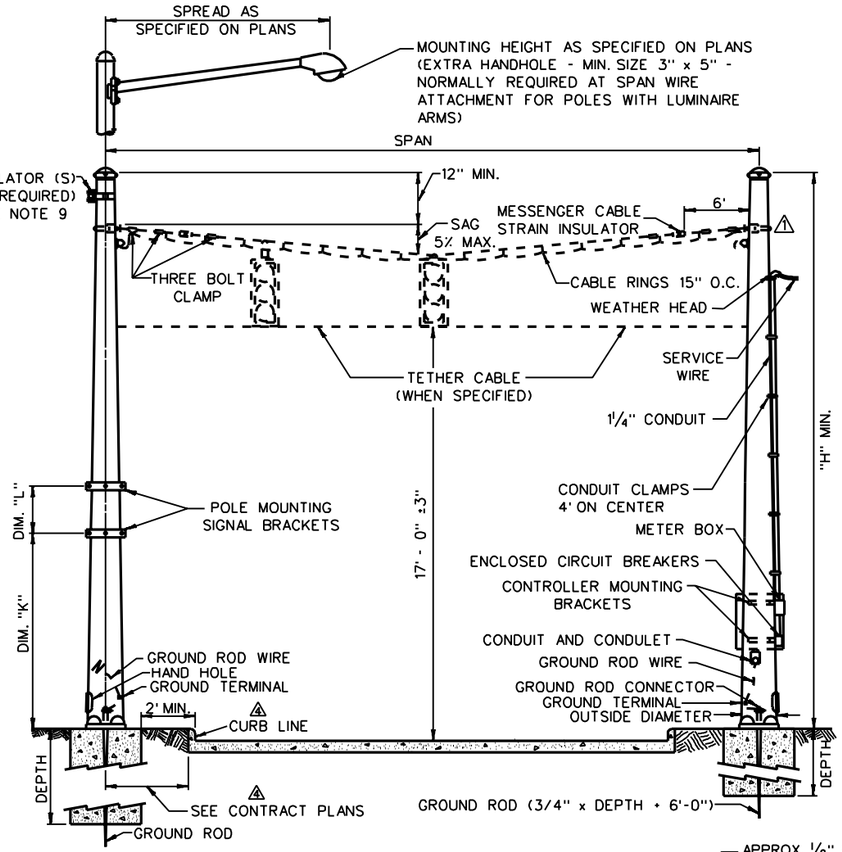


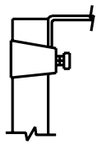
S.,F. & B.C. DIMENSIONS SHALL BE FURNISHED BY POLE MANUFACTURER

POLE BASE

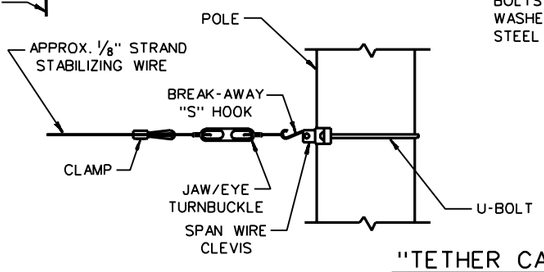


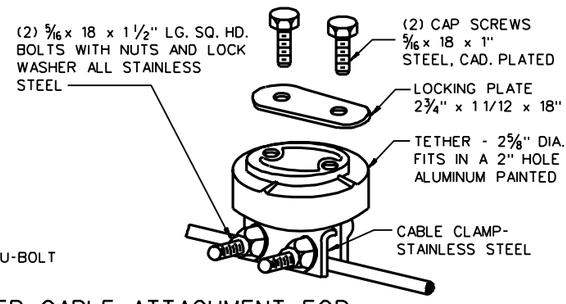
VARMINT SCREEN (TYP.)





GROUND ROD CONNECTOR





"TETHER CABLE ATTACHMENT FOR PROGRAMMED SIGNAL HEADS"

GENERAL NOTES

1. SIGNAL HEADS:
   - A. ALL SIGNAL HEADS ON A SINGLE SPAN SHALL HAVE THE RED SECTIONS LEVEL. ALL SIGNAL HEADS SHALL HAVE A 17 FEET, PLUS OR MINUS 3 INCH CLEARENCE FROM THE BOTTOM OF THE SIGNAL HEAD TO THE PAVEMENT DIRECTLY BELOW IT, (UNLESS OTHERWISE SPECIFIED). AT LEAST ONE HEAD, PER SPAN, SHALL BE DIRECTLY SECURED TO THE SPAN WIRE. IF APPROVED BY THE ENGINEER, THE REMAINING SIGNAL HEADS MAY BE PIPED TO ACHEIVE ROADWAY CLEARENCE.
   - B. POST MOUNTED SIGNAL HEADS SHALL BE MOUNTED AT A HEIGHT SPECIFIED ON THE CONTRACT PLANS.
2. POLE:
   - A. EACH POLE SHALL BE COMPLETE WITH ONE POLE CAP, J-HOOK, WIRE CLAMP AND HAND HOLE.
   - B. POLE DIMENSIONS ARE NOTED ON THE CONTRACT PLANS.
   - C. SEE TES-40 FOR FOUNDATION DETAILS.
3. CONDUIT:
   - A. CONDUIT FOR THE POWER SUPPLY SHALL BE FASTENED TO THE POLE WITH CONDUIT CLAMPS 4 FEET O.C.
   - B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF-TAPPING SCREWS.
4. CONTROLLER MOUNTING BRACKET:
   - A. WHEN CONTROLLER CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   - B. THE HEIGHT OF THE CONTROLLER CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   - C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR SELF-TAPPING SCREWS AFTER THE FINAL POSITION HAS BEEN DETERMINED.
5. POLE BASE:
   - A. THE HAND HOLE FRAME AND COVER SHALL BE A MINIMUM SIZE OF 4" x 6½".
   - B. THE HAND HOLE FRAME AND COVER SHALL BE LOCATED 180° FROM THE STRAIN WIRE OR AT ONE-HALF THE ANGLE "E" WHEN TWO STRAIN WIRES ARE USED. THIS HOLE MAY BE SHOP DRILLED BY THE MANUFACTURER.
6. SIGNAL HEAD MOUNTING BRACKET:
   - A. WHEN POST MOUNT SIGNALS ARE CALLED FOR ON CONTRACT PLANS. THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER SIGNAL CONFIGURATION.
   - B. THE ONE (1) INCH HOLE FOR THE SIGNAL HEAD MOUNTING BRACKET SHALL BE DRILLED AND DEBURRED AFTER THE FINAL POSITION OF THE SIGNAL HEAD HAS BEEN DETERMINED. THIS HOLE MAY BE DRILLED BY MANUFACTURER.
7. ANCHOR BOLTS:
   - A. ANCHOR BOLT DETAILS ARE NOTED ON TES-40.
   - B. EACH ANCHOR BOLT SHALL HAVE A BOLT COVER.
8. WELDING
   - CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS BUT NOT LESS THAN 100 PERCENT OF THE STRENGTH OF THE MEMBERS. MINIMUM FILLET WELD SHALL BE 3/16 INCH.
9. INSULATORS:
   - INSULATORS SHALL BE INSTALLED WHEN SECONDARY POWER IS CARRIED PAST THE SIGNAL POLE INSTALLATION . SINGLE INSULATORS SHALL ALSO BE USED TO CARRY INTERCONNECT WIRE PAST THE INSTALLATION. THE INSULATORS ALSO MAY BE MOUNTED ON EITHER SIDE OF THE POLE.
10. LUMINAIRE MOUNTING BRACKET:
    - A. SPREAD IS SPECIFIED ON THE CONTRACT PLANS.
    - B. LUMINAIRE SHALL BE CONNECTED TO THE BRACKET WITH A SLIP FIT TYPE CONNECTION.
    - C. BRACKET SHALL BE CONNECTED TO THE POLE SO THE STRENGTH OF THE CONNECTION EXCEEDS THE STRENGTH OF THE BRACKET.
11. ⚠ MESSENGER CABLE:
    - THE SPAN WIRE CLAMP MAY BE MOUNTED EITHER ABOVE OR BELOW THE POLE WIRE INLET. THE POSITION OF THE SPAN WIRE CLAMP SHALL BE DETERMINED BY THE REQUIRED HEIGHT ABOVE THE PAVEMENT OF THE SIGNAL HEADS.

⚠ DELETED CAST STEEL BASE AND MODIFIED GROUND TERMINAL
⚠ CHANGED GROUND ROD TO ¾"
⚠ ADDED 2' MIN., CURB LINE, SEE CONTRACT PLANS, VARMINT SCREEN, REVISED SPAN WIRE CLAMP

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
STRAIN POLE
TYPES C1, C1L, C2 AND C2L

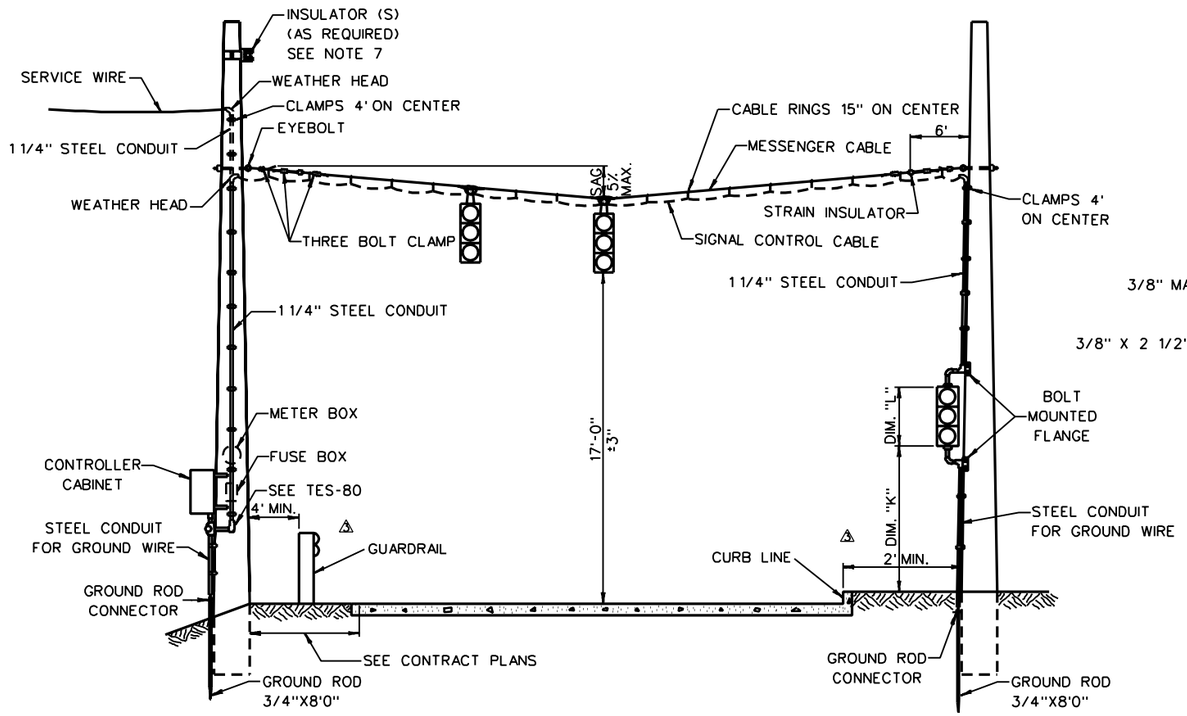
PREPARED: 08/28/74

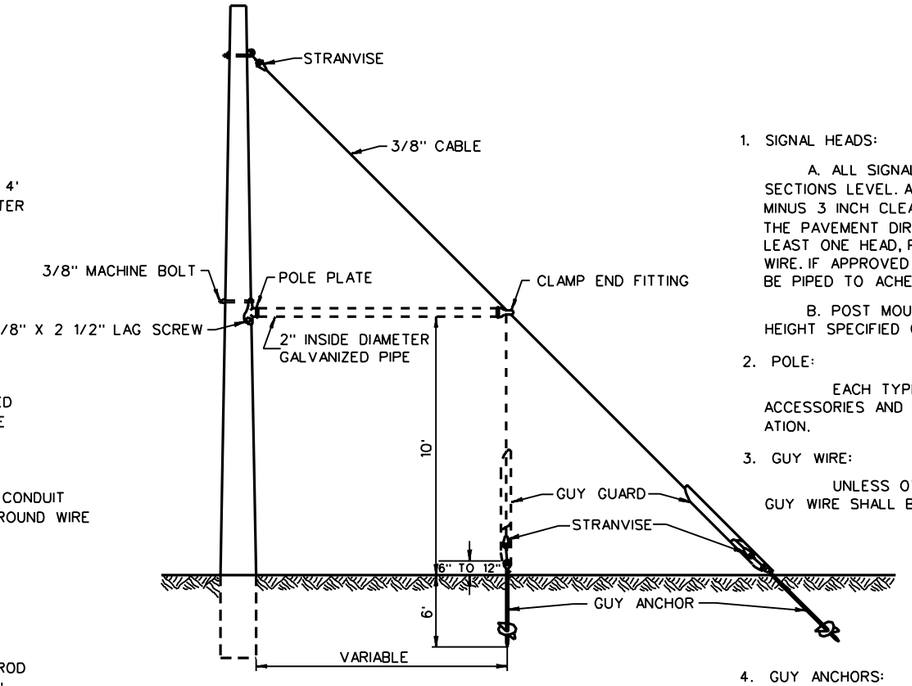
REVISIONS
⚠ 5-12-75
6-18-76
⚠ 10-5-77
⚠ 9-20-84
⚠ 09-14-93

STANDARD SHEET TES-20

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS





GENERAL NOTES

1. SIGNAL HEADS:

A. ALL SIGNAL HEADS ON A SINGLE SPAN SHALL HAVE THE RED SECTIONS LEVEL. ALL SIGNAL HEADS SHALL HAVE A 17 FEET, PLUS OR MINUS 3 INCH CLEARANCE FROM THE BOTTOM OF THE SIGNAL HEAD TO THE PAVEMENT DIRECTLY BELOW IT, (UNLESS OTHERWISE SPECIFIED). AT LEAST ONE HEAD, PER SPAN, SHALL BE DIRECTLY SECURED TO THE SPAN WIRE. IF APPROVED BY THE ENGINEER, THE REMAINING SIGNAL HEADS MAY BE PIPED TO ACHEIVE ROADWAY CLEARANCE.

B. POST MOUNTED SIGNAL HEADS SHALL BE MOUNTED AT THE HEIGHT SPECIFIED ON THE CONTRACT PLANS.

2. POLE:

EACH TYPE D POLE SHALL BE COMPLETE WITH THE NECESSARY ACCESSORIES AND HARDWARE REQUIRED TO MAKE A COMPLETE INSTALLATION.

3. GUY WIRE:

UNLESS OTHERWISE SPECIFIED ON THE CONTRACT PLANS, ALL GUY WIRE SHALL BE THE STRAIGHT DIAGONAL TYPE.

4. GUY ANCHORS:

A. GUY ANCHORS MAY BE EITHER THE EXPANDING TYPE, SCREW TYPE, PLATE TYPE, CONE TYPE OR ROCK TYPE ANCHORS.

B. GUY ANCHORS SHALL BE GALVANIZED OR COATED WITH AN ASPHALT PAINT.

C. GUY ANCHORS SHALL BE OF SUCH DIMENSIONS AND STRENGTH TO WITHSTAND A TENSILE LOAD OF 7,000 POUNDS AND AN A-2 (AASHTO SOIL CLASSIFICATION) TYPE SOIL.

5. EYEBOLT:

EYEBOLT SHALL EXCEED TENSILE STRENGTH OF MESSENGER CABLE.

6. CONDUIT:

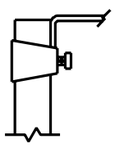
A. CONDUIT FOR THE POWER SUPPLY SHALL BE FASTENED TO THE POLE WITH CONDUIT CLAMPS 4 FEET ON CENTER.

B. CONDUIT CLAMPS SHALL BE FASTENED TO THE TYPE D WOOD POLE WITH WOOD SCREWS.

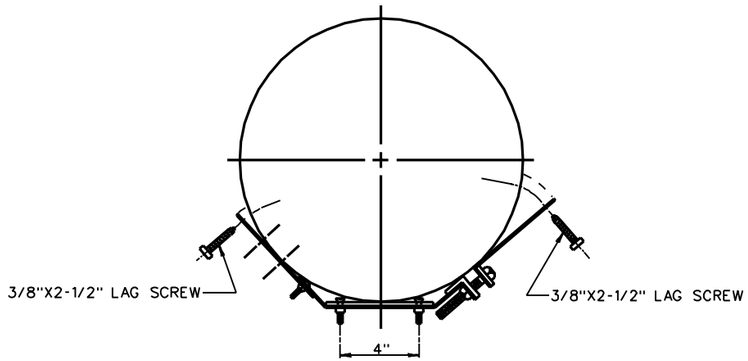
7. INSULATORS:

INSULATORS SHALL BE INSTALLED WHEN SECONDARY POWER IS CARRIED PAST THE SIGNAL POLE INSTALLATION. SINGLE INSULATORS SHALL ALSO BE USED TO CARRY INTERCONNECT WIRE PAST THE INSTALLATION. THE INSULATORS ALSO MAY BE MOUNTED ON EITHER SIDE OF THE POLE.

⚠1 NOTE 1 AND SIGNATURE BLOCK
⚠2 CHANGED GROUND ROD TO 3/4"
⚠3 ADDED GR CLEAR, 2' MIN., SEE CONTRACT PLANS, CURB LINE

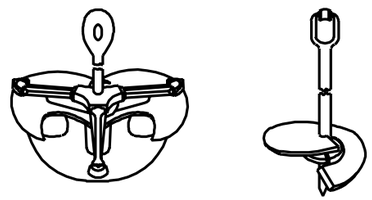


GROUND ROD CONNECTOR



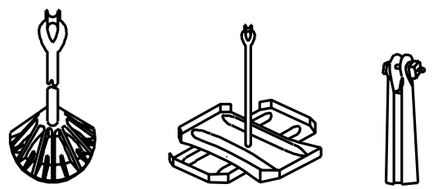
MOUNTING BRACKET FOR CABINETS

THREE BOLT CABLE CLAMP



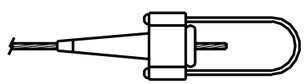
EXPANDING SCREW

GUY ANCHORS



CONE CROSS-PLATE ROCK

GUY ANCHORS



CABLE STRANVISE

EYE BOLT WITH CURVED WASHERS AND NUTS FOR WOOD POLES

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
WOOD POLE TYPE D

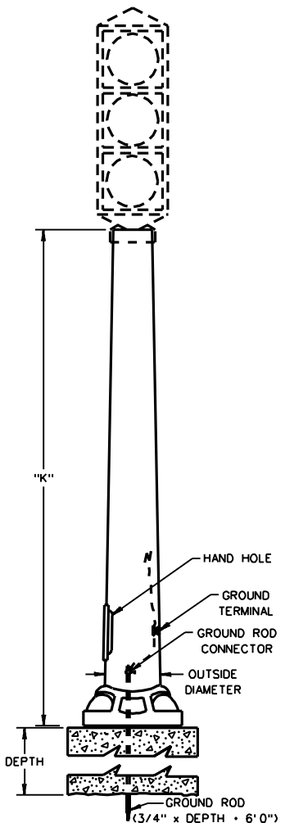
PREPARED: 08/00/74

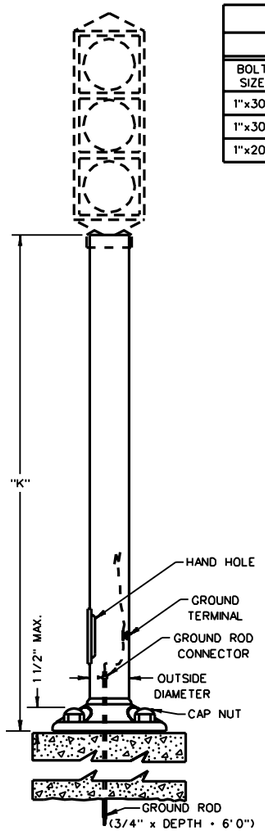
REVISIONS
⚠1 10-12-76
⚠2 9-20-84
⚠3 09-14-93

STANDARD SHEET TES-23

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



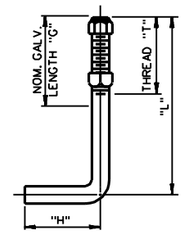


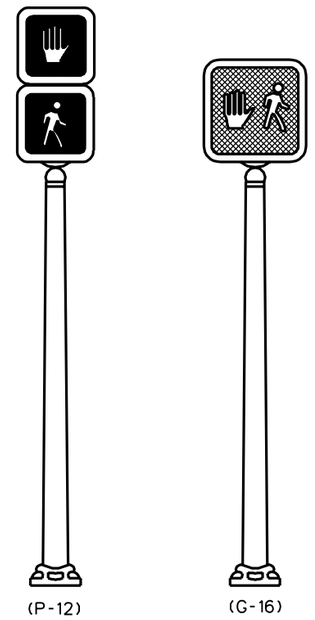
ANCHOR BOLTS MINIMUM DIMENSIONS						
BOLT SIZE	BOLT CIRCLE	"L"	"H"	"T"	"G"	POLE TYPE
1"x30"	9 1/2"	26"	4"	4"	6"	E-1
1"x30"	9 1/2"	26"	4"	4"	6"	E-2
1"x20"	9 1/2"	17"	3"	4"	6"	E-3

ANCHOR BOLTS

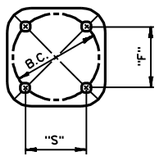
POLE TYPE	DIAM. (SIDE)	DEPTH	VOLUME (C.Y.)	REIN.
E-1	1'-6"	4'-0"	0.333	—
E-2	1'-6"	4'-0"	0.333	—
E-3	1'-6"	4'-0"	0.333	—

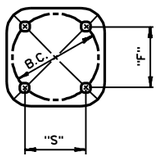
FOOTING SIZES





PEDESTAL MOUNTING FOR PEDESTRIAN SIGNAL



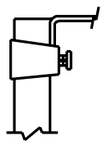


"F" & "S" DIMENSIONS SHALL BE FURNISHED BY POLE MANUFACTURER

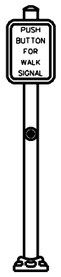
TYPE-E1

TYPE-E2 or E3

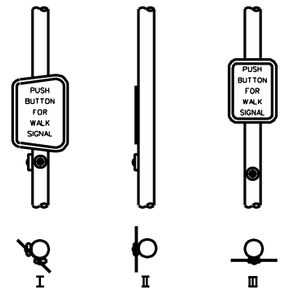
PEDESTAL BASE



GROUND ROD CONNECTOR



PEDESTAL MOUNTING FOR PEDESTRIAN PUSH BUTTON



PEDESTRIAN PUSH BUTTON AND SIGN INSTALLATION

GENERAL NOTES:

1. SIGNAL HEADS:
   - A. HEIGHT OF THE INDICATIONS SHALL BE AS NOTED ON THE CONTRACT PLANS.
2. POLE:
   - A. THE WELDED CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE SHAFT BUT NOT LESS THAN 75% OF THE STRENGTH OF THE SHAFT. MINIMUM FILLET WELD SHALL BE 3/16 INCH.
   - B. DIMENSIONS "K" AND OUTSIDE DIAMETER SHALL BE NOTED ON THE CONTRACT PLANS.
   - C. CONDUIT SHALL EXTEND 4" VERTICALLY UP IN THE POLE ABOVE THE FOUNDATION.
3. HAND HOLE:
   - A. TYPE E-1 SHALL HAVE A MINIMUM SIZE HAND HOLE OF 3"x5".
   - B. TYPE E-2 SHALL HAVE A MINIMUM SIZE HAND HOLE OF 3"x5" LOCATED AT THE BASE.
   - C. TYPE E-3 SHALL HAVE A MINIMUM SIZE HAND HOLE OF 3"x5" LOCATED AT THE BASE.
   - D. EACH COVER SHALL BE ATTACHED TO THE POLE BY STAINLESS STEEL SCREWS.
4. PUSH BUTTON AND SIGN:
   - A. THE SIGN SHALL CONFORM TO THE SIGN DESIGNATED AS R 10-4 IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
   - B. THE PUSH BUTTON SHALL BE MOUNTED AT A HEIGHT OF 3'-6" UNLESS OTHER WISE SPECIFIED ON CONTRACT PLANS.
   - C. THE SIGN SHALL BE MOUNTED IMMEDIATELY ABOVE THE PUSH BUTTON.
5. MOUNTING:
   - BANDING OF SIGNAL HEAD BRACKETS TO POLES IS NOT PERMITTED UNLESS OTHERWISE SPECIFIED ON THE PLANS.
6. CONCRETE:
   - A. ALL EXPOSED CONCRETE SHALL HAVE A NORMAL FINISH.
   - B. ALL OUTSIDE CONCRETE CORNERS AND EDGES SHALL HAVE A 3/4" CHAMFER.
   - C. CONCRETE TO BE RODDED OR VIBRATED WHILE POURING.
   - D. ALL CONCRETE SHALL BE CLASS "B".
7. FOOTINGS:
   - A. ALL FOOTING IN SIDEWALKS SHALL BE FINISHED FLUSH WITH EXISTING SIDEWALKS, UNLESS OTHERWISE SPECIFIED BY THE PROJECT ENGINEER.
   - B. FOOTINGS MAY BE EITHER CIRCULAR OR SQUARE IN CROSS-SECTION. CIRCULAR FOOTINGS SHALL BE SQUARE FOR TOP 12".
8. FORMS:
   - A. NO FORMS MAY EXTEND TO A DEPTH GREATER THAN 12" UNLESS APPROVAL IS GRANTED BY THE PROJECT ENGINEER.

⚠1 DELETED FOUNDATION NOTE
⚠2 CHANGED E-3
⚠3 CHANGED E-3, NOTES 1 & 2
⚠4 CHANGED GROUND ROD TO 3/4"
⚠5 MODIFIED PEDESTRIAN PUSH BUTTON AND SIGN INSTALLATION
⚠6 DELETED PEDESTAL MNTG FOR TRAFFIC AND PEDESTRIAN SIGNAL, DELETED NOTES 1B & 1C, ADDED G-16 PED MNTG

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL PEDESTAL POLES

TYPES E-1, E-2, E-3

PREPARED: 09/06/74

REVISIONS
⚠1 10-23-75
⚠2 10-12-76
⚠3 10-5-77
⚠4 9-20-84
⚠5 6-30-89
⚠6 02-03-93

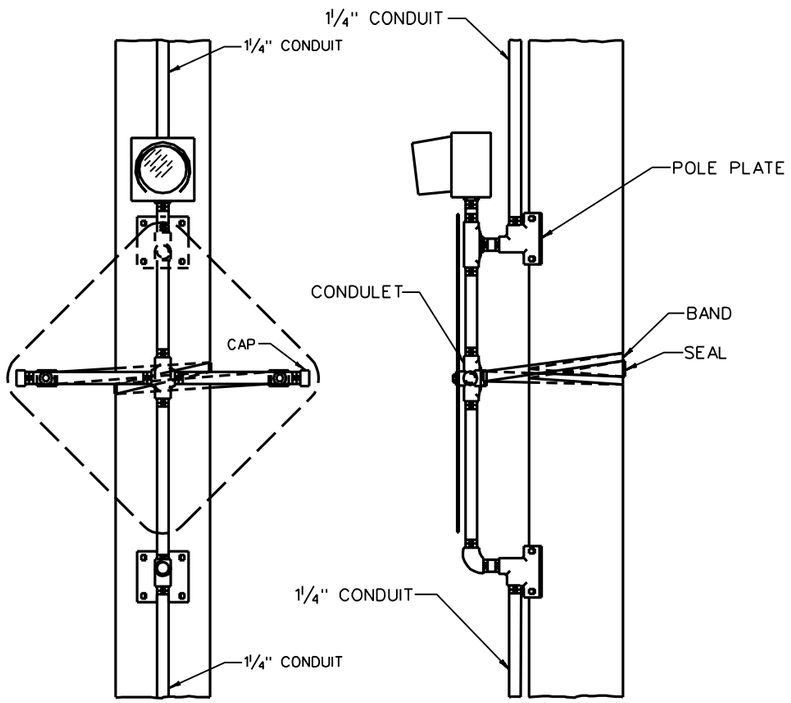
STANDARD SHEET TES-30

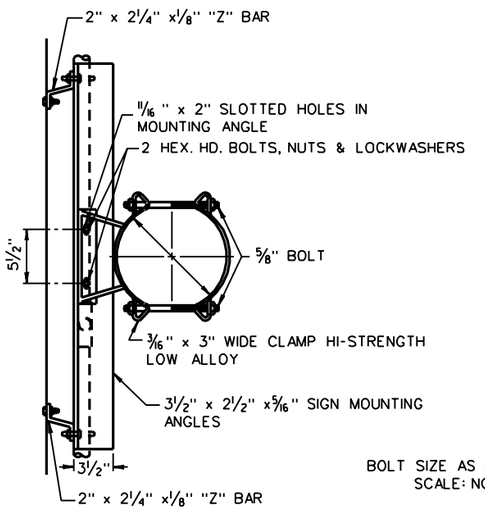
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

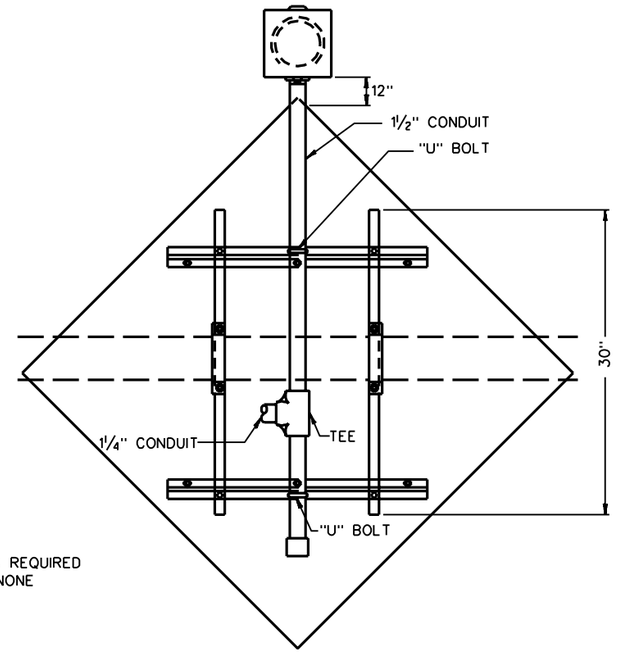
GENERAL NOTES:

1. TRAFFIC SIGN AND SIGNAL HEAD SIZE (8" MIN.) WILL BE AS SHOWN ON CONTRACT PLANS.
2. ALL LENS VISORS SHALL BE OF THE "CUT-AWAY" TYPE UNLESS OTHERWISE SPECIFIED.
3. ALL CONDUIT SHALL BE 1½" DIAMETER UNLESS OTHERWISE NOTED.
4. ALL MESSENGER CABLES SHALL BE A MINIMUM OF ⅜".
5. BOLT AND NUT ASSEMBLIES MAY BE STAINLESS STEEL OR CADMIUM PLATED.
6. BOTTOM OF SIGN SHALL BE 8' MIN. TO 10' MAX.

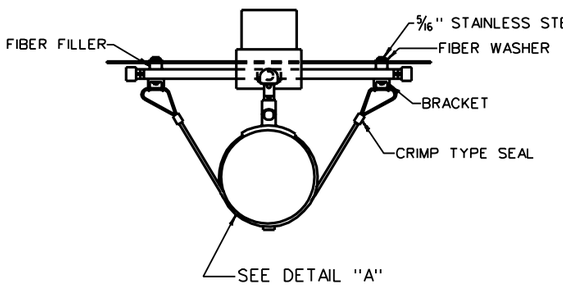




BOLT SIZE AS REQUIRED
SCALE: NONE



FLASHER AND SIGN MOUNTING DETAIL
MAST ARM MOUNT



EACH SIDE OF BRACE BANDING MAKES ONE COMPLETE LOOP AROUND POLE SEAL ON BACK OF POLE

DETAIL "A"

FLASHER AND SIGN MOUNTING DETAIL
POST MOUNT

⚠ SIGNATURE BLOCK
⚠ REVISED NOTE 1, ADDED NOTE 6.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL FLASHER AND SIGN INSTALLATION

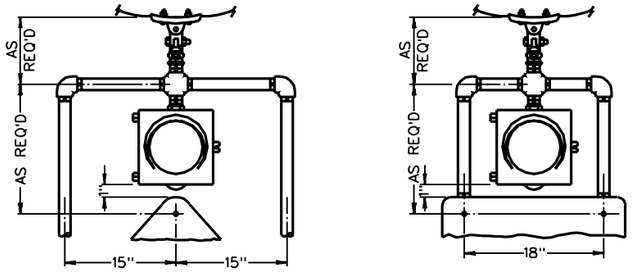
PREPARED: 06 /00/68

REVISIONS
09-12-69
01-00-70
04-00-72
⚠ 10-12-76
⚠ 02-09-93

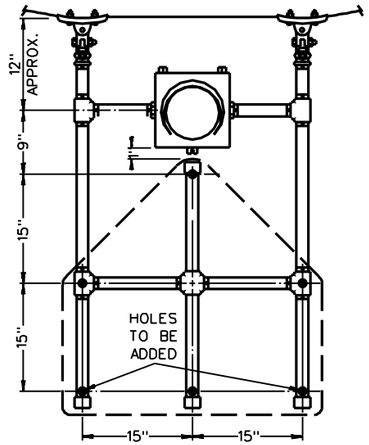
STANDARD SHEET TES-35

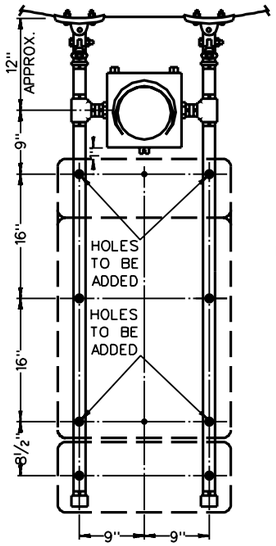
TRAFFIC ENGINEERING DIVISION

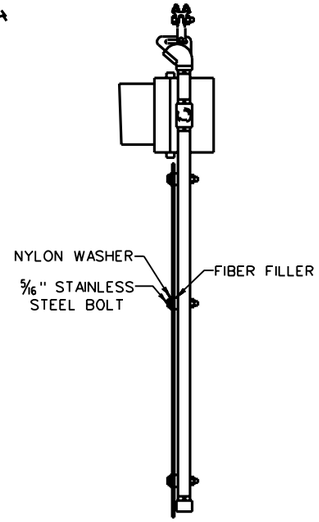
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



SUSPENSION METHOD "A" - SINGLE HANGER UNITS

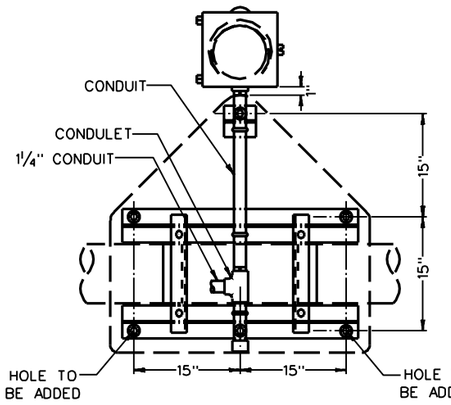


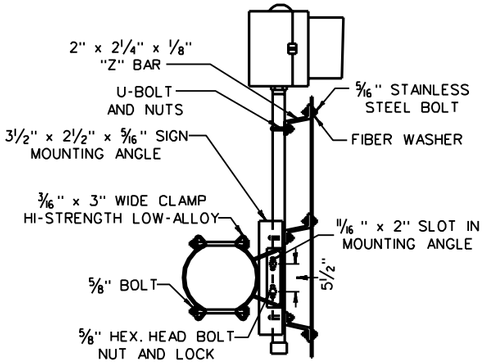




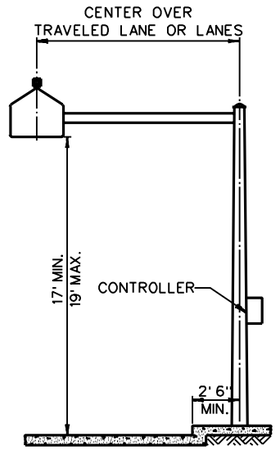
SUSPENSION METHOD "B" - DOUBLE HANGER UNITS

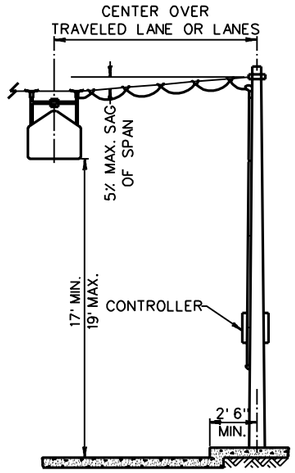
SPAN WIRE MOUNTING DETAILS

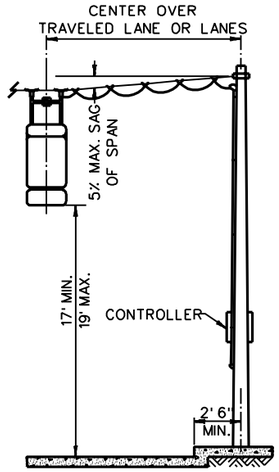


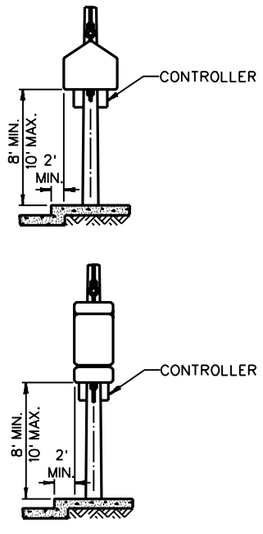


MAST ARM MOUNTING DETAIL







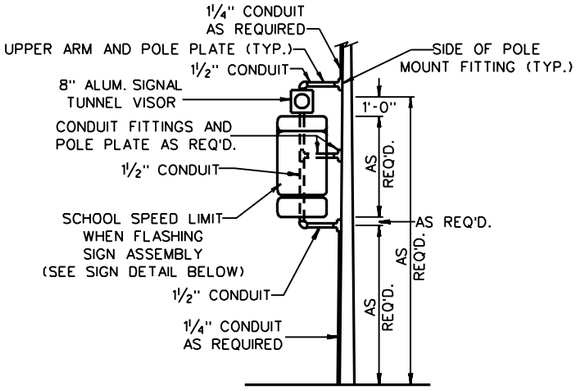


SIGN LOCATION DETAILS

HORIZONTAL MINIMUM CLEARANCE (2' AND 2' 6") AS SHOWN ARE FOR CURB AREAS.
FOR RURAL AREAS IT SHALL BE 4' MIN. BEHIND SHOULDER EDGE AND 2' MIN. BEHIND FACE OF GUARDRAIL.

GENERAL NOTES

1. ALL BEACON LENS SHALL BE 8" AMBER.
2. ALL LENS VISORS SHALL BE OF THE "TUNNEL" TYPE UNLESS OTHERWISE SPECIFIED.
3. ALL CONDUIT SHALL BE 1½" DIAMETER UNLESS OTHERWISE NOTED.
4. SIGNS SHALL BE STANDARD 36" x 36" "SCHOOL CROSSING" SIGN OR 24" x 48" "SCHOOL SPEED LIMIT" ASSEMBLY ONLY.
5. MOUNTING DIMENSIONS SHOWN ARE FOR STANDARD 8" SIGNAL HEADS ONLY.
6. ALL MESSENGER CABLES SHALL BE A MINIMUM OF ⅜".
7. BOLT AND NUT ASSEMBLIES MAY BE STAINLESS STEEL OR CADMIUM PLATED.



POST (POLE) MOUNTING DETAIL

S4-3A
24" x 38"
(36" x 60")

S4-4
24" x 10"
(36" x 15")

SIGN DETAIL

⚠ COMPLETELY REVISED POST MOUNTING DETAIL, ADDED SIGN LOCATING DETAILS NOTES

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
INSTALLATION DETAILS FOR SCHOOL SIGNS WITH FLASHERS

PREPARED: 07/15/92

REVISIONS
⚠ 01-20-93

STANDARD SHEET TES-36

TRAFFIC ENGINEERING DIVISION

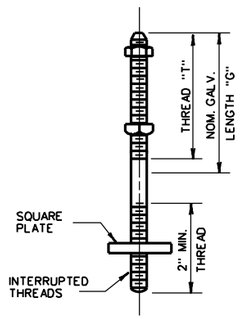
ANCHOR BOLTS & BOLT CHART

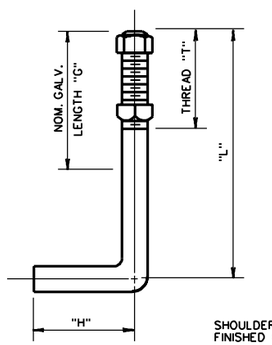
ANCHOR BOLTS

MINIMUM DIMENSIONS						
BOLT SIZE	PARENT METAL	"L"	"H"	"T"	"G"	SIGNAL POLES A1, A1L, A2, A2L, B1, B1L, C1, C1L, C2, C2L STEEL LIGHTING POLES
1" X 40"	1.000	36"	4"	6"	8" TO 12" MIN.	11 GA. 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10 O.D. (IN.)
1 1/4" X 48"	1.250	42"	6"	6" TO 8"	10" TO 12" MIN.	11 GA. 11, 12 10 GA. 10, 10 1/2, 11 9 GA. 11 7 GA. 8, 8 1/2, 9, 9 1/2, 10 3 GA. 7
1 1/2" X 60"	1.500	54"	6"	8" TO 9"	11" TO 12" MIN.	7 GA. 10, 10 1/2, 11, 11 1/2, 12, 13, 13 1/2, 14 3 GA. 9, 9 1/2, 10 O.D. (IN.)
1 3/4" X 90"	1.750	84"	6"	8" TO 9"	11" TO 12" MIN.	3 GA. 11, 11 1/2, 12, 12 1/2, 13, 13 1/2, 14 0 GA. 12 2 PLY 3 GA. 9
2" X 90"	2.000	90"	⚠2 2¼"x7¾" x7¾" PLATES	9"	11" TO 12" MIN.	3 GA. 15, 15 1/2, 16, 17, 18 O.D. (IN.) 0 GA. 13, 14, 15 2 PLY 3 GA. 10, 11, 12 2 PLY 7 GA. 13, 14
2 1/4" X 96"	2.250	96"	⚠2 2½"x9" x9" PLATES	10"	12"	0 GA. 16 2 PLY 3 GA. 12 1/2, 13 O.D. (IN.) 2 PLY 7 GA. 15

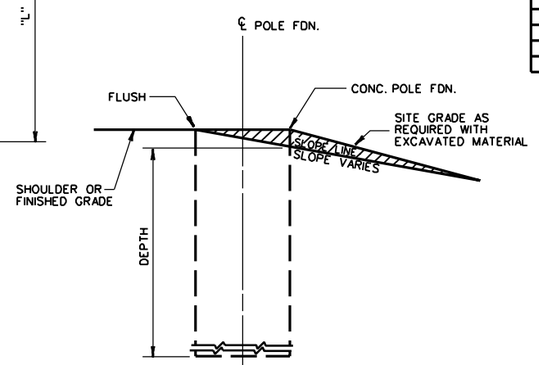
BOLT CIRCLES (INCHES) ✱			
POLE SIZE	B.C.	POLE SIZE	B.C.
11 GA. 6½	9½	10 GA. 10½	14
7	10	11	15
7½	10½		
8	11	9 GA. 11	15
8½	11½		
9	12½	3 GA. 7	10
9½	13	9	12½
10	13½	10	13½
11	15	11	15
12	16	11½& 12	16
7 GA. 8	11	12½& 13	18
8½	11½	13½	19
9	12½	14	20
9½	13	15	22
10	13½	15½	22½
10½	15	16	23½
11	15	17	24
11½	15½	18	25½
12	16		
13	18	0 GA. 12	16 or 17
13½	19	13	18
14	20	14	20
		15	22
2Ply 7Ga.13	20	16	23½
2Ply 7Ga.14	22		
2Ply 7Ga.15	22	2Ply 3 Ga.9	15
		10	18
		11	20
		12	22
		12½& 13	22

✱ - WHEN USING TRANSFORMER BASE(S), SEE TEL-18 FOR ANCHOR BOLT - BOLT CIRCLE IN FOUNDATION.





ANCHOR BOLT DETAIL



FOOTER IN SLOPE

POLE-FOOTER CHART

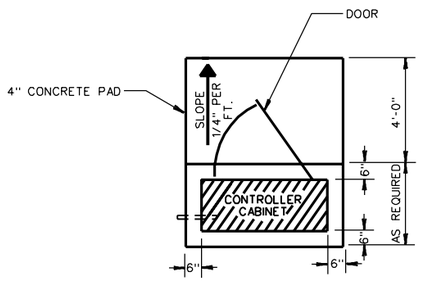
POLE SIZE							CONCRETE FOOTING			REINFORCING STEEL	
11 GAUGE O.D.(INCHES)	10 GAUGE O.D.(INCHES)	9 GAUGE O.D.(INCHES)	7 GAUGE O.D.(INCHES)	3 GAUGE O.D.(INCHES)	0 GAUGE O.D.(INCHES)	2 PLY 3 GAUGE O.D.(INCHES)	DIAMETER OR SIDE(FEET)	DEPTH (FEET)	VOLUME (YD.³)	NUMBER OF BARS	SIZE OF BARS
6.5	—	—	—	—	—	—	2.0	4.0	.592	6	#4
7.0	—	—	—	—	—	—	2.0	4.0	.592	↓	↓
7.5	—	—	—	—	—	—	2.0 (2.5)	4.5 (4.0)	.667 (.926)	6	#5
8.0	—	—	—	—	—	—	2.0 (2.5)	4.5 (4.0)	.667 (.926)		
8.5	—	—	—	—	—	—	2.0 (2.5)	5.0 (4.5)	.741 (1.04)		
9.0	—	—	—	—	—	—	2.0 (2.5)	5.0 (4.5)	.741 (1.04)	↓	↓
9.5	—	—	8.0	—	—	—	2.0 (2.5)	5.5 (5.0)	.815 (1.16)	6	#6
10.0	—	—	8.5	7.0	—	—	2.0 (2.5)	5.5 (5.0)	.815 (1.16)		
11.0	—	—	9.0	—	—	—	2.5 (3.0)	5.5 (5.0)	1.27 (1.67)		
—	—	—	9.5	—	—	—	2.5 (3.0)	5.5 (5.0)	1.27 (1.67)		
12.0	—	—	10.0	9.0	—	—	2.5 (3.0)	6.0 (5.5)	1.39 (1.83)		
—	—	—	10.5	—	—	—	2.5 (3.0)	6.5 (6.0)	1.50 (2.00)		
—	—	—	11.0	—	—	—	2.5 (3.0)	6.5 (6.0)	1.50 (2.00)		
—	—	11.0	—	—	—	—	3.0 (3.5)	5.5 (5.0)	1.83 (2.27)		
—	10.0	—	—	—	—	—	2.5 (3.5)	5.0 (4.5)	1.16 (2.04)		
—	10.5	—	—	—	—	—	**2.5 (3.0)**	5.5 (5.0)	1.27 (1.67)		
—	11.0	—	—	—	—	—	2.5 (3.0)	5.5 (5.0)	1.27 (1.67)	↓	↓
—	—	—	11.5	—	—	—	2.5 (3.0)	7.0 (6.5)	1.62 (2.17)	6	#7
—	—	—	12.0	—	—	—	3.0 (3.5)	6.5 (6.0)	2.17 (2.72)	8	#6
—	—	—	13.0	—	—	—	3.5 (4.0)	6.5 (6.0)	2.95 (3.56)		
—	—	—	13.5	—	—	—	3.5 (4.0)	7.0 (6.5)	3.18 (3.85)		
—	—	—	14.0	—	—	—	3.5 (4.0)	7.0 (6.5)	3.18 (3.85)	↓	↓
—	—	—	—	10.0	—	—	3.0 (3.5)	6.0 (5.5)	2.00 (2.50)	8	#6
—	—	—	—	11.0	—	—	3.0 (3.5)	7.0 (6.5)	2.33 (2.95)		
—	—	—	—	11.5	—	9.0	3.0 (3.5)	7.5 (7.0)	2.50 (3.18)		
—	—	—	—	12.0	—	—	3.0 (3.5)	7.5 (7.0)	2.50 (3.18)		
—	—	—	—	12.5	—	—	3.5 (4.0)	7.0 (6.5)	3.18 (3.85)		
—	—	—	—	13.0	—	—	3.5 (4.0)	7.5 (7.0)	3.40 (4.15)		
—	—	—	—	13.5	—	—	3.5 (4.0)	8.0 (7.5)	3.63 (4.44)		
—	—	—	—	14.0	—	—	3.5 (4.0)	8.5 (8.0)	3.63 (4.44)		
—	—	—	—	15.0	—	—	3.5 (4.0)	9.0 (8.5)	3.63 (4.44)	↓	↓
—	—	—	—	—	12.0	10.0	3.0 (3.5)	8.5 (8.0)	2.83 (3.63)	8	#8
—	—	—	—	—	13.0(Round)	—	3.0 (3.5)	9.0 (8.5)	3.00 (3.86)		
—	—	—	—	—	13.0(12Sided)	11.0	3.0 (3.5)	9.5 (9.0)	3.17 (4.08)		
—	—	—	2Ply 7Ga.13	15.5	14.0	12.0	3.5 (4.0)	9.5 (9.0)	4.31 (5.33)		
—	—	—	—	—	—	12.5	3.5 (4.0)	9.5 (9.0)	4.31 (5.33)	↓	↓
—	—	—	2Ply 7GA.14	16.0	15.0	—	3.5 (4.0)	10.0 (9.5)	4.54 (5.63)	10	#8
—	—	—	2Ply 7Ga.15	17.0	16.0	13.0	3.5 (4.0)	10.5 (10.0)	4.76 (5.93)		
—	—	—	—	18.0	—	—	3.5 (4.0)	11.0 (10.0)	4.99 (5.93)	↓	↓

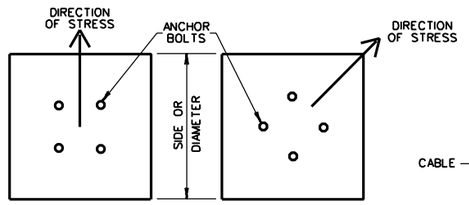
NOTE: NUMBER IN PARENTHESES ARE ALTERNATE SIZE FOUNDATIONS

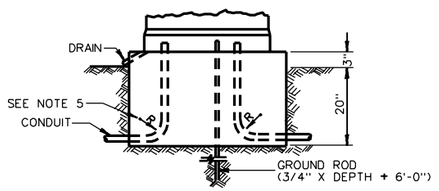
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES

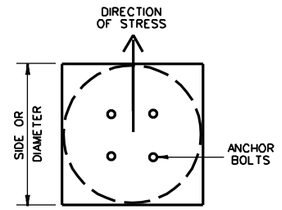
1. CONCRETE:
   - A. ALL EXPOSED CONCRETE SHALL HAVE A NORMAL FINISH.
   - B. ALL OUTSIDE CONCRETE CORNERS AND EDGES SHALL HAVE A ¾" CHAMFER.
   - C. CONCRETE TO BE RODDED OR VIBRATED WHILE POURING.
   - D. ALL CONCRETE SHALL BE CLASS "B".
2. STEEL:
   - A. REINFORCING STEEL SHALL NOT BE CLOSER THAN 3" TO THE OUTSIDE SURFACE OF THE FOOTING AND SHALL BE TIED OR WELDED.
   - B. VERTICAL BARS SHALL BE TIED WITH #4 HOOP BARS 1'-0" ON CENTER. THE #4 HOOP BARS SHALL HAVE A 1'-0" MINIMUM LAP.
3. FOOTINGS:
   - A. ALL FOOTING IN SIDEWALKS SHALL BE FINISHED FLUSH WITH THE EXISTING SIDEWALKS, UNLESS OTHERWISE SPECIFIED BY THE PROJECT ENGINEER.
   - B. FOOTINGS MAY BE EITHER CIRCULAR OR SQUARE IN CROSS-SECTION. CIRCULAR FOOTINGS SHALL BE SQUARE FOR THE TOP 12".
   - C. WITH PERMISSION OF THE PROJECT ENGINEER, THE DEPTH OF THE FOOTING MAY BE REDUCED ONE (1) FOOT WHEN THE FOOTING IS PLACED IN A CONCRETE OR ASPHALTIC CONCRETE SIDEWALK OR PAVED SURFACE. THE FOOTING MAY BE REDUCED BY (1) FOOT WHEN THE FOOTING IS IN ROCK.
4. FORMS:
   - A. NO FORMS MAY EXTEND TO A DEPTH GREATER THAN 12" UNLESS APPROVAL IS GRANTED BY THE PROJECT ENGINEER.
5. CONDUIT:
   - A. THE RADIUS (R) OF THE CURVE OF THE INNER EDGE OF ANY BEND SHALL NOT BE LESS THAN THE SIZE SPECIFIED IN THE N.E.C.





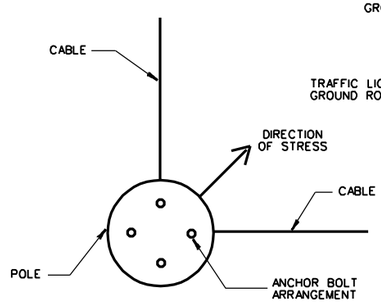


SIGNAL CONTROLLER CABINET BASE

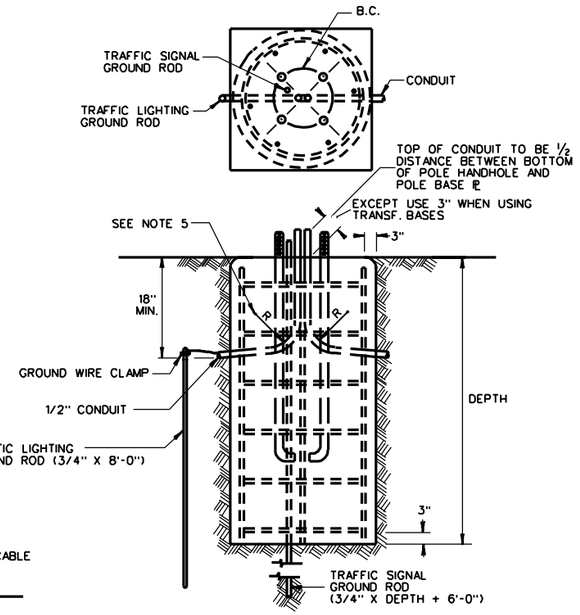


TOP VIEW OF FOOTER

DEFINITIONS:
3 GA. - 0.250 INCHES
2 PLY 3 GA. - 0.500 INCHES
0 GA. - 0.3125 INCHES



DIRECTION OF STRESS FOR SIGNAL POLES w/ TWO CABLES ATTACHED



FOUNDATION DETAILS

⚠1 FOUNDATIONS & REINFORCING STEEL

⚠2 CHANGED ANCHOR BOLTS & ADDED BOLT CIRCLES

⚠3 CHANGED GROUND RODS TO 3/4"

⚠4 ADDED PLATES

WEST VIRGINIA DIVISION OF HIGHWAYS

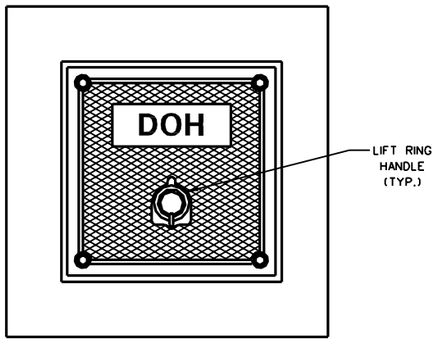
STANDARD DETAIL STEEL POLE FOUNDATION

PREPARED: 10/00/74
REVISIONS
⚠1 2/24/75
6/18/76
⚠2 10/5/77
⚠3 9/20/84
⚠4 9-14-93

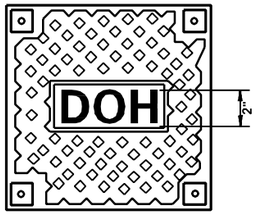
STANDARD SHEET TES-40

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



PLAN

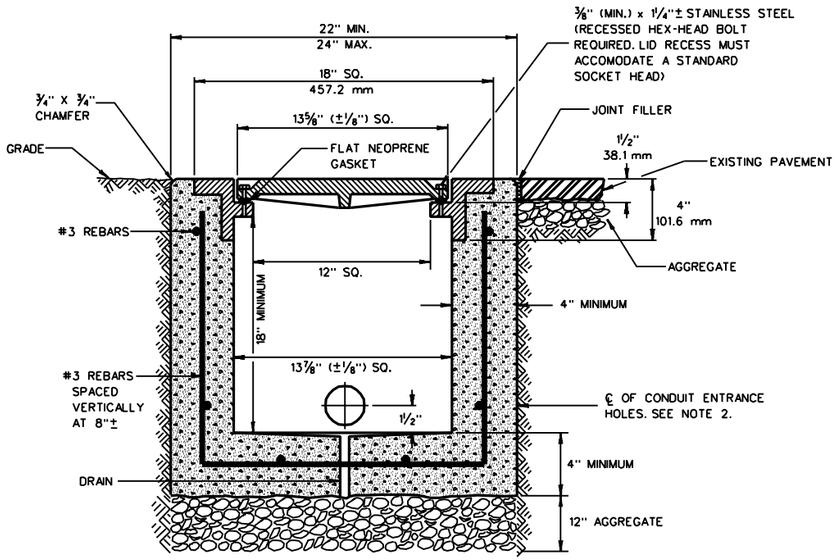


JUNCTION BOX COVER

CHECKERED, NON-SLIP SURFACE

(TYPE H AND L)

PLAN



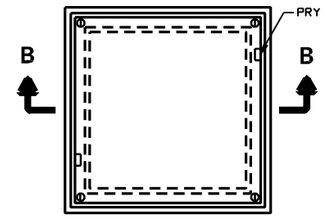
GENERAL NOTES

TYPE H AND TYPE L

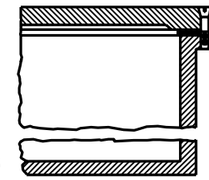
1. AGGREGATE TO BE COVERED WITH 3 PLY TAR PAPER OR OTHER APPROVED VAPOR BARRIER-DRAIN HOLE TO BE BROKE THRU AFTER COMPLETION.
2. AGGREGATE SHALL BE BY VISUAL INSPECTION AN EVENLY DISTRIBUTED MIXTURE OF PARTICLES BETWEEN 3/8" AND 3/4" DIAMETER.
3. BOTH TYPE H AND TYPE L JUNCTION BOXES SHALL BE GRAY IRON (FRAME AND LID). GRAY IRON SHALL MEET THE REQUIREMENTS OF SECTIONS 709.10 AND 715.42.11.2 OF THE SPECIFICATIONS.
4. THESE JUNCTION BOXES SHALL HAVE TYPE H-20 LOADING CAPACITY, BE WATERPROOF, AND THE COVER FRAME FOR THE TYPE H JUNCTION BOX SHALL BE CAST INTEGRAL WITH THE CONCRETE BOX.
5. FRAMES AND COVERS ARE SHOWN AS EXAMPLES ONLY. SHOP DRAWINGS SHALL BE SUBMITTED IF DETAILS AND DIMENSIONS VARY.

TYPE H ONLY

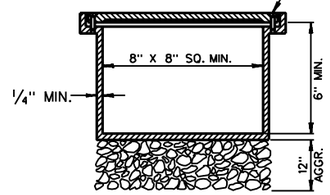
1. CONCRETE WHICH IS CAST IN PLACE SHALL MEET CLASS "B". CONCRETE WHICH IS PRECAST SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND AN AIR CONTENT OF 7 ±2 PERCENT.
2. ALL CONDUIT ENTRANCE HOLES TO BE THREE INCH DIAMETER WITH ONE INCH KNOCKOUT WALL. FOUR HOLES PER JUNCTION BOX ARE REQUIRED UNLESS NOTED OTHERWISE.
3. WHERE BOX IS SET IN OR POURED AGAINST PAVED AREA, A ½" JOINT FILLER IS TO BE USED.
4. WHEN BOX IS POURED IN PLACE, IN OTHER THAN PAVED AREA, THE TOP 3" SHALL BE FORMED.



PLAN



TWO–PIECE JUNCTION BOX (TYPE L)



SECTION B–B

⚠1 SIGNATURE BLOCK
⚠2 ADDED DIMENSIONS ON BOLT-HOLE
⚠3 DELETED 3-PIECE H BOX
⚠4 ADDED BOLT NOTE FOR H, ADDED SCREW AND THICKNESS NOTE FOR L, ADDED CAST IRON NOTES AND CONCRETE NOTES
⚠5 DELETED CADMIUM PLATED BOLT

WEST VIRGINIA DIVISION OF HIGHWAYS

SPECIAL DETAIL
JUNCTION BOXES
TYPE H, 10" x 10"
TYPE L, 8" x 8"

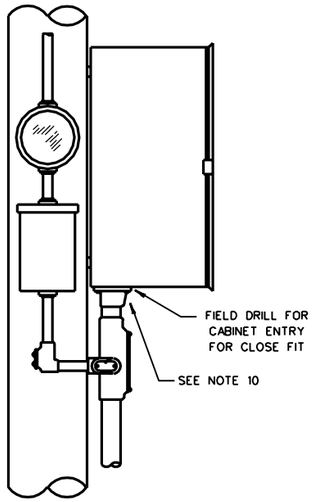
PREPARED: 05/00/67

REVISIONS
JAN. 1970
⚠1 10-12-76
⚠2 10-5-77
⚠3 9-29-78
⚠4 01-20-93
⚠5 10-29-93

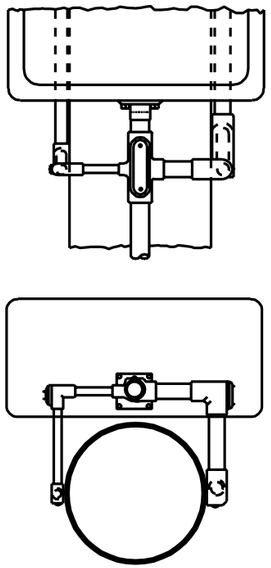
STANDARD SHEET TES–50

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

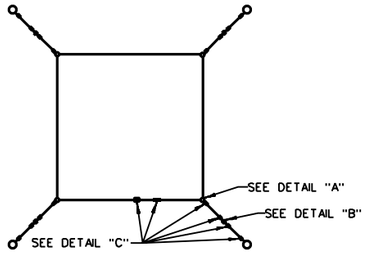


POWER SERVICE CONNECTION

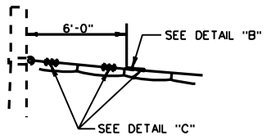


CONTROLLER OR DETECTOR SERVICE CONNECTION

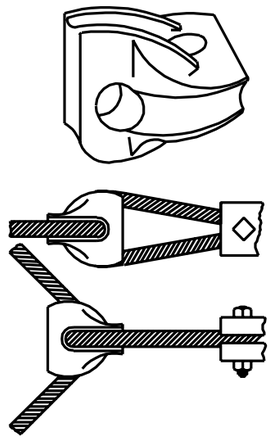
EXTERNAL CONDUIT CONNECTION
WOODEN POLE - ONLY



SUSPENDED BOX



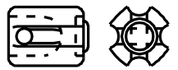
SPAN WIRE CONNECTIONS TO POLE



STRAND CONNECTOR

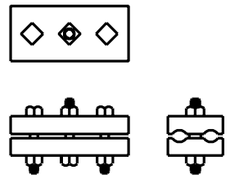
DETAIL "A"

STRAIN INSULATOR MAY BE SUBSTITUTED FOR THE STRAND CONNECTOR



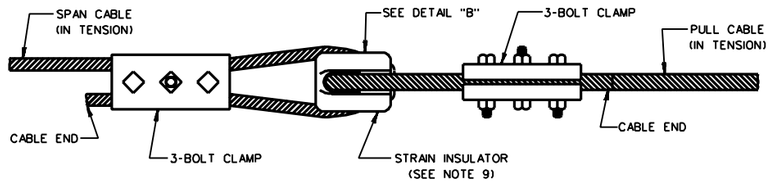
STRAND INSULATOR

DETAIL "B"

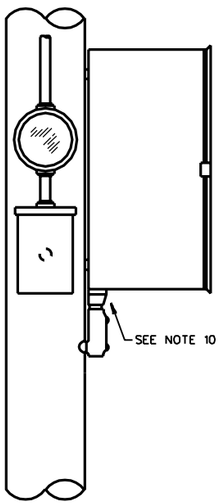


THREE BOLT CLAMP

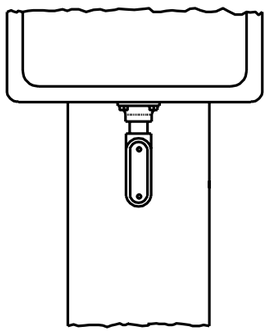
DETAIL "C"

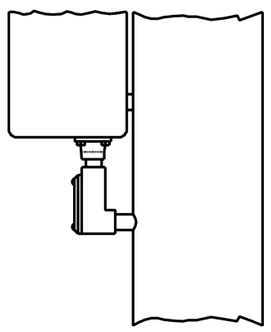


SPAN WIRE CONNECTION
CLAMP & INSULATOR



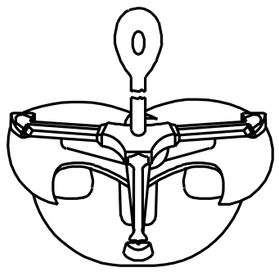
POWER SERVICE CONNECTION



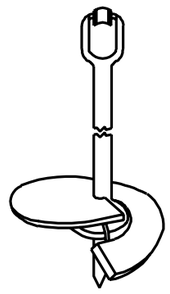


CONTROLLER OR DETECTOR SERVICE CONNECTION

INTERNAL CONDUIT CONNECTION



EXPANDING TYPE



SCREW TYPE

GUY ANCHORS

GENERAL NOTES

1. EXTERNAL CONDUIT CONNECTIONS:
   - A. ALL RIGHT ANGLE CONDUIT BENDS SHALL BE MADE WITH TYPE LB CONDULETS.
   - B. ALL CONDUIT CARRYING CONDUCTOR CABLE SHALL BE A MINIMUM OF TWO INCHES OR AS REQUIRED.
   - C. POWER SERVICE SHALL BE CARRIED IN 1-1/4" CONDUIT.
   - D. CONDULET SHALL BE CONSTRUCTED OF CAST STEEL ALLOY AND SHALL BE CADMIUM-GALVANIZED. THE CONDULETS SHALL BE WATER PROOFED BY USE OF A GASKET AND A CAST STEEL ALLOY COVER.
2. INTERNAL CONDUIT CONNECTIONS:
   - A. TYPE LB OR LBY CONDULETS AS SHOWN.
   - B. ALL CONDUIT CARRYING CONDUCTOR CABLE SHALL BE A MINIMUM OF TWO INCHES OR AS REQUIRED.
   - C. POWER SERVICE SHALL BE CARRIED IN 1-1/4" CONDUIT.
   - D. CONDULET SHALL BE CONSTRUCTED OF CAST STEEL ALLOY AND SHALL BE CADMIUM-GALVANIZED. THE CONDULETS SHALL BE WATER PROOFED BY USE OF A GASKET AND A CAST STEEL ALLOY COVER.
   - E. THE HOLE MAY BE DRILLED 1/16" DIAMETER LARGER THAN THE CONDUIT WHICH IS INSERTED IN THE HOLE. THEN THE CONNECTION SHALL BE DOUBLE-NUT SECURED ON BOTH SIDES WITH A BUSHING INSIDE, THE CONNECTION IS THEN SEALED WITH A RUBBER BASE SEALANT.
3. SUSPENDED BOX:
   - A. THE BOX SHALL BE SUSPENDED BY THE STRAND CONNECTOR, ILLUSTRATED IN DETAIL "A".
   - B. THE BOX SHALL BE INSULATED FROM THE POLES WITH THE STRAIN INSULATOR, ILLUSTRATED IN DETAIL "B".
   - C. ALL CONNECTIONS SHALL BE MADE WITH A THREE-BOLT CLAMP, ILLUSTRATED IN DETAIL "C".
4. STRAND CONNECTOR:
   STRAND CONNECTOR SHALL BE CAPABLE OF WITHSTANDING A TENSILE LOAD OF 25,000 POUNDS AND IT SHALL BE GROOVED FOR 3/8" OR 1/2" CABLE.
5. STRAIN INSULATOR:
   - A. THE STRAIN INSULATOR SHALL HAVE MINIMUM ULTIMATE TENSILE STRENGTH OF 10,000 POUNDS.
   - B. THE STRAIN INSULATOR SHALL HAVE AN OUTSIDE DIAMETER OF 2-1/2" AND AN OVERALL LENGTH OF 3-1/2".
6. THREE BOLT CLAMP:
   - A. THE THREE BOLT CLAMP SHALL BE GALVANIZED.
   - B. THE CLAMP SHALL BE 5-5/8" IN LENGTH AND EACH PLATE SHALL BE 3/8" THICK AND 1-1/2" WIDE.
   - C. THE STUD SIZE SHALL BE 7/8".
7. GUY ANCHORS:
   - A. GUY ANCHORS MAY BE EITHER THE EXPANDING TYPE OR SCREW TYPE (ILLUSTRATED), OR PLATE OR CONE TYPE ANCHORS (NOT ILLUSTRATED.
   - B. GUY ANCHORS SHALL BE GALVANIZED OR COATED WITH AN ASPHALT PAINT.
   - C. GUY ANCHORS SHALL BE OF SUCH DIMENSIONS AND STRENGTH TO WITHSTAND A TENSILE LOAD OF 7,000 POUNDS AND AN A-2 (AASHTO SOIL CLASSIFICATION) TYPE SOIL.
8. SPLICES:
   SPAN WIRE SHALL BE ERECTED WITHOUT SPLICES EXCEPT AS NOTED.
9. TYPICAL FOR STRAIN INSULATOR OR STRAND CONNECTOR AS WELL AS FOR STRAIN POLE CLEVIS CONNECTION.
10. CONDUIT CONNECTION TO ALL CABINETS SHALL BE MADE THROUGH THE BASE OF THE CABINETS ONLY.

⚠1 NOTES 1B,2B,2E
⚠2 REVISED CONDULET & ADDED NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL CONDUIT AND SPAN WIRE CONNECTIONS

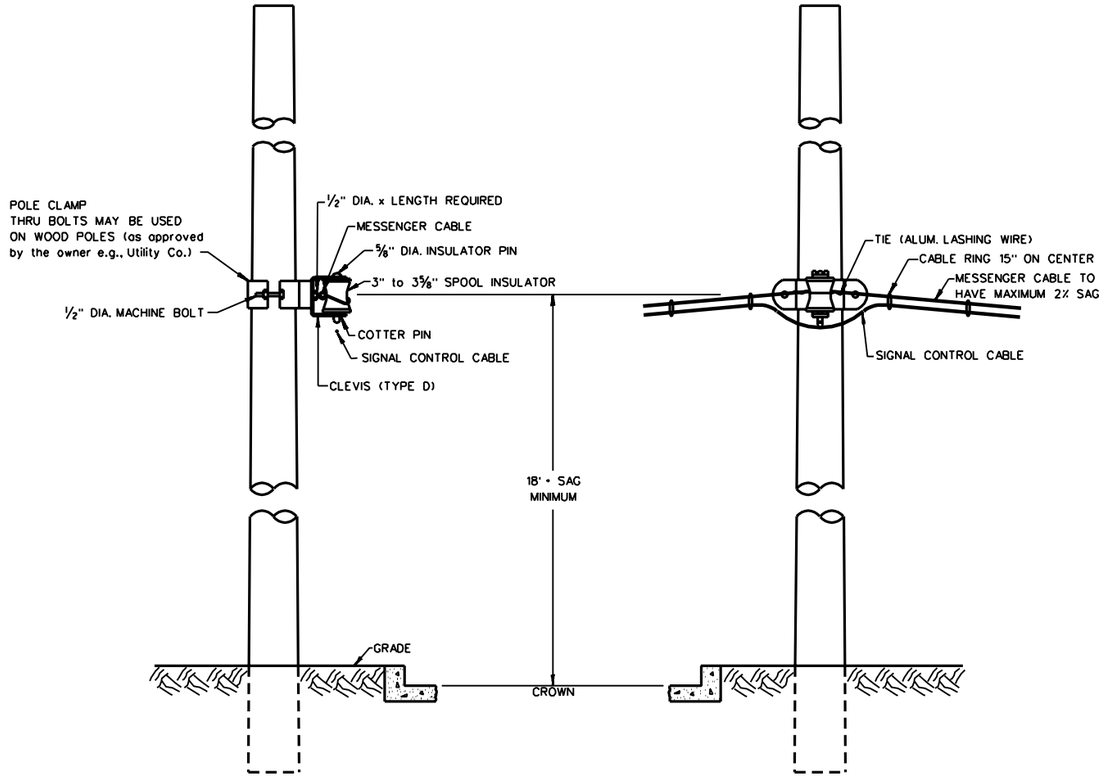
PREPARED: 08/00/67

REVISIONS
11-19-69
JAN.-1970
JAN.-1971
MAY-1971
JULY-1973
⚠1 12-3-76
⚠2 12-10-84

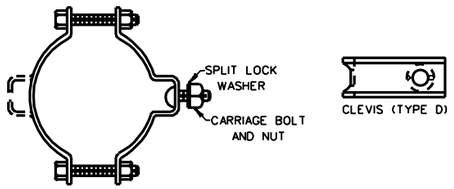
STANDARD SHEET TES-80

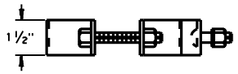
TRAFFIC ENGINEERING DIVISION

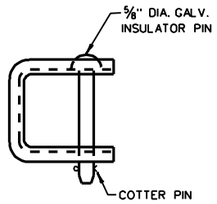
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



INTERCONNECT CABLE ATTACHMENT
METAL OR WOOD POLES

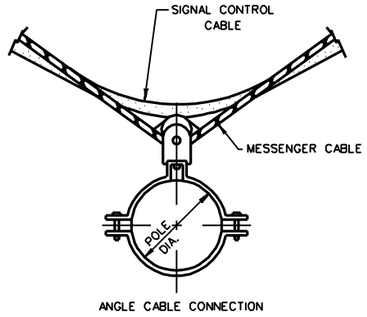




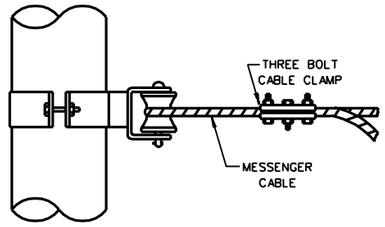


INTERCONNECT POLE CLAMP AND
CLEVIS ATTACHMENT

MUST USE FOR MESSENGER CABLE
MUST USE ON METAL POLES



ANGLE CABLE CONNECTION



DEAD END CONNECTION

MESSENGER CABLE CONNECTIONS

GENERAL NOTES

THE FOLLOWING EXTRACT FROM THE NATIONAL ELECTRICAL CODE SHALL BE USED AS A GENERAL GUIDELINE. (LOCAL CONDITIONS MAY DICTATE SOME VARIANCE WITH THIS SPACING AT THE DISCRETION OF THE PROJECT ENGINEER).

SIGNAL CONDUCTOR CABLE SUPPORT ON POLES SHALL HAVE A SEPARATION OF NO LESS THAN ONE FOOT EXCEPT WHEN PLACED ON RACKS OR BRACKETS.

SIGNAL CONDUCTOR CABLE SUPPORTED ON POLES SHALL PROVIDE A HORIZONTAL CLIMBING SPACE NOT LESS THAN FOLLOWING:

A. SIGNAL CONDUCTOR CABLE LOCATED BELOW EXISTING POWER LINES -- 12 INCHES FOR SECONDARY OR AS OTHERWISE DIRECTED ON THE PLANS OR BY THE LOCAL POWER COMPANY.

B. SIGNAL CONDUCTOR CABLE LOCATED ABOVE EXISTING COMMUNICATION LINES -- 30 INCHES.

C. SIGNAL CONDUCTOR CABLE LOCATED BELOW EXISTING COMMUNICATION LINES -- NOT ALLOWED UNLESS OTHERWISE DIRECTED ON THE PLANS OR BY THE OWNER.

⚠1 REVISED FIGURE "8" vs. MESSENGER CABLE ADDED J-HOOK FOR FIGURE "8"
⚠2 ADDED THRU - BOLT NOTE ON POLE CLAMP
⚠3 DELETED FIGURE "8"
⚠4 DELETED FIGURE '8' CABLE AND DETAILS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
INTERCONNECT

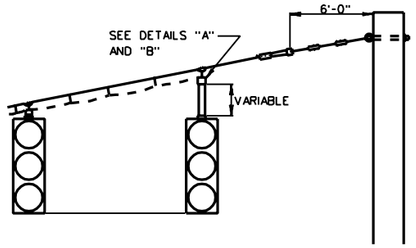
PREPARED: 01/00/70

REVISIONS
8/0/74
6/18/76
⚠1 3/23/77
⚠2 10/5/77
⚠3 5/5/84
⚠4 01-20-93

STANDARD SHEET TES-81

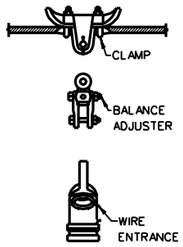
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

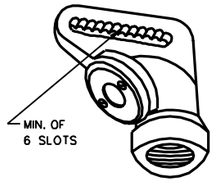


PIPING METHOD

PIPING MUST BE APPROVED BY THE ENGINEER. THE METHOD USED MUST NOT ALLOW HEADS TO TWIST OUT OF PROPER POSITION. (SEE NOTE NO. 1)

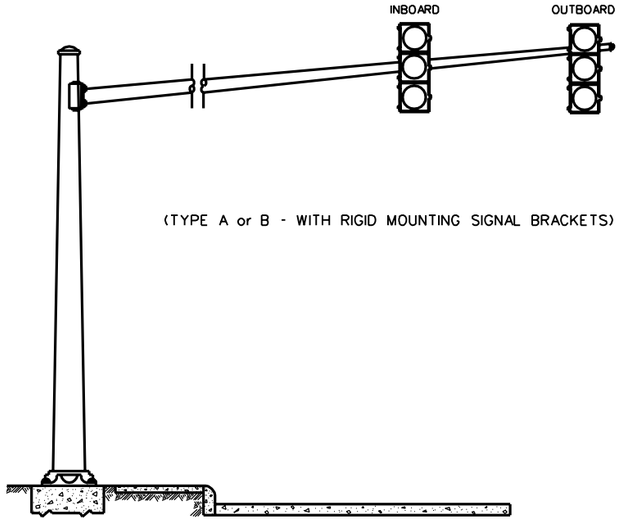


DETAIL "A"



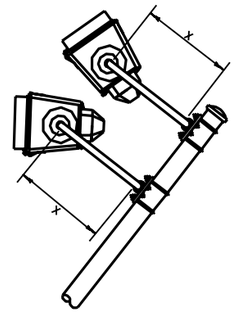
DETAIL "B

(WIRE ENTRANCE)



(TYPE A or B - WITH RIGID MOUNTING SIGNAL BRACKETS)

MAST ARM METHOD



PROGRAMMED HEADS

(MAST ARM - TOP VIEW)

(MAY BE EITHER OUTBOARD OR INBOARD)

GENERAL NOTES:

1. PIPING METHOD:

A. WHEN SIGNAL HEADS ARE SUSPENDED FROM SPAN WIRE OR MAST ARMS AND NOT RIGIDLY MOUNTED, AT LEAST ONE HEAD, PER SPAN OR ARM, SHALL BE DIRECTLY SECURED TO THE SPAN WIRE OR MAST ARM. IF APPROVED BY THE ENGINEER, THE REMAINING HEADS MAY BE PIPED TO ACHEIVE ROADWAY CLEARANCE. ALL SIGNAL HEADS SHALL HAVE A 17 FEET, PLUS OR MINUS 3 INCH CLEARANCE FROM BOTTOM OF THE SIGNAL HEAD TO THE PAVEMENT DIRECTLY BELOW IT, (UNLESS OTHERWISE SPECIFIED).

2. POST MOUNT METHODS:

A. POST MOUNT POSITION IS NOTED ON CONTRACT PLANS.

B. BOLT MOUNTED POST MOUNTS SHALL BE USED ONLY ON TYPE D POLES.

C. BRACKET (POST) MOUNTED SIGNAL HEADS SHALL BE INSTALLED AND ARRANGED TO ALLOW FULL 180° OPENING OF THE SIGNAL HEAD ACCESS DOOR.

3. MAST ARM MOUNT METHODS:

A. PROGRAM TYPE SIGNAL HEADS MUST BE MOUNTED WITH THE USE OF SEPARATE CLAMPING DEVICES, EXCEPT WHEN THEY ARE USED BACK TO BACK.

B. ALL VIEWS OF HARDWARE MOUNTING DEVICES MAY BE APPLIED TO SINGLE HEADS AS WELL AS FOR DOUBLE HEAD INSTALLATIONS,

C. THE "X" DIMENSION BETWEEN THE MOUNT OF A PROGRAMMED HEAD AND THE VERTICAL PIPING OR MAST ARM MUST BE NO LESS THAN 14" FOR DOOR CLEARANCE.

4. G-16 PEDESTRIAN HEADS

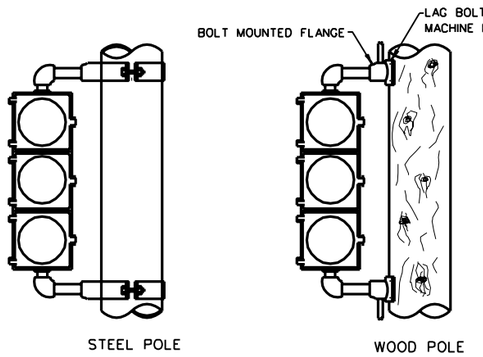
A. MUST BE INCANDESCENT TYPE WITH RATED BULB LIFE OF 8,000 HRS.

B. 69 WATT BULB TO BE USED IN "HAND" SECTION; 116 WATT BULB IN "WALKING PERSON" SECTION.

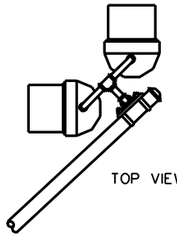
C. PEDESTRIAN HEAD TO BE CAST ALUMINUM AND BOTTOM HINGED.

D. SYMBOLIC DISPLAY TO BE MINIMUM 18" x 17".

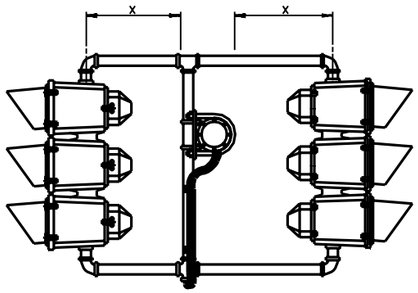
E. HIGH IMPACT GRID TYPE VISOR REQUIRED. NO OTHER VISOR TO BE USED UNLESS OTHERWISE SPECIFIED.



POST MOUNT METHOD

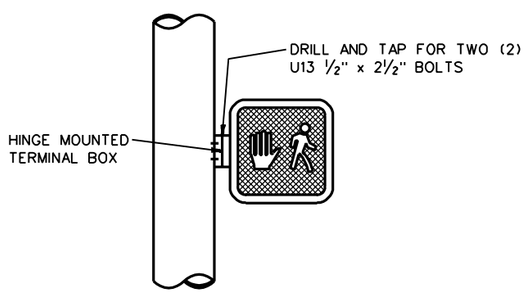


STANDARD HEADS ATTACHED TO MAST ARM

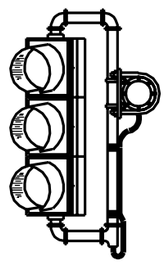


PROGRAMMED HEADS

(MAST ARM - BACK TO BACK)

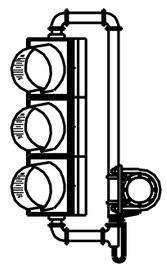


G-16 PEDESTRIAN POST MOUNT (STEEL)



TYPICAL ELEVATION

(OUTBOARD MOUNT)



TYPICAL ELEVATION

(INBOARD MOUNT)

⚠1 "X" DIMENSION FOR PROGRAMMED HEADS
⚠2 PIPING METHOD
⚠3 DETAIL "A"
⚠4 ADDED CLAMP - BALANCE ADJUSTER AND CHANGED NOTE 2
⚠5 ADDED G-16 POST PED POST MOUNT DETAILS AND ATTENDANT NOTE 4, RENAMED SHEET

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
VEHICULAR AND PEDESTRIAN HEADS (G-16)

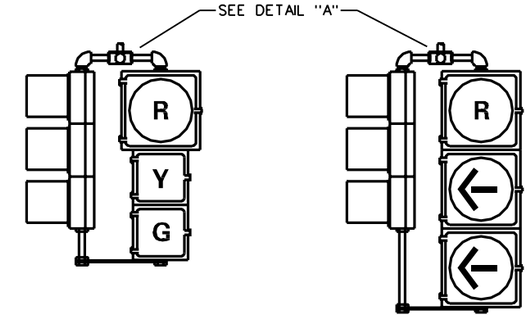
PREPARED: 01/00/73

REVISIONS
⚠1 1/00/74
⚠2 5/12/75
⚠3 12/03/76
⚠4 10/05/77
⚠5 02-04-93

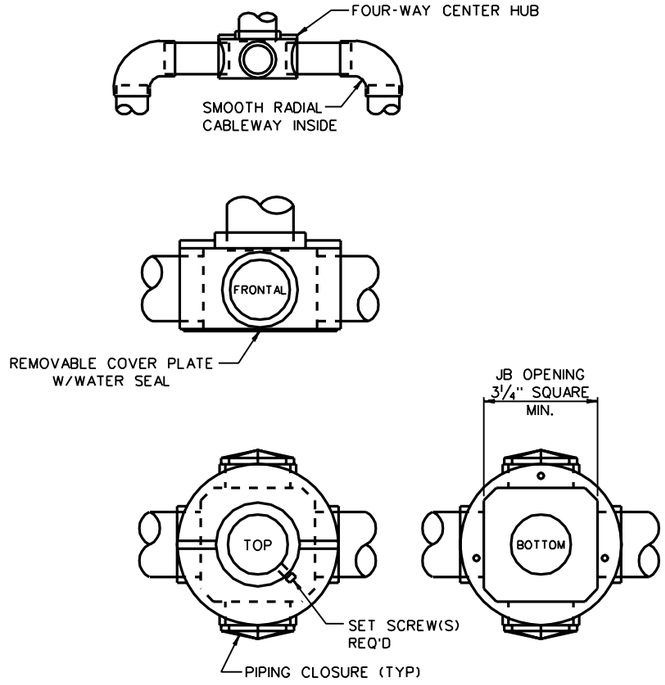
STANDARD SHEET TES-90

TRAFFIC ENGINEERING DIVISION

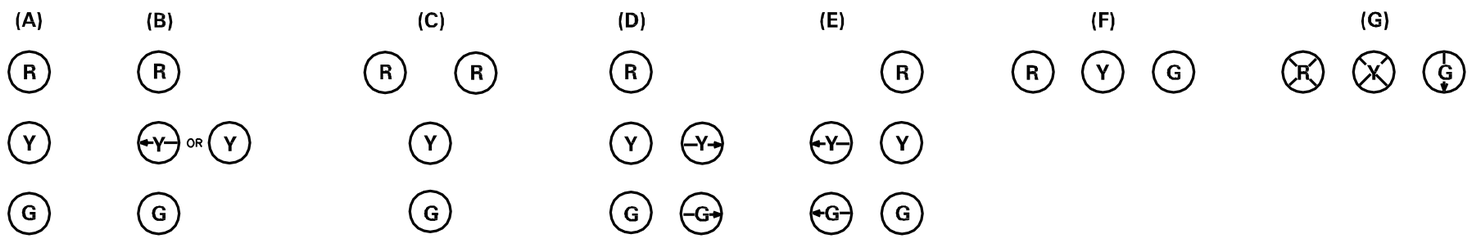
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



TYPICAL COMBINATIONS IN TWO-WAY AND FIVE SECTION ASSEMBLIES



DETAIL "A"



TYPICAL ARRANGEMENTS OF LENSES IN FACES

GENERAL NOTES

1. COMBINATION SIGNAL HEADS:

A. TWO-WAY, THREE-WAY, AND FOUR-WAY SIGNAL HEAD ASSEMBLIES SHALL HAVE THE RED SECTIONS LEVEL. IN SUCH CASES THE BOTTOM OF THE LOWEST SIGNAL HEAD SHALL BE 17 FEET (PLUS OR MINUS THREE INCHES) ABOVE THE PAVEMENT DIRECTLY BELOW IT, UNLESS OTHERWISE SPECIFIED.

B. THE BOTTOM HORIZONTAL BRACKET OF THE SIGNAL HEAD ASSEMBLIES SHALL BE ON THE BOTTOM OF THE LOWEST HEAD.

C. PIPING TO COMPENSATE FOR DIFFERENT LENGTH SECTIONS SHALL BE DONE AT THE BOTTOM AS SHOWN ON TES-90. THE PIPE SHALL BE 1-1/2" GALVANIZED STEEL PIPE PAINTED TO MATCH SIGNAL HEADS.

2. LENSE ARRANGEMENT:

A. LENSE ARRANGEMENT (A) IS TYPICAL FOR DUAL INDICATIONS ON STANDARD LANE TREATMENT.

B. LENSE ARRANGEMENT (B) IS TYPICAL FOR EXCLUSIVE (PROTECTED) LEFT TURN MOVEMENTS.

C. LENSE ARRANGEMENT (C) IS TYPICAL FOR SPECIAL USE LANE TREATMENT WHERE ONLY ONE SIGNAL HEAD IS USED TO CONTROL THE LANE.

D. LENSE ARRANGEMENT (D) IS TYPICAL FOR SITUATION ALLOWING A RIGHT TURN ON RED THAT IS EXCLUSIVE (PROTECTED).

E. LENSE ARRANGEMENT (E) IS TYPICAL FOR SITUATION ALLOWING PROTECTED AND PERMISSIVE LEFT TURN MOVEMENTS DURING THE DIFFERENT PHASES.

F. LENSE ARRANGEMENT (F) IS TYPICAL FOR DUAL INDICATIONS ON STANDARD LANE TREATMENT WHERE THERE IS A VERTICAL SIGHT DISTANCE OR OBSTRUCTION PROBLEM.

G. LENSE ARRANGEMENT (G) IS USED FOR REVERSIBLE LANE SITUATIONS.

3. SUPPORT HARDWARE:

A. ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO, AND INCLUDING THE WIRE INLET FITTING MUST BE FERROUS METAL FOR SIGNAL DISPLAYS OF TWO OR MORE HEADS.

B. FOUR-WAY CENTER HUB REQUIRED FOR ALL APPLICATIONS.

⚠1 WHOLE SHEET
⚠2 LABELED UPPER LEFT & DELETED CLEARANCE INTERVALS
⚠3 ADDED DETAIL "A" AND NOTE 3.

WEST VIRGINIA DIVISION OF HIGHWAYS

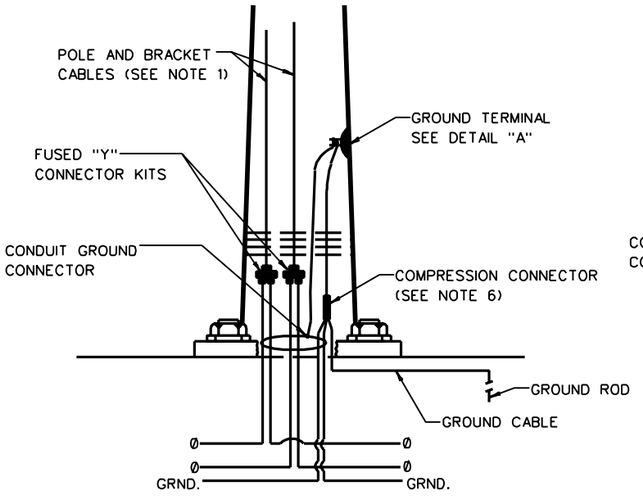
STANDARD DETAIL SIGNAL FACES AND MOUNTING HARDWARE

PREPARED: 01/00/73

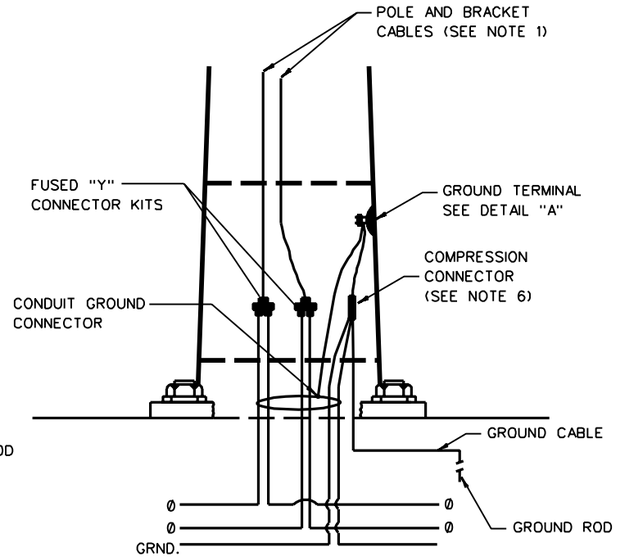
REVISIONS
⚠1 12/03/76
⚠2 12/10/84
⚠3 12/23/93

STANDARD SHEET TES-91

TRAFFIC ENGINEERING DIVISION



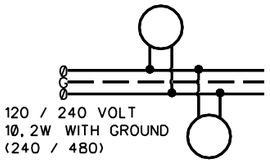
ANCHOR, SLIP AND FLUTED ALUMINUM BREAKAWAY COUPLING BASE POLES



CAST ALUMINUM BASE POLES

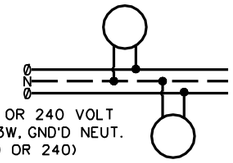
SIX OR LESS LUMINAIRES ON A WIRING RUN

LUMINAIRE WIRED WITH 240 VOLT BALLAST (TYPICAL) (480)



120 / 240 VOLT
10, 2W WITH GROUND
(240 / 480)

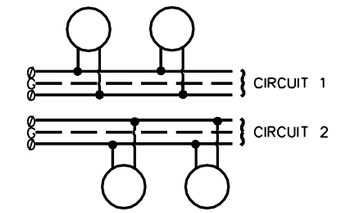
LUMINAIRE WIRED WITH 120 VOLT BALLAST (TYPICAL) (240)



120 OR 240 VOLT
10, 3W, GND'D NEUT.
(120 OR 240)

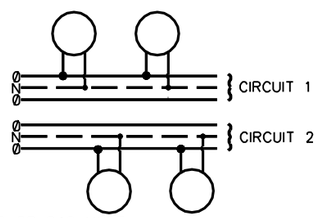
MORE THAN SIX LUMINAIRES ON A WIRING RUN

LUMINAIRE WIRED WITH 240 VOLT BALLAST (TYPICAL) (480)



120 / 240 VOLT
ONE PHASE, TWO WIRE
WITH GROUND
(240 / 480)

LUMINAIRE WIRED WITH 120 VOLT BALLAST (TYPICAL) (240)

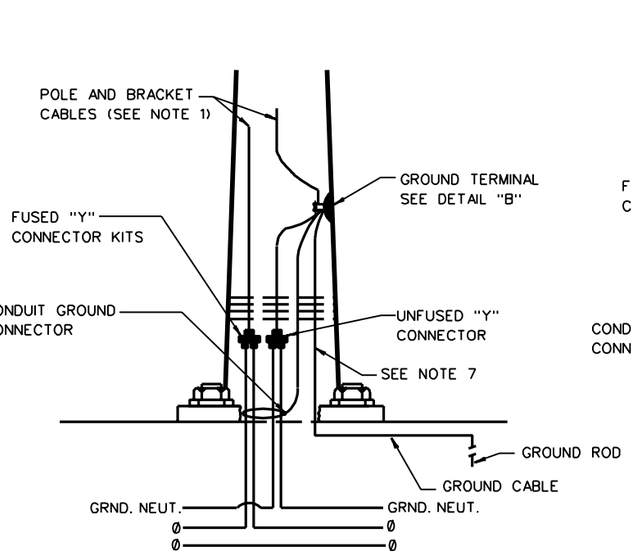


120 OR 240 VOLT
ONE PHASE, THREE WIRE
GROUNDED NEUTRAL
(120 OR 240)

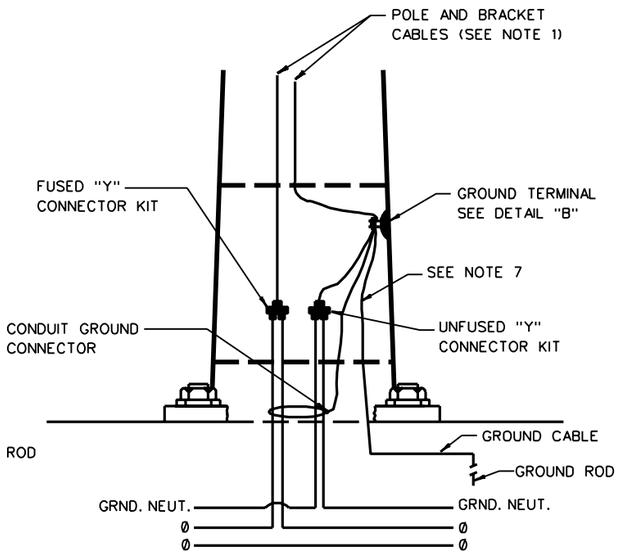
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES:

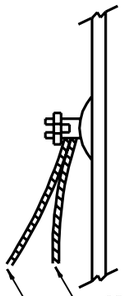
1. ALL INTERNAL ROADWAY LIGHTING SHALL BE DONE USING #10 AWG STRANDED COPPER WIRE.
2. FOR CONNECTOR KIT DETAILS SEE TEL-09A.
3. GROUND RODS SHALL BE A MINIMUM OF 1" DIA. 10 FEET IN LENGTH, SOLID, WITH DRIVING POINT AT ONE END.
4. CONDUIT SHALL EXTEND 4 INCHES ABOVE TOP OF FOUNDATION INTO POLE BASE AND SHALL HAVE BUSHINGS. (UNLESS OTHERWISE INDICATED ON THAT BASE DETAIL).
5. GROUND WIRES SHALL BE INSULATED (GREEN) COPPER CONDUCTOR EQUAL IN SIZE TO THE LARGEST ADJOINING PHASE WIRE EXCEPT WHERE OTHERWISE CALLED FOR ON THE PLANS.
6. WHEN USING TYPE P CONDUIT, AN ADDITIONAL SYSTEM BARE GROUND SHALL BE INSTALLED FROM THIS COMPRESSION CONNECTOR OUTSIDE THE CONDUIT FOR THE ENTIRE SYSTEM.
7. WHEN USING TYPE P CONDUIT, A COMPRESSION CONNECTOR SHALL BE INSTALLED AT THIS LOCATION WHICH SHALL CONNECT THE GROUND ROD WIRE AND AN ADDITIONAL SYSTEM BARE GROUND WHICH SHALL BE INSTALLED FROM THIS COMPRESSION CONNECTOR OUTSIDE THE CONDUIT FOR THE ENTIRE SYSTEM.



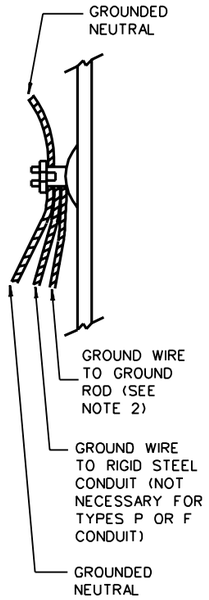
ANCHOR, SLIP AND FLUTED ALUMINUM BREAKAWAY COUPLING BASE POLES



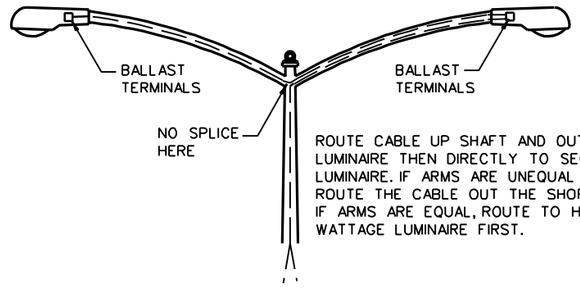
CAST ALUMINUM BASE POLES



DETAIL "A"



DETAIL "B"



120 OR 240 VOLTS, THREE WIRE, GROUNDED NEUTRAL
(120 OR 240 VOLT BALLAST)

⚠1 CHANGED TOP TO WITH GROUND, BOTTOM TO 120 OR 240
⚠2 ADDED NEW APPROVED BREAKAWAY BRACES
⚠3 ADDED LUM. WIRING WITH MORE THAN SIX LUMINAIRES ON A RUN.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL POLE AND SYSTEM WIRING DETAILS

PREPARED: / /

REVISIONS
6/1/76
⚠1 12/10/76
⚠2 10/24/77
12/3/80
⚠3 09-14-93

STANDARD SHEET TEL-01

TRAFFIC ENGINEERING DIVISION

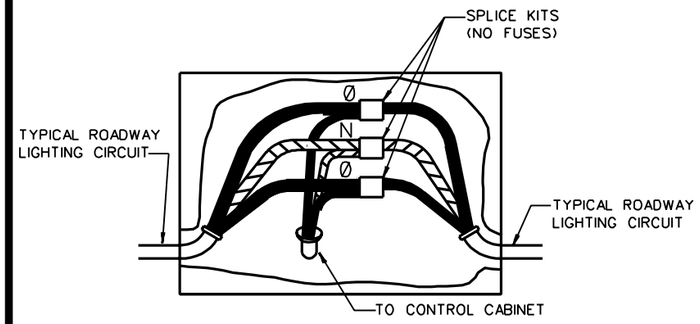
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

SIGN LIGHTING CONTROL CABINET WIRING DIAGRAMS

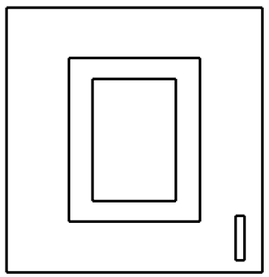
(FOR USE WITH ROADWAY LIGHTING POWER SOURCE)

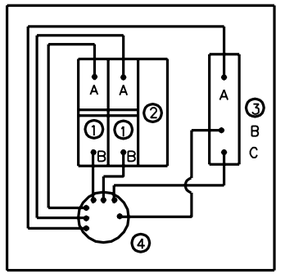
GENERAL
DETAIL OF THIS SHEET SHALL APPLY TO EACH OVERHEAD SIGN STRUCTURE THAT SUPPORTS EXTERNALLY ILLUMINATED SIGNS POWERED FROM A ROADWAY LIGHTING CIRCUIT.
ADDITIONAL NOTES APPLICABLE TO THIS SHEET MAY BE FOUND ON STANDARD SHEETS TE6-3B, TE6-3C, AND TE6-3D.

NOTE
1. COMPONENTS SHALL BE SIZED AS REQUIRED ACCORDING TO LOAD.



120/240 VOLT JUNCTION BOX DETAIL

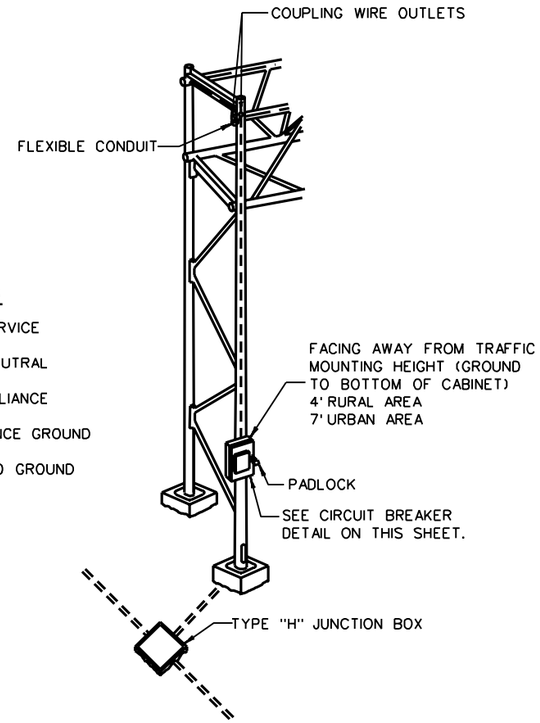




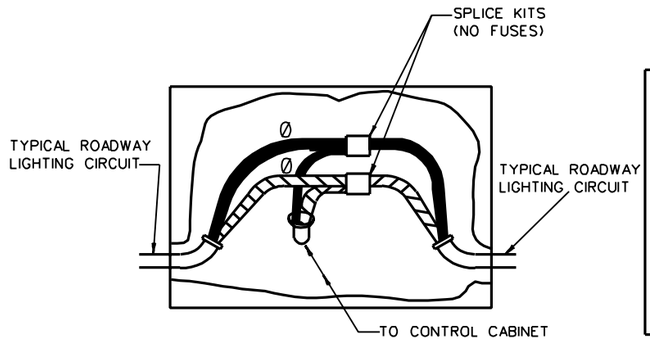
120 or 240 VOLT CONTROL CABINET

LEGEND
1. CIRCUIT BREAKER, SEE NOTE 1.
2. SPACE FOR FUTURE BREAKER
3. SOLID NEUTRAL GROUND BAR
4. CONDUIT HUB (POLE TYPE) (2" CHASE NIPPLE)

WIRING
1A - LINE SERVICE
3A - LINE NEUTRAL
1B - TO APPLIANCE
3B - APPLIANCE GROUND
3C - LINE TO GROUND

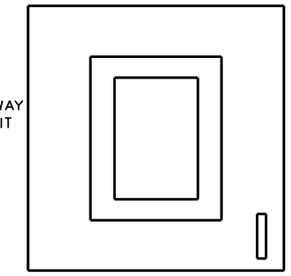


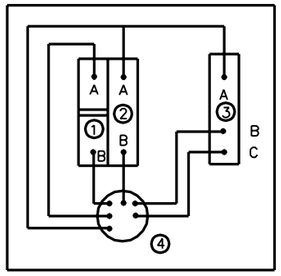
TYPICAL INSTALLATION



480 VOLT (*) JUNCTION BOX DETAIL

(*) FOR 480 VOLT UNGROUNDED SYSTEM BOTH WIRES ARE PHASE WIRES WITHOUT ANY NEUTRAL WIRE.





480 VOLT (*) CONTROL CABINET

(*) FOR 480 VOLT UNGROUNDED SYSTEMS, THE SECOND BREAKER IS INSTALLED AND WIRE LEAD 3A BECOMES 2A (A PHASE WIRE), WIRE 2B PARALLELS WIRE 1B.

LEGEND
1. CIRCUIT BREAKER, SEE NOTE 1.
2. SPACE FOR FUTURE BREAKER
3. SOLID NEUTRAL GROUND BAR
4. CONDUIT HUB (POLE TYPE) (2" CHASE NIPPLE)

WIRING
1A - LINE SERVICE
3A - LINE NEUTRAL
1B - TO APPLIANCE
3B - APPLIANCE GROUND
3C - LINE TO GROUND

⚠ DELETED UNIVERSAL QUICK DISCONNECT
⚠ CHANGED TO WIRING AT TOP

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL SIGN LIGHTING WITH ROADWAY LIGHTING

PREPARED: 01/20/75

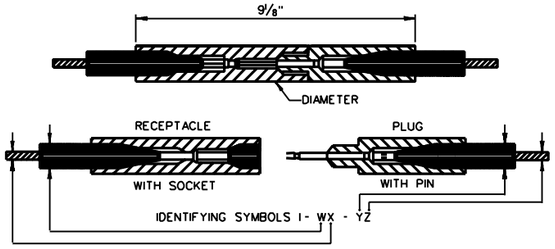
REVISIONS
⚠ 07-22-76
⚠ 12-10-76

STANDARD SHEET TEL-06

TRAFFIC ENGINEERING DIVISION

CABLE CONNECTOR KITS
TYPES 1 THRU 6

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



TO SPECIFY THE PROPER KIT FOR AN INSTALLATION SELECT FROM THE TABLES BELOW THE SYMBOLS WHICH COINCIDE WITH THE REQUIREMENTS AND SUBSTITUTE FOR (W,X) (Y,Z) RESPECTIVELY.

CABLE DIAMETER		SYMBOL FOR X AND Z
MIN.	MAX.	
.195"	.260"	B*
.250"	.330"	C*
.320"	.430"	D*
.420"	.585"	E
.575"	.785"	F
.775"	.985"	G
.975"	1.125"	H

CONDUCTOR SIZE AWG		SYMBOL FOR X AND Z
CONCENTRIC STRANDED	SOLID	
#10, #12	#8,#10	6
#8	#6	4
#6	#4	3
#4	–	2
#2	–	1

* MOLDED RUBBER ADAPTERS ARE A PART OF THESE KITS FOR SMALL DIAMETER CAVLES.

EXAMPLE

IF THE INSTALLATION REQUIRES A RECEPTACLE FOR NO. 6 STRANDED CONDUCTOR AND A CABLE DIAMETER OF .660" AND A PLUG FOR NO. 8 SOLID CONDUCTOR AND A CABLE DIAMETER OF .460", THE KIT REQUIRED WILL BE I-F3-E6.

TYPE 1
IN-LINE SELF-LOCKING CONNECTOR KIT FOR PULL* BOX INSTALLATION

(*) WHEREVER JUNCTION BOXES ARE USED FOR WIRE PULLING PURPOSES ONLY.

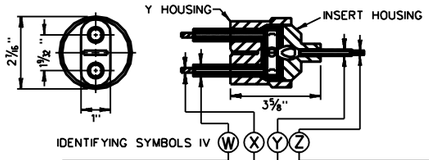


TABLE (W)

CABLE DIAMETER		SYMBOL FOR (W)
MIN.	MAX.	
.195"	.260"	B
.250"	.330"	C
.320"	.380"	DA
.370"	.430"	DB
.420"	.505"	EA
.495"	.585"	EB
.575"	.685"	FA
.675"	.785"	FB

TABLE (X)

COPPER CONDUCTOR(AWG)		SYMBOL FOR (X)
CONCENTRIC STRANDED	SOLID	
–	#8	6
#8	#6	4
#6	#4	3
#4	–	2
#2	–	1
#1	–	0
#1/0	–	10
#2/0	–	20

TABLE (Y)

CABLE DIAMETER		SYMBOL FOR (Y)
MIN.	MAX.	
.120"	.160"	S
.155"	.205"	A
.195"	.260"	B
.250"	.330"	C
.320"	.430"	D
.420"	.585"	E
.575"	.785"	F

TABLE (Z)

COPPER CONDUCTOR(AWG)		SYMBOL FOR (Z)
CONCENTRIC STRANDED	SOLID	
#14,#16	#12,#14	8
#10,#12	#8,#10	6
#8	#6	4
#6	#4	3
#4	–	2
#2	–	1
#1/0	–	10
#2/0	–	20

EXAMPLE

IF THE TWIN CABLE OUTSIDE DIAMETER (W) IS .54" AND THEIR CONDUCTOR (X) IS NO. 2 STRANDED, AND THE SINGLE CABLE OUTSIDE DIAMETER (Y) IS .29" AND THE CONDUCTOR (Z) IS NO. 12 STRANDED, THE KIT REQUIRED WILL BE IV-EB1-C6.

TYPE 4
UNFUSED "Y" CONNECTOR KIT FOR PULL* BOX INSTALLATION

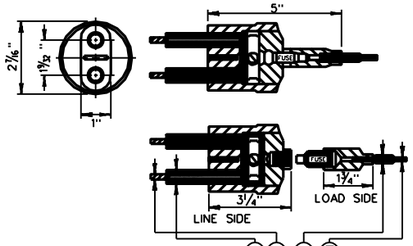


TABLE (W)

CABLE DIAMETER		SYMBOL FOR (W)
MIN.	MAX.	
.195"	.260"	B
.250"	.330"	C
.320"	.380"	DA
.370"	.430"	DB
.420"	.505"	EA
.495"	.585"	EB
.575"	.685"	FA
.675"	.785"	FB

TABLE (X)

COPPER CONDUCTOR(AWG)		SYMBOL FOR (X)
CONCENTRIC STRANDED	SOLID	
–	#8	6
#8	#6	4
#6	#4	3
#4	–	2
#2	–	1
#1	–	0
#1/0	–	10
#2/0	–	20

TABLE (Y)

CABLE DIAMETER		SYMBOL FOR (Y)
MIN.	MAX.	
.120"	.160"	S
.155"	.205"	A
.195"	.260"	B
.250"	.330"	C
.320"	.430"	D

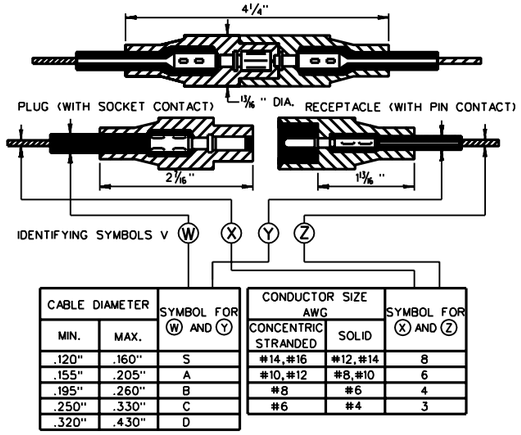
TABLE (Z)

COPPER CONDUCTOR(AWG)		SYMBOL FOR (Z)
CONCENTRIC STRANDED	SOLID	
#14,#16	#12,#14	8
#10,#12	#8,#10	6
#8	#6	4
#6	#4	3

EXAMPLE

IF THE LINE OUTSIDE DIAMETER (W) IS .42" AND THE CONDUCTOR (X) IS NO. 6 STRANDED, AND THE LOAD SIDE OUTSIDE DIAMETER (Y) IS .29" AND THE CONDUCTOR (Z) IS NO. 12 STRANDED THE KIT REQUIRED WILL BE II-DB3-C6.

TYPE 2
FUSED "Y" CONNECTOR KIT FOR POLE BASE INSTALLATION



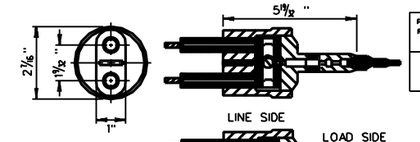
CABLE DIAMETER		SYMBOL FOR (W) AND (Y)
MIN.	MAX.	
.120"	.160"	S
.155"	.205"	A
.195"	.260"	B
.250"	.330"	C
.320"	.430"	D

CONDUCTOR SIZE AWG		SYMBOL FOR (X) AND (Z)
CONCENTRIC STRANDED	SOLID	
#14,#16	#12,#14	8
#10,#12	#8,#10	6
#8	#6	4
#6	#4	3

EXAMPLE

IF THE INSTALLATION REQUIRES A PLUG FOR A CABLE DIAMETER OF .38" AND A NO. 8 STRANDED CONDUCTOR, AND A RECEPTACLE FOR A CABLE DIAMETER OF .27", AND A NO. 14 STRANDED CONDUCTOR, THE KIT REQUIRED WILL BE V-D4-C8.

TYPE 5
UNFUSED IN-LINE CONNECTOR KIT FOR JUNCTION BOX INSTALLATION



IDENTIFYING SYMBOLS III - (W) (X) (Y) (Z)

CABLE DIAMETER		SYMBOL FOR (W)
MIN.	MAX.	
.195"	.260"	B
.250"	.330"	C
.320"	.380"	DA
.370"	.430"	DB
.420"	.505"	EA
.495"	.585"	EB
.575"	.685"	FA
.675"	.785"	FB

COPPER CONDUCTOR(AWG)		SYMBOL FOR (X)
CONCENTRIC STRANDED	SOLID	
–	#8	6
#8	#6	4
#6	#4	3
#4	–	2
#2	–	1
#1	–	0
#1/0	–	10
#2/0	–	20

CABLE DIAMETER		SYMBOL FOR (Y)
MIN.	MAX.	
.120"	.160"	S
.155"	.205"	A
.195"	.260"	B
.250"	.330"	C
.320"	.430"	D

COPPER CONDUCTOR(AWG)		SYMBOL FOR (Z)
CONCENTRIC STRANDED	SOLID	
#14,#16	#12,#14	8
#10,#12	#8,#10	6
#8	#6	4
#6	#4	3

EXAMPLE

IF THE LINE SIDE CABLE OUTSIDE DIAMETER (W) IS .54" AND THE CONDUCTOR (X) IS NO. 2 STRANDED, AND THE LOAD SIDE CABLE OUTSIDE DIAMETER (Y) IS .29" AND THE CONDUCTOR (Z) IS NO. 12 STRANDED, THE KIT REQUIRED WILL BE III-EB1-C6.

TYPE 3
UNFUSED "Y" CONNECTOR KIT FOR POLE BASE INSTALLATION

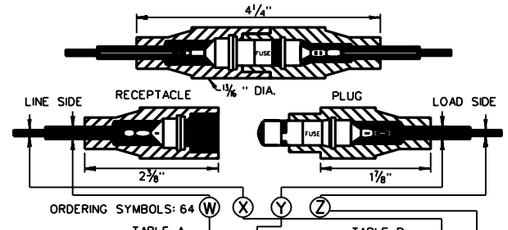


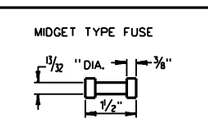
TABLE A

CABLE DIAMETER		SYMBOL FOR (W) AND (Y)
MIN.	MAX.	
.110"	.110"	T
.120"	.160"	S
.155"	.205"	A
.195"	.260"	B
.250"	.330"	C
.320"	.430"	D

TABLE B

CONDUCTOR SIZE AWG		SYMBOL FOR (X) AND (Z)
CONCENTRIC STRANDED	SOLID	
#14,#16	#12,#14	8
#10,#12	#8,#10	6
#8	#6	4
#6	#4	3

MIDGET TYPE FUSE



ANY STANDARD MIDGET, FERRULE TYPE FUSE, (EXCEPT GLASS TUBE) MAY BE USED IN THIS CONNECTOR. FUSES RATED 600 VOLTS AND 30 AMPERES, MINIMUM SHALL BE USED UNLESS OTHERWISE SPECIFIED.

EXAMPLE

IF THE LINE OUTSIDE DIAMETER (W) IS .42" AND THE CONDUCTOR (X) IS NO. 6 STRANDED, AND THE LOAD SIDE OUTSIDE DIAMETER (Y) IS .29" AND THE CONDUCTOR (Z) IS NO. 12 STRANDED, THE KIT REQUIRED WILL BE VI-D3-C6.

TYPE 6
FUSED IN-LINE CONNECTOR KIT FOR JUNCTION BOX INSTALLATION

⚠SIGNATURE BLOCK

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
ELECTRICAL CABLE CONNECTOR KITS

PREPARED: 07/18/75

REVISIONS
⚠ 12-10-76

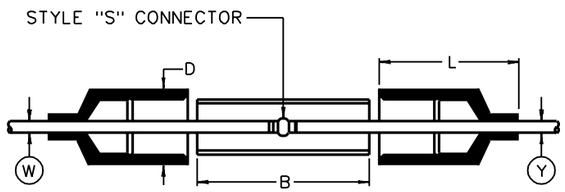
STANDARD SHEET TEL-09A

TRAFFIC ENGINEERING DIVISION

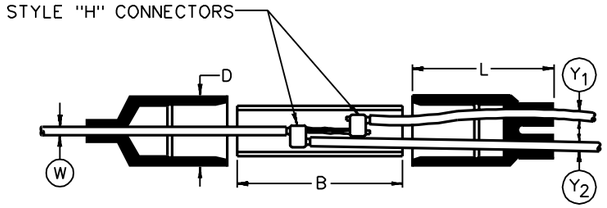
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

CABLE CONNECTOR KITS
TYPE 7 THRU 9

TYPE 7 CABLE CONNECTOR KITS

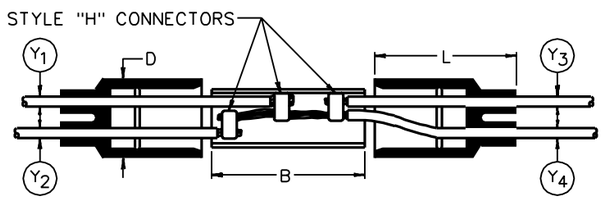


STRAIGHT LINE SPLICE
TYPE 7A



Y_1 AND Y_2 MUST BE THE SAME SIZE

TWO-WAY SPLICE
TYPE 7B



Y_1 AND Y_2 MUST BE THE SAME SIZE Y_3 AND Y_4 MUST BE THE SAME SIZE

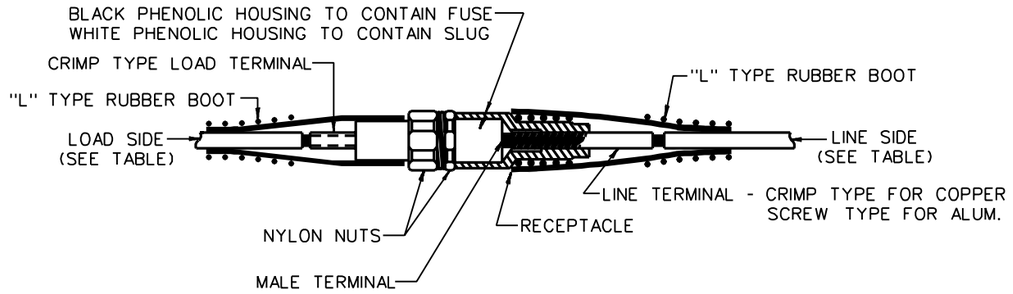
THREE-WAY SPLICE
TYPE 7C

TABLE OF NOMINAL TYPE 7 KIT STYLE VARIATIONS REQUIRED

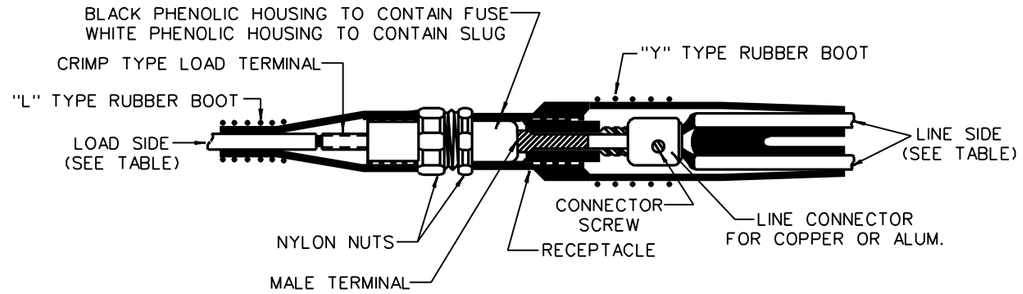
B	D	L	CABLE DIAMETER MIN.	CABLE DIAMETER MAX.	AWG 600V CABLE
3" AND 7"	1 29/32"	4 1/16"	.320"	.430"	NO.6 AND NO.4
	"	"	.420"	.585"	NO.2 AND NO.2/0
	"	"	.575"	.785"	NO.3/0-250MCM*
	"	"	.775"	.985"	200MCM-400MCM
	"	4 3/16"	.975"	1.185"	500MCM
	"	4 5/16"	1.175"	1.385"	600MCM-750MCM

*MAXIMUM "Y" CABLE SIZE. SEE CATALOGS OR DESIGN DRAWINGS FOR SPECIFIC KIT SYMBOLIZATION REQUIRED IN EACH APPLICATION.

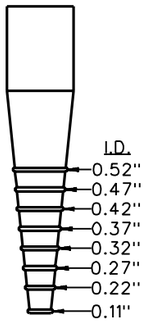
TYPE 8 & 9 CABLE CONNECTOR KITS



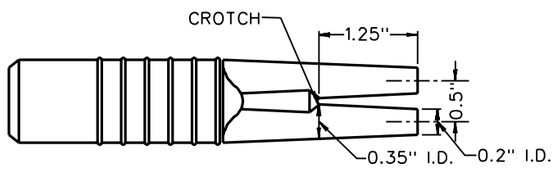
TYPE 8 "AL" - IN-LINE ALUMINUM
TYPE 8 "CU" - IN-LINE COPPER



TYPE 9 "AL" - T-TAP ALUMINUM
TYPE 9 "CU" - T-TAP COPPER



"L" TYPE
RUBBER BOOT



"Y" TYPE RUBBER BOOT

NOTES:

1. STYLE "S" CONNECTORS SHALL BE THE SPLICING SLEEVE TYPE CONSISTING OF A CRIMPABLE PLATED COPPER SLEEVE WITH A THIN METAL WALL ("STOP") IN THE BARREL CENTERED BETWEEN EACH SLEEVE END IN SUCH A MANNER THAT THE SLEEVE SHALL ENCLOSE EQUAL LENGTHS OF THE TWO CONDUCTORS BEING SPLICED END TO END. THE BARREL OF THE SLEEVE WILL FIT SPECIFIC RANGES OF CONDUCTOR SIZES. THE MANUFACTURER'S INSTRUCTIONS RELATING THERETO SHALL BE STRICTLY FOLLOWED.
2. STYLE "H" CONNECTORS SHALL BE THE PARALLEL GROOVE CONNECTOR CONSISTING OF A METAL BODY HAVING TWO FULLY-OPENED GROOVES OR SLOTS PARALLEL TO EACH OTHER, AND SEPARATED BY A PORTION OF THE CENTER SECTION OF THE BODY. THE TOTAL CIRCUMFERENCE OF EACH CONDUCTOR SHALL BE COMPLETELY SURROUNDED BY METAL WHEN THE CONNECTOR IS DEPRESSED.
3. THE FUSEHOLDER SHALL BE CAPABLE OF RETAINING A 13/32 INCH DIAMETER BY 1 1/2 INCH LONG FUSE RATED AT 600 VOLT AND A MINIMUM OF 30 AMPERES.
4. THE "Y" TYPE BOOT SHALL NOT BE CUT BEYOND THE CROTCH WHERE THE INSIDE DIAMETER OF EACH LEG IS 0.35". USE OF A CABLE OF 0.48" O.D. IN THE "Y" TYPE BOOT MAY REQUIRE THE APPLICATION OF A LUBRICATING COMPOUND ON THE CABLE INSULATION FOR IT TO SLIDE INTO THE BOOT.
5. IF THE CABLE HAS A NYLON JACKET, THE JACKET SHALL BE PEELED BACK TO A POINT WHERE NO PART OF THE JACKET IS ENCASED IN THE BOOT OF THE INSULATED CABLE.

⚠ SIGNATURE BLOCK
⚠ CHANGE NOTE 3 - AMPERAGE RATING

WEST VIRGINIA DIVISION OF HIGHWAYS

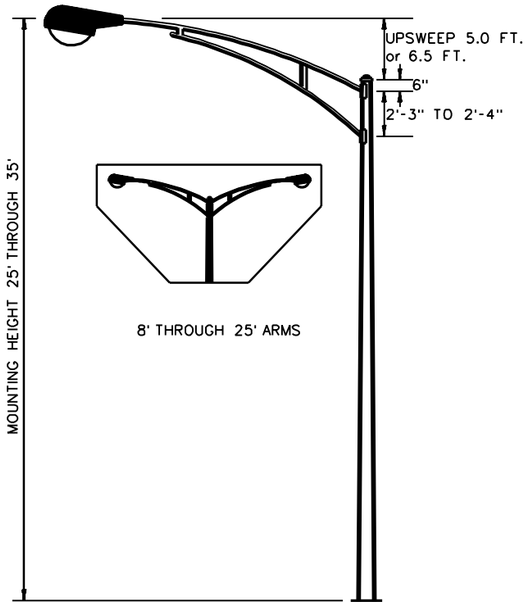
STANDARD DETAIL ELECTRICAL CABLE CONNECTOR KITS

PREPARED: 07/18/75

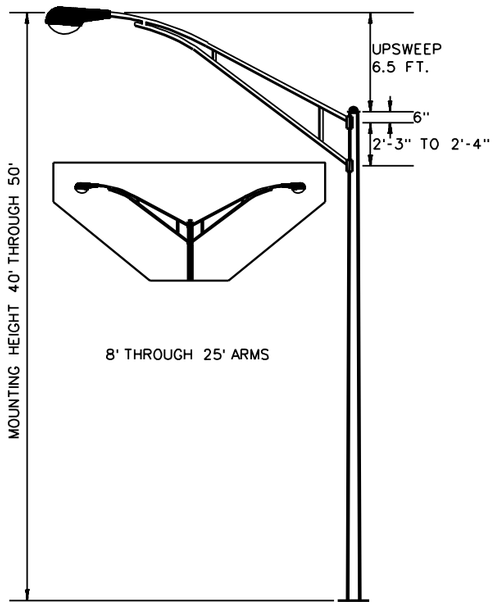
REVISIONS
⚠ 12-10-76
⚠ 07-07-89

STANDARD SHEET TEL-09B

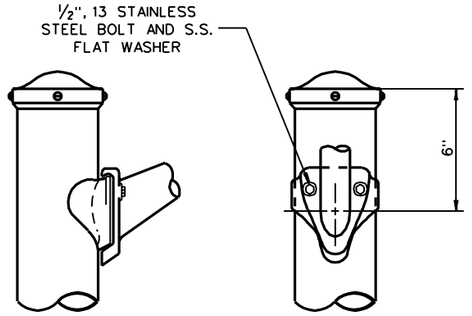
TRAFFIC ENGINEERING DIVISION



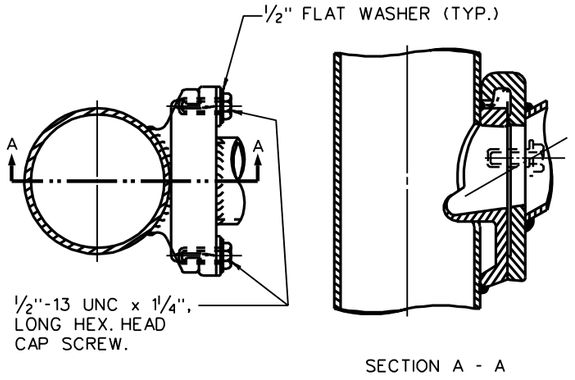
STYLE I



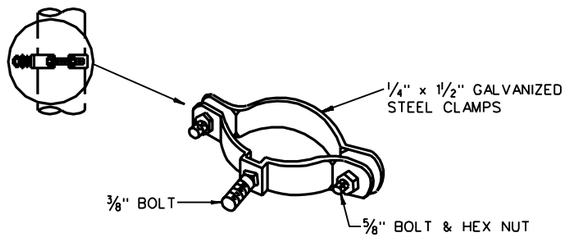
STYLE I (continued)



TWO BOLT ARM ATTACHMENT
(OPTION NO. 1)



TWO BOLT ARM ATTACHMENT
(OPTION NO. 2)



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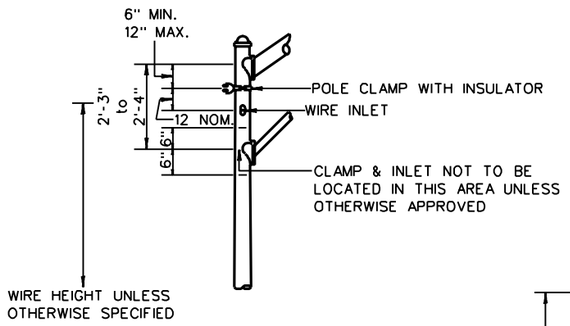
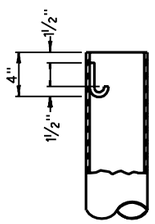
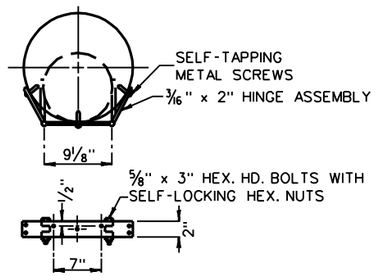


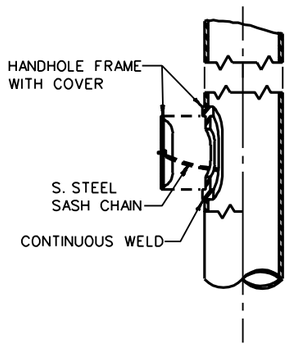
OVERHEAD WIRE ENTRANCE



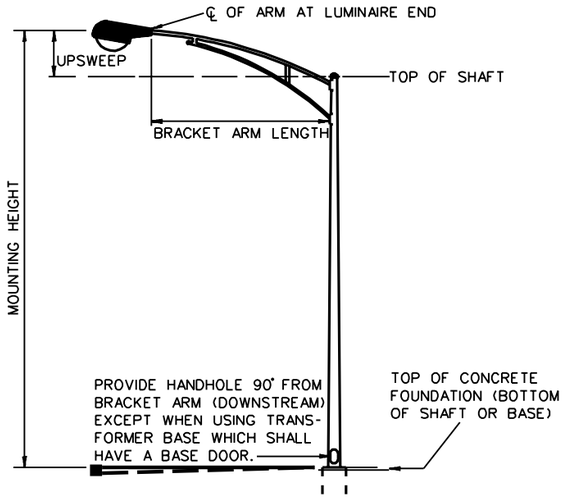
"J" HOOK DETAIL



CABINET
MOUNTING BRACKET



HANDHOLE DETAIL



POLE COMPONENTS

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES

1. POLE:
   - A. EACH POLE SHALL BE COMPLETE WITH ONE POLE CAP, J-HOOK, AND A HAND HOLE.
   - B. SEE TES-40 FOR FOUNDATION DETAILS. ⚠3
   - C. FOR BASES, SEE CONTRACT PLANS AND/OR TEL-18 OR TEL-19.
2. CONDUIT : (FOR CABINET MOUNTING AND/OR POSSIBLE POWER SERVICE)
   - A. CONDUIT SHALL BE FASTENED TO THE POLE WITH CONDUIT CONDUIT CLAMPS 4 FEET C.C.
   - B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF-TAPPING SCREWS.
3. CABINET MOUNTING BRACKET:
   - A. WHEN CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   - B. THE HEIGHT OF THE CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   - C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR THE SELF-TAPPING SCREWS AFTER THE FINAL POSITION HAS BEEN DETERMINED.
4. HAND HOLES:
   - A. THE HAND HOLE IN THE BASE SHALL BE A MINIMUM SIZE OF 4" x 6½" MIN.
   - B. THE HAND HOLE SHALL BE LOCATED 90° FROM BRACKET ARM (DOWNSTREAM).
5. BRACKET ARM:
   - A. BRACKET ARM SHALL BE EQUIPPED WITH A 2" SLIP FIT TYPE CONNECTION FOR THE LUMINAIRE.
   - B. BRACKET ARM CONNECTION SHALL BE THE TYPE SHOWN AND SHALL BE OF SUFFICIENT STRENGTH SO THAT THE BRACKET WILL FAIL BEFORE THE CONNECTION.
6. WELDING:
   - A. CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS.

⚠1 6.5' UPSWEEP AND POLE COMPONENTS
⚠2 CHANGED ARMS AND RISES
⚠3 ADDED TEL-19 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
STEEL LIGHTING POLE DETAILS
TYPE I

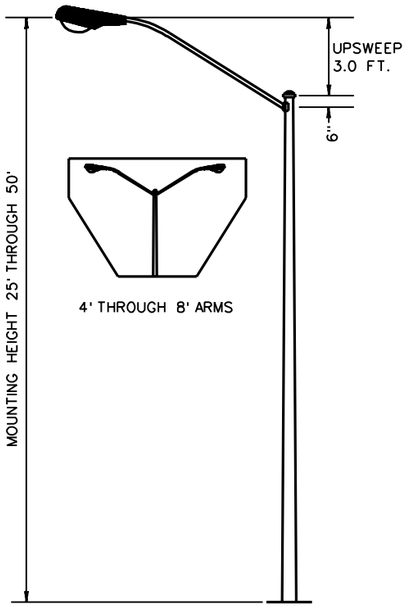
PREPARED: 11/00/74

REVISIONS
⚠1 03-03-77
⚠2 05-23-80
⚠3 09-14-93

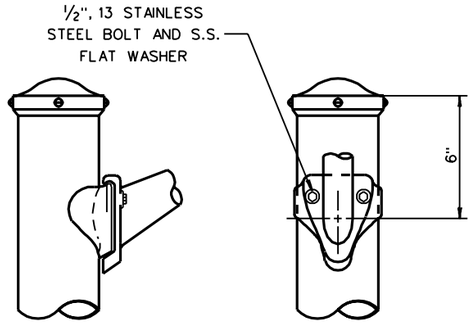
STANDARD SHEET TEL-11

TRAFFIC ENGINEERING DIVISION

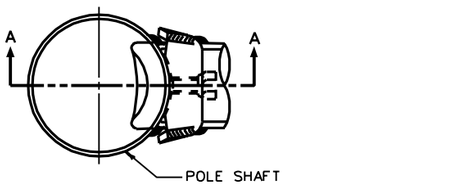
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

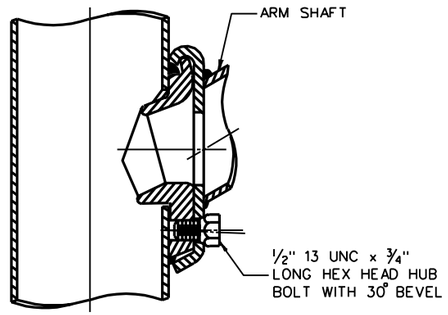


STYLE II



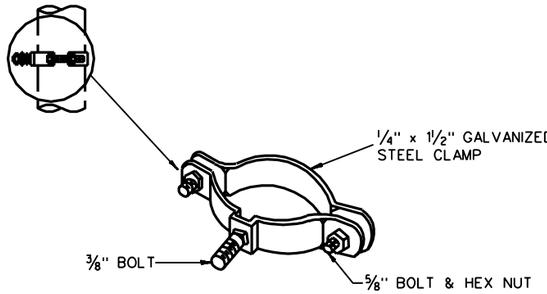
TWO BOLT ARM ATTACHMENT
(OPTION NO. 1)





SECT. A - A

ONE BOLT ARM ATTACHMENT
(OPTION NO. 2)



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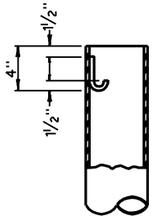
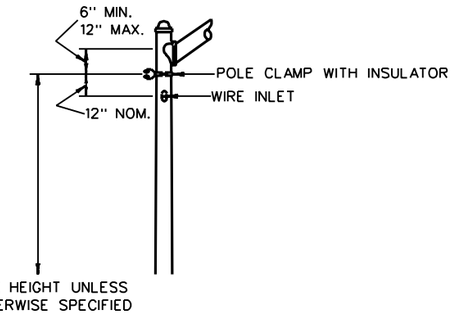
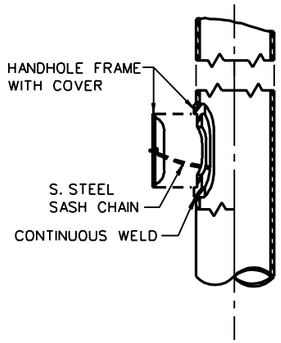


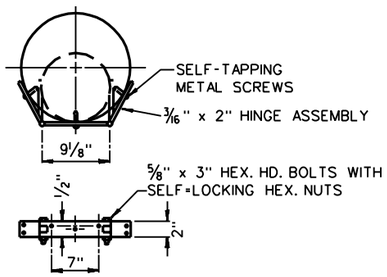
"J" HOOK DETAIL



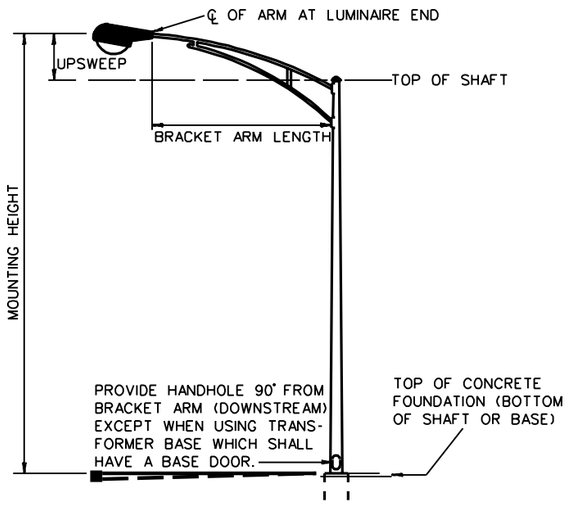
OVERHEAD WIRE ENTRANCE



HANDHOLE DETAIL



CABINET
MOUNTING BRACKET



POLE COMPONENTS

GENERAL NOTES

1. POLE:
   - A. EACH POLE SHALL BE COMPLETE WITH ONE POLE CAP, J-HOOK, AND A HAND HOLE.
   - B. SEE TES-40 FOR FOUNDATION DETAILS.
   - C. FOR BASES, SEE CONTRACT PLANS AND/OR TEL-18 OR TEL-19. ⚠3
2. CONDUIT : (FOR CABINET MOUNTING AND/OR POSSIBLE POWER SERVICE)
   - A. CONDUIT SHALL BE FASTENED TO THE POLE WITH CONDUIT CONDUIT CLAMPS 4 FEET C.C.
   - B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF-TAPPING SCREWS.
3. CABINET MOUNTING BRACKET:
   - A. WHEN CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   - B. THE HEIGHT OF THE CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   - C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR THE SELF-TAPPING SCREWS AFTER THE FINAL POSITION HAS BEEN DETERMINED.
4. HAND HOLES:
   - A. THE HAND HOLE IN THE BASE SHALL BE A MINIMUM SIZE OF 4" x 6½" MIN.
   - B. THE HAND HOLE SHALL BE LOCATED 90° FROM BRACKET ARM (DOWNSTREAM).
5. BRACKET ARM:
   - A. BRACKET ARM SHALL BE EQUIPPED WITH A 2" SLIP FIT TYPE CONNECTION FOR THE LUMINAIRE.
   - B. BRACKET ARM CONNECTION SHALL BE THE TYPE SHOWN AND SHALL BE OF SUFFICIENT STRENGTH SO THAT THE BRACKET WILL FAIL BEFORE THE CONNECTION.
6. WELDING:
   - A. CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS.

⚠1 MH TO 50' AND POLE COMPONENTS
⚠2 CHANGED ARMS AND RISES
⚠3 ADDED TEL-19 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
STEEL LIGHTING POLE DETAILS
TYPE II

PREPARED: 11/00/74

REVISIONS
⚠1 03-03-77
⚠2 05-23-80
⚠3 09-14-93

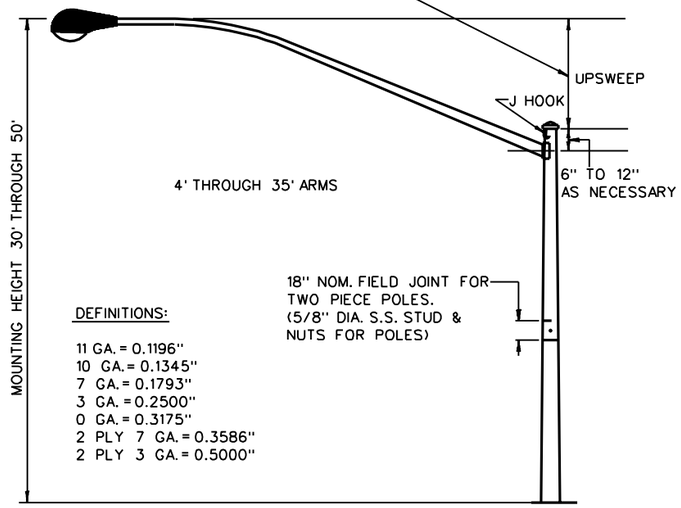
STANDARD SHEET TEL-12

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

30' THROUGH 50' MOUNTING HEIGHTS

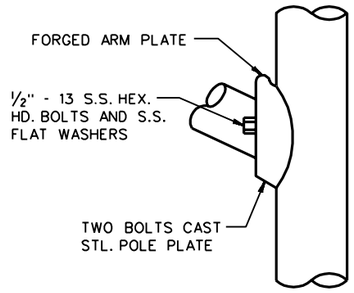
UPSWEEP 3' FOR 4' - 10' ARMS, 6' FOR 12' - 15' ARMS, 7' FOR 20' - 35' ARMS (MODIFICATION OF THE RATIO OF THE BRACKET UPSWEEP TO ARM LENGTH MAY BE PERMITTED IF APPROVED BY THE ENGINEER.)



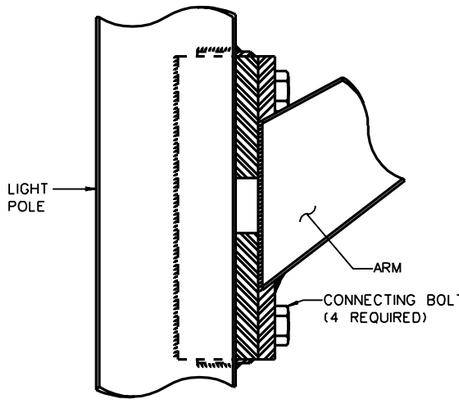
DEFINITIONS:

11 GA. = 0.1196"
10 GA. = 0.1345"
7 GA. = 0.1793"
3 GA. = 0.2500"
0 GA. = 0.3175"
2 PLY 7 GA. = 0.3586"
2 PLY 3 GA. = 0.5000"

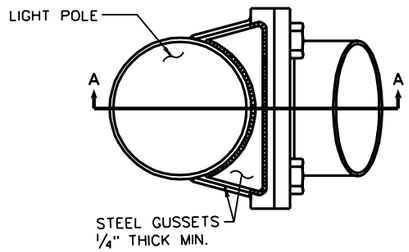
STYLE III



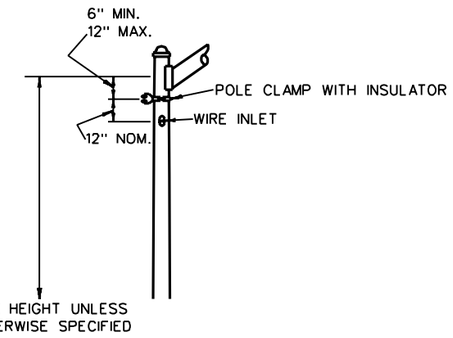
ARM ATTACHMENT - 2 BOLTS
(FOR 4' - 10' ARMS)



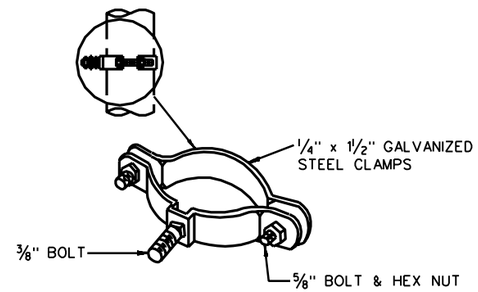
SECTION A - A



ARM ATTACHMENT - 4 BOLT
(FOR 12' - 35' ARMS)



OVERHEAD WIRE ENTRANCE



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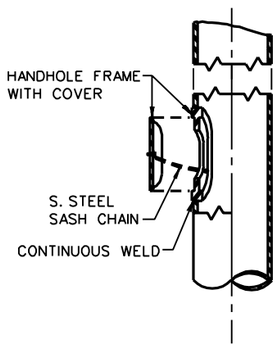
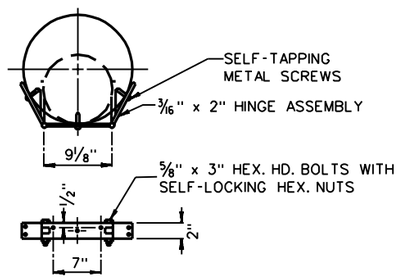
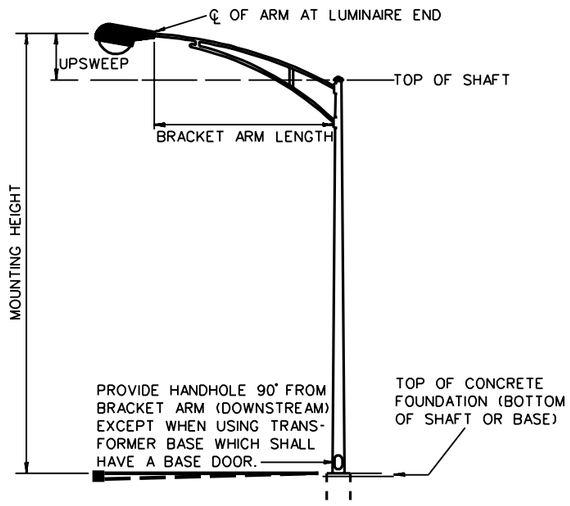


HANDHOLE DETAIL





POLE COMPONENTS

GENERAL NOTES

1. POLE:
   - A. EACH POLE SHALL BE COMPLETE WITH ONE POLE CAP, J-HOOK, AND A HAND HOLE.
   - B. SEE TES-40 FOR FOUNDATION DETAILS. ⚠3
   - C. FOR BASES, SEE CONTRACT PLANS AND/OR TEL-18 OR TEL-19.
2. CONDUIT : (FOR CABINET MOUNTING AND/OR POSSIBLE POWER SERVICE)
   - A. CONDUIT SHALL BE FASTENED TO THE POLE WITH CONDUIT CLAMPS 4 FEET C.C.
   - B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF-TAPPING SCREWS.
3. CABINET MOUNTING BRACKET:
   - A. WHEN CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   - B. THE HEIGHT OF THE CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   - C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR THE SELF-TAPPING SCREWS AFTER THE FINAL POSITION HAS BEEN DETERMINED.
4. HAND HOLES:
   - A. THE HAND HOLE IN THE BASE SHALL BE A MINIMUM SIZE OF 4" x 6 1/2" MIN.
   - B. THE HAND HOLE SHALL BE LOCATED 90° FROM BRACKET ARM (DOWNSTREAM).
5. BRACKET ARM:
   - A. BRACKET ARM SHALL BE EQUIPPED WITH A 2" SLIP FIT TYPE CONNECTION FOR THE LUMINAIRE, OR ACCEPTED ALTERNATE.
   - B. BRACKET ARM CONNECTION SHALL BE THE TYPE SHOWN AND SHALL BE OF SUFFICIENT STRENGTH SO THAT THE BRACKET WILL FAIL BEFORE THE CONNECTION.
6. WELDING:
   - A. CONNECTION SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS.

⚠1 CHANGED ARMS AND RISES
⚠2 REVISED MOUNTING HEIGHTS AND ARMS, DELETED TELESCOPING JOINT, ADDED 2 BOLT ARM
⚠3 ADDED TEL-19 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
STEEL LIGHTING POLE DETAILS
TYPE III

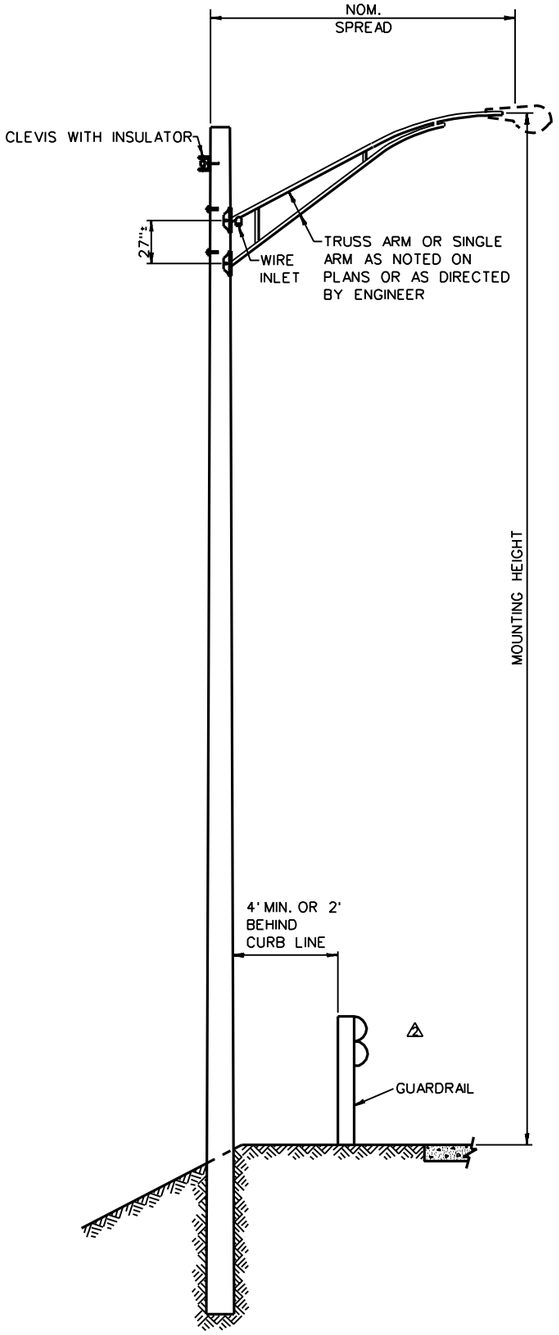
PREPARED: 11/00/74

REVISIONS
⚠1 05-23-80
⚠2 01-21-93
⚠3 09-14-93

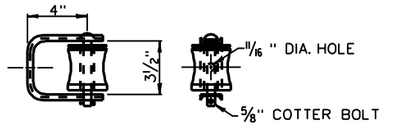
STANDARD SHEET TEL-13

TRAFFIC ENGINEERING DIVISION

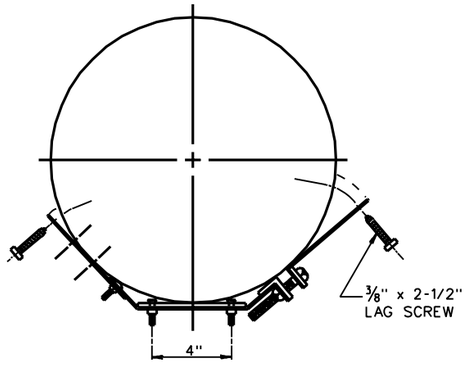
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



POLE STYLE IV



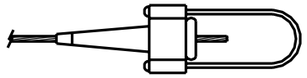
CLEVIS DETAIL WITH INSULATOR



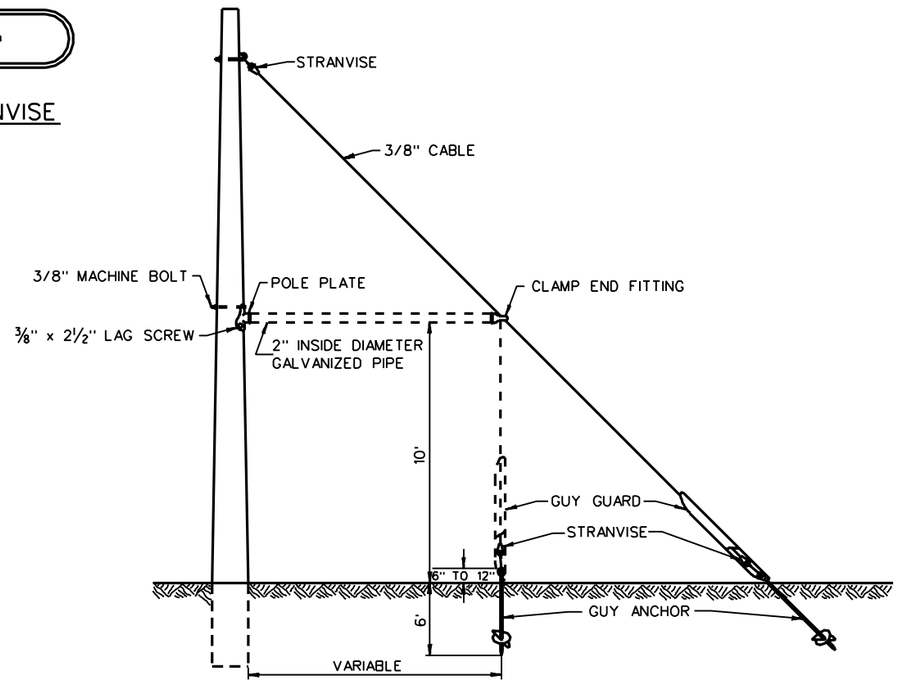
MOUNTING BRACKET FOR CABINETS

THREE BOLT CABLE CLAMP

EYE BOLT WITH CURVED WASHERS AND NUTS FOR WOOD POLES



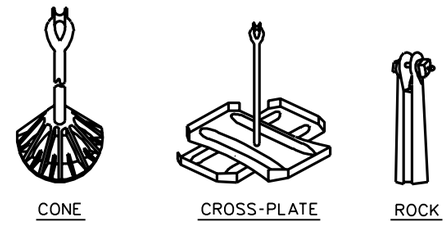
CABLE STRANVISE



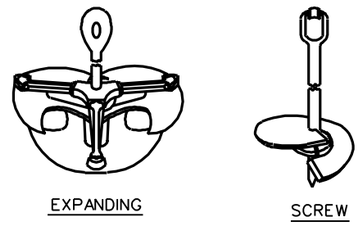
POLE GUYING METHODS

GENERAL NOTES:

1. POLE
   - A. POLE CLASS SHALL BE AS CALLED FOR ON THE PLANS.
   - B. POLE EMBEDMENT SHALL BE AT A DEPTH AS NOTED ON CONTRACT PLANS.
2. MAST ARM
   - A. THE ATTACHMENT SHALL BE CONSTRUCTED SO THAT IT TRANSFERS THE FULL STRENGTH OF THE ARM TO THE POLE SHAFT.
3. A. GUY SUPPORT SHALL BE PROVIDED BY THE CONTRACTOR IF CALLED FOR ON THE PLANS.
4. GROUNDING
   - A. IF EQUIPMENT GROUNDS ARE NOT PROVIDED IN THE SERVICE, EACH POLE WILL BE GROUNDED.



CONE CROSS-PLATE ROCK



EXPANDING SCREW

GUY ANCHORS

⚠1 MOUNTING HEIGHT
⚠2 ADDED GR AND CURB LINE CLEARANCE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL WOOD LIGHTING POLE TYPE IV

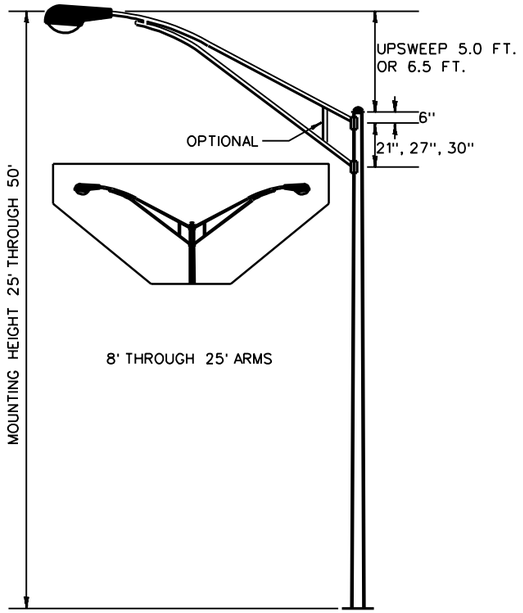
PREPARED: 12/00/74

REVISIONS	
⚠1	03-03-77
⚠2	09-14-93

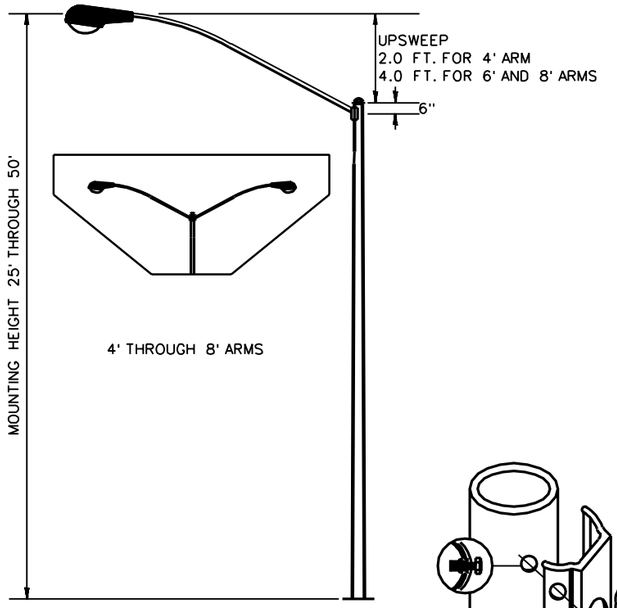
STANDARD SHEET TEL-14

TRAFFIC ENGINEERING DIVISION

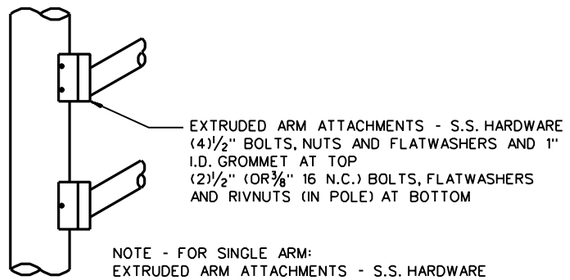
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



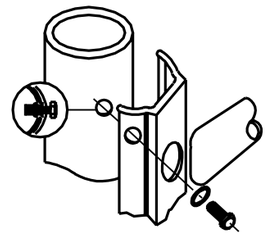
TRUSS ARM
TYPE V



SINGLE ARM
TYPE V

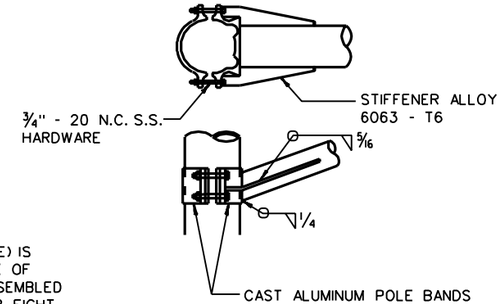


NOTE - FOR SINGLE ARM:
EXTRUDED ARM ATTACHMENTS - S.S. HARDWARE
(4)3/8" BOLTS, NUTS, AND FLATWASHERS AND 1"
I.D. GROMMET OR1/2" ALUM. HARDWARE AS APPROVED
BY THE ENGINEER.



MAIN ARM AND UNDERBRACE (AS APPLICABLE) IS WELDED TO AN EXTRUDED MOUNTING PLATE OF ALLOY 6061 - T6. THE TRUSS ARM(S) IS ASSEMBLED TO THE SHAFT BY MEANS OF FOUR, SIX OR EIGHT RIVNUTS OR S.S. HEX. HEAD BOLTS, DEPENDING ON LENGTH.

MOUNTING PLATE TYPE

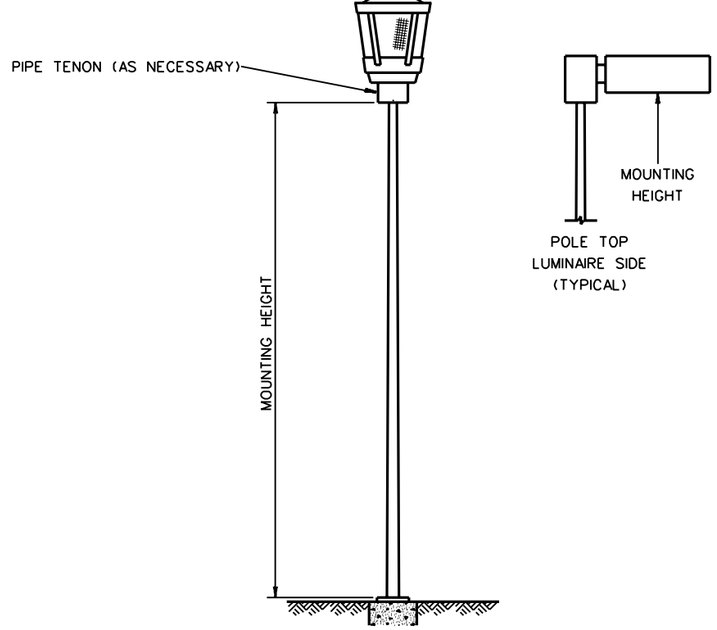


BAND TYPE

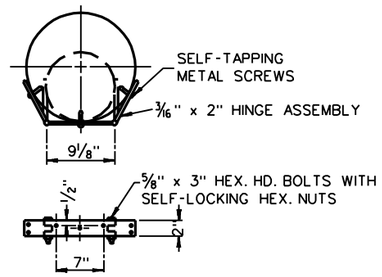
ARM ATTACHMENT OPTIONS
TYPE V

GENERAL NOTES

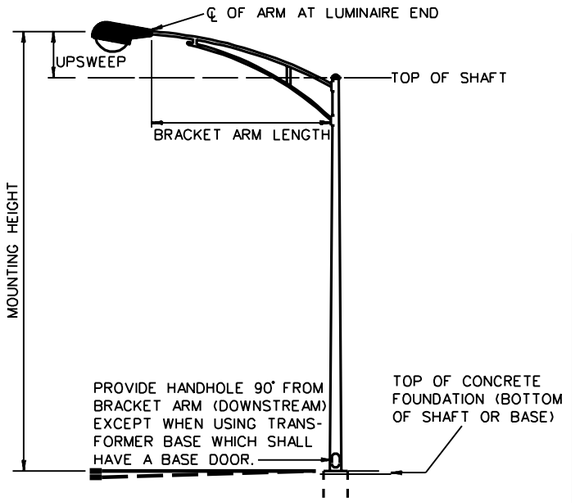
1. POLE:
   - A. EACH POLE SHALL BE COMPLETE WITH A POLE CAP, J-HOOK, AND A HAND HOLE.
   - B. SEE TEL-15B FOR FOUNDATION DETAILS.
   - C. FOR BASES, SEE CONTRACT PLANS AND/OR TEL-18.
2. CONDUIT : (FOR CABINET MOUNTING AND/OR POSSIBLE POWER SERVICE)
   - A. CONDUIT SHALL BE FASTENED TO THE POLE WITH CONDUIT CLAMPS 4 FEET C.C.
   - B. CONDUIT CLAMPS SHALL BE FASTENED TO THE POLE WITH SELF-TAPPING SCREWS.
3. CABINET MOUNTING BRACKET:
   - A. WHEN CABINET OR CABINETS ARE TO BE MOUNTED ON A POLE, THE POLE SHALL BE COMPLETE WITH TWO BRACKETS PER CABINET.
   - B. THE HEIGHT OF THE CABINET IS SPECIFIED ON THE CONTRACT PLANS.
   - C. CONTRACTOR SHALL FIELD DRILL THE HOLES FOR THE SELF-TAPPING SCREWS AFTER THE FINAL POSITION HAS BEEN DETERMINED.
4. HAND HOLES:
   - A. THE HAND HOLE IN THE BASE SHALL BE A MINIMUM SIZE OF 4" x 6". FOR TYPE V POLES; FOR TYPE VII POLES - SEE CONTRACT PLANS.
   - B. THE HAND HOLE FOR TYPE V POLES SHALL BE LOCATED 90° FROM BRACKET ARM (DOWNSTREAM).
5. BRACKET ARM:
   - A. THE ARM FOR TYPE V POLES SHALL BE ATTACHED TO THE POLE SO THAT IT CAN TRANSFER THE FULL STRENGTH OF THE ARM TO THE POLE SHAFT.
   - B. BRACKET ARM SHALL BE EQUIPPED WITH A 2" SLIP FIT TYPE CONNECTION FOR THE LUMINAIRE.
6. WELDING:
   - A. CONNECTIONS SHALL BE DESIGNED FOR THE LOAD ON THE MEMBERS.



TYPE V



CABINET
MOUNTING BRACKET



POLE COMPONENTS
TYPE V

⚠1 CHANGED ARMS AND RISES
⚠2 REVISED UPSWEEPS, DELETED SOCKET ARM, ADDED EXTRUDED ARM ATTACHMENTS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
ALUMINUM LIGHTING POLE DETAILS
TYPES V AND VII

PREPARED: 11/03/76

REVISIONS
10-24-77
⚠1 05-23-80
⚠2 01-21-93

STANDARD SHEET TEL-15A

TRAFFIC ENGINEERING DIVISION

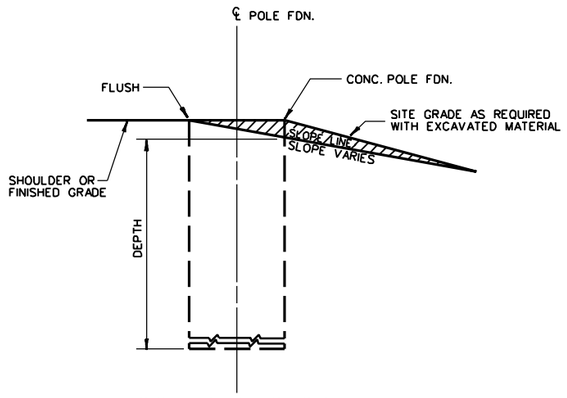
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

POLE SIZE BASE O.D. (INCHES)							FOUNDATION DEPTH (FEET)			ANCHORAGE		REINFORCING STEEL	
.125	.135	.156	.188	.219	.250	.270	DIAMETER OR SIDE ☐	DEPTH (FEET)	VOLUME (YD³)	B.C. ✱ ✱	A.B. ✱	NO. BARS	SIZE
4							1.5	4.0	0.333	7	¾	—	—
5							1.5	4.0	0.333	8	¾	—	—
		6					2.0	4.0	0.592	10	1	6	4
		7	7				2.0	4.0	0.592	11	1	6	4
	8 & 9	8	8 & 9	8 & 9	8		2.0	4.0	0.592	12	1	6	4
					9		2.0	4.5	0.667	12	1	6	5
			10				2.0	4.0	0.592	15	1	6	4
				10	10		2.0	4.5	0.667	15	1	6	5
				11			2.5	4.5	1.042	15	1	6	5
	11.5						2.5	4.5	1.042	15	1¼	6	4
	12						2.5	4.5	1.042	16	1¼	6	5
				12			2.5	5.0	1.157	16.5	1	6	5
	13 & 13.5						2.5	5.0	1.157	16	1¼	6	5
						9	2.0	5.0	0.741	12	1¼	6	5

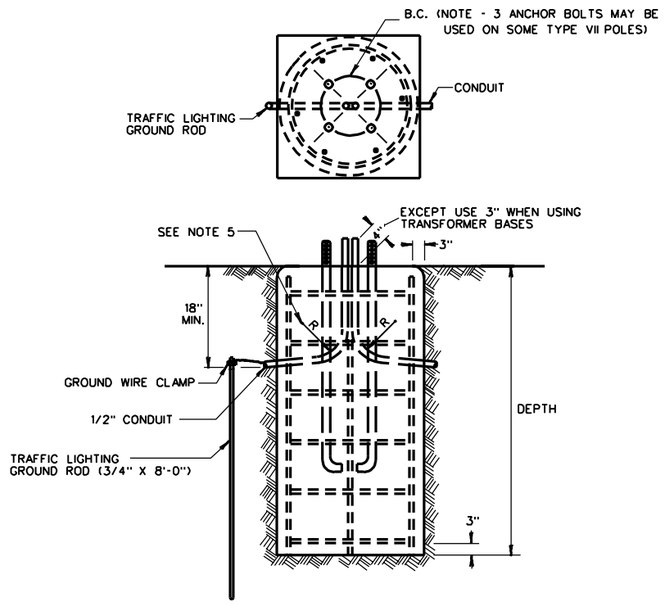
✱ MINIMUM SIZES ¾" x 26" x 4", 1" x 36" x 4" & 1¼" x 42" x 6"
✱ ✱ WHEN USING TRANSFORMER BASE(S), SEE TEL-18 FOR ANCHOR BOLT-BOLT CIRCLE IN FOUNDATION.

FOUNDATION NOTE:

1. CONCRETE:
   - A. ALL EXPOSED CONCRETE SHALL HAVE A NORMAL FINISH.
   - B. ALL OUTSIDE CONCRETE CORNERS AND EDGES SHALL HAVE A ¾" CHAMFER.
   - C. CONCRETE TO BE RODDED OR VIBRATED WHILE POURING.
   - D. ALL CONCRETE SHALL BE CLASS "B".
2. STEEL:
   - A. REINFORCING STEEL SHALL NOT BE CLOSER THAN 3" TO THE OUTSIDE SURFACE OF THE FOOTING AND SHALL BE TIED OR WELDED.
   - B. VERTICAL BARS SHALL BE TIED WITH #4 HOOP BARS AT 1'-0" ON CENTER. THE #4 HOOP BARS SHALL HAVE A 1'-0" MINIMUM LAP.
3. FOOTINGS:
   - A. ALL FOOTING IN SIDEWALKS SHALL BE FINISHED FLUSH WITH THE EXISTING SIDEWALKS, UNLESS OTHERWISE SPECIFIED BY THE PROJECT ENGINEER.
   - B. FOOTINGS MAY BE EITHER CIRCULAR OR SQUARE IN CROSS-SECTION. CIRCULAR FOOTINGS SHALL BE SQUARE FOR THE TOP 12".
   - C. WITH PERMISSION OF THE PROJECT ENGINEER, THE DEPTH OF THE FOOTING MAY BE REDUCED ONE (1) FOOT WHEN THE FOOTING IS PLACED IN A CONCRETE OR ASPHALTIC CONCRETE SIDEWALK OR PAVED SURFACE. THE FOOTINGS MAY BE REDUCED BY ONE (1) FOOT WHEN THE FOOTING IS IN ROCK.
4. FORMS:
   - A. NO FORMS MAY EXTEND TO A DEPTH GREATER THAN 12" UNLESS APPROVAL IS GRANTED BY THE PROJECT ENGINEER.
5. CONDUIT:
   - A. THE RADIUS (R) OF THE CURVE OF THE INNER EDGE OF ANY BEND SHALL NOT BE LESS THAN THE SIZE SPECIFIED IN THE N.E.C.



FOOTER IN SLOPE



FOUNDATION DETAILS

⚠1 DELETED ALLOY
⚠2 CHANGED GROUND ROD

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL ALUMINUM POLE FOUNDATIONS

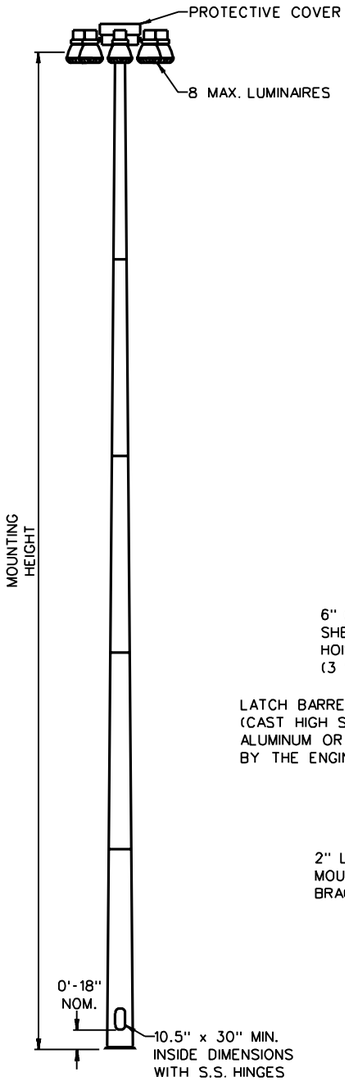
PREPARED: 05/01/77

REVISIONS
10-24-77
⚠1 05-23-80
⚠2 09-15-84

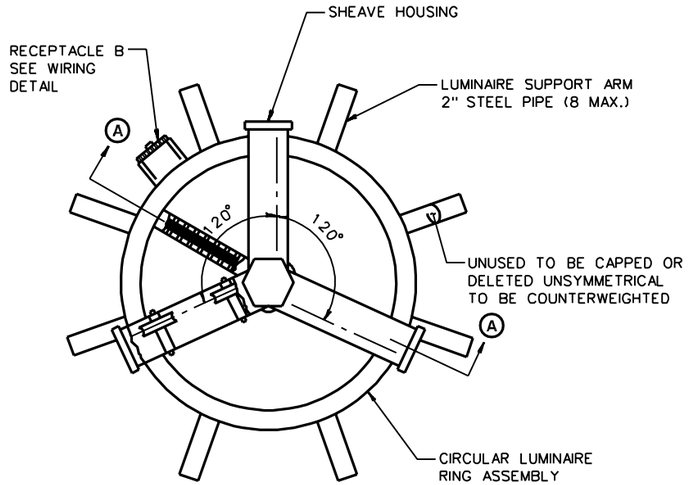
STANDARD SHEET TEL-15B

TRAFFIC ENGINEERING DIVISION

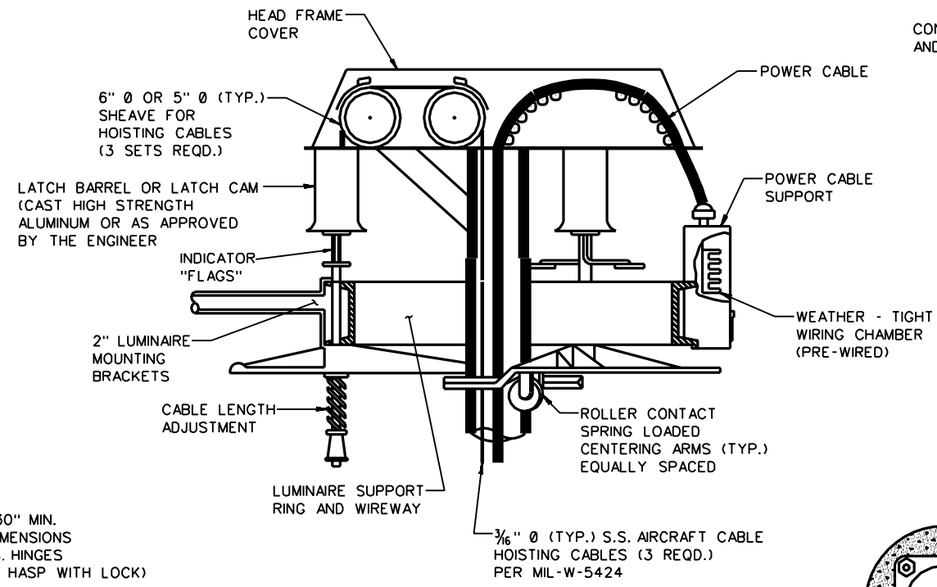
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



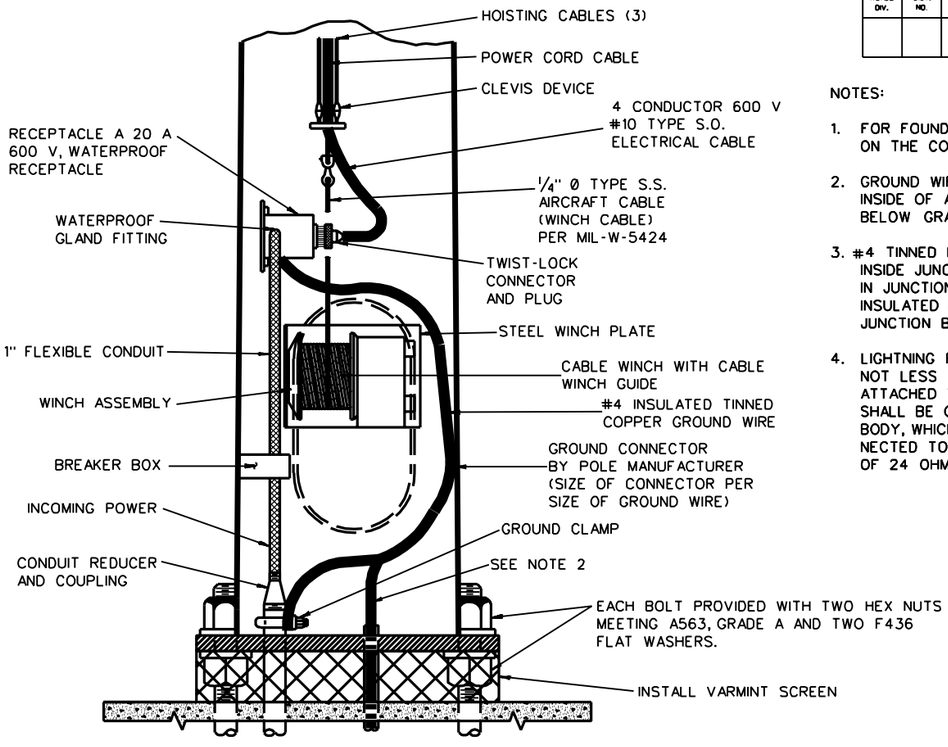
ELEVATION



PLAN VIEW



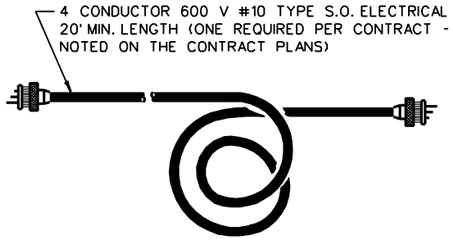
SECTION A-A
LOWERING DEVICE



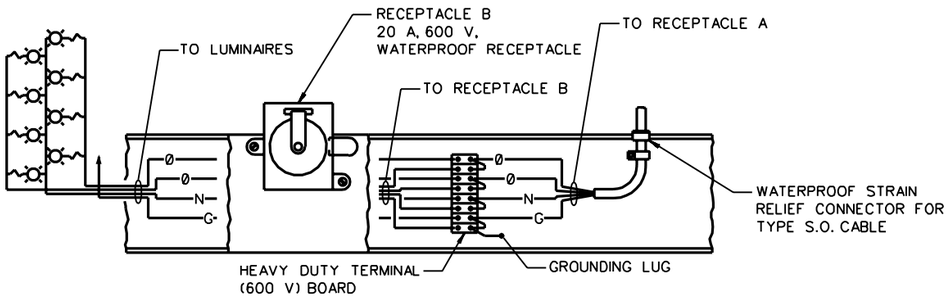
LOWERING DEVICE DETAIL

NOTES:

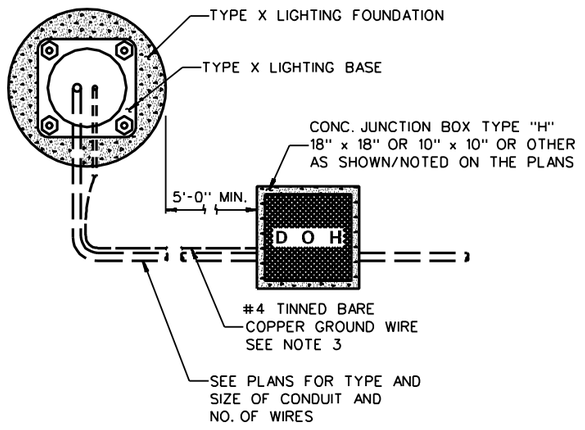
1. FOR FOUNDATIONS SEE SPECIAL DESIGNS AS SHOWN ON THE CONTRACT PLANS OR CONTACT ENGINEER.
2. GROUND WIRE TO BE BROUGHT THROUGH FOUNDATION INSIDE OF A 3/4" METAL CONDUIT. CONDUIT SHALL BE 18" BELOW GRADE AND SHALL BE BUSHED.
3. #4 TINNED BARE COPPER GROUND WIRE WITH 2' SLACK INSIDE JUNCTION BOX. THERMO WELD TO GROUND ROD IN JUNCTION BOX AND CONNECT TO GROUNDED TYPE INSULATED BUSHINGS ON ALL METAL CONDUITS IN JUNCTION BOX.
4. LIGHTNING PROTECTION - A STAINLESS STEEL SPIKE NOT LESS THAN SIX INCHES IN LENGTH SHALL BE ATTACHED TO THE TOP OF THE POLE. THIS SPIKE SHALL BE CONNECTED ELECTRICALLY TO THE POLE BODY, WHICH IN TURN SHALL BE ELECTRICALLY CONNECTED TO A POSITIVE GROUND, MAXIMUM RESISTANCE OF 24 OHMS PER GROUND ROD TO GROUND.



SERVICE CORD DETAIL



LUMINAIRE SUPPORT WIRING DETAIL



TYPICAL CONDUIT DETAIL

⚠ COMPLETE REVISION HEAD FRAME AND LOWERING DEVICE, DELETED HOLD DOWN CABLE, DELETED STOP RING

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
STEEL LIGHTING POLE DETAILS
TYPE X

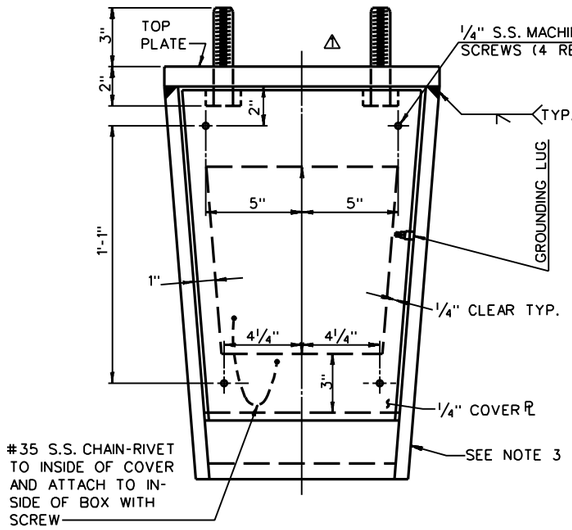
PREPARED: 06/00/76

REVISIONS
06-22-76
⚠ 01-22-93

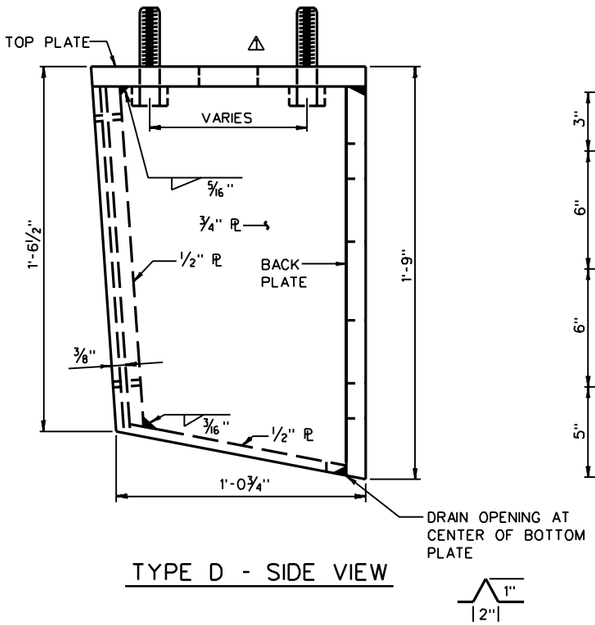
STANDARD SHEET TEL-16A

TRAFFIC ENGINEERING DIVISION

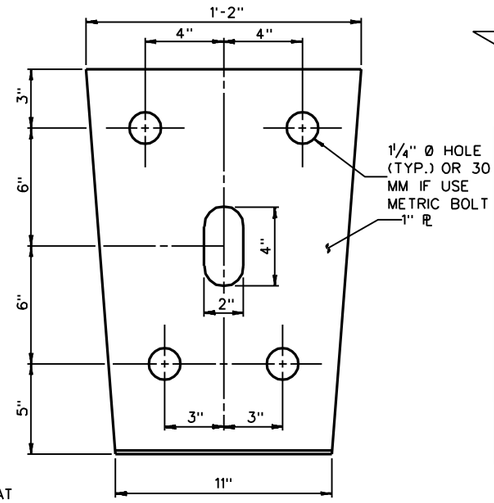
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



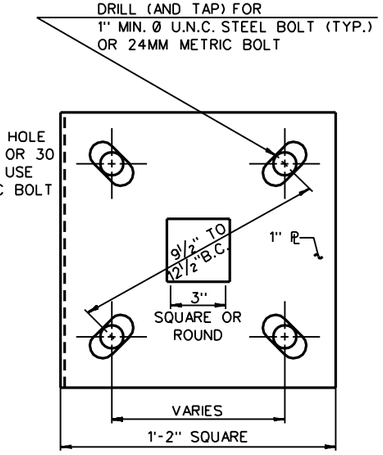
TYPE D - FRONT VIEW



TYPE D - SIDE VIEW



TYPE D - BACK PLATE

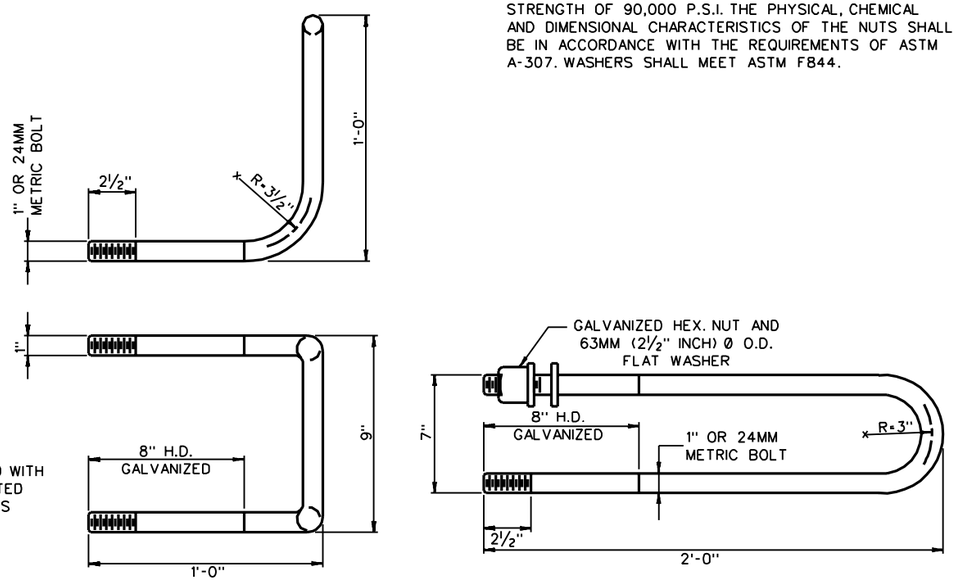


TYPE D - TOP PLATE

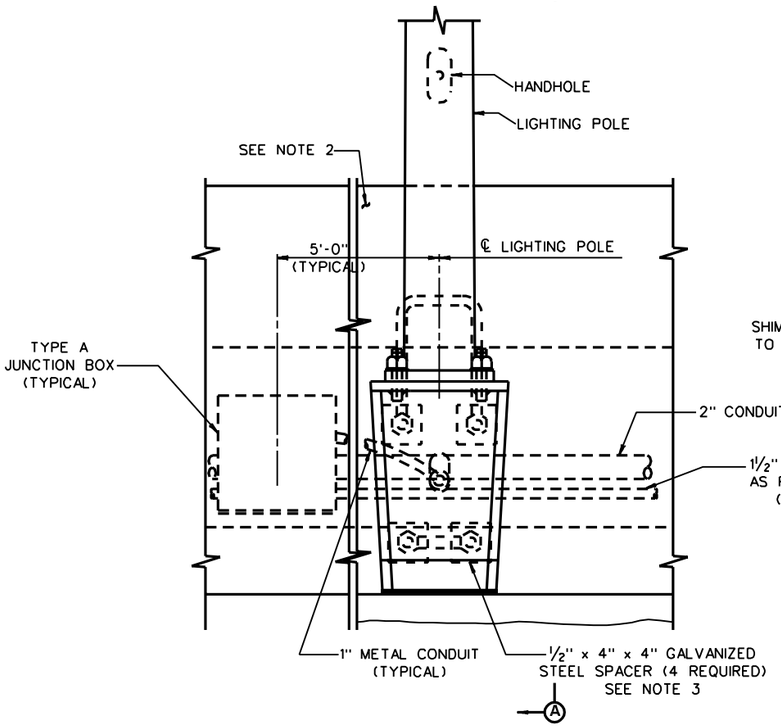
NOTES

1. ALL TYPE D BOXES ARE TO BE FABRICATED FROM STEEL CONFORMING TO ASTM A-36 AND HOT DIPPED GALVANIZED AFTER ASSEMBLY.
2. FOR ADDITIONAL STEEL REINFORCING BARS NEEDED TO SUPPORT LIGHTING POLES, SEE INDIVIDUAL BRIDGE DESIGN DRAWING.
3. STEEL SPACERS MAY BE WELDED TO BASE PRIOR TO GALVANIZING.
4. EACH LIGHTING POLE TO BE SUPPLIED WITH A MINIMUM OF FOUR 1/16" THICK STANDARD GALVANIZED STEEL SHIMS.
5. ANCHOR BOLTS AND NUTS FOR LIGHTING POLE CONNECTION TO LIGHTING POLE SUPPORT BASE SHALL MEET THE REQUIREMENTS OF SECTION 709.24.

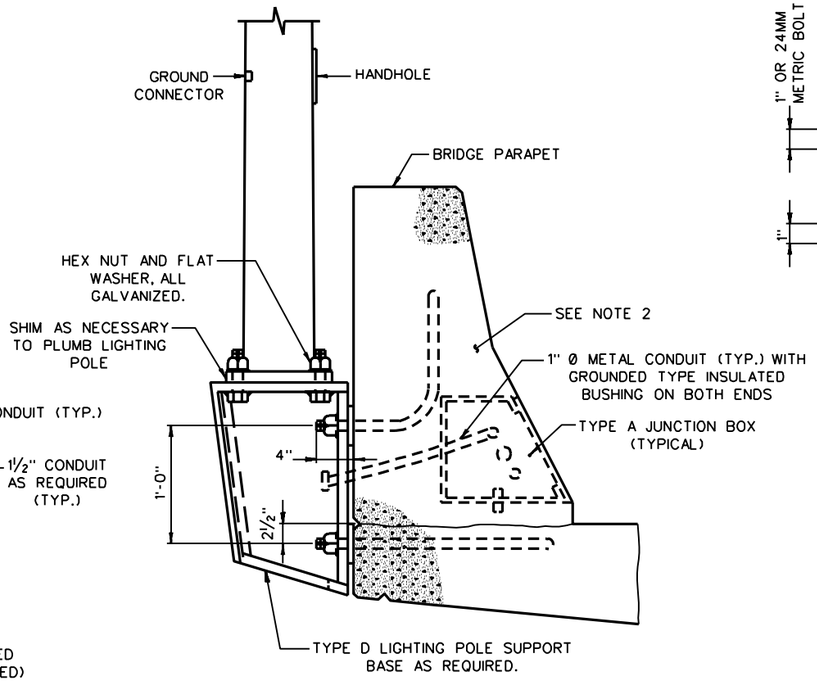
   TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.
6. ANCHOR BOLTS FOR LIGHTING POLE SUPPORT BASE CONNECTION TO PARAPET WALL SHALL BE FABRICATED FROM HIGH STRENGTH STEEL HAVING A MINIMUM YIELD STRENGTH OF 55,000 P.S.I. AND A MINIMUM TENSILE STRENGTH OF 90,000 P.S.I. THE PHYSICAL, CHEMICAL AND DIMENSIONAL CHARACTERISTICS OF THE NUTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A-307. WASHERS SHALL MEET ASTM F844.



ANCHOR BOLTS FOR LIGHTING POLE SUPPORT BASE - TYPE D



ELEVATION



SECTION A-A

TYPE D - INSTALLATION DETAILS

⚠ DELETED WELDS

⚠ REVISED H.S. BOLT NOTE AND A.B. WASHER SPEC AND CHANGED U-ANCHOR BOLT NOTE

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL LIGHTING POLE SUPPORT BASE – TYPE D

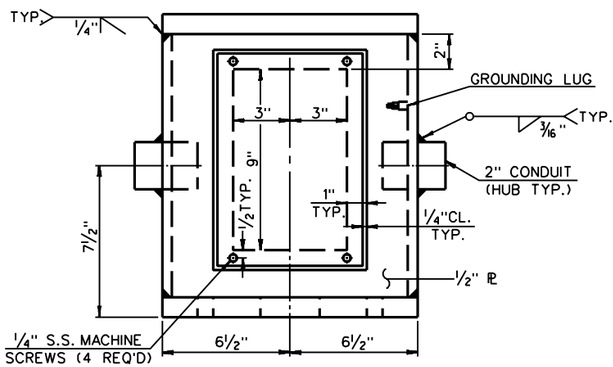
PREPARED: 07/18/75

REVISIONS
⚠ 07-22-76
⚠ 09-14-93

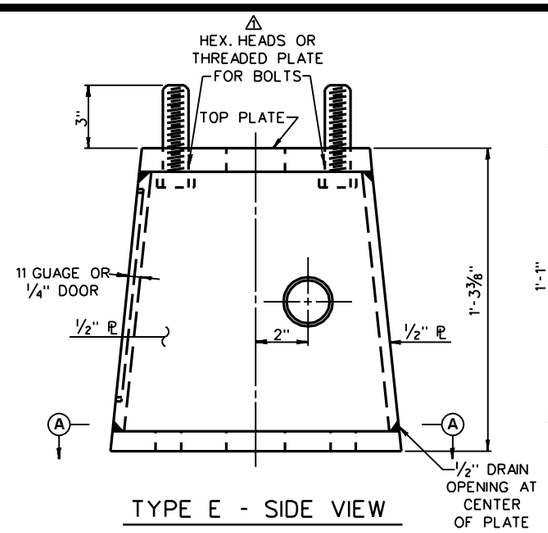
STANDARD SHEET TEL-17A

TRAFFIC ENGINEERING DIVISION

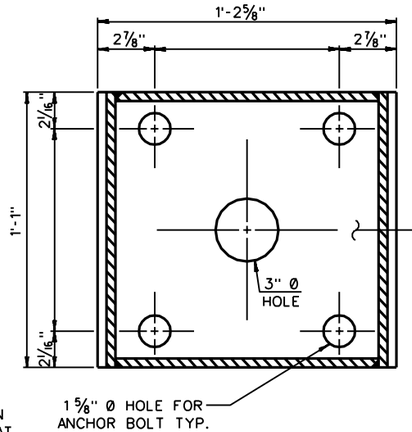
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



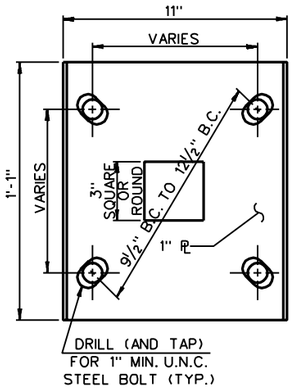
TYPE E - FRONT VIEW



TYPE E - SIDE VIEW



SECTION A - A

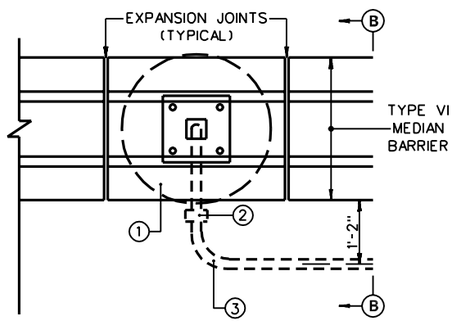


TYPE E - TOP PLATE

NOTES:

1. ALL TYPE E BOXES AND PLATES ARE TO BE FABRICATED FROM STEEL CONFORMING TO ASTM A-36 AND HOT DIPPED GALVANIZED AFTER ASSEMBLY.
2. FOR ADDITIONAL STEEL REINFORCING BARS NEEDED TO SUPPORT LIGHTING POLES, SEE INDIVIDUAL BRIDGE DESIGN DRAWINGS.
3. EACH LIGHTING POLE TO BE SUPPLIED WITH A MINIMUM OF FOUR 1/16" STANDARD GALVANIZED STEEL SHIMS.
4. ANCHOR BOLTS AND NUTS FOR LIGHTING POLE CONNECTION TO LIGHTING POLE SUPPORT BASE SHALL MEET THE REQUIREMENTS OF SECTION 709.24.

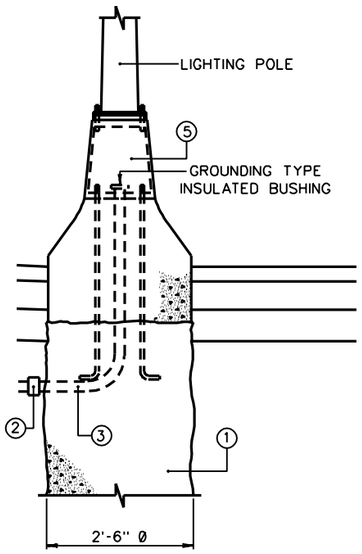
   TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.
5. ANCHOR BOLTS FOR LIGHTING POLE SUPPORT BASE CONNECTION TO FOUNDATION ON BRIDGE MEDIAN SHALL BE FABRICATED FROM HIGH STRENGTH STEEL HAVING A MINIMUM YIELD STRENGTH OF 55,000 P.S.I. AND A MINIMUM TENSILE STRENGTH OF 90,000 P.S.I. THE PHYSICAL, CHEMICAL, AND DIMENSIONAL CHARACTERISTICS OF ASTM A-307. WASHERS SHALL MEET ASTM F844.
6. CONDUIT NOT USED TO BE FIELD CAPPED.
7. CONTRACTOR MAY USE #4 HOOPS SPACED 1'-0" ON CENTER IN LIEU OF BARS AS SHOWN. HOOPS SHALL HAVE A MINIMUM OF 1'-0" OVERLAP.



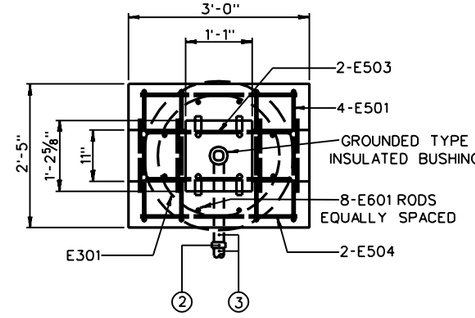
PLAN

LEGEND:

1. TYPE E LIGHTING SUPPORT BASE FOUNDATION FOR MEDIAN BARRIER.
2. CONDUIT COUPLING.
3. 2" METAL CONDUIT UNLESS OTHERWISE INDICATED ON PLANS.
4. CONDUIT EXPANSION AND DEFLECTION JOINT FITTING.
5. TYPE E LIGHTING POLE SUPPORT BASE.
6. ANCHOR PLATE (1", ASTM A-36, GALVANIZED)

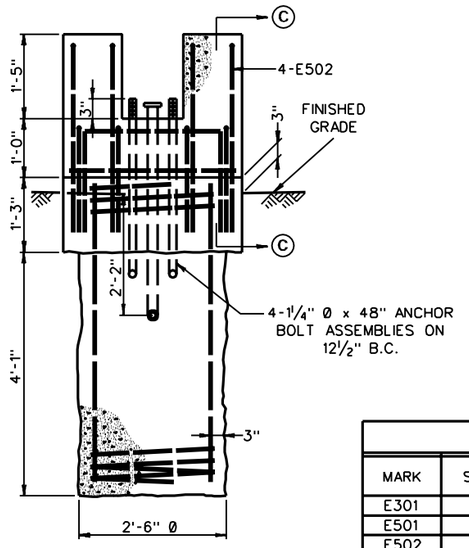


SECTION B - B

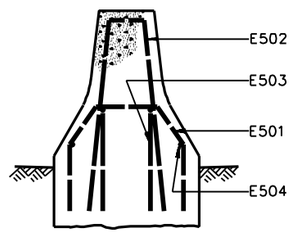


PLAN

TYPE E - INSTALLATION DETAILS FOR MEDIAN BARRIER

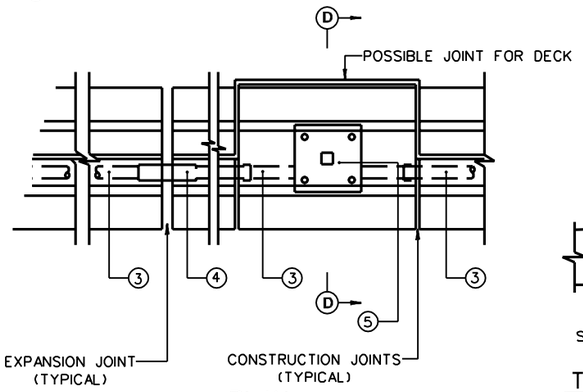


ELEVATION

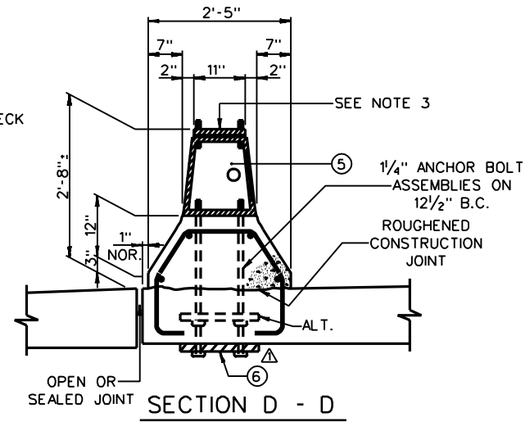


SECTION C - C

REINFORCING BAR SCHEDULE								
MARK	SIZE	NO. REQ'D.	LENGTH	TYPE	A	B	C	D
E301	3	1	204'-0"	3	2'-0"	0'-2"	3'-3"*	
E501	5	4	5'-1"	4	1'-0"	0'-10 1/2"	1'-2"	0'-6"
E502	5	4	6'-11"	5	0'-7"	3'-2"	0'-4"	
E503	5	2	6'-1"	6	2'-5"	1'-10"		
E504	5	2	2'-8"	STR.				
E601	6	8	5'-2"	STR.				

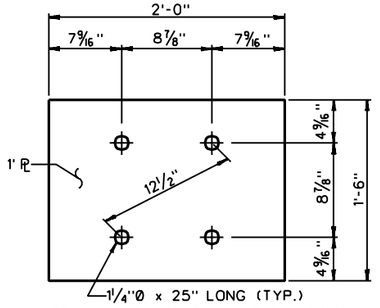


PLAN

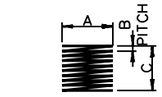


SECTION D - D

TYPE E - INSTALLATION DETAILS FOR BRIDGE MEDIAN BARRIER

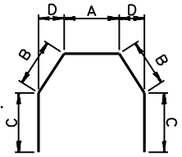


ANCHOR PLATE ASSEMBLY

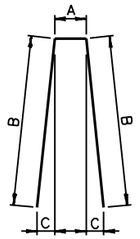


* NUMBER OF TURNS. (INCLUDES 1 1/2 TURNS AT EACH END - SEE NOTE 7.)

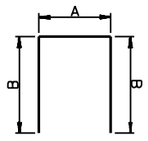
TYPE 3



TYPE 4



TYPE 5



TYPE 6

⚠ DELETED WELDS AND ADDED HEX HEADS FOR ANCHOR PLATE
⚠ REVISED H.S. BOLT NOTE AND A.B. WASHER SPEC.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL LIGHTING POLE SUPPORT BASE – TYPE E

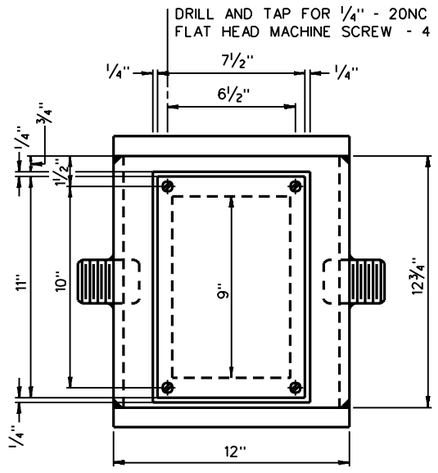
PREPARED: 07/18/75

REVISIONS
⚠ 07-22-76
⚠ 09-14-93

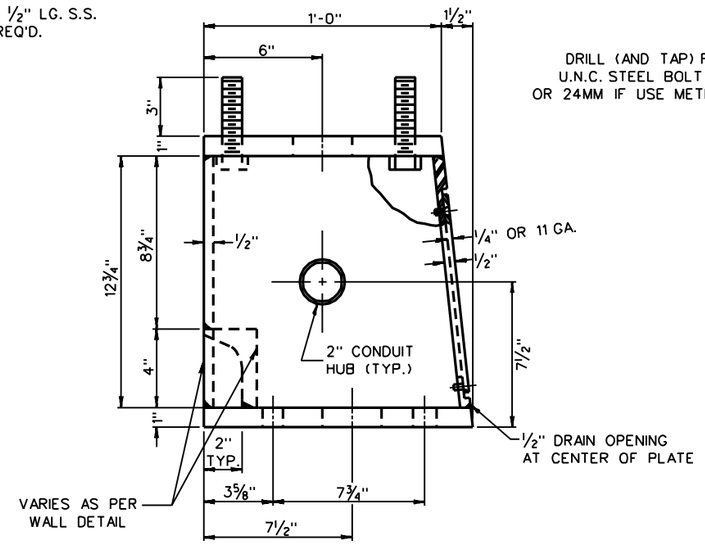
STANDARD SHEET TEL-17B

TRAFFIC ENGINEERING DIVISION

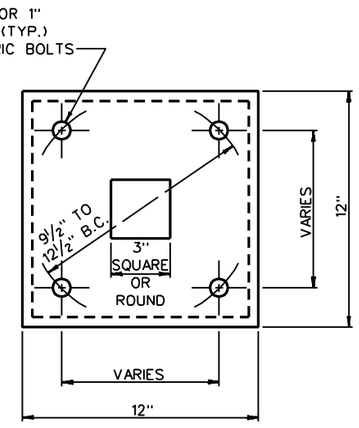
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



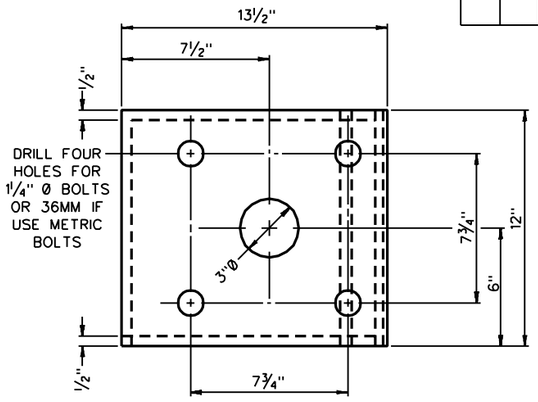
TYPE "F" FRONT VIEW



TYPE "F" SIDE VIEW



TYPE "F" TOP VIEW

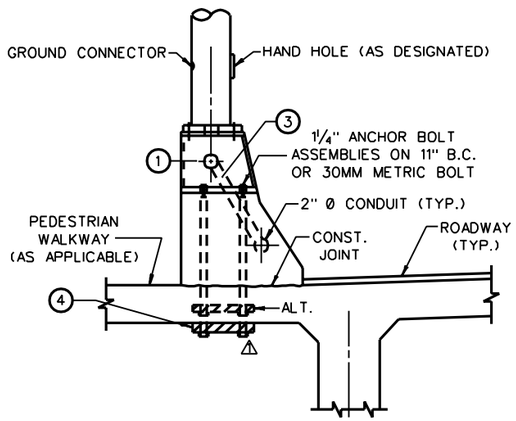


TYPE "F" BOTTOM VIEW

NOTES:

1. ALL TYPE "F" BOXES AND PLATES ARE TO BE FABRICATED FROM STEEL CONFORMING TO ASTM A-36 AND HOT DIPPED GALVANIZED, AFTER ASSEMBLY.
2. FOR ADDITIONAL STEEL REINFORCING BARS NEEDED TO SUPPORT LIGHTING POLES, SEE INDIVIDUAL BRIDGE DESIGN OR WALL DESIGN DRAWINGS.
3. EACH LIGHTING POLE TO BE SUPPLIED WITH A MINIMUM OF FOUR 1/16" THICK STANDARD GALVANIZED STEEL SHIMS.
4. ANCHOR BOLTS AND NUTS FOR LIGHTING POLE CONNECTION TO LIGHTING POLE SUPPORT BASE SHALL MEET THE REQUIREMENTS OF SECTION 709.24.

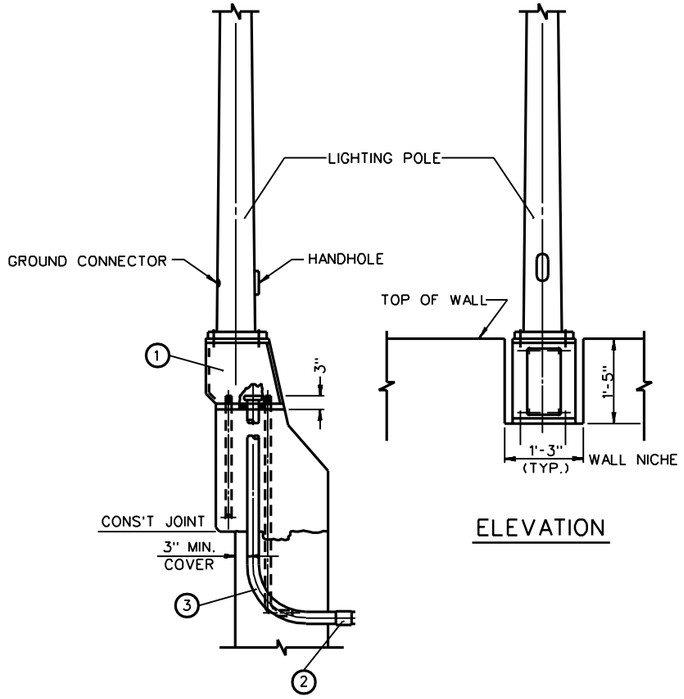
   TIGHTEN ALL HIGH STRENGTH BOLTS BY TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS.
5. ANCHOR BOLTS FOR LIGHTING POLE SUPPORT BASE CONNECTION TO BRIDGE OR WALL SHALL BE FABRICATED FROM HIGH STRENGTH STEEL HAVING A MINIMUM YIELD STRENGTH OF 55,000 PSI AND A MINIMUM TENSILE STRENGTH OF 90,000 PSI. THE PHYSICAL, CHEMICAL, AND DIMENSIONAL CHARACTERISTICS OF THE NUTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A-307. WASHERS SHALL MEET ASTM F844.



TYPE "F" INSTALLATION DETAILS ON PARAPET

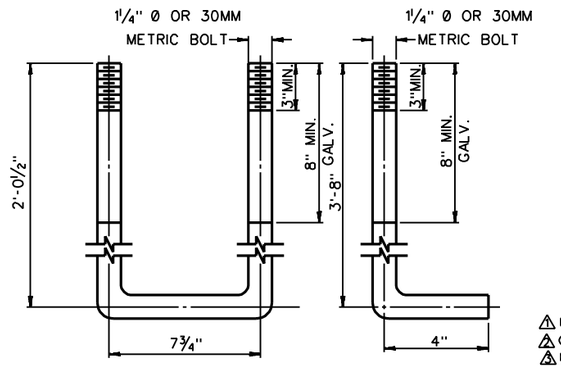
LEGEND:

1. TYPE "F" LIGHTING POLE SUPPORT BASE
2. CONDUIT COUPLING (AS REQUIRED)
3. 1" METAL CONDUIT (TYP.)
4. ANCHOR PLATE (1", ASTM A-36, GALVANIZED)



TYPE "F" INSTALLATION DETAILS ON WALL

ELEVATION



ANCHOR BOLTS FOR WALL MOUNTING

⚠1 DELETED WELDS AND ADDED HEX. HEADS FOR ANCHOR PLATE
⚠2 CHANGED ALL DIMENSIONS
⚠3 REVISED H.S. BOLT NOTE AND A.B. WASHER SPEC.

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL LIGHTING POLE SUPPORT BASE – TYPE F

PREPARED: 07/18/75

REVISIONS
⚠1 07-22-76
⚠2 08-11-77
⚠3 09-14-93

STANDARD SHEET TEL-17C

TRAFFIC ENGINEERING DIVISION

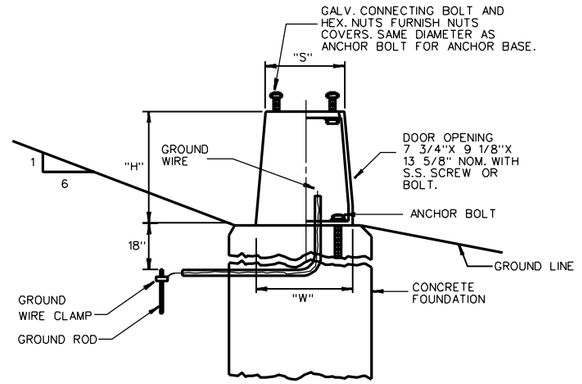
DESIGNATOR	MATERIAL	HGT. (H)	TOP B.C.	TOP DIMENSION (S)	BOTTOM B.C.	BOTTOM DIMENSION (N)	CONNECTING BOLTS	* ANCHOR BOLTS	SPECIAL DETAILS	MAX. LIMITATION (TO TYPE 1, 2, AND 5, FOR TYPE 3 SEE CONTRACT PLANS)	
										WEIGHT (WITH LUMINAIRE)	WALL THICK & O.D. VS. T-BASE MAX.
AT-UA1 **	356-T6 MEETING ASTM B-108	20"	11" TO 12 1/2" SLOTTED	12 5/8" SQ.	15" TO 15 1/2" SLOTTED (USE 15")	14 5/8" SQ.	TOP WASHERS-5/32"X2"O.D. OUTSIDE, 5/32 "X2 1/2"O.D. INSIDE; BOTTOM WASHERS-3/8"X2 1/2"O.D.	1" X 40" MAX. TORQUE 200 FT.-LBS.		900 # STEEL TYPE 1-50-20,45-24 STEEL TYPE 2-50-8 ALUM.-TRUSS ARM-50-25 ALUM.SINGLE ARM-50-8	50-20,45-24 / 50-8 / 40-15 / 40-8
AT-AA **	356-T6	17"	10 1/2" TO 13 1/2" SLOTTED	13 1/8" SQ.	13" TO 15" SLOTTED (USE 15")	15 3/8" SQ.	1"-A307 OR 1 1/4"-A325 AS REQUIRED.	1"X40" OR 1 1/4"48" AS REQ'D.	TOP WASHERS-2 1/2"DIAM.X3/8"THICK BOTTOM WASHERS-2 3/4"DIAM.X1/2" THICK UPPER CORNER STIFFENER RIBS PERMITTED (INSIDE TOP) PER MANUF'S. RECOMMENDATIONS	950 #	
AT-AB **	356-T6	17"	10 1/2" TO 13 1/2" SLOTTED	13 1/8" SQ.	10 1/2" TO 15" SLOTTED (USE 15")	15 3/8" SQ.	1"-A307 OR 1 1/4"-A325 AS REQUIRED.	1"X40" OR 1 1/4"X48" AS REQ'D.	TOP WASHERS-2 1/2"DIA.X3/8"THICK BOTTOM WASHERS-2 3/4"DIA.X1/2" THICK ALSO-BOTTOM MTG. SHALL HAVE FOUR-2 3/4"X4 1/4"X5/8"RECT. WASHERS & FOUR-2 1/2"DIA.X3/8 WASHERS ON TOP. UPPER CORNER STIFFENER RIBS PERMITTED (INSIDE TOP) PER MANUF'S. RECOMMENDATIONS	832 #	
AT-AC **	356-T6	17"	10" TO 12" SLOTTED	12.04" SQ.	10" TO 12" SLOTTED (USE 12")	13.08" SQ.	1"-A307 OR 1 1/4"-A325 AS REQUIRED.	1"X40" OR 1 1/4"X48" AS REQ'D.	TOP WASHERS-2 1/2"DIA.X3/8"THICK BOTTOM WASHERS-2 3/4"DIA.X1/2" THICK UPPER CORNER STIFFENER RIBS PERMITTED (INSIDE TOP) PER MANUF'S RECOMMENDATIONS	550 #	
AT-AD **	356-T6	17"	13" TO 15 1/8" SLOTTED	15.09" SQ.	15" TO 17 1/4" (SEE PLANS)	17.44" SQ.	1"-A307 OR 1 1/4"-A325 AS REQUIRED	1"X40" OR 1 1/4"X48" AS REQ'D.	TOP WASHERS-2 3/4"DIA.X1/2"THICK BOTTOM WASHERS-2 3/4"DIA.X1/2" THICK UPPER CORNER STIFFENER RIBS PERMITTED (INSIDE TOP) PER MANUF'S RECOMMENDATIONS	778 #	

** - MEETS 1985 AASHTO

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES:

1. THE TRANSFORMER BASE SHALL BE CERTIFIED FOR CONFORMANCE TO THE LATEST AASHTO BREAKAWAY PERFORMANCE CRITERIA.
2. FOR POLE BASE B.C. AT TOP OF ALUMINUM TRANSFORMER BASE AND POLE FOUNDATION B.C. AND DIMENSIONS, REFER TO APPROPRIATE PORTION OF TES-40 FOR STEEL POLES AND THE APPROPRIATE PORTION OF TEL-15B FOR ALUMINUM POLES.
* 3. OTHER APPROVED GALVANIZED CONNECTING HARDWARE (E.G. NUTS, WASHERS, PLATES, CLIPS, CONNECTING BOLT COVER, ANCHOR BOLTS ETC.) SHALL BE SUPPLIED AS REQUIRED IN ACCORDANCE WITH THE APPROPRIATE POLE SPECIFICATIONS, THE CHARTS ON TES-40 OR TEL-15B, AND THE MANUFACTURERS RECOMMENDATIONS.
4. SHIM AS REQUIRED WITH 1/16" GALVANIZED STEEL SHIMS.
5. GROUNDING SHALL COMPLY WITH THAT ILLUSTRATED ON TEL-01 AND TES-40 OR TEL-15B.
6. ONE SIDE OF TRANSFORMER BASE NEAR THE DOOR SHALL BE TAPPED FOR GROUNDING LUG.
7. MAXIMUM SLOPE TO THE TRANSFORMER BASE SHALL BE 6:1.



1. CHANGED AT-VA
2.
3. UPDATE RIBS
4. BOTTOM 4 WT.
5. ADDED UA1, AA,AB,AC AND AD AND ATTENDANT 85 AASHTO DETAILS.
6. MOVED TORQUE NOTE FOR AT-UA1, DELETED AT-UA, AT-UB, AT-VA, AT-VB, AT-HA, AT-HB, DETAILS "A", "C", "D".

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

ALUMINUM TRANSFORMER BASE

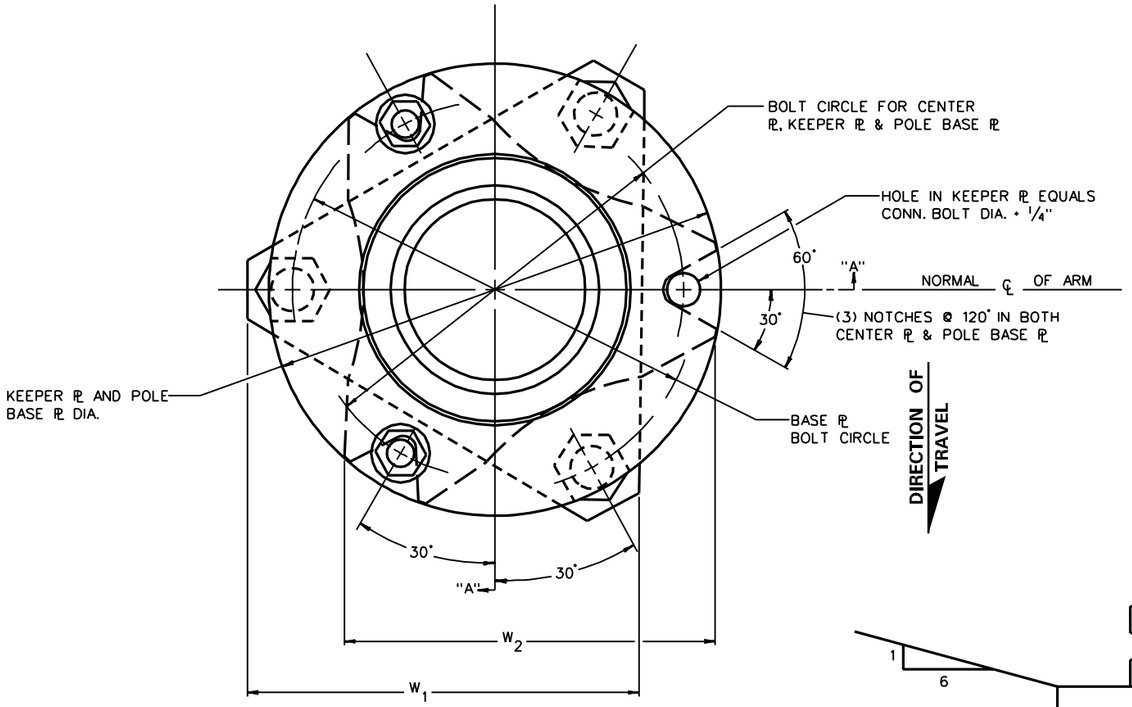
PREPARED: 05/30/80

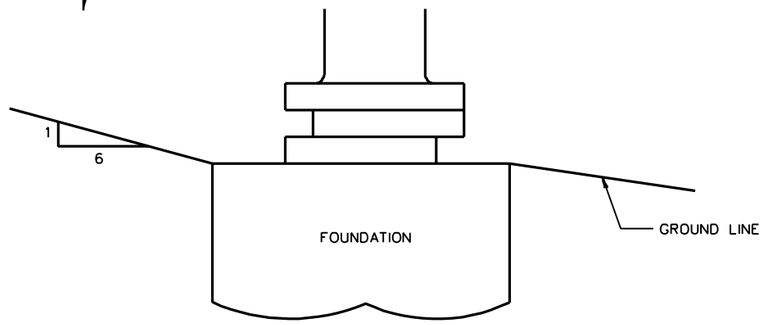
REVISIONS
1. 9/15/84
2. 10/25/89
3. 9/25/91
4. 2/6/92
5. 01-25-93
6. 09-14-93

STANDARD SHEET TEL-18

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



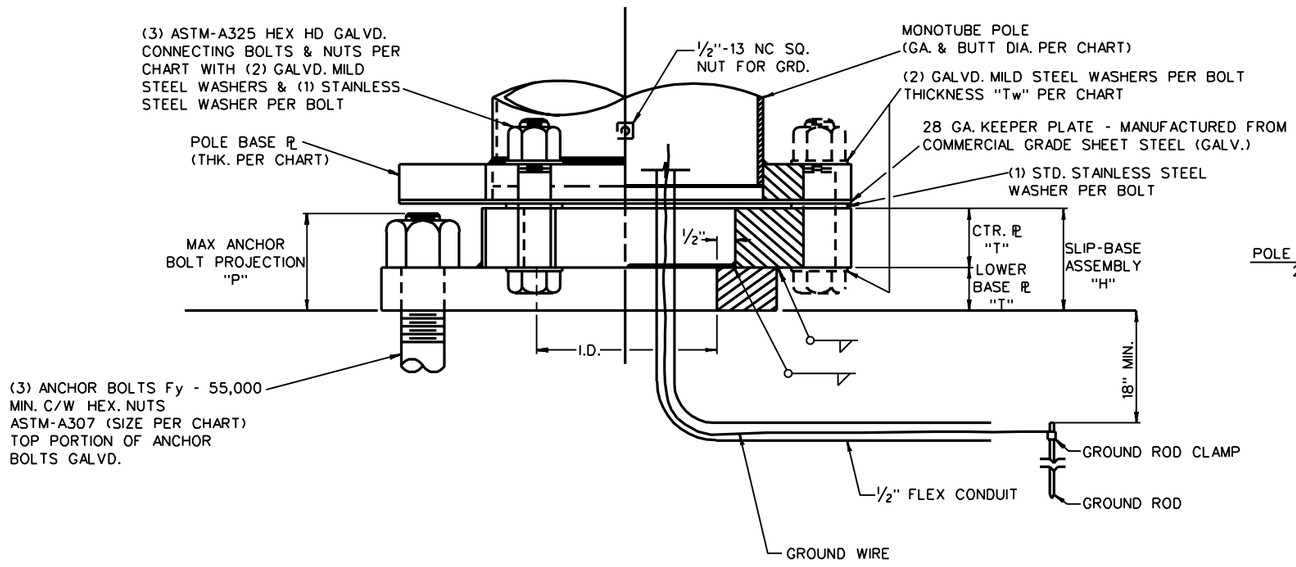


	SLIP BASE ASSY.							ANCHOR BOLTS		POLE BASE ℄			CONN. BOLTS	Tw
	LOWER BASE ℄				CTR. ℄		H							
DIA.	B.C.	I.D.	W_1	T	W_2	T		P	SIZE	B.C.	O.D.	T		
7.0	10"	5"	10 5/8"	1"	10 3/4"	1 1/2"	2 1/2"	2 1/4"	1"x40"	11 1/2"	13 1/4"	3/4"	5/8"x3 3/4"	1/4"
7.5	10 1/2"		11"		10 7/8"									
8.0	11"		11 3/8"	1 1/4"	11 7/8"	1 3/4"	3"	2 3/4"	1 1/4"x48"	12 3/4"	14 1/2"		3/4"x4"	
8.5	11 1/2"		11 3/4"									1"	3/4"x4 1/4"	
9.0	12 1/2"	7"												
1. 8.5	11 1/2"	5"	11 3/4"	1 1/2"	11 7/8"	2"	3 1/2"	3 1/4"	1 1/2"x60"	12 3/4"	14 1/2"	1"	7/8"x5"	3/8"
2. 9.0	12 1/2"	7"										1 1/4"	1"x5 1/4"	

(1.) USE THIS DATA FOR 8.5" POLES WITH 45'-0" MTG. HGT.
(2.) USE THIS DATA FOR 9.0" POLES WITH 45'-0" & 50'-0" MTG. HGT.

IMPORTANT - CONNECTING BOLTS ARE TO BE (TIGHTENED) TENSIONED USING THE TURN OF NUT METHOD IN ACCORDANCE WITH SECTION 615 OF THE SPECIFICATIONS. TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN THE FOLLOWING RESIDUAL TENSIONS ON EACH BOLT.

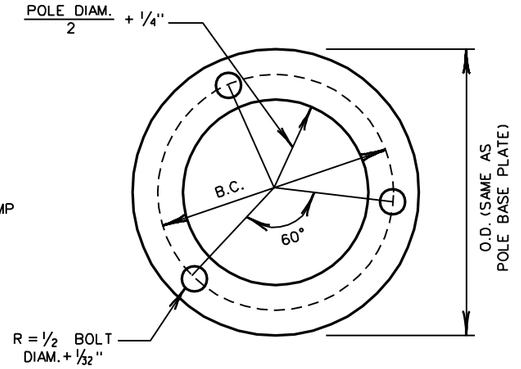
BOLT SIZE	RESIDUAL BOLT TENSION
5/8" Ø	9,200 psi
3/4" Ø	14,200 psi
7/8" Ø	15,000 psi
1" Ø	15,000 psi



SECTION ELEVATION
"A - A"

SEE TES-40 FOR FOUNDATION DETAILS (COMBINE SHAFT THICKNESS WITH APPROPRIATE SHAFT BASE DIA. TO ENTER CHART.)
(NOTE: ANCHOR BOLT SIZES ARE ON THIS SHEET - NOT ON TES-40).

THE USE OF STEEL POLES WITH SLIP BASES IS LIMITED TO THOSE POLES WITH A TOTAL WEIGHT LESS THAN 700 LBS.



KEEPER PLATE

1. FOUNDATION AND PLATE
2. ADDED ADDITIONAL SIZES
3. COMPLETE REVISIONS
4. NOTE - CONNECTING BOLTS
5. SUBSITUTED 615 PROCEDURE
6. ADDED SLOPE DRAWING, ADDED PSI

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
SLIP BASE FOR STEEL POLE

PREPARED: 11/02/71

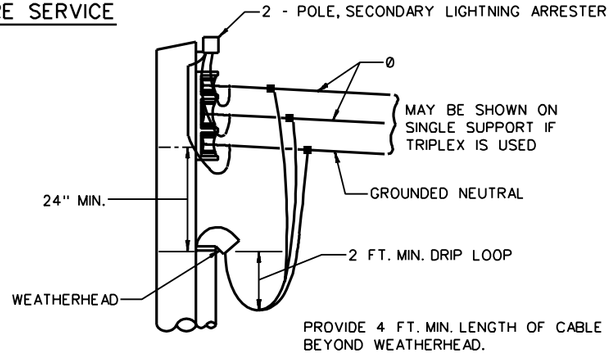
REVISIONS
1 03-20-75
2 07-22-76
3 03-03-77
4 07-07-89
5 02-24-93
6 09-14-93

STANDARD SHEET TEL-19

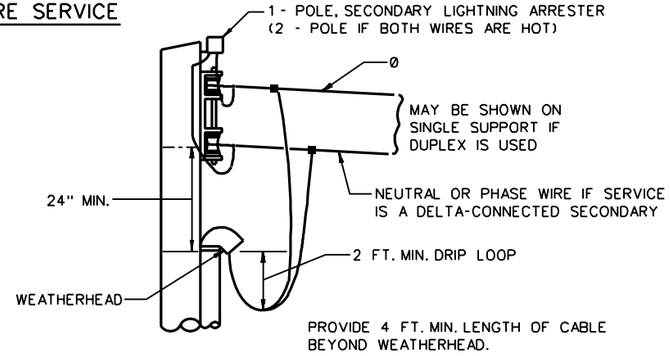
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

3-WIRE SERVICE



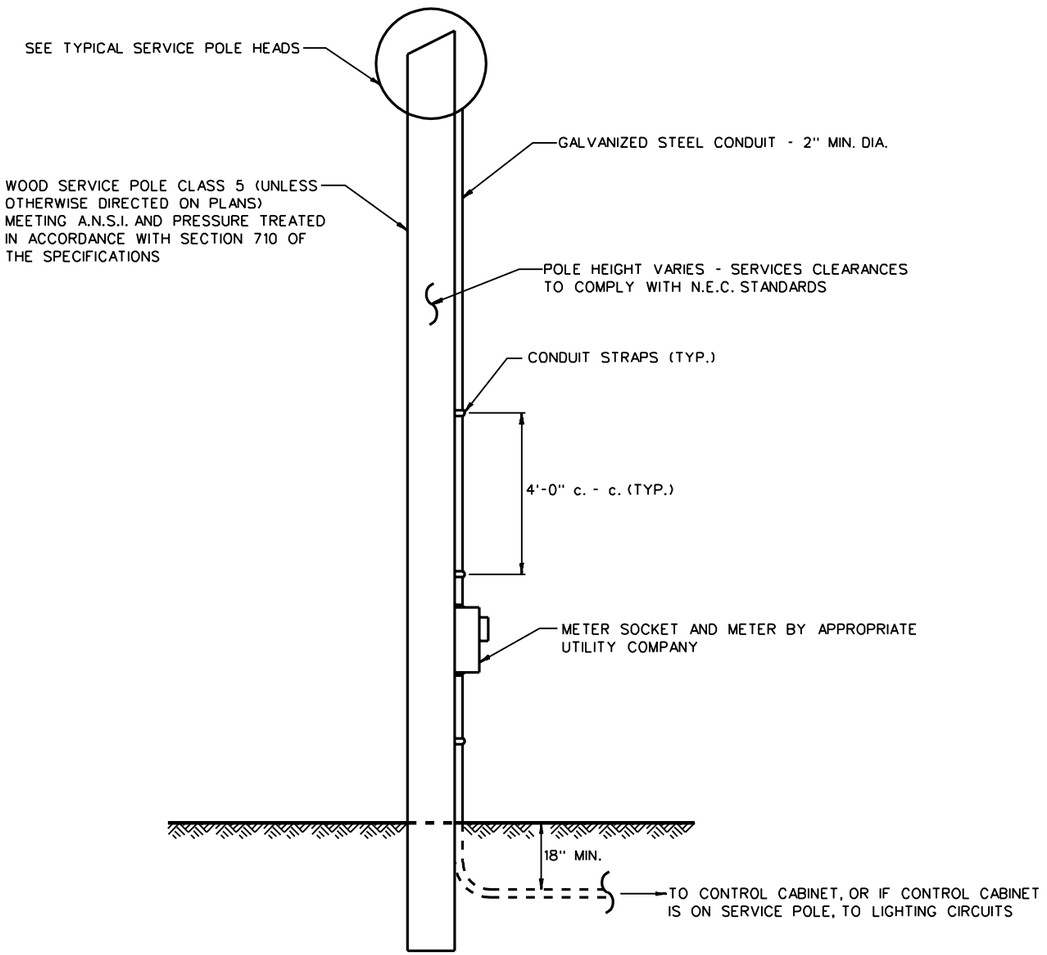
2-WIRE SERVICE



TYPICAL SERVICE POLE HEADS

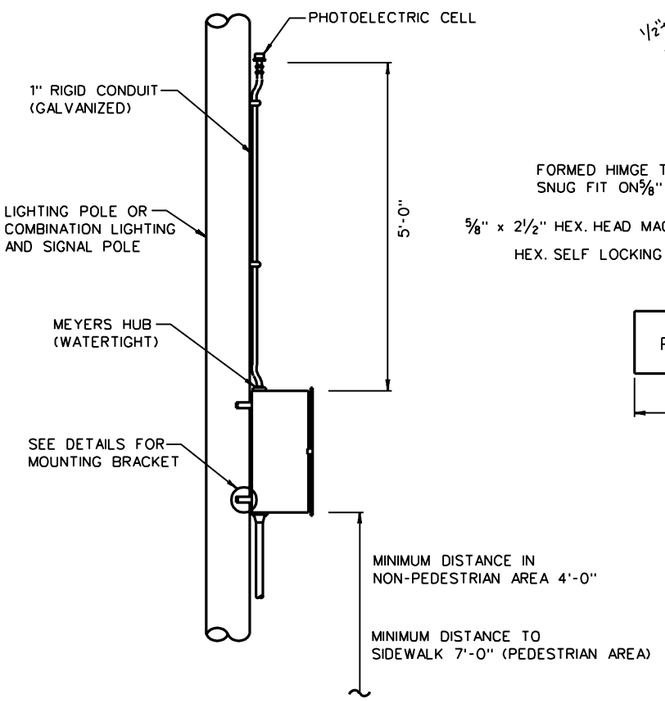
NOTES:

1. FINAL LOCATION OF THE SERVICE POLE SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. PHOTOELECTRIC CELL WILL BE PHOTOCELL - TWISTLOCK TYPE, STANDARD NEMA WITH 2¾" ID LOCKING BASE.
3. THE P.E. UNIT SHALL NORMALLY BE MOUNTED ON THE SAME POLE AS THE CONTROL STATION CABINET IS MOUNTED. THE P.E. UNIT FOR GROUND MOUNTED CONTROL STATIONS SHALL BE MOUNTED AT THE ENCLOSURE (AS DETAILED ON TEL-23) UNLESS OTHERWISE DIRECTED ON THE PLANS.
4. CONDUIT CONNECTION TO ALL CABINETS SHALL BE MADE THROUGH THE BASE OF THE CABINETS ONLY (EXCEPT P.E.).
5. THE CONTROL STATION CABINET IS POLE MOUNTED ON THE SERVICE POLE UNLESS OTHERWISE DIRECTED ON THE PLANS (E.G. ON THE FIRST POLE OF LIGHTING CIRCUIT).
6. THE METHOD SHOWN FOR CONTROL STATION CABINET POLE MOUNTING SHALL BE USED ONLY IN SITUATIONS WHERE SMALL CONTROL CABINETS ARE USED. FOR LARGER CABINETS, MOUNTING METHOD ON SHEET TEL-23 SHALL BE USED.



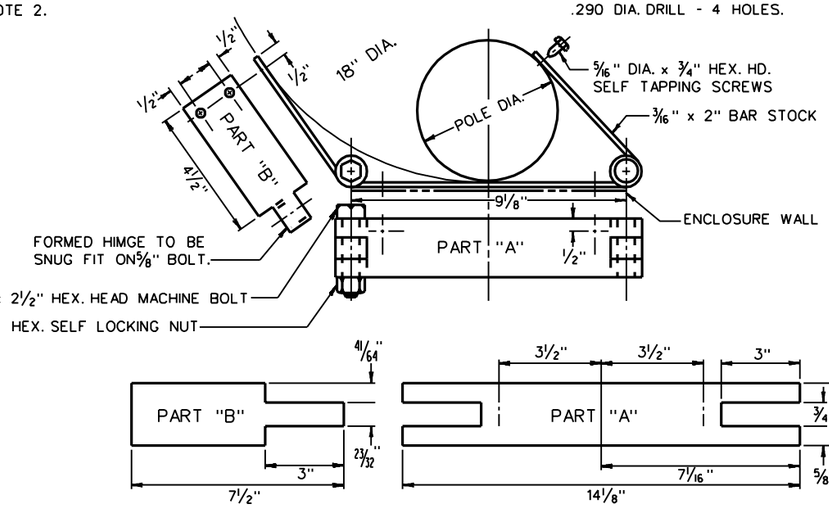
SERVICE POLE TYPICAL

NOTE: PHOTOCELL "WINDOW" SHALL BE ORIENTED NORTH. IF NOT POSSIBLE, ORIENT SOUTH. ALSO - SEE NOTE 2.



CONTROL STATION - POLE MOUNTING DETAIL

FIELD DRILL POLE .290 DIA. DRILL - 4 HOLES.



MOUNTING BRACKET

1. SIGNATURE BLOCK
2. MODIFY SERVICE POLE AND CONTROL STATION DETAILS. CHANGE NOTE 3.
3. PE CELL RELOCATED, SERVICE POLE REVISED, SAME NOTES (3 AND 5) REVISED

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

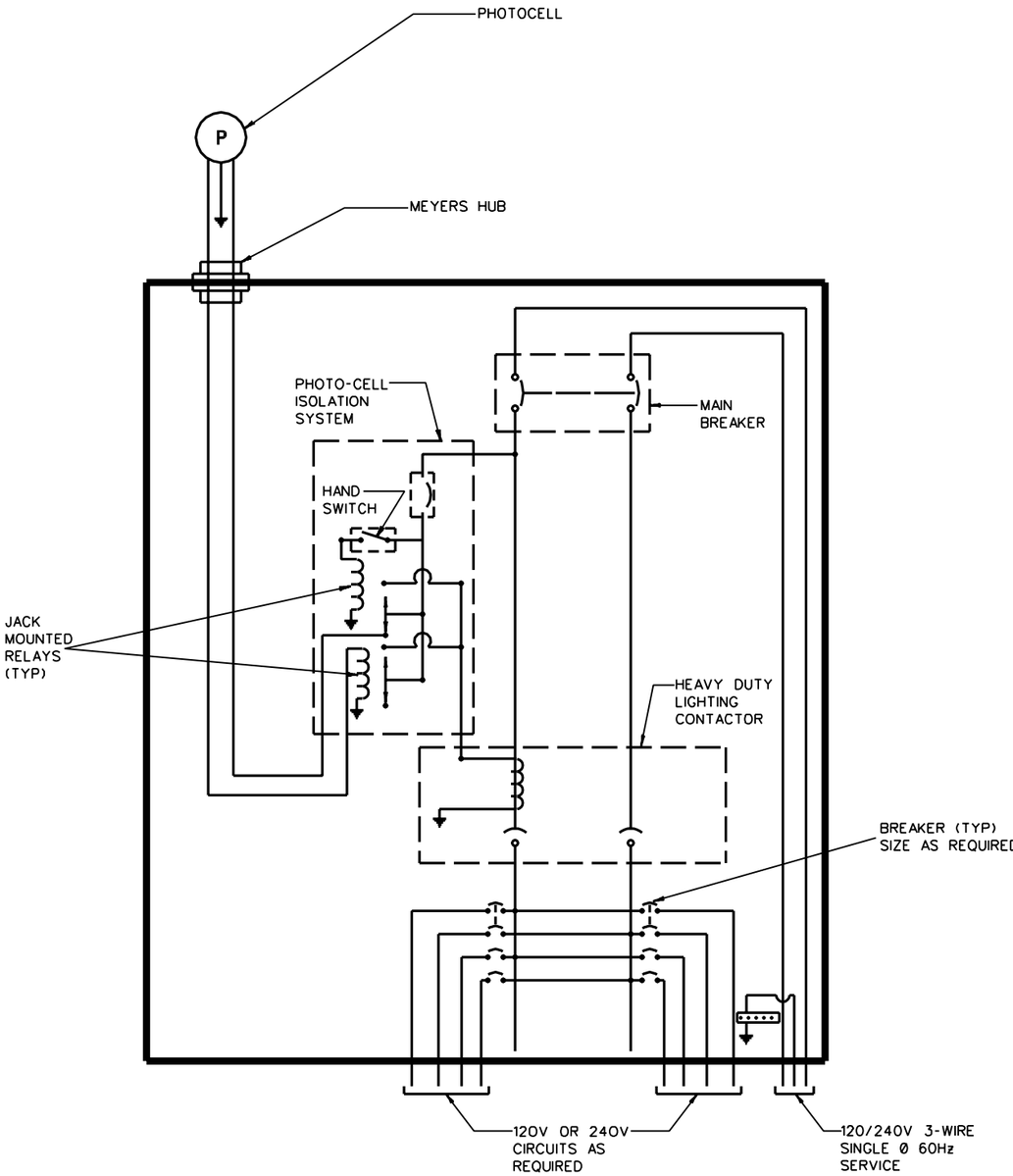
SERVICE POLE AND CONTROL STATION (POLE MOUNTED ENCLOSURE)

PREPARED: 09/02/75

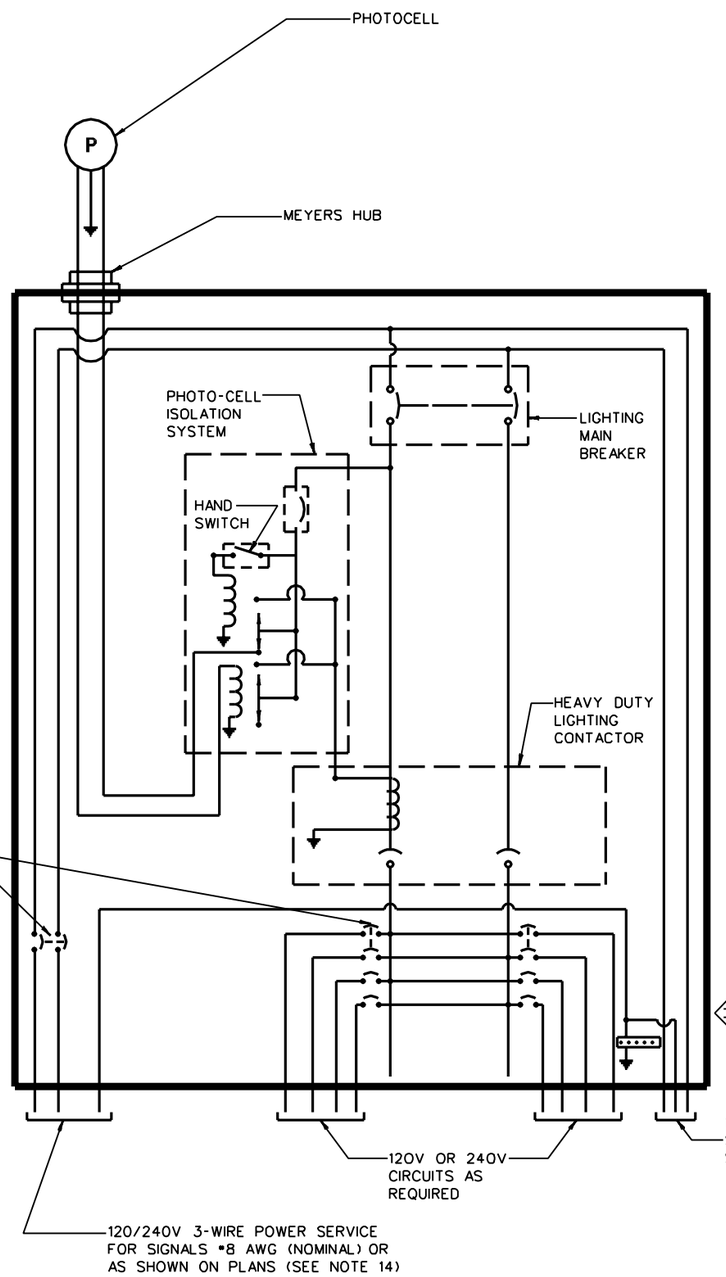
REVISIONS
1 12-10-76
2 07-07-89
3 01-26-93

STANDARD SHEET TEL-21

TRAFFIC ENGINEERING DIVISION



TYPICAL WIRING
SINGLE PHASE - POWER SERVICE
LIGHTING ONLY



TYPICAL WIRING
SINGLE PHASE - POWER SERVICE
LIGHTING WITH SEPARATE FEED FOR
TRAFFIC SIGNALS

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

NOTES:

1. COMPONENT SIZES FOR CONTROL CENTERS NOT SPECIFIED ON THIS SHEET WILL BE DETERMINED BY EVALUATION OF THE CIRCUIT LOAD.
2. FOR INTERNAL CONTROL CENTER WIRING #10 AWG STRANDED COPPER WIRE SHALL BE USED UNLESS OTHERWISE SPECIFIED.
3. LIGHTNING PROTECTION FOR CONTROL STATION SHALL BE PROVIDED ON THE SERVICE POLE AT THE WEATHERHEAD AS PER TEL-21.
4. CONDUIT HUBS SHALL BE MOUNTED TO ACCOMMODATE ALL CIRCUITS TO BE SERVED. SIZES SHALL BE COMPATIBLE TO CONDUIT SIZE INDICATED ON PLAN SHEETS. REDUCERS SHALL NOT BE USED.
5. IN THE EVENT THAT A CONTROL STATION COMPONENT SIZE FALLS BETWEEN TWO TRADE SIZES, THE HIGHER TRADE SIZE SHALL BE USED.
6. GROUNDING SYSTEMS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH NATIONAL ELECTRIC CODE, STATE AND LOCAL REGULATIONS.
7. ALL WIRING SHALL BE NEAT AND OF GOOD WORKMANSHIP. NATIONAL ELECTRIC CODE STANDARDS SHALL BE ADHERED TO BY THE CONTRACTOR.
8. LUMINAIRE WIRING AT POLE BASE SHALL BE PERFORMED IN ACCORDANCE WITH STANDARD DRAWING TEL-01.
9. CONTROL CABINET MOUNTING SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TEL-21 OR AS OTHERWISE DIRECTED ON THE CONTRACT PLANS.
10. ENCLOSURES WILL BE NEMA TYPE 4 STAINLESS STEEL CABINET, WITH 3" LETTERING D.O.H. -___VOLTS.
11. ENCLOSURE SIZE WILL BE DETERMINED BY COMPONENT SIZE AND APPROVED BY THE ENGINEER.
12. PHOTOELECTRIC UNIT SHALL BE MOUNTED OUTSIDE THE LIGHT ENVELOPE CAST BY THE LIGHTING SYSTEM. PHOTOELECTRIC UNIT WILL BE PHOTO-CELL TWISTLOCK TYPE, STANDARD NEMA WITH 2¾" I.D. LOCKING BASE.
13. IN CASES WHERE THE LINE-SIDE OF THE ELECTRICAL SERVICE DOES NOT HAVE A LIGHTNING ARRESTER INSTALLED BY THE SERVING UTILITY COMPANY: THE UNIT MUST BE INSTALLED BY THE CONTRACTOR ON THE LOAD-SIDE OF THE SYSTEM WITHIN THE CONTROL CENTER ENCLOSURE.
14. TRAFFIC SIGNAL FEED GOES TO EXTERNAL ENCLOSED CIRCUIT BREAKER AT SIGNAL (SEE STANDARD SPECIFICATIONS). NOTE ONLY 120V IS TO BE BROUGHT INTO THE SIGNAL CONTROLLER CABINET.

NOTICE
ENCLOSURE POWER-OFF DOOR INTERLOCK SHALL NOT BE USED FOR THIS CONTROL CABINET

⚠ COORDINATED VOLTAGES WITH TEL-01.
⚠ COMPLETELY CHANGED TYPICAL WIRING.
⚠ MODIFIED PHOTOELECTRIC CELL WIRING SCHEME.
⚠ REVISED PE CELL, ADDED COMBINATION SIGNAL AND LIGHTING CONTROLLER

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL
CONTROL STATION (POLE MOUNTED)

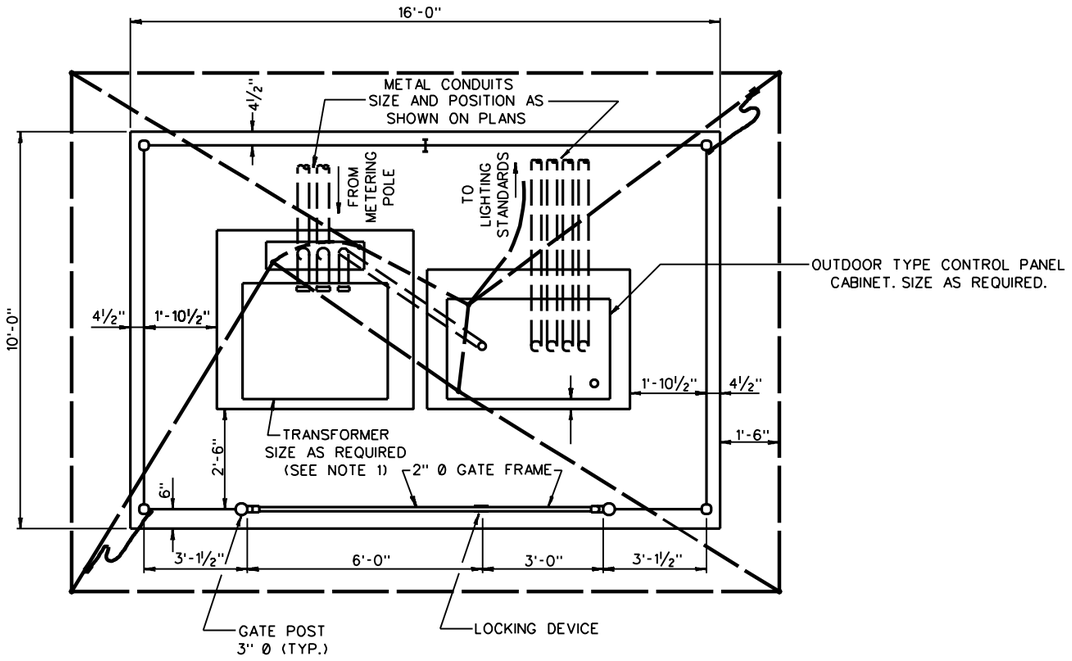
PREPARED: 09/02/75

REVISIONS
⚠ 12-10-76
⚠ 12-03-80
⚠ 07-03-89
⚠ 01-26-93

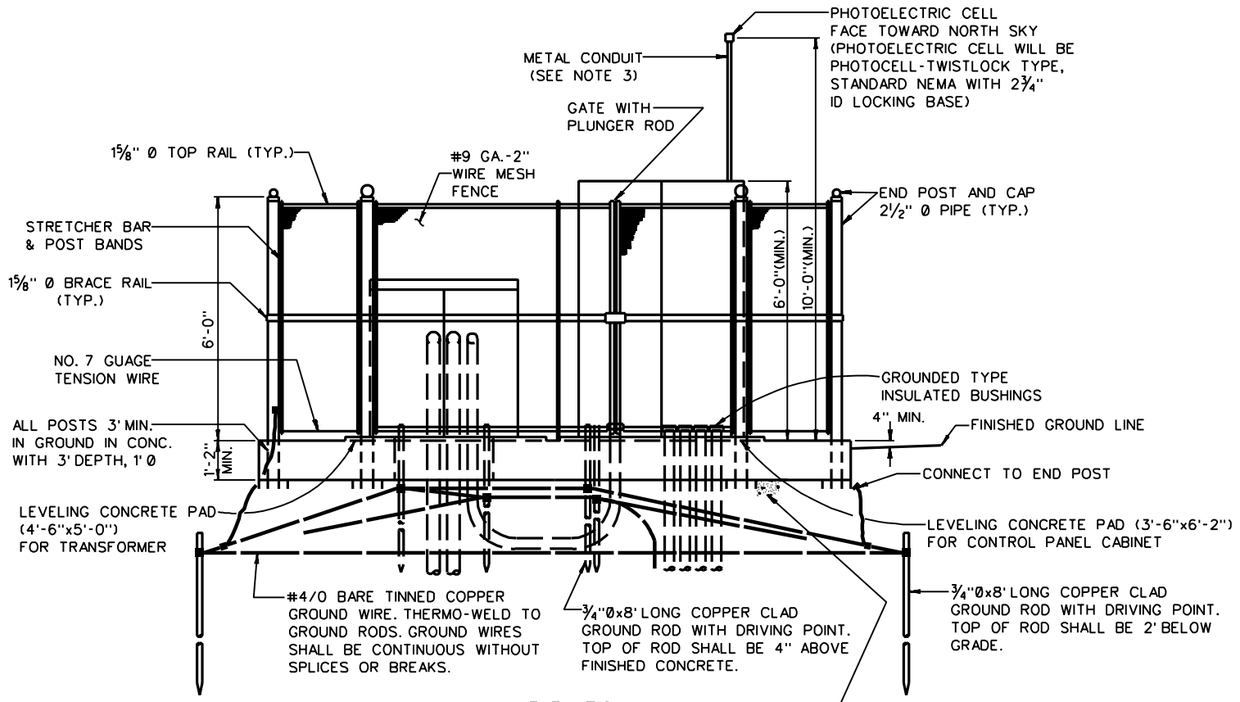
STANDARD SHEET TEL-22

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



PLAN



ELEVATION

CONTROL STATION ENCLOSURE

GENERAL NOTES:

1. TRANSFORMER SHALL ONLY BE INCLUDED IN THE ENCLOSURE IF CALLED FOR ON PLANS.
2. IF TRANSFORMER IS NOT INCLUDED, THE DIMENSIONS OF THE ENCLOSURE SHALL BE REDUCED TO 10'-0" x 11'-0" x 0'-14".
3. CONDUIT MOUNTED P.E. UNIT TO BE USED IF SYSTEM EMPLOYS PRIMARY VOLTAGE ON METERING POLE OR IF NOTED ON THE CONTRACT PLANS.
4. CONDUIT TO SUPPORT P.E. UNIT SHALL BE 1½" O.D. GALVANIZED STEEL.
5. REINFORCEMENT IN FOUNDATION SHALL BE 6's SPACED AT 8" DEPTH WISE AND 16" LENGTH WISE AT 3" FROM BOTTOM OF FOUNDATION.
6. ALL CONCRETE SHALL BE CLASS "B".
7. THE ENCLOSURE MUST HAVE DOUBLE DOORS AND BE NEMA TYPE 4. IT MUST HAVE ADJUSTABLE MOUNTING CHANNELS ON BOTH SIDES AND ON THE BACK WALL. IT MUST BE OF 0.125 INCH THICK ALUMINUM TYPE 5052-H3 AND BE REINFORCED TO SUPPORT LOADING AND DOORWAYS.
8. ENCLOSURE SIZES WILL BE DETERMINED BY COMPONENT REQUIREMENTS AND SUBMITTED FOR APPROVAL TO THE ENGINEER.

⚠1 SIGNATURE BLOCK
⚠2 CHANGED GROUND RODS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

CONTROL STATION (GROUND MOUNTED) ENCLOSURE

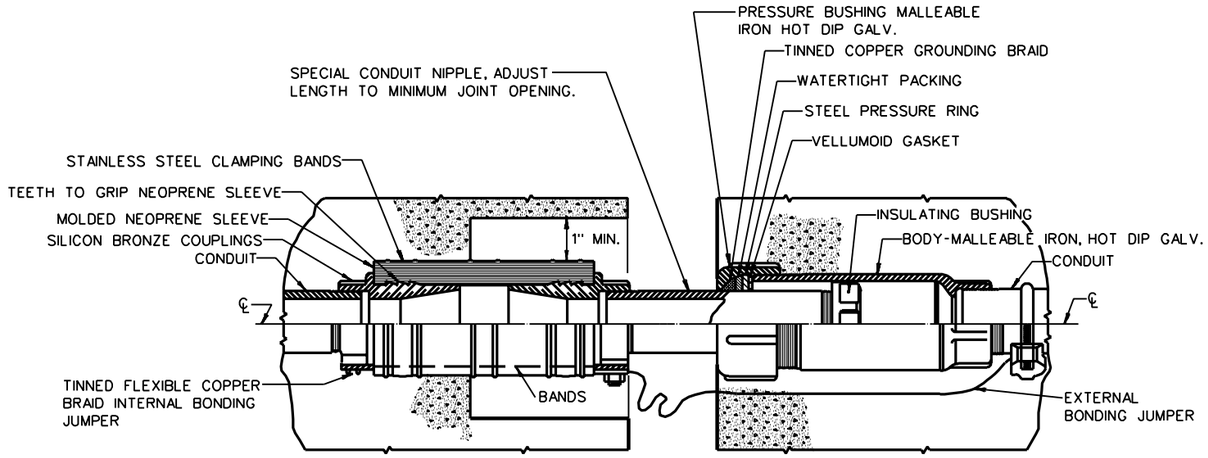
PREPARED: 09/02/75

REVISIONS	
⚠1	12-10-75
⚠2	09-15-84

STANDARD SHEET TEL-23

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

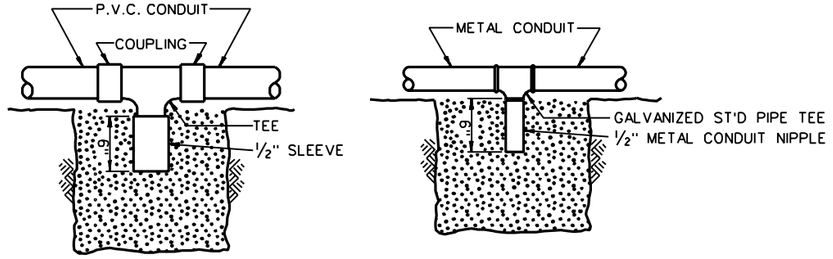


CONDUIT DEFLECTION / EXPANSION JOINT FITTING

NOT TO SCALE

NOTE

PROVIDE DEFLECTION / EXPANSION FITTING AT ALL EXPANSION JOINTS AND ALL STRINGER (STRESS) RELIEF JOINTS IN BRIDGE STRUCTURES, MEDIANS, PARAPETS, RETAINING WALLS, AND SIMILAR LOCATIONS. PROVIDE SIMILAR INSTALLATION IN EXPOSED CONDUIT RUNS AS REQUIRED AT EXPANSION JOINTS, ETC., AND NEAR THE JOINT BETWEEN EXPOSED AND BURIED OR ENCASED CONDUIT. FITTING TO BE SIMILAR TO COMBINATION OF OZ/GEDNEY TYPES EX, AX, DX AND AXDX FITTINGS AND SHALL BE SET FOR MOVEMENT IN EACH DIRECTION EQUAL TO PLAN MOVEMENT PLUS 1" IN EACH DIRECTION.



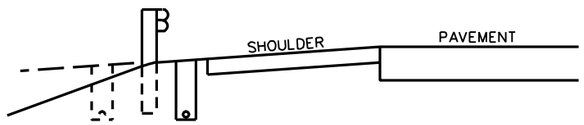
UNDERGROUND CONDUIT DRAINAGE DETAILS

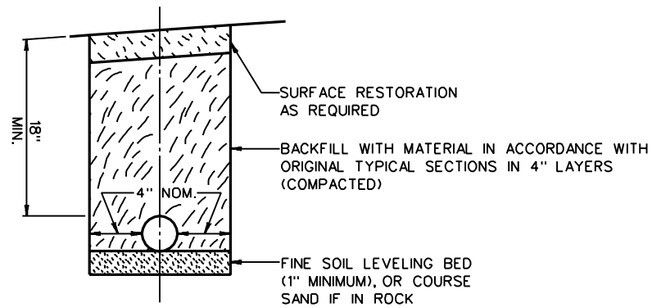
NOT TO SCALE

NOTE

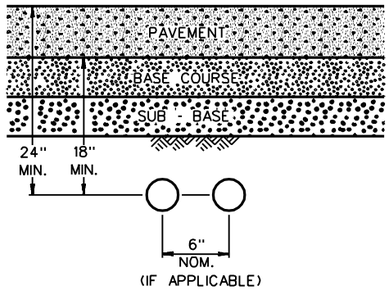
PROVIDE 2' x 2" x TRENCH WIDTH AGGREGATE POCKET AND DRAIN AT LOW POINT OF CONDUIT RUN IF LOW POINT IS NOT IN A JUNCTION BOX.

CONDUIT LOCATION IS SPECIFIED ON THE CONTRACT PLANS





TRENCH DETAILS



1. DIMENSIONS ARE MEASURED AT POINT OF CONDUIT ENTRANCE. EXIT DIMENSIONS MAY VARY + 12"-6" VERTICALLY, + 12"-3" HORIZONTALLY (BETWEEN CONDUITS) UNLESS OTHERWISE APPROVED.
2. CROSSING TO TERMINATE BOTH ENDS IN JUNCTION BOX UNLESS OTHERWISE NOTED.
3. CONDUIT TO BE JACKED OR BORED AND MAY NOT BE WASH-BORED.

CROSSING DETAIL

⚠CHANGED NOTES OF EXP./DEFL. FITTING AND ON TRENCH DETAILS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL CONDUIT DETAILS

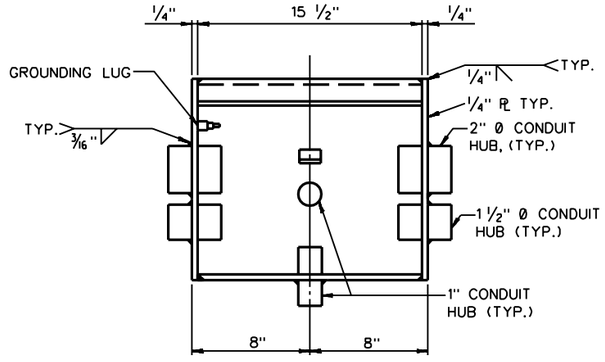
PREPARED: 07/18/75

REVISIONS
06-01-76
⚠ 09-15-84

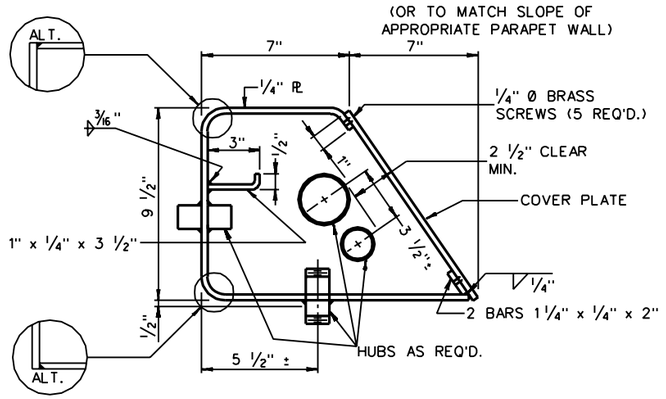
STANDARD SHEET TEL-31

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

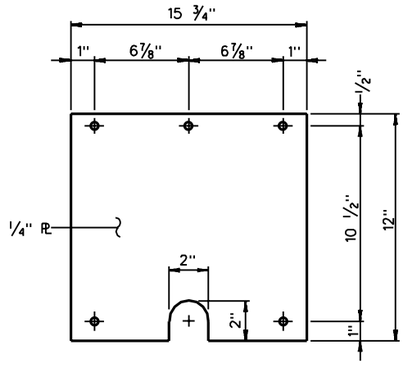


FRONT VIEW WITH COVER REMOVED



SIDE VIEW

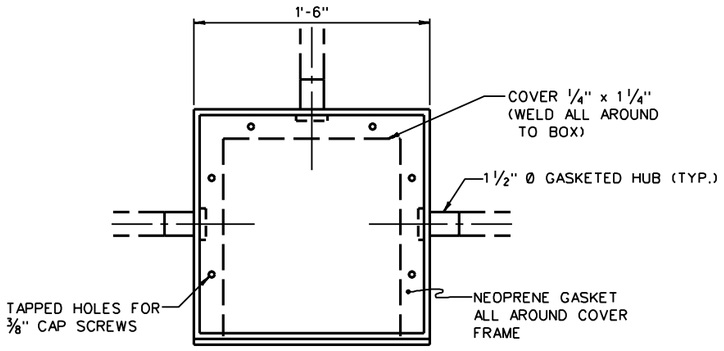
TYPE A JUNCTION BOX



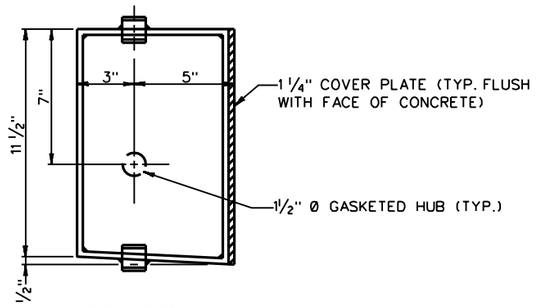
COVER PLATE

NOTES:

1. TYPE A AND B BOXES ARE TO BE FABRICATED FROM STEEL CONFORMING TO ASTM A-36 AND HOT-DIPPED GALVANIZED AFTER ASSEMBLY.
2. REINFORCING STEEL THAT CONFLICTS WITH TYPE A OR TYPE B BOXES SHALL BE APPROPRIATELY MODIFIED AS SHOWN ON THE BRIDGE PLANS OR AS DIRECTED BY THE ENGINEER.
3. TYPE C BOX IS TO BE FABRICATED FROM COMMERCIAL GRADE STEEL WITH WEATHER RESISTANT STEEL. TYPE C BOX SHALL INCLUDE STAINLESS STEEL PINS AND DOOR CLAMPS.
4. CONDUIT NOT USED TO BE FIELD CAPPED.

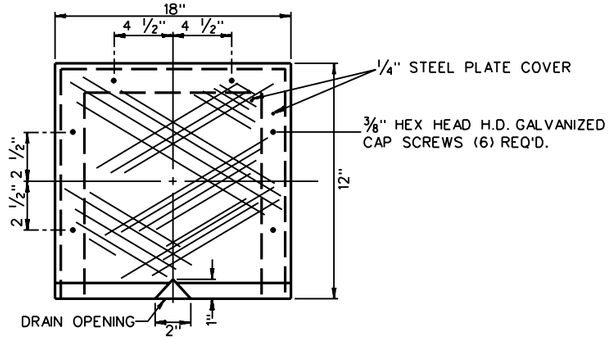


FRONT VIEW WITH COVER REMOVED

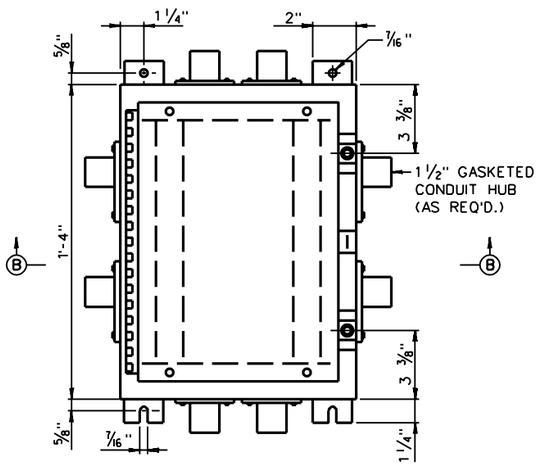


SIDE VIEW

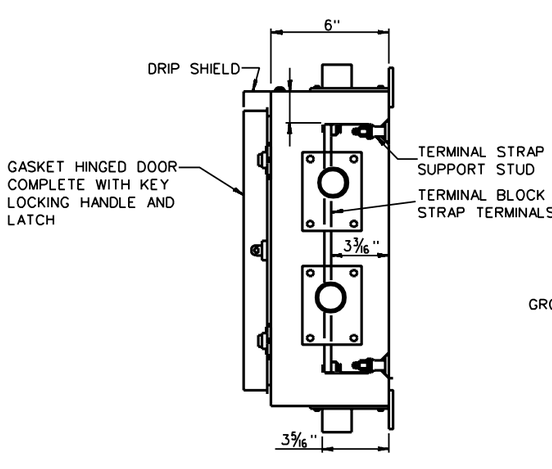
TYPE B JUNCTION BOX



COVER PLATE

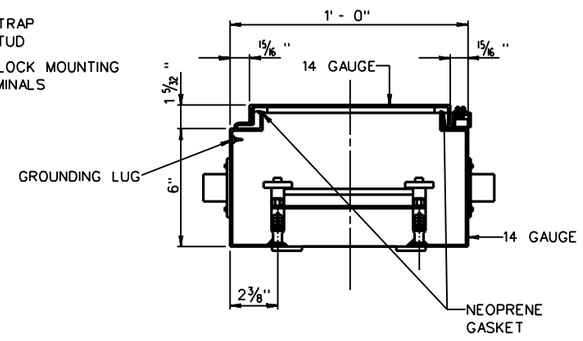


FRONT VIEW



SIDE VIEW

TYPE C JUNCTION BOX



SECTION B - B

⚠1 INCREASED TYPE A AND TYPE B BOXES DIMENSIONS
⚠2 CHANGED HUB SIZES

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL JUNCTION BOXES TYPES A,B,C

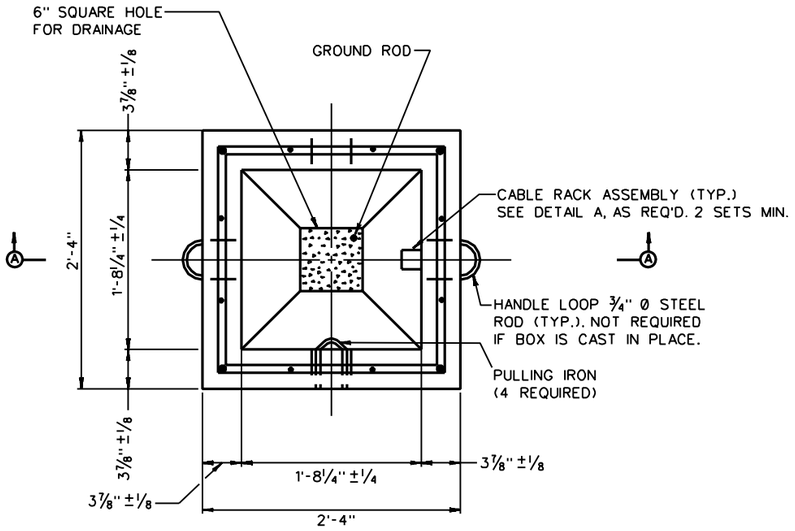
PREPARED: 07/18/75

REVISIONS
06-01-76
⚠1 12-10-76
⚠2 08-11-77

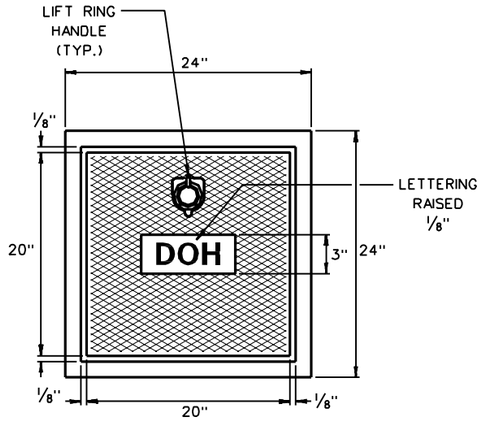
STANDARD SHEET TEL-42

TRAFFIC ENGINEERING DIVISION

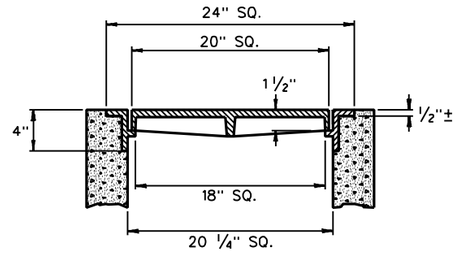
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

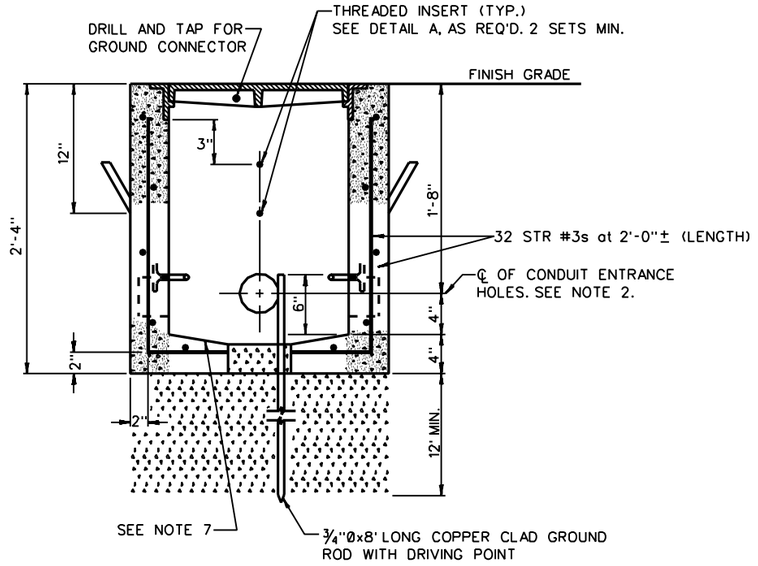


PLAN WITH COVER REMOVED



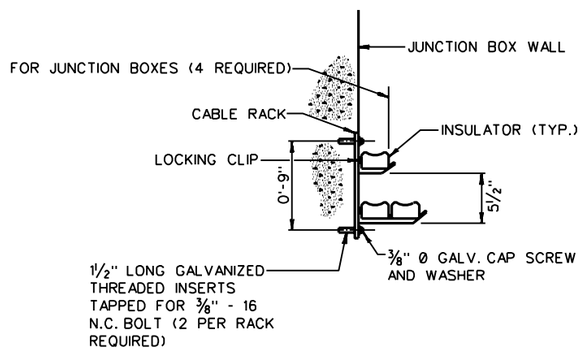
PLAN





SECTION A - A

CONCRETE JUNCTION BOX



DETAIL A

CABLE RACK ASSEMBLY

GENERAL NOTES

1. CONCRETE WHICH IS CAST IN PLACE SHALL MEET CLASS "B". CONCRETE WHICH IS PRECAST SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND AN AIR CONTENT OF 7+/-2 PERCENT.

2. ALL CONDUIT ENTRANCE HOLES TO BE THREE INCH DIAMETER WITH ONE INCH KNOCKOUT WALL. FOUR HOLES PER JUNCTION BOX ARE REQUIRED UNLESS NOTED OTHERWISE.

3. CONDUCTORS SHALL BE SUPPORTED ON CABLE RACKS IN JUNCTION BOXES 18" x 18". JUNCTION BOXES (18" x 18") ARE TO HAVE END BELLS OR INSULATED BUSHINGS INSTALLED BEFORE ANY CABLE IS PULLED IN CONDUIT.

4. THIS JUNCTION BOX SHALL HAVE TYPE H-20 LOADING CAPACITY, BE WATERPROOF, AND THE COVER FRAME SHALL BE CAST INTEGRAL WITH THE CONCRETE BOX. ALL PORTIONS OF THIS JUNCTION BOX SHALL MEET THE REQUIREMENTS OF SECTION 715.42.11.2 OF THE SPECIFICATIONS.

5. THE FRAME CASTINGS SHALL BE CAST IRON MEETING THE REQUIREMENTS OF SECTION 709.10 OF THE SPECIFICATIONS. THE COVER SHALL BE DUCTILE IRON MEETING ASTM A 536, GRADE 80-55-6, 65-45-12, OR 60-40-18.

6. FRAMES AND COVERS ARE SHOWN AS EXAMPLES ONLY. SHOP DRAWINGS SHALL BE SUBSMITTED IF DETAILS AND DIMENSIONS VARY.

7. BOTTOM OF JUNCTION BOXES SHALL BE SLOPED TO DRAIN HOLE.

8. FOR TYPE H, 10" x 10" OR TYPE L, 8" x 8", SEE TES-50.

⚠1 DECREASED ALL DIMENSIONS
⚠2 RACK SPACING
⚠3 CHANGED NOTE 4
⚠4 CHANGED GROUND ROD AND NOTE 4
⚠5 REVISED NOTES 1 AND 4

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL JUNCTION BOX – TYPE H, 18" x 18"

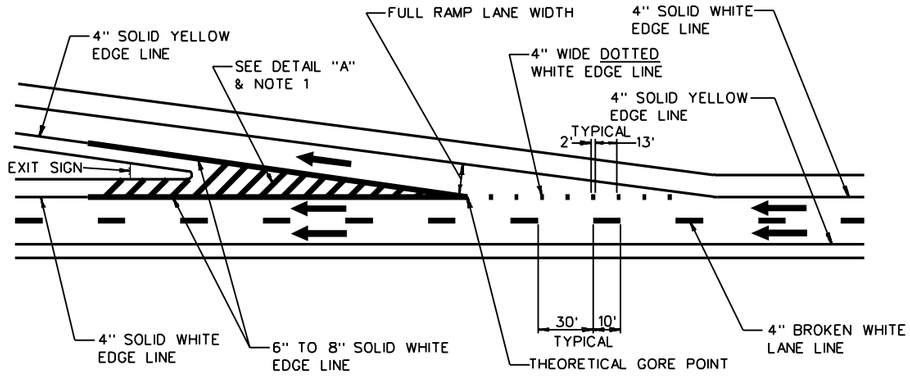
PREPARED: 07/18/75

REVISIONS
⚠1 07-22-76
⚠2 12-10-76
⚠3 08-11-77
⚠4 09-15-84
⚠5 01-27-93

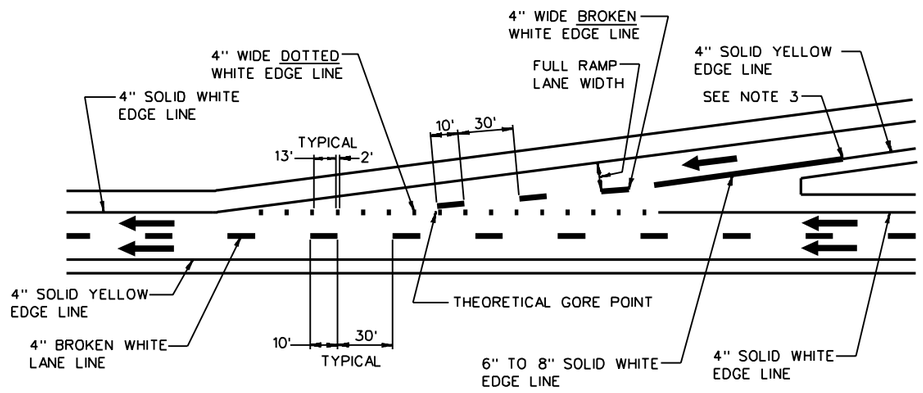
STANDARD SHEET TEL-43

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS



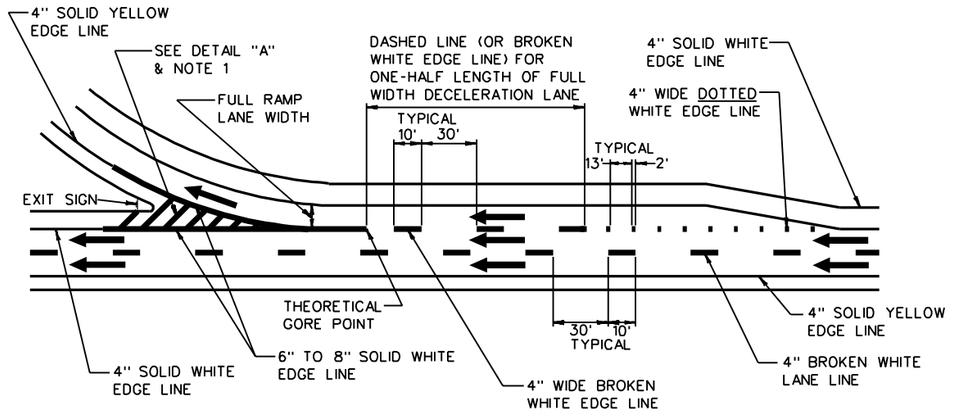
EXIT RAMP: STRAIGHT TAPERED DECELERATION LANE



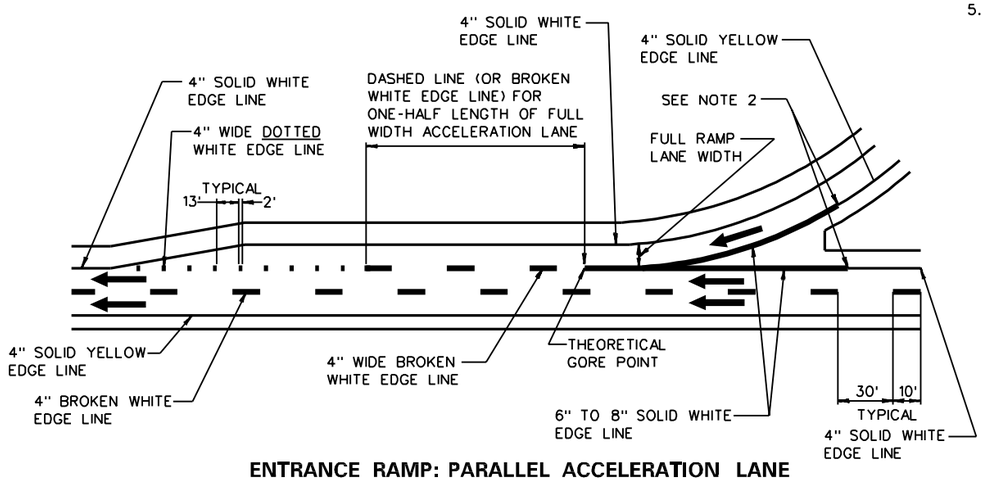
ENTRANCE RAMP: TAPERED ACCELERATION LANE

GENERAL NOTES

1. THE 6" TO 8" EDGE LINE SHALL BE EXTENDED TO A POINT APPROXIMATELY 25' BEYOND THE EXIT SIGN ON BOTH SIDES OF THE GORE.
2. THE 6" TO 8" EDGE LINE ON BOTH SIDES OF THE GORE SHALL BE PLACED BEGINNING AT A POINT APPROXIMATELY 25' BEFORE THE POINT WHERE THE RAMP AND MAINLINE SHOULDER AREAS JOIN AND EXTEND UNTIL THE 6" TO 8" LINES MERGE INTO ONE 6" TO 8" LINE.
3. THE 6" TO 8" EDGE LINE ON THE RIGHT SIDE OF THE GORE SHALL BE PLACED BEGINNING AT A POINT APPROXIMATELY 25' BEFORE THE POINT WHERE THE RAMP AND MAINLINE SHOULDER AREAS JOIN AND EXTEND FOR APPROXIMATELY ONE-HALF THE LENGTH TO THE THEORETICAL GORE POINT.
4. IF TYPICAL MARKINGS AS SHOWN ON THIS SHEET DO NOT APPLY, MARKINGS WILL BE AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.
5. THIS DIMENSION SHALL BE 12 FEET UNLESS OTHERWISE SPECIFIED. IN NO CASE SHALL THIS DIMENSION BE LESS THAN 8 FEET OR GREATER THAN 12 FEET.



EXIT RAMP: PARALLEL DECELERATION LANE



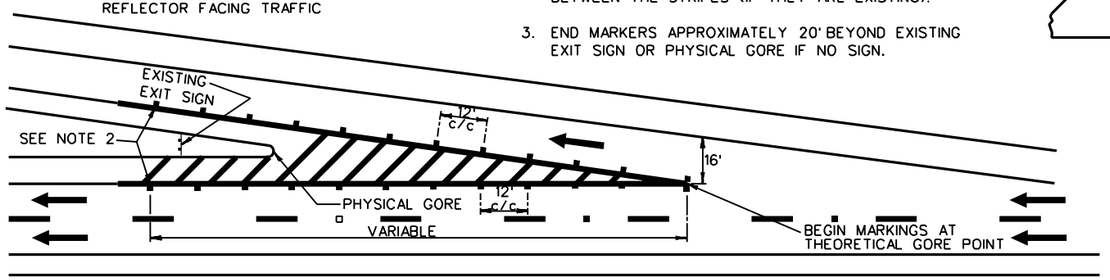
ENTRANCE RAMP: PARALLEL ACCELERATION LANE

■ - BI-DIRECTIONAL (WHITE/RED) WITH WHITE REFLECTOR FACING TRAFFIC

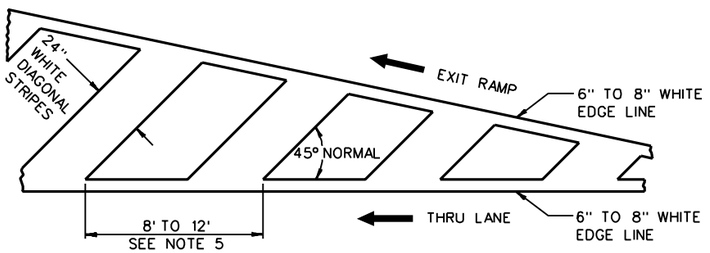
□ - MONO-DIRECTIONAL WITH WHITE REFLECTOR FACING TRAFFIC

NOTES:

1. MARKER PLACEMENT AT GORES ONLY WHEN SPECIFIED.
2. THE SPACING BETWEEN MARKERS IN THE GORE AREA SHOULD BE APPROXIMATELY 12' APART AND CENTERED BETWEEN THE STRIPES (IF THEY ARE EXISTING).
3. END MARKERS APPROXIMATELY 20' BEYOND EXISTING EXIT SIGN OR PHYSICAL GORE IF NO SIGN.



GORE AREAS: MARKER PLACEMENT



DETAIL "A"

NOTE:

← THIS ARROW ONLY INDICATES DIRECTION OF TRAVEL.

⚠1 EDGE LINES
⚠2 RAMP EDGE LINES
⚠3 MODIFIED SPACING & DOTTED LINES
⚠4 WHOLE SHEET
⚠5 ADDED NOTE ABOUT ARROWS

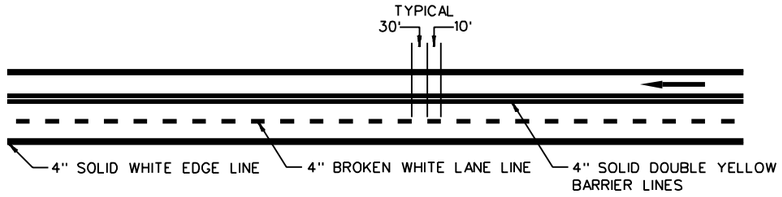
WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL TYPICAL MARKINGS OF INTERCHANGE RAMPS

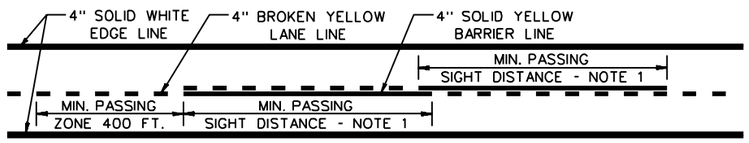
PREPARED: 07/00/71

REVISIONS
⚠1 05-00-73
⚠2 10-00-74
⚠3 11-23-77
⚠4 01-15-85
⚠5 12-09-93

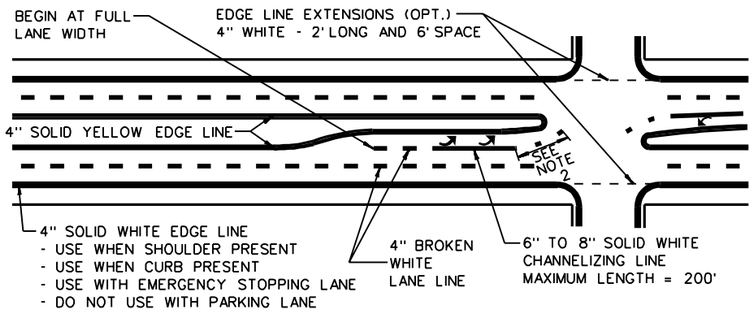
STANDARD SHEET TEM-1



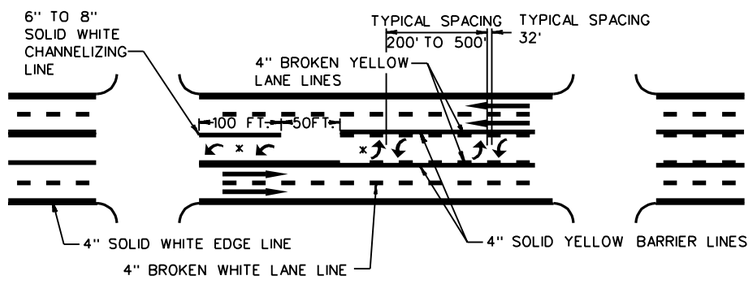
(A) TWO WAY MARKING, TRUCK CLIMBING LANE



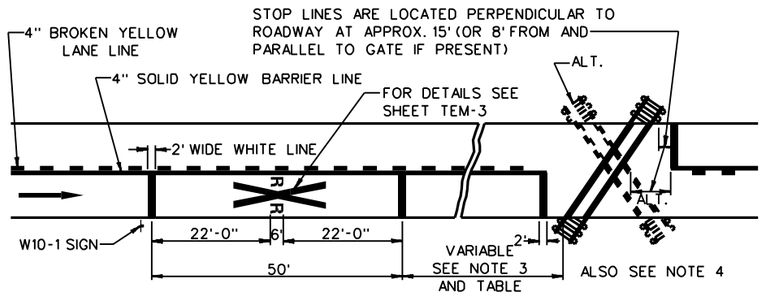
(B) TWO WAY MARKING FOR PASSING ZONE



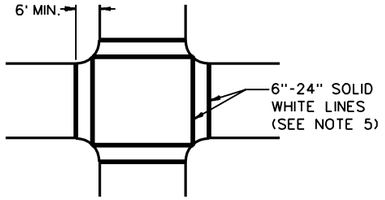
(C) DIVIDED HIGHWAY WITH MEDIAN



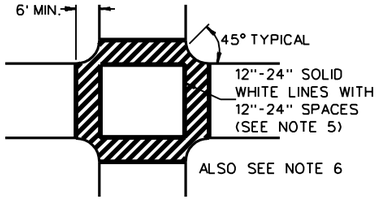
(D) TWO WAY MARKING, MULTI-LANE HIGHWAY WITH DUAL LEFT TURN CHANNELIZATION



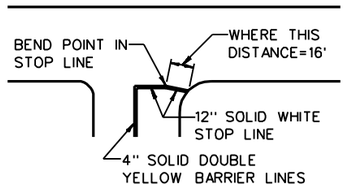
(E) TWO WAY MARKING, RAILROAD-HIGHWAY GRADE CROSSINGS



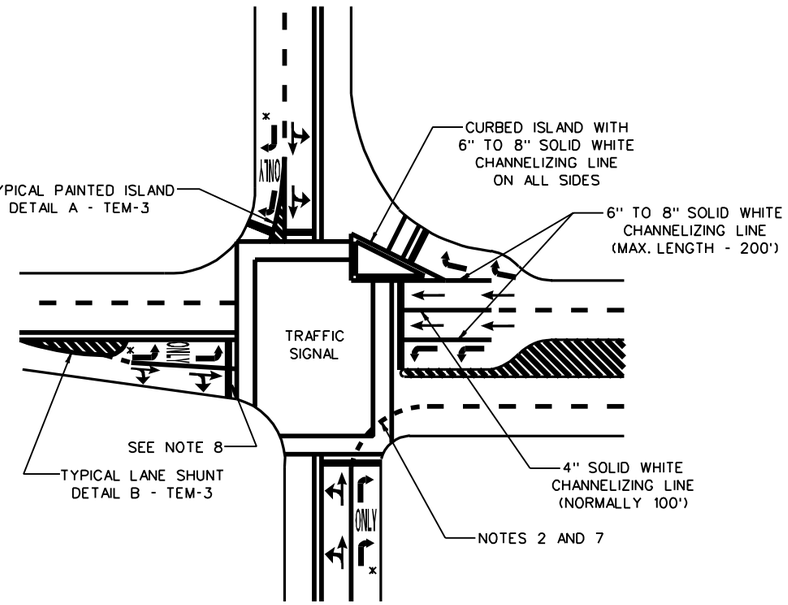
(F) TRANSVERSE CROSSWALK MARKINGS



(G) DIAGONAL CROSSWALK MARKINGS
(USED FOR ADDED VISIBILITY)



(H) METHODOLOGY FOR INSTALLING (BENDING) STOP LINES AT WIDE THROATED INTERSECTIONS



(I) TYPICAL INTERSECTIONS MARKINGS

RAILROAD CROSSING MARKING DISTANCE TABLE

POSTED OR 85TH PERCENTILE TRAFFIC SPEED	DISTANCE FROM NEAR RAIL TO FIRST LINE 150' PLUS VARIABLE
20	100**
25	100**
30	100
35	150
40	225
45	300
50	375
55	450
60	550

NOTE: VALUES FOR GUIDANCE, ARE TO BE APPLIED WITH ENGINEERING JUDGEMENT TO ASSURE EFFECTIVENESS.

** - THIS DISTANCE MAY BE REDUCED TO A MINIMUM OF 50' DEPENDING UPON LOCAL CONDITIONS. A MINIMUM OF 100' IS GENERALLY NECESSARY FOR THE EFFECTIVE DISPLAY OF PAVEMENT MARKINGS. IF THE 100' MINIMUM CANNOT BE OBTAINED, MARKINGS MAY BE OMITTED.

NOTE:
← THIS ARROW ONLY INDICATES DIRECTION OF TRAVEL.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

GENERAL NOTES

1. BROKEN LINES SHALL BE 10' IN LENGTH WITH 30' SPACINGS, UNLESS OTHERWISE SPECIFIED. THE RATIO OF PAINTED LINE LENGTH TO SKIP LENGTH SHALL BE 1 TO 3.
2. THE TURNING RADIUS EXTENSION SHALL BE OPTIONAL OR AS INDICATED ON THE PLANS AND SHALL BE EITHER AN EXTENSION OF THE SOLID WHITE CHANNELIZING LINE AND/OR C-4 WHITE MARKERS ON ONE FOOT CENTERS, EVERY FIFTH ONE TO BE REFLECTIVE, OTHERS TO BE NON-REFLECTIVE.
3. THE DISTANCE FROM THE RAILROAD CROSSING MARKING TO THE NEAREST TRACK WILL VARY ACCORDING TO THE APPROACH SPEED AND THE SIGHT DISTANCE OF THE VEHICULAR TRAFFIC APPROACHING, BUT SHOULD NOT BE LESS THAN 50 FEET. ALSO SEE TABLE.
4. ALL RXR MARKINGS AND LINES SHALL BE WHITE. ON MULTI-LANE ROADS THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL RXR SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.
5. LINES UP TO 24" MAY BE REQUIRED UNDER SPECIAL CIRCUMSTANCES WHERE NO ADVANCE STOP LINE IS PROVIDED OR WHERE VEHICULAR SPEEDS EXCEED 35 MPH OR WHERE CROSSWALKS ARE UNEXPECTED. WIDTH AND SPACING OF LINES SHALL BE AS SPECIFIED.
6. WHEN DIAGONAL LINES ARE USED TO MARK A CROSSWALK, THE TRANSVERSE CROSSWALK LINES MAY BE OMITTED.
7. LANE LINE EXTENSIONS THROUGH INTERSECTION MAY BE EITHER 6" LONG LINE (4" WIDTH) WITH 2' SPACING OR WHITE C-4 MARKERS ON ONE FOOT CENTERS, EVERY FIFTH ONE TO BE REFLECTIVE, OTHERS TO BE NON-REFLECTIVE (SEE TEM-3).
8. STOP LINES SHALL BE 12 TO 24 INCHES WIDE EXTENDING ACROSS ALL APPROACH LANES. STOP LINES SHOULD BE PLACED 4' IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK LINE. IN THE ABSENCE OF A MARKED CROSSWALK, THE STOP LINE SHOULD BE PLACED AT THE DESIRED STOPPING POINT AS NEAR AS POSSIBLE TO THE INTERSECTING ROADWAY, BUT IN NO CASE MORE THAN 30 FEET OR LESS THAN 4 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY.
9. SUPPLEMENTAL PAVEMENT WORD AND/OR SYMBOL MARKINGS SHOULD BE LIMITED TO NOT MORE MORE THAN A TOTAL OF THREE LINES OF INFORMATION (WORDS AND/OR SYMBOLS). THEY SHALL BE WHITE IN COLOR. LETTERS, SYMBOLS AND NUMERALS SHALL BE A MINIMUM OF 8' IN HEIGHT. THE WORD MARKING "ONLY" AND THE ARROW SHALL BE USED WHERE A MOVEMENT THAT WOULD OTHERWISE BE LEGAL IS TO BE PROHIBITED. THE SPACE BETWEEN LINES SHOULD BE AT LEAST FOUR TIMES THE HEIGHT OF THE CHARACTERS FOR LOW SPEEDS BUT NOT MORE THAN TEN TIMES THE HEIGHT OF THE CHARACTERS UNDER ANY CONDITIONS. LOCATION OF SUPPLEMENTAL PAVEMENT MARKINGS SHALL BE AS SHOWN BELOW OR AS DIMENSIONED ON THE PLANS.
10. A NO-PASSING ZONE AT A HORIZONTAL OR VERTICAL CURVE IS WARRANTED WHERE THE SIGHT DISTANCE IS LESS THAN THE MINIMUM NECESSARY FOR SAFE PASSING BASED ON ONE OF THREE PREVAILING OFF PEAK 85 PERCENTILE SPEED.

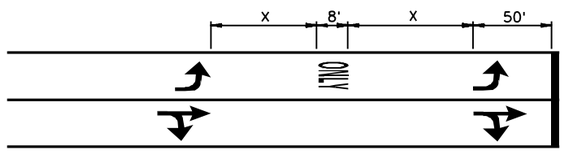
85 PERCENTILE SPEED (MPH)	MINIMUM PASSING SIGHT DISTANCE (FEET)
40	600
50	800
60	1000

SEE MUTCD SECTION 3B-5 FOR MORE DETAILS.

11. ALL DOUBLE LINES SHALL BE SPACED 8" CENTER TO CENTER.
12. WHERE APPLIED TO PORTLAND CEMENT CONCRETE PAVEMENT, THE CENTER OF THE STRIPE SHALL BE OFFSET TO THE LEFT AND FOUR INCHES FROM THE LONGITUDINAL JOINT.
13. NORMALLY, THE MAXIMUM LANE WIDTH SHALL BE 12', EXCEPT A SINGLE-LANE RAMP WIDTH SHALL BE 16'.

TYPICAL LANE-USE MARKING

* REQUIRED LANE-USE MARKINGS. ALL OTHER SHOWN LANE USE ARROWS ON THIS SHEET ARE OPTIONAL AS CALLED FOR ON PLANS.



X - 32' WHEN OPERATING SPEED IS 40 MPH AND BELOW
X - 80' WHEN OPERATING SPEED IS ABOVE 40 MPH

△ EDGE LINES
△ MODIFIED SPACING & NOTES 1, 2, 7 & 11
△ WHOLE SHEET
△ ADDED R.R DISTANCE TABLE AND EDGE LINE EXTENSION NOTE TO DETAIL C

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL TYPICAL PAVEMENT MARKINGS

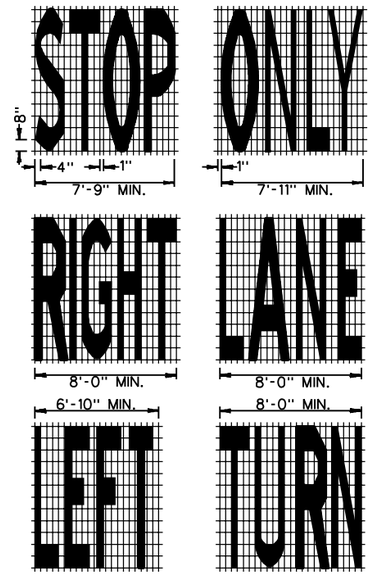
PREPARED: 07/00/71

REVISIONS
05-00-72
△ 05-00-73
08-28-75
△ 11-23-77
△ 01-15-85
△ 02-03-93

STANDARD SHEET TEM-2

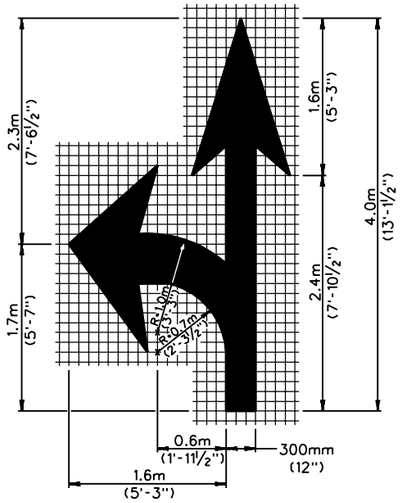
CATALOG:dt standa FILENAME:tem2a.dgn DATE:02/28/93

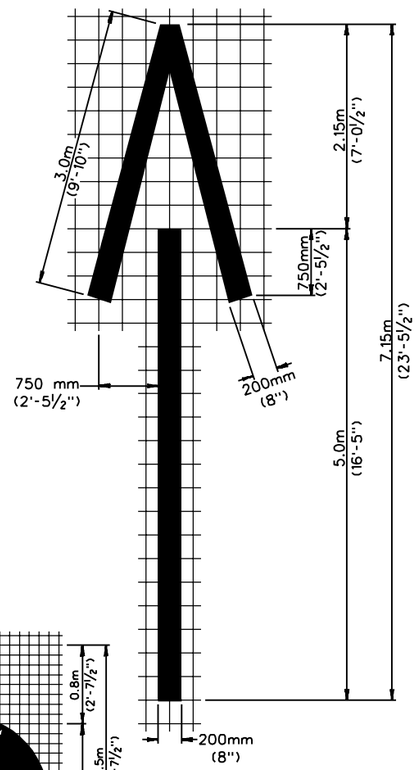
TRAFFIC ENGINEERING DIVISION



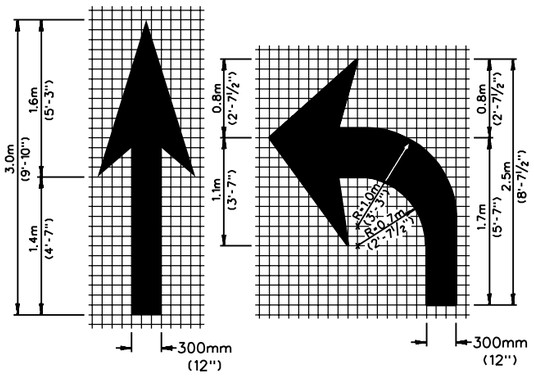
ALL LETTERS SHALL HAVE A MIN. HEIGHT OF 8'-0"

ELONGATED LETTERS

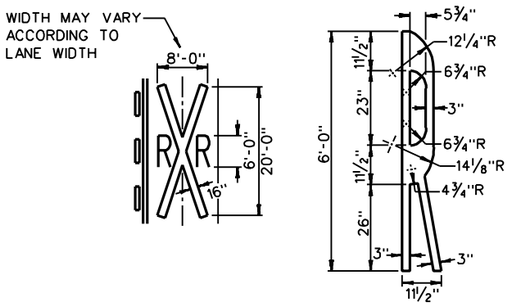




FREEWAY RAMP ARROW(S) SEE NOTE 10

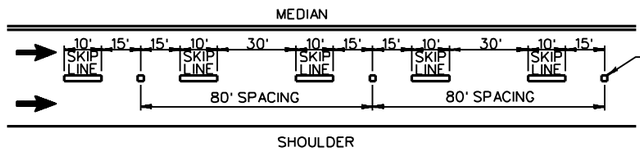


ELONGATED ARROWS



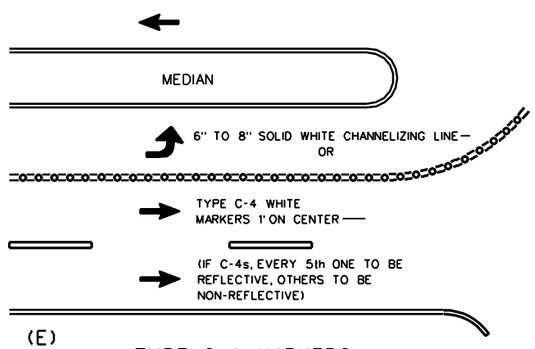
MARKINGS FOR RAILROAD-HIGHWAY CROSSINGS

NOTE: INSTALL "P" MARKERS ON THE SAME ALIGNMENT AS THE PAVEMENT MARKINGS



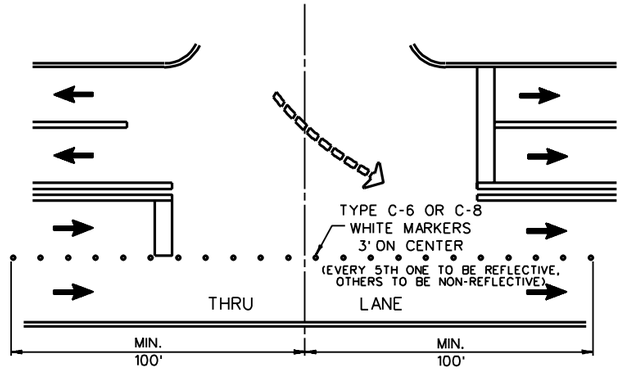
(D)

TYPE "P" MARKERS



(E)

TYPE C-4 MARKERS ("DOTS")



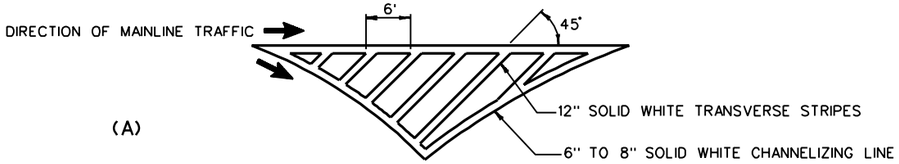
(F)

TYPE C-6 OR C-8 MARKERS

(SEE CONTRACT PLANS)

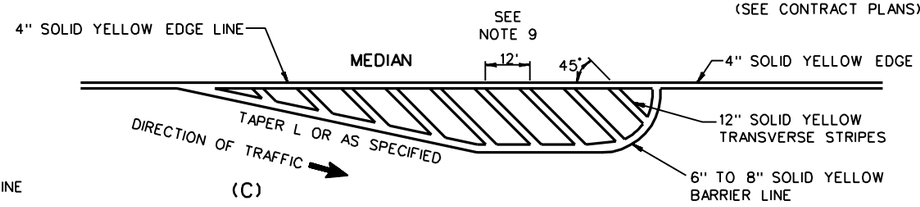
GENERAL NOTES

1. LOCATION OF WORDS AND SYMBOLS SHALL BE AS SHOWN ON THE PLANS OR AS OTHERWISE SPECIFIED.
2. TYPICAL PLACEMENT OF WORD AND SYMBOL MARKINGS IS SHOWN ON STANDARD SHEET TEM-2.
3. IF MESSAGES ON PAVEMENT CONSIST OF MORE THAN ONE WORD IT SHOULD BE READ "UP", THAT IS THE FIRST WORD SHOULD BE NEAREST THE DRIVER.
4. ALL WORD AND SYMBOL MARKINGS SHALL BE WHITE IN COLOR. (EXCEPTION: MARKINGS VISIBLE ONLY TO TRAFFIC PROCEEDING IN THE WRONG DIRECTION MAY BE RED).
5. WORD AND SYMBOL MARKINGS SHALL BE MADE OF COLD-LAID PLASTIC OR PREFORMED MARKINGS OR PAINT AS INDICATED ON THE CONTRACT PLANS.
6. SEE SHEET TEM-4 FOR DETAILS OF TYPE "P", "R" AND "C" MARKERS.
7. TYPE "P" AND "R-4" MARKERS MAY HAVE EITHER MONODIRECTIONAL OR BIDIRECTIONAL REFLECTORIZATION AS SHOWN ON THE PLAN OR AS OTHERWISE SPECIFIED.
8. IN MOST CASES, YELLOW Ps, R-4s, C-4s OR C-6s OR C-8s WILL BE BIDIRECTIONAL AND THE WHITE Ps, R-4s,C-4s OR C-6s OR C-8s WILL BE MONO-DIRECTIONAL.
9. THIS DIMENSION SHALL BE 12 FEET UNLESS OTHERWISE SPECIFIED. IN NO CASE SHALL THIS DIMENSION BE LESS THAN 8 FEET OR GREATER THAN 12 FEET.
10. WHERE LENGTH WILL PERMIT, TWO (2) FREEWAY RAMP ARROWS SHOULD BE PLACED ON EXIT RAMPS. THE NO. 1 ARROW SHOULD BE PLACED NEAR THE INTERSECTION OF THE RAMP AND THE SIDE ROAD (50' MIN.). THE NO. 2 ARROW SHOULD BE PLACED NOT LESS THAN 100 FEET, BUT USUALLY NOT MORE THAN 250 FEET BEYOND THE NO. 1 ARROW, WITH 150'-200' DESIRABLE. NO. 2 ARROW SHOULD NOT BE PLACED ON RAMP IN FRONT OF "EXIT" SIGN OR "EXIT" SIGN LOCATION IF GORE SIGN IS OVERHEAD. ARROWS SHOULD BE LOCATED IN FIELD WITHIN LIMITS MENTIONED ABOVE, TAKING ADVANTAGE OF RAMP GRADE AND ALIGNMENT.



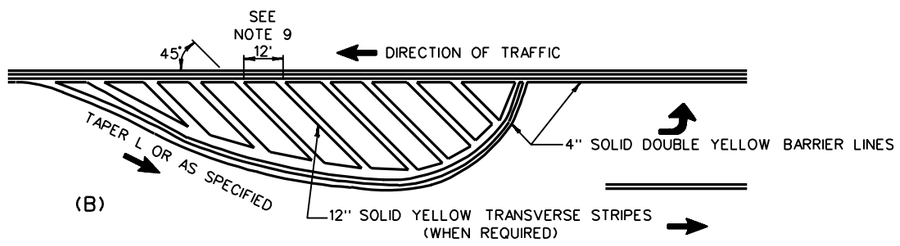
(A)

TYPICAL PAINTED ISLAND



(C)

TYPICAL LANE SHUNT —— DIVIDED HIGHWAY



(B)

TYPICAL LANE SHUNT —— UNDIVIDED HIGHWAY

TAPER L DIMENSIONS

FOR SPEEDS 45 MPH OR MORE

$L = S \times W$

FOR SPEEDS 40 MPH OR LESS

$L = \frac{WS^2}{60}$

WHERE:

L = LENGTH IN FEET
S = 85TH PERCENTILE SPEED IN MPH
W = OFFSET WIDTH IN FEET

NOTE:

← THIS ARROW ONLY INDICATES DIRECTION OF TRAVEL.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS

⚠"NR" TO "C"
⚠MODIFIED SPACING & NOTE 5 & ADDED NOTE 9
⚠WHOLE SHEET
⚠ELONGATED ARROWS & MODIFIED NOTE 4
⚠ADDED C-6's
⚠ADDED NOTE ABOUT ARROWS

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL

CHANNELIZATION, WORD AND SYMBOL MARKINGS INSTALLATION OF P, R AND C MARKERS

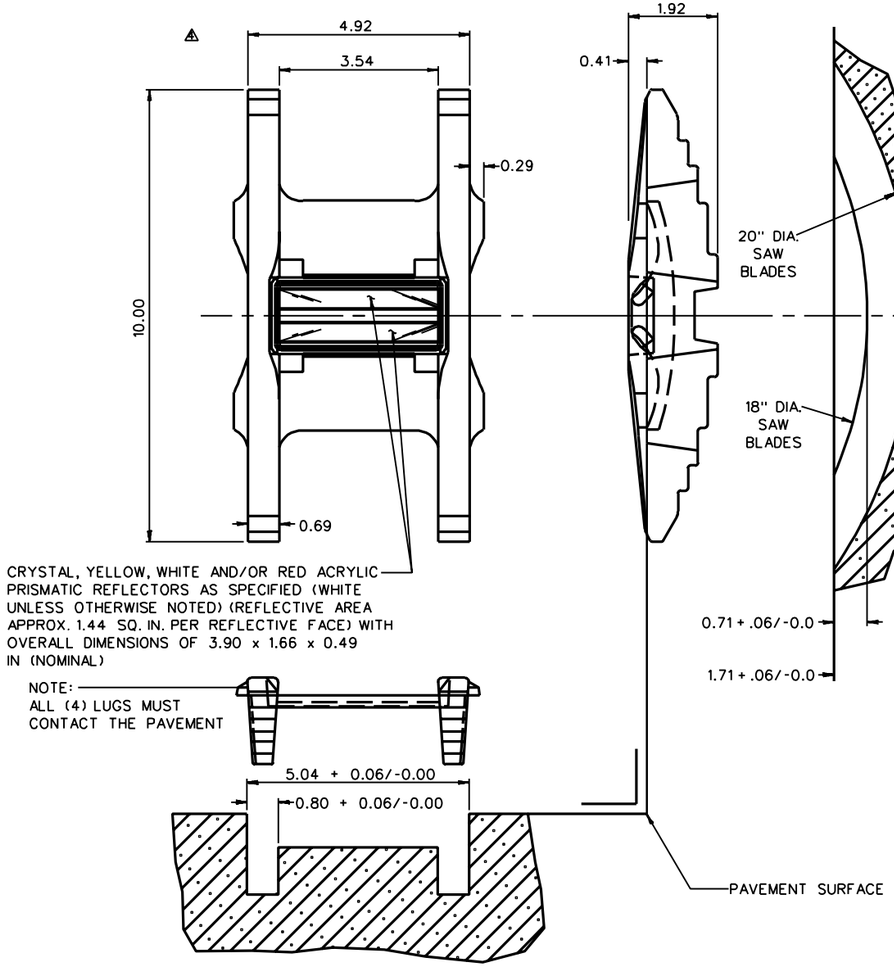
PREPARED: 07/00/71

REVISIONS
⚠ 04-09-75
08-28-75
⚠ 11-23-77
⚠ 01-15-85
⚠ 06-30-89
⚠ 12-15-92
⚠ 12-09-93

STANDARD SHEET TEM-3

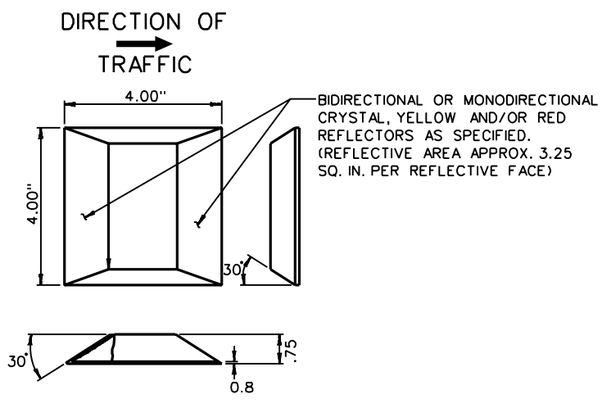
TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
WV	06	S335 -70- 5.37	NH-0701 (093)E	1994	OHIO		

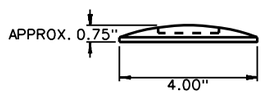


TYPE "P-2" MARKER

(WEIGHT APPROX. 5.5 LBS.)



TYPE "R-4" MARKER



TYPE "C-4" MARKERS

(C-4R OR C-4NR)

TYPE "C-6" AND "C-8" MARKERS

(C-6R OR C-6NR AND C-8R OR C-8NR)

GENERAL NOTES

1. LOCATION OF MARKERS ARE SHOWN ON THE PLANS.
2. TYPES "R" & "C" MARKERS ARE NOT TO BE APPLIED OVER PAINT STRIPING.
3. TYPE "P" MARKER INSTALLATION:
   - (A) THE PAVEMENT SHALL BE SAW CUT TO THE DIMENSIONS SHOWN IN OUTLINE AT LEFT.
   - (B) A 65 HORSEPOWER CONCRETE SAW IS RECOMMENDED FOR MAKING THE REQUIRED SAW CUT.
   - (C) THE CONCRETE SAW SHALL BE FITTED WITH A GANG OF 18.0 INCH DIAMETER CONCRETE SAW BLADES, BORDERED BY 20.0 INCH DIAMETER BLADES AT EACH END.
   - (D) EACH CUT SHOULD BE INSPECTED FOR PROPER FIT OF THE MARKER.
     - THE CASTING SHOULD HAVE APPROXIMATELY 1/8 INCH CLEARANCE (SIDE TO SIDE MOVEMENT) WHEN INSERTED INTO THE CUT.
     - ALL FOUR LEVELING LUGS MUST CONTACT THE PAVEMENT.
     - THE LEADING EDGES OF THE CASTING MUST LIE BELOW THE PAVEMENT SURFACE.
   - (E) THE SAW CUT AREA MUST BE DRY AND FREE OF DUST, DIRT OR ANY MATERIAL WHICH WILL ADVERSELY AFFECT THE BOND OF THE ADHESIVE.
   - (F) THE SURFACE OF THE KEEL AND WEB SHALL BE FREE OF SCALE, DIRT, RUST, OIL, GREASE OR ANY OTHER CONTAMINANT WHICH MIGHT REDUCE ITS BOND TO THE EPOXY ADHESIVE.
   - (G) INSTALL THE MARKER WITH A MANUFACTURER'S APPROVED TWO COMPONENT EPOXY ADHESIVE, BY FIRST FILLING THE SAW CUT TO WITHIN APPROXIMATELY 3/8 INCH OF PAVEMENT SURFACE AND THEN PLACING THE MARKER BY HAND INTO THE EPOXY FILLED SAW CUT. AFTER PLACEMENT OF MARKER, EPOXY SHOULD BE FLUSH TO SLIGHTLY BELOW PAVEMENT SURFACE. EPOXY SHOULD NOT BE ALLOWED TO BUILD UP IN FRONT OF MARKER LENS.
   - (H) MARKER IS TO BE SET IN SAW CUT IMMEDIATELY AFTER APPLICATION OF ADHESIVE AND MUST BE PROTECTED FROM TRAFFIC A MINIMUM OF 30 MINUTES OR UNTIL ADHESIVE HAS PROPERLY HARDENED.
4. TYPE "R-4" MARKER INSTALLATION:
   - (A) AREA OF APPLICATION MUST BE FREE OF OIL, GREASE, DIRT, CURING COMPOUND, LOOSE PARTICLES OR ANY OTHER MATERIAL WHICH WILL ADVERSELY AFFECT THE BOND OF THE ADHESIVE. THE PREFERRED METHOD OF SURFACE PREPARATION IS BY SAND BLASTING OR GRINDING THE ROAD SURFACE.
   - (B) APPLY TO CLEANED PAVEMENT A QUANTITY OF EPOXY ADHESIVE SUFFICIENT TO COMPLETELY COVER BASE OF MARKER, AND FILL ANY IRREGULARITIES IN THE PAVEMENT. GENERALLY, A PAD BETWEEN 1/16" AND 1/8" THICK IS SUFFICIENT. AFTER PLACING THE MARKER ON THE ADHESIVE, ALL VOIDS IN THE ADHESIVE SHOULD BE ELIMINATED BY APPLYING PRESSURE ON THE MARKER UNTIL IT IS IN FIRM CONTACT WITH THE PAVEMENT. ADHESIVE AS RECOMMENDED BY MARKER MANUFACTURER SHALL BE USED. THE MARKER MUST BE PROTECTED FROM TRAFFIC UNTIL THE ADHESIVE HAS PROPERLY HARDENED.
5. TYPES "C-4", "C-6", AND "C-8" MARKER INSTALLATION:
   - (A) PREPARATION OF AREA OF APPLICATION SAME AS NOTE 4A ABOVE FOR TYPE R-4 MARKERS.
   - (B) APPLICATION OF MARKER TO PAVEMENT SHALL BE BY EPOXY ADHESIVE SAME AS 4B ABOVE FOR TYPE R-4 MARKERS, EXCEPT THE EPOXY PAD FOR C-6 AND C-8 MARKERS SHALL BE 1/8" TO 1/4" THICK.
   - (C) BUTTERING THE BOTTOMS OF THE MARKERS IS ADEQUATE FOR SMALL JOBS. A TEMPLATE IS RECOMMENDED FOR GREATER EFFICIENCY. APPROXIMATELY 1/16" (.15 CM) OF ADHESIVE IS REQUIRED TO PROPERLY BOND. THE MARKER IN PLACE FOR C-4's; FOR C-6's AND C-8's USE 1/8" TO 1/4".
   - (D) IMMEDIATELY AFTER THE ADHESIVE IS APPLIED, PLACE THE MARKER ONTO THE PATCH OF ADHESIVE. PRESS DOWN GRADUALLY AND CAREFULLY UNTIL A BEAD OF ADHESIVE FORMS ALL AROUND THE OUTSIDE OF THE MARKER.
   - (E) A COARSE PAVEMENT TEXTURE WILL REQUIRE SLIGHTLY MORE ADHESIVE.
   - (F) MARKER MUST BE PROTECTED FROM TRAFFIC UNTIL ADHESIVE HAS PROPERLY HARDENED.

MT-6

- ⚠ ADDED TYPE P-2 MARKERS
- ⚠ REVISED P-2 DIMENSIONS
- ⚠ REVISED P-2, R-4, C-4, C-8 MARKERS
- ⚠ REVISED P-2, ADDED C-6

WEST VIRGINIA DIVISION OF HIGHWAYS

STANDARD DETAIL PAVEMENT MARKERS TYPES "P", "R" & "C"

PREPARED: 07/00/71

REVISIONS
03-00-73
06-00-74
04-22-75
⚠ 11-23-77
⚠ 11-10-81
⚠ 09-05-84
⚠ 12-10-92

STANDARD SHEET TEM-4

TRAFFIC ENGINEERING DIVISION