WORK ITEM KEY

ELECTRICAL

- E1 - INSTALL DUAL FLASHING SIGNAL ASSEMBLIES (LED LIGHTS)
- E2 - REMOVE EXISTING DUAL FLASHING SIGNAL ASSEMBLIES AND INSTALL NEW DUAL FLASHING SIGNAL ASSEMBLIES (LED LIGHTS)
- ✓ E3 - INSTALL AUDIBLE PEDESTRIAN WARNING DEVICE
- E4 - INSTALL VEHICULAR SIGNAL HEADS (R/Y/G)
- E5 - INSTALL LIGHT RAIL SIGNAL HEAD (R/Y)
- E6 - RELOCATE ELECTRIC METER
- E7 - OVERHEAD SIGNAL CABLE
- E8 - UNDERGROUND SIGNAL CABLE

ELECTRICAL & SIGNING

- ES1 - INSTALL 'NO RIGHT TURN' ACTIVATED BLANK-OUT SIGN (MUTCD R3-1, 24"x24")
- ES2 - INSTALL 'NO LEFT TURN' ACTIVATED BLANK-OUT SIGN (MUTCD R3-2, 24"x24")
- ES3 - INSTALL LIGHT RAIL ACTIVATED BLANK-OUT SYMBOL SIGN (MUTCD W10-7, 24"x24")

SIGNING

- ✓ S1 - INSTALL 'DO NOT STOP ON TRACKS' SIGN (MUTCD R8-8, 24"x30")
- ✓ S2 - INSTALL 'RAILROAD CROSSBUCK' SIGN (SEE NOTE 1) (MUTCD R15-1, 48"x9")
- ✓ S3 - INSTALL 'TRACKS' SIGN (SEE NOTE 1) (MUTCD R15-2P, 27"x18")
- ✓ S4 - INSTALL 'EMERGENCY NOTIFICATION' SIGN (MUTCD 1-13, 30"x30")
- S5 - INSTALL 'RAILROAD WARNING' SIGN (MUTCD W10-1, 36" DIAMETER)
- S6 - INSTALL 'RAILROAD CROSSING AT CROSS ROAD' SIGN (MUTCD W10-2, 36"x36")
- S7 - INSTALL 'RAILROAD CROSSING ON SIDE ROAD' SIGN (MUTCD W10-3, 36"x36")
- S8 - INSTALL 'RAILROAD CROSSING ON STEM OF "T" INTERSECTION' SIGN (MUTCD 10-4A, 36"x36")
- ✓ S9 - INSTALL 'STOP ON RED SIGNAL' SIGN
- ✓ S10 - REMOVE EXISTING SIGN
- ✓ S11 - INSTALL SIGN POST, TYPE B
- ✓ S12 - INSTALL SIGN POST, TYPE C

PAVEMENT MARKINGS

- P1 - INSTALL GRADE CROSSING PAVEMENT MARKING
- P2 - INSTALL STOP LINE (24" WHITE PAVEMENT MARKING)
- ✓ P3 - INSTALL DYNAMIC ENVELOPE (6" WHITE PAVEMENT MARKING)
- ✓ P4 - RESTRIPE PEDESTRIAN CROSSWALK (6" WHITE PAVEMENT MARKING) (TYPE "C")
- ✓ P5 - RESTRIPE GRADE CROSSING PAVEMENT MARKING
- ✓ P6 - RESTRIPE STOP LINE (24" WHITE PAVEMENT MARKING)

OTHER

- ✓ O1 - APPLY WHITE RETROFLECTIVE SHEETING (2" MIN. WIDTH)
- O2 - INSTALL NEW MAST
- O3 - REMOVE EXISTING UTILITY POLE AND INSTALL NEW UTILITY POLE
- O4 - INSTALL PIPE BOLLARD
- O5 - REMOVE EXISTING STEEL POLE

WORK ITEM NOTES:

1. APPLY WHITE RETROFLECTIVE SHEETING (2" MIN. WIDTH) TO BACK OF NEW SIGNS
2. ✓ DEPICTS APPLICABLE WORK ITEMS FOR THIS GRADE CROSSING.

SIGNING AND PAVEMENT MARKING NOTES

INSTALL SIGNS AND PAVEMENT MARKINGS IN ACCORDANCE WITH MOST CURRENT PENNDOT PUBLICATION 111M TRAFFIC CONTROL, TC-8600 AND TC-8700 SERIES, THE FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, PENNDOT PUBLICATION 236, AND HANDBOOK OF APPROVED SIGNS.

PLACE ALL SIGNS ENTIRELY WITHIN THE STATE, MUNICIPAL, COUNTY, OR PAAC LEGAL RIGHT-OF-WAY.

LOCATIONS OF NEW SIGNS SHOWN ON PLANS ARE APPROXIMATE. INSTALL SIGN POSTS IN A MANNER TO AVOID OBSTRUCTING EXISTING SIGNS, TRAFFIC SIGNALS, AND FLASHIING SIGNAL ASSEMBLIES. LOCATE ALL SIGNS SO THAT SIGHT DISTANCES WILL NOT BE OBSTRUCTED AT DRIVEWAYS, LOCAL, COUNTY, AND STATE ROADS.

FOR FABRICATION OF ALL STANDARD SIGNS, REFER TO PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 236.

APPLY AN INSTALLATION DATE PERMANENTLY TO THE BACK SIDE OF EACH NEW SIGN INSTALLED WITHIN PENNDOT RIGHT-OF-WAY.

PAAC SHALL CALL PA ONE CALL SYSTEM, INC. AT 1-800-242-1776 PRIOR TO DIGGING FOR ALL SIGNS.

APPLY PAVEMENT MARKINGS AT WIDTH INDICATED ON THE PLANS.

USE A DURABLE MARKING FOR ALL LEGENDS, CROSSWALKS, AND STOP BARS.

APPLY ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

REMOVE EXISTING PAVEMENT MARKINGS BY MEANS OF WATER OR SAND BLASTING. GRINDING IS NOT PERMITTED.

MAINTENANCE AND PROTECTION OF TRAFFIC

FURNISH, ERECT, PLACE, AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES, MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES CONSISTENT WITH THE FOLLOWING:
1. PA CODE, TITLE 67, CHAPTER 212, OFFICIAL TRAFFIC CONTROL DEVICES.
2. PENNDOT PUBLICATION 213, TEMPORARY TRAFFIC CONTROL GUIDELINES.
3. PENNDOT PUBLICATION NO. 35, APPROVED CONSTRUCTION MATERIALS (BULLETIN 15).
4. PENNDOT PUBLICATION 408/2011, SPECIFICATIONS.
5. PENDOT PUBLICATION 236, HANDBOOK OF APROVED SIGNS.

REMOVE THESE DEVICES IMMEDIATELY UPON COMPLETION OF WORK.

INSPECT ALL TRAFFIC CONTROL DEVICES PRIOR TO START OF WORK.

COVER OR REMOVE ALL CONFLICTING SIGNS AND ERADICATE ALL CONFLICTING PAVEMENT MARKINGS.

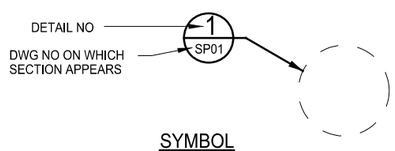
ALL SIGNS AND DEVICES TO BE MAINTAINED IN NEW OR LIKE NEW CONDITION. DRVIEWAYS WILL BE KEPT ACCESIBLE AT ALL TIMES. LOCATE ALL SIGNS SO THAT SIGHT DISTANCES WILL NOT BE OBSTRUCTED AT DRIVEWAYS AND LOCAL ROADS.

PAAC WLL NOTIFY LOCAL EMERGENCY AUTHORITIES, AFFECTED BUSINESSES, SCHOOL DISTRICT(S), AND THE GENERAL PUBLIC, AT LEAST FOURTEEN DAYS PRIOR TO ANY SIGNIFICANT TRAFFIC IMPACTS.

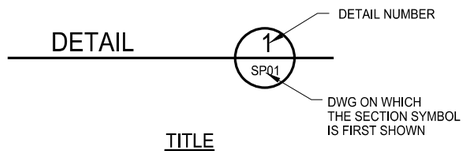
PAAC WILL COMPLETE DISTRICT 11-0 ROADWORK NOTIFICATION AND APPROVAL REQUEST AT LEAST THREE WEEKS PRIOR TO BEGINNING WORK ALONG STATE ROUTES.

DO NOT RESTRICT TRAFFIC FROM 6:00 AM TO 8:00 AM AND 4:00 PM TO 6:00 PM MONDAY THROUGH FRIDAY.

GENERAL ANNOTATION SYMBOLS



SYMBOL



TITLE

DETAIL

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
SP01	GENERAL NOTES & INDEX OF SHEETS
SP02	QUANTITIES & MATERIAL LIST
SP03	GRADE CROSSING PLAN
SP04	SIGN DETAIL SHEET
SP05	PAVEMENT MARKING DETAILS
E01	WIRING DIAGRAM - FLASHING CIRCUIT AND ALARM BELL MOUNTING DETAIL

ATTACHMENTS:

STANDARD	SHEETS	APPLICABLE WORK ITEMS
TC-8600	2 SHEETS (SHT 6 & 7 OF 13)	P4 P5
TC-8702B	9 SHEETS (SHTS 1-9 OF 9)	S11
TC-8702C	2 SHEETS (SHTS 1-2 OF 2)	S12
PUB 236	2 SHEETS	S1 S2
MUTCD	1 SHEET	S3
PUB 213	PATA 006, 102, 107	MPT

MANUFACTURER	ITEM	DWG. PART NO	APPLICABLE WORK ITEMS
WESTERN - CULLEN - HAYES, INC.	MECHANICAL BELL W/ SIDE MAST MOUNT	0666-ARP-4	E3

100% SUBMISSION

INFORMATION PROVIDED BY: _____
PROJECT RECORD DATE: _____
PROJECT RECORD PREPARED BY: _____
PROJECT RECORD SIGNATURE: _____

NO.	DATE	DESCRIPTION

REVISIONS

THE Markosky ENGINEERING GROUP INC.
223 East Main Street .. Ligonier, PA 15658
Phone: 724.238.4138 .. Fax: 724.238.4194

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL WILLIAM BRUCE MCNEAL ENGINEER PE074465

SIGNATURE

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PORT AUTHORITY OF ALLEGHENY COUNTY
PITTSBURGH PENNSYLVANIA

GRADE CROSSING IMPROVEMENT PROJECT
ROUTE 88

GENERAL NOTES & INDEX OF SHEETS

Port Authority connecting people to life

CONTRACT NO. R13-09-A
DWG. NO. SP01 SHT. 1

QUANTITIES AND MATERIALS LIST

ROUTE 88 GRADE CROSSING QUANTITIES AND COST ESTIMATE

WORK ITEM	MATERIAL	QUANT	UNIT	NOTES	SPECIFICATION	ORDER LEAD TIME
E3	MECHANICAL BELL W/ SIDE MAST MOUNT	2	EACH	1 PER EXISTING MAST	WESTERN - CULLEN - HAYES, INC. PART NO. 0666-ARP-4	6 WEEKS
	CONDUCTOR CABLE	10	LINEAR FEET	5 LF PER MAST	XHHW-2, TYPE TC, 14 AWG, 3 COND, 600V, SUN RES, DIR BUR, 90 DEG C JKT	< 1 WEEK
	STRAIGHT CABLE CONNECTOR	2	EACH	FLASHING SIGNAL JUNCTION BOX	-	< 1 WEEK
	90 DEGREE CABLE CONNECTOR	2	EACH	MECHANICAL BELL	-	< 1 WEEK
S1	SIGN (R8-8, 24" X 30")	2	EACH	-	PENNDOT PUBLICATION 408, SECTION 1103.04	14 DAYS
	ANTI-THEFT SIGN HARDWARE	2	SETS	POST MOUNTED SIGNS, TYPE B (2 SETS PER SIGN)	PENNDOT PUBLICATION 408, SECTION 1103.11, SYSTEM A	14 DAYS
	5/16" X 3" LAG SCREWS	2	EACH	POST MOUNTED SIGNS, TYPE C (2 EACH PER SIGN)	PENNDOT PUBLICATION 408, SECTION 1103.11(d)	14 DAYS
S2	SIGN (R15-1, 48" X 9")	2	EACH	-	PENNDOT PUBLICATION 408, SECTION 1103.04	30 DAYS
	HARDWARE FOR MOUNTING TO 4" DIAMETER VERTICAL MAST	4	SETS	POST MOUNTED SIGNS, TYPE F (2 SETS PER SIGN)	PENNDOT PUBLICATION 408, SECTION 935.2, 1103.03, 1103.11	14 DAYS
	2" WHITE REFLECTIVE SHEETING	16	LINEAR FEET	APPLY TO THE CENTER LINE ON THE BACK OF SIGN	TYPE VII OR IX REFLECTIVE SHEETING FROM MANUFACTURER LISTED IN PENNDOT BULLETIN	14 DAYS
S3	SIGN (R15-2P, 27" X 18")	2	EACH	-	PENNDOT PUBLICATION 408, SECTION 1103.04	30 DAYS
	HARDWARE FOR MOUNTING TO 4" DIAMETER VERTICAL STEEL MAST	4	SETS	POST MOUNTED SIGNS, TYPE F (2 SETS PER SIGN)	PENNDOT PUBLICATION 408, SECTION 935.2, 1103.03, 1103.11	14 DAYS
	2" WHITE REFLECTIVE SHEETING	6	LINEAR FEET	APPLY TO THE CENTER LINE ON THE BACK OF SIGN	TYPE VII OR IX REFLECTIVE SHEETING FROM MANUFACTURER LISTED IN PENNDOT BULLETIN	14 DAYS
S4	SIGN (I-13, 30" X 30")	1	EACH	-	PENNDOT PUBLICATION 408, SECTION 1103.04	30 DAYS
	5/16" X 3" LAG SCREWS	2	EACH	POST MOUNTED SIGNS, TYPE C (2 EACH PER SIGN)	PENNDOT PUBLICATION 408, SECTION 1103.11(d)	14 DAYS
S9	SIGN (25.5" X 22.5")	1	EACH		PENNDOT PUBLICATION 408, SECTION 1103.04	30 DAYS
	HARDWARE FOR MOUNTING TO 4" DIAMETER VERTICAL STEEL MAST	2	SETS	POST MOUNTED SIGNS, TYPE F (2 SETS PER SIGN)	PENNDOT PUBLICATION 408, SECTION 935.2, 1103.03, 1103.11	14 DAYS
S11	SIGN POST S1	1	EACH	1.75" (W) X 10.00' (H) STEEL SQUARE POST	PENNDOT PUBLICATION 408, SECTION 1103.08(b) AND TC-8702B	14 DAYS
	ANCHOR POST FOR S1	1	EACH	2.00"(W) X 3.00' (H) STEEL SQUARE POST	PENNDOT PUBLICATION 408, SECTION 1103.08(b) AND TC-8702B	14 DAYS
	ANTI-THEFT HARDWARE FOR S1	1	SET	5/16" (18 UNC) X 1.343" X 0.969" CORNER BOLT & NUT OR 3/8" (16 UNC) X 3" ANCHOR BOLT & NUT	PENNDOT PUBLICATION 408, SECTION 1103.11, SYSTEM A AND TC-8702B	14 DAYS
S12	SIGN POST	1	EACH	4" x 6" x 15' TREATED WOOD POST	PENNDOT PUBLICATION 408, SECTION 1103.09 AND TC-8702C	30 DAYS
	SLEEVE	1	EACH	4" X 6" X 30" 12 GA GALVANIZED STEEL SLEEVE	PENNDOT PUBLICATION 408, SECTION 1105.02(J)1 AND TC-8702C	30 DAYS
	SHIM PLATE A	1	EACH	SEE TC-8702C FOR DIMENSIONS	PENNDOT PUBLICATION 408, SECTION 1105.02(a)2 AND TC-8702C	30 DAYS
	SHIM PLATE B	1	EACH	SEE TC-8702C FOR DIMENSIONS	PENNDOT PUBLICATION 408, SECTION 1105.02(a)2 AND TC-8702C	30 DAYS
	SHIM PLATE C	1	EACH	SEE TC-8702C FOR DIMENSIONS	PENNDOT PUBLICATION 408, SECTION 1105.02(a)2 AND TC-8702C	30 DAYS
	SHIM PLATE D	1	EACH	SEE TC-8702C FOR DIMENSIONS	PENNDOT PUBLICATION 408, SECTION 1105.02(a)2 AND TC-8702C	30 DAYS
	1/4" X 1.5" LAG SCREWS	4	EACH	ATTACH SHIM PLATES A & B TO WOOD POST	PENNDOT PUBLICATION 408, SECTION 1103.11(d)	14 DAYS
	7/16" X 5" BOLT W/ NUT	1	SET		PENNDOT PUBLICATION 408, SECTION 1105.02(c)2	14 DAYS
	#8 PENNY NAILS	4	EACH	ATTACH SHIM PLATES C & D TO WOOD POST	-	14 DAYS
	CLASS A CEMENT CONCRETE	5	CUBIC FEET	-	PENNDOT PUBLICATION 408, SECTION 704	< 1 WEEK
P3	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	96	LINEAR FEET	6" WHITE PREFORMED THERMOPLASTIC	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	GLASS BEADS	-	LBS	AS RECOMMENDED BY MANUFACTURER	PENNDOT PUBLICATION 408, SECTION 1103.14, TYPE A	1 WEEK

WORK ITEM	MATERIAL	QUANT	UNIT	NOTES	SPECIFICATION	ORDER LEAD TIME
* P4	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	168	LINEAR FEET	6" WHITE PREFORMED THERMOPLASTIC - LONGITUDINAL	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	130	LINEAR FEET	12" PREFORMED THERMOPLASTIC - TRANSVERSE	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	GLASS BEADS	-	LBS	AS RECOMMENDED BY MANUFACTURER	PENNDOT PUBLICATION 408, SECTION 1103.14, TYPE A	1 WEEK
P5	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	2	EACH	"RXR" KIT, NARROW, 20' X 6' X 6"	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	44	LINEAR FEET	24" WHITE PREFORMED THERMOPLASTIC - TRANSVERSE BANDS	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	GLASS BEADS	-	LBS	AS RECOMMENDED BY MANUFACTURER	PENNDOT PUBLICATION 408, SECTION 1103.14, TYPE A	1 WEEK
P6	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS	22	LINEAR FEET	24" WHITE PREFORMED THERMOPLASTIC	PENNDOT PUBLICATION 408, SECTION 965.2 (b)	1 WEEK
	GLASS BEADS	-	LBS	AS RECOMMENDED BY MANUFACTURER	PENNDOT PUBLICATION 408, SECTION 1103.14, TYPE A	1 WEEK
O1	2" WHITE REFLECTIVE SHEETING	20	LINEAR FEET	APPLY TO THE CENTER LINE ON THE FRONT AND BACK OF MAST	TYPE VII OR IX REFLECTIVE SHEETING FROM MANUFACTURER LISTED IN PENNDOT BULLETIN	< 1 WEEK

* FOR QUANTITY PURPOSES, 6" LONGITUDINAL LINES ARE SPACED AT 6' AND 12" TRANSVERSE MARKINGS ARE SPACED AT 5 FEET.

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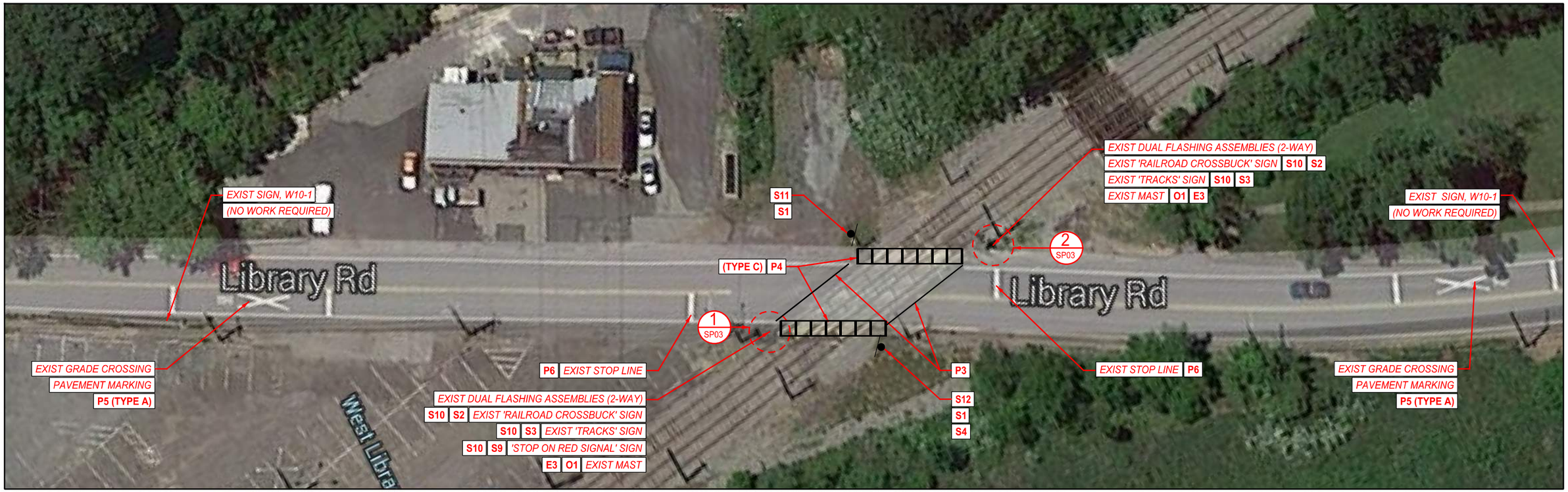
PORT AUTHORITY OF ALLEGHENY COUNTY
PITTSBURGH PENNSYLVANIA

GRADE CROSSING IMPROVEMENT PROJECT
ROUTE 88

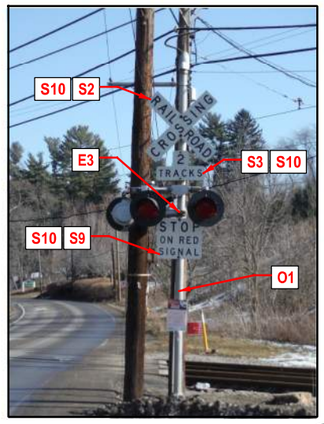
QUANTITES AND MATERIAL LIST

Port Authority connecting people to life

CONTRACT NO. R13-09-A
DWG. NO. SP02 SHT. 2



PLAN - ROUTE 88 GRADE CROSSING



SOUTH EXISTING MAST 1 SP03



NORTH EXISTING MAST 2 SP03

NOTES:
1. ATTACH MECHANICAL BELL BELOW THE FLASHING SIGNAL.

WORK ITEM KEY

- E3 - INSTALL AUDIBLE PEDESTRIAN WARNING DEVICE
- S1 - INSTALL 'DO NOT STOP ON TRACKS' SIGN (MUTCD R8-8, 24"x30")
- S2 - INSTALL 'RAILROAD CROSSBUCK' SIGN (SEE NOTE 1) (MUTCD R15-1, 48"x9")
- S3 - INSTALL 'TRACKS' SIGN (SEE NOTE 1) (MUTCD R15-2P, 27"x18")
- S4 - INSTALL 'EMERGENCY NOTIFICATION' SIGN (MUTCD 1-13, 30"x30")
- S9 - INSTALL 'STOP ON RED SIGNAL' SIGN
- S10 - REMOVE EXISTING SIGN
- S11 - INSTALL SIGN POST, TYPE B
- S12 - INSTALL SIGN POST, TYPE C
- P3 - INSTALL DYNAMIC ENVELOPE (6" WHITE PAVEMENT MARKING)
- P4 - RESTRIPE PEDESTRIAN CROSSWALK (6" WHITE PAVEMENT MARKING) (TYPE "C")
- P5 - RESTRIPE GRADE CROSSING PAVEMENT MARKING
- P6 - RESTRIPE STOP LINE (24" WHITE PAVEMENT MARKING)
- O1 - APPLY WHITE RETROFLECTIVE SHEETING (2" MIN. WIDTH)

WORK ITEM NOTES:

1. APPLY WHITE RETROFLECTIVE SHEETING (2" MIN. WIDTH) TO BACK OF NEW SIGNS

REFERENCE:

1. FOR INDEX OF SHEETS, SEE SHEET SP01.
2. FOR SIGNING AND PAVEMENT MARKING NOTES, SEE SHEET SP01.
3. FOR QUANTITIES AND MATERIAL LIST, SEE SHEET SP02.
4. FOR SIGN DETAILS, SEE SHEET SP04.
5. FOR PAVEMENT MARKING DETAILS, SEE SHEET SP05.

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PORT AUTHORITY OF ALLEGHENY COUNTY
PITTSBURGH PENNSYLVANIA

GRADE CROSSING IMPROVEMENT PROJECT
ROUTE 88

GRADE CROSSING PLAN SHEET

Port Authority connecting people to life

CONTRACT NO. R13-09-A
DWG. NO. SP03 SHT. 3



R8-8
24" x 30"



R15-1
48" x 9"



R15-2P
27" x 18"



W10-1
36"



25.5" x 22.5"



I-13
30" x 30"

LEGEND

COLORS: LEGEND — WHITE (RETROREFLECTIVE)
BACKGROUND — BLUE (RETROREFLECTIVE)

BORDER THICKNESS: 0.75"
BORDER RADIUS: 1.875"
FONT: UPPER CASE SERIES C

SPACING

	7.0		7.6		6.1		4.3		11.5		9.7
R	1.5	O	1.6	T	1.4	4	1.6	R	1.5	C	1.4
E	1.3	R	1.1	O	1.1	1	0.8	T	1.0	R	1.5
P	1.5		2.0		2.0	2	1.1		2.0	O	1.5
O	1.6	P	1.5	P	1.5		1.5	8	1.5	S	1.5
R	1.4	R	1.5	A	1.3	-	1.5	8	1.1	S	1.5
T	1.0	O	1.6	T	1.0		1.5		11.4	I	0.7
	2.0	B	1.5		2.0	2	1.5			N	1.5
E	1.3	L	1.3	P	1.5	5	1.5			G	1.1
M	1.7	E	1.4	O	1.6	5	1.1				9.6
E	1.3	M	1.3	L	1.3		1.5				
R	1.5		7.6	I	0.7	-	1.5				
G	1.5			C	1.4		1.5				
E	1.3			E	1.0	1	0.9				
N	1.5				6.1	3	1.4				
C	1.3					8	1.5				
Y	1.3					5	1.1				
	7.0						4.2				

NOTE:
APPLY 2" WIDE REFLECTIVE SHEETING TO THE CENTERLINE ON THE BACK OF SIGNS R15-1 AND R15-2P.

100% SUBMISSION

INFORMATION PROVIDED BY: _____ PROJECT RECORD DATE: _____
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		REVISIONS

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
WILLIAM BRUCE MCNEAL
PE074465
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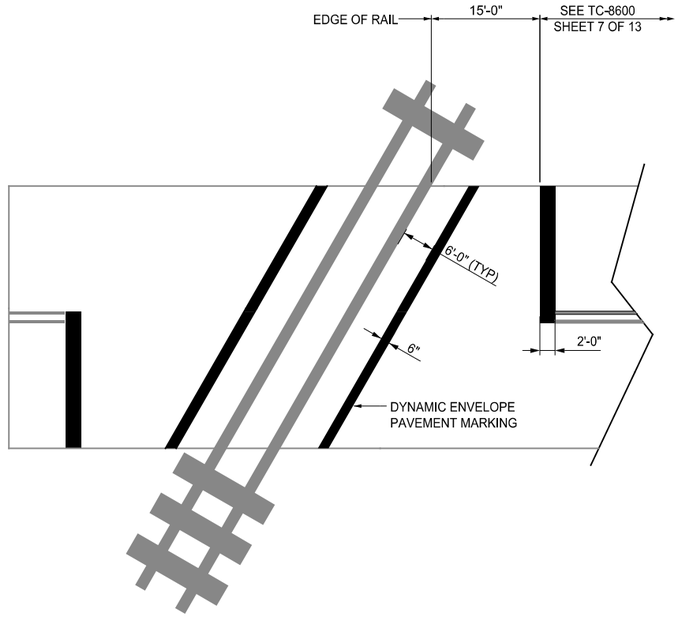
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GRADE CROSSING IMPROVEMENT PROJECT
ROUTE 88

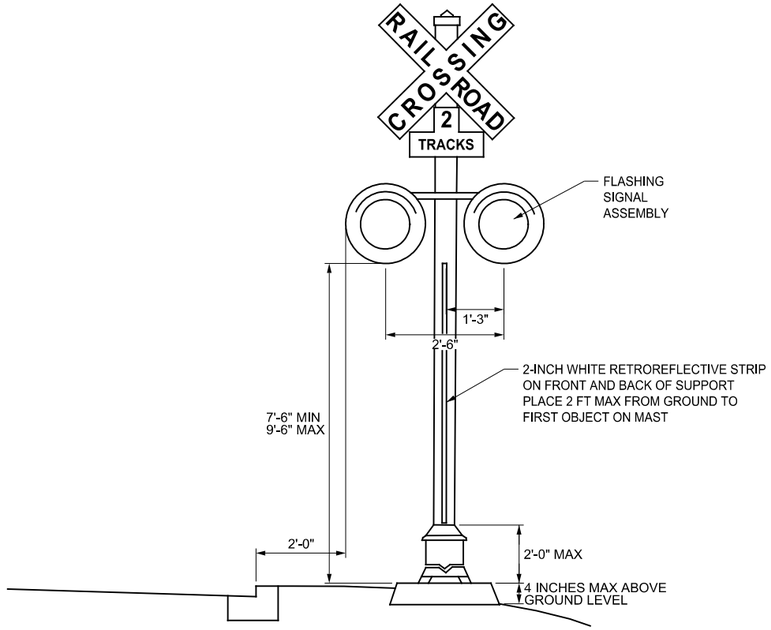
SIGN DETAIL SHEET

Port Authority
connecting people to life

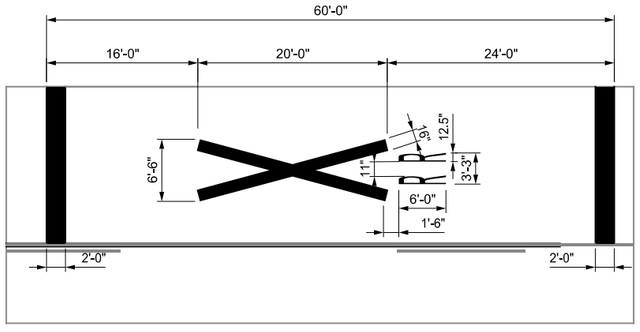
CONTRACT NO. R13-09-A
DWG. NO. SP04 SHT. 4



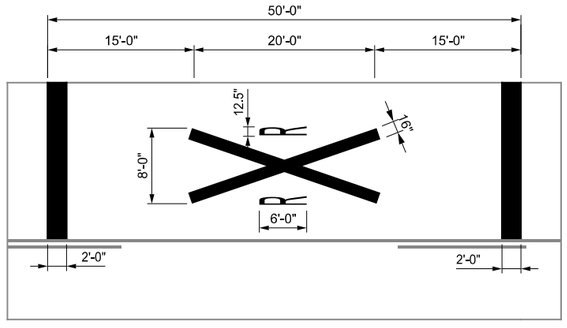
DYNAMIC ENVELOPE DETAIL



GRADE CROSSING TYPICAL MAST



TYPE A



TYPE B

GRADE CROSSING PAVEMENT MARKINGS

100% SUBMISSION

INFORMATION PROVIDED BY: _____
PROJECT RECORD DATE: _____
PROJECT RECORD PREPARED BY: _____
PROJECT RECORD SIGNATURE: _____

NO.	DATE	DESCRIPTION

REVISIONS

THE Markosky ENGINEERING GROUP INC.
223 East Main Street .. Ligonier, PA 15658
Phone: 724.238.4138 .. Fax: 724.238.4194

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
WILLIAM BRUCE MCNEAL
ENGINEER
PE074465

SIGNATURE

APPROVED _____ DATE _____

DESIGNED	HMC
DRAWN	CMM
CHECKED	WBM
IN CHARGE	JDM
DATE	9/15/2015
SCALE	NOT TO SCALE

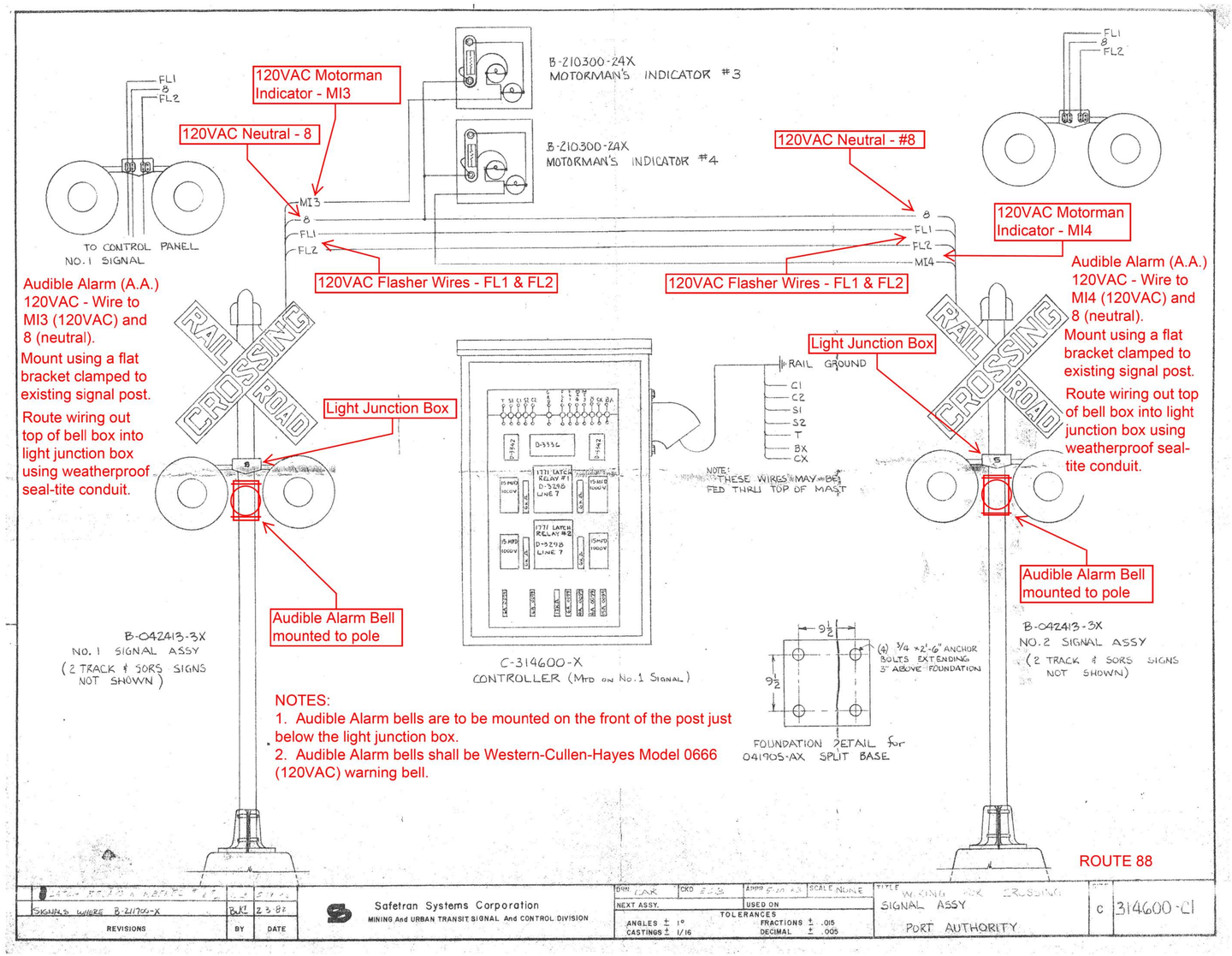
PORT AUTHORITY OF ALLEGHENY COUNTY
PITTSBURGH PENNSYLVANIA

GRADE CROSSING IMPROVEMENT PROJECT
ROUTE 88

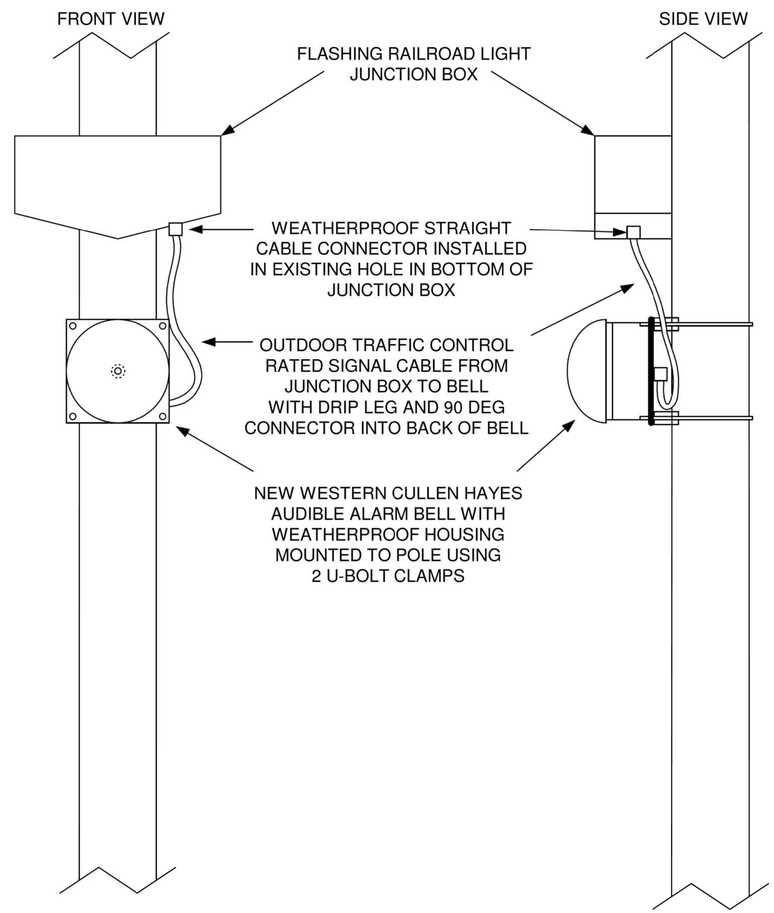
PAVEMENT MARKING DETAILS

Port Authority
connecting people to life

CONTRACT NO. R13-09-A
DWG. NO. SP05 SHT. 5



AUDIBLE ALARM BELL - POLE MOUNTING



100% SUBMISSION

INFORMATION PROVIDED BY: _____
PROJECT RECORD DATE: _____
PROJECT RECORD PREPARED BY: _____
PROJECT RECORD SIGNATURE: _____

NO.	DATE	DESCRIPTION

REVISIONS

Gannett Fleming
GANNETT FLEMING, INC.
601 Holiday Drive
Foster Plaza III
Suite 200
Pittsburgh, PA. 15220

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL THOMAS MICHAEL IMBLUM ENGINEER NO. 054028-E 9/28/2015

APPROVED _____ DATE _____

DESIGNED
DRAWN
CHECKED
IN CHARGE
DATE
SCALE NOT TO SCALE

PORT AUTHORITY OF ALLEGHENY COUNTY
PITTSBURGH PENNSYLVANIA

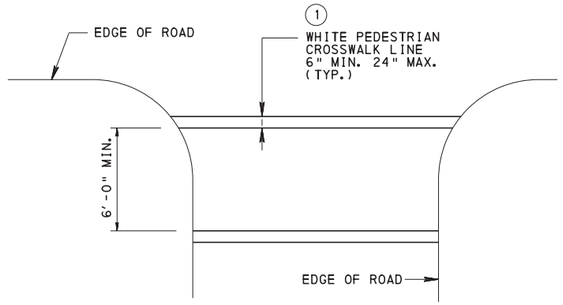
GRADE CROSSING IMPROVEMENT PROJECT - ROUTE 88

WIRING DIAGRAM - FLASHING CIRCUIT AND ALARM BELL MOUNTING DETAIL

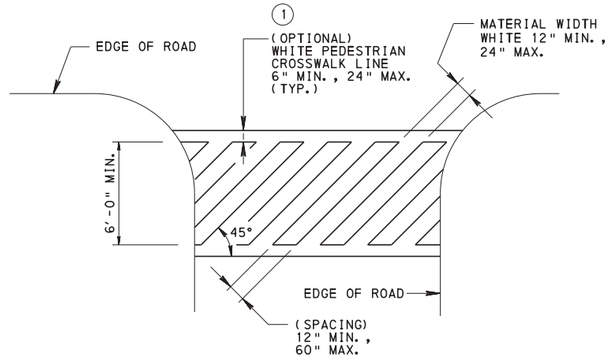
Port Authority connecting people to life

CONTRACT NO. R13-09-A
DWG. NO. E01 SHT. 6

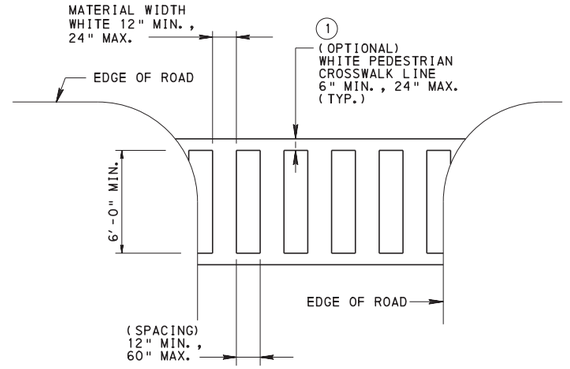
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9/28/2015 8:34:42 AM



TYPE A - PARALLEL



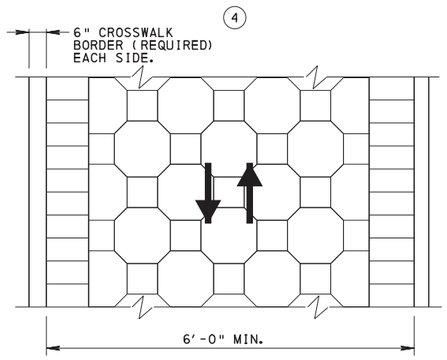
TYPE B - DIAGONAL



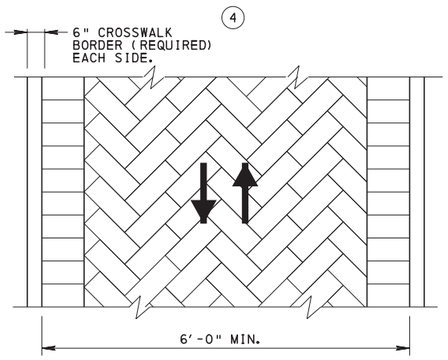
TYPE C - PERPENDICULAR

STANDARD CROSSWALK MARKINGS

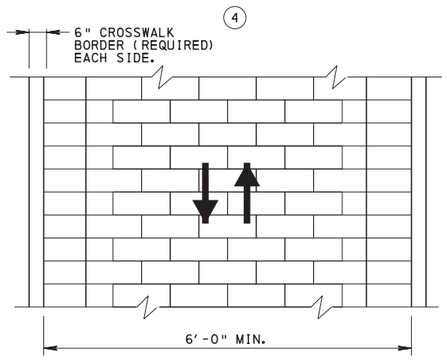
DECORATIVE CROSSWALK



TYPE D - COURTYARD



TYPE E - HERRINGBONE



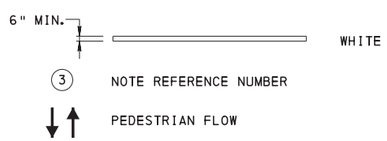
TYPE F - OFFSET BRICK

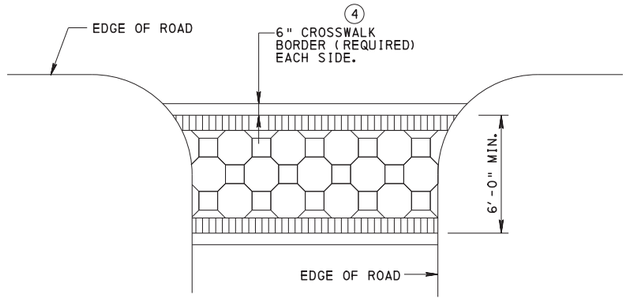
APPROVED NON-REFLECTIVE COLORS: WHITE, BLACK, BROWN, SILVER-GRAY, TAN AND MAROON

NOTES:

1. MAKE THE CROSSWALK LINES SOLID WHITE, NOT LESS THAN 6" WIDE.
2. EXTEND THE CROSSWALK ACROSS THE ROADWAY FROM FACE OF CURB TO FACE OF CURB OR EDGE OF SHOULDER AS APPLICABLE.
3. THE MINIMUM WIDTH OF CROSSWALKS SHALL BE 6'.
4. A WHITE BORDER, 6" WIDE, IS REQUIRED ALONG EACH SIDE OF THE DECORATIVE CROSSWALK, THE BORDERS ARE TO BE PARALLEL USING A PENNDOT APPROVED PAVEMENT MARKING MATERIAL AND EXTENDS FROM FACE OF CURB TO FACE OF CURB OR SHOULDER.

LEGEND





PLAN - CROSSWALK WITH DECORATIVE PATTERN

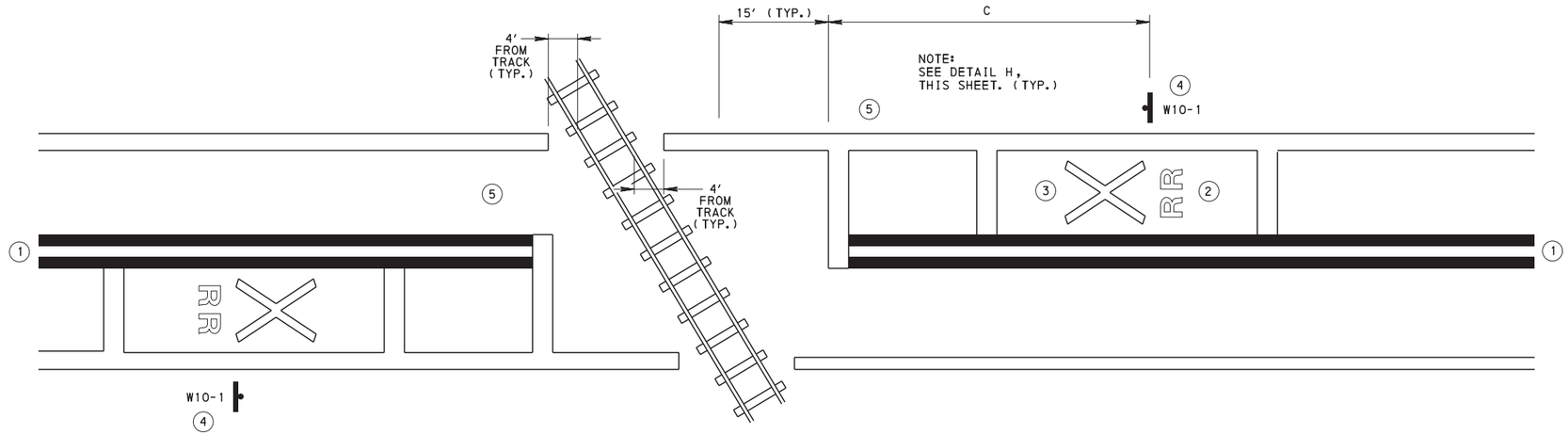
SEE DECORATIVE CROSSWALK PATTERNS.
(DECORATIVE CROSSWALK PATTERN MUST BE CONTAINED WITHIN THE 6" WHITE PEDESTRIAN CROSSWALK BORDERS FORMING THE CROSSWALK)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS

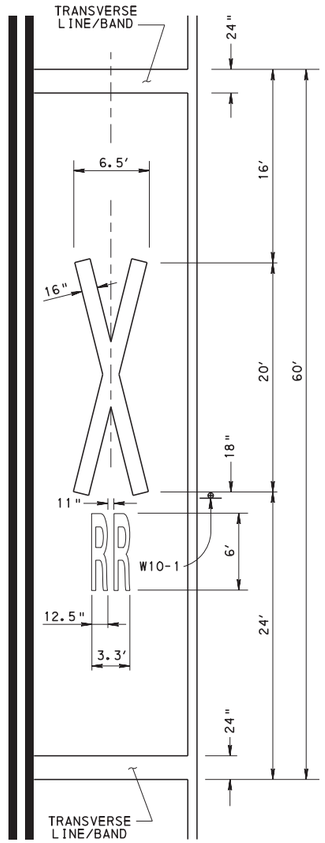
CROSSWALKS

RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 6 OF 13
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8600



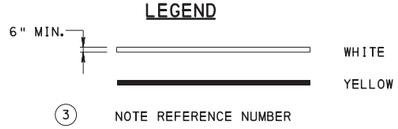
RAILROAD CROSSING MARKING

(SEE MUTCD FIG. 8B-6 AND 8B-7 FOR MORE DETAILS)



DETAIL H

LEGEND



SPEED LIMIT OR 85TH PERCENTILE SPEED (MPH)	DISTANCE (FT)
35 OR LESS	300
40	350
45	400
50	450
55	500

TABLE A

SEE NOTE 1

POSTED OR 85TH PERCENTILE SPEED (MPH)	C (FT)
20	100
25	100
30	100
35	150
40	225
45	300
50	375
55	450
60	550
65	650

LOCATION OF RAILROAD CROSSING SIGN

SEE NOTE 4

NOTES

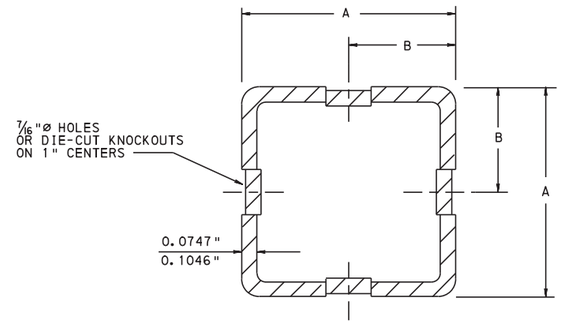
1. ON TWO-LANE, TWO-WAY HIGHWAYS, THE CENTER LINES ARE YELLOW, 4" WIDE EITHER SOLID, BROKEN OR A COMBINATION THEREOF. A SOLID BARRIER LINE SHALL PRECEDE ALL GRADE CROSSINGS BY THE MINIMUM DISTANCE NOTED IN TABLE A.
2. CENTER THE RAILROAD SYMBOLS WITHIN EACH LANE ON ALL PAVED APPROACHES TO HIGHWAY-RAIL GRADE CROSSINGS. IN THOSE SITUATIONS WHERE THERE IS INADEQUATE SPACE FOR THE PAVEMENT MARKINGS OR WHERE THE INSTALLATION WOULD CREATE OPERATIONAL PROBLEMS WITH TURNING LANES OR OTHER SPECIAL CONDITIONS, PAVEMENT MARKINGS ARE NOT REQUIRED PROVIDING AN ENGINEERING STUDY INDICATES THAT OTHER TRAFFIC CONTROL DEVICES PROVIDE SUITABLE WARNING AND CONTROL.
3. ON MULTI-LANE ROADS EXTEND THE TRANSVERSE LINES ACROSS ALL TRAFFIC LANES ON EACH APPROACH AND USE INDIVIDUAL SYMBOLS IN EACH APPROACH LANE.
4. LOCATE A PORTION OF RAILROAD PAVEMENT MARKING SYMBOL DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN W10-1. USE DIMENSION "C" FOR PLACEMENT OF ADVANCE WARNING SIGN W10-1.
5. LOCATE STOP LINES 8' FROM THE GATE (IF PRESENT), BUT NO CLOSER THAN 15' FROM THE NEAREST RAIL.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS

RAILROAD CROSSING

RECOMMENDED JUN. 13, 2013 CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	RECOMMENDED JUN. 13, 2013 CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	SHT. 7 OF 13 TC-8600



SIGN POST				ANCHOR POST				ANCHOR SLEEVE *				SPLICE SLEEVE			
SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.
	A	B			A	B			A	B			A	B	
1.75"	1.75"	0.875"	0.0747"	2.00"	2.00"	1.000"	0.1046"	2.25"	2.25"	1.125"	0.1046"	1.50"	1.50"	0.750"	0.0747"
2.00"	2.00"	1.000"	0.0747"	2.25"	2.25"	1.125"	0.1046"	2.50"	2.50"	1.250"	0.1046"	1.75"	1.75"	0.875"	0.0747"
2.25"	2.25"	1.125"	0.0747"	2.50"	2.50"	1.250"	0.1046"	3.00"	3.00"	1.500"	0.1875"	2.00"	2.00"	1.000"	0.0747"

* ONLY REQUIRED FOR INSTALLATIONS IN CONCRETE.

SQUARE STEEL POSTS
SYSTEM A

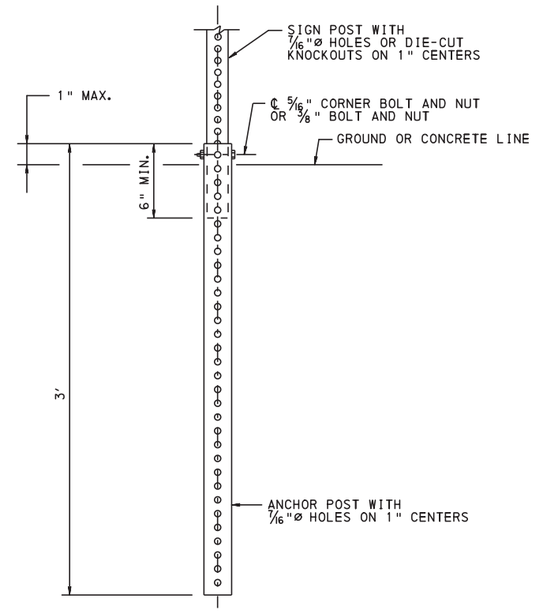
0.1046" AND 0.0747" - 60 KSI

INSTALLATION INSTRUCTIONS:

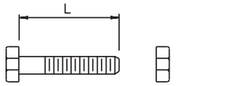
1. DETERMINE THE PROPER SIZE AND NUMBER OF SIGN POSTS FROM THE APPROPRIATE GRAPH ON SHEET 2.
2. PUNCH OUT APPROPRIATE KNOCKOUTS AND ATTACH THE SIGN.
3. DETERMINE THE PROPER SIZE ANCHOR POST FROM THE SQUARE STEEL POSTS TABLE ON THIS SHEET.
4. DRIVE THE ANCHOR POST INTO THE GROUND, USING THE APPROPRIATE SIZE DRIVE CAP, UNTIL ONLY ONE HOLE REMAINS ABOVE THE GROUND OR FINISHED ELEVATION OF THE CONCRETE.
5. PUNCH OUT THE SIXTH KNOCKOUTS FROM THE BOTTOM OF THE SIGN POST.
6. SLIDE A MINIMUM OF 6" OF THE SIGN POST INTO THE ANCHOR POST.
7. ATTACH THE SIGN POST TO THE ANCHOR POST WITH ONE 5/16" CORNER BOLT AND NUT (OR ALTERNATELY ONE 3/8" BOLT AND NUT) THROUGH THE TOP HOLE OF THE ANCHOR POST.
8. TIGHTEN THE BOLT AND NUT BY THE TURN-OF-NUT METHOD. BRING NUT TO A SNUG CONDITION TO ENSURE THAT ALL PARTS ARE BROUGHT TOGETHER INTO FULL CONTACT WITH EACH OTHER, THEN TIGHTEN AN ADDITIONAL 1/2 TURN.

INSTALLATION IN CONCRETE:

INSTALL AS NOTED ABOVE, BUT PLACE A 18" LONG ANCHOR SLEEVE OUTSIDE THE ANCHOR POST SO THAT THE TOPS OF THE ANCHOR POST AND ANCHOR SLEEVE ARE EVEN. SELECT THE PROPER SIZE ANCHOR SLEEVE FROM THE SQUARE STEEL POSTS TABLE ON THIS SHEET.



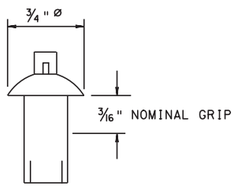
INSTALLATION DETAIL



SIGN POST SIZE (INCHES)	DIMENSION L (INCHES)
1.75	3.0
2.00	
2.25	3.5

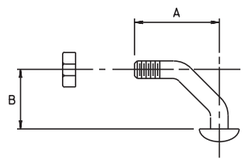
3/8" - 16 UNC
ANCHOR BOLTS & NUTS

CADMIUM PLATED STEEL, ZINC PLATED STEEL OR ALUMINUM



3/8" DRIVE RIVET

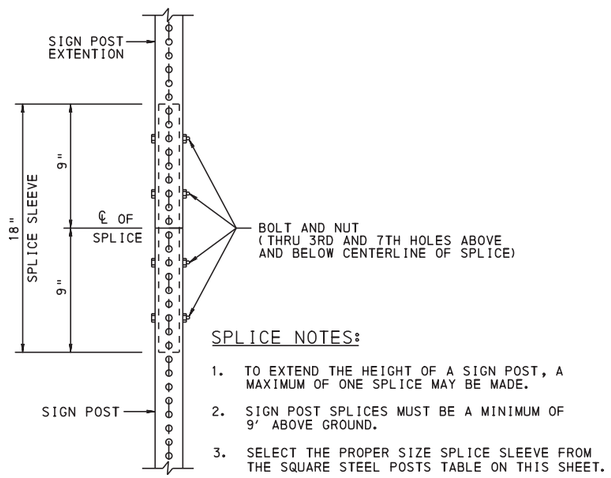
CADMIUM PLATED STEEL, ZINC PLATED STEEL OR ALUMINUM



SIGN POST SIZE (INCHES)	DIMENSION (INCHES)	
	A	B
1.75	1.343	0.969
2.00	1.562	1.188
2.25		

5/16"- 18 UNC
CORNER BOLTS & NUTS

CADMIUM PLATED STEEL, ZINC PLATED STEEL OR ALUMINUM



SPLICE NOTES:

1. TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE.
2. SIGN POST SPLICES MUST BE A MINIMUM OF 9' ABOVE GROUND.
3. SELECT THE PROPER SIZE SPLICE SLEEVE FROM THE SQUARE STEEL POSTS TABLE ON THIS SHEET.

SPLICE DETAIL

NOTES:

1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PUB. 408.
2. SIGN POSTS AND SPLICE SLEEVES SHALL HAVE 7/16" DIAMETER HOLES OR DIE-CUT KNOCKOUTS ON 1" CENTERS ON ALL FOUR SIDES. ANCHOR POSTS AND ANCHOR SLEEVES SHALL HAVE 7/16" DIAMETER HOLES ON 1" CENTERS ON ALL FOUR SIDES.
3. BOLTS AND NUTS SHALL BE ASTM A 307, GRADE B.
4. DRIVE RIVETS MAY BE USED TO FASTEN SIGN BLANKS TO THE SIGN POST.

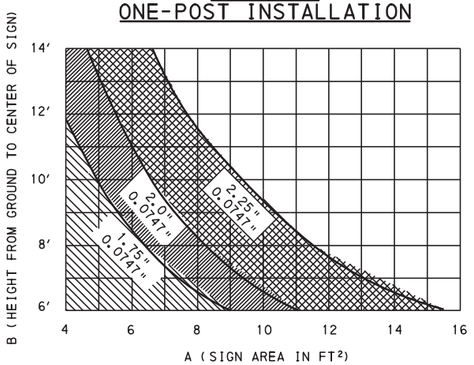
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE B

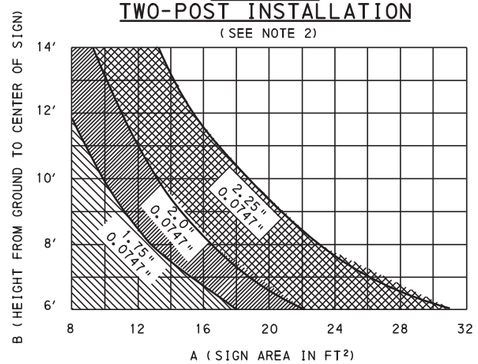
STEEL SQUARE POSTS (SYSTEM A) ERECTION DETAILS

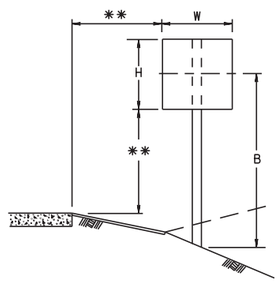
RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 1 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B

SYSTEM A
ONE-POST INSTALLATION



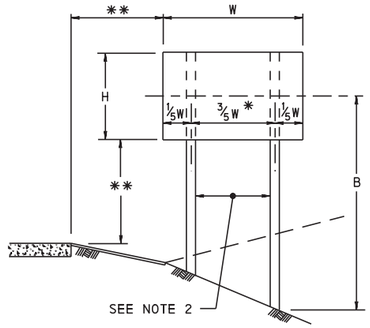
SYSTEM A
TWO-POST INSTALLATION
(SEE NOTE 2)





* WHEN ERECTING STANDARD WARNING OR REGULATORY SIGNS THAT ARE PREPUNCHED, THIS DISTANCE IS THE DISTANCE BETWEEN THE HORIZONTAL HOLES.

** SEE SHEET 9 FOR SIGN LOCATION/INSTALLATION DETAILS.



A = SIGN AREA (SEE TABLE).
A = W x H FOR SQUARE OR RECTANGULAR SIGNS,
WHERE: W = WIDTH OF SIGN
H = HEIGHT OF SIGN

SIGN AREA TABLE

SQUARE OR RECTANGULAR SIGNS						IRREGULAR SHAPED SIGNS	
SIZE (in. x in.)	AREA (FT^2)	SIZE (in. x in.)	AREA (FT^2)	SIZE (in. x in.)	AREA (FT^2)	SIGN (in. x in.)	AREA (FT^2)
8"x48"	2.7	30"x15"	3.1	72"x12"	6.0	YIELD (R1-2) 36"x36"	3.9
12"x18"	1.5	30"x24"	5.0	72"x24"	12.0	YIELD (R1-2) 48"x48"	6.9
12"x24"	2.0	30"x30"	6.3	72"x36"	18.0	YIELD (R1-2) 60"x60"	10.8
12"x30"	2.5	30"x36"	7.5	72"x48"	24.0	NO PASSING PENNANT (W14-3) 48"x36"	5.6
12"x36"	3.0	30"x48"	10.0	72"x60"	30.0	RAILROAD WARNING (W10-1) 36" DIA.	7.1
12"x48"	4.0	30"x60"	12.5	96"x24"	16.0	SCHOOL (S1-1) 30"x30"	4.7
18"x15"	1.9	36"x36"	9.0	96"x48"	32.0	SCHOOL (S1-1) 36"x36"	6.8
18"x18"	2.3	36"x48"	12.0	120"x12"	10.0	STOP (R1-1) 24"x24"	3.3
18"x24"	3.0	36"x54"	13.5	120"x15"	12.5	STOP (R1-1) 30"x30"	5.2
18"x36"	4.5	48"x48"	16.0	120"x24"	20.0	STOP (R1-1) 36"x36"	7.4
18"x48"	6.0	48"x60"	20.0	120"x30"	25.0	STOP (R1-1) 48"x48"	13.2
21"x15"	2.2	60"x12"	5.0	144"x12"	12.0	INTERSTATE ROUTE MARKER (M1-1) 24"x24"	3.2
24"x24"	4.0	60"x24"	10.0	144"x18"	18.0	INTERSTATE ROUTE MARKER (M1-1) 30"x24"	4.0
24"x36"	6.0	60"x42"	17.5	144"x24"	24.0	INTERSTATE ROUTE MARKER (M1-1) 36"x36"	7.2
24"x48"	8.0	60"x60"	25.0	144"x30"	30.0	INTERSTATE ROUTE MARKER (M1-1) 45"x36"	9.0

NOTES:

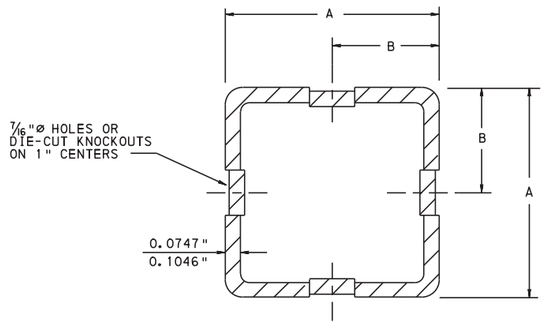
1. TO DETERMINE THE POST SIZE, ENTER THE GRAPH WITH THE VALUES OF A AND B. THE SHADED AREA INDICATES THE APPROPRIATE POST SIZE REQUIRED.
2. 2.25" POSTS SHALL HAVE 7 FT. CLEARANCE BETWEEN EACH OTHER, MEASURED FROM INSIDE POST EDGE TO INSIDE POST EDGE, WHEN USED IN TWO-POST INSTALLATIONS. 2" AND 1.75" POSTS MAY HAVE LESS THAN 7 FT. CLEARANCE BETWEEN EACH OTHER WHEN USED IN TWO-POST INSTALLATIONS.

COMMONWEALTH OF PENNSYLVANIA
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POST-MOUNTED SIGNS, TYPE B

STEEL SQUARE POSTS (SYSTEM A) SELECTION TABLES

RECOMMENDED JUN. 13, 2013 CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	RECOMMENDED JUN. 13, 2013 CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	SHT. 2 OF 9 TC-8702B



SIGN POST				ANCHOR POST				ANCHOR SLEEVE *				SPLICE SLEEVE			
SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.	SIZE	DIMENSION		THICK.
	A	B			A	B			A	B			A	B	
1.75"	1.75"	0.875"	0.0747"	2.00"	2.00"	1.000"	0.1046"	2.25"	2.25"	1.125"	0.1046"	1.50"	1.50"	0.750"	0.0747"
2.00"	2.00"	1.000"	0.0747"	2.25"	2.25"	1.125"	0.1046"	2.50"	2.50"	1.250"	0.1046"	1.75"	1.75"	0.875"	0.0747"

* REQUIRED FOR ALL POST INSTALLATIONS

SQUARE STEEL POSTS
SYSTEM C

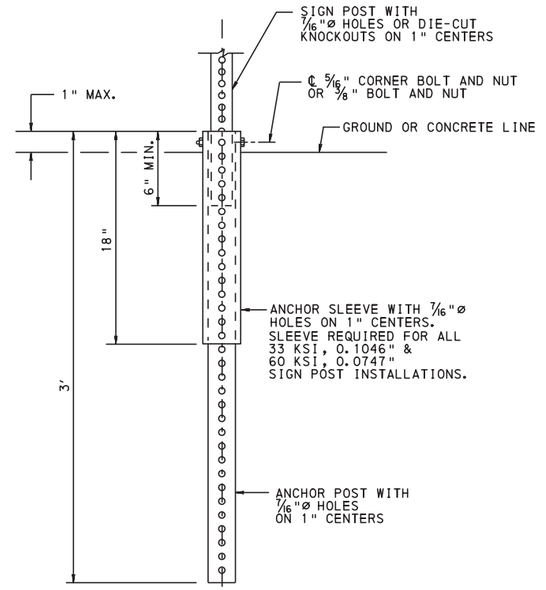
0.0747" - 60 KSI
0.1046" - 33 KSI

INSTALLATION INSTRUCTIONS:

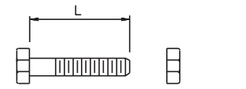
1. DETERMINE THE PROPER SIZE AND NUMBER OF SIGN POSTS FROM THE APPROPRIATE GRAPH ON SHEET 4.
2. DETERMINE THE PROPER SIZE ANCHOR POST AND ANCHOR SLEEVE FROM THE SQUARE STEEL POSTS TABLE ON THIS SHEET.
3. DRIVE THE ANCHOR POST AND ANCHOR SLEEVE INTO THE GROUND SIMULTANEOUSLY, USING THE APPROPRIATE SIZE DRIVE CAP, UNTIL ONLY ONE HOLE REMAINS ABOVE THE GROUND OR FINISHED ELEVATION OF THE CONCRETE.
4. SLIDE A MINIMUM OF 6" OF THE SIGN POST INTO THE ANCHOR POST.
5. ATTACH THE SIGN POST TO THE ANCHOR POST AND SLEEVE WITH ONE 5/16" CORNER BOLT AND NUT (OR ALTERNATELY ONE 3/8" BOLT AND NUT) THROUGH THE TOP HOLE OF THE ANCHOR POST AND SLEEVE.
6. TIGHTEN THE BOLT AND NUT BY THE TURN-OF-NUT METHOD. BRING NUT TO A SNUG CONDITION TO ENSURE THAT ALL PARTS ARE BROUGHT TOGETHER INTO FULL CONTACT WITH EACH OTHER, THEN TIGHTEN AN ADDITIONAL 1/2 TURN.

INSTALLATION IN CONCRETE:

INSTALL AS NOTED ABOVE.



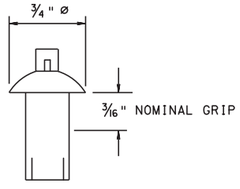
INSTALLATION DETAIL



SIGN POST SIZE (INCHES)	DIMENSION L (INCHES)
1.75	3.0
2.00	

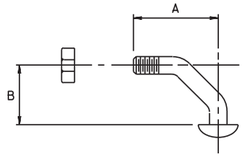
3/8" - 16 UNC
ANCHOR BOLTS & NUTS

CADMIUM PLATED STEEL,
ZINC PLATED STEEL OR
ALUMINUM



3/8" DRIVE RIVET

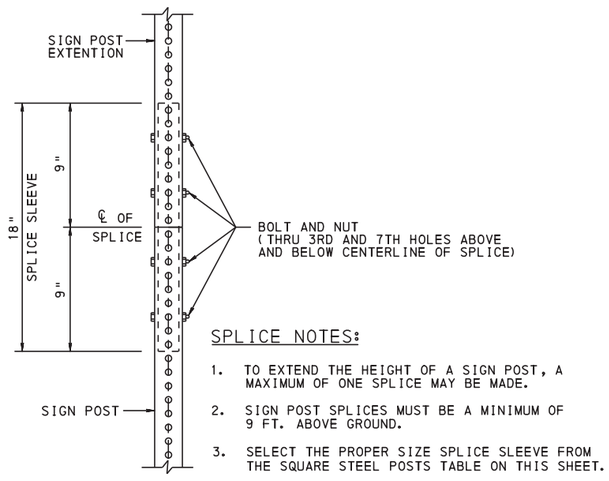
CADMIUM PLATED STEEL,
ZINC PLATED STEEL OR
ALUMINUM



SIGN POST SIZE (INCHES)	DIMENSION (INCHES)	
	A	B
1.75	1.343	0.969
2.00	1.562	1.188

5/16"- 18 UNC
CORNER BOLTS & NUTS

CADMIUM PLATED STEEL,
ZINC PLATED STEEL OR
ALUMINUM



SPLICE NOTES:

1. TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE.
2. SIGN POST SPLICES MUST BE A MINIMUM OF 9 FT. ABOVE GROUND.
3. SELECT THE PROPER SIZE SPLICE SLEEVE FROM THE SQUARE STEEL POSTS TABLE ON THIS SHEET.

SPLICE DETAIL

NOTES:

1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PUB. 408.
2. SIGN POSTS AND SPLICE SLEEVES SHALL HAVE 7/16" DIAMETER HOLES OR DIE-CUT KNOCKOUTS ON 1" CENTERS ON ALL FOUR SIDES. ANCHOR POSTS AND ANCHOR SLEEVES SHALL HAVE 7/16" DIAMETER HOLES ON 1" CENTERS ON ALL FOUR SIDES.
3. BOLTS AND NUTS SHALL BE ASTM A 307, GRADE B.
4. DRIVE RIVETS MAY BE USED TO FASTEN SIGN BLANKS TO THE SIGN POST.

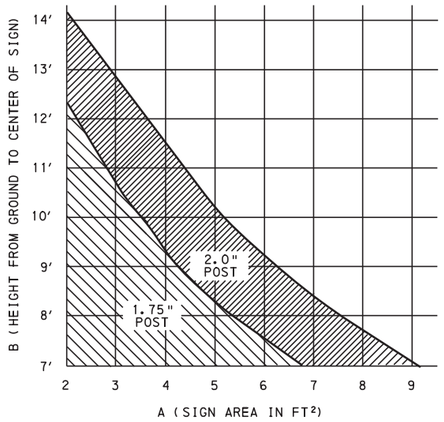
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE B

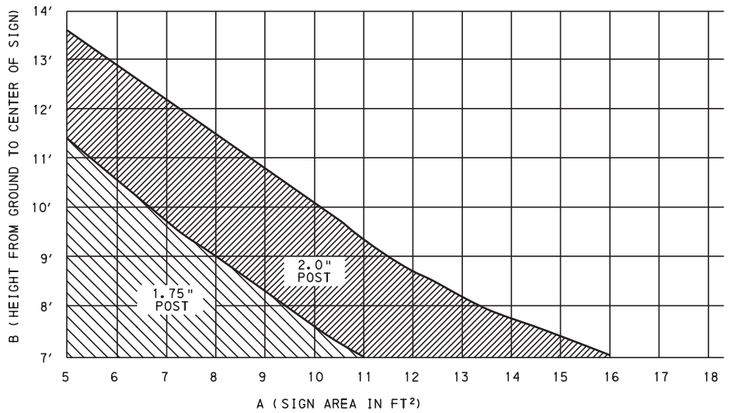
STEEL SQUARE POSTS (SYSTEM C) ERECTION DETAILS

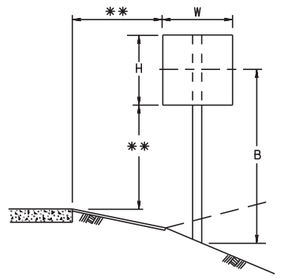
RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 3 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B

SYSTEM C
ONE-POST INSTALLATION



SYSTEM C
TWO-POST INSTALLATION

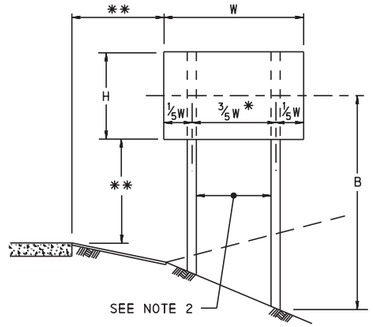




* WHEN ERECTING STANDARD WARNING OR REGULATORY SIGNS THAT ARE PREPUNCHED, THIS DISTANCE IS THE DISTANCE BETWEEN THE HORIZONTAL HOLES.

** SEE SHEET 9 FOR SIGN LOCATION/INSTALLATION DETAILS.

A = SIGN AREA (SEE TABLE).
A = W x H FOR SQUARE OR RECTANGULAR SIGNS,
WHERE: W = WIDTH OF SIGN
H = HEIGHT OF SIGN



NOTES:

1. TO DETERMINE THE POST SIZE, ENTER THE GRAPH WITH THE VALUES OF A AND B. THE SHADED AREA INDICATES THE APPROPRIATE POST SIZE REQUIRED.
2. 2" AND 1.75" POSTS MAY HAVE LESS THAN 7 FT. CLEARANCE BETWEEN EACH OTHER WHEN USED IN TWO-POST INSTALLATIONS.

SIGN AREA TABLE

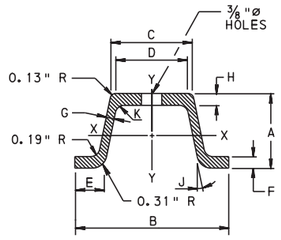
SQUARE OR RECTANGULAR SIGNS						IRREGULAR SHAPED SIGNS	
SIZE (in. x in.)	AREA (FT²)	SIZE (in. x in.)	AREA (FT²)	SIZE (in. x in.)	AREA (FT²)	SIGN (in. x in.)	AREA (FT²)
8"x48"	2.7	30"x15"	3.1	72"x12"	6.0	YIELD (R1-2) 36"x36"	3.9
12"x18"	1.5	30"x24"	5.0	72"x24"	12.0	YIELD (R1-2) 48"x48"	6.9
12"x24"	2.0	30"x30"	6.3	72"x36"	18.0	YIELD (R1-2) 60"x60"	10.8
12"x30"	2.5	30"x36"	7.5	72"x48"	24.0	NO PASSING PENNANT (W14-3) 48"x36"	5.6
12"x36"	3.0	30"x48"	10.0	72"x60"	30.0	RAILROAD WARNING (W10-1) 36" DIA.	7.1
12"x48"	4.0	30"x60"	12.5	96"x24"	16.0	SCHOOL (S1-1) 30"x30"	4.7
18"x15"	1.9	36"x36"	9.0	96"x48"	32.0	SCHOOL (S1-1) 36"x36"	6.8
18"x18"	2.3	36"x48"	12.0	120"x12"	10.0	STOP (R1-1) 24"x24"	3.3
18"x24"	3.0	36"x54"	13.5	120"x15"	12.5	STOP (R1-1) 30"x30"	5.2
18"x36"	4.5	48"x48"	16.0	120"x24"	20.0	STOP (R1-1) 36"x36"	7.4
18"x48"	6.0	48"x60"	20.0	120"x30"	25.0	STOP (R1-1) 48"x48"	13.2
21"x15"	2.2	60"x12"	5.0	144"x12"	12.0	INTERSTATE ROUTE MARKER (M1-1) 24"x24"	3.2
24"x24"	4.0	60"x24"	10.0	144"x18"	18.0	INTERSTATE ROUTE MARKER (M1-1) 30"x24"	4.0
24"x36"	6.0	60"x42"	17.5	144"x24"	24.0	INTERSTATE ROUTE MARKER (M1-1) 36"x36"	7.2
24"x48"	8.0	60"x60"	25.0	144"x30"	30.0	INTERSTATE ROUTE MARKER (M1-1) 45"x36"	9.0

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE B

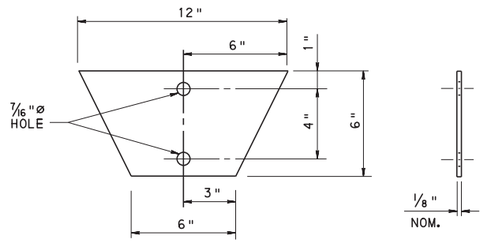
STEEL SQUARE POSTS (SYSTEM C) SELECTION TABLES

RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 4 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B



STEEL POST DIMENSIONS											
* WEIGHT LBS/FT.	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	
2.5	1.56	3.13	1.25	1.06	0.63	0.16	0.13	0.15	12.5°	0.13 R	
4.0	1.75	3.50	1.67	1.41	0.72	0.25	0.18	0.23	11.5°	0.19 R	

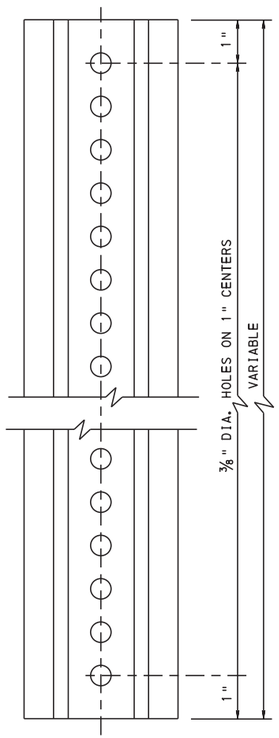
* ±3.5%



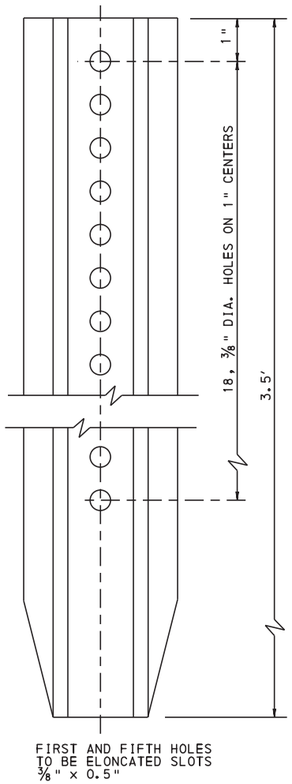
ANCHOR PLATE

NOTES:

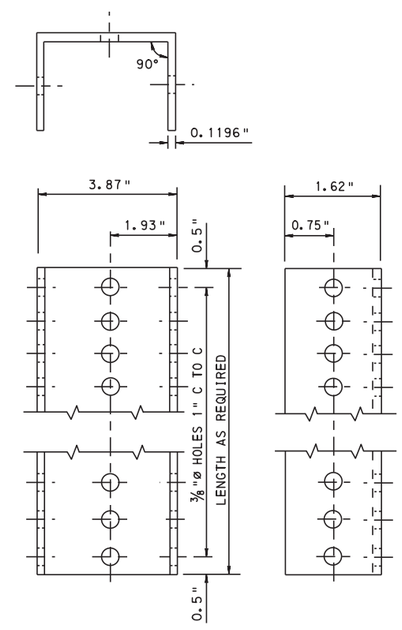
1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PUB. 408.
2. FORMED-CHANNEL SIGN MOUNTS SHALL BE MILD STEEL.
3. ANCHOR BOLTS SHALL BE 5/16" - 18 UNC x 1.5" FULLY THREADED, GRADE 9 HEX HEAD. A FLANGED ANCHOR BOLT MAY BE SUBSTITUTED FOR THE STANDARD ANCHOR BOLT AND FLAT WASHER.
4. WASHERS SHALL BE 5/16" GRADE 9 PLATED.
5. LOCKNUTS SHALL BE 5/16" - 18 UNC THREADS, HEX HEADED.
6. ANY OTHER DEPARTMENT APPROVED BREAKAWAY CONNECTION APPROVED FOR THIS KIND OF POST MAY BE SUBSTITUTED FOR THE UNIVERSAL SPACER.
7. SEE SHEET 6 FOR SPACER AND ANCHOR BOLT DETAILS.



SIGN POST

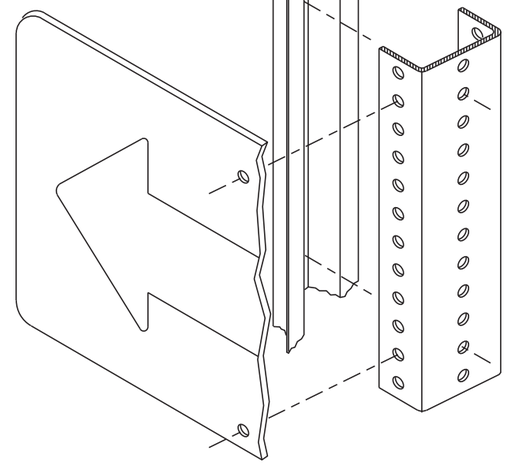


ANCHOR POST



FORMED-CHANNEL SIGN MOUNT

USE WHEN IT IS NECESSARY TO MOUNT SIGNS ON THE SIDE OF A CHANNEL BAR POST IN ADDITION TO THE NORMAL SIGN MOUNTING LOCATION ON THE FLANGED FACE.

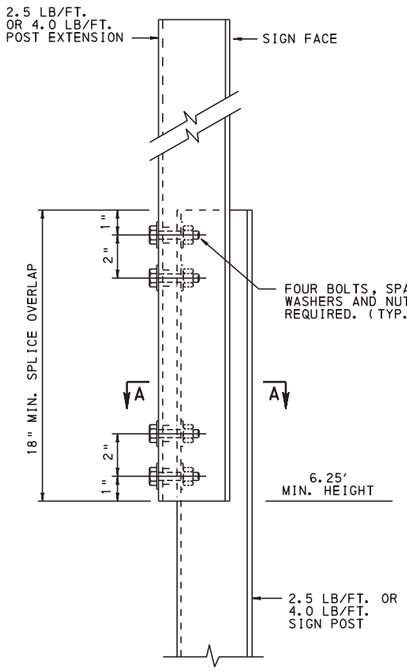


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE B

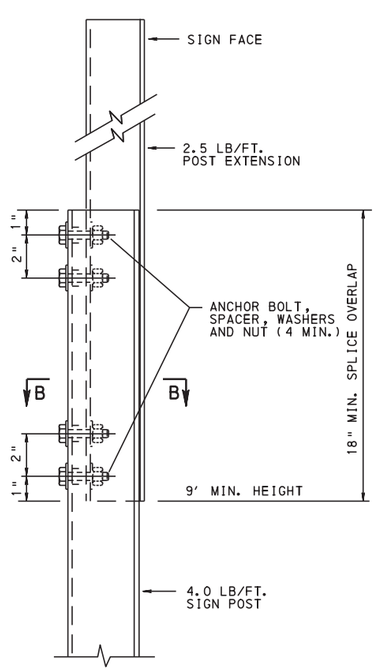
CHANNEL BAR POSTS (ROLLED STEEL RAILS) MATERIAL DETAILS

RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 5 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B



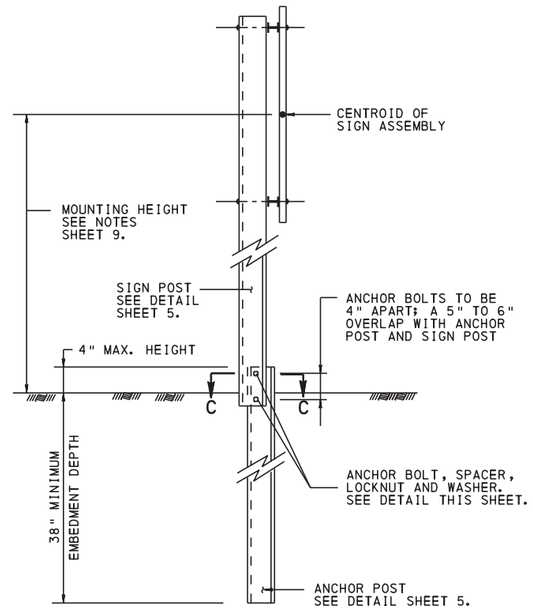
POST EXTENSION SPLICE DETAIL A

FOR USE IN EXTENDING SIGN POSTS



ALTERNATE POST EXTENSION SPLICE DETAIL B

FOR USE IN EXTENDING SIGN POSTS



INSTALLATION DETAIL

ANCHOR SPLICE INSTALLATION INSTRUCTIONS:

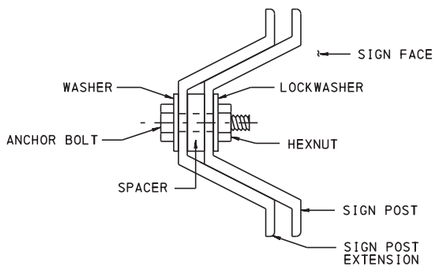
1. DETERMINE THE PROPER SIZE SIGN POST AND ANCHOR POST FROM THE APPROPRIATE GRAPH ON SHEET 7. USE 2.5 LB/FT. ANCHOR POSTS WITH 2.5 LB/FT. SIGN POSTS AND 4.0 LB/FT. ANCHOR POSTS WITH 4.0 LB/FT. SIGN POSTS.
2. REMOVE A SHOVEL OF SOIL AT THE POST LOCATION TO ALLOW FOR FINAL ATTACHMENT OF THE SIGN POST TO THE ANCHOR POST.
3. DRIVE ANCHOR POST WITH A DRIVE CAP TO WITHIN APPROXIMATELY 12" ABOVE GROUND LEVEL. PLACE ONE BOLT AND WASHER IN FIFTH HOLE FROM THE END OF THE EXPOSED ANCHOR POST. SECURELY TIGHTEN SPACER ONTO BOLT.
4. DRIVE ANCHOR POST TO 4" ABOVE GROUND LEVEL. PLACE REMAINING BOLT AND WASHER IN FIRST HOLE FROM THE END OF POST AND SECURELY TIGHTEN SPACER ONTO BOLT. (BOLTS 4" APART).
5. NEST TOP SIGN POST OVER PROTRUDING ANCHOR POST BOLTS THROUGH FIRST AND FIFTH HOLES OF TOP SIGN POST. THIS WILL RESULT IN A 5" TO 6" OVERLAP.
6. PLACE A LOCKNUT ON EACH BOLT (A STANDARD LOCKWASHER AND NUT MAY BE USED IN LIEU OF THE LOCKNUT). TIGHTEN BOLTS AND NUTS BY TURN-OF-NUT METHOD. BRING NUT TO A SNUG TIGHT CONDITION TO ENSURE THAT ALL PARTS ARE BROUGHT TOGETHER INTO FULL CONTACT WITH EACH OTHER, THEN TIGHTEN AN ADDITIONAL $\frac{1}{2}$ TURN.
7. RESTORE SOIL AROUND THE ANCHOR POST.

INSTALLATION IN SOFT SOIL:

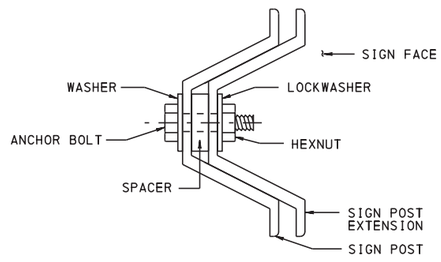
1. USE THE ANCHOR PLATE IN AREAS WITH SOFT SOIL. BOLT THE TOP ANCHOR BOLT 1" BELOW THE BOTTOM ANCHOR POST BOLT, (6 TO 7 HOLES FROM THE END OF THE ANCHOR POST).

POST EXTENSION SPLICE NOTES:

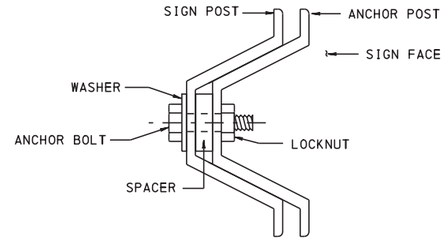
1. TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE.
2. FOUR ANCHOR BOLTS WITH SPACERS, WASHERS, LOCKWASHERS AND NUTS ARE REQUIRED (LOCKNUTS MAY BE USED IN LIEU OF STANDARD LOCKWASHERS AND NUTS). SEE THIS SHEET FOR ANCHOR BOLT SYSTEM.
3. POST EXTENSION SPLICE DETAIL A IS PREFERRED OVER POST EXTENSION SPLICE DETAIL B. WHEN DETAIL A IS USED, 2.5 LB/FT. POSTS SHALL USE A 2.5 LB/FT. POST EXTENSION POST FOR SPLICE EXTENSIONS; 4.0 LB/FT. POSTS SHALL USE A 4.0 LB/FT. POST EXTENSION POST FOR SPLICE EXTENSIONS. WHEN DETAIL A IS USED, POST EXTENSION SPLICES SHALL BE MOUNTED ON THE BACK (NON-IMPACT) SIDE OF THE SIGN POST. SPLICES SHALL BE MADE AT A MINIMUM HEIGHT OF 6.25 FT., MEASURED TO THE BOTTOM OF THE SPLICE.
4. POST EXTENSION SPLICE DETAIL B IS PERMITTED FOR USE TO PROVIDE A FLUSH SIGN MOUNT SURFACE FOR 4.0 LB/FT. POSTS. WHEN DETAIL B IS USED, 2.5 LB/FT. POST EXTENSION SPLICES MAY BE NESTED ON THE FRONT OF A 4.0 LB/FT. POST. SPLICES SHALL BE MADE AT A MINIMUM HEIGHT OF 9 FT., MEASURED TO THE BOTTOM OF THE SPLICE.



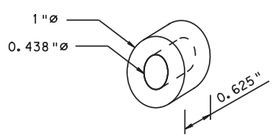
SECTION A-A



SECTION B-B

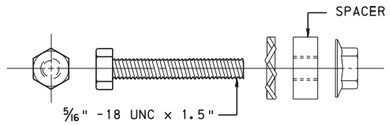


SECTION C-C



SPACER DETAIL

ZINC PLATED



ANCHOR BOLT, WASHER, SPACER AND LOCKNUT

ANCHOR BOLTS TO BE 1.5", GRADE 9, HEX HEAD.

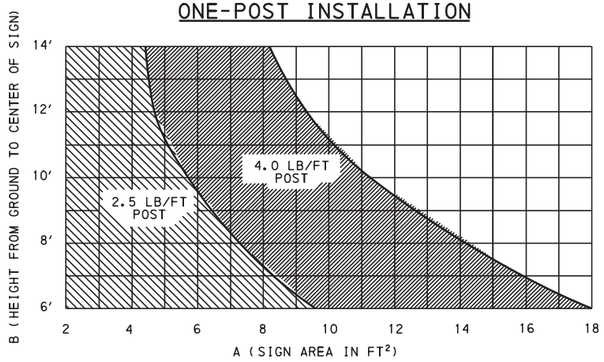
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE B

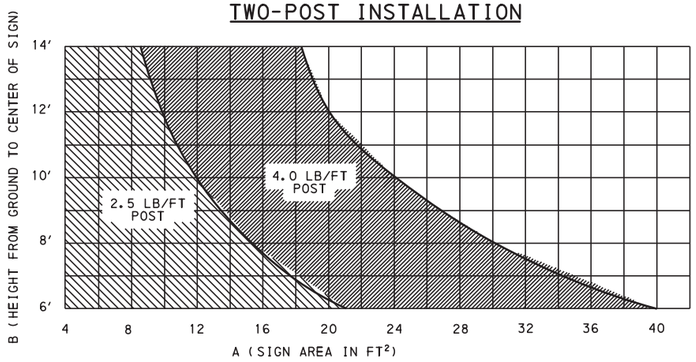
CHANNEL BAR POSTS ERECTION DETAILS

RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 6 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B

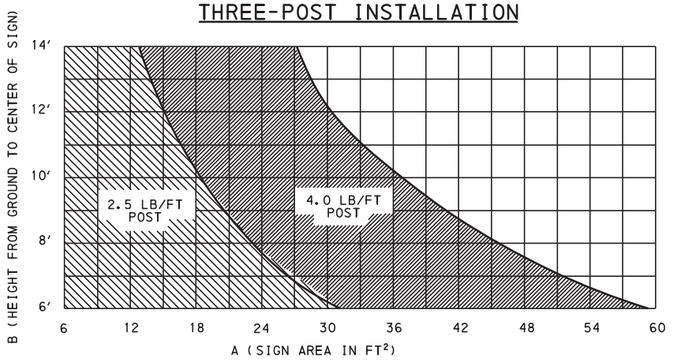
ONE-POST INSTALLATION

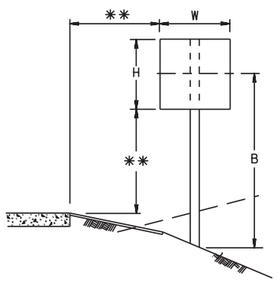


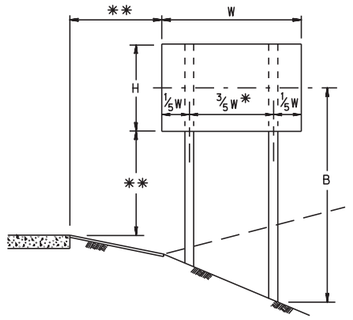
TWO-POST INSTALLATION

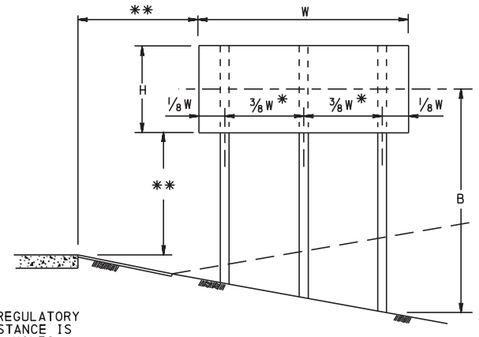


THREE-POST INSTALLATION









A = SIGN AREA (SEE TABLE).
A = W x H FOR SQUARE OR RECTANGULAR SIGNS,
WHERE: W = WIDTH OF SIGN
H = HEIGHT OF SIGN

* WHEN ERECTING STANDARD WARNING OR REGULATORY SIGNS THAT ARE PREPUNCHED, THIS DISTANCE IS THE DISTANCE BETWEEN THE HORIZONTAL HOLES.

** SEE SHEET 9 FOR SIGN LOCATION/INSTALLATION DETAILS.

SIGN AREA TABLE

SQUARE OR RECTANGULAR SIGNS						IRREGULAR SHAPED SIGNS	
SIZE (in. x in.)	AREA (FT²)	SIZE (in. x in.)	AREA (FT²)	SIZE (in. x in.)	AREA (FT²)	SIGN (in. x in.)	AREA (FT²)
8"x48"	2.7	30"x15"	3.1	72"x12"	6.0	YIELD (R1-2) 36"x36"	3.9
12"x18"	1.5	30"x24"	5.0	72"x24"	12.0	YIELD (R1-2) 48"x48"	6.9
12"x24"	2.0	30"x30"	6.3	72"x36"	18.0	YIELD (R1-2) 60"x60"	10.8
12"x30"	2.5	30"x36"	7.5	72"x48"	24.0	NO PASSING PENNANT (W14-3) 48"x36"	5.6
12"x36"	3.0	30"x48"	10.0	72"x60"	30.0	RAILROAD WARNING (W10-1) 36" DIA.	7.1
12"x48"	4.0	30"x60"	12.5	96"x24"	16.0	SCHOOL (S1-1) 30"x30"	4.7
18"x15"	1.9	36"x36"	9.0	96"x48"	32.0	SCHOOL (S1-1) 36"x36"	6.8
18"x18"	2.3	36"x48"	12.0	120"x12"	10.0	STOP (R1-1) 24"x24"	3.3
18"x24"	3.0	36"x54"	13.5	120"x15"	12.5	STOP (R1-1) 30"x30"	5.2
18"x36"	4.5	48"x48"	16.0	120"x24"	20.0	STOP (R1-1) 36"x36"	7.4
18"x48"	6.0	48"x60"	20.0	120"x30"	25.0	STOP (R1-1) 48"x48"	13.2
21"x15"	2.2	60"x12"	5.0	144"x12"	12.0	INTERSTATE ROUTE MARKER (M1-1) 24"x24"	3.2
24"x24"	4.0	60"x24"	10.0	144"x18"	18.0	INTERSTATE ROUTE MARKER (M1-1) 30"x24"	4.0
24"x36"	6.0	60"x42"	17.5	144"x24"	24.0	INTERSTATE ROUTE MARKER (M1-1) 36"x36"	7.2
24"x48"	8.0	60"x60"	25.0	144"x30"	30.0	INTERSTATE ROUTE MARKER (M1-1) 45"x36"	9.0

NOTES:

1. TO DETERMINE THE POST SIZE, ENTER THE GRAPH WITH THE VALUES OF A AND B. THE SHADED AREA INDICATES THE APPROPRIATE POST SIZE REQUIRED.
2. 2.5 LB/FT. AND 4.0 LB/FT. POSTS MAY HAVE LESS THAN 7 FT. CLEARANCE BETWEEN EACH OTHER WHEN USED IN TWO-POST AND THREE-POST INSTALLATIONS.

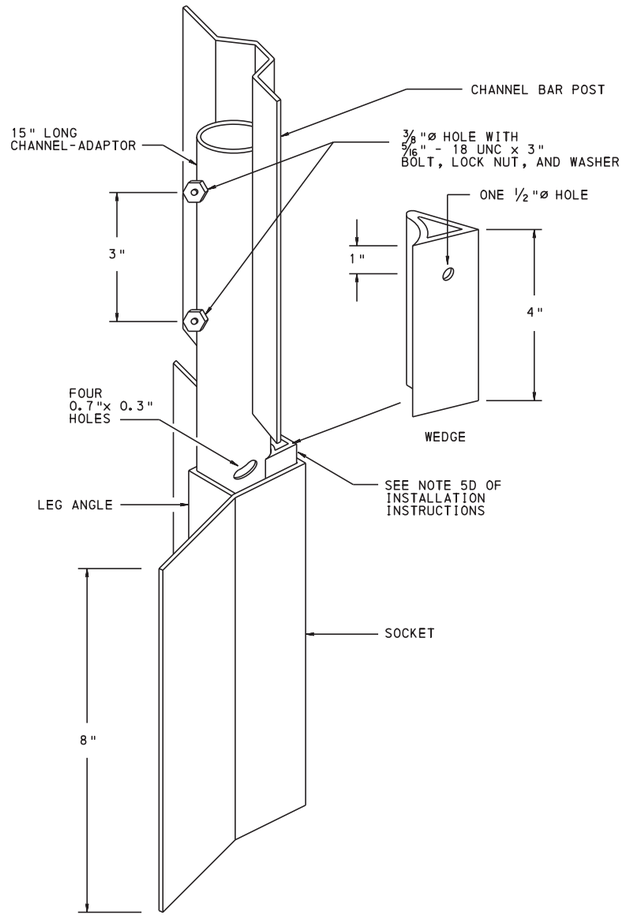
COMMONWEALTH OF PENNSYLVANIA
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POST-MOUNTED SIGNS, TYPE B

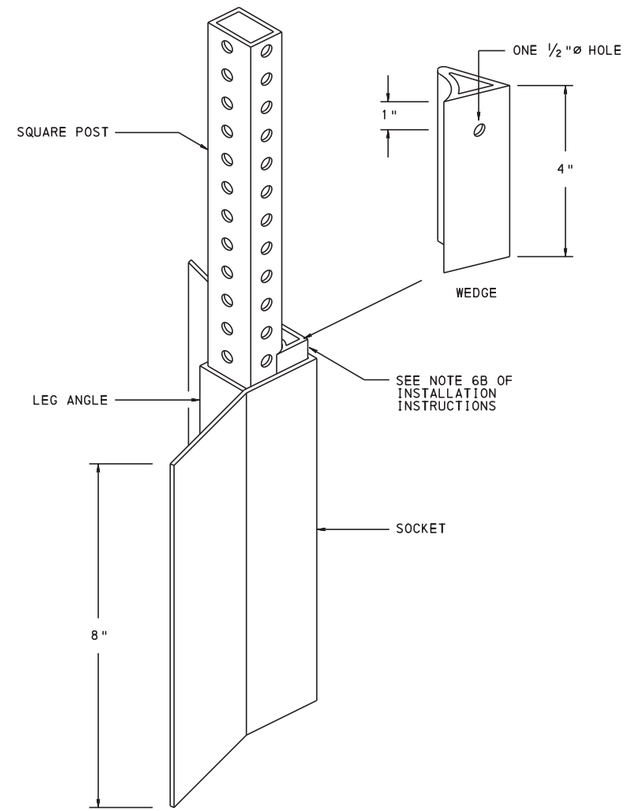
CHANNEL BAR POSTS SELECTION TABLES

RECOMMENDED JUN. 13, 2013
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION

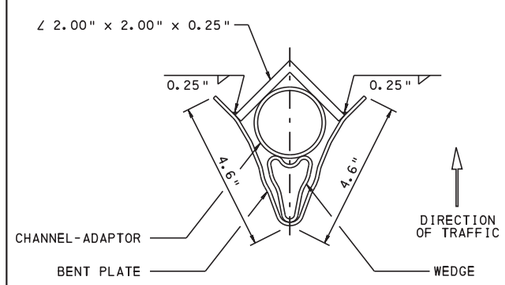
RECOMMENDED JUN. 13, 2013
CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION



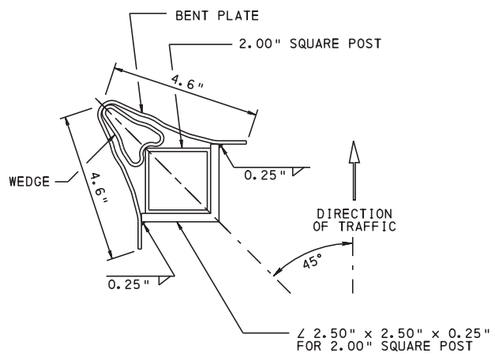
ELEVATION



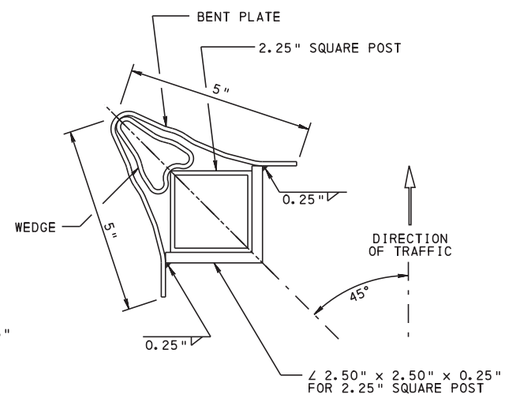
ELEVATION



PLAN



PLAN



PLAN

CHANNEL BAR POST - SOCKET SYSTEM

SQUARE POST - SOCKET SYSTEM

NOTES:

INSTALLATION INSTRUCTIONS:

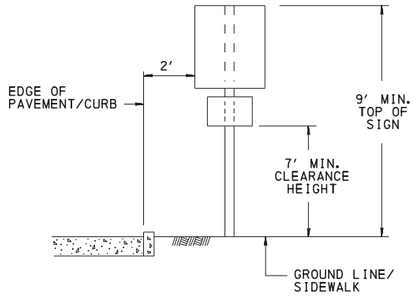
TAPCO INDUSTRIES OR EQUAL

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

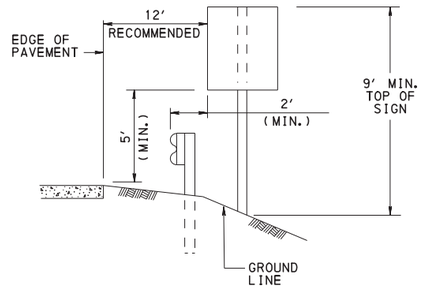
POST-MOUNTED SIGNS, TYPE B

SOCKET SYSTEM FOR CONCRETE INSTALLATIONS

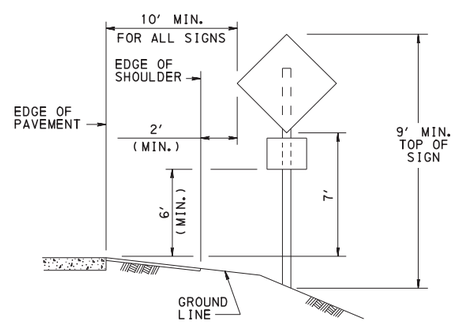
RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 8 OF 9
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702B



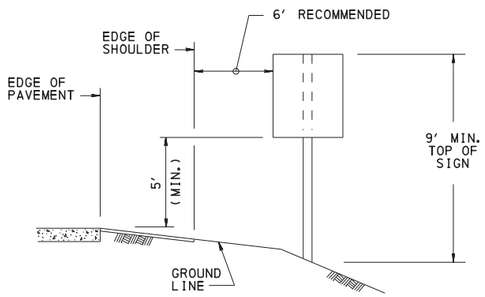
BUSINESS OR RESIDENTIAL AREA



RURAL AREA
CONVENTIONAL HIGHWAY (NO SHOULDER)



FREEWAY / EXPRESSWAYS



RURAL AREA
CONVENTIONAL HIGHWAY (WITH SHOULDER)

NOTES:

SIGN CLEARANCE HEIGHT

1. CLEARANCE HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE SIGN TO A LEVEL LINE PROJECTED FROM THE NEAR EDGE OF ROADWAY. THIS MAY RESULT IN A SIGN HEIGHT GREATER THAN THE MINIMUM HEIGHT REQUIRED WHEN MEASURED FROM THE GROUND LEVEL TO THE BOTTOM OF THE SIGN. IN BUSINESS AND URBAN AREAS THE CLEARANCE HEIGHT SHALL ALSO BE MEASURED FROM THE BOTTOM OF THE SIGN TO THE GROUND LEVEL OR SIDEWALK AREA TO REDUCE THE POSSIBILITY OF PEDESTRIANS COLLIDING WITH THE SIGN.

LATERAL SIGN CLEARANCE

2. SIGNS SHOULD BE PLACED AS FAR AS PRACTICAL FROM THE EDGE OF THE ROADWAY TO REDUCE THE POSSIBILITY OF VEHICLES HITTING THE SIGNS. WHEN GUIDE RAIL IS PRESENT, SIGNS WILL BE PLACED BEHIND THE GUIDERAIL.

3. ROUTE MARKER SIGNS WITH AUXILIARY SIGNS (NORTH, SOUTH, ETC.) SHALL BE CONSIDERED A SINGLE SIGN ASSEMBLY. THE CLEARANCE HEIGHT IS MEASURED FROM THE BOTTOM OF THE LOWEST AUXILIARY SIGN TO A LEVEL LINE PROJECTED FROM THE NEAR EDGE OF ROADWAY.

4. BUSINESS OR URBAN AREAS

   A. IN BUSINESS, COMMERCIAL OR RESIDENTIAL DISTRICTS, OR WHERE PARKING AND/OR PEDESTRIAN MOVEMENTS ARE LIKELY, OR WHERE THE SIGN MAY BLOCK VISIBILITY, THE BOTTOM OF ALL SIGNS (INCLUDING AUXILIARY SIGNS) SHALL BE A MINIMUM OF 7′ ABOVE GROUND AND THE NEAR PAVEMENT EDGE.

   B. LATERAL CLEARANCE RECOMMENDED IS 2′ BEHIND CURB. IF SIDEWALK WIDTH IS LIMITED, OR WHEN EXISTING UTILITY POLES ARE CLOSE TO THE CURB A 1′ CLEARANCE IS PERMISSIBLE. SIGNS SUPPORTS SHOULD NOT PROTRUDE INTO SIDEWALK AREA

5. RURAL AREAS

   A. CONVENTIONAL HIGHWAYS. ALTHOUGH 7′ MINIMUM SIGN HEIGHT CLEARANCE IS RECOMMENDED, IN RURAL DISTRICTS WHERE THE CONDITIONS LISTED IN NOTE 4A ARE NOT LIKELY, SIGNS MAY BE MOUNTED AT A MINIMUM CLEARANCE HEIGHT OF 5′. IF A SUPPLEMENTAL SIGN IS INSTALLED BELOW THE MAIN SIGN, THE CLEARANCE HEIGHT OF THE SUPPLEMENTAL SIGN MAY BE 4′.

   WHEN GUIDERAIL OR CONCRETE BARRIERS ARE PRESENT A 2′ LATERAL CLEARANCE IS RECOMMENDED.

   WHEN SHOULDERS ARE NOT PRESENT IT IS RECOMMENDED THAT SIGNS BE PLACED 12′ FROM THE EDGE OF ROADWAY. WHERE SHOULDERS ARE PRESENT A 6′ LATERAL CLEARANCE IS RECOMMENDED.

   B. FREEWAY AND EXPRESSWAYS. DIRECTIONAL SIGNS SHALL BE HAVE A MINIMUM CLEARANCE HEIGHT OF 7′. HOWEVER, IF A SUPPLEMENTAL SIGN IS INSTALLED BELOW THE MAIN SIGN, THE SUPPLEMENTAL SIGN MAY HAVE A CLEARANCE HEIGHT OF 6′, PROVIDED THAT A 7′ CLEARANCE HEIGHT IS MAINTAINED FOR THE MAIN SIGN.

   ALL ROUTE MARKER, REGULATORY, AND WARNING SIGN ASSEMBLIES SHALL MAINTAIN A 6′ CLEARANCE HEIGHT TO THE BOTTOM OF THE SIGN ASSEMBLY (INCLUDING AUXILIARY SIGNS).

   2′ MINIMUM LATERAL CLEARANCE IS REQUIRED BEHIND UNMOUNTABLE CURB OR ROADWAY SHOULDER.

   10′ MINIMUM LATERAL CLEARANCE FROM THE EDGE OF THE NEAREST TRAVEL LANE IS RECOMMENDED.

6. ON CONVENTIONAL ROADS A 2-FOOT LATERAL OFFSET IS PERMITTED WHEN IT IS IMPRACTICAL TO LOCATE THE SIGN WITH THE PRESCRIBED OFFSET.

7. A LATERAL OFFSET OF 1 FOOT FROM THE FACE OF THE CURB MAY BE USED IN BUSINESS, COMMERCIAL OR RESIDENTIAL AREAS WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.

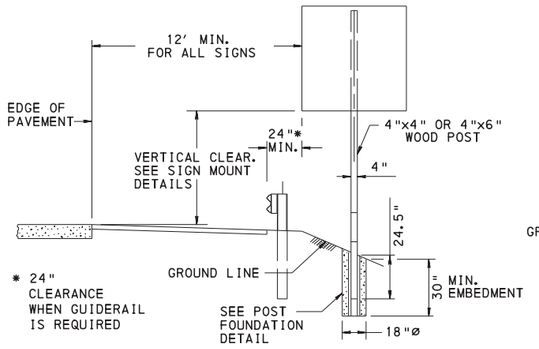
8. OVERHEAD SIGN SUPPORTS AND POST-MOUNTED SIGN AND OBJECT MARKERS SUPPORTS SHOULD NOT INTRUDE INTO THE USABLE WIDTH OF A SIDEWALK OR OTHER PEDESTRAIN FACILITY.

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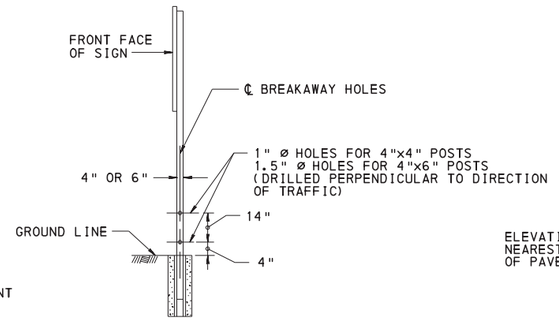
POST-MOUNTED SIGNS, TYPE B

SIGN LOCATION/INSTALLATION DETAILS

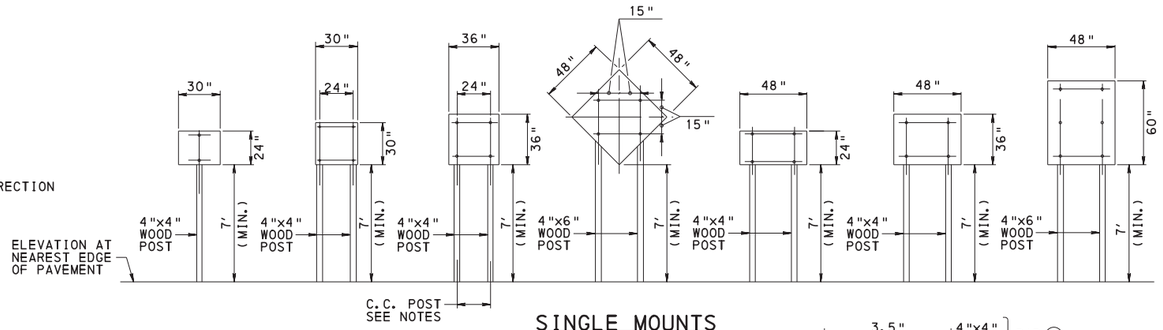
RECOMMENDED JUN. 13, 2013 CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	RECOMMENDED JUN. 13, 2013 CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	SHT. 9 OF 9 TC-8702B



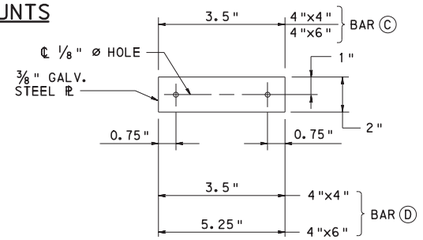
ELEVATION VIEW



END VIEW

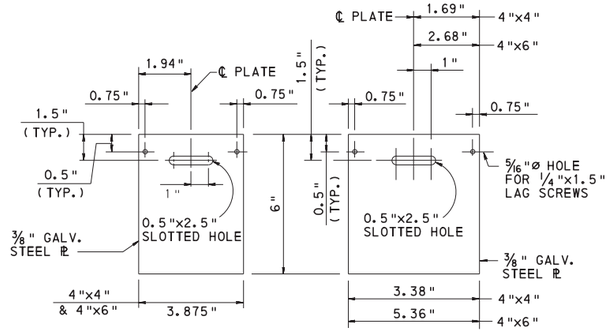


SINGLE MOUNTS

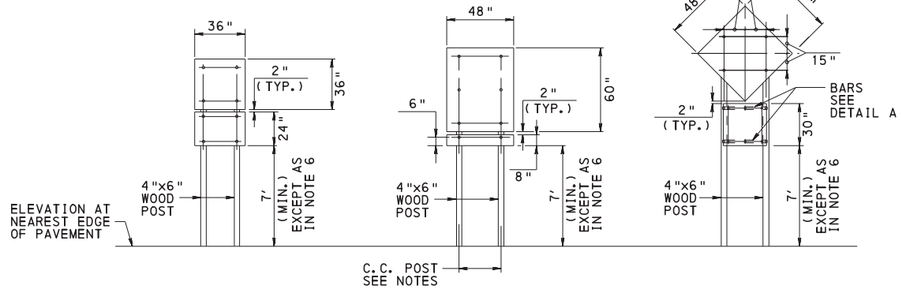


NOTE:
NAIL SHIM BARS TO POST TO
HOLD BARS IN PLACE WHILE
POST IS BEING PLACED.

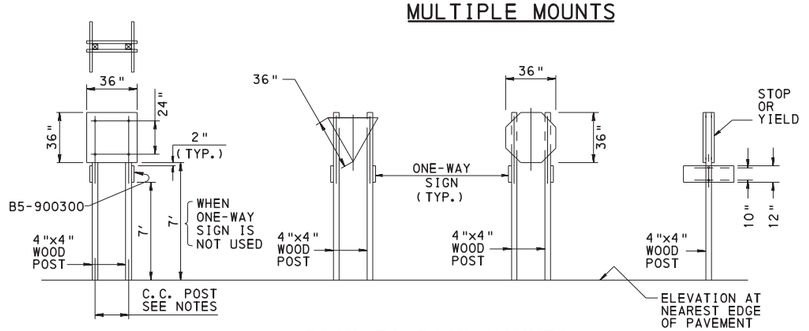
SHIM PLATE Ⓒ
SHIM PLATE Ⓓ



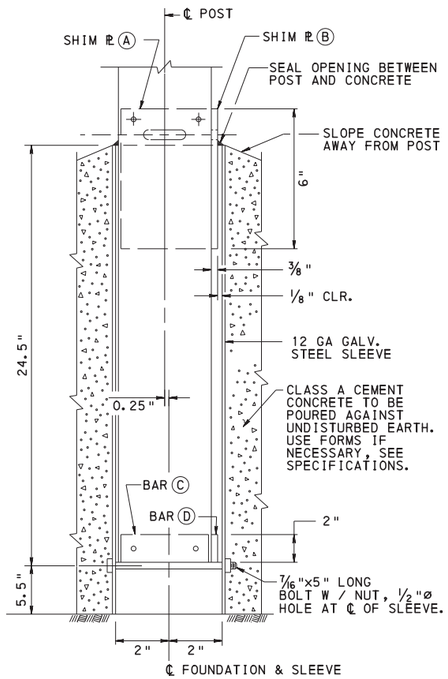
SHIM PLATE Ⓐ SHIM PLATE Ⓑ



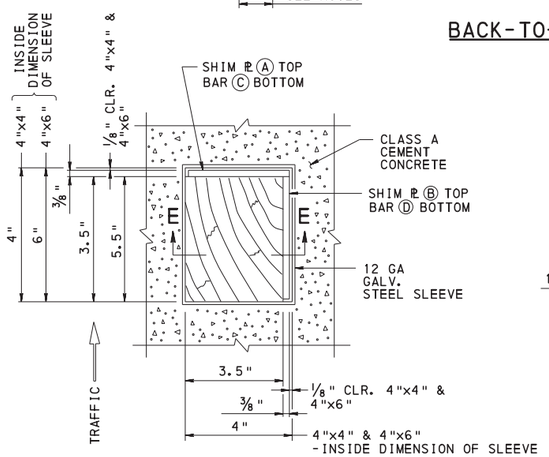
MULTIPLE MOUNTS



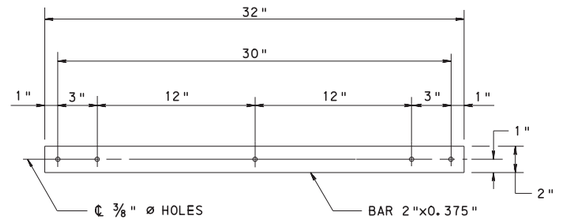
BACK-TO-BACK MOUNTS



SECTION E-E (SHOWN)



FOUNDATION DETAIL



BAR
DETAIL A

NOTES:

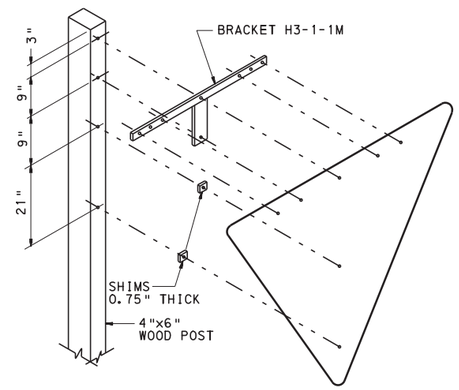
1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, UNLESS OTHERWISE NOTED.
2. DETERMINE THE CENTER TO CENTER POST DIMENSIONS ON TWO-POST INSTALLATIONS BY THE BOLT HOLE SPACING ON THE SIGN BLANKS.
3. FOR DETAILS OF BOLTS AND SIZE REQUIRED, SEE SHEET 2 OF 2.
4. GALVANIZE ALL STEEL SLEEVES IN ACCORDANCE WITH ASTM A 123 / A 123M.
5. STEEL USED FOR SLEEVES AND SHIMS SHALL HAVE A MINIMUM YIELD STRENGTH OF 36 KSI.
6. IF A SUPPLEMENTAL SIGN IS INSTALLED BELOW THE MAIN SIGN, THE BOTTOM OF THE SIGN ASSEMBLY MAY BE 6' ABOVE THE NEAR EDGE OF THE PAVEMENT. HOWEVER, IN BUSINESS, COMMERCIAL & RESIDENTIAL DISTRICTS, OR WHERE PARKING AND/OR PEDESTRIAN MOVEMENTS ARE LIKELY, OR WHERE THE SIGN MAY BLOCK VISIBILITY, THE BOTTOM OF ALL SIGNS (INCLUDING AUXILIARY SIGNS) SHALL BE A MINIMUM OF 7' ABOVE GROUND.
7. ON CONVENTIONAL ROADS A 2-FOOT LATERAL OFFSET IS PERMITTED WHEN IT IS IMPRACTICAL TO LOCATE THE SIGN WITH THE PRESCRIBED OFFSET.
8. A LATERAL OFFSET OF 1 FOOT FROM THE FACE OF THE CURB MAY BE USED IN BUSINESS, COMMERCIAL OR RESIDENTIAL AREAS WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.
9. OVERHEAD SIGN SUPPORTS AND POST-MOUNTED SIGN AND OBJECT MARKERS SUPPORTS SHOULD NOT INTRUDE INTO THE USABLE WIDTH OF A SIDEWALK OR OTHER PEDESTRAIN FACILITY.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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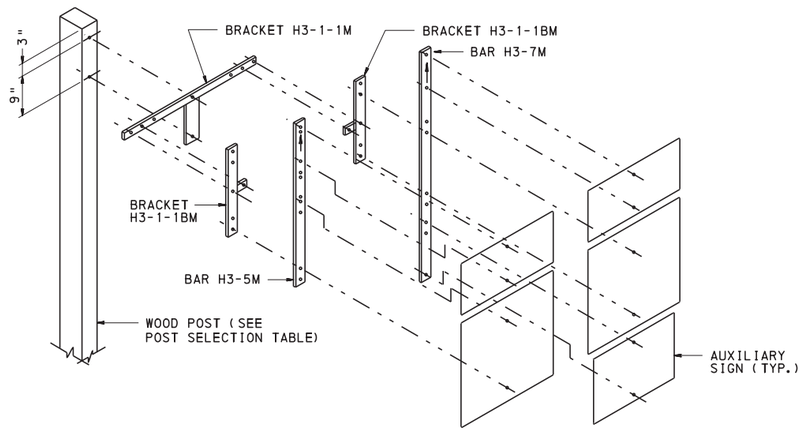
POST-MOUNTED SIGNS, TYPE C

ERECTION DETAILS

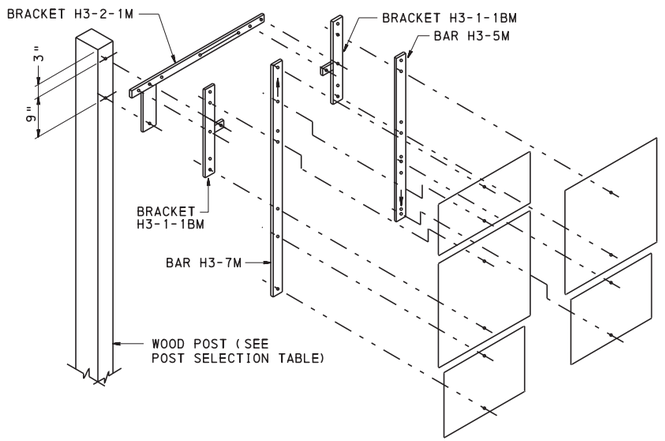
RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 1 OF 2
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702C



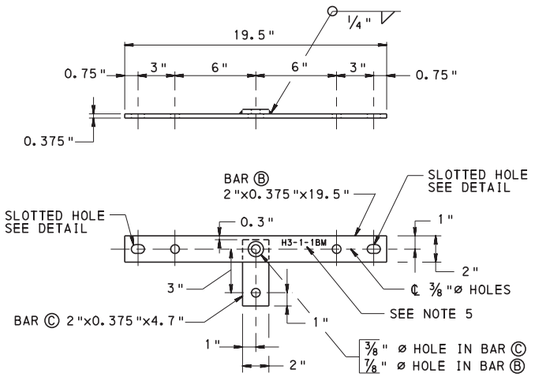
TYPICAL YIELD SIGN ASSEMBLY



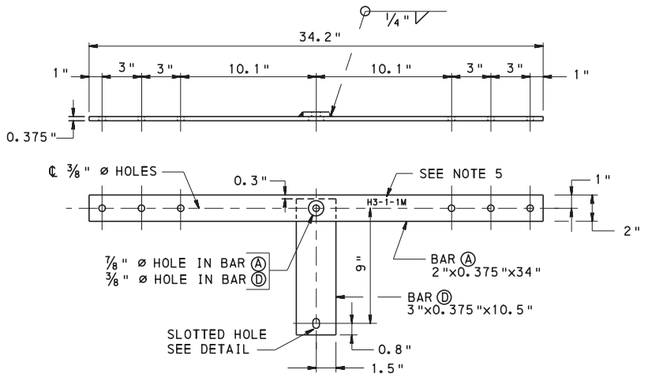
ROUTE MARKER BRACKET ASSEMBLY - TYPE I



ROUTE MARKER BRACKET ASSEMBLY - TYPE II



BRACKET H3-1-1BM



BRACKET H3-1-1M

ROUTE MARKER POST SELECTION TABLE	
POST SIZE	MAXIMUM SIGN SURFACE AREA
4"x6"	14.375 FT²
6"x6"*	16.375 FT²
6"x8"*	33.125 FT²

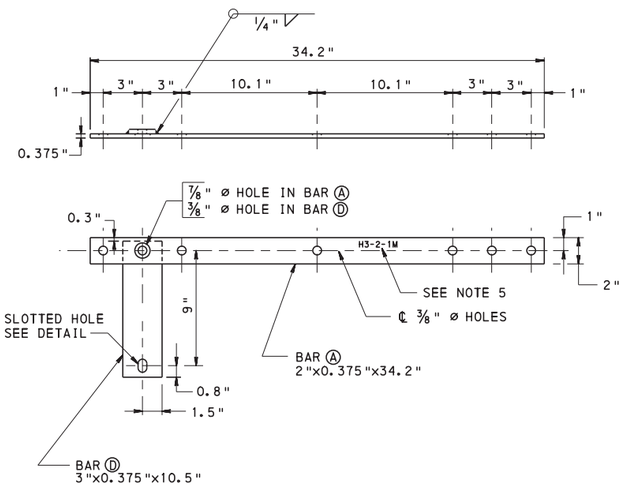
* SEE TC-8702E FOR FOUNDATION DETAIL.

BOLT TABLE	
LENGTH	DESCRIPTION
1"	SIGN + BRACKET
1.5"	SIGN + BRACKET + BRACKET
1.5"	BRACKET + BRACKET
7.5"	SIGN + BRACKET(S) + 4"x6" POST
7.5"	BRACKET(S) + 4"x6" POST
6.5"	SIGN + 4"x6" POST
4.5"	SIGN + 4"x4" POST

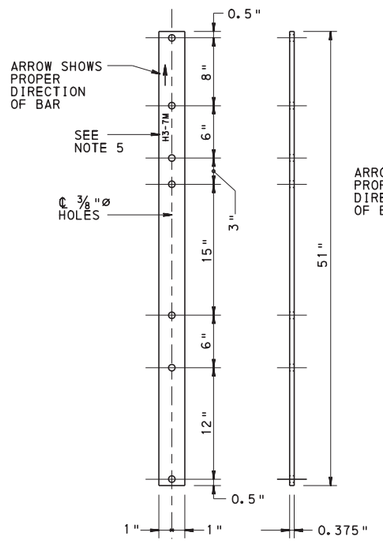
BOLTS ARE STAINLESS STEEL OR ALUMINUM, 5/16" WITH FLAT WASHERS, LOCK WASHERS AND NUT. LENGTH AS SHOWN IN THE BOLT TABLE.

NOTES:

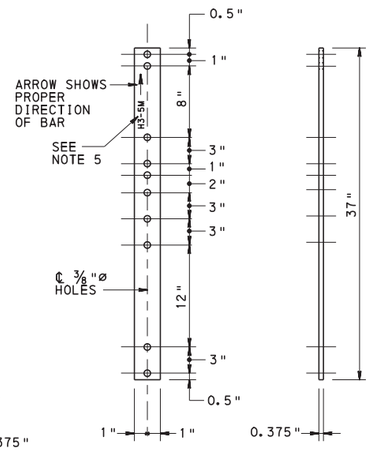
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, UNLESS OTHERWISE NOTED.
2. A 5/16"x3" LAG SCREW MAY BE USED IN LIEU OF A BOLT THROUGH THE POST AS ILLUSTRATED.
3. USE A FLAT ALUMINUM OR NYLON WASHER ON THE FACE OF ALL SIGNS.
4. DRILL BREAKAWAY HOLES IN POSTS AND ERECT AS SHOWN ON SHEET 1 OF 2.
5. STAMP BRACKET/BAR NUMBER IN 0.375" HIGH LETTERS AND NUMBERS IN POSITIONS AS SHOWN.



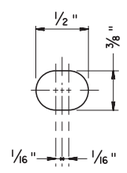
BRACKET H3-2-1M



BAR H3-7M



BAR H3-5M



SLOTTED HOLE

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE C

ERECTION DETAILS

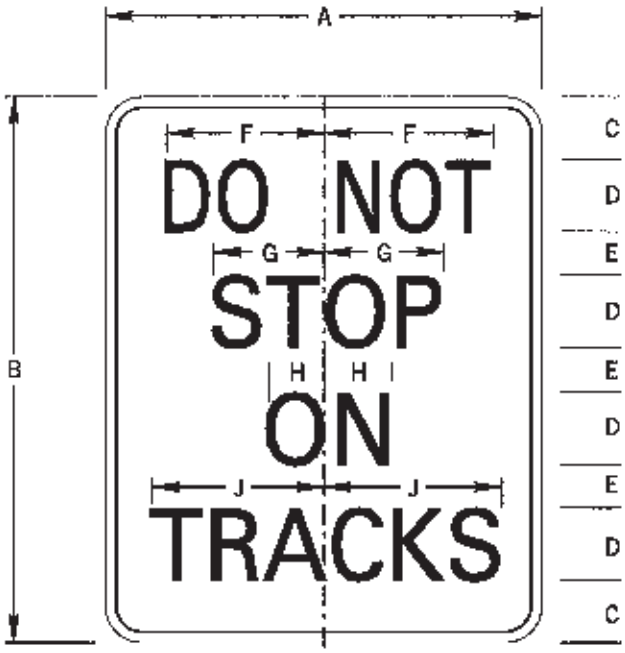
RECOMMENDED JUN. 13, 2013	RECOMMENDED JUN. 13, 2013	SHT. 2 OF 2
CHIEF, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8702C

R8–8

DO NOT STOP ON TRACKS SIGN

(a) Justification. The Do Not Stop On Tracks Sign (R8–8) shall be authorized for use at those railroad crossings where it has been determined there is extremely high potential that vehicles may stop on the tracks.

(b) Placement. The R8–8 sign should normally be placed on the far right side of the grade crossing. On multilane or one–way highways a second sign should be placed on the far left side of the grade crossing.



DIMENSIONS – IN										
SIGN SIZE A x B	C	D	E	F	G	H	J	MAR–GIN	BOR–DER	BLANK STD.
24" x 30"	3.4	4D	2.4	9.4	6.6	3.3	10.2	0.4	0.6	B5–3024
36" x 48"	6	6D	4	14.3	9.8	4.8	15.3	0.6	1	B5–4836

COLOR:

LEGEND AND BORDER:
BLACK (NON–REFLECTORIZED)

BACKGROUND:
WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

By : Glen C Rowe Date : 02–29–12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

R8_8.DGN

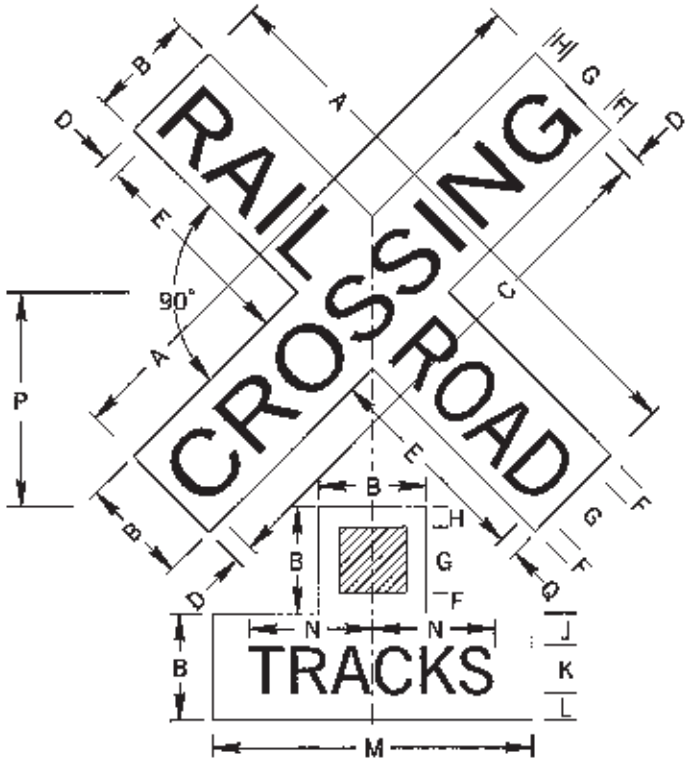
R15–1 & 2P

RAILROAD CROSSBUCK AND TRACKS SIGN

(a) Justification. The Railroad Crossbuck Sign (R15–1) shall be authorized for use on the right side of the roadway on each approach to a highway–rail grade crossing. Where restricted sight distance or unfavorable highway geometry exists on an approach to a highway–rail grade crossing, an additional R15–1 sign shall also be installed on the left side of each approach. A minimum 2" width of white Type VII or IX retroreflective sheeting shall be applied to the center line on the back of each crossbuck blade except when crossbucks are installed back–to–back. A similar 2" width of retroreflective sheeting shall also be applied vertically on the front and back side of the supports, except not on the side with a flashing light, or a stop or yield sign.

(b) Placement. The R15–1 sign shall be installed within 12' to 15' from the centerline of the nearest track. It shall not be less than 6' or more than 12' from the edge of the pavement, or less than 2' outside a paved shoulder or curb. The Tracks Sign (R15–2P) indicating the number of tracks shall be mounted below the R15–1 when there are two or more tracks, including sidings.

(c) Posting Responsibility. The R15–1 and R15–2P signs shall be furnished and installed by the railroad company, typically within the railroad right–of–way.



DIMENSIONS – IN													
SIGN SIZE A x B	C	D	E	F	G	H	J	K	L	M	N	P	Q
24" x 4.5"	22.4	0.8	9	0.8	2.8D	0.9	1.3	2D	1.2	13.5	5	9	0.7
48" x 9"	45	1.5	18	1.7	5.6D	1.7	2.5	4D	2.5	27	10.2	18	1.5

*COLORS MAY BE REVERSED FOR R15–2P

COLOR:

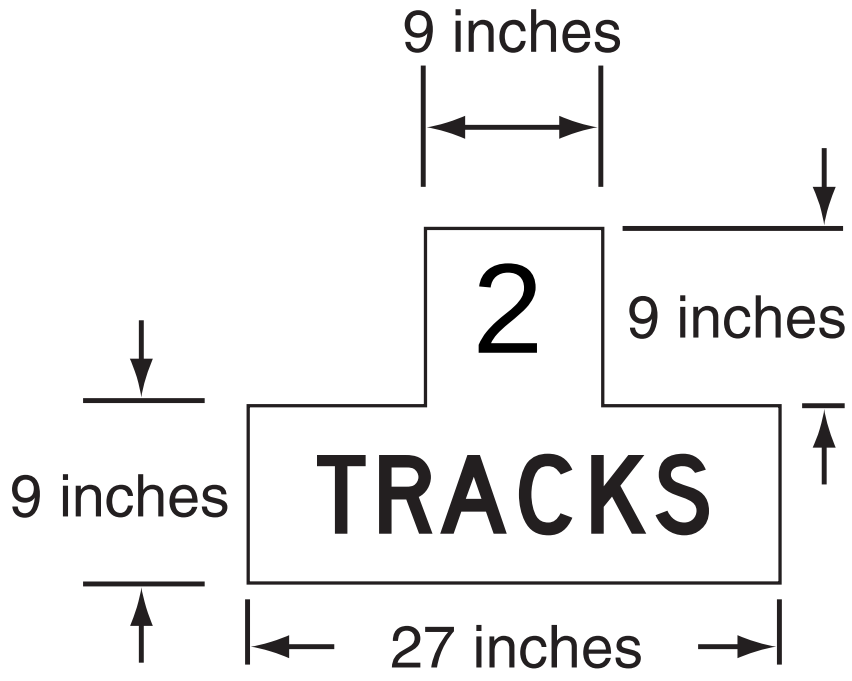
LEGEND:
BLACK (NON–REFLECTORIZED)

BACKGROUND:
WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

By : Glen C Rowe Date : 02–29–12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

R15_1-2.DGN



R15-2P

PATA 006
Side Road Approach To Stationary Operations - Notes

1. Commercial and/or private driveways may be posted and controlled as shown in this PATA.

2. The Road Work (W20-1) and Flagger Symbol (W20-7) signs shall be posted on side road approaches to intersections where a flagger is controlling traffic in conjunction with a stationary operation. These signs are optional for mobile operations.

3. Drivers approaching a roadway where a stationary road work operation is taking place must pass at least one orange warning sign prior to encountering the work space. The sign may be placed on the side road approach or along the road where work is taking place. This requirement is not mandatory for mobile operations.

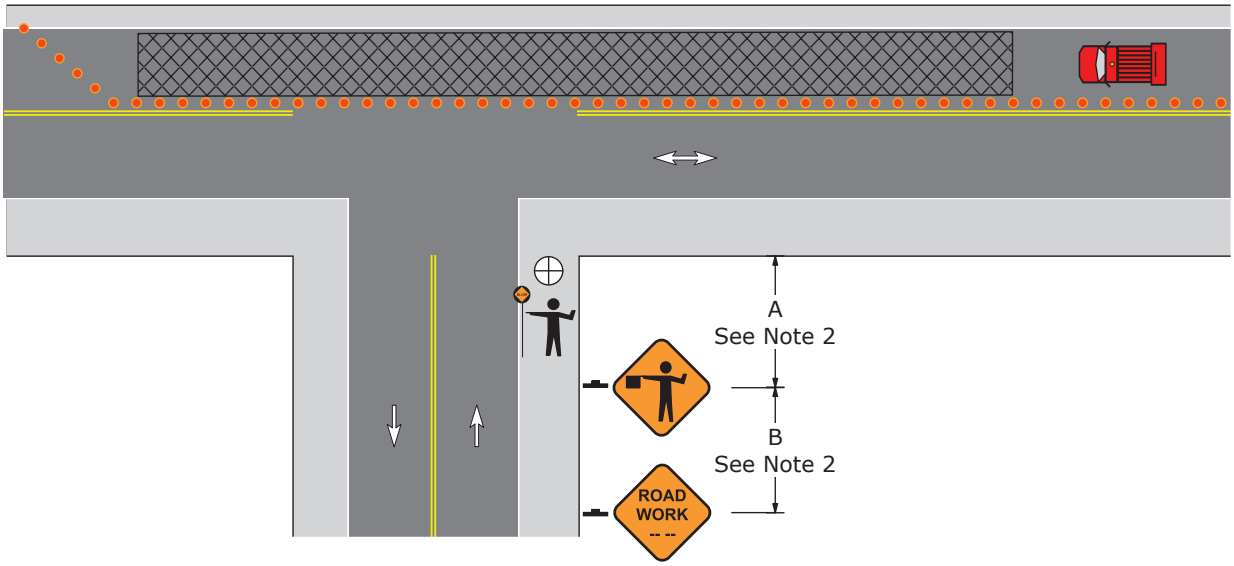
4. The Shoulder Work (W21-5) sign may be replaced with other appropriate signs (Low Shoulder sign, No Guide Rail sign, etc.).

Signs

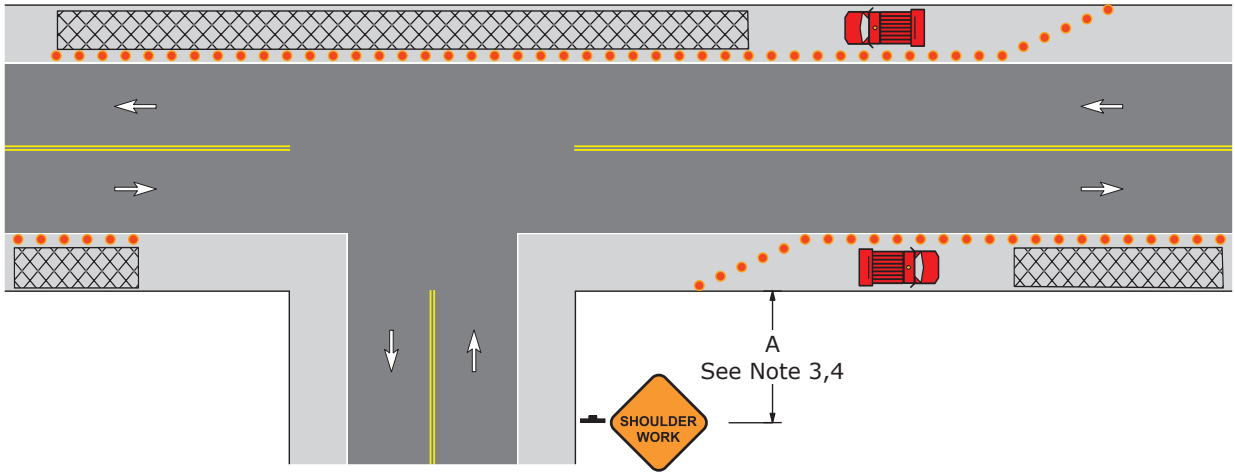


W20-1 W20-7 W21-5

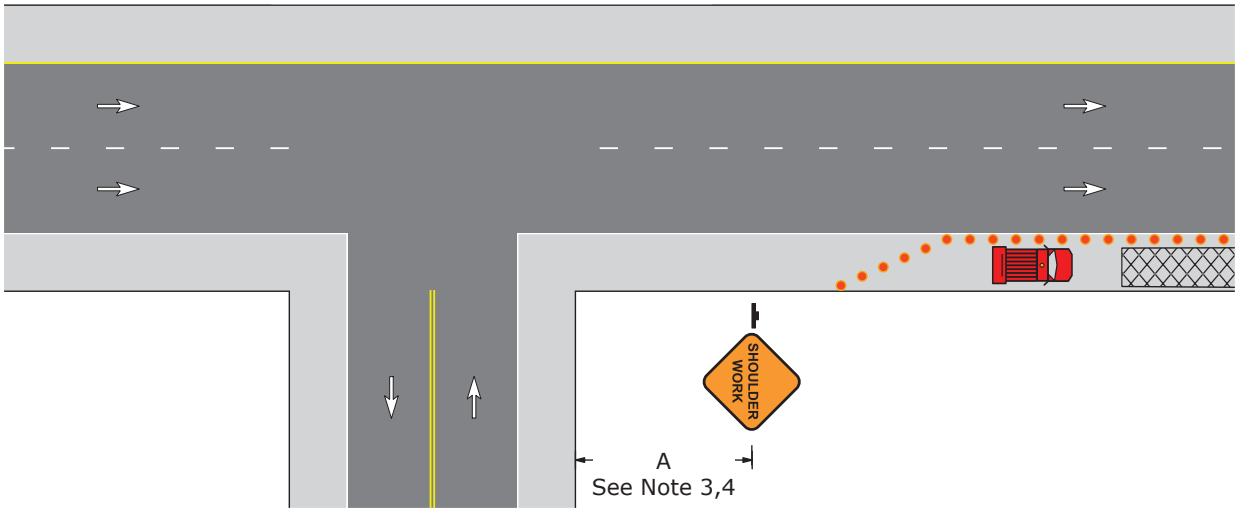
PATA 006
Side Road Approach To Stationary Operations



Side Road Approach Signing With Flagger Control at Intersection



Side Road Approach Signing Without Flagger Control at Intersection - Option 1



Side Road Approach Without Flagger Control at Intersection - Option 2

PATA 102 (Old PATA 7) - Notes

1. If the work space is completely within a parking lane and parking is present, the taper or shadow vehicle is not required.

2. For operations of 15 minutes or less:

   a. The Road Work (W20-1) sign is not required.

   b. All channelizing devices may be eliminated if a shadow vehicle is present.

3. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway.

4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

Signs



W20-1

Sign Spacing Chart

Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

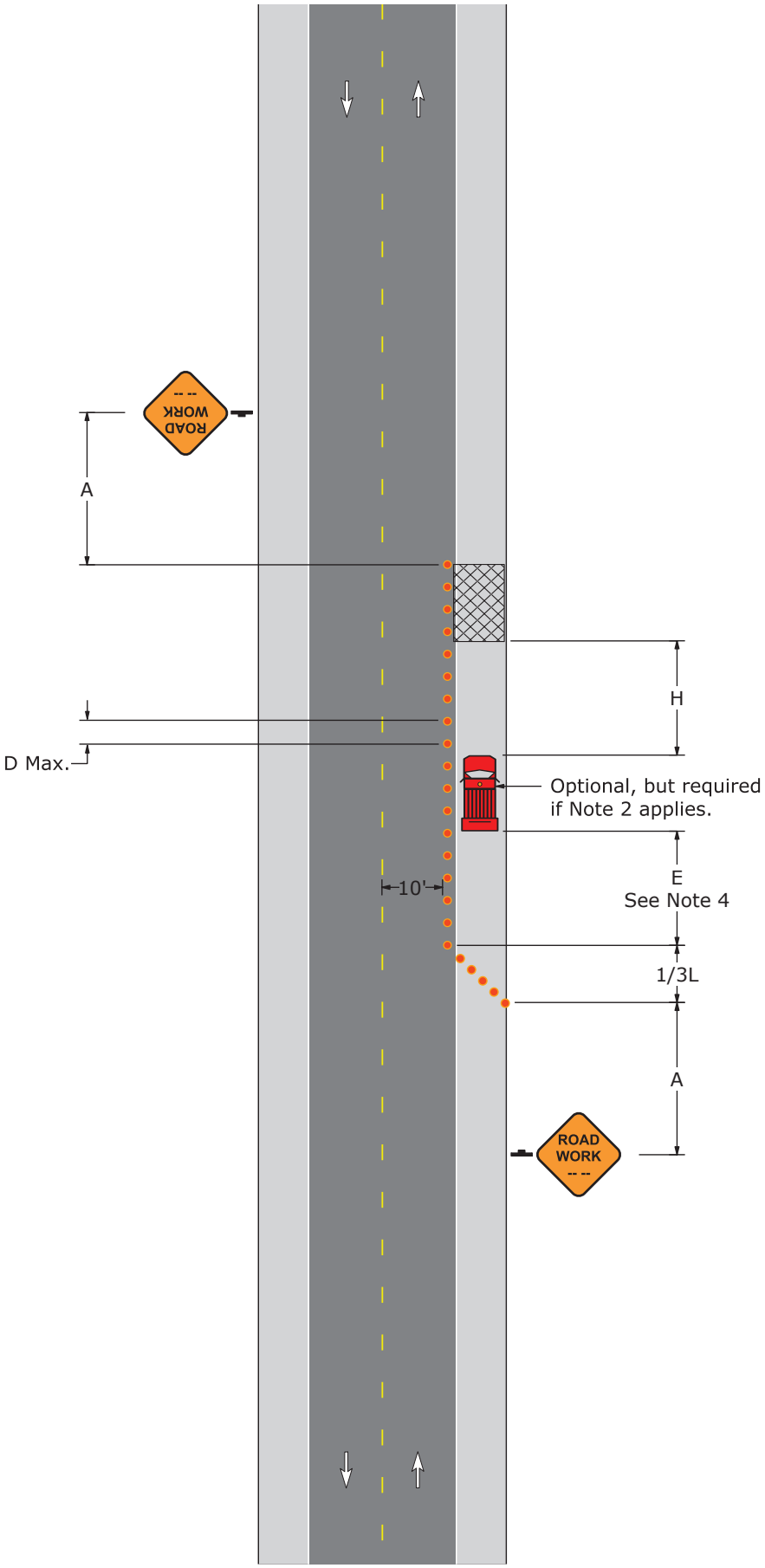
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed	W	L	1/2L	1/3L	Min. Channelizing Devices Per Taper Type (Length)				D	E	H
MPH	Feet	Feet	Feet	Feet	L	1/2L	1/3L	50'	Feet	Feet	Feet
25	10	105	55	35	6	6	6	6	50	155	150
	11	115	60	40							
	12	125	65	45							
30	10	150	75	50	6	6	6	6	60	200	150
	11	165	85	55	7						
	12	180	90	60	7						
35	10	205	105	70	7	6	6	6	70	250	150
	11	225	115	75	8						
	12	245	125	85	8						
40	10	270	135	90	8	6	6	6	80	305	150
	11	295	150	100	9						
	12	320	160	110	9						
45	10	450	225	150	11	6	6	6	90	360	150
	11	495	250	165	12	7					
	12	540	270	180	13	7					
50	10	500	250	170	11	6	6	6	100	425	250
	11	550	275	185	12	7					
	12	600	300	200	13	7					
55	10	550	275	185	11	6	6	6	110	495	250
	11	605	305	205	12	7					
	12	660	330	220	13	7					

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

PATA 102 (Old PATA 7)
Work Space On Or Beyond The Shoulder (Minor Roadway Encroachment)



PATA 107 (Old PATA 10a) - Notes

1. Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.

2. For operations of 15 minutes or less:

   a. The Road Work (W20-1), One Lane Road (W20-4), and Flagger Symbol (W20-7) signs are not required.

   b. All channelizing devices may be eliminated if a shadow vehicle is present.

3. The buffer space shall be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.

Signs



W20-1 W20-4 W20-7

Sign Spacing Chart

Condition	Distance			
	A	B	C	F
	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.
Example: either all "AHEAD" or XXX FEET.

Taper Length Formulas

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	L = WS

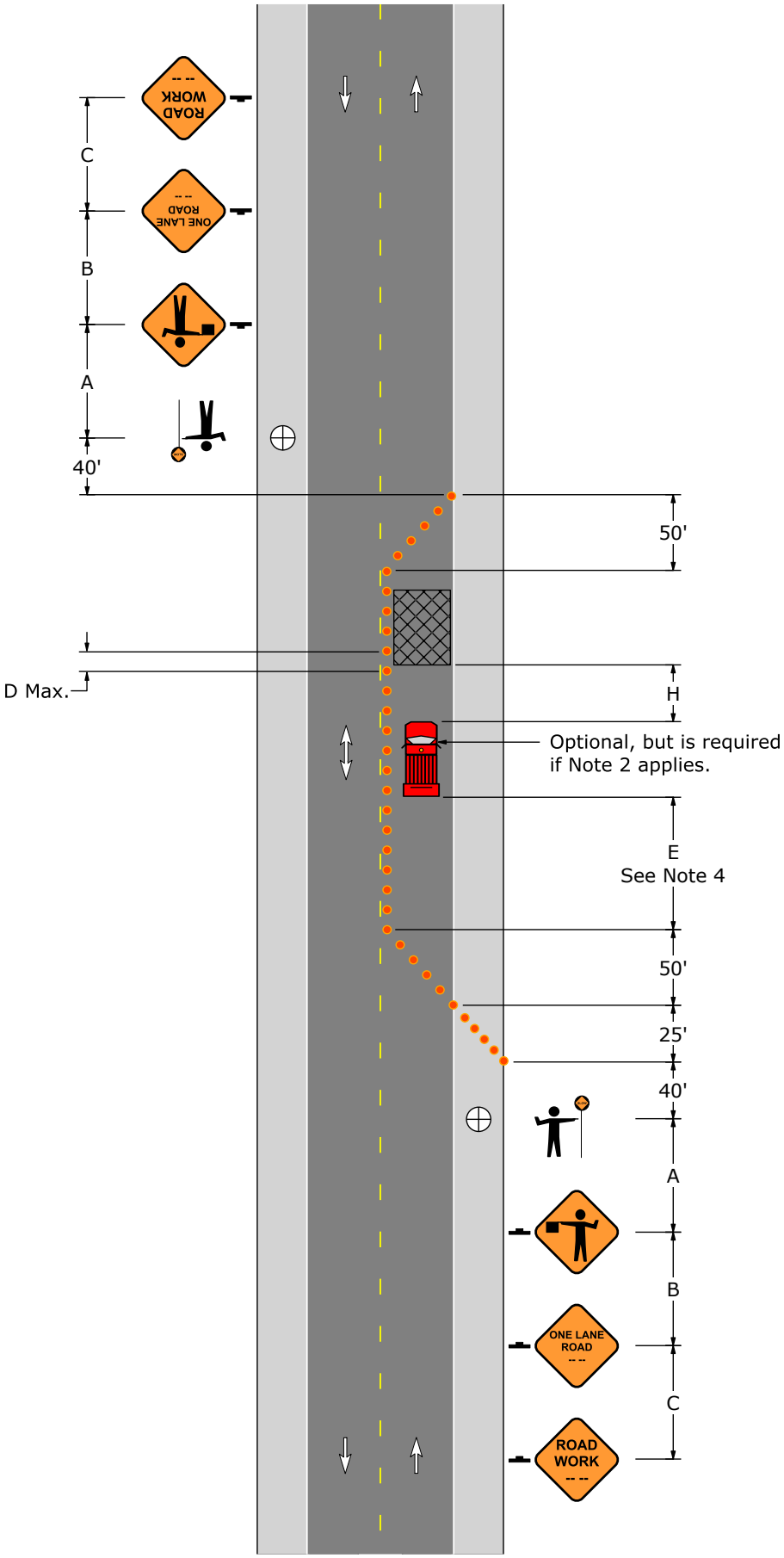
S = Regulatory Speed Limit
W = Width of Offset
L = Length

Distance and Spacing Quick Reference Chart

Speed	W	L	1/2L	1/3L	Min. Channelizing Devices Per Taper Type (Length)				D	E	H
MPH	Feet	Feet	Feet	Feet	L	1/2L	1/3L	50'	Feet	Feet	Feet
25	10	105	55	35	6	6	6	6	50	155	150
	11	115	60	40							
	12	125	65	45							
30	10	150	75	50	6	6	6	6	60	200	150
	11	165	85	55	7						
	12	180	90	60	7						
35	10	205	105	70	7	6	6	6	70	250	150
	11	225	115	75	8						
	12	245	125	85	8						
40	10	270	135	90	8	6	6	6	80	305	150
	11	295	150	100	9						
	12	320	160	110	9						
45	10	450	225	150	11	6	6	6	90	360	150
	11	495	250	165	12	7					
	12	540	270	180	13	7					
50	10	500	250	170	11	6	6	6	100	425	250
	11	550	275	185	12	7					
	12	600	300	200	13	7					
55	10	550	275	185	11	6	6	6	110	495	250
	11	605	305	205	12	7					
	12	660	330	220	13	7					

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

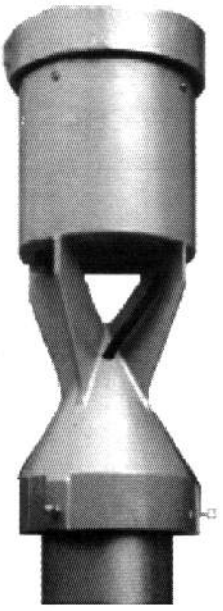
PATA 107 (Old PATA 10a)
Work In One Lane; Two Flaggers



Western-Cullen-Hayes
Highway Crossing Bells

Western-Cullen-Hayes manufactures a wide range of electronic and mechanical warning bells for every type of highway crossing application. Loud and soft tone hammers are available for the mechanical bells; while the electronic bell's volume can be easily adjusted on its solid state circuit board. All bells have an adjustable ringing rate.

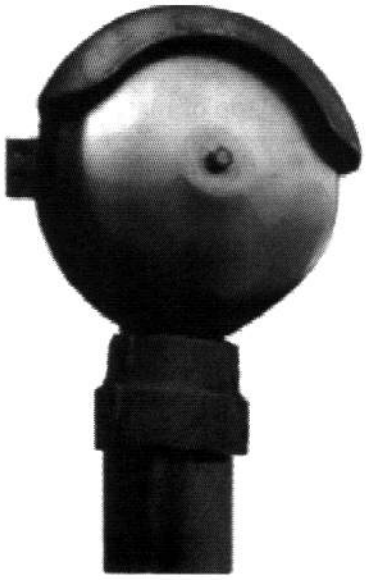
Our bells are constructed of light weight, rust-proof cast aluminum, and are designed to offer years of extremely low maintenance service. Western-Cullen-Hayes crossing bells offer unsurpassed sound quality and intensity.



0777 Electronic Bell

Dimensions:

Height:	18 inches
Diameter:	6-1/2 inches
Weight:	10 pounds
Decibles:	80-95 db at 10 feet in a 360° plane



0333/0666 Mechanical Bell

Dimensions:

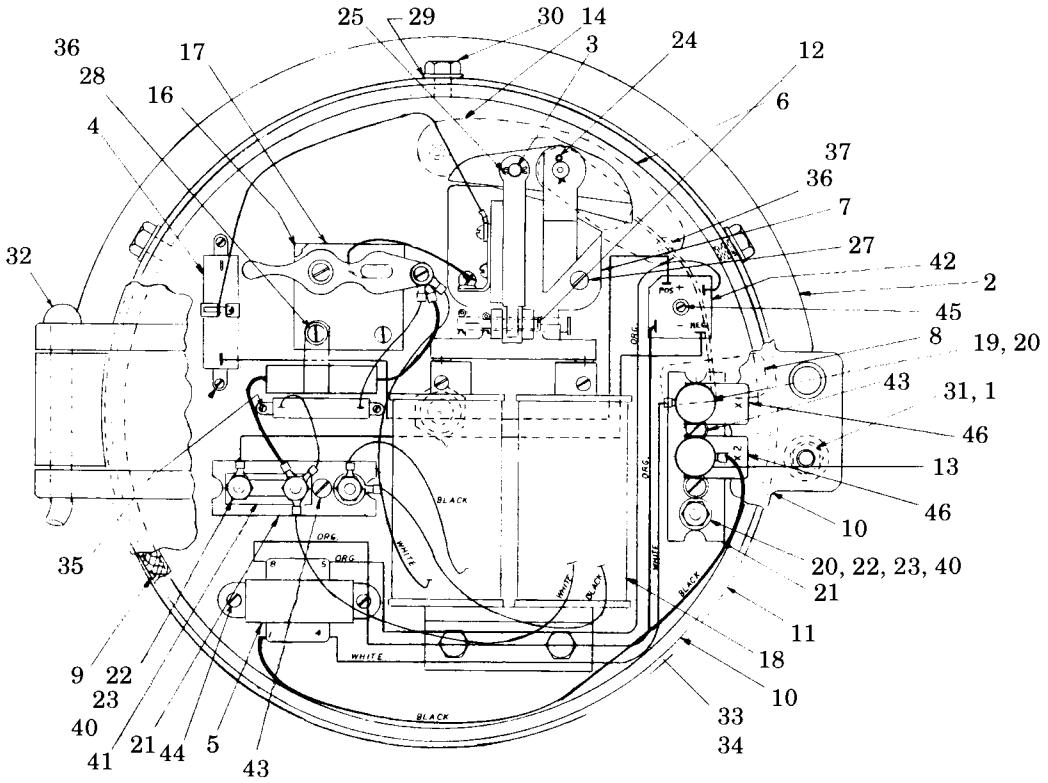
Height:	15 inches
Width:	14 inches
Depth:	7 inches
Weight:	27 pounds
Decibles:	90 db at 10 feet

WESTERN-CULLEN-HAYES, INC.
2700 W. 36TH PLACE CHICAGO, IL. 60632
(773) 254-9600 FAX (773) 254-1110

Ref.	Description	Part Number
A	Model 0333, 6 - 16 VDC, 600 mA For 4" and 5" top of mast mount For 6" top of mast mount For surface mount For side of mast mount. Specify 4" or 5"	 0333 - CFR 0333 - HR 0333 - ARP 0333 - ARP - X
B	Model 0333-2, 6 - 16 VAC/VDC, 600 mA For 4" and 5" top of mast mount For 6" top of mast mount For surface mount For side of mast mount. Specify 4" or 5"	 0333 - CFR - 2 0333 - HR - 2 0333 - ARP - 2 0333 - ARP - 2 - X
C	Model 0666, 105 - 125 VAC, 1.2 Amp. For 4" and 5" top of mast mount For 6" top of mast mount For surface mount For side of mast mount. Specify 4" or 5"	 0666 - CFR 0666 - HR 0666 - ARP 0666 - ARP - X
D	Model 0777 electronic bell, 9-15VDC or AC,150 mA For 4" or 5" top of mast mount	0777-CFR
NOTE	For soft tone mechanical bell, add suffix -S	

WESTERN-CULLEN-HAYES, INC.
2700 W. 36TH PLACE CHICAGO, IL. 60632
(773) 254-9600 FAX (773) 254-1110

Model 0666 115 VAC Warning Bell



Ref.	Description	Part Number
1	Push Nut	970-45
2	Rain Shield	1208-CA
3	1/4" X 1 1/4" Clevis Pin	1209-16
4	Resistor Sub-Assembly	1210-42-1
5	Transformer Assembly 0666 Bell	37-1050-41-5
6	Gong	1211
7	Movement Base Sub-Assembly	1215*
*	Movement Base Sub-Assemby	1209-1
*	Armature & Pins Sub-Assembly	1209-2
*	Operating Link	1209-4
*	1/4" x 2" Clevis Pin	1209-17
*	Contact Arm	1210-5
8	Oscillator & Hammer Sub-Assembly	1215-1**
**	Oscillator	1209-11
**	Hammer & Reinforcement Spring	1210-17

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(773) 254-9600 FAX (773) 254-1110

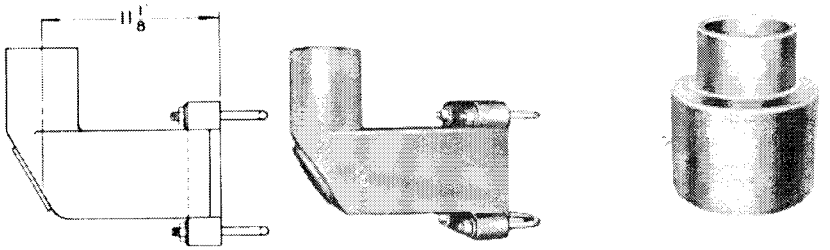
Model 0666 115 VAC Parts List - Continued

Ref.	Description	Part Number
9	Packing Strip for Cover	1217-2
10	Bell Cover	1219-2-M
11	Case	1220-3
12	3/16" X 1" Clevis Pin	1209-15
13	Insulating Cap Black	R-2000-1
14	Dust Guard-Felt	1248-15-1
16	Contact Block Insulator	1249-16-1
17	Contact Block Sub-Assembly	1249-26-1
18	Coil & Core Assembly	1249-30
19	Insulating Cap Red	R-2000-1-R
20	Insulating Sleeve 1-1/2" Lg	R-2000-2-B
21	Terminal Strip	2508-69-3
22	Washer	10708
23	Binding Nut	10706
24	1/16" X 1/2" Cotter Pin	VV-00-AZ-3-005
25	1/16" X 3/8" Cotter Pin	VV-00-AZ-3-0037
27	1/4"-20 X 7/8" Filister Screw	AA-16-EE-3-0087
28	10-32 X 1" Filister Screw	AA-16-DD-3-01
29	.328" Brass Washer	PP-00-AK-8
30	5/16"-18 X 3/4" Hex Bolt	BB-12-GG-3-0062
31	5/16"-18 X 1" Hex Bolt	BB-12-GG-3-01
32	3/8" X 3-1/2" Rivet	1249-40
33	1/2"-13 X 7/8" Hex Screw	BB-12-PP-3-0087
34	1/2" Split Lockwasher	RR-00-AP-3
35	#6-32 X 1/4" Round Head Screw	AA-10-AA-3-0025
36	#10 Steel Washer	PP-00-AH-3
37	#10-32 X 1/4" Round Head Screw	AA-10-DD-3-0025
38	Cable Ties	MC-126-00027
39	#8-32 X 3/4" Round Head Screw	AA-10-BB-3-0075
40	Clamp Nut	10707
41	Shunting Plate	7323-2
42	Bridge Rectifier	1210-45
43	1/4-20 X 3/4" Filister Screw	AA-16-EE-3-0075
44	#8-32 X 1/4" Mach Screw	AA-10-BB-3-0025
45	#8-32 X 1/2" Mach Screw	AA-10-BB-3-005
46	White Marking Tag	16222-W

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Mounting Accessories For CR Version

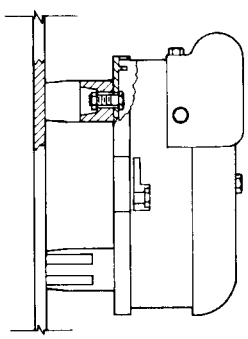
Reference A **Reference B**



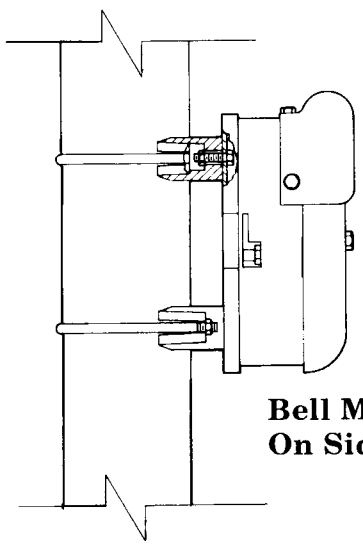
Special accessories are available for the mounting of the bell in a variety of locations.

Ref.	Description	Part Number
A	Gooseneck Bracket for mounting to: 3" ID pipe 3-1/2" ID pipe 4" ID pipe 5" ID pipe 6" ID pipe 8" ID pipe	 873-27B 873-28B 873-29B 873-30B 873-31B 873-32B
B	Reducer 5" to 4" ID pipe	990-63
C	Bell Socket for 4" or 5" mast (Not Shown) Bell Socket for 6" mast (Not Shown)	1206-20 1206-6-CA

Mounting Applications For ARP Version



Bell Mounted On Wall



Bell Mounted On Side of Pipe

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(773) 254-9600 FAX (773) 254-1110