STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION

ROADWAY DESIGN DIVISION
SUITE 1300 JAMES K. POLK BUILDING
505 DEADERICK STREET
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JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

INSTRUCTIONAL BULLETIN NO. 14-08

Regarding Revised Standard Drawings

Effective for the February 2015 Letting (Dec 3rd turn-in), the following Standard Drawings are revised or new. Section V of the Guidelines is also revised effective that date. Standard Drawings **T-S-16A** is voided by this Instructional Bulletin.

DRAWING NUMBER	CURRENT REVISION DATE	DESCRIPTION
RD01-TS-6B	NEW	TYPICAL CURB AND GUTTER FOR HIGH SPEED SUBURBAN ROADWAYS
D-CB-99	5/20/14	MISC. DETAILS FOR RECTANGULAR STRUCTURES
RP-J-7	7/14/14	CONCRETE RAMP JOINT TYPES AND SPACING
S-GRT-2	6/30/14	TYPE 38 GUARDRAIL TERMINAL
S-SSMB-7	5/10/14	FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 32” MEDIAN BARRIER WALL
S-SSMB-8	5/20/14	FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 51” MEDIAN BARRIER WALL
S-BPR-1	6/4/14	BIKE/PEDESTRIAN SAFETY RAIL
T-M-1	7/24/14	DETAILS OF PAVEMENT MARKING FOR CONVENTIONAL ROADS AND MARKING ABBREVIATIONS
T-M-2	7/24/14	DETAILS OF PAVEMENT MARKING FOR CONVENTIONAL ROADS

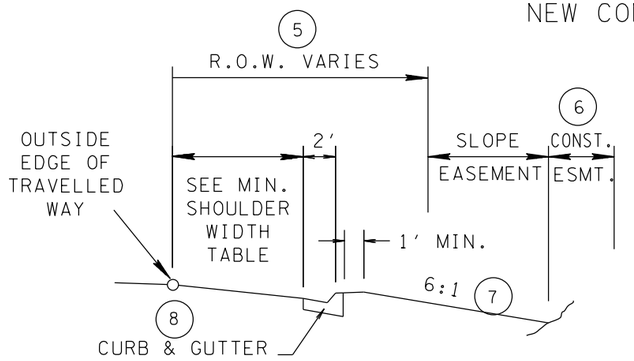
DRAWING NUMBER	CURRENT REVISION DATE	DESCRIPTION
T-M-3	7/24/14	MARKING STANDARDS FOR TRAFFIC ISLANDS, MEDIANS & PAVED SHOULDER ON CONVENTIONAL ROADS
T-M-4	7/24/14	STANDARD INTERSECTION PAVEMENT MARKINGS
T-M-16A	7/24/14	ASPHALT CENTERLINE RUMBLE STRIPE
T-S-9	6/10/14	STANDARD LAYOUT GROUND MOUNTED SIGNS
T-S-16	6/5/14	GROUND MOUNTED ROADSIDE SIGN PLACEMENT DETAILS
T-SG-9A	5/1/14	MISC. SIGNAL DETAILS
T-SG-10	6/11/14	MAST ARM POLE AND STRAIN POLE FOUNDATION DETAILS
T-SG-11	7/8/14	MAINTENANCE OF EXISTING SIGNALS DURING HIGHWAY CONSTRUCTION
T-WZ-55	6/30/14	SIDEWALK TRAFFIC CONTROL
EC-STR-8	6/10/14	FILTER SOCK
EC-STR-37	6/10/14	SEDIMENT TUBE

Jennifer Lloyd

Jennifer Lloyd, PE
Civil Engineering Director
Roadway Design Division

JL:ARH:MWC
Attachments
8/8/14

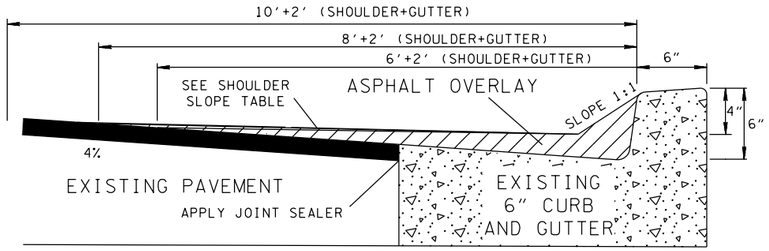
NEW CONSTRUCTION



SHOULDER AND CURB CONFIGURATION
FOR 45-55 MPH DESIGN SPEED
(SEE NOTE ③)

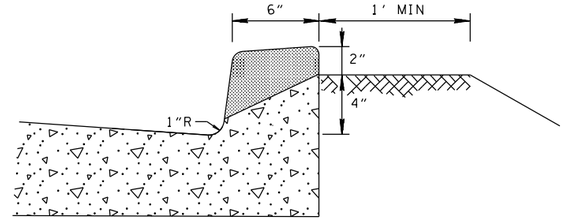
MINIMUM SHOULDER WIDTH TABLE			
ROAD CLASSIFICATION	STANDARD DRAWING	ADT	SHOULDER WIDTH
COLLECTION ROADS STREET	RD01-TS-2	< 2000	6′
		> 2000	8′
4-6 LANE COLLECTOR HWY	RD01-TS-2B	ANY	10′
2 LANE ARTERAL HWY	RD01-TS-3	< 2000	8′
		> 2000	10′
4-6 LANE ARTERAL HWY	RD01-TS-3C	ANY	10′

RECONSTRUCTION DETAILS



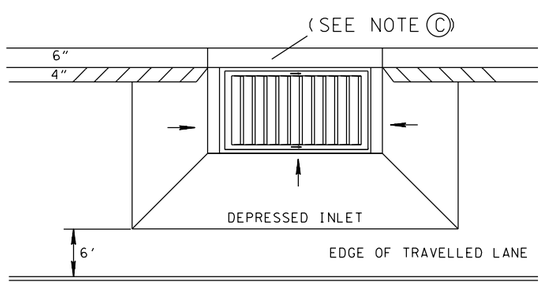
OPTION 2

THIS DETAIL IS INTENDED TO BE USED DURING RESURFACING PROJECTS WHEN MODIFICATION OF EXISTING CURB HEIGHT IS REQUIRED.
(SEE NOTE Ⓓ)



OPTION 3

SAW CUT LOCATION TO MODIFY EXISTING
6″ CURB TO 4″ CURB
(SEE NOTE Ⓓ)



DETAIL FOR OPTION 2
DEPRESSED GRATE INLET
MODIFICATION FOR ASPHALT OVERLAY
(SEE NOTE Ⓕ)

SHOULDER SLOPE TABLE	
EXISTING SHOULDER WIDTH (FT)	ADJUSTED SHOULDER SLOPE (%)
10	2.4
8	2
6	1.6

DESIGN NOTES

PURPOSE

① THIS STANDARD DRAWING IS INTENDED TO BE USED IN TRANSITIONAL ZONES (SUBURBAN) BETWEEN RURAL AND FULLY DEVELOPED URBAN AREAS WHERE CURB AND GUTTER IS NEEDED FOR DRAINAGE OR TO LIMIT RIGHT OF WAY, BUT A POSTED SPEED OF 45 MPH OR GREATER IS DESIRED. THIS STANDARD SHALL BE USED IN CONJUNCTION WITH THE TYPICAL SECTION REQUIRED FOR THE ROAD CLASSIFICATION.

DESIGN SPEED

② THIS APPLICATION IS FOR DESIGN SPEEDS OF 45-55 MILES PER HOUR. FOR DESIGN SPEEDS LESS THAN 45 MPH SEE RD01-TS-6.

TYPICAL CROSS-SECTION DETAILS

③ THIS STANDARD ADDRESSES THE USE OF CURBS ON HIGHER DESIGN SPEEDS AND SHOWS HOW TO MODIFY EXISTING STANDARD TYPICAL SECTIONS BEYOND THE OUTSIDE EDGE OF TRAVELLED WAY ONLY. FOR ALL OTHER INFORMATION NOT SHOWN SEE APPLICABLE TYPICAL CROSS-SECTION STANDARD DRAWING RD01-TS-2, RD01-TS-2B, RD01-TS-3, OR RD01-TS-3C.

SHOULDER

④ SHOULDER WIDTH VERIES FOR DIFFERENT ROAD CLASSIFICATIONS AND ADT (SEE TABLE).

RIGHT OF WAY

⑤ IF GUARDRAIL IS NOT PROPOSED, THE REQUIRED RIGHT-OF-WAY SHALL BE ACQUIRED TO MEET CLEAR ZONE REQUIREMENTS AS SHOWN ON S-CZ-1 FOR THE DESIGN SPEED (45-55 MPH). FOR 55 MPH DESIGN SPEED THE REQUIRED ROW WIDTH FROM THE OUTSIDE OF TRAVELLED WAY IS 22′ (6:1 SLOPES) OR 26′ (4:1 SLOPES)

CONSTRUCTION EASEMENT

⑥ IF REQUIRED, 10 FEET MINIMUM DESIRABLE.

SLOPES

⑦ 6:1 SLOPES OR FLATTER ARE DESIRABLE AND 4:1 IS THE MAXIMUM. SLOPES STEEPER REQUIRE GUARDRAIL SEE NOTE ⑨.

CURBS

⑧ ONLY 4″ SLOPING CURB (RP-MC-1) TYPE 4-30, 4-36 OR 4-42 MAY BE USED.

GUARDRAIL

⑨ 31″ GUARDRAIL ONLY MAY BE USED SEE S-GR-31-1 FOR GUARDRAIL LOCATION REACTIVE TO CURB SEE S-PL-6.

SIDEWALKS

⑩ SIDEWALKS ADJACENT TO CURB SHOULD NOT BE CONSIDERED FOR HIGH SPEED FACILITIES. HOWEVER IF UNAVOIDABLE SIDEWALK SHOULD BE PLACED AS FAR AS FROM THE ROADWAY.

PARKING

⑪ PARKING NOT PERMITTED ON HIGH SPEED URBAN ROADWAYS.

RECONSTRUCTION NOTES

Ⓐ EXISTING SECTION OF CURBED ROADWAY MAY BE RETROFITTED TO THIS STANDARD TO ALLOW HIGHER SPEED LIMITS IF A TRAFFIC ENGINEERING STUDY SHOWS THAT THE ROADWAY MEETS THE HIGHER SPEED DESIGN CRITERIA (GEOMETRIC DESIGN, SIGHT DISTANCE, ETC) SEE NOTE Ⓑ AND Ⓒ.

Ⓑ EXISTING 6″ VERTICAL CURB SHALL BE REPLACED BY 4″ SLOPING CURB AT THE TIME OF RESURFACING OR OTHER LARGE SCOPE PROJECT.

Ⓒ EXISTING 6″ VERTICAL CURB IRONS SHALL BE REPLACED BY 4″ SLOPING CURB IRONS WHEN THE CURB IS RETROFITTED.

Ⓓ MODIFICATIONS TO EXISTING 6″ VERTICAL CURBS MAY BE ACCOMPLISHED BY OR A COMBINATION OF FOLLOWING OPTIONS:

1) REMOVING EXISTING 6″ CURB AND REPLACING WITH 4″ CURB.

2) PAVING OVER THE GUTTER WITH ASPHALT WITH MODIFIED SHOULDER SLOPE. (SEE OPTION 2).

3) CUTTING THE EXISTING 6″ VERTICAL CURB FACE (SEE OPTION 3).

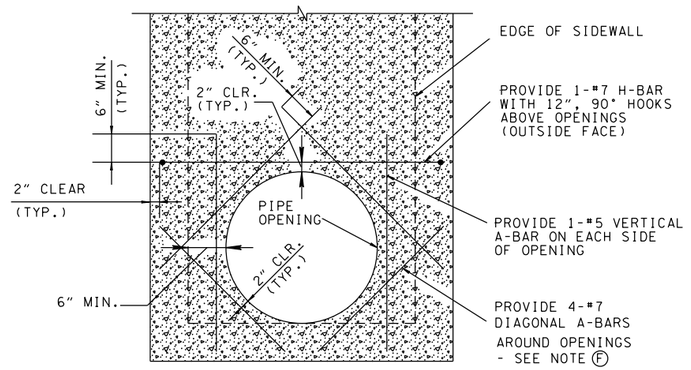
Ⓔ PROPER CLEAR ZONE OR GUARDRAIL MUST BE PROVIDED. SEE DESIGN NOTES ⑤ AND ⑨.

Ⓕ IF ASPHALT OVERLAY OPTION IS USED, THE PAVEMENT AT EXISTING GRATE INLETS SHALL BE MODIFIED TO CREATE A DEPRESSED INLET. THE FLARES SHALL BE 1% STEEPER THAN THE RUNNING GRADE OR CROSS SLOPE RESPECTIVELY SEE DETAIL 3.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

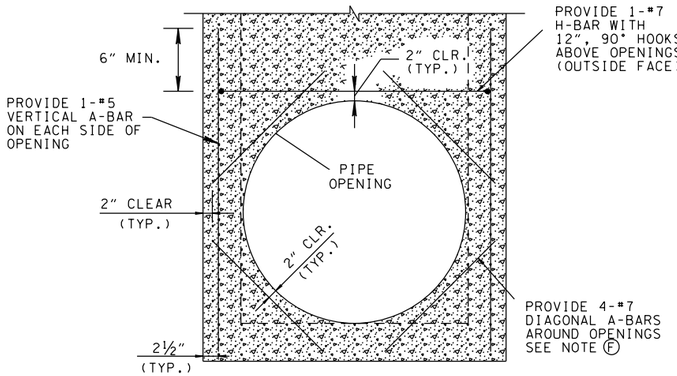
TYPICAL CURB AND GUTTER FOR HIGH SPEED SUBURBAN ROADWAYS

4-17-14 | RD01-TS-6B



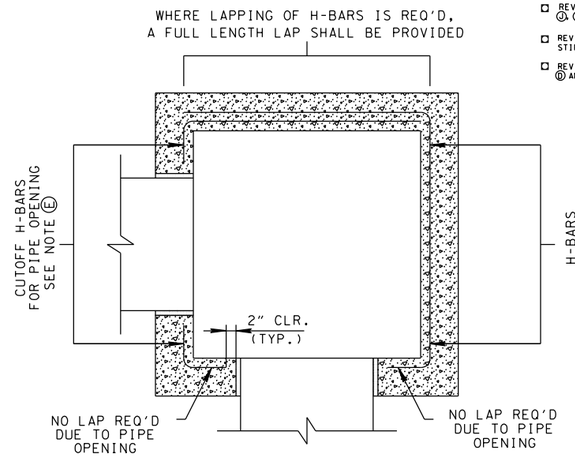
ELEVATION VIEW

(EDGE OF PIPE OPENING IS GREATER THAN OR EQUAL TO 6" FROM SIDE WALL)



ELEVATION VIEW

(EDGE OF PIPE OPENING IS LESS THAN TO 6" FROM SIDE WALL)



PLAN VIEW

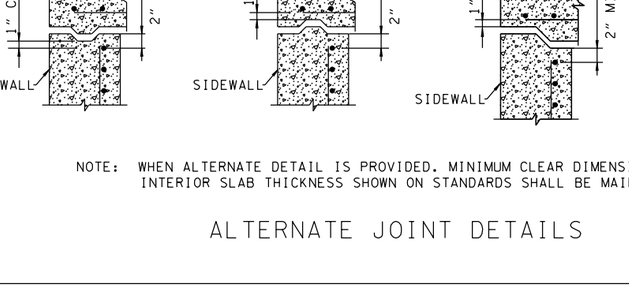
SEE NOTE (C)

DEPICTING ADJACENT PIPE OPENINGS AND OVERLAPPING H-BARS

(VERTICAL REINFORCING NOT SHOWN FOR CLARITY)

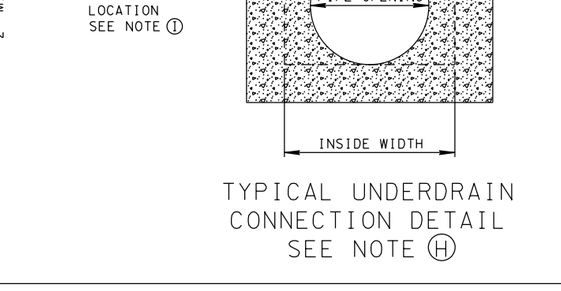
- REV. 6-7-13: ADDED NOTES (J), (K), AND (L).
- REV. 3-11-14: ELIMINATED STIRRUPS.
- REV. 5-20-14: COMBINED NOTE (B) AND (L).

ADDITIONAL REINFORCING REQUIRED FOR 30" OR LARGER PIPES



ELEVATION VIEW

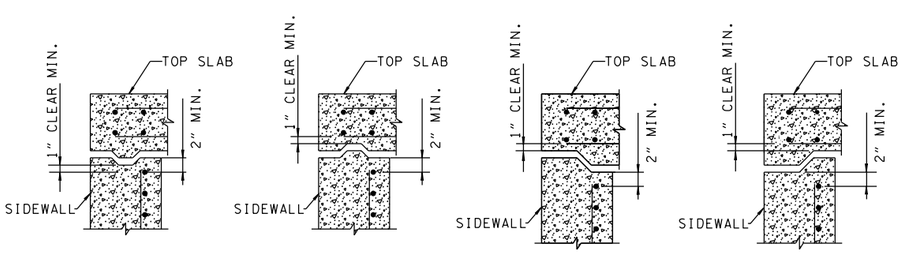
(EDGE OF PIPE OPENING IS GREATER THAN OR EQUAL TO 6" FROM SIDE WALL)



ELEVATION VIEW

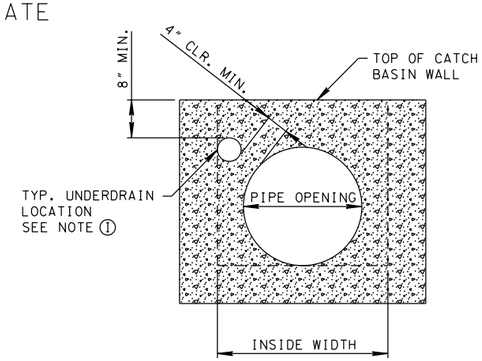
(EDGE OF PIPE OPENING IS LESS THAN 6" FROM SIDE WALL)

BAR TERMINATION TO ACCOMMODATE PIPE OPENINGS



NOTE: WHEN ALTERNATE DETAIL IS PROVIDED. MINIMUM CLEAR DIMENSIONS AND INTERIOR SLAB THICKNESS SHOWN ON STANDARDS SHALL BE MAINTAINED.

ALTERNATE JOINT DETAILS



TYPICAL UNDERDRAIN CONNECTION DETAIL SEE NOTE (H)

GENERAL NOTES

(A) DRAWING TO BE USED FOR ALL NONCIRCULAR CAST-IN-PLACE AND ALL NONCIRCULAR PRECAST CATCH BASINS, MANHOLES, JUNCTION BOXES AND SPRING DRAINS.

(B) PLACE ALL REINFORCING STEEL AS DETAILED ON APPLICABLE STANDARD DRAWINGS. TO ACCOMMODATE A PIPE OPENING, THE REQUIRED REINFORCING SCHEMES SHALL BE MODIFIED BY CUTTING OR TRIMMING THE AFFECTED REINFORCING STEEL AS DETAILED ON THIS STANDARD DRAWING.

(C) HORIZONTAL H-BARS AS DETAILED ON THE STANDARD DRAWINGS ASSUME PIPE OPENINGS AS SHOWN ON THE APPLICABLE STANDARD DRAWING. IN THESE CASES, THE LEGS OF THE H-BARS SHALL BE TERMINATED TO ACCOMMODATE PIPE OPENINGS AND THERE WILL BE NO LAPPING OF H-BARS. IN THE CASE SHOWN ON THIS SHEET, WITH PIPE OPENINGS IN ADJACENT CATCH BASIN WALLS, A FULL LENGTH LAP SHALL BE REQUIRED IN THE SOLID WALL. IF PIPE OPENINGS ARE IN OPPOSITE WALLS BUT ROTATED 90° FROM WHAT IS DEPICTED ON THE STANDARD DRAWING (I.E. FOR A CROSS-DRAIN) THE CONTRACTOR HAS THE OPTION TO MODIFY THE H-BARS IN A SIMILAR FASHION SO AS TO ELIMINATE LAPS.

(D) A SINGLE L-BAR OF THE SAME DIAMETER MAY BE SUBSTITUTED FOR TWO OVERLAPPING H-BARS, WITH 15" OVERLAP.

(E) IF MODIFICATION TO STEEL REINFORCEMENT FOR A PIPE OPENING RESULTS IN ONE LEG OF AN H-BAR LESS THAN 6 INCHES LONG, THE LEG MAY BE OMITTED. IF MODIFICATION TO STEEL REINFORCEMENT FOR A PIPE OPENING RESULTS IN AN A-BAR LESS THAN 6 INCHES LONG, THEN THE A-BAR MAY BE OMITTED ENTIRELY.

(F) ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED AROUND PIPE OPENINGS AS DETAILED ON THIS SHEET. PROVIDE DIAGONAL BARS WHEN PIPE OPENING IS FOR A 30 INCH OR LARGER PIPE.

(G) TIE ADDITIONAL REINFORCEMENT TO THE EXISTING INSIDE FACE REINFORCEMENT.

(H) THE PREFERRED LOCATION OF UNDERDRAIN CONNECTIONS, WHEN REQUIRED, IS IN A WALL WITH NO PIPE OPENING. UNDERDRAIN CONNECTIONS SHALL BE LOCATED AT LEAST 8 INCHES FROM THE TOP OF THE CATCH BASIN WALL. IF PLACEMENT IN A WALL WITH A PIPE OPENING IS NECESSARY, THE OUTSIDE EDGE OF THE UNDERDRAIN SHALL BE LOCATED A MINIMUM OF 4 INCHES FROM THE OUTSIDE EDGE OF THE PIPE OPENING.

(I) UNDERDRAIN HOLE SHOULD BE PLACED BETWEEN THE REINFORCING BARS. DURING THE PLACEMENT OF THE UNDERDRAIN HOLE, EVERY EFFORT SHALL BE MADE TO AVOID CUTTING REINFORCEMENT.

(J) VARIATIONS OF BAR LOCATION DUE TO REQUIRED SPLICES IS ACCEPTABLE UP TO A DISTANCE EQUAL TO THE BAR DIAMETER.

(K) MANUFACTURING TOLERANCES WILL BE AS SHOWN ON STANDARD OPERATING PROCEDURE (SOP) 5-3.

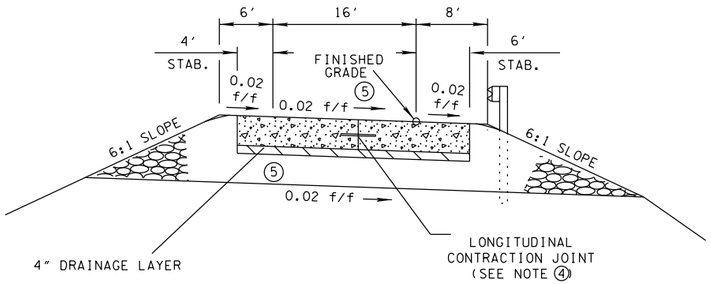
REINFORCING STEEL LEGEND

DIMENSIONS SHOWN ON THIS LEGEND ARE OUTSIDE TO OUTSIDE OF BAR. STANDARD C.R.S.I. HOOK AND TIE DETAILS SHALL APPLY, EXCEPT AS NOTED.

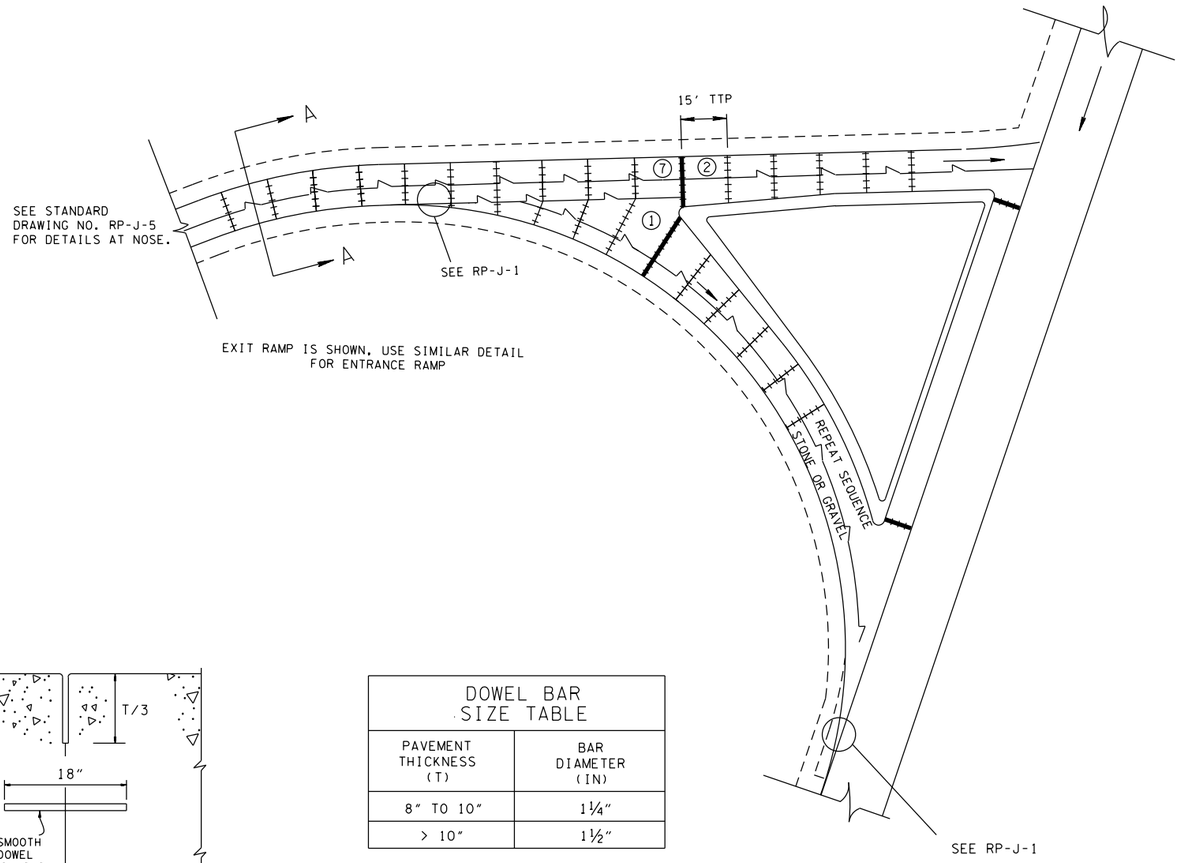
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS FOR RECTANGULAR STRUCTURES

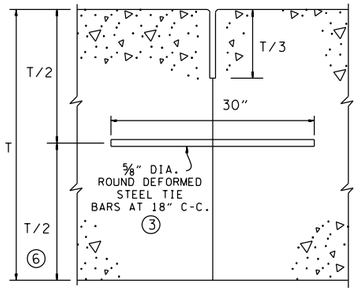
NOT TO SCALE | 8-01-12 | D-CB-99



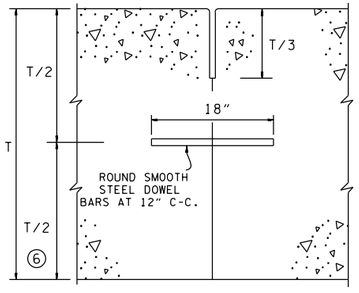
SECTION A-A



EXIT RAMP IS SHOWN, USE SIMILAR DETAIL FOR ENTRANCE RAMP



TIE BAR DETAIL FOR
LONGITUDINAL CONTRACTION JOINTS
FOR JOINT SEAL DETAILS SEE DRAWING RP-J-15



DOWEL BAR DETAIL FOR
TRANSVERSE CONTRACTION JOINTS
FOR JOINT SEAL DETAILS SEE DRAWING RP-J-9

DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (T)	BAR DIAMETER (IN)
8" TO 10"	1¼"
> 10"	1½"

JOINT SYMBOLS
1¾" EXPANSION
TRANSVERSE CONTRACTION
LONGITUDINAL CONTRACTION OR CONSTRACTION

CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-1, RP-J-5, RP-J-9, RP-J-11, RP-J-13, RP-J-15, RP-J-17, RP-J-18 AND RP-J-19.

FOOTNOTES
(1) SKEW JOINTS WITH TURNING RADII WHEN LENGTH OF JOINT IS GREATER THAN 8'.
(2) UNLESS OTHERWISE NOTED IN THE PLANS, THE TRANSVERSE CONTRACTION AND EXPANSION JOINTS SHALL BE SKEWED AT 90° TO THE ROADWAY CENTERLINE OR BASELINE.
(3) NO TIE BARS SHALL BE PLACED WITHIN 18" OF TRANSVERSE JOINT.
(4) LONGITUDINAL CONSTRUCTION JOINT MAY BE USED INSTEAD OF THE LONGITUDINAL CONTRACTION JOINT (RP-J-15).
(5) CONSTANT ROADWAY SLOPE SHOULD BE USED, INCLUDING ON SHOULDERS, REFER TO RD01-TS-4 FOR INFORMATION PERTAINING TO RAMP DESIGN
(6) MAX. HORIZONTAL AND VERTICAL TOLERANCE FOR DOWEL AND TIE BARS IS 1".
(7) UNLESS OTHERWISE NOTED IN THE PLANS, THE LONGITUDINAL CONTRACTION JOINTS, IS TO END WHEN IT REACHES THE EXPANSION JOINT.

REV. 1-31-83: ADDED JOINT SKEW NOTE.

REV. 6-23-88: DELETED JOINT SKEW.

REV. 3-20-91: REDREW SHEET AND CHANGED JOINT SPACING FOR CONCRETE PAVEMENT USING STONE. ADDED FOOTNOTE NO. (3).

☐ REV. 12-18-94: CHANGED DRAWING REFERENCE NUMBER IN CROSS-REFERENCE BLOCK.

☐ REV. 10-26-00: CHANGED VARIABLE JOINT SPACING TO 15' CONSTANT.

REV. 1-30-12: ADDED LONGITUDINAL CONTRACTION JOINT DETAILS.

☐ REV. 7-14-14: UPDATED DOWEL BAR DETAIL.

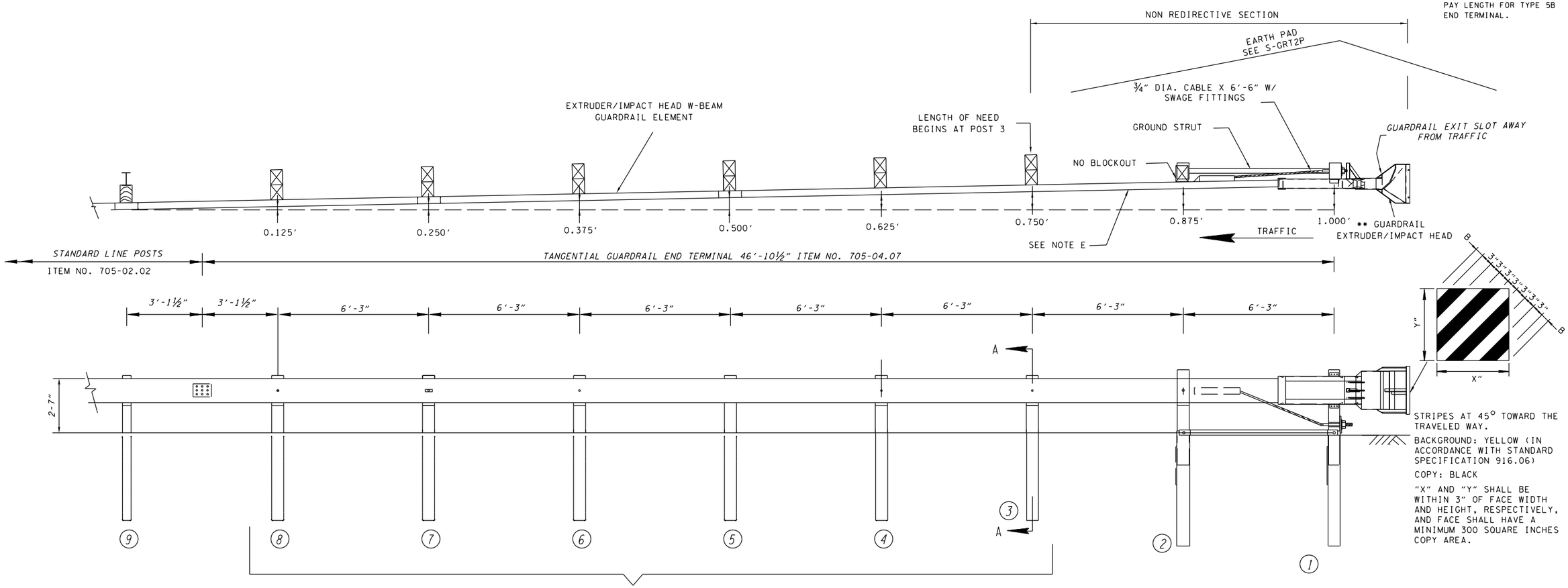
☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCRETE RAMP JOINT TYPES AND SPACING

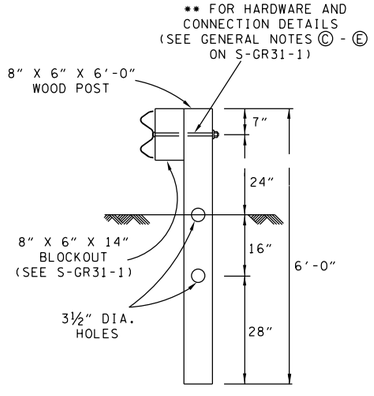
RP-J-7

REV. 6-30-14: MODIFIED PAY LENGTH FOR TYPE 5B END TERMINAL.



NOTE TO DESIGNER

DO NOT USE WITHOUT REFERENCING S-GRT-2P



SECTION "A-A"

(TYPICAL AT POST NO. 3, 4, 5, 6, 7, & 8)

SPECIAL INSTALLATION NOTES

ANY NCHRP 350 OR MASH COMPLIANT TL-3 TANGENTIAL END TERMINAL ON THE TDOT QUALIFIED PRODUCTS LIST MAY BE INSTALLED. MANUFACTURER'S SHOP DRAWINGS SHALL BE REQUIRED BEFORE ANY TANGENTIAL END TERMINAL INSTALLATIONS CAN BEGIN. THE CONTRACTOR SHALL HAVE ONE COMPLETE SET OF SHOP DRAWINGS ON SITE DURING INSTALLATION OR REPAIR OF ANY TANGENTIAL GUARDRAIL TERMINAL ANCHOR. THE CONTRACTOR SHALL ALSO PROVIDE THE CONSTRUCTION OR MAINTENANCE SUPERVISOR WITH ONE COMPLETE SET OF SHOP DRAWINGS INCLUDING TDOT OPL EVALUATION NUMBER.

FOR THE TYPE 38 GUARDRAIL TERMINAL TO FUNCTION AS IT WAS CRASH TESTED UNDER NCHRP-350 TEST LEVEL 3 THE EARTH PAD MUST BE CONSTRUCTED PER STANDARD DRAWING NO. S-GRT-3P OR S-GRT-3R.

DIFFERENT TANGENTIAL TERMINAL SYSTEMS OR PARTS SHALL NOT BE COMBINED ON A RUN OF GUARDRAIL.

POST MATERIAL SIZE, GUARDRAIL SPLICING LOCATION, TAPER RATE, OFFSET GUARDRAIL HEIGHT, EXTRUDER HEAD DIMENSION, AND ALL OTHER MISCELLANEOUS HARDWARE MAY BE DIFFERENT. INSTALLATION SHELL FALLOW THE MANUFACTURER'S SHOP DRAWINGS.

GENERAL NOTES

(A) FOR ADDITIONAL DETAILS OF TERMINAL SYSTEM, REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

(B) THE FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.

(C) THE TANGENT ENERGY ABSORBING TERMINAL (INCLUDING ANCHOR) IS TO BE INSTALLED UNDER THE PRICE BID FOR ITEM NO. 705-04.07 PER EACH.

(D) METAL POSTS ARE AN ACCEPTABLE ALTERNATE TO WOOD POSTS WHEN THE SYSTEM IS ON APPROVED PRODUCTS LIST, NCHRP 350 COMPLIANT AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS.

(E) TERMINAL SYSTEM MUST BE CONSTRUCTED SO THAT THE FULL LENGTH OF THE TERMINAL SYSTEM GUARD RAILING IS IN STRAIGHT ALIGNMENT. THE GUARD RAIL EXTRUDER/IMPACT HEAD SHALL NOT ENCROACH UPON THE ADJACENT PAVED SHOULDER OR LANE.

(F) SYSTEM IS APPROVED FOR USE ON STATE HIGHWAYS, FEDERAL HIGHWAYS, INTERSTATE HIGHWAYS AND LOCAL ROADS (WITH DESIGN SPEEDS GREATER THAN 40 MPH).

(G) FIRST 12'-6" FROM END IS GATING, DO NOT USE THIS SECTION IN LENGTH OF NEED.

(H) IF LENGTH OF NEED FOR GUARDRAIL NEEDS TO BE EXTENDED BEYOND THE THIRD POST EXTEND RUN OF GUARDRAIL.

(I) ALL HOLES IN WOOD POSTS ARE TO BE DRILLED BEFORE PRESERVATIVE TREATMENT.

(J) ALL CUTTING, DRILLING, AND WELDING OF STEEL COMPONENTS SHALL BE DONE BEFORE GALVANIZING.

(K) THE FINISHED CABLE ASSEMBLY WILL NOT BE ACCEPTABLE UNLESS IT IS IN TENSION WITH NO SAG.

50:1 TAPER OVER 50' LENGTH OF SYSTEM

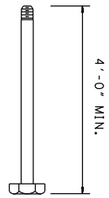
POST NO.	DECIMAL X	DECIMAL Y
9	0.00'	0.00'
8	0.125'	6.25'
7	0.250'	12.50'
6	0.375'	18.75'
5	0.500'	25.00'
4	0.625'	31.25'
3	0.750'	37.50'
2	0.875'	43.75'
1	1.000'	50.50'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPE 38 GUARDRAIL TERMINAL

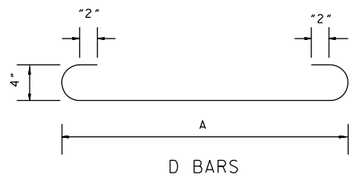
7-11-13 | S-GRT-2

- REV. 12-4-13: CHANGED ANCHOR BOLTS TO THREADED.
- REV. 5-10-14: REVISED BILL OF STEEL.

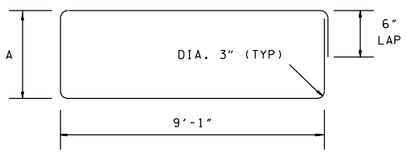


ANCHOR BOLT DETAIL

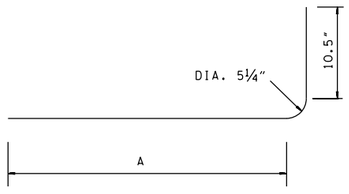
ASTM F1554 ANCHOR BOLTS
(55KSI, HEADED OR THREADED/NUTTED)TO BE DESIGNED BY SIGN STRUCTURE MANUFACTURER. SEE S-SSMB-8 FOR MIN BEARING AREA OF HEAD OR NUT



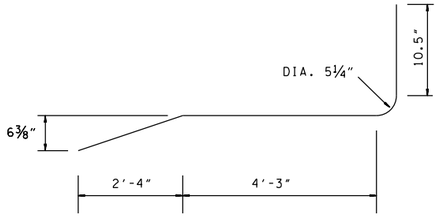
D BARS



L BARS



C BARS

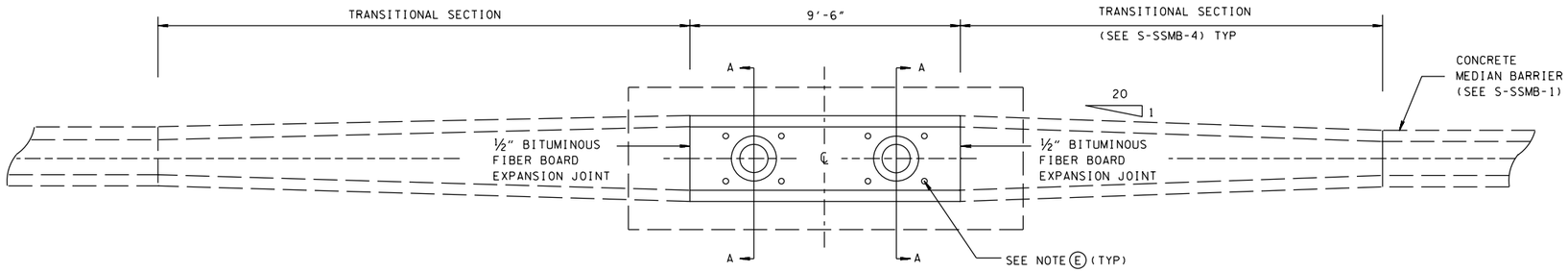


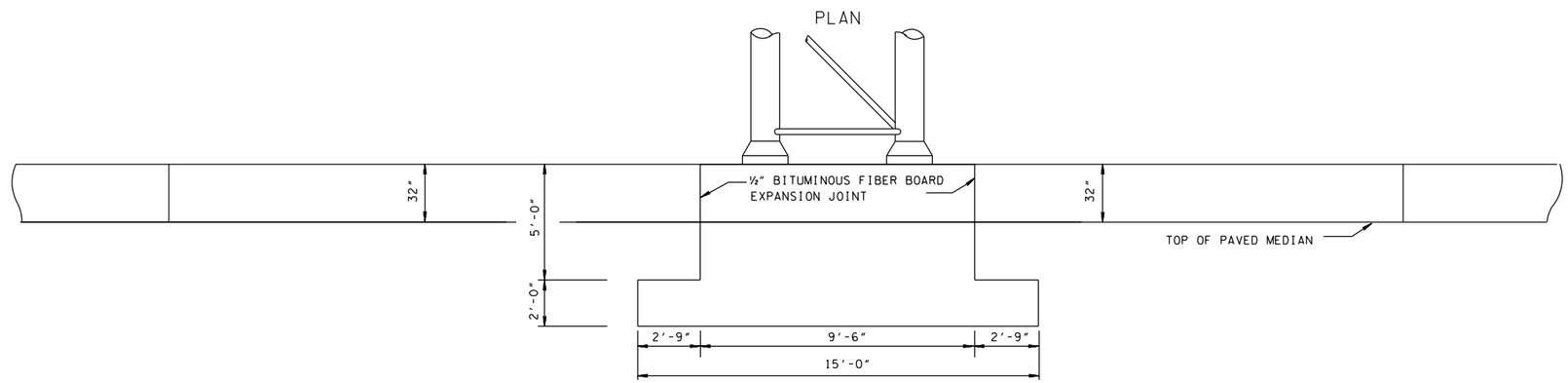
BARS CA 700

BAR DETAIL

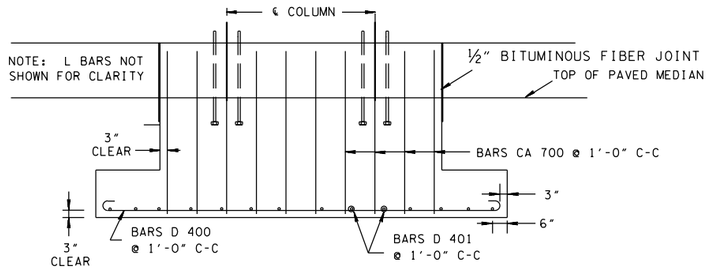
BILL OF STEEL - PER FOOTING				
BAR	SIZE	NO. REQ'D.	DIM A	LENGTH
C 700	7	4	6'-6"	7'-8"
CA 700	7	20		7'-9"
D 400	4	6	14'-6"	15'-10"
D 401	4	15	5'-6"	6'-10"
L 400	4	1	2'-4"	23'-0"
L 401	4	1	2'-7¾"	23'-11½"
L 402	4	3	3'-2"	25'-0"

QUANTITIES	
CLASS "A" CONCRETE	12.0 C.Y.
REINFORCING STEEL	593 LB.

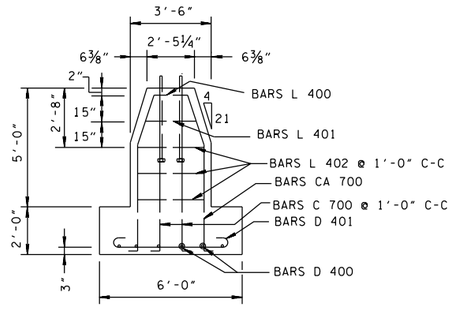




ELEVATION



FOOTING



SECTION "A-A"

GENERAL NOTES

Ⓐ FINISHED CONCRETE SURFACES: CONCRETE FINISHING SHALL BE IN ACCORDANCE WITH SECTION 604.22 OF THE TENNESSEE STANDARD SPECIFICATIONS EXCEPT AS MODIFIED BY THE SPECIAL PROVISION NO. 130 REGARDING SECTION 604-CONCRETE STRUCTURES. A TEXTURED COATED FINISH SHALL BE USED IN LIEU OF A CLASS 2 FINISH. THE COLOR OF THE FINISH SHALL BE SIMILAR TO WHITE FEDERAL SPECIFICATION NO. 37778, A COLOR SAMPLE SHALL BE SUBMITTED TO THE MATERIALS AND TEST ENGINEER FOR APPROVAL.

Ⓑ EPOXY COATED DOWEL BARS WILL BE PERMITTED AS AN ALTERNATE TO PAINTED AND GREASED DOWEL BARS. THE EPOXY COATING SHALL BE AN APPROVED HIGH DENSITY POLYETHYLENE 17 MILS (± 2 MILS) BONDED TO THE BAR WITH AN APPROVED ADHESIVE 1 TO 8 MILS THICK (4 MILS NOMINAL).

Ⓒ IF A STORM DRAINAGE SYSTEM IS PLACED UNDER THE CENTER LINE OF THE MEDIAN BARRIER, THE PIPE SHALL BE SHIFTED HORIZONTALLY AROUND THE FOOTING.

Ⓓ OVERHEAD SIGN FOOTING COST IS TO BE INCLUDED IN THE COST OF THE OVERHEAD SIGN STRUCTURE.

Ⓔ LOCATION OF ANCHOR BOLTS TO BE DETERMINED IN THE FIELD BY THE ENGINEER TO MATCH SIGN STRUCTURE MANUFACTURERS SHOP DRAWING.

Ⓕ ANCHOR BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED STEEL.

Ⓖ CONCRETE: F_c= 4000 POUNDS PER SQUARE INCH AT 28 DAYS.
REINFORCING STEEL: ASTM A615, F_y = 60,000 POUNDS PER SQUARE INCH
ALL REINFORCEMENT IS TO BE INSTALLED AS DETAILED ON THIS DRAWING .

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 32" MEDIAN BARRIER WALL

2-29-12 | S-SSMB-7

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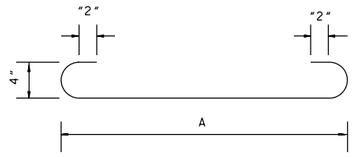
- REV. 12-4-13: CHANGED ANCHOR BOLTS TO THREADED. ADDED BEARING AREA TABLE.
- REV. 5-20-14: REVISED BILL OF STEEL.

REQUIRED BEARING AREA FOR ANCHOR BOLT	
ANCHOR BOLT DIA(IN)	HEAD OR NUT AREA (SQ IN)
1"	1.800
1¼"	2.812
1½"	4.050
1¾"	5.512
2"	7.199
2¼"	9.122
2½"	11.249

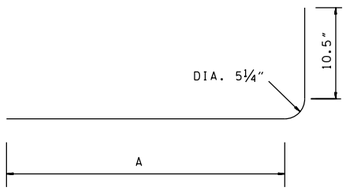
ANCHOR BOLT DETAIL

ASTM F1554 ANCHOR BOLTS
(55KSI, HEADED OR THREADED/NUTTED)TO BE DESIGNED BY SIGN STRUCTURE MANUFACTURER

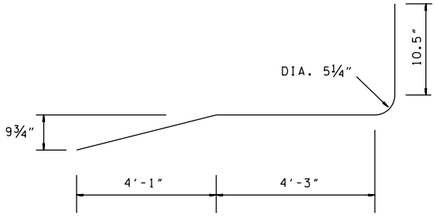


D BARS

L BARS

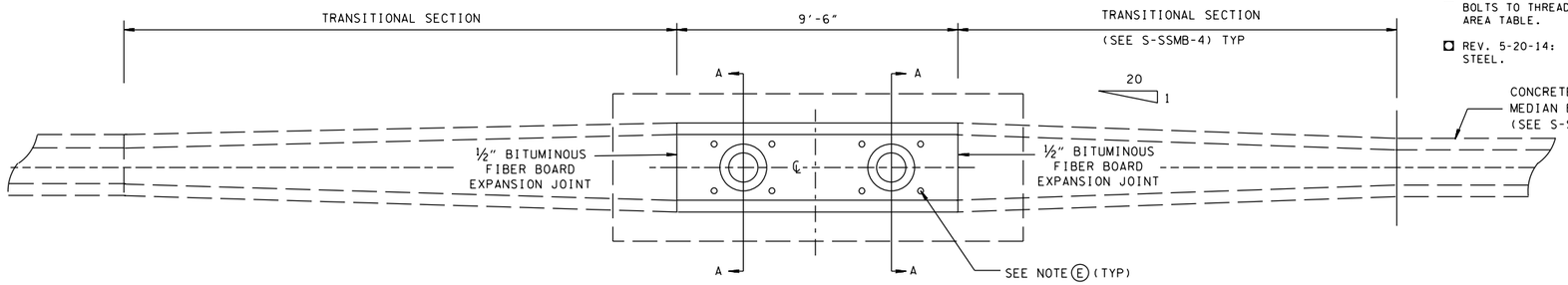


C BARS

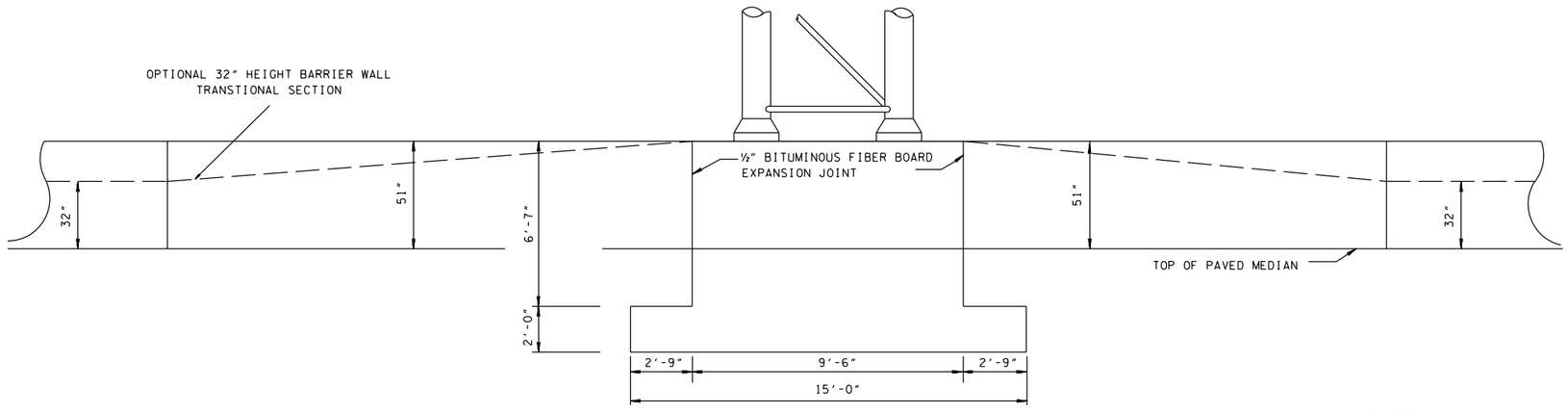


BARS CA 700

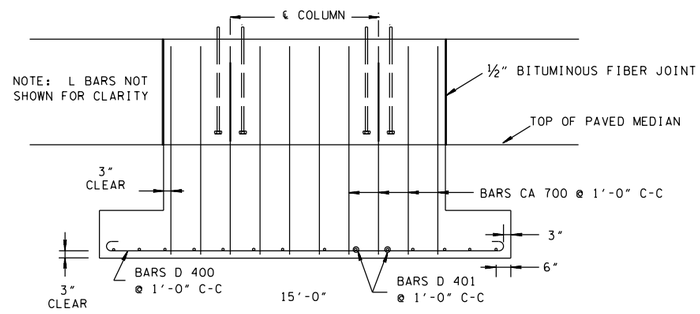
BAR DETAIL



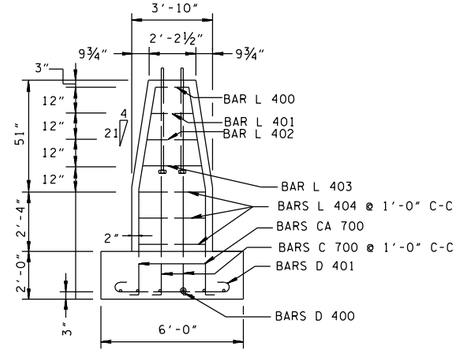
PLAN



ELEVATION



FOOTING



SECTION "A-A"

BILL OF STEEL - PER FOOTING				
BAR	SIZE	NO. REQ'D.	DIM "A"	LENGTH
C 700	7	4	8'-2"	9'-4"
CA 700	7	20		9'-7"
D 400	4	6	14'-6"	15'-6"
D 401	4	15	5'-6"	6'-6"
L 400	4	1	2'-1½"	22'-7"
L 401	4	1	2'-4¼"	23'-5"
L 402	4	1	2'-8¾"	24'-1½"
L 403	4	1	3'-1⅜"	24'-10¾"
L 404	4	3	3'-8"	25'-8"

QUANTITIES	
CLASS "A" CONCRETE	13.3 C.Y.
REINFORCING STEEL	710 LB.

GENERAL NOTES

Ⓐ FINISHED CONCRETE SURFACES: CONCRETE FINISHING SHALL BE IN ACCORDANCE WITH SECTION 604.22 OF THE TENNESSEE STANDARD SPECIFICATIONS EXCEPT AS MODIFIED BY THE SPECIAL PROVISION NO. 130 REGARDING SECTION 604-CONCRETE STRUCTURES. A TEXTURED COATED FINISH SHALL BE USED IN LIEU OF A CLASS 2 FINISH. THE COLOR OF THE FINISH SHALL BE SIMILAR TO WHITE FEDERAL SPECIFICATION NO. 37778, A COLOR SAMPLE SHALL BE SUBMITTED TO THE MATERIALS AND TEST ENGINEER FOR APPROVAL.

Ⓑ EPOXY COATED DOWEL BARS WILL BE PERMITTED AS AN ALTERNATE TO PAINTED AND GREASED DOWEL BARS. THE EPOXY COATING SHALL BE AN APPROVED HIGH DENSITY POLYETHYLENE 17 MILS (± 2 MILS) BONDED TO THE BAR WITH AN APPROVED ADHESIVE 1 TO 8 MILS THICK (4 MILS NOMINAL).

Ⓒ IF A STORM DRAINAGE SYSTEM IS PLACED UNDER THE CENTER LINE OF THE MEDIAN BARRIER, THE PIPE SHALL BE SHIFTED HORIZONTALLY AROUND THE FOOTING.

Ⓓ OVERHEAD SIGN FOOTING COST IS TO BE INCLUDED IN THE COST OF THE OVERHEAD SIGN STRUCTURE.

Ⓔ LOCATION OF ANCHOR BOLTS TO BE DETERMINED IN THE FIELD BY THE ENGINEER TO MATCH SIGN STRUCTURE MANUFACTURERS SHOP DRAWING.

Ⓕ ANCHOR BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED STEEL.

Ⓖ CONCRETE: F_c = 4000 POUNDS PER SQUARE INCH AT 28 DAYS.
REINFORCING STEEL: ASTM A615, F_y = 60,000 POUNDS PER SQUARE INCH
ALL REINFORCEMENT IS TO BE INSTALLED AS DETAILED ON THIS DRAWING .

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 51" MEDIAN BARRIER WALL

2-29-12 | S-SSMB-8

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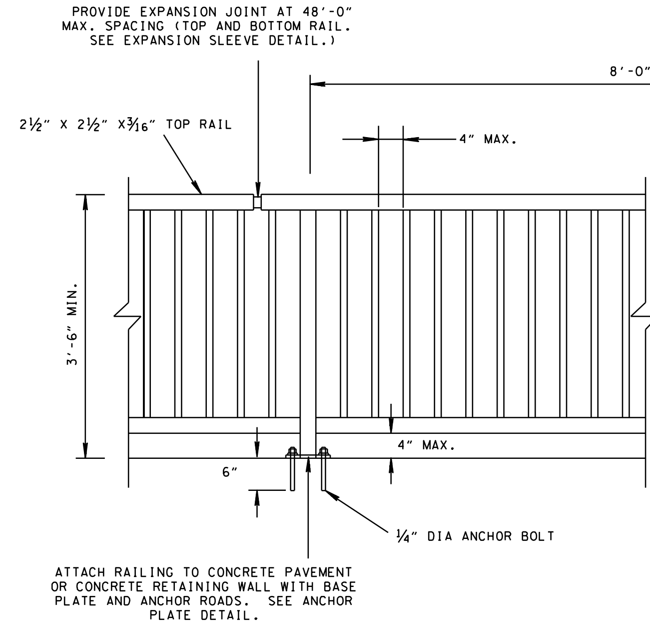
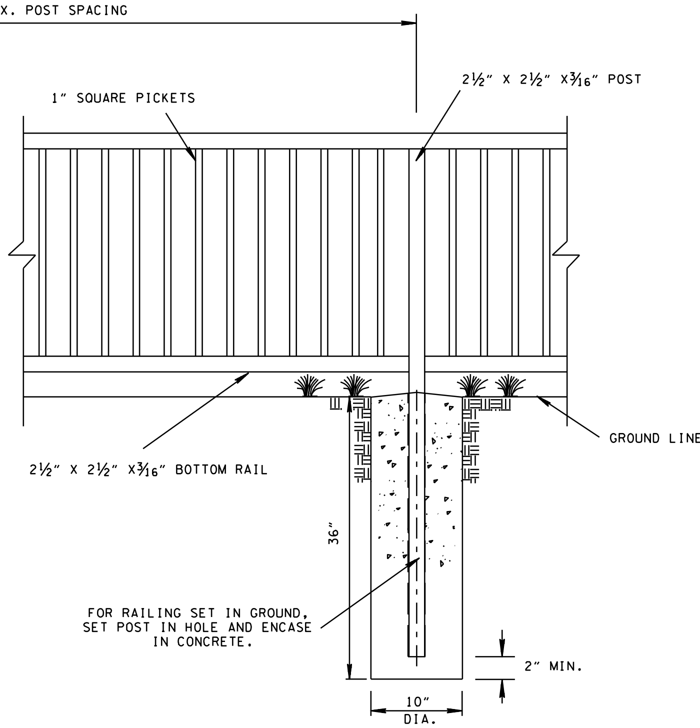
REV. 6-4-14: CHANGED PAY ITEM NO.

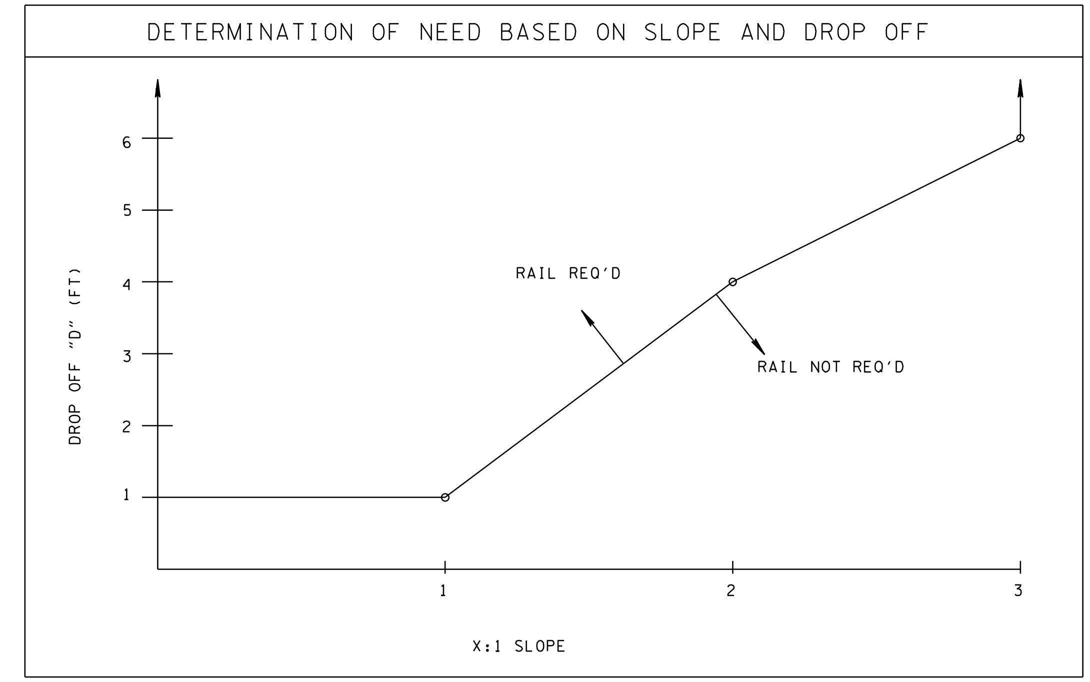


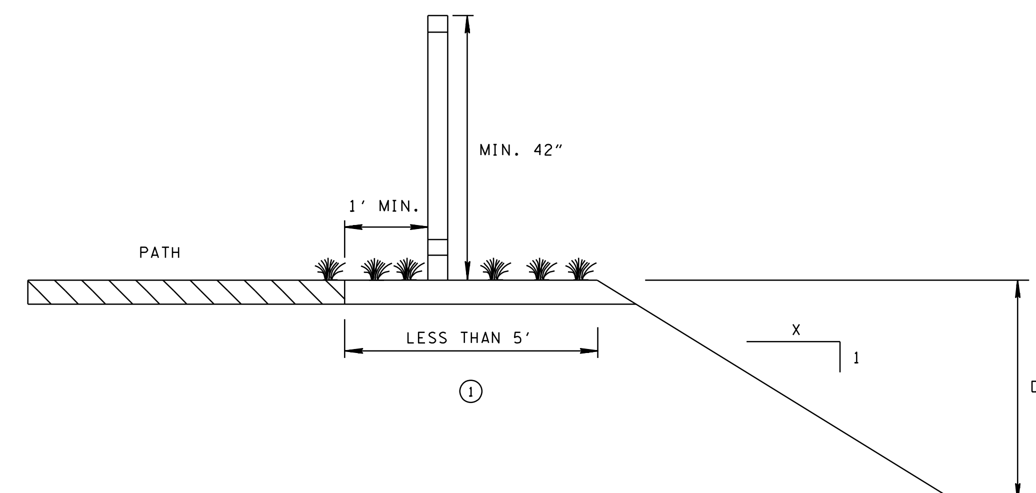
BOLT TO CONCRETE



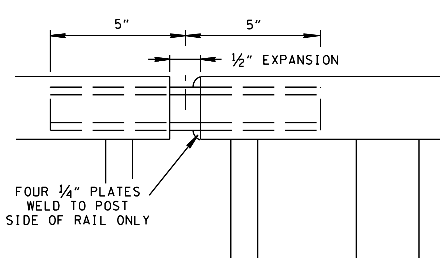
POST SET IN GROUND

FIGURE (A)

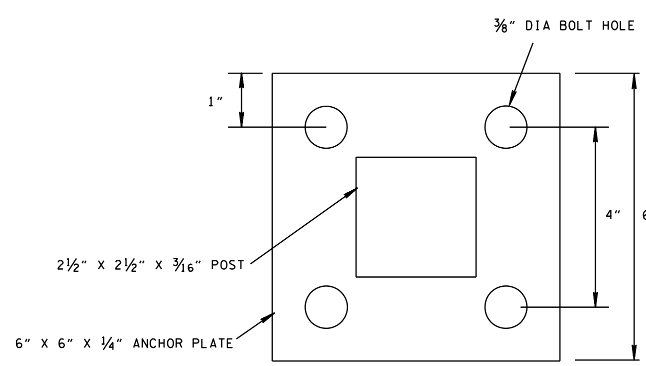




SECTION VIEW

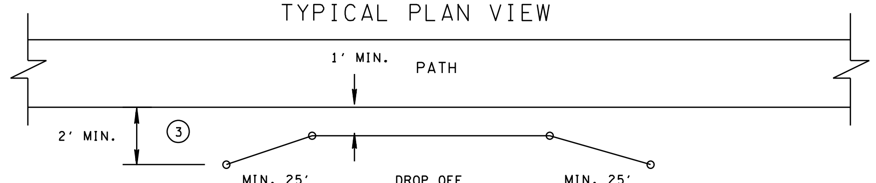


EXPANSION SLEEVE DETAIL ⑤

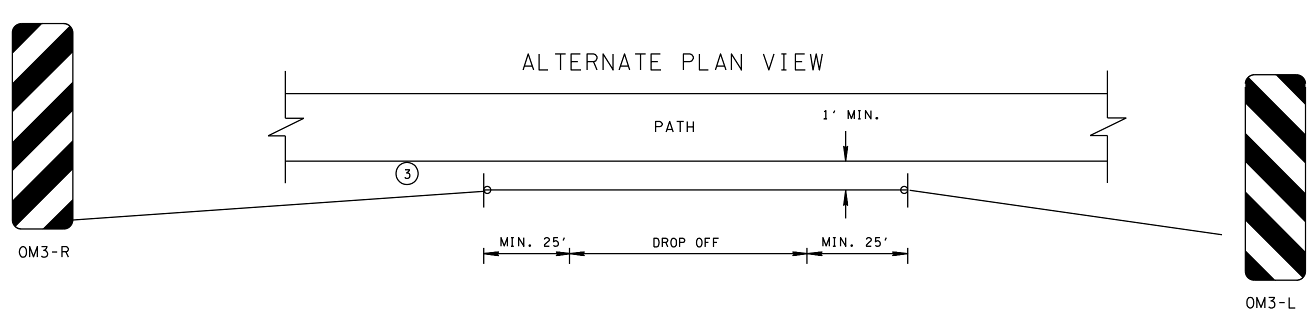


ANCHOR PLATE DETAIL

TYPICAL PLAN VIEW



ALTERNATE PLAN VIEW



GENERAL NOTES

① TO DETERMINE IF SAFETY RAIL IS REQUIRED, REFER TO FIGURE (A) WHEN SHARED USE PATH SIDEWALK EDGE DROP OFF IS WITHIN 5'. INFORMATION IS PROVIED FOR GUIDANCE ONLY SOME SITES MAY REQUIRE A RAIL PER ENGINEER JUDGIMENT.

② SAFETY RAIL SHALL BEGIN 25' BEFORE AND EXTEND 25' BEYOND AREA OF NEED.

③ SAFETY RAIL ENDS SHALL BE FLARED TO BEYOND 2' OF THE EDGE OF THE PATH OR MARKED WITH OBJECT MARKERS.

④ STEEL SHALL CONFORM TO ASTM A36 WELD ALL COMPONENTS POST THICKNESS IS 3⁄16" FILLET WELDS. GRIND WELDS AND CONNECTIONS AS REQUIRED TO PROVIDE A SMOOTH SURFACE, FREE OF BURRS.

FIELD PAINT SAFETY RAIL AFTER INSTALLATION AS SPECIFIED IN THE CONTRACT DOCUMENTS.

⑤ DETAIL SHOWN IS FOR TOP RAIL. EXPANSION JOINT FOR BOTTOM RAIL IS SIMILAR.

⑥ SYSTEM REPLACEMENTS MAY BE ALLOWED PROVIDING THAT THE HEIGHT AND SPACING LIMITATIONS SHOWN ON THIS DRAWING ARE MET.

⑦ TO BE PAID FOR UNDER ITEM NO. 604-01.20 BOX TUBE SAFETY RAIL PER LINER FOOT.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

BIKE/PEDESTRIAN SAFETY RAIL

7-11-13 S-BPR-1

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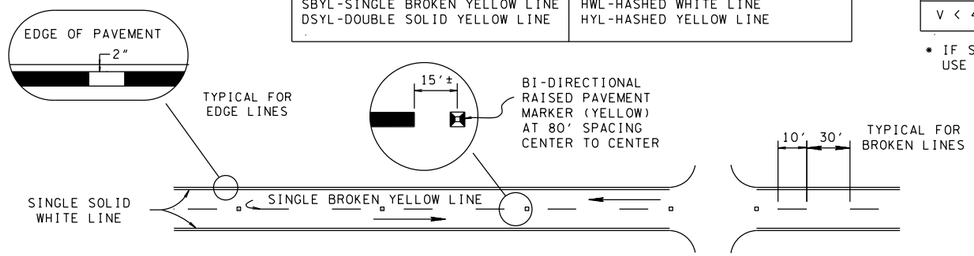
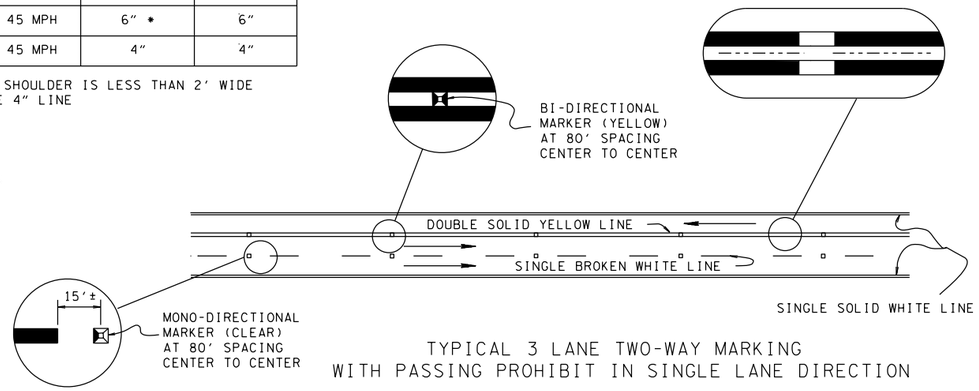
MARKING ABBREVIATIONS	
SSWL-SINGLE SOLID WHITE LINE	DBYL-DOUBLE BROKEN YELLOW LINE
SSYL-SINGLE SOLID YELLOW LINE	DWL-DOTTED WHITE LINE
SBWL-SINGLE BROKEN WHITE LINE	DYL-DOTTED YELLOW LINE
SBYL-SINGLE BROKEN YELLOW LINE	HWL-HASHED WHITE LINE
DSYL-DOUBLE SOLID YELLOW LINE	HYL-HASHED YELLOW LINE

PAVEMENT MARKING TABLE		
DESIGN SPEED	EDGE LINE	LANE LINE
V ≥ 45 MPH	6" *	6"
V < 45 MPH	4"	4"

* IF SHOULDER IS LESS THAN 2' WIDE USE 4" LINE



TYPICAL TWO-LANE, TWO WAY MARKING
WITH PASSING PERMITTED IN BOTH DIRECTIONS



TYPICAL 3 LANE TWO-WAY MARKING
WITH PASSING PROHIBIT IN SINGLE LANE DIRECTION

REV. 2-22-88: ADDED EDGELINES, NOTES AND VARIOUS STRIPING AND MARKING DETAILS. CHANGED DWG. NO. FROM T-M-7 TO T-M-1. CHANGED SPACING & LOCATION OF VARIOUS RAISED PAVEMENT MARKERS. ADDED MARKING ABBREVIATIONS.

REV. 3-20-91: REDREW SHEET. CHANGED TYPE 2 PAVEMENT MARKERS (CLEAR) TO MONO-DIRECTIONAL PAVEMENT MARKERS (CLEAR) AND CHANGED TYPE 1 PAVEMENT MARKERS (YELLOW) TO BI-DIRECTIONAL MARKERS (YELLOW).

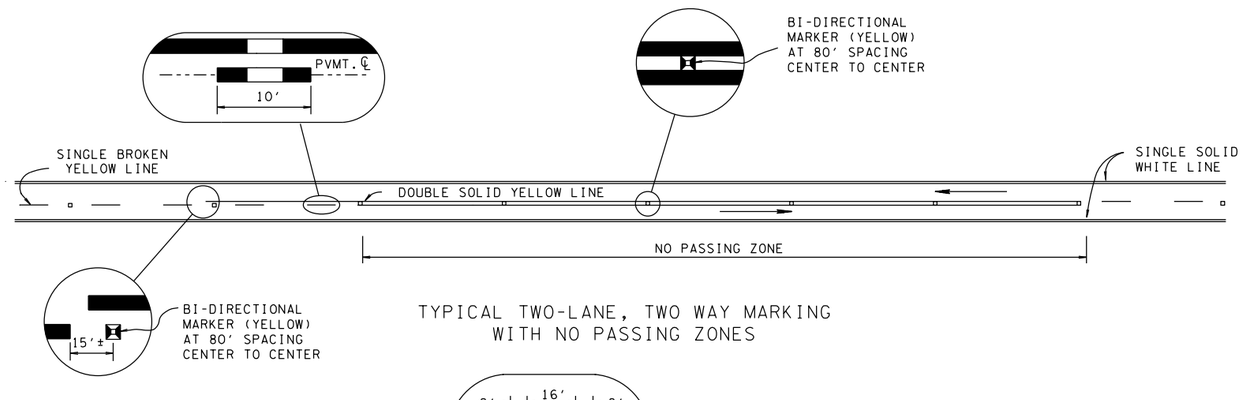
☐ REV. 10-26-92: ADDED GENERAL NOTE Ⓒ.

☐ REV. 7-29-98: REVISED DISTANCE BETWEEN EDGELINE PAVEMENT MARKING AND EDGELINE FROM 4" TO 2".

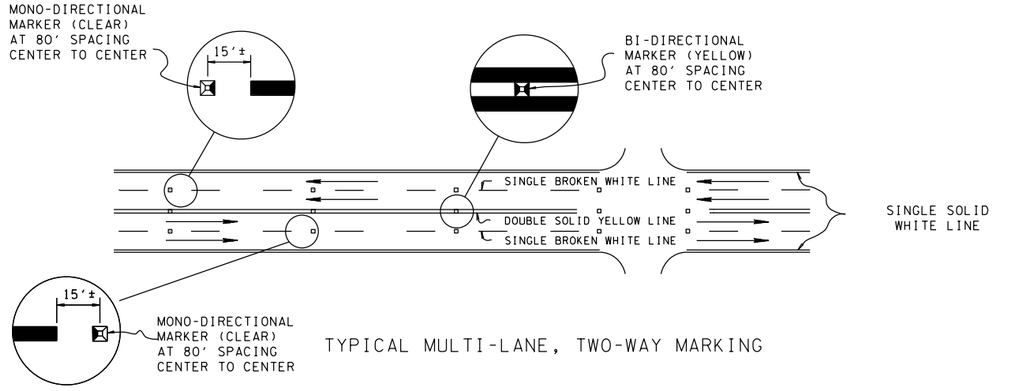
☐ REV. 4-15-04: CHANGED SPACING BETWEEN DOUBLE LEFT TURN ARROWS TO COMPLY WITH 2003 MUTCD.

REV. 11-1-11: UPDATED TYPICAL DETAILS TO CONFORM WITH 2009 MUTCD STANDARD DETAILS.

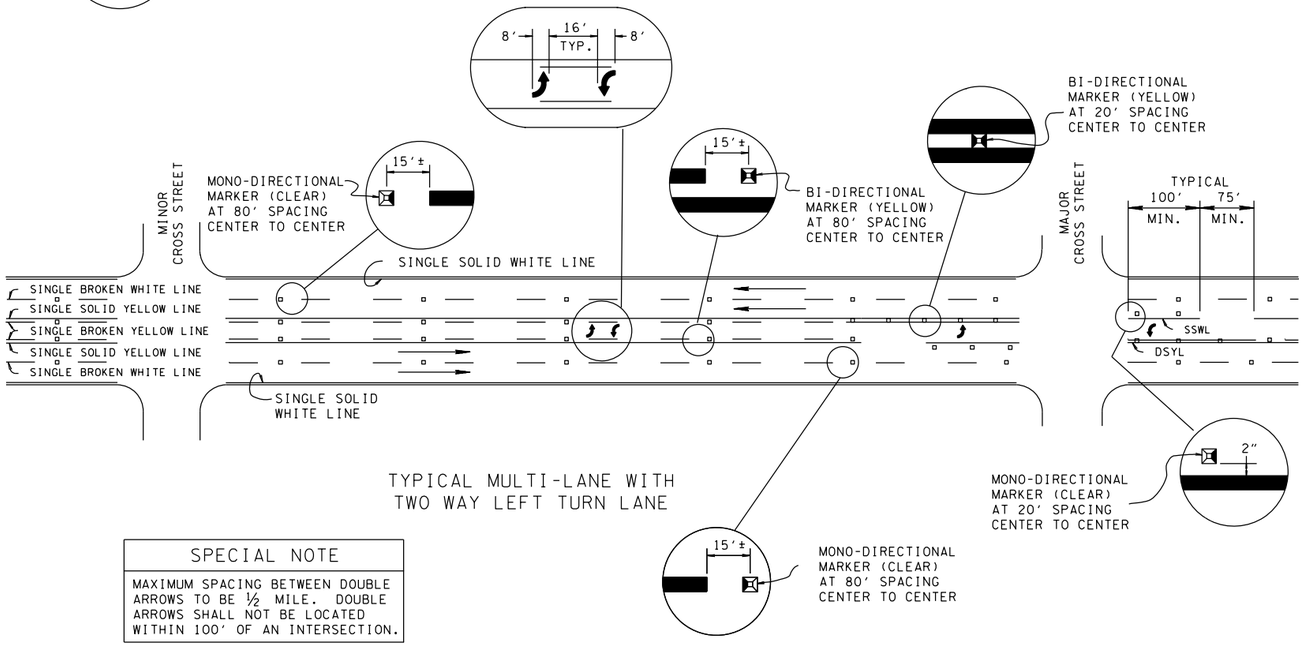
REV. 7-24-14: ADDED PAVEMENT MARKING TABLE.



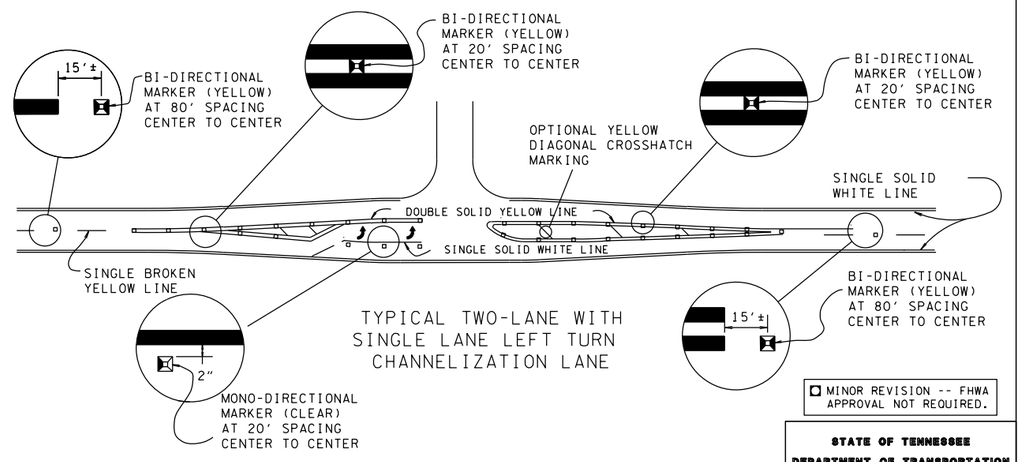
TYPICAL TWO-LANE, TWO WAY MARKING
WITH NO PASSING ZONES



TYPICAL MULTI-LANE, TWO-WAY MARKING



TYPICAL MULTI-LANE WITH
TWO WAY LEFT TURN LANE



TYPICAL TWO-LANE WITH
SINGLE LANE LEFT TURN
CHANNELIZATION LANE

SPECIAL NOTE
MAXIMUM SPACING BETWEEN DOUBLE ARROWS TO BE ½ MILE. DOUBLE ARROWS SHALL NOT BE LOCATED WITHIN 100' OF AN INTERSECTION.

GENERAL NOTES
Ⓐ EDGE LINES ARE NOT REQUIRED FOR PAVEMENT WIDTH LESS THAN 16 FEET ON CURB AND GUTTER SECTIONS UNLESS SPECIFIED IN PLANS.
Ⓑ SEE STANDARD DRAWING NOS. T-M-3 AND T-M-4 FOR CHANNELIZATION MARKING AND INTERSECTION MARKING DETAILS.
Ⓒ PAVEMENT MARKERS ARE REQUIRED ONLY WHEN SPECIFIED IN THE PLANS.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS AND MARKING ABBREVIATIONS

T-M-1

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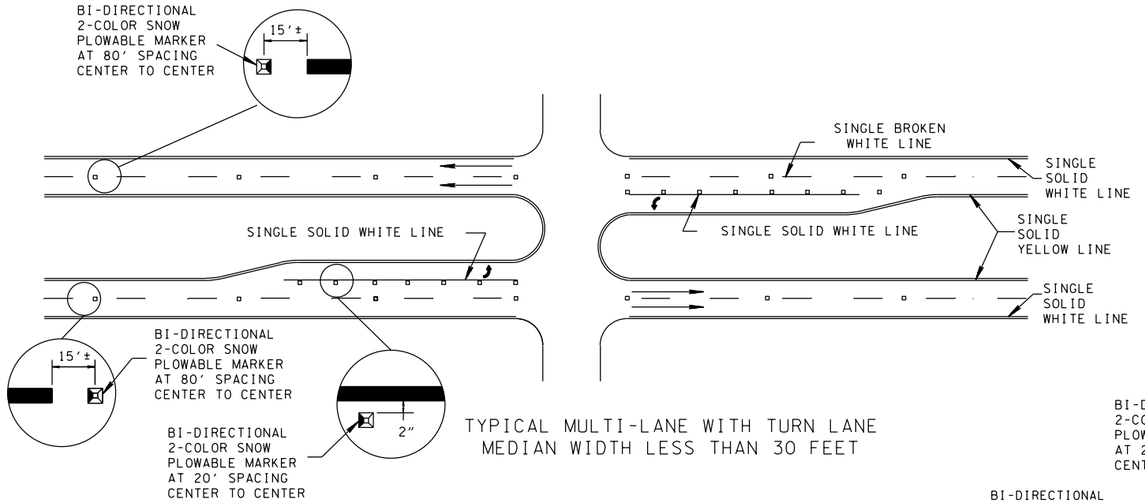
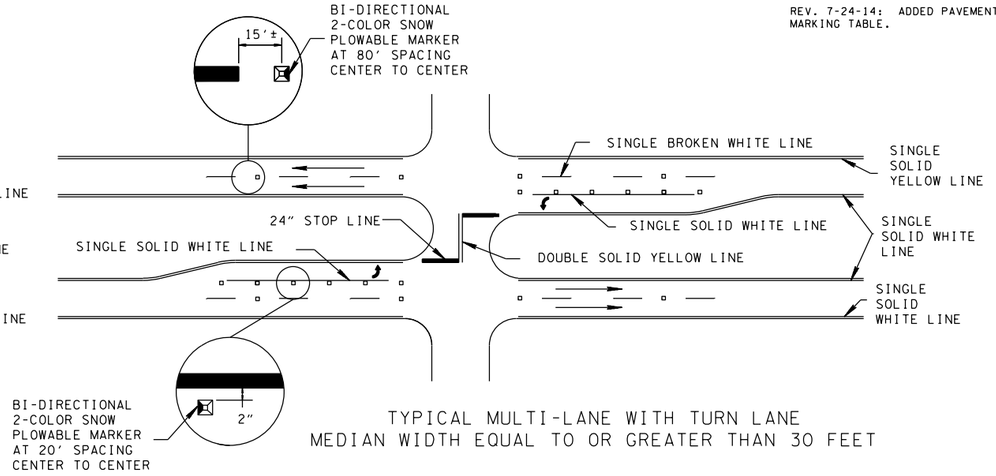


TYPICAL MULTI-LANE WITH TURN LANE
MEDIAN WIDTH LESS THAN 30 FEET



TYPICAL MULTI-LANE WITH TURN LANE
MEDIAN WIDTH EQUAL TO OR GREATER THAN 30 FEET

REV. 7-24-14: ADDED PAVEMENT MARKING TABLE.

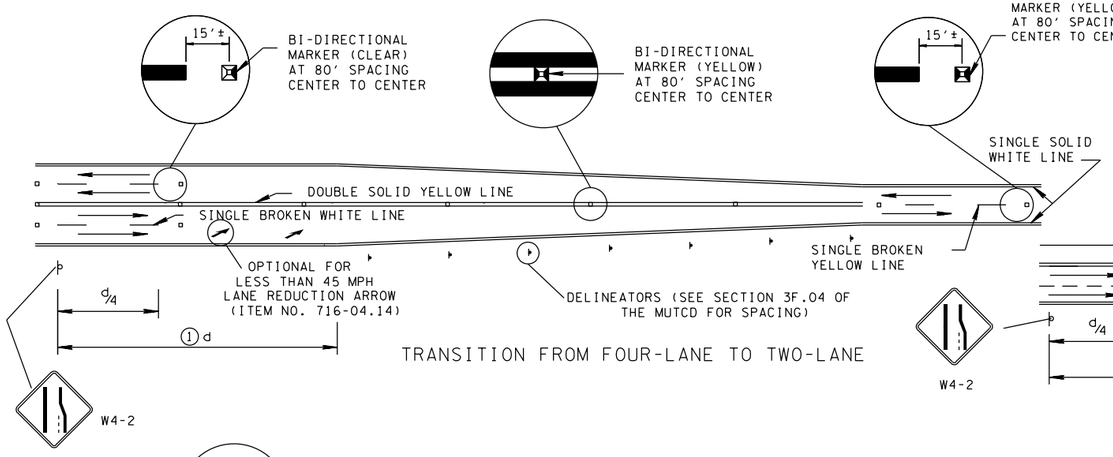
REV. 2-22-88: ADDED EDGE-LINES, NOTES, AND DETAILS FOR TRANSITION MARKING. CHANGED SHEET TITLE AND DRAWING NO. FROM T-M-8 TO T-M-2. ADDED DETAILS ON RIGHT OF SHEET.

REV. 3-20-91: REDREW SHEET. CHANGED TYPE 2 PAVEMENT MARKERS (CLEAR) TO MONO-DIRECTIONAL PAVEMENT MARKERS (CLEAR) AND TYPE 1 PAVEMENT MARKERS (YELLOW) TO BI-DIRECTIONAL MARKERS (YELLOW).

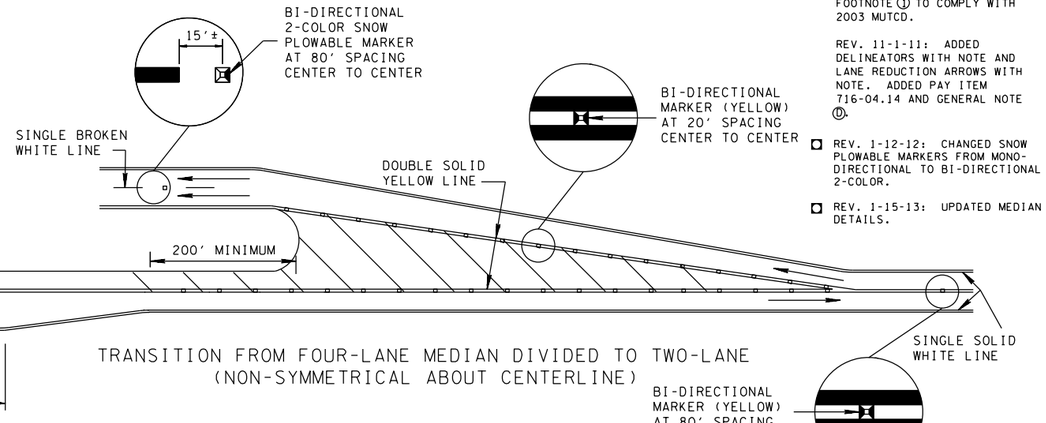
- REV. 10-26-92: ADDED GENERAL NOTE Ⓒ.
- REV. 12-18-93: ADDED EDGELINES INSIDE MEDIAN CROSSOVERS FOR MEDIAN WIDTHS LESS THAN 44 FEET.
- REV. 1-19-94: CHANGED WIDTH CRITERION FOR MEDIAN WIDTH FROM 44 FEET TO 64 FEET.
- REV. 1-19-96: CHANGED DETAIL ON LEFT BOTTOM OF SHEET.
- REV. 4-15-04: CHANGED W4-2 SIGNS AND FOOTNOTE ① TO COMPLY WITH 2003 MUTCD.
- REV. 9-5-04: CHANGED FOOTNOTE ① TO COMPLY WITH 2003 MUTCD.

REV. 11-1-11: ADDED DELINEATORS WITH NOTE AND LANE REDUCTION ARROWS WITH NOTE. ADDED PAY ITEM 716-04.14 AND GENERAL NOTE Ⓓ.

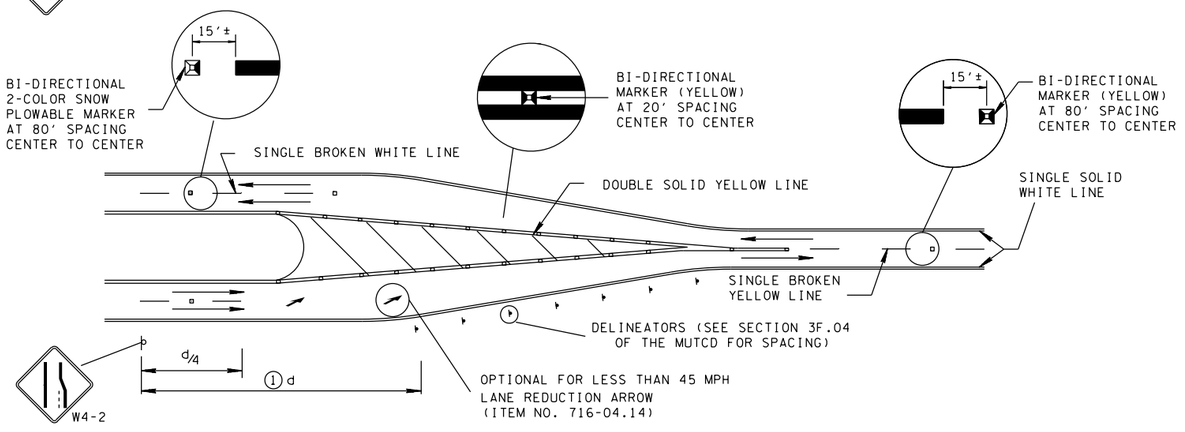
- REV. 1-12-12: CHANGED SNOW PLOWABLE MARKERS FROM MONO-DIRECTIONAL TO BI-DIRECTIONAL 2-COLOR.
- REV. 1-15-13: UPDATED MEDIAN DETAILS.



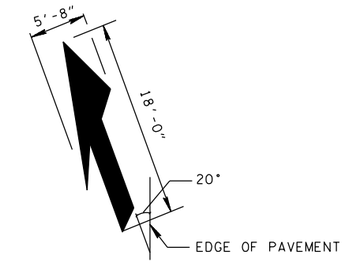
TRANSITION FROM FOUR-LANE TO TWO-LANE



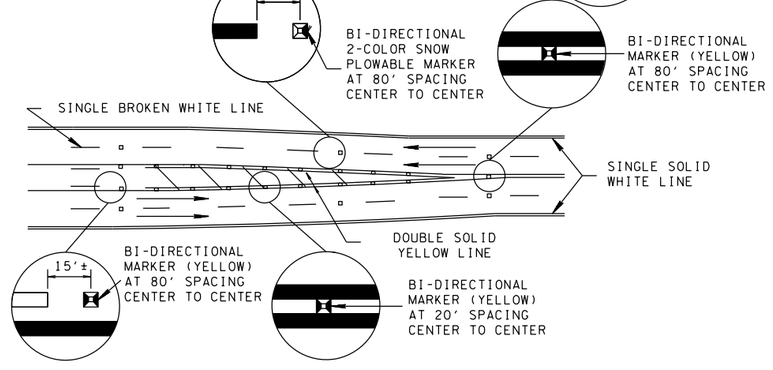
TRANSITION FROM FOUR-LANE MEDIAN DIVIDED TO TWO-LANE
(NON-SYMMETRICAL ABOUT CENTERLINE)



TRANSITION FROM FOUR-LANE MEDIAN DIVIDED TO TWO-LANE
(SYMMETRICAL ABOUT CENTERLINE)
(SIMILAR FOR MULTI-LANE WITH TWO WAY LEFT TURN LANE TO TWO-LANE)



LANE-REDUCTION ARROW



TRANSITION FROM MULTI-LANE WITH TWO WAY
LEFT TURN LANE TO FOUR-LANE

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

FOOTNOTE

① SEE TABLE 2C-4 OF PART 2 OF THE MANUAL ON UNIFORM TRAFFIC DEVICES (MUTCD) FOR GUIDELINES FOR ADVANCE PLACEMENT OF WARNING SIGNS DISTANCE d.

GENERAL NOTES

Ⓐ EDGE LINES ARE NOT REQUIRED FOR PAVEMENT WIDTH LESS THAN 16 FEET OR ON CURB AND GUTTER SECTIONS UNLESS SPECIFIED IN PLANS.

Ⓑ SEE STANDARD DRAWING NOS. T-M-3 AND T-M-4 FOR CHANNELIZATION MARKING AND INTERSECTION MARKING DETAILS.

Ⓒ PAVEMENT MARKERS ARE REQUIRED ONLY WHEN SPECIFIED IN THE PLANS.

Ⓓ SEE STD. DWG. T-S-11 FOR DETAILS OF DELINEATORS.

PAVEMENT MARKING TABLE

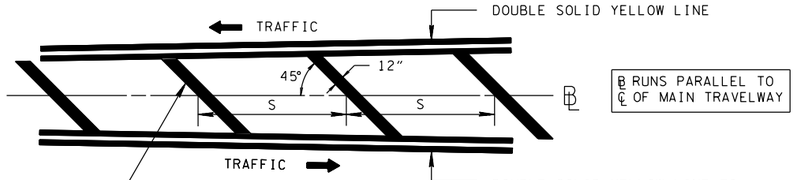
DESIGN SPEED	EDGE LINE	LANE LINE
V ≥ 45 MPH	6" *	6"
V < 45 MPH	4"	4"

* IF SHOULDER IS LESS THAN 2' WIDE USE 4" LINE

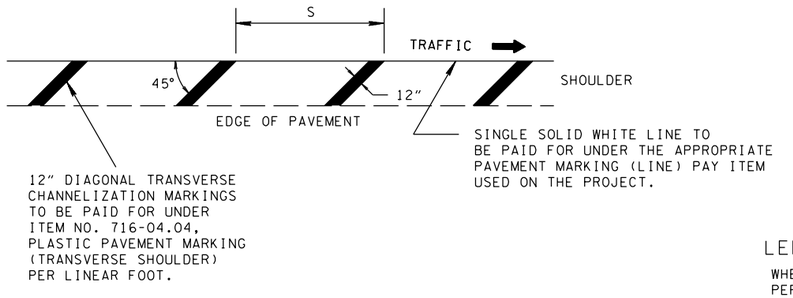
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS

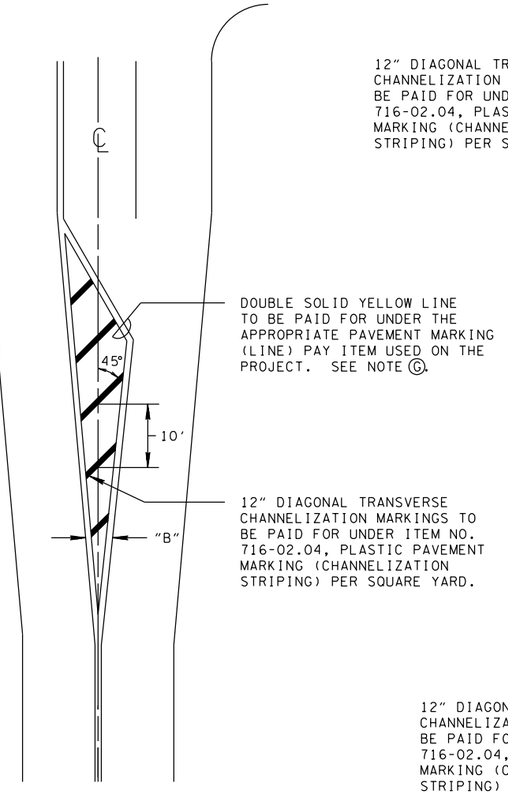
T-M-2



MARKED MEDIAN ISLAND
AND OBSTRUCTION APPROACH

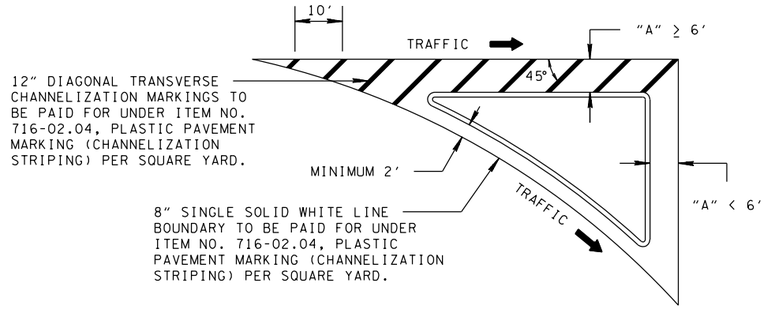


TRANSVERSE SHOULDER MARKING

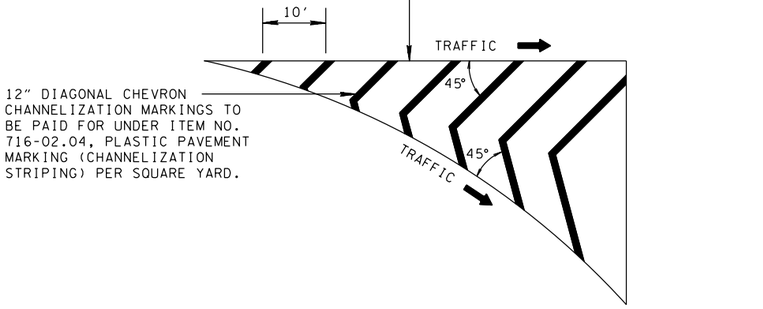


LEFT TURN CHANNELIZATION ISLAND

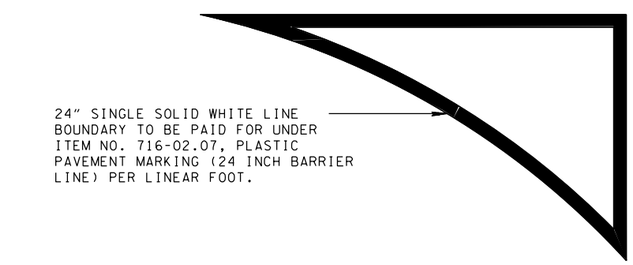
WHEN WIDTH "B" IS LESS LESS THAN 6' (MEASURED PERPENDICULAR TO THE ℄) -NO DIAGONAL MARKING WILL BE REQUIRED.



RAISED ISLAND
(SAME FOR DEPRESSED ISLAND)



MARKED ISLAND
AREA GREATER THAN 400 SQUARE FEET



MARKED ISLAND
AREA EQUAL TO OR LESS THAN 400 SQUARE FEET
(SEE NOTE Ⓔ)

Ⓓ TABLE FOR SPACING OF DIAGONAL LINES		
POSTED SPEED	SHOULDERS AND MARKED MEDIANS	OBSTRUCTION APPROACH
40 MPH OR LESS	50'	10'
45 MPH OR GREATER	100'	20'

Ⓓ SPACING IN TABLE SHOWN AS "S" IN DETAILS ON THIS SHEET.

GENERAL NOTES

Ⓐ TO SEPARATE TRAFFIC MOVEMENT IN THE SAME DIRECTION, DIAGONAL MARKING SHALL BE WHITE (HWL) WITH AN 8 INCH SSWL BOUNDARY.

Ⓑ TO SEPARATE OPPOSING LANES OF TRAFFIC, DIAGONAL MARKING SHALL BE YELLOW (HYL) WITH DSYL BOUNDARY.

Ⓒ ALL DIAGONAL MARKINGS SHALL BE 12 INCHES IN WIDTH MARKED AT 45 DEGREES TO MARKINGS OUTLINING RESTRICTED AREA OR TO CENTERLINE TO ROADWAY.

Ⓓ THERE SHALL BE A MINIMUM OF THREE DIAGONAL MARKINGS AT THE REQUIRED SPACING. OTHERWISE, NO DIAGONAL MARKING SHALL BE USED.

Ⓔ MARKED TRAFFIC ISLANDS SHOULD BE A MINIMUM OF 75 SQUARE FEET.

Ⓕ THE RECOMMENDED SPACING IS MEASURED PARALLEL TO THE CENTERLINE OF THE MAIN TRAVELWAY.

Ⓖ DOUBLE SOLID YELLOW LINE SHALL MATCH THE STRIPPING ON THE ADJACENT ROADWAY. IN GENERAL: USE 4" FOR SPEEDS 40 MPH AND BELOW AND 6" FOR SPEEDS 45 MPH AND ABOVE.

REV. 6-20-83: GENERAL REVISIONS.

REV. 3-22-85: ADDED NOTE 'SAME FOR DEPRESSED ISLAND' TO MARKING FOR RAISED ISLAND.

REV. 2-22-88: CHANGED MINIMUM "B" DIMENSION TO 6'. CHANGED DWG. NO. FROM T-M-10 TO T-M-3. REVISED GEN. NOTE D. CHANGED MINIMUM "A" DIMENSION TO 6'.

REV. 3-20-91: REDREW AND REORGANIZED SHEET.

REV. 9-19-91: GENERAL REVISION.

□ REV. 7-24-14: ADDED GENERAL NOTE Ⓖ.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MARKING STANDARDS FOR TRAFFIC ISLANDS, MEDIANS & PAVED SHOULDERS ON CONVENTIONAL ROADS.

I-M-3

TRAFFIC ISLANDS

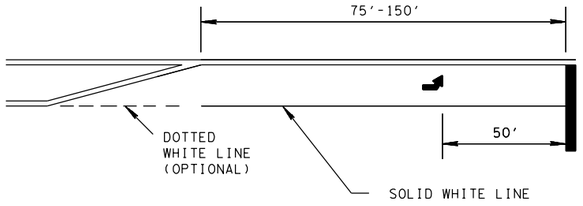
- REV.3-15-07: REVISED TO REFER THE HANDICAP RAMP STANDARDS TO DETERMINE THE MINMUM WIDTH OF CROSS WALK MARKINGS.
- REV.6-1-09: TYPICAL STOP LINE PLACEMENT NOTE REVISED.

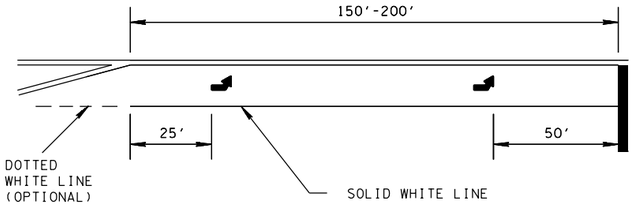
  REV. 11-1-11: REVISED PAVEMENT MARKINGS FOR LEFT TURN DETAILS.
- REV. 7-24-14: REVISED CROSSWALK TO SHOW LONGITUDINAL LINES AS PREFERRED OPTION. ADDED PAVEMENT MARKING TABLE.

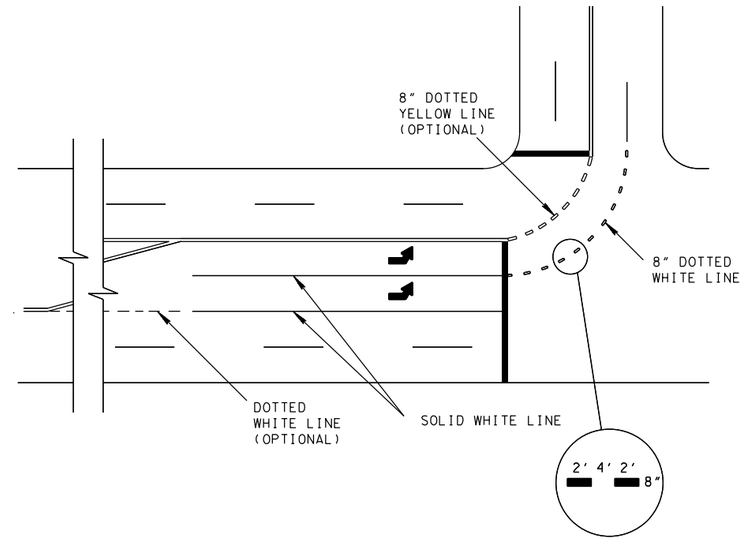
REV. 2-22-88: REVISED DETAIL LEFT TURN LANE MARKING. ADDED NOTE FOR STOP LINE TO BE PARALLEL TO CROSS-WALK. NOTED LONGITUDINAL CROSS-WALK LINES TO BE WHITE. CHANGED DWG. NO. FROM T-M-11 TO T-M-4. ADDED DETAIL FOR DOUBLE LEFT TURN LANE.

REV. 3-20-91: REDREW AND REORGANIZED SHEET. ADDED PAY ITEMS AND THEIR DESCRIPTIONS.

- REV. 5-27-01: CHANGED DESCRIPTION IN ITEM NO. 716-02.09.
- REV. 9-5-01: CHANGED DESCRIPTION IN ITEM NO. 716-02.03.
- REV.1-19-05: CHANGED HANDICAP RAMP DETAIL SHOWN ON CROSSWALK MARKING DETAILS.



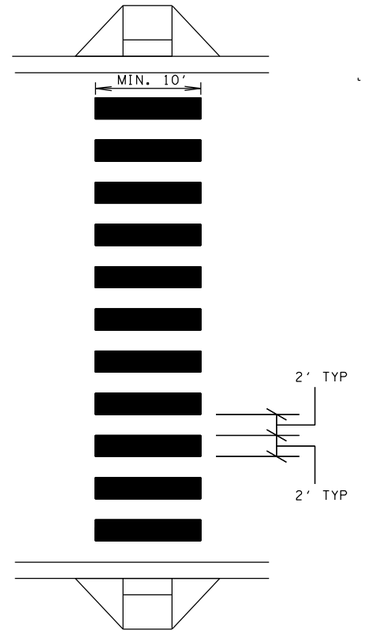




LEFT TURN ARROWS SHALL BE PAID FOR UNDER ITEM NO. 716-02.06, PLASTIC

716-02.08, PLASTIC PAVEMENT MARKING (8" DOTTED LINE) PER LINEAR FOOT.

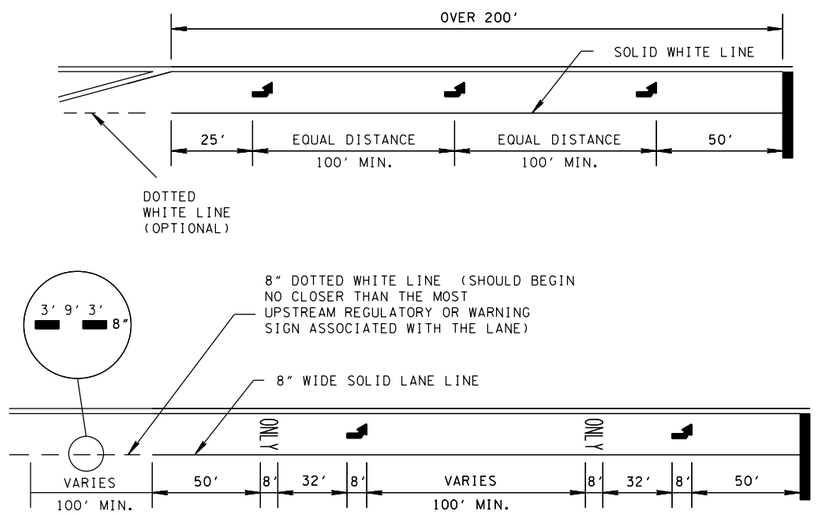
TYPICAL MARKING FOR DOUBLE LEFT TURN LANES



TYPICAL PLAN VIEW OF STANDARD CROSS WALK MARKING

CROSS-WALK MARKING WITH LONGITUDINAL LINES SHALL BE PAID FOR UNDER ITEM NO. 716-02.09, PLASTIC PAVEMENT MARKING (LONGITUDINAL CROSS-WALK) PER LINEAR FOOT. ALTERNATIVELY CROSSWALKS MAY BE MARKED BY TWO PARALLEL 8" SOLID WHITE LINES (716-02.12) SPACED A MINIMUM 6' APART.

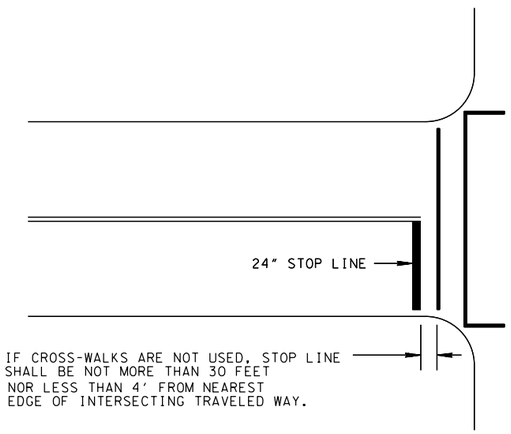
SPECIAL PAVERS OR PAVEMENT TEXTURES DO NOT CONSTITUTE LEGAL CROSS WALK MARKINGS IN THIS CASE USE 8" PARALLEL SOLID WHITE LINE.



IF A THROUGH LANE BECOMES AN EXCLUSIVE LEFT TURN LANE, AN "ONLY" MESSAGE IS REQUIRED FOR EACH ARROW. THE "ONLY" MESSAGE SHALL BE PAID FOR UNDER ITEM NO. 716-03.01, PLASTIC WORD PAVEMENT MARKING (ONLY) PER EACH.

TYPICAL MARKING FOR LEFT TURN LANES

ALSO APPLICABLE FOR RIGHT TURN LANES



LOCATION SHALL BE DETERMINED BY VEHICLE TURNING PATHS FROM THE INTERSECTING ROADWAY, AND IF SIGNALIZED, ITS POSITION RELATIVE TO SIGNAL HEADS, PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

STOP LINES SHALL BE PAID FOR UNDER ITEM NO. 716-02.05, PLASTIC PAVEMENT MARKING (STOP LINE) PER LINEAR FOOT.

TYPICAL STOP LINE PLACEMENT

NOTE: STOP LINES REQUIRED ONLY ON APPROACHES CONTROLLED BY STOP SIGNS OR TRAFFIC SIGNALS.

PAVEMENT MARKING TABLE		
DESIGN SPEED	EDGE LINE	LANE LINE
V ≥ 45 MPH	6" *	6"
V < 45 MPH	4"	4"

* IF SHOULDER IS LESS THAN 2' WIDE USE 4" LINE

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD INTERSECTION PAVEMENT MARKINGS

T-M-4

8/1/2014 7:21:01 AM
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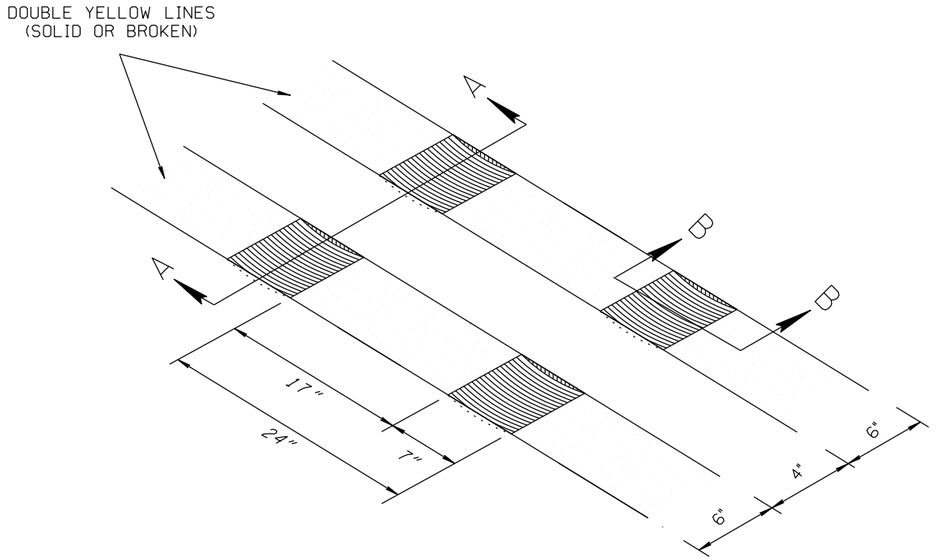
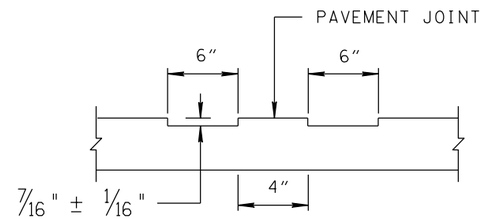
- REV. 4-21-14: REMOVED TWO WAY PASSING ZONE OPTION MODIFIED NOTES (A) AND (B).
- REV. 7-24-14: CHANGED STRIPE WIDTH.

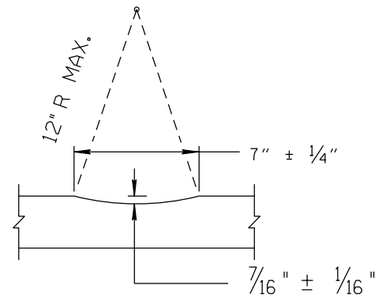
FOR NO PASSING ZONES OR ONE WAY PASSING ZONES



ISOMETRIC VIEW



SECTION A-A



SECTION B-B

DESIGN NOTES

(A) FOR IMPROVEMENTS OR RECONSTRUCTION OF EXISTING ROADS RUMBLE STRIPES MAY BE USED AS NEED DUE TO ACCIDENT HISTORY. FOR NEW CONSTRUCTION CENTERLINE RUMBLE STRIPES MAY BE SPECIFIED IF THE FOLLOWING CONDITIONS EXIST:

1) DESIGN SPEED GREATER THAN 45 MPH
2) ADT OF 1500 OR MORE
3) LANE WIDTH 12' MINIMUM.
4) ROAD SEGMENT IS A TWO OR FOUR LANE UNDIVIDED SECTION.
5) ROAD SEGMENT IS A NO PASSING OR ONE WAY PASSING ZONE.

(B) WHEN RUMBLE STRIPES ARE SPECIFIED, ONLY SPRAY THERMOPLASTIC (60 MIL) 4 IN LINE (716-13.01) SHALL BE USED.

(C) CENTERLINE RUMBLE STRIPES SHALL NOT BE USED ON BRIDGES.

(D) THE PAVEMENT JOINT SHALL NOT BE MILLED.

(E) RUMBLE STRIPE SHALL BE DISCONTINUED WHENEVER THE CENTERLINE MARKING IS ALSO DISCONTINUED.

(F) RUMBLE STRIPE SHOULD NOT BE USED IN RESIDENTIAL OR COMMERCIAL AREAS.

(G) SCORING FOR RUMBLE STRIPES TO PAID FOR UNDER ITEM NO. 411-12.05 (INCLUDES BOTH LEFT AND RIGHT SIDE PER LINEAR MILE).

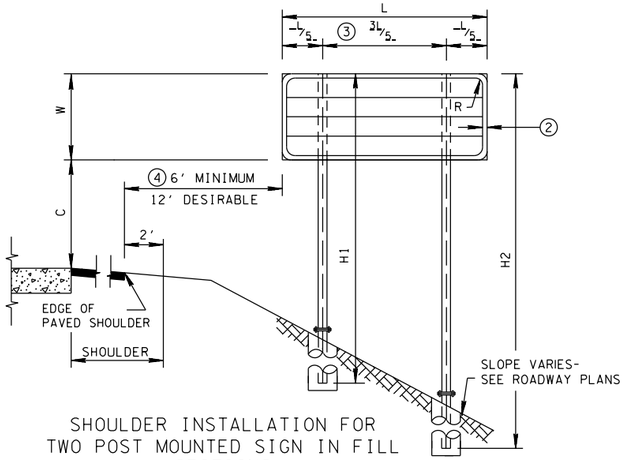
(H) FOR RPM SPACING SEE T-M-1. IN LOCATIONS WHERE RPMS ARE PRESENT STAGGER RUMBLES SUCH THAT RPMS ARE CENTERED BETWEEN RUMBLES.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

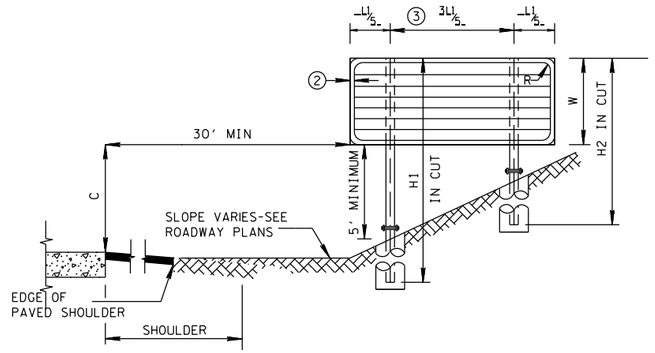
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ASPHALT CENTER LINE RUMBLE STRIPE

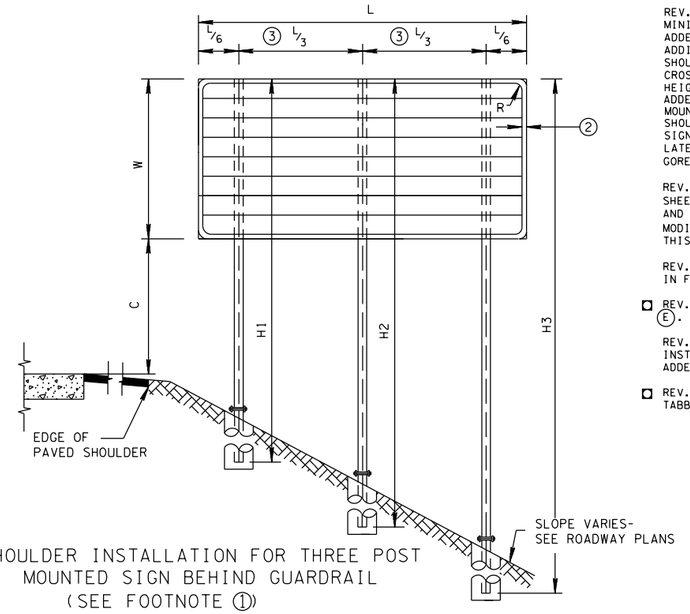
1-3-13 | T-M-16A



SHOULDER INSTALLATION FOR
TWO POST MOUNTED SIGN IN FILL
SECTIONS
(SEE FOOTNOTE ①)



SHOULDER INSTALLATION
FOR TWO POST MOUNTED SIGNS IN CUT
SECTIONS
(SEE FOOTNOTE ①)



SHOULDER INSTALLATION FOR THREE POST
MOUNTED SIGN BEHIND GUARDRAIL
(SEE FOOTNOTE ①)

REV. 1-30-85: REDREW SHEET. CHANGED MINIMUM OFFSET ON ALL SIGNS AND NOTE. ADDED EXIT PANEL MOUNTING DETAIL, ADDITIONAL PANEL MOUNTING DETAIL, AND SHOULDER INSTALLATION RAMPS AND CROSSROADS. CHANGED MINIMUM MOUNTING HEIGHT. ELIMINATED SECONDARY SIGN AND ADDED BREAKAWAY TO THREE POST MOUNTED SIGN. ADDED GUARDRAILTO SHOULDER INSTALLATION TWO POST MOUNTED SIGN. ADDED FILL SLOPE DETAIL TO 30' LATERAL CLEARANCE. ELIMINATED TYPICAL GORE SIGN LOCATION.

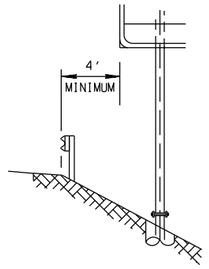
REV. 12-7-90: REDREW AND REORGANIZED SHEET. NUMBERED ALL GENERAL NOTES AND FOOTNOTES. ADDED FOOTNOTE NO. (3). MODIFIED EXIT PANEL MOUNTING DETAILS ON THIS SHEET.

REV. 8-16-91: CHANGED MINIMUM DIMENSION IN FOOTNOTE NO. (3) FROM 7'-0" TO 7'-6".

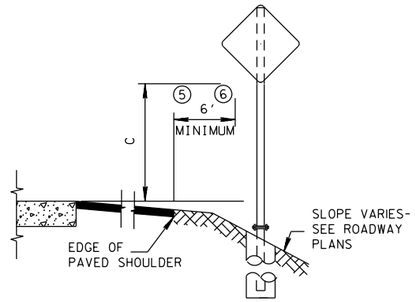
☐ REV. 5-27-03: CORRECTED GENERAL NOTE (E).

REV. 11-1-11: REVISED SHOULDER INSTALLATION HEIGHT FOR FREEWAYS AND ADDED GENERAL NOTE (G)

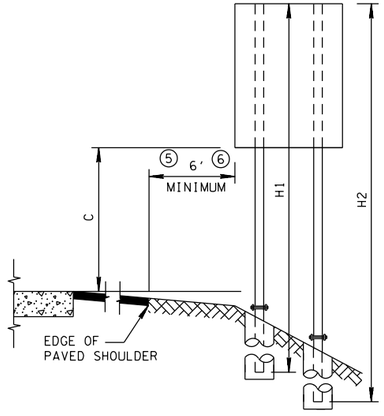
☐ REV. 6-10-14: ADDED CLEAR HEIGHT TABB. MODIFIED DETAILS AND NOTES.



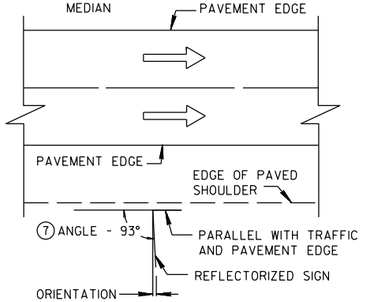
SIGN INSTALLATION BEHIND GUARDRAIL



SHOULDER INSTALLATION FOR
SINGLE POST SIGNS



SHOULDER INSTALLATION FOR
TWO POST SIGNS
(SEE FOOTNOTE ①)



NOTE: SIGNS SHALL NORMALLY BE ERECTED SO THAT THE SIGN FACE IS TRULY VERTICAL AND AT 93° AWAY FROM THE CENTER OF THE LANE WHICH THE SIGN SERVES AND THE DIRECTION OF TRAVEL. WHERE LANES DIVIDE OR ARE ON CURVES, SIGN FACES SHALL BE ORIENTED SO AS TO BE MOST EFFECTIVE BOTH DAY AND NIGHT AND TO AVOID THE POSSIBILITY OF SPECULAR REFLECTION.

ANGLE OF REFLECTORIZED SIGN TO
APPROACHING TRAFFIC DETAIL
(SEE FOOTNOTE ⑦)

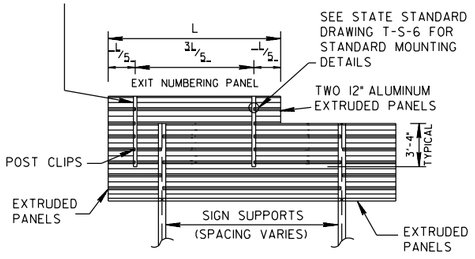
CLEAR HEIGHT OF SIGN
(C)

RURAL (8)	5'
URBAN	7'
FREEWAY	7'

LEGEND

W-HEIGHT OF SIGN FACE
L-LENGTH OF SIGN FACE
R-RADIUS OF BORDER
E-HEIGHT OF AUXILIARY EXTRUDED PANELS
H-HEIGHT OF SIGN SUPPORT
C-CLEAR HEIGHT TO BOTTOM OF SIGN

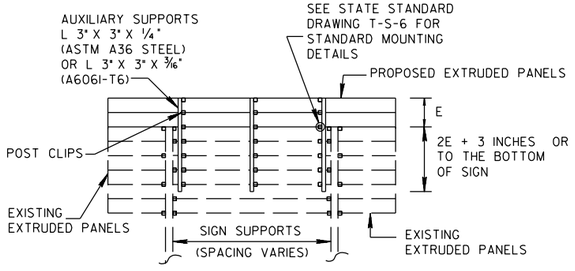
AUXILIARY SUPPORTS
L 3" X 3" X ¼"
(ASTM A36 STEEL)
OR L 3" X 3" X 3/16"
(A6061-T6)



EXIT PANEL MOUNTING DETAIL

ITEM NO. 713-17.02, INSTALL AUXILIARY SUPPORT FOR EXIT NUMBER PANEL PER EACH (INCLUDES THE COST OF AUXILIARY SUPPORTS AND POST CLIPS).

AUXILIARY SUPPORTS
L 3" X 3" X ¼"
(ASTM A36 STEEL)
OR L 3" X 3" X 3/16"
(A6061-T6)



ADDITIONAL PANEL MOUNTING DETAIL
(WHERE REQUIRED)

ITEM NO. 713-17.03, INSTALL AUXILIARY SUPPORT ON EXISTING SIGN PER EACH (INCLUDES THE COST OF AUXILIARY SUPPORTS AND POST CLIPS).

GENERAL NOTES

(A) THE LAYOUTS SHOWN ON THIS PAGE ARE TYPICAL FOR ALL SIGNS ERECTED ON THE FREEWAY SYSTEM AND WITHIN THEIR RESPECTIVE INTERCHANGE AREAS, UNLESS OTHERWISE SPECIFIED IN THE ROADWAY PLANS FOR A SPECIFIC PROJECT.

(B) ALL SIGNS SHALL BE ERECTED SO THAT THE INSIDE EDGE OF THE PROPOSED SIGN OR ITS ASSEMBLY IS A MINIMUM OF SIX FEET BEYOND THE EDGE OF PAVED SHOULDER OR TWO FEET FROM THE BACK FACE OF THE CURB.

(C) ALL DIRECTIONAL SIGNS ON THE FREEWAY SYSTEM SHALL BE ERECTED SO THAT BOTTOM OF THE SIGN ASSEMBLY IS SEVEN FEET ABOVE THE EDGE OF PAVED SHOULDER.

(D) WHEN ANAUXILIARY SIGN IS MOUNTED BELOW THE MAJOR SIGN, THE MAJOR SIGN OR ITS ASSEMBLY SHALL BE ERECTED AT LEAST EIGHT FEET ABOVE THE EDGE OF PAVED SHOULDER AND THE AUXILIARY SIGN SHALL BEERECTED AT LEAST FIVE FEET ABOVE THE EDGE OF PAVED SHOULDER.

(E) ALL SIGNS MOUNTED IN URBAN AREAS OR OTHERWISE MOUNTED ADJACENT TO A SIDEWALK SHALL BE A MINIMUM 7 FEET OF CLEAR HEIGHT IN RURAL AREAS WITHOUT SIDEWALK THE MINIMUM CLEAR HEIGHT MAY BE 5 FEET.

(F) THE CLEAR HEIGHT SHALL BE MEASURED VERTICAL TO THE TOP OF THE SIDEWALK OR, IN THE ABSENCE OF SIDEWALK, MINIMUM OF FIVE FEET ABOVE THE EDGE OF PAVED SHOULDER.

(G) SEE SECTIONS 2A.18 THROUGH 2A.23 OF THE MUTCD FOR ADDITIONAL INFORMATION.

(H) SIGN SUPPORTS INSTALLED WITHIN THE CLEAR ZONE SHALL BE BENDAWAY, HAVE A BREAKAWAY SIGN HARDWARE (PER OPL) OR BE SHIELDED BY BARRIER.

FOOTNOTES

(1) SEE SIGN SCHEDULE SHEET IN THE PLANS FOR DIMENSIONS E, L, H, H1, H2, H3, R, AND W.

(2) SEE SIGN SCHEDULE SHEET FOR WIDTH OF BORDER.

(3) THIS DIMENSION SHALL BE A MINIMUM OF SEVEN FEET SIX INCHES WHEN USING POST SIZE OF W6 X 15 OR LARGER.

(4) MIN DISTANCE OF FOUR FEET IS TO BE USED BEHIND GUARDRAIL.

(5) DISTANCE OF TWENTY FEET IS DESIRABLE ON FREEWAYS AND EXPRESSWAYS.

(6) DISTANCE OF TWO FEET MINIMUM IS TO BE USED ON URBAN STREETS WITH CURB AND GUTTER SECTIONS.

(7) ANGLE OF REFLECTORIZED SIGN TO APPROACHING TRAFFIC DETAIL DOES NOT APPLY WHEN PROPOSED SIGNS ARE SET BACK THIRTY FEET OR MORE. SIGNS ON TANGENTS THAT ARE SET BACK THIRTY FEET OR MORE FROM THE EDGE OF PAVEMENT SHALL BE ORIENTED AT NINETY DEGREES.

(8) IF SIGN IS PLACED ADJACENT TO SIDEWALK USE URBAN CLEAR HEIGHT.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD
LAYOUT
GROUND MOUNTED
SIGNS

1-19-96 T-S-9

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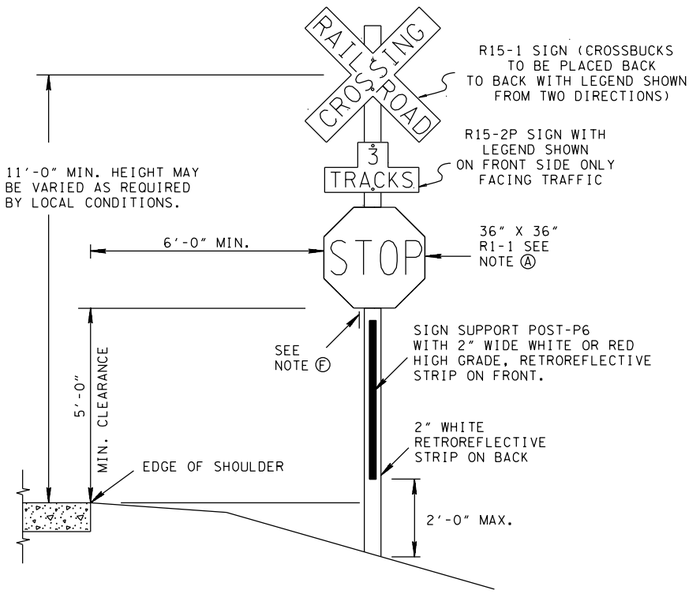
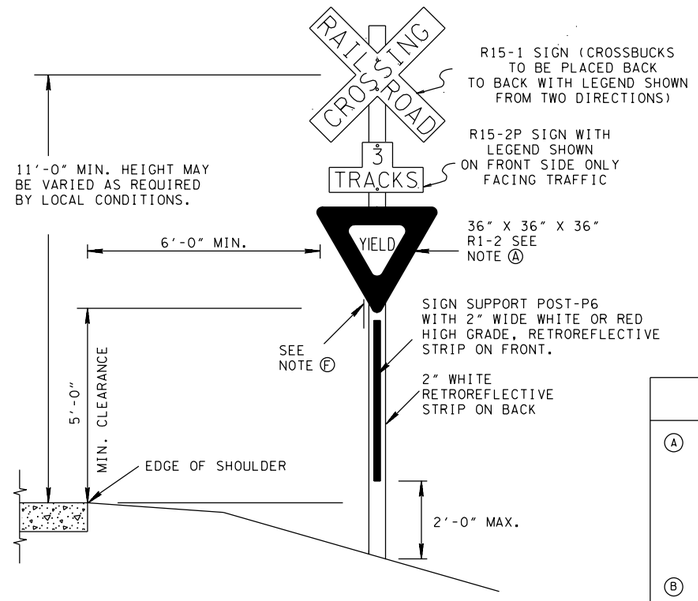
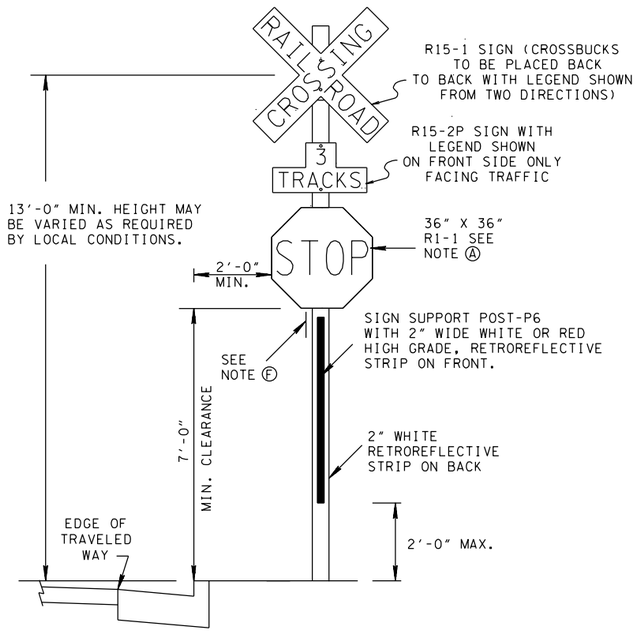
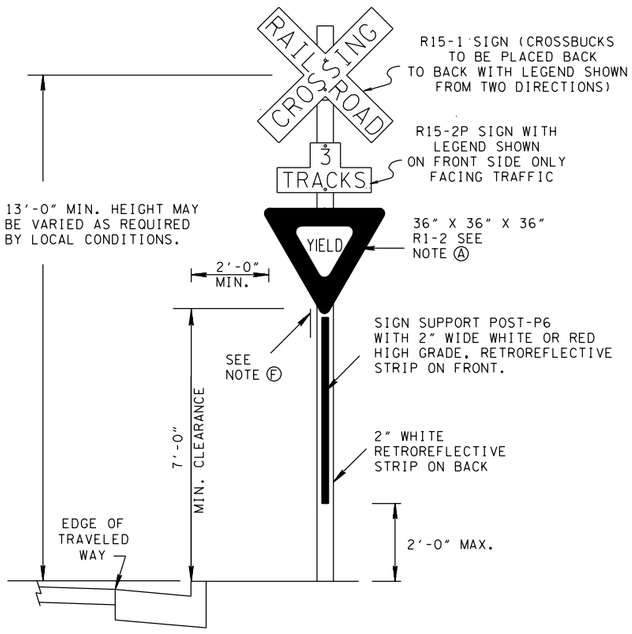
STOP OR YIELD SIGN ON SAME POST WITH THE CROSSBUCK SIGN AT PASSIVE HIGHWAY-RAIL GRADE CROSSINGS





RURAL DISTRICT





BUSINESS OR RESIDENCE DISTRICT

GENERAL NOTES

(A) YIELD SIGNS SHALL BE THE DEFAULT SIGN AND SHALL BE USED UNLESS AN ENGINEERING STUDY DETERMINES THAT A STOP SIGN IS REQUIRED. IF A STOP SIGN IS REQUIRED, 36" X 36" STOP AHEAD (W3-1) SHALL BE PLACE IN ADVANCE OF THE RAILROAD SIGN (W10-1) ACCORDING TO SECTION 2C.05 AND TABLE 2C-4 IN THE MUTCD. FOR SINGLE LANE CONVENTIONAL ROADS USE 36"X36"X36" YIELD SIGN. FOR MULTI-LANE CONVENTIONAL ROADS USE 48"X48"X48" YIELD SIGN FOR ADDITIONAL INFORMATION FOR STOP AND YIELD SIGN SIZES, SEE TABLE 8B-1 OF THE MUTCD.

(B) ONLY REFLECTIVE SHEETING ON THE QUALIFIED PRODUCT LIST (10A) SHALL BE USED.

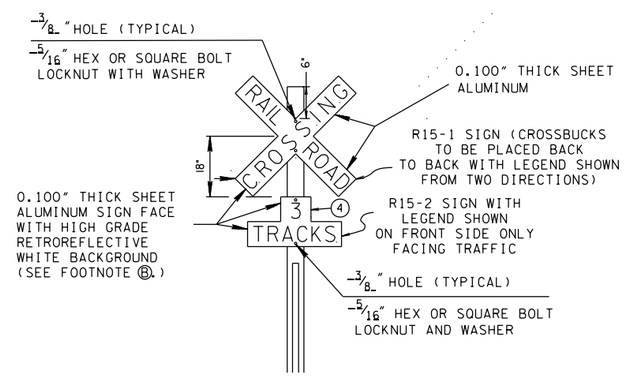
(C) RAILROAD CROSS-BUCK SIGN AND SUPPORT, YIELD/STOP SIGN, NUMBER OF TRACKS AUXILIARY SIGN, AND TRACK ID PLATE IS TO BE PAID FOR UNDER ITEM NO. 713-16.05, RAILROAD CROSS-BUCK SIGN AND SUPPORT PER EACH. THIS PAY ITEM SHALL INCLUDE THE FURNISHING AND INSTALLING OF THE SIGNS, SUPPORT AND HARDWARE.

(D) LOCATION OF THE CROSSBUCK SIGN AND SUPPORT WITH RESPECT TO THE CENTERLINE OF THE NEAREST TRACK SHALL BE IN ACCORDANCE WITH THE TYPICAL LOCATION PLAN FOR FLASHING LIGHT SIGNAL LOCATIONS AS SHOWN ON FIGURE 8C-2 OF THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). SEE SECTION 8C.06 OF THE MUTCD FOR ADDITIONAL INFORMATION.

(E) IF AN EXISTING CROSSBUCK SIGN AND SUPPORT IS TO BE REMOVED, THE CONSTRACTOR SHALL REMOVE AND INSTALL THE EXISTING AAR NUMBER PLATE ON THE PROPOSED CROSSBUCK SIGN. ALL COST ARE TO BE INCLUDED IN THE PRICE BID FOR ITEM NO. 713-16.05.

(F) TRACK ID PLATE TO BE MOUNTED ON LEFT SIDE FACING TRACK.

(G) SEE FIGURE 8B-2 AND SECTION 8B.04 OF THE MUTCD FOR ADDITIONAL INFORMATION FOR PASSIVE GRADE CROSSINGS.



REV. 11-1-11: REVISED GENERAL NOTES (A) AND (D). ADDED GENERAL NOTE (G). CHANGED R-15-2 SIGNS TO R15-2P.

☐ REV. 6-5-14: COMBINED T-S-16 AND T-S-16A.

REV. 7-1-72: CHANGED DEPARTMENT NAME.

REV. 7-26-73: CORRECT VERTICAL AND LATERAL CLEARANCES AND RAILROAD CROSSBUCK SIGN TO AGREE WITH 1971 MUTCD. ELIMINATED USE OF WOOD POST SUPPORTS AND CHANGEABLE NUMERAL DETAIL.

REV. 8-24-73: BREAKAWAY ADDED TO SQUARE TUBE POST DESCRIPTION. REFERENCE ARROWS ADDED FROM RI5-2 TO THE APPROPRIATE SIGNS.

REV. 2-21-74: PAY ITEM AND NOTE ADDED REGARDING RAILROAD CROSS-BUCK SIGN AND SUPPORT.

REV. 1-1-76: CHANGED DWG. NO. FROM RD-S-16 (68) TO T-S-16.

REV. 3-15-76: DELETED REFERENCE TO OLD DWG. NO., SUBSTITUTED NEW DWG. NO.

REV. 2-25-77: THE WORD "STEEL" ELIMINATED FROM U-POST.

REV. 10-24-79: U-POST CONNECTION DETAIL REVISED.

REV. 12-12-83: CONNECTION DETAIL U-POST CHANGED.

REV. 5-28-84: CONNECTION DETAIL U-POST AND RAILROAD CROSSBUCK SIGN AND SUPPORT CHANGED.

REV. 10-31-84: ADDED TAMPER PROOF NUT TO CONNECTION DETAIL U-POST.

REV. 2-12-85: ADDED POP-RIVET ALTERNATE TO U-POST CONNECTION DETAIL.

REV. 4-10-86: ADDED REFERENCE TO SECTION 2A-21 OF MUTCD.

REV. 7-8-86: REDREW SHEET. DELETED POP-RIVET ALTERNATE. ADDED NOTES.

REV. 10-15-90: REDREW AND REORGANIZED SHEET. CHANGED MINIMUM DEPTH OF "U" POST IN GROUND FROM 3'-0" TO 3'-6".

REV. 1-16-91: ELIMINATED SHOULDER INSTALLATION USING THREE SUPPORTS.

REV. 2-12-91: CORRECTED FOOTNOTE NUMBERS IN BOTH SHOULDER INSTALLATION DETAILS.

☒ REV. 7-29-92: CHANGED U7 POST TO P8 POST IN RAILROAD CROSSBUCK SIGN AND SUPPORT DETAIL.

☒ REV. 7-29-96: CHANGED MATERIAL ON CROSSBUCK AND TRACK NUMBER SIGN. ADDED WHITE RETROREFLECTIVE STRIP TO CROSSBUCK SUPPORT.

☒ REV. 1-19-99: ADDED FOOTNOTE (B).

☒ REV. 5-27-01: CHANGED DESCRIPTION IN ITEM NO. 713-16.05.

☒ REV. 7-29-04: IN RAILROAD CROSSBUCK SIGN AND SUPPORT DETAIL MOVED 18" DIMENSION LINE.

☒ REV. 10-23-06: ADDED GENERAL NOTE (D), (E) AND TRACK ID PLATE.

REV. 11-1-11: ADDED RAILROAD ADVANCE WARNING SIGN DETAIL.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GROUND MOUNTED ROADSIDE SIGN PLACEMENT DETAILS

T-S-16

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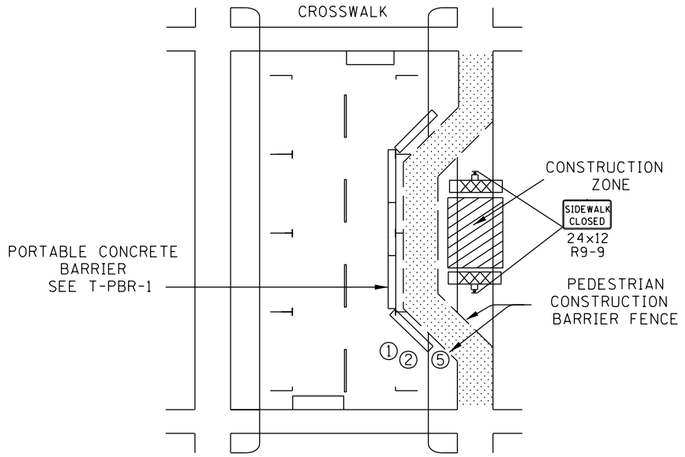
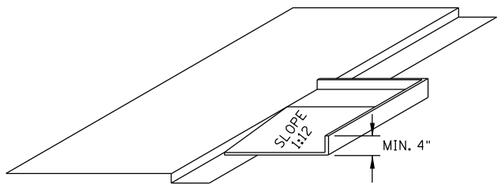
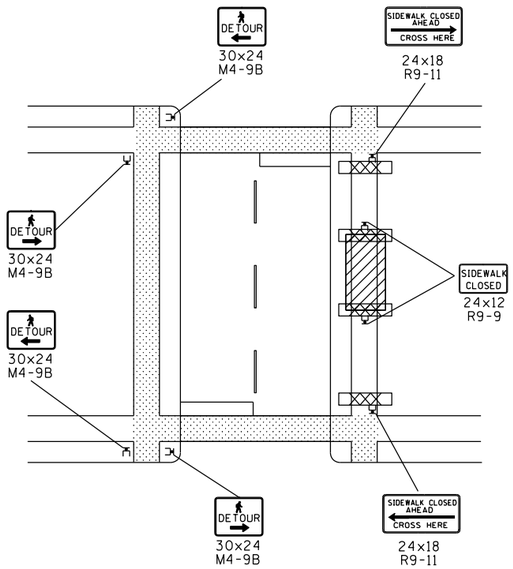
REV. 6-30-14: ADDED ITEM NUMBER FOR PEDESTRIAN CONSTRUCTION BARRIER FENCE.



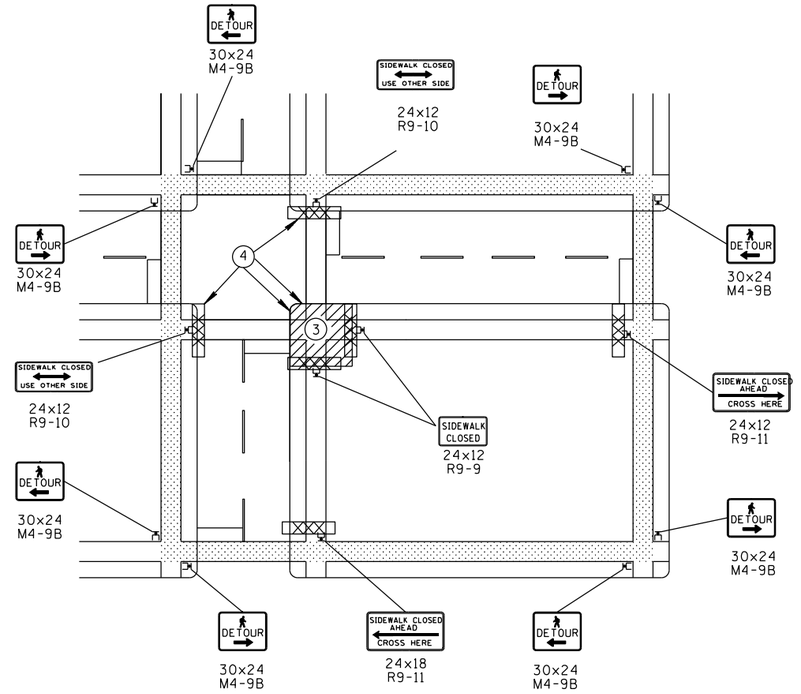
SIDEWALK DIVERSION



PLYWOOD CURB RAMP DETAIL



SIDEWALK CLOSURE, MIDBLOCK



SIDEWALK CLOSURE, CORNER

GENERAL NOTES FOR SIDEWALK DIVERSION

(A) SIDEWALK DIVERSION MAY BE USED ON ROADS WITH ON STREET PARKING LANES ADJACENT TO THE SIDEWALK CLOSURE.

(B) THE PEDESTRIAN WALKWAY SHALL BE AT LEAST 5' WIDE.

(C) TEMPORARY FACILITIES SHALL BE COMPLIANT WITH THE CURRENT VERSION OF THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG).

(D) DIVERSIONS MUST BE CLEARLY IDENTIFIED, PROTECTED FROM TRAFFIC AND FREE FROM HAZARDS.

(E) PEDESTRIAN CONSTRUCTION BARRIER FENCE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE DIVERSION WITH A DETECTABLE EDGING WITH A BOTTOM NO HIGHER THAN 2.5" ABOVE THE SURFACE AND TOP NO LESS THAN 6" ABOVE THE SURFACE. THE PEDESTRIAN CHANNELIZATION DEVICE SHALL BE ORANGE. HIGH VISIBILITY FENCE, PED. RAIL, AND CHAIN LINK FENCE ARE ACCEPTABLE. COST OF FENCE TO BE PAID UNDER ITEM NUMBER:
707-11.01 PEDESTRIAN CONSTRUCTION BARRIER FENCE PER L.F.

(F) CROSSING THE DIVERSION PATH BY CONSTRUCTION VEHICLES SHOULD BE AVOIDED, WHEN NECESSARY IT SHALL BE CONTROLLED BY FLAGGER.

(G) TRAFFIC CONTROL DEVICES FOR VEHICULAR TRAFFIC ARE NOT SHOWN BUT ARE REQUIRED FOR CLOSING THE LANE.

(H) A SMOOTH, HARD, CONTINUOUS AND RIDEABLE SURFACE SHALL BE PROVIDED THROUGHOUT THE LENGTH OF THE DIVERSION.

(I) THE COST OF MAINTAINING PEDESTRIAN DIVERSION, (INCLUDING HANDICAP RAMPS IF NEEDED) SHALL NOT BE PAID DIRECTLY BUT PAID FOR IN THE COST OF OTHER ITEMS.

FOOTNOTES

1. IF PARKING STALLS ARE USED FOR DIVERSION, CHANNELIZING DEVICES MAY BE SUBSTITUTED FOR PORTABLE BARRIER RAILS IF PORTABLE BARRIER RAILS ARE DEEMED UNNECESSARY BY ENGINEERING JUDGEMENT.
2. IF DIVERSION REQUIRES A LANE CLOSURE SEE T-WZ-SERIES FOR FURTHER INFORMATION.
3. LIMIT WORK TO ONE CORNER AT A TIME TO MINIMIZE DISRUPTION TO PEDESTRIAN TRAFFIC.
4. PEDESTRIAN TRAFFIC SIGNAL DISPLAYS CONTROLLING CLOSED CROSSWALKS SHALL BE COVERED.
5. AREAS WHERE THE ROUTE CROSSES GRASSY TERRAIN OR ELEVATION CHANGES PLYWOOD MAY BE USED WITH A HIGHLIGHTED BEVEL AT THE JOINT.

GENERAL NOTES FOR SIDEWALK CLOSURE

(A) TRAFFIC CONTROL DEVICES FOR VEHICULAR TRAFFIC ARE NOT SHOWN BUT MAY BE REQUIRED TO CONTROL VEHICLES THROUGH WORK ZONE.

(B) SIGNS R9-9, R9-10 AND R9-11 TO BE ATTACHED TO TYPE III BARRICADE. ALL OTHER SIGNS SHOWN ON THIS PLAN MAY BE PLACED ON PORTABLE SUPPORTS.

(C) MINIMIZE PEDESTRIAN OUT-OF-DIRECTION TRAVEL. IT IS NOT ACCEPTABLE TO REQUIRE PEDESTRIANS TO RETRACE THEIR PATH TO FIND A SAFE CROSSING.

(D) DETOUR SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING FACILITY.

(E) BARRICADES SHALL BE PLACED ACROSS THE FULL WIDTH OF THE CLOSED SIDEWALK.

(F) WORK SHALL BE EXPEDITED TO MINIMIZE IMPACTS TO BUSINESS CAUSED BY THE SIDEWALK CLOSURE.

PORTABLE BARRIER RAIL

UNDER PEDESTRIAN TRAFFIC

UNDER CONSTRUCTION

PEDESTRIAN CONSTRUCTION BARRIER FENCE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SIDEWALK TRAFFIC CONTROL

2-29-12 | I-WZ-55

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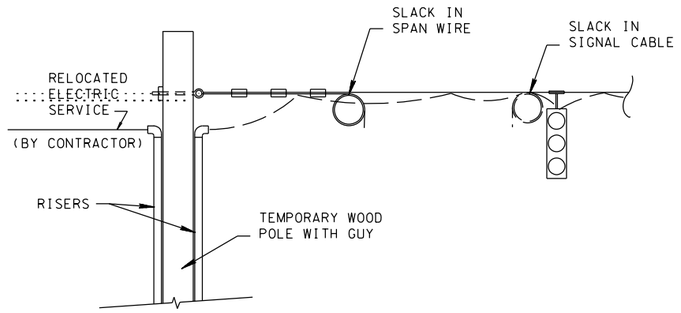
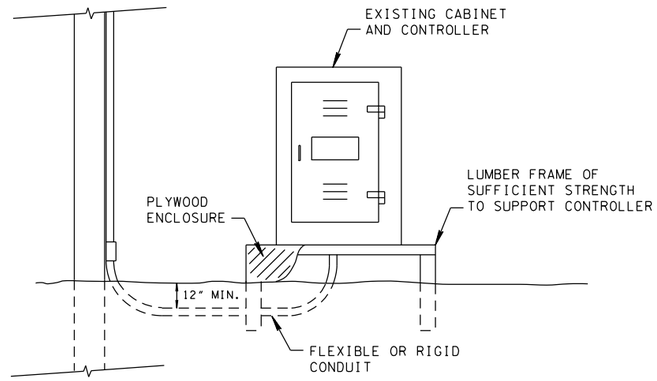
☐ REV. 7-29-04: REDREW SHEET.
☐ REV. 7-8-14: CORRECTED NOTE (G8).



TYPICAL DETAIL FOR TEMPORARY SUPPORTS, SPANS AND CABLES
(REFERENCE STANDARD DRAWING T-SG-1)



DETAIL FOR TEMPORARY RELOCATION OF EXISTING BASE-MOUNT CONTROLLER

NOTES FOR TEMPORARY SIGNALS

(T1) WHEN CONSTRUCTION OPERATIONS AND PHASING REQUIRE THE REMOVAL OR RELOCATION OF EXISTING SIGNAL EQUIPMENT (I.E., SIGNAL SUPPORTS, BASE-MOUNTED CONTROLLERS), THE CONTRACTOR MAY USE THE FOLLOWING METHODS TO MAINTAIN SIGNALIZATION.

(1) THE CONTRACTOR MAY RELOCATE EXISTING EQUIPMENT.

(2) THE CONTRACTOR MAY USE PROPOSED EQUIPMENT. EQUIPMENT SUCH AS SIGNAL SUPPORTS, BASE-MOUNTED CONTROLLERS, PULLBOXES, AND CONDUIT SHALL BE INSTALLED IN THE PROPOSED FINAL LOCATION AND AT FINAL GRADES AND SHALL NOT BE RELOCATED. IF PROPOSED SPAN WIRE AND/OR SIGNAL CABLES ARE USED WITH TEMPORARY SUPPORTS, SUFFICIENT SLACK SHALL BE LEFT TO ATTACH TO FINAL SUPPORTS AND FOR FINAL SIGNAL HEAD ALIGNMENT OR FOR REPOSITIONING EQUIPMENT DURING CONSTRUCTION PHASING. IF CONDITIONS MAKE IT IMPRACTICAL TO LEAVE SLACK IN SPAN WIRE, THE PROPOSED SPAN WIRE MAY BE OVERRUN, AS APPROVED BY THE ENGINEER. (IN PROJECTS WHERE FINAL SUPPORTS ARE MAST ARM POLES AND TEMPORARY WOOD POLES ARE PROVIDED IN THE PLANS, TEMPORARY SPAN WIRE WILL ALSO BE PROVIDED IN THE PLANS.)

(3) THE CONTRACTOR MAY SUPPLY AND USE TEMPORARY EQUIPMENT, AS PROVIDED FOR IN THE PLANS OR AT HIS OWN DISCRETION. THIS MATERIAL AND EQUIPMENT, WHILE NOT REQUIRED TO BE NEW, SHALL BE IN GOOD CONDITION AND READY FOR USE. IF THE CONTRACTOR ELECTS TO USE A TRAFFIC SIGNAL CONTROLLER THAT IS NOT NEW, CERTIFICATION SHALL BE SUBMITTED THAT THE EQUIPMENT HAS BEEN TESTED TO THE ORIGINAL MANUFACTURER'S SPECIFICATIONS AND IS IN GOOD WORKING CONDITION, AND THAT ALL APPLICABLE NEMA ENVIRONMENTAL STANDARDS ARE MET. WHEN THE CONTRACTOR SUPPLIES AND USES TEMPORARY EQUIPMENT, HE ASSUMES ALL MAINTENANCE RESPONSIBILITIES ASSOCIATED WITH THAT EQUIPMENT, AND RETAINS POSSESSION OF THE EQUIPMENT AT THE END OF ITS USE.

(T2) TYPICAL PAY ITEMS THAT MAY BE INCLUDED IN THE PLANS FOR USE IN TEMPORARY SIGNALS INCLUDE WOOD POLES, GUYING DEVICES, SPAN WIRE, AND CONDUIT RISERS, AND THESE ITEMS WILL BE SO NOTED. THERE WILL BE NO DIRECT PAYMENT FOR OTHER COSTS RELATED TO RELOCATING OR REPOSITIONING SIGNAL EQUIPMENT OR FOR TEMPORARY EQUIPMENT PROVIDED AT THE CONTRACTOR'S DISCRETION.

GENERAL NOTES FOR MAINTAINING EXISTING AND PROPOSED SIGNALS DURING HIGHWAY CONSTRUCTION

(G1) EXISTING TRAFFIC SIGNALS SHALL REMAIN OPERATIONAL UNTIL THE PROPOSED SIGNALS ARE PLACED IN OPERATION.

(G2) WHEN IT IS NECESSARY TO PUT AN EXISTING TRAFFIC SIGNAL OUT OF OPERATION FOR SHORT PERIODS OF TIME, THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE A LICENSED OFFICER TO CONTROL TRAFFIC. THE SIGNAL SHALL BE PLACED BACK IN OPERATION BY THE END OF THE WORKING DAY.

(G3) THE LOCAL AGENCY IS RESPONSIBLE FOR ROUTINE MAINTENANCE OF EXISTING SIGNAL EQUIPMENT DURING CONSTRUCTION. ANY EXISTING EQUIPMENT THAT IS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

(G4) THE CONTRACTOR SHALL NOTIFY THE LOCAL AGENCY A MINIMUM OF TWENTY-FOUR (24) HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS THAT WILL RENDER EXISTING DETECTION LOOPS USELESS. THE LOCAL AGENCY WILL ARRANGE TO DISCONNECT THE LOOPS AND MAKE APPROPRIATE ADJUSTMENTS TO SIGNAL TIMING PRIOR TO THESE OPERATIONS.

(G5) ALL PROPOSED SIGNAL HEADS SHALL BE BAGGED AND COMPLETELY COVERED UNTIL THEY ARE PUT INTO USE.

(G6) PROPOSED SIGNALS INSTALLED AT PREVIOUSLY UNSIGNALIZED INTERSECTIONS SHALL BE FLASHED A MINIMUM OF SEVEN (7) DAYS BEFORE PUT INTO FINAL OPERATION.

(G7) THE EXISTING SIGNAL PHASING SHALL BE CONTINUED DURING THE CONSTRUCTION PERIOD. PROPOSED PHASING, IF DIFFERENT, MAY BE IMPLEMENTED WHEN PROPOSED SUPPORTS, SIGNAL HEADS, CONTROLLER, AND ROADWAY GEOMETRY ARE IN PLACE SUCH THAT PROPOSED PHASING IS PRACTICAL.

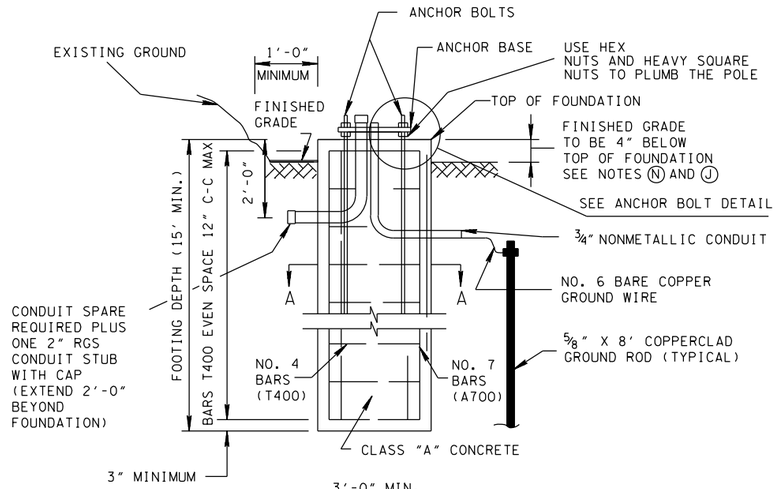
(G8) SIGNAL HEADS SHALL BE REPOSITIONED FOR CHANGES IN CONSTRUCTION PHASING TO CONFORM TO REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THIS MAY REQUIRE ADDITIONAL NEAR SIDE SIGNAL HEADS IF STOPLINE TO SIGNAL HEAD DISTANCE EXCEEDS 180' (120' IF 8 INCH LENSES ARE USED) OR IS LESS THAN 40'.

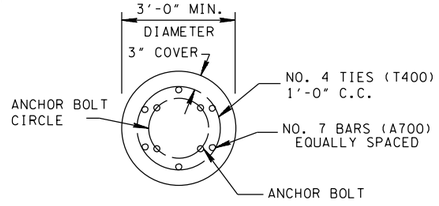
☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF EXISTING SIGNALS DURING HIGHWAY CONSTRUCTION

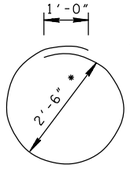
10-26-91 | I-SG-11





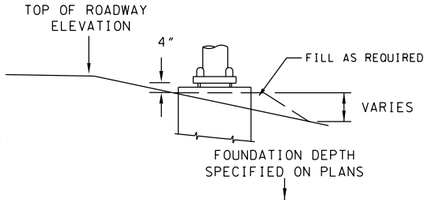
SECTION A-A

FOUNDATION DETAIL FOR STRAIN OR MAST ARM POLE

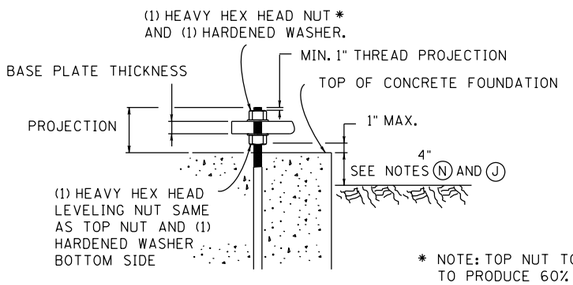


T400 BARS SHALL LAP 1'-0"

* FOR 3'-0" DIAMETER FOOTING. USE 3'-6" FOR 4'-0" DIAMETER FOOTING.



LOW SHOULDER FOUNDATION DETAIL

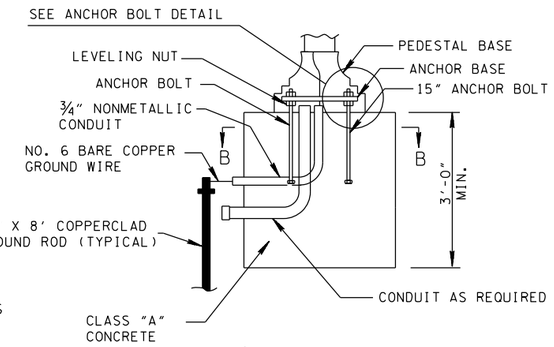


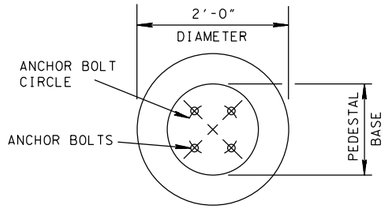
ANCHOR BOLT DETAIL

* NOTE: TOP NUT TO BE TOROUED TO PRODUCE 60% YIELD STRESS OF ANCHOR BOLT.
NOTE: DO NOT GROUT BETWEEN BOTTOM OF BASE PLATE AND TOP OF CONCRETE FOUNDATION.

UNDER NO CONDITIONS WILL DRILLED AND GROUTED ANCHOR BOLTS BE ALLOWED)
(CANTILEVER AND BUTTERFLY SIGN BASES SHALL REQUIRE A MINIMUM OF 8 ANCHOR BOLTS 1 ½" IN DIAMETER)

REQUIRED BEARING AREA FOR ANCHOR BOLT	
ANCHOR BOLT DIA(IN)	HEAD OR NUT AREA (SQ IN)
1"	1.800
1¼"	2.812
1½"	4.050
1¾"	5.512
2"	7.199
2¼"	9.122
2½"	11.249





SECTION B-B

FOOTING DETAIL FOR STEEL PEDESTAL POLE

- REV. 9-18-89: ADDED NOTE (J) AND GRADE DETAILS TO FOOTING DETAIL.
- REV. 1-18-91: REDREW AND REORGANIZED SHEET. ADDED GENERAL NOTE (K) REGARDING FOOTINGS IN ROCK.
- REV. 1-19-96: CHANGED GENERAL NOTE (A).
- REV. 2-14-99: REVISED GENERAL NOTE (K).

  REV. 12-16-03: REVISED SHEET TITLE. DELETED ESTIMATED QUANTITY FOR FOUNDATIONS LESS THAN 10', ADDED SPARE CONDUIT TO STRAIN OR MAST ARM FOUNDATION DETAIL, ADDED LOW SHOULDER FOUNDATION DETAIL, DELETED NOTE G, RE LETTERED REMAINING NOTES AND ADDED NOTES (L) TO (N).

  REV. 7-29-04: MODIFIED ESTIMATED FOOTING QUANTITIES FOR STRAIN POLE TABLE. ADDED LOWER SHOULDER FOUNDATION DETAIL.
- REV. 02-15-07: ADDED ANCHOR BOLT DETAIL. REVISED GENERAL NOTES (D),(G) & (N) AND CHANGED TITLE
- REV. 1-5-10: MODIFIED ESTIMATED FOUNDATION QUANTITIES TABLE.

  REV. 5-6-13: MODIFIED ESTIMATED FOUNDATION QUANTITIES, T400 BARS, GENERAL NOTES AND FOUNDATION DETAILS.
- REV. 12-4-13: CHANGED ANCHOR BOLTS TO THREADED. ADDED BEARING AREA TABLE.
- REV. 6-11-14: ADDED 2' DIA FOUNDATION FOR PEDESTAL POLES. ADDED NOTES (N)

ESTIMATED FOUNDATION QUANTITIES

FOOTING DIAMETER	FOOTING DEPTH	T400 REINFORCING BARS			A700 REINFORCING BARS			CONCRETE (CUBIC YARDS)	MAXIMUM DESIGN MOMENT (FT-KIP) SERVICE LOAD
		NUMBER OF BARS	LENGTH OF EACH BAR	TOTAL WEIGHT IN POUNDS	NUMBER OF BARS	LENGTH OF EACH BAR	TOTAL WEIGHT IN POUNDS		
3'-0"	15'-0"	15	8'-10"	89	8	14'-6"	237	3.9	134
3'-0"	16'-0"	16	8'-10"	95	8	15'-6"	253	4.2	150
3'-0"	17'-0"	17	8'-10"	101	10	16'-6"	337	4.5	167
3'-0"	18'-0"	18	8'-10"	107	10	17'-6"	358	4.7	184
3'-0"	19'-0"	19	8'-10"	113	10	18'-6"	378	5.0	202
3'-0"	20'-0"	20	8'-10"	119	12	19'-6"	478	5.2	221
3'-0"	21'-0"	21	8'-10"	125	12	20'-6"	503	5.5	240
3'-0"	22'-0"	22	8'-10"	130	12	21'-6"	527	5.8	260
3'-0"	23'-0"	23	8'-10"	136	12	22'-6"	552	6.0	280
3'-0"	24'-0"	24	8'-10"	142	14	23'-6"	672	6.3	300
4'-0"	15'-0"	15	12'-0"	121	10	14'-6"	296	7.0	179
4'-0"	16'-0"	16	12'-0"	128	10	15'-6"	317	7.4	200
4'-0"	17'-0"	17	12'-0"	136	12	16'-6"	405	7.9	223
4'-0"	18'-0"	18	12'-0"	145	12	17'-6"	429	8.4	246
4'-0"	19'-0"	19	12'-0"	153	12	18'-6"	454	8.8	270
4'-0"	20'-0"	20	12'-0"	161	14	19'-6"	558	9.3	295
4'-0"	21'-0"	21	12'-0"	169	14	20'-6"	587	9.8	320
4'-0"	22'-0"	22	12'-0"	177	14	21'-6"	615	10.2	346
4'-0"	23'-0"	23	12'-0"	185	16	22'-6"	736	10.7	373
4'-0"	24'-0"	24	12'-0"	193	16	23'-6"	769	11.2	401
4'-0"	25'-0"	25	12'-0"	201	16	24'-6"	801	11.7	429
4'-0"	26'-0"	26	12'-0"	209	18	25'-6"	938	12.1	458
4'-0"	27'-0"	27	12'-0"	217	18	26'-6"	975	12.6	487
4'-0"	28'-0"	28	12'-0"	224	18	27'-6"	1012	13.0	517
4'-0"	29'-0"	29	12'-0"	233	20	28'-6"	1165	13.5	547
4'-0"	30'-0"	30	12'-0"	241	20	29'-6"	1206	14.0	578
4'-0"	31'-0"	31	12'-0"	248	20	30'-6"	1247	14.4	609
4'-0"	32'-0"	32	12'-0"	257	22	31'-6"	1416	14.9	641
2'-0"	6'-0"	7	5'-9"	27	6	5'-6"	67	0.7	(N)

GENERAL NOTES

(A) ALL STEEL STRAIN POLES SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION, SECTION 730 - TRAFFIC SIGNALS.

(B) STRAIN POLES SHALL BE DESIGNED ACCORDING TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (CURRENT EDITION).

(C) THE CONTRACTOR SHALL FURNISH POLES DESIGNED FOR A WIND VELOCITY ACCORDING TO THE CURRENT STANDARDS AS SPECIFIED IN AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS".

(D) ANCHOR BOLTS SHALL BE DESIGNED BY THE POLE FABRICATOR. THEY SHALL BE CAPABLE OF RESISTING THE FULL BENDING MOMENT OF THE SHAFT AT ITS YIELD STRENGTH STRESS.

MATERIAL SPECIFICATI NS - BOLTS:

1.) ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 55 ksi WITH THREADS CONFORMING TO THE REQUIREMENTS OF ASTM A563.

2.) NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A563.

3.) ALL HARDWARE, EXCEPT STAINLESS STEEL, SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A153 OR MECHANICALLY GALVANIZED ACCORDING TO ASTM B695.

(E) THE COST OF ALL FOOTING MATERIALS AND INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR STEEL POLES

(F) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND NOTES TO THE ENGINEER OF STRUCTURES FOR APPROVAL PRIOR TO FABRICATION.

(G) THE MOMENT CAPACITY OF THE STRAIN POLES AND THE FOOTING DEPTHS FOR BOTH STRAIN POLE AND MAST ARM POLE SHALL BE AS SPECIFIED IN THE PLANS.

(H) CANTILEVER SIGNAL SUPPORTS SHALL BE DESIGNED BY THE POLE FABRICATOR.

(I) TOP OF FOOTING SHALL BE FLUSH IN SIDEWALK OR PAVED ISLANDS. TOP OF FOOTING SHALL NOT EXTEND MORE THAN 4" ABOVE THE GROUND LINE IN OTHER AREAS.

(J) IF ROCK IS ENCOUNTERED WHILE DRILLING FOR FOOTING, AND CORE AND THE DRILLING INDICATES ROCK IS SOLID, THE CONTRACTOR SHALL PROCEED BY ONE OF TWO METHODS. METHOD1: PROVIDE A ROCK SOCKET TWO TIMES THE DIAMETER OF THE POLE FOUNDATION. METHOD 2: DRILL SIX 1⅛" DIAMETER HOLES IN TO ROCK A MIMIMUM DISTANCE OF THREE FEET. FILL HOLES WITH A-B EPOXY MIX AND ROTATE THE A700 BARS UNTIL FULLDEPTH IS ACHIEVED. THE A-B EPOXY MIX SHALL BE APPROVED BY TENNESSE DEPARTMENT OF TRANSPORTATION, MATERIALS AND TEST DIVISION. GROUND ROD MAY BE PLACED HORIZONTALLY, AS DEEP AS ROCK ALLOWS, WITH A 3" MINIMUM SEPARATION FROM ANY CONDUIT. THE CONTRACTOR SHALL CONTACT THE DIVISION OF STRUCTURES TO DETERMINE WHICH METHOD IS APPLICABLE OR WHETHER A SPECIAL SPREAD FOOTING DESIGN MUST BE FURNISHED BT THE DIVISION OF STRUCTURES.

(K) ALL STRAIN POLES AND MAST ARM POLES TO HAVE SPARE 2" RGS CONDUIT STUB EXTENDING 24" BEYOND POLE FOUNDATION.

(L) ALL CONDUIT BENDS IN POLE FOUNDATION TO BE 6" RADIUS.

(M) BASE OF POLE SHALL REMAIN OPEN TO PERMIT DRAINAGE AND AIR CIRCULATION. FINISHED GROUND PROFILE SHOULD DRAIN WATER AWAY FROM FOUNDATION.

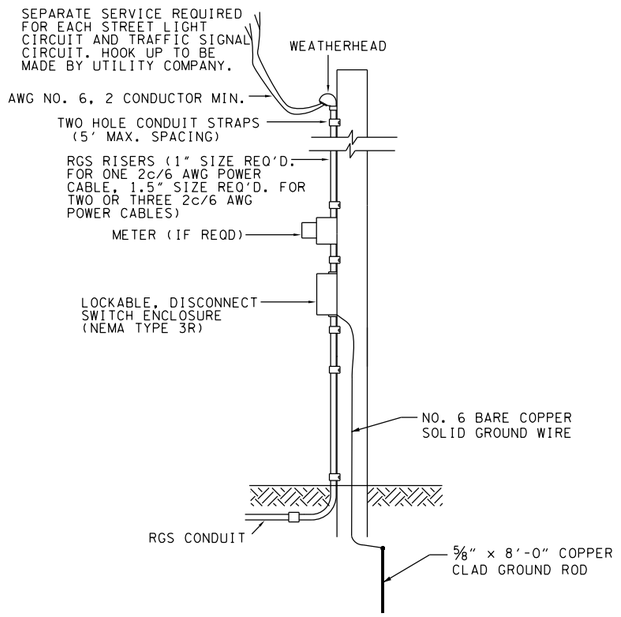
(N) 2' DIAMETER FOUNDATION ONLY TO BE USED WITH PEDESTAL POLE (SEE T-SG-9A).

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

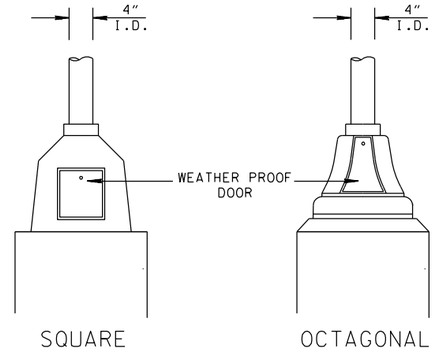
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MAST ARM POLE AND STRAIN POLES FOUNDATION DETAILS

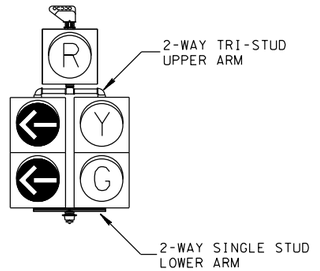
T-SG-10



POWER SERVICE DETAIL



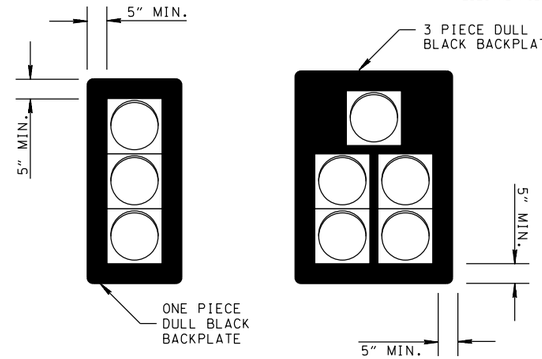
CAST PEDESTAL BASE ALTERNATES



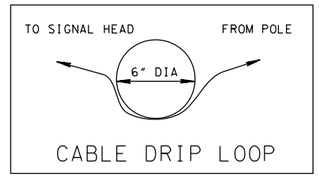
5-SECTION SIGNAL HEAD

REV. 12-4-13: CHANGED ANCHOR BOLTS TO THREADED.

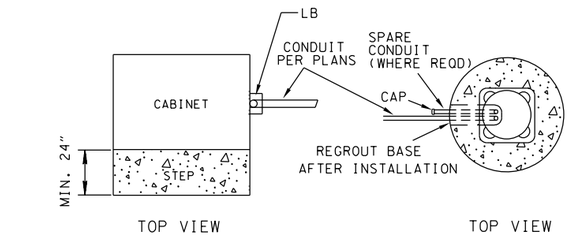
REV. 5-1-14: MODIFIED PEDESTAL POLE HEIGHT.

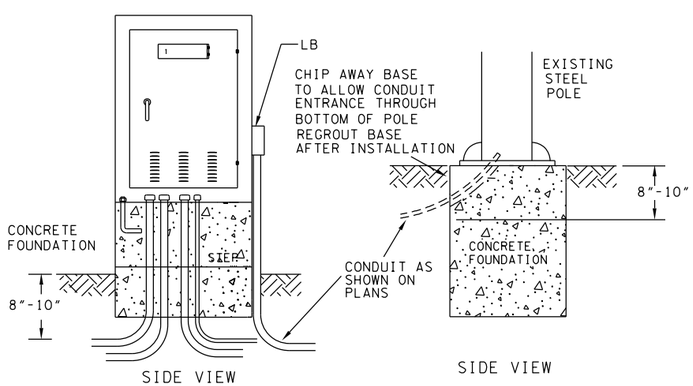


TRAFFIC SIGNAL BACKPLATE DETAIL

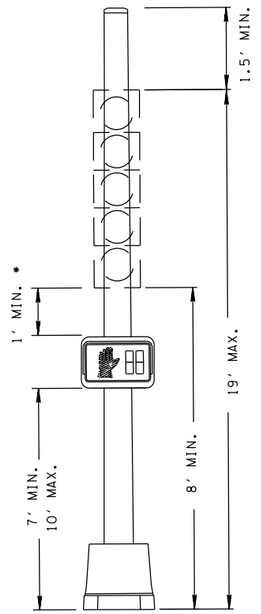


TO PREVENT WATER FROM ENTERING SIGNAL HEAD LOOP CABLE BETWEEN POLE AND SIGNAL HEAD



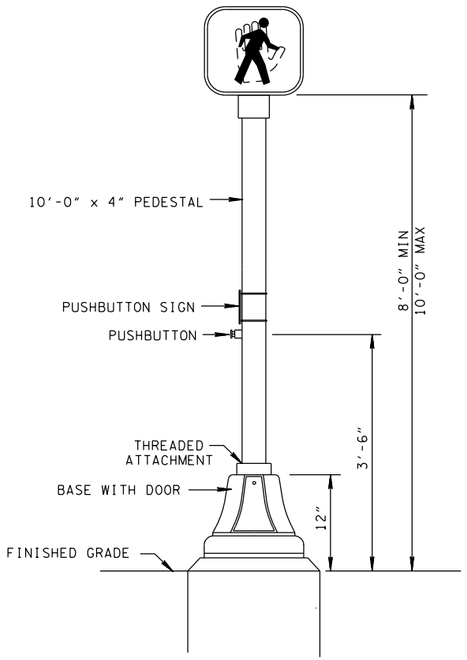


CONDUIT ENTRANCE DETAIL
(EXISTING CABINET OR POLE)



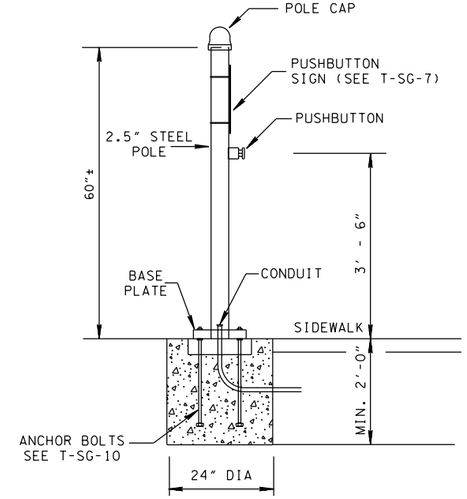
PEDESTAL POLE

* IF PEDESTRIAN DISPLAYS ARE PROVIDED ON SAME POLE, THE MINIMUM HEIGHT OF THE VEHICULAR DISPLAY SHALL BE AT LEAST ONE FOOT ABOVE THE TOP OF THE PEDESTRIAN DISPLAY, HOUSING AND BRACKETS.

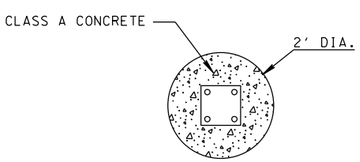


PEDESTAL MOUNTING

FOR PEDESTAL POLE FOOTING SEE 2' DIAMETER FOOTING ON T-SG-10



PEDESTRIAN PUSHBUTTON POST



FOUNDATION DETAIL
PEDESTRIAN PUSHBUTTON POST

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS SIGNAL DETAILS

7-29-04 | T-SG-9A

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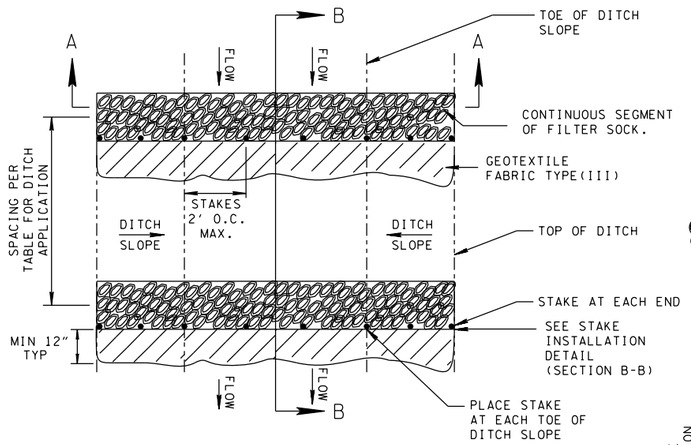
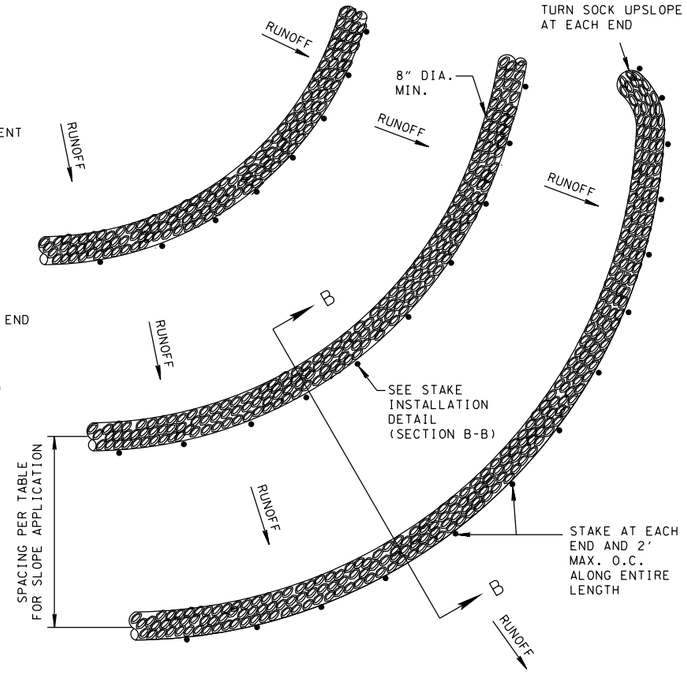
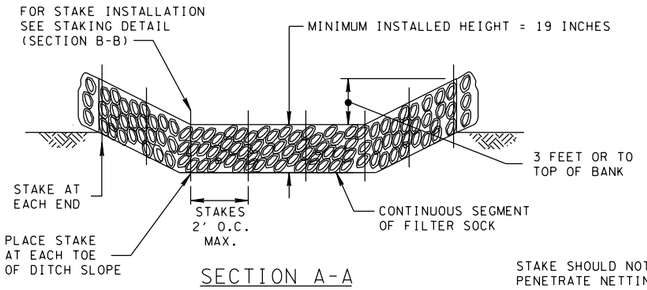


PLAN VIEW FOR DITCH APPLICATION

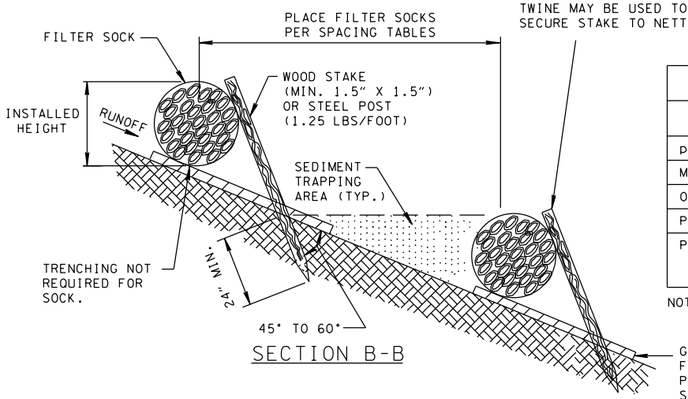


PLAN VIEW FOR SLOPE APPLICATION



SECTION A-A

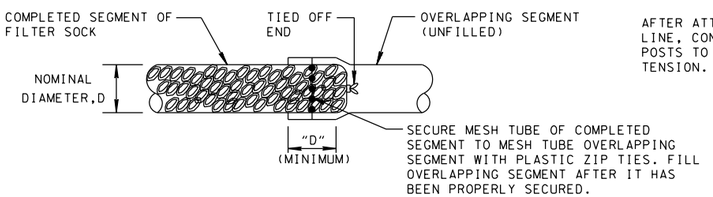
SOCK HEIGHTS INSTALLED		
NOMINAL DIAMETER, D	INSTALLED HEIGHT OF SINGLE SOCK	INSTALLED HEIGHT OF STACKED SOCKS
8"	6.5"	N/A
12"	9.5"	19"
18"	14.5"	29"
24"	19"	38"



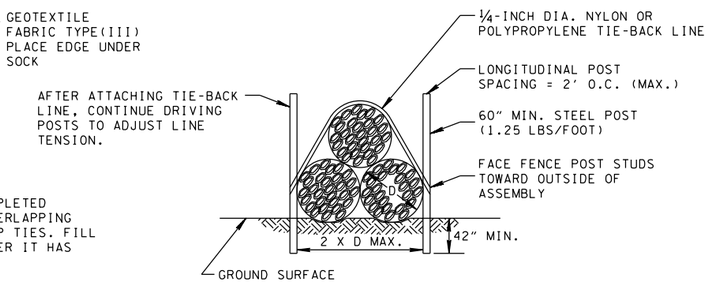
SECTION B-B

MINIMUM SPECIFICATION FOR FILTER MEDIA		
PROPERTY	UNITS	RANGE
pH	pH	5.0 - 8.5
MOISTURE CONTENT	% WET WEIGHT BASIS	< 60
ORGANIC MATTER CONTENT	% DRY WEIGHT BASIS	25 - 100
PHYSICAL CONTAMINANTS	% DRY WEIGHT BASIS	< 1
PARTICLE SIZE	% PASSING SELECTED MESH SIZE, DRY WEIGHT BASIS	2 INCH - 99% ⅜INCH - 30% - 50% MAX. PARTICLE SIZE 2 INCHES

NOTE: MANUFACTURER SPECIFICATION MAY BE SUBSTITUTED WITH THE APPROVAL OF ENGINEER.



FILTER SOCK JOINT DETAIL (FOR SLOPE APPLICATION ONLY)



FILTER SOCK STACKING DETAIL
SEE NOTE (D)

EROSION CONTROL PLAN LEGEND: **SOCK**SOCK**SOCK**SOCK** FILTER SOCK

FILTER SOCK CHECK DAM ESTIMATED QUANTITIES						
	V-DITCH [1]			TRAPEZOIDAL DITCH [2]		
	24' FILTER SOCK (INSTALLED HEIGHT 19")	12" FILTER SOCK STACKED (INSTALLED HEIGHT 19")	18" FILTER SOCK STACKED (INSTALLED HEIGHT 29")	24' FILTER SOCK (INSTALLED HEIGHT 19")	12" FILTER SOCK STACKED (INSTALLED HEIGHT 19")	18" FILTER SOCK STACKED (INSTALLED HEIGHT 29")
LENGTH(FT)	20	60	48	24	72	60

1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, 4 FT DEPTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.

FILTER SOCK SPACING FOR SLOPE APPLICATION				
SLOPE	8"	12"	18"	24"
2%	70'	80'	N/A	N/A
5%	30'	60'	80'	N/A
10%	20'	30'	70'	80'
6:1	N/A	20'	40'	55'
4:1	N/A	20'	30'	30'
3:1	N/A	N/A	20'	25'
2:1	N/A	N/A	20'	20'

(P)

N/A = NOT RECOMMENDED
SPACING NOT TO EXCEED 80'

FILTER SOCK SPACING FOR DITCH APPLICATION	
DITCH SLOPE	MAXIMUM FILTER SOCK SPACING
LESS THAN 2%	80'
2%	80'
3%	50'
4%	40'
5%	30'
6%	20'
GREATER THAN 6%	20'

BASED ON AN INSTALLED HEIGHT OF 19 INCHES. SEE TABLE ON EC-STR-6 FOR OTHER HEIGHTS.

FILTER SOCK GENERAL NOTES

(A) FILTER SOCKS CAN BE PLACED IN DITCHES OR AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES. THEY CAN ALSO SERVE TO REMOVE SEDIMENT FROM RUNOFF AND RELEASE IT AS SHEET FLOW.

(B) FILTER SOCKS INSTALLED ON A SLOPE SHALL BE PLACED ALONG OR ON THE GROUND CONTOUR. WHERE POSSIBLE FILTER SOCKS APPLIED AT THE TOE OF A SLOPE SHOULD BE PLACED 10 FEET AWAY FROM THE TOE IN ORDER TO PROVIDE SEDIMENT STORAGE. THE MAXIMUM DRAINAGE AREA SHALL BE ¼ ACRE PER 100 LF OF SOCK.

(C) FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 15 ACRES. AT SITES WHICH OUTFALL TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM DRAINAGE AREA SHALL BE LIMITED TO 10 ACRES. FILTER SOCKS SHALL NOT BE USED IN STREAMS, WETLANDS, OTHER NATURAL WATER RESOURCES, OR IN DITCHES WITH CONTINUOUS FLOWS.

(D) FOR DITCH APPLICATIONS, THE MINIMUM INSTALLED HEIGHT OF A SINGLE SOCK, OR OF AN ASSEMBLY OF STACKED SOCKS, SHALL BE 19 INCHES. FILTER SOCKS MAY BE STACKED AS DETAILED ON THIS DRAWING TO ACHIEVE THE REQUIRED HEIGHT. SOCKS SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER. FILTER SOCKS SHALL CONTINUE UP THE SIDE SLOPES TO THE TOP OF BANK OR A MAXIMUM OF 3 FEET ABOVE THE INSTALLED HEIGHT FILTER SOCKS SHALL REMAIN IN PLACE UNTIL ALL UPSTREAM AREAS ARE PERMANENTLY STABILIZED.

(E) FILTER SOCKS SHALL CONSIST OF A TUBULAR MESH SOCK WITH OPENINGS NO GREATER THAN 3/8THS OF AN INCH IN SIZE. THE MESH SOCK IS NOT REQUIRED TO BE BIODEGRADABLE. FILL MATERIAL SHALL CONSIST OF EITHER WOOD CHIPS (MULCH) OR A 50/50 COMBINATION OF WOOD CHIPS AND MANUFACTURED COMPOST MATERIAL.

(F) FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED IN DIAMETERS OF 8, 12, 18 OR 24 INCHES. DIAMETER TOLERANCE IS 2 INCHES. A FILTER SOCK WILL FLATTEN OUT TO AN OVAL WHEN IT IS PLACED; THUS, THE INSTALLED HEIGHT WILL BE LESS THAN THE NOMINAL DIAMETER.

(G) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(H) FILTER SOCKS ARE FILLED ON THE PROJECT SITE AND MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED AS SHOWN ON THIS DRAWING.

(I) ANY PRODUCT LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE TO FILTER SOCKS IS ALSO ACCEPTABLE. FOR DITCH APPLICATIONS, SANDBAG OR GRAVEL BAG BERMS MAY ALSO BE USED AS ALTERNATE MATERIALS.

(J) FILTER SOCKS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-03.20 FILTER SOCK (8 INCH) PER LINEAR FOOT
209-03.21 FILTER SOCK (12 INCH) PER LINEAR FOOT
209-03.22 FILTER SOCK (18 INCH) PER LINEAR FOOT
209-03.23 FILTER SOCK (24 INCH) PER LINEAR FOOT
209-08.09 FILTER SOCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS (INCLUDING GEOTEXTILE FABRIC IF USED) AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF FILTER SOCKS.

(K) SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER SOCK WHEN IT HAS ACCUMULATED TO ONE-HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(L) FILTER SOCKS SHALL BE INSPECTED AFTER EACH RUNOFF EVENT AND SHALL BE REMOVED AND REPLACED IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

(M) FILTER SOCKS SHOULD BE REMOVED FROM SLOPES AFTER STABILIZATION IS COMPLETE. THIS MAY BE ACCOMPLISHED BY CUTTING THE SOCK OPEN AND SPREADING THE FILL MATERIAL ON THE SITE. ALL NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED. FILTER SOCKS APPLIED IN DITCHES SHALL BE COMPLETELY REMOVED.

(N) GEOTEXTILE FABRIC REQUIRED FOR SLOPE APPLICATION STEEPER THAN 6:1.

☐ REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

☐ REV. 6-10-14: MODIFIED SPACING TABLE. ADDED GEOTEXTILE FABRIC ADDED NOTE (N).

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

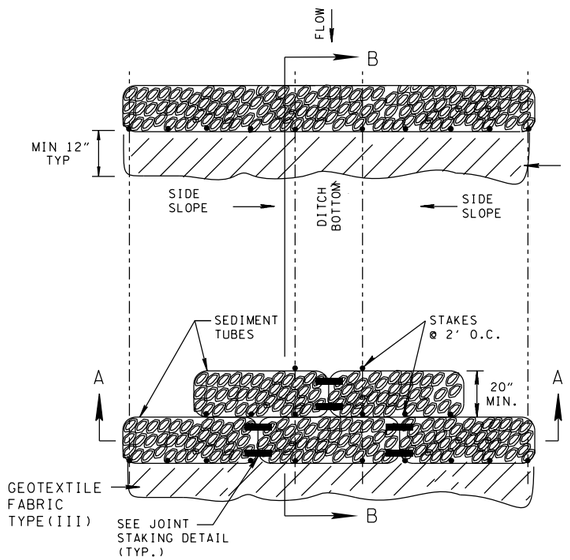
NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FILTER SOCK

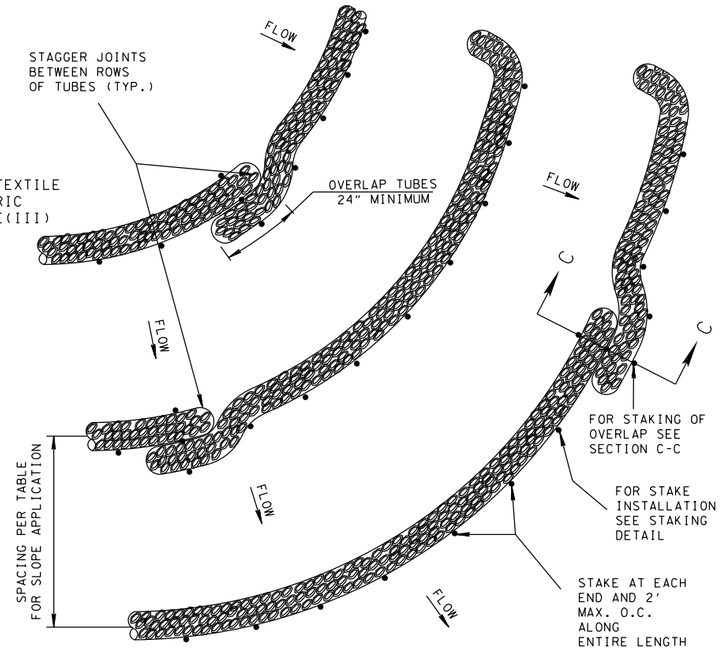
4-1-08 | EC-STR-8

- ☐ REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- ☐ REV. 4-1-08: REMOVED TEMPORARY REFERENCE, ADDED OVERLAP DETAIL, OTHER MINOR MISC. EDITS, REVISED GENERAL NOTES.
- ☐ REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.
- ☐ REV. 6-10-14: MODIFIED SPACING TABLES. ADDED GEOTEXTILES ADDED NOTE (P).



PLAN VIEW FOR DITCH APPLICATION

SEE NOTE (G)



PLAN VIEW FOR SLOPE APPLICATION

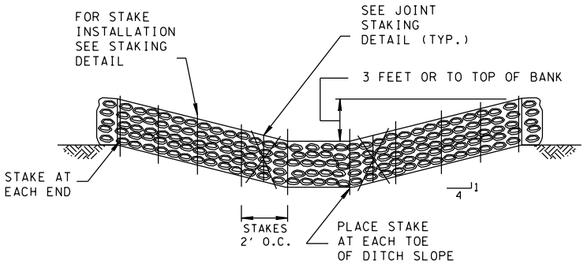
(P)

SEDIMENT TUBE SPACING FOR SLOPE APPLICATION					
SLOPE	8"	12"	18"	20"	24"
2%	70'	80'	N/A	N/A	N/A
5%	30'	60'	80'	N/A	N/A
10%	20'	30'	70'	80'	80'
6:1	N/A	20'	40'	50'	55'
4:1	N/A	20'	30'	30'	30'
3:1	N/A	N/A	20'	20'	25'
2:1	N/A	N/A	20'	20'	20'

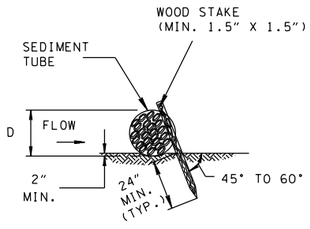
N/A = NOT RECOMMENDED
SPACING NOT TO EXCEED 80'

SEDIMENT TUBE SPACING TABLE FOR DITCH APPLICATION	
SLOPE	MAXIMUM SEDIMENT TUBE SPACING
LESS THAN 2%	80'
2%	80'
3%	50'
4%	40'
5%	30'
6%	20'
GREATER THAN 6%	20'

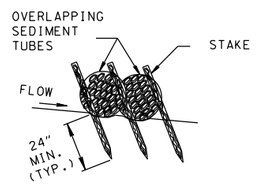
BASED ON A 20" SEDIMENT TUBE
SEE TABLE ON EC-STR-6 FOR OTHER HEIGHTS.



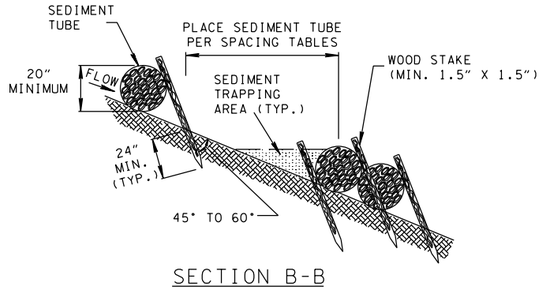
SECTION A-A



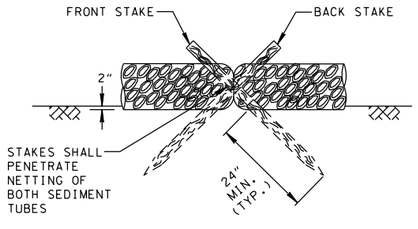
STAKING DETAIL



SECTION C-C



SECTION B-B



JOINT STAKING DETAIL

(DITCH APPLICATION ONLY)

EROSION CONTROL PLAN LEGEND: TUBE••TUBE••TUBE SEDIMENT TUBE

SEDIMENT TUBE GENERAL NOTES

(A) SEDIMENT TUBES CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF.

(B) SEDIMENT TUBES SHALL BE INSTALLED ALONG OR ON THE GROUND CONTOUR, AT THE TOE OF SLOPES, OR IN A DITCH TO HELP REDUCE THE EFFECTS OF SOIL EROSION AND RETAIN SEDIMENT. SEDIMENT TUBES SHOULD NOT BE USED IN DITCHES OR STREAMS.

(C) FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 15 ACRES. AT SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES. FOR SLOPE APPLICATIONS, THE MAXIMUM DRAINAGE AREAS SHALL BE ¼ ACRE PER 100 LF OF TUBE.

(D) SEDIMENT TUBES SHALL NOT BE USED ON PAVEMENT, ROCKY SOILS, OR AT ANY OTHER LOCATIONS WHERE THE STAKES CANNOT BE DRIVEN TO THE REQUIRED DEPTH.

(E) SEDIMENT TUBES SHALL BE MANUFACTURED FROM WOOD EXCELSIOR, RICE OR WHEAT STRAW, COCONUT FIBERS, OR HARDWOOD MULCH THAT IS ENCLOSED BY A TUBULAR FLEXIBLE NETTING MATERIAL. ALL MATERIALS INCLUDING THE NETTING SHALL BE BIODEGRADABLE.

(F) PINE NEEDLE AND LEAF MULCH FILLED SEDIMENT TUBES AND STRAW BALES ARE NOT ACCEPTABLE MATERIALS.

(G) THE DIAMETER OF A SEDIMENT TUBE SHALL BE A MINIMUM OF 8 INCHES AND A MAXIMUM OF 24 INCHES. DIAMETER TOLERANCE IS 2 INCHES. FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCHES.

(H) SEDIMENT TUBES SHALL BE INSTALLED WITH WOODEN STAKES (MIN. 1.5" x 1.5" ACTUAL). THE STAKE SHALL BE EMBEDDED A MINIMUM OF 2 FEET.

(I) SEDIMENT TUBES SHALL BE TRENCHED IN A MINIMUM OF 2 INCHES.

(J) IF MORE THAN ONE SEDIMENT TUBE IS PLACED IN A ROW IN SLOPE APPLICATION, THE TUBES SHALL BE OVERLAPPED A MINIMUM OF 24 INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. WHEN USED IN DITCHES, TWO ROWS OF TUBE SHALL BE PLACED ON THE CHANNEL BOTTOM WITH STAGGERED JOINTS AS SHOWN.

(K) FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCH DIAMETER AND SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER. SEDIMENT TUBES SHALL CONTINUE UP THE SIDE SLOPES A MINIMUM OF 3 FEET PLUS THE DIAMETER OF THE TUBE, OR TO THE TOP OF THE DITCH, WHICHEVER IS LESS.

(L) SEDIMENT TUBES USED IN SLOPE APPLICATIONS MAY REMAIN IN PLACE TO BIODEGRADE. FOR DITCH APPLICATIONS SEDIMENT TUBES SHALL BE COMPLETELY REMOVED AFTER FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED.

(M) SEDIMENT TUBES SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS NUMBERS:

740-11.01 TEMPORARY SEDIMENT TUBE (8 INCH) PER LINEAR FOOT
740-11.02 TEMPORARY SEDIMENT TUBE (12 INCH) PER LINEAR FOOT
740-11.03 TEMPORARY SEDIMENT TUBE (18 INCH) PER LINEAR FOOT
740-11.04 TEMPORARY SEDIMENT TUBE (20 INCH) PER LINEAR FOOT
740-11.05 TEMPORARY SEDIMENT TUBE (24 INCH) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS (INCLUDING GEOTEXTILE FABRIC IF USED) AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SEDIMENT TUBE.

(N) ONLY SEDIMENT TUBES LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(O) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SEDIMENT TUBE WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(P) GEOTEXTILE FABRIC REQUIRED FOR SLOPE APPLICATION STEEPER THAN 6:1.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT TUBE

1-20-06 EC-STR-37