STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
SUITE 1300 JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-3848
(615) 741-2221

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

INSTRUCTIONAL BULLETIN NO. 15-03

Regarding Revised Standard Drawings

Effective May 15, 2015 letting (March 4, 2015 Turn-in), the following Standard Drawings are revised and Section V of the Design Guidelines is revised for this update

DRAWING NUMBER	CURRENT REVISION DATE	DESCRIPTION
S-PL-6	12-1-14	SAFETY PLAN SAFETY HARDWARE PLACEMENT
D-PE-4	12-1-14	STRAIGHT CONCRETE ENDWALL
S-GR31-1	12-1-14	W-BEAM GUARDRAIL
T-M-11	12-1-14	SIGNING AND PAVEMENT MARKINS FOR BICYLE LANE OR ROUTES
T-M-12	1-30-15	SIGNING AND PAVEMENT MARKINS FOR BICYLE LANES ON URBAN ROADWAYS
T-M-15A	1-30-15	ASPHALT SHOULDER RUMBLE STRIP INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES
T-M-15A	1-30-15	ASPHALT SHOULDER RUMBLE STRIPE INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES

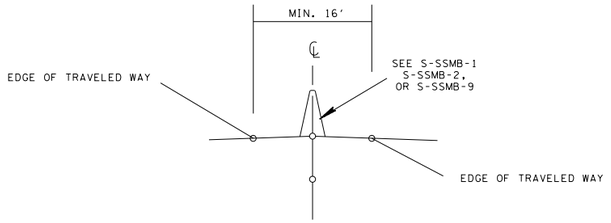
A copy of the revised standard drawings is attached.

Jennifer Lloyd

Jennifer Lloyd, PE
Civil Engineering Director
Roadway Design Division

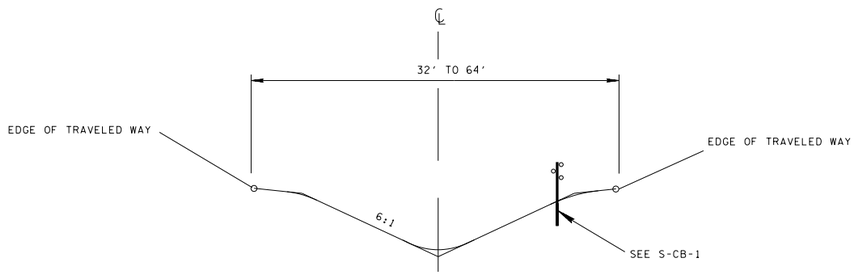
JCL:ARH
1/29/2015

REV. 12-1-14: ADDED NOTE TO DETAIL (E) MINOR DRAFTING UPDATE. ADDED TABLE.



DETAIL A

MEDIANS 16' TO 32'



DETAIL B

MEDIANS 32' TO 64'

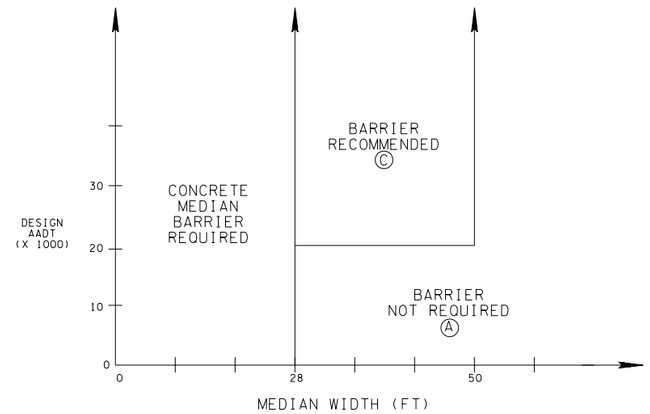


FIGURE A
THE NEED OF BARRIER DETERMINATION GUIDE
FOR MEDIAN INSTALLATION

GENERAL NOTES FOR MEDIAN DEVICES

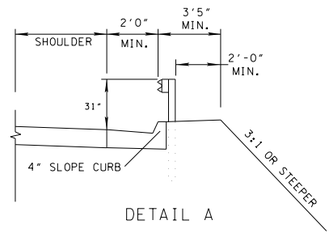
Ⓐ THIS STANDARD IS TO BE USED AS A GUIDE, BUT IS NOT A SUBSTITUE FOR GOOD ENGINEERING JUDGEMENT. OTHER CONSIDERATIONS, SUCH AS CRASH HISTORY, MAY BE USED TO JUSTIFY BARRIER INSTALLATION. THIS STANDARD DOES NOT APPLY TO FREEWAYS WITH INDEPENDENT ROADWAYS (SEE RD01-TS-5A)

Ⓑ MEDIAN WIDTH INCLUDES SHOULDERS.

Ⓒ SEE DETAIL A AND DETAIL B FOR APPROPRIATE CONFIGURATION AND BARRIER SYSTEM.

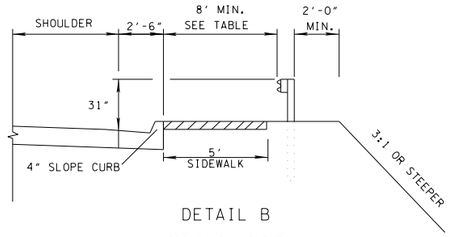
Ⓓ END OF BARRIER SYSTEMS (EXPECT CABLE BARRIER) REQUIRE END TERMINAL OR ATTENUATORS.

OUTSIDE SHOULDER GUARDRAIL PLACEMENT



DETAIL A

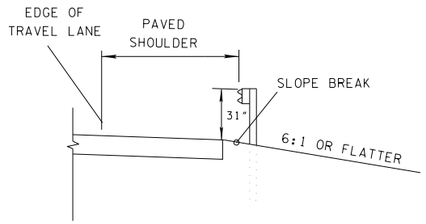
GUARDRAIL PLACEMENT ON
CURB AND GUTTER SECTION
(MAY BE USED FOR ALL SPEEDS)



DETAIL B

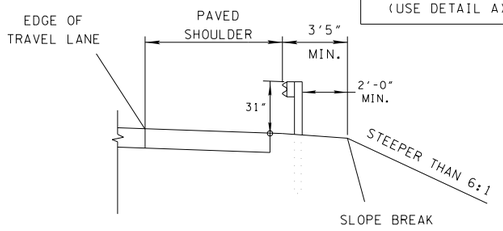
GUARDRAIL PLACEMENT ON
CURB AND GUTTER SECTION
SEE (D)

MINIMUM GUARDRAIL OFFSET WITH CURB AND GUTTER	
SPEED (MPH)	OFFSET
45 OR LESS	MIN 8'
45 -50	MIN 13'
SPEED 50 AND ABOVE (USE DETAIL A)	0'



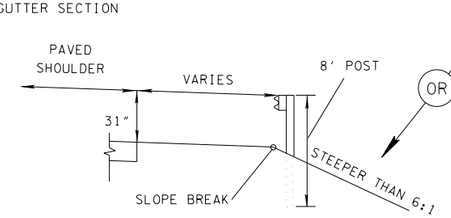
DETAIL C

GUARDRAIL PLACEMENT ON
NON-CURB AND GUTTER SECTION



DETAIL D

GUARDRAIL PLACEMENT ON
NON-CURB AND GUTTER SECTION
SEE (D)



DETAIL E

GUARDRAIL PLACEMENT ON
NON-CURB AND GUTTER SECTION

SLOPES 4:1 TO 2:1 USE 8' POST; STEEPER THAN 2:1 USE 9' POST

GENERAL NOTES FOR GUARDRAIL

Ⓐ IF GUARDRAIL IS IN A CURB AND GUTTER SECTION IT SHALL BE PLACED SUCH THAT THE GUARDRAIL FACE IS EVEN WITH THE CURB (DETAIL A) OR A MINIMUM OF 8' FROM THE CURB (DETAIL B).

Ⓑ ON 6:1 OR FLATTER SLOPE GUARDRAIL MAY BE PLACED AT THE SLOPE BREAK.

Ⓒ ON SLOPES STEEPER THAN 6:1 GUARDRAIL SHALL BE PLACED A MINIMUM OF 2' IN FRONT OF SLOPE BREAK.

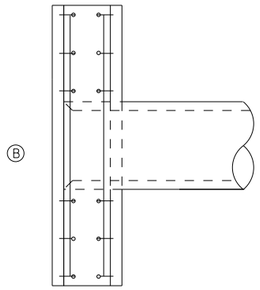
Ⓓ IF THE CONDITION IN NOTE Ⓒ CANNOT BE MET GUARDRAIL MAY BE PLACED AT SLOPE BREAK IF POSTS ARE LENGTHENED TO 8'.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

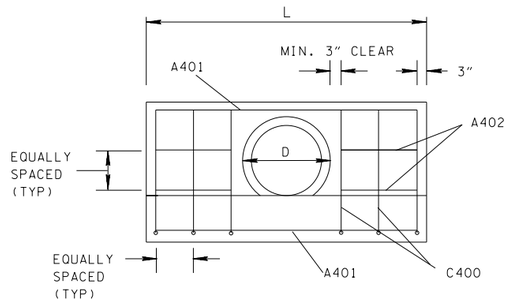
SAFETY PLAN
SAFETY HARDWARE
PLACEMENT

7-11-13 | S-PL-6

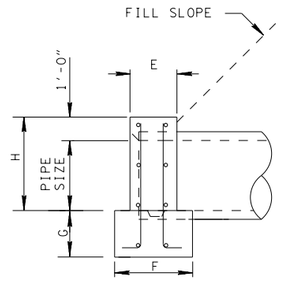
STRAIGHT TYPE CONCRETE ENDWALL



PLAN



FRONT ELEVATION VIEW



SIDE ELEVATION VIEW

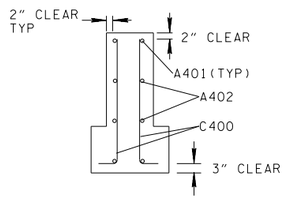
REV. 9-28-83: REDREW AND ADDED TABLE FOR STRAIGHT ENDWALL WHEN PIPE IS SKEWED.

REV. 2-19-88: ADDED SAFETY ADJUSTMENTS " U " TYPE ENDWALL.

- REV. 1-19-94 : REDREW AND REORGANIZED DRAWING. ELIMINATED TYPE " U " ENDWALL FOR 3:1 SLOPE.
- REV. 1-19-97: ADDED UNITS TO HEADING FOR TABLE FOR SKEWED PIPE.
- REV. 6-1-09: ADDED GENERAL NOTE Ⓓ.
- REV. 7-19-10: REMOVED GENERAL NOTE Ⓓ.
- REV. 1-15-13: ADDED REINFORCEMENT AND CHANGED NOTES. ADDED BILL OF STEEL, REMOVED "U" AND "L" TYPE ENDWALL.
- REV. 12-1-14: REVISED BAR DESIGNATION MINOR EDITING.

DIMENSIONS AND ESTIMATED QUANTITIES FOR STRAIGHT CONCRETE ENDWALL

PIPE SIZE	HOLE SIZE	WALL			FOOTING		CONC.	REINF. STEEL
IN	D(IN)	L	H	E	F	G	C.Y.	LB
18"	25"	6'-0"	2'-6"	1'-3"	2'-1"	1'-3"	1.16	40
24"	30"	8'-0"	3'-0"	1'-4"	2'-2"	1'-4"	1.86	68
30"	37"	10'-0"	3'-6"	1'-6"	2'-4"	1'-6"	2.98	90



REINFORCEMENT DETAILS

REINFORCING STEEL LEGEND

a — A400 — b a — C400

BILL OF STEEL

	18" PIPE				24" PIPE				30" PIPE			
BAR	a	b	LENGTH	NUMBER	a	b	LENGTH	NUMBER	a	b	LENGTH	NUMBER
A401	66	0	66	4	90	0	90	4	114	0	114	4
C400	40	6	46	8	47	6	53	12	55	6	61	12
A402	18.5	0	18.5	8	27	0	27	8	35.5	0	35.5	12
	TOTAL LB	706 in 40			TOTAL LB	1212 in 68			TOTAL LB	1614 in 90		

GENERAL NOTES

Ⓐ CONCRETE ENDWALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD CONSTRUCTION SPECIFICATIONS,SECTION 611, AND/OR SPECIAL PROVISIONS.

Ⓑ ALL STRAIGHT CONCRETE ENDWALLS ON THE INLET END OF PIPE, AND AT 90° SKEW SHALL BE BEVELED AT 3" AT AN 45° ANGLE. BEVEL WILL NOT BE REQUIRED WHEN ENDWALL IS CONSTRUCTED ON THE "BELLED "END OF CONCRETE PIPE.

Ⓒ ENDWALL MAY BE MODIFIED TO ACCOMMODATE MULTIPLE PIPES WHEN MORE THAN ONE PIPE IS PROPOSED, THE DISTANCE FROM CENTER TO CENTER OF PIPE SHALL BE D + 1'-0".

Ⓓ PAYMENT FOR ENDWALLS WILL BE MADE AS FOLLOWS:

ITEM 611-07.01, CLASS "A" CONCRETE (PIPE ENDWALLS)----CUBIC YARD.
ITEM 611-07.02. STEEL BAR REINFORCING (PIPE ENDWALLS)----POUND.

Ⓔ SEE SECTION 6.04.3.3 IN THE TDOT DESIGN MANUAL FOR RIPRAP APRON REQUIREMENT.

Ⓕ PRECASTING IS ALLOWED.

Ⓖ PIPE OPENING TO BE BASED ON TYPE "B" WALL THICKNESS (AASHTO M170).

Ⓗ PIPE ENDWALLS FOR SLOPES STEEPER THAN 3:1 (PREVIOUSLY TYPE "U") WILL NOW USE TYPE "B" SEE D-PE-9.

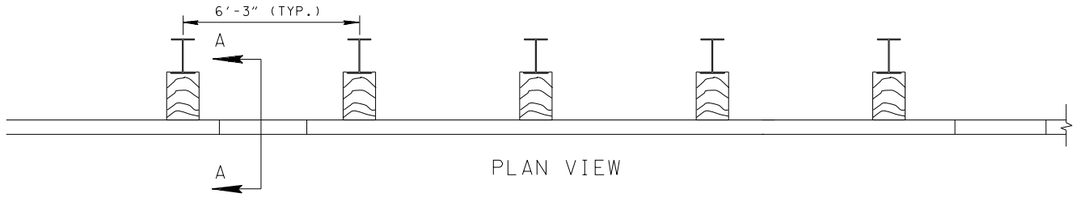
☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

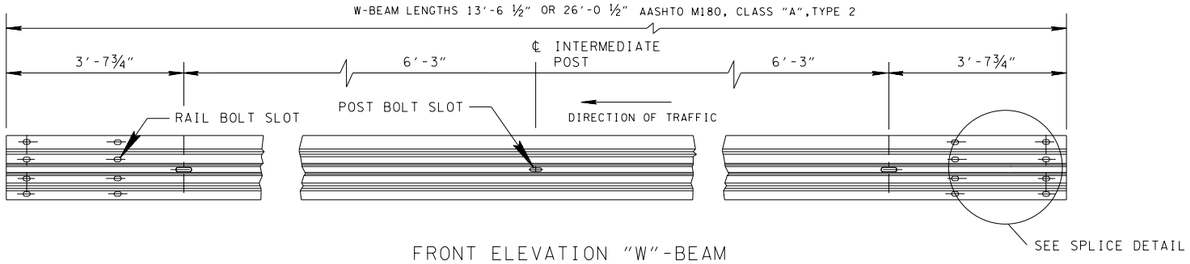
STRAIGHT CONCRETE ENDWALL

3-1-94 | D-PE-4

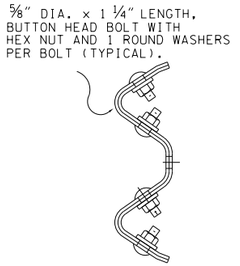
REV. 12-1-14: REVISED NOTE (L).



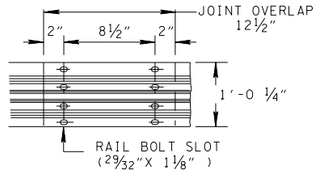
PLAN VIEW



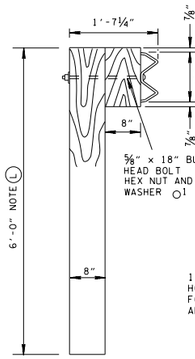
FRONT ELEVATION "W"-BEAM



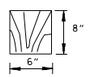
SECTION A-A
SPLICE CROSS-SECTION



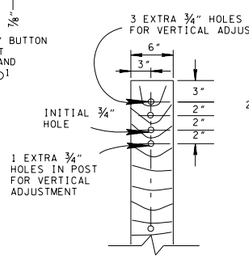
SPLICE DETAIL
(AT MID SPAN BETWEEN POSTS ONLY)



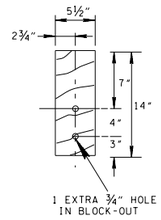
SIDE VIEW
SINGLE GUARDRAIL
WOOD POST



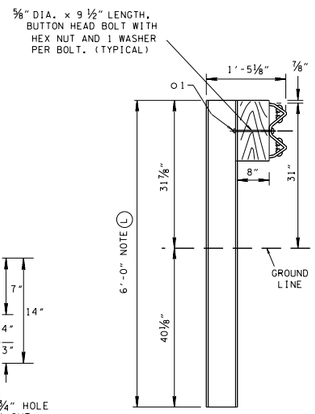
TOP VIEW



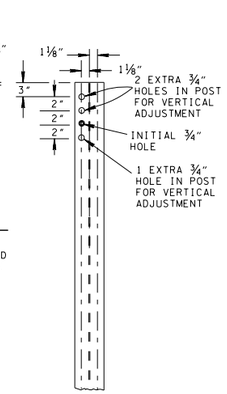
FRONT ELEVATION
WOOD POST



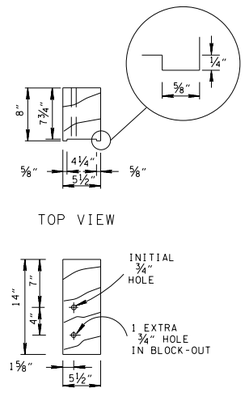
FRONT ELEVATION
WOOD BLOCK-OUT
FOR WOOD POST



SIDE VIEW
SINGLE GUARDRAIL
STEEL POST



FRONT ELEVATION
STEEL POST



TOP VIEW

FRONT VIEW

WOOD BLOCK-OUT DETAIL
FOR STEEL POST WITH VERTICAL
ADJUSTMENT HOLES

LEGEND FOR WASHER REQUIREMENTS
1 OR 2 ROUND WASHERS — ○1○2

NOTE: SIDE VIEW FOR STEEL POST DIMENSIONS BASED ON W6 X 8.5, OTHER DETAILS APPLY TO W6 x 9.0 AND W6 x 15.0 POSTS AND BLOCK-OUTS.

GENERAL NOTES

METAL BEAM

(A) METAL BEAMS SHALL CONFORM TO AASHTO M 180: TYPE 2, CLASS "A" UNLESS OTHERWISE NOTED ON THE PLANS.

(B) WHERE GUARDRAIL IS PLACED ON A CURVE WITH A RADIUS LESS THAN 150 FEET, THE RAIL IS TO BE SHOP-FORMED TO THE REQUIRED RADIUS.

(C) AT THE OPTION OF THE CONTRACTOR THE RAIL ELEMENTS FOR THE GUARDRAIL MAY BE FURNISHED IN EITHER 12½' OR 25 FOOT NOMINAL LENGTHS WITH POST BOLT SLOTS FOR CONNECTION TO POSTS.

HARDWARE

(D) BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS TO THE REQUIREMENTS OF ASTM A563M, GRADE "A" OR BETTER, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

(E) DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTION OF THE PART, INCLUDING ITS APPEARANCE AND ACCEPTED MANUFACTURING PRACTICES.

(F) BOLTS FOR CONNECTING RAIL TO POST THROUGH BLOCKOUT SHALL BE ⅝" DIAMETER X 9½" (STEEL POST) OR ⅝" DIAMETER BY 18" (WOOD POST) BUTTON HEAD WITH ROUND STEEL WASHER.

(G) BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

POSTS

(H) THE CONTRACTOR MAY HAVE THE CHOICE OF EITHER HOT ROLLED OR WELDED STEEL W6 X 8.5 OR W6 X 9 OR 8" X 6" WOOD POST. EXCEPT AS NOTED

(1) THE MIXING OF ANY POST TYPES ON A GIVEN PROJECT WILL BE AVOIDED IF AT ALL POSSIBLE.

(2) SHOULD IT BECOME NECESSARY TO MIX POST TYPES ON A GIVEN PROJECT POSTS SHALL NOT BE MIXED ON A SINGLE RUN OF GUARDRAIL EXCEPT AS NECESSARY AT END TERMINALS.

(3) W6 X 15 IS USED WITH GUARDRAIL CONNECTION TO STRUCTURES.

(I) STEEL POSTS SHALL CONFORM TO ASTM A36 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123. BOLT HOLES SHALL BE APPROXIMATELY CENTERED BETWEEN WEB AND EDGE OF FLANGE OF SPACERS AND POSTS.

(J) WOOD POSTS SHALL CONFORM WITH TDOT CONSTRUCTION STANDARD SPECIFICATION.

(K) WELDED STEEL POSTS SHALL CONFORM TO ASTM A769 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

(L) ON STEEP SLOPES, WHEN GUARDRAIL IS PLACED AT SLOPE BREAK, MINIMUM POST LENGTH SHALL BE 8 FEET. FOR SLOPES STEEPER THAN 2:1 USE 9' POST. ADDITIONAL EXPENSE TO BE INCLUDED IN THE COST OF THE RUN OF GUARDRAIL (SEE S-PL-6).

BLOCKOUTS

(M) BLOCKOUTS SHALL BE WOOD CONFORMING TO THE REQUIREMENTS OF TDOT CONSTRUCTION STANDARD SPECIFICATIONS OR PLASTIC GUARDRAIL BLOCKOUTS LISTED ON THE TDOT QUALIFIED PRODUCT LIST.

(N) ONLY WOODEN BLOCKOUTS MAY BE USED WITH WOODEN POSTS, PLASTIC OR WOODEN BLOCKOUTS MAY BE USED WITH STEEL POSTS.

(O) ALL BLOCKOUTS SHALL MEET NCHRP-350 OR MASH GUIDELINES.

(P) MIXING THE BLOCKOUT MATERIAL ON A GIVEN PROJECT SHOULD BE AVOIDED. IF MIXING OF BLOCKOUT MATERIAL IS NECESSARY, BLOCKOUTS SHALL NOT BE MIXED ON A SINGLE RUN OF GUARDRAIL.

FUTURE ADJUSTMENTS

(Q) BLOCKOUTS SHALL HAVE ONE ADDITIONAL ¾" HOLE, FOUR INCHES BELOW THE INITIAL HOLE FOR FUTURE ADJUSTMENT.

(R) INITIAL INSTALLATION REQUIRES ONE BOLT CONNECTION, EACH ADJUSTMENT THEREAFTER REQUIRES TWO BOLT CONNECTIONS.

END TREATMENTS

(S) ALL RUNS OF GUARDRAIL WILL BEGIN AND END WITH AN ANCHOR SYSTEM (SEE S-GRA-SERIES).

(T) GUARDRAIL ENDS THAT ARE INSIDE THE CLEARZONE AND EXPOSED TO ONCOMING TRAFFIC SHALL HAVE A CRASH WORTHY END TERMINAL AS NOTED:

(1) ANY ROAD WITH SUITABLE BACKSLOPES SHALL USE END TERMINALS BURIED IN BACK SLOPE (SEE S-GRT-1).

(2) ALL HIGHWAY SYSTEM ROADS WITHOUT SUITABLE BACKSLOPES SHALL USE TANGENTIAL END TERMINALS (SEE S-GRT-2).

(3) ALL OTHER ROADS SHALL USE SLOTTED RAIL END TERMINALS UNLESS OTHERWISE NOTED (SEE S-GRT-3).

DESIGN

(U) 4' BEHIND GUARDRAIL SHALL BE CLEAR AT OBSTRUCTION FOR DEFLECTION.

(V) REFER TO SAFETY PLAN STANDARDS FOR HOW TO DETERMINE THE BEGINNING AND END.

PAYMENT

(W) PAYMENT FOR GUARDRAIL WILL BE UNDER ITEM:

705-02.02 SINGLE GUARDRAIL (TYPE 2) LF

(X) GUARDRAIL WILL BE PAID FOR ONLY IN LENGTHS THAT ARE MULTIPLES OF 6'-3".

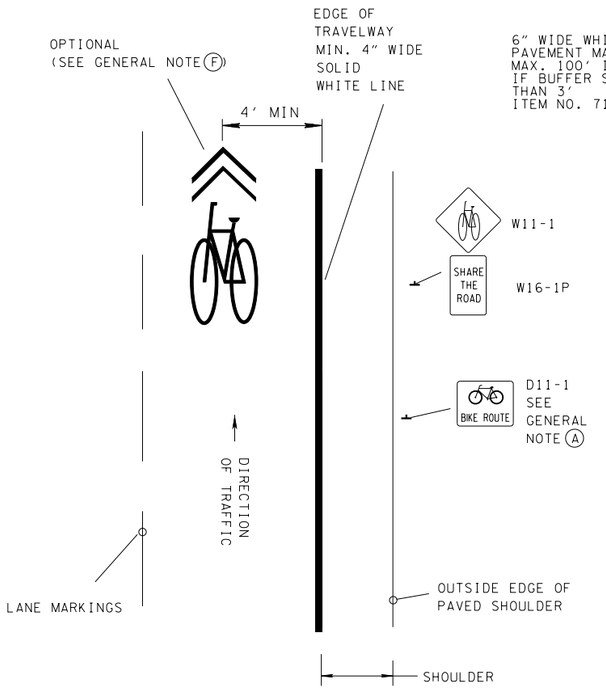
(Y) PAYMENT FOR SPECIAL CONNECTIONS AND GUARDRAIL SECTIONS REQUIRED FOR END TREATMENTS WILL BE AS NOTED ON THOSE DRAWINGS.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

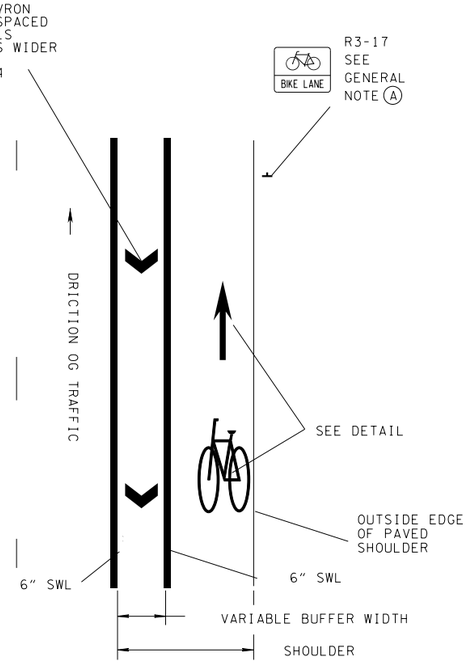
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

W-BEAM GUARDRAIL

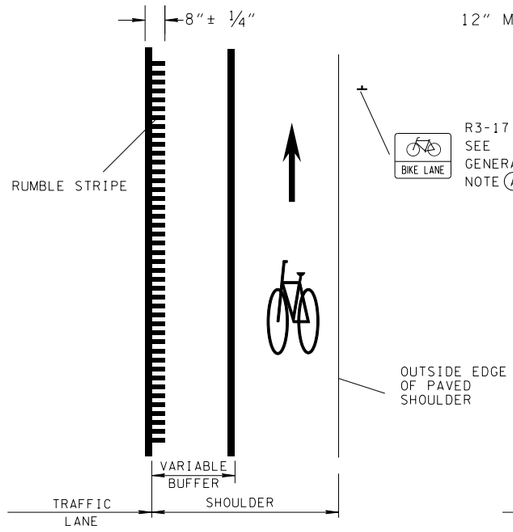
7-11-13 | S-GR31-1



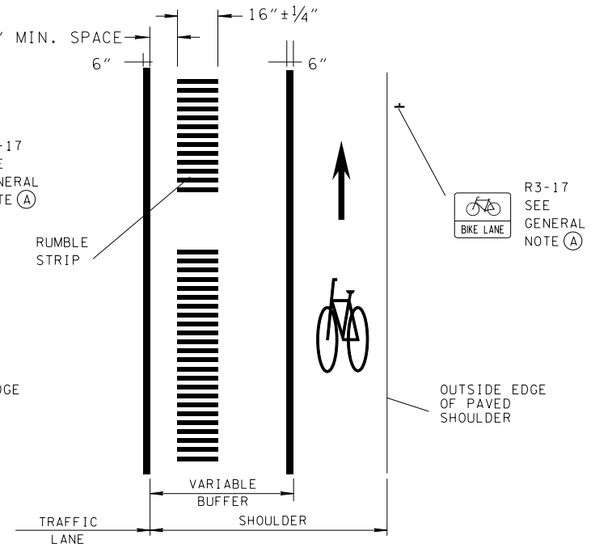
BIKE ROUTE
MARKING AND SIGN DETAILS



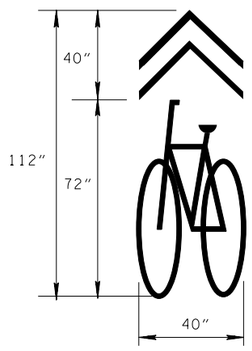
TYPICAL BIKE LANE
ON MAJOR SUBURBAN ROADWAY
(I)



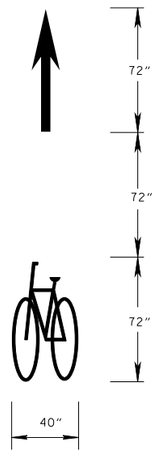
TYPICAL BIKE LANE/RUMBLE
STRIPE DETAIL (I)



TYPICAL BIKE LANE/RUMBLE
STRIP DETAIL (I)



TYPICAL PAVEMENT MARKING
FOR BICYCLE ROUTES
(ITEM NO. 716-04.15)
SEE NOTE (F)



TYPICAL PAVEMENT MARKING
FOR BICYCLE LANES
ITEM NO. 716-04.13

NOTE: SPACED AT INTERVALS NOT GREATER THAN 1000 FEET

GENERAL NOTES

(A) SIGNS SHOULD BE PLACED APPROXIMATELY EVERY 0.25 MILES, AT EVERY TURN, AND AT ALL SIGNALIZED INTERSECTIONS. SIGN SPACING SHOULD NOT EXCEED A MILE ON RURAL ROADS.

(B) SEE STD. DWG. T-M-15A IF RUMBLE STRIP OR RUMBLE STRIPE IS PROPOSED IN CONJUNCTION WITH BIKE ROUTE.

(C) BIKE LANES AND BIKE ROUTES ARE NOT PERMITED ON ACCESS CONTROLLED FACILITIES.

(D) IF BIKE LANE IS PROPOSED ON PAVED SHOULDER, RUMBLE STRIPS SHOULD NOT BE USED WHEN THEIR INSTALLATION WOULD LEAVE A CLEAR SHOULDER PATHWAY LESS THAN 4 FEET WIDE (OR LESS THAN 5 FEET WIDE IF THERE IS AN OBSTRUCTION SUCH AS A CURB OR GUARDRAIL) TO THE RIGHT OF THE RUMBLE STRIP FOR BICYCLE USE SEE T-M-15 FOR FURTHER INFORMATION.

(E) SEE SECTIONS 9B.06, 9B.18, 9B.19, 9B.20, 9C.04, AND 9C.07 FOR ADDITIONAL SIGNING AND PAVEMENT MARKING INFORMATION IN THE MUTCD.

(F) SHARED BIKE LANE MARKINGS SHOULD NOT BE PLACED ON ROADWAYS THAT HAVE A SPEED LIMIT ABOVE 35 MPH. MARKING TO BE PLACED IMMEDIATELY AFTER AN INTERSECTION AND SPACED AT INTERVALS NOT GREATER THAN 250 FEET.

(G) SIGNS SHOULD BE PLACED APPROXIMATELY EVERY 0.25 MILES, AT EVERY TURN, AND AT ALL SIGNALIZED INTERSECTIONS. SIGN SPACING SHOULD NOT EXCEED A MILE ON RURAL ROADS.

(H) TO BE PAID UNDER ITEM 716-04.15 PLASTIC PAVEMENT (MARKING BIKE SYMBOL/ARROW SHARED) PER EACH.

(I) ON MAJOR ROADWAYS APPROACHING URBAN AREAS A BUFFERED BIKE LANE MAY BE USED, CONTACT THE TDOT BIKE COORDINATOR FOR GUIDANCE.

(J) SEE T-M-13 AND T-M-14 FOR ADDITIONAL BIKE LANE GUIDANCE.

- REV. 12-1-09: REMOVED RUMBLE DETAILS TO T-M-15 AND 15A.

  REV. 11-1-11: REVISED GENERAL NOTE (B), ADDED GENERAL NOTE E AND (F), UPDATED PLAN VIEW, AND ADDED BIKE SYMBOL/ARROW SHARED LANE MARKING DETAIL.

  REV. 6-15-12: ADDED NOTE (G).
- REV. 10-24-13: ADDED NOTE (H).
- REV. 12-1-14: ADDED BUFFERED LANE DETAILS.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SIGNING AND
PAVEMENT MARKINGS
FOR
BICYCLE
LANE OR ROUTES

5-1-07 | T-M-11

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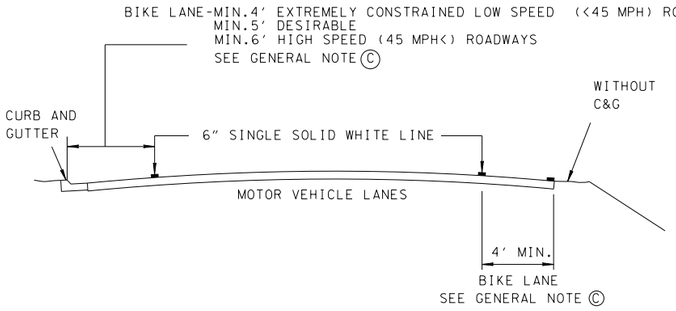
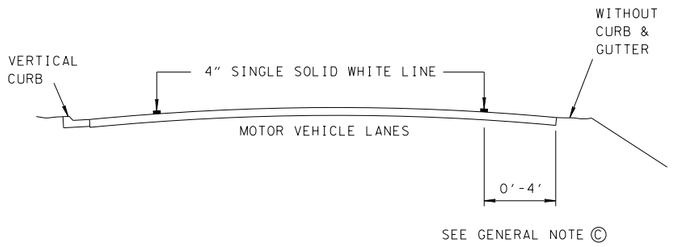
- REV. 12-1-09: ADDED SIGN NO.W5-4a AND CHANGED GENERAL NOTE (D) REARRANGED.
- REV. 11-1-11: ADDED BARRIER POST STRIPING DETAIL AND REVISED GENERAL NOTE (E).
- REV. 10-10-13: ADDED NOTE (G) AND (H).
- REV. 1-30-15: UPDATED BIKE LANE WIDTH AND GENERAL DRAFTING. REVISED NOTES.

TYPICAL BIKE LANE CROSS SECTIONS FOR URBAN COLLECTORS AND STREETS

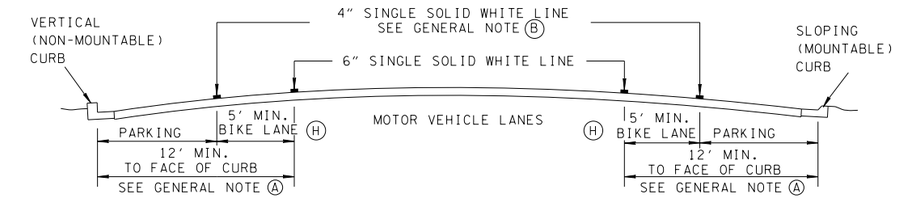
URBAN COLLECTORS AND STREETS WITH BIKE LANE MIN. PAVED SHOULDER WIDTH 4′ - 8′



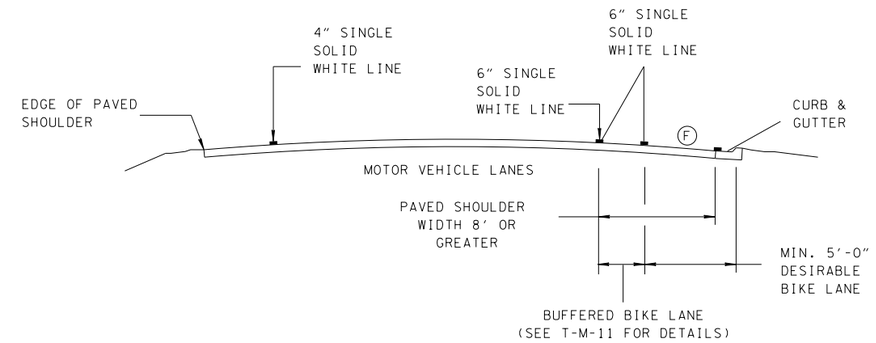
URBAN COLLECTORS AND STREETS WITH BIKE ROUTE MIN. PAVED SHOULDER WIDTH LESS THAN 4′



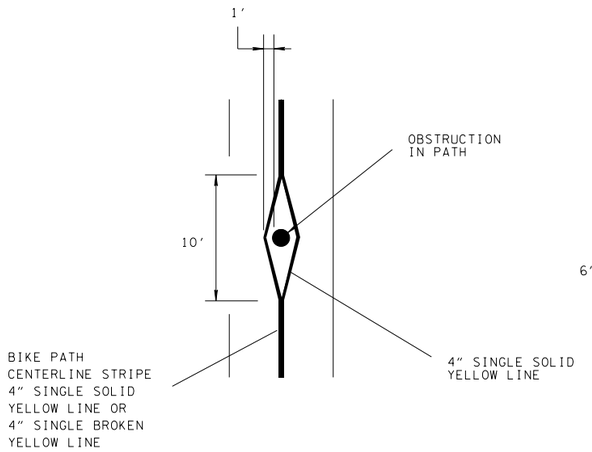
4-5 LANE URBAN COLLECTORS AND STREETS (CURB AND GUTTER) WITH BIKE LANE MIN. PAVED SHOULDER WIDTH 8′ OR GREATER



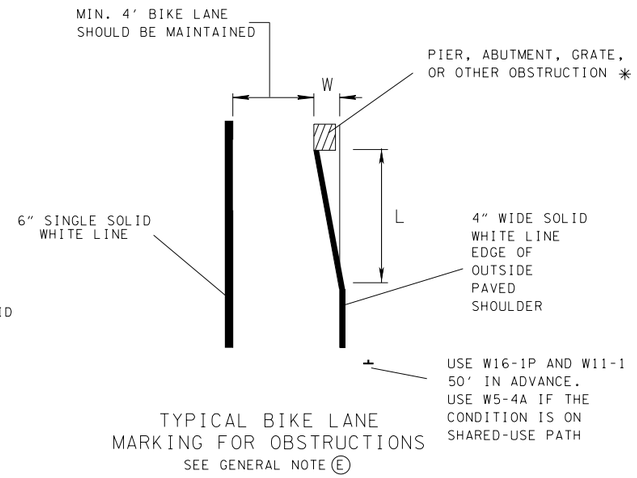
PARKING IS PERMITTED



PARKING IS PROHIBITED



BARRIER POST STRIPING



TYPICAL BIKE LANE MARKING FOR OBSTRUCTIONS
SEE GENERAL NOTE (E)

GENERAL NOTES

(A) 13′ IS RECOMMENDED WHERE THERE IS SUBSTANTIAL PARKING OR TURNOVER OF PARKED CARS IS HIGH (E.G. COMMERCIAL AREAS).

(B) THE OPTIONAL SOLID WHITE LINE MAY BE ADVISABLE WHERE PARKING STALLS ARE UNNECESSARY (BECAUSE PARKING IS LIGHT) BUT THERE IS CONCERN THAT MOTORISTS MAY MISCONSTRUE THE BIKE LANE TO BE A TRAFFIC LANE.

(C) AREAS WHERE MIN. OF 4′ BIKE LANE CAN NOT BE PROVIDED " SHARE THE ROAD" (W16-1P AND W11-1) SIGN SHOULD BE PLACED TO WARN THE MOTORIST FOR SHARED ROADWAY USE SEE T-M-11 FOR BIKE ROUTE PAVEMENT MARKINGS AND SIGNING REQUIREMENTS. WHERE THE ROADWAY DESIGN SPEEDS IS MORE THAN 40 MPH SHARED USE BIKE ROUTES ARE NOT RECOMMENDED.

(D) BIKE LANE SIGNS SHOULD BE PLACED APPROXIMATELY EVERY 0.25 MILES AND AT ALL MAJOR INTERSECTIONS.

(E) WHEN PIER, BRIDGE ABUTMENT, GRATE, OR OTHER ROADWAY OBSTRUCTION INTRUDES IN THE BIKE PATH, THE BIKE LANE SHOULD BE MARKED AS SHOWN; L=WS, WHERE W IS WIDTH OF THE OBSTRUCTION IN FEET IN BIKE LANE AND S IS BICYCLE AVERAGE APPROACH SPEED 20 MPH. * PROVIDE AN ADDITIONAL FOOT OF OFFSET FOR A RAISED OBSTRUCTION AND USE THE FORMULA L=(W+1) S FOR THE TAPER LENGTH. SEE SECTION 9C.06 OF THE MUTCD FOR ADDITIONAL INFORMATION.

(F) FOR BIKE ROUTE/LANE MARKING SIGNING REQUIREMENTS SEE T-M-11.

(G) ITEM NO. 716-04.13 PLASTIC PAVEMENT MARKING (BIKE LANE SYMBOL AND ARROW) PER EACH TO INCLUDE BIKE SYMBOL AND ARROW AS ONE QUANTITY.

(H) BIKE LANES UP TO 7′ IN WIDTH MAY BE CONSIDERED ADJACENT TO NARROW LANES WITH HIGH TURNOVER.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

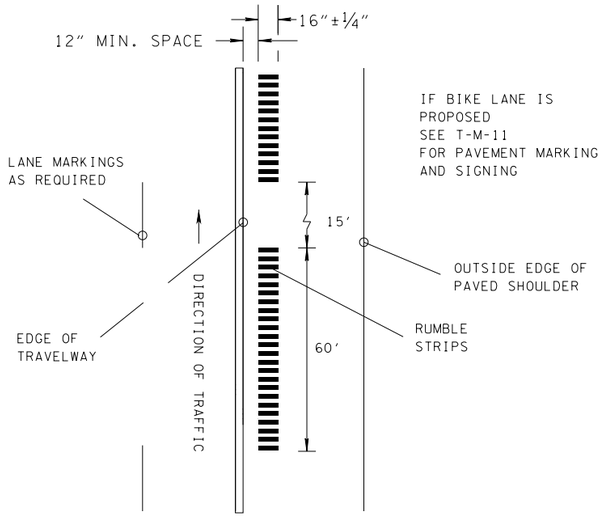
SIGNING AND PAVEMENT MARKINGS FOR BICYCLE LANES ON URBAN ROADWAYS

5-1-07 | T-M-12

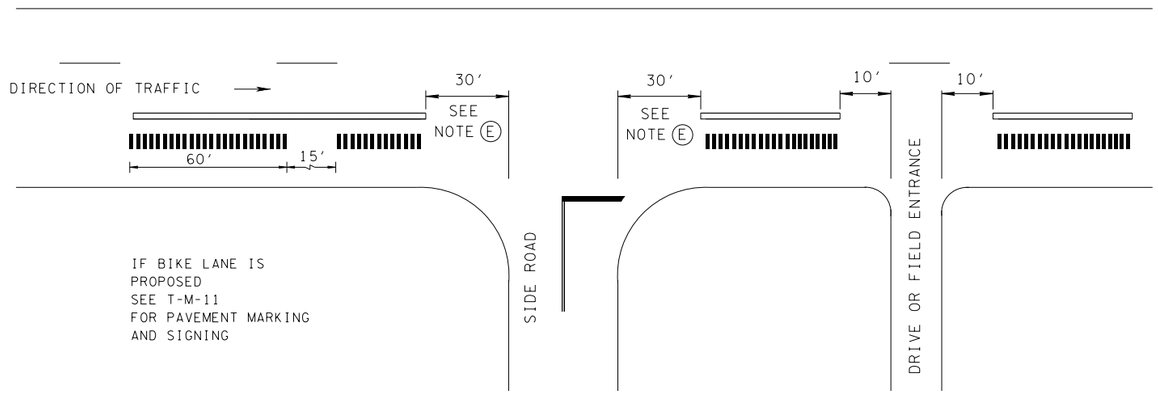
REV. 11-1-11: ADDED BIKE SYMBOL/ ARROW SHARED LANE MARKINGS DETAILS AND ADDED GENERAL NOTE (H) AND (I).

☐ REV. 1-30-15: REVISED RUMBLE STRIP SPACING.

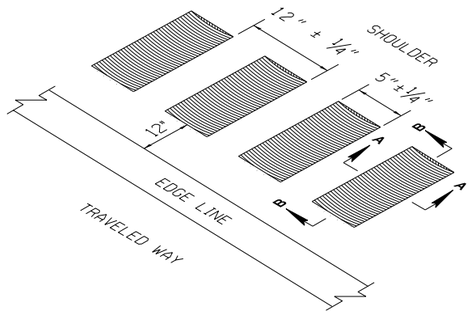
TYPICAL RUMBLE STRIP INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES



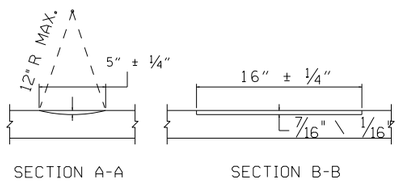
AVAILABLE PAVED SHOULDER
WIDTH 8' OR GREATER



SIDE ROAD AND DRIVEWAY
RUMBLE STRIP INSTALLATION DETAILS



ISOMETRIC VIEW



SECTION A-A SECTION B-B

TYPICAL RUMBLE STRIP INSTALLATION

RUMBLE STRIP GENERAL NOTES

(A) WHEN RUMBLE STRIPS ARE USED ON NON-ACCESS CONTROLLED FACILITIES, THEY SHOULD BE DISCONTINUED IN ADVANCE OF DRIVEWAYS, INTERSECTIONS, AND MEDIAN OPENINGS.

(B) MILLED-IN RUMBLE STRIP WITH 5"± ¼" GROOVES, 7/16"± 1/16" DEEP, ON 12" ± ¼" SPACING.

(C) A 15 FOOT LONG GAP BETWEEN 60 FOOT LONG SECTIONS OF RUMBLE STRIPS IS REQUIRED TO ACCOMMODATE BICYCLES.

(D) ON NON-ACCESS CONTROLLED ROUTES WITH A MEDIAN AND/OR INSIDE SHOULDERS,CONTINUOUS RUMBLE STRIPS SHOULD BE PLACED IN ACCORDANCE WITH STD. DWG. T-M-16. INSTALLATION SHOULD BE PAID UNDER ITEM 411-12.01 SCORING SHOULDERS (CONTINUOUS) (16" WIDTH) PER L.M. BREAKS, SHALL BE MADE AT SIDE ROADS AND MEDIAN OPENINGS BREAKS SHALL BEGIN 10' PRIOR TO OPENING.

(E) WHEN THE SIDE ROAD RADIUS IS GREATER THAN 30' RUMBLE STRIP APPLICATION SHOULD BE DISCONTINUED 50' IN ADVANCE OF THE INTERSECTION.

(F) RUMBLE STRIPS SHOULD ONLY BE PLACED ON PAVED SHOULDERS 8'.

(G) RUMBLE STRIP INSTALLATION SHALL BE PAID UNDER ITEM NUMBER

411-12.02. SCORING SHOULDERS (NON-CONTINUOUS) (16" WIDTH) PER L.M.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ASPHALT SHOULDER RUMBLE STRIP INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES

12-1-09 T-M-15A

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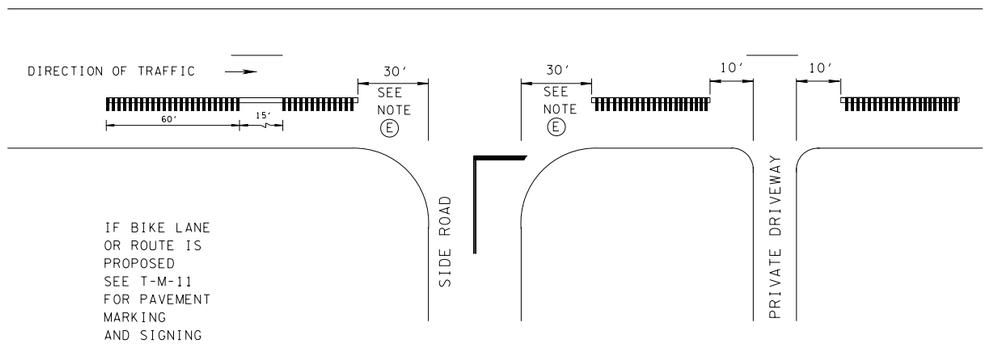
TYPICAL RUMBLE STRIPE INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES

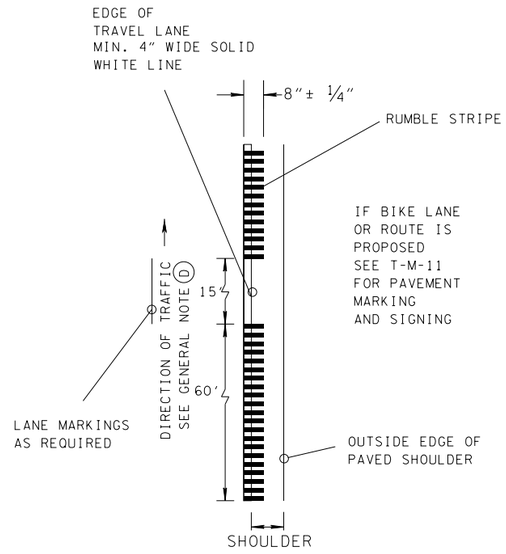
REV. 1-30-15: REVISED RUMBLE STRIPE SPACING.

REV. 11-1-11: CHANGED GENERAL NOTES (E), (F), AND (G). DELETED T-M-11A. ADDED BIKE SYMBOL/ARROW SHARED LANE MARKING DETAILS AND ADDED GENERAL NOTE (H) AND (I).

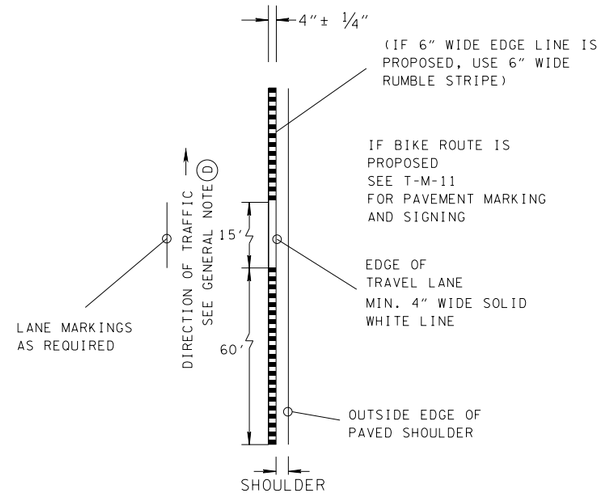
REV. 12-1-14: REVISED RUMBLE STRIPE SPACING ADDED REFERENCE TO T-M-11.



SIDE ROAD AND DRIVEWAY
RUMBLE STRIPE INSTALLATION DETAILS



AVAILABLE PAVED SHOULDER
WIDTH 2' OR GREATER



AVAILABLE PAVED SHOULDER WIDTH 0'- 2'

RUMBLE STRIPE GENERAL NOTES

(A) WHEN RUMBLE STRIPES ARE USED ON NON-ACCESS CONTROLLED FACILITIES, THEY SHOULD BE DISCONTINUED IN ADVANCE OF DRIVEWAYS, INTERSECTIONS, AND MEDIAN OPENINGS.

(B) MILLED-IN RUMBLE STRIPE WITH 5"± 1/4" GROOVES, 7/16"± 1/16" DEEP, ON 12" ± 1/4" SPACING.

(C) WHEN RUMBLE STRIPES ARE INSTALLED ON ACCESS CONTROLLED ROUTES, THE RUMBLE STRIPE IS TO BE INSTALLED CONTINUOUSLY WITHOUT THE 15' GAP. RUMBLE STRIPE WIDTH SHALL BE 16" WIDE AS DETAILED ON STD. DWG. T-M-15.

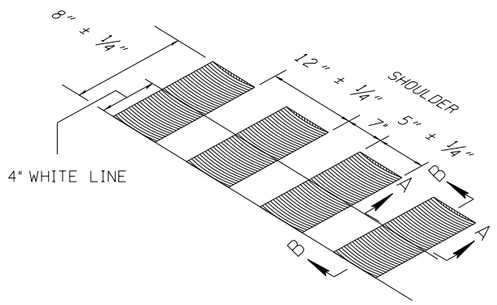
(D) A 15 FOOT LONG GAP BETWEEN 60 FOOT LONG SECTIONS OF RUMBLE STRIPES IS REQUIRED TO ACCOMMODATE BICYCLES.

(E) WHEN THE SIDE ROAD RADIUS IS GREATER THAN 30', RUMBLE STRIPE APPLICATION SHOULD BE DISCONTINUED 50' IN ADVANCE.

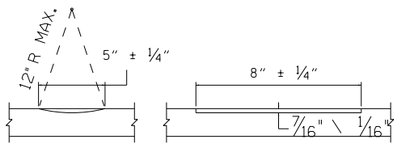
(F) RUMBLE STRIPE INSTALLATION SHALL BE PAID UNDER THE FOLLOWING ITEM NUMBERS

411-12.03. SCORING FOR RUMBLE STRIPE (NON-CONTINUOUS) (8" WIDTH) PER L.M.
411-12.04. SCORING FOR RUMBLE STRIPE (NON-CONTINUOUS) (4" WIDTH) PER L.M.

(G) THE COLOR OF AN EDGE LINE OR CENTER LINE ASSOCIATED WITH LONGITUDINAL RUMBLE STRIPE SHALL BE ACCORDANCE WITH SECTION 3A.05 OF THE MUTCD.

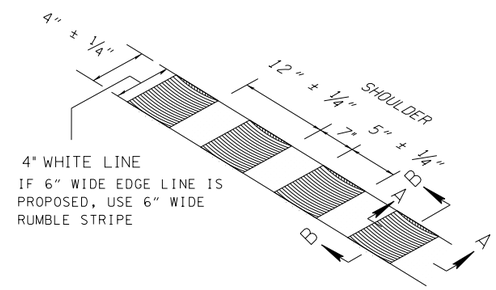


ISOMETRIC VIEW

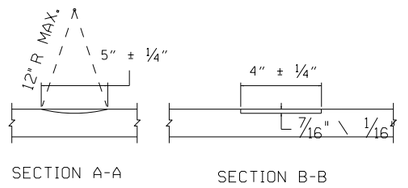


SECTION A-A SECTION B-B

TYPICAL 8" WIDE RUMBLE STRIPE INSTALLATION



ISOMETRIC VIEW



SECTION A-A SECTION B-B

TYPICAL 4" WIDE RUMBLE STRIPE INSTALLATION

NOTE:

4" WIDE RUMBLE IS NOT A PREFERRED APPLICATION IT SHOULD BE USED IN LOCATIONS WHERE NO SHOULDER IS AVAILABLE AND RUMBLE STRIP IS REQUIRED FOR A SAFETY UPGRADE.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ASPHALT SHOULDER RUMBLE STRIPE INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES

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