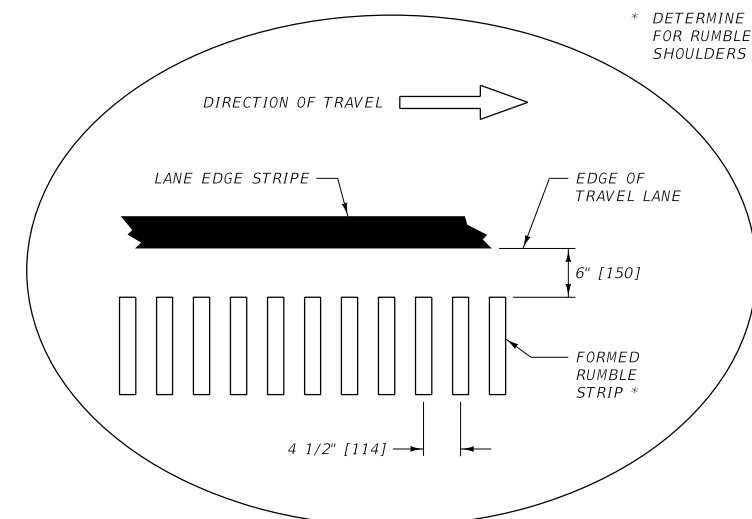
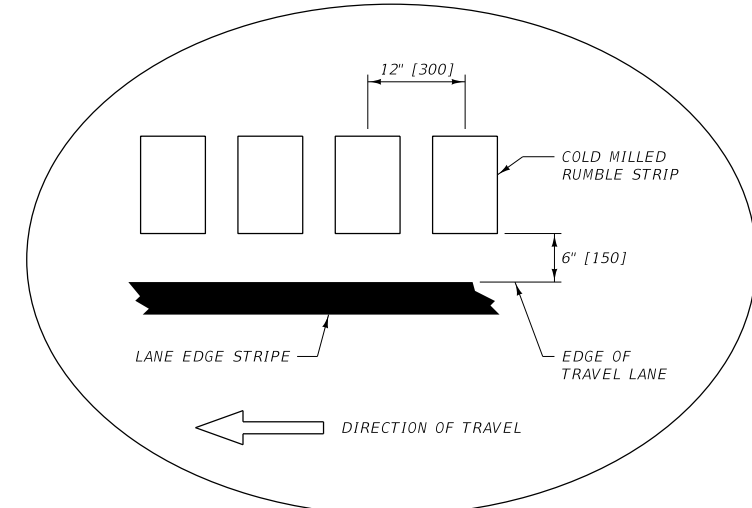


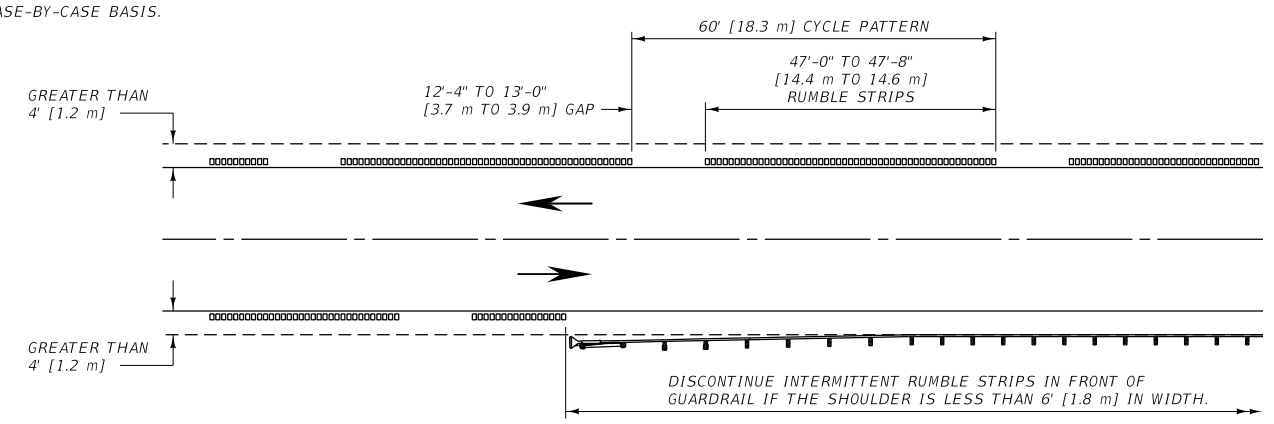
* DETERMINE THE METHOD OF INSTALLATION FOR RUMBLE STRIPS ON EXISTING CONCRETE SHOULDERS ON A CASE-BY-CASE BASIS.



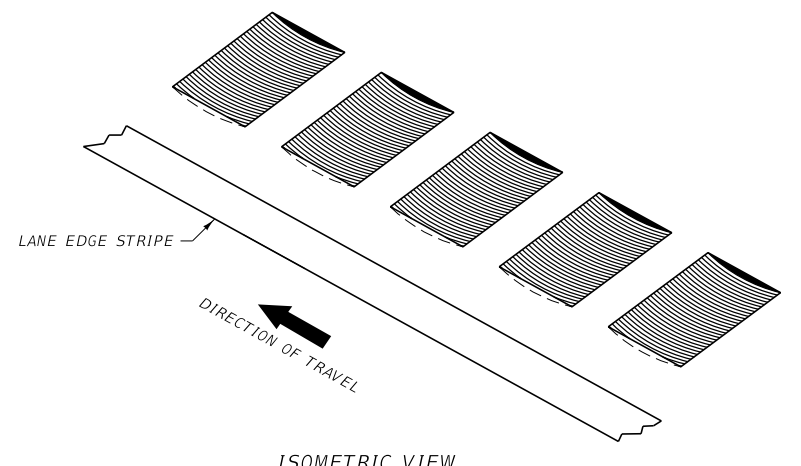
TYPICAL SHOULDER INSTALLATION (CONCRETE PAVEMENT)



TYPICAL SHOULDER INSTALLATION (ASPHALT PAVEMENT)

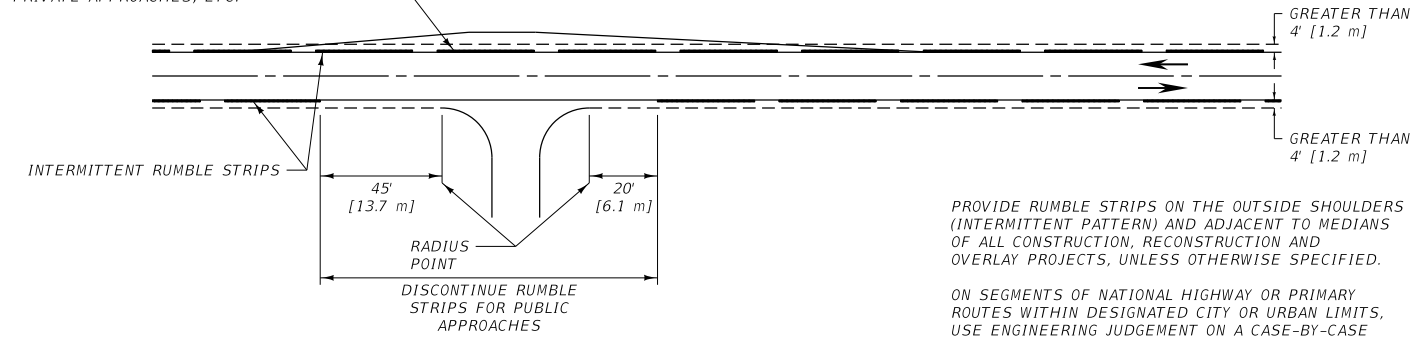


INTERMITTENT RUMBLE STRIP SPACING



ISOMETRIC VIEW

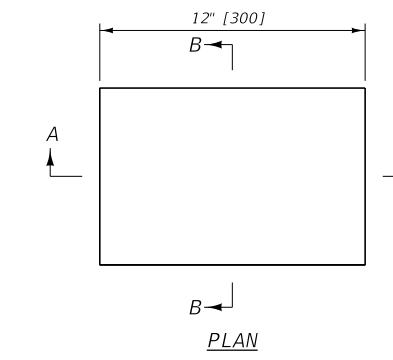
CONTINUE RUMBLE STRIPS ALONG THE FULL LENGTH, INCLUDING TAPERS, OF MAILBOX TURNOUTS, SCENIC TURNOUTS, HISTORIC MARKER TURNOUTS, FARM FIELD APPROACHES, PRIVATE APPROACHES, ETC.



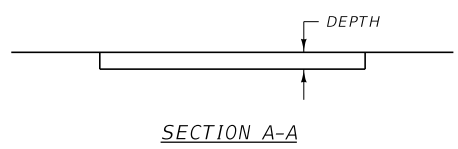
TYPICAL APPLICATION

PROVIDE RUMBLE STRIPS ON THE OUTSIDE SHOULDERS (INTERMITTENT PATTERN) AND ADJACENT TO MEDIANS OF ALL CONSTRUCTION, RECONSTRUCTION AND OVERLAY PROJECTS, UNLESS OTHERWISE SPECIFIED.

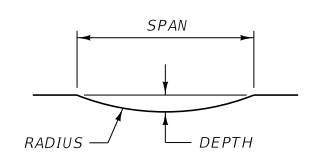
ON SEGMENTS OF NATIONAL HIGHWAY OR PRIMARY ROUTES WITHIN DESIGNATED CITY OR URBAN LIMITS, USE ENGINEERING JUDGEMENT ON A CASE-BY-CASE BASIS TO DETERMINE IF RUMBLE STRIP INSTALLATION IS APPROPRIATE.



PLAN



SECTION A-A



SECTION B-B

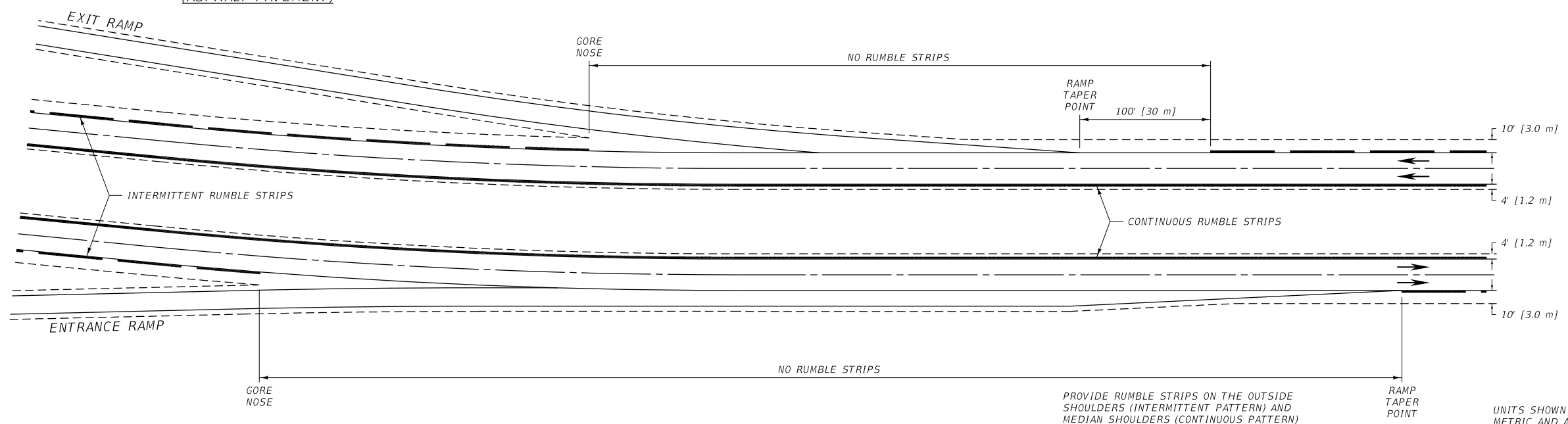
	DEPTH	RADIUS	SPAN
CONCRETE	1"	1"	2"
ASPHALT	1/2" TO 3/4"	12" MAX.	6 7/8" TO 8 3/8"

	DEPTH (mm)	RADIUS (mm)	SPAN (mm)
CONCRETE	25	25	50
ASPHALT	13 TO 19	300 MAX.	175 TO 200

RUMBLE STRIP DETAIL

NOTE:

DO NOT INSTALL RUMBLE STRIPS OVER CONCRETE BRIDGE DECKS OR WHERE OBSTACLES, SUCH AS CONCRETE BARRIER RAIL, PREVENT PROPER PLACEMENT.



INTERSTATE APPLICATION

PROVIDE RUMBLE STRIPS ON THE OUTSIDE SHOULDERS (INTERMITTENT PATTERN) AND MEDIAN SHOULDERS (CONTINUOUS PATTERN) OF ALL INTERSTATE PROJECTS UNLESS OTHERWISE SPECIFIED.

DISCONTINUE RUMBLE STRIPS IN FRONT OF EXIT AND ENTRANCE RAMPS.

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

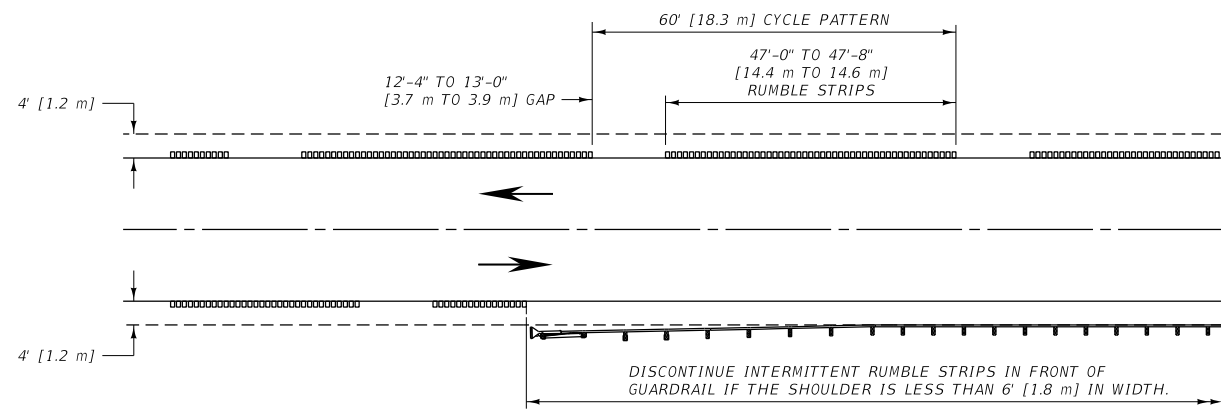
DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 411	DWG. NO. 411-02

SHOULDER RUMBLE STRIPS

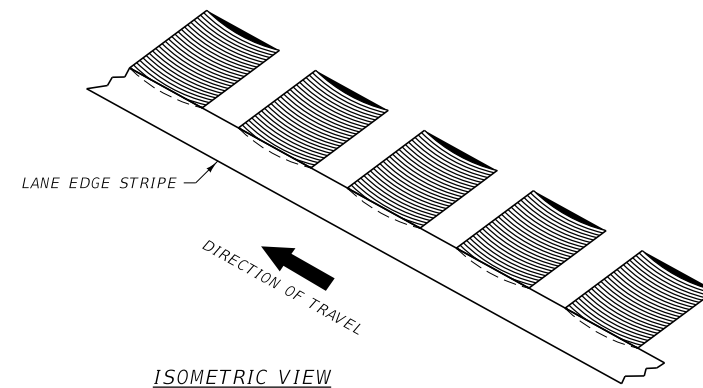
--REVISED--
JANUARY 2018

EFFECTIVE: SEPTEMBER 2014

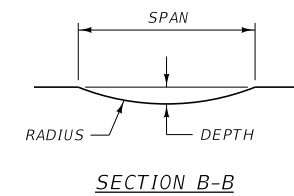
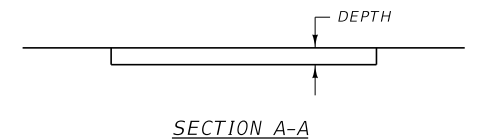
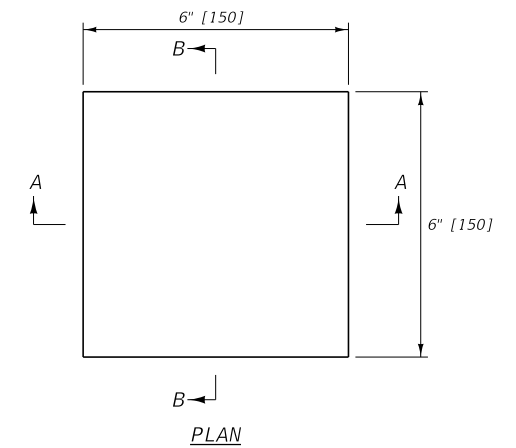




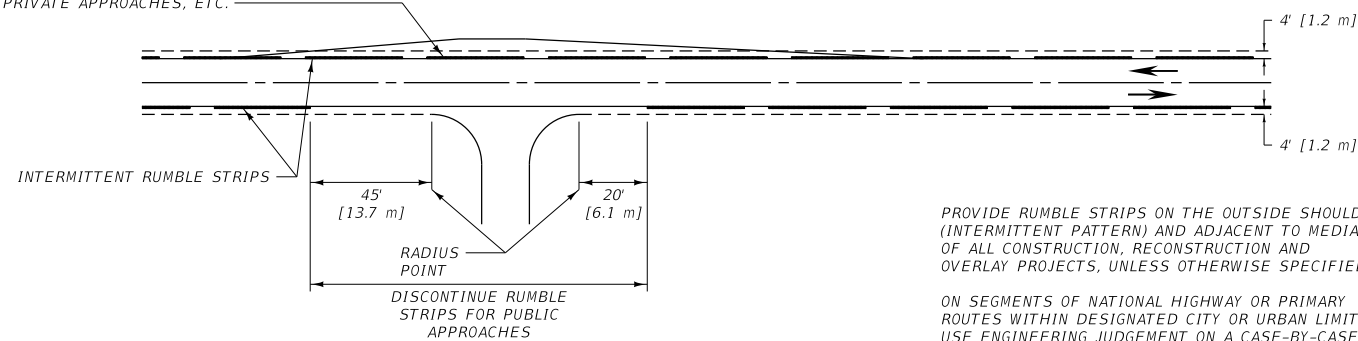
INTERMITTENT RUMBLE STRIP SPACING



ISOMETRIC VIEW



CONTINUE RUMBLE STRIPS ALONG THE FULL LENGTH, INCLUDING TAPERS, OF MAILBOX TURNOUTS, SCENIC TURNOUTS, HISTORIC MARKER TURNOUTS, FARM FIELD APPROACHES, PRIVATE APPROACHES, ETC.



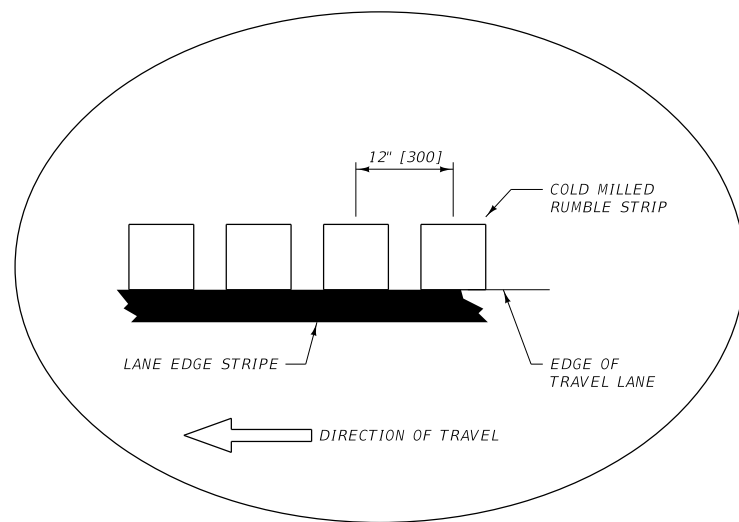
TYPICAL APPLICATION

PROVIDE RUMBLE STRIPS ON THE OUTSIDE SHOULDERS (INTERMITTENT PATTERN) AND ADJACENT TO MEDIANS OF ALL CONSTRUCTION, RECONSTRUCTION AND OVERLAY PROJECTS, UNLESS OTHERWISE SPECIFIED.

ON SEGMENTS OF NATIONAL HIGHWAY OR PRIMARY ROUTES WITHIN DESIGNATED CITY OR URBAN LIMITS, USE ENGINEERING JUDGEMENT ON A CASE-BY-CASE BASIS TO DETERMINE IF RUMBLE STRIP INSTALLATION IS APPROPRIATE.

	DEPTH	RADIUS	SPAN
ASPHALT	1/2" TO 3/4"	12" MAX.	6 7/8" TO 8 3/8"

	DEPTH (mm)	RADIUS (mm)	SPAN (mm)
ASPHALT	13 TO 19	300 MAX.	175 TO 200



TYPICAL SHOULDER INSTALLATION (ASPHALT PAVEMENT)

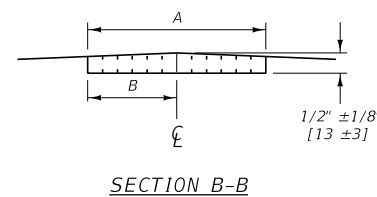
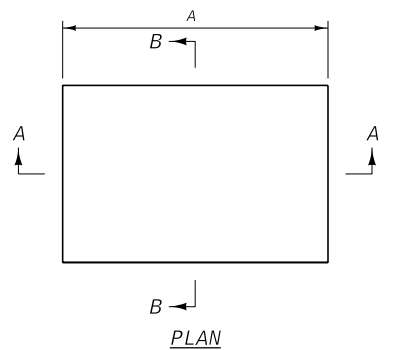
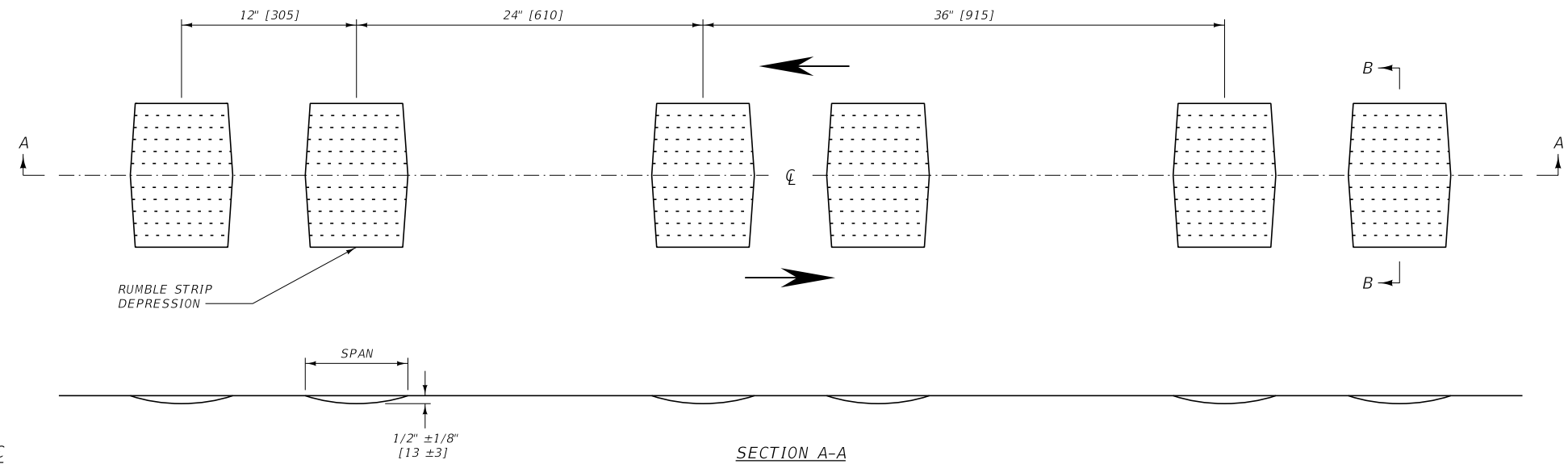
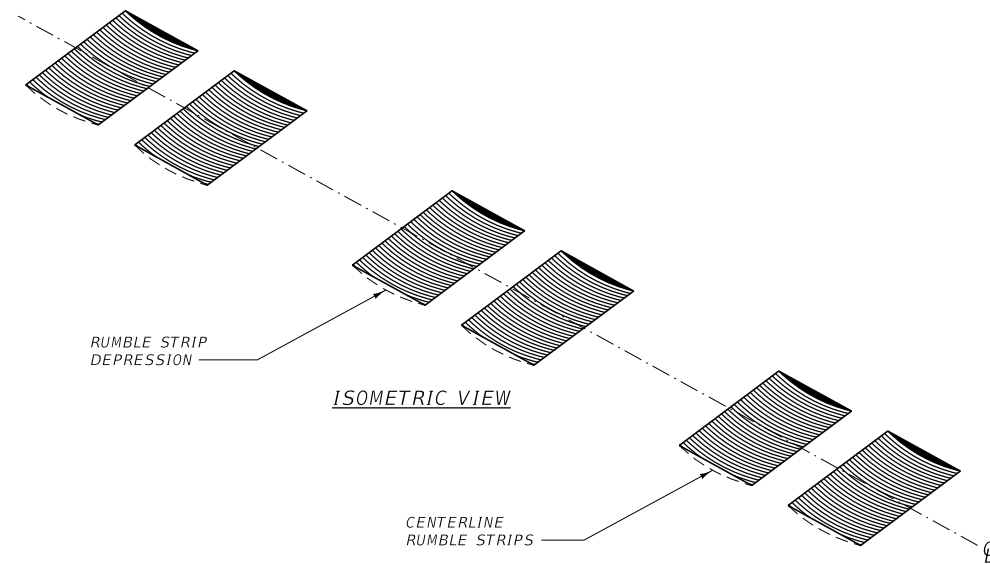
RUMBLE STRIP DETAIL

NOTE:

- DO NOT INSTALL RUMBLE STRIPS OVER CONCRETE BRIDGE DECKS OR WHERE OBSTACLES, SUCH AS CONCRETE BARRIER RAIL, PREVENT PROPER PLACEMENT.
- INSTALLATION ON SHOULDERS LESS THAN 4-FT [1.2 m] WILL BE DECIDED ON A CASE-BY-CASE BASIS.

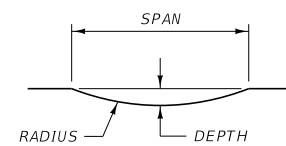
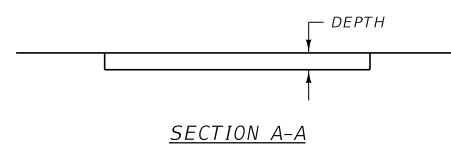
UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 411	DWG. NO. 411-03
MODIFIED SHOULDER RUMBLE STRIPS	
EFFECTIVE: JANUARY 2018	
MDTA	MONTANA DEPARTMENT OF TRANSPORTATION



TYPE		ENGLISH DIMENSIONS	
		INCHES	
1	NO SHOULDER	6	3
2	≤ 2.0' SHOULDER	8	4
3	> 2.0' SHOULDER	12	6

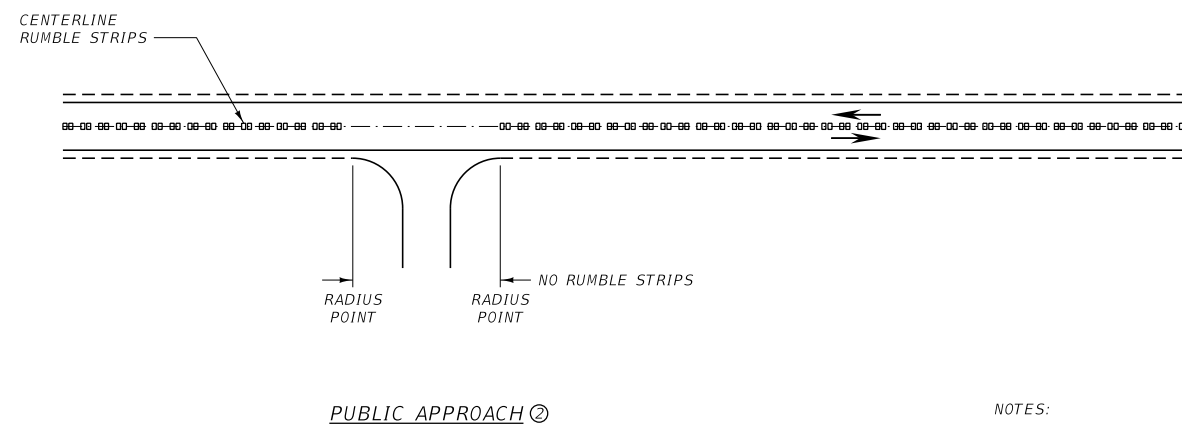
TYPE		METRIC DIMENSIONS	
		mm	
1	NO SHOULDER	150	75
2	≤ 0.6 m SHOULDER	200	100
3	> 0.6 m SHOULDER	300	150



	DEPTH	SPAN
ASPHALT	$1/2" \pm 1/8"$	6" TO 7"

	DEPTH (mm)	SPAN (mm)
ASPHALT	13 ±3	150 TO 175

RUMBLE STRIP DETAIL



NOTES:

- ① ROUTES WITHIN DESIGNATED CITY OR URBAN LIMITS, USE ENGINEERING JUDGEMENT ON A CASE-BY-CASE BASIS TO DETERMINE IF CENTERLINE RUMBLE STRIP INSTALLATION IS APPROPRIATE.
- ② BREAK CENTERLINE RUMBLE STRIPS FOR PUBLIC APPROACHES ONLY.
- ③ CONSIDER REMILLING EXISTING CENTERLINE RUMBLE STRIPS PRIOR TO A SECOND SEAL AND COVER APPLICATION.
- ④ DO NOT INSTALL CENTERLINE RUMBLE STRIPS ON CONCRETE BRIDGE DECKS.

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

--REVISED--
JANUARY 2018
APRIL 2019

DETAILED DRAWING
REFERENCE DWG. NO.
STANDARD SPEC. 411-05
SECTION 411

CENTERLINE
RUMBLE STRIPS

EFFECTIVE: SEPTEMBER 2014
MDTA MONTANA DEPARTMENT
OF TRANSPORTATION