

From Research to Practice: TxDOT's SRM-25 Speed Reduction Markings

EXAMPLE PLACEMENT

Total Length of Speed Reduction Markings (See *Suggested Spacings and Lengths*)

Point of curvature

Approaching Traffic

Reduce Speed from Posted Speed to Advisory Speed

GENERAL NOTES:

- Speed reduction markings may be placed in advance of an unexpectedly severe horizontal or vertical curve or other roadway feature where drivers need to decelerate prior to reaching the feature and where the desired reduction in speeds has not been achieved by the installation of warning signs and/or other traffic control devices.
- Speed reduction markings shall not be used in lanes that do not have a longitudinal line (centerline, edge line, or lane line) on both sides of the lane.
- Speed reduction markings may complement, but not replace warning signs and/or other traffic control devices.
- Speed reduction markings may be used where the posted speed is 55 mph and higher, and the speed difference with advisory speed is equal to or exceeds 20 mph.
- All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.
- Refer to PM standard sheets for pavement marking details.
- Lane width and wheel path should be considered in determining speed reduction marking extension into lane.

TYPICAL INSTALLATION MULTI-LANE APPROACH

Point of curvature

6" Broken White Lane Line

White Speed Reduction Markings

Raised Pavement Marker

INSTRUCTIONS:

Step 1: Use advisory speed to select applicable table under *Suggested Spacings and Lengths*.
Step 2: Use posted speed and table selected in Step 1 to determine range of Space IDs.
Step 3: Refer to "Example Placement" drawing and appropriate "Typical Installation" drawing to install the speed reduction markings based on Space IDs.

SUGGESTED SPACINGS AND LENGTHS

35 MPH ADVISORY SPEED				40 MPH ADVISORY SPEED				45 MPH ADVISORY SPEED				50 MPH ADVISORY SPEED			55 MPH ADVISORY SPEED				
SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)	SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)	SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)	SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)	SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)
X1	13	35	60	X1	16	40	65	X1	17	45	70	X1	18	50	75	X1	20	55	75
X2	14	35	65	X2	17	40	70	X2	17	45	75	X2	19	50	80	X2	21	55	80
X3	14	35	70	X3	18	40	75	X3	18	45	80	X3	20	50	85	X3	22	55	85
X4	14	35	75	X4	18	40	80	X4	18	45	85	X4	20	50	90	X4	22	55	90
X5	15	35	80	X5	19	40	85	X5	19	45	90	X5	21	50	95	X5	23	55	95
X6	15	35	85	X6	19	40	90	X6	19	45	95	X6	21	50	100	X6	23	55	100
X7	16	35	90	X7	20	40	95	X7	20	45	100	X7	22	50	105	X7	24	55	105
X8	16	35	95	X8	20	40	100	X8	20	45	105	X8	22	50	110	X8	24	55	110
X9	16	35	100	X9	20	40	105	X9	20	45	110	X9	22	50	115	X9	24	55	115
X10	17	35	105	X10	21	40	110	X10	21	45	115	X10	23	50	120	X10	25	55	120
X11	17	35	110	X11	21	40	115	X11	21	45	120	X11	23	50	125	X11	25	55	125
X12	18	35	115	X12	22	40	120	X12	22	45	125	X12	24	50	130	X12	26	55	130
X13	18	35	120	X13	22	40	125	X13	22	45	130	X13	24	50	135	X13	26	55	135
X14	19	35	125	X14	23	40	130	X14	23	45	135	X14	25	50	140	X14	27	55	140
X15	19	35	130	X15	23	40	135	X15	23	45	140	X15	25	50	145	X15	27	55	145
X16	19	35	135	X16	23	40	140	X16	23	45	145	X16	25	50	150	X16	27	55	150
X17	20	35	140	X17	24	40	145	X17	24	45	150	X17	26	50	155	X17	28	55	155
X18	20	35	145	X18	24	40	150	X18	24	45	155	X18	26	50	160	X18	28	55	160
X19	21	35	150	X19	24	40	155	X19	24	45	160	X19	26	50	165	X19	28	55	165
X20	21	35	155	X20	25	40	160	X20	25	45	165	X20	27	50	170	X20	29	55	170
X21	21	35	160	X21	25	40	165	X21	25	45	170	X21	27	50	175	X21	29	55	175
X22	22	35	165	X22	25	40	170	X22	25	45	175	X22	27	50	180	X22	29	55	180
X23	22	35	170	X23	25	40	175	X23	25	45	180	X23	27	50	185	X23	29	55	185
X24	22	35	175	X24	25	40	180	X24	25	45	185	X24	27	50	190	X24	29	55	190
X25	23	35	180	X25	25	40	185	X25	25	45	190	X25	27	50	195	X25	29	55	195
X26	23	35	185	X26	25	40	190	X26	25	45	195	X26	27	50	200	X26	29	55	200
X27	24	35	190	X27	25	40	195	X27	25	45	200	X27	27	50	205	X27	29	55	205
X28	24	35	195	X28	25	40	200	X28	25	45	205	X28	27	50	210	X28	29	55	210
X29	25	35	200	X29	25	40	205	X29	25	45	210	X29	27	50	215	X29	29	55	215
X30	25	35	205	X30	25	40	210	X30	25	45	215	X30	27	50	220	X30	29	55	220
X31	26	35	210	X31	25	40	215	X31	25	45	220	X31	27	50	225	X31	29	55	225
X32	26	35	215	X32	25	40	220	X32	25	45	225	X32	27	50	230	X32	29	55	230
X33	26	35	220	X33	25	40	225	X33	25	45	230	X33	27	50	235	X33	29	55	235
X34	27	35	225	X34	25	40	230	X34	25	45	235	X34	27	50	240	X34	29	55	240
X35	27	35	230	X35	25	40	235	X35	25	45	240	X35	27	50	245	X35	29	55	245

TYPICAL INSTALLATION ONE-LANE APPROACH

Point of curvature

5" Solid Yellow Line

White Speed Reduction Markings

Raised Pavement Marker

TRAFFIC CONTROL STANDARDS

SPEED REDUCTION MARKINGS PLACEMENT DETAILS SRM-25

SPACE ID	SPACING (feet)	POSTED SPEED (MPH)	LENGTH (feet)
X1	13	35	60
X2	14	35	65
X3	14	35	70
X4	14	35	75
X5	15	35	80
X6	15	35	85
X7	16	35	90
X8	16	35	95
X9	16	35	100
X10	17	35	105
X11	17	35	110
X12	18	35	115
X13	18	35	120
X14	19	35	125
X15	19	35	130
X16	19	35	135
X17	20	35	140
X18	20	35	145
X19	21	35	150
X20	21	35	155
X21	21	35	160
X22	22	35	165
X23	22	35	170
X24	22	35	175
X25	23	35	180
X26	23	35	185
X27	24	35	190
X28	24	35	195
X29	25	35	200
X30	25	35	205
X31	26	35	210
X32	26	35	215
X33	26	35	220
X34	27	35	225
X35	27	35	230

2026 TextTE District Meeting
Houston

Xin (Juno) Zhang, PE, PTOE

April 10, 2026

Agenda

What is Speed Reduction Marking (SRM)



Why Speed Reduction Marking Matters



Where SRM can be applied



Research behind the development of SRM-25



How to use this standard sheets

What is Speed Reduction Markings (SRM)

Definition

Supplemental transverse pavement markings

Visual effect

Progressively reduced spacing creates the impression of increasing speed (which warns drivers and encourages appropriate speed reduction)

Field use

Low-cost markings to slow drivers before severe curves or other key roadway features.

Illustrative Examples of Speed Reduction Markings



*Image Source: Texas A&M Transportation Institute (TTI), Technical Report 0-6969-R3.
Available at: <http://tti.tamu.edu/documents/0-6969-R3.pdf>*

SRM-25 standardizes the details of this treatment.

Why Speed Reduction Marking Matters

- ❖ Road to Zero sets the bigger vision.
- ❖ Speed management remains a continuing traffic safety need.
- ❖ **Speed Reduction Marking** is practical, cost-effective, and easy to implement.
- ❖ **SRM-25 is one practical tool within a larger safety toolbox**

Toward zero traffic fatalities and serious injuries in Texas

SRM aligns with that direction as one standardized, field-ready treatment.



Where SRM can be applied

Application Conditions

- Unexpectedly severe horizontal or vertical curve, or other roadway feature
- Drivers need to decelerate before reaching the feature
- Warning signs and/or other traffic control devices have not achieved the desired speed reduction

Use Criteria

- ❖ **Posted speed of 55 mph or higher**
- ❖ **Speed difference to advisory speed of 20 mph or greater**

SRM complements, but does not replace, warning signs or other traffic control devices.

Research Behind the Development

SRM-25 was developed by combining guidance, application review, and technical research.

Guidance

MUTCD / TMUTCD

Established the treatment concept and application direction.

Examples:
Dimension, concept and guidance.

MUTCD Guidance Section 3B.28 (11 Edition)

Application Consideration

Texas A&M Transportation Institute (TTI)

Helped evaluate where the treatment may be most appropriate in the field.

Examples: application considerations, speed differential, and context.

Traffic Control Device Analysis, Testing, and Evaluation Program: FY2020 Activities, etc.

Technical Research

Katz research

Provided the foundation for development of marking length and spacing.

Examples:

- Deceleration rate: **6.7 ft/s²**
- Frequency: **4 bars per second.**
- **Equations for Length and Spacing.**

Peripheral Transverse Pavement Markings For Speed Control

Pavement Markings for Speed Reduction: Final Report

How the spacing and length were developed

1 Perception concept

Progressively reduced spacing creates the impression of increasing speed.



2 Design translation

The concept was converted into practical marking lengths and spacing values for implementation based on technical research.



3 Standardization

Those values were organized into SRM-25 tables for more consistent design use.

Reference Equations And Key Settings Used During Development

- ❖ Deceleration rate: 6.7 ft/s²
- ❖ Speed reduction markings Frequency: 4 bars per second.

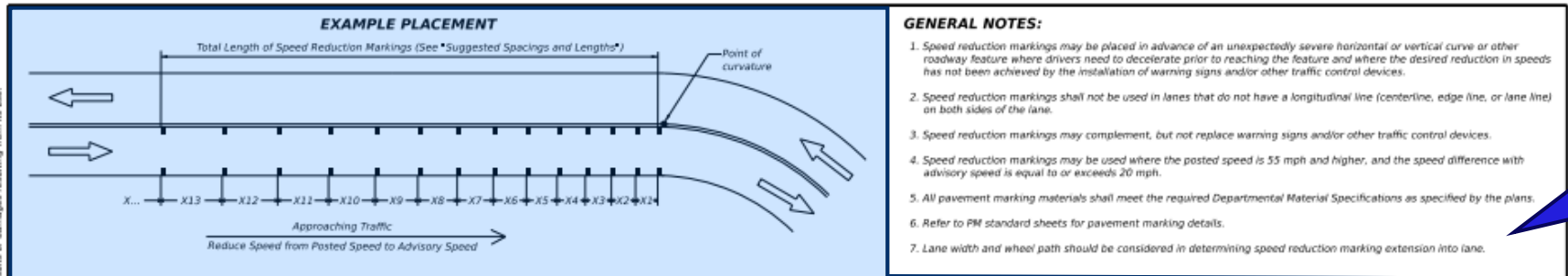
$$D = \frac{(v_0^2 - v_1^2)}{2a}$$

$$x = \frac{1}{2} a \left(\frac{n}{f} \right)^2 + v_0 \left(\frac{n}{f} \right) + x_0$$

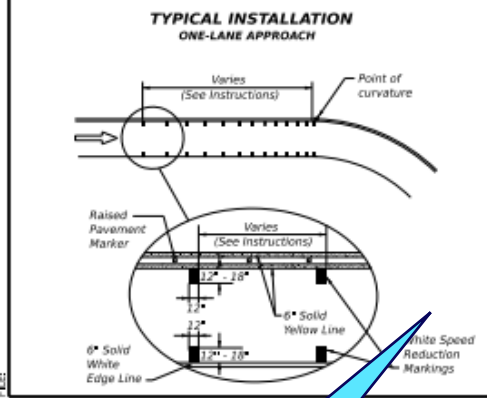
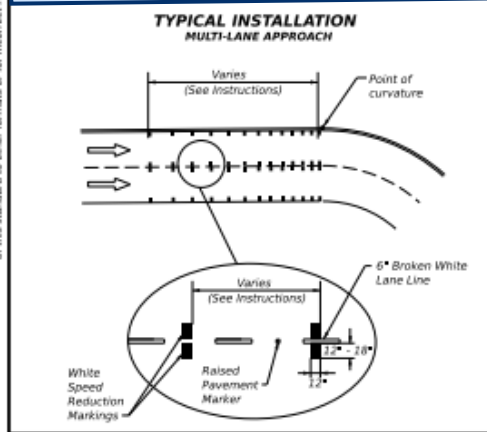
This design principle has been adopted for eight sites in Alabama for SRM's implementation and evaluation.

Overview of the SRM-25

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Department of Transportation for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



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X1	12	55	60	X1	12	60	65	X1	17	65	X1	19	70	X1	20	75
X2	14	60	65	X2	14	65	70	X2	17	70	X2	19	75	X2	21	75
X3	14	65	70	X3	16	70	75	X3	18	75	X3	19	75	X3	21	75
X4	14	70	75	X4	16	75		X4	18		X4	20		X4	21	
X5	15			X5	16			X5	19		X5	20		X5	22	
X6	15			X6	17			X6	19		X6	21		X6	22	
X7	16			X7	17			X7	19		X7	21		X7	23	
X8	16			X8	18			X8	20		X8	21		X8	23	
X9	16			X9	18			X9	20		X9	22		X9	24	
X10	17			X10	19			X10	22		X10	22		X10	24	
X11	17			X11	19			X11	22		X11	23		X11	24	
X12	18			X12	19			X12	22		X12	23		X12	25	
X13	18			X13	20			X13	22		X13	24		X13	25	
X14	19			X14	20			X14	22		X14	24		X14	26	
X15	19			X15	21			X15	23		X15	24		X15	26	
X16	19			X16	21			X16	23		X16	25		X16	26	
X17	20			X17	21			X17	24		X17	25		X17	27	
X18	20			X18	22			X18	24		X18	26		X18	27	
X19	21			X19	22			X19	24		X19	26		X19	27	
X20	21			X20	23			X20	25		X20	26		X20	27	
X21	21			X21	23			X21	25		X21	27		X21	27	
X22	22			X22	24			X22	26		X22	27				
X23	22			X23	24			X23	26							
X24	23			X24	24			X24	26							
X25	23			X25	25			X25	27							
X26	24			X26	25			X26	27							
X27	24			X27	26			X27	28							
X28	24			X28	26			X28	28							
X29	25			X29	26			X29	28							
X30	25			X30	27			X30	29							
X31	26			X31	27											
X32	26			X32	28											
X33	26			X33	28											
X34	27			X34	29											
X35	27			X35	29											

General Notes:
Explains application conditions and use considerations.

Tables include guidance for advisory speeds from 35–55 mph and posted speeds from 55–75 mph.

Typical Installation Layouts
Shows how the markings are placed on the roadway approach.

Recommended spacing and length for different speed/advisory combinations, with a placement example.

Texas Department of Transportation Traffic Safety Division Standard

SPEED REDUCTION MARKINGS PLACEMENT DETAILS SRM-25

FILE: sr-25/25p IN: T-887 IN: T-001 IN: T-887 IN: T-887

0-T-001 March 2023 DATE: JOB: REVISION:

REVISED: COUNTY: SHEET NO.:

2023

How to Use SRM-25

1 Confirm the site condition
Check that the location fits the intended application conditions in the sheet.

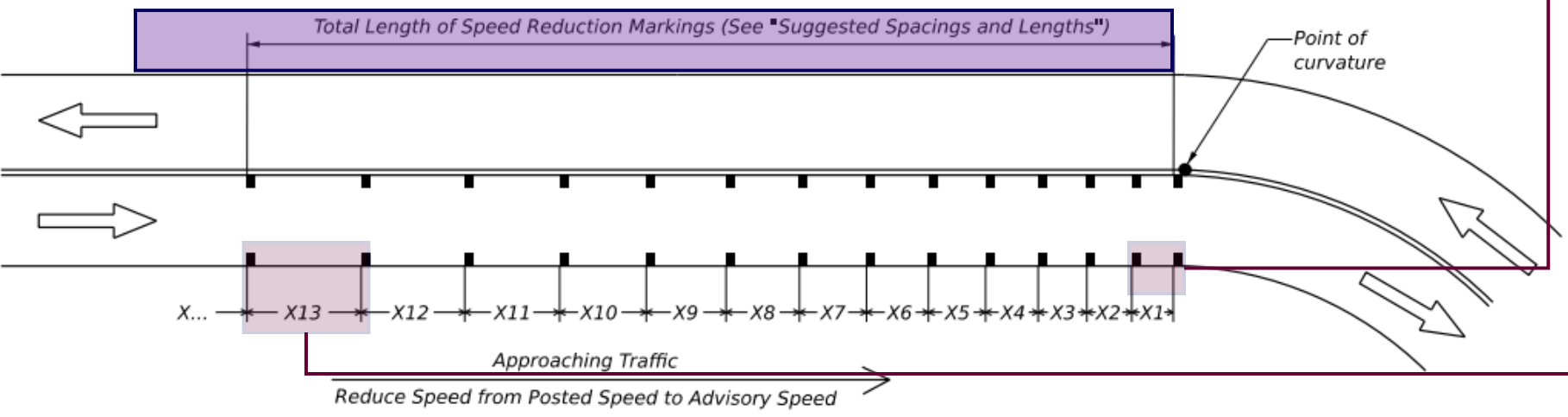
2 Check speeds
Identify posted speed and advisory speed.

3 Select the table and layout
Use the matching spacing, length, and typical installation detail.

4 Apply as a supplement
Coordinate with warning signs and other traffic control devices.

Sample Implementation

EXAMPLE PLACEMENT



		35 MPH ADVISORY SPEED				
SPACE ID	SPACING (feet)	POSTED SPEED (MPH)				
		55	60	65	70	75
X1	13	Length of Speed Reduction Markings = 279 ft	Length of Speed Reduction Markings = 385 ft	Length of Speed Reduction Markings = 476 ft	Length of Speed Reduction Markings = 600 ft	Length of Speed Reduction Markings = 707 ft
X2	14					
X3	14					
X4	14					
X5	15					
X6	15					
X7	16					
X8	16					
X9	16					
X10	17					
X11	17					
X12	18					
X13	18					
X14	19					
X15	19					
X16	19					
X17	20					
X18	20	Length of Speed Reduction Markings = 279 ft	Length of Speed Reduction Markings = 385 ft	Length of Speed Reduction Markings = 476 ft	Length of Speed Reduction Markings = 600 ft	Length of Speed Reduction Markings = 707 ft
X19	21					
X20	21					
X21	21					
X22	22					
X23	22					
X24	23					
X25	23					
X26	24					
X27	24					
X28	24					
X29	25					
X30	25					
X31	26					
X32	26					
X33	26					
X34	27					
X35	27					

Summary

1

A standardized option

SRM-25 provides a standardized option for applying speed reduction markings.

2

A research-based process

Its development was supported by guidance, application review, and research.

3

A practical implementation tool

The sheet helps practitioners move from concept to real-world implementation.

Thank you!
Open Discussion

