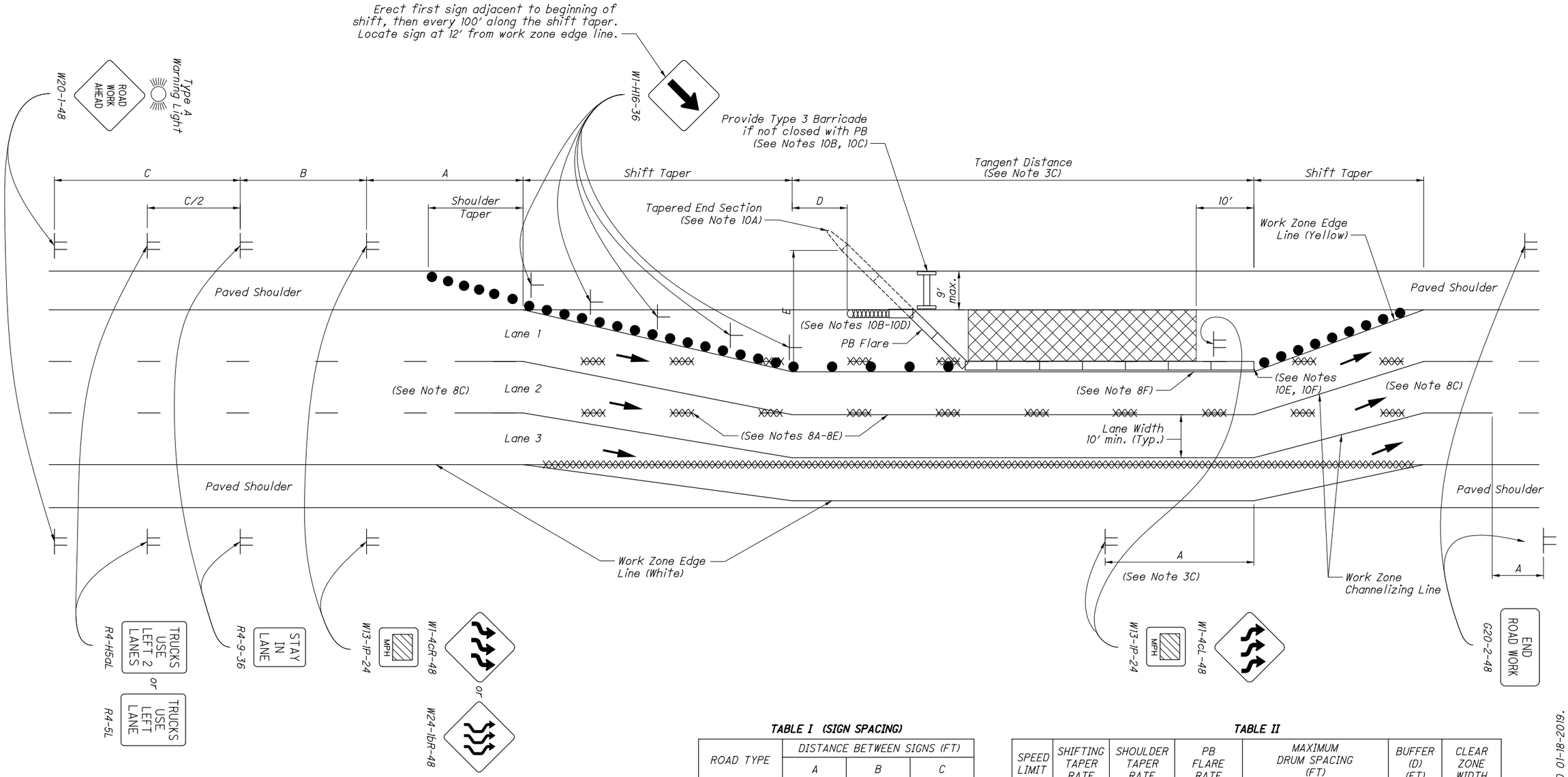

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
MAJOR CONVENTIONAL	500	500	500
FREEWAY & EXPRESSWAY	1000	1500	2640

TABLE II

SPEED LIMIT (MPH)	SHIFTING TAPER RATE MINIMUM	SHOULDER TAPER RATE MINIMUM	PB FLARE RATE MINIMUM	MAXIMUM DRUM SPACING (FT)		BUFFER (D) (FT) MINIMUM	CLEAR ZONE WIDTH (E) (FT)
				TAPER SEC.	TANGENT SEC.		
25	11:1	4:1	8:1	25	40	155	15
30	15:1	5:1	8:1	30	40	200	15
35	21:1	7:1	9:1	35	40	250	15
40	27:1	9:1	10:1	40	80	305	15
45	45:1	15:1	12:1	45	80	360	19
50	50:1	17:1	14:1	50	80	425	19
55	55:1	19:1	16:1	55	80	495	23
60	60:1	20:1	18:1	60	120	570	30
65	65:1	22:1	19:1	65	120	645	30
70	70:1	24:1	20:1	70	120	730	30

LEGEND

- WORK AREA
- DRUMS
- PORTABLE BARRIER (PB)
- REMOVE EXISTING MARKINGS
- ATTENUATOR
- OPTIONAL TREATMENT
- DIRECTION OF TRAVEL

THIS DRAWING REPLACES MT-102.10 DATED 01-18-2019.

REVISION DATE 01-17-2020

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER Soisson

OFFICE OF ROADWAY ENGINEERING

LANE SHIFT ON A MULTI-LANE HIGHWAY USING PORTABLE BARRIER

STANDARD ROADWAY CONSTRUCTION DRAWING

SCD NUMBER MT-102.10

NOTES:

DESIGN SPEED

1. The design speed used for taper rates should typically be the permanent legal speed. However, on construction projects for which the speed limit is reduced, the reduced speed may be used in determining the taper rate when the taper is not the first active construction area within the project.

TAPERS

2A. The minimum acceptable length for the shift taper shall be determined by multiplying the width of offset by the shift taper rate. The shift taper rate is provided in Table II.

2B. The minimum acceptable length for the shoulder taper shall be determined by multiplying the width of the shoulder by the shoulder taper rate. The shoulder taper rate is provided in Table II.

SIGN SPACING

3A. The minimum spacing between work zone signs is shown in Table I. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200′ for speeds of 45 mph or less and a minimum of 400′ for speeds of 50 mph or greater.

3C. If the tangent distance along the temporary diversion is less than 1000′, place the second Reverse Curve (W1-4) sign at the midpoint of the tangent (also see Notes 6C and 6F).

ADJUSTMENTS FOR SIGHT DISTANCE

4. The location of the shift taper and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

5A. ROAD WORK AHEAD (W20-1) signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK (G20-2) signs are only required for lane closures of more than one day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any ROAD WORK AHEAD or END ROAD WORK sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

6A. The Advisory Speed (W13-1P) plaque shall be used when specified in the plan.

6B. 36″ warning signs may be used when the approach speed limit is 40 mph or less.

6C. Where the shifted section is longer than 600′, a Reverse Curve (W1-4) sign shall be used to show the initial shift and a second W1-4 shall be used to show the return to the normal alignment. Where the tangent distance along the shifted section is less than 600′, the Double Reverse Curve (W24-1) sign should be used in place of the first W1-4 sign. The second W1-4 sign should be omitted.

SIGNING DETAILS (cont.)

6D. Provide signing on the inactive side of the highway, as shown in Standard Construction Drawing (SCD) MT-95.30, when called for in the plans.

6E. Provide truck-use signs R4-H5a or R4-5 to keep trucks off the shoulder, unless specified otherwise in the plans or as determined otherwise by the Engineer. Where used, provide the appropriate legend (right/left) to direct truck use to the intended lane(s).

6F. For information on other related signing such as Speed Limit or Increased Penalties, see SCD MT-102.30.

6G. Provide the appropriate symbol legend necessary on Reverse Curve (W1-4, W1-4b or W1-4c) and Double Reverse Curve (W24-1, W24-1a, or W24-1b) signs to correctly identify the direction and the number of through lanes available for road users. Provide the appropriate symbol legend necessary on Construction Arrow (W1-H16) signs to correctly identify the applicable oblique direction.

DRUMS

7. The maximum drum spacing along tapers and along tangent sections shall be as shown in Table II. A minimum of 5 drums shall be used to close the upstream shoulder.

PAVEMENT MARKING / RAISED PAVEMENT MARKERS (RPMs)

8A. The existing conflicting reflectors from the RPMs shall be removed.

8B. The appropriate color work zone edge lines shall be applied. Existing conflicting pavement markings shall be removed or covered as per CMS 614.11G.

8C. Work zone pavement markings for lane shifts shall be as per SCD MT-99.30.

8D. Work zone pavement markings which would conflict with the final traffic lanes shall be removable (CMS 740.06, Type I) tape unless the area will be resurfaced prior to project completion.

8E. After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 614.11I. The original markings and raised pavement marker reflectors shall be restored at no additional cost unless separately itemized in the plans.

8F. Existing markings which will be covered by portable barrier do not need to be removed.

8G. Lane line markings between lane shifts shall be as called for in the plans.

(RESERVED FOR FUTURE USE)

9A. (intentionally blank)

PORTABLE BARRIER (PB)

10A. A tapered end section may be used in place of the impact attenuator at locations where the last full section of NCHRP 350 PB can be extended outside of the clear zone for approaching traffic. See Table II for clear zone widths.

10B. If it is necessary to provide the Contractor with access to the work area behind the PB flare, the PB end treatment shall include an impact attenuator. The maximum width of opening shall be 9′ between the impact attenuator and the outside edge of the paved shoulder.

PORTABLE BARRIER (cont.)

10C. If Contractor access is provided as per Note 10B, the length of PB shall be adequate to shield the work area from the motorist. This length of need of PB shall be determined from the calculations provided in SCD MT-101.75 and the L&D Manual, Volume 1, Figure 602-1E, and shall require the approval of the Engineer.

10D. When used, impact attenuators shall be installed parallel to traffic. Also, the last full section of PB, adjacent to the impact attenuator, shall be located parallel to traffic.

10E. If the PB is located within the clear zone of opposing traffic, the downstream end shall be flared away from opposing traffic (ONLY if work is on the right side of the directional roadway) to shield the work area from the potential errant vehicles crossing the median.

10F. If the PB is located beyond the clear zone of opposing traffic, the downstream end of the NCHRP 350 PB may be provided with a tapered end, located 10′ beyond the work area.

10G. Where PB is located beyond the edge of the paved shoulder, the cross section (from the edge of paved shoulder, up to and including the location of the PB) shall be graded at 10:1 or flatter.

10H. The work area shall be adequately protected from traffic approaching from intersections and driveway approaches using PB and impact attenuators as called for by the Engineer.

10I. For installation procedures, refer to manufacturer's installation instructions.

10J. For details on delineation of PB, see SCD MT-101.70.

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