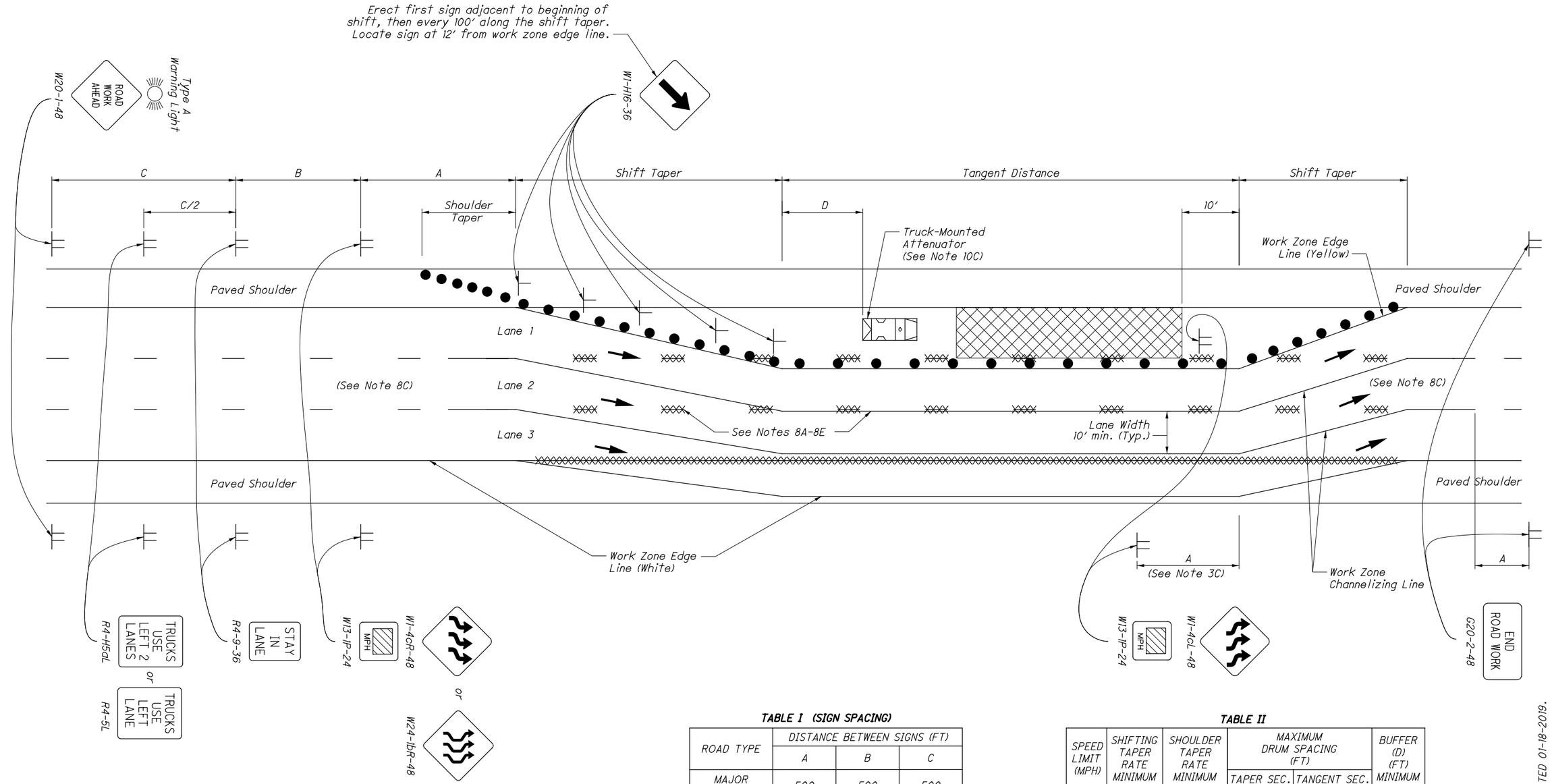

TABLE I (SIGN SPACING)

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	MAXIMUM DRUM SPACING (FT)		BUFFER (D) (FT) MINIMUM
			TAPER SEC.	TANGENT SEC.	
25	11:1	4:1	25	40	155
30	15:1	5:1	30	40	200
35	21:1	7:1	35	40	250
40	27:1	9:1	40	80	305
45	45:1	15:1	45	80	360
50	50:1	17:1	50	80	425
55	55:1	19:1	55	80	495
60	60:1	20:1	60	120	570
65	65:1	22:1	65	120	645
70	70:1	24:1	70	120	730

LEGEND

- WORK AREA
- DRUMS
- REMOVE EXISTING MARKINGS
- DIRECTION OF TRAVEL
- SHADOW VEHICLE WITH TMA

THIS DRAWING REPLACES MT-102.20 DATED 01-18-2019.

REVISION DATE 04-19-2019

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 DRUMS

STANDARD ROADWAY CONSTRUCTION DRAWING

SCD NUMBER **MT-102.20**

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 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)

SHADOW VEHICLE

10A. The shadow vehicle shall be in a place and unoccupied whenever workers are in the work area. This vehicle shall be removed from the pavement whenever workers are not in the work area.

10B. The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe light(s).

10C. The shadow vehicle shall be equipped with a truck-mounted or trailer attenuator (TMA) in accordance with CMS 614.03.

SINGLE LANE SHIFT ONLY

11A. The modification described in 11B through 11D may ONLY be used when the highway is restricted to one remaining open through lane (within allowable lane closure hours).

11B. Use of drums along both parallel sides of the tapers and tangent may be used in lieu of pavement marking and RPM modifications otherwise required, due to the short time of implementation.

11C. Drums shall be spaced at 20′ along both parallel sides of the tapers for both the entering and exiting shift tapers.

11D. Cones may be substituted for drums as follows:

a) Use of cones is permissible for either daytime operation or nighttime operation, but shall not be used continuously, day and night. Upon completion of the work within the work period, the cones shall be removed. They may again be placed on the highway in order to resume work in the following such work period.
b) Cones used for daytime traffic control shall have a minimum height of 28″.
c) Cones used for nighttime traffic control shall have a minimum height of 42″.
d) Use of cones at night shall be prohibited along tapers.
e) Cone spacing at night shall be at a maximum of 40′.
f) Where cones are substituted for drums along tangents, intermixing of channelizing devices within the same run will not be permitted. Either cones shall be used for the entire length of the tangent section, or drums shall be used for the entire length.
g) Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.
h) All drums and cones should have a minimum offset from the edge of the traveled lanes of 1.5 feet.

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