

LATE MERGE

LEGEND

| | |
|--------------------------|--|
| WORK AREA | |
| DRUMS/CONES | |
| REMOVE EXISTING MARKINGS | |
| DIRECTION OF TRAVEL | |

TABLE II

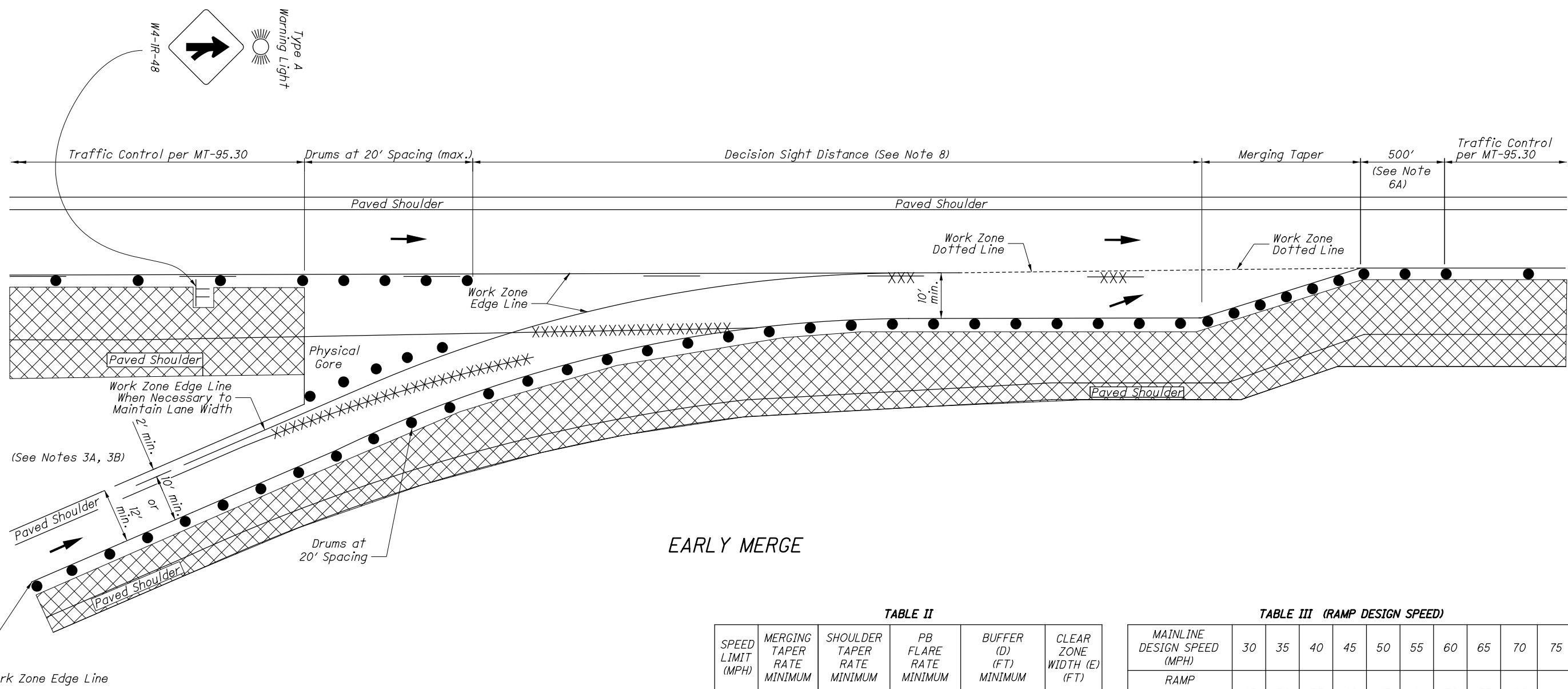
| SPEED LIMIT (MPH) | MERGING TAPER RATE MINIMUM | 1/2 MERGING TAPER RATE MINIMUM | SHOULDER TAPER RATE MINIMUM | PB FLARE RATE MINIMUM | BUFFER (D) (FT) MINIMUM | CLEAR ZONE WIDTH (E) (FT) |
|-------------------|----------------------------|--------------------------------|-----------------------------|-----------------------|-------------------------|---------------------------|
| 25 | 11:1 | 6:1 | 4:1 | 8:1 | 155 | 15 |
| 30 | 15:1 | 8:1 | 5:1 | 8:1 | 200 | 15 |
| 35 | 21:1 | 11:1 | 7:1 | 9:1 | 250 | 15 |
| 40 | 27:1 | 14:1 | 9:1 | 10:1 | 305 | 15 |
| 45 | 45:1 | 23:1 | 15:1 | 12:1 | 360 | 19 |
| 50 | 50:1 | 25:1 | 17:1 | 14:1 | 425 | 19 |
| 55 | 55:1 | 28:1 | 19:1 | 16:1 | 495 | 23 |
| 60 | 60:1 | 30:1 | 20:1 | 18:1 | 570 | 30 |
| 65 | 65:1 | 33:1 | 22:1 | 19:1 | 645 | 30 |
| 70 | 70:1 | 35:1 | 24:1 | 20:1 | 730 | 30 |

TABLE III (RAMP DESIGN SPEED)

| MAINLINE DESIGN SPEED (MPH) | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|-----------------------------|----|----|----|----|----|----|----|----|----|----|
| RAMP DESIGN SPEED (MPH) | 25 | 30 | 35 | 40 | 45 | 48 | 50 | 55 | 60 | 65 |

THIS DRAWING REPLACES MT-98.10 DATED 01-20-2017.

THIS DRAWING REPLACES MT-98.10 DATED 01-20-2017.



EARLY MERGE

TABLE II

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

TABLE III (RAMP DESIGN SPEED)

| MAINLINE DESIGN SPEED (MPH) | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|-----------------------------|----|----|----|----|----|----|----|----|----|----|
| RAMP DESIGN SPEED (MPH) | 25 | 30 | 35 | 40 | 45 | 48 | 50 | 55 | 60 | 65 |

LEGEND

WORK AREA

DRUMS/CONES

REMOVE EXISTING MARKINGS

DIRECTION OF TRAVEL

NOTES:

SIGNING

1. It is intended that the Merge (W4-1) sign be located to the right of the through lane as shown. However, if the sign cannot be located as shown due to the activity at the location, it may be located to the left of the through lane as an alternate.

FLASHING WARNING LIGHTS

2. Type A flashing warning lights shown on the Merge (W4-1) sign are required at night.

RAMP WIDTH

- 3A. Normally a 10' minimum ramp width is to be maintained on existing ramp pavement.
- 3B. Where the condition in Note 3A is not possible, a minimum width of 12' to the outside edge of the paved shoulder may be used only if the shoulder pavement buildup is adequate to carry the load. Where an edge line is required to designate a shoulder, the edge line shall be placed such that the minimum lane width is 10' and the minimum shoulder width is 2'.

PAVEMENT MARKING

- 4A. If the construction operation requires a lane closure for more than 1 day, the existing conflicting reflectors from the raised pavement markers shall be removed.
- 4B. Additionally, if a lane closure of greater than 3 days is required, the appropriate color work zone edge lines shall be applied along the taper, and existing conflicting pavement markings shall be removed or covered as per CMS 614.11G.
- 4C. Where the temporary merging taper is to be in use for more than 3 days, work zone dotted lines shall be provided to identify the extension of the edge line.
- 4D. Work zone pavement markings which would conflict with the final traffic lanes shall be removable tape (CMS 740.06, Type I) unless the area will be resurfaced prior to project completion.
- 4E. 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.

(RESERVED FOR FUTURE USE)

- 5A. (intentionally blank)

DRUMS / CONES

- 6A. Drum spacing shall be as follows:

- a) 20' center-to-center along the mainline beginning at the physical gore, and continuing to a point 500' beyond the end of the merging taper;
- b) As shown on Standard Construction Drawing (SCD) MT-95.30 elsewhere along the mainline; and
- c) 20' center-to-center along the ramp.

- 6B. Cones may be substituted for drums as follows:

- a) Use of cones is permissible for either daytime operation or for nighttime operation, but shall not be used continuously, day and night. Upon completion of 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', but shall never be greater than the drum spacing called for in Note 6A.
- f) When 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 run.

- 6C. Provisions shall be made to stabilize the cones and drums per the manufacturer's specifications to prevent them from blowing over.

PORTABLE BARRIER (PB)

- 7A. 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.
- 7B. 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.
- 7C. If Contractor access is provided per Note 7B, 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 I, Figure 602-IE, and shall require the approval of the Engineer.
- 7D. 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.

- 7E. For installation procedures, refer to the manufacturer's installation instructions.

- 7F. For details on delineation of PB, see SCD MT-101.70.

- 7G. Where PB is located beyond the edge of the paved shoulder, the cross slope within the clear zone, including the surface on which the PB is placed, shall be graded at 10:1 or flatter. If the cross slope is steeper than 10:1, the PB shall be terminated on the paved shoulder. The PB shall be extended along the paved shoulder as necessary to satisfy the length of need, and then terminated using the impact attenuator.

DECISION SIGHT DISTANCE (DSD)

8. If the DSD is not specified in the plans, it shall be as determined by the Engineer (see ODOT Traffic Engineering Manual Section 607-15 and the table below).

DECISION SIGHT DISTANCE

| POSTED MAINLINE SPEED (MPH) | RURAL (FEET) | URBAN (FEET) |
|-----------------------------|---|--------------|
| 45 | 675 | 930 |
| 50 | 750 | 1030 |
| 55 | 865 | 1135 |
| 60 | 990 | 1280 |
| 65 | DIAMOND RAMP = 1050 LOOP RAMP = 1220 | 1365 |
| 70 | DIAMOND RAMP = 1105 LOOP RAMP = 1275 | 1445 |