

WORK ON OUTSIDE OF RAMP

TABLE I (SIGN SPACING)

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

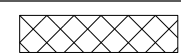
TABLE II


SPEED LIMIT (MPH)	SHOULDER TAPER RATE MINIMUM	PB FLARE RATE MINIMUM	CLEAR ZONE WIDTH (E) (FT)
25	4:1	8:1	15
30	5:1	8:1	15
35	7:1	9:1	15
40	9:1	10:1	15
45	15:1	12:1	19
50	17:1	14:1	19
55	19:1	16:1	23
60	20:1	18:1	30
65	22:1	19:1	30
70	24:1	20:1	30

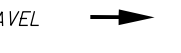
TABLE III (RAMP DESIGN SPEED)

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 

DIRECTION OF TRAVEL 

THIS DRAWING REPLACES MT-98.28 DATED 01-20-2017.

SD NUMBER  
**MT-98.28**

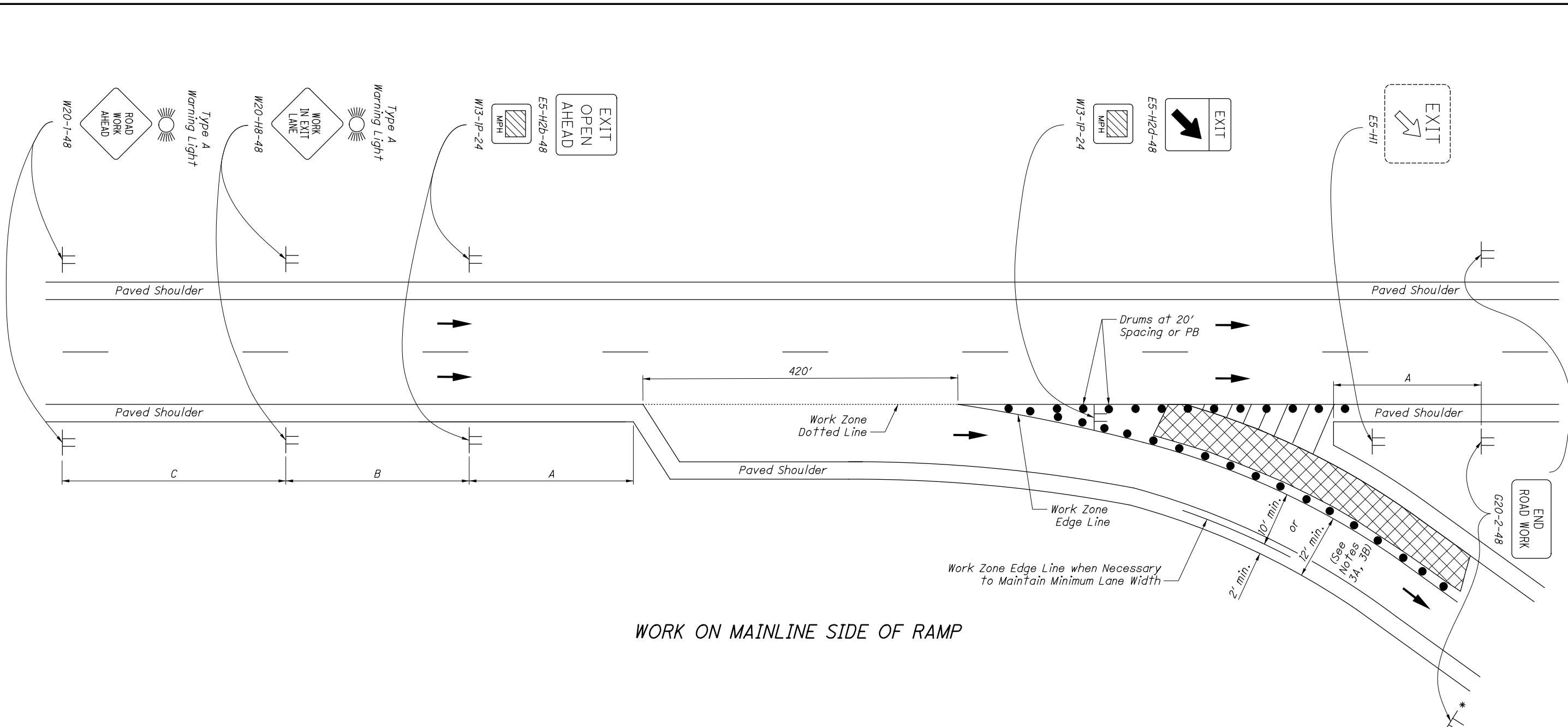
STANDARD ROADWAY CONSTRUCTION DRAWING  
**LANE CLOSURE WITHIN EXIT RAMP**

OFFICE OF  
**ROADWAY  
ENGINEERING**

STDS  
ENGINEER  
Soisson

STATE OF OHIO DEPARTMENT OF  
TRANSPORTATION ADMINISTRATOR  
David L. Holstein

REVISION DATE  
01-17-2020



**WORK ON MAINLINE SIDE OF RAMP**

**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)	SHOULDER TAPER RATE MINIMUM	PB FLARE RATE MINIMUM	CLEAR ZONE WIDTH (E) (FT)
25	4:1	8:1	15
30	5:1	8:1	15
35	7:1	9:1	15
40	9:1	10:1	15
45	15:1	12:1	19
50	17:1	14:1	19
55	19:1	16:1	23
60	20:1	18:1	30
65	22:1	19:1	30
70	24:1	20:1	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

\* END ROAD WORK (G20-2-48) Sign 200' from End of Work

**LEGEND**

WORK AREA

DRUMS/CONES

DIRECTION OF TRAVEL

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STANDARD ROADWAY CONSTRUCTION DRAWING

NOTES:

SIGNING

- 1A. The Advisory Speed (W13-1P) plaque shall be used when specified in the plan, or when it is necessary for the vehicle to reduce speed by more than 10 mph in order to safely exit from the mainline, as directed by the Engineer. The following additional criteria shall also apply:
  - a) Advisory speeds within 10 mph of the posted speed limit need not be displayed.
  - b) When provided at exit ramp openings (see Note 2A), the Advisory Speed plaque should typically be mounted below the EXIT (arrow) (E5-H2d) sign. The Advisory Speed plaque shall not be mounted below the permanent gore (E5-H1a) sign. As an alternative, the Advisory Speed plaque may be mounted below the EXIT OPEN AHEAD (E5-H2b) sign.
  - c) The advisory speed displayed shall not be greater than would otherwise be required to accommodate the permanent ramp geometry at the exit.
- 1B. END ROAD WORK (G20-2) signs are only required for lane closures of more than 1 day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits. Any END ROAD WORK sign which would fall within the limits of another work zone may be omitted.
- 1C. The work zone sign spacings shown in Table I are minimums. Maximum spacing should not be greater than 1.5 times the distance shown in Table I.
- 1D. 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.
- 1E. The existing gore sign, E5-H1 or E5-H1a, shall be covered or removed when the work zone EXIT (arrow) (E5-H2d) sign is in use.
- 1F. The location of advance warning signs should be adjusted to provide adequate sight distance for the existing horizontal and vertical roadway alignment.
- 1G. For traffic control procedures to be implemented approaching the subject location, see Standard Construction Drawings (SCDs) MT-95.30, MT-95.40, or the MT-102 series as may be appropriate.

RAMP OPENING

- 2A. The opening to the ramp should be 420' or more whenever possible. A lesser opening may be provided if no other alternative is available. When a lesser opening is provided, the advisory speed applicable to such condition shall be as follows:

Opening/Taper	Advisory Speed
390'	65 mph
360'	60 mph
330'	55 mph
300'	50 mph
270'	45 mph
240'	40 mph
210'	35 mph

- 2B. The opening shall never be less than 200'. If a 200' minimum dimension cannot be provided, the ramp should be closed when so determined by the Engineer.

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 614.116.
- 4C. 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.
- 4D. After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 614.111. 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)

- 5. (intentionally blank)

DRUMS / CONES

- 6A. Drums shall be spaced at 20' center-to-center. If shoulder work extends along the mainline beyond the physical gore, drum spacing along the shoulder shall be at 20' intervals for the first 500', and at 2 times the speed limit (mph), in feet, thereafter.
- 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 cones and drums per the manufacturer's specifications to prevent them from blowing over.

FLASHING WARNING LIGHTS

- 7. Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) sign and on the WORK IN EXIT LANE (W20-H8) sign are required at night.

PORTABLE BARRIER (PB)

- 8A. 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.
- 8B. 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.
- 8C. When PB is provided at the gore, the impact attenuators shall be installed parallel to mainline traffic. Also, the last full section of PB adjacent to the impact attenuator, shall be located parallel to mainline traffic.
- 8D. The PB within the gore, along the left side of the exit ramp traffic, should be flared as per Table II, with the upstream end of the PB placed adjacent to the mainline PB.
- 8E. For installation procedures, refer to the manufacturer's installation instructions.
- 8F. For details on delineation of PB, see SCD MT-101.70.
- 8G. 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.

THIS DRAWING REPLACES MT-98.28 DATED 01-20-2017.

STANDARD ROADWAY CONSTRUCTION DRAWING

SCD NUMBER  
**MT - 98.28**

**LANE CLOSURE WITHIN EXIT RAMP**

**OFFICE OF  
ROADWAY  
ENGINEERING**

STATE ENGINEER  
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