NOTE:

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 should be used in determining the taper rate when the taper is not the first active construction area within the project.

TAPER

28. The minimum acceptable rate for the shoulder taper is provided in Table II.

SIGN SPACING

36. The work zone sign spacing shown in Table I are minimums. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

39. 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 50 mph or greater.

ADJUSTMENTS FOR SIGHT DISTANCE

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

SIGN DETAILS

5A. ROAD WORK AHEAD W10-2 signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK (W20-2) signs are only required for shoulder closures of more than 1 day. It is intended that these signs be placed on the roadway, on all exit ramps, and on the beginning of the shoulder taper.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any W10-5 or W20-2 signs which fall within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

STORM DETAILS

6A. When the approach speed limit is 40 mph or less, 36' work zones may be used.

6B. The distance plaques W20-2 shall indicate the distance to the beginning of the shoulder taper. Distances less than 1 mile may be expressed in feet.

EXTRA ADVANCE WARNING SIGNING

7. Extra advance warning signage consisting of ROAD WORK AHEAD W10-2, RIGHT SHOULDER CLOSED W10-2 signs plus distance warning signs shall be as shown in Table I. Minimum spacing to existing signs shall be 200' for speeds of 45 mph or less and a minimum of 400' for speeds 50 mph or greater.

PREVENT WARNING SIGNS

8A. If a shoulder closure of greater than 3 days is required, the following shall be performed:
   a) The appropriate color work zone edge lines shall be applied along the taper and tangent sections.
   b) The existing conflicting pavement markings shall be removed or covered per CMS 614.105.

8B. Work zone pavement markings which would conflict with final traffic lanes shall be removable type CMS 140-M6, Type 2 unless the area will be resurfaced prior to project completion.

8C. After completion of the work, pavement markings other than CMS 140-M6, Type 2 shall be removed in accordance with CMS 614.105. The original markings and raised pavement marker reflectors shall be restored at no additional cost unless separately identified in the plans.

RESERVED FOR FUTURE USE

8D. (Intentionally blank)

8E. (Intentionally blank)

FLASHING WARNING LIGHTS

11. Type A flashing warning lights shown on the ROAD WORK AHEAD (W10-2) signs and the RIGHT SHOULDER CLOSED (W10-2) signs are required whenever a right lane closure is necessary.

INTERSECTION / MIDWAY ACCESS

12A. The location of the shoulder taper and the advance warning signs shall be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

SIGN SPACING

12B. If a shoulder closure of greater than 3 days is required, the following shall be performed:
   a) Place across the closed shoulder, barricades, and/or portable barriers (PB) on the closed shoulder. Where space constraints do not allow for it, the shoulder taper shall be the first section of PB parallel to the traveled lanes.

RESERVED FOR FUTURE USE

12C. (Intentionally blank)

12D. (Intentionally blank)

12E. (Intentionally blank)

12F. (Intentionally blank)

12G. (Intentionally blank)

12H. (Intentionally blank)

12I. (Intentionally blank)

12J. (Intentionally blank)

12K. (Intentionally blank)

13A. The minimum ramp spacing along travel lanes and along tangent sections shall be as shown in Table II. A minimum of 5 drums in the taper shall be used to close the upstream shoulder.

13B. 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 or 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 work period.
   b) Cones used for daytime traffic control shall have a minimum height of 24'.
   c) Cones used for nighttime traffic control shall have a minimum height of 42' and shall be marked with reflective materials.
   d) Cones at night shall be prohibited along tangents.
   e) Cones spacing at night shall be a maximum of 45'.
   f) Cones spaced at 60' or more shall be used to close the shoulder taper to the first section of PB parallel to the traveled lanes.

13C. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

13D. All drums and cones should have a minimum offset from the edge of the traveled lanes of 1.5 feet.

13E. The use of drums or cones in lieu of portable barrier should be engineered judgement.

PORTABLE BARRIERS (PB)

14A. A tapered section may be used in place of the impact attenuator or location where the last full section of PB can be extended outside of the clear zone for approaching traffic.

14B. If it is necessary to provide a work area behind the PB ramps, the PB end treatment shall include an impact attenuator. The maximum width of the opening shall be 5' between the impact attenuator and the outside edge of the paved shoulder. Where space constraints do not allow for it, the shoulder taper shall be the first section of PB parallel to the traveled lanes.

14C. If Contractor access is provided per Note 14B, the PB is located within the clear zone of opposing traffic. If the PB is located beyond the clear zone of opposing traffic, the downstream end shall be flared away from opposing traffic to shield the work from potential errant vehicles crossing the median.

14D. Where the 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 at the paved shoulder. The PB shall be extended along the paved shoulder as necessary to satisfy the length of work, and then terminated using an impact attenuator.

14E. 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.

14F. For installation procedures, refer to the manufacturer’s installation instructions.

14G. For details on delineation of PB, see Standard Construction Drawing MT-95.10.

14H. 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.

14I. For installation procedures, refer to the manufacturer’s installation instructions.

14J. For details on delineation of PB, see Standard Construction Drawing MT-95.10.

14K. (Reserved for future use)