

**TRAVEL LANE REQUIREMENTS**

BARRIER SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE CENTERLINE TO ALLOW THE TRAFFIC TO USE THE NORMAL LANE WIDTH.

EDGE LINES SHALL BE REMOVED AND NEW TEMPORARY TAPE EDGE LINES APPLIED. THE DRIVER'S LEFT EDGE LINE SHALL BE A MINIMUM OF ONE FOOT (TWO FEET IS DESIRABLE) FROM BARRIER. TRAVEL LANE SHALL BE 12 FEET WIDE.

THE TEMPORARY TAPE PAVEMENT MARKINGS SHALL BE OF A TYPE WHICH CAN BE COMPLETELY REMOVED AFTER THE PROJECT IS COMPLETED WITHOUT SCARRING OR MARKING THE PAVEMENT SURFACE. PAYMENT FOR THE TAPE MARKINGS SHALL BE UNDER THE APPROPRIATE ITEM NUMBERS.

PAVEMENT MARKING REMOVALS SHALL BE PAID UNDER THE APPROPRIATE ITEM NUMBER. TEMPORARY TAPE REMOVAL IS NOT PAID UNDER THE REMOVAL ITEM. IT IS SUBSIDIARY TO THE TAPE ITEM.

THE RAISED PAVEMENT MARKERS (RPM'S) SHALL BE OF A TYPE WHICH CAN BE EASILY REMOVED AND THEY SHALL BE PLACED TO THE OUTSIDE OF THE TEMPORARY TAPE PAVEMENT MARKINGS. THE RPM'S SHALL BE SPACED AT 20 FT. THE RPM'S ARE TO BE PAID UNDER THE ITEM TEMPORARY RAISED PAVEMENT MARKINGS. IF RPM'S ARE INCLUDED AS AN INTEGRAL PART OF THE TEMPORARY TAPE PAVEMENT MARKINGS, THEN THE COST OF THE RAISED MARKERS SHALL BE CONSIDERED A PART OF THE TEMPORARY PAVEMENT MARKING ITEM AND SEPARATE RPM'S SHALL NOT BE REQUIRED.

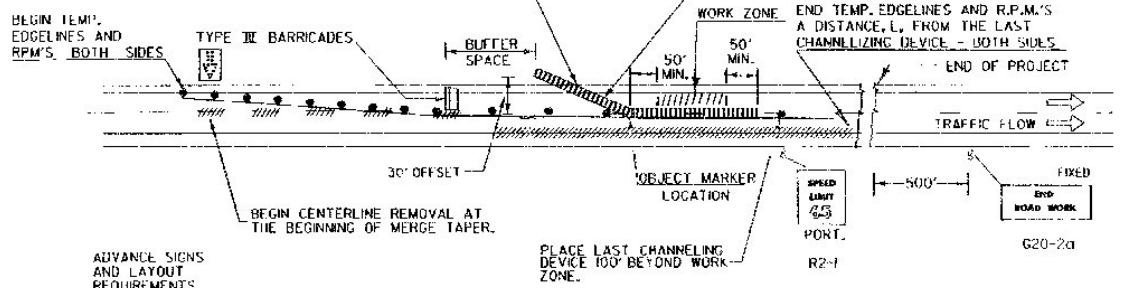
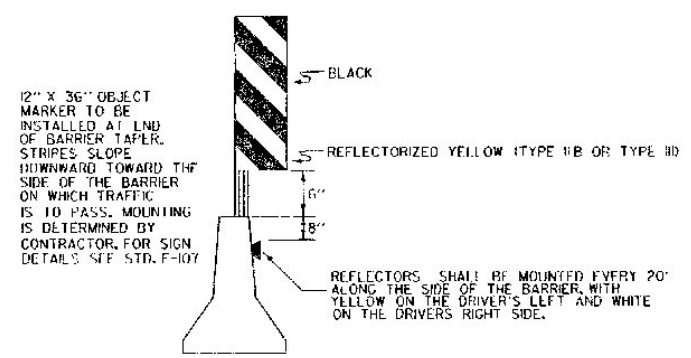
"CONCRETE MEDIAN BARRIER". PROVIDE A MINIMUM TAPER RATE AS SHOWN IN THE TABLE BELOW, WITH A MINIMUM OF 50 FT. OF TANGENT SECTION ON EACH END OF THE WORK ZONE. THE END OF THE BARRIER FACING APPROACHING TRAFFIC SHALL MEET THE FOLLOWING REQUIREMENTS: WHEN NO GUARDRAIL IS PRESENT, USE 30' OFFSET FROM EDGE OF TRAVELLED WAY. IF GUARDRAIL IS PRESENT, THEN CONCRETE BARRIER CAN BE TAPERED TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL. IF A 30' OFFSET IS NOT ATTAINABLE OR TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL, THEN A CRASH ATTENUATOR DESIGNED FOR THE REGULAR SPEED LIMIT OF THE ROADWAY SHALL BE PROVIDED.

IF THE BARRIER IS PLACED SUCH THAT THE TEMPORARY TAPE CAN BE PLACED OVER THE EXISTING DASHED LINE, THEN THE EDGE LINES DO NOT NEED TO BE TAPERED BEFORE THE BARRIER AND THE DASHED MARKINGS DO NOT NEED TO BE REMOVED IN THE TANGENT SECTION.

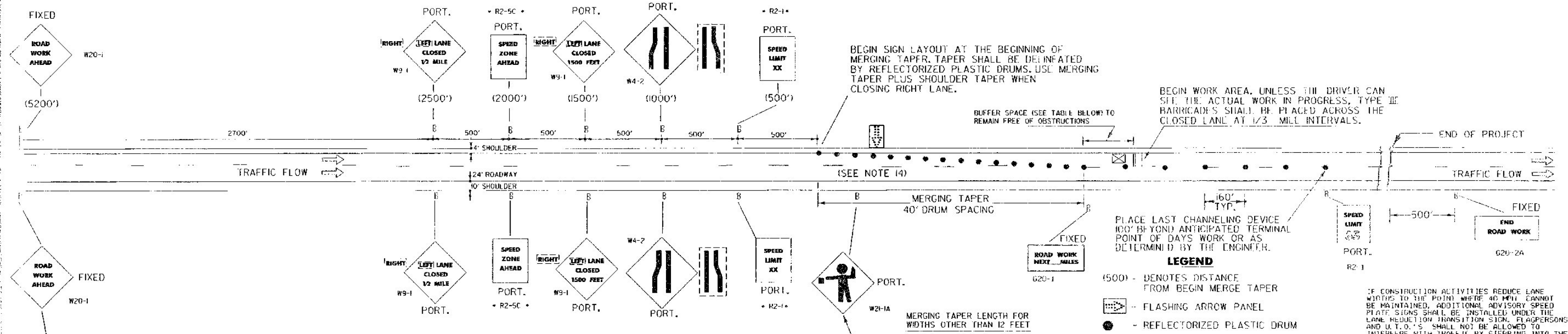
IF THE BARRIER IS PLACED SUCH THAT COVERING THE DASHED LINES WITH THE TEMPORARY TAPE EDGE LINE IS NOT POSSIBLE THEN THE EDGE LINES SHALL BE TAPERED A LENGTH, L, BOTH IN ADVANCE AND BEYOND THE BARRIER PLACED ON TANGENT.

**NOTES**

1. WHEN CONSTRUCTION EQUIPMENT IS WORKING AT OR NEAR THE EXIT OR ENTRANCE RAMP, FLAGPERSONS OR UNIFORMED TRAFFIC CONTROL OFFICERS (UTCO'S) SHOULD BE USED TO ASSIST IN CONTROLLING TRAFFIC. SEE STD. E-106 FOR TRAFFIC CONTROL DETAILS.
2. ALL SIGNS SHALL BE PLACED BEFORE ANY WORK BEGINS OR EQUIPMENT IS PUT ON THE ROADWAY. SIGNS SHALL BE COVERED OR REMOVED WHEN NOT APPLICABLE. SEE STANDARD SHEET E-106 FOR REQUIREMENTS.
3. CONTRACTOR SHALL HAVE CHANNELIZING DEVICES AND SIGNS FOR LEFT SIDE CLOSURE AND RIGHT SIDE CLOSURE ON PROJECT BEFORE STARTING PROJECT.
4. EXISTING SPEED LIMIT SIGNS SHALL BE COVERED WHEN REDUCED SPEED SIGNS ARE POSTED.
5. CHANNELIZING DEVICES OTHER THAN REFLECTORIZED PLASTIC DRUMS WILL BE ALLOWED ALONG TANGENT SECTIONS AS LONG AS THEY CONFORM TO THE M.U.T.C.D. AND ARE APPROVED BY THE RESIDENT ENGINEER. THE TYPE OF DEVICE SHALL BE CONSISTENT THROUGHOUT THE TANGENT SECTION.
6. THE "SPEED LIMIT XX" AND OTHER RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN WORK IS NOT IN PROGRESS AND ROADWAY IS NOT RESTRICTED.
7. "REDUCED SPEED AHEAD" SIGNS MAY BE USED IN LIEU OF "SPEED ZONE AHEAD".
8. FOR RELATIVELY SHORT TERM PROJECTS WITH NO OFFICIAL SPEED ZONE ENACTMENT, THE SPEED LIMIT AND REDUCED SPEED LIMIT SIGNS CAN BE SUBSTITUTED WITH ADVISORY SPEED PLAQUES MOUNTED AS SUPPLEMENTAL SIGNS ON OTHER WARNING SIGNS.
9. ALL FIXED SIGNS SHALL BE MOUNTED ON YIELDING STEEL, ALUMINUM OR WOOD SUPPORTS AS SHOWN ON APPROPRIATE STANDARD SHEETS.
10. PORTABLE SIGNS SHALL BE KEPT LEVEL WHEN PLACED ON THE EDGE OF ROADWAY AND ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT SUBSIDIARY TO OTHER ITEMS, WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACES SHALL BE PLACED ABOVE THE TOP OF THE GUARDRAIL.
11. WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
12. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
13. FOR ANY LONG TERM CLOSURE (GREATER THAN 3 DAYS) EXISTING CENTERLINE SHALL BE REMOVED AND TEMPORARY EDGE LINES PLACED AS SHOWN WITH POSITIVE BARRIER.



**ONE LANE CLOSED WITH POSITIVE BARRIER PROTECTION**



| POSTED SPEED OR 85TH PERCENTILE M.P.H. | MERGING TAPER 12' LANE | SHOULDER TAPER W=10' | BARRIER TAPER RATE | BUFFER SPACE (MINIMUMS) |
|--|------------------------|----------------------|--------------------|-------------------------|
| 40                                     | 320'                   | 90'                  | 9 TO 1             | 160'                    |
| 45                                     | 540'                   | 150'                 | -                  | 270'                    |
| 50                                     | 600'                   | 170'                 | 11 TO 1            | 300'                    |
| 55                                     | 660'                   | 190'                 | -                  | 330'                    |
| 60                                     | 720'                   | 200'                 | 13 TO 1            | 360'                    |
| 65                                     | 780'                   | 220'                 | -                  | 390'                    |

**TAPER FORMULA:**  
 $L = S \times W$  FOR SPEEDS OF 45 OR MORE.  
 $L = \frac{WS^2}{60}$  FOR SPEEDS OF 40 OR LESS.

WHERE:  
 L = MINIMUM LENGTH OF TAPER.  
 S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85 PERCENTILE SPEED.  
 W = WIDTH OF OFFSET.

**LEGEND**

- (500) - DENOTES DISTANCE FROM BEGIN MERGE TAPER
  - [Flashing Arrow Panel] - FLASHING ARROW PANEL
  - [ReflectORIZED Plastic Drum] - REFLECTORIZED PLASTIC DRUM
  - [Pavement Marking Removal] - PAVEMENT MARKING REMOVAL
  - [Concrete Median Barrier] - CONCRETE MEDIAN BARRIER
  - [Type III Barricade] - TYPE III BARRICADE
  - [Truck/Trailer Mounted Attenuator] - TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)
- IF CONSTRUCTION ACTIVITIES REDUCE LANE WIDTHS TO THE POINT WHERE 40 MPH CANNOT BE MAINTAINED, ADDITIONAL ADVISORY SPEED PLATE SIGNS SHALL BE INSTALLED UNDER THE LANE REDUCTION TRANSITION SIGN. FLAGPERSONS AND U.T.O.'S SHALL NOT BE ALLOWED TO INTERFERE WITH TRAFFIC BY STEPPING INTO THE LANE TO REDUCE THE DRIVER'S SIGHT.

**REVISIONS AND CORRECTIONS**

OCT. 30, 1987 - DATE OF ORIGINAL ISSUE

JAN. 23, 1989 - FHWA COMMENTS - CHANGE TO 65 M.P.H. TAPER RATES

OCT. 21, 1992 - ADDED TAPER RATE TABLE & REVISED TITLE BLOCK

AUG. 08, 1995 - DELETED AN INVALID NOTE

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

APPROVED

*Stephen D. MacArthur*  
 DIRECTOR OF ENGINEERING

*David A. Ross*  
 TRAFFIC AND SAFETY ENGINEER

**MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED**

OTHER STDS. REQUIRED: E-100 E-101 E-102 E-102A E-107A

VERMONT AGENCY OF TRANSPORTATION

STANDARD E-103