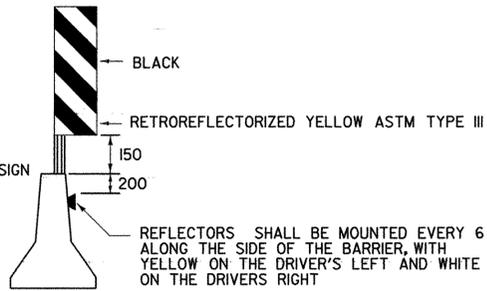


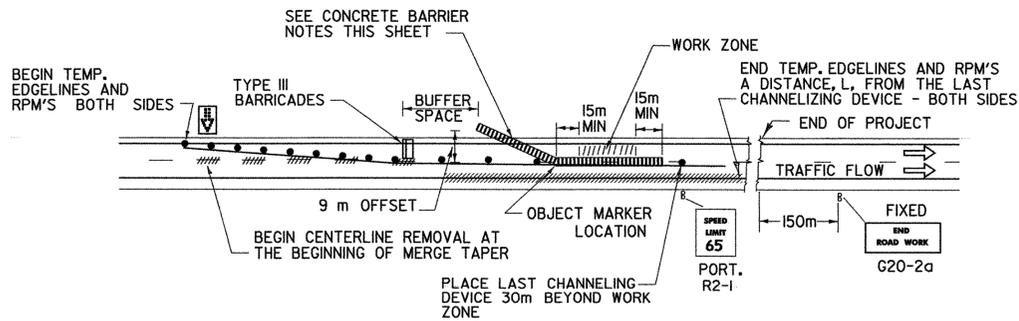
TRAVEL LANE REQUIREMENTS

1. BARRIER SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE CENTERLINE TO ALLOW THE TRAFFIC TO USE THE NORMAL LANE WIDTH.
2. EDGELINES SHALL BE REMOVED AND NEW TEMPORARY TAPE EDGELINES SHALL APPLIED. THE DRIVER'S LEFT EDGELINE SHALL BE A MINIMUM OF 300 mm (600 mm IS DESIRABLE) FROM BARRIER. TRAVEL LANE SHALL BE 3.6 m WIDE.
3. 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.
4. 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 PAID INCIDENTAL TO THE TAPE ITEM.
5. 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 6 m. THE RPM'S ARE INCIDENTAL TO ITEM 646.08 TEMPORARY PAVEMENT MARKINGS.
6. 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.

300 X 900 OBJECT MARKER TO BE INSTALLED AT END OF BARRIER TAPER. STRIPES SLOPE DOWNWARD TOWARD THE SIDE OF THE BARRIER ON WHICH TRAFFIC IS TO PASS. MOUNTING IS DETERMINED BY RESIDENT ENGINEER. FOR SIGN DETAILS SEE STD. E-107M



REFLECTORS SHALL BE MOUNTED EVERY 6 m ALONG THE SIDE OF THE BARRIER, WITH YELLOW ON THE DRIVER'S LEFT AND WHITE ON THE DRIVERS RIGHT



ONE LANE CLOSED WITH POSITIVE BARRIER PROTECTION

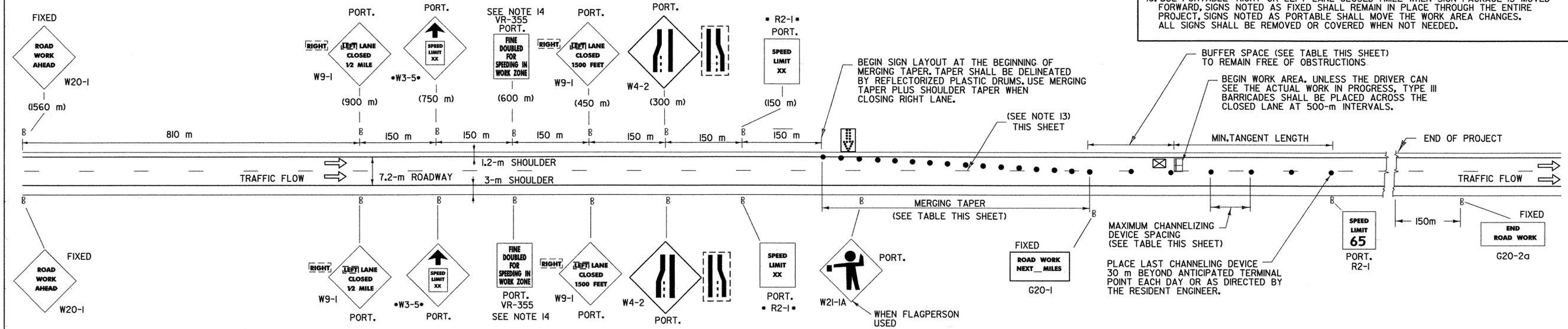
ADVANCE SIGNS AND LAYOUT REQUIREMENTS ARE THE SAME AS SHOWN BELOW USING FIXED SIGN MOUNTING THROUGHOUT

CONCRETE MEDIAN BARRIER NOTES

1. PROVIDE A MINIMUM TAPER RATE AS SHOWN IN THE TABLE BELOW, WITH A MINIMUM OF 15 m OF TANGENT SECTION ON EACH END OF WORK ZONE.
2. THE END OF THE BARRIER FACING APPROACHING TRAFFIC SHALL MEET THE FOLLOWING REQUIREMENTS:
 - A. WHEN NO GUARDRAIL IS PRESENT, USE 9 m OFFSET FROM EDGE OF TRAVELED WAY.
 - B. IF GUARDRAIL IS PRESENT, THEN CONCRETE BARRIER CAN BE TAPERED TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL. IF A 9 m OFFSET IS NOT ATTAINABLE OR TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL, THEN A CRASH ATTENUATOR SHALL BE PROVIDED.
3. IF THE BARRIER IS PLACED SUCH THAT THE TEMPORARY TAPE CAN BE PLACED OVER THE EXISTING DASHED LINE, THEN THE EDGELINES 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 LINE IS PLACED SUCH THAT COVERING THE DASHED EDGELINE WITH TEMPORARY TAPE IS NOT POSSIBLE, THE EDGELINES SHALL BE TAPERED LENGTH 'L', BOTH IN ADVANCE AND BEYOND THE BARRIER PLACED ON THE TANGENT.

NOTES

1. WHEN CONSTRUCTION EQUIPMENT IS WORKING AT OR NEAR THE EXIT OR ENTRANCE RAMP, FLAGPERSONS OR UNIFORMED TRAFFIC CONTROL OFFICERS (UTO'S) SHOULD BE USED TO ASSIST IN CONTROLLING TRAFFIC. SEE STD. E-106M 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-100M 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 MUTCD 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 WHERE PLACED ON THE EDGE OF ROADWAY AND ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT INCIDENTAL TO OTHER CONTRACT ITEMS, WHERE 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 COVERED WITH BLACK TAPE OR REMOVED AND TEMPORARY EDGELINES PLACED AS SHOWN WITH POSITIVE BARRIER.
14. FINE DOUBLED FOR SPEEDING IN WORK ZONE WILL ONLY BE USED IF TEMPORARY SPEED LIMIT FORM HAS BEEN FILED
15. 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 SPEED.
16. USE PORTABLE 'RIGHT OR LEFT LANE CLOSED 1 MILE' WHEN SIGN PACKAGE IS MOVED FORWARD, SIGNS NOTED AS FIXED SHALL REMAIN IN PLACE THROUGH THE ENTIRE PROJECT, SIGNS NOTED AS PORTABLE SHALL MOVE THE WORK AREA CHANGES. ALL SIGNS SHALL BE REMOVED OR COVERED WHEN NOT NEEDED.



CHANNELIZING DEVICES

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:
 $L = 0.6WS$ FOR DESIGN SPEEDS OF 70 km/h OR GREATER
 $L = WS^2/155$ FOR DESIGN SPEEDS OF 60 km/h OR LESS
 WHERE:
 L = MINIMUM LENGTH OF TAPER IN METERS
 W = WIDTH OF OFFSET (USUALLY LANE WIDTH) IN METERS
 S = DESIGN SPEED IN KILOMETERS PER HOUR

POSTED SPEED OR 85th PERCENTILE (mph)	DESIGN SPEED (km/h)	TAPER LENGTHS (m)			TANGENT SECTION LENGTHS (L/2) (m)	MINIMUM BUFFER SPACE LENGTH (m)	MAXIMUM CHANNELIZING DEVICE SPACING (m)		BARRIER FLARE RATE (MIN)
		MERGING 3.6-m LANE (L)	SHIFTING W=4.8 m (L/2)	SHOULDER W=3 m (L/3)			TAPER	ALONG LANE LINE & WORK ZONE	
≤40	60	90	55	25	45	50	11	22	1:9
45	70	160	100	40	80	65	13	26	1:9
50	80	180	115	50	90	85	15	30	1:11
55	90	200	130	55	100	100	17	34	1:13
60 & 65	100	220	145	60	110	135	19	38	1:13
70	110	240	160	65	120	170	21	42	1:13

LEGEND

- FLASHING ARROW PANEL
- REFLECTORIZED PLASTIC DRUM
- PAVEMENT MARKING REMOVAL
- CONCRETE MEDIAN BARRIER
- TYPE III BARRICADE
- TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)

OTHER STDS. E-100M, E-101M, E-102M, E-102AM, E-106M, E-107M, REQUIRED: E-107AM, E-108M

REVISIONS AND CORRECTIONS
 JUNE 13, 1997 - ORIGINAL APPROVAL DATE
 SEPT. 24, 1998 - ADDED THE FINE SIGN VR-355
 MAR. 01, 2004 - CHANGED REFLECTIVE SHEETING AND REVISED TO MUTCD 2003

APPROVED

 DIRECTOR OF PROGRAM DEVELOPMENT

 TRAFFIC OPERATIONS ENGINEER

 FEDERAL HIGHWAY ADMINISTRATION

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



**Metric
 STANDARD
 E-103M**