

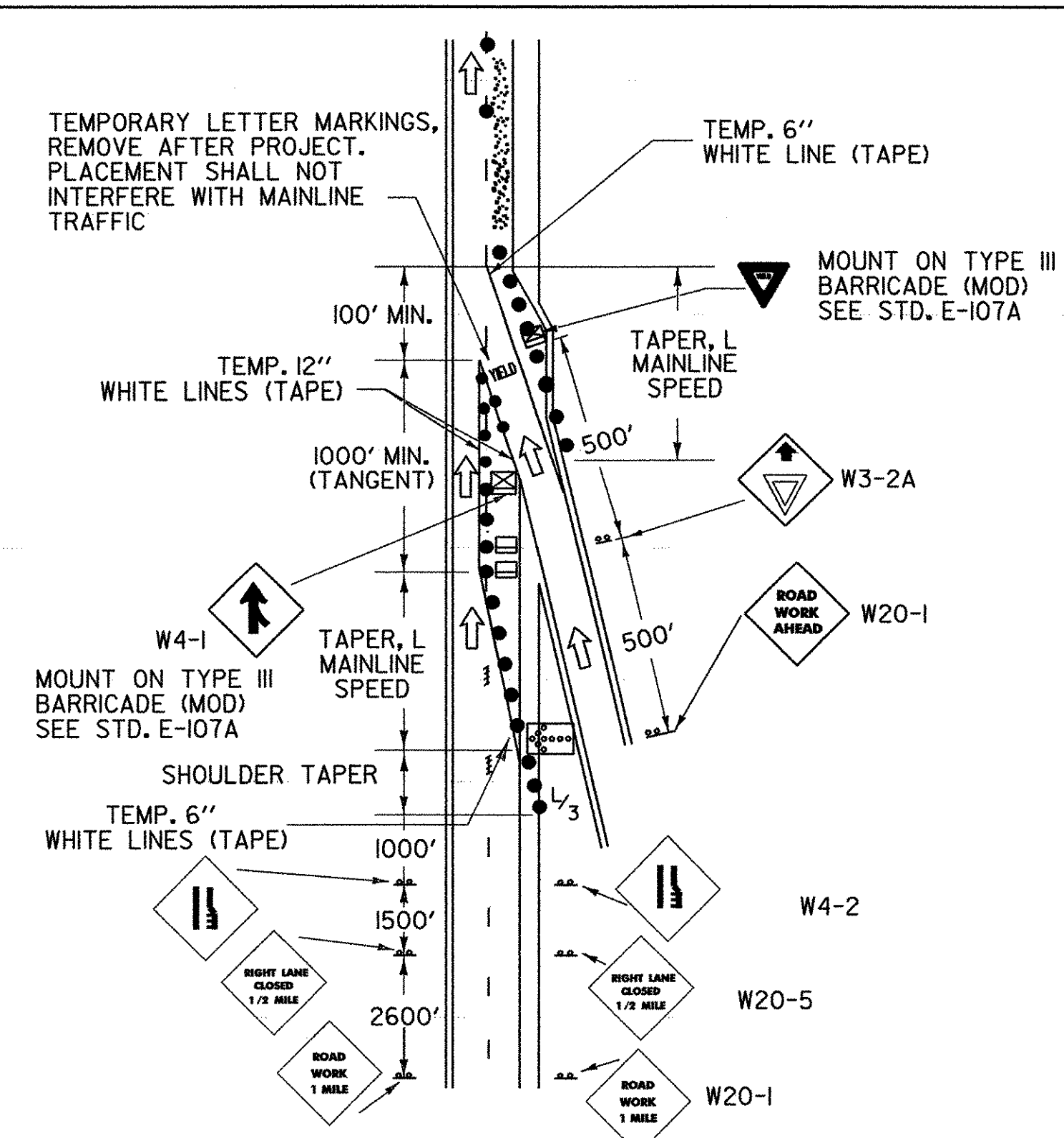
**MAINLINE LANE CLOSURE AT AN EXIT RAMP**

NOT TO SCALE  
THIS DETAIL SHALL BE USED WHEN THE WORK ZONE BEGINS AT THE CORE OR THE MAINLINE LANE CLOSURE DRUM PLACEMENT INTERFERES WITH THE EXIT RAMP.

- LEGEND**
- REFL. PLASTIC DRUMS
  - PAVEMENT MARKING REMOVAL
  - ↑ INDICATES TRAFFIC FLOW
  - WORK AREA
  - FLASHING ARROW PANEL
  - TYPE III BARRICADES
  - TYPE III BARRICADES (MOD.)

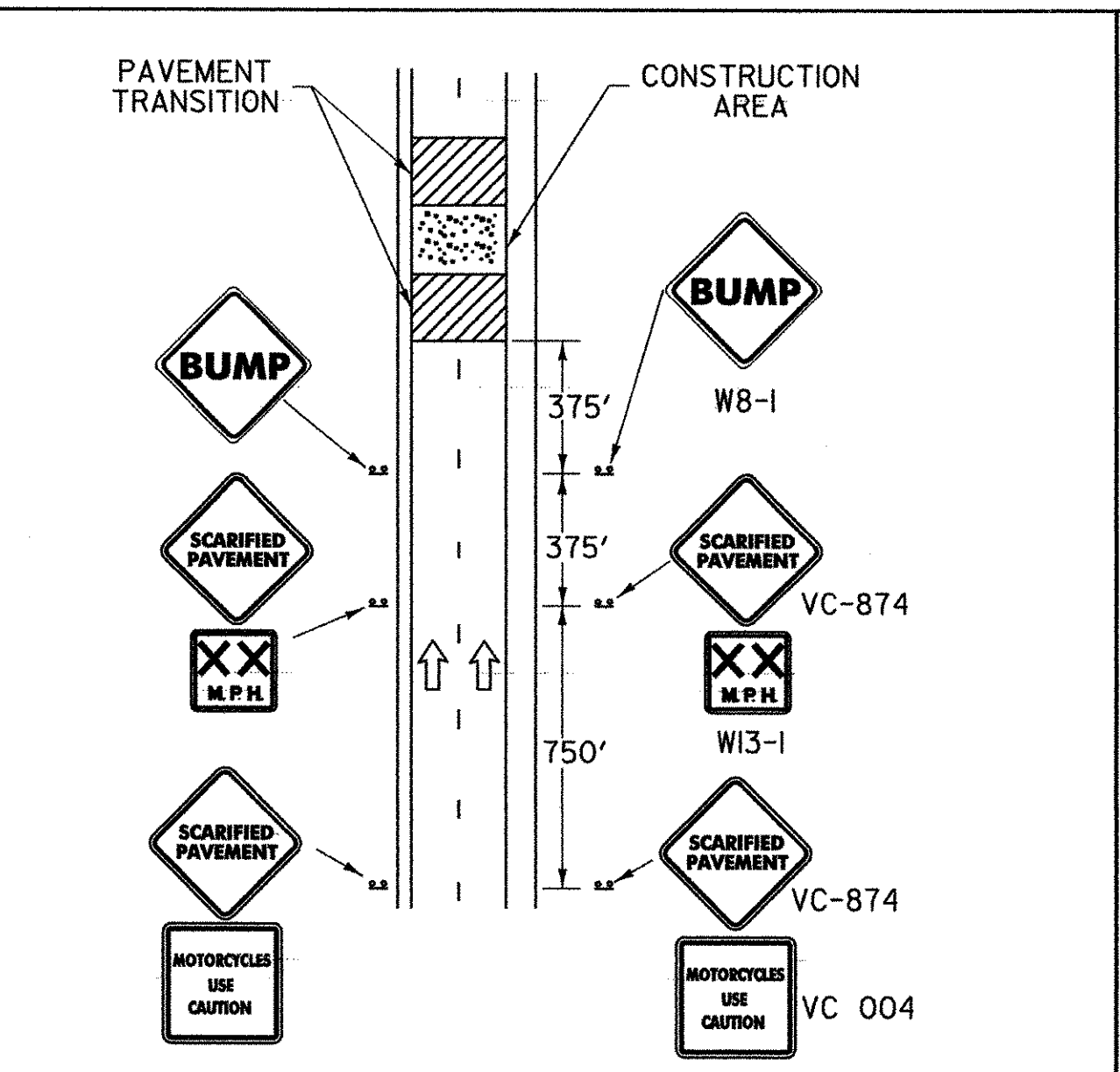
**NOTES**

1. ALL SIGNS SHALL BE MOUNTED ON FIXED POSTS (YIELDING TYPE) UNLESS OTHERWISE NOTED.
2. CHANNELIZING DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE TABLE ON THIS SHEET
3. ALL DISTANCES ARE DESIRABLE MINIMUMS, FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
4. TAPER RATES ARE BASED ON THE POSTED MAINLINE AND EXIT SPEEDS.
5. TEMPORARY PAVEMENT MARKINGS ARE REQUIRED WHEN THE LAYOUT IS TO BE IN EFFECT FOR THREE DAYS OR MORE.
6. LANE CLOSURES AND TAPER LENGTHS, L, AS DETAILED ON THIS SHEET.
7. EXIT SIGN SHALL BE MOUNTED A MINIMUM OF 7 FEET ABOVE THE GROUND AND HIGH ENOUGH TO BE SEEN ABOVE CHANNELIZING DEVICES.



**MAINLINE LANE CLOSURE AT AN ENTRANCE RAMP**

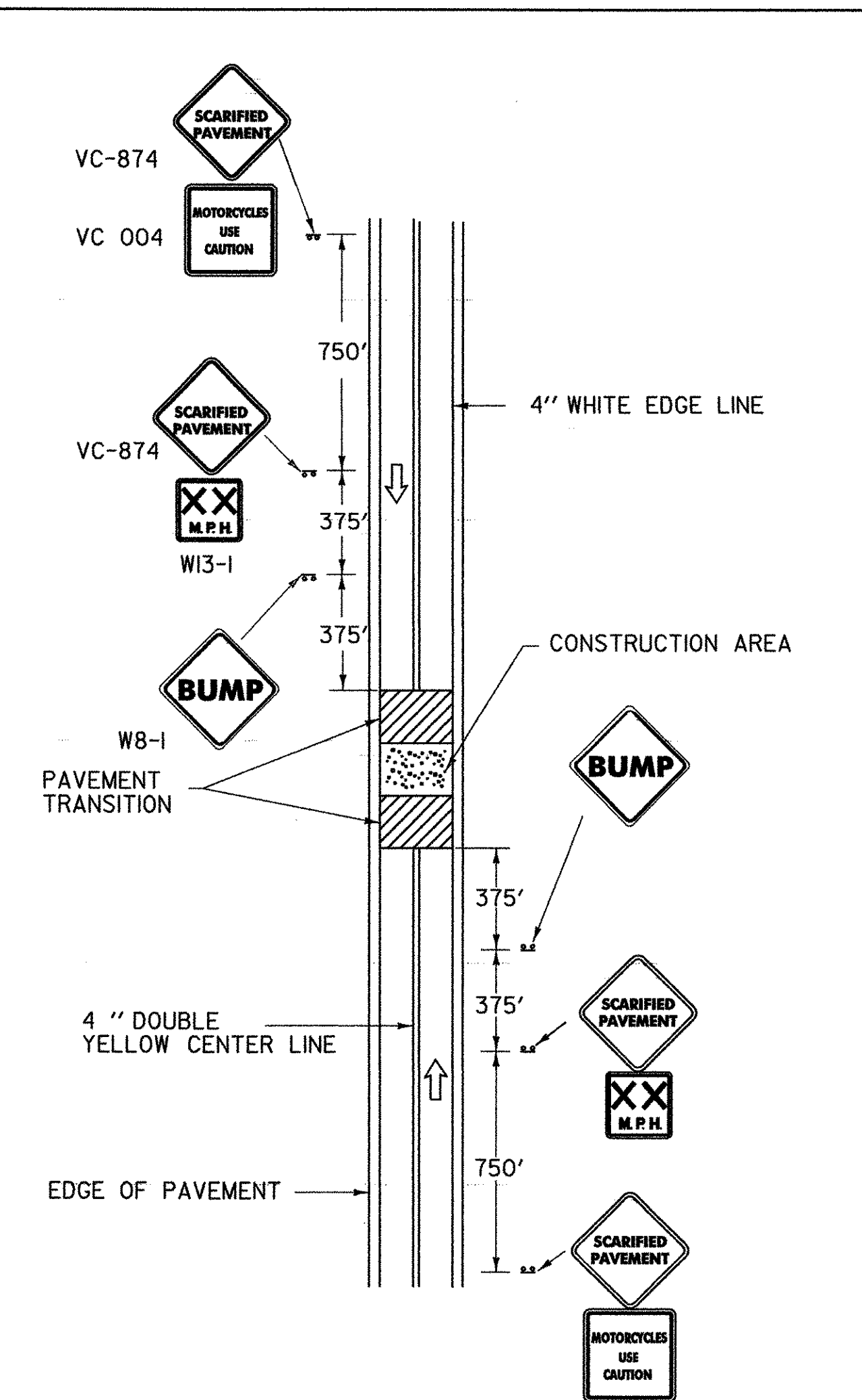
NOT TO SCALE  
THIS DETAIL SHALL BE USED WHEN THE WORK ZONE BEGINS AT THE END OF THE ACCELERATION LANE OR THE MAINLINE LANE CLOSURE DRUM PLACEMENT INTERFERES WITH THE ON-RAMP TRAFFIC. IF THE LENGTH OF THE ACCELERATION LANE IS NOT ADEQUATE, THE YIELD SIGN SHALL BE REPLACED WITH A STOP SIGN. IF A STOP SIGN IS USED, IT SHOULD BE ACCOMPANIED BY A STOP BAR.



**ADVANCED WARNING SIGN PACKAGE FOR COLD PLANED (SCARIFIED) SURFACES DIVIDED HIGHWAY**

**NOTES**

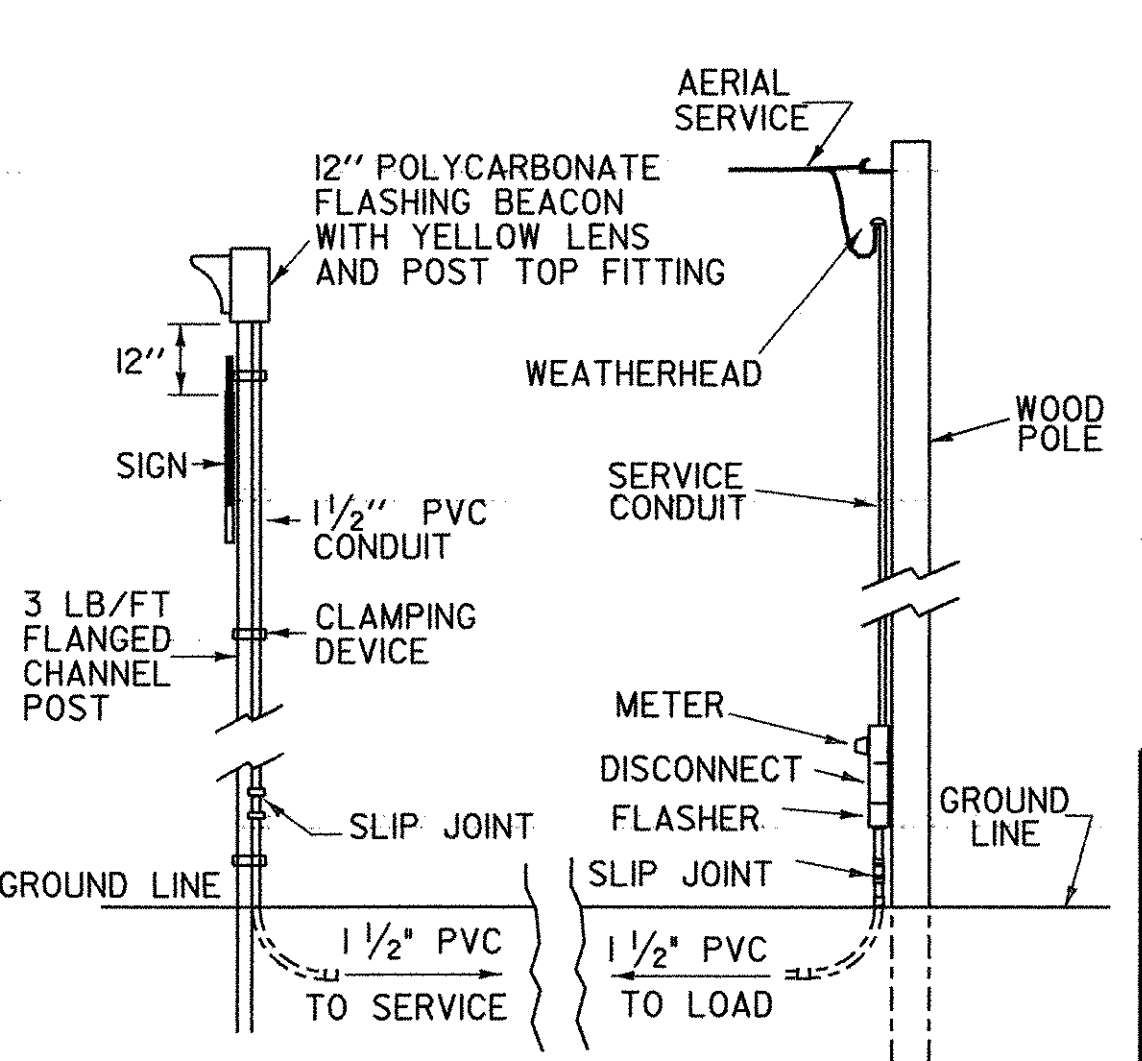
1. ADVISORY SPEED AS DETERMINED BY THE RESIDENT ENGINEER (40 MPH MINIMUM RECOMMENDED).
2. ALL SIGNS SHALL BE MOUNTED ON FIXED POSTS (YIELDING TYPE).
3. ALL DISTANCES ARE DESIRABLE MINIMUMS, FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
4. THE BUMP SIGN MAY BE ELIMINATED WHEN THERE IS NO BUMP. WHEN THE CONTRACTOR IS WORKING IN THE CONSTRUCTION AREA THE APPROPRIATE ADVANCED WARNING SIGN PACKAGE SHALL BE USED, SEE STD.E-103.
5. GATE POSTING OF SIGNS IS AN OPTION AS DETERMINED BY THE RESIDENT ENGINEER (WHEN PASSING, TURNING OR CLIMBING LANES LIMIT VISIBILITY).



**ADVANCED WARNING SIGN PACKAGE FOR COLD PLANED (SCARIFIED) SURFACES 2 LANE ROADWAY**

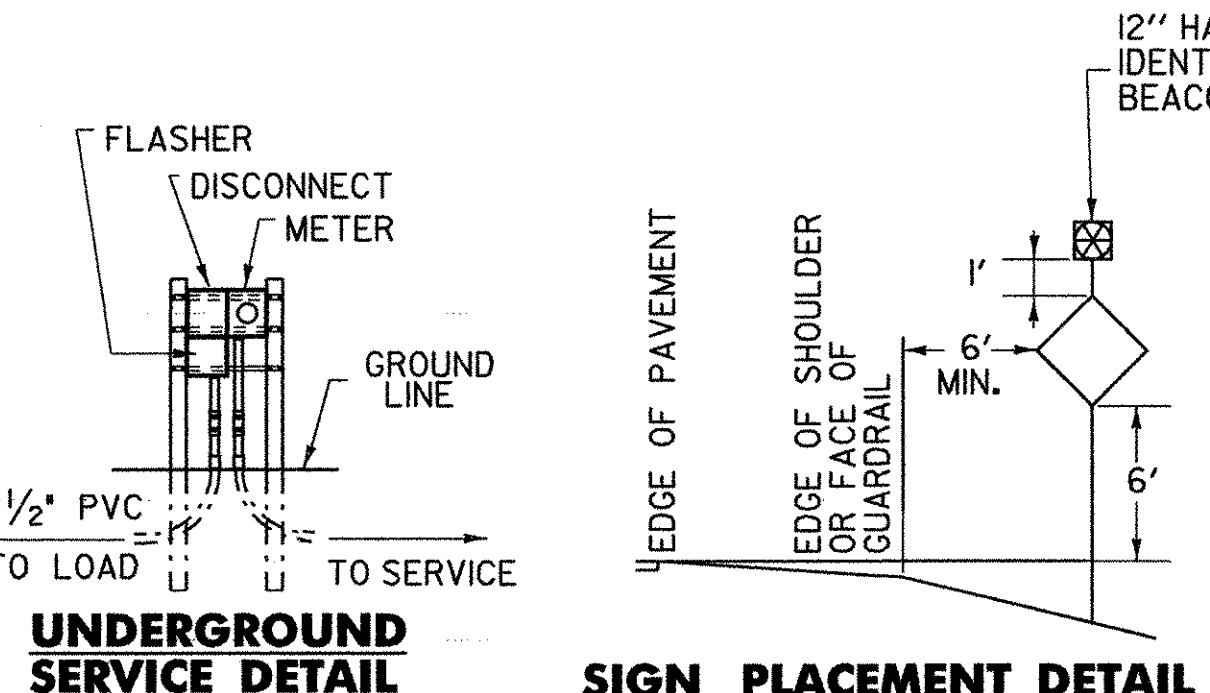
**NOTES**

1. ADVISORY SPEED AS DETERMINED BY THE RESIDENT ENGINEER (40 MPH MINIMUM RECOMMENDED).
2. ALL SIGNS SHALL BE MOUNTED ON FIXED POSTS (YIELDING TYPE).
3. ALL DISTANCES ARE DESIRABLE MINIMUMS, FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
4. THE BUMP SIGN MAY BE ELIMINATED WHEN THERE IS NO BUMP. WHEN THE CONTRACTOR IS WORKING IN THE CONSTRUCTION AREA THE APPROPRIATE ADVANCED WARNING SIGN PACKAGE SHALL BE USED, SEE STD.E-103.
5. GATE POSTING OF SIGNS IS AN OPTION AS DETERMINED BY THE RESIDENT ENGINEER (WHEN PASSING, TURNING OR CLIMBING LANES LIMIT VISIBILITY).



**FLASHING BEACON DETAIL**

**AERIAL SERVICE WITHOUT LUMINAIRE**



**UNDERGROUND SERVICE DETAIL**

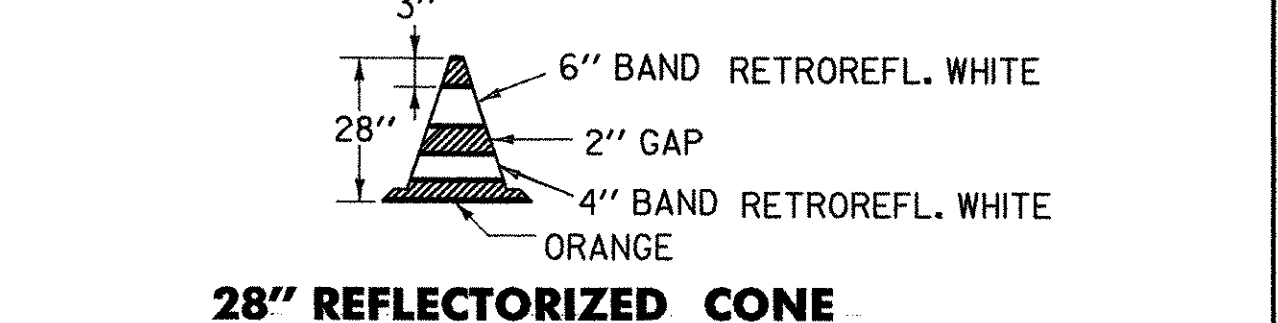
**SIGN PLACEMENT DETAIL**

- NOTES**
1. AT THE CONTRACTOR'S OPTION:
    - A. THE POWER SUPPLY MAY BE AERIAL OR UNDERGROUND (SEE DETAIL).
    - B. POWER FOR A FLASHING BEACON MAY BE COMBINED WITH POWER FOR A TRAFFIC SIGNAL OR THEY MAY HAVE SEPARATE POWER SOURCES.
    - C. THE FLASHER MAY BE INSTALLED ON A STANCHION NEAR THE SIGN, ON A UTILITY POLE (WITH UTILITY COMPANY APPROVAL) OR AT THE SAME LOCATION AS A TRAFFIC SIGNAL CONTROLLER.
  2. THE FLASHER UNIT SHALL BE ONE CIRCUIT AND INCLUDE A RADIO INTERFERENCE FILTER.
  3. BATTERY OPERATED FLASHERS WILL NOT BE ALLOWED.
  4. BOTTOM OF THE BEACON SHALL BE A MIN. OF 8' AND A MAX. OF 12' ABOVE THE EDGE OF THE PAVEMENT.
  5. FOR URBAN AREA PLACEMENT SEE STD. E-121.
  6. FOR POWER DROP STANCHIONS SEE STD. E-175

**CHANNELIZING DEVICES**

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:  
 $L = WS$  FOR DESIGN SPEEDS OF 45 MPH OR GREATER  
 $L = WS^2/60$  FOR DESIGN SPEEDS OF 40 MPH OR LESS  
 WHERE: L = MINIMUM LENGTH OF TAPER IN FEET  
 W = WIDTH OF OFFSET (USUALLY LANE WIDTH) IN FEET  
 S = DESIGN SPEED IN MPH

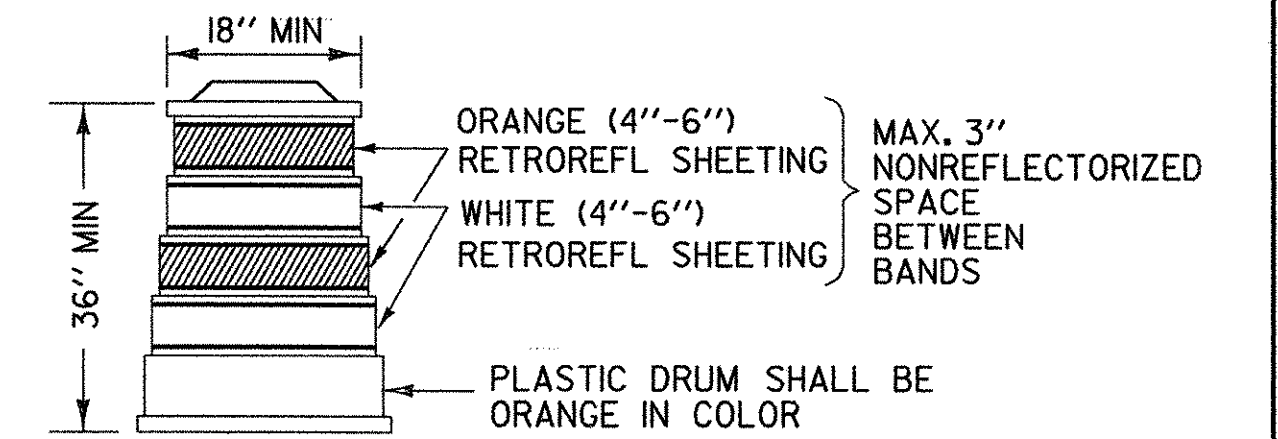
POSTED SPEED OR 85th PERCENTILE (mph)	DESIGN SPEED (mph)	TAPER LENGTHS (ft)			TANGENT SECTION LENGTHS (L/2) (ft)	MINIMUM BUFFER SPACE LENGTH (ft)	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		BARRIER FLARE RATE (MIN)
		MERGING 12ft LANE (L)	SHIFTING W=16ft (L/2)	SHOULDER W=10ft (L/3)			TAPER	ALONG LANE LINE & WORK ZONE	
≤ 40	40	320	215	90	160	160	35	70	1:9
45	45	540	360	150	270	270	40	80	1:9
50	50	600	400	170	300	300	50	100	1:11
55	55	660	440	185	330	330	55	110	1:13
60 & 65	60	720	480	200	360	360	60	120	1:13
70	70	840	560	235	420	440	65	130	1:13



**28" REFLECTORIZED CONE**

**NOTES**

1. 28" CONES SHALL BE USED ON ROADWAYS WITH SPEED LIMITS OF 35 MPH OR MORE AND ON ALL ROADWAYS DURING HOURS OF DARKNESS.
2. CONES MAY BE WEIGHTED TO PREVENT OVERTURNING, HOWEVER THE WEIGHTS SHALL NOT PRESENT A HAZARD IF THE CONE IS STRUCK.
3. RETROREFLECTIVE SHEETING SHALL BE ASTM TYPE III OR TYPE VI.



**REFLECTORIZED PLASTIC DRUM**

SAND BAGS OR AN APPROPRIATE BALLASTING DEVICE, WHICH DOES NOT PRESENT A HAZARD TO THE IMPACTING VEHICLE OR BECOME A PROJECTILE UPON IMPACT, SHALL BE USED TO WEIGHT DRUMS. RETROREFLECTIVE SHEETING SHALL BE ASTM TYPE III OR TYPE VI.

**OTHER STDS. E-101, E-102, E-102A, E-103, E-107A, E-110, E-121, E-136, REQUIRED: E-150, E-175**

**REVISIONS AND CORRECTIONS**  
 APR 12, 1988 - DATE OF ORIGINAL ISSUE  
 JAN 23, 1989 - REVISED EXIT SIGN - CLARIFIED EXIT TAPER  
 SEPT 20, 1993 - REVISED RAMP CLOSURES, FLASHING BEACON DETAILS AND MOVED TYPE III BARRICADE (MOD) TO STDE-107A  
 AUG 08, 1995 - REVISED BEACON SIZE  
 MAR. 01, 2004 - ADDED ADVANCED WARNING SIGN PACKAGE FOR COLD PLANED TWO WAY HIGHWAYS, CHANNELIZING DEVICES CHART

APPROVED  
 DIRECTOR OF PROGRAM DEVELOPMENT  
 TRAFFIC OPERATIONS ENGINEER  
 FEDERAL HIGHWAY ADMINISTRATION

**TRAFFIC CONTROL MISCELLANEOUS DETAILS**

VERMONT AGENCY OF TRANSPORTATION  
**STANDARD E-106**