# DESIGN
# FOR
# TEMPORARY BRIDGE

FOR

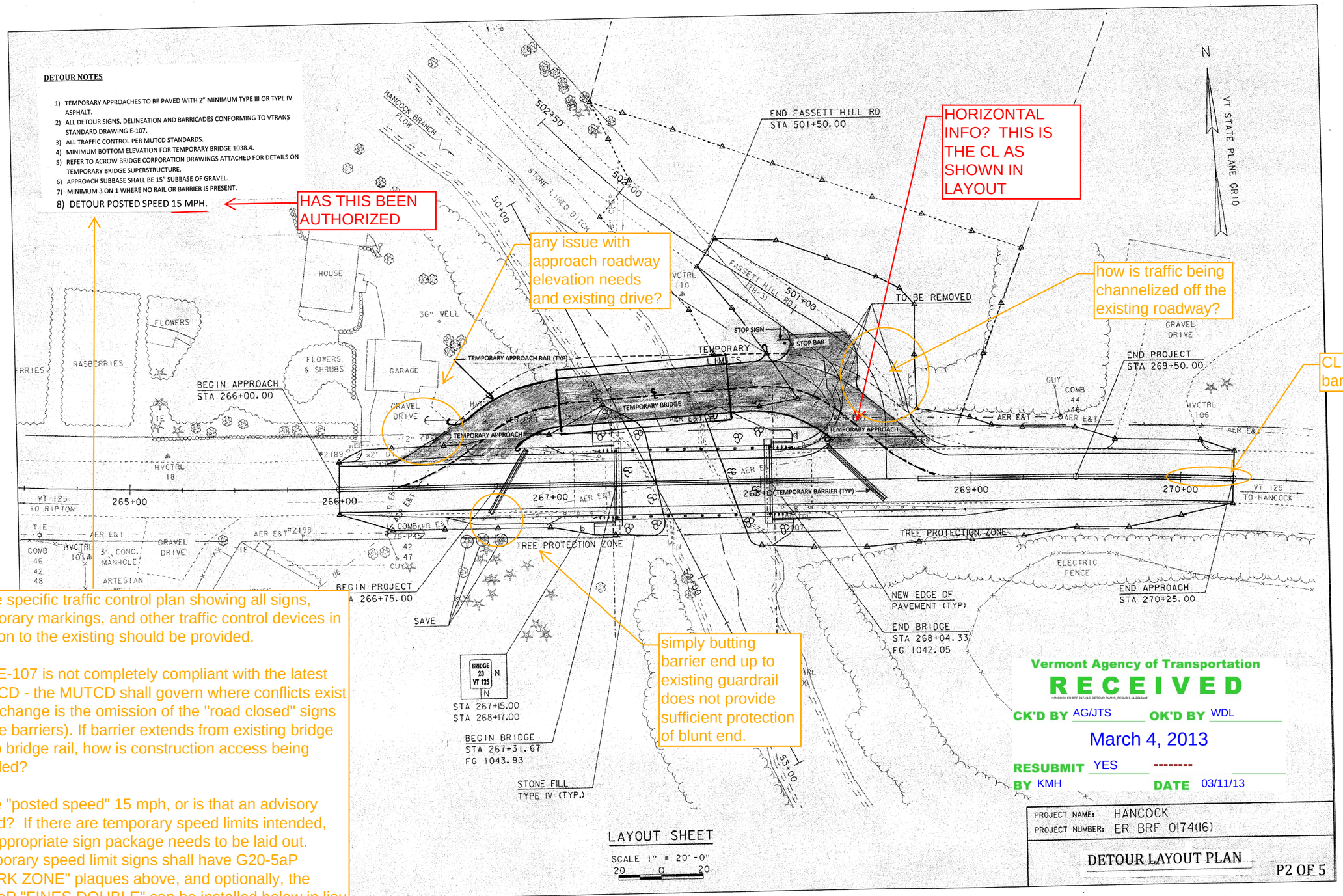
HANCOCK ER BRF 0174
(16)
HANCOCK, VERMONT

FOR

PARENT CONSTRUCTION
INC
HINESBURG, VERMONT

PREPARED BY
JOHN B. STEVENS, PE
122 SMITH HILL ROAD
NORTHFIELD, VT
802-485-6448
OCTOBER 10 , 2012

Vermont Agency of Transportation
RECEIVED
HANCOCK ER BRF 0174(16) DETOUR PLANS_RESUB 3-11-2013.pdf
CK'D BY AG/JTS OK'D BY WDL
March 4, 2013
RESUBMIT YES --------
BY KMH DATE 03/11/13




A site specific traffic control plan showing all signs, temporary markings, and other traffic control devices in relation to the existing should be provided.

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FYI, E-107 is not completely compliant with the latest MUTCD - the MUTCD shall govern where conflicts exist (one change is the omission of the "road closed" signs on the barriers). If barrier extends from existing bridge rail to bridge rail, how is construction access being handled?

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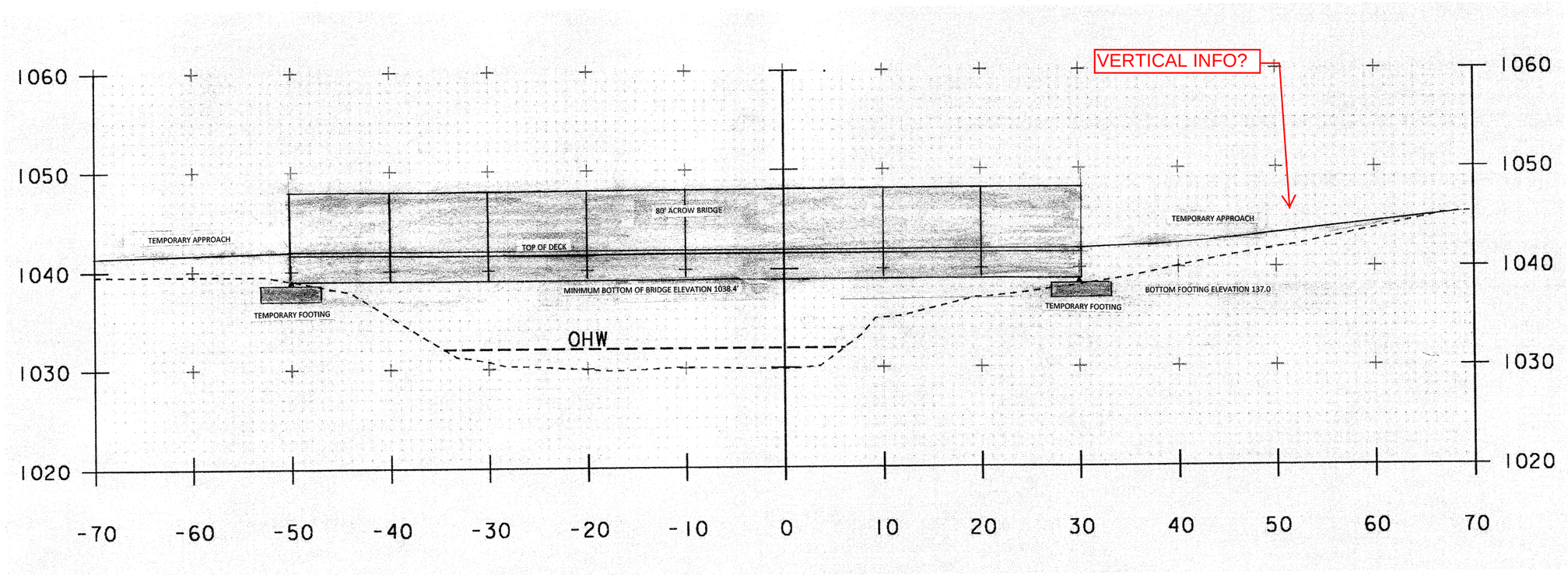
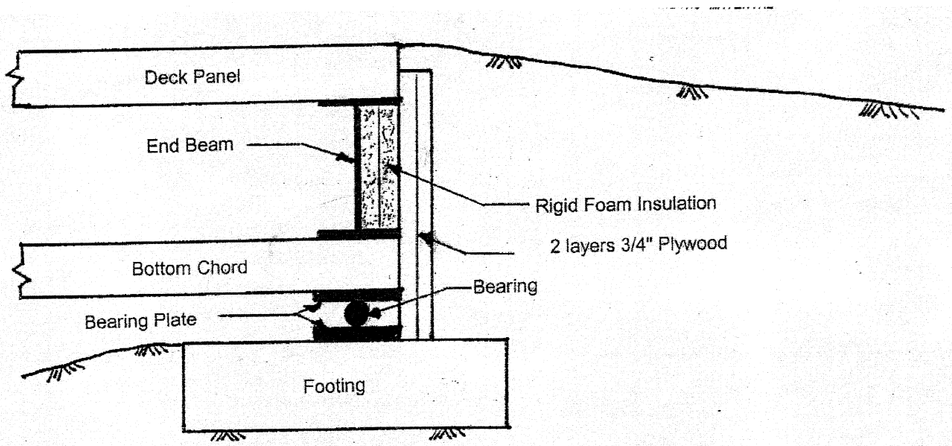
Is the "posted speed" 15 mph, or is that an advisory speed? If there are temporary speed limits intended, the appropriate sign package needs to be laid out. Temporary speed limit signs shall have G20-5aP "WORK ZONE" plaques above, and optionally, the R2-6aP "FINES DOUBLE" can be installed below in lieu of using the VR-355 "FINES DOUBLED IN WORK ZONE" sign.




No Scale

BACKWALL DETAIL

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TEMPORARY BRIDGE FOOTING DESIGN
HANCOCK ER BRF 0174 (16)
HANCOCK, VT

***PARENT CONSTRUCTION, INC.***
***HINESBURG, VT***

JOHN B. STEVENS, PE
Northfield, VT
802-485-6448

DATE: Oct 4, 2012

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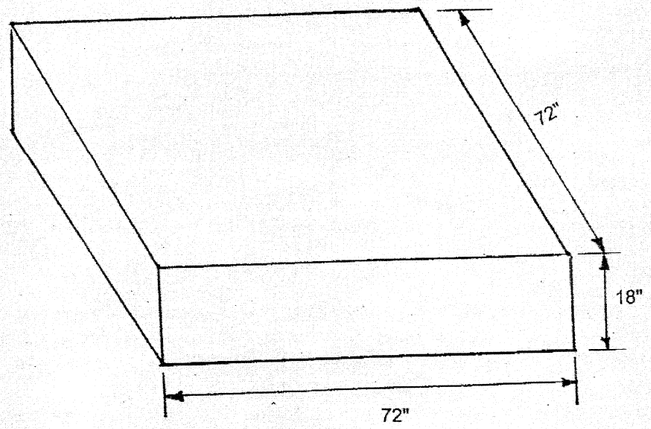
DETOUR PROFILE ALONG CENTER LINE

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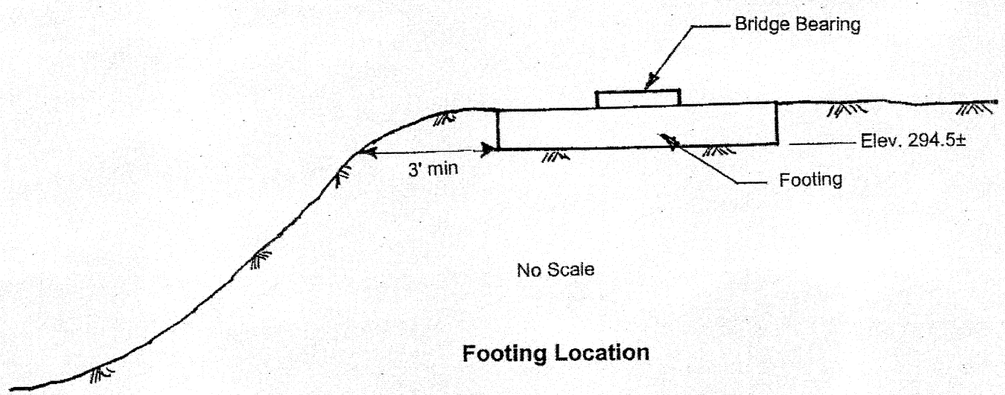
**Footing Dimensions**




No Scale

**Footing Location**

Concrete Footing Notes

1. Concrete to be Class B - 3500 psi compressive strength at 28 days.
2. Reinforcement to be two mats of # 6 bars spaced 6 inches each way. Lower mat to be 3 inches from footing bottom and top mat to be 2 inches from slab top. All reinforcement to be Grade 60.
3. Provide 3 inches of clearance on all sides for reinforcement.
4. Bearing to be centered on footing.
5. Anchor bolts as per Acrow Bridge Corporation.

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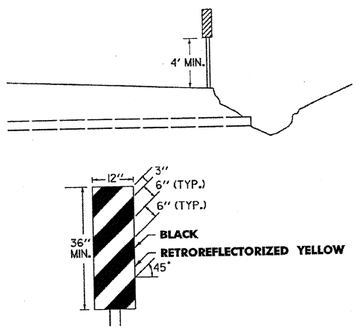
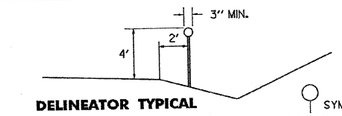
| | |
|---|---|
| TEMPORARY BRIDGE FOOTING DESIGN<br>HANCOCK ER BRF 0174 (16)<br>HANCOCK, VT | STATE OF VERMONT<br>JOHN B. STEVENS<br>NO. 2654<br>REGISTERED PROFESSIONAL ENGINEER<br>FOOTING DESIGN |
| *PARENT CONSTRUCTION, INC.*<br>*HINESBURG, VT* | |
| JOHN B. STEVENS, PE<br>Northfield, VT<br>802-485-6448 | |
| DATE: Oct 4, 2012 | P4 OF 5 |



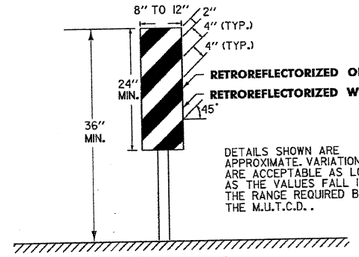

## OBJECT MARKER TYPICAL

OBJECTS MARKERS ARE USED TO MARK OBSTRUCTIONS WITHIN OR ADJACENT TO THE ROADWAY. IN SOME CASES THERE MAY NOT BE A PHYSICAL OBJECT INVOLVED, BUT OTHER ROADSIDE CONDITIONS SUCH AS NARROW SHOULDER DROP-OFFS, GORES, D.I. EXCAVATIONS, AND ABRUPT CHANGES IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE OBJECT MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHENEVER POSSIBLE.
OBJECT MARKERS SHALL HAVE ALTERNATING BLACK AND RETROREFLECTORIZED YELLOW STRIPES. (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS).




## DELINEATOR TYPICAL

THE STANDARD COLOR FOR DELINEATORS USED ALONG BOTH SIDES OF TWO-WAY STREETS AND HIGHWAYS AND THE RIGHT SIDE OF ONE-WAY STREETS SHALL BE WHITE. DELINEATORS USED ALONG THE LEFT SIDE OF ONE-WAY ROADWAYS SHALL BE YELLOW THEY SHALL HAVE A MINIMUM AREA OF 7 SQUARE INCHES. THEY MAY BE ROUND, SQUARE OR OBLONG, FOR ALTERNATES SEE STD. E-198

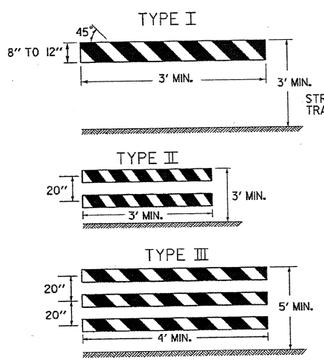



DETAILS SHOWN ARE APPROXIMATE. VARIATIONS ARE ACCEPTABLE AS LONG AS THE VALUES FALL IN THE RANGE REQUIRED BY THE M.U.T.C.D..

## VERTICAL PANEL

VERTICAL PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE RETROREFLECTORIZED STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS). THESE DEVICES MAY BE USED FOR TRAFFIC SEPARATION, CHANNELIZING OR BARRICADING WHERE SPACE IS AT A MINIMUM.

## DELINEATOR, VERTICAL PANEL AND OBJECT MARKER DETAILS FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED




A TYPE III(MODIFIED) BARRICADE SHALL CONSIST OF TYPE II RAILS MOUNTED ON A BREAKAWAY BARRICADE AS SHOWN ON STANDARD SHEET E-107A.

| BARRICADE CHARACTERISTICS | | | |
|---|---|---|---|
| | I | II | III |
| WIDTH OF RAIL | 8" MIN. 12" MAX. | 8" MIN. 12" MAX. | 8" MIN. 12" MAX. |
| LENGTH OF RAIL | 3' MIN. | 3' MIN. | 4' MIN. |
| WIDTH OF STRIPES | 6" | 6" | 6" |
| HEIGHT | 3' MIN. | 3' MIN. | 5' MIN. |
| TYPE OF FRAME | SEE E-107A | SEE E-107A | SEE E-107A |
| FLEXIBILITY | PORTABLE | PORTABLE | PORTABLE |
| ANGLE OF STRIPE | 45° | 45° | 45° |
| COLOR OF STRIPES | ORANGE AND WHITE | ORANGE AND WHITE | ORANGE AND WHITE |

## BARRICADE CHARACTERISTICS

## BARRICADES

### APPLICATION NOTES

TYPE I BARRICADES SHALL BE USED ON CONVENTIONAL ROADS OR URBAN STREETS AND ARTERIALS TO MARK A SPECIFIC HAZARD.

TYPE II BARRICADES SHALL BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS TYPE I BARRICADES.

TYPE III BARRICADES (SEE STD. E-107A) SHALL ONLY BE USED WHEN A ROAD SECTION OR LANE IS CLOSED TO TRAFFIC AND ARE TO BE ERECTED AT THE POINT OF CLOSURE.

### MATERIALS

THE BARRICADES SHOWN ON THIS SHEET SHOULD BE OF LIGHTWEIGHT MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY:

1. WOODEN BARRICADES (TYPE I AND II)
   - A) SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 M.P.H. ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
   - B) MAY BE USED WHERE OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED.

### COLORS

THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING RETROREFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICALS AND APPROVED BY THE US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. THE BARRICADE COMPONENTS SHALL BE WHITE UNLESS UNPAINTED METAL OR ALUMINUM IS USED.

### REFLECTORIZATION

THE RETROREFLECTIVE SHEETING ON BARRICADE PANELS SHALL BE ASTM TYPE III.

### LOCATION

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE RESIDENT ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE ''MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES'', OR AS OTHERWISE NOTED.

### MAINTENANCE

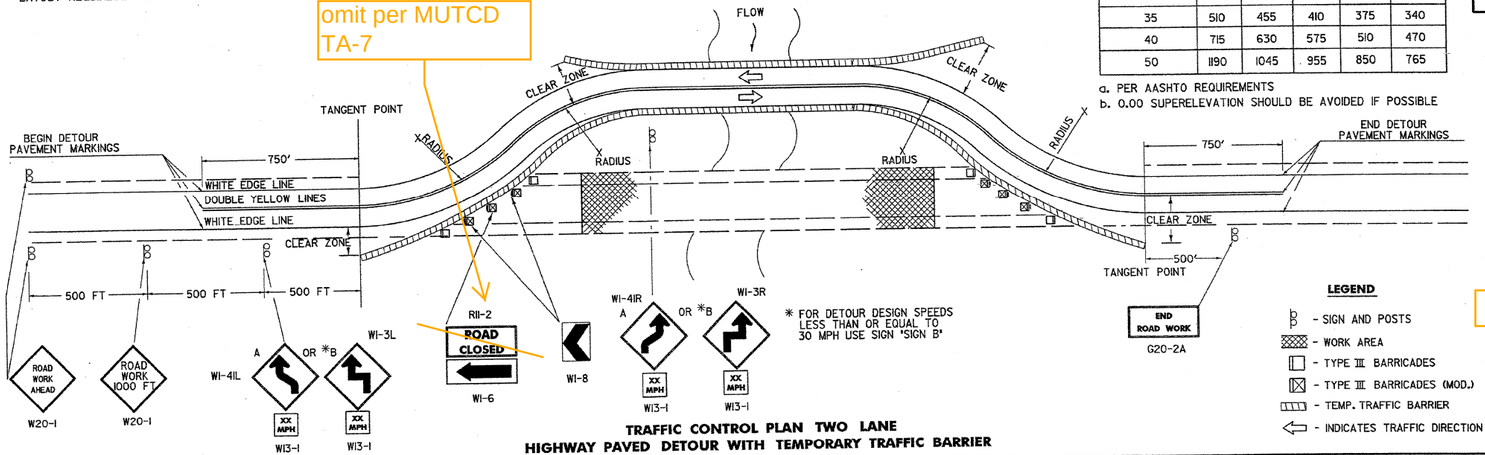
BARRICADES SHALL BE MAINTAINED IN CLEAN CONDITION, SATISFACTORY TO THE RESIDENT ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO THE APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFACED, OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED, OR REPLACED AS ORDERED BY THE RESIDENT ENGINEER.

ALL SIGN PLACEMENT DISTANCES ARE DESIRABLE SPECIFICATIONS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT. PROJECT CONSTRUCTION APPROACH SIGNING PLACEMENT SHALL TAKE INTO CONSIDERATION SPACING REQUIREMENTS FOR THE DETOUR SIGN LAYOUT REQUIREMENTS.

| DETOUR DESIGN SPEED | MINIMUM RADIUS (FT.)[a] SUPERELEVATION (FT./FT.) | | | | |
|---|---|---|---|---|---|
| (M.P.H.) | 0.00[b] | 0.02 | 0.04 | 0.06 | 0.08 |
| 20 | 160 | 140 | 130 | 120 | 110 |
| 25 | 245 | 220 | 200 | 185 | 170 |
| 30 | 375 | 335 | 305 | 275 | 255 |
| 35 | 510 | 455 | 410 | 375 | 340 |
| 40 | 715 | 630 | 575 | 510 | 470 |
| 50 | 1190 | 1045 | 955 | 850 | 765 |

a. PER AASHTO REQUIREMENTS
b. 0.00 SUPERELEVATION SHOULD BE AVOIDED IF POSSIBLE

omit per MUTCD TA-7




* FOR DETOUR DESIGN SPEEDS LESS THAN OR EQUAL TO 30 MPH USE SIGN 'SIGN B'

**LEGEND**
- SIGN AND POSTS
- WORK AREA
- TYPE III BARRICADES
- TYPE III BARRICADES (MOD.)
- TEMP. TRAFFIC BARRIER
- INDICATES TRAFFIC DIRECTION

## TRAFFIC CONTROL PLAN TWO LANE HIGHWAY PAVED DETOUR WITH TEMPORARY TRAFFIC BARRIER

## DETOUR NOTES

1.) SIGNS AND DELINEATION SHOWN FOR ONE DIRECTION OF TRAFFIC ONLY.
2.) THE CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
3.) ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER.
4.) UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS FROM EXISTING PAVEMENT.
5.) THE NUMBER OF CHANNELIZING DEVICES, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
6.) AASHTO CLEAR ZONE REQUIREMENTS SHOULD BE MET. IF NOT THEN AN APPROVED ENERGY ABSORPTION ATTENUATOR (SUITABLE FOR THE TEMPORARY TRAFFIC BARRIER USED AND FOR THE DESIGN SPEED) SHALL BE INSTALLED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
7.) THE DETOUR DESIGN SPEED SHOULD BE NO LESS THAN 10 M.P.H. BELOW THE POSTED SPEED LIMIT, UNLESS PHYSICAL RESTRICTIONS PREVENT THIS.
8.) SEE STANDARD SHEETS E-100, E-101 AND E-102 FOR SIGN DETAIL AND MATERIAL REQUIREMENTS.
9.) IF THE USE OF TEMPORARY TRAFFIC BARRIER IS NOT REQUIRED, THEN REFLECTORIZED PLASTIC DRUMS SHALL BE USED.

is 15 mph design speed justified?

**OTHER STDS. REQUIRED:** E-100 E-101 E-102 E-102a E-107a E-198

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REVISIONS AND CORRECTIONS
SEPT. 10, 1987 - DATE OF ORIGINAL ISSUE
APRIL 29, 1988 - FHWA REVIEW COMMENTS
SEPT. 20, 1993 - NEW RADIUS CHART, BARRICADE ALIGNMENT AND USE OF TEMPORARY TRAFFIC BARRIER
AUG. 08, 1995 - REVISED SIGNING PER MUTCD
JUNE 30, 2003 - CHANGED REFLECTIVE SHEETING TO TYPE III

APPROVED
DIRECTOR OF PROGRAM DEVELOPMENT
TRAFFIC OPERATIONS ENGINEER
FEDERAL HIGHWAY ADMINISTRATION

# DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS

VERMONT AGENCY OF TRANSPORTATION

STANDARD E-10[illegible]

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