

MAINTENANCE OF TRAFFIC (MOT)

GENERAL NOTES

- Concrete: All concrete shall conform to Mix. No. 6 (4500 psi).
- Welded Steel Wire Fabric: All wire fabric shall be 6 x 6 - W2.9 x W2.9.
- Reinforcing Steel: Reinforcing steel shall conform to ASTM A 615 Grade 60.
- Structural Steel: All structural steel conform to ASTM A 709 Grade 36 or better.
- Anchor Bolts: All anchor bolts shall be ASTM A 325 unless otherwise specified on details.
- Connector Loop: $\frac{3}{4}$ " ϕ galvanized or stainless steel rod. Stainless steel rods shall conform to ASTM A 276 for the type specified, galvanizing shall conform to ASTM A 153.
- Connector Pin: The $\frac{1}{4}$ " x 25" connector pin shall be a threaded rod or bolt conforming to ASTM A 307, Grade A. Nuts shall conform to ASTM A 563, Grade DH or DH3 or ASTM A 94, Grade 2H. Washers shall conform to ASTM F 436. The connector pin, nuts and washers shall be galvanized in conformance with ASTM A 153.
- Other Connector Devices: Contractor may use any other connection devices between barrier sections in lieu of the pin and loop, provided they appear on S.H.A. standard plates and have written approval of Chief Engineer.
- Temporary Shield: When specified on the Plans, a shield shall be connected to the temporary precast concrete barrier. The shield shall be designed, furnished, and installed by the Contractor. The height of the shield shall be 6 ft - 6 in. above the roadway surface, and shall have no cracks or openings through which material or debris can pass. The shield will not be measured but the cost will be incidental to the pertinent Temporary Concrete Traffic Barrier for Maintenance of Traffic item.

METHODS OF ANCHORAGE CONNECTION TO CONCRETE DECKS

EXISTING BRIDGE DECK TO BE REMOVED.

Holes for anchor bolts in existing bridge deck shall be drilled. Use $\frac{1}{4}$ " ϕ bolts with $5\frac{1}{2}$ " x $5\frac{1}{2}$ " x $\frac{3}{4}$ " square washer under existing deck slab, as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " ϕ bolt at connection plate.

EXISTING BRIDGE DECK TO REMAIN.

Holes for anchor bolts in existing bridge deck shall be cored. Use $\frac{1}{4}$ " ϕ bolts with $5\frac{1}{2}$ " x $5\frac{1}{2}$ " x $\frac{3}{4}$ " square washer under existing deck slab, as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " ϕ bolt at connection plate. The Contractor is alerted that as little damage as possible shall be done to the existing reinforcement steel. Therefore, the Contractor shall locate the reinforcement steel and space the bolts to miss the reinforcement steel, all as directed by the Engineer. Fill all cored holes with epoxy grout after barrier is removed. (See below for grout composition).

NEW BRIDGE DECK

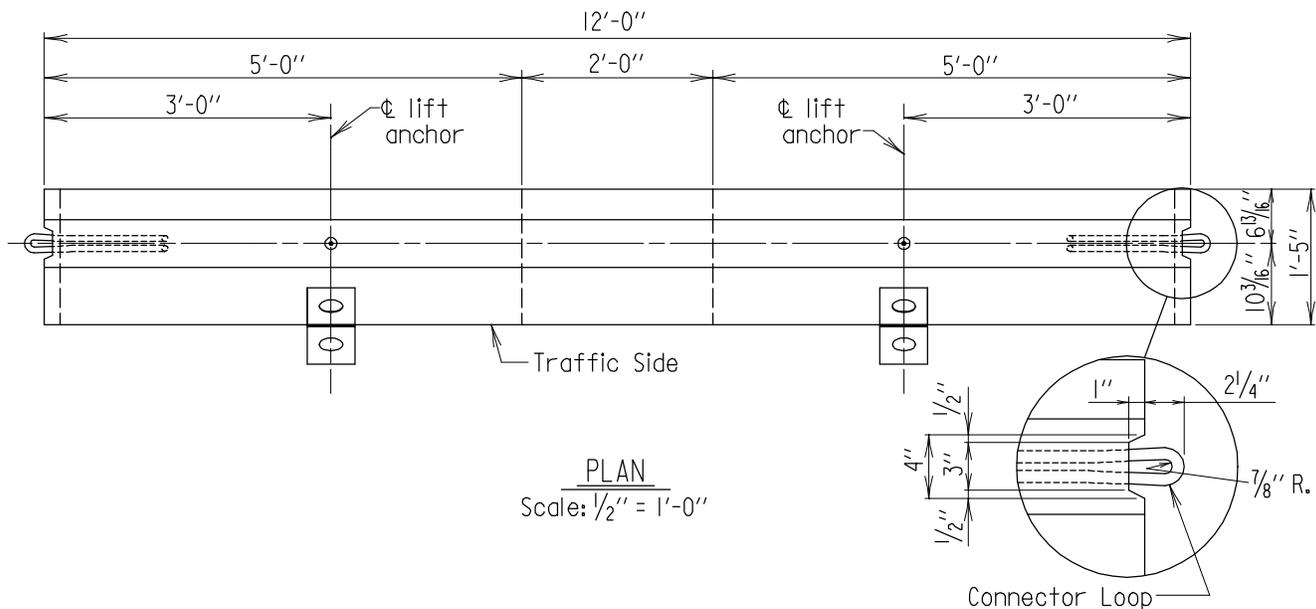
$\frac{1}{4}$ " ϕ bolt to be placed in an epoxy coated open coil anchor insert (cast in slab) having a minimum working load tension strength of 16 000 lb and shear strength of 13 000 lb with a minimum $7\frac{1}{2}$ " length. Coil to be tapped for a $\frac{1}{4}$ " N.C. thread bolt. No insert shall be longer than slab depth minus 1". Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " ϕ bolt at connection plate. Fill all inserts with epoxy grout after barrier is removed. (See below for grout composition).

The option to use bolts in drilled holes in lieu of the coiled insert is no longer allowed.

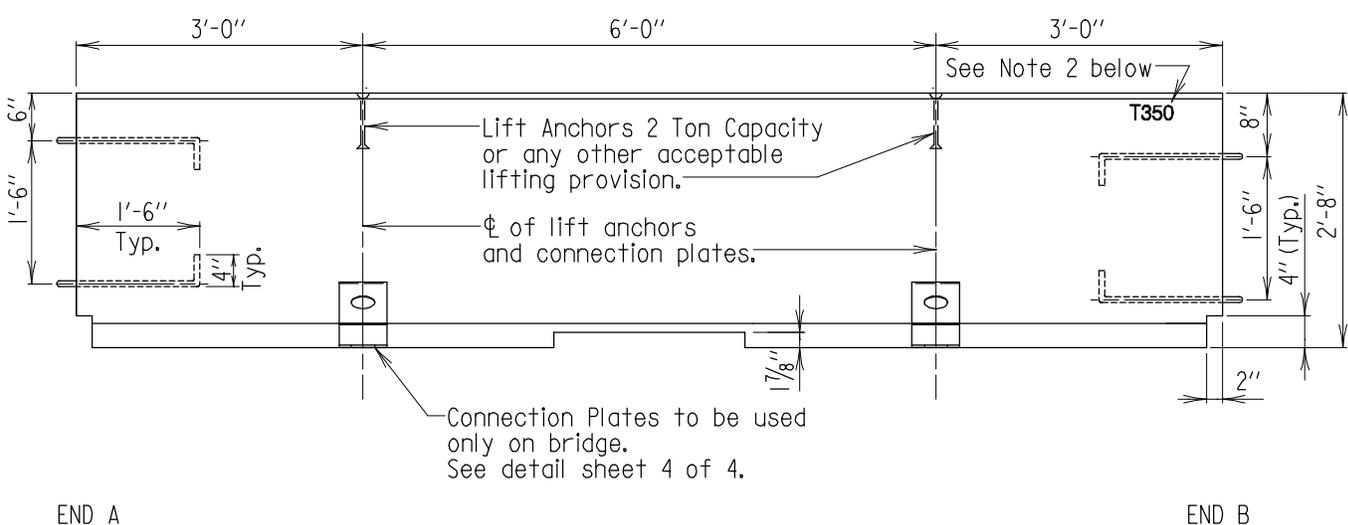
GROUT COMPOSITION

Any areas of bridge decks, to remain in place, damaged as a result of anchoring temporary concrete barriers (anchor holes, etc.) shall be repaired to the satisfaction of the Engineer using an epoxy grout conforming to 902.11(d).

<p align="center">APPROVAL</p> <p><i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES</p> <p>DATE: 4/6/83</p>		<p align="center">STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES</p> <p align="center">TEMPORARY PRECAST SINGLE FACE F-TYPE CONCRETE BARRIER</p>	<p align="right">SHEET <u>1</u> OF <u>4</u></p>
<p align="center">REVISIONS</p>			
SHA	FHWA		
11-29-04			
5-19-09			
FHWA APPROVAL	7-29-11	STANDARD NO. MOT-101	
DATE: 6-8-90	10-21-13		



PLAN
Scale: 1/2" = 1'-0"



ELEVATION
Scale: 1/2" = 1'-0"

Notes:

- One connector pin shall be furnished with each barrier. The cost of the connector pin shall be incidental to the item precast temporary concrete barrier.
- All barriers shall have "T350" imprinted on top end of barrier. Imprint shall have a minimum depth of 1/4" and a minimum height of 2".

APPROVAL	
L. S. Fisher DIRECTOR OFFICE OF STRUCTURES	
DATE: 4/6/83	
REVISIONS	
SHA	FHWA
4-4-02	
5-21-04	
FHWA APPROVAL	6-28-04
DATE: 6-8-90	8-5-04

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

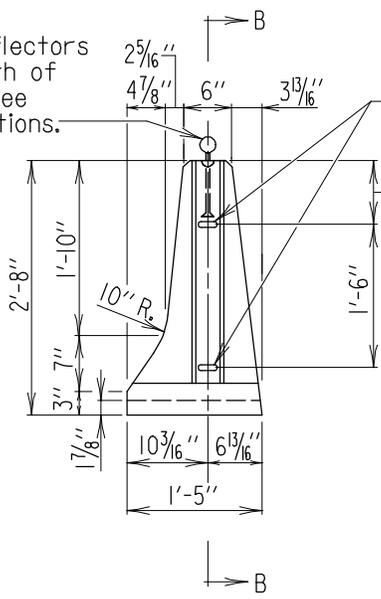
TEMPORARY PRECAST SINGLE
FACE F-TYPE CONCRETE BARRIER

STANDARD NO. MOT-101

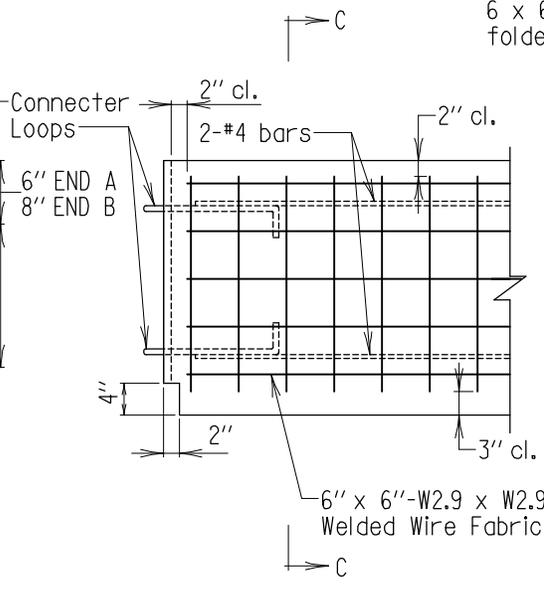
SHEET 2 OF 4

MAINTENANCE OF TRAFFIC

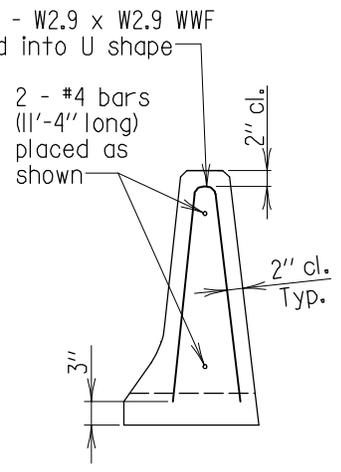
Place reflectors full length of barrier see Specifications.



END VIEW
Scale: 1/2" = 1'-0"

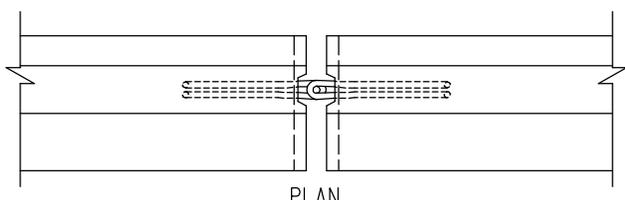


SECTION B-B

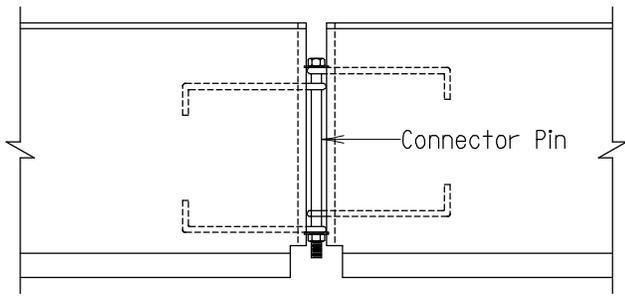


SECTION C-C

REINFORCING STEEL DETAILS
Scale: 1/2" = 1'-0"



PLAN
(Connector pin not shown)



ELEVATION

JOINT DETAILS
Scale: 1/2" = 1'-0"

APPROVAL
L.S. Friedman DIRECTOR
OFFICE OF STRUCTURES
DATE: 4/6/83

REVISIONS	
SHA	FHWA
4-4-02	
5-21-04	
6-28-04	
8-5-04	

FHWA APPROVAL
DATE: 6-8-90

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

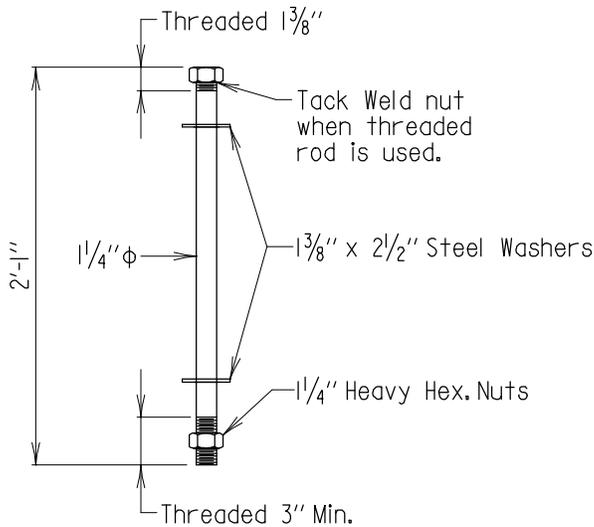
TEMPORARY PRECAST SINGLE
FACE F-TYPE CONCRETE BARRIER

STANDARD NO. MOT-101

SHEET 3 OF 4

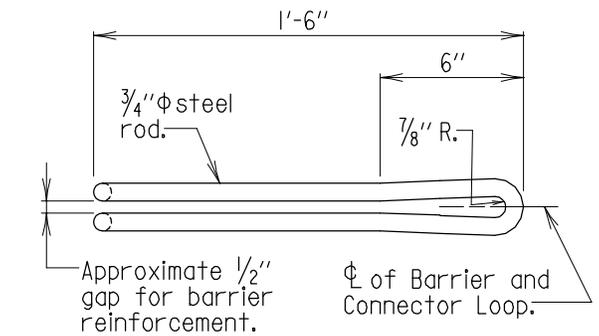
OLD NO. M(5.09)-83-143

MAINTENANCE OF TRAFFIC

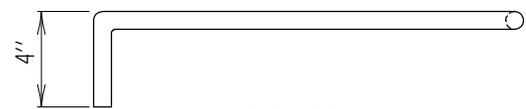


CONNECTOR PIN

Scale: None



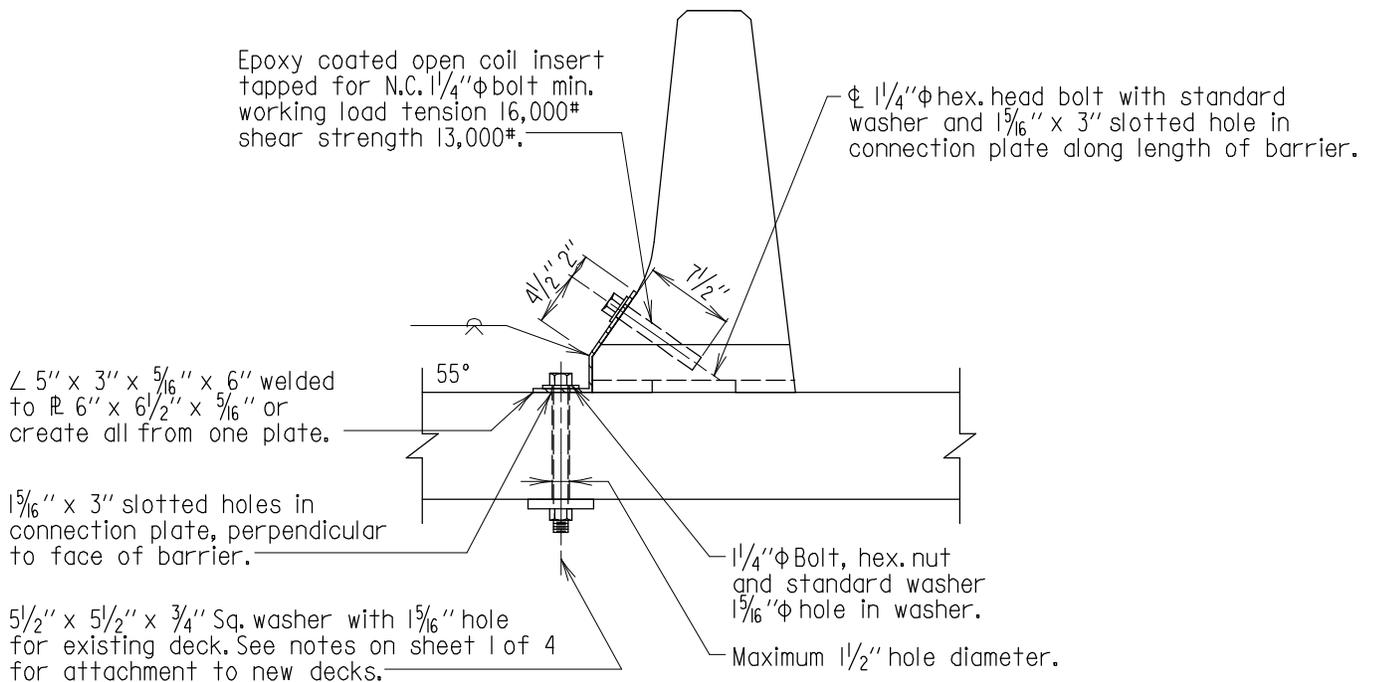
PLAN



ELEVATION

CONNECTOR LOOP

Scale: None



CONNECTION DETAIL

Scale: 3/4" = 1'-0"

APPROVAL	
<i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES DATE: 4/6/83	
REVISIONS	
SHA	FHWA
12-4-84	6-8-90
5-17-91	
FHWA APPROVAL	4-27-92
DATE: 6-8-90	4-4-02

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 OFFICE OF STRUCTURES

TEMPORARY PRECAST SINGLE
 FACE F-TYPE CONCRETE BARRIER

STANDARD NO. MOT-101

SHEET 4 OF 4

OLD NO. M(5.09)-83-143

MAINTENANCE OF TRAFFIC

GENERAL NOTES

- Concrete: All concrete shall conform to Mix. No. 6 (4500 psi).
- Welded Steel Wire Fabric: All wire fabric shall be 6 x 6 - W2.9 x W2.9.
- Reinforcing Steel: Reinforcing steel shall conform to ASTM A 615 Grade 60.
- Structural Steel: All structural steel conform to ASTM A 709 Grade 36 or better.
- Anchor Bolts: All anchor bolts shall be ASTM A 325 unless otherwise specified on details.
- Connector Loop: $\frac{3}{4}$ " ϕ galvanized or stainless steel rod. Stainless steel rods shall conform to ASTM A 276 for the type specified, galvanizing shall conform to ASTM A 153.
- Connector Pin: The $\frac{1}{4}$ " x 25" connector pin shall be a threaded rod or bolt conforming to ASTM A 307, Grade A. Nuts shall conform to ASTM A 563, Grade DH or DH3 or ASTM A 94, Grade 2H. Washers shall conform to ASTM F 436. The connector pin, nuts and washers shall be galvanized in conformance with ASTM A 153.
- Other Connector Devices: Contractor may use any other connection devices between barrier sections in lieu of the pin and loop, provided they appear on S.H.A. standard plates and have written approval of Chief Engineer.
- Temporary Shield: When specified on the Plans, a shield shall be connected to the temporary precast concrete barrier. The shield shall be designed, furnished, and installed by the Contractor. The height of the shield shall be 6 ft - 6 in. above the roadway surface, and shall have no cracks or openings through which material or debris can pass. The shield will not be measured but the cost will be incidental to the pertinent Temporary Concrete Traffic Barrier for Maintenance of Traffic item.

METHODS OF ANCHORAGE CONNECTION TO CONCRETE DECKS

EXISTING BRIDGE DECK TO BE REMOVED.

Holes for anchor bolts in existing bridge deck shall be drilled. Use $\frac{1}{4}$ " ϕ bolts with $5\frac{1}{2}$ " x $5\frac{1}{2}$ " x $\frac{3}{4}$ " square washer under existing deck slab, as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " ϕ bolt at connection plate.

EXISTING BRIDGE DECK TO REMAIN.

Holes for anchor bolts in existing bridge deck shall be cored. Use $\frac{1}{4}$ " ϕ bolts with $5\frac{1}{2}$ " x $5\frac{1}{2}$ " x $\frac{3}{4}$ " square washer under existing deck slab, as shown. Bolts shall be of sufficient length that when nut is tight, all the threads of the nut are engaged. Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " bolt at connection plate. The Contractor is alerted that as little damage as possible shall be done to the existing reinforcement steel. Therefore, the Contractor shall locate the reinforcement steel and space the bolts to miss the reinforcement steel, all as directed by the Engineer. Fill all cored holes with epoxy grout after barrier is removed. (See below for grout composition).

NEW BRIDGE DECK

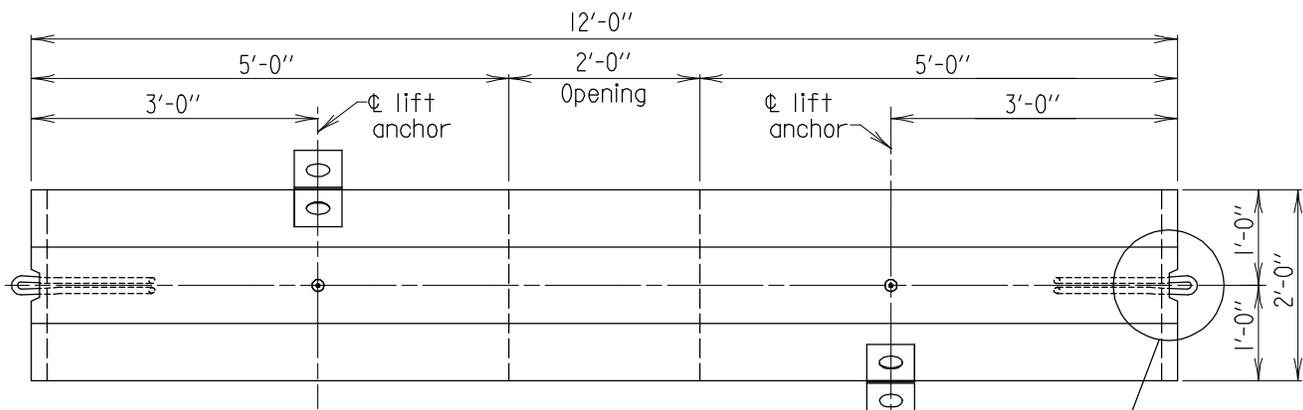
$\frac{1}{4}$ " ϕ bolt to be placed in an epoxy coated open coil anchor insert (cast in slab) having a minimum working load tension strength of 16 000 lb and shear strength of 13 000 lb with a minimum $7\frac{1}{2}$ " length. Coil to be tapped for a $\frac{1}{4}$ " N.C. thread bolt. No insert shall be longer than slab depth minus 1". Provide Type 'A' plain washer SAE N (narrow) for each $\frac{1}{4}$ " ϕ bolt at connection plate. Fill all inserts with epoxy grout after barrier is removed. (See below for grout composition).

The option to use bolts in drilled holes in lieu of the coiled insert is no longer allowed.

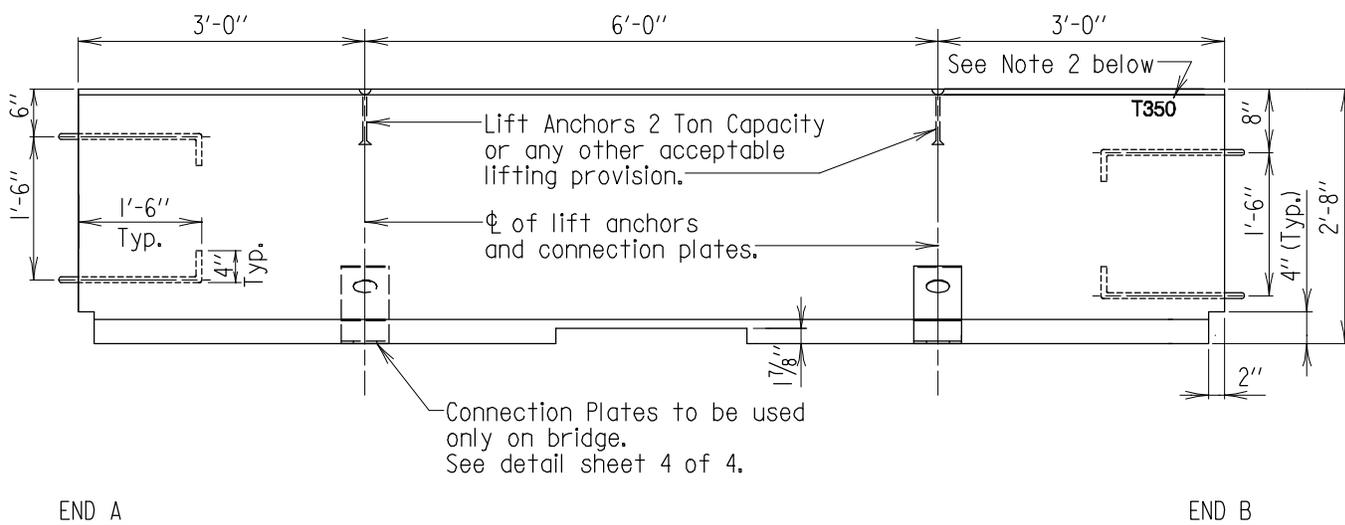
GROUT COMPOSITION

Any areas of bridge decks, to remain in place, damaged as a result of anchoring temporary concrete barriers (anchor holes, etc.) shall be repaired to the satisfaction of the Engineer using an epoxy grout conforming to 902.11 (d).

<p align="center">APPROVAL</p> <p><i>L.S. Fisher</i> DIRECTOR OFFICE OF STRUCTURES</p> <p>DATE: 6/15/84</p>		<p align="center">STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES</p> <p align="center">TEMPORARY PRECAST DOUBLE FACE F-TYPE CONCRETE BARRIER</p>	<p align="right">SHEET <u>1</u> OF <u>4</u></p>
<p align="center">REVISIONS</p>			
SHA	FHWA		
8-5-04			
11-29-04			
FHWA APPROVAL	7-29-11	STANDARD NO. MOT-102	
DATE: 1-23-85	10-21-13		



PLAN
Scale: 1/2" = 1'-0"



ELEVATION
Scale: 1/2" = 1'-0"

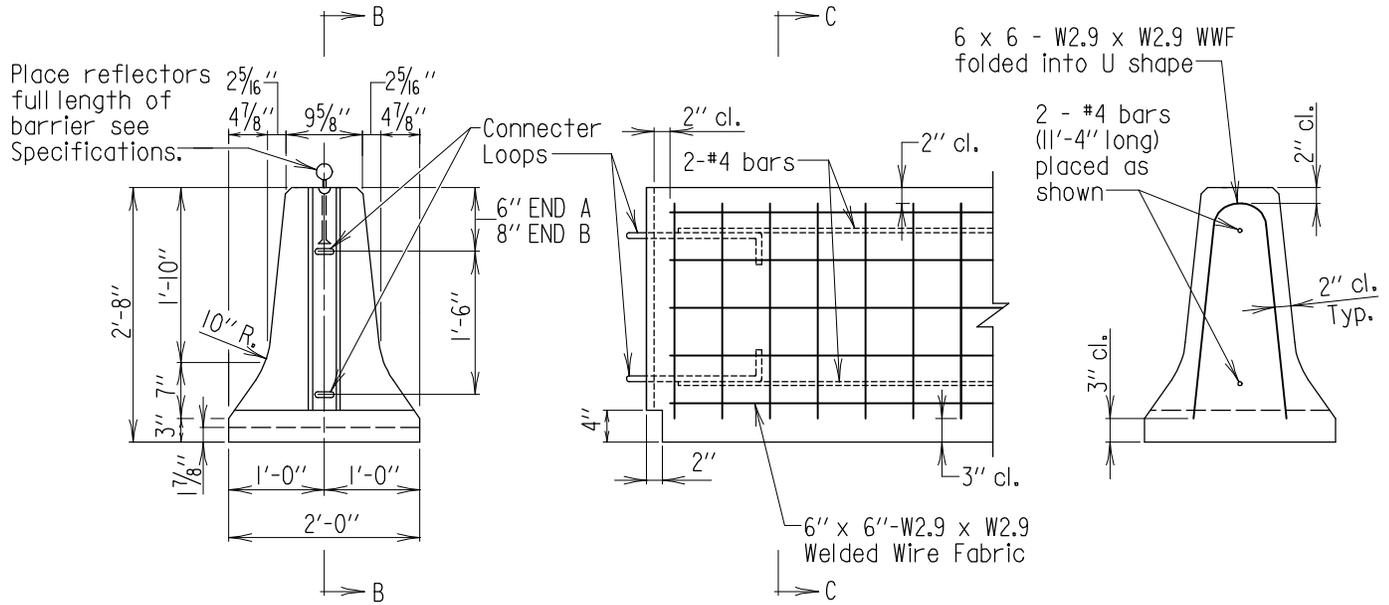
Notes:

- One connector pin shall be furnished with each barrier. The cost of the connector pin shall be incidental to the item precast temporary concrete barrier.
- All barriers shall have "T350" imprinted on top end of barrier. Imprint shall have a minimum depth of 1/4" and a minimum height of 2".

APPROVAL	
L.S. Friedman DIRECTOR OFFICE OF STRUCTURES	
DATE: 6/15/84	
REVISIONS	
SHA	FHWA
4-4-02	
5-21-04	
6-28-04	
FHWA APPROVAL	8-5-04
DATE: 1-23-85	

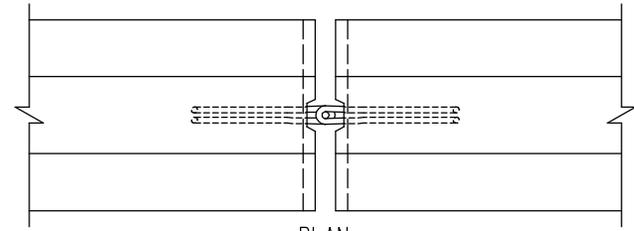
STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES	TEMPORARY PRECAST DOUBLE FACE F-TYPE CONCRETE BARRIER
STANDARD NO. MOT-102	SHEET 2 OF 4

MAINTENANCE OF TRAFFIC

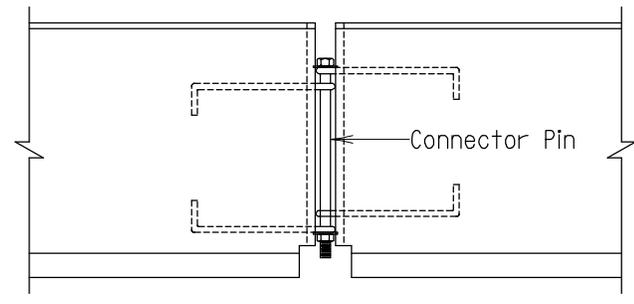


END VIEW
Scale: 1/2" = 1'-0"

SECTION B-B SECTION C-C
REINFORCING STEEL DETAILS
Scale: 1/2" = 1'-0"



(Connector pin not shown)



JOINT DETAILS
Scale: 1/2" = 1'-0"

APPROVAL	
<i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES	
DATE: 6/15/84	
REVISIONS	
SHA	FHWA
4-4-02	
5-21-04	
6-28-04	
FHWA APPROVAL	
DATE: 1-23-85	8-5-04

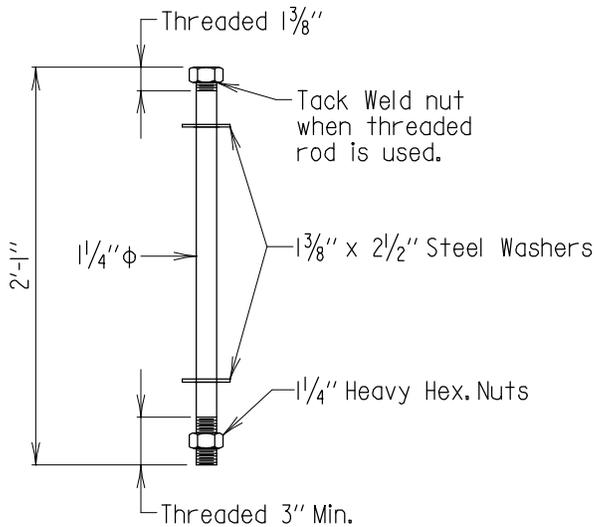
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TEMPORARY PRECAST DOUBLE
FACE F-TYPE CONCRETE BARRIER

STANDARD NO. MOT-102

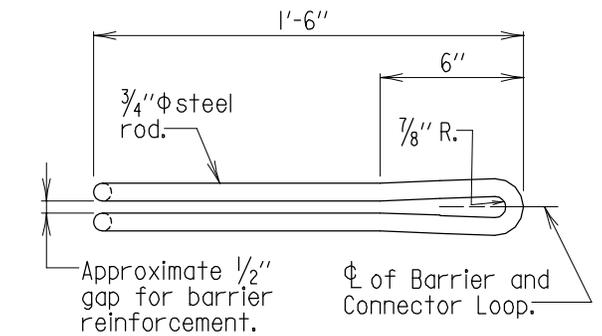
SHEET 3 OF 4

MAINTENANCE OF TRAFFIC

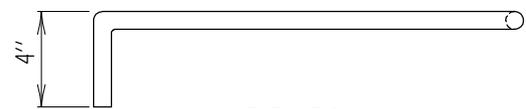


CONNECTOR PIN

Scale: None



PLAN



ELEVATION

CONNECTOR LOOP

Scale: None

Epoxy coated open coil insert tapped for N.C. 1/4" φ bolt min. working load tension 16,000# shear strength 13,000#.

φ 1/4" φ hex. head bolt with standard washer and 1 5/16" x 3" slotted hole in connection plate along length of barrier.

∠ 5" x 3" x 5/16" x 6" welded to 6" x 6 1/2" x 5/16" or create all from one plate.

1 5/16" x 3" slotted holes in connection plate, perpendicular to face of barrier.

5 1/2" x 5 1/2" x 3/4" Sq. washer with 1 5/16" hole for existing deck. See notes on sheet 1 of 4 for attachment to new decks.

1/4" φ Bolt, hex. nut and standard washer 1 5/16" φ hole in washer.

Maximum 1 1/2" hole diameter.

CONNECTION DETAIL

Scale: 3/4" = 1'-0"

APPROVAL	
<i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES	
DATE: 6/15/84	
REVISIONS	
SHA	FHWA
12-4-84	1-23-85
5-17-91	
4-27-92	
4-4-02	

FHWA APPROVAL	4-27-92
DATE: 1-23-85	4-4-02

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TEMPORARY PRECAST DOUBLE
FACE F-TYPE CONCRETE BARRIER

STANDARD NO. MOT-102

SHEET 4 OF 4

OLD NO. M(5.10)-84-158

MAINTENANCE OF TRAFFIC

Place minimum 9" wide steel wedges @ 3'-0" (±) c/c for entire span length; weld wedges (welds to be at least 3" long 1/4" welds) to each other and to beam to secure in place.

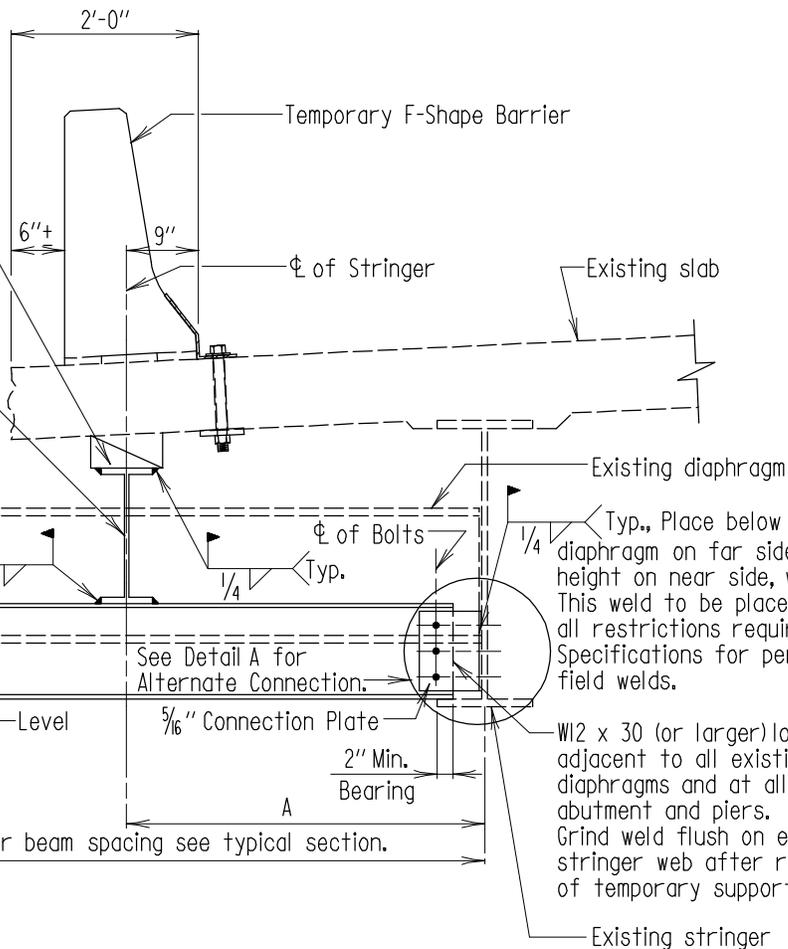
W14 x 61 (or larger) supported at each end adjacent to existing diaphragms.

Proposed slab

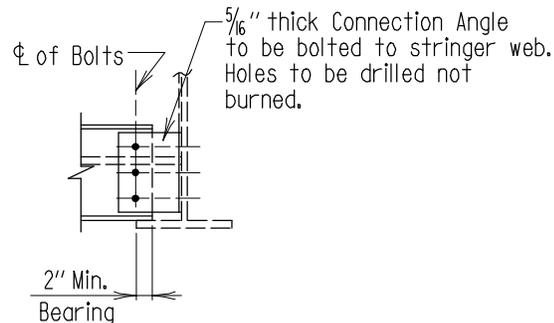
Place steel filler blocks (tack weld to W12 x 30 with at least 3" long 1/4" welds) at low stringer to make W12 x 30 horizontal. Do not weld to any part of stringer under any circumstances.

Existing stringer

Typ., Place below existing diaphragm on far side. Grind weld flush on existing stringer web after support removal.



SECTION
Scale: 1/2" = 1'-0"



DETAIL 'A'
Scale: 1/2" = 1'-0"

Notes:

1. Existing structure shown in dashed lines.
2. This detail is only required where A dimension is 2'-6" or greater.
3. This detail can be used for maximum stringer spacing of 10' and maximum diaphragm spacing of 25'.
4. All structural steel to be ASTM A 709 Grade 36 or better.
5. All bolts to be 7/8" φ ASTM A-325 and holes to be 15/16" φ.
6. Member sizes and connections shown are minimums. Engineer shall design.

FHWA APPROVAL	10-22-03
DATE: 10-7-83	10-9-07

APPROVAL	
L.S. Freedom DIRECTOR OFFICE OF STRUCTURES	
DATE: 9/2/83	
REVISIONS	
SHA	FHWA
9-24-96	
1-22-01	
10-22-03	
10-9-07	

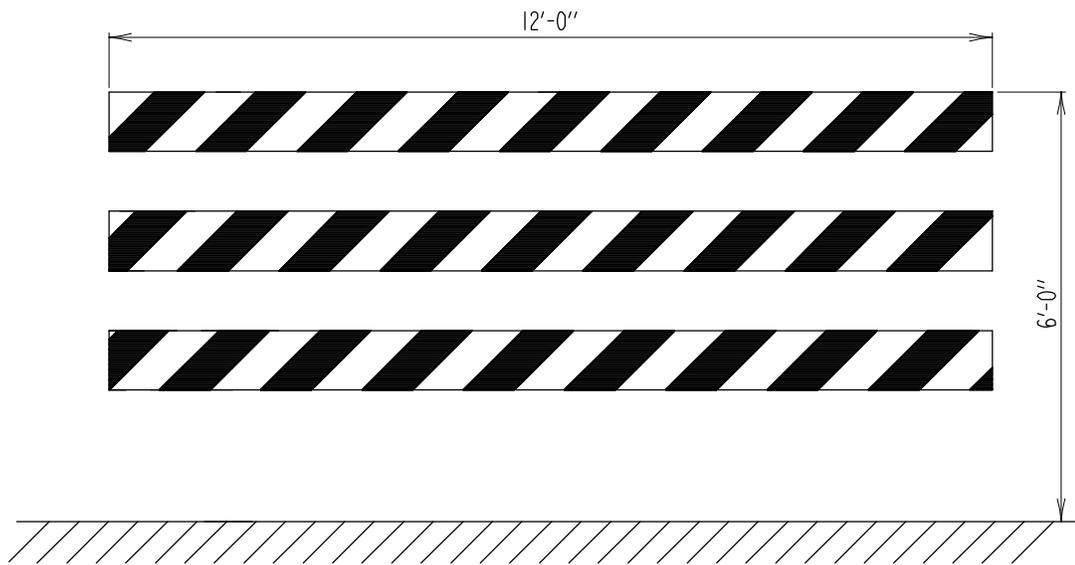
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

DETAIL OF TEMPORARY SLAB
UNDERPINNING DURING STAGE CONSTRUCTION

STANDARD NO. MOT-201

SHEET OF

MAINTENANCE OF TRAFFIC



ELEVATION
Scale: $\frac{3}{8}'' = 1'-0''$

Notes:

1. Type III Barricade shall conform to NCHRP Report 350 and the MUTCD except that all barricades to close structures shall be 12 ft. long by 6 ft. high.
2. Striping shall be reflectorized alternate orange and white colors. Right (R) Barricade shown. (L) barricade shall have stripes sloping in opposite direction. If barricades are to be used close road, striping shall be reflectorized alternate white and red colors.
3. Barricade shall be lighted if required by location.
4. Type III Barricades shall be selected from the Preapproved List maintained by the Office of Materials and Technology. Procedures for adding products to the prequalified list may be obtained from the Office of Materials and Technology.
5. If signing is attached to the movable barricade, the signs shall be placed so that no more than 1/3 of the reflective surface of the barricade shall be covered.

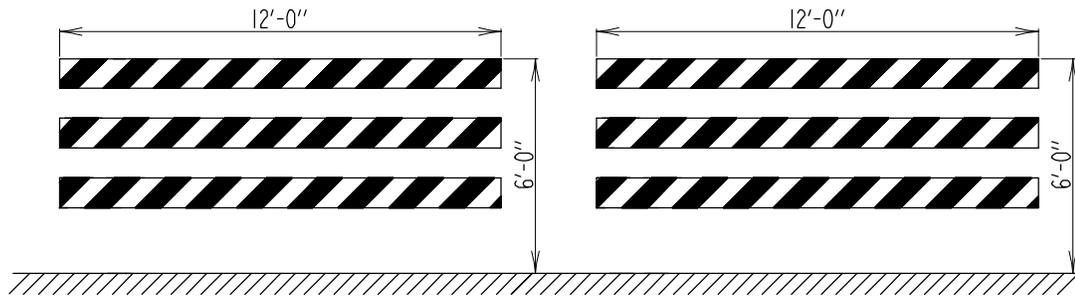
APPROVAL	
<i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES DATE: 8/31/79	
REVISIONS	
SHA	FHWA
12-12-05	
1-6-06	
FHWA APPROVAL DATE: 1-16-80	7-24-07

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TEMPORARY MOVABLE BARRICADE

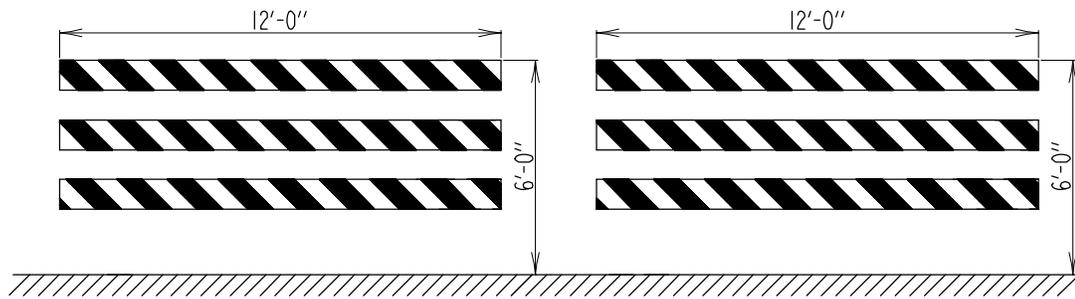
STANDARD NO. MOT-301

SHEET 1 OF 2



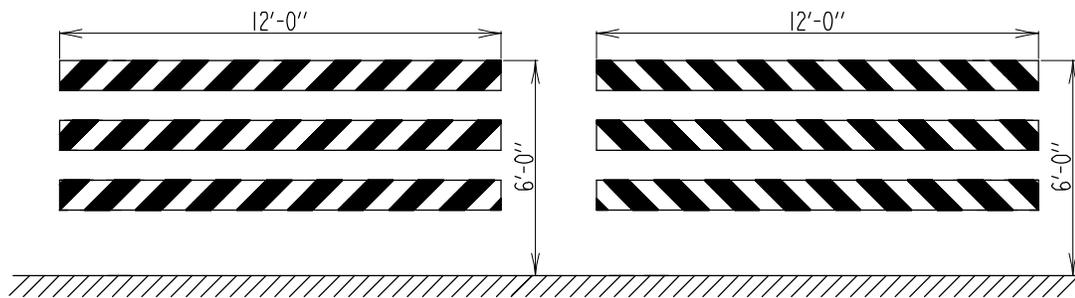
ELEVATION-ROAD CLOSED, TRAFFIC DIRECTED TO LEFT

Scale: $\frac{3}{16}'' = 1'-0''$



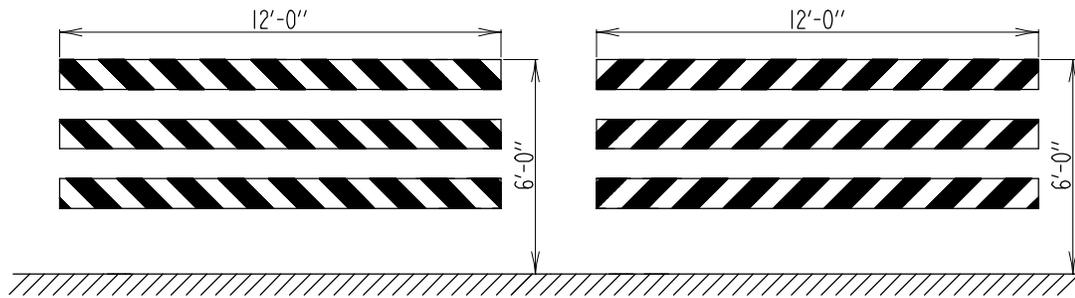
ELEVATION-ROAD CLOSED, TRAFFIC DIRECTED TO RIGHT

Scale: $\frac{3}{16}'' = 1'-0''$



ELEVATION-ROAD CLOSED, TRAFFIC DIRECTED TO EITHER SIDE

Scale: $\frac{3}{16}'' = 1'-0''$



ELEVATION-ROAD CLOSED USING WHITE AND RED STRIPES

Scale: $\frac{3}{16}'' = 1'-0''$

APPROVAL	
<i>L.S. Friedman</i> DIRECTOR OFFICE OF STRUCTURES	
DATE: 1/6/06	
REVISIONS	
SHA	FHWA
7-24-07	
FHWA APPROVAL	
DATE:	

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TEMPORARY MOVABLE BARRICADE

STANDARD NO. MOT-301

SHEET 2 OF 2

OLD NO. M(5.08)-79-82

MAINTENANCE OF TRAFFIC