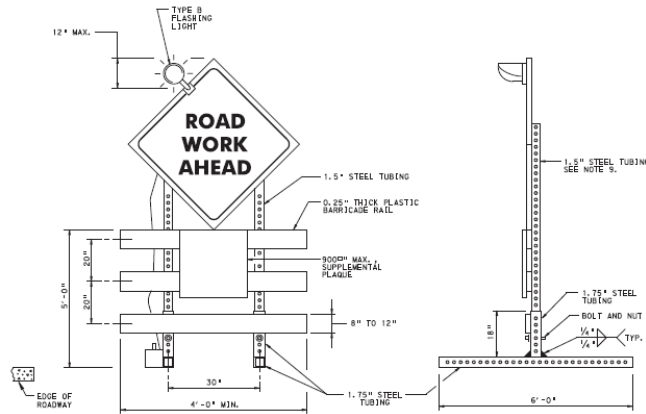


Project Title:	Testing Type III Barricades with Aluminum Panels and Mounted Signs
Project Synopsis:	There is a need to place Type III Barricades across or along publicly travelled roadways to protect road users from potential hazards created by road work. This need requires the availability of a non-propriety Type III Barricade with Aluminum Panels and Mounted Signs to be successfully crash tested to MASH compliance so that state Department of Transportations (DOTs) have an available design to provide to approved suppliers to produce a crashworthy Type III Barricade for deployment. MASH testing will be conducted to aide in the development of a crashworthy Type III Barricade with Aluminum Panel and Mounted Signs for road work (temporary) applications.
Project Goal(s):	Develop a design for a Type III Barricade with Aluminum Panels and Mounted Signs on top so that it can be placed across or along a publicly travelled roadway. Sign sizes needed to be mounted on top of the barricade range from 30" x 30" (6.25 square feet) to 48" x 48" (16 square feet).
Project Background:	<p>The utilization and deployment of Type III Barricades is a widespread practice for most state DOTs across the country. Type III Barricades are required for a variety of Temporary Traffic Control (TTC) applications for work zones. Of these applications, the two most common scenarios are as follows: 1) Placing and extending the barricades entirely across the roadway due to a complete closure of the roadway. 2) Placing advance warning signs for TTC along the side of the roadway at times with a sign mounted to the top of a Type III Barricade for long-term operations (This is done for portability, elimination of "one calls" as the signs would not need to be anchored into the ground, and for better conspicuity during dark or inclement weather conditions). While many Type III Barricade designs had been previously accepted under the guidelines of NCHRP-350, an adequate number of Type III Barricade designs are not currently available under the MASH standards. Many of the limited designs available under MASH appear to be proprietary in nature thus limiting the availability of barricades needed to accommodate the massive amount of road work currently underway and/or expected to begin nationwide. The proprietary designs also primarily use plastic panels and state DOTs are concerned with the long-term durability of these devices. With the December 31st already passed, the availability of non-proprietary crashworthy Type III Barricades is of great concern to the state DOTs.</p> <p>Attachments (see below):</p> <ul style="list-style-type: none"> • Pennsylvania Department of Transportation standard drawing (NCHRP 350 Approved Type III Barricade)

NOTES:

1. PROVIDE SIGN MATERIALS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 1102.4.
2. DIAMOND, RECTANGULAR, OCTAGONAL AND TRIANGULAR SIGNS ARE PERMITTED. WHILE HAVING NO MAXIMUM AREA, THE MAXIMUM HEIGHT OF THE SIGN MAY NOT EXCEED 29.16".
3. MINIMUM MOUNTING HEIGHT TO TOP OF ALL SIGNS IS 128".
4. SUPPLEMENTAL PLAQUE IS TO BE MOUNTED AS SHOWN.
5. BATTERY CASE MUST BE PLACED EITHER ON THE GROUND OR ATTACHED 20" MAXIMUM ABOVE THE GROUND TO THE POST OR BASE LEG.
6. SIGN SUBSTRATE MAY BE PLYWOOD, ALUMINUM, FLEXIBLE (ROLL-UP) ABS, ALUMINUM / PLASTIC LAWNSITE, CORRUGATED POLYPROPYLENE OR POLYETHYLENE.
7. SANDRAG BALLAST SHALL BE PLACED ON THE END OF EACH LEG TO PROVIDE STABILITY.
8. SIGNS AND RAILS ARE TO BE ATTACHED WITH BOLTS AND NUTS.
9. IF TURNED 90°, RETROREFLECTIVE SHEETING MUST BE PLACED ON THE SIDES SO THAT THE BARRICADE IS CLEARLY VISIBLY TO APPROACHING DRIVERS.
10. MAXIMUM OF TWO TYPE B WARNING LIGHTS ON ALL SIGNS ARE ALLOWED WITH 24" SEPARATING LIGHTS ON ROAD CLOSED SIGNS.
11. FLASHING LIGHTS ARE OPTIONAL. WHEN USED, LIGHTS SHALL BE ATTACHED AS SHOWN AND LOCATED ON THE SIDE OF THE SIGN WHICH IS NEAREST TO TRAFFIC.
12. SIGNS SHALL REMAIN IN THE VERTICAL POSITION WHEN LOCATED WITHIN THE HIGHWAY RIGHT-OF-WAY.



SKID-MOUNTED METAL SIGN SUPPORT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

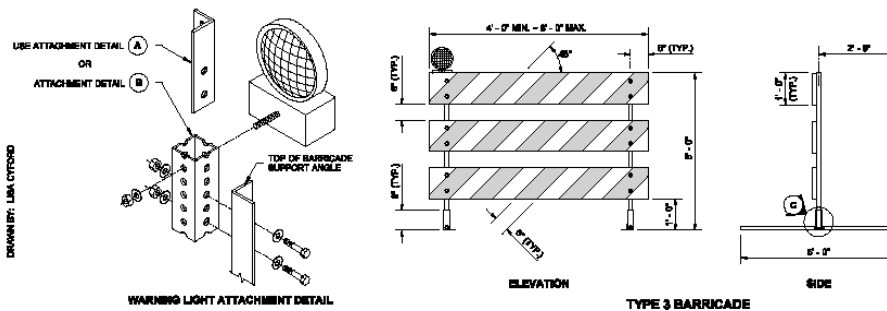
TRAFFIC CONTROL SIGNING
TYPE III BARRICADE

RECOMMENDED JUN. 13, 2013
CHIEF OF BUREAU
TRAFFIC CONTROL DIVISION AND PERMITS SECTION

RECOMMENDED JUN. 13, 2013
CHIEF ADMINISTRATION AND TRAFFIC OPERATIONS DIVISION

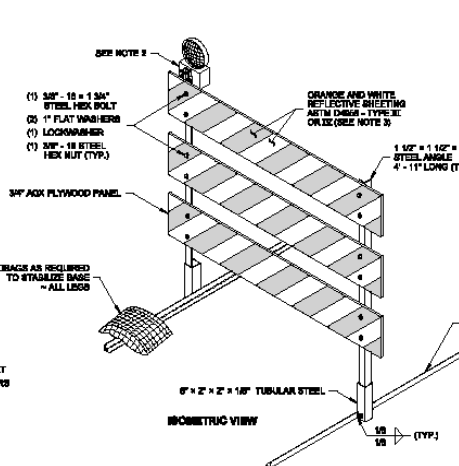
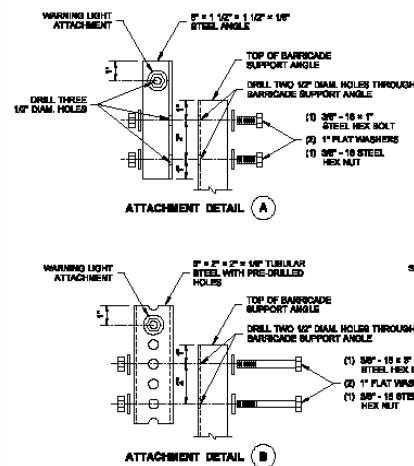
SHT. 1 OF 1
TC-8716

- Washington Department of Transportation standard drawing (NCHRP 350 Approved Type III Barricade)



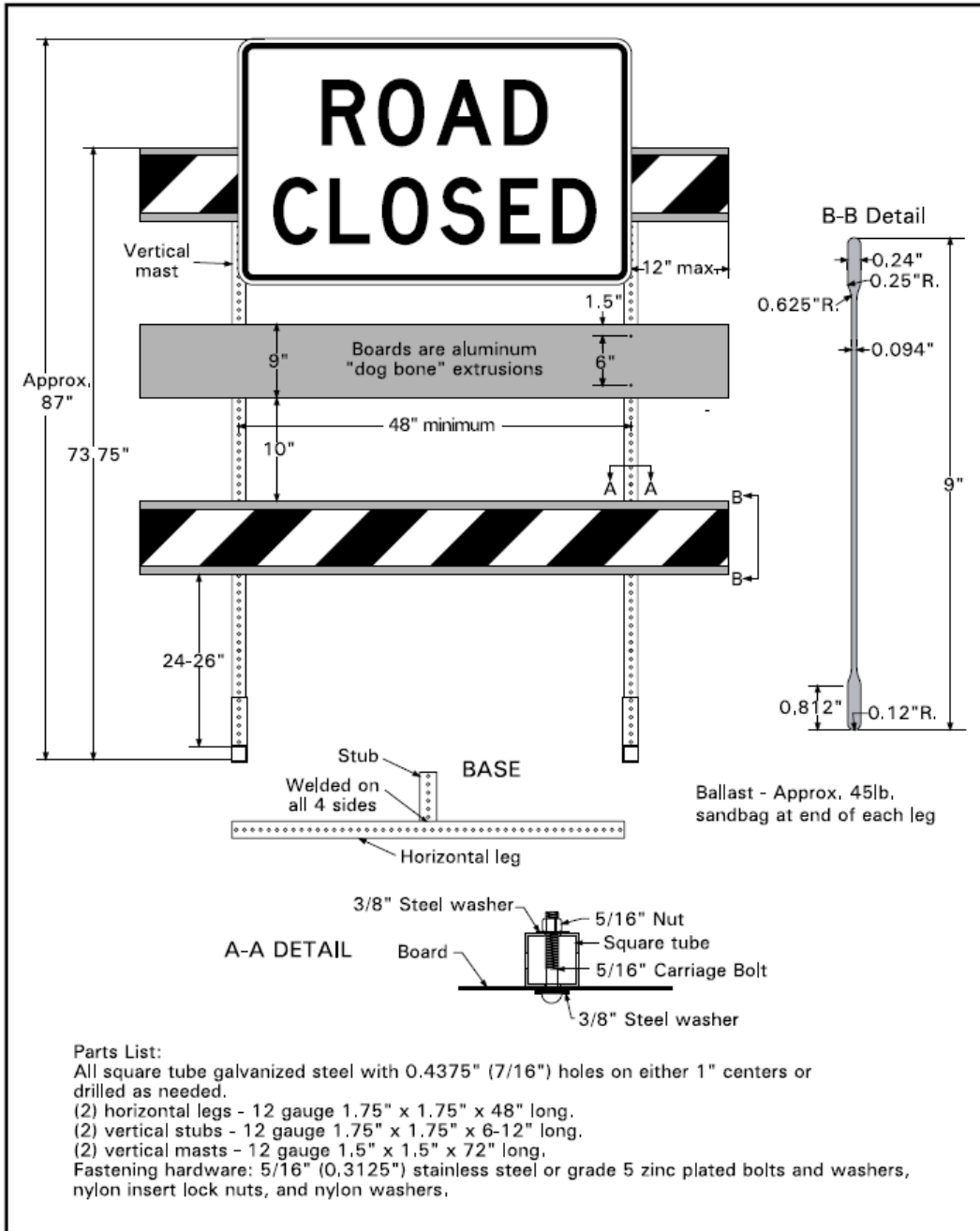
NOTES


1. All barriers may be zinc plated, galvanized or stainless steel. All steel angle and tubular steel shall be hot-rolled, high carbon steel, painted or galvanized.
2. Install one lightweight Type A Low-Intensity flashing warning light on the traffic side of the barricade. Install two Type A Low-Intensity flashing warning lights per barricade when the barricades are used to close a roadway. Attach the light to the barricade according to the light manufacturer's recommendations or use the details shown on this plan.
3. Stripes on barricade rails shall be alternating orange and white retroreflective stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass).
4. The Type 3 barricade design shown on this plan meets the crash test requirements of NCHRP 350. Alternative designs may be approved if they conform to the NCHRP 350 crash test criteria and the MUTCD.
5. When a sign is mounted on the barricade, it shall be securely bolted to at least two plywood panels. The top of the sign shall not be higher than the top panel of the barricade.
6. When sandbags are used in freezing weather, Urea fertilizer shall be mixed with the sand in a quantity to prevent the sand from freezing.



TYPE 3 BARRICADE
STANDARD PLAN K-80.20-00
SHEET 1 OF 2 SHEETS
APPROVED FOR PUBLICATION
Kevin J. Dayton 12-20-08
2008 STANDARD PLAN
Washington State Department of Transportation

- Minnesota Department of Transportation standard drawing (NCHRP 350 Approved Type III Barricade under WZ-55)



APPROVED 5/3/06	DATE OF REV.	TYPE III BARRICADE 1.75" SQUARE TUBE BASE 1.5" SQUARE TUBE MASTS	
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- Photos of Type III Barricade with sign



Proposed Work Plan:

Task 1: Engineering Review

This task will review current standards regarding signs mounted on Type III barricades used by the Roadside Safety Pooled Fund. This task will also develop a critical design(s) that will be crash tested in Task 2.

Task 2: MASH Crash Testing

This task will crash test one or two critical designs of Type III barricades which include mounted signs.

Deliverables:

Compile summary report to document research effort, including literature review, CAD details, crash testing, and recommendations for further research in the event of the system failing testing criteria.

Urgency and Expected Benefit:	Successful MASH evaluation of a non-proprietary Type III Barricade with Aluminum Panels and Mounted Signs will improve safety in work zones. This will allow for state DOTs to continue a consistent work zone environment for road users as there will be familiarity to the road user with existing or similar Type III Barricades deployed within work zones. This will also provide for better availability of crashworthy Type III Barricades that will be non-proprietary thus allowing for greater production by multiple approved suppliers.
Problem Funding and Research Period:	\$175,000 and 18 months.
Developer(s) of the Problem Statement:	Name: Brian Crossley / Steve Haapala / Hassan Raza / Ken Johnson / Filiberto Sotelo Email: bcrossley@pa.gov / HaapalS@wsdot.wa.gov / hraza@pa.gov / Ken.johnson@state.mn.us / Filiberto.Sotelo@illinois.gov Phone: 717.265.7562 / 360.705.7241 / 717.783.5110 / 651.234.7386 / 217.557.2563