U.S. Department of Transportation
Federal Highway Administration

September 24, 2024

1200 New Jersey Ave., SE
Washington, D.C. 20590

In Reply Refer To:
HSST-1/WZ-467

William Franklin
Atkore (Allied Tube and Conduit)
16100 S. Lathrop Avenue
Harvey, IL 60426

Dear Mr. Franklin:

We received your initial correspondence on September 8, 2022, requesting issuance of a Federal-aid reimbursement eligibility letter under the Federal-aid highway program for the roadside safety system, device, design, product, or hardware (collectively "device") described below. On June 14, 2024, we received a complete set of files needed to initiate our review. We write to inform you that the device Type III Barricade with PSST Supports is eligible for Federal-aid reimbursement. This letter is assigned Federal Highway Administration (FHWA) control number WZ-467.

ELIGIBILITY LETTERS

The FHWA issues Federal-aid reimbursement eligibility letters for new roadside safety devices that are crash tested in accordance with the industry standard of the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH).

FHWA, the Department of Transportation, and the United States (government) do not regulate roadside safety devices, crash test facilities, or the manufacturing industry. Issuance of eligibility letters is discretionary and provided only as a service to the states. FHWA may, at its discretion, decline to issue, revise, or rescind an eligibility letter. Eligibility letters are only issued by the FHWA headquarters Office of Safety.

Eligibility letters are issued only as notice to the states that a device is eligible for reimbursement under the Federal-aid highway program. They do not establish approval or certification for any other purpose. Issuance of an eligibility letter is not a prerequisite or requirement for state transportation agencies seeking to use Federal-aid funds for roadside safety devices. State agencies may use a device for which an eligibility letter has not been issued and seek Federal-aid reimbursement.

FEDERAL-AID REIMBURSEMENT

The request for issuance of this letter certified the device was crash tested in accordance with the industry standard of AASHTO's MASH. This eligibility letter is based on that certification and

the material offered in support of its issuance. The device described below is eligible for reimbursement under the Federal-aid highway program.

Name of system: Type III Barricade with PSST Supports
Type of system: Work Zone
Test Level: Test Level 3
Testing conducted by: Texas A&M Transportation Institute
Date of request: June 14, 2024

Information about the device, including material such as the eligibility request, crash test reports, drawings, or images are included in one or more attachment(s) to this letter.

Eligibility letter WZ-467 is inapplicable to devices, optional equipment, alternate materials, or other features that were not crash tested in accordance with AASHTO's MASH.

This letter is issued only for the subject device as crash tested under AASHTO's MASH. Later modification(s) of the device are not eligible for Federal-aid reimbursement under this letter. Notice of later modification(s) should be given to transportation agencies, facility owners, and operators (collectively "agencies").

Agencies should be provided appropriate information about the device's design, installation, maintenance, materials, and mechanical properties.

Issuance of this letter is discretionary, and it may be revised or rescinded at FHWA's discretion. This letter is not a determination of compliance with the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) or ownership of any intellectual property rights.

This eligibility letter is not a determination by the government that a crash involving the subject device will result in any particular outcome. It is limited to only the device's eligibility for Federal-aid reimbursement.

INTELLECTUAL PROPERTY

Issuance of this eligibility letter does not convey property rights of any sort nor any exclusive privilege. This letter is not authorization or consent by the government for the use, manufacture, or sale of any patented or proprietary system, device, design, product, or hardware for which the requester is not the patent owner. Eligibility letters are not an expression of any view, position, or determination by the government as to the validity, scope, or ownership of any intellectual property rights to a specific device. These letters do not grant, impute, suggest, or otherwise establish any ownership, distribution, or licensing rights to the requester. The government expresses no opinion about the intellectual property rights relating to any device for which this or any other eligibility letter is issued.

PUBLIC DISCLOSURE

To prevent any misunderstanding, and as discussed above, this Federal-aid eligibility letter is assigned FHWA control number WZ-467. It should only be reproduced in full with its attachment(s). This Federal-aid eligibility letter and the material offered by the requester supporting its issuance is public information. All eligibility letters and supporting material are subject to public disclosure under the Freedom of Information Act (FOIA). Eligibility letters are available to the public at https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/.

If you have any questions please contact Aimee Zhang at Aimee.Zhang@dot.gov.

Sincerely,

Amy S. Fox
Acting Director
Office of Safety Technologies
Office of Safety

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	06/13/2024	(•) New ( ) Resubmission
	Name:	William Franklin	
	Company:	Atkore (Allied Tube and Conduit)	
	Address:	16100 S. Lathrop Avenue, Harvey, Illinois 60426	
	Country:	USA	
	To:	Michael S. Griffith, Director FHWA, Office of Safety Technologies	

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

Device & Testing Criterion - Enter from right to left starting with Test Level

! - ! - !

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'WZ': Crash Worthy Work Zone Traffic Control Devices	(•) Physical Crash Testing ( ) Engineering Analysis	Type III Barricade with PSST Supports	AASHTO MASH	TL3

By submitting this request for review and evaluation by the Federal Highway Administration, I certify that the product(s) was (were) tested in conformity with the AASHTO Manual for Assessing Safety Hardware and that the evaluation results meet the appropriate evaluation criteria in the MASH.

Individual or Organization responsible for the product:

Contact Name:	William Franklin	Same as Submitter ☒
Company Name:	Atkore (Allied Tube and Conduit)	Same as Submitter ☒
Address:	16100 S. Lathrop Avenue, Harvey, Illinois 60426	Same as Submitter ☒
Country:	USA	Same as Submitter ☒

Enter below all disclosures of financial interests as required by the FHWA `Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.

Texas A&M Transportation Institute (TTI) was contracted by Allied Tube & Conduit Corporation to perform full-scale crash testing of the Type III Barricade with PSST Supports. There are no shared financial interests in the Type III Barricade with PSST Supports, or between Allied Tube & Conduit Corporation and TTI, other than the costs involved in the actual crash tests and reports for this submission to FHWA.

690900-ATC 28-29

PRODUCT DESCRIPTION

(●) New Hardware or Significant Modification ( ) Modification to Existing Hardware

The Type III Barricade with PSST Supports was comprised of two 2-inch square, 14 gauge x 60-inch long Telespar feet or skids that were spaced at 36 inches center to center. A 6-inch-long section of 2-inch square, 14-gauge Telespar socket was welded to the skids at their midpoint. A 1.75-inch square, 14-gauge x 58-inch tall Telespar support was inserted into the vertical sockets and secured in place by a through bolt. Three 48-inch long nominal 1x8-inch wood boards were bolted to the supports at heights of 20, 40, and 60 inches from the roadway to the top of each respective board. The weight of each barricade was 49.5 pounds (without sandbags). Each barricade had one 40 pound sandbag placed on each end of the skids for a total of four sandbags per barricade.

The test site installation consisted of two identical barricades, one aligned 90° to the impact path and 17 inches towards the driver's side of the vehicle, and the second positioned 30 feet downstream and aligned 0° and centered on the impact path.

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The MASH test matrix for work zone traffic control devices consists of three tests: 3-70, 3-71, and 3-72. Test 3-70 is considered optional for free-standing devices weighing less than 220 lb because "velocity changes during low-speed impacts will be within acceptable limits…" Tests 3-71 and 3-72 evaluate the behavior of the device during high-speed impacts with the 1100C passenger car and 2270P pickup, respectively. MASH Section 2.2.4.2 states that "lightweight free-standing features cannot cause sufficient velocity change to result in failure of the test under occupant risk criteria. Therefore, Tests 71 and 72 can be conducted without the instrumentation necessary for determining occupant risk whenever the test article has a total weight of 220 lb (100 kg) or less." Consequently, the vehicles used for the tests on the Type III Barricade with PSST Supports reported herein were un-instrumented.

CRASH TESTING

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that all of the critical and relevant crash tests for this device listed above were conducted to meet the MASH test criteria. The Engineer has determined that no other crash tests are necessary to determine the device meets the MASH criteria.

Engineer Name:	Roger Bligh	
Engineer Signature:	Roger Bligh — Digitally signed by Roger Bligh Date: 2024.06.14 09:19:50 -05'00'	
Address:	TTI, 3135 TAMU, 77843-3135	Same as Submitter ☐
Country:	U.S.A.	Same as Submitter ☐

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
3-70 (1100C)	Optional Test per MASH; <220 lbs	Non-Critical, not conducted

Required Test Number	Narrative Description	Evaluation Results
3-71 (1100C)	Test 3-71 involves an 1100C vehicle weighing 2420 lb ±55 lb impacting the traffic control device at a target impact speed of 62 mi/h ±2.5 mi/h. Per MASH recommendations, the device was tested at critical impact angles (CIAs) of 90° ±1.5° and 0° ±1.5°. ---------- The results of Test 3-71 (ATC-28) conducted on April 14, 2022, are found in TTI Test Report 690900-ATC-28-29, Chapter 5. The test vehicle was traveling at a speed of 63.3 mi/h as it made contact with the first barricade 17 inches off of the centerline of the vehicle toward the driver's side at an impact angle of 90.0°, and with the second barricade at a speed of 60.1 mi/h on the centerline of the vehicle at an impact angle of 0.0° The Type III Barricade with PSST Supports yielded to the 1100C vehicle as designed. Brakes on the vehicle were applied after the vehicle exited the test site, and the vehicle subsequently came to rest 375 ft downstream of the point of impact and 9 ft to the right of the initial vehicle path. The 1100C vehicle remained upright during and after the collision event. No detached elements, fragments, or other debris were present to penetrate or show potential for penetrating the occupant compartment, obstruct the driver's vision, or present hazard to others in the area. Maximum exterior deformation to the vehicle was 4 inches in the top driver side of the hood, 16 inches off of the centerline . No occupant compartment deformation was observed. No fuel tank damage was observed. ---------- The Type III Barricade with PSST Supports performed acceptably for MASH Test 3-71 at impact angles of 90° and 0° .	PASS

3-72 (2270P)	Test 3-72 involves an 2270P vehicle weighing 5000 lb ±110 lb impacting the traffic control device at a target impact speed of 62 mi/h ±2.5 mi/h. Per MASH recommendations, the device was tested at critical impact angles (CIAs) of 90° ±1.5° and 0° ±1.5°. ---------- The results of Test 3-72 (ATC-29) conducted on April 14, 2022, are found in TTI Test Report 690900-ATC-28-29, Chapter 6. The test vehicle was traveling at a speed of 61.4 mi/h as it made contact with the first barricade 17 inches off of the centerline of the vehicle toward the driver's side at an impact angle of 90.0°, and with the second barricade at a speed of 60.2 mi/h on the centerline of the vehicle at an impact angle of 0.0° The Type III Barricade with PSST Supports yielded to the 2270P vehicle as designed. Brakes on the vehicle were applied after the vehicle exited the test site, and the vehicle subsequently came to rest 385 ft downstream of the point of impact and 14 ft to the left of the initial vehicle path. The 2270P vehicle remained upright during and after the collision event. No detached elements, fragments, or other debris were present to penetrate or show potential for penetrating the occupant compartment, obstruct the driver's vision, or present hazard to others in the area. Maximum exterior deformation to the vehicle was 5 inches in the front driver side of the hood, 18 inches off of the centerline . No occupant compartment deformation was observed. No fuel tank damage was observed. ---------- The Type III Barricade with PSST Supports performed acceptably for MASH Test 3-72 at impact angles of 90° and 0° .	PASS

Full Scale Crash Testing was done in compliance with MASH by the following accredited crash test laboratory (cite the laboratory's accreditation status as noted in the crash test reports.):

Laboratory Name:	Texas AM Transportation Institute	
Laboratory Signature:	Bill Griffith Digitally signed by Bill Griffith Date: 2024.06.14 08:50:23 -05'00'	
Address:	1254 Avenue A, Bldg 7091, Bryan, Texas 77807 USA	Same as Submitter ☐
Country:	USA	Same as Submitter ☐
Accreditation Certificate Number and Dates of current Accreditation period :	ISO 17025-2017 Laboratory A2LA Certificate Number: 2821.01 Valid To: April 30, 2023	

Submitter Signature*: Franklin, William Digitally signed by Franklin, William Date: 2024.06.14 10:03:06 -05'00'

Submit Form

ATTACHMENTS

Attach to this form:

1) Additional disclosures of related financial interest as indicated above.
2) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
3) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric line drawing is usually acceptable to illustrate the product, with detailed specifications, intended use, and contact information provided on the reverse. Additional drawings (not in TF-13 format) showing details that are relevant to understanding the dimensions and performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

Eligibility Letter		
Number	Date	Key Words

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0.100 s

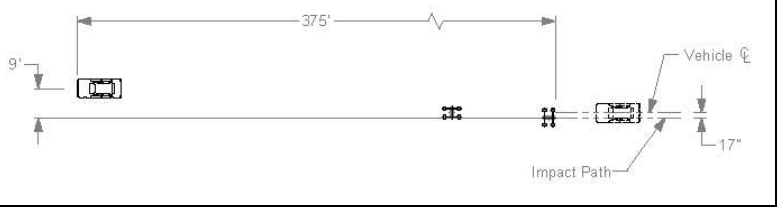
0.200 s

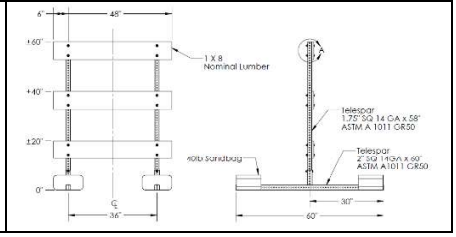
0.300 s

Test Agency	Texas A&M Transportation Institute (TTI)
Test Standard/Test No.	*MASH* 2016, Test 3-71
TTI Test No.	690900-ATC-28
Test Date	2022-04-14
TEST ARTICLE	
Type	Work-Zone Traffic Control Device
Name	Type III Barricade with PSST Supports
Height	60 inches
Key Materials	14-gauge telespar perforated square tubing frame 1x8x48-inch wood boards
Soil Type and Condition	Concrete pavement, dry
TEST VEHICLE	
Type/Designation	1100C
Year, Make and Model	2016 Nissan Versa
Curb Weight (lbs)	2383
Inertial Weight (lbs)	2430
Dummy (lbs)	165
Gross Static (lbs)	2595
IMPACT CONDITIONS	
Impact Speed (mi/h)	63.3, 60.1
Impact Angle (deg)	90, 0
Impact Location	Centerline of 90 degree barricade aligned 17 inches off centerline of vehicle toward drivers side, centerline of 0 degree barricade aligned with centerline of vehicle.
Impact Severity (kip-ft)	325.5, 293.4
EXIT CONDITIONS	
Exit Speed (mi/h)	60.4, 55.3
Trajectory/Heading Angle (deg)	N/A
Exit Box Criteria	N/A
Stopping Distance	375 ft downstream of impact point 9 ft to the right side
TEST ARTICLE DEFLECTIONS	
Dynamic (inches)	N/A
Permanent (inches)	N/A
Working Width / Height (inches)	N/A
VEHICLE DAMAGE	
VDS	12FD2
CDC	12FDEN1
Max. Ext. Deformation	4 inches
Max Occupant Compartment Deformation	No Occupant Compartment Deformation

OCCUPANT RISK VALUES

Long.OIV (ft/s)	N/A	Long. Ridedown (g)	N/A	Max 50ms Long. (g)	N/A	Max Roll (deg)	N/A
Lat. OIV (ft/s)	N/A	Lat. Ridedown (g)	N/A	Max 50ms Lat. (g)	N/A	Max Pitch (deg)	N/A
THIV (m/s)	N/A	ASI	N/A	Max 50ms Vert (g)	N/A	Max Yaw (deg)	N/A





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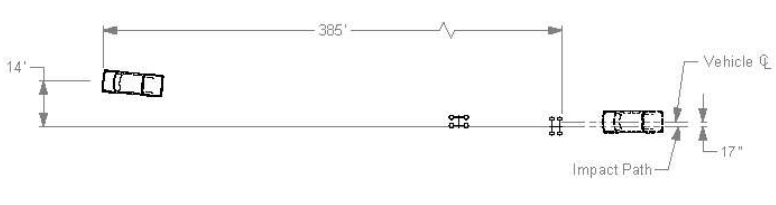
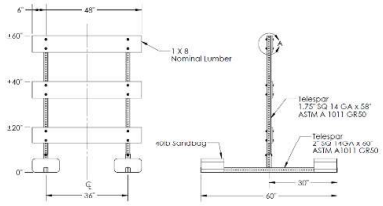
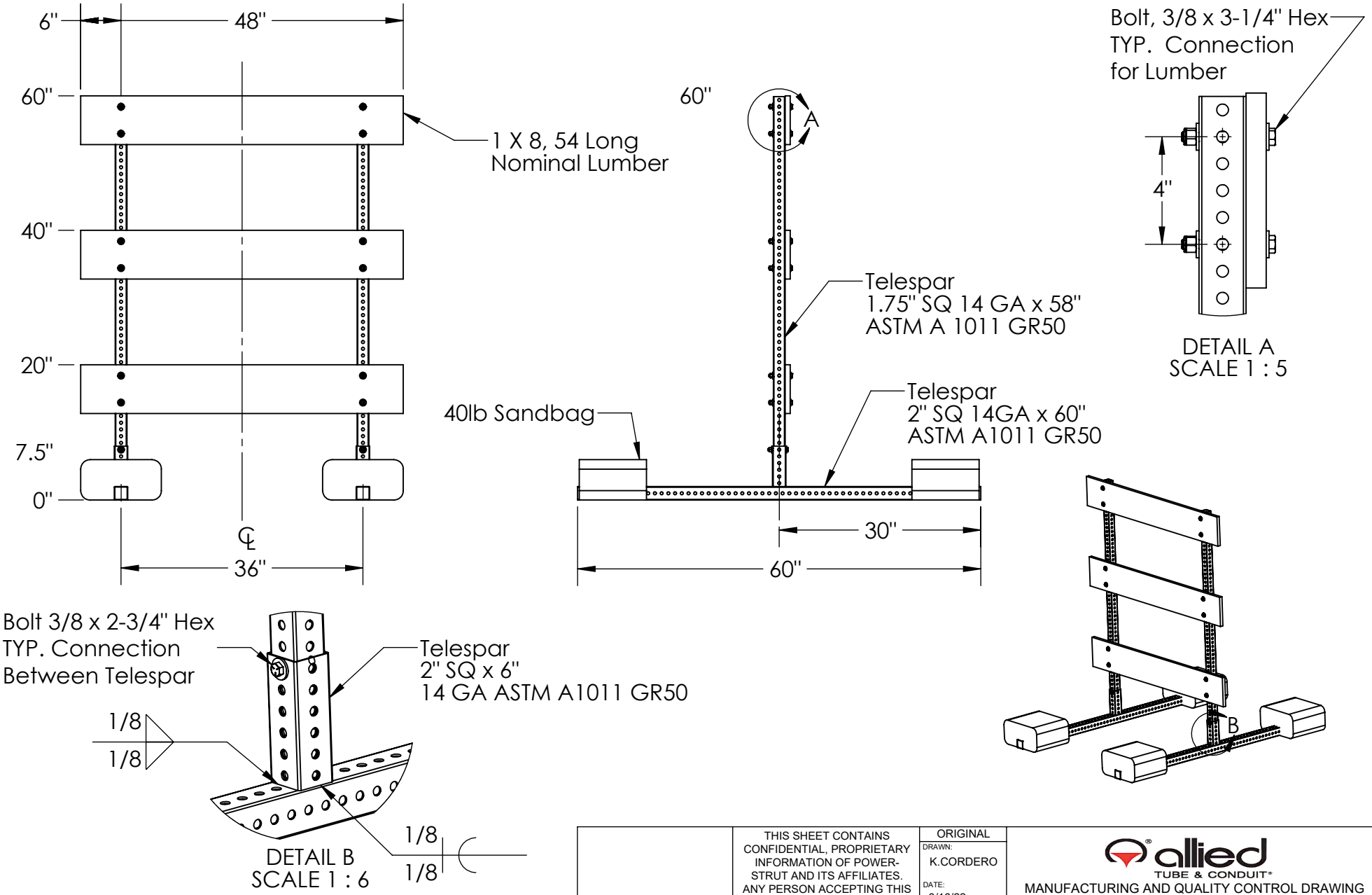
Test Agency	Texas A&M Transportation Institute (TTI)
Test Standard/Test No.	*MASH* 2016, Test 3-72
TTI Project No.	690900-ATC-29
Test Date	2022-04-14
TEST ARTICLE	
Type	Work-Zone Traffic Control Device
Name	Type III Barricade
Length	60 inches
Key Materials	14-gauge telespar perforated square tubing frame 1x8x48-inch wood boards
Soil Type and Condition	Concrete pavement, dry
TEST VEHICLE	
Type/Designation	2270P
Year, Make and Model	2017 RAM 1500
Curb Weight (lbs)	5077
Inertial Weight (lbs)	5055
Dummy (lbs)	N/A
Gross Static (lbs)	5055
IMPACT CONDITIONS	
Impact Speed (mi/h)	61.4, 60.2
Impact Angle (deg)	90, 0
Impact Location	Centerline of 90 degree barricade aligned 17 inches off centerline of vehicle toward drivers side, centerline of 0 degree barricade aligned with centerline of vehicle.
Impact Severity (kip-ft)	637, 612.4
EXIT CONDITIONS	
Exit Speed (mi/h)	61.4, 59.5
Trajectory/Heading Angle (deg)	N/A
Exit Box Criteria	N/A
Stopping Distance	385 ft downstream of impact point 14 ft to the left side
TEST ARTICLE DEFLECTIONS	
Dynamic (inches)	N/A
Permanent (inches)	N/A
Working Width / Height (inches)	N/A
VEHICLE DAMAGE	
VDS	12FD1
CDC	12FDEN1
Max. Ext. Deformation	5 inches
Max Occupant Compartment Deformation	No Occupant Compartment Deformation

OCCUPANT RISK VALUES

Long.OIV (ft/s)	N/A	Long. Ridedown (g)	N/A	Max 50ms Long. (g)	N/A	Max Roll (deg)	N/A
Lat. OIV (ft/s)	N/A	Lat. Ridedown (g)	N/A	Max 50ms Lat. (g)	N/A	Max Pitch (deg)	N/A
THIV (m/s)	N/A	ASI	N/A	Max 50ms Vert (g)	N/A	Max Yaw (deg)	N/A







Hardware BOM

QTY 12, 3/8" Hex Bolts Grade 5, 3-1/4" Long
QTY 2, 3/8" Hex Bolts Grade 5, 2-3/4" Long
QTY 14, 3/8" USS Washers, ASME B18.21.1
QTY 14, 3/8" Nylon Insert Lock Nut, Grade 5

MATERIAL: ASTM A1011 GR 50

FINISH: ASTM A-653

ORIGINAL

DRAWN: K.CORDERO

DATE: 3/16/22

APPROVED: XXXX

DATE: XXXX

UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES [MM]

DIMENSIONS IN PARENTHESES ( ) ARE REFERENCE ONLY

allied TUBE & CONDUIT®

MANUFACTURING AND QUALITY CONTROL DRAWING

DESCRIPTION: TYPE III BARRICADES

SIZE:	PART NUMBER:	REV:
A	XXXXXX	B

SCALE: 1:32 | WEIGHT: X lbs | SHEET 1 OF 2

ASSEMBLY NOTES

1. Drill 7/16" holes in boards. All holes should be 6" on center from the end of each board. In addition, all holes should be 2" from top and bottom of board center line so that they are spaced 4" on center vertically. **See Detail A.**
2. Place each 1.75" SQ upright into each 2" SQ foot.
3. Insert a 3/8" x 2-3/4" hex bolt into a 3/8" washer, and then insert into top hole on front face of a foot.
4. Place another 3/8" washer onto the end of hex bolt.
5. Thread hex lock nut onto bolt, and tighten.
6. Measure 20"/40"/60" from bottom of each foot, and mark with a grease pencil or similar. The top of each board should approximately line up with these marks.
7. Insert 3/8 x 3-1/4" Hex bolt into 3/8" washer. Insert bolt shaft into one of the holes in a board.
8. Insert bolt shaft into hole of 1.75" SQ upright tube such that the board and the foot tube are at right angles. Verify that board will line up with line marked in **Step 6** when level.
9. Place washer onto bolt shaft on the end of bolt.
10. Thread hex lock nut onto bolt, and tighten.
11. Repeat Steps 7 through 9 for the remaining three holes in the board. Verify the top of the board is flush with the marks made in **Step 6**.
12. After the first board is attached, stand the barricade up on its feet.
13. Attach the second board using **Steps 7 through 11** for the second board (flush with the 40" mark) and third board (flush with the top of the 1.75" SQ upright tube).
14. Use wrench and socket wrench to tighten all the hex bolts.
15. Place Barricade in desired position and place sandbags over each end of each foot.

MATERIAL: ASTM A1011 GR 50 FINISH: ASTM A-653		ORIGINAL DRAWN: K.CORDERO DATE: 3/16/22 APPROVED: XXXX DATE: XXXX UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES [MM] DIMENSIONS IN PARENTHESES ( ) ARE REFERENCE ONLY	allied TUBE & CONDUIT® MANUFACTURING AND QUALITY CONTROL DRAWING DESCRIPTION: TYPE III BARRICADES SIZE: A | PART NUMBER: XXXXXX | REV: B SCALE: 1:24 | WEIGHT: X lbs | SHEET 2 OF 2