



U.S. Department  
of Transportation

**Federal Highway  
Administration**

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

August 18, 2017

In Reply Refer To:  
HSST-1/B-216A

Gary D. Miracle  
Cumberland Barrier, Inc.  
7685 Old Woods Court  
Springboro Ohio 45066

Dear Mr. Miracle:

This letter is in response to your March 30, 2016 request for the Federal Highway Administration (FHWA) to review a roadside safety device, hardware, or system for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number B-216A and is valid until a subsequent letter is issued by FHWA that expressly references this device.

### **Decision**

The following devices are eligible, with details provided in the form which is attached as an integral part of this letter:

- Emergency Median Access Barrier System

### **Scope of this Letter**

To be found eligible for Federal-aid funding, new roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH).

However, the FHWA, the Department of Transportation, and the United States Government do not regulate the manufacture of roadside safety devices. Eligibility for reimbursement under the Federal-aid highway program does not establish approval, certification or endorsement of the device for any particular purpose or use.

This letter is not a determination by the FHWA, the Department of Transportation, or the United States Government that a vehicle crash involving the device will result in any particular outcome, nor is it a guarantee of the in-service performance of this device. Proper manufacturing, installation, and maintenance are required in order for this device to function as tested.

This finding of eligibility is limited to the crashworthiness of the system and does not cover other structural features, nor conformity with the Manual on Uniform Traffic Control Devices.

### **Eligibility for Reimbursement**

FHWA previously issued an eligibility letter for the roadside safety system described in your request. Your request now identifies a modification to that roadside safety system.

The original roadside safety device information is provided here:

Name of system: Cumberland Emergency Median Access Barrier  
 Type of system: Moveable Steel Median Barrier Unit  
 Date of original request: December 21, 2010  
 Original FHWA eligibility letter: March 10, 2011  
 FHWA Control number: B-216

The modification(s) consists of the following changes:

1. Replace cover plate retention pin with revised cover plate retainer, "dead bolt."
2. Replace rigid cover plate guides with hinged cover plate guides.
3. Eliminate external control box by relocating external control box contents to bottom horizontal gate member.
4. Eliminate the 6"x 6"x 0.25" guide tubes, W6x15 posts extending below the gate, and associated pulleys.
5. Eliminate the 7"x 7"x 0.25" guide tube housings, 7"x7"x 0.25" lift post housings, W5x19 stiffeners, and the lower sections of the W12x40 end posts.
6. Relocate the counterweight housing.
7. Revise the vault bottom by adding a platform of W8x10 beams to aid in transporting and installation.
8. Modify the original sprocket covers mounted on top of the concrete median barrier, to accommodate the "two part line" sprocket arrangement in Item 9) and the relocated counter weight housing in item 6).
9. Shorten the counterweight travel distance by replacing the "one on one" sprocket arrangement with a "two part line" arrangement between the gate and counterweight.

FHWA concurs with the recommendation of the accredited crash testing laboratory as stated within the attached form.

### **Full Description of the Eligible Device**

The device and supporting documentation, including reports of the crash tests or other testing done, videos of any crash testing, and/or drawings of the device, are described in the attached form.

### **Notice**

This eligibility letter is issued for the subject device as tested. Modifications made to the device are not covered by this letter and will need to be tested in accordance with all recommended tests in AASHTO's MASH as part of a new and separate submittal.

You are expected to supply potential users with sufficient information on design, installation and maintenance requirements to ensure proper performance.

You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO's MASH.

Issuance of this letter does not convey property rights of any sort or any exclusive privilege. This letter is based on the premise that information and reports submitted by you are accurate and correct. We reserve the right to modify or revoke this letter if: (1) there are any inaccuracies in the information submitted in support of your request for this letter, (2) the qualification testing was flawed, (3) in-service performance or other information reveals safety problems, (4) the system is significantly different from the version that was crash tested, or (5) any other information indicates that the letter was issued in error or otherwise does not reflect full and complete information about the crashworthiness of the system.

### **Standard Provisions**

- To prevent misunderstanding by others, this letter of eligibility designated as FHWA control numbers B-216A shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed upon request.
- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder.
- If the subject device is a patented product it may be considered to be proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects: (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

Sincerely,



Robert Ritter  
Acting Director, Office of Safety  
Technologies  
Office of Safety

Enclosures

## Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

<b>Submitter</b>	Date of Request:	March 30, 2016	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Gary D Miracle	
	Company:	Cumberland Barrier Inc	
	Address:	7685 Old Woods Ct, Springboro, OH 45066	
	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.

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'B': Barriers (Roadside, Median, Bridge Railings)	<input type="radio"/> Physical Crash Testing <input checked="" type="radio"/> Engineering Analysis	Emergency Median Access Barrier System (EMA)	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.

Identification of the Individual or organization responsible for the product:

Contact Name:	Gary D Miracle	Same as Submitter <input checked="" type="checkbox"/>
Company Name:	Cumberland Barrier Inc	Same as Submitter <input checked="" type="checkbox"/>
Address:	7685 Old Woods Ct	Same as Submitter <input checked="" type="checkbox"/>
Country:	USA	Same as Submitter <input checked="" type="checkbox"/>

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

Transportation Research Center Inc (TRC), their employees, any other testing facility, including their employees, have no financial interest in the Emergency Median Access System (EMA) or its manufacturer, Cumberland Barrier Inc.

## PRODUCT DESCRIPTION

<input type="radio"/> New Hardware or Significant Modification	<input checked="" type="radio"/> Modification to Existing Hardware	Non-Significant
<p>On March 10, 2011, Cumberland Barrier, Inc received a letter of acceptance from FHWA for its Emergency Median Access Barrier System HSST/B-216. In an attempt to provide a unit easier to install, maintain and operate, Cumberland is considering certain modifications to the original crash tested unit. At the request of TRC, those modifications have been reviewed by the Ohio State University Center for Automotive Research and determined to be "non-significant". See attachments for greater detail. Those modifications are:</p> <ol style="list-style-type: none"> <li>1) Replace cover plate retention pin with revised cover plate retainer, "dead bolt".</li> <li>2) Replace rigid cover plate guides with hinged cover plate guides.</li> <li>3) Eliminate external control box by relocating external control box contents including winch, batteries and solar charge controller, to bottom horizontal gate member W16x26.</li> <li>4) Eliminate the 6"x6"x0.25" guide tubes, W6x15 lift posts extending below the gate and associated pulleys. The lift posts are eliminated by redesigning the drive system to include drive shafts, bearings sprockets and roller chain attached to the bottom horizontal gate member W16x26 and gate end posts W12x40. The guide tubes are eliminated by utilizing ultra high molecular weight (UHMW) strips located on the gate, or optionally, replace 6x6x 0.25 gate end tubes with 10x6x 0.25 inch end tubes and install UHMW strips on the flanges of the W12x40 end posts.</li> <li>5) Since the lift posts and guides posts have now been eliminated (from 4 above), the 7"x7"x0.25" guide tube housings, 7"x7"x0.25" lift post housings, W5x19 stiffeners, and the lower sections of the W12x40 end posts are no longer needed and may be eliminated.</li> <li>6) Relocate the counter weight housing by detaching it from the W12x40 end posts and make it a separate fully concrete encased housing. This will contribute to requirements for a shallower installation and allow a non-level installation.</li> <li>7) Revise the vault bottom by adding a platform of W8x10 beams to aid in transporting and installation.</li> <li>8) Modify the original sprocket covers, mounted on top of the concrete median barrier, to accommodate the "two part line" sprocket arrangement in item 9) and the relocated counter weight housing in item 6).</li> <li>9) To satisfy the final requirement for decreasing installation depth, the counterweight travel distance must be shortened. The travel distance can be cut in half by replacing the "one to one" sprocket arrangement with a "two-part line" arrangement between the gate and counterweight.</li> </ol>		

## CRASH TESTING

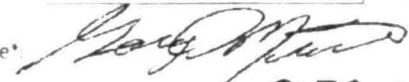
A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
101015	On Dec 6, 2010, TRC issued a report describing the details and results of a full scale crash test performed on the Cumberland Barrier, Inc Emergency Median Access (EMA). The crash test performed was MASH test designation 3-21 involving a 2004 Dodge Ram 1500 at a normal speed of 100 km/h and nominal angle of 25 degrees. On March 10, 2011, Cumberland Barrier, Inc received a letter of acceptance from FHWA for its Emergency Median Access Barrier System HSST/B-216.	PASS

Full Scale Crash Testing was done in compliance with AASHTO MASH by the following accredited crash test Laboratory. By signature below, the Laboratory agrees in support of this submission that all critical and relevant crash tests for the device listed above were conducted. (cite the laboratory's accreditation status as noted in the crash test reports):

Testing Laboratory's signature concurs that these modifications are considered Non-Significant.		
Laboratory Name:	Transportation Research Center, Inc	
Laboratory Signature:	<i>Jeffrey W. Lombay, P.E.</i> 3/31/16	
Address:	10820 State Route 347, East Liberty, OH 43319	Same as Submitter <input type="checkbox"/>
Country:	USA	Same as Submitter <input checked="" type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period:	L2187 Jan 26, 2018	

Submitter Signature\*



3-30-2016

Submit Form

## ATTACHMENTS

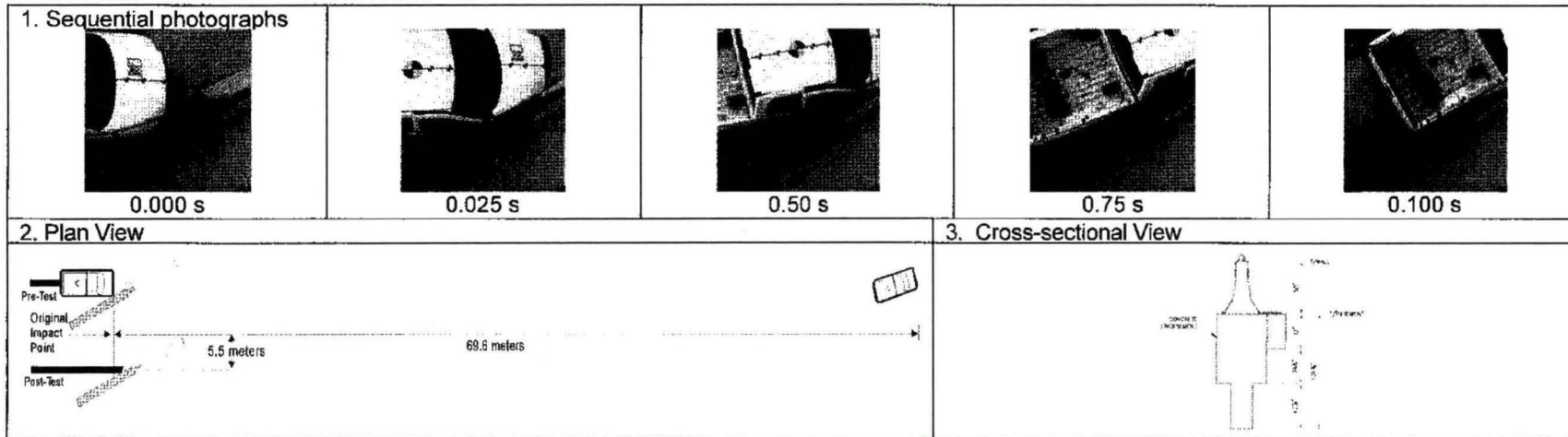
Attach to this form:

- 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		AASHTO TF13
Number	Date	Designator

## SUMMARY ORIGINAL CRASH TEST REPORT



4. General Information:

- Test Agency: Transportation Research Center Inc.
  - Test Number: 101015
  - Date: October 15, 2010
5. Test Article:
- Type: Emergency Median Access
  - Installation Length: Longitudinal Barrier Gate
  - Key Elements: 18 feet
  - Key Elements: Steel Barrier Gate, concrete foundation

6. Soil Conditions:

- Type of Soil: Not applicable
- Soil Strength: Not applicable

7. Test Vehicle:

- Type/Designation: Production Model 2270P
- Make and Model: 2004 Dodge Ram 1500
- Test Inertial: 2294.2 kg
- Gross Static: 2294.2 kg

8. Impact Conditions:

- Speed: 100.1 km/h
- Angle: 25 degrees
- Location/Orientation: 1.3 m upstream from the inside edge of the gate's steel end post

9. Exit Conditions:

- Speed: 100.1 km/h (estimated)
  - Angle: 5 degrees (estimated)
  - Exit Box Criterion: Met
10. Post-Impact Trajectory:
- Vehicle Stability: Satisfactory
  - Stopping Distance: 69.6 m downstream; 5.5 m laterally left

11. Occupant Risk:

- Longitudinal OIV: 6.43 g
- Lateral OIV: 10.64 g
- Longitudinal RA: 4.76 m/s
- Lateral RA: 9.28 m/s

12. Test Article Damage:

- Test Article Deflections: Slight
- Permanent Set: 0.0 mm
- Dynamic: 0.0 mm
- Working Width: 762 mm

14. Vehicle Damage:

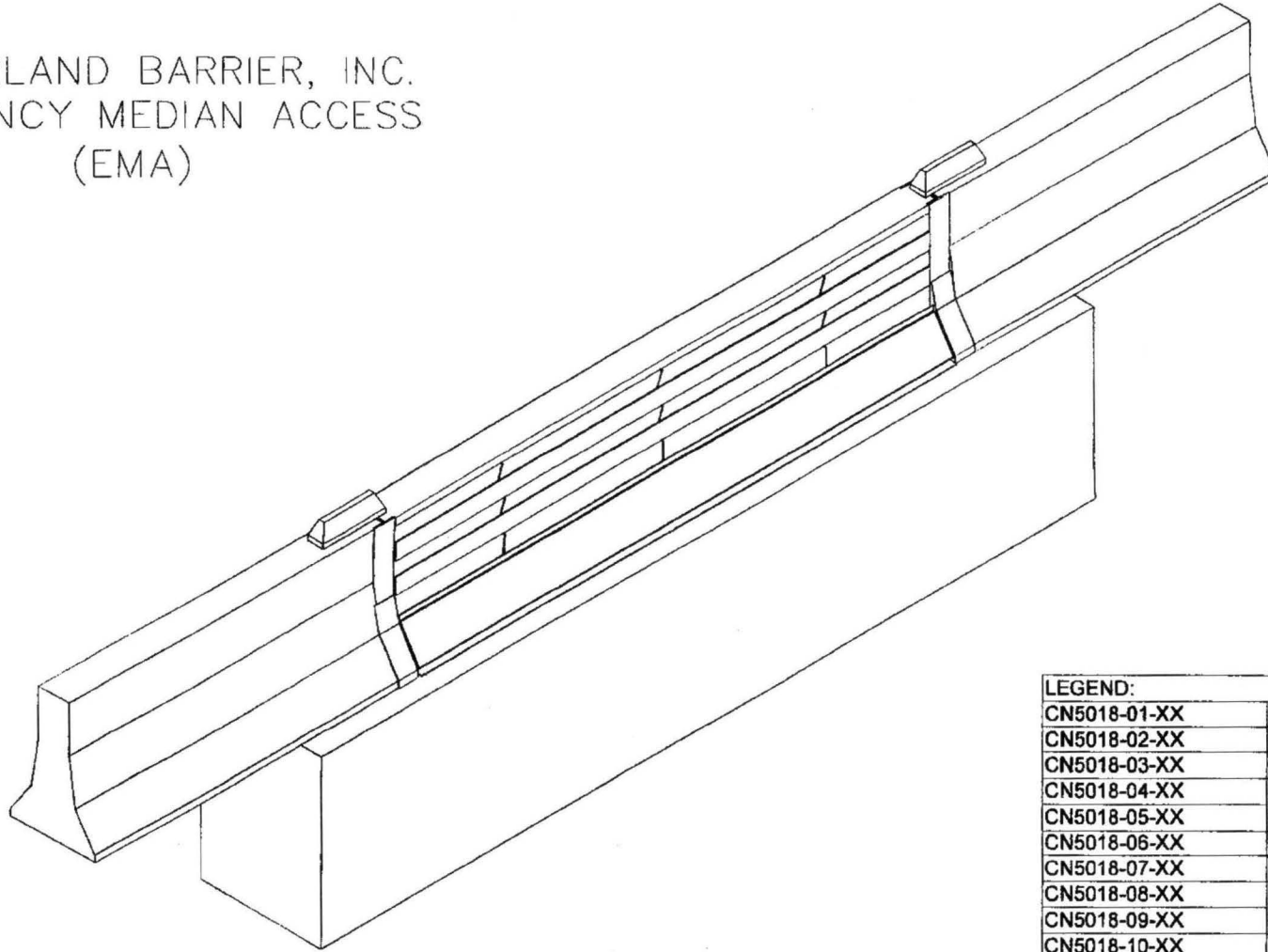
- Vehicle Damage: Moderate
- VDS: N/A
- CDC: 01FZEW2
- Maximum Deformation: 329 mm

Figure 35. Summary of results for test 101015



ISOMETRIC LINE DRAWINGS  
AND  
TF-13 DRAWINGS

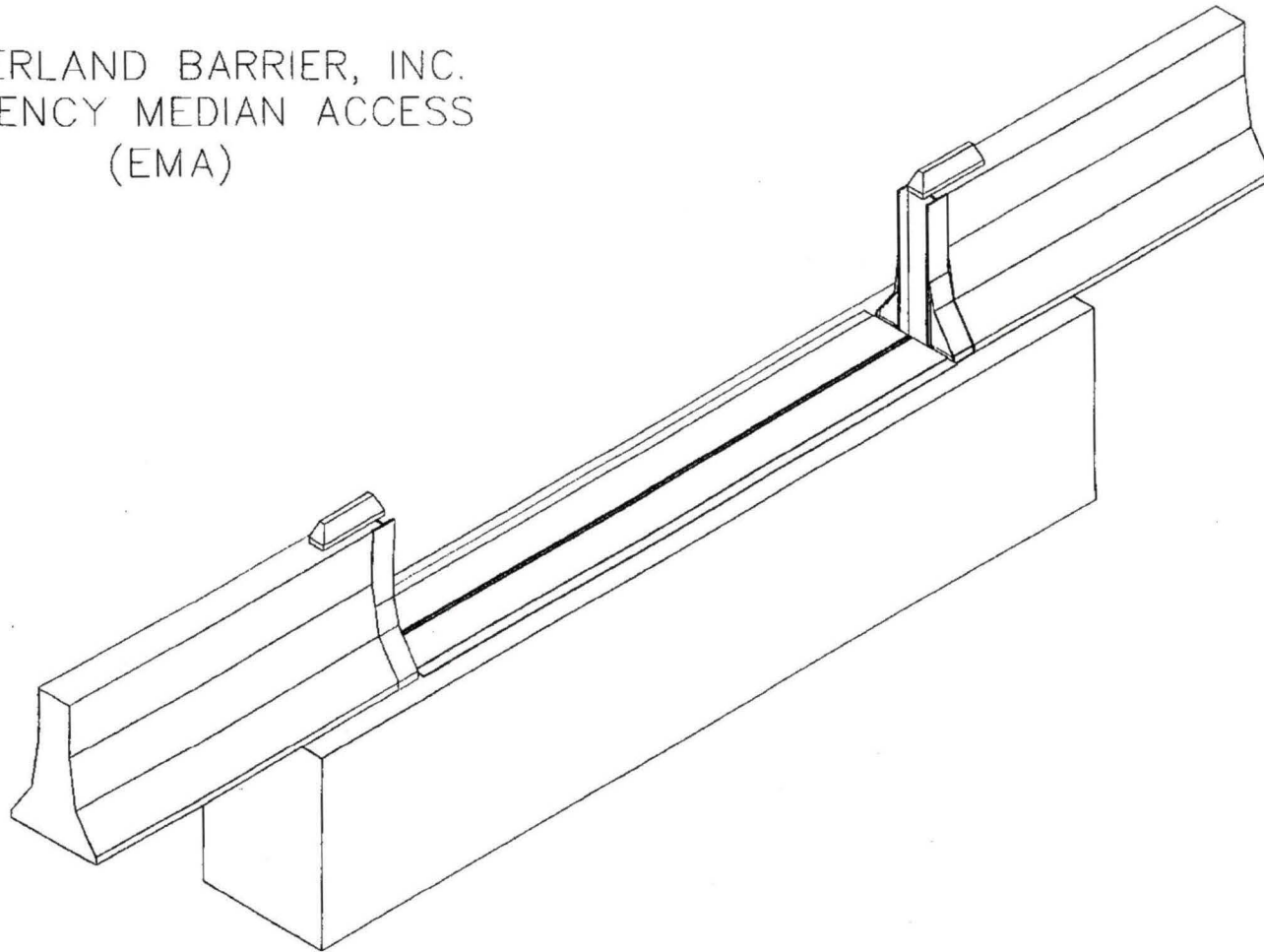
CUMBERLAND BARRIER, INC.  
 EMERGENCY MEDIAN ACCESS  
 (EMA)



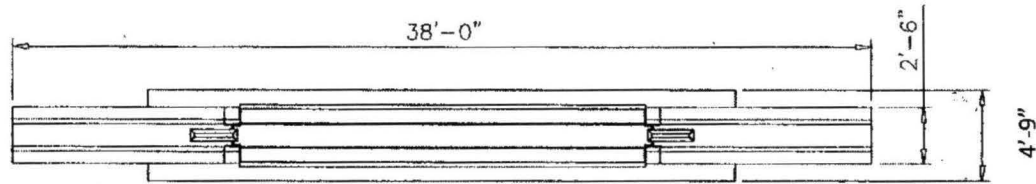
LEGEND:	
CN5018-01-XX	GENERAL ARRANGEMENT
CN5018-02-XX	VAULT ASSEMBLY
CN5018-03-XX	HORIZONTAL MEMBERS
CN5018-04-XX	COVER PLATE & HINGES
CN5018-05-XX	CONTROL BOX (OMIT)
CN5018-06-XX	TRANSITION PLATES
CN5018-07-XX	COUNTERWEIGHT SYSTEM
CN5018-08-XX	DRIVE SYSTEM
CN5018-09-XX	CONCRETE / REBAR
CN5018-10-XX	ELECTRICAL / CONTROLS

REVISION	DATE	
		CUMBERLAND BARRIER, INC.
		EMERGENCY MEDIAN ACCESS
00		DEPLOYED BARRIER
DATE:	7/6/12	
CHK:		
SCALE:	N.T.S.	CN5018-01-01

CUMBERLAND BARRIER, INC.  
EMERGENCY MEDIAN ACCESS  
(EMA)

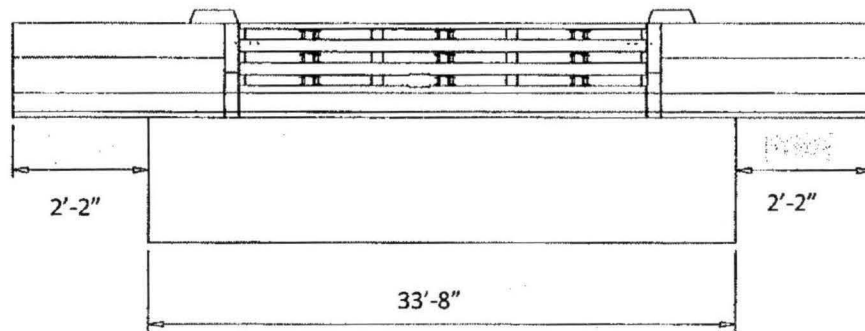


REVISION	DATE	CUMBERLAND BARRIER, INC.
		EMERGENCY MEDIAN ACCESS
DWG:	GO	OPEN BARRIER
DATE:	7/6/12	
CHKD:		CN5018-01-02
SCALE:	N.T.S.	



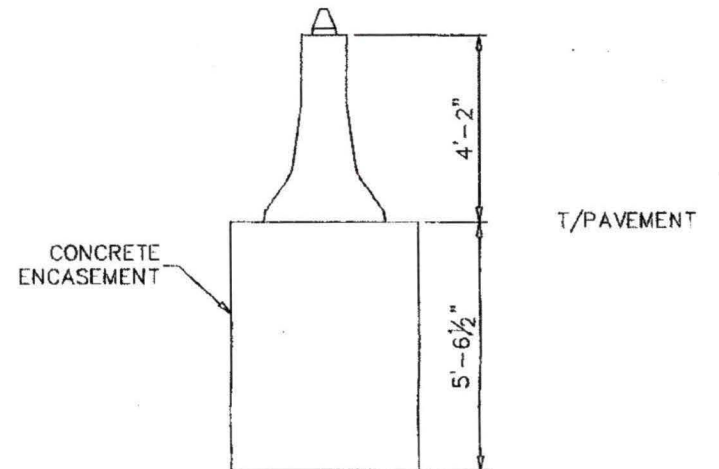
PLAN

SCALE: 3/16" = 1'-0"



ELEVATION

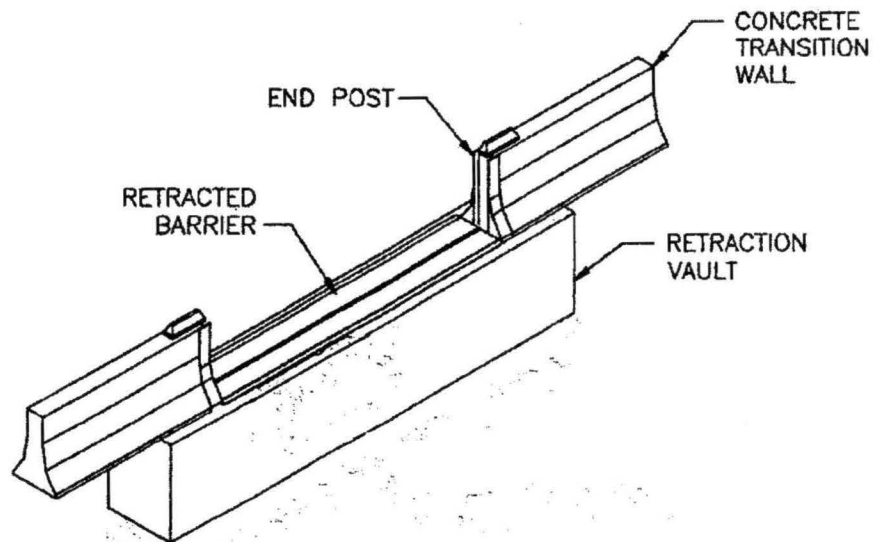
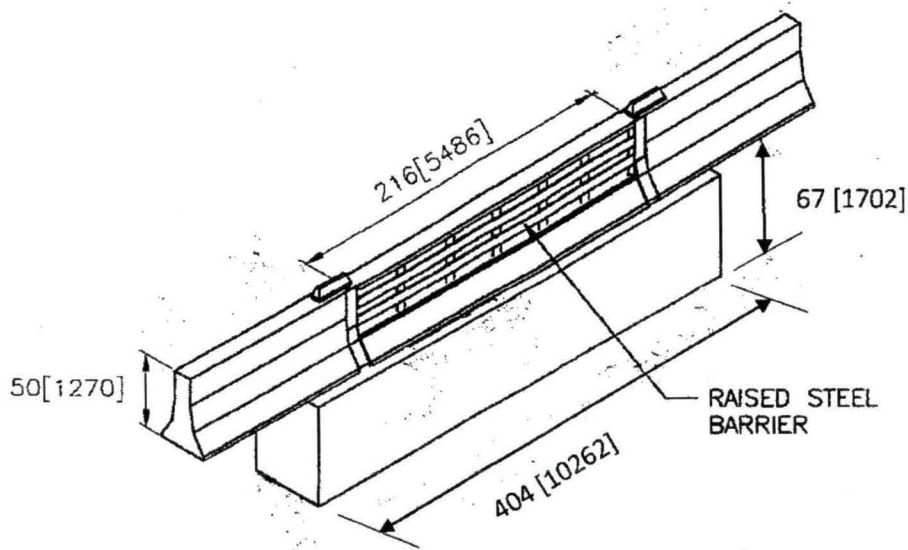
SCALE: 3/16" = 1'-0"



SIDE

SCALE: 3/8" = 1'-0"

REVISION	DATE	CUMBERLAND BARRIER, INC.
		EMERGENCY MEDIAN ACCESS
DRG:	GO	DEPLOYED BARRIER
DATE:	7/6/12	CN5018-01-03
CKD:		
SCALE:	VARIES	



EMERGENCY MEDIAN ACCESS

CUMBERLAND BARRIER, INC.

SHEET NO.

DATE:

1 of 2

02-22-2016

### **SPECIFICATIONS**

The Emergency Median Access (EMA) steelwork shall be Grade A36 or Grade A992. Welding shall be in conformance with the American Welding Society (AWS) code (d1.1). The (EMA) shall be powered by a non-hydraulic winch rated at not less than 8,000 pounds. Concrete and concrete reinforcing shall conform to the state highway requirements of the state in which the (EMA) is installed. Likewise, joining or splicing newly created concrete barrier wall, immediately adjacent to the (EMA), to existing concrete barrier wall, shall conform to the state highway requirements of the state in which the (EMA) is installed.

### **INTENDED USE**

The Emergency Median Access (EMA) is intended to provide vehicular access across highway medians that are blocked with concrete barrier walls. When the (EMA) is in its raised position, it assumes the profile of the existing concrete barrier wall and performs as a longitudinal barrier. The (EMA) may be lowered wirelessly by a number of signal sending devices thereby allowing vehicles to pass through the wall. The same wireless signal would then raise the (EMA). The (EMA) may be powered by AC electrical power when available or by DC batteries that are rechargeable utilizing solar energy. The (EMA) may be installed as a part of new construction or can be "cut into" an existing barrier wall. (EMA) uses:

- 1) Shortens emergency response time.
- 2) Allows rerouting of traffic as needed including accidents, weather, and construction.
- 3) Facilitates highway maintenance.

### **CONTACT INFORMATION**

Cumberland Barrier, Inc.  
7685 Old Woods Ct  
Springboro, Ohio 45066  
Telephone: 513-267-5143  
Email: gary.miracle@sbcglobal.net

### **EMERGENCY MEDIAN ACCESS (EMA)**

<b>SHEET NO.</b>	<b>DATE</b>
2 of 2	02-22-2016

**CUMBERLAND BARRIER, INC.**