U.S. Department
of Transportation
Federal Highway
Administration

April 10, 2019

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

In Reply Refer To:
HSST-1 / CC-143

Mr. Kaddo Kothman
Road Systems, Inc.
3616 Howard County Airport
Big Spring, TX 79720

Dear Mr. Kothman:

This letter is in response to your June 16, 2018 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. We appreciate the additional information you sent dated January 9, 2019 and March 15th, 2019 to facilitate our review.This FHWA letter of eligibility is assigned FHWA control number CC-143 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

Decision

The following device is eligible within the length-of-need, with details provided in the form which is attached as an integral part of this letter:

- MFLEAT Terminal

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'(AASHTO) 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

Based solely on a review of crash test results and certifications submitted by the manufacturer, and the crash test laboratory, FHWA agrees that the device described herein meets the crash test and evaluation criteria of the AASHTO's MASH. Therefore, the device is eligible for reimbursement under the Federal-aid highway program if installed under the range of tested conditions.

Name of system: MFLEAT Terminal
Type of system: Terminal
Test Level: MASH Test Level 3 (TL3)
Testing conducted by: KARCO
Date of request: June 16, 2018
Date initially acknowledged: July 17, 2018

FHWA concurs with the recommendation of the accredited crash testing laboratory on 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. Any modifications to this device should be submitted to the user (i.e., state DOT) as per their requirements.

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 number CC-143 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.

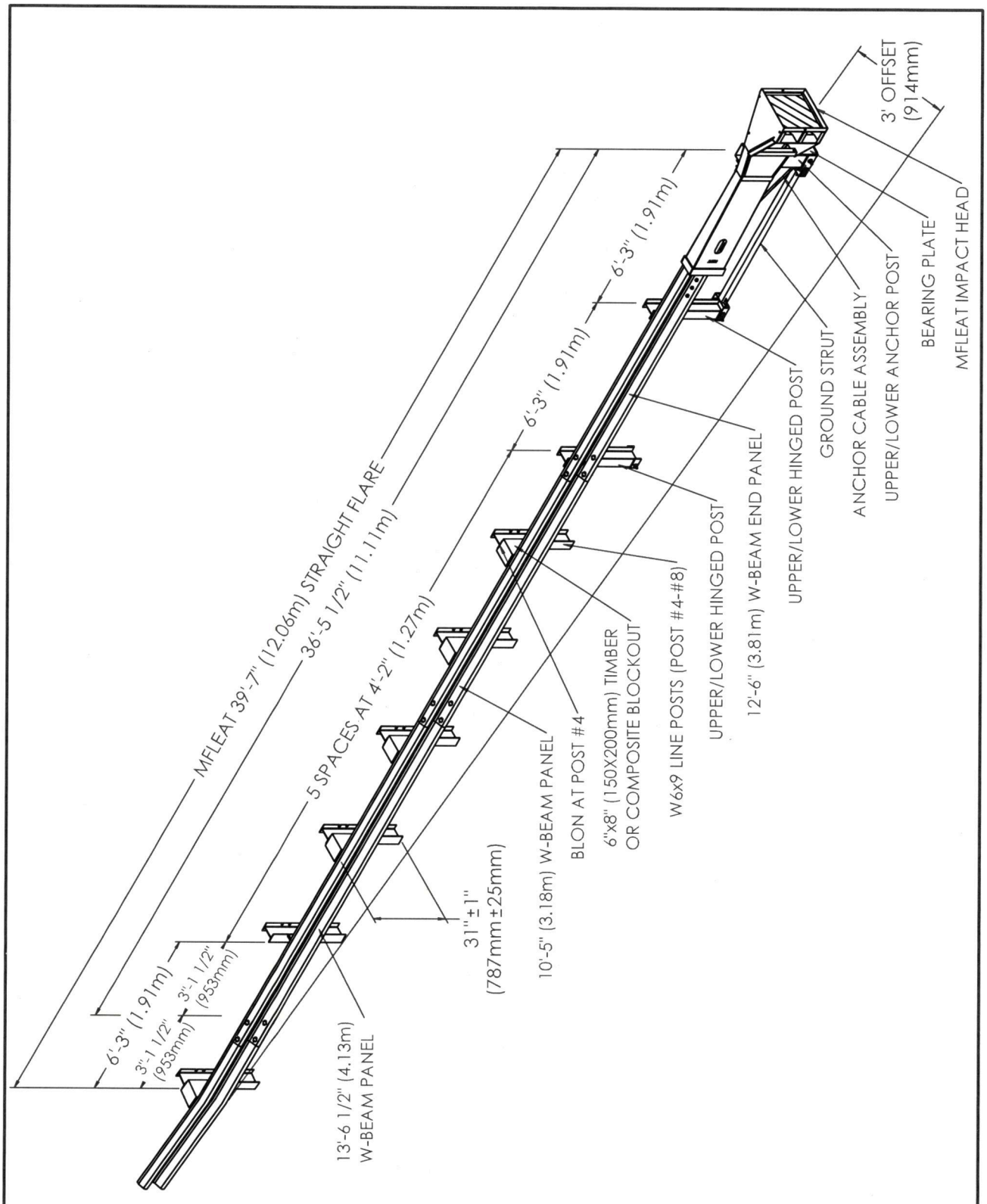
- This FHWA eligibility letter is not an expression of any Agency view, position, or determination of validity, scope, or ownership of any intellectual property rights to a specific device or design. Further, this letter does not impute any distribution or licensing rights to the requester. This FHWA eligibility letter determination is made based solely on the crash-testing information submitted by the requester. The FHWA reserves the right to review and revoke an earlier eligibility determination after receipt of subsequent information related to crash testing.

- 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,

Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Enclosures



MFLEAT - MASH FLEAT - MGS System

Road Systems Inc.

SEW14c

SHEET NO.	DATE
1 of 2	06-21-18

INTENDED USE

The **MFLEAT** (MASH FLEAT) is a flared roadside energy-absorbing terminal that has been designed and tested under MASH criteria. The MFLEAT system has a 3-ft straight flare offset over the length of the system and has a top-of-rail height of 31" with a plus-or-minus 1" height tolerance.

The first two posts in the terminal are bolted posts connected by a strut. Downstream of post #2 the terminal requires the use of a 10'-5" W-Beam panel to set splices at mid-span between posts, one additional bolted post with no blockout, and five W6x9 (or W6x8.5) steel line posts having 8" or 12" wood or composite blocks. The third 12 gage W-Beam panel is 13'-6 1/2" long and extends 3'-1 1/2" beyond post #8 for a TL-3 system.

The MFLEAT is used to protect the ends of MGS W-Beam barriers. During end-on impacts, the vehicle pushes the MFLEAT impact head down the rail section while sequentially kinking the rail element. The kinked rail exits the impact head on the traffic side of the rail.

The MFLEAT is a cable-anchored system. When impacted on the traffic side within the length of need and within design limits, the MFLEAT contains and redirects the errant vehicle back toward its original travel path. A cable anchor bracket is attached to the backside of the first 12'-6" rail section with special high strength shoulder bolts. The cable anchor bracket locks into place for traffic face redirection impacts but releases for end-on impacts.

ACCEPTANCE

FHWA Letter CC-xx, x x, 2018 - MFLEAT Test Level 3

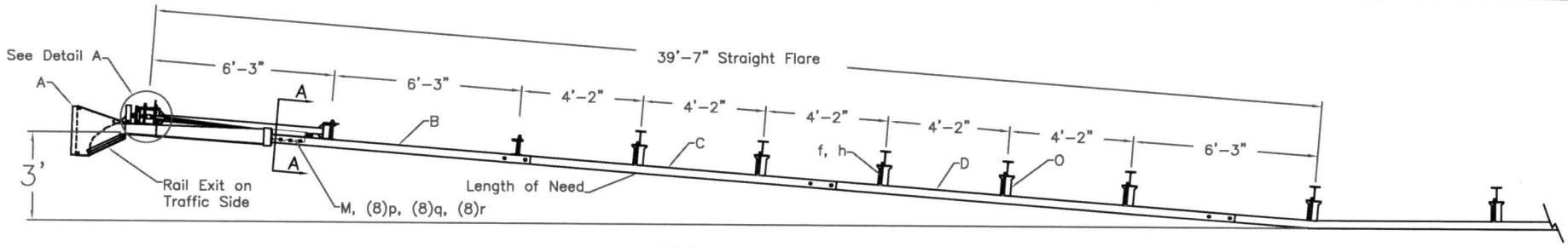
CONTACT INFORMATION

Road Systems, Inc.
3616 Old Howard County Airport
Big Spring, Texas 79720
Phone 432-263-2435Fax 432-267-4039
www.roadsystems.com

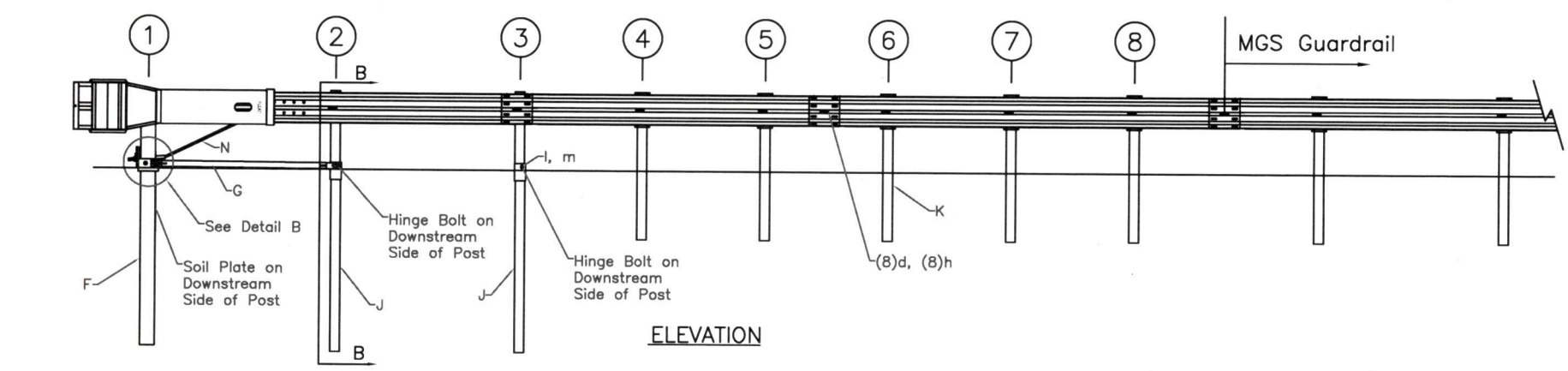
MFLEAT - MASH FLEAT - MGS System

SEW14c	
SHEET NO.	DATE:
2 of 2	06-21-18

RSI Road Systems Inc.

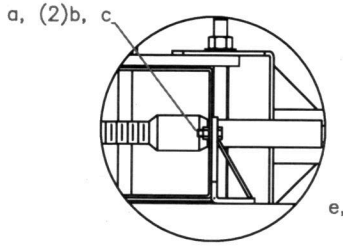


PLAN

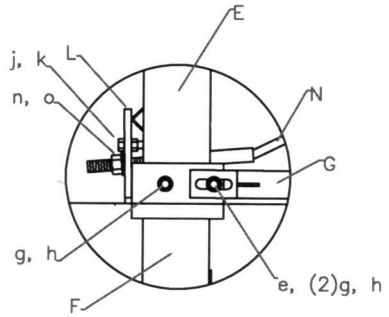


ELEVATION

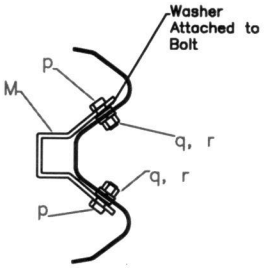
ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	FLEAT IMPACT HEAD	MF3000
B	1	FLEAT ANCHOR RAIL 12'-6"	SF1303
C	1	FLEAT SECOND RAIL 10'-5"	F1324
D	1	FLEAT THIRD RAIL 13'-6 1/2"	F1334
E	1	FIRST POST TOP (6X6X$\frac{3}{16}$" Tube)	MP1A
F	1	FIRST POST BOTTOM (6' W6X15)	MP1B
G	1	GROUND STRUT	MS785
H	2	HINGE POST UPPER	MHP2A
J	2	HINGED POST LOWER	HP2B
K	5	STEEL LINE POST 6'	P621
L	1	MASH BEARING PLATE	ME750
M	1	CABLE ANCHOR BOX	S760
N	1	BCT CABLE ANCHOR ASSEMBLY	E770
O	5	RECYCLED PLASTIC BLOCK OR EQUIV.	CBSP-14
		HARDWARE (ALL DIMENSIONS IN INCHES)	
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	18	5/8 x 1 1/4 SPLICE BOLT	B580122
e	2	5/8 x 9 HEX BOLT GRD 5	B580904A
f	5	5/8 x 10 H.G.R. BOLT	B581002
g	3	5/8 WASHER	W050
h	25	5/8 H.G.R NUT	N050
j	1	5/8 x 5" BOLT GRD A449	B580504A
k	1	5/8 HEX NUT	N055
l	2	3/4 x 8 1/2 HEX BOLT GRD A449	B340854A
m	2	3/4 HEX NUT	N030
n	2	1 ANCHOR CABLE HEX NUT	N100
o	2	1 ANCHOR CABLE WASHER	W100
p	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
q	8	1/2 STRUCTURAL NUT	N012A
r	8	1/2 STRUCTURAL WASHER	W012A



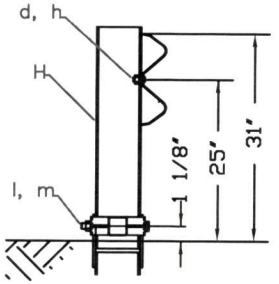
Detail A
Impact Head Connection



Detail B
Post #1 Connection



SECTION A–A
Anchor Bracket



SECTION B–B
Post #2

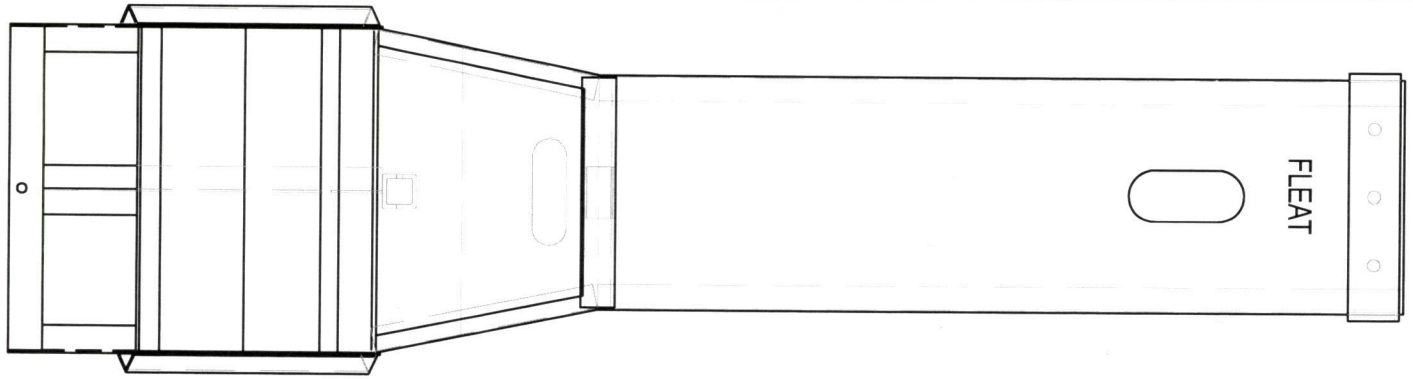
GENERAL NOTES:

1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
2. The lower sections of the Posts 1, 2 & 3 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
3. The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
4. When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

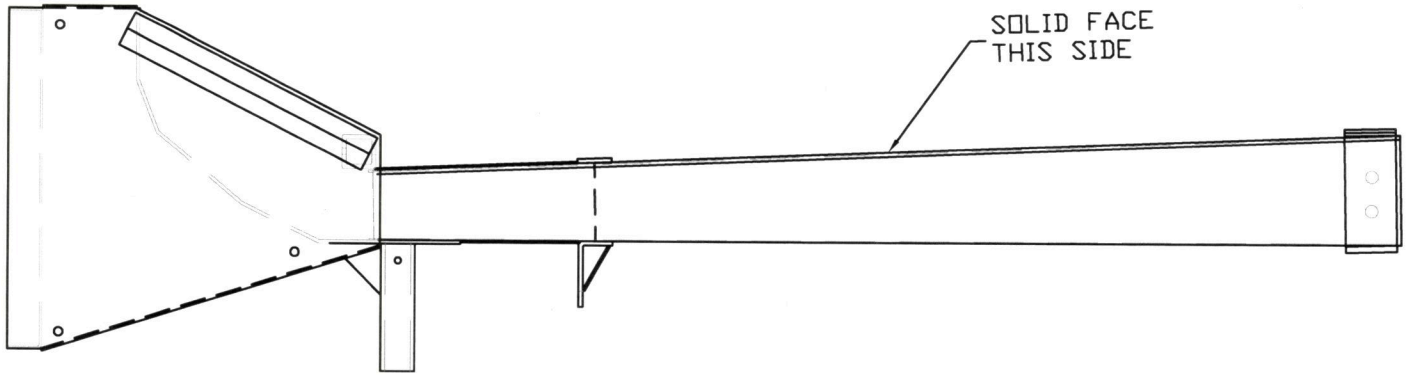
RSI
Road Systems, Inc.
Big Spring, TX
Phone: 432-263-2435
or Phone: 330-348-0721

MASH FLEAT Terminal
TL-3 Standard Post System

Sheet: 1
Date: 04/14/18
By: JRR
Drawing Name: MFLT
Scale: None
Rev: 0

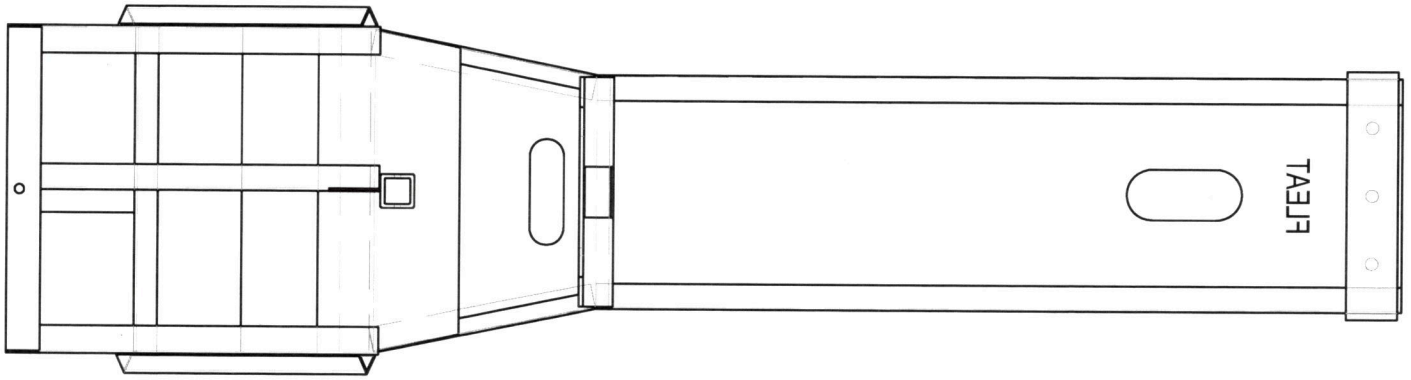


TRAFFIC SIDE



TRAFFIC SIDE

POST SIDE



POST SIDE

RSI
Road Systems, Inc.
Big Spring, TX
Phone: 432-263-2435
or Phone: 330-346-0721

MASH FLEAT IMPACT HEAD

Drawing Name:	Scale:	By:	Rev:
MF3000	NONE	JRR	0

Sheet: 1

Date: 01/10/18