

State of Nebraska - INVITATION TO BID CONTRACT

Date	4/8/22	Page	1 of 1
Solicitation Number	6687 OF		
Opening Date and Time	05/02/22	2:00 pm	
Buyer	CHRISTIE KELLY (AS)		

DESTINATION OF GOODS
DEPARTMENT OF TRANSPORTATION
5001 S 14TH ST
PO BOX 94759
LINCOLN NE 68509-4759

Per Nebraska's Transparency in Government Procurement Act, DAS is required to collect statistical information regarding the number of contracts awarded to Nebraska contractors. This information is for statistical purposes only and will not be considered for contract award purposes.

____ NEBRASKA CONTRACTOR AFFIDAVIT: Bidder hereby attests that bidder is a Nebraska Contractor. "Nebraska Contractor" shall mean any bidder who has maintained a bona fide place of business and at least one employee within this state for at least the six (6) months immediately preceding the posting date of this ITB.

____ I hereby certify that I am a Resident disabled veteran or business located in a designated enterprise zone in accordance with Neb. Rev. Stat. §73-107 and wish to have preference, if applicable, considered in the award of this contract.

Contract to supply and deliver Truck Towed Attenuators to the State of Nebraska as per the attached specifications for a One (1) year period from date of award. The contract may be renewed for Four (4) additional One (1) year periods when mutually agreeable to the vendor and the State of Nebraska.

(MH 4/7/22)

INVITATION

Line	Description	Quantity	Unit of Measure	Unit Price	Extended Price
1	TRUCK TOWED ATTENUATOR	7.0000	EA	\$21,950.00	\$153,650.00
	OPTION:				
2	NO ARROW BOARD MOUNTING FRAME (DEDUCT)	7.0000	EA	\$20,750.00	\$145,250.00

BIDDER MUST COMPLETE THE FOLLOWING

DISCOUNT PAYMENT TERMS: 0 % 0 DAYS

By signing this Invitation to Bid form, the bidder guarantees compliance with the provisions stated in this Invitation to Bid, agrees to the terms and conditions unless otherwise agreed to and certifies that bidder maintains a drug free work place environment. Vendor will furnish the items requested within 120 days after receipt of order. Failure to enter Delivery Date may cause quotation to be REJECTED.

DocuSigned by:

Sign
Here

Matt Lannert 4/28/2022

8CDE5F843E42445...

(Authorized Signature Mandatory – Form must be signed manually in ink or by DocuSign)

Enter Contact Information Below

VENDOR#

VENDOR: Roadway Safety Technologies, LLC

Address: 3937 Randall Drive

Jefferson City, MO 65109

Contact Matt Lannert

Telephone (573) 301-0101

Email roadwaysafetytech@gmail.com

**TRUCK TOWED ATTENUATORS
STATE OF NEBRASKA
ITB #: 6687 OF**

BIDDER'S NAME: Roadway Safety Technologies, LLC (RST)

The State of Nebraska (State), Department of Administrative Services (DAS), Materiel Division, State Purchasing Bureau (SPB), is issuing this solicitation for a Commodity contract, ITB Number 6687 OF for the purpose of selecting a qualified Vendor to provide **Truck Towed Attenuators**. A more detailed description can be found in Sections II through VI. The resulting contract may not be an exclusive contract as the State reserves the right to contract for the same or similar goods from other sources now or in the future.

The term of the Contract Will be One (1) year commencing upon execution of the Contract by the State and the Awarded Vendor. The Contract includes the option to renew for Four (4) additional One (1) year period(s) upon mutual agreement of the Parties. The State reserves the right to extend the period of this Contract beyond the Termination date when mutually agreeable to the Parties.

INFORMATION PERTINENT TO THIS SOLICITATION CAN BE FOUND ON THE INTERNET AT:

<http://das.nebraska.gov/materiel/purchasing.html>

IMPORTANT NOTICE: Pursuant to Neb. Rev. Stat. § 84-602.02, State contracts in effect as of January 1, 2014, and contracts entered into thereafter, must be posted to a public website. The resulting contract, the solicitation, and the successful Vendor's bid or response will be posted to a public website managed by DAS, which can be found at:

<https://statecontracts.nebraska.gov>

In addition and in furtherance of the State's public records statute (Neb. Rev. Stat. § 84-712 et seq.) all bids or responses received regarding this solicitation will be posted to the SPB website.

These postings will include the entire bid or response. Vendor must request that proprietary information be excluded from the posting. The Vendor must identify the proprietary information, mark the proprietary information according to state law, and submit the proprietary information in a separate container or envelope marked conspicuously using an indelible method with the words "PROPRIETARY INFORMATION". The Vendor must submit a **detailed written document showing** that the release of the proprietary information would give a business advantage to named business competitor(s) and explain how the named business competitor(s) will gain an actual business advantage by disclosure of information. The mere assertion that information is proprietary or that a speculative business advantage might be gained is not sufficient (See Attorney General Opinion No. 92068, April 27, 1992). **THE VENDOR MAY NOT ASSERT THAT THE ENTIRE BID OR RESPONSE IS PROPRIETARY. COST WILL NOT BE CONSIDERED PROPRIETARY AND IS A PUBLIC RECORD IN THE STATE OF NEBRASKA.** The State will then determine, in its discretion, if the interests served by nondisclosure outweighs any public purpose served by disclosure (See Neb. Rev. Stat. § 84-712.05(3)). The Vendor will be notified of the Agency's decision. Absent a State determination that information is proprietary, the State will consider all information a public record subject to release regardless of any assertion that the information is proprietary.

If the Agency determines it is required to release proprietary information, the Vendor will be informed. It will be the Vendor's responsibility to defend the Vendor's asserted interest in non-disclosure.

To facilitate such public postings, with the exception of proprietary information, the State of Nebraska reserves a royalty-free, nonexclusive, and irrevocable right to copy, reproduce, publish, post to a website, or otherwise use any contract, bid, or response to this solicitation for any purpose, and to authorize others to use the documents. Any individual or entity awarded a contract, or who submits a bid or response to this solicitation, specifically waives any copyright or other protection the contract, bid, or response to the solicitation may have; and, acknowledges that they have the ability and authority to enter into such waiver. This reservation and waiver is a prerequisite for submitting a bid or response to this solicitation, and award of a contract. Failure to agree to the reservation and waiver will result in the bid or response to the solicitation being found non-responsive and rejected.

Any entity awarded a contract or submitting a bid or response to the solicitation agrees not to sue, file a claim, or make a demand of any kind, and will indemnify and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials from and against any and all claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses of every nature, including investigation costs and expenses, settlement costs, and attorney fees and expenses, sustained or asserted against the State, arising out of, resulting from, or attributable to the posting of the contract or the bids and responses to the solicitation, awards, and other documents.

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GLOSSARY OF TERMS

Acceptance Test Procedure: Benchmarks and other performance criteria, developed by the State or other sources of testing standards, for measuring the effectiveness of products or goods and the means used for testing such performance

Addendum: Something to be added or deleted to an existing document; a supplement

After Receipt of Order: After Receipt of Order

Agency: Using agencies shall mean and include all officers of the state, departments, bureaus, boards, commissions, councils, and institutions receiving legislative appropriations

Agent/Representative: A person authorized to act on behalf of another

Amend: To alter or change by adding, subtracting, or substituting

Amendment: A written correction or alteration to a document

Appropriation: Legislative authorization to expend public funds for a specific purpose. Money set apart for a specific use

Automated Clearing House: Electronic network for financial transactions in the United States

Award: All purchases, leases, or contracts which are based on competitive bids will be awarded according to the provisions in the solicitation

Best and Final Offer: In a competitive bid, the final offer submitted which contains vendor's most favorable terms for price

Bid: An offer or quote submitted by a vendor/vendor in a response to a written solicitation

Bidder: A vendor who submits an offer bid in response to a written solicitation

Breach: Violation of a contractual obligation by failing to perform or repudiation of one's own promise.

Business: Any corporation, partnership, individual, sole proprietorship, joint-stock company, joint venture, or any other private legal entity

Business Day: Any weekday, except State-recognized holidays

Calendar Day: Every day shown on the calendar including Saturdays, Sundays, and State/Federal holidays

Cancellation: To call off or revoke a bid, purchase order or contract without expectation of conducting or performing at a later time

Central Processing Unit: Any computer or computer system that is used by the State to store, process, or retrieve data or perform other functions using Operating Systems and applications software

Change Order: Document that provides amendments to an executed purchase order

Collusion: An agreement or cooperation between two (2) or more persons or entities to accomplish a fraudulent, deceitful, or unlawful purpose

Commodities: Any equipment, material, supply or goods; anything movable or tangible that is provided or sold

Commodities Description: Detailed descriptions of the items to be purchased; may include information necessary to obtain the desired quality, type, color, size, shape, or special characteristics necessary to perform the work intended to produce the desired results

Competition: The effort or action of two (2) or more commercial interests to obtain the same business from third parties

Confidential Information: Unless otherwise defined below, "Confidential Information" shall also mean proprietary trade secrets, academic and scientific research work which is in progress and unpublished, and other information which if released would give advantage to business competitors and serve no public purpose (see Neb. Rev. Stat. § 84-712.05(3)). In accordance with Nebraska Attorney General Opinions 92068 and 97033, proof that information is proprietary requires identification of specific, named competitor(s) who would be advantaged by release of the information and the specific advantage the competitor(s) would receive

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Contract: An agreement between two (2) or more parties creating obligations that are enforceable or otherwise recognizable at law; the writing that sets forth such an agreement

Contract Administration: The management of the contract which includes and is not limited to contract signing, contract amendments and any necessary legal actions

Contract Management: The management of day to day activities at the Agency which includes and is not limited to ensuring deliverables are received, specifications are met, handling meetings and making payments to the Vendor

Contract Period: The duration of the contract

Contractor: An individual or entity lawfully conducting business in the State, who seeks or agrees to provide goods or services under the terms of a written contract.

Cooperative Purchasing: The combining of requirements of two or more political entities to obtain advantages of volume purchases, reduction in administrative expenses or other public benefits

Copyright: A property right in an original work of authorship fixed in any tangible medium of expression, giving the holder the exclusive right to reproduce, adapt and distribute the work

Critical Program Error: Any Program Error, whether or not known to the State, which prohibits or significantly impairs use of the Licensed Software as set forth in the documentation and intended in the contract

Customer Service: The process of ensuring customer satisfaction by providing assistance and advice on those products or goods provided by a Vendor

Default: The omission or failure to perform a contractual duty

Deviation: Any proposed change(s) or alteration(s) to either the Terms and Conditions or deliverables within the scope of the written solicitation or contract

Evaluation: The process of examining an offer after opening to determine the vendor's responsibility, responsiveness to requirements, and to ascertain other characteristics of the offer that relate to determination of the successful award

Extension: Continuance of a contract for a specified duration upon the agreement of the parties beyond the original Contract Period. Not to be confused with "Renewal Period"

Free on Board Destination: The delivery charges are included in the quoted price and prepaid by the vendor. Vendor is responsible for all claims associated with damages during delivery of product

Free on Board Point of Origin: The delivery charges are not included in the quoted price and are the responsibility of the Agency. Agency is responsible for all claims associated with damages during delivery of product

Foreign Corporation: A foreign corporation that was organized and chartered under the laws of another state, government, or country.

Installation Date: The date when the procedures described in "Installation by Vendor", and "Installation by State", as found in the solicitation, or contract are completed.

Interested Party: A person, acting in their personal capacity, or an entity entering into a contract or other agreement creating a legal interest therein

Invalid Bid: A bid that does not meet the requirements of the solicitation or cannot be evaluated against the other bids.

Invitation to Bid: A written solicitation utilized for obtaining competitive offers for Services or Goods

Late Bid: An offer received after the Opening Date and Time

Licensed Software Documentation: The user manuals and any other materials in any form or medium customarily provided by the Vendor to the users of the Licensed Software which will provide the State with sufficient information to operate, diagnose, and maintain the Licensed Software properly, safely, and efficiently

Mandatory: Required, compulsory, or obligatory

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May: Discretionary, permitted; used to express possibility

Module (see System): A collection of routines and data structures that perform a specific function of software

Must: See "Mandatory"

National Institute for Governmental Purchasing: Source used for assignment of universal commodity codes to goods and services

Open Market Purchase: Authorization may be given to an Agency to purchase items above direct purchase authority due to the unique nature, price, quantity, location of the using Agency, or time limitations by the AS Materiel Division, State Purchasing Bureau

Opening Date and Time: Specified date and time for the public opening of received, labeled, and sealed formal bids

Operating System: The control program in a computer that provides the interface to the computer hardware and peripheral devices, and the usage and allocation of memory resources, processor resources, input/output resources, and security resources

Outsourcing: The contracting out of a business process which an organization may have previously performed internally or has a new need for, to an independent organization from which the process is purchased back

Payroll & Financial Center: Electronic procurement system of record

Platform: A specific hardware and Operating System combination that is different from other hardware and Operating System combinations to the extent that a different version of the Licensed Software product is required to execute properly in the environment established by such hardware and Operating System combination

Point of Contact: The person designated to receive communications and to communicate

Product: Something that is distributed commercially for use or consumption and that is usually (1) tangible personal property, (2) the result of fabrication or processing, and (3) an item that has passed through a chain of commercial distribution before ultimate use or consumption

Program Error: Code in Licensed Software which produces unintended results or actions, or which produces results or actions other than those described in the specifications. A program error includes, without limitation, any Critical Program Error

Program Set: The group of programs and products, including the Licensed Software specified in the solicitation, plus any additional programs and products licensed by the State under the contract for use by the State

Project: The total scheme, program, or method worked out for the accomplishment of an objective, including all documentation, commodities, and goods to be provided under the contract

Proprietary Information: Proprietary information is defined as trade secrets, academic and scientific research work which is in progress and unpublished, and other information which if released would give advantage to business competitors and service no public purpose (see Neb. Rev. Stat. § 84-712.05(3)). In accordance with Attorney General Opinions 92068 and 97033, proof that information is proprietary requires identification of specific named competitor(s) advantaged by release of the information and the demonstrated advantage the named competitor(s) would gain by the release of information

Protest/Grievance: A complaint about a governmental action or decision related to the solicitation or resultant contract, brought by a vendor who has timely submitted a bid response in connection with the award in question, to AS Materiel Division or another designated Agency with the intention of achieving a remedial result

Public Bid Opening: The process of opening correctly submitted offers at the time and place specified in the written solicitation and in the presence of anyone who wished to attend

Quote: See "Bid".

Recommended Hardware Configuration: The data processing hardware (including all terminals, auxiliary storage, communication, and other peripheral devices) to the extent utilized by the State as recommended by the Vendor.

Release Date: The date of public release of the written solicitation to seek offers

Renewal Period: Optional contract periods subsequent to the original Contract Period for a specified duration with previously agreed to Terms and Conditions. Not to be confused with Extension

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Request for Information: A general invitation to vendor is requesting information for a potential future solicitation. The Request for Information is typically used as a research and information gathering tool for preparation of a solicitation

Resident Disabled Veteran: Any person (a) who resides in the State of Nebraska, who served in the United States Armed Forces, including any reserve component or the National Guard, who was discharged or otherwise separated with a characterization of honorable or general (under honorable conditions), and who possesses a disability rating letter issued by the United States Department of Veterans Affairs establishing a service-connected disability or a disability determination from the United States Department of Defense and (b)(i) who owns and controls a business or, in the case of a publicly owned business, more than fifty percent of the stock is owned by one or more persons described in subdivision (a) of this subsection and (ii) the management and daily business operations of the business are controlled by one or more persons described in subdivision(a) of this subsection. Any contract entered into without compliance with this section shall be null and void.

Responsible Vendor: A Vendor who has the capability in all respects to perform fully and lawfully all requirements with integrity and reliability to assure good faith performance

Responsive Vendor: A Vendor who has submitted a bid which conforms to all requirements of the solicitation document

Shall: See "Must".

Should: Expected; suggested, but not necessarily mandatory

Software License: Legal instrument with or without printed material that governs the use or redistribution of licensed software

Specifications: The detailed statement, especially of the measurements, quality, materials, and functional characteristics, or other items to be provided under a contract

Statutory: These clauses are controlled by state law and are not subject to negotiation

Subcontractor: Individual or entity with whom the contractor enters a contract to perform a portion of the work awarded to the contractor

System (see Module): Any collection or aggregation of two (2) or more Modules that is designed to function, or is represented by the Vendor as functioning or being capable of functioning, as an entity

Termination: Occurs when the contract expires or either party, pursuant to a power created by agreement or law puts an end to the contract prior to the stated expiration date. All obligations which are still executory on both sides are discharged but any right based on prior breach or performance survives

Third-Party: Any person or entity, including but not limited to fiduciaries, shareholders, owners, officers, managers, employees, legally disinterested persons, and sub-vendors or agents, and their employees. It shall not include any entity or person who is an interested Party to the contract or agreement

Trade Secret: Information, including, but not limited to, a drawing, formula, pattern, compilation, program, device, method, technique, code, or process that (a) derives independent economic value, actual or potential, from not being known to, and not being ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and (b) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy (see Neb. Rev. Stat. § 87-502(4))

Trademark: A word, phrase, logo, or other graphic symbol used by a manufacturer or vendor to distinguish its product from those of others, registered with the U.S. Patent and Trademark Office

Upgrade: Any change that improves or alters the basic function of a product of service

Vendor Performance Report: A report completed by the using Agency and submitted to State Purchasing Bureau documenting products or services delivered or performed which exceed or fail to meet the terms of the purchase order, contract, and/or solicitation specifications.

Vendor: Inclusive term for any Bidder or Vendor.

Will: See "Mandatory".

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ACRONYM LIST

- ACH:** Automated Clearing House
- ARO:** After Receipt of Order
- ASTM:** American Society for Testing and Materials
- ATA:** American Trucking Association
- BAFO:** Best and Final Offer
- CPU:** Central Processing Unit
- DAS:** Department of Administrative Services
- EFT:** Electronic Fund Transfer
- FOB:** Free on Board
- GVW:** Gross Vehicle Weight
- ICC:** International Code Counsel
- ITB:** Invitation to Bid
- lb.:** Pound(s)
- MASH:** Manual for Assessing Safety Hardware
- MPH:** Miles Per Hour
- MUTCD:** Manual on Uniform Traffic Control Devices
- NCHRP:** National Cooperative Highway Research program
- NDOT:** Nebraska Department of Transportation
- NIGP:** National Institute for Governmental Purchasing
- PA:** Participating Addendum
- PFC:** Payroll & Financial Center
- POC:** Point of Contact
- RFI:** Request for Information
- SPB:** State Purchasing Bureau
- TMA:** Trailer/Truck Mounted Attenuator

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BIDDER'S NAME: RST

I. PROCUREMENT PROCEDURE

A. GENERAL INFORMATION

The solicitation is designed to solicit bids from qualified Vendors who will be responsible for providing **Truck Towed Attenuators** at a competitive and reasonable cost. Terms and Conditions, Item Description(s), Bid instructions, and Cost Bid Requirements may be found in Sections II through VI.

Bids shall conform to all instructions, conditions, and requirements included in the solicitation. Prospective Vendors are expected to carefully examine all documents, schedules, and requirements in this solicitation, and respond to each requirement in the format prescribed. Bids may be found non-responsive if they do not conform to the solicitation.

B. PROCURING OFFICE AND COMMUNICATION WITH STATE STAFF AND EVALUATORS

Procurement responsibilities related to this solicitation reside with SPB. The POC for the procurement is as follows:

ITB #: 6687 OF
Name: Christie Kelly, Procurement Contracts Officer
Agency: State Purchasing Bureau
Address: 1526 K Street, Suite 130
Lincoln, NE 68508

Telephone: 402-471-6500

E-Mail: as.materielpurchasing@nebraska.gov

From the date the solicitation is issued until the Intent to Award is issued, communication from the Vendor is limited to the POC listed above. After the Intent to Award is issued, the Vendor may communicate with individuals the State has designated as responsible for negotiating the contract on behalf of the State. No member of the State Government, employee of the State, or member of the Evaluation Committee is empowered to make binding statements regarding this solicitation. The POC will issue any answers, clarifications or amendments regarding this solicitation in writing. Only the SPB or awarding Agency can award a contract. Vendors shall not have any communication with, or attempt to communicate or influence any evaluator involved in this solicitation.

The following exceptions to these restrictions are permitted:

1. Contact made pursuant to pre-existing contracts or obligations;
2. Contact required by the schedule of events or an event scheduled later by POC; and
3. Contact required for negotiation and execution of the final contract.

The State reserves the right to reject a vendor's bid, withdraw an Intent to Award, or terminate a contract if the State determines there has been a violation of these procurement procedures.

ITB #: 6687 OF**BIDDER'S NAME:** RST**C. SCHEDULE OF EVENTS**

The State expects to adhere to the procurement schedule shown below, but all dates are approximate and subject to change.

ACTIVITY		DATE/TIME
1.	Release ITB:	April 8, 2022
2.	Last Day to Submit Written Questions: Upload electronic Question submissions for 6687 OF via ShareFile to: https://nebraska.sharefile.com/r-rbe40d2ad78664f72970a2c94edc574d8	April 15, 2022
3.	State Responds to Written Questions through an Addendum to be posted to the internet at: https://das.nebraska.gov/materiel/bidopps.html	April 22, 2022
4.	Electronic Bid Opening via Zoom Meeting: Bids are to be Electronically submitted via ShareFile link below: Upload electronic Bid submissions for 6687 OF via ShareFile to: https://nebraska.sharefile.com/r-reb02eddfdd7341dfbdabb64f7043d998 Zoom Meeting Information: https://us02web.zoom.us/j/7318536781?pwd=cHRFNjZzRzBwSitiVDZSQytEa2Zwdz09 Meeting ID: 731 853 6781 Passcode: 4Gkv2t IT IS THE BIDDERS' RESPONSIBILITY TO ENSURE ALL BIDS SHALL BE SUBMITTED AND RECEIVED BY THE DATE AND TIME INDICATED IN THE SCHEDULE OF EVENTS FOR EACH BID SUBMITTED.	May 2, 2022 2:00 PM Central Time

D. WRITTEN QUESTIONS AND ANSWERS

Questions regarding the meaning or interpretation of any ITB provision must be submitted in writing to SPB and clearly titled "**ITB Number 6687 OF; Truck Towed Attenuators Questions**".

The POC is not obligated to respond to questions are received late per the Schedule of Events.

Bidders should present, as questions, any assumptions upon which the Bidder's bid is, or might be, developed. Bids will be evaluated without consideration of any known or unknown assumptions of a Bidder. The contract will not incorporate any known or unknown assumptions of a Bidder.

Questions should be in the format below and uploaded to ShareFile at: <https://nebraska.sharefile.com/r-rbe40d2ad78664f72970a2c94edc574d8>, but may be emailed or delivered by hand or U.S. Mail.

Solicitation Section Reference	Solicitation Page Number	Question

Written answers will be posted at <https://das.nebraska.gov/materiel/bidopps.html>.

E. SECRETARY OF STATE/TAX COMMISSIONER REGISTRATION REQUIREMENTS (Statutory)

All Vendors must be authorized to transact business in the State and comply with all Nebraska Secretary of State Registration requirements. The Vendor who is the recipient of an Intent to Award will be required to certify that it has complied and produce a true and correct copy of its current (within 90 calendar days of the intent to award) Certificate or Letter of Good Standing, or in the case of a sole proprietorship, provide written documentation of sole proprietorship and the United States Citizenship Attestation Form, available on the DAS website at: <https://sos.nebraska.gov/business-services/explanation-us-citizen-attestation-form>. This must be accomplished prior to execution of the contract.

ITB #: 6687 OF**BIDDER'S NAME:** RST**F. ETHICS IN PUBLIC CONTRACTING**

The State reserves the right to reject bids, withdraw an intent to award or award, or terminate a contract if a Contractor commits or has committed ethical violations, which include, but are not limited to:

1. Offering or giving, directly or indirectly, a bribe, fee, commission, compensation, gift, gratuity, or anything of value to any person or entity in an attempt to influence the bidding process;
2. Utilize the services of lobbyists, attorneys, political activists, or consultants to influence or subvert the bidding process;
3. Being considered for, presently being, or becoming debarred, suspended, ineligible, or excluded from contracting with any state or federal entity;
4. Submitting a bid on behalf of another party or entity;
5. Collude with any person or entity to influence the bidding process, submit sham bids, preclude bidding, fix pricing or costs, create an unfair advantage, subvert the bid, or prejudice the State.

The Contractor shall include this clause in any subcontract entered into for the exclusive purpose of performing this contract.

Contractor shall have an affirmative duty to report any violations of this clause by the Contractor throughout the bidding process, and throughout the term of this contract for the successful Contractor and their subcontractors.

G. DEVIATIONS FROM THE ITB

The requirements contained in the solicitation (Sections II through VI) become a part of the Terms and Conditions of the contract resulting from this solicitation. Any deviations from the solicitation in Sections II through VI must be clearly defined by the Vendor in its bid and, if accepted by the State, will become part of the contract. Any specifically defined deviations must not be in conflict with the basic nature of the solicitation, solicitation requirements, or applicable state or federal laws or statutes. "Deviation", for the purposes of this solicitation, means any proposed changes or alterations to either the contractual language or deliverables within the scope of this solicitation. The State discourages deviations and reserves the right to reject proposed deviations.

H. SUBMISSION OF BIDS

The State shall not incur any liability for any costs incurred by the Bidder in replying to the **Truck Towed Attenuators** Bid, in the demonstrations and/or oral presentations, or in any other activity related to bidding on this ITB.

The ITB document must be manually signed in an indelible manner, or by DocuSign, and returned by the Bid Opening date and time, along with any other required documents as stated in the **Truck Towed Attenuators** Bid in order for the bidder's ITB to be evaluated.

It is the responsibility of the bidder to check the website for all information relevant to the **Truck Towed Attenuators** bid to include Addenda and/or Amendments issued prior to the Opening Date. The Website address is as follows: <https://das.nebraska.gov/materiel/bidopps.html>.

Emphasis should be concentrated on conformance to the ITB instructions, responsiveness to requirements, completeness, and clarity of content. If the bidder's bid is presented in such a fashion that makes evaluation difficult or overly time consuming the State reserves the right to reject the bid as nonresponsive.

By signing the ITB, the Bidder guarantees compliance with the provisions stated in the **Truck Towed Attenuators** Bid(s).

1. ELECTRONICALLY UPLOADING BID(S) TO SHAREFILE

- a. Bidders should upload bid(s) via ShareFile to: <https://nebraska.sharefile.com/r-reb02eddfdd7341dfbdabb64f7043d998>
- b. Bidders are to be sure to upload their Bid(s) to the correct ShareFile link listed in the bid.
- c. Not all browsers are compatible with ShareFile. **Currently Chrome, Internet Explorer and Firefox are compatible, but Microsoft Edge is not.**
- d. **After the bidder clicks the bid submission link, the bidder will be prompted to enter contact information including an e-mail address so that the bidder will receive a confirmation email confirming the successful upload directly from ShareFile.**

2. OTHER BID DOCUMENTS TO UPLOAD TO SHAREFILE

- a. Any **Proprietary information** (if applicable) should be uploaded as separate and distinct files (see page one (1) paragraph nine (9)).

ITB #: 6687 OF**BIDDER'S NAME:** RST

- b. If it is the bidder's intent to submit multiple bids, the bidder must clearly identify each submission separately (see "Electronic ITB File Names" below).
- c. It is the Bidders' responsibility to ensure their bid(s), have been electronically submitted and received by the date and time indicated in the "Schedule of Events" for **Truck Towed Attenuators**.
- d. **LATE BIDS ARE UNACCEPTABLE.**
- e. **Hardware, software, internet, user, or electronic issues will not excuse a late bid.**

3. ELECTRONIC ITB FILE NAMES

- a. The Bidder should clearly identify the uploaded Bid files.
- b. **Do not submit bid file(s) more than 30 days prior to the Bid Opening. Once file(s) are uploaded they are only available for 30 days.**
- c. **DO NOT ADD any language to the naming conventions below**. Long titles can make the files difficult to work with. Consistency is key.
- d. If the bidder submits the bid/bid documents as one (1) complete packet (preferred method), please use the following naming convention:
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** Bid.
- e. If the bidder submits the bid/bid documents as separate files, please use the following naming convention(s):
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** Bid.
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** File 1.
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** File 2.
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** File 3, etc....
- f. If multiple bids are submitted for the same ITB number and Attachment, follow the same naming convention as letter "e", for example:
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** Bid 2".
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** Bid 2 File 1.
 - **6687 OF Truck Towed Attenuators <<NAME OF BIDDER>>** Bid 2 File 2, etc....

I. BID PREPARATION COSTS

The State shall not incur any liability for any costs incurred by Vendors in replying to this solicitation, including any activity related to bidding on this solicitation.

J. FAILURE TO COMPLY WITH ITB

Violation of the Terms and Conditions contained in this solicitation or any resultant contract, at any time before or after the award, shall be grounds for action by the State which may include, but is not limited to, the following:

1. Rejection of a Vendor's bid;
2. Withdrawal of the Intent to Award;
3. Withdrawal of the Award;
4. Negative Vendor Performance Report(s)
5. Termination of the resulting contract;
6. Legal action; or,
7. Suspension of the Vendor from further bidding with the State for the period of time relative to the seriousness of the violation, such period to be within the sole discretion of the State.

K. BID CORRECTIONS

A vendor may correct a mistake in a bid prior to the time of opening by giving written notice to the State of intent to withdraw the bid for modification or to withdraw the bid completely. Changing a bid after opening may be permitted if the change is made to correct a minor error that does not affect price, quantity, quality, delivery, or contractual conditions. In case of a mathematical error in extension of price, unit price shall govern.

ITB #: 6687 OF**BIDDER'S NAME:** RST**L. LATE BIDS**

Bids received after the time and date of the bid opening will be considered late bids. Late bids will be returned unopened, if requested by the Vendor and at Vendor's expense. The State is not responsible for bids that are late or lost regardless of cause or fault.

M. BID OPENING

Anyone may attend the opening. It is considered a public opening. The Procurement Contracts Officer will read the names of the respondents. Depending upon the complexity of the bid for goods, the Procurement Contracts Officer may read the bids aloud or allow bids be available for viewing by the public during the bid opening. Once the bid opening has concluded, the bids will not be available for viewing until the Intent to Award has been posted. An initial bid tabulation will be posted to the website as soon as feasible. Information identified as proprietary by the submitting vendor, in accordance with the solicitation and state statute, will not be posted. If the state determines submitted information should not be withheld, in accordance with the [Public Records Act](#), or if ordered to release any withheld information, said information may then be released. The submitting vendor will be notified of the release and it shall be the obligation of the submitting vendor to take further action, if it believes the information should not be released.

N. ITB REQUIREMENTS

The bids will first be examined to determine if all requirements listed below have been addressed and whether further evaluation is warranted. Bids not meeting the requirements may be rejected as non-responsive. The requirements are:

1. Original Commodity ITB form signed using an indelible method (electronic signatures are acceptable);
2. Clarity and responsiveness of the bid;
3. Completed Sections II through VI;
4. Completed ITB Form or Bid Sheet.

O. EVALUATION OF BIDS

Neb. Rev. Stat. § 81-161 allows the quality of performance of previous contracts to be considered when evaluating responses to competitively bid solicitations in determining the lowest responsible bidder. Information obtained from any Vendor Performance Report may be used in evaluating responses to solicitations for goods and services to determine the best value for the State.

Neb. Rev. Stat. § 73-107 allows for a preference for a resident disabled veteran or business located in a designated enterprise zone. When a state contract is to be awarded to the lowest responsible vendor, a resident disabled veteran or a business located in a designated enterprise zone under the Enterprise Zone Act shall be allowed a preference over any other resident or nonresident vendor, if all other factors are equal.

Therefore, a resident disabled veteran or business located in a designated enterprise zone who wishes to be allowed preference must submit a bid in accordance with **Neb. Rev. Stat. § 73-107** and has so indicate on the ITB cover page by placing a mark in the space before the statement "I hereby certify that I am a Resident disabled veteran or business located in a designated enterprise zone in accordance with Neb. Rev. Stat. § 73-107 and wish to have preference, if applicable, considered in the award of this contract." and must submit the following documentation within ten (10) business days of request:

1. Documentation from the United States Armed Forces confirming service;
2. Documentation of discharge or otherwise separated characterization of honorable or general (under honorable conditions);
3. Disability rating letter issued by the United States Department of Veterans Affairs establishing a service-connected disability or a disability determination from the United States Department of Defense; and
4. Documentation which shows ownership and control of a business or, in the case of a publicly owned business, more than fifty percent of the stock is owned by one or more persons described in subdivision (a) of this subsection; and the management and daily business operations of the business are controlled by one or more persons described in subdivision (a) of this subsection.

Failure to submit the requested documentation within ten (10) business days of notice will disqualify the vendor from consideration of the preference.

P. BEST AND FINAL OFFER

If best and final offers BAFO are requested by the State and submitted by the vendor, they will be evaluated (using the stated BAFO criteria) and ranked by the Evaluation Committee. The State reserves the right to conduct more than one BAFO. The award will then be granted to the lowest responsible vendor. However, a vendor should provide its best offer in its original bid. Vendors should not expect that the State will request a BAFO.

ITB #: 6687 OF**BIDDER'S NAME:** RST**Q. REFERENCE AND CREDIT CHECKS**

The State reserves the right to conduct and consider reference and credit checks. The State reserves the right to use third parties to conduct reference and credit checks. By submitting a bid in response to this solicitation, the vendor grants to the State the right to contact or arrange a visit in person with any or all of the vendor's clients. Reference and credit checks may be grounds to reject a bid, withdraw an intent to award, or rescind the award of a contract.

R. AWARD

The State reserves the right to evaluate bids and award contracts in a manner utilizing criteria selected at the State's discretion and in the State's best interest. After evaluation of the bids, or at any point in the solicitation process, the State of Nebraska may take one or more of the following actions:

1. Amend the solicitation;
2. Extend the time of or establish a new bid opening time;
3. Waive deviations or errors in the State's solicitation process and in vendor bids that are not material, do not compromise the solicitation process or a vendor's bid, and do not improve a vendor's competitive position;
4. Accept or reject a portion of or all of a bid;
5. Accept or reject all bids;
6. Withdraw the solicitation;
7. Elect to rebid the solicitation;
8. Award single lines or multiple lines to one or more vendors; or,
9. Award one or more all-inclusive contracts.

The State of Nebraska may consider, but is not limited to considering, one or more of the following award criteria:

1. Price;
2. Location;
3. Quality;
4. Delivery time;
5. Vendor qualifications and capabilities; and,
6. State contract management requirements and/or costs.

The solicitation does not commit the State to award a contract. Once intent to award decision has been determined, it will be posted to the Internet at:

<http://das.nebraska.gov/materiel/purchasing.html>

Any protests must be filed by a vendor within ten (10) business days after the intent to award decision is posted to the Internet. The "State Purchasing Bureau Protest/Grievance Procedures" document is available on the Internet at:

<https://das.nebraska.gov/forms/index.html#mat> in the "Directors Office" section.

S. SPECIFICATIONS

Any manufacturer's names, trade names, brand names, information and/or catalog numbers listed in a specification are for reference and not intended to limit competition, but will be used as the standard by which equivalent material offered will be judged. The Materiel Administrator will be the sole judge of equivalency. The Vendor may offer any brands which meets or exceeds the specification. When a specific product is required, the solicitation will so state. Any item bid is to be the latest current model under standard production at the time of order. No used or refurbished equipment will be accepted, unless otherwise stated.

T. ALTERNATE/EQUIVALENT BIDS

Vendor may offer bids which are at variance from the express specifications of the solicitation. The State reserves the right to consider and accept such bids if, in the judgment of the Materiel Administrator, the bid will result in goods and/or services equivalent to or better than those which would be supplied in the original bid specifications. Vendor must indicate on the solicitation the manufacturer's name, number and shall submit with their bid, sketches, descriptive literature and/or complete specifications. Reference to literature submitted with a previous bid will not satisfy this provision. Bids which do not comply with these requirements are subject to rejection. In the absence of any stated deviation or exception, the bid will be accepted as in strict compliance with all terms, conditions and specification, and the Vendor shall be held liable therefore.

U. "ALL OR NONE" OR "LUMP SUM" BIDS

The State reserves the right to award contracts "item-by-item", by groups or as a total when in the best interest of the State. In addition to the aforementioned types of awards, Vendors may submit additional bid(s) on an "all or none" or "lump sum" basis. An "all or none" bid is a conditional bid which requires the award of all items on which bids are offered and the Vendor declines to accept an "item-by-item", group or total bid. A "lump sum" bid is one in which the Vendor offers a lower price than the sum of the "item-by-item" or total bids if all items bids are awarded, but agrees to deliver individual items at the prices quoted. If submitting an "all or none" bid or a "lump sum" bid please indicate such on the ITB form and Bid Documents.

ITB #: 6687 OF

BIDDER'S NAME: RST

V. EMAIL SUBMISSIONS

SPB will not accept bids by email, electronic, voice, or telephone bids **except** for one-time purchases under \$50,000.00.

W. BID TABULATIONS

Bid tabulations are available on the website at: <https://das.nebraska.gov/materiel/bidopps.html>.

X. REJECTION OF BIDS

The State reserves the right to reject any or all bids, wholly or in part, in the best interest of the State.

Y. RESIDENT BIDDER

Pursuant to Neb. Rev. Stat. §§ 73-101.01 through 73-101.02, a Resident Bidder shall be allowed a preference against a Non-resident Bidder from a state which gives or requires a preference to Bidders from that state. The preference shall be equal to the preference given or required by the state of the Nonresident Bidders. Where the lowest responsible bid from a resident Bidder is equal in all respects to one from a nonresident Bidder from a state which has no preference law, the resident Bidder shall be awarded the contract. The provision of this preference shall not apply to any contract for any project upon which federal funds would be withheld because of the provisions of this preference.

ITB #: 6687 OF

BIDDER'S NAME: RST

II. TERMS AND CONDITIONS

Vendors should complete Section II through VI as part of their bid. Vendor is expected to read the Terms and Conditions and must initial either accept, reject, or reject and provide alternative language for each clause. The Vendor should also provide an explanation of why the Vendor rejected the clause or rejected the clause and provided alternate language using "Track Changes". Upon request an electronic copy of the bid with "Track Changes" must be submitted in an editable Word format. By signing the solicitation, Vendor is agreeing to be legally bound by all the accepted Terms and Conditions, and any proposed alternative Terms and Conditions submitted with the bid. The State reserves the right to negotiate rejected or proposed alternative language. If the State and Vendor fail to agree on the final Terms and Conditions, the State reserves the right to reject the bid. The State is soliciting bids in response to the solicitation. The State reserves the right to reject bids that attempt to substitute the Vendor's commercial contracts and/or documents for this solicitation.

The Vendor should submit with their bid any license, user agreement, service level agreement, or similar documents that the Vendor wants incorporated in the Contract. Upon notice of Intent to Award, the Vendor must submit a copy of these documents in an editable Word format. The State will not consider incorporation of any document not submitted with the Vendor's bid. These documents shall be subject to negotiation and will be incorporated as addendums if agreed to by the Parties.

If a conflict or ambiguity arises after the addendums have been negotiated and agreed to, the addendums shall be interpreted as follows:

1. If only one (1) Party's document has a particular clause then that clause shall control;
2. If both Party's documents have a similar clause, but the clauses do not conflict, the clauses shall be read together;
3. If both Party's documents have a similar clause, but the clauses conflict, the State's clause shall control.

A. GENERAL

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The contract resulting from this solicitation shall incorporate the following documents:

1. Invitation to Bid and Addenda;
2. Amendments to the solicitation;
3. Questions and Answers;
4. Vendor's bid;
5. The executed Contract and any Addenda, if applicable, and properly submitted documents; and,
6. Amendments to the Contract

These documents constitute the entirety of the contract.

Unless otherwise specifically stated in a future contract amendment, in case of any conflict between the incorporated documents, the documents shall govern in the following order of preference with number one (1) receiving preference over all other documents and with each lower numbered document having preference over any higher numbered document: 1) Amendment to the executed Contract with the most recent dated amendment having the highest priority, 2) executed Contract and any attached Addenda, 3) Amendments to solicitation and any Questions and Answers, 4) the original solicitation document and any Addenda, and 5) the Vendor's submitted Bid.

Any ambiguity or conflict in the contract discovered after its execution, not otherwise addressed herein, shall be resolved in accordance with the rules of contract interpretation as established in the State.

ITB #: 6687 OF

BIDDER'S NAME: RST**B. NOTIFICATION**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The Vendor and the State shall identify a contract manager who shall serve as the POC for the executed contract. Communications regarding the executed contract shall be in writing and shall be deemed to have been given if delivered via email, personally, or by U.S. Mail. Either party may change its address for notification purposes by giving notice of the change, and setting forth the new address and an effective date.

C. PROCUREMENT CONTRACTS OFFICER'S REPRESENTATIVE

The State reserves the right to appoint a Procurement Contracts Officer's Representative to manage [or assist the Procurement Contracts Officer in managing] the contract on behalf of the State. The Procurement Contracts Officer's Representative will be appointed in writing, and the appointment document will specify the extent of the Procurement Contracts Officer's Representative authority and responsibilities. If a Procurement Contracts Officer's Representative is appointed, the Vendor will be provided a copy of the appointment document, and is expected to cooperate accordingly with the Procurement Contracts Officer's Representative. The Procurement Contracts Officer's Representative has no authority to bind the State to a contract, amendment, addendum, or other change or addition to the contract.

D. GOVERNING LAW (Statutory)

Notwithstanding any other provision of this contract, or any amendment or addendum(s) entered into contemporaneously or at a later time, the parties understand and agree that, (1) the State of Nebraska is a sovereign state and its authority to contract is therefore subject to limitation by the State's Constitution, statutes, common law, and regulation; (2) this contract will be interpreted and enforced under the laws of the State of Nebraska; (3) any action to enforce the provisions of this contract must be brought in the State of Nebraska per state law; (4) the person signing this contract on behalf of the State of Nebraska does not have the authority to waive the State's sovereign immunity, statutes, common law, or regulations; (5) the indemnity, limitation of liability, remedy, and other similar provisions of the final contract, if any, are entered into subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity; and, (6) all Terms and Conditions of the final contract, including but not limited to the clauses concerning third-party use, licenses, warranties, limitations of liability, governing law and venue, usage verification, indemnity, liability, remedy or other similar provisions of the final contract are entered into specifically subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity. The Parties must comply with all applicable local, state and federal laws, ordinances, rules, orders, and regulations.

E. AMENDMENT

This Contract may be amended in writing, within scope, upon the agreement of both parties.

F. SUBSTITUTIONS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

In the event any product is discontinued or replaced upon mutual consent during the contract period or prior to delivery, the State reserves the right to amend the contract or purchase order to include the alternate product which meets or exceeds original specifications and is the same or lesser price.

*****Vendor will not substitute any item that has been awarded without prior written approval of SPB*****

ITB #: 6687 OF

BIDDER'S NAME: RST**G. VENDOR PERFORMANCE REPORT(S)**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The State may document any instance(s) of products or services delivered or performed which exceed or fail to meet the terms of the purchase order, contract, and/or solicitation specifications. The SPB may contact the Vendor regarding any such report. Vendor performance report(s) will become a part of the permanent record of the Vendor.

H. NOTICE OF POTENTIAL VENDOR BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

If Vendor breaches the contract or anticipates breaching the contract, the Vendor shall immediately give written notice to the State. The notice shall explain the breach or potential breach, a proposed cure, and may include a request for a waiver of the breach if so desired. The State may, in its discretion, temporarily or permanently waive the breach. By granting a waiver, the State does not forfeit any rights or remedies to which the State is entitled by law or equity, or pursuant to the provisions of the contract. Failure to give immediate notice, however, may be grounds for denial of any request for a waiver of a breach.

I. BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Either Party may terminate the contract, in whole or in part, if the other Party breaches its duty to perform its obligations under the contract in a timely and proper manner. Termination requires written notice of default and a 30 calendar day (or longer at the non-breaching Party's discretion considering the gravity and nature of the default) cure period. Said notice shall be delivered by Certified Mail, Return Receipt Requested, or in person with proof of delivery. Allowing time to cure a failure or breach of contract does not waive the right to immediately terminate the contract for the same or different contract breach which may occur at a different time.

In case of breach by the Vendor, the State may, without unreasonable delay, make a good faith effort to make a reasonable purchase or contract to purchased goods in substitution of those due from the vendor. The State may recover from the Vendor as damages the difference between the costs of covering the breach. Notwithstanding any clause to the contrary, the State may also recover the contract price together with any incidental or consequential damages defined in UCC Section 2-715, but less expenses saved in consequence of Vendor's breach. OR In case of default of the Vendor, the State may contract the service from other sources and hold the Vendor responsible for any excess cost occasioned thereby. The State's failure to make payment shall not be a breach, and the Vendor shall retain all available statutory remedies. (See Indemnity - Self-Insurance and Payment)

J. NON-WAIVER OF BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The acceptance of late performance with or without objection or reservation by a Party shall not waive any rights of the Party nor constitute a waiver of the requirement of timely performance of any obligations remaining to be performed.

ITB #: 6687 OF

BIDDER'S NAME: RST**K. SEVERABILITY**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

If any term or condition of the contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining Terms and Conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the provision held to be invalid or illegal.

L. INDEMNIFICATION

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

1. GENERAL

The Contractor agrees to defend, indemnify, and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials ("the indemnified parties") from and against any and all claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses of every nature, including investigation costs and expenses, settlement costs, and attorney fees and expenses ("the claims"), sustained or asserted against the State for personal injury, death, or property loss or damage, arising out of, resulting from, or attributable to the willful misconduct, negligence, error, or omission of the Contractor, its employees, Subcontractors, consultants, representatives, and agents, resulting from this contract, except to the extent such Contractor liability is attenuated by any action of the State which directly and proximately contributed to the claims.

2. INTELLECTUAL PROPERTY

The Contractor agrees it will, at its sole cost and expense, defend, indemnify, and hold harmless the indemnified parties from and against any and all claims, to the extent such claims arise out of, result from, or are attributable to, the actual or alleged infringement or misappropriation of any patent, copyright, trade secret, trademark, or confidential information of any third party by the Contractor or its employees, Subcontractors, consultants, representatives, and agents; provided, however, the State gives the Contractor prompt notice in writing of the claim. The Contractor may not settle any infringement claim that will affect the State's use of the Licensed Software without the State's prior written consent, which consent may be withheld for any reason.

If a judgment or settlement is obtained or reasonably anticipated against the State's use of any intellectual property for which the Contractor has indemnified the State, the Contractor shall, at the Contractor's sole cost and expense, promptly modify the item or items which were determined to be infringing, acquire a license or licenses on the State's behalf to provide the necessary rights to the State to eliminate the infringement, or provide the State with a non-infringing substitute that provides the State the same functionality. At the State's election, the actual or anticipated judgment may be treated as a breach of warranty by the Contractor, and the State may receive the remedies provided under this solicitation.

M. ATTORNEY'S FEES

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

In the event of any litigation, appeal, or other legal action to enforce any provision of the contract, the Parties agree to pay all expenses of such action, as permitted by law and if ordered by the court, including attorney's fees and costs, if the other party prevails.

ITB #: 6687 OF

BIDDER'S NAME: RST**N. ASSIGNMENT, SALE, OR MERGER**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Either party may assign the contract upon mutual written agreement of the other party. Such agreement shall not be unreasonably withheld. The Vendor retains the right to enter into a sale, merger, acquisition, internal reorganization, or similar transaction involving Vendor's business. Vendor agrees to cooperate with the State in executing amendments to the contract to allow for the transaction. If a third party or entity is involved in the transaction, the Vendor will remain responsible for performance of the contract until such time as the person or entity involved in the transaction agrees in writing to be contractually bound by this contract and perform all obligations of the contract.

O. CONTRACTING WITH OTHER POLITICAL SUB-DIVISIONS OF THE STATE OR ANOTHER STATE

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The Vendor may, but shall not be required to, allow agencies, as defined in Neb. Rev. Stat. § 81-145, to use this contract. The Terms and Conditions, including price, of the contract may not be amended. The State shall not be contractually obligated or liable for any contract entered into pursuant to this clause.

The Vendor may, but shall not be required to, allow other states, agencies or divisions of other states, or political subdivisions of other states to use this contract. The Terms and Conditions, including price, of this contract shall apply to any such contract, but may be amended upon mutual consent of the Parties. The State of Nebraska shall not be contractually or otherwise obligated or liable under any contract entered into pursuant to this clause. The State shall be notified if a contract is executed based upon this contract.

P. FORCE MAJEURE

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Neither party shall be liable for any costs or damages, or for default resulting from its inability to perform any of its obligations under the contract due to a natural or man-made event outside the control and not the fault of the affected party ("Force Majeure Event"). The Party so affected shall immediately make a written request for relief to the other party, and shall have the burden of proof to justify the request. The other Party may granted the relief requested; relief may not be unreasonably withheld. Labor disputes with the impacted party's own employees will not be considered a Force Majeure Event.

Q. CONFIDENTIALITY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

All materials and information provided by the Parties or acquired by a Party on behalf of the other Party shall be regarded as confidential information. All materials and information provided or acquired shall be handled in accordance with federal and state law, and ethical standards. Should said confidentiality be breached by a Party, the Party shall notify the other Party immediately of said breach and take immediate corrective action.

ITB #: 6687 OF

BIDDER'S NAME: RST

It is incumbent upon the Parties to inform their officers and employees of the penalties for improper disclosure imposed by the Privacy Act of 1974, 5 U.S.C. 552a. Specifically, 5 U.S.C. 552a (i)(1), which is made applicable by 5 U.S.C. 552a (m)(1), provides that any officer or employee, who by virtue of his/her employment or official position has possession of or access to Agency records which contain individually identifiable information, the disclosure of which is prohibited by the Privacy Act or regulations established thereunder, and who knowing that disclosure of the specific material is prohibited, willfully discloses the material in any manner to any person or Agency not entitled to receive it, shall be guilty of a misdemeanor and fined not more than \$5,000.00.

R. EARLY TERMINATION

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The contract may be terminated as follows:

1. The State and the Vendor, by mutual written agreement, may terminate the contract at any time.
2. The State, at its sole discretion, may terminate the contract for any reason upon 30 calendar day's written notice to the Vendor. Such termination shall not relieve the Vendor of warranty or other service obligations incurred under the terms of the contract. In the event of termination the Vendor shall be entitled to payment, determined on a pro rata basis, for products or services satisfactorily performed or provided.
3. The State may terminate the contract immediately for the following reasons:
 - i. if directed to do so by statute;
 - ii. Vendor has made an assignment for the benefit of creditors, has admitted in writing its inability to pay debts as they mature, or has ceased operating in the normal course of business;
 - iii. a trustee or receiver of the Vendor or of any substantial part of the Vendor's assets has been appointed by a court;
 - iv. fraud, misappropriation, embezzlement, malfeasance, misfeasance, or illegal conduct pertaining to performance under the contract by its Vendor, its employees, officers, directors, or shareholders;
 - v. an involuntary proceeding has been commenced by any party against the Vendor under any one of the chapters of Title 11 of the United States Code and (i) the proceeding has been pending for at least sixty (60) calendar days; or (ii) the Vendor has consented, either expressly or by operation of law, to the entry of an order for relief; or (iii) the Vendor has been decreed or adjudged a debtor;
 - vi. a voluntary petition has been filed by the Vendor under any of the chapters of Title 11 of the United States Code;
 - vii. Vendor intentionally discloses confidential information;
 - viii. Vendor has or announces it will discontinue support of the deliverable; and,
 - ix. In the event funding is no longer available.

ITB #: 6687 OF**BIDDER'S NAME:** RST**III. CONTRACTOR DUTIES****A. INDEPENDENT CONTRACTOR / OBLIGATIONS**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

It is agreed that the Contractor is an independent contractor and that nothing contained herein is intended or should be construed as creating or establishing a relationship of employment, Agency, or a partnership. The Contractor is solely responsible for fulfilling the contract. The Contractor or the Contractor's representative shall be the sole point of contact regarding all contractual matters.

The Contractor shall secure, at its own expense, all personnel required to perform the services under the contract. The personnel the Contractor uses to fulfill the contract shall have no contractual or other legal relationship with the State; they shall not be considered employees of the State and shall not be entitled to any compensation, rights or benefits from the State, including but not limited to, tenure rights, medical and hospital care, sick and vacation leave, severance pay, or retirement benefits.

By-name personnel commitments made in the Contractor's bid shall not be changed without the prior written approval of the State. Replacement of these personnel, if approved by the State, shall be with personnel of equal or greater ability and qualifications. The Contractor warrants that all persons assigned to the project shall be employees of the Contractor or a Subcontractor, and shall be fully qualified to perform the work required herein. Personnel employed by the Contractor or a subcontractor to fulfill the terms of the contract shall remain under the sole direction and control of the Contractor or the subcontractor respectively.

With respect to its employees, the Contractor agrees to be solely responsible for the following:

1. Any and all pay, benefits, and employment taxes and/or other payroll withholding;
2. Any and all vehicles used by the Contractor's employees, including all insurance required by state law;
3. Damages incurred by Contractor's employees within the scope of their duties under the contract;
4. Maintaining Workers' Compensation and health insurance that complies with state and federal law and submitting any reports on such insurance to the extent required by governing law;
5. Determining the hours to be worked and the duties to be performed by the Contractor's employees; and,
6. All claims on behalf of any person arising out of employment or alleged employment (including without limit claims of discrimination alleged against the Contractor, its officers, agents, or subcontractors or subcontractor's employees).

If the Contractor intends to utilize any subcontractor, the Subcontractor's level of effort, tasks, and time allocation must be clearly defined in the Contractor's bid. The Contractor shall agree that it will not utilize any Subcontractors not specifically included in its bid in the performance of the contract without the prior written authorization of the State. The State reserves the right to require the Contractor to reassign or remove from the project any Contractor or Subcontractor employee.

Contractor shall insure that the Terms and Conditions contained in any contract with a sub-contractor does not conflict with the Terms and Conditions of this contract. The Contractor shall include a similar provision, for the protection of the State, in the contract with any Subcontractor engaged to perform work on this contract.

B. EMPLOYEE WORK ELIGIBILITY STATUS

The Contractor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of employees physically performing work within the State. A federal immigration verification system means the electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal Agency authorized to verify the work eligibility status of an employee.

If the Contractor is an individual or sole proprietorship, the following applies:

1. The Contractor must complete the United States Citizenship Attestation Form, available on the Nebraska Secretary of State website at [Microsoft Word - attestation_form,lor's_version.docx \(nebraska.gov\)](#)

If required, the completed United States Attestation Form should be submitted with the solicitation response.

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2. If the Contractor indicates on such attestation form that he or she is a qualified alien, the Contractor agrees to provide the U.S. Citizenship and Immigration Services documentation required to verify the Contractor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program.
3. The Contractor understands and agrees that lawful presence in the United States is required and the Contractor may be disqualified or the contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. § 4-108.

C. COMPLIANCE WITH CIVIL RIGHTS LAWS AND EQUAL OPPORTUNITY EMPLOYMENT / NONDISCRIMINATION (Statutory)

The Contractor shall comply with all applicable local, state, and federal statutes and regulations regarding civil rights laws and equal opportunity employment. The Nebraska Fair Employment Practice Act prohibits Contractors of the State, and their Subcontractors, from discriminating against any employee or applicant for employment, with respect to hire, tenure, terms, conditions, compensation, or privileges of employment because of race, color, religion, sex, disability, marital status, or national origin (Neb. Rev. Stat. §§ 48-1101 through 48-1125). The Contractor guarantees compliance with the Nebraska Fair Employment Practice Act, and breach of this provision shall be regarded as a material breach of contract. The Contractor shall insert a similar provision in all Subcontracts for goods or services to be covered by any contract resulting from this solicitation.

D. COOPERATION WITH OTHER VENDORS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Vendor may be required to work with or in close proximity to other vendors or individuals that may be working on the same or different projects. The Vendor shall agree to cooperate with such other vendors or individuals, and shall not commit or permit any act which may interfere with the performance of work by any other vendor or individual. Vendor is not required to compromise Vendor's intellectual property or proprietary information unless expressly required to do so by this contract.

E. DISCOUNTS

Prices quoted shall be inclusive of ALL trade discounts. Cash discount terms of less than 30 days will not be considered as part of the bid. Cash discount periods will be computed from the date of receipt of a properly executed claim voucher or the date of completion of delivery of all items in a satisfactory condition, whichever is later.

F. PRICES

Prices quoted shall be net, including transportation and delivery charges fully prepaid by the vendor and FOB Destination as named in the solicitation. No additional charges will be allowed for packing, packages, or partial delivery costs. When an arithmetic error has been made in the extended total, the unit price will govern.

All prices, costs, and Terms and Conditions submitted in the bid shall remain fixed and valid for the first 90 days of the initial contract term. Any request for a price increase must be submitted in writing to SPB a minimum of 30 days prior to the requested start date of the increase. Several forms of documentation may be required by the State to support the price increase.

The State will be given full proportionate benefit of any decreases for the term of the contract.

The State reserves the right to deny any requested price increase.

No price increases are to be billed to any State Agencies prior to written amendment of the contract by the parties.

G. COST CLARIFICATION

The State reserves the right to review all aspects of cost for reasonableness and to request clarification of any bid where the cost component shows significant and unsupported deviation from industry standards or in areas where detailed pricing is required.

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BIDDER'S NAME: RST**H. PERMITS, REGULATIONS, LAWS**

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The contract price shall include the cost of all royalties, licenses, permits, and approvals, whether arising from patents, trademarks, copyrights or otherwise, that are in any way involved in the contract. The Vendor shall obtain and pay for all royalties, licenses, and permits, and approvals necessary for the performance of the contract. The Vendor must guarantee that it has the full legal right to the materials, supplies, equipment, software, and other items used to execute this contract.

I. OWNERSHIP OF INFORMATION AND DATA / DELIVERABLES

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The State shall have the unlimited right to publish, duplicate, use, and disclose all information and data developed or obtained by the Vendor on behalf of the State pursuant to this contract. The State shall own and hold exclusive title to any deliverable developed as a result of this contract. The Vendor shall have no ownership interest or title, and shall not patent, license, or copyright, duplicate, transfer, sell, or exchange, the design, specifications, concept, or deliverable.

J. NOTICE OF POTENTIAL CONTRACTOR BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

If the Vendor breaches the contract or anticipates breaching the contract the Vendor shall immediately give written notice to the State. The notice shall explain the breach or potential breach, and may include a request for a waiver of the breach if so desired. The State may, at its discretion, temporarily or permanently waive the breach. By granting a temporary waiver, the State does not forfeit any rights or remedies to which the State is entitled by law or equity, or pursuant to the provisions of the contract. Failure to give immediate notice, however, may be grounds for denial of any request for a waiver of a breach.

K. ANTITRUST

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The Vendor hereby assigns to the State any and all claims for overcharges as to goods and/or services provided in connection with this contract resulting from antitrust violations which arise under antitrust laws of the United States and the antitrust laws of the State.

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L. CONFLICT OF INTEREST

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

By submitting a bid, bidder certifies that no relationship exists between the bidder and any person or entity which either is, or gives the appearance of, a conflict of interest related to this Request for Bid or project. Bidder further certifies that bidder will not employ any individual known by bidder to have a conflict of interest nor shall bidder take any action or acquire any interest, either directly or indirectly, which will conflict in any manner or degree with the performance of its contractual obligations hereunder or which creates an actual or appearance of conflict of interest.

If there is an actual or perceived conflict of interest, bidder shall provide with its bid a full disclosure of the facts describing such actual or perceived conflict of interest and a proposed mitigation plan for consideration. The State will then consider such disclosure and proposed mitigation plan and either approve or reject as part of the overall bid evaluation.

M. ADVERTISING

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The Vendor agrees not to refer to the contract award in advertising in such a manner as to state or imply that the company or its goods and services are endorsed or preferred by the State. Any publicity releases pertaining to the project shall not be issued without prior written approval from the State.

N. NEBRASKA TECHNOLOGY ACCESS STANDARDS (Statutory)

The Vendor shall review the Nebraska Technology Access Standards, found at <http://nitc.nebraska.gov/standards/2-201.html> and ensure that products and/or goods provided under the contract are in compliance or will comply with the applicable standards to the greatest degree possible. In the event such standards change during the Vendor's performance, the State may create an amendment to the contract to request the contract comply with the changed standard at a cost mutually acceptable to the parties.

O. DISASTER RECOVERY/BACK UP PLAN

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The Vendor shall have a disaster recovery and back-up plan, of which a copy should be provided upon request to the State, which includes, but is not limited to equipment, personnel, facilities, and transportation, in order to continue delivery of goods and services as specified under the specifications in the contract in the event of a disaster.

P. DRUG POLICY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Contractor certifies it maintains a drug free work place environment to ensure worker safety and workplace integrity. Contractor agrees to provide a copy of its drug free workplace policy at any time upon request by the State.

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Q. WARRANTY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Despite any clause to the contrary, the Contractor represents and warrants that its services hereunder shall be performed by competent personnel and shall be of professional quality consistent with generally accepted industry standards for the performance of such services and shall comply in all respects with the requirements of this Contract. For any breach of this warranty, the Contractor shall, for a period of 90 days from performance of the service, perform the services again, at no cost to Customer, or if Contractor is unable to perform the services as warranted, Contractor shall reimburse Customer the fees paid to Contractor for the unsatisfactory services. The rights and remedies of the parties under this warranty are in addition to any other rights and remedies of the parties provided by law or equity, including, without limitation actual damages, and, as applicable and awarded under the law, to a prevailing party, reasonable attorneys' fees and costs.

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BIDDER'S NAME: RST**IV. PAYMENT****A. PROHIBITION AGAINST ADVANCE PAYMENT (Statutory)**

Neb. Rev. Stat. §§ 81-2403 states, "[n]o goods or services shall be deemed to be received by an Agency until all such goods or services are completely delivered and finally accepted by the Agency."

B. TAXES (Statutory)

The State is not required to pay taxes and assumes no such liability as a result of this solicitation. The Vendor may request a copy of the Nebraska Department of Revenue, Nebraska Resale or Exempt Sale Certificate for Sales Tax Exemption, Form 13 for their records. Any property tax payable on the Vendor's equipment which may be installed in a state-owned facility is the responsibility of the Vendor.

C. INVOICES

Invoices for payments must be submitted by the Vendor to the Agency requesting the services with sufficient detail to support payment. The Terms and Conditions included in the Vendor's invoice shall be deemed to be solely for the convenience of the parties. No terms or conditions of any such invoice shall be binding upon the State, and no action by the State, including without limitation the payment of any such invoice in whole or in part, shall be construed as binding or estopping the State with respect to any such term or condition, unless the invoice term or condition has been previously agreed to by the State as an amendment to the contract.

D. INSPECTION AND APPROVAL

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

Final inspection and approval of all work required under the contract shall be performed by the designated State officials. The State and/or its authorized representatives shall have the right to enter any premises where the Contractor or Subcontractor duties under the contract are being performed, and to inspect, monitor or otherwise evaluate the work being performed. All inspections and evaluations shall be at reasonable times and in a manner that will not unreasonably delay work.

E. PAYMENT (Statutory)

Payment will be made by the responsible Agency in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. § 81-2403). The State may require the Vendor to accept payment by electronic means such as ACH deposit. In no event shall the State be responsible or liable to pay for any goods and services provided by the Vendor prior to the Effective Date of the contract, and the Vendor hereby waives any claim or cause of action for any such services.

F. LATE PAYMENT (Statutory)

The Vendor may charge the responsible Agency interest for late payment in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. §§ 81-2401 through 81-2408).

G. SUBJECT TO FUNDING / FUNDING OUT CLAUSE FOR LOSS OF APPROPRIATIONS (Statutory)

The State's obligation to pay amounts due on the Contract for a fiscal years following the current fiscal year is contingent upon legislative appropriation of funds. Should said funds not be appropriated, the State may terminate the contract with respect to those payments for the fiscal year(s) for which such funds are not appropriated. The State will give the Vendor written notice 30 calendar days prior to the effective date of termination. All obligations of the State to make payments after the termination date will cease. The Vendor shall be entitled to receive just and equitable compensation for any authorized work which has been satisfactorily completed as of the termination date. In no event shall the Vendor be paid for a loss of anticipated profit.

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H. RIGHT TO AUDIT (First Paragraph is Statutory)

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative Response (Initial)	NOTES/COMMENTS:
ML			

The State shall have the right to audit the Vendor's performance of this contract upon a 30 day written notice. Vendor shall utilize generally accepted accounting principles, and shall maintain the accounting records, and other records and information relevant to the contract (Information) to enable the State to audit the contract. (Neb. Rev. Stat. § 84-304 et seq.) The State may audit and the Vendor shall maintain the information during the term of the contract and for a period of five (5) years after the completion of this contract or until all issues or litigation are resolved, whichever is later. The Vendor shall make the Information available to the State at Vendor's place of business or a location acceptable to both Parties during normal business hours. If this is not practical or the Vendor so elects, the Vendor may provide electronic or paper copies of the Information. The State reserves the right to examine, make copies of, and take notes on any Information relevant to this contract, regardless of the form or the Information, how it is stored, or who possesses the Information. In no circumstances will vendor be required to create or maintain documents not kept in the ordinary course of vendor's business operations, nor will vendor be required to disclose any information, including but not limited to product cost data, which is confidential or proprietary to vendor.

The Parties shall pay their own costs of the audit unless the audit finds a previously undisclosed overpayment by the State. If a previously undisclosed overpayment exceeds two and one-half (2.5%) of the total contract billings, or if fraud, material misrepresentations, or non-performance is discovered on the part of the Vendor, the Vendor shall reimburse the State for the total costs of the audit. Overpayments and audit costs owed to the State shall be paid within 90 days of written notice of the claim. The Vendor agrees to correct any material weaknesses or condition found as a result of the audit.

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V. SCOPE OF WORK

The Vendor must provide the following information in response to this solicitation

A. SCOPE

It is the intent of this ITB to establish a contract to supply **Truck Towed Attenuators** per the attached specifications from date of award for a period of One (1) year with the option to renew for an additional Four (4), One (1)-year periods when mutually agreeable to the vendor and the State. The State reserves the right to extend the period of this contract beyond the end date when mutually agreeable to the vendor and the State.

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VI. TECHNICAL SPECIFICATIONS

A. VENDOR INSTRUCTIONS

Vendor must respond to each of the following statements. Specifications listed are minimum conditions that must be met in order for a Vendor to qualify for the award.

“YES” response means the Vendor guarantees they can meet this condition.

“NO” response means the Vendor cannot meet this condition and will not be considered.

“NO & PROVIDE ALTERNATIVE” responses should be used only with a narrative response in the “NOTES/COMMENTS” section explaining in detail any deviation from the Vendor’s ability to meet the condition, and an explanation of how this would be determined to be an acceptable alternative to meeting the condition. Alternatives must be detailed in such a way that allows such deviations to be fully evaluated. The State shall determine at its sole discretion whether or not the Vendor’s alternative is an acceptable alternative.

B. NON-COMPLIANCE STATEMENT

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Read these specifications carefully. Any and all exceptions to these specifications must be written on or attached to solicitation response. Any noncompliance may void your bid. Non-compliance to any single specification can void your bid.
ML			2. It is the responsibility of Vendors to obtain information and clarifications as provided below. The State is not responsible for any erroneous or incomplete understandings or wrongful interpretations of this solicitation by any Vendor.
ML			3. No interpretation related to the meaning of solicitation specifications or other pre-bid documents will be made orally to any Vendor by the State.
ML			4. The Vendor must submit any solicitation interpretation in writing to SPB via the following ShareFile link: https://nebraska.sharefile.com/r-rbe40d2ad78664f72970a2c94edc574d8 by the last day to submit written questions per the Schedule of Events. (Inquiries received after the last day to submit written questions may not be addressed).
NOTES/COMMENTS:			

C. MOUNTING

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Unit shall be capable of being towed by a truck with a minimum GVW of 10,000 lbs.
ML			2. Unit shall be able to be installed and removed from an industry standard minimum 20 Ton Pintle Hook hitch with common trailer position, including trailer safety chains, in three (3) minutes or less.
		ML	3. Hitch system shall provide anti-rotational movement of trailer while withstanding “off-angle” rear hit.
		ML	a. Telescopic sliding hitch with solid bolsters preferred. Specify if other in the “NOTES/COMMENTS” section below.
		ML	b. Hitch designs that use additional brackets or hydraulic cylinders are acceptable.
ML			c. Mounting hardware shall be universal so that they may be used on multiple types of trucks at one location.

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ML			d. Attenuators are used by multiple trucks within each location.
ML			e. Anti-rotational system shall be designed to allow the trailer to articulate normally behind the tow vehicle with "locks" to prevent trailer from rotating during off center or angle impacts.
NOTES/COMMENTS: The TTMA-100 requires only an 8 ton pintle hitch to connect to host vehicle. Because of the patented design of the TTMA-200 attenuator trailer, it does not require the use of any attachments other than the pintle hitch. The design does however ensure that the attenuator will maintain it's position between the impacting vehicle and the host vehicle during "off-angle" hits, which has allowed it to pass all MASH TL3 testing.			

D. PERFORMANCE CRITERIA

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Each unit must be tested and pass all requirements established in NCHRP-350, Test Levels 3-50, 3-51, 3-52, 3-53, all conducted at 62 mph or MASH, Test Level 3.
ML			a. Documentation illustrating compliance shall be provided upon request by the State.
ML			b. The arrow board mounting frame listed in Subsection "E". Components, Number six (6) , Letters a, b, and c shall have been tested and passed all optional and mandatory requirements.
ML			2. To minimize potential damage to the truck with TMA attached, no portion of the TMA's structure or energy absorbing elements shall protrude forward of the under-ride attachment hardware during an impact.
ML			3. Performance studies are required on units proposed and should be submitted with the bid. If the performance studies are not submitted with the bid, they must be furnished prior to award.
ML			4. The attenuator shall be capable of passing the following accelerated endurance tests:
ML			a. The TMA cartridges shall be subjected to a total of 40 hours in the normal operation position.
ML			b. A variance of one half inch (1/2") of any component dimension, damage to the energy absorbing cells, will constitute failure of the device.
ML			c. 24 hours of simulated rain at six inches (6") per hour on the cartridge top, 24 hours of simulated rain at six inches (6") per hour on the cartridge bottom, and no water accumulation or moisture absorption by the cartridge material shall deteriorate the performance of the attenuator.
ML			d. When subjected to 50 hours of salt spray in accordance with ASTM B117-73, the energy absorbing material shall show no signs of corrosion or decrease in energy capacity of the material.
NOTES/COMMENTS:			

E. COMPONENTS

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The Truck Towed Attenuators shall consist of the following components:
ML			a. Heavy duty torsion suspension axle and wheels.
		ML	b. Replaceable cartridge(s) design.

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ML			c. Impact face:
ML			i. The surface of the impact frame facing oncoming traffic shall have a display of black on yellow inverted "V" chevron with four inch (4") wide color bands.
ML			ii. The colors shall meet the value and tolerance limits established by MUTCD.
ML			iii. The surface area of the delineation shall be no less than 1,300 square inches.
ML			2. System length to be a maximum of 24'.
ML			3. The unit must be equipped with a standard trailer lighting system to include brake lights, tail lights, turn signals and ICC bar lights with a seven (7) Pin ATA connector.
ML			a. Wires shall be routed in a protective, jacketed cable.
ML			b. For repair or replacement, individual circuits shall be easily identified and accessible.
ML			4. The unit shall be equipped with one (1) trailer jack stand that will be used for storage on the ground when not attached to the truck.
ML			5. The trailer shall have a break-away system designed to automatically lock the trailer brakes in the event of a hitch failure which results in the trailer breaking away from the tow vehicle.
ML			6. The Trailer shall be equipped with an arrow board mounting frame.
ML			a. The arrow board frame to hold a 48" x 96" arrow board, (the arrow board is not to be included.)
ML			b. The arrow board frame to accommodate the folding model arrow board will be equipped with manual winch to raise and lower the arrow board.
ML			c. The arrow board frame shall have been tested and passed all optional and mandatory requirement with 48" x 96" arrow board installed.
ML			7. All attenuator components shall be fully assembled and ready for use by NDOT upon delivery.

NOTES/COMMENTS:

The TTMA-200 uses an open frame design with replaceable bursting tubes, that do not require the need for cartridges. This system has been tested under 2016 MASH TL-3 and has received an FHWA Letter of Eligibility.

F. REPLACEMENT PARTS

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The awarded bidder shall have adequate replacement parts on hand to allow for replacement orders. Specify turnaround time for replacement parts in the "NOTES/COMMENTS" section below.
ML			2. Replacement parts shall be interchangeable to allow for immediate replacement.

NOTES/COMMENTS:

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BIDDER'S NAME: RST _____

G. MANUALS

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The following manuals must accompany each unit upon delivery:
ML			a. Operator's manual.
ML			b. Equipment shop repair manual.
ML			c. Equipment parts manual.
ML			2. Specify if the above manuals are available online in the "NOTES/COMMENTS" section below.
ML			3. All manual(s) must be furnished prior to payment and delivered to the Fleet Management, Equipment Data Coordinator.
ML			4. If all manuals do not accompany the unit upon delivery per Neb. Rev. Stat. § 81-2403 payment in full for all goods or services will not be made until all goods or services have been completely delivered and finally accepted by the agency.
NOTES/COMMENTS: Manuals are available at gregorycorp.com			

H. MISCELLANEOUS

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The bidders will submit with their bid a list of any special tools which will be furnished with each unit.
ML			2. Dealer nameplates, decals, etc. shall not be affixed to the unit.
NOTES/COMMENTS:			

I. SPECIFICATION FORM(S)

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Specification form(s) will be supplied by NDOT to the awarded bidder after a purchase order has been issued.
ML			2. The specification form(s) shall be completed by the awarded bidder to the fullest extent possible for each unit and must accompany each unit when delivered.
ML			3. The unit will not be considered completely delivered until the specification form(s) are properly completed and submitted to NDOT.
NOTES/COMMENTS:			

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J. ANNUAL USAGE, ESTIMATED

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Annual usage figures provided are estimates and are not to be construed as either a minimum or maximum purchase quantity.
ML			2. The orders shall be for the actual quantities of each item ordered by or for any Agency during the life of the contract.
ML			3. Vendor shall not impose minimum order requirements.
ML			4. Annual estimated usage five (5) to seven (7) units.
NOTES/COMMENTS:			

K. USAGE REPORT

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Upon request, as determined by the State, the Vendor shall provide a usage report for the requested time period of this contract by State Agencies and Political Subdivisions. Information will include, at a minimum, Agency or Political Subdivision name, item description, item number and dollar amount.
NOTES/COMMENTS:			

L. DELIVERY ARO / LOCATION

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Delivery desired within 90 to 120 days after receipt of order(s).
ML			2. NDOT 5001 S 14 th Street Lincoln, NE 68512
NOTES/COMMENTS:			

M. ORDERS

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Orders will be placed either by, phone, e-mail or Internet (if available and not to the exclusion of the other methods).
ML			2. All orders must reference a purchase order number
ML			3. The purchase order number must be referenced on the packing slip, and invoice.
ML			4. Invoices are to be sent to the "Invoice to" address on the purchase order.
NOTES/COMMENTS:			

ITB #: 6687 OF**BIDDER'S NAME:** RST**N. QUALITY**

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Product quality must meet specifications and be consistent for the term of the contract. All materials must be of first quality, under standard production by the manufacturer and be of standard design, complete as regularly advertised and marketed and be of proven performance.
ML			2. Products are to be fully guaranteed and may be returned for full credit or replacement (at the State's option) for any reason during the initial warranty period with no additional charges for shipping or restocking.
NOTES/COMMENTS:			

O. AUTHORIZED DEALER

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. To the extent required by the manufacturer, the Vendor shall be an authorized dealer. The Vendor may be required to substantiate that they are an authorized dealer. Proof, if required, should be submitted to SPB within three (3) business days of the request and prior to any contract award(s).
NOTES/COMMENTS:			

P. WARRANTY

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The Vendor warrants for a period of one (1) year from the date of Acceptance that:
ML			a. the Products perform according to all specific claims that the Vendor made in its response to the solicitation;
ML			b. the Product is suitable for the ordinary purposes for which such Product is used;
ML			c. the Product is suitable for any special purposes identified in the solicitation or for which the State has relied on the Vendor's skill or judgment;
ML			d. the Product is designed and manufactured in a commercially reasonable manner;
ML			e. the Product is free of defects;
ML			f. the Vendor shall be responsible for all repairs to include parts and labor unless the unit is destroyed unintentionally prior to end of warranty period; and,
ML			g. If repairs are required all transportation costs to and from the nearest authorized repair facility will be the responsibility of NDOT.
ML			2. Upon breach of the warranty, the Vendor will repair or replace (at no charge to the State) the Product whose nonconformance is discovered and made known to the Vendor.

ITB #: 6687 OF**BIDDER'S NAME:** RST

ML			3. If the repaired and/or replaced Product proves to be inadequate, or fails of its essential purpose, the Vendor will refund the full amount of any payments that have been made.
ML			4. The rights and remedies of the parties under this warranty are in addition to any other rights and remedies of the parties provided by law or equity, including, without limitation actual damages, and, as applicable and awarded under the law, to a prevailing party, reasonable attorneys' fees and costs.
ML			5. The terms of the original manufacturer's standard warranty shall apply to all equipment acquired from this solicitation for the entire warranty period.
NOTES/COMMENTS:			

Q. SAMPLES/PERFORMANCE TESTING

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. Samples of Truck Towed Attenuator, in accordance with the specifications utilizing materials and features as proposed, may be required prior to award.
ML			2. Vendor shall have ten (10) business days to provide sample(s) upon the State's written request.
ML			3. Sample Truck Towed Attenuator is to be of material and construction as bid. Failure to supply samples and/or sample(s) that do not meet specifications and/or fail any of the protocols/tests as outlined below, may be grounds to reject the bid.
ML			4. Any sample requested will be reviewed by the NDOT Material & Test division.
ML			5. Bids may be rejected based on the quality of samples provided.
NOTES/COMMENTS:			

R. DEMONSTRATION

YES	NO	NO & PROVIDE ALTERNATIVE	
ML			1. The State may require a demonstration of the equipment being considered.
ML			2. If a demonstration is requested the Bidder(s) will be required to provide a demonstration, at a location chosen by NDOT, within ten (10) days of such request.
ML			3. A bidder that does not comply with a Demonstration request will be considered non-responsive.
ML			4. The demonstration will include such features as attachments and accessories as are called out in these specifications and to the satisfaction of NDOT.
NOTES/COMMENTS:			

August 4, 2020



U.S. Department
of Transportation
**Federal Highway
Administration**

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

In Reply Refer To:
HSST-1/CC-152

Mr. Frederick Mauer
Gregory Industries
4100 13th Street, SW
Canton, OH. 44710

Dear Mr. Mauer:

On March 6, 2019, the Federal Highway Administration (FHWA) issued Letter CC-152 for the Gregory Industries Truck-Trailer Mounted Attenuator (TTMA) 200. On May 1, 2020, Gregory Industries submitted a second application for eligibility for an updated TTMA 200 which features heavier-duty spindles and electric braking system. This letter is in response to the May 1, 2020 request for FHWA to review the updated device for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number CC-152 and will supersede and replace the existing letter CC-152.

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:

- TTMA-200

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: TTMA-200

Type of system: Truck-Trailer Mounted Attenuator

Test Level: MASH Test Level 3 (TL3)

Testing conducted by: Applus IDIADA KARCO Engineering, LLC.

Date of request: May 1, 2020

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-152 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.

Sincerely,



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

Enclosures

Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Submitter	Date of Request:	May 01, 2020	<input checked="" type="radio"/> New <input type="radio"/> Resubmission
	Name:	Nick Injev	
	Company:	Applus IDIADA KARCOEngineering, LLC.	
	Address:	9270 Holly Road, Adelanto, CA 92301	
	Country:	United States of America	
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
'CC': Truck-Mounted Attenua	<input checked="" type="radio"/> Physical Crash Testing <input type="radio"/> Engineering Analysis	TTMA-200	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:	Frederick Mauer	Same as Submitter <input type="checkbox"/>
Company Name:	Gregory Industries	Same as Submitter <input type="checkbox"/>
Address:	4100 13th Street SW Canton OH 44710	Same as Submitter <input type="checkbox"/>
Country:	United States of America	Same as Submitter <input type="checkbox"/>
Enter below all disclosures of financial interests as required by the FHWA 'Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.		
Gregory Industries is the manufacturer and marketer of the TTMA-200.		
Applus IDIADA KARCOEngineering, LLC (IDIADA KARCO) is an independent research and testing laboratory having no affiliation with any other entity. IDIADA KARCO is actively involved in data acquisition and compliance/certification testing for a variety of government agencies and equipment manufacturers. The principals and staff of IDIADA KARCO have no past or present financial, contractual or organizational interest in any company or entity directly or indirectly related to the products that KARCO tests. If any financial interest should arise, other than receiving fees for testing, reporting, etc., with respect to any project, the company will provide, in writing, a full and immediate disclosure to the FHWA.		

PRODUCT DESCRIPTION

Help

- New Hardware or Significant Modification
 Modification to Existing Hardware

The TTMA-200 is trailer attenuator designed to dissipate the kinetic energy of an impacting vehicle to reduce the severity of a crash. As the impact head and mandrel are pushed forward into the first tube, the tapered mandrel bursts the first tube at the corners into four (4) straps. The bursting of the first tube dissipates the kinetic energy of the impacting vehicle. The trailer attenuator has a length of 23.6ft (7.2 m) with an optional hitch extension its total tested length was 24.9 ft. (7.6 m) and a max width of 8.0 ft. (2.4 m). The TTMA-200 is supported by a wheel and axle assembly and is attached to the support truck with a lunette ring.

All testing of the TTMA-200 was conducted with an optional 4.0 ft. x 8.0 ft. (1.2 m x 2.4 m) arrow board and arrow board frame that attached to the trailer frame assembly. The arrow board frame was attached to the trailer frame assembly with two (2) 5/8" grade 5 bolts and six (6) 1/2" grade 5 bolts. The arrow board was secured to the arrow board frame with five (5) 3/8" grade 5 bolts. An optional 16.0 in. (406 mm) hitch extension bolted to the trailer frame assembly with four (4) 5/8" grade 5 bolts. The TTMA-200 lunette ring was inserted into a standard 8-ton pintle hitch mounted on the support truck at a height of 19.5 in. (495 mm). Complete detail of the assemblies can be found in the manufacturer's drawings.

Test Chronology and Design Modifications:

Tests 3-51, 52, and 53 were conducted from 07/23/18 through 07/26/18.

Test 3-50 was conducted on 03/11/20.

Throughout the series, the TTMA-200 was tested with some optional accessories, one being a light bar at the rear of the TMA. The mounting method of the optional light bar accessory was changed during the test series. Tests 3-52 and 3-53 were tested with the revised mounting method of the accessory. The new mounting method used four (4) pieces of 0.75 in. (19 mm) galvanized steel hanger strap to secure the light bar. Test 3-50 replaced the galvanized steel strap with a stainless steel strap to add longevity to the attachment component. These changes had no impact on performance of the system.

Test 3-50 was run with a heavier duty spindle. This change added an additional 0.9 lbs (0.4 kg) per axle. In addition, Test 3-50 was also run using an optional electrically operate braking package to the axle. This change added an additional 8.1 lbs (3.7 kg) per axle. The total change in axle weight was 18 lbs (8.2 kg). Only Test 3-50 was performed with this modification to the axle because a 1100C vehicle is the most susceptible to seeing a change in occupant impact velocities and ridedown acceleration than the heavier 2270P vehicle used in Tests 3-51, 3-52, and 3-53. Therefore, Test 3-50 represents the worst case test for this design modification.

During Test 3-50, the occupant struck the dashboard at time 0.1016 s. Since the impact head engaged the axle push rods at 0.125 s, it can be concluded that the occupant impact velocity was not affected by this change.

The time of maximum ridedown acceleration occurred between times 0.1252 s and 0.1352 s. The maximum ridedown acceleration was -17.8 g's, which is well below the MASH allowable ridedown acceleration of 20 g's therefore this modification had a minimal effect on the performance of the TTMA-200.

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:	Nick Injev	
Engineer Signature:	 <small>email=nick.injev@idiada.com, c=US Digitally signed by Nick Injev DN: cn=Nick Injev, o=Applus IDIADA KARCO, ou,</small> <small>Date: 2020.05.01 14:50:09 -07'00'</small>	
Address:	9270 Holly Road, Adelanto, CA 92301	Same as Submitter <input checked="" type="checkbox"/>
Country:	United States of America	Same as Submitter <input checked="" type="checkbox"/>


A brief description of each crash test and its result: [Help](#)

Required Test Number	Narrative Description	Evaluation Results
3-50 (1100C)	<p>IDIADA KARCOTest Number P40080-01. An 1100C test vehicle impacting the TTMA-200 at a nominal impact speed and angle of 62 mph and 0°, respectively. The primary intent of this test is to evaluate the impact performance of the TTMA-200 during small car impacts. The support vehicle was blocked against forward movement. The support vehicle was also placed in second gear with the parking brake engaged and the front wheels were centered with no steering angle. The test vehicle, 2015 Kia Rio impacted the TTMA-200 at a speed and angle of 61.64 mph (99.20 km/h) and 1.2°. The TTMA-200 brought the vehicle to a controlled stop. There was no penetration into the occupant compartment and the deformation limits were not exceeded. The Occupant Impact Velocities (OIV) in the longitudinal and lateral directions were 32.8 ft/s (10.0 m/s) and 1.0 ft/s (0.3 m/s), respectively. The Ridedown acceleration in the longitudinal and lateral directions were -17.8 g and -2.2 g, respectively. The TTMA-200 met all the requirements for MASH Test 3-50.</p>	PASS

Required Test Number	Narrative Description	Evaluation Results
3-51 (2270P)	<p>IDIADA KARCOTest Number P38076-01. An 2270P test vehicle impacting the TTMA-200 at a nominal impact speed and angle of 62 mph and 0°, respectively. The primary intent of this test is to evaluate the energy dissipation capacity of the TTMA-200, structural adequacy and occupant risk. The support vehicle was blocked against forward movement. The support vehicle was also placed in second gear with the parking brake engaged and the front wheels were centered with no steering angle. The test vehicle, 2012 RAM 1500 impacted the TTMA-200 at a speed and angle of 64.11 mph (103.18 km/h) and 0.3°. The TTMA-200 brought the vehicle to a controlled stop. There was no penetration into the occupant compartment and the deformation limits were not exceeded. The Occupant Impact Velocities (OIV) in the longitudinal and lateral directions were 29.2 ft/s (8.9 m/s) and 0.7 ft/s (0.2 m/s), respectively. The Ridedown acceleration in the longitudinal and lateral directions were -14.9 g and -3.1 g, respectively. All the occupant risk values were below the preferred values in MASH. The TTMA-200 met all the requirements for MASH Test 3-51.</p>	PASS
3-52 (2270P)	<p>IDIADA KARCOTest Number P38078-01. An 2270P test vehicle impacting the TTMA-200 offset 1/3 the vehicles overall width at a nominal impact speed and angle of 62 mph and 0°, respectively. The primary intent of this test is to evaluate structural adequacy and occupant risk. The support vehicle was blocked against forward and lateral movement. The support vehicle was also placed in second gear with the parking brake engaged and the front wheels were centered with no steering angle. The test vehicle, 2013 RAM 1500 impacted the TTMA-200 at a speed and angle of 62.99 mph (101.37 km/h) and 0.1°. The TTMA-200 brought the vehicle to a controlled stop. There was no penetration into the occupant compartment and the deformation limits were not exceeded. The Occupant Impact Velocities (OIV) in the longitudinal and lateral directions were 28.2 ft/s (8.6 m/s) and 2.0 ft/s (0.6 m/s), respectively. The Ridedown acceleration in the longitudinal and lateral directions were -16.4 g and 2.5 g, respectively. The TTMA-200 met all the requirements for MASH Test 3-52.</p>	PASS

3-53 (2270P)	<p>IDIADA KARCOTest Number P38075-02. An 2270P test vehicle impacting the TTMA-200 offset 1/4 the vehicles overall width at a nominal impact speed and angle of 62 mph and 10°, respectively. The primary intent of this test is to evaluate structural adequacy and occupant risk. The support truck weighed 10,337 lbs and was tested with the parking brake engaged, transmission placed in second gear and the front wheels centered with no steering angle. The test vehicle, 2012 RAM 1500 impacted the TTMA-200 at a speed and angle of 63.49 mph (102.18 km/h) and 10.1°. The TTMA-200 brought the vehicle to a controlled stop. There was no penetration into the occupant compartment and the deformation limits were not exceeded. The Occupant Impact Velocities (OIV) in the longitudinal and lateral directions were 26.6 ft/s (8.1 m/s) and 1.3 ft/s (0.4 m/s), respectively. The Ridedown acceleration in the longitudinal and lateral directions were -9.8 g and -4.0 g, respectively. The support vehicle had a maximum roll ahead measurement 34.8 ft. (10.6 m). The TTMA-200 met all the requirements for MASH Test 3-53.</p>	PASS
3-54 (1500A)	Per MASH this test is optional	Non-Relevant Test, not conducted

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:	Applus IDIADA KARCO Engineering, LLC.	
Laboratory Signature:	 <small>email=nick.injev@idiada.com, c=US Digitally signed by Nick Injev DN: cn=Nick Injev, o=Applus IDIADA KARCO, ou, Date: 2020.05.01 14:50:26 -07'00'</small>	
Address:	9270 Holly Road, Adelanto, CA 92301	Same as Submitter <input checked="" type="checkbox"/>
Country:	United States of America	Same as Submitter <input checked="" type="checkbox"/>
Accreditation Certificate Number and Dates of current Accreditation period :	TL 371: July 1, 2019 - July 1, 2022	

Submitter Signature*: **Nick Injev** Digitally signed by Nick Injev
DN: cn=Nick Injev, o=Applus IDIADA
KARCO, ou, email=nick.injev@idiada.com,
c=US
Date: 2020.05.01 14:50:43 -07'00'

Submit Form

ATTACHMENTS

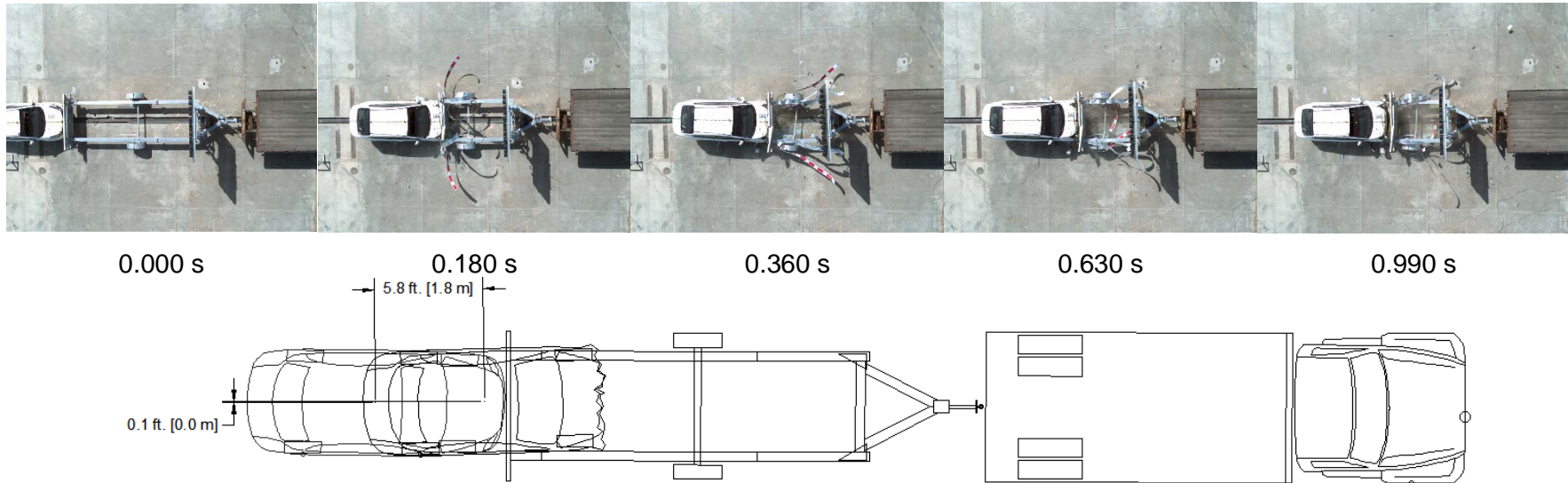
Attach to this form:

- 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

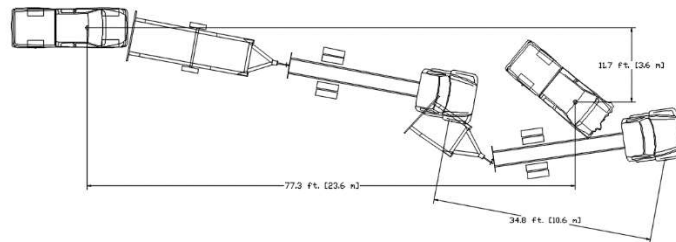
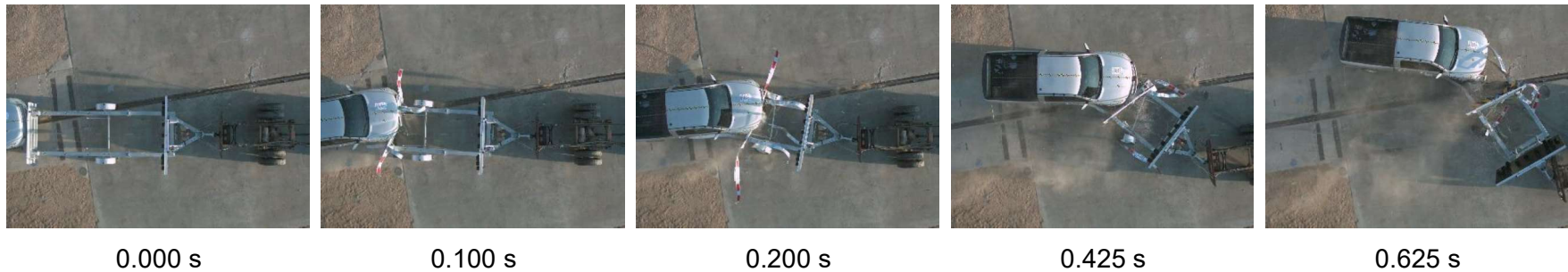
MASH 2016 Test 3-50 Summary



<p>General Information</p> <p>Test Agency..... Applus IDIADA KARCO Test No..... P40080-01 Test Designation..... 3-50 Test Date..... 03/11/20</p> <p>Test Article</p> <p>Name / Model..... TTMA-200 Type..... Crash Cushion Crash Cushion Length..... 24.9 ft. (7.6 m) Road Surface..... Smooth, clean concrete</p> <p>Test Vehicle</p> <p>Type / Designation..... 1100C Year, Make, and Model..... 2015 Kia Rio Curb Mass..... 2,559.5 lbs (1,161.0 kg) Test Inertial Mass..... 2,462.5 lbs (1,117.0 kg) Gross Static Mass..... 2,635.6 lbs (1,195.5 kg)</p>	<p>Impact Conditions</p> <p>Impact Velocity..... 61.64 mph (99.20 km/h) Impact Angle..... 1.2° Location / Orientation..... 0.6 in (15 mm) left Kinetic Energy..... 312.8 kip-ft (424.1 kJ)</p> <p>Exit Conditions</p> <p>Exit Velocity..... N/A Exit Angle..... N/A Final Vehicle Position..... 5.8 ft. (1.8 m) downstream 0.1 ft. (0 m) left Support Truck Rollahead..... 0.0 ft (0 m) Vehicle Snagging..... None Vehicle Pocketing..... None Vehicle Stability..... Satisfactory Maximum Roll Angle..... -2.9° Maximum Pitch Angle..... 3.2° Maximum Yaw Angle..... 2.6°</p>	<p>Occupant Risk</p> <p>Longitudinal OIV..... 32.8 ft/s (10.0 m/s) Lateral OIV..... 1.0 ft/s (0.3 m/s) Longitudinal RA..... -17.8 g Lateral RA..... -2.2 g THIV..... 32.8 ft/s (10.0 m/s) PHD..... 17.8 g ASI..... 1.21</p> <p>Test Article Deflections</p> <p>Static..... 9.9 ft. (3.0 m) Dynamic..... 10.7 ft. (3.3 m) Working Width..... N/A Debris Field..... N/A</p> <p>Vehicle Damage</p> <p>Vehicle Damage Scale..... 12-FD-5 CDC..... 12FDEW3 Maximum Intrusion..... 0.1 in. (3 mm) at toe pan</p>
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Figure 4 Summary of Test 3-50

MASH 2016 Test 3-53 Summary



GENERAL INFORMATION

Test Agency..... KARCO Engineering, LLC.
 KARCO Test No..... P38075-02
 Test Designation..... 3-53
 Test Date..... 07/26/18

TEST ARTICLE

Name / Model..... TTMA-200
 Type..... Trailer Mounted Attenuator
 Support Vehicle Length..... 25.0 ft. (7.6 m)
 TMA Length..... 24.9 ft. (7.6 m)
 Road Surface..... Concrete
 Support Vehicle Restraint.... 2nd gear, parking brakes engaged

TEST VEHICLE

Type / Designation..... 2270P
 Year, Make, and Model.... 2012 RAM 1500
 Curb Mass..... 5,112.4 lbs (2,319.0 kg)
 Test Inertial Mass..... 4,996.7 lbs (2,266.5 kg)
 Gross Static Mass..... 4,996.7 lbs (2,266.5 kg)

Impact Conditions

Impact Velocity..... 63.49 mph (102.18 km/h)
 Impact Angle..... 10.1°
 Location / Orientation..... Offset 500 mm
 Kinetic Energy..... 673.3 kip-ft (912.9 kJ)

Exit Conditions

Exit Velocity..... 21.6 mph (34.8 km/h)
 Heading Angle..... 38.0°
 Final Vehicle Position..... 77.3 ft. (23.6 m) Downstream
 Support Vehicle Roll Ahead.... 34.8 ft. (10.6 m)
 Vehicle Snagging..... None
 Vehicle Pocketing..... None
 Vehicle Stability..... Satisfactory
 Maximum Roll Angle..... -2.5 °
 Maximum Pitch Angle..... -8.5 °
 Maximum Yaw Angle..... -24.8 °

Occupant Risk

Longitudinal OIV..... 26.6 ft/s (8.1 m/s)
 Lateral OIV..... 1.3 ft/s (0.4 m/s)
 Longitudinal RA..... -9.8 g
 Lateral RA..... -4.0 g
 THIV..... 26.6 ft/s (8.1 m/s)
 PHD..... 10.6 g
 ASI..... 0.84

Test Article Deflections

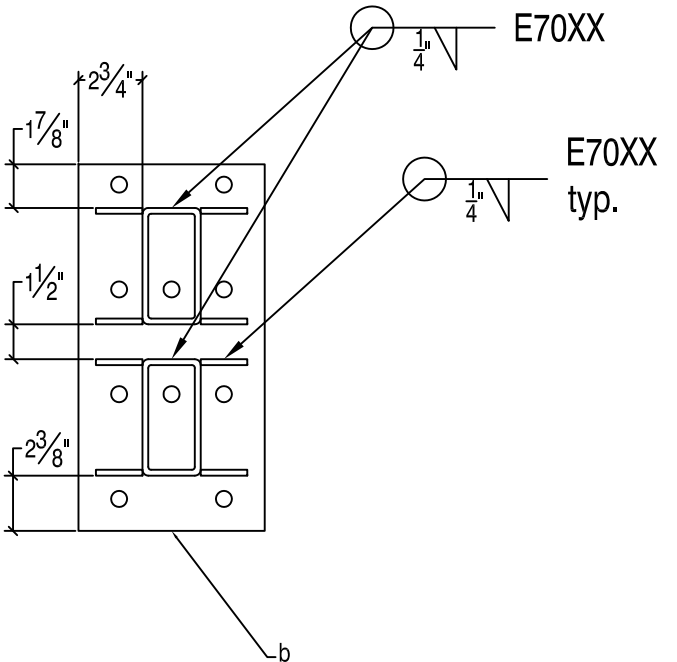
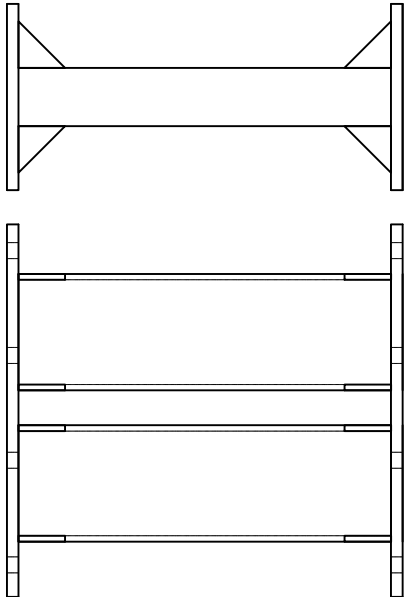
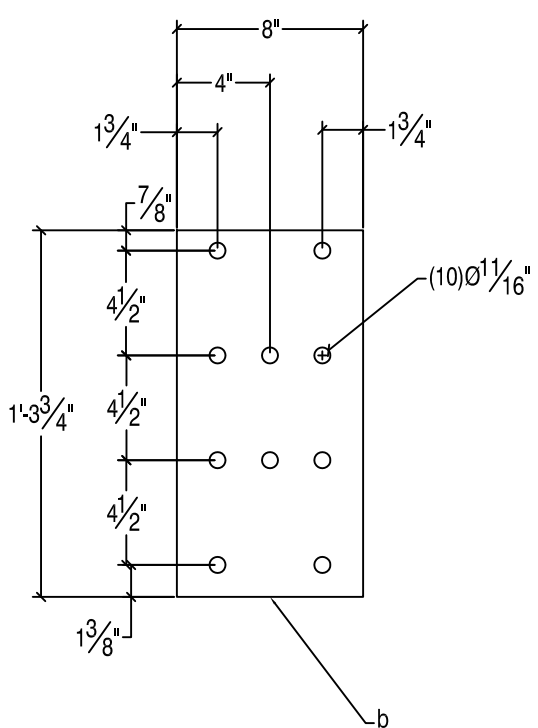
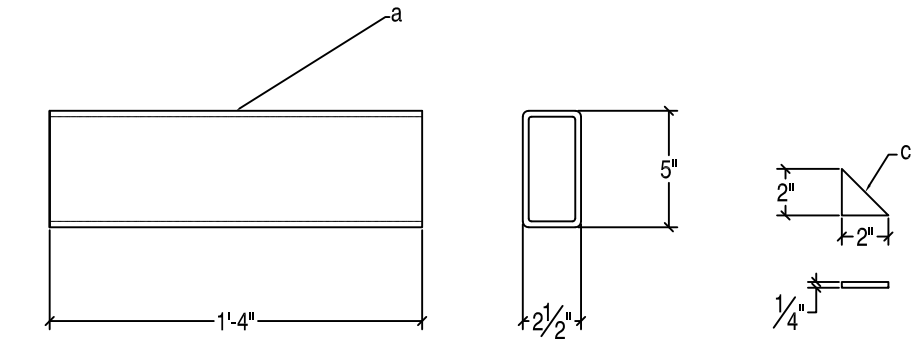
Static..... 11.6 ft. (3.5 m)
 Dynamic..... 11.6 ft. (3.5 m)
 Working Width..... 23.4 ft. (7.1 m)
 Debris Field..... 57.1 ft. (17.4 m) Downstream
 13.0 ft. (4.0 m) Right

Vehicle Damage

Vehicle Damage Scale..... 12-FR-4
 CDC..... 12FZEW3
 Maximum Intrusion..... 0.2 in. (5 mm)

Figure 4 Summary of Test 3-53

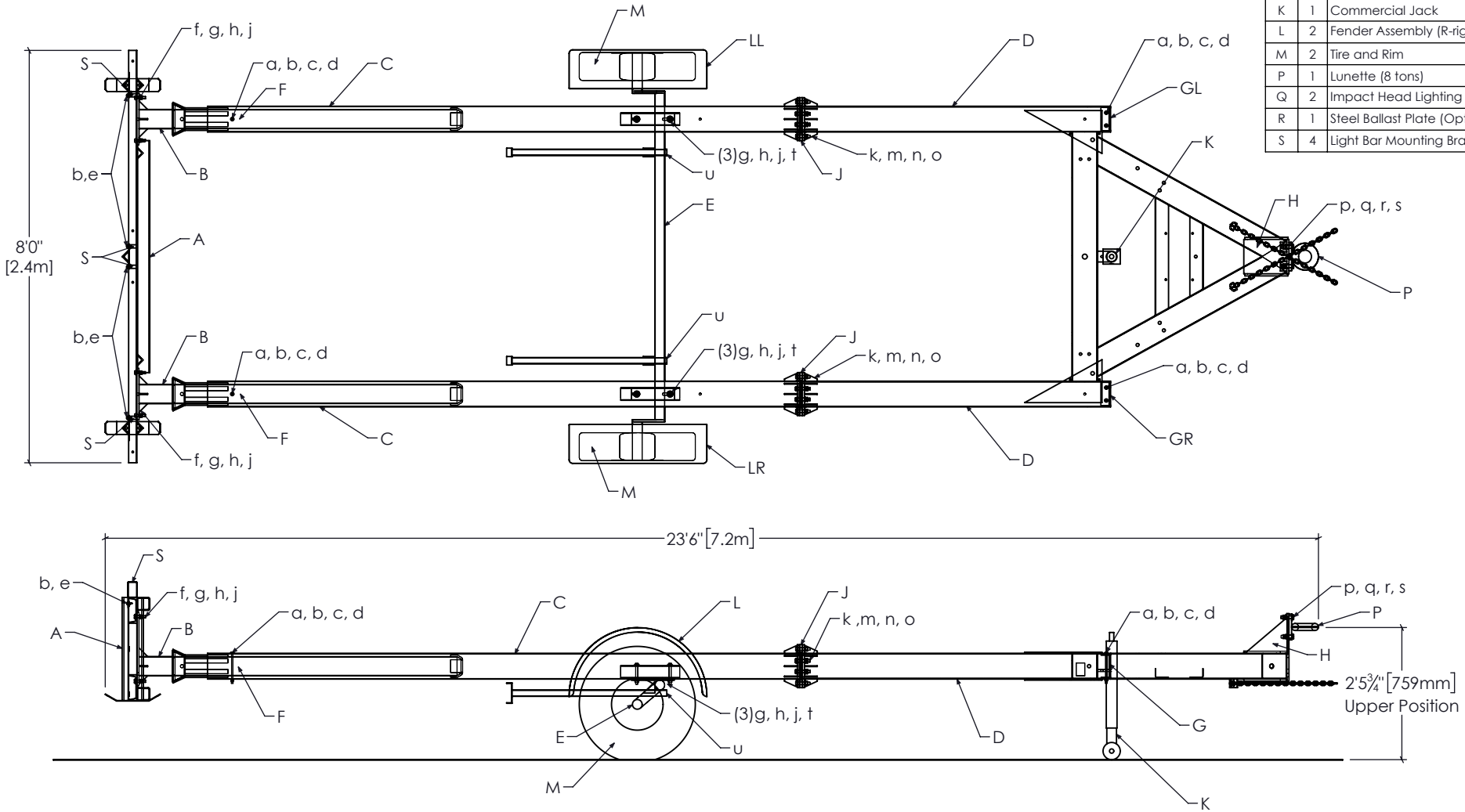
ITEM	QTY	DESCRIPTION	MATERIAL
a	2	Extension Tube	5"x2.5"x3/16" A500 B
b	2	End Plate	1/2" A36
c	2	Gusset	1/4" A36



	TTMA-100 & 200		Sheet: 1
	16" Hitch Extension		Date: 12/14/10
Gregory Industries, Inc. 4100 13th Street, SW Canton, Ohio 44710 Phone: 330-477-4800x123	Drawing Name: Hitch Extension STI MO	Scale: NONE	By: JRR Rev:

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
a	6	5/16" x 7" Grd 5 Hex Bolt	h	12	1/2" Heavy Lock Washer	q	4	5/8" Washer
b	10	5/16" Washer	j	12	1/2" Grd 5 Hex Nut	r	4	5/8" Heavy Lock Washer
c	6	5/16" Heavy Lock Washer	k	16	9/16" x 3" Grd 5 Hex bolt	s	4	5/8" Grd 5 Hex Nut
d	6	5/16" Grd 5 Hex Nut	m	16	9/16" SAE Washer	t	4	1 1/2" Plastic Locking Plug
e	4	5/16" Tech Screws	n	16	9/16" Heavy Lock Washer	u	2	Square Tubing Plug
f	8	1/2" x 2.25" Grd 5 Hex Bolt	o	16	9/16" Grd 5 hex Nut			
g	20	1/2" Washer	p	4	5/8" x 2 1/2" Grd 5 Hex Bolt*			

ITEM	QTY	DESCRIPTION
A	1	Impact Head
B	2	Bursting Mandrel
C	2	First Tube
D	1	Trailer Frame
E	1	Axle Assembly
F	4	Plastic Guide Plates
G	2	End caps (R-right, L-left)
H	1	Hitch Assembly
J	8	Spacer
K	1	Commercial Jack
L	2	Fender Assembly (R-right, L-left)
M	2	Tire and Rim
P	1	Lunette (8 tons)
Q	2	Impact Head Lighting Package (Optional)
R	1	Steel Ballast Plate (Optional)
S	4	Light Bar Mounting Bracket



REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018
B	ADDED LIGHT BAR MOUNTING BRACKET, 5/16" TECH SCREW, AND 1/2" WASHERS	09/27/2018

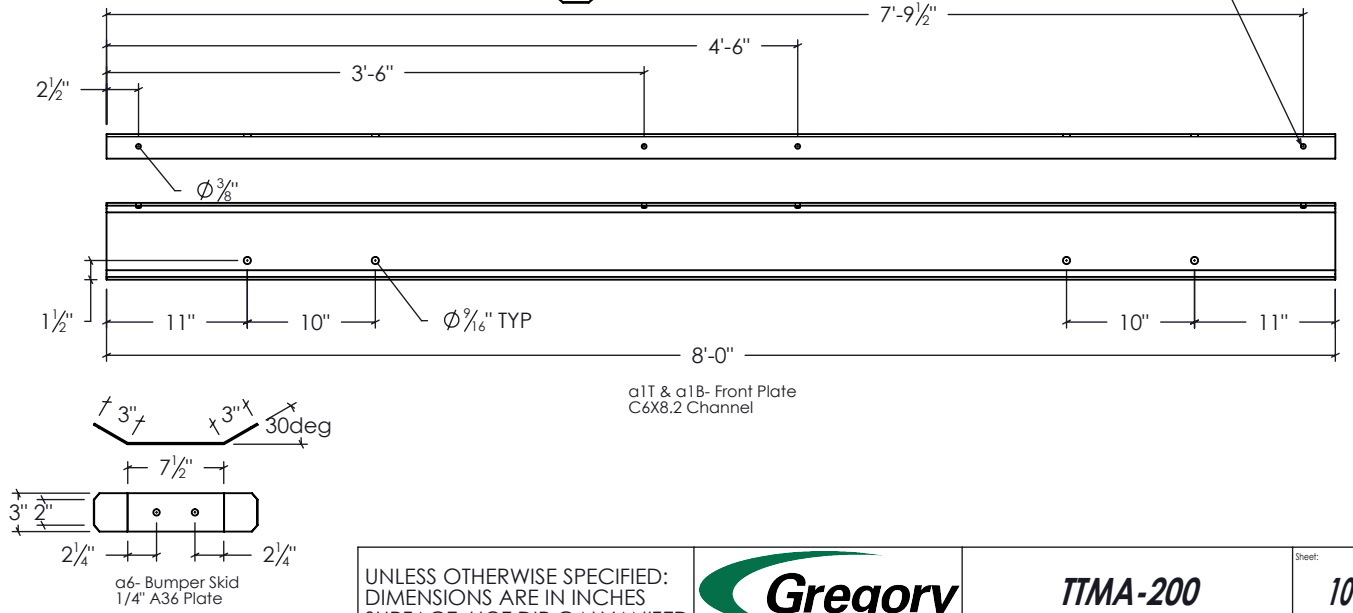
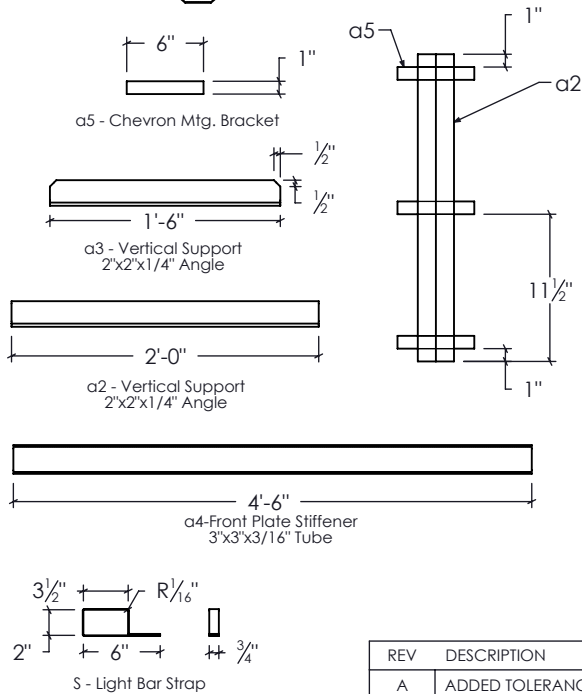
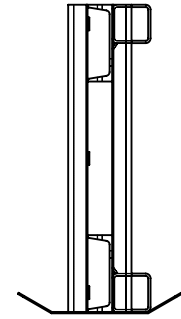
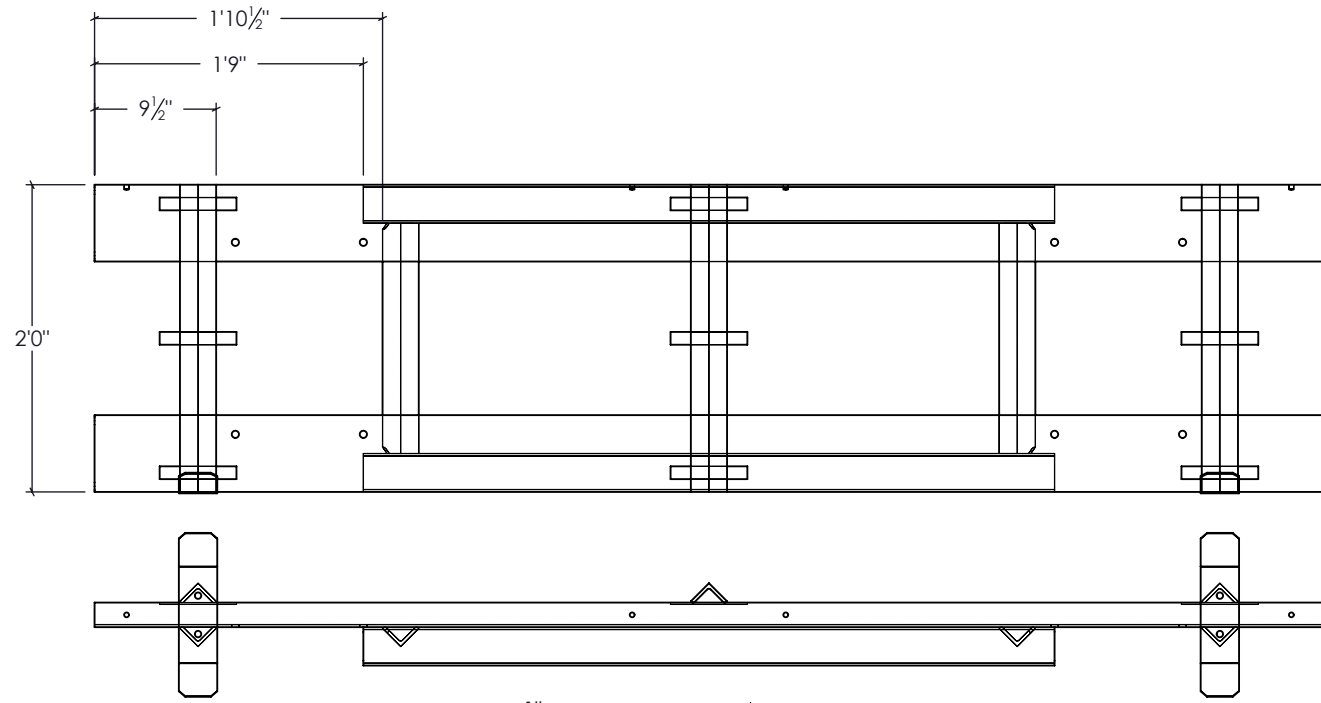
UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: $\pm 1/16"$
 BOLT HOLE: $+1/16", -0"$
 ANGULAR: $\pm 1^\circ$

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TTMA-200
Assembly

Sheet: **100**
 Date: 9/27/2018
 Drawing Name: TTMA-200
 Scale: 1:35
 By: JMS
 Rev:

ITEM	QTY	DESCRIPTION
A	1	Impact Head
a1T	1	Front Plate - Top
a1B	1	Front Plate - Bottom
a2	5	Vertical Supports
a3	2	Vertical Supports
a4	2	Front Plate Stiffener
a5	9	Chevron Mounting Bracket
a6	2	Bumper Skid
S	4	Light Bar Strap



REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018
B	ADDED LIGHT BAR MOUNTING BRACKET	09/26/2018

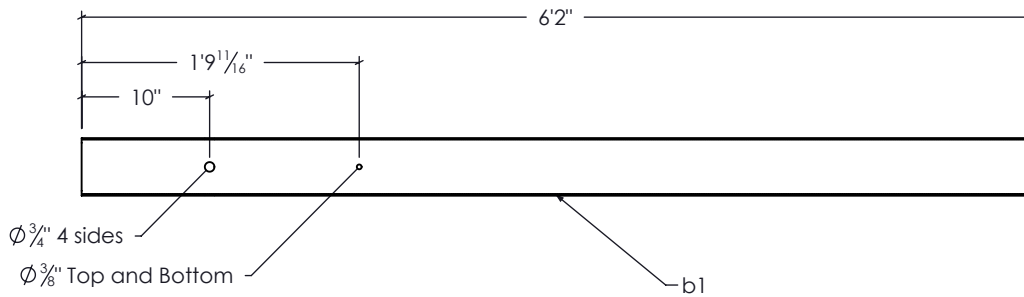
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DIMENSIONS ARE IN INCHES
SURFACE: HOT DIP GALVANIZED
TOLERANCE:
LINEAR: $\pm 1/16"$
BOLT HOLE: $+1/16", -0"$
ANGULAR: $\pm 1^\circ$

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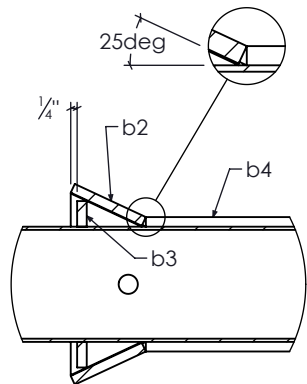
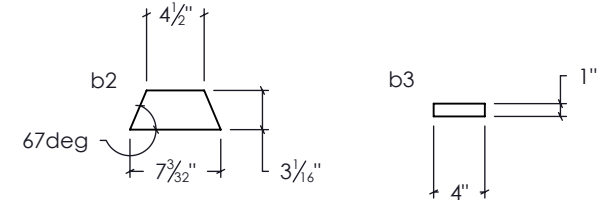
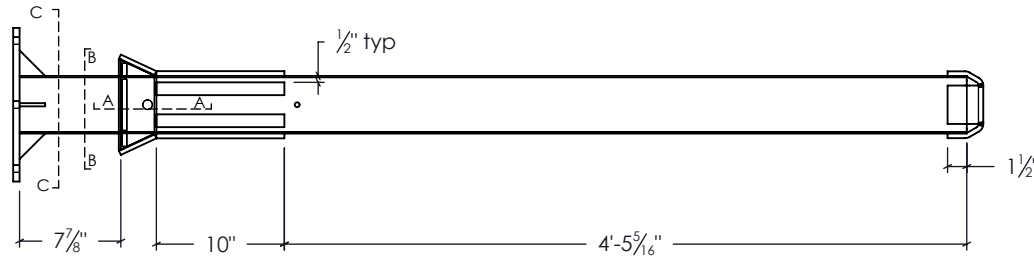
TTMA-200
Impact Head Assembly

Sheet: **101**
Date: 9/27/2018

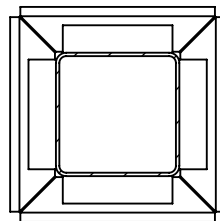
Drawing Name: TTMA-200 Scale: 1:15
By: JMS Rev:



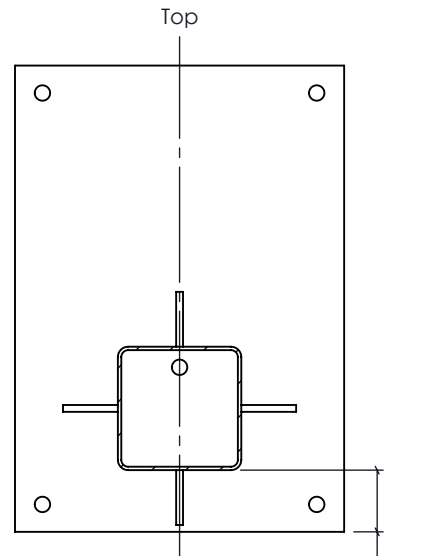
ITEM	QTY	DESCRIPTION
B	2	Bursting Mandrel
b1	2	Mandrel Tube
b2	8	Burster Plate
b3	8	Burster Support
b4	16	Guide Strap
b6	2	End Plate
b7	2	Mandrel End Plate
b8	8	Gusset Plate
F	4	Plastic Guide



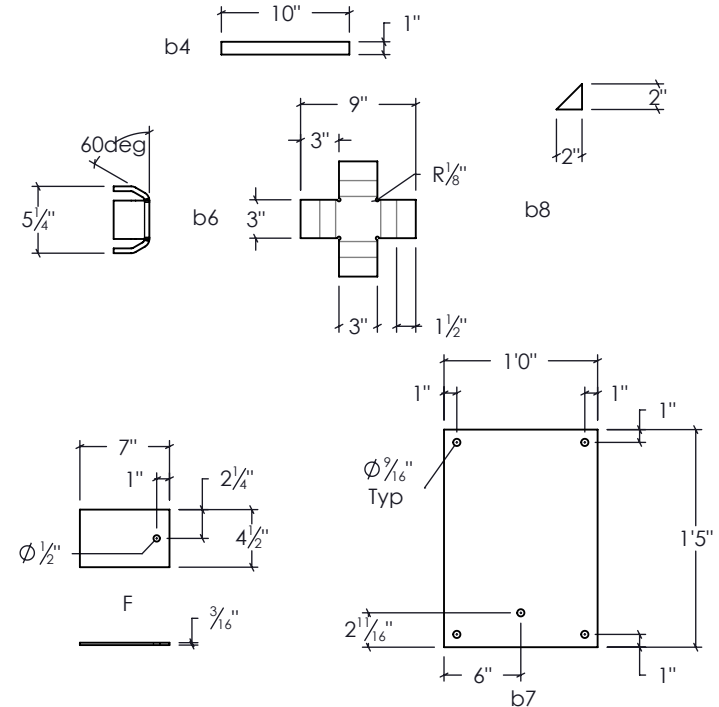
DETAIL "A-A"
Note: Positioning of b3 is critical to maintain the angle of the burster plate b2



SECTION "B-B"
SCALE 1 : 7



SECTION "C-C"
Bottom



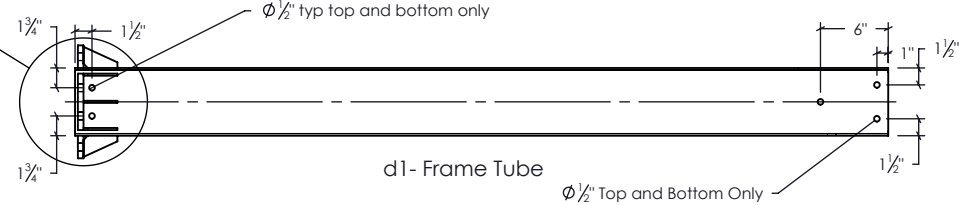
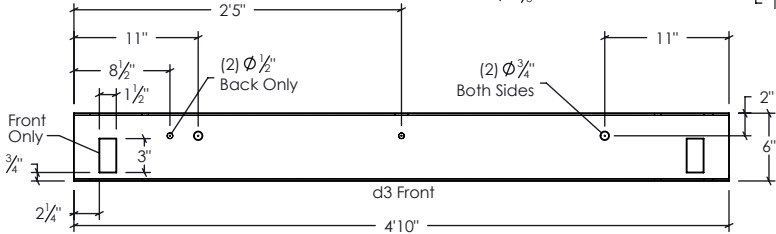
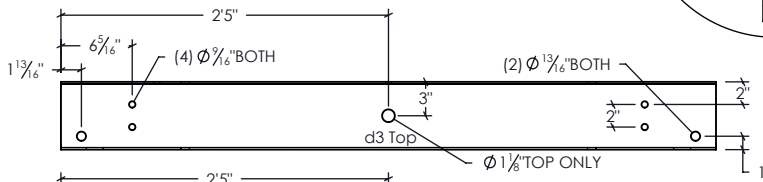
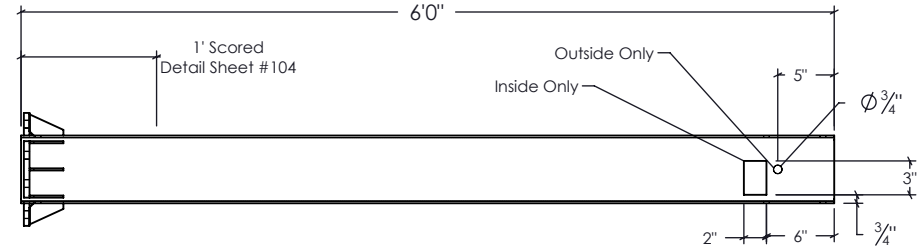
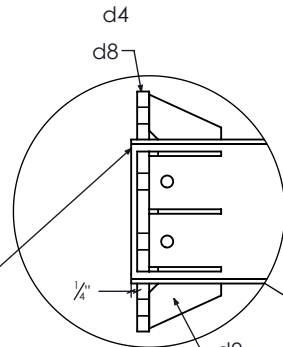
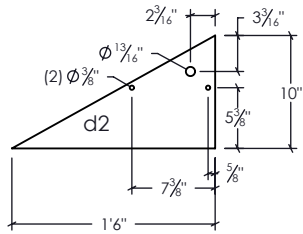
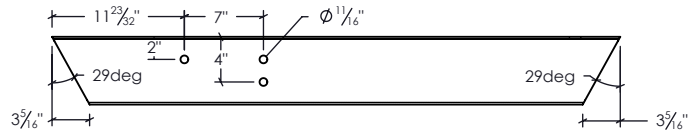
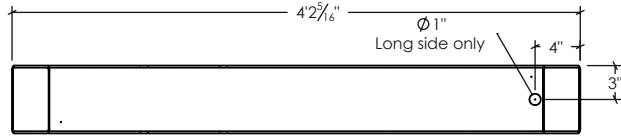
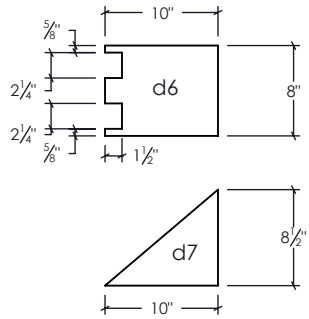
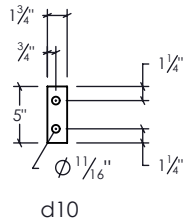
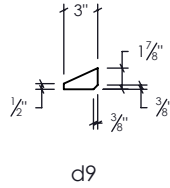
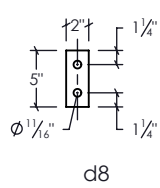
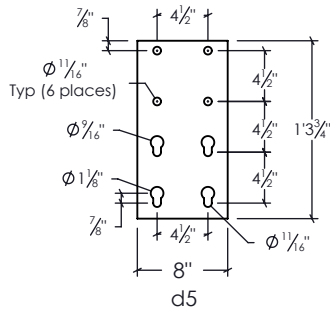
REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE: HOT DIP GALVANIZED
TOLERANCE:
LINEAR: $\pm 1/16$ "
BOLT HOLE: $+1/16$ ", -0 "
ANGULAR: ± 1 "

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TTMA-200
Mandrel Assembly

Sheet: **102**
Date: 9/27/2018
Drawing Name: TTMA-200
Scale: 1:15
By: JMS
Rev:



ITEM	QTY	DESCRIPTION
d1	2	Frame Tube
d2	4	Gusset Plate
d3	1	Cross Tube
d4	2	Hitch Tube
d5	1	Hitch Plate
d6	2	Hitch Support Plate
d7	2	Hitch Gusset
d8	8	Splice Plate (4 For Part C)
d9	24	Splice Gusset Plate (12 for Part C)
d10	8	Space

REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

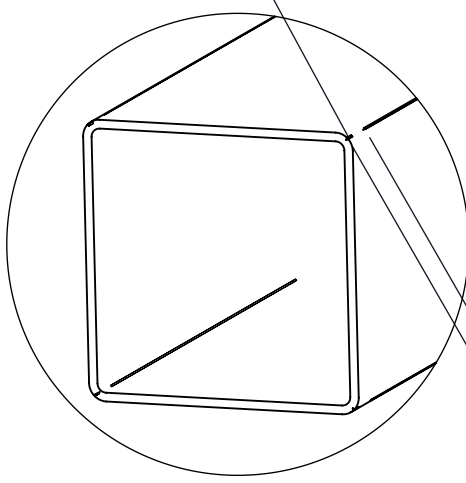
UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: ±1/16"
 BOLT HOLE: +1/16", -0"
 ANGULAR: ±1°

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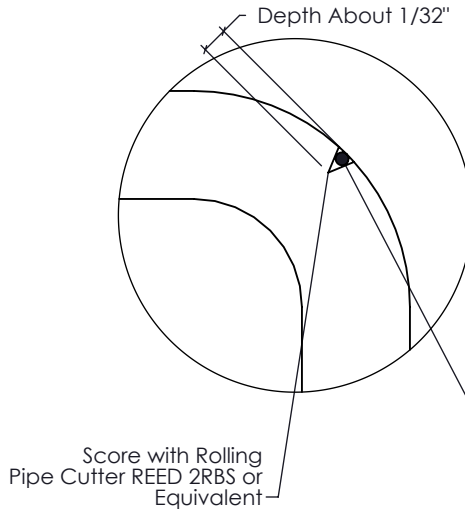
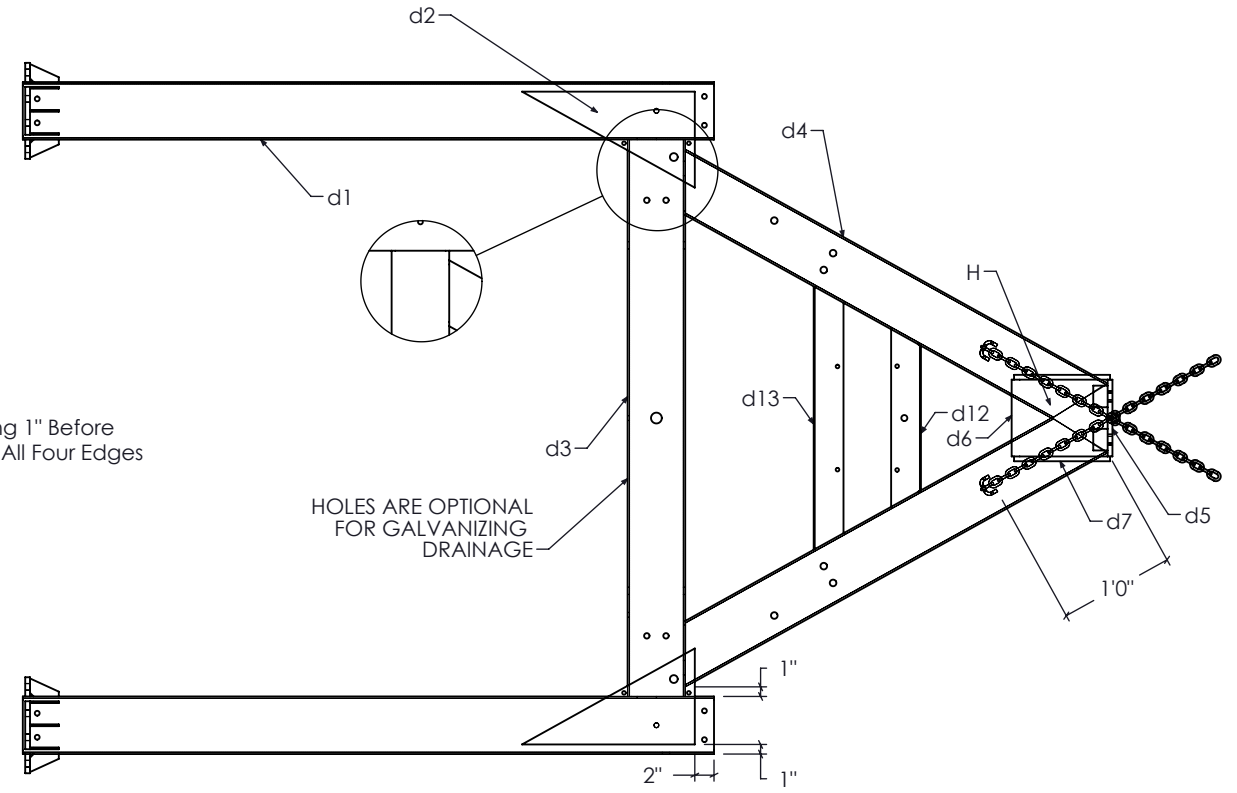
TTMA-200
Trailer Frame Parts
 Drawing Name: TTMA-200 Scale: 1:17
 Sheet: 103 Date: 9/27/2018
 By: JMS Rev:

ITEM	QTY	DESCRIPTION
D		Trailer Frame Assembly
H		Hitch Assembly

45 Degree Saw Cut to Depth of Tube all Four Corners after Galvanizing. After worked then sprayed with spray galv.



End Scoring 1" Before End of Tube. All Four Edges



Gage Depth with Flush Insertion of 0.025" Wire

4/16" Grade 70 Transport Chain Yellow Zinc Finish
45" w/o Hitch Extension
62" w/ Hitch Extension

REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE: HOT DIP GALVANIZED
TOLERANCE:
LINEAR: $\pm 1/16"$
BOLT HOLE: $+1/16"$, $-0"$
ANGULAR: $\pm 1^\circ$

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TTMA-200
Trailer Frame Assembly and Scoring Details

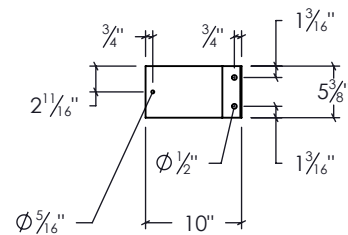
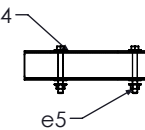
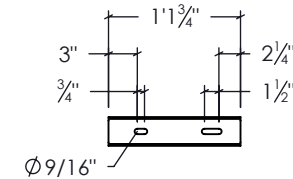
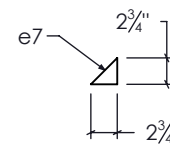
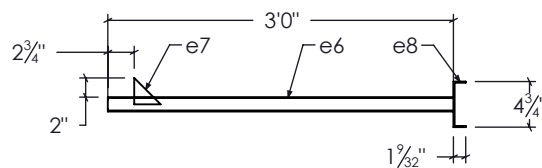
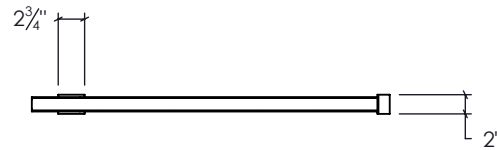
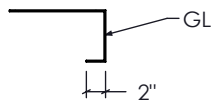
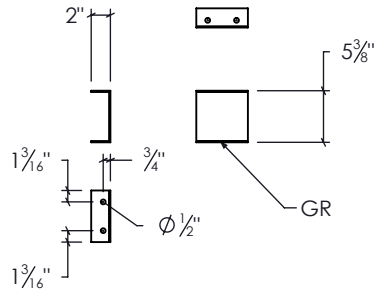
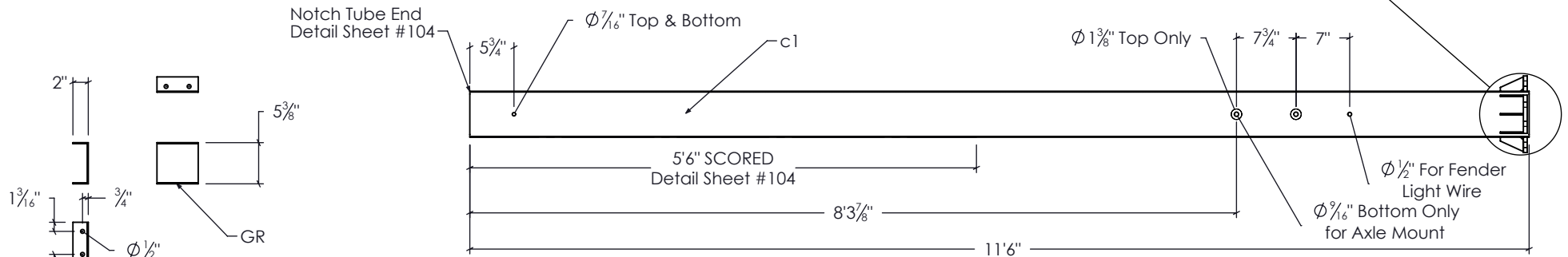
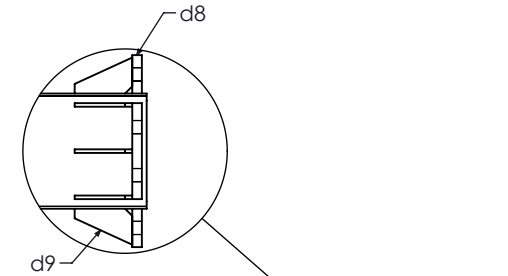
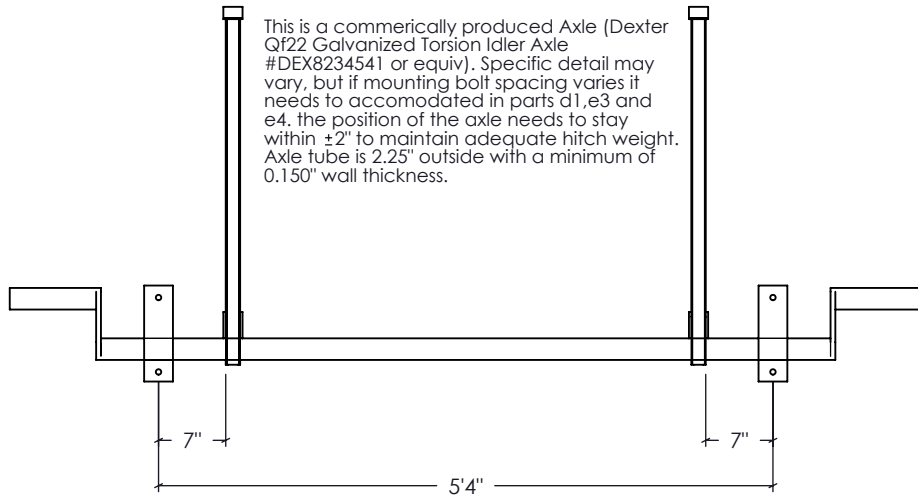
Drawing Name: TTMA-200	Scale: 1:20	By: JMS	Rev:
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Sheet: 104	Date: 9/27/2018
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Note:

This is a commercially produced Axle (Dexter Qf22 Galvanized Torsion Idler Axle #DEX8234541 or equiv). Specific detail may vary, but if mounting bolt spacing varies it needs to be accommodated in parts d1, e3 and e4. The position of the axle needs to stay within $\pm 2"$ to maintain adequate hitch weight. Axle tube is 2.25" outside with a minimum of 0.150" wall thickness.

ITEM	QTY	DESCRIPTION
C	2	First Tube
c1	2	Bursting Tube
E	1	Axle Assembly
e4	2	Axle Shear Connector
e5	4	Shear Bolts
e6	2	Axle Push Tubes
e7	4	Gusset Plate
e8	2	End Plate
GR	1	PS End Tube Cover
GL	1	DS End Tube Covers



UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: $\pm 1/16"$
 BOLT HOLE: $+1/16"$, $-0"$
 ANGULAR: $\pm 1^\circ$

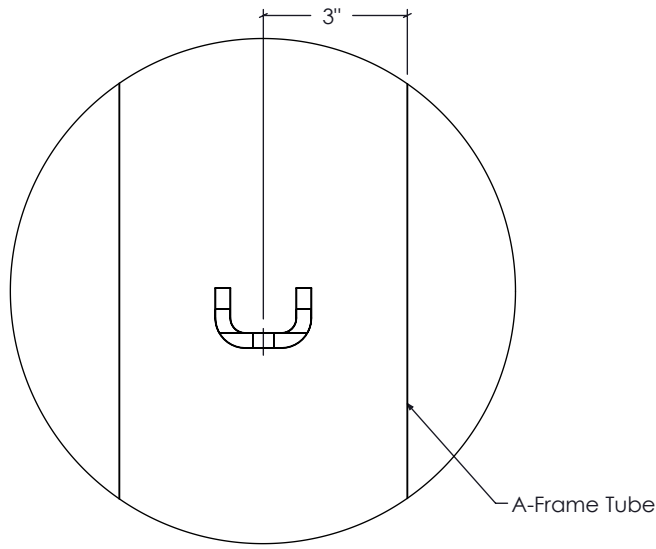
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 Phone: 330-447-4800x123

TTMA-200
**First Tube, Axle Assembly
 and Front End Covers**

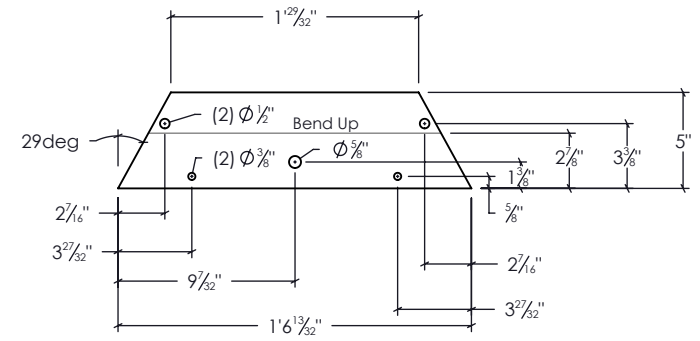
Sheet: **105**
 Date: 9/27/2018
 Drawing Name: TTMA-200
 Scale: 1:20
 By: JMS
 Rev:

REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

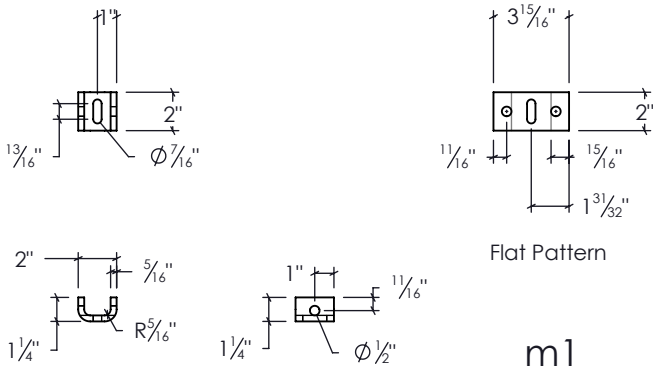
ITEM	QTY	DESCRIPTION
m1	2	Chain Bracket
m2	2	Retainer Rod
m3	2	Cotter Pin
d12	1	Front battery Mount - 18.5"x5"
d13	1	Rear Battery Mount 27.5" x 5"



Chain Attachment Detail
NOT TO SCALE



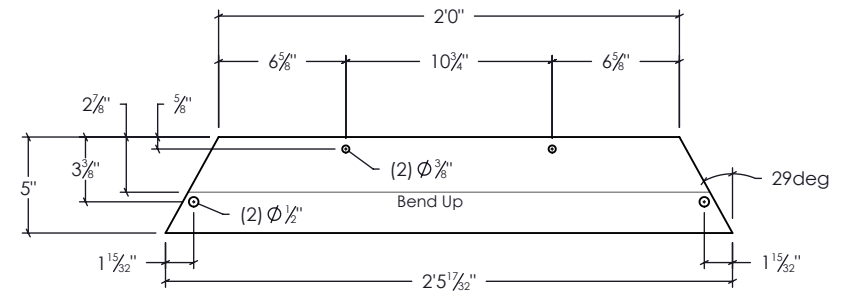
d12



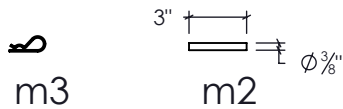
Flat Pattern

m1

Bend Diagram



d13



m3

m2

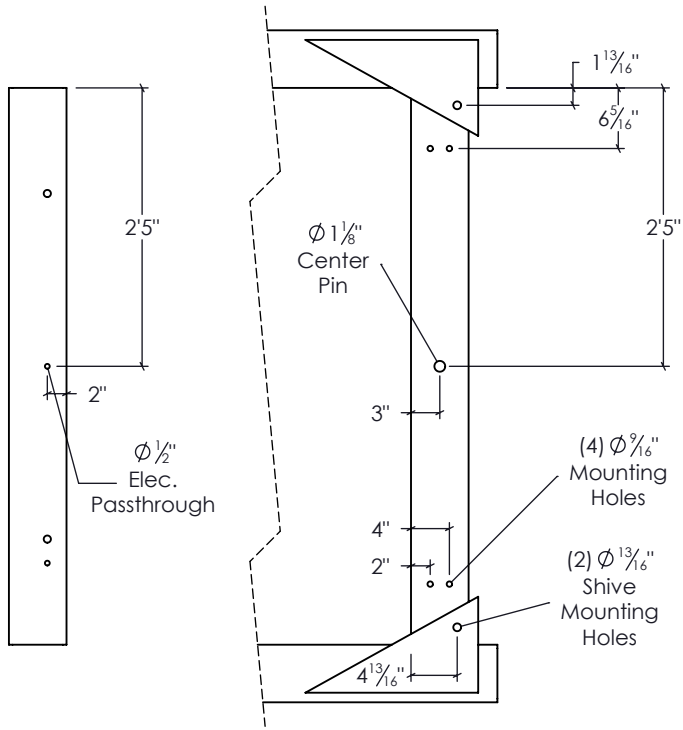
REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE: HOT DIP GALVANIZED
TOLERANCE:
LINEAR: $\pm 1/16$ "
BOLT HOLE: $+1/16$ ", -0 "
ANGULAR: $\pm 1^\circ$

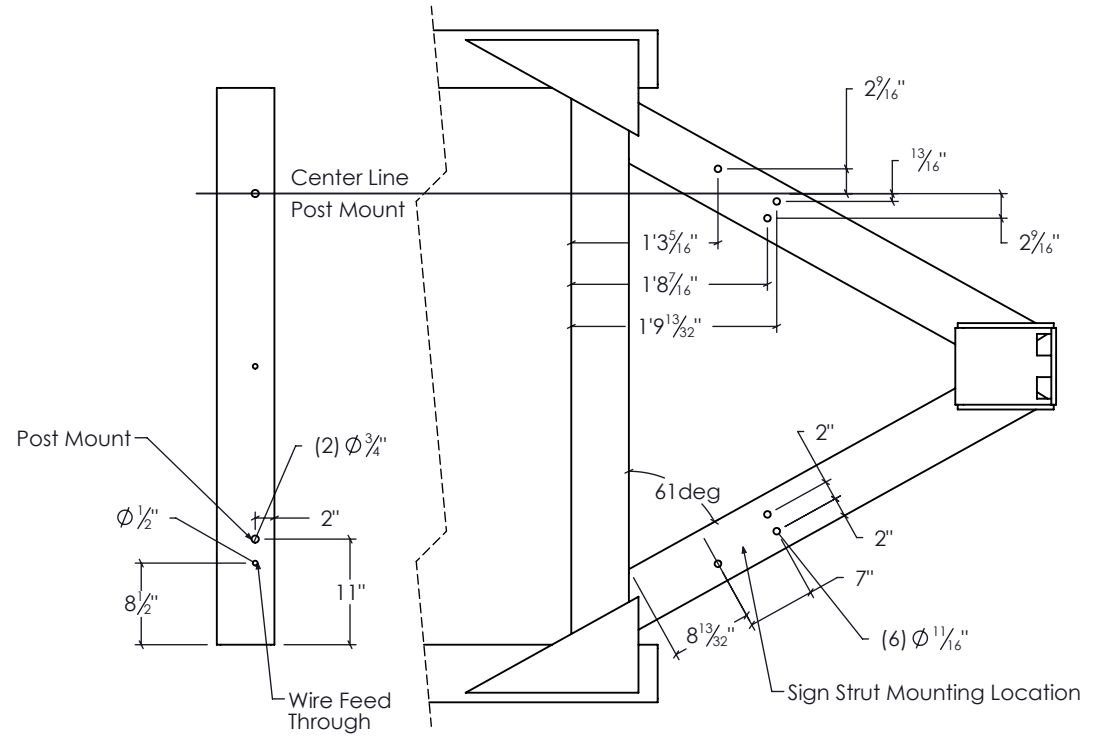
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TTMA-200
Safety Chain
Attachment Details

Sheet: **106**
Date: 9/27/2018
Drawing Name: TTMA-200
Scale: 1:10
By: JMS
Rev:



Optional Reverse Guidance Mounting Detail



Arrow Board Mounting Detail

REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: $\pm 1/16$ "
 BOLT HOLE: $+1/16$ ", -0 "
 ANGULAR: $\pm 1^\circ$

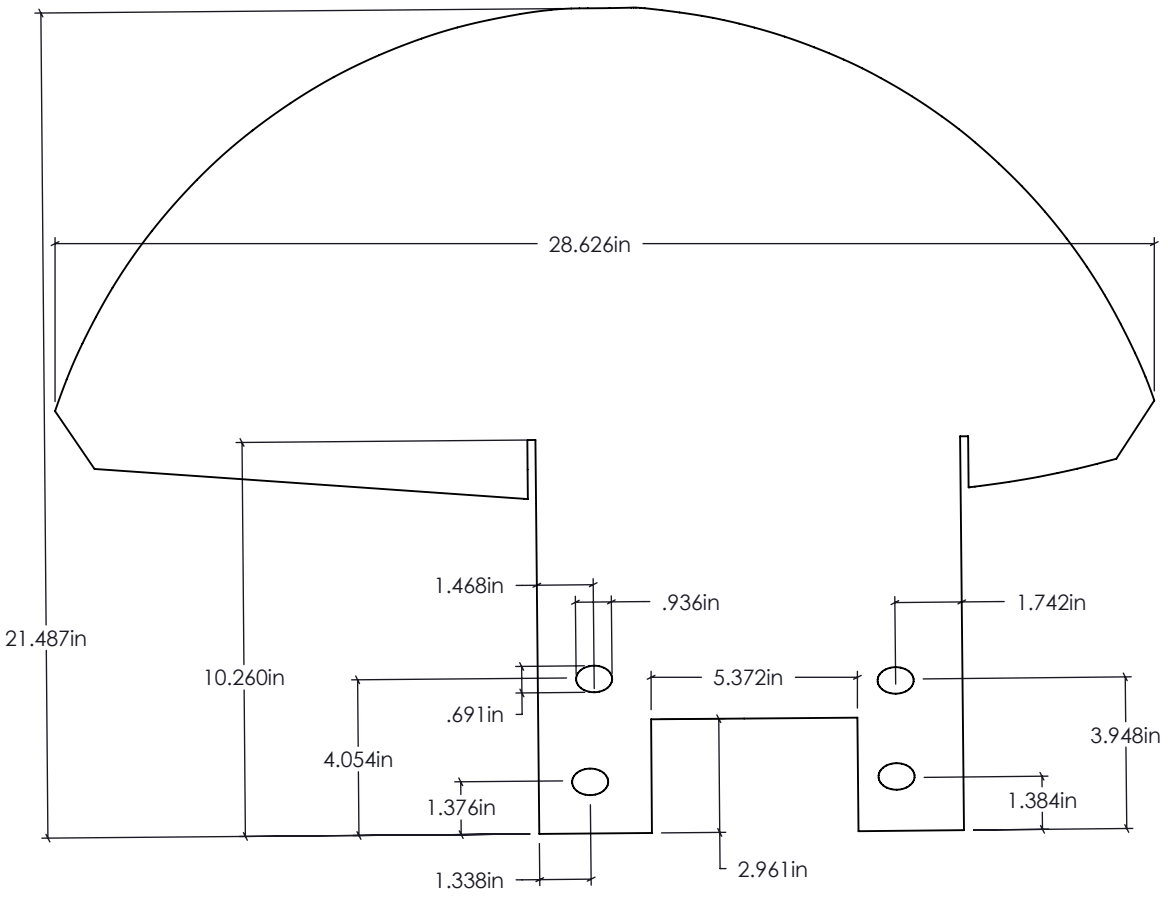
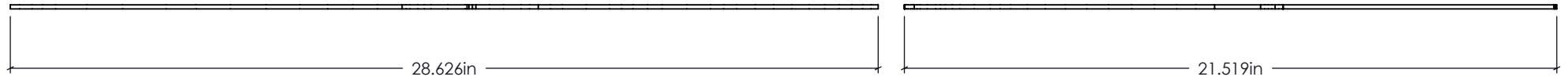

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TTMA-200
Arrow Board and Reverse Guidance Mounting Detail

Drawing Name: TTMA-200
 Scale: 1:20

Sheet: 107
 Date: 9/27/2018
 By: JMS
 Rev: 

ITEM	QTY	DESCRIPTION
L	2	Fender




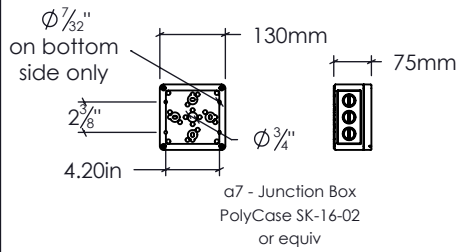
REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: $\pm 1/16"$
 BOLT HOLE: $+1/16"$, $-0"$
 ANGULAR: $\pm 1^\circ$

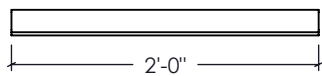
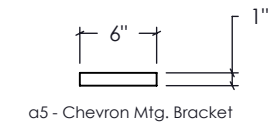
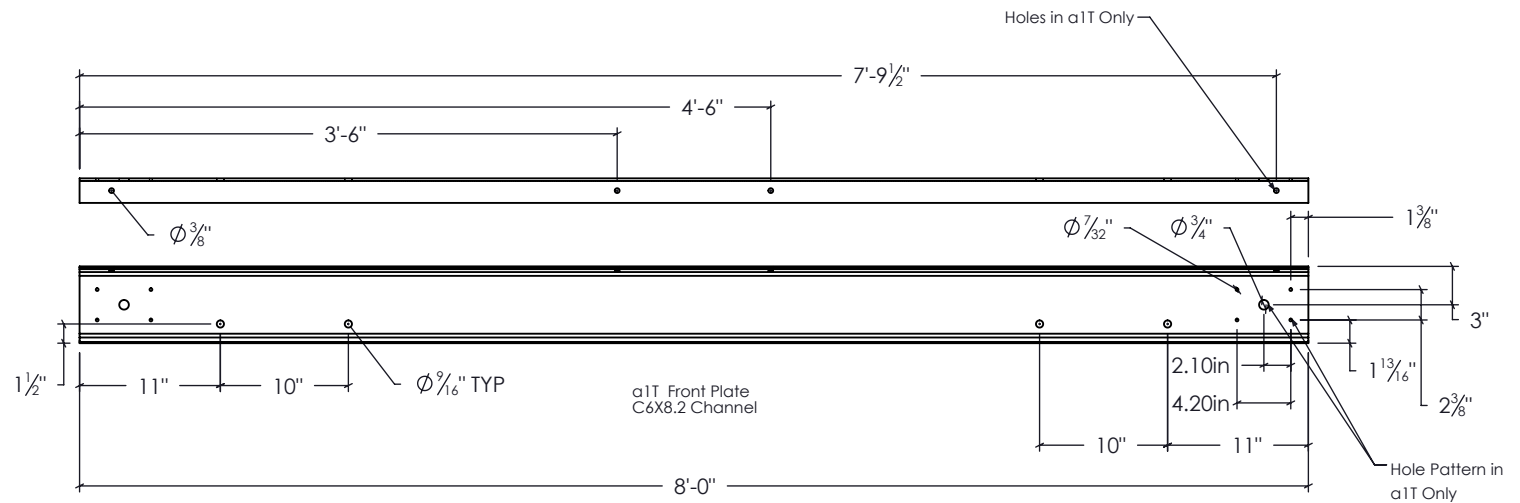
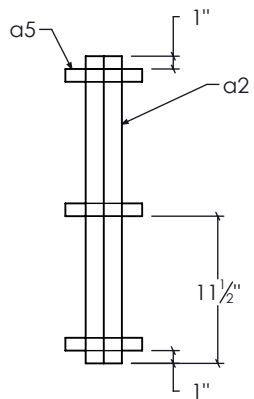
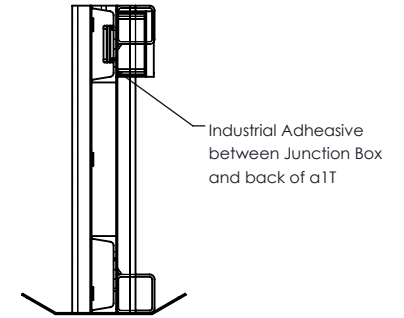
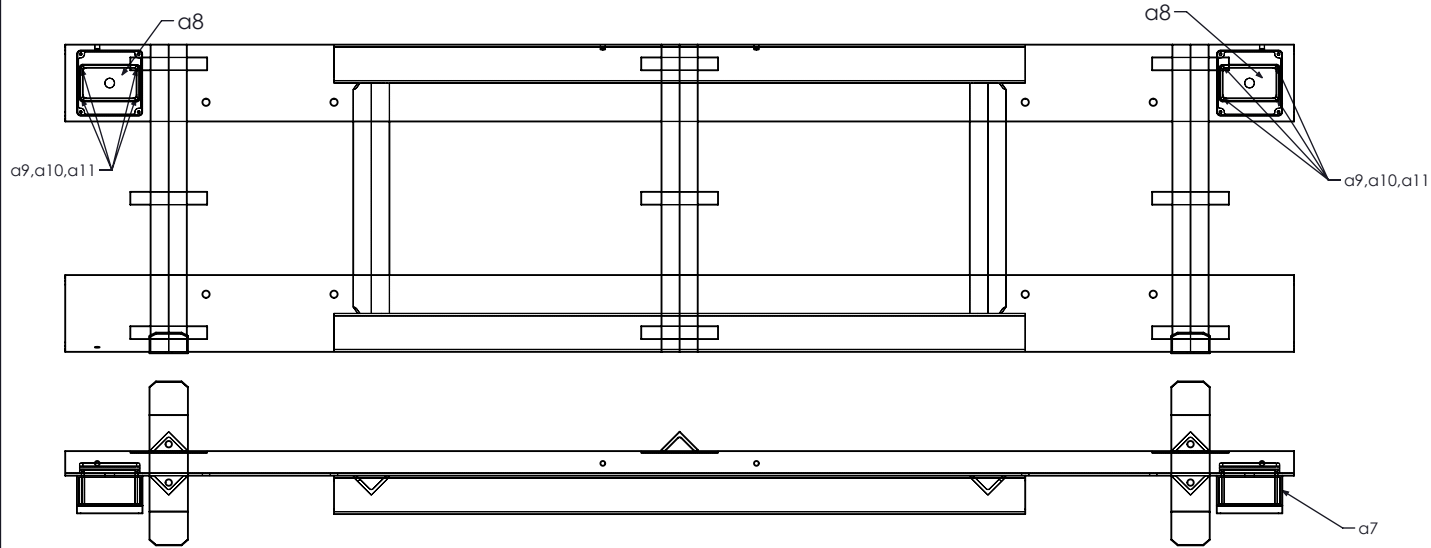


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TTMA-200 Fender		Sheet:	108
		Date:	9/27/2018
Drawing Name:	TTMA-200	Scale:	1:5
By:	JMS	Rev:	



ITEM	QTY	DESCRIPTION
A	1	Impact Head
a1T	1	Front Plate - Top Lighting Package
a2	5	Vertical Supports
a5	9	Chevron Mounting Bracket
a7	2	Junction Box
a8	2	Whelen Linear Light Head or equiv
a9	8	Stainless Machine Screw
a10	8	Nylon Locknut
a11	8	Stainless Flat Washer



REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
SURFACE: HOT DIP GALVANIZED
TOLERANCE:
LINEAR: ±1/16"
BOLT HOLE: +1/16", -0"
ANGULAR: ±1°

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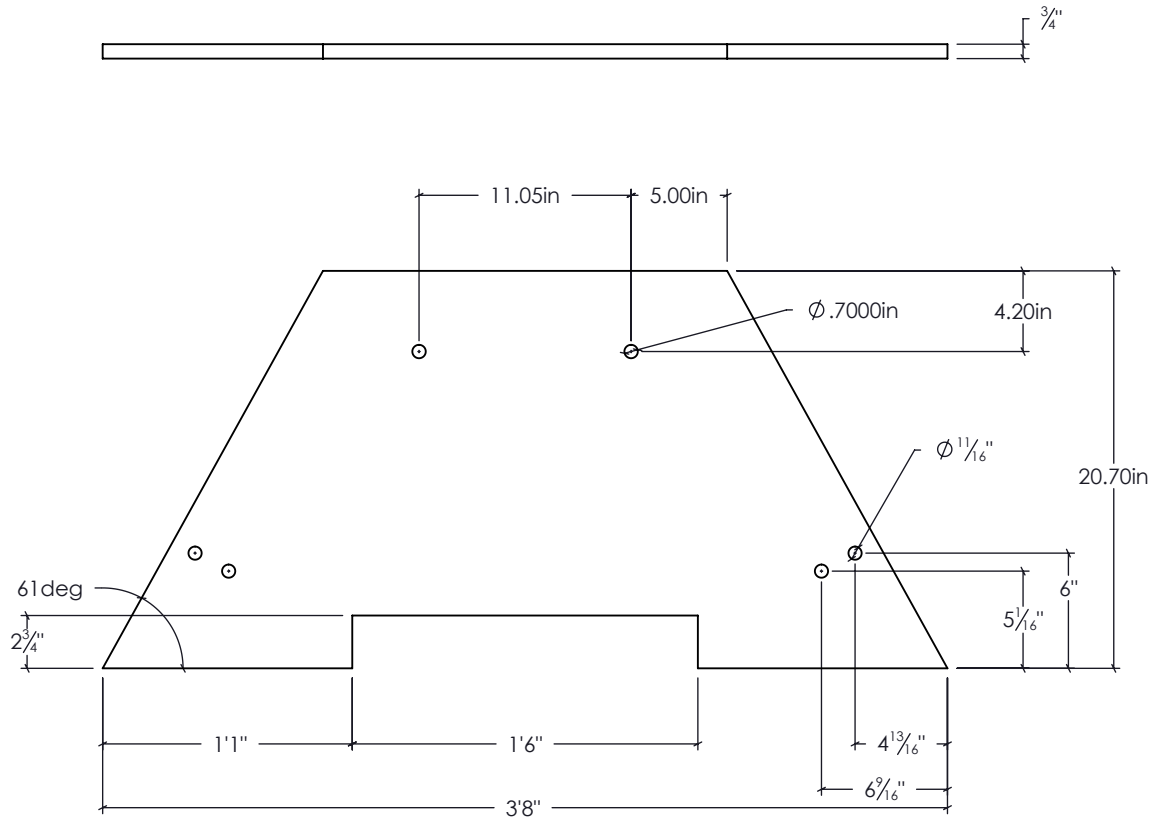
TTMA-200
Impact Head Lighting
Package (Optional)

Drawing Name:
TTMA-200

Scale:
1:15

Sheet:
109
Date:
9/27/2018
By:
JMS
Rev:
A

ITEM	QTY	DESCRIPTION
R	2	Ballast Plate
r1	6	5/8" x 9" Grd 5 Hex Bolt
r2	12	5/8" Flat Washer
r3	6	5/8" Lock Washer
r4	6	5/8" Grd 5 Hex Nut



REV	DESCRIPTION	DATE
A	ADDED TOLERANCE AND FINISH DETAILS	06/21/2018

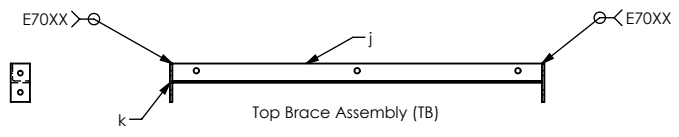
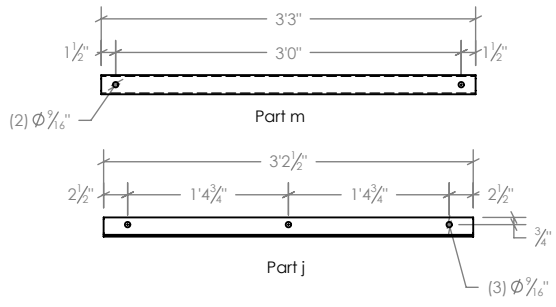
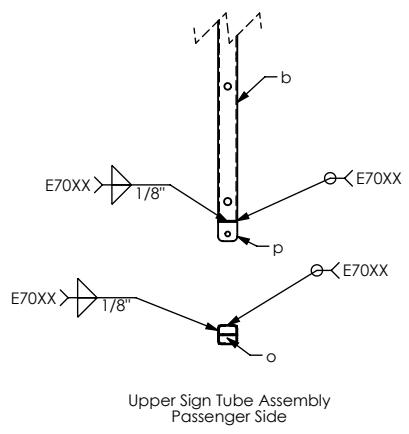
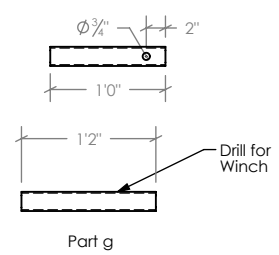
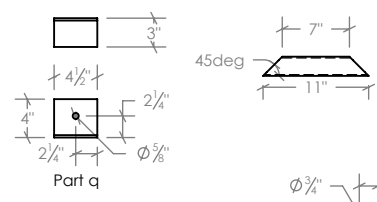
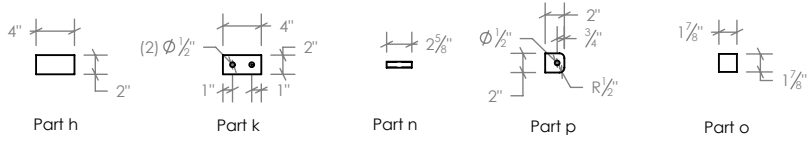
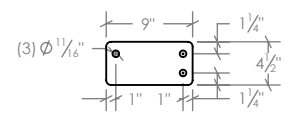
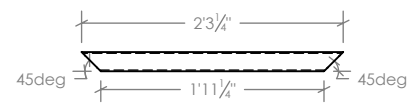
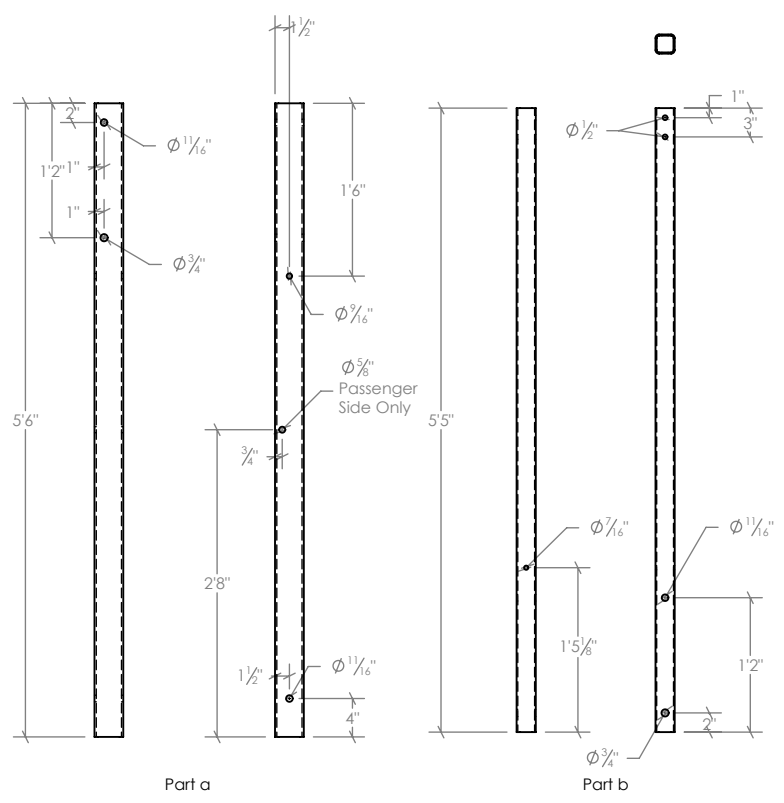
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 BOLT HOLE: $+1/16"$, $-0"$
 ANGULAR: $\pm 1^\circ$

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TTMA-200
Steel Ballast Plate (Optional)

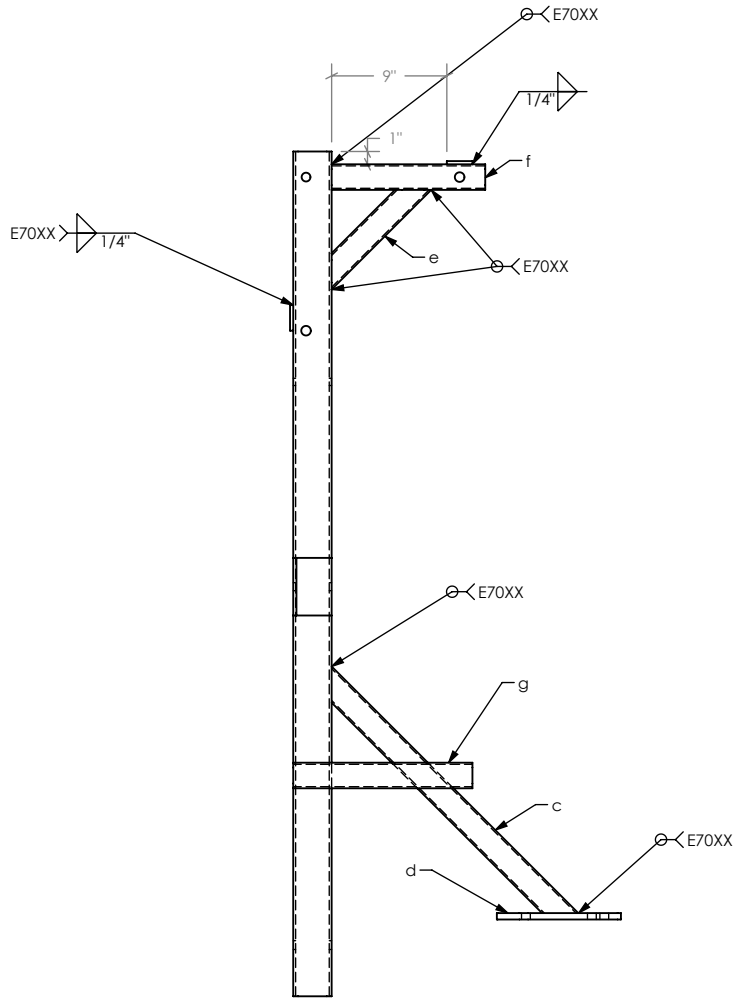
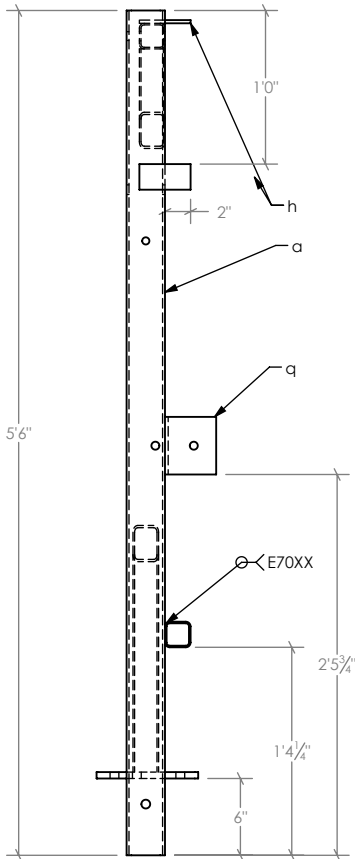
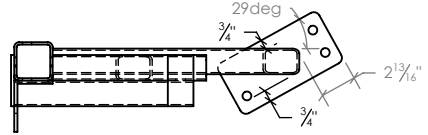
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ITEM	QTY	DESCRIPTION	
a	2	Lower Sign Support Tube	
b	2	Upper Sign Support Tube	
c	2	Angled Strut	
d	2	Base Plate	
e	2	Angle Strut Sign	
f	2	Sign Leg	
g	1	Winch Mount	
h	4	Stop Plate	
j	1	Upper Sign Mount	
k	2	End Plate	
m	1	Cross Beam	
n	5	Sign Mounting Sleeve	
o	1	Tube Cap	
p	1	Cable Bracket	
q	1	Idler Bracket	



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		Parts		Date: 7/3/2018
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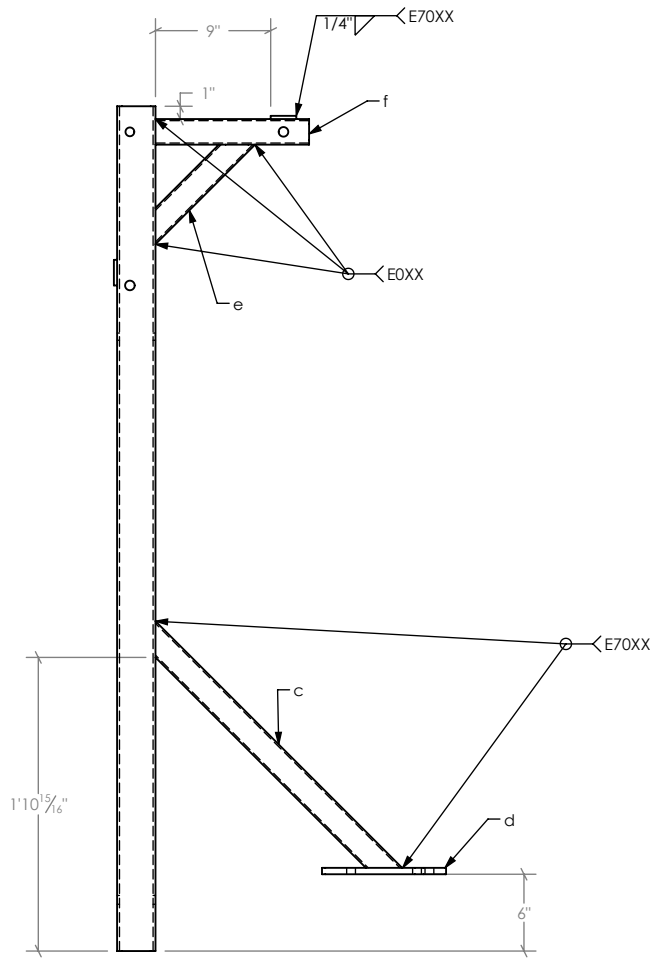
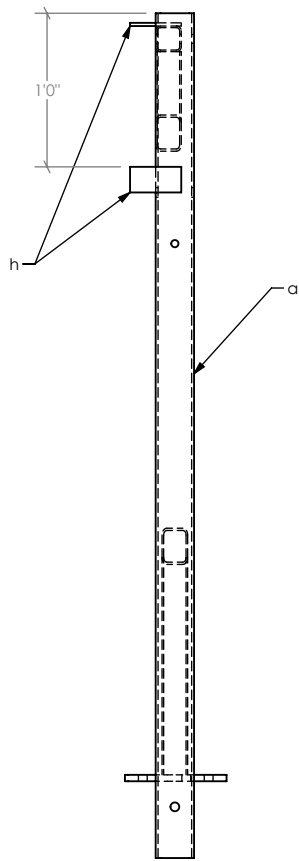
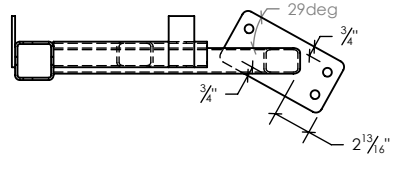
Trailer TMA (TTMA-200)
 Folding Sign Stand

Passenger Side Assembly

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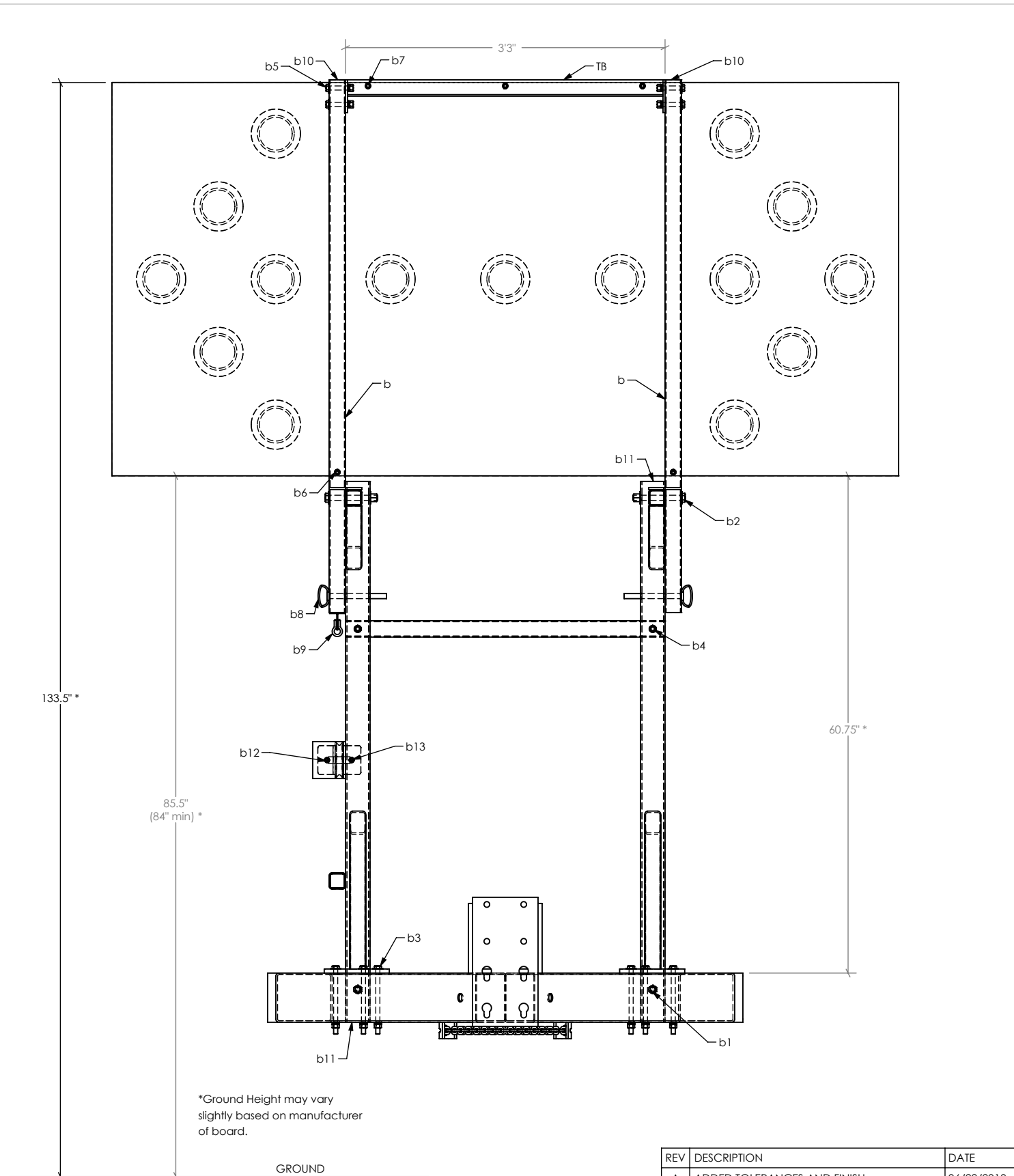


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Trailer TMA (TTMA-200)
 Folding Sign Stand
 Driver Side Assembly

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*Ground Height may vary slightly based on manufacturer of board.

GROUND

REV	DESCRIPTION	DATE
A	ADDED TOLERANCES AND FINISH	06/22/2018

ITEM	QTY	DESCRIPTION
b1	4	5/8" x 10 1/2" Grade 5 w/ Washer, Nut and Lock Washer
b2	2	5/8" x 6" Grade 5 w/(2) Washers, Nylon Lock Nut
b3	6	1/2" X 8" Grade 5 w/Washer, Nut and Lock Washer
b4	2	1/2" X 6" Grade 5 w/Washer, Nut and Lock Washer
b5	4	1/2" x 3" Grade 5 w/Washer, Nut and Lock Washer
b6	2	3/8" x 6" Grade 5 w/Washer, Nut and Lock Washer
b7	3	3/8" x 4" Grade 5 w/Washer, Nut and Lock Washer
b8	2	5/8" x 7" Hitch Pin and Clip
b9	1	5/16" Screw Pin Anchor Shackle (CM)
b10	9	2"x2" Plastic End Cap
b11	4	3"x3" Plastic End Cap
b12	2	5/16" x 1" Grade 5 w/Washer, Nut and Lock Washer
b13	2	5/16" x 4" Grade 5 w/Washer, Nut and Lock Washer

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 DIMENSIONS ARE IN INCHES
 SURFACE: HOT DIP GALVANIZED
 TOLERANCE:
 LINEAR: ±1/16"
 BOLT HOLE: +1/16", -0"
 ANGULAR: ±1°



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Trailer TMA (TTMA-200)
 Folding Sign Stand

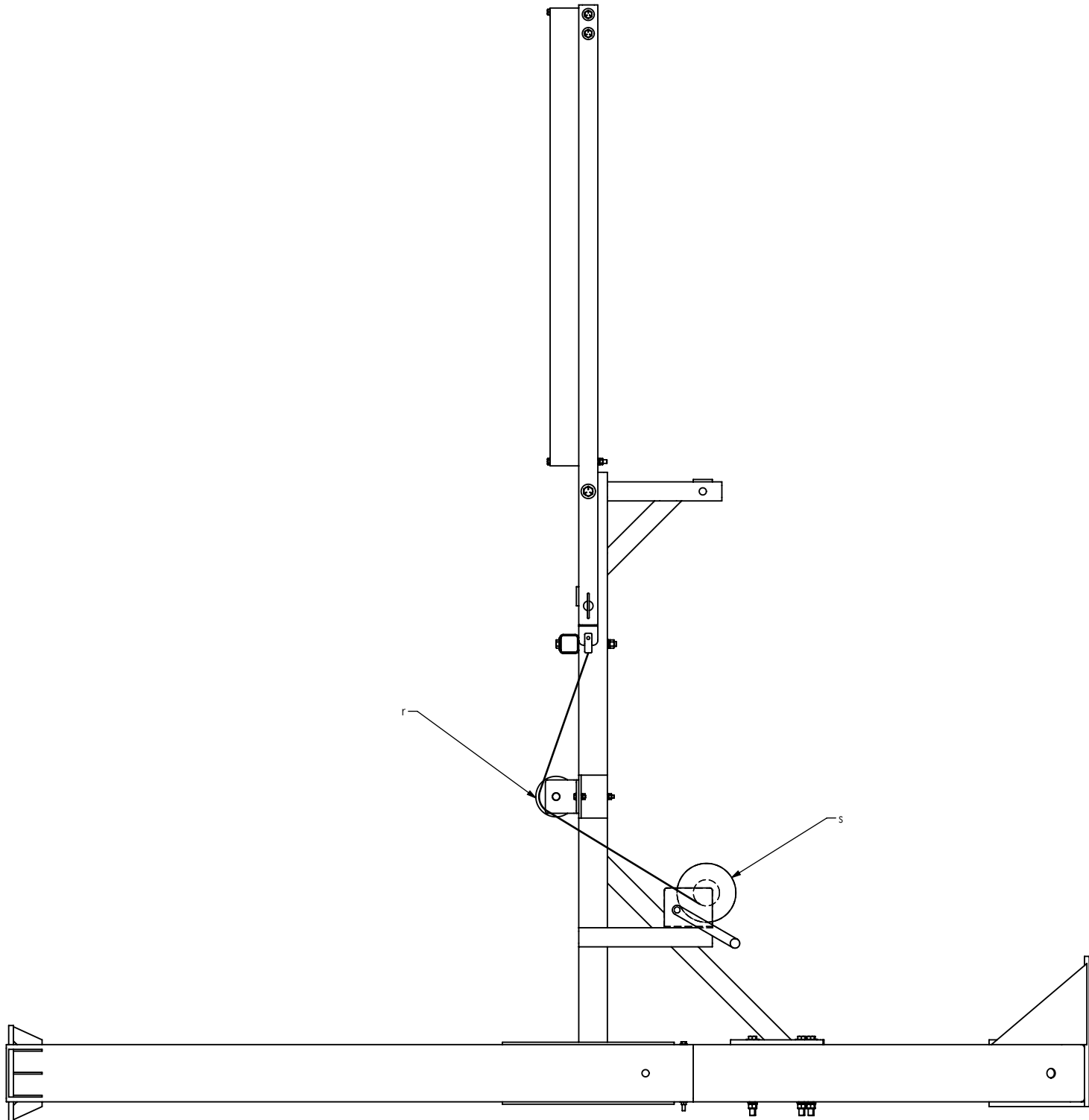
Assembly Front View

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 TTMA-200

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ITEM	QTY	DESCRIPTION	MANUFACTURER
r	1	Pulley	ZORO Item #5RRR3 or equiv
s	1	Winch	DL Item # DLB1200A or equiv



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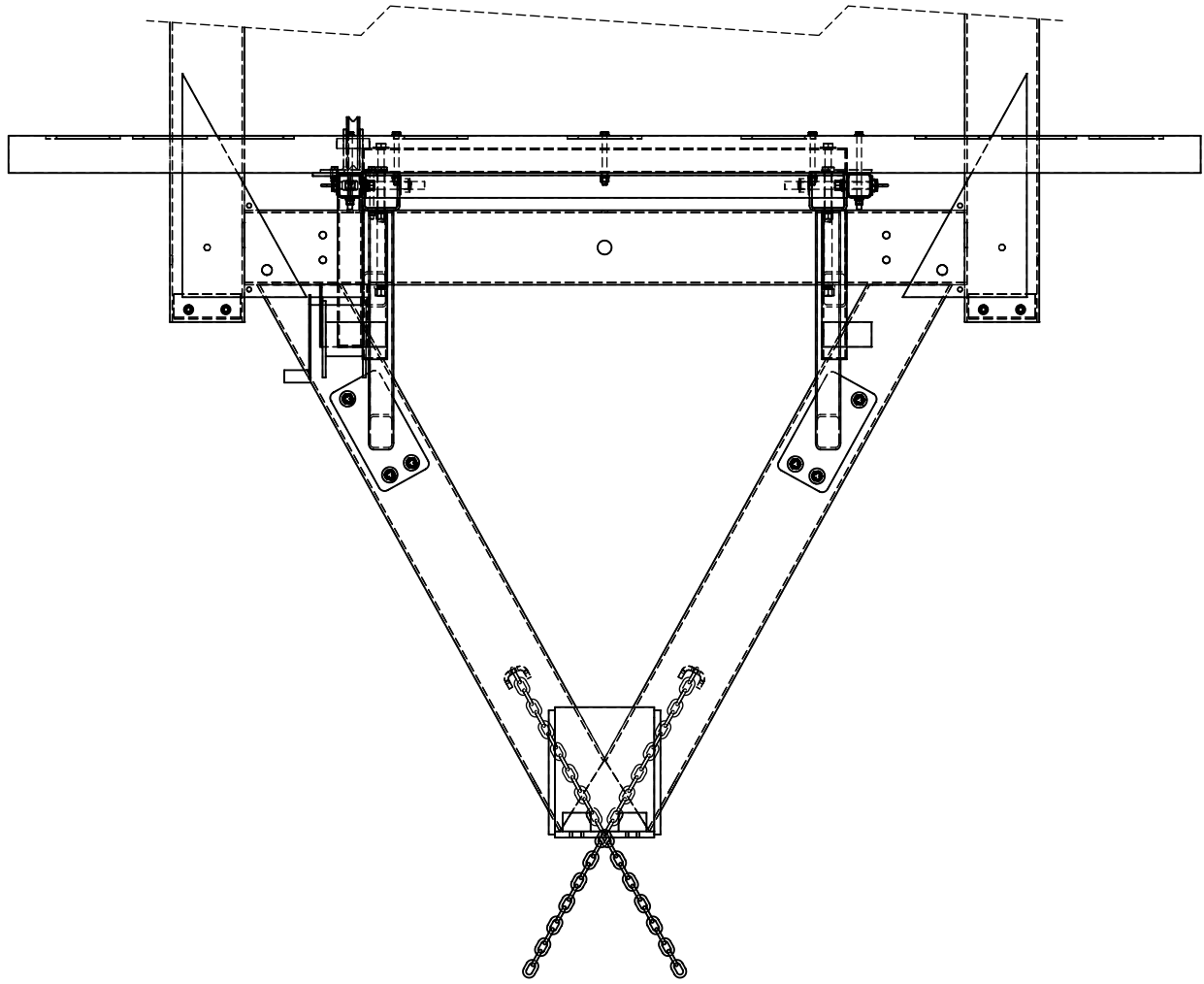
Trailer TMA (TTMA-200)
 Folding Sign Stand

Assembly Side View

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 TTMA-200

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A	ADDED TOLERANCES AND FINISH	06/22/2018

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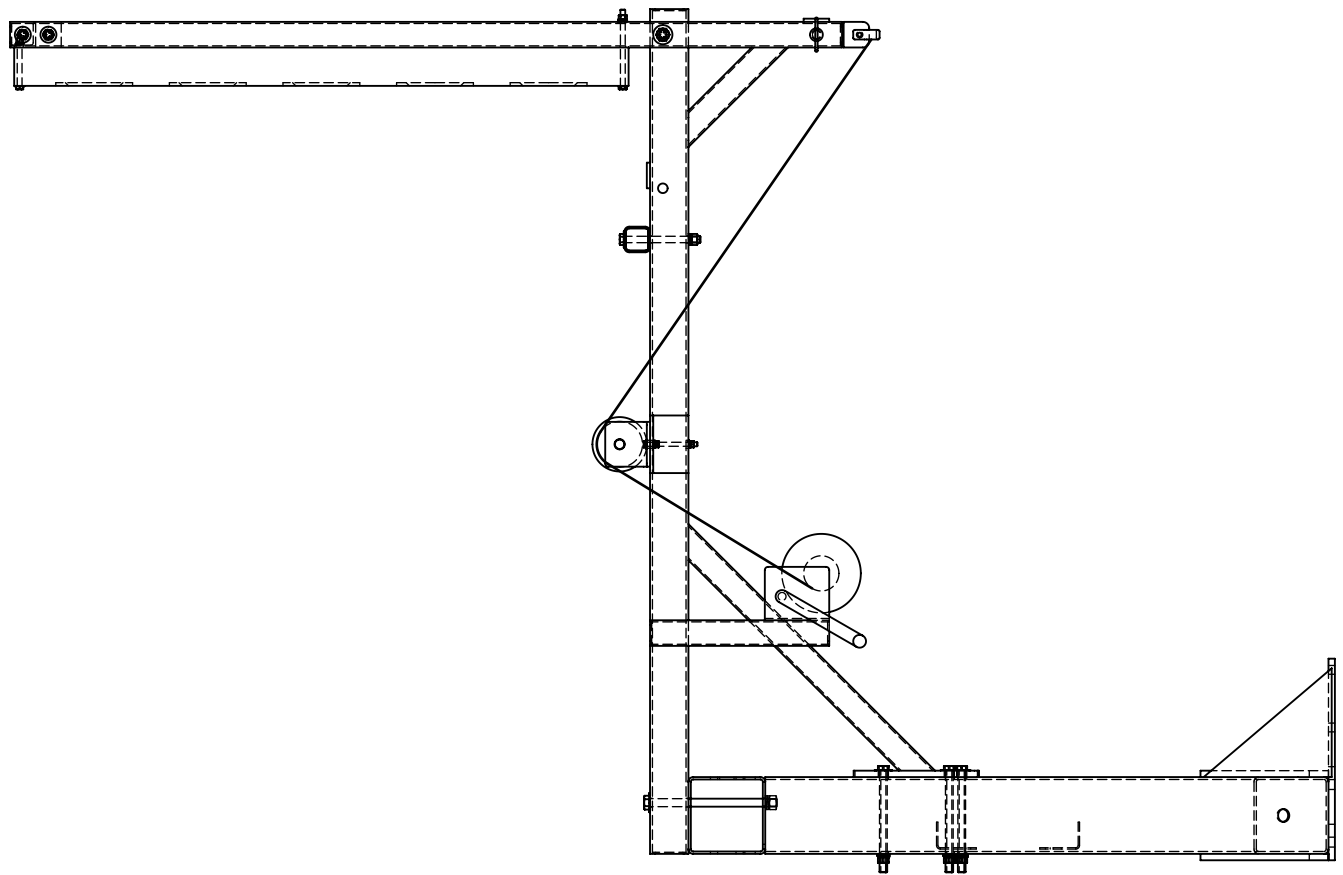


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Trailer TMA (TTMA-200)
 Folding Sign Stand
 Assembly Top View

Drawing Name: TTMA-200
 Scale: 1:15

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		Folded Assembly Side View	Date: 7/3/2018
		Drawing Name: TTMA-200	Scale: 1:15
		By: JMS	Rev: 



GREGORY **HIGHWAY**

TTMA-200

Trailer Truck Mounted Attenuator (MASH TL-3)



USER MANUAL

Gregory Industries, Inc.

4100 13th Street, SW • Canton, Ohio 44710 • Phone 866-994-4929

www.GregoryHighway.com

JANUARY 2021

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FOREWORD

Thank you for your purchase of the TTMA-200 Trailer Truck Mounted Attenuator (MASH) from Gregory Industries, Inc. (herein referred to as the TTMA-200). We are committed to providing our customers with highway safety products offering the best performance and value for your money, as well as the highest level of customer service.

The TTMA-200 is the latest addition to our highway safety products line. The TTMA-200 is an AASHTO MASH 2016 Test Level 3 (TL-3) crash cushion designed for use with a support truck in both stationary and moving work zones. The TTMA-200 is nearly identical to the predecessor TTMA-100 which was one of the most innovative TMA's in the market.

The TTMA-200 can be equipped to most vehicles 10,000 lbs. or heavier in your fleet within a matter of minutes. The TTMA-200 has successfully passed all required crash tests (3-50, 3-51, 3-52, 3-53, 3-54) set forth by AASHTO MASH 2016 and is eligible for use on the National Highway System by the Federal Highway Administration (CC-152). Versatility, reparability and ease of use are the keys to the TTMA-200. We believe you will find the TTMA-200 a great value for your short or long-term work zone solution.

This manual is a guide for operators through the operation and maintenance of the TTMA-200. Please read and understand the recommendations contained in this manual thoroughly before using the TTMA-200 and keep the manual available for future reference. If you have any questions or comments regarding the operation and/or maintenance of this product, please contact us:

Telephone: (866) 994-4929 - Monday to Friday, 8:00 a.m. to 5:00 p.m. EST.

Email: Technical Support: TTMATechnicalSupport@gregorycorp.com
Sales & Distribution: TTMASales@gregorycorp.com

Mail: Gregory Industries, Inc. • 4100 13th Street SW • Canton, Ohio 44710

Online: For the most up to date version of our USER MANUAL visit our website
www.gregoryhighway.com

This manual has four sections:

- **TTMA Design and Major Components.** Detailed in this section is an overview of the TTMA-200 design and major components. Included are trailer and components, technical specifications, and wiring instructions.
- **Operational Guidelines.** Guidelines pertaining to the operation of the TTMA-200 are located in this section such as minimum support truck weight, support truck attachment structure, roll-ahead distances, connections, and other operational items.
- **Maintenance Guidelines:** This section offers suggested routine maintenance of the TTMA-200. How to keep the TTMA-200 in top operational condition.
- **Repair Guidelines.** Includes discussion of impacts by an errant vehicle and the associated repair and replacement of trailer parts.

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TTMA-200 DESIGN AND MAJOR COMPONENTS

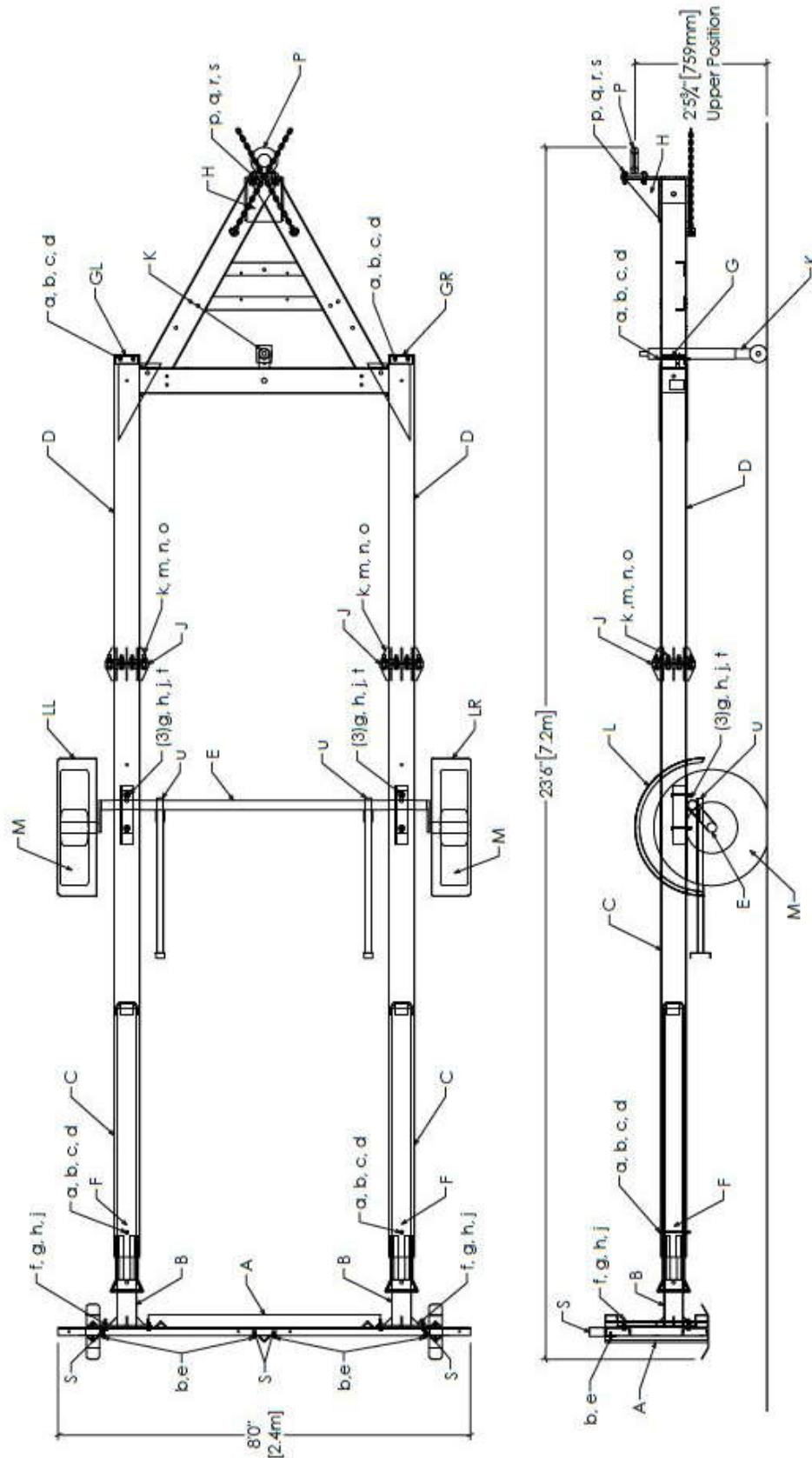


Figure 1. Schematic and Parts Layout of TTMA-200

TTMA-200 DESIGN AND MAJOR COMPONENTS

GENERAL

Trailer Components			
ITEM	PART #	QTY	DESCRIPTION
A	T-200A	1	Impact Head
B	T-200B	2	Bursting Mandrel
C	T-200C	2	First Stage Energy Absorber
D	T-200D	1	Trailer A-Frame
E	T-200P	1	MASH Axle Assembly
F	T-NHRC	2	Plastic Guide Plates w/Shear Bolt & hdw
G	T-200F/T-200G	2	End Caps (Driver/Passenger)
H	T-200H	1	Hitch Assembly/Lunette Ring
J	T-200J	8	Spacer
K	T-200K	1	Wheeled Jack Assembly
L	T-200EF-L/R	2	Fender (left/right)
M	T-200T	2	Spare Tire w/rim (205/75D15)

For a complete list of repair parts please refer to the index of this manual or contact your local distributor

Table 1. Main Components of TTMA-200

Hardware Items (all hardware is Grade 5 Zinc Coated)			
ITEM	PART #	QTY	DESCRIPTION
a	-	6	5/16"-18 x 7" Grade 5 Hex Bolt
b	-	12	5/16" Flat Washer
c	-	6	5/16" Heavy Lock Washer
d	-	6	5/16"-18 Hex Nut
e	-	12	5/16" Tech Screws
f	-	8	1/2"-13 x 2" Hex Bolt
g	-	32	1/2" Flat Washer
h	-	16	1/2" Heavy Lock Washer
j	-	16	1/2"-13 Hex Nuts
k	-	16	9/16"-12 x 3" Hex Bolts
m	-	32	9/16" SAE Flat Washer
n	-	16	9/16" Heavy Lock Washer
o	-	16	9/16"-12 Hex Nuts
p	-	4	5/8"-11 x 2-1/2" Hex Bolts
q	-	4	5/8" USS Flat Washer
r	-	4	5/8" Heavy Lock Washer
s	-	4	5/8" Hex Nuts
t	-	4	1-3/8" (1-1/2" OD) Plastic Locking Plugs
u	-	2	Square Tubing Plug
v	-	4	1/2"-13 x 1-1/2" Hex Bolts
w	-	4	1/2"-13 x 4-1/2" Hex Bolts
x	-	4	5/8" SAE Flat Washers

Hardware items listed for reference only. Hardware items supplied with each repair part as needed.

Table 2. Hardware Parts List

TTMA-200 Technical Specifications

Overall Dimensions

Length	23' - 6"
Width	8' - 0"
Height (to top of impact head)	39"
Height (to top of light bar)	43"
Ground Clearance (to bottom of impact head).....	13"

Capacity

Trailer Weight	1,835 lbs.
Approximate Tongue Weight (w/ Arrow Board Stand and Arrow Board)	300 lbs.
Minimum Support Truck Weight	10,000 lbs.
Maximum Support Truck Weight	Unlimited

Pintle Hook

Hitch	Lunette ring with no other structural attachment
Capacity Rating (Minimum)	8 tons
Mounting Height (3 positions).....	19.5" – 32.0"
Hitch Plate (Hitch Mounting Structure).....	100 klf (minimum)

Breakaway Axle

Rating	2,200 lbs.
Tire Size	205/75D15
Rim Size	15x5JJ
Cold Tire Inflation Pressure	50 psi

Lighting

Lighting	Integrated light bar
Lighting Standard	FMVSS 108

Arrow Board Frame

Arrow Board Frame	3" x 3" x 3/16" A500B
Manual Winch	

Construction

Frame	Open design
All energy absorbing components	6" x 6" x 3/16" A500 B
All structural members in impact system	Hot-dipped galvanized
Axle	Mid-mounted breakaway
Fender	Full-fender

Safety Performance

MASH 2016 required tests	AASHTO
Support truck weight – MASH 2016 Tests 3-50, 3-51, 3-52, 3-54	Unlimited
Support truck weight – MASH 2016 Test 3-53	10,000 lbs. (minimum)
Energy Absorbing System	Bursting Tube Technology
FHWA Letter of Eligibility.....	CC-152

Warranty

Warranty against defects in material and workmanship	One year
--	----------

Table 3. TTMA-200 Technical Specifications

TTMA-200 DESIGN AND MAJOR COMPONENTS

Table 3 presents the technical specifications for the TTMA-200, including:

- Overall dimensions
 - Capacity of the TTMA-200
 - Capacity and mounting height of the Pintle hook
 - Axle, Tire, and Rim Capacity
 - Lighting specifications
 - Arrow Board Frame construction
 - Construction of the TTMA-200
 - Safety performance of TTMA-200
 - Warranty
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WIRING INSTRUCTIONS

The TTMA-200 comes standard with a 7-pin Heavy Duty Truck Plug for connection to the tow vehicle. It is necessary to determine the plug on the tow vehicle so the correct plug can be adapted to the TTMA-200. The TTMA-200 can be adapted to fit an RV Plug as well as a 6-pin Heavy Duty Truck Plug. The shapes of the plug types are distinguishable as shown **Figure 2**. The RV plug uses blades and both truck plugs uses round pins.



Figure 2. Photographs of RV and Heavy Duty Truck Plugs

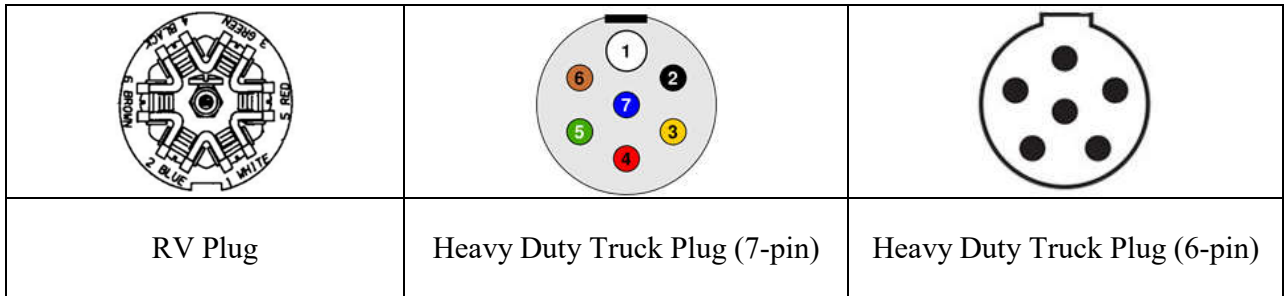


Figure 3. Standard Wiring Layouts of RV and Heavy Duty Truck Plugs

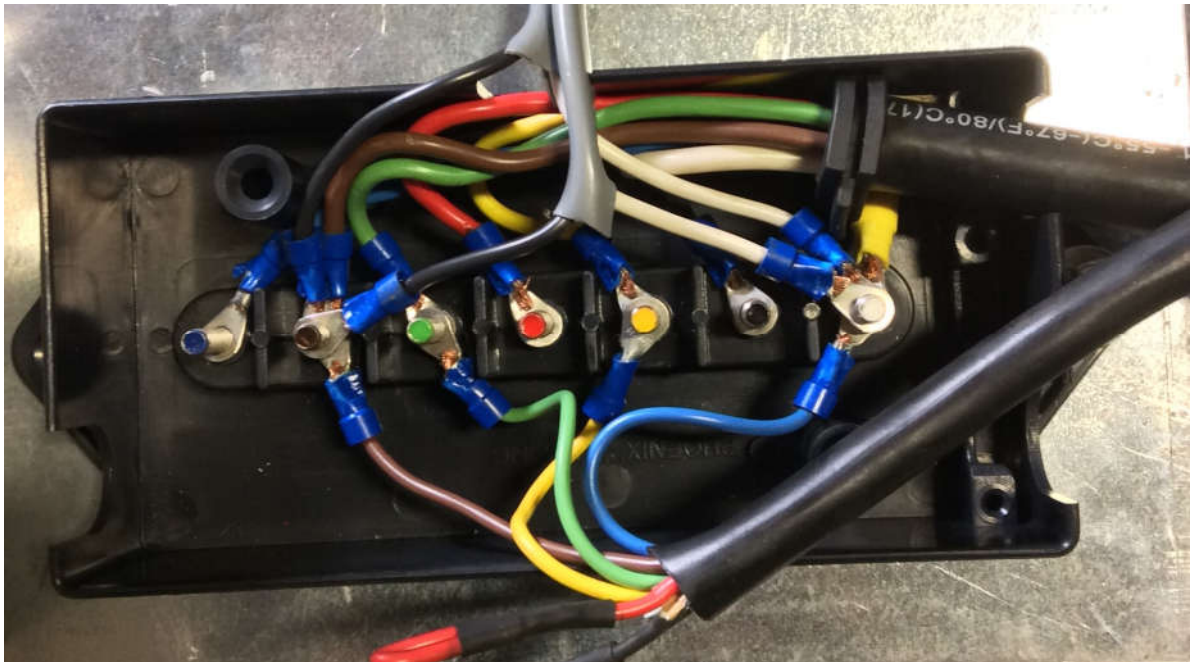


Figure 4. Wiring junction box TTMA-200

WIRING INSTRUCTIONS (Cont.)

RV Plugs with Separate Brake Wire			
Function	Trailer Wire Color	Plug Labels	
		Number	Color
Common Ground	White	1	White
Auxiliary	Black	2	Black
Left Turn	Yellow	3	Yellow
Brake Light	Red	4	Red
Right Turn	Green	5	Green
Tail/Marker Lights	Brown	6	Brown
12V Power Supply	Blue	7	Blue

Heavy Duty Truck Plugs			
Function	Trailer Wire Color	Plug Labels	
		Number	Color
Common Ground	White	1	White
Brake Light	Red	2	Blue
Tail/Marker Lights	Brown	3	Green
12V Power Supply	Blue	4	Black
Left Turn	Yellow	5	Red
Right Turn	Green	6	Brown
Auxiliary	Black	7	(center)

Table 4. Standard Wiring Layouts of RV and Heavy Duty Truck Plugs

NOTE: The above wiring patterns represent standard wiring for the tow vehicle. Wiring patterns may need modified if the tow vehicle does not use standard wiring. Please contact our technical services for assistance at TTMATechnicalSupport@gregorycorp.com

Figure 3 shows the different standard wiring layouts for the RV plug and the heavy-duty truck plugs.

Figure 4 shows the schematic of the wiring details of the TTMA-200. The TTMA-200 is fully wired at the time of delivery and this diagram is for reference purposes only. The only item that may require attention of the user is the wiring of the trailer plug for connection to the tow vehicle.

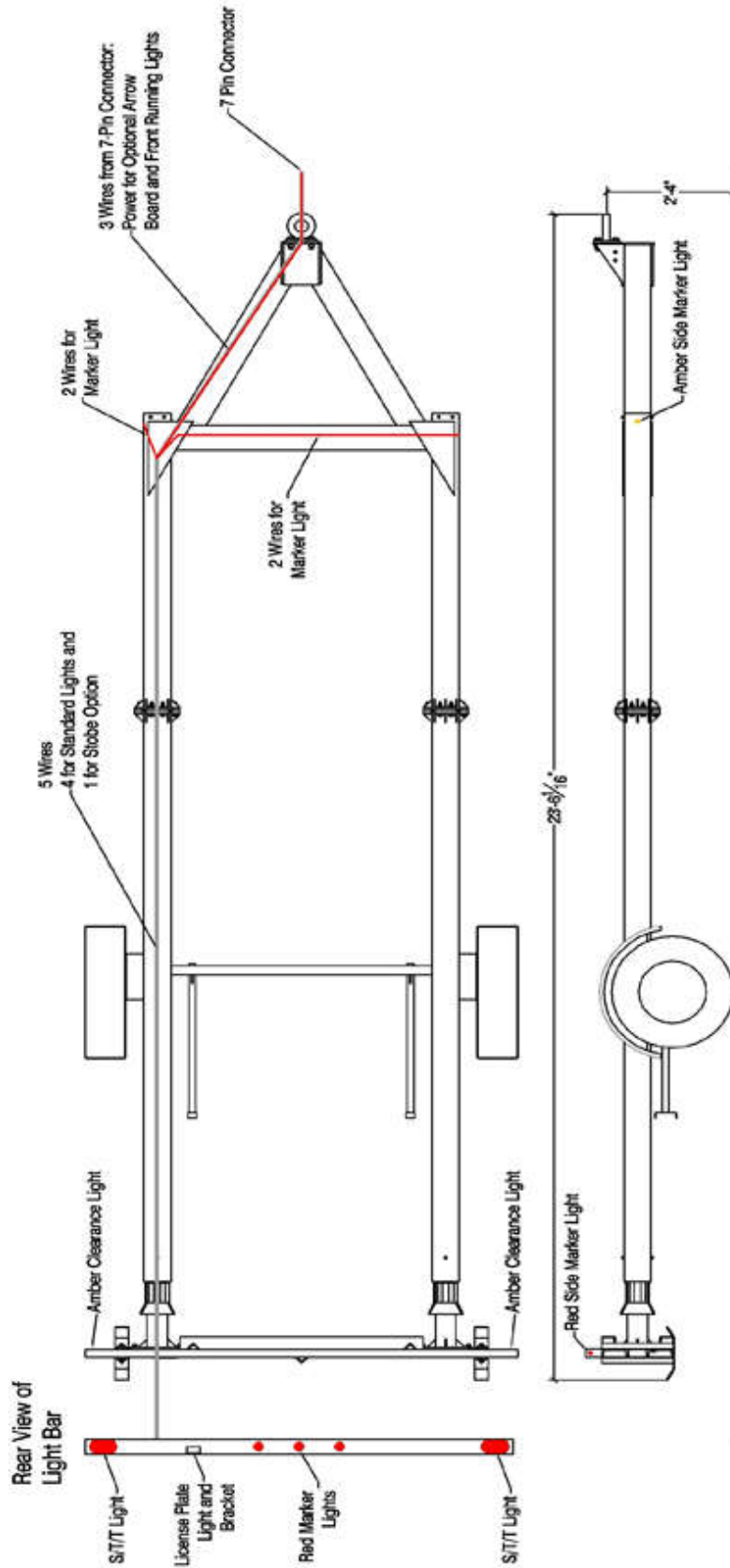


Figure 5. TTMA-200 Wiring and Light Layout

OPERATION GUIDELINES

INITIAL SETUP

The TTMA-200 should be delivered fully assembled. If there are problems with the delivered trailer, please contact Gregory Industries, Inc. immediately.

Three items will require your attention prior to utilizing the trailer:

- Check to make sure that there are no missing bolts and the bolts are tightened to the specific torque. The following are the recommended torques to the bolts according to the bolt size:

Bolt Size (in)	5/16"	1/2"	9/16"	5/8"
Torque (ft-lb)	15	60	85	115
Torque (N-m)	20	81	115	156

Table 5. Torque Detail for Fasteners

- Check to make sure the wiring of the trailer plug for connection to the tow vehicle is appropriate. As mentioned on **Page 8**, there are two distinctly different wire plugs that are not compatible, one is the RV plug and the other is the heavy-duty truck plug. Make sure that you have the correct type of plug and that the plug is wired properly. Also, check to confirm that the lights are functioning properly prior to putting the TTMA-200 into service.
- Check to make sure the Pintle hook is mounted properly. Due to the wide variations in the frame structures of different tow vehicles, there is not a single standard means of mounting the pintle hook assembly to the frame of the tow vehicle. **The major considerations in mounting of the pintle hook are the strength of the attachment and the mounting height.**

The Pintle hook assembly may be welded or bolted to the frame of the tow vehicle. Regardless of the method of mounting or attachment to the tow vehicle, it is critical to ensure that the strength of the attachment exceeds the rated capacity of the pintle hook with a wide margin of safety. **It is the obligation of the users to ensure that their particular pintle hook attachment system meets these strength requirements.** *Figure 6* below shows the mounting positions of the lunette ring.



Figure 6. Mounting Positions of Lunette Ring

MINIMUM AND MAXIMUM WEIGHT OF TOW VEHICLE

The minimum recommended weight for the tow vehicle is 10,000 lbs. gross vehicle weight (GVW) was established during AASHTO MASH 2016 Test 3-53. This test, as specified by AASHTO MASH 2016 did not use a vehicle blocked against forward movement. There is no specified maximum weight for the tow vehicle. TTMA-200 crash tests (3-50, 3-51, 3-52) specified under AASHTO MASH 2016 were conducted with the TTMA-200 attached to a tow vehicle that was blocked against any forward movement. By these standards, the TTMA-200 can be towed by a vehicle with an unlimited amount of weight.

TOW VEHICLE ROLL AHEAD DISTANCES

One of the major safety concerns is the roll-ahead distance of the shadow vehicle when impacted by an errant vehicle. When an errant vehicle impacts the tow vehicle with a TTMA-200 attached, it WILL roll forward. It is therefore important to allow sufficient space between the tow vehicle and the workers so the roll ahead of the tow vehicle would not pose any safety concern to the workers. **Table 6** and **Table 7** show the estimated roll-ahead distances for rolling and stationary tow vehicles, respectively, as a function of impact speed and weights of the support truck and impacting vehicle. The space between the support vehicle and the workers should exceed the estimated roll-ahead distance under the prevailing operating conditions. The following steps are provided to determine appropriate roll-ahead distance.

1. Assess the nature of the operation (i.e., moving or stationary operation). In a moving operation, the tow vehicle is moving at slow speed, such as 15 mph. In a stationary operation, the shadow vehicle is stopped with the parking brakes on. Use **Table 6** for stationary operations and **Table 7** for mobile operations.
2. Select the weight that best approximates the actual weight of the tow vehicle: 10,000, 15,000, 24,000, 40,000, 60,000 or 80,000 lb. Note the weight of the support truck should include the weights of items to be carried on the truck during the operation and the weight of the TTMA-200.
3. Select the range of prevailing speed of the traffic at the work zone: 45, 55 or 65 mph.
4. Select the weight of the impact vehicle to be contained: 10,000, 15,000, or 24,000 lb.
5. Select from the appropriate table the expected roll ahead distance

For example: If you are operating a tow vehicle with a gross weight of 15,000 lb as a stopped shadow vehicle in an area where the operating traffic speed is 45 mph, and there are few if any large trucks in the mix of traffic. Start with **Table 6**, select the appropriate values from above, and determine that the maximum roll-ahead distance would be 11 ft. This is the distance from the front of the tow vehicle to the work area that should be provided.

ATTACHMENT OF TTMA-200 TO TOW VEHICLE

The TTMA-200 is attached to the tow vehicle via a Pintle hook with a minimum capacity of 8 tons.

- Verify the retaining pin for the pintle hook is properly locked to avoid accidental release of the Pintle hook and lunette ring attachment of the TTMA-200
- Make sure the TTMA-200 lights are connected to the tow vehicle and are operating properly
- Ensure the safety chains properly secure the TTMA-200 to the tow vehicle.
- The mounting structure where the pintle hook attaches should be capable of sustaining 100 klb (minimum) force at impact. Consult the hitch plate, vehicles manufacturer or engineer to ensure mount integrity.

Tow Vehicle Weight	Traffic Operating Speed	Impact Vehicle Weight			
		4500 lbs.	10000 lbs.	15000 lbs.	24000 lbs.
10000 lbs.	65 mph	38 ft.	103 ft.	152 ft.	216 ft.
	55 mph	27 ft.	74 ft.	109 ft.	155 ft.
	45 mph	18 ft.	50 ft.	73 ft.	104 ft.
15000 lbs.	65 mph	22 ft.	68 ft.	108 ft.	166 ft.
	55 mph	16 ft.	49 ft.	77 ft.	119 ft.
	45 mph	11 ft.	33 ft.	52 ft.	80 ft.
24000 lbs.	65 mph	11 ft.	38 ft.	65 ft.	111 ft.
	55 mph	8 ft.	27 ft.	47 ft.	80 ft.
	45 mph	6 ft.	18 ft.	32 ft.	54 ft.
40000 lbs.	65 mph	5 ft.	18 ft.	34 ft.	64 ft.
	55 mph	4 ft.	13 ft.	24 ft.	46 ft.
	45 mph	3 ft.	9 ft.	16 ft.	31 ft.
60000 lbs.	65 mph	3 ft.	10 ft.	19 ft.	38 ft.
	55 mph	2 ft.	7 ft.	13 ft.	27 ft.
	45 mph	2 ft.	5 ft.	9 ft.	18 ft.
80000 lbs.	65 mph	2 ft.	6 ft.	12 ft.	25 ft.
	55 mph	1 ft.	5 ft.	9 ft.	18 ft.
	45 mph	1 ft.	3 ft.	6 ft.	12 ft.

Table 6. Calculated Roll Ahead Distances for Stationary Operation

Tow Vehicle Weight	Traffic Operating Speed	Impact Vehicle Weight			
		4500 lbs.	10000 lbs.	15000 lbs.	24000 lbs.
10000 lbs.	65 mph	119 ft.	205 ft.	261 ft.	333 ft.
	55 mph	97 ft.	158 ft.	198 ft.	247 ft.
	45 mph	77 ft.	118 ft.	143 ft.	174 ft.
15000 lbs.	65 mph	93 ft.	161 ft.	211 ft.	278 ft.
	55 mph	78 ft.	127 ft.	162 ft.	209 ft.
	45 mph	65 ft.	97 ft.	120 ft.	150 ft.
24000 lbs.	65 mph	71 ft.	118 ft.	157 ft.	215 ft.
	55 mph	62 ft.	97 ft.	124 ft.	165 ft.
	45 mph	54 ft.	77 ft.	96 ft.	122 ft.
40000 lbs.	65 mph	56 ft.	86 ft.	112 ft.	155 ft.
	55 mph	50 ft.	73 ft.	92 ft.	123 ft.
	45 mph	45 ft.	61 ft.	74 ft.	95 ft.
60000 lbs.	65 mph	48 ft.	68 ft.	86 ft.	118 ft.
	55 mph	44 ft.	60 ft.	73 ft.	96 ft.
	45 mph	41 ft.	52 ft.	61 ft.	77 ft.
80000 lbs.	65 mph	44 ft.	59 ft.	73 ft.	97 ft.
	55 mph	41 ft.	53 ft.	63 ft.	81 ft.
	45 mph	39 ft.	47 ft.	54 ft.	67 ft.

Table 7. Calculated Roll Ahead Distances for Moving Operation (15 mph)

OPERATION OF TTMA-200

Operation of the TTMA-200 is similar to many other trailers. Special attention should be given to the following issues:

- The TTMA-200 when deployed the entire TTMA-200 should be horizontal to the ground with the impact head clearance to the ground at 13" +/- 1"
- The TTMA-200 device does not have brakes. All braking will be dependent on the tow vehicle. Thus, additional distance should be allowed for in braking and stopping of the tow vehicle.
- Do not use the TTMA-200 for hauling. Objects on the trailer create a potential projectile hazard for vehicles impacting the TTMA-200 and workers in the work zone.
- Attachment of the TTMA-200 results in wider turns. Drivers should be aware of this need for wider turning radius and adjust their driving accordingly.
- Attachment of any trailer TMA will result in different handling for the tow vehicle while backing up. Drivers should be aware of this difference in vehicle handling characteristics and adjust their driving accordingly.
- Tow vehicles should be equipped with headrests, lap belts and shoulder straps to provide proper crash protection for the driver. Operators should adjust their headrest to contact the center of the head and should wear seat belt and shoulder strap at all times.
- Do not attach any item to the trailer or hitch without explicit approval from the manufacturer. Contact Gregory Industries Technical Support for any question regarding attachments to the trailer E-Mail: TTMATechnicalSupport@gregorycorp.com - Phone: (330) 477-4800
- Verify that the retaining pin for the Pintle hook is properly locked to avoid accidental release of the Pintle hook and/or the lunette ring attachment of the TTMA-200.
- Make sure that the trailer lights are connected to the tow vehicle and operating properly.
- Ensure that the safety chains properly secure the TTMA-200 to the tow vehicle.

This manual does not cover the operation of optional equipment such as arrow boards, variable message signboards, and other approved hitch mounted equipment. Please see appropriate operating manuals accompanying those devices for instructions.

MAINTENANCE GUIDELINES

Proper maintenance of the TTMA-200 is critical to assure continued safe operation and long-term durability of the device. The outside of the TTMA-200 should be washed periodically, particularly during winter usage, to eliminate salt and other road contaminants. The inside of the frame should be washed annually. The end caps (Item G) can be removed to allow rinsing the inside of the frame. Care should be taken with the wiring for the side marker lights during this process. Note all critical parts of the TTMA-200 are hot-dip galvanized and require minimal maintenance. The following preventive maintenance schedule is recommended:

Item	Function Required	Each Use	Weekly	3 Months	1 Year
Lighting System	Test that all lights are operational	**			
Pintle Hook	Check capacity and verify the retaining pins properly inserted	**			
Safety Chains	Check they are properly attached	**			
Mandrel Restraining Bolts	Check the restraining bolts are not missing, bent, or broken and tightened to specified torque of 15 lbs.	**			
Lunette Ring	Check tightness of the 5/8" nuts / bolts to torque of 115 ft-lbs		**		
Tire Inflation	Ensure tires are inflated to 50 psi (Cold)		**		
Tire Condition	Inspect for cuts, wear, bulging, etc. <i>Table 9</i> provides guidance of routine wear issues.		**		
Wheels	Inspect for cracks, dents, distortion or other signs of wear			**	
Chevrons	Inspect retroreflective material & ensure it meets requirements for deployment		**		
Splice Bolts	Check the 9/16" splice bolts are not missing, bent, or broken and tightened to the specified torque of 85 ft-lbs.			**	
Wheel Nuts	Tighten to manufacturer specified torque values			**	
Breakaway Axle Bolts	Check the 1/2" breakaway axle bolts are not missing, bent, or broken and tightened to the specified torque of 60 ft-lbs.			**	
Wheel Bearings and Cups	Inspect for corrosion or wear. Clean and repack				**
Frame Welds	Check for cracks, call Gregory Industries for instruction if cracks are detected				**

Torque Chart				
Bolt Size (in)	5/16"	1/2"	9/16"	5/8"
Torque (ft-lb)	15	60	85	115
Torque (N-m)	20	81	115	156

TABLE 8. Recommended Maintenance Schedule

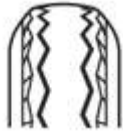





Tire Wear Diagnostic Chart			
Wear Pattern		Cause	Action
	Center Wear	Over Inflation	Adjust pressure to particular load per tire catalog
	Edge Wear	Under Inflation	Adjust pressure to particular load per tire catalog
	Side Wear	Loss of camber or overloading	Make sure load does not exceed axle rating. Alignment may be needed
	Even Wear	Proper wear of tire	Replace Tires
	Cupping	Out of balance	Check bearing adjustment and balance tires
	Flat Spots	Wheel lockup & tire skidding	Avoid sudden stops when possible and adjust brakes

TABLE 9. Tire Wear Diagnostic Chart

REPAIR GUIDELINES

For impacts requiring repair and replacement of parts on the TTMA-200, Gregory Industries, Inc. offers different parts packages depending on the extent of damage sustained by the unit. Parts packages are available through Gregory Industries, Inc. or a TTMA-200 distributor in your area.

DAMAGE ASSESSMENT AND REPAIR PARTS PACKAGES

Inspect the TTMA-200 to assess the extent of the damage and the necessary repairs. Due to the simple design of the TTMA-200, damages to the trailers are usually very evident. **The TTMA-200 should always be thoroughly inspected to assure everything is in proper working order prior to returning into service.**

The extent of damage to the trailer will vary greatly, depending on the nature and severity of the impact. It would not possible to cover all situations that could potentially be encountered in real-world crashes. Thus, the instructions are presented in general terms for the following levels of damage to the trailer.

- **Nuisance Impact** – No apparent damage to TTMA-200 (5 mph impact)
- **Level 1 Impact** - Energy absorbing tubes (Part C) bursted, but axle assembly (Part E) not detached.
- **Level 2 Impact** - Energy absorbing tubes (Part C) bursted and axle assembly (Part E) detached, but the bursting does not reach the trailer A-frame (Part D).
- **Level 3 Impact** - Bursting reaches trailer A-frame (Part D).

Nuisance Impact - No Apparent Damage to Trailer

- Inspect shear bolts (Part a) holding mandrels (Part B) in place with the energy absorbing tubes (Part C). If the shear bolts are bent or broken, replace the bolts.
- Inspect trailer lighting system for damage. If the lighting system sustains only minor damage, such as a broken lens or light bulb, repair the damaged items, which may be purchased from automotive supplies stores. Make sure that all the lights are working properly prior to returning the trailer to service.
- The following replacements parts are typically required for repair with this severity of damage sustained by the trailer. **T-NHRC** (Shear Bolt, Nut, Washers and Plastic Guide Plates) per side.
- The user may conduct replacement of the shear bolts and plastic guide plates for the mandrels and repair of the lights in the field without involving the distributor or manufacturer.

Level 1 Impact – Energy absorbing tubes (Part C) bursted and axle assembly (Part E) not detached.

- Replace energy absorbing tubes (Part C) and shear bolts (Parts a, b, c, d).
 - **T-200C** (includes all hardware)
- Inspect trailer lights for damage. If the lighting system sustains only minor damage, such as a broken lens or light bulb, repair the damaged items, which may be purchased from automotive supplies stores. Make sure all the lights are working properly prior to returning the TTMA-200 to service. If the lighting system is severely damaged and no longer functional, replace the entire lighting system.

REPAIR GUIDELINES (Cont.)

- **T-LIGHTBAR-12V** (includes mounting hardware)
- Inspect impact head (Part A) and mandrels (Parts B) for damage. For this severity of impact, it is unusual for either the impact head or the mandrels to be damaged to the extent they are no longer usable and need replaced. Check to make sure that the impact head and mandrels are not severely bent and are properly aligned with the energy absorbing tubes. Replace as needed.
 - **T-200A** (includes mounting hardware)
 - **T-200B** (includes all hardware)
- Inspect lunette ring and pintle hook for damage. For this severity of impact, it is unusual for either the lunette ring or the pintle hook to be damaged to the extent they are no longer usable or need to be replaced. Check to make sure that the lunette ring and the pintle hook are not severely bent and can be hooked up properly.
 - **T-200H** (includes mounting hardware)



Figure 7



Figure 8

Level 2 Impact - Axle Assembly Detached, but No Damage to Trailer A-Frame.

- Replace energy-absorbing tubes (Part C) and shear bolts (Parts a, b, c, d, g and h).
 - **T-200C** (includes all hardware)
- Inspect the breakaway axle assembly (Part E) for damage. Replace axle if visibly bent. If the axle is not damaged, but the push rods are bent, straighten out the push rods. Make sure that the push rods are attached to the axle properly. If the axle is not damaged, but the fenders are severely bent, replace only the fenders.
 - **T-200P** (includes mounting hardware)
 - **T-200EF** – (includes mounting hardware, specify left, right or both fenders)
- Inspect trailer lights for damage. If the lighting system sustains only minor damage, such as a broken lens or light bulb, repair the damaged items, which may be purchased from automotive supplies stores. Make sure all the lights are working properly prior to returning the trailer to service. If the lighting system is severely damaged and no longer functional, replace the entire lighting system.

REPAIR GUIDELINES (Cont.)

- **T-LIGHTBAR-12V** (includes mounting hardware)
- Inspect impact head (Part A) and mandrels (Parts B) for damage. Check to make sure that the impact head and mandrels are not severely bent and are properly aligned with the energy absorbing tubes.
 - **T-200A** (includes mounting hardware)
 - **T-200B** (includes all hardware)
- Inspect lunette ring and Pintle hook for damage. For this severity of impact, it is unusual for either the lunette ring or the pintle hook to be damaged to the extent that they are no longer usable and needs to be replaced. Check to make sure that the lunette ring and the pintle hook are not severely bent and can be hooked up properly.
 - **T-200H** (includes mounting hardware)

Level 3 Impact - Bursting Reaches Trailer A-Frame

For this high severity of impact, it is not advisable to repair the trailer. It is recommended the user consider purchasing a new TTMA-200. The cost for the replacement parts would approach the price of a new trailer. Extensive assembly will be required, which may pose some problems for someone not familiar with the details of the trailer.

Arrow Board Frame

The TTMA-200 can be equipped with heavy gauge steel arrow board framework for use with a variety of 4' x 8' arrow board panels or variable message boards.

The arrow board framework for the TTMA-200 was used with each successful test during the AASHTO MASH 2016 testing.

NOTE: In the event an Arrow Board and Arrow Board Frame is not used on the TTMA a pair of ballast plates must be used in their absence. The ballast plates provide the necessary tongue weight required for the TTMA-200. Contact the manufacturer or distributor for pricing of ballast plates.

NOTE: Arrow Board/Arrow Board Frame should be moved to the travel position any time the TTMA-200 is being pulled over normal mobile work zone operating speeds. This will extend the life of the arrow-board stand connections.

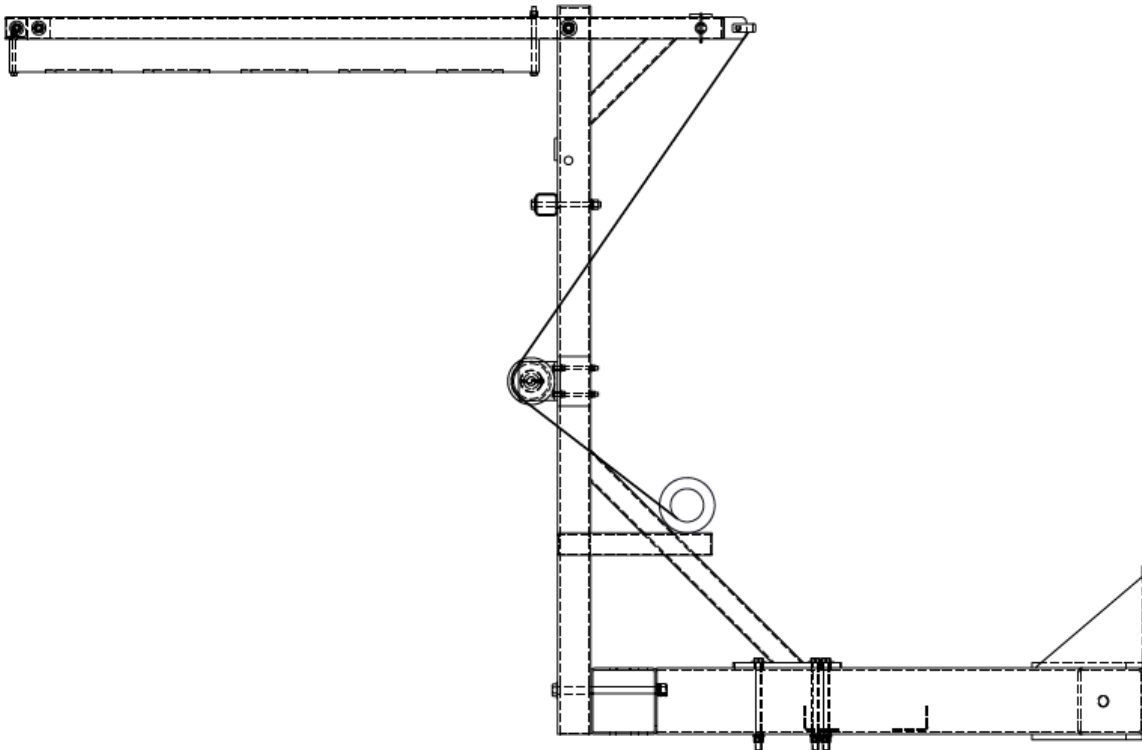


Figure 9. Arrow Board Frame (travel position)

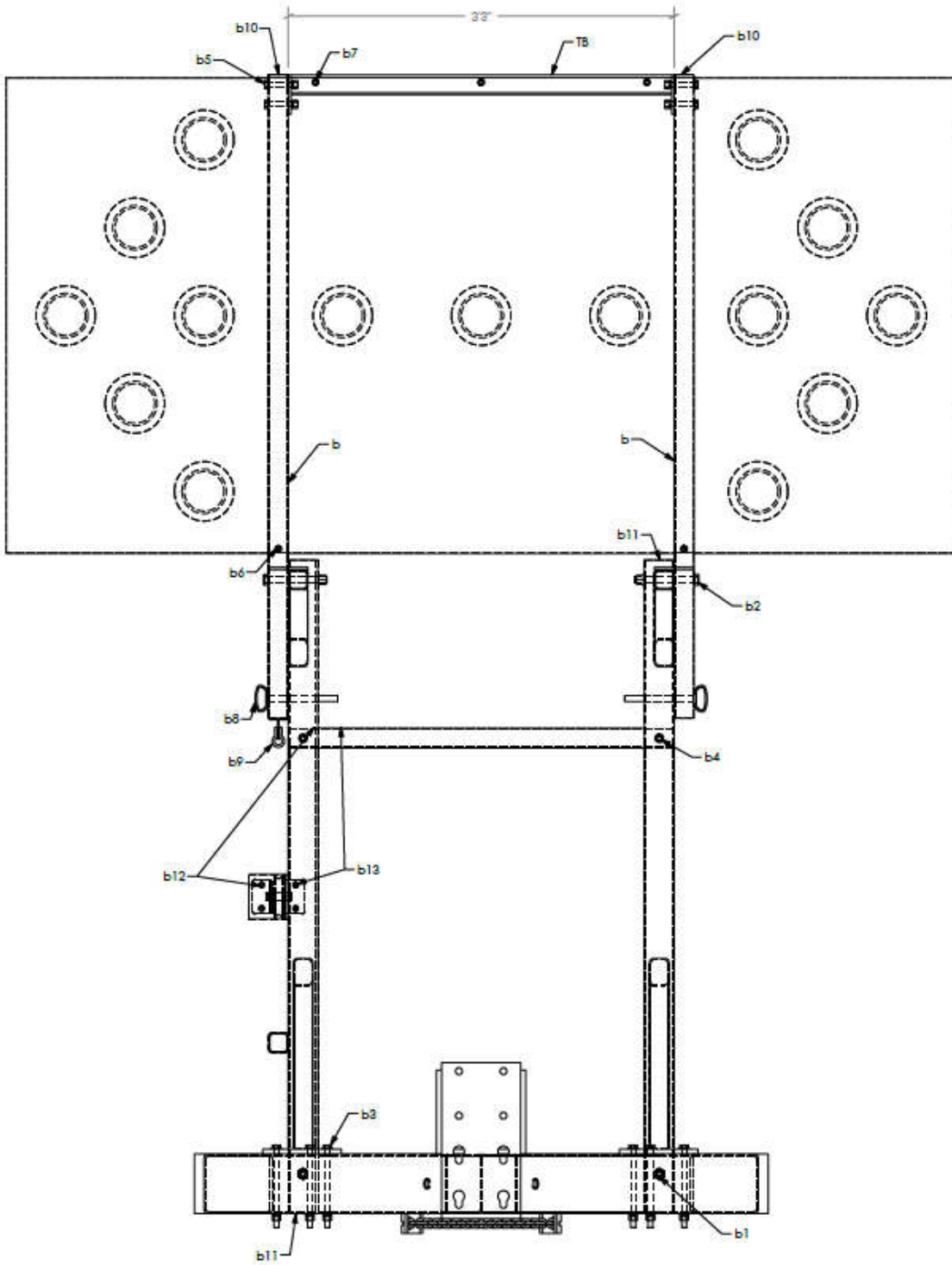


Figure 10. Arrow Board Frame (deployed position)

Replacement Parts and Components of TTMA-200

Replacement Parts	Description	Weight (lbs.)
T-200A	Impact Head & Hardware	240.00
T-200B	Mandrel w/ Hardware (ea.)	120.00
T-200C	Bursting Tube w/ Hardware (ea.)	127.00
T-200D	Trailer A-Frame	505.00
T-200E	Fender Bracket Light (specify driver or passenger side)	1.00
T-200EF-L/T-200EF-R	Fender (Left or Right)	23.50
T-200F	End Cap (Passenger)	1.75
T-200G	End Cap (Driver)	1.75
T-200H	Lunette Ring & Hardware	22.00
T-200J	Spacer (package of 8)	2.00
T-200K	Wheeled Jack Assembly	15.00
T-200K-WHEEL	Jack Assembly (Wheel Only)	1.00
T-200L	Safety Chains w/Hooks GR 70 (2 chains) – Standard Length	10.00
T-200LX	Safety Chains w/Hooks GR 70 (2 chains) – Extended Length	11.00
T-200M	16” Hitch Extension	63.00
T-NHRC	Shear Bolt, Nut, Washer & (2) Plastic Guide Plates	1.00
T-200P	MASH Axle and 5 Lug Hub Assembly (only)	90.50
T-200R	Battery Tray – Replacement/Upgrade	9.00
T-200S	Spare Tire Mount w/ Hardware	20.00
T-200T	Spare Tire w/ Rim (205/75D15)	37.50
T-200U	Radial Tire (205/75D15) – Upgrade	37.50
T-200X	T-Pin & Clip for Arrow Board Stand	1.00
T-200Y	Wiring Harness (Each) - From Lightbar to Junction Box	9.00
T-200Z	Reflective Tape for Bursting Tubes (2 per)	1.00
CHEVRONS	Various Chevron Patterns (CALL)	8.00
T-200-LIGHTBAR	12 Volt Light Bar (includes hardware and brackets)	8.50
T-200-LIGHTBAR-BRACKETS	MASH Mounting Brackets SS (Package of 4) with hardware	1.00
TM-ABF	Arrow Board Frame MASH	194.00
TM-WINCH	Manual Winch for TM-ABF MASH	9.00

Table 10. Repair and Replacement Parts

Table 10 provides a list of parts and part numbers. Please refer to these part numbers and legends for ordering spare or repair parts. Note this is not a complete parts list. Please inquire with the manufacturer, distributor, or reseller of the TTMA-200 for a complete parts list and pricing.

TECHNICAL ASSISTANCE

If you have any questions regarding inspection and assessment of damage to the trailer or required repair parts, please contact your distributor or Gregory Industries, Inc. by telephone at

Telephone: (866) 994-4929 - Monday to Friday, 8:00 a.m. to 5:00 p.m. Eastern Standard Time.

Fax: (330) 477-0626

Email: TTMATechnicalSupport@gregorycorp.com

TTMASales@gregorycorp.com

Web Site: www.GregoryHighway.com

Mail: Gregory Industries, Inc.
4100 13th Street SW
Canton, Ohio 44710

In order for Technical assistance to better provide assessment of the TTMA-200 or required repair parts, it is requested photographs be sent via email of the damaged TTMA-200 showing the overall damages, VIN tag and damages to the specific areas or parts in question.

Limitations and Warnings

The TTMA-200 Trailer Truck Mounted Attenuator has been tested and evaluated per the recommendations of the [American Association of State Highway and Transportation Officials \(AASHTO\) Manual for Assessing Safety Hardware \(MASH\) 2016](#).

The TTMA-200 Trailer Truck Mounted Attenuator is a Test Level 3 (TL-3) tested device capable of decelerating and stopping lightweight vehicles (2,425 lbs.) [1100 kg] and heavyweight vehicles (5004 lbs.) [2270 kg] in accordance with the criteria of MASH Tests 3-50, 3-51, 3-52, 3-53, 3-54 (62.14 mph/100 km/hr). FHWA Letter of Eligibility CC-152.

Impacts that exceed the design capabilities described in this manual (vehicle weight, speed, impact angle) may not result in acceptable crash performance as described in AASHTO MASH 2016, relative to structural adequacy, occupant risk and vehicle trajectory factors.

One Year Limited Warranty

Gregory Industries, Inc. warrants the purchaser against any defects in materials and workmanship of the Trailer Truck Mounted Attenuator (TTMA-200). Should the TTMA-200 prove to be defective in material and workmanship during the period of this warranty, Gregory Industries, Inc. will repair and/or replace the defective product free of charge. The period of the warranty shall commence on the date the purchaser puts the unit into service and shall remain in effect for a period of ONE YEAR.

This warranty does not cover any failure of the TTMA-200 caused by misuse, abuse or material alteration of the TTMA-200, or any negligence in connection with the installation, service, or use of this product. For proper installation, maintenance, or use of this product refer to the User's Manual, and the maintenance/service checklist.



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