



received approval letters from the Federal Highway Administration (“FHWA”) as eligible for federal reimbursement. Thousands of these units have been paid for, at least in part, by the United States government and installed on the nation’s highways.

2. Between 2002 and 2005, Trinity made a series of changes to the design and specifications of the ET-Plus. Trinity did not disclose these modifications to the FHWA, nor seek required approval of the modified ET-Plus. Nor did Trinity properly test units that contained these changes. Instead of undertaking proper testing and seeking approval, Trinity has falsely certified that the modified ET-Plus is approved for federal reimbursement when approval has never been sought or granted for the modified unit.

3. The changes for the ET-Plus are not harmless. As addressed below, if a vehicle strikes the modified ET-Plus, the modified internal dimensions of the ET-Plus can cause the guardrail to lock in the throat of the unit, thereby causing the unit to malfunction, creating a hazard to the occupants of the vehicle and others. Several recent accidents involving the modified ET-Plus units have resulted in serious injuries and fatalities when the ET-Plus units malfunctioned.

### **PARTIES**

4. Relator, Joshua Harman (“Harman”), is an individual and citizen of the United States of America residing in Swords Creek, Virginia.

5. Defendant Trinity Industries, Inc. is a Delaware corporation authorized to do business in Texas with its principal place of business located at 2525 N. Stemmons Freeway, Dallas, Texas 75207. Trinity Industries, Inc.’s Texas agent for service of process is CT Corp System, 350 N. St. Paul St., Suite 2900, Dallas, Texas 75201-4234.

6. Defendant Trinity Highway Products, LLC is, on information and belief, a

Delaware limited liability company with its principal place of business at 2525 N. Stemmons Freeway, Dallas, Texas 75207. Trinity Highway Products, LLC's Texas agent for service of process is CT Corp. System, N. St. Paul St., Suite 2900, Dallas, Texas 75201-4234.

### **JURISDICTION AND VENUE**

7. This Court maintains subject matter jurisdiction over this action pursuant to 31 U.S.C. § 3732(a) (False Claims Act) and 28 U.S.C. § 1331 (Federal Question).

8. Venue is proper in this Court under 31 U.S.C. § 3732(a) because Trinity manufactures and sells guardrail systems throughout the Eastern District of Texas as well as throughout the United States.

9. Harman is the original source of and has direct and independent knowledge of all publicly disclosed information that the allegations herein are based upon. Harman has personally gathered all the documentation and photographs substantiating the allegations herein. Additionally, he has voluntarily provided all such information to the Government prior to the filing of this action.

### **FACTS**

10. Trinity is in the business of manufacturing various highway safety and construction products for use across the United States. In particular, Trinity manufactures the ET-Plus guardrail end terminal ("ET-Plus") under an exclusive license agreement from Texas A&M University. The ET-Plus is commonly referred to as a "head" and when used in conjunction with the standard "W beam" style guardrail seen throughout the roads and highways of America is designed to absorb and dissipate the energy of a vehicular impact. Upon impact the guardrail is extruded through the head and flattened out into a ribbon, thus absorbing the majority of the errant vehicle's energy without severe impact forces that would result in life

threatening injuries.

11. Texas A&M University (“TAMUS”) is the owner of certain patents that are embodied in the ET-Plus guardrail terminal system. TAMUS granted Trinity an exclusive license to sell the ET-Plus.

12. The original design of the subject product was a guardrail end named ET-2000. The ET-2000 was subsequently modified and renamed the ET-Plus. See [Exhibit A](#) pp. 3-6 (Failure Assessment of Guardrail Terminals, created by Joshua Harman). The ET-Plus, as originally designed, was approximately 80 pounds lighter than the ET-2000 and was originally approved in January, 2000 by FHWA. The original production of the ET-Plus was initially built according to the design and specifications approved by FHWA. That version of the ET-Plus was overall very successful.

13. The following pictures show the first model ET-Plus performing correctly:





14. Between 2002 and 2005, Trinity secretly modified certain critical dimensions of the ET-Plus. As addressed below, Trinity was required to, but did not, inform FHWA of these changes, and the secretly redesigned product has never received the approvals necessary to install it on the highways of any state in the union. Despite the lack of approval, thousands of the secretly redesigned ET-Plus end terminals have been installed across the United States and in over 60 foreign countries. The secretly redesigned and unapproved ET-Plus terminals are illegal and, moreover, fail at an alarming rate, thereby killing or maiming citizens of the United States of America, including by impaling drivers and passengers with the very guardrails that were originally intended to protect them.

#### **TRINITY'S SECRET PRODUCT MODIFICATIONS**

15. When Trinity obtained regulatory approval of the original ET-Plus in 2000, it was required to provide FHWA and the state Departments of Transportation with scaled drawings that showed the critical dimensions of the product. Those drawings, which Harman has confirmed through measurements of the physical product itself, show the following critical dimensions:

	<b>2000</b>
Exit Gate	1.3 to 1.5 inches (usually 1.5)
Feeder Channel Width	5 inches
Feeder Chute Assembly Height	
a. exterior	15 3/8 inches
b. interior	15 3/8 inches
Feeder Chute Assembly Length	37 inches

Between 2002 and 2005, Trinity secretly changed each of the critical dimensions set forth above.

Based on measurement of numerous ET-Plus units, the new dimensions are:<sup>1</sup>

	<b>Summer of 2005</b>
Exit Gate	1.0 inches
Feeder Channel Width	4 inches
Feeder Chute Assembly Height	
a. exterior	14 7/8 inches
b. interior	14 3/8 inches
Feeder Chute Assembly Length	36 1/4 inches

16. Although required to do so, Trinity never sought approval for the secretly redesigned ET-Plus or provided scaled drawings of the modified unit to the FHWA. To date, Trinity has only provided to the FHWA one drawing of a purportedly redesigned unit that shows a four inch feeder channel; however, that drawing lacks the detail necessary for it to be effectively used and is not scalable as required by FHWA policies.

17. The problem with the ET-Plus as modified in 2005 is that the guardrail does not feed properly through the chute due to the reduced area/dimensions of the feeder chute itself. This causes the guardrail to “throat lock” in the head during impact. Once throat locked, the energy of the crash is diverted elsewhere usually causing the guardrail to double over on itself or protrude through the crashing vehicle.

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<sup>1</sup> Based on Harman’s measurement of various ET-Plus units, there may be slight variations in the dimensions of the post-modified ET-Plus; the point is, however, these units all have critical dimensions that are *smaller* than the ET-Plus unit that was tested and approved and these smaller dimensions cause the product to malfunction as more fully described herein.

18. Based on the information and testimony that was made available in certain patent litigation filed in the Eastern District of Virginia as well as Harman's investigation, the following timeline regarding the modifications to the ET-Plus have become known.

19. Sometime between January and May 2005, Steve Brown (then president of Trinity Highway Products) asked Wade Malizia (then manager of Trinity plant 31 in Girard, Ohio) to make an ET-Plus prototype using 4-inch wide feeder channels. Mr. Malizia in turn delegated the task to the plant 31 welding shop. The welders attached 4-inch wide feeder channels to the standard extruder throat unit that Trinity had used since approval in January 2000. No engineer was involved in the process to assure that the critical dimensions of the original tested product were maintained.

20. Trinity shipped the prototype to the Texas A&M Transportation Institute in April or May 2005. As discussed in greater detail below, this prototype was not treated as either a new unit or as a modification of an existing unit. The modifications were not disclosed to the FHWA. Moreover, the prototype was not fully tested pursuant to National Cooperative Highway Research Program Report 350 ("NCHRP 350"), and the modifications were not disclosed pursuant FHWA's protocols.

21. Trinity did not comply with even one requirement for a new or modified unit. In July 2005, Trinity made a submission to the FHWA specifying eight (8) changes that were made to the ET-Plus system. However, not one change to the internal or external dimensions of the extruder head was revealed in that submission.

22. In 2005, Trinity began shipping to customers ET-Plus units that were significantly different than the unit that received federal approval.

23. In addition to the change to the width of the feeder channels from 5 to 4 inches,

Trinity made, *inter alia*, the following additional changes: According to a drawing of the Feeder Chute Assembly created on May 31, 2005, Trinity inserted the channels approximately 3/4 inch into the extruder throat which had the effect of reducing the height of the Feeder Chute Assembly by approximately 3/8 inches because of the thickness of the metal of the Feeder Channel. In making this change Trinity also changed the type of weld used to connect two critical pieces of the unit. The original weld resulted in a flush fit; the new weld caused the thickness of the metal of the channel to intrude into the roof and floor space of the extruder chamber. Trinity also reduced the height of the Feeder Chute Assembly by an additional 1/8 inch. The effect of these changes on the exterior dimensions had an even more pronounced effect on the internal dimensions because the steel feeder channels are parallel and by inserting them into the tapered roof and floor, they lost the benefit of the widest part of the tapered roof and floor. Ultimately, these changes resulted in a 1 inch reduction of the internal height of the extruder channel. On July 6, 2005, Trinity shortened the length of the Feeder Chute Assembly by 3/4 inch in an attempt to reduce scrap that resulted from production and reduce costs.

24. On information and belief, the 2005 changes to the ET-Plus, including the changes to the dimensions of the unit as well as the type of weld used to build the unit reduced Trinity's costs to manufacture the ET-Plus. Moreover, after an accident, the most expensive part of the ET-Plus, the Extruder Head, could often be re-used on the unit as originally designed. After Trinity's unreported changes to the ET-Plus in 2005, and on information and belief, the heads cannot be re-used as regularly or easily after an accident, thereby requiring the federal and/or state highway authorities/entities to purchase new ET-Plus units as replacements.

#### **FHWA REGULATION OF THE ET-PLUS**

25. The ET-Plus, along with other products used on the National Highway System,

must undergo rigorous testing to determine crashworthiness before the product may be placed on the National Highway System. The Federal Highway Administration (“FHWA”), a division of the Department of Transportation, is charged along with other state and federal agencies with establishing the crashworthiness criteria for products such as the ET-Plus. Between 1998 and 2010, new highway safety features were required to be tested according to the NCHRP 350.<sup>2</sup> NCHRP 350 provides detailed requirements regarding almost every parameter of the required tests including, inter alia, how the tests are to be performed, requirements for test vehicles, test conditions, and the data to be collected.

26. Not only are the required tests strictly regimented, the materials that must be submitted for approval are also expressly defined by the FHWA. Submissions that a highway feature is crashworthy and acceptable for use on the National Highway System: “must fully identify: a) the feature(s) tested; b) the conditions and results of the testing; and, if acceptance is being sought for any variations in design or construction details or procedures from those covered in the documentation of the testing of the feature, c) the complete design, construction, and installation details and specifications for the version(s) of the feature for which acceptance is being sought.”<sup>3</sup> FHWA also explicitly requires two copies of a “high quality, reproducible, letter-size, engineering drawing or set of drawings showing all pertinent details and installation requirements of the version(s) of the feature for which acceptance is being sought are to be included with the request for acceptance.” *Id.*

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<sup>2</sup> After January 1, 2011 new highway safety features were evaluated according to the American Association of State Highway and Transportation Officials’ Manual for Assessing Safety Hardware (“MASH”); however, equipment that had previously been approved pursuant to NCHRP was not required to be retested or certified.

<sup>3</sup> Background and Guidance on Requesting Federal Highway Administration Acceptance of Highway Safety Feature attached to FHWA’s Policy Memo: Identifying Acceptable Highway Safety Features available at <http://www.fhwa.dot.gov/legsregs/directives/policy/ra.htm>

27. Once a product is approved for use on the highways its design specifications cannot be altered without additional testing and approval, which must be granted prior to the modified product being used on the National Highway System. The FHWA has established three categories of changes for equipment that already has FHWA approval and a specific means to demonstrate that the new hardware is acceptable: (1) Significant modifications require additional testing pursuant to NCHRP 350 or MASH standards; (2) Non-Significant modifications where the “Effect is Uncertain” require finite element analysis acceptable under NCHRP 179 and validation of that analysis; and (3) Non-significant modifications where the “Effect is Positive or Inconsequential” require a certification by a registered professional engineer that the change has no adverse effect on crash test performance as well as an engineering report of the original crash testing and the expected effects of the modifications. *See* FHWA policy: Federal Aid Reimbursement Eligibility Process available at [http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/acceptprocess/#s2b](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/acceptprocess/#s2b)

28. To ensure compliance with its requirements, FHWA’s policy is to revoke acceptance if misrepresentations are made by the developer: “Any deliberate misrepresentation or withholding of the conditions of FHWA’s acceptance of a feature by the supplier of a feature will be cause for withdrawal of acceptance.” Background and Guidance on Requesting Federal Highway Administration Acceptance of Highway Safety Features. <http://www.fhwa.dot.gov/legsregs/directives/policy/ra.htm>

### **TRINITY’S FRAUD ON FHWA AND THE PUBLIC**

29. As addressed above, FHWA regulations require that a manufacturer of highway safety products sell the same product as that for which approval was sought and granted. Any modification, even one expected to have a positive effect on the product, requires additional

submissions to the FHWA. Trinity's modifications, however, not only remain unsubmitted, but do not have a positive effect on the ET-Plus. Instead, those changes are significant and would have, if disclosed by Trinity, required additional testing pursuant to NCHRP 350 standards. Trinity did not perform that testing and fraudulently concealed the series of modifications it made on the ET-Plus.<sup>4</sup>

30. Manufacturers, such as Trinity, are not merely required to sell the same product as that for which approval was granted, they are also required to certify this fact to buyers. The FHWA standard approval letter states that the following provision applies:

You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance.

Trinity received this very language in FHWA's March 15, 2010 approval letter CC-12Q in response to a separate modification to the ET-Plus for which it sought approval. In selling the ET-Plus after the secret modifications, Trinity has provided false certifications that its units are the same as those approved by the FHWA.

31. After the existence and sale of the unapproved version was brought to the FHWA's attention by Mr. Harman in January 2012, Trinity scheduled a meeting with Mr. Nicholas Artimovich of FHWA's Office of Engineering. At that February 14, 2012 meeting, Trinity admitted for the first time that they had, indeed, shrunk the width of the ET-Plus' feeder channels from 5 inches to 4 inches; however, they failed to tell Mr. Artimovich that they had also shrunk the interior vertical clearance of the feeder chute by approximately 1 inch. They further failed to tell Mr. Artimovich that they had also shrunk the ET-Plus' exit gate by approximately

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<sup>4</sup> Trinity also did not seek approval for any variations of design that would have required Trinity to submit "complete design, construction, and installation details and specifications for the version(s) of the feature for which acceptance is being sought." Background and Guidance on Requesting Federal Highway Administration Acceptance of Highway Safety Feature, *supra*.

one half inch resulting in a 33% decrease. Not surprisingly, Trinity did not give Mr. Artimovich scaled drawings of the secretly changed ET-Plus. The drawings would have shown the extensive, additional changes.

32. In the February 14, 2012 meeting with Mr. Artimovich, and focusing solely on the change to the 4 inch feeder chute, Trinity represented that the secretly changed ET-Plus was tested successfully on May 27, 2005. On February 28, 2012, Brian Smith submitted to the FHWA the test results purportedly corresponding to the May 27, 2005 test along with other materials to perpetuate the falsehood that the unit tested and approved was the same as the unit Trinity had sold for the previous seven years. In reliance on Trinity's and TAMUS' continuing misrepresentations, the FHWA has continued to approve the use of the ET-Plus on the National Highway System and continued to permit that unit to qualify for Federal reimbursement.

33. Trinity's representation to FHWA that the modified ET-Plus unit was properly tested on May 27, 2005 was itself a blatant misrepresentation for several reasons. First, the 4-inch prototype purportedly tested on that date was a one-off unit built by Trinity's welders without guidance or supervision of any designer or engineer and without a plan or drawing of what the welders should build or what they did build. Second, even assuming the unit tested on May 27, 2005 had 4 inch wide feeder channels as claimed, Trinity made substantial changes to the design of the modified ET-Plus *after* the May 27, 2005 test, such that the versions Trinity began selling in the fourth quarter of 2005 necessarily had different specifications and geometry than the unit that was crash tested. Third, the May 27, 2005 test was not designed to see if the modified ET-Plus could properly withstand vehicle impact. Instead, that test was designed to establish that the ET-Plus would work in conjunction with a 31 inch high guardrail system.

**TRINITY'S FRAUDULENT COVER UP**

34. After TAMUS and Trinity sued Harman's companies for infringement of the ET-Plus patents, Harman began investigating the ET-Plus. He discovered over time the secret, unapproved changes that TAMUS and/or Trinity had made. Mr. Artimovich confirmed in a deposition in the patent case that he was unaware of the multiple secret changes Trinity had made to the ET-Plus until informed of those changes by Mr. Harman in January 2012.

35. To recap, the changes in dimensions are:<sup>5</sup>

	<b>2000</b>	<b>Summer of 2005</b>
Exit Gate inches	1.3 to 1.5 inches	1.0 inches
Feeder Channel Width inches	5 inches	4 inches
Feeder Chute Assembly Height		
a. exterior	15 3/8 inches	14 7/8 inches
b. interior	15 3/8 inches	14 3/8 inches
Feeder Chute Assembly Length	37 inches	36 1/4 inches

36. To date the ET-Plus continues to be sold in the United States, based on Trinity's representations that the ET-Plus is federally approved. That representation is false.

37. Harman has made a concerted effort to bring awareness to this issue to relevant public officials. Specifically, over the past year Harman has had numerous contacts with state and federal highway safety officials. Additionally, at the 2012 American Traffic Safety Services Association's annual convention, Harman provided a summary presentation of the facts herein to the state highway officials from New Hampshire, California, Florida, Oklahoma, North Carolina, Pennsylvania, and Mississippi.

**TRINITY'S FALSE CERTIFICATIONS AND CLAIMS**

38. On information and belief, every time Trinity sold the ET-Plus after the secret 2005 modifications, it necessarily provided a false certification that ET-Plus conformed to the

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<sup>5</sup> As addressed, *supra*, there may be slight variations in the critical dimensions of the post-modification ET-Plus units.

unit that had been approved by the FHWA. Those certifications--made to every state--were required for the contractor-purchasers that would forward those certifications as part of their invoice in order to be entitled to payment from state or federal authorities. In the case of purchasers paid in the first instance by state authorities, the states would forward the certifications or provide their own certifications that the roadside hardware was in compliance with or approved by the FHWA for reimbursement by the U.S. government. Since 2005, thousands of dangerous and unapproved ET-Plus heads have been passed off by Trinity as approved by the FHWA and eligible for federal reimbursement to purchasers, state authorities and, ultimately, the Federal government.

39. Without Trinity's false certifications, the purchasers would not have purchased the ET-Plus heads, and state and federal governments would not have relied on those certifications and approved either payment or reimbursement for those ET-Plus heads.

### **CAUSE OF ACTION**

#### ***Violations of the False Claims Act***

40. Harman incorporates and re-alleges all of the foregoing allegations herein.

41. Based upon the acts described above, Defendants knowingly violated one or more of the following:

- a. Knowingly presented, or caused to be presented, a false or fraudulent claim for payment or approval;
- b. Knowingly made, used, or caused to be made or used, a false record or statement to get a false or fraudulent claim paid or approved by the Government.

42. The United States, unaware of the falsity of these claims, records, and statements made by the Defendants, and in reliance on the accuracy thereof, paid money to Defendants and/or various highway contractors for the fraudulent claims either directly or through payments made to the various States under the Federal Aid Highway Program.

43. The United States and the general public have been damaged as a result of Defendants' violations of the False Claims Act and a highly dangerous situation continues to exist.

**PRAYER**

44. For the reasons set forth above, Harman, on behalf of the United States, respectfully requests this Court to find that Defendants have damaged the United States Government as a result of its conduct under the False Claims Act. Harman prays that judgment enter against Defendants for all applicable damages, including but not limited to the following:

- a. Three times the actual damages suffered by the United States including an amount sufficient to cover the cost to recall and replace every defective guardrail product of Defendants placed on the public roadways of the United States.
- b. Civil Penalties for each and every false claim submitted by Trinity for payment or approval.
- c. Relator seeks a fair and reasonable amount of any award for his contribution to the Government's investigation and recovery pursuant to 31 U.S.C. §§ 3730(b) and (d) of the False Claims Act.
- d. Attorney's fees and costs awarded to Relator.
- e. Pre-judgment and post judgment interest.



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**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing document was served by U.S. Mail, postage prepaid and by electronic mail on the following individuals on May 16, 2013:

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\_\_\_\_\_/s/ jbm\_\_\_\_\_  
Josh B. Maness

**CERTIFICATION REGARDING SEALED DOCUMENT**  
**PURSUANT TO LOCAL RULE CV-5(a)(7)(A)**

Pursuant to this Court's March 1, 2012 Order in Trinity Industries, Inc. v. Harman, 2:12-cv-46-JRG, Exhibit A to this Amended Complaint has been restricted to the parties and their attorneys.