A deflection limiting JJ-Hook style temporary concrete median barrier (TCMB) comprising: a JJ-Hook style TCMB; and at least one bent plate attached to the JJ-Hook style TCMB; wherein a first portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate; wherein the anchor bolt is disposed through the first portion of the bent plate, the JJ-Hook style TCMB and the backing plate; wherein a second portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of the bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.
DEFLECTION LIMITING JJ-HOOK STYLE TEMPORARY CONCRETE MEDIAN BARRIER

FIELD OF THE DISCLOSURE

BACKGROUND

This application claims the benefit of provisional patent application U.S. Ser. No. 62/007,352 filed June 3, 2014, by the present inventors entitled Deflection Limiting JJ-Hook Style Temporary Concrete Median Barrier which is incorporated by reference herein for all purposes.

DEFLECTION LIMITING JJ-HOOK STYLE TEMPORARY CONCRETE MEDIAN BARRIER

This disclosure is related to temporary median barriers.

BACKGROUND

Temporary Concrete Median Barriers ("TCMB") and, more specifically, JJ-Hook style TCMBs as disclosed in U.S. Pat. No. 5,149,224 incorporated by reference herein, are used primarily for the protection of traffic work zones. JJ-Hook style TCMBs typically are linked together in a string to form a barrier system. The JJ-Hook connection is termed as a "positive" connection and testing has proved that it does not separate when impacted.

Recently, the Transportation Departments ("DOT's") in the various states have begun to focus on TCMB deflection distances which mean the distance the TCMB moves laterally when impacted by traffic. There are instances when the DOT's want the lateral movement to be minimized to 2' or less. Typical JJ-Hook style TCMBs move in excess of 2' when impacted. Thus, an improved deflection limiting JJ-Hook style TCMB exhibiting lateral movement of 2' or less upon impact is desired.

The Federal Highway Administration ("FHWA") and the DOT's both rely on standardized crush testing criteria to make their determination whether a particular safety device functions as designed during a crash. Currently, the Manual for Assessing Safety Hardware ("MASH") test criteria is being used. In order to get a product on a DOT approved list, it must first be tested under the MASH test criteria and done at an accredited facility under strict guidelines. The testing facility will conduct the test, review the result, develop a detailed report and submit to the FHWA for review. If the FHWA agrees with the testing process and the results of the test are favorable, they will write a Letter of Eligibility that can be submitted to the DOT's for approval and inclusion into their approved product bulletins.

SUMMARY OF THE DISCLOSURE

In a preferred aspect, the present disclosure comprises a deflection limiting JJ-Hook style temporary concrete median barrier (TCMB) comprising: a JJ-Hook style TCMB; and at least one bent plate attached to the JJ-Hook style TCMB; wherein a first portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of the bent plate, the JJ-Hook style TCMB and the backing plate; wherein a second portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of the bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

In another preferred aspect, the deflection limiting JJ-Hook style TCMB of the present disclosure further comprises a plurality of bent plates attached to the JJ-Hook style TCMB; wherein a first portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of each bent plate, the JJ-Hook style TCMB and the backing plate; wherein a second portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of each bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

In another preferred aspect of the deflection limiting JJ-Hook style TCMB of the present disclosure, the plurality of bent plates attached to the JJ-Hook style TCMB equals two.

In a preferred aspect, the present disclosure comprises a barrier system comprising: a plurality of interconnected deflection limiting JJ-Hook style temporary concrete median barriers (TCMBs), wherein each deflection limiting JJ-Hook style TCMB comprises: a JJ-Hook style TCMB; and at least one bent plate attached to the JJ-Hook style TCMB wherein a first portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of the bent plate, the JJ-Hook style TCMB and the backing plate; wherein a second portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of the bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

In another preferred aspect of the deflection limiting JJ-Hook style TCMB of the present disclosure, each of the plurality of interconnected deflection limiting JJ-Hook style TCMBs comprises a plurality of bent plates attached to the JJ-Hook style TCMB wherein a first portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of each bent plate, the JJ-Hook style TCMB and the backing plate; wherein a second portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of each bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

In another preferred aspect of the deflection limiting JJ-Hook style TCMB of the present disclosure, the plurality of bent plates attached to the JJ-Hook style TCMB equals 2.

BRIEF DESCRIPTION OF THE DRAWINGS

For the present disclosure to be easily understood and readily practiced, the present disclosure will now be described for purposes of illustration and not limitation in connection with the following figures, wherein:
FIG. 1 shows a perspective view of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 2 is a top plan view of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 3 is a front elevational view of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 4 is a cross-sectional view of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 5 is an elevational view of an anchor pin component of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 6 is a side elevational view of a bent plate component of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 7 is a front elevational view of a bent plate component of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

FIG. 8 is a front elevational view of a backing plate component of a preferred embodiment of a deflection limiting JJ-Hook style TCMB according to the present disclosure.

DETAILED DESCRIPTION

In the following detailed description, reference is made to the accompanying examples and figures that form a part hereof, and in which is shown, by way of illustration, specific embodiments in which the inventive subject matter may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice them, and it is to be understood that other embodiments may be utilized and that structural or logical changes may be made without departing from the scope of the inventive subject matter. Such embodiments of the inventive subject matter may be referred to, individually and/or collectively, herein by the term “disclosure” merely for convenience and without intending to voluntarily limit the scope of this application to any single disclosure or inventive concept if more than one is in fact disclosed.

The following description is, therefore, not to be taken in a limited sense, and the scope of the inventive subject matter is defined by the appended claims and their equivalents.

FIGS. 1-8 illustrate a preferred construction of an improved deflection limiting JJ-Hook style TCMB of the present disclosure which preferably may be constructed from the following preferred components per 12" section of an improved deflection limiting JJ-Hook style TCMB of the present disclosure are as follows:

Component 1. Plate 1—QTY 2-Bent Plate-6" wide×20½" long×⅝" thick steel plate;

Component 2. Plate 2—QTY 2-Flat Plate-4" wide×10" long×⅝" thick steel plate;

Component 3. Anchor Pin 3—QTY 2-26" long×1⅛" in diameter with a 4" square steel washer that is ⅝ thick welded to the top; and

Component 4. Anchor Bolt 4—QTY 2-16" long×1⅛" in diameter hex head bolt with nut and beveled washer.

Referring to FIGS. 1-8, a preferred construction of an improved and preferred deflection limiting JJ-Hook style TCMB of the present disclosure is set forth below.

The improved deflection limiting JJ-Hook style TCMB of the present disclosure is preferably intended to be used in a DOT work zone that requires TCMB deflection that is 2° or less.

After a standard JJ-Hook style TCMB is installed in its designated area, the installer preferably attaches components 1-4 referenced above by drilling a 1½" hole through the upright portion of the TCMB at area “A” and then drilling a 1¾" hole at a 36° angle through the lower portion of the TCMB at area “B”. The hole drilled at area “B” preferably extends through the barrier into the roadway surface. The concrete roadway surface depth preferably is a minimum of 7" in order to comply with the MASH testing conditions. Each hole is preferably drilled at approximately 22° from each end of the TCMB. After the holes are drilled, plates 1 and 2 should be attached to the TCMB by anchor bolt 4 and then to the roadway surface utilizing anchor pin 3.

Plate 2 is designed to engage the lateral rebar that connects the JJ-Hook connection hardware located at each end of the barriers as shown in FIG. 1. Accordingly, the plates 2 preferably are oriented vertically or substantially vertically prior to tightening the nut on anchor bolt 4 which preferably is disposed through interlock plate 10 of the TCMB 5.

It should be noted that this process with TCMB 5 preferably can be utilized in various roadway and soil conditions other than in concrete by adjusting the length of the anchoring pin 3 accordingly, i.e., a longer anchoring pin 3 will be required for looser roadway or soil conditions.

It will be readily understood to those skilled in the art that various other changes in the details, material, and arrangements of the parts and method stages which have been described and illustrated in order to explain the nature of this disclosure may be made without departing from the principles and scope of the disclosure as expressed in the subjoined claims.

In the foregoing description of preferred embodiments of the present disclosure, various features are grouped together in a single embodiment to streamline the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments of the disclosure require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus, the following claims are hereby incorporated into the foregoing description, with each claim standing on its own as a separate embodiment.

What is claimed is:

1. A deflection limiting JJ-Hook style temporary concrete median barrier (TCMB) comprising:

a. a JJ-Hook style TCMB; and

at least one bent plate attached to the JJ-Hook style TCMB; wherein a first portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of the bent plate, the JJ-Hook style TCMB and the backing plate;

wherein a second portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of the bent plate and a portion the JJ-Hook style TCMB; and wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.
2. The deflection limiting JJ-Hook style TCMB of claim 1 comprising a plurality of bent plates attached to the JJ-Hook style TCMB;

wherein a first portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of each bent plate, the JJ-Hook style TCMB and the backing plate;

wherein a second portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of each bent plate and a portion the JJ-Hook style TCMB;

and

wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

3. The deflection limiting JJ-Hook style TCMB of claim 2 wherein the plurality of bent plates attached to the JJ-Hook style TCMB equals two.

4. A barrier system comprising:

a plurality of interconnected deflection limiting JJ-Hook style temporary concrete median barriers (TCMBs), wherein each deflection limiting JJ-Hook style TCMB comprises:

a JJ-Hook style TCMB; and

at least one bent plate attached to the JJ-Hook style TCMB wherein a first portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of the bent plate, the JJ-Hook style TCMB and the backing plate;

wherein a second portion of the bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of the bent plate and a portion the JJ-Hook style TCMB; and

wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

5. The barrier system of claim 4 wherein each of the plurality of interconnected deflection limiting JJ-Hook style TCMBs comprises a plurality of bent plates attached to the JJ-Hook style TCMB;

wherein a first portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor bolt, nut and backing plate wherein the anchor bolt is disposed through the first portion of each bent plate, the JJ-Hook style TCMB and the backing plate;

wherein a second portion of each bent plate is attached to the JJ-Hook style TCMB using an anchor pin wherein the anchor pin is disposed through the second portion of each bent plate and a portion the JJ-Hook style TCMB;

and

wherein the anchor pin extends through a bottom of the JJ-Hook style TCMB and into a surface supporting the JJ-Hook style TCMB.

6. The barrier system of claim 5 wherein the plurality of bent plates attached to the JJ-Hook style TCMB equals two.

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