



January 26, 2009

In Reply Refer To: HSSD/SS-159

Mr. Donnie Lewis  
Roadway Construction Products, Inc.  
3645 Elizabethtown Road  
Clarkson, Kentucky 42726

Dear Mr. Lewis:

This letter is in response to your request for the Federal Highway Administration (FHWA) acceptance of omni-directional slip bases for wide flange beams used as sign supports for use on the National Highway System (NHS).

Name of system:	Roadway Construction Products, Inc. Omni-Directional Slip Base for Wide Flange Beams
Type of system:	Sign Support
Test Level:	NCHRP Report 350 TL-3
Testing conducted by:	Texas Transportation Institute (TTI)
Date of request:	October 30, 2008

You requested that we find this sign support system acceptable for use on the NHS under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

### **Requirements**

The FHWA memorandum, "ACTION: Identifying Acceptable Highway Safety Features" of July 25, 1997, provides further guidance on testing requirements of sign supports and outlines procedures for pendulum testing and estimation of high-speed breakaway performance of sign supports from low-speed pendulum test results.

### **Product description**

The two different sizes of posts with the Roadway Construction Products, Inc. Omni-Directional Slip Bases that were tested to evaluate impact performance were the S4x7.7 and the W12x26 posts. Intermediate sizes of posts including S5x10, W6x9, W6x12, W8x18, W8x21, W10x22, and W10x26 were not tested but will be considered for acceptance based on interpolation of the test results. Detailed drawings of the slip base assembly are enclosed.

The S4x7.7 size post was impacted by the pendulum to evaluate omni-directional crashworthy performance. One test was conducted in the strong axis direction and a subsequent test was performed in the weak axis direction. The bolt torque was 37ft/lb at the slip base and 85 ft/lb on the hinge plate for each test.

The W12x26 size post was impacted by the pendulum to evaluate omni-directional performance. One test was conducted in the strong axis and a subsequent test was performed in the weak axis direction. The bolt torque was 62-63 ft/lb at the slip base and 70 ft/lb on the hinge plate for each test.

### **Test article installations**

Each tested post was installed with a surrogate sign attached that represented the largest sign configuration according to the Texas Department of Transportation Standards under a Zone 1 design wind condition. Calculations determined the weight and mounting height of the surrogate sign for each of the post sizes.

### **Testing**

The test article installations were tested at the TTI outdoor pendulum testing facility. The pendulum bogie was built according to the specifications of the Federal Outdoor Impact Laboratory's (FOIL) pendulum, and the frontal crush of the aluminum honeycomb nose of the bogie simulated the crush of an actual vehicle. Tests with pendulums are acceptable for most breakaway supports with the exceptions of base bending or yielding supports. Pendulum testing can be used on your company's sign support systems as a surrogate for a full crash testing.

In each of the four tests, the supports slipped away from the base as designed and came to rest near the impact location. No significant damage was noted to the support or the slip base. Results from testing the Omni-Directional Slip Base show the support slipped away from the base as designed. For the S4x7.7 size post the resulting maximum change in velocity was 1.8 ft/s in the strong axis direction and 1.9 ft/s in the weak axis direction. For the W12x26 size post the resulting maximum change in velocity was 4.5 ft/s in the strong axis direction and 6.0 ft/s in the weak axis direction. In addition, the TTI extrapolated the high speed performance from the low speed pendulum tests. The test articles appear to perform appropriately to make such high speed extrapolations. For the S4x7.7 size post the high speed extrapolations yield acceptable change in velocity values of 3.58 ft/s and 3.29 ft/s respectively in the strong and weak axis direction. For the W12x26 size post the high speed extrapolations yield acceptable change in velocity values of 11.36 ft/s and 12.24 ft/s respectively in the strong and weak axis direction. It is noted that the upper hinge plates did not activate during any of the pendulum tests and this does not result in a failure of the evaluation criteria. A summary of the test results are enclosed.

Based on the test results, the Roadway Construction Products, Inc. Omni-Directional Slip Base for Wide Flange Beams as described above meet the appropriate evaluation criteria for the NCHRP 350 Test Level 3 devices. The beam sizes tested represent the minimum (S4x7.7) and maximum (W12x26) sizes acceptable. Additionally, the post sizes are limited to the conditions and configurations stated in the FHWA's previous acceptance letters, SS-25 and SS-36, addressing standard I-beam sign support sizes utilizing generic slipbases.

This FHWA acceptance applies to the Roadway Construction Products, Inc. Omni-Directional Slip Base for Wide Flange Beams. These devices may be used at all appropriate locations on the NHS when selected by the contracting authority, and subject to the provisions of Title 23, Code of Federal Regulations, Section 635.411, as they pertain to proprietary products. This acceptance is based on the reported crash performance of your device and is not meant to address the limitations of testing or the systems' installation, maintenance, or repair characteristics.

## Standard provisions

Please note the following standard provisions that apply to the FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- 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, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others this letter of acceptance designated as number SS-159 shall not be reproduced except in full. This letter and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The Roadway Construction Products, Inc. Omni-Directional Slip Base for Wide Flange Beams are patented products and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.
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Sincerely yours,

David A. Nicol, P.E.  
 Director, Office of Safety Design  
 Office of Safety

## Enclosures

FHWA:HSSD:MLupes:tb:x66994:1/8/09

File: s://directory folder/mlupes/SSRoadway.doc

cc: HSSD (Reader, HSA; Chron File, HSSD; MLupes, HSSD; WLongstreet, HSSD; M.McDonough, HSSD)

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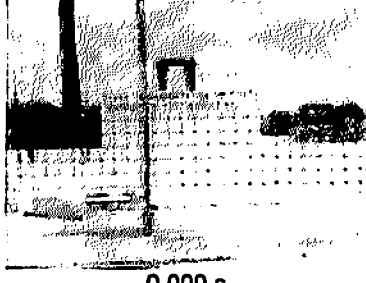
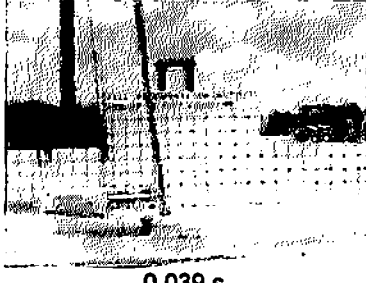
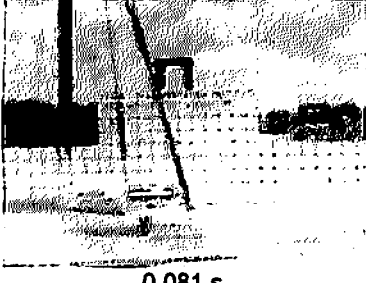
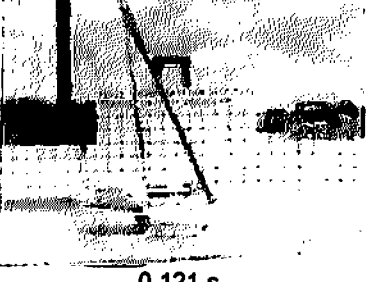
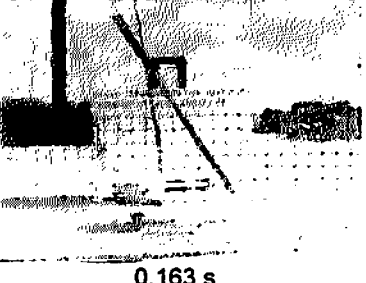
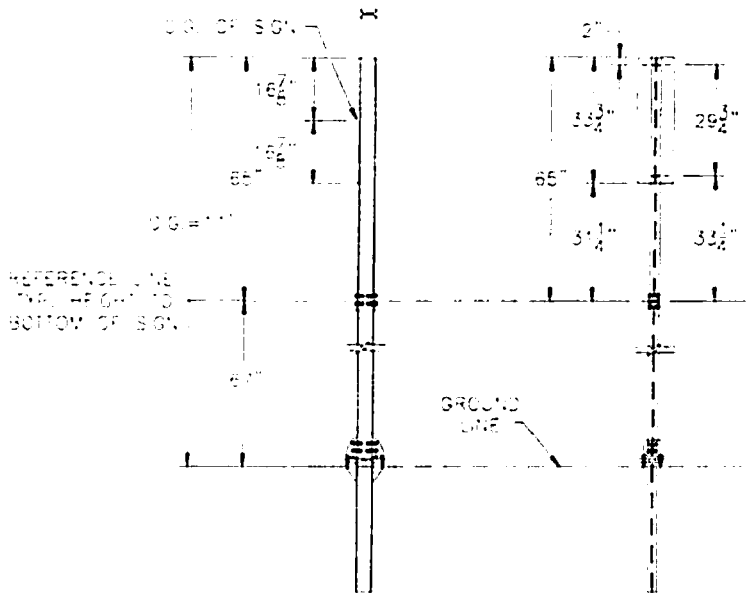
Sincerely yours,



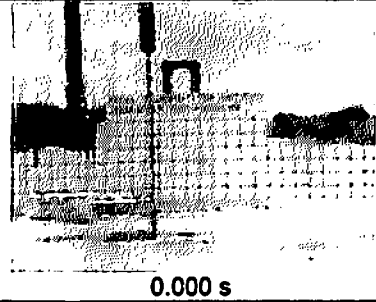
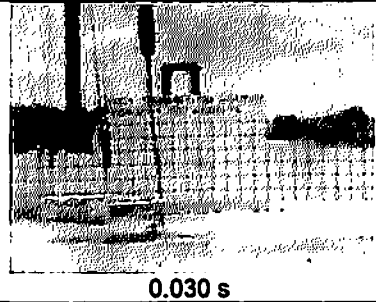
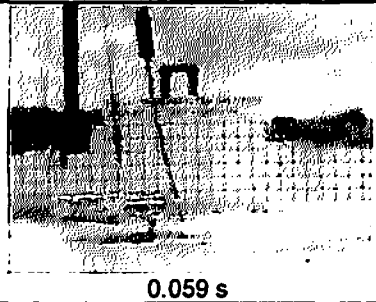
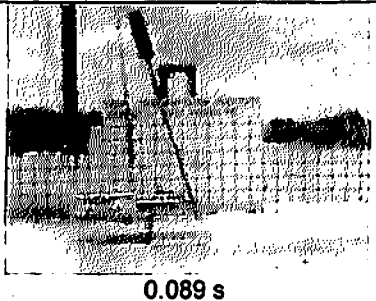
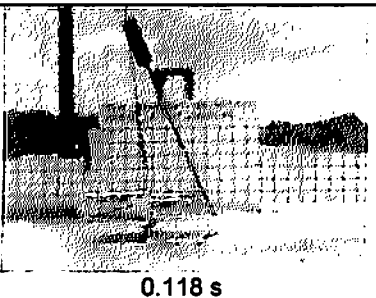
David A. Nicol, P.E.  
Director, Office of Safety Design  
Office of Safety

Enclosures

**Table F1. Summary of results for pendulum test 400001-RCP P5.**

 <p>0.000 s</p>	<p><b>General Information</b>                  Test Agency ..... Texas Transportation Institute                  Test No. .... 400001-RCP P5                  Date ..... 2008-07-18</p>
 <p>0.039 s</p>	<p><b>Test Article</b>                  Type ..... Single Sign Support                  Name ..... Sign Support                  Installation Height (m) ..... 7 ft                  Material of Key Element ..... S4x7.7 Post</p>
 <p>0.081 s</p>	<p><b>Soil Type</b> ..... Rigid Mounting Plate</p>
 <p>0.121 s</p>	<p><b>Test Vehicle</b>                  Type ..... Bogie                  Designation ..... Pendulum                  Test Inertia Mass ..... 1850 kg</p>
 <p>0.163 s</p>	<p><b>Impact Conditions</b>                  Speed ..... 21.6 mi/h                  Angle ..... 90 deg</p> <p><b>Occupant Risk Values</b>                  Impact Velocity                  Longitudinal direction ..... No Contact                  Ridedown Accelerations                  Longitudinal direction ..... N/A</p> <p><b>Maximum Change in Velocity</b> ..... 1.8 ft/s  <b>Predicted High-Speed Change in Velocity</b> ..... 3.6 ft/s</p>
	

**Table F2. Summary of results for pendulum test 400001-RCP P6.**

 <p>0.000 s</p>	<p><b>General Information</b>                  Test Agency ..... Texas Transportation Institute                  Test No. .... 400001-RCP P6                  Date ..... 2008-07-18</p> <p><b>Test Article</b>                  Type ..... Single Sign Support                  Name ..... Sign Support                  Installation Height (m) ..... 7 ft                  Material of Key Element ..... S4x7.7 Post</p> <p><b>Soil Type</b> ..... Rigid Mounting Plate</p> <p><b>Test Vehicle</b>                  Type ..... Bogie                  Designation ..... Pendulum                  Test Inertia Mass ..... 1850 lb</p> <p><b>Impact Conditions</b>                  Speed ..... 21.6 mi/h                  Angle ..... 90 deg</p> <p><b>Occupant Risk Values</b>                  Impact Velocity                  Longitudinal direction ..... No Contact                  Ridedown Accelerations                  Longitudinal direction ..... N/A                  Maximum Change in Velocity ..... 1.9 ft/s                  Predicted High-Speed Change in Velocity ..... 3.3 ft/s</p>
 <p>0.030 s</p>	
 <p>0.059 s</p>	
 <p>0.089 s</p>	
 <p>0.118 s</p>	



**Table F3. Summary of results for pendulum test 400001-RCP P7.**

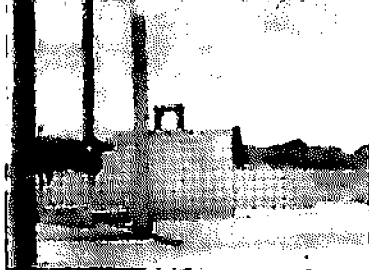
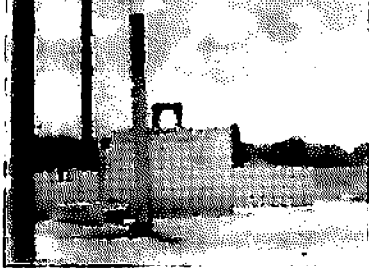
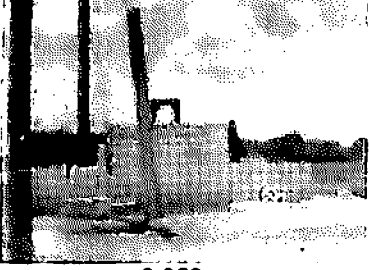

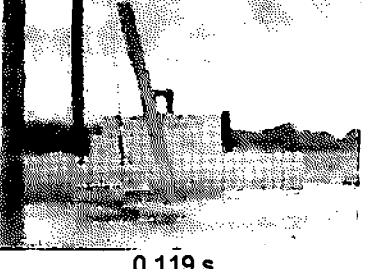
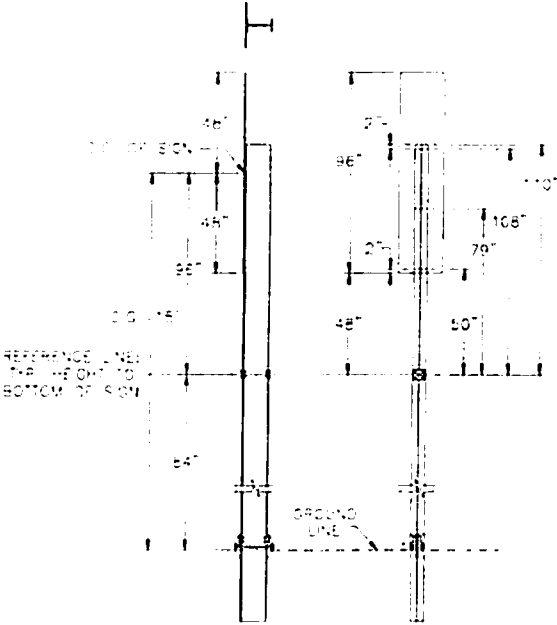





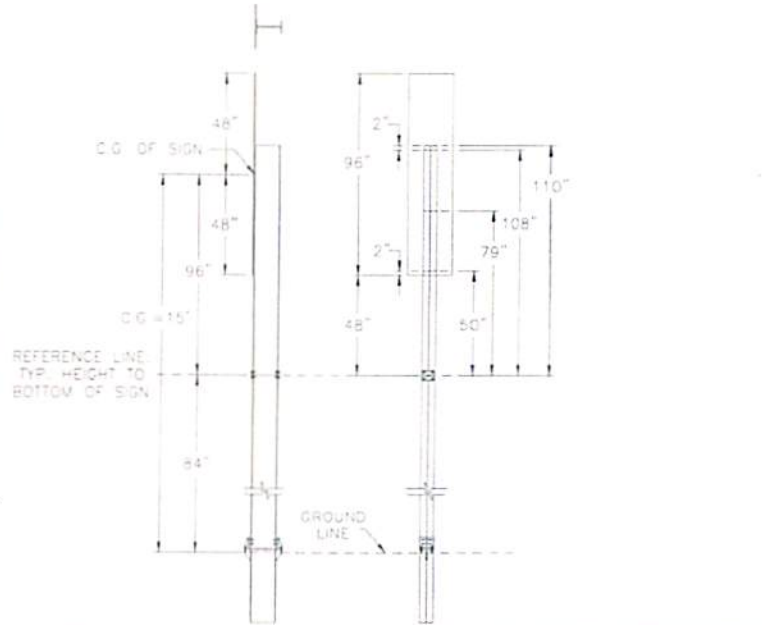
 <p>0.000 s</p>	<p><b>General Information</b>                  Test Agency ..... Texas Transportation Institute                  Test No. .... 400001-RCP P7                  Date ..... 2008-07-18  <b>Test Article</b>                  Type ..... Single Sign Support                  Name ..... Sign Support                  Installation Height (m) ..... 7 ft                  Material of Key Element ..... W12x56 Post</p>
 <p>0.030 s</p>	<p>Soil Type ..... Rigid Mounting Plate</p>
 <p>0.059 s</p>	<p><b>Test Vehicle</b>                  Type ..... Bogie                  Designation ..... Pendulum                  Test Inertia Mass ..... 1850 lb  <b>Impact Conditions</b>                  Speed ..... 21.5 mi/h                  Angle ..... 90 deg</p>
 <p>0.089 s</p>	<p><b>Occupant Risk Values</b>                  Impact Velocity                  Longitudinal direction ..... No Contact                  Ridedown Accelerations                  Longitudinal direction ..... N/A                  Maximum Change in Velocity ..... 4.5 ft/s                  Predicted High-Speed Change in Velocity ..... 11.4 ft/s</p>
 <p>0.119 s</p>	 <p>The diagram shows a vertical W12x56 post with a sign support structure. Key dimensions include: 46" for the top section, 45" for the middle section, 96" for the total height to the top of the sign, 108" for the height to the top of the sign support, 79" for the height to the center of the sign, 48" for the height to the bottom of the sign, and 50" for the height to the bottom of the sign support. A horizontal reference line is shown at the bottom of the sign, and a ground line is indicated at the base of the post.</p>

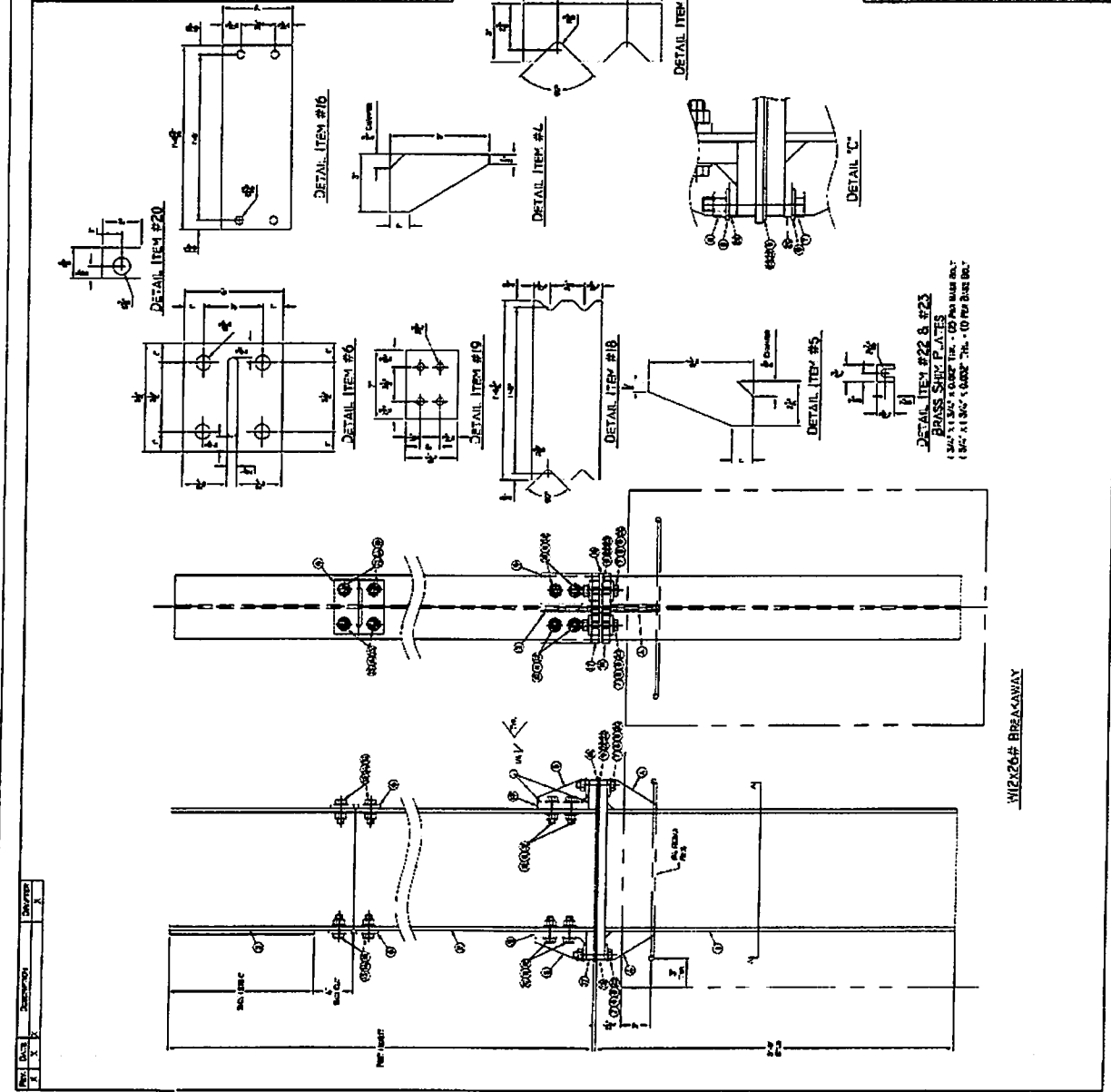
Table F4. Summary of results for pendulum test 400001-RCP P8.

 <p>0.000 s</p>	<p><b>General Information</b>          Test Agency ..... Texas Transportation Institute          Test No. .... 400001-RCP P8          Date ..... 2008-07-18</p> <p><b>Test Article</b>          Type ..... Single Sign Support          Name ..... Sign Support          Installation Height (m) ..... 7 ft          Material of Key Element ..... W12x56 Post</p>
 <p>0.052 s</p>	<p>Soil Type ..... Rigid Mounting Plate</p>
 <p>0.106 s</p>	<p><b>Test Vehicle</b>          Type ..... Bogie          Designation ..... Pendulum          Test Inertia Mass ..... 1850 lb</p> <p><b>Impact Conditions</b>          Speed ..... 20.6 mi/h          Angle ..... 90 deg</p>
 <p>0.158 s</p>	<p><b>Occupant Risk Values</b>          Impact Velocity          Longitudinal direction ..... No Contact          Ridedown Accelerations          Longitudinal direction ..... N/A</p> <p><b>Maximum Change in Velocity</b> ..... 6.8 ft/s  <b>Predicted High-Speed Change in Velocity</b> ..... 12.2 ft/s</p>
 <p>0.212 s</p>	 <p>The diagram shows a cross-section of the sign support structure. Key dimensions include:          - C.O. OF SIGN: 48" (twice)          - 96" (twice)          - C.O. = 15"          - 84"          - 48" (twice)          - 2" (twice)          - 96"          - 110"          - 108"          - 79"          - 50"          - REFERENCE LINE TYP. HEIGHT TO BOTTOM OF SIGN          - GROUND LINE</p>



### BILL OF MATERIAL

Item Number/Quantity	Description	Part Number	Notes	Remarks
1	Steel Post Stud - 1/2" x 3/4" x 1/8"	7	A	ASB
2	Intermediate Post - 1/2" x 3/4" x 1/8"	7	A	ASB
3	Top Post - 1/2" x 3/4" x 1/8"	7	A	ASB
4	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
5	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
6	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
7	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
8	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
9	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
10	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
11	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
12	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
13	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
14	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
15	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
16	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
17	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
18	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
19	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
20	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
21	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
22	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
23	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
24	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB
25	Channel P. - 2" x 3/4" x 1/8"	8	B	ASB



ROADWAY CONSTRUCTION PRODUCTS, INC.  
 5645 ELIZABETH ROAD  
 CLAYTON, KY 40301  
 PH (502) 342-2000  
 FX (502) 342-9880

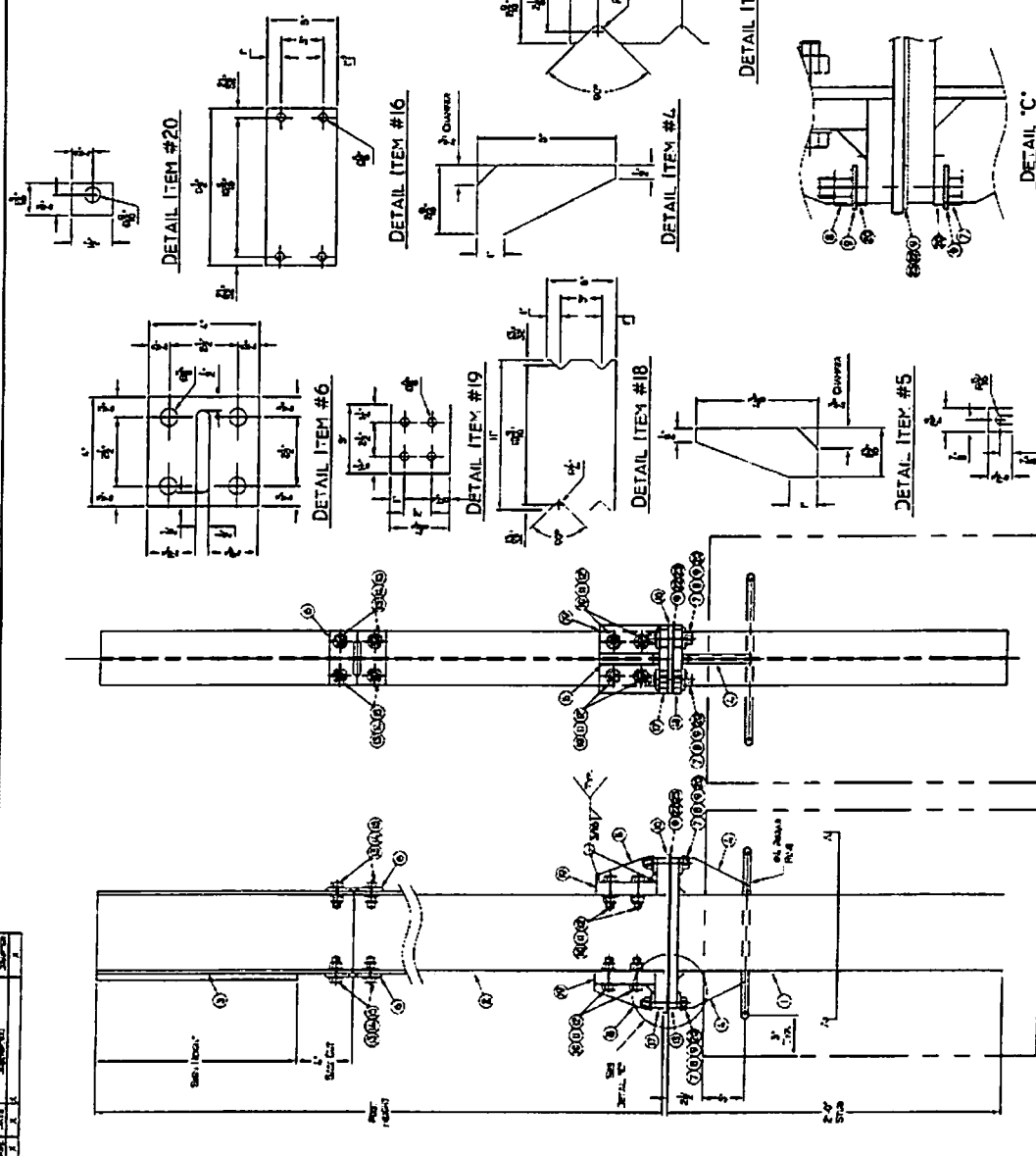
ORDER NO. 07-1106  
 QUANTITY 1000  
 DATE 10/1/06

DRAWN BY B. D. P. / CHECKED BY X



### BILL OF MATERIAL

PART NUMBER	QUANTITY	DESCRIPTION	F.	QTY	REMARK
1	1	BRASS SHIM - 1/8" X 1/2" X 1/8"	7	7	ASB
2	1	BRASS SHIM - 1/8" X 1/2" X 1/8"	7	7	ASB
3	1	TOP PLATE - 1/8" X 1/2" X 1/8"	7	7	ASB
4	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
5	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
6	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
7	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
8	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
9	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
10	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
11	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
12	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
13	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
14	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
15	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
16	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
17	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
18	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
19	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
20	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
21	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
22	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
23	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
24	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB
25	2	CLAMP P. - 1/8" X 1/2" X 1/8"	0	0	ASB



**Patent Pending**

PART LIST DATED 04/10/07	
DATE	07/08/08
BY	6700X
<b>ROADWAY CONSTRUCTION PRODUCTS, INC.</b>	
3045 EQUIPMENT ROAD	
LITTLE ROCK, AR 72203-3421	
TEL: (501) 224-2421	
FAX: (501) 224-4320	
DRAWN BY: J. J. S. CHECKED BY: [ ]	
DATE: 07/08/08	
SCALE: 1/8" = 1"	
SHEET: 1 OF 1	

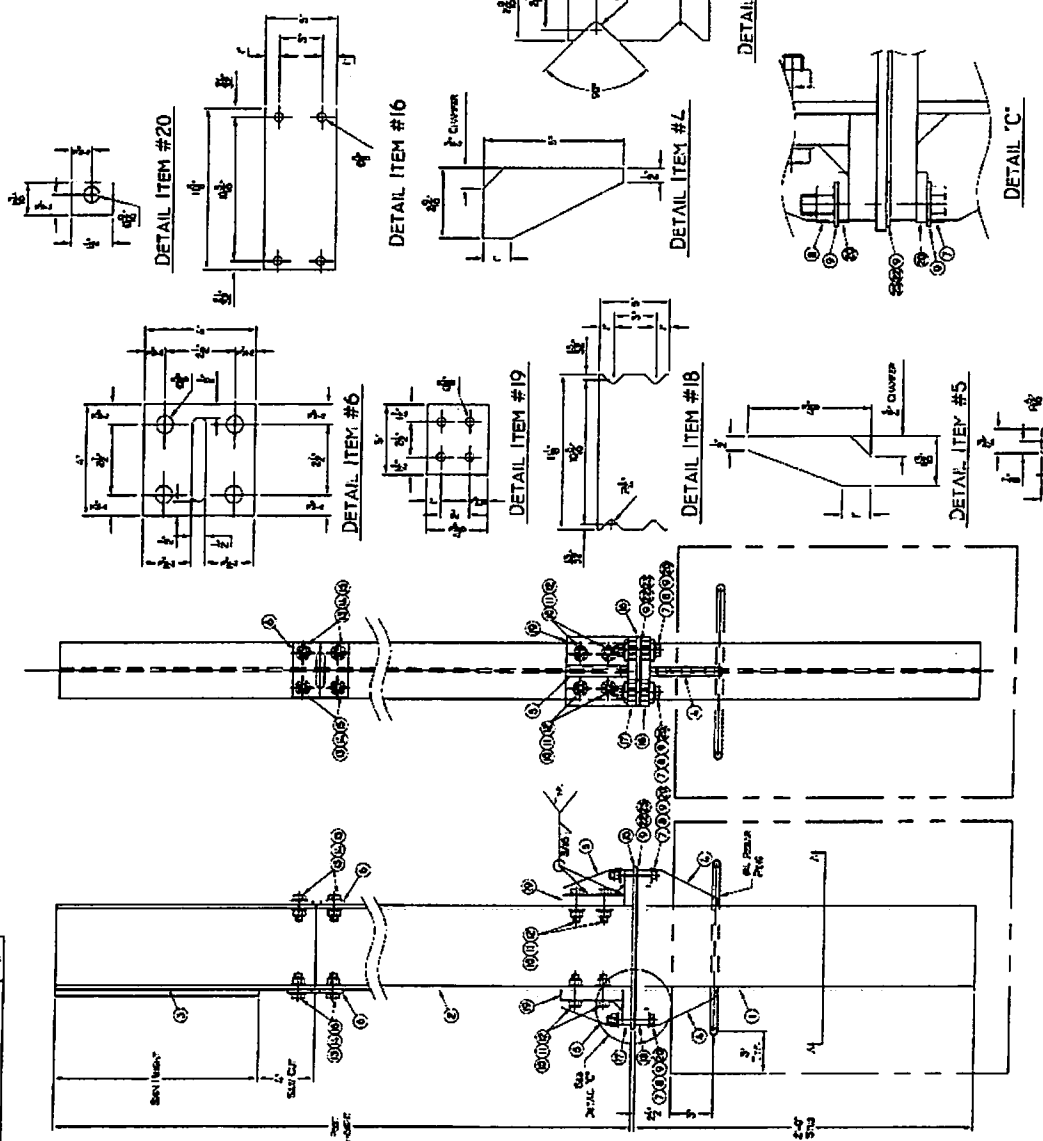
**DETAIL ITEM #22 & #23**  
**BRASS SHIM PLATES**  
 1 3/4" X 1 3/4" X 0.002" THK. - (2) PER BASE SHIM  
 1 3/4" X 1 3/4" X 0.002" THK. - (2) PER BASE SHIM

**W6x9# BREAKAWAY**

REV	DATE	BY	CHKD
1			
2			

### BILL OF MATERIAL

PART NUMBER	QUANTITY	DESCRIPTION	P.	REMARKS
1	1	SKIN PLATE - THROUG HOLES	F	ASB
2	1	INTERMEDIATE PLATE - THROUGH HOLES	F	ASB
3	1	TOP PLATE - THROUGH HOLES	F	ASB
4	2	CLAMP P. - 2 1/2" DIA. X 1/2" THK.	D	ASB
5	2	CLAMP P. - 1 1/2" DIA. X 1/2" THK.	D	ASB
6	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
7	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
8	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
9	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
10	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
11	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
12	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
13	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
14	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
15	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
16	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
17	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
18	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
19	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
20	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
21	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
22	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
23	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
24	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB
25	2	NUT - 1/2" DIA. X 1/2" THK.	D	ASB



**Patent Pending**

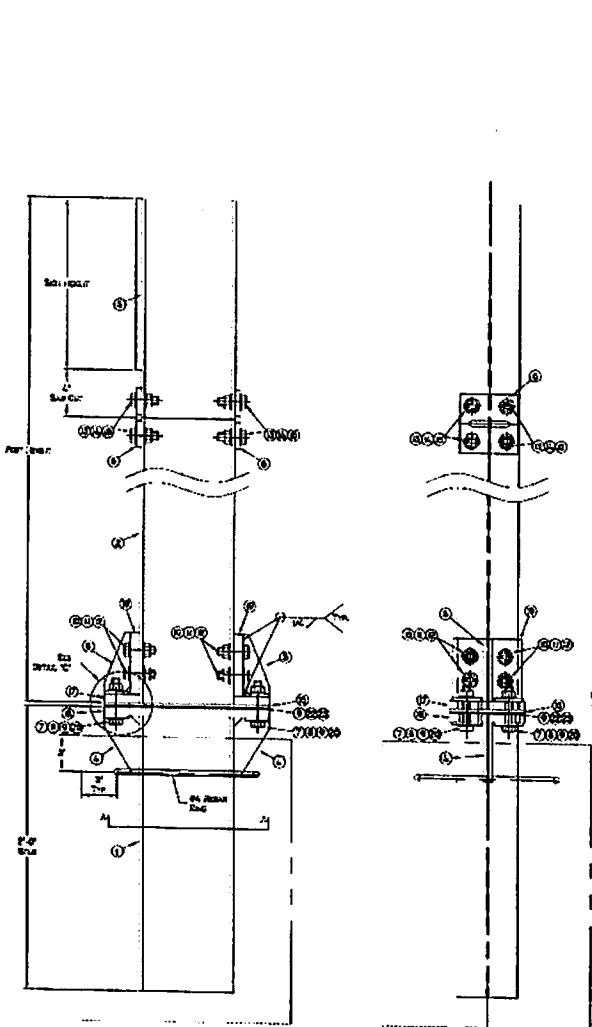
ROADWAY CONSTRUCTION PRODUCTS, INC.  
 3645 CLARKSON ROAD  
 CLARKSON, NY 12520  
 PH: (518) 242-2311  
 FX: (518) 242-2688

ORDER NO. 07-02-006  
 QUANTITY 1000  
 DATE 10/20/07  
 PROJECT B. CANTON  
 DRAWING NO. 07-02-006  
 SHEET NO. 1 OF 1

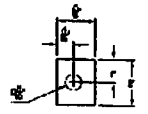
**DETAIL ITEM #22 & #23**  
**BRASS SHIM PLATES**  
 1 3/4" X 1 3/4" X 0.002" THK. - (2) PER BRASS PLATE  
 1 3/4" X 1 3/4" X 0.002" THK. - (2) PER BRASS PLATE

**W6x12# BRACKAWAY**

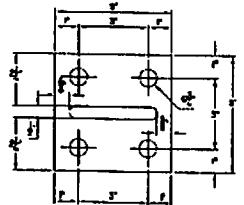
REV.	DATE	DESCRIPTION	DRAWN BY
1	X	X	X



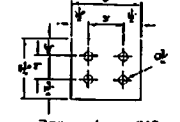
WBX18# BREAKAWAY



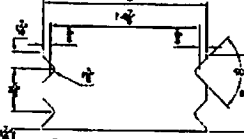
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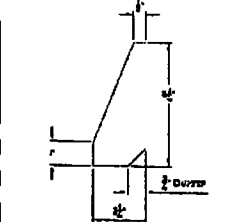
DETAIL ITEM #6



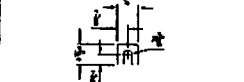
DETAIL ITEM #19



DETAIL ITEM #18

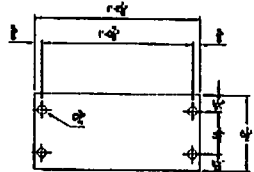


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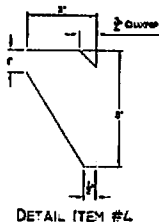


DETAIL ITEM #22 & #23  
BRASS SHIM PLATES

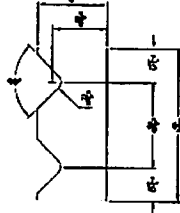
1 3/4" x 1 3/4" x 0.032" THK. - (10) PER BASE BOLT  
1 3/4" x 1 3/4" x 0.032" THK. - (10) PER BASE BOLT



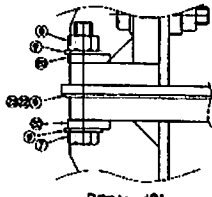
DETAIL ITEM #16



DETAIL ITEM #4



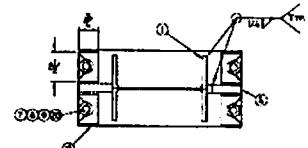
DETAIL ITEM #17



DETAIL 'C'

**BILL OF MATERIAL**

PART NUMBER	PLATE	QTY	DESCRIPTION	FT.	INCHES	REMARK
1	1		END POST SHIM - WIDE FLANGE BEAM	X	X	A36
2	1		INTERMEDIATE POST - WIDE FLANGE BEAM	X	X	A36
3	1		TOP POST - WIDE FLANGE BEAM	X	X	A36
4	2		CLIPPER PL. - 3" X 3/4" THK.	0	0	A36
5	2		CLIPPER PL. - 2 1/2" X 3/4" THK.	0	0	A36
6	2		SHIM PL. - 6" X 3/8" THK.	0	0	A36
7	4		BOLT - 3/8" DIA X 1 1/2"	0	3 1/2"	A325
8	4		NUT - 3/8" DIA.			1/2" DIA GR21
9	12		WASHER - 3/4" DIA.			FL36
10	8		BOLT - 3/8" DIA X 1 1/2"	0	2	A325
11	8		NUT - 3/8" DIA.			1/2" DIA GR21
12	10		WASHER - 3/4" DIA.			FL36
13	8		BOLT - 3/8" DIA X 1 1/2"	0	2	A325
14	8		NUT - 3/8" DIA.			1/2" DIA GR21
15	10		WASHER - 3/4" DIA.			FL36
16	1		BOLT FLANGE PL. - 6 1/2" X 25 GA.	1	2 1/2"	A36
17	2		BASE PL. - 3" X 3/4" THK.	0	6 1/2"	A36
18	1		SHIMMING PL. - 6 1/2" X 3/4" THK.	1	2 1/2"	A36
19	2		SHIMMING PL. - 6 1/2" X 3/4" THK.	0	6	A36
20	8		PLATE WASHER - 1 1/2" X 1 1/2" THK.	0	2	A36
21			PLATE WASHER			
22	8		DRUM BRACE - 1 3/4" X 1/2" THK.	0	1 3/4"	A36
23	4		DRUM BRACE - 1 3/4" X 1/2" THK.	0	1 3/4"	A36



VIEW A-A

**Patent Pending**

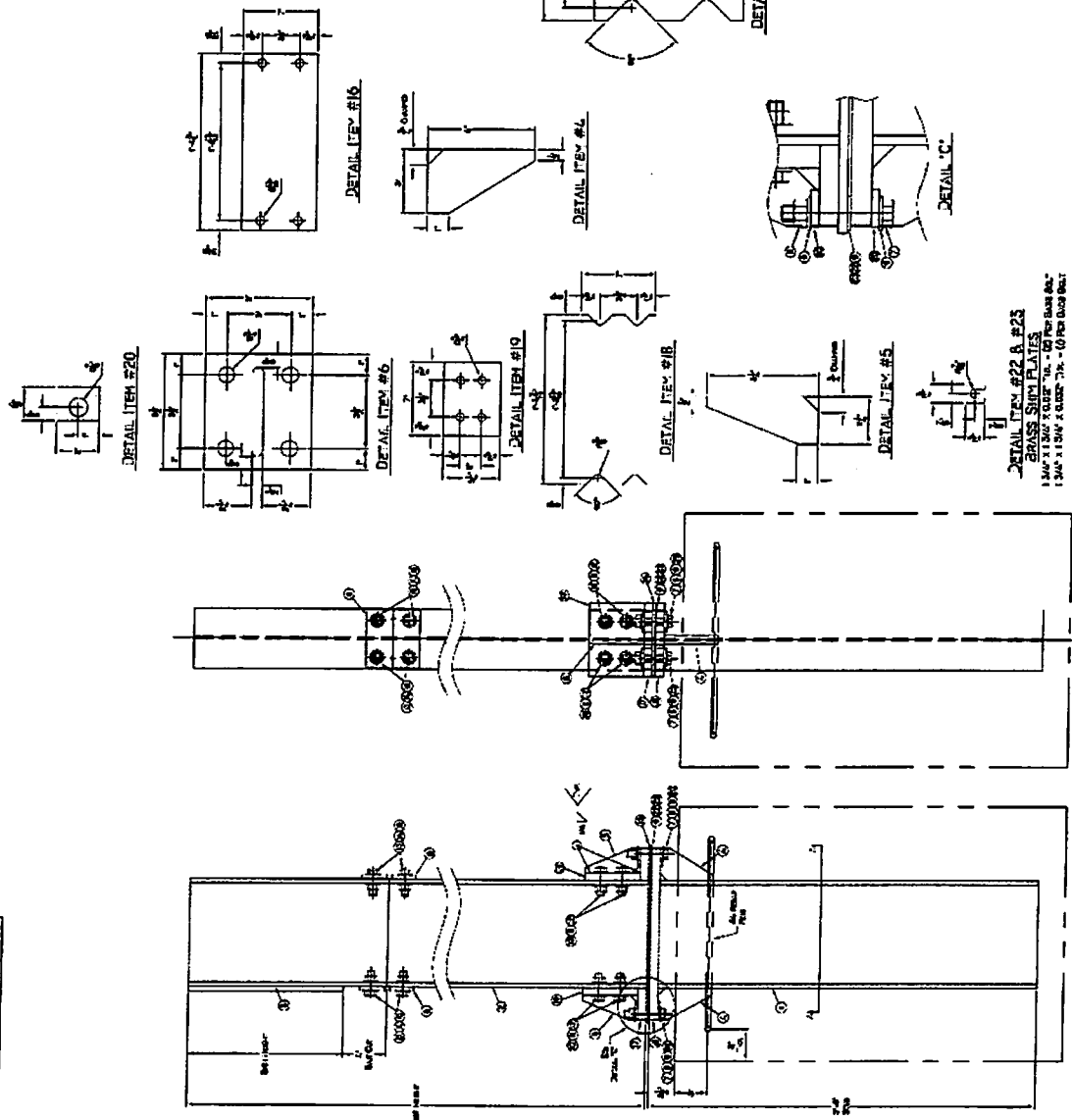
CLAS	
META	101 DIPPED GALVANIZED
FINISH	CLASS E70XX
<b>ROADWAY CONSTRUCTION PRODUCTS, INC.</b> 3445 ELIZABETHVILLE ROAD CLARKSON, KY 42706 PH (270) 242-2578 FX (270) 242-0288	
COUNTRY	CLARKSON, KY
DESCRIPTION	ONE-DIRECTIONAL SLIP BASE FOR WIDE FLANGE BEAMS
ITEM #	WBX18
DATE	07-10-06
BY	N.T.S.
CHKD BY	B. CLAYTONS
APP'D BY	
REV #	1 OF 1





**BILL OF MATERIAL**

Part No.	Qty	Description	Notes	Remarks
1	1	6x4 PLATE - 1/2" THICK		A36
2	1	INTERMEDIATE PLATE - 1/2" THICK		A36
3	1	TOP PLATE - 1/2" THICK		A36
4	2	ANGLE IRON - 2" X 2" X 1/4"		A36
5	2	ANGLE IRON - 2" X 2" X 1/4"		A36
6	2	ANGLE IRON - 2" X 2" X 1/4"		A36
7	4	PLATE - 1/2" THICK		A36
8	4	PLATE - 1/2" THICK		A36
9	4	PLATE - 1/2" THICK		A36
10	4	PLATE - 1/2" THICK		A36
11	4	PLATE - 1/2" THICK		A36
12	4	PLATE - 1/2" THICK		A36
13	4	PLATE - 1/2" THICK		A36
14	4	PLATE - 1/2" THICK		A36
15	4	PLATE - 1/2" THICK		A36
16	4	PLATE - 1/2" THICK		A36
17	4	PLATE - 1/2" THICK		A36
18	4	PLATE - 1/2" THICK		A36
19	4	PLATE - 1/2" THICK		A36
20	4	PLATE - 1/2" THICK		A36
21	4	PLATE - 1/2" THICK		A36
22	4	PLATE - 1/2" THICK		A36
23	4	PLATE - 1/2" THICK		A36



**Patent Pending**

ROADWAY CONSTRUCTION PRODUCTS, INC.  
 3403 ELLIOTT AVENUE  
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 PH (518) 842-2571  
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ROADWAY CONSTRUCTION PRODUCTS, INC.  
 3403 ELLIOTT AVENUE  
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 CLARKSON, NY 12726  
 PH (518) 842-2571  
 FX (518) 842-4960