



# MASH TL-3 Testing and Evaluation of Large Signs Slipbase Support on Slope

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# MASH TL-3 Testing and Evaluation of Large Signs

## Slipbase Support on Slope

### Objectives:

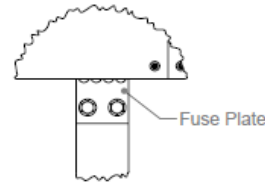
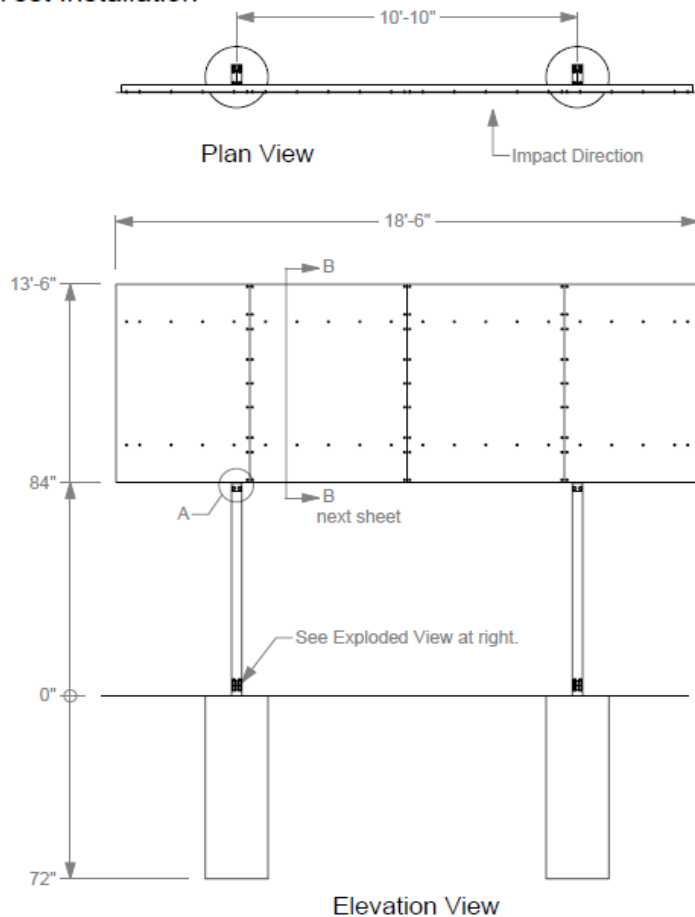
- Assess crashworthiness of a large breakaway sign support per MASH Test Level 3
- Investigate the most practical and utilized installation conditions for large breakaway sign support on sloped terrain

### Modifications:

- Performed full scale crash test passed MASH Test Level 3. however, the behavior of the sign post was different than anticipated.
- To analyze the results, the design was compared to a TxDOT sign post and modifications are suggested by redesigning the sign post.
- Redesigning includes modification to the oversized sections and stiffness of the sign post.

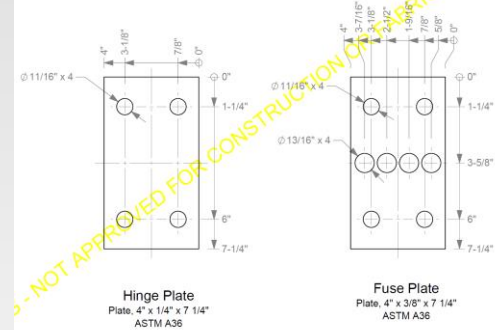
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## Test Installation

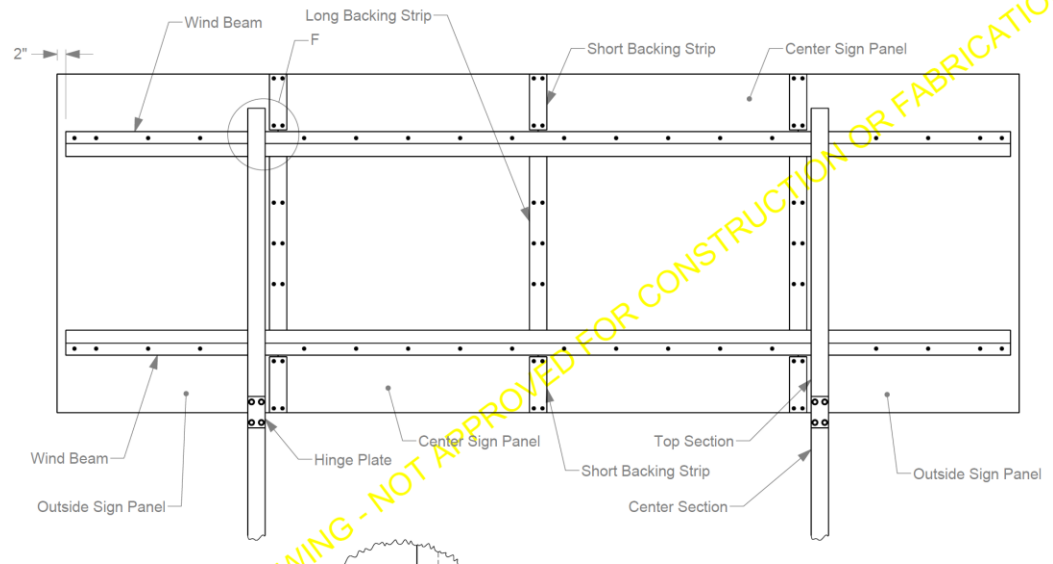


**Detail A**  
Scale 1 : 10  
See Section View on next sheet for hardware details

## Plates

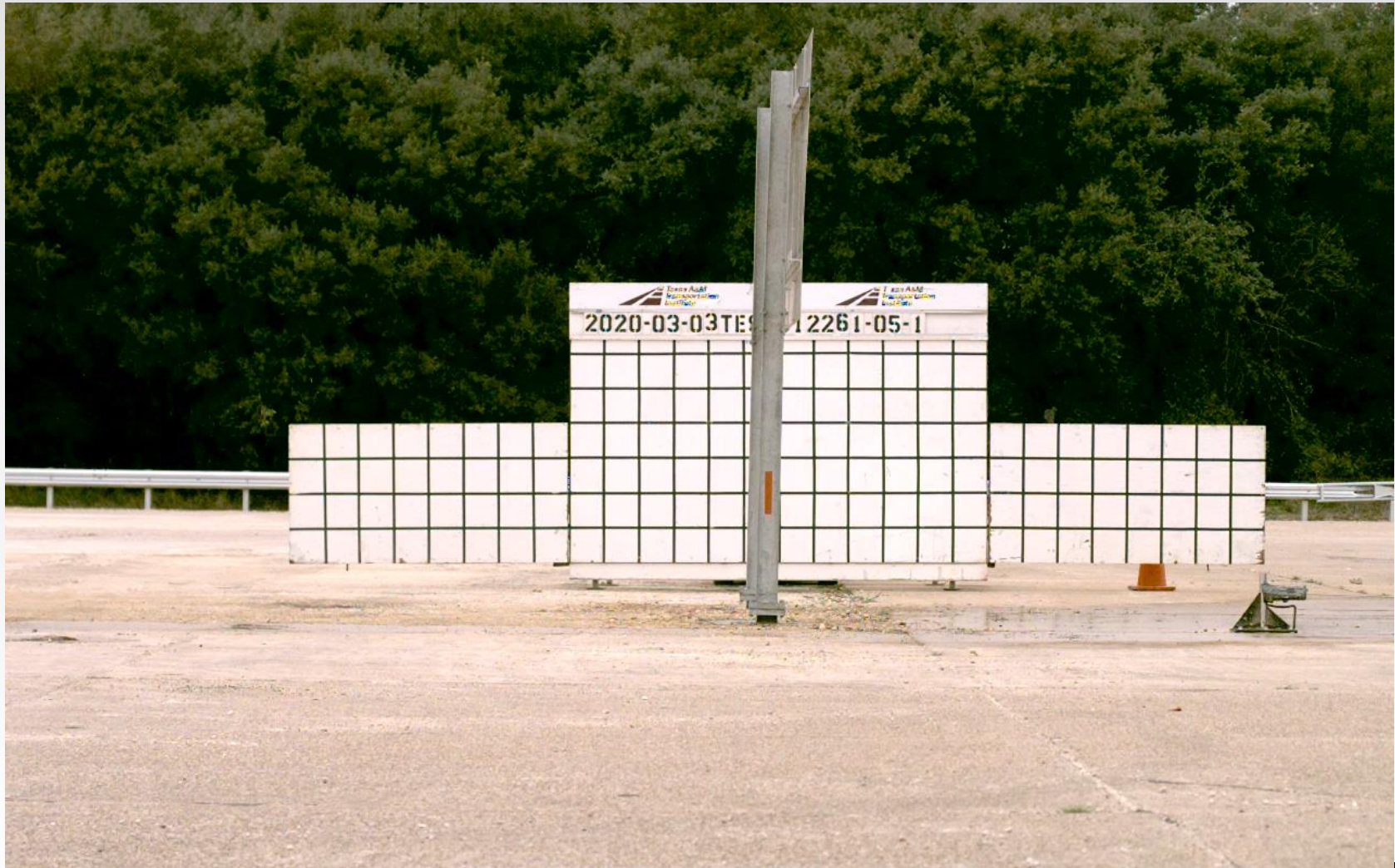


## Field Side



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	Post Size	Width	Hole Size	Number of Holes	Thickness	Area	Fu (Kips)	Depth (ft)	Total Depth (ft)	Fuse Plate Capacity (Kip*ft)	ASD Factor	Final Fuse Plate Capacity (kip*ft)
TxDOT	W6x12	4.0	0.750	4	0.250	0.250	58.0	0.500	0.521	7.552	2.00	<b>3.776</b>
Florida	W6x12	4.00	0.813	4	0.375	0.281	58.0	0.50	0.531	8.666	2.00	<b>4.333</b>

	Post Size	Width	Hole Size	Number of Holes	Thickness	Area	Fu (Kips)	Depth (ft)	Total Depth (ft)	Hinge Plate Capacity (Kip*ft)	ASD Factor	Hinge Plate Capacity (kip*ft)
TxDOT	W6x12	4.0	0.750	4	0.250	0.250	58.0	0.500	0.521	7.552	2.00	<b>3.776</b>
Florida	W6x12	4.00	0.00	0	0.25	1.00	58.0	0.500	0.521	30.208	2.000	<b>15.104</b>

It was found that for the same size post (W6X12), hinge/fuse plate capacity for FDOT is high compared to the one used by TxDOT. Based on visual inspection, It was also found that the stiffness of the sign panel used by TxDOT is high compared to the one used by FDOT. For comparing the plates, we used an existing study carried out by TTI for TxDOT.



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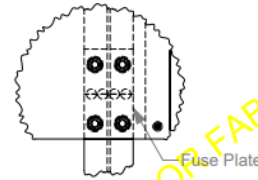
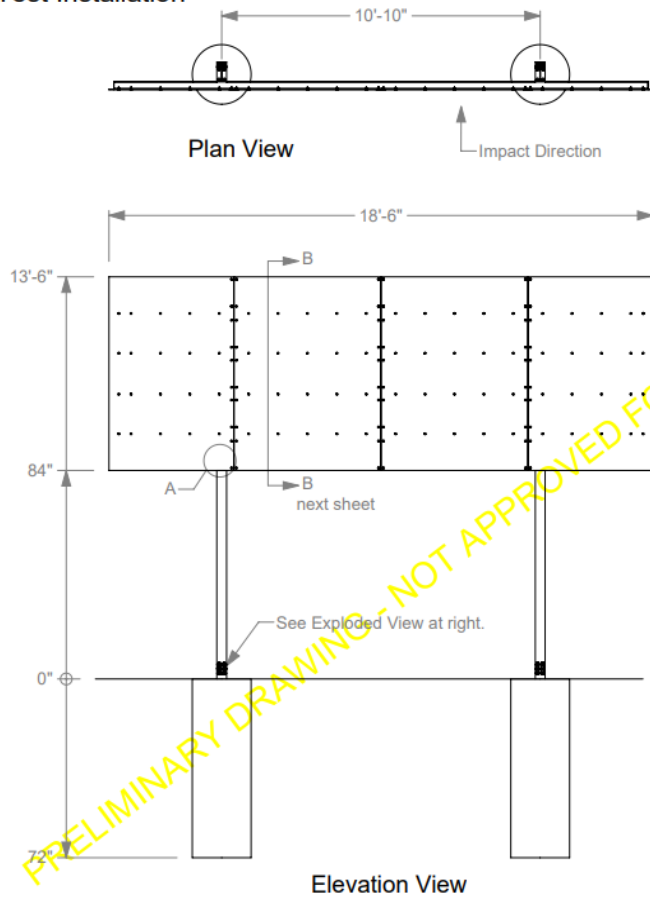
Based on our above observations we propose the following options:

- Reduce the thickness of the fuse plate based on the TxDOT sign supports.
- The thickness and design for the hinge plate can be kept the same or can be modified as per the TxDOT sign supports.
- Increasing the stiffness of sign by including the 3<sup>rd</sup> and 4<sup>th</sup> wind beam. As per the FDOT standards, the number of wind beams depends only on the height of the sign.
- The height of the fuse and hinge plate can also be increased as this will increase the moment arm and will help to activate the plates with less energy.

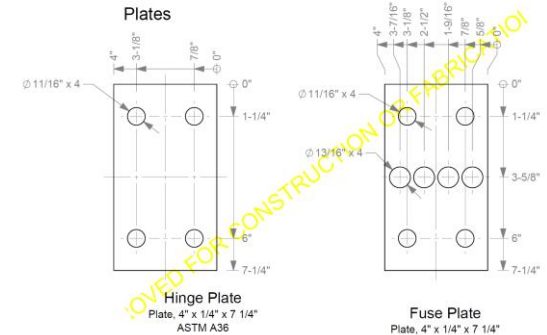
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Test Installation



Detail A  
Scale 1:10  
See Section View on next sheet for hardware details



Field Side

