

## Impact Attenuator Reflectivity To Increase Safety



### Description

Standard plans call for one reflective orange diamond on the leading impact attenuator barrel for head on visibility. With reduced roadway widths there have been several slight impacts with the arrays where the double barrels start instead of the leading barrels. These barrels are closer to the traveling public than the leading barrel with reflectivity. Adding reflective sheeting to the edge of the barrels along the roadway will reduce impacts. This additional sheeting is also applied to the ending barrels where the driver is approaching the back of the array. This additional reflective sheeting will allow for the array to be more visible to the traveling public. (See the back of this page for plans)

### Benefit

Between April 1 and August 1, 2018 10 barrels out of five arrays have been replaced from side impacts or impacts from trailers per standard plans. From August 1 and November 30, 2018 out of 6 arrays, there has not been the need to replace any sand barrels. The three week prior to August 1, 2018 there were 9 sand barrels that needed to be replaced. Due to an upcoming fair event in the area which attracts many people from the surrounding areas, that may involve motorist drinking, we requested to install some reflective sheeting on the barrel edges that were closer to the roadway than the leading barrel. Since the reflective sheeting was added, there have been no costs, time, or safety impacts due to attenuator hits. There have been zero head-on impacts to the arrays since the beginning of the project. The proposal to the standards is to apply a 9x9 inch orange reflective diamond on the barrels that are closer to the travel lane than the leading barrel facing the travel direction with the standard 18x18 inch reflective diamond. Reflective sheeting costs are minimal to the costs associated with vehicle damage and replacing hit sand barrels.

### Materials and Labor

Material costs and reoccurring cost will be run through the contract with Tramar Contracting at a cost. \$15 per orange reflective diamond and \$25 for any barrels replaced. Total labor cost is approximately \$10 per barrel.

## For More Information Contact

Brian Lange at [Brian.Lange@modot.mo.gov](mailto:Brian.Lange@modot.mo.gov) or (314) 974-7112. Additional contacts: Tim Hellebusch and Mitch Shaneberger.

Additional information, photos or videos can be seen by accessing Innovations Challenge SharePoint page at: <http://sharepoint/systemdelivery/TP/Documents/InnovationsChallenge.aspx>

DESIGN SPEED	70 MPH	65 MPH	60 MPH	55 MPH	50 MPH	45 MPH	40 MPH	35 MPH
LENGTH	41'-6"	38'-0"	31'-0"	27'-5"	24'-0"	20'-6"	20'-6"	17'-0"
WIDTH	8'-6"	8'-6"	8'	8'	7'-6"	7'-6"	7'-6"	7'-6"
ROW 12	1 @ 200#							
11	1 @ 200#	1 @ 200#						
10	1 @ 200#	1 @ 200#	1 @ 200#					
9	1 @ 200#	1 @ 200#	1 @ 200#	1 @ 200#				
8	1 @ 400#	1 @ 200#	1 @ 200#	1 @ 200#	1 @ 200#			
7	2 @ 200#	2 @ 200#	1 @ 400#	1 @ 400#	1 @ 400#	1 @ 400#		
6	2 @ 400#	2 @ 200#	1 @ 400#	1 @ 400#	1 @ 400#	1 @ 400#	1 @ 400#	
5	2 @ 400#	2 @ 400#	2 @ 400#	1 @ 700#	1 @ 700#	1 @ 700#	1 @ 700#	1 @ 700#
4	2 @ 700#	2 @ 700#	2 @ 700#	2 @ 700#	1 @ 1400#	1 @ 1400#	1 @ 1400#	1 @ 1400#
3	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#
2	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#
1	2 @ 2100#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#	2 @ 1400#
TOTAL WEIGHT	14400#	12200#	11600#	11300#	11100#	10900#	10900#	10500#
TOTAL NO. OF ATTEN.	19	17	14	12	10	9	9	8

**TYPE 3 OBJECT MARKER PLACEMENT FOR PERMANENT INSTALLATIONS**

**TYPE 1 OBJECT MARKER PLACEMENT FOR TEMPORARY INSTALLATIONS**

**ATTENUATOR LAYOUT**

\* OFFSET ARRAY FOR BIDIRECTIONAL TRAFFIC

**GENERAL NOTES:**  
OBJECT MARKERS SHALL BE CENTERED VERTICALLY OR PLACED AS DIRECTED BY THE ENGINEER.

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
100 WEST CAPITOL  
JEFFERSON CITY, MISSOURI 64533  
1-888-645-4400 / 1-502-775-9531

**SAND FILLED IMPACT ATTENUATORS**

DATE EFFECTIVE: 08/21/2008  
REVISED: 02/20/09

SHEET NO. **612.20D** OF **1**