

CRASH CUSHION, END TREATMENT AND BARRIER APPLICATION CHART

SUPPLIERS	DEVICE NAME and TYPE	APPLICATION				LOCATION			DIMENSIONS		1	2	3	4	REMARKS							
		END TREATMENT	CRASH CUSHION	REDIRECTIVE	PERMANENT	WORKZONE (TEMP.)	ROADSIDE	GORE	MEDIAN (BI-DIRECTIONAL)	WIDTH OF DEVICE						LENGTH OF DEVICE	DISTANCE (FT.) BEYOND L.O.N	HAZARD WIDTH (WIDE OR NARROW)	FLARE OFFSET (FT.)	GATING	TRANSITION TO RIGID SYSTEM REQ'D	MAX CROSS SLOPE (%)
Sand Barrel Arrays																						
PSS	CrashGuard Sand Barrels	◆	X	-	X	X	X	X	X	7 FT. MIN	12 - 46 FT.	NA	W	-	X	-	5	TL-3	-	-	-	Reference M-614-2
EAS	FITCH Universal Barrels	◆	X	-	X	X	X	X	X	7 FT. MIN	12 - 46 FT.	NA	W	-	X	-	6	TL-3	-	-	-	Reference M-614-2
EAS	ENERGITE III	X	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-	TL-1,2,3	-	-	-	Reference M-614-2
TFX	Big Sandy Sand-Filled Plastic Barrels	◆	X	-	X	X	X	X	X	7 FT. MIN	12 - 46 FT.	NA	W	-	X	-	5	TL-2,3	TL-3	-	-	Reference M-614-2
Barrier End Treatments																						
RSI	FLEAT 350	X	-	X	X	-	X	-	-	2 FT.	37.5 FT.	16.3	-	2.5-4	X	X	10	TL-3	-	X	-	Reference M-606-1
RSI	SKT-350	X	-	X	X	-	X	-	-	21 IN.	50 FT.	12.5	-	0-1	X	X	10	TL-2,3	-	X	-	Reference M-606-1
RSI	MSKT	X	-	X	X	-	X	-	-	21 IN.	50 FT.	12.5	-	0-1	X	X	10	-	TL-2,3	X	-	Reference M-606-1
BSI	MAX-TENSION MEDIAN	X	-	X	X	-	X	-	X	30 IN.	50 FT.	9.3	-	0-2	X	X	15	-	TL-3	X	X	Reference M-606-1
TRI	SRT-350	X	-	X	X	-	X	-	-	2 FT.	37.5 FT.	12.5	-	4	X	X	10	TL-3	-	X	-	Reference M-606-1
TRI	SoftStop	X	-	X	X	-	X	-	-	7 IN.	38.25, 50.75 FT.	16.5	-	0-2	X	X	-	-	TL-2, 3	X	-	Reference M-606-1
BSI	Max-Tension TL-2	X	-	X	X	-	X	-	-	17.5 IN.	15 FT.	10	-	0-2	X	X	-	-	TL-2	X	-	Reference M-606-1
BSI	Max-Tension TL-3	X	-	X	X	-	X	-	-	17.5 IN.	27 FT.	23	-	0-2	X	X	-	-	TL-3	X	-	Reference M-606-1
Impact Attenuators																						
EAS	QUADTREND 350	X	X	Y	X	-	X	-	-	15 IN.	20 FT.	10.0	N	0	X	X	8	TL-3	-	-	-	
EAS	REACT 350	X	X	X	X	X	X	X	X	3 FT.	16 - 31 FT.	3.0	N&W	0	-	X	8	TL-1,2,3	-	-	-	100% Reusable
EAS	REACT 350 II	X	X	X	X	X	X	X	X	4 FT.	21.75 FT.	3.0	-	0	-	X	8	TL-3	-	-	-	90% Reusable
EAS	QUADGUARD II	X	X	X	X	X	X	X	X	24 - 126 IN.	6-31 FT.	-	N&W	0	-	-	8	TL-2,3	-	-	-	Compatible with original QUADGUARD
EAS	QUADGUARD ELITE	X	X	X	X	X	X	X	X	24, 30, 36, 69, 90 IN.	23-44 FT.	2.67	N&W	0	-	-	8	TL-2,3	-	-	X	100% Reusable
EAS	QUADGUARD LMC	X	X	X	X	X	X	X	X	36, 69, 90 IN.	33 FT.	2.67	N&W	0	-	-	8	TL-3	-	-	-	
EAS	QUADGUARD M10	X	X	X	X	X	X	X	X	2 FT.	12-21 FT.	1	N	0	-	-	8	-	TL-2,3	-	X	Compatible with original QUADGUARD
EAS	QUADGUARD HIGH SPEED	X	X	X	X	X	X	X	X	2 -3 FT.	31 FT.	-	N&W	0	-	-	-	TL-3	-	-	-	60% Reusable
BSI	X-TENUATOR	X	X	X	X	X	X	X	X	22 FT.	24.75 FT.	X	-	0	-	X	-	TL-3	-	-	-	
WAP	SCI 70 GM SmartCushion	X	X	X	X	X	X	X	X	24-126 IN.	13.5 FT.	1	N&W	0	-	-	-	TL-2,3	-	-	X	100% Reusable
WAP	SCI 100 GM SmartCushion	X	X	X	X	X	X	X	X	24-126 IN.	21.5 FT.	1	N&W	0	-	-	-	TL-2,3	TL-2,3	-	X	100% Reusable Low Maint.
TRI	TRACC	X	X	X	-	X	X	X	X	31 IN.	22 FT.	3	N	0	-	-	10	TL-3	-	-	-	
TRI	FASTRACC	X	X	X	-	X	X	X	X	31 IN.	26.5 FT.	3	N	0	-	-	10	TL-3	-	-	-	
TRI	SHORTRACC	X	X	X	X	X	X	X	X	31 IN.	14 FT.	-	N	0	-	-	10	TL-3	-	-	-	
TRI	WIDETRACC	X	X	X	X	X	X	X	X	24 -92 IN.	32.5 FT.	-	W	4-8	-	-	-	TL-3	-	-	-	
BSI	TAU-II AND TAU-II-R	X	X	X	X	X	X	X	X	3-8.5 FT.	27 FT.	-	N	0	-	-	-	TL-2,3	-	-	-	100% Reusable
BSI	TAU-M TL-2 AND 3	X	X	X	X	X	X	X	X	30 IN.	14.2, 22.75 FT.	-	N	0	-	-	-	-	TL-2,3	-	X	100% Reusable
BSI	ABSORB 350	X	X	-	X	X	X	X	X	24 IN.	9-42 FT.	-	N	0	X	X	-	TL-1,2,3	-	-	-	Antifreeze needed <32°

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SUPPLIERS	DEVICE NAME and TYPE	APPLICATION				LOCATION			DIMENSIONS		DISTANCE (FT) BEYOND L.O.N	HAZARD WIDTH (WIDE OR NARROW)	1		2		TRANSITION TO RIGID SYSTEM REQ'D	MAX CROSS SLOPE (%)	NCHRP 350 COMPLIANT	MASH COMPLIANT	PROPRIETARY M-STANDARD	APL	REMARKS
		END TREATMENT	CRASH CUSHION	REDIRECTIVE	PERMANENT	WORKZONE (TEMP.)	ROADSIDE	GORE	MEDIAN (BI-DIRECTIONAL)	WIDTH OF DEVICE			LENGTH OF DEVICE	FLARE OFFSET	GATING	3							
EAS	QUEST SYSTEM	X	X	X	X	X	X	X	24, 30, 36 IN.	18-30 FT	-	N	0	-	X	8	TL-2,3	-	-	-			
TRI	ADIEM	X	X	X	-	X	X	X	2-3 FT.	30 FT.	15	N	0	X	-	10	TL-3	-	-	-			
TFX	SLED	X	X	-	X	X	X	X	22.5 IN.	12 - 25 FT.	-	N	0	-	-	-	-	TL-1,2,3	-	X	Water Filled		
Impact Attenuators (Construction Zone)																							
EAS	N.E.A.T.	X	X	X	-	X	X	-	22.5 IN.	9.62 FT.	-	N	0	X	X	8	TL-2	-	-	-	Portable System		
EAS	TRITON BARRIER CET	X	X	-	-	X	X	X	21 IN.	39	-	N	0	X	X	-	TL-2,3	-	-	-			
EAS	QUADGUARD CZ	X	X	X	-	X	X	X	2-3 FT.	12-30 FT.	1-3	N	0	-	-	8	TL-3	-	-	-			
EAS	ACZ - 350	X	X	X	-	X	X	X	22 IN.	32 FT.	-	N	0	X	X	-	TL-2,3	-	-	-			
Cable Barrier																							
BRI	Briffen WRSE	-	-	X	X	-	X	-	E	10.5 FT.	-	-	-	-	X	17	TL-3,4	-	-	-			
GRE	SAFENCE	-	-	X	X	-	X	-	5 IN.	6-20 FT.	-	-	-	-	X	17	TL-3,4	TL-3,4	-	-			
GIB	GIBRALTOR CBS	-	-	X	X	-	X	-	5 IN.	6-20 FT.	-	-	-	-	X	17	TL-3,4	-	-	-	3 and 4 Cable available		
TRI	TRINITY CASS	-	-	X	X	-	X	-	5 IN.	6-20 FT.	-	-	-	-	X	17	TL-3,4	-	-	-	3 and 4 Cable available		
Temporary Barrier																							
BSI	ArmorGuard Steel Barrier	-	-	X	-	X	X	-	28 IN.	28 FT.	-	N	0	-	X	-	TL-3	TL-3	-	X			
BSI	Orion	-	-	X	-	X	X	-	18 IN.	38.6 FT.	-	N	-	-	-	-	TL-3	-	-	X			
H&S	Zoneguard Steel Barrier	-	-	X	-	X	X	-	32 IN.	50 FT.	-	N	-	-	X	-	TL-3	TL-3,4	-	-			
EAS	VULCAN Steel Barrier	-	-	X	-	X	X	-	22 IN.	13-39 FT.	-	N	-	-	X	-	TL-3	-	-	-			
ESI	J-J HOOKS Concrete Barrier	-	-	X	-	X	X	-	2 FT.	10 FT.	-	-	-	-	-	-	TL-3	TL-3	-	-			
EAS	Triton Water-Filled Barrier	X	-	X	-	X	X	X	21 IN.	6.5 FT.	65.0	N	-	X	-	5	TL-2	-	-	-			
SCS	YODOCK BARRIER 2001	-	-	-	-	X	X	-	2 FT.	6 FT.	-	N	-	X	-	-	TL-2,3	-	-	-	Water Filled		
SCS	YODOCK BARRIER 2001MB	-	-	-	-	X	X	-	18 IN.	6 FT.	-	N	-	X	-	-	TL-2,3	-	-	-	Water Filled		
Barrier Gate																							
BSI	ArmorGuard Gate	-	-	X	X	X	X	-	28 IN.	26-52 FT.	-	N	0	-	X	-	TL-3	-	-	-			
EAS	VULCAN GATE	-	-	X	X	X	X	-	22 IN.	27-81 FT.	-	N	0	-	X	-	TL-3	-	-	-			
Truck Mounted Attenuators																							
EAS	ALPHA 70K TMA	-	X	X	-	X	-	-	93 IN.	160 IN.	-	W	0	-	-	-	TL-2	-	-	-			
TFX	SCORPION Model A	-	X	X	-	X	-	-	96 IN.	104 IN.	-	W	0	-	-	-	TL-2	-	-	-			
EAS	SAFE -STOP 180 TMA	-	X	X	-	X	-	-	7.75 FT.	14.5 FT.	-	W	0	-	-	-	TL-2,3	-	-	-			
WPI	Vanderbilt TMA (VTMA)	-	X	X	-	X	-	-	114 IN.	150 IN.	-	W	0	-	-	-	TL-3	-	-	-			
TRI	MPS - 350 III	-	X	X	-	X	-	-	92 IN.	82 IN.	-	W	0	-	-	-	TL-3	-	-	-			
TRX	SCORPION II TMA	-	X	X	-	X	-	-	96 IN.	154 IN.	-	W	-	-	-	-	-	TL-3	-	-			
DPI	U - MAD 100K TMA	-	X	X	-	X	-	-	7.5 FT.	13.3 FT.	-	W	0	-	-	-	TL-3	-	-	-			

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SUPPLIERS	DEVICE NAME and TYPE	APPLICATION					LOCATION			DIMENSIONS		1	2	3	4	REMARKS						
		END TREATMENT	CRASH CUSHION	REDIRECTIVE	PERMANENT	WORKZONE (TEMP.)	ROADSIDE	GORE	MEDIAN (BI-DIRECTIONAL)	WIDTH OF DEVICE	LENGTH OF DEVICE						DISTANCE (FT) BEYOND L.O.N	HAZARD WIDTH (WIDE OR NARROW)	FLARE OFFSET	GATING	TRANSITION TO RIGID SYSTEM REQ'D	MAX CROSS SLOPE (%)
REN	RAM-100K	-	X	X	-	X	-	-	-	90 IN.	82 IN.	-	W	0	-	-	-	TL-3	-	-	-	
DPI	Blade TMA	-	X	X	-	X	-	-	-	7.6 FT.	19.3 FT.	-	W	0	-	-	-	-	TL-3	-	-	
EAS	SS90 HD TMA	-	X	X	-	X	-	-	-	93 IN.	158 IN.	-	W	0	-	-	-	TL-3	-	-	-	
TFX	SCORPION Model C-90	-	X	X	-	X	-	-	-	96 IN.	177 IN.	-	W	-	-	-	-	TL-3	-	-	-	
TRX	SCORPION Model C	-	X	X	-	X	-	-	-	96 IN.	166 IN.	-	W	-	-	-	-	TL-3	-	-	-	
Trailer Mounted Attenuators																						
EAS	SAFE-STOP Trailer TMA	-	X	X	-	X	-	-	-	93 IN.	19 FT.	-	W	-	-	-	-					
EAS	VORTEQ TL3 Trailer TMA	-	X	X	-	X	-	-	-	92 IN.	23 FT.	-	W	-	-	-	-					
TFX	SCORPION Trailer Attenuators	-	X	X	-	X	-	-	-	96 IN.	17 FT.	-	W	-	-	-	-	TL-3	-	-	-	
TFX	SCORPION II Trailer Attenuator	-	X	X	-	X	-	-	-	96 IN.	17 FT.	-	W	-	-	-	-	-	TL-3	-	-	
<p>MANUFACTURER KEY</p> <p>PSS Plastic Systems Inc. EAS Energy Absorption Systems TFX Trafos RSI RoadSystems Inc. TRI Trinity WAP Work Area Protection BSI Barrier Systems Inc. BRI Briffen GRE Gregory GIB GIBRALTOR H&S Hill & Smith ESI Easi-Set Industries SCS SC Supply Co. WPI Worcester Polytechnic Institute REN Renco Highway Control Products DPI Dimensional Products Inc.</p>		<p>◆ Sand barrels may be used as a roadside end terminal for rigid barrier in temporary construction applications.</p> <p>1 Wide Hazards > 3 FT Narrow Hazards < 3 FT.</p> <p>2 Gating = Allows a vehicle to enter a clear zone where it can safely decelerate before contacting a hazard</p> <p>3 MASH compliant devices must be used on projects added after the following dates: December 31, 2017 - Cast-in-place concrete barriers June 30, 2018 - W-beam terminals December 31, 2018 - Crash cushions December 31, 2019 - Bridge rails, transitions, cable barrier, cable barrier terminals, all other longitudinal barriers (including portable barriers installed permanently), all other terminals, sign supports and breakaway hardware.</p> <p>4 If 3 or more products are listed for any category then one of those products must be used. If the category is under-populated a COC will be required if the product actually used is not from the APL. If the category is unpopulated a COC will be required for the product actually used. CDOT's Subject Matter Expert (Guardrail or Standards Engineer) shall be contacted for assistance. The Project Engineer has ultimate authority over installed products.</p> <p>NCHRP 350 and MASH Design Speed TL-1 = 31 MPH TL-2 = 44 MPH TL-3 = 62 MPH</p> <p>All of these safety devices shall be installed and used according to the manufacturer's instructions. Whenever possible, devices placed adjacent to the roadway should have the site grading similar to the roadway grading. Contact the Guardrail Engineer for additional information.</p> <p>Refer to the <i>2011 AASHTO Roadway Design Guide</i>, Chapter 8 and 9 for design considerations.</p>																				

CRASH CUSHION, END TREATMENT AND BARRIER APPLICATION CHART



PSS CrashGard Sand Barrel System



RSI FLEAT 350



TRI SoftStop



EAS QuadGard Elite



EAS Fitch Universal Barrel



RSI SKT 350



EAS QuadTrend 350



EAS QuadGard LMC



EAS Energite III



RSI MSKT



EAS REACT 350



EAS QuadGard M10



TRX Big Sandy



BSI MAX-Tension Median



EAS REACT 350 II



EAS QuadGard High Speed



BSI MAX-Tension



TRI SRT 350



EAS QuadGard II



EAS Quest

CRASH CUSHION, END TREATMENT AND BARRIER APPLICATION CHART



WAP SCI Smart Cushion



BSI TAU-II



BSI ABSORB 350



EAS Triton Barrier CET



TRI TRACC



BSI TAU-II R



TFX SLED



GIB CBS



TRI FASTRACC



BSI TAU-M



EAS QuadGard CZ



TRI CASS



TRI SHORTRACC



BSI X-TENUator



EAS ACZ-350



BRI WRSF



TRI WIDETRACC



TRI ADIEM



EAS N.E.A.T



GRE SAFENCE

CRASH CUSHION, END TREATMENT AND BARRIER APPLICATION CHART



H&S Zoneguard Steel Barrier



BSI ArmorGuard Gate



TRI MPS-350 II



EAS SS90-HD TMA



EAS Vulcan Steel Barrier



EAS Vulcan Gate



TFX Scorpion II TMA



TFX Scorpion Model C-90



JJ Hooks Concrete Barrier



BSI ORION



REN RAM-100K



TFX Scorpion Model C



BSI ArmorGuard Steel Barrier



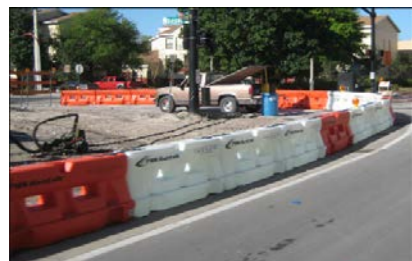
TFX Scorpion Model A



DPI BLADE TMA



EAS SafeStop Trailer



SCS YODOCK 2001/2001MB



EAS Triton Water Filled Barrel



DPI U-MAD 100K



EAS VORTEZ Trailer

CRASH CUSHION, END TREATMENT AND BARRIER APPLICATION CHART



TFX Scorpion Trailer Attenuator



TFX Scorpion II Trailer Attenuator



EAS SafeStop 180 TMA



EAS Alpha 70K TMA