Type C Crashworthy End Terminals
Field Section 1040 Table 5
(1040GRCW..C)

Unit	Manufacturer
ABSORB 350	Barrier Systems Inc. 180 River Road Rio Vista, CA 94571
ABSORB 350/QMB	Barrier Systems Inc. 180 River Road Rio Vista, CA 94571
Adiem II	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207
Connecticut Impact Attenuator System (CIAS)	A.J. Braun Mfg. Limited 116 Hanson Ave. Kitchener, ON N2C 2E2
FASTRACC 05	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207
QuadGuard 69/90 Low Maintenance Crash Cushion (LMC)	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076
QuadGuard II	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076
QuadGuard CZ	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076
QuadGuard ELITE	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076
QuadGuard System	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076
QuadTrend-350	Energy Absorption Systems, Inc. One East Wacker Drive Chicago, IL 60601-2076

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

Unit	Manufacturer
Quest	HCI Enterprises 5421 W 86th St P.O. Box 681064 Indianapolis, IN 46268
SHORTRACC	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207
TAU-II System	Barrier Systems Inc. 180 River Road Rio Vista, CA 94571
Trinity Attenuating Crash Cushion (TRACC)	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207
TRACC 05	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207
WIDETRACC	Trinity Industries Co. 2525 Stemmons Freeway Dallas, TX 75207

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

Unit	NCHRP 350 Test Level	Crash Cushion/ End Terminal			Used as L-O-N (A)	Unit Width	Unit Length (B)	Engineer's Estimate for Installment	% Reusble or Average repair Cost	Max Cross-Slope	Clear Zone Reqd. (C)	Hazard Location			*Addtl Modifica-tions	Addtl Length of Guard Rail	*Notes
		R	G	NR								M	G	R			
ABSORB 350 2 Element Design 5 Element Design 9 Element Design	TL-1 TL-2 TL-3		X	X		610 mm (2')	2.4 m (8') 5.2 m (17') 8.8 m (29')	$2,500 $3,700 $6,800	40%	8%	None	X		X		0' (0 m)	1,2
ABSORB 350/QMB 2 Element Design 5 Element Design 9 Element Design	TL-1 TL-2 TL-3		X	X		610 mm (2')	2.4 m (8') 5.2 m (17') 8.8 m (29')	$3,250 $4,750 $6,800	40%	8%	None	X		X		0' (0 m)	1,2
ADIEM II (30.00')	TL-3	X	X		4.3 m (14' – 0")	0.7 m (2' – 4")	9.1 m (30' – 0")	$14,000	40% Reusable $2,500 - $5,000	10:1	22.5 m x 6 m (75' x 20')	X	X	X		0' (0 m)	1,2,3
Connecticut Impact Attenuator System (CIAS)	TL-3	X	X		None	3.81m (12' – 6")	6.86 m (22' – 6")	Unknown	50% Reusable Repair Cost Unknown	10:1	None	X	X	X			1,2,3
FASTRACC 05	TL-3+	X			None	0.61 m (2')	7.1 m (23' – 4")	$14,600	80-95% Reusable $1,500-$2,500		None	X	X	X		0' (0 m)	1,2,3
Quest 3 Bays	TL-3	X	X		None	601 mm (24")	5.7m (18' 8")	Unknown	Repair Cost Unknown	8%	None	X	X	X			1,2,3

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

Unit	NCHRP 350 Test Level	Crash Cushion/ End Terminal			Used as L-O-N (A)	Unit Width	Unit Length (B)	Engineer's Estimate for Installment	% Reusble or Average repair Cost	Max Cross-Slope	Clear Zone Reqd. (C)	Hazard Location			*Addtl Modifica-tions	Addtl Length of Guard Rail	*Notes
		R	G	NR								M	G	R			
QuadGuard II 2 Bays 5 Bays 5 Bays (wide)	 TL-2 TL-3 TL-3	X			None	.610 m (24") .610 m (24") 2.886m (90")	3.08 m (10'-1') 5.83 m (19'-1') 5.83 m (19'-1')	$19, 500	75%	1.5:1	None	X	X	X		0' (0 m)	1,2,3
QuadGuard 2 Bays 4 Bays 9 Bays	 TL-1 TL-2 TL-3	X			None	0.61 – 2.29 m (2' – 7.5')	2.66 m (8' – 9") 4.49 m (14' – 9") 9.06 m (29' – 9")	$5,000 $7,000 $10,000	80% Reusable $1,200 - $2,500	1.5:1	None	X	X	X		0' (0 m)	1,2,3
QuadGuard ELITE 7 Bays 11 Bays	 TL-2 TL-3	X			None	0.61 m (24"), 0.762 m (30"), 0.914 m (36"), 1.753 m (69"), or 2.286 m (90")	10.82 m (35' – 6")	Price between QuadGuard and QuadGuard LMC	90% Reusable $1,200 - $2,500	1.5:1	None	X	X	X		0' (0 m)	1,2,3
QuadGuard LMC 11 Bays	TL-3				None	1.753 m (69") or 2.286 m (90")	10 m (31' – 0")	$33,000-$34,350	99% Reusable $1,200 - $2,500	1.5:1	None	X	X	X		0' (0 m)	1,2,3
QuadGuard CZ 3 Bays 6 Bays	 TL-2 TL-3	X			None	0.61 – 0.76 m (2' – 2.5')	3.58 m (11' – 9") 6.33 m (20' – 9")		$1,200-$2,500	8%	None	X	X	X		0' (0 m)	1,2,3
QuadTrend-350	TL-3	X	X		None	0.46 m (1' –6")	6.1 m (20')		70-80% Reusable	10:1				X		0' (0 m)	1,3
TRACC (Trinity Attenuating Crash Cushion)	TL-3	X			None	0.8 m (2' – 7")	6.4 m (21' – 1") plus 0.61 m (2') backup	Unknown	80% Reusable $1,200 - $2,500							0' (0 m)	
TRACC 05	TL-3	X			None	0.61 m (2')	6.4 m (21' – 1")	$12,500	80-95% Reusable $1,500 - $2,500		None	X	X	X		0' (0 m)	1,2,3

Unit	NCHRP 350 Test Level	Crash Cushion/ End Terminal			Used as L-O-N (A)	Unit Width	Unit Length (B)	Engineer's Estimate for Installment	% Reusble or Average repair Cost	Max. Cross-Slope	Clear Zone Reqd. (C)	Hazard Location			*Addtl Modifications	Addtl Length of Guard Rail	* Notes
		R	G	NR								M	G	R			
SHORT-TRACC 05	TL-3	X			None	0.61 m (2')	4.3 m (14')		80-95% Reusable $1,500-$2,500			X	X	X		0' (0 m)	1,2,3
WIDETRACC 05	TL-3	X			None	0.61 m (2')	6.4 m (21' – 1")		80-95% Reusable $1,500-$2,500		None	X	X	X		0' (0 m)	1,2,3
TAU –II System 2 Bays 4 Bays 8 Bays 10 Bays (70 mph)	TL-1 TL-2 TL-3	X			None	0.9 m (2.9')	1.6 m (6' – 2") 4.3 m (14') 6.8 m (22') 8.5 m (28')	$3,125 $5,375 $10,000 $13,000	80-85% Reusable Av < $1,800 - $2,200 repair cost	8%	None	X	X	X		0' (0 m)	1,2,3

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

***Notes/Definitions**

1. Reverse Impact Treated
2. Two-way Traffic
3. Deck/Structure Required

(A) Use designated length of system as part of required length of need to protect hazard.
(B) System length does not include transition section required to connect system to guardrail, median barrier or retaining wall.
(C) Based on 62.5 mph.

Crash Cushion/End Terminal

R = Redirectional
G = Gating
NR = Non-Redirectional

Hazard Location

M = Median
G = Gore
R = Roadside

Additional Comments

QuadGuard – Not applicable for workzones. Requires concrete pad. Good for sites where studies indicate you can expect up to 2-3 crashes a year. QuadGuard parts are interchangeable with parts in the QuadGuard family. All can be upgraded to the LMC.

QuadGuard ELITE – Not applicable for workzones. Requires a concrete pad. Use in gore areas to protect wide obstacles and where impact may be 3-5 crashes per year.

QuadGuard LMC – Not applicable for workzones. Requires a concrete pad. Use in areas where high frequency impacts are expected, more than 5 per year.

QuadGuard CZ – Use for temporarily locations primarily, but may be installed to function as a permanent protection. Requires either asphalt or concrete pads.

QuadTrend-350 – Used as a transition element end terminal for right longitudinal barriers. Requires asphalt or concrete pad.

TRACC – Requires concrete pad.

Type C Crashworthy End Terminals
Field Section 1040 Table 5 (Cont.)
(1040GRCW..C)

ADIEM II – Not recommended on loose soil and must be installed to function as a permanent protection. Requires either asphalt or concrete pads.

Additional Comments (cont.)

TAU-II System – Requires installation on a 8" concrete or asphalt pad. Designed for use in both low and high speed applications. The system is low maintenance, quickly restored, and has reusable components. Systems are available for use from 30 to 75 mph. Can expect to survive with multiple impacts per year without replacements.

Absorb-350 – Can be attached to permanent or portable concrete barrier without need to anchor the system to the roadway surface. The system is easily installed, requires no sand clean-up, and restores in minutes. Proper anti-freezing agents must be used as filler when the unit will be exposed to freezing temperatures.

Absorb-350/QMB – To be used in conjunction with Quick Moveable Barrier units. The system is easily installed, requires no sand clean-up, restores in minutes, and does not require a foundation. Proper anti-freezing agents must be used as a filler when the unit will be exposed to freezing temperatures.

Connecticut Impact Attenuator System (CIAS) – Non-proprietary

Quest – The Quest System is a highly efficient, redirective, non-gating crash cushion designed to shield hazards 610 mm or less in width. The steel backup is designed to be placed against the rest around the hazard, resulting in a shorter overall installation length.