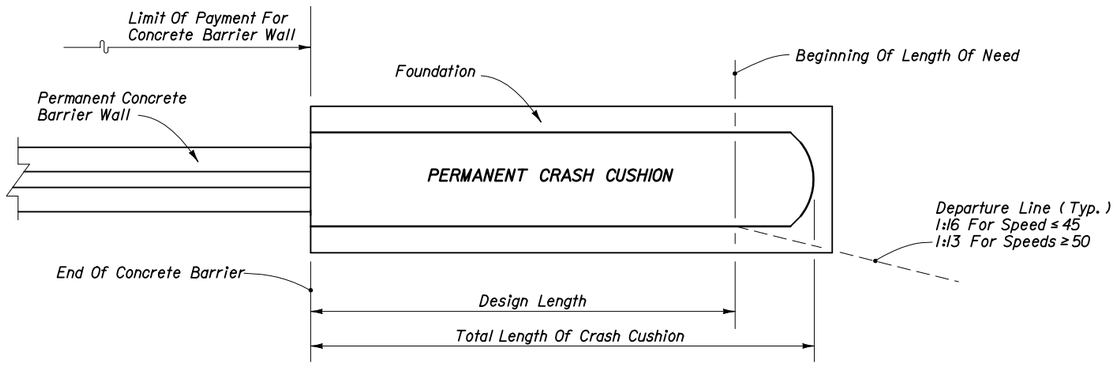


DESIGN NOTES - CONCRETE BARRIER WALL APPLICATION

1. Design length is the length from the beginning of length of need to the end of the crash cushion.
2. Determine length of need for barrier as detailed on Index 400.
3. Establish the end of barrier based on design length of shortest Crash Cushion option for given design speed.
4. Determine that adequate space is available for construction of all options for given design speed. If adequate space is not available, options must be limited to those that will fit. Tabulate selected options in the plans by location and design speed.

GENERAL NOTES FOR OPTIONAL CRASH CUSHIONS

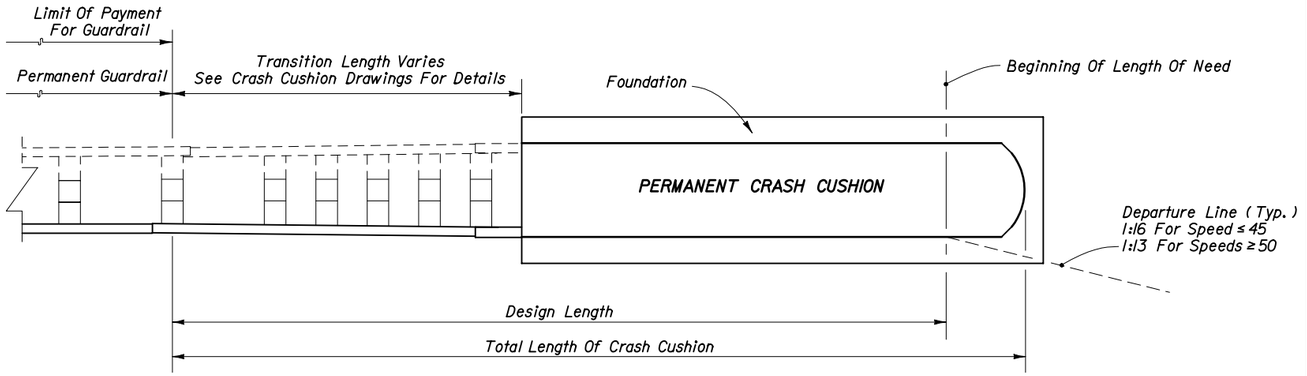
1. Crash Cushions for which the optional item may be used are limited to the systems identified on this index. The Contractor may only use the options identified in the plans.
2. This Index is applicable for permanent installations that shield the ends of Concrete Barrier Walls or Guardrails only.
3. For Crash Cushion details, see drawings posted on Qualified Products List (QPL) web page.
4. For other Crash Cushion applications, see the approved QPL drawings.
5. Crash Cushions shall be assembled and installed in accordance with the manufacturer's specifications and any limiting conditions noted on the approved QPL drawings.
6. Transition Panels may be required from Concrete Barriers to Crash Cushions subject to reverse direction hits; see the Crash Cushion drawings posted on the QPL for details. Transitions are required between the Crash Cushion and guardrail and vary in length depending on the Crash Cushion used; see the Crash Cushion drawings for details.

   The cost of the transition(s) is to be included in the cost of the Crash Cushion.
7. Optional Crash Cushions will be paid for under the contract unit price for Vehicular Impact Attenuator/Crash Cushion (optional) EA, and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications; the drawings posted on the QPL and this Index.

CONCRETE BARRIER WALL APPLICATION

Design Speed	System	Design Length (Ft.)	Total Length Of Crash Cushion (Ft.)
30	QuadGuard	6.71	9.98
	TAU II	4.61	8.35
	SHORTRACC	14.11	15.06
35	QuadGuard	6.71	9.98
	TAU II	7.45	11.19
	SHORTRACC	14.11	15.06
40	QuadGuard	6.71	9.98
	TAU II	10.30	14.04
	SHORTRACC	14.11	15.06
45	QuadGuard	9.55	12.83
	TAU II	10.30	14.04
	SHORTRACC	14.11	15.06
50	QuadGuard	12.55	15.83
	TAU II	13.14	16.88
	TRACC	21.00	21.98
55	QuadGuard	15.65	18.93
	TAU II	18.82	22.56
	TRACC	21.00	21.98
60	QuadGuard	18.62	21.90
	TAU II	21.67	25.41
	TRACC	21.00	21.98
65	QuadGuard	21.60	24.87
	QuadGuard HS	24.58	29.16
	TAU II	24.52	28.26
	FASTRACC	26.00	26.98
70	QuadGuard	27.55	30.83
	QuadGuard HS	24.58	29.16
	TAU II	27.36	31.10
	FASTRACC	26.00	26.98

NOTE:
Total length of Crash Cushion for the TAU II units is based on use of the Compact Backstop. When the PCB Backstop is used, these lengths are reduced by 1.67 ft.



GUARDRAIL APPLICATION			
Design Speed	System	Design Length (Ft.)	Total Length Of Crash Cushion (Ft.)
30	QuadGuard	26.29	29.56
	TAU II	18.36	22.10
	SHORTRACC	26.70	27.65
35	QuadGuard	26.29	29.56
	TAU II	21.20	24.94
	SHORTRACC	26.70	27.65
40	QuadGuard	26.29	29.56
	TAU II	24.05	27.79
	SHORTRACC	26.70	27.65
45	QuadGuard	29.13	32.41
	TAU II	24.05	27.79
	SHORTRACC	26.70	27.65
50	QuadGuard	32.13	35.41
	TAU II	26.89	30.63
	TRACC	33.59	34.57
55	QuadGuard	35.23	38.51
	TAU II	32.57	36.31
	TRACC	33.59	34.57
60	QuadGuard	38.20	41.48
	TAU II	35.42	39.16
	TRACC	33.59	34.57
65	QuadGuard	41.18	44.45
	QuadGuard HS	44.16	48.74
	TAU II	38.27	42.01
	FASTRACC	38.59	39.57
70	QuadGuard	47.13	50.41
	QuadGuard HS	44.16	48.74
	TAU II	41.11	44.85
	FASTRACC	38.59	39.57

DESIGN NOTES - GUARDRAIL APPLICATION

1. Design length is the length from the beginning of length of need to the end of the transition section.
2. Determine length of need for barrier as detailed on Index 400.
3. Establish the end of the guardrail based on design length of shortest Crash Cushion option for given design speed.
4. Determine that adequate space is available for construction of all options for given design speed. If adequate space is not available, options must be limited to those that will fit. Tabulate selected options in the plans by location and design speed.