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16. Abstract <p>This report is an analysis of 127 accidents involving crash cushions in Kentucky. The primary data base was for the period 1980-82, with some additional data before and after this period. An attempt was made to document each accident with a police report, photographs, and a repair form. The largest number of accidents (63) involved a Hi-Dro cell cushion or cluster, followed by 33 accidents involving a G.R.E.A.T. crash cushion, 19 with a temporary G.R.E.A.T., 10 with sand barrels, and 2 with steel drums.</p> <p>Average repair cost was lowest for the Hi-Dro cell cushion (\$392) and highest for the Hi-Dro cell cluster (\$2,839). Other repair costs were \$1,886 for the G.R.E.A.T. system, \$887 for sand barrel installations, and \$1,760 for steel drum installations.</p> <p>For those accidents in which performance was noted, crash cushions performed properly 85 percent of the time. Instances of improper performance generally involved either a vehicle rebounding into or across the adjacent roadway or a vehicle overturning. All of the various types performed well.</p> <p>Results from the cost-effectiveness analysis show that crash cushion installations produce a benefit-cost ratio in the range of 1.0 - 2.0.</p>					
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ANALYSIS OF ACCIDENTS INVOLVING CRASH CUSHIONS

by

Jerry G. Pigman
Chief Research Engineer

Kenneth R. Agent
Senior Transportation Research Engineer

and

Tom Creasey
Transportation Research Engineer

Kentucky Transportation Research Program
College of Engineering
University of Kentucky
Lexington, Kentucky

in cooperation with

Transportation Cabinet
Commonwealth of Kentucky

and

Federal Highway Administration
U.S. Department of Transportation

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Kentucky Department of Highways

E. B. Drake, Division of Design,
Kentucky Department of Highways

C. S. Layson, Assistant State Highway Engineer,
Kentucky Department of Highways

B. L. Wheat, Assoc. Assistant State Highway Engineer,
Kentucky Department of Highways

Bill Netherton, Kentucky Department of Highways

Bill Bensing, Federal Highway Administration

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INTRODUCTION

Hazardous fixed-objects located within the driving environment continue to present severe safety problems to errant vehicles and their drivers. When the roadway is wholly or partially on structure, the gore area is characterized by bridge abutments or massive bases for sign supports. Bridge piers and other fixed objects located in medians have previously been inadequately shielded by guardrail or not shielded at all. In addition, roadways with narrow medians separated only by guardrail have proven to be ineffective and the source of many severe or fatal accidents. More recent designs have incorporated the concrete median barrier. At other locations where guardrail is deemed adequate, the breakaway-cable-terminal guardrail end treatment is now being used.

Based on the 1978 revision of the "Handbook of Highway Safety Design and Operating Practices," highway traffic barriers may be classified into two general groups: a) longitudinal barriers, such as guardrail, concrete median barriers, and bridge railing, which redirect vehicles away from roadside hazards; and b) crash cushions which incorporate various methods to reduce the rate of deceleration for vehicles (1). "Running off the road" has been shown to account for approximately 40 percent of all fatal accidents, and collisions with fixed-objects are frequently the culmination of the out-of-control vehicle (2). Recent design standards have emphasized the need to install barriers only when the consequence of striking a barrier is less than that of striking the object being shielded. This problem of barrier overuse can be of considerable consequence in gore areas where past research has shown that the rate of accidents is approximately four times that of run-off-road accidents at other locations (3). Gore areas which are not or cannot be modified to provide favorable terrain and unobstructed recovery zones have

been recognized as misfits in the environs of the highway. Bridge piers in narrow medians and openings between parallel bridges on divided highways are also potential hazards from which the driver should be protected. Crash cushions are an alternative means of shielding the errant vehicle at these types of locations.

Analyses of accidents involving crash cushion impacts have shown them to be very effective. A study by the Federal Highway Administration in 1973 included analysis of 188 crash cushion installations in 36 states (4). It was determined that 5 fatalities resulted from a total of 393 accidents. They also found that the total accident experience increased due to a reduction of clear area in the gores and a higher accident reporting level in the after period. Installation and maintenance costs were also reported from the study in 1973. Installation costs were lowest for the sand barrel installations and the liquid cell clusters and highest for the steel drum installations.

Another analysis of accidents involving crash cushions was performed by the Texas Transportation Institute (5). The analysis included 135 steel drums and sand barrels. Included were 400 impacts over a seven-year period. Results from crash experience showed elimination of the redirection panels on steel drum crash cushions at sites with low probability of angular impacts would improve the safety and reduce construction and maintenance costs.

The design and evaluation of crash cushions began in Kentucky in 1970 with the installation of a sand barrel system and a liquid cell system. Following those installations, a survey of the interstate system was made and the result was a list of 23 gore sites which were considered to be candidates for crash cushion installations or other types of improvements (6). Barriers were installed at 16 sites, and 7 sites were contour graded. Accident experience was monitored at five crash cushion locations in Kentucky from 1970

through 1972 (6). Included were three sand barrel installations and two liquid cell installations. At one sand barrel installation, there were 24 police-investigated accidents during a 37-month period before the barrier was installed. After installation, there were only four accidents in a 24-month period. All four accidents after installation were minor as compared to two fatalities and seven incapacitating injuries before installation. Increased recovery area and the conspicuous nature of the sand barrels were determined to be responsible for the large decrease in accidents. At another sand barrel installation, a considerably different accident history resulted. In a 36-month period before installation, 33 police-investigated accidents were reported. After installation, 18 accidents occurred in a 18-month period. "Reduced" recovery area was determined to be the primary cause of the continued high number of accidents. Modifications were made to the gore area such that the more compact liquid cell unit could be installed and the result was a significant decrease in the number of accidents.

CRASH CUSHION USAGE IN KENTUCKY

Crash cushions were first installed in Kentucky in 1970. During that year, three sand barrel systems (Kentucky's Type II) were installed at an average cost of \$3,583 per unit and three Hi-Dro cell systems (Kentucky's Type IV) were installed at an average cost of \$6,844 per unit. Crash cushion installations were relatively infrequent during the early 1970's with the exception of several Hi-Dro cell clusters installed at toll booths. Recent crash cushion installations in Kentucky have been almost exclusively Guardrail Energy Absorbing Terminals (G.R.E.A.T.). Presented in Table 1 is a summary of crash cushion installations by year for the period 1970 through 1983. Numbers

of crash cushions and average unit costs were obtained from tabulations of average unit prices from contracts awarded by the Kentucky Department of Highways. Other installation costs were obtained from records of installations by state forces. From this table, it may be seen that 403 crash cushions were installed during the 14-year period. Many of the temporary G.R.E.A.T.'s were installed for short periods of time on construction projects and then reused. Prices for other types of crash cushions did not vary as much, even though the sample of locations was relatively small. There have been four sand barrel systems and only one steel drum system installed in Kentucky. A total of 119 Hi-Dro cell systems have been installed. Of the 119 Hi-Dro cell systems installed, 103 are clusters installed at toll booths and 16 are cushions installed at other locations such as gore areas and bridge piers. As noted, most of the recent crash cushion systems have been G.R.E.A.T.'s, and they now total 121. In addition, a large number of temporary G.R.E.A.T.'s have been installed (a total of 159). Typical installations of the various types of crash cushions used in Kentucky are presented in Appendix A. Details of the most frequently used types (Kentucky's Type IV and Type VI) are shown in the Standard Drawings in Appendix B.

DATA COLLECTION

Initially, police accident reports of accidents involving crash cushions were collected for the years 1980, 1981, and 1982. The accident reports were made available through the Accident Surveillance Section of the Division of Traffic of the Kentucky Transportation Cabinet. An inventory of all Kentucky routes having crash cushion installations was used, and accident reports

pertaining to these routes were reviewed and appropriately selected. This established a three-year data base for accidents involving all types of crash cushions.

The next step involved obtaining photographs to aid in the documentation process. When the accident report indicated that photographs had been taken at the scene, a request was made by telephone or in writing to the reporting police agency. Some photographs were obtained through communication with maintenance officials from each highway district, either through written correspondence or through notification that would allow the study team members to investigate the scene shortly after the accident occurred. When available, repair forms also were obtained from maintenance officials. Therefore, an individual accident possibly could be documented by a police accident report, photographs, and a repair form. However, most cases could not be documented this thoroughly.

Finally, some accidents occurring either before 1980 or after 1982 were included for the purpose of strengthening the sample size. These cases were either already in possession prior to the beginning of the study or were discovered in the search process. In all, 127 accidents involving crash cushions were obtained.

RESULTS

Data for a total of 127 crash cushion accidents were included in the analysis. A summary of accident locations and information available is given in Table 2. A detailed description of each crash cushion accident is given in Appendix C. This description includes a narrative describing the accident, an accident diagram (when sufficient information was available) and photographs,

when available.

The largest number of accidents (63) involved a Hi-Dro cell cushion or cluster (Type IV). Of these 63, 41 involved Hi-Dro cell cluster installations on the toll road system. This was followed by 33 accidents involving a G.R.E.A.T. crash cushion (Type VI) and 19 with a temporary G.R.E.A.T. (Type VI-T). There were 10 accidents involving sand barrels (Type I or Type II) and 2 involving steel drums (Type V).

The large majority of the accidents occurred from 1980 through 1982 with 42 in 1980, 28 in 1981, and 25 in 1982. There were 16 accidents included prior to 1980 and 16 after 1982.

The largest number of accidents occurred in District 6 (49 accidents) followed by District 5 (31 accidents). This was expected because those two districts had the largest number of crash cushions. Four districts had no crash cushion accidents, and two districts had only one accident each.

Repair costs were available for several of the accidents included in this analysis as well as others. The lowest average repair cost was \$395 for the Hi-Dro cell crash cushion for 45 repairs. One accident required replacement of the Hi-Dro cell crash cushion at a cost of about \$11,000. This compares to an average cost of \$2,839 for 19 repairs of Hi-Dro cell clusters. The average cost of 52 repairs to sand barrel installations was \$887. This includes repairs over the past ten years, and costs for the most recent repairs have averaged about two times that amount. The average cost of 20 repairs to G.R.E.A.T. crash cushion installations was \$1,886. The average cost to repair three steel drum installations was \$1,760.

The possible sources of information concerning the accidents included accident reports, photographs, and repair forms. Accident reports were obtained for 125 of the 127 accidents. Photographs were obtained for 19

accidents, and a repair form was obtained for 28 accidents. All three sources of information were obtained for only nine accidents. Following is a discussion of the results from analyses of crash cushion accidents.

Crash Cushion Performance

A summary of the performance of crash cushions for each accident is given in Table 3. In addition to crash cushion performance, information concerning type of crash cushion, vehicle size, impact severity, type of impact, crash cushion placement, vehicle initial contact area, vehicle action after impact, and crash cushion damage is given. Subjective judgment was used to determine many of these variables. A description of the variable categories is given in Figure 1.

Performance was rated in 116 of the accidents as either proper or improper. Proper performance was defined as the crash cushion performing as designed with the impact energy fully attenuated in head-on, broadside, and angle collisions. For sideswipe impacts, proper performance was defined as the condition when the vehicle was redirected at a shallow angle back into the adjacent traffic lane. In six accidents, sufficient information was not available to rate performance. The other five accidents involved impact with a high speed heavy-truck in which the crash cushion was destroyed. Performance was not rated in those accidents because the crash cushions were not designed for such impacts so a "Does-Not-Apply" category was used. Performance of the crash cushions was judged to be very good with 85 percent of the collisions resulting in proper performance.

A detailed analysis of the data given in Table 3 is summarized in Table 4. Crash cushion performance was determined as a function of type of crash cushion, vehicle size, impact severity, and type of impact.

All types of crash cushions were found to have a high percentage of

proper performance. In 17 accidents, performance was termed improper. The problem was related primarily to the vehicle rebounding into or across the roadway at a sharp angle or the vehicle rolling over. One of these two vehicle actions occurred in 14 of the 17 improper performance accidents. Of the three Hi-Dro cell crash cushion accidents with improper performance, all involved a rollover. Of the seven G.R.E.A.T. crash cushion accidents with improper performance, three were rollover and four involved a rebound. Two of the three temporary G.R.E.A.T. accidents with improper performance involved a rebound and in the other, the temporary G.R.E.A.T. crash cushion was knocked from its base by the impact. Of the two sand barrel accidents with improper performance, one involved a rebound and in the other, the vehicle impacted the bridge abutment. In one of the two Hi-Dro cell cluster accidents with improper performance, a large automobile knocked the cluster from its brace and impacted the abutment in front of the toll booth. The other accident with improper performance involved a rebound into a light pole. Except for five heavy truck accidents in which the crash cushions were destroyed, the crash cushions prevented the vehicles from impacting the shielded object with two exceptions. One exception occurred when a vehicle hit a sand barrel installation next to a back corner which allowed impact with a bridge abutment. The other was the improper performance of the Hi-Dro cell cluster.

When vehicle size was compared to performance, the percentage with proper performance was high for all vehicle types. All but one non-severe impact was rated proper. The one improper, non-severe impact involved a rebound. Performance was also high for all types of impact. Improper performance was higher for angle than head-on impacts because of the higher possibility of rebound and rollover.

In most instances, crash cushion damage was not known. In those

accidents in which damage was documented, damage was judged to be either moderate or heavy. The most common location for crash cushion accidents (55 accidents) was gore areas where various types of crash cushions were used. There were 41 accidents at toll booth locations, all of which involved a Hydro cell cluster. There were 19 accidents in construction zones, all involving a G.R.E.A.T.-Temporary crash cushion. There were seven accidents at the termination of a concrete median barrier and five at a bridge pier, primarily involving G.R.E.A.T. crash cushions. Usually the initial vehicle contact area was the front (62 accidents); this was followed by the right front (25 accidents) and the left front (11 accidents).

The primary vehicle action after impact was for the vehicle to be stopped by the crash cushion (52 accidents). The second most common action was for the vehicle to rebound left or right (23 accidents). In six accidents, the vehicle overturned. In the remaining accidents with a known vehicle action after impact, the vehicle either continued in the same direction (12 accidents), spun clockwise or counter-clockwise (7 accidents), or ramped (1 accident).

Vehicle Size and Impact Severity

Information concerning vehicle size and impact severity is presented in Table 5. Impact severity for crash cushion accidents is high with 68 percent of the impacts termed severe. If the less severe toll booth accidents are excluded, 85 percent of the remaining collisions were rated as severe. This is reflected in the vehicle damage with 66 percent of the impacts resulting in disabling vehicle damage. This percentage is increased to 86 percent if toll booth accidents are excluded.

The percentage of accidents involving an injury was high (38 percent) as would be expected. The percentage involving either a fatality or

incapacitating (severe) injury was 16 percent. When toll booth accidents are excluded, the percentage of injury accidents increases to 46 percent and the percentage of fatal or severe injury accidents increases to 19 percent. While these percentages are high, they are substantially lower than those determined for accidents involving a breakaway-cable-terminal (BCT) guardrail end treatment. In BCT accidents, the percentage of injury-producing accidents was determined to be 71 percent while 29 percent resulted in a fatality or severe injury (7). This comparison illustrates the better performance of a crash cushion versus a BCT end treatment.

There were four fatal accidents involving crash cushions. Three involved a Hi-Dro cell crash cushion and one involved a Hi-Dro cell cluster. One involved a head-on collision of a large car with a Hi-Dro cell crash cushion in a gore. The car rolled over after impact, partially ejecting the driver. The second involved an angle collision of a large truck with a crash cushion in a gore. The crash cushion was destroyed since it was not designed for such a high speed impact with a large truck. The truck continued on with the cab eventually vaulting over a bridge railing. The third fatal accident occurred when a van sideswiped a crash cushion and then overturned. The fatal accident involving the Hi-Dro cell cluster occurred when a large car hit the cluster head-on, knocked the cluster from its brace and hit the abutment in front of the toll booth. The percentage of injury accidents was lower for trucks (26 percent) compared to large cars (41 percent). There were only nine small cars in the sample, but the percentage of injury accidents was substantially higher (67 percent).

Cost-Effectiveness Analysis

In order to determine the cost effectiveness of crash cushion installations in Kentucky, an analysis was made which included installation

costs, maintenance repair costs, and accident savings resulting from these installations. Installation costs were obtained, when available, from average unit bid prices prepared by the Kentucky Department of Highways. Additional installation cost summaries were obtained from other reports for use when data were not available for Kentucky (8,9). Average installation costs used for this analysis are presented in Table 6. Installations costs were tabulated for all crash cushions installed in Kentucky. Maintenance repair costs were available from repair forms used by Department of Highways' employees responsible for repair of damaged crash cushions. As part of the arrangement with maintenance employees in each highway district, repair information was provided along with accident reports for collisions occurring during the study period. Repair costs were also tabulated for all data available since the first crash cushion installations in 1970. Values used for the three-year analysis period were annual averages since installation. A summary of these average costs is included in Table 6.

Accident savings were determined by calculating the reductions in injuries which resulted because collisions were with crash cushions rather than a fixed, non-energy absorbing object such as a bridge abutment. For this analysis, accident data were summarized for collisions with bridge abutments during the period 1980 through 1982. During the period, there were 394 accidents of this type and the average cost per accident was calculated. The costs for each fatality (\$200,000), each non-fatal injury (\$8,000), and each property-damage-only accident (\$1,090) were those reported by the National Safety Council for 1982 (10). The cost per accident for each reported collision involving a bridge abutment was found to be about \$21,000. Similarly, the cost per accident for each collision with a crash cushion in 1980 through 1982 (95 accidents) was found to be about \$11,000. Therefore,

the savings per accident was determined to be \$10,000. The total savings would be \$950,000 over a three-year period or an annual savings of about \$317,000.

Installation costs were amortized over a 10-year period at a 10 percent interest rate and the annual costs were determined for each type of crash cushion. Average annual installation costs for the analysis period were determined to be \$274,707. Total repair costs for the three-year period were \$178,506, or \$59,502 per year. The result was an average cost of approximately \$334,000 per year. Comparing the average annual accident savings of \$317,000 with the average annual cost of \$334,000 yields a benefit-cost ratio of approximately 1.0. It should be noted that additional savings likely resulted in the form of reduced accident costs because of non-reported accidents involving crash cushions. In many cases, crash cushions are capable of absorbing an impact or redirecting a vehicle without disabling the vehicle. The result is reduced accident severity when comparing the consequences of impacting a rigid object such as a bridge abutment. However, these successful impacts were not included in the cost-effectiveness analysis because no accident report was filed.

Another approach to evaluate the cost effectiveness of crash cushion installations is application of accident reduction factors obtained from a national survey conducted by the Transportation Research Program as part of another study (11). Several states reported reduction factors for crash cushions and those reductions averaged approximately 75 percent for fatal accidents and 50 percent for injury accidents. When these factors are applied to the numbers of various types of crash cushion accidents for the time period 1980 through 1982, the expected reduction in fatal and injury accidents may be estimated. If no crash cushions had been installed, there would have been 9

more fatal accidents and 36 more injury accidents expected as well as 45 fewer property-damage-only accidents. This would have resulted in an annual accident cost savings of approximately \$680,000. With an average annual cost of about \$334,000 for crash cushion installation and repair cost, the benefit-cost ratio would be about 2.0.

Therefore, the range of benefit-cost ratios for crash cushions would be from 1.0 to 2.0 depending upon what approach is used to estimate the reduction in accidents. The conservative estimate of 1.0 was obtained when the severity of crash cushion accidents was compared with the severity of bridge abutment accidents in Kentucky. The higher benefit-cost ratio of 2.0 resulted when the severity of crash cushion accidents was compared with the reductions expected because crash cushions were installed.

CONCLUSIONS

An analysis of accidents involving crash cushions, which include Hi-Dro Cell, G.R.E.A.T., G.R.E.A.T.-T, sand barrel, and steel drum types, indicates that the crash cushions have been performing their function properly (85 percent proper performance). Vehicles have generally been stopped by the crash cushions. The instances of improper performance have generally involved either a vehicle rebounding into or across the adjacent roadway or a vehicle overturning. All of the various types have performed well.

Accident severity was high but less than that for similar impacts into BCT guardrail end treatments (7). This illustrates the increase in impact attenuation of a crash cushion over a guardrail end treatment.

Results from the cost-effectiveness analysis show that crash cushion installations produce a benefit-cost ratio in the range of 1.0 to 2.0.

RECOMMENDATIONS

The use of crash cushions should be continued at locations where they are cost-effective. Primary examples of these locations include: 1) gore areas on elevated structures; 2) other gore areas where guardrail end treatments must be joined together; 3) bridge piers in narrow medians at high speed, high volume locations; and 4) at the end of concrete barrier walls. Any of the types studied could be used, depending on site geometrics.

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FIGURE 1. DESCRIPTION OF VARIABLE CATEGORIES

VARIABLE	CATEGORY	DESCRIPTION
Vehicle Size	Auto-L	Full or mid-size passenger car; full-sized pickup truck; van
	Auto-S	Compact or sub-compact cars; small pickup trucks
	Auto-U	Automobile, unknown size
	SUT	Single-unit trucks (2 axle, 6 tires or larger)
	Comb	Combination tractor and semi-trailer or full trailer
Impact Severity	Severe	Impact sufficient to cause heavy or extensive damage to crash cushion; disabling damage to vehicle; and/or fatal or incapacitating injury (injury severity 1 or 2)
	Non-Severe	Functional or non-functional to vehicle; slight or moderate damage to crash cushion; and/or non-incapacitating, possible or no injury (injury severity 3,4 or 5)
Type of Impact	Head-On	At a shallow angle (15 degrees or less) with front end of vehicle
	Angle	At a moderate or sharp angle (16 degrees or greater) with front, right front, or left front of vehicle
	BSD	Broadside; impact at a shallow angle (15 degrees or less) with left or right side of vehicle
	SS	Sideswipe; impact to side of crash cushion with side of vehicle
	Unknown	Cannot be determined from available data
Injury Severity	1	Fatal
	2	Incapacitating injury
	3	Non-incapacitating injury
	4	Possible injury
	5	No injury

FIGURE 1. DESCRIPTION OF VARIABLE CATEGORIES
(continued)

VARIABLE	CATEGORY	DESCRIPTION
Crash Cushion Placement	Toll	Protecting toll booth at toll plaza
	Gore	Area between roadway split
	BP	Protecting median bridge pier
	CMB	Terminating concrete median barrier
	TCB	Terminating temporary concrete barrier in construction zone
Vehicle Contact Area	1	Front
	2	Right front
	3	Right side
	4	Left front
	5	Left side
	6	Right side of trailer
	7	Left side of trailer
	8	Bottom of trailer
Vehicle Make	AMC	American Motors
	Buick	Buick
	Chev	Chevrolet
	Dodge	Dodge
	Ford	Ford
	Frtln	Freightliner
	GMC	General Motors
	Intl	International
	Kenw	Kenworth
	Linc	Lincoln
	Mack	Mack
	Merc	Mercury
	Olds	Oldsmobile
	Pblt	Peterbilt
	Plym	Plymouth
	Pont	Pontiac
Toyo	Toyota	
Volks	Volkswagen	
White	White	
Dia	Diamond	
Vehicle Style	2-Dr-Sd	2-Door sedan
	4-Dr-Sd	4-Door sedan
	SW	Station wagon
	PU	Pickup
	SD	Sedan
	Semi	Combination tractor and semi-trailer
	Truck	Truck (single unit)
	Van	Van

FIGURE 1. DESCRIPTION OF VARIABLE CATEGORIES
(continued)

VARIABLE	CATEGORY	DESCRIPTION
Vehicle Action After Impact	Stop	Stopped by crash cushion
	SP-CW-D	Spun clockwise D degrees
	SP-CCW-D	Spun counterclockwise D degrees
	Over	Overturned
	Ramp	Ramped
	RB-L	Rebounded left
	RB-R	Rebounded right
	Cont	Continue in same direction
Crash Cushion Performance	Proper	Crash cushion performed as designed; impact energy fully attenuated in head-on, broadside and angle collisions; for sideswipe impacts, vehicle redirected at a shallow angle back into adjacent traffic lane
	Improper	Performance other than as designed
	DNA	Does not apply
Crash Cushion Damage	Slight	Damage insufficient to affect performance should crash cushion be struck again before repairs are made
	Moderate	Up to 50% damage
	Heavy	Between 50% and 100% damage; rendered useless
	Extensive	Total destruction of crash cushion in addition to damage to protected structure behind crash cushion
Vehicle Damage	1	No damage
	2	Non-functional damage
	3	Functional damage
	4	Disabling damage
Crash Cushion Contact Area	End	End of crash cushion
	Side	Side of crash cushion

TABLE 1. SUMMARY OF CRASH CUSHION INSTALLATIONS .BY YEAR

YEAR	TYPE OF CRASH CUSHION*							
	TYPE I	TYPE II	TYPE III	TYPE IV CLUSTERS	TYPE IV CUSHIONS	TYPE V	TYPE VI	TYPE VI-T
1970		3			3			
1971								
1972				12				
1973				12		1		
1974				6				
1975				6	4		6	
1976				16			15	
1977				10	2		14	8
1978		1		10			20	6
1979				7			20	20
1980				2	7		2	10
1981				20			5	10
1982				2			17	26
1983							22	59
TOTAL		4		103	16	1	121	159

- * Type I - Energite Module Inertial Barrier
- Type II - Fitch - Type Energy Absorbing Barrier System
- Type III - Hi-Dri Cell Type Energy Absorbing Barrier System
- Type IV - Hi-Dro Cushion Type Energy Absorbing Barrier System
- Type V - Steel Crash Cushion Type Energy Absorbing Barrier System
- Type VI - Guardrail Energy Absorbing Terminal (G.R.E.A.T.)
- Type VI-T - Guardrail Energy Absorbing Terminal (G.R.E.A.T.) - Temporary

TABLE 2. SUMMARY OF ACCIDENT LOCATIONS AND INFORMATION AVAILABLE

ACCIDENT NUMBER	DISTRICT	COUNTY	ROUTE	MILEPOINT	TYPE OF CRASH CUSHION	DATE	INFORMATION AVAILABLE		
							ACCIDENT REPORT	PHOTOGRAPHS	REPAIR FORMS
001	2	Christian	Pennyrile	11.8	IV	11/21/82	X		
002	2	Christian	Pennyrile	11.7	IV	2/05/80	X		
003	2	Henderson	Audubon	10.2	IV	12/12/82	X		
004	2	Hopkins	Western Ky	24.4	IV	6/01/81	X		
005	2	Hopkins	Western Ky	24.4	IV	12/17/82	X		
006	2	Hopkins	Western Ky	24.4	IV	12/31/82	X		
007	2	Hopkins	Western Ky	24.4	IV	7/07/83	X		
008	2	Hopkins	Western Ky	24.4	IV	7/26/83	X		
009	2	Muhlenberg	Western Ky	58.0	IV	10/26/83	X	X	X
010	2	Muhlenberg	Western Ky	58.0	IV	1/14/82	X		
011	2	Muhlenberg	Western Ky	58.0	IV	6/21/80	X		
012	2	Muhlenberg	Western Ky	58.0	IV	5/07/80	X		
013	2	Ohio	Green River	47.9	IV	11/26/81	X		
014	2	Ohio	Western Ky	47.8	IV	7/01/83	X		
015	2	Webster	Western Ky	62.6	IV	7/21/83	X	X	X
016	2	Webster	Pennyrile	62.6	IV	12/18/82	X	X	X
017	2	Webster	Pennyrile	62.6	IV	6/16/82	X	X	X
018	2	Webster	Pennyrile	62.6	IV	1/06/81	X		
019	2	Webster	Pennyrile	62.6	IV	7/22/80	X		X
020	3	Barren	Cumberland	3.1	IV	5/22/81	X		X
021	3	Butler	Green River	13.8	IV	11/14/80	X		X
022	4	Grayson	Western Ky	107.0	IV	8/04/82	X		
023	4	Grayson	Western Ky	107.0	IV	11/23/80	X		
024	4	Grayson	Western Ky	107.0	IV	3/17/80	X		X
025	4	Grayson	Western Ky	107.0	IV	3/01/80	X		X
026	4	Grayson	Western Ky	107.0	IV	4/18/77	X	X	X
027	4	Grayson	Western Ky	107.0	IV	10/11/79	X		
028	4	Grayson	Western Ky	107.0	IV	5/29/80	X		X
029	4	Grayson	Western Ky	107.0	IV	7/17/81	X		X
030	4	Grayson	Western Ky	107.0	IV	10/30/81	X		
031	4	Grayson	Western Ky	107.0	IV	1/04/83	X	X	X
032	4	Grayson	Western Ky	107.0	IV	10/14/83	X		X
033	4	Grayson	Western Ky	107.0	IV	3/20/84	X		
034	4	Nelson	Bluegrass	33.3	IV	12/23/79	X		
035	4	Nelson	Bluegrass	33.3	IV	11/17/84	X	X	X
036	4	Nelson	Bluegrass	9.7	IV	2/04/82	X		X
037	4	Nelson	Bluegrass	33.3	IV	4/15/81	X		
038	4	Nelson	Bluegrass	33.7	IV	11/18/80	X		
039	5	Franklin	US 421	3.0	VI	3/04/82	X		
040	5	Franklin	KY 676	Unk.	VI	3/17/80	X	X	
041	5	Henry	I71	37.1	VI-T	10/15/81	X		
042	5	Jefferson	I64	2.7	V	8/29/82	X	X	X
043	5	Jefferson	I64	2.7	V	4/11/80	X		

TABLE 2. SUMMARY OF ACCIDENT LOCATIONS AND INFORMATION AVAILABLE
(continued)

ACCIDENT NUMBER	DISTRICT	COUNTY	ROUTE	MILEPOINT	TYPE OF CRASH CUSHION	DATE	INFORMATION AVAILABLE		
							ACCIDENT REPORT	PHOTOGRAPHS	REPAIR FORMS
044	5	Jefferson	I64	4.5	IV	3/17/80	X		
045	5	Jefferson	I65	123.5	VI	1/30/84	X		
046	5	Jefferson	I65	133.0	IV	3/09/83	X		
047	5	Jefferson	I65	136.3	IV	10/09/82	X		
048	5	Jefferson	I65	136.4	IV	10/02/82	X		
049	5	Jefferson	I65	133.0	IV	7/29/82	X	X	
050	5	Jefferson	I65	133.0	IV	6/24/82	X		
051	5	Jefferson	I65	136.5	IV	6/10/82	X	X	X
052	5	Jefferson	I65	133.0	IV	4/27/82	X		
053	5	Jefferson	I65	136.5	IV	4/26/82	X		
054	5	Jefferson	I65	136.4	IV	2/09/82	X		
055	5	Jefferson	I65	136.3	IV	11/05/81	X		
056	5	Jefferson	I65	136.7	IV	2/07/81	X		
057	5	Jefferson	I65	125.0	VI-T	12/09/80	X		
058	5	Jefferson	I65	126.0	VI	12/05/80	X		
059	5	Jefferson	I65	125.0	VI-T	12/04/80	X		
060	5	Jefferson	I65	136.7	IV	4/01/80	X		
061	5	Jefferson	I65	123.5	VI	1/31/78	X	X	X
062	5	Jefferson	I264	7.5	II	11/12/82	X		X
063	5	Jefferson	I264	19.9	VI	9/26/82	X		X
064	5	Jefferson	I264	19.1	II	9/26/82	X		X
065	5	Jefferson	I264	7.5	II	8/27/82	X		X
066	5	Jefferson	I264	19.9	VI	5/22/82	X		
067	5	Jefferson	I264	7.5	II	2/09/82	X		
068	5	Jefferson	I264	11.0	VI	7/27/80	X		
069	5	Jefferson	I264	9.1	VI	3/06/80	X		
070	6	Campbell	I275	77.0	VI	10/16/81	X		
071	6	Campbell	KY 9	13.7	VI	3/14/81	X		
072	6	Campbell	KY 9	13.7	VI	3/02/81	X		
073	6	Campbell	KY 9	13.7	VI	2/15/81	X		
074	6	Campbell	KY 9	13.7	VI	1/25/81	X		
075	6	Campbell	KY 9	13.7	VI	1/19/81	X		
076	6	Campbell	KY 9	13.7	VI	1/14/81	X		
077	6	Campbell	KY 9	13.7	VI	1/11/81	X		
078	6	Campbell	KY 9	13.7	VI	10/30/80	X		
079	6	Campbell	KY 9	13.7	VI	9/04/80	X		
080	6	Campbell	KY 9	13.7	VI	7/23/80	X		
081	6	Campbell	KY 9	13.7	VI	4/30/80	X		
082	6	Campbell	KY 9	13.7	VI	3/23/80	X		
083	6	Campbell	KY 9	13.7	VI	2/05/80	X		
084	6	Campbell	KY 9	13.7	VI	12/17/77	X	XX	
085	6	Campbell	KY 9	13.7	VI	11/06/76	X		X

TABLE 2. SUMMARY OF ACCIDENT LOCATIONS AND INFORMATION AVAILABLE
(continued)

ACCIDENT NUMBER	DISTRICT	COUNTY	ROUTE	MILEPOINT	TYPE OF CRASH CUSHION	DATE	INFORMATION AVAILABLE		
							ACCIDENT REPORT	PHOTOGRAPHS	REPAIR FORMS
086	6	Campbell	KY 9	13.7	VI	3/07/77	X		X
087	6	Campbell	KY 9	13.7	VI	5/14/77		X	X
088	6	Campbell	KY 9	13.7	VI	5/26/77		X	X
089	6	Kenton	I75	191.3	II	12/22/72	X		X
090	6	Kenton	I75	191.3	II	10/26/72	X		X
091	6	Kenton	I75	191.3	II	4/29/72	X		X
092	6	Kenton	I75	191.3	II	5/17/72	X		X
093	6	Kenton	I75	191.3	II	6/05/72	X		X
094	6	Kenton	I75	191.3	II	8/04/72	X		X
095	6	Kenton	I75	191.3	IV	1/18/84	X		
096	6	Kenton	I75	191.3	IV	12/23/83	X		
097	6	Kenton	I75	191.3	IV	10/23/83	X	X	
098	6	Kenton	I75	184.7	VI	12/27/81	X		
099	6	Kenton	I75	191.3	IV	11/08/81	X		
100	6	Kenton	I75	191.3	IV	8/15/81	X		
101	6	Kenton	I75	184.0	VI	6/18/81	X		
102	6	Kenton	I75	191.3	IV	4/11/81	X		
103	6	Kenton	I75	191.4	IV	3/13/81	X		
104	6	Kenton	I75	186.7	VI-T	11/18/80	X		
105	6	Kenton	I75	186.5	VI-T	11/11/80	X		
106	6	Kenton	I75	186.6	VI-T	11/11/80	X		
107	6	Kenton	I75	186.7	VI-T	11/09/80	X		
108	6	Kenton	I75	186.9	VI-T	11/08/80	X		
109	6	Kenton	I75	186.7	VI-T	10/05/80	X		
110	6	Kenton	I75	186.8	VI-T	9/30/80	X		
111	6	Kenton	I75	186.5	VI-T	9/26/80	X		
112	6	Kenton	I75	187.0	VI-T	9/21/80	X		
113	6	Kenton	I75	191.3	IV	9/06/80	X		
114	6	Kenton	I75	191.3	IV	8/30/80	X		
115	6	Kenton	I75	190.6	VI-T	6/10/80	X		
116	6	Kenton	I75	190.6	VI-T	6/07/80	X		
117	6	Kenton	I75	184.1	VI	5/15/80	X		
118	6	Kenton	I75	188.0	VI-T	5/04/80	X		
119	7	Anderson	Bluegrass	58.8	IV	9/19/81	X		
120	7	Anderson	Bluegrass	58.8	IV	4/17/81	X		
121	7	Anderson	Bluegrass	58.8	IV	4/13/80	X	X	
122	7	Fayette	I75	116.9	VI-T	10/04/81	X		
123	7	Fayette	I75	112.0	VI-T	7/02/80	X		
124	7	Fayette	I75	113.5	VI-T	9/23/79	X	X	
125	7	Scott	I75	128.3	VI-T	8/13/83	X	X	
126	11	Harlan	US 119	14.0	VI	12/17/81	X		
127	12	Pike	US 23	Unk	VI	2/13/83	X	X	

TABLE 3. CRASH CUSHION PERFORMANCE *

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE SIZE CATEGORY	IMPACT SEVERITY	TYPE OF IMPACT	CRASH CUSHION PLACEMENT	INITIAL CONTACT AREA	VEHICLE ACTION AFTER IMPACT	CRASH CUSHION PERFORMANCE	CRASH CUSHION DAMAGE
TYPE IV HI-DRO CELL									
IV	001	Auto-L	Severe	Head-On	Toll	1	Rb-R	Proper	Unknown
IV	002	Auto-U	Non-Severe	Head-On	Toll	1	Stop	Proper	Slight
IV	003	Auto-L	Non-Severe	Angle	Toll	4	Rb-R	Proper	Unknown
IV	004	Auto-L	Severe	Angle	Toll	2	Rb-L	Proper	Unknown
IV	005	Sut	Non-Severe	SS	Toll	6	Stop	Proper	Slight
IV	006	Auto-L	Non-Severe	Angle	Toll	2	Cont	Proper	Unknown
IV	007	Comb	Non-Severe	SS	Toll	6	Cont	Proper	Slight
IV	008	Auto-L	Non-Severe	Angle	Toll	1	Stop	Proper	Slight
IV	009	Comb	Severe	Angle	Toll	2	Stop	Proper	Moderate
IV	010	Auto-L	Non-Severe	SS	Toll	2	Stop	Proper	Slight
IV	011	Auto-U	Non-Severe	Head-On	Toll	1	Stop	Proper	Unknown
IV	012	Auto-U	Non-Severe	Angle	Toll	2	Rb-L	Proper	Unknown
IV	013	Auto-S	Non-Severe	Angle	Toll	2	Stop	Proper	Slight
IV	014	Comb	Severe	BSD	Toll	7	Unknown	Unknown	Slight
IV	015	Auto-L	Severe	Head-On	Toll	1	Bb-L	Improper	Extensive
IV	016	Auto-S	Non-Severe	Angle	Toll	4	Rb-R	Improper	Slight
IV	017	Comb	Non-Severe	SS	Toll	6	Rb-L	Proper	Slight
IV	018	Auto-L	Non-Severe	SS	Toll	4	Stop	Proper	Unknown
IV	019	Auto-U	Non-Severe	SS	Toll	2	Rb-L	Proper	Slight
IV	020	Auto-L	Non-Severe	Angle	Toll	4	Rb-R	Proper	Slight
IV	021	Auto-L	Non-Severe	Head-On	Toll	1	Stop	Proper	Slight
IV	022	Comb	Non-Severe	SS	Toll	2	Cont	Proper	Unknown
IV	023	Auto-L	Non-Severe	Unk	Toll	Unk	Unk	Proper	Slight
IV	024	Comb	Non-Severe	SS	Toll	2	Cont	Proper	Slight
IV	025	Auto-L	Non-Severe	SS	Toll	2	Stop	Proper	Slight
IV	026	Auto-L	Severe	Head-On	Toll	1	SP-CCW-90	Proper	Moderate
IV	027	Auto-L	Non-Severe	Angle	Toll	1	Stop	Proper	Slight
IV	028	Comb	Non-Severe	SS	Toll	6	Stop	Proper	Slight
IV	029	Auto-U	Severe	BSD	Toll	3	SP-CCW-180	Proper	Moderate
IV	030	Comb	Non-Severe	SS	Toll	6	Stop	Proper	Slight
IV	031	Auto-L	Severe	Head-On	Toll	1	Rb-R	Proper	Heavy
IV	032	Comb	Non-Severe	SS	Toll	6	Cont	Proper	Slight

* Refer to Figure 1 for explanation of codes.

TABLE 3. CRASH CUSHION PERFORMANCE *
(continued)

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE SIZE CATEGORY	IMPACT SEVERITY	TYPE OF IMPACT	CRASH CUSHION PLACEMENT	INITIAL CONTACT AREA	VEHICLE ACTION AFTER IMPACT	CRASH CUSHION PERFORMANCE	CRASH CUSHION DAMAGE
IV	033	Comb	Non-Severe	SS	Toll	6	Stop	Proper	Unknown
IV	034	Auto-U	Non-Severe	Angle	Toll	1	Cont	Proper	Slight
IV	035	Comb	Non-Severe	SS	Toll	6,7	Cont	Proper	Slight
IV	036	Auto-L	Severe	Angle	Toll	Unk	Rb-R	Proper	Moderate
IV	037	Comb	Non-Severe	SS	Toll	2	Cont	Proper	Unknown
IV	038	Comb	Non-Severe	SS	Toll	6,7	Cont	Proper	Slight
IV	044	Comb	Severe	BSD	Gore	5	Stop	Proper	Unknown
IV	046	Auto-L	Unknown	Head-On	Gore	1	Stop	Proper	Unknown
IV	047	Auto-U	Non-Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	048	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	049	Auto-L	Severe	Head-On	Gore	2	Over	Improper	Heavy
IV	050	Auto-U	Non-Severe	BSD	Gore	5	Unk	Proper	Unknown
IV	051	Comb	Severe	Angle	Gore	4	Cont	DNA **	Heavy
IV	052	Auto-U	Severe	Head-On	Gore	1	Stop	Unknown	Unknown
IV	053	Comb	Severe	Head-On	Gore	1	Stop	Unknown	Unknown
IV	054	Auto-L	Severe	Head-On	Gore	2	Unk	Proper	Unknown
IV	055	Comb	Severe	Angle	Gore	2	Unknown	Proper	Unknown
IV	056	Auto-L	Severe	Head-On	Gore	1	Over	Improper	Unknown
IV	060	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	095	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Heavy
IV	096	Auto-U	Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	097	Comb	Severe	Angle	Gore	1	Unk	Proper	Heavy
IV	099	Auto-U	Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	100	Auto-L	Severe	Head-On	Gore	Unk	Unk	Proper	Unknown
IV	102	Auto-L	Severe	Head-On	Gore	1	Unk	Proper	Moderate
IV	103	Auto-L	Severe	Head-On	Gore	4	Stop	Proper	Unknown
IV	113	Auto-L	Severe	SS	Gore	2	Over	Improper	Unknown
IV	114	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Unknown
IV	119	Auto-U	Severe	Head-On	Toll	2	SP-CW-90	Proper	Unknown
IV	120	Auto-U	Severe	Angle	Toll	1	Rb-L	Proper	Unknown
IV	121	Comb	Severe	Angle	Toll	2,3	Cont	Proper	Heavy

* Refer to Figure 1 for explanation of codes.

**Crash cushions are not designed to attenuate impacts of large/heavy trucks.

TABLE 3. CRASH CUSHION PERFORMANCE *
(continued)

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE SIZE CATEGORY	IMPACT SEVERITY	TYPE OF IMPACT	CRASH CUSHION PLACEMENT	INITIAL CONTACT AREA	VEHICLE ACTION AFTER IMPACT	CRASH CUSHION PERFORMANCE	CRASH CUSHION DAMAGE
TYPE VI	G.R.E.A.T.								
VI	039	Auto-L	Severe	Head-On	CMB	1	Stop	Proper	Unknown
VI	040	Auto-L	Severe	Unknown	CMB	4	Unknown	Proper	Heavy
VI	045	Comb	Severe	Head-On	BP	1	Stop	DNA **	Extensive
VI	058	Auto-U	Severe	Unknown	BP	Unk	Over	Improper	Unknown
VI	061	Comb	Severe	BSD	BP	8	Stop	DNA **	Extensive
VI	063	Auto-U	Severe	Head-On	Gore	1	Unknown	Proper	Unknown
VI	066	Auto-U	Severe	SS	Gore	5	Unknown	Proper	Unknown
VI	068	Auto-L	Non-Severe	BSD	CMB	3	Stop	Proper	Slight
VI	069	Auto-S	Severe	BSD	CMB	3	Over	Improper	Unknown
VI	070	Auto-L	Severe	Head-On	Gore	1	Unknown	Proper	Moderate
VI	071	Auto-U	Severe	SS	Gore	2	Rb-L	Improper	Moderate
VI	072	Auto-U	Severe	Head-On	Gore	1	Stop	Proper	Moderate
VI	073	Auto-U	Severe	Angle	Gore	2	Unknown	Proper	Moderate
VI	074	Auto-U	Severe	Angle	Gore	2	Rb-L	Improper	Moderate
VI	075	Auto-U	Non-Severe	SS	Gore	3	Unknown	Proper	Moderate
VI	076	Auto-U	Non-Severe	SS	Gore	2	Cont	Proper	Unknown
VI	077	Auto-S	Non-Severe	Head-On	Gore	1	Stop	Proper	Moderate
VI	078	Auto-S	Severe	Head-On	Gore	1	Stop	Proper	Moderate
VI	079	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Moderate
VI	080	Auto-U	Severe	Head-On	Gore	2	Rb-R	Improper	Unknown
VI	081	Auto-L	Severe	Angle	Gore	2	Rb-L	Improper	Moderate
VI	082	Auto-U	Non-Severe	Unknown	Gore	2	Unknown	Proper	Unknown
VI	083	Auto-U	Severe	Unknown	Gore	1	Over	Improper	Unknown
VI	084	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Moderate
VI	085	Sut	Non-Severe	Angle	Gore	3	Rb-L	Proper	Moderate
VI	086	Auto-S	Severe	Angle	Gore	2,3	Rb-L	Proper	Moderate
VI	087	Unk	Unknown	Unknown	Gore	Unk	Unknown	Unknown	Moderate
VI	088	Unk	Unknown	Unknown	Gore	Unk	Unknown	Unknown	Moderate
VI	098	Auto-L	Severe	Unknown	CMB	2	Unknown	Unknown	Unknown
VI	101	Auto-L	Severe	Head-On	Gore	1	Unknown	Proper	Unknown
VI	117	Auto-L	Severe	Head-On	CMB	1	Stop	Proper	Unknown
VI	126	Auto-L	Severe	Angle	BP	4	Unknown	Proper	Unknown
VI	127	Auto-L	Severe	Head-On	CMB	1	Stop	Proper	Heavy

* Refer to Figure 1 for explanation of codes.

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TABLE 3. CRASH CUSHION PERFORMANCE *
(continued)

TYPE OF CUSHION	ACCIDENT NUMBER	VEHICLE SIZE CATEGORY	IMPACT SEVERITY	TYPE OF IMPACT	CRASH CUSHION PLACEMENT	INITIAL CONTACT AREA	VEHICLE ACTION AFTER IMPACT	CRASH CUSHION PERFORMANCE	CRASH CUSHION DAMAGE
TYPE VI-T TEMPORARY G.R.E.A.T.									
VI-T	041	Comb	Severe	Angle	TCB	1	Rb-R	Proper	Unknown
VI-T	057	Auto-U	Severe	Head-On	TCB	1	Stop	Proper	Unknown
VI-T	059	Auto-L	Severe	Head-On	TCB	1	SP-CCW-180	Proper	Unknown
VI-T	104	Auto-S	Severe	Angle	TCB	4	SP-CCW-90	Proper	Unknown
VI-T	105	Auto-L	Severe	Head-On	TCB	1	Stop	Proper	Unknown
VI-T	106	Auto-U	Severe	Head-On	TCB	1	Unknown	Proper	Unknown
VI-T	107	Auto-L	Severe	SS	TCB	5	Unknown	Proper	Unknown
VI-T	108	Auto-S	Severe	Head-On	TCB	1	Rb-L	Improper	Unknown
VI-T	109	Auto-L	Severe	Head-On	TCB	1	Stop	Proper	Unknown
VI-T	110	Auto-L	Non-Severe	SS	TCB	5	Unknown	Proper	Slight
VI-T	111	Auto-L	Severe	Angle	TCB	4	Unknown	Proper	Unknown
VI-T	112	Auto-U	Severe	Angle	TCB	4	Rb-R	Improper	Unknown
VI-T	115	Auto-U	Severe	Head-On	TCB	1	Stop	Proper	Heavy
VI-T	116	Auto-L	Severe	Head-On	TCB	1	Unknown	Proper	Unknown
VI-T	118	Auto-L	Severe	Head-On	TCB	1	Stop	Proper	Unknown
VI-T	122	Auto-L	Severe	Head-On	TCB	1	SP-CW-90	Proper	Unknown
VI-T	123	Comb	Severe	Head-On	TCB	1	Stop	Proper	Unknown
VI-T	124	Auto-L	Severe	SS	TCB	5	Rb-R	Improper	Heavy
VI-T	125	Comb	Severe	Head-On	TCB	1	Ramp	DNA **	Heavy
TYPE I OR TYPE II FITCH SAND BARRELS									
II	062	Auto-S	Severe	Head-On	Gore	1	Stop	Proper	Heavy
II	064	Comb	Severe	Head-On	BP	1	Stop	DNA **	Extensive
II	065	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Heavy
II	067	Auto-L	Severe	Angle	Gore	1	Stop	Improper	Unknown
II	089	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Moderate
II	090	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Heavy
II	091	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Heavy
II	092	Auto-L	Severe	Head-On	Gore	1	SP-CW-90	Proper	Heavy
II	093	Auto-L	Severe	Head-On	Gore	1	Stop	Proper	Heavy
II	094	Auto-L	Severe	Head-On	Gore	1	Rb-L	Improper	Heavy
TYPE V STEEL DRUMS									
V	042	Auto-L	Severe	Head-On	Gore	1	Head-On	Proper	Heavy
V	043	Auto-L	Severe	Head-On	Gore	1	Head-On	Proper	Unknown

* Refer to Figure 1 for explanation of codes.

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TABLE 4. DETAILED ANALYSIS OF CRASH CUSHION PERFORMANCE

VARIABLE	CATEGORY	PROPER		IMPROPER	
		NUMBER	PERCENT	NUMBER	PERCENT
TYPE OF CRASH CUSHION	Hi-Dro Cell				
	Cushion	18	86	3	14
	Cluster	38	95	2	5
	G.R.E.A.T.	21	75	7	25
	G.R.E.A.T.-Temp	15	83	3	17
	Sand Barrels	5	71	2	29
	Steel Drums	2	100	0	0
VEHICLE SIZE	Auto-S	6	67	3	33
	Auto-L	51	88	7	12
	Auto-U	22	73	7	27
	Truck	20	100	0	0
IMPACT SEVERITY	Severe	61	79	16	21
	Non-Severe	37	97	1	3
TYPE OF IMPACT	Head-On	49	88	7	12
	Angle	22	81	5	19
	Broadside	4	80	1	20
	Sideswipe	21	88	3	12

TABLE 5. VEHICLE SIZE AND IMPACT SEVERITY *

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE YEAR	VEHICLE MAKE	VEHICLE STYLE OR MODEL	VEHICLE SIZE CATEGORY	OCCUPANT IMPACT SEVERITY	CRASH INJURY SEVERITY	VEHICLE DAMAGE	CUSHION DAMAGE
TYPE IV HI-DRO CELL									
IV	001	76	Olds	Cutlass	Auto-L	Severe	5	4	Unknown
IV	002	76	Chev	2-Dr-Sd	Auto-U	Non-Severe	5,5,5	2	Slight
IV	003	77	Olds	Cutlass	Auto-L	Severe	4,5	4	Unknown
IV	004	81	Ford	Pu	Auto-L	Severe	5	4	Unknown
IV	005	72	Chev	Truck	Sut	Non-Severe	5	1	Slight
IV	006	78	Ford	Pu	Auto-L	Non-Severe	5	4	Unknown
IV	007	78	Intl	Semi	Comb	Non-Severe	5	1	Slight
IV	008	73	Olds	2-Dr-Sd	Auto-L	Non-Severe	5	2	Slight
IV	009	83	Pblt	Semi	Comb	Severe	5	2	Moderate
IV	010	67	Plym	4-Dr-Sd	Auto-L	Non-Severe	5	3	Slight
IV	011	77	Buick	2-Dr-Sd	Auto-U	Non-Severe	5	1	Unknown
IV	012	79	Pont	2-Dr-Sd	Auto-U	Non-Severe	4	3	Unknown
IV	013	72	Chev	Vega	Auto-S	Non-Severe	5	2	Slight
IV	014	79	Kenw	Semi	Comb	Severe	5	4	Slight
IV	015	79	Ford	Pu	Auto-L	Severe	1	4	Extensive
IV	016	81	Chev	Chevette	Auto-S	Severe	3,3	4	Slight
IV	017	78	Intl	Semi	Comb.	Non-Severe	5	2	Slight
IV	018	77	Linc	2-Dr-Sd	Auto-L	Non-Severe	5,5,5,5,5	2	Unknown
IV	019	79	Pont	2-Dr-Sd	Auto-U	Non-Severe	5	2	Slight
IV	020	71	Chev	El Camino	Auto-L	Non-Severe	5	4	Slight
IV	021	68	Dodge	2-Dr-Sd	Auto-L	Non-Severe	5	2	Slight
IV	022	75	Frtn	Semi	Comb	Non-Severe	5	2	Unknown
IV	023	73	Ford	Sd	Auto-L	Non-Severe	5	1	Unknown
IV	024	69	Frtn	Semi	Comb	Non-Severe	5,5	1	Slight
IV	025	77	Ford	Sw	Auto-L	Non-Severe	5	1	Slight
IV	026	69	Dodge	Van	Auto-L	Sevee	4	4	Moderate
IV	027	70	Pont	4-Dr-Sd	Auto-L	Non-Severe	5	3	Slight
IV	028	71	GMC	Semi	Comb	Non-Severe	5	2	Slight
IV	029	78	Chev	Sd	Auto-U	Severe	4	4	Moderate
IV	030	73	GMC	Semi	Comb	Non-Severe	5	1	Slight
IV	031	78	Merc	2-Dr-Sd	Auto-L	Severe	2,2	4	Heavy
IV	032	74	Dia	Semi	Comb	Non-Severe	5	2	Slight

* Refer to Figure 1 for explanation of codes.

TABLE 5. VEHICLE SIZE AND IMPACT SEVERITY *
(continued)

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE YEAR	VEHICLE MAKE	VEHICLE STYLE OR	VEHICLE SIZE	OCCUPANT IMPACT	CRASH INJURY	VEHICLE DAMAGE	CUSHION DAMAGE
IV	033	78	Pblt	Semi	Comb	Non-Severe	5,5	2	Unknown
IV	034	73	Buick	Sd	Auto-U	Non-Severe	5	2	Slight
IV	035	75	White	Semi	Comb	Non-Severe	5	2	Slight
IV	036	69	Olds	4-Dr-Sd	Auto-L	Severe	5	3	Moderate
IV	037	78	Ford	Semi	Comb	Non-Severe	5	2	Unknown
IV	038	78	Pblt	Semi	Comb	Non-Severe	5	1	Slight
IV	044	77	Intl	Semi	Comb	Severe	5	4	Unknown
IV	046	74	Linc	Sd	Auto-L	Unknown	5	3	Unknown
IV	047	79	Dodge	Sd	Auto-U	Non-Severe	4	2	Unknown
IV	048	74	Chev	2-Dr-Sd	Auto-L	Severe	5	4	Unknown
IV	049	73	Pont	Catalina	Auto-L	Severe	1	4	Extensive
IV	050	79	Ford	Sd	Auto-U	Non-Severe	5	2	Unknown
IV	051	79	Mack	Semi	Comb	Severe	1	4	Heavy
IV	052	81	Chev	Sd	Auto-U	Severe	2,3	4	Unknown
IV	053	79	GMC	Semi	Comb	Severe	2,5	4	Unknown
IV	054	75	Chev	Sd	Auto-L	Severe	2,5	3	Unknown
IV	055	71	GMC	Semi	Comb	Severe	5	4	Unknown
IV	056	73	Chev	Sd	Auto-L	Severe	3	4	Unknown
IV	060	80	Ford	T-Bird	Auto-L	Severe	5	4	Unknown
IV	095	74	Buick	2-Dr-Sd	Auto-L	Severe	2	4	Extensive
IV	096	76	Ford	Sd	Auto-U	Severe	5	4	Unknown
IV	097	Unkn	Frtn	Semi	Comb	Severe	5	4	Extensive
IV	099	76	Chev	2-Dr-Sd	Auto-U	Severe	3	4	Unknown
IV	100	72	Pont	2-Dr-Sd	Auto-L	Severe	5,5	4	Unknown
IV	102	79	Dodge	Diplomat	Auto-L	Severe	4	4	Unknown
IV	103	Unkn	Olds	Sd	Auto-L	Severe	5,5	4	Unknown
IV	113	74	Ford	Van	Auto-L	Severe	1,3,3	4	Unknown
IV	114	76	Chev	Monte Carlo	Auto-L	Severe	4	4	Unknown
IV	119	79	Ford	Sd	Auto-U	Severe	2	4	Unknown
IV	120	79	Chev	Pu	Auto-U	Severe	2	4	Unknown
IV	121	79	White	Semi	Comb	Severe	5	3	Heavy

* Refer to Figure 1 for explanation of codes.

TABLE 5. VEHICLE SIZE AND IMPACT SEVERITY *
(continued)

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE YEAR	VEHICLE MAKE	VEHICLE STYLE OR MODEL	VEHICLE SIZE CATEGORY	OCCUPANT IMPACT SEVERITY	CRASH INJURY SEVERITY	VEHICLE DAMAGE	CUSHION DAMAGE
TYPE VI	G.R.E.A.T.								
VI	039	77	AMC	Pacer	Auto-L	Severe	5,5,5	4	Unknown
VI	040	75	Merc	2-Dr-Sd	Auto-L	Severe	5	4	Heavy
VI	045	84	Pblt	Semi	Comb	Severe	2	4	Heavy
VI	058	74	Chev	Unknown	Auto-U	Unknown	5	4	Unknown
VI	061	Unkn	Kenw	Semi	Comb	Severe	3	4	Extensive
VI	063	78	Ford	Pu	Auto-U	Severe	5	4	Unknown
VI	066	80	Merc	Sd	Auto-U	Non-Severe	5	4	Unknown
VI	068	67	Ford	Pu	Auto-L	Non-Severe	5	2	Slight
VI	069	76	Chev	Monza	Auto-S	Severe	2	4	Unknown
VI	070	68	Plym	2-Dr-Sd	Auto-L	Severe	4	4	Unknown
VI	071	77	Pont	2-Dr-Sd	Auto-U	Severe	4,4	4	Unknown
VI	072	77	Pont	2-Dr-Sd	Auto-U	Severe	5	4	Unknown
VI	073	76	Chev	2-Dr-Sd	Auto-U	Severe	2,4,5	4	Unknown
VI	074	79	Ford	2-Dr-Sd	Auto-U	Severe	3,3	4	Unknown
VI	075	75	Olds	2-Dr-Sd	Auto-U	Non-Severe	5,5,5,5	4	Unknown
VI	076	78	Ford	2-Dr-SD	Auto-U	Non-Severe	5	2	Unknown
VI	077	77	Ford	Mustang	Auto-S	Non-Severe	4	2	Unknown
VI	078	78	Ford	Mustang	Auto-S	Severe	3	4	Unknown
VI	079	78	Merc	Cougar	Auto-L	Severe	4	3	Unknown
VI	080	80	Plym	2-Dr-Sd	Auto-U	Severe	5	4	Unknown
VI	081	77	Chev	Nova	Auto-L	Severe	4	4	Unknown
VI	082	75	Chev	2-Dr-Sd	Auto-U	Non-Severe	5	2	Unknown
VI	083	71	Chev	2-Dr-Sd	Auto-U	Severe	4	4	Unknown
VI	084	75	Dodge	Pu	Auto-L	Severe	5	2	Heavy
VI	085	71	Ford	Truck	Sut	Non-Severe	5	3	Moderate
VI	086	70	VW	2-Dr-Sd	Auto-S	Severe	5	4	Moderate
VI	087	Unkn	Unkn	Unkn	Unkn	Unknown	Unk	Unk	Moderate
VI	088	Unkn	Unkn	Unkn	Unkn	Unknown	Unk	Unk	Moderate
VI	098	72	Ford	2-Dr-Sd	Auto-L	Severe	2,2	4	Unknown
VI	111	70	Olds	2-Dr-Sd	Auto-L	Severe	5	4	Unknown
VI	117	68	Ford	2-Dr-Sd	Auto-L	Severe	2	4	Unknown
VI	126	77	Ford	Pu	Auto-L	Severe	5	4	Unknown
VI	127	76	Merc	Montego	Auto-L	Severe	5	4	Heavy

* Refer to Figure 1 for explanation of codes.

TABLE 5. VEHICLE SIZE AND IMPACT SEVERITY *
(continued)

TYPE OF CRASH CUSHION	ACCIDENT NUMBER	VEHICLE YEAR	VEHICLE MAKE	VEHICLE STYLE OR MODEL	VEHICLE SIZE CATEGORY	OCCUPANT IMPACT SEVERITY	CRASH INJURY SEVERITY	VEHICLE DAMAGE	CUSHION DAMAGE
TYPE VI-T TEMPORARY G.R.E.A.T.									
VI-T	041	80	Intl	Semi	Comb	Severe	3	4	Unknown
VI-T	057	79	Chev	Pu	Auto-U	Severe	5	4	Unknown
VI-T	059	71	Ford	4-Dr-Sd	Auto-L	Severe	5	4	Unknown
VI-T	104	78	Ford	Pinto	Auto-S	Severe	2	4	Unknown
VI-T	105	78	Chev	Monte Carlo	Auto-L	Severe	4	4	Unknown
VI-T	106	78	Dodge	2-Dr-Sd	Auto-U	Severe	3	4	Unknown
VI-T	107	78	Chev	2-Dr-Sd	Auto-L	Severe	5,5,5,5	4	Unknown
VI-T	108	80	Toyo	2-Dr-Sd	Auto-S	Severe	4,5	4	Unknown
VI-T	109	77	Ford	LTD	Auto-L	Severe	5	4	Unknown
VI-T	110	77	Pont	2-Dr-Sd	Auto-L	Non-Severe	5,5	2	Unknown
VI-T	111	77	Chev	Sw	Auto-L	Non-Severe	5	4	Unknown
VI-T	112	80	Chev	2-Dr-Sd	Auto-U	Severe	5	4	Unknown
VI-T	115	79	Pont	2-Dr-Sd	Auto-U	Severe	4	4	Extensive
VI-T	116	69	Dodge	Sd	Auto-L	Severe	5,5	4	Unknown
VI-T	118	73	Pont	2-Dr-Sd	Auto-L	Severe	5,5	4	Unknown
VI-T	122	69	Plym	4-Dr-Sd	Auto-L	Severe	2	4	Unknown
VI-T	123	78	Kenw	Semi	Comb	Severe	3,3	4	Unknown
VI-T	124	77	Ford	T' Bird	Auto-L	Severe	5,5,5,5,5	3	Extensive
VI-T	125	83	White	Semi	Comb	Severe	4	4	Extensive
TYPE I OR TYPE II SAND BARRELS									
II	062	75	Volks	2-Dr-Sd	Auto-S	Non-Severe	5	3	Unknown
II	064	78	Intl	Semi	Comb	Severe	5	4	Unknown
II	065	71	Ford	Pu	Auto-L	Severe	5	4	Unknown
II	067	78	Chev	Sd	Auto-U	Severe	2	4	Unknown
II	089	62	Ford	2-Dr-Sd	Auto-L	Severe	5	4	Moderate
II	090	66	Olds	4-Dr-Sd	Auto-L	Severe	2	4	Heavy
II	091	66	Plym	Sd	Auto-L	Severe	5	4	Heavy
II	092	67	Chev	Sd	Auto-L	Severe	5	4	Heavy
II	093	64	Ford	Sd	Auto-L	Severe	5	3	Heavy
II	094	65	Chev	Sw	Auto-L	Severe	3	4	Heavy
TYPE V STEEL DRUMS									
V	042	70	Chev	4-Dr-Sd	Auto-L	Severe	2	4	Unknown
V	043	72	Dodge	Pu	Auto-L	Severe	5	4	Unknown

* Refer to Figure 1 for explanation of codes.

TABLE 6. SUMMARY OF INSTALLATION AND REPAIR COSTS

TYPE OF CRASH CUSHION	ANNUALIZED INSTALLATION* COST	AVERAGE INSTALLATION COST	AVERAGE REPAIR COST PER ACCIDENT
Type I and II	\$ 641	\$ 3,937	\$ 887
Type IV (Cushion)	\$3,225	\$19,824	\$ 392
Type IV (Cluster)	\$ 779	\$ 4,788	\$2,839
Type V	\$1,082	\$ 6,650	\$1,760
Type VI	\$1,968	\$12,098	\$1,886
Type VI-T	\$2,338	\$14,369	\$1,886

* Installation costs amortized over a 10-year period at a 10 percent rate.

APPENDIX A
EXAMPLES OF CRASH CUSHIONS
USED IN KENTUCKY



Figure A1. Type IV Hi-Dro Cell Cushion, I 65 at Brook Street-Jefferson Street Split, Jefferson County.



Figure A2. Type IV Hi-Dro Cell Cluster, Bluegrass Parkway at Lawrenceburg (US 127) Toll Plaza, Anderson County.





Figure A3. Type II Sand Barrels, I 264 Westbound at I 64 Eastbound Ramp, Jefferson County.



Figure A4. Type II Sand Barrels, I 64 Eastbound at 9th Street Ramp, Jefferson County.



Figure A5. Type V Steel Drums, I 64 Eastbound at 22nd Street Ramp, Jefferson County.

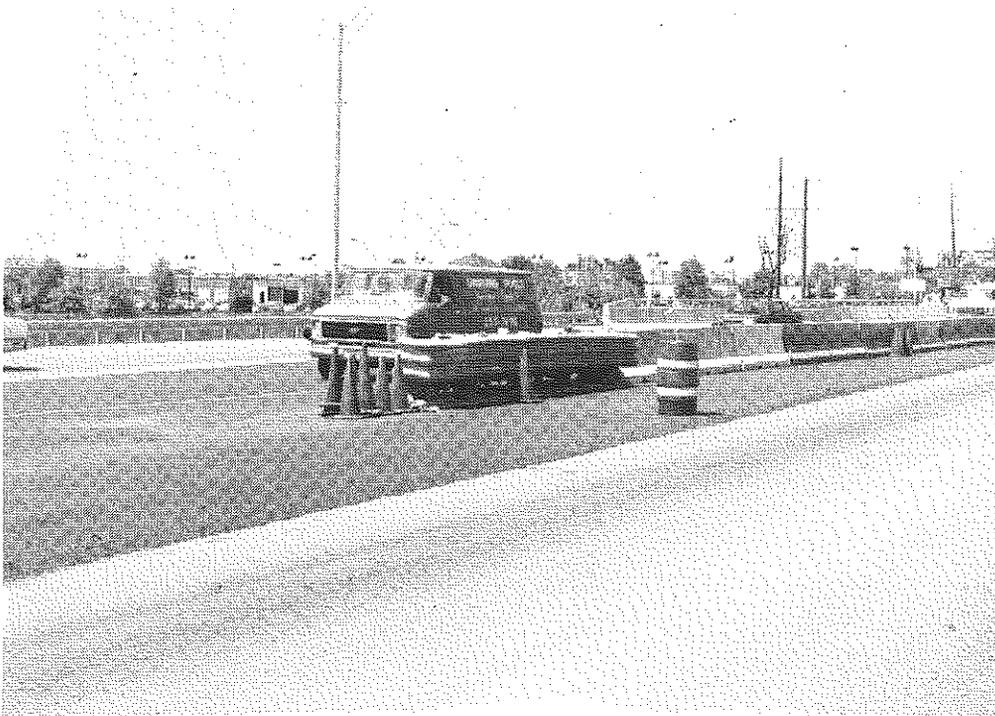


Figure A6. Type VI-T G.R.E.A.T., Nicholasville Road (US 27) at New Circle Road (KY 4), Fayette County.

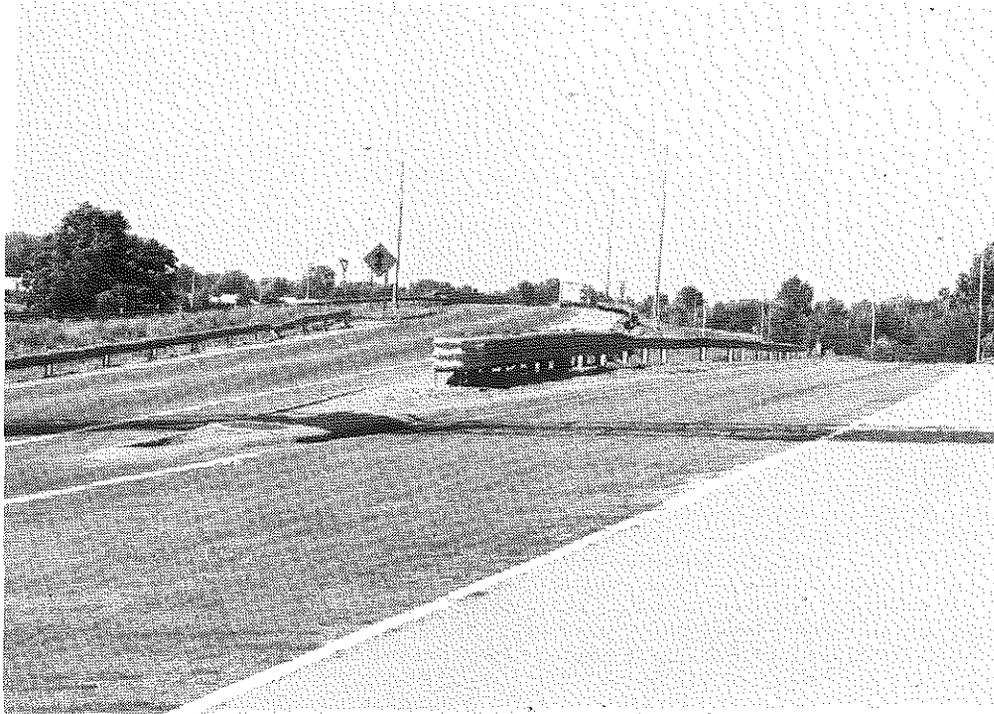


Figure A7. Type VI G.R.E.A.T., I 264 at Taylorsville Road (KY 155), Jefferson County.

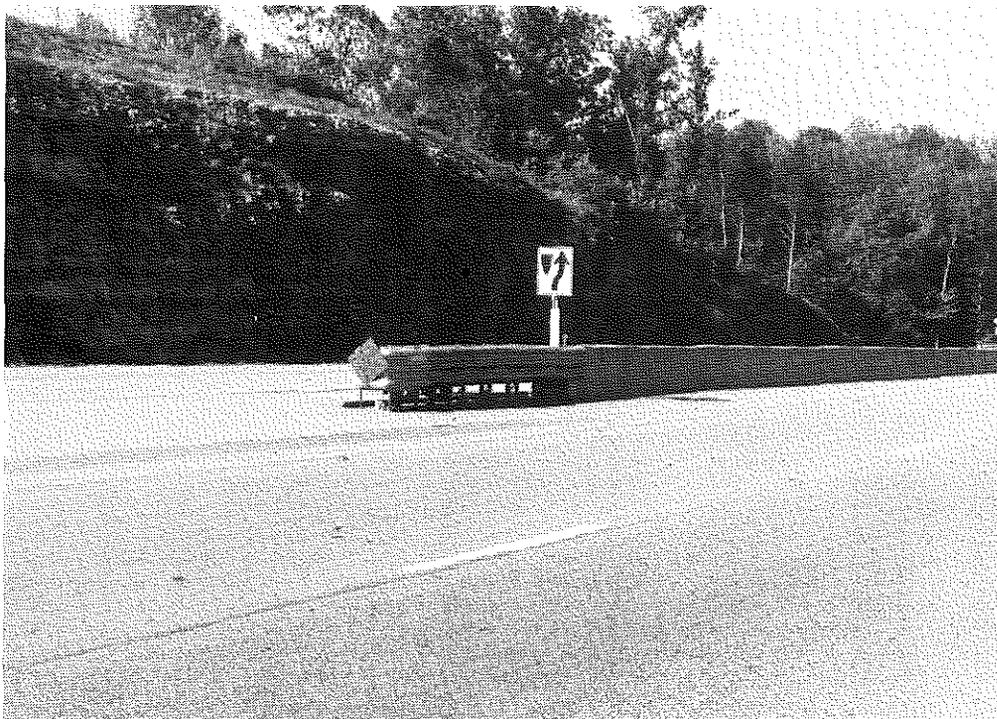
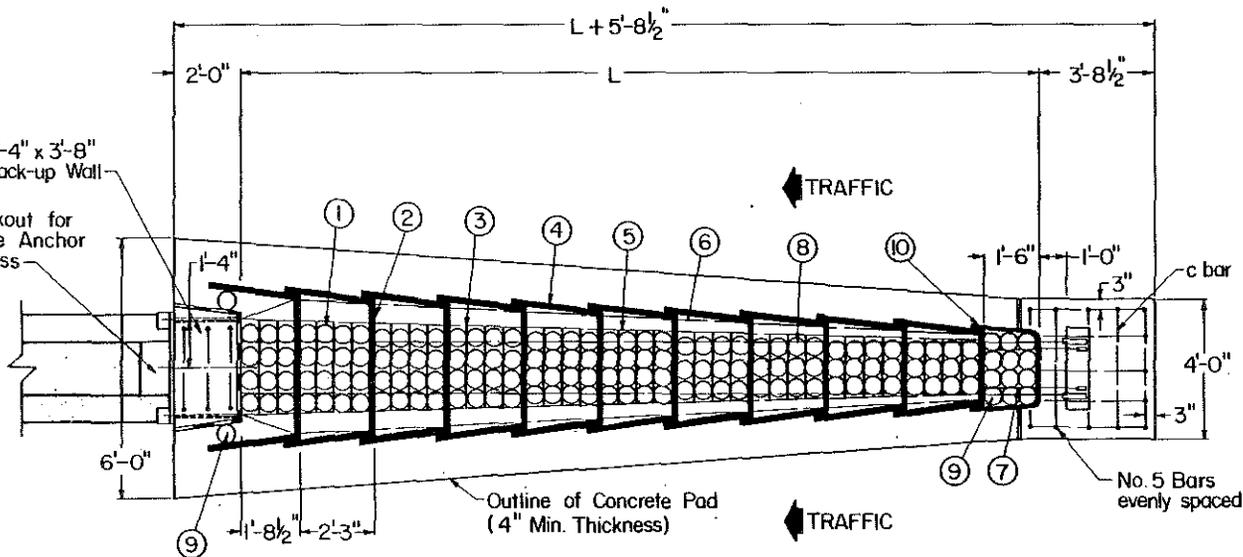


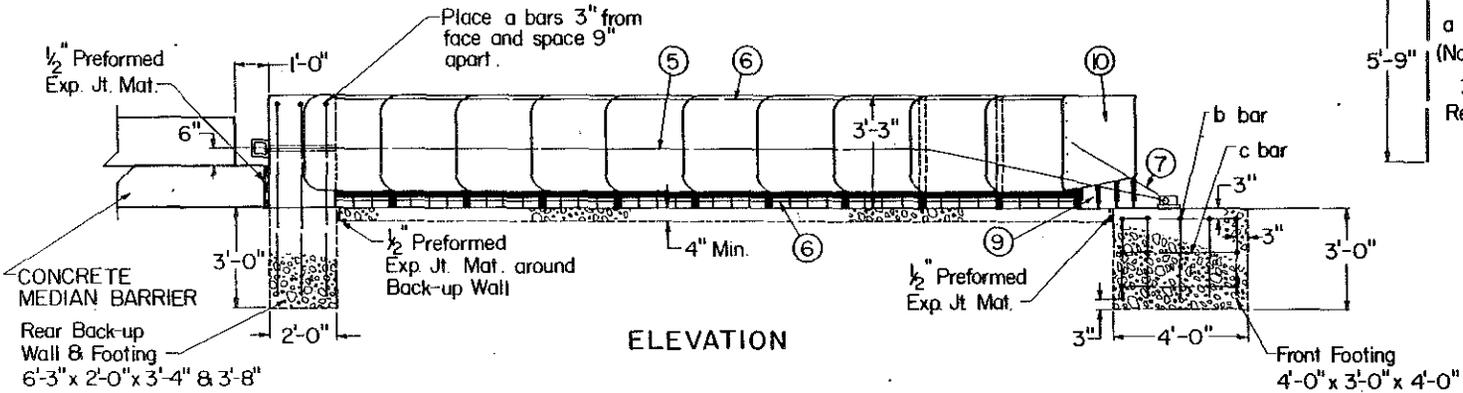
Figure A8. Type VI G.R.E.A.T., KY 676, Franklin County.

APPENDIX B
STANDARD DRAWINGS FOR CRASH CUSHIONS

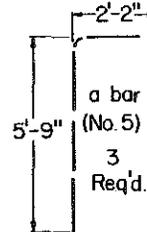


- KEY**
- ① Hi-Dro Cushion Cells
 - ② Diaphragms
 - ③ Interior Panels
 - ④ Fender Panels
 - ⑤ Restraining Cables
 - ⑥ Pull-Out Cables
 - ⑦ Secondary Cables
 - ⑧ Slide Straps
 - ⑨ Std. Vinyl Cells
 - ⑩ Safety-Flex Belt

PLAN



ELEVATION



NOTES

The concrete pad shall be required only when the unit is constructed on non-rigid pavement and shall be measured and paid for per cubic yard of Class A Concrete, which shall include all necessary excavation and reinforcing steel. The pad shall be cured and finished as either sidewalk or pavement. Front and rear footings and rear back-up wall, except on structures, shall be required at all installations, which shall be measured and paid for as Class A Concrete and shall include all necessary excavation and reinforcing steel.

The cross slope on the pad or pavement shall not exceed 5 percent.

In the event the unit is installed on a structure, it shall be adequately anchored into the structure.

The Concrete Pad shall have No 5 bars 12" O.C. longitudinal and transversely. Bars shall be located in the center of the pad.

METRIC CONVERSIONS
 1 FT. = 0.3048 m
 1 IN. = 25.4 mm

ATTENUATOR		No. Of Bays	SPEED M. P. H.
MODEL	LENGTH "L"		
A	14'-5 1/2"	6	45 and less
B	18'-1 1/2"	8	50
C	21'-2 1/2"	9	55
D	25'-8 1/2"	11	60
E	27'-11 1/2"	12	65 or greater

The contract unit price shall be Crash Cushion Type IV ϕ
 ϕ Either A, B, C, D, or E as required.

**KENTUCKY
BUREAU OF HIGHWAYS**

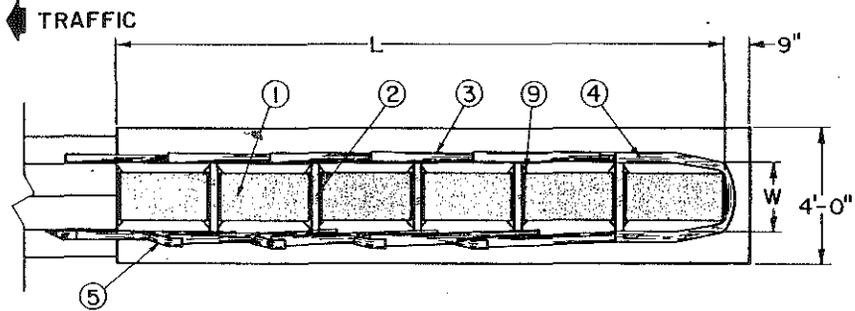
**CRASH CUSHION
TYPE IV
(ONE DIRECTIONAL UNIT)**

STANDARD DRAWING No. RBE-040-01

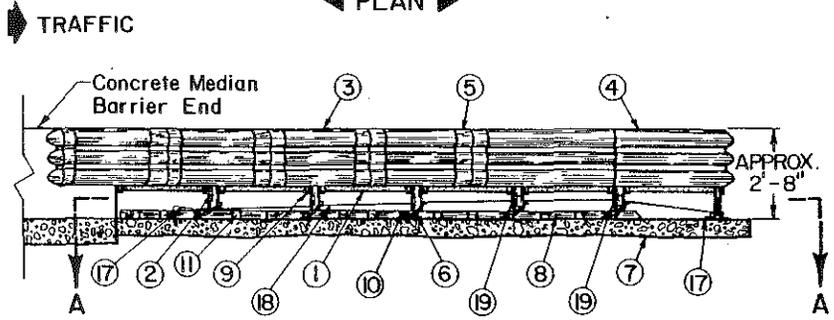
SUBMITTED: *[Signature]* DATE: *7/1/62*
DIRECTOR OF DIVISION OF DESIGN

APPROVED: *[Signature]* DATE: *7/1/62*
STATE HIGHWAY ENGINEER

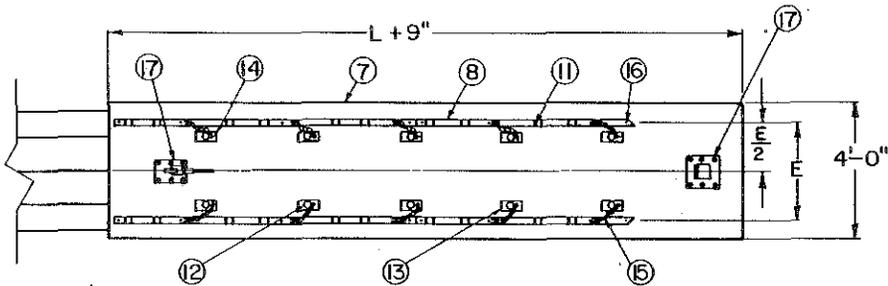
B-1



◀ PLAN ▶



◀ ELEVATION ▶



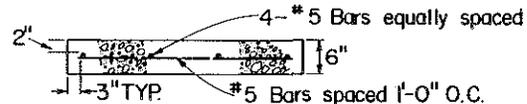
◀ SECTION A-A ▶

LEGEND

- ① Hex-Foam Cartridge
- ② Diaphragm
- ③ Thrie Beam Panel
- ④ Nose Cover
- ⑤ Deflector Vane (Required only when facing traffic.)
- ⑥ Anchor Chain
- ⑦ 6" Concrete Pad
- ⑧ Anchor Rail
- ⑩ Chain Bracket
- ⑪ Anchor Rail Support
- ⑫ Diaphragm Leg
- ⑬ Steel Plate Slide
- ⑭ Steel Rod
- ⑮ Chain
- ⑯ Anchor Bolt
- ⑰ Cable Anchoring Device
- ⑱ Restraining Cable

◀ NOTES ▶

1. The contract unit price shall be Crash Cushion Type VI ★ ▲
★ Either A, B, C, D, E or F as required.
▲ See "Connection Details of Crash Cushion Type VI to Double Face Guardrail"
2. The 6" concrete pad shall be measured and paid for per cubic yard of Class "A" Concrete, which shall include all necessary excavation and reinforcing steel (See Concrete Pad Section for steel requirements). The pad shall be cured and finished as either sidewalk or pavement. The cross slope of the pad or pavement shall not exceed 5%. The pad will not be required when the unit is constructed on rigid pavement.
3. Crash Cushion Type VI may be used at the end of: Concrete Median Barrier, Bridge Piers and Steel "W" Beam Guardrail (Double Face).
4. When Crash Cushion Type VI connects to: Concrete Median Barrier or Bridge Pier the contract unit price shall include: Crash Cushion Type VI, all hardware, additional rail elements, post and all other incidentals necessary to complete the installation.
5. This drawing depicts connection of Crash Cushion Type VI to Concrete Median Barrier End. For this application see current Std. Dwg. RBE-065 "Concrete Median Barrier End."
6. When Crash Cushion Type VI connects to Double Face Guardrail see Current Std. Dwg. RBC-110 "Connection Details of Crash Cushion Type VI to Double Face Guardrail."
7. The complete installation shall meet all requirements of Energy Absorption Systems Inc. (see approved shop plans).
8. Use Anchor Rail for Anchor Bolt Template (Anchor Bolts required when concrete pad is placed; Anchor details on an existing facility shall be shown on the shop plans.)



◀ CONCRETE PAD SECTION ▶

METRIC CONVERSIONS
 1 FT. = 0.3048 m
 1 IN. = 25.4 mm

ATTENUATOR		NO. OF BAYS	SPEED MPH
MODEL	LENGTH "L"		
A	14'-9"	4	45 & Less
B	17'-9"	5	50
C	20'-9"	6	55
D	23'-9"	7	60
E	26'-9"	8	65
F	32'-9"	10	70

USE WITH CURRENT STD. DWG. RBE-065 OR RBC-110 AS APPLICABLE.

KENTUCKY BUREAU OF HIGHWAYS

CRASH CUSHION

TYPE VI ★ ▲

(ONE & TWO DIRECTION)

STANDARD DRAWING No. RBE-060-05
 SUBMITTED *R. L. Smith* *J. L. ...*

B-2

APPENDIX C

DETAILED DESCRIPTION OF END TREATMENT ACCIDENTS

ACCIDENT NUMBER: 001

LOCATION: COUNTY - Christian
ROUTE - Pennyrite Parkway
MILEPOINT - 11.8; Toll Plaza

DATE OF ACCIDENT: 11/21/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1976 Oldsmobile Cutlass collided head-on with the crash cushion at the toll plaza. The vehicle bounced slightly rearward after the impact and came to a halt; there were no skid marks prior to impact as the driver claimed to have dozed off. The vehicle received disabling damage to the front end, but the driver was uninjured. She was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 002

LOCATION: COUNTY - Christian
ROUTE - Pennyrile Parkway
MILEPOINT - 11.7; Toll Plaza

DATE OF ACCIDENT: 2/5/80

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1976 2-door Chevrolet, skidded out of control on the snow-covered pavement as it approached the toll plaza and ran into the crash cushion. Damage to the vehicle's front end was non-functional. None of the three occupants wore safety belts, but no injuries were reported.

DIAGRAM: Not Available

ACCIDENT NUMBER: 003

LOCATION: COUNTY - Henderson
ROUTE - Audubon Parkway
MILEPOINT - 10.2; Toll Plaza

DATE OF ACCIDENT: 12/12/82

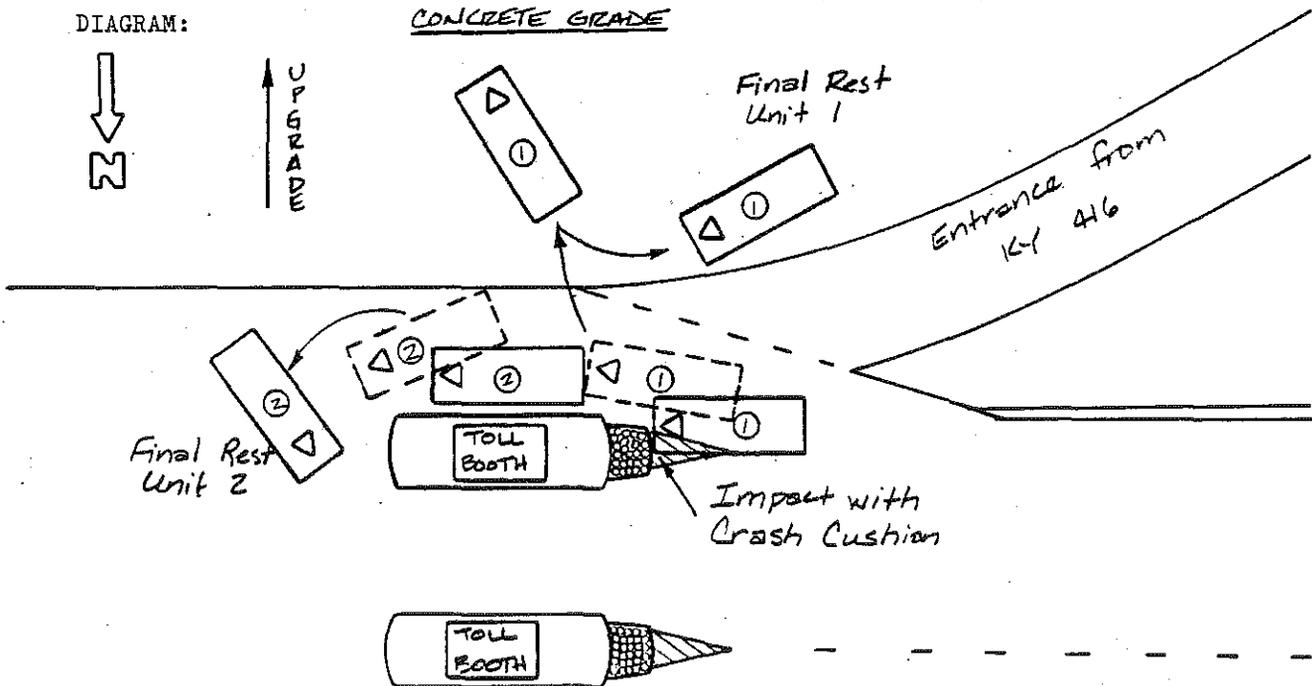
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1977 Oldsmobile Cutlass, was weaving on the roadway, due to the driver being intoxicated, as it approached the toll plaza. The automobile glanced off the crash cushion dividing the entrance/exit lane and the right-hand through lane, then struck a vehicle stopped in front of it in the area of the driver's-side headlight (it previously struck the crash cushion in the same area). The vehicle then bounced off the car in front (as it had begun to exit the toll plaza), ran up the concrete grade on the right side of the toll plaza, then rolled backwards down the slope before coming to rest. Disabling damage was done to the Oldsmobile, but it cannot be determined whether or not the crash cushion caused the damage. The passenger of the Oldsmobile suffered a possible head injury; no one else was injured. Neither driver nor passenger were wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 004

LOCATION: COUNTY - Hopkins
ROUTE - Western Kentucky Parkway
MILEPOINT - 24.4; Toll Plaza

DATE OF ACCIDENT: 6/1/81

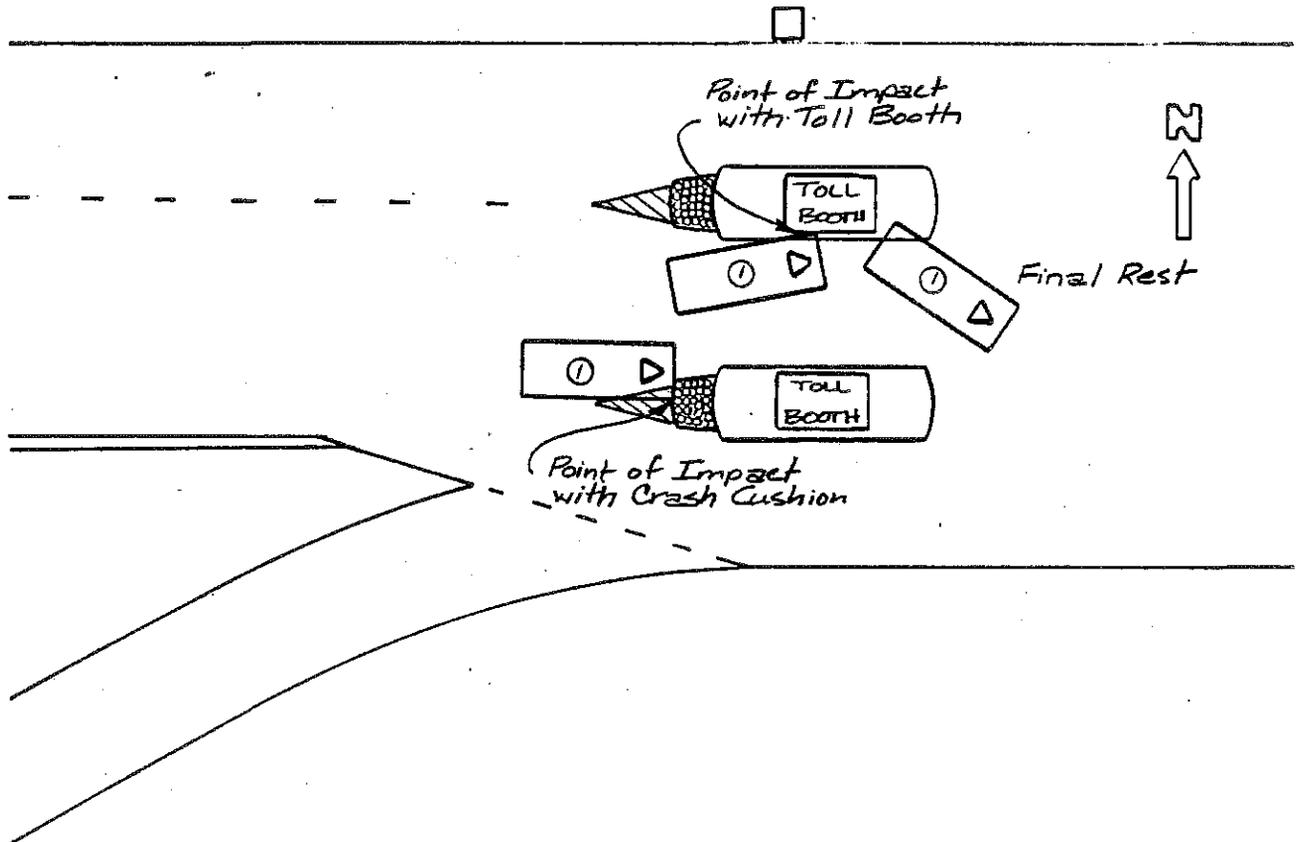
TYPE OF CRASH CUSHION: Type IV; HI-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1981 Ford pickup impacted a crash cushion with its right front corner, glanced to the left and passed between two toll booths before coming to rest. The impact was sufficient enough to disable the truck. The driver was uninjured; he was not wearing a safety belt at the time of the accident.

DIAGRAM:



ACCIDENT NUMBER: 005

LOCATION: COUNTY - Hopkins
ROUTE - Western Kentucky Parkway
MILEPOINT - 24.4; Toll Plaza

DATE OF ACCIDENT: 12/17/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1972 Chevrolet farm truck (1 1/2-ton) was passing through the Dawson Springs Toll Plaza when a disk attached to the rear of the truck struck the corner of the toll booth. The driver was not injured and the only damage to the vehicle was to the disk attached to the truck. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 006

LOCATION: COUNTY - Hopkins
ROUTE - Western Kentucky Parkway
MILEPOINT - 24.4; Toll Plaza

DATE OF ACCIDENT: 12/31/82

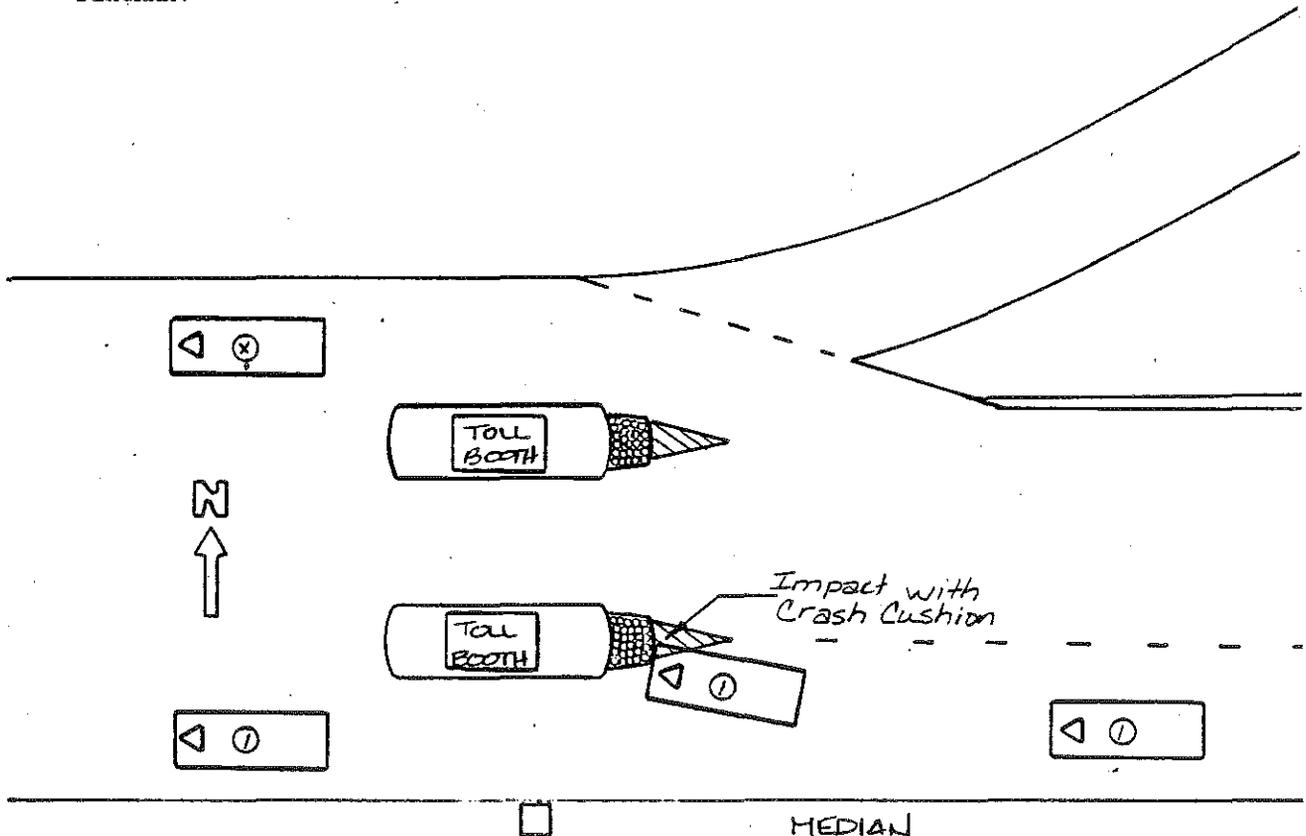
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1978 Ford pickup truck westbound on the Western Kentucky Parkway ran into the crash cushion with the right front of the vehicle. The vehicle continued on through the toll lane approximately 0.1 mile before stopping. The vehicle was disabled. The driver was not injured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 007

LOCATION: COUNTY - Hopkins
ROUTE - Western Kentucky Parkway
MILEPOINT - 24.4; Toll Plaza

DATE OF ACCIDENT: 7/7/83

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1978 International tractor-trailer was passing through the center lane of the Dawson Springs Toll Plaza. The truck hit a signal light suspended over the right lane booth and apparently impacted the crash cushion with right side. The load was 11 feet, 6 inches wide and the clearance between the toll booths 12 feet, 2 inches. Driver apparently misjudged the clearance. The vehicle impacted the concrete abutment with only slight damage. The driver was not injured and he was wearing a lap safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 008

LOCATION: COUNTY - Hopkins
ROUTE - Western Kentucky Parkway
MILEPOINT - 24.4; Toll Plaza

DATE OF ACCIDENT: 7/26/83

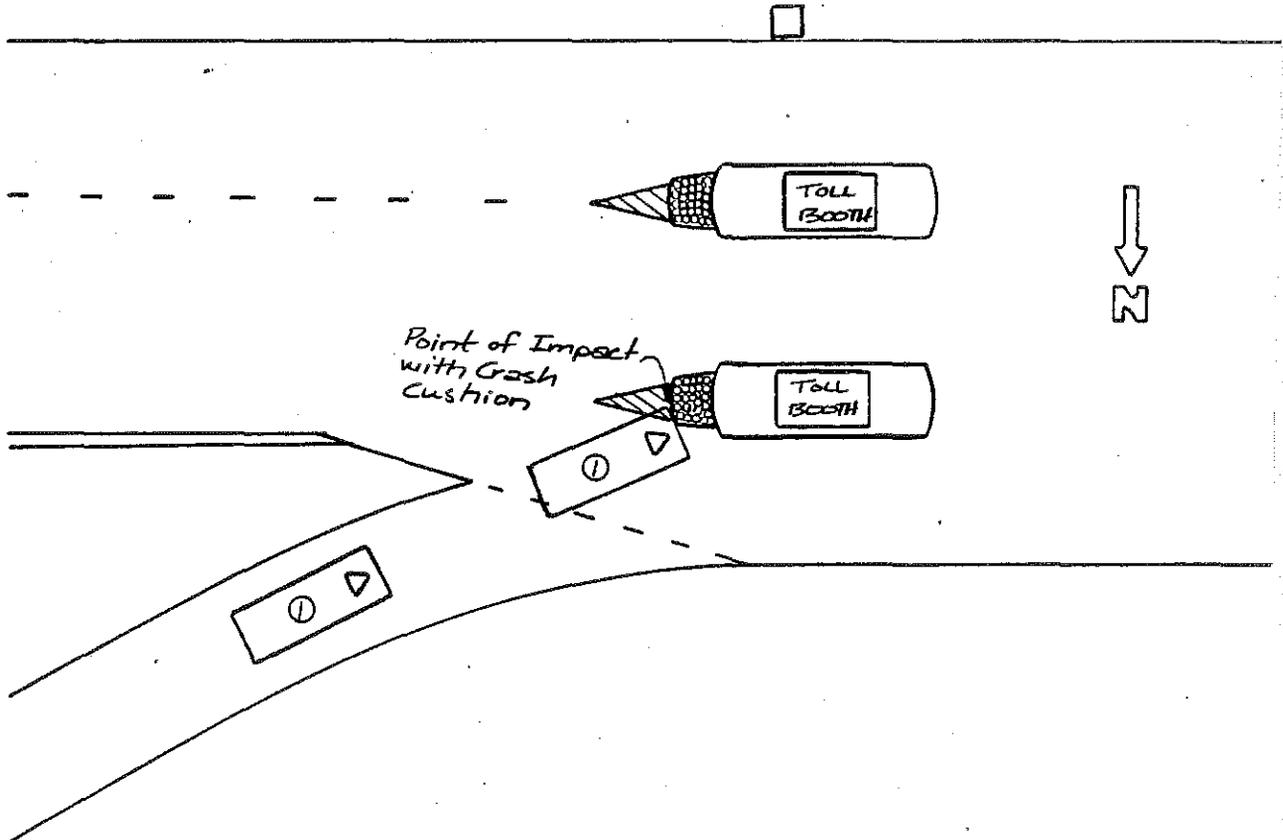
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1973 Oldsmobile 2-door sedan struck the crash cushion as the vehicle was entering the parkway. The driver stated he dropped his change; as he was looking down to pick it up he hit the crash cushion. The vehicle received non-functional damage. The driver was uninjured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 009

LOCATION: COUNTY - Muhlenberg
ROUTE - Western Kentucky Parkway
MILEPOINT - 57.9; Toll Plaza

DATE OF ACCIDENT: 10/26/83

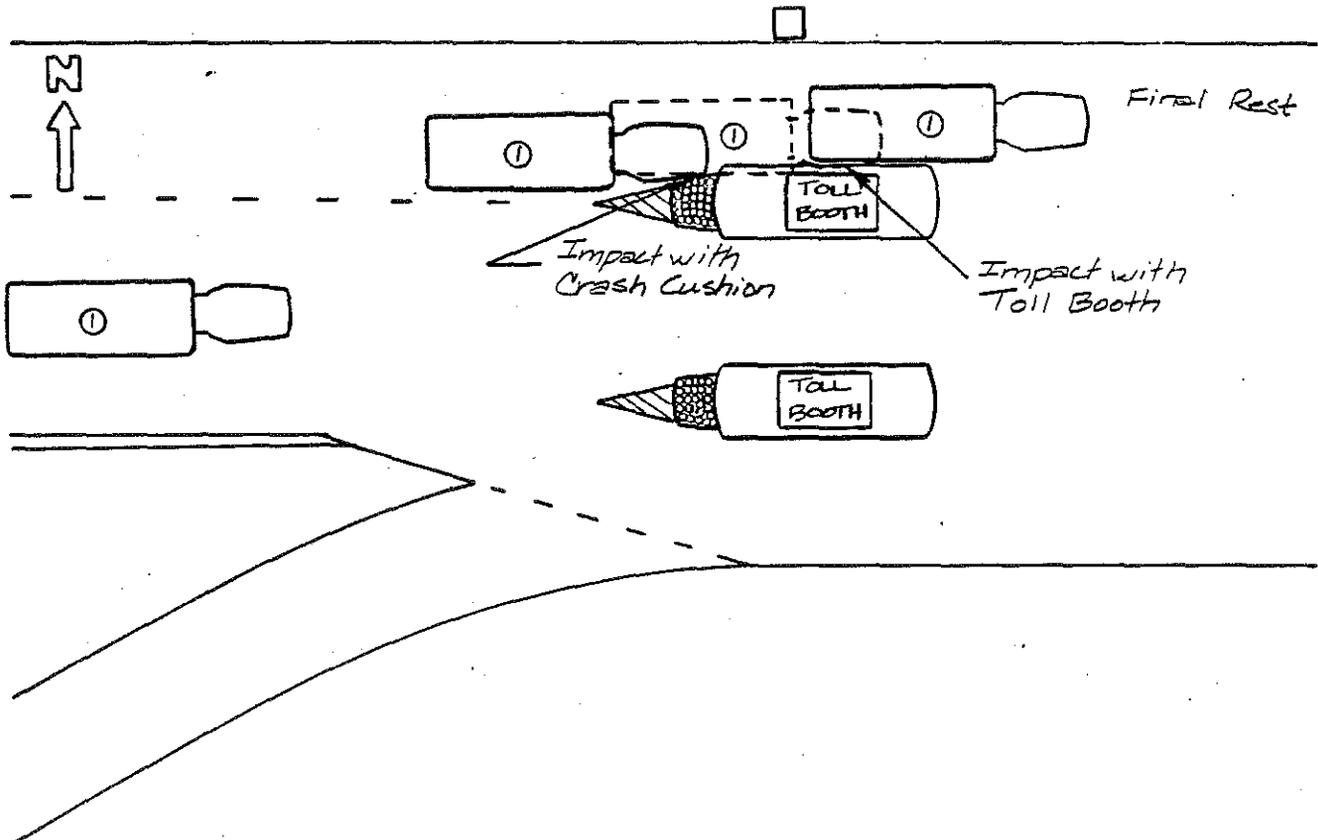
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: A 1983 Peterbilt tractor and semi-trailer was approaching the toll booth when the left front tire blew out, causing the vehicle to swerve left and impact the crash cushion. The vehicle hit the toll booth after impacting the crash cushion. The right front of the truck hit the crash cushion with unknown damage. The driver was not injured and he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 010

LOCATION: COUNTY - Muhlenberg
ROUTE - Western Kentucky Parkway
MILEPOINT - 58.0; Toll Plaza

DATE OF ACCIDENT: 1/14/82

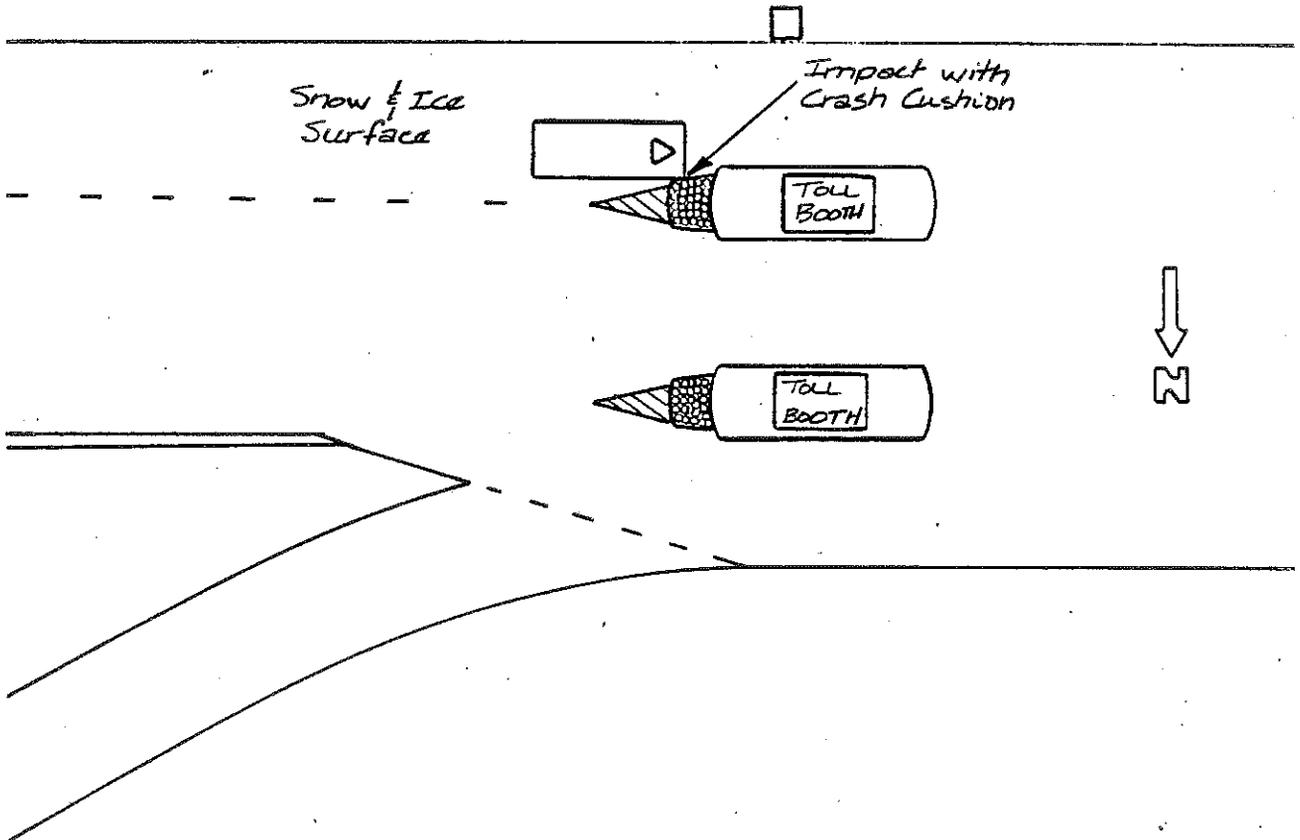
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1967 Plymouth 4-door sedan impacted a crash cushion with its right front corner and then came to rest in the traffic lane. The vehicle received functional damage to the front end. The driver of the vehicle, who was not wearing a safety belt, was not injured. Snow on the roadway was listed as a contributing factor.

DIAGRAM:



ACCIDENT NUMBER: 011

LOCATION: COUNTY - Muhlenberg
ROUTE - Western Kentucky Parkway
MILEPOINT - 58.0; Toll Plaza

DATE OF ACCIDENT: 6/21/80

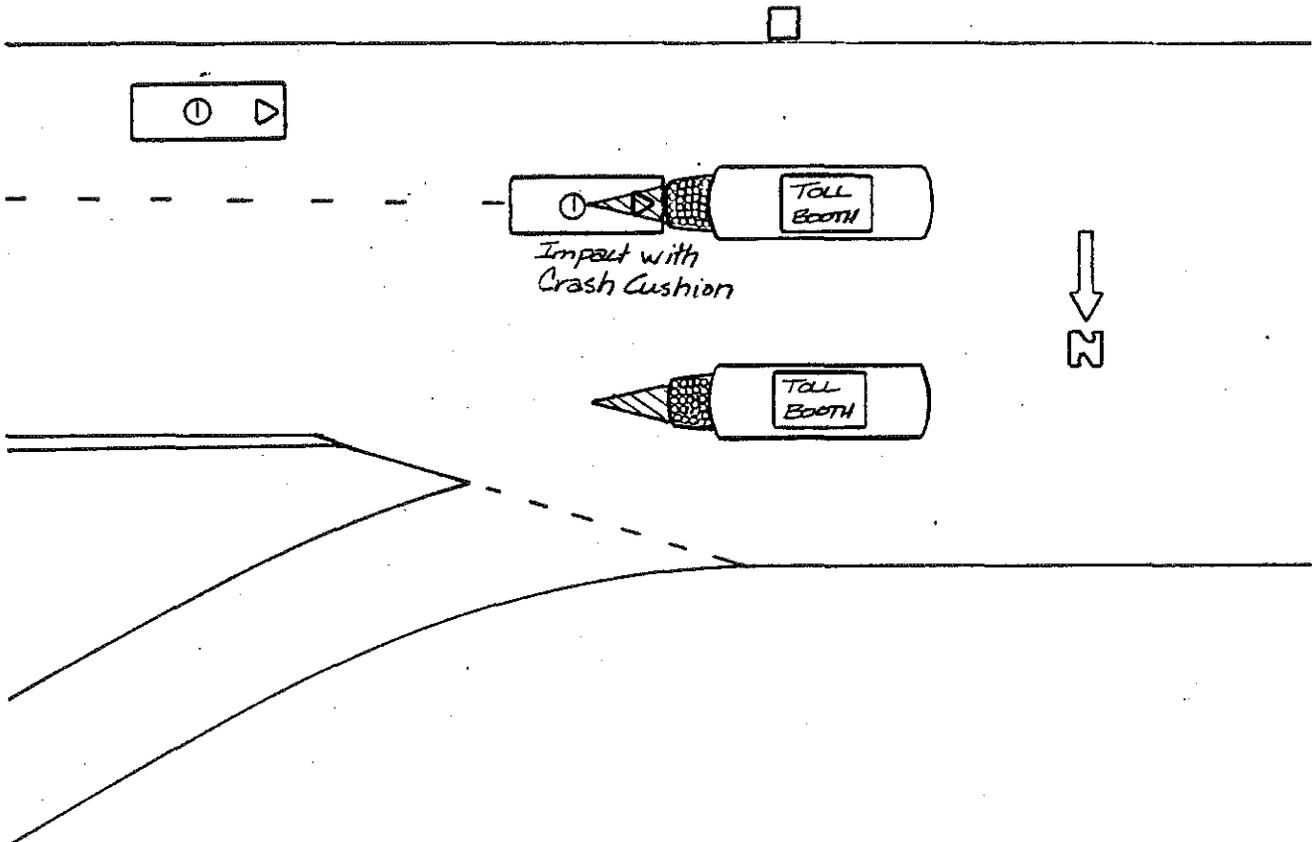
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1977 Buick 2-door sedan, travelling in the inside lane (adjacent to the median), veered to the right as it approached the toll plaza and bumped the crash cushion head-on, where it came to a stop. The driver, who was uninjured, claimed that he lost control as he looked down to get a coin. The vehicle was not damaged. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 012

LOCATION: COUNTY - Muhlenberg
ROUTE - Western Kentucky Parkway
MILEPOINT - 57.9; Toll Plaza

DATE OF ACCIDENT: 5/7/80

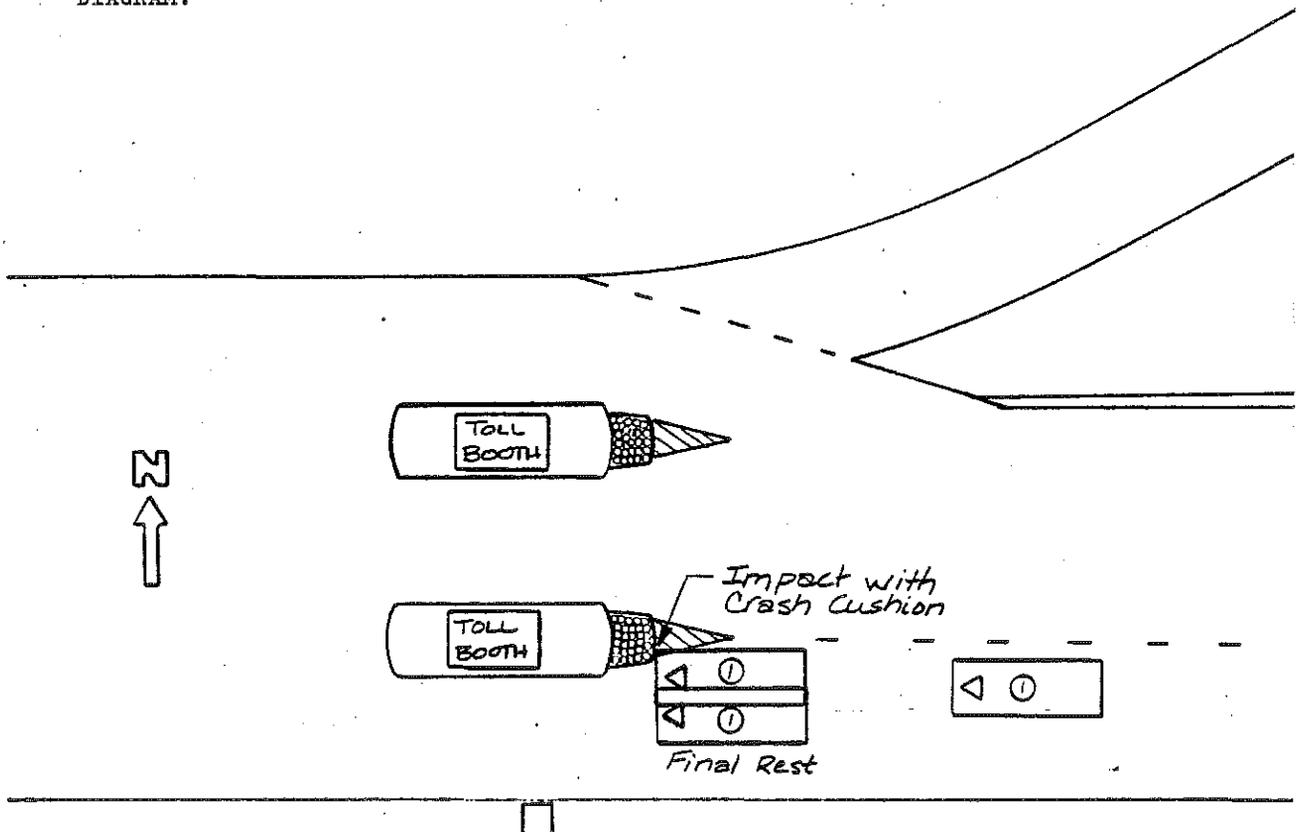
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1979 Pontiac 2-door sedan, struck the crash cushion with the right front corner and then bounced sideways to the left into the middle of the traffic lane. The driver claimed that she looked down to get change and the vehicle then veered to the right. The car received functional damage. The driver received a possible head injury; she was not wearing a safety belt when the accident occurred.

DIAGRAM:



ACCIDENT NUMBER: 013

LOCATION: COUNTY - Ohio
ROUTE - Green River Parkway
MILEPOINT - 47.9; Toll Plaza

DATE OF ACCIDENT: 11/26/81

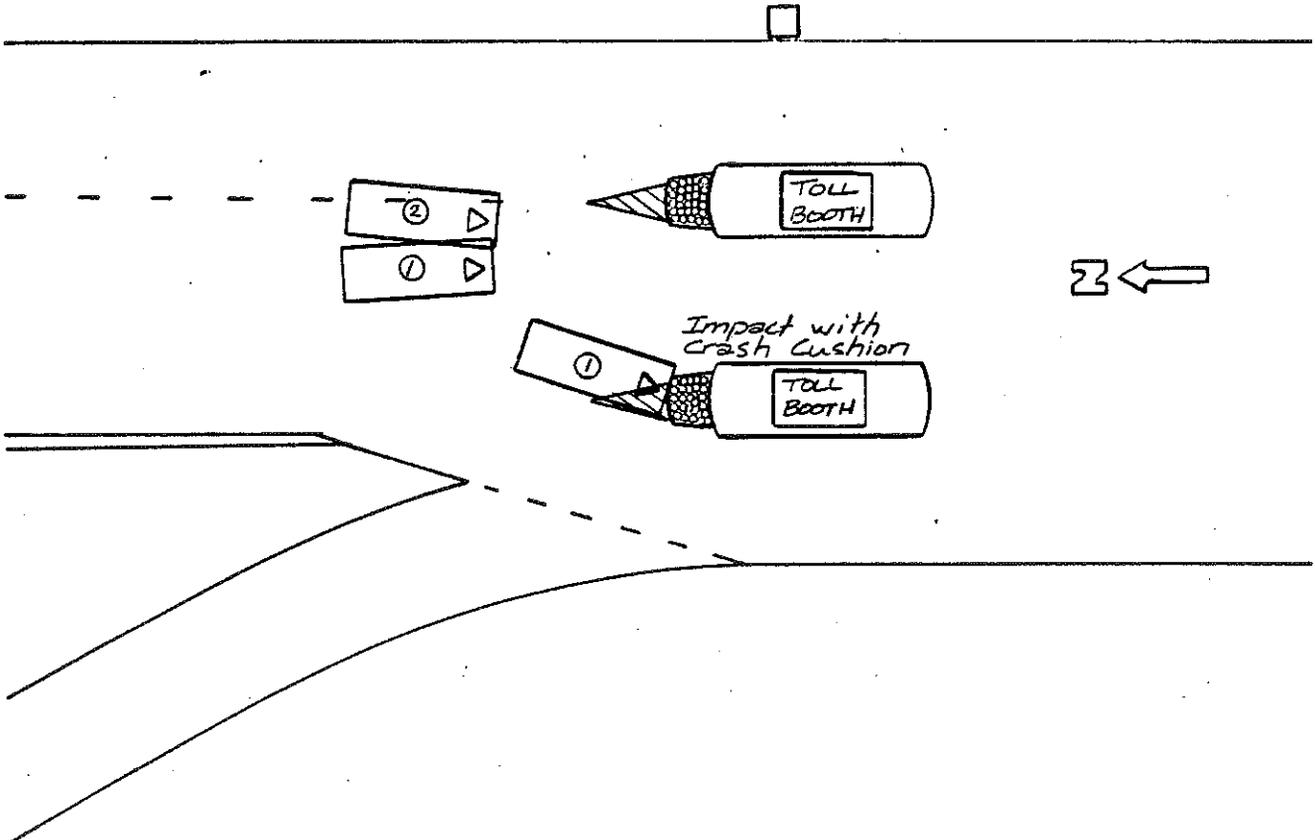
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: Unit 1, a 1972 Chevrolet Vega, struck another vehicle as both attempted to go through the toll plaza in the same lane (right "through" lane). Unit 1 glanced off Unit 2, veered to the right and struck the crash cushion head-on. Both impacts were minor and Unit 1 suffered only slight damage. No one was injured. The driver of Unit 1 was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 014

LOCATION: COUNTY - Ohio
ROUTE - Green River Parkway
MILEPOINT - 47.8; Toll Plaza

DATE OF ACCIDENT: 7/1/83

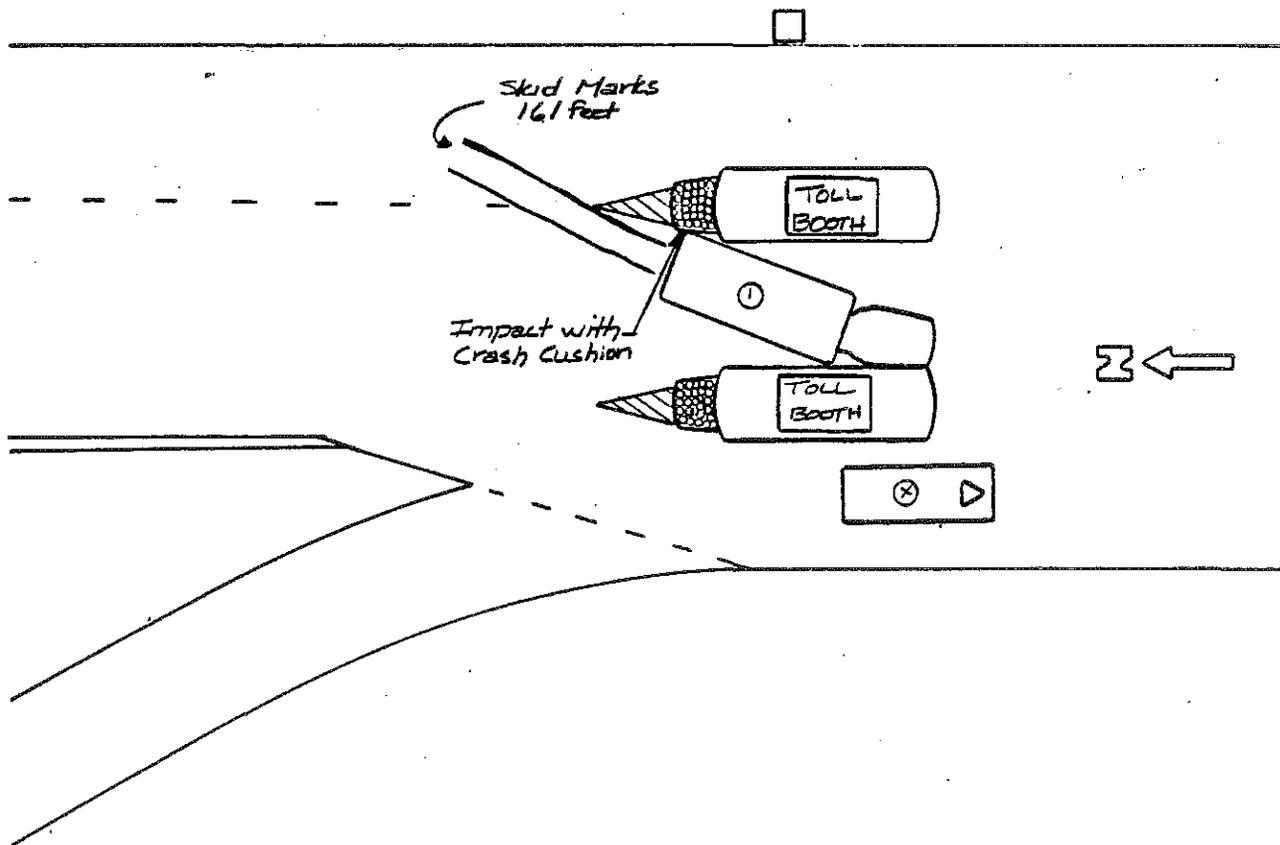
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1979 Kenworth tractor trailer was approaching the Hartford Toll Plaza when his trailer brakes failed and later locked up, causing the trailer to slide sideways into the toll booth crash cushion. The trailer wheels fell off and it continued and fell to the right into the toll booth occupied by an attendant. The vehicle was disabled. The driver was not injured; however, the attendant received non-incapacitating injuries. The driver was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 015

LOCATION: COUNTY - Webster
ROUTE - Pennyrite Parkway
MILEPOINT - 62.6; Toll Plaza

DATE OF ACCIDENT: 7/21/83

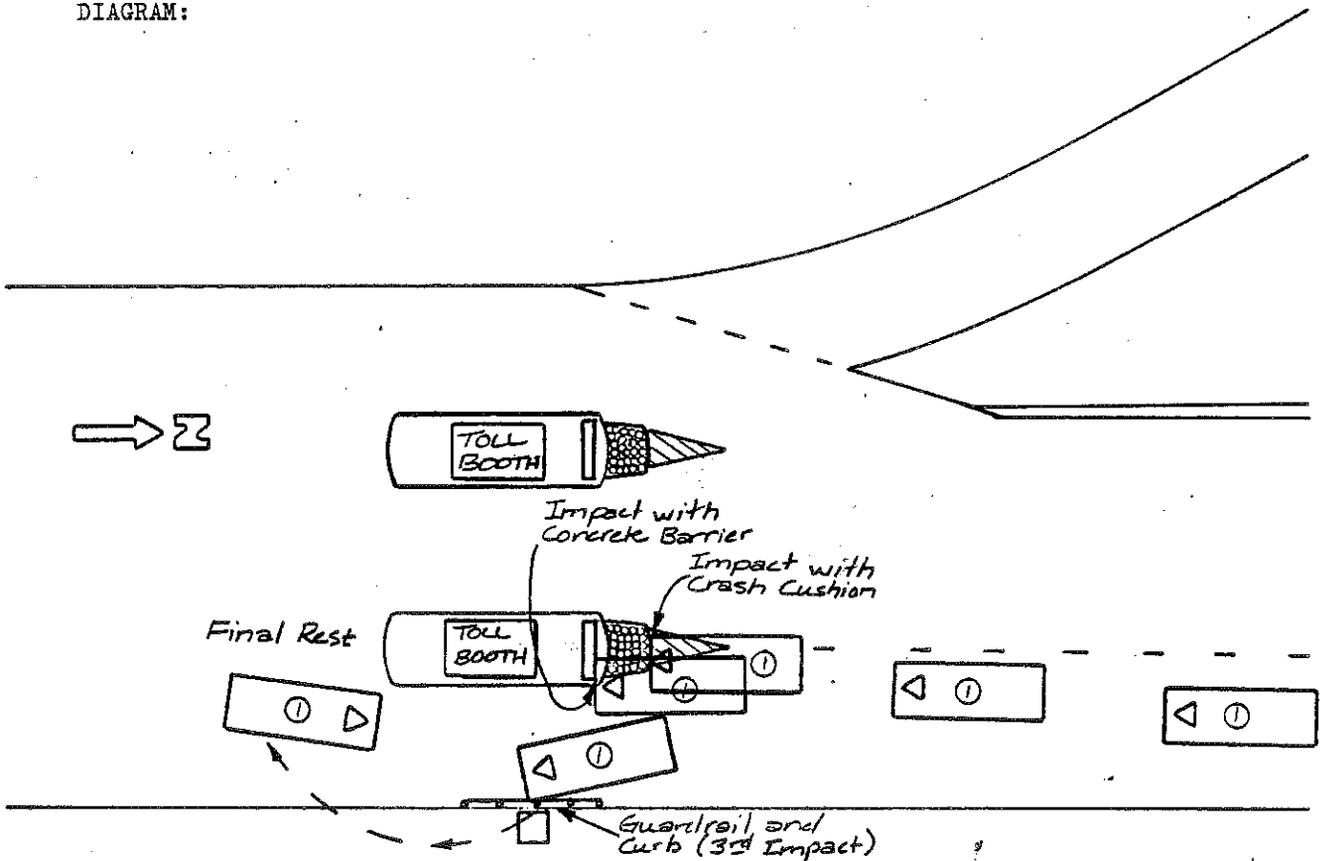
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: A 1979 Ford pickup attempted to pass through the toll plaza at a high rate of speed and struck the crash cushion head-on. It was thrown to the left, where it struck a guardrail and then spun around 180 degrees. The driver was killed and the vehicle was disabled. The driver was not wearing a safety belt.

DIAGRAM:



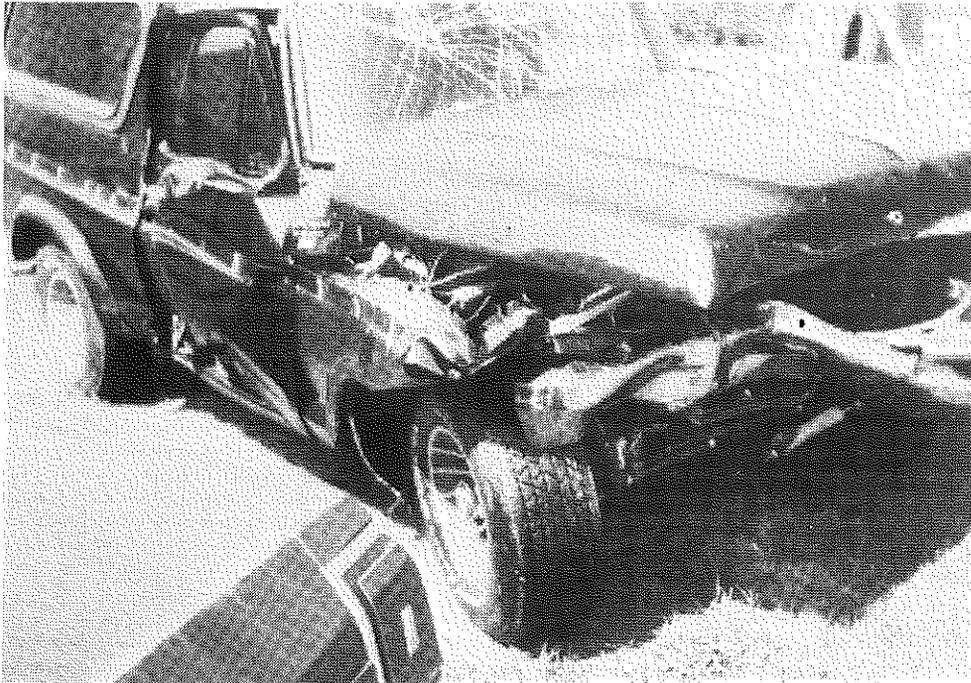
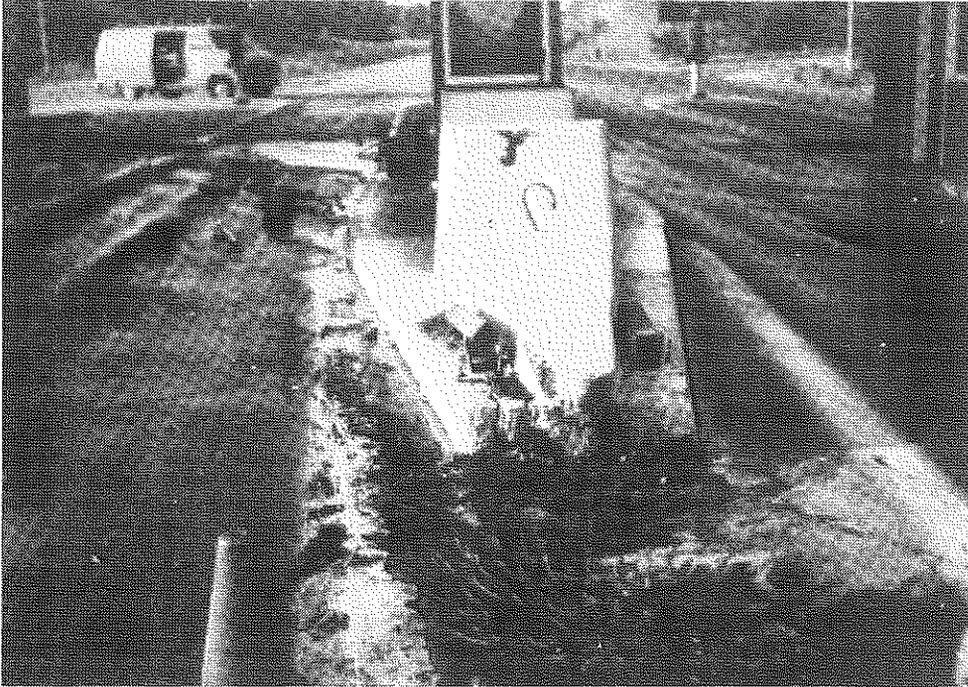


Figure C1. Accident Number 015, Webster County, Pennyrite Parkway, MP 62.6, at Sebree Toll Plaza.

ACCIDENT NUMBER: 016

LOCATION: COUNTY - Webster
ROUTE - Pennyrile Parkway
MILEPOINT - 62.6; Toll Plaza

DATE OF ACCIDENT: 12/18/82

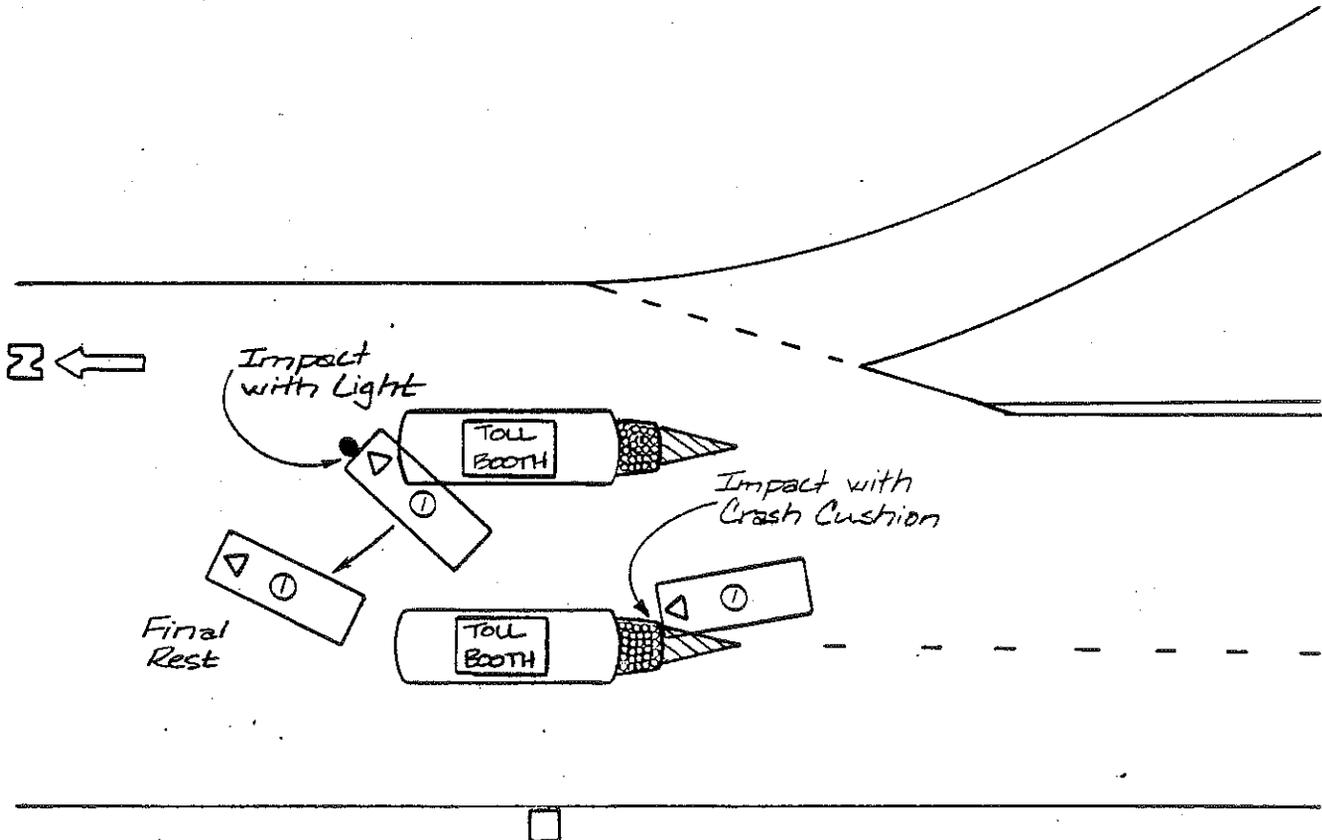
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1981 Chevrolet Chevette, was approaching the toll plaza at an unsafe speed due to driver intoxication. The vehicle struck the crash cushion on the left with its left front end, slid between the two toll booths, struck the light behind the toll booth to the right and bounced sideways back to the left, where it came to rest in the traffic lane. The driver received a non-incapacitating injury to the legs, while the passenger received a non-incapacitating head injury; neither occupant was wearing a safety belt. The vehicle was disabled.

DIAGRAM:



ACCIDENT NUMBER: 017

LOCATION: COUNTY - Webster
ROUTE - Pennyrile Parkway
MILEPOINT - 62.6; Toll Plaza

DATE OF ACCIDENT: 6/16/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: A 1978 International tractor and semi-trailer was unable to stop due to excessive speed on the wet pavement as it approached the toll plaza. The tractor made it into the left lane, but the trailer struck the crash cushion in the center with its right side and bounced off into the guardrail and coin machine on the other side of the lane. The trailer was damaged slightly on its right side from impact with the crash cushion. The driver, who was uninjured, was not wearing a safety belt.

DIAGRAM: Not Available

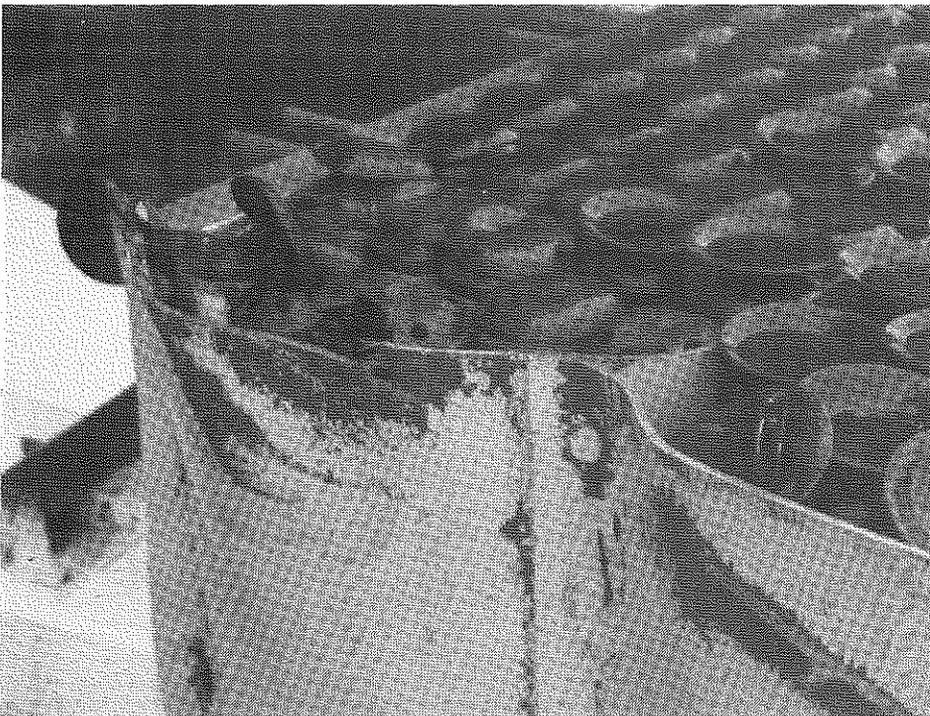


Figure C2. Accident Number 017, Webster County, Pennyrite Parkway, MP 62.6, at Sebree Toll Plaza.

ACCIDENT NUMBER: 018

LOCATION: COUNTY - Webster
ROUTE - Pennyrile Parkway
MILEPOINT - 62.6; Toll Plaza

DATE OF ACCIDENT: 1/6/81

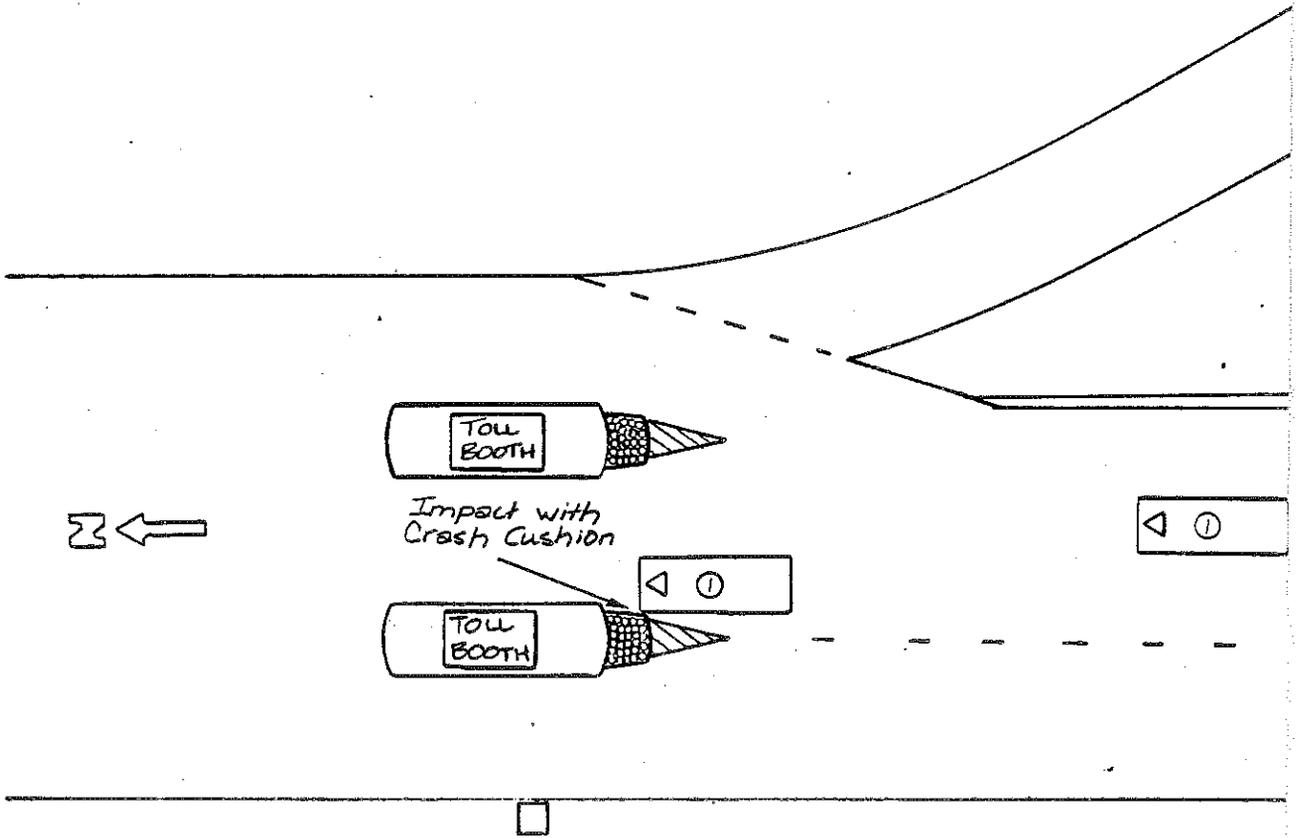
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1977 Lincoln 2-door sedan, went out of control on the ice-covered roadway and sideswiped the crash cushion at the toll booth. Non-functional damage was done to the left front corner of the car, which remained in service. None of the five occupants of the car were wearing safety belts. No one was injured.

DIAGRAM:



ACCIDENT NUMBER: 019

LOCATION: COUNTY - Webster
ROUTE - Pennyrile Parkway
MILEPOINT - 62.6; Toll Plaza

DATE OF ACCIDENT: 7/22/80

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Pontiac 2-door sedan was intoxicated as he approached the toll plaza in the left lane at an unsafe speed. The car sideswiped the crash cushion on the right and travelled about 330 feet out of control through the toll plaza. It then left the right side of the roadway and travelled approximately 60 feet down an embankment before coming to rest. Non-functional damage was done to the right front corner of the car from impact with the crash cushion. The driver, who was uninjured, was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 020

LOCATION: COUNTY - Barren
ROUTE - Cumberland Parkway
MILEPOINT - 3.1; Toll Plaza

DATE OF ACCIDENT: 5/22/81

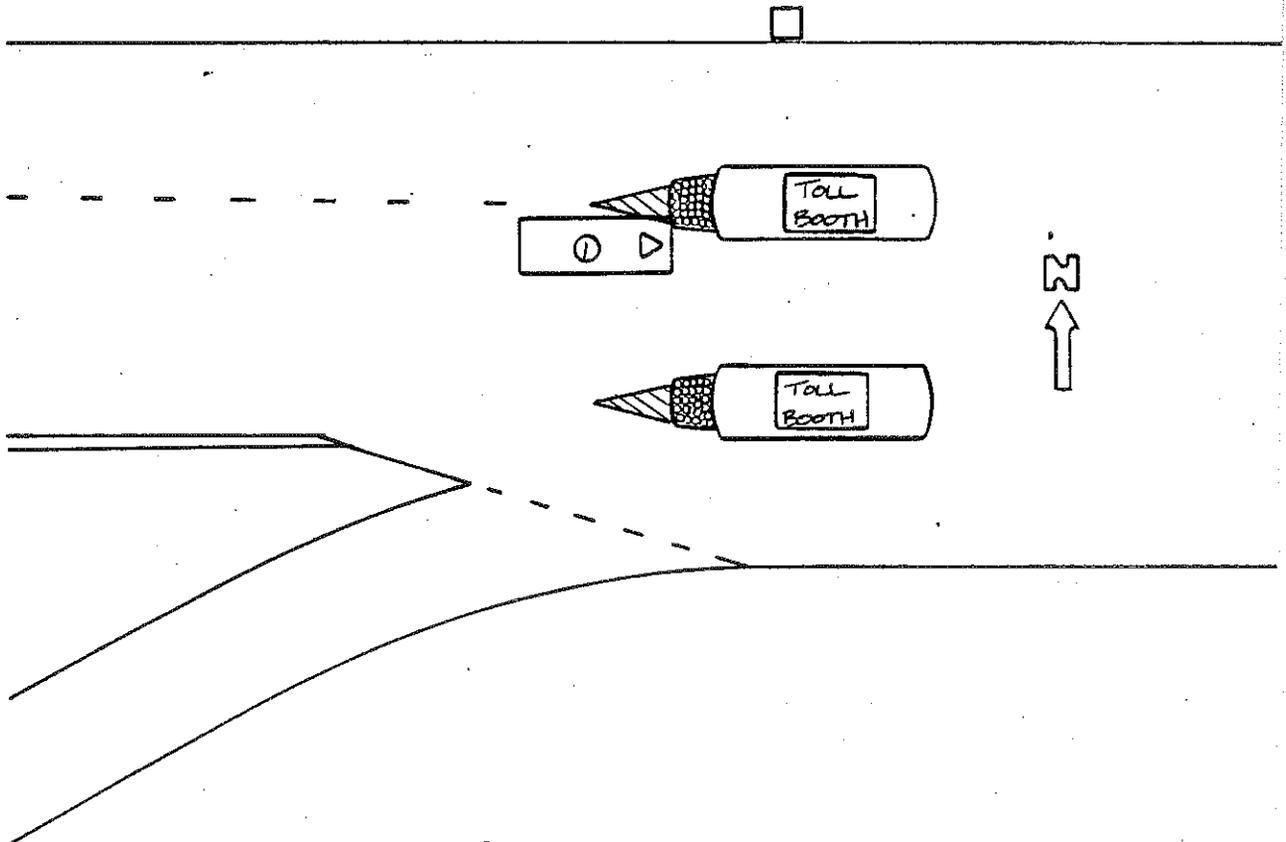
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A witness at the scene stated that a 1971 Chevrolet El Camino approached the toll plaza at a high speed. The vehicle sideswiped the crash cushion on the left and the driver's side-view mirror went through the toll booth window. The vehicle continued past the toll plaza, crossed the median and opposite lanes, then hit a light pole and stopped. The vehicle was disabled (left front corner), but it cannot be determined if the crash cushion or light pole caused the most damage. The driver was uninjured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 021

LOCATION: COUNTY - Butler
ROUTE - Green River Parkway
MILEPOINT - 13.8; Toll Plaza

DATE OF ACCIDENT: 11/4/80

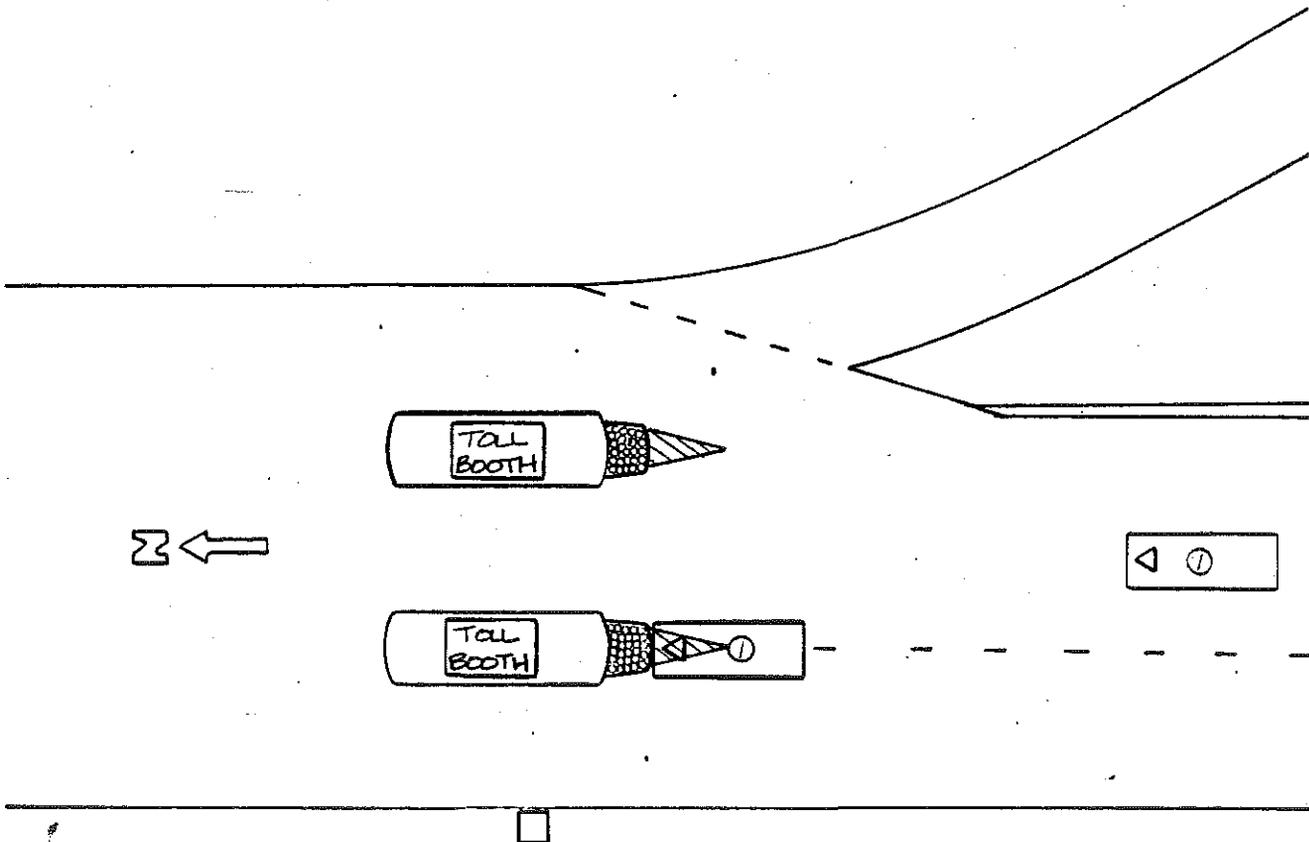
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1968 Dodge 2-door sedan lost control as he applied the brakes and veered sharply to the left, where he bumped into the crash cushion head-on. The damage to the front end of the car was non-functional and it remained in service. The driver, who was uninjured, did not wear a safety belt. Road conditions were wet.

DIAGRAM:



ACCIDENT NUMBER: 022

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 8/4/82

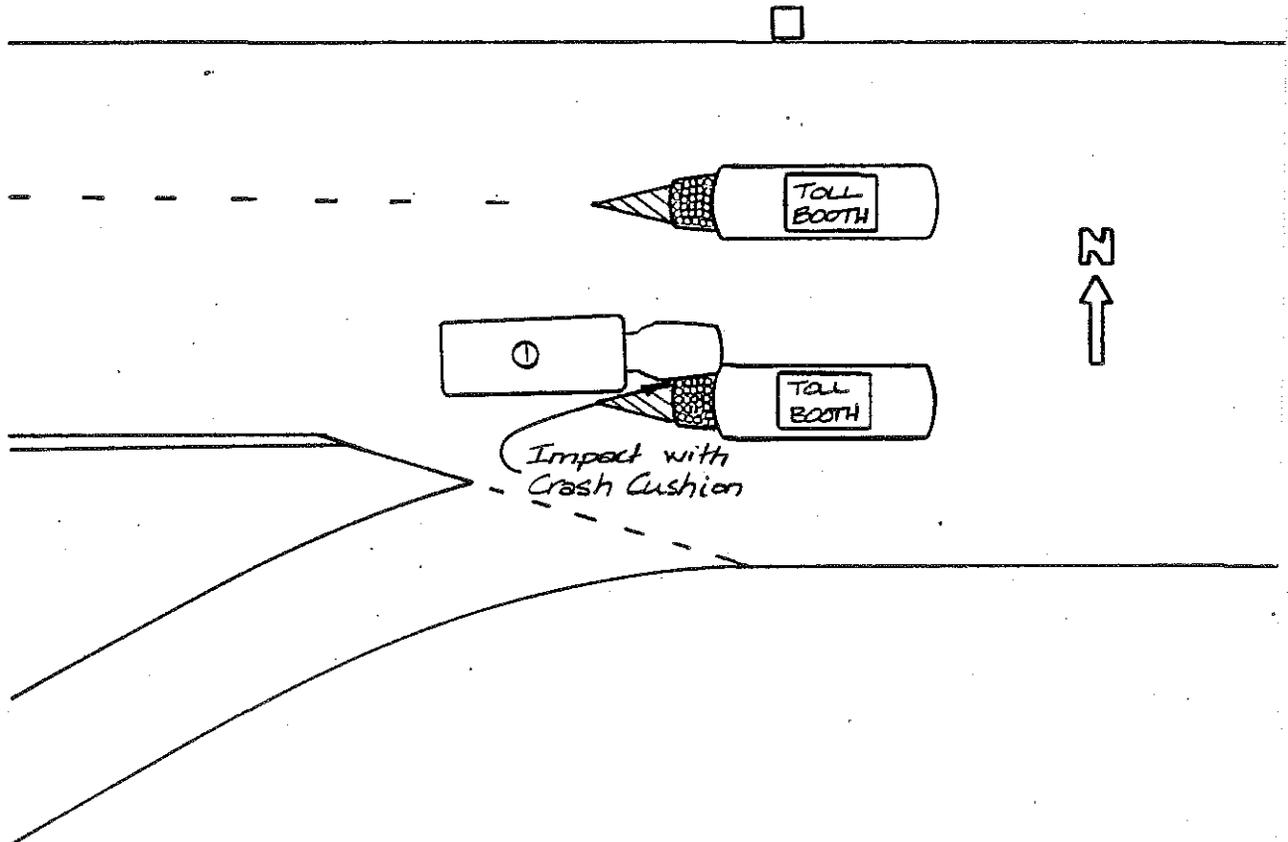
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1975 Freightliner tractor and semi-trailer lost air brake pressure as it approached the toll plaza and side-swiped the right-side crash cushion with the passenger side of the cab. It then continued approximately 300 feet past the toll plaza before stopping. There was non-functional damage to the cab. The driver was not wearing a safety belt; he was uninjured.

DIAGRAM:



ACCIDENT NUMBER: 023

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.1; Toll Plaza

DATE OF ACCIDENT: 11/23/80

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: As the vehicle, a 1973 Ford sedan, approached the toll plaza in the left-hand lane, the driver looked down to get money and did not notice that the lane was blocked off with cones. The driver then looked up and applied his brakes, causing him to skid and bump into the crash cushion. There was no damage to the car and the driver was not injured. He was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 024

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 3/17/80

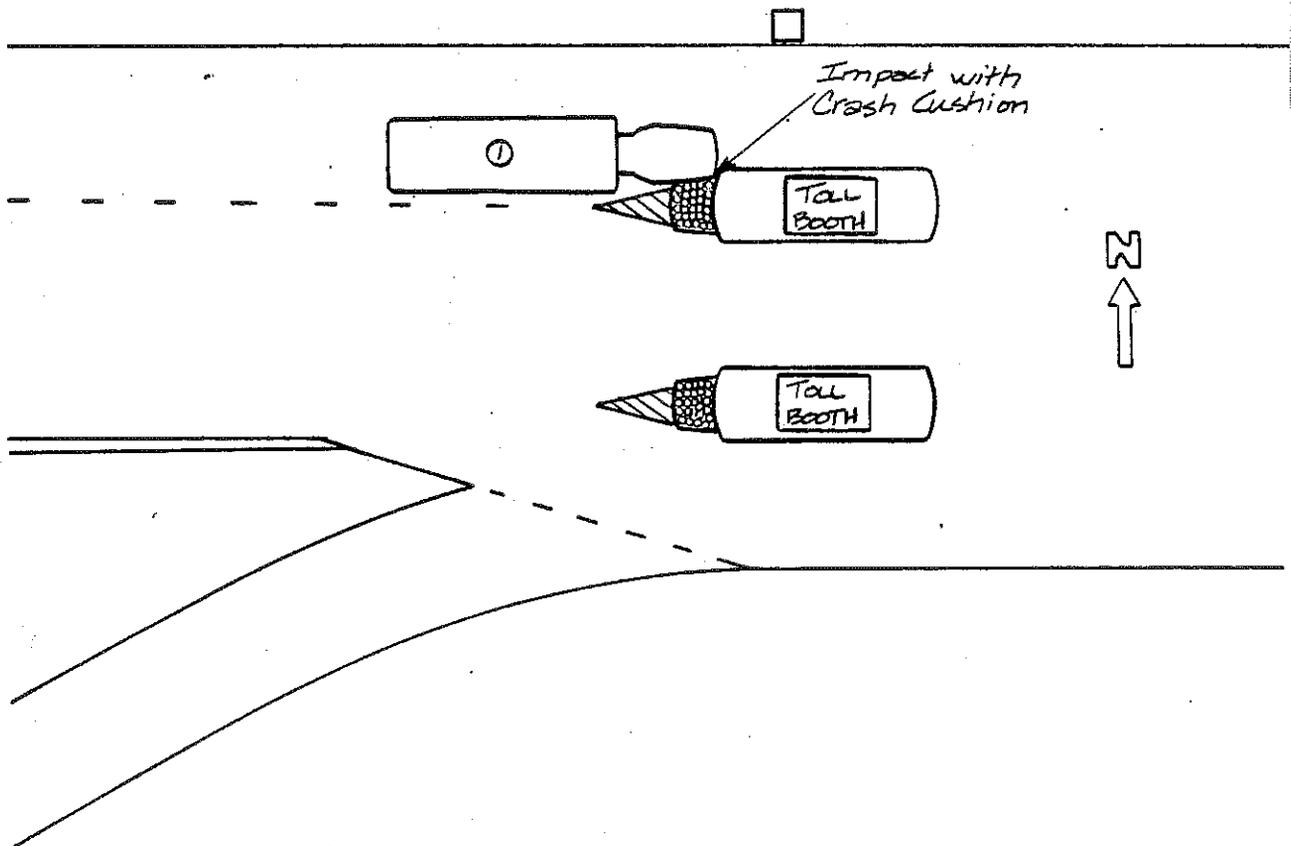
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The right rear drive wheel of a 1969 Freightliner tractor and semi-trailer caught the side of the crash cushion as the truck passed through the toll plaza. There was no damage to the truck and neither the driver nor his passenger were injured. They were not wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 025

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 3/1/80

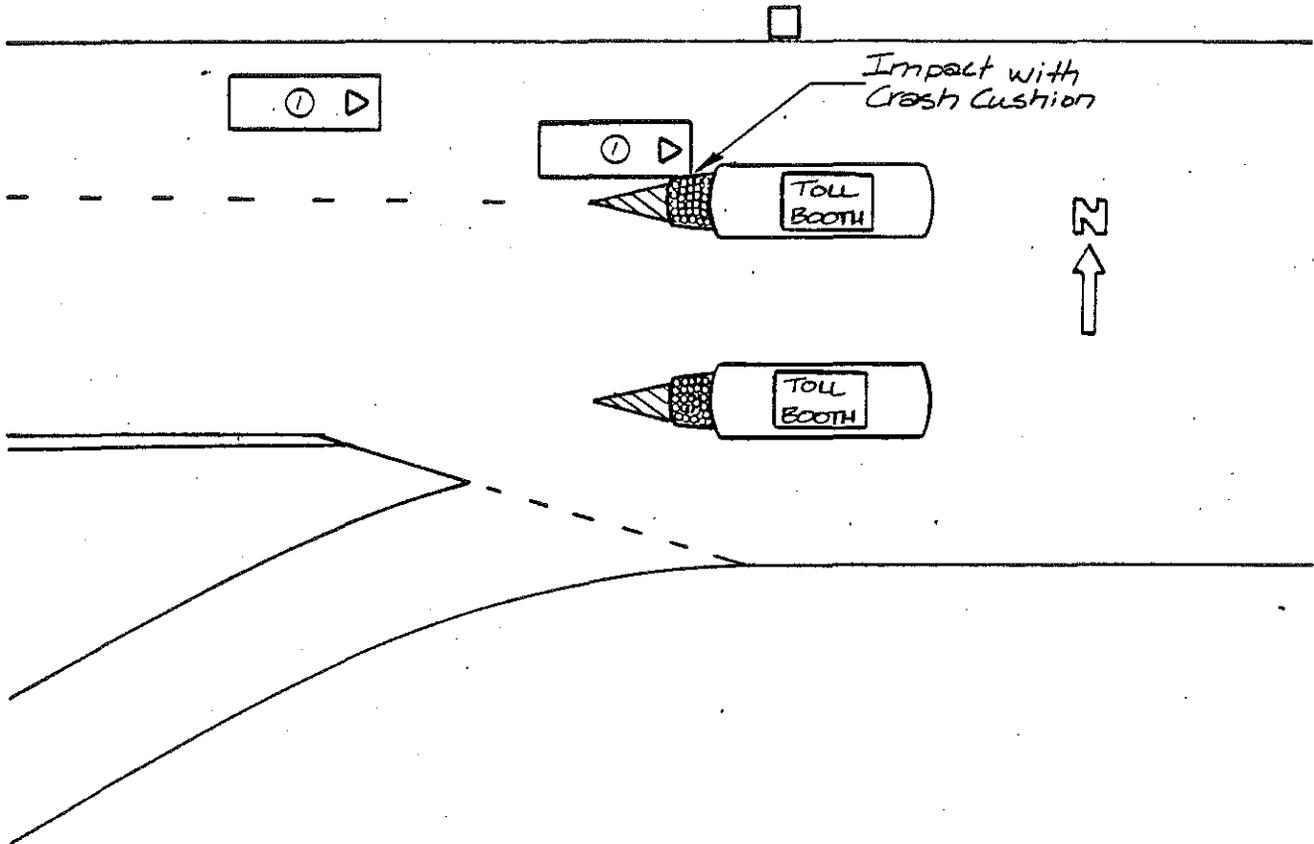
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1977 Ford station wagon slid on wet pavement as it approached the toll plaza and bumped the crash cushion on the right with the right front corner of the car. There was no damage to the car. The driver, who was not wearing a safety belt, was not injured.

DIAGRAM:



ACCIDENT NUMBER: 026

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 4/18/77

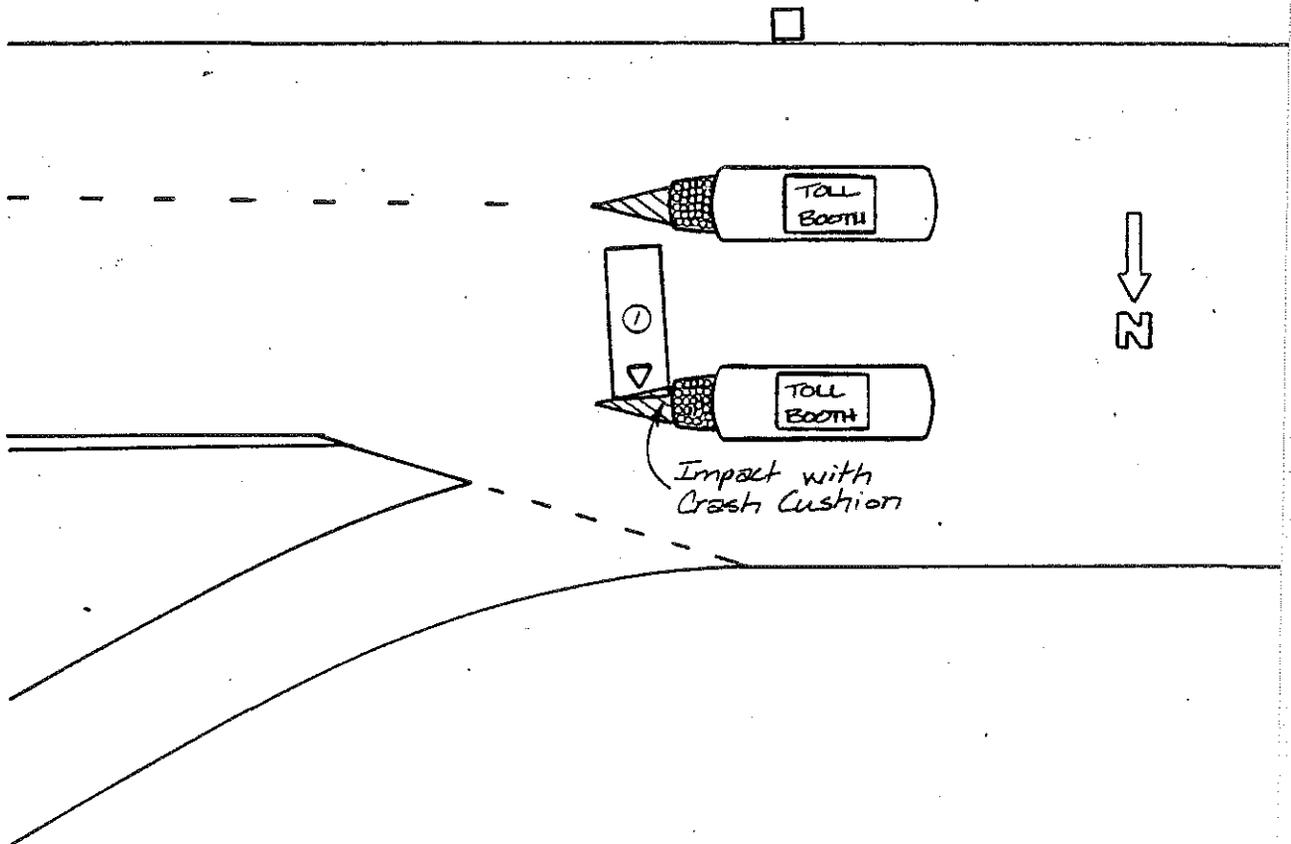
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: A 1969 Dodge van impacted the crash cushion head-on and spun clockwise 90 degrees until the left rear came to rest against another cushion. Damage to the van was disabling. The driver received possible injuries and he was not wearing a safety belt.

DIAGRAM:



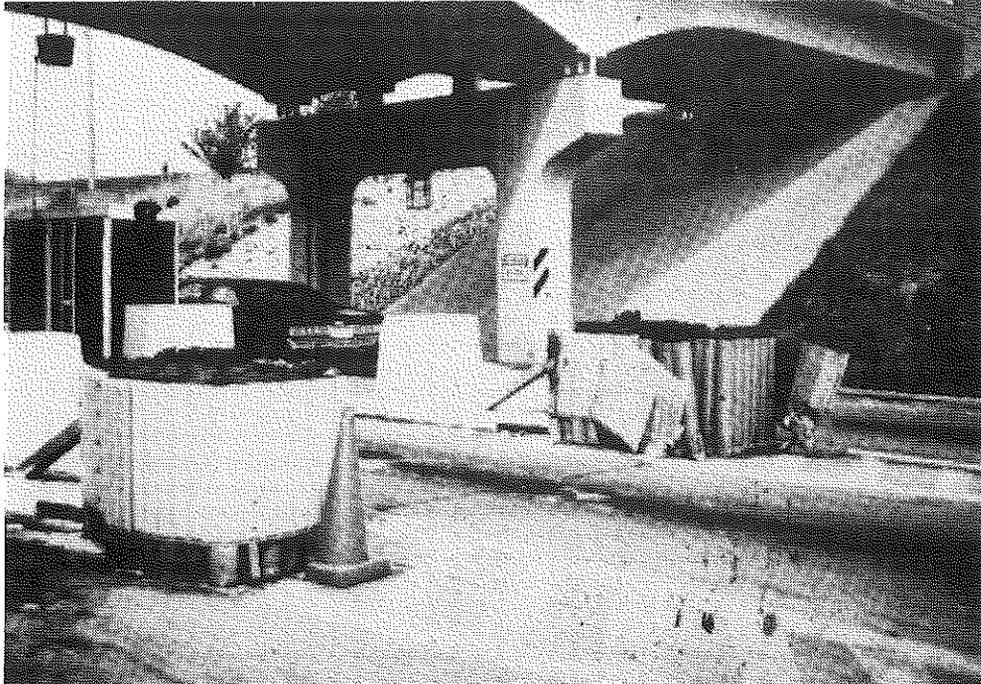


Figure C3. Accident Number 026, Grayson County, Western Kentucky Parkway, MP 107.0, at Leitchfield Toll Plaza

ACCIDENT NUMBER: 027

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 10/11/79

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1970 Pontiac 4-door sedan hit a crash cushion with an angle impact as driver attempted to change lanes, moving the cushion about three feet. The vehicle then backed from point of impact and left scene. The vehicle received functional damage. There were no injuries and the driver and passenger were not wearing safety belts.

DIAGRAM: Not Available

ACCIDENT NUMBER: 028

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 5/29/80

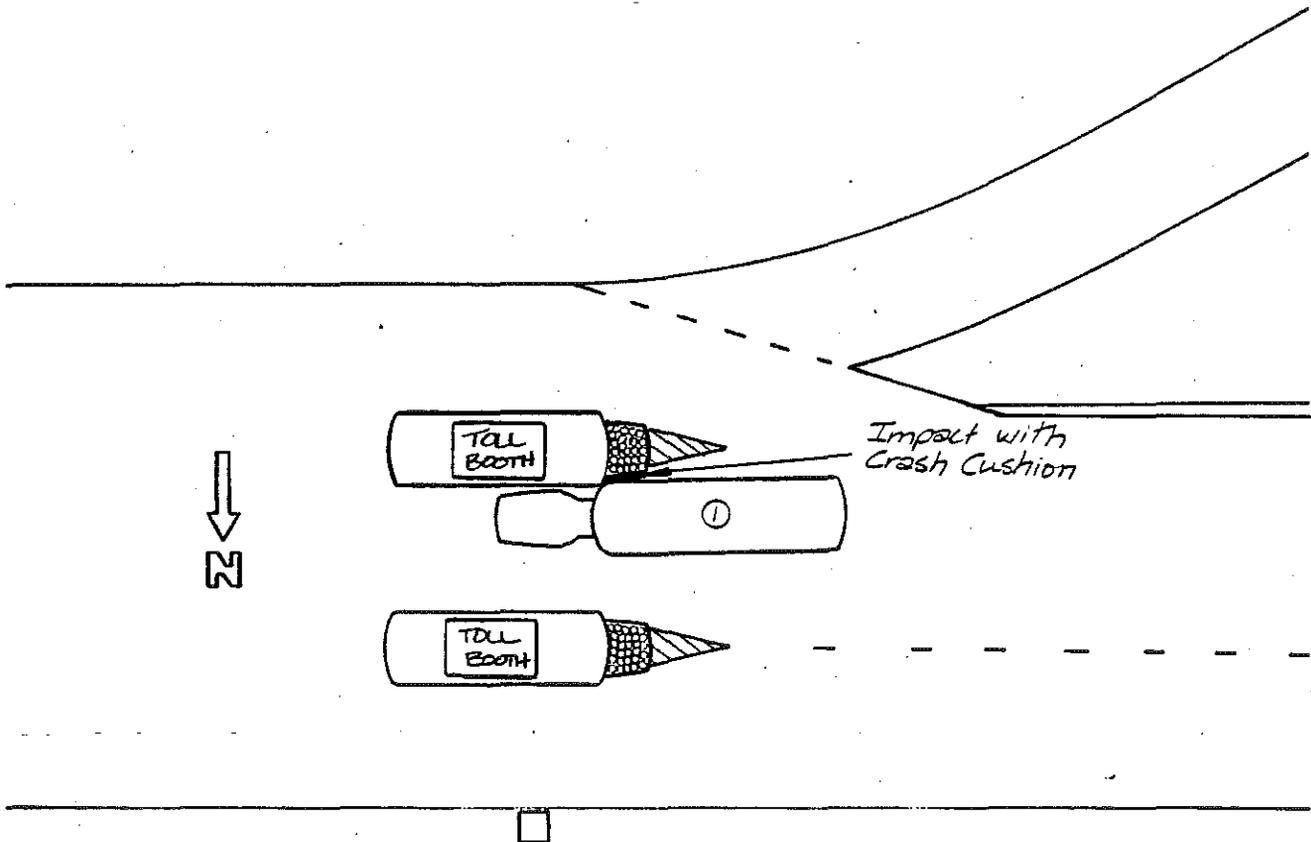
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1971 GMC tractor and semi-trailer attempted to go through a toll gate when part of the load on the trailer caught on the crash cushion. Damage was slight to the right side of the trailer. The driver was not injured and he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 029

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 7/17/81

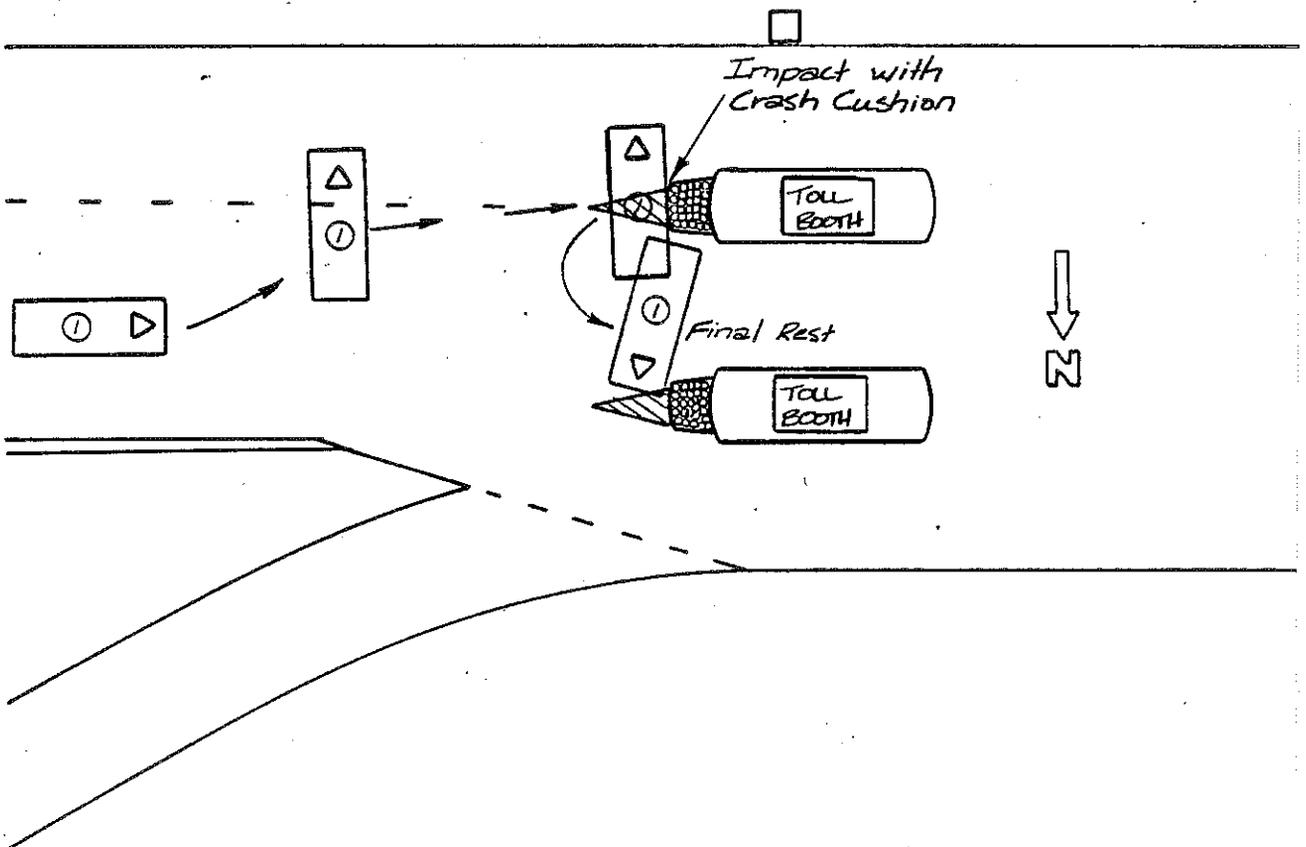
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1978 Chevrolet sedan hit a crash cushion broadside after the driver dozed off momentarily and then applied his brakes. The vehicle sustained disabling damage. The driver received a possible head injury. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 030

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 11/30/81

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1973 GMC tractor and semi-trailer was changing lanes at the toll plaza when he found that the right lane was closed. While changing lanes, the back wheels on the trailer struck the crash cushion. The vehicle sustained no damage, and the driver, who was wearing a lap belt, was not injured.

DIAGRAM: Not Available

ACCIDENT NUMBER: 031

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 1/4/83

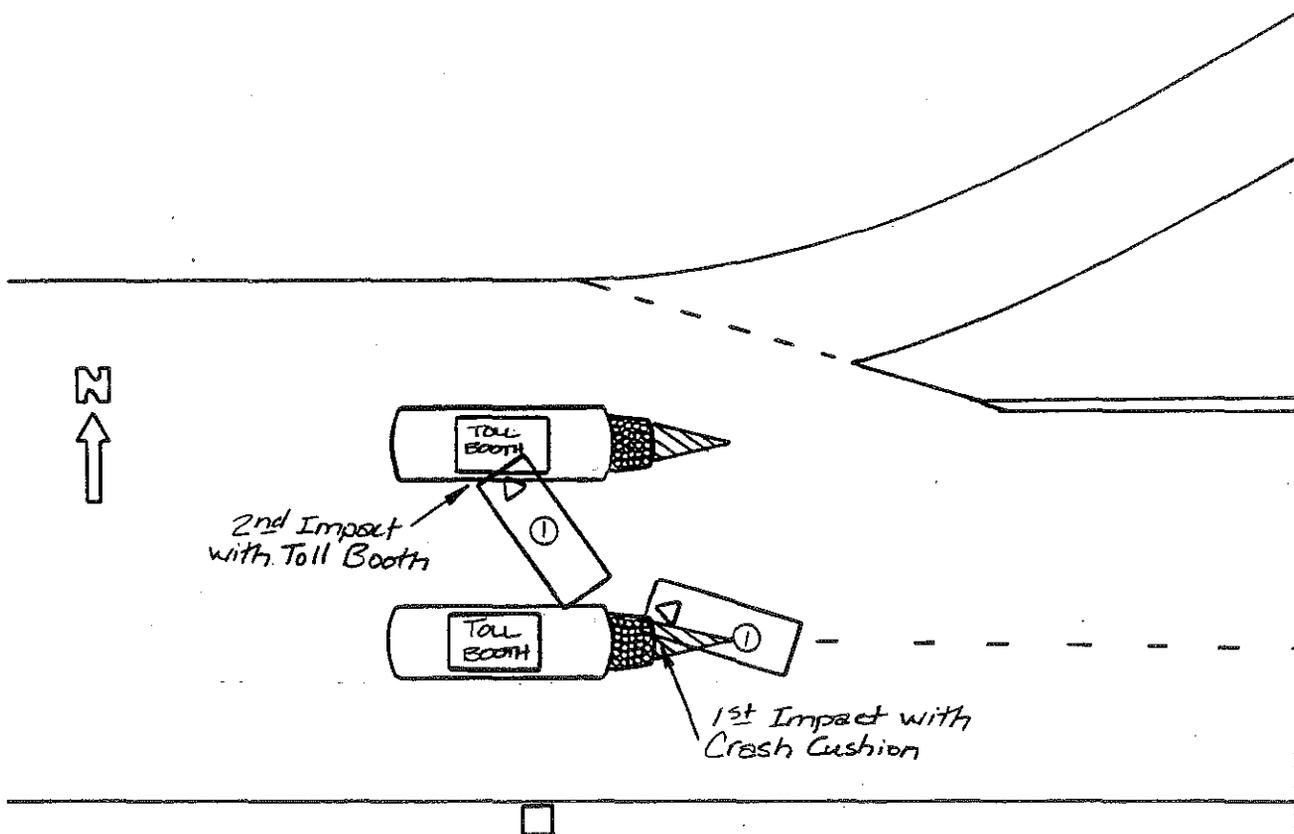
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Mercury 2-door sedan fell asleep and struck a crash cushion head-on. The vehicle then rebounded to its right into the toll lane. The vehicle received disabling damage, and both the driver and his passenger received incapacitating injuries. Neither occupant was wearing a safety belt.

DIAGRAM:



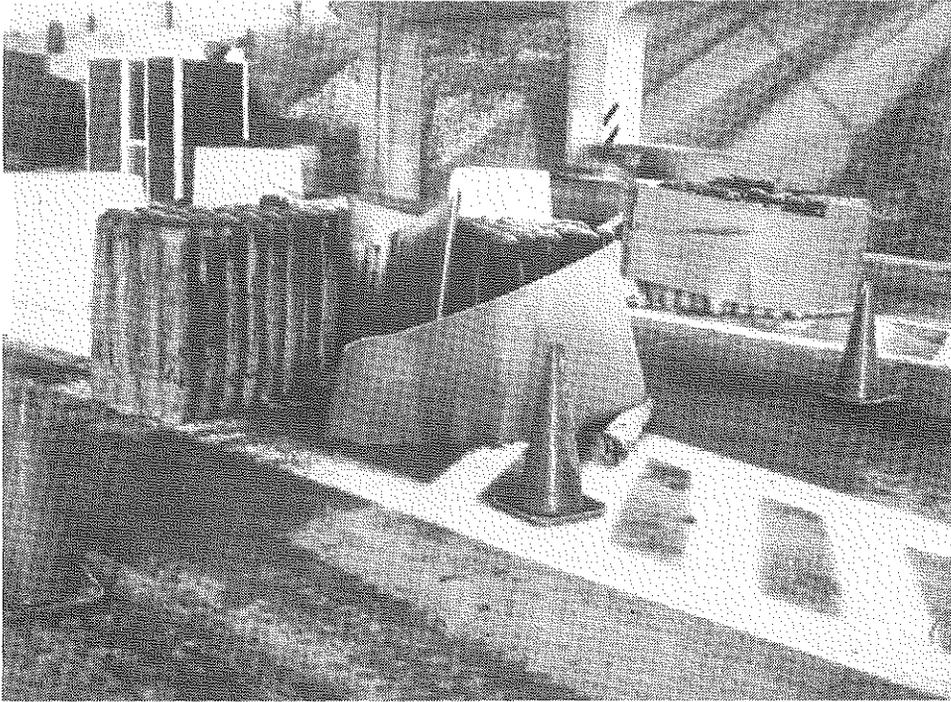


Figure C4. Accident Number 031, Grayson County, Western Kentucky Parkway, MP 107.0, at Leitchfield Toll Plaza.

ACCIDENT NUMBER: 032

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 10/14/83

TYPE OF CRASH CUSHION: Type IV; Hi-Dro-Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1983 Subaru 4-door sedan was passing through a toll gate when a 1974 Diamond tractor and semi-trailer impacted him from the rear. The tractor and semi-trailer sideswiped the crash cushion causing minor damage to the wrap-around belt. Damage to the truck was non-functional. The driver of the truck was not injured and he was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 033

LOCATION: COUNTY - Grayson
ROUTE - Western Kentucky Parkway
MILEPOINT - 107.0; Toll Plaza

DATE OF ACCIDENT: 3/20/84

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Peterbilt tractor and semi-trailer saw the right-hand lane closed and tried to turn left into the adjacent lane, striking the crash cushion with the right rear side of his truck. The truck sustained non-functional damage. Neither the driver or passenger were injured. They were not wearing safety belts.

DIAGRAM: Not Available

ACCIDENT NUMBER: 034

LOCATION: COUNTY - Nelson
ROUTE - Bluegrass Parkway
MILEPOINT - 33.3; Toll Plaza

DATE OF ACCIDENT: 12/23/79

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1973 Buick passenger car skidded on a slippery road surface and collided with a crash cushion before it impacted another passenger car while the car was stopped at the toll gate. The 1973 Buick sustained non-functional damage to its front end. The driver was not injured and he was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 035

LOCATION: COUNTY - Nelson
ROUTE - Bluegrass Parkway
MILEPOINT - 33.3; Toll Plaza

DATE OF ACCIDENT: 1/17/84

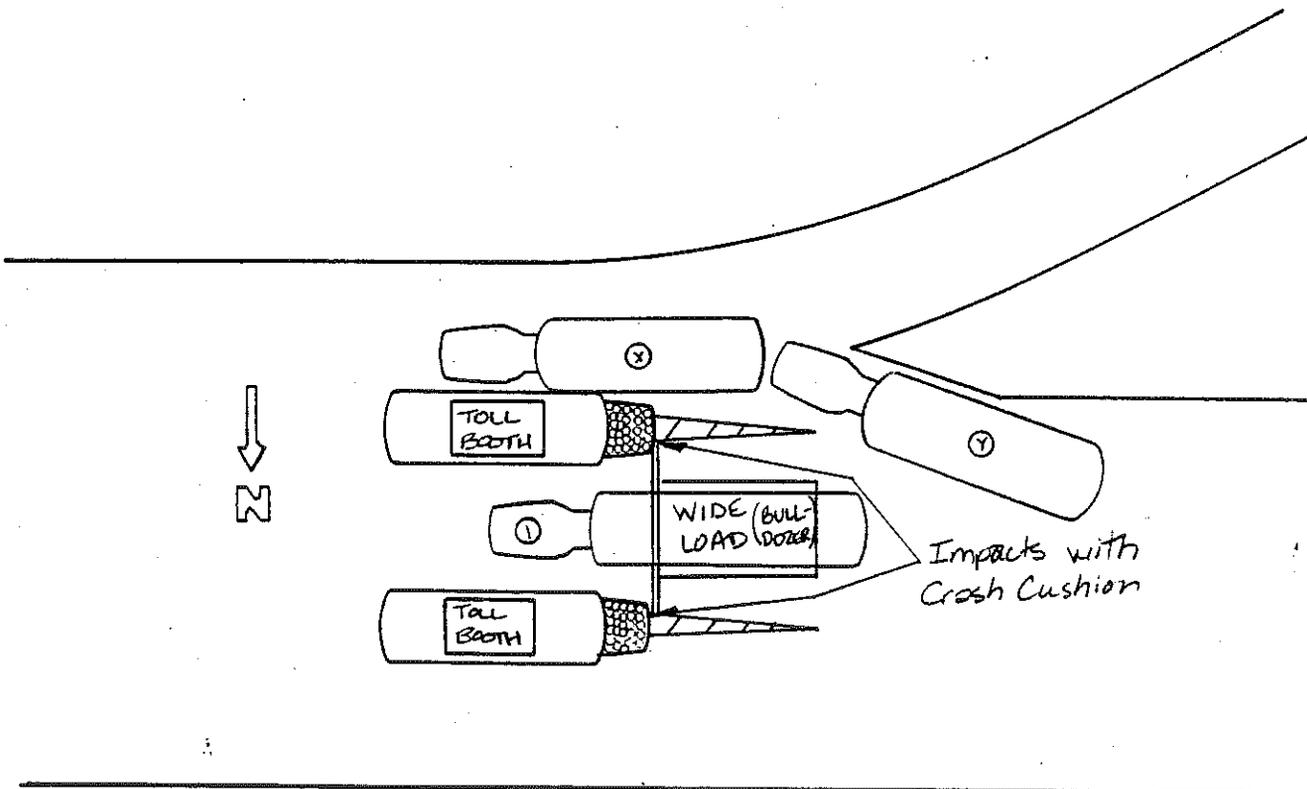
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The brakes on a 1975 White tractor and semi-trailer would not function properly and the truck impacted the crash cushion in an attempt to pass through the toll gate. The truck was hauling a bulldozer and the side of the dozer impacted the toll booth causing extensive damage. The tractor and semi-trailer was only slightly damaged. The driver was not injured and he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 036

LOCATION: COUNTY - Nelson
ROUTE - Bluegrass Parkway
MILEPOINT - 9.7; Toll Plaza

DATE OF ACCIDENT: 2/4/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1969 Oldsmobile 4-door sedan was described as being very intoxicated and on prescription drugs as his car ran head-on into a crash cushion and then into the concrete wall behind it at a toll booth. There was functional damage to the front of the vehicle. The driver, who was uninjured, was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 037

LOCATION: COUNTY - Nelson
ROUTE - Bluegrass Parkway
MILEPOINT - 33.3; Toll Plaza

DATE OF ACCIDENT: 4/15/81

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Ford tractor and semi-trailer dozed off upon approaching the toll plaza, but woke up in time to swerve his rig into an empty lane. The cab of the truck side-swiped a crash cushion on its passenger side, doing slight damage. The driver was wearing a safety belt and was not injured.

DIAGRAM: Not Available

ACCIDENT NUMBER: 038

LOCATION: COUNTY - Nelson
ROUTE - Bluegrass Parkway
MILEPOINT - 33.7; Toll Plaza

DATE OF ACCIDENT: 11/18/80

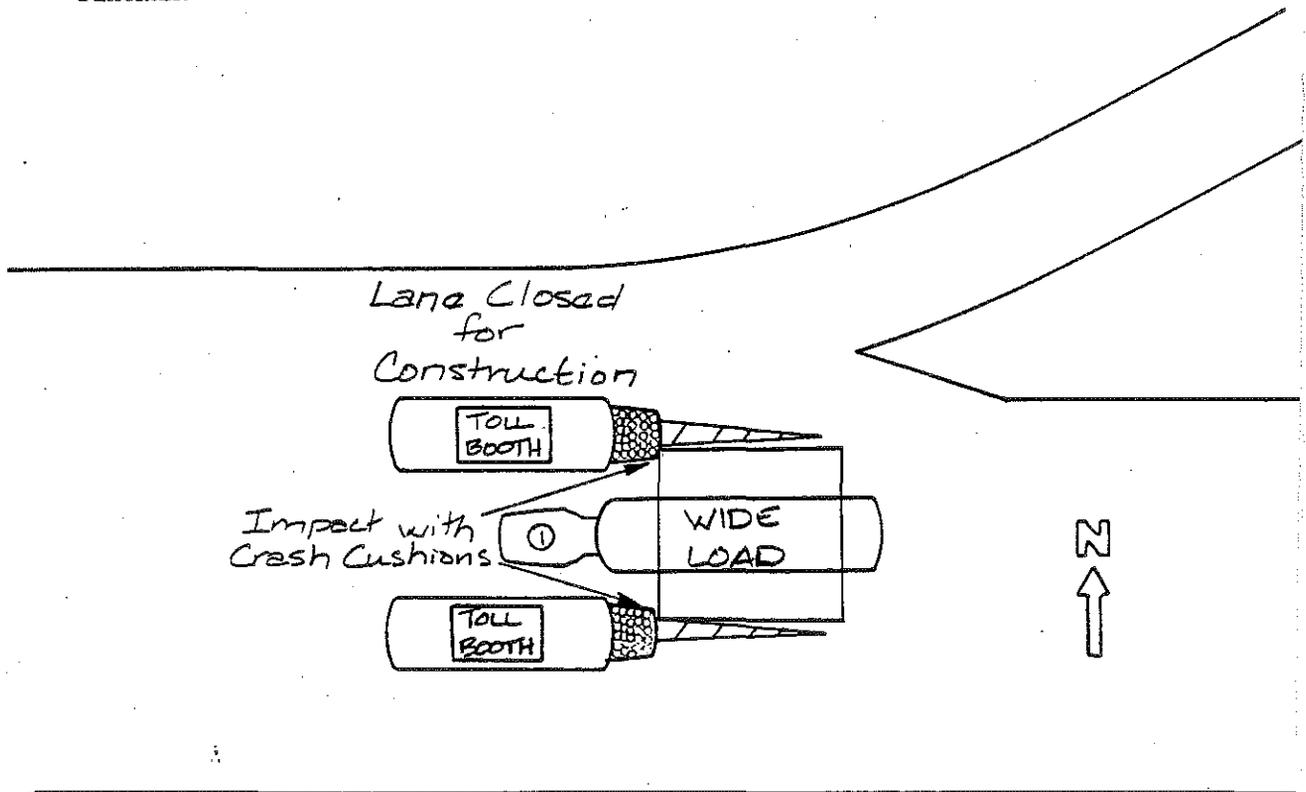
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1978 Peterbilt tractor and semi-trailer carrying a wide load, was forced to attempt to pass between the two toll booths at the toll plaza due to construction in the wide lane. The load was too wide and it caused damage to the crash cushions, walls, and toll booths. No injuries were reported and there was no damage to the vehicle. The driver was wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 039

LOCATION: COUNTY - Franklin
ROUTE - US 421
MILEPOINT - 3.0

DATE OF ACCIDENT: 3/4/82

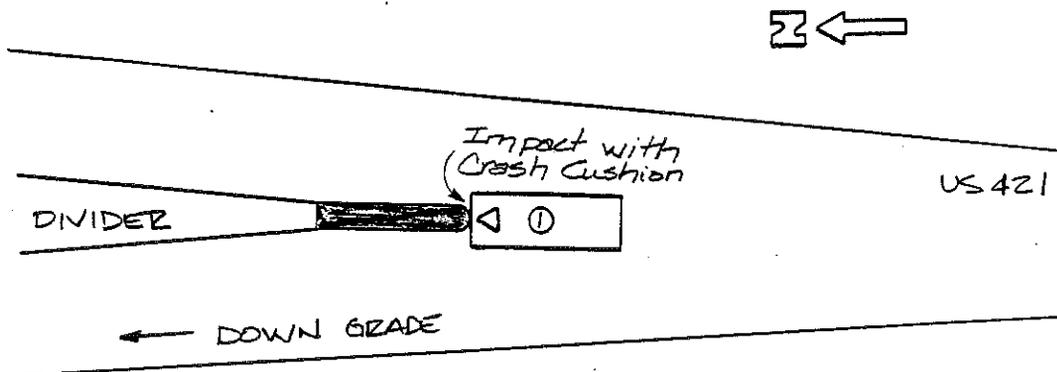
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 AMC Pacer was intoxicated and ran head-on into the crash cushion terminating the raised median divider. The front of the car received disabling damage. Neither the driver nor his two passengers received any injuries. None of the occupants was wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 040

LOCATION: COUNTY - Franklin
ROUTE - KY 676
MILEPOINT -at Collins Lane

DATE OF ACCIDENT: 3/17/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1975 Mercury 2-door sedan was arrested for public intoxication when he returned to the scene of the accident with a tow truck to remove the car. The car had a large hole in the fender just behind the left front wheel. The driver received an injury to his wrist; he was not wearing a safety belt at the time of the accident. No further details could be obtained from the accident report.

DIAGRAM: Not Available



Figure C5. Accident Number 040, Franklin County, KY 676, at Collins Lane.

ACCIDENT NUMBER: 041

LOCATION: COUNTY - Henry
ROUTE - I 71
MILEPOINT - 37.1

DATE OF ACCIDENT: 10/15/81

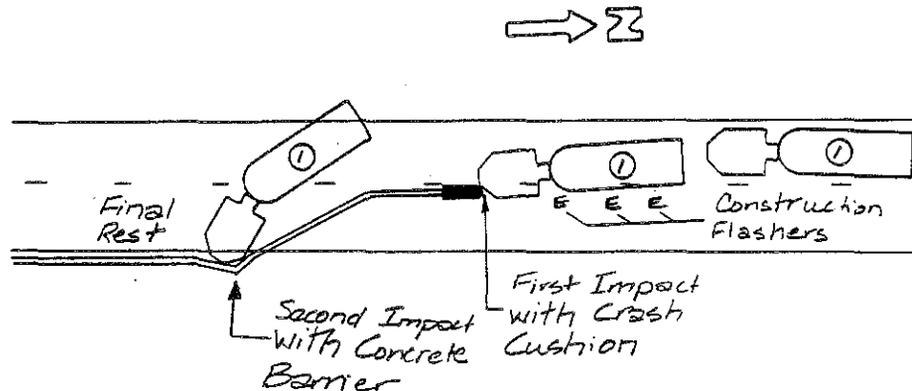
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1980 International tractor and semi-trailer, suffered a blowout in the left front tire, which pulled the vehicle to the left into a crash cushion terminating a temporary concrete barrier at a construction site. The truck bounced off the crash cushion and travelled 510 feet down the road before again striking the wall and coming to a halt. The truck received disabling damage to the front end. The driver suffered a non-incapacitating injury. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 042

LOCATION: COUNTY - Jefferson
ROUTE - I 64
MILEPOINT - 2.6; 22nd St. Exit

DATE OF ACCIDENT: 8/29/82

TYPE OF CRASH CUSHION: Type V; Steel Barrels

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle involved was a 1970 Chevrolet 4-door sedan. The police report states that the accident involved a head-on collision with the crash cushion (steel barrels) when the driver fell asleep. The driver suffered disabling injuries to the chest and legs. The car was disabled in the front end. The driver was not wearing a safety belt when the accident occurred.

DIAGRAM: Not Available



Figure C6. Accident Number 042, Jefferson County, I 64, MP 2.6, 22nd Street Exit.

ACCIDENT NUMBER: 043

LOCATION: COUNTY - Jefferson
ROUTE - I 64
MILEPOINT - 2.6; 22nd St. Exit

DATE OF ACCIDENT: 4/11/80

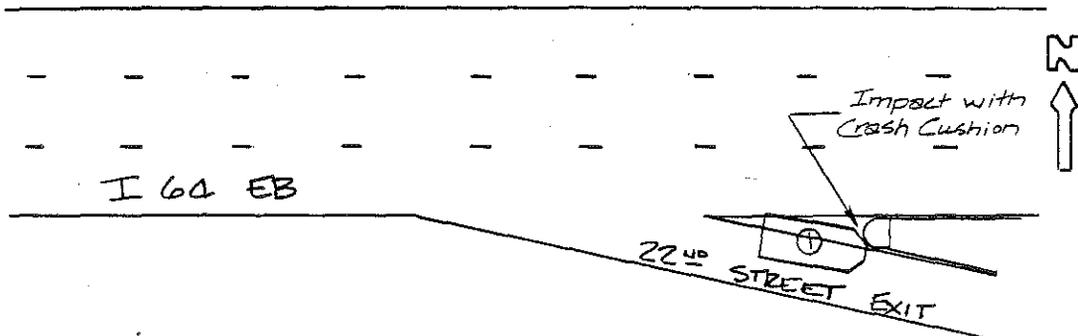
TYPE OF CRASH CUSHION: Type V; Steel Barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1972 Dodge pickup appeared to be travelling onto the 22nd Street Exit when the left front tire blew out, causing the truck to veer left head-on into the steel barrel crash cushion at the ramp gore area. The truck was disabled, but the driver was uninjured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 044

LOCATION: COUNTY - Jefferson
ROUTE - I 64
MILEPOINT - 4.5; 3rd Street Exit

DATE OF ACCIDENT: 3/17/80

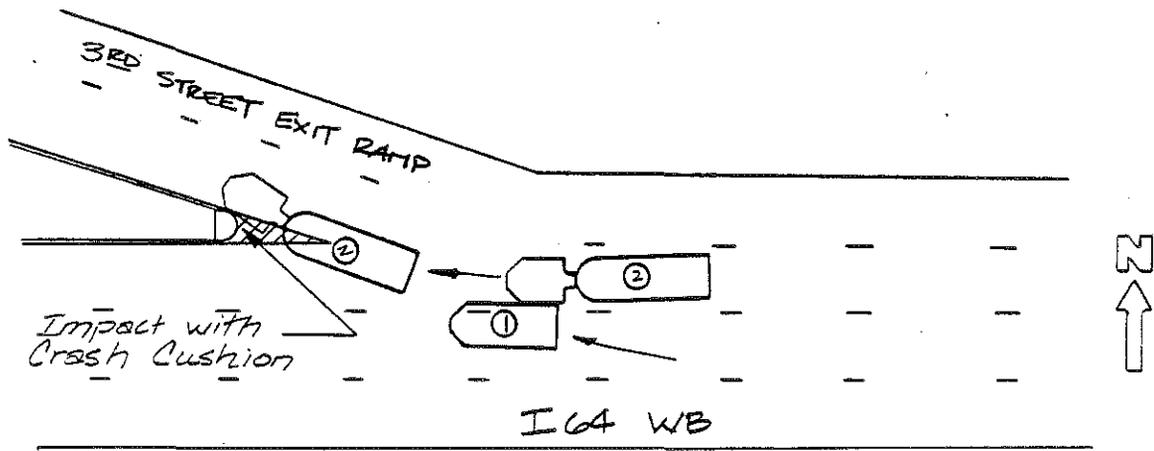
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: Unit 1, a passenger sedan, was travelling in the middle lane (3 lanes each direction) of I 64 at the 3rd Street exit ramp. Unit 2, a 1977 International tractor and semi-trailer, was in the right-hand lane. The sketch on the police report shows that Unit 1 veered into the tractor-trailer, sideswiping the driver's side of the cab with its right side. The truck then veered to the right, striking the crash cushion at the gore area with the cab of the truck near the driver's side door. Neither driver was injured, but the truck was disabled. The driver of the truck was wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 045

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 123.5; Hutcherson Drive

DATE OF ACCIDENT: 1/30/84

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1984 Peterbilt tractor and semi-trailer stated that a sudden gust of wind caused his vehicle to go out of control where it jackknifed, struck the crash cushion head-on and lodged itself underneath the overpass. Debris from the collision struck and disabled a vehicle headed in the opposite direction. The driver of the truck suffered an incapacitating leg injury. He was not wearing a safety belt. The truck received disabling damage to the front of the cab. Extent of damage to the crash cushion was heavy as the entire unit had to be replaced.

DIAGRAM: Not Available

ACCIDENT NUMBER: 046

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 133.0; Eastern Parkway Exit

DATE OF ACCIDENT: 3/9/83

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1974 Lincoln 2-door sedan collided with the crash cushion in the gore area head-on. Functional damage was done to the front and bottom of the car. The driver, who was not wearing a safety belt, was not injured. Extent of damage to the crash cushion is unknown.

DIAGRAM: Not Available

ACCIDENT NUMBER: 047

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.3; I 65 SB at I 64 WB

DATE OF ACCIDENT: 10/9/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle involved was a 1979 Dodge sedan, which the police report stated was going too fast for the wet road conditions. The car slid out of control and bumped into a crash cushion with its front end. The vehicle suffered slight damage to the front. The driver received a possible back injury. She was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 048

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.4; I 65 at I 64

DATE OF ACCIDENT: 10/2/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: This accident was caused by driver inattention as the vehicle, a 1974 Chevrolet 2-door sedan, drifted into the crash cushion at the I 64 Exit, impacting it head-on with the front end. The car was disabled but the driver was not injured. The driver was wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 049

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 133.0; Eastern Parkway Exit

DATE OF ACCIDENT: 7/29/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: A 1973 Pontiac Catalina collided head-on at high speed with a crash cushion. Prior to impact, the police report sketch shows that the car glanced off the concrete median barrier, crossed over three traffic lanes, impacted the crash cushion at the exit ramp, rotated 90 degrees clockwise and landed on its top in the gore area. The driver was fatally injured and was not wearing a safety belt. Disabling damage was done to the car and heavy damage was done to the crash cushion.

DIAGRAM:

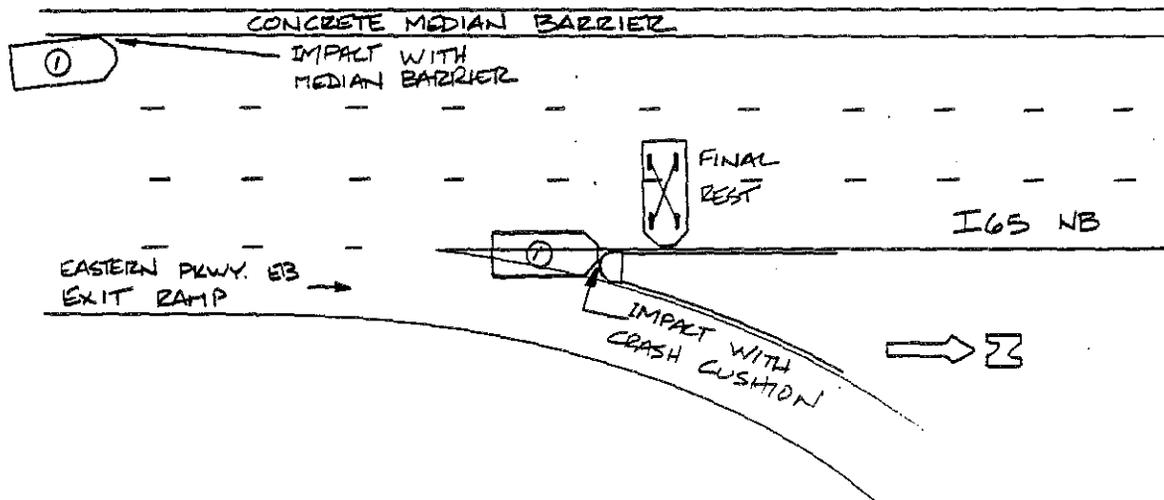




Figure C7. Accident Number 049, Jefferson County, I 65, MP 133.0, Eastern Parkway Exit.

ACCIDENT NUMBER: 050

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 133.0; Eastern Parkway Exit

DATE OF ACCIDENT: 6/24/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Ford sedan was attempting to brake and make an abrupt exit onto the exit ramp after she almost missed the exit. Apparently she acted too late and the car slid into the crash cushion at the gore area, striking it with the middle of the left side. There was non-functional damage to the car. The driver was not wearing a safety belt, but she was not injured.

DIAGRAM: Not Available

ACCIDENT NUMBER: 051 .

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.5; I 65 SB at I 64

DATE OF ACCIDENT: 6/10/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Mack tractor and semi-trailer was travelling southbound on I 65 when he came upon the exit ramp to I 64. At the last minute he swerved to the right in an attempt to make the exit ramp, but he reacted too late and struck the crash cushion in the gore area with the left front corner of the cab. The cab then rode up onto the bridge railing, became detached from the trailer and fell to the roadway below. The driver was killed, suffering multiple injuries as he was ejected from the cab. The truck was demolished. The driver was not wearing a safety belt. Heavy damage was done to the crash cushion.

DIAGRAM:

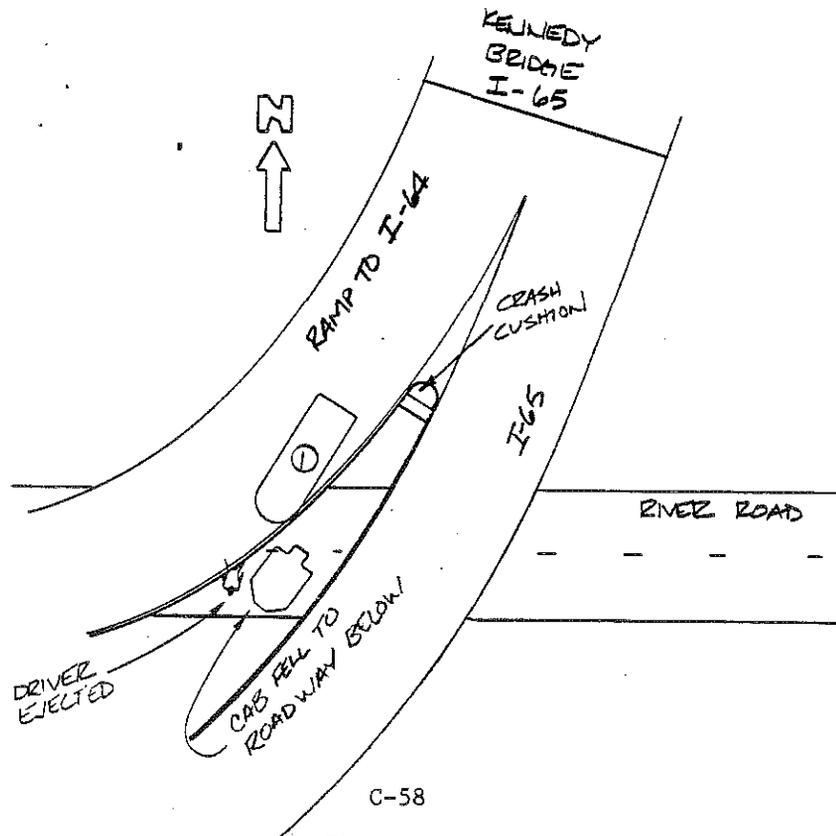




Figure C8. Accident Number 051, Jefferson County, I 65, MP 136.5, I 65 Southbound at I 64.

ACCIDENT NUMBER: 052

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 133.0; Eastern Parkway Exit

DATE OF ACCIDENT: 4/27/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1981 Chevrolet sedan was not paying attention to the roadway ahead due to alcohol involvement and struck the crash cushion at the gore area head-on. The driver suffered non-incapacitating head injuries, while his passenger suffered incapacitating head injuries. The car was disabled. Neither of the occupants wore a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 053

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.5; I 65 SB at I 64

DATE OF ACCIDENT: 4/26/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1979 GMC tractor and semi-trailer, went out of control due to rainy conditions and struck the crash cushion head-on, where it then caught fire. The vehicle was heavily damaged. The driver was not injured but the passenger suffered an incapacitating chest injury. Neither occupant wore a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 054

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.4; I 65 NB at I 64

DATE OF ACCIDENT: 2/9/82

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: Ice and snow on the roadway caused a 1975 Chevrolet sedan to go out of control and strike a crash cushion head-on. There was functional damage to the right front corner of the car. The driver was not injured; but the passenger sustained an incapacitating chest injury. Neither occupant was wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 055

LOCATION: COUNTY - Jefferson
ROUTE - I 65
MILEPOINT - 136.3; I 65 SB at I 64

DATE OF ACCIDENT: 11/5/81

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: Unit 2, a 1971 GMC tractor and semi-trailer, was travelling in the exit lane at the interchange of I 65 with I 64 - I 71. From the police report, it appears that Unit 2 intended to stay on I 65 and was in the wrong lane. Unit 1, a pickup truck, veered suddenly in front of Unit 2 in an attempt to make an exit, causing Unit 2 to collide with Unit 1 and then with the crash cushion at the gore area. Unit 2 struck the crash cushion with the right front corner of the cab, disabling it. Neither driver was injured. The driver of Unit 2 was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 056

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT - 136.4; I65 NB at I64

DATE OF ACCIDENT: 2/7/81

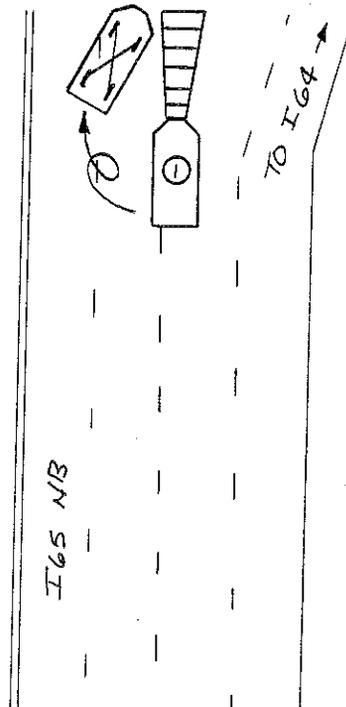
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1973 Chevrolet sedan lost control of the vehicle due to alcohol involvement and struck the crash cushion in the gore area head-on. The car then spun 360 degrees and landed on its top just to the left of the crash cushion. The driver suffered non-capacitating head injuries. The car was disabled, receiving heavy damage over the entire vehicle. The driver was not wearing a safety belt.

DIAGRAM:



C-64

ACCIDENT NUMBER: 057

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT -125.0

DATE OF ACCIDENT: 12/9/80

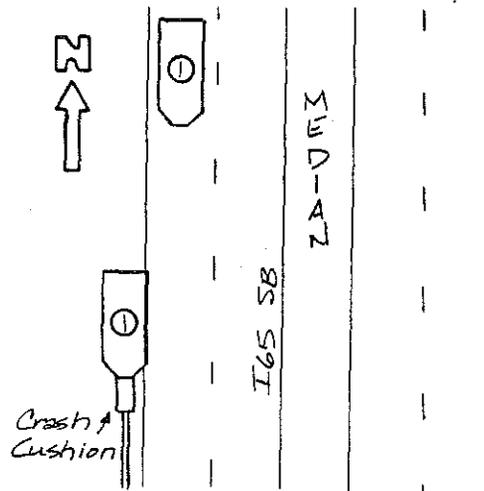
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The roadway in this section of I65 was narrowed by construction and the emergency lane was being used as a traffic lane. The driver of a 1979 Chevrolet pickup failed to observe the traffic control measures and ran head-on into the crash cushion terminating the temporary concrete barrier. Disabling damage was done to the front end of the truck. The driver was not injured; he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 058

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT - 126.6

DATE OF ACCIDENT: 12/5/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1974 Chevrolet 2-door sedan struck the crash cushion and then overturned. Disabling damage was done to the top of the vehicle, but the driver was not hurt. Alcohol involvement was noted. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 059

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT - 125.0

DATE OF ACCIDENT: 12/4/80

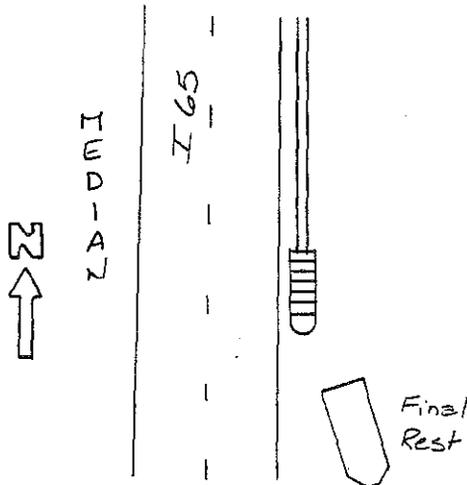
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1971 Ford 4-door sedan was not paying attention to the roadway construction and ran into the crash cushion at the end of a temporary concrete barrier. The vehicle impacted the crash cushion with the front end of the car and bounced back, spinning around 180 degrees. The car suffered disabling damage. The driver was not injured; he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 060

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT - 136.7; I65 SB at I64

DATE OF ACCIDENT: 4/1/80

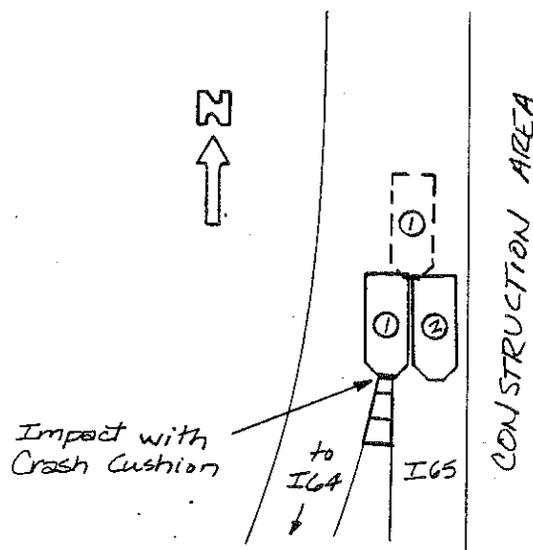
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1980 Ford Thunderbird was travelling through the construction area at an unsafe speed. Not watching the roadway, he ran into the rear of a slower vehicle in front of him and then veered to the right, striking a crash cushion at the I64 exit gore area head-on. The car was disabled from extensive front-end damage, but the driver was not injured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 061

LOCATION: COUNTY - Jefferson
ROUTE - I65
MILEPOINT - 123.5; at Hutcherson Drive Overpass

DATE OF ACCIDENT: 1/31/78

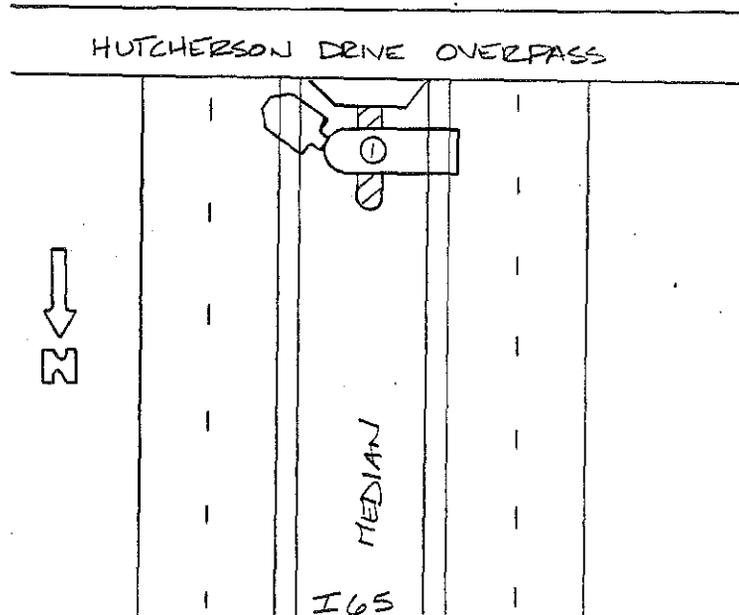
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a Kenworth tractor and semi-trailer lost control of his vehicle after striking a patch of ice on the roadway. The truck slid sideways into the median and struck the G.R.E.A.T. crash cushion protecting the bridge pier with the bottom edge of the right side of the trailer. The bottom of the trailer was heavily damaged. Photos show massive damage to the crash cushion. The driver suffered a non-incapacitating chest injury. He was not wearing a safety belt.

DIAGRAM:



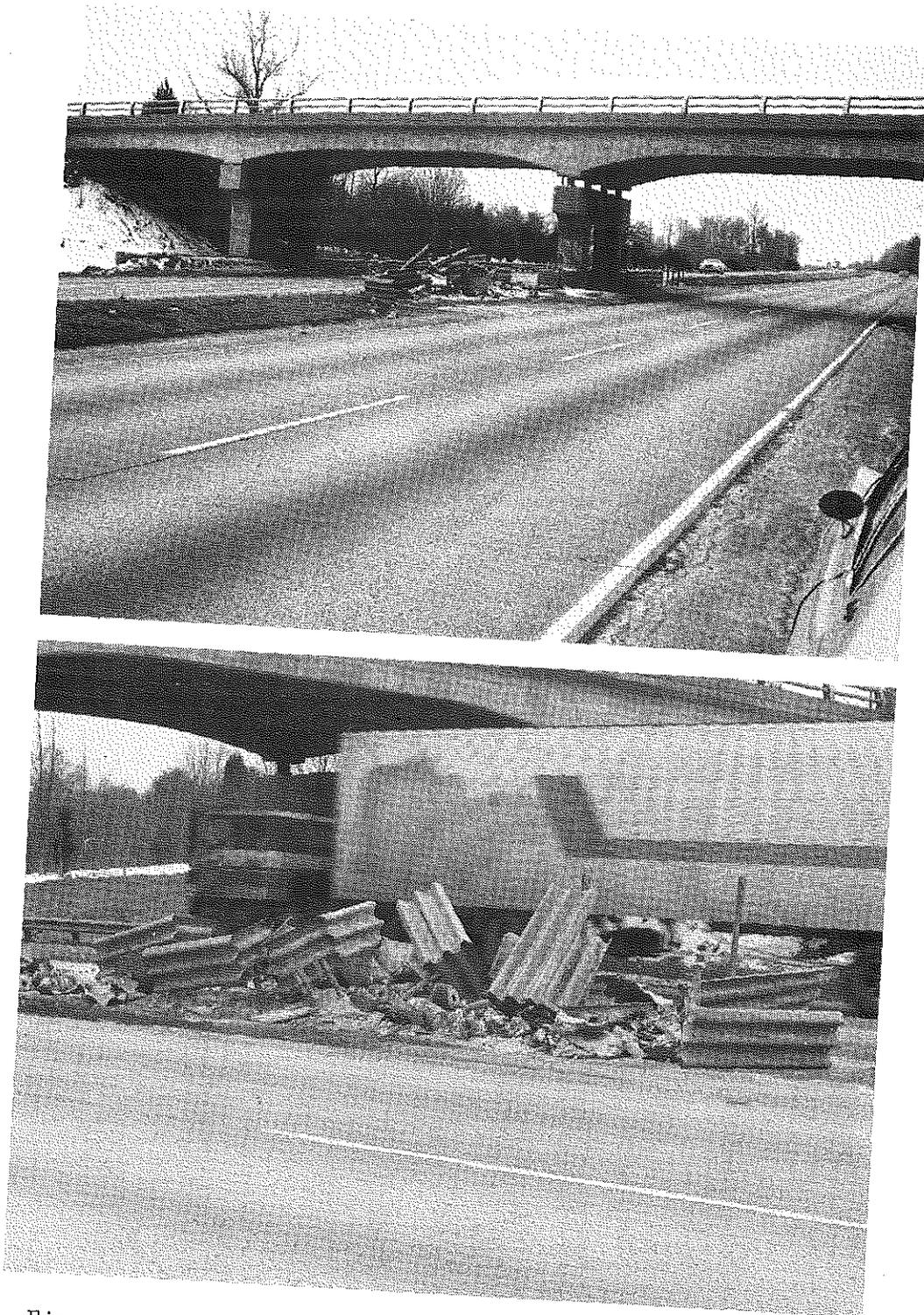


Figure C9. Accident Number 061, Jefferson County, I 65, MP 123.5, at Hutcherson Drive.

ACCIDENT NUMBER: 062

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 7.5; at US31W

DATE OF ACCIDENT: 11/12/82

TYPE OF CRASH CUSHION: Type I or Type II; Sand Barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1975 2-door Volkswagen stated that he lost control of his vehicle due to wet pavement conditions and struck several sand barrels head-on at the gore area. The vehicle received non-functional damage to the front end and remained in service. The driver was not injured; he was not wearing a safety belt when the accident occurred.

DIAGRAM: Not Available

ACCIDENT NUMBER: 063

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 19.9; at US60

DATE OF ACCIDENT: 9/26/82

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Ford pickup struck the crash cushion in the gore area head-on. Disabling damage was done to the front end of the vehicle. The driver, who was not wearing a safety belt, was not injured. Extent of damage to the crash cushion is unknown.

DIAGRAM: Not Available

ACCIDENT NUMBER: 064

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 19.1; I264 WB at I64 WB

DATE OF ACCIDENT: 9/26/82

TYPE OF CRASH CUSHION: Type I or Type II; Sand Barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1978 International tractor and semi-trailer collided head-on with the crash cushion. The police report states that the accident was caused by defective trailer wheels and axles. The cab suffered disabling damage to the front end. The driver was not injured and was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 065

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 7.5; at US31W

DATE OF ACCIDENT: 8/27/82

TYPE OF CRASH CUSHION: Type I or Type II; Sand Barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1971 Ford pickup, went out of control when it struck a pool of water on the roadway and collided head-on with a crash cushion. The vehicle sustained disabling damage to the front end. The driver was not injured. He was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 066

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 19.9; at US60

DATE OF ACCIDENT: 5/22/82

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1980 Mercury sedan, sideswiped a crash cushion with its left rear corner, causing disabling damage. The driver, who was not wearing a safety belt, was not injured. No further details of the accident were available from the police report.

DIAGRAM: Not Available

ACCIDENT NUMBER: 067

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 7.5; at US31W

DATE OF ACCIDENT: 2/9/82

TYPE OF CRASH CUSHION: Type I or Type II; Sand Barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1978 Chevrolet sedan, went out of control after striking ice and struck a crash cushion at the gore area. The impact was at the back corner next to the bridge structure allowing the vehicle to impact the bridge. The driver sustained severe multiple injuries, although she was wearing a safety belt. The car suffered disabling damage to the front end.

DIAGRAM: Not Available

ACCIDENT NUMBER: 068

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 11.0

DATE OF ACCIDENT: 7/27/80

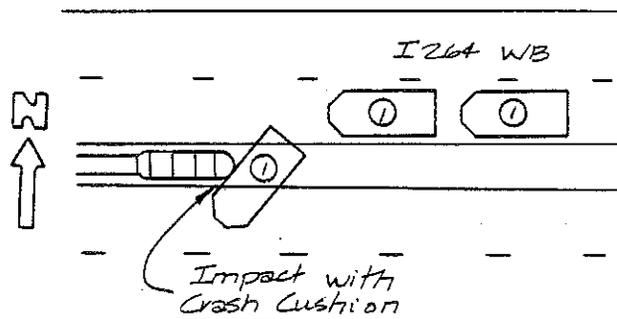
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1967 Ford pickup truck swerved into the median in order to avoid a collision with a vehicle making an illegal U-turn. The vehicle slid sideways into a crash cushion, striking it with the passenger side and causing slight damage. The vehicle remained in operation. The driver of the truck was not injured; he was not wearing a safety belt when the accident occurred.

DIAGRAM:



ACCIDENT NUMBER: 069

LOCATION: COUNTY - Jefferson
ROUTE - I264
MILEPOINT - 9.1; at Lentz Ave.

DATE OF ACCIDENT: 3/6/80

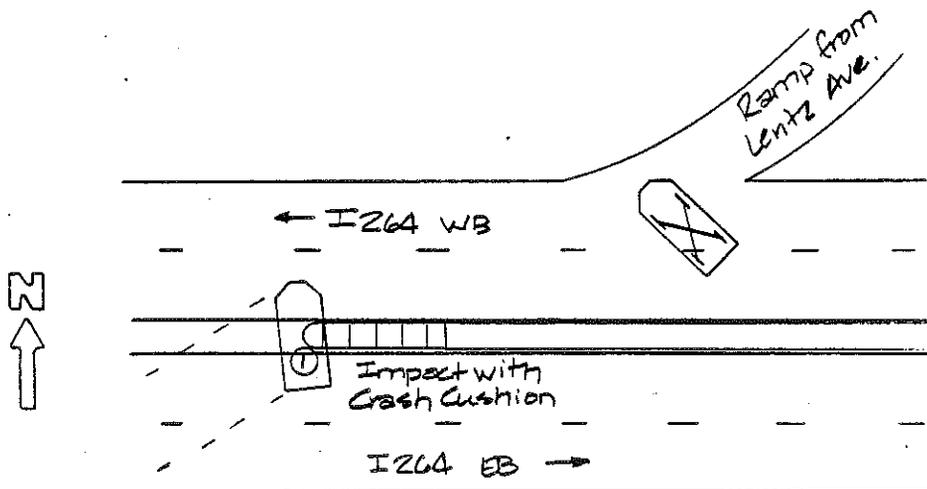
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1976 Chevrolet Monza went out of control due to high speed and slid sideways into the median, striking a crash cushion with the passenger side of the car. The vehicle then flipped over the crash cushion and landed on its top in the opposite lanes. The driver, who was wearing a lap belt and shoulder harness, suffered non-disabling injuries to the neck and back. The vehicle sustained extensive damage to the right side.

DIAGRAM:



ACCIDENT NUMBER: 070

LOCATION: COUNTY - Campbell
ROUTE - I 275
MILEPOINT - 77.0; at KY 9

DATE OF ACCIDENT: 10/16/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1968 Plymouth 2-door sedan struck a crash cushion head-on at the KY 9 exit from I 275. Disabling damage was done to the front end of the vehicle. The driver, who was not wearing a safety belt, suffered a possible head injury.

DIAGRAM: Not Available

ACCIDENT NUMBER: 071

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 3/14/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Pontiac 2-door sedan states that she was forced off the road by an oncoming car. She sideswiped the crash cushion at the Banklick Rd. exit, travelled across the road and went off on the other side. The car sustained disabling damage to the right front end. The driver received a possible neck injury. Neither occupant was wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 072

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 3/2/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1977 Pontiac 2-door sedan went out of control and struck a crash cushion head-on. Disabling damage was done to the front end of the vehicle; the driver, who was not wearing a safety belt, was not injured.

DIAGRAM: Not Available

ACCIDENT NUMBER: 073

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 2/15/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1976 Chevrolet 2-door sedan struck a crash cushion at a slight angle of impact with the right front corner of the car. One passenger suffered an incapacitating arm injury, while the driver suffered a possible head injury. The other passenger (front seat) was not injured. None of the occupants were wearing safety belts.

DIAGRAM: Not Available

ACCIDENT NUMBER: 074

LOCATION: COUNTY - Campbell
ROUTE - Ky 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 1/25/81

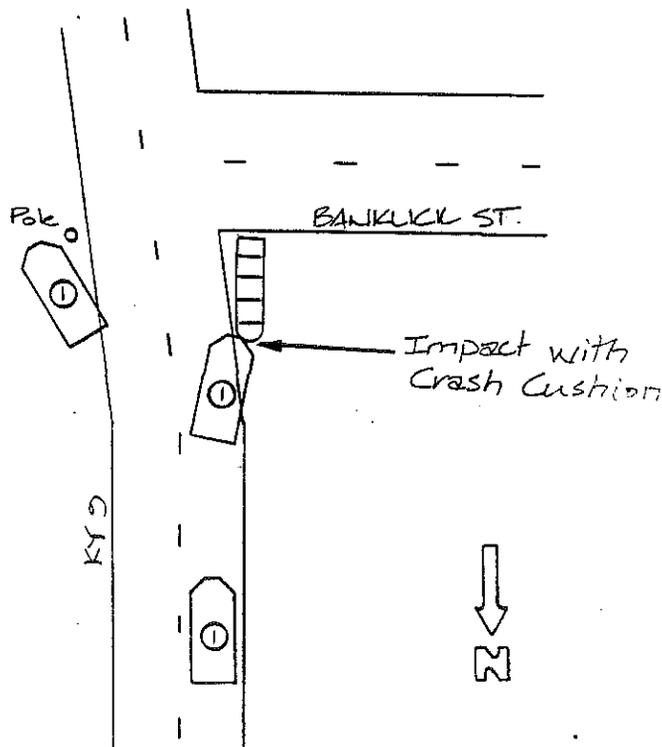
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Ford 2-door sedan stated that an oncoming car with its headlights on high beam caused him to veer to the right and strike the crash cushion with the right front corner of his vehicle. The car then glanced off the crash cushion and crossed the roadway, where it ran off the other side. The driver received a non-disabling neck injury, while the passenger received a non-disabling head injury. Neither driver nor passenger were wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 075

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 1/19/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: For no known reason, a 1975 Oldsmobile 2-door sedan went out of control and slid to the right, striking the crash cushion with its right rear fender. Slight damage was done to the car, but it remained in service. None of the four occupants were wearing safety belts. No one was injured.

DIAGRAM: Not Available

ACCIDENT NUMBER: 076

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 1/14/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The owner of a 1978 Ford 2-door sedan claimed that his car was stolen by 2 subjects, whom he followed in another car. He states that the car hit the crash cushion at KY 9 and Banklick Road with the right front end, causing slight damage. The car continued to KY 9 and Vine Street, where the subjects abandoned it and fled on foot. Neither appeared to be injured from the accident. The car remained in service.

DIAGRAM: Not Available

ACCIDENT NUMBER: . 077

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 1/11/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Ford Mustang struck the crash cushion head-on and then drove away. He suffered a possible head injury. The car was slightly damaged but remained in operation. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 078

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 10/30/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Ford Mustang claimed that she took her eyes off the road to light a cigarette, causing her to veer to the right, where she struck the crash cushion head-on. The front end of the car received disabling damage. The driver received a non-disabling head injury. She was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 079

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 9/4/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Mercury Cougar stated that she fell asleep at the wheel, causing her vehicle to veer off the roadway where she ran head-on into the crash cushion. The car received functional damage to the front end and right front fender. The driver sustained a possible chest injury. She was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 080

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 7/23/80

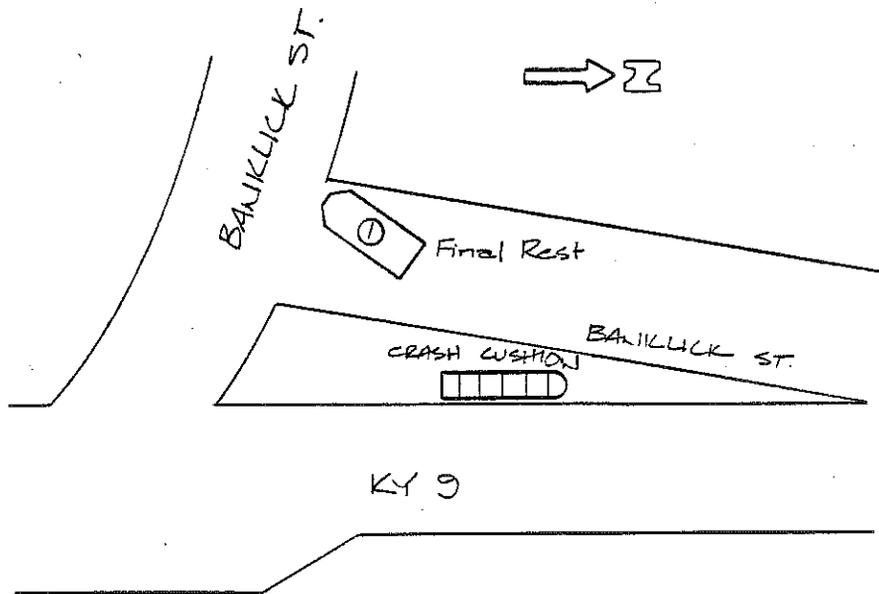
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1980 Plymouth 2-door sedan stated that an oncoming vehicle was across the centerline in his lane, forcing him to leave the roadway and strike the crash cushion. The car suffered disabling damage to the right front corner. The driver, who was not wearing a safety belt, was not injured.

DIAGRAM:



ACCIDENT NUMBER: 081

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 4/30/80

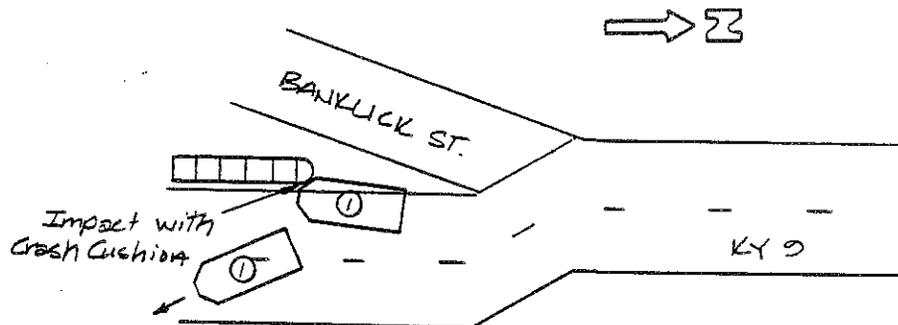
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1977 Chevrolet Nova, struck the crash cushion with the right front corner of the car, then glanced off the crash cushion across the roadway, where it ran off the other side and struck a tree. The car was disabled. The driver suffered possible arm injuries. She was wearing a safety belt when the accident occurred.

DIAGRAM:



ACCIDENT NUMBER: 082

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 3/23/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1975 Chevrolet 2-door sedan, was found abandoned about 75 feet from the crash cushion. Damage was to the right front corner of the car, but its severity and the severity of impact could not be determined from the police report. The driver, who was found later, was not injured. He was not wearing a safety belt at the time of the accident.

DIAGRAM: Not Available

ACCIDENT NUMBER: 083

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 2/5/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1971 Chevrolet 2-door sedan, hit the crash cushion head-on, then veered left back across the roadway and off the other side, where it landed on its side in a creek bed. The vehicle received disabling damage to the front end. The driver received a possible head injury. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 084

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 12/17/77

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1975 Dodge pickup stated that an oncoming vehicle forced him off the road and head-on into the crash cushion. The vehicle received moderate damage to the front end. The driver, who was not wearing a safety belt, was not injured.

DIAGRAM: Not Available

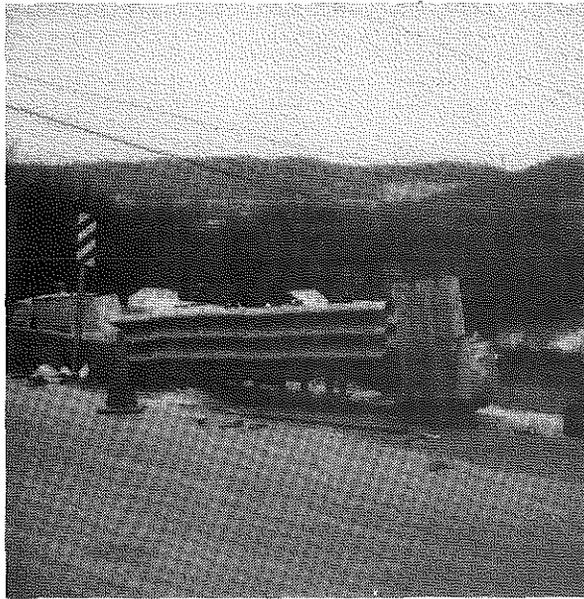
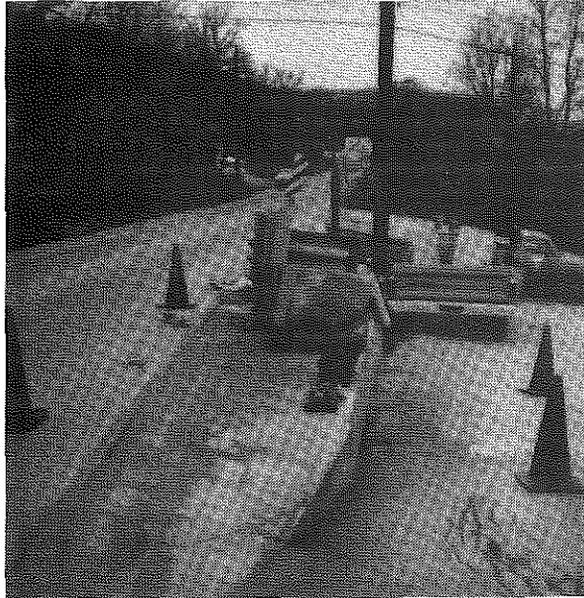


Figure C10. Accident Number 084, Campbell County, KY 9, MP 13.7, at Banklick Road.

ACCIDENT NUMBER: 085

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 11/6/76

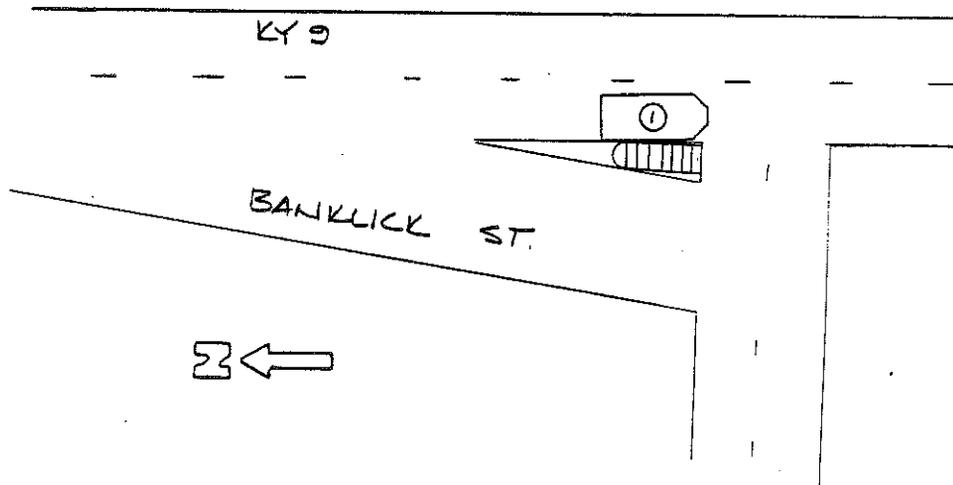
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1971 Ford 750 (Coca Cola truck) was traveling south on KY 9 and sideswiped the crash cushion with its right side. The vehicle received functional damage along the right side. The driver was not wearing a safety belt and was not injured. Damage to the crash cushion was moderate.

DIAGRAM:



ACCIDENT NUMBER: 086

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 3/7/77

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1970 Volkswagen struck the crash cushion head-on due to inattentiveness to the roadway. The vehicle came to a stop along the left side of the cushion after sustaining disabling damage to the right front and right side. The driver was not wearing a safety belt and was not injured. Damage to the crash cushion was moderate.

DIAGRAM: Not Available

ACCIDENT NUMBER: 087

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 5/14/77

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Not Available

COMMENTS: Photographs and the repair form show the crash cushion was damaged moderately. The crash cushion was torn from its mounting base, which was secured with chains and bolts. The unit had been shifted to the right and the nose cone portion was damaged sufficiently to be detached from the remaining part of the crash cushion.

DIAGRAM: Not Available

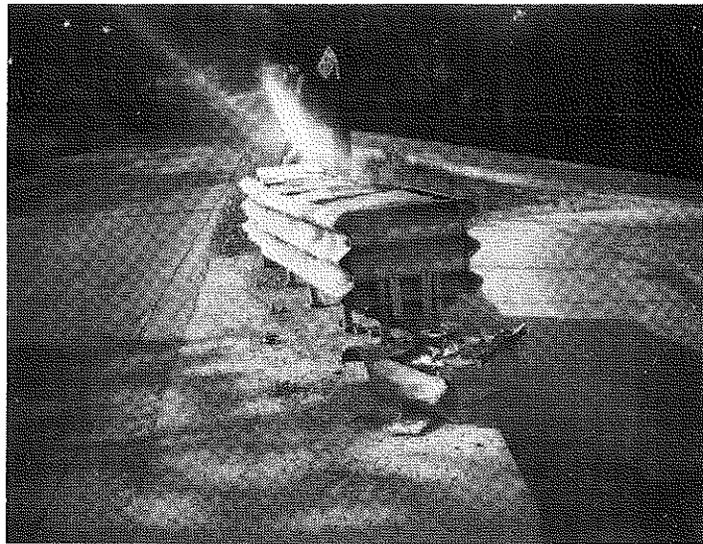


Figure C11. Accident Number 087, Campbell County, KY 9, MP 13.7, at Banklick Road.

ACCIDENT NUMBER: 088

LOCATION: COUNTY - Campbell
ROUTE - KY 9
MILEPOINT - 13.7; at Banklick Road

DATE OF ACCIDENT: 5/26/77

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Not Available

COMMENTS: Photographs and the repair form show the crash cushion was apparently hit from the side just behind the nose cone. It was shifted slightly to the right and buckled slightly in the mid-portion.

DIAGRAM: Not Available



Figure C12. Accident Number 088, Campbell County, KY 9, MP 13.7, at Banklick Road.

ACCIDENT NUMBER: 089

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 12/22/72

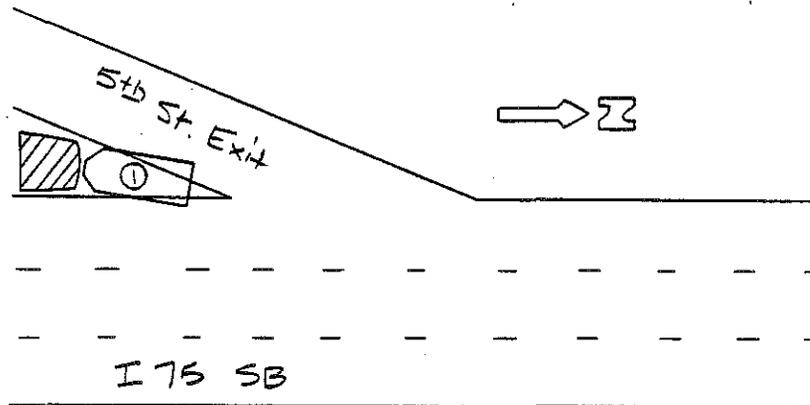
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1962 Ford 2-door sedan was southbound on I 75 when a vehicle forced him into the crash cushion resulting in a head-on impact. There were no injuries and the vehicle sustained disabling damage.

DIAGRAM:



ACCIDENT NUMBER: 090

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 10/26/72

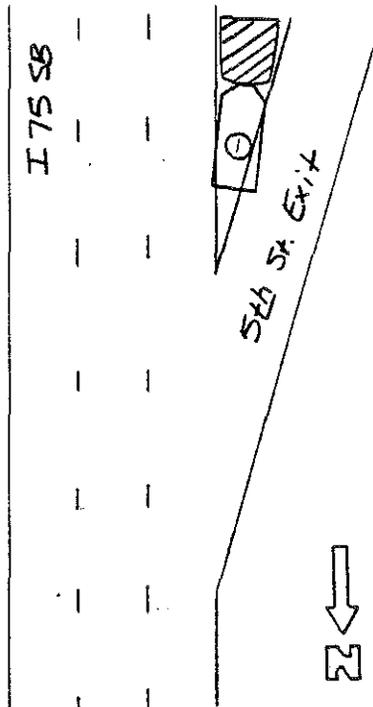
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1966 Oldsmobile 4-door sedan stated he took his eyes off the road to watch a car to his right and struck the crash cushion head-on. The vehicle was disabled and the driver received an incapacitating injury.

DIAGRAM:



ACCIDENT NUMBER: 091

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 4/29/72

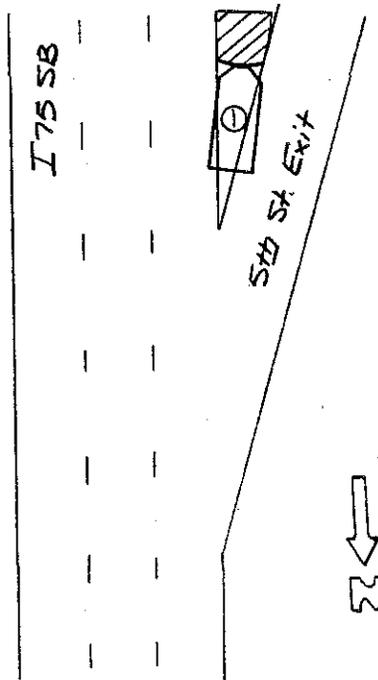
TYPE OF CRASH CUSHION: Type II; Fitch sand barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1966 Plymouth sedan fell asleep and struck the sand barrels head-on. The driver was not injured. The vehicle sustained disabling damage to the front end.

DIAGRAM:



ACCIDENT NUMBER: 092

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 5/19/72

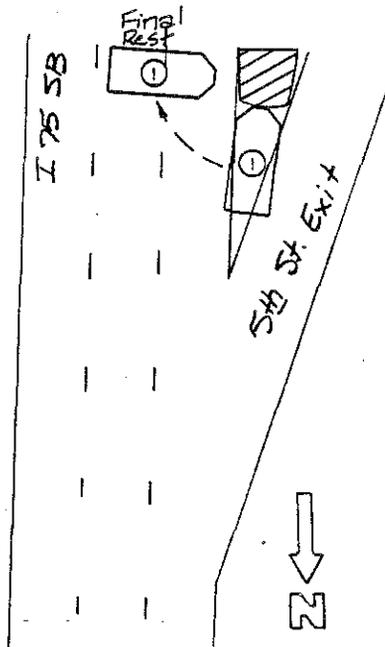
TYPE OF CRASH CUSHION: Type II; Fitch sand barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1967 Chevrolet automobile was forced into the crash cushion by an unidentified vehicle. The vehicle hit the crash cushion head-on and rotated 90 degrees clockwise into the right-through lane. The driver was not injured. The vehicle received disabling damage to the front.

DIAGRAM:



ACCIDENT NUMBER: 093

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 6/3/72

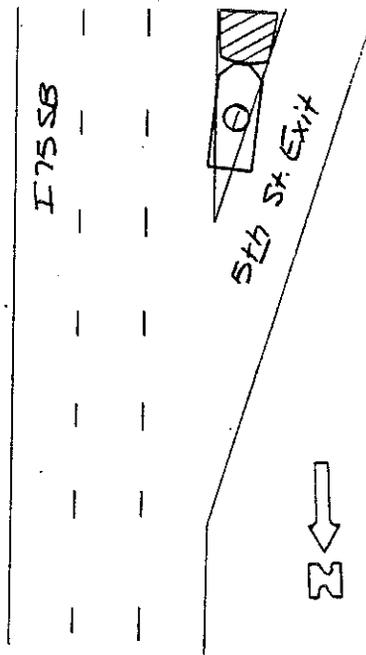
TYPE OF CRASH CUSHION: Type II; Fitch sand barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1964 Ford automobile fell asleep and hit the sand barrels head-on. The driver was not injured. The vehicle sustained functional damage.

DIAGRAM:



ACCIDENT NUMBER: 094

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 8/4/72

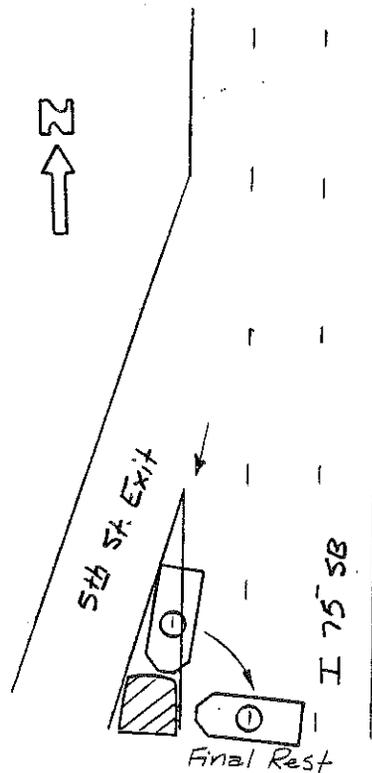
TYPE OF CRASH CUSHION: Type II; Fitch sand barrels

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1965 Chevrolet station wagon was south-bound on I 75 at the 5th Street exit in the right lane when another car cut in front of him. He swerved to miss the other vehicle and struck the sand barrels with the right-front of his vehicle and then rotated 90 degrees clockwise in the right lane. The driver and passenger received non-incapacitating injuries, and the vehicle sustained disabling damage.

DIAGRAM:



ACCIDENT NUMBER: 095

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 1/8/84

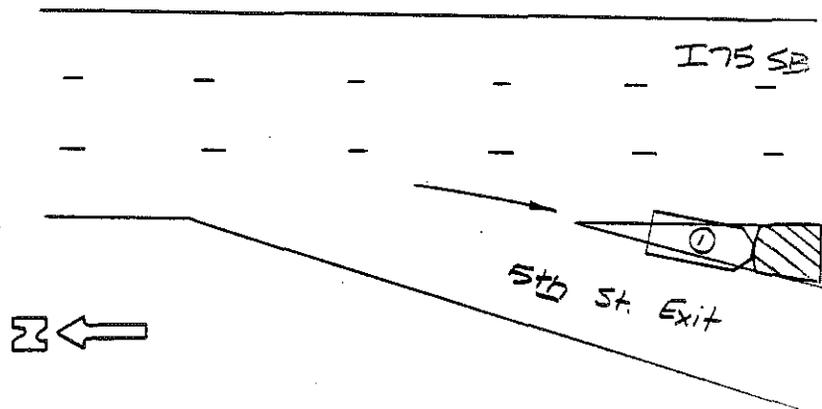
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1974 Buick 2-door sedan struck the crash cushion head-on. The driver, who was found to be intoxicated, stated that he remembered nothing before the accident. He received incapacitating chest injuries from impact with the steering wheel. The crash cushion was destroyed and the car was totalled. The driver was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 096

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 12/23/83

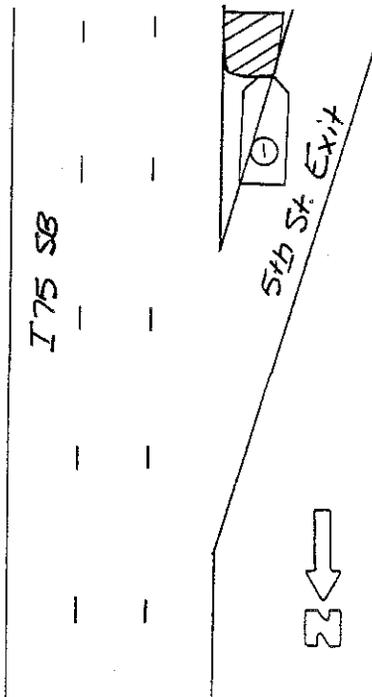
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1976 Ford sedan stated that as he was exiting the interstate, a truck in the right-hand lane cut into his lane, causing him to swerve and consequently strike the crash cushion head-on. Disabling damage was done to the front of the vehicle, but the driver was not injured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 097

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 11/9/83

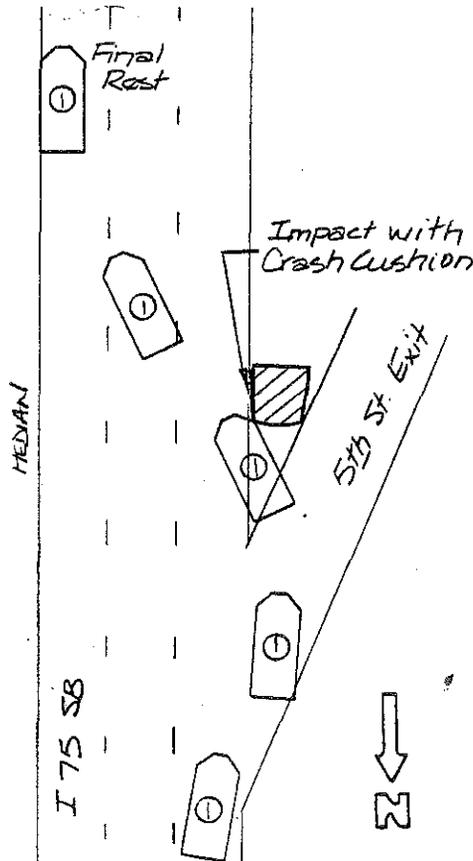
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a Freightliner tractor and semi-trailer was approaching the 5th Street Exit on I 75 southbound in the exit lane when he attempted to change lanes (he did not wish to exit) and struck the crash cushion at an angle with the front end of the cab. The driver stated that the steering wheel locked up as he was changing lanes. After the collision, the truck continued across both southbound lanes of I 75 for 300 feet before coming to rest. The truck was disabled, but the driver was not injured. Extensive damage was done to the crash cushion. The driver was not wearing a safety belt.

DIAGRAM:



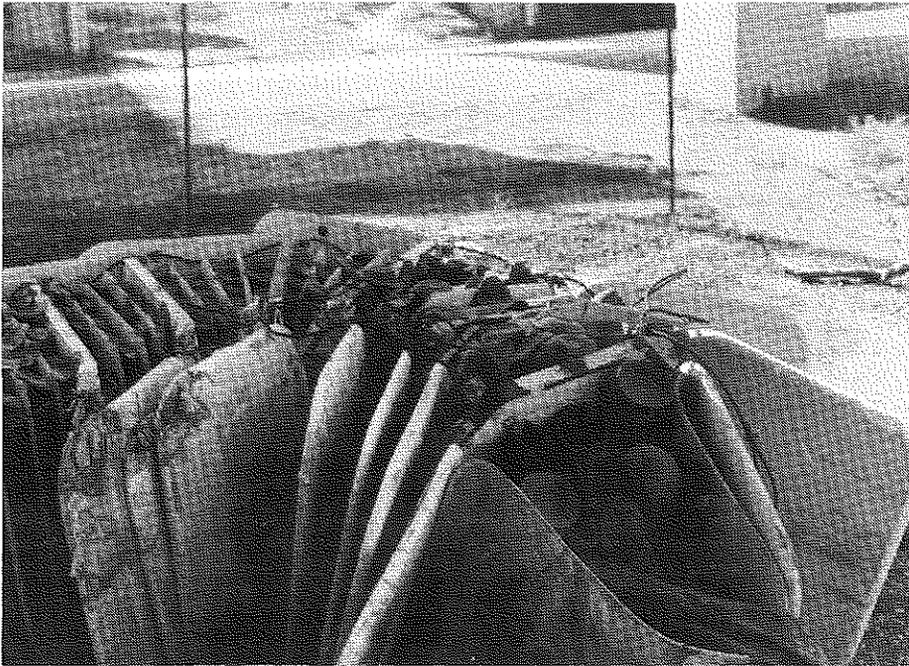


Figure C13. Accident Number 097, Kenton County, I 75, MP 191.3 at 5th Street Exit

ACCIDENT NUMBER: 098

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 184.7; at I 275

DATE OF ACCIDENT: 12/27/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The passenger in a 1972 Ford 2-door sedan stated that she and the driver were having an argument when she reached over and shut off the ignition. The vehicle then ran off into the median and struck the crash cushion with the right front end of the car. The car was disabled. The driver sustained incapacitating multiple injuries, while the passenger received incapacitating head injuries. No safety belts were worn by the occupants.

DIAGRAM: Not Available

ACCIDENT NUMBER: 099

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 11/8/81

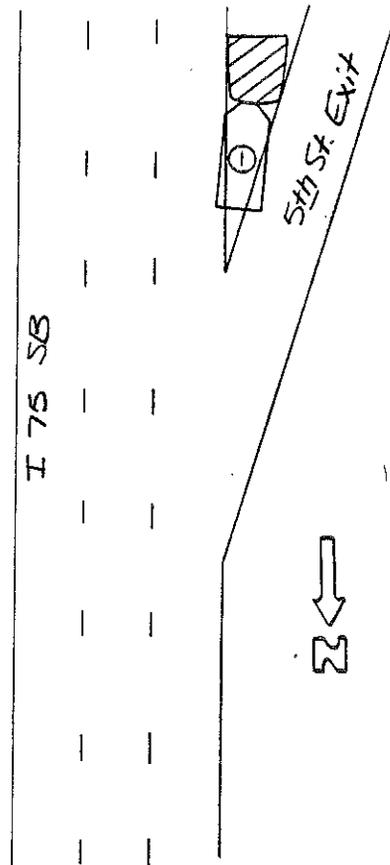
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1976 Chevrolet 2-door sedan mistook the exit lane at the interchange for a mainline lane and ran head-on into the crash cushion at the bridge abutment. The car received disabling damage to the front end. The driver suffered non-incapacitating head or face injuries. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 100

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 8/15/81

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1972 Pontiac 2-door sedan ran head-on into the crash cushion at the exit ramp. The vehicle was disabled, but neither driver nor passenger were injured. The occupants were not wearing safety belts.

DIAGRAM: Not Available

ACCIDENT NUMBER: 101

LOCATION: COUNTY - Kenton
ROUTE - I 75
- MILEPOINT - 184.0

DATE OF ACCIDENT: 6/18/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1970 Oldsmobile 2-door sedan stated that a vehicle in front of him changed lanes, causing him to run off the right shoulder of the road into the crash cushion. The vehicle received disabling damage to the front end. The driver was not injured; he was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 102

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3; at 5th Street Exit

DATE OF ACCIDENT: 4/11/81

TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Dodge Diplomat stated that another vehicle forced him off the roadway, where he collided head-on with the crash cushion in the gore area. The vehicle was disabled. The driver suffered a possible injury to the head or face. He was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 103

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.4; at 4th Street Exit

DATE OF ACCIDENT: 3/13/81

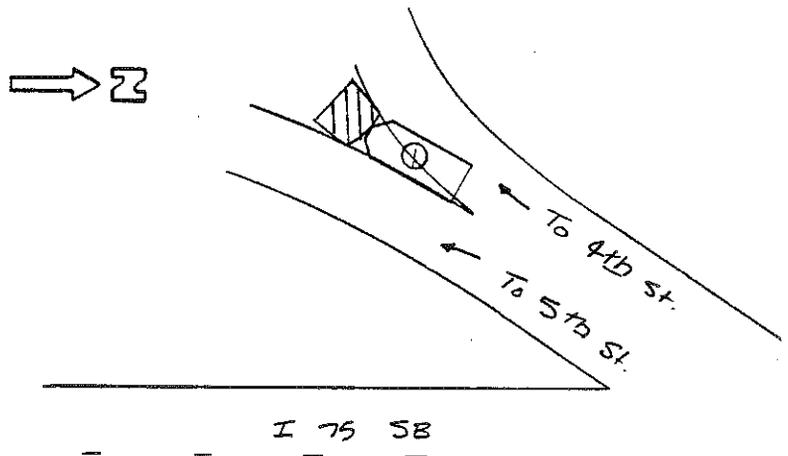
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: An Oldsmobile sedan ran into the crash cushion in the gore area of the 4th Street exit, striking it with the left front end of the car. The car was disabled. Neither the driver nor passenger were injured. Neither occupant was wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 104

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.7

DATE OF ACCIDENT: 11/18/80

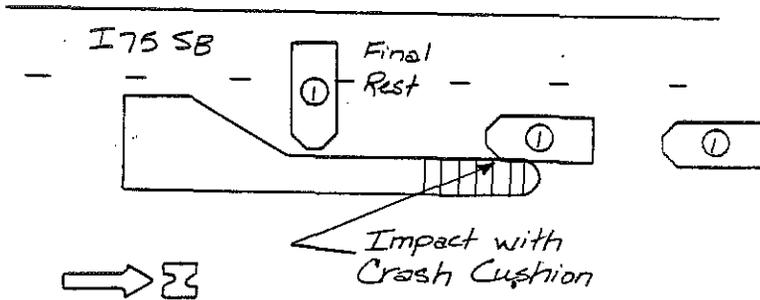
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Ford Pinto said that he was suffering from heart trouble (he had a pacemaker) and felt very unsteady. He lost control of his vehicle and struck a crash cushion terminating a temporary concrete barrier at a construction site with the left front end and left side of the car. The car then spun counterclockwise 90 degrees and stopped. The car was disabled. The driver received incapacitating chest injuries. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 105

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.5

DATE OF ACCIDENT: 11/11/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Chevrolet Monte Carlo was driving in the center lane (3 lanes each direction) when he attempted to change lanes to made the exit ramp to KY 371. In doing so, he struck a crash cushion head-on at a temporary concrete barrier. The car was disabled (front-end damage). The driver received possible head or face injuries. He was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 106

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.6

DATE OF ACCIDENT: 11/11/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Dodge 2-door sedan stated that he fell asleep while driving and struck the temporary crash cushion at the construction site head-on. His estimated speed was 50 mph. The car was disabled with front-end damage. The driver suffered non-incapacitating head injuries. He was not wearing a safety belt at the time of the accident.

DIAGRAM: Not Available

ACCIDENT NUMBER: 107

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.7

DATE OF ACCIDENT: 11/9/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Chevrolet 2-door sedan became confused when he came upon a construction site and hit a temporary crash cushion with the left side and left rear end of his car. The car suffered disabling damage. None of the four occupants were injured or were wearing safety belts.

DIAGRAM: Not Available

ACCIDENT NUMBER: 108

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.9

DATE OF ACCIDENT: 11/8/80

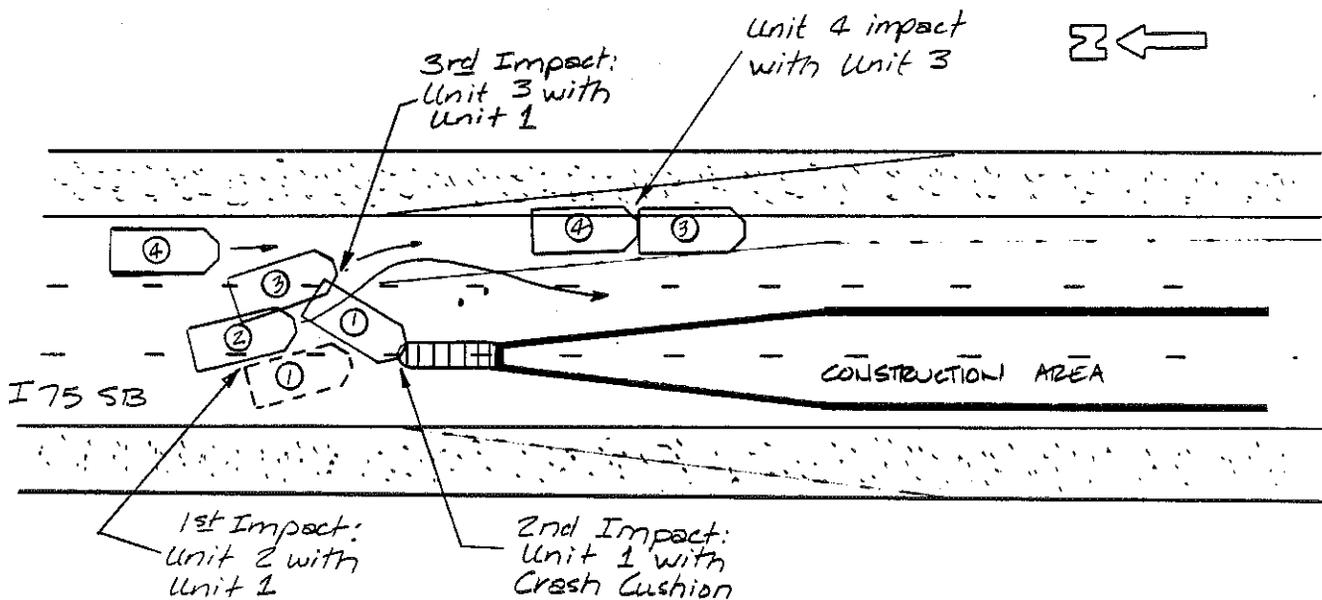
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1980 Toyota 2-door sedan became confused when he encountered a lane divider at a construction site. In an attempt to change lanes, he struck the temporary crash cushion head-on and spun approximately 45 degrees clockwise into the traffic lane. He was then struck by two other vehicles in the chain reaction that followed. The driver sustained a possible head or face injury. His passenger was not injured. The vehicle was disabled. Neither of the occupants was wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 109

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.7

DATE OF ACCIDENT: 10/5/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Ford LTD became confused when a tractor and semi-trailer in front of him blocked his vision at a construction site. Thinking the lane veered to the right, the driver steered right and ran into a crash cushion head-on, demolishing the front end of the car. The driver, however, was not injured. He was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 110

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.8; at Beechwood Overpass

DATE OF ACCIDENT: 9/30/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Pontiac 2-door sedan had stopped in the roadway for a stalled vehicle in front of him and was struck in the rear by a third car. This impact then pushed him into a temporary crash cushion at the construction site, but no damage was caused by the crash cushion. No injuries were reported. None of the occupants wore a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 111

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 186.5

DATE OF ACCIDENT: 9/26/80

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Chevrolet station wagon was unable to see the crash cushion at the construction site due to heavy traffic conditions and struck it with the left front fender, causing disabling damage. There were no injuries reported. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 112

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 187.0

DATE OF ACCIDENT: 9/21/80

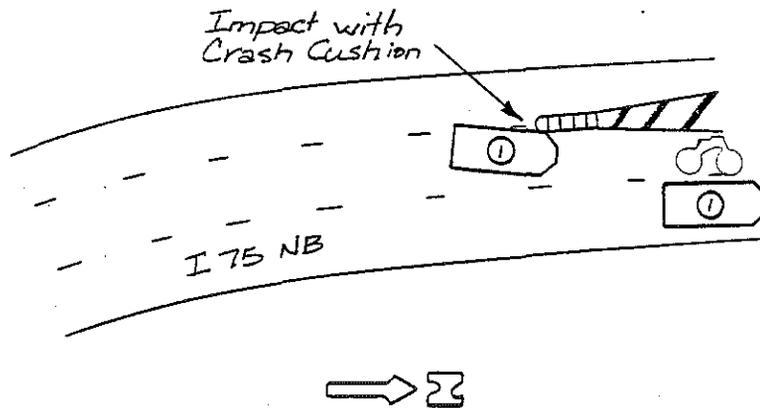
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1980 Chevrolet 2-door sedan became distracted by a bicyclist at the construction area and impacted the crash cushion with the left front corner of the car, disabling the vehicle. The driver was uninjured. He was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 113

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3

DATE OF ACCIDENT: 9/6/80

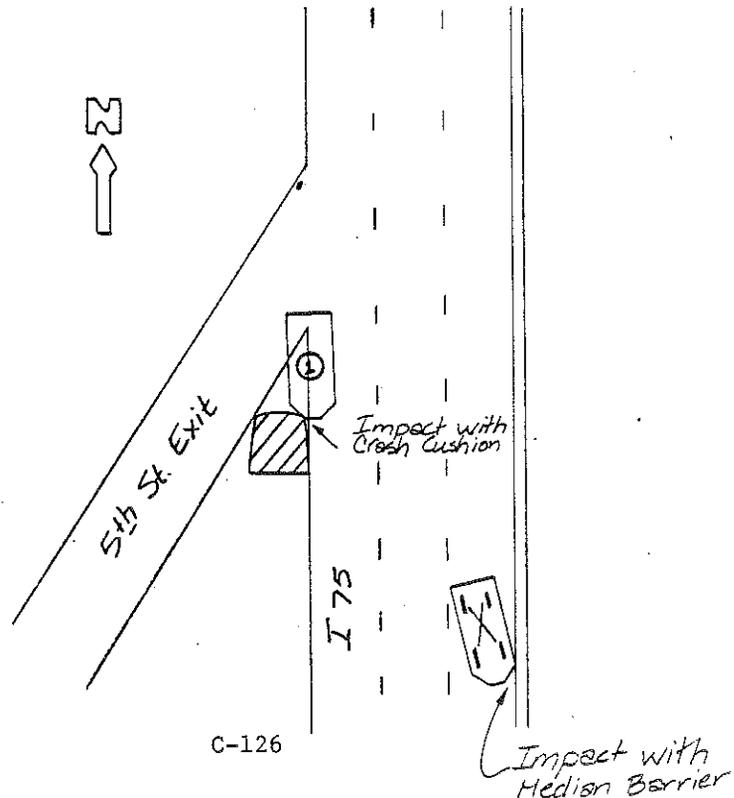
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Not Available

COMMENTS: A 1974 Ford van was travelling at a high rate of speed when it went out of control and struck a crash cushion head-on. It then flipped over on its top and slid approximately 250 feet, rendering fatal head injuries to one of the passengers. The driver, who registered a .439 percent BAC, received non-disabling head and chest injuries. He was charged with DUI and Reckless Homicide. Another passenger received non-incapacitating head injuries. The vehicle suffered heavy damage to the front end and top. The passenger who was killed was not wearing a safety belt, but the driver and other passenger were both wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 114

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 191.3

DATE OF ACCIDENT: 8/30/80

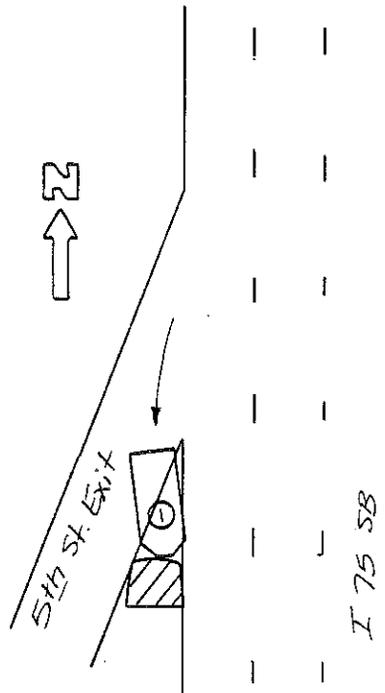
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1976 Chevrolet Monte Carlo swerved to avoid a motorcycle that had cut in front of him and struck the crash cushion head-on. He received slight head injuries. The car was disabled with extensive front-end damage. The driver was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 115

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 190.6

DATE OF ACCIDENT: 6/10/80

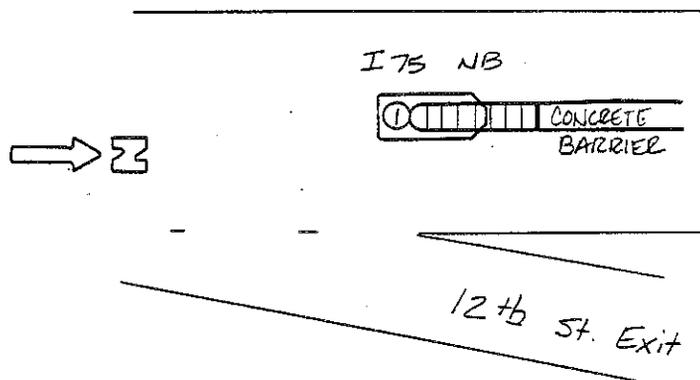
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The vehicle, a 1979 Pontiac 2-door sedan, swerved to avoid a collision with another vehicle and struck the temporary crash cushion at the construction site head-on. The vehicle was disabled with front-end damage. The driver received a possible head injury. He was wearing a shoulder harness and lap belt.

DIAGRAM:



ACCIDENT NUMBER: 116

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 190.6

DATE OF ACCIDENT: 6/7/80

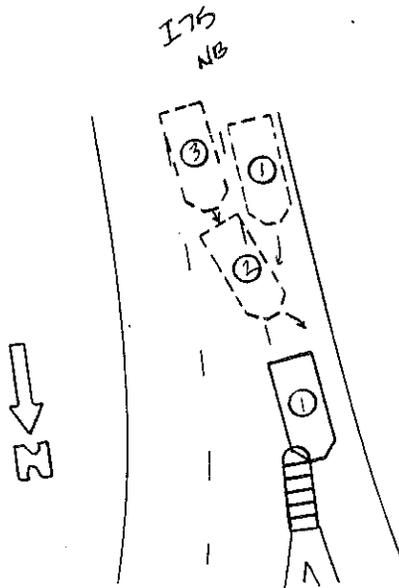
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1969 Dodge sedan, upon approaching a construction site, swerved to avoid two other vehicles and ran into the temporary crash cushion at the concrete barrier. The vehicle sustained disabling damage to the front end and right front corner. Neither the driver nor passenger were injured. Safety belts were not worn by the occupants.

DIAGRAM:



ACCIDENT NUMBER: 117

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 184.1

DATE OF ACCIDENT: 5/15/80

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1968 Ford 2-door sedan struck a crash cushion at the beginning of the median barrier head-on. The driver suffered incapacitating head injuries. The vehicle suffered disabling damage to the front end. The driver was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 118

LOCATION: COUNTY - Kenton
ROUTE - I 75
MILEPOINT - 188.0

DATE OF ACCIDENT: 5/4/80

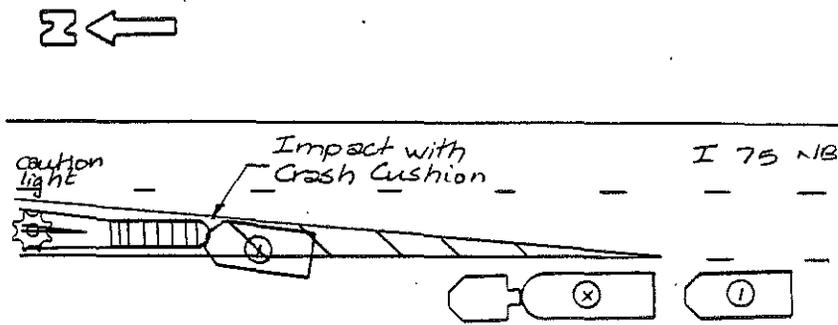
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1973 Pontiac 2-door sedan was following a tractor and semi-trailer too closely as they approached a construction site. The driver could not see around the truck and when it changed lanes to avoid the construction area, the driver could not avoid collision (head-on) with a crash cushion. Neither the driver nor his passenger were injured, but the car was disabled with front-end damage. The occupants were not wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 119

LOCATION: COUNTY - Anderson
ROUTE - Bluegrass Parkway
MILEPOINT - 58.8; Toll Plaza

DATE OF ACCIDENT: 9/19/81

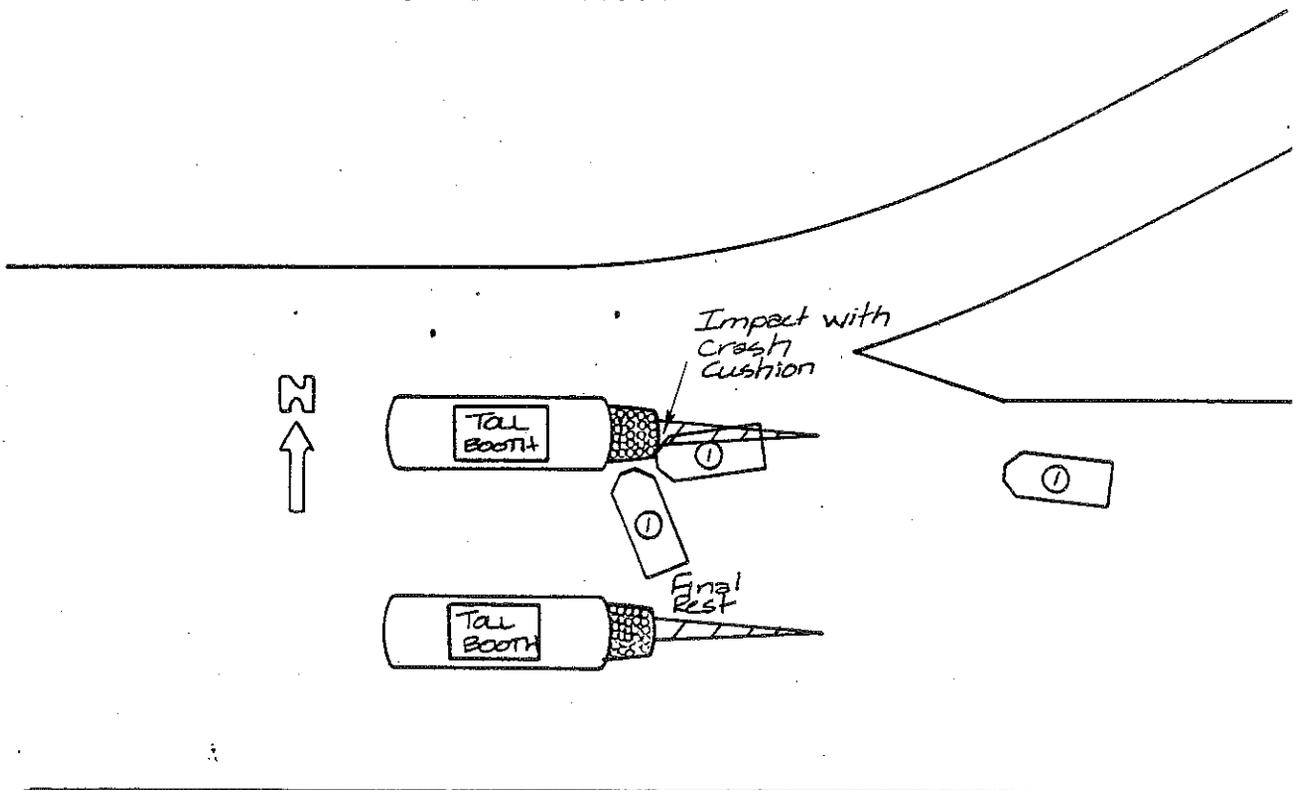
TYPE OF CRASH CUSHION: Type IV; Hi-Dro CellCluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Ford sedan was indecisive about which lane to get in as he approached the toll plaza and impacted the front of the crash cushion with the right front corner of his vehicle. The car then spun 90 degrees clockwise after impact and came to rest in the middle of the traffic lane. The driver suffered incapacitating head injuries. Disabling damage was done to the front end of the vehicle.

DIAGRAM:



ACCIDENT NUMBER: 120

LOCATION: COUNTY - Anderson
ROUTE - Bluegrass Parkway
MILEPOINT - 58.8; Toll Plaza

DATE OF ACCIDENT: 4/17/81

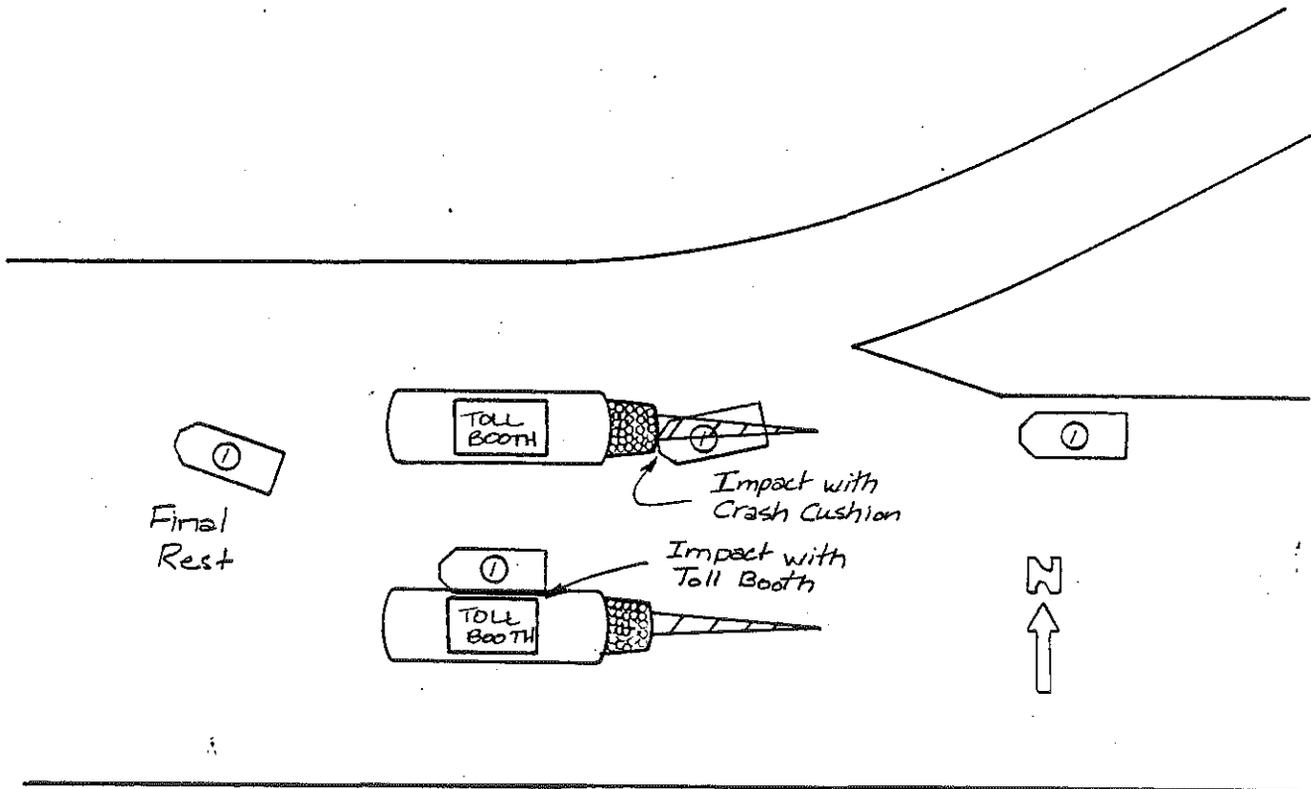
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1979 Chevrolet pickup stated that he lost consciousness as he approached the toll plaza. The vehicle first impacted the crash cushion head-on, then bounced left and continued through the toll booth with the front end. The car then travelled 96 feet before coming to rest. It appears that the driver was approaching in an intoxicated state at high speed; he received incapacitating head injuries. Disabling damage was done to the front of the vehicle. The driver was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 121

LOCATION: COUNTY - Anderson
ROUTE - Bluegrass Parkway
MILEPOINT - 58.8; Toll Plaza

DATE OF ACCIDENT: 4/13/80

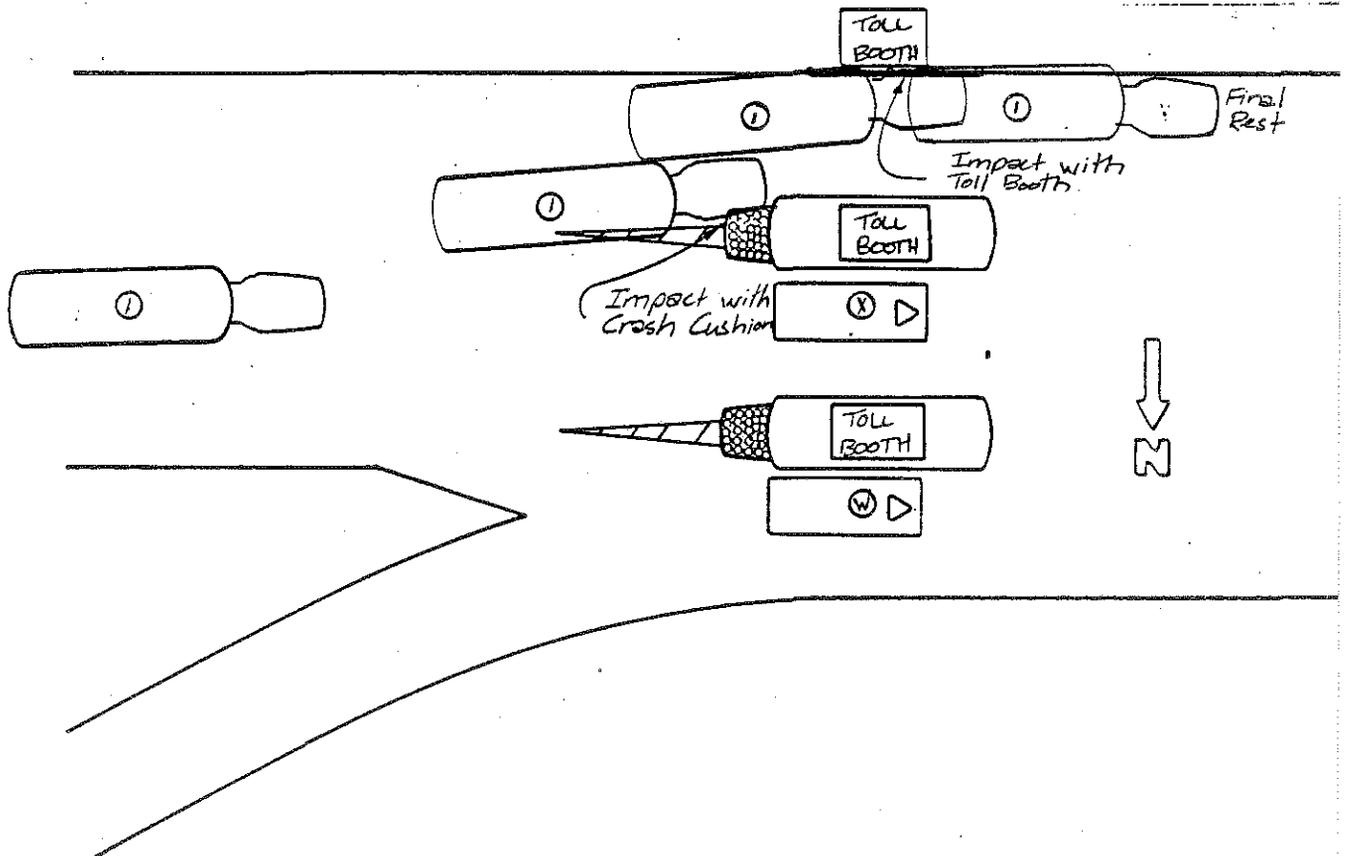
TYPE OF CRASH CUSHION: Type IV; Hi-Dro Cell Cluster

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1969 White tractor and semi-trailer was approaching a toll plaza when its brakes failed. The driver swerved to avoid a vehicle at the toll gate and impacted a crash cushion in front of a toll booth before continuing on into another toll booth. Damage to the truck was functional. The driver was not injured and he was not wearing a safety belt.

DIAGRAM:



ACCIDENT NUMBER: 122

LOCATION: COUNTY - Fayette
ROUTE - I75
MILEPOINT - 116.9

DATE OF ACCIDENT: 10/4/81

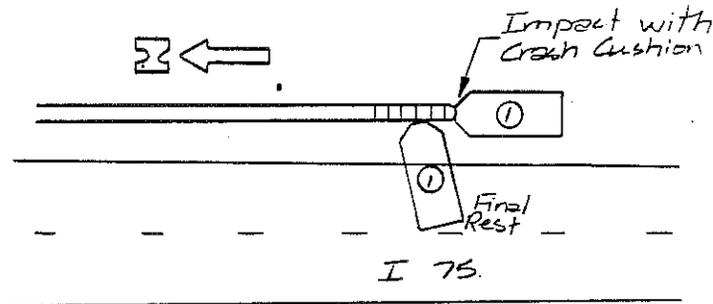
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: A 1969 Plymouth 4-door sedan apparently ran off the right side of the road and hit the temporary crash cushion head-on. It then rotated about 90 degrees clockwise and stopped with the rear of the car sticking out into the near lane. The driver suffered incapacitating chest injuries. The car received disabling front-end damage. No safety belt was worn by the driver.

DIAGRAM:



ACCIDENT NUMBER: 123

LOCATION: COUNTY - Fayette
ROUTE - I 75
MILEPOINT - 112.0

DATE OF ACCIDENT: 7/2/80

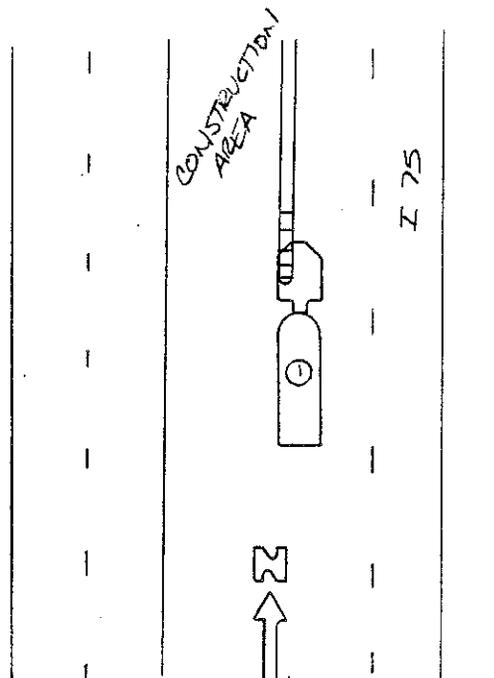
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1978 Kenworth tractor and semi-trailer swerved to the left from the left-hand lane in order to avoid a collision with another vehicle and struck the temporary crash cushion at the concrete barrier head-on. The driver received non-incapacitating leg injuries, while his passenger received non-incapacitating chest injuries. The extent of damage to the truck is indeterminate from the accident report but can be assumed to be moderate to heavy since the truck was towed from the scene. The occupants were not wearing safety belts.

DIAGRAM:



ACCIDENT NUMBER: 124

LOCATION: COUNTY - Fayette
ROUTE - I 75
MILEPOINT - 113.5

DATE OF ACCIDENT: 9/23/79

TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Ford Thunderbird stated that the roadway narrowed suddenly because of the construction and he was forced against the crash cushion at the end of the temporary concrete barrier, as there was another vehicle on the other side of him. The car sideswiped the crash cushion with the driver's side door, causing functional damage to it. However, it remained in service. The crash cushion was impacted near the junction with the concrete barrier; photographs show that part of the car door was sheared off by the corner of the barrier. The rest of the crash cushion was knocked over into the opposite lanes. Neither driver nor any of the four passengers were injured. None of the occupants wore safety belts.

DIAGRAM: Not Available

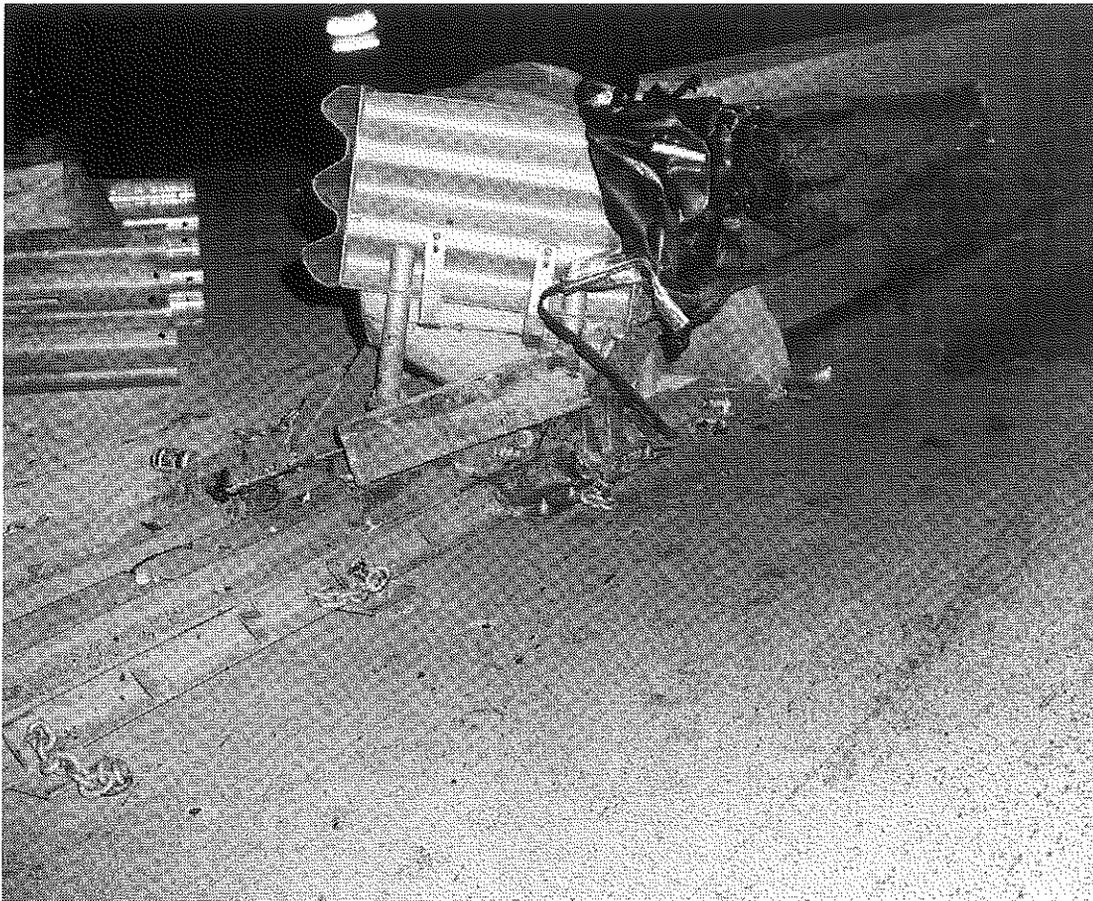


Figure C14. Accident Number 124, Fayette County, I 75, MP 113.5

ACCIDENT NUMBER: 125

LOCATION: COUNTY - Scott
ROUTE - I 75
MILEPOINT - 128.3

DATE OF ACCIDENT: 8/13/83

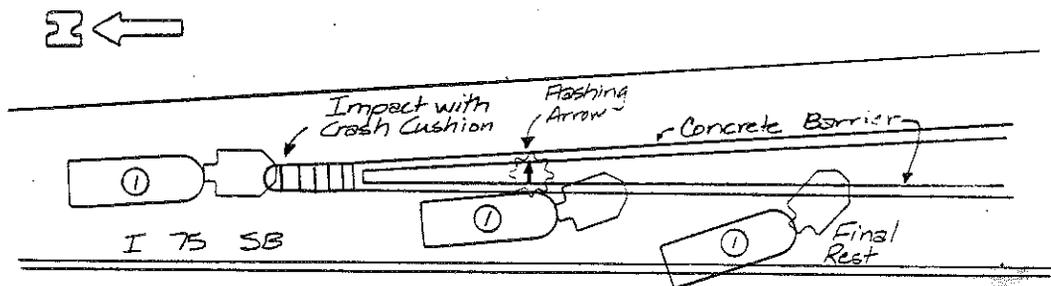
TYPE OF CRASH CUSHION: Type VI-T; Temporary G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1983 White tractor and semi-trailer apparently fell asleep as he approached the construction site and struck the crash cushion head-on. The vehicle then rode on top of the temporary concrete median barrier behind the crash cushion a distance of 138 feet, where it contacted a flashing arrow located between the double barrier walls. It then travelled another 47 feet before coming to rest. The vehicle was disabled and extensive damage was done to the crash cushion. The driver, who was not wearing a safety belt, suffered possible injuries.

DIAGRAM:



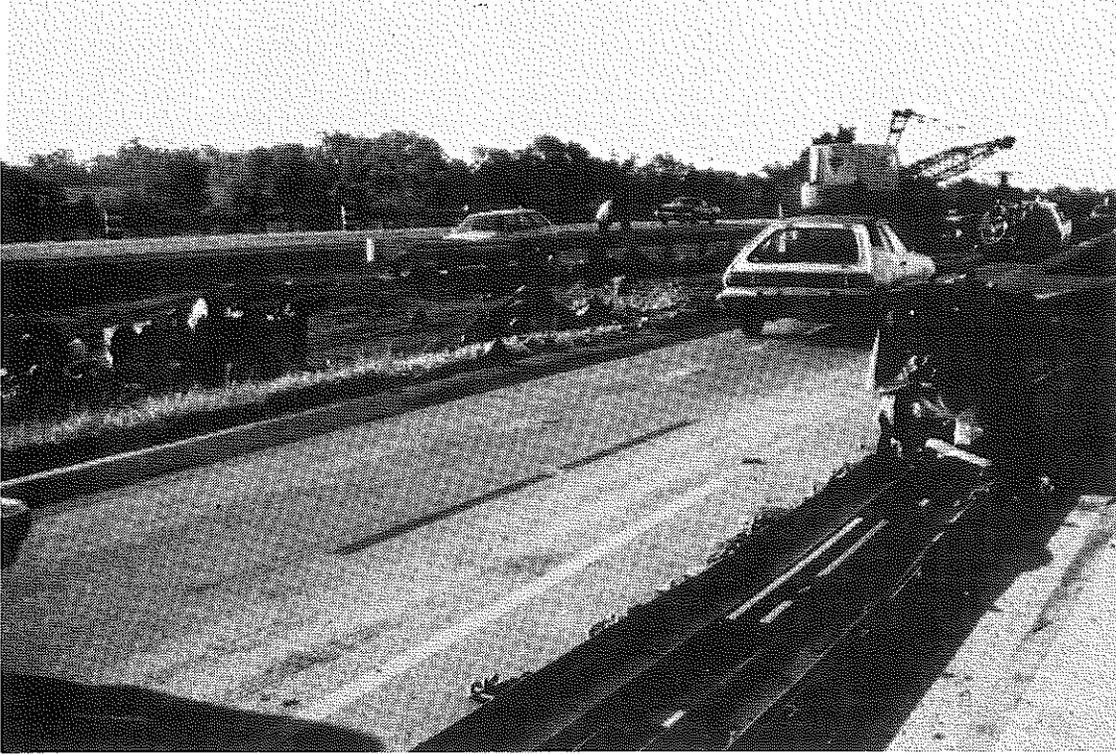


Figure C15. Accident Number 125, Scott County, I 75, MP 128.3

ACCIDENT NUMBER: 126

LOCATION: COUNTY - Harlan
ROUTE - US 119
MILEPOINT - 14.0

DATE OF ACCIDENT: 12/17/81

TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Not Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1977 Ford pickup swerved to miss a deer and struck a crash cushion with the left front end of the truck, causing disabling damage to the vehicle. The driver, who was not injured, was not wearing a safety belt.

DIAGRAM: Not Available

ACCIDENT NUMBER: 127

LOCATION: COUNTY - Pike
ROUTE - US 23
MILEPOINT - at New Bole's Addition Overpass

DATE OF ACCIDENT: 2/13/83

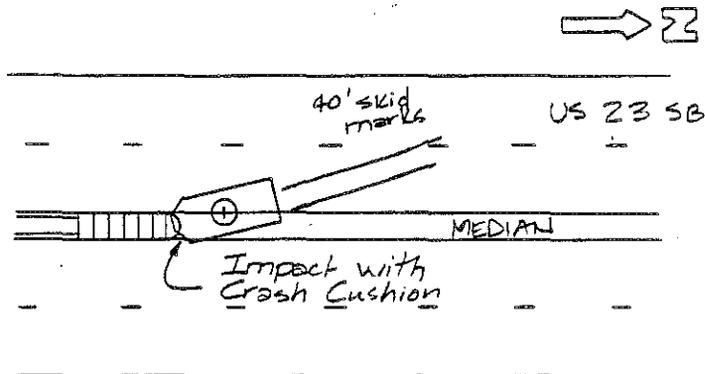
TYPE OF CRASH CUSHION: Type VI; G.R.E.A.T.

PHOTOS: Available

ACCIDENT REPORT: Available

COMMENTS: The driver of a 1976 Mercury Montego stated that he was travelling at a high rate of speed when he saw a police car turn on its blue lights. As he glanced into the rear view mirror, the car swerved into the median. The driver braked, leaving 40 feet of skid marks, and slid into the crash cushion terminating a concrete median barrier. The front end of the car was damaged heavily. The driver was not injured; he was not wearing a safety belt.

DIAGRAM:



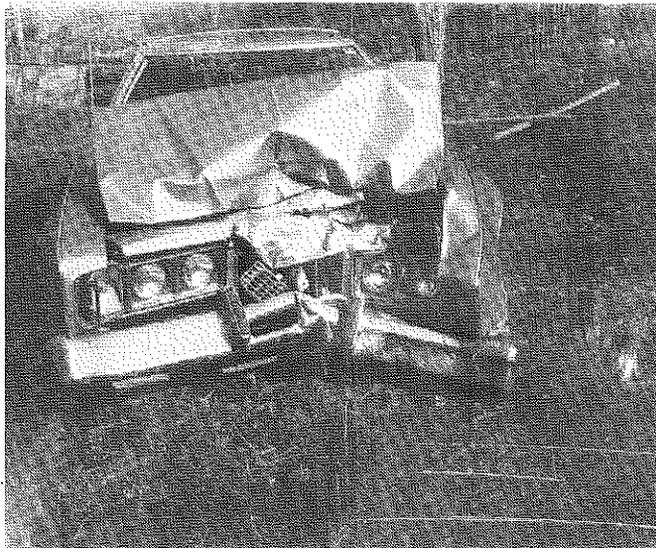
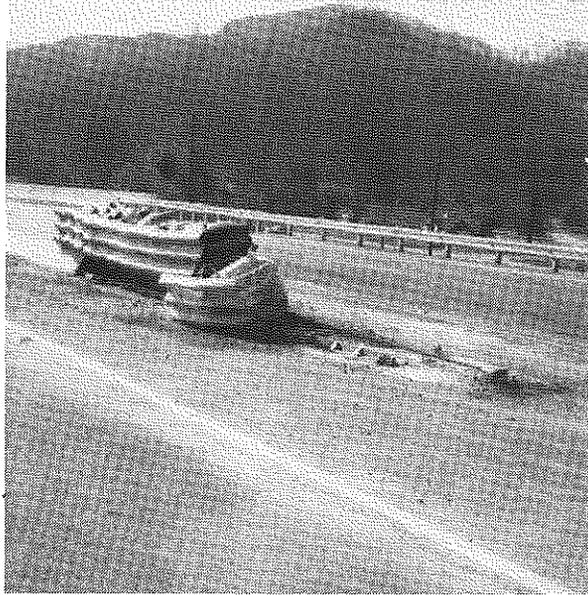


Figure C16. Accident Number 127, Pike County, US 23
at New Bole's Addition Overpass

