Ohio Department of Transportation

Central Office, P.O. Box 899, Columbus, Ohio 43216-0899

November 22, 2005

Mr. Dennis Decker
Division Administrator
Federal Highway Administration
200 N. High Street.
Columbus, Ohio 43215

Re: Brifen Cable ISPE, Year 2 Report

Dear Mr. Decker:

On August 1, 2002 ODOT asked FHWA's Division Administrator to approve the installation of a proprietary cable system as an experimental project. As part of FHWA's approval ODOT was to provide a three year In-Service Performance Evaluation (ISPE) on the cable's performance.

These reports were to include:

1) crash performance as well as repair problems and costs,
2) ongoing maintenance considerations and costs,
3) conclusions.

Three annual reports are to be provided to the FHWA Division Office. The first report was previously submitted to FHWA on January 31, 2005 and covered the period from July 2003 to June 2004. This Year 2 report represents the cable performance from July 2004 to June 2005 and is attached.

ODOT's Office of Roadway Engineering monitored the installation and maintenance on the completed barrier system in an effort to evaluate its performance in preventing cross-median crashes. The ISPE shows the system still to be performing as expected.

Respectfully,

Dirk B. Gross

Dirk Gross, P.E.
Office Administrator
Office of Roadway Engineering Services

Attachment

Brifen WRSF In-Service Performance Evaluation
Year 2 Report - For the period from July 2004 to June 2005
Prepared by Dean Focke, Standards Engineer, ODOT
November 22, 2005

INTRODUCTION

Cross medians accidents are a growing concern in the United States. In an effort to address the issue, the Ohio Department of Transportation (ODOT) received approval from the Federal Highway Administration (FHWA) to install a product new to the United States, but which has been effective in preventing such accidents overseas. This system is the Brifen WRSF, and it is a four-strand tensioned cable system of highly stressed cables that is reported to perform well.

ODOT believed the advantages of this system over installing standard guardrail systems are:

1) A tensioned cable system should maintain its redirective function after being struck, unlike the generic cable that is inoperable after even a minor accident;
2) Reduce the frequency and severity of nuisance accidents by maintaining a large lateral offset in the median instead of having miles of strong post w-beam guardrail at the standard offset at both edges of shoulder;
3) Prevent costly grading required to move guardrail further off the shoulder in an attempt to reduce accidental impacts; and
4) Utilizing the cable to capture large vehicles which could tear through the w-beam system.

As part of the FHWA's agreement to allow ODOT to install the Brifen WRSF as an experimental project ODOT was tasked with providing a three year In-service Performance Evaluation (ISPE).

Reports were to be prepared one, two and three years after installation is complete and will include data on:

1) Crash performance as well as repair problems & costs,
2) Ongoing maintenance considerations & costs, and
3) Conclusions (views from safety and maintenance personnel regarding maintenance, repair and recommendations).

ODOT's Office of Roadway Engineering monitored the installation and maintenance on the completed barrier system in an effort to evaluate its performance. This is the second year report.

PROJECT LOCATION AND HISTORY

The location chosen for ODOT's first installation of a proprietary cable barrier was on Interstate 75 just north of Cincinnati, between State Routes 129 and 73 in Butler and Warren counties. The freeway at that location is a north-south 6-lane rural interstate, built during the 1960s, with good geometrics. This section is a 14.5 mile section, mostly level and mostly tangential, that narrows to a 60 foot depressed median with 6:1 slopes and a 4-foot paved inside shoulder. (The highway on either end has a very wide median, as it was planned for future dual-dual lanes in the center median.) For a rural interstate it does have a high volume of traffic. In 2003 that section recorded an ADT of 92,000 with 22 percent trucks.

DATA COLLECTION METHODOLOGY

Accidents on the system are investigated by District 8 personnel and are logged on a standardized "Tensioned Cable Guardrail Accident Report and Evaluation Form" (Figure 1). Supporting data such as photos and accident reports are obtained to compliment the forms. Each completed form includes data on vehicle damage, injury severity, damage to article as well as repair time and costs, parts availability, and out-of-service duration. This form was developed to meet the recommendations contained in NCHRP Project 22-13.

There are three components of data needed to completing the evaluation forms. The first component of data is inspection. Each week, District 8's Tommy Arnold and Bill Vorst performed field reviews of the wire rope. They would calibrate a data collector in the ODOT pool car to match with the mile marker posts existing in the field. Then, they would drive along the highway until they observed a damaged section. If it was the first observance of that specific damaged section, they would take a picture of the damage. If the damage section had occurred in a previous week, they would note that the damage still existed. This data allowed them to evaluate the second component of data collection, maintenance record investigation. Using a database query, Bill or Jay Hamilton would query a summary labor, equipment, and material costs used in fixing the wire rope. Based on the date and log point included in the query, they would match that fix with the inspection data and the third component of data collection, the OH-1 accident reports. The Ohio State Highway Patrol sent in accident reports involving the wire rope as they identified them. Based on the date of the accident and the log point, this data was linked with the inspection and maintenance data to fill out the evaluation form.

In some cases, the crew received accident reports that did not have corresponding maintenance data and vise versa. Though incomplete, this data was still entered in an evaluation form. In addition, there are several pictures that could not be linked to any accident report. There are two possibilities that explain this instance. First, the State Highway Patrol did not send in data that they have which could be the result of incomplete data. (The missing data from these cases were supplemented at a later time by GQL queries of the ODOT maintenance database.) Second, accidents occurred at the wire rope but were not reported to the Patrol.

There were some other obstacles to creating reliable data in this manner. The most difficult of these obstacles was the logging of these crashes. Unfortunately, log points from our inspection, maintenance records, and crash reports did not always match. As a result, comparing the date of the crash, the date of the inspection, and the date of the maintenance had to be the deciding factors when linking data, as long as the log points were not too far off. It is believed that this process was successful at describing the effects of the crash.

CRASH PERFORMANCE

One hundred thirteen accidents were recorded in the period from July 1, 2004 to June 30, 2005 (Year 2) bringing the total logged to 233. Data was to a Microsoft Excel spreadsheet (Figure 2).

Analysis of the numbers for both reporting years, as shown in "Analysis of Crashes" (Figure 3) shows performance as expected for the cable system. Most numbers seem to be normal, with no statistical outliers. Directional distribution is balanced, weather and light conditions are

represented, as one would expect. The numbers of vehicles crossing the ditch line is unbalanced, but with the cable being closer the traveled lane when it is on the near side of the ditch, that is also expected.

A graph showing the frequency of crash by location is shown in Figure 4 "Wire Rope Hits by Logpoint". A greater frequency of accidents occurs in the southern end of the installation, as shown by lower Mile Markers. This is consistent with the higher ADT, and thus congestion, in that area of the installation location.

Specific cable issues are:

A) Cable Penetration

Cable systems are a promising new design tool to prevent cross median crashes. However, a national issue with cable is the propensity for cable to let some vehicles, in some situations, to apparently under-ride the bottom cable. District personnel identified each incident that was considered by the Ohio State Patrol to be a penetration. The table below summarizes each occurrence of an incident classified as a penetration.

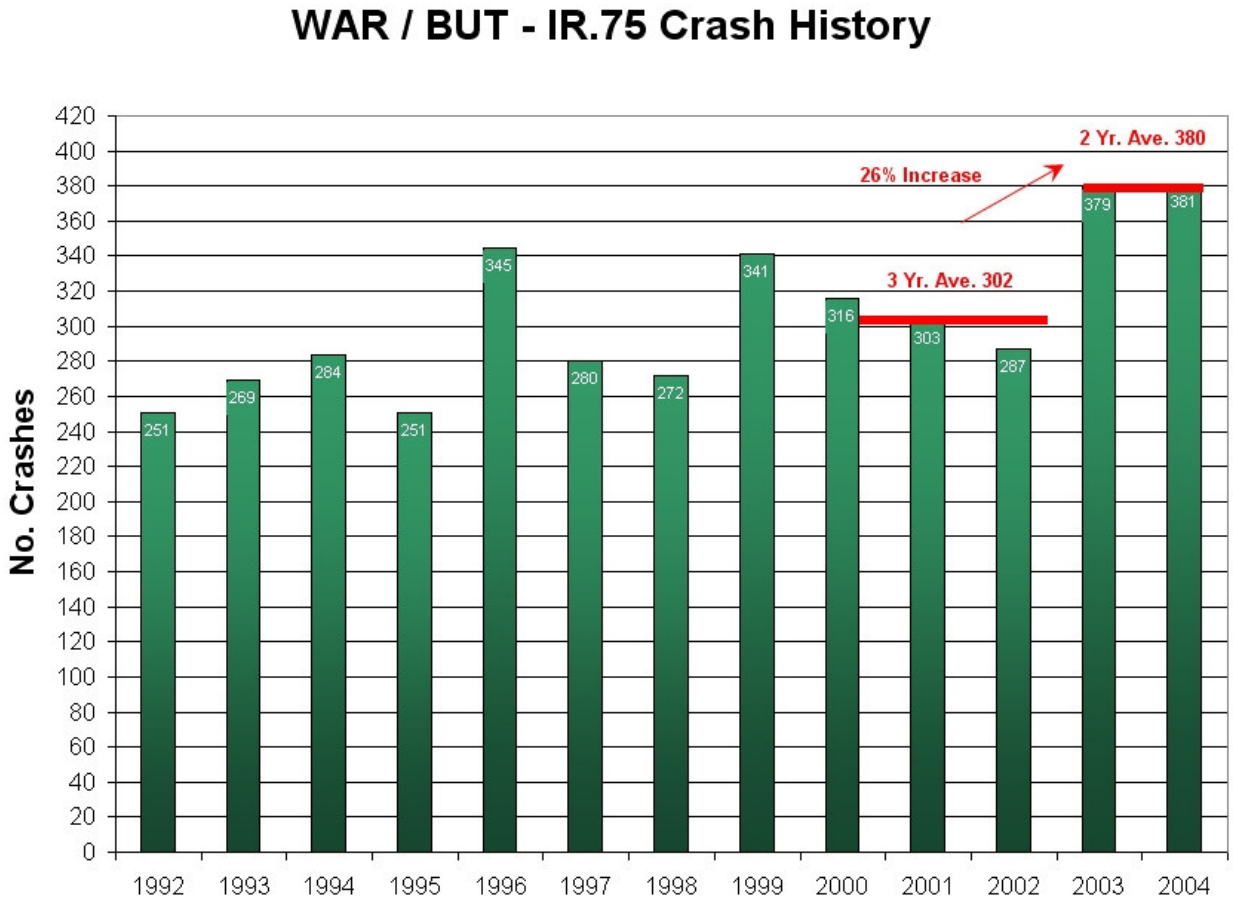
Date	Report Year	Mile Marker	Description
8/13/03	1	34.9	Penetration: it appears the vehicle struck the cable rail which then became stuck under the bent posts. It is possible that the cable was then unable to stop the vehicle. This crash did occur near a turn buckle.
9/9/03	1	36.66	Possible penetration: it appears the front right corner of the vehicle struck cable rail first. At that point, two cables went over top of the vehicle and two went underneath, possibly getting caught. The vehicle then backed into the cable rail and came to rest. This crash did occur near a turn buckle for the cable.
9/22/03	1	31.8	Penetration: it appears the northbound vehicle was spinning went it struck the cable. Based on the damage to the windshield and along the front passenger door frame and along the bottom of the rear bumper it appears the split the cables. This crash appears to have occurred near a turn buckle.
5/2/04	1	25.8	Overturned: it appears vehicle struck the cable rail after spinning around 180 degrees; then overturned over top of the cable rail. All of the windows on the right side of the vehicle were knocked out. This crash appears to have occurred near a turn buckle.
7/8/04	2	28.3	Possible penetration: According to the OH-1 report, an improper lane change resulted in a collision that forced the two cars into the cable. It appears that Unit 1 struck the cable at which point Unit 2 struck Unit 1 again, which may have led to the penetration of the cable. No injuries were sustained by either of these drivers.
10/18/04	2	25.7	Penetration: According to the OH-1 report, the driver lost control and was rotating when he struck the cable rail. This

			rotation may have led to the penetration of the cable.
1/5/05	2	25.4	Penetration: It appears the northbound vehicle lost control, spun around, went through the cable rail backwards, and entered the southbound lanes. The vehicle then struck a southbound vehicle, causing a sideswipe collision with a semi-truck that left the scene. This crash appears to have occurred near a turn buckle.
3/27/05	2	31.5	Entangled: According to the OH-1 report, the driver was heading northbound on IR-75, lost control due to excessive speed, and struck the cable. The vehicle then rotated around and became entangled in the cables. The vehicle was a Pontiac Trans Am that has a steeply sloped nose. This nose may have split the cables causing one cable to slide over top of the vehicle.

In the 3/27/05 accident, the vehicle became totally entangled in the cable as is shown in the following photo. One of the difficulties in analyzing accidents after the fact is to determine exactly what happened in the crash sequence. Exactly how the vehicle ended in this position is unknown.

B) Increase in Accidents

One of the reasons transportation departments nationwide have against installing cable is that the introduction of an object in the roadway's clear zone will increase the overall number of accidents. This department has previously heard estimates of 200 to 1000 percent more crashes. The graph below shows accidents for 2003 and 2004 (the last data available) averaged 380 per year in the area the cable is located. In the same locations in the three years prior to the cable, accidents averaged 302 per year. This modest 26 percent increase can generally be contributed to the presence of the cable. However, even with an increase in accidents, a review of Figure 3 shows the number and types of accidents to be mostly PDO and minor injury.



C) Proximity to Interchanges

Various state transportation departments have postulated that vehicle weaving and merging at exits and entrances ramps of freeway contribute to crossovers accidents. Ohio tracks these accidents as shown in the "Crashes within 2,000' of Interchanges" column in Figure 2. Approximately 50 percent of the freeway is within 2,000 feet of an interchange, but in this stretch of highway, 71 were logged as being within this distance while 110 were not (39 percent). As of this time it is not apparent that proximity to an interchange increases accidents on the cable system.

D) Maintenance Concerns

As in Year 1, the maintenance experience for District 8 in Year 2 was different for the socketed sections and the driven post sections of the wire rope. Repairs of the socketed posts have been relatively straightforward. In fact, the average cost of repairing damage in a socketed section of the system was about $54.21 per post, including labor, materials, and equipment. In contrast, repairs of driven posts have been extremely difficult during periods of rain/melting snow when the ground is too wet to support equipment. The average cost to repair damage in the non-socketed post locations was about $115.18. It should be noted that this cost is down from $205.74 in Year 1. This decrease in cost is most likely the result of the successful retrofit of much of the system. After repairing these sections, the tension was checked and only minor adjustments have been needed in most cases.

In general, the system has performed as expected. The anchors have remained stable, repair parts have been readily available, and no special problems related to winter conditions have been identified (i.e. posts frozen in sockets). Finally, the maintenance crews have been able to mow the median and spray the area under the cable to keep vegetation in check.

SECOND YEAR CONCLUSIONS

The crash performance of the barrier is very effective. The Brifen WRSF functions appropriately, although it still is prudent for ODOT to collect ISPE data for the third year. Two years after installation no serious injuries or fatalities have occurred.

No cross median fatalities have occurred in this section of IR-75 since the cable rail was installed.

FIGURE 1

TENSIONED CABLE GUARDRAIL
ACCIDENT REPORT AND EVALUATION FORM

Ohio Department of Transportation

CRASH LOCATION

County: BUT Route: I-75 Milepost: 23.9 Direction: northbound
Horizontal curve: 1 (1) Tangent, (2) Radius: _____ ft. and Direction: Right - Left

COLLISION DATA (Sketch accident on reverse side or attach separately)

Date of Accident: 4/10/2005 Day of Week: Sunday Time: 11:59 PM
Weather: 1 (1) Clear or cloudy and dry, (2) rain, (3) fog/smog/smoke, (4) snow/sleet/hail
Estimated Angle of Impact: 120 degrees
Estimated Speed at Impact: 65 mph
Result of collision: 2 (1) Redirected, (2) stopped in contact, (3) snagged/spun out, (4) overrode, (5) underrode, (6) penetrated, (7) unknown
Describe sequence of events leading to accident: Driver was headed northbound lost control, went of the road right, overcorrected, and struck the cable

VEHICLE AND OCCUPANT

Vehicle Type: 1 (1) Car, (2) Pickup/SUV/Van, (3) SU, (4) Tractor Trailer, (5) Bus, (6) Other_____
Vehicle Make: Mini Model: Cooper Year: 2003
Describe Damage to Vehicle: Disabling damage to the front Total Occupants: 1
Describe Occupant Injuries: (Seating position/Were seat belts used/Air bag deployed?) Seat belts were in use, airbags were not deployed, no injuries sustained

HARDWARE

Impact Location (Check One): Cable X Terminal section_____ Other: (Describe) ___

Describe Damage to Barrier: _____
Rate Overall Barrier Performance: Good

REPAIR

Number of posts damaged: ? Was cable damaged?:__
Did cable maintain tension?___
Cost to repair: labor $_, material $, equipment $__. Total$ none
Repair problems? (Difficulties in obtaining parts/repair guidance/or other)_____

Attach any supporting information, sketches, photos, accident reports, etc.

Evaluator: Tommy Arnold Date: 11/2/05
Title: Transportation Engineer

Submit to Standards Engineer, Office of Roadway Engineering, Central Office, Thank you!

Wire Rope Crash Inventory
IR-75
Butler and Warren Counties

FIGURE 2

Last Date Modified: 11/15/2005
Modified by: ETA

Year 1 07/01/2003 - 06/30/2004
Year 2 07/01/2004 - 06/30/2005
Year 3 07/01/2005 - 06/30/2006

Instructions
- do not enter any data in the white cells
- do not modify order of columns
- Cable rail data inventory begins 7/1/2003 and ends 6/30/2006
- for hit and run crashes, input the date of the maintenance costs

ABBREVIATIONS

FTC	FAILURE TO CONTROL	DF	DRIVER FATIGUE
US	UNSAFE SPEED		
ILC	IMPROPER LANE CHANGE		
ODE	OPERATING DEFECTIVE EQUIPMENT		
DIA	DRIVER INATTENTION		
STA	SWERVING TO AVOID		
RD	RECKLESS DRIVING		
DUI	DRIVING UNDER THE INFLUENCE		

Crash Data Last Updated Through June of 2004

Accident Point Number	Local Report Number	Date of Accident	Crash Location (mm)	County	Time of Crash	Peak Hour (7-9am) or (4-6pm)	Direction of Travel (NB/SB)	Cable Rail Location (R/L)	Vehicle Crossed Ditch	Distance to Nearest NB Interchange (mm)	Crashes Within 2000' of Interchange	Socketed Post Location	Result of Crash	Vehicle Type	Type of Crash	Contributing Circumstances	Crash Severity	Injury Severity	Seatbelt In Use	Road Condition	Light Condition	Damage to Cable Rail (# of posts)	Repair Cost	Inspection Picture Taken	Evaluation Form Completed	Data Year	Crash Year
038196144	83-1075-83	7/1/2003	34.20	WAR	5:50 PM	PM PEAK	SB	n/a	No	1.07	No		REDIRECTED	CAR	FO	FTC	PDO			WET	DAY	?	$ 326.23	NO	YES	Year 1	2003
038196330	83-1087-83	7/3/2003	36.50	WAR	12:20 AM		SB	L	No	0.03	Yes		STOPPED IN CONTACT	CAR	SIDESWIPE	FTY	PDO			DRY	DARK	?	?	NO	YES	Year 1	2003
038195664	09-0362-09	7/4/2003	26.60	BUT	4:28 AM		NB	L	Yes	2.13	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			DRY	DARK	?	$ 614.12	NO	YES	Year 1	2003
038198909	83-1117-83	7/9/2003	36.80	WAR	5:50 PM	PM PEAK	SB	L	No	0.01	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			DRY	DAY	?	see 36.66	NO	YES	Year 1	2003
038198944	83-1174-83	7/20/2003	34.30	WAR	7:04 AM	AM PEAK	SB	n/a	No	1.17	No		REDIRECTED	CAR	FO	ILC/ACDA	PDO			DRY	DAY	2	$ 371.83	NO	YES	Year 1	2003
038219654	83-1197-83	7/25/2003	35.20	WAR	5:42 PM	PM PEAK	SB	n/a	No	2.07	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			DRY	DAWN	4	$ 706.38	NO	YES	Year 1	2003
038209814	09-0412-09	7/30/2003	24.40	BUT	7:38 AM	AM PEAK	NB	R	No	0.13	Yes		STOPPED IN CONTACT	SUV	SIDESWIPE	ILC	PDO			DRY	DAY	3	$ 1,131.60	NO	YES	Year 1	2003
038224814	09-0423-09	8/3/2003	24.90	BUT	11:07 AM		NB	R	No	0.63	No		STOPPED IN CONTACT	CAR	SIDESWIPE	ILC	PDO			DRY	DARK	4	$ 642.61	NO	YES	Year 1	2003
HIT AND RUN		8/7/2003	25.90	BUT																			$ 1,268.43	NO	YES	Year 1	2003
HIT AND RUN		8/8/2003	35.30	WAR																		4	$ 346.91	NO	YES	Year 1	2003
HIT AND RUN		8/12/2003	27.70	BUT																			$ 666.61	NO	YES	Year 1	2003
038230771	83-1286-83	8/13/2003	34.90	WAR	11:58 AM		SB	n/a	No	1.77	No		PENETRATION OF RAIL	CAR	ANGLE	ILC	INJ	NON-INCAPACITATING	YES	DRY	DAY	2	$ 1,136.16	NO	YES	Year 1	2003
HIT AND RUN		8/18/2003	32.00	WAR								Socketed										8	$ 293.43	NO	YES	Year 1	2003
038244174	83-1345-83	8/24/2003	36.40	WAR	5:25 PM	PM PEAK	NB	L	Yes	0.31	Yes		REDIRECTED	CAR	FO	FELL ASLEEP	PDO			DRY	DAY	8	$ 451.64	NO	YES	Year 1	2003
038244056	83-1376-83	8/30/2003	29.20	WAR	5:10 PM	PM PEAK	NB	L	Yes	0.38	Yes		REDIRECTED	CAR	FO	US	PDO			WET	DAY	5	$ 889.51	NO	YES	Year 1	2003
038244205	09-0474-09	9/1/2003	25.20	BUT	5:46 PM	PM PEAK	SB	R	Yes	0.78	No		STOPPED IN CONTACT	SUV	FO	FTC	PDO			WET	DAY	7	$ 711.44	NO	YES	Year 1	2003
038244206	09-0475-09	9/1/2003	25.30	BUT	7:15 PM		SB	R	Yes	0.88	No		SPUN OUT	CAR	FO	FTC	PDO			WET	DUSK	?	SEE 25.2	NO	YES	Year 1	2003
038253094	83-1405-83	9/2/2003	30.70	WAR	6:26 PM		NB	R	No	0.85	No	Socketed	REDIRECTED	PICKUP	FO	US	PDO			WET	DAY	3	$ 282.83	NO	YES	Year 1	2003
038244074	83-1395-83	9/2/2003	33.10	WAR	1:35 AM		SB	R	Yes	0.03	Yes		REDIRECTED	SUV	FO	FELL ASLEEP	PDO			WET	DARK	5	$ 347.15	NO	YES	Year 1	2003
038278570	83-1433-83	9/7/2003	37.90	WAR	5:10 PM	PM PEAK	SB	L	No	0.60	No		STOPPED IN CONTACT	SUV	FO	ILC	PDO			DRY	DAY	?	SEE 37.3	NO	YES	Year 1	2003
HIT AND RUN		9/8/2003	28.90	WAR																		?	$ 126.48		YES	Year 1	2003
038274507	09-0486-83	9/9/2003	36.66	WAR	3:50 PM		NB	L	Yes	0.05	Yes		POSSIBLE PENETRATION OF RAIL	CAR	FO	FTC	PDO			DRY	DAY	?	$ 152.68	NO	YES	Year 1	2003
038253334	09-0495-09	9/11/2003	27.50	BUT	3:00 PM		SB	L	No	0.20	Yes		STOPPED IN CONTACT	SUV	FO	STA	PDO			DRY	DAY	?	$ 1,133.98	NO	YES	Year 1	2003
HIT AND RUN		9/15/2003	35.50	WAR																		?	$ 512.94	NO	YES	Year 1	2003
038269013	83-1500-83	9/22/2003	31.80	WAR	8:20 AM	AM PEAK	NB	R	No	1.08	No	Socketed	PENETRATION OF RAIL	CAR	FO	FTC	PDO			WET	DAY	6	$ 259.90	NO	YES	Year 1	2003
HIT AND RUN		10/7/2003	37.00	WAR																		?	$ 301.72	NO	YES	Year 1	2003
038278754	09-0579-09	10/14/2003	25.50	BUT	10:40 AM		NB	R	No	1.23	No		SPUN OUT	CAR	FO	FTC	PDO			WET	DAY	?	$ 901.24	NO	YES	Year 1	2003
HIT AND RUN		10/15/2003	29.30	WAR																		?	$ 539.38	NO	YES	Year 1	2003
HIT AND RUN		10/15/2003	33.10	WAR																			$ 388.53	NO	YES	Year 1	2003
038298409	83-1626-83	10/17/2003	30.90	WAR	1:00 AM		NB	R	No	1.05	No	Socketed	SPUN OUT	CAR	ANIMAL	NONE	PDO			WET	DARK	?	$ 629.05	NO	YES	Year 1	2003
HIT AND RUN		10/20/2003	30.00	WAR								Socketed											$ 304.48	NO	YES	Year 1	2003
HIT AND RUN		10/21/2003	24.90	BUT																			$ 464.02	NO	YES	Year 1	2003
HIT AND RUN		10/21/2003	25.90	BUT																			$ 592.68	NO	YES	Year 1	2003
038300550	09-0616-09	10/29/2003	25.50	BUT	6:57 PM		NB	R	No	1.23	No		STOPPED IN CONTACT	CAR	SIDESWIPE	RD	PDO			DRY	DARK	?	SEE 25.5	NO	YES	Year 1	2003
038300504	09-0622-09	11/1/2003	26.90	BUT	12:35 PM		SB	L	No	0.36	Yes		STOPPED IN CONTACT	CAR	ANGLE	FTC	PDO			DRY	DAY	?	$ 1,388.63	NO	YES	Year 1	2003
HIT AND RUN		11/3/2003	25.60	BUT																		?	$ 321.36	NO	YES	Year 1	2003
HIT AND RUN		11/4/2003	27.80	BUT																		?	$ 2,249.03	NO	YES	Year 1	2003
038322928	83-1782-09	11/8/2003	24.10	BUT	2:30 PM		NB	R	No	0.03	Yes		REDIRECTED INTO TRAFFIC	CAR	FO	FTC	PDO			DRY	DAY	1	$ 810.25	YES	YES	Year 1	2003
038326417	83-1821-83	11/14/2003	35.60	WAR	7:15 AM	AM PEAK	SB	n/a	No	1.63	No		STOPPED IN CONTACT	CAR	FO	ILC	PDO			WET	DAY	?	see 35.70	NO	YES	Year 1	2003
HIT AND RUN		11/17/2003	23.30	BUT																		?	$ 546.63	NO	YES	Year 1	2003
HIT AND RUN		11/18/2003	23.40	BUT																		?	$ 328.72	NO	YES	Year 1	2003
HIT AND RUN		11/21/2003	34.00	WAR																		?	$ 328.06	NO	YES	Year 1	2003
038331430	09-0679-09	11/27/2003	25.40	BUT	8:45 AM	AM PEAK	SB	R	Yes	0.98	No		SPUN OUT	CAR	FO	FTC	PDO			WET	DAY	6	$ 377.31	YES	YES	Year 1	2003
038336221	09-0682-09	11/28/2003	26.10	BUT	5:00 AM		SB	L	No	1.16	No		STOPPED IN CONTACT	CAR	FO	US	INJ	POSSIBLE	YES	WET	DARK	1	$ 901.74	YES	YES	Year 1	2003
038325108	83-1927-83	11/28/2003	29.20	WAR	4:15 AM		NB	L	Yes	0.38	Yes		REDIRECTED	CAR	FO	FTC	PDO			WET	DARK	?	$ 527.18	NO	YES	Year 1	2003
038354127	03-0424	11/29/2003	33.33	WAR	2:09 AM		SB	R	Yes	0.20	Yes		SPUN OUT	SUV	FO	FTC	PDO			SNOW	DARK	?	$ 275.31	NO	YES	Year 1	2003
HIT AND RUN		12/3/2003	27.20	BUT																		?	$ 209.53	NO	YES	Year 1	2003
HIT AND RUN		12/8/2003	37.00	WAR																		?	$ 382.36	YES	YES	Year 1	2003
038353028	09-0719-09	12/9/2003	25.00	BUT	6:25 PM		NB	R	No	0.73	No		STOPPED IN CONTACT	CAR	FO	DIA	PDO			DRY	DARK	?	$ 1,022.49	NO	YES	Year 1	2003
038353413	83-2011-83	12/10/2003	38.00	WAR	11:00 AM		NB	L	Yes	0.61	No		STOPPED IN CONTACT	PICKUP W/ TRAILER	FO	US/ACDA	PDO			WET	DAY	4	$ 1,491.91	YES	YES	Year 1	2003
038349178	09-0732-09	12/12/2003	28.30	BUT	3:50 PM		NB	L	Yes	0.72	No		SPUN OUT AND ROLLED OVER	CAR	FO	ILC	INJ	NON-INCAPACITATING	YES	DRY	DAY	?	SEE 28.2	YES	YES	Year 1	2003
038349184	09-0738-09	12/14/2003	24.20	BUT	11:15 AM		NB	R	No	0.07	Yes		REDIRECTED	CAR	FO	ILC	PDO			WET	DAY	?	$ 696.13	NO	YES	Year 1	2003
038368705	03120361	12/14/2003	25.60	BUT	9:35 AM		NB	R	No	1.33	No		STOPPED IN CONTACT	SUV	FO	FTC	PDO			SNOW	DAY	?	SEE 25.4	NO	YES	Year 1	2003
038349181	09-0735-09	12/14/2003	28.20	BUT	5:52 AM		NB	L	Yes	0.60	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	?	SEE 28.2	SEE 28.2	YES	Year 1	2003
038348918	09-0748-83	12/17/2003	36.30	WAR	10:10 AM		SB	L	No	0.05	Yes		STOPPED IN CONTACT	SUV	FO	FTC	PDO			SNOW	DAY	?	SEE 36.98	NO	YES	Year 1	2003
038364191	80-1339-83	12/19/2003	28.20	BUT	5:20 PM	PM PEAK	NB	L	Yes	0.60	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DAY	5	$ 1,086.89	YES	YES	Year 1	2003
038362803	83-2090-83	12/19/2003	32.80	WAR	6:20 PM		SB	n/a	No	0.01	Yes		REDIRECTED INTO TRAFFIC	VAN	ANGLE	US	PDO			ICE	DARK	2	$ 528.18	YES	YES	Year 1	2003
038364556	83-2104-83	12/19/2003	32.90	WAR	5:50 PM	PM PEAK	NB	R	No	0.02	Yes		STOPPED IN CONTACT	SUV	FO	US	PDO			SNOW	DARK	?	$ 389.95	YES	YES	Year 1	2003
038362802	83-2089-83	12/19/2003	36.98	WAR	5:45 PM	PM PEAK	NB	n/a	No	0.09	Yes		STOPPED IN CONTACT	SUV	FO	US	INJ	POSSIBLE	YES	ICE	DARK	3	$ 2,723.96	YES	YES	Year 1	2003
038373601	83-2171-83	12/30/2003	29.10	WAR	4:57 PM	PM PEAK	NB	L	Yes	0.48	No		STOPPED IN CONTACT	PICKUP	FO	FTC	PDO			DRY	DAY	?	?	NO	YES	Year 1	2003
038373598	83-2174-83	12/31/2003	34.00	WAR	5:15 AM		NB	n/a	No	0.64	No		STOPPED IN CONTACT	PICKUP	SIDESWIPE	ILC	PDO			DRY	DARK	1	SEE 36.98	YES	YES	Year 1	2003
048006737	09-0002-09	1/1/2004	25.80	BUT	10:18 AM		SB	L	No	1.38	No		SPUN OUT	CAR	FO	US	INJ	NON-INCAPACITATING	YES	WET	DARK	4	$ 602.05	YES	YES	Year 1	2004
048006941	09-0008-09	1/4/2004	26.00	BUT	8:22 AM	AM PEAK	NB	L	Yes	1.73	No		STOPPED IN CONTACT	SUV	FO	FTC	PDO			WET	DAY	?	SEE 25.8	NO	YES	Year 1	2004
048006938	09-0005-09	1/4/2004	26.60	BUT	7:10 AM	AM PEAK	SB	L	No	0.66	No		REDIRECTED INTO TRAFFIC	CAR	FO	FTC	PDO			WET	DARK	7	SEE 26.1	NO	YES	Year 1	2004
048006759	09-0009-09	1/4/2004	27.10	BUT	8:05 PM		SB	L	No	0.16	Yes		SPUN OUT	CAR	FO	FTC	PDO			WET	DARK	7	$ 1,105.95	YES	YES	Year 1	2004
048004331	83-0024-83	1/4/2004	33.50	WAR	2:30 PM		SB	R	Yes	0.37	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			WET	DAY	1	SEE 33.6	YES	YES	Year 1	2004
048004252	83-0052-83	1/8/2004	31.10	WAR	1:50 PM		NB	R	No	1.25	No	Socketed	STOPPED IN CONTACT	SUV	FO	FTC	PDO			SNOW	DAY	6	SEE 33.6	YES	YES	Year 1	2004
048004148	83-0053-63	1/8/2004	35.70	WAR	12:30 PM		SB	n/a	No	1.23	No		SPUN OUT	CAR	FO	US	PDO			SNOW	DAY	3	$ 593.15	YES	YES	Year 1	2004
048004244	83-0044-83	1/8/2004	37.30	WAR	12:30 PM		SB	n/a	No	0.05	Yes		REDIRECTED INTO TRAFFIC	PICKUP	ANGLE	US	PDO			SNOW	DAY	12	SEE 37.3	YES	YES	Year 1	2004
048030669	83-0040-83	1/8/2004	37.40	WAR	12:20 PM		NB	n/a	No	0.08	Yes		SPUN OUT	SUV	FO	US	PDO			SNOW	DAY	SEE 37.3	SEE 37.3	SEE 37.3	YES	Year 1	2004
048030668	83-0039-83	1/8/2004	37.70	WAR	12:20 PM		SB	R	Yes	0.55	No		STOPPED IN CONTACT	PICKUP	FO	US	PDO			SNOW	DAY	SEE 37.3	SEE 37.3	SEE 37.3	YES	Year 1	2004
HIT AND RUN		1/13/2004	25.30	BUT																		?	$ 799.22	YES	YES	Year 1	2004
HIT AND RUN		1/21/2004	27.50	BUT																		?	$ 739.85	YES	YES	Year 1	2004
HIT AND RUN		1/22/2004	33.10	WAR																		4	$ 513.94	YES	YES	Year 1	2004
048014928	83-0165-83	1/25/2004	33.60	WAR	5:45 PM	PM PEAK	SB	n/a	No	0.47	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DUSK	?	SEE 33.6	NO	YES	Year 1	2004
048014931	83-0168-83	1/25/2004	35.80	WAR	7:49 PM		SB	n/a	No	0.90	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	SEE 35.7	SEE 35.7	YES	YES	Year 1	2004
048014935	83-0173-09	1/26/2004	28.50	BUT	9:18 AM		NB	R	No	0.90	No		STOPPED IN CONTACT	PICKUP	SIDESWIPE	US	PDO			SNOW	DAY	?	$ 584.89	YES	YES	Year 1	2004
048033043	09-0060-09	1/28/2004	26.00	BUT	5:09 AM		NB	L	Yes	1.73	No		STOPPED IN CONTACT	MACK TRUCK	FO	ODE/ACDA	PDO			WET	DARK	6	SEE 25.8	YES	YES	Year 1	2004
048031026	09-0071-09	1/30/2004	28.50	BUT	12:05 AM		NB	R	No	0.90	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	?	SEE 28.2	NO	YES	Year 1	2004
048027908	83-0205-83	1/30/2004	37.30	WAR	6:04 AM		SB	n/a	No	0.05	Yes		REDIRECTED	SUV	FO	US	PDO			ICE	DARK	5	$ 462.92	YES	YES	Year 1	2004
048031127	09-0084-09	1/31/2004	25.50	BUT	4:16 PM	PM PEAK	NB	R	No	1.23	No		STOPPED IN CONTACT	CAR	FO	RD	PDO			DRY	DAY	32	$ 2,468.09	YES	YES	Year 1	2004
048019082	83-0229-83	2/2/2004	33.60	WAR	1:09 PM		SB	n/a	No	0.47	No		STOPPED IN CONTACT	CAR	FO	ACDA	PDO			DRY	DAY	5	$ 647.97	YES	YES	Year 1	2004
048031124	09-0093-09	2/5/2004	24.50	BUT	8:05 PM		NB	R	No	0.23	Yes		SPUN OUT	CAR	FO	FTC	PDO			WET	DAY	4	$ 260.34	YES	YES	Year 1	2004
048023464	09-0122-09	2/20/2004	28.10	BUT	7:17 PM		NB	L	Yes	0.48	No		REDIRECTED	CAR	FO	FTC	PDO			WET	DARK	7	SEE 26.9	YES	YES	Year 1	2004
HIT AND RUN		2/27/2004	24.80	BUT																		?	$ 965.62	NO	YES	Year 1	2004
048047540	83-0351-83	2/28/2004	30.80	WAR	3:33 PM		NB	R	No	0.95	No	Socketed	STOPPED IN CONTACT	CAR	SIDESWIPE	ODE	PDO			DRY	DAY	?	$ 173.62	NO	YES	Year 1	2004
048057525	09-0141-09	3/1/2004	27.30	BUT	3:15 AM		SB	L	No	0.04	Yes		UNDERRAN THE RAIL PARTIALLY	CAR	FO	FTC	PDO			DRY	DARK	11	$ 1,321.56	YES	YES	Year 1	2004
HIT AND RUN		3/3/2004	26.90	BUT																		3	$ 408.52	YES	YES	Year 1	2004
HIT AND RUN		3/5/2004	26.00	BUT																			$ 696.22	NO	YES	Year 1	2004
048060754	09-0153-09	3/6/2004	24.40	BUT	2:13 AM		NB	R	No	0.13	Yes		STOPPED IN CONTACT	CAR	FO	ILC	PDO			DRY	DARK	10	$ 360.23	NO	YES	Year 1	2004

HIT AND RUN		3/8/2004	25.40	BUT																	11	$ 1,067.67	YES	YES	Year 1	2004
048060597	83-0446-83	3/16/2004	30.80	WAR	7:18 AM	AM PEAK	NB	R	No	0.95	No	Socketed	STOPPED IN CONTACT	PICKUP	FO	US	PDO			SNOW	DAWN	?	$ -	NO	YES	Year 1	2004
HIT AND RUN		3/22/2004	25.40	BUT																		?	$ 1,123.22	NO	YES	Year 1	2004
048089354	09-0183-83	3/27/2004	29.00	WAR	4:50 AM		SB	L	No	0.09	Yes		STOPPED IN CONTACT	SUV	FO	ODE	PDO			WET	DARK	?	$ 331.08	NO	YES	Year 1	2004
HIT AND RUN		3/29/2004	24.20	BUT																		3	$ 123.80	YES	YES	Year 1	2004
048089358	09-0188-09	3/29/2004	25.30	BUT	10:55 PM		NB	R	No	1.03	No		SPUN OUT	CAR	FO	FTC	PDO			WET	DARK	?	N/A	NO	YES	Year 1	2004
048089356	06-0186-09	3/29/2004	25.60	BUT	8:56 AM	AM PEAK	NB	R	No	1.33	No		SPUN OUT	VAN	FO	FTC	PDO			WET	DARK	5	$ 520.75	YES	YES	Year 1	2004
HIT AND RUN		4/5/2004	24.70	BUT																		?	$ 1,144.44	NO	YES	Year 1	2004
048096034	09-0229-83	4/15/2004	32.30	WAR	5:08 PM	PM PEAK	NB	L	Yes	0.58	No		SPUN OUT	CAR	SIDESWIPE	ILC	PDO			DRY	DAY	?	$ 277.55	NO	YES	Year 1	2004
048104345	09-0246-09	4/22/2004	25.60	BUT	7:00 PM		SB	R	Yes	1.18	No		STOPPED IN CONTACT	SUV	FO	FTC	PDO			WET	DAY	?	SEE 25.6	NO	YES	Year 1	2004
048116205	09-0257-09	4/25/2004	25.20	BUT	8:43 AM	AM PEAK	SB	R	Yes	0.78	No		STOPPED IN CONTACT	SUV	FO	FTC	PDO			WET	DAY	3	SEE 25.2	YES	YES	Year 1	2004
048116204	09-0256-09	4/25/2004	27.30	BUT	8:07 AM	AM PEAK	SB	L	No	0.04	Yes		STOPPED IN CONTACT	CAR	FO	ILC	PDO			WET	DAY	8	$ 870.16	NO	YES	Year 1	2004
HIT AND RUN		4/26/2004	26.00	BUT																			$ 238.37	NO	YES	Year 1	2004
HIT AND RUN		4/28/2004	27.20	BUT																		?	$ 242.26	YES	YES	Year 1	2004
048116208	09-0272-09	5/2/2004	25.80	BUT	1:34 AM		SB	L	No	1.38	No		OVERTURNED OVER THE RAIL	CAR	FO	FTC	PDO			WET	DARK	?	$ 836.44	NO	YES	Year 1	2004
048120359	83-0718-83	5/6/2004	34.20	WAR	7:43 PM		NB	n/a	No	0.84	No		REDIRECTED INTO TRAFFIC	CAR	FO	DIA	PDO			DRY	DAY	7	$ 677.10	YES	YES	Year 1	2004
HIT AND RUN		5/11/2004	26.10	BUT																		?	$ 474.45	NO	YES	Year 1	2004
048127921	09-0297-09	5/12/2004	26.90	BUT	11:13 PM		NB	L	Yes	0.82	No		STOPPED IN CONTACT	CAR	FO	US/FTC	PDO			DRY	DARK	?	$ 95.50	NO	YES	Year 1	2004
048127552	83-0758-83	5/12/2004	37.10	WAR	10:45 PM		NB	n/a	No	0.21	Yes		STOPPED IN CONTACT	CAR	SIDESWIPE	ILC	PDO			DRY	DARK	13	$ 1,599.76	YES	YES	Year 1	2004
048127555	83-0763-83	5/13/2004	37.10	WAR	4:00 PM	PM PEAK	NB	n/a	No	0.21	Yes		SPUN OUT	PICKUP	FO	US	PDO			WET	DAY	1	$ 543.93	YES	YES	Year 1	2004
048127793	83-0768-83	5/14/2004	37.50	WAR	12:55 PM		NB	R	No	0.18	Yes		STOPPED IN CONTACT	CAR	FO	ILC	PDO			DRY	DAY	SEE 37.1	SEE 37.1	YES	YES	Year 1	2004
048127795	83-776-83	5/15/2004	31.40	WAR	4:40 AM		NB	R	No	1.48	No	Socketed	STOPPED IN CONTACT	CAR	FO	US	INJ	POSSIBLE	YES	WET	DARK	2	$ 219.59	YES	YES	Year 1	2004
HIT AND RUN		5/18/2004	28.72	BUT																			$ 518.35	NO	YES	Year 1	2004
048166558	83-0853-83	5/27/2004	32.00	WAR	10:22 PM		NB	R	No	0.88	No	Socketed	SPUN OUT	CAR	FO	US	PDO			WET	DAY	8	$ 328.25	YES	YES	Year 1	2004
048166569	83-0875-83	5/30/2004	32.90	WAR	4:55 PM	PM PEAK	SB	R	Yes	0.09	Yes		REDIRECTED	CAR	FO	FTC	PDO			WET	DAY	2	SEE 36.3	YES	YES	Year 1	2004
048166287	83-0952-83	6/10/2004	32.90	WAR	2:25 PM		NB	R	No	0.02	Yes		STOPPED IN CONTACT	CAR	FO	FTC	INJ	NON-INCAPACITATING	YES	DRY	DAY	?	?	NO	YES	Year 1	2004
048161707	04-0187	6/11/2004	36.00	WAR	4:47 PM	PM PEAK	NB	n/a	No	0.71	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			DRY	DAY	?	$ 379.22	NO	YES	Year 1	2004
048166257	83-0966-83	6/12/2004	36.30	WAR	7:28 AM	AM PEAK	SB	L	No	0.05	Yes		STOPPED IN CONTACT	CAR	FO	DIA	INJ	NON-INCAPACITATING	YES	DRY	DAY	9	$ 1,033.91	YES	YES	Year 1	2004
048176299	00-419-83	6/26/2004	29.40	WAR	1:50 PM		SB	L	No	0.10	Yes		REDIRECTED	CAR	SIDESWIPE	ILC	PDO			DRY	DAY	1	?	YES	YES	Year 1	2004
048181073	09-0425-09	6/29/2004	24.40	BUT	8:00 AM	AM PEAK	NB	R	No	0.13	Yes		REDIRECTED	CAR	ANGLE	ILC	INJ	NON-INCAPACITATING	Yes	DRY	DAY	?	?	NO	YES	Year 1	2004
048179842	09-0433-09	7/8/2004	28.30	BUT	7:40 AM	AM PEAK	SB	L	No	0.51	No		POSSIBLE PENETRATION OF RAIL	CAR	SIDESWIPE	ILC	INJ	NON-INCAPACITATING	YES	DRY	DAY	12	$ 440.46	YES	YES	Year 2	2004
HIT AND RUN		7/21/2004	27.80	BUT																			$ 907.41	NO	YES	Year 2	2004
048208462	09-050183	7/31/2004	29.50	WAR	3:00 AM		SB	L	No	0.20	Yes		STOPPED IN CONTACT	CAR	FO	N/A				WET	DARK	NONE	NONE	NO	YES	Year 2	2004
HIT AND RUN		8/2/2004	25.90	BUT																		1	$ 54.87	YES	YES	Year 2	2004
HIT AND RUN		8/3/2004	24.40	BUT																			$ 1,148.72	NO	YES	Year 2	2004
HIT AND RUN		8/3/2004	28.40	BUT																			$ 387.72	NO	YES	Year 2	2004
048210547	83-1264-83	8/4/2004	35.70	WAR	1:05 PM		NB	n/a	No	1.01	No		REDIRECTED INTO TRAFFIC	SUV	FO	ODE	PDO			WET	DAY	?	$ 504.33	YES	YES	Year 2	2004
HIT AND RUN		9/9/2004	31.50	WAR																			$ 140.35	NO	YES	Year 2	2004
048248951	09-0589-09	9/15/2004	24.90	BUT	12:10 PM		SB	R	Yes	0.48	No		REDIRECTED	CAR	RE	FELL ASLEEP	INJ	POSSIBLE	YES	DRY	DAY	8	$ 721.63	YES	YES	Year 2	2004
HIT AND RUN		9/20/2004	24.20	BUT																		7	$ 873.67	YES	YES	Year 2	2004
HIT AND RUN		10/6/2004	27.90	BUT																			$ 667.83	NO	YES	Year 2	2004
048277640	09-0645-09	10/12/2004	25.20	BUT	8:45 PM		SB	R	Yes	0.78	No		SPUN OUT	SUV	FO	US	PDO			WET	DARK	6	$ 791.61	YES	YES	Year 2	2004
048290276	09-0659-09	10/18/2004	25.70	BUT	11:30 AM		NB	L	Yes	1.43	No		PENETRATION OF RAIL	CAR	FO	FTC	PDO			WET	DAY	17	$ 1,316.07	YES	YES	Year 2	2004
048290278	09-0661-09	10/18/2004	26.00	BUT	12:30 PM		NB	L	Yes	1.73	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			WET	DAY	?	SEE 25.7	SEE 25.7	YES	Year 2	2004
048289376	83-1692-83	10/18/2004	30.46	WAR	3:45 PM		NB	R	No	0.61	No	Socketed	SPUN OUT	CAR	FO	US	PDO			WET	DAY	1	$ 90.17	YES	YES	Year 2	2004
048287687	83-1696-83	10/18/2004	33.90	WAR	4:00 PM	PM PEAK	SB	n/a	No	0.77	No		SPUN OUT	CAR	FO	US	PDO			WET	DAY	6	$ 660.62	YES	YES	Year 2	2004
048293143	09-0683-09	10/23/2004	27.30	BUT	11:28 PM		NB	L	Yes	0.05	Yes		SPUN OUT	CAR	ANIMAL	ANIMAL	PDO			WET	DARK	7	$ 606.04	YES	YES	Year 2	2004
048295111	09-0701-09	10/29/2004	27.00	BUT	6:30 AM		SB	L	No	0.26	Yes		SPUN OT	SUV	SIDESWIPE	ILC	PDO			DRY	DAY	3	$ 268.00		YES	Year 2	2004
048295115	09-0706-09	11/2/2004	24.50	BUT	8:55 AM	AM PEAK	NB	R	No	0.23	Yes		REDIRECTED	CAR	FO	US	PDO			WET	DAY	8	$ 874.89	YES	YES	Year 2	2004
HIT AND RUN		11/3/2004	26.40	BUT																		4	$ 619.47	YES	YES	Year 2	2004
048309949	83-1809-09	11/4/2004	28.50	BUT	4:35 AM		SB	R	Yes	0.31	Yes		SPUN OUT	CAR	ANIMAL	STA	PDO			WET	DARK	5	$ 417.39	YES	YES	Year 2	2004
048308273	09-0722-09	11/7/2004	25.20	BUT	6:17 PM		NB	R	No	0.93	No		STOPPED IN CONTACT	CAR	SIDESWIPE	ILC	PDO			DRY	DARK	?	see 25.2a	NO	YES	Year 2	2004
HIT AND RUN		11/8/2004	25.30	BUT																			$ 566.77	NO	YES	Year 2	2004
048309891	83-1854-83	11/9/2004	34.64	WAR	9:02 AM		SB	n/a	No	1.51	No		SPUN OUT	CAR	FO	US/ILC	PDO			DRY	DAY	13	$ 958.17	YES	YES	Year 2	2004
048317938	09-0727-09	11/10/2004	29.00	WAR	3:43 PM		SB	L	No	0.09	Yes		STOPPED IN CONTACT	CAR	FO	ILC	PDO			DRY	DAY	?	$ 216.41	NO	YES	Year 2	2004
048322160	83-1883-83	11/13/2004	33.80	WAR	12:30 AM		NB	n/a	No	0.44	No		STOPPED IN CONTACT	CAR	FO	FELL ASLEEP	PDO			DRY	DARK	1	$ 136.35	YES	YES	Year 2	2004
HIT AND RUN		11/17/2004	34.20	WAR																			$ 217.30	NO	YES	Year 2	2004
HIT AND RUN		11/17/2004	34.70	WAR																			$ 162.37	NO	YES	Year 2	2004
048337349	09-0746-09	11/19/2004	25.20	BUT	12:50 AM		SB	R	Yes	0.78	No		REDIRECTED	CAR	FO	FTC	PDO			WET	DARK	12	$ 690.08	YES	YES	Year 2	2004
048333891	09-0747-09	11/19/2004	25.60	BUT	4:40 AM		SB	R	Yes	1.18	No		REDIRECTED	CAR	FO	FTC	PDO			WET	DARK	6	$ 400.87	YES	YES	Year 2	2004
HIT AND RUN		11/22/2004	28.20	BUT																			$ 259.55	NO	YES	Year 2	2004
048334229	83-1946-83	11/23/2004	37.20	WAR	11:21 AM		NB	n/a	No	0.12	Yes		SPUN OUT	CAR	SIDESWIPE	ILC	PDO			DRY	DAY	7	$ 490.91	YES	YES	Year 2	2004
048340232	83-1996-83	12/1/2004	32.50	WAR	6:30 AM		NB	L	Yes	0.38	No		SPUN OUT	CAR	SIDESWIPE	ILC	PDO			WET	DARK	?	$ 262.27	NO	YES	Year 2	2004
048348034	09-0791-09	12/7/2004	25.40	BUT	6:45 AM		NB	R	No	1.13	No		SPUN OUT	CAR	FO	FTC	PDO			WET	DARK	?	$ 455.51	NO	YES	Year 2	2004
048367580	09-0793-09	12/8/2004	26.20	BUT	6:50 AM		SB	L	No	1.06	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			DRY	DAY	?	$ 941.78	NO	YES	Year 2	2004
048367584	09-0798-09	12/10/2004	27.20	BUT	1:20 AM		SB	L	No	0.06	Yes		STOPPED IN CONTACT	CAR	FO	FELL ASLEEP	PDO			DRY	DAY	?	?	NO	YES	Year 2	2004
HIT AND RUN		12/15/2004	24.20	BUT																			$ 67.52	NO	YES	Year 2	2004
HIT AND RUN		12/15/2004	25.60	BUT																			$ 66.24	NO	YES	Year 2	2004
HIT AND RUN		12/15/2004	26.90	BUT																			$ 136.32	NO	YES	Year 2	2004
83-2095-83	83-2095-83	12/16/2004	34.20	WAR	11:38 AM		SB	n/a	No	1.07	No		STOPPED IN CONTACT	CAR	FO	ILC				DRY	DAY	14	$ 1,205.53	YES	YES	Year 2	2004
83-2103-83	83-2103-83	12/18/2004	34.10	WAR	1:00 AM		SB	n/a	No	0.97	No		REDIRECTED	CAR	FO	DIA	INJ	POSSIBLE	YES	DRY	DARK	SEE 34.2	SEE 34.2	SEE 34.2	YES	Year 2	2004
048372306	09-0823-09	12/22/2004	24.60	BUT	9:30 AM		NB	R	No	0.33	Yes		STOPPED IN CONTACT	CAR	FO	FTC	PDO			SNOW	DAY	6	?	NEED	YES	Year 2	2004
048381223	83-2153-83	12/22/2004	30.30	WAR	12:52 PM		SB	L	No	1.00	No	Socketed	SPUN OUT	CAR	FO	FTC	PDO			SNOW	DAY	1	$ 254.06	YES	YES	Year 2	2004
048381221	83-2149-83	12/22/2004	32.13	WAR	11:15 AM		NB	R	No	0.75	No	Socketed	STOPPED IN CONTACT	CAR	ANGLE	FTC	PDO			SNOW	DAY	3	$ 178.83	YES	YES	Year 2	2004
048381216	83-2143-83	12/22/2004	33.50	WAR	9:05 AM		SB	R	Yes	0.37	Yes		STOPPED IN CONTACT	SUV	FO	US	PDO			SNOW	DAY	4	$ 332.81	YES	YES	Year 2	2004
048381217	83-2145-83	12/22/2004	35.20	WAR	10:15 AM		SB	n/a	No	2.07	No		SPUN OUT	PICK UP	FO	FTC	PDO			SNOW	DAY	2	$ 289.28	YES	YES	Year 2	2004
n/a	83-2158-83	12/22/2004	35.60	WAR	8:38 PM		SB	n/a	No	1.63	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			SNOW	DARK	1	?	YES	YES	Year 2	2004
048381215	83-2141-83	12/22/2004	36.50	WAR	7:40 AM	AM PEAK	SB	L	No	0.03	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DAY	2	440.74	YES	YES	Year 2	2004
048381224	83-2154-83	12/22/2004	36.50	WAR	3:23 PM		SB	L	No	0.03	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	6	$ 601.83	YES	YES	Year 2	2004
048379755	2004120671	12/25/2004	26.80	BUT	12:33 AM		SB	L	No	0.46	No		STOPPED IN CONTACT	CAR	FO	STA	INJ	NON-INCAPACITATING	YES	ICE	DARK	NONE	NONE	NO	YES	Year 2	2004
HIT AND RUN		12/29/2004	27.60	BUT			SB	L	No	0.10	Yes											3	$ 430.79	YES	YES	Year 2	2004
HIT AND RUN		12/29/2004	31.40	WAR																		10	$ 635.88	YES	YES	Year 2	2004
HIT AND RUN		12/29/2004	32.90	WAR			NB	R	No	0.02	Yes											1	$ 121.09	YES	YES	Year 2	2004
HIT AND RUN		12/29/2004	34.70	WAR			NB	n/a	No	1.34	No											2	$ 242.86	YES	YES	Year 2	2004
HIT AND RUN		12/29/2004	34.50	WAR			NB	n/a	No	1.14	No											2	$ 336.98	YES	YES	Year 2	2004
HIT AND RUN		12/29/2004	35.50	WAR			NB	n/a	No	1.21	No											1	$ 516.48	YES	YES	Year 2	2004
048385868	83-2223-83	12/30/2004	31.80	WAR	5:30 PM	PM PEAK	NB	R	No	1.08	No	Socketed	STOPPED IN CONTACT	CAR	FO	ILC	PDO			WET	DARK	10	$ 342.62	see 32.8	YES	Year 2	2004
058013652	09-0005-09	1/3/2005	27.30	BUT	4:29 AM		SB	L	No	0.04	Yes		STOPPED IN CONTACT	CAR	FO	FTC	PDO			WET	DARK	8	$ 1,137.87	YES	YES	Year 2	2005
058013471	83-0021-83	1/4/2005	30.20	WAR	11:15 PM		NB	L	Yes	0.35	Yes	Socketed	STOPPED IN CONTACT	CAR	FO	FTC	PDO			WET	DARK	see 30.1d	see 30.1d	see 30.1d	YES	Year 2	2005
058015179	09-0010-09	1/5/2005	25.40	BUT	9:00 PM		SB	R	Yes	0.98	No		PENETRATION OF RAIL	CAR	FO	US	INJ	NON-INCAPACITATING	YES	WET	DARK	8	$ 1,367.55	YES	YES	Year 2	2005
058015180	09-0007-09	1/5/2005	25.80	BUT	12:05 AM		SB	L	No	1.38	No		STOPPED IN CONTACT	CAR	FO	US	INJ	NON-INCAPACITATING	YES	WET	DARK	3	$ 1,866.00	YES	YES	Year 2	2005
HIT AND RUN		1/10/2005	25.70	BUT			SB	L	No	1.28	No											2	$ 318.68	YES	YES	Year 2	2005
HIT AND RUN		1/10/2005	25.90	BUT			SB	L	No	1.36	No											5	$ 617.77	YES	YES	Year 2	2005
HIT AND RUN		1/10/2005	37.30	WAR			NB	n/a	No	0.02	Yes												$ 155.07	NO	YES	Year 2	2005
058017430	83-0056-83	1/12/2005	35.70	WAR	4:50 AM		NB	n/a	No	1.01	No		REDIRECTED	CAR	FO	FELL ASLEEP	PDO			WET	DARK	see 35.9	see 35.9	YES	YES	Year 2	2005
058017390	83-0070-83	1/16/2005	35.90	WAR	7:15 AM	AM PEAK	NB	n/a	No	0.81	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	16	$ 1,115.70	see 35.7	YES	Year 2	2005
058024238	83-0116-83	1/20/2005	31.70	WAR	3:15 PM		NB	R	No	1.18	No	Socketed	STOPPED IN CONTACT	CAR	FO	OFE	PDO			SNOW	DAY	SEE 31.6	see 31.6	see 31.6	YES	Year 2	2005
058024242	83-0120-83	1/20/2005	30.10	WAR	5:30 PM	PM PEAK	NB	L	Yes	0.25	Yes	Socketed	STOPPED IN CONTACT	SUV	FO	US	PDO			ICE	DUSK	2	$ 381.05	NO	YES	Year 2	2005
058024239	83-0117-83	1/20/2005	31.60	WAR	3:40 PM		NB	R	No	1.28	No	Socketed	STOPPED IN CONTACT	SUV	FO	US	PDO			SNOW	DAY	4	$ 182.65	YES	YES	Year 2	2005
058038954	83-0109-83	1/20/2005	33.00	WAR	12:11 PM		NB	R	No	0.04	Yes		STOPPED IN CONTACT	CAR	FO	ILC	PDO			SNOW	DAY	10	$ 1,495.85	YES	YES	Year 2	2005
058024247	83-0125-83	1/20/2005	33.10	WAR	7:30 PM		NB	R	No	0.06	Yes		STOPPED IN CONTACT	SUV	FO	FTC	PDO			SNOW	DARK	see 33.0	see 33.0	see 33.0	YES	Year 2	2005
058024237	83-0115-83	1/20/2005	33.30	WAR	2:45 PM		SB	R	Yes	0.17	Yes		REDIRECTED	SUV	ANGLE	ILC	INJ	NON-INCAPACITATING	YES	ICE	DAY	3	$ 428.66	YES	YES	Year 2	2005
058023945	83-0127-83	1/20/2005	33.90	WAR	8:10 PM		SB	n/a	No	0.77	No		STOPPED IN CONTACT	CAR	FO	US	PDO			SNOW	DARK	9	$ 998.02	YES	YES	Year 2	2005
058024571	09-0037-09	1/21/2005	25.30	BUT	12:45 AM		SB	R	Yes	0.88	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			SNOW	DARK	?	SEE 25.3A	NO	YES	Year 2	2005
058023949	83-0133-83	1/21/2005	37.40	WAR	9:35 AM		NB	n/a	No	0.08	Yes		STOPPED IN CONTACT	SUV	FO	US	INJ	POSSIBLE	YES	WET	DAY	4	$ 923.77	YES	YES	Year 2	2005
058023962	83-0146-83	1/22/2005	30.10	WAR	9:00 AM		SB	L	No	0.80	No	Socketed	STOPPED IN CONTACT	CAR	FO	US	PDO			ICE	DAY	see 30.1d	see 30.1d	YES	YES	Year 2	2005
058023958	83-0142-83	1/22/2005	33.30	WAR	7:25 AM	AM PEAK	NB	R	No	0.06	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			ICE	DAY	see 33.3b	see 33.3b	YES	YES	Year 2	2005
HIT AND RUN		1/24/2005	26.10	BUT			SB	L	No	1.16	No											3	$ 853.56	YES	YES	Year 2	2005

058046356	83-0164-83	1/25/2005	36.60	WAR	12:55 PM		SB	L	No	0.03	Yes		STOPPED IN CONTACT	CAR	RE	US	PDO			DRY	DAY	2	$ 208.67	NO	YES	Year 2	2005
058041510	83-0193-83	1/29/2005	30.10	WAR	3:00 PM		NB	L	Yes	0.25	Yes	Socketed	STOPPED IN CONTACT	CAR	FO	US	PDO			ICE	DAY	see 30.1d	see 30.1d	NO	YES	Year 2	2005
058041514	83-0201-83	1/30/2005	30.10	WAR	4:30 AM		SB	L	No	0.80	No	Socketed	REDIRECTED	SUV	FO	ODE	PDO			WET	DARK	see 30.1d	see 30.1d	NO	YES	Year 2	2005
HIT AND RUN		2/2/2005	33.80	WAR			NB	n/a	No	0.44	No											2	$ 344.69	YES	YES	Year 2	2005
058065422	09-0070-09	2/14/2005	25.00	BUT	10:25 AM		NB	R	No	0.73	No		STOPPED IN CONTACT	CAR	FO	STA	PDO			WET	DAY	7	NONE	YES	YES	Year 2	2005
058054773	83-0299-83	2/16/2005	29.30	WAR	4:40 AM		NB	L	Yes	0.24	Yes		SPUN OUT IN MEDIAN	CAR	FO	US	PDO			WET	DARK	3	$ 487.36	YES	YES	Year 2	2005
058072775	83-0361-09	2/28/2005	27.80	BUT	7:34 AM	AM PEAK	NB	L	Yes	0.15	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			DRY	DAY	4	NONE	YES	YES	Year 2	2005
058074208	83-0395-83	3/5/2005	35.10	WAR	6:45 AM		SB	n/a	No	1.97	No		SPUN OUT	CAR	FO	FTC	INJ	POSSIBLE	YES	ICE	DAWN	7	$ 418.01	YES	YES	Year 2	2005
058075781	83-0408-83	3/7/2005	36.90	WAR	5:13 PM	PM PEAK	NB	L	Yes	0.01	Yes		SPUN OUT	CAR	FO	US	PDO			WET	DAY	3	?	YES	YES	Year 2	2005
058082282	09-0098-83	3/9/2005	32.30	WAR	4:40 PM	PM PEAK	NB	L	Yes	0.58	No		REDIRECTED IN MEDIAN	TRUCK	FO	ODE	PDO			DRY	DAY	?	$ 100.72	NO	YES	Year 2	2005
058075786	83-0414-83	3/9/2005	33.20	WAR	2:50 AM		SB	R	Yes	0.07	Yes		SPUN OUT	CAR	FO	DUI	PDO			DRY	DARK	?	see 33.b	NO	YES	Year 2	2005
HIT AND RUN		3/16/2005	28.90	WAR																			$ 706.45	NO	YES	Year 2	2005
058090160	2005030483	3/19/2005	25.90	BUT	3:59 AM		SB	L	No	1.36	No		STOPPED IN CONTACT	CAR	FO	FTC	PDO			DRY	DARK	?	NONE	NO	YES	Year 2	2005
058093374	83-0496-83	3/24/2005	32.10	WAR	3:20 PM		NB	R	No	0.78	No	Socketed	STOPPED IN CONTACT	CAR	SIDESWIPE	ILC	PDO			DRY	DAY	?	?	NO	YES	Year 2	2005
058097730	83-0512-83	3/27/2005	31.50	WAR	2:20 AM		NB	R	No	1.38	No	Socketed	**BECAME ENTANGLED**	CAR	FO	FTC	PDO			WET	DARK	15	$ 617.78	YES	YES	Year 2	2005
058106637	09-0126-09	3/28/2005	24.80	BUT	11:57 AM		NB	R	No	0.53	No		SPUN OUT	CAR	FO	ILC	INJ	NON-INCAPACITATING	YES	WET	DAY	7	$ 622.60	YES	YES	Year 2	2005
058106635	09-0124-09	3/28/2005	25.60	BUT	5:22 AM		SB	R	Yes	1.18	No		SPUN OUT	CAR	FO	US	PDO			WET	DARK	5	$ 620.00	YES	YES	Year 2	2005
058097731	83-0513-83	3/28/2005	29.50	WAR	3:00 AM		NB	L	Yes	0.08	Yes		REDIRECTED IN MEDIAN	CAR	FO	US	PDO			WET	DARK	1	NONE	YES	YES	Year 2	2005
058097732	83-0514-83	3/28/2005	34.30	WAR	7:15 AM	AM PEAK	SB	n/a	No	1.17	No		REDIRECTED	CAR	FO	US	PDO			WET	DAY	4	$ 437.35	YES	YES	Year 2	2005
058097938	83-0517-83	3/28/2005	36.60	WAR	6:45 AM		SB	L	No	0.03	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			WET	DARK	2	$ 209.15	YES	YES	Year 2	2005
058106641	09-130-09	4/2/2005	25.60	BUT	5:39 AM		SB	R	Yes	1.18	No		STOPPED IN CONTACT	SUV	FO	US	PDO			WET	DARK	4	$ 285.51	YES	YES	Year 2	2005
HIT AND RUN		4/4/2005	27.10	BUT			SB	L	No	0.16	Yes											3	$ 197.01	YES	YES	Year 2	2005
HIT AND RUN		4/4/2005	30.20	WAR			NB	L	Yes	0.35	Yes	Socketed										2	$ 200.01	NO	YES	Year 2	2005
058133658	09-0169-09	4/10/2005	23.90	BUT	11:59 PM		NB	R	No	0.02	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			DRY	DARK	?	NONE	NO	YES	Year 2	2005
HIT AND RUN		4/12/2005	35.70	WAR																			$ 122.30	NO	YES	Year 2	2005
058117145	09-0156-09	4/21/2005	28.30	BUT	10:00 PM		SB	L	No	0.51	No		STOPPED IN CONTACT	SUV	FO	ORM	INJ	NON-INCAPACITATING	YES	DRY	DAY	4	$ 406.73	NO	YES	Year 2	2005
058117143	09-0158-09	4/22/2005	28.20	BUT	7:35 AM		NB	L	Yes	0.60	No		REDIRECTED	CAR	FO	US	PDO			WET	DAY	?	NONE	NO	YES	Year 2	2005
058137565	83-0627-83	4/23/2005	29.50	WAR	7:14 AM	AM PEAK	NB	L	Yes	0.08	Yes		STOPPED IN CONTACT	CAR	FO	US	PDO			WET	DAY	5	$ 293.90	YES	YES	Year 2	2005
HIT AND RUN		4/27/2005	25.90	BUT			NB	L	Yes	1.63	No											3	$ 328.64	NO	YES	Year 2	2005
058143750	83-0732-83	5/17/2005	30.40	WAR	1:50 PM		NB	L	Yes	0.55	No	Socketed	REDIRECTED	SUV	FO	US	PDO			WET	DARK	11	$ 362.34	YES	YES	Year 2	2005
058149555	09-0198-09	5/22/2005	25.20	BUT	6:50 AM		NB	R	No	0.93	No		STOPPED IN CONTACT	PICK UP	FO	RD	PDO			DRY	DAY	30	$ 2,469.52	YES	YES	Year 2	2005
HIT AND RUN		6/1/2005	26.40	BUT																			$ 1,787.74	NO	YES	Year 2	2005
058160969	83-0898-83	6/10/2005	37.90	WAR	6:00 PM		SB	L	No	0.60	No		REDIRECTED	CAR	SIDESWIPE	ILC	INJ	NON-INCAPACITATING	Yes	DRY	DAY	6	$ 653.82	YES	YES	Year 2	2005
058163593	83-0924-09	6/15/2005	28.50	BUT	10:44 AM		SB	R	Yes	0.31	Yes		STOPPED IN CONTACT	PICK UP	FO	ACDA	PDO			DRY	DAY	6	$ 213.46	YES	YES	Year 2	2005
058166963	09-0235-83	6/17/2005	30.80	WAR	2:50 AM		NB	R	No	0.95	No	Socketed	STOPPED IN CONTACT	CAR	FO	DF	PDO			DRY	DARK	9	$ 300.68	YES	YES	Year 2	2005

Total Cost of Cable Rail

	# of Posts	Costs	Cost/Post
Year 1	284	$ 58,429.52	$ 205.74
Year 2	414	$ 47,686.09	$ 115.18
Year 3			$ 0.00
Total	*698*	*$ 106,115.61*	
		Approx. Cost / Post =	*$ 152.03*

FIGURE 3

ANALYSIS OF CRASHES
BUT/WAR IR-75 WIRE ROPE DAMAGE

Count of Data Year	
Data Year	Total
Year 1	120
Year 2	113
Grand Total	233

Count of County	
County	Total
BUT	111
WAR	122
Grand Total	233

Count of Direction of Travel (NB/SB)	
Direction of Travel (NB/SB)	Total
NB	97
SB	84
Grand Total	181

Count of Vehicle Crossed Ditch	
Vehicle Crossed Ditch	Total
No	126
Yes	55
Grand Total	181

Count of Road Condition	
Road Condition	Total
DRY	58
ICE	10
SNOW	31
WET	69
Grand Total	168

Count of Light Condition	
Light Condition	Total
DARK	68
DAWN	3
DAY	94
DUSK	3
Grand Total	168

Count of Crash Severity2	
Crash Severity2	Total
INJ	21
PDO	145
Grand Total	166

Count of Seatbelt In Use	
Seatbelt In Use	Total
YES	21
Grand Total	21

Count of Injurity Severity	
Injurity Severity	Total
NON-INCAPACITATING	14
POSSIBLE	7
Grand Total	21

Count of Peak Hour (7-9am) or (4-6pm)	
Peak Hour (7-9am) or (4-6pm)	Total
AM PEAK	21
PM PEAK	22
Grand Total	43

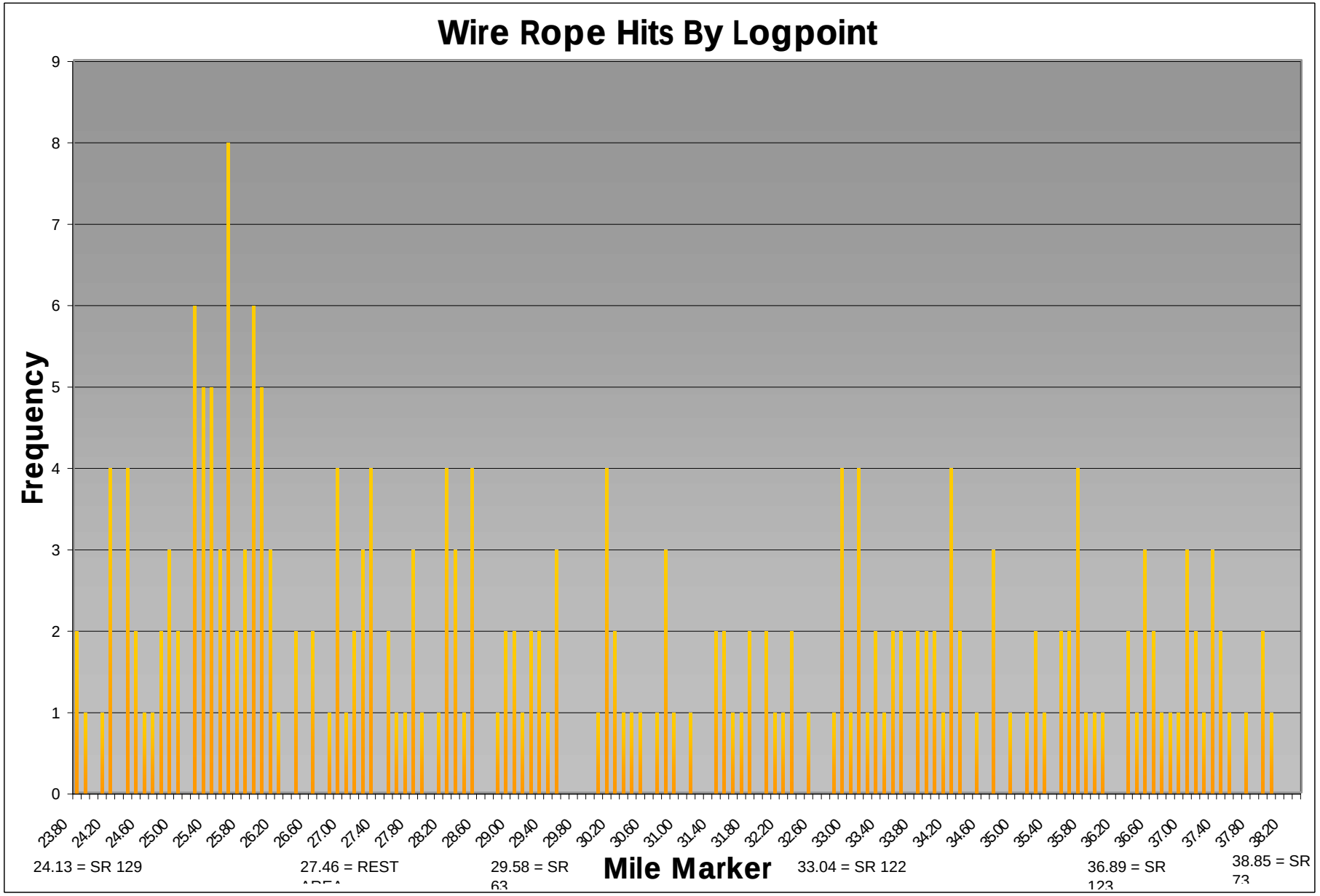
Count of Crashes Within 2000' of Interchange	
Crashes Within 2000' of Interchange	Total
No	110
Yes	71
Grand Total	181

Count of Accident Point Number		
Accident Point Number	Crash Year	Total
HIT AND RUN	2003	19
	2004	35
	2005	11
HIT AND RUN Total		65
Grand Total		65

Count of Socketed Post Location	
Socketed Post Location	Total
Socketed	24
Grand Total	24

Count of Calendar Crash Year	
Crash Year	Total
2003	61
2004	116
2005	56
Grand Total	233

FIGURE 4


Wire Rope Hits By Logpoint
Frequency
0
1
2
3
4
5
6
7
8
9
23.80
24.20
24.60
25.00
25.40
25.80
26.20
26.60
27.00
27.40
27.80
28.20
28.60
29.00
29.40
29.80
30.20
30.60
31.00
31.40
31.80
32.20
32.60
33.00
33.40
33.80
34.20
34.60
35.00
35.40
35.80
36.20
36.60
37.00
37.40
37.80
38.20
24.13 = SR 129
27.46 = REST
29.58 = SR
Mile Marker
33.04 = SR 122
36.89 = SR
123
38.85 = SR
73