
South Jersey Transportation Planning Organization

2005 Road Safety Audit

**English Creek Road (CR 575)
Egg Harbor Township, Atlantic County**



Prepared By:



Orth-Rodgers & Associates, Inc.
810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

In Association with:



June 14, 2005

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In Association with:

A-TECH Engineering Inc.
3739 N. Delsea Drive
Vineland, NJ 08360

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Introduction

The South Jersey Transportation Planning Organization (SJTPO) has retained Orth-Rodgers & Associates, Inc. (ORA) to conduct their 2005 Road Safety Audit (RSA) of five sections of roadways in southern New Jersey. The sections of roadways to be studied were selected by SJTPO based on a number of factors considered important to the safety and future development of the roadways. Among the factors considered were crash data, traffic volume growth, local cooperation and control, and recent and future development along the roadway. State highways were excluded from the process. County and local officials cooperated with SJTPO in identifying roads that met these parameters. The selection process is detailed in a report prepared by SJTPO dated November 29, 2004.

Two of the roadways are located in Atlantic County, one is in Cumberland County and two are in Salem County. The five roadway sections are:

1. English Creek Road (CR 575) between Ocean Heights Avenue (CR 559A) and Delilah Road (CR 646), in the Township of Egg Harbor, Atlantic County.
2. Delilah Road (CR 646) between the Airport Circle (at Tilton Road, CR 563) and US RT 9 in the Township of Egg Harbor and the City of Pleasantville, Atlantic County.
3. Third Street, Wheaton Avenue, and South Main Road (CR 555) between Main Street (Millville) and Sherman Avenue, in the Cities of Millville and Vineland, Cumberland County.
4. Hook Road (CR 551) between RT 49 and US RT 40 in the Townships of Pennsville and Carneys Point.
5. Richwood Road (CR 609), Swedesboro Road (CR 666), and Monroeville Road (CR 604) in the Township of Upper Pittsgrove, Salem County.

Each road will have a separate report, but will share the same introduction, background section, format and some additional text.

Safety audits serve to address safe operation of roadways and to ensure a high level of safety for all road users. The process of a safety audit is two-fold: 1) to conduct a formal examination of highway features and the surrounding environment that increase the potential for crashes; and, 2) identify countermeasures that will reduce or (eliminate) the probability of such crashes. According to the Federal Highway Administration (FHWA), the formal definition of a road safety audit is as follows:

“A Road Safety Audit is the formal examination of an existing or future roadway or traffic project by an independent team of trained specialists.”¹

To accomplish these goals, the audit team assesses the crash potential and safety performance of a roadway and prepares a report that documents the safety deficiencies and appropriate countermeasures. Safety audits are especially important during the design phase of a project as they can identify deficiencies before they are built into the project and propose cost-effective safety improvements that can be adopted from the onset. Project managers can then evaluate, select, and justify appropriate project changes within the constraints of budget, time and policy issues.

The purpose of this audit is to identify potential safety deficiencies along the selected section of five roads. There are three primary parts of the audit: the data collection and evaluation phase, the field view (conducted by the team), and the preparation of the report and findings.

The data collection phase is performed prior to the audit team conducting a field view of the entire roadway. The data is intended to assist the team in identifying potential safety problems, as well as to provide a factual and historic component of the study. Traffic count and crash data

¹ Federal Highway Administration, Road Safety Audits and Road Safety Audit Reviews , EDL #12345 FHWA XX-03-999

are collected, an inventory of the traffic control devices is taken, and a capacity analysis of major intersections is performed. The traffic counts were used to analyze solutions for the intersections, as well as aid in identifying the most congested sections of the roads. The crash data assisted the team in identifying specific areas and/or conditions that warrant close scrutiny that might have otherwise been overlooked. The inventory of traffic control devices, in addition to documenting what traffic control devices were present before the audit began, often provides clues to safety issues that have been identified or experienced in the past. The capacity analysis of intersections identifies how well the intersections are operating and when and where improvements may be needed. Based on an analysis of all data, the audit team can conduct a productive and comprehensive evaluation of the roads being studied.

BACKGROUND INFORMATION

A kick-off meeting was held on January 12, 2005, at the Atlantic County Engineer's Office. This meeting featured a presentation by ORA to provide a forum to educate attendees on core elements of the RSA process such as:

1. Definition – What is involved in the typical safety audit and how it differs from other safety review measures currently in use.
2. Process – The required steps involved in a successful audit and the reasons the steps are required.
3. Lessons learned from previous audits.
4. The Draft & Final Report – What to expect.

After the formal presentation, a discussion of the roadway began with the project leader asking questions of the local officials in order to obtain background information and insight into the problems on the road from the local officials. The local officials were asked what changes have occurred along the road within the last three years. What changes are planned along the road? Are there any developments planned in the area that will affect the traffic on the road? What safety problems have you had? What intersections should be counted? The attendees displayed a genuine interest in roadway safety and in participating in this audit. A typical audit team is comprised of three to five members. ORA chose to have a larger than usual audit team for this project for the following reasons:

- ♦ There was a wealth of experience that could be tapped into.
- ♦ The team did not want to discourage any effort towards achieving a safer roadway environment.

- ♦ It is hoped that greater participation will increase the likely hood that the findings of the team would be implemented.

At the end of the kick-off meeting, the RSA was scheduled for March 15, 2005 commencing at 9:00 AM. Coordinating the efforts of this relatively large group was encouraged and facilitated by Jim Mason, John Peterson, and Tim Chelius. Following is a list of attendees at the kick-off meeting:

KICK-OFF MEETING ATTENDEES

Name	Agency
Jim Mason	Atlantic County - Engineering
John Pope	Egg Harbor Township Police Department
John Peterson	Atlantic County Planning
Ray Reeve	NJ Division of Highway Traffic Safety
Everest John	Atlantic County
John J. Petersack	NJDOT - Planning
Michael Gaines	Pleasantville Police Department
William Kafer	NJDOT - Traffic Engineering & Investigations
Edward Newman	Atlantic County Engineering
John Townsend	Egg Harbor Police Department
Timothy Chelius	SJTPO - Executive Director
Norman Deitch	Orth-Rodgers & Associates, Inc.
George Strathern	Orth-Rodgers & Associates, Inc.

ENGLISH CREEK ROAD

English Creek Road (CR 575) is an existing roadway that falls under the jurisdictional control of Atlantic County. It is designated as a south-north road. The section being audited is a major connector roadway between Delilah Road (CR 646) and Ocean Heights Avenue (CR 559A). South of the study area, English Creek Road is a two-lane roadway with shoulders. Approaching Ocean Heights Avenue, it is flared to two lanes northbound (left-turn lane and shared through and right-turn lane) at the intersection. The southbound approach to the intersection is flared to three lanes (left-turn lane, through lane, and right-turn lane) at the intersection. Immediately north of the intersection, there is a northbound left-turn lane at the driveway to WAWA, and further north a southbound left-turn lane for High School Drive. The road then reverts to a two-lane roadway with shoulders until it approaches the West Jersey Avenue intersection where it flares to provide a left-turn lane and a shared through/ right-turn lane along both of its approaches to this signalized intersection. North of West Jersey Avenue, the roadway cross-section varies, but for the most part maintains three lanes (with either a single direction or dual direction left-turn lane) until it approaches RT 40/322 where it is flared to five lanes. North of the RT 40/322 intersection, the five-lane cross-section narrows to one lane in each direction before reaching Delilah Road. There are three signalized intersections along the study section. The signalized intersections are Ocean Heights Avenue (CR 559A), West Jersey Avenue and RT 40/322. The traffic signal phasing at the Ocean Heights Avenue intersection was revised in October of 2004. The old signal phasing had a lead-lag phasing for both roadways. The new operation provides leading left turn intervals (quad lefts) for the four approaches to the intersection. The traffic signal at West Jersey Avenue was activated on or about August 1, 2002. The signal designs and operations are discussed in the findings of the report. Development along the section of road between Ocean Heights Avenue and West Jersey Avenue is sparse and mostly residential. North of West Jersey Avenue, curbside development is

more dense, comprised of mixed residential and commercial. As you approach RT 40/322, the development becomes more dense and is predominantly retail and commercial. The English Creek Shopping Center, located on the southwest corner of the RT 40/322 intersection, is a major traffic generator.

Discussions at the kick-off meeting and the pre-audit meeting revealed that:

- When possible, a police officer directs traffic at the High School Drive intersection when school is dismissed. When an officer is not present, traffic on the High School Drive approach wishing to turn left at the intersection often becomes frustrated with the delay in entering the intersection, turns right at the intersection and then makes a U-turn along English Creek Road.
- Vehicles parked (off of roadway on grass) along the east side of the road, north of High School Drive, are students' vehicles which are not permitted in the school parking lot.
- Subdivisions are planned off of both West Jersey Avenue and Mill Road.
- A "Super WAWA " is planned for the northeast corner of the Ocean Height Avenue intersection that will include some revisions to the northerly approach to the intersection. It is unknown what will happen to the existing WAWA property on the northwest corner of the intersection.
- A project is expected to go to bid shortly to improve the Delilah Road intersection. The improvement includes:
 1. The installation of a traffic signal at the intersection.
 2. The widening of both Delilah Road approaches to provide a left-turn lane and a shared through/ right-turn lane.
 3. The widening of the English Creek Road northerly approach to the intersection to provide a left-turn lane and a shared through/ right-turn lane.
 4. The widening of the English Creek Road southerly approach to provide an exclusive

right-turn lane and a shared left/ through lane. The widening extends south from the intersection to Health Park Drive where a southbound left-turn lane is provided.

- Except for the previously mentioned student parking, parking along the roadway is not typically practiced.

The following sections describe the various tasks undertaken by ORA in partnership with the Safety Audit Team and summarize the findings from the audit process in a manner that will allow the responsible agencies and personnel to prioritize implementation of safety enhancements.

Pre-Audit Data Collection and Analysis

Prior to the audit activities on site, ORA collected and reviewed traffic data and other related materials in order to assist the team in conducting the audit. A description of the materials that were reviewed is provided below.

1. Aerial Photos

Aerial photographs of the study section, scaled at approximately 1"=300' were printed and used as reference at kick-off and audit meetings.

2. Straight Line Plan

The straight line diagram was used as a base for 1"=400' straight line plans of the study section of the road. The crash data, traffic counts and inventory of traffic control devices were shown on these plans for use at the audit and for the final report.

3. Traffic Volume Data

At the kick-off meeting, the team agreed that AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour manual counts would be taken at the Dogwood Avenue and West Jersey Avenue intersections; and an ATR count would be taken between Dogwood Avenue and Ocean Heights Avenue. The count at Dogwood Avenue counted school buses separately. The counts were conducted by A-TECH Engineering on February 3, 2005. ORA reviewed the turning movement counts at these intersections and used the volumes to perform capacity analyses of the intersections to identify operational problems.

Intersection capacity analyses (level of service analyses) were performed using the count data. The English Creek Road and West Jersey Avenue intersection was found to be operating at an overall Level of Service 'D' during both the AM and PM peak hours. The

unsignalized intersection of English Creek Road and Dogwood Avenue was found to be operating at an overall Level of Service 'A' during both the AM and PM peak hours. However, it was noted that the Dogwood Avenue northerly approach operated at a Level of Service 'D' during both peak hours.

4. Crash Data

SJTPO received and forwarded to ORA the crash reports from the Egg Harbor Township Police Department. The crash data for the years 2002 and 2003 were plotted on the straight-line plans. Summary sheets were prepared for each year, as well as a summary sheet for the two-year period. For the two-year period, a total of 137 crashes were plotted for the study section of road. Sixty-five (65) crashes occurred in 2002 and 72 occurred in 2003. Twenty-three (23) of the crashes occurred within the limits of the Delilah Road intersection improvement project.

The types of crashes are characterized as follows:

1 Fatal crash

43 Injury Crashes

92 Non-Injury crashes

50 right-angle type crashes – Twelve (12) crashes occurred at the Delilah Road intersection and two (2) others within the limits of the Delilah Road intersection improvement project; two (2) at the Rt 40/322 intersection; nine (9) at the driveway to English Creek Shopping Center; three (3) at the Scarborough Road intersection; five (5) at the West Jersey Avenue intersection (all five occurred before the intersection was signalized); and, six (6) at Dogwood Avenue. There were no other concentrations of right-angle type crashes. The statewide average for right-angle type crashes on county roads is approximately 22%. This section of road experienced 36%. With the signalization of West Jersey Avenue and the future signalization of Delilah Road, the right-angle type crash experience along the road should improve to where it approaches or falls below the statewide average.

54 same-direction type crashes – Eight (8) same-direction type crashes occurred within the limits of the Delilah Road intersection improvement project; eight (8) at Rt 40/322; three (3) in the vicinity of the driveway to the English Creek Shopping Center driveway; three (3) at Scarborough Road; 18 at West Jersey Avenue (17 of the 18 after the traffic signal was installed); five (5) at Dogwood Avenue; and, six (6) at Ocean Heights Avenue. There were no other concentrations of same-direction crashes. The statewide average for same-directional crashes on county roads is approximately 29%. This section of road experienced 39%.

2 fixed-object type crashes

1 head-on (fatal) crash

10 sideswipe type crashes – These were mostly same-directional lane change crashes in the vicinity of Rt 40/322.

10 left-turn type crashes – These involved a vehicle turning left being struck by a vehicle going straight from the opposing direction of traffic. Left-turning vehicles being struck from behind by a vehicle traveling in the same direction is recorded as same-directional type crashes. There were two (2) crashes at Delilah Road; two (2) at Rt 40/322; and, three (3) at Ocean Heights Avenue. All three crashes at the Ocean Height intersection involved a southbound left-turning vehicle being struck by a northbound vehicle. The signal phasing at the time of the crashes provided a lag green for southbound traffic. The current signal phasing, installed in October of 2004, should help to alleviate this type of crash.

10 other-type crashes.

An extensive review of the crashes established the following:

- ♦ The critical months for crash occurrences are May, October and November.
- ♦ Weekdays had a higher frequency of daily crash occurrences than did Saturday or Sunday.
- ♦ The highest frequency of crashes occurred during the evening peak (4:00-6:00 PM).

- ♦ The percentage of crashes (18%) during hours of darkness is lower than the statewide average for county roads (approximately 28%).
- ♦ The percentage of crashes for wet surface crashes (14%) is lower than the statewide average for county roads (approximately 22%).
- ♦ The percentage of crashes with injuries (31%) is consistent with the statewide average for county roads (approximately 30%).
- ♦ The percentage of same-directional crashes (39%) exceeds the statewide average for county roads (approximately 29%).
- ♦ The percentage of left-turn crashes (7%) is consistent with the statewide average for county roads (approximately 6%).
- ♦ The percentage of fixed-object type crashes is (1.4%) much lower than the statewide average for county roads (approximately 12%).

Bar charts of the crash data are included in the Appendix of this report.

5. Other Information

Additional materials reviewed by ORA prior to the formal audit process included video tapes from pre-audit field views and traffic signal plans and timings for each of the signalized intersections.

All the materials listed above are included in the Appendix.

Audit

On March 15, 2005, the Safety Audit Team met in the Atlantic County Engineering Offices in Northfield to formally conduct the roadway inspection. The meeting commenced at 9:00 AM with brief statements by ORA representatives who reiterated the importance of RSAs and outlined the objectives of the safety audit. There were brief introductions by team members followed by an extensive review and discussion of materials described in the previous section. The team then boarded a bus provided by Atlantic County to conduct the audit. Team members are listed below:

SAFETY AUDIT TEAM FOR DELILAH ROAD

Name	Agency
John Peterson	Atlantic County Planning
Jim Mason	Atlantic County Planning
Nancy Allen	NJDOT - Traffic Engineering & Investigations
Norman Deitch	Orth-Rodgers & Associates, Inc.
Timothy Chelius	SJTPO - Executive Director
Bill Schiavi	SJTPO
George Strathern	Orth-Rodgers & Associates, Inc.
Peter Szwandrak	Orth-Rodgers & Associates, Inc.

The team walked the entire road beginning at Delilah Road (CR 646).

During the walk, team members identified features on the roadway and its surrounding environment that could contribute to the occurrence or relative severity of roadway crashes. At each intersection and mid-block location, the audit team identified safety deficiencies and inappropriate traffic signs and other items that are not consistent with effective road function and use. The inspection focused not only on motorists' safety issues, but also highlighted the safety needs of other user groups such as pedestrians, bicyclists, truck drivers, and disabled

pedestrians. A variety of safety improvement measures were discussed with field notes and digital photographs being taken by team members.

The audit team returned to the Atlantic County Engineering Offices to review information gathered during the roadway inspection. The Safety Audit Checklist was completed in correlation with findings from the inspection. The team leader informed other team members on the next step in the audit process; ORA will prepare a draft report summarizing the findings from the audit process and forward the report to all team members for their review and comments.

The nighttime safety audit was conducted on April 20, 2005 by Mr. Deitch, Mr. Peterson, and Mr. Strathern. The goal was to check the retroreflectivity of the street signs, pavement markings, and condition of the raised pavement markers (RPMs). In addition, the need for street lighting was checked and lights adjacent to the roadway on private property were checked to ensure that they did not create bright areas which could distract drivers. The team also looked for issues that would only be apparent during hours of darkness, such as clearly defined roadway alignment, signal indication visibility conflicts, ineffective street lighting, etc.

The next section of the report summarizes the findings from the roadway inspection.

Findings

The findings from the English Creek Road safety audit are presented below.

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
1	General comment - Sign installation. Many of the signs along the road are installed as “bendaway” rather than “breakaway.” Many installed as “breakaway” are installed incorrectly with the snub too far out of the ground or on the wrong side of the post.	Consideration should be given to inventorying the method of sign installation along the entire road and taking steps to properly install all signs as “breakaway” in accordance with the most current NJDOT standards and the MUTCD.			X			X
2	“Center Left Turn Lane” signs missing for both directions of traffic between Delilah Road and Route 40/322.	Add appropriate signage facing both north and south bound directions where necessary.	X				X	

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
3	Rt. 40-322 intersection. Several discrepancies were observed between the traffic signal plan (TS 5382) provided by the DOT and the actual conditions in the field. The traffic signal plan shows only one crosswalk at the intersection, across the RT. 40/322 westerly approach to the intersection. There are actually crosswalks across all of the approaches to the intersection. There are PPB's on the northwest and southwest corners of the intersection and R9-3A (No Pedestrian Crossing) signs with R9-3B plates (Use Crosswalks) on the northeast and southeast corners of the intersection. The signal design and timing appears to only accommodate the crosswalk shown on the plan. The elephant tracks shown on the plan for both English Creek Road approaches to the intersection are not installed.	Advise NJDOT of observed conditions so that corrective action can be taken.	X				X	
4	Many motorists know RT. 40-322 as the "Black Horse Pike" not as Rt. 40-322. The existing signing identifies the road as RT. 40-322 making no reference to "Black Horse Pike" which may cause confusion to some motorists.	Consideration should be given to adding "Black Horse Pike" to the signing at the intersection.	X			X		

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
5	Sign clutter exists along the English Creek Road northbound approach to Route 40/322.	Eliminate M1-6 & M5-1 sign prior to intersection with Route 40/322.	X			X		
		Relocate D1-2 sign prior to intersection with Route 40/322.	X			X		
		Add advanced route marker sign prior to intersection with Route 40/322.	X			X		
6	The painted left turn arrows in the left turn slot into the English Creek Road Shopping Center are worn and the left turn slot is not signed.	Re-paint left turn arrows and install R3-7L (LEFT LANE MUST TURN LEFT) sign.	X			X		
7	The intersection of the southernmost driveway to the English Creek Shopping Center experienced nine right-angle type crashes in a two-year period.	Driveway traffic volumes are high. Intersection appears to warrant further study to evaluate need for a traffic signal or other remedial action.		X				X
8	W4-2 (right lane ends symbol) sign installed south of the English Creek Road Shopping center facing southbound traffic is defaced.	Replace W4-2 sign.	X			X		
9	Southbound traffic experiences a lane drop in area of Scarborough Drive.	It appears widening along the westerly curb line could be accomplished relatively easily, providing a more consistent cross section for southbound motorist.			X		X	
10	“BUMP” sign with 20 MPH advisory speed plate installed south of driveway to English Creek Shopping Center facing northbound traffic. Sign not needed.	Remove sign and post.	X			X		
11	Scarborough Drive, a divide roadway lacks “KEEP RIGHT” sign.	Install “KEEP RIGHT” sign on center median of Scarborough Road.	X			X		

SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
12	Wooden non-standard and non-reflective signs “STOP” signs installed along the Scarborough Road approach to the intersection.	X			X		
13	Southbound pavement markings in the vicinity of Gravelbent Road (Providence) confusing with what appears to be very short deceleration and acceleration lane.		X			X	
14	Northbound left turn lane at Scarborough Drive not signed.	X			X		
15	Northbound left-turn lane at Gravelbent Road not signed.	X			X		
16	Non-Bicycle safe grate is located south of Gravelbent Road.	X			X		
17	Driveway for utility company is currently uncontrolled.	X				X	
18	Non-standard side road symbol sign north of Providence Road facing southbound traffic.	X			X		
19	“Keep Right” sign (R4-7) is missing from Providence Road.	X			X		
20	“Do Not Enter Sign” (R5-1) is needed at Providence Road.	X			X		
21	Confusing lane configuration and signing in the area of Providence Road.		X			X	

SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
22	Non-bicycle safe grate is located north of Providence Road in front of teen coffee house.	X			X		
23	Driveway for John Coughard Community Center is uncontrolled.	X				X	
24	Pedestrian path worn in grass along the westerly side of road opposite John Coughard Community Center. No idea where pedestrians are walking to or from.	X			X		
25	There are no "BEGIN" or "END" signs facing either direction of traffic for the dual left-turn lane beginning in the vicinity of Providence Road and extending south to the vicinity of Rega Avenue.	X			X		
26	The driveway to the Family Service Association is located along the westerly side of the road south of Hurly Avenue. The northwest corner of the driveway has a handicap ramp, which is approximately 4 inches above the roadway. There are plantings on that corner obstructing access to the ramp. That corner also has an 8" to 12" curb face.	X			X		
27	There are three chevron signs and two object markers installed on the southwest corner of the driveway to the Family Services Association.	X			X		
	Replace signs with OM-3R 9 (type three object marker) installed closest to travel way and two OM2-2V (type two object marker) installed to the right of the OM-3R9. See MUTCD section 3c.03 for additional guidance.						

SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
28 R3-2 (NO LEFT TURN) sign and post installed north of Harley Avenue facing northbound traffic twisted.	Re-install sign and post.	X			X		
29 One of three object marker signs found lying on ground just south of Harley Avenue.	Reinstall damaged object marker.	X			X		
30 Post-mounted street name sign at Rega Avenue is rotated.	Rotate signs so that they are orientated correctly.	X			X		
31 Headwall exists just north of Boxwood Drive.	Consideration be given to eliminating headwall or installing guide rail.			X			X
32 "Traffic Fines Doubled in Work Area" sign exists in northbound direction near area of Boxwood Drive.	Remove sign.	X			X		
33 A dead 10" diameter tree located 100' south of Glen Avenue at end of curb.	Remove tree.		X			X	
34 Stop sign along Locust Avenue is worn.	Replace STOP sign.	X				X	
35 Visibility of Locust Avenue to northbound traffic somewhat limited	Add street name sign below existing W2-2 (side road symbol) sign along the northbound approach to the intersection.	X			X		
36 Inlet along the westerly curb line south of Locust Avenue not bicycle safe type grate.	Replace grate with bicycle safe grate.	X			X		
37 Missing Mile Post 5 sign. Location of sign should be on westerly side of roadway just south of Locust Street.	Replace sign.	X			X		
38 An Advanced Intersection Warning sign (W2-1) is needed southbound prior to Dogwood Avenue.	Add appropriate sign and street name plate.	X				X	
39 Warning Sign – Deer is currently located too close to school bus sign.	Remove or relocate sign.	X			X		
40 Swale in vicinity of flashing sign near Canale Training Center appears to warrant guiderail.	Consideration should be given to installing guiderail.			X			X

SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
41 Empty sign post-is located 300' south of entrance to Canale Training Center.	Remove sign post.	X			X		
42 High School students park along the easterly side of the road south of High School Drive and walk through the woods to the high school. While the students were not observed parking, it is obvious that they must either execute U-turns when parking or leaving the area.	Contact school officials regarding their policy to discuss permitting students to park in the school parking lot. NOTE: During night view conducted on April 20, 2005, it was observed that No Parking signs have been installed along both sides of Delilah Road between High School Drive and the Canale Training Center. This signing may have addressed this issue. Local officials should check the area, and talk with the school officials to see where the students are now parking to ensure that they have not created a safety issue at another location.	X					X
43 Left turn slot at High School Drive not signed.	Install R3-7L (LEFT LANE MUST TURN LEFT) sign.	X			X		
44 Local officials stated that a police officer is stationed at High School Drive when school is dismissed. When an officer is not available, motorists wishing to turn left from the driveway become frustrated with the delay and turn right from the driveway and then execute a U-turn somewhere north of the intersection.	Consideration should be given to several options outside of the scope of this project. Perhaps the high school complex should have additional entrances and exits. Is a connection to Mill Road possible or desirable? A second entrance to English Creek Road? Can a driveway be constructed at a location suitable to signalization? Should the existing driveway be signalized?			X			X
45 Sign assembly "JCT - Alternate 559" facing southbound traffic approaching Alternate CR 559 is installed too low.	Re-install assembly at standard height.	X			X		

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
46	Left turn storage along the southbound approach to RT. 559 is very limited. Motorists wanting to turn left at the intersection are driving over the painted cross-hatching. County has attempted to discourage this by installing flex-posts on the centerline in the crosshatched area. During the audit some motorists were observed driving over the painted crosshatching to the left of the flex posts.	Request police increase enforcement of this practice. Super Wawa is planned for northwest quadrant of this intersection. Roadway improvements associated with Super-Wawa should address this issue. Negotiations with the developer should attempt to limit movement to the existing driveway to right turns only. NOTE: During the night audit on April 20,2005 it was noted that the flex posts had been removed.			X			X
47	General: Consideration should be given to installing street nameplates below all side road and crossroad warning signs.		X			X		
48	Pine tree located close to roadway approximately 400' South 5085 English Creek Road.	Remove tree.	X				X	
49	The night safety audit found the following: 1. Centerline pavement markings are worn between RT 40/322 and Delilah Road. 2. Crosshatching worn between RT 40/322 and Gravelbend Road. 3. Crosshatching worn at Ocean Heights Road. 4. General comment- raised pavement markers missing or damaged	1. Re-install markings.		X			X	
		2. Re-install markings		X			X	
		3. Re-install markings			X			X
		4. Inventory RPMs replace damaged lenses replace missing units.						

Recommendations

As stated earlier, the intent of the road safety audit process is to conduct a formal examination of highway features and surrounding environment that increases the potential for crashes and identify countermeasures that will reduce (or eliminate) the probability of such crashes. The safety issues identified during the conduct of this audit and included in this report have been organized to provide the convenience and flexibility necessary to allow the implementation of the safety improvements as time and budget limitations allow. To the extent possible, the recommendations have been separated into line items so that the improvements can be implemented independently as appropriate. Clearly, consolidating a number of the safety recommendations will reduce the overall cost of improvements. We recommend that the appropriate management staff review the findings and decide what items can be completed in the immediate (within 1 year) future. Many of the deficiencies can be corrected in the short term if the roadway owners dedicate both the time and financial resources to the task. The level of effort indicated on the finding sheets of the report represent the team's best effort at categorizing each item.

The crash experience is concentrated at the three signalized intersections in the study area and at the intersection of Delilah Road, the southern driveway to the English Creek Shopping Center, and Dogwood Drive. The discrepancies between the signal plan provided by NJDOT for RT 40/322 and the actual signal installation are discussed in the findings of the report and it is recommended that NJDOT be made aware of the as-built conditions of their installation. The signal design and phasing for vehicular traffic appears to be appropriate. The signal design at West Jersey Avenue also appears to be appropriate and conforming to the current national and state requirements. The Ocean Height Avenue signal installation is also a modern installation that appears to conform to all national and state requirements. Finding #46 should be addressed

at the intersection. The crash experience at the Delilah Road intersection should be addressed by the project scheduled for the intersection. The High School Drive intersection, Dogwood Drive intersection, and the driveway to the English Creek Shopping Center intersection should be evaluated for more long-term solutions. As indicated in the findings, a general cleanup of the signing issues and pavement marking refurbishing will improve overall conditions.

Lastly, the various lane configurations between Scarborough Ave to south of Providence Road should be evaluated to develop a comprehensive revision to the pavement markings (may require some minor widening and right-of-way purchase) in order to avoid any possible motorist confusion.

The safety audit focused on roadway features on this road. However, as with any road, enforcement is a crucial component of safety. Without proper enforcement, motorists may become lax in obeying and observing the traffic regulations along the road. This disobedience contributes to the crash experience. Unfortunately, since 9/11, police departments throughout the country have been stretched to their limits by additional demands for their services. Local officials are reminded that no number of safety audits or improvements is a substitute for enforcement. Just as resources must be allocated to the physical improvements of the road, so must they be allocated to enforcement officials.

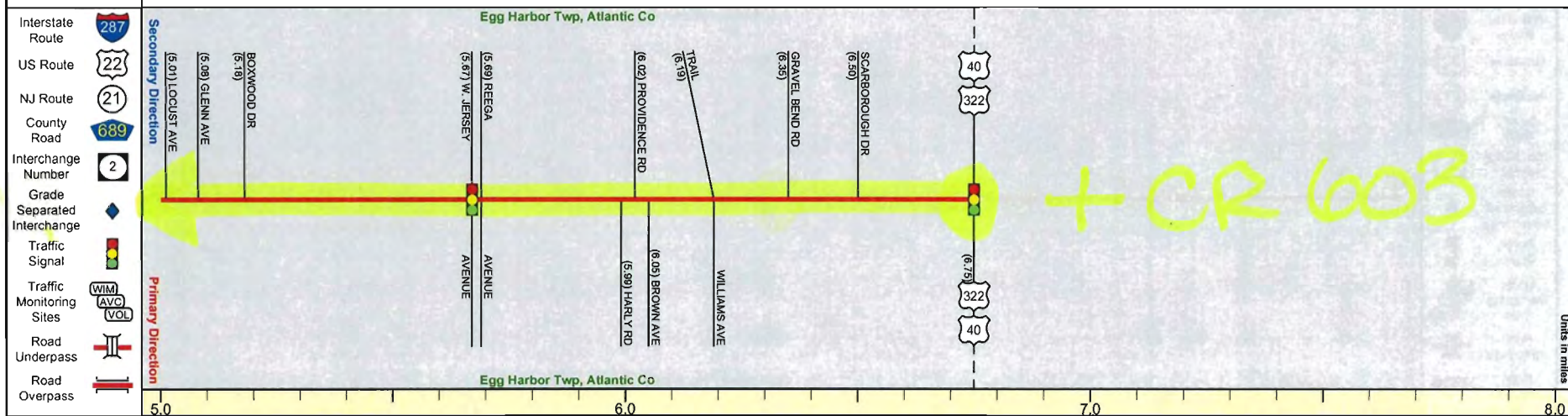
The opinions found in the findings of this Safety Audit report are those of the Safety Audit Team as a whole, and not necessarily the opinions of the SJTPO or the individual team members.

ROUTE 575 (South to North)

Mile Posts: 5.000 - 6.750



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	English Creek-Port Republic Road	
Jurisdiction	County	
Functional Class	Urban Minor Arterial	
Federal Aid - NHS Sy	STP	
Control Section		
Speed Limit	50	
Number of Lanes	2	3
Med. Type	None	
Med. Width	0	
Pavement	24	36
Shoulder	3	12
Traffic Volume	14,257 (2005)	
Traffic Sta. ID	8-4-432	
Structure No.		
Enlarged Views		

SRI = 00000575__

Date last inventoried: August 2006

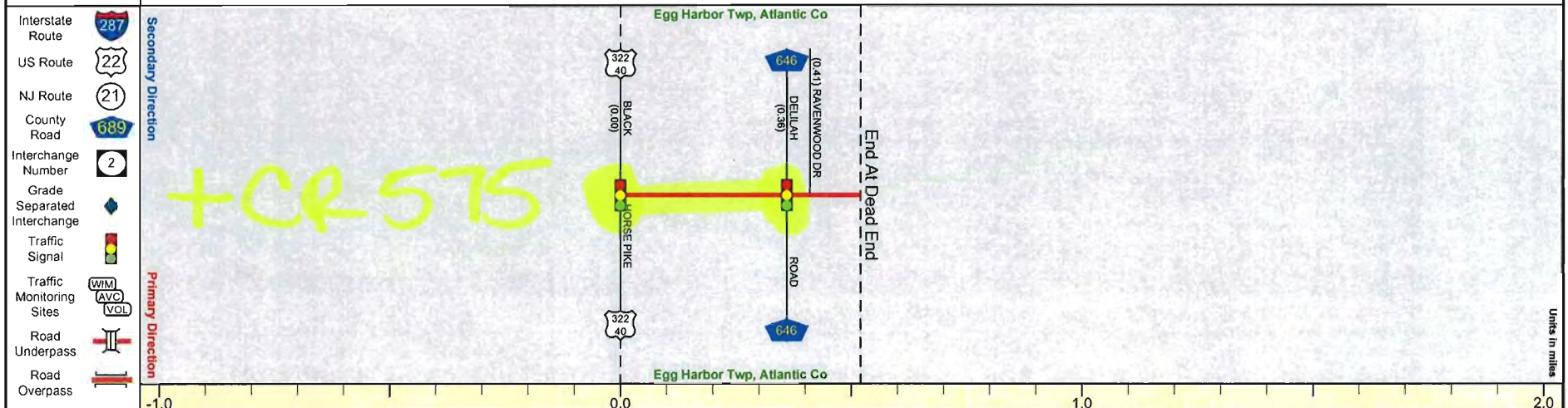
MP 5.75 = Begin Coinc. With US 40 MP 53.85
MP 6.75-8.67 See US 40 MP 53.85-51.93

ATLANTIC COUNTY 603 (South to North)

Mile Posts: 0.000 - 0.520



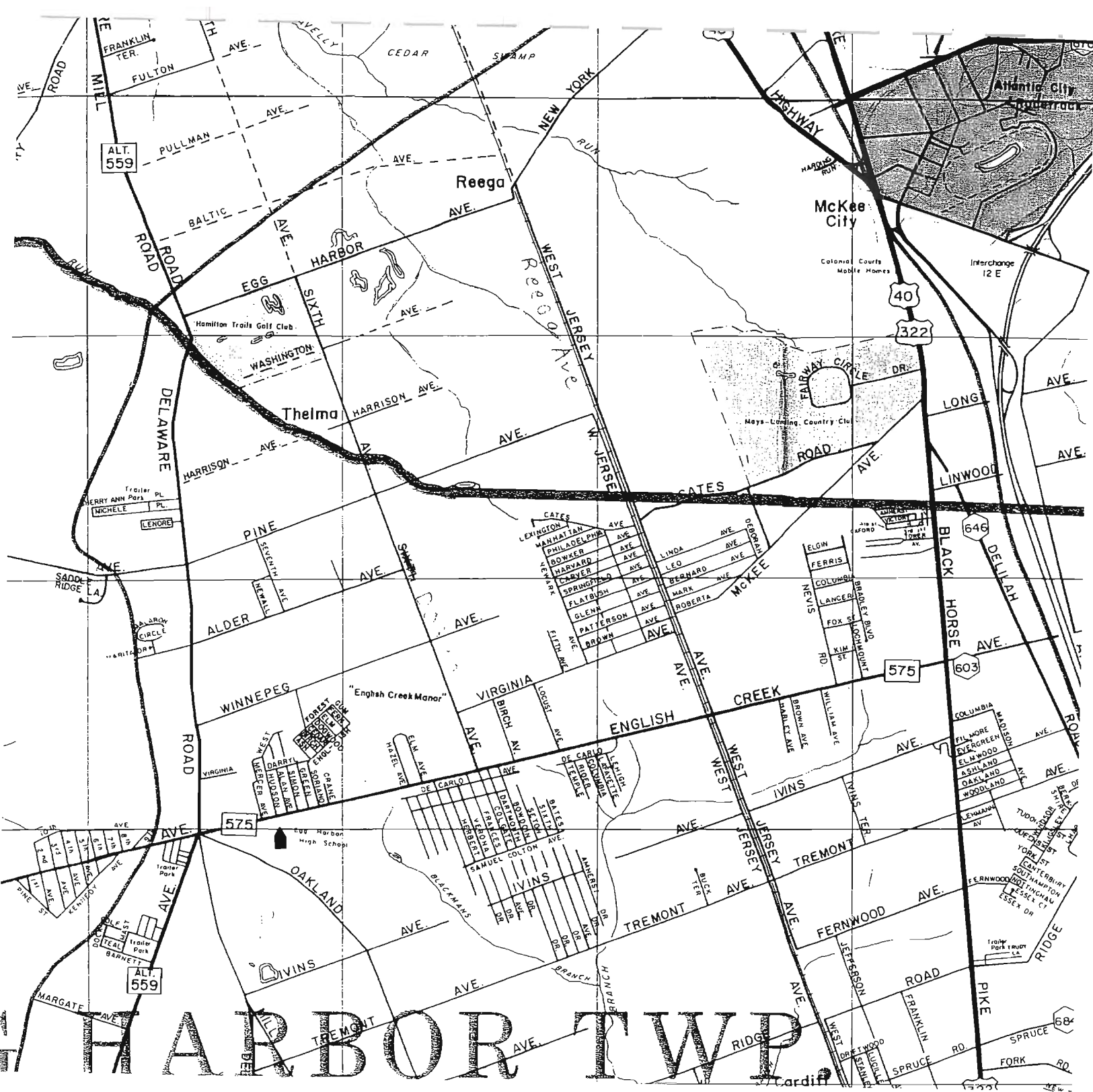
Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



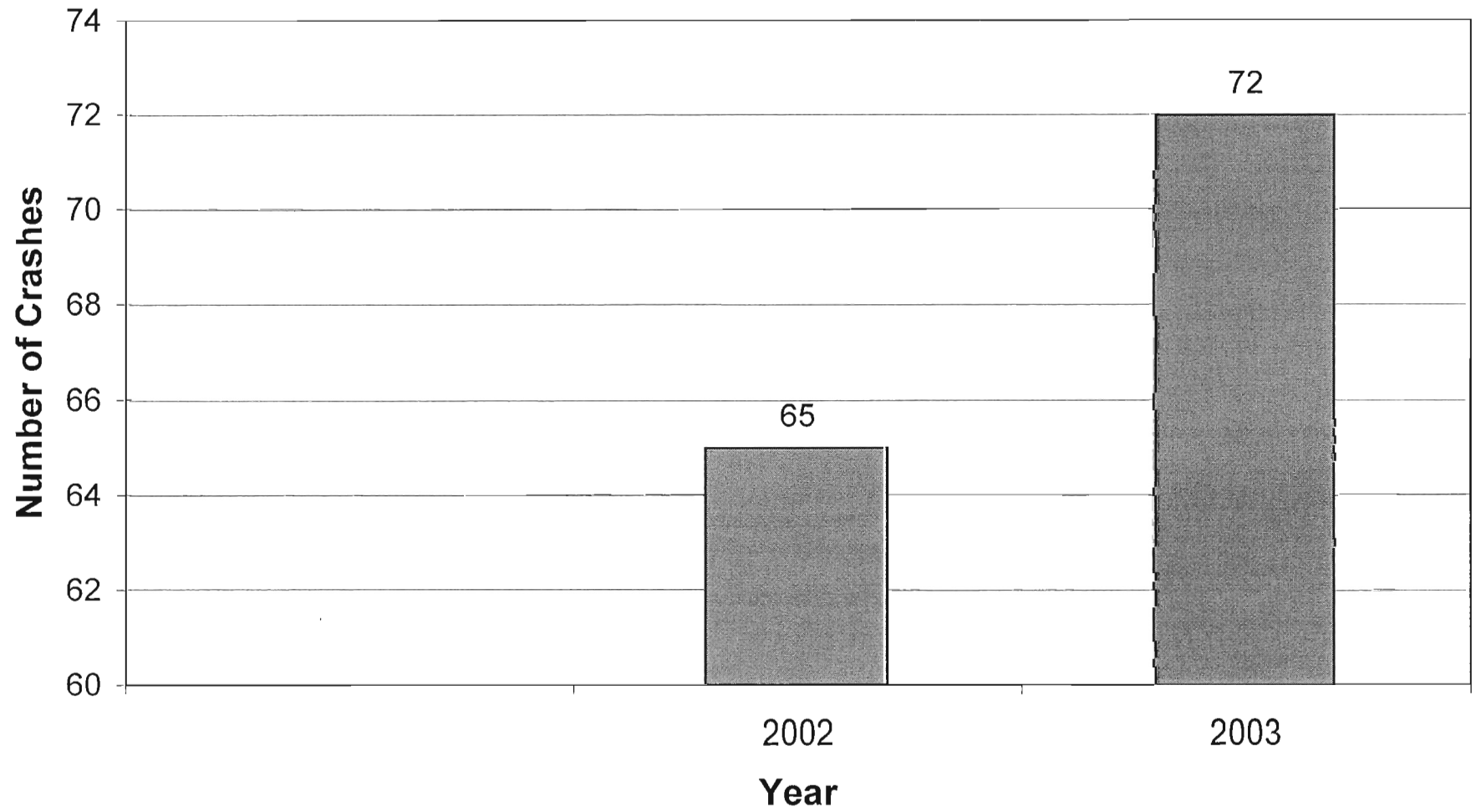
Street Name	English Creek Avenue
Jurisdiction	County
Functional Class	Urban Local
Federal Aid - NHS Sy	Non-Federal Aid
Control Section	
Speed Limit	NOT POSTED
Number of Lanes	4 + 2
Med. Type	None
Med. Width	0
Pavement	64 + 26
Shoulder	0 + 1
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

SRI = 01000603__

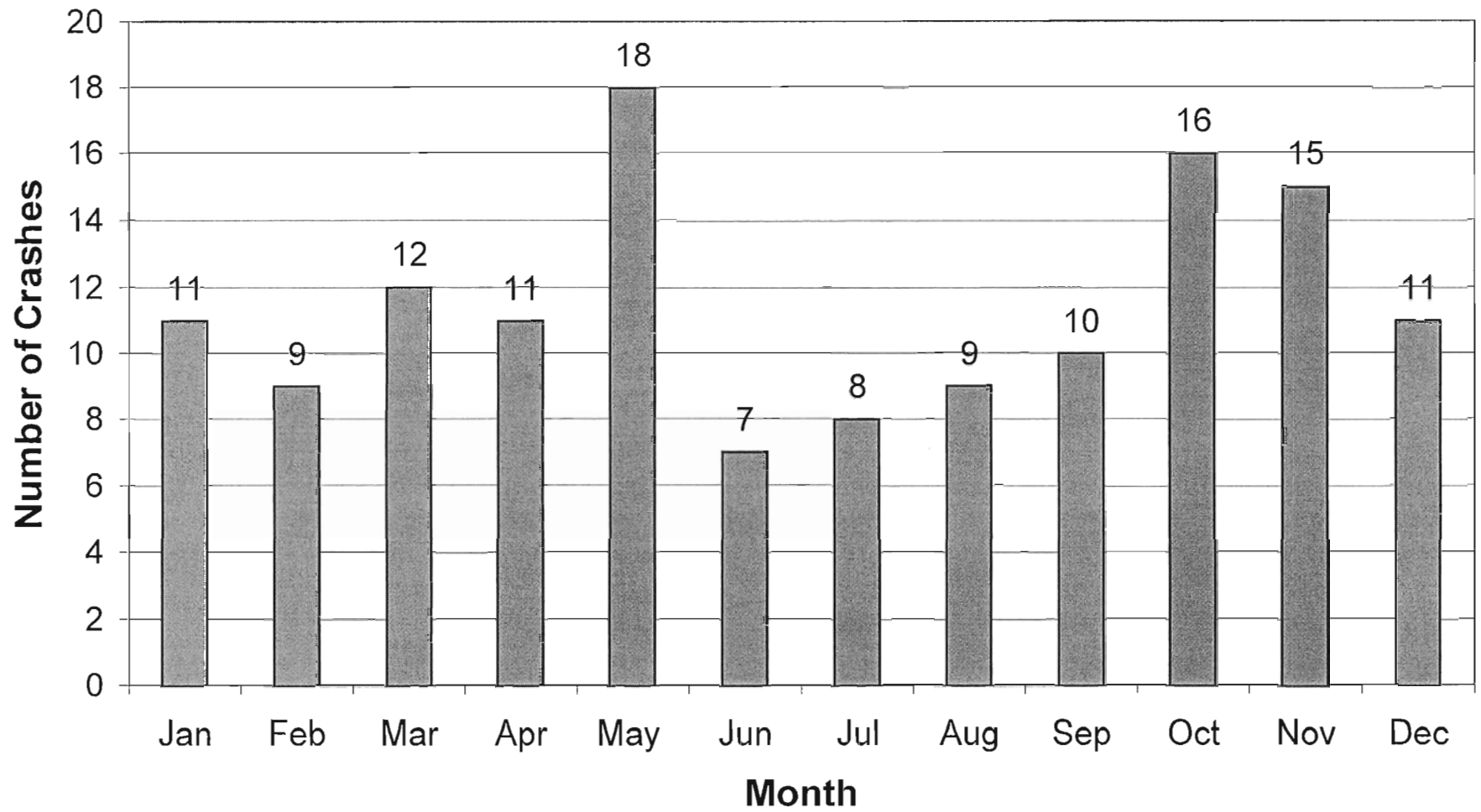
Date last inventoried: August 2001



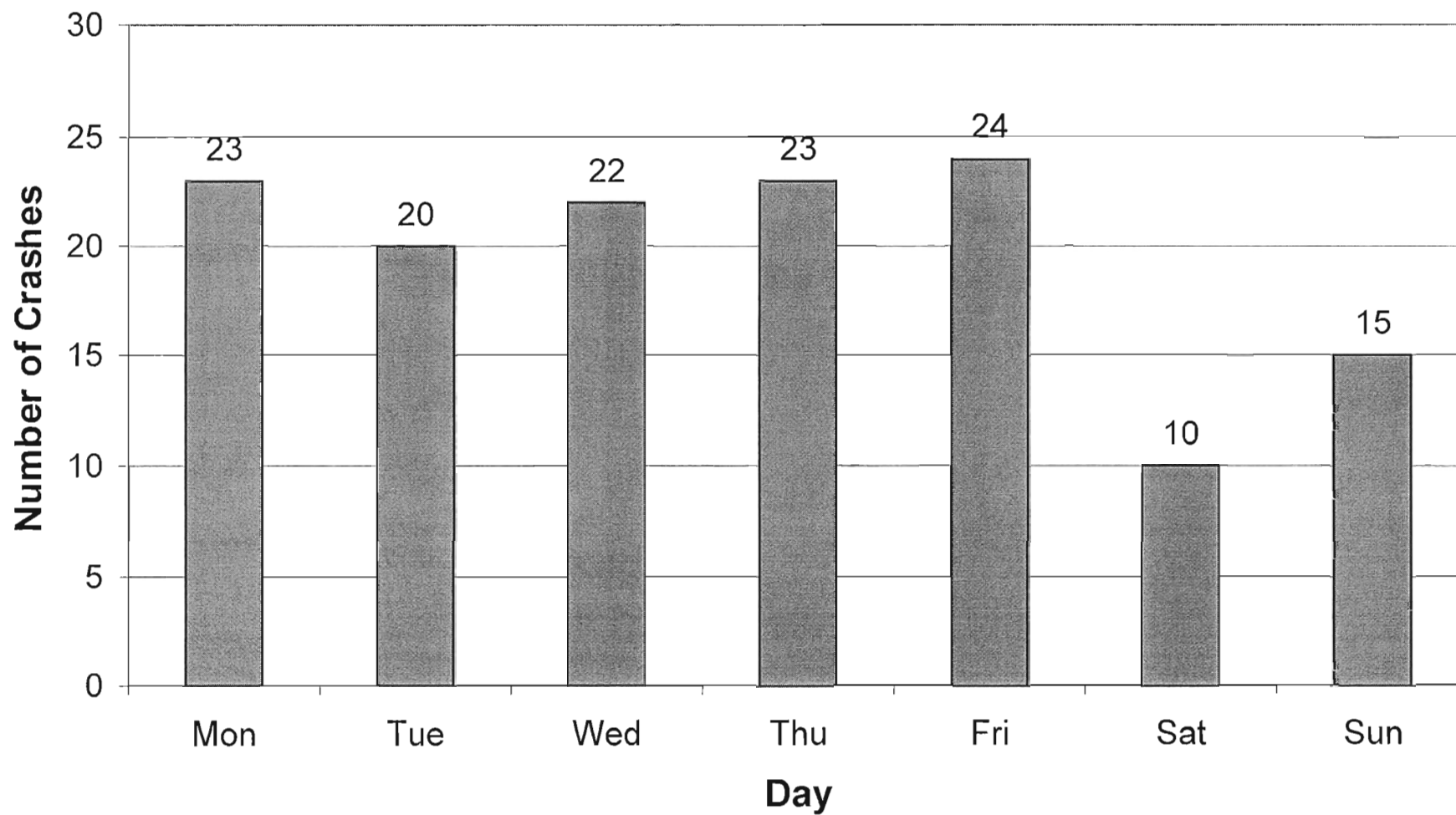
English Creek Road (CR 575) 2 Year Trend



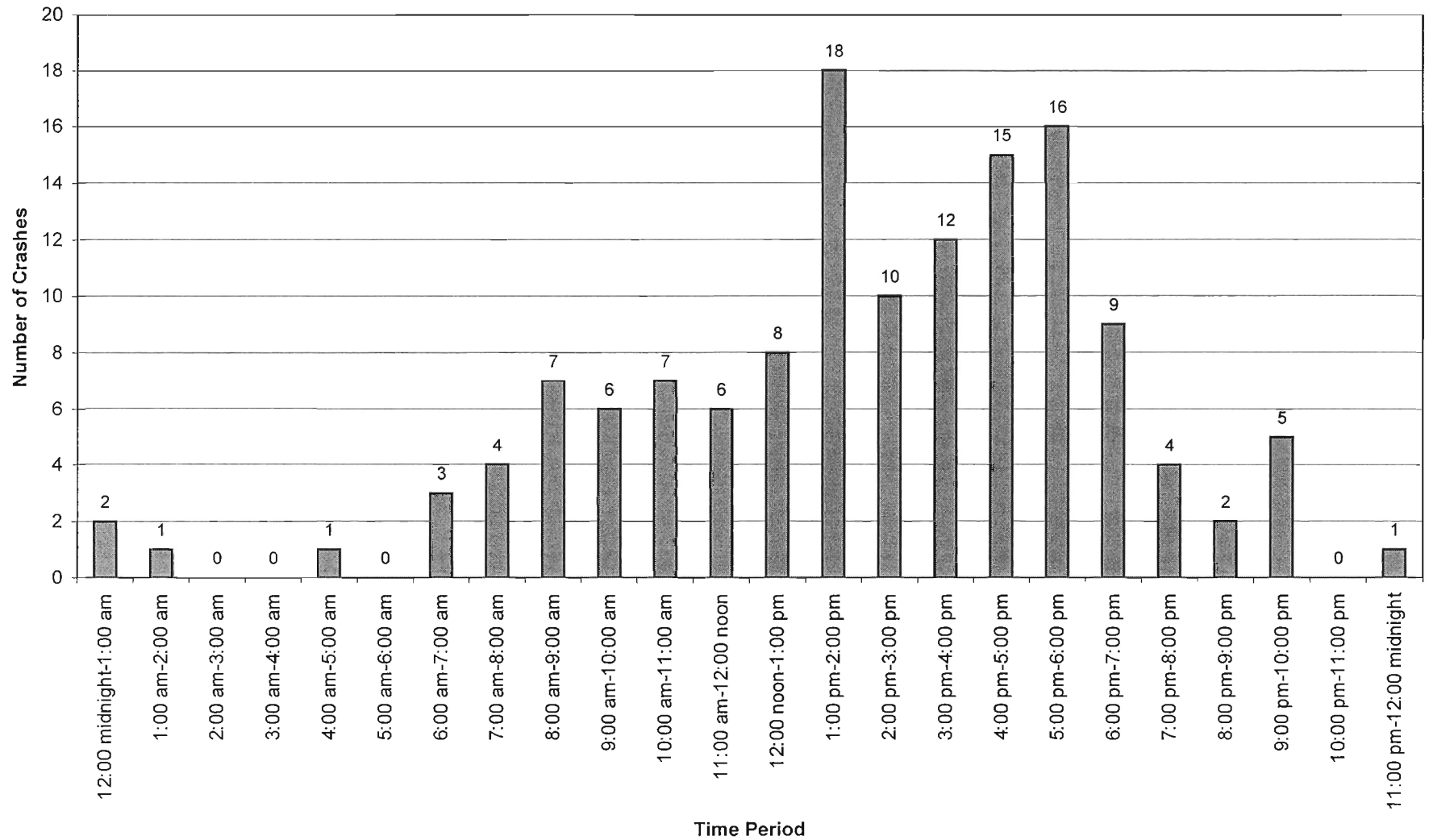
English Creek Road (CR 575) Crash Occurrence by Month



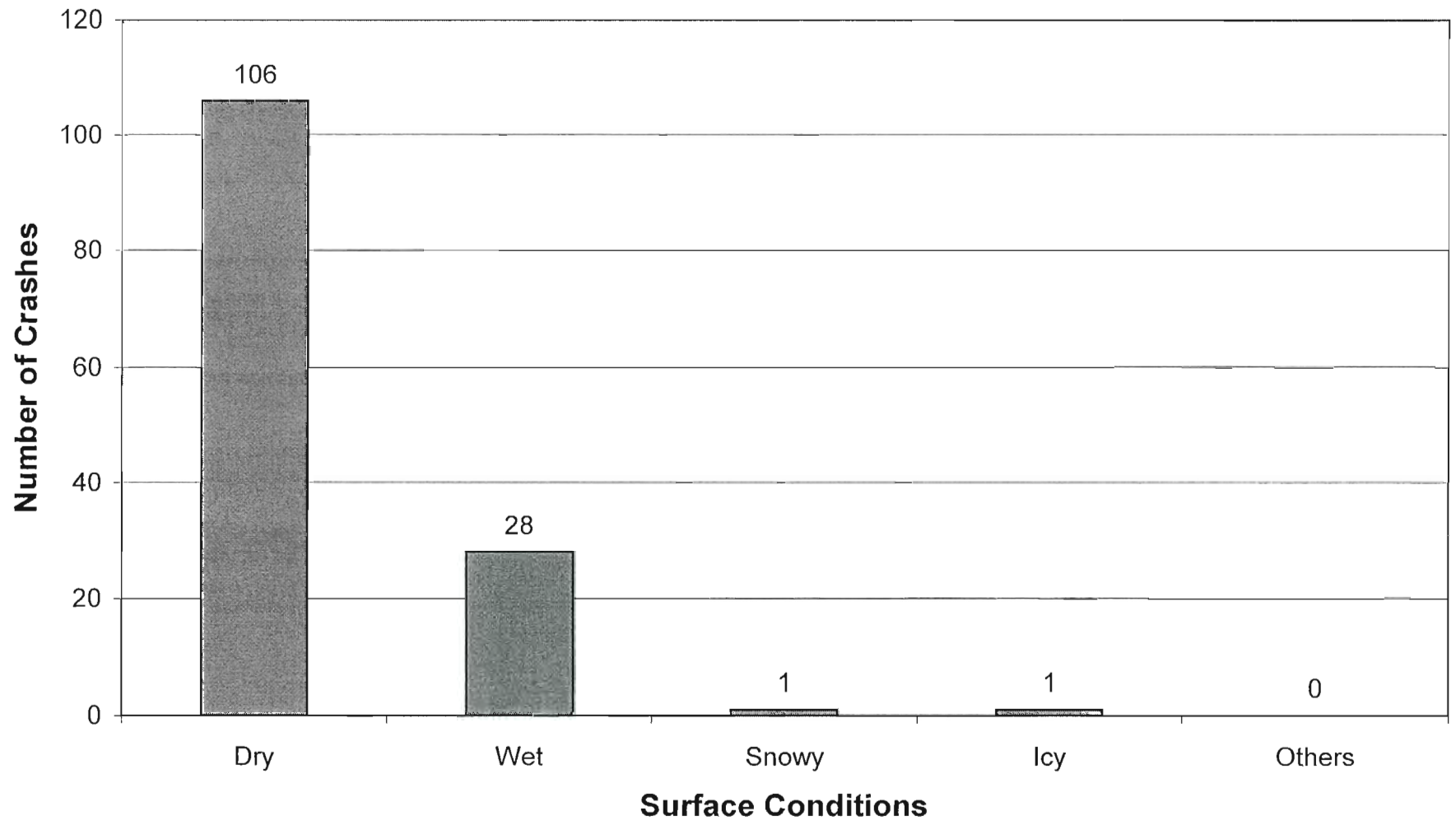
English Creek Road (CR 575) Crash Occurrence by Day of Week



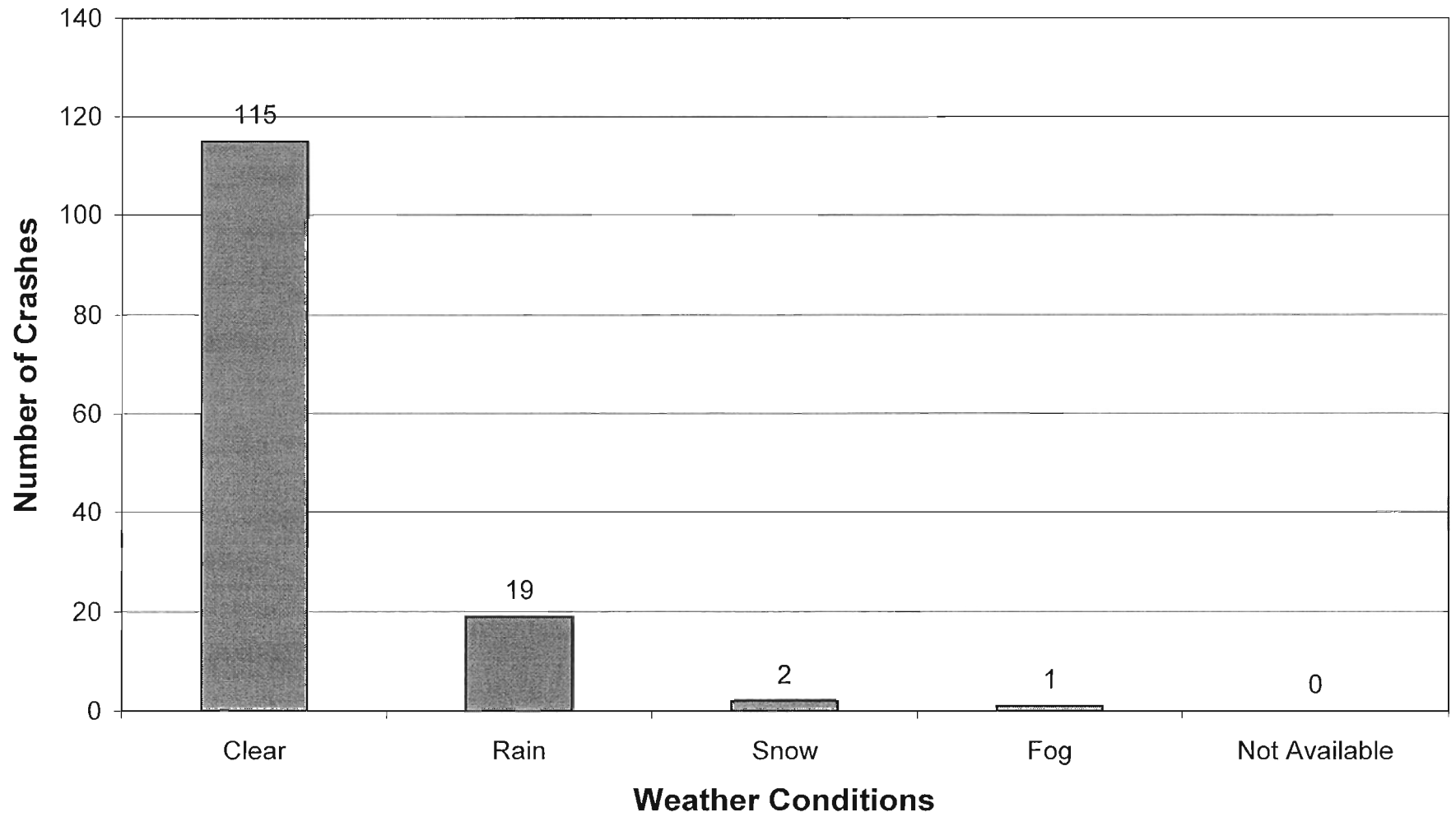
English Creek Road (CR 575)
Crash Occurrence by Time of Day



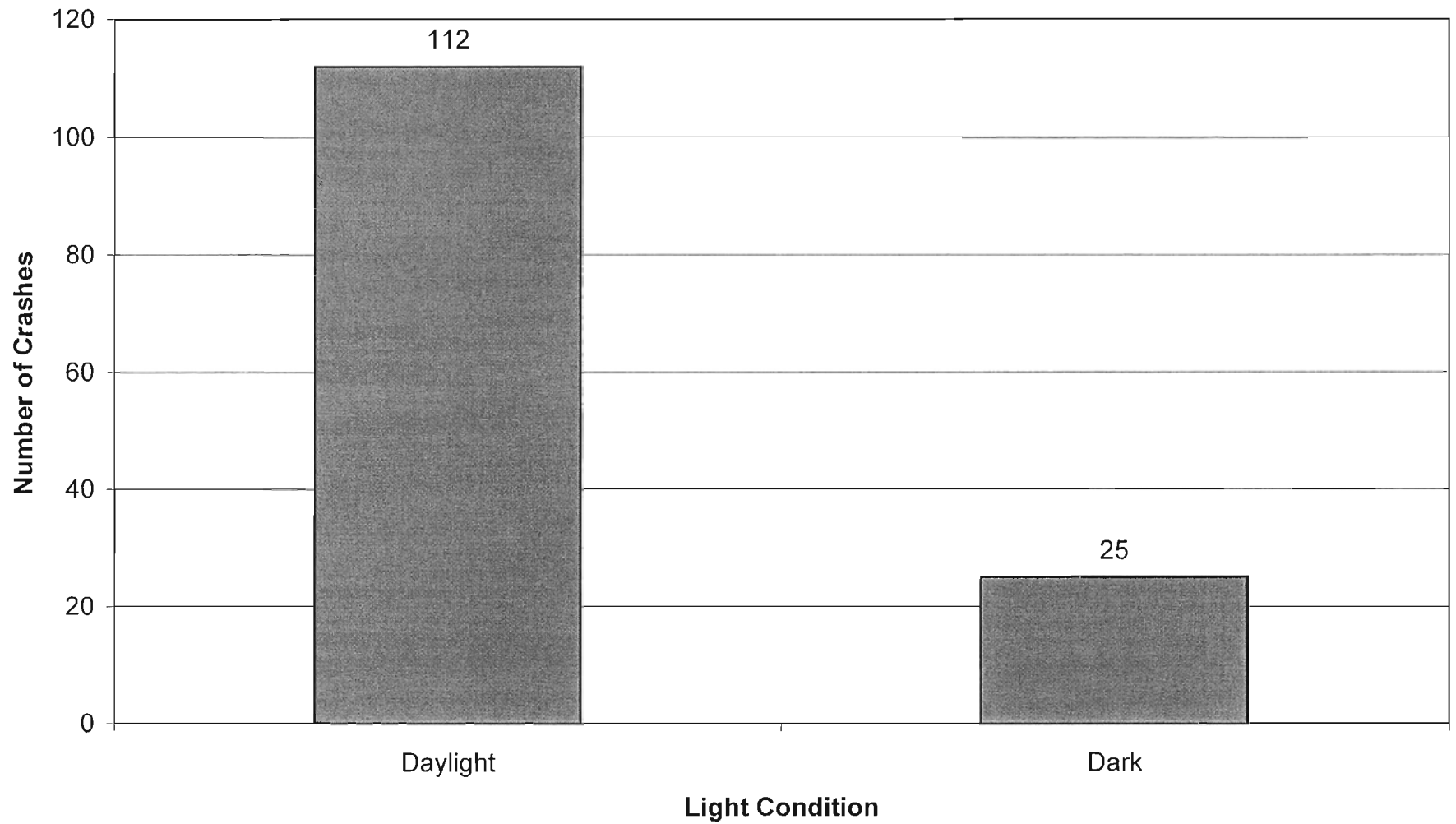
English Creek Road (CR 575) Crash Occurrence by Surface Conditions



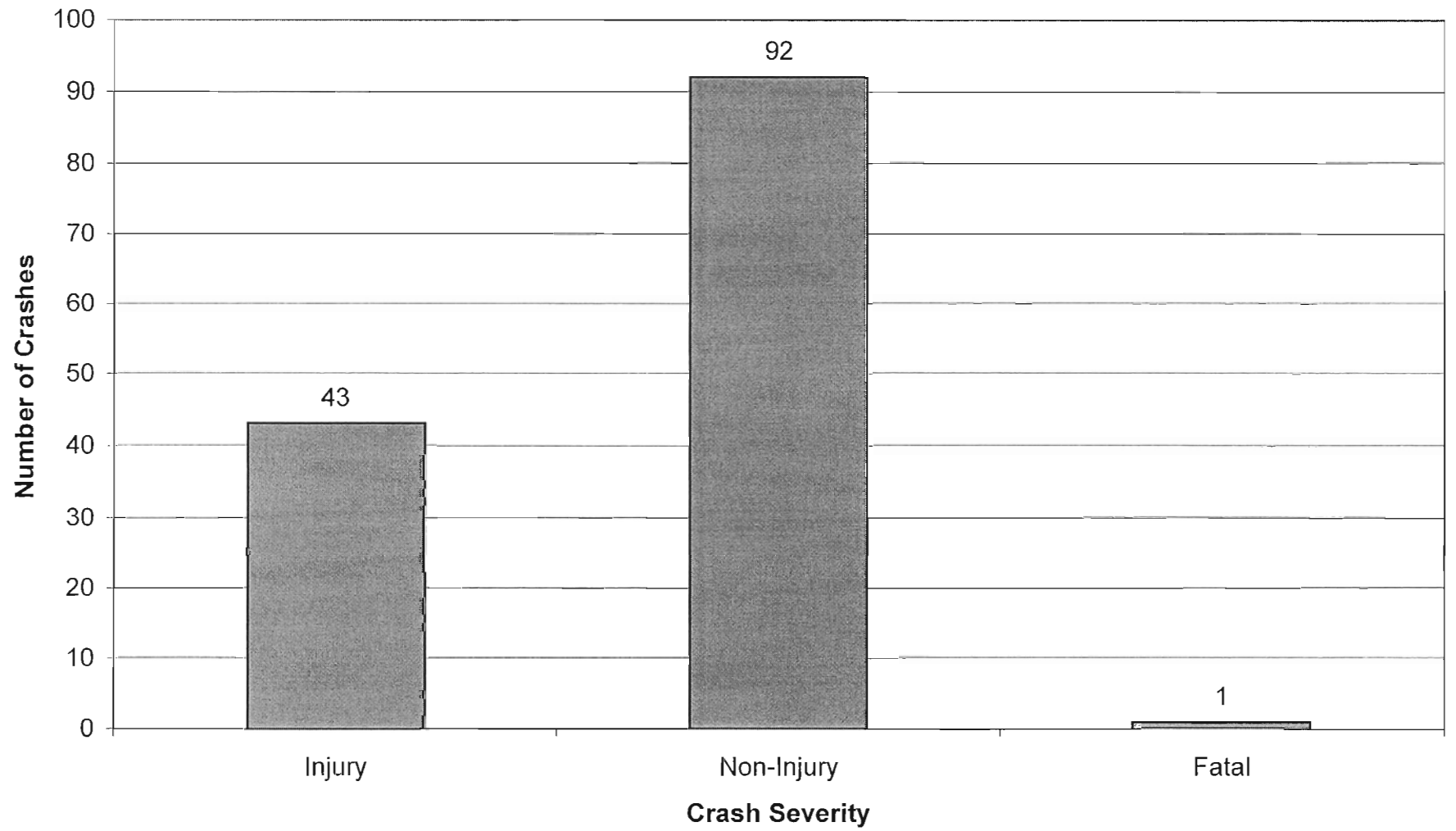
English Creek Road (CR 575) Crash Occurrence by Weather Conditions



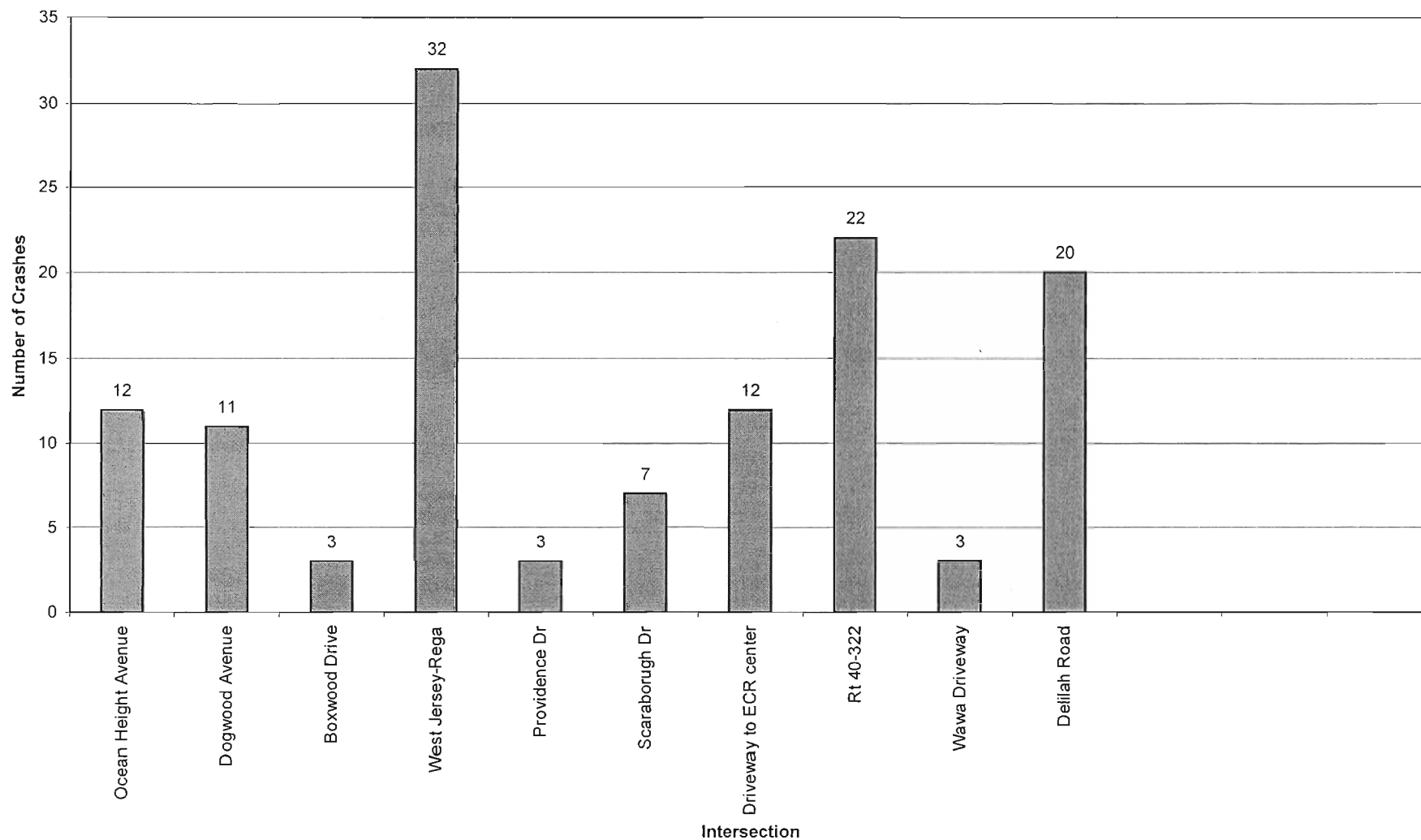
English Creek Road (CR 575) Crash Occurrence by Light Condition

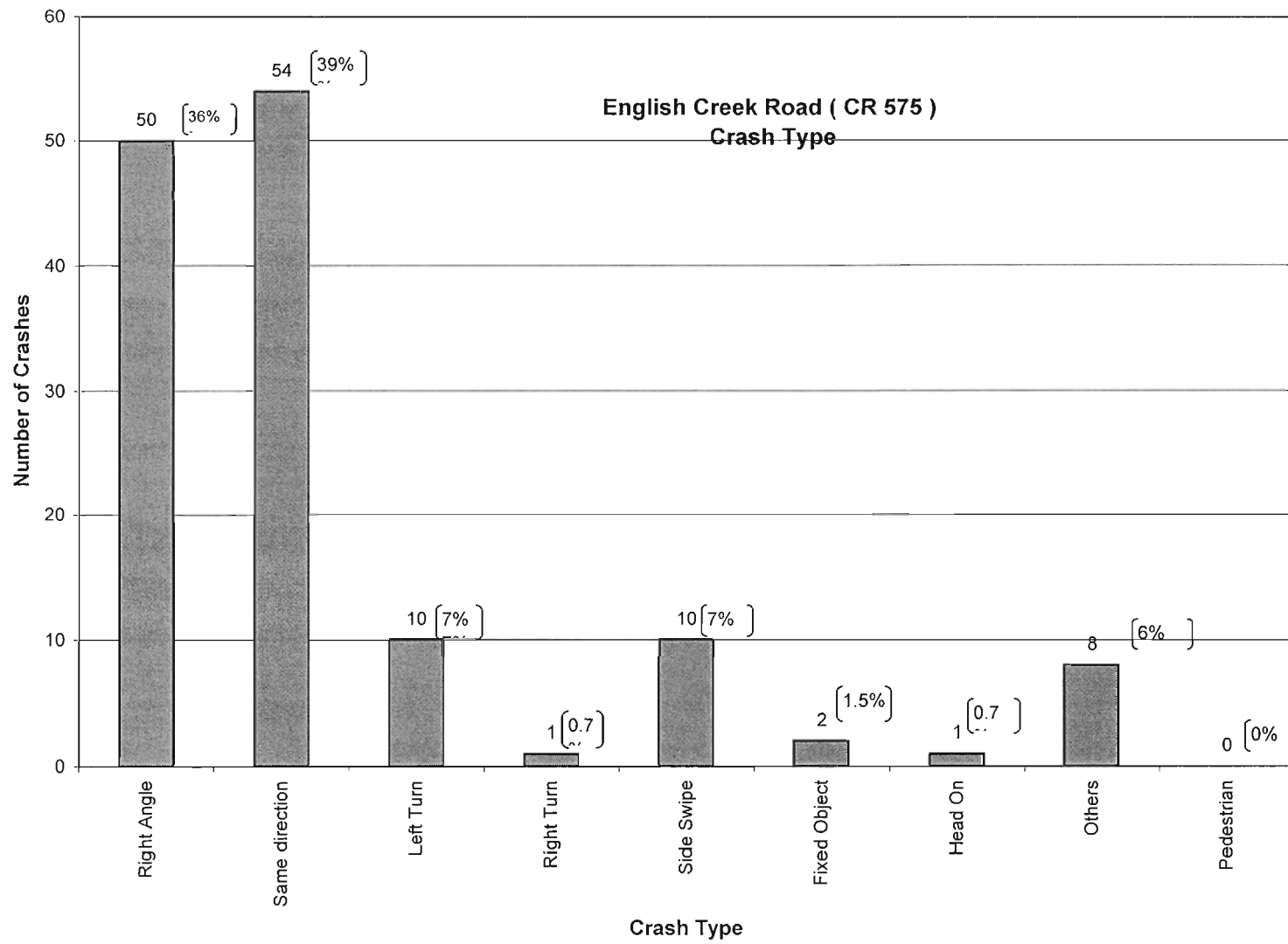


English Creek Road (CR 575) Crash Severity



English Creek Road (CR 575)
Spot Location of Crashes (Proximity to Nearest Major
Intersection)





ENGLISH CREEK ROAD (cr 575)
CRASH SUMMARY 2002-2003
TOTAL-137 CRASHES
Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>11</u>	<u>9</u>	<u>12</u>	<u>11</u>	<u>18</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>16</u>	<u>15</u>	<u>11</u>

Time of Day				Day of Week	
AM	Number of	PM	Number of		Number of
Midnight - Noon	Crashes	Noon - Midnight	Crashes		Crashes
Midnight – 1:00	2	12:00-1300	8	Monday	23
1:00 – 2:00	1	1300-1400	18	Tuesday	20
2:00 – 3:00	0	1400-1500	10	Wednesday	22
3:00 – 4:00	0	1500-1600	12	Thursday	23
4:00 – 5:00	1	1600-1700	15	Friday	24
5:00 – 6:00	0	1700-1800	16	Saturday	10
6:00 – 7:00	3	1800-1900	9	Sunday	15
7:00 – 8:00	4	1900-2000	4		
8:00 – 9:00	7	2000-2100	2		
9:00 – 10:00	6	2100-2200	5		
10:00 – 11:00	7	2200-2300	0		
11:00 – 12 Noon	6	2300-2400	1		

Crash Caused By

Local Resident 56 County Resident 46 State Resident 25 Out-of-State Resident 7 Unknown 3

DAY 112

NIGHT 25

DRY 106 WET 28 SNOWY 1 ICY 1 OTHERS 0

CLEAR 115 RAIN 19 SNOW 2 FOG 1

INJURY 43 NON-INJURY 92 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
50	54	10	1	10

Fixed Object	Head On	Other	Pedestrian	Bike
2	1(fatal)	8	0	1

Parking Related 0

ENGLISH CREEK ROAD (CR 575)
CRASH SUMMARY 2002
TOTAL-65 CRASHES
Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
7	5	4	9	6	3	4	3	5	6	8	5

Time of Day				Day of Week	
AM	Number of	PM	Number of		Number of
Midnight - Noon	Crashes	Noon - Midnight	Crashes		Crashes
Midnight – 1:00	1	12:00-1300	5	Monday	11
1:00 – 2:00	1	1300-1400	7	Tuesday	10
2:00 – 3:00	0	1400-1500	5	Wednesday	11
3:00 – 4:00	0	1500-1600	5	Thursday	8
4:00 – 5:00	0	1600-1700	8	Friday	10
5:00 – 6:00	0	1700-1800	5	Saturday	5
6:00 – 7:00	1	1800-1900	6	Sunday	10
7:00 – 8:00	3	1900-2000	1		
8:00 – 9:00	2	2000-2100	1		
9:00 – 10:00	3	2100-2200	5		
10:00 – 11:00	4	2200-2300	0		
11:00 – 12 Noon	2	2300-2400	0		

Crash Caused By

Local Resident 26 **County Resident** 25 **State Resident** 13 **Out-of-State Resident** 0 **Unknown** 1

DAY 62
NIGHT 10

DRY 52 **WET** 13 **SNOWY** 0 **ICY** 0 **OTHERS** 0

CLEAR 56 **RAIN** 8 **SNOW** 1 **FOG** 0

INJURY 19 **NON-INJURY** 45 **FATAL** 1

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
28	23	6	0	5

Fixed Object	Head On	Other	Pedestrian	Bike
0	0	3	0	0

Parking Related 0

ENGLISH CREEK ROAD (CR 575)
CRASH SUMMARY 2003
TOTAL-72 CRASHES
Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
4	4	8	2	12	4	4	6	5	10	7	6

Time of Day				Day of Week	
AM	Number of	PM	Number of		Number of
Midnight - Noon	Crashes	Noon - Midnight	Crashes		Crashes
Midnight – 1:00	1	12:00-1300	3	Monday	12
1:00 – 2:00	0	1300-1400	11	Tuesday	10
2:00 – 3:00	0	1400-1500	5	Wednesday	11
3:00 – 4:00	0	1500-1600	7	Thursday	15
4:00 – 5:00	1	1600-1700	6	Friday	14
5:00 – 6:00	0	1700-1800	11	Saturday	5
6:00 – 7:00	2	1800-1900	3	Sunday	5
7:00 – 8:00	1	1900-2000	3		
8:00 – 9:00	5	2000-2100	1		
9:00 – 10:00	3	2100-2200	0		
10:00 – 11:00	4	2200-2300	0		
11:00 – 12 Noon	4	2300-2400	1		

Crash Caused By

Local Resident 30 **County Resident** 21 **State Resident** 12 **Out-of-State Resident** 7 **Unknown** 2

DAY 62
NIGHT 10

DRY 56 **WET** 15 **SNOWY** 0 **ICY** 1 **OTHERS** 0

CLEAR 59 **RAIN** 11 **SNOW** 1 **FOG** 1

INJURY 24 **NON-INJURY** 48 **FATAL** 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
22	31	4	1	5

Fixed Object	Head On	Other	Pedestrian	Bike
2	1	6	0	0

Parking Related 0

SJTPO Safety Audits



001.jpg



002.jpg



003.jpg



004.jpg

English Creek Road

SJTPO Safety Audits



005.jpg



006.jpg



007.jpg



008.jpg

SJTPO Safety Audits



009.jpg



010.jpg



011.jpg



012.jpg

SJTPO Safety Audits



013.jpg



014.jpg



015.jpg



016.jpg

Route _____

Date _____

Safety Audit Stage 5**Operation/Existing Roads***Checklist 5-1**General Topics*

Item	Issues to be Considered	Check	Comments
1 Landscaping	Is landscaping in accordance with guidelines (e.g., clearances, sight distance)?		
	Are required clearances and sight distances not likely to be restricted following future plant growth (landscaping and natural)?		
2 Parking	Are provisions for parking satisfactory in relation to traffic operations and safety?		
3 Temporary works	Are all locations free of construction or maintenance equipment, and any signing or temporary traffic control devices that are no longer required?		
4 Headlight glare	Have any problems due to headlight glare (e.g., two-way service road close to main traffic lanes) been addressed?		

Checklist 5-2

Alignment and Cross Section

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Visibility, sight distances	Is sight distance adequate for the speed of traffic using the route?		
	Is adequate sight distance provided for intersections, crossings (e.g., pedestrian, cyclist, cattle, railway) etc.?		
2 Design speed	Is the horizontal and vertical alignment suitable for the (85th percentile) traffic speed? If not:		
	(a) Are warning signs installed?		
	(b) Are advisory speed signs installed?		
	Are the posted advisory speeds for curves appropriate?		

Checklist 5-2

Alignment and Cross Section

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
3 Overtaking	Are adequate passing opportunities provided?		
4 Readability by drivers	Are there any sections of roadway which may cause confusion e.g.:		
	(a) Is alignment of roadway clearly defined?		
	(b) Has disused pavement (if any) been removed or treated?		
	(c) Have old pavement markings been removed properly?		
	(d) Do streetlight and tree lines conform with the road alignment?		

Checklist 5-2

Alignment and Cross Section

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
5 Widths	Are all traffic lanes and roadway widths, including bridges, adequate?		
6 Shoulders	Are shoulder widths appropriate (e.g. for broken down or emergency vehicles)?		
	Are shoulders traversable for all vehicles and road users?		
	Is the shoulder cross slope sufficient to provide proper drainage?		
7 Side slopes	Are the side slopes and table drains safe for run off vehicles to traverse?		

Checklist 5-3

Intersections

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Location	Are intersections located safely with respect to horizontal and vertical alignment?		
2 Warning	Where intersections occur at the end of high speed environments (e.g., at approaches to towns), are there traffic control devices to alert drivers?		
3 Controls	Are pavement markings and intersection control signing satisfactory?		
4 Layout	Is the alignment of curbs, traffic islands and medians satisfactory?		
	Is the intersection layout obvious to all users?		
	Are turning radii and tapers appropriate?		

Checklist 5-3

Intersections

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
5 Visibility, sight distances	Is sight distance adequate for all movements and all users?		

Checklist 5-4***Auxiliary Lanes and Turn Lanes*****Project** _____**Audit Team Members** _____**Date** _____

Item	Issues to be Considered	Check	Comments
1 Tapers	Are starting and finishing tapers located and aligned correctly?		
2 Shoulders	Are appropriate shoulder widths provided at merges in accordance with design guidelines?		
3 Signs	Is signing and marking installed in accordance with standards?		
4 Turning traffic	Is there advance warning of the approaching auxiliary lane?		

Checklist 5-4

Auxiliary Lanes and Turn Lanes

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
5 Visibility, sight distances	Have right turn movements within the length of the auxiliary lane been avoided?		
	Has stopping sight distance been provided to the rear of turning vehicles?		
	Has stopping sight distance been provided for entering and leaving vehicles?		

Checklist 5-5

Non-Motorized Traffic

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Paths	Are there appropriate travel paths and crossing points for pedestrians and cyclists?		
2 Barriers and fencing	Where necessary, is fencing installed to guide pedestrians and cyclists to crossings or overpasses?		
	Is fencing of your design (e.g., avoid solid horizontal rails)?		
	Where necessary, is crash barrier installed to separate vehicle, pedestrian and cyclist flows?		
3 Bus stops	Are bus stops appropriately located with adequate clearance from the traffic lane for safety and visibility?		
4 Elderly and disabled	Are there adequate provisions for the elderly, the disabled, children, wheelchairs and baby carriages (e.g., holding rails, curb and median crossings, ramps)?		
	Where necessary, are hand rails provided (e.g., on bridges, ramps), and are they adequate?		

Checklist 5-5

Non-Motorized Traffic

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
Elderly and disabled (cont.)	Distance between stop line and pedestrian crossing at signalized intersections (for visibility of pedestrians from truck driver's seat).		
	Signal timing - cycle length - pedestrian clearance time - are pedestrian buttons operable?		
5 Cyclists	Is the pavement width adequate for the number of cyclists using the route?		
	Is the bicycle route continuous, i.e., free of squeeze points or gaps?		
	Are bicycle safe grates provided at drainage pits where necessary?		

Checklist 5-6

Signs and Lighting

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Lighting	Is appropriate lighting installed at intersections, roundabouts, pedestrian and bicycle crossings, pedestrian refuges, etc?		
	Is all lighting operating satisfactorily?		
	Are the appropriate types of poles used for all locations and correctly installed (e.g. slip base at correct height, rigid poles protected if within clear zone)?		
	Are all locations free of any lighting which may conflict visually with traffic signals or signs?		
	Has lighting for signs, particularly overhead signs, been provided where necessary?		
2 Signs	Are all necessary regulatory, warning and direction signs (including detours) in place? Are they conspicuous?		
	Are there any redundant signs?		

Checklist 5-6

Signs and Lighting

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
Signs (cont.)	Are traffic signs in their correct locations, and properly positioned with respect to lateral clearance and height?		
	Are the correct signs used for each situation, and is each sign necessary?		
	Are signs placed so as not to restrict sight distance, particularly for vehicles?		
	Are all signs effective for all likely conditions (e.g. day, night, rain, fog, rising or setting sun, oncoming headlights, poor lighting)?		
	Do sign supports conform to guidelines?		
3 Marking and delineation	Have retroreflective markers been installed? Where colored markers are used, have they been installed correctly?		
	Is all necessary pavement marking installed?		
	Are pavement markings (center lines, edge lines, transverse lines) clearly visible and effective for all likely conditions (e.g. day, night, rain, fog, rising or setting sun, oncoming headlights, light colored pavement surface, poor lighting)?		

Checklist 5-6

Signs and Lighting

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
Marking and delineation (cont.)	On light colored pavement surfaces (e.g. concrete) are RRPMS used to simulate traffic lanes?		
	Has raised profile edge marking been provided where necessary (e.g. fatigue zones)?		
	Is delineation adequate and in accordance with guidelines (e.g. post-mounted delineators, RRPMS, chevron alignment markers)?		
	Is delineation effective for all likely conditions (e.g. day, night, rain, fog, rising or setting sun, oncoming headlights)?		
	If chevron alignment markers are installed, have the correct types of markers been used?		
	Are vehicle paths through intersections delineated where required?		
	On truck routes, are reflective devices appropriate to driver's eye height?		

Checklist 5-7

Traffic Signals

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Operation	Are traffic signals operating correctly? Is the number and location of signal displays appropriate?		
2 Visibility	Are traffic signals clearly visible to approaching motorists?		
	Is the end of likely vehicle queues visible to motorists so that they may stop safely?		
	Have any visibility problems caused by the rising or setting sun been addressed?		
	Are signal displays shielded so that they can be seen only by the motorists for whom they are intended?		
	Where signal displays are not visible from an adequate distance, are signal warning signs and/or flashing lights installed?		
3 Other provisions	Where necessary, are there provisions for visually impaired pedestrians (e.g., audio-tactile push buttons, tactile markings)? Are they working?		
	Where necessary, are there provisions for elderly or disabled pedestrians (e.g., extended green phase, phase displacement)?		

Checklist 5-8

Physical Objects

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Clear zone	Is a clear zone provided in accordance with the guidelines?		
	Is the appropriate treatment or protection provided for any objects within the clear zone (e.g., slip-base or frangible poles, crash barrier, crash cushions, sloping culvert, headwalls)?		

*Checklist 5-8**Physical Objects*

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
2 Crash barriers	Are safety barriers installed at all necessary locations, including on bridges, in accordance with guidelines?		
	Are the crash barrier systems suitable for the purpose?		
	Is the length of crash barrier at each installation adequate? Are the crash barriers correctly installed?		
	Are Guard Rail Energy Absorbing Terminals (GREAT) or crash cushions installed where necessary (e.g., off ramp, bridge piers)?		

Checklist 5-8

Physical Objects

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
Crash barriers (cont.)	Where works are subject to stage construction, are temporary barriers installed in accordance to guidelines?		
	Is there a safe run off area behind breakaway terminals?		
3 Fencing	Is pedestrian fencing where needed?		
	Is fencing in the clear zone free of separate horizontal rails?		
	Is there adequate delineation/visibility of barriers and fences at night?		

Checklist 5-9

Delineation

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Line markings	Are all line markings (center line, edge line, transverse lines) in good condition?		
2 Guide posts	Are guide posts correctly placed, clean, and visible?		
3 Raised and Recessed Pavement Markings	Are RPM's in good condition?		
4 Chevron Alignment Markers	Are Chevron Alignment Markers placed correctly, and used only according to standards?		

Checklist 5-10

Pavement

Project _____

Audit Team Members _____

Date _____

Item	Issues to be Considered	Check	Comments
1 Pavement defects	Is the pavement free of defects (e.g., excessive roughness or rutting, potholes, etc.) which could result in safety problems (e.g., loss of steering control)?		
2 Skid resistance	Does the pavement appear to have adequate skid resistance, particularly on curves, steep grades and approaches to intersection? Has skid resistance testing been carried out where necessary?		
3 Ponding	Is the pavement free of areas where ponding or sheet flow of water may occur with resultant safety problems?		
4 Loose screenings	Is the pavement free of loose screenings?		