
South Jersey Transportation Planning Organization

2005 Road Safety Audit

**Third Street, Wheaton Avenue, S. Main Road (CR 555)
Millville City & Vineland City, Cumberland 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 roadway 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 the 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, Salem County.
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 text.

Safety audits serve to address the 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: 1) the data collection phase; 2) the field view (conducted by the team); and, 3) 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 are collected, an inventory of the traffic control devices is taken, and a capacity analysis of major intersections is

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

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 March 17, 2005, at the County Courthouse in the City of Salem. 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.

The kick-off meeting also facilitated the exchange of ideas among attendees. The attendees displayed a genuine interest in safer roadways and more specifically an interest 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 likelihood that the findings of the team would be implemented.

At the end of the kick-off meeting, the RSA was scheduled for March 30, 2005, commencing at 9:00 AM. The attendees at the kick-off meeting are listed below:

KICK-OFF MEETING ATTENDEES

Name	Agency
Scott Oplinger	NJDOT Division of Safety and Traffic Engineering
Bill Schiavi	SJTPO
Rosemarie Anderson	DVRPC
Karen Yunk	FHWA
Sgt. S. Ware	Vineland Police Department
Charles Munyon	Salem County Planning Board
John J. Petersack	NJDOT Planning
Bill Miller	Salem County Engineering
Joe Federici	Salem County Engineering
Chuck Sullivan	Salem County
Ron Harvey	Millville Police
Matt Rabbai	Millville Police
Jack Lynch	Pennsville Township
Ed O'Connor	NJDHTS
Mike Barruzza	CC Sheriff's Department
Bill Garrison	CC Sheriff's Department
Richard Jones	Millville Engineering Department
Karl Gleissner	Cumberland County Planning
Ron Groshardt	Cumberland County Engineering
Richard Tesanro	NJSP Woodstown
Jeff Ridgway	Salem City
Ted Vengenock	Salem County Sheriff's Department
Sean H. Phillips	Salem County Sheriff's Department
Robert Brewer	Cumberland County Planning Department
Don Chafin	Pennsville Police
Jack Cimprich	Upper Pittsgrove Township
Barry Foote	Upper Pittsgrove Public Works
Norman Deitch	Orth-Rodgers & Associates, Inc.
George Strathern	Orth-Rodgers & Associates, Inc.

CR 555 (Third Street, Wheaton Avenue and S. Main Road)

CR 555 is an existing roadway that is under the jurisdictional control of Millville City and Cumberland County. Representatives at the meeting were unsure of the exact jurisdictional limits, but believed it to be just south of “G” Street. That portion of the road in Vineland City is under county jurisdiction. It is designated as a south-north road. The section being audited is a major connector roadway between Millville and Vineland. The entire study section is basically a two-lane roadway. The Third Street section is a two-lane road approximately 40 feet wide with no marked shoulders. It is urban residential in nature with on-street parking, vertical curbs, sidewalks and a grid pattern of intersecting streets. The Wheaton Avenue - S. Main Road section of road begins at its intersection with Third Street where the road narrows to approximately 22 feet. It remains approximately 22 feet wide with sidewalk and curb until the vicinity of “G” Street. From “G” Street north, it generally remains a 40-foot-wide, two-lane roadway with shoulders to the northern end of the study area at Sherman Avenue. There are some narrower sections where the shoulders are minimized or not marked. The curbside development, while still mostly residential, is less dense and more rural-residential than Third Street. On-street parking is generally not practiced along this section of road and many areas have no sidewalk or curb. The straight-line diagram indicates that the speed limit along the road is 25 MPH along the Third Street section, 35 MPH from “D” Street to the vicinity of “G” Street and 45 MPH along the remainder of the study area. There are five signalized intersections along the study section. The signalized intersections are Route 49 and Third Street, Third Street and Broad Street, CR 555 (Wheaton Avenue) and “G” Street, CR 555 (S. Main Road) and Butler Avenue, and CR 555 (S. Main Road) and Sherman Avenue. Route 55 goes under the road and has an interchange with CR 555. There are three railroad grade crossings along the roadway (one has since been removed).

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 8-hour traffic counts would be taken at Wade Boulevard, the southbound Route 55 ramp, and Burns Avenue. After reading a Horner and Canter report obtained at the kick-off meeting, an 8-hour traffic count was also ordered for S. Lincoln Avenue. An automatic traffic recorder (ATR) count data, taken on February 16, 2005, was also provided at the kick-off meeting. The counts were conducted by ORA during the last week in March and the first week in April. ORA reviewed the turning movement counts at these intersections and used the volumes to perform capacity analyses of the intersections to identify operational problems. All of the intersections counted are stop sign controlled. The results of the analyses are discussed in the next section.

4. Capacity Analyses (level of service analyses)

The following is a brief explanation of Capacity and Level of Service followed by a discussion of the analysis for each intersection counted:

While traffic volumes provide an important measure of activity on the area road system, evaluating how well that system accommodates those volumes is also important, i.e., a comparison of peak traffic volumes with available roadway capacity. By definition, capacity represents the maximum number of vehicles that can be accommodated given the constraints of roadway geometry, environment, traffic characteristics and control.

Primarily, intersections control capacity in road networks, since conflicts exist at these points between through, crossing and turning traffic. Because of these conflicts, congestion is most likely to occur at intersections. Therefore, intersections are studied most often when determining the quality of traffic flow.

Although an unsignalized intersection on a through route is seldom critical to the overall capacity of the through route, it may significantly affect the capacity of the minor cross route and it may influence the quality of traffic flow on both. When analyzing unsignalized intersections, major street through movements and right turns are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements.

Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. For each impeded movement in turn, all conflicting flows are summed. It should be noted that the Highway Capacity Manual (HCM) assumes a random arrival for all the movements, which is not always the case (i.e., an adjacent signal will platoon vehicles).

Since operation at capacity is usually unsatisfactory to most drivers, a descriptive concept has been developed for unsignalized intersections called Level of Service. Level of Service relates

expected traffic delay to critical movement. Unsignalized levels of service range from Level of Service ‘a’ (indicating average delays of 10 seconds or less) to Level of Service ‘f’ (indicating average delays of greater than 50 seconds). Level of Service ‘e’ is generally considered as the acceptable limit of delay for most drivers in a suburban setting. A more detailed level of service description for unsignalized intersections is summarized in Table I.

Table I

Level of Service and Expected Delay for Unsignalized Intersections²

Level of Service	Average Control Delay per Vehicle (seconds)
a	0 to 10.0
b	10.1 to 15.0
c	15.1 to 25.0
d	25.1 to 35.0
e	35.1 to 50.0
f	over 50.0

Wade Boulevard intersection. An HCS (Highway Capacity Software) early afternoon peak hour analysis (1:15-2:15 PM) resulted in an intersection overall Level of Service ‘a’ with the Wade Boulevard approach experiencing a Level of Service ‘c’. The PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service ‘c’ with the Wade Boulevard approach experiencing a Level of Service ‘f’.

² Highway Capacity Manual, published by the Transportation Research Board, Washington, D.C., 2000.

Southbound Rt 55 ramp intersection. An HCS (Highway Capacity Software) early afternoon peak hour analysis (12:00-1:00 PM) resulted in an intersection overall Level of Service 'a' with the ramp experiencing a Level of Service 'e'. The PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'f' with the ramp experiencing a Level of Service 'f'.

The Horner and Canter report stated that a traffic signal may be warranted at this intersection. At the same time, there were no crashes at the intersection of the type susceptible to correction by the installation of a traffic signal. The NJDOT investigation into the need for a traffic signal at the intersection will be more comprehensive than the constraints of this project permit.

CR 555 and Lincoln Avenue intersection. An HCS (Highway Capacity Software) early afternoon peak hour analysis (12:00-1:00 PM) resulted in an intersection overall Level of Service 'c' with the Lincoln Avenue approach left turn experiencing a Level of Service 'f' and the right turn a Level of Service 'b'. The PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'f' with the Lincoln Avenue approach left turn experiencing a Level of Service 'f' and the right turn a Level of Service 'b'.

CR 555 and Burns Avenue intersection. An HCS (Highway Capacity Software) early afternoon peak hour analysis (12:00-1:00 PM) resulted in an intersection overall Level of Service 'a' with the Burns Avenue approach experiencing a Level of Service 'c'. The PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'e' with the Burns Avenue approach experiencing a Level of Service 'f'.

Graphical representations of the traffic volume data and capacity analyses results are included in the Appendix.

5. Crash Data

SJTPO received and forwarded to ORA the crash reports from both Millville City and Vineland City police departments. Summary sheets were prepared for each of the two years, as well as a summary sheet for the two-year period. For the two-year period, a total of 129 crashes were plotted for the study section of road. While conducting the audit, the crash experience at Sassafras Street was questioned. A later review of the crash reports revealed that the leader line on the plan locating the crashes at Sassafras Street was miss-drawn and that the crashes actually occurred at Route 49.

The type of crashes are characterized as follows:

0-Fatal crashes

38-Injury crashes

90-Non-Injury crashes

34 right-angle type crashes – Three (3) of these occurred at Oak Street, four (4) at “D” Street, five (5) at “E” Street and three (3) at Burns Avenue. There were no other concentrations.

50 same-direction type crashes – These crashes were concentrated at the traffic signal at Sherman Avenue, at Burns Avenue, and at both of the approaches to the Route 55 overpass. Eleven (11) crashes occurred at Sherman Avenue, fifteen (15) at Burns Avenue and nine (9) between Wade Boulevard and Burns Avenue. Five (5) others occurred in the vicinity of Route 49.

16 fixed-object crashes – Seven (7) of these crashes occurred between Wade Boulevard and Burns Avenue. There were no other concentrations.

8 left-turn type crashes – Three (3) occurred at “L” Street and three (3) at Burns Avenue. There were no other concentrations.

5 right-turn type crashes – Two (2) of these occurred at Sherman Avenue and two(2) at Burns Avenue.

3 crashes involving bicycles – Two (2) occurred at Route 49 and one (1) at “D” Street.

15 other type crashes

An extensive review of the crashes established the following:

- ♦ The critical month for crash occurrence is July.
- ♦ The critical day for crashes was Friday.
- ♦ The highest frequency of crashes occurred during evening peak, 4:00-5:00 PM.
- ♦ The percentage of crashes during hours of darkness (21%) is lower than the statewide average for county roads (approximately 30%).
- ♦ The percentage of crashes for wet surface conditions (23%) is lower than the statewide average for county roads (approximately 29%).
- ♦ The percentage of crashes with injuries (29%) is consistent with the statewide average for county roads (approximately 30%).
- ♦ The percentage of same-direction crashes (38%) exceeds the statewide average for county roads (approximately 29%).
- ♦ The percentage of right-angle type crashes (27%) exceeds the statewide average for county roads (approximately 22%).
- ♦ The percentage of left turn accidents (6%) is consistent with the statewide average for county roads (approximately 6%).
- ♦ The percentage of fixed-object type accidents is consistent (11%) with the statewide average for county roads (approximately 12%).
- ♦ The percentage of crashes involving bicycles (2.3%) exceeds the statewide average for county roads (approximately 1%).
- ♦ The percentage of crashes involving parked vehicles (1%) is lower then the statewide average for county roads (approximately 6%).

6. **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 30, 2005, the Safety Audit Team met in the City of Millville Town Hall 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. Some of the items discussed during the meeting and information obtained were:

- Representatives of both police departments thought that the crash data plotted for the two-year period was less extensive than the actual crash experience along the road. It was pointed out that only a fraction of the crash reports submitted by Millville occurred along the section of road being audited, the remaining were at other locations within the City.
- Whitaker Avenue – Local Aid project will be improving the corner radii and corner sight distances at the intersection.
- Route 47(Delsea Drive) has been under construction for approximately 18 months, which has diverted some traffic to this section of CR 555.
- Thirty (30) to 40 homes are to be built with access onto CR 555 somewhere between Overbrook and Whitaker
- Millville presented a scheme, which was discussed in some detail, for the re-configuration of the Third Street and Wheaton Ave intersection. While a conclusion was not reached on the merit of the plan, it was agreed that some sort of re-configuration could probably enhance the safety and operation of the intersection.

- The NJDOT was investigating the need for a traffic signal at the intersection of the Route 55 southbound ramp and CR 555.
- The railroad grade crossings on Wheaton Avenue is being reviewed NJDOT. The DOT should issue a decision and order regarding the level of protection for this crossing.. The tracks for the crossing in the vicinity of Burns Avenue have recently been removed.
- A Pre-K school, with an initial enrollment of 555 students and a capacity of 800, is due to open April 4, 2005. The school is located east of CR 555 with access onto both Combs Avenue and Wade Boulevard. Eleven (11) buses are scheduled to be using Combs Avenue and the school staff has been directed to use Wade Boulevard.
- The recommendations of a Horner and Canter Associates report, prepared for the county dated December 5, 2002, were presented and discussed. The introduction of the report identifies it as a “Traffic Signal Master Plan for the County Route 555 (Main Road) Corridor in the City of Vineland.” The limits of the study were from “G” Street to Wheat Road. The recommendations for the section of road within our roadway audit study were:
 - Traffic signals may be warranted at Wade Boulevard and the southbound Route 55 off-ramp intersections.
 - Stripe the Lincoln Avenue approach to CR 555 as two lanes.
 - Local officials consider prohibiting the left turn from Burns Avenue onto CR 555, relocating the turn to Butler or Sherman.
 - Recommended against signalizing the CR 555 intersections with Combs, Route 55 northbound ramp, and Wade Boulevard.
 - Short term improvements – Implement three-lane cross section within available ROW, coordinate traffic signals, conduct periodic traffic signal warrant analysis at key intersections, such as Route 55, Lincoln Avenue and Burns Avenue.
 - Long-term improvements – Three-lane cross section between “G” Street to Route 55

and five-lane cross section north of Route 55.

- The county's consultant has under design a three-lane cross section for the road from "G" Street in Millville to Chestnut Street in Vineland. No funding for ROW or construction has been programmed at this time.

The team then rode the short distance to Route 49 and Third Street to begin the audit. Team members are listed below.

SAFETY AUDIT TEAM FOR CR 555

Name	Agency
Ron Groshardt	Cumberland County Planning
Ed Liu	NJDOT - Traffic Engineering & Investigations
Sgt. Matt Rabbai	Millville Police Department
John Knoop	Millville City Engineer
Sgt. S. Ware	Vineland Police Department
Rosemarie Anderson	DVRPC
Norman Deitch	Orth-Rodgers & Associates, Inc.
Karen Yunk	FHWA
Bill Garrison	Cumberland County Sheriff's Department
Bill Schiavi	SJTPO
George Strathern	Orth-Rodgers & Associates, Inc.
Peter Szwandrak	Orth-Rodgers & Associates, Inc.

The team walked the road beginning at Route 49 and finishing at Sherman Avenue. Mr. David Battistini, Vineland City Engineer, and Mr. Brian Myers, Vineland City Supervising Engineer, joined the team during the audit.

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 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.

A nighttime safety audit was conducted on May 13, 2005, by ORA staff Mr. Strathern and Mr. Kovacs. Ms. Yunk of the FHWA also did a night audit on May 14, 2005. The goal was to check the reflectivity 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 that 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 CR 555 safety audit are presented below.

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
1	Sign installation. Many if not most of the signs along the road are installed as “bendaway” rather than “breakaway”. Many installed as “breakaway” are installed incorrectly with the stub too far out of the ground or on the wrong side of the post.	Inventory method of sign installation along entire road and take steps to properly install all signs as “breakaway” in accordance with the most current standards.			X			X
2	Stop sign –general. Stop signs at most if not all of the intersection appear to have engineering grade sheeting.	Replace all Stop signs with new signs with high intensity sheeting.		X			X	
3	Improve advance motorist information for primary crossings.	Install street name plaque on all advanced intersection warning signs.	X			X		
4	Rt 49 intersection. Signal installation does not meet current MUTCD requirements regarding provisions for pedestrians. Crosswalks shown on the plan across both Rt 49 approaches are missing.	This intersection is under NJDOT jurisdiction. Request DOT to consider installing WALK-DON'T WALK signals across all approaches to the intersection and to install missing crosswalks.			X		X	
5	Rt 49 intersection. CR 555 in immediate vicinity of crosswalk across north approach badly rutted creating tripping hazard.	Re-pave area in vicinity of crosswalk.		X			X	
6	Intersection of South 3 rd Street and Sassafras is missing one-way signage.	Add appropriate signage.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
7	Railroad grade crossings. As previously stated the Wheaton Ave crossing is being reviewed by the NJDOT and the crossing in the vicinity of Burns Ave has been removed. The pavement marking, signing and other traffic control devices identifying the crossing appear worn and not in compliance with current standards. Since these items are being addressed by the NJDOT review they are only mentioned here as a matter of record.	Implement recommendations of NJDOT diagnostic team when issued. City should consider requesting a DOT review of the Third Street crossing.			X		X	
8	Third Street and Wheaton Avenue. Geometry of the intersection is unfavorable. Acute angle of intersection makes it difficult for Wheaton Avenue traffic to see traffic southbound on Third Street. Also, higher volume approach forced to Stop.	As stated in the body of the report Millville presented a scheme for the intersection that was discussed in some detail. The feasibility of re-configuring the intersection should be studied in more detail.			X			X
9	Third Street and Wheaton Avenue. Heavier volume approach is stop controlled.	Supplement stop control with "Stop Ahead" sign.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
10	Speed Limit Signing. The straight-line diagram indicates that the speed limit along the road is 25 MPH along the Third Street section, 35 MPH from "D" Street to the vicinity of "G" Street and 45 MPH along the remainder of the study area. Currently facing southbound traffic there is a 45 MPH sign south of Beacon Ave, a 45 MPH south of Burns, a 45 MPH sign south of Rt 55, and a "REDUCE SPEED AHEAD" sign north of "G" Street. No other speed limit signing is provided for southbound traffic. Northbound traffic has a 25 MPH sign north of RT 49, a 45 MPH sign north of "G" street, and a 45 MPH sign south of Burns Avenue. No other speed limit signing is provided for northbound traffic.	Additional speed limit related signing be installed along road to bring the signing into conformance with current practices.	X			X		
11	Intersection of 4 th Street and Route 555. Stop sign is faded.	Replace faded stop sign.	X			X		
12	"G" Street intersection. Signal installation does not meet current MUTCD requirements regarding provisions for pedestrians.	Consideration be given to installing crosswalks and WALK-DON'T WALK SIGNALS across all approaches to the intersection..			X		X	
13	"SLOW MOVING VEHICLE AHEAD" located north of "G" Street facing northbound traffic. Non-conforming, worn sign.	Remove.	X			X		
14	Driveway for 1401 Wheaton Ave. missing stop sign.	Add stop sign.	X			X		
15	Stop sign located at end of driveway for Alcan packaging facility is faded.	Replace stop sign.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
16	"Road May be Flooded" sign located north of G Street is damaged (missing letters).	Replace sign.	X			X		
17	MV Inspection Station. Located on the southwest corner of "L" Street. Traffic wishing to enter the station is required to turn onto "M" Street that is one block to the north. Existing guide signing is poor.	Install directional signs along both CR 555 approaches directing MV Station traffic to "M" Street.	X				X	
18	Lynn's Deli – angle parking in front of Deli. Motorist back out of parking spaces onto road.	Contact property owner to discuss possible alternatives.	X				X	
19	On northbound approach to Rt 55 "BRIDGE FREEZES BEFORE ROAD SURFACE" sign obstructed by tree branches.	Trim tree branches.	X				X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
20	Wade Boulevard intersection. As discussed in Section 4 of the Pre-Audit Data Collection and Analysis portion of the report, the Wade Blvd. approach to the intersection experiences a Level of Service 'F' during the PM peak hour. The Horner and Canter report stated that a traffic signal may be warranted at this intersection. The same report did not recommend that a traffic signal be installed "since traffic exiting Wade Boulevard primarily consists of right turning traffic. The few left turns can find, if deemed necessary, other area roadways that have less traffic volumes, such as Combs Avenue, to reach CR 555." The report also suggests that the RT 55 southbound ramp and the Lincoln Avenue intersection are better choices for signalization. The latest count shows that 95% of Wade Blvd. traffic turns right at the intersection. The crash data compiled in this audit showed that there were no crashes at the intersection of the type susceptible to correction by the installation of a traffic signal.	Intersection should be further evaluated for long-term solutions to the PM peak hour delays to the Wade Blvd. approach.			X		X	
21	East side of Route 555 on northbound approach to South Lincoln Ave (Dead End) in need of advanced intersection-warning sign along with street name plaque.	Install appropriate signage.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
22	Southbound Rt 55 ramp. As discussed in Section 4 of the Pre-Audit Data Collection and Analysis portion of the report, the PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'F' with the ramp experiencing a Level of Service 'F'. The Horner and Canter report stated that a traffic signal may be warranted at this intersection. At the same time, there were no crashes at the intersection of the type susceptible to correction by the installation of a traffic signal. The need for a traffic signal at the intersection is being investigated by the NJDOT. That investigation of the intersection will be more comprehensive than the constraints of this project permit.	Await result of the NJDOT investigation.	X					X
23	Northbound traffic experiences curve to left as it crosses over Rt 55 approaching Lincoln Avenue.	Install chevron signs on southeast corner of Lincoln Avenue facing northbound traffic.	X				X	
24	Advertising signs on the center median along Lincoln Ave obstructing sight distance.	Remove signs.	X			X		
25	Traffic turning right off of the northbound Rt55 ramp onto CR 555 often have their right turn signal on from when they turned onto the ramp from Rt 55. Motorist on Lincoln Avenue entering CR 555 sometimes mistake this to mean that the driver is intending to turn right onto Lincoln Avenue. Lincoln Ave driver then turn onto CR 555 in front of these motorist.	Install sign on Rt 55 ramp advising motorist to turn off their turn signal.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
26	CR 555 and Lincoln Avenue intersection. As discussed in Section 4 of the Pre-Audit Data Collection and Analysis portion of the report, the PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'F' with the Lincoln Avenue left turn experiencing a Level of Service 'F'.	Intersection should be further evaluated for long-term solutions to the PM peak hour delays. Refer to #30(Burns Avenue) for possible long-term alternative. As an interim solution the installation of a traffic signal should be evaluated.			X			X
27	North Rt 555 sign assembly, located just north of Lincoln Avenue, facing northbound traffic has adopt a highway signing installed below it. The adopt a highway signs are too low and obstruct corner sight distance.	Relocate adopt a highway signing.	X			X		
28	Pavement markings along the entire length of the audit are worn. This is especially true along both of the CR 555 approached to Rt 55. The curvature of this section of road makes it particularly important that these pavement marking be maintained. This was the area of concentration for fixed object accidents.	Repaint all pavement marking along the road. If not possible in the short term repaint at least both approaches to Rt 55 interchange.	X					X
29	Temporary orange fence installed along southbound curb line approaching Lincoln Avenue. Fence install in response to fixed object type accidents involving southbound motorist mistaking dead end street as CR 555.	Retain fence. Install two more chevron signs south of the dead end street. Plant conifers trees on corner behind fence which when mature will shield dead end street from view of southbound motorist. If any trees are planted within the clear zone they should be of the type which will not grow to more then 4 inches in diameter..		X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
30	Burns Ave Intersection. Mr. Battistini and Mr. Myers joined the team in the field to specifically discuss this intersection. Of the 129 crashes experienced in the study area 28 occurred in the vicinity of this intersection. There have been discussions with the property owner on the east side of CR 555 opposite Burns Ave regarding extending Burns Ave to Lincoln Avenue. Lincoln Ave at CR 555 would then be closed or movements limited to right turn in. The Burns Ave intersection would be signalized. Burns Ave is a major short cut used by locals to the Cumberland Mall. Local team members stated that traffic volumes on Burns Avenue are much higher during November and December. The PM peak hour analysis (4:30-5:30 PM) of the intersection resulted in an intersection overall Level of Service 'E' with the Burns Avenue approach experiencing a Level of Service 'F'. Vehicle path worn across the southwest corner of the intersection is testimony to the difficulties being experienced at the intersection.	Strongly recommend that the feasibility of extending Burns Ave to Lincoln Ave be investigated.			X			X
31	"BUMP" sign along southbound road north of Burns Ave. Bump no longer exist.	Remove sign.	X			X		
32	STUMP along the northbound side of road in front of # 3771.	Remove	X				X	
33	Boulder along the northbound side of road in front of 3911.	Remove	X				X	
34	Other diseased or dead trees may exist in the clear zone along the road.	County conduct an in depth evaluation of trees along road to identify which ones are diseased or dead and establish program for their removal.		X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
35	W3-3- Signal Ahead Symbol signs along both of the approaches to Butler Ave have educational "Signal Ahead" plates mounted below. Sign facing N/B traffic is worn.	Remove educational plates and replace sign facing N/B traffic.	X			X		
36	Street name sign pole on northeast corner of Butler Ave missing signs. Signal at intersection does not have mast arm street name signs.	Install street name signs on existing pole. If possible install street name signs on mast arms and remove existing street sign pole.	X			X		
37	Mail boxes (for 2831, 2819) along the northbound side of road south of Sherman Ave mounted on horizontal member extending parallel to road.	Contact mail box owners to replace existing mounting with conventional mail box installation.	X			X		
38	Sherman Ave intersection. Steel pole supporting sign for Athens Florist on the northeast corner of intersection appears to be within ROW.	Confirm location of pole and contact owner regarding its removal.	X			X		
39	Night safety audit found the following;							
	a. Some luminaries are burned out.	Replace burned out luminaries	X			X		
	b. Many of the luminaries have branches from adjacent trees growing between them and the roadway surface, obstructing the light from reaching the road.	Trim tree branches so that light is not obstructed.		X			X	
	c. Pavement markings are worn and lost reflectivity. Those on 3 rd Street section are barely visible.	Re-paint all pavement markings along entire length of study area.		X			X	
	d. While road has street lighting there are still many dark sections that the team driver did not feel comfortable driving .	Consideration be given to installing RPM's along the road and installing delineators on utility poles that are a constant distance off the roadway.		X				X

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
	e. Chevron alignment signs facing southbound traffic approaching the curve just north of Lincoln Avenue are mounted more than 4 feet above the road surface.	It is recommended that these signs be installed four feet above the road surface measured to the bottom of the sign . This positions the signs in a better position to reflect vehicles head lights, increasing their effectiveness.	X			X		
	f. Both approaches to RT 55 have dark areas and gore markings in ramps not readily visible.	Install RPM's on centerline, edgelines and in gore areas on approaches to and at RT 55 interchange.	X					X
	g. CR 555 route marker assemble facing northbound Third Avenue traffic just south of intersection with CR 555 has lost its reflectivity.	Replace sign assembly.	X			X		
	h. Side road symbol sign facing northbound traffic approaching Burns Avenue has lost its reflectivity.	Replace sign.	X			X		

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 increase 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 future (within 1 year). This Road Safety Audit project revealed a number of problematic issues in the study area. 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. Other findings, such as the extension of Burns Avenue, the reconfiguration of the Third Street and Wheaton Avenue intersection, finding long-term solutions to the delays at Wade Boulevard and southbound RT 55 ramp, and the modifications to the existing traffic signals, require a greater expenditure of both time and resources. The Level of Effort indicated on the finding sheets of the report represent the team's best effort at categorizing each item.

As with all traffic studies, some of the crash experience on the roadway has no obvious solution.

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

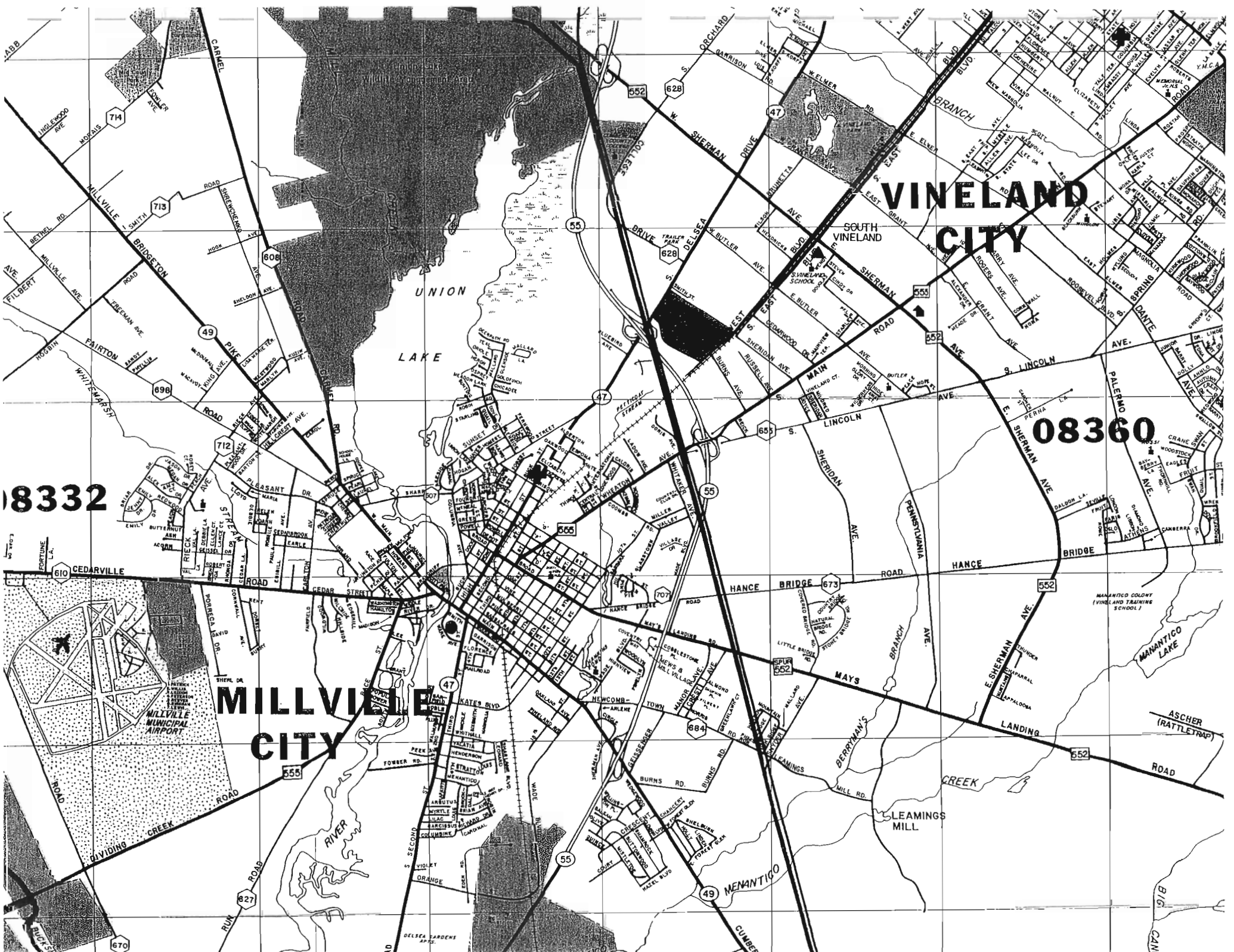
officials are reminded that no number of safety audits or improvements is a substitute for enforcement. Just as resources must be allocated to the physical improvements of the road, so must they be allocated to enforcement.

It is felt that the traveling public would benefit the most from the extension of Burns Avenue to Lincoln Avenue (Item #30) and the signalization of the intersection, the reconfiguration of Third Street and Wheaton Avenue intersection (Item #8), and improving the delineation and illumination of the CR 555 approaches to Rt 55 (Items 22, 28, 29 and 39f). The NJDOT current investigation of the southbound Rt 55 ramp intersection could also find that the installation of a traffic signal at the ramp would contribute to the safety and efficiency of the road.

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.

Appendix

- Street Map of CR 555
- Straight line plans
- Crash Data Charts
- Crash Data Summary
- Traffic Counts
- Level of Service Diagram
- Photographs
- Checklists



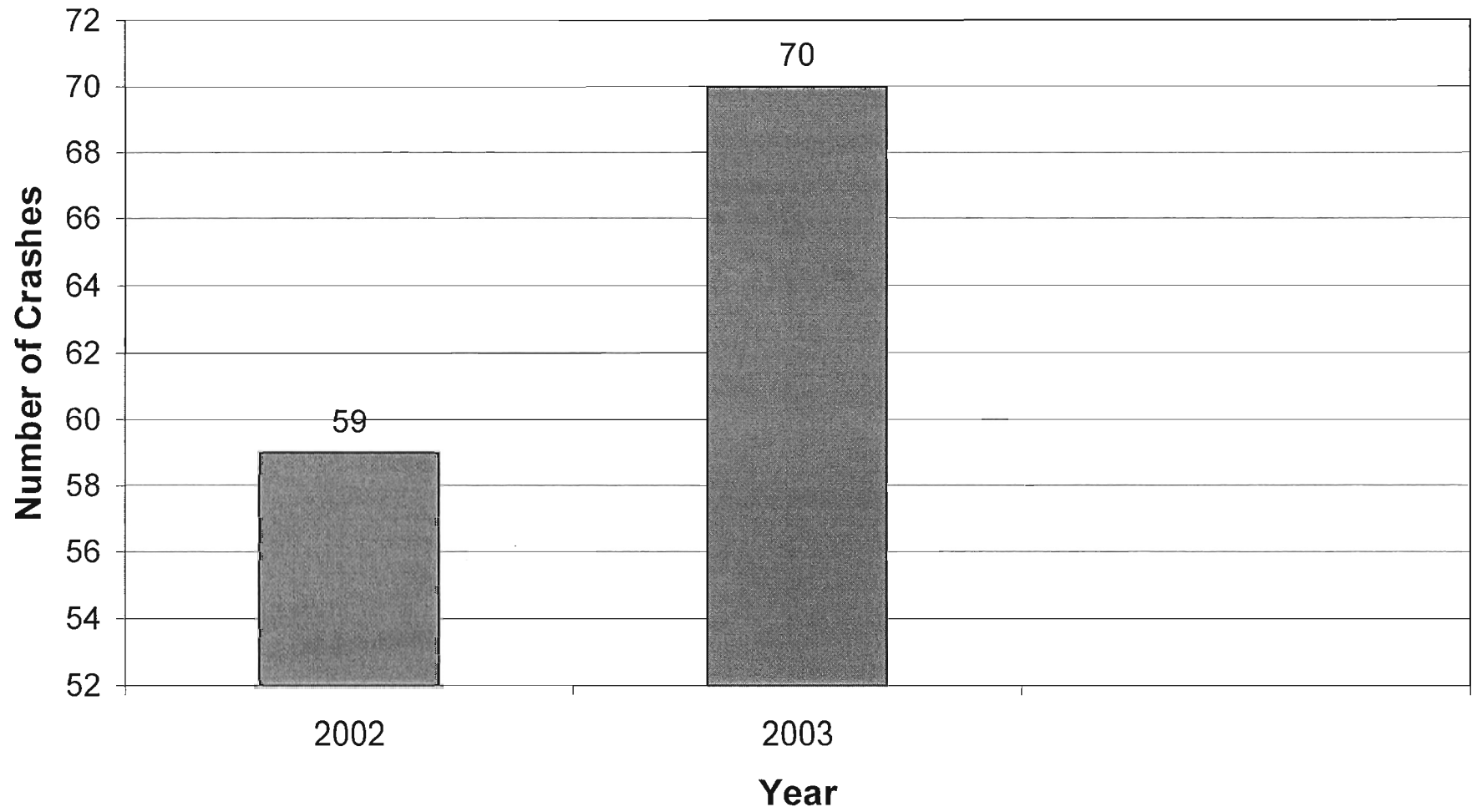
**VINELAND
CITY**

08360

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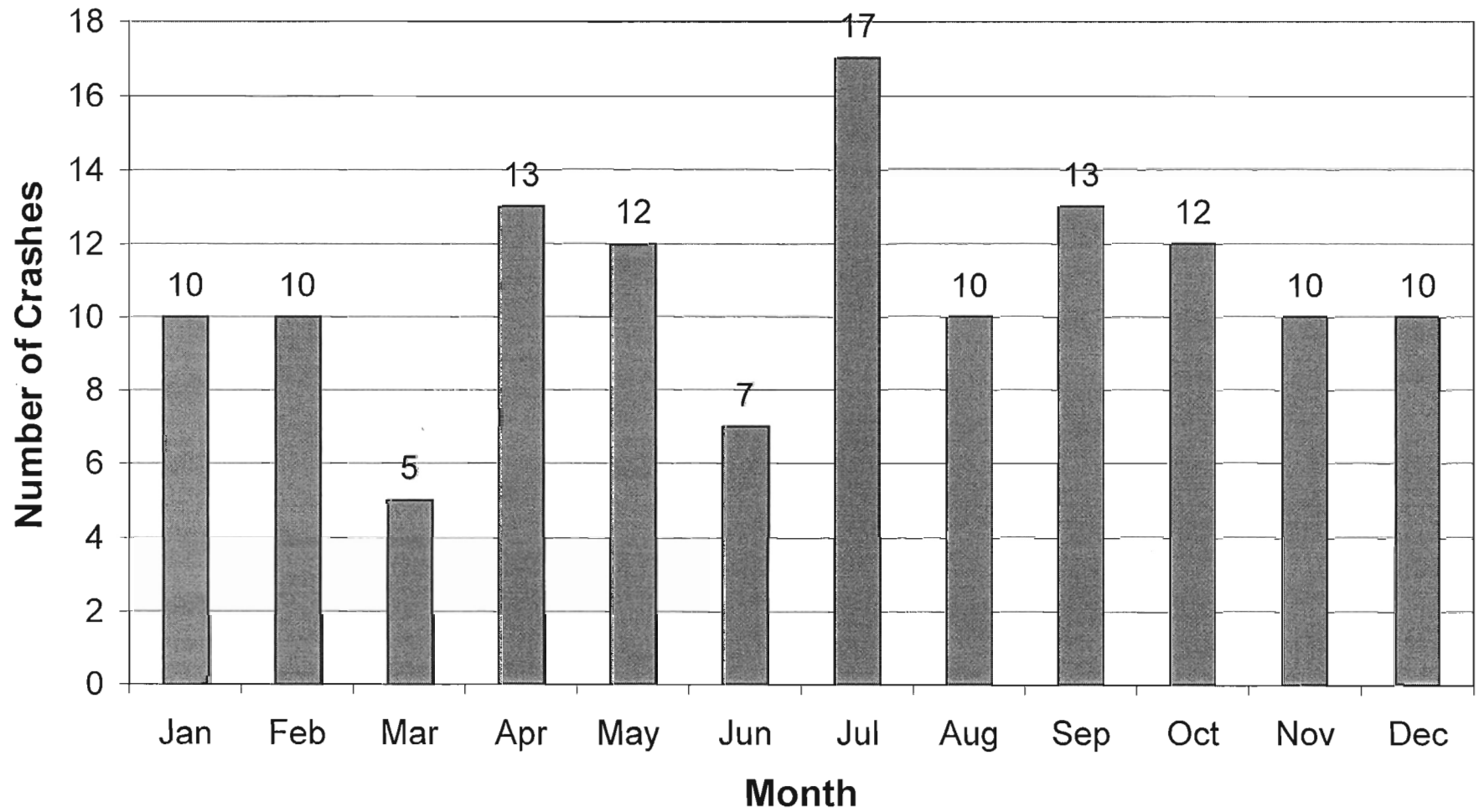
**MILLVILLE
CITY**

**CR 555
2 Year Trend**



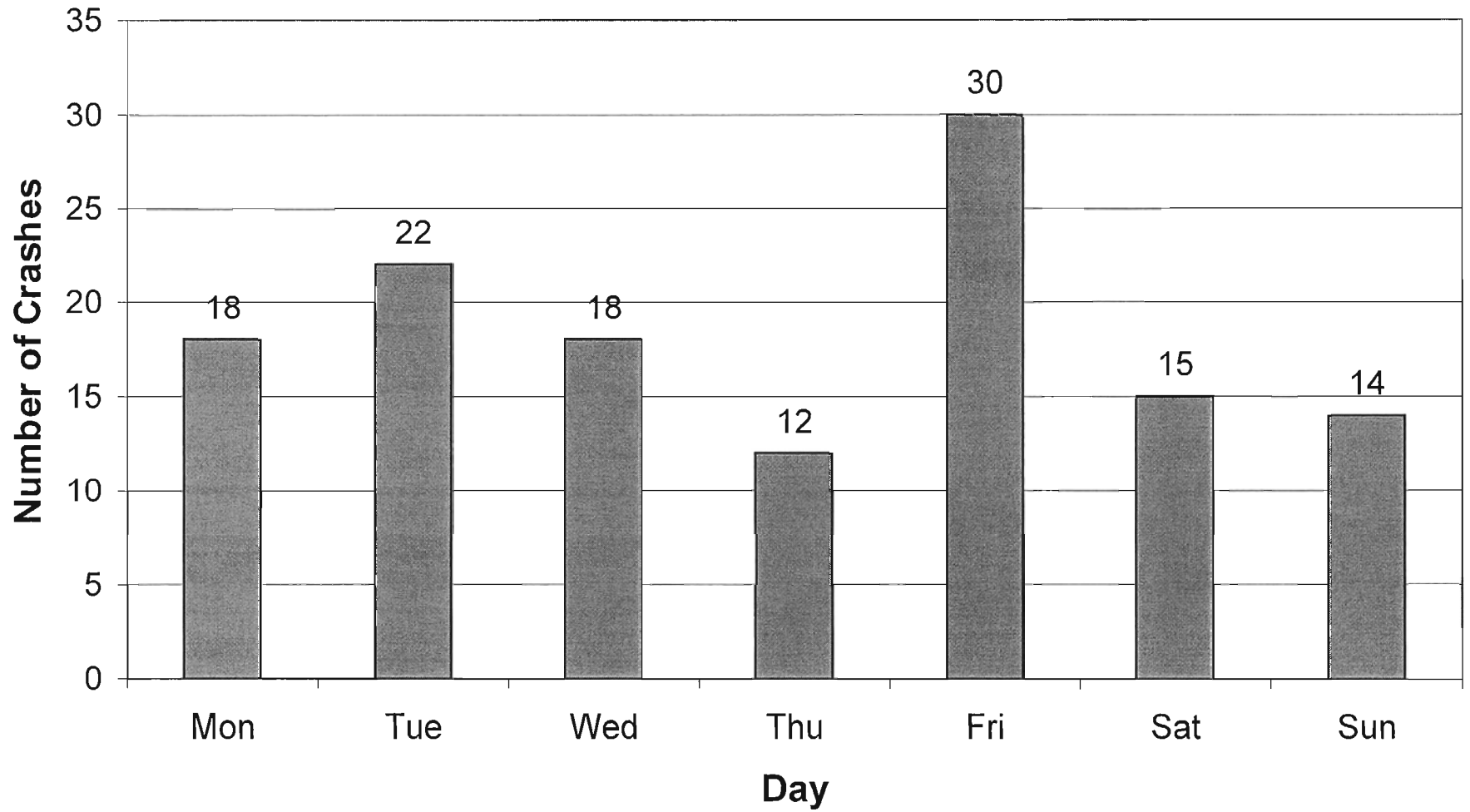
CR 555

Crash Occurrence by Month

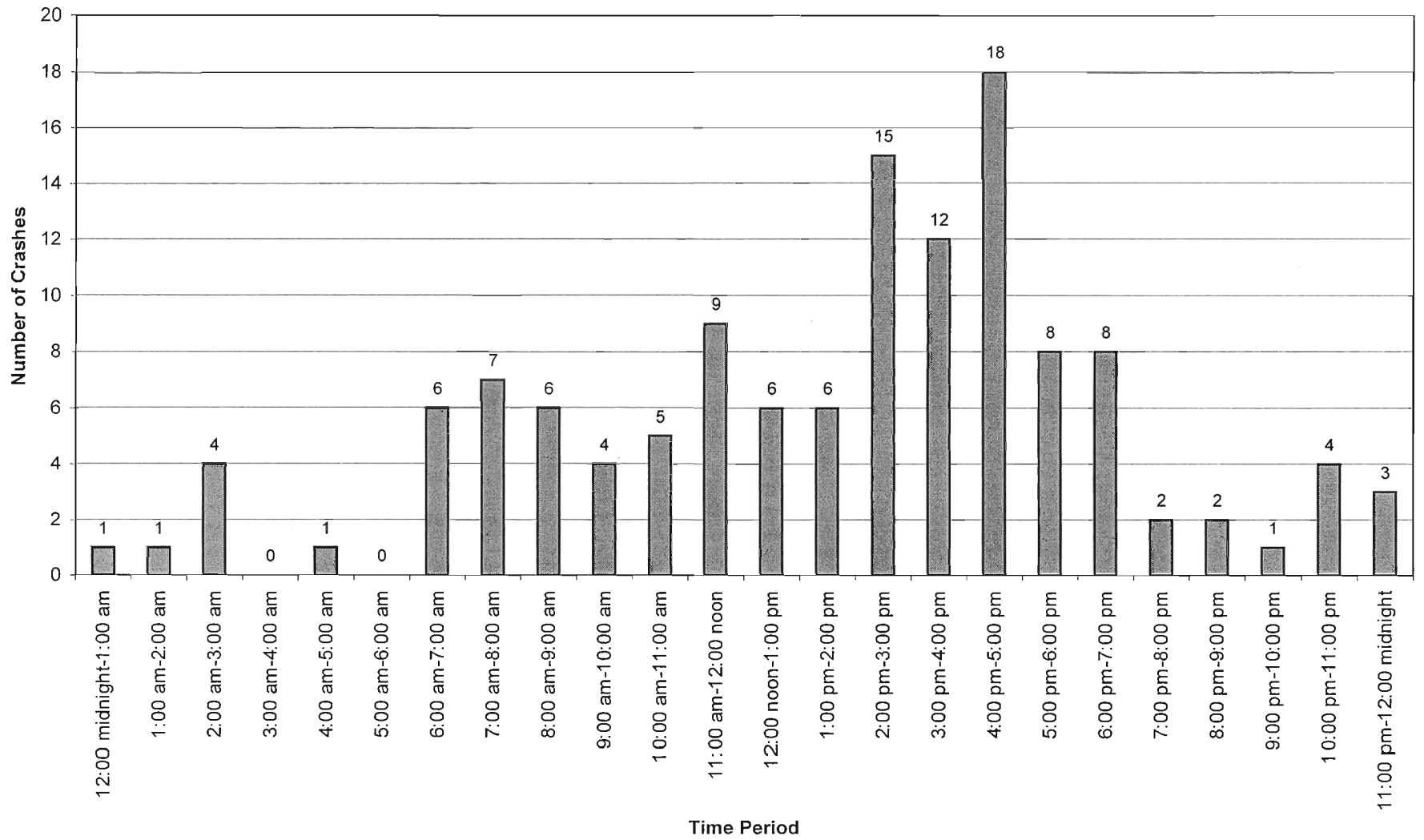


CR 555

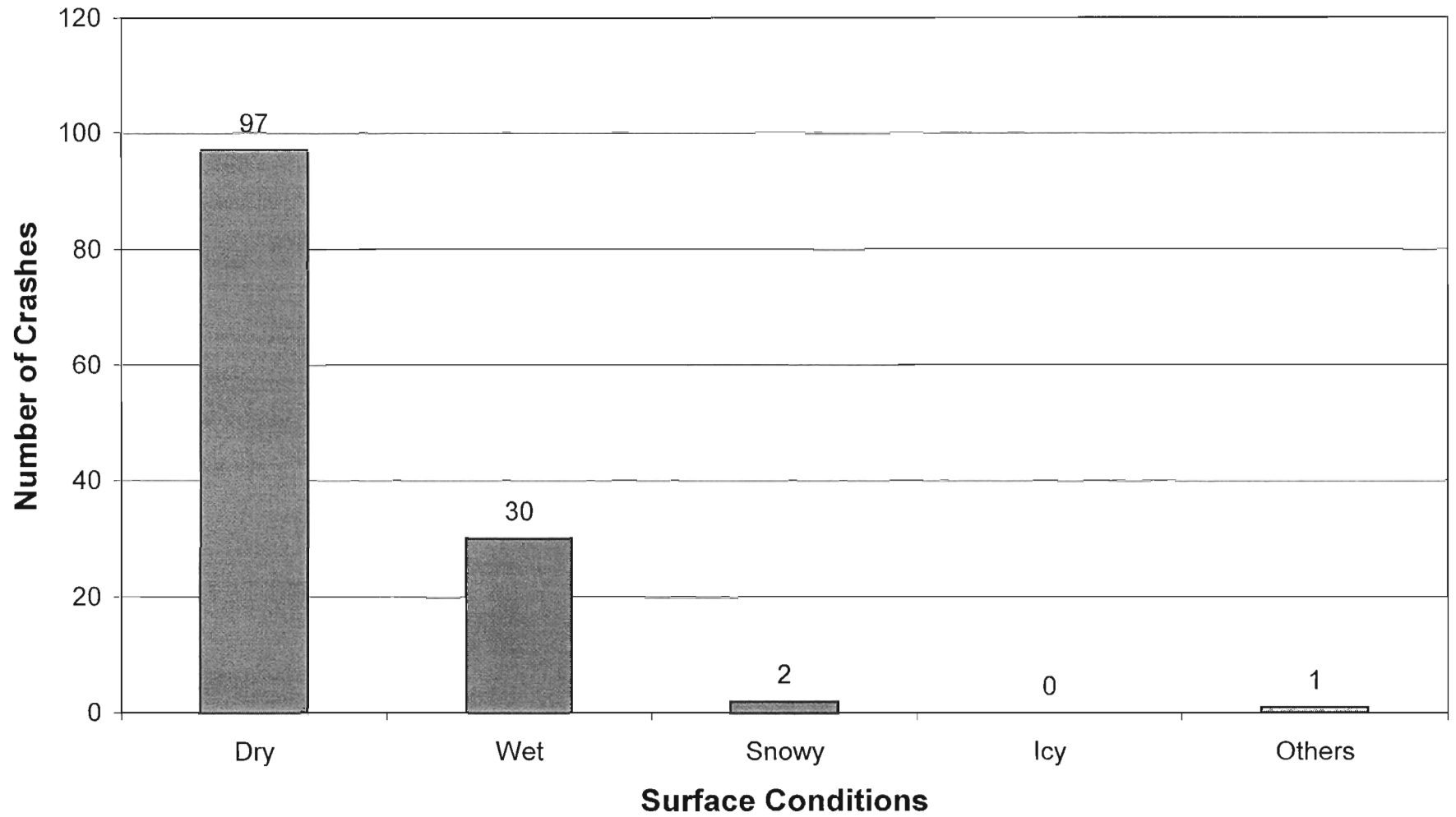
Crash Occurrence by Day of Week



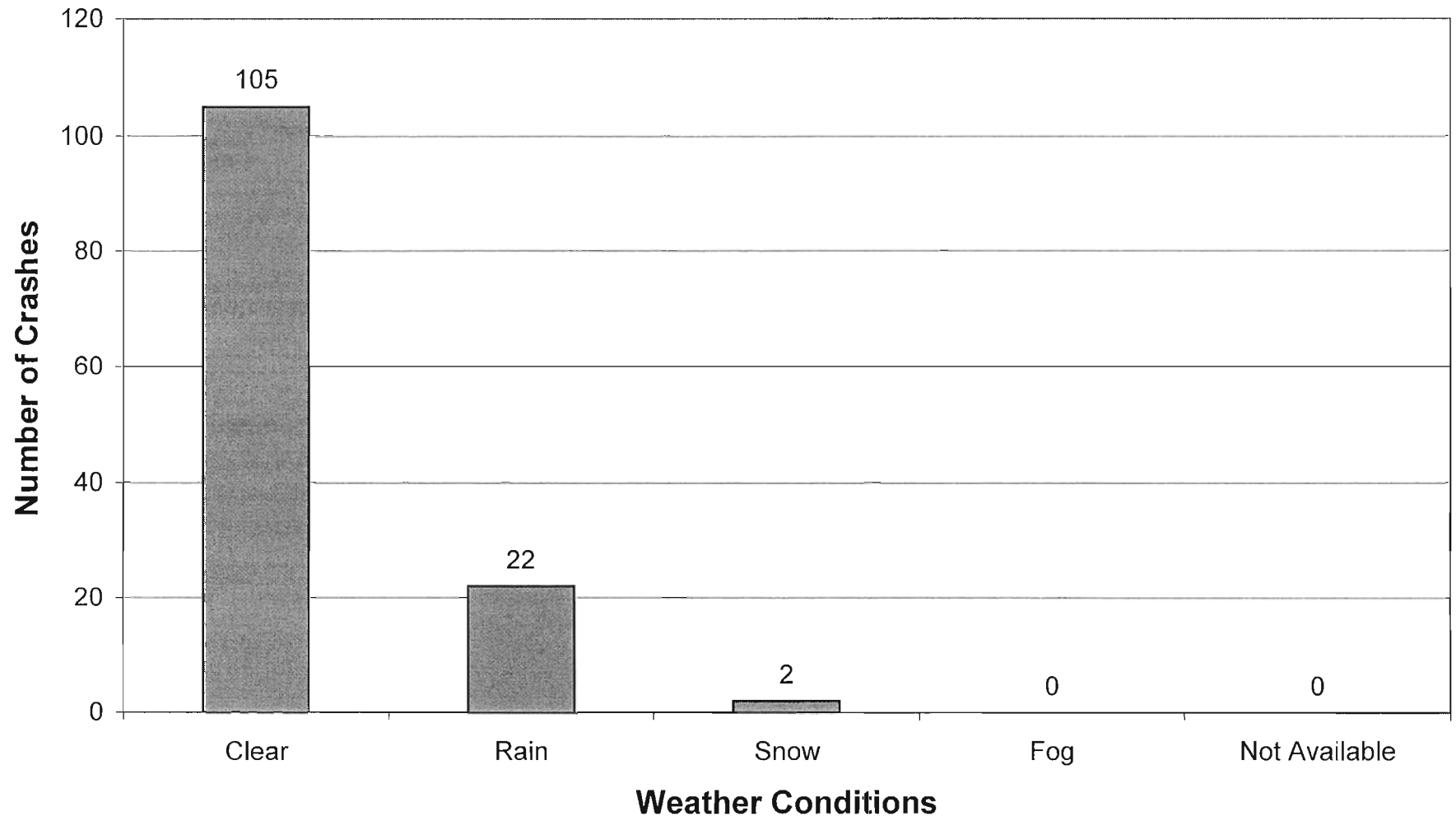
CR 555
Crash Occurrence by Time of Day



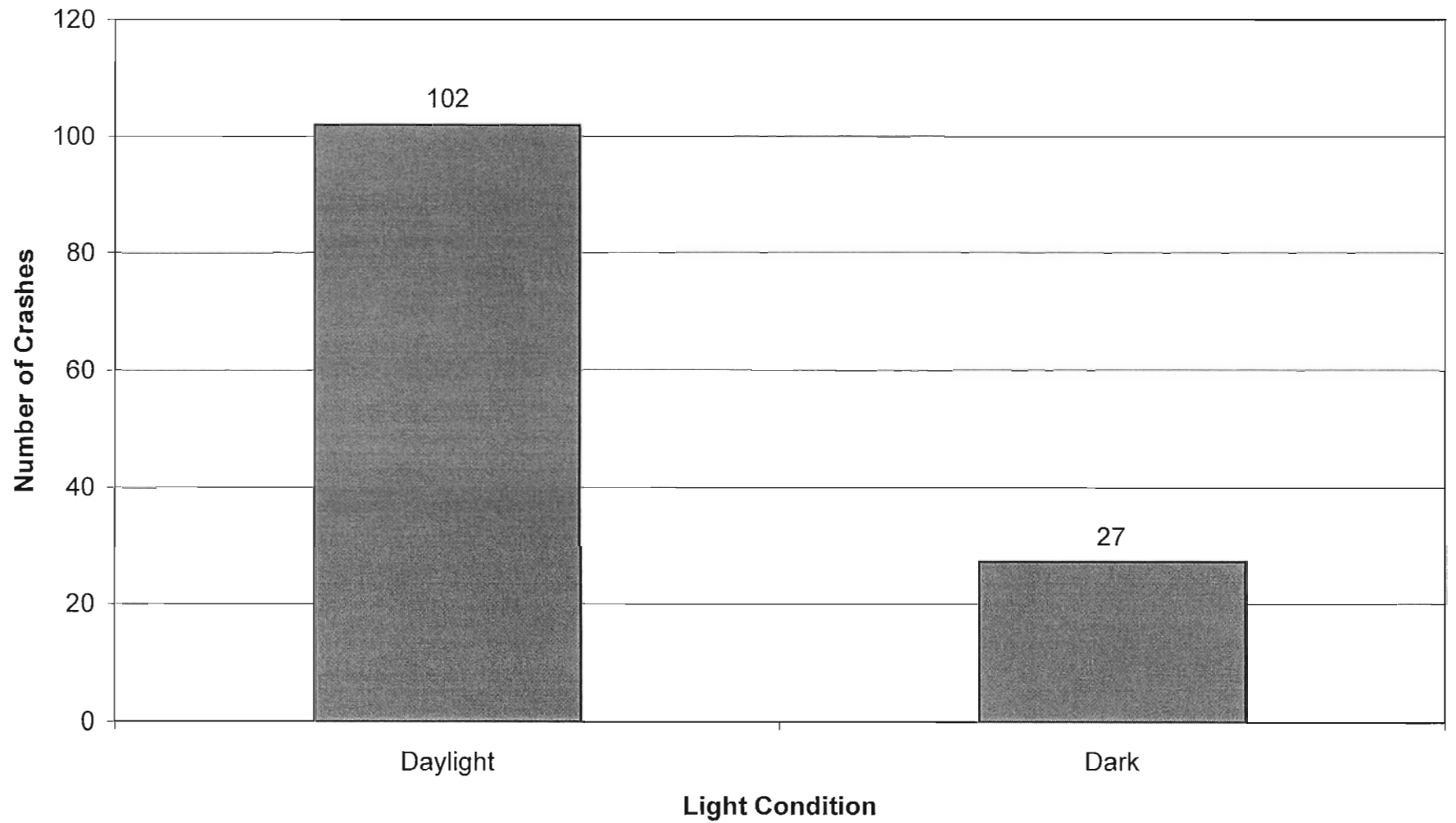
CR 555
Crash Occurrence by Surface Conditions



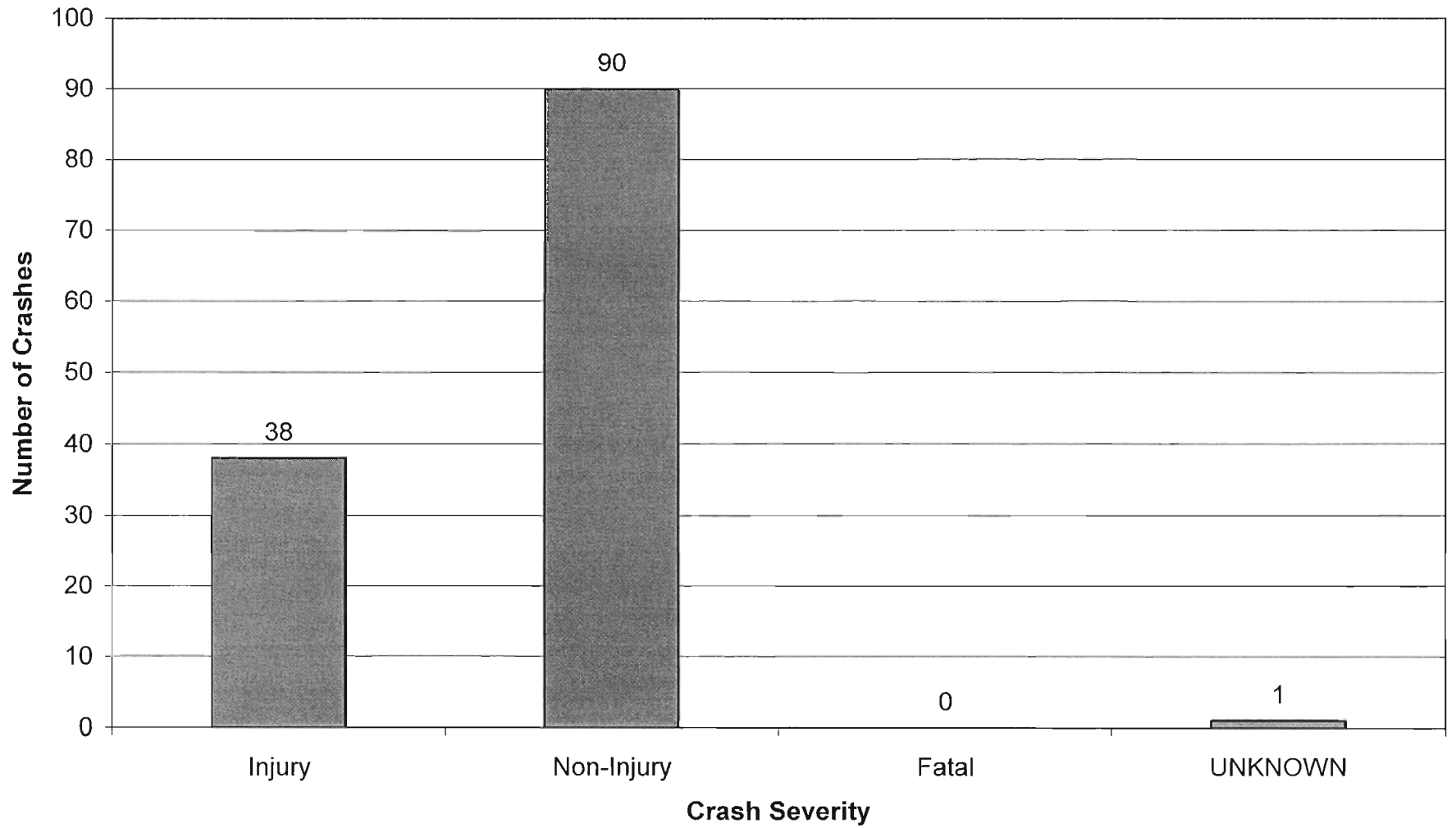
CR 555
Crash Occurrence by Weather Conditions



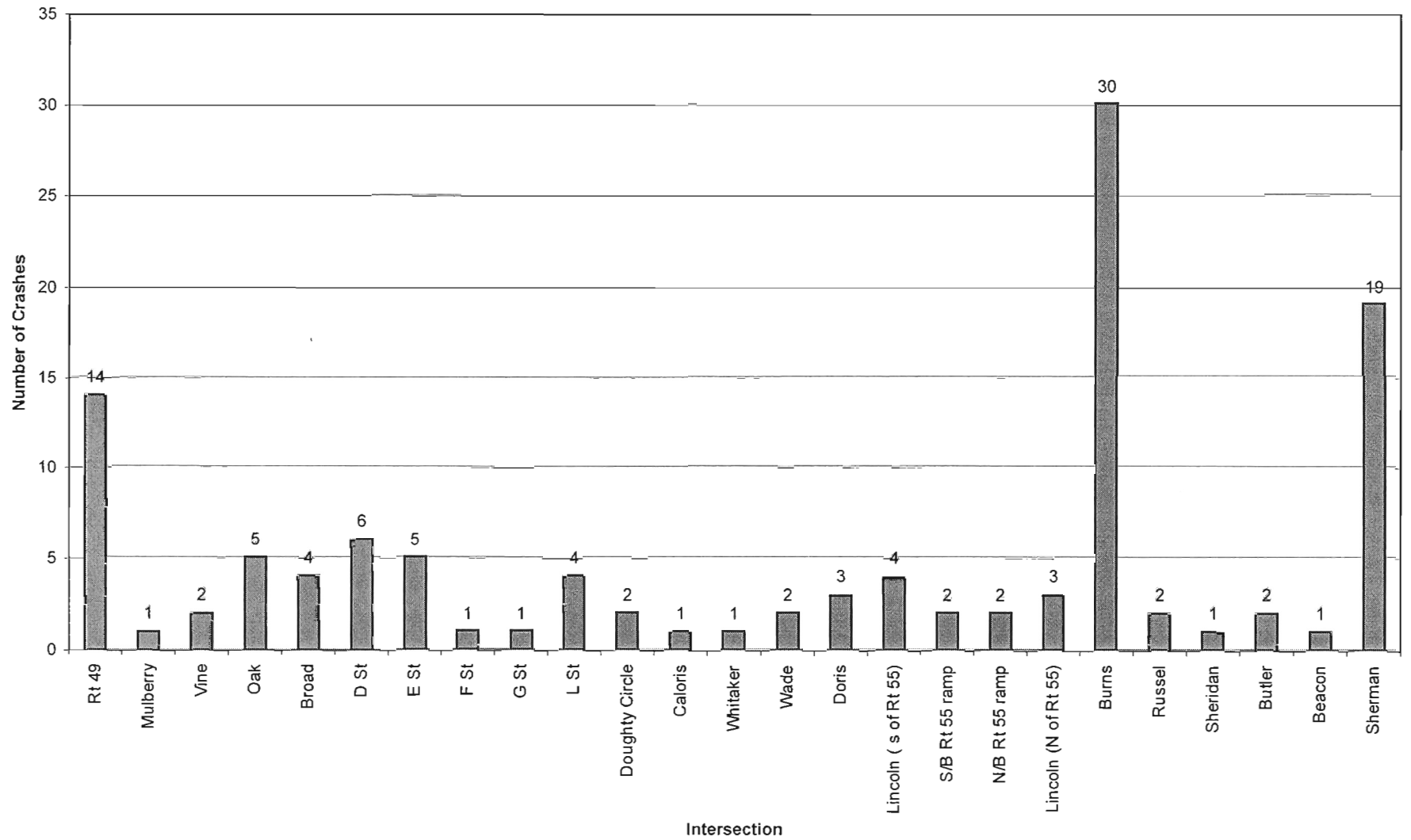
CR 555
Crash Occurrence by Light Condition



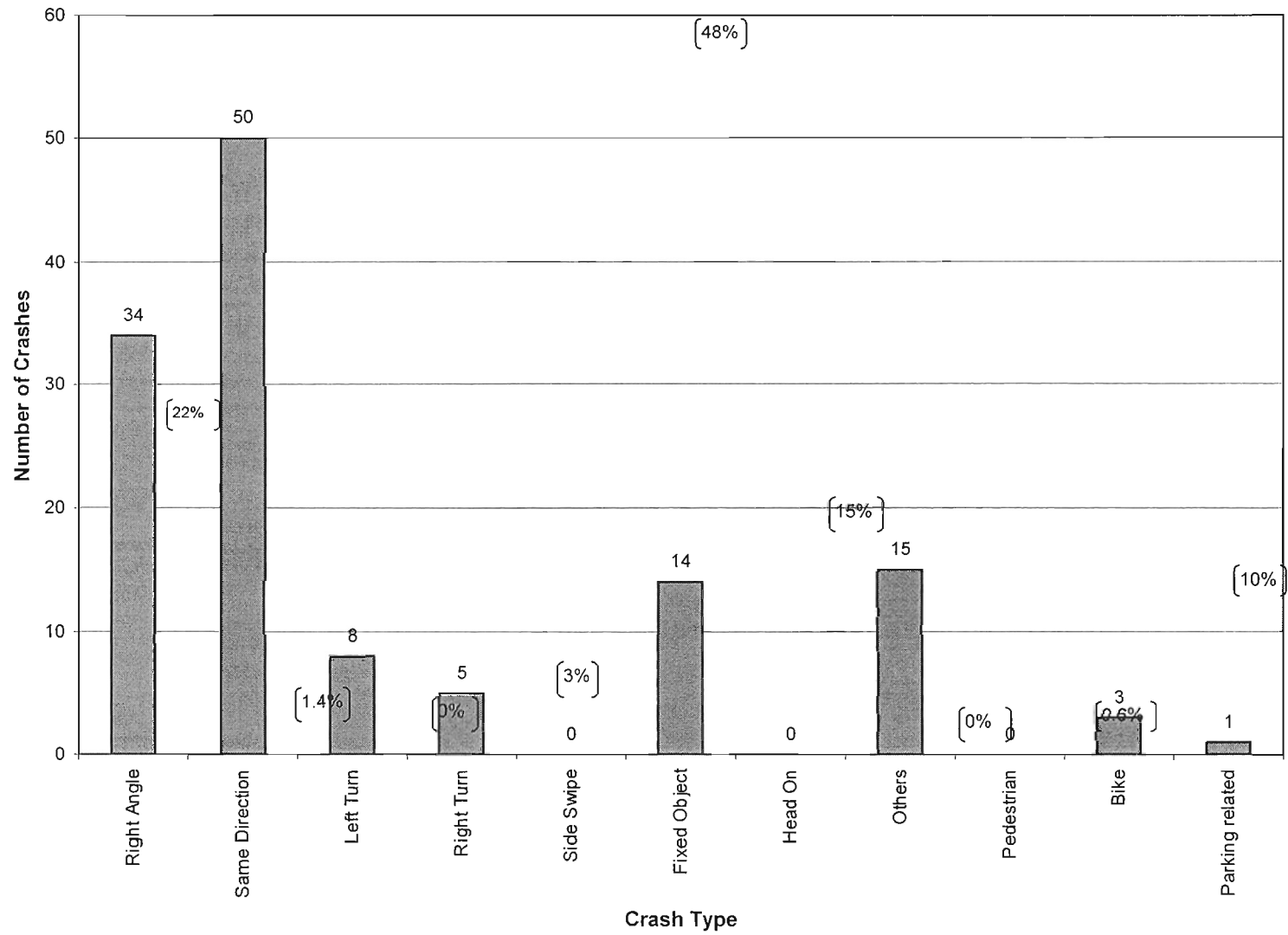
CR 555
Crash Severity



CR 555
Spot Location of Crashes (Proximity to Nearest Intersection)



CR 555
Crash Type



CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF MILLVILLE-VINELAND

CRASH SUMMARY 2002-2003

TOTAL- 129 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>10</u>	<u>10</u>	<u>5</u>	<u>13</u>	<u>12</u>	<u>7</u>	<u>17</u>	<u>10</u>	<u>13</u>	<u>12</u>	<u>10</u>	<u>10</u>

Time of Day				Day of Week	
AM	Number of	PM	Number of		Number of
Midnight - Noon	Accidents	Noon - Midnight	Accidents		Accidents
Midnight – 1:00	1	12:00-1300	6	Monday	18
1:00 – 2:00	1	1300-1400	6	Tuesday	22
2:00 – 3:00	4	1400-1500	15	Wednesday	18
3:00 – 4:00	0	1500-1600	12	Thursday	12
4:00 – 5:00	1	1600-1700	18	Friday	30
5:00 – 6:00	0	1700-1800	8	Saturday	15
6:00 – 7:00	6	1800-1900	8	Sunday	14
7:00 – 8:00	7	1900-2000	2		
8:00 – 9:00	6	2000-2100	2		
9:00 – 10:00	4	2100-2200	1		
10:00 – 11:00	5	2200-2300	4		
11:00 – 12 Noon	9	2300-2400	3		

Crash Caused By

Local Resident 67 County Resident 23 State Resident 24 Out-of-State Resident 7 Unknown 8

DAY 102

NIGHT 27

DRY 97 WET 30 SNOWY 2 ICY 0 OTHERS 1

CLEAR 105 RAIN 22 SNOW 2 FOG 0

INJURY 38 NON-INJURY 90 UNKNOWN 1 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
34	50	8	5	0

Fixed Object	Head On	Other	Pedestrian	Bike
14	0	15	0	3

Parking Related 1

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CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF MILLVILLE-VINELAND

CRASH SUMMARY 2003

TOTAL- 70 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>5</u>	<u>5</u>	<u>2</u>	<u>2</u>	<u>7</u>	<u>6</u>	<u>9</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>5</u>	<u>8</u>

Time of Day				Day of Week	
AM	Number of	PM	Number of		Number of
Midnight - Noon	Accidents	Noon - Midnight	Accidents		Accidents
Midnight – 1:00	0	12:00-1300	2	Monday	10
1:00 – 2:00	0	1300-1400	3	Tuesday	10
2:00 – 3:00	4	1400-1500	12	Wednesday	7
3:00 – 4:00	0	1500-1600	7	Thursday	9
4:00 – 5:00	0	1600-1700	11	Friday	17
5:00 – 6:00	0	1700-1800	2	Saturday	9
6:00 – 7:00	2	1800-1900	3	Sunday	8
7:00 – 8:00	3	1900-2000	1		
8:00 – 9:00	5	2000-2100	1		
9:00 – 10:00	1	2100-2200	1		
10:00 – 11:00	3	2200-2300	3		
11:00 – 12 Noon	4	2300-2400	2		

Crash Caused By

Local Resident 29 County Resident 19 State Resident 15 Out-of-State Resident 4 Unknown 3

DAY 55

NIGHT 15

DRY 52 WET 17 SNOWY 1 ICY 0 OTHERS 0

CLEAR 55 RAIN 14 SNOW 1 FOG 0

INJURY 20 NON-INJURY 49 UNKNOWN 1 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
17	29	2	4	0

Fixed Object	Head On	Other	Pedestrian	Bike
3	0	12	0	3

Parking Related 0

CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF MILLVILLE
CRASH SUMMARY 2003
TOTAL- 25 CRASHES
Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>3</u>	<u>1</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>3</u>	<u>3</u>	<u>4</u>

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

Crash Caused By

Local Resident 12 County Resident 4 State Resident 5 Out-of-State Resident 2 Unknown 2

DAY 19

NIGHT 6

DRY 22 WET 3 SNOWY 0 ICY 0 OTHERS 0

CLEAR 23 RAIN 2 SNOW 0 FOG 0

INJURY 5 NON-INJURY 20 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
<u>8</u>	<u>6</u>	<u>0</u>	<u>0</u>	<u>0</u>

Fixed Object	Head On	Other	Pedestrian	Bike
<u>1</u>	<u>0</u>	<u>7</u>	<u>0</u>	<u>3</u>

Parking Related 0

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CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF VINELAND
CRASH SUMMARY 2003

TOTAL- 33 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>2</u>	<u>3</u>	<u>2</u>	<u>5</u>	<u>1</u>		<u>5</u>	<u>2</u>	<u>4</u>	<u>4</u>	<u>3</u>	<u>2</u>

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

Crash Caused By

Local Resident 17 County Resident 3 State Resident 7 Out-of-State Resident 3 Unknown 3

DAY 28

NIGHT 5

DRY 23 WET 9 SNOWY 1 ICY 0 OTHERS 1

CLEAR 26 RAIN 6 SNOW 1 FOG 0

INJURY 6 NON-INJURY 27 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
5	14	3	1	0

Fixed Object	Head On	Other	Pedestrian	Bike
7	0	3	0	0

Parking Related 0

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CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF MILLVILLE-VINELAND

CRASH SUMMARY 2002

TOTAL-59 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
5	5	3	11	5	1	8	4	6	4	5	2

Time of Day				Day of Week	
AM Midnight - Noon	Number of Accidents	PM Noon - Midnight	Number of Accidents		Number of Accidents
Midnight – 1:00	1	12:00-1300	4	Monday	8
1:00 – 2:00	1	1300-1400	3	Tuesday	12
2:00 – 3:00	0	1400-1500	3	Wednesday	11
3:00 – 4:00	0	1500-1600	5	Thursday	3
4:00 – 5:00	1	1600-1700	7	Friday	13
5:00 – 6:00	0	1700-1800	6	Saturday	6
6:00 – 7:00	4	1800-1900	5	Sunday	6
7:00 – 8:00	4	1900-2000	1		
8:00 – 9:00	1	2000-2100	1		
9:00 – 10:00	3	2100-2200	0		
10:00 – 11:00	2	2200-2300	1		
11:00 – 12 Noon	5	2300-2400	1		

CRASH Caused By

Local Resident 38 County Resident 4 State Resident 9 Out-of-State Resident 3 Unknown 5

DAY 47

NIGHT 12

DRY 45 WET 13 SNOWY 1 ICY 0 OTHERS 1

CLEAR 50 RAIN 8 SNOW 1 FOG 0

INJURY 18 NON-INJURY 41 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
17	21	6	1	0

Fixed Object	Head On	Other	Pedestrian	Bike
11	0	3	0	0

Parking Related 1

CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF MILLVILLE
CRASH SUMMARY 2002
TOTAL-26 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
3	2	1	6	4	1	3	2	2		2	

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

CRASH Caused By

Local Resident 21 County Resident 0 State Resident 2 Out-of-State Resident 0 Unknown 2

DAY 19

NIGHT 7

DRY 22 WET 4 SNOWY 0 ICY 0 OTHERS 0

CLEAR 24 RAIN 2 SNOW 0 FOG 0

INJURY 11 NON-INJURY 12 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
12	6	3	0	0

Fixed Object	Head On	Other	Pedestrian	Bike
4	0	0	0	0

Parking Related 1

CR 555 (THIRD STREET, WHEATON AVE, S. MAIN RD.)

CITY OF VINELAND
CRASH SUMMARY 2002
TOTAL- 33 CRASHES

Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>2</u>	<u>3</u>	<u>2</u>	<u>5</u>	<u>1</u>		<u>5</u>	<u>2</u>	<u>4</u>	<u>4</u>	<u>3</u>	<u>2</u>

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

Crash Caused By

Local Resident 17 County Resident 3 State Resident 7 Out-of-State Resident 3 Unknown 3

DAY 28

NIGHT 5

DRY 23 WET 9 SNOWY 1 ICY 0 OTHERS 1

CLEAR 26 RAIN 6 SNOW 1 FOG 0

INJURY 6 NON-INJURY 27 FATAL 0

Right Angle	Same Direction	Left Turn	Right Turn	Side Swipe
<u>5</u>	<u>14</u>	<u>3</u>	<u>1</u>	<u>0</u>

Fixed Object	Head On	Other	Pedestrian	Bike
<u>7</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>0</u>

Parking Related 0

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SJTPO Safety Audits



MVC-001S.JPG



MVC-002S.JPG



MVC-003S.JPG



MVC-004S.JPG

Main Street - Millville/Vineland

SJTPO Safety Audits



MVC-005S.JPG



MVC-006S.JPG



MVC-007S.JPG



MVC-009S.JPG

Main Street - Millville/Vineland

SJTPO Safety Audits



MVC-010S.JPG



MVC-011S.JPG



MVC-012S.JPG



MVC-013S.JPG

Main Street - Millville/Vineland

SJTPO Safety Audits



MVC-014S.JPG



MVC-015S.JPG



MVC-016S.JPG



MVC-017S.JPG

Main Street - Millville/Vineland

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?		