### Chapter 11
### TRAFFIC CRASH SURVEILLANCE

#### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-1.00 INTRODUCTION</td>
<td>11-3</td>
</tr>
<tr>
<td>11-2.00 ACCIDENT REPORT FORMS</td>
<td>11-3</td>
</tr>
<tr>
<td>11-3.00 ACCIDENT REPORT PROCESSING</td>
<td>11-4</td>
</tr>
<tr>
<td>11-4.00 CRASH DATA REPORTS</td>
<td>11-5</td>
</tr>
<tr>
<td>11-5.00 HIGHWAY SAFETY IMPROVEMENT PROGRAM PROCESS</td>
<td>11-11</td>
</tr>
<tr>
<td>11-6.00 REFERENCES</td>
<td>11-11</td>
</tr>
</tbody>
</table>

**LIST OF FIGURES**
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>Traffic Accident Report (Police)</td>
<td>11-13</td>
</tr>
<tr>
<td>11.1A</td>
<td>Traffic Accident Report (Police)</td>
<td>11-15</td>
</tr>
<tr>
<td>11.1B</td>
<td>Traffic Accident Report (Police)</td>
<td>11-16</td>
</tr>
<tr>
<td>11.2</td>
<td>Minnesota Motor Vehicle Accident Report (Citizen)</td>
<td>11-17</td>
</tr>
<tr>
<td>11.2A</td>
<td>Minnesota Motor Vehicle Accident Report (Citizen)</td>
<td>11-18</td>
</tr>
<tr>
<td>11.3</td>
<td>Typical Interchange Element Sketch</td>
<td>11-19</td>
</tr>
<tr>
<td>11.4</td>
<td>Typical Collision Diagram</td>
<td>11-20</td>
</tr>
</tbody>
</table>
CHAPTER 11 - TRAFFIC CRASH SURVEILLANCE

11-1.00 INTRODUCTION

11-1.01 Purpose

Crash records and their analysis are an essential element in any traffic safety program for several reasons. First, crash studies aid in locating high crash locations on the existing highway system. Second, crash experience provides an evaluation of design features. Third, effective planning is based, in part, on traffic volumes and crash rates. Last, an analysis of crash records may have a direct influence on the budgeting of improvements. The District Offices are responsible for most crash analyses. The purpose of this chapter is to describe the existing data available to the crash analyst, how it may be obtained, how it may be used, and how it may affect the Highway Safety Improvement Program (H.S.I.P.).

11-1.02 Scope

This chapter describes the types of crash reports that are available to the crash analyst, presents guidelines concerning crash rate calculations, and discusses the crash analysis services available from the use of the Transportation Information System (T.I.S.). The use of crash analysis as it applies to the H.S.I.P. will be discussed later in the chapter.

11-1.03 Transportation Information System

The T.I.S. is a computer system that is used to relate several types of transportation data. The Accident Analysis Subsystem allows roadway files and crash files to be tied together. The Accident Subsystem details information on crash type, time, date, injuries, and vehicles involved. The Intersection Subsystem includes data on traffic control devices and intersection types. The Section Subsystem is used for analyzing crashes along portions of the roadways.

11-1.04 Chapter Organization

In this chapter the crash analysis process will be described. Crash reporting forms and processing procedures are described; crash data reports are discussed; and crash analysis procedures using T.I.S. are outlined; and the H.S.I.P. procedures are discussed.

11-2.00 CRASH REPORT FORMS

11-2.01 Responsibilities

Subdivision 7 of Minnesota Statutes (M.S.) Section 169.09 requires the driver of a vehicle involved in an crash (resulting in injury, death, or property damage in excess of $1000) to file a written report of the crash (Citizen Report) with the Department of Public Safety (DPS) within 10 days of the crash occurrence. Subdivision 8 requires the law enforcement officer investigating an crash resulting in injury, death, or total property damage in excess of $1000 to submit a report (Police Report) to the DPS. This report is also due within 10 days of the crash occurrence.

11-2.02 Crash Report Forms

Figures 11.1, 11.1A and 11.1B are copies of the Police Traffic Accident Report form and its overlay sheets. This form is used by all law enforcement agencies when reporting a crash to DPS. These forms as well as the Citizen Accident Report form, shown in Figures 11.2 and 11.2A, are used for entering data.
11-3.00 CRASH REPORT PROCESSING

11-3.01 Department of Public Safety (DPS)

1. Receipt of Accident/Crash Reports

Crash reports received by the DPS are channeled through the Drivers Compliance Section of the Drivers & Vehicles Services Division. Many law enforcement agencies also retain a copy of the police report form. The stubs of the citizen reports containing insurance information are sent to the insurance companies for verification.

2. Receiving Line

All reports (Citizen and Police) received by the DPS are passed through the receiving line. It is at this stage where they are combined into files and numbered. Crashes are numbered using an eight-digit format based on the Julian date. T.I.S. adds a decade number creating a nine-digit Crash number). These are the crash numbers by which each crash is filed and stored by the DPS. All major participants of a crash that are not Minnesota licensed drivers (pedestrians, bicyclists, owners of damaged property, out-of-state drivers, etc.) are cataloged on an application of an Alpha mini-computer housed at the Bureau of Criminal Apprehension.

3. Code-Locating Units

Only qualified traffic crashes (death, injury, or $1000 total damage occurring on trafficways by motorized vehicles) are entered on the Accident Records database. Individual crashes are coded and geographically located in this process. Locations of crashes are pinpointed using the reference point system. Crashes occurring at or near an interchange are additionally coded using interchange element numbers. A typical interchange element sketch is shown in Figure 11.3. Coders enter drivers license numbers and other pertinent crash information, using the police report as their primary data source. All data is entered on the Accident Records database (an Alpha 6410 system) located at the Bureau of Criminal Apprehension. Every night, all records entered for the day are passed on to the Driver’s License, Motor Vehicle, and T.I.S. databases on the Intertech mainframe to verify driver licenses, motor vehicle plates and reference point coordinates for correctness. The driver records in the Driver License database are updated with the eight-digit crash reference number, crash date, crash severity codes, and alcohol use codes. After the data is verified, appropriate information is brought back and placed on the Accident Records database. An error edit of incorrect data is run each morning. Department of Transportation personnel ensure that all crashes are included in the T.I.S. database by performing updates as needed.

4. Insurance Inspection

Insurance inspection is the means by which the DPS verifies a driver's insurance coverage. Data on owners who have not submitted a report with insurance information are entered on a tickler record of the Driver License database. Computer generated letters, that ask for a report and insurance information, are mailed to owners of motor vehicles. The owner has fifteen working days to respond. If no response is received, the computer then generates a notice of proposed motor vehicle license plate revocation. After ten working days, if still no response, the computer generates the revocation notice. The tickler record is deleted upon proof of insurance coverage given by the auto owner.

5. Electronic Imaging of Reports

All crash files, once processed, are sent to the Operations Support Unit of Driver & Vehicle Services (DVS) to be scanned and electronically imaged. Access to the imaged crash files is made available to government agencies for accident analysis.
11-3.02 Department of Transportation

The Department of Transportation (Mn/DOT) keeps a history of motor vehicle crash reports from 1984 to the present in the Office of Traffic, Safety, and Technology (OTST). In 1998, DPS switched crash report storage from microfilm to scanned computer files. Copies of crash reports are available to the Districts or local road authorities upon request. Caution must be exercised to maintain the confidential status of individual crash reports. Subdivision 13 of M.S. 169.09 should be consulted concerning this requirement.

11-4.00 CRASH DATA REPORTS

There are a number of general crash summation reports produced for Department use. The T.I.S. database offers a variety of these to traffic engineering personnel. The crash files used by the T.I.S. allow access to the system through a series of files. The user can gain access by date, location, or by individual crash number. Information requested and received may consist of crash details, vehicle characteristics, injury summaries or a combination of these. While it is not possible to explain all of the crash reports available, a brief summary of these crash reports follows.

For more information please refer to the T.I.S. User's Manual.

11-4.01 Transportation Information System Reports

Crash listings are formatted in columns and rows of data. Code lists summarizing information on the listings can be provided in the printout. The lists contain a start-date and end-date specifying the time period under study. A list of elements printed for each crash on the listing is available in the T.I.S. User’s Manual.

1. List-Accident-By-Reference-Point

   Prints a list of crashes for the roadway and time period specified. The crashes are subjected to selection criteria if only crashes of a like nature are desired.

2. Find-Accident-Clusters

   Locates a "cluster" of crashes along a roadway. A cluster is a grouping of crashes that occurred within a given distance of each other. The number of crashes, the time period, and the length of roadway are user-defined parameters.

3. Accident-Matrix-Summary

   Produces general purpose summaries of crashes. Summaries can be broken down by one, two or three data elements. The summary provides system, vehicle type, or driver type studies.

4. Compute-Accident-Rates

   This command reports crash statistics for user-specified sections of roadway and user-specified time. It combines crash data and traffic volume to provide information on crash rates.

5. Intersection-Accident-Analysis Capabilities

   The Intersection/Interchange (I/I) files contain records for various intersections and interchanges for which crash analysis information is available. The I/I file is a highly flexible tool in T.I.S. A great deal of flexibility is provided in the software for performing many different types of analysis. As a result, a large number of user-specified parameters are available in the CREATE file and before the PRINT file function.

   Three types of reports can be obtained from the I/I crash analysis software: showing data for a single intersection, for a group of intersections, or for several groups of intersections.
6. Section-Accident-Analysis Capabilities

The section file contains information required to define sections of roadway for crash analysis reports. It is maintained by individual construction districts for analysis purposes, and is currently available for Trunk Highways only. Its data elements include codes describing general geometric design and environment, speed limit, route system, route number and reference points, construction district and categorization codes as well as a verbal description.

7. List-Accidents-By-Accident-Number

It lists crash records specified by crash number. It allows a user to print every data element in individual crash records.

8. Bridge-Accident-Analysis Capabilities

This aids user in analyzing crashes that occurred at various types of bridges. A great deal of flexibility is provided for performing many different types of analyses.

11-4.02 Data Requests

Requests for crash information are received frequently by traffic personnel. Data requested may involve specific areas of study, from annual reports prepared by the traffic office for distribution, to site-specific information on crash rates and numbers. Requests are received from individuals as well as various types of businesses that require crash data.

Any request, regardless of the source, for information concerning a specific location on the trunk highway system should be directed to the District Traffic Engineer in the appropriate District. General requests for statewide or system wide data should be referred to OTST.

Any request, regardless of source, seeking information NOT relating to the trunk highway system, should be directed to the local road authority for processing. This guarantees the local government agency will have full knowledge of all information being provided to the requester. If requested by the local agency, the district or OTST may assist them in completing the request.

When information is being requested as the result of a crash, personal injury, or property damage incident, the procedure outlined in Section 12-6.02 shall be followed.

Crash information requests can be reported in tabular form or illustrated with Geographical Information Systems (G.I.S.) Maps.

11-4.03 Other Reports

1. Minnesota Motor Vehicle Crash Facts

This report is published annually by the Office of Traffic Safety within the DPS. It is a detailed examination of motor vehicle crashes occurring on Minnesota roadways based on crash reports submitted by drivers and investigating police officers to the DPS. The report contains a discussion of apparent crash trends, and graphical and tabular displays of crash data. Its purpose is to provide summary information about crashes occurring in Minnesota.

2. Freeway Volume Accident Study

This report is prepared annually by DOT personnel located at the Regional Traffic Management Center (RTMC). It is a summary of data on the operating characteristics of freeways within the Twin Cities Metropolitan Area. Comparisons are made each year to determine crash rate trends for specific freeway sections. These areas are also ranked in order of the highest crash rates to determine where problem areas exist. It is useful for the monitoring of existing systems, establishing traffic management priorities, and identifying problem sections in the Twin Cities area.
11-4.04 General Procedures and Services

The Traffic Safety section of OTST serves as a direct contact with DPS regarding all available crash record data. Through this section, information is available upon request to the Districts and other agencies.

1. General Procedures

Considerable effort is maintained at all times to provide the traveling public a safe roadway system. Efforts to reduce crashes generally involve several steps: location selection, study of possible improvements to that location, estimate of the benefit/cost of the improvement, selection and programming of locations to be improved, and finally, a determination of the improvement upon completion of the project. District personnel perform the foot work, in addition to making funding decisions and designation.

The first step, location selection, is determined by crash experience. The number of crashes, severity of crashes, crash rate, crash cost, crash details, or a combination or these can be used to weight crash experience. The cost of the improvement project is then compared to the benefit to be derived from the improvement. A benefit/cost ratio greater than one indicates that the proposed improvement does not cost more than the cost of the crashes that may be eliminated by the improvement.

2. Crash Rates and Crash Severities

The crash rate can be determined using the T.I.S. database by roadway sections, at specific locations, or by using the "clusters" command to determine areas with high crash counts. COMPUTE-ACCIDENT-RATES reports crash statistics for sections of roadway within a specified time period. Both the roadway section and time period are user-specified. The program retrieves traffic volume and crash data, combining them to provide crash rate information. Crash rates, severity rates and fatality rates are also provided. The user must specify the sections to be analyzed, using the ROUTES subcommand.

The crash rate (CR):

\[
CR_{\text{section}} = \frac{1,000,000 \times \text{CRASH}}{\text{ADT} \times \text{Length} \times \text{Days}}
\]

\[
CR_{\text{intersection}} = \frac{1,000,000 \times \text{CRASH}}{\text{ADT} \times \text{Days}}
\]

\[
\text{CRASH} = \text{Number of crashes for the section}
\]

\[
\text{Days} = \text{Number of days for the study}
\]

\[
\text{ADT} = \text{Average Daily Traffic}
\]

\[
\text{Length} = \text{Length of Section}
\]

The severity rate (SR) applies a weight value to the severity of the crash:

\[
SR_{\text{section}} = \frac{1,000,000 \times [5(K) + 4(A) + 3(B) + 2(C) + 1(PD)]}{\text{ADT} \times \text{Length} \times \text{Days}}
\]

\[
K = \text{Number of fatal crashes}
\]

\[
A = \text{Number of incapacitating injury crashes}
\]

\[
B = \text{Number of non-incapacitating injury crashes}
\]

\[
C = \text{Number of possible injury crashes}
\]

\[
P = \text{Number of property damage only crashes}
\]

\[
VM = \text{Vehicle Miles}
\]
The inclusion of crash and severity rate calculations in T.I.S. provides the user with numerous ways to apply these rates: significance limits, ordering of sections within groups, and best/worst section searches, to name just a few. More applications can be found in the T.I.S. User’s Manual. There are also several types of manual calculations performed as described below.

3. Analytical Tools

There are several tools available to the crash analyst which aid in the evaluation of crash locations and the determination of appropriate improvements. These tools, described below, include: a) intersection collision diagrams, b) individual crash reports, c) crash reduction estimates, d) crash costs, e) before-after studies, f) crash differentials, and g) family of measures.

a. Intersection Collision Diagrams

One of the most basic tools in analyzing intersection crashes is the intersection collision diagram. Figure 11.4 illustrates a typical collision diagram form. Crash data from summation reports and/or individual crash reports can be utilized in preparing a collision diagram. Preparation of a collision diagram will assist in identifying the crash "pattern" in a graphic sense, thus providing an aid to locating the most common crashes and determining appropriate corrective measures. The same results can be obtained for interchanges by preparing interchange collision diagrams. The study of collision diagrams consists of looking for crashes with common circumstances. This is often aided by visiting the crash location to view its physical characteristics or by analyzing a condition diagram of the site. A typical condition diagram is drawn to scale and illustrates all physical characteristics of the location under study.

b. Individual Traffic Accident Reports

It is often valuable to analyze individual crash reports to obtain the best available "picture" of a crash or series of crashes. As previously noted, copies of individual traffic crash reports are available from OTST. All information identifying persons and vehicles involved in crashes is obliterated prior to distribution as explained in Section 11-3.02.

c. Estimating Crash Reduction

After analyzing the crash experience, the crash reduction from a proposed improvement can be estimated. These estimated reductions can be translated into a benefit-cost relationship for establishing priorities for safety improvement projects.

d. Crash Costs

**Comprehensive costs**, as defined by the National Safety Council (NCS), include cost factors and a measure of the value of lost quality of life that society is willing to pay to prevent deaths and injuries associated with motor vehicle crashes. For calculation simplicity, the DOT converted the comprehensive costs as outlined in the Federal Highway Administration (FHWA) Technical Advisory T 7570.2 from cost per injury into a cost per crash. For documentation of the procedure, contact the Traffic Safety Unit at 651-634-5100.

The following comprehensive costs per crash are only to be used when computing a benefit/cost analysis:

$ 560,000 per Fatal Crash (= 2 x Severity A Crash)
$ 280,000 per Severity A Crash
$ 61,000 per Severity B Crash
$ 30,000 per Severity C Crash
$ 4,400 per Property Damage Only Crash
**Economic cost** is a measure of the loss of productivity and expenses incurred because of the crash. If a district wants to approximate the economic impacts of motor vehicle crashes that occurred within its jurisdiction, it is suggested that NSC's economic costs (2004) be used. The breakdown is as follows:

$1,120,000 per Fatality  
$ 55,500 per Severity A Injury  
$ 18,200 per Severity B Injury  
$ 10,300 per Severity C Injury  
$ 8,200 per Property Damage Only Crash

It is important to note the units used in calculations. The comprehensive costs are per crash, whereas the economic costs are per injury except for property damage only.

e. Before-After Studies

While the previous three subsections were concerned with crash analysis in order to determine remedial measures, before-after studies are utilized to determine the actual effect of safety improvements that have been implemented. A comparison is not normally made until at least one year of "after" crash data has been accumulated. Three years of “after” crash data is preferred. Results are judged by comparing the "before" and "after" crash data.

f. Statistical Significance of Crash Differentials

There are several statistical procedures for determining the significance of crash differentials. If the analysis of one project does not contain a sufficient percent change to judge the improvement, the analysis of a number of similar projects may provide more reliable data.

The percent crash rate reduction must first be calculated. The following formula may be used:

\[
\text{Percent Crash Rate Reduction} = \frac{(\text{CR}_B - \text{CR}_A)(100)}{\text{CR}_B}
\]

where

- \( \text{CR}_B \) = the "before" crash rate  
- \( \text{CR}_A \) = the "after" crash rate

Crash rate reduction by type can also be calculated using the following formula:

“Before” Crash Rate for a particular type crash equals \( \frac{1}{100} \) (percent crash type)(CR\(_B\))

"After" Crash Rate for a particular type crash equals \( \frac{1}{100} \) (percent crash type)(CR\(_A\))

The percent reduction is then calculated as shown previously.

g. Family of Measures

In October of 1998, OTST met with District Traffic Engineers to discuss DOT safety measures. A preferred organization of crash data was requested to assist the districts/division in their decision making.
Crash Rates by Trunk Highway Section as follows:

1) 2-Lane by Rural and Urban categories by ADT (Average Daily Traffic) in 4 categories:
   - Less than 1,500 ADT
   - 1,500 - 5,000 ADT
   - 5,000 - 8,000 ADT
   - Greater than 8,000 ADT
   (A total of 8 numbers for this measure)

2) Freeways (includes Interstates and Trunk Highways) by Rural and Urban categories in 2 categories:
   - 4 Lane
   - 6 Lane
   (A total of 4 numbers for this measure)

3) 4 Lane Expressways by Rural and Urban categories
   (A total of 2 numbers for this measure)
   Rural will be defined as roadways with speed limits of 55 mph or greater.
   Urban as roadways with speed limits of less than 55 mph.

Crash Rates by Roadway Intersection as follows:

1) Signalized Trunk Highway Intersections by High or Low Speed Limit (where High Speed is when any leg has an approach speed limit of 45 mph or greater; and Low Speed is when no legs have an approach speed limit of 45 mph or greater) in 2 categories:
   - Low Volume  (ADT < 15,000)
   - High Volume  (ADT > 15,000)

2) Non-Signalized Trunk Highway Intersections in 2 categories:
   - All-Way Stop
   - Thru/Stop

ADT = Total intersection Average Annual Daily Traffic (entering vehicles)
It was agreed to continue to use a 3-year roll-up of all data for these measures.
11-5.00 HIGHWAY SAFETY IMPROVEMENT PROGRAM

The purpose of the Highway Safety Improvement Program (H.S.I.P.) is to eliminate hazardous conditions and/or to increase intersection capacity. The projects consist of mainly intersection improvements (channelization, signals), widening turn lanes, guardrail, improving curves, and skid resistant surface treatments. This category has two sub-categories determined by funding eligibility.

11-5.01 Hazard Elimination Safety

Based on requirements of the Transportation Efficiency Act for the 21st Century (TEA 21) of 1991, Federal Funds are available to all local agencies within the state of Minnesota. To participate in the Hazard Elimination Safety (HES) program, all interested local agencies within the Area Transportation Partnership (ATP) regions must complete the necessary studies, computations and forms according to the established eligibility criteria. The ATPs would solicit these types of projects and prioritize them. These projects would then be included in the State Transportation Investment Program (STIP). For a copy of the forms and instructions, contact your District/Division Traffic Engineer or visit the website http://www.dot.state.mn.us/trafficeng/safety/hes/.

11-5.02 Safety Capacity

Safety Capacity (SC) projects are typically state funded. The project's potential to reduce crashes is reviewed but does not have a specific requirement for the Benefit/Cost Ratio.

11-6.00 REFERENCES


ABBREVIATIONS

AADT -- Annual average daily traffic
ADT -- Average daily traffic
Co. Rd. -- County Road
CS -- Control station
CSAH -- County State Aid Highway
DOT -- Department of Transportation
DPS -- Department of Public Safety
I/I -- Intersection/Interchange
K -- Fatality
MSAS -- Municipal State Aid Street
N -- Property damage
PI -- Personal injury
RP -- Reference point
TH -- Trunk highway
TIS -- Transportation information system
twp -- Township
This page is intentionally left blank
FIGURE 11.1A

Text Ref.: 11-2.02

July 1, 1992

TRAFFIC ACCIDENT REPORT (POLICE) (OVERLAY - FRONT)

EXAMPLE OF TRAFFICWAY

FOR REFERENCE WHEN CODING LOCATION

TRAFFICWAY WITH FRONTAGE ROAD

Text Ref.: 11-2.02

August 1, 2007

TRAFFIC ENGINEERING MANUAL
### FIGURE 11.1B

**Traffic Accident Report (Police) (Overlay - Back)**

#### ACT TYPE - ACCIDENT TYPE BY 1ST HARMFUL EVENT

<table>
<thead>
<tr>
<th>COLLISION WITH AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ACCIDENT SITE: IN FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: IN FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: IN FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: IN FREEWAY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLLISION WITH FIXED OBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. COLLISION SITE: IN FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: IN FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: IN FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: IN FREEWAY</td>
</tr>
</tbody>
</table>

#### TYPE OF WE - WORK ZONE

<table>
<thead>
<tr>
<th>LOCATION - LOCATION OF FIRST HARMFUL EVENT (SEE EXAMPLES OF TRAFFIC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ACCIDENT SITE: ON FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: ON FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: ON FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: ON FREEWAY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCATION OF CRASH RELATED TO THE WORK ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. COLLISION SITE: ON FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: ON FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: ON FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: ON FREEWAY</td>
</tr>
</tbody>
</table>

#### ROAD SIDE - ROAD SIDE CONDITIONS

<table>
<thead>
<tr>
<th>ROAD SURF - ROAD SURFACE CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. STAY: ON FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: ON FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: ON FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: ON FREEWAY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROAD CURB - ROADWAY CHARACTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TRAFFIC SITE: ON FREEWAY</td>
</tr>
<tr>
<td>2. STREETS TYPES: ON FREEWAY</td>
</tr>
<tr>
<td>3. ROAD CONDITION: ON FREEWAY</td>
</tr>
<tr>
<td>4. TRAFFIC: ON FREEWAY</td>
</tr>
</tbody>
</table>

#### TRAFFIC ACCIDENT REPORT (POLICE) (OVERLAY - BACK)

#### Notes:

- IF ACCIDENT INVOLVED A COMMERCIAL MOTOR VEHICLE, SCHOOL BUS, OR HEAD START BUS, REMEMBER TO NOTIFY THE STATE PATROL (required under MS 169.783 and 169.451).

---

**Text Ref.: 11-2.02**

---

**Figure 11.1B**
**Traffic Engineering Manual**

**Use of this form is mandatory.**

**MINNESOTA MOTOR VEHICLE CRASH REPORT**

- **Use** BLACK ink and CAPITAL LETTERS
- **Form** available at www.mn交通安全.org

---

**ORDER OF TRAFFIC SIGNALS:**

1. **Traffic Signal**
   - 1- TRAFFIC SIGNAL
   - 2- OVERHEAD FLASHERS
   - 3- STOP SIGN - ALL APPROACHES
   - 4- STOP SIGN - NOT ALL APPROACHES
   - 5- YIELD SIGN
   - 6- OFFICER/FLAG PERSON/SCHOOL
   - 7- STALLED ON ROADWAY
   - 8- ENTERING PARKED POSITION
   - 9- PARKED MOTOR VEHICLE
   - 10- RIGHT TURN ON RED
   - 11- MAKING LEFT TURN
   - 12- RIGHT TURN
   - 13- MAKING U-TURN
   - 14- SLOWING/STOPPING/REVERSING
   - 15- RR SIGN ONLY (NO LIGHTS, NO WORK ZONE)
   - 16- MAKING EASTWEST BEND
   - 17- MAKING NORTH/SOUTH BEND
   - 18- OTHER

---

**UNIFORM CRASH REPORT**

<table>
<thead>
<tr>
<th>DATE OF CRASH</th>
<th>COUNTY</th>
<th>CITY</th>
<th>ZIP CODE</th>
<th>PHONE NUMBER</th>
<th>STREET ADDRESS</th>
<th>NEAR WORK ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**OTHER DASH**

- **DASH**:
  - 1- TRAFFIC SIGNAL
  - 2- OVERHEAD FLASHERS
  - 3- STOP SIGN - ALL APPROACHES
  - 4- STOP SIGN - NOT ALL APPROACHES
  - 5- YIELD SIGN
  - 6- OFFICER/FLAG PERSON/SCHOOL
  - 7- STALLED ON ROADWAY
  - 8- ENTERING PARKED POSITION
  - 9- PARKED MOTOR VEHICLE
  - 10- RIGHT TURN ON RED
  - 11- MAKING LEFT TURN
  - 12- RIGHT TURN
  - 13- MAKING U-TURN
  - 14- SLOWING/STOPPING/REVERSING
  - 15- RR SIGN ONLY (NO LIGHTS, NO WORK ZONE)
  - 16- MAKING EASTWEST BEND
  - 17- MAKING NORTH/SOUTH BEND
  - 18- OTHER

---

**continuation**

- **Continue report on other side.
  - **Was there a police investigator at the scene?**
  - **Yes**
  - **No**

---

**FIGURE 11.2A**

Text Ref.: 11.2.02

July 1, 1992

---

**11-17**
As required by Minnesota Data Privacy Act you are hereby informed that the information requested on this form is collected pursuant to Minnesota Statute 169.09 Subdivision 13 to provide statistical data on traffic crashes. The time and place of the crash, names of parties involved and insurance information may be disclosed to any person involved in the crash or to others persons as specified by law. This written report cannot be used against you as evidence in any civil or criminal matter and your version of how the crash happened is confidential.

### Passenger Name

#### Damage to Property Other Than Vehicles: (MAILBOX, FENCE, SIGNPOST, GUARDRAIL, ETC.)

<table>
<thead>
<tr>
<th>Property Damaged</th>
<th>Estimate Cost of Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SIGN HERE X**

Signature of person submitting report is required

**Mail this report to:**

DVS / CRASH RECORDS
445 MINNESOTA STREET, SUITE 181
ST. PAUL, MN 55101-5181

**Text Ref.: 11-2.02**

**July 1,1992**

**MINNESOTA MOTOR VEHICLE CRASH REPORT (CITIZEN - BACK)**

**FIGURE 11.2B**
USTH 10 JCT WITH CSAH 9
(ROUND LAKE BLVD.)

USTH 10

100's

USE 110

A&B's

CSAH 9 300's

400's

USE 000

RP = 226 + 0.362

RP = 000 + 0.470

CSAH 9

(ROUND LAKE BLVD.)

CSAH 9

(ROUND LAKE BLVD.)

Other Diamond
Revised 6/30/98
02-2-10-226.3

Text Ref.: 11-3.01
Collision Diagram
Minneapolis Department of Transportation

Location: C.S. 0208 TH 65 E McKay Dr./153rd Ave NE m.p. 18.948
Time Period: 1-1-96 - 12-31-98 Date: 4-2-99

Prepared By: M. Kent

No. of Accidents 96 97 98
Fatal: 0 0 0
A Injury: 0 0 0
B Injury: 1 1 2
C Injury: 0 0 0
Injury Total: 1 1 3
Property Damage: 3 1 2
Total Accidents: 4 2 5

KEY

Motor Vehicle Backing Up
Motor Vehicle Out of Control
Motor Vehicle Ahead
Fixed Object
 Fatal Acc.
A Injury Acc.
B Injury Acc.
C Injury Acc.
Property Damage Acc.

Pedestrian
Bicycle/Maped
Motorcycle

Rear End
Property Damage
Right Angle

Light:
L: Daylight (1)
D: Dawn (2)
B: Dusk (3)
O: Dusk, Lighted (4)
D: Dusk, Lights Off (5)

Weather:
C: Clear or Cloudy (1) or (2)
R: Rain (3)
S: Snow or Sleet (4 or 5)
F: Fog, Smoke, Snow (6)
B: Blowing Sand/Dust (7)
X: Other or Unknown (99)

Surface:
D: Dry (1)
W: Wet (2)
S: Snow or Ice (3 or 4)
M: Mud (5)
O: Other or Unknown (99)

Text Ref.: 11-5.02

July 1, 2000

TYPICAL COLLISION DIAGRAM

FIGURE 11.4

11-20