CEDAR RAPIDS
City of Five Seasons®

REPORT TO IOWA DEPARTMENT OF TRANSPORTATION

CITY OF CEDAR RAPIDS AUTOMATED TRAFFIC ENFORCEMENT ON PRIMARY ROADWAY 2013

MAY 2014

Cedar Rapids Police Department
505 First Street SW • Cedar Rapids, Iowa 52404-2103 • (319) 286-5375 • FAX (319) 286-5447

ATE BACKGROUND

BACKGROUND

Cedar Rapids began installing automated traffic enforcement (ATE) in March of 2010. The city utilizes ATE's at locations and intersections that have been identified by the City's Traffic Engineering Department as having a high number of crashes. A combination of crash rates and the number of crashes per intersection was used to identify the locations. The pre-installation analysis was particularly concerned with the number of right angle crashes. Also highlighted was the increasing number of crashes occurring on I-380 within a section known as the "S" curves.

INTERSECTIONS

Numerous agencies, including the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), the Institute of Transportation Engineers (ITE), and Iowa State University's Institute for Transportation (InTrans), have published guidance and best practices for addressing red light running, and reducing the severity of intersection related crashes. The City of Cedar Rapids has used this guidance and incorporated it into existing signalized intersections and new signalized intersections. We believe that adherence to this guidance has contributed to Cedar Rapids' safety record being better than most communities in Iowa. In the latest Statewide Safety Improvement Candidate Location (SICL) list released by the Iowa Department of Transportation, the City has only one intersection in the top 50 (27th), and only 9 out of the top 200 in the state. Only 7 of these are signalized and under the jurisdiction of the City. The City of Cedar Rapids has also been ranked 19th best or lower out of 200 cities nationwide in the America's Best Driver's Report published by Allstate Insurance. Automated enforcement is mentioned by each of these agencies as an effective measure to reduce red lighting running. A recent study by the InTrans/CTRE Center for Transportation Research and Education (Iowa State University), *Evaluating the Effectiveness of Red Light Running Camera Enforcement in Cedar Rapids and Developing Guidelines for Selection and use of Red Light Running Countermeasures*, concluded "the main findings of the research conducted as part of this study, support the idea that the cameras have had a positive safety effect at the intersections".

The City of Cedar Rapids also followed many of the recommendations for automated speed enforcement found in the *Speed Enforcement Camera Systems Operational Guidelines* published by NHTSA.

The following summary is a list of engineering countermeasures included in guidance and best practices from the agencies above that have been applied to signalized intersections in Cedar Rapids:

Improve Signal Visibility

1. **All signals**
   Are designed to follow the standards ("shall" statements) listed in the Manual on Uniform Traffic Control Devices. In nearly all cases, the City will also follow guidance ("should" statements).

2. **Signals Placed Overhead**
   All signals have at least one and typically two signal heads mounted on a mast arm for each approach. An additional far side pole mounted head is also provided for improved visibility.

3. **Signal for Each Approach Lane**
   All through lanes have an overhead signal.

4. **Size of Signal Displays**
   All signal indications are 12-inch LED's.

5. **Line of Sight**
   All of the intersections under automated enforcement have an acceptable line of sight. Programmable lenses are used at two of the locations, due to intersection angle and the proximity of two adjacent signalized intersections. The new programmable lenses are LED and the angle of the light can be adjusted from the ground to provide optimal visibility under these circumstances.

6. **Visors** –
   Standard equipment for all signal and pedestrian indications.

7. **Signal Conspicuity**
   Backplates and LED signal indications are standard equipment.

Increase Likelihood of Stopping

1. Stop bars are present at all signalized intersections.
2. Signal Ahead signs (W3-3) are used if signal visibility is an issue because of the roadway geometry or when a signal is the first one encountered on an arterial roadway.
3. Left Turn Signal signs (R10-10) are used to supplement protected left turn heads to avoid driver confusion when the through movement is green.

Address Intentional Violations

1. **Signal Optimization**
   Approximately 80 percent of all traffic signals in Cedar Rapids are connected to a Central Traffic Management system which monitors the operation of the signals and manages groups of signals that are operated in coordinated timing plans. The City is nearly complete with an upgrade of our communication system from copper to fiber. Work will be completed this summer and all 237 traffic signals will be monitored from a Traffic Management Center. New traffic management software, traffic monitoring cameras, and adaptive traffic control is part of the upgrade and will be used to monitor and improve operations.

2. **Signal Cycle Length**
   Cedar Rapids uses traffic signal optimization software, and provides training to staff engineers to properly employ cycle lengths, phasing, timing and offsets.

3. **Yellow-Change Interval**
   All yellow-change intervals are calculated according to ITE's recommended guidelines.

4. **All-Red Clearance Interval**
   The City also uses an all-red interval per ITE. It does not reduce the likelihood of entering the intersection on Red, but there are studies that show it can positively impact the safety of an intersection.

5. **Dilemma-Zone Protection**
   All new signals are designed with dilemma-zone protection. All existing signals have dilemma zone protection if the approach speeds are greater than 25mph. In the downtown many of the signals are pre-timed. As they are upgraded, we are adding detection to operate in actuated-coordinate mode.

6. **Flashing Mode** –
   Many signals are operated in overnight flash when volumes are low. Crash statistics for these locations are monitored and if 3 or more crashes occur in a year, the signal is no longer operated in overnight flash mode. The City is evaluating the use of overnight flash, as several recent studies have shown the potential for increased crashes during overnight flash. We have not seen this same outcome in Cedar Rapids.

The ATE equipment utilized at intersections by Cedar Rapids provides both red light and speed violation monitoring. Crash rates were the guiding factor for intersection selection. The broadest goal of the program has been the reduction of crashes caused by red light running but part of the red light running problem is the driver who speeds up to "beat the red light" instead of stopping. In order to achieve the reduction we have to change driver behavior. Without the speed enforcement option, there is a real possibility that drivers would learn to accelerate instead of apply the brakes.

The following crash data was taken from the accident reporting program TraCs. Only accident reports completed by an officer are included in this data.

1ST AVE. AND 10th ST. SE

	2008	2009	2012	2013
Total	**4**	**7**	**4**	**5**
Property Damage Only	2	5	4	3
Personal Injury Status				
Incapacitating	1	0	0	0
Non-incapacitating	0	1	0	1
Possible	1	1	0	1
Manner of Crash				
Non-Collision	1	0	0	0
Head-On	0	0	0	0
Rear-End	1	5	2	2
Angle, left turn	0	1	1	0
Broadside	2	1	1	3
Driver Contributing Factors				
	2-Ran Light	1-Ran Light	1-Ran Light	2-Ran Light
	2-Too close	1-Left turn	1-Left turn	1- Left Turn
	1-Control	4-Control	1-Control	1-Control
	1-Reckless	1-Reckless	1-On Phone	1-Turn
	1-Pedestrian	1-OWI		2-Other
Weather Conditions				
Clear	4	2	3	2
Partly Cloudy	0	1	0	0
Cloudy	0	3	1	3
Rain	0	1	0	1
Snow	0	1	0	0
Surface Conditions				
Dry	4	4	4	3
Wet	0	2	0	1
Snow	0	1	0	1
Environmental Factors				
None	3	6	4	4
Weather	0	1	0	1
Glare	1	0	0	0
Roadway Condition				
None	4	6	4	5
Road Surface	0	1	0	0

1ST AVE AND L ST WEST

	2008	2009	2012	2013
Total	**6**	**4**	**3**	**8**
Property Damage Only	3	3	3	5
Personal Injury Status				
Non-Incapacitating	2	0	0	0
Possible	1	1	0	3
Manner of Crash				
Rear- End	0	1	1	0
Left Turn	4	0	1	2
Broadside	2	3	0	6
Sideswipe	0	0	1	0
Driver Contributing Factor				
	2-DTS	3-DTS	1-Left Turn	5-DTS
	4-Left Turn	1-Too close	1-Control	2-Left Turn
			2-Others	2-Unk
Weather Conditions				
Clear	1	1	2	3
Partly Cloudy	2	1	0	0
Cloudy	3	2	1	5
Rain	1	0	0	1
Surface Conditions				
Dry	4	3	3	6
Wet	2	0	0	2
Snow	0	1	0	0
Environmental Factors				
None	6	4	2	8
Other	0	0	1	0
Roadway Condition				
None	6	4	3	8

WILLIAMS BOULEVARD AND 16TH AVE SW

	2008	2009	2012	2013
Total	**4**	**10**	**1**	**3**
Property Damage Only	3	5	1	3
Personal Injury Status				
Non-Incapacitating	1	4	0	0
Possible	0	1	0	0
Manner of Crash				
Rear End	2	3	0	0
Left Turn	2	4	1	2
Broadside	0	3	0	1
Driver Contributing Factors				
	1-Left Turn	4-Left Turns	2-Unk	2-Left Turn
	2-Control	2-DTS		1-DTS
	1-Other	2-Control		
		1-Too close		
		1-Other		
		2-Unk		
Weather Conditions				
Clear	3	5	0	3
Partly Cloudy	0	2	0	0
Cloudy	1	2	1	0
Rain	1	0	0	0
Snow	0	1	0	0
Surface Conditions				
Dry	3	8	1	3
Wet	1	1	0	0
Snow	0	1	0	0
Environmental Factors				
None	3	8	1	3
Weather	1	1	0	0
Glare	0	1	0	0
Roadway Condition				
None	4	9	1	3
Road Surface	0	1	0	0

I-380 Crashes

Pre-ATE installation crash data showed an average of 2 deaths a year for several years, along with a high number of injury-related crashes. The data shows that not only has the total number of crashes been reduced per year, but there have been fewer injuries related to crashes, and zero fatal crashes since the installation and use of ATE. Pre-installation data shows that a majority of crashes resulted in some type of injury. The number of personal injury crashes was greater than the total number of property damage crashes. Crashes still occur, however, those that do occur result in fewer injuries; and no crashes have resulted in a death since ATE installation. Post-installation data reveals that property damage crashes now number higher than injury crashes.

I-380 Design

Because of its design, I-380 creates a hazardous environment for law enforcement officers and problematic for speed enforcement. Most of the "S" curve is either elevated with steep embankments, or nothing to the side of the travel portion but a paved shoulder and a wall. There are limited places where an officer can safely set a squad car to monitor traffic. Even when a traffic law violation is observed, the officer may not be able to pursue without creating an additional hazard for the motoring public. Another concern for law enforcement is the limited escape routes available, if the need arises during a traffic stop to take evasive action. When law enforcement is called to respond to an event on I-380, steps have to be taken to ensure the safety of all First Responders. That usually means additional squad cars positioned up-stream in an attempt to slow the traffic down and divert the traffic to a specific lane.

There has been no reconstruction, redesign, or major changes to the roadway or traffic flow, since ATE started.

ROAD SAFETY AUDIT

I-380

ROAD SAFETY AUDIT FOR 1-380

THROUGH CEDAR RAPIDS AND HIAWATHA IN LINN COUNTY, IOWA

FINAL REPORT – MARCH 2009

This report is a product of a common concern between the Cedar Rapids Police Department and the Iowa Department of Transportation District 6 Office; the safety of I-380. The report addresses several issues including the increasing number of crashes, roadway surface conditions (friction), traffic volumes, and speed. The report acknowledges the very problem that ATE's are designed and installed to address the high number of crashes in the "S" curves.

Automated Traffic Enforcement is one of approximately 40 safety issues listed in the I-380 Cedar Rapids Corridor Safety Initiatives. Also listed is the need for surface treatment in low friction areas. A friction coating has been applied to a test section within the "S" curves and seems to be providing additional crash reduction.

Speeding

The Iowa Department of Transportation's Road Safety Audit for I-380 (2009), identified speed as the leading cause of crashes on mainline I-380 (pg. 9). The posted speed limit within the "S" curves is 55 miles per hour. It has been set at 55 mph since the roadway was constructed.

The speed limit is not constant along I-380 within the boundaries of Cedar Rapids. For southbound I-380, the speed limit changes from a rural interstate speed of 70 mph, to 60 mph north of Hiawatha. The speed limit remains 60 mph for approximately four miles. For northbound I-380 the speed limit changes from 70 mph, to 60 mph south of Highway 30 and remains 60 mph for approximately 3 miles. A conclusion can be drawn that some motorists are choosing to ignore the reduction in speeds and enter the "S" curves without slowing.

Historically, the Cedar Rapids Police Department has utilized traditional speed enforcement, along with a variety of other practices, in an effort to maintain safe driving speeds. Those include multi-officer enforcement projects, as well as "zero" tolerance, multi-agency operations. The City even used aircraft for a number of years.

According to the Road Safety Audit, the only speed study done was in a 60 mph zone located near Coldstream Ave NE. The Audit acknowledges that "the area of particular interest for speed compliance is between the "S" curves on either side of the "5 in 1 Bridge", and no speed sampling data is available for that location".

In February 2013, the Cedar Rapids Police Department, using Laser Radar, conducted a speed study on I-380 within the "S" curves at 7th St NE. The speeds of 10,138 vehicles were recorded, with an average speed of 58.33 mph in the 55 mph speed zone.

Crash Data for I-380

This crash data was taken from the accident reporting program (TraCs). Only accident reports completed by an officer are included.

I-380 "S" CURVES CRASH DATA

	2008	2009	2012	2013
TOTAL	**35**	**47**	**26**	**33**
Property Damage Only	14	16	15	22
Personal Injury Status				
Incapacitating	2	3	3	0
Non-Incapacitating	10	10	4	0
Possible	8	16	4	11
Fatal	1	2	0	0
Manner Of Crash				
Non-Collision	17	20	10	10
Head-on	1	5	1	1
Rear-end	3	8	11	10
Angle, oncoming left turn	0	0	0	0
Broadside	3	2	0	3
Sideswipe, same direction	8	11	3	9
Sideswipe, opposite	0	0	0	0
Unknown	3	1	1	0
Driver Contributing Factors				
	24-Control	33-Control	16-Control	16-Control
	3-Too fast	6-Too Fast	5-Too Fast	5-Too Fast
	1-Mechanical	1-Feel Asleep	3-Too Close	6-Too Close
	1-Unknown	1-Medical	1-Medical	1-Mechanical
	3-Swerving	1-Wrongway	1-Reckless	2-Reckless
	4-OWI	2-Swerving	2-Other	2-Asleep
		1-Overcorrecting	2-Swerving	1-Overcorrecting
		5-OWI	1-OWI	5-OWI
Weather Conditions				
Clear	13	14	11	17
Partly cloudy	5	3	0	3
Cloudy	17	27	11	10
Fog	0	3	0	0
Rain	8	14	2	2
Snow	9	6	6	5
Blowing snow, dirt etc.	1	0	0	1

Surface Conditions				
Dry	12	14	14	21
Wet	9	18	3	3
Ice	3	7	2	4
Snow	9	6	6	5
Slush	2	2	1	0
Environmental factors				
None	23	20	17	27
Weather	10	26	8	5
Previous Accident	1	0	1	1
Other	1	1	0	0
Roadway Condition				
None	23	30	19	24
Road Surface	11	17	6	5
Debris	1	0	0	0
Work Zone	0	0	1	3
Obstruction	0	0	0	1

Hearing Process

One of the most common complaints about automated traffic enforcement is the lack of due process. Cedar Rapids takes that concern very seriously and believes that our appeal process addresses that concern. By statute, the Notice of Violation goes to the owner of the vehicle, identical to a parking citation. Like a parking ticket, this is a civil infraction not a criminal charge. The recipient has 30 days to pay the fine, or request an appeal. If, after the original due date no action has been taken, a second notice is mailed. The hearing is presided over by a community member, in good standing, who simply has a desire to serve. They have no affiliation with the police department or the legal profession. If the recipient is not satisfied with the outcome of the hearing, then they may request the infraction be moved to District Court.

Accuracy

Yet another often repeated challenge to automated traffic enforcement is the technology. The system employed by Cedar Rapids has built-in software designed to ensure the highest level of accuracy. First the system preforms a self-test daily to ensure that it is operating properly. Then the radar validates the hardware and software parameters, and system settings every minute. If one of the verifications fails the system shuts down, no radar reading will take place and no photos will be taken. Annually the calibration is checked using a Target Speed Simulator. The TSS is mounted to the outside of the radar/camera box. It then sends signals that mimic different speeds and the radar must return the correct speed reading. If any of those verifications are incorrect the radar is removed and replaced. There are no adjustments that can be made on site. The Cedar Rapids Police Department verified the calibration of the equipment on January 12th, 2014 and again on April 22nd, 2014.

Citation Totals - Intersections

		2011	2012	2013
1st Ave @ 10th St EB	Red Light	215	452	284
	Speed	195	202	206
1st Ave @ 10th St WB	Red Light	78	89	128
	Speed	296	172	457
1st Ave @ L St WB	Red Light	135	414	281
	Speed	464	469	423
1st Ave @ L St EB	Red Light	265	515	366
	Speed	12	109	163
Williams @ 16th Ave NB	Red Light	395	459	596
	Speed	1065	1039	1275
Williams @ 16th Ave SB	Red Light	30	50	41
	Speed	42	62	47

CITATIONS TOTAL I-380

	2011	2012	2013
Diagonal Dr NB	9190	10109	4218
J Ave NB	36775	35327	36069
J Ave SB	44775	38052	44529
1st Av Ramp SB	1226	986	1234

APPENDIX A

CEDAR RAPIDS TRAFFIC ENGINEERING INTERSECTION CRASH DIAGRAMS

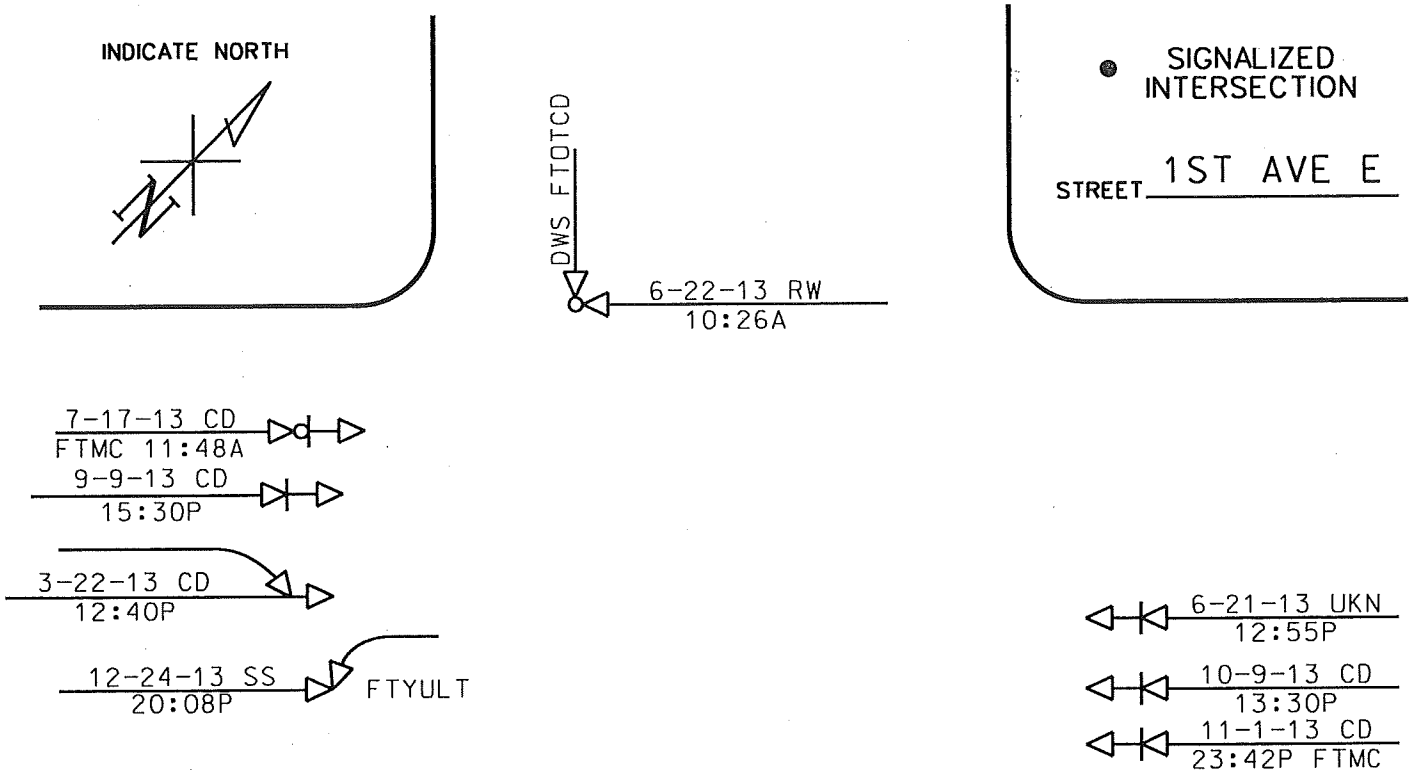
1ST AVENUE AND 10th STREET EAST

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2013



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

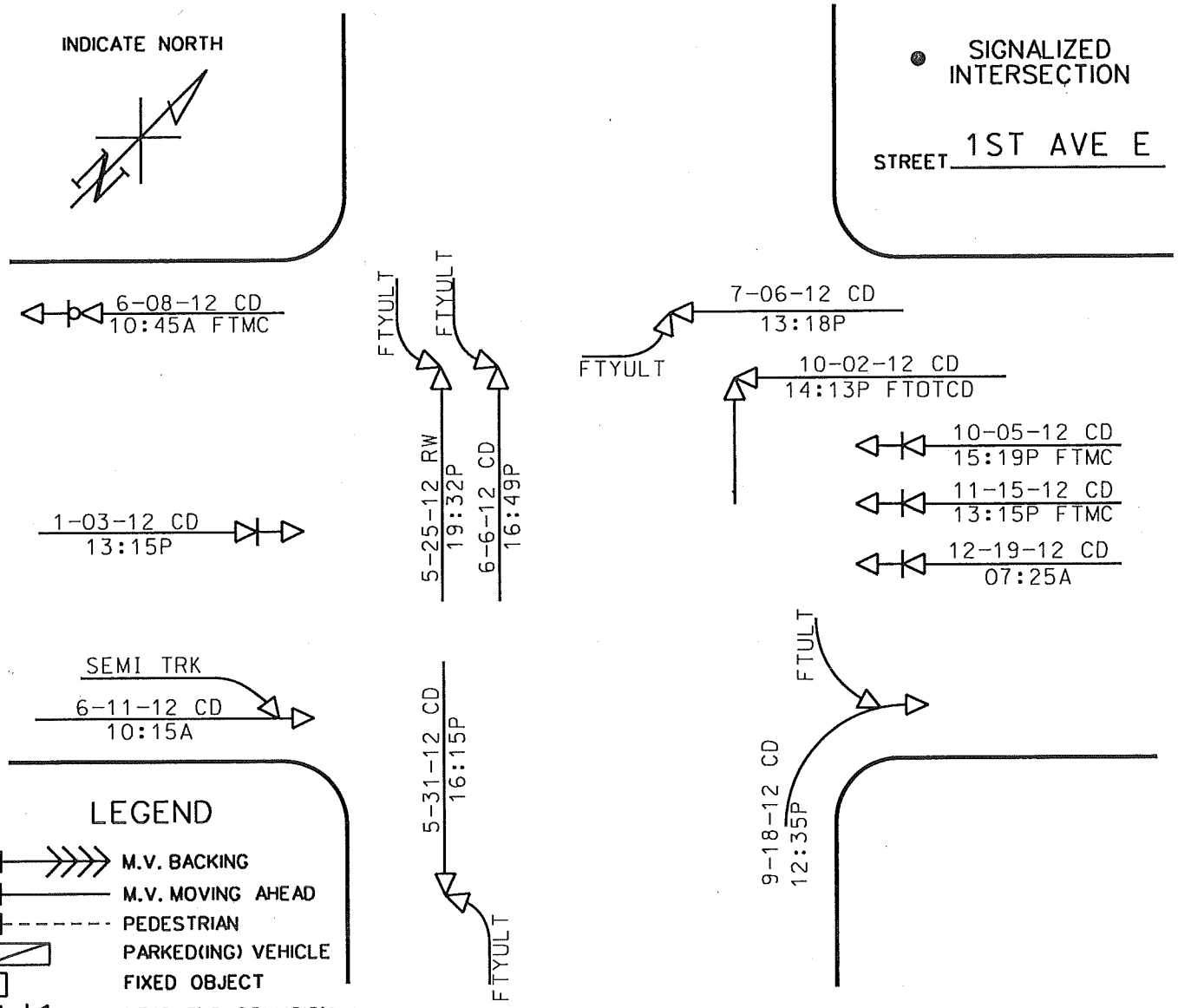
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2012



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

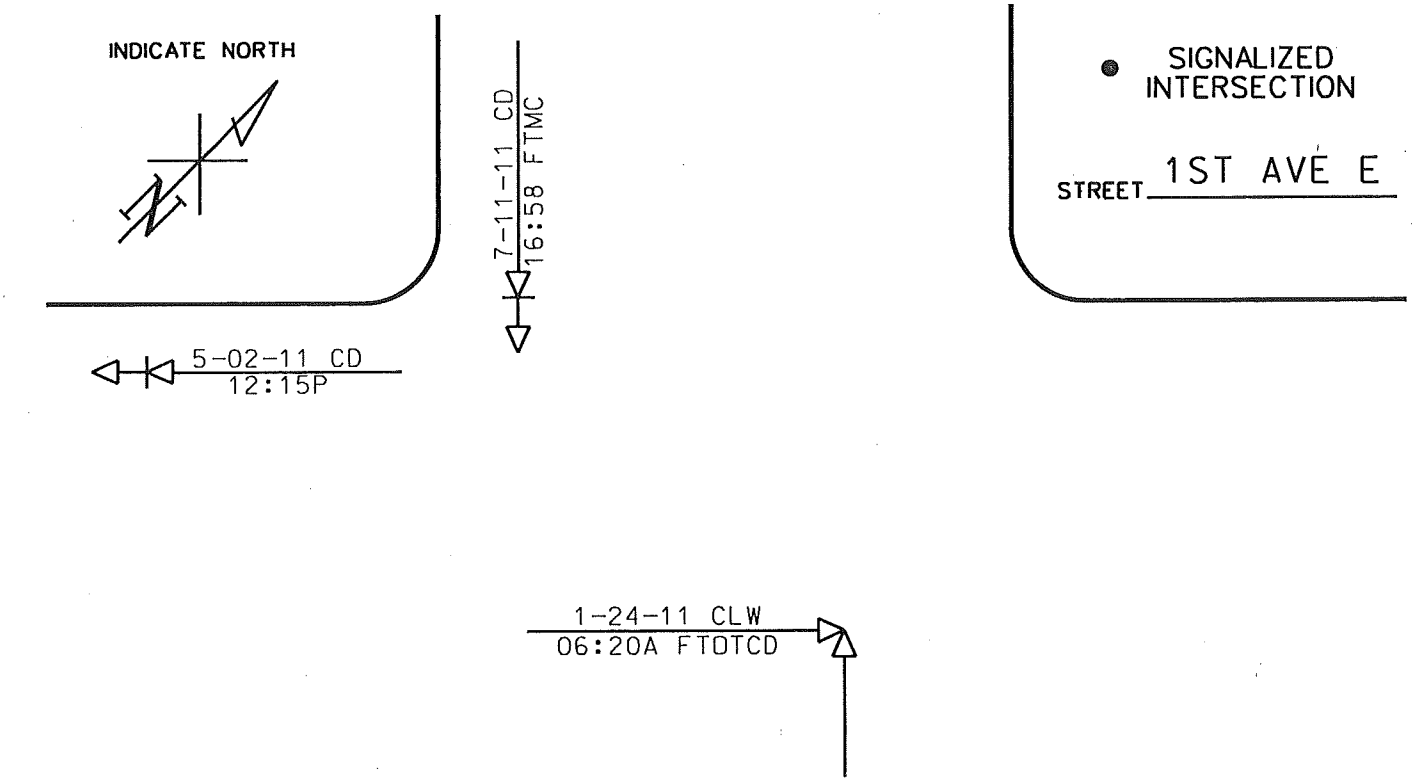
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2011



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

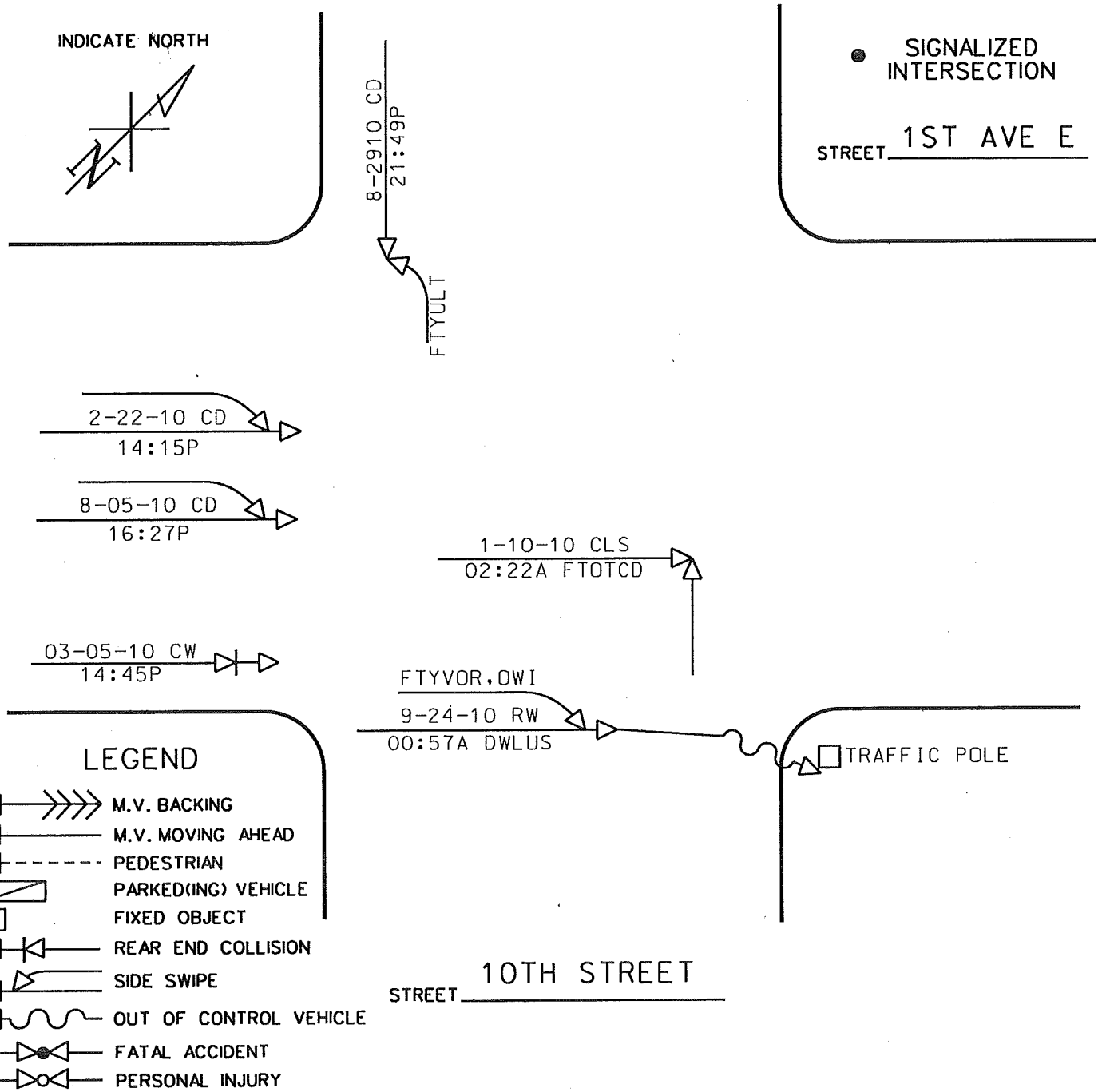
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2010



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

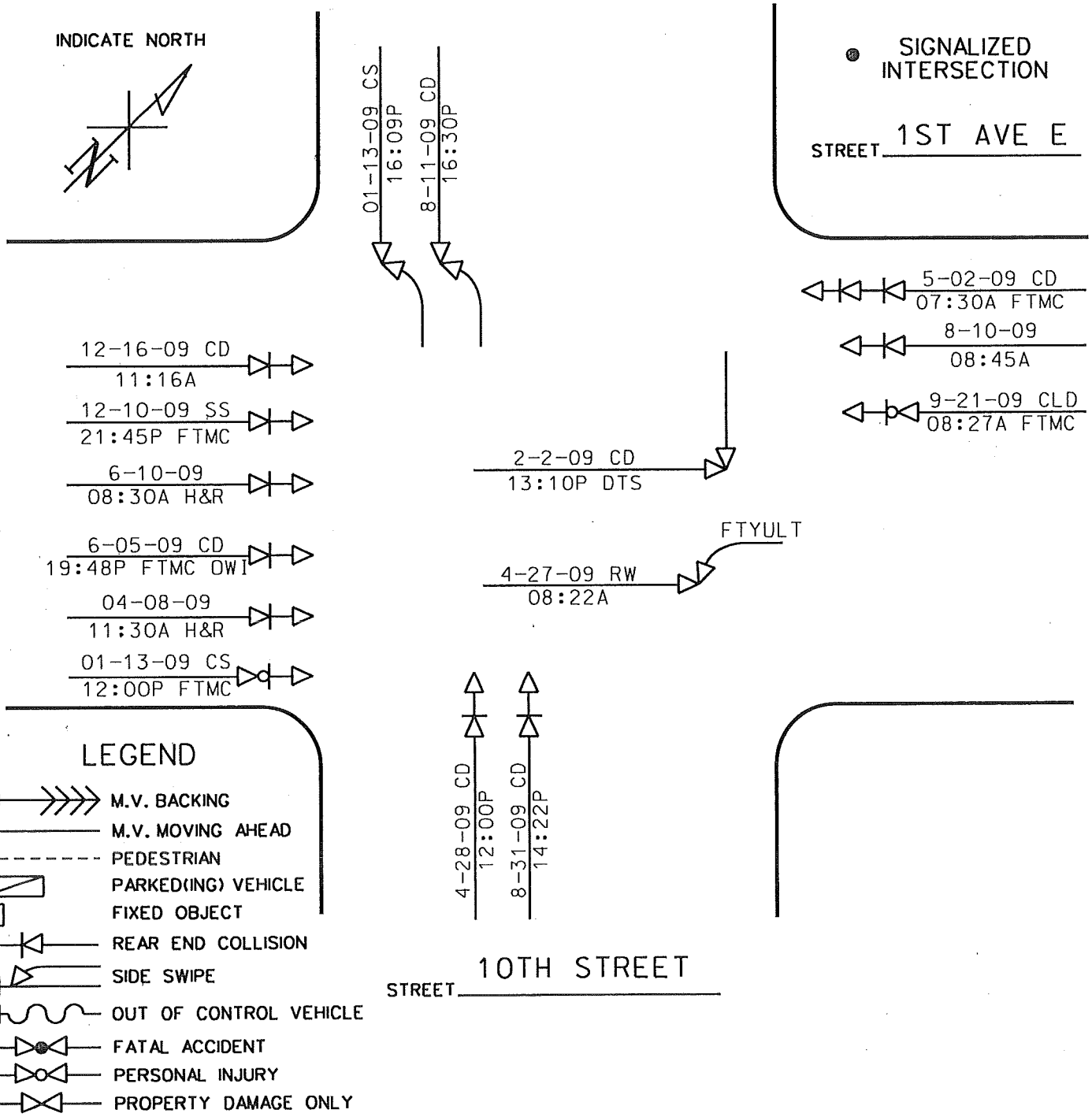
TIME: A-A.M. P-P.M.
PAVEMENT: D-DRY I-ICY W-WET
WEATHER: C-CLEAR F-FOG R-RAIN
S-SNOW SL-SLEET
CL-CLOUDY

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2009

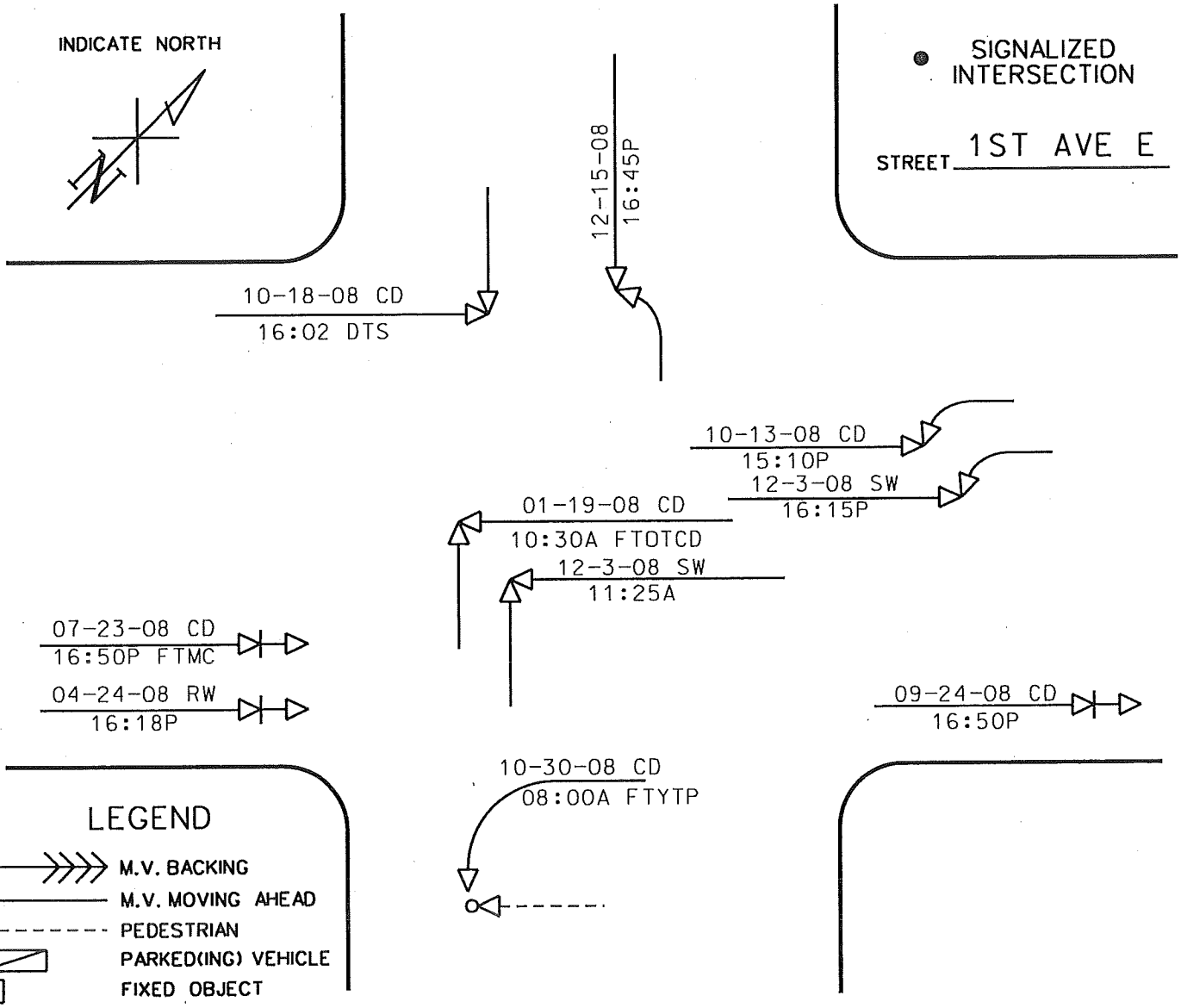


Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2008



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

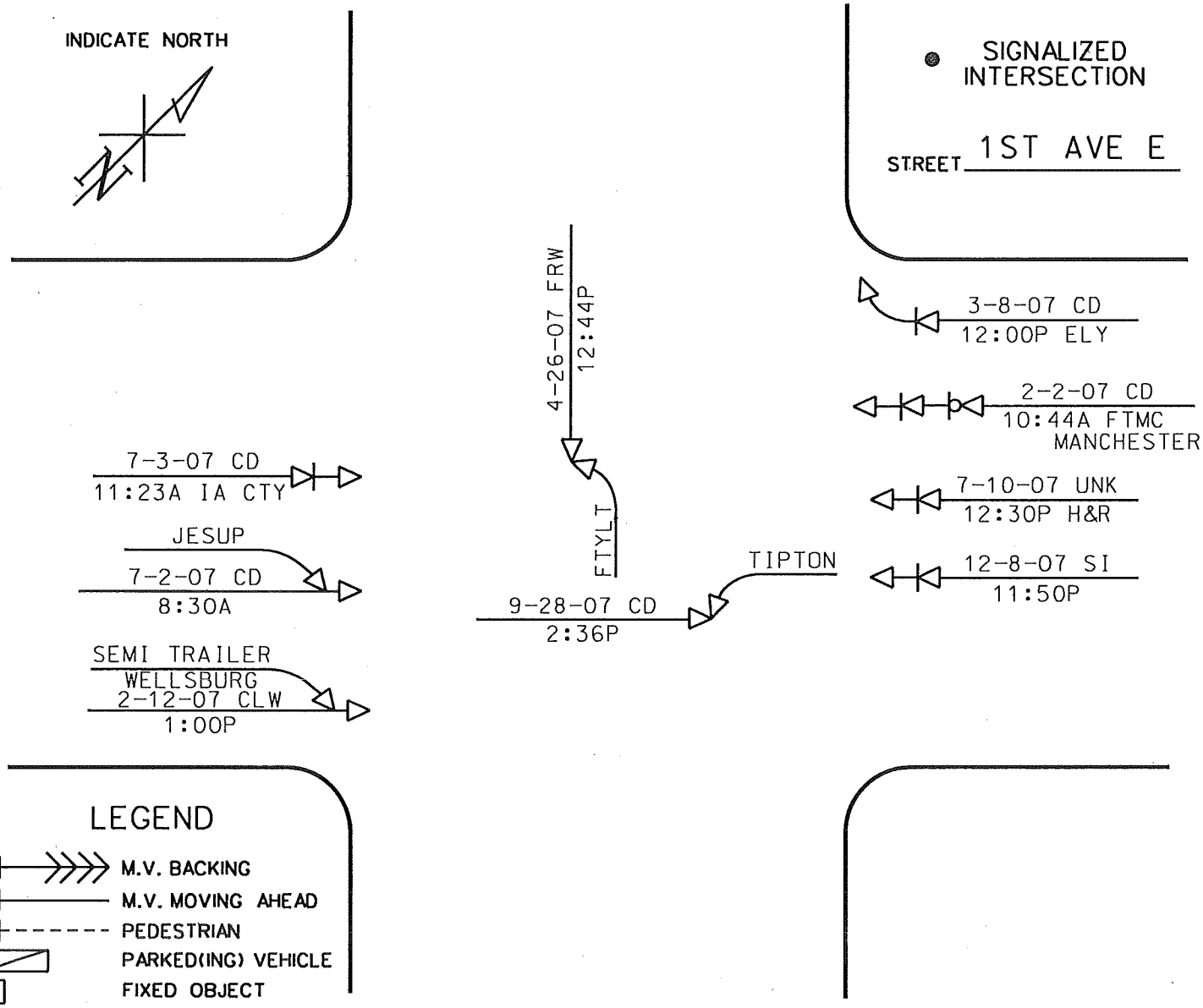
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2007



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

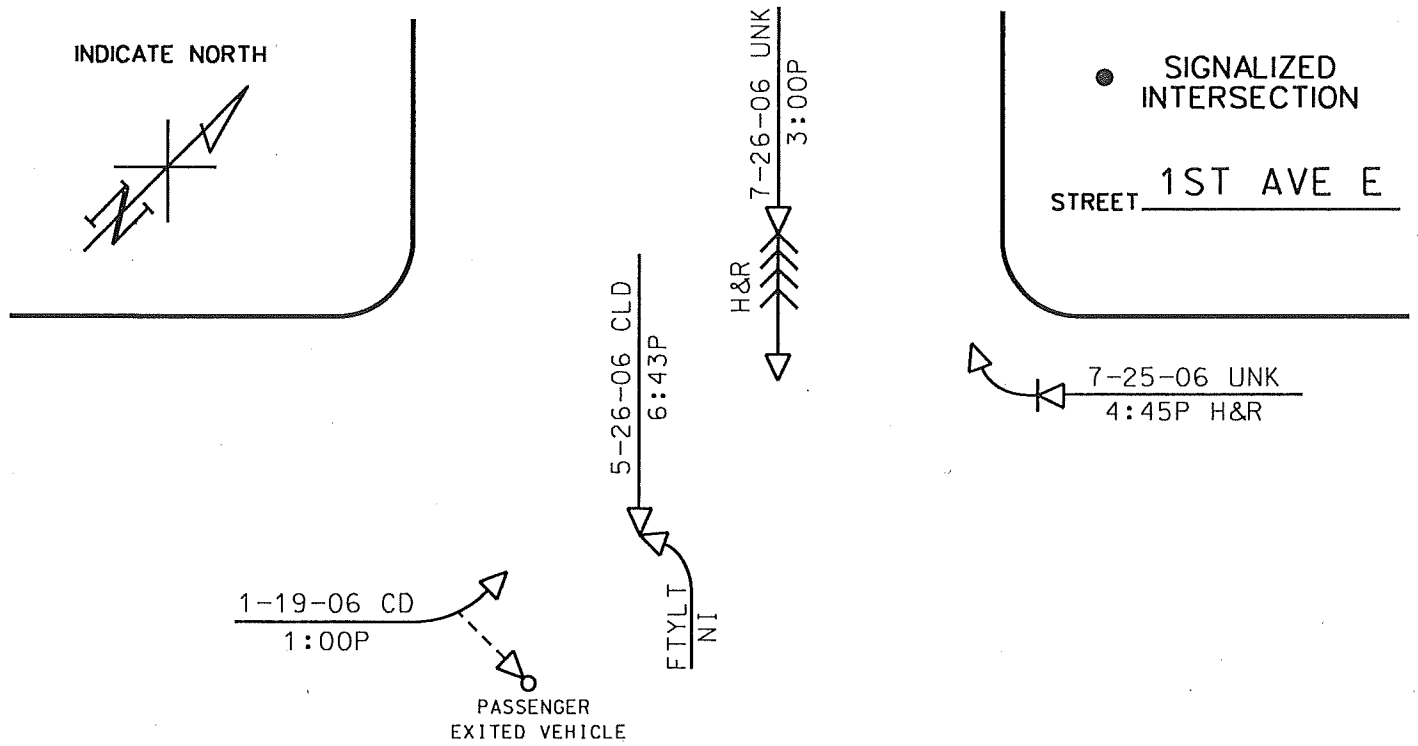
ME: A-A.M. P-P.M.
PAVEMENT: D-DRY I-ICY W-WET
WEATHER: C-CLEAR F-FOG R-RAIN
S-SNOW SL-SLEET
CL-CLOUDY

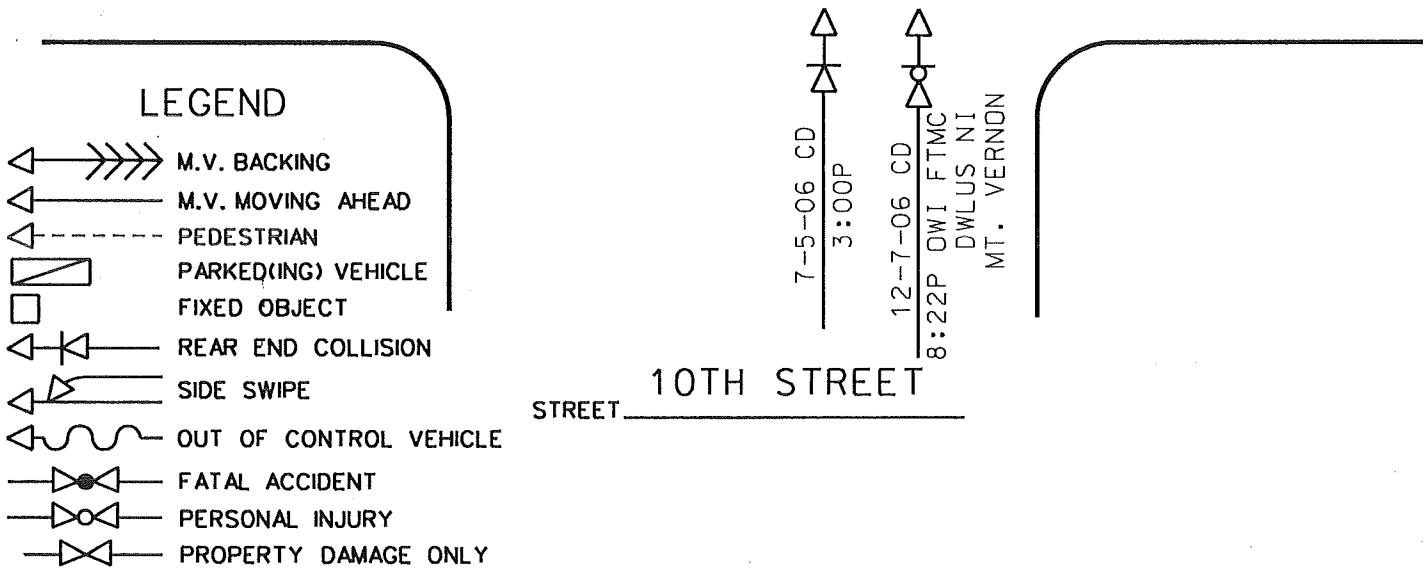
Appendix A

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVENUE EAST AND 10TH STREET PERIOD 2006





LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

.IME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

APPENDIX B

CEDAR RAPIDS TRAFFIC ENGINEERING INTERSECTION CRASH DIAGRAMS

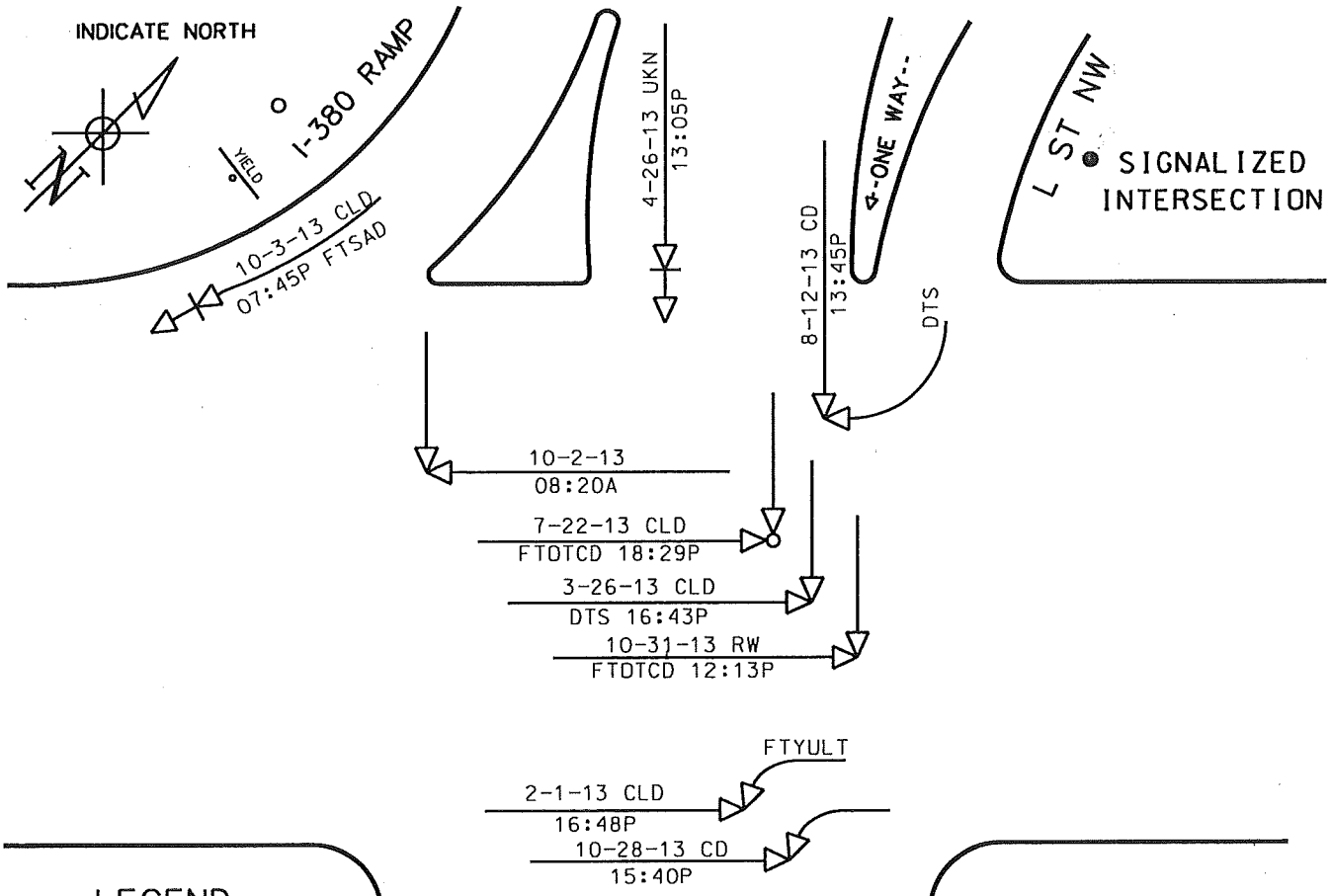
1ST AVENUE AND L STREET WEST

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2013



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

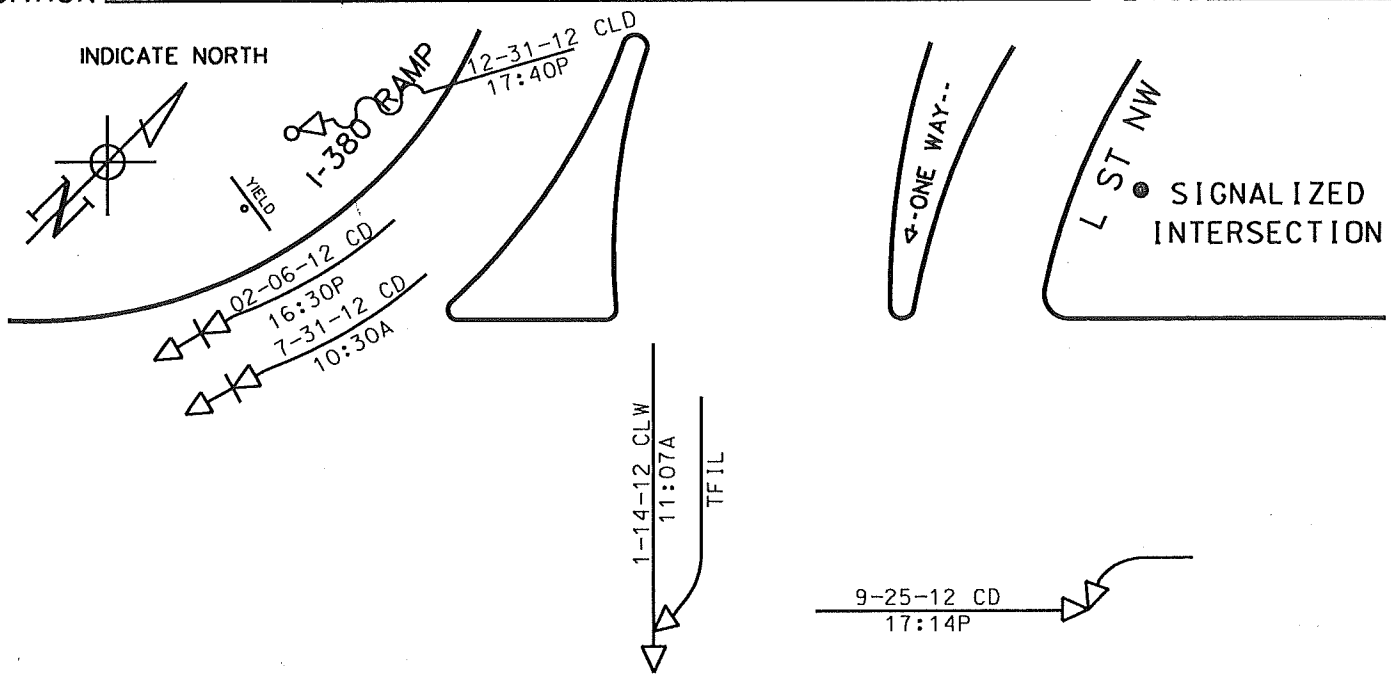
TIME: A-A.M. P-P.M.
PAVEMENT: D-DRY I-ICY W-WET
WEATHER: C-CLEAR F-FOG R-RAIN
S-SNOW SL-SLEET
CL-CLOUDY

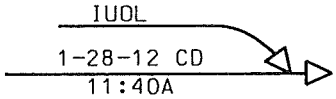
Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2012





LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

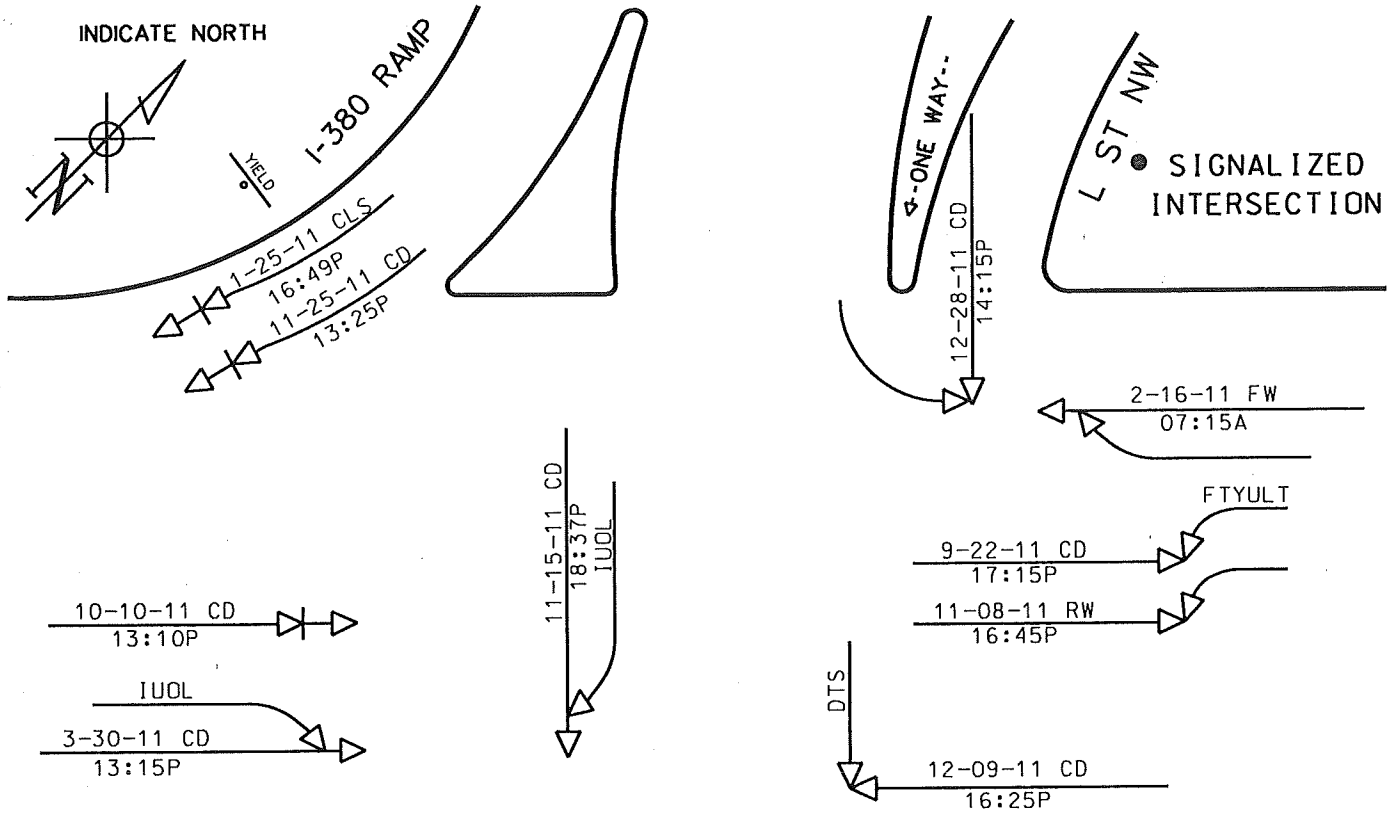
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2011



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

STREET 1ST AVE. WEST

-ONE WAY--

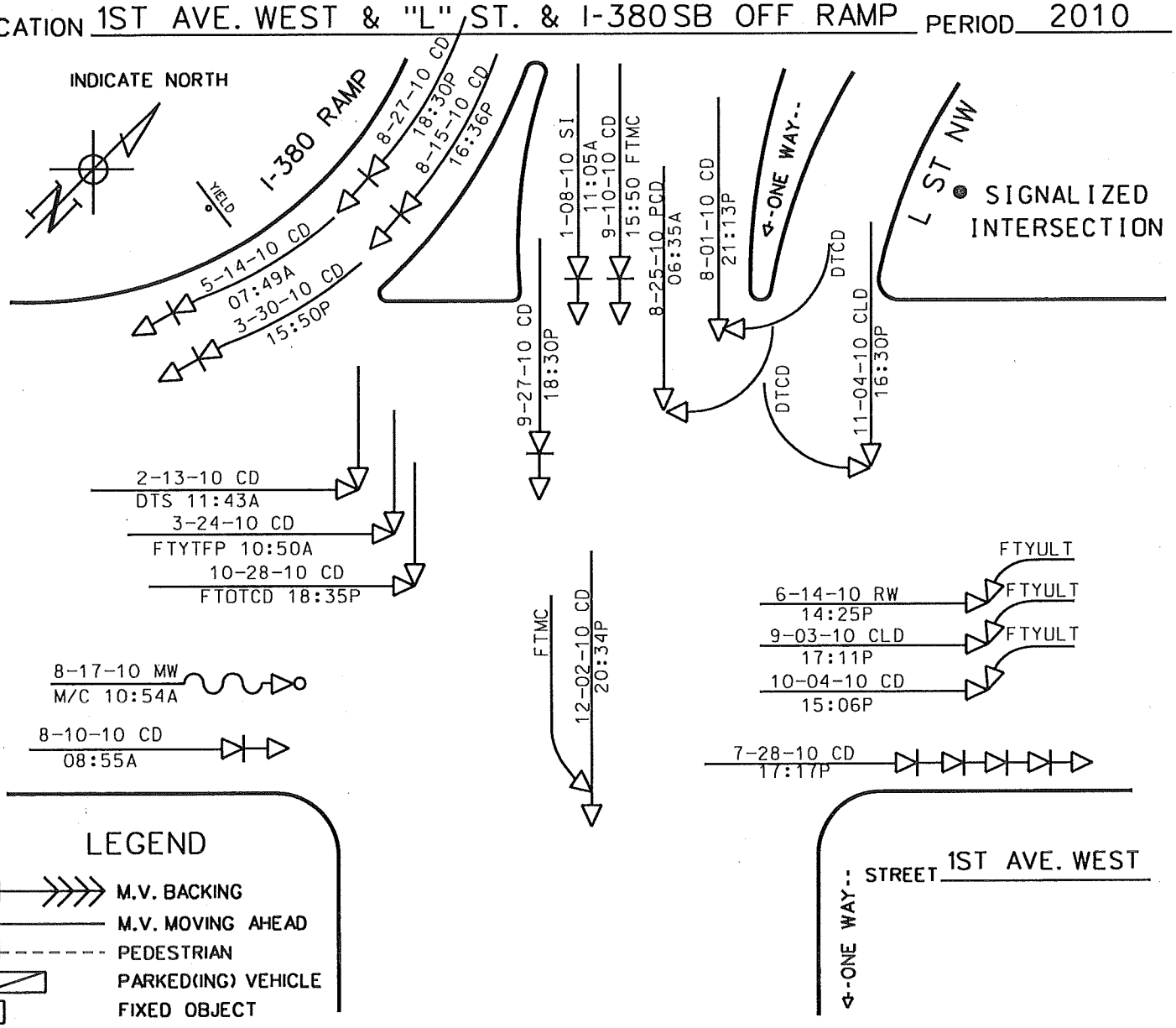
STREET L ST SW

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380SB OFF RAMP PERIOD 2010



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

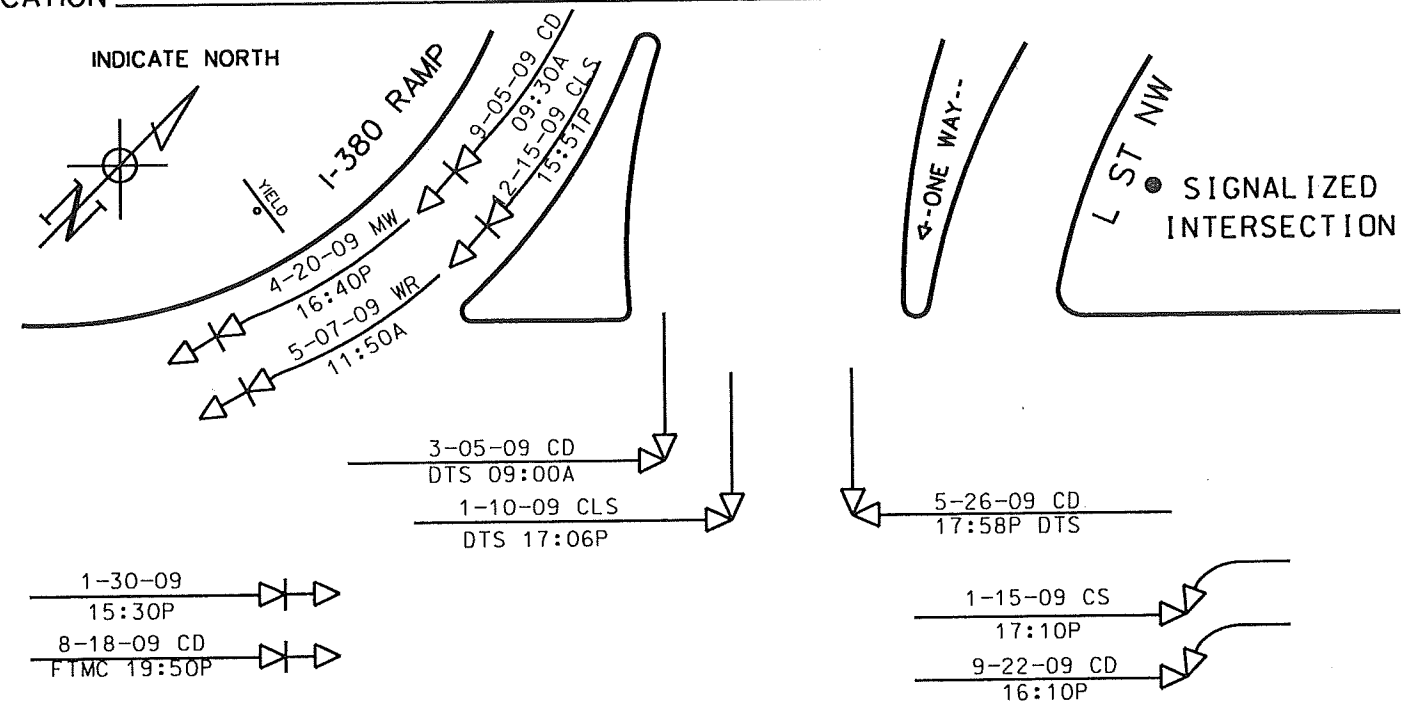
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380SB OFF RAMP PERIOD 2009



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

STREET 1ST AVE. WEST

ONE WAY

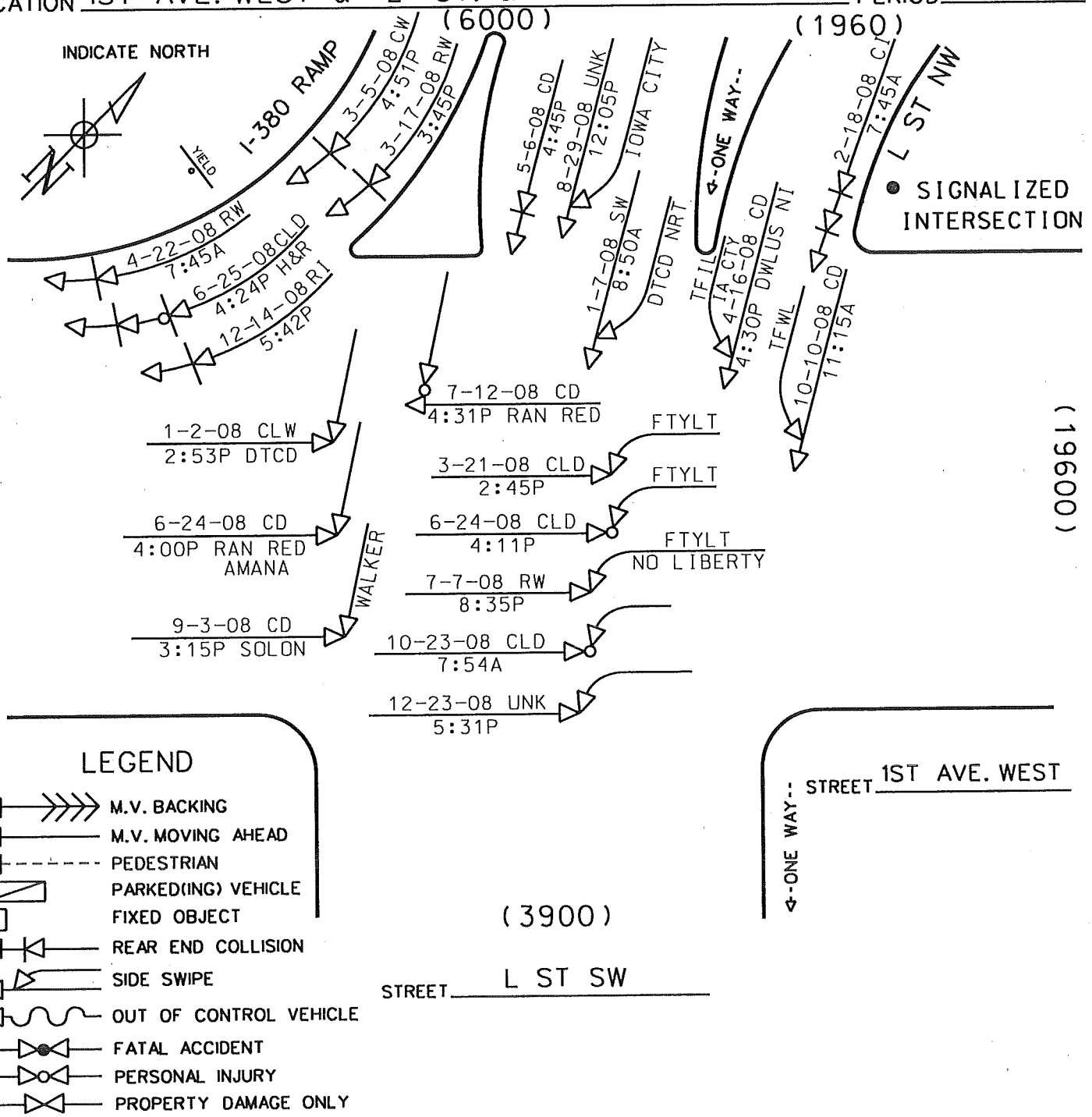
STREET L ST SW

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2008



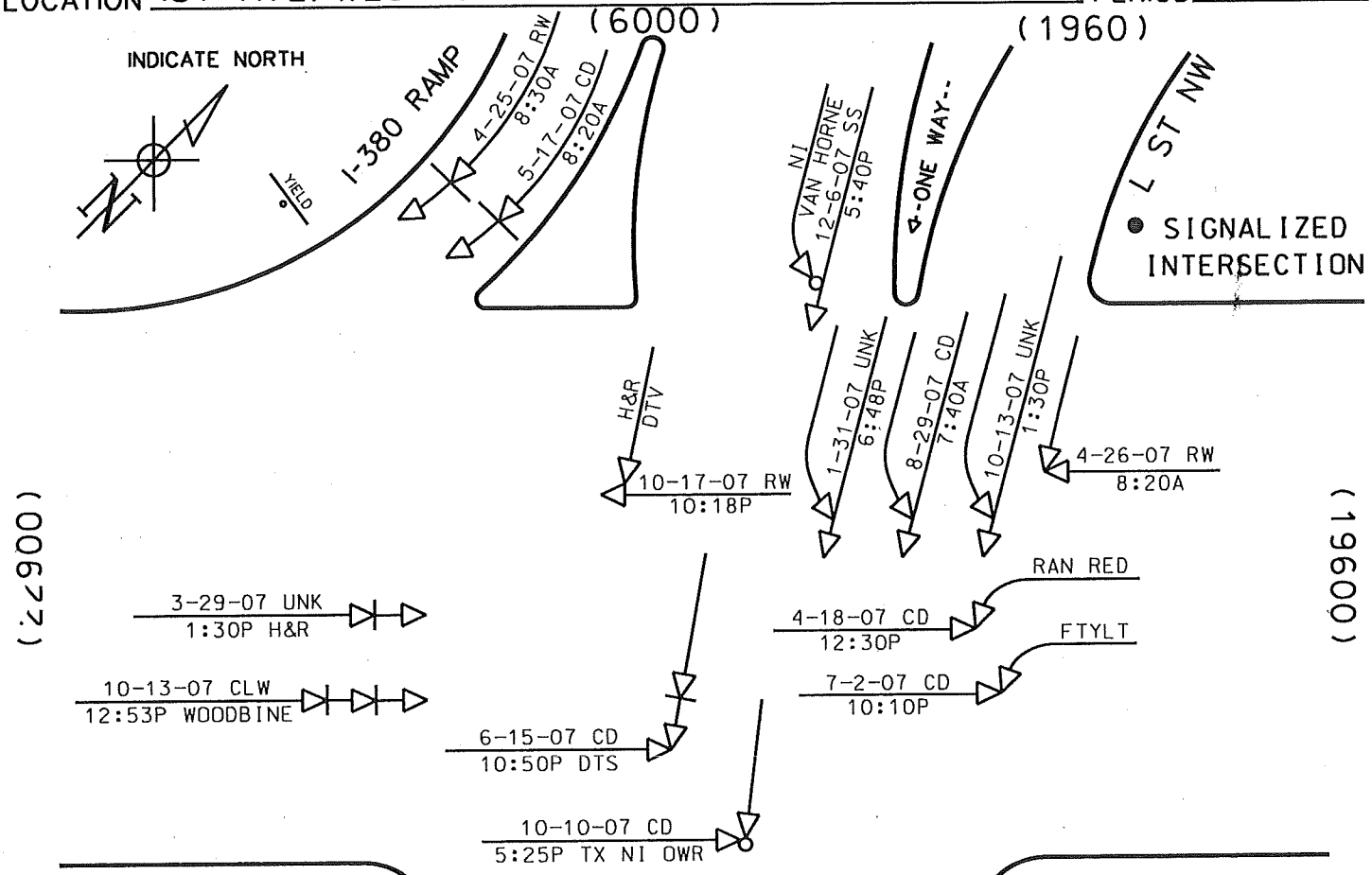
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2007



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

(3900)

STREET L ST SW

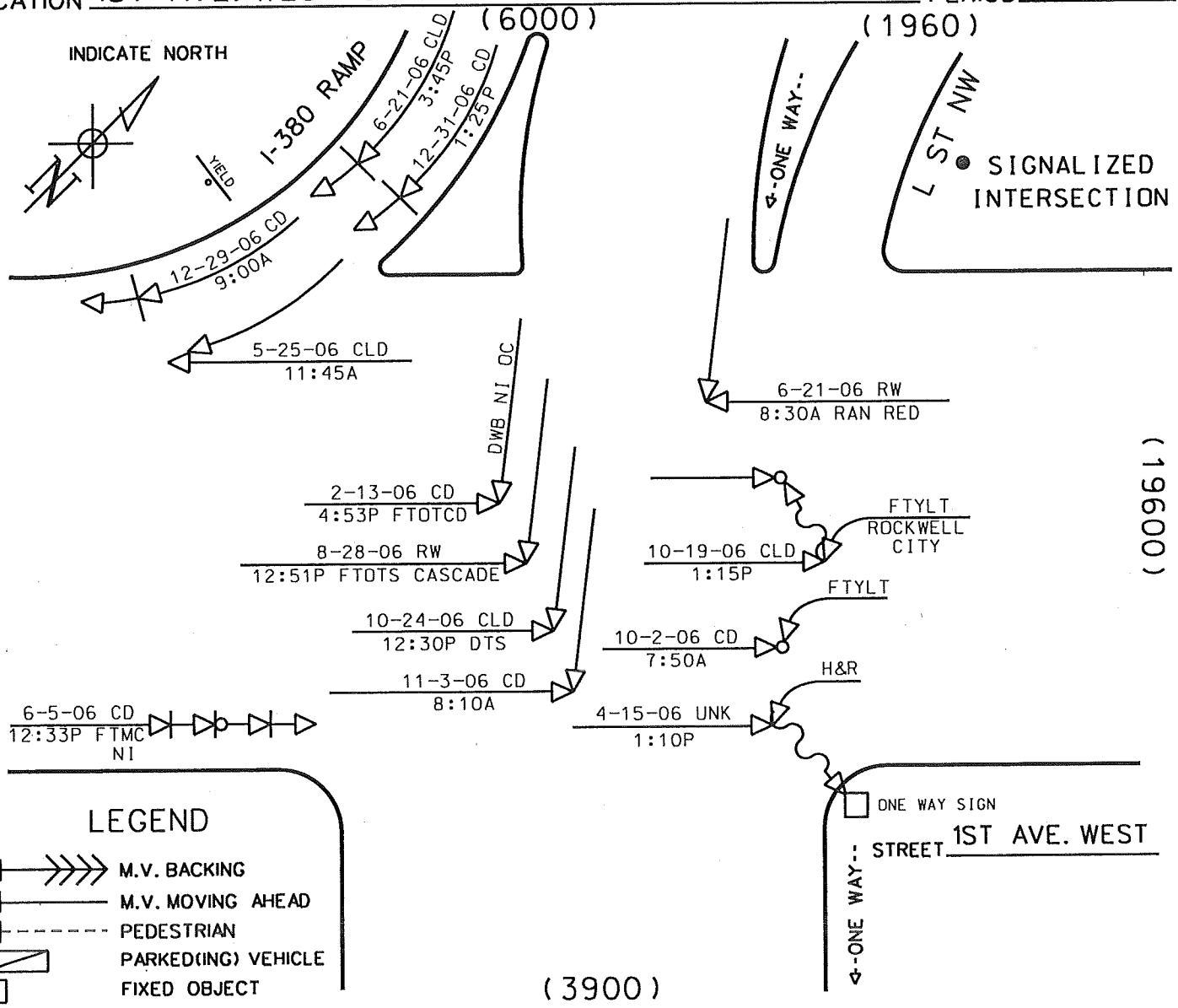
ONE WAY-- STREET 1ST AVE. WEST

Appendix B

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 1ST AVE. WEST & "L" ST. & I-380 SB OFF RAMP PERIOD 2006



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

APPENDIX C

CEDAR RAPIDS TRAFFIC ENGINEERING INTERSECTION CRASH DIAGRAMS

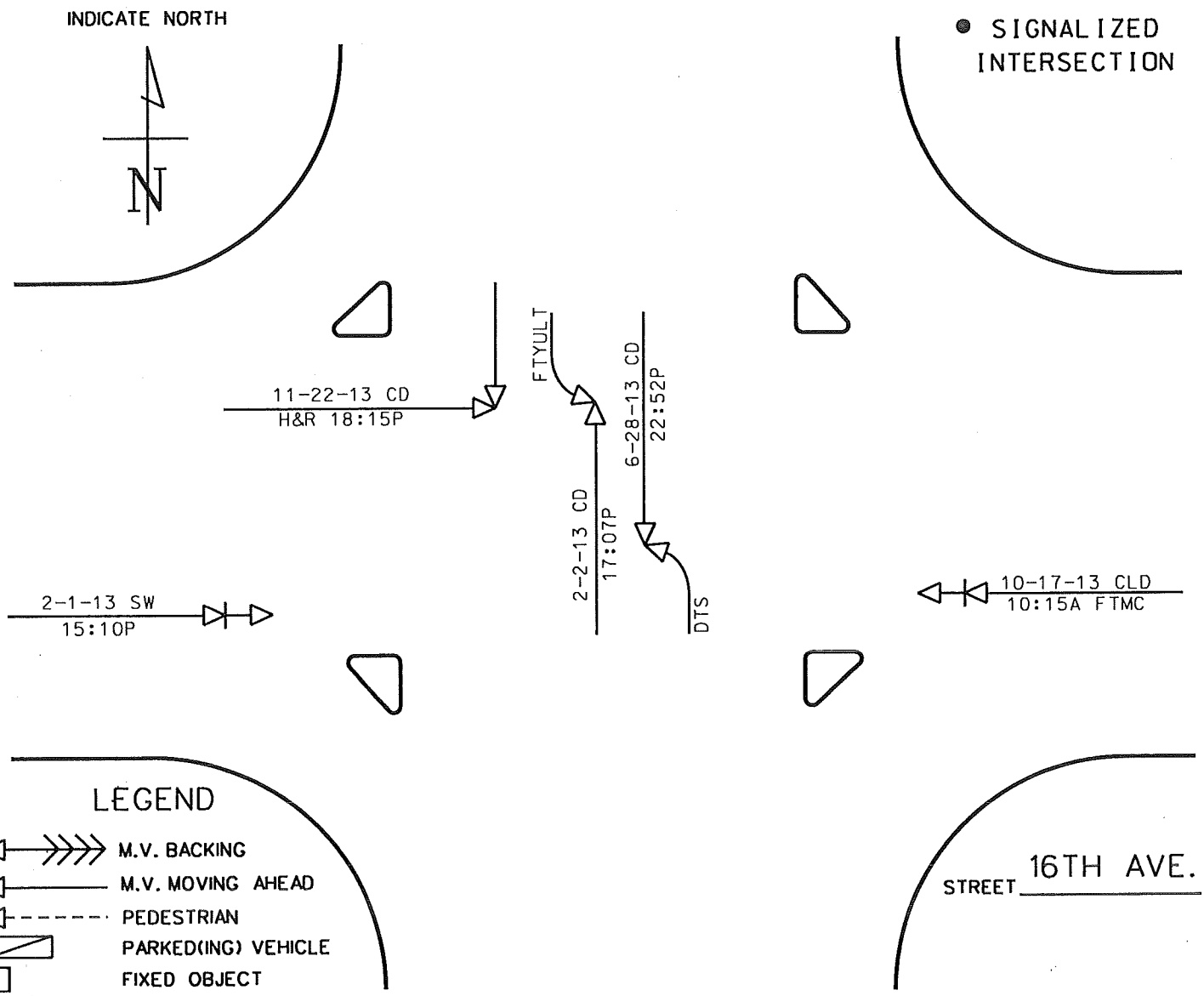
WILLIAMS BOULEVARD AND 16th AVENUE SW

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2013



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

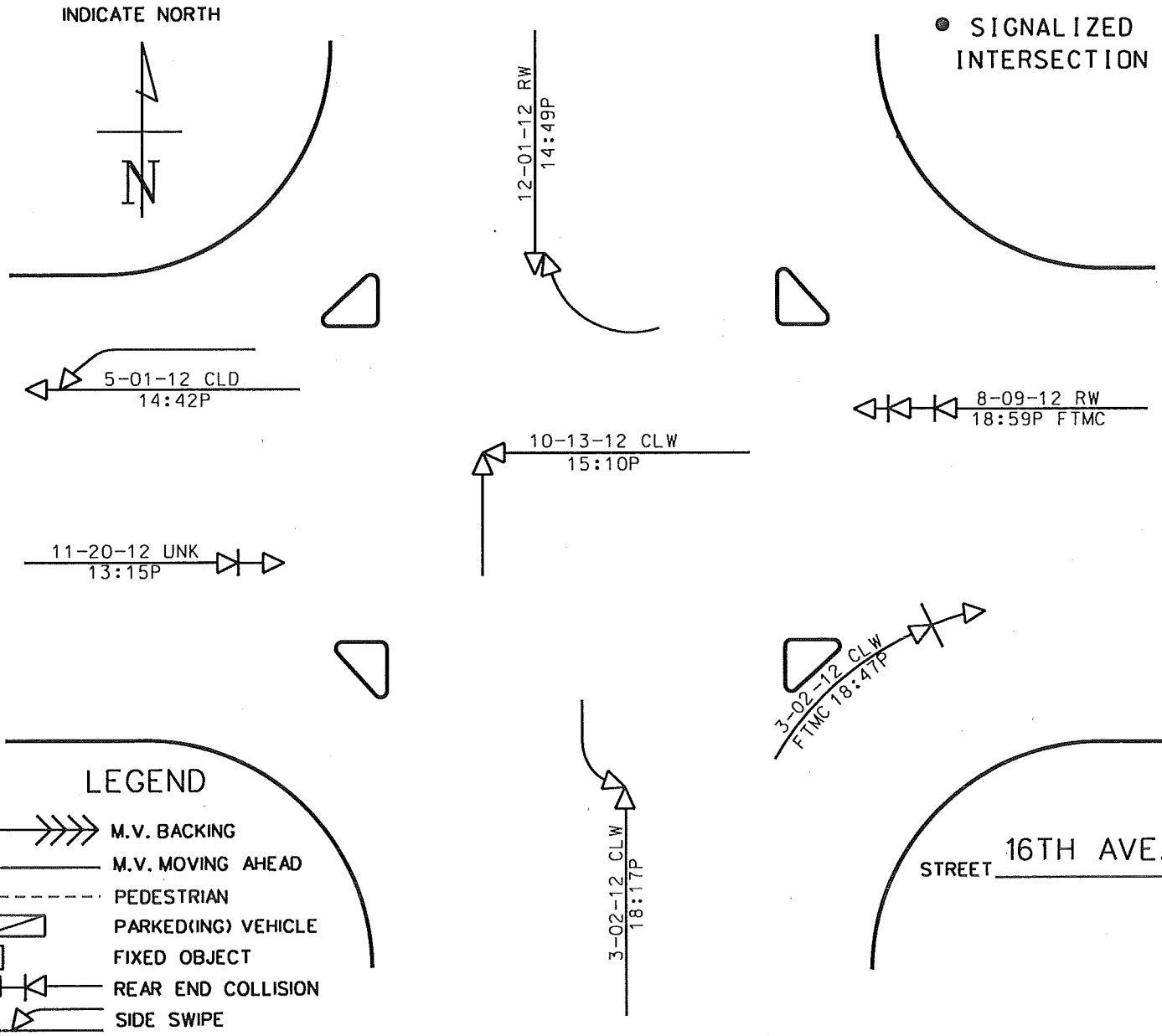
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2012



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

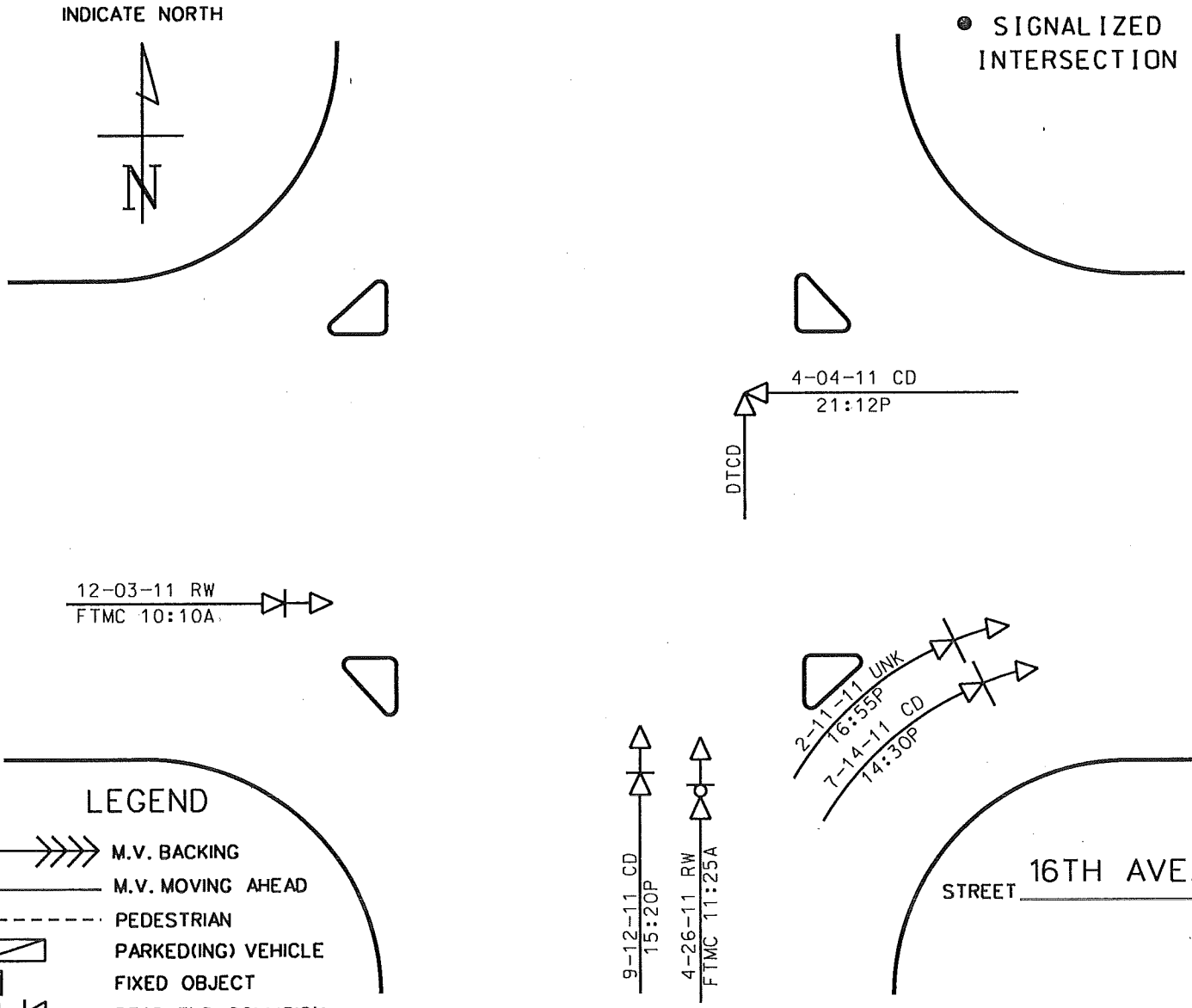
TIME: A-A.M. P-P.M.
PAVEMENT: D-DRY I-ICY W-WET
WEATHER: C-CLEAR F-FOG R-RAIN
S-SNOW SL-SLEET
CL-CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2011



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

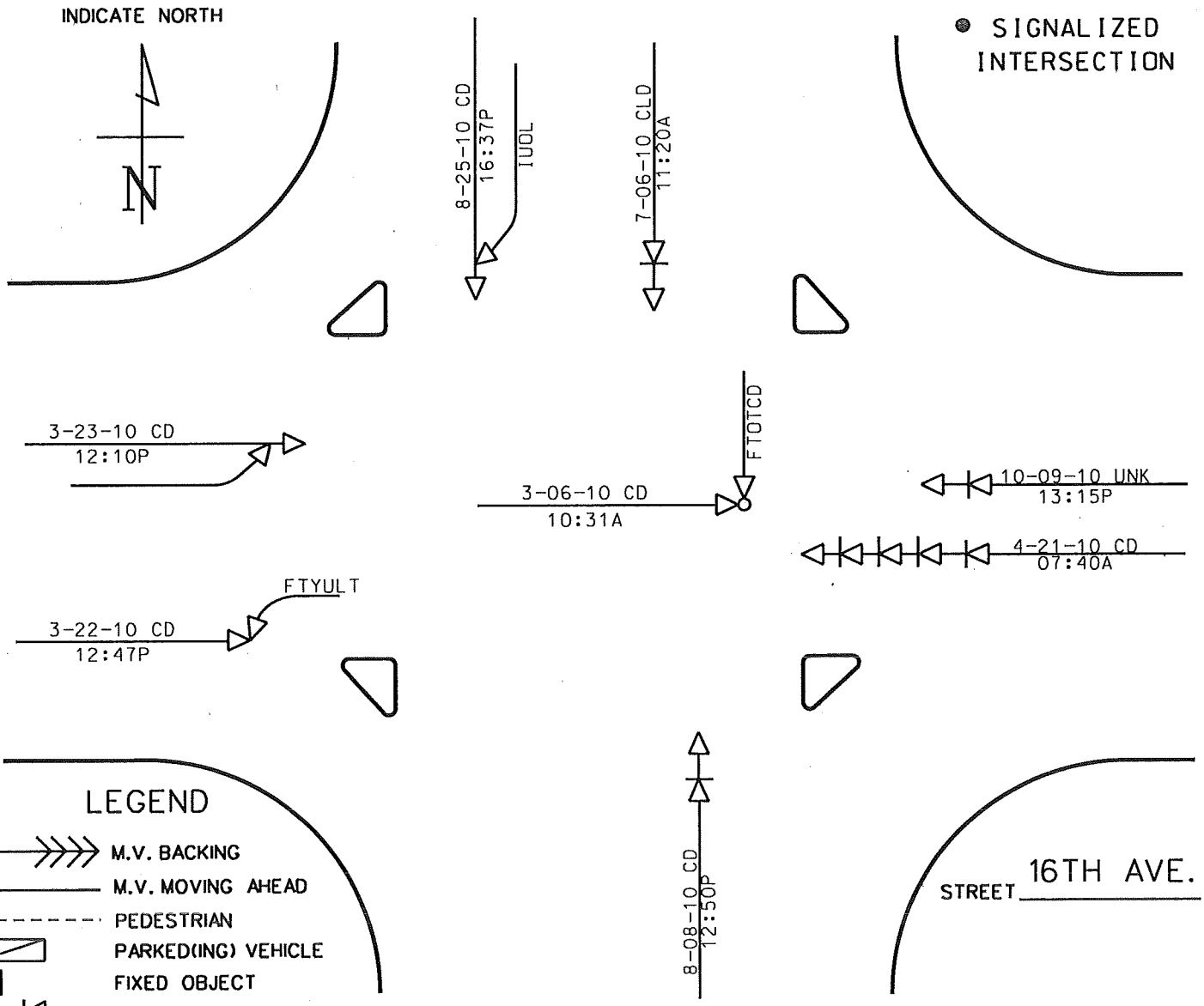
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2010



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

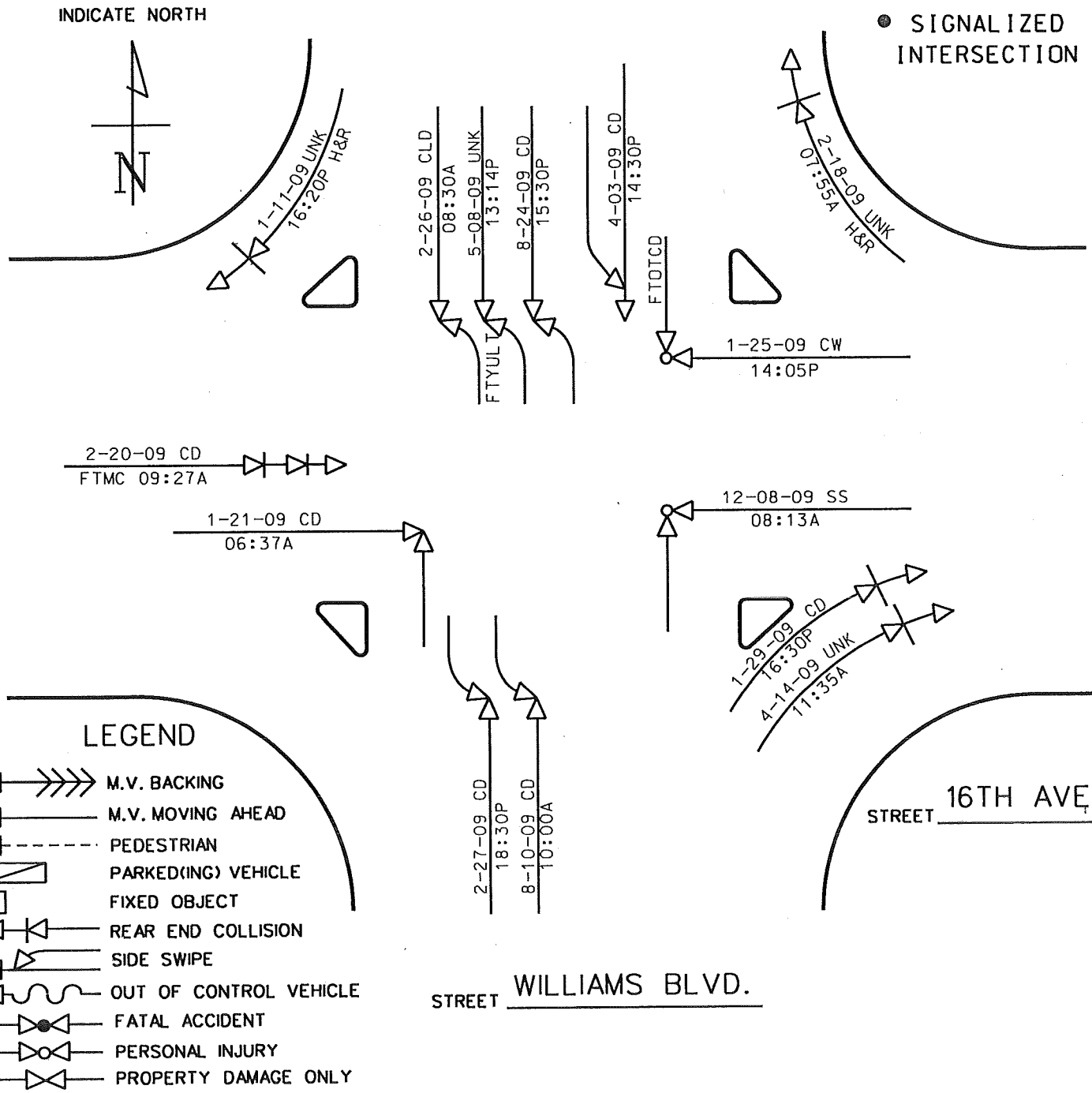
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2009



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

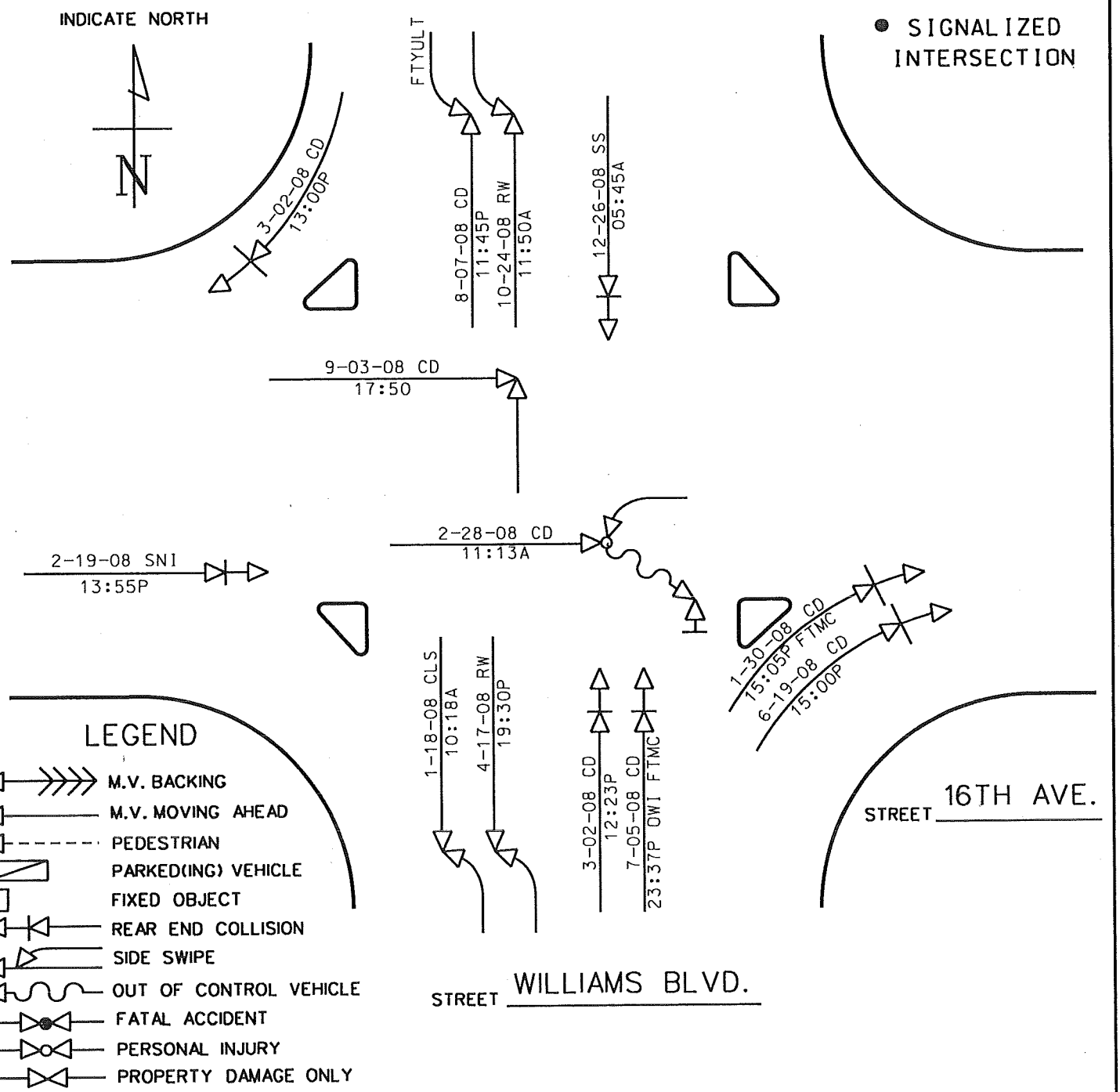
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2008



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

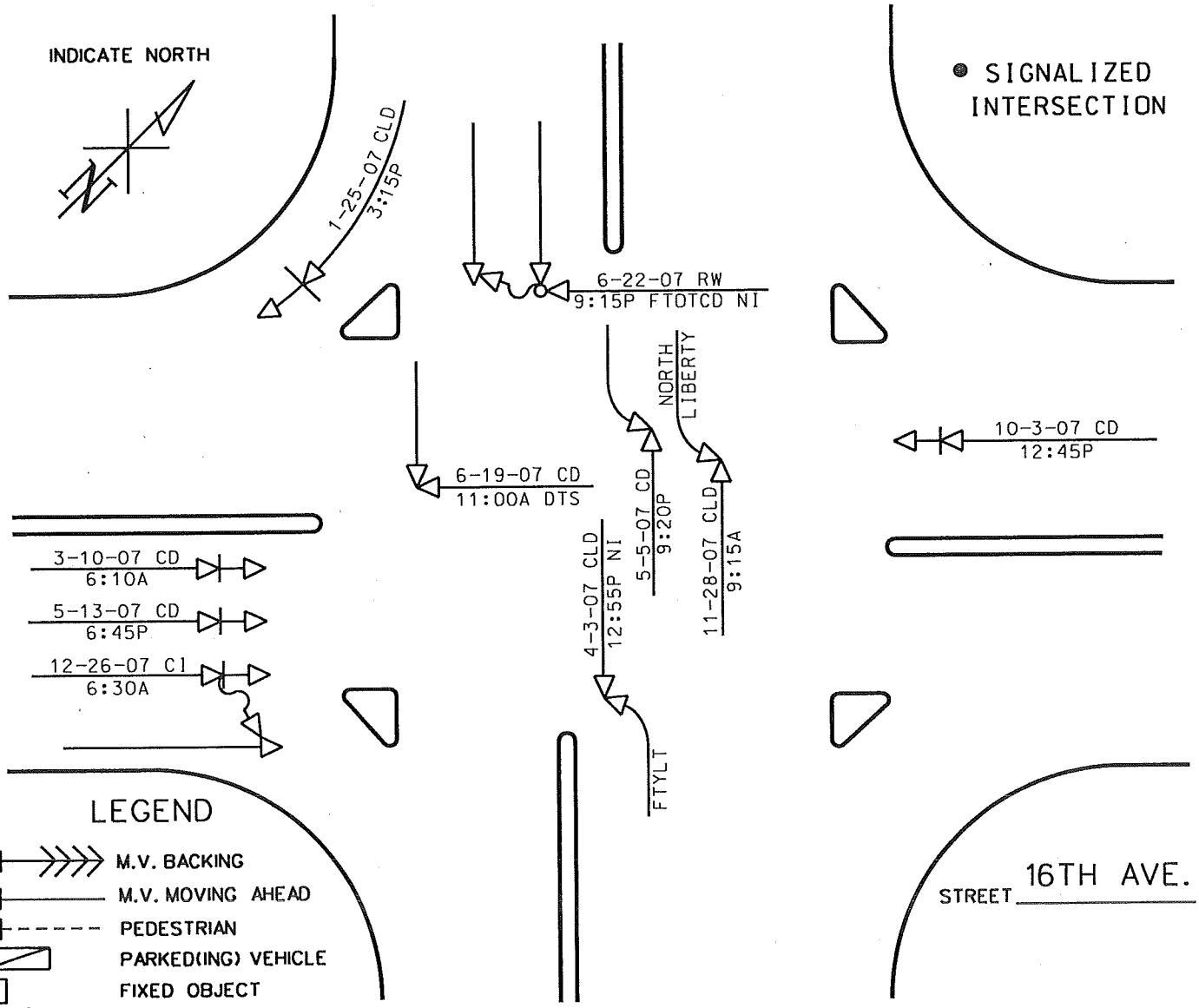
TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2007



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

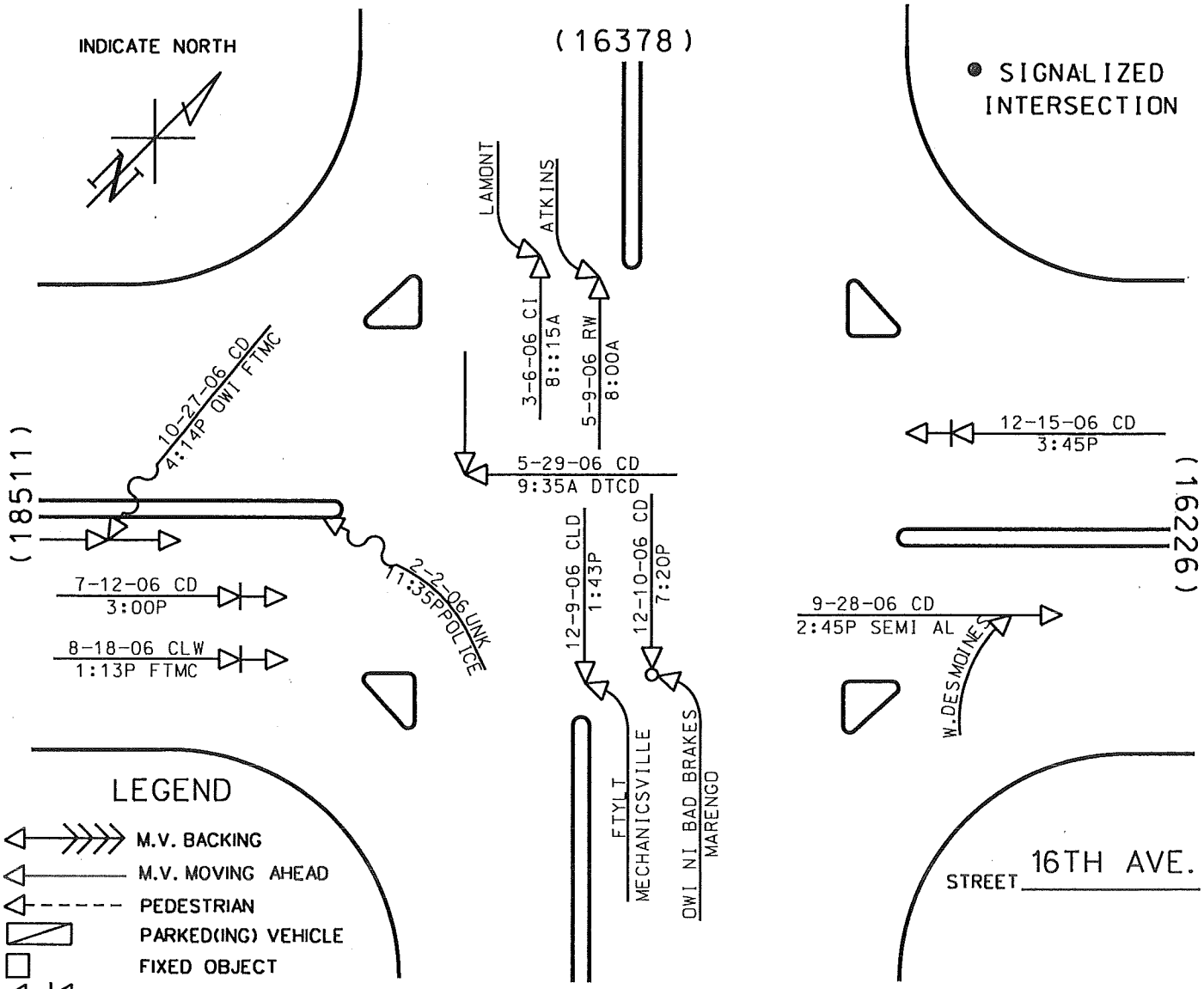
IME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

Appendix C

CITY OF CEDAR RAPIDS, IOWA
TRAFFIC ENGINEERING DEPARTMENT

COLLISION DIAGRAM

LOCATION 16TH AVE. & WILLIAMS BLVD. S.W. PERIOD 2006



LEGEND

- M.V. BACKING
- M.V. MOVING AHEAD
- PEDESTRIAN
- PARKED(ING) VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- SIDE SWIPE
- OUT OF CONTROL VEHICLE
- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY

TIME: A=A.M. P=P.M.
PAVEMENT: D=DRY I=ICY W=WET
WEATHER: C=CLEAR F=FOG R=RAIN
S=SNOW SL=SLEET
CL=CLOUDY

APPENDIX D

I-380 CEDAR RAPIDS

CORRIDOR SAFETY INITIATIVES

I-380 Cedar Rapids Corridor Safety Initiatives

As of: 10/20/11

	Recommendation	Status / Schedule	Lead Agency / Office/ Individual	Remarks
	Short Term Options			
1	Establish Multi-Disciplinary Traffic Safety Team ITEM TRACKING COMPLETE tho efforts will be ongoing	Kick-Off meeting held January 25th, 2010.	City of Cedar Rapids - Scott Hamlin	
2	Replace warning signs - entire corridor ITEM COMPLETE	Signs installed	Iowa DOT - Steve Wilson	Will replace all in corridor with new bright yellow signs. DOT Maintenance to install. See also item 21.
3	Replace guide and regulatory signs - entire corridor	All signs have been either replaced or under contract to be replaced.	Iowa DOT - Steve Wilson	Will be done by contract(s). Reviewed destinations impacted by flood - Czech museum & Convention & Visitors Bureau to remain in place, Science Station dest. to be covered/removed
4	Replace delineators - entire corridor ITEM COMPLETE	DOT Maintenance completed	Iowa DOT - Maintenance - Randy Roethlisberger	Some (buttons) are missing, some misaligned, some just dirty. DOT Maintenance will install. Relatively small quantities - will come out of DOT Maintenance operations budget
5	Add 1/10 mile markers	Need to review and make decision if to go forward. DOT leaning toward not implementing. At 4/26/10 **MDST** general concensus was 1/2mile spacing but were going to get feedback from Waterloo police	**MDST**	DOT district office views as lower priority & may choose not to implement, but open to input from local enforcement & emergency responders.
6	Install guidance markers on bridge rails ITEM COMPLETE	Markers installed and complete.	Iowa DOT - Steve Wilson	DOT district office views as lower priority. DOT Maintenance to install. 890 yellow reflectors, 380 white. Future consideration: Should white reflectors have some type of black backing for better visibility?
7	Replace all burned-out bulbs in roadway lighting ITEM TRACKING COMPLETE tho some work is ongoing	Replaced bulbs. Completed flood damage repairs. Meter installation complete.	Iowa DOT - Maintenance - Randy Roethlisberger	Bulb replacement complete, but ongoing. Luminaire repairs ongoing. Non-flood related repairs completed in house in lieu of including in items 8 & 9 work.
8	Install new lighting in unlighted areas north for CBD	Field review held Nov 10th 2009. Concept complete 1/27/11. Project is on DOT program monitor list, not in 12-16 program. On call consultant to start work on design	Iowa DOT - Traffic and Safety - Mike Jorgensen	Will be done by contract. No funding programmed yet. DOT project no. IMN-380-6(262)20--OE-57
9	Study need for additional lighting for SB I-380 south of H Ave NE ITEM NOT IMPLEMENTED		Iowa DOT - Traffic and Safety - Mike Jorgensen	Field review determined no apparent deficiencies for SB lighting south of H Ave - item will not be implements
10	Upgrade and replace all pavement markings along I-380 ITEM COMPLETE	TSF project for grooved in nighttime wet reflective taps on lane lines from "H" Ave to Diagonal completed. Other lanes repainted by DOT paint crew	Iowa DOT - Tom Storey	
11	Study traffic signal modifications east terminus of Wilson Ave interchange ITEM NOT IMPLEMENTED	City concluded lead-lag phasing is not a contributor to higher percentage of traffic signal related crashes. Item dropped as not warranted.	City of Cedar Rapids - Traffic Engineering	Reduce possible driver confusion that may be caused by EB lagging left turn

I-380 Cedar Rapids Corridor Safety Initiatives

	Recommendation	Status / Schedule	Lead Agency / Office/ Individual	Remarks
12	Remove trees w/in ROW along NB 380 at 1st St NW off ramp ITEM COMPLETE	City and DOT concur removal of tree would not in itself be effective. Building is biggest issue blocking view. Refer to item 25 and I-380 study		Tree is on city property. City arborist thought fence may be more of an obstruction. High quality tree.
13	Review I-380 SB to 1st Ave WB off-ramp signing and pavement marking improvements	DOT/City met 4/27/08 to discuss responsibilities & concept. City still to put up lane use signs on mast arms - was waiting on completion of pole inspection, status? Other signs were installed by DOT Maintenance.	Iowa DOT - Steve Wilson	Replace turn restriction signs with larger, more visible devices. City also to address trees that block portions of view of signals. DOT repainted arrows. Interim improvements until longer term work is completed potentially with flood planning efforts
14	Place 'Watch for Stopped Traffic' warning signs along 1st Ave W off ramp ITEM NOT IMPLEMENTED	DOT/City met 4/27/08 to discuss responsibilities and concept. Decided not to implement	Iowa DOT - Steve Wilson	Along right side, prior to the termini. Other improvements (better signing, tree removal, etc) should suffice for interim.
15a	DOT/City consensus on I380 SB to US 30 lane markings ITEM COMPLETE	City/DOT agreed to install interim pavement markings w/ resurfacing - work complete. Additional gore signing already in place.	Iowa DOT - Tom Storey / Steve Wilson	Completed with HMA resurfacing project Spring 2009
15b	I380 SB to US 30 lane markings	Add consideration of conversion to single lane exit to I-380 study.	Iowa DOT - Cathy Cutler	Will need to review traffic capacity.
16	Development of and training for Changeable Message Sign (CMS) operations	Training with City (PD only), DOT District Staff & Operations Center staff held 6/16/09. More training probably needed - make **MDST** agenda item	Iowa DOT - SEOC	Develop acceptable messaging and operation of advisory notices for drivers using existing CMS devices. Dispatchers & Command post now called DOT Ops Center directly less of a need - John Hass & Cory will coordinate.
17	Install median barrier (high-tension cable rail) in narrow median areas	Project let in August 2010, work underway	Iowa DOT - Tom Storey / Troy Jerman	Intent is to proceed with the project without median openings (see item 37).
18	Review all unshielded bridge piers and install high-tension cable where warranted	Reviewed as part of 6/10 field exam (item 17), included in that project	Iowa DOT - Tom Storey / Troy Jerman	Specific areas of concern include the outside of horizontal curves and high crash locations
19	Develop media news release describing safety audit recommendations and the proposed improvements to be pursued ITEM COMPLETE	CR Gazette has already had an article and there have been a couple of radio interviews ⇨ no specific new release required. Item complete.	Iowa DOT - Cathy Cutler	
20	Consider installing additional Automatic Traffic Recorder (ATR) site in s-curve area ITEM NOT IMPLEMENTED	Can install additional. Per City, if speed enforcement cameras are approved and installed, this item can be deferred	Iowa DOT - Steve Wilson & Trans Data office	To monitor traffic volumes and speed. NOTE - RWIS (weather) cameras are thru public web site.
21	Install additional curve warning signing either side of s-curve ITEM COMPLETE	Installation complete. Steve will provide notification to city as part of Traffic Safety Device permit that DOT will be responsible for maintenance	Iowa DOT - Steve Wilson	Flashing beacon, replacing existing sign and beacons (w/ solar).

I-380 Cedar Rapids Corridor Safety Initiatives

	Recommendation	Status / Schedule	Lead Agency / Office/ Individual	Remarks
22	Review safe operating speeds through s-curve area and appropriateness of posted speed ITEM COMPLETE	Completed detailing ball bank testing - results did not indicate warrant for reduced speed limit.	Iowa DOT - Steve Wilson	Design speed is 60 mph. Smooth tire friction testing will be separate effort.
23	Review and implement improvements at 1st St NW termini for sign and marking visibility ITEM COMPLETE	Some signs have already been upgraded. Had intended to include lamp changes as part of lighting project (item 8) and concept, but was not discussed. DOT maintenance completed work.	Iowa DOT	Includes relocating or shielding roadway lamps and replacing guide signs. Existing markings were worn. DOT Maintenance to try flat black paint on lamp adjacent to signal head to remove glare.
24	Enhance pavement markings in the larger gore areas	Not sure if it has been a problem and may not implement - will monitor for now.	Iowa DOT - Steve Wilson	Especially interchanges north of CBD. Consider chevron markings or special surface treatments. Contrast tape? Not part of TSF $ application.
	Longer Term, Higher Cost Options			
25	Study acquisition of and removal of Linn County Sheriff building along I-380 just south of 1st St ramp	DOT not actively pursuing		
26	Study potential installation of ice detection system on 5 in 1 bridge ITEM NOT IMPLEMENTED	Reviewed as part of I-380 River Crossing ITS study, determined not cost effective (typically more cost effective in isolated rural areas) - decided not to pursue. Results of I-74 pilot project? Pavement & subsurface temps/conditions info available thru RWIS site at http://weatherview.iowadot.gov/. Camera shots also available at this public web site	Iowa DOT - Roger Walton	Review effectiveness of pilot installation on I-74 bridge. Was not installed in time to evaluate winter 2008/2009. I74 system is passive system (does not activate brine system). Also does not send alert messages - provides real time pavement condition data.
27	Additional CMS devices on each side of s-curve	Reviewed as part of I-380 River Crossing ITS study. Roadside DMS's recommended. Schedule?	Iowa DOT - Roger Walton	Use to advise drivers of pavement surface conditions, crashes, delays, etc. Considering as lower priority since "S" curve is already pretty well "bracketed" by existing DMS - considering side mount DMS near approaches. See also item 30
28	Study 1st Ave west termini for long-term improvements	DOT considering on hold while City completes flood recovery master plan	Iowa DOT - Cathy Cutler	Potential connector closings, geometric changes. Arrow signals already in place
29	Study implementation of automated enforcement - speed and traffic signal	Cameras in place. Evaluation of effectiveness to be done - timeframe?	City of Cedar Rapids - Traffic Engineering	Mobile speed camera also in use. Maybe eventual "point to point" speed enforcement on I-380.
30	Installation of additional cameras at key locations to monitor I-380 traffic conditions and improve response times	Part of ITS efforts (item 27)	Iowa DOT - Roger Walton	Currently intend to start an effort to evaluate the ITS systems sometime late in 2010 (funding 2011 at earliest),

I-380 Cedar Rapids Corridor Safety Initiatives

	Recommendation	Status / Schedule	Lead Agency / Office/ Individual	Remarks
31	If low friction areas are determined, implement corrective actions where warranted	Smooth tire friction testing complete - interpretation of results difficult. Let project for friction course test sections - Spring 2012 construction	Iowa DOT - Ken Yanna	Especially in s-curve areas. Possible "fixes" include diamond grinding and placement of high-friction treatment.
32	Replace cantilever guide sign for SB I-380 (for U.S. 30 interchange) near 33rd Ave SW interchange with full truss	Confirm concept and obtain funding. Include review as part of I-380 study.	Iowa DOT - Ken Yanna	Requires some study first. Intent is to provide guide signs for each lane of travel
33	Retro-fit existing bridge rail with concrete barrier rail on 5 in 1 bridge and SB to EB ramp bridge at US 30 interchange	To be let with HMA resurfacing project. SB in FY 12, Scheduled for May 12 letting; NB in FY 13	Iowa DOT - Ken Yanna	In DOT scheduling system as Project No. IMN-380-6(244)13--OE-57. **Split to match up with two years of HMA resurfacing?**
34	Construct IA 100 Extension	Dependant of funding availability. 28E Mitigation agreement approved. Design underway through DOT contract. Mitigation ROW in 2012/2013		
	Misc notes and issues mentioned in report, but not covered by a specific recommendation			
35	IA 100 interchange	Review as part of I-380 interchange study.		
36	~~speed limit reductions suggested by police chief~~ ITEM NOT IMPLEMENTED	DOT not actively pursuing		
37	~~CR police suggestions to add median crossovers to help with speed enforcement~~ ITEM NOT IMPLEMENTED	May be in conflict w/ desire to install median barriers. Reviewed during barrier field exam (item 17). Intend to install barriers without median openings	Iowa DOT - Tom Storey / Troy Jerman	Will need FHWA concurrence. Initial review indicated not adding crossovers. Considering removal of existing just north of US30. Discussed at April 26 2010 multi-disciplinary task force - enforcement reps present were OK with not having openings in high tension barrier
38	Some ramp termini had numerous crashes but almost all were PDO or low injury - I think my intent would not be to focus on those	Not addressing with this effort		
39	Many apparently signal related crashes at 1st Ave W, H or J Ave NE, Coldstream Ave NE and Glass Rd NE, Blairs Ferry Road	Not addressing with this effort		
40	Recognition & compliance w/ traffic signal by WB traffic on Blairs Ferry Rd just east of I-380 is problematic - numerous rear end crashes	Not addressing with this effort		
41	Apply for State Traffic Safety Improvement Program funds ITEM COMPLETE	Obtained for friction course for 2011.	Iowa DOT - Tom Storey	Potential projects include signing, pavement marking, lighting and bridge rail replacement