

**Transportation Advisory Board
of the Metropolitan Council of the Twin Cities**

ACTION TRANSMITTAL

DATE: November 14, 2013
TO: TAC Funding and Programming Committee
PREPARED BY: Heidi Schallberg, Senior Planner (651-602-1721)
SUBJECT: Scope Change Request for the Scott County CSAH 17 from Vierling Dr to TH 169 in Shakopee traffic signal rebuild
REQUESTED ACTION: The City of Shakopee requests a scope change to modify the scope of Scott County CSAH 17 from Vierling Dr to TH 169 in Shakopee (SP# 166-020-014) by adding mill and overlay and pavement rehab.
RECOMMENDED MOTION: Recommend approval of the request to modify the scope for CSAH 17 by adding mill and overlay and pavement rehab.

BACKGROUND AND PURPOSE OF ACTION: In the 2009 Highway Safety Improvement Program (HSIP) solicitation, the City of Shakopee received \$1,101,600 in federal funding for traffic signal rebuild, including turn lanes, on Scott County CSAH 17 from Vierling Dr. to TH 169 in Shakopee. The project application included adding turn lanes, traffic signal rebuild, providing signal communication interconnect, and providing a red light confirmation system. This scope change would modify the project scope to add locally-funded pavement rehabilitation work that was identified as a need as the project proceeded. Adding this locally-funded rehabilitation work would coordinate road work and eliminate additional construction disruption if the work was being done separately. The scope change request and supporting information are attached. A related TIP amendment request has also been submitted.

RELATIONSHIP TO REGIONAL POLICY: Projects that receive funding through the regional solicitation process are subject to the regional scope change policy. The purpose of this policy is to ensure that the project is designed and constructed according to the plans and intent described in the original application. Additionally, federal rules require that any federally-funded project scope change must go through a formal review and TIP amendment process if the project description or total project cost changes substantially. The scope change policy and process allow project sponsors to make adjustments to their projects as needed while still providing substantially the same benefits described in their original project applications.

STAFF ANALYSIS: Staff reviewed the submitted scope change request after an initial city consultation with Federal Highway Administration and MnDOT State Aid. The Minnesota Interagency Air Quality and Transportation Planning Committee determined that the project scope changes are exempt from air quality conformity analysis. The project originally had a benefit/cost ratio of 5.83 and was ranked 8th out of 21 selected projects for Highway Safety Improvement Program funding. Based on a review of the original application, the proposed scope changes would not have changed the safety elements of the project. No project elements are being removed, so the safety benefits

should remain the same as what was proposed in the original application. Based on the information provided, staff recommends approval of the requested scope change.

ROUTING

TO	ACTION REQUESTED	DATE COMPLETED
TAC Funding & Programming Committee	Review & Recommend	
Technical Advisory Committee	Review & Recommend	
Transportation Advisory Board	Review & Approve	



November 8, 2013

Mr. Karl Keel P.E.
Funding and Programming
Metropolitan Council
390 Robert Street No.
Saint Paul, MN 55101-1805

RE: Scope Change and TIP Amendment Request

S.P. 166-020-014

2009 Solicitation

HSIP Funds - \$1,101,600

Current Description/Scope: On Scott CSAH 17 from Vierling Dr. to TH 169 in Shakopee – traffic signal rebuild including turn lanes.

Proposed TIP Description/Scope: On Scott CSAH 17 from Vierling Dr. to TH 169 in Shakopee – Construction of additional left turn lanes, rebuilding the signal systems, providing signal communication interconnect, red light running system, pavement rehabilitation on Vierling Drive from Sage Lane to Miller Street, and mill and overlay of CSAH 17 from 17th Avenue to 10th Avenue.

Project Cost as shown in current STIP: \$1,224,000

Proposed Total Cost: \$2,220,000

Dear Mr. Keel,

The City of Shakopee and Scott County are proposing a Scope Change and TIP Amendment for the above project (SP 166-020-014). This letter is intended to provide the background information and justification for the proposed changes. The requested change in project scope is to add locally funded pavement preservation work, rather than perform the work in a separate construction project. The resulting project will provide the same safety benefits of the previously approved project. The City and County are requesting to add this pavement preservation work to the original HSIP contract in order to reduce impacts to the traveling public and adjacent businesses.

BACKGROUND

In 2009, the City of Shakopee successfully applied for federal funding in the Highway Safety Improvement Program (HSIP) for improvements at the intersection of Vierling Drive and CSAH 17 (Marschall Road) and the intersection of CSAH 17 at Trunk Highway 169 North Ramp. The awarded project includes constructing additional left turn lanes, rebuilding the signal systems, providing signal communication interconnect, and a red light running system. The purpose of the project is to improve the safety and operations of these two closely spaced signalized intersections. Funds are programmed in the TIP and STIP for FY 2014. The 2013-2016 TIP project funding is listed as Total: \$1,224,000, FHWA: \$1,101,600, Other: \$122,400.

Since the initial project scoping, the City and County have both evaluated the existing road surface conditions within and adjacent to the project area, and determined CSAH 17—from 17th Avenue to 10th Avenue—and Vierling Drive—from Sage Lane to Miller Street—are both in need of pavement rehabilitation. Due to the amount of work, complexity, and duration of the approved HSIP project at CSAH 17 and Vierling Drive and the TH 169 North Ramp, the City and County find it is beneficial to the traveling public to incorporate the needed pavement rehabilitation work on CSAH 17 and Vierling Drive to the HSIP project. This will prevent both roads from needing two rounds of lane restrictions and extending the construction impacts to adjacent businesses.

The Draft 2014-2017 TIP project funding is listed as Total: \$2,220,000, FHWA: \$1,101,600, Other: \$1,118,400. The local contribution cost covers the ten percent (10%) local match for the HSIP project, one hundred percent (100%) of costs for the pavement rehabilitation work for Vierling Drive from Sage Lane to Miller Street, and one hundred percent (100%) of costs for the Mill and Overlay on CSAH 17 from 17th Avenue to 10th Avenue. The project costs were updated earlier this year with the intent that the pavement rehabilitation and mill and overlay work would be let as a connected project to the HSIP project. However, since then there has been a revised approach regarding as to whether the projects could be tied together under one bid package. In order to maintain the project schedule, a Scope Change is being requested to add the pavement rehabilitation and mill and overlay work to the HSIP project.

FORMAL SCOPE CHANGE REQUEST

Since the Pavement Rehabilitation and Mill and Overlay work are not defined in the initial project scope and may not be allowed to be tied to the HSIP project, a Scope Change and TIP Amendment were suggested following consultation with Dan Erickson and his staff at Mn/DOT Metro State Aid, and Susan Moe at FHWA. Pursuant to the recommended scope change consultation process guidelines to evaluate scope change requests for regionally-selected projects, the City of Shakopee respectfully requests that the Metropolitan Council TAC Funding and Programming Committee consider this Scope Change request.

A formal Scope Change and TIP Amendment are required for the following reasons:

1. The City is requesting to add a locally-funded project to the federally-funded project by adding pavement rehabilitation on Vierling Drive from Sage Lane to Miller Street.
2. The County is requesting to add a locally-funded project to the federally-funded project by adding a mill and overlay of CSAH 17 from 17th Avenue to 10th Avenue.
3. The current project description in the TIP does not reference the proposed work and project limits for the pavement rehabilitation on Vierling Drive and mill and overlay on CSAH 17.

UPDATED PROJECT DESCRIPTION REQUEST

Construction of additional left turn lanes, rebuilding the signal systems, providing signal communication interconnect, red light running system, pavement rehabilitation on Vierling Drive from Sage Lane to Miller Street, and mill and overlay of CSAH 17 from 17th Avenue to 10th Avenue.

Construction letting: Spring 2014.

Project cost: \$2,220,000 FHWA \$1,101,600, Other \$1,118,400. Lead Agency: Shakopee.

JUSTIFICATION

The requested Scope Change and TIP Amendment is to update the project description to include the pavement rehabilitation on Vierling Drive between Sage Lane and Miller Street, and include the Mill and

Overlay on CSAH 17 from 17th Avenue to 10th Avenue. This will align the project description with the project funding currently included in the Draft 2014-2017 TIP.

Should the Mill and Overlay not be added to the project, the work would need to be bid and awarded separately, or completed in a future year. Essentially, two construction periods (and resulting traffic disruptions) on the same road would occur during one or more construction seasons. This could create a significant inconvenience to the traveling public and adjacent businesses. This option is not the most efficient, and may lead to a lesser quality product, resulting in a less than desirable use of public dollars.

The project scope does not reduce the project's benefits and value to the public, especially the expected crash reduction associated with added turning movement capacity and coordinated traffic signals. No elements are being removed from the project, and the project significantly improves the road surface conditions. The project does not increase federal or regional financial contributions to the project.

PROJECT COST BREAKDOWN (based on 90% Plans Cost Estimate)

HSIP Project:	\$1,400,000
City Rehabilitation Project on Vierling Drive:	\$500,000
<u>County Mill and Overlay Project on CSAH 17:</u>	<u>\$320,000</u>
Combined Project Costs:	\$2,220,000

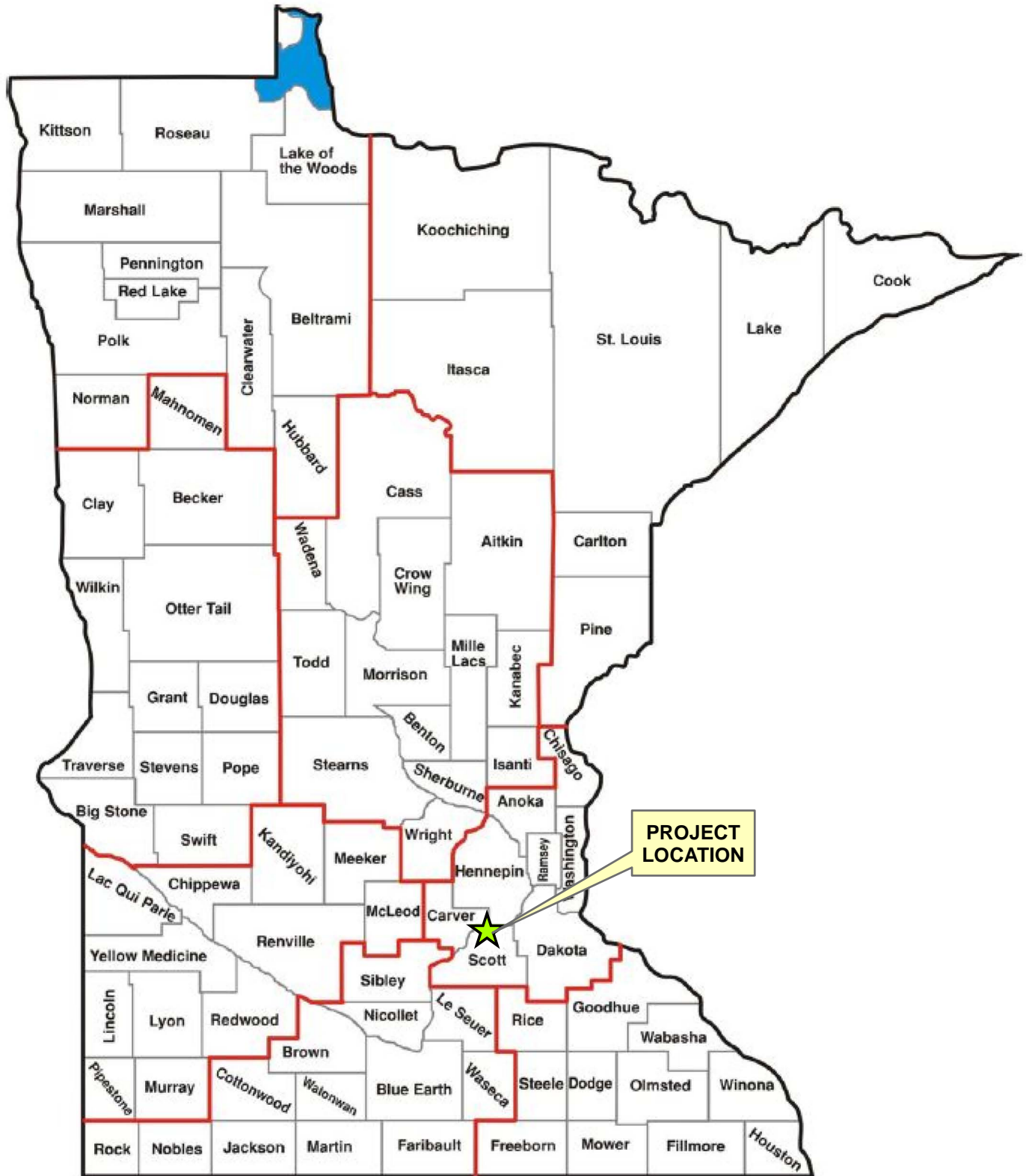
This project supports the vision and adopted policies of the roadway systems planning within the Twin Cities Metropolitan Area in reaction to proposed land uses in the next twenty years in coordination with Metropolitan Council, MnDOT, Scott County, and the City of Shakopee. The project supports the safety and operations of TH 169, the primary Principal Arterial connection to the rest of the metropolitan area. The project also supports the continued regional effort to upgrade and improve CSAH 17 as an important north-south A-Minor Arterial in the southwest metro area.

Thank you for your review of this request. I will be available to discuss the requested Scope Change and TIP Amendment with the TAC Funding and Programming Committee.

Sincerely,

Bruce Loney, PE
Public Works Director
City of Shakopee
bloney@ci.shakopee.mn.us
(952) 233-9361

STATE MAP



MARSHALL ROAD (CSAH 17) Intersection Improvements TH 169 and Vierling Drive

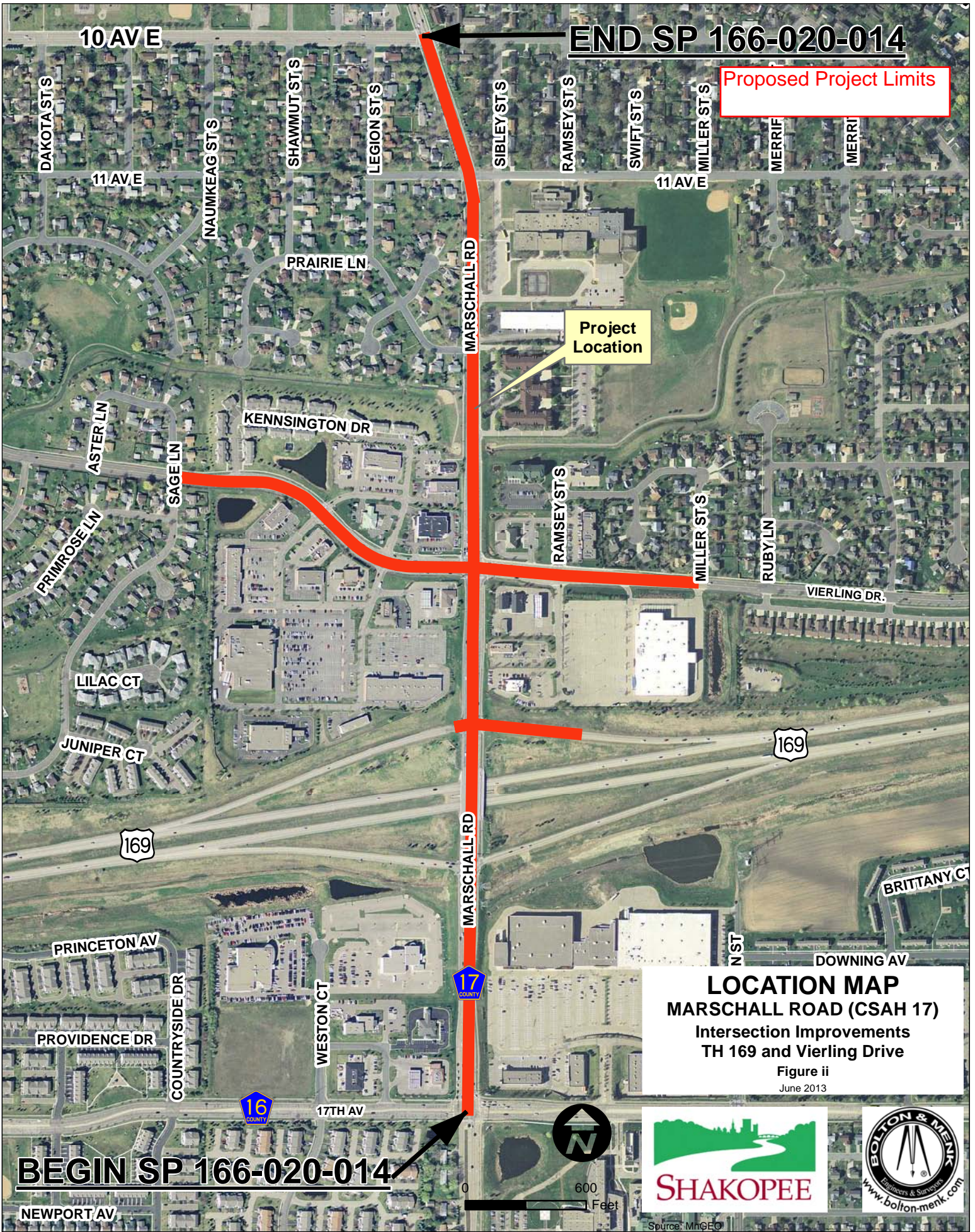
Figure i
June 2013



Source: MnDOT







END SP 166-020-014

Proposed Project Limits

Project Location

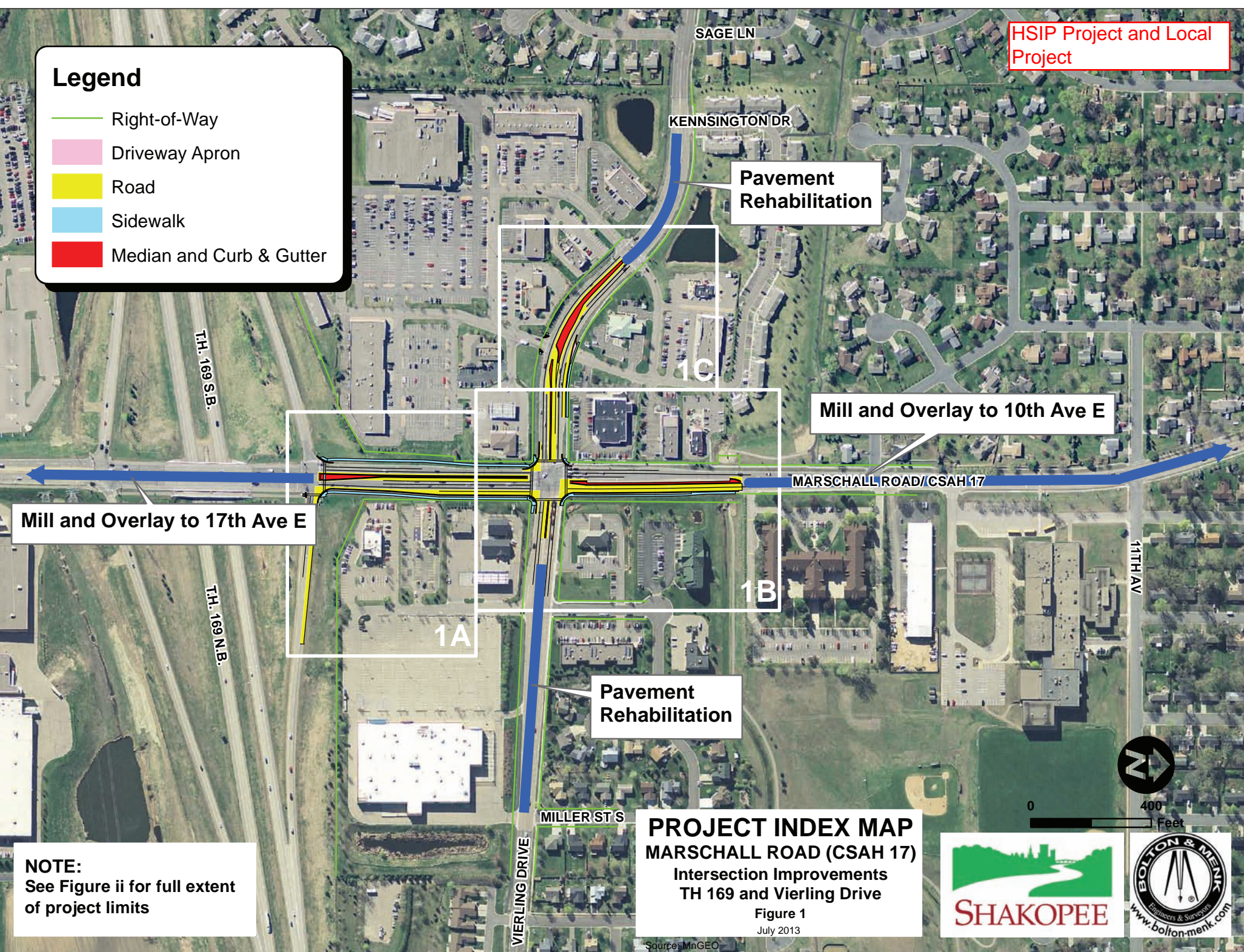
BEGIN SP 166-020-014

LOCATION MAP
MARSHALL ROAD (CSAH 17)
 Intersection Improvements
 TH 169 and Vierling Drive
 Figure ii
 June 2013



Legend

-  Right-of-Way
-  Driveway Apron
-  Road
-  Sidewalk
-  Median and Curb & Gutter



Mill and Overlay to 17th Ave E

Pavement Rehabilitation

Mill and Overlay to 10th Ave E

Pavement Rehabilitation

NOTE:
See Figure ii for full extent of project limits

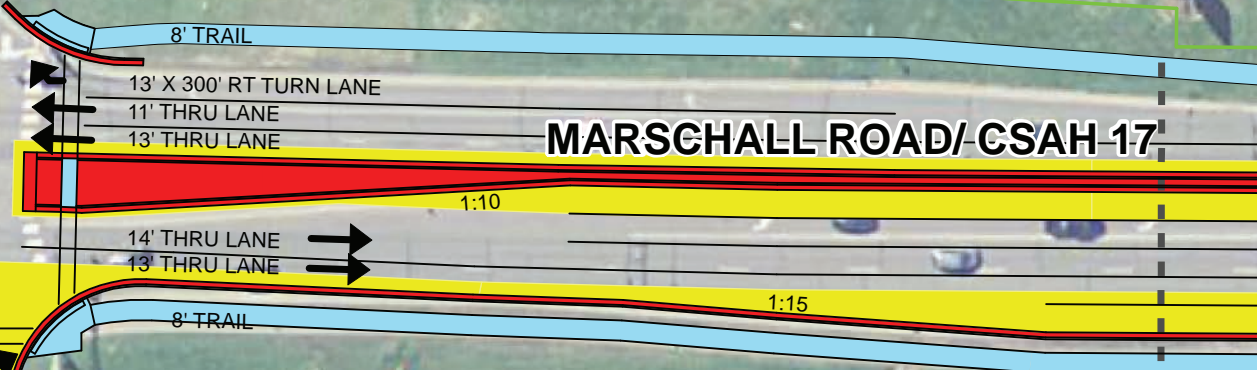
PROJECT INDEX MAP
MARSCHALL ROAD (CSAH 17)
 Intersection Improvements
 TH 169 and Vierling Drive

Figure 1
July 2013



Source: MnGEO

LANE (EX.)
LANE (EX.)



MARSCHALL ROAD/ CSAH 17

4' SHLD (EX.)
12' LT TURN LANE (EX.)
12' THRU/LT TURN LANE (EX. THRU/RT)
12' X 300' RT TURN LANE

TH 169

1:15

APPLEBEE'S

ARBY'S

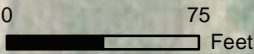
Match Line

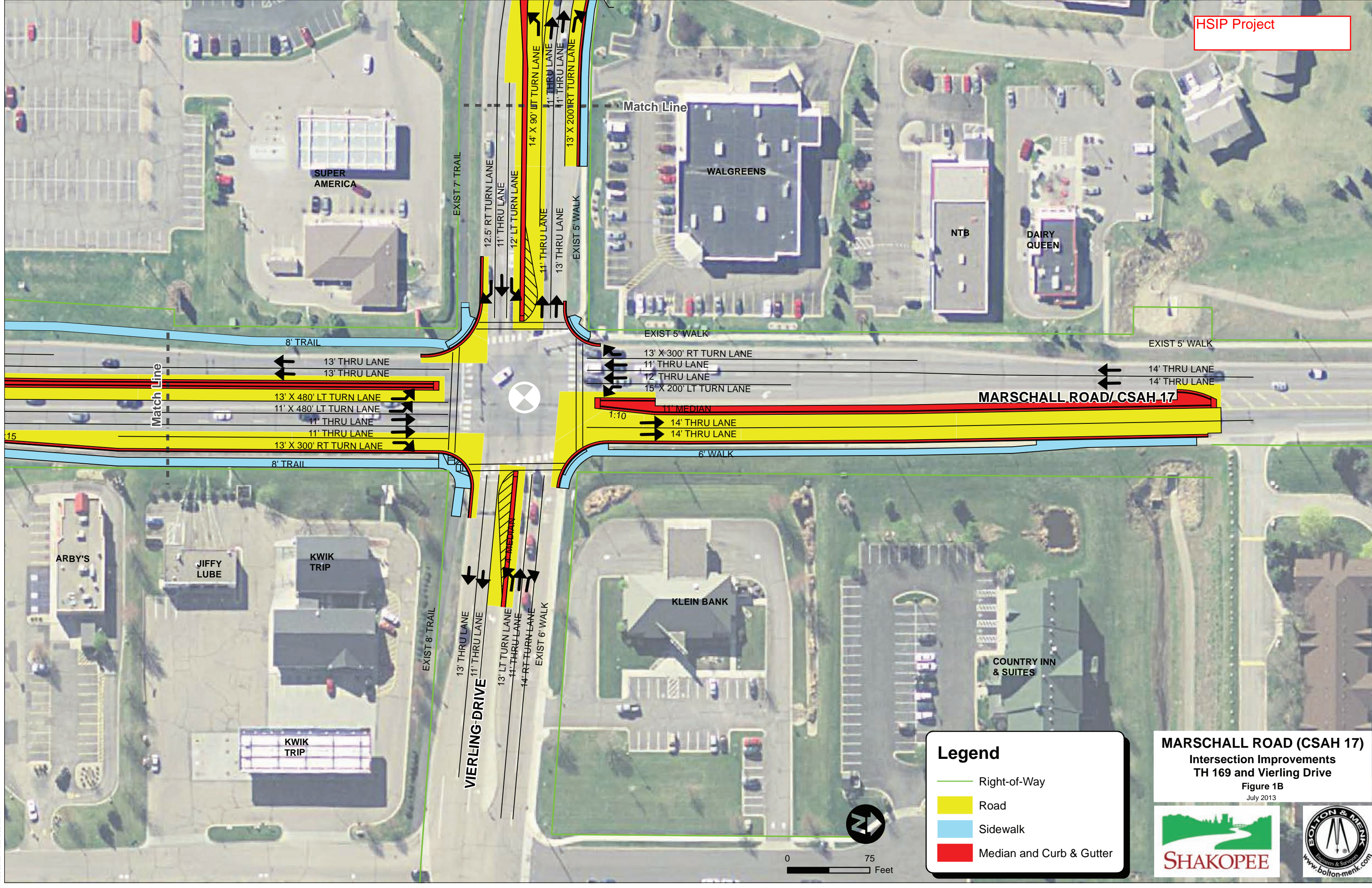
JIF
LUI

Legend

- Right-of-Way
- Sidewalk
- Road
- Median and Curb & Gutter

MARSCHALL ROAD (CSAH 17)
 Intersection Improvements
 TH 169 and Vierling Drive
 Figure 1A
 July 2013





Match Line

Match Line

SUPER AMERICA

WALGREENS

NTB

DAIRY QUEEN

EXIST 5' WALK

EXIST 5' WALK

8' TRAIL

13' THRU LANE

13' THRU LANE

13' X 480' LT TURN LANE

11' X 480' LT TURN LANE

11' THRU LANE

11' THRU LANE

13' X 300' RT TURN LANE

8' TRAIL

13' X 300' RT TURN LANE

11' THRU LANE

12' THRU LANE

15' X 200' LT TURN LANE

11' MEDIAN

14' THRU LANE

14' THRU LANE

6' WALK

MARSCHALL ROAD/CSAH 17

14' THRU LANE

14' THRU LANE

ARBY'S

JIFFY LUBE

KWIK TRIP

KWIK TRIP

KLEIN BANK

COUNTRY INN & SUITES

VIERLING DRIVE

EXIST 8' TRAIL

13' THRU LANE

11' THRU LANE

13' LT TURN LANE

11' THRU LANE

14' RT TURN LANE

EXIST 6' WALK

Legend

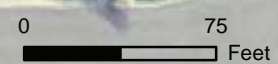
- Right-of-Way
- Road
- Sidewalk
- Median and Curb & Gutter

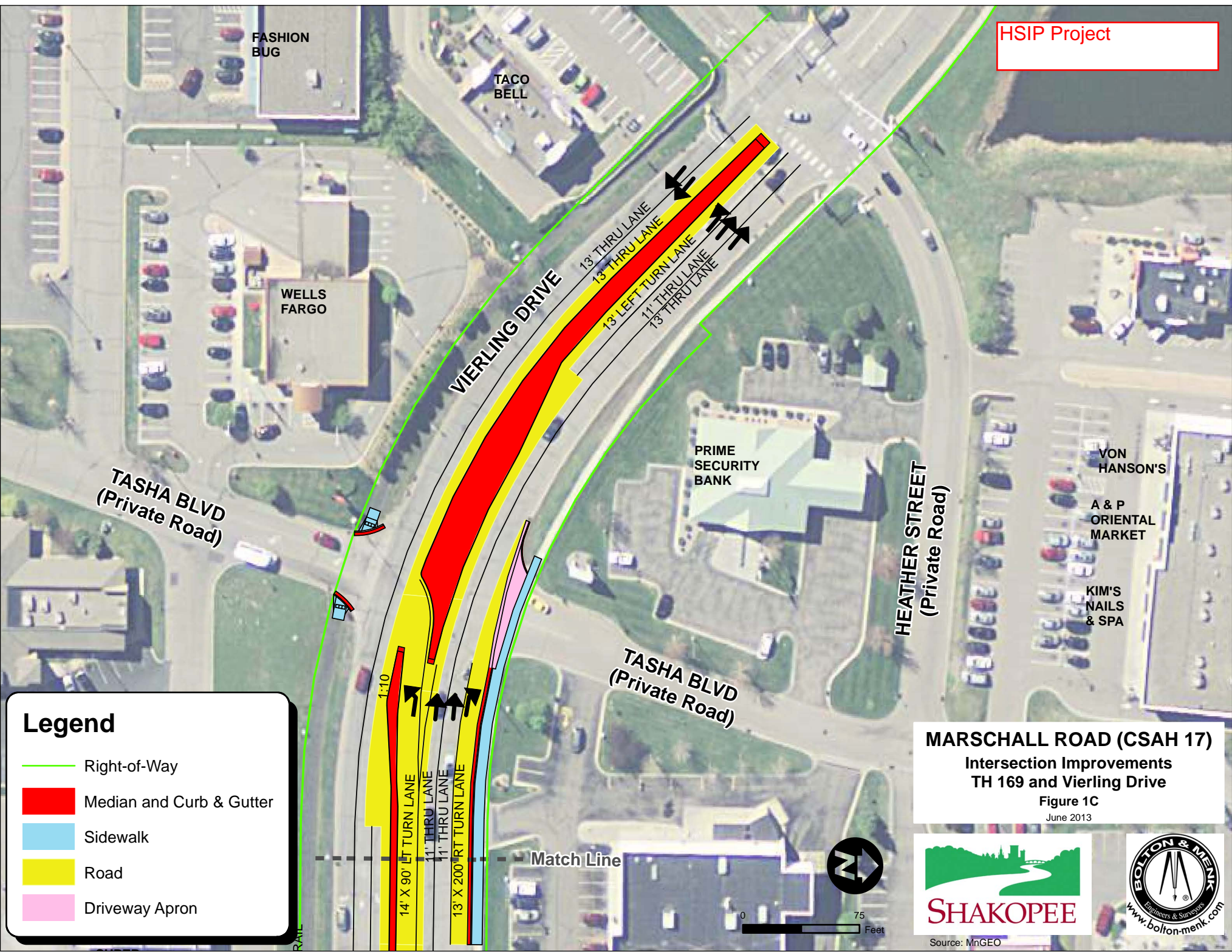
MARSCHALL ROAD (CSAH 17)

Intersection Improvements
TH 169 and Vierling Drive






Figure 1B

July 2013





Legend

-  Right-of-Way
-  Median and Curb & Gutter
-  Sidewalk
-  Road
-  Driveway Apron

MARSHALL ROAD (CSAH 17)
Intersection Improvements
TH 169 and Vierling Drive
 Figure 1C
 June 2013





July 2, 2009

Mr. Wayne Lemaniak
Mn/DOT Metro District Traffic Engineering
1500 West County Road B2
Roseville, MN 55044

Subject: 2009 Highway Safety Improvement Program Application
Vierling Drive at CSAH 17 and CSAH 17 at TH 169 North Ramp

Dear Mr. Lemaniak:

The City of Shakopee is submitting for your review an application for federal funding in the Highway Safety Improvement Program (HSIP).

The proposed project is for improvements at the intersection of Vierling Drive and County State Aid Highway (CSAH) 17 and the intersection of CSAH 17 at Trunk Highway (TH) 169 North Ramp. The proposed scope of work includes constructing additional left turn lanes, rebuilding the signal systems, providing signal communication interconnect, and a red light running system.

Estimated cost of the project is \$1,200,000. The City is requesting federal funds in the amount of \$1,080,000 (90%). The remaining project cost will be funded with local dollars. The City of Shakopee and Scott County is committed to fund the local match and necessary right-of-way costs. A letter of support from Scott County is attached. The benefit/cost ratio for the life of this project is 4.35.

Thank you for consideration of our application. As project manager for this project, please call if you need any additional information.

Sincerely,

Bruce Loney, PE
Public Works Director

Enclosures: Project Description
Figure 1: Location Map
Figure 2: Preliminary Layout
Collision Diagrams
Crash Reduction Factors
HSIP Worksheet with B/C Ratio
Scott County Letter of Support

COMMUNITY PRIDE SINCE 1857

PROJECT DESCRIPTION

The City of Shakopee is submitting this federal application through the Highway Safety Improvement Program (HSIP) for intersection improvements and signal reconstruction for the intersection of Vierling Drive and CSAH 17 and the intersection of CSAH 17 and TH 169 North Ramp in the City of Shakopee as shown in **Figure 1**. The purpose of the project is to improve the safety and operations of these two closely spaced signalized intersections by providing additional left turn lanes at northbound CSAH 17 at Vierling Drive and at southbound TH 169 at CSAH 17. The project will also include rebuilding the traffic signals, providing signal communication interconnect, and providing a red light confirmation system.

Existing Conditions

The intersection of Vierling Drive and CSAH 17 annually tops the City's list of intersections with the highest number of crashes. In addition, the proximity of the TH 169 North Ramp intersection 900 feet to the south creates operational constraints along this congested corridor which contributes to the high number of crashes. Similarly, the North Ramp has a significant number of crashes that can be attributed to capacity issues which decrease safety at the intersection.

Vierling Drive is a Major Collector roadway. It is a 4-lane divided urban section east and west of CSAH 17. The east and west approach legs at CSAH 17 each have a left turn lane, through lane, and right turn lane. Vierling Drive is an important corridor to the City of Shakopee. There is considerable commercial and community retail development along Vierling Drive. Vierling Drive carries average daily traffic (ADT) of nearly 19,000 vehicles immediately west of CSAH 17 and 7,000 vehicles east of CSAH 17. Vierling Drive is the longest east-west city street in Shakopee and serves to balance mobility and access running parallel north of TH 169.

CSAH 17 is an A-Minor Arterial roadway carrying nearly 25,000 vehicles per day at Vierling Drive. Through the Vierling Drive intersection, it is a 4-lane divided urban section with left and right turn lanes at the intersection. During the p.m. peak hour, the northbound left turn demand is over 550 vehicles and is served by a single left turn lane. The left turn lane cannot be extended any further and does not provide enough vehicle storage. The left turn lane overflow spills back into the North Ramp intersection for TH 169 causing safety concerns there as well. The ability to access the left turn lane from the through lane is difficult during the p.m. peak periods, especially for those that may have turned on to CSAH 17 at the TH 169 exit ramp. Vehicles exiting TH 169 destined to westbound Vierling Drive need to cross two through lanes before entering a full queue of vehicles waiting to make the left turn onto Vierling Drive.

Proposed Improvements

The layout of the proposed intersection project is shown in **Figure 2**. To improve the safety and operations of the intersections, the following improvements are proposed:

- Widen CSAH 17 to provide an additional exclusive left turn lane on the south approach of Vierling Drive and CSAH 17.
- Extend the north bound right turn lane at Vierling Drive.
- Mill and overlay along the northbound segment of CSAH 17 to align through movements along CSAH 17 and provide appropriate tapers for turn lanes.
- Widen North Ramp east approach to provide an additional left turn lane.
- Reconstruct traffic signals at both intersections to provide appropriate vehicle and pedestrian indication locations.

- Provide countdown pedestrian indications at both traffic signals.
- Provide traffic signal communications interconnect between signals.
- Replace trail and incorporate ADA pedestrian amenities as required.
- Provide red light confirmation system to enhance enforcement efforts as recommended by Shakopee Police Department.

The proposed intersection improvements at the two intersections are consistent with the CSAH 17 Corridor Study (May 2009) recommendations developed cooperatively between Scott County and the City of Shakopee.

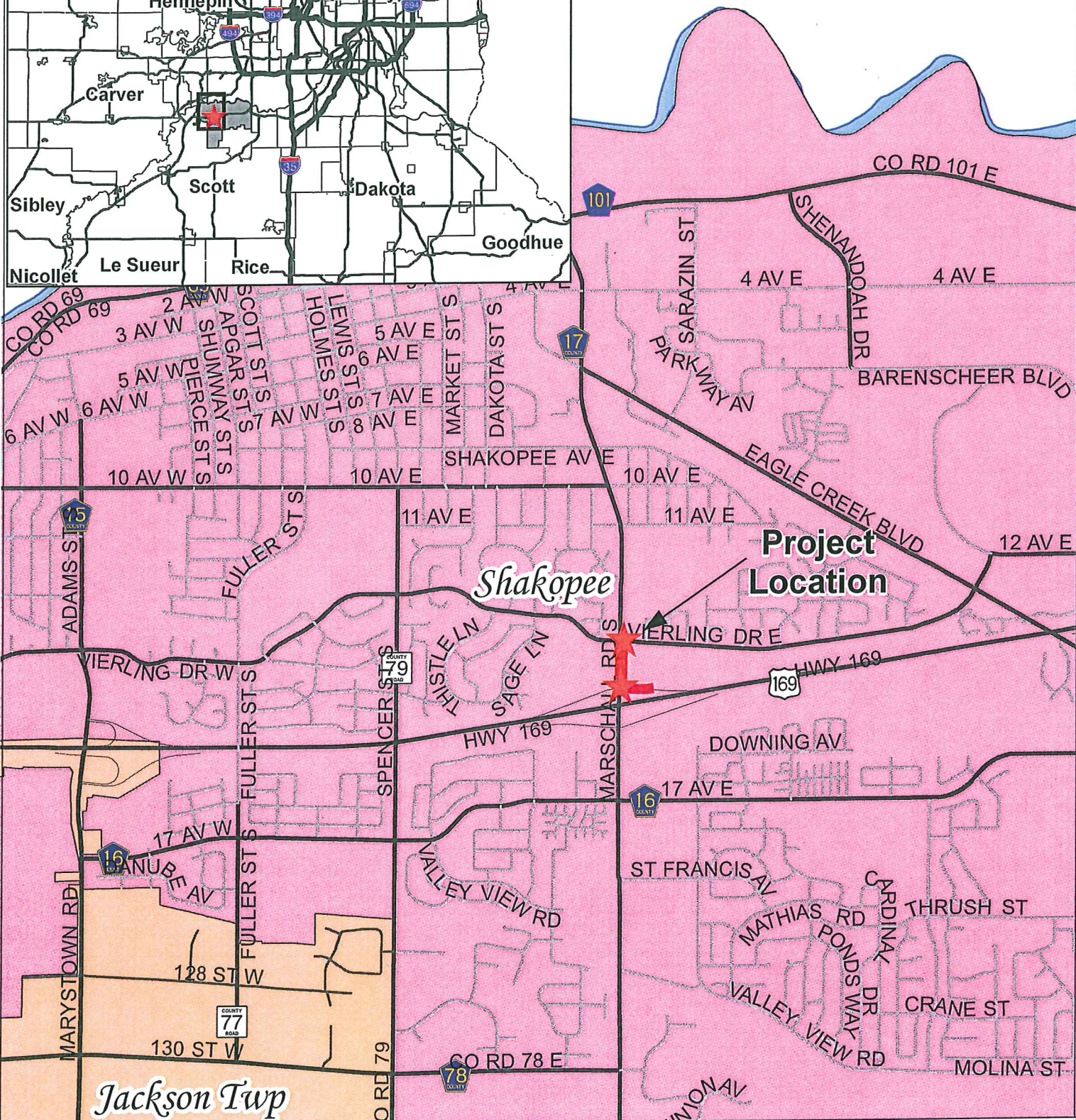
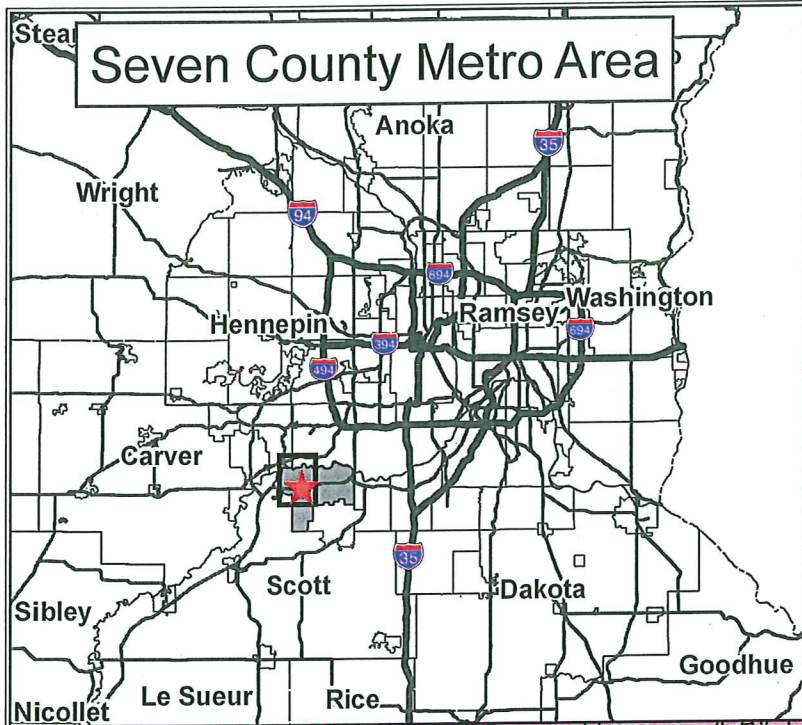
Crash Data

The Minnesota Department of Transportation provided the crash data and diagrams for the years 2005-2007 for the two intersections. The crash diagrams for all three years are attached. There were 41 crashes at the Vierling Drive and CSAH 17 intersection and 31 crashes at the CSAH 17 and TH 169 North Ramp intersection in the three year data period of 2005-2007. Of the 72 crashes, 20 were injury crashes. The proposed improvements are expected to decrease the total number of crashes by 29 crashes.

Using the attached HSIP Worksheet, a crash reduction analysis was performed for the intersections in order to estimate the reduction in the number of crashes based on proposed improvements. In order to determine the crash reduction factors, the HSIP Application Guidelines, Appendix D was used to determine reduction factors. A table is included in this application showing the percentages and combined percentages calculated and used.

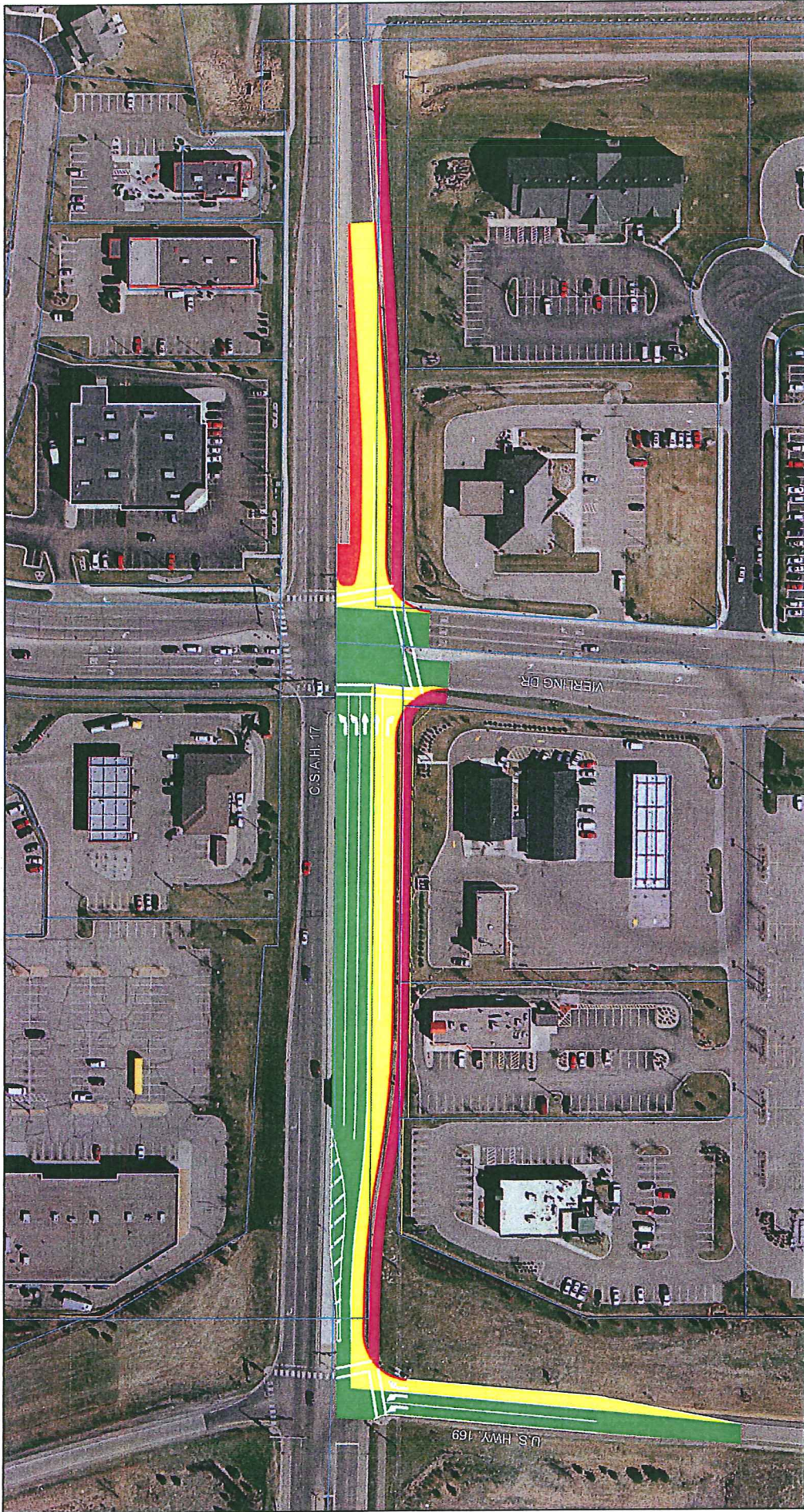
Benefit - Cost Analysis

The proposed project has an estimate construction cost for the improvements of \$1,200,000. The project service life for constructing turn lanes and upgrading traffic signals is 20 years. The HSIP table values of 3% traffic growth and 4.5% discount rate were used as unchanged. The amortized safety benefit over a 20 year period based on expected reduction in crashes would be approximately \$5,225,336. The calculated benefit/cost ratio is 4.35, which exceeds the minimum qualifying criteria of 1.0.



CSAH 17 & Vierling Dr & TH 169 Southbound Ramps at CSAH17 Intersections

Figure 1



- LEGEND**
- PROPOSED BITUMINOUS ROADWAYS
 - PROPOSED CONC. CURB, RAISED CONC. MEDIAN
 - PROPOSED MILL & OVERLAY
 - PROPOSED BITUMINOUS TRAIL



VIERLING DRIVE AT C.S.A.H. 17 FIGURE NO. 2

FPV (CSAH 17 at Vierling) - 08/20/2008 - 2:08:11 PM

COLLISION DIAGRAM

SIGNALIZED

Minnesota Department of Transportation

Location: CSAH17@ VIERLING DR E

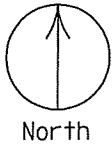
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Date: 4/22/09

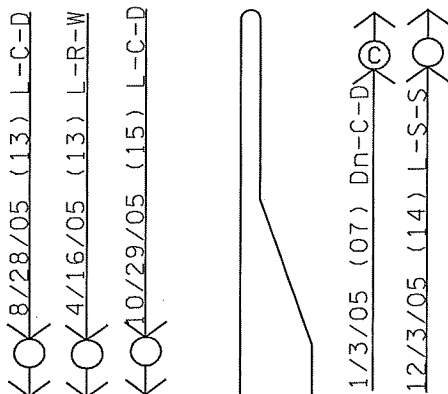
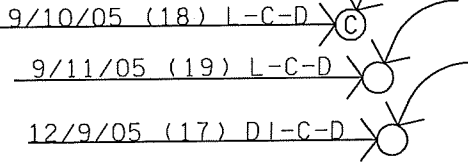
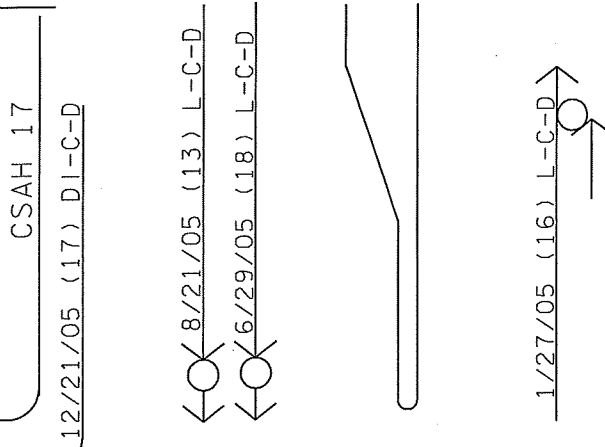
Prepared By: HGG

No. of Crashes

Fatal =	0
A Injury =	0
B Injury =	0
C Injury =	2
Injury Total =	2
Property Damage =	10
Total Crashes =	12



VIERLING DR E



KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

- [1] _____
- [2] _____
- [3] _____

<p>Light:</p> <p>L= Daylight (1) Dn= Dawn (2) Du= Dusk (3) DI= Dark, Lighted (4) Do= Dark, Lights Off (5) D= Dark, Unlighted (6) X= Unknown (99)</p>	<p>Weather:</p> <p>C= Clear or Cloudy (1 or 2) R= Rain (3) S= Snow or Sleet (4 or 5) F= Fog, Smog, Smoke (6) B= Blowing Sand/Dust (7) W= Severe Crosswinds (8) X= Other or Unknown (99)</p>	<p>Surface:</p> <p>D= Dry (1) W= Wet (2) S= Snow, Ice, Slush (3,4 or 5) M= Muddy (7) Db= Debris (8) O= Oily (9) X= Other or Unknown (99)</p>
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(X) = Number of Vehicles in Crash (X) [Date] - [Time (hrs)] - [Light-Weather-Surface]

COLLISION DIAGRAM

SIGNALIZED

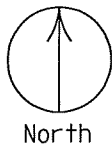
Minnesota Department of Transportation

Location: CSAH17@ VIERLING DR E

Time Period: 1/1/2006 - 12/31/2006 Date: 4/22/09

Prepared By: HGG

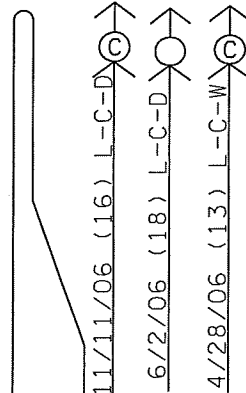
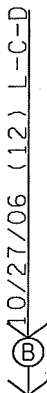
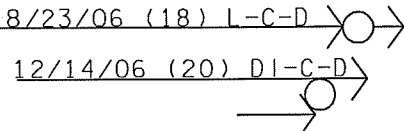
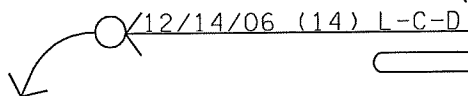
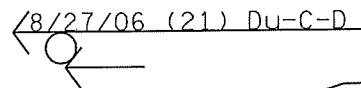
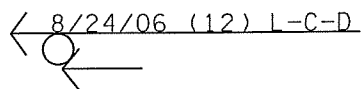
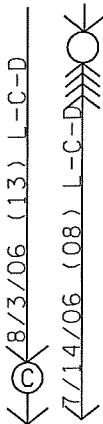
No. of Crashes	
Fatal =	0
A Injury =	0
B Injury =	1
C Injury =	3
Injury Total =	4
Property Damage =	7
Total Crashes =	11



North

CSAH 17

VIERLING DR E



VIERLING DR E

CSAH 17

KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

- [1] _____
- [2] _____
- [3] _____

Light:	Weather:	Surface:
L = Daylight (1)	C = Clear or Cloudy (1 or 2)	D = Dry (1)
Dn = Dawn (2)	R = Rain (3)	W = Wet (2)
Du = Dusk (3)	S = Snow or Sleet (4 or 5)	S = Snow, Ice, Slush (3, 4 or 5)
DI = Dark, Lighted (4)	F = Fog, Smog, Smoke (6)	M = Muddy (7)
Do = Dark, Lights Off (5)	B = Blowing Sand/Dust (7)	Db = Debris (8)
D = Dark, Unlighted (6)	W = Severe Crosswinds (8)	O = Oily (9)
X = Unknown (99)	X = Other or Unknown (99)	X = Other or Unknown (99)

(X) = Number of Vehicles in Crash (X) [Date] - [Time (hrs)] - [Light-Weather-Surface]

COLLISION DIAGRAM

SIGNALIZED

Minnesota Department of Transportation

Location: CSAH17@ VIERLING DR E

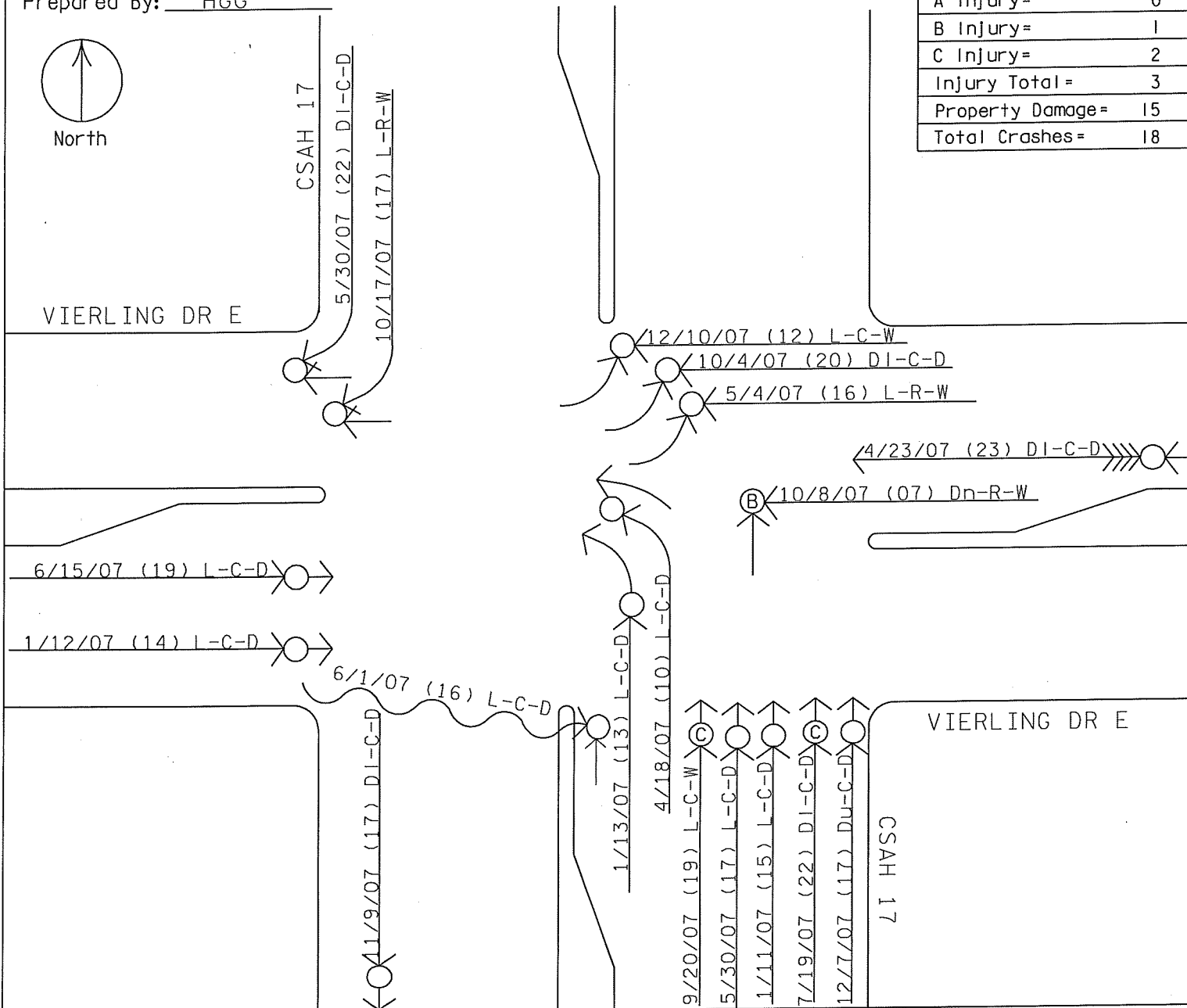
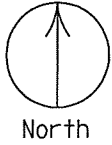
Time Period: 1/1/2007 - 12/31/2007

Date: 4/22/09

Prepared By: HGG

No. of Crashes

Fatal =	0
A Injury =	0
B Injury =	1
C Injury =	2
Injury Total =	3
Property Damage =	15
Total Crashes =	18



KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

- [1] _____
- [2] _____
- [3] _____

<p>Light:</p> <p>L = Daylight (1) Dn = Dawn (2) Du = Dusk (3) DI = Dark, Lighted (4) Do = Dark, Lights Off (5) D = Dark, Unlighted (6) X = Unknown (99)</p>	<p>Weather:</p> <p>C = Clear or Cloudy (1 or 2) R = Rain (3) S = Snow or Sleet (4 or 5) F = Fog, Smog, Smoke (6) B = Blowing Sand/Dust (7) W = Severe Crosswinds (8) X = Other or Unknown (99)</p>	<p>Surface:</p> <p>D = Dry (1) W = Wet (2) S = Snow, Ice, Slush (3,4 or 5) M = Muddy (7) Db = Debris (8) O = Oily (9) X = Other or Unknown (99)</p>
--	---	--

(X) = Number of Vehicles in Crash (X) [Date] - [Time (hrs)] - [Light-Weather-Surface]

COLLISION DIAGRAM

SIGNALIZED

Minnesota Department of Transportation

Location: USTH 169 @ CSAH 17/MARSCHALL RD ELEM 352 R.P. 110+00.742

Time Period: 01/01/05 - 12/31/05

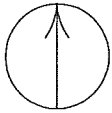
Date: 11/8/07

Prepared By: MPK

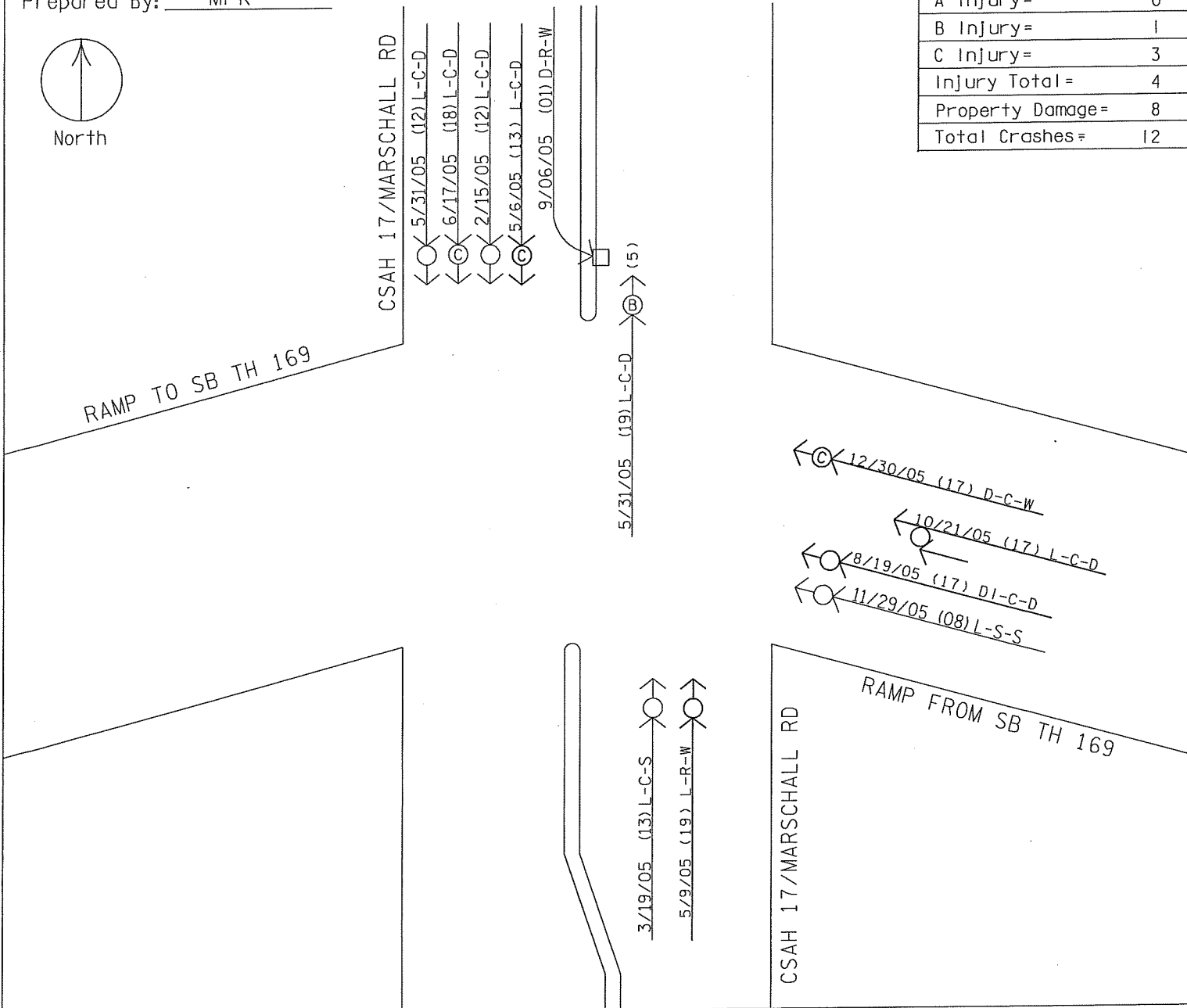
EDITED 6/22/09 BY HGG

No. of Crashes

Fatal =	0
A Injury =	0
B Injury =	1
C Injury =	3
Injury Total =	4
Property Damage =	8
Total Crashes =	12



North



KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

- [1] _____
- [2] _____
- [3] _____

<p>Light:</p> <p>L = Daylight (1) Dn = Dawn (2) Du = Dusk (3) D1 = Dark, Lighted (4) Do = Dark, Lights Off (5) D = Dark, Unlighted (6) X = Unknown (99)</p>	<p>Weather:</p> <p>C = Clear or Cloudy (1 or 2) R = Rain (3) S = Snow or Sleet (4 or 5) F = Fog, Smog, Smoke (6) B = Blowing Sand/Dust (7) W = Severe Crosswinds (8) X = Other or Unknown (99)</p>	<p>Surface:</p> <p>D = Dry (1) W = Wet (2) S = Snow, Ice, Slush (3,4 or 5) M = Muddy (7) Db = Debris (8) O = Oily (9) X = Other or Unknown (99)</p>
--	---	--

(X) = Number of Vehicles in Crash (X) [Date] - [Time (hrs)] - [Light-Weather-Surface]

COLLISION DIAGRAM

SIGNALIZED

Minnesota Department of Transportation

Location: USTH 169 @ CSAH 17/MARSCHALL RD ELEM 352 R.P. 110+00.742

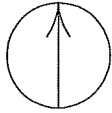
Time Period: 01/01/06 - 12/31/06 Date: 11/8/07

Prepared By: MPK

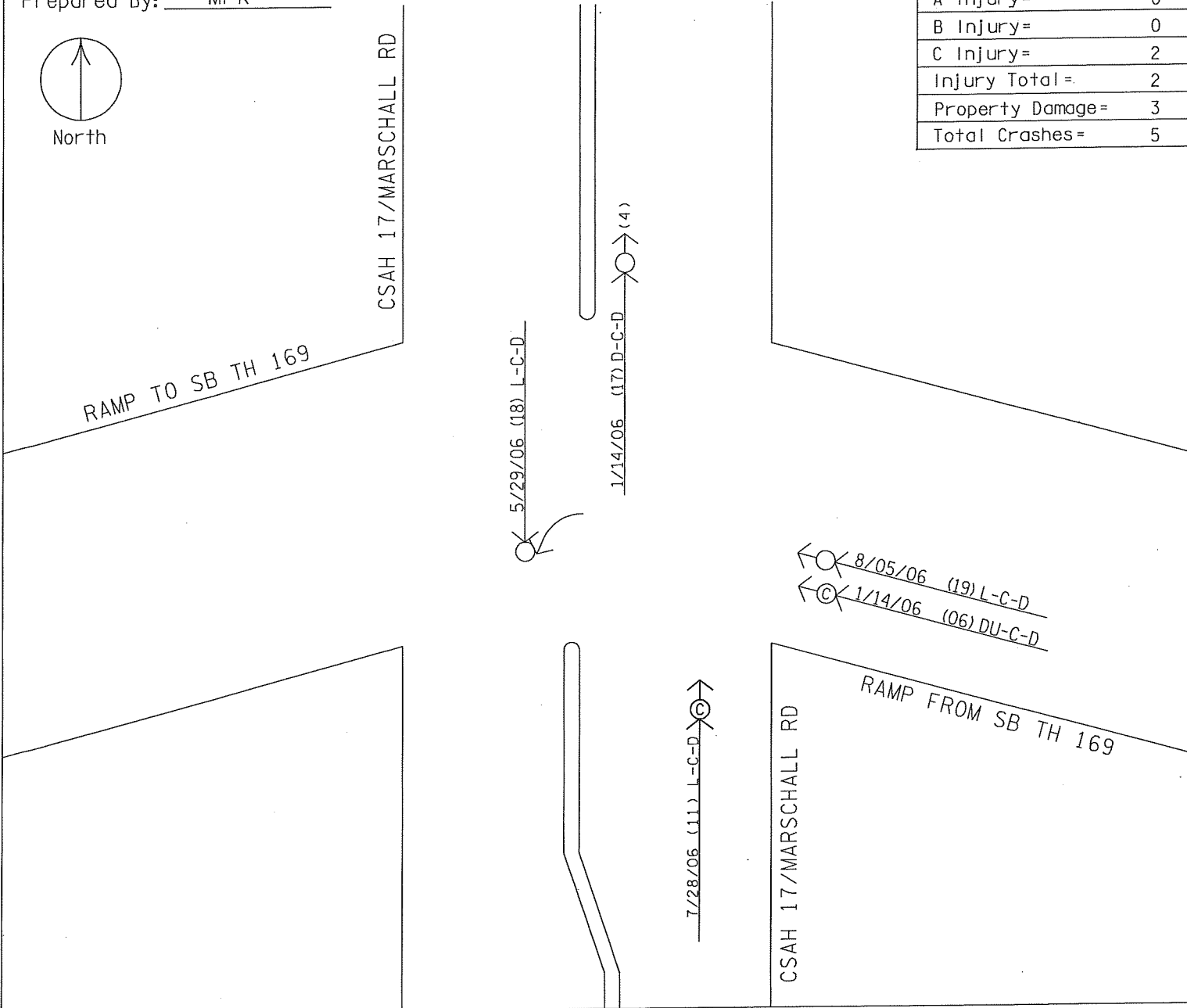
EDITED 6/22/09 BY HGG

No. of Crashes

Fatal =	0
A Injury =	0
B Injury =	0
C Injury =	2
Injury Total =	2
Property Damage =	3
Total Crashes =	5



North



KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

[1] _____
 [2] _____
 [3] _____

<p>Light:</p> <p>L = Daylight (1) Dn = Dawn (2) Du = Dusk (3) Dl = Dark, Lighted (4) Do = Dark, Lights Off (5) D = Dark, Unlighted (6) X = Unknown (99)</p>	<p>Weather:</p> <p>C = Clear or Cloudy (1 or 2) R = Rain (3) S = Snow or Sleet (4 or 5) F = Fog, Smog, Smoke (6) B = Blowing Sand/Dust (7) W = Severe Crosswinds (8) X = Other or Unknown (99)</p>	<p>Surface:</p> <p>D = Dry (1) W = Wet (2) S = Snow, Ice, Slush (3,4 or 5) M = Muddy (7) Db = Debris (8) O = Oily (9) X = Other or Unknown (99)</p>
--	---	--

(X) = Number of Vehicles in Crash (X) Other Vehicle Injury Type [Date] - [Time (hrs)] - [Light-Weather-Surface]

COLLISION DIAGRAM

SIGNALIZED

Minnesota Department of Transportation

Location: USTH 169 @ CSAH 17/MARSCHALL RD ELEM 352 R.P. 110+00.742

Time Period: 01/01/07 - 12/31/07

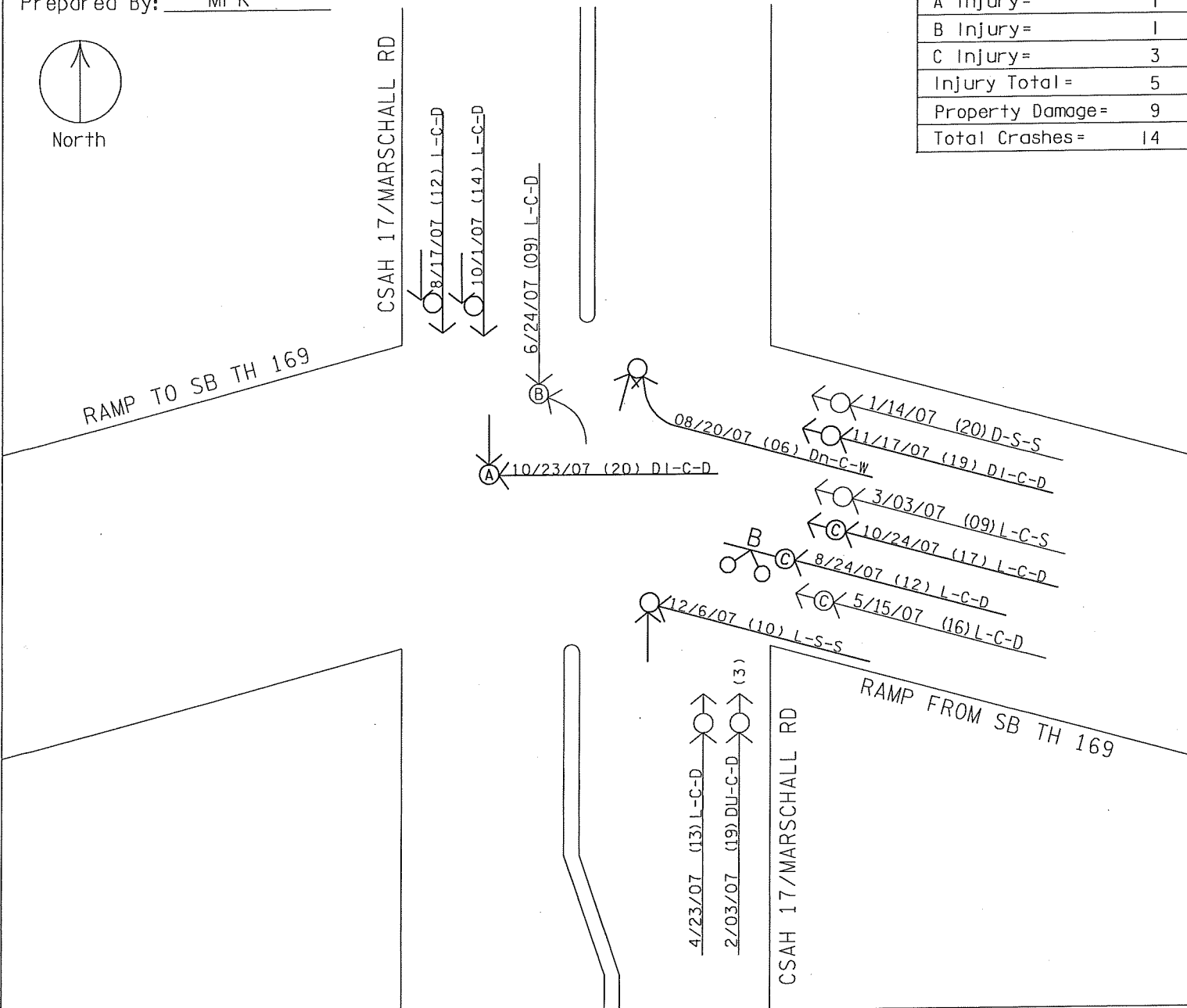
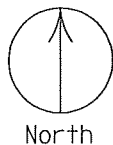
Date: 11/8/07

Prepared By: MPK

EDITED 6/22/09 BY HGG

No. of Crashes

Fatal =	0
A Injury =	1
B Injury =	1
C Injury =	3
Injury Total =	5
Property Damage =	9
Total Crashes =	14



KEY

- Motor Vehicle Out of Control
- Motor Vehicle Backing Up
- Motor Vehicle Rollover
- Motor Vehicle Sideswipe
- Fixed Object
- Fatal Crash
- A Injury Crash
- B Injury Crash
- C Injury Crash
- Property Damage Crash
- Pedestrian
- Bicycle
- Motorcycle
- Parked Vehicle
- Rear End Property Damage
- Right Angle B Injury

NOTES

[1] _____
 [2] _____
 [3] _____

Light:

- L = Daylight (1)
- Dn = Dawn (2)
- Du = Dusk (3)
- DI = Dark, Lighted (4)
- Do = Dark, Lights Off (5)
- D = Dark, Unlighted (6)
- X = Unknown (99)

Weather:

- C = Clear or Cloudy (1 or 2)
- R = Rain (3)
- S = Snow or Sleet (4 or 5)
- F = Fog, Smog, Smoke (6)
- B = Blowing Sand/Dust (7)
- W = Severe Crosswinds (8)
- X = Other or Unknown (99)

Surface:

- D = Dry (1)
- W = Wet (2)
- S = Snow, Ice, Slush (3, 4 or 5)
- M = Muddy (7)
- Db = Debris (8)
- O = Oily (9)
- X = Other or Unknown (99)

(X) = Number of Vehicles in Crash (X) [Date] - [Time (hrs)] - [Light-Weather-Surface]

Crash Reductions

Project Location: Vierling Drive at CSAH 17, and CSAH 17 at TH 169 North Ramp

Source: MnDOT % Change in Crashes

Crash Type	Signal Rebuild	Intersection Left Turn Lane	Reduction
Rear End - Injury	0.20	0.15	32%
Rear End - PD	0.30	0.15	41%
Sideswipe Passing - Injury	0.50	0.35	68%
Sideswipe Passing - PD	0.30	0.10	37%
Left Turn - Injury (*)	0.25	0.35	51%
Left Turn - PD (*)	0.20	0.35	48%
Right Angle - Injury (*)	0.30	0.15	41%
Right Angle - PD (*)	0.30	0.45	62%
Ran off the Road - Injury	0.35	0.25	51%
Ran off the Road - PD	0.50	0.25	63%
Head On/Sideswipe Passing - Injury	0.45	0.15	53%
Head On/Sideswipe Passing - PD	0.60	0.00	60%
Other/Total Crash - Injury	0.25	0.20	40%
Other/Total Crash - PD	0.30	0.25	48%

(*) Red light confirmation system/enforcement crash reduction undetermined

HSIP worksheet

Control Section	E.H./ Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State County City or Township	Study Period Begins	Study Period Ends
	CSAH 17	TH 169 N Ramp to 600' North of Vierling	N Ramp TH 169	600' N of Vierling	Scott Co.	1/1/2005	12/31/2007

Description of Proposed Work: Construct additional left turn lanes on CSAH 17 and additional left turn lane on the North Ramp from TH 169.

Accident Diagram Codes	1. Rear End	2. Sideswipe Same Direction	3. Left Turn Main Lane	4. Right Angle	5. Run off Road	6. Head On Sideswipe Opposite Direction	Pedestrian	Other	Total

Study Period Number of Crashes	Priority	F								
		A				1			1	
		B	2	1	1					4
		C	13		1				1	15
		PD	30	8	10	3	1			52

% Change in Crashes	Priority	F								
		A			-51%	-41%				
		B	-32%	-33%						
		C	-32%						-48%	
		PD	-41%	-37%	-48%	-62%	-63%			

Change in Crashes = No. of crashes X % change in crashes	Priority	F								
		A				-0.41			-0.41	
		B	-0.64	-0.33	0.00					-0.97
		C	-4.16		0.00				-0.48	-4.64
		PD	-12.30	-2.96	-4.80	-1.86	-0.63			-22.55

Year (Safety Improvement Construction) 2013

Project Cost (exclude Right of Way)	Right of Way Costs (optional)	Traffic Growth Factor	Capital Recovery	1. Discount Rate	2. Project Service Life (n)
\$ 1,200,000		3%		4.5%	20

Type of Crash	Study Period Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			\$ 780,000	
A	-0.41	-0.14	\$ 390,000	\$ 53,349
B	-0.97	-0.32	\$ 121,000	\$ 38,957
C	-4.64	-1.55	\$ 75,000	\$ 116,106
PD	-22.55	-7.52	\$ 12,000	\$ 90,282
Total			\$ 298,694	

B/C = 4.35

Using present worth values,
B = \$ 5,225,336
C = \$ 1,200,000
 See "Calculations" sheet for amortization.



SCOTT COUNTY PUBLIC WORKS DIVISION

HIGHWAY DEPARTMENT • 600 COUNTRY TRAIL EAST • JORDAN, MN 55352-9339
(952) 496-8346 • Fax: (952) 496-8365 • www.co.scott.mn.us

LEZLIE A. VERMILLION
PUBLIC WORKS DIRECTOR

MITCHELL J. RASMUSSEN, P.E.
COUNTY ENGINEER

JAMES L. HENTGES
COUNTY SURVEYOR

June 30, 2009

Mr. Bruce Loney, PE
Public Works Director
City of Shakopee
129 S. Holmes Street
Shakopee, MN 55379

Subject: 2009 Highway Safety Improvement Program Application
Vierling Drive at CSAH 17 and CSAH 17 at TH 169 North Ramp

Dear Mr. Loney:

Scott County has reviewed the subject Highway Safety Improvement Program application prepared by the City of Shakopee for intersection improvements at two intersections; CSAH 17 at Vierling Drive and CSAH 17 at TH 169 North Ramp. Scott County supports the application and will contribute 50% toward and local construction match and 50% toward the right of way costs.

Sincerely,

Leslie A. Vermillion
Public Works Director