



**Department of  
Public Works**  
Steven A. Kotke, P.E.  
City Engineer  
Director

350 South 5th Street - Room 203  
Minneapolis MN 55415

Office 612 673-3000  
Fax 612 673-3565  
TTY 612 673-2157

Jacob Frey  
Council Member Ward 3  
350 S. 5th St., Room 307  
Minneapolis, MN 55415

October 9, 2014

Re. 2<sup>nd</sup> Ave. N and 3<sup>rd</sup> St N. Crashes

Due to resident and business traffic safety concerns, the Ward 3 Council Office has requested that The Department of Public Works, Traffic and Parking Services Division (TPS) Staff analyze the intersection of 2<sup>nd</sup> Ave. N. and 3<sup>rd</sup> St. N. for possible safety enhancements. The Traffic and Parking Services Division brought this intersection forward to the internal Crash Reduction Committee for evaluation with the intent of assessing the data, determining if there are issues, and providing possible options that may enhance safety.

Based on the collected data, along with resident and staff observations, Public Works will move forward on implementing safety enhancements at this intersection. These enhancements will include:

- Add westbound overhead signal indication
- Install yellow reflectorized back shields on overhead signal indications ( 1<sup>st</sup> in the City)
- Replace 8" diameter traffic signal indications with 12" indications
- Install "Turning Vehicles Stop for Pedestrian" Signs for northbound traffic
- Install (paint) a "Zebra" style crosswalk on the west leg of the intersection

A summary of the analysis and a basis for these enhancements are explained further in this document.

### Traffic Data

To better gauge crashes at the intersection of 2<sup>nd</sup> Ave. N and 3<sup>rd</sup> St. N., crash data from other intersections were also tabulated. Two adjacent intersections were chosen, along with another freeway access point that is on a one way roadway.

- **3<sup>rd</sup> St N. Speed Data**
  - Avg. Speed 31 MPH
  - 85% Speed 33 MPH

2 <sup>nd</sup> Ave. N and 3 <sup>rd</sup> St. N Data Summary									
Intersection	*Intersection Crash Rate	Avg. State Crash Rate	Crash Type 2011-2013 (Volume)						Crash Total
			Right Angle	Pedestrian	Bicycle	Side Swipe	Parked Vehicle	Rear End	
2nd Ave. N. & 3rd St. N.	0.88	0.70	17	**1	1	5	1	4	30
<b>Comparison Intersections</b>									
1st Ave. N. & 3rd St. N.	0.70	0.70	1	3	0	4	2	3	22
2nd Ave. N. and 4th St. N.	0.61	0.70	3	2	0	3	1	5	20
4th Ave. S. and 10th St. S	0.26	0.70	0	0	0	2	0	1	8

Note: Data is obtained as part of reported crashes from Minneapolis Police Department

\* Crash Rate is a measure of crashes per million vehicles entering the intersection. Typically, total number of crashes are higher at intersections with high vehicle volume. The crash rate is measured to correlate the total number of crashes based on the volume of vehicles at the intersection.

\*\* 2 pedestrian crashes in last 4 years, and 4 pedestrian crashes in the last 11years

## Data Summary

The above data for the intersection of 2<sup>nd</sup> Ave. N. and 3<sup>rd</sup> St. N. indicates a couple of issues regarding intersection crashes. The issues that can be concluded from the data are the crash rate and the right angle crashes are higher than other similar high volume intersections.

The crash rate at this intersection is higher than the state average. The rate provides for a correlation of crashes to vehicle volumes, but also gives a measurement that can be quickly compared to other intersections in terms of crashes. As the data indicates, the crash rate is higher than the State average, but also higher than the comparison intersections that were considered.

The number of right angle crashes is high at this intersection in comparison to the other intersections. Violations of the red signal indication are predominantly in the 3<sup>rd</sup> St. direction. This will be a point of focus for possible enhancements.

Another type of crash where the data does not suggest an issue, but that the businesses and residents in the area are concerned about, is pedestrian crashes. Staff researched the historical pedestrian crashes at this intersection in greater detail and did discover a vehicle maneuver that is consistent with all 4 pedestrian crashes that have occurred in the last 11 years. The maneuver is a vehicle turning left from northbound 2<sup>nd</sup> Ave. N. to the 394/94 ramp entrance and hitting a pedestrian walking in the crosswalk with the walk signal. This is a factor that will be considered as safety enhancement options are evaluated.

Public Works also completed a speed study for 3<sup>rd</sup> St. N. The study indicates an average speed of 31 MPH and an 85% speed of 33 MPH. 85% speed is a measurement used by transportation engineers to determine the "comfort speed" of the roadway. This is the speed at which 85% of vehicles drive less than. Both the Avg. Speed and the 85% speed are in line with other similar roadways in the City. What the speed data did indicate was a high number of vehicles traveling in excess of 40MPH between the hours of 4pm and 5pm.

Based on some of the comments from the residents regarding pedestrian safety, Public Works observed the intersection from 4pm-6pm for three days and tabulated the observations. The observations tabulated included:

- Pedestrian using the west crosswalk
- Number of 3<sup>rd</sup> St. N. vehicles violating the red light
- Number of 2<sup>nd</sup> Ave. N. vehicles turning left on red
- Number of 2<sup>nd</sup> Ave. N. vehicles turning in front of pedestrians
- Number of bicycles using west crosswalk.

The results are included in an attachment to this document.

## **Safety Enhancement Options**

The Crash Committee discussed this intersection and offers some possible enhancements that may reduce crashes at this intersection. The crash type, and possible enhancement for reduction are listed below.

### **Right Angle Crashes**

- Add additional westbound overhead signal indication
- Install yellow reflectorized back shields on the overhead signal indications to enhance visibility.
- Replace any 8" signal heads with 12" signal heads to enhance visibility
- Request Enforcement to ticket red light violators and speeders.
- Remove large overhead sign that is located midblock on 3<sup>rd</sup> St. between 1<sup>st</sup> Ave. N. and 2<sup>nd</sup> Ave. N., and replace with sign more consistent with other freeway entrance points
- Install near side signal heads for greater visibility to drivers.

### **Pedestrian Crashes**

- Install "Turning Vehicles Stop for Pedestrian" Signs
- Install a "Zebra" style crosswalk on the west leg of the intersection
- Flashing Yellow arrows to indicate caution when turning Left.
- Restrict left turns by separately phasing the movement with left turn indications.

## **Conclusion**

### **Right Angle Crashes**

The intersection's accommodation of freeway entrance traffic does appear to be creating an environment for disregarding the traffic signal indications. The right angle crash data is a clear indication that leads to this conclusion. There are some potential mitigation options listed above that do have proven effectiveness for reducing right angle crashes. Some of these options can readily be implemented by Public Works and some will likely take some time as there is other agency involvement. In order to provide mitigation for right angle crashes at this intersection, Public Works will start the planning, design and implementation of the following options:

- Additional westbound overhead signal indication
- Install yellow reflectorized back shields on overhead signal indications ( 1<sup>st</sup> in the City)
- Replace 8" diameter traffic signal indications with 12" indications

The option that will need further discussion, includes the replacement of the overhead sign. Public Works staff will continue to discuss this option with partner agencies for possible implementation.

### **Pedestrian Crashes**

Local residents are very concerned with this type of crash and the numerous close calls that have also been occurring. Unfortunately, there is no data set that includes "close calls". Public Works Staff did observe this intersection during the evening peak traffic period for the purpose of tabulating driver behavior, pedestrian usage and bike usage. This would allow a greater focus on a particular vehicle

movement, and to better gauge the activity occurring at the intersection. The observation results do indicate some degree of red light violations on 3<sup>rd</sup> St. N. The options that will be implemented as part of reducing right angle crashes, can result in fewer situations where vehicles are entering the crosswalk in violation of the signal. Pedestrians utilizing all four crosswalk legs of the intersection could presumably benefit from this.

The data set that the City has available includes police reports of crashes that have been tabulated over the last 11 years. From this data, the 4 total pedestrian crashes were specifically looked at for possible safety enhancements. All 4 pedestrian crashes included a vehicle traveling northbound and turning left on to the freeway and hitting the pedestrian in the west crosswalk. In all four crashes, the pedestrian had the walk signal. This type of pre-maneuver to a crash is a little more challenging to manage from a safety perspective, and the infrequency of this type of crash does not suggest a routine behavior from drivers. There are a few options that will be implemented in order to provide drivers turning left awareness of the pedestrian crosswalk. These include:

- Install "Turning Vehicles Stop for Pedestrian" Signs for northbound traffic
- Install (paint) a "Zebra" style crosswalk on the west leg of the intersection

The installation of a zebra style crosswalks have not been proven to reduce pedestrian crashes. However, they are typically preferred by pedestrians, and provide pedestrians with a more pronounced path by which to cross. The "Turning Vehicles Stop for Pedestrians" sign is somewhat new to the transportation environment, but is viewed positively by traffic engineers as a means to give greater indication to vehicles that pedestrians may be in their turning path.

#### Speeding/Red Light Violations

The data indicates that right angle crashes are occurring more often between the hours of 11am-noon, and 11pm to midnight. Also, the speed data indicates that speeds on 3<sup>rd</sup> St. N are highest between 4pm and 5pm. Public Works has arranged with the 1st Precinct Police Department to provide focused enforcement during these hours. Typically enforcement along with the safety enhancements will produce a more positive response from drivers thus increasing safety at the intersection.

Further discussion and analysis will be needed to consider the other potential options that include the flashing yellow arrows to indicate caution when turning left, and restricting left turns by separately phasing the movement with left turn indications. Because of the high volume of traffic at the intersection, these options will be analyzed further to determine the impacts at this intersection and possibly other intersections.

The options that Public Works intends on moving forward will be implemented within the next 10 weeks and will include:

- Add westbound overhead signal indication
- Install yellow reflectorized back shields on overhead signal indications ( 1<sup>st</sup> in the City)
- Replace 8" diameter traffic signal indications with 12" indications
- Install "Left Turns Stop for Pedestrian" Signs
- Install (paint) a "Zebra" style crosswalk on the west leg of the intersection

Public Works will continue to monitor the intersection and provide updates on any of the options that will be further evaluated.

Thanks, Steve



Steve Mosing PE, PTOE  
Traffic Operations Engineer  
Dept. of Public Works  
Traffic and Parking Services Division  
300 Border Ave. N., Mpls, MN 55405  
[steve.mosing@minneapolismn.gov](mailto:steve.mosing@minneapolismn.gov)  
612-673-5746

c: Richie, Wertjes, Drew  
Attachments:  
Staff Observations  
Improvement Illustration