

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE: Review of 15th Ave NE Traffic Information
DEPARTMENT: Public Works-Traffic Services
PRESENTED BY: Paul Haines, Public Works Director
 Jesus Sanchez, Operations Manager
 Rich Meredith, City Traffic Engineer

PROBLEM/ISSUE STATEMENT:

In December, 2003, Public Works completed a project to reconfigure 15th Ave NE between NE 150 St and NE 175 St from a 4-lane roadway to a 3 lane roadway. Concerns were raised about increased traffic congestion on 15th Ave NE, and increased traffic volumes and speeds on nearby neighborhood streets. Staff have been monitoring these issues through traffic counts, speed studies, collision review, and traffic studies.

FINDINGS/CONCLUSIONS

The operation of 15th Ave NE as a three-lane roadway meets the planned expectations:

- Lower speeds – The 85th speeds fell from 39.3 to 38.5
- Lower volumes – The average weekday traffic (AWDT) declined 1,268 (7.4%)
- Fewer collisions – There was a 4.7% decline in reported collisions on 15th Ave NE, and a 15.5% decline in the surrounding neighborhood area.
- Decreased severity – There was a 42.6% drop in the number of reported injuries.

Some local streets experienced small gains in traffic volumes and speeds, and some experienced small reductions. The increases on local streets are within the range that these streets can accommodate, and are manageable with controls through the Neighborhood Traffic Safety Program (NTSP) and the Neighborhood Traffic Action Plans (NTAP). With the completion of the North City project, traffic volumes on 15th Ave NE and the local arterials continue to rebound, approaching pre-construction levels.

RECOMMENDATION

Continue to operate 15th Ave NE in a three-lane configuration. Staff will continue to work on the following four key elements with local residents to manage traffic impacts on non-arterial streets and implement appropriate neighborhood traffic mitigation improvements.

The addition of traffic signals at NE 150th St and 15th Ave NE, and potentially at NE 170th St and 15th Ave NE., to create additional access gaps on 15th Ave. N.E..

- Review road alignment for potential bus pull-out extension alleviating back ups along 15th Ave NE
- Continue implementing traffic calming devices and Neighborhood Traffic Action Plans
- Installation of traffic islands along 15th Ave NE discouraging use of center lanes as “passing lanes”

Approved By: City Manager  City Attorney _____

ACTION/BACKGROUND

Prior to December, 2003, 15th Ave NE consisted of two lanes in each direction between NE 150 St and NE 175 St. The curb to curb width of 15th Ave NE is 44 feet, so there is not enough room for a center turn lane and two lanes in each direction. The character of the land uses along 15th Ave NE is primarily residential. The speed limit is 35 MPH. According to King County records, local residents have had concerns about traffic speeds, safety, and pedestrian safety along the corridor prior to incorporation in 1995.

A master plan developed for the North City Business District (NCBD) recommended reconfiguring 15th Ave NE to a three lane section between NE 175 St and NE 180 St to enhance the pedestrian environment, improve pedestrian safety while crossing 15th Ave NE, and improve turning movements into and out of adjacent businesses. In 1998, the City of Shoreline funded a study to examine the corridor south of NE 175th St and recommend improvements. One of the recommendations was to reconfigure the roadway from 2 lanes each direction to one lane in each direction with a center turn lane. This change, sometimes referred to as a "road diet" because of the reduction in the number of lanes, has been found to improve overall safety of a roadway. It also provided an opportunity to transition into the proposed NCBD configuration.

One specific safety benefit of a "road diet" is the reduction of the "multiple threat" situation for pedestrians. A "multiple threat" occurs when one car stops for a pedestrian, but a vehicle in the adjacent lane doesn't, in part because the visibility of the pedestrian can be obscured by the stopped vehicle.

In December, 2003, 15th Ave NE south of NE 175 St was reconfigured to three lanes to facilitate the transition into and out of the North City Business District.

Subsequently, in December, 2004, the City Council directed the channelization through the North City Business District be maintained as 4 lanes between NE 175th St and NE 180th St after completion of the North city construction project. This was, in part, based on neighborhood concerns for potential traffic diversions.

The City Council asked for a review of the traffic behavior changes resulting from the three lane section between NE 175th St and NE 150th St. A report summarizing those findings was presented in March, 2005. This report updates the findings from that report with data collected through October, 2006.

DISCUSSION

In March, 2003, prior to implementing the three-lane design, traffic counts were taken at 56 locations, and speed studies were conducted at 15 locations to establish a baseline to measure against after the restriping project and the North City improvement project were implemented. Traffic signal equipment was upgraded to improve synchronization and coordination along to corridor. Construction of the restriping project began in December, 2003. The North City project began in May, 2005, and was substantially complete in June, 2006.

Follow up traffic data was collected in February 2004, November 2004, February 2005, February 2006, and October 2006 to help monitor the effects of the reconfiguration and the construction impacts of the North City project. In February, 2005, data was collected at the original 56 locations to compare the changes in traffic patterns to the baseline data one year after the 3-lane conversion. Data was collected in February 2006, to monitor the effects of the North City construction project. Data was collected in October, 2006, to monitor the traffic patterns following substantial completion of the North city project. Additional monitoring would be needed to see if observed post-construction change in traffic is an anomaly or a trend. This last data collection is tentatively scheduled for February, 2007.

It should be noted that the October 2006 traffic counts were taken prior to the placement of the traffic calming devices in neighborhoods as part of the 2006 CIP project. Also, level of service standards continue to be achieved with the current roadway configuration.

The following are some of the results of the comparison:

15th Ave NE

Overall, traffic volumes declined 1,268 vehicles per day (7.4%) on 15th Ave NE between NE 145th St and NE 175th St. AM peak hour volumes have almost rebounded to 2003 levels, down 12 (0.9%) in the morning. PM peak hour volumes are down 196 (11.6%). The 85 percentile speeds dropped 1.8% from 39.25 MPH to 38.45 MPH. The speed limit is posted at 35 MPH. The trend for the traffic volumes showed a low point during the NCBD construction, and shows an increase in volumes following the substantial completion of the project. The speeds have remained fairly constant since the change.

According to the Police Department, the number of citations issued on 15th Ave NE south of NE 175 St has dropped. Their evaluation is that the three lane configuration significantly influenced the number of speeding violations they observed.

	2001*	2002	2003	2004	2005	2006*
Number of reported collisions - NE 150th St to NE 175th St	20	34	32	38	30	14
Number of reported injuries - NE 150th St to NE 175th St	6	35	20	14	16	5

**partial year data (8 months)*

Vehicle collisions between NE 145th St and NE 175th St decreased 4.7% between 5/1/2001 and 8/31/06. The severity drastically decreased, with the reported injuries dropping 42.6%. The decline in the number of collisions and injuries implies that the three lane configuration has been successful in reducing collision severity, in part by reducing overall speeds, providing refuge for turning vehicles, and improving sight distance for vehicles entering 15th Ave NE.

Vicinity around 15th Ave NE

Staff collected data for the area between NE 145th St and NE 180th St, 5th Ave NE and 25th Ave NE. Excluding 15th Ave NE, the cumulative daily traffic volumes declined 1.9% between March, 2003, and October, 2006. Combining the data for 15th Ave NE, the entire area experienced a 2.9% drop in daily traffic.

A review of reported collisions shows a decrease in collisions of 15.5% for the period before and after the road diet. Collision severity showed a slight decline of 1.7%. According to the police department, during periods of targeted enforcement on neighborhood streets, the vast majority of the citations written were to local residents, not commuters passing through the neighborhood. This helps support the expectations that commuter traffic would find alternate routes instead of cutting through neighborhoods.

5th Ave NE

Overall, traffic volumes increased 251 vehicles per day (3.7%) to 6,985 on 5th Ave NE between NE 145th St and NE 175th St. Peak hour volumes grew, 130 (30.1%) in the morning and 5 (0.7%) in the evening. The 85 percentile speeds grew 3.9% from 35.5 MPH to 36.9 MPH. The speed limit is posted at 30 MPH. 5th Ave NE is classified as a minor arterial, where we would expect traffic volumes between 8,000 and 25,000 vehicles per day, and speeds between 30 and 40 MPH.

Current volumes are down about 3.6% since February, which can imply that there is a downward trend following the completion of the North City construction.

10 Ave NE

Overall, traffic volumes grew 317 vehicles per day (17.8%) to 2,096 on 10th Ave NE between NE 155th St and NE 175th St. The Peak hour volumes grew, 29 (16.7%) in the morning and 44 (22.1%) in the evening. The 85 percentile speeds declined 1.4% from 34.8 MPH to 34.3 MPH. The speed limit is posted at 30 MPH. 10th Ave NE is classified as a Neighborhood Collector, where we would expect traffic volumes up to 4,000 vpd, and speeds between 25 and 30 MPH.

Current volumes are down about 12.9% since February, which can imply that there is a downward trend following the completion of the North City construction.

25 Ave NE

Overall, traffic volumes declined 237 vehicles per day (5.6%) south of NE 150th St, and increased 32 (0.8%) between NE 150th St and NE 177th St. South of NE 150th St, the peak hour volumes increased 7 (1.8%) in the morning, and declined 90 (19.9%) in the evening. North of NE 150th St, the peak hour volumes increased 26 (5.4%) in the morning, and declined 19 (4.4%) in the evening. The 85 percentile speeds north of NE 150th St grew 0.9% from 33.5 MPH to 33.8 MPH. The speed limit is posted at 30 MPH, with a 20MPH school zone north of NE 153rd St and south of NE 165th St. 25th Ave NE

is classified as a collector arterial, where we would expect traffic volumes between 3,000 and 9,000 vehicles per day, and speeds between 30 and 35 MPH.

Current volumes are down about 7.0% since February, which can imply that there is a downward trend following the competition of the North City construction.

NE 175 St

Overall, traffic volumes increased 279 vehicles per day (1.9%) on NE 175th St between 5th Ave NE and 15th Ave NE. Peak hour volumes increased, 16 (1.7%) in the morning and declined 28 (2.2%) in the evening. The 85 percentile speeds grew 4.3% from 38.5 MPH to 40.2 MPH. The speed limit is posted at 35 MPH.

Current volumes are up about 4.4% since February, which can imply that there is a increasing trend following the competition of the North City construction.

Links

“Road diet” projects have been successfully implemented in other cities, such as Seattle, Bellevue, Portland, and other locations across the country. Below are some links to websites where more information about the conclusions and findings of similar projects can be found.

<http://www.hsisinfo.org/pdf/04-082.pdf>

<http://www.walkable.org/download/rdiets.pdf>

http://www.ite.org/meetcon/2005AM/Rosales_Tues.pdf

ISSUES

Since the completion of the reconfiguration, residents have voiced a number of concerns. These include congestion on 15th Ave NE. Preliminary traffic modeling showed that there would be added delay to traffic on 15th Ave NE, and suggested that some commuter traffic would find other routes. According to field observations by staff and residents, it appears that congestion has increased on 15th Ave NE during peak hours. Traffic count data shows, at the same time, a reduction in volume. A consultant is currently developing a new signal timing plan to synchronize and optimize the traffic flow along the 15th Ave NE corridor.

Another concern was increased traffic on neighboring streets. While some streets have seen some increase in the total daily traffic, most of the streets south of NE 175th St experienced a decrease in the weekday traffic volumes.

While cut through traffic has lessened as reports indicate, there are still resident concerns regarding access on to 15th Ave NE. The current traffic volumes provide a limited number of gaps in the traffic flow making ingress onto 15th Ave NE from the side streets more difficult. The addition of a traffic signal at NE 150th St and 15th Ave NE, and the potential of a grant funded traffic signal at NE 170th St and 15th Ave NE, and the signal optimization project should help improve the number of significant gaps in traffic allowing for easier access on to 15th Ave NE from the side streets. Additionally,

reviewing the lane alignments looking for potential opportunity to extend the King County Metro bus pullouts, could alleviate traffic backups along 15th Ave NE.

Residents have commented that speeding appears to be more of a problem. The comparison showed that 15th Ave NE has seen a decrease in the 85 percentile speeds over a 24 hour period. Some increased speeds have been measured on neighboring streets. The traffic calming projects currently under construction are targeted at addressing this issue. Our experience has shown them to be effective in reducing speeds.

There have been complaints about drivers using the center turn lane as a passing lane. This problem developed in other cities making a similar change. It can be mitigated by building several small traffic islands in the center turn lane. Construction of such islands should be a priority if the decision is made to retain the three lane configuration.

There have been positive comments about the bike lanes on 15th Ave NE by bicycle users, who feel safer when using the bike lanes. Data collected the week of October 2, 2006, showed that the daily bicycle volumes range from 35 to 85 per day. No bicycle counts prior to December 2003 exist.

Some concerns were raised about transit stop locations. Working with King County Metro, stop placement was reviewed, and some were moved, and a couple eliminated, to improve traffic flow. Striping on the roadway was adjusted to help guide drivers around stopped buses.

Intersection visibility has improved on 15th Ave NE in that the bike lanes have moved the vehicular traffic lane 5 ft away from the curb. With a 4-lane design, the vehicles travel next to the curb.

Pedestrian comfort and safety has improved. Vehicles have been moved further away from the curb and sidewalk, providing for a more comfortable pedestrian environment. Also, the center lane can be used as a quasi-refuge by pedestrians crossing 15th Ave NE, as they wait for a gap in traffic. Lastly, the three-lane design greatly reduces the "multiple-threat" scenario for pedestrians crossing 15th Ave NE. The multiple-threat is one of the most problematic situations facing pedestrians crossing a multi-lane roadway.

FUNDING CONSIDERATIONS

Should the 3-lane configuration remain permanent, it is recommended that short median islands be constructed. Two landscaped islands could be built for about \$25,000. If 15th Ave NE is changed back to 4 lanes, required capital costs would include restriping, signing, and signal modifications, and would be at least \$100,000.

A signal solution at 15th Ave NE and NE 170th St would range between 150k and 600k, depending on adjoining street improvements and signal system. The need for such a signal would be higher with 4-lane configuration of 15th Ave NE, in that such a configuration would tend to increase speed, reduce gaps in traffic, lengthen the effective crossing distance for pedestrians, and re-establish the multiple threat factor.

CONCLUSION

The current operation of 15th Ave NE is meeting expectations and within our level of service standards. While vehicle volumes on 15th Ave NE have declined 7.4%, the trend has been increasing as traffic patterns rebound following completion of the North City project. More important, the data records show improvement to both vehicle and pedestrian safety, both on 15th Ave NE and in the surrounding neighborhood streets. Some of the non-arterial roadways in the surrounding area have seen an increase in vehicles and speeds. However, many roadways actually saw a decrease in volume, and a reduction in the number of reported collisions. Completion of the traffic calming devices in these neighborhoods should result in reduced speeds over the next couple of months. Also, with the completion of the neighborhood traffic action plans for North City, Ridgecrest, and Briercrest, we have a good idea of the highest priority projects to focus on implementing next in the area.

RECOMMENDATION

Continue to operate 15th Ave NE in a three-lane configuration. Staff will continue to work on the following four key elements with local residents to manage traffic impacts on non-arterial streets and implement appropriate neighborhood traffic mitigation improvements.

- **The addition of traffic signals at NE 150th St and 15th Ave NE, and potentially at NE 170th St and 15th Ave NE., to create additional access gaps on 15th Ave. N.E..**
- **Review road alignment for potential bus pull-out extension alleviating back ups along 15th Ave NE**
- **Continue implementing traffic calming devices and Neighborhood Traffic Action Plans**
- **Installation of traffic islands along 15th Ave NE discouraging use of center lanes as “passing lanes”**

ATTACHMENTS

Attachment A

Map of area showing changes to daily volume

Attachment B

Spreadsheet showing data comparison from March, 2003 to October, 2006

Spreadsheet showing data comparison from February, 2006 to October, 2006

Attachment C

Graph showing Daily Volume trends since March, 2003




Attachment D

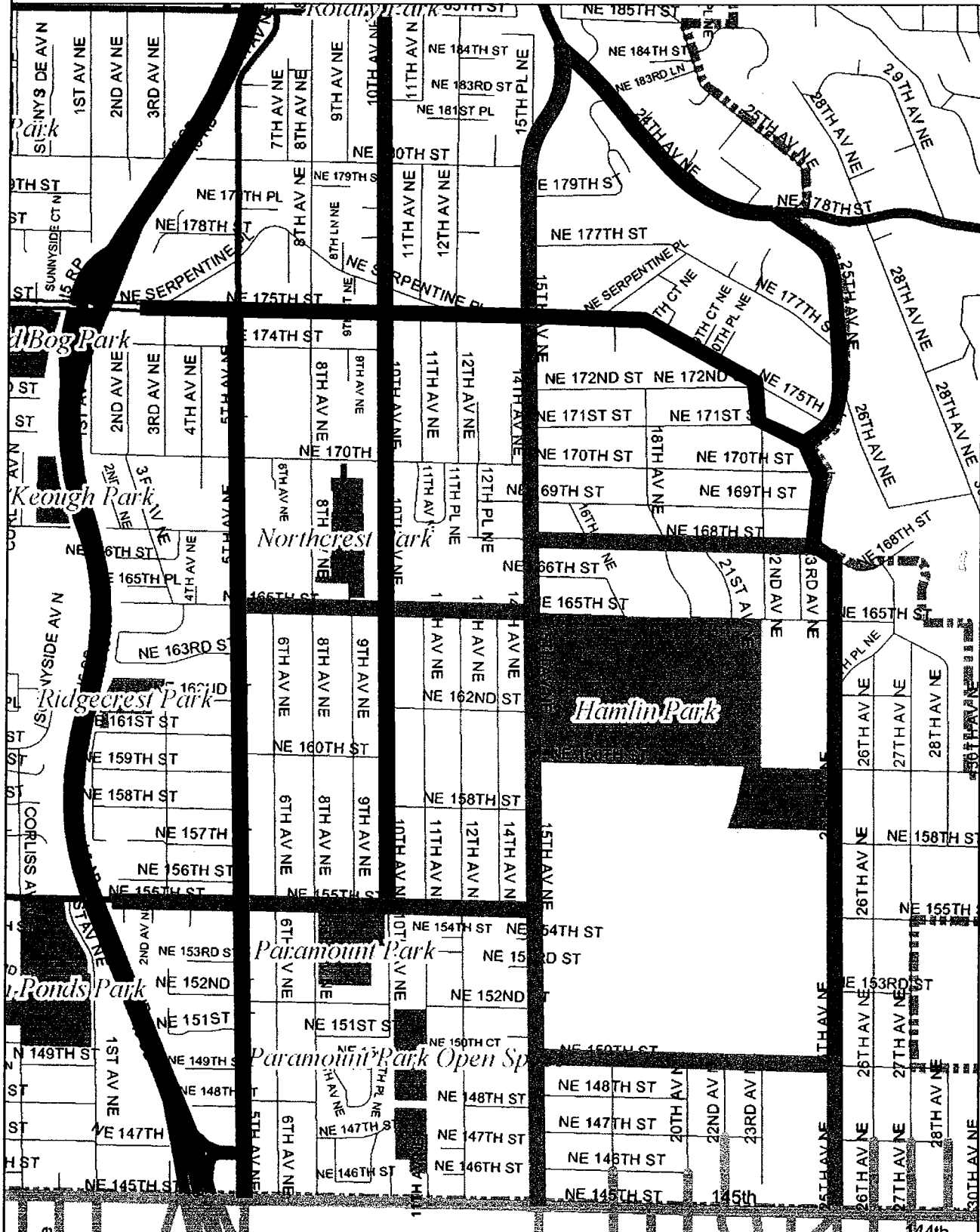
Graphs showing collision and injury trends on 15th Ave NE and the cumulative collision and injury trends in general vicinity around the 15th Ave NE restriping project.

North City Traffic Monitoring Study

March 2003 to October 2006 Comparison

AWDT - Average Weekday Daily Traffic Volumes

Increase - 
 Decrease - 
 No Change (less than 1%) - 



North City Traffic Monitoring Study Average Weekday Volume Summary

March 2003 to October 2006

revised 11/12/2006

North/South

5 Ave NE	2003	2006	diff	% diff
NE 148 St	7,831	8,216	385	
NE 156 St	7,005	6,746	(259)	
NE 163 St	6,557	6,924	367	
NE 165 St	6,363	6,633	270	
NE 170 Ln	5,916	6,408	492	
NE 180 St	3,213	3,712	499	
average 145 to 175	6,734	6,985	251	3.7
average 145 to 180	6,148	6,440	292	4.8

8 Ave NE	2003	2006	diff	% diff
NE 145 St	530	542	12	
NE 155 St	639	693	54	
NE 160 St	504	628	124	
NE 170 St	506	755	249	
NE 175 St	548	632	84	
average 145 to 155	530	542	12	2.3
average 155 to 175	549	677	128	23.3

10 Ave NE	2003	2006	diff	% diff
NE 155 St	1,261	1,364	103	
NE 160 St	1,261	1,450	189	
NE 165 St	2,216	2,627	411	
NE 170 St	2,378	2,944	566	
NE Serpentine Pl	3,994	4,158	164	
NE 182 St	5,230	5,132	(98)	
average 155 to 175	1,779	2,096	317	17.8
average 175 to 185	4,612	4,645	33	0.7
average 155 to 185	2,723	2,946	223	8.2

11 Ave NE	2003	2006	diff	% diff
NE 155 St	398	283	(115)	
average north of 155	398	283	(115)	(28.9)

12 Ave NE	2003	2006	diff	% diff
NE 155 St	423	398	(25)	
NE 175 St	992	823	(169)	
average 155 to 165	423	398	(25)	(5.9)
average north of 175	992	823	(169)	(17.0)

14 Ave NE	2003	2006	diff	% diff
NE 155 St	327	229	(98)	
average 155 to 165	327	229	(98)	(30.0)

24 Ave NE	2003	2006	diff	% diff
15 Ave NE	4,446	4,449	3	
average 25 to 15	4,446	4,449	3	0.1

15 Ave NE	2003	2006	diff	% diff
NE 146 St	16,315	16,476	161	
NE 152 St	18,963	16,502	(2,461)	
NE 158 St	15,433	14,698	(735)	
NE 170 St	18,158	16,121	(2,037)	
NE 177 St	17,169	15,233	(1,936)	
24 Ave NE	15,123	13,735	(1,388)	
average 145 to 175	17,217	15,949	(1,268)	(7.4)
average 175 to 24 Av NE	16,146	14,484	(1,662)	(10.3)
average 145 to 24 Av NE	16,860	15,461	(1,399)	(8.3)

25 Ave NE	2003	2006	diff	% diff
NE 147 St	4,242	4,005	(237)	
NE 155 St	4,837	4,378	(459)	
NE 168 St	4,626	4,539	(87)	
NE 171 St	2,355	2,413	58	
NE 177 St	3,840	4,455	615	
average 145 to 150	4,242	4,005	(237)	(5.6)
average 150 to 178	3,915	3,946	32	0.8

North City Traffic Monitoring Study

Average Weekday Volume Summary

March 2003 to October 2006

revised 11/12/2006

East/West

NE 150 St	2003	2006	diff	% diff
15 Ave NE	3,740	3,115	(625)	
average 15 to 25	3,740	3,115	(625)	(16.7)

NE 158 St	2003	2006	diff	% diff
15 Ave NE	344	308	(36)	
average 10 to 15	344	308	(36)	(10.5)

NE 165 St	2003	2006	diff	% diff
15 Ave NE	2,606	2,209	(397)	
average 5 to 15	2,606	2,209	(397)	(15.2)

NE 170 St	2003	2006	diff	% diff
10 Ave NE	1,689	1,377	(312)	
15 Ave NE	735	751	16	
average 5 to 15	1,689	1,377	(312)	(18.5)
average 15 to 25	735	751	16	2.2

NE 171 St	2003	2006	diff	% diff
15 Ave NE	457	404	(53)	
average 25 to 15	457	404	(53)	(11.6)

NE 172 St	2003	2006	diff	% diff
15 Ave NE	620	600	(20)	
average 25 to 15	620	600	(20)	(3.2)

NE 177 St	2003	2006	diff	% diff
15 Ave NE	685	1,441	756	
25 Ave NE	840	761	(79)	
average 25 to 15	763	1,101	339	44.4

NE Serpentine Pl	2003	2006	diff	% diff
NE 175 St	864	798	(66)	
average 175 to 177	864	798	(66)	(7.6)

NE Perkins Way	2003	2006	diff	% diff
15 Ave NE	2,984	3,567	583	
average 10th to 15th	2,984	3,567	583	19.5

NE 155 St	2003	2006	diff	% diff
5 Ave NE	11,368	10,305	(1,063)	
8 Ave NE	9,187	8,537	(650)	
14 Ave NE	8,642	7,394	(1,248)	
average west of 5th	11,368	10,305	(1,063)	(9.4)
average 5th to 15th	8,915	7,966	(949)	(10.6)

NE 162 St	2003	2006	diff	% diff
15 Ave NE	208	212	4	
average 10th to 15th	208	212	4	1.9

NE 168 St	2003	2006	diff	% diff
18 Ave NE	2,897	2,469	(428)	
average 25 to 15	2,897	2,469	(428)	(14.8)

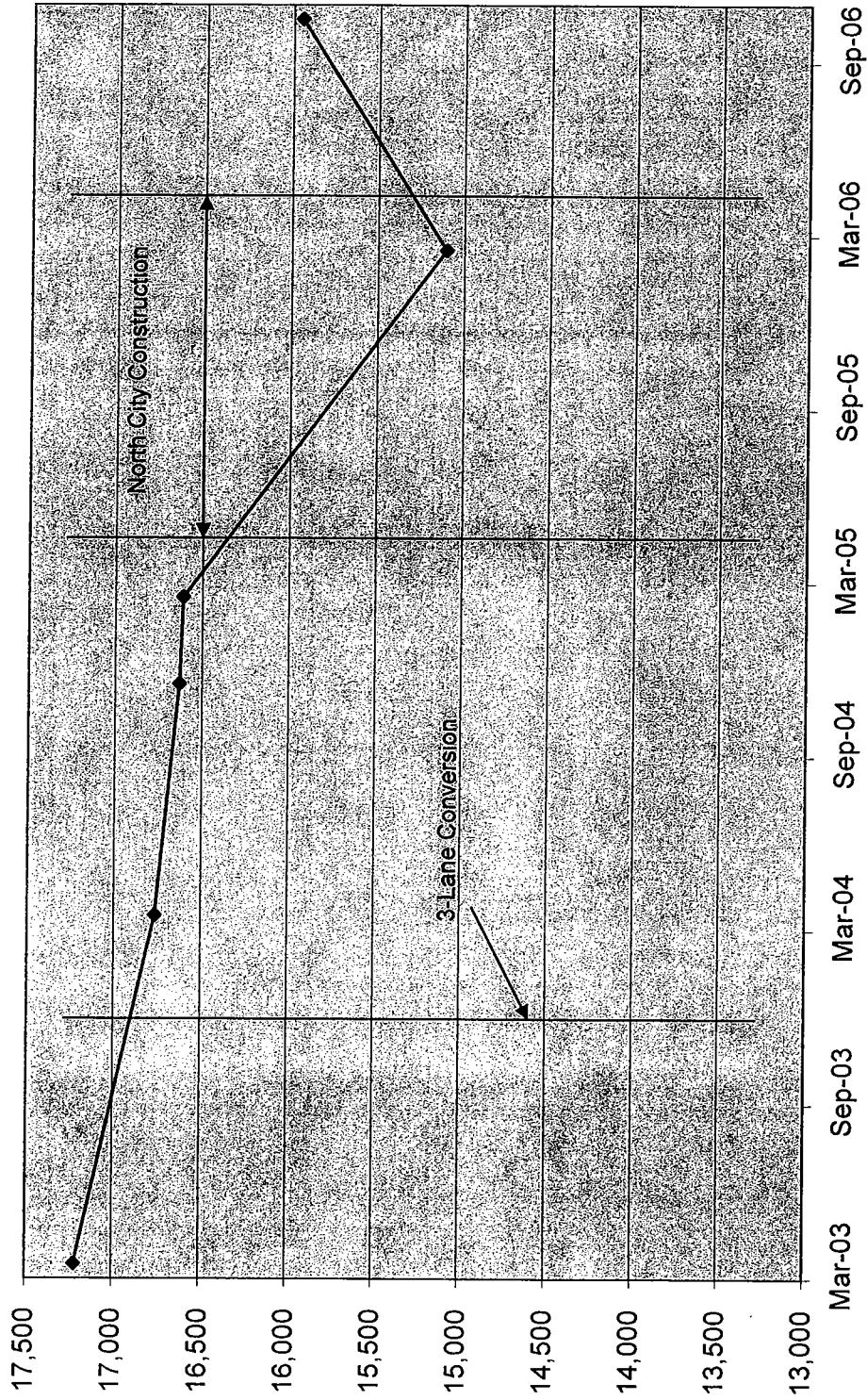
NE 169 St	2003	2006	diff	% diff
22 Ave NE	147	167	20	
average 25 to 15	147	167	20	13.6

NE 175 St	2003	2006	diff	% diff
5 Ave NE	14,792	15,205	413	
12 Ave NE	14,606	14,750	144	
15 Ave NE	4,023	4,393	370	
25 Ave NE	2,058	2,336	278	
average 5 to 15	14,699	14,978	279	1.9
average 15 to 25	3,041	3,365	324	10.7

NE 180 St	2003	2006	diff	% diff
11 Ave NE	2,951	2,862	(89)	
average 10th to 15th	2,951	2,862	(89)	(3.0)

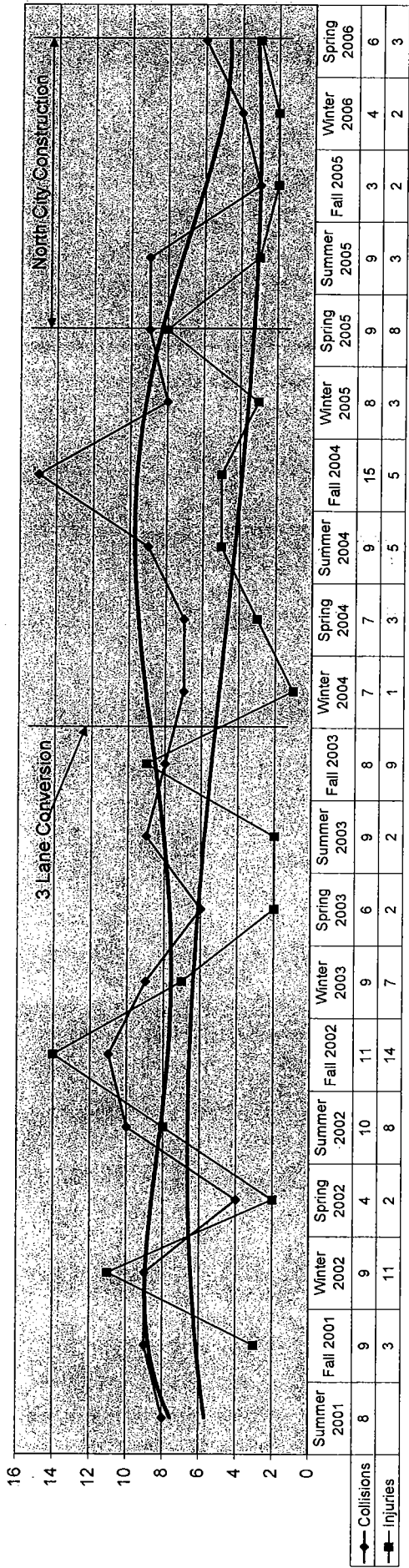
NE 185 St	2003	2006	diff	% diff
9 Ave NE	7,533	7,748	215	
average west of 10	7,533	7,748	215	2.9

15th Ave NE - Average Weekday Traffic Volumes

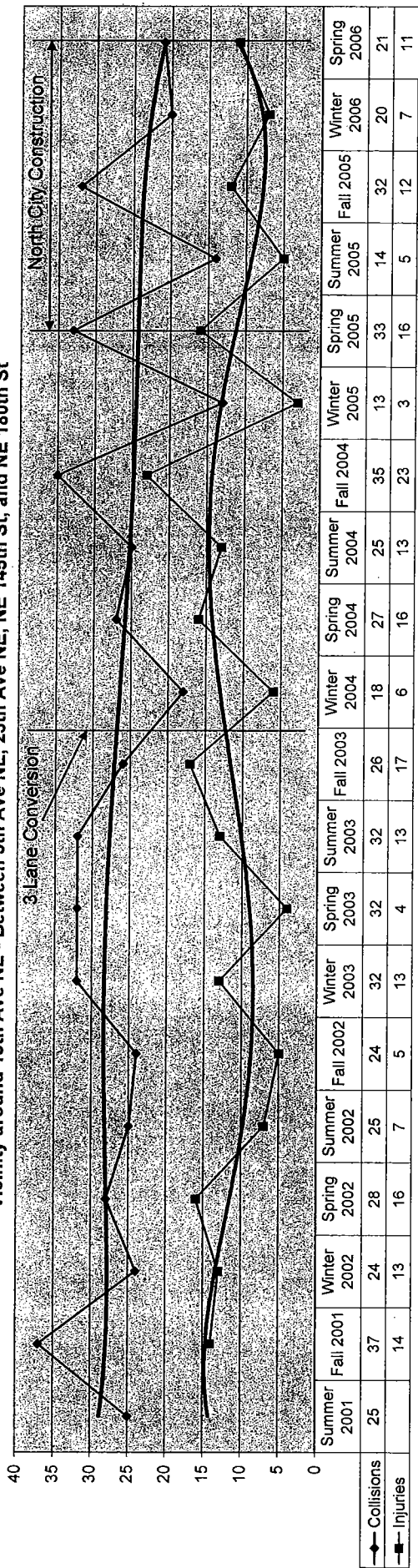


Date	Average Weekday Traffic Volume
Mar-03	17,217
Mar-04	16,764
Nov-04	16,631
Feb-05	16,611
Feb-06	15,103
Oct-06	15,949

Collisions and Injuries 15th Ave NE - NE 150th St to NE 175th St



Collisions and Injuries Vicinity around 15th Ave NE - Between 5th Ave NE, 25th Ave NE, NE 145th St, and NE 180th St



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