

McIntyre Street

32nd Avenue to 64th Avenue Corridor Study

Jefferson County
Department of Highways and Transportation
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EXECUTIVE SUMMARY

Jefferson County Department of Highways and Transportation personnel have reviewed traffic operation and safety characteristics for the 3.5 mile segment of McIntyre Street between 32nd Avenue and 64th Avenue.

Currently, McIntyre Street between 32nd Avenue and 48th Avenue is classified as a principal arterial on the *Major Thoroughfare Plan*. It is primarily a two-lane arterial roadway with left-turn and right-turn acceleration/deceleration lanes at key locations. McIntyre Street from 48th Avenue to 64th Avenue is classified as a minor arterial in the *Major Thoroughfare Plan*. McIntyre Street currently carries 14,000 vehicles per day north of State Highway 58 and 7,300 vehicles per day south of 64th Avenue. South of State Highway 58, McIntyre Street carries 7,200 vehicles per day.

All roadway segments and intersections along McIntyre Street are currently operating at acceptable levels-of-service.

There were 42 accidents on McIntyre Street between 32nd Avenue and 64th Avenue during the three year period beginning January 1, 1995 and ending December 31, 1997. There were no fatal accidents, 13 injury accidents, and 29 property damage only accidents during this analysis period.

Recommendations

Speed limits in the corridor are currently set at 40 mph at the two ends of the corridor and 30 mph in the residential portion of the corridor. Speed studies in the corridor show that the 85th percentile speed is approximately 40 mph throughout the corridor. It is recommended that the speed limit should be set to a consistent 35 mph north of 48th Avenue to 64th Avenue.

There are seven signs that should be removed, eight new signs to be installed, six signs to be replaced, and three advance warning signs that need to be moved. The sign changes are needed to implement new the new speed limit and bring warning signs into compliance with the Manual on Uniform Traffic Control Devices, 1988. There are also signs in the right of way that are difficult to see due to the vegetation overgrowth in the shoulders. The vegetation should be trimmed back or removed so the signage can be read at the proper distances for adequate warning.

For adequate safety, it is desirable to have a shoulder area for recovery if the motorist veers from the travel lanes. According to the AASHTO Roadside Design Guide, shoulder width for a facility with a speed limit at or below 40 mph should be between 10 feet and 15 feet. The shoulders north of 50th Avenue range from very narrow to non-existent. There are numerous trees, fences, mail boxes, telephone poles, and other obstructions in the shoulder area that should either be moved, removed or signed with object markers.

New bridge and approach rail are required at the Van Bibber Creek Bridge. Currently, guard rail is not installed nor are there warnings for this ditch area. The existing damaged bridge rails on the three structures over the Farmers Highline Canal north of 48th Avenue need to be replaced and approach rail needs to be added. The structure just north of 56th Avenue needs to have guardrail placed around the tree that is at the bridge abutment on the east side of McIntyre Street.

Currently, McIntyre Street is being widened from the Croke Canal bridge north to 48th Avenue adjacent to the Coors Technology Center development. This will be a five-lane section to six-

lane section with curb and gutter and a raised 4'-0" median. The North Plains Community Plan identified a 72'-0" cross section using four travel lanes and a raised median as the preferred section in this corridor. This 72'-0" cross section should be constructed south of the improvements currently being built by the Coors Technology Center development to match the four-lane section currently on the SH-58 bridge. To accomplish this, the railroad crossing north of 44th Avenue needs to be improved, the 44th Avenue intersection should be reconstructed, and McIntyre Street would need to be widened south of the 44th Avenue intersection to the SH-58 bridge.

The Jefferson County Roadway Design and Construction Manual states that left turn lanes are required at all arterial intersections. The intersection at 50th Avenue currently has a left-turn lane and left-turn lanes are needed at 52nd Avenue, 54th Avenue, and 56th Place. A continuous center turn lane should be constructed between 52nd Avenue and 56th Place to give the residents and businesses along this segment safer access to and from McIntyre Street.

McIntyre Street from 32nd Avenue to 64th Avenue should be added to the arterial priority road marking list. This designation will assure that the road markings on McIntyre Street would be maintained twice per year.

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1.0 INTRODUCTION

Jefferson County Department of Highways and Transportation personnel have reviewed traffic operation and safety characteristics for the 3.5 mile segment of McIntyre Street between 32nd Avenue and 64th Avenue.

The purpose of the McIntyre Street Safety and Operations study is to document existing conditions and identify operational and safety deficiencies for this 3.5 mile section of McIntyre Street. The recommendations made in this report will be used to identify possible spot improvements in the corridor.

1.1 Study Area

Figure 1.1 illustrates the study area included in this study. The corridor is approximately 3.5 miles long originating at the McIntyre Street intersection at 32nd Avenue and terminating at 64th Avenue. The corridor is primarily located in unincorporated Jefferson County except the portion south of the 63rd Avenue alignment to 64th Avenue which is in the City of Arvada. The City of Golden recently annexed the Coors Technology Center; however McIntyre Street remains under County jurisdiction. State Highway 58 intersects the corridor just south of 44th Avenue. The corridor resides in the Fairmount Subarea of the North Plains community planning area.

The corridor can be broken up into three segments. The south segment extends from 32nd Avenue to 48th Avenue. This portion of the corridor is made up of industrial and commercial type land uses. The Burlington Northern/Santa Fe railroad operates the rail line that is approximately 150 feet north of the 44th Avenue intersection.



McIntyre Street South of 44th Avenue Facing North

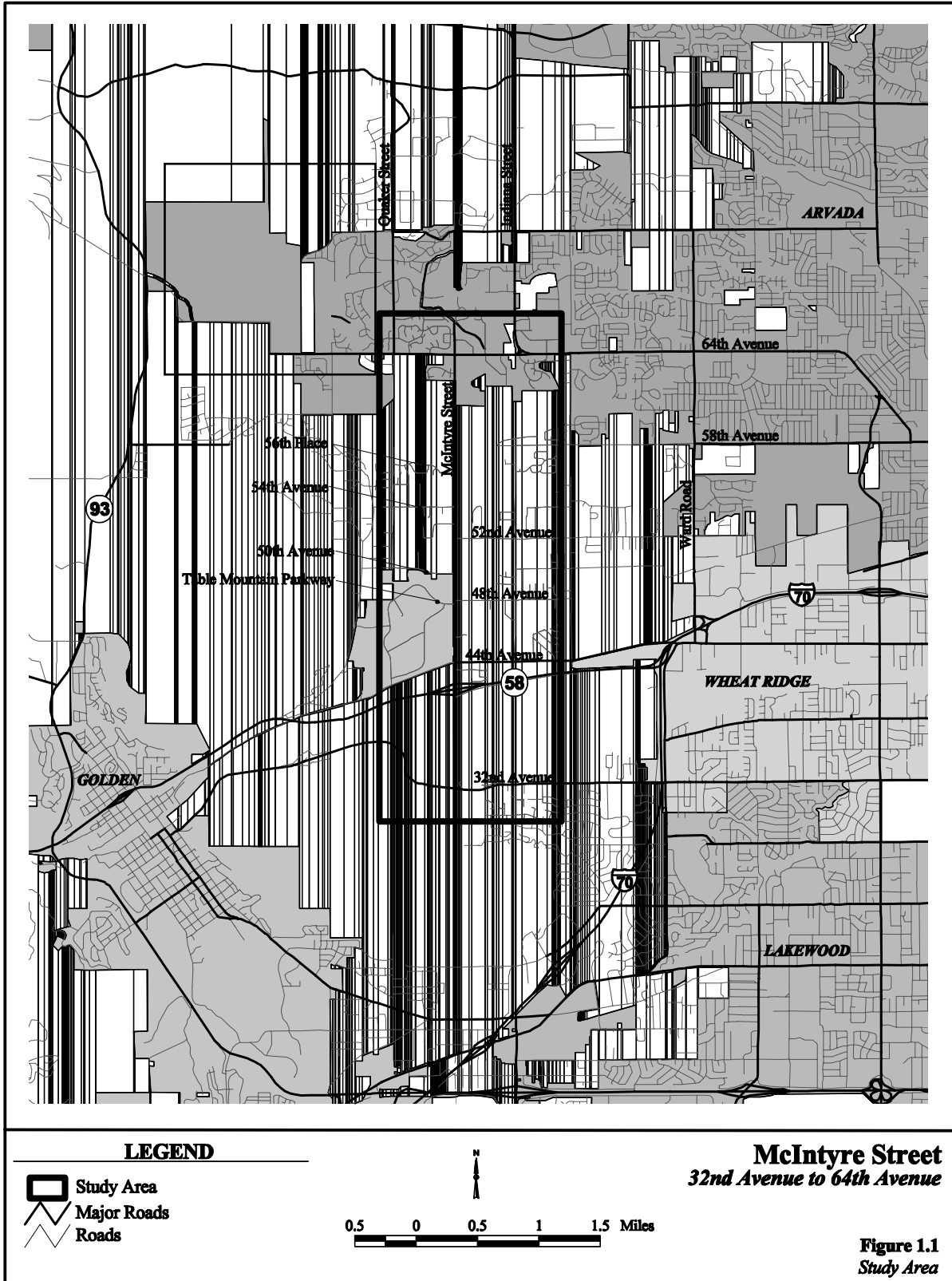
The middle segment of the corridor located between 48th Avenue and the alignment of 58th Avenue can be characterized as single family detached residential with agricultural land uses. The *North Plains Community Plan* describes the Fairmount Subarea as having a village-like atmosphere with large lots, vacant land and livestock. This area is primarily zoned as Agricultural-2 providing for general farming, ranching, intensive agricultural uses and agriculturally related uses with minimum lot areas of ten acres.



McIntyre Street North of 58th Avenue Facing South

The north segment of the McIntyre corridor lies between the 58th Avenue alignment and 64th Avenue. Light industrial uses and new residential development characterize this area.

Figure 1.1



2.0 CORRIDOR PHYSICAL CHARACTERISTICS

2.1 Functional Classification

McIntyre Street between 32nd Avenue and 48th Avenue is classified as a principal arterial in the Jefferson County *Major Thoroughfare Plan*. The *Major Thoroughfare Plan* establishes the functional classification for all roadways at existing zoning build-out within Jefferson County. A principal arterial is characterized by serving major traffic volumes with limited access. Opposing movements are typically separated by a raised, depressed, or painted median. Pedestrians and bicycle traffic are to be carried on detached walks and trails. Principal arterials have a design volume between 25,000 and 40,000 vehicles per day with six through lanes and a design speed of 45 miles per hour (mph).

Currently, McIntyre Street between 32nd Avenue and 48th Avenue is primarily a two-lane arterial roadway with left-turn and right-turn acceleration/deceleration lanes at key locations. This section of McIntyre Street has excessive commercial and industrial access points for a principal arterial. Coors is currently widening McIntyre Street to six lanes between 48th Avenue and the Croke Canal bridge.

The 2015 “Needs Based” *Countywide Transportation Plan* calls for McIntyre Street south of 48th Avenue to be widened to four lanes with turn lanes at signalized intersections.

McIntyre Street from 48th Avenue to 64th Avenue is classified as a minor arterial in the *Major Thoroughfare Plan*. Minor arterials serve intracommunity traffic and carry moderate traffic volumes. Access is allowed with the exception of private residential driveway access. Opposing movements are generally separated by a raised, depressed, or painted median. Pedestrians and bicycle traffic are usually carried on a detached walk or an adjacent trail. Minor arterials have a design volume between 10,000 and 25,000 vehicles per day with four lanes and a design speed of 40 miles per hour. This portion of McIntyre Street currently has two lanes with turn lanes at key locations with numerous residential and commercial access points.

The 2015 “Needs Based” *Countywide Transportation Plan* shows that this segment of McIntyre Street is proposed to be widened from two lanes to four lanes with turn lanes at intersections. Spot safety and operational improvements between 50th Avenue and 62nd Avenue have been identified in the 2015 “Fiscally Constrained” *Countywide Transportation Plan*. The segment of McIntyre Street north of 60th Avenue is planned to be realigned to the east to 64th Avenue/Kendrick Drive intersection.

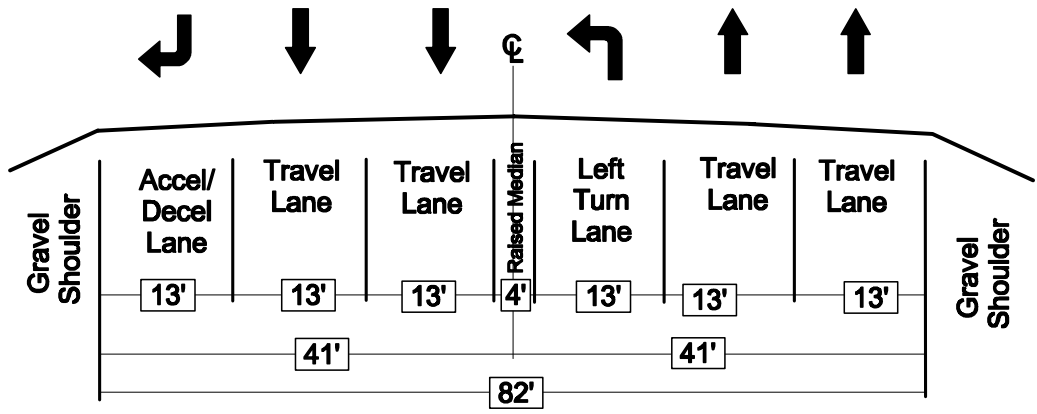
2.2 Physical Characteristics

Laneage

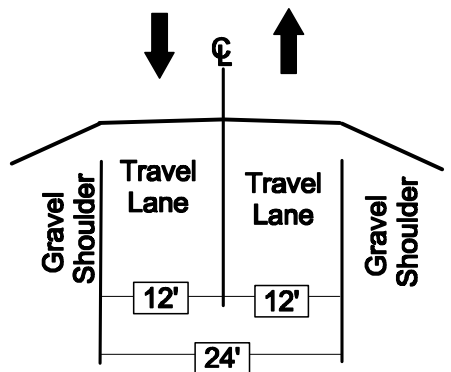
The McIntyre Street laneage between 32nd Avenue and 64th Avenue is primarily one lane in each direction with and turn lanes at key intersections. The roadway is undivided with no passing allowed. Figure 2.1 displays typical cross-sections taken north of the Coors Technology Center south entrance and south of 54th Avenue. The proposed cross section taken from the North Plains Plan is also displayed in Figure 2.1. The cross section on McIntyre



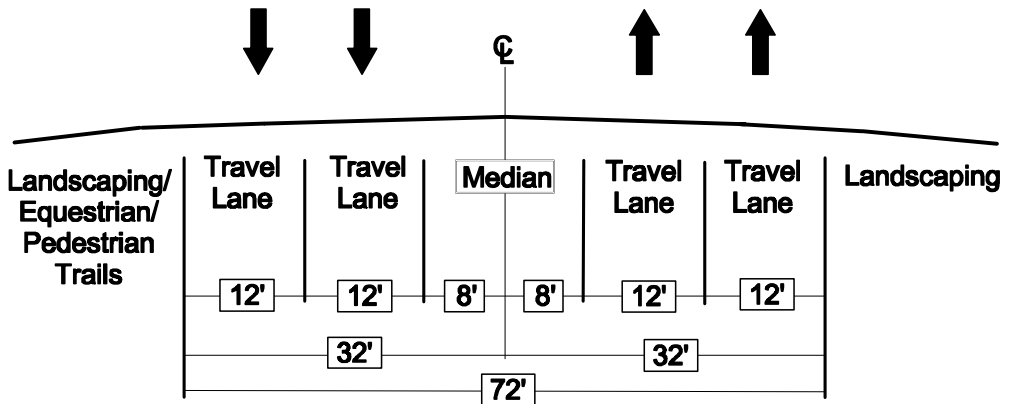
McIntyre Street laneage South of 56th Avenue Facing South



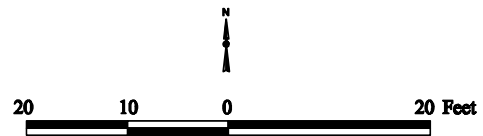
McIntyre Street north of Coors Technology Center south entrance



McIntyre Street South of 54th Avenue



Proposed North Plains Plan Cross Section North of 50th Avenue



McIntyre Street
32nd Avenue to 64th Avenue

Figure 2.1
Typical Cross Sections

Street adjacent to the Coors Technology Center varies between a 71'-0" and 82'-0" cross section, which is not the standard principal arterial design template used by Jefferson County.

Traffic Control

Figure 2.2 displays the traffic control for McIntyre Street between 32nd Avenue and 64th Avenue. As displayed, there are three traffic signals located at 44th Avenue, 50th Avenue and a new signal at 64th Avenue. One STOP sign is located on McIntyre Street at the T-intersection of 32nd Avenue. STOP signs are located at all other T-intersections accessing McIntyre Street. Traffic conditions at the SH-58 ramp intersections have met traffic signal warrants and are on the Colorado Department of Transportation (CDOT) signal installation priority list.

Speed Limits

Speed limits in the corridor are 40 mph between 32nd Avenue to just south of 50th Avenue. From 50th Avenue north, the speed limit decreases to 30 mph to Van Bibber Creek just north of 56th Place. North of Van Bibber Creek, the speed limit increases to 40 mph to just north of the 63rd Avenue alignment. From that point it decreases to 30 mph to the T-intersection at 64th Avenue.

Jefferson County Department of Highways and Transportation conducted two speed studies in the corridor. One speed study was located north of 44th Avenue in the 40 mph speed zone. The second speed study was located south of 54th Avenue in the 30 mph speed zone. Table 2.1 lists the results of the two speed survey locations.

Table 2.1
Speed Study Results

Location	Speed Limit	Average Speed	85 th Percentile Speed	Percent of Vehicles Speeding by 5 MPH or More
N/O 44 th Avenue	40 MPH	36 MPH	39 MPH	2.2%
S/O 54 th Avenue	30 MPH	35 MPH	40 MPH	42.9%

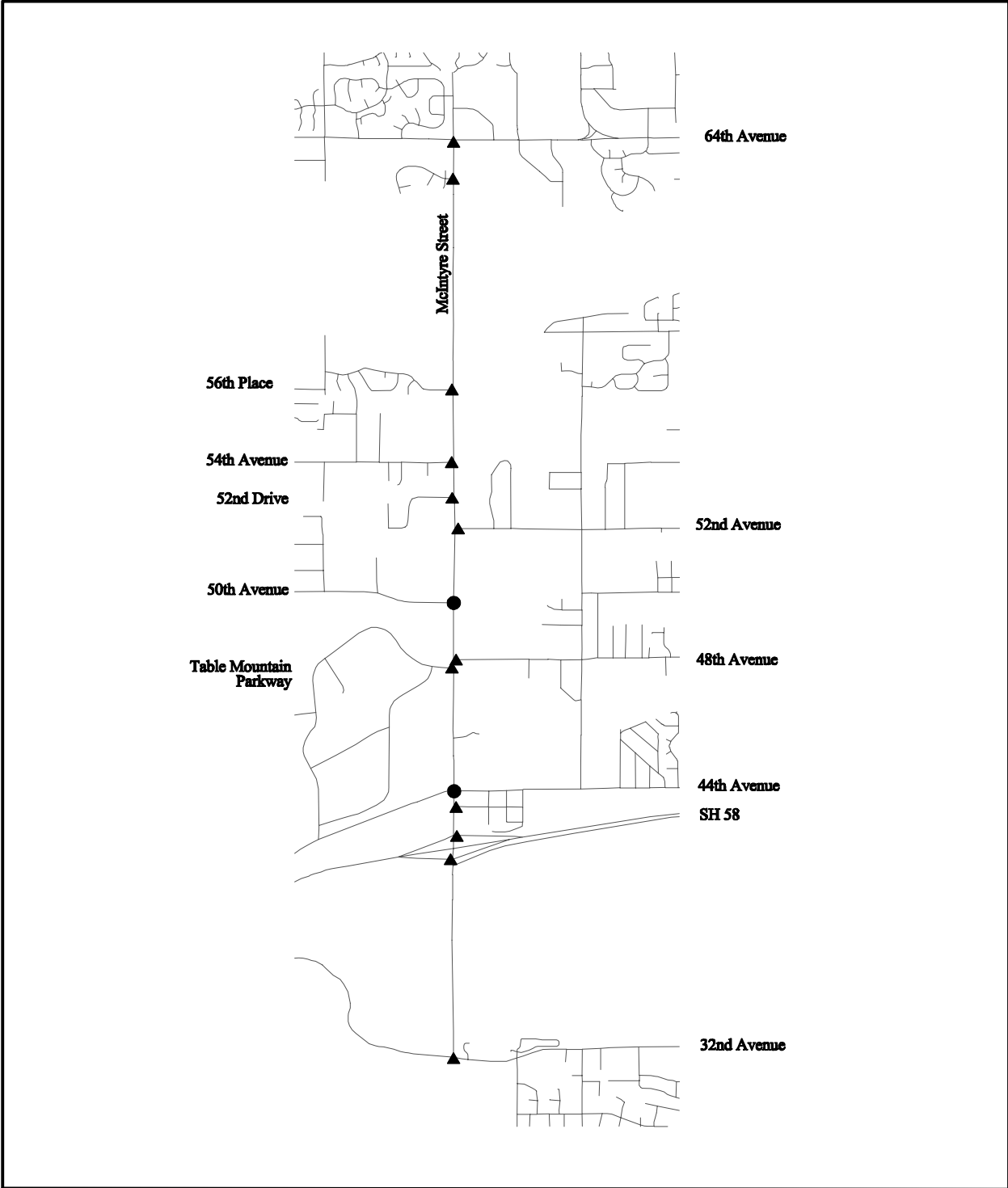
As shown in the table, vehicle travel speeds north of 44th Avenue are within tolerable limits. However, there is a significant percentage of motorists speeding south of 54th Avenue. This analysis indicates that vehicles travelling through the corridor are generally travelling at the same speed even though the speed limit changes in the residential section of the corridor.

Bike Paths

There is an existing bicycle facility that parallels Clear Creek south of State Highway 58. Planned bicycle facilities include a path along Van Bibber Creek at about 56th Avenue and along the Croke Canal north of 48th Avenue.

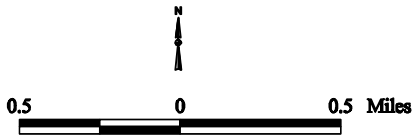
Transit Service

Currently there is little transit service in the corridor. Between 32nd Avenue and 44th Avenue, Route 17 travels between the Ward Road park-n-Ride and Golden. This route has 30-minute peak and off-peak headways as well as 60-minute headways on Saturdays. Route 44L is a limited stop route that travels on 44th Avenue and has a stop at McIntyre Street. It has 30-minute peak headways on weekdays with no service on weekends.



LEGEND

- Existing Signalized Intersection
- Future Signalized Intersection
- ▲ Stop Controlled Intersection



McIntyre Street
32nd Avenue to 64th Avenue

Figure 2.2
Traffic Control

Bridges

There are five major structures and one minor structure on McIntyre Street between 32nd Avenue and 64th Avenue. A bridge integrity evaluation has been completed on the five major structures. The minor structure over Van Bibber Creek has not been evaluated yet by Jefferson County Department of Highways and Transportation staff. The bridge locations can be found on Figure 2.3.

1. F-23-29

This major structure is located south of State Highway 58 over the railroad tracks. The bridge is a continuous span (36'-60'-83'-57') steel I-girder structure with a roadway width of 82'-0". The sufficiency rating is 95.5, which is extremely good and will require very little maintenance. The bridge was constructed in 1971.

2. F-23-38A

The first bridge north of 44th street on McIntyre is structure number F-23-38A. This structure is located over the Croke Canal and was constructed in 1988. The bridge is a simple span bridge with I-girders on concrete abutments. The span length is 31'-1" and the roadway width is currently at 40'-0" and has the potential to be 72'-0". The bridge is currently being redesigned to accommodate the McIntyre widening adjacent to the Coors Technology Center development.

3. F-23-41

The second bridge north of 44th street on McIntyre is structure number F-23-41. This structure is located over the Farmers Highline Canal and was constructed in 1940. The structure is a 37'-6" simple span bridge with steel I-girders on a 50 degree skew. This structure is the worst major structure in Jefferson County with a sufficiency rating of 38.0. The county has applied for and has been awarded use of \$255,200 to improve the bridge. This money comes from Colorado County, Inc. (CCI) to be used to reconstruct deficient bridges. This bridge has a load restriction posted at 20 tons. The money allocated by CCI must be used by the end of the year 2000.

4. F-24-42

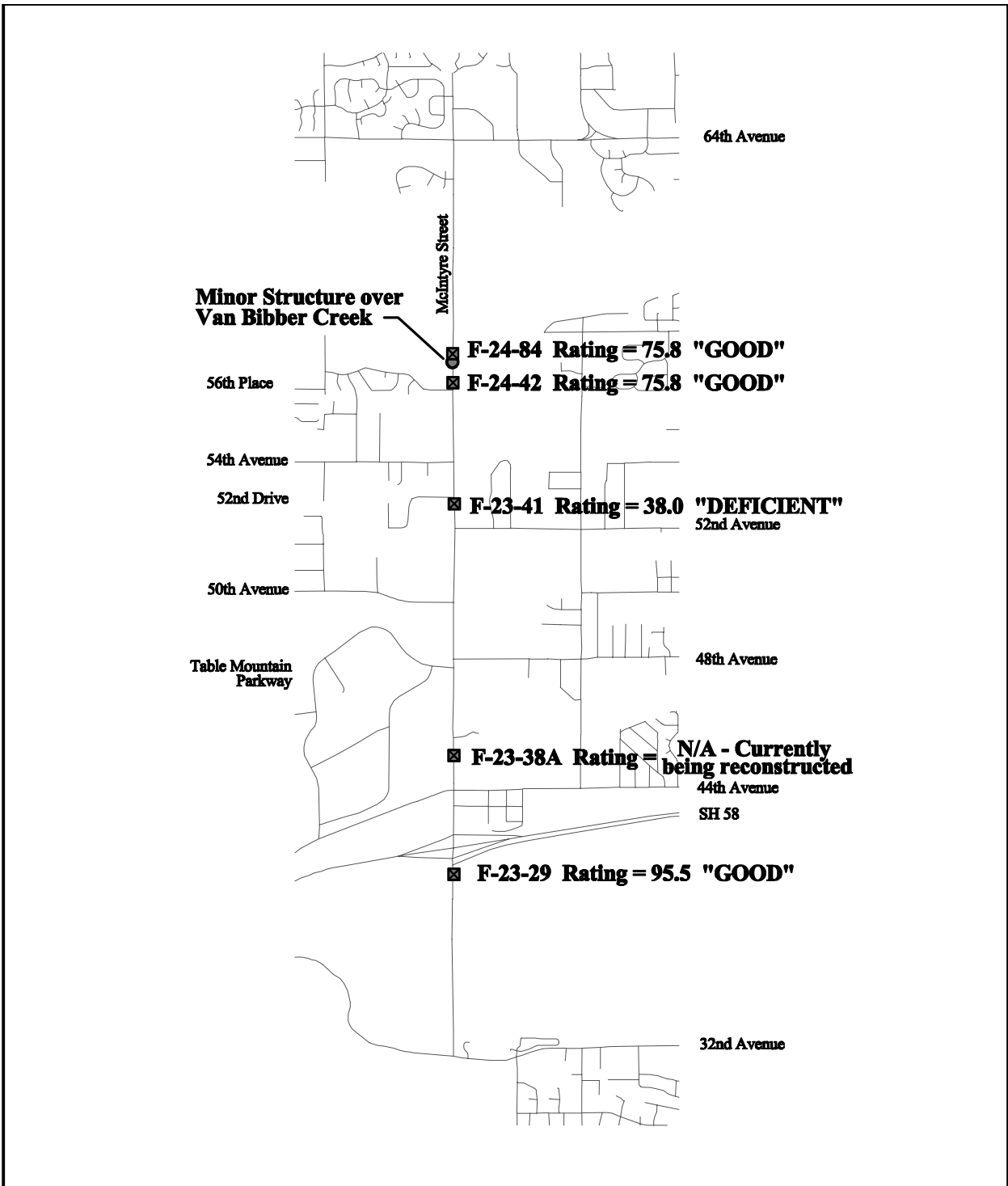
The third bridge north of 44th Avenue is also located over the Farmers Highline Canal and was constructed in 1940. This structure is also a 26'-6" simple span bridge on steel I-girders. The sufficiency rating is 75.8 with is very good for a structure of this age. The biggest problem with this structure is that it is narrow and has damaged guardrails.

5. F-24-84

This structure is also located over the Farmers Highline Canal and was also built in 1940. This structure is a 24'-0" simple span bridge on steel I-girders. The sufficiency rating is 75.9, which is very similar to structure F-24-42.

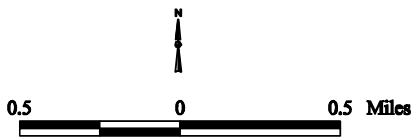
6. Van Bibber Creek

Jefferson County Department of Highways and Transportation staff have not evaluated the minor structure on McIntyre Street over Van Bibber Creek. Sufficiency rating information is not available.



LEGEND

- ☒ Major Bridge Structure
- Minor Bridge Structure



McIntyre Street
32nd Avenue to 64th Avenue

Figure 2.3
Bridge Structures

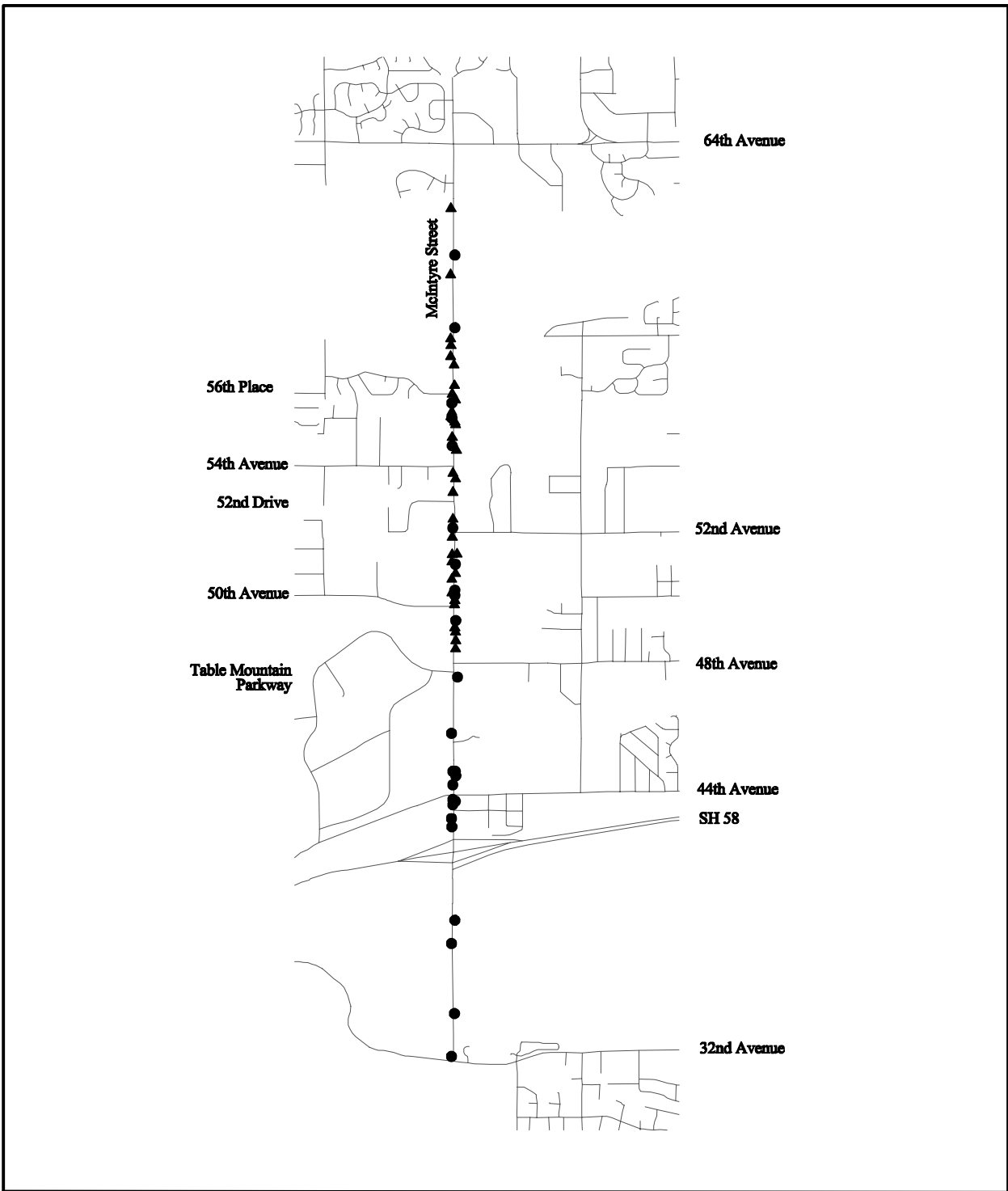
Access

Access control on McIntyre Street is similar to a collector facility and does not meet arterial access standards. Private residential access is generally not permitted on arterial roadways. The primary function of an arterial roadway is to efficiently move traffic. Private driveway accesses decrease the safety of motorists on McIntyre Street as well as the motorists entering McIntyre Street at STOP-controlled intersections.

There are currently 71 residential, business, and street access points on McIntyre Street between 32nd and 64th Avenues. These access locations are displayed on Figure 2.4. As shown, there are 25 commercial access points, 33 residential access points, and 13 street access points.

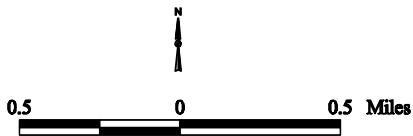
Street Lights

There are 12 existing locations with overhead streetlights along McIntyre Street between 32nd Avenue and 64th Avenue. Currently, there are three additional overhead streetlights on the 1999 priority list and will be installed as funding becomes available. The new overhead streetlight sites are on McIntyre Street at 52nd Drive, 54th Avenue, and 56th Avenue. Figure 2.5 displays the locations of the existing and future overhead streetlights.



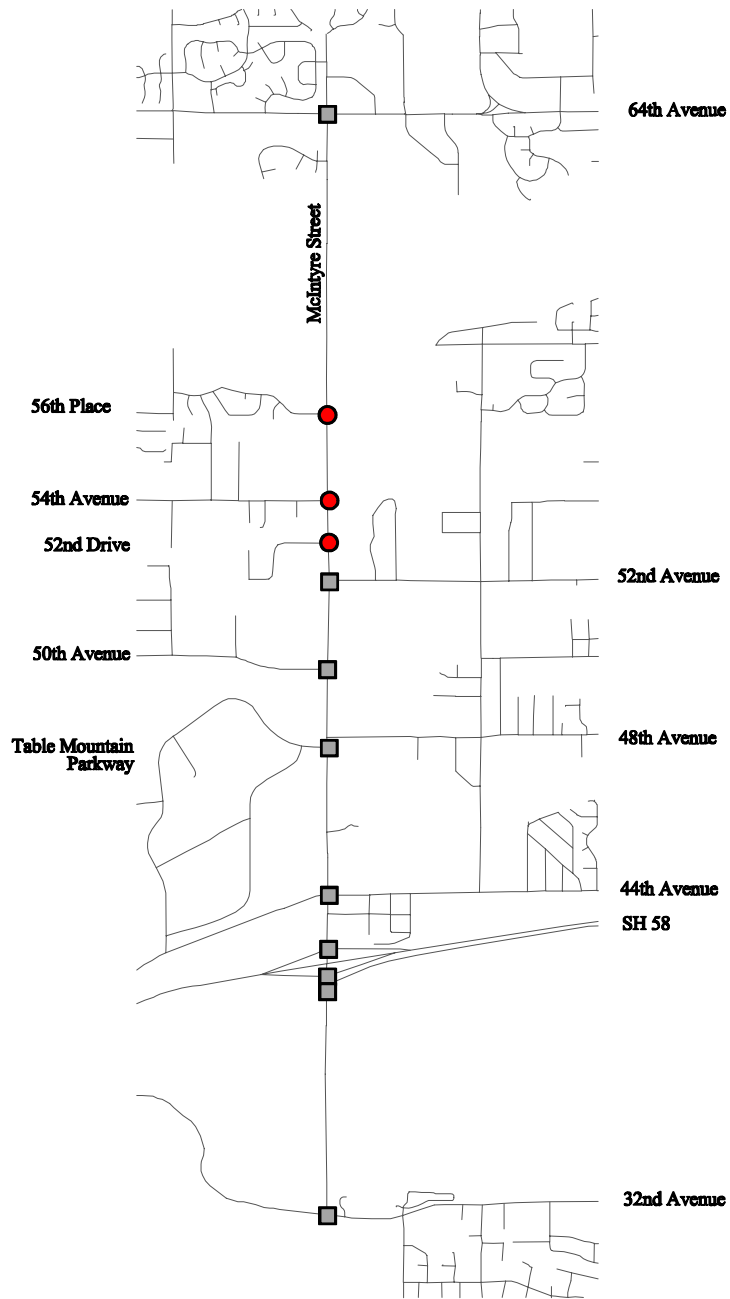
LEGEND

- Commercial
- ▲ Residential



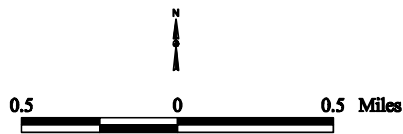
McIntyre Street
32nd Avenue to 64th Avenue

Figure 2.4
Access



LEGEND

- Existing Streetlight Location
- Proposed Streetlight Location



McIntyre Street
32nd Avenue to 64th Avenue

Figure 2.5
Streetlights

3.0 TRAFFIC VOLUMES

3.1 24 Hour Daily Traffic

The Jefferson County Department of Highways and Transportation staff collected daily traffic counts throughout the corridor. Counts that were collected prior to this study were adjusted by a 4.5 percent per year growth factor based on historical traffic counts taken throughout Jefferson County. Figure 3.1 displays the daily link traffic volumes found in the corridor. McIntyre Street carries 14,000 vehicles per day north of State Highway 58 and 7,300 vehicles per day south of 64th Avenue. South of State Highway 58, McIntyre Street carries 7,200 vehicles per day. Appendix A contains the 24-hour traffic count data used for this report.

3.2 Turning Movement Counts

Morning and afternoon peak-hour turning movement counts were collected at key intersections in the corridor by the Jefferson County Department of Highways and Transportation staff. The morning and afternoon peak hour turning movements are shown in Figures 3.2 and 3.3 respectively. Based on the turning movements, most of the traffic travelling on McIntyre Street is through traffic between 64th Avenue and either State Highway 58 or 32nd Avenue. Appendix B contains the peak-hour turning movements collected for this report.

3.3 Level of Service

Level-of-service (LOS) is a measure of how well a transportation facility can accommodate traffic volume. There are six levels of service ranging from LOS A representing free flow conditions to LOS F representing the severe congestion. Jefferson County uses LOS D during peak hours for most design and planning applications.

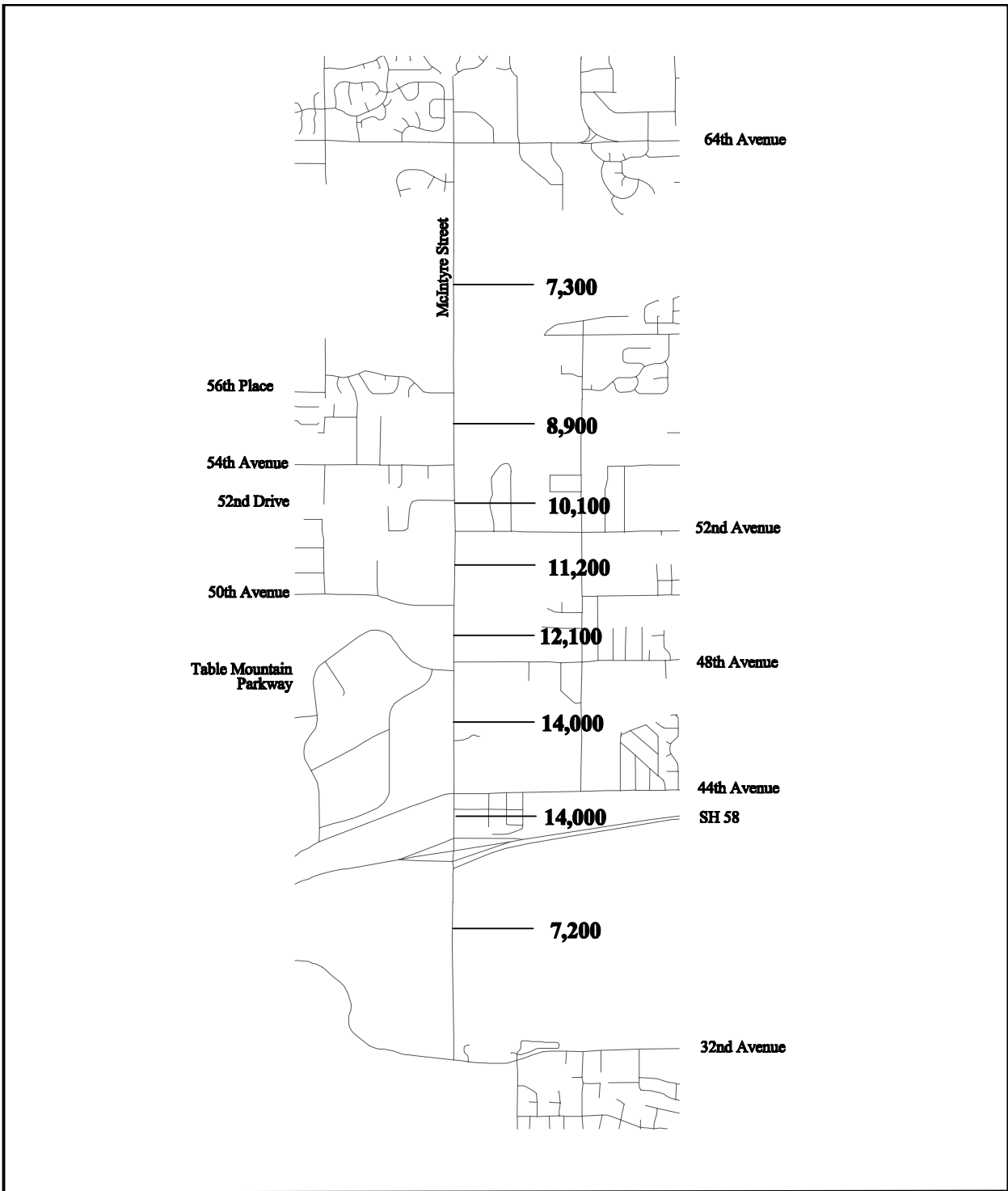
Intersection LOS was calculated for both morning and afternoon peak hour periods on McIntyre Street between 32nd Avenue and 64th Avenue. Table 3.1 displays the results of the LOS analysis.

Table 3.1
McIntyre Street Intersection Level of Service

Intersection	Control Type	McIntyre Street LOS		Cross Street LOS	
		Morning	Afternoon	Morning	Afternoon
32 nd Avenue	Stop	C	D	A	A
SH-58 EB Ramps	Stop	A	A	D	C
SH-58 WB Ramps	Stop	A	A	D	C
44 th Avenue	Signal	B	B	B	B
48 th Avenue	Stop	B	A	C	C
50 th Avenue	Signal	A	A	B	B
52 nd Avenue	Stop	A	A	C	C
54 th Avenue	Stop	A	A	B	B
64 th Avenue*	Stop (Signal)	D (B)	F (B)	B (B)	A (B)

*The City of Arvada installed a signal at the McIntyre Street/64th Avenue intersection late December.

The LOS analysis shows that all approaches at McIntyre Street intersections are operating at acceptable levels-of-service. As displayed in Table 3.1, the 64th Avenue intersection operated at LOS F prior to the new signal installation. After the signal was installed, the intersection operations improved to LOS B.



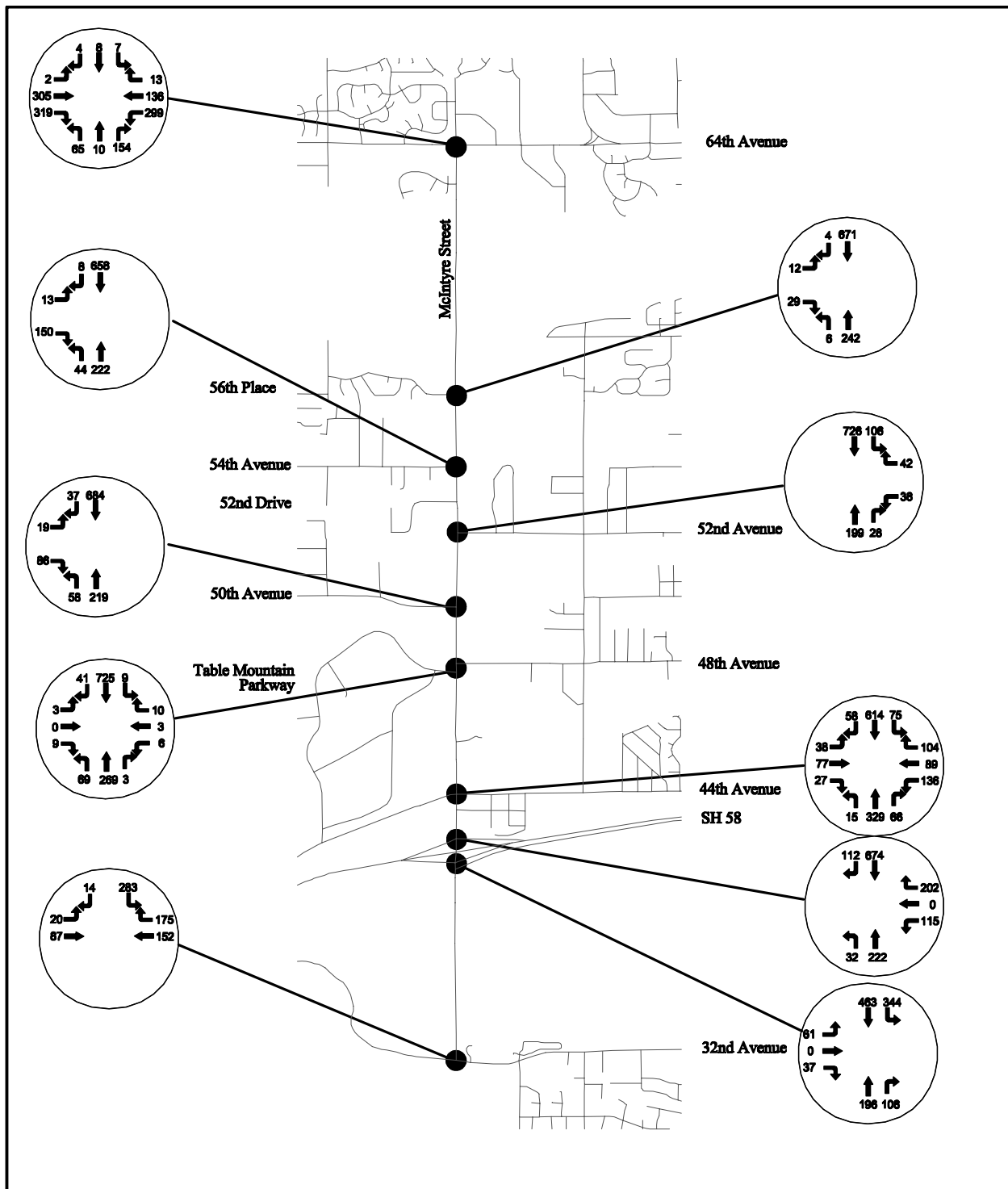
LEGEND

7,300 24 Hour Link Volume



McIntyre Street
32nd Avenue to 64th Avenue

Figure 3.1
1998 24-Hour Traffic Volume



McIntyre Street
32nd Avenue to 64th Avenue

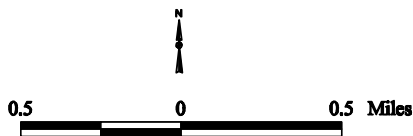
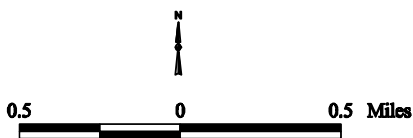
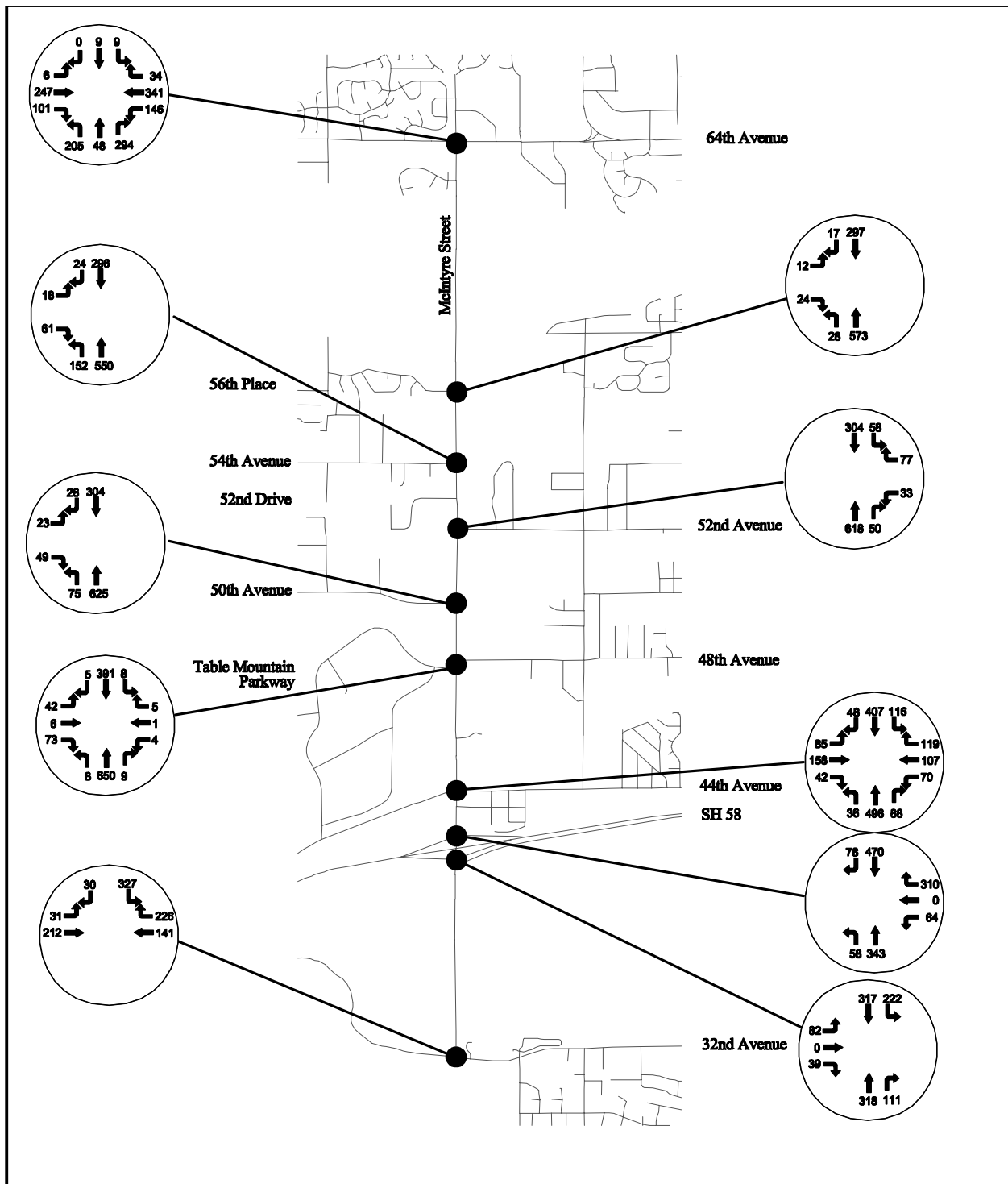


Figure 3.2
AM Peak Hour Turning Movements



McIntyre Street
32nd Avenue to 64th Avenue

Figure 3.3
 PM Peak Hour Turning Movements

4.0 ACCIDENTS

Traffic accident tabulation is a measure of how safe the roadway performs. Traffic accidents are either fatal, injury or property damage only (PDO). When an accident occurs, a number of road, driver, and vehicle characteristics are recorded in the accident report to help determine the cause of each accident, and to help identify trends based on accident location.

Accident frequency refers to the number of accidents that have occurred at a given location. Accident rate is based on the number of accidents and the amount of traffic flow. There are different formulas for calculating accident rates for (a) links and (b) intersections as shown below.

$$(a) \text{ Link Accident Rate} = \frac{(\text{Number of Accidents}) (10^6)}{(\text{Years}) (\text{Daily Entering Vehicles}) (365) (\text{Section Length})}$$

$$(b) \text{ Intersection Accident Rate} = \frac{(\text{Number of Accidents}) (10^6)}{(\text{Years}) (\text{Daily Entering Vehicles}) (365)}$$

In calculating the accident rate for links and intersections, a severity factor for fatality and injury accidents was applied. Fatality accidents have a weighted value of five, injury accidents have a weighted value of three, and PDO accidents have a weighted value of one.

4.1 Corridor Accident Characteristics

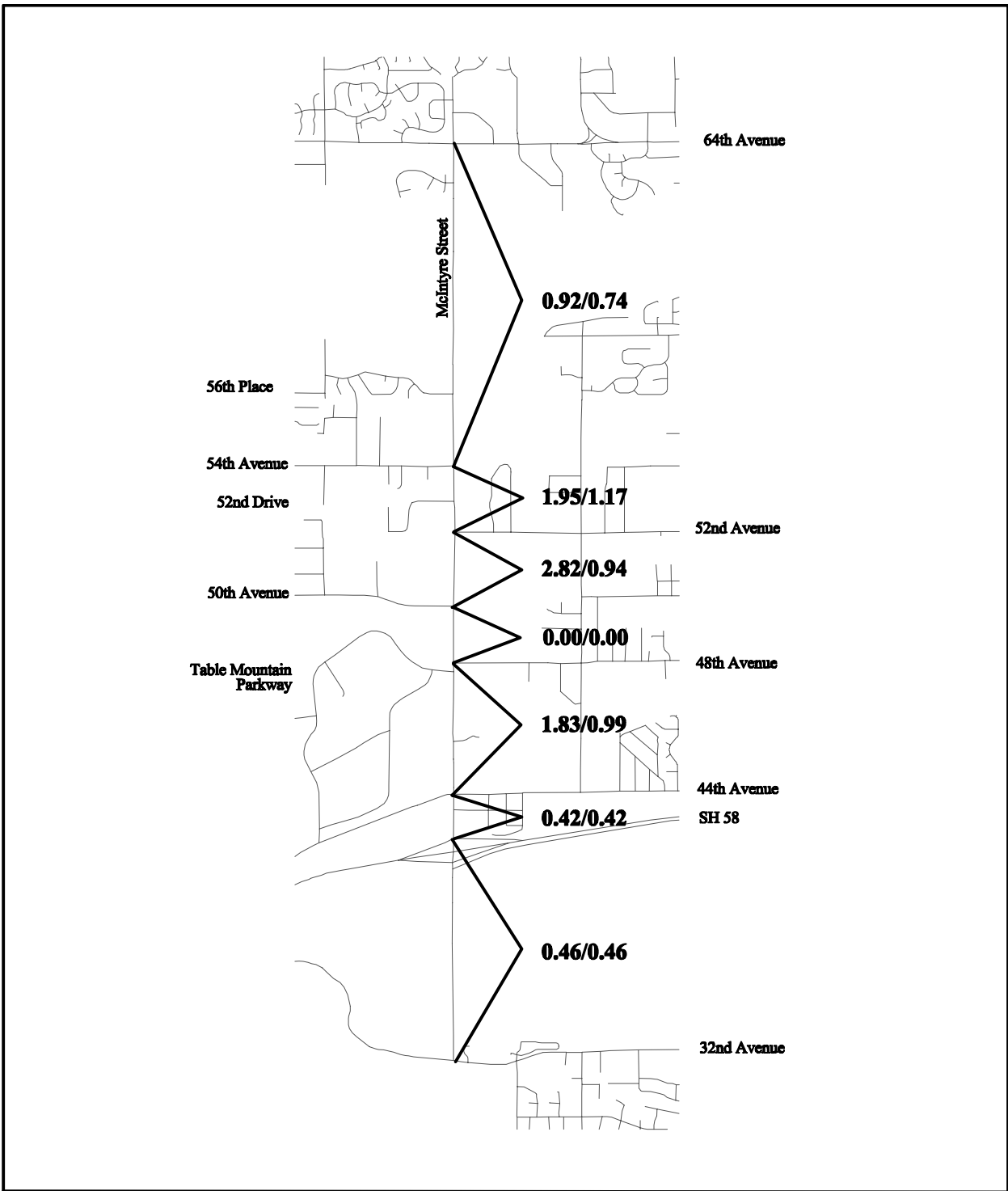
There were 42 accidents on McIntyre Street between 32nd Avenue and 64th Avenue in the three year period beginning January 1, 1995 and ending December 31, 1997. There were 17 (40%) intersection related accidents and 25 (60%) non-intersection related accidents during this time period. Of the 42 accidents in the corridor, there were no fatal accidents, 13 injury (31%) and 29 PDO (69%) accidents. The overall corridor accident rate is 1.09 for unweighted accidents and 1.76 for weighted accidents. Table 4.1 lists the number of accidents by severity, and the accidents are listed in Appendix C.

Table 4.1
Accident Severity

	Fatality	Injury	PDO	Total
Intersection Related	0	5	12	17
Non-Intersection Related	0	8	17	25
Total	0	13	29	42

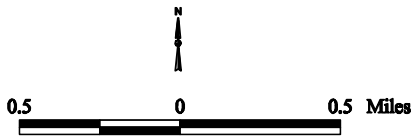
4.2 Link Accident Characteristics

The McIntyre Street corridor was divided into seven sections, primarily split at major streets. Figure 4.1 depicts the link segments and accident rates for the three year time period between January 1, 1995 through December 31, 1997. As displayed, the link between 50th Avenue and 52nd Avenue has a weighted accident rate of 2.82, which was higher than the overall weighted accident rate. This link had three injury accidents during the three year time period on the .29 mile segment. The accident types that occurred on this roadway segment include one head-on, one rear-end, and one broadside at a private drive.



LEGEND

0.92/0.74 Weighted/Unweighted Link Accident Rate



McIntyre Street
32nd Avenue to 64th Avenue

Figure 4.1
Link Accident Rate

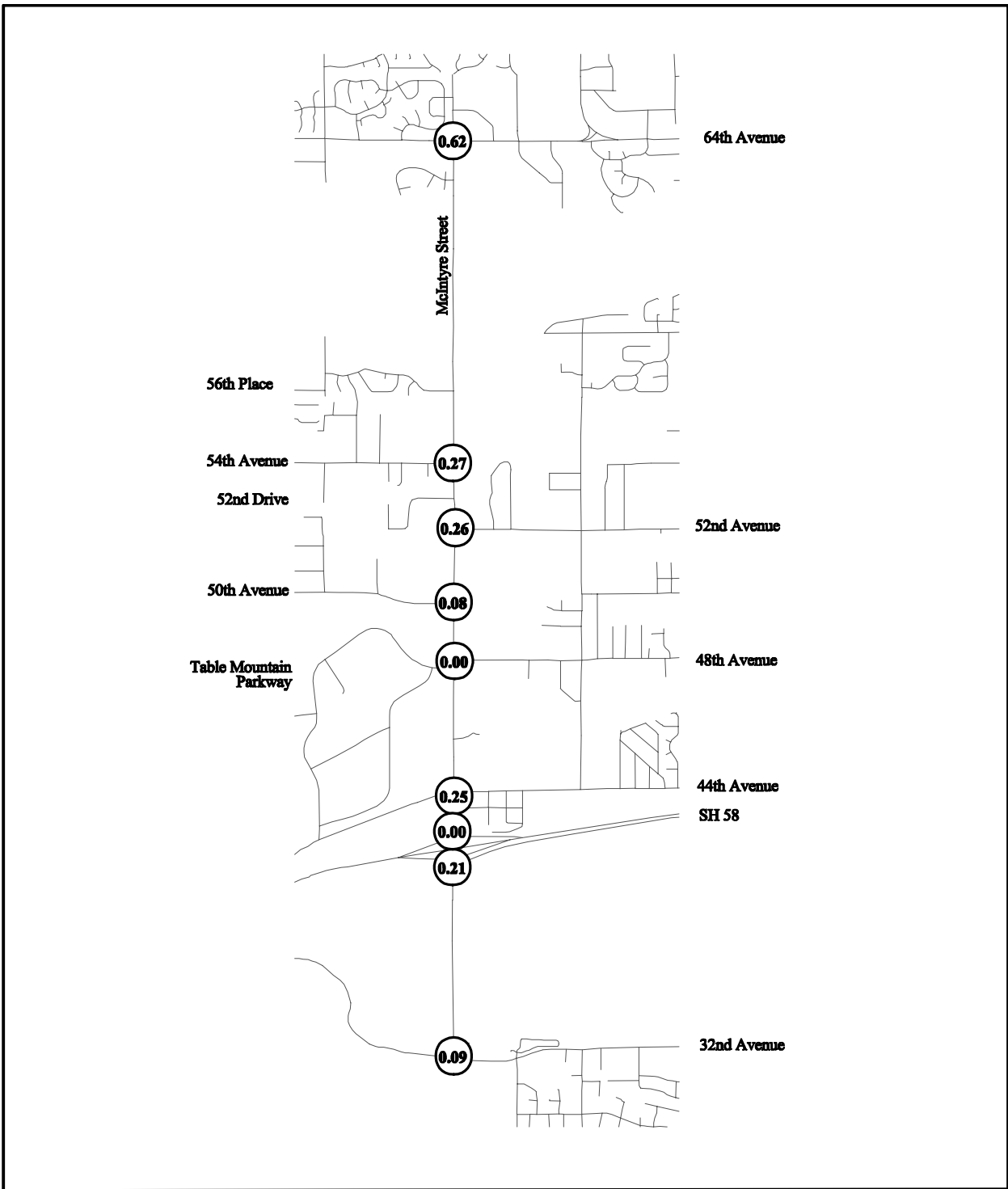
The segment between 52nd Avenue and 54th Avenue had an accident rate of 1.95. There was one injury accident and two PDO accidents. One of the injury and one of the PDO accidents occurred at the exact same location, but the accidents were two different types, overturning and rear-end respectively.

On the segment between 54th Avenue and 64th Avenue, there were eight accidents; one injury accident and seven PDO accidents. These accidents were evenly distributed throughout the segment except two accidents occurred at the same location, and both were because the vehicle collided with a fence.

4.3 Intersection Accidents

There were 17 intersection related accidents in the corridor during the three year time period studied. The accident rates ranged from 0.00 at 48th Avenue and SH-58 westbound ramps to 0.62 at 64th Avenue. Figure 4.2 displays the intersection accident rates at the key intersections in the corridor. Appendix D contains the intersection collision diagrams for all of the key intersections in the corridor.

Broadside accidents are the predominant type of intersection accident in the corridor. There were a total of ten broadside, two rear end, two approach-turn, and three fixed object accidents in the corridor. Four of the ten broadside accidents occurred at the intersection of McIntyre Street and 64th Avenue. All of these accidents occurred prior to the installation of the traffic signal. Two other broadside accidents occurred at the SH-58 eastbound ramps. The two approach-turn accidents occurred at the signalized intersection of McIntyre Street and 44th Avenue.



LEGEND



Intersection Accident Rate



**McIntyre Street
32nd Avenue to 64th Avenue**

Figure 4.2
Intersection Accident Rate

5.0 RECOMMENDATIONS

5.1 Traffic Control

An analysis was completed for signal warrants at the seven unsignalized intersections in the corridor. None of the intersections met signal warrants as defined in the Manual on Uniform Traffic Control Devices (MUTCD).

5.2 Speed Limit

Speed limits in the corridor are currently set at 40 mph at the two ends of the corridor and 30 mph in the residential portion of the corridor. Speed studies in the corridor show that the 85th percentile speed is approximately 40 mph throughout the corridor. It is recommended that the speed limit should be set to a consistent 35 mph north of 48th Avenue to 64th Avenue. Speed regulations and speed limits are intended to supplement the motorist's judgment in determining speeds that are reasonable for particular roadway conditions. The Institute of Traffic Engineers Traffic Engineering Handbook states, "It is generally assumed that 85 percent of drivers operate at speeds that are reasonable and prudent for the conditions present in each situation."

5.3 Signage

Figure 5.1 displays the existing sign inventory for McIntyre Street between 32nd Avenue and 64th Avenue. Figure 5.2 displays the proposed signing plan for the corridor. As displayed, there are seven signs that should be removed, eight new signs to be installed, six signs to be replaced, and three advance warning signs that need to be relocated. The sign changes are needed to implement the new speed limit and bring warning signs into compliance with the MUTCD.

5.4 Shoulders

For adequate safety, it is desirable to have a shoulder area for recovery if the motorist unintentionally veer from the travel lanes. Six of the 25 accidents that were non-intersection related may have been avoided if there was an adequate clear zone beside the roadway. According to the AASHTO Roadside Design Guide, shoulder width for a facility with a speed limit at or below 40 mph should be between 10 feet and 15 feet. The shoulders north of 50th Avenue are very narrow to non-existent. There are numerous trees, fences, mail boxes, telephone poles, and other obstructions in the shoulder area that should be moved, removed or signed with object markers.



Vegetation protruding into travel lanes



Inadequate shoulder clear zone

Figure 5.1 Existing Sign Inventory

There are also signs in the right of way that are difficult to see due to the vegetation overgrowth in the shoulders. The vegetation should be trimmed back or removed so the signage can be read at the proper distances for adequate warning.

5.5 Guard Rail

New bridge and approach rail needs to be placed at the Van Bibber Creek Bridge. Currently, guard rail is not installed nor are there warnings for this ditch area.



Van Bibber Creek Bridge

The existing damaged bridge rails on the three structures over the Farmers Highline Canal north of 48th Avenue need to be replaced and approach rail needs to be added. The structure just north of 56th Avenue needs to have guard rail placed around the tree that is near the bridge abutment on the east side of McIntyre Street.

5.6 McIntyre Widening

Currently, McIntyre Street is being widened from the Croke Canal bridge north to 48th Avenue adjacent to the Coors Technology Center development. This will be a five-lane section to six-lane section with curb and gutter and a raised 4'-0" median. McIntyre Street should be widened to provide a consistent cross section from the bridge over the Croke Canal south to SH-58.

The North Plains Plan identified a 72'-0" cross section using four travel lanes and a raised median as the preferred section in this corridor. This 72'-0" cross section should be constructed south of the improvements currently being built by the Coors Technology Center development and meet up with the four-lane section currently on the SH-58 bridge. To accomplish this, the railroad crossing north of 44th Avenue needs to be improved, the 44th Avenue intersection should be reconstructed, and McIntyre Street would need to be widened south of the 44th Avenue intersection to SH-58.

5.7 Left-Turn Lanes

The Jefferson County Roadway Design and Construction Manual states that left-turn lanes are required at all arterial intersections. A left-turn lane analysis was completed for all intersections in the corridor that currently do not have left-turn lanes. Current turning movement volumes warrant left turn lanes on McIntyre Street at 52nd Avenue, 54th Avenue, and 56th Place. Figures 5.3, 5.4, and 5.5 display the left-turn analysis for 52nd Avenue, 54th Avenue, and 56th Place respectively based on AASHTO's A Policy on Geometric Design of Highways and Streets, 1990.

While Jefferson County staff was collecting turning movement data at McIntyre Street and 52nd Avenue T-intersection, staff observed that southbound through traffic would use the Diamond Taurus Feed Company parking lot as a through lane when left-turning traffic was waiting for an appropriate gap in traffic.

The existing intersection at 50th Avenue currently has a left-turn lane and left-turn lanes are needed, as documented earlier, at 52nd Avenue, 54th Avenue, and 56th Place. A continuous center turn lane between 50th Avenue and 56th Place should be constructed along this segment of

Figure 5.3
52nd Avenue Left-Turn Lane Analysis

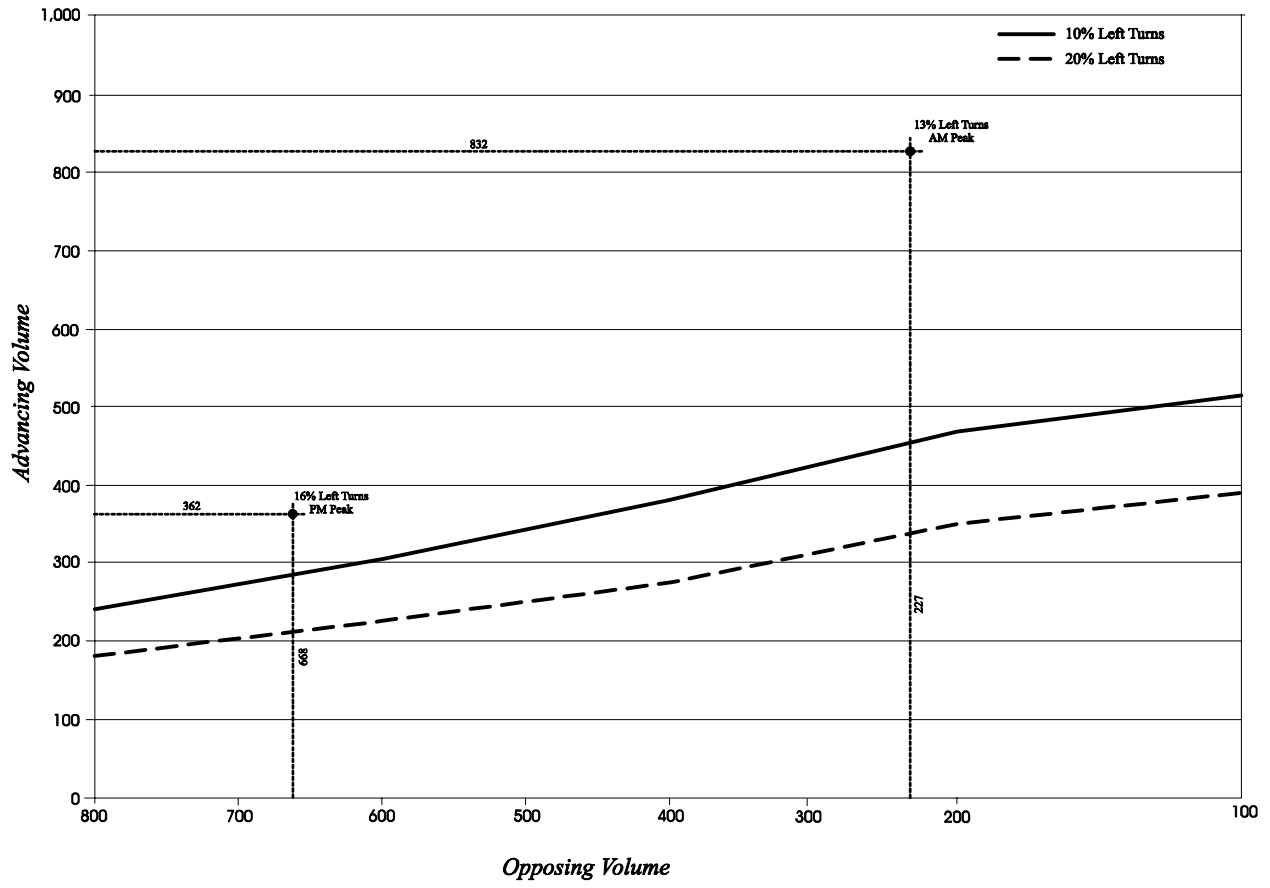


Figure 5.4
54th Avenue Left-Turn Lane Analysis

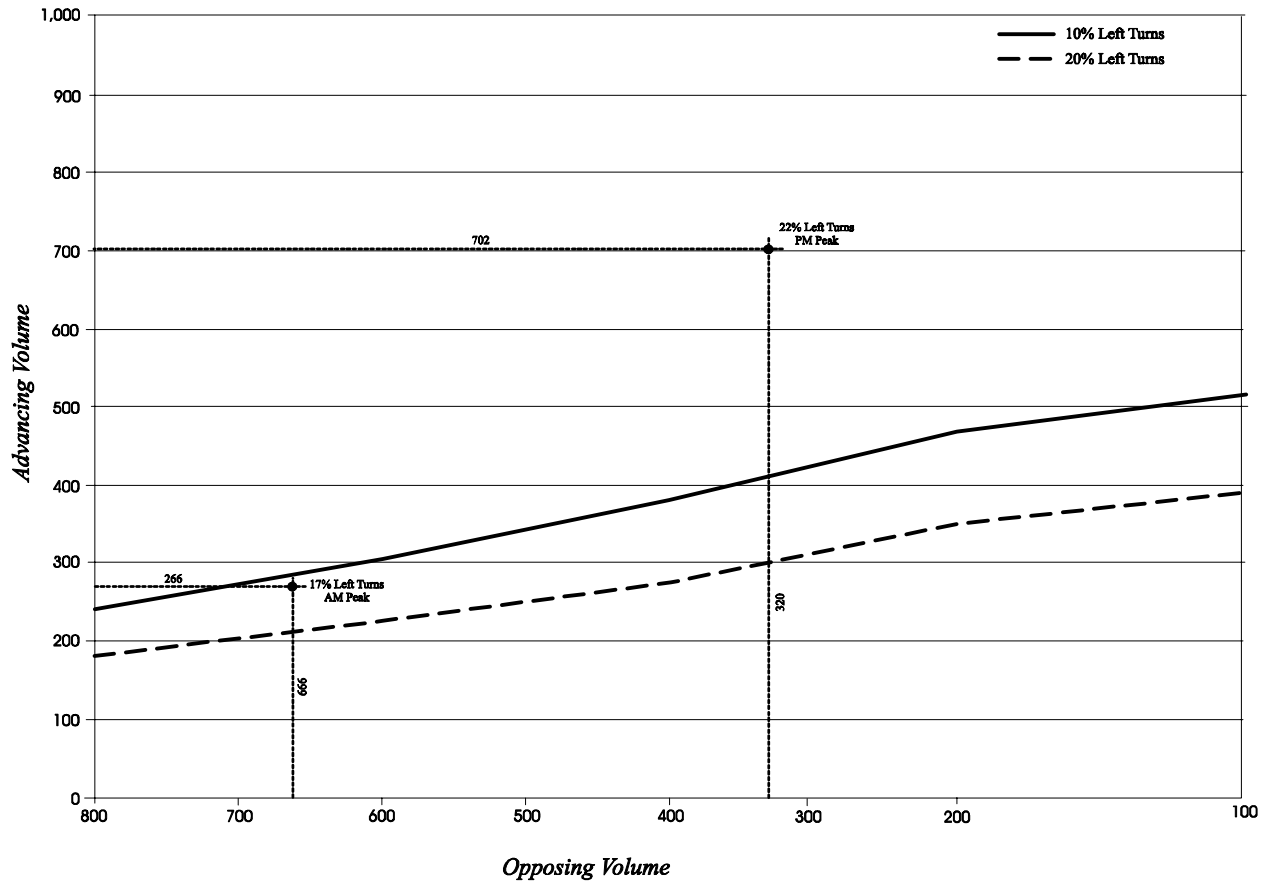
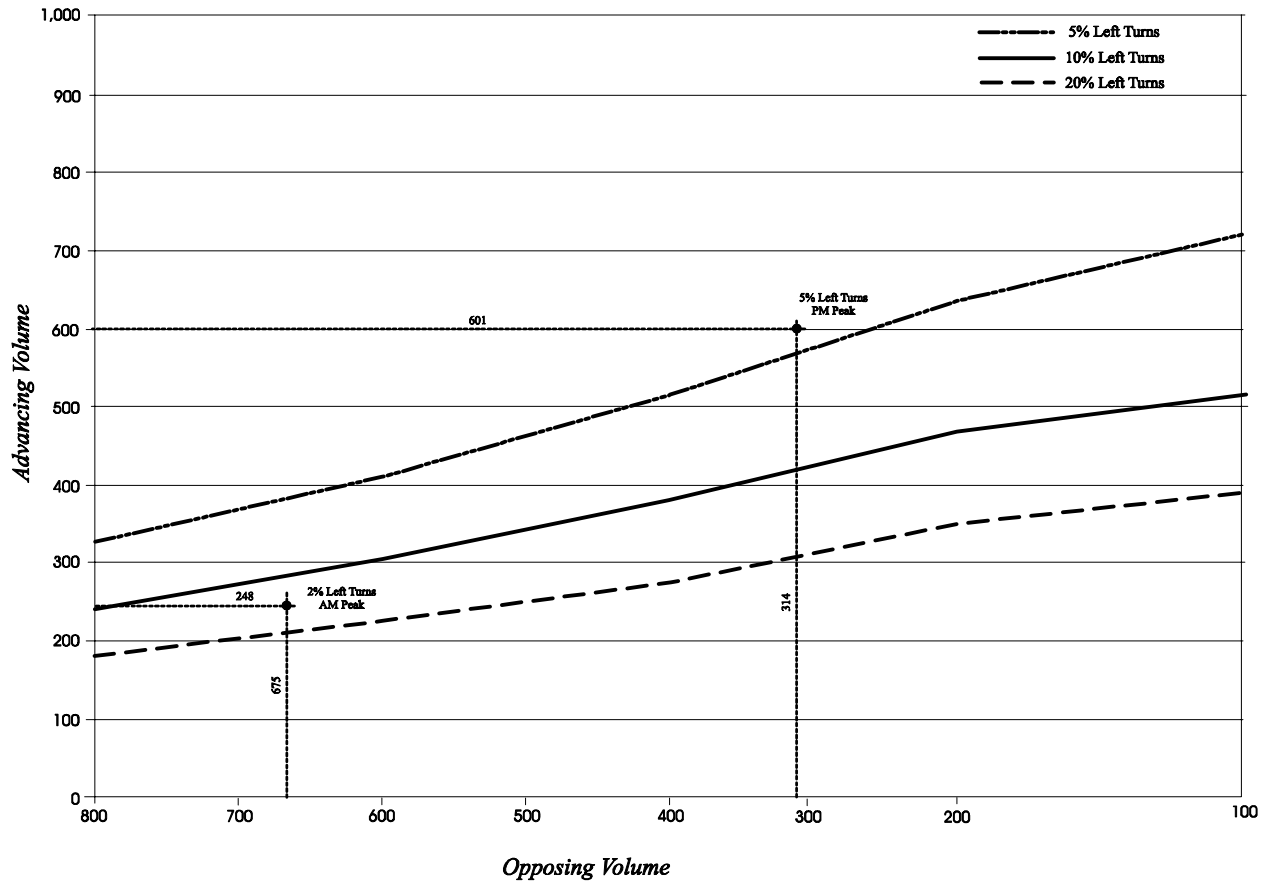


Figure 5.5
56th Place Left-Turn Lane Analysis



McIntyre Street. The installation of left-turn lanes should be accommodated in the design and reconstruction of the deficient structure located between 52nd Avenue and 54th Avenue.

5.8 Lane Striping

McIntyre Street between 32nd Avenue and 64th Avenue should be restriped with exception to the newly constructed segment between the Croke Canal Bridge and 48th Avenue adjacent to the Coors Technology Center. The center double yellow line is difficult to see and the side fog lines are non-existent. By restriping, some of the embankment or fence accidents may be mitigated. McIntyre Street from 32nd Avenue to 64th Avenue should be added to the arterial priority road marking list. This designation will assure that the road markings on McIntyre Street would be maintained twice per year.