

Appendix A:
Literature Search Sources

Literature Search Sources

1. Hennepin County, City of St. Paul, *A Summary of Experiences with 3-Lane Roadway Conversions*, January 2012
(https://www.ceam.org/vertical/Sites/%7BD96B0887-4D81-47D5-AA86-9D2FB8BC0796%7D/uploads/Concurrent_Session_3_-_Bob_Byers_Eric_Drager_and_Monica_Beeman.pdf).
2. Iowa Department of Transportation, Office of Traffic and Safety, *4-Lane to 3-Lane Conversions*, n.d. ([https://iowadot.gov/iowabikes/pdf/Road Diet.pdf](https://iowadot.gov/iowabikes/pdf/Road_Diet.pdf)).
3. Knapp, K, B. Chandler, J. Atkinson, T. Welch, H. Rigdon, R. Retting, S. Meekins, E. Widstrand, R. Porter, and R. Crowe. *Road Diet Informational Guide*, Report No. FHWA-SA-14-028, Federal Highway Administration, U.S. Department of Transportation, November 2014.
4. Rosales, J., *Road Diet Handbook: Setting Trends for Livable Streets*. 2nd ed., Parsons Brinckerhoff, 2007.
5. Federal Highway Administration, *Road Diets (Roadway Reconfigurations)*, n.d. (https://safety.fhwa.dot.gov/road_diets/).

Appendix B:
Segment Characteristics Maps

Corridor 1 Characteristics

Directional Split ¹ :	AM: 52% EB/48% WB
	PM: 68% EB/32% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	118
Crashes/Mile ² :	147.5

Corridor 1 Transit Routes

Route 32
Route 801

General Notes

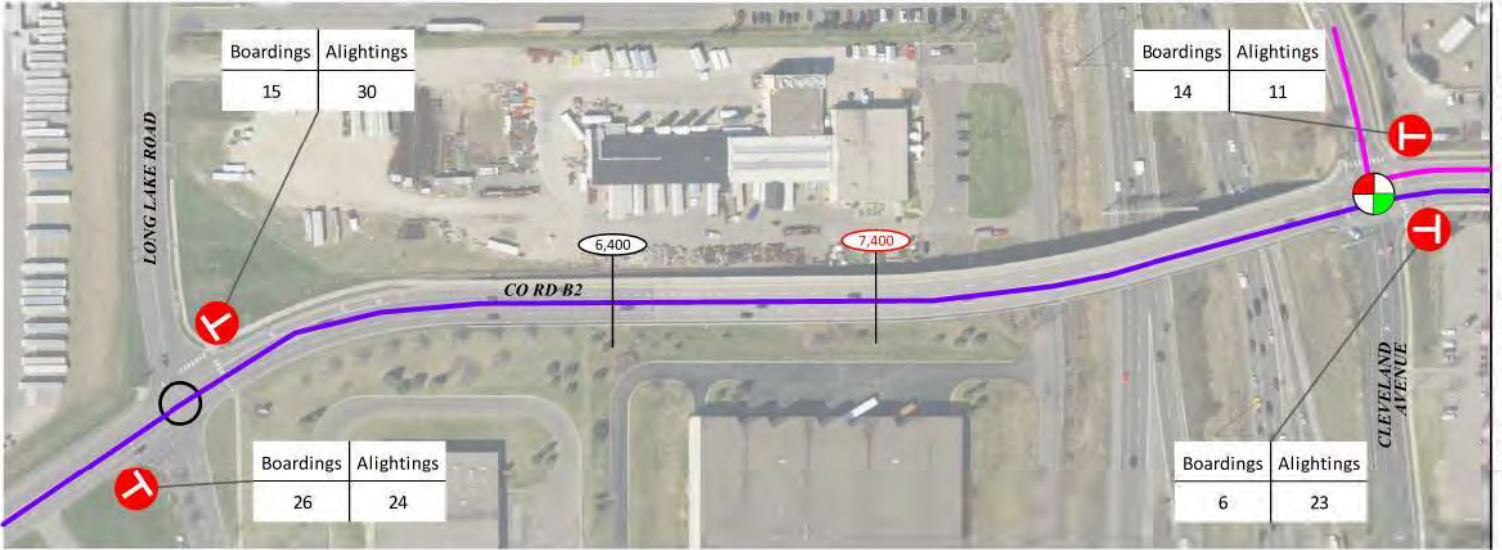
1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 1A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,400
Segment Maximum Peak Hour Volume ⁴ :	624

Segment 1B Characteristics

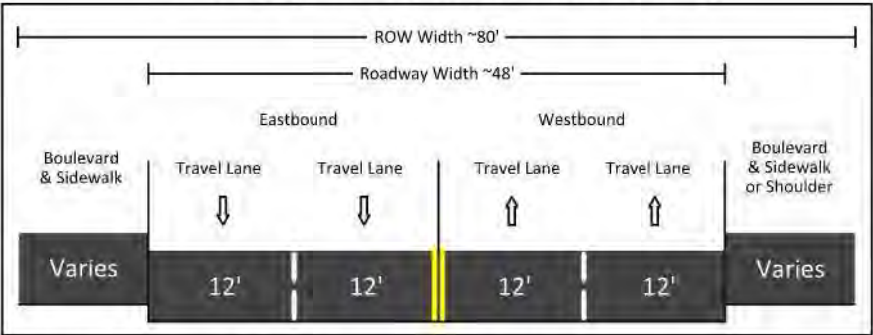
Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	12,900 - 13,100
Segment Maximum Peak Hour Volume ³ :	1,141



Segment 1A

Segment 1B

Existing Typical Section (Segments 1A & 1B)

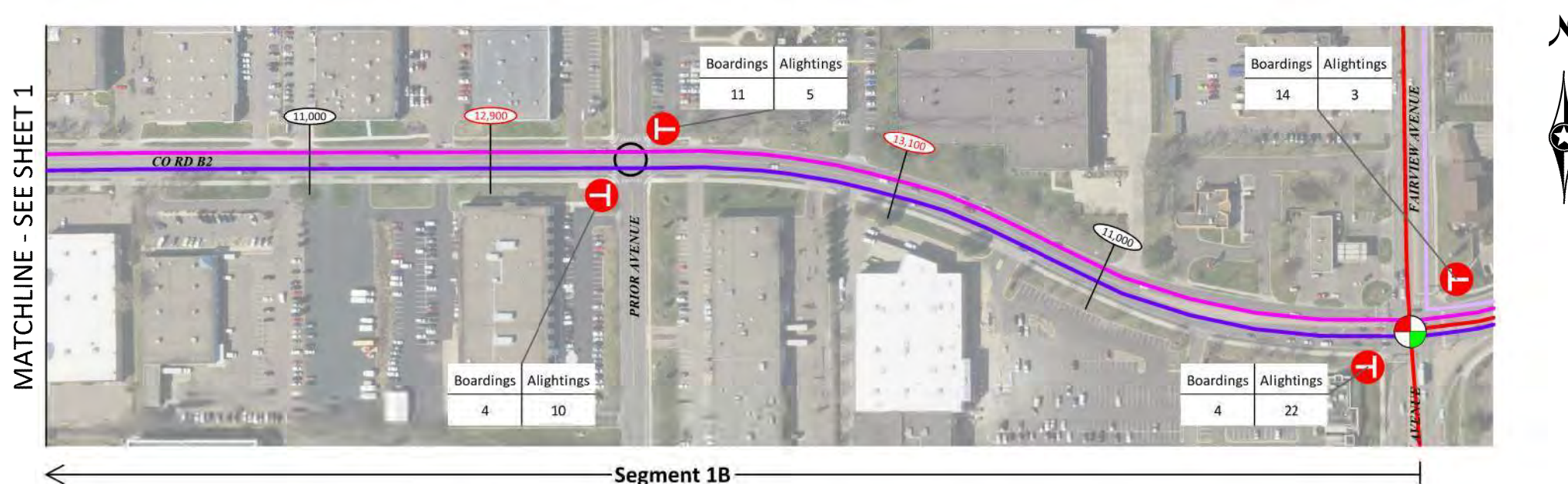


* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 1 Characteristics

Directional Split ¹ :	AM: 52% EB/48% WB PM: 68% EB/32% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	118
Crashes/Mile ² :	147.5

Corridor 1 Transit Routes

Route 32
Route 801

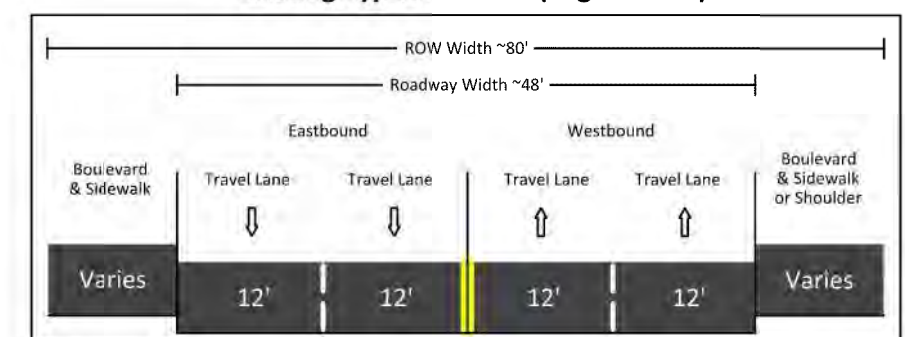
General Notes

- Parking not permitted unless noted otherwise.
- Transit boardings and alightings are 2018 weekday averages.

Segment 1B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	12,900 - 13,100
Segment Maximum Peak Hour Volume ³ :	1,141

Existing Typical Section (Segment 1B)



* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 2A

Segment 2A Characteristics

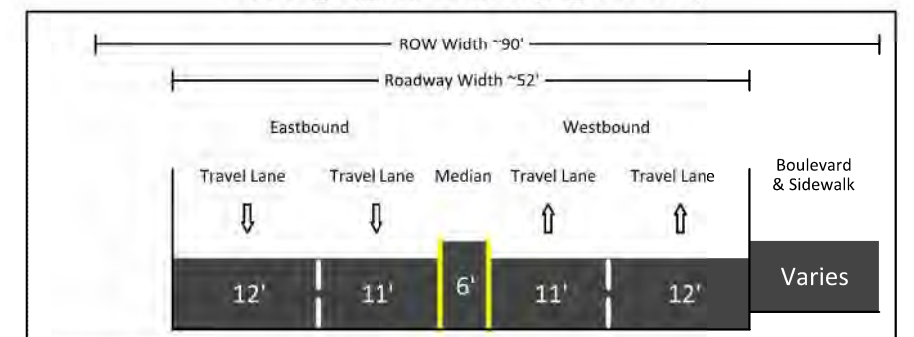
Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	10,300
Segment Maximum Peak Hour Volume ⁴ :	820

Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

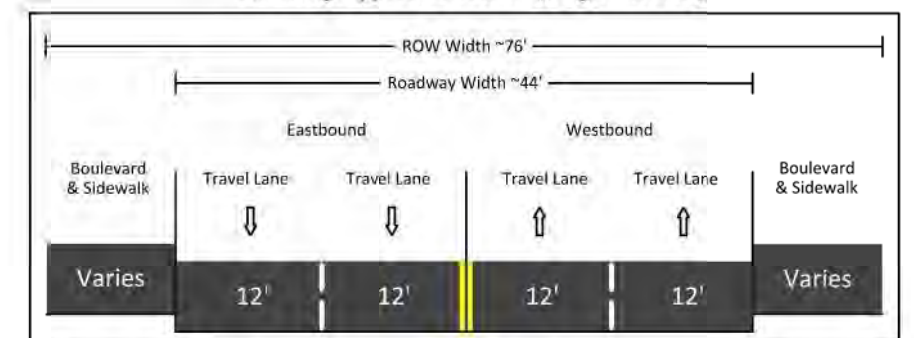
Segment 2B

Existing Typical Section (Segment 2A)



* Not to scale - for illustration purpose only; widths vary by locations

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

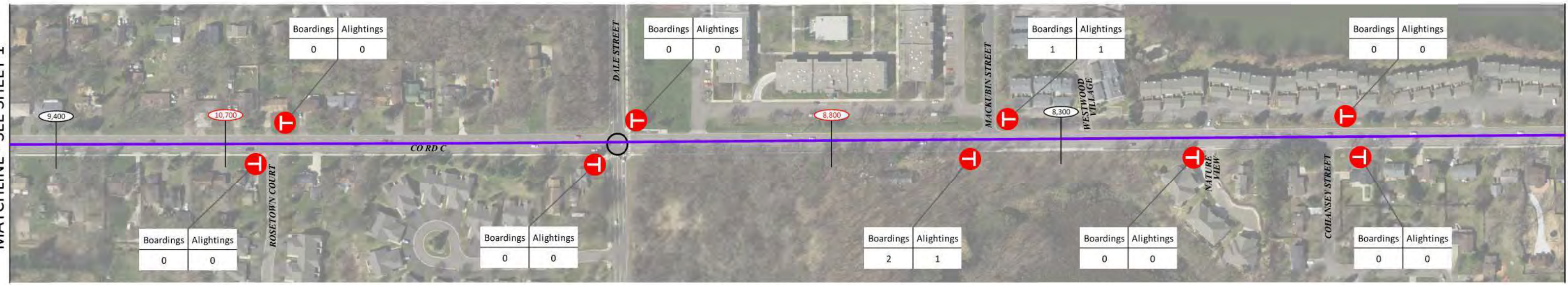
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

MATCHLINE - SEE SHEET 1

MATCHLINE - SEE SHEET 3



Segment 2B

Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

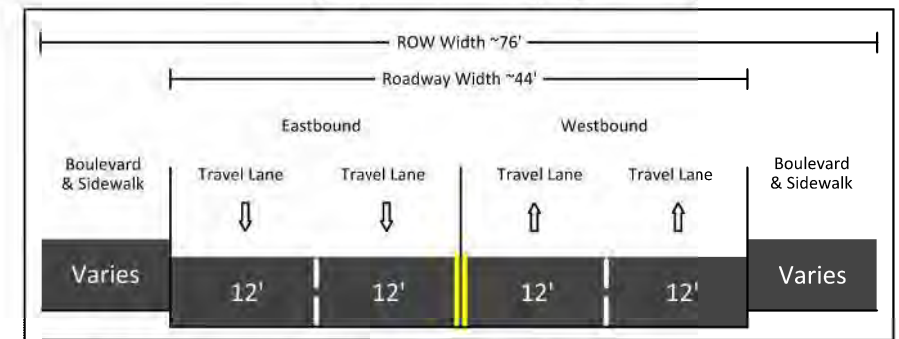
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops

Ramsey County 4 to 3 Lane Conversion Study

ALLIANT

Segment 2
County Road C (Lexington Avenue to I-35E)
Sheet 2 of 4



Segment 2B

Segment 2C

Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

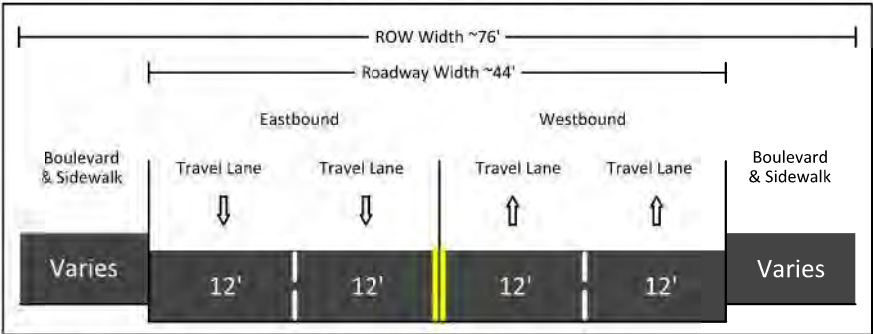
Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

Segment 2C Characteristics

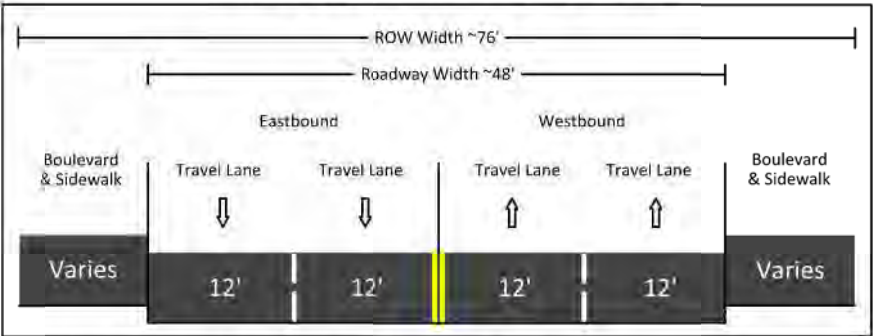
Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	492

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

Existing Typical Section (Segment 2C)

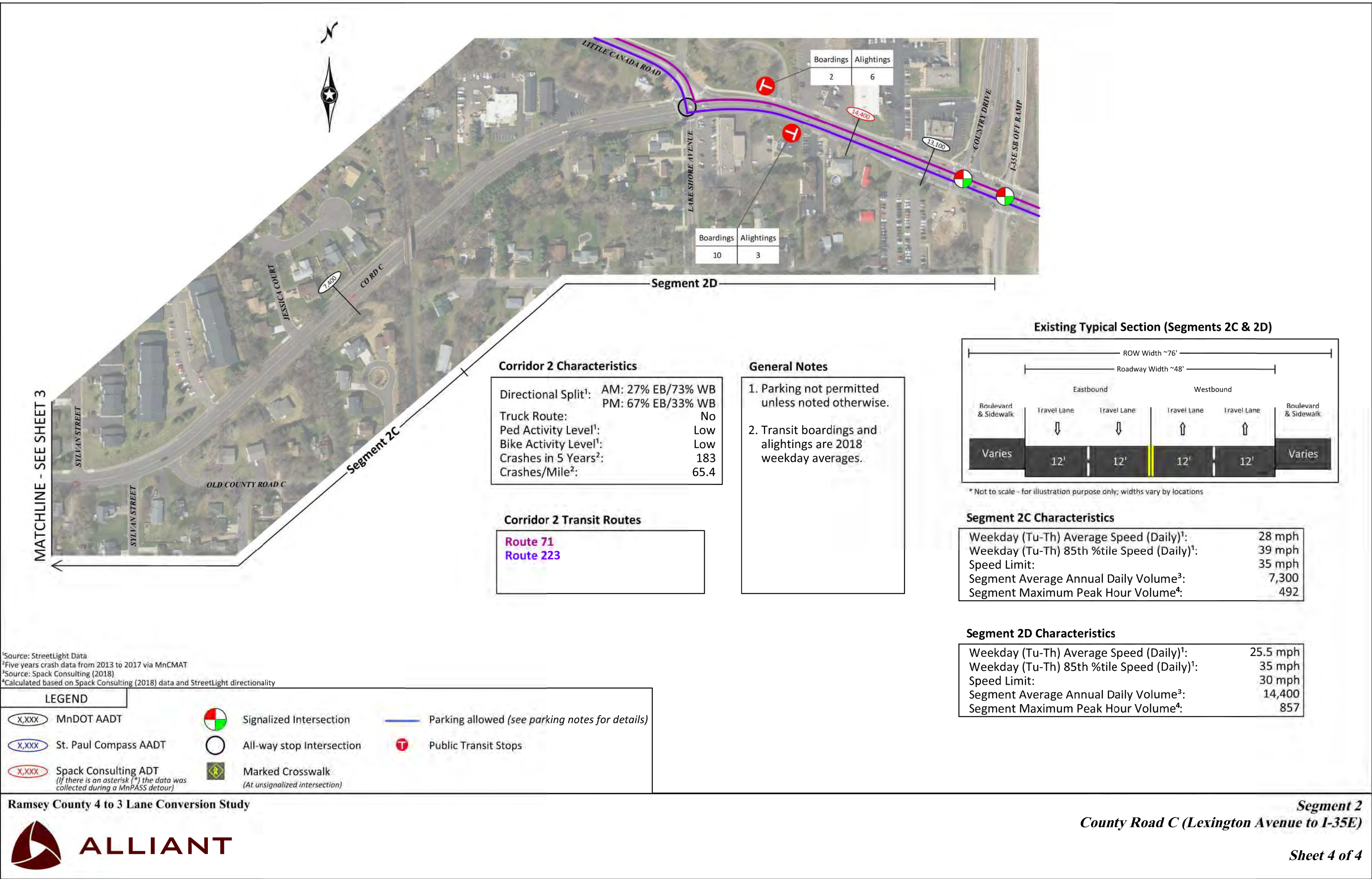


* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 3

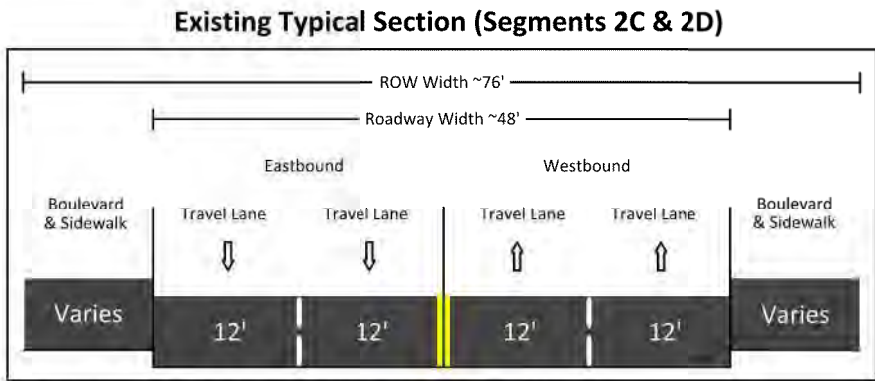
Corridor 2 Characteristics	
Directional Split ¹ :	AM: 27% EB/73% WB PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes
Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.

2. Transit boardings and alightings are 2018 weekday averages.



Segment 2C Characteristics	
Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	492

Segment 2D Characteristics	
Weekday (Tu-Th) Average Speed (Daily) ¹ :	25.5 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	14,400
Segment Maximum Peak Hour Volume ⁴ :	857

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 2

Corridor 3 Characteristics

Directional Split ¹ :	AM: 65% EB/35% WB PM: 38% EB/62% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	130
Crashes/Mile ² :	130

Corridor 3 Transit Routes

Route 4
Route 141
Route 801

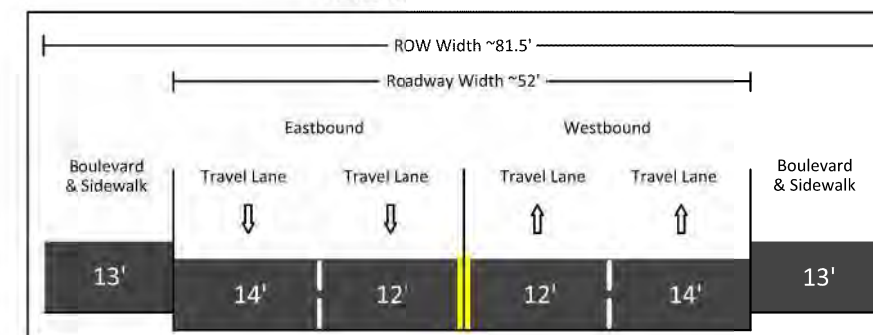
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 3 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	14,100
Segment Maximum Peak Hour Volume ⁴ :	739

Existing Typical Section



* Not to scale - for illustration purpose only

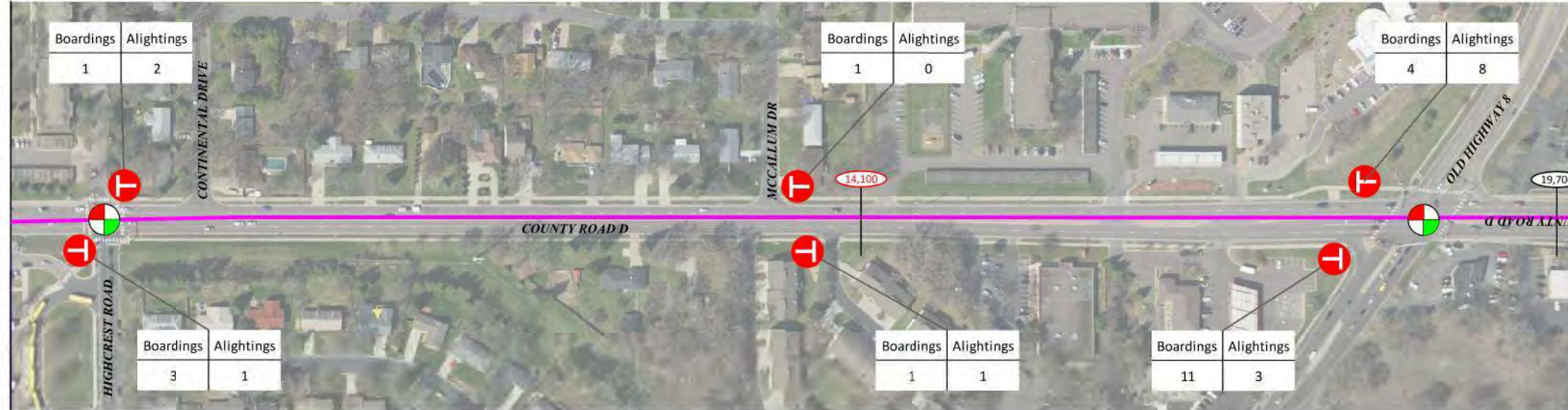
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 1



Corridor 3 Characteristics

Directional Split ¹ :	AM: 65% EB/35% WB PM: 38% EB/62% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	130
Crashes/Mile ² :	130

Corridor 3 Transit Routes

Route 4
Route 141
Route 801

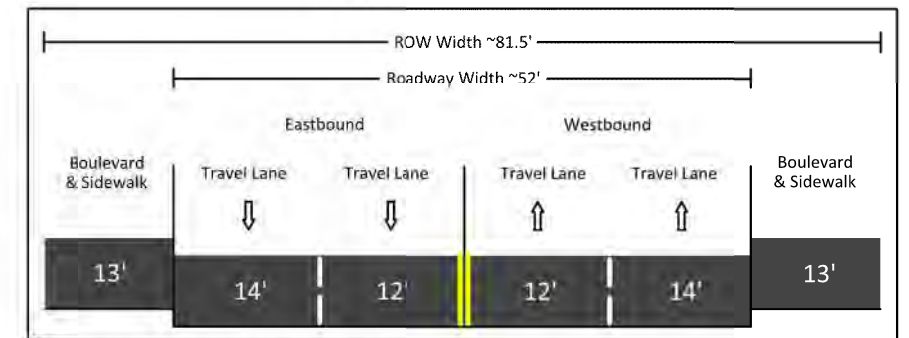
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 3 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	14,100
Segment Maximum Peak Hour Volume ⁴ :	739

Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Segment 4A

Corridor 4 Characteristics

Directional Split ¹ :	AM: 54% EB/46% WB
	PM: 53% EB/47% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	131
Crashes/Mile ² :	187.1

Corridor 4 Transit Routes

No transit routes on this corridor.

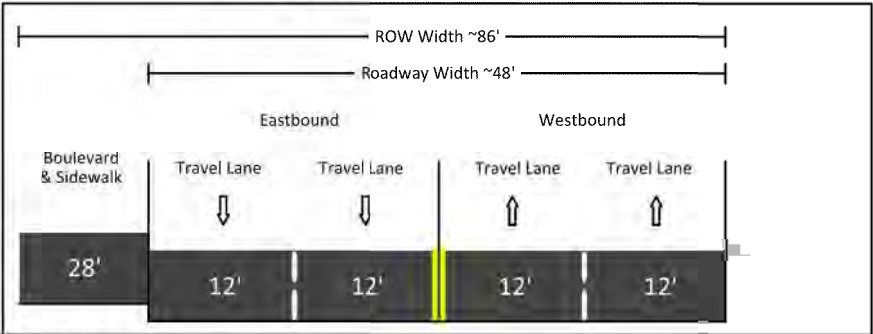
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 4A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	33 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	45 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	15,800
Segment Maximum Peak Hour Volume ⁴ :	831

Existing Typical Section (Segment 4A)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2018)
⁴Calculated based on MnDOT (2018) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 1



Corridor 4 Characteristics

Directional Split ¹ :	AM: 54% EB/46% WB
	PM: 53% EB/47% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	131
Crashes/Mile ² :	187.1

Corridor 4 Transit Routes

No transit routes on this corridor.

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

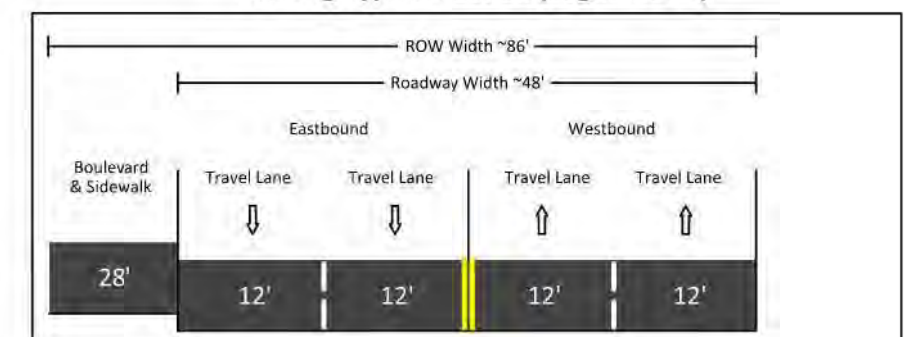
Segment 4A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	33 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	45 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	15,800
Segment Maximum Peak Hour Volume ⁴ :	831

Segment 4B Characteristics

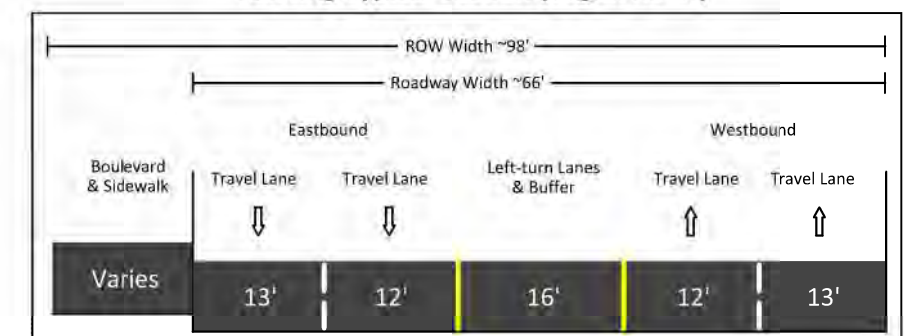
Weekday (Tu-Th) Average Speed (Daily) ¹ :	33 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	45 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	15,800
Segment Maximum Peak Hour Volume ⁴ :	831

Existing Typical Section (Segment 4A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 4B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2018)
⁴Calculated based on MnDOT (2018) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 4
County Road E (Labore Road to TH 61)

Sheet 2 of 2



Corridor 5 Characteristics

Directional Split ¹ :	AM: 71% EB/29% WB
	PM: 44% EB/56% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	46
Crashes/Mile ² :	115.0

Corridor 5 Transit Routes

No transit routes on this corridor.

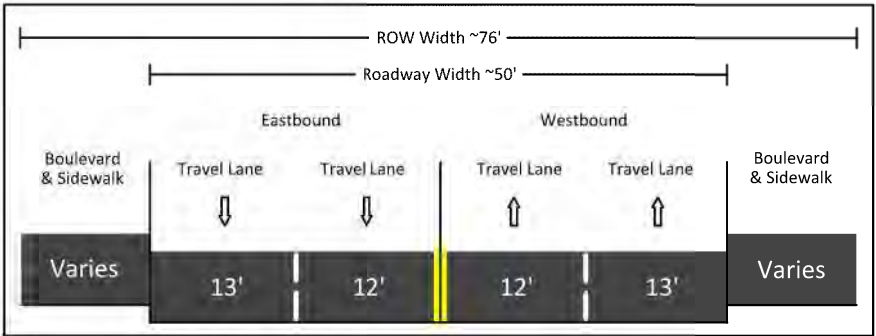
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 5 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	32 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	48 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	11,500
Segment Maximum Peak Hour Volume ⁴ :	683

Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 6 Characteristics

Directional Split ¹ :	AM: 53% NB/47% SB
	PM: 45% NB/55% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	172
Crashes/Mile ² :	245.7

General Notes

- Where there are no notes about parking, parking is not allowed.
- Transit boardings and alightings are 2018 weekday averages.

Segment 6 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	24 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	32 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,900 - 17,900
Segment Maximum Peak Hour Volume ⁴ :	985

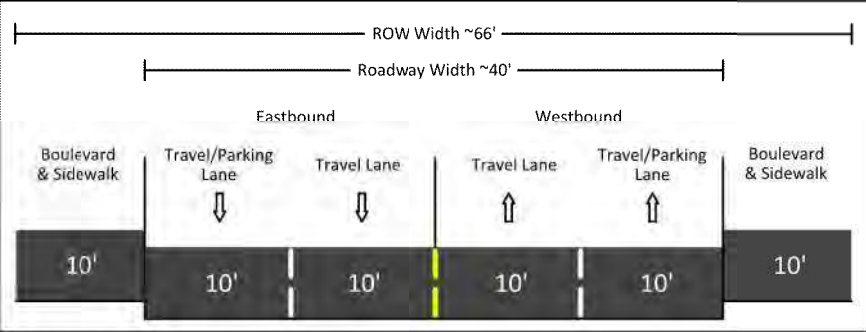
Parking Notes:

- | | | | |
|---|---------------------------------------------|---|--------------------------------------------------|
| 1 | 1 hour parking (8am-6pm) | 5 | No Parking All Day (7am-6pm) |
| 2 | 15 minute parking (8am-4pm) | 6 | No Parking During Early Morning (2am-7am Mon) |
| 3 | 2 Hour Limit During Day (8am-6pm Every Day) | 7 | No Parking During Early Morning (2am-7am M-W-F) |
| 4 | No parking During PM Peak (4pm-6pm Mon-Fri) | 8 | No Parking During Early Morning (2am-7am Thurs) |
| | | 9 | No Parking During Early Morning (2am-7am T-Th-S) |

Corridor 6 Transit Routes

Route 65

Existing Typical Section



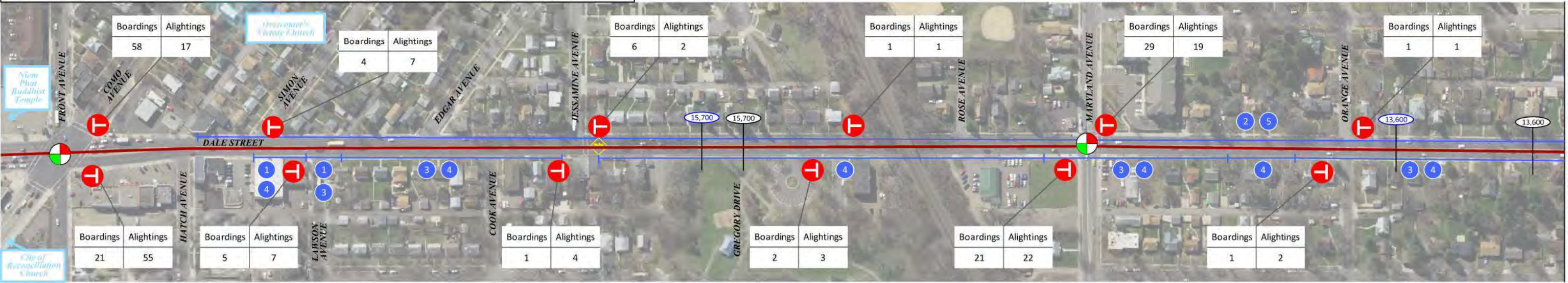
* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2017 & 2018)
⁴Calculated based on MnDOT (2017 & 2018) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

- | | | |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| (X,XXX) MnDOT AADT | Signalized Intersection | Parking allowed (see parking notes for details) |
| (X,XXX) St. Paul Compass AADT | All-way stop Intersection | Public Transit Stops |
| (X,XXX) Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour) | Marked Crosswalk
(At unsignalized intersection) | |

- Parking Notes:**
- 1 2 Hour Limit During Day (8am-4pm Every Day)
 - 2 No Parking During AM Peak (7am-8am Mon-Fri)
 - 3 No Parking During PM Peak (4pm-6pm Mon-Fri)
 - 4 No Parking During Early Morning (2am-7am Mon-Wed-Fri)
 - 5 No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



Corridor 7 Characteristics

Directional Split ¹	AM: 41% NB/59% SB PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

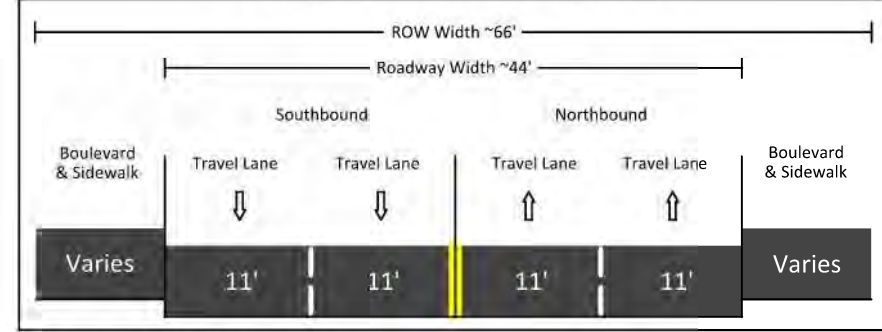
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 7A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	13,600 - 15,700
Segment Maximum Peak Hour Volume ³ :	1,138

Existing Typical Section (Segment 7A)



¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2016 & 2018)

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops

Ramsey County 4 to 3 Lane Conversion Study

ALLIANT

Segment 7
Dale Street (Como Avenue to TH 36)

Sheet 1 of 4

MATCHLINE - SEE SHEET 1

MATCHLINE - SEE SHEET 3

- Parking Notes:**
- 1

2 Hour Limit During Day (8am-4pm Every Day)

2

No Parking During AM Peak (7am-8am Mon-Fri)

3

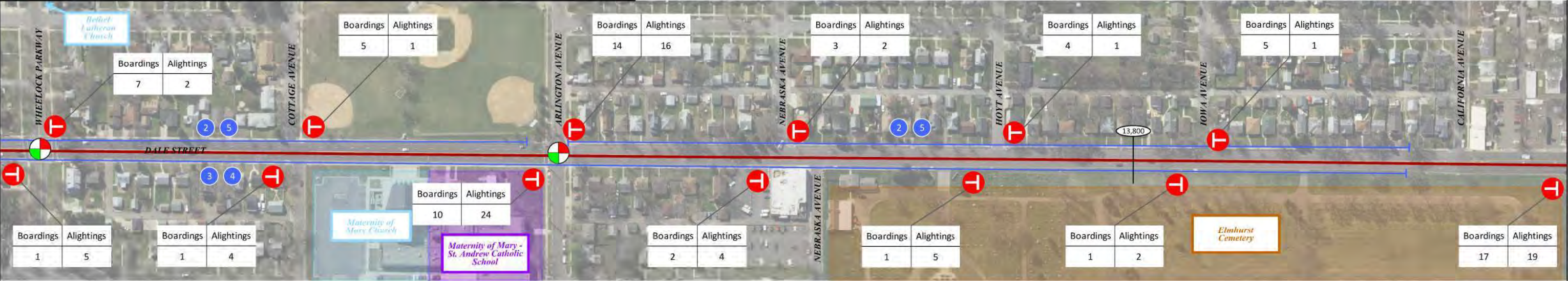
No Parking During PM Peak (4pm-6pm Mon-Fri)

4

No Parking During Early Morning (2am-7am Mon-Wed-Fri)

5

No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



Segment 7A

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

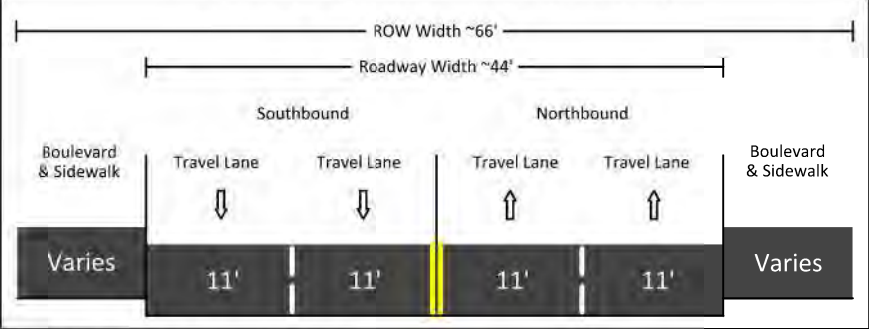
General Notes

- Parking not permitted unless noted otherwise.
- Transit boardings and alightings are 2018 weekday averages.

Segment 7A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	13,600 - 15,700
Segment Maximum Peak Hour Volume ³ :	1,138

Existing Typical Section (Segment 7A)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2016 & 2018)

LEGEND

- (X,XXX)

MnDOT AADT

(X,XXX)

St. Paul Compass AADT

(X,XXX)

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)
- Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops
- Ramsey County 4 to 3 Lane Conversion Study
- ALLIANT
- Segment 7
Dale Street (Como Avenue to TH 36)
- Sheet 2 of 4

MATCHLINE - SEE SHEET 2

- Parking Notes:**
- 1

2 Hour Limit During Day (8am-4pm Every Day)

2

No Parking During AM Peak (7am-8am Mon-Fri)

3

No Parking During PM Peak (4pm-6pm Mon-Fri)

4

No Parking During Early Morning (2am-7am Mon-Wed-Fri)

5

No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



MATCHLINE - SEE SHEET 4

Segment 7B

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

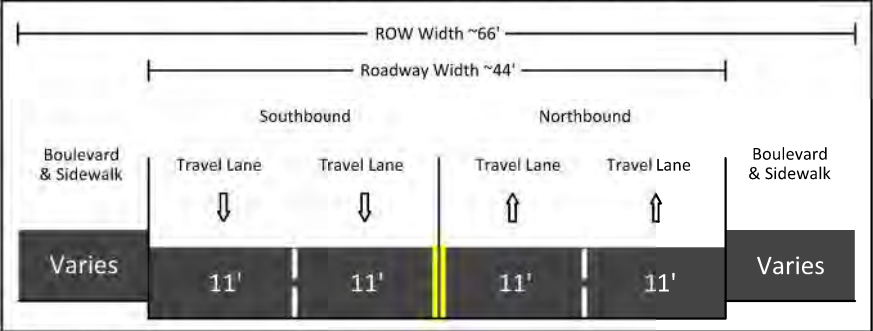
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 7B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	34 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	44 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	13,500
Segment Maximum Peak Hour Volume ³ :	938

Existing Typical Section (Segment 7B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)

LEGEND

MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

MATCHLINE - SEE SHEET 3



Segment 7B

Segment 7C

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

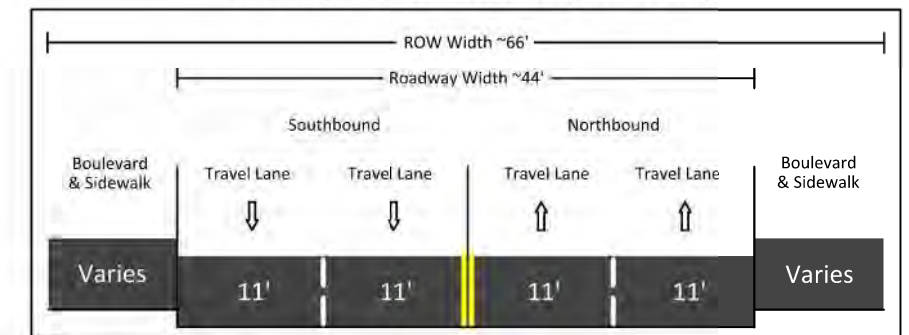
Segment 7B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	34 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	44 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	13,500
Segment Maximum Peak Hour Volume ³ :	938

Segment 7C Characteristics

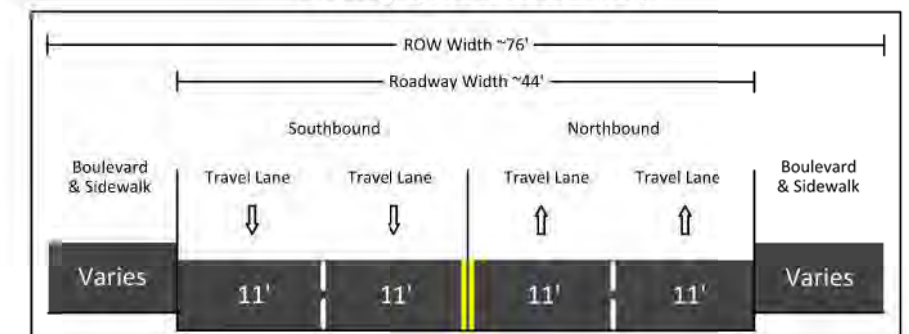
Weekday (Tu-Th) Average Speed (Daily) ¹ :	30 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	14,700
Segment Maximum Peak Hour Volume ⁴ :	783

Existing Typical Section (Segments 7B)



* Not to scale - for illustration purpose only

Existing Typical Section (7C)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

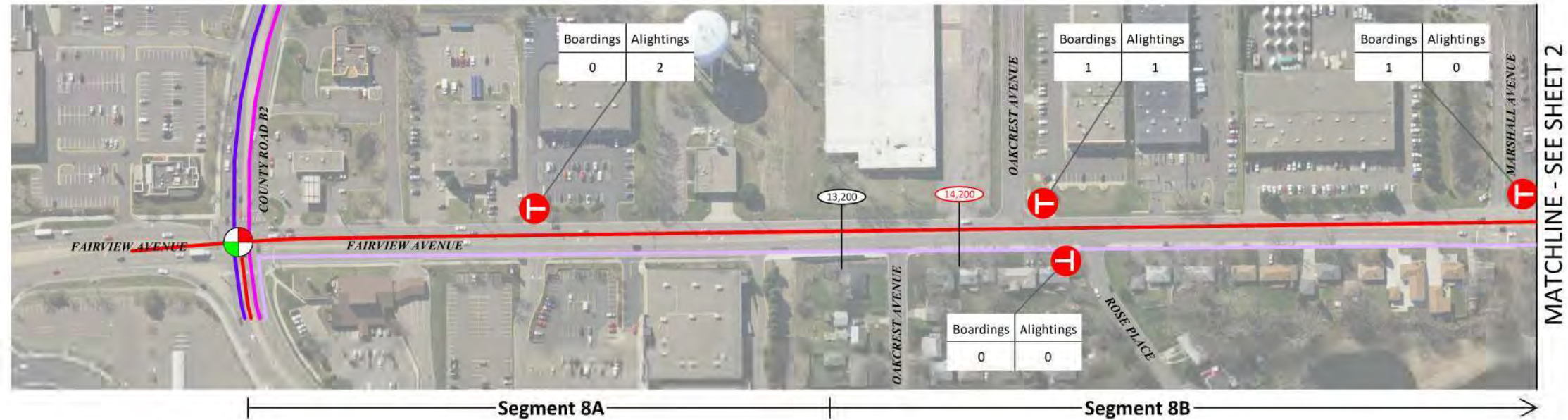
(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 7
Dale Street (Como Avenue to TH 36)

Sheet 4 of 4



Corridor 8 Characteristics

Directional Split ¹ :	AM: 40% NB/60% SB PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	160
Crashes/Mile ² :	177.8

Corridor 8 Transit Routes

Route 225
Route 264

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

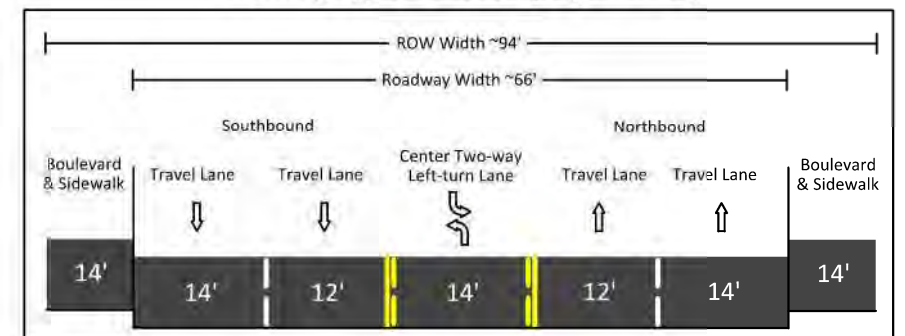
Segment 8A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	14,200
Segment Maximum Peak Hour Volume ⁴ :	755

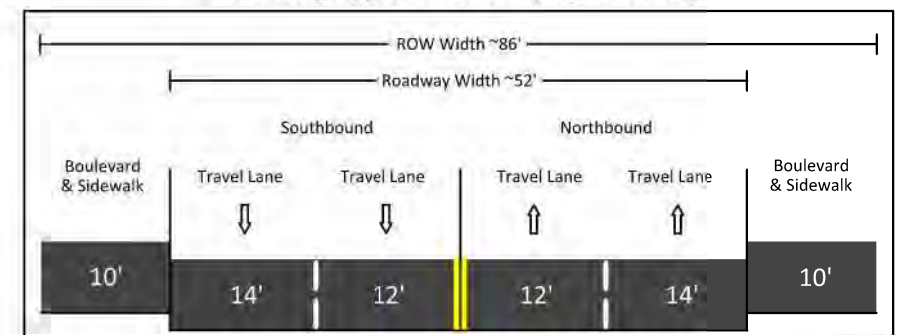
Segment 8B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	14,200
Segment Maximum Peak Hour Volume ⁴ :	755

Existing Typical Section (Segment 8A)



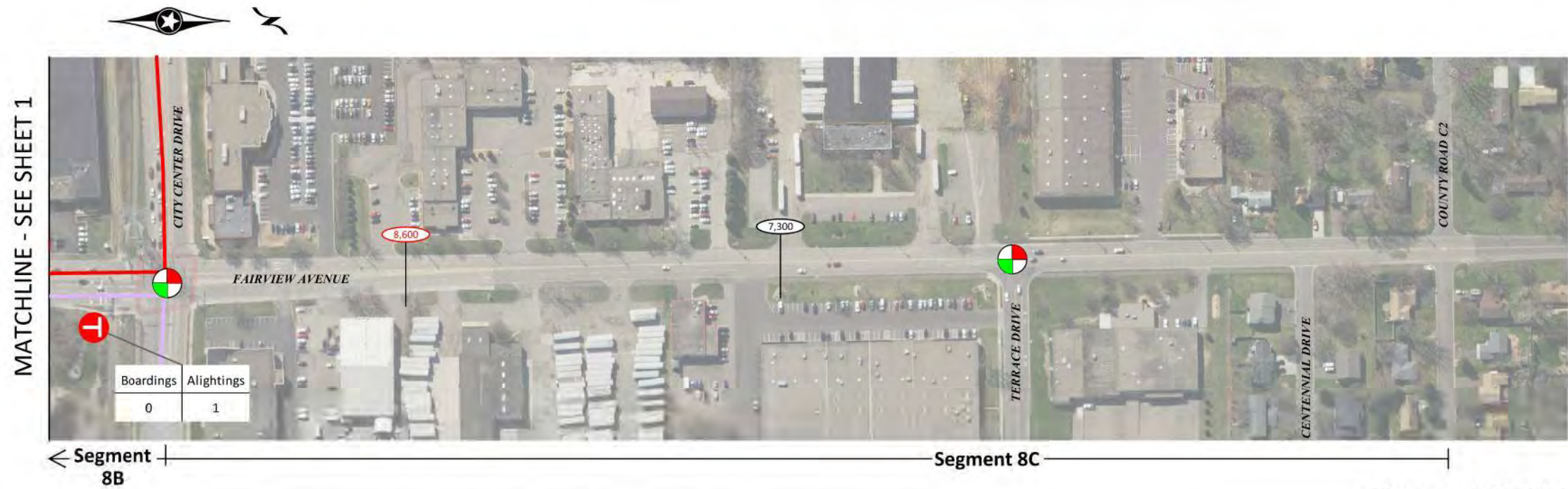
Existing Typical Section (Segment 8B)



¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 8 Characteristics

Directional Split ¹ :	AM: 40% NB/60% SB PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	160
Crashes/Mile ² :	177.8

Corridor 8 Transit Routes

Route 225
Route 264

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

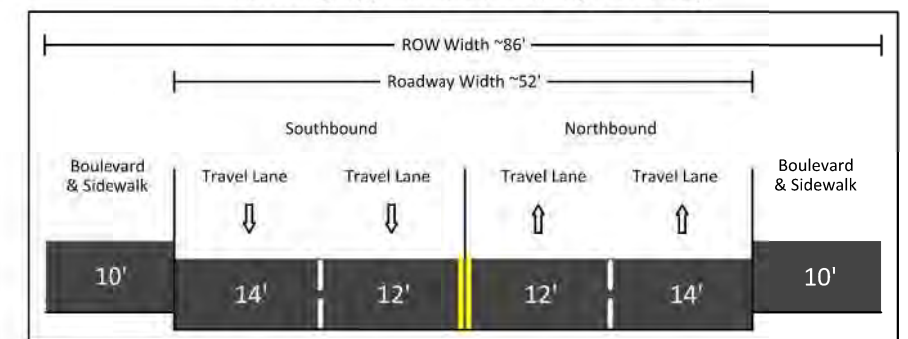
Segment 8B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	14,200
Segment Maximum Peak Hour Volume ⁴ :	755

Segment 8C Characteristics

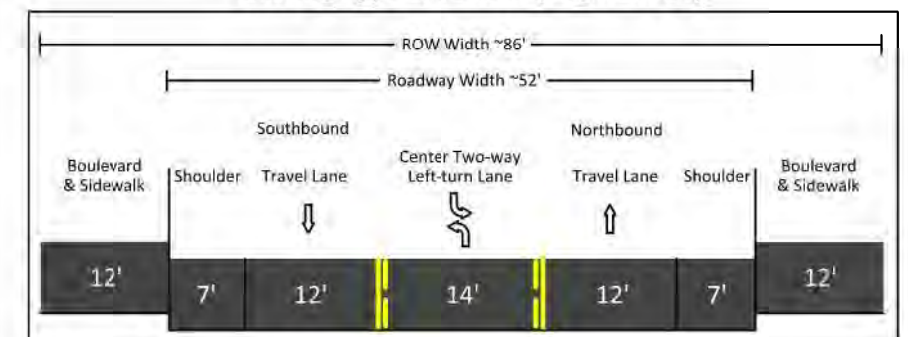
Weekday (Tu-Th) Average Speed (Daily) ¹ :	XX mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	XX mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,600
Segment Maximum Peak Hour Volume ⁴ :	466

Existing Typical Section (Segment 8B)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 8C)

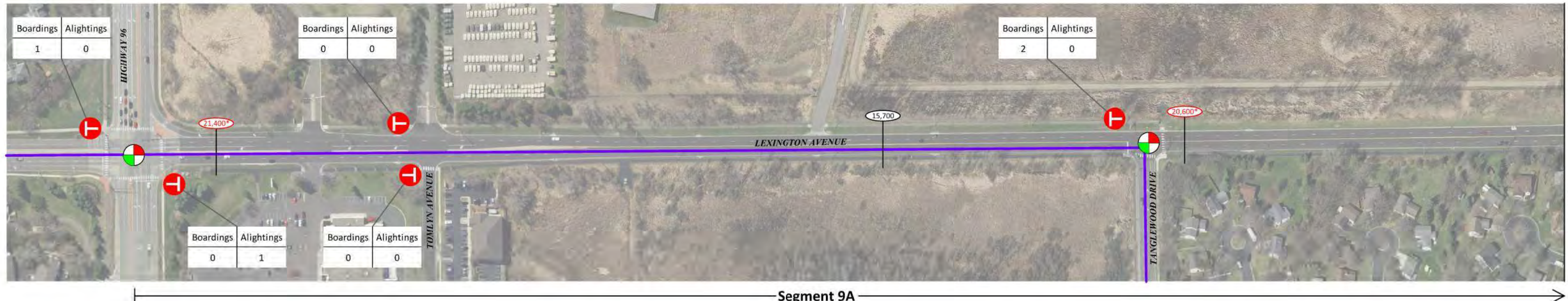


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Segment 9A

Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB
	PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

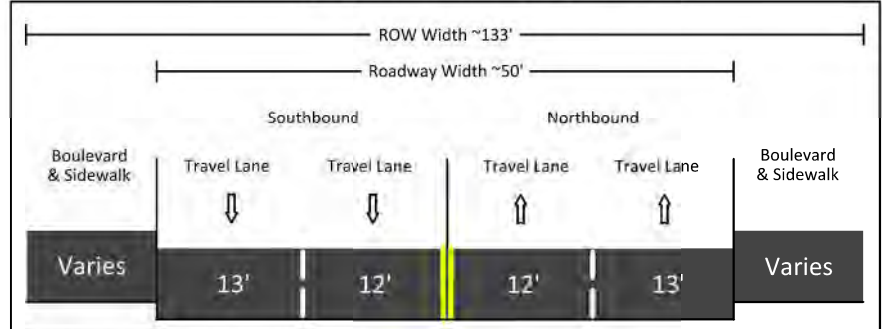
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 9A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	41 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	51 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	21,400
Segment Maximum Peak Hour Volume ⁴ :	1,854

Existing Typical Section (Segment 9A)



* Not to scale - for illustration purpose only

Corridor 9 Transit Routes

Route 261

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2017)
⁴Calculated based on MnDOT (2017) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed *(see parking notes for details)*Public Transit Stops



MATCHLINE - SEE SHEET 1



MATCHLINE - SEE SHEET 3

Segment 9A

Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB
	PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

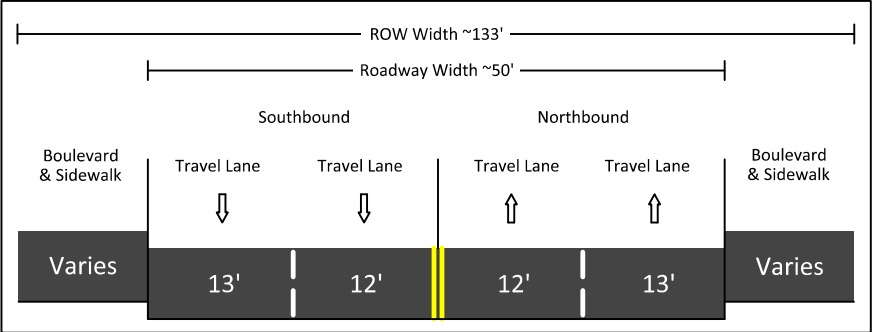
Segment 9A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	41 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	51 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	21,400
Segment Maximum Peak Hour Volume ⁴ :	1,854

Corridor 9 Transit Routes

Route 261

Existing Typical Section (Segment 9A)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2017)
⁴Calculated based on MnDOT (2017) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

MnDOT AADT	Signalized Intersection	Parking allowed (<i>see parking notes for details</i>)
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
Spack Consulting ADT <i>(If there is an asterisk (*) the data was collected during a MnPASS detour)</i>	Marked Crosswalk <i>(At unsignalized intersection)</i>	





MATCHLINE - SEE SHEET 2



MATCHLINE - SEE SHEET 4

Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

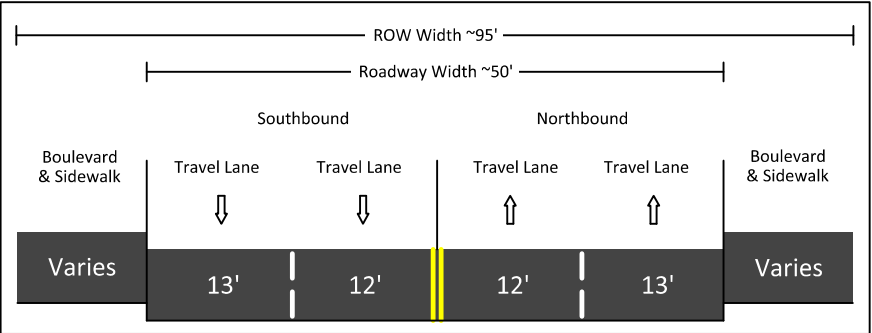
Segment 9A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	41 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	51 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	21,400
Segment Maximum Peak Hour Volume ⁴ :	1,854

Segment 9B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	45 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	69 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ⁵ :	11,100 - 20,600
Segment Maximum Peak Hour Volume ⁶ :	986

Existing Typical Section (Segment 9A & 9B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2017)
⁴Calculated based on MnDOT (2017) data, 10% PM Peak assumption, and StreetLight directionality
⁵Source: Spack Consulting (2019)
⁶Calculated based on Spack Consulting (2019) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops



Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

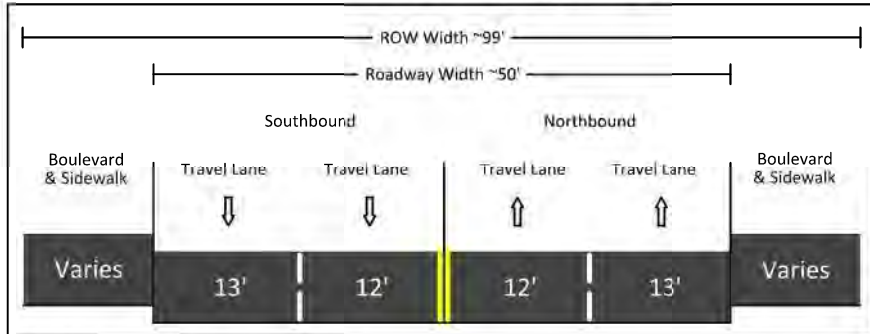
Corridor 9 Transit Routes

Route 261

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Existing Typical Section (Segment 9B)



* Not to scale - for illustration purpose only

Segment 9B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	45 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	69 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	11,100 - 20,600
Segment Maximum Peak Hour Volume ⁴ :	986

MATCHLINE - SEE SHEET 3



Segment 9B

MATCHLINE - SEE SHEET 5

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)
⁴Calculated based on Spack Consulting (2019) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB
	PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

Corridor 9 Transit Routes

Route 261

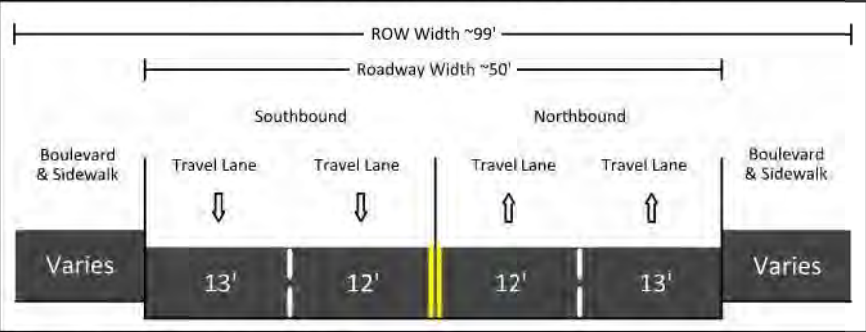
General Notes

- 1. Parking not permitted unless noted otherwise.
- 2. Transit boardings and alightings are 2018 weekday averages.

Segment 9B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	45 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	69 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	11,100 - 20,600
Segment Maximum Peak Hour Volume ⁴ :	986

Existing Typical Section (Segment 9B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)
⁴Calculated based on Spack Consulting (2019) data, 10% PM Peak assumption, and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed *(see parking notes for details)*Public Transit Stops



Corridor 9 Characteristics

Directional Split ¹ :	AM: 9% NB/91% SB PM: 74% NB/26% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	180
Crashes/Mile ² :	47.4

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

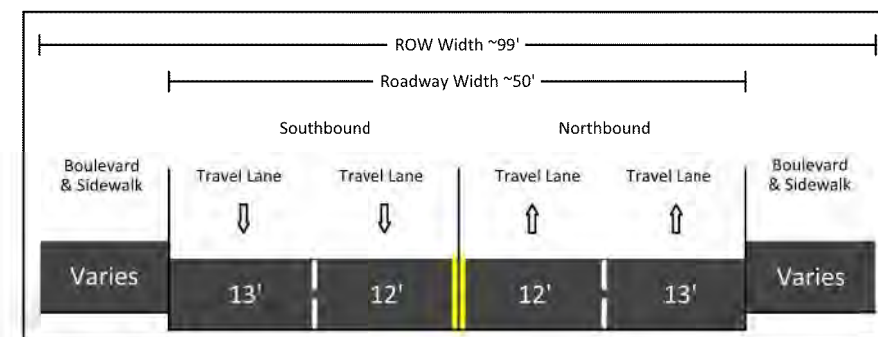
Corridor 9 Transit Routes

Route 261

Segment 9B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	45 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	69 mph
Speed Limit:	45 mph
Segment Average Annual Daily Volume ³ :	11,100 - 20,600
Segment Maximum Peak Hour Volume ⁴ :	986

Existing Typical Section (Segment 9B)



* Not to scale - for illustration purpose only

LEGEND

MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

¹Source: StreetLight Data

²Five years crash data from 2013 to 2017 via MnCMAT

³Source: Spack Consulting (2019)

⁴Calculated based on Spack Consulting (2019) data, 10% PM Peak assumption, and StreetLight directionality



Corridor 10 Characteristics

Directional Split ¹ :	AM: 27% EB/71% WB
	PM: 51% EB/49% WB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	39
Crashes/Mile ² :	195.0

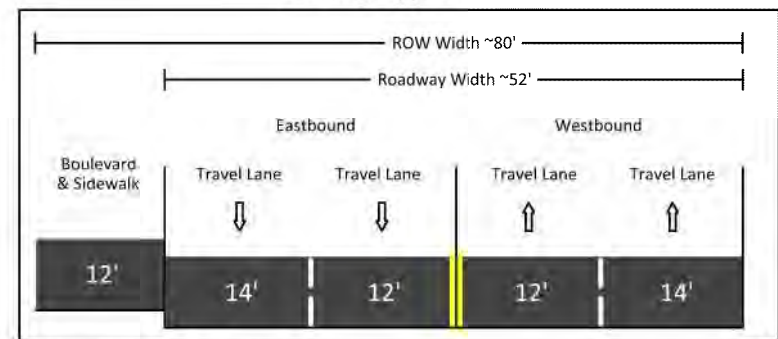
General Notes

1. Where there are no notes about parking, parking is not allowed.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 10 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	22 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	33 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	3,200
Segment Maximum Peak Hour Volume ⁴ :	160

Existing Typical Section



Corridor 10 Transit Routes

- Route 219
- Route 270

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed *(see parking notes for details)*Public Transit Stops

Corridor 11 Characteristics

Directional Split ¹ :	AM: 48% EB/52% WB
	PM: 50% EB/50% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	76
Crashes/Mile ² :	190.0

Corridor 11 Transit Routes

Route 21
Route 53

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 11A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	33 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	19,200
Segment Maximum Peak Hour Volume ³ :	974

Segment 11B Characteristics

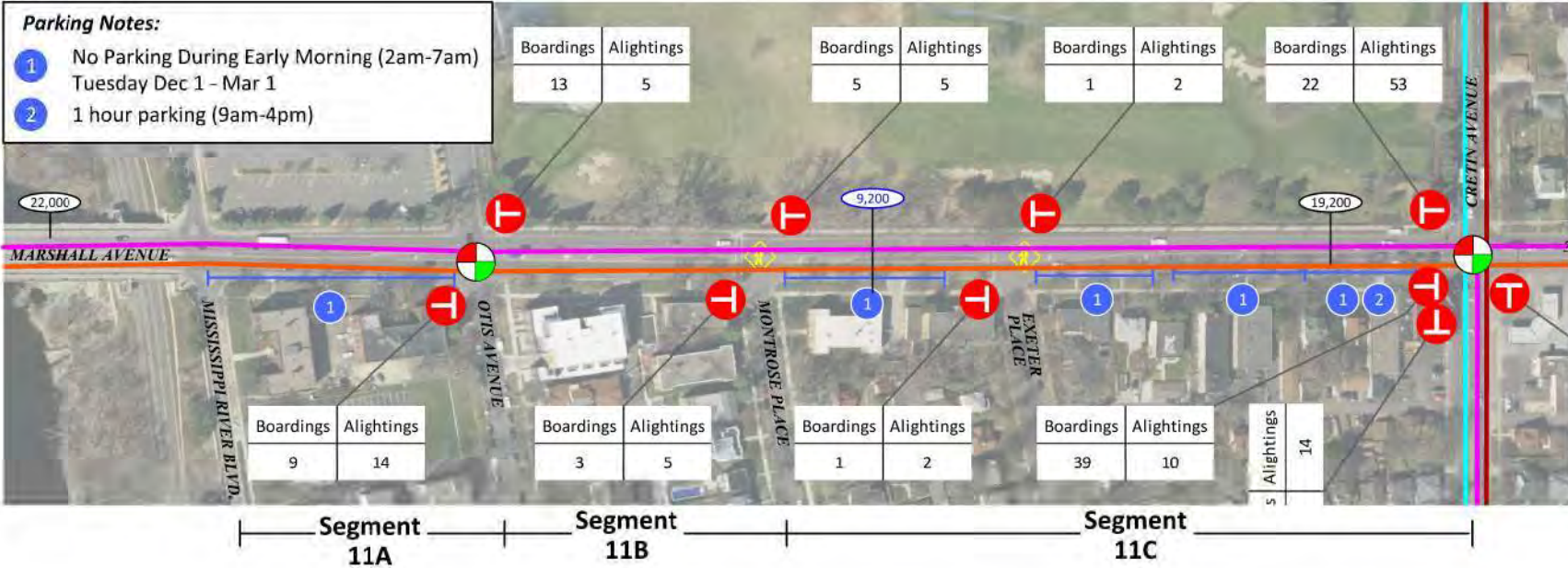
Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	33 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	19,200
Segment Maximum Peak Hour Volume ³ :	974

Segment 11C Characteristics

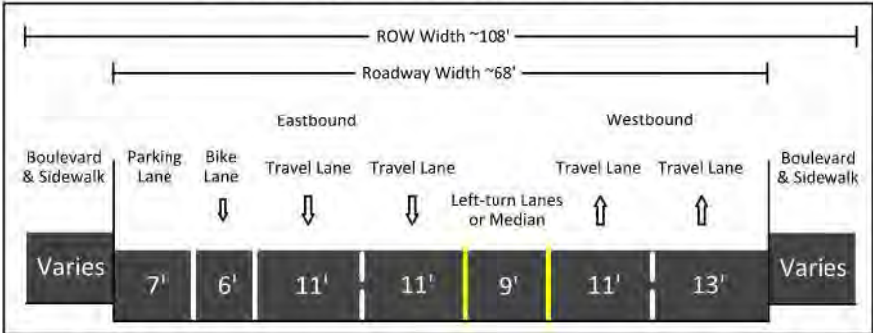
Weekday (Tu-Th) Average Speed (Daily) ¹ :	23 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	33 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	19,200
Segment Maximum Peak Hour Volume ³ :	974

Parking Notes:

- 1 No Parking During Early Morning (2am-7am)
Tuesday Dec 1 - Mar 1
- 2 1 hour parking (9am-4pm)

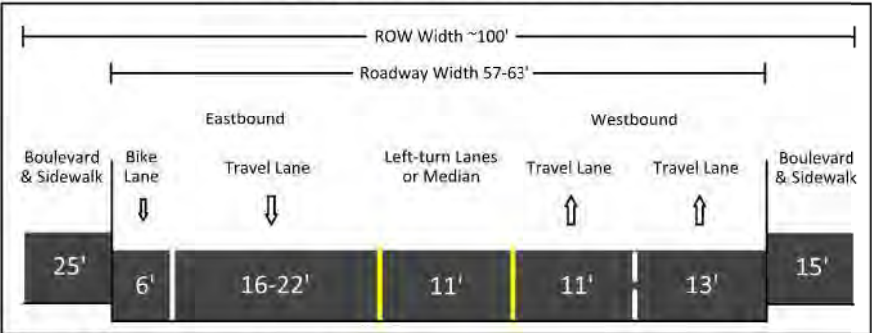


Existing Typical Section (Segment 11A)



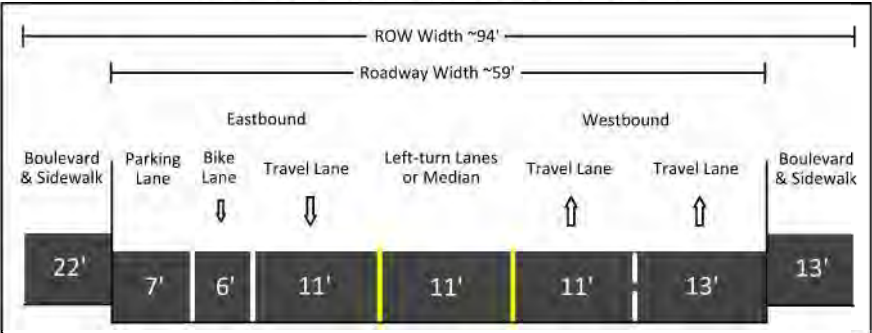
* Not to scale - for illustration purpose only

Existing Typical Section (Segment 11B)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 11C)



* Not to scale - for illustration purpose only

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 12 Characteristics

Directional Split ¹ :	AM: 44% EB/56% WB
	PM: 58% EB/42% WB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	190
Crashes/Mile ² :	633.3

Corridor 12 Transit Routes

No transit routes on this corridor.

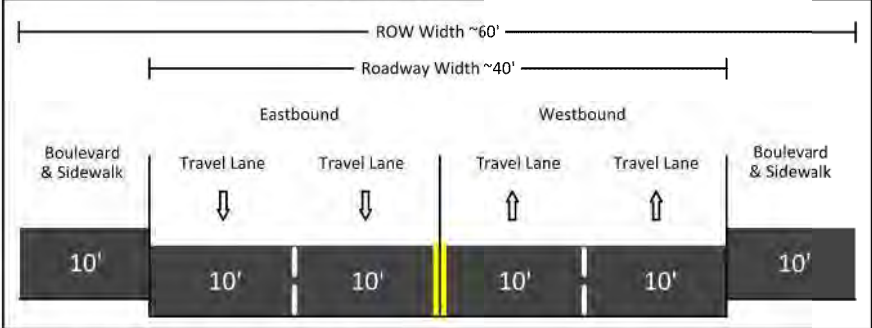
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 12 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	25 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	17,000
Segment Maximum Peak Hour Volume ³ :	855

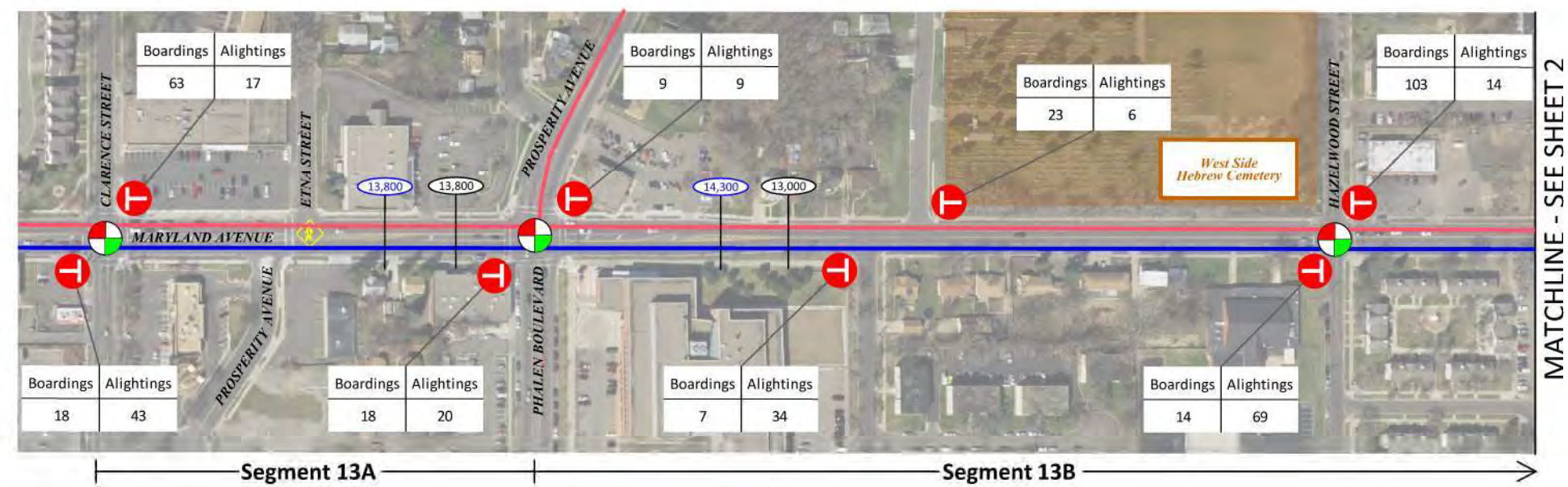
Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)

LEGEND			
MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)	
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops	
Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)		



Corridor 13 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB PM: 60% EB/40% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	253
Crashes/Mile ² :	281.1

Corridor 13 Transit Routes

Route 54
Route 64

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

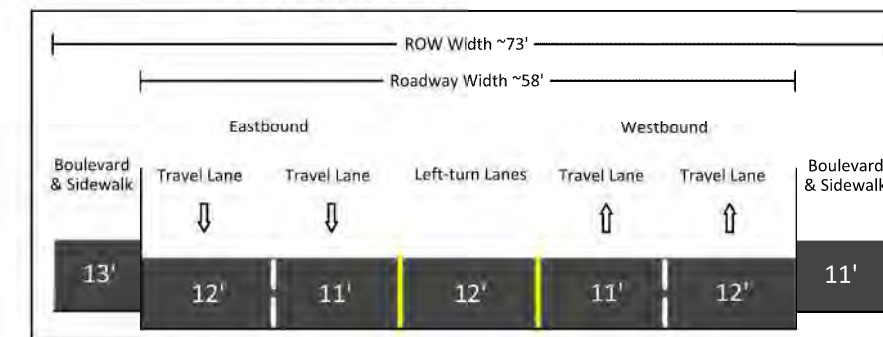
Segment 13A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	25 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	13,800
Segment Maximum Peak Hour Volume ³ :	628

Segment 13B Characteristics

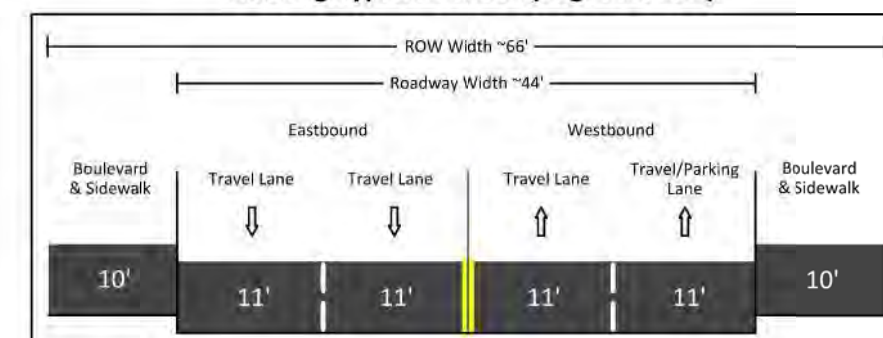
Weekday (Tu-Th) Average Speed (Daily) ¹ :	25 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	11,100 - 14,300
Segment Maximum Peak Hour Volume ³ :	742

Existing Typical Section (Segment 13A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 13B)

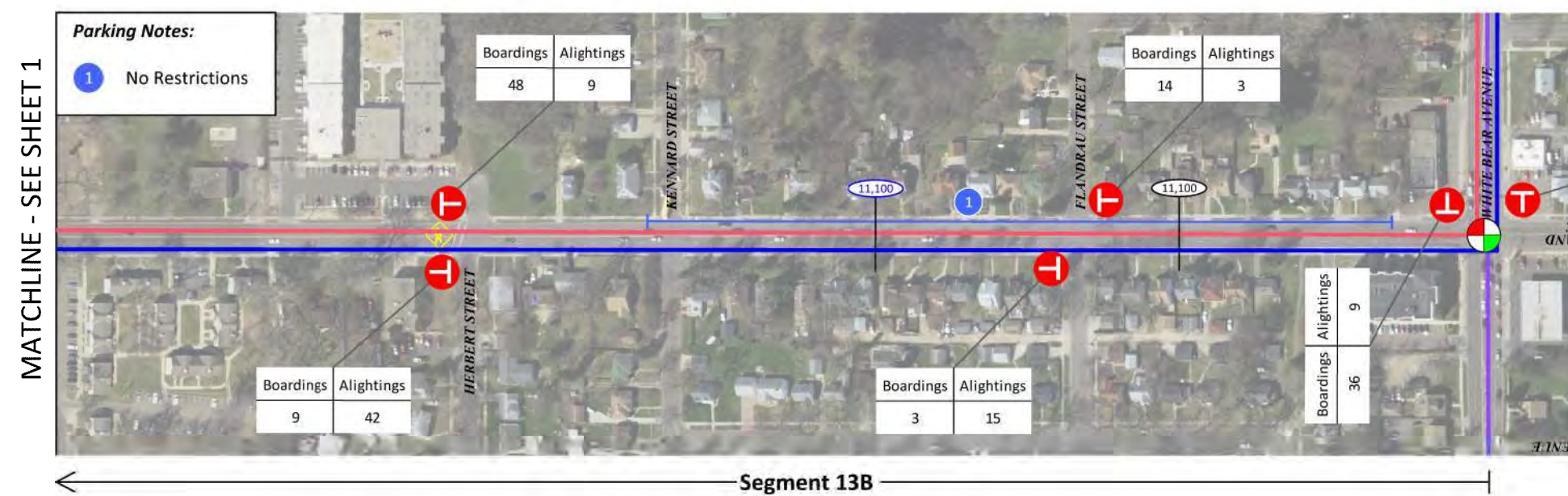


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 13 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 60% EB/40% WB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	253
Crashes/Mile ² :	281.1

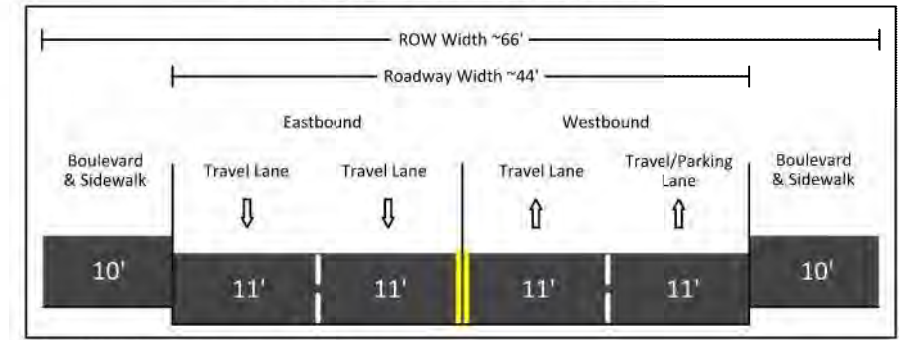
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 13B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	25 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	11,100 - 14,300
Segment Maximum Peak Hour Volume ³ :	742

Existing Typical Section (Segment 13B)



* Not to scale - for illustration purpose only

Corridor 13 Transit Routes

Route 54
Route 64

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Corridor 14 Characteristics

Directional Split ¹ :	AM: 48% NB/52% SB
	PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	8
Crashes/Mile ² :	26.7

Corridor 14 Transit Routes

No transit routes on this corridor.

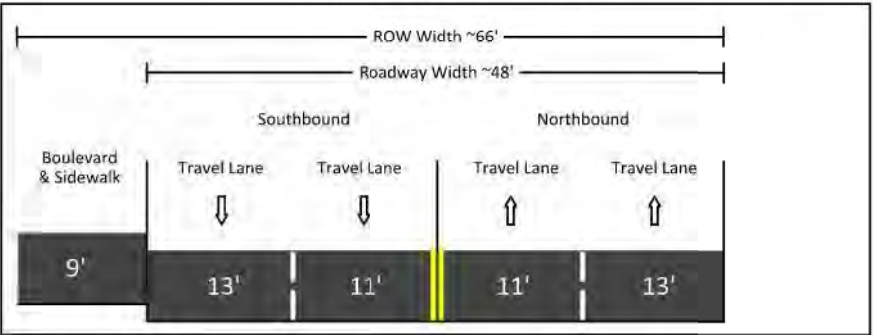
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 14 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	33 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	12,000
Segment Maximum Peak Hour Volume ³ :	497

Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

X,XXX	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
X,XXX	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
X,XXX	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB
	PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

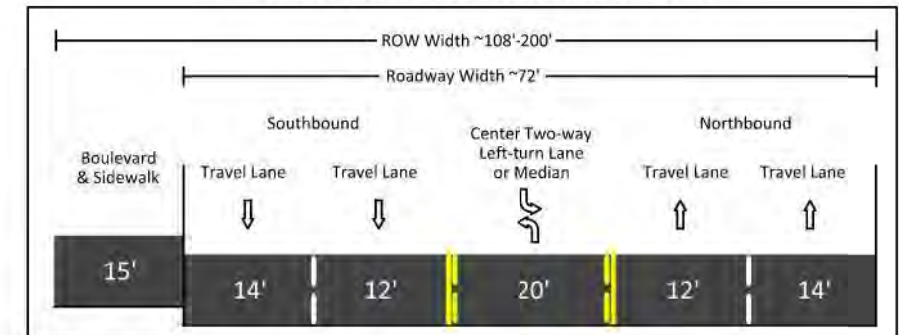
Segment 16A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	10,700
Segment Maximum Peak Hour Volume ⁴ :	799

Segment 16B Characteristics

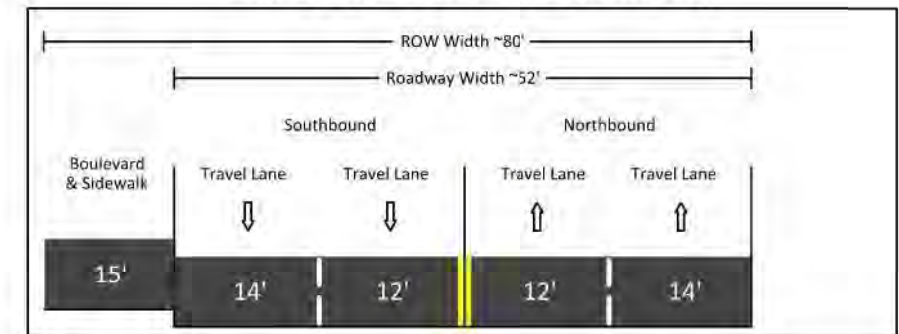
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ⁵ :	15,700
Segment Maximum Peak Hour Volume ⁶ :	1,176

Existing Typical Section (Segment 16A)



* Not to scale - for illustration purpose only

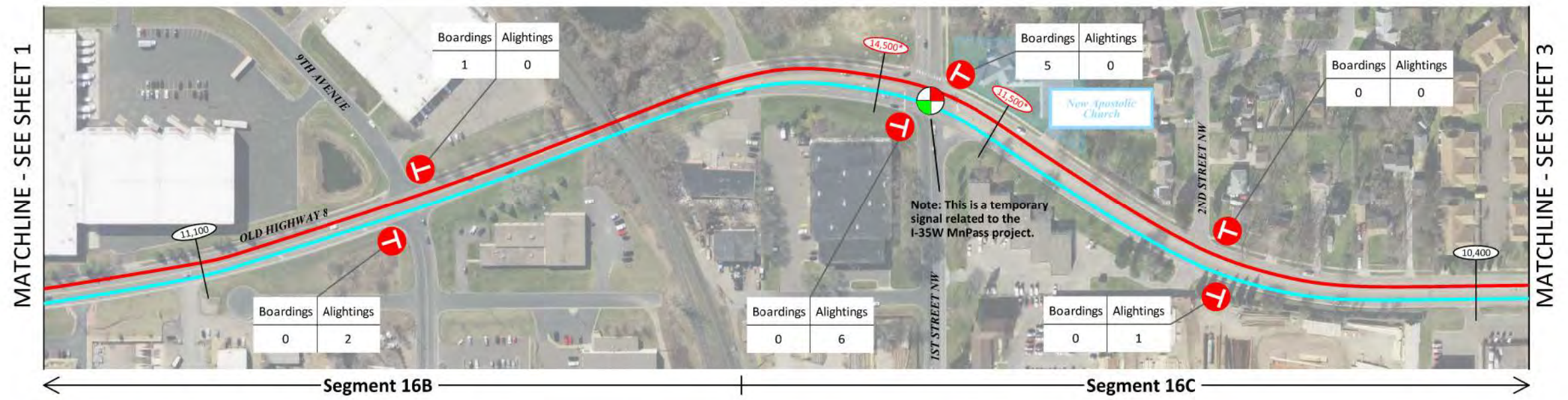
Existing Typical Section (Segment 16B)



* Not to scale - for illustration purpose only

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

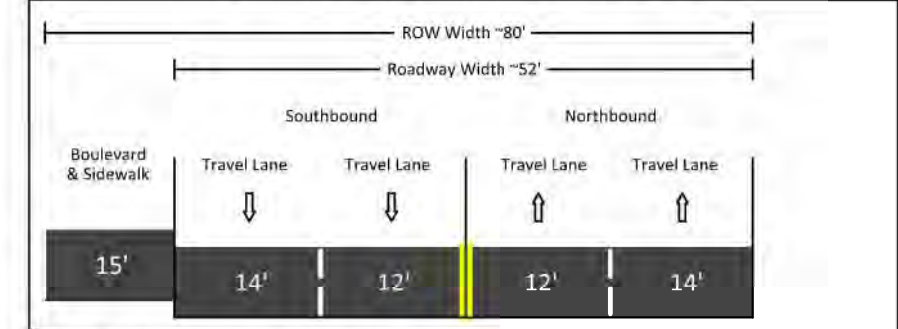
Segment 16B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	15,700
Segment Maximum Peak Hour Volume ⁴ :	1,176

Segment 16C Characteristics

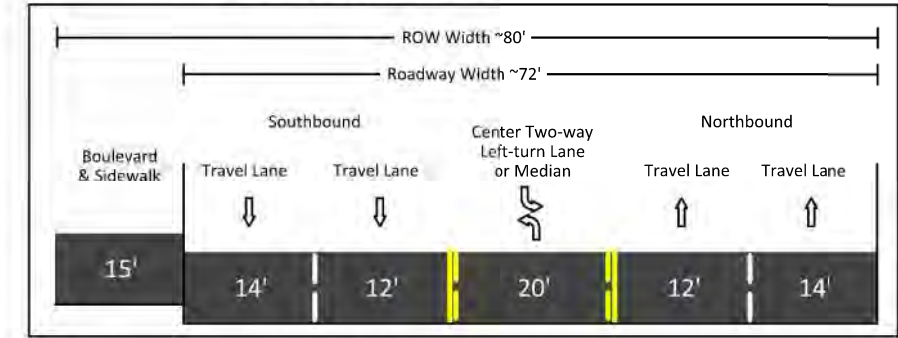
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ⁵ :	11,500 - 14,500
Segment Maximum Peak Hour Volume ⁶ :	924

Existing Typical Section (Segment 16B)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 16C)



* Not to scale - for illustration purpose only

LEGEND

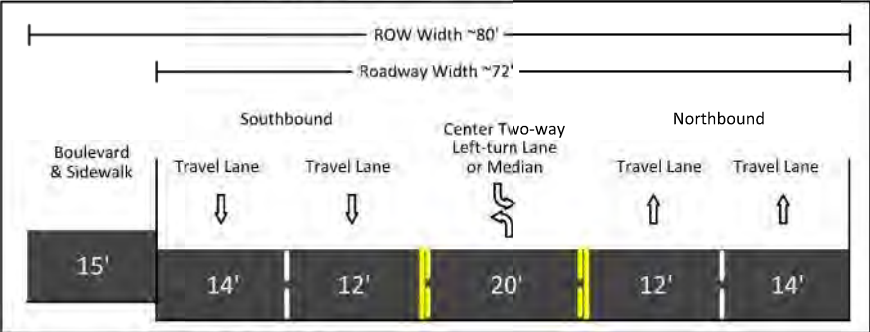
- (X,XXX) MnDOT AADT
- (X,XXX) St. Paul Compass AADT
- (X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)
- Signalized Intersection
- All-way stop Intersection
- Marked Crosswalk (At unsignalized intersection)
- Parking allowed (see parking notes for details)
- Public Transit Stops

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2014)
⁴Calculated based on MnDOT (2014) data, 10% PM Peak assumption, and StreetLight directionality
⁵Source: MnDOT (2016)
⁶Calculated based on MnDOT (2016) data, 10% PM Peak assumption, and StreetLight directionality



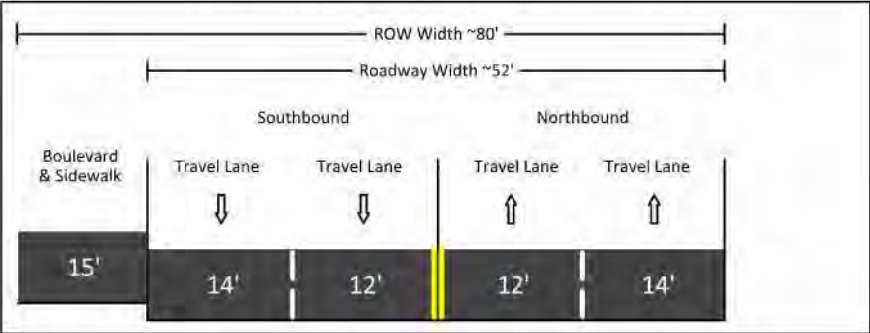


Existing Typical Section (Segment 16C)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 16D)



* Not to scale - for illustration purpose only

Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

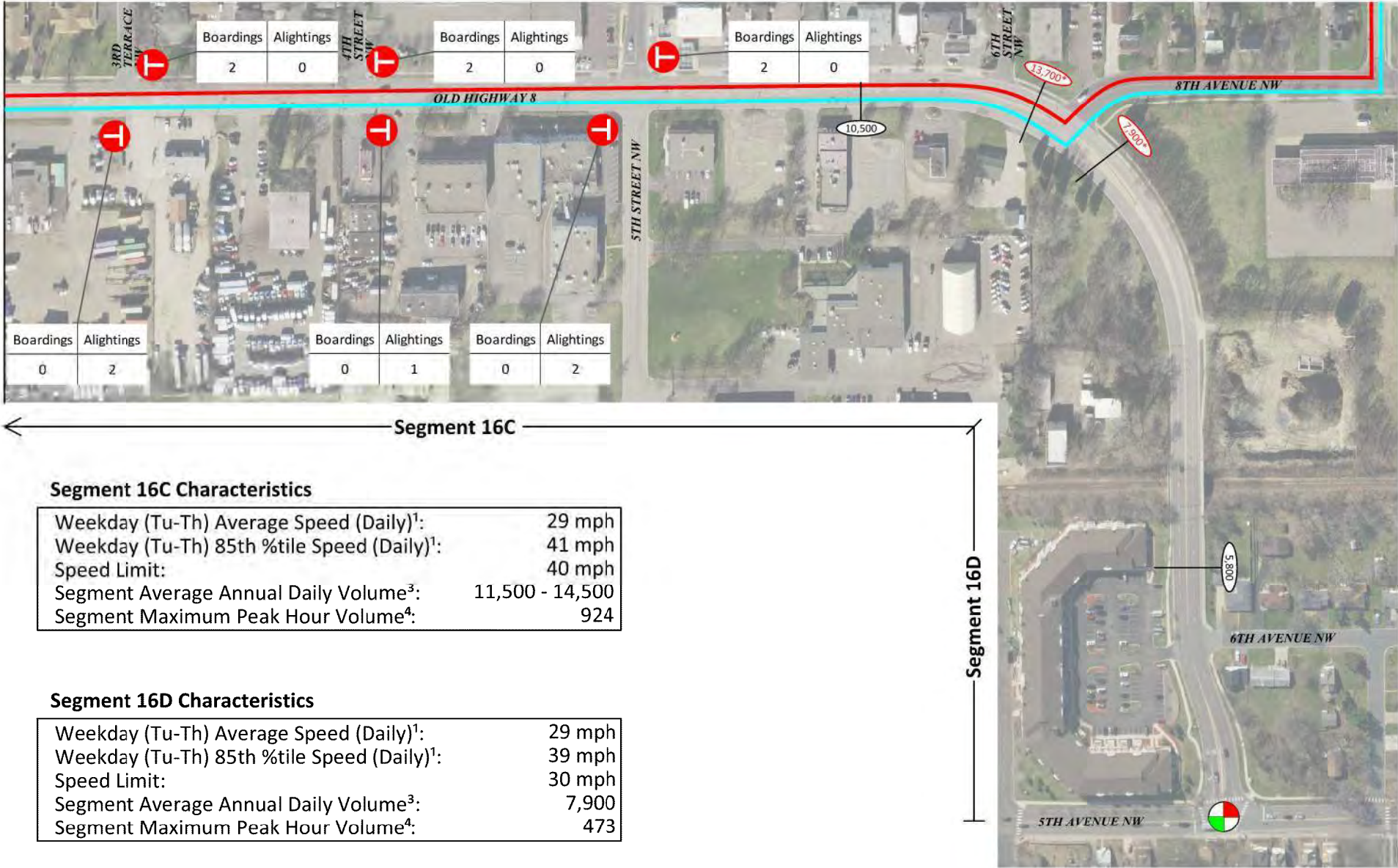
Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

MATCHLINE - SEE SHEET 2



Segment 16C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	11,500 - 14,500
Segment Maximum Peak Hour Volume ⁴ :	924

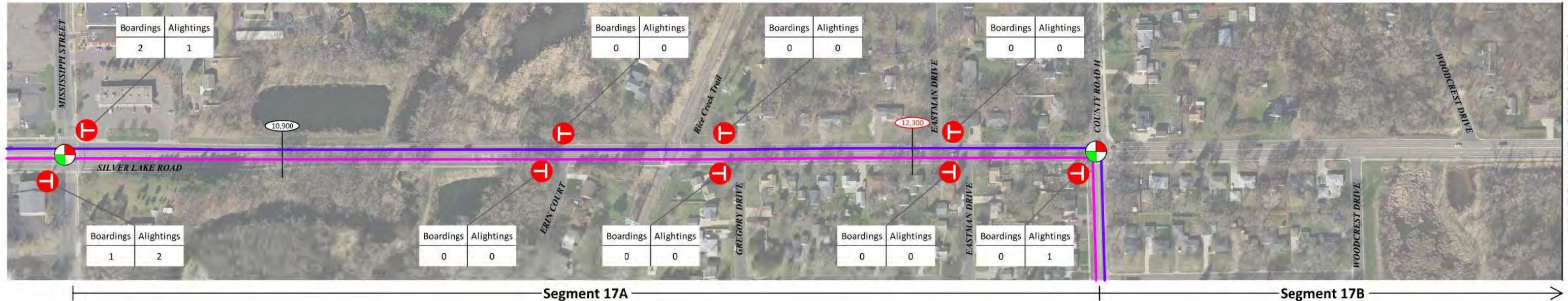
Segment 16D Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,900
Segment Maximum Peak Hour Volume ⁴ :	473

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2016)
⁴Calculated based on MnDOT (2016) data, 10% PM Peak assumption, and StreetLight directionality



Corridor 17 Characteristics

Directional Split ¹ :	AM: 26% NB/74% SB PM: 65% NB/35% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	141
Crashes/Mile ² :	82.9

Corridor 17 Transit Routes

Route 25
Route 825

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

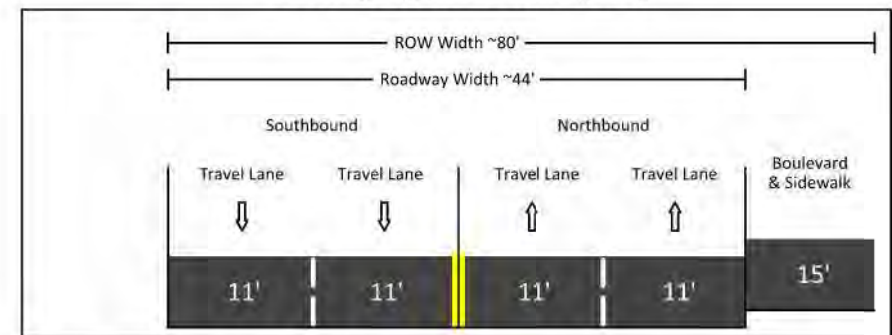
Segment 17A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	12,300
Segment Maximum Peak Hour Volume ⁴ :	815

Segment 17B Characteristics

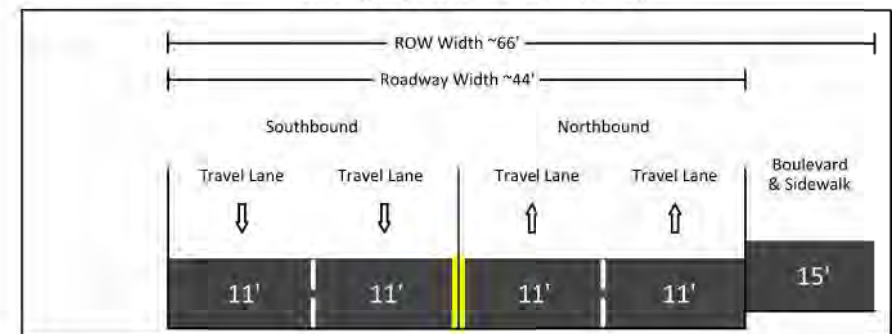
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,800
Segment Maximum Peak Hour Volume ⁴ :	590

Existing Typical Section (17A)



* Not to scale - for illustration purpose only

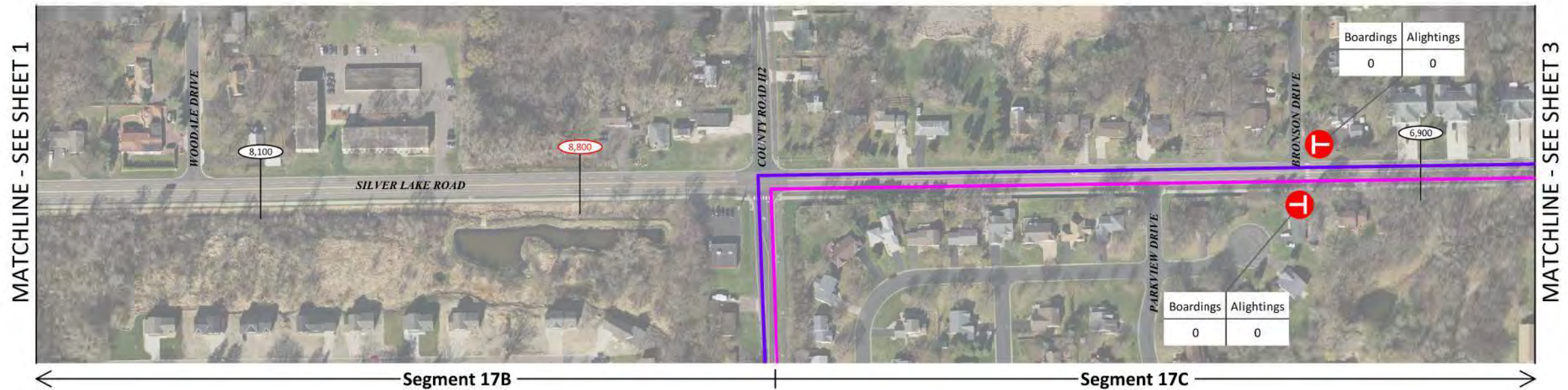
Existing Typical Section (17B)



* Not to scale - for illustration purpose only

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 17 Characteristics

Directional Split ¹ :	AM: 26% NB/74% SB PM: 65% NB/35% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	141
Crashes/Mile ² :	82.9

Corridor 17 Transit Routes

Route 25
Route 825

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

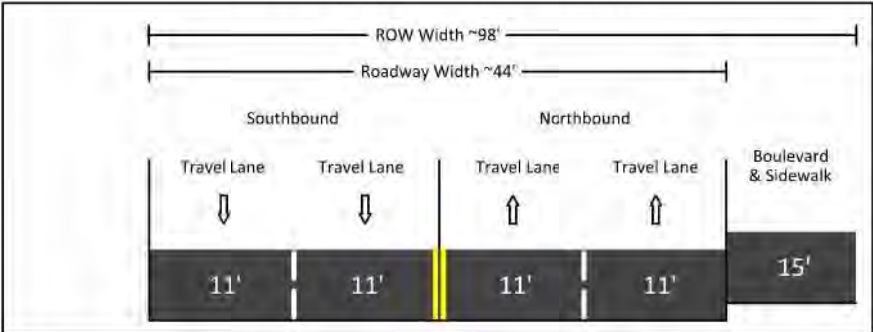
Segment 17B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,800
Segment Maximum Peak Hour Volume ⁴ :	590

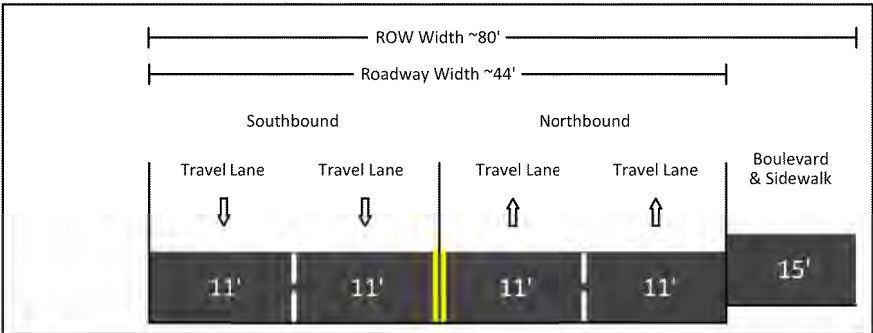
Segment 17C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	7,900
Segment Maximum Peak Hour Volume ⁴ :	520

Existing Typical Section (17B)



Existing Typical Section (17C)



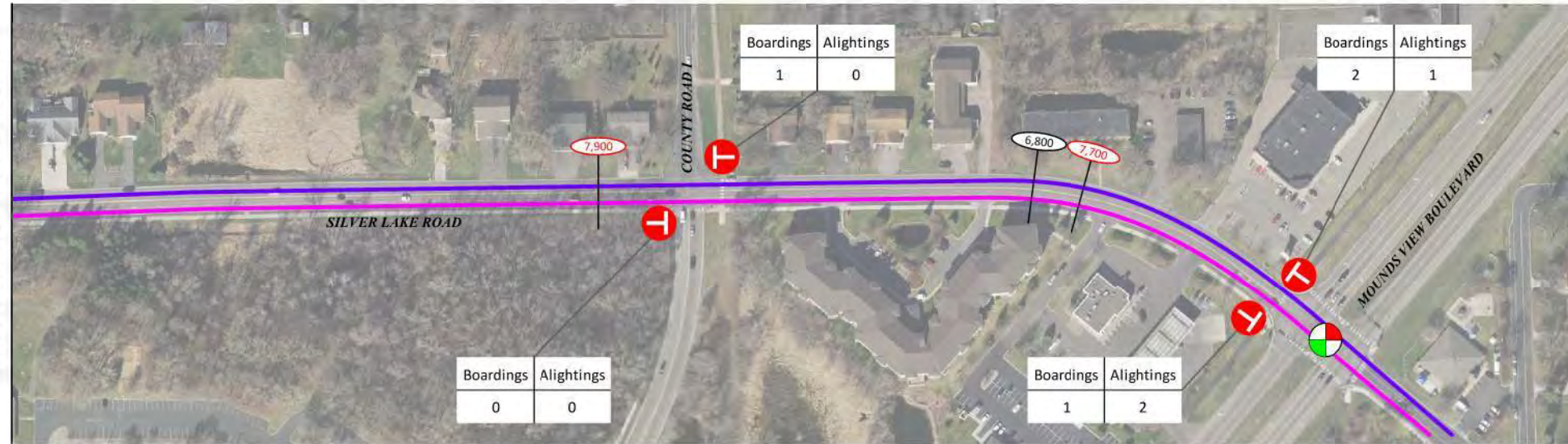
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 2



Segment 17C

Corridor 17 Characteristics

Directional Split ¹ :	AM: 26% NB/74% SB
	PM: 65% NB/35% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	141
Crashes/Mile ² :	82.9

Corridor 17 Transit Routes

Route 25
Route 825

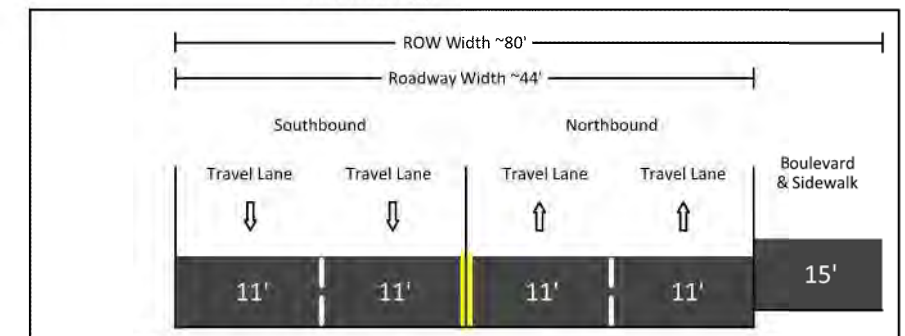
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 17C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	7,900
Segment Maximum Peak Hour Volume ⁴ :	520

Existing Typical Section (17C)

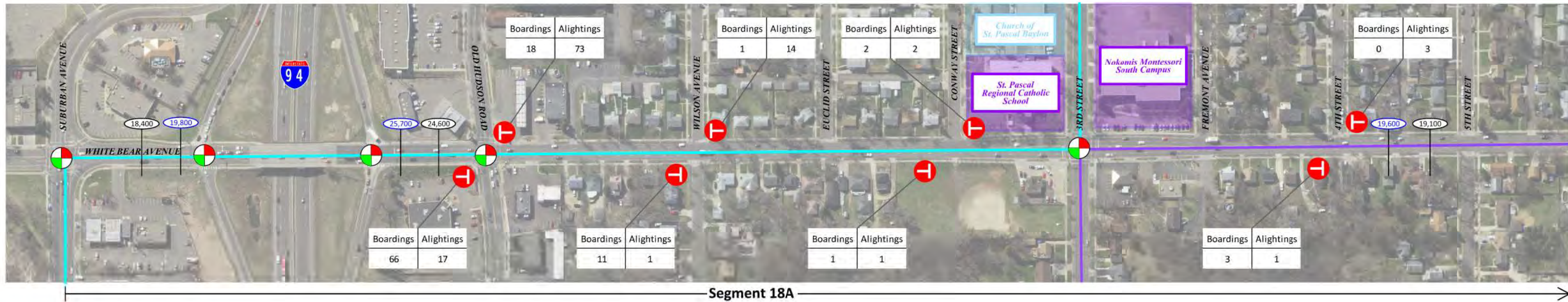


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 18 Characteristics

Directional Split ¹ :	AM: 45% NB/55% SB
	PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

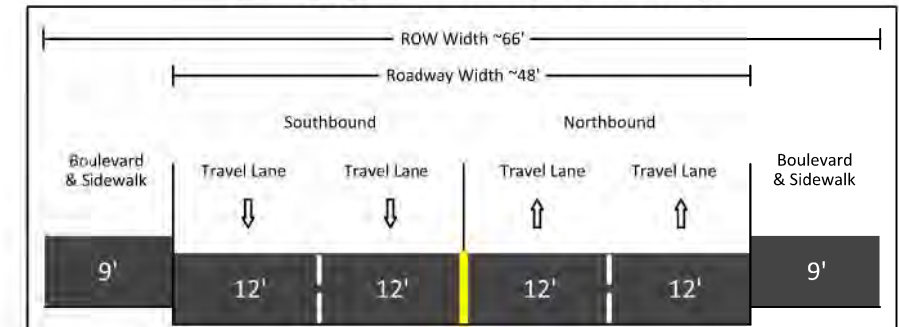
Segment 18A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	18,400 - 25,700
Segment Maximum Peak Hour Volume ³ :	864 - 1,104

Corridor 18 Transit Routes

- Route 54
- Route 63
- Route 64
- Route 80

Existing Typical Section (Segment 18A)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2013-2018)

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

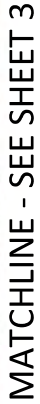
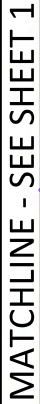
Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed *(see parking notes for details)*Public Transit Stops



Parking Notes:

- 1 No Restrictions
- 2 No Parking During PM Peak (4pm-6pm Mon-Fri)

Directional Split ¹ :	AM: 45% NB/55% SB PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	18,400 - 25,700
Segment Maximum Peak Hour Volume ³ :	864 - 1,104

Route 54
Route 63
Route 64
Route 80

Diagram illustrating the proposed cross-section of the roadway, showing a four-lane divided highway configuration.

The total width of the Right-of-Way (ROW) is approximately 66 feet. The roadway width is approximately 48 feet.

The cross-section includes:

- Southbound:** Two travel lanes, each 12 feet wide, separated by a centerline. A 9-foot Boulevard & Sidewalk is located to the left.
- Northbound:** Two travel lanes, each 12 feet wide, separated by a centerline. A 9-foot Boulevard & Sidewalk is located to the right.

The diagram shows a yellow double line separating the Southbound and Northbound travel lanes.

* Not to scale - for illustration purpose only

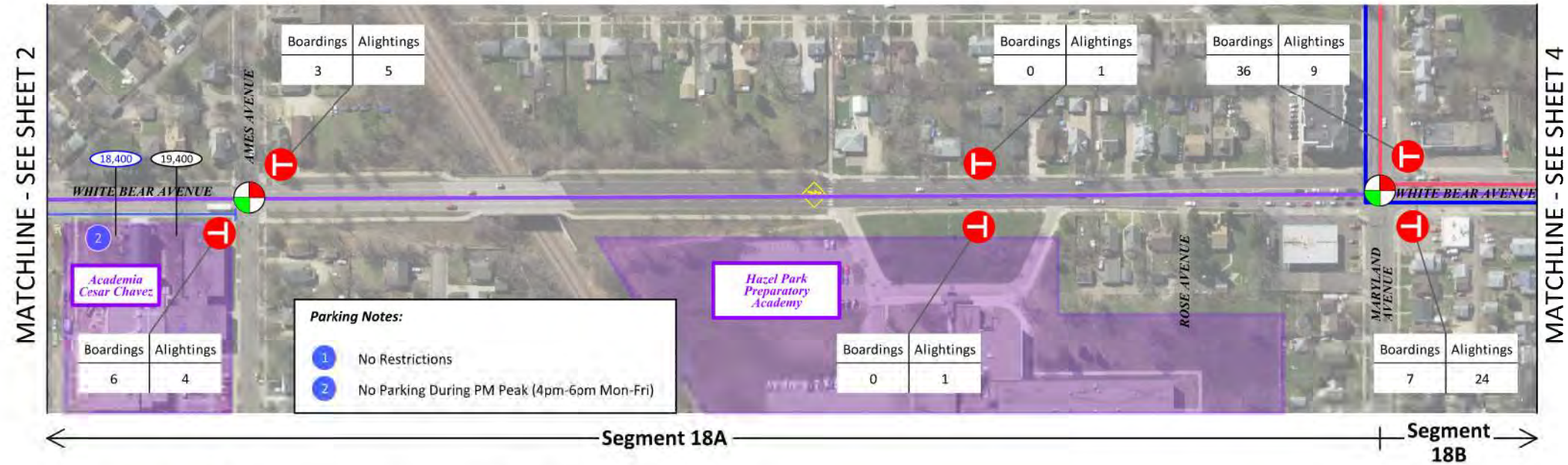
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2013-2018)

	MnDOT AADT		Signalized Intersection		Parking allowed (<i>see parking notes for details</i>)
	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



ALLIANT

Sheet 2 of 6



Corridor 18 Characteristics

Directional Split ¹ :	AM: 45% NB/55% SB
	PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

Corridor 18 Transit Routes

Route 54
Route 63
Route 64
Route 80

General Notes

- Parking not permitted unless noted otherwise.
- Transit boardings and alightings are 2018 weekday averages.

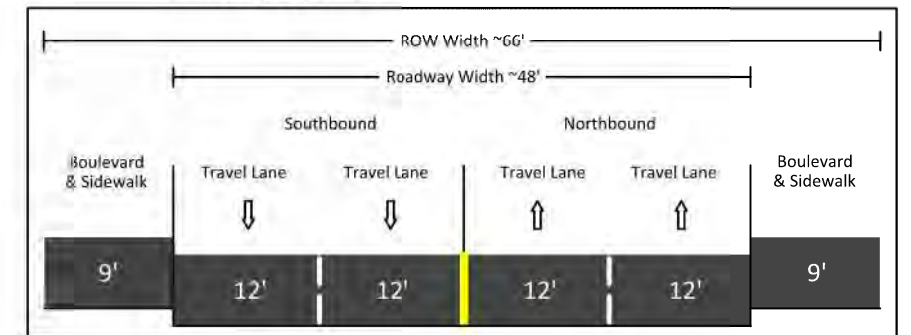
Segment 18A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	18,400 - 25,700
Segment Maximum Peak Hour Volume ³ :	864 - 1,104

Segment 18B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	16,800 - 19,300
Segment Maximum Peak Hour Volume ⁴ :	963

Existing Typical Section (Segments 18A & 18B)



* Not to scale - for illustration purpose only

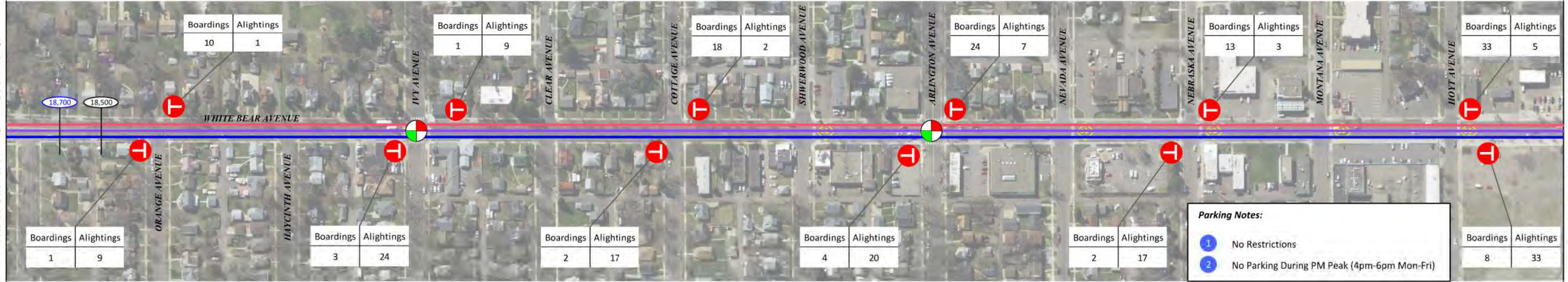
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2013-2018)
⁴Source: St. Paul Compass (2013-2016)

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



MATCHLINE - SEE SHEET 3



MATCHLINE - SEE SHEET 5

Segment 18B

Corridor 18 Characteristics

Directional Split ¹ :	AM: 45% NB/55% SB
	PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

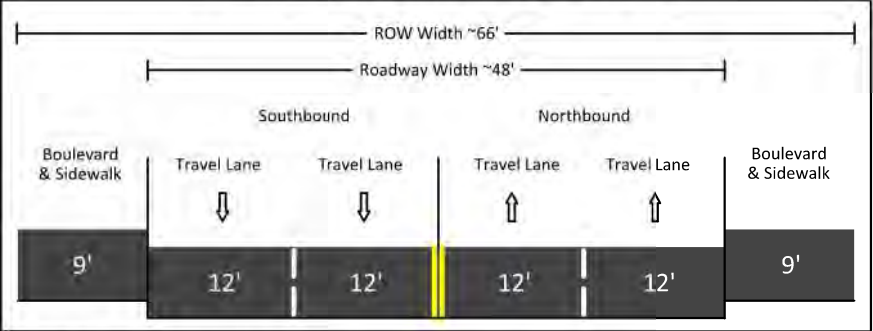
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 18B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	16,800 - 19,300
Segment Maximum Peak Hour Volume ³ :	963

Existing Typical Section (Segment 18B)



* Not to scale - for illustration purpose only

Corridor 18 Transit Routes

- Route 54
- Route 63
- Route 64
- Route 80

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2013-2016)

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



MATCHLINE - SEE SHEET 4

MATCHLINE - SEE SHEET 6



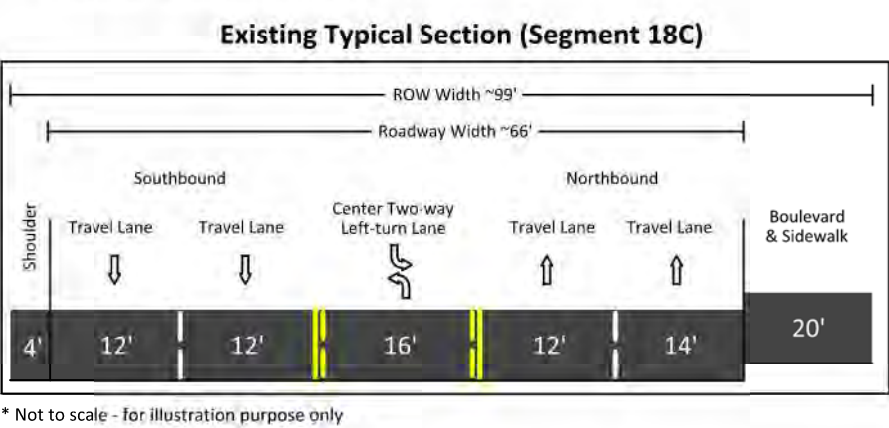
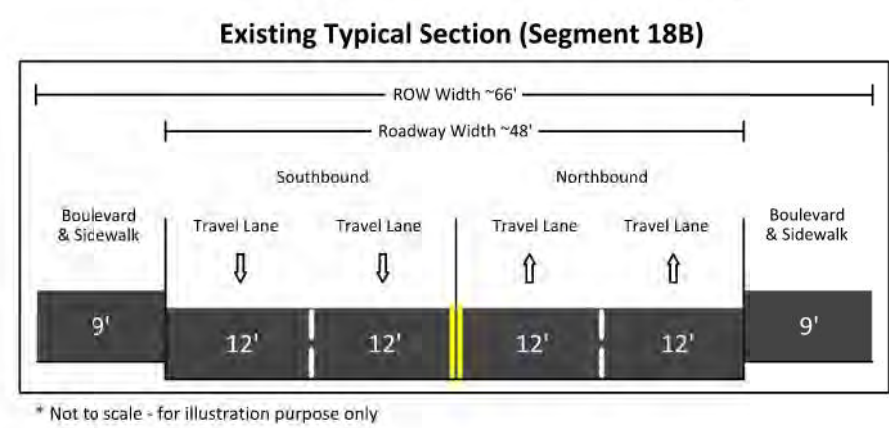
Corridor 18 Characteristics	
Directional Split ¹ :	AM: 45% NB/55% SB PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

Corridor 18 Transit Routes	
Route 54	
Route 63	
Route 64	
Route 80	

- General Notes**
1. Parking not permitted unless noted otherwise.
 2. Transit boardings and alightings are 2018 weekday averages.

Segment 18B Characteristics	
Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	16,800 - 19,300
Segment Maximum Peak Hour Volume ³ :	963

Segment 18C Characteristics	
Weekday (Tu-Th) Average Speed (Daily) ¹ :	31 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	40 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ⁴ :	25,600
Segment Maximum Peak Hour Volume ⁴ :	1,043



¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2013-2016)
⁴Source: Spack Consulting (2019)

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed *(see parking notes for details)*

Public Transit Stops

Ramsey County 4 to 3 Lane Conversion Study

ALLIANT

Segment 18
White Bear Avenue (Suburban Avenue to County Road B)

Sheet 5 of 6



MATCHLINE - SEE SHEET 5



Segment 18D

Corridor 18 Characteristics

Directional Split ¹ :	AM: 45% NB/55% SB
	PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

Corridor 18 Transit Routes

Route 54
Route 63
Route 64
Route 80

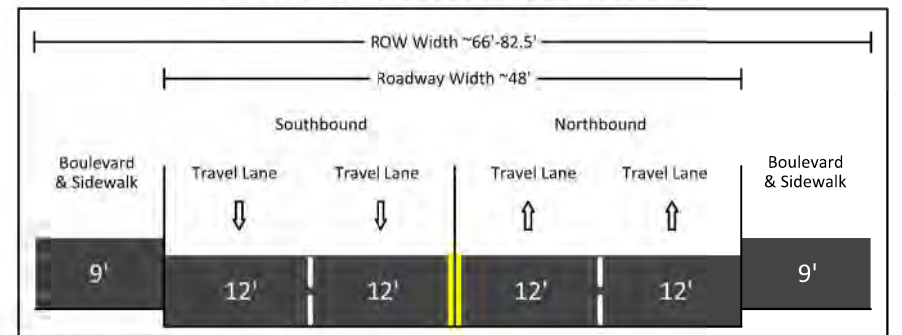
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 18D Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	32 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	35-40 mph
Segment Average Annual Daily Volume ³ :	28,200
Segment Maximum Peak Hour Volume ³ :	1,172

Existing Typical Section (Segment 18D)

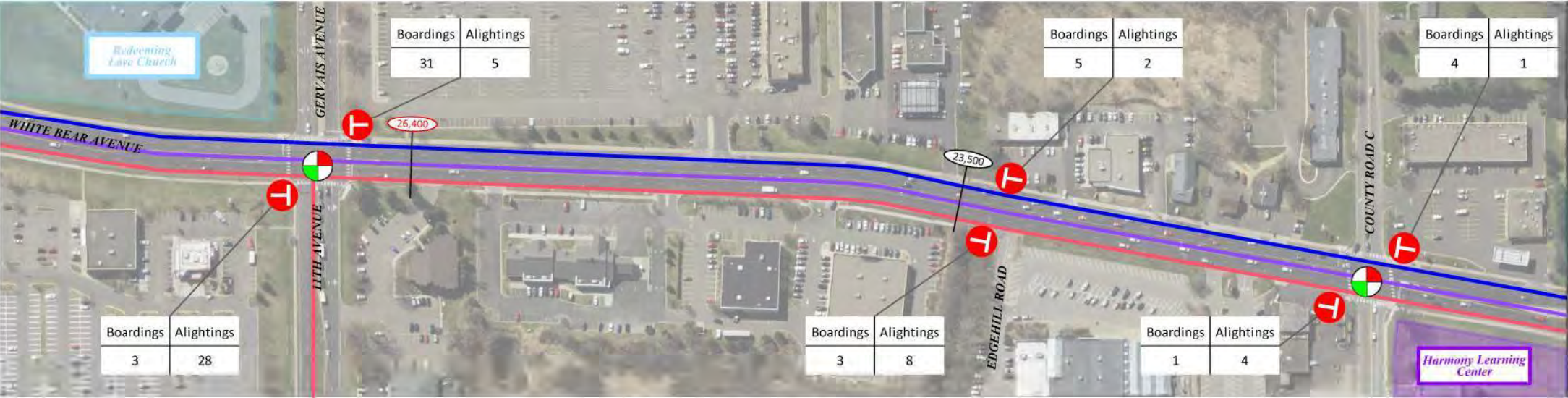


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Corridor 19 Characteristics

Directional Split ¹ :	AM: 52% NB/48% SB
	PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	269
Crashes/Mile ² :	298.9

Corridor 19 Transit Routes

Route 54
Route 80
Route 64

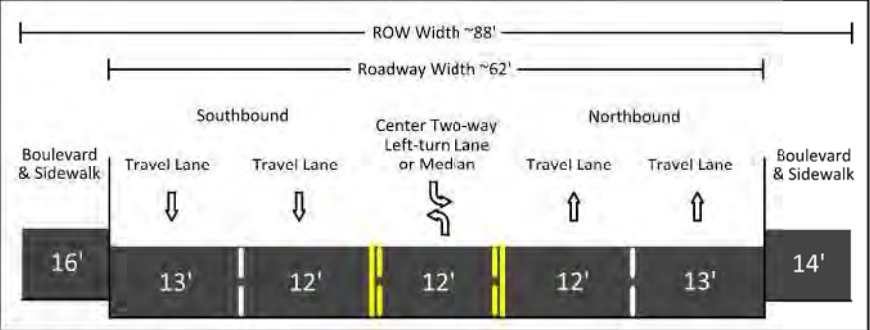
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 19 Characteristics






Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	26,400
Segment Maximum Peak Hour Volume ³ :	1,089

Existing Typical Section



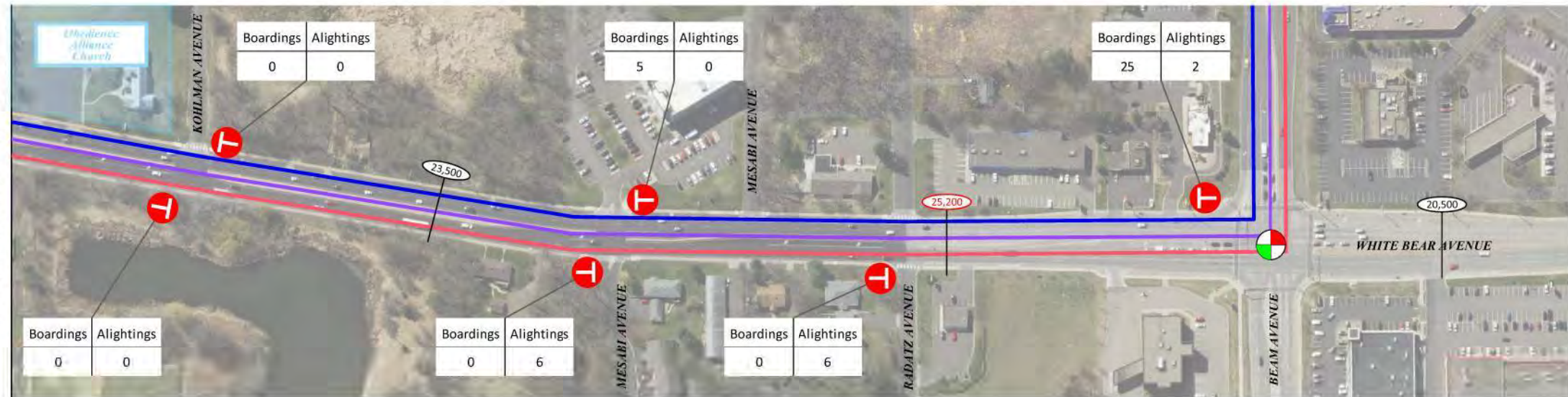
* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND		
(X,XXX)	MnDOT AADT	 Signalized Intersection
(X,XXX)	St. Paul Compass AADT	 All-way stop Intersection
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	 Marked Crosswalk (At unsignalized intersection)
	 Parking allowed (see parking notes for details)	 Public Transit Stops



MATCHLINE - SEE SHEET 1



Corridor 19 Characteristics

Directional Split ¹ :	AM: 52% NB/48% SB PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	269
Crashes/Mile ² :	298.9

Corridor 19 Transit Routes

Route 54
Route 80
Route 64

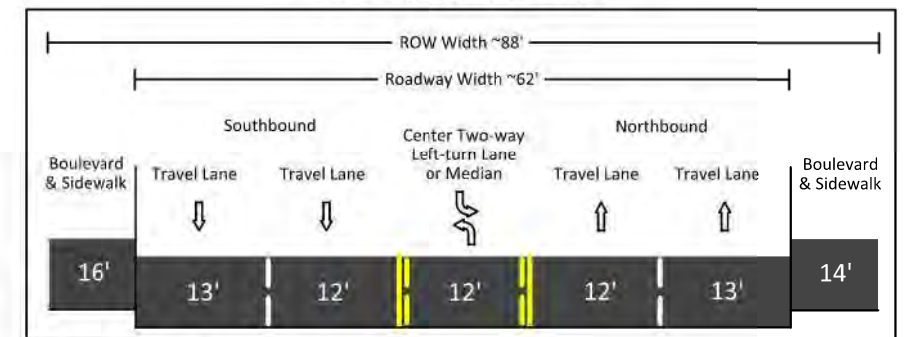
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 19 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	26,400
Segment Maximum Peak Hour Volume ³ :	1,089

Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

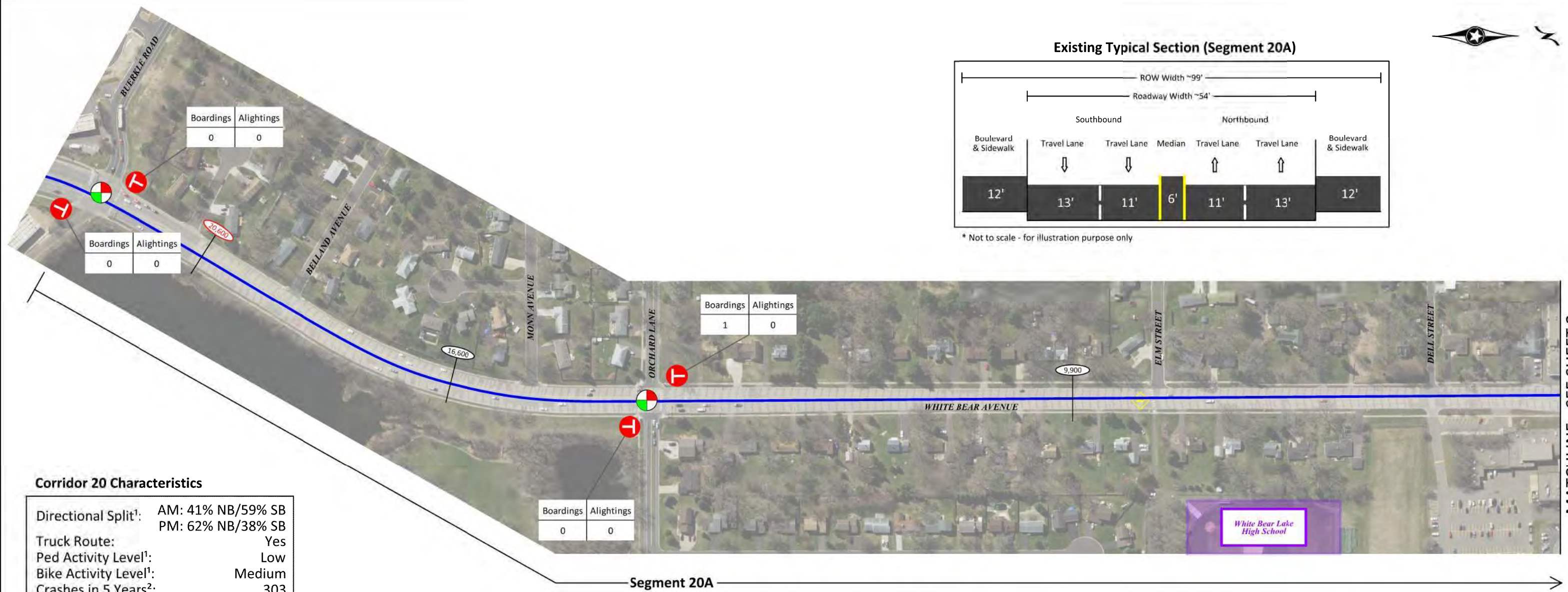
(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 19
White Bear Avenue (Gervais Avenue to Beam Avenue)

Sheet 2 of 2



Directional Split ¹ :	AM: 41% NB/59% SB PM: 62% NB/38% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	303
Crashes/Mile ² :	108.2

Route 54

Weekday (Tu-Th) Average Speed (Daily) ¹ :	31 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	7,800 - 20,600
Segment Maximum Peak Hour Volume ³ :	872

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

	MnDOT AADT		Signalized Intersection		Parking allowed (<i>see parking notes for details</i>)
	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
	Spack Consulting ADT <i>(If there is an asterisk (*) the data was collected during a MnPASS detour)</i>		Marked Crosswalk <i>(At unsignalized intersection)</i>		



MATCHLINE - SEE SHEET 1



MATCHLINE - SEE SHEET 3

← Segment 20A | Segment 20B →

Corridor 20 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 62% NB/38% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	303
Crashes/Mile ² :	108.2

Corridor 20 Transit Routes

Route 54

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

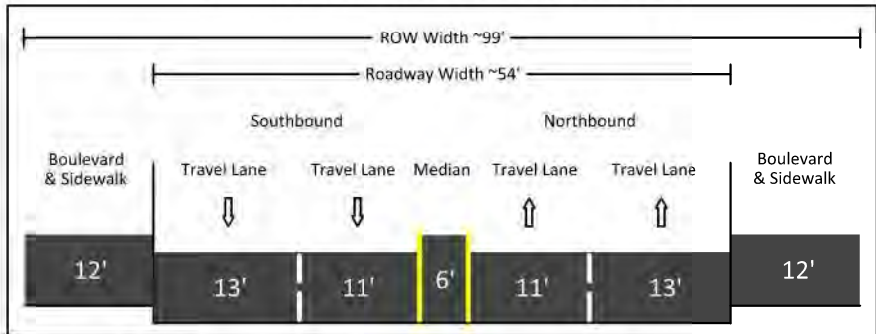
Segment 20A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	31 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	16,100 - 20,600
Segment Maximum Peak Hour Volume ³ :	872

Segment 20B Characteristics

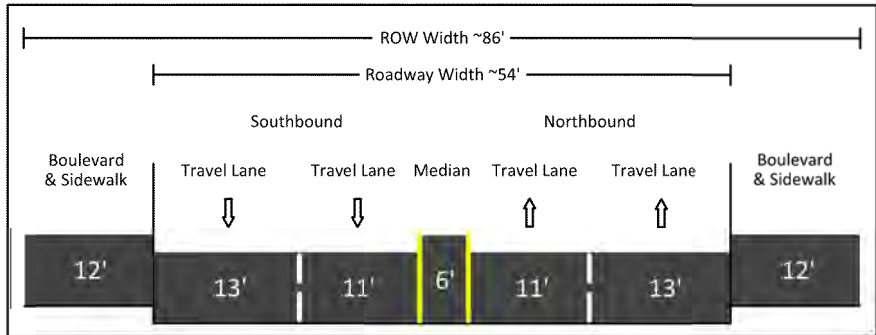
Weekday (Tu-Th) Average Speed (Daily) ¹ :	31 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	7,800 - 11,300
Segment Maximum Peak Hour Volume ³ :	517

Existing Typical Section (Segment 20A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 20B)

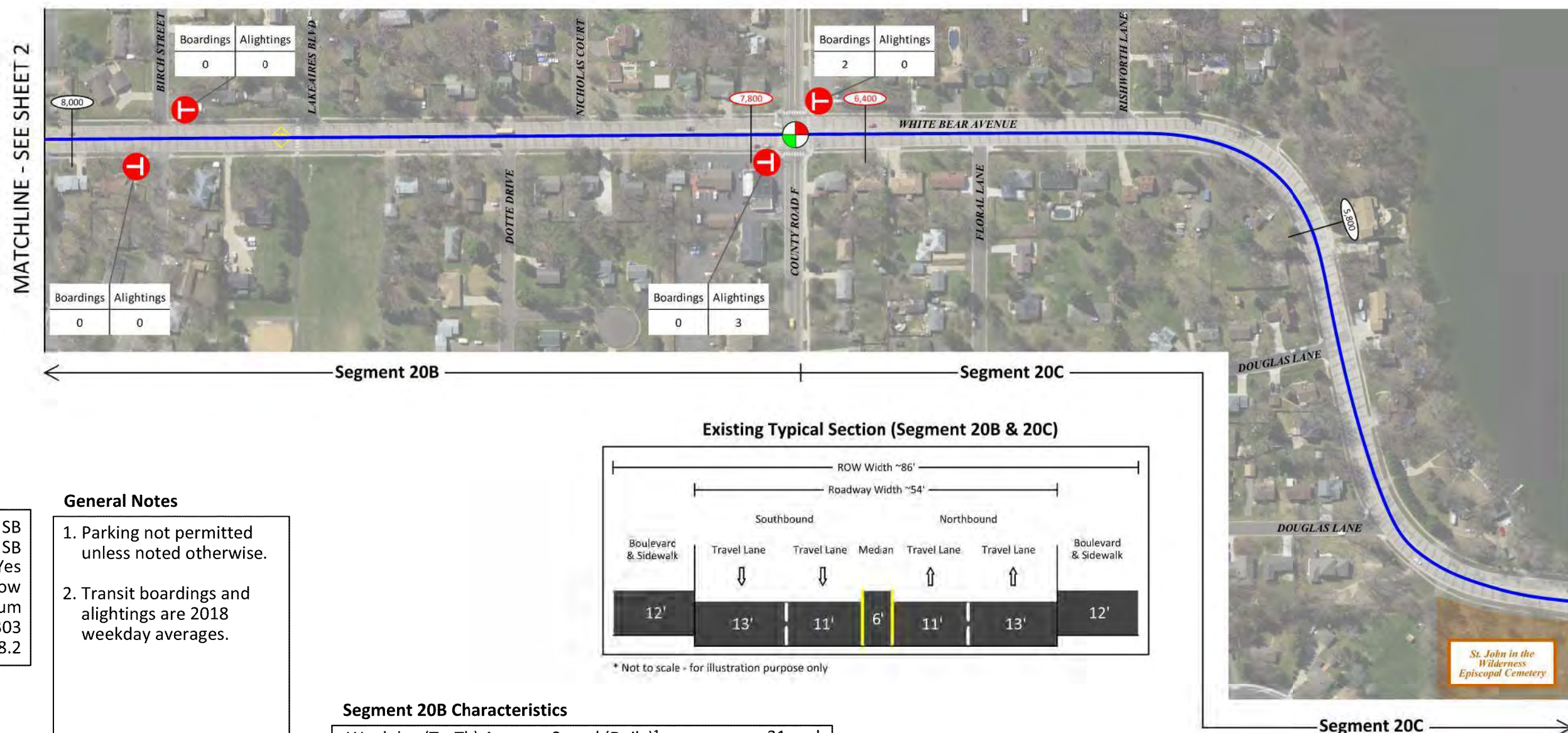


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

- | | | |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| (X,XXX) MnDOT AADT | Signalized Intersection | Parking allowed (see parking notes for details) |
| (X,XXX) St. Paul Compass AADT | All-way stop Intersection | Public Transit Stops |
| (X,XXX) Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour) | Marked Crosswalk
(At unsignalized intersection) | |



Corridor 20 Characteristics

Directional Split¹: AM: 41% NB/59% SB
PM: 62% NB/38% SB
Truck Route: Yes
Ped Activity Level¹: Low
Bike Activity Level¹: Medium
Crashes in 5 Years²: 303
Crashes/Mile²: 108.2

Corridor 20 Transit Routes

Route 54

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 20B Characteristics

Weekday (Tu-Th) Average Speed (Daily)¹: 31 mph
Weekday (Tu-Th) 85th %tile Speed (Daily)¹: 42 mph
Speed Limit: 40 mph
Segment Average Annual Daily Volume³: 7,800 - 11,300
Segment Maximum Peak Hour Volume³: 517

Segment 20C Characteristics

Weekday (Tu-Th) Average Speed (Daily)¹: 32 mph
Weekday (Tu-Th) 85th %tile Speed (Daily)¹: 40 mph
Speed Limit: 30 mph
Segment Average Annual Daily Volume³: 6,400 - 10,500
Segment Maximum Peak Hour Volume³: 430

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Segment 20C Characteristics

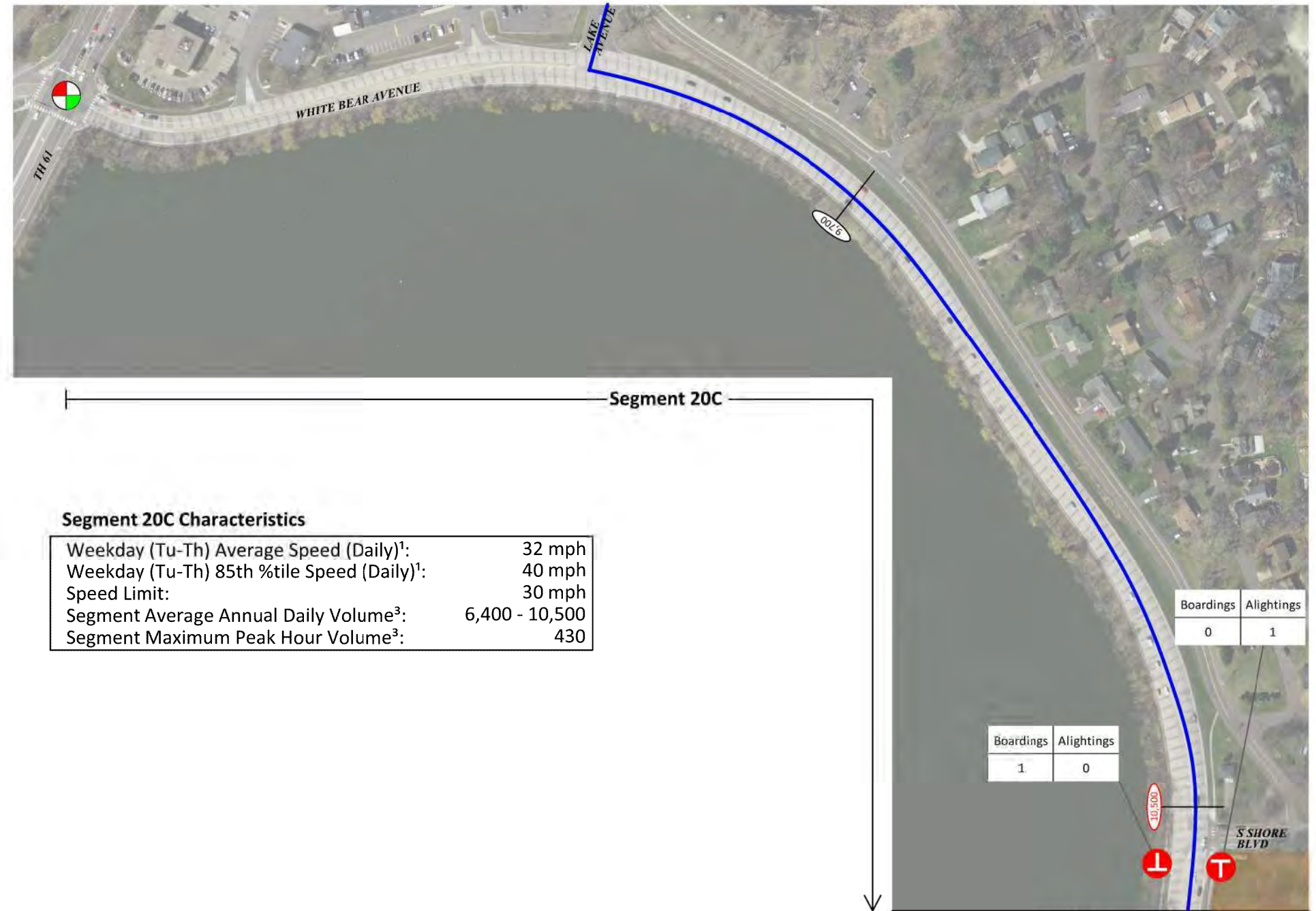
Directional Split ¹ :	AM: 41% NB/59% SB PM: 62% NB/38% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	303
Crashes/Mile ² :	108.2

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Weekday (Tu-Th) Average Speed (Daily) ¹ :	32 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	40 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	6,400 - 10,500
Segment Maximum Peak Hour Volume ³ :	430

Corridor 20 Transit Routes









Route 54

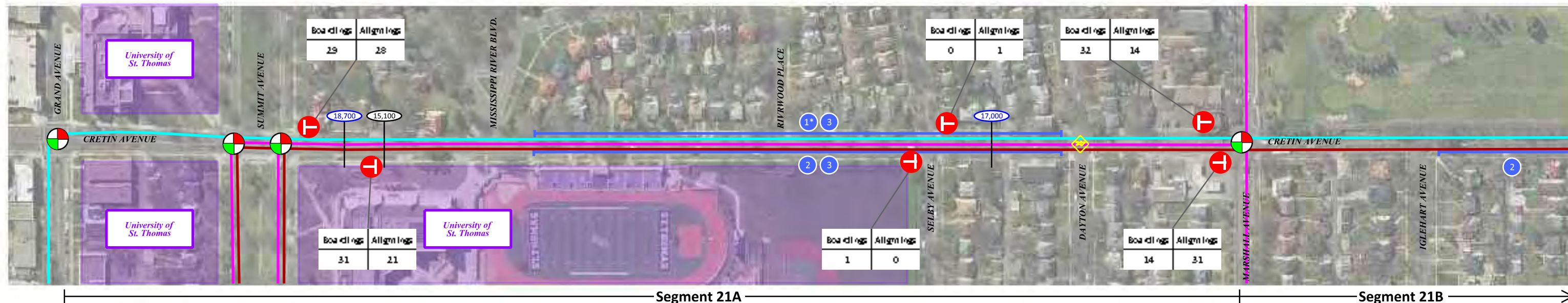


MATCHLINE - SEE SHEET 3

³Source: Spack Consulting (2019)

LEGEND

 MnDOT AADT	 Signalized Intersection	 Parking allowed (<i>see parking notes for details</i>)
 St. Paul Compass AADT	 All-way stop Intersection	 Public Transit Stops
 Spack Consulting ADT <i>(If there is an asterisk (*) the data was collected during a MnPASS detour)</i>	 Marked Crosswalk <i>(At unsignalized intersection)</i>	



MATCHLINE - SEE SHEET 2

Corridor 21 Characteristics

Directional Split ¹ :	AM: 64% NB/36% SB
	PM: 41% NB/59% SB
Truck Route:	No
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	271
Crashes/Mile ² :	180.7

Corridor 1 Transit Routes

Route 21
Route 63
Route 134

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 21A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	15,100
Segment Maximum Peak Hour Volume ³ :	1,220

Segment 21B Characteristics

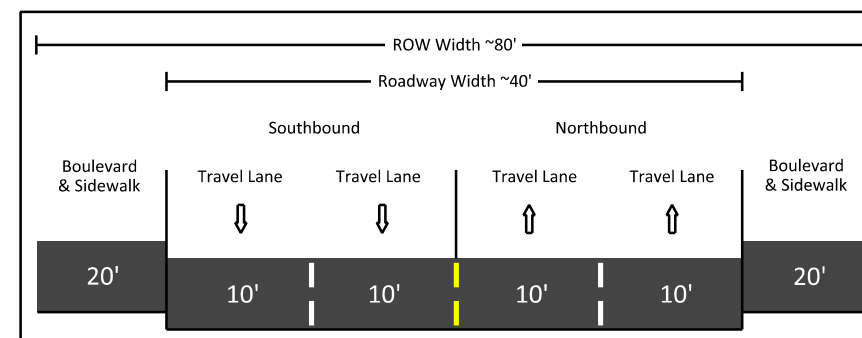
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	23,100
Segment Maximum Peak Hour Volume ⁴ :	1,392

Parking Notes:

- 1 No Parking During Day (8am-8pm Mon-Fri)
- 2 No Parking During AM Peak (7am-9am Mon-Fri)
- 3 No Parking During PM Peak (4pm-6pm Mon-Fri)

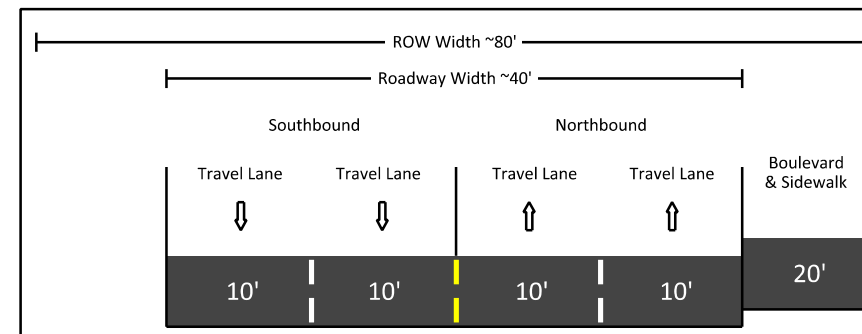
*Except by permit

Existing Typical Section (Segment 21A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 21B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)
⁴Source: St. Paul Compass (2017)

LEGEND

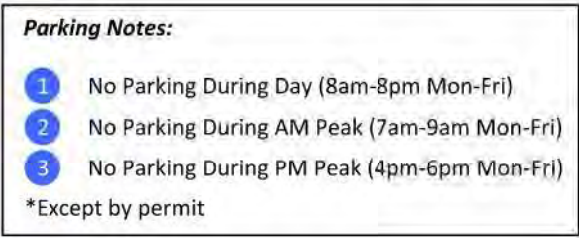
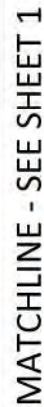
(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 21
Cretin Avenue (Grand Avenue to University Avenue)

Sheet 1 of 2



Directional Split ¹ :	AM: 64% NB/36% SB PM: 41% NB/59% SB
Truck Route:	No
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	271
Crashes/Mile ² :	180.7

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Route 21
Route 63
Route 134

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	23,100
Segment Maximum Peak Hour Volume ³ :	1,392

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	17,200
Segment Maximum Peak Hour Volume ⁴ :	770

Diagram illustrating the proposed intersection geometry for the intersection of SR 168 and SR 168Bypass. The diagram shows a four-lane intersection with two travel lanes in each direction (Southbound and Northbound). The total Right-of-Way (ROW) width is approximately 80 feet, and the roadway width is approximately 40 feet. The travel lanes are 10 feet wide each. A 20-foot wide Boulevard & Sidewalk is shown on the right side of the intersection.

* Not to scale - for illustration purpose only; widths vary by locations

Diagram illustrating the proposed 58-foot wide roadway cross-section:

- ROW Width ~80'** (Right-of-Way)
- Roadway Width ~58'**
- Southbound**
 - Sidewalk: 5'
 - Travel Lane: 12'
 - Travel Lane: 11'
 - Left-turn Lanes: 12'
- Northbound**
 - Travel Lane: 11'
 - Travel Lane: 12'
 - Sidewalk: 5'

* Not to scale - for illustration purpose only

	MnDOT AADT		Signalized Intersection		Parking allowed (<i>see parking notes for details</i>)
	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
	Spack Consulting ADT <i>(If there is an asterisk (*) the data was collected during a MnPASS detour)</i>		Marked Crosswalk <i>(At unsignalized intersection)</i>		

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2017)
⁴Source: St. Paul Compass (2018)



- Parking Notes:**
- 1 30 Minute Limit During Day (8am-4pm Every Day)
 - 2 No Parking During AM Peak (7am-9am Mon-Fri)
 - 3 No Parking During PM Peak (4pm-6pm Mon-Fri)

Corridor 22 Characteristics

Directional Split ¹ :	AM: 72% NB/28% SB
	PM: 42% NB/58% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	337
Crashes/Mile ² :	306.4

Corridor 22 Transit Routes

Route 21

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

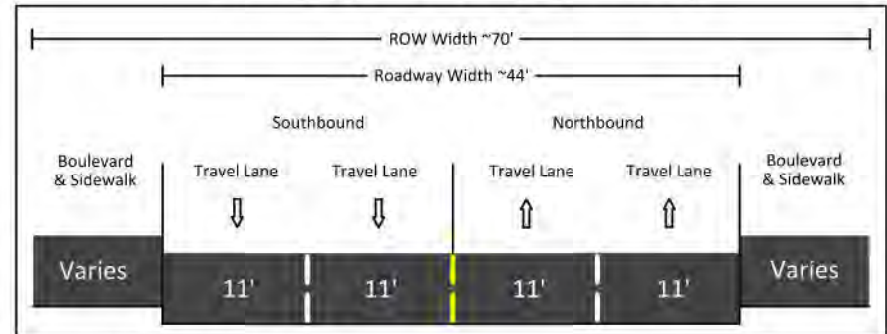
Segment 22A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	8,500
Segment Maximum Peak Hour Volume ³ :	629

Segment 22B Characteristics

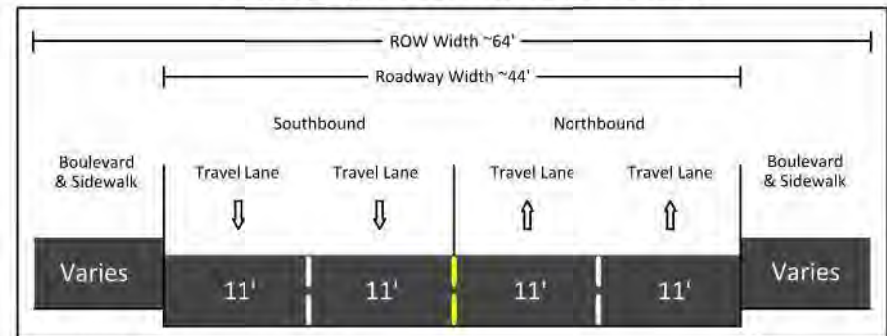
Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	19,600
Segment Maximum Peak Hour Volume ⁴ :	1,092

Existing Typical Section (Segment 22A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 22B)



* Not to scale - for illustration purpose only

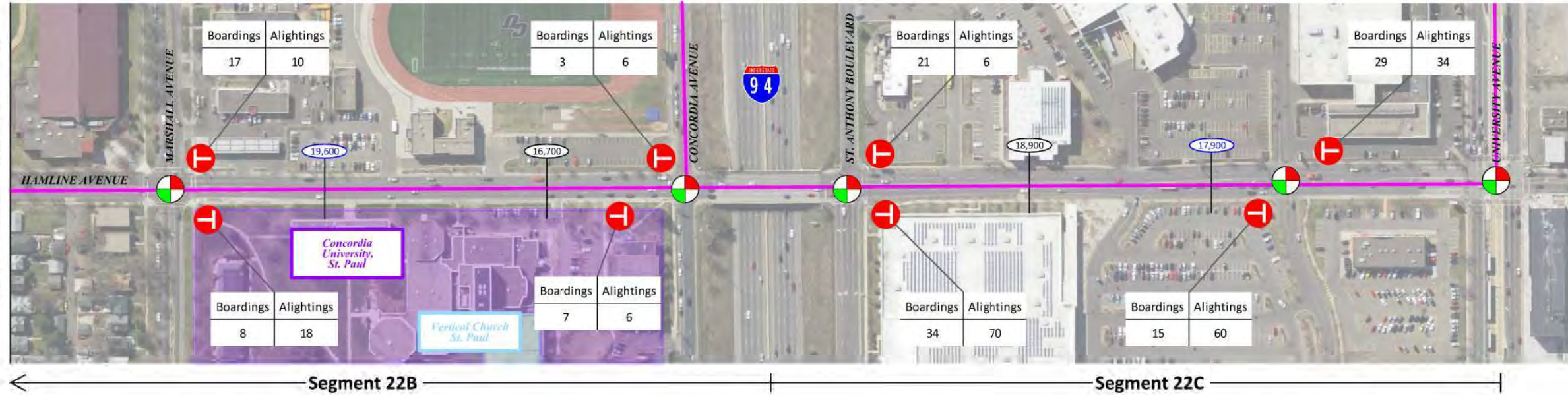
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)
⁴Source: St. Paul Compass (2019)

LEGEND

- | | | |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| (X,XXX) MnDOT AADT | Signalized Intersection | Parking allowed (see parking notes for details) |
| (X,XXX) St. Paul Compass AADT | All-way stop Intersection | Public Transit Stops |
| (X,XXX) Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour) | Marked Crosswalk
(At unsignalized intersection) | |



MATCHLINE - SEE SHEET 1



Corridor 22 Characteristics

Directional Split ¹ :	AM: 72% NB/28% SB
	PM: 42% NB/58% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	337
Crashes/Mile ² :	306.4

Corridor 22 Transit Routes

Route 21

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

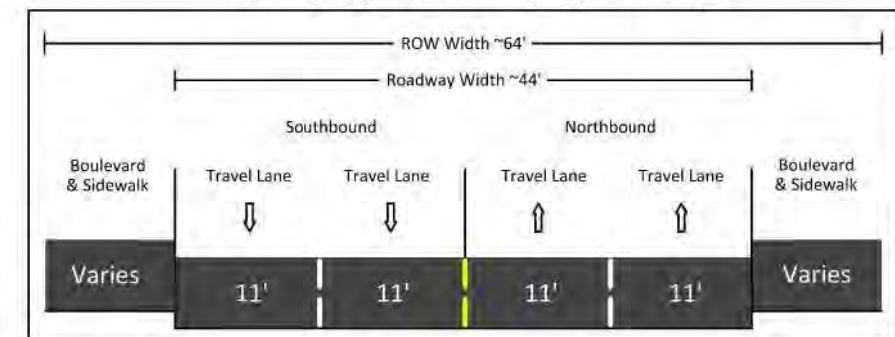
Segment 22B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	19,600
Segment Maximum Peak Hour Volume ³ :	1,092

Segment 22C Characteristics

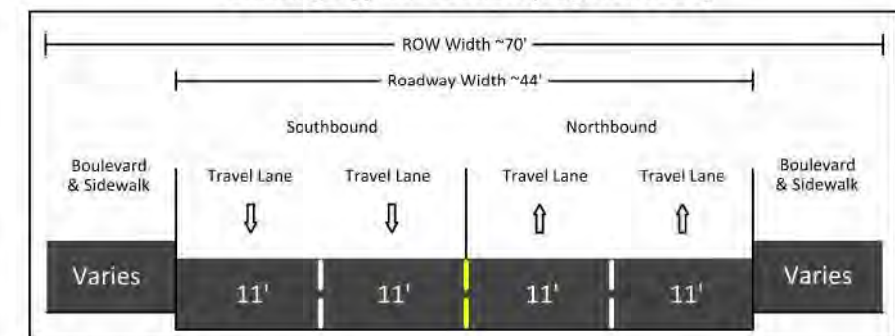
Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	17,900
Segment Maximum Peak Hour Volume ³ :	704

Existing Typical Section (Segment 22B)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 22C)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2019)

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 22
Hamline Avenue (Grand Avenue to University Avenue)

Sheet 2 of 2



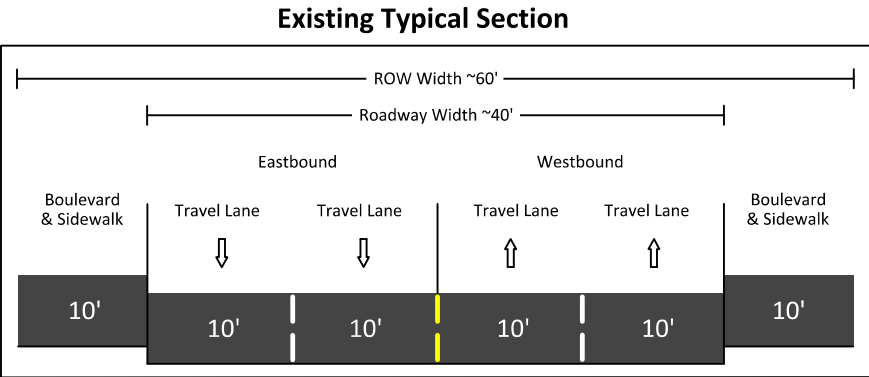
Parking Notes:	
1	No Restrictions
2	2 Hour Limit During Day (8am-4pm Every Day)
3	2 Hour Limit During Day (9am-6pm Every Day)
4	No Parking During AM Peak (7am-9am Mon-Fri)
5	No Parking During PM Peak (4pm-6pm Mon-Fri)

Corridor 23 Characteristics

Directional Split ¹ :	AM: 26% EB/74% WB
	PM: 34% EB/66% WB
Truck Route:	No
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	95
Crashes/Mile ² :	190

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.



* Not to scale - for illustration purpose only

Corridor 23 Transit Routes









No transit routes on this corridor.

Segment 23 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	29 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	368

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Compass Consulting (2018)
⁴Calculated based on Compass (2018) data and StreetLight directionality

LEGEND

 MnDOT AADT	 Signalized Intersection	 Parking allowed (<i>see parking notes for details</i>)
 St. Paul Compass AADT	 All-way stop Intersection	 Public Transit Stops
 Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	 Marked Crosswalk (At unsignalized intersection)	

Appendix C: Feasibility Screening Results

Ramsey County 4 to 3 Conversion Study Feasibility Screen

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Approximate Road Width	3 Lane Screen Result	Curbside Uses	AADT	Screen Result	Max Directional Peak Hour Volume	Screen Result	Other Considerations	Feasibility Summary			Potential 3-Lane Scope
	Ramsey County Segments																
1A	County Road 82 (CSAH 24 and 78)	0.8 mile	Roseville	Long Lake Road to Cleveland Avenue	0.3	48'	3 lane feasible but would result in loss of curbside uses on one side of street	1 bus stop on 1 bus route.	7,400	Under capacity	624	Under capacity	3 lane roadway entering at western end of segment. No access on this end, consider 2 lane segment. 1 signal.	Consider 2 lane segment.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
1B				Cleveland Avenue to Fairview Avenue	0.5	48'	3 lane feasible but would result in loss of curbside uses on one side of street	5 bus stops on 2 bus routes.	12,900 - 13,100	Under capacity	1,141	Likely above peak hour capacity	4 lane roadway entering on eastern end of segment. High access density. Was initially considered easy but peak hour directional volumes indicate otherwise. 2 signals.	Further study needed to determine 3 lane operations, 3 lane would have impacts to transit.	Further Study Needed		
2A	County Road C (CSAH 23)	2.8 miles	Roseville Little Canada	Lexington Ave to Victoria St	0.4	52'	3 lane feasible with no loss of curbside uses	None	10300	Under capacity	820	Slightly above 3 lane capacity.	Capacity analysis needed at Victoria (split phasing, long queues). No Curbside Uses. Entering traffic on western end is 4 lane divided. 1 signal.	Further study needed to determine 3 lane operations.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
2B				Victoria St to Rice St	1.6	44'	3 lane feasible but would result in loss of curbside uses on one side of street	22 bus stops on 1 bus route.	8,700 - 10,700	Under capacity	691 - 833	Near or slightly above 3 lane capacity	Capacity analysis needed at Victoria and Rice (split phasing, long queues). High access density. 2 signals.	Further study needed to determine 3 lane operations, 3 lane would have impacts to transit.	Further Study Needed		
2C				Rice St to RR Bridge	0.4	48'	3 lane feasible but would result in loss of curbside uses on one side of street	None	7300	Under capacity	492	Under capacity	High access density with offset streets. 1 signal. Low volumes.	Should be feasible, consider offset accesses.	Likely Feasible		
2D				RR Bridge to I-35E	0.4	RR bridge to Little Canada 48' Little Canada to I-35E 48'-70'	3 lane feasible but would result in loss of curbside uses on one side of street west of Little Canada rd, wouldn't affect east of Little Canada rd.	2 bus stops on 2 bus routes (mostly only on wider portion)	14400	Under capacity	857	Likely above peak hour capacity	Entering traffic on eastern end is 2 lane with shoulders. High access density. 2 signals - very closely spaced.	Further study needed to determine 3 lane operations, may impact transit.	Further Study Needed		
3	County Road D (CSAH 19)	1.0 mile	St. Anthony (Hennepin Co) Roseville New Brighton	Silver Lake Road to Old Highway 8	1.0	Silver Lake to Penrod 57' Penrod to McCullum 52' McCullum to Old 8 60'	3 lane feasible with no loss of curbside uses	13 bus stops and 3 bus routes.	14,100	Under capacity	739	Near 3 lane capacity.	3 lane roadway entering at western end of segment. Volumes near capacity 3 signals.	Segment likely has adequate capacity.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
4A	County Road E (CSAH 15)	0.7 mile	Vadnais Heights Gem Lake	Labore Rd to International Dr	0.5	@ Labore 72', Labore to Big Fox 62' 1371' (W?) of 61- 51'	3 lane feasible with no loss of curbside uses	None	15,800	Near 3 lane capacity	831	Likely above peak hour capacity	4-lane divided roadway with turn lanes entering from west. 2 signals. High access density on south side.	Segment has inadequate capacity.	Further Study Needed, Likely Above Capacity	Further Study Needed, Likely Above Capacity	Restripe+Sig Mods
4B				International Dr to TH 61	0.2	67'	3 lane feasible with no loss of curbside uses	None	15,800	Near 3 lane capacity	831	Likely above peak hour capacity	Roadway is currently 5-lane. 4-lane roadway entering to the east, but 3-lane very close nearby. High access density 2 signals.	Segment has inadequate capacity.	Further Study Needed, Likely Above Capacity		
5	County Road F/10th Street NW (CSAH 12/45)	0.4 mile	New Brighton	I-694 to Old Highway 8	0.4	1-694 to tower drive -52', @ old 8-70'	3 lane feasible with no loss of curbside uses	None	11500	Under capacity	683	Under capacity	2-lane roadways on either end of corridor. Was planned for conversion but waiting until after MnPASS. 3 signals, 1 at-grade RR crossing. High access density.	Good candidate	Likely Feasible	Likely Feasible	Restripe+Sig Mods
6	Dale Street (CSAH 53)	0.7 mile	St. Paul	Grand Avenue to Iglehart Avenue	0.7	40'	3 lane feasible but would result in loss of curbside uses on both sides of street	11 bus stops and 1 bus route. Off peak parking permitted on majority of segment.	7,900 - 17,900	Feasible but slightly above capacity on north end.	985	Likely above peak hour capacity	2 lane roadway entering at southern end of segment. Capacity analysis needed on north end: Dale/Marshall, Dale/Selby. Not many signals and spread out.	3 Lane would have impacts to on-street parking. South segment (south of Selby) has adequate capacity, North segment does not.	Further Study Needed	Further Study Needed	M&O+Sig Mods
7A	Dale Street (CSAH 53)	2.7 miles	St. Paul Roseville	Como Ave to Larpenteur Ave	1.5	48'	3 lane feasible but would result in loss of curbside uses on one side of street	25 bus stops and 1 bus route. Off peak parking permitted on majority of segment.	13,600 - 15,700	Near 3 lane capacity	1138	Likely above peak hour capacity	4-lane divided on southern end. 5 signals. Low-medium access density on most blocks, some blocks high density.	Segment has inadequate capacity, would also impact transit.	Further Study Needed, Likely Above Capacity	Further Study Needed, Likely Above Capacity	M&O+Sig Mods
7B				Larpenteur Ave to CR B	1.0	44'	3 lane feasible but would result in loss of curbside uses on one side of street	9 bus stops and 1 bus route.	13500	Under capacity	938	Likely above peak hour capacity	2 signals. Medium access density, offset streets.	Segment has inadequate capacity, would also impact transit.	Further Study Needed, Likely Above Capacity		
7C				CR B to TH 36	0.2	44'	3 lane feasible but would result in loss of curbside uses on one side of street	None	14700	Under capacity	783	Slightly above 3 lane capacity.	2-lane with shoulders on northern end. 3 signals (if you count both TH 36 signals). High access density.	Further study needed to determine 3 lane operations, would also impact transit.	Further Study Needed		
8A	Fairview Avenue (CSAH 48)	0.9 mile	Roseville	CR B2 to Oakcrest Ave	0.2	62'	3 lane feasible with no loss of curbside uses	1 bus stop on 2 bus routes.	14200	Under capacity	755	Slightly above 3 lane capacity.	Need capacity analysis at B2. 1 signal. High access density.	Capacity analysis needed at B2	Further Study Needed	Further Study Needed	Restripe+Sig Mods
8B				Oakcrest Ave to CR C	0.3	Oakcrest to RR tracks -53 to 67' RR tracks to C -74'	3 lane feasible with no loss of curbside uses	4 bus stops on 2 bus routes.	14200	Under capacity	755	Slightly above 3 lane capacity.	Need capacity analysis at C. 1 signal. High access density.	Capacity analysis needed at C	Further Study Needed		
8C				CR C to CR C2	0.4	51-64'	3 lane feasible with no loss of curbside uses	None	8600	Under capacity	466	Under capacity	Entering traffic on northern end is 2 lane w shoulders. 2 signals. High access density.	Good candidate	Likely Feasible		
9A	Lexington Avenue (CSAH 51)	3.8	Shoreview Arden Hills	Hwy 96 to CR I	2.0	96' to Tanglewood 68'-52' Tanglewood to I -48'	3 lane feasible but would result in loss of curbside uses on one side of street (most of corridor - no loss south of tanglewood)	4 bus stops and 1 bus route, only south of tanglewood.	14900	Near 3 lane capacity	1107	Likely above peak hour capacity	Highly directional. High-speed. High-Access (majority on east side, just a few on west side). 3 signals. Segment currently has detour traffic from MnPASS (ADT of 21,400).	Segment has inadequate capacity.	Further Study Needed, Likely Above Capacity	Half of Corridor Further Study Needed/Likely Over Capacity	Restripe+Sig Mods
9B				CR I to CR J	1.8	48'	3 lane feasible but would result in loss of curbside uses on one side of street	None	10,800	Under capacity	802	Slightly above 3 lane capacity.	Highly directional. Even though AADT is low, peak hour directional data is very high. High-speed, High access density, 2 signals. Segment currently may have detour traffic from MnPASS (ADT of 11,100).	Further study needed to determine 3 lane operations.	Further Study Needed		

AADT/Peak Hour Volume Screen Legend

Under capacity	Low impact/High probability will operate acceptably per published ranges with little need for detailed analysis prior to implementation.
Near/At/Above 3 lane capacity	Moderate impact/Moderate probability will operate acceptably per published ranges and should have detailed analysis prior to implementation.
Likely over capacity	High impact/Low probability will operate acceptably per published ranges and detailed analysis prior to implementation is strongly recommended.

Potential 3-Lane Scope Legend

Restripe
Mill & Overlay
Reconstruction

Ramsey County 4 to 3 Conversion Study Feasibility Screen

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Approximate Road Width	3 Lane Screen Result	Curbside Uses	AADT	Screen Result	Max Directional Peak Hour Volume	Screen Result	Other Considerations	Feasibility Summary			Potential 3-Lane Scope
10	Lydia Avenue (CSAH 19)	0.2 mile	Maplewood	White Bear Avenue to Ariel Street	0.2	50'	3 lane feasible and would probably not result in loss of curbside uses	3 bus stops and 2 bus routes.	3,200	Under capacity	160	Under capacity	Entering traffic on east end is 2-lane w/ shoulders. 2 closely-spaced signals (eastern one is a ped signal). Could probably function as a 2-lane, might be able to squeeze a 3rd lane in.	3 lane may have impacts to transit.	Likely Feasible	Likely Feasible	Restripe+Sig Mods
11A	Marshall Avenue (CSAH 35)	0.5 mile	St. Paul	Mississippi River Blvd to Otis Ave	0.1	64'-70'	3 lane feasible with no loss of curbside uses	1 bus stop and 2 bus routes. Bike lane and parking lane on south side.	19,200	Likely over capacity	974	Likely above peak hour capacity	Entering traffic on west side is 4-lane. Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Currently transition point to one lane EB.	Segment might have inadequate capacity.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
11B				Otis Ave to Montrose Pl	0.1	57'-62'	3 lane feasible with no loss of curbside uses	2 bus stops and 2 bus routes. Bike lane on south side.	19,200	Likely over capacity	974	Likely above peak hour capacity	Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Has only one lane eastbound already.	Segment might have inadequate capacity.	Further Study Needed		
11C				Montrose Pl to Cretin Ave	0.2	57'	3 lane feasible with no loss of curbside uses	5 bus stops and 2 bus routes. Bike lane and parking lane on south side.	19,200	Likely over capacity	974	Likely above peak hour capacity	Entering traffic on east side is 2-lane with left turn lanes and bike lanes. Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Has only one lane eastbound already.	Segment might have inadequate capacity.	Further Study Needed		
12	Maryland Avenue (CSAH 31)	0.3 mile	St. Paul	Rice Street to Abell Street	0.3	42' (at Rice St 57')	3 lane feasible but would result in loss of curbside uses on one side of street (except at Rice)	None	17,000	At 3 lane capacity.	855	Likely above peak hour capacity	Entering traffic on west side is 2-lane, on east side is 4 lane divided. Could work well on this corridor if current Maryland project goes well. 2 signals.	Segment might have inadequate capacity.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
13A	Maryland Avenue (CSAH 31)	0.9 mile	St. Paul	Clarence St to Phalen Blvd	0.2	72'	3 lane feasible with no loss of curbside uses	2 bus stops and 2 bus routes.	13800	Under capacity	628	Under capacity	Entering traffic on west side is 4-lane divided, then 3-lane soon after. Could work well on this corridor if current Maryland project goes well. 2 signals.	Good candidate	Likely Feasible	Further Study Needed	Restripe+Sig Mods
13B				Phalen Blvd to White Bear Ave	0.8	40'	3 lane feasible but would result in loss of curbside uses on both sides of street	9 bus stops and 2 bus routes. Parking on north side only for two blocks (in travel lane, no restrictions)	11,100 - 14,300	Under capacity	742	Slightly above 3 lane capacity.	entering traffic on east side is 2 lane with parking Could work well on this corridor if current Maryland project goes well. 3 signals.	3 lane would have impacts to parking, may have impacts to transit.	Further Study Needed		
14	McKnight Road (CSAH 68)	0.3 mile	North St. Paul	13th Avenue to Mohawk Road	0.3	48'	3 lane feasible but would result in loss of curbside uses on one side of street (except at Rice)	None	12100	Under capacity	497	Under capacity	Entering traffic on the south is 4-lane divided but planned to be 3-lane. Entering traffic on the north is 2-lane. No signals.	Good candidate	Likely Feasible	Likely Feasible	Restripe
15	North St. Paul Road (CSAH 29)	0.2 mile	Maplewood	White Bear Avenue to Ripley Avenue		50'											
16A	Old Highway 8 (CSAH 77)	2.0 miles	New Brighton	CR D to 5th St	0.4	50'-70'	3 lane feasible with no loss of curbside uses	None	10700	Under capacity	799	Slightly above 3 lane capacity.	Traffic entering on south side is 3-lane. High access density. 1 signal. Segment currently may have detour traffic from MnPASS (ADT of unknown)	Further study needed to determine 3 lane operations.	Likely Feasible	Majority of Segment Likely Feasible	Restripe+Sig Mods
16B				5th St to RR Crossing	0.6	50' (but narrows under RR bridge)	3 lane feasible with no loss of curbside uses	5 bus stops and 2 bus routes.	11100	Under capacity	829	Likely above peak hour capacity	High access density. No signals. Segment currently has detour traffic from MnPASS (ADT of 15,700)	Segment has inadequate capacity.	Further Study Needed, Likely Above Capacity		
16C				RR Crossing to 8th Ave	0.7	60' (but narrows under RR bridge)	3 lane feasible with no loss of curbside uses	10 bus stops and 2 bus routes.	10500	Under capacity	784	Slightly above 3 lane capacity.	Utility pole company on corridor - large timber trucks. Ped crossing difficulty at DQ at trailer park. High access density. 1 signal. Segment currently has detour traffic from MnPASS (ADT of 14,500)	Further study needed to determine 3 lane operations.	Likely Feasible		
16D				8th Ave to 5th Ave	0.3	47'	3 lane feasible but would result in loss of curbside uses on one side of street	None	5800	Under capacity	433	Under capacity	Traffic entering on north/east side is 4-lane with turn lanes. Queueing on bridge. Bridge needs replacement. High access density. 1 signal. Segment currently has detour traffic from MnPASS (ADT of 7,800)	Good candidate	Likely Feasible		
17A	Silver Lake Road (CSAH 44)	1.7 miles	New Brighton Mounds View	Mississippi Street to CR H	0.5	44'	3 lane feasible but would result in loss of curbside uses on one side of street	8 bus stops and 2 bus routes.	12300	Under capacity	815	Slightly above 3 lane capacity.	Traffic entering on south side is 5 lane. 2 signals. RR and trail crossing on corridor. Some blocks have low access density, others have high density.	Further study needed to determine 3 lane operations and it would have impacts to transit.	Further Study Needed	Further Study Needed	Restripe+Sig Mods
17B				CR H to CR H2	0.5	44'	3 lane feasible but would result in loss of curbside uses on one side of street	None	8800	Under capacity	590	Under capacity	1 signal. Generally low access density. Transit turns off corridor and runs parallel for this segment.	Good candidate	Likely Feasible		
17C				CR H2 to Mounds View Boulevard	0.7	44'	3 lane feasible but would result in loss of curbside uses on one side of street	6 bus stops and 2 bus routes.	7900	Under capacity	520	Under capacity	Traffic entering on north side is 2 lane. 1 signal. Some blocks have high access density, others have medium density on west side.	3-lane would have impacts to transit.	Further Study Needed		

AADT/Peak Hour Volume Screen Legend

Under capacity	Low impact/High probability will operate acceptably per published ranges with little need for detailed analysis prior to implementation.
Near/At/Above 3 lane capacity	Moderate impact/Moderate probability will operate acceptably per published ranges and should have detailed analysis prior to implementation.
Likely over capacity	High impact/Low probability will operate acceptably per published ranges and detailed analysis prior to implementation is strongly recommended.

Potential 3-Lane Scope Legend

Restripe
Mill & Overlay
Reconstruction

Ramsey County 4 to 3 Conversion Study Feasibility Screen

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Approximate Road Width	3 Lane Screen Result	Curbside Uses	AADT	Screen Result	Max Directional Peak Hour Volume	Screen Result	Other Considerations	Feasibility Summary			Potential 3-Lane Scope
18A	White Bear Avenue (CSAH 65)	4.0 miles	St. Paul Maplewood	Suburban Ave to Maryland Ave	2.0	94 to Minnehaha 48' to 52', Minnehaha to Maryland 48'	3 lane feasible but would result in loss of curbside uses on one side of street	27 bus stops and 2 bus routes (but the routes don't run on the same blocks). ~5 blocks on east side on	18,400-25,700	Likely over capacity	864-1104	Likely above peak hour capacity	2 lane roadway entering southern end of segment. 8 signals. High access density.	Segment has inadequate capacity.	Further Study Needed, Likely Above Capacity	Majority of Segment Further Study Needed, Likely Above Capacity	Restripe+Sig Mods
18B				Maryland Ave to Idaho Ave	0.9	48'	3 lane feasible with no loss of curbside uses	16 bus stops and 3 bus routes.	16,800-19,300	At or slightly above 3 lane capacity.	963	Likely above peak hour capacity	4 signals. High access density.	Further study needed to determine 3 lane operations.	Further Study Needed		
18C				Idaho Ave to Frost Ave	0.6	Idaho to Larpenter 60', Larpenter to Frost 66'-51',	3 lane feasible with no loss of curbside uses	7 bus stops and 2-3 bus routes.	25,600	Likely over capacity	1043	Likely above peak hour capacity	4 closely spaced signals Some access control. Low transit ridership on north end. Segment is 5-lane.	Inadequate capacity for 3-lane.	Further Study Needed, Likely Above Capacity		
18D				Frost Ave to CR B	0.5	51'	3 lane feasible with no loss of curbside uses	3 bus stops and 2 bus routes.	28,200	Likely over capacity	1172	Likely above peak hour capacity	2 signals.	Inadequate capacity for 3-lane.	Further Study Needed, Likely Above Capacity		
19	White Bear Avenue (CSAH 65)	0.9 mile	Maplewood	Gervais Avenue to Beam Avenue	0.9	48' to 60'	3 lane feasible with no loss of curbside uses	11 bus stops and 3 bus routes.	26,400	Likely over capacity	1089	Likely above peak hour capacity	Basically existing 5-lane. Entering traffic on north is 6-lane, on south is 4-lane with turn lanes. 3 signals. Access density is variable - high in some spots.	Inadequate capacity for 3-lane.	Further Study Needed, Likely Above Capacity	Further Study Needed, Likely Above Capacity	Reconstruct
20A	White Bear Avenue (CSAH 65)	2.8 miles	White Bear Lake	Buerkle Rd to CR E	0.8	55'-70'	3 lane feasible with no loss of curbside uses	4 bus stops and 1 bus route.	16,100 - 20,600	Likely over capacity	872	Likely above peak hour capacity	Entering traffic on south side is 4-lane divided. High access density. Center raised median on entire segment. 3 signals.	Further study needed to determine 3 lane operations.	Further Study Needed, Likely Above Capacity	More than half of Segment Likely Feasible	Reconstruct
20B				CR E to CR F	1.0	55'	3 lane feasible with no loss of curbside uses	6 bus stops and 1 bus route.	7,800 - 11,300	Under capacity	517	Under capacity	High access density. Center raised median on entire segment. 3 signals.	Consider 2 lane segment. Good candidate.	Likely Feasible		
20C				CR F to TH 61	1.0	55'	3 lane feasible with no loss of curbside uses	3 bus stops and 1 bus route.	6,400 - 10,500	Under capacity	430	Under capacity	Corridor ends at TH 61. Center raised median on entire segment. 2 signals.	Consider 2 lane segment. Good candidate.	Likely Feasible		

AADT/Peak Hour Volume Screen Legend

Under capacity	Low impact/High probability will operate acceptably per published ranges with little need for detailed analysis prior to implementation.
Near/At/Above 3 lane capacity	Moderate impact/Moderate probability will operate acceptably per published ranges and should have detailed analysis prior to implementation.
Likely over capacity	High impact/Low probability will operate acceptably per published ranges and detailed analysis prior to implementation is strongly recommended.

Potential 3-Lane Scope Legend

Restripe
Mill & Overlay
Reconstruction

Ramsey County 4 to 3 Conversion Study Feasibility Screen

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Approximate Road Width	3 Lane Screen Result	Curbside Uses	AADT	Screen Result	Max Directional Peak Hour Volume	Screen Result	Other Considerations	Feasibility Summary			Potential 3-Lane Scope
	St. Paul Segments																
21A	Cretin Avenue	1.5 miles	St. Paul	Grand Avenue to Marshall Avenue	0.6	43' (52' at Grand and Marshall)	3 lane feasible but would result in loss of curbside uses on one side of street	6 bus stops and 3 bus routes. Off-peak parking allowed on most blocks.	18700	Likely over capacity	1220	Likely above peak hour capacity	Traffic entering on southern end is 4-lane with left turn lanes. 3 signals.	Segment likely above capacity, would also affect transit and parking	Further Study Needed, Likely Above Capacity	Majority of Segment Further Study Needed, Likely Above Capacity	Restripe+Sig Mods
21B				Marshall Avenue to I-94	0.5	43'	3 lane feasible but would result in loss of curbside uses on one side of street	6 bus stops and 2 bus routes. Off-peak parking allowed on one side.	23100	Likely over capacity	1392	Likely above peak hour capacity	2 signals. No sidewalk along golf course, all ped crossings are bus-related. Motorists come across Marshall from Minneapolis and use this corridor to get to 94.	Segment likely above capacity, would also affect transit and parking	Further Study Needed, Likely Above Capacity		
21C				I-94 to University Ave	0.4	59'+	3 lane feasible with no loss of curbside uses	2 bus stops and 1 bus route.	17200	Slightly above 3 lane capacity.	770	Slightly above 3 lane capacity.	Traffic entering on northern end is 4-lane with left turn lanes. 3 signals.	Further study needed to determine 3 lane operations.	Further Study Needed		
22A	Hamline Avenue	1.1 miles	St. Paul	Grand Avenue to Ayd Mill Rd	0.3	43' (Except on bridges: 51')	3 lane feasible but would result in loss of curbside uses on one side of street	Off-peak parking allowed on 2 blocks near Summit.	8,500	Under capacity	629	Under capacity	Entering traffic on both sides is 2-lane. Potential parking issues (off-peak parking permitted). 3 closely spaced signals	Further study needed to determine 3 lane operations. Would also impact transit and parking.	Further Study Needed	Further Study Needed for Subsegments on Either End of Corridor	Restripe+Sig Mods
22B				Ayd Mill Rd to I-94	0.5	43' (Except on bridges: 51')	3 lane feasible but would result in loss of curbside uses on one side of street	4 bus stops and 1 bus route.	19,600	Likely over capacity	1092	Likely above peak hour capacity	3 closely spaced signals. Large bridge over Ayd Mill	Segment likely above capacity, would also affect transit	Further Study Needed, Likely Above Capacity		
22C				I-94 to University Ave	0.3	43' (Except on bridges: 51')	3 lane feasible but would result in loss of curbside uses on one side of street	4 bus stops and 1 bus route.	17,900	Slightly above 3 lane capacity.	704	Under capacity	Entering traffic on north side is 2-lane. North end would be expected to have operations issues, capacity analysis may be needed. 4 closely spaced signals.	Further study needed to determine 3 lane operations. Would also impact transit.	Further Study Needed		
23	Minnehaha Avenue	0.5 mile	St. Paul	Payne Avenue to East Seventh Street	0.5	40'	3 lane feasible but would result in loss of curbside uses on both sides of street	Off-peak parking allowed on about 2 blocks, unrestricted parking on about two blocks.	7,300	Under capacity	368	Under capacity	Entering traffic on both sides is 2-lane. 3 signals.	Consider 2-lane segment. 3-lane would have impacts to parking.	Further Study Needed	Further Study Needed	M&O+Sig Mods

AADT/Peak Hour Volume Screen Legend

Under capacity	Low impact/High probability will operate acceptably per published ranges with little need for detailed analysis prior to implementation.
Near/At/Above 3 lane capacity	Moderate impact/Moderate probability will operate acceptably per published ranges and should have detailed analysis prior to implementation.
Likely over capacity	High impact/Low probability will operate acceptably per published ranges and detailed analysis prior to implementation is strongly recommended.

Potential 3-Lane Scope Legend

Restripe
Mill & Overlay
Reconstruction

Appendix D:
Benefit Screening Results

Ramsey County 4 to 3 Conversion Study Benefit Analysis

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Number of Access Points	Access Density (# of Access Points Per Mile)	Access Density Score	Posted Speed	85th Percentile Speed (Daily)	85th Percentile Speed (% of Posted)	Speed Benefit Score	Crashes in 5 Years	Crashes/Mile	Crash Benefit Score	Crossing Ped Volume (Streetlight Score)	Crossing Ped Benefit Score	Bicyclist Volume (Streetlight Score)	Bicycle Benefit Score	Sub-Segment Benefit Score	Segment Benefit Score
	Ramsey County Segments																				
1A	County Road B2 (CSAH 24 and 78)	0.8 mile	Roseville	Long Lake Road to Cleveland Avenue	0.3	2	6.7	1	30	--	--	--	118	147.5	3	34.5	2	28.8	2	2.00	2.25
1B				Cleveland Avenue to Fairview Avenue	0.5	28	56.0	4	35	34	97%	1								2.40	
2A	County Road C (CSAH 23)	2.8 miles	Roseville Little Canada	Lexington Ave to Victoria St	0.4	3	7.5	1	40	37	93%	1	183	65.4	2	13	1	6.4	1	1.20	1.69
2B				Victoria St to Rice St	1.6	59	36.9	3												1.60	
2C				Rice St to RR Bridge	0.4	21	52.5	4	35	39	111%	3								2.20	
2D				RR Bridge to I-35E	0.4	17	42.5	3	30	35	117%	3								2.00	
3	County Road D (CSAH 19)	1.0 mile	St. Anthony (Hennepin Co) Roseville New Brighton	Silver Lake Road to Old Highway 8	1.0	40	40.0	3	35	39	111%	3	130	130.0	3	9.6	1	15.5	1	2.20	2.20
4A	County Road E (CSAH 15)	0.7 mile	Vadnais Heights Gem Lake	Labore Rd to International Dr	0.5	19	38.0	3	45	45	100%	1	131	187.1	4	7.8	1	10	1	2.00	1.94
4B				International Dr to TH 61	0.2	6	30.0	2												1.80	
5	County Road F/10th Street NW (CSAH 12/45)	0.4 mile	New Brighton	I-694 to Old Highway 8	0.4	16	40.0	3	30	48	160%	5	46	115.0	3	6.7	1	20.3	2	2.80	2.80
6	Dale Street (CSAH 53)	0.7 mile	St. Paul	Grand Avenue to Iglehart Avenue	0.7	32	45.7	4	30	32	107%	2	172	245.7	5	64.4	4	19.4	1	3.20	3.20
7A	Dale Street (CSAH 53)	2.7 miles	St. Paul Roseville	Como Ave to Larpenteur Ave	1.5	63	42.0	3	30	34	113%	3	308	114.1	3	12.4	1	7.6	1	2.20	2.19
7B				Larpenteur Ave to CR B	1.0	37	37.0	3	40	44	110%	2								2.00	
7C				CR B to TH 36	0.2	13	65.0	5	30	42	140%	5								3.00	
8A	Fairview Avenue (CSAH 48)	0.9 mile	Roseville	CR B2 to Oakcrest Ave	0.2	13	65.0	5	35	35	100%	1	160	177.8	4	39.7	2	30.3	2	2.80	2.89
8B				Oakcrest Ave to CR C	0.3	20	66.7	5												2.80	
8C				CR C to CR C2	0.4	22	55.0	4	40	--	--	--								3.00	
9A	Lexington Avenue (CSAH 51)	3.8	Shoreview Arden Hills	Hwy 96 to CR I	2.0	47	23.5	2	45	51	113%	2	180	47.4	1	0	1	11.5	1	1.40	1.68
9B				CR I to CR J	1.8	30	16.7	2	45	69	153%	5								2.00	

Legend	
1	Low Benefit
2	
3	Moderate Benefit
4	
5	High Benefit

Ramsey County 4 to 3 Conversion Study Benefit Analysis

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Number of Access Points	Access Density (# of Access Points Per Mile)	Access Density Score	Posted Speed	85th Percentile Speed (Daily)	85th Percentile Speed (% of Posted)	Speed Benefit Score	Crashes in 5 Years	Crashes/Mile	Crash Benefit Score	Crossing Ped Volume (Streetlight Score)	Crossing Ped Benefit Score	Bicyclist Volume (Streetlight Score)	Bicycle Benefit Score	Sub-Segment Benefit Score	Segment Benefit Score
10	Lydia Avenue (CSAH 19)	0.2 mile	Maplewood	White Bear Avenue to Ariel Street	0.2	7	35.0	3	30	33	110%	2	39	195.0	4	78.3	4	0	1	2.80	2.80
11A	Marshall Avenue (CSAH 35)	0.5 mile	St. Paul	Mississippi River Blvd to Otis Ave	0.1	3	30.0	2	30	33	110%	2	76	190.0	4	24.2	2	100	5	3.00	3.00
11B				Otis Ave to Montrose Pl	0.1	3	30.0	2												3.00	
11C				Montrose Pl to Cretin Ave	0.2	4	20.0	2												3.00	
12	Maryland Avenue (CSAH 31)	0.3 mile	St. Paul	Rice Street to Abell Street	0.3	14	46.7	4	30	34	113%	3	190	633.3	5	82.3	5	20.9	2	3.80	3.80
13A	Maryland Avenue (CSAH 31)	0.9 mile	St. Paul	Clarence St to Phalen Blvd	0.2	6	30.0	2	30	34	113%	3	253	281.1	5	43.7	3	43	3	3.20	3.68
13B				Phalen Blvd to White Bear Ave	0.8	57	71.3	5												3.80	
14	McKnight Road (CSAH 68)	0.3 mile	North St. Paul	13th Avenue to Mohawk Road	0.3	20	66.7	5	30	33	110%	2	8	26.7	1	21.1	2	1.8	1	2.20	2.20
15	North St. Paul Road (CSAH 29)	0.2 mile	Maplewood	White Bear Avenue to Ripley Avenue																	
16A	Old Highway 8 (CSAH 77)	2.0 miles	New Brighton	CR D to 5th St	0.4	19	47.5	4	40	41	103%	2	153	76.5	2	9.3	1	17.9	1	2.00	1.88
16B				5th St to RR Crossing	0.6	17	28.3	2												1.60	
16C				RR Crossing to 8th Ave	0.7	41	58.6	4												2.00	
16D				8th Ave to 5th Ave	0.3	5	16.7	2												2.00	
17A	Silver Lake Road (CSAH 44)	1.7 miles	New Brighton Mounds View	Mississippi Street to CR H	0.5	22	44.0	3	40	37	93%	1	141	82.9	2	7.3	1	12.1	1	1.60	1.68
17B				CR H to CR H2	0.5	21	42.0	3												1.60	
17C				CR H2 to Mounds View Boulevard	0.7	32	45.7	4												1.80	

Legend	
1	Low Benefit
2	
3	Moderate Benefit
4	
5	High Benefit

Ramsey County 4 to 3 Conversion Study Benefit Analysis

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Number of Access Points	Access Density (# of Access Points Per Mile)	Access Density Score	Posted Speed	85th Percentile Speed (Daily)	85th Percentile Speed (% of Posted)	Speed Benefit Score	Crashes in 5 Years	Crashes/Mile	Crash Benefit Score	Crossing Ped Volume (Streetlight Score)	Crossing Ped Benefit Score	Bicyclist Volume (Streetlight Score)	Bicycle Benefit Score	Sub-Segment Benefit Score	Segment Benefit Score
18A	White Bear Avenue (CSAH 65)	4.0 miles	St. Paul Maplewood	Suburban Ave to Maryland Ave	2.0	108	54.0	4	30	37	123%	4	917	229.3	5	21.4	2	78.5	4	3.80	3.75
18B				Maryland Ave to Idaho Ave	0.9	55	61.1	5	30	35	117%	3								3.80	
18C				Idaho Ave to Frost Ave	0.6	38	63.3	5	35	40	114%	3								3.80	
18D				Frost Ave to CR B	0.5	18	36.0	3	35	42	120%	3								3.40	
19	White Bear Avenue (CSAH 65)	0.9 mile	Maplewood	Gervais Avenue to Beam Avenue	0.9	31	34.4	3	40	41	103%	2	269	298.9	5	17.8	1	30.3	2	2.60	2.60
20A	White Bear Avenue (CSAH 65)	2.8 miles	White Bear Lake	Buerkle Rd to CR E	0.8	40	50.0	4	40	42	105%	2	303	108.2	3	7.7	1	18.5	1	2.20	2.41
20B				CR E to CR F	1.0	79	79.0	5												2.40	
20C				CR F to TH 61	1.0	32	32.0	3	30	40	133%	5								2.60	

Legend	
1	Low Benefit
2	
3	Moderate Benefit
4	
5	High Benefit

Ramsey County 4 to 3 Conversion Study Benefit Analysis

	Road Segment	Study Segment Approximate Length (mi)	Municipality (s) <i>(Italicized if on border)</i>	Extents	Sub-Segment Approximate Length (mi)	Number of Access Points	Access Density (# of Access Points Per Mile)	Access Density Score	Posted Speed	85th Percentile Speed (Daily)	85th Percentile Speed (% of Posted)	Speed Benefit Score	Crashes in 5 Years	Crashes/Mile	Crash Benefit Score	Crossing Ped Volume (Streetlight Score)	Crossing Ped Benefit Score	Bicyclist Volume (Streetlight Score)	Bicycle Benefit Score	Sub-Segment Benefit Score	Segment Benefit Score
	St. Paul Segments																				
21A	Cretin Avenue	1.5 miles	St. Paul	Grand Avenue to Marshall Avenue	0.6	30	50.0	4	30	37	123%	4	271	180.7	4	34.8	2	42.1	3	3.40	3.23
21B				Marshall Avenue to I-94	0.5	19	38.0	3												3.20	
21C				I-94 to University Ave	0.4	9	22.5	2												3.00	
22A	Hamline Avenue	1.1 miles	St. Paul	Grand Avenue to Ayd Mill Rd	0.3	11	36.7	3	30	31	103%	2	337	306.4	5	100	5	74.5	4	3.80	3.75
22B				Ayd Mill Rd to I-94	0.5	16	32.0	3												3.80	
22C				I-94 to University Ave	0.3	6	20.0	2												3.60	
23	Minnehaha Avenue	0.5 mile	St. Paul	Payne Avenue to East Seventh Street	0.5	19	38.0	3	30	29	97%	1	95	190.0	4	66.9	4	33.3	2	2.80	2.80

Legend	
1	Low Benefit
2	
3	Moderate Benefit
4	
5	High Benefit

Appendix E:
Segment 2 Detailed Analysis Results



Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 2A

Segment 2A Characteristics

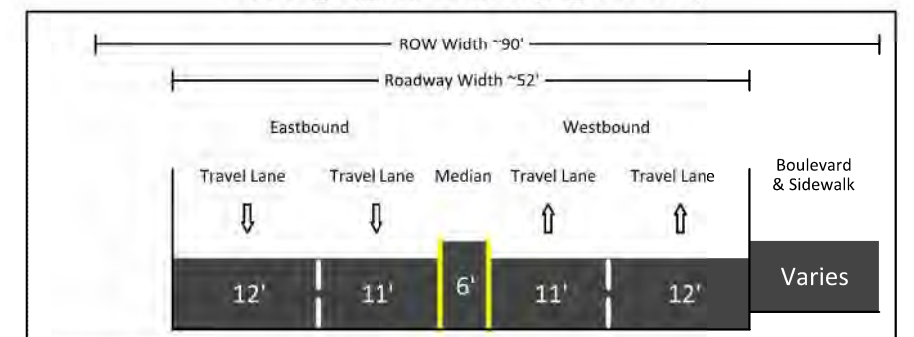
Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	10,300
Segment Maximum Peak Hour Volume ⁴ :	820

Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

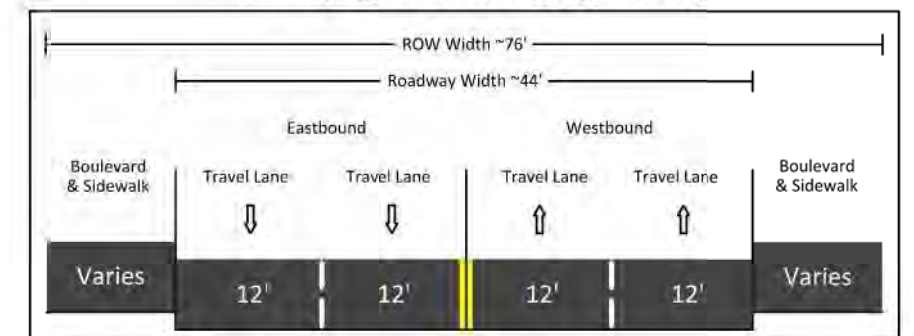
Segment 2B

Existing Typical Section (Segment 2A)



* Not to scale - for illustration purpose only; widths vary by locations

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

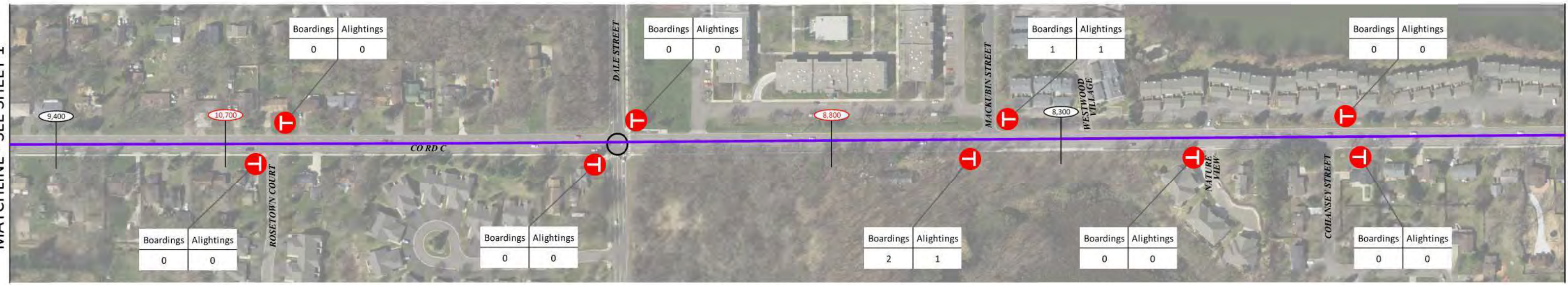
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

MATCHLINE - SEE SHEET 1

MATCHLINE - SEE SHEET 3



Segment 2B

Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

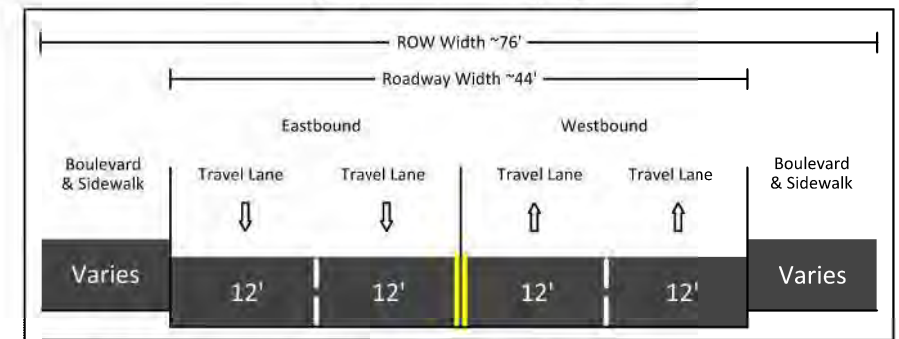
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops

Ramsey County 4 to 3 Lane Conversion Study

ALLIANT

Segment 2
County Road C (Lexington Avenue to I-35E)
Sheet 2 of 4



Segment 2B

Segment 2C

Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

Corridor 2 Transit Routes

Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

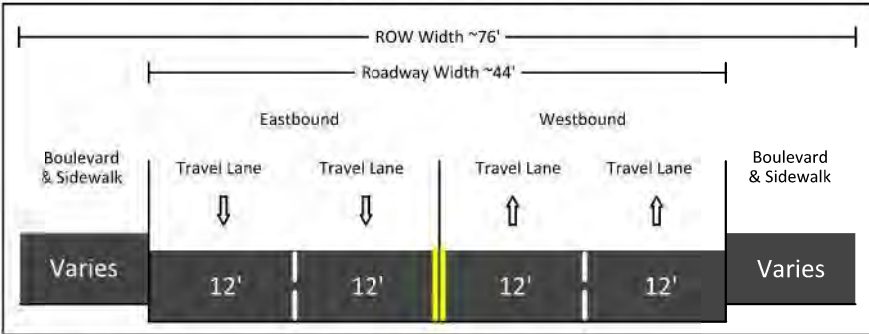
Segment 2B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	8,700 - 10,700
Segment Maximum Peak Hour Volume ⁴ :	691 - 833

Segment 2C Characteristics

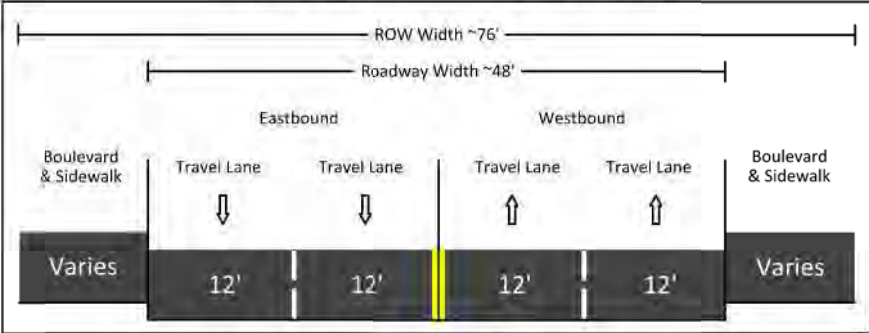
Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	492

Existing Typical Section (Segment 2B)



* Not to scale - for illustration purpose only; widths vary by locations

Existing Typical Section (Segment 2C)



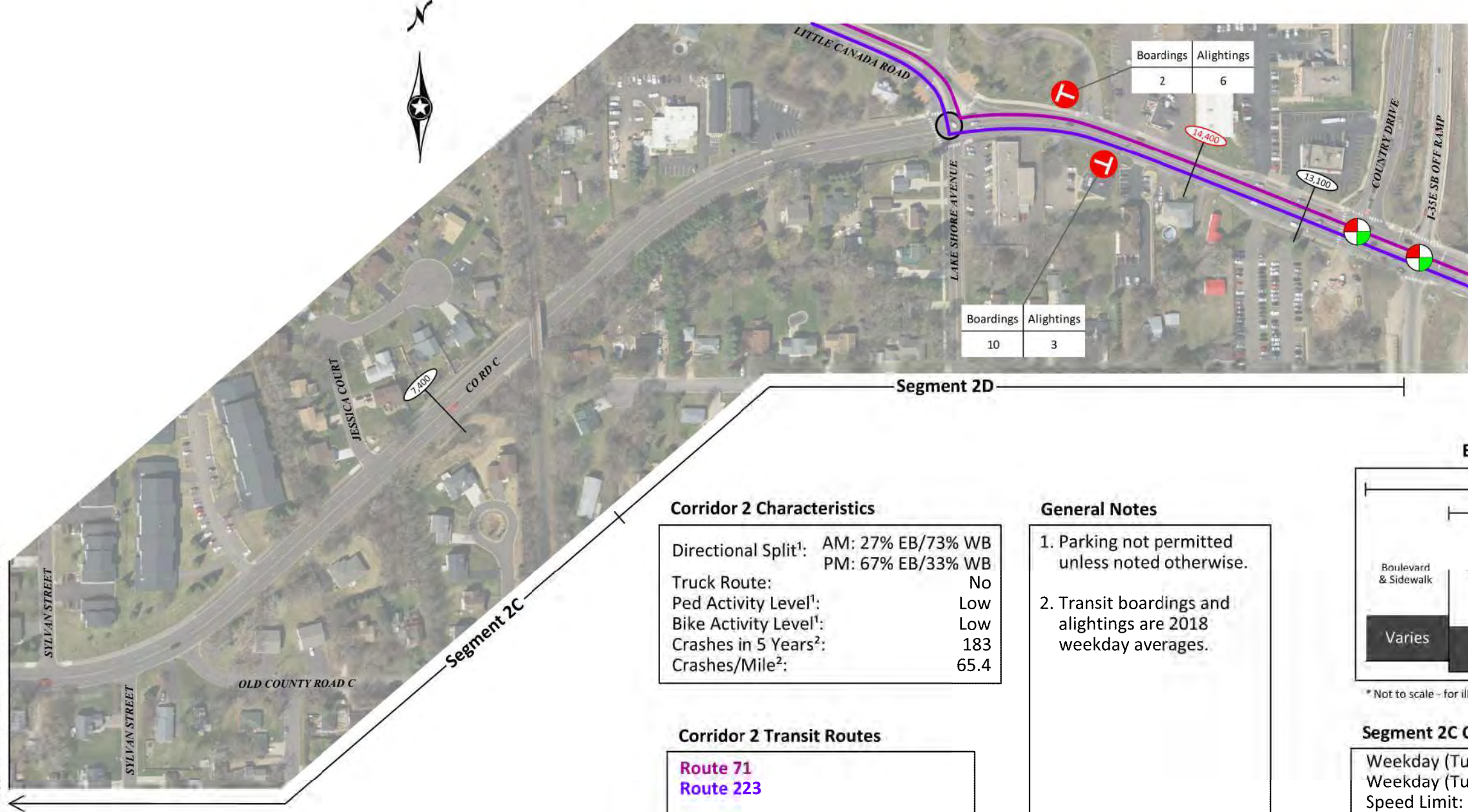
* Not to scale - for illustration purpose only; widths vary by locations

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

MATCHLINE - SEE SHEET 3



Corridor 2 Characteristics

Directional Split ¹ :	AM: 27% EB/73% WB
	PM: 67% EB/33% WB
Truck Route:	No
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	183
Crashes/Mile ² :	65.4

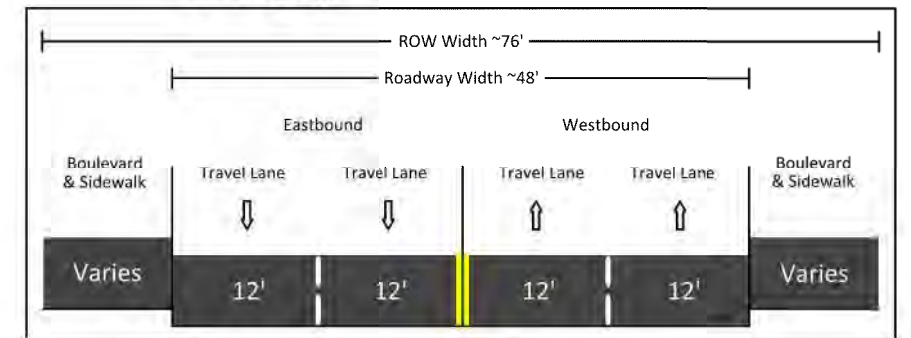
Corridor 2 Transit Routes

Route 71
Route 223

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Existing Typical Section (Segments 2C & 2D)



* Not to scale - for illustration purpose only; widths vary by locations

Segment 2C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	35 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	492

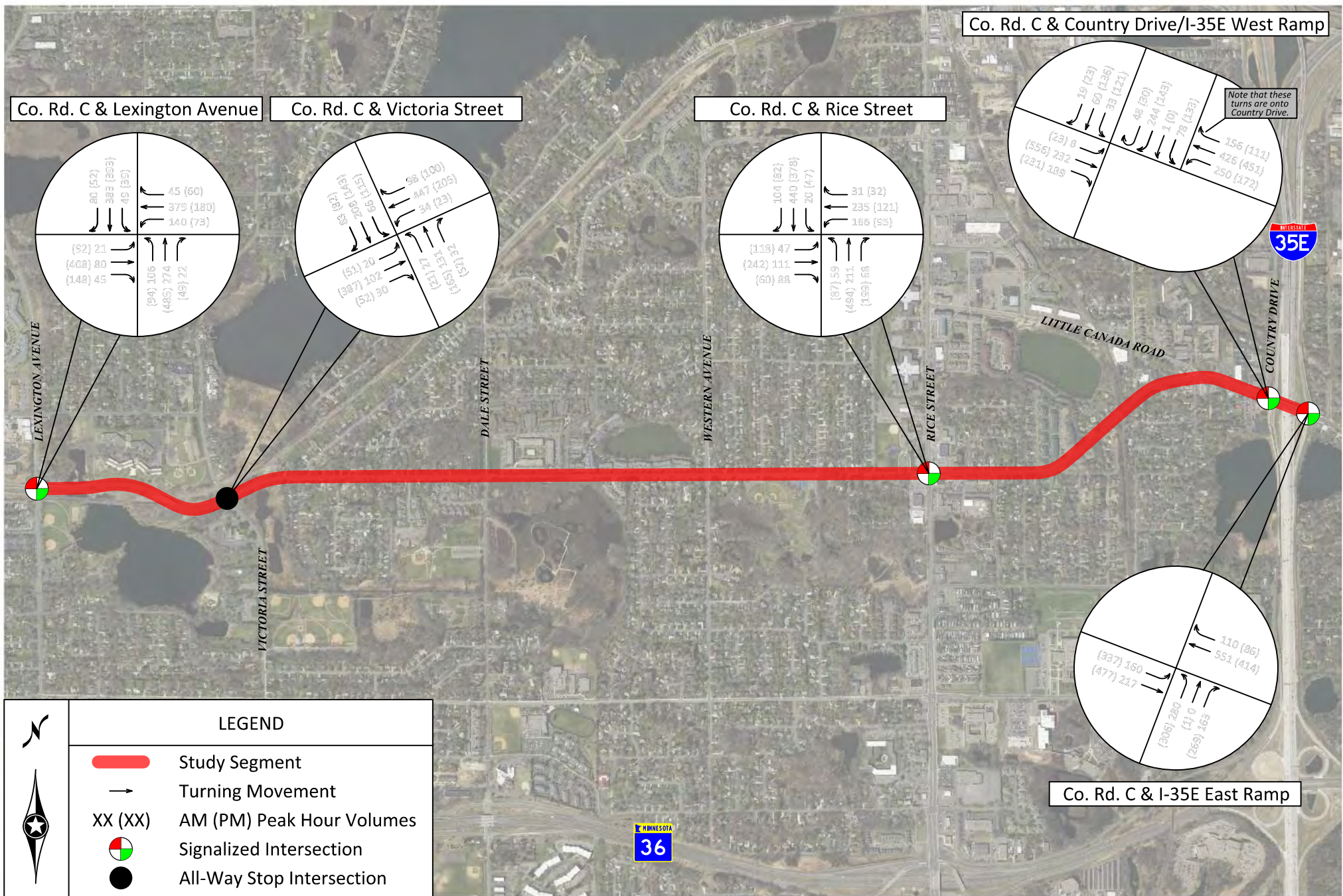
Segment 2D Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	25.5 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	35 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	14,400
Segment Maximum Peak Hour Volume ⁴ :	857

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Ramsey County 4 to 3 Lane Conversion Study



Segment 2
County Road C (Lexington Avenue to I-35E)

Existing Turning Movement Counts



Segment 2A - County Road C between Lexington Avenue and Victoria Street

Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	1. Two locations on this segment saw more than 5 crashes over the study period: Lexington Avenue and Victoria Street. 2. Lexington Avenue (signalized) had 14 crashes, 9 of which were rear end collisions; and had a CR=0.45 per MEV. 3. Victoria Street (4-way stop) had 9 crashes, 8 of which were angled collisons; and had a CR=0.41 per MEV.	1. The lane reduction is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 100% of crashes studied along this segment of County Road C. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 9% (CMF=0.91) on average.	Benefit Expected
Curbside Uses	1. Curbside uses can be accommodated within the existing roadway width with the 2-lane conversion. 2. There is no transit on this segment. 3. There are currently no bike lanes but are planned for the future.	1. On-street parking could be accommodated within the existing roadway width with the 2-lane conversion (on both sides). 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both.	Feasible (Minimal Impact)
Roadway Function / Mobility	1. The signalized intersections at County Road C/Lexington is expected to operate at LOS D or better. The all-way stop-controlled intersection at Victoria Street is expected to have an increase in delay if remaining stop-controlled. A roundabout alternative at this intersection was analyzed and is expected to operate at LOS A during the AM and PM Peaks. 2. Average queue lengths along County Road C are expected to moderately increase.	1. Roadway function is maintained with moderate traffic mobility impact from 2-lane conversion. 2. The slight travel time and side-street delay increase are expected to negatively impact roadway mobility or access.	Moderate Impact Expected
Average Daily Traffic (ADT)	The AADT along County Road C is 10,300.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 830.	Peak hour volumes are low and 2 lane roadway will be below capacity during peak hours.	Minimal impact expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is 27% EB/73% WB in morning hours and 67% EB/33% WB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 37 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
Access Points and Turning Traffic Patterns	There is 1 access point along County Road C Ave (0.4 mi).	Low access density supports a 2-lane roadway.	Benefit Expected
Roadway Width	The existing roadway width is 52 feet.	2-lane cross-section could occur within the existing roadway width.	Feasible

Segment 2B - County Road C between Victoria Street and Rice Street

Key Findings	Favorability	Conclusion
1. Two locations on this segment saw more than 5 crashes over the study period: Dale Street and Rice Street. 2. Dale Street (2-way stop) had 7 crashes, 5 of which were angled collisions; and had a CR=0.39 per MEV. 3. Rice Street (signalized) had 25 crashes, which included 1 with a pedestrian, 1 resulting in serious injury. There were 7 rear end and 11 angled collisions; and had a CR=0.76 per MEV. 4. The serious injury at/near the intersection of Rice St & County Rd C was due to vehicle attempting to turn left just after passing through the traffic signal.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 91% of crashes studied along this segment of County Road C. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 23% (CMF=0.77) in residential areas and 9% (CMF =0.91) in high crash areas (CR > 0.71).	Benefit Expected
1. On-street parking can be accommodated within the existing roadway width with the 3-lane conversion, but only on one side of the street. 2. Buses in one direction would stop in through lane with 3-lane conversion. 3. There are currently no bike lanes but are planned for the future.	1. Currently there is no on-street parking provided, but parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion if desired. 2. There are trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both. 3. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible (Minimal Impact)
1. The signalized intersection at County Road C/Rice is expected to operate at LOS C or better. 2. Average queue lengths along County Road C are expected to minimally increase.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
The AADT along County Road C ranges from 8,700 to 10,700.	The AADT is below 17,000.	Feasible
The maximum directional peak hour traffic volume ranges from 691-833.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
The traffic volume directional distribution is 27% EB/73% WB in morning hours and 67% EB/33% WB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 37 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
1. There are 59 access points along County Road C Ave (1.6 mi).	Extremely high benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 44 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street.	Feasible

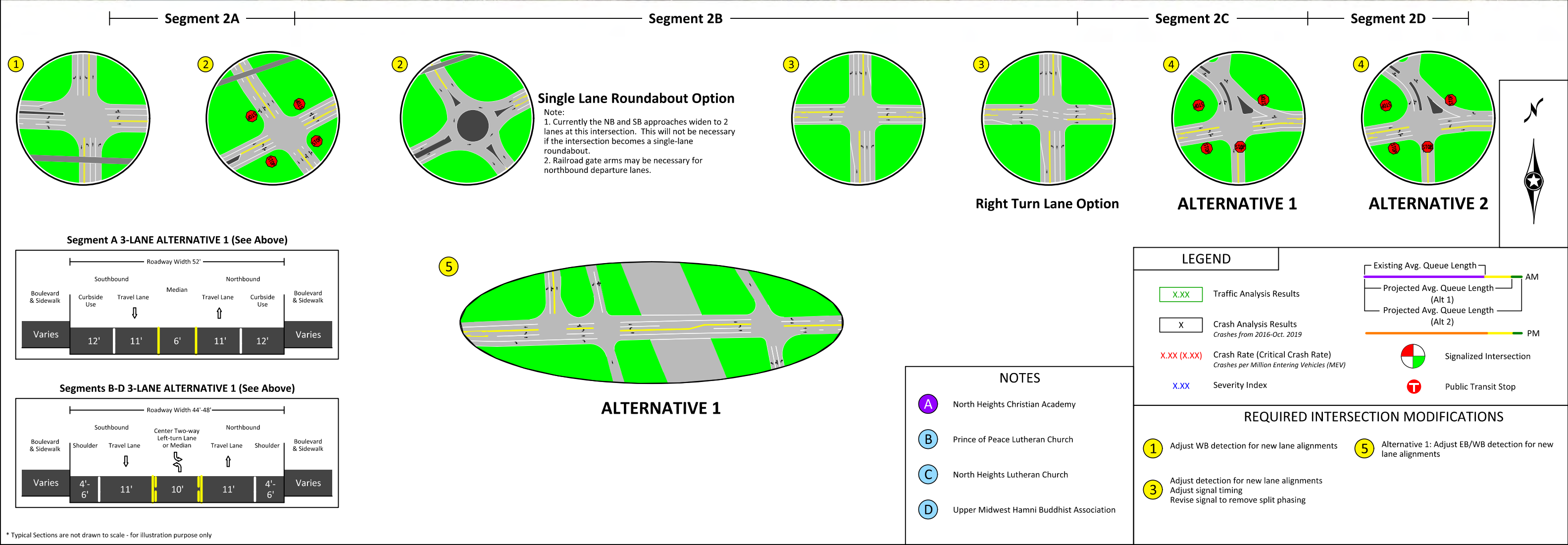
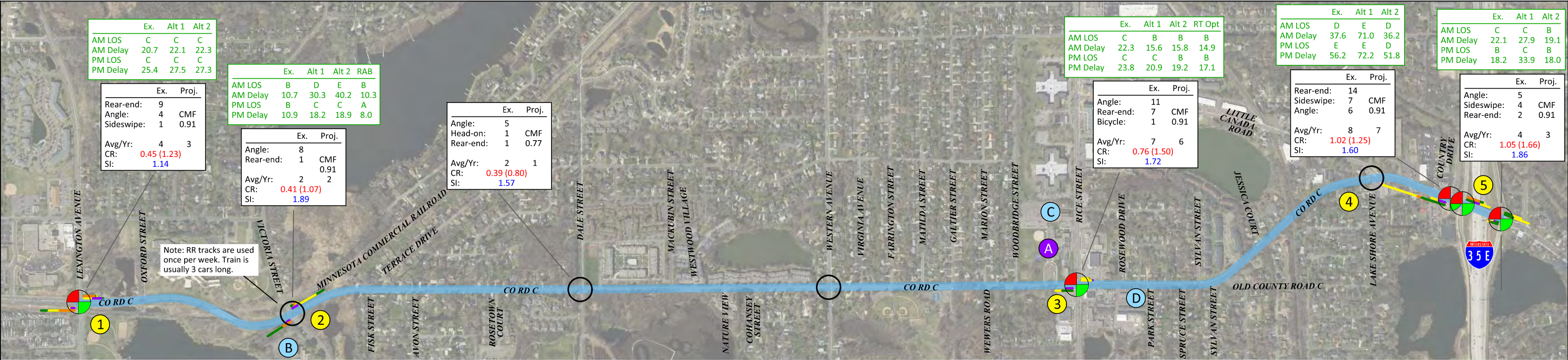
Segment 2C - County Road C between Rice Street and Railroad Bridge

Key Findings	Favorability	Conclusion
1. There were no locations found on this segment with 5 or more crashes within the study period.		
1. Curbside uses can be accommodated within the existing roadway width with the 3-lane conversion, but only on one side of the street. 2. There is no transit on this segment. 3. There are currently no bike lanes but are planned for the future.	1. On-street parking could be accommodated within the existing roadway width with the 3-lane conversion (on one side only). 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both.	Feasible (Minimal Impact)
There are no signalized intersections on this segment.	Roadway function has minimal mobility impact from 3-lane conversion.	Minimal impact expected
The AADT along County Road C is 7300.	The AADT is below 17,000.	Feasible
The maximum directional peak hour traffic volume is 492.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
The traffic volume directional distribution is 27% EB/73% WB in morning hours and 67% EB/33% WB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 35mph. 2. The 85th percentile speed is approximately 39 mph.	1. An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
1. There are 21 access points along County Road C (0.4 mi).	1. Extremely high benefit of Two-way Center Left Turn Lane with existing access density. 2. Side-streets with high left turn volumes may become more efficient from the 3-lane conversion due to addition of the exclusive left-turn lane.	Benefit Expected
The existing roadway width is 48 feet.	3-lane cross-section could occur within the existing roadway width.	Feasible



Segment 2D: County Road C between Railroad Bridge and I-35E

Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	<div>1. Two locations on this segment saw more than 5 crashes over the study period: Country Drive/I-35E SB Off Ramp and I-35E NB Off Ramp.</div> <div>2. Country Drive/1-35 E SB Off Ramp (signalized) had 30 crashes, 14 of which were rear end collisions; and had a CR=1.02 per MEV.</div> <div>3. I-35E NB Ramp (signalized) had 14 crashes, 5 of which were angled collisions; and had a CR=1.05 per MEV.</div>	<div>1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 91% of crashes studied along this segment of County Road C.</div> <div>2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added.</div> <div>3. The conversion is expected to reduce crash severity due to reduced vehicle speeds.</div> <div>4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 9% (CMF=0.91) in high crash areas (CR >0.71).</div>	Benefit Expected
Curbside Uses	<div>1. On-street parking can be accommodated within the existing roadway width with the 3-lane conversion, but only on one side of the street.</div> <div>2. Buses in one direction would stop in through lane with 3-lane conversion.</div> <div>3. There are currently no bike lanes but are planned for the future.</div>	<div>1. Currently there is no on-street parking provided, but parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion if desired.</div> <div>2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both.</div> <div>3. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.</div>	Feasible
Roadway Function / Mobility	<div>1. The signalized intersection at County Road C and Country Dr/I-35E Ramp is expected to operate at LOS E during the AM and PM peaks with a 3-lane conversion. The County Road C/I-35E WB ramp signalized intersection is expected to operate at LOS D or better.</div> <div>2. Average queue lengths along County Road C are expected to moderately increase with a 3-lane conversion.</div>	<div>1. Roadway function has significant traffic mobility impact from 3-lane conversion.</div> <div>2. The travel time and side-street delay increase are expected to negatively impact roadway mobility or access.</div>	Significant Impact Expected
Average Daily Traffic (ADT)	The AADT along County Road C is around 14,400.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 857.	Peak hour volumes are moderate and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is 27% EB/73% WB in morning hours and 67% EB/33% WB in evening hours.	Low to moderate peak direction single lane capacity concern.	Moderate Impact Expected
Motor Vehicle Speeds	<div>1. The posted speed limit is 30mph.</div> <div>2. The 85th percentile speed is approximately 35 mph.</div>	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
Access Points and Turning Traffic Patterns	1. There are 17 access points along County Road C (0.4 mi).	Moderate benefit of existing Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 48 feet from railroad bridge to Little Canada Rd and 48-70 feet from Little Canada Rd to I-35E.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street from railroad bridge to Little Canada Rd.	Feasible



* Typical Sections are not drawn to scale - for illustration purpose only

Ramsey County 4 to 3 Lane Conversion Study



Segment 2 County Road C (Lexington Avenue to I-35E)

Detailed Analysis and Concept Design

ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 2 - County Road C (Lexington Avenue to I-35E NB Ramp)
Alliant Project No. 119-0166

Date Prepared:
April 8, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		Alternative 2		Roundabout at Victoria Street	
					Quantity	Total	Quantity	Total	Quantity	Total
Construction Costs										
1.	REMOVE CONCRETE MEDIAN	LIN FT	\$ 56.00		250	\$ 14,000.00	250	\$ 14,000.00		
2.	MICRO MILL AND OVERLAY PAVEMENT	SQ FT	\$ 0.64		307035	\$ 196,161.25	307035	\$ 196,161.25		
3.	2" MILL AND OVERLAY PAVEMENT	SQ FT	\$ 1.20		414693	\$ 497,631.60	414693	\$ 497,631.60		
4.	REVISE SIGNAL SYSTEM A (LEXINGTON AVE)	SYSTEM	\$ 2,500.00		1	\$ 2,500.00	1	\$ 2,500.00		
5.	REVISE SIGNAL SYSTEM B (RICE ST)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00	1	\$ 200,000.00		
6.	REVISE SIGNAL SYSTEM C (COUNTRY DR/I-35E SB RAMP)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00				
7.	REVISE SIGNAL SYSTEM D (I-35E NB RAMP)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00				
8.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,529.50		46	\$ 116,357.00	44	\$ 111,298.00		
9.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		4800	\$ 19,200.00	4800	\$ 19,200.00		
10.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		5195	\$ 10,390.00	5195	\$ 10,390.00		
11.	6" BROKEN LINE MULTI-COMPONENT (WR)	LIN FT	\$ 0.60				1162	\$ 697.20		
12.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		140	\$ 700.00	140	\$ 700.00		
13.	SINGLE LANE ROUNDABOUT	EA	\$ 1,000,000.00						1	\$ 1,000,000.00
Construction Subtotal						\$ 1,066,940		\$ 1,052,578		\$ 1,000,000
Mobilization 4%						\$ 42,678		\$ 42,103		\$ 40,000
Traffic Control 6%						\$ 64,016		\$ 63,155		\$ 60,000
Contingency 10%						\$ 106,694		\$ 105,258		\$ 100,000
Total Opinion of Construction Cost Plus Contingency						\$ 1,280,328		\$ 1,263,094		\$ 1,200,000
Professional Services										
14.	Design Services (Engineering, Survey, Architecture)	10%				\$ 128,033		\$ 126,309		\$ 120,000
15.	Overhead (Legal, Fiscal, Etc.)	7%				\$ 89,623		\$ 88,417		\$ 84,000
Subtotal Professional Services						\$ 217,656		\$ 214,726		\$ 204,000
Total Opinion of Project Cost						\$ 1,497,984		\$ 1,477,820		\$ 1,404,000

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate. Single lane roundabout cost is for a single lane roundabout with an inscribed diameter of 130' and does not include ROW acquisition, utility relocation, or Railroad crossing gate arms for the north leg.

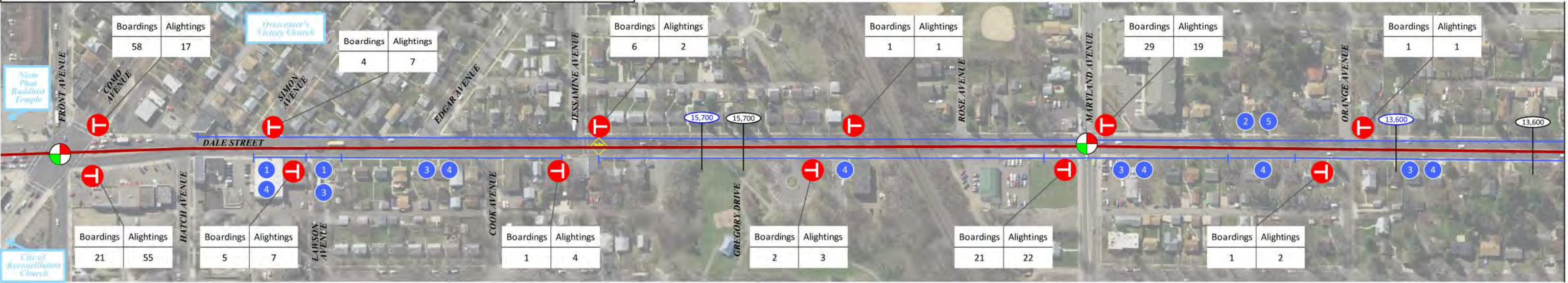
Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: XXX

Checked By: SP

Appendix F:
Segment 7 Detailed Analysis Results

- Parking Notes:**
- 1 2 Hour Limit During Day (8am-4pm Every Day)
 - 2 No Parking During AM Peak (7am-8am Mon-Fri)
 - 3 No Parking During PM Peak (4pm-6pm Mon-Fri)
 - 4 No Parking During Early Morning (2am-7am Mon-Wed-Fri)
 - 5 No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



Corridor 7 Characteristics

Directional Split ¹	AM: 41% NB/59% SB PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

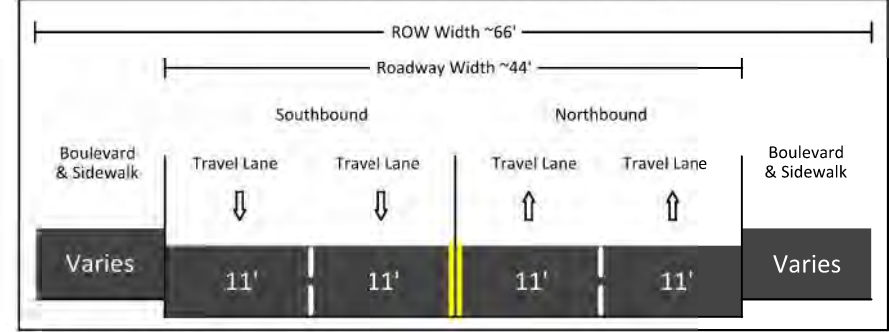
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 7A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	13,600 - 15,700
Segment Maximum Peak Hour Volume ³ :	1,138

Existing Typical Section (Segment 7A)



¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2016 & 2018)

LEGEND

X,XXX

MnDOT AADT

X,XXX

St. Paul Compass AADT

X,XXX

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)

Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops

Ramsey County 4 to 3 Lane Conversion Study

ALLIANT

Segment 7
Dale Street (Como Avenue to TH 36)

Sheet 1 of 4

MATCHLINE - SEE SHEET 1

MATCHLINE - SEE SHEET 3

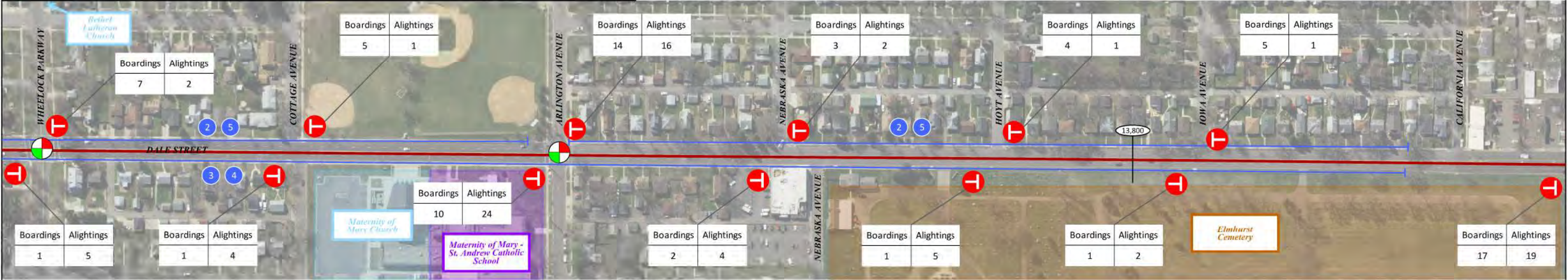
- Parking Notes:**
- 12 Hour Limit During Day (8am-4pm Every Day)

No Parking During AM Peak (7am-8am Mon-Fri)

No Parking During PM Peak (4pm-6pm Mon-Fri)

No Parking During Early Morning (2am-7am Mon-Wed-Fri)

No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



Segment 7A

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

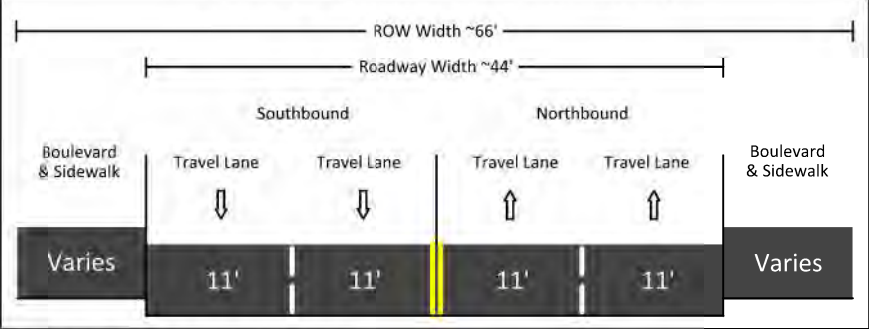
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 7A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	26 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	34 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	13,600 - 15,700
Segment Maximum Peak Hour Volume ³ :	1,138

Existing Typical Section (Segment 7A)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2016 & 2018)

LEGEND

- (X,XXX) MnDOT AADT

(X,XXX) St. Paul Compass AADT

(X,XXX) Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)
- Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)
- Parking allowed (see parking notes for details)

Public Transit Stops

MATCHLINE - SEE SHEET 2

- Parking Notes:**
- 1

2 Hour Limit During Day (8am-4pm Every Day)

2

No Parking During AM Peak (7am-8am Mon-Fri)

3

No Parking During PM Peak (4pm-6pm Mon-Fri)

4

No Parking During Early Morning (2am-7am Mon-Wed-Fri)

5

No Parking During Early Morning (2am-7am Tues-Thurs-Sat)



MATCHLINE - SEE SHEET 4

Segment 7B

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

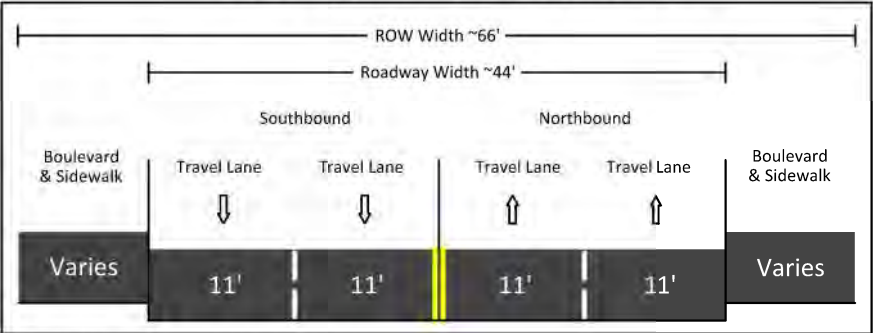
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 7B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	34 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	44 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	13,500
Segment Maximum Peak Hour Volume ³ :	938

Existing Typical Section (Segment 7B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)

LEGEND

- x,xxx

MnDOT AADT

x,xxx

St. Paul Compass AADT

x,xxx

Spack Consulting ADT
(If there is an asterisk (*) the data was collected during a MnPASS detour)
- Signalized Intersection

All-way stop Intersection

Marked Crosswalk
(At unsignalized intersection)

Parking allowed (see parking notes for details)

Public Transit Stops
- Ramsey County 4 to 3 Lane Conversion Study
- ALLIANT
- Segment 7
Dale Street (Como Avenue to TH 36)
- Sheet 3 of 4

MATCHLINE - SEE SHEET 3



← Segment 7B | Segment 7C →

Corridor 7 Characteristics

Directional Split ¹ :	AM: 41% NB/59% SB
	PM: 66% NB/34% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	308
Crashes/Mile ² :	114.1

Corridor 7 Transit Routes

Route 65

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

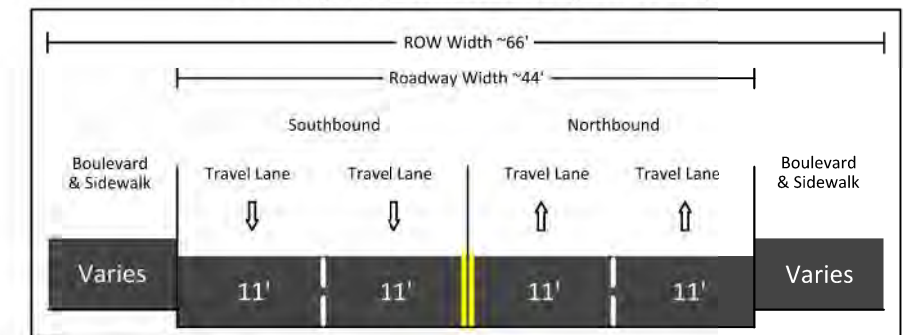
Segment 7B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	34 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	44 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	13,500
Segment Maximum Peak Hour Volume ³ :	938

Segment 7C Characteristics

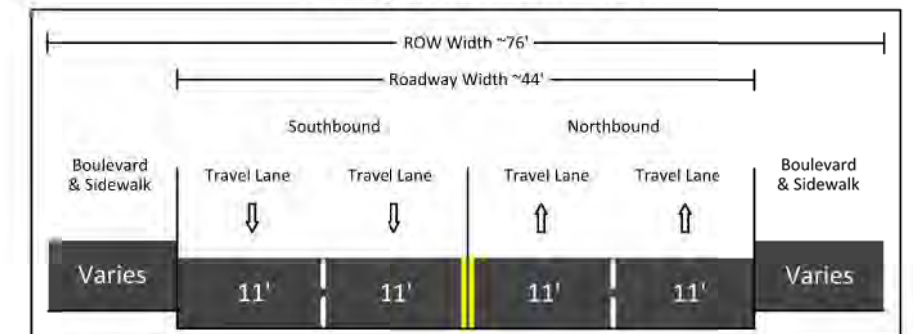
Weekday (Tu-Th) Average Speed (Daily) ¹ :	30 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	14,700
Segment Maximum Peak Hour Volume ⁴ :	783

Existing Typical Section (Segments 7B)



* Not to scale - for illustration purpose only

Existing Typical Section (7C)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2018)
⁴Calculated based on Spack Consulting (2018) data and StreetLight directionality

LEGEND

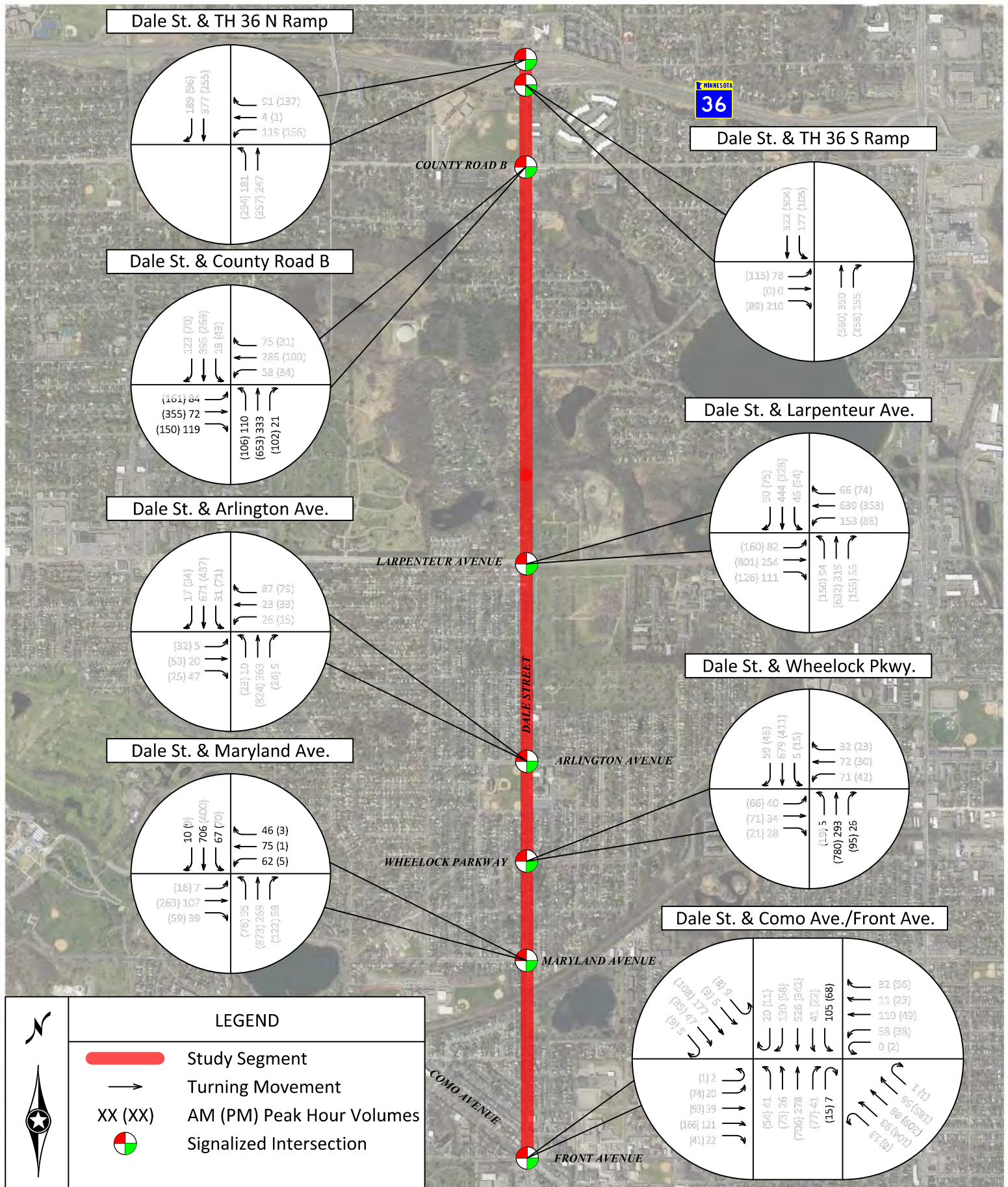
(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		

Ramsey County 4 to 3 Lane Conversion Study



Segment 7
Dale Street (Como Avenue to TH 36)

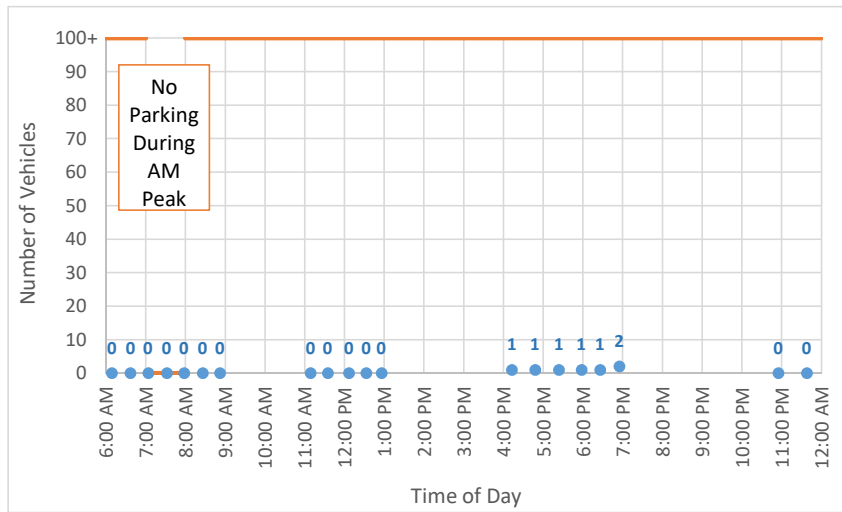
Sheet 4 of 4



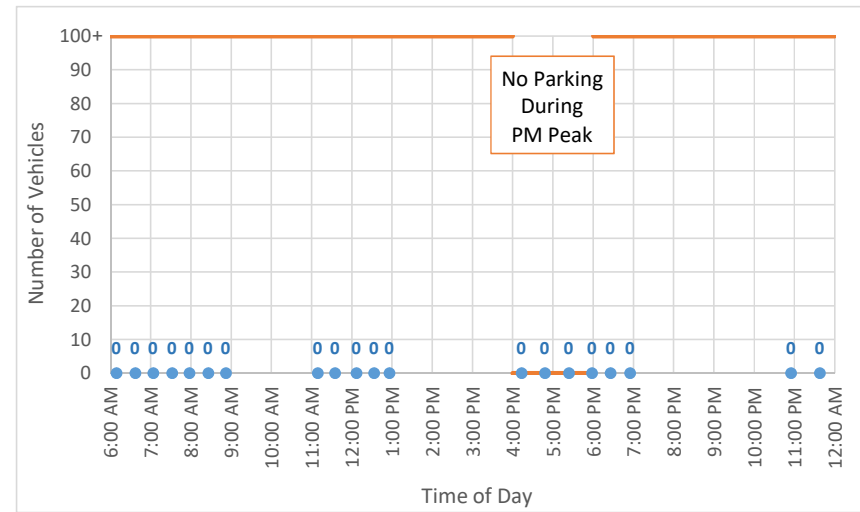
Segment 7 Parking Study Summary



West Side of Dale Street



East Side of Dale Street



● Observed Demand
— Estimated Supply

Note: Evening observations were made on 1/29/2020. Morning and mid-day observations were made on 1/30/2020. Late night observations were made on 2/27/2020.

Segment 7
Evaluation Summary



Segment 7A: Dale Street between Como Avenue and Larpenteur Avenue

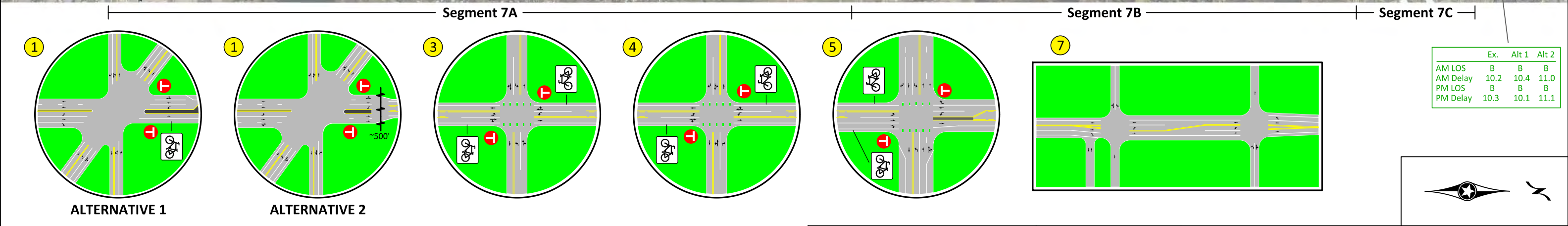
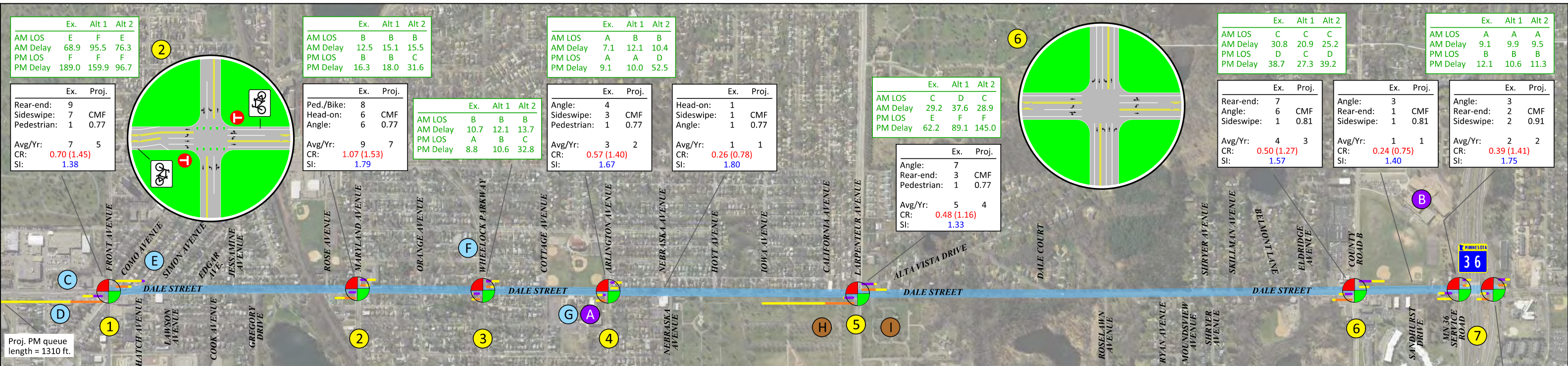
Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	1. Five locations on this segment saw more than 5 crashes over the study period: Front Avenue/Como Avenue, Maryland Avenue, Arlington Avenue, Nebraska Avenue, and Larpenteur Avenue. 2.Front Ave/Como Ave (signalized) had 26 crashes which included 1 with a pedestrian and 9 rear end collisions. CR= 0.70 per MEV. 3. Maryland Ave (signalized) had 33 crashes which included 8 with pedestrians or bicycles with 2 of those resulting in serious injuries. CR=1.07 per MEV. 4. Arlington Ave (signalized) had 12 crashes which included 1 with a pedestrian. CR=0.57 per MEV. 5. Nebraska Ave (thru/stop offset T-intersection) had 5 crashes and a CR=0.26 per MEV. 6. Larpenteur Ave (signalized) had 18 crashes which included 1 with a pedestrian that resulted in a serious injury. CR=0.48 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 66% of crashes studied along this segment of Dale Street. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 23% (CMF=0.77) in residential areas and 9% (0.91) in high crash areas (CR >0.71).	Benefit Expected
Curbside Uses	1. On-street parking is currently minimally used (2 vehicles parked on corridor observed at maximum). 2. There is one transit route with 20-minute headways during peak hours. 3. There are currently no bike lanes but bike lanes are planned for the future.	1. On-street parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion. 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both. 3. The 3-lane conversion will maintain curb-side bus stops. 4. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible (Minimal Impact)
Roadway Function / Mobility	1. The signalized intersections at Dale/Maryland, Dale/Wheelock, and Dale/Arlington are expected to operate at LOS B or better. 2. The intersection at Dale/Como is currently at LOS F, and is expected to remain at LOS F with an increase in overall intersection delay. 3. Average queue lengths along Dale Street are expected to significantly increase at Dale/Como/Front, and minimally increase north of Dale/Como/Front.	1. Roadway function has significant traffic mobility impact from 3-lane conversion at the Dale/Como/Front intersection, and minimal impact north of Dale/Como/Front. 2. The slight travel time and side-street delay increase north of Dale/Como/Front are not expected to negatively impact roadway mobility or access.	Significant Impact Expected at southern terminus
Average Daily Traffic (ADT)	1. The AADT along Dale Street is between 13,600-15,700. 2. Dale Street is a designated truck route.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	1 The maximum directional peak hour traffic volume is 1138. 2. Dale Street is a designated truck route.	Peak hour volumes are high and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is approximately 41% NB/59% SB in the morning and 66% NB/34% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 34mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
Access Points and Turning Traffic Patterns	There are 63 access points along Dale St (1.5 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 44 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on at least one side of the street.	Feasible

Segment 7B: Dale Street between Larpenteur Avenue and County Road B

Key Findings	Favorability	Conclusion
1. One location on this segment saw more than 5 crashes over the study period: County Road B. 2. County Road B (signalized) had 14 crashes, 7 of which were rear end collisions; and had a CR=0.50 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist of all crashes studied along this segment of Dale Street. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found a crash reduction of 19% (CMF=0.81) in areas with high driveway density (>45 driveways/mile).	Benefit Expected
1. Currently there is no on-street parking provided. 2. There is one transit route with 20-minute headways during peak hours. The 3-lane conversion will maintain curb-side bus stops. 3. There are currently no bike lanes but a bike facility is planned for the future.	1. On-street parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion. 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both. 3. The 3-lane conversion will maintain curb-side bus stops. 4. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible
1. A reduction in overall intersection delay is expected at Dale/County Road B with removal of split phasing. 2. The Dale/Larpenteur intersection is expected to operate at an overall intersection LOS C/D (AM/PM). 3. Average queue lengths along Dale street are expected to moderately increase.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal Impact Expected
The AADT along Dale St is 13,500.	The AADT is below 17,000.	Feasible
1. The maximum directional peak hour traffic volume is 938. 2. Dale Street is a designated truck route.	Peak hour volumes are high and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected
The traffic volume directional distribution is approximately 41% NB/59% SB in the morning and 66% NB/34% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 44mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
There are 37 access points along Dale St (1.0 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 44 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on at least one side of the street.	Feasible

Segment 7C: Dale Street between County Road B and TH 36

Key Findings	Favorability	Conclusion
1. Two locations on this segment saw more than 5 crashes over the study period: Sandhurst Drive and TH 36 Service Road/TH 36 EB Off Ramp. 2. Sandhurst Dr (T-intersection) had 5 crashes and a CR=0.24 per MEV. 3. TH 36 Service Rd/TH 36 Off Ramp (signalized) had 8 crashes and a CR=0.39 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 92% of all crashes studied along this segment of Dale Street. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found a crash reduction of 19% (CMF=0.81) in areas with high driveway densities (>45 driveways/mile) and 9% (CMF=0.91) on average for 4 to 3 conversions.	Benefit Expected
1. Currently there is no on-street parking provided, no transit routes, and no bike lanes. 2. There are no plans to accommodate curbside uses in the future.	1. Curbside uses could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion.	Feasible
1. The signalized intersections at the TH 36 ramps are expected to operate at LOS B or better, with minimal increase in overall intersection delay. 2. A minimal increase (50 feet or less) in queue length along Dale Street is expected.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal Impact Expected
The AADT along Dale St is 14,700.	The AADT is below 17,000.	Feasible
1. The maximum directional peak hour traffic volume is 783. 2. Dale Street is a designated truck route.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal Impact Expected
The traffic volume directional distribution is approximately 41% NB/59% SB in the morning and 66% NB/34% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 42mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
There are 13 access points along Dale St (0.2 mi).	1. High benefit of Two-way Center Left Turn Lane with existing access density. 2. Side-streets with high left turn volumes may become more efficient from the 3-lane conversion due to addition of the exclusive left-turn lane.	Benefit Expected
The existing roadway width is 44 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on at least one side of the street.	Feasible



Advantages: Lane reduction all the way to Como/Front, provides bike lanes along Dale St

Disadvantages: Significant increase in traffic delay and queuing during peak hours

Advantages: Provides same level of delay and queuing as existing conditions at Como/Front

Disadvantages: Designated bike lane does not connect with existing Como Ave bike facility, significant increase in traffic delay at other signals along Dale St

3-LANE ALTERNATIVE 1

Roadway Width ~44'						
Boulevard & Sidewalk	Bike Lane	Travel Lane	Center Two-way Left-turn Lane or Median	Travel Lane	Bike Lane	Boulevard & Sidewalk
Varies	6'	11'	10'	11'	6'	Varies

3-LANE ALTERNATIVE 2

Roadway Width ~44'						
Boulevard & Sidewalk	Curbside Use	Travel Lane	Center Two-way Left-turn Lane or Median	Travel Lane	Boulevard & Sidewalk	
Varies	10'	11'	10'	11'	2'	Varies

Alternative could provide curbside uses on either side of the street.

NOTES

- A Maternity of Mary-St. Andrew Catholic School
- B Parkview Center School
- C Niem Phat Buddhist Temple
- D City of Reconciliation Church
- E Overcomer's Victory Church
- F Bethel Lutheran Church
- G Maternity of Mary Church (On-street parking along Dale St)
- H Elmhurst Cemetery
- I Temple of Aaron Cemetery

LEGEND

- X.XX Traffic Analysis Results
- X Crash Analysis Results (Crashes from 2016-Oct. 2019)
- X.XX (X.XX) Crash Rate (Critical Crash Rate) (Crashes per Million Entering Vehicles (MEV))
- X.XX Severity Index
- Existing Avg. Queue Length
- Projected Avg. Queue Length (Alt 1)
- AM
- PM
- Signalized Intersection
- Public Transit Stop

REQUIRED INTERSECTION MODIFICATIONS

- 1 Alternative 1: Adjust detection for new lane alignments
- 2 Alternative 1: Adjust signal timing
- 3 Adjust detection for new lane alignments
- 4 Adjust detection for new lane alignments
- 5 Adjust detection for new lane alignments
- 6 Adjust signal timing to give more time to NB/SB
- 7 Remove 1 NB/SB thru head, adjust other NB/SB thru head
- 8 Adjust detection for new lane alignments
- 9 Adjust signal timing
- 10 Revise signal to remove split phasing
- 11 Adjust detection for new lane alignments at both TH 36 EB Ramp and TH 36 WB Ramp

ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 7 - Dale Street (Como Avenue to TH 36)
Alliant Project No. 119-0166

Date Prepared:
April 8, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		Alternative 2			
					Quantity	Total	Quantity	Total		
Construction Costs										
1.	MICRO MILL AND OVERLAY PAVEMENT	SQ FT	\$ 0.64		653770	\$ 417,686.13	653770	\$ 417,686.13		
2.	REVISE SIGNAL SYSTEM A (COMO AVE/FRONT AVE)	SYSTEM	\$ 300,000.00		1	\$ 300,000.00				
3.	REVISE SIGNAL SYSTEM B (MARYLAND AVE)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00	1	\$ 200,000.00		
4.	REVISE SIGNAL SYSTEM C (WHEELLOCK PKWY)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00		
5.	REVISE SIGNAL SYSTEM D (ARLINGTON AVE)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00	1	\$ 200,000.00		
6.	REVISE SIGNAL SYSTEM E (LARPENTEUR AVE)	SYSTEM	\$ 17,000.00		1	\$ 17,000.00	1	\$ 17,000.00		
7.	REVISE SIGNAL SYSTEM F (COUNTY RD B)	SYSTEM	\$ 65,000.00		1	\$ 65,000.00	1	\$ 65,000.00		
8.	REVISE SIGNAL SYSTEM G (TH36 EB OFF RAMP)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00		
9.	REVISE SIGNAL SYSTEM H (TH 36 WB OFF RAMP)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00		
10.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,529.50		47	\$ 118,886.50	44	\$ 111,298.00		
11.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		875	\$ 3,500.00	1625	\$ 6,500.00		
12.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		15500	\$ 31,000.00	16800	\$ 33,600.00		
13.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		519	\$ 2,595.00	534	\$ 2,670.00		
14.	PAVEMENT MARKING SPECIAL	SQ FT	\$ 5.00		672	\$ 3,360.00	672	\$ 3,360.00		
Construction Subtotal						\$ 1,374,028		\$ 1,072,114		
Mobilization 4%						\$ 54,961		\$ 42,885		
Traffic Control 6%						\$ 82,442		\$ 64,327		
Contingency 10%						\$ 137,403		\$ 107,211		
Total Opinion of Construction Cost Plus Contingency						\$ 1,648,833		\$ 1,286,537		
Professional Services										
15.	Design Services (Engineering, Survey, Architecture)		10%			\$ 164,883		\$ 128,654		
16.	Overhead (Legal, Fiscal, Etc.)		7%			\$ 115,418		\$ 90,058		
Subtotal Professional Services						\$ 280,302		\$ 218,711		
Total Opinion of Project Cost						\$ 1,929,135		\$ 1,505,248		

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix G:
Segment 16 Detailed Analysis Results



Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

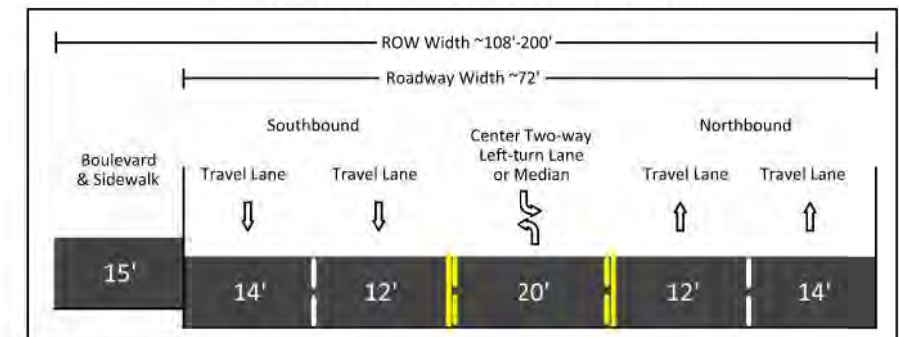
Segment 16A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	10,700
Segment Maximum Peak Hour Volume ⁴ :	799

Segment 16B Characteristics

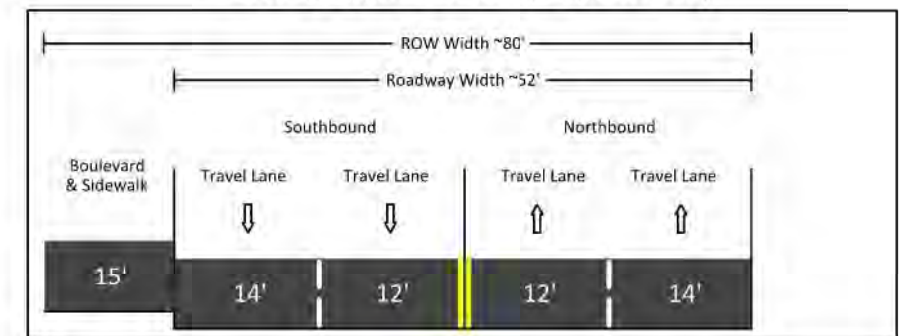
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ⁵ :	15,700
Segment Maximum Peak Hour Volume ⁶ :	1,176

Existing Typical Section (Segment 16A)



* Not to scale - for illustration purpose only

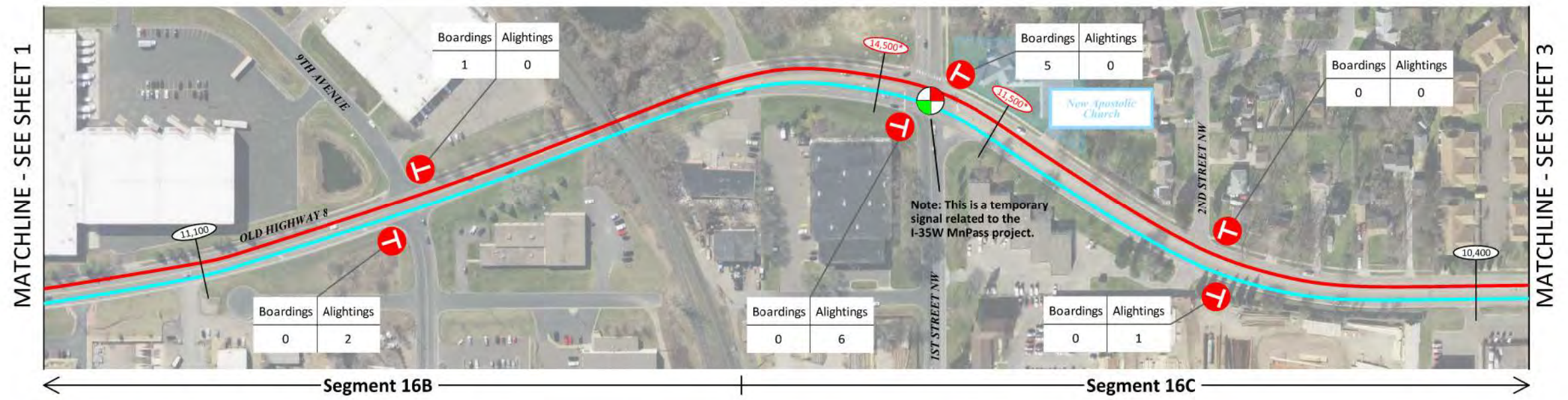
Existing Typical Section (Segment 16B)



* Not to scale - for illustration purpose only

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	



Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB
	PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

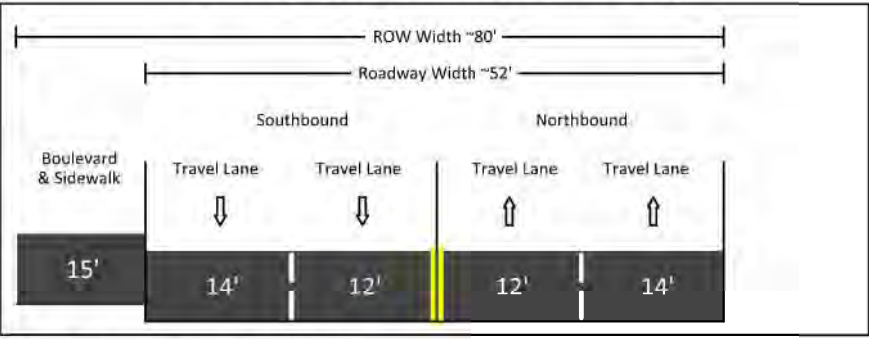
Segment 16B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	15,700
Segment Maximum Peak Hour Volume ⁴ :	1,176

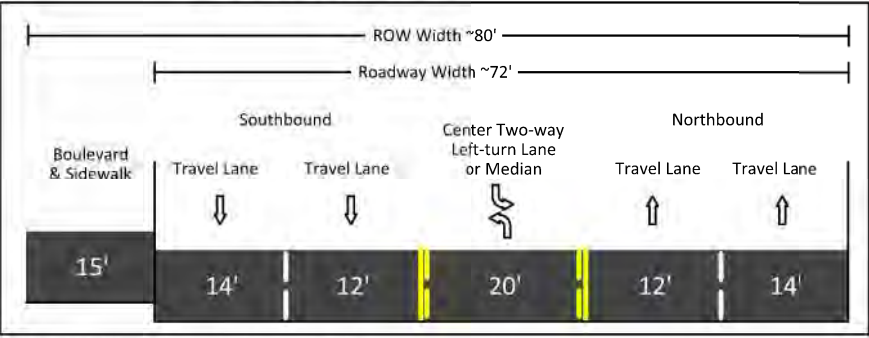
Segment 16C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ⁵ :	11,500 - 14,500
Segment Maximum Peak Hour Volume ⁶ :	924

Existing Typical Section (Segment 16B)



Existing Typical Section (Segment 16C)



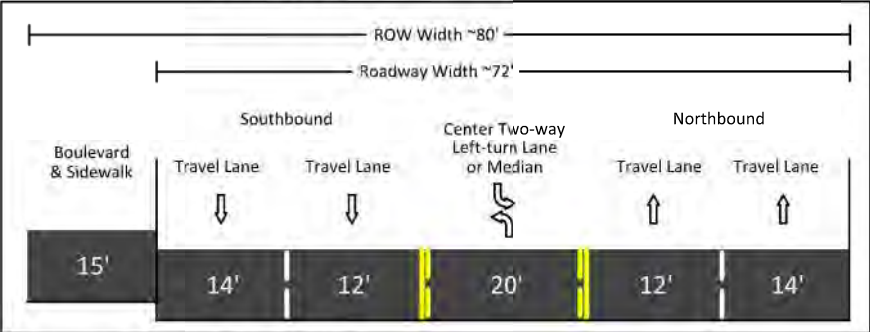
LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2014)
⁴Calculated based on MnDOT (2014) data, 10% PM Peak assumption, and StreetLight directionality
⁵Source: MnDOT (2016)
⁶Calculated based on MnDOT (2016) data, 10% PM Peak assumption, and StreetLight directionality

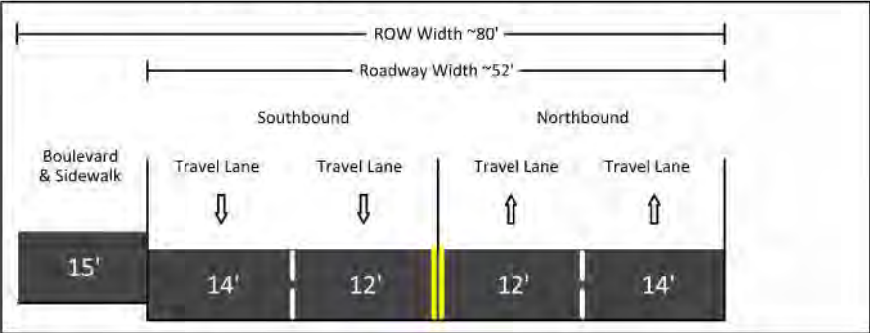


Existing Typical Section (Segment 16C)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 16D)



* Not to scale - for illustration purpose only

Corridor 16 Characteristics

Directional Split ¹ :	AM: 27% NB/73% SB PM: 75% NB/25% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Low
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	153
Crashes/Mile ² :	76.5

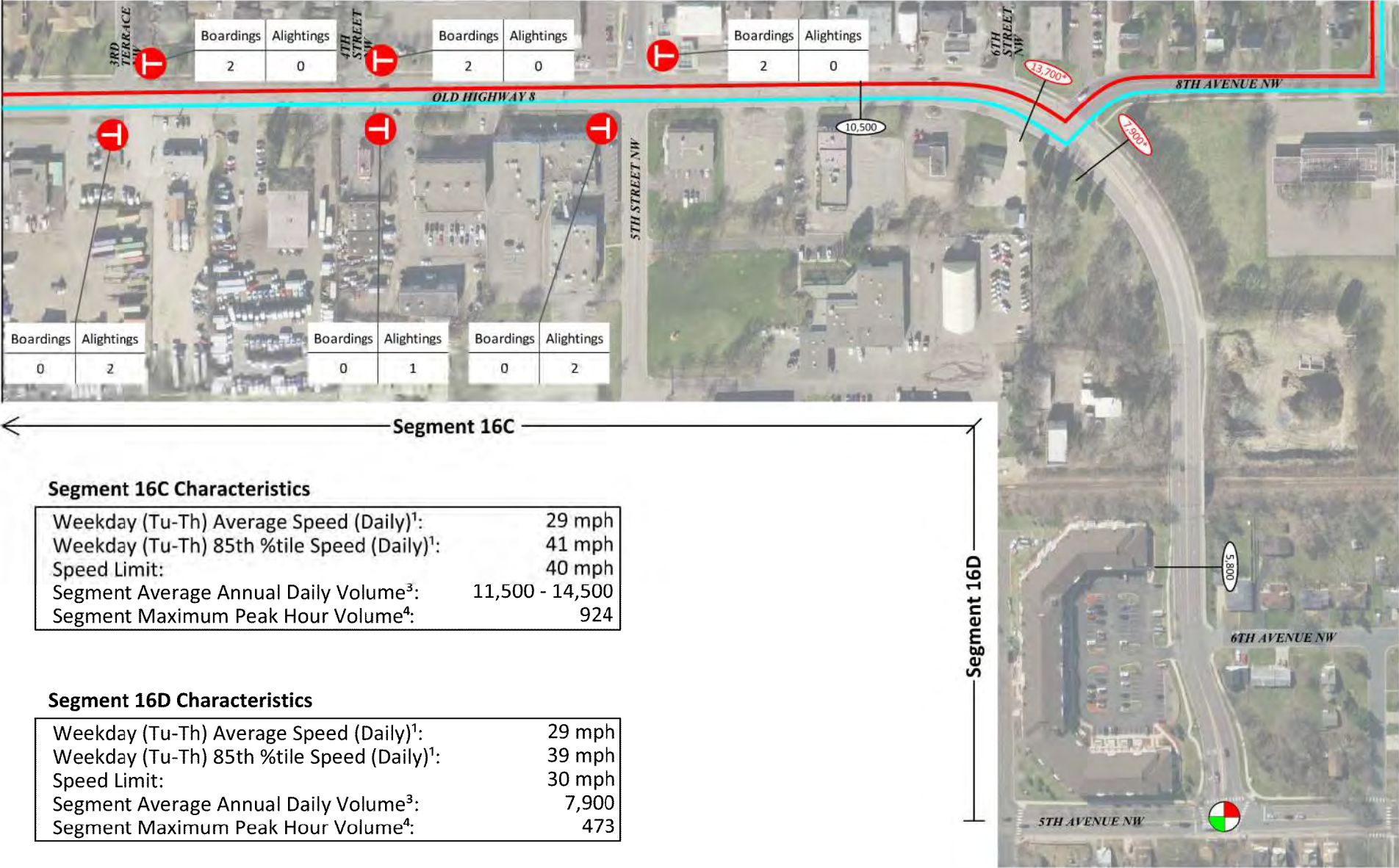
Corridor 16 Transit Routes

Route 4
Route 141

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

MATCHLINE - SEE SHEET 2



Segment 16C Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	11,500 - 14,500
Segment Maximum Peak Hour Volume ⁴ :	924

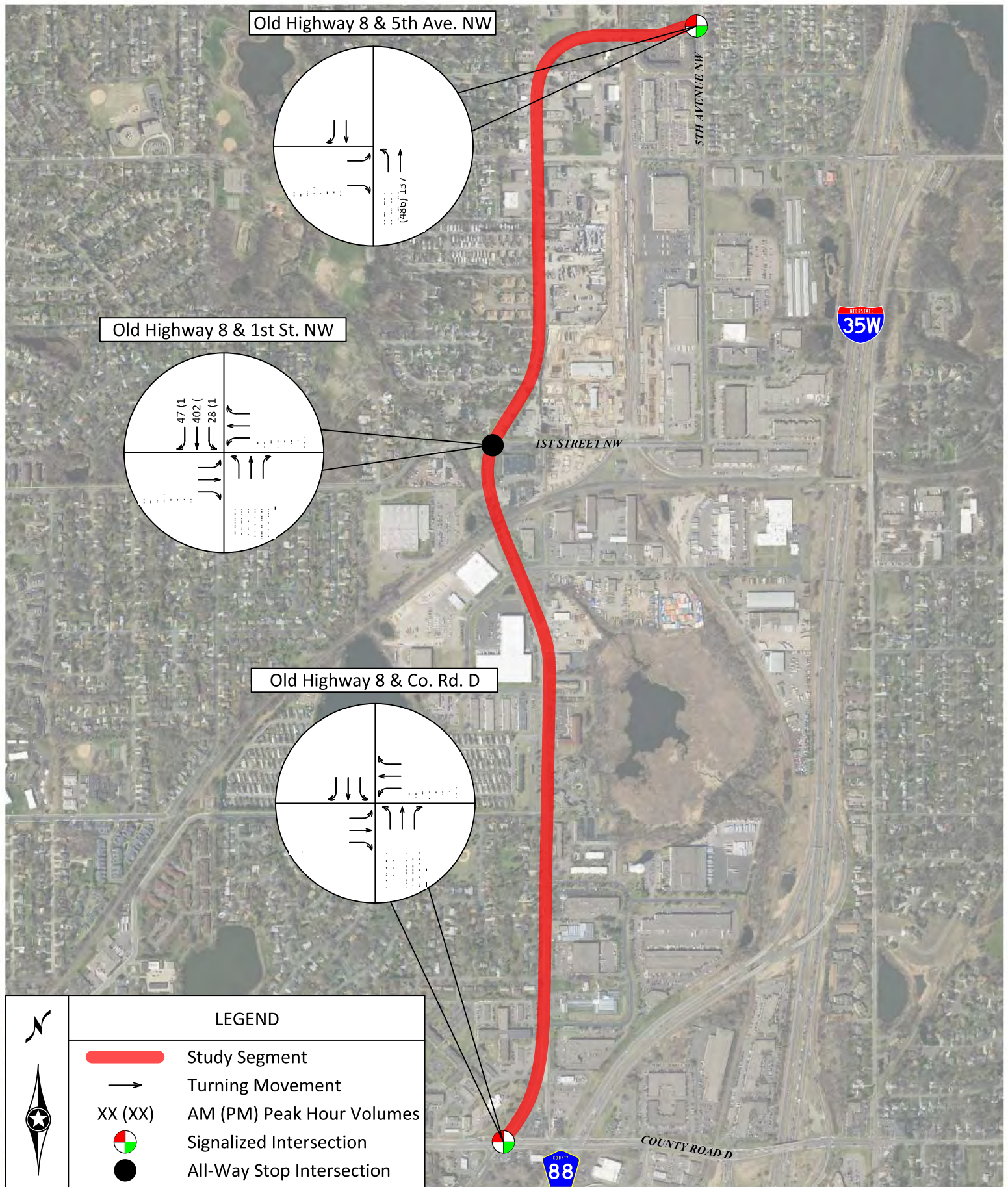
Segment 16D Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	39 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,900
Segment Maximum Peak Hour Volume ⁴ :	473

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: MnDOT (2016)
⁴Calculated based on MnDOT (2016) data, 10% PM Peak assumption, and StreetLight directionality



Ramsey County 4 to 3 Lane Conversion Study



ALLIANT

Segment 16
Old Highway 8 (County Road D to 5th Avenue NW)

Existing Turning Movement Counts

Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	1. Three locations on this segment saw more than 5 crashes over the study period: County Road D, Long Lake Road, and Campus Drive. 2. County Rd D (signalized) had 15 crashes, 7 of which were rear-end collisions and another 6 were angle crashes; CR=0.40 per MEV. 3. Long Lake Rd (Thru/stop) had 11 crashes which included 4 sideswipe and 4 angle collisions; CR = 0.65 per MEV. 4. Campus Dr (Thru/stop) had 6 crashes all of which were either property damage only or unknown; CR = 0.36 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 88% of crashes studied along this segment of Old Highway 8. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 19% (CMF=0.81) in high driveway density areas.	Benefit Expected
Curbside Uses	1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion. 2. There is no transit, parking, or bike lanes on this segment and they are not planned for the future.	Curbside uses could be accommodated within the existing roadway with the 3-lane conversion.	Feasible (Minimal Impact)
Roadway Function / Mobility	1. The signalized intersection at Old Highway 8/County Road D is expected to operate at LOS C or better. 2. Average queue lengths along Old Highway 8 are expected to slightly increase.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
Average Daily Traffic (ADT)	The AADT along Old Highway 8 is 10,700.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 799.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is 27% NB/73% SB in morning hours and 75% NB/25% SB in evening hours.	Although peak hour volumes are unbalanced, there is no concern about directional distribution with low peak hour volumes.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 41 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
Access Points and Turning Traffic Patterns	There are 19 access points along Old Highway 8 (0.4 mi).	High benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 50-70 feet.	3-lane cross-section could occur within the existing roadway width.	Feasible

Key Findings	Favorability	Conclusion
1. Three locations on this segment saw more than 5 crashes over the study period: Foss Road, 3rd Street SW, and 9th Avenue/1st Street SW. 2. Foss Rd (Offset Thru/stop) had 9 crashes, 6 of which were rear-end collisions; CR = 0.50 per MEV. 3. 3rd St SW (Thru/stop T-intersection) had 6 crashes, 3 were rear-end and another 2 were angle collisions, 1 of which resulted in a fatality. CR = 0.37 per MEV. 4. 9th Ave/1st St SW (Thru/stop) had 6 crashes, 1 of which was with a bicyclist. CR = 0.33 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 86% of crashes studied along this segment of Old Highway 8. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 23% (CMF=0.77) in residential areas, 19% (CMF=0.81) in high driveway density areas, and 9% (CMF=0.91) in general.	Benefit Expected
1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion. 2. The 3-lane conversion will maintain curb-side bus stops. There are 2 transit routes along the corridor. 3. There is currently no parking or bike lanes and they are not planned for the future.	Curbside uses could be accommodated within the existing roadway with the 3-lane conversion.	Feasible (Minimal Impact)
There are no signalized intersections on this segment.	1. Roadway function has minimal traffic mobility impact from 3-lane conversion. 2. The travel time and side-street delay increase are expected to negatively impact roadway mobility or access.	Minimal impact expected
The AADT along Old Highway 8 is 11,100.	The AADT is below 17,000.	Feasible
The maximum directional peak hour traffic volume is 892.	Peak hour volumes are moderate and 3 lane roadway will have low to moderate capacity constraints during peak hours.	Moderate Impact Expected
The traffic volume directional distribution is 27% NB/73% SB in morning hours and 75% NB/25% SB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 41 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
There are 17 access points along Old Highway 8 (0.6 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 50 feet.	3-lane cross-section could occur within the existing roadway width.	Feasible

Key Findings	Favorability	Conclusion
1. Two locations on this segment saw more than 5 crashes over the study period: 1st Street NW and 5th Avenue NW. 2. 1st St NW (signalized) had 12 crashes, including 4 that were angle collisions, and 3 rear-end. There was 1 serious injury that resulted from a crash with a tree. CR = 0.54 per MEV. 3. 5th Ave NW (signalized) had 5 crashes, including 1 angle and 1 rear end collision. There was also 1 crash with a pedestrian. CR = 0.33 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 76% of crashes studied along this segment of Old Highway 8. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 19% (CMF=0.81) in high driveway density areas.	Benefit Expected
1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion. 2. The 3-lane conversion will maintain curb-side bus stops. There are 2 transit routes along the corridor. 3. There is currently no parking or bike lanes and they are not planned for the future.	Curbside uses could be accommodated within the existing roadway with the 3-lane conversion.	Feasible (Minimal Impact)
1. The intersection at Old Highway 8/1st Street is an all-way stop-control intersection that would be expected to operate at LOS E during the PM Peak with moderate queueing. 2. If a permanent traffic signal is installed, the intersection would be expected to operate at LOS B or better during the PM Peak, with minimal increase in average queue lengths along Old Highway 8.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Moderate Impact Expected
The AADT along Old Highway 8 is 10,500.	The AADT is below 17,000.	Feasible
The maximum directional peak hour traffic volume is 784.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
The traffic volume directional distribution is 27% NB/73% SB in morning hours and 75% NB/25% SB in evening hours.	Although peak hour volumes are unbalanced, there is no concern about directional distribution with low peak hour volumes.	Feasible
1. The posted speed limit is 40mph. 2. The 85th percentile speed is approximately 41 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
There are 41 access points along Old Highway 8 (0.7 mi).	High benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 60 feet.	3-lane cross-section could occur within the existing roadway width.	Feasible



Segment 16D: Old Highway 8 between 8th Avenue and 5th Avenue

Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	No locations with 5+ crashes for detailed analysis		
Curbside Uses	1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion. 2. There is no transit, parking, or bike lanes on this segment and they are not planned for the future.	Curbside uses could be accommodated within the existing roadway with the 3-lane conversion.	Feasible
Roadway Function / Mobility	1. The signalized intersection at Old Highway 8/County Road D is expected to operate at LOS B or better. 2. Average queue lengths along Old Hgihway 8 are expected to minimally increase.	1. Roadway function is maintained with moderate traffic mobility impact from 3-lane conversion. 2. The travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
Average Daily Traffic (ADT)	The AADT along Old Highway 8 is 10,500.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 433.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is 27% NB/73% SB in morning hours and 75% NB/25% SB in evening hours.	Although peak hour volumes are unbalanced, there is no concern about directional distribution with low peak hour volumes.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 39mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
Access Points and Turning Traffic Patterns	There are 5 access points along Old Highway 8 (0.3 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 47 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street.	Feasible



ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 16 - Old Highway 8 (County Road D to 5th Avenue NW)
Alliant Project No. 119-0166

Date Prepared:
April 7, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		Alternative 2			
					Quantity	Total	Quantity	Total		
Construction Costs										
1.	MICRO MILL AND OVERLAY PAVEMENT	SQ FT	\$ 0.64		413955	\$ 264,471.25	413955	\$ 264,471.25		
2.	2" MILL AND OVERLAY PAVEMENT	SQ FT	\$ 1.20		247914	\$ 297,496.80	247914	\$ 297,496.80		
3.	REVISE SIGNAL SYSTEM A (COUNTY ROAD D)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00	1	\$ 200,000.00		
4.	REVISE SIGNAL SYSTEM B (1ST STREET NW)	SYSTEM	\$ 10,000.00				1	\$ 10,000.00		
4.	REVISE SIGNAL SYSTEM C (5TH AVENUE NW)	SYSTEM	\$ -							
5.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,529.50		24	\$ 59,696.20	36	\$ 91,062.00		
6.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		930	\$ 3,720.00	930	\$ 3,720.00		
7.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		25540	\$ 51,080.00	25540	\$ 51,080.00		
8.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		155	\$ 775.00	155	\$ 775.00		
Construction Subtotal						\$ 877,239		\$ 918,605		
Mobilization 4%						\$ 35,090		\$ 36,744		
Traffic Control 6%						\$ 52,634		\$ 55,116		
Contingency 10%						\$ 87,724		\$ 91,861		
Total Opinion of Construction Cost Plus Contingency						\$ 1,052,687		\$ 1,102,326		
Professional Services										
9.	Design Services (Engineering, Survey, Architecture)	10%				\$ 105,269		\$ 110,233		
10.	Overhead (Legal, Fiscal, Etc.)	7%				\$ 73,688		\$ 77,163		
Subtotal Professional Services						\$ 178,957		\$ 187,395		
Total Opinion of Project Cost						\$ 1,231,644		\$ 1,289,721		

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix H:
Segment 18D Detailed Analysis Results



MATCHLINE - SEE SHEET 5



Segment 18D

Corridor 18 Characteristics

Directional Split ¹ :	AM: 45% NB/55% SB
	PM: 58% NB/42% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	917
Crashes/Mile ² :	229.3

Corridor 18 Transit Routes

Route 54
Route 63
Route 64
Route 80

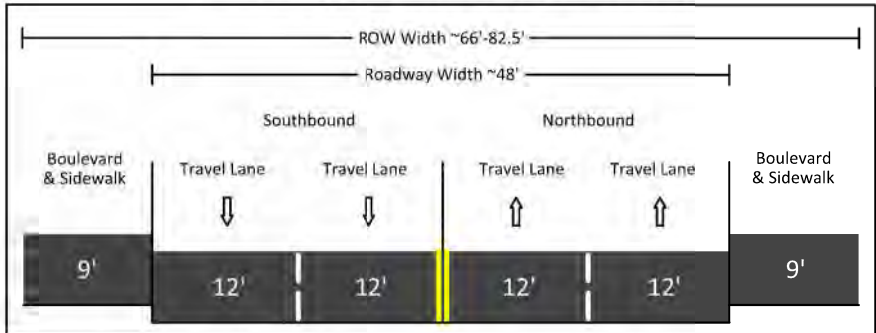
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 18D Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	32 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	42 mph
Speed Limit:	35-40 mph
Segment Average Annual Daily Volume ³ :	28,200
Segment Maximum Peak Hour Volume ³ :	1,172

Existing Typical Section (Segment 18D)

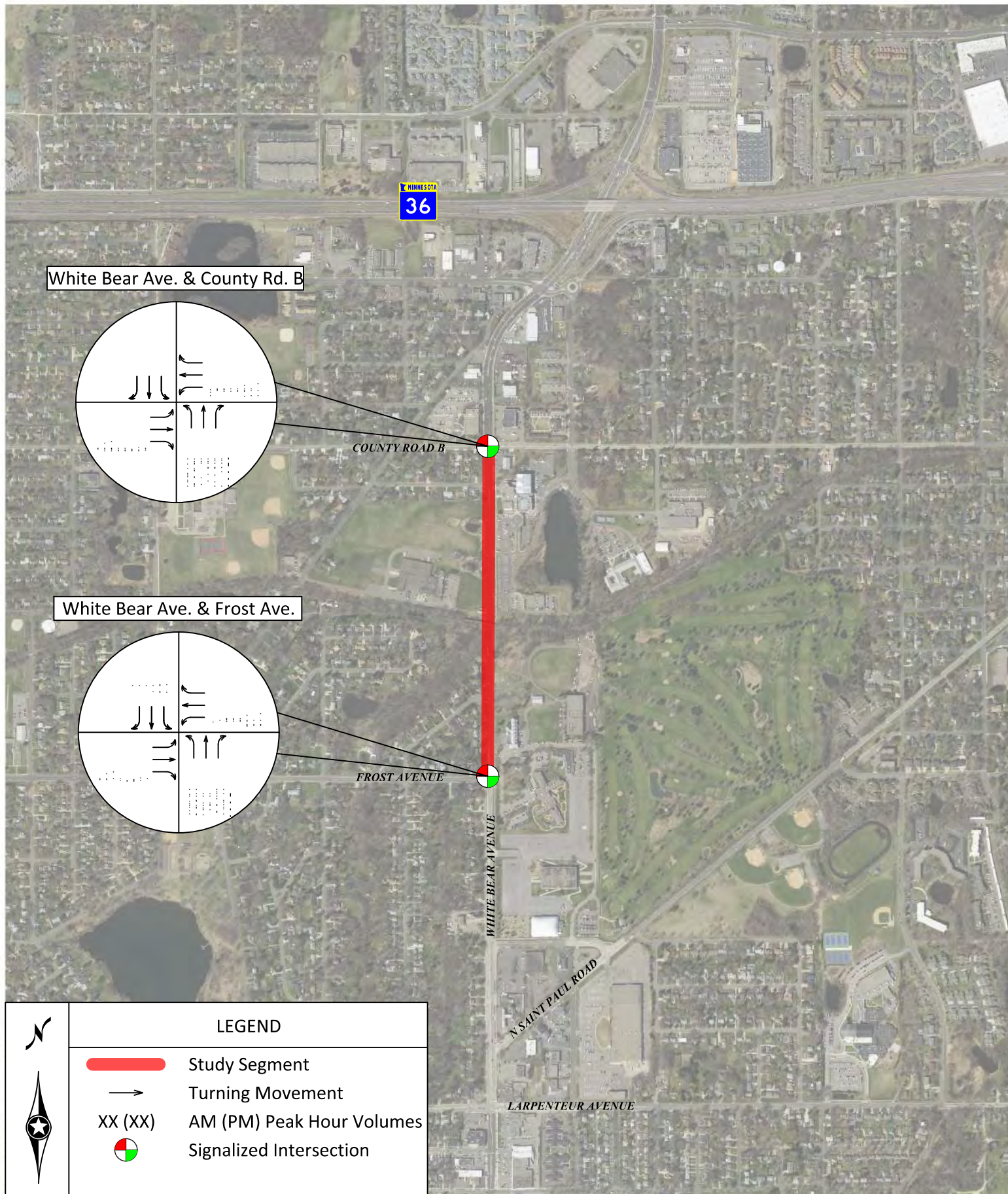


* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		



Ramsey County 4 to 3 Lane Conversion Study



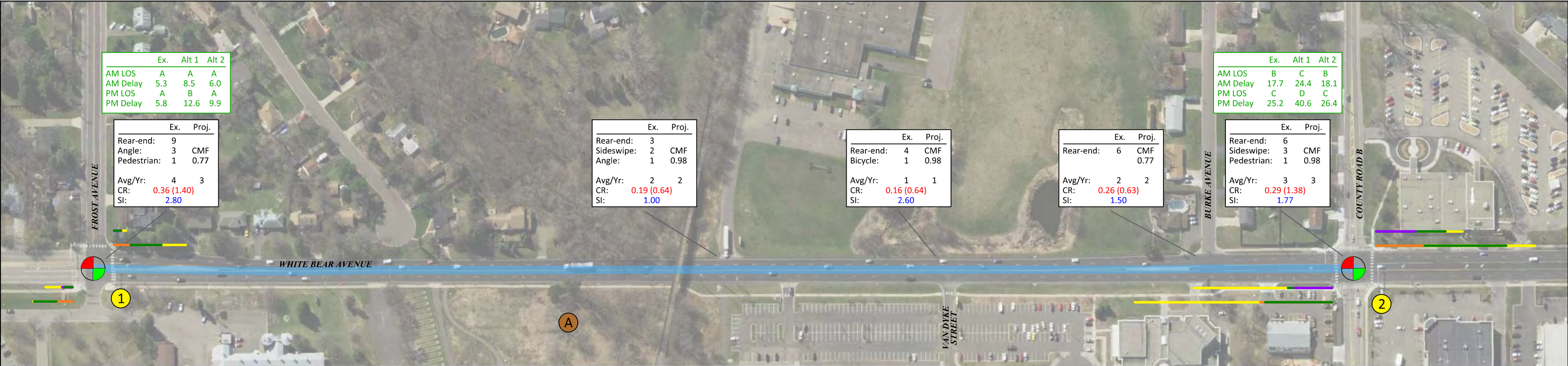
ALLIANT

Segment 18D
White Bear Avenue (Frost Avenue to County Road B)

Existing Turning Movement Counts



Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	<div>1. Five locations on this segment saw more than 5 crashes over the study period: Frost Avenue, driveway with American Fastening Systems, Van Dyke Street, Burke Avenue, and County Road B.</div> <div>2.Frost Ave (signalized) had 15 crashes which included 9 rear end collisions and 3 angle crashes in which 1 resulted in a serious injury. There was also 1 pedestrian crash that resulted in a fatality. CR= 0.36 per MEV.</div> <div>3. Driveway with American Fastening Systems (thru/stop T-intersection) had 6 crashes which included 3 rear end collisions. All crashes resulted in property damage only. CR=0.19 per MEV.</div> <div>4. Van Dyke Street (thru/stop T-intersection) had 5 crashes which included 1 with a bicycle. CR=0.16 per MEV.</div> <div>5. Burke Ave (Thru/Stop) had 8 crashes, 6 of which were rear end collisions, and a CR=0.26 per MEV.</div> <div>6. County Road B (signalized) had 13 crashes which included 6 rear end collisions and 1 with a pedestrian that resulted in a serious injury. CR=0.29 per MEV.</div>	<div>1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 87% of crashes studied along this segment of White Bear Avenue.</div> <div>2. A conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added.</div> <div>3. The conversion is expected to reduce crash severity due to reduced vehicle speeds.</div> <div>4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 2% (CMF=0.98) in low crash areas and 23% (CMF=0.77) in residential areas.</div>	Benefit Expected
Curbside Uses	<div>1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion.</div> <div>2. Currently there is no on-street parking provided.</div> <div>3. There is one transit route with 20-minute headways during peak hours. The 3-lane conversion will maintain curb-side bus stops.</div> <div>4. There are currently no bike lanes and are not planned for the future.</div>	Curbside uses could be accommodated within the existing roadway width with the 3-lane conversion, however, if two northbound lanes are maintained buses may need to stop in travel lane.	Feasible
Roadway Function / Mobility	<div>1. The signalized intersections at White Bear/County Road B and White Bear/Frost are expected to operate at LOS D or better, with minimal increases in overall intersection delay.</div> <div>2. Average queue lengths along White Bear are expected to significantly increase.</div> <div>3. If two northbound lanes are maintained, the signalized intersections at White Bear/County Road B and White Bear/Frost are expected to operate at LOS C or better- closer to existing conditions than a true three-lane.</div>	<div>1. Roadway function is maintained with moderate traffic mobility impact from 3-lane conversion.</div> <div>2. The travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.</div>	Moderate Impact Expected
Average Daily Traffic (ADT)	The AADT along White Bear Ave is 28,200.	The AADT is above 3 lane capacity.	Significant Impact Expected
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 1172.	Peak hour volumes are high and 3 lane roadway will be pushed towards capacity during peak hours.	Moderate Impact Expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is approximately 45% NB/55% SB in the morning and 58% NB/42% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	<div>1. The posted speed limit is 35mph.</div> <div>2. The 85th percentile speed is approximately 42mph.</div>	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
Access Points and Turning Traffic Patterns	1. There are 18 access points along White Bear Ave (0.5 mi).	1. Minimal benefit of existing Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 48 feet.	3-lane cross-section could occur within the existing roadway width and would not impact any curbside uses, however, if two northbound lanes are maintained buses may need to stop in travel lane.	Feasible



1

ALTERNATIVE 1

OR

1

ALTERNATIVE 2

2

ALTERNATIVE 1

OR

2

ALTERNATIVE 2

Note: Opportunity to move bus stop on East side of White Bear Ave/Co Rd B intersection to near side

3-LANE ALTERNATIVE 1 (See Above)

Advantages: Maintains curbside use on both sides of White Bear Ave
Disadvantages: Increase in PM peak delay at White Bear Ave/County Road B

3-LANE ALTERNATIVE 2 (See Above)

Advantages: Maintains current LOS, more efficient traffic flow
Disadvantages: Does not offer curbside use on SB side of White Bear Ave

LEGEND

X.XX

Traffic Analysis Results

X

Crash Analysis Results
Crashes from 2016-Oct. 2019

X.XX (X.XX)

Crash Rate (Critical Crash Rate)
Crashes per Million Entering Vehicles (MEV)

X.XX

Severity Index

Existing Avg. Queue Length

Projected Avg. Queue Length (Alt 1)

Projected Avg. Queue Length (Alt 2)

AM

PM

Signalized Intersection

Public Transit Stop

REQUIRED INTERSECTION MODIFICATIONS

2

Alternative 1: Remove 1 NB/SB thru head, adjust other NB/SB thru head

NOTES

A

Ramsey County Cemetery

Ramsey County 4 to 3 Lane Conversion Study

Segment 18D

White Bear Avenue (Frost Avenue to County Road B)

Detailed Analysis and Concept Design

* Typical Sections are not drawn to scale - for illustration purpose only

ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 18D - White Bear Avenue (Frost Avenue to County Road B)
Alliant Project No. 119-0166

Date Prepared:
 April 7, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		Alternative 2			
					Quantity	Total	Quantity	Total		
Construction Costs										
1.	REVISE SIGNAL SYSTEM A (FROST AVE)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00	1	\$ 200,000.00		
2.	REVISE SIGNAL SYSTEM B (COUNTY RD B)	SYSTEM	\$ 12,000.00		1	\$ 12,000.00				
3.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 1,529.50		8	\$ 12,236.00	8	\$ 12,236.00		
4.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		1000	\$ 4,000.00	1000	\$ 4,000.00		
5.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		5800	\$ 11,600.00	2300	\$ 4,600.00		
6.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		153	\$ 765.00	153	\$ 765.00		
Construction Subtotal						\$ 240,601		\$ 221,601		
Mobilization 4%						\$ 9,624		\$ 8,864		
Traffic Control 6%						\$ 14,436		\$ 13,296		
Contingency 10%						\$ 24,060		\$ 22,160		
Total Opinion of Construction Cost Plus Contingency						\$ 288,721		\$ 265,921		
Professional Services										
7.	Design Services (Engineering, Survey, Architecture)		10%			\$ 28,872		\$ 26,592		
8.	Overhead (Legal, Fiscal, Etc.)		7%			\$ 20,210		\$ 18,614		
Subtotal Professional Services						\$ 49,083		\$ 45,207		
Total Opinion of Project Cost						\$ 337,804		\$ 311,128		

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

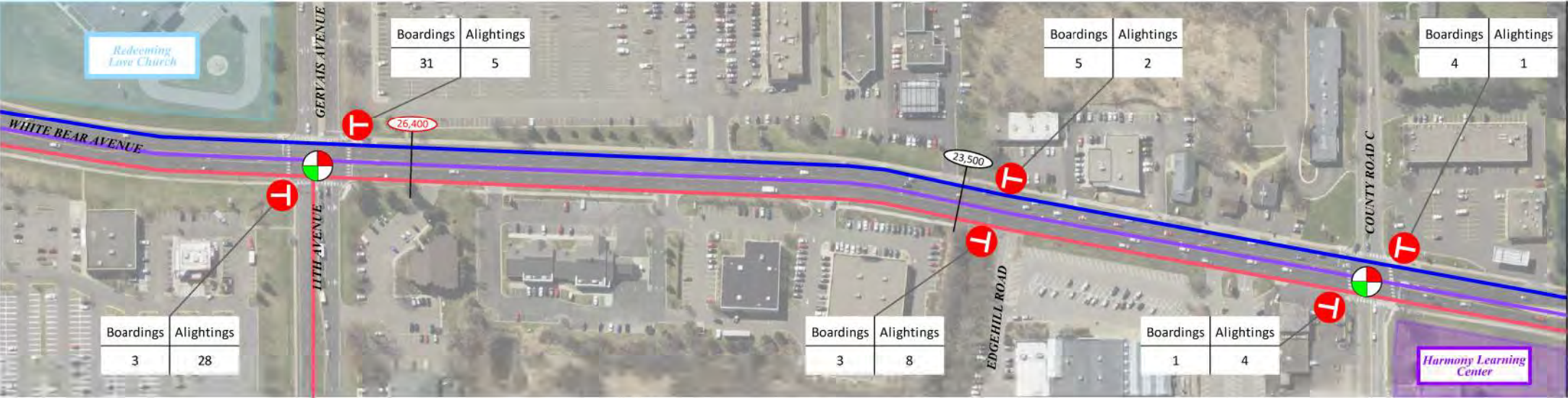
White Bear Avenue is programmed for reconstruction. Costs shown in the estimate above are for traffic related components only.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix I :
Segment 19 Detailed Analysis Results



Corridor 19 Characteristics

Directional Split ¹ :	AM: 52% NB/48% SB PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	269
Crashes/Mile ² :	298.9

Corridor 19 Transit Routes

- Route 54
- Route 80
- Route 64

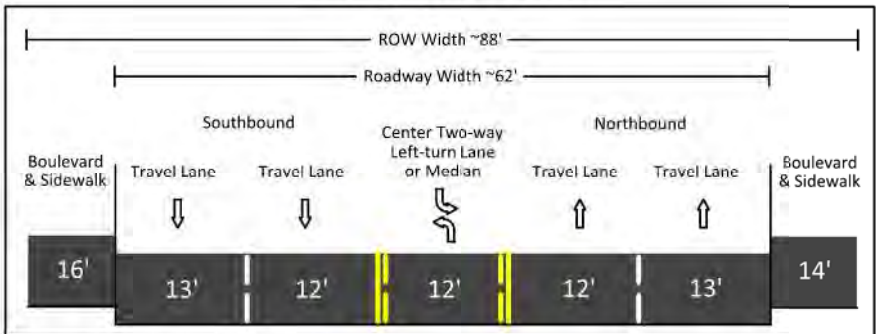
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 19 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	26,400
Segment Maximum Peak Hour Volume ³ :	1,089

Existing Typical Section



* Not to scale - for illustration purpose only

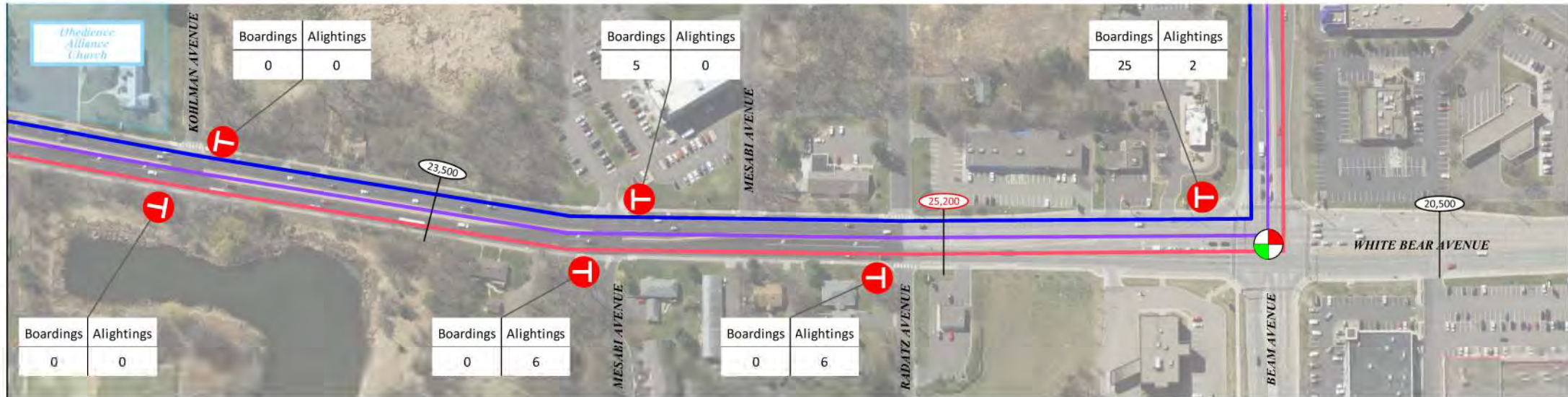
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND		
(X,XXX)	MnDOT AADT	Signalized Intersection
(X,XXX)	St. Paul Compass AADT	All-way stop Intersection
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)
		Parking allowed (see parking notes for details)
		Public Transit Stops





MATCHLINE - SEE SHEET 1



Corridor 19 Characteristics

Directional Split ¹ :	AM: 52% NB/48% SB PM: 54% NB/46% SB
Truck Route:	Yes
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	269
Crashes/Mile ² :	298.9

Corridor 19 Transit Routes

Route 54
Route 80
Route 64

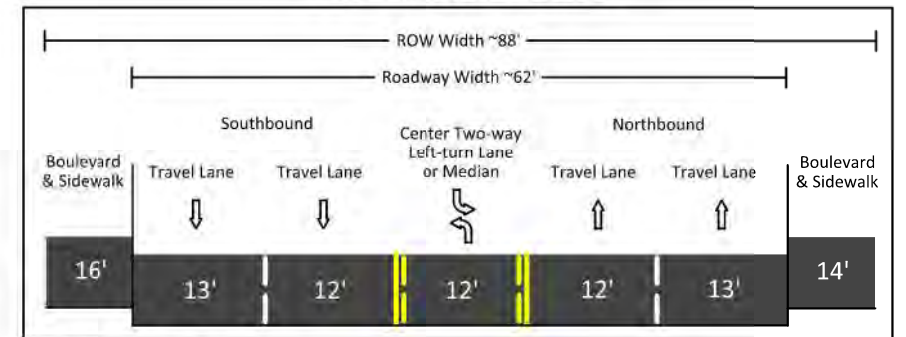
General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 19 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	28 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	41 mph
Speed Limit:	40 mph
Segment Average Annual Daily Volume ³ :	26,400
Segment Maximum Peak Hour Volume ³ :	1,089

Existing Typical Section



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: Spack Consulting (2019)

LEGEND

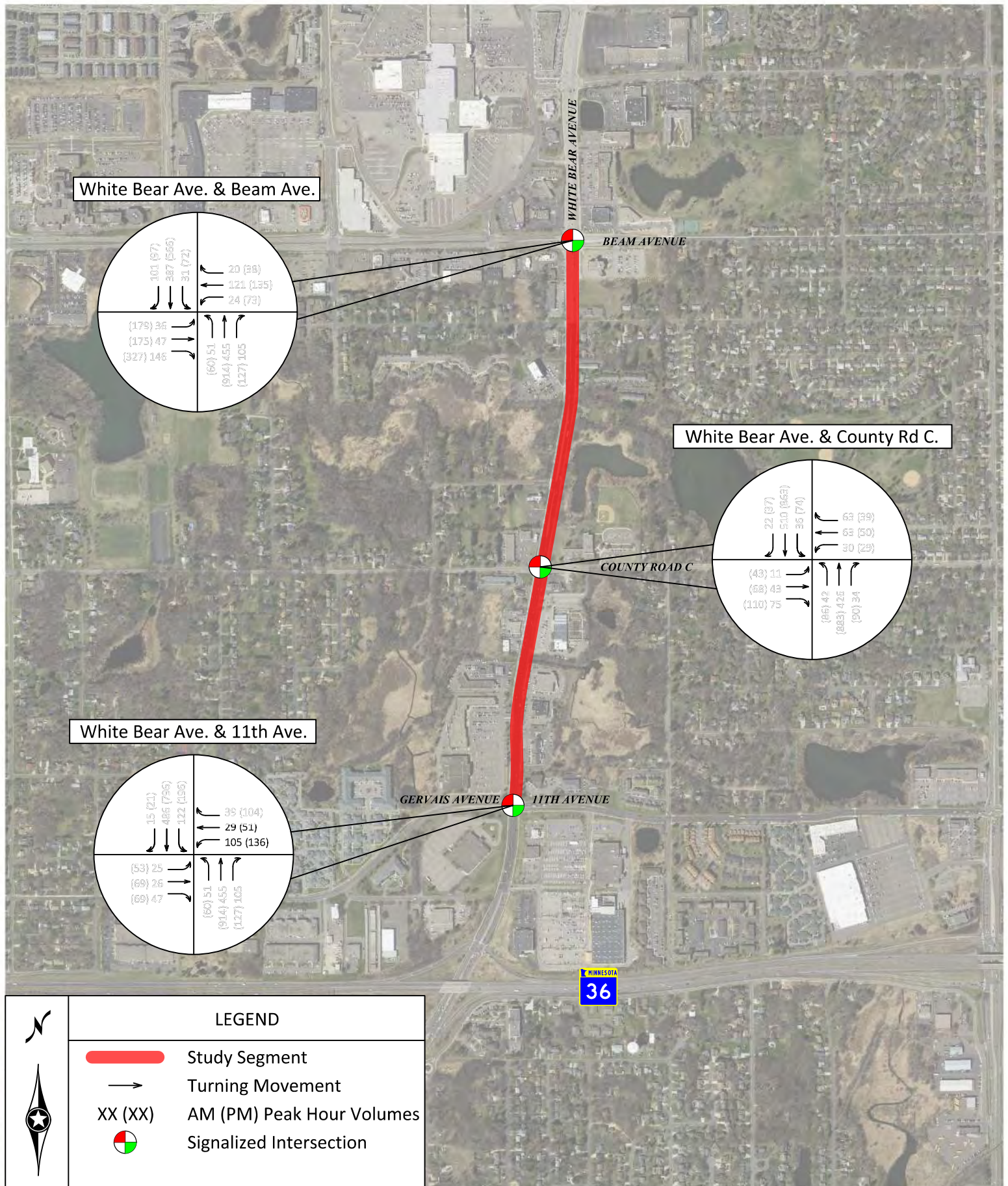
(X,XXX)	MnDOT AADT		Signalized Intersection		Parking allowed (see parking notes for details)
(X,XXX)	St. Paul Compass AADT		All-way stop Intersection		Public Transit Stops
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)		Marked Crosswalk (At unsignalized intersection)		

Ramsey County 4 to 3 Lane Conversion Study

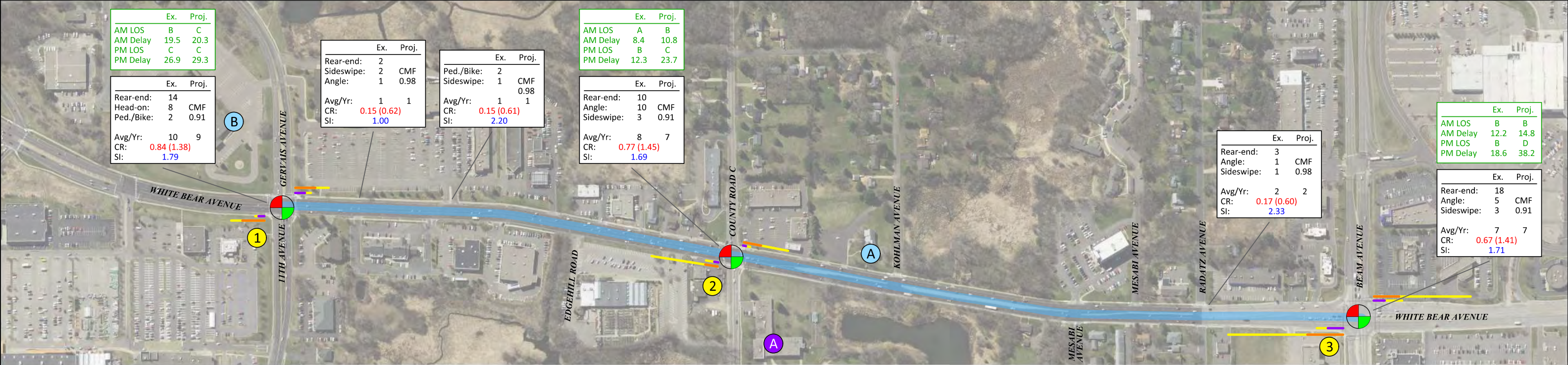


Segment 19
White Bear Avenue (Gervais Avenue to Beam Avenue)

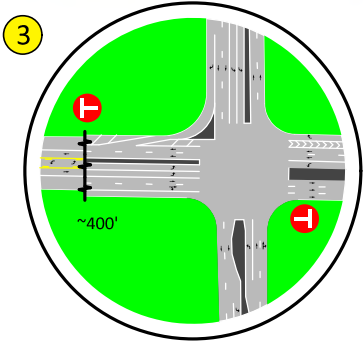
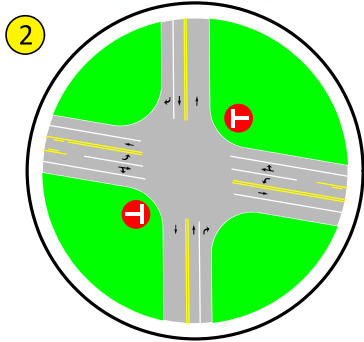
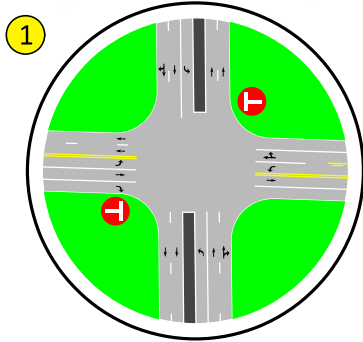
Sheet 2 of 2



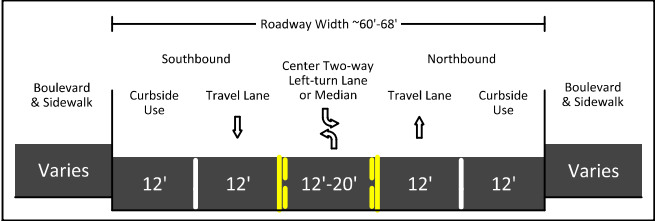
Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	<p>1. Six locations on this segment saw more than 5 crashes over the study period: Gervais Avenue/11th Avenue, both entrances to a strip mall, County Road C, Radatz Avenue, and Beam Avenue.</p> <p>2. Gervais Ave/11th Ave (signalized) had 38 crashes which included 14 rear end collisions and 8 angle crashes in which 1 resulted in a serious injury. There was also 1 crash with a pedestrian and another with a bicycle. CR=0.84 per MEV.</p> <p>3. Southern strip mall entrance (thru/stop T-intersection) had 5 crashes which included 2 rear end collisions. All crashes resulted in property damage only. CR=0.15 per MEV.</p> <p>4. Northern strip mall entrance/mall entrance (thru/stop) had 5 crashes which included 1 with a bicycle. There was also a crash with a pedestrian which resulted in a serious injury. CR=0.15 per MEV.</p> <p>5. County Road C (signalized) had 29 crashes, 10 of which were rear end collisions and another 10 that were angle collisions. CR=0.77 per MEV.</p> <p>6. Radatz Ave (thru/stop) had 6 crashes which included 3 rear end collisions; CR=0.17 per MEV.</p> <p>7. Beam Ave (signalized) had 28 crashes, 18 of which were rear-end collisions. Another 5 were angle collisions with one resulting in serious injury. CR=0.67.</p>	<p>1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 82% of crashes studied along this segment of White Bear Avenue.</p> <p>2. A conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added.</p> <p>3. The conversion is expected to reduce crash severity due to reduced vehicle speeds.</p> <p>4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 9% (CMF=0.91) on average for 4 to 3 lane conversions, 2% (CMF=0.98) in low crash areas, and 9% (CMF=0.91) in high crash areas (CR>0.71).</p>	Benefit Expected
Curbside Uses	<p>1. Curbside uses can be accommodated on both sides of the street within the existing roadway width with the 3-lane conversion.</p> <p>2. Currently there is no on-street parking provided.</p> <p>3. There are three transit routes. During peak hours, Route 54 has 20-minute headways, Route 80 has 30-minute headways, and Route 64 has headwas ranging between 5 and 25 minutes. The 3-lane conversion will maintain curb-side bus stops.</p> <p>4. There are currently no bike lanes and are not planned for the future.</p>	Curbside uses could be accommodated within the existing roadway width with the 3-lane conversion.	Feasible
Roadway Function / Mobility	<p>1. The signalized intersections at White Bear/Beam and White Bear/County Road C are expected to operate at LOS C or better, with minimal increases in overall intersection delay.</p> <p>2. The signalized intersection at White Bear/11th-Gervais is expected to operate at LOS B during the AM Peak with minimal increases in overall intersection delay. That intersection is expected to operate at LOS D during the PM Peak with a mooderate increase in overall intersection delay.</p> <p>2. Average queue lengths along White Bear are expected to significantly increase, especially during the PM Peak.</p>	<p>1. Roadway function is maintained with moderate traffic mobility impact from 3-lane conversion.</p> <p>2. The travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.</p>	Moderate Impact Expected
Average Daily Traffic (ADT)	The AADT along White Bear Ave is 26,400.	The AADT is above 17,000.	Significant Impact Expected
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 1089.	Peak hour volumes are high and 3 lane roadway will be pushed towards capacity during peak hours.	Moderate Impact Expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is approximately 52% NB/48% SB in the morning and 54% NB/46% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	<p>1. The posted speed limit is 40mph.</p> <p>2. The 85th percentile speed is approximately 41mph.</p>	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
Access Points and Turning Traffic Patterns	1. There are 31 access points along White Bear Ave (0.9 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 48-60 feet.	3-lane cross-section could occur within the existing roadway width and would not impact any curbside uses.	Feasible



Segment 19



3-LANE ALTERNATIVE



NOTES

- A Harmony Learning Center
- B Redeeming Love Church
- C Obedience Alliance Church

LEGEND

- X.XX Traffic Analysis Results
- X Crash Analysis Results
Crashes from 2016-Oct. 2019
- X.XX (X.XX) Crash Rate (Critical Crash Rate)
Crashes per Million Entering Vehicles (MEV)
- X.XX Severity Index
- Existing Avg. Queue Length
- Projected Avg. Queue Length
- AM
- PM
- Signalized Intersection
- Public Transit Stop

REQUIRED INTERSECTION MODIFICATIONS

- 1 Replace detection (with White Bear Ave reconstruction)
- 2 Adjust signal heads
Replace detection (with White Bear Ave reconstruction)
- 3 Adjust signal heads

* Typical Sections are not drawn to scale - for illustration purpose only



ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 19 - White Bear Avenue (Gervais Avenue to Beam Avenue)
Alliant Project No. 119-0166

Date Prepared:
April 8, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1						
					Quantity	Total					
Construction Costs											
1.	REVISE SIGNAL SYSTEM A (GERVAIS AVE/11TH AVE)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00					
2.	REVISE SIGNAL SYSTEM B (COUNTY RD C)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00					
3.	REVISE SIGNAL SYSTEM C (BEAM AVE)	SYSTEM	\$ 12,000.00		1	\$ 12,000.00					
4.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,529.50		6	\$ 15,177.00					
5.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		600	\$ 2,400.00					
6.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		11025	\$ 22,050.00					
7.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		259	\$ 1,295.00					
Construction Subtotal						\$ 452,922					
Mobilization 4%						\$ 18,117					
Traffic Control 6%						\$ 27,175					
Contingency 10%						\$ 45,292					
Total Opinion of Construction Cost Plus Contingency						\$ 543,506					
Professional Services											
8.	Design Services (Engineering, Survey, Architecture)		10%			\$ 54,351					
9.	Overhead (Legal, Fiscal, Etc.)		7%			\$ 38,045					
Subtotal Professional Services						\$ 92,396					
Total Opinion of Project Cost											
						\$ 635,902					

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

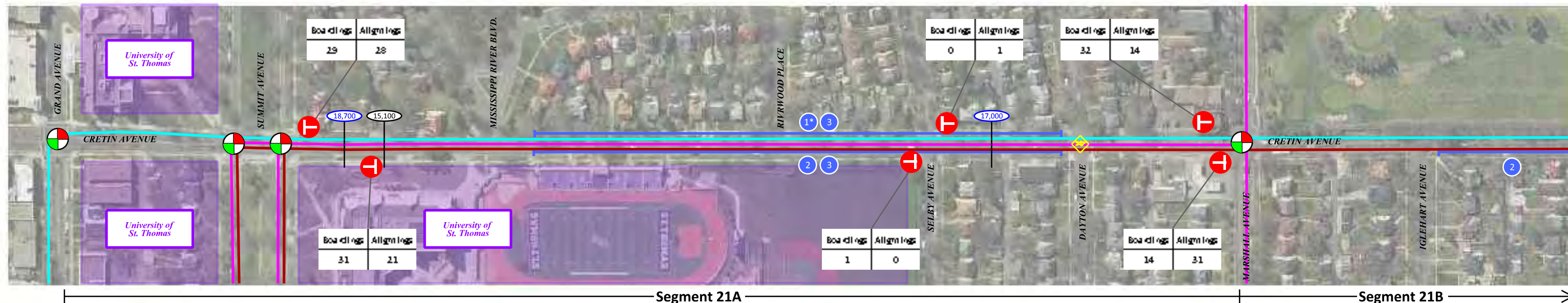
~~White Bear Avenue is programmed for reconstruction. Costs shown in the estimate above are for traffic related components only.~~

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix J:
Segment 21 Detailed Analysis Results



MATCHLINE - SEE SHEET 2

Corridor 21 Characteristics

Directional Split ¹ :	AM: 64% NB/36% SB
	PM: 41% NB/59% SB
Truck Route:	No
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	271
Crashes/Mile ² :	180.7

Corridor 1 Transit Routes

Route 21
Route 63
Route 134

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Segment 21A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	15,100
Segment Maximum Peak Hour Volume ³ :	1,220

Segment 21B Characteristics

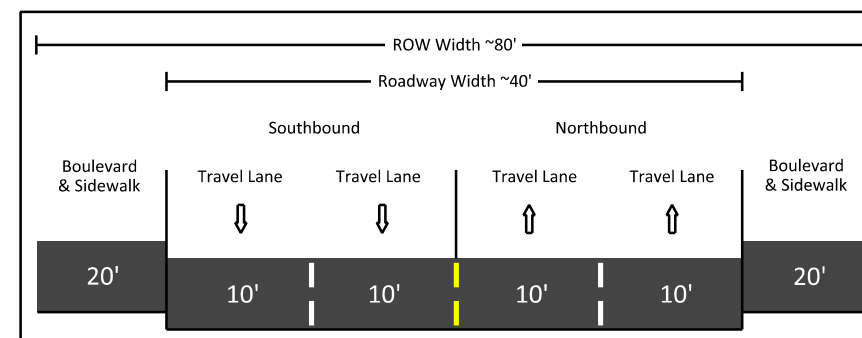
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	23,100
Segment Maximum Peak Hour Volume ⁴ :	1,392

Parking Notes:

- 1 No Parking During Day (8am-8pm Mon-Fri)
- 2 No Parking During AM Peak (7am-9am Mon-Fri)
- 3 No Parking During PM Peak (4pm-6pm Mon-Fri)

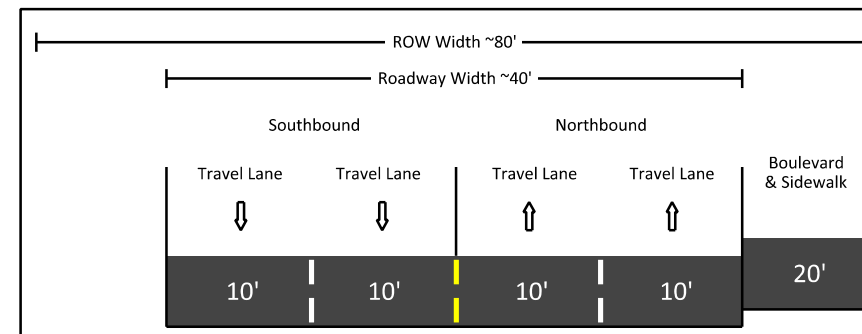
*Except by permit

Existing Typical Section (Segment 21A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 21B)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)
⁴Source: St. Paul Compass (2017)

LEGEND

(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study

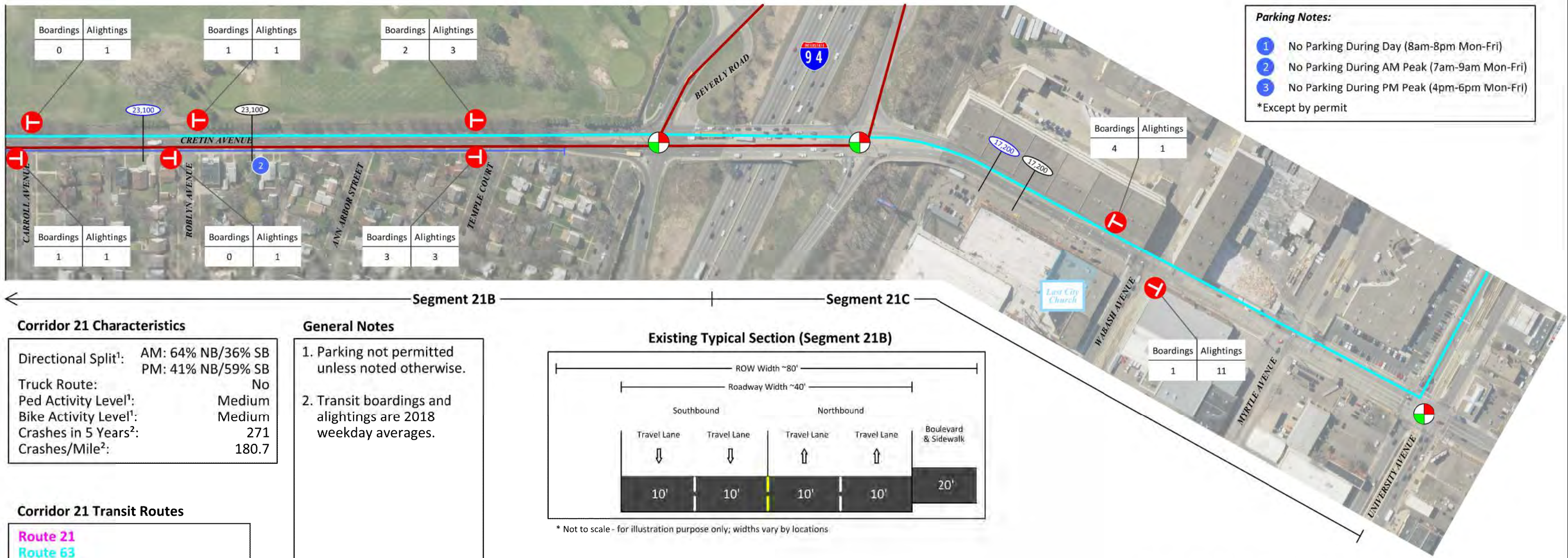


Segment 21
Cretin Avenue (Grand Avenue to University Avenue)

Sheet 1 of 2



MATCHLINE - SEE SHEET 1



Parking Notes:

- 1 No Parking During Day (8am-8pm Mon-Fri)
- 2 No Parking During AM Peak (7am-9am Mon-Fri)
- 3 No Parking During PM Peak (4pm-6pm Mon-Fri)

*Except by permit

Corridor 21 Characteristics

Directional Split ¹ :	AM: 64% NB/36% SB
	PM: 41% NB/59% SB
Truck Route:	No
Ped Activity Level ¹ :	Medium
Bike Activity Level ¹ :	Medium
Crashes in 5 Years ² :	271
Crashes/Mile ² :	180.7

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Corridor 21 Transit Routes

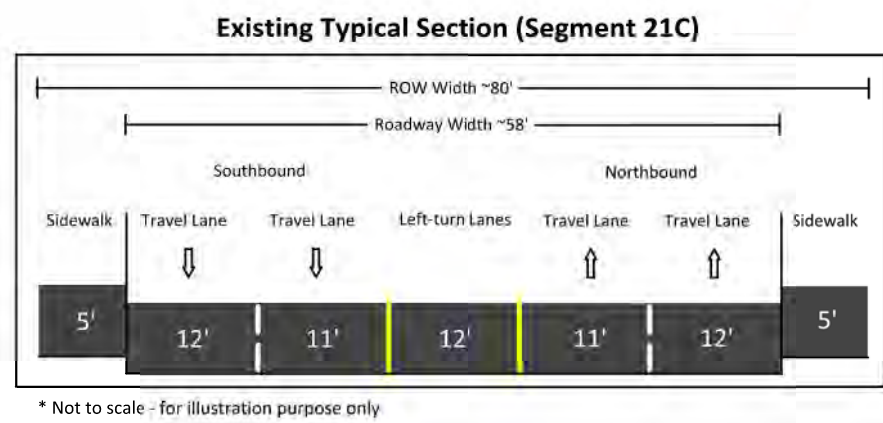
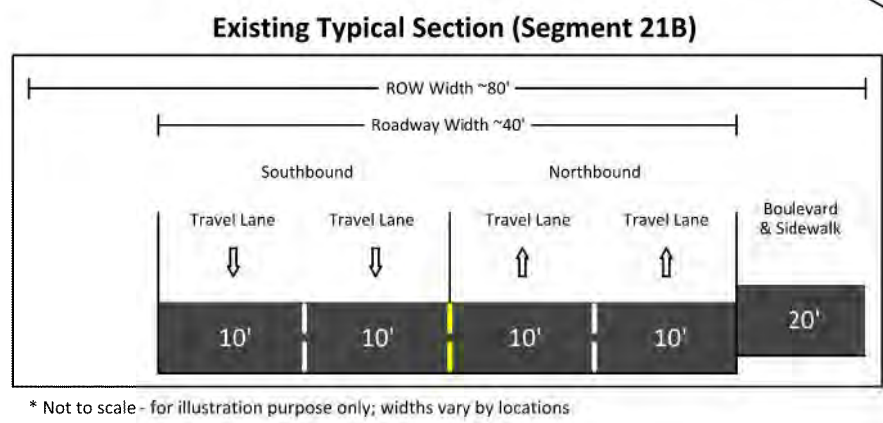
Route 21
Route 63
Route 134

Segment 21B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	23,100
Segment Maximum Peak Hour Volume ³ :	1,392

Segment 21C Characteristics

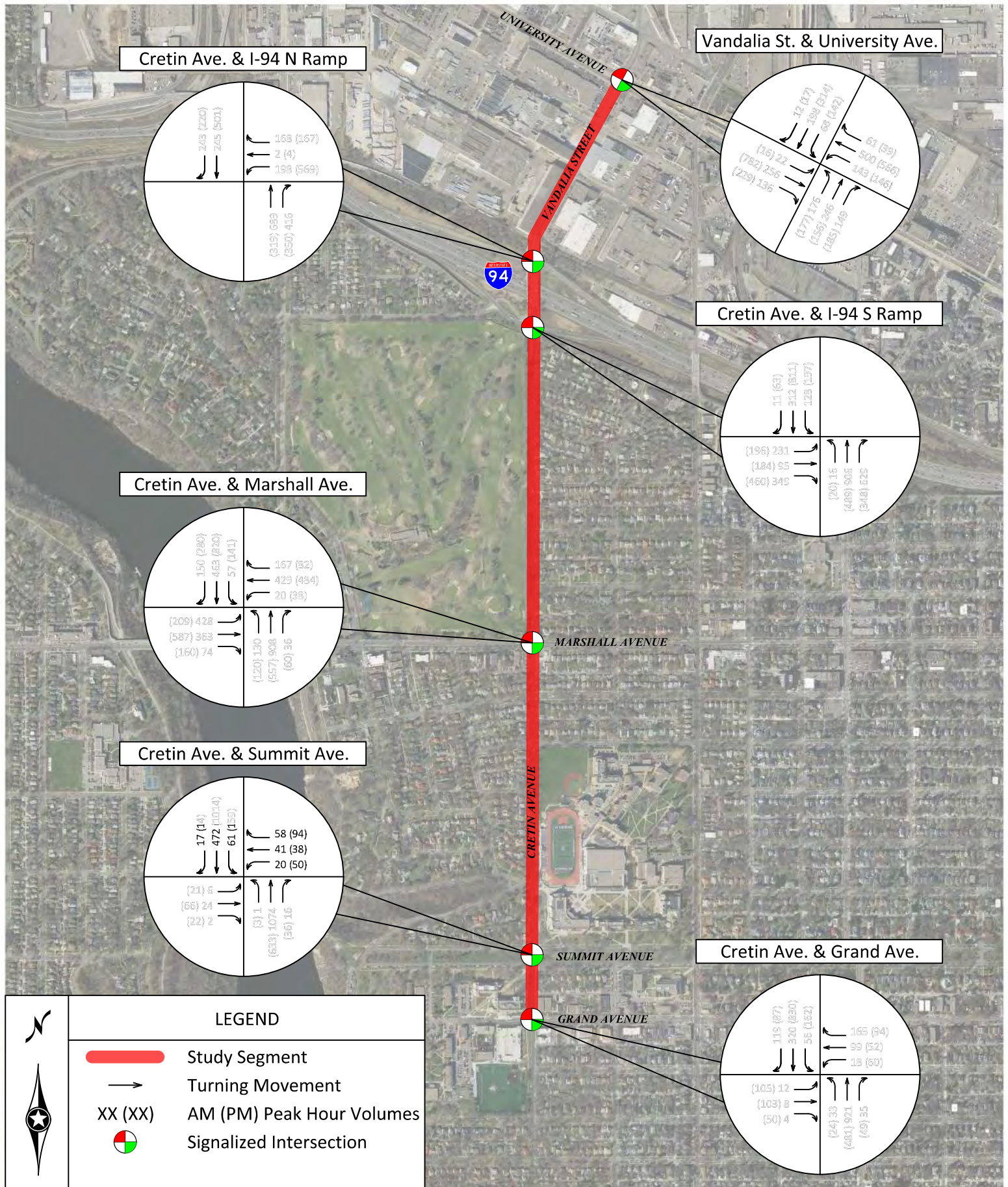
Weekday (Tu-Th) Average Speed (Daily) ¹ :	29 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	37 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	17,200
Segment Maximum Peak Hour Volume ⁴ :	770



LEGEND

- (X,XXX) MnDOT AADT
- (X,XXX) St. Paul Compass AADT
- (X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)
- Signalized Intersection
- All-way stop Intersection
- Marked Crosswalk (At unsignalized intersection)
- Parking allowed (see parking notes for details)
- Public Transit Stops

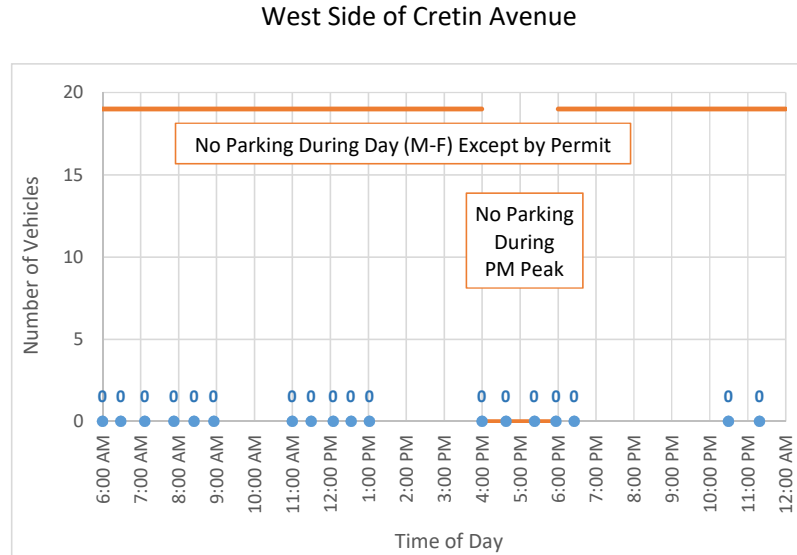
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2017)
⁴Source: St. Paul Compass (2018)



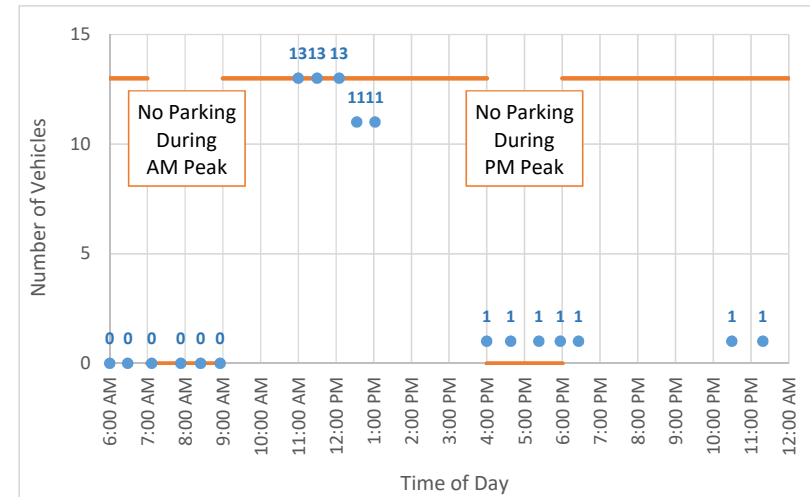
Segment 21 Parking Study Summary



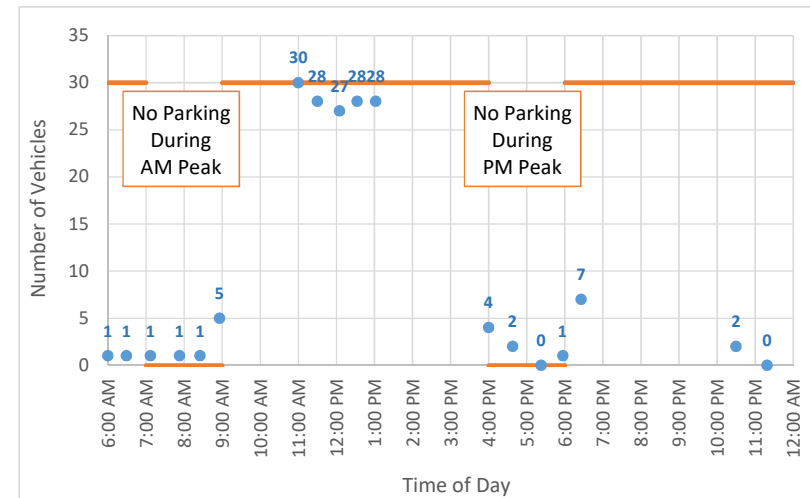
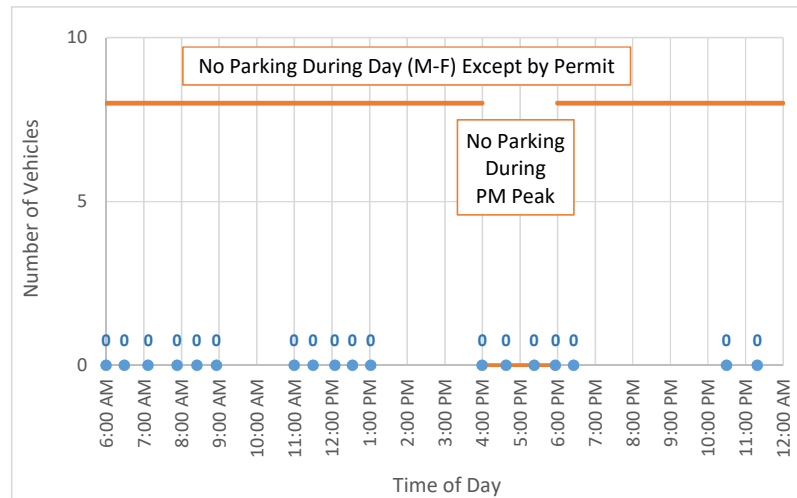
Between Riverwood Pl
& Selby Ave



East Side of Cretin Avenue



Between Mississippi River Blvd
& Riverwood Pl



No parked vehicles were observed on any other block along Cretin Avenue

● Observed Demand
— Estimated Supply

Note: Morning, mid-day, and evening observations were made on 2/26/2020. Late night observations were made on 2/27/2020.

**Ramsey County 4 to 3 Conversion Study
Cretin Avenue (Grand Avenue to University Avenue)**

Segment 21
Evaluation Summary



Segment 21A: Cretin Avenue between Grand Avenue and Marshall Avenue				Segment 21B: Cretin Avenue between Marshall Avenue and I-94			Segment 21C: Cretin Avenue between I-94 and University Avenue		
Key Factors	Key Findings	Favorability	Conclusion	Key Findings	Favorability	Conclusion	Key Findings	Favorability	Conclusion
Crash Patterns	1. One location on this segment saw more than 5 crashes over the study period: Marshall Avenue. 2. Marshall Ave (signalized) had 21 crashes which included 1 with a pedestrian and 9 rear end collisions. There was also an angle collision which resulted in serious injury. CR= 0.36 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 81% of crashes studied along this segment of Cretin Avenue. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 23% (CMF=0.77) in residential areas.	Benefit Expected	No locations with 5+ crashes for detailed analysis			1. One location on this segment saw more than 5 crashes over the study period: University Avenue. 2. University Ave (signalized) had 9 crashes, 2 of which were with pedestrians. CR=0.20 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 33% of all crashes studied along this segment of Dale Street. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found a crash reduction of 2% (CMF=0.98) in low crash areas.	Benefit Expected
Curbside Uses	1. On-street parking can be accommodated on one side of the street within the existing roadway width with the 3-lane conversion. 2. Buses in one direction would stop in through lane with 3-lane conversion. There are three routes along the corridor. Route 134 has 20-minute hedways during peaks. Route 63 has 15- to 20-minute headways during peaks. Route 21 diverts down Cretin once or twice during peak hours. 3. There are currently no bike lanes and bike lanes are not planned for the future.	1. On-street parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion. 2. Transit stops would be accessed with buses stopping in a travel lane on one side of the street and out of the travel lane on the other. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible (Minimal Impact)	1. On-street parking can be accommodated on east side of the street within the existing roadway width with the 3-lane conversion. 2. Buses in southbound direction would stop in through lane with 3-lane conversion. There are two routes along the corridor. Route 134 has 20-minute hedways during peaks. Route 63 has 15- to 20-minute headways during peaks. 3. There are currently no bike lanes and bike lanes are not planned for the future.	1. On-street parking could be accommodated on east side of the street within the existing roadway width with the 3-lane conversion. 2. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible	1. There is currently no on-street parking. 2. Buses in southbound direction would stop in through lane with 3-lane conversion. Conversion would provide opportunity for in-lane bus stop to move to out-of-lane. There is one route along the corridor. Route 63 has 15- to 20-minute headways during peaks. 3. There are currently no bike lanes and bike lanes are not planned for the future.	Lane reduction allows NB buses to stop out of travel lane and opportunity for SB buses to stop out of travel lane with stop relocation. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible
Roadway Function / Mobility	1. The intersections at Cretin/Grand and Cretin/Summit are expected to have a sharp increase in delay during the AM peak (LOS A to F, and LOS B to D respectively), due to poor expected operations at Cretin/Marshall. 2. The intersection at Cretin/Marshall is expected to operate at LOS F, with significant delay and queues during both the AM and PM peaks. 3. Average queue lengths along Cretin Avenue are expected to significantly increase at Cretin/Marshall.	1. Roadway function has significant traffic mobility impact from 3-lane conversion at the Cretin/Marshall, causing significant impacts at adjacent intersections. 2. The travel time and delay increase are expected to negatively impact roadway mobility or access.	Significant Impact Expected	1. The intersection at Cretin/I-94 N ramp is currently operating at LOS C during the AM peak and PM peaks, and is expected to remain at LOS C during the AM peak and operated at LOS F during the PM peak. 2. Average queue lengths along Cretin Avenue are expected to moderately increase.	1. Roadway function has significant traffic mobility impact from 3-lane conversion at the Cretin/Marshall intersection, causing significant impact at adjacent intersections. 2. The travel time and delay increase are expected to negatively impact roadway mobility or access.	Significant Impact Expected	1. The intersections at Cretin/I-94 S ramp and Cretin/University are currently operating at LOS C or better. They are expected to remain at LOS C during the AM peak, but have a sharp increase in delay during the PM peak. 2. Average queue lengths along Cretin Avenue are expected to significantly increase.	1. Roadway function has significant traffic mobility impact from 3-lane conversion at the Cretin/Marshall intersection, causing significant impact at adjacent intersections. 2. The travel time and side-street delay increase are expected to negatively impact roadway mobility or access.	Significant Impact Expected
Average Daily Traffic (ADT)	The AADT along Cretin Ave is around 18,700.	The AADT is above 17,000.	Moderate Impact Expected	The AADT along Cretin Ave is 23,100.	The AADT is above 17,000.	Over capacity	The AADT along Cretin Ave is 17,200.	Th AADT is slightly above 17,000	Likely Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 1220.	Peak hour volumes are high and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected	The maximum directional peak hour traffic volume is 1092.	Peak hour volumes are high and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected	The maximum directional peak hour traffic volume is 770.	Peak hour volumes are low and 3 lane roadway will be near capacity during peak hours.	Minimal Impact Expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is approximately 64% NB/36% SB in the morning and 41% NB/59% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible	The traffic volume directional distribution is approximately 64% NB/36% SB in the morning and 41% NB/59% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible	The traffic volume directional distribution is approximately 64% NB/36% SB in the morning and 41% NB/59% SB in the evening.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 37mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 37mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 37mph.	An overall speed reduction is expected. Local and national 3-lane conversions have resulted in vehicle speed reductions up to 5 mph or more.	Benefit Expected
Access Points and Turning Traffic Patterns	There are 30 access points along Cretin Ave (0.6 mi).	High benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected	There are 19 access points along Cretin Ave (0.5 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected	There are 9 access points along Cretin Ave (0.4 mi).	Low benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 43 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on at least one side of the street.	Feasible	The existing roadway width is 43 feet.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on at least one side of the street.	Feasible	The existing roadway width is 59 feet.	3-lane cross-section could occur within the existing roadway width and would not impact any curbside uses.	Feasible

ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 21 - Cretin Avenue (Grand Avenue to University Avenue)
Alliant Project No. 119-0166

Date Prepared:
September 16, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1-A		Alternative 2		Alternative 1		M&O Add-On Option	
					Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
Construction Costs												
1.	PAVEMENT MARKING REMOVAL	LIN FT	\$ 1.00		12650	\$ 12,650.00	10525	\$ 10,525.00	12650	\$ 12,650.00	-12650	\$ (12,650.00)
2.	MILL AND OVERLAY PAVEMENT	SQ FT	\$ 1.20								322000	\$ 386,400.00
3.	REVISE SIGNAL SYSTEM A (GRAND AVE)	SYSTEM	\$ -									
4.	REVISE SIGNAL SYSTEM B (SUMMIT AVE)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00	1	\$ 5,000.00		
5.	REVISE SIGNAL SYSTEM C (MARSHALL AVE)	SYSTEM	\$ 8,000.00		1	\$ 8,000.00	1	\$ 5,000.00	1	\$ 5,000.00		
6.	REVISE SIGNAL SYSTEM D (I-94 EB OFF RAMP)	SYSTEM	\$ 11,000.00		1	\$ 11,000.00						
7.	REVISE SIGNAL SYSTEM E (I-94 WB OFF RAMP)	SYSTEM	\$ 11,000.00		1	\$ 11,000.00						
8.	REVISE SIGNAL SYSTEM F (UNIVERSITY AVE)	SYSTEM	\$ -									
9.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,029.50		25	\$ 50,737.50	13	\$ 26,383.50	27	\$ 54,796.50		
10.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		2000	\$ 8,000.00	2675	\$ 10,700.00	1600	\$ 6,400.00		
11.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		3500	\$ 7,000.00	3500	\$ 7,000.00	3900	\$ 7,800.00		
12.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		503	\$ 2,515.00	397	\$ 1,985.00	503	\$ 2,515.00		
13.	ADA-COMPLIANT PEDESTRIAN RAMPS	CORNER	\$ 20,000.00	(1)	21	\$ 420,000.00	21	\$ 420,000.00	21	\$ 420,000.00		
Construction Subtotal						\$ 535,903		\$ 486,594		\$ 514,162		\$ 373,750
Mobilization 4%						\$ 21,436		\$ 19,464				
Traffic Control 6%						\$ 32,154		\$ 29,196				
Contingency 10%						\$ 53,590		\$ 48,659		\$ 51,416		\$ 37,375
Total Opinion of Construction Cost Plus Contingency						\$ 643,083		\$ 583,912		\$ 565,578		\$ 411,125
Professional Services												
14.	Design Services (Engineering, Survey, Architecture)	10%				\$ 64,308		\$ 58,391		\$ 56,558		\$ 41,113
15.	Overhead (Legal, Fiscal, Etc.)	7%				\$ 45,016		\$ 40,874		\$ 39,590		\$ 28,779
Subtotal Professional Services						\$ 109,324		\$ 99,265		\$ 96,148		\$ -
Total Opinion of Project Cost						\$ 752,407		\$ 683,177		\$ 661,726		\$ 411,125

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

Alternative 1-B does not require a mill & overlay between Marshall Ave and Wabash Ave. (1) Pedestrian ramp cost does not include any utility work.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix K:
Segment 22 Detailed Analysis Results



- Parking Notes:**
- 1 30 Minute Limit During Day (8am-4pm Every Day)
 - 2 No Parking During AM Peak (7am-9am Mon-Fri)
 - 3 No Parking During PM Peak (4pm-6pm Mon-Fri)

Corridor 22 Characteristics

Directional Split ¹ :	AM: 72% NB/28% SB PM: 42% NB/58% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	337
Crashes/Mile ² :	306.4

Corridor 22 Transit Routes

Route 21

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

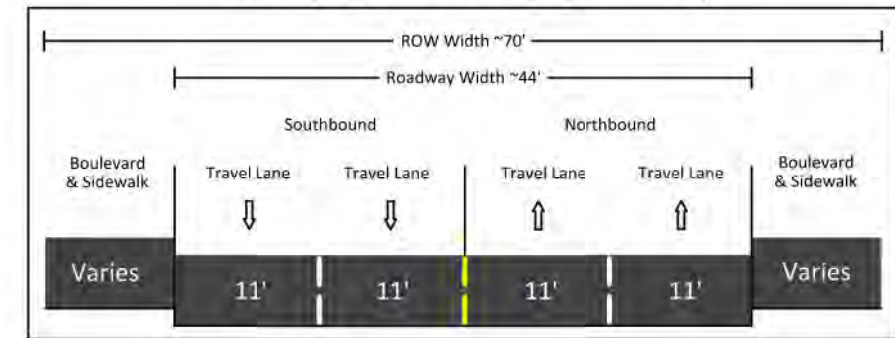
Segment 22A Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	8,500
Segment Maximum Peak Hour Volume ³ :	629

Segment 22B Characteristics

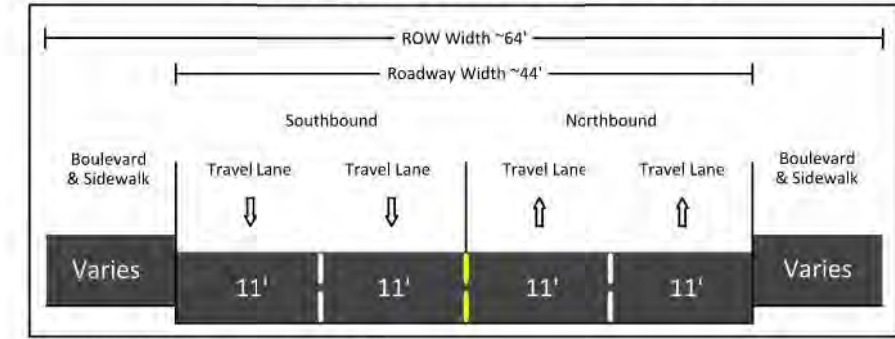
Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ⁴ :	19,600
Segment Maximum Peak Hour Volume ⁴ :	1,092

Existing Typical Section (Segment 22A)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 22B)



* Not to scale - for illustration purpose only

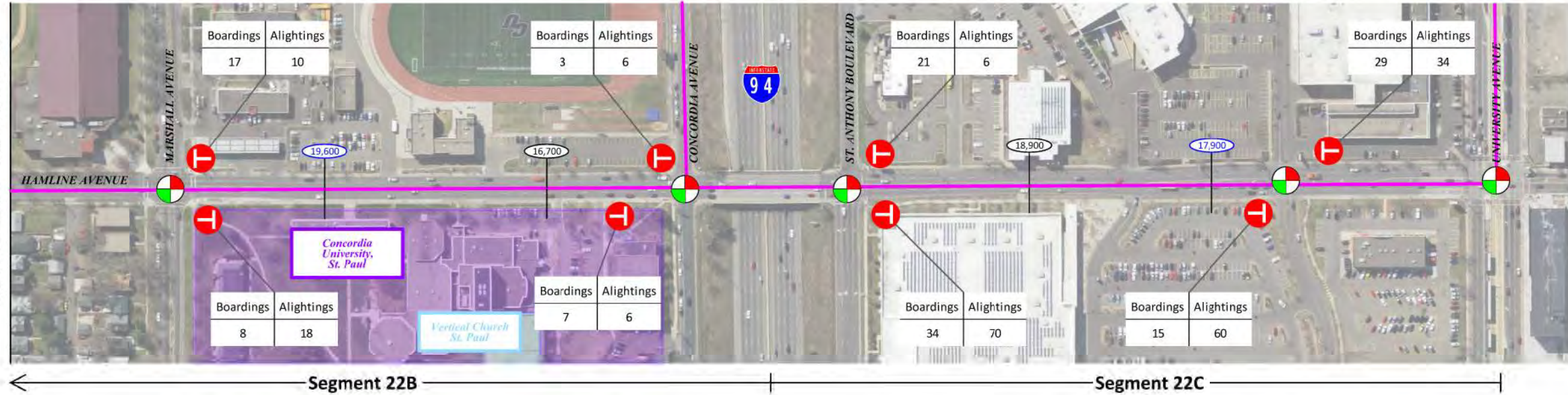
¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2018)
⁴Source: St. Paul Compass (2019)

LEGEND		
(X,XXX)	MnDOT AADT	Signalized Intersection
(X,XXX)	St. Paul Compass AADT	All-way stop Intersection
(X,XXX)	Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)
		Parking allowed (see parking notes for details)
		Public Transit Stops





MATCHLINE - SEE SHEET 1



Corridor 22 Characteristics

Directional Split ¹ :	AM: 72% NB/28% SB
	PM: 42% NB/58% SB
Truck Route:	Yes
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	High
Crashes in 5 Years ² :	337
Crashes/Mile ² :	306.4

Corridor 22 Transit Routes

Route 21

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

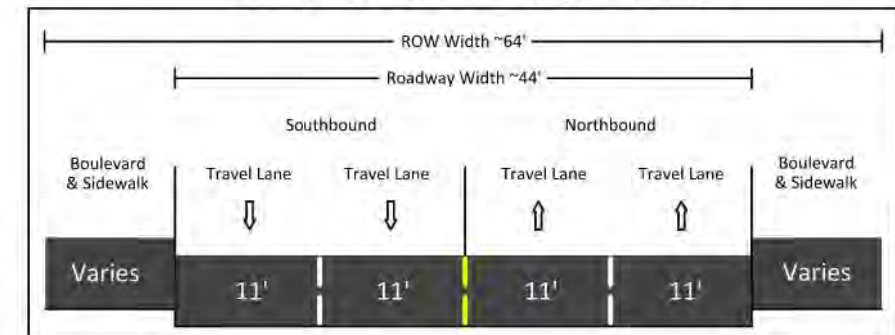
Segment 22B Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	19,600
Segment Maximum Peak Hour Volume ³ :	1,092

Segment 22C Characteristics

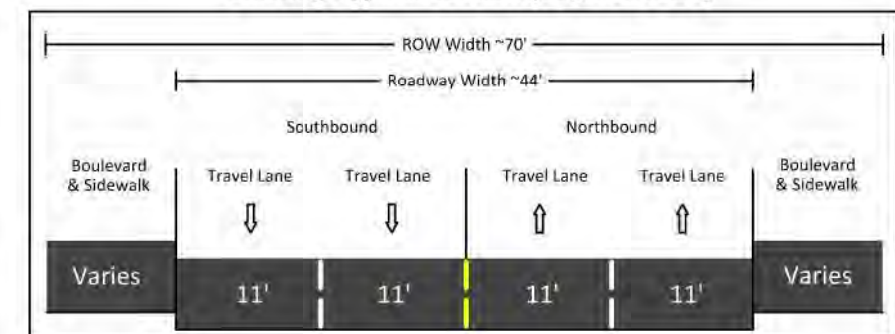
Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	31 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	17,900
Segment Maximum Peak Hour Volume ³ :	704

Existing Typical Section (Segment 22B)



* Not to scale - for illustration purpose only

Existing Typical Section (Segment 22C)



* Not to scale - for illustration purpose only

¹Source: StreetLight Data
²Five years crash data from 2013 to 2017 via MnCMAT
³Source: St. Paul Compass (2019)

LEGEND

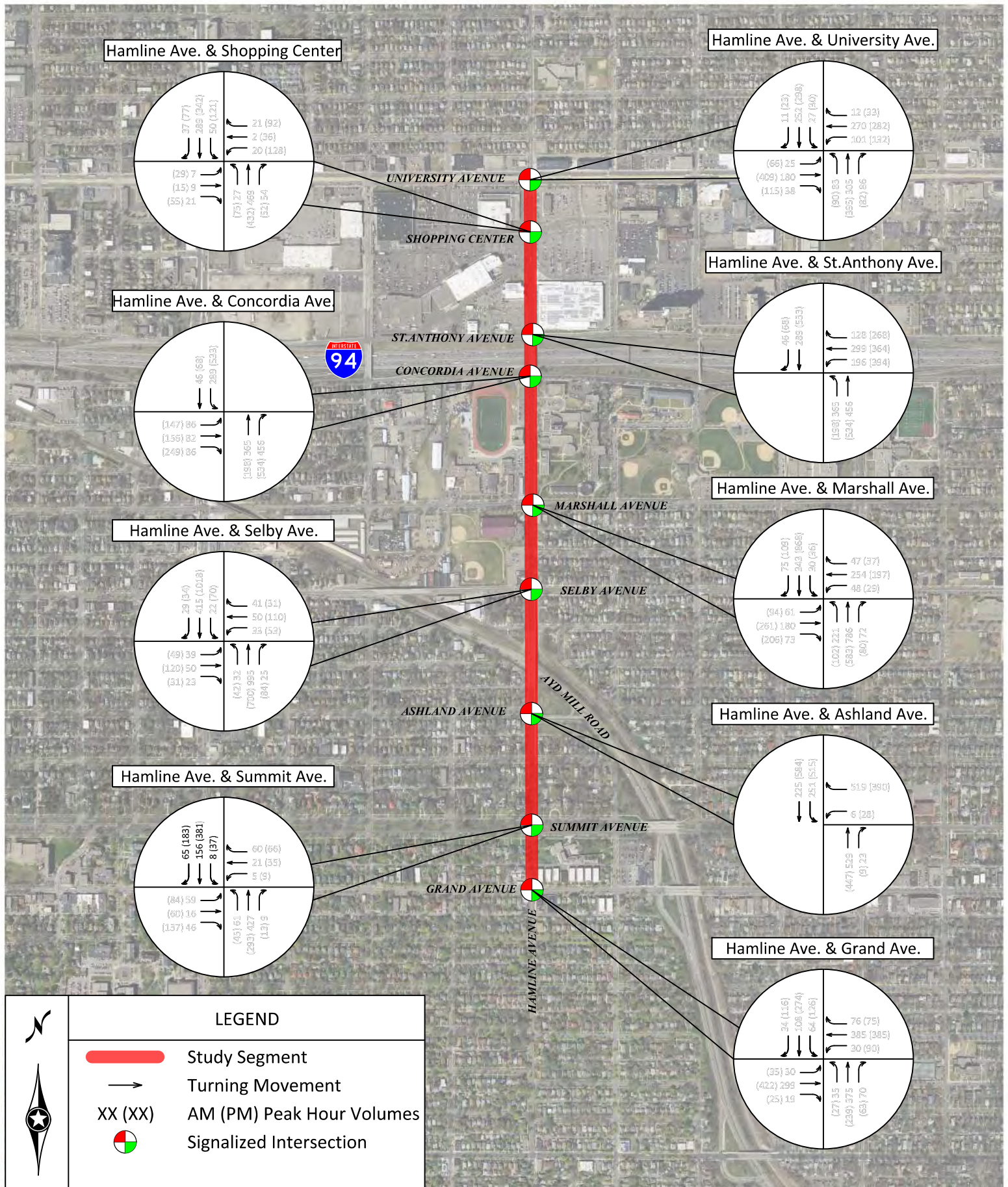
(X,XXX) MnDOT AADT	Signalized Intersection	Parking allowed (see parking notes for details)
(X,XXX) St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
(X,XXX) Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

Ramsey County 4 to 3 Lane Conversion Study



Segment 22
Hamline Avenue (Grand Avenue to University Avenue)

Sheet 2 of 2

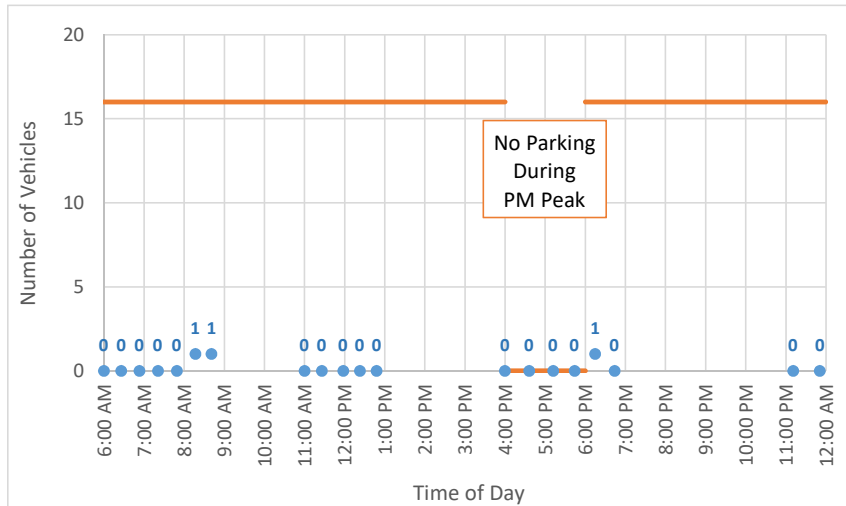


Segment 22 Parking Study Summary

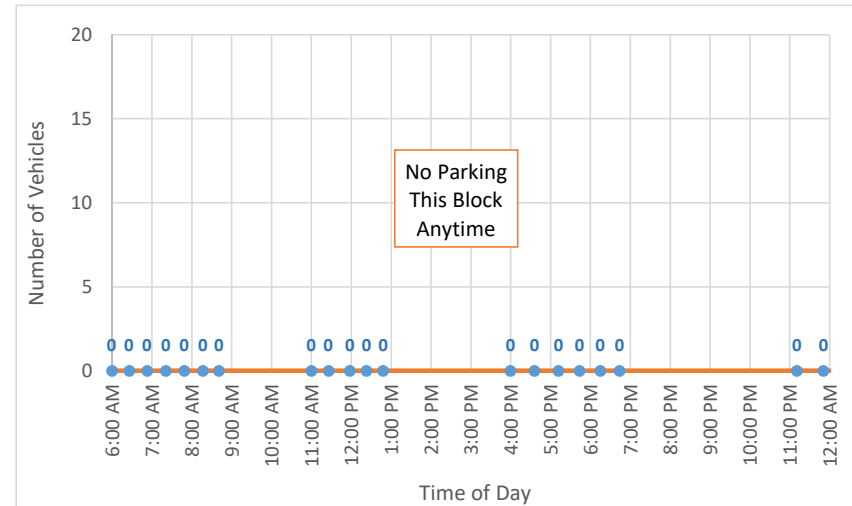


Between Summit Ave & Portland Ave

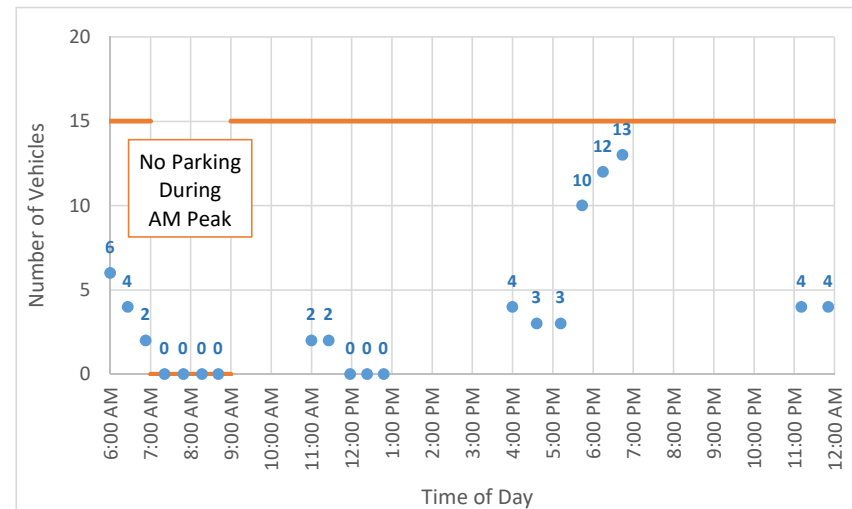
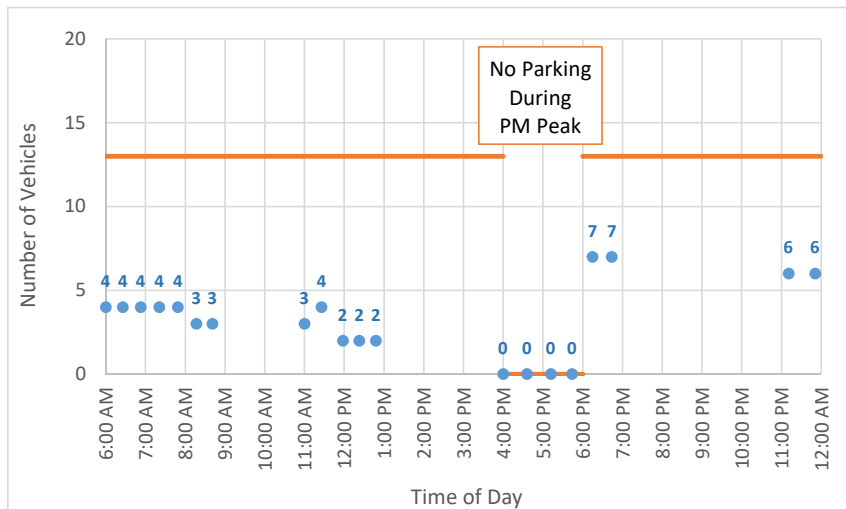
West Side of Hamline Avenue



East Side of Hamline Avenue



Between Grand Ave & Summit Ave



● Observed Demand
— Estimated Supply

Note: Evening observations were made on 1/29/2020. Morning and mid-day observations were made on 1/30/2020. Late night observations were made on 2/27/2020.

Segment 22

Evaluation Summary

Segment 22A - Hamline Avenue between Grand Avenue and Ayd Mill Road

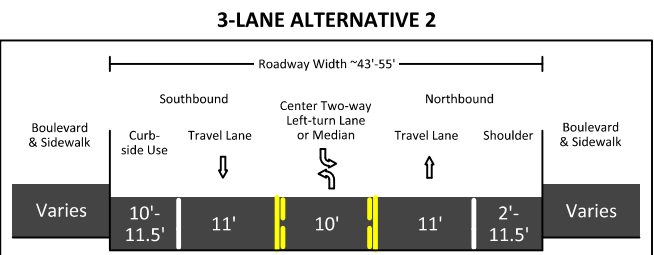
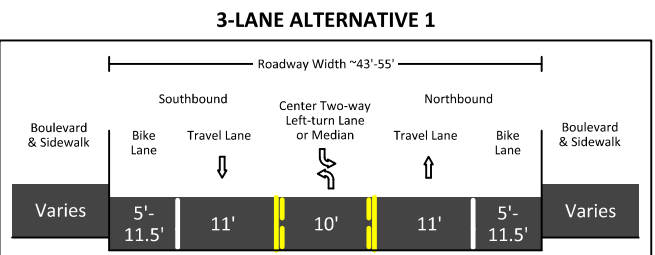
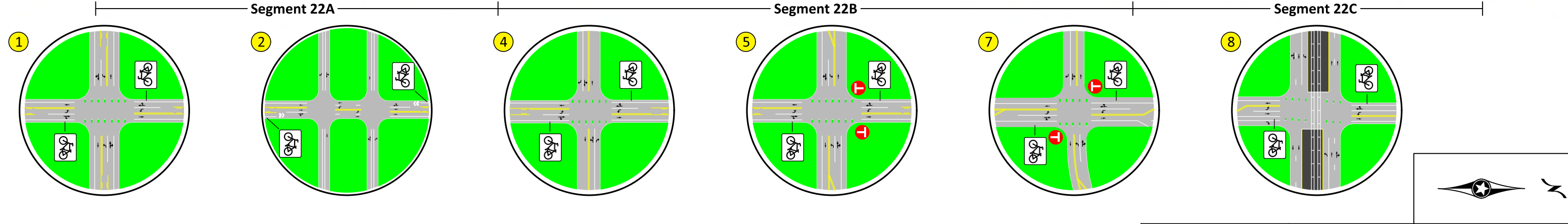
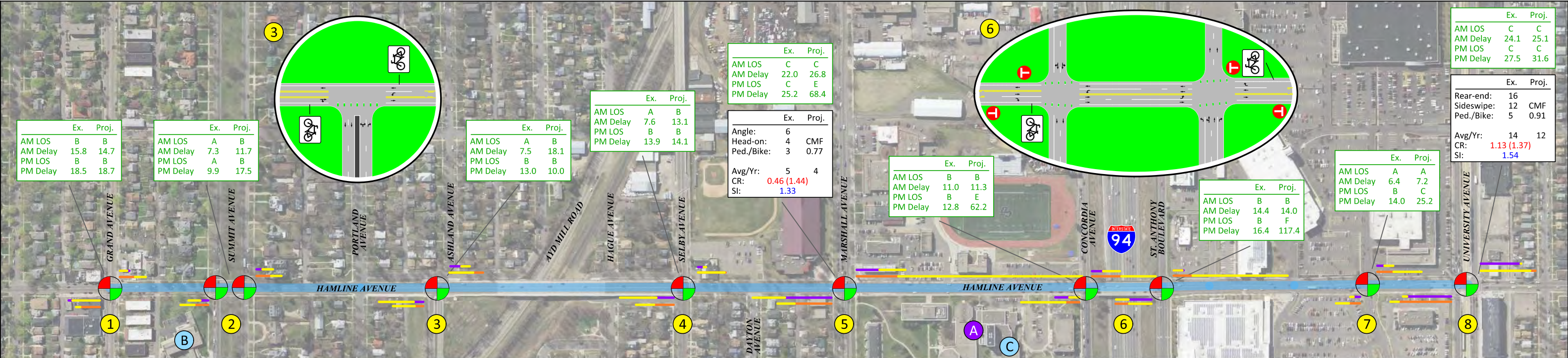
Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	No locations with 5+ crashes for detailed analysis		
Curbside Uses	1. Throughout most of the day parking is under-utilized, but it demand reaches near capacity after the PM peak. 2. There is no transit on this segment. 3. There are currently no bike lanes but are planned for the future.	1. On-street parking could be accommodated within the existing roadway width with the 3-lane conversion, but only one side of the street from Grand Ave to Portland Ave. 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both.	Feasible (Minimal Impact)
Roadway Function / Mobility	1. The signalized intersections at Hamline/Grand, Hamline/Summit, and Hamline/Ashland are expected to operate at LOS B or better. 2. Average queue lengths along Hamline Avenue are expected to moderately increase.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
Average Daily Traffic (ADT)	The AADT along Hamline Ave is 8,500.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 629.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is 72% NB/28% SB in morning hours and 42% NB/58% SB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 31 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
Access Points and Turning Traffic Patterns	1. There are 11 access points along Hamline Ave (0.3 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 43 feet from Grand Ave to Portland Ave and 51 feet from Portland to Ayd Mill Rd.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street between Grand Ave and Portland Ave.	Feasible

Segment 22B - Hamline Avenue between Ayd Mill Road and I-94

Key Findings	Favorability	Conclusion
1. One location on this segment saw more than 5 crashes over the study period: Marshall Avenue. 2. Marshall Avenue (signalized) had 18 crashes, 2 of which were with pedestrians and another with a bicycle; and had a CR=0.46 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 78% of crashes studied along this segment of Hamline Avenue. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 23% (CMF=0.77) in residential areas.	Benefit Expected
1. There is one transit route with 15-minute headways during peak hours. 2. The 3-lane conversion will maintain curb-side bus stops. 3. There are currently no bike lanes but are planned for the future.	1. Currently there is no on-street parking provided, but parking could be accommodated on one side of the street within the existing roadway width with the 3-lane conversion if desired. 2. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both. 3. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible (Minimal Impact)
1. The signalized intersection at Hamline/Selby is expected to operate at LOS B or better. 2. The signalized intersections at Hamline/Marshall, Hamline Concordia, and Hamline/St. Anthony are expected to operate at LOS E or F during the PM Peak. 3. Average queue lengths along Hamline are expected to significantly increase.	1. Roadway function has significant traffic mobility impact from 3-lane conversion. 2. The travel time and side-street delay increase are expected to negatively impact roadway mobility or access.	Significant Impact Expected
The AADT along Hamline Ave is 19,600.	The AADT is above 17,000.	Likely over capacity
The maximum directional peak hour traffic volume is 1092.	Peak hour volumes are high and 3 lane roadway will be pushed to capacity during peak hours.	Moderate Impact Expected
The traffic volume directional distribution is 72% NB/28% SB in morning hours and 42% NB/58% SB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 31 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
1. There are 16 access points along Hamline Ave (0.5 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 51 feet from Ayd Mill Rd to Selby Ave and 43 feet from Selby to Concordia Ave.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street.	Feasible

Segment 22C - Hamline Avenue between I-94 and University Avenue

Key Findings	Favorability	Conclusion
1. One location on this segment saw more than 5 crashes over the study period: University Avenue. 2. University Avenue (signalized) had 52 crashes, of which 16 were rear-end collisions. There was 1 crash with a bicycle and another 4 that were with pedestrians, 1 of which resulted in serious injury. This intersection had a CR=1.13 per MEV.	1. The 3-lane conversion is expected to reduce Sideswipe, Rear-end, Left-turn and Head on crashes that consist 69% of crashes studied along this segment of Hamline Avenue. 2. The conversion is expected to improve pedestrian crossing safety, and potentially improve cycling safety if bike lanes are added. 3. The conversion is expected to reduce crash severity due to reduced vehicle speeds. 4. A comprehensive study on 4 to 3 lane conversions found crash reductions of 9% (0.91) in high crash areas (CR >0.71).	Benefit Expected
1. There is one transit route with 15-minute headways during peak hours. 2. The 3-lane conversion will maintain curb-side bus stops. 3. There are currently no bike lanes but are planned for the future.	1. Some alternatives provide trade offs between on-street parking and bike lanes, there is not enough roadway width to accommodate both. 2. Some alternatives allow for buses to stop out of travel lanes while others require buses to stop in a travel lane. Delays created by buses stopping in a travel lane will be minimal due to large headways.	Feasible (Minimal Impact)
1. The signalized intersections at Hamline/Midway Market and Hamline/University ise expected to operate at LOS C or better. 2. Average queue lengths along Hamline Avenue are expected to moderately increase.	1. Roadway function is maintained with minimal traffic mobility impact from 3-lane conversion. 2. The slight travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
The AADT along Hamline Ave is 17,900.	The AADT is slightly above 17,000.	Feasible
The maximum directional peak hour traffic volume is 704.	Peak hour volumes are low and 3 lane roadway will be below capacity during peak hours.	Minimal impact expected
The traffic volume directional distribution is 72% NB/28% SB in morning hours and 42% NB/58% SB in evening hours.	Marginal peak direction single lane capacity concern.	Feasible
1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 31 mph.	Although vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
1. There are 6 access points along Hamline Ave (0.3 mi).	Minimal benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
The existing roadway width is 43 feet from St. Anthony Boulevard to mall entrance and 55 feet from mall entrance to University Avenue.	3-lane cross-section could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street.	Feasible



Alternative could provide curbside use on either side of the street.

LEGEND

Traffic Analysis Results

X.XX Existing Avg. Queue Length AM

X.XX Projected Avg. Queue Length PM

Crash Analysis Results

Crashes from 2016-Oct. 2019

X.XX (X.XX) Crash Rate (Critical Crash Rate) Crashes per Million Entering Vehicles (MEV)

X.XX Severity Index

Signalized Intersection

Public Transit Stop

- REQUIRED INTERSECTION MODIFICATIONS**
- 1 Adjust detection for new lane alignments Recommend mast arms
 - 2 Adjust detection for new lane alignments
 - 3 Adjust detection for new lane alignments Remove 1 NB/SB thru head, Adjust other NB/SB thru head
 - 4 Adjust detection for new lane alignments Remove 1 NB/SB thru head, Adjust other NB/SB thru head
 - 5 Adjust detection for new lane alignments
 - 6 Adjust detection for new lane alignments at both Concordia Ave. & St. Anthony Blvd.
 - 7 Adjust detection for new lane alignments Remove 1 NB/SB thru head, Adjust other NB/SB thru head
 - 8 Adjust detection for new lane alignments

- NOTES**
- A Concordia University, St. Paul
 - B Mt. Zion Temple
 - C Vertical Church St. Paul

* Typical Sections are not drawn to scale - for illustration purpose only



ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 22 - Hamline Avenue (Grand Avenue to University Avenue)
Alliant Project No. 119-0166

Date Prepared:
September 16, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		M&O Add-On Option				
					Quantity	Total	Quantity	Total			
Construction Costs											
1.	PAVEMENT MARKING REMOVAL	LIN FT	\$ 1.00		9175	\$ 9,175.00	-9175	\$ (9,175.00)			
2.	MILL AND PATCH BITUMINOUS PAVEMENT	SQ FT	\$ 1.20				202100	\$ 242,520.00			
3.	REVISE SIGNAL SYSTEM A (GRAND AVE)	SYSTEM	\$ 200,000.00		1	\$ 200,000.00					
4.	REVISE SIGNAL SYSTEM B (SUMMIT AVE)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00					
5.	REVISE SIGNAL SYSTEM C (ASHLAND AVE)	SYSTEM	\$ 17,000.00		1	\$ 17,000.00					
6.	REVISE SIGNAL SYSTEM D (SELBY AVE)	SYSTEM	\$ 17,000.00		1	\$ 17,000.00					
7.	REVISE SIGNAL SYSTEM E (MARSHALL AVE)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00					
8.	REVISE SIGNAL SYSTEM F (CONCORDIA AVE)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00					
9.	REVISE SIGNAL SYSTEM G (ST. ANTHONY BLVD)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00					
10.	REVISE SIGNAL SYSTEM H (MALL ENTRANCE)	SYSTEM	\$ 17,000.00		1	\$ 17,000.00					
11.	REVISE SIGNAL SYSTEM I (UNIVERSITY AVE)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00					
12.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 2,529.50		10	\$ 25,295.00					
13.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		875	\$ 3,500.00					
14.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		1400	\$ 2,800.00					
15.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		671	\$ 3,355.00					
16.	PAVEMENT MARKING SPECIAL	SQ FT	\$ 5.00		147	\$ 735.00					
17.	ADA-COMPLIANT PEDESTRIAN RAMPS	CORNER	\$ 20,000.00	(1)	5	\$ 100,000.00					
Construction Subtotal						\$ 420,860		\$ 233,345			
Mobilization 4%						\$ 16,834					
Traffic Control 6%						\$ 25,252					
Contingency 10%						\$ 42,086		\$ 23,335			
Contaminated Material Contingency						\$ -		\$ -			
Total Opinion of Construction Cost Plus Contingency						\$ 505,032		\$ 256,680			
Professional Services											
18.	Design Services (Engineering, Survey, Architecture)		10%			\$ 50,503		\$ 25,668			
19.	Overhead (Legal, Fiscal, Etc.)		7%			\$ 35,352		\$ 17,968			
Subtotal Professional Services						\$ 85,855		\$ 43,636			
Total Opinion of Project Cost						\$ 590,887		\$ 300,315			

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

(1) Pedestrian ramp cost does not include any utility work.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix L:
Segment 23 Detailed Analysis Results



Parking Notes:	
1	No Restrictions
2	2 Hour Limit During Day (8am-4pm Every Day)
3	2 Hour Limit During Day (9am-6pm Every Day)
4	No Parking During AM Peak (7am-9am Mon-Fri)
5	No Parking During PM Peak (4pm-6pm Mon-Fri)

Corridor 23 Characteristics

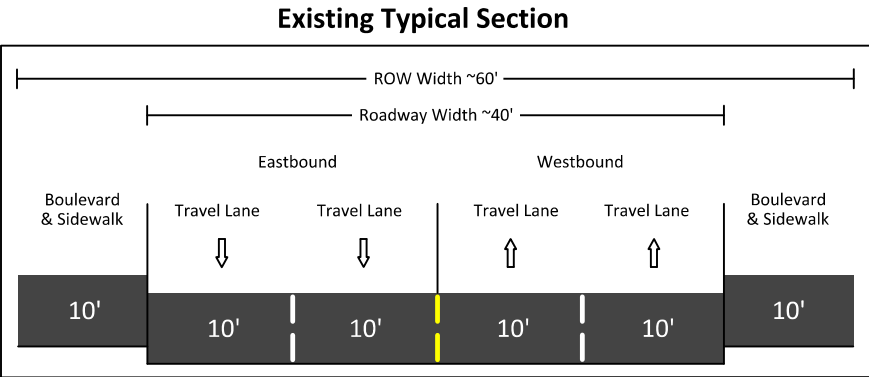
Directional Split ¹ :	AM: 26% EB/74% WB
	PM: 34% EB/66% WB
Truck Route:	No
Ped Activity Level ¹ :	High
Bike Activity Level ¹ :	Low
Crashes in 5 Years ² :	95
Crashes/Mile ² :	190

General Notes

1. Parking not permitted unless noted otherwise.
2. Transit boardings and alightings are 2018 weekday averages.

Corridor 23 Transit Routes

No transit routes on this corridor.



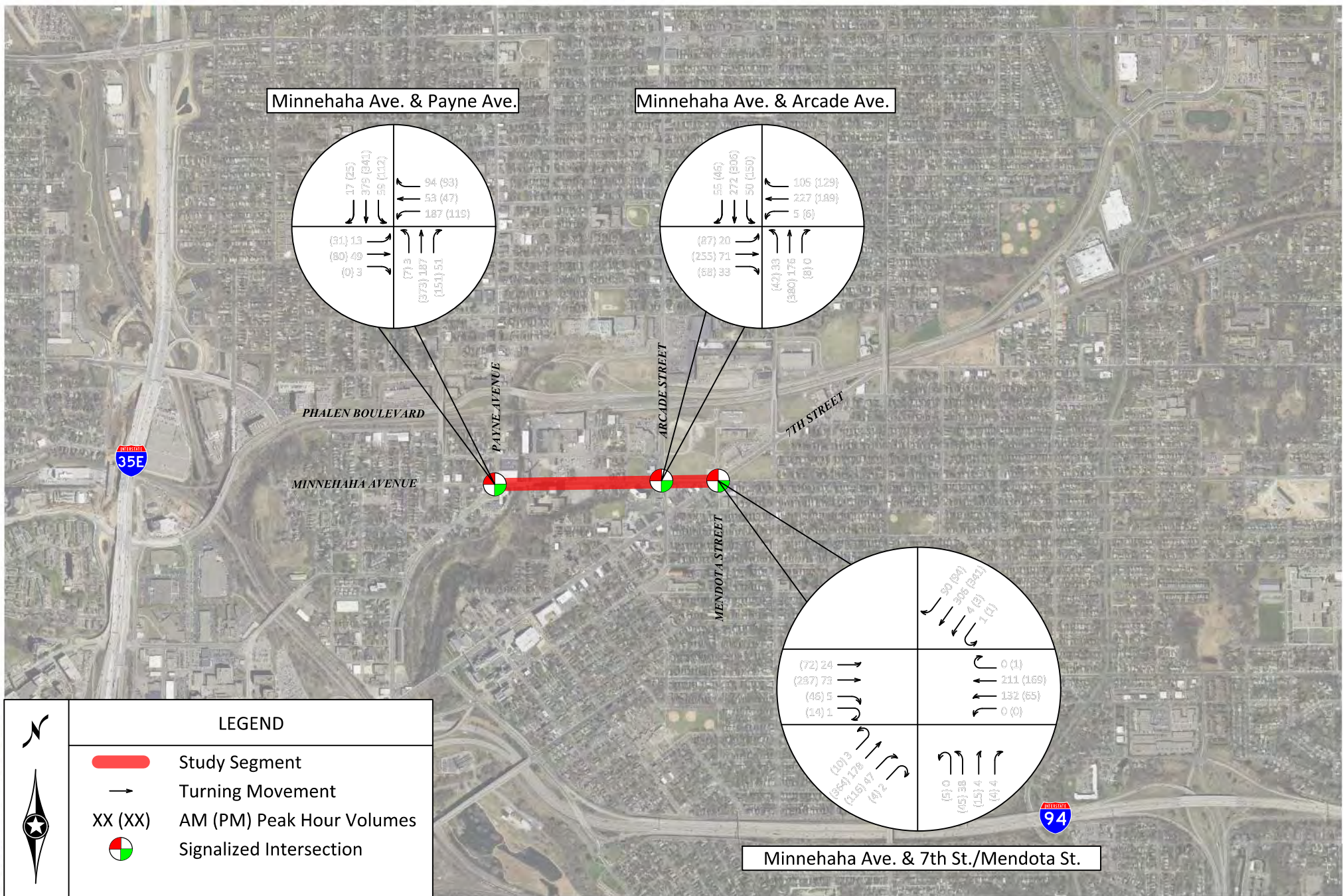
* Not to scale - for illustration purpose only

Segment 23 Characteristics

Weekday (Tu-Th) Average Speed (Daily) ¹ :	21 mph
Weekday (Tu-Th) 85th %tile Speed (Daily) ¹ :	29 mph
Speed Limit:	30 mph
Segment Average Annual Daily Volume ³ :	7,300
Segment Maximum Peak Hour Volume ⁴ :	368

LEGEND

MnDOT AADT	Signalized Intersection	Parking allowed (<i>see parking notes for details</i>)
St. Paul Compass AADT	All-way stop Intersection	Public Transit Stops
Spack Consulting ADT (If there is an asterisk (*) the data was collected during a MnPASS detour)	Marked Crosswalk (At unsignalized intersection)	

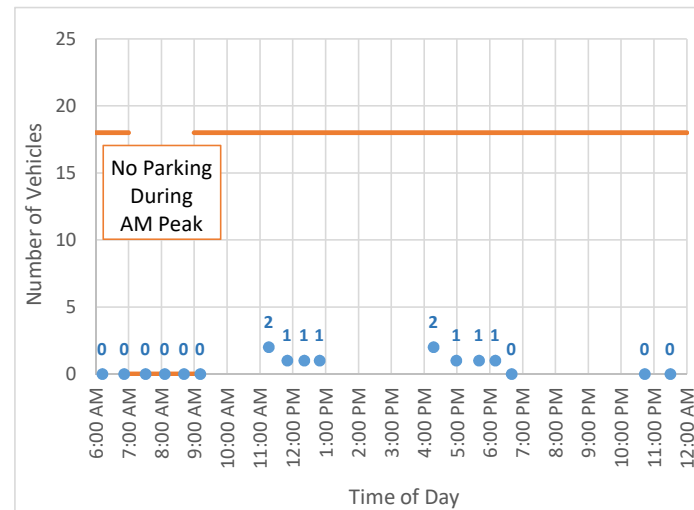


Segment 23 Parking Study Summary

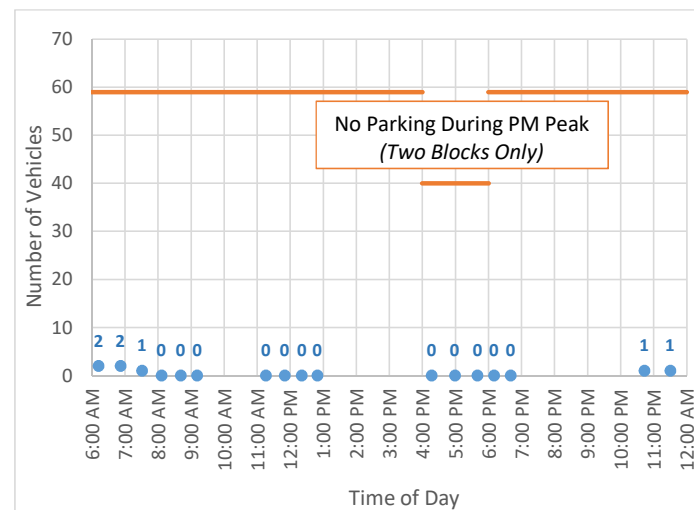


Between Bridge & 7th Street

North Side of Minnehaha Avenue



South Side of Minnehaha Avenue



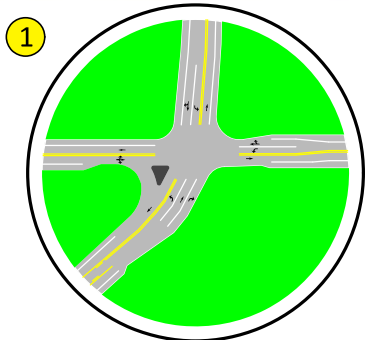
● Observed Demand
— Estimated Supply

Note: Morning, mid-day, and evening observations were made on 2/26/2020. Late night observations were made on 2/27/2020.

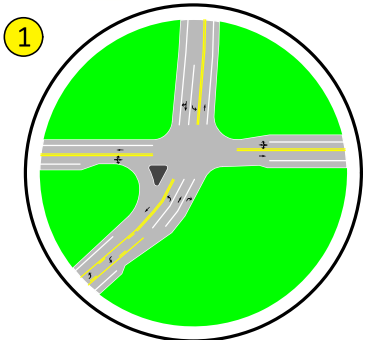
Segment 23: Minnehaha Avenue between Payne Avenue and 7th Street/Mendota Street			
Key Factors	Key Findings	Favorability	Conclusion
Crash Patterns	No locations with 5+ crashes for detailed analysis		
Curbside Uses	1. Curbside uses can be accommodated on one side of the street within the existing roadway width with the 3-lane conversion. 2. Currently there is on-street parking provided on both sides (some blocks are off-peak only). 3. There is currently no transit or bike lanes and they are not planned for the future.	1. Curbside uses could be accommodated on one side within the existing roadway width with the 3-lane conversion. 2. If the 2-lane option is implemented, curbside uses could be accommodated on both sides.	Feasible
Roadway Function / Mobility	1. The signalized intersections at Minnehaha/Payne, Minnehaha/Arcade, and Minnehaha/7th/Mendota are expected to operate at LOS C or better, with minimal increases in overall intersection delay. 2. Average queue lengths along Minnehaha are expected to be comparable to existing queues for either the 3-lane option (Alternative 1) or the 2-lane option (Alternative 2).	1. Roadway function is maintained with moderate traffic mobility impact from 2-lane or 3-lane conversion. 2. The travel time and side-street delay increase are not expected to negatively impact roadway mobility or access.	Minimal impact expected
Average Daily Traffic (ADT)	The AADT along Minnehaha Ave is 7,300.	The AADT is below 17,000.	Feasible
Peak Hour Traffic Volumes	The maximum directional peak hour traffic volume is 368.	Peak hour volumes are low and both 2 or 3 lane roadways will be below capacity during peak hours.	Minimal impact expected
Traffic Volume Directional Distribution	The traffic volume directional distribution is approximately 25% EB/75% WB in the morning and 50% EB/50% WB in the evening.	Although peak hour volumes are unbalanced during the morning peak hour, there is no concern about directional distribution with low peak hour volumes.	Feasible
Motor Vehicle Speeds	1. The posted speed limit is 30mph. 2. The 85th percentile speed is approximately 29mph.	Although actual vehicle speeds are very close to the posted speed, an overall speed reduction is expected.	Feasible (Minimal Impact)
Access Points and Turning Traffic Patterns	There are 19 access points along Minnehaha Ave (0.5 mi).	Moderate benefit of Two-way Center Left Turn Lane with existing access density.	Benefit Expected
Roadway Width	The existing roadway width is 40 feet.	1. 3-lane cross-section (Alternative 1) could occur within the existing roadway width, but would result in the loss of curbside uses on one side of the street. 2. 2-lane cross-section (Alternative 2) could occur within the existing roadway width and would not result in the loss of any curbside uses.	Feasible



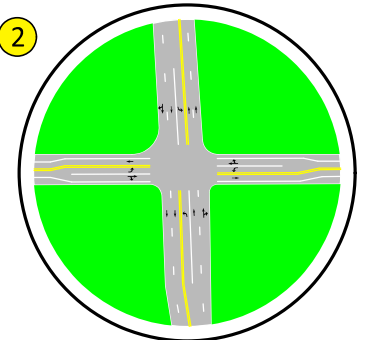
Segment 23



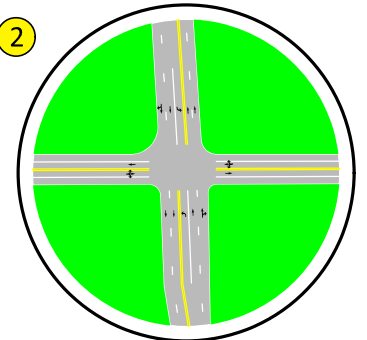
ALTERNATIVE 1



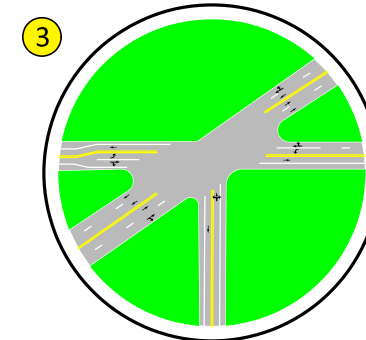
ALTERNATIVE 2



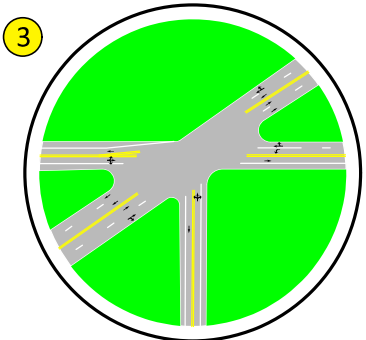
ALTERNATIVE 1



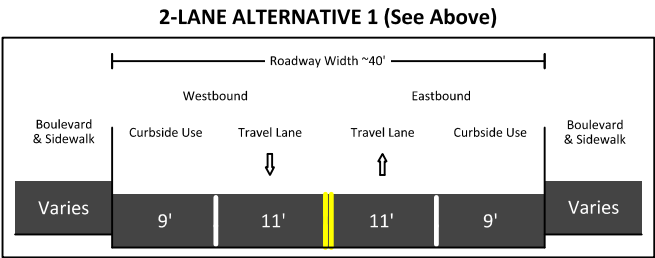
ALTERNATIVE 2



ALTERNATIVE 1

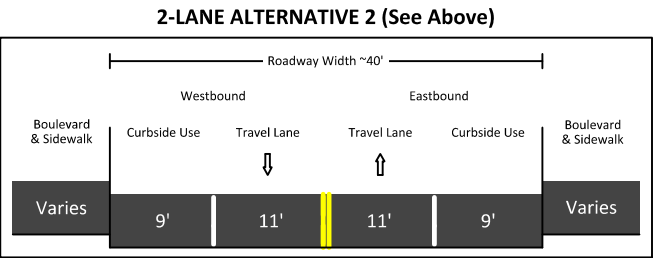


ALTERNATIVE 2



Alternative Includes left turn lanes at intersections

Advantages: At intersections, a left turn lane could be provided. Maintains curbside use on both sides of Minnehaha Ave, similar or reduced average queue lengths compared to existing.
Disadvantages: Curbside uses on only one side of the street at intersections.



Advantages: Maintains curbside use on both sides of Minnehaha Ave, similar or reduced average queue lengths compared to existing and Alternative 1
Disadvantages: At intersections, left turn lanes could be provided instead of curbside uses

LEGEND

X.XX Traffic Analysis Results

X Crash Analysis Results
Crashes from 2016-Oct. 2019

X.XX (X.XX) Intersection Crash Rate
Crashes per Million Entering Vehicles (MEV)

X.XX Severity Index

Existing Avg. Queue Length

Projected Avg. Queue Length (Alt 1)

Projected Avg. Queue Length (Alt 2)

Signalized Intersection

Public Transit Stop

REQUIRED INTERSECTION MODIFICATIONS

1 Adjust detection for new lane alignments

2 Adjust detection for new lane alignments

3 Adjust detection for new lane alignments

NOTES

A Hope Community Academy

ENGINEER'S OPINION OF PROBABLE COST
Ramsey County - 4 to 3 Lane Conversion Study
Segment 23 - Minnehaha Avenue (Payne Avenue to East 7th Street)
Alliant Project No. 119-0166

Date Prepared:
September 16, 2020



No.	Description	Unit	Unit Price	Notes	Alternative 1		Alternative 2		M&O Add-On Option	
					Quantity	Total	Quantity	Total	Quantity	Total
Construction Costs										
1.	PAVEMENT MARKING REMOVAL	LIN FT	\$ 1.00		2813	\$ 2,813.00	2813	\$ 2,813.00	-2813	\$ (2,813.00)
2.	MILL AND PATCH BITUMINOUS PAVEMENT	SQ FT	\$ 1.20						11112	\$ 13,334.40
3.	REVISE SIGNAL SYSTEM A (PAYNE AVE)	SYSTEM	\$ 2,500.00		1	\$ 2,500.00	1	\$ 2,500.00		
4.	REVISE SIGNAL SYSTEM B (ARCADE ST)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00		
5.	REVISE SIGNAL SYSTEM C (7TH ST/MENDOTA ST)	SYSTEM	\$ 5,000.00		1	\$ 5,000.00	1	\$ 5,000.00		
5.	TWO-WAY LEFT TURN LANE STRIPING	250 LIN FT	\$ 1,529.50							
6.	6" DOUBLE SOLID LINE PAINT (WR)	LIN FT	\$ 4.00		2500	\$ 10,000.00	2500	\$ 10,000.00		
7.	6" SOLID LINE MULTI-COMPONENT (WR)	LIN FT	\$ 2.00		5400	\$ 10,800.00	5000	\$ 10,000.00		
8.	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN	SQ FT	\$ 5.00		183	\$ 915.00				
9.	ADA-COMPLIANT PEDESTRIAN RAMPS	CORNER	\$ 20,000.00	(1)	5	\$ 100,000.00	5	\$ 100,000.00		
Construction Subtotal						\$ 137,028		\$ 135,313		\$ 10,521
Mobilization 4%						\$ 5,481		\$ 5,413		\$ 421
Traffic Control 6%						\$ 8,222		\$ 8,119		\$ 631
Contingency 10%						\$ 13,703		\$ 13,531		\$ 1,052
Total Opinion of Construction Cost Plus Contingency						\$ 164,434		\$ 162,376		\$ 12,626
Professional Services										
10.	Design Services (Engineering, Survey, Architecture)		10%			\$ 16,443		\$ 16,238		\$ 1,263
11.	Overhead (Legal, Fiscal, Etc.)		7%			\$ 11,510		\$ 11,366		\$ 884
Subtotal Professional Services						\$ 27,954		\$ 27,604		\$ 2,146
Total Opinion of Project Cost						\$ 192,387		\$ 189,979		\$ 14,772

Note: Right-of-way costs not included in estimate. Survey needed in pre-design phase to confirm necessary right-of-way acquisition. Removal of contaminated materials is not included in this estimate.

(1) Pedestrian ramp cost does not include any utility work.

Alliant Engineering's (Alliant) Opinions of Probable Cost provided for herein are to be made on the basis of Alliant's experience and qualifications and represent Alliant's best judgment. However, since Alliant has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Alliant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from Opinions of Probable Cost prepared by Alliant.

Prepared By: JDC

Checked By: SP

Appendix M:
Crash Modification Factors

Crash Modification Factors References

4 to 3 Conversion

- a. Residential Areas (Subjective—best judgment)
 - i. Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviyy, and T. Haan. "Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan". Michigan Department of Transportation Report Num RC-1555, (2012) **(0.77)**
- b. General (where intersection did not meet any of the other criteria)
 - i. Gates, T. J., Noyce, D. A., Talada, V., and Hill, L., "The Safety and Operational Effects of "Road Diet" Conversion in Minnesota." 2007 TRB 86th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#07-1918, Washington, D.C., (2007) **(0.63)**
 - ii. Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviyy, and T. Haan. "Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan". Michigan Department of Transportation Report Num RC-1555, (2012) **(0.91)**
- c. High crash areas (Crash Rate >0.71)
 - i. Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviyy, and T. Haan. "Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan". Michigan Department of Transportation Report Num RC-1555, (2012) **(0.91)**
- d. Low crash areas (Crash Rate <0.35 EXCLUDING intersections where CR>Statewide Avg)
 - i. Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviyy, and T. Haan. "Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan". Michigan Department of Transportation Report Num RC-1555, (2012) **(0.98)**
- e. High Driveway Density (Access Density Score >=4 (>=45 driveways/mile))
 - i. Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviyy, and T. Haan. "Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan". Michigan Department of Transportation Report Num RC-1555, (2012) **(0.81)**

Appendix N:
Prioritization Ranking Analysis

Ramsey County 4 to 3 Conversion Study: Ramsey Co Priortization Ranking Analysis

	Road Segment	Study Segment Approximate Length (mi)	Extents	Sub-Segment Approximate Length (mi)	Pavement Condition Index (PCI)	Pavement Condition Notes	Approximate Road Width	Curbside Use Impact	Traffic Operations Impact	Other Considerations	Sub-Segment Benefit Score	Segment Benefit Score	Concept Design/Potential Lane Reduction Scope	Preliminary Cost	Implementation Priority Ranking
1A	County Road B2 (CSAH 24 and 78)	0.8 mile	Long Lake Road to Cleveland Avenue	0.3	54 to 64	Terminal Road - 2.45, B2 - 2.9	48'	Moderate	Likely Low	3 lane roadway entering at western end of segment. No access on this end, consider 2 lane segment. 1 signal.	2.0	2.25	Restripe+Sig Mods	n/a	10
1B			Cleveland Avenue to Fairview Avenue	0.5			48'	Moderate	Likely High	4 lane roadway entering on eastern end of segment. High access density. Was initially considered easy but peak hour directional volumes indicate otherwise. 2 signals.	2.4				
2A	County Road C (CSAH 23)	2.8 miles	Lexington Ave to Victoria St	0.4	50 to 72	Lex to Victoria - 3.25, Vic to Dale -2.25, Dale to Rice 2.4, Rice to LCR -3.05	52'	Low	Low	Capacity analysis needed at Victoria (split phasing, long queues). No Curbside Uses. Entering traffic on western end is 4 lane divided. 1 signal.	1.2	1.69	2-Lane Restripe+Sig Mods	\$1,500,000	14
2B			Victoria St to Rice St	1.6			44'	Moderate	Low	Capacity analysis needed at Victoria and Rice (split phasing, long queues). High access density. 2 signals.	1.6		3-Lane Restripe+Sig Mods		
2C			Rice St to RR Bridge	0.4			48'	Low	Low	High access density with offset streets. 1 signal. Low volumes.	2.2		3-Lane Restripe+Sig Replace		
2D			RR Bridge to I-35E	0.4			RR bridge to Little Canada 48' Little Canada to I-35E 48'-70'	Moderate	High	Entering traffic on eastern end is 2 lane with shoulders. High access density. 2 signals - very closely spaced.	2.0		3-Lane Restripe+Sig Mods		
3	County Road D (CSAH 19)	1.0 mile	Silver Lake Road to Old Highway 8	1.0	67 to 71	Silver Lake to Chandler-3.2 , Chandler to old 8 3.00	Silver Lake to Penrod 57' Penrod to McCullum 52' McCullum to Old 8 60'	Low	Likely Low	3 lane roadway entering at western end of segment. Volumes near capacity 3 signals.	2.2	2.20	Restripe+Sig Mods	n/a	9
4A	County Road E (CSAH 15)	0.7 mile	Labore Rd to International Dr	0.5	100	4.5 - overlaid in 2018	@ Labore 72', Labore to Big Fox 62' 1371' (W?) of 61- 51'	Low	Likely Moderate	4-lane divided roadway with turn lanes entering from west. 2 signals. High access density on south side.	2.0	1.94	Restripe+Sig Mods	n/a	12
4B			International Dr to TH 61	0.2			67'	Low	Likely Moderate	Roadway is currently 5-lane. 4-lane roadway entering to the east, but 3-lane very close nearby. High access density 2 signals.	1.8				

Ramsey County 4 to 3 Conversion Study: Ramsey Co Priortization Ranking Analysis

	Road Segment	Study Segment Approximate Length (mi)	Extents	Sub-Segment Approximate Length (mi)	Pavement Condition Index (PCI)	Pavement Condition Notes	Approximate Road Width	Curbside Use Impact	Traffic Operations Impact	Other Considerations	Sub-Segment Benefit Score	Segment Benefit Score	Concept Design/Potential Lane Reduction Scope	Preliminary Cost	Implementation Priority Ranking
5	County Road F/10th Street NW (CSAH 12/45)	0.4 mile	I-694 to Old Highway 8	0.4	58	694 to 8th - 2.6, 8th to old 8 - no data	1-694 to tower drive -52', @ old 8-70'	Low	Likely Low	2-lane roadways on either end of corridor. Was planned for conversion but waiting until after MnPASS. 3 signals, 1 at-grade RR crossing. High access density.	2.8	2.80	Restripe+Sig Mods	n/a	5
6	Dale Street (CSAH 53)	0.7 mile	Grand Avenue to Iglehart Avenue	0.7	46	2.05	40'	High	Likely High	2 lane roadway entering at southern end of segment. Capacity analysis needed on north end: Dale/Marshall, Dale/Selby. Not many signals and spread out.	3.2	3.20	M&O+Sig Mods	n/a	16
7A	Dale Street (CSAH 53)	2.7 miles	Como Ave to Larpenteur Ave	1.5	43 to 69	Front to Hatch - 1.95, Hatch to Arlington -2.0, Arlignto to Larpenteur - 3.1, Larpenteur to 36 -2.75	48'	High	High	4-lane divided on southern end. 5 signals. Low-medium access density on most blocks, some blocks high density.	2.2	2.19	3-Lane M&O+Sig Replace+Sig Mods	\$1,505,000-\$1,929,000	17
7B			Larpenteur Ave to CR B	1.0			44'	Moderate	Moderate	2 signals. Medium access density, offset streets.	2.0		3-Lane M&O+Sig Replace+Sig Mods		
7C			CR B to TH 36	0.2			44'	Low	Low	2-lane with shoulders on northern end. 3 signals (if you count both TH 36 signals). High access density.	3.0		3-Lane M&O+Sig Mods		
8A	Fairview Avenue (CSAH 48)	0.9 mile	CR B2 to Oakcrest Ave	0.2	59 to 63	B2 to Concrete - 2.85, Concrete 2.75 (rehabed 2019, 2.75 is an old score), Concrete to C2- 2.65	62'	Moderate	Likely Moderate	Need capacity analysis at B2. 1 signal. High access density.	2.8	2.89	Restripe+Sig Mods	n/a	6
8B			Oakcrest Ave to CR C	0.3			Oakcrest to RR tracks -53 to 67' RR tracks to C - 74'	Moderate	Likely Moderate	Need capacity analysis at C. 1 signal. High access density.	2.8				
8C			CR C to CR C2	0.4			51-64'	Low	Likely Low	Entering traffic on northern end is 2 lane w shoulders. 2 signals. High access density.	3.0				
9A	Lexington Avenue (CSAH 51)	3.8	Hwy 96 to CR I	2.0	58 to 80	96 to Tanglewood - 3.35, Tanglewood to I -3.6, I to royal Oaks -3.3, Royal Oaks to J - 2.6	96' to Tanglewood 68'-52' Tanglewood to I -48'	Moderate	Likely High	Highly directional. High-speed. High-Access (majority on east side, just a few on west side). 3 signals. Segment currently has detour traffic from MnPASS (ADT of 21,400).	1.4	1.68	Restripe+Sig Mods	n/a	15
9B			CR I to CR J	1.8			48'	Low	Likely Low	Highly directional. Even though AADT is low, peak hour directional data is very high. High-speed, High access density, 2 signals. Segment currently may have detour traffic from MnPASS (ADT of 11,100).	2.0				
10	Lydia Avenue (CSAH 19)	0.2 mile	White Bear Avenue to Ariel Street	0.2	71	3.2	50'	Moderate	Likely Low	Entering traffic on east end is 2-lane w/ shoulders. 2 closely-spaced signals (eastern one is a ped signal). Could probably function as a 2-lane, might be able to squeeze a 3rd lane in.	2.8	2.80	Restripe+Sig Mods	n/a	1

Ramsey County 4 to 3 Conversion Study: Ramsey Co Priortization Ranking Analysis

	Road Segment	Study Segment Approximate Length (mi)	Extents	Sub-Segment Approximate Length (mi)	Pavement Condition Index (PCI)	Pavement Condition Notes	Approximate Road Width	Curbside Use Impact	Traffic Operations Impact	Other Considerations	Sub-Segment Benefit Score	Segment Benefit Score	Concept Design/Potential Lane Reduction Scope	Preliminary Cost	Implementation Priority Ranking
11A	Marshall Avenue (CSAH 35)	0.5 mile	Mississippi River Blvd to Otis Ave	0.1	71	3.2	64'-70'	High	Likely High	Entering traffic on west side is 4-lane. Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Currently transition point to one lane EB.	3.0	3.00	Restripe+Sig Mods	n/a	7
11B			Otis Ave to Montrose Pl	0.1			57'-62'	High	Likely High	Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Has only one lane eastbound already.	3.0				
11C			Montrose Pl to Cretin Ave	0.2			57'	High	Likely High	Entering traffic on east stide is 2-lane with left turn lanes and bike lanes. Westbound buses stop in right lane, westbound bicyclists ride in right lane. B Line corridor. 1 signal. Has only one lane eastbound already.	3.0				
12	Maryland Avenue (CSAH 31)	0.3 mile	Rice Street to Abell Street	0.3	61	2.75	42' (at Rice St 57')	Low	Likely High	Entering traffic on west side is 2-lane, on east side is 4 lane divided. Could work well on this corridor if current Maryland project goes well. 2 signals.	3.8	3.80	Restripe+Sig Mods	n/a	3
13A	Maryland Avenue (CSAH 31)	0.9 mile	Clarence St to Phalen Blvd	0.2	62	2.8	72'	Moderate	Likely Low	Entering traffic on west side is 4-lane divided, then 3-lane soon after. Could work well on this corridor if current Maryland project goes well. 2 signals.	3.2	3.68	Restripe+Sig Mods	n/a	2
13B			Phalen Blvd to White Bear Ave	0.8			40'	Moderate	Likely Low	entering traffic on east side is 2 lane with parking Could work well on this corridor if current Maryland project goes well. 3 signals.	3.8				
14	McKnight Road (CSAH 68)	0.3 mile	13th Avenue to Mohawk Road	0.3	60	2.7	48'	Low	Likely Low	Entering traffic on the south is 4-lane divided but planned to be 3-lane. Entering traffic on the north is 2-lane. No signals.	2.2	2.20	Restripe	n/a	8
15	North St. Paul Road (CSAH 29)	0.2 mile	White Bear Avenue to Ripley Avenue		10 to 61	2.75, concrete sections are .45	50'								
16A	Old Highway 8 (CSAH 77)	2.0 miles	CR D to 5th St	0.4	70	3.15	50'-70'	Low	Low	Traffic entering on south side is 3-lane. High access density. 1 signal. Segment currently may have detour traffic from MnPASS (ADT of unknown)	2.0	1.88	3-Lane Restripe+Sig Mods	\$1,232,000-\$1,290,000	11
16B			5th St to RR Crossing	0.6			50' (but narrows under RR bridge)	Moderate	Low	High access density. No signals. Segment currently has detour traffic from MnPASS (ADT of 15,700)	1.6		3-Lane Restripe		
16C			RR Crossing to 8th Ave	0.7			60' (but narrows under RR bridge)	Moderate	Low	Utility pole company on corridor - large timber trucks. Ped crossing difficulty at DQ at trailer park. High access density. 1 signal. Segment currently has detour traffic from MnPASS (ADT of 14,500)	2.0		3-Lane Restripe+Sig Mods		
16D			8th Ave to 5th Ave	0.3			47'	Low	Low	Traffic entering on north/east side is 4-lane with turn lanes. Queueing on bridge. Bridge needs replacement. High access density. 1 signal. Segment currently has detour traffic from MnPASS (ADT of 7,800)	2.0		3-Lane Restripe		

Ramsey County 4 to 3 Conversion Study: Ramsey Co Priortization Ranking Analysis

	Road Segment	Study Segment Approximate Length (mi)	Extents	Sub-Segment Approximate Length (mi)	Pavement Condition Index (PCI)	Pavement Condition Notes	Approximate Road Width	Curbside Use Impact	Traffic Operations Impact	Other Considerations	Sub-Segment Benefit Score	Segment Benefit Score	Concept Design/Potential Lane Reduction Scope	Preliminary Cost	Implementation Priority Ranking
17A	Silver Lake Road (CSAH 44)	1.7 miles	Mississippi Street to CR H	0.5	52 to 67	Mississippi to H - 2.55, H to Mounds -2.35	44'	Moderate	Likely Moderate	Traffic entering on south side is 5 lane. 2 signals. RR and trail crossing on corridor. Some blocks have low access density, others have high density.	1.6	1.68	Restripe+Sig Mods	n/a	13
17B			CR H to CR H2	0.5			44'	Low	Likely Low	1 signal. Generally low access density. Transit turns off corridor and runs parallel for this segment.	1.6				
17C			CR H2 to Mounds View Boulevard	0.7			44'	Moderate	Likely Low	Traffic entering on north side is 2 lane. 1 signal. Some blocks have high access density, others have medium density on west side.	1.8				
18A	White Bear Avenue (CSAH 65)	4.0 miles	Suburban Ave to Maryland Ave	2.0	59 to 74	94 to Conway - 3.35, Conway to Minnehaha - 2.7, Minnehaha to rr bridge -2.65, RR bridge to Larpenteur - 2.9, Larpentuer to Frost -2.85, Frost to B - 3.05	94 to Minnehaha 48' to 52', Minnehaha to Maryland 48'	High	Likely High	2 lane roadway entering southern end of segment. 8 signals. High access density.	3.8	3.75	Restripe+Sig Mods	n/a	4
18B			Maryland Ave to Idaho Ave	0.9			48'	Moderate	Likely High	4 signals. High access density.	3.8				
18C			Idaho Ave to Frost Ave	0.6			Idaho to Larpenter 60', Larpenter to Frost 66'-51',	Moderate	Likely High	4 closely spaced signals Some access control. Low transit ridership on north end. Segment is 5-lane.	3.8				
18D			Frost Ave to CR B	0.5			51'	Moderate	High	2 signals.	3.4		3-Lane Restripe+Sig Replace+Sig Mod	\$311,000-\$338,000	
19	White Bear Avenue (CSAH 65)	0.9 mile	Gervais Avenue to Beam Avenue	0.9	68	3.05 (concrete w/ ultra thin overlay)	48' to 60'	Moderate	Moderate	Basically existing 5-lane. Entering traffic on north is 6-lane, on south is 4-lane with turn lanes. 3 signals. Access density is variable - high in some spots.	2.6	2.60	3-Lane Reconstruct+Sig Replace+Sig Mod	\$636,000	18
20A	White Bear Avenue (CSAH 65)	2.8 miles	Buerkle Rd to CR E	0.8	74 to 82	Buerkle to F - 3.35, F to 61 - 3.7 (all concrete)	55'-70'	Moderate	Likely High	Entering traffic on south side is 4-lane divided. High access density. Center raised median on entire segment. 3 signals.	2.2	2.41	Reconstruct	n/a	19
20B			CR E to CR F	1.0			55'	Moderate	Likely Low	High access density. Center raised median on entire segment. 3 signals.	2.4			n/a	
20C			CR F to TH 61	1.0			55'	Moderate	Likely Low	Corridor ends at TH 61. Center raised median on entire segment. 2 signals.	2.6			n/a	

Ramsey County 4 to 3 Conversion Study: St. Paul Priortization Ranking Analysis

	Road Segment	Study Segment Approximate Length (mi)	Extents	Sub- Segment Approximate Length (mi)	Pavement Condition Index (PCI)	Pavement Condition Notes	Approximate Road Width	Curbside Use Impact	Traffic Operations Impact	Other Considerations	Sub- Segment Benefit Score	Segment Benefit Score	Concept Design/Potential Lane Reduction Scope	Preliminary Cost(1)	Implementation Priority Ranking
21A	Cretin Avenue	1.5 miles	Grand Avenue to Marshall Avenue	0.6	62	n/a	43' (52' at Grand and Marshall)	High	Moderate	Traffic entering on southern end is 4-lane with left turn lanes. 3 signals.	3.4	3.2	3 Lane Restripe+Sig Mods	\$661,700-\$752,407	3
21B			Marshall Avenue to I-94	0.5			43'	High	Extremely High	2 signals. No sidewalk along golf course, all ped crossings are bus-related. Motorists come across Marshall from Minneapolis and use this corridor to get to 94.	3.2		3 Lane Restripe+Sig Mods		
21C			I-94 to University Ave	0.4			59'+	Moderate	Low	Traffic entering on northern end is 4-lane with left turn lanes. 3 signals.	3.0		3 Lane Restripe+Sig Mods		
22A	Hamline Avenue	1.1 miles	Grand Avenue to Ayd Mill Rd	0.3	71	n/a	43' (Except on bridges: 51')	Moderate	Low	Entering traffic on both sides is 2-lane. Potential parking issues (off-peak parking permitted). 3 closely spaced signals	3.8	3.8	3 Lane Restripe+Sig Mods	\$590,887	2
22B			Ayd Mill Rd to I-94	0.5			43' (Except on bridges: 51')	Moderate	High	3 closely spaced signals. Large bridge over Ayd Mill	3.8		3 Lane Restripe+Sig Mods		
22C			I-94 to University Ave	0.3			43' (Except on bridges: 51')	Moderate	Low	Entering traffic on north side is 2-lane. North end would be expected to have operations issues, capacity analysis may be needed. 4 closely spaced signals.	3.6		3 Lane Restripe+Sig Mods		
23	Minnehaha Avenue	0.5 mile	Payne Avenue to East Seventh Street	0.5	49	n/a	40'	Moderate	Low	Entering traffic on both sides is 2-lane. 3 signals. Low access density.	2.8	2.8	2 Lane M&O+Sig Mods	\$189,900-\$192,300	1

Note:
(1) Does not include roadway M&O.

Appendix O:
Technical Advisory Committee Meeting Minutes



MEETING MINUTES

DATE/TIME: October 16, 2019 / 1:30 PM

LOCATION: Ramsey County Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee Meeting (TAC 1)

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Brad Estochen, Ramsey County
- Scott Poska, Alliant Engineering
- Mike Anderson, Alliant Engineering
- Hannah Johnson, Alliant Engineering
- Marc Culver, City of Roseville
- Mike Klobocar, City of St. Paul
- Steve Love, City of Maplewood

2) Project Background and Scope (Goals / Objectives / Key Issues)

- Scott and Joe provided an overview of the study goals and explained the purpose and goals of the screening phase that the study is currently in.
- The County would like the screening to be broken down into 3 categories: 1) restripe only, 2) mill and overlay, and 3) full reconstruct and move curblines. They would like this level of screening broken down as soon as possible.
- Joe will be the County's project manager. Brad will provide oversight and make final decisions.
- The County is open to any roadway cross section, not just 3 lane sections.

3) Review Project Schedule

- Scott went over the study schedule, which was attached to the agenda.
- The next TAC meeting will be December 18 and will cover the results of the screening analysis and identify segments to further study.

4) Literature Review

- Scott presented the draft Literature Review memo, which was attached to the agenda.
- The TAC requested examples and findings on 4 to 3 conversions that were completed in Ramsey County in the last 10 years including Maryland Avenue, Larpenteur Avenue, and Dale Street. The TAC also suggested contacting Hennepin County for the same information.

5) Screening Criteria

- Scott explained the conversion criteria developed to date and how it was going to be used to evaluate a segment for difficulty and benefit.
- The TAC suggested several criteria additions/clarifications:
 - Number of mainline controlled intersections/crossings
 - Adjust the controversial criteria to include why controversial
 - Use the Pavement Condition Index (PCI)
 - Prevailing speed
 - Number of marked crosswalks
 - High pedestrian traffic areas/crossings (municipalities to help identify)
 - Metro Transit boarding and alighting data for stops
 - Planned bike route (Ramsey County map 2015.10.18A)

6) Segment Summary Matrix

- Scott brought up the screening matrix on screen and described how it was going to be used to assist in the screening phase of the study.
- The TAC requested access to the screening matrix.
- StreetLight data will be used to collect segment speeds and volume directionality.

7) Corridor Screening Example

- Scott briefly discussed the Minnehaha Avenue segment map example which was attached to the agenda and was part of Alliants proposal.
- The TAC understood the level of detail that would be included in the 23 segment maps.

8) Next Steps

- Scott explained that the next several weeks will be spent doing data collection to support the screening analysis.

9) Next Meeting

- The next TAC Meeting will be December 18, 2019.
- The TAC requested meeting appointments for TAC meetings 2 and 3.

10) Follow up items/action items:

Task	Responsibility	Resolution
Send TAC 2 and 3 Meeting appointments	Scott	Complete
Conversion before/after data for Maryland Avenue, Larpenteur Avenue, and Dale Street	Joe/Brad	
Provide TAC access to screening matrix	Scott	Complete
Provide MT contact for boarding/alighting data	Joe	

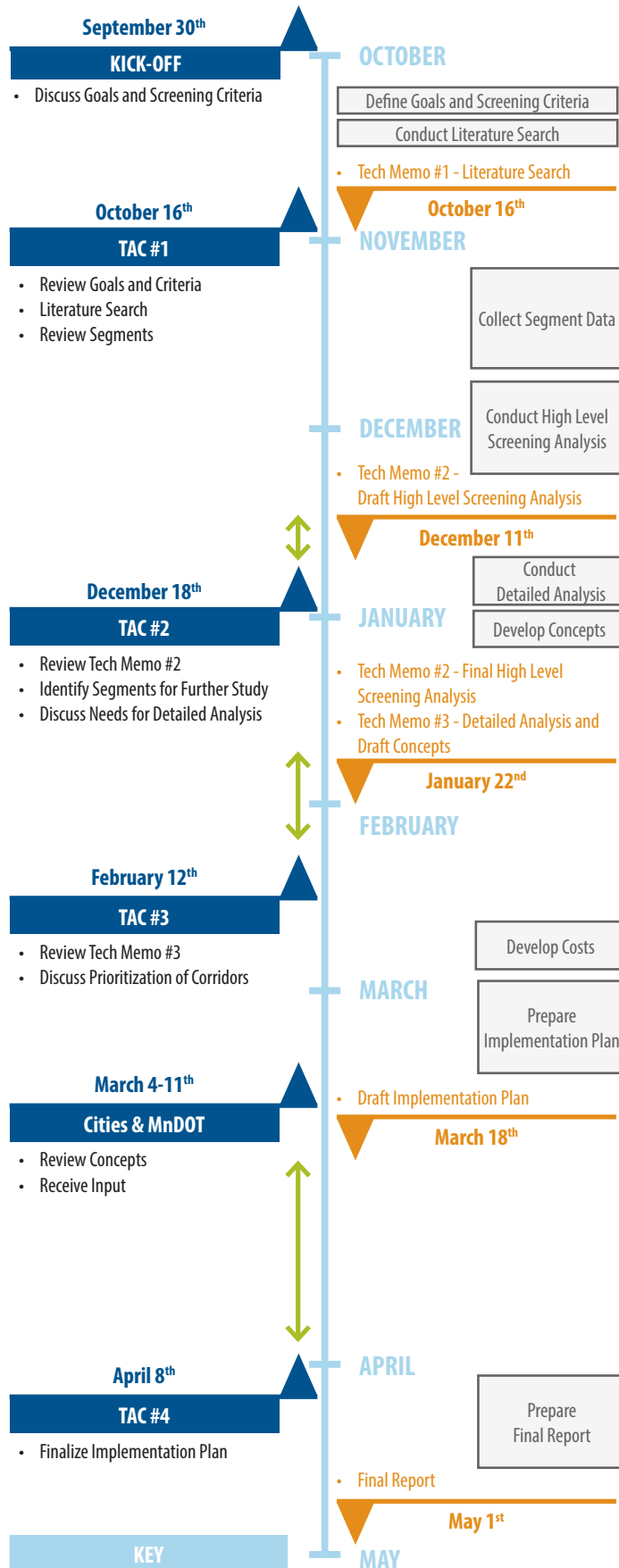


ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: October 16, 2019 / 1:30pm – 3:30pm
LOCATION: Ramsey County Public Works
PROJECT: Ramsey County 4 to 3 Conversion Study
PURPOSE: Project Kick-Off

Present	Name	Agency	Phone	Email
✓	Joseph Lux	Ramsey County		Joseph.Lux@CO.RAMSEY.MN.US
✓	Brad Estochen	Ramsey County	266 7120	Bradley.Estochen@CO.RAMSEY.MN.US
✓	Mike Klobucar	St. Paul	651 968 6288	mike.klobucar@ci.stpaul.mn.us
		New Brighton		
✓	Steve Love	Maplewood	651-249 2404	steve.love@maplewoodmn.gov
	Jesse Freihammer	Roseville		Jesse.Freihammer@cityofroseville.com
L	Marc Culver	Roseville	651-792-7041	Marc.Culver@cityofroseville.com
✓	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
✓	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
✓	Hannah Johnson	Alliant Engineering	612-767-9329	hjohnson@alliant-inc.com



KEY			
▲	Meeting	↕	Agency Review
▼	Deliverable	□	Work in Progress



MEETING MINUTES

DATE/TIME: December 18, 2019 / 1:30 PM

LOCATION: Ramsey County Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee Meeting (TAC 2)

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Craig Schlichting, City of New Brighton
- Scott Poska, Alliant Engineering
- Mike Anderson, Alliant Engineering
- Hannah Johnson, Alliant Engineering
- Marc Culver, City of Roseville
- Steve Love, City of Maplewood
- Mike Klobocar, City of St. Paul
- Claire Connelly, City of Roseville

2) Segment Feasibility Screening Draft Results

- Scott provided an overview of the draft screening results and explained the 4 page color coded segment matrix.
- Several members of the TAC expressed some concern about the “infeasible” screen result and suggested a change to something along the lines of “above capacity”. It was also noted that the starting point capacity thresholds (17,000 AADT and 750vph) were indicators of additional analysis needed. The higher the numbers, the greater amount of detailed analysis would be needed. It was noted that the City of St. Paul

may be more tolerant of capacity delays than other segments in the study. For example, the Maryland project that was implemented had a pre/post conversion AADT of 22,000.

- Mike Klobocar requested more analysis to demonstrate the relative benefits of potential conversions. Alliant will revise screening results by December 27 and distribute to TAC.

3) Select Further Study Segments (5 Ramsey Co and 3 St. Paul)

- Scott discussed the initial segments he thought would make good candidates for further study. Discussion and debate ensued on selection of segments. Detailed analysis was preliminarily selected for segments 2, 6, 7, 12, 16, 20 for Ramsey County and 21-23 for St. Paul. The County would like to discuss internally after review of revised screening results.
- For segments not selected for further study, Alliant will note key considerations and criteria to consider for future implementation on the segment maps.

4) Detailed Analysis

- Joe outlined the County's lane width standards. There are few 10' lanes in the County. They typically have 13' center left turn lanes and got away with 12' center lane on the Maryland project. They would like the study to consider 11' and wider only travel lanes for the study.
- Detailed analysis will begin after the segments have been agreed upon by the TAC.

5) Next Steps

- Revise screening results with benefit scores and distribute to TAC by December 27. County to review and respond on selected segments for detailed analysis.
- Prepare Technical Memorandum 2 to document the screening process and results.
- Begin detailed analysis.

6) Next Meeting

- The next TAC Meeting will be February 12, 2020. This meeting will be a progress update on the Detailed Analysis task with a preview of results for 3-4 segments.

7) Follow up items/action items:

Task	Responsibility	Resolution
Send TAC 3 meeting appointment to Craig S.	Scott	Complete
Revise screening results and provide benefit score	Alliant	
Review and respond with selected detailed analysis segments	Ramsey County	



ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: October 16, 2019 / 1:30pm – 3:30pm
LOCATION: Ramsey County Public Works
PROJECT: Ramsey County 4 to 3 Conversion Study
PURPOSE: Project Kick-Off

Present	Name	Agency	Phone	Email
✓	Joseph Lux	Ramsey County	651-266-7114	Joseph.Lux@CO.RAMSEY.MN.US
	Brad Estochen	Ramsey County	651-266-7120	Bradley.Estochen@CO.RAMSEY.MN.US
✓	Mike Klobucar	St. Paul	651-266-6208	mike.klobucar@ci.stpaul.mn.us
✓	Craig Schlichting	New Brighton	651-638-2056	craig.schlichting@newbrightonmn.gov
✓	Steve Love	Maplewood	651-249-2404	steve.love@maplewoodmn.gov
	Jesse Freihammer	Roseville		Jesse.Freihammer@cityofroseville.com
✓	Marc Culver	Roseville	651-792-7041	Marc.Culver@cityofroseville.com
✓	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
✓	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
✓	Hannah Johnson	Alliant Engineering	612-767-9329	hjohnson@alliant-inc.com
✓	Claire Connelly	Roseville		claire.connelly@cityofroseville.com



MEETING AGENDA

DATE/TIME: December 18, 2019 / 1:30pm – 3:00pm

LOCATION: Ramsey County Public Works,
1425 Paul Kirkwold Drive
Arden Hills, MN 55112

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee (TAC) Meeting #2

AGENDA BY: Scott Poska; sposka@alliant-inc.com
(612-767-9369)

1. Introductions
2. Segment Feasibility Screening Draft Results
 - Maps
 - Matrix
3. Select Further Study Segments (5 Ramsey Co and 3 St. Paul)
4. Detailed Analysis
5. Next Steps
 - Final Screening Results
 - Screening Technical Memorandum
 - Detailed Analysis
6. Next Meeting: Prioritization of Corridors (TAC 3) – February 12, 2020, 1:30-3:00pm.

Alliant Project No.: 119-0166



MEETING MINUTES

DATE/TIME: February 12, 2020 / 1:30 PM

LOCATION: Ramsey County Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee Meeting (TAC 3)

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Brad Estochen, Ramsey County
- Craig Schlichting, City of New Brighton
- Scott Poska, Alliant Engineering
- Mike Anderson, Alliant Engineering
- Hannah Johnson, Alliant Engineering
- Marc Culver, City of Roseville
- Steve Love, City of Maplewood
- Mike Klobocar, City of St. Paul

2) Screening Technical Memorandum

- Scott informed the TAC that a technical memorandum documenting the screening process has been reviewed by the County and a revised draft will be sent to the TAC by the end of the day 2/13.

3) Detailed Analysis Results and Concept Designs

- Scott walked through the major steps of the detailed analysis process: crash analysis, operations analysis, and parking analysis, and concept/cross section development.
- To better understand statistically significant high crash locations, Alliant will provide critical crash rates on detailed analysis maps to supplement the crash analysis results.
- Alliant will further research corridor ROW dimensions for cross sections in feasibility maps and make revisions as needed.
- Mike Klobucar requested expanded parking demand analysis to include overnight hours.
- Brad Estochen noted that average queues are an appropriate consideration for the detailed analysis but 95%ile queues would be used when designing turn lane lengths etc.
- For the purpose of the detailed traffic operations analysis of each conversion, signal timing can be optimized and noted on the analysis map.

Segment 7 (Dale Street)

- Given the forecasted traffic operations, the group felt a conversion would be most appropriate to implement north of the Dale/Front/Como intersection.
- Several intersections have full lane shifts across intersection that isn't desirable. These locations should be examined for potential curb adjustments/revisions.
- Mike Klobucar noted that the St. Paul Bike Plan includes a planned bike facility through the Dale/Front/Como intersection.
- This segment is feasible for conversion north of Dale/Front/Como.

Segment 18D (White Bear Avenue)

- Operations analysis shows that intersections won't fail but queues will be longer than they are today.
- Although AADT is very high, conversion impact is modest.
- The group questioned the benefit of converting this short segment of White Bear Avenue with the roadway north and south being a five lane section.
- Alliant will evaluate a second concept to have 2 lanes northbound, 1 lane southbound, and a two way center left turn lane.

Segment 22 (Hamline Avenue)

- The Marshall/Hamline intersection operations are currently poor.
- Note cross-coordination with a lot of east/west streets – Scott did not change signal timing for fear of messing with this
- Mike Klobucar noted that the Hamline/Marshall intersection is only coordinated with Griggs so signal timing can be adjusted as needed for the conversion. The I-94 ramp signals are coordinated. The University and mall entrance signal are coordinated.

4) Next Steps

- Alliant will collect intersection turning movement counts for Segments 16 and 23. Ramsey County will collect intersection turning movement counts for Segment 2.

Segment 2 intersections include Co Rd C/Lexington, Co Rd C/Rice, and Co Rd C/I-35E NB Ramps.

- Send Doodle poll to TAC for next meeting for last week in March.
- Prepare high level cost estimates.
- Prepare Technical Memorandum 3 to document the detailed analysis.
-

5) Next Meeting

- The next TAC Meeting will be determined from the Doodle poll and will likely be the last week in March. This meeting will be another progress update on the Detailed Analysis task with analysis results for segments 2, 16, 19, 21, and 23.

6) Follow up items/action items:

Task	Responsibility	Resolution
Send draft Screening Tech Memo to TAC	Scott	complete
Send Doodle poll for TAC 4 meeting	Scott	complete
Send new St. Paul TMC counts to Mike Klobocar	Hannah	
Perform overnight parking analysis	Alliant	



ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: February 12, 2020 / 1:30pm – 3:30pm

LOCATION: Ramsey County Public Works

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee (TAC) Meeting #3

Present	Name	Agency	Phone	Email
✓	Joseph Lux	Ramsey County	651-266-7114	Joseph.Lux@CO.RAMSEY.MN.US
✓	Brad Estochen	Ramsey County	651-266-7120	Bradley.Estochen@CO.RAMSEY.MN.US
	Mike Klobucar	St. Paul	651-266-6208	mike.klobucar@ci.stpaul.mn.us
✓	Craig Schlichting	New Brighton	651-638-2056	craig.schlichting@newbrightonmn.gov
✓	Steve Love	Maplewood	651-249-2404	steve.love@maplewoodmn.gov
	Jesse Freihammer	Roseville		Jesse.Freihammer@cityofroseville.com
✓	Marc Culver	Roseville	651-792-7041	Marc.Culver@cityofroseville.com
✓	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
✓	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
✓	Hannah Johnson	Alliant Engineering	612-767-9329	hjohnson@alliant-inc.com



MEETING AGENDA

DATE/TIME: February 12, 2020 / 1:30pm – 3:00pm

LOCATION: Ramsey County Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee (TAC) Meeting #3

AGENDA BY: Scott Poska; sposka@alliant-inc.com
(612-767-9369)

1. Introductions
2. Screening Technical Memorandum
3. Detailed Analysis Results and Concepts
 - Segment 7
 - Segment 18D
 - Segment 22
4. Next Steps
 - Detailed Analysis for Segments 2, 16, 19, 21, 23
 - High level cost estimates
 - Prioritization of corridors
 - MnDOT/Cities outreach
 - Implementation ranking
5. Next Meeting: Detailed Analysis and Prioritization of Corridors (TAC 4) – TBD, March 2020, 1:30-3:00pm.

Alliant Project No.: 119-0166



MEETING MINUTES

DATE/TIME: March 26, 2020 / 10:00 AM

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee Meeting (TAC 4)

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Brad Estochen, Ramsey County
- Scott Poska, Alliant Engineering
- Mike Anderson, Alliant Engineering
- Hannah Johnson, Alliant Engineering
- Mike Klobocar, City of St. Paul

2) Detailed Results and Concept Design

Scott presented detailed analysis results and concept designs for the following 8 segments.

- Segment 7 (Dale Street). Good conversion candidate north of Como Avenue. Mike K requested more detail in the cost estimates for the signal revisions. Aging signals (25+ years for Ramsey Co signals) needing revision as part of a potential conversion should be assumed to be replaced rather than revise.
- Segment 18D (White Bear Avenue). Revised initial concept and analysis and operations are favorable for conversion.
- Segment 22 (Hamline Avenue). Conversion would have moderate to significant impacts between I-94 and Ashland Avenue.
- Segment 2 (County Road C). For Co Rd C/Victoria, there is just 1 train per day, 2-3 train cars maximum length. Joe L requested analysis with exclusive right turn lanes

- at Rice Street. Joe L noted that the Co Rd C/Dale all way stop intersection has peak hour queuing concerns.
- Segment 16 (Old Highway 8). Good conversion candidate. Northbound Long Lake Rd merge onto Old Highway 8 area was discussed. Concept map will be revised to include an access modification option for this area.
 - Segment 19 (White Bear Avenue). Conversion would have moderate impacts. Scott clarified that detailed operations analysis on all segments consisted of aggressive lane reductions at the majority of intersections to get an understanding of the potential operational impacts. The northbound thru/right turn lane at Beam Avenue was the subject of this discussion.
 - Segment 21 (Cretin Avenue). Conversion would have major impacts between I-94 and Marshall Avenue. Mike K requested additional analysis of a traditional 3 lane cross section between I-94 and Marshall, understanding that Alliants brief look at this configuration showed massive operational delays in the traffic model. The shared thru/left turn lanes at I-94 should change to left turn only lanes. During off peak times several areas along this corridor operates acceptably as 2-lane roadway.
 - Segment 23 (Minnehaha Avenue). Excellent conversion candidate. Mike K requested revision to concept map to show a 2-lane alternative and a 2-lane alternative with left-turn lanes provided at each of the 3 intersections.

3) Prioritization of Corridors

Scott briefly discussed the strategy for the prioritization of corridors. The 3 St. Paul segments will be prioritized separately from the rest of the study segments. The easier low impact segments will generally have a higher priority and the harder higher impact segments will generally have a lower priority.

4) Stakeholder Engagement Strategy

Scott discussed the upcoming study stakeholder engagement process. Mike K requested a St. Paul meeting to discuss St. Paul segments in more depth. This meeting will include Brad E and/or Joe L. Because a few study segments cross or terminate at a trunk highway or interstate, a meeting needs to take place with MnDOT to present the findings of the conversion study.

5) Next Steps

- Detailed analysis tech memo. A draft will be completed and sent to the TAC in mid to late April.
- Stakeholder engagement. This task will take place in April based on item 4 above.
- Prioritization of corridors. This task will follow the stakeholder engagement task.

6) Next Meeting

- The next TAC Meeting will be in early May following the conclusion of the stakeholder engagement meetings. This meeting will be to discuss the findings of the stakeholder engagement and prioritization of segments.

7) Follow up items/action items:

Task	Responsibility	Resolution
Revise Segment 2 concept map and share with TAC	Scott	
Send Alliant Ramsey County signal age info	Brad	complete
Send Alliant contact person for Little Canada	Joe	
Revise/re-run analysis for Segments 2, 21, and 23	Alliant	



ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: March 26, 2020 / 10:00am – 11:30am

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee (TAC) Meeting #4

Present	Name	Agency	Phone	Email
yes	Joseph Lux	Ramsey County	651-266-7114	Joseph.Lux@CO.RAMSEY.MN.US
yes	Brad Estochen	Ramsey County	651-266-7120	Bradley.Estochen@CO.RAMSEY.MN.US
yes	Mike Klobucar	St. Paul	651-266-6208	mike.klobucar@ci.stpaul.mn.us
no	Craig Schlichting	New Brighton	651-638-2056	Craig.schlichting@newbrightonmn.gov
no	Steve Love	Maplewood	651-249-2404	steve.love@maplewoodmn.gov
no	Jesse Freihammer	Roseville		Jesse.Freihammer@cityofroseville.com
no	Marc Culver	Roseville	651-792-7041	Marc.Culver@cityofroseville.com
yes	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
yes	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
yes	Hannah Johnson	Alliant Engineering	612-767-9329	hjohnson@alliant-inc.com



MEETING AGENDA

DATE/TIME: March 26, 2020 / 1:30pm – 3:00pm

LOCATION: [Join Microsoft Teams Meeting](#)
[+1 612-263-6793](#) United States, Minneapolis (Toll)
Conference ID: 470 773 205#

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Technical Advisory Committee (TAC) Meeting #4

AGENDA BY: Scott Poska; sposka@alliant-inc.com
(612-767-9369)

1. Introductions
2. Detailed Analysis Results, Concepts, and Cost Estimates
 - Revisions to segments 7, 18D, 22
 - Segments 2, 16, 19, 21, 23
3. Stakeholder engagement strategy
 - Meeting with MnDOT
 - Meeting with St. Paul
 - Meeting with Little Canada
 -
4. Prioritization of corridors
5. Next Steps
 - Detailed analysis tech memo
 - Stakeholder engagement
 - Prioritization of corridors
6. Next Meeting: Prioritization of Corridors (TAC 5) – TBD early May 2020, 1:30-3:00pm.

Alliant Project No.: 119-0166

Appendix P:
Stakeholder Outreach Meeting Minutes



3

MEETING MINUTES

DATE/TIME: April 13, 2020 / 1:00 PM

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: St. Paul Stakeholder Outreach

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Brad Estochen, Ramsey County
- Scott Poska, Alliant Engineering
- Ben Hawkins, City of St. Paul
- HunWen Westman, City of St. Paul
- Randy Newton, City of St. Paul
- Mike Klobocar, City of St. Paul
- Reuben Collins, City of St. Paul

2) Project Overview

Scott and Joe provided the group an overview of the project. The project began in fall 2019 with a data collection effort and transitioned to a screening effort based on impact and benefit. 8 segments were selected for detailed analysis which included operations analysis, parking analysis, crash analysis, and preliminary concept development and cost estimates. The final step of the study will be to prioritize segments for potential implementation.

3) Detailed Results and Concept Design

Scott presented detailed analysis results and concept designs for the following 4 segments.

- Segment 7 (Dale Street between Como Ave/Front Ave and TH 36). Good conversion candidate north of Como Avenue. Front intersection operates at or above capacity today and potential lane reduction compounds the situation. Joe and Brad are working on a HSIP application for implementation of this segment. Segment 6 (Dale Street between Grand Ave and Iglehart Ave) was also discussed. Reuben pointed out that there are many offset intersections which makes it difficult to define legal crosswalks. There would be many opportunities for pedestrian bump outs if conversion were to take place. Joe noted sidewalks are in poor condition. Segment was studied as part of the I-94/Dale bridge project and analysis showed gridlock during pm peak hour. Although not part of detailed analysis for the project, this task could be added as an amendment or added to the final design task of a separate project.
- Segment 21 (Cretin Avenue between University Ave and Grand Ave). Conversion would have major impacts between I-94 and Marshall Avenue. Conversion variation (Alternative 1A) provides 2 lanes northbound, 1 lane southbound, and a continuous southbound left turn lane between I-94 and Marshall and was suggested since all access along this segment is on the east side of Cretin. Reuben commented that this segment could benefit from some enhanced pedestrian crossings to access transit stops. No pedestrian accommodations are provided on west side of Cretin. During off peak times several areas along this corridor operates acceptably as 2-lane roadway.
- Segment 22 (Hamline Avenue between University Ave and Grand Ave). This segment is diverse with residential land uses at the south end, Concordia University and I-94 in the middle, and retail/commercial uses at the north end. Conversion would have moderate to significant impacts between I-94 and Ashland Avenue/Ayd Mill Road.
- Segment 23 (Minnehaha Avenue between Payne Ave and 7th St). Excellent conversion candidate. This segment could easily be implemented as a 2 lane without impacting current on street parking. A 3 lane could be implemented but would not provide significant benefit.

4) Next Steps

Scott briefly discussed the strategy for the prioritization of corridors, the final step of the study. The St. Paul segments will be prioritized separately from the rest of the study segments. The easier low impact segments will generally have a higher priority and the harder higher impact segments will generally have a lower priority.

5) Follow up items/action items:

Task	Responsibility	Resolution
Send meeting participants link to materials	Scott	Complete



ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: April 13, 2020 / 1:00pm – 2:00pm

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: St Paul Stakeholder Outreach

Present	Name	Agency	Phone	Email
yes	Joseph Lux	Ramsey County	651-266-7114	Joseph.Lux@CO.RAMSEY.MN.US
yes	Brad Estochen	Ramsey County	651-266-7120	Bradley.Estochen@CO.RAMSEY.MN.US
yes	Mike Klobucar	St. Paul	651-266-6208	mike.klobucar@ci.stpaul.mn.us
no	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
yes	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
no	Hannah Johnson	Alliant Engineering	612-767-9329	hjohnson@alliant-inc.com
yes	Randy Newton	St. Paul		
yes	Reuben Collins	St. Paul		
Yes	HunWen Westman	St. Paul		
Yes	Ben Hawkins	St. Paul		ben.hawkins@ci.stpaul.mn.us



MEETING AGENDA

DATE/TIME: April 13, 2020 / 1:00pm – 2:00pm

LOCATION: [Join Microsoft Teams Meeting](#)
[+1 612-263-6793](#) United States, Minneapolis (Toll)
Conference ID: 467 430 718#

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: St Paul Stakeholder Outreach

AGENDA BY: Scott Poska; sposka@alliant-inc.com
(612-767-9369)

1. Introductions
2. Project overview
3. Detailed Analysis Results
 - Segment 7
 - Dale Street between Como Ave/Front Ave and TH 36
 - Segment 21
 - Cretin Avenue between University Avenue and Grand Avenue
 - Segment 22
 - Hamline Avenue between University Avenue and Grand Avenue
 - Segment 23
 - Minnehaha Avenue between Payne Avenue and 7th Street
4. Next Steps
 - Prioritization of corridors

Alliant Project No.: 119-0166



MEETING MINUTES

DATE/TIME: April 27, 2020 / 2:00 PM

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: MnDOT Stakeholder Outreach

AGENDA BY: Scott Poska, Alliant Project Manager
sposka@alliant-inc.com / 612-767-9369

The following is a summary of the meeting based on the Agenda, which is attached to this record:

1) Introductions

The meeting was attended by the following:

- Joe Lux, Ramsey County
- Brad Estochen, Ramsey County
- Scott Poska, Alliant Engineering
- Mike Klobucar, City of St. Paul
- Anthony Wotzka, MnDOT
- Nick Olson, MnDOT
- Ashley Roup, MnDOT
- Fay Simer, MnDOT

2) Project Overview

Scott and Joe provided the group an overview of the project. The project began in fall 2019 with a data collection effort and transitioned to a screening effort based on impact and benefit. 8 segments were selected for detailed analysis which included operations analysis, parking analysis, crash analysis, and preliminary concept development and cost estimates. The final step of the study will be to prioritize segments for potential implementation and document in a final report.

3) Detailed Analysis Results

Scott presented detailed analysis results and concept designs for the following segments.

- Segment 2 (Co Rd C between Lexington Avenue and I-35E. Good conversion candidate west of I-35E. Lane reduction through I-35E interchange would have traffic capacity impacts and was previously discussed with MnDOT.

- Segment 7 (Dale Street between Como Ave/Front Ave and TH 36). Good conversion candidate north of Como Avenue. Ramsey County has completed a layout for this conversion and are working on a HSIP application for implementation. Funding would be in 2023 or 2024.
- Segment 16 (Old Highway 8 between 5th Avenue NW and Co Rd D). Part of this segment is currently an I-35W MnPass construction detour. Overall the segment is a good conversion candidate. Capacity issue at 1st Street NW if temporary signal is removed and all way stop is reinstalled.
- Segment 21 (Cretin Avenue between University Avenue and Grand Avenue). Conversion would have major impacts between I-94 and Marshall Avenue. Conversion variation (Alternative 1A) provides 2 lanes northbound, 1 lane southbound, and a continuous southbound left turn lane between I-94 and Marshall and was suggested since all access along this segment is on the east side of Cretin. During off peak times several areas along this corridor operates acceptably as 2-lane roadway.
- Segment 22 (Hamline Avenue between University Avenue and Grand Avenue). This segment is diverse with residential land uses at the south end, Concordia University and I-94 in the middle, and retail/commercial uses at the north end. Conversion would have moderate to significant impacts between I-94 and Ashland Avenue/Ayd Mill Road.

4) Next Steps

The study is nearing completion. Next step will be to prioritize segments for implementation. A report will be completed to document findings and conclusions.

5) Follow up items/action items:

Task	Responsibility	Resolution



ALLIANT

MEETING SIGN-IN SHEET

DATE/TIME: April 27, 2020 / 2:00pm – 3:00pm

LOCATION: Microsoft Teams

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Preliminary Findings with MnDOT

Present	Name	Agency	Phone	Email
x	Joseph Lux	Ramsey County	651-266-7114	Joseph.Lux@CO.RAMSEY.MN.US
x	Brad Estochen	Ramsey County	651-266-7120	Bradley.Estochen@CO.RAMSEY.MN.US
x	Mike Klobucar	St. Paul	651-266-6208	mike.klobucar@ci.stpaul.mn.us
x	Scott Poska	Alliant Engineering	612-767-9369	sposka@alliant-inc.com
	Mike Anderson	Alliant Engineering	612-767-9345	manderson@alliant-inc.com
	Melissa Barnes	MnDOT		Melissa.barnes@state.mn.us
x	Fay Simer	MnDOT		Fay.simer@state.mn.us
x	Nick Olson	MnDOT		Nicholas.olson@state.mn.us
x	Anthony Wotzka	MnDOT		Anthony.wotzka@state.mn.us
	Greg Kern	MnDOT		Gregory.kern@state.mn.us
x	Ashley Roup	MnDOT		Ashley.roup@state.mn.us



MEETING AGENDA

DATE/TIME: April 27, 2020 / 2:00pm – 3:00pm

LOCATION: [Join Microsoft Teams Meeting](#)
[+1 612-263-6793](#) United States, Minneapolis (Toll)
Conference ID: 392 888 172#

PROJECT: Ramsey County 4 to 3 Conversion Study

PURPOSE: Preliminary Findings with MnDOT

AGENDA BY: Scott Poska; sposka@alliant-inc.com
(612-767-9369)

1. Introductions
2. Project overview
3. Detailed Analysis Segments
 - Segment 2
 - County Road 2 between Lexington Avenue and I-35E.
 - Terminates at I-35E
 - Segment 7
 - Dale Street between Como Ave/Front Ave and TH 36
 - terminates at TH 36
 - Segment 16
 - Old Highway 8 between 5th Avenue NW and County Road D
 - close proximity to I-35W
 - Segment 21
 - Cretin Avenue between University Avenue and Grand Avenue
 - crosses I-94
 - Segment 22
 - Hamline Avenue between University Avenue and Grand Avenue
 - crosses I-94
4. Next Steps
 - Prioritization of corridors

Alliant Project No.: 119-0166