

A Summary of Experiences with 3-Lane Roadway Conversions



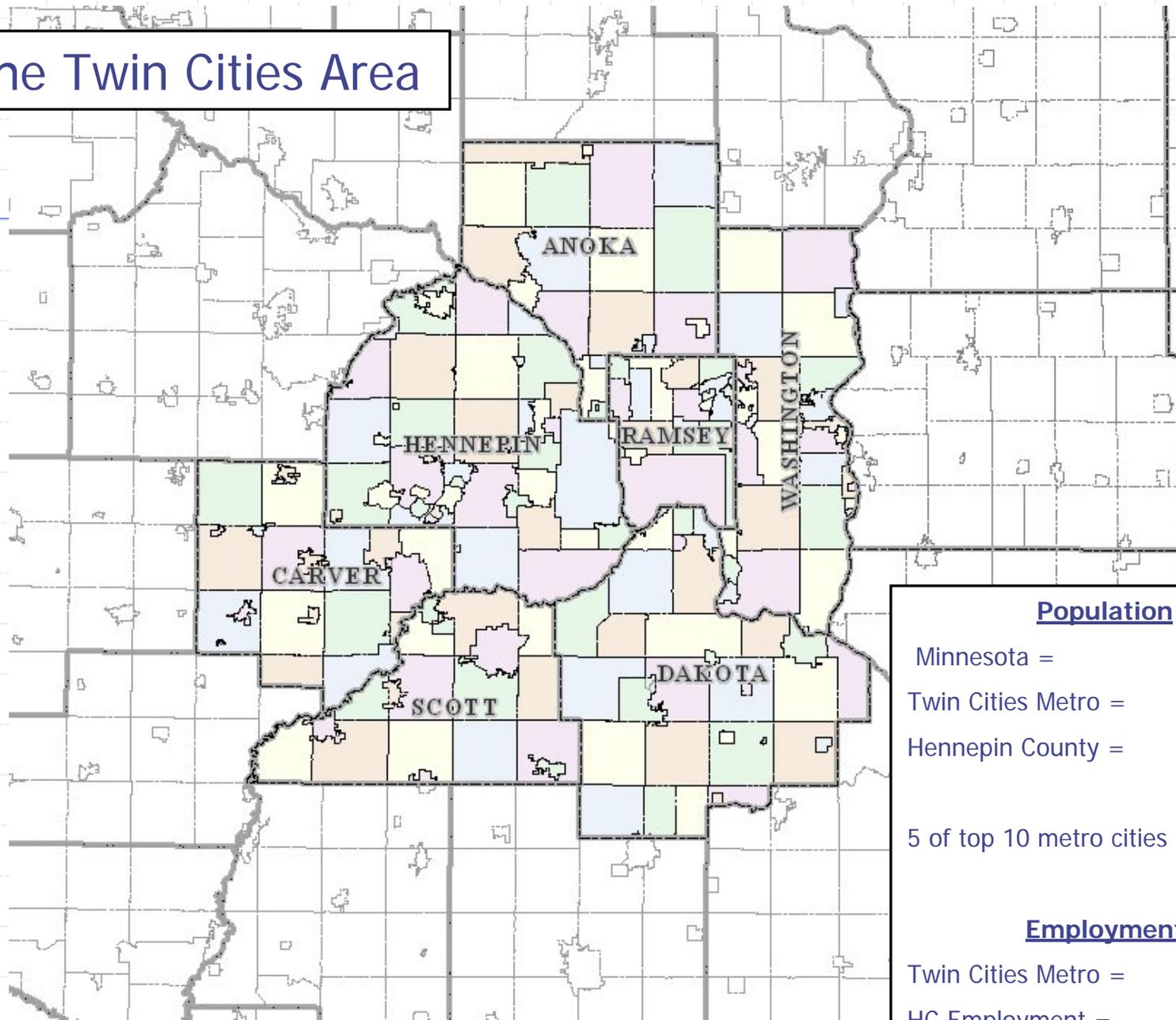
Hennepin County, Minnesota



Presentation Topic

- Background
- Why the Recent Resurgence of Interest?
- Importance of Context
- Bike Lanes versus Shoulders
- Before / After Findings
- Additional Considerations

The Twin Cities Area



Population

Minnesota =	5.2 mil
Twin Cities Metro =	2.8 mil
Hennepin County =	1.2 mil

5 of top 10 metro cities in HC

Employment

Twin Cities Metro =	1.6 mil
HC Employment =	0.9 mil

History of 3-Lane Roads

- Strong Interest in mid-1970's
- Originally pursued for safety and operational reasons
- 3-Lane roads continued to be implemented in the 1980's & 1990's

- Lexington Avenue (Roseville)
- Hamline Avenue (Arden Hills)
- Trunk Highway 244 (Mn/DOT)



- As traffic growth has continued, older 4-lane undivided roads have become more problematic
 - Relatively high vehicle crash rates
 - Speeding issues
 - Crosswalk and Trail crossing difficulties
 - Traffic growth leveling off in some areas – ability to reconsider

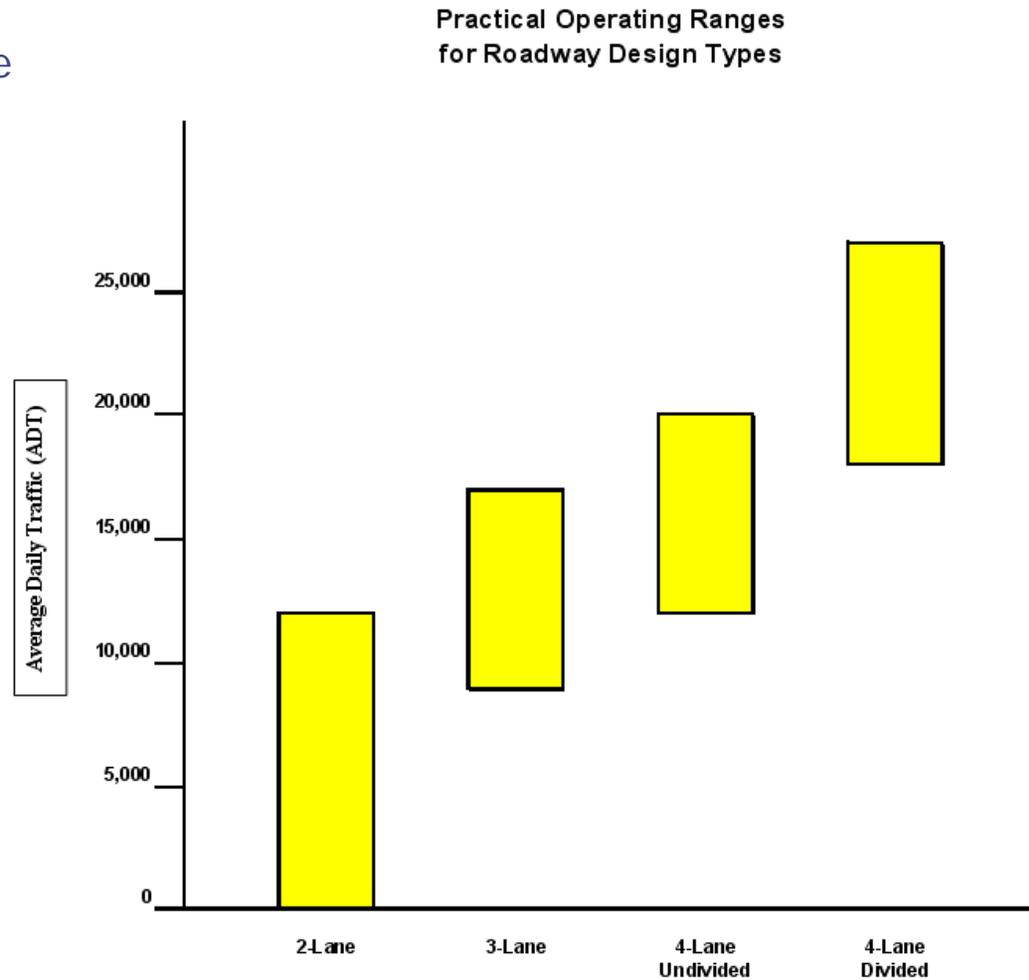
Why the Recent Resurgence of Interest?

- Perceived safety benefits
- Operational benefits
- Increasingly restricted right-of-ways
- Desire to bring speeds within posted limits
- Bicycle accommodation interests
- Pedestrian crossing and sidewalk buffering
- Advocacy for health, environmental, redevelopment interests
- As a response to difficulties with access management

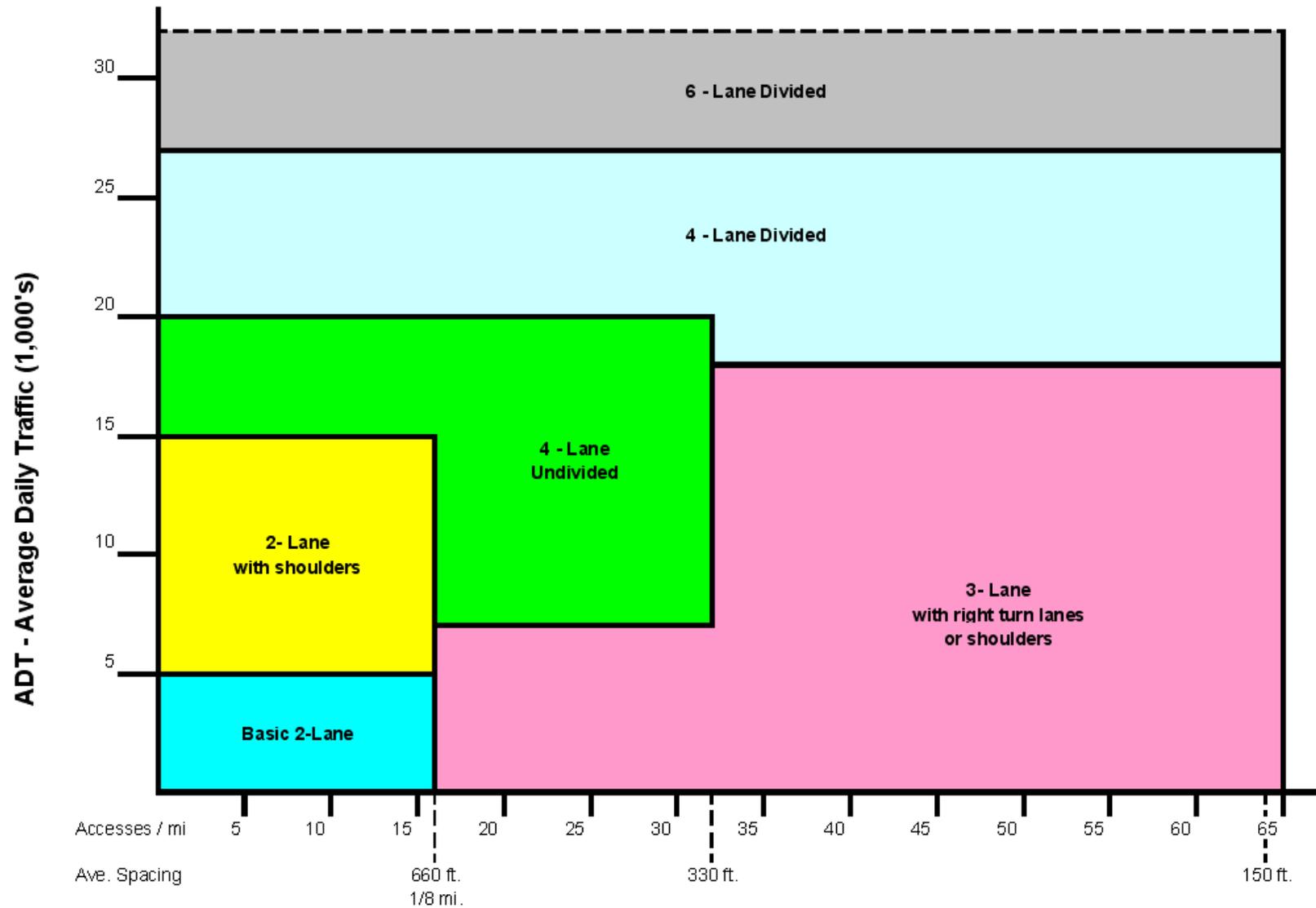


Context is Important

- Practical ADT operating range
- Access spacing
- Truck & bus traffic
- Need for on-street parking
- Street network configuration
- Bicycle accommodations

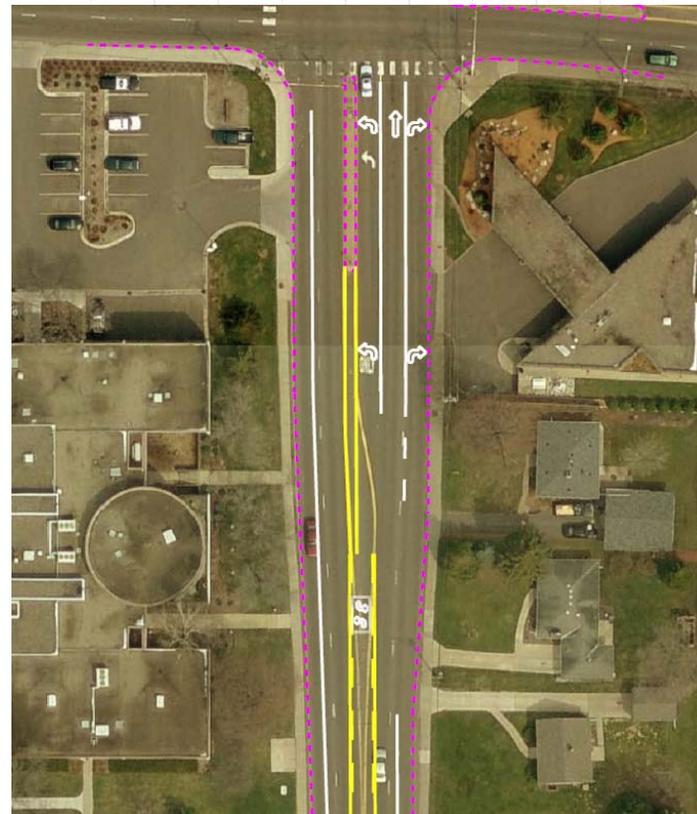
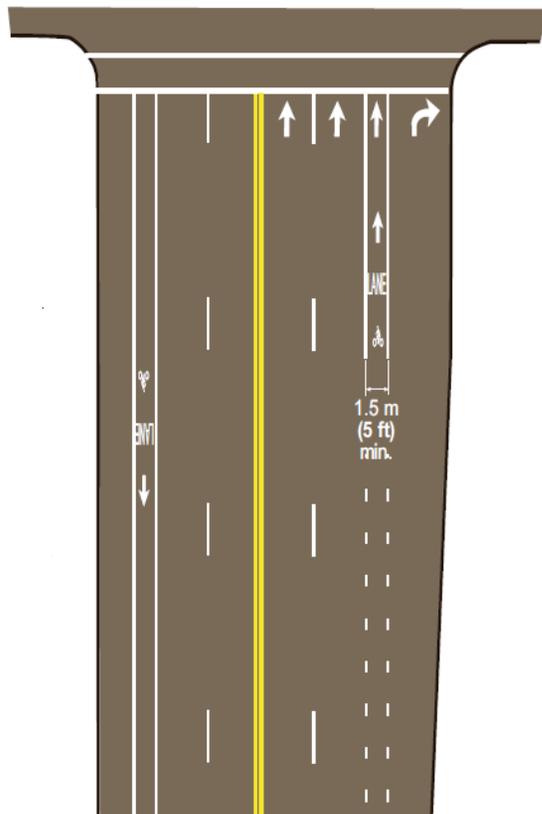


Choice of Roadway Section Based on ADT and Access Spacing



Bike Lanes versus Shoulders

- Bike lanes dedicate actual space for the bicycle – increase visibility
- Shoulders maximize flexible use of space (postal vehicles, garbage collection, etc.)
- The design through intersections is usually handled in a different manner

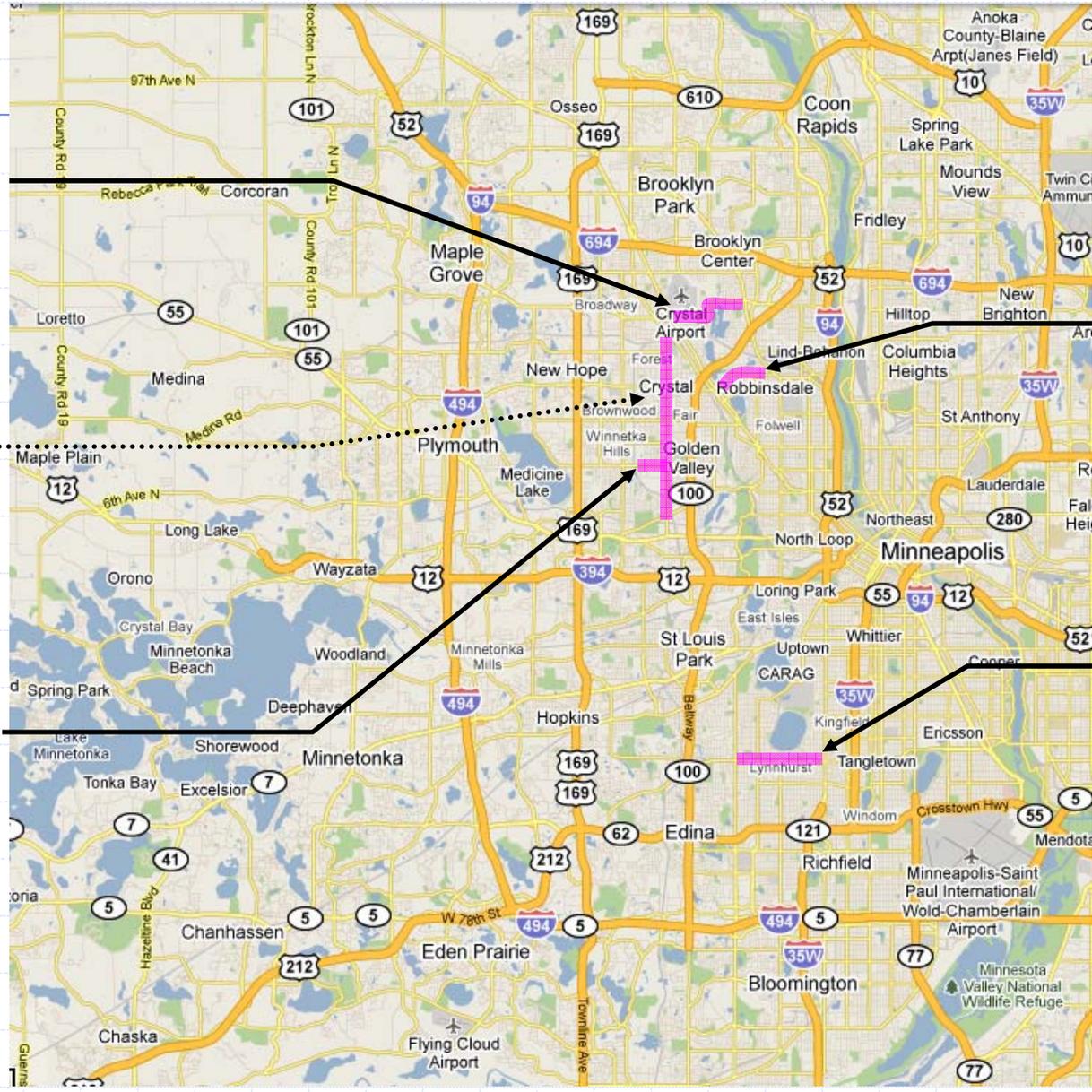


Recent Conversions to 3-Lanes

Bass Lake Road
(CSAH-70)
Brooklyn Center
& Crystal
Spring 2007

Douglas Drive
(CSAH-102)
Crystal
Golden Valley
Summer 2010

Medicine Lake
Road
(CSAH-70)
Crystal
Summer 2006



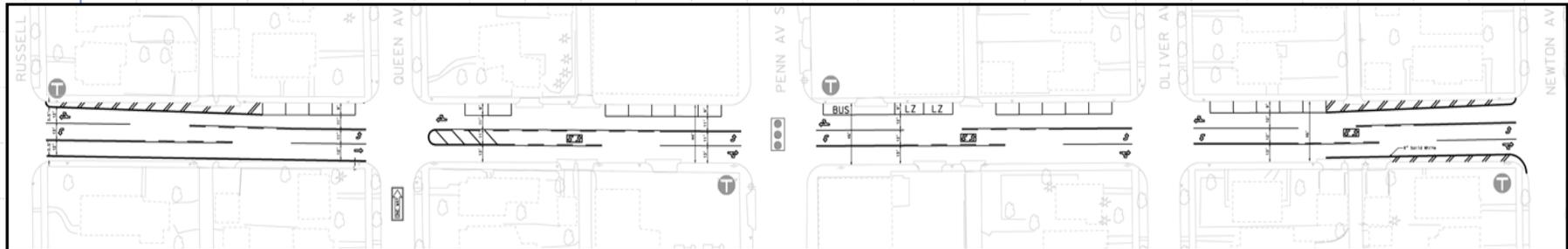
Lake Drive
(CSAH-9)
Robbinsdale
Fall 2004

50th Street
(CSAH-21)
Minneapolis
Spring 2004

50th Street – Minneapolis (Spring 2004)

ISSUES:

- Concerns about speeds
- 4-lane undivided had numerous weaving sections
- Uncomfortable as a pedestrian - traffic was adjacent to sidewalks



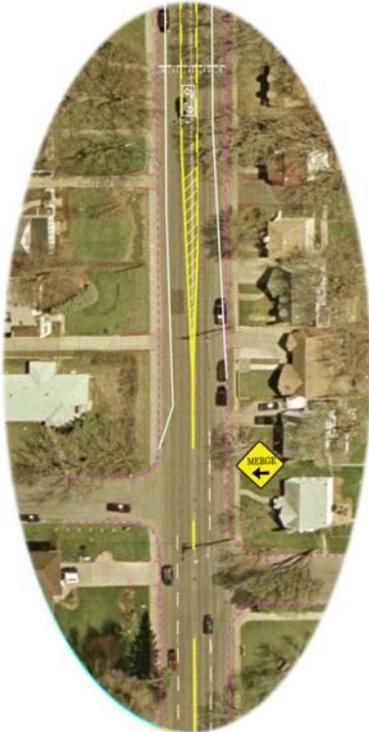
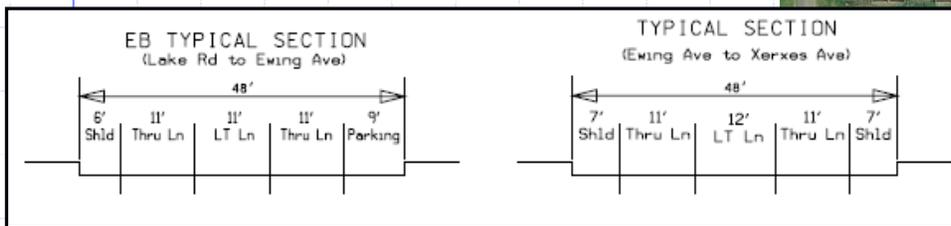
CHARACTERISTICS:

- 1 ¾ mile length
- Previous, existing and forecasted ADT's stable at 12-14,000 vpd
- Four business nodes (France, Xerxes, Penn, Bryant)
- Parking important & significant bus traffic

Lake Drive – Robbinsdale (Fall 2004)

ISSUES:

- Concerns about speeds
- Driving lanes were somewhat ambiguous – 4 or 2?
- Desire for some on-street bicycle accommodation



CHARACTERISTICS:

- 1 mile length
- Previous, existing and forecasted ADT's stable at 8-10,000 vpd
- Couple of sharp kinks in roadway at Indiana & France Avenues
- Parking important & significant school bus traffic

Medicine Lake Road – Crystal (Summer 2006)

ISSUES:

- Concerns about speeds especially in area near elementary school
- Desire for some on-street bicycle accommodation



CHARACTERISTICS:

- ½ mile length
- Previous, existing and forecasted ADT's stable at 8-10,000 vpd
- Excessive speeding recorded
- Nearby railroad crossing complicated transition from 4-lane

Bass Lake Road – Brooklyn Center & Crystal (Spring 2007)

ISSUES:

- Some segments with high crash rates – run off the road crashes on curves
- Concerns about speeds
- Roadway identified on the county bike plan



CHARACTERISTICS:

- 2 mile length
- Previous, existing and forecasted ADT's stable at 11-13,000 vpd
- Excessive speeding observed by police department

Douglas Drive – Crystal & Golden Valley (planned for Summer 2010)

ISSUES:

- A few segments exhibiting higher than average crash rates
- Golden Valley concerned about walkway needs – obtained a TLC grant
- Concerns about speeds, Roadway identified on the county bike plan



CHARACTERISTICS:

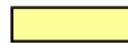
- 4 mile length – would be longest conversion to date
- Previous, existing and forecasted ADT's stable at 11-13,000 vpd

Before / After Findings - Crashes

**Crash Rate Trends
(per million vehicle miles)**

	2002	2003	2004	2005	2006	2007	2008*
50th Street (CSAH-21)							
France -> Chowen	3.54		5.35	3.57	2.04	6.12	1.84
Xerxes -> Vincent	13.14		9.86	3.29	7.42	14.85	3.22
Penn -> James	1.19		1.27	0.64	2.87	0.72	1.87
Lake Drive (CSAH-9)							
Indiana Ave -> France (curved)	1.61		0.75	1.77	0.88	1.79	0
France -> Victory Mem (straight)	7.96		5.90	0	0	0	2.69
Medicine Lake Road (CSAH-70)							
Louisiana -> Douglas	1.39		0	0	0.80	0.86	1.72
Bass Lake Road (CSAH-10)							
Regent -> June	2.02		1.33	1.73	2.59	2.14	1.53
Halifax -> Northpoint	1.36		0.60	2.32	2.32	0.82	0
Average Crash Rates by Type							
2-Lane Urban	2.02		1.61	1.79	1.57	1.60	
4-Lane Undivided	2.66		2.05	2.20	1.76	2.11	
4-Lane Divided	0.96		0.78	0.84	0.81	0.74	

* Preliminary Information

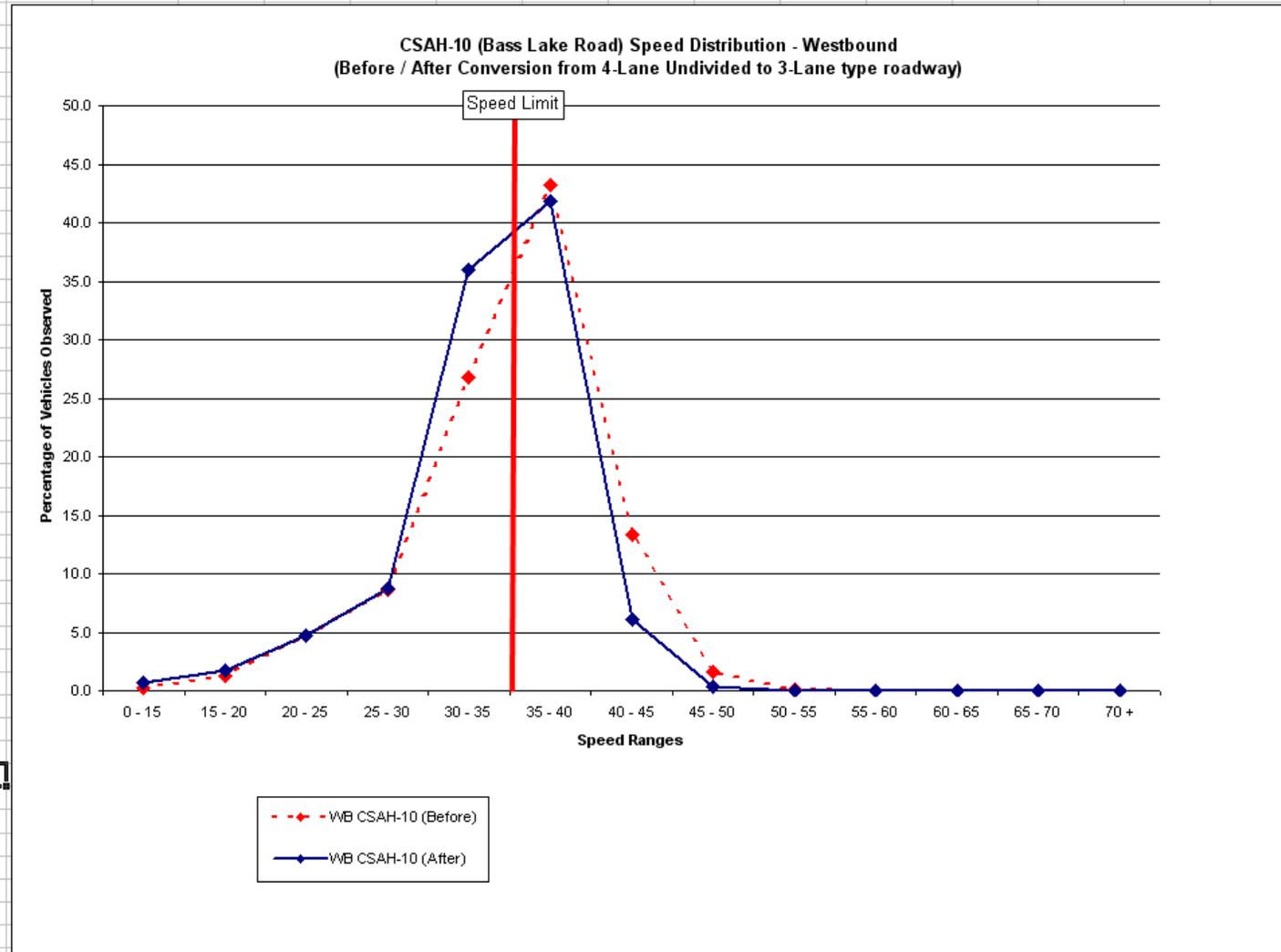


- Year when 3-Lane Conversion was made

Before / After Findings – CSAH-10 Speeds

WB - Before (6/27/07)		
Speed	Number	%
0 - 15	21	0.2
15 - 20	132	1.2
20 - 25	505	4.8
25 - 30	919	8.7
30 - 35	2,841	26.8
35 - 40	4,574	43.2
40 - 45	1,418	13.4
45 - 50	165	1.6
50 - 55	10	0.1
55 - 60	2	0.0
60 - 65	2	0.0
65 - 70	2	0.0
70 +	6	0.1
Total	10,597	100.0
85th Percentile Speed		40.5

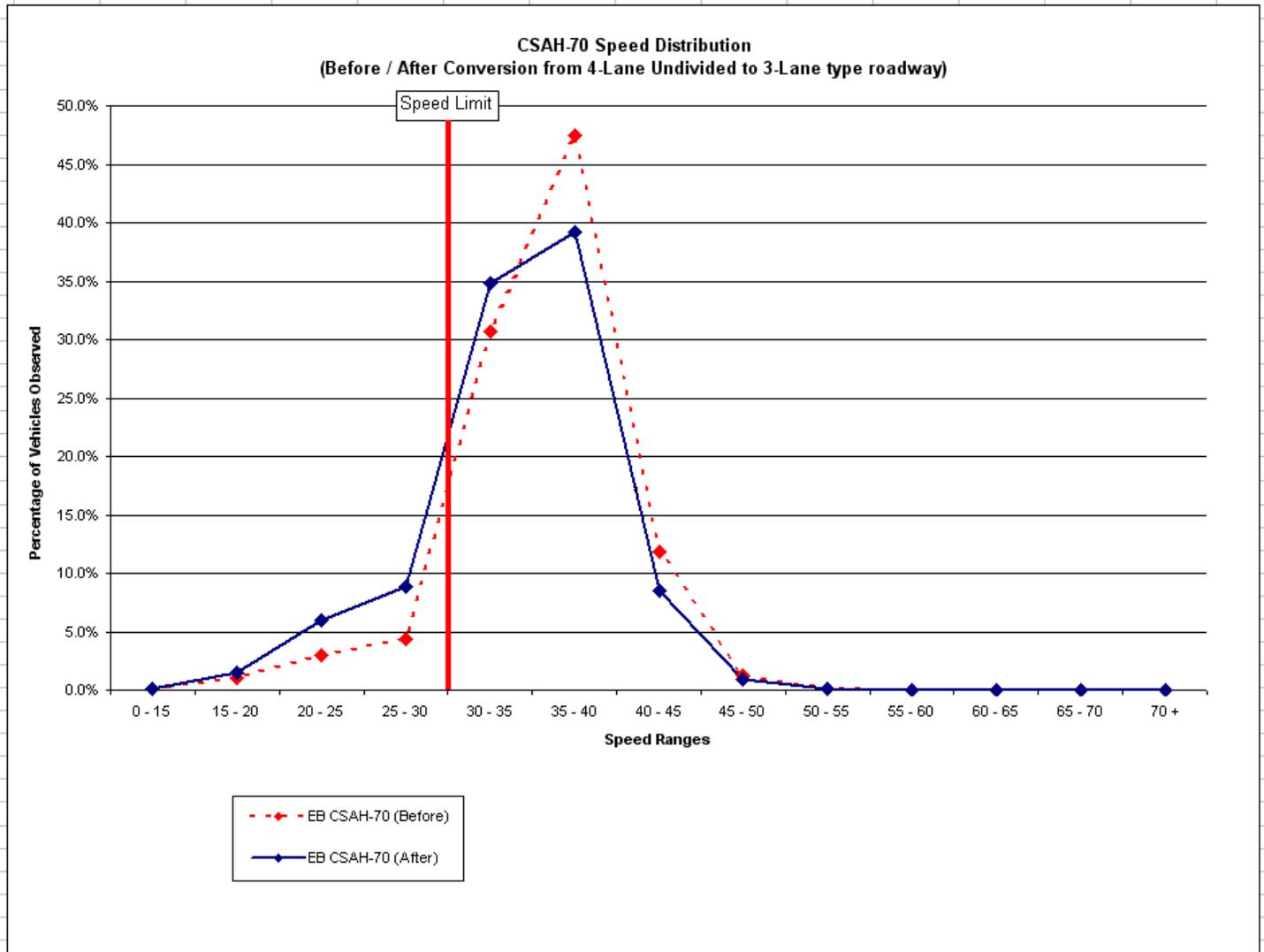
WB - After (10/15/07)		
Speed	Number	%
0 - 15	65	0.6
15 - 20	168	1.7
20 - 25	469	4.7
25 - 30	873	8.7
30 - 35	3,595	35.9
35 - 40	4,182	41.8
40 - 45	609	6.1
45 - 50	37	0.4
50 - 55	3	0.0
55 - 60	0	0.0
60 - 65	1	0.0
65 - 70	0	0.0
70 +	1	0.0
Total	10,003	100.0
85th Percentile Speed		38.4



Before / After Findings – CSAH-70 Speeds

EB - Before		
Speed	Number	%
0 - 15	22	0.2%
15 - 20	140	1.1%
20 - 25	386	3.0%
25 - 30	573	4.4%
30 - 35	4,013	30.7%
35 - 40	6,215	47.5%
40 - 45	1,549	11.8%
45 - 50	163	1.2%
50 - 55	17	0.1%
55 - 60	1	0.0%
60 - 65		0.0%
65 - 70		0.0%
70 +	2	0.0%
Total	13,081	100.0%
85th Percentile Speed	39.6	

EB - After		
Speed	Number	%
0 - 15	9	0.1%
15 - 20	199	1.5%
20 - 25	820	6.0%
25 - 30	1,204	8.8%
30 - 35	4,757	34.8%
35 - 40	5,353	39.2%
40 - 45	1,161	8.5%
45 - 50	132	1.0%
50 - 55	16	0.1%
55 - 60		0.0%
60 - 65		0.0%
65 - 70		0.0%
70 +	1	0.0%
Total	13,652	100.00%
85th Percentile Speed	38.8	



Other Considerations

- A 3-lane removes ambiguity for turn maneuvers and eliminates weaving and unanticipated braking
- 3-lane overall width is similar to a 4-lane undivided
- Some drivers are confused by 3-lane
- The 3-lane is often viewed as a suburban solution
- If little access exists – large unused pavement
- High peak hour volumes can result in long queues
- Long queues encourage bypassing via left turn lane
- Continuous left provides flexibility for vehicle storage at major intersections (no taper)

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