Appendix B
Traffic Operations and Multimodal Analysis Report

SH-44, I-84 TO STAR ROAD

Level 2 Evaluation
Traffic Operations and Multimodal Analysis

November 2025

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Introduction

This technical report was prepared for the SH-44, I-84 to Star Road Planning and Environmental Linkages (PEL) Study as support for the technical traffic and multimodal analyses completed for the Level 2 alternatives evaluation. It provides a summary of the analysis of the quantitative Level 2 Traffic Operations and Multimodal criteria shown in **Table 1**.

Table 1. Level 2 Traffic Operations, Safety, and Multimodal Criteria

PURPOSE AND NEED AND GOALS CATEGORY	CRITERIA	PERFORMANCE MEASURE
Traffic Operations	Corridor congestion	Planning Time Index (PTI) between I-84 and Star Rd (AM/PM) *PTI represents how much total time a driver should allow to ensure on-time travel. For example, PTI of 1.6 means for a trip that takes 15 minutes in light traffic a driver would need to allow 60% more time for a total of 24 minutes (15 x 1.6) to make sure they will arrive on time.* *A lower PTI represents lower congestion and better travel time reliability for the corridor.*
	Intersection congestion	Intersection level of service (LOS) during morning and evening commute peak hours (AM/PM) *LOS is a qualitative measure used to relate the quality of vehicular service at an intersection with calculation of delay, using letters A through F with A being the best and F being the worst.*
	Peak volume-to-capacity (v/c) ratio on roadway adjacent to Middleton Middle School	Volume-to-capacity (v/c) ratio on Main Street adjacent to schools during school peak time afternoon pick up
	Daily volume-to-capacity (v/c) ratio on SH-44	Daily volume-to-capacity (v/c) ratio on SH-44 (on new alignment, when applicable) *Daily v/c ratio higher than 1.0 indicates the roadway is congested during peak hours of the day*

PURPOSE AND NEED AND GOALS CATEGORY	CRITERIA	PERFORMANCE MEASURE
Multimodal	Pedestrian and bicyclist comfort	Level of Traffic Stress (LTS) for bicyclists and pedestrians with qualitative description of facilities, including adjacent traffic volumes *LTS is reported on a scale of 1-4, with 1 being the best score and 4 being the worst score*
	Support/incorporation of new pedestrian and bicyclist options along and across SH-44	Qualitative description of pedestrian and bicyclist options for overall connectivity along and across SH-44 (new alignment, when applicable)

The following alternatives were evaluated in the Level 2 evaluation under future year 2050 conditions:

- No Action Alternative
- Alternative 1: SH-44 Widening and Improvements on Existing Alignment
- Alternative 2: SH-44 South Alternate Route around Middleton at Ballard Lane
- Alternative 3: SH-44 South Alternate Route around Middleton at Cemetery Road
- Alternative 4: SH-44 One-Way Couplet through Middleton to South

The methodology and assumptions used to develop forecast travel demand volumes and the analysis of existing traffic, safety, and multimodal conditions is described in the *SH-44, I-84 to Star Road Final Existing Corridor Conditions Report* (January 2024).

Safety Evaluation

The qualitative safety evaluation for the Level 2 evaluation was conducted using a five-year crash history review from the crash data provided by ITD and a qualitative assessment of the potential crash reduction for changes with the corridor alternatives, including reduction in crashes involving pedestrians and bicyclists.

The five-year crash history review in the *SH-44, I-84 to Star Road Final Existing Corridor Conditions Report* (January 2024) identified characteristics, severity, and observed crash rate for both intersection and roadway segments that determined predominant crash patterns at specific locations and along the corridor as a whole. This information was utilized for the qualitative assessment of potential crash reduction with each alternative, which is summarized in the Level 2 evaluation matrix.

Traffic Operations

Traffic Volumes

Future year 2050 traffic volumes were developed using future travel demand model plots provided by Community Planning Association of Southwest Idaho (COMPASS). The future intersection turning movement volume projections and intersection control for each scenario are presented in Figures 1 through 5.

Figure 1. SH-44 Intersection Peak Hour Traffic Volumes: 2050 Alternative 1

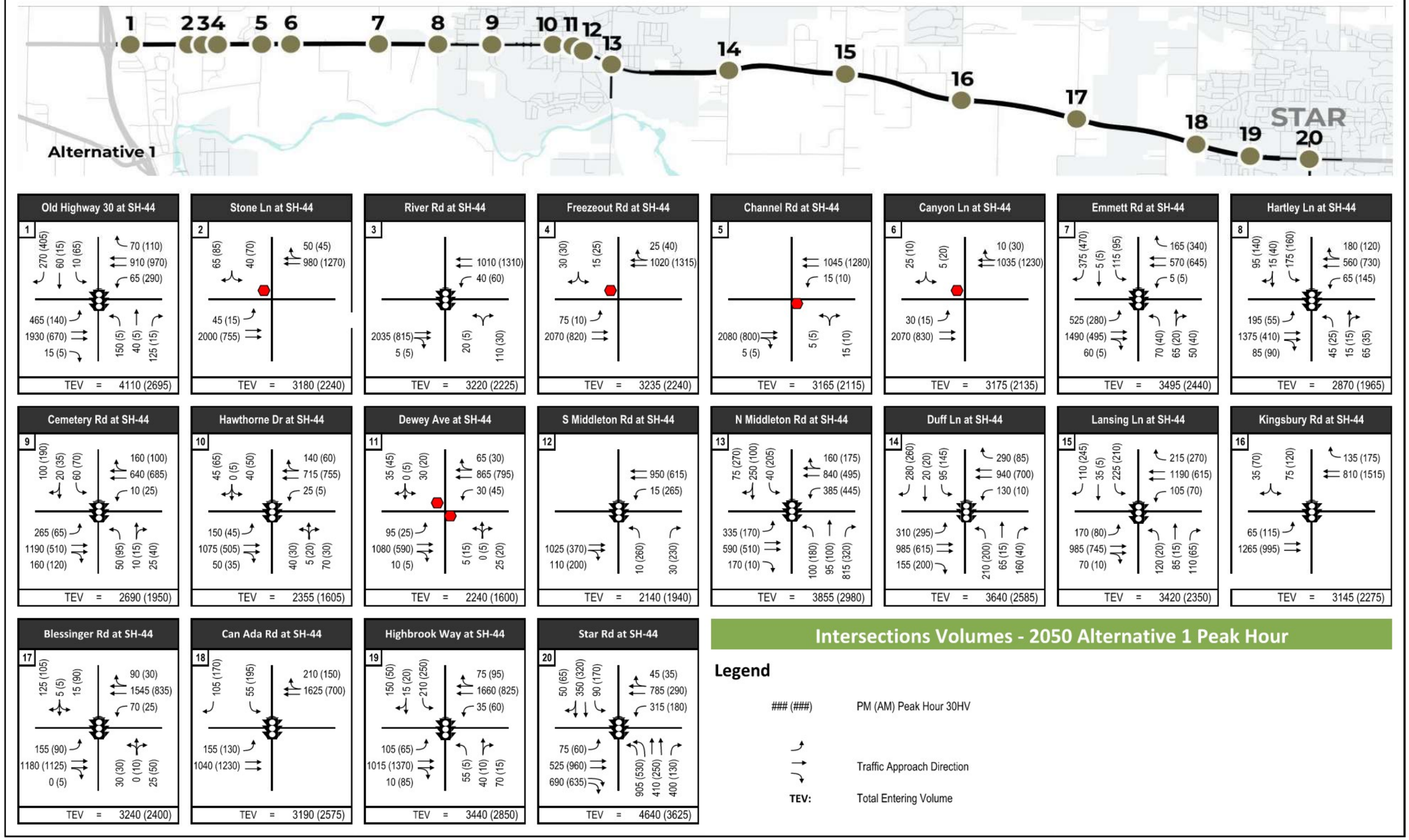


Figure 2. SH-44 Intersection Peak Hour Traffic Volumes: 2050 Alternative 2

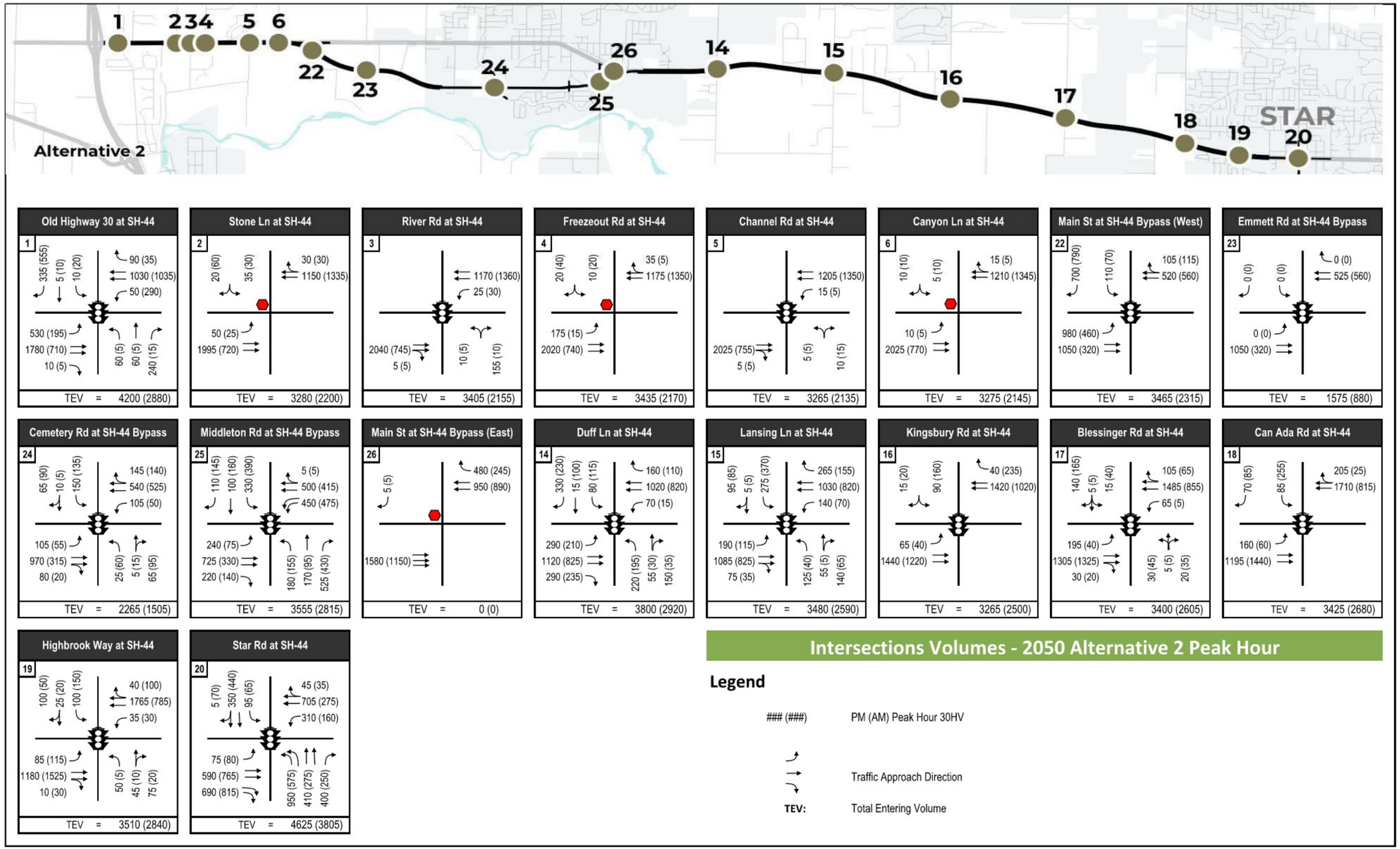


Figure 3. SH-44 Intersection Peak Hour Traffic Volumes: 2050 Alternative 3

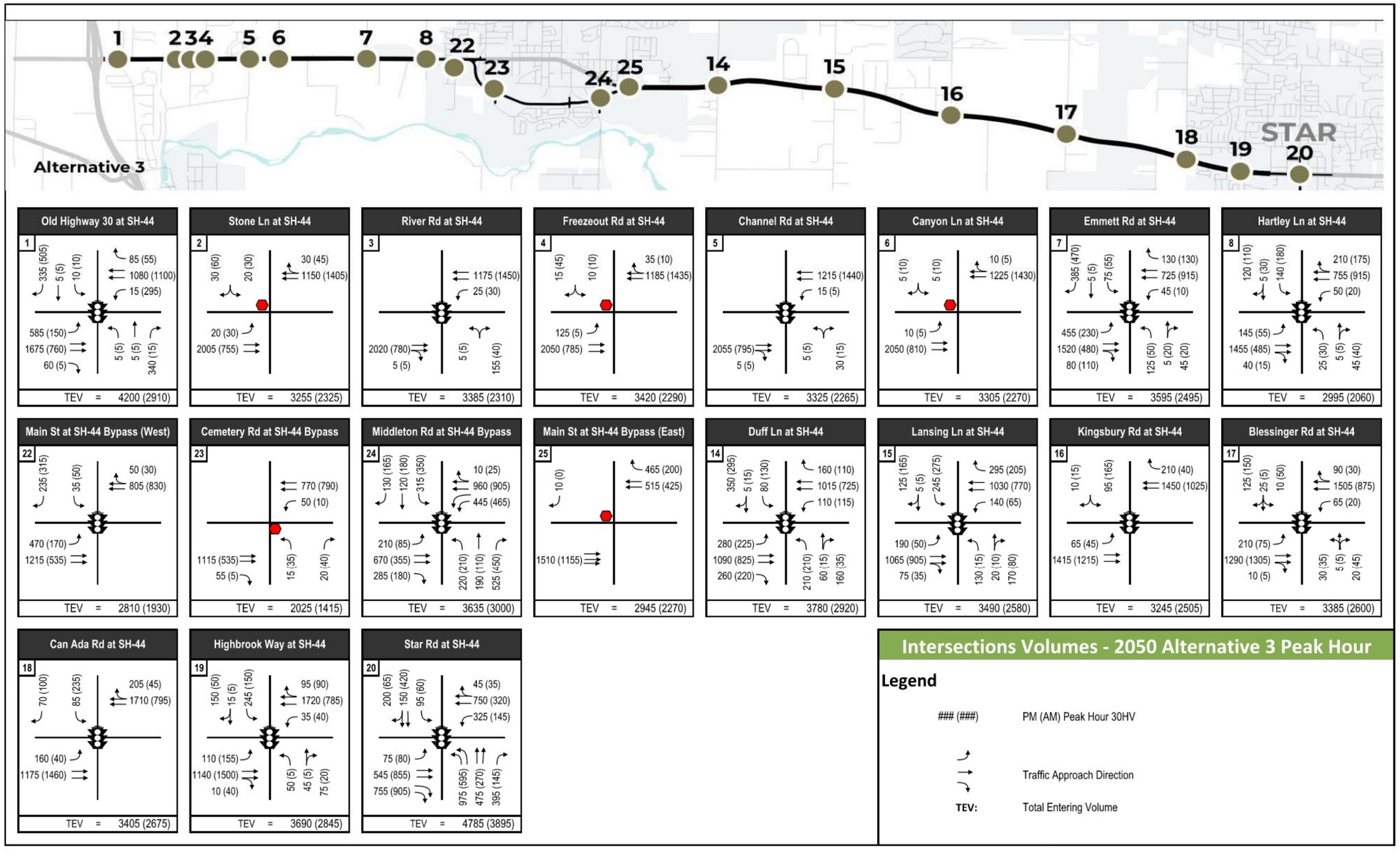


Figure 4. SH-44 Intersection Peak Hour Traffic Volumes: 2050 Alternative 4

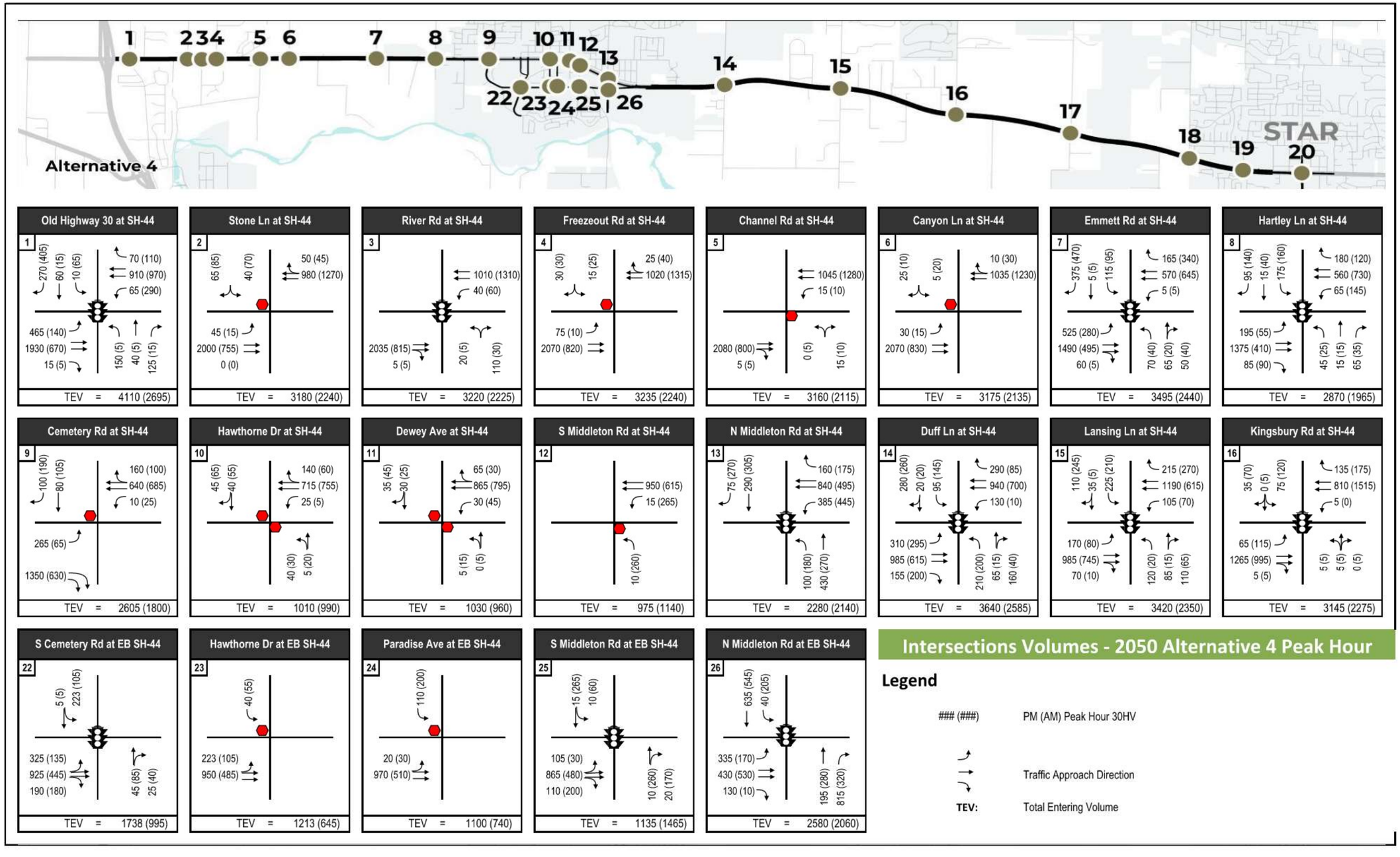
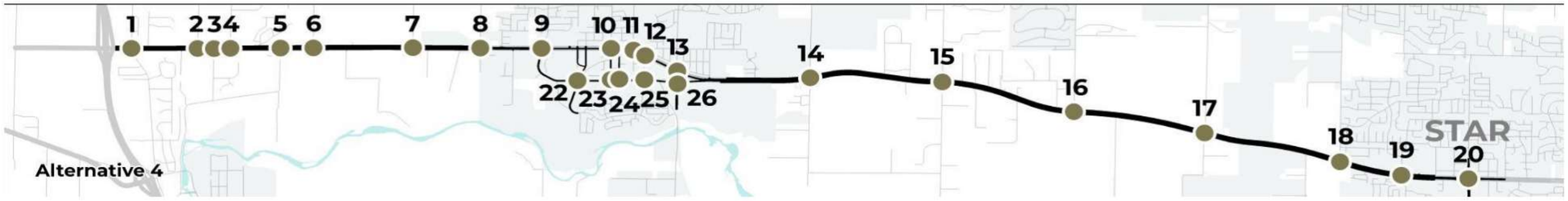
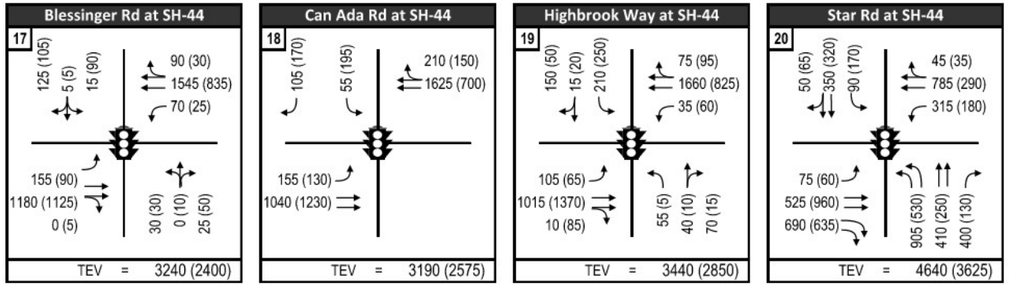


Figure 1. SH-44 Intersection Peak Hour Traffic Volumes: 2050 Alternative 4 (Continued)





Intersections Volumes - 2050 Alternative 4 Peak Hour

Legend

### (###)	PM (AM) Peak Hour 30HV
	Traffic Approach Direction
TEV:	Total Entering Volume

Corridor Congestion

Travel time reliability was estimated for the No Action and four action alternatives. The Planning Time Index (PTI) is calculated as the simulated travel time (obtained from SimTraffic software version 11) divided by the ideal free-flow travel time (calculated using corridor length and posted speed). The PTI represents how much total time a driver should allow to ensure on-time travel. For example, a PTI of 1.6 means for a trip that takes 15 minutes in light traffic a driver would need to allow 60% more time for a total of 24 minutes (15 x 1.6) to ensure arriving on time. A lower PTI represents lower congestion and better travel time reliability for the corridor. The PTI calculations for the AM and PM peak hours are summarized in **Tables 2 and 3**.

Table 2: Travel Time Reliability – AM Peak Hour

TRAVEL TIME COMPONENT	TRAVEL TIME RELIABILITY – AM PEAK HOUR				
	NO ACTION	ALT 1	ALT 2	ALT 3	ALT 4
EB SimTraffic Travel Time (s)	2238.4	1270.3	1071.0	1108.6	1233.0
EB Ideal Free-flow Travel Time (s)	876.64	946.53	902.57	918.77	816.07
EB Planning Time Index	2.55	1.34	1.19	1.21	1.51
WB SimTraffic Travel Time	2003.9	1109.4	1075.3	1080.9	890.1
WB Ideal Free-flow Travel Time (s)	876.64	946.53	902.57	918.77	816.07
WB Planning Time Index	2.29	1.17	1.19	1.18	1.05
Average Bidirectional PTI	**2.42**	**1.26**	**1.19**	**1.20**	**1.28**

Table 3: Travel Time Reliability – PM Peak Hour

TRAVEL TIME COMPONENT	TRAVEL TIME RELIABILITY – PM PEAK HOUR				
	NO ACTION	ALT 1	ALT 2	ALT 3	ALT 4
EB SimTraffic Travel Time (s)	5886.7	1273.2	1157.4	1215.3	1122.6
EB Ideal Free-flow Travel Time (s)	876.64	946.53	902.57	918.77	816.07
EB Planning Time Index	6.72	1.35	1.28	1.32	1.38
WB SimTraffic Travel Time	3727.8	1233.3	1347.2	1214.6	900.7
WB Ideal Free-flow Travel Time (s)	876.64	946.53	902.57	918.77	847.95
WB Planning Time Index	4.25	1.30	1.49	1.32	1.06
Average Bidirectional PTI	**5.49**	**1.33**	**1.39**	**1.32**	**1.22**

As presented in **Table 2**, Alternative 2 yields the lowest PTI in the eastbound direction and Alternative 4 yields the lowest PTI in the westbound direction during the AM peak hour. Alternative 2 yields the lowest average, bidirectional PTI during the AM peak hour.

As presented in **Table 3**, Alternative 2 yields the lowest PTI in the eastbound direction and Alternative 4 yields the lowest PTI in the westbound direction during the PM peak hour. Alternative 4 yields the lowest average, bidirectional PTI during the PM peak hour.

Changes in Travel Circulation

Circulation of travel to notable origins and destinations in Middleton were evaluated based on the change in travel route and resulting time, using route length and posted speed. These estimates were for uncongested conditions. Travel times during peak hours with travel at lower than the posted speed and delays at traffic signals would be higher.

The following origins were used, with the assumed common points:

- Middleton Fire Station 53 – southeast corner of Main Street and Dewey Avenue
- Neighborhood South – intersection of Sawtooth Lake and S Crane Creek Way
- Neighborhood North – intersection of Hawthorne Drive and 2nd Street North

The following destinations were used, with the assumed common points:

- SH-44 West of Middleton – intersection of SH-44 and Emmett Road
- SH-44 East of Middleton – intersection of SH-44 and Marjorie Avenue
- Neighborhood South – intersection of Sawtooth Lake and South Crane Creek Way
- Neighborhood North – intersection of Hawthorne Drive and 2nd Street North
- Ridley's Family Market – southeast corner of Main Street and S Middleton Road

The routes assumed for the circulation of each alternative and percent difference in travel time from the baseline conditions are illustrated in **Figures 6 through 9**.

Figure 6: No Action and Alternative 1 Circulation

Figure 7: Alternative 2 Circulation

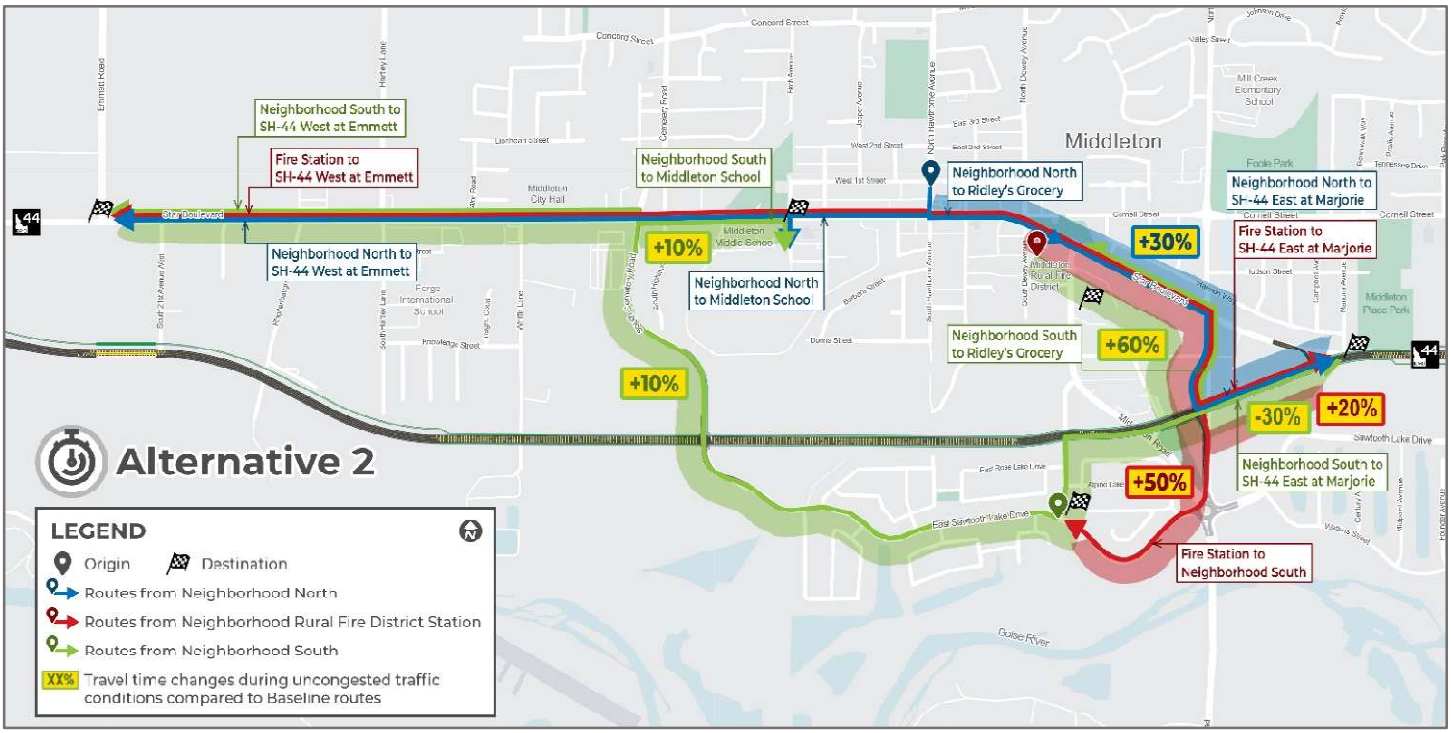


Figure 8: Alternative 3 Circulation

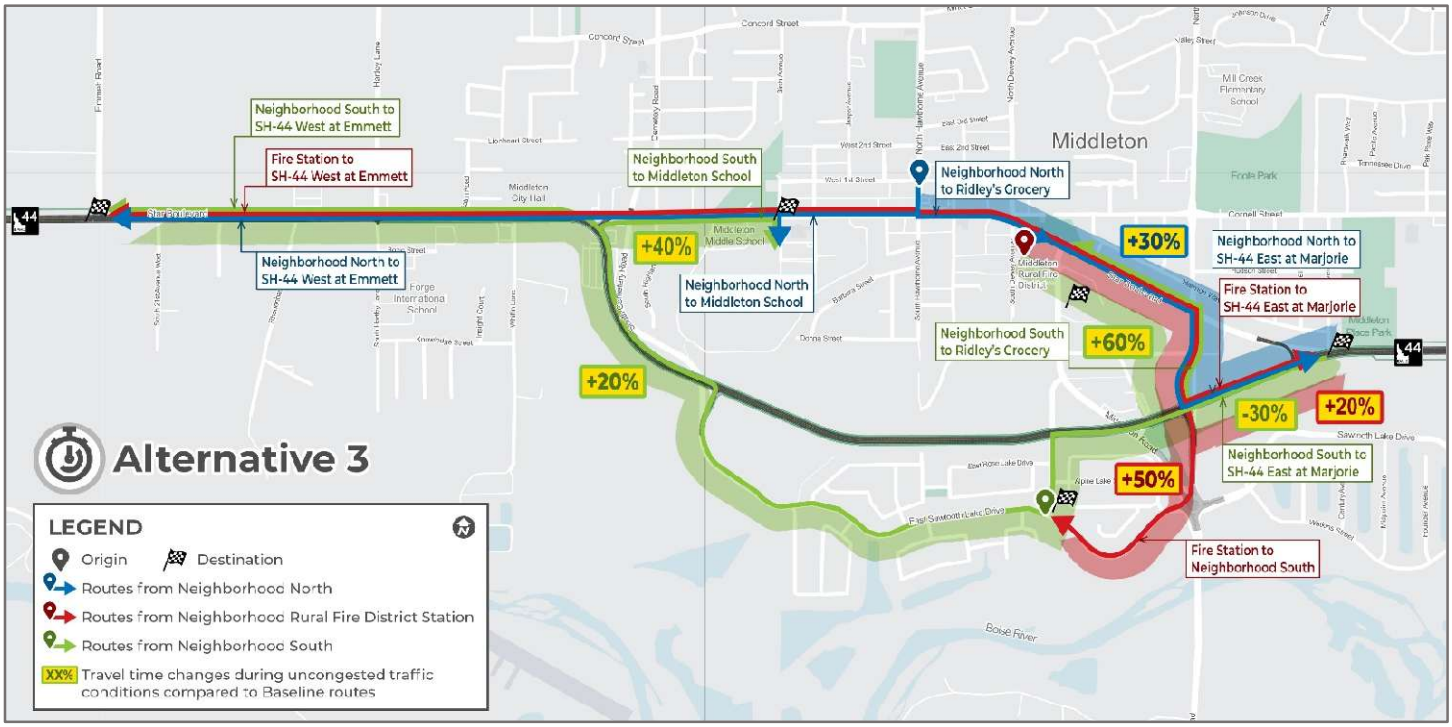
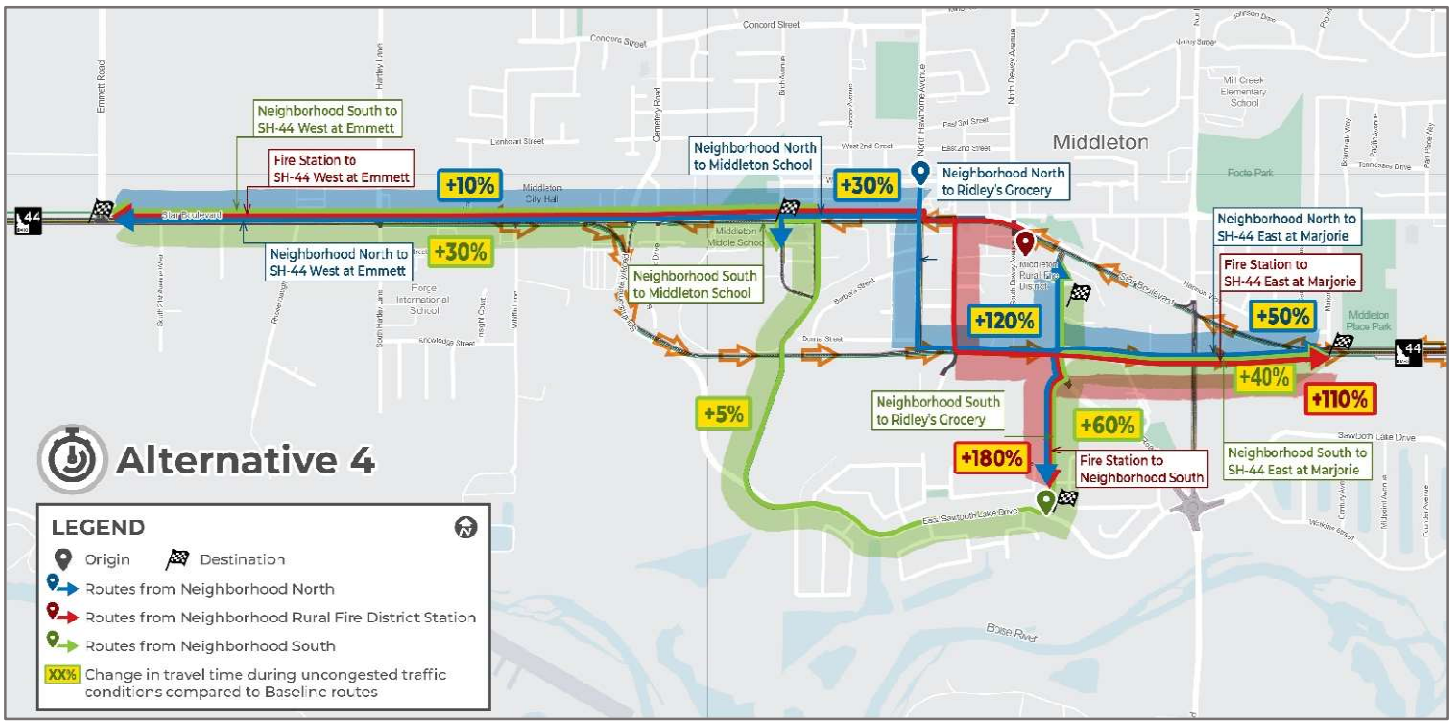


Figure 9: Alternative 4 Circulation



Additional time was added to the travel route for each of the following movements through intersections:

- Left turn movement at traffic signal = 30 seconds
- Through movement at traffic signal = 20 seconds
- Right turn movement at traffic signal = 10 seconds
- Left turn or through movement at stop sign = 60 seconds
- Right turn at stop sign = 30 seconds

The travel times and differences for each alternative are summarized in **Table 4**.

Table 4: Travel Time Differences by Alternative

FROM	TO	NO ACTION & ALT 1	ALT 2		ALT 3		ALT 4	
		TIME (MIN)	TIME (MIN)	CHANGE	TIME (MIN)	CHANGE	TIME (MIN)	CHANGE
Fire Station	SH-44 West at Emmett	4.3	4.3	0.0	4.3	0.0	4.3	0.0
Fire Station	SH-44 East at Marjorie	2.2	2.7	0.5	2.7	0.5	4.5	2.3
Fire Station	Neighborhood South	1.7	2.6	0.9	2.6	0.9	4.9	3.1
Neighborhood South	SH-44 West at Emmett	4.5	4.8	0.3	5.5	1.0	5.8	1.4
Neighborhood South	SH-44 East at Marjorie	2.5	1.9	-0.6	1.9	-0.6	3.4	0.9
Neighborhood South	Ridley's Grocery	1.7	2.7	1.0	2.7	1.0	2.7	1.0
Neighborhood South	Middle School	2.8	3.1	0.3	3.8	1.0	2.8	0.0
Neighborhood North	SH-44 West at Emmett	4.0	4.0	0.0	4.0	0.0	4.4	0.3
Neighborhood North	SH-44 East at Marjorie	3.0	4.0	1.0	4.0	1.0	4.5	1.5
Neighborhood North	Ridley's Grocery	1.9	1.9	0.0	1.9	0.0	4.2	2.3
Neighborhood North	Middle School	1.1	1.1	0.0	1.1	0.0	1.4	0.3

Intersection Congestion

Traffic operations were evaluated at the 20 study intersections under the 2050 traffic conditions in the AM and PM peak hours and each alternative. The Level of Service (LOS) and delay at each intersection are summarized in **Tables 5 through 9**.

Table 5: 2050 No Build – Peak Hour Intersection Operations Summary

SH-44 INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			LOS	DELAY (SEC/VEH)	LANE GROUP	LOS	DELAY (SEC/VEH)	LANE GROUP
1	**Old Hwy 30**	**STOP**	**F**	**192.9**	**SBR**	**F**	**199.1**	**SBLT**
2	Stone	STOP	F	392	SBLR	F	222.5	SBLR
3	River	STOP	F	60.8	NBLR	F	310.0	NBLR
4	Freezeout	STOP	F	83.3	SBLR	F	>400	SBLR
5	Channel	STOP	F	61.0	NBLR	F	84.9	NBLR
6	Canyon	STOP	F	116.7	SBLR	F	87.9	SBLR
7	Emmett	STOP	F	>400	NBL	F	>400	NBL
			F	131.3	SBR	F	>400	NBTR
						E	38.5	SBR
8	Hartley	Signal	F	85.0	Overall	E	71.8	Overall
9	**Cemetery**	**STOP**	**E**	**36.8**	**NBTR**	**F**	**>400**	**NBL**
			F	**>400**	**SBL**	**E**	**46.9**	**NBTR**
			F	**370.4**	**SBTR**	**F**	**>400**	**SBL**
						F	**106.5**	**SBTR**
10	Hawthorne	STOP	F	114.1	NBLTR	F	141.3	NBLTR
		STOP	F	>400	SBLTR	E	42.3	SBLTR
11	S. Dewey	STOP	F	79.4	NBLTR	F	59.2	SBLTR
		STOP	F	>400	SBLTR			
12	S. Middleton	Signal	E	55.2	Overall	A	6.2	Overall
13	**N. Middleton**	**STOP**	**D**	**30.8**	**NBLTR**	**F**	**>400**	**SBTR**
14	Duff	STOP	F	>400	NBLTR	B	11.0	EBL
		STOP	F	>400	SBLTR			
15	Lansing	STOP	F	>400	NBLTR	F	>400	NBLTR
		STOP	F	>400	SBLTR			
16	Kingsbury	STOP	F	202.0	NBLTR	F	260.5	NBLTR
		STOP	F	>400	SBLTR	F	>400	SBLTR
17	Blessinger	STOP	F	>400	NBLTR	F	>400	SBLTR
		STOP	F	>400	SBLTR			
18	N. Can Ada	STOP	F	340.4	SBL	F	87.6	SBL
19	N. Highbrook	Signal	C	21.1	Overall	C	26.1	Overall
20	**N. Star**	**Signal**	**F**	**270.7**	**Overall**	**F**	**>400**	**Overall**

Note:
Signalized intersection LOS based on overall intersection delay (HCM 7 Edition methodology)
Unsignalized intersection LOS based on worst minor leg delay (HCM 7 Edition methodology)

Table 6: 2050 Alternative 1 – Peak Hour Intersection Operations Summary

SH-44 INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			LOS	DELAY (SEC/VEH)	LANE GROUP	LOS	DELAY (SEC/VEH)	LANE GROUP
1	**Old Hwy 30**	**Signal**	**D**	**40.2**	**Overall**	**C**	**29.6**	**Overall**
2	Stone	STOP	F	78.5	SBLR	E	40.2	SBLR
3	River	Signal	A	3.4	Overall	B	19.8	Overall
4	Freezeout	STOP	D	29.6	SBLR	C	24.7	SBLR
5	Channel	STOP	C	15.6	NBLR	C	24.6	NBLR
6	Canyon	STOP	D	28.1	SBLR	C	17.1	SBLR
7	Emmett	Signal	C	24.3	Overall	C	25.2	Overall
8	Hartley	Signal	D	38.4	Overall	D	35.7	Overall
9	**Cemetery**	**Signal**	**B**	**19.7**	**Overall**	**C**	**30.5**	**Overall**
10	Hawthorne	Signal	A	8.5	Overall	B	17.9	Overall
11	S. Dewey	STOP	D	33.2	SBLTR	F	178.2	SBLTR
12	S. Middleton	Signal	C	31.3	Overall	B	14.9	Overall
13	**N. Middleton**	**Signal**	**D**	**53.0**	**Overall**	**D**	**43.5**	**Overall**
14	Duff	Signal	C	22.1	Overall	C	21.6	Overall
15	Lansing	Signal	D	46.0	Overall	D	38.6	Overall
16	Kingsbury	Signal	C	23.9	Overall	A	8.5	Overall
17	Blessinger	Signal	C	22.3	Overall	C	34.2	Overall
18	N. Can Ada	Signal	C	26.4	Overall	B	13.5	Overall
19	N. Highbrook	Signal	C	30.0	Overall	D	48.9	Overall
20	N. Star	Signal/Conventional	C	33.4	Overall	D	53.5	Overall
20	N. Star	Full Quadrant	B	14.6	Overall	B	14.4	Overall
20	N. Star	Quadrant	D	38.9	Overall	D	50.9	Overall
20	**N. Star**	**Jughandle**	**D**	**53.9**	**Overall**	**D**	**35.7**	**Overall**

Note:
Signalized intersection LOS based on overall intersection delay (HCM 7 Edition methodology)
Unsignalized intersection LOS based on worst minor leg delay (HCM 7 Edition methodology)

Table 7: 2050 Alternative 2 – Peak Hour Intersection Operations Summary

SH-44 INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			LOS	DELAY (SEC/VEH)	LANE GROUP	LOS	DELAY (SEC/VEH)	LANE GROUP
1	**Old Hwy 30**	**Signal**	**D**	**53.0**	**Overall**	**C**	**35.2**	**Overall**
2	Stone	STOP	D	31.4	SBLR	F	51.3	SBLR
3	River	Signal	B	14.8	Overall	B	18.8	Overall
4	Freezeout	STOP	D	27.1	SBLR	D	32.3	SBLR
5	Channel	Signal	B	12.0	Overall	B	13.5	Overall
6	Canyon	STOP	D	25.4	SBLR	C	22.0	SBLR
14	Duff	Signal	C	31.0	Overall	C	30.8	Overall
15	Lansing	Signal	C	33.9	Overall	D	43.3	Overall
16	Kingsbury	Signal	A	9.6	Overall	A	7.9	Overall
17	Blessinger	Signal	C	23.2	Overall	D	46.7	Overall
18	N. Can Ada	Signal	C	27.3	Overall	B	14.1	Overall
19	N. Highbrook	Signal	C	22.6	Overall	D	37.2	Overall
20	**N. Star**	**Signal/Conventional**	**C**	**31.3**	**Overall**	**D**	**53.3**	**Overall**
22	SH-44 at Bypass	Signal	A	7.0	Overall	D	37.3	Overall
24	**Cemetery at Bypass**	**Signal**	**D**	**53.3**	**Overall**	**C**	**34.5**	**Overall**
25	**Middleton at Bypass**	**Signal**	**D**	**43.4**	**Overall**	**D**	**44.2**	**Overall**
26	Main Street (East) at Bypass	STOP	B	11.9	SBR	B	12.2	SBR

Note:
Signalized intersection LOS based on overall intersection delay (HCM 7 Edition methodology)
Unsignalized intersection LOS based on worst minor leg delay (HCM 7 Edition methodology)

Table 8: 2050 Alternative 3 – Peak Hour Intersection Operations Summary

SH-44 INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			LOS	DELAY (SEC/VEH)	LANE GROUP	LOS	DELAY (SEC/VEH)	LANE GROUP
1	**Old Hwy 30**	**Signal**	**D**	**46.2**	**Overall**	**D**	**52.5**	**Overall**
2	Stone	STOP	E	43.6	SBLR	D	31.8	SBLR
3	River	Signal	A	2.8	Overall	B	18.3	Overall
4	Freezeout	STOP	C	23.6	SBLR	D	31.5	SBLR
5	Channel	Signal	B	13.7	Overall	B	14.4	Overall
6	Canyon	STOP	D	26.9	SBLR	D	26.3	SBLR
7	Emmett	Signal	D	37.8	Overall	C	28.5	Overall
8	Hartley	Signal	D	48.6	Overall	C	27.7	Overall
14	Duff	Signal	D	39.8	Overall	D	51.2	Overall
15	Lansing	Signal	D	39.2	Overall	D	50.6	Overall
16	Kingsbury	Signal	B	11.2	Overall	A	8.3	Overall
17	Blessinger	Signal	C	32.2	Overall	C	34.1	Overall
18	N. Can Ada	Signal	C	26.7	Overall	B	13.9	Overall
19	N. Highbrook	Signal	C	23.4	Overall	D	44.4	Overall
20	**N. Star**	**Signal/Conventional**	**C**	**31.1**	**Overall**	**D**	**52.3**	**Overall**
22	SH-44 at Bypass	STOP	C	21.1	Overall	C	28.3	Overall
23	**Cemetery at Bypass**	**STOP**	**C**	**16.3**	**NBL**	**D**	**27.4**	**NBL**
24	**Middleton at Bypass**	**Signal**	**D**	**40.8**	**Overall**	**D**	**48.3**	**Overall**
25	Main Street (East) at Bypass	STOP	B	12.0	SBR	B	12.4	SBR

Note:
Signalized intersection LOS based on overall intersection delay (HCM 7 Edition methodology)
Unsignalized intersection LOS based on worst minor leg delay (HCM 7 Edition methodology)

Table 9: 2050 Alternative 4 – Peak Hour Intersection Operations Summary

SH-44 INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			LOS	DELAY (SEC/VEH)	LANE GROUP	LOS	DELAY (SEC/VEH)	LANE GROUP
1	**Old Hwy 30**	**Signal**	**D**	**40.2**	**Overall**	**C**	**29.7**	**Overall**
2	Stone	STOP	F	78.5	SBLR	E	40.2	Overall
3	River	Signal	A	3.4	Overall	B	19.8	Overall
4	Freezeout	STOP	D	29.6	SBLR	C	24.7	SBLR
5	Channel	STOP	C	15.6	NBLR	C	24.6	NBLR
6	Canyon	STOP	D	28.1	SBLR	C	17.1	SBLR
7	Emmett	Signal	C	23.7	Overall	C	27.1	Overall
8	Hartley	Signal	D	37.3	Overall	C	26.0	Overall
9	Cemetery	STOP	N/A	N/A	N/A	N/A	N/A	N/A
10	Hawthorne	STOP	C	21.9	NBLT	C	17.6	SBTR
11	S. Dewey	STOP	C	17.0	NBLT	C	18.9	SBTR
12	S. Middleton	STOP	F	108.8	NBLT	B	12.9	Overall
13	**N. Middleton**	**Signal**	**C**	**27.7**	**Overall**	**C**	**24.7**	**Overall**
14	Duff	Signal	D	41.7	Overall	D	45.3	NBL
15	Lansing	Signal	D	40.7	Overall	D	37.6	NBR
16	Kingsbury	Signal	C	29.9	Overall	C	31.6	Overall
17	Blessinger	Signal	C	22.3	Overall	C	33.7	Overall
18	N. Can Ada	Signal	C	27.6	Overall	A	5.5	Overall
19	N. Highbrook	Signal	D	39.9	Overall	D	49.9	Overall
20	**N. Star**	**Signal**	**C**	**33.4**	**Overall**	**D**	**41.8**	**Overall**
22	**Cemetery at EB SH-44**	**Signal**	**B**	**16.3**	**Overall**	**C**	**20.0**	**Overall**
23	Hawthorne at EB SH-44	STOP	B	13.1	SBL	C	23.4	SBL
24	Paradise at EB SH-44	STOP	B	13.8	SBL	C	15.8	SBL
25	S Middleton at EB SH-44	Signal	C	28.3	Overall	A	4.9	Overall
26	**N Middleton at EB SH-44**	**Signal**	**C**	**20.1**	**Overall**	**B**	**19.6**	**Overall**

Note:
Signalized intersection LOS based on overall intersection delay (HCM 7 Edition methodology)
Unsignalized intersection LOS based on worst minor leg delay (HCM 7 Edition methodology)

Peak Volume-to-Capacity Ratio Adjacent to Middleton Middle School

Congestion during the afternoon school peak hour (3:00 PM to 4:00 PM) adjacent to Middleton Middle School was reviewed for the No Action and four action alternatives. Peak hour volume-to-capacity (v/c) ratios were developed for each scenario using the future peak hour traffic volume forecasts developed for the study and planning-level capacity thresholds. Planning-level capacity was assumed to be 920 vehicles per hour per lane for the per-lane approach volumes in the urban/transitioning area of the Middleton Middle School.

As presented in **Table 10**, Alternative 3 is projected to result in the lowest bidirectional traffic on the current SH-44 alignment adjacent to Middleton Middle School during the school's afternoon peak hour between 3:00 and 4:00 PM. Increased traffic results in increased congestion. Therefore, Alternative 3 is projected to result in the least congestion on the current SH-44 alignment during the school's afternoon peak hour. Conversely, Alternative 4 is projected to result in the most congestion on the current SH-44 alignment during the school's afternoon peak hour.

Table 10: Volume-to-Capacity on SH-44/Main Street East of Cemetery Road (2050)

ALTERNATIVE	EASTBOUND (VEH/HR)	WESTBOUND (VEH/HR)	TOTAL (VEH/HR)	CAPACITY (VEH/HR)	V/C
No Action	620	540	1,160	1,840	0.63
1	1,670	745	2,415	3,680	0.67
2	560	165	725	1,840	0.39
3	525	145	670	1,840	0.36
4	N/A	745	745	1,840	0.41

Daily Volume-to-Capacity

Daily v/c ratios were developed for each alternative using the future daily traffic volume forecasts provided by COMPASS and planning-level capacity thresholds. Planning-level capacity in vehicles per day (vpd) were based on generalized service volumes from Florida Department of Transportation (FDOT) *2023 Multimodal Quality Level of Service Handbook* and were assumed as:

- 2-lane urban arterial (25-35 mph) = 13,900 vpd
- 2-lane rural highway (45 mph or greater) = 14,000 vpd
- 2-lane urban one-way – access control (25-35 mph) = 14,600 vpd
- 3-lane urban arterial (25-35 mph) = 14,600 vpd
- 5-lane urban arterial – frequent driveways (25-35 mph) = 28,300 vpd

- 5-lane urban arterial – no access control (25-35 mph) = 31,400 vpd
- 5-lane urban arterial – access control (25-35 mph) = 33,000 vpd
- 5-lane divided expressway (40 mph) = 37,300 vpd
- 5-lane rural highway (45 mph or greater) = 39,200 vpd

The daily v/c for each alternative along sections of the SH-44 corridor are summarized in **Table 11**.

Table 11: Daily Volume-to-Capacity on SH-44 (2050)

ALT	WEST OF OLD HWY 30		OLD HWY 30 TO BALLARD LN		BALLARD LN TO CEMETERY RD		CEMETERY RD TO MARJORIE AVE		MARJORIE AVE TO CAN ADA RD		CAN ADA RD TO STAR RD	
	VOLUME	V/C	VOLUME	V/C	VOLUME	V/C	VOLUME	V/C	VOLUME	V/C	VOLUME	V/C
No Action	36,400	2.6	25,300	1.8	18,400	1.3	15,300	1.0	28,100	2.0	36,900	1.1
1	40,500	1.0	32,600	0.8	32,500	1.0	21,900	0.8	36,900	0.9	41,300	1.2
2	41,500	1.1	32,100	0.8	16,700	0.4	19,500	0.5	37,600	1.0	41,400	1.2
3	41,800	1.1	34,100	0.9	25,400	0.7	27,200	0.7	37,600	1.0	41,400	1.2
4	40,500	1.0	32,600	0.8	32,500	1.0	13,500 (EB) 14,000 (WB)	1.0 (EB) 1.0 (WB)	36,900	0.9	41,300	1.2

Multimodal

Pedestrian and Bicyclist Comfort

The existing multimodal conditions along the SH-44 corridor are described in the *SH-44, I-84 to Star Road Final Existing Corridor Conditions Report* (January 2024). Pedestrian and bicyclist comfort was evaluated for each action alternative. This evaluation was based on level of traffic stress (LTS) scores presented in Ada County Highway District's (ACHD's) *Livable Streets Performance Measures* (version adopted September 2021) and in the Multi-Use Path Example Application - Typical Section in *Section 7200 of ACHD's Policy Manual*.

LTS is scored on a scale of 1-4, with 1 being the best score as the most comfortable environment for bicyclists and pedestrians and 4 being the worst score with the least comfortable environment for bicyclists and pedestrians. These scores were accompanied in the Level 2 evaluation by a qualitative description of facilities.

Bike LTS

LTS scores for bicyclist facilities were based on the ACHD Multi-Use Path LTS Criteria shown in **Table 12**. The single LTS scores presented in the Level 2 evaluation matrix represent the combined LTS score for the entire alternative. This was determined by calculating the average of the individual LTS scores for each corridor geographic segment.

Table 12: Multi-Use Pathway LTS Criteria

TOTAL TRAVEL LANES	TOTAL BUFFER WIDTH MEASURED FORM EDGE OF TRAVELED WAY TO CENTERLINE OF MULTI-USE PATHWAY		
	5 – 10 FEET	11 – 14 FEET	15 FEET +
1-2	LTS 2	LTS 1	LTS 1
3	LTS 2	LTS 1	LTS 1
4-5	LTS 3	LTS 2	LTS 1
6+	LTS 4	LTS 3	LTS 2

Pedestrian LTS

LTS scores for pedestrian facilities were based on the sidewalk buffer and presence LTS criteria shown in **Tables 13 and 14**. The single LTS scores presented in the Level 2 evaluation matrix, for both the buffer and sidewalk presence categories, represent the combined LTS score for the entire alternative. This was determined by calculating the average of the individual LTS scores for each corridor geographic segment.

Table 13: Sidewalk Buffer LTS Criteria

TOTAL TRAVEL LANES	TOTAL BUFFER WIDTH (INCLUDES LANDSCAPING, PARKING, BIKE LANES, ETC.)			
	< 5 FEET	5 – 10 FEET	11 – 14 FEET	15 FEET +
1-2	LTS 2	LTS 2	LTS 1	LTS 1
3	LTS 3	LTS 2	LTS 1	LTS 1
4 - 5	LTS 4	LTS 3	LTS 2	LTS 1
6+	LTS 4	LTS 4	LTS 3	LTS 2

Table 14: Sidewalk Presence LTS Criteria

SIDEWALK PRESENCE	NUMBER OF TRAVEL LANES	POSTED SPEEDS (ACTUALS WHEN AVAILABLE)				
		20 MPH	25 MPH	30 MPH	35 MPH	40+ MPH
Complete Both Sides	2 lanes	LTS 1	LTS 1	LTS 1	LTS 1	LTS 2
Complete Both Sides	3+ lanes	LTS 1	LTS 1	LTS 1	LTS 1	LTS 2
Complete One Side	2 lanes	LTS 2	LTS 2	LTS 2	LTS 2	LTS 3
Complete One Side	3+ lanes	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
Incomplete Both Sides	2 lanes	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
Incomplete Both Sides	3+ lanes	LTS 2	LTS 2	LTS 4	LTS 4	LTS 4

No Action

The No Action alternative would maintain current conditions where pedestrian and bicyclist facilities are in close proximity to high traffic volumes with no pedestrian facilities separate from the roadway. This would also still have large distances along SH-44 where there is only a shoulder with no sidewalk available. Bicyclists would experience LTS 3 in the No Action alternative and pedestrians would experience LTS 4.

It is assumed that new multi-use paths would be installed as part of new developments, but this would result in piece meal installation of facilities opposed to creating a corridor-wide facility for bicyclists or pedestrians. New development that would result in new sidewalks was not considered as part of the 2050 No Build scenario.

Action Alternatives

Alternatives 1, 2, and 3 have similar multimodal facilities throughout the different alternatives. While the extents are slightly different and some of the facility details are different for the Middleton section, the following elements are the same throughout the different action alternatives:

- Western section: Detached multi-use path on one side
- Middleton section: Detached multi-use path on one side, detached multi-use path or attached sidewalk on one side
    - Alternative 4 is different given the couplet nature of the roadway elements through Middleton. The Middleton extent differs from the Alternatives 1, 2, and 3 in that there is multi-use path and sidewalk associated with each piece of the couplet.
- Eastern section: Detached multi-use path on both sides
- Star section: Detached multi-use path on one side, attached sidewalk on one side

Due to the similar conditions throughout all the action alternatives, each alternative scores a LTS 1 for bicyclists and LTS 2 for pedestrians. Additional qualitative assessment was completed in order to identify the differences between the action alternatives.

Alternative 1

Alternative 1 would provide a multi-use path on at least one side of SH-44, with much of the corridor having a multi-use path on both sides or a combination of a multi-use path and sidewalk on both sides. Improvements would be made to facilities through downtown Middleton but remain adjacent to high traffic volumes (20,000 or more vpd).

Alternative 2

Alternative 2 would provide a new multi-use path connection on at least one side of SH-44, with much of the corridor having a multi-use path on both sides of SH-44 east of Whiffin Lane. As a result of the new roadway alignment, there would be a reduction of traffic volumes in downtown Middleton, adjacent to pedestrians and bicyclists traveling along and across Main Street.

Alternative 3

Alternative 3 would provide a new multi-use path connection on both sides of SH-44 until the Town of Star, where there would be a multi-use path on one side and a sidewalk on one side. There would be a reduction of traffic volumes in downtown Middleton, adjacent to pedestrians and bicyclists traveling along and across Main Street.

Alternative 4

Alternative 4 would provide a new multi-use path connection on both sides of SH-44 until Middleton, with a multi-use path on one side and sidewalk on one side along each of the couplet sections, then multi-use paths on both sides of SH-44 until Town of Star. Added traffic volumes on Middleton residential streets between the couplet roadways will decrease comfort for bicyclists and pedestrians, even with added sidewalks along those local streets.

Multimodal Connectivity

Multimodal connectivity of pedestrian and bicyclist facilities was evaluated based on the ability to support/incorporate new pedestrian and bicyclist options along and across SH-44. This analysis identified the number of controlled or separated crossing opportunities across SH-44 and evaluated consistency of spacing between crossing opportunities. It was determined that crossings would only occur at signalized intersections and grade-separated crossings due to driver expectation, potential issues with crossing a raised median, and the resulting spacing of anticipated signalized intersections. It is assumed that all signalized intersections will provide adequate facilities for pedestrian crossings, and locations of grade-separated crossings were also noted.

No Action

The No Action alternative would allow for new crossings to be implemented as new development warrants new traffic signals. The No Action condition provides eight crossing opportunities (that currently exist) along SH-44, only at signalized intersections. New traffic signals may be installed with new developments, which would provide additional crossing opportunities for bicyclists and pedestrians.

Alternative 1

Alternative 1 would provide crossing locations west of Middleton across SH-44 at planned and warranted traffic signals. Alternative 1 would require pedestrians and bicyclists to navigate crossings that would have additional travel lanes compared to the No Action conditions and do not connect to the River Walk or Crane Creek development park areas. Alternative 1 provides sixteen planned crossing opportunities across SH-44. Most of these crossings would be located at signalized intersections, with one grade-separated crossing near Middleton Middle School.

Alternative 2

Alternative 2 would provide crossing locations west of Middleton across SH-44 at planned and warranted traffic signals, plus provide pedestrian/bicyclist connections to the River Walk and Crane Creek development park areas. Alternative 2 provides fifteen planned crossing opportunities. Most of these crossings would be located at signalized intersections, with three grade-separated crossings at planned trails with connections to the River Walk and Crane Creek park areas.

Alternative 3

Alternative 3 would provide crossing locations west of Middleton across SH-44 at planned and warranted traffic signals, plus provide pedestrian/bicyclist connections to the River Walk and Crane Creek development park areas. Alternative 3 provides fifteen planned crossing opportunities. Most of these crossings would be located at signalized intersections, with three grade-separated crossings at planned trails with connections to the River Walk and Crane Creek park areas.

Alternative 4

Alternative 4 would provide crossings with reduced crossing distance at locations through Middleton across SH-44, although there would be additional arterial roadway crossing with the two one-way couplet roadways. The alternative also does not provide direct connections to the River Walk and Crane Creek development park areas. Alternative 4 provides fifteen planned crossing opportunities. Most of these crossings would be located at signalized intersections, with one grade-separated crossing near Middleton Middle School.