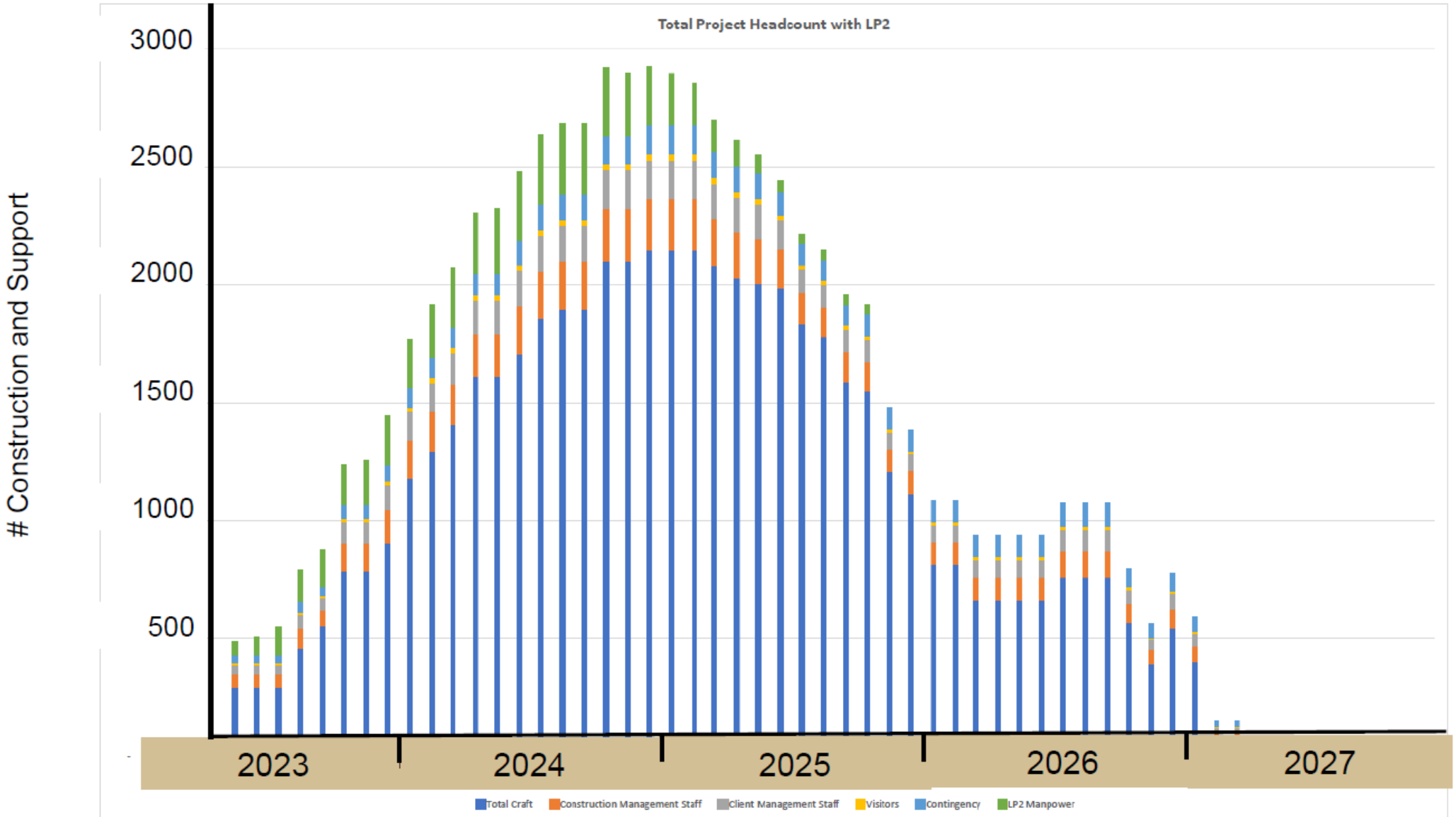
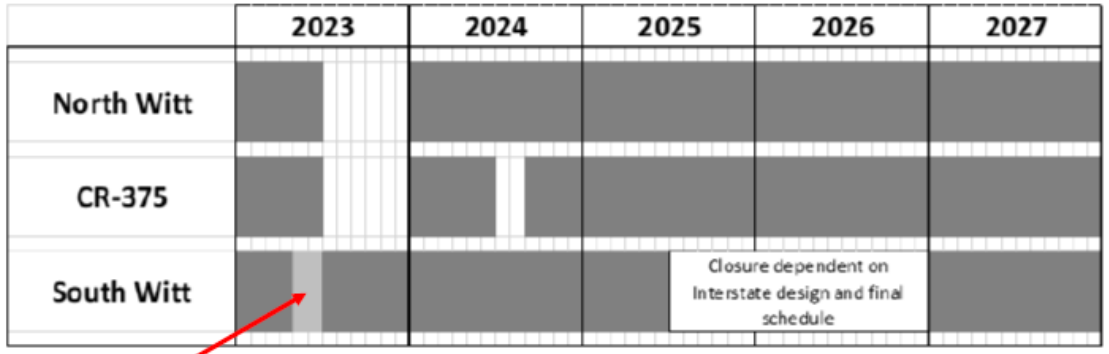
Lilly Project
Construction Traffic

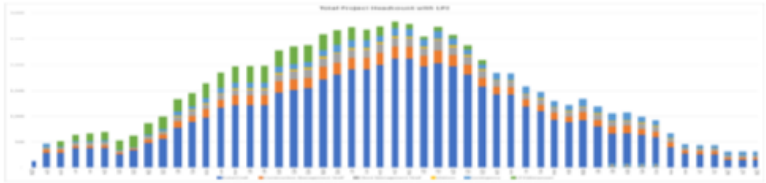
Construction – Headcount Forecast



Road Closures
Construction Interventions



Intermittent Closures for Water line to site



Phase 1 Period

Phase 2 Period

Now
- Initiate Phase 1 traffic recommendations
- Project set up monthly reviews with Lebanon and Boone county to review traffic patterns and adjust as needed

June
- Do not close North Witt Road before completing water line installation

2023
- Upgrade Witt Rd north of site and CR-375
- Include Recommended Construction upgrade

Mid-2024
- Make decision about timing and additional phase 2 interventions

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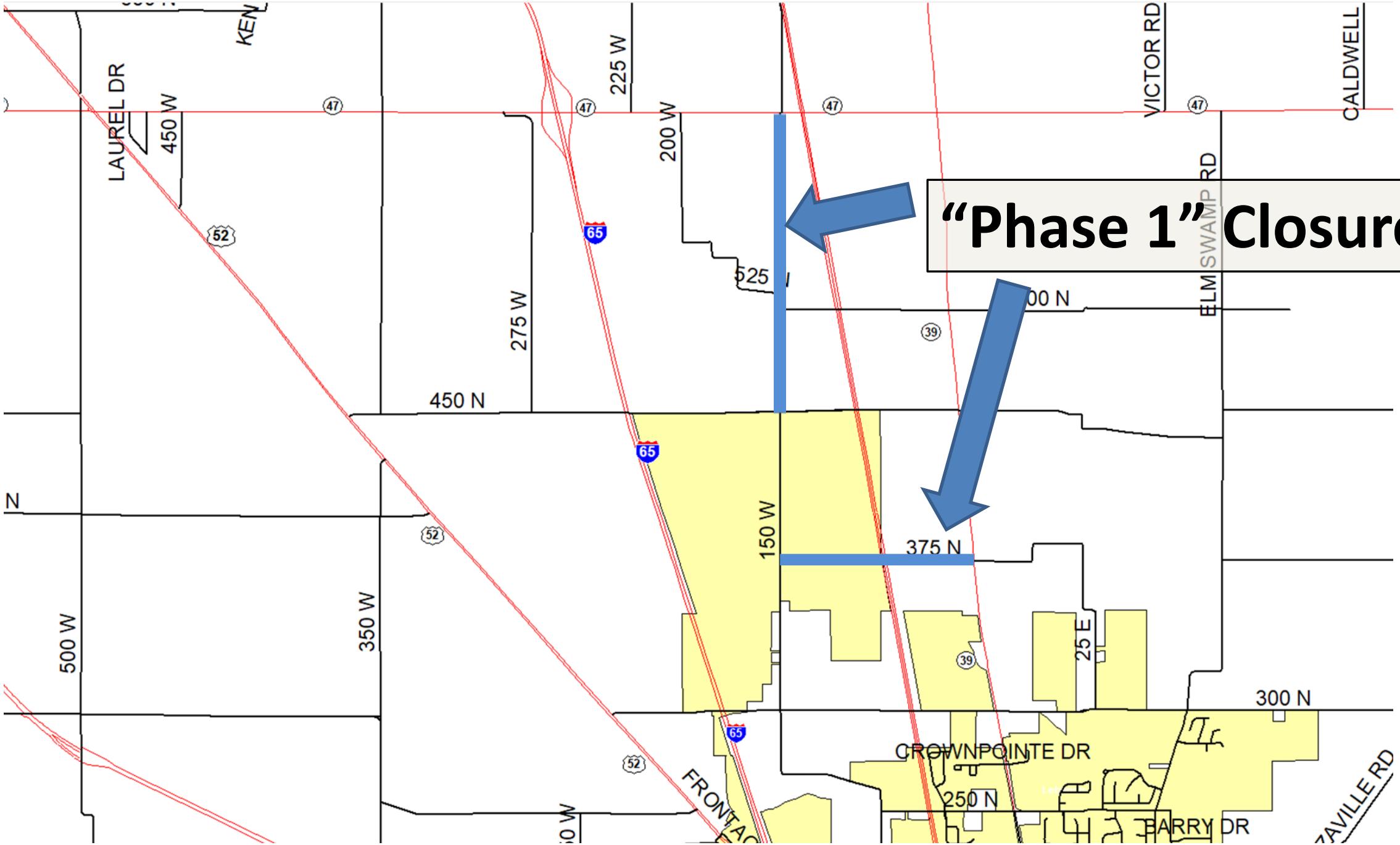
"Phase 1" Closures
LAUREL DR
450 W
225 W
200 W
275 W
525
450 N
150 W
375 N
350 W
500 W
25 E
300 N
250 N
CROWNPOINTE DR
BARRY DR
VICTOR RD
CALDWELL
ELM SWAMP RD
FRONTAGE
47
52
65
39

Construction Traffic Characteristics

This section of the report outlines anticipated Project Grassland's construction traffic volumes and the distribution of traffic to and from the site.

TRIP GENERATION

The anticipated number of construction employees for Phase 1 and Phase 2 was obtained from the contractor. Due to the large workforce and the expected commuter distance, it was assumed that carpooling would occur at a rate of 1.5 people per vehicle. A carpooling multiplier of 0.67 was applied. **Table 2** shows the Phase 1 and Phase 2 total employees as well as the anticipated trips with the carpooling reduction factor applied.

Table 2. Site-Generated Trips

Land Use	Unit	Total	Peak Hour Trips[1]					
			AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Construction Traffic – Phase 1	Employees	1,460	970	--	970	--	970	970
Construction Traffic – Phase 2	Employees	2,925	1,950	--	1,950	--	1,950	1,950

[1]Peak hour trips were estimated based on the assumption that construction employees would carpool to the site, resulting in an average of 1.5 employees per vehicle.

For both phases, it was assumed that all traffic would arrive in the AM Peak as entering vehicles and all traffic would depart in the PM Peak as exiting vehicles.

DIRECTIONAL DISTRIBUTION

Kimley Horn developed a directional distribution for the construction traffic. With the proximity of the project site to Indianapolis, it is anticipated that the majority of construction traffic will be traveling to/from the south. **Table 3** shows the anticipated directional distribution from which vehicles will travel to and from the site.

Kimley»Horn

FIGURE 3

CONSTRUCTION TRAFFIC TRIP ASSIGNMENT: PHASE 1

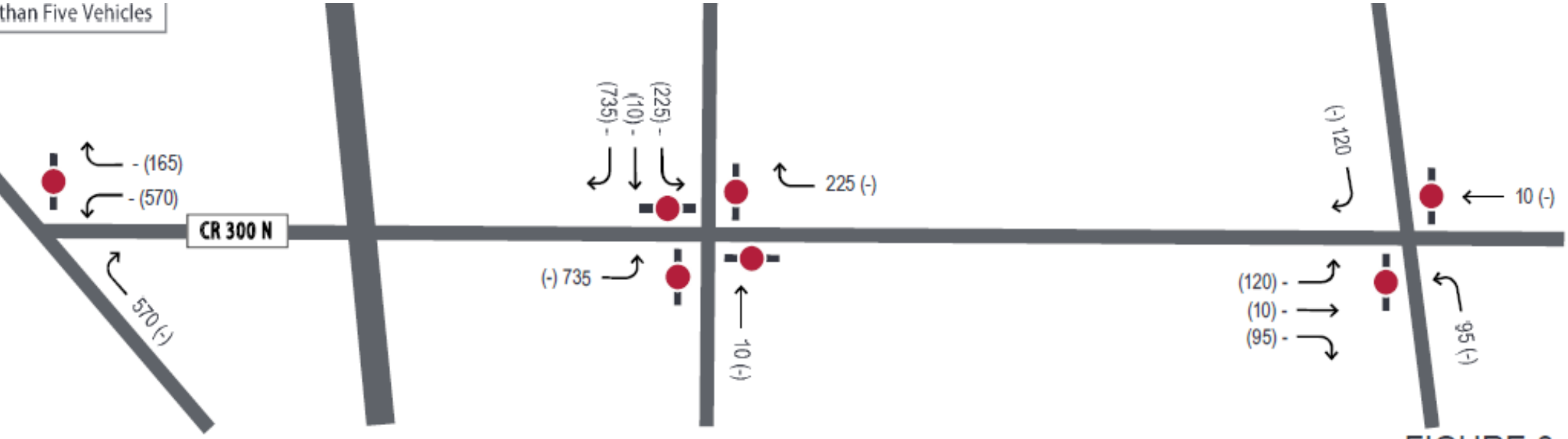

FIGURE 3

Horn

CONSTRUCTION TRAFFIC TRIP ASSIGNMENT: PHASE 1

Lilly Campus – Temporary Interventions

Original Traffic Study - 629 per hour AM and PM

- Upgrade Intersection of Witt Rd. and IN-47
  - Install traffic light
  - Install EB right turn lane
  - Install NB left turn lane
- Upgrade intersection of CR375
  - Install Traffic Signal

Current Traffic Study

- Phase 1 (970 total AM and PM)
  - Light at CR300 and IN-52
  - Light at CR300 and Witt Rd.
  - Light at CR300 and IN-39
- Phase 2 (1,950 total AM and PM)
  - Light at SB ramp from I-65 to IN-47
  - Light at SB ramp from I-65 to IN-47

- Phase 1 (970 total AM and PM)
  - Light at CR300 and IN-52
  - Light at CR300 and Witt Rd.
  - Light at CR300 and IN-39

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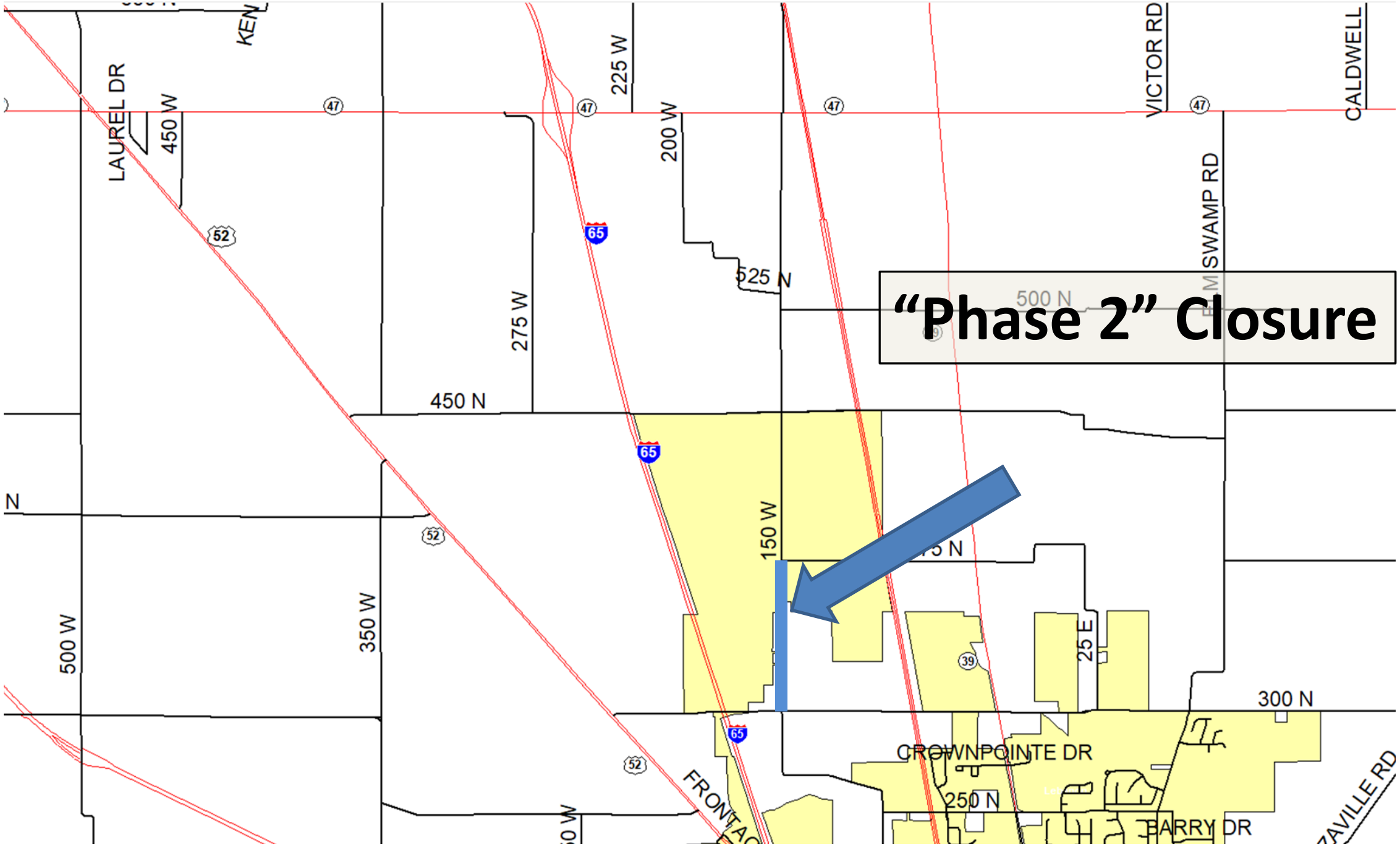
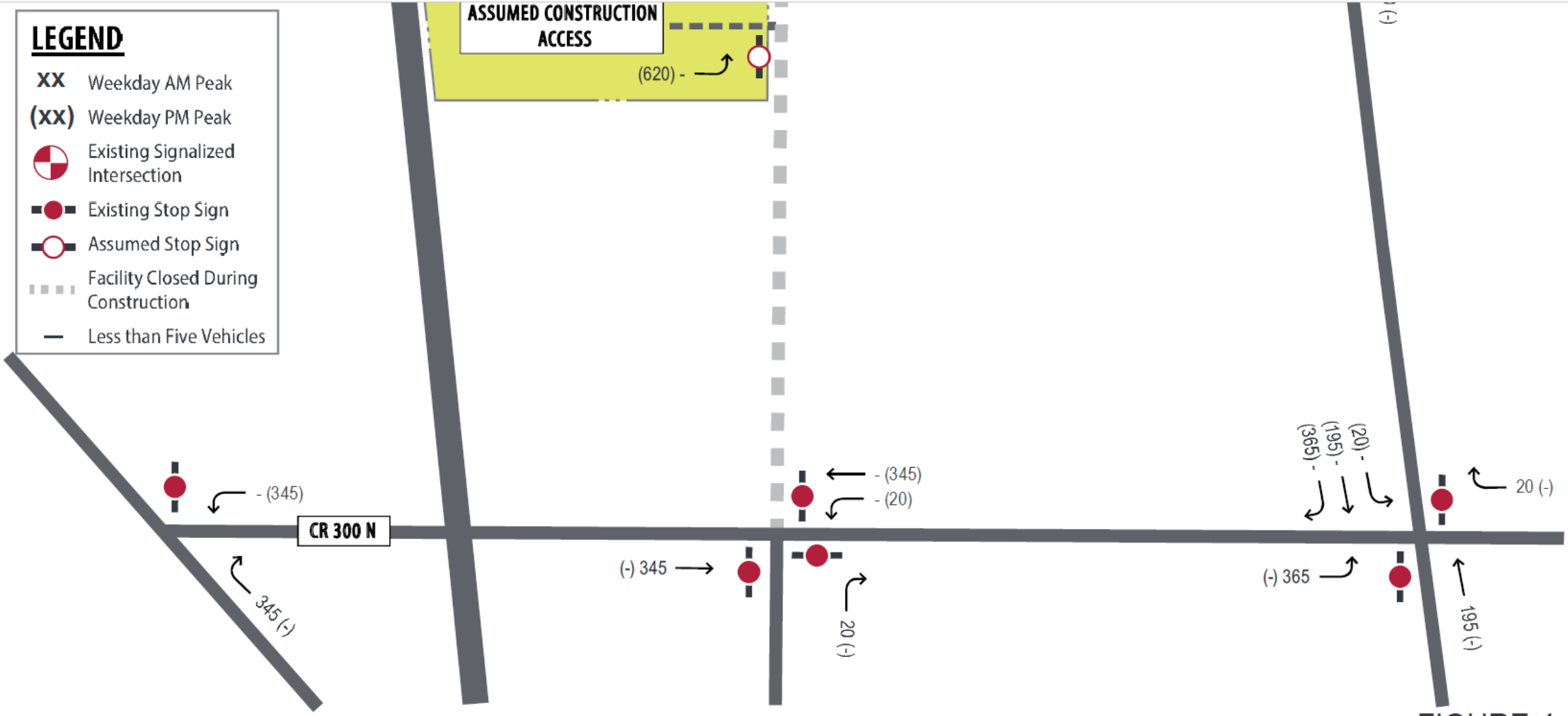

"Phase 2" Closure
LAUREL DR
450 W
KEN
225 W
200 W
VICTOR RD
CALDWELL
SWAMP RD
525 N
500 N
275 W
450 N
150 W
500 W
350 W
25 E
300 N
CROWNPOINTE DR
250 N
BARRY DR
FRONTA
ZAVILLE RD
47
65
52
39

Kimley»Horn

FIGURE 4
CONSTRUCTION TRAFFIC TRIP ASSIGNMENT: PHASE 2



Kimley»Horn

FIGURE 4

CONSTRUCTION TRAFFIC TRIP ASSIGNMENT: PHASE 2

CR 450 N
CR 375 N
INTERSTATE
65
SITE
ASSUMED CONSTRUCTION ACCESS
ASSUMED CONSTRUCTION ACCESS
(10) -
- (10)
- (30)
- (10)
- (1,320)
(-) 40
(40) -
(580) -
580 (-)
(-) 620
(620) -

SR 47
CR 525 N
CR 500 N
195
- (215)
- (805)
- (195)
- (1,020)
(-) 215
(-) 410
805 (-)
(-) 1,215
105 (-)
- (1,215)
- (105)
(-) 1,320
- (1,320)
(-) 1,320
- (1,320)
(-) 1,32
(-) 30
(-) 50
55 (-)
(50) -
(55) -
(-) -
- (-)
- (30)
(-) 30
- (30)

Lilly Campus – Temporary Interventions

Original Traffic Study - 629 per hour AM and PM

- Upgrade Intersection of Witt Rd. and IN-47
  - Install traffic light
  - Install EB right turn lane
  - Install NB left turn lane
- Upgrade intersection of CR375 and IN-39
  - Install Traffic Signal

Current Traffic Study

- Phase 1 (970 total AM and PM)
  - Light at CR300 and IN-52
  - Light at CR300 and Witt Rd.
  - Light at CR300 and IN-39
- Phase 2 (1,950 total AM and PM)
  - Light at SB ramp from I-65 to IN-47
  - Light at SB ramp from I-65 to IN-47

Table 4. Level of Service Grading Descriptions[1]

Level of Service	Description[1]
A	Minimal control delay: traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
C	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	High control delay; average travel speed no more than 33 percent of free flow speed.
F	Extremely high control delay: extensive queuing and high volumes create exceedingly restricted traffic flow.

[1]Highway Capacity Manual, 6th Edition.

Table 5. Level of Service Grading Criteria[1]

Level of Service	Average Control Delay (s/veh) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F[2]	> 50	> 80

[1]Highway Capacity Manual, 6th Edition

[2]All movements with a Volume to Capacity (v/C) ratio greater than 1 receive a rating of LOS F.

Construction Phase 1

Intersection		Weekday AM Peak Hour Delay (s/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour Delay (s/veh)	Weekday PM Peak Hour LOS
1. I-65 SB Ramp / SR 47	MLSC				
Westbound (Left)		8	A	9	A
Southbound		15	C	38	E
2. I-65 NB Ramp / SR 47	MLSC				
Eastbound (Left)		NB Ramps closed			
Northbound					
3. SR 47 / Witt Road	MLSC				
Eastbound (Left)		Witt Rd S. of SR-47 closed			
Westbound (Left)					
Northbound					
Southbound					
4. SR 47 / SR 39	Signal				
Eastbound		10	A	17	B
Westbound		11	B	11	B
Northbound		9	A	26	C
Southbound		11	B	14	B
Intersection		10	B	18	B
5. Witt Road / CR 525	MLSC				
Eastbound		Intersection closed			
Northbound (Left)					
6. Witt Road / CR 500	MLSC				
Westbound		Instersection closed			
Southbound (Left)					
7. SR 39 / CR 500 N	MLSC				
Eastbound		14	B	16	C
Westbound		13	B	17	C
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	9	A
8. Witt Road / CR 450	MLSC				
Eastbound		Intersection closed			
Westbound					
Northbound (Left)					
Southbound (Left)					
9. SR 39 / CR 450 N	MLSC				
Eastbound		13	B	0	A
Westbound (Left)		14	B	15	B
Northbound (Left)		0	A	0	A
Southbound (Left)		0	A	9	A
10. Witt Road / CR 375	MLSC				
Westbound		Intersection closed			
Southbound (Left)					
11. SR 39 / CR 375 N	MLSC				
Eastbound		0	A	0	A
Westbound		14	B	16	C
Northbound (Left)		0	A	0	A
Southbound (Left)		8	A	9	A
12. Witt Road / CR 300 N	AWSC				
Eastbound		289	F	13	B
Westbound		13	B	12	B
Northbound		11	B	10	A
Southbound		11	B	205	F
13. SR 39 / CR 300 N	MLSC				
Eastbound		14	B	158	F
Westbound		26	D	29	D
Northbound (Left)		9	A	8	A
Southbound (Left)		8	A	8	A
14. US-52 / CR 300 N	MLSC				
Westbound		22	C	1573	F
Southbound (Left)		12	B	9	A

Construction Phase 2

Intersection		Weekday AM Peak Hour Delay (s/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour Delay (s/veh)	Weekday PM Peak Hour LOS
1. I-65 SB Ramp / SR 47	MLSC				
Westbound (Left)		8	A	16	A
Southbound		59	F	11	B
2. I-65 NB Ramp / SR 47	MLSC				
Eastbound (Left)		8	A	13	B
Northbound		664	F	16	C
3. SR 47 / Witt Road	MLSC				
Eastbound (Left)		8	A	8	A
Westbound (Left)		16	C	9	A
Northbound		67	F	3131	F
Southbound		120	F	20	C
4. SR 47 / SR 39	Signal				
Eastbound		10	A	22	C
Westbound		11	B	10	A
Northbound		9	A	27	C
Southbound		11	B	18	B
Intersection		11	B	20	C
5. Witt Road / CR 525	MLSC				
Eastbound		58	F	0	A
Northbound (Left)		0	A	0	A
6. Witt Road / CR 500	MLSC				
Westbound		0	A	0	A
Southbound (Left)		0	A	0	A
7. SR 39 / CR 500 N	MLSC				
Eastbound		13	B	13	B
Westbound		13	B	0	A
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	0	A
8. Witt Road / CR 450	MLSC				
Eastbound		0	A	0	A
Westbound		166	F	0	A
Northbound (Left)		0	A	0	A
Southbound (Left)		0	A	0	A
9. SR 39 / CR 450 N	MLSC				
Eastbound		0	A	16	C
Westbound		14	B	15	B
Northbound (Left)		0	A	8	A
Southbound (Left)		8	A	8	A
10. Witt Road / CR 375	MLSC				
Westbound		Intersection closed			
Southbound (Left)					
11. SR 39 / CR 375 N	MLSC				
Eastbound		40	E	95	F
Westbound		125	F	167	F
Northbound (Left)		12	B	8	A
Southbound (Left)		8	A	8	A
12. Witt Road / CR 300 N	AWSC				
Eastbound		14	B	8	A
Westbound		8	A	13	A
Northbound		10	A	9	A
Southbound		Approach Closed			
13. SR 39 / CR 300 N	MSLC				
Eastbound		497	F	37	E
Westbound		17	C	61	F
Northbound (Left)		8	A	10	A
Southbound (Left)		9	A	8	A
14. US-52 / CR 300 N	MLSC				
Westbound		22	C	883	F
Southbound (Left)		11	B	9	A

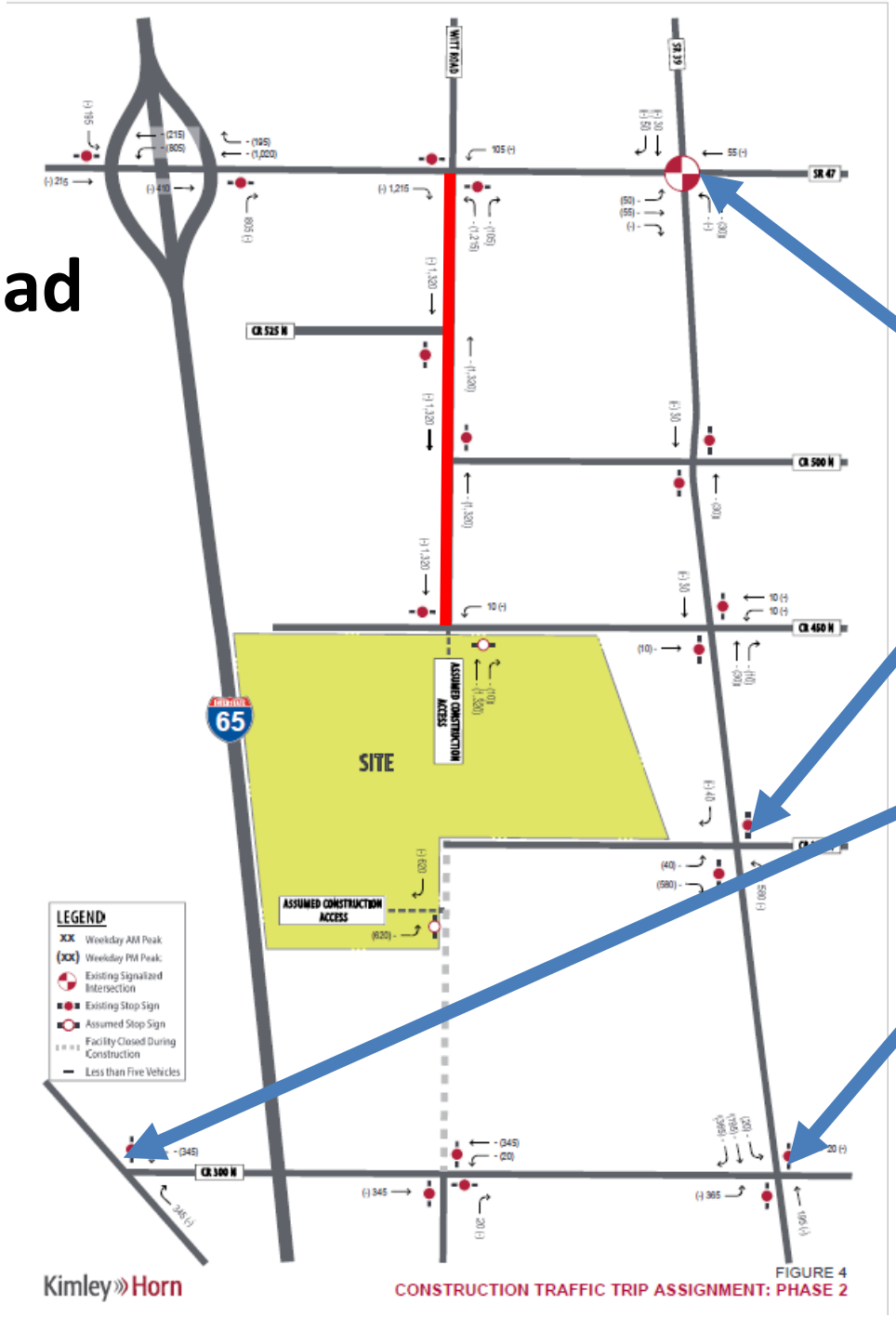
Construction Phase 1 with Mitigation & 60% Reduced Construction Traffic

Intersection		Weekday AM Peak Hour Delay (s/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour Delay (s/veh)	Weekday PM Peak Hour LOS
1. I-65 SB Ramp / SR 47	MLSC				
Westbound (Left)		3	A	2	A
Southbound		15	C	35	E
2. I-65 NB Ramp / SR 47	MLSC				
Eastbound (Left)		NB Ramps closed			
Northbound					
3. SR 47 / Witt Road	MLSC				
Eastbound (Left)		Witt Rd S. of SR-47 closed			
Westbound (Left)					
Northbound					
Southbound					
4. SR 47 / SR 39	Signal				
Eastbound		9	A	15	B
Westbound		10	B	11	B
Northbound		9	A	20	B
Southbound		11	B	14	B
Intersection		10	A	15	B
5. Witt Road / CR 525	MLSC				
Eastbound		Intersection closed			
Northbound (Left)					
6. Witt Road / CR 500	MLSC				
Westbound		Intersection closed			
Southbound (Left)					
7. SR 39 / CR 500 N	MLSC				
Eastbound		13	B	15	B
Westbound		13	B	16	C
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	9	A
8. Witt Road / CR 450	MLSC				
Eastbound		Intersection closed			
Westbound					
Northbound (Left)					
Southbound (Left)					
9. SR 39 / CR 450 N	MLSC				
Eastbound		12	B	14	B
Westbound (Left)		13	B	15	B
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	8	A
10. Witt Road / CR 375	MLSC				
Westbound		Intersection closed			
Southbound (Left)					
11. SR 39 / CR 375 N	MLSC				
Eastbound		0	A	0	A
Westbound		13	B	14	B
Northbound (Left)		0	A	0	A
Southbound (Left)		8	A	8	A
12. Witt Road / CR 300 N	SIGNAL				
Eastbound		5	A	10	B
Westbound		3	A	10	A
Northbound		12	B	5	A
Southbound		12	B	9	A
Intersection		5	A	9	A
13. SR 39 / CR 300 N	SIGNAL				
Eastbound		16	B	16	B
Westbound		14	B	12	B
Northbound		4	A	8	A
Southbound		4	A	6	A
Intersection		7	A	10	A
14. US-52 / CR 300 N	SIGNAL				
Westbound		12	B	20	B
Northbound		6	A	20	B
Southbound		5	A	24	C
Intersection		5	A	21	C

Construction Phase 2 with Mitigation & 60% Reduced Construction Traffic

Intersection		Weekday AM Peak Hour Delay (s/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour Delay (s/veh)	Weekday PM Peak Hour LOS
1. I-65 SB Ramp / SR 47	SIGNAL				
Eastbound		13	B	4	A
Westbound		17	B	24	C
Southbound		11	B	31	C
Intersection		14	B	22	C
2. I-65 NB Ramp / SR 47	SIGNAL				
Eastbound		12	B	1	A
Westbound		14	B	18	B
Southbound		6	A	14	B
Intersection		12	B	13	B
3. SR 47 / Witt Road	SIGNAL				
Eastbound		4	A	34	C
Westbound		3	A	33	C
Northbound		16	B	35	C
Southbound		Phase Called by Demand			
Intersection		4	A	34	C
4. SR 47 / SR 39	Signal				
Eastbound		9	A	17	B
Westbound		10	B	10	A
Northbound		9	A	22	C
Southbound		11	B	17	B
Intersection		10	B	17	B
5. Witt Road / CR 525	MLSC				
Eastbound		20	C	13	B
Northbound (Left)		11	B	8	A
6. Witt Road / CR 500	MLSC				
Westbound		13	B	15	B
Southbound (Left)		7	A	9	A
7. SR 39 / CR 500 N	MLSC				
Eastbound		13	B	14	B
Westbound		12	B	15	B
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	8	A
8. Witt Road / CR 450	MLSC				
Eastbound		21	C	15	C
Westbound		24	C	18	C
Northbound (Left)		10	B	7	A
Southbound (Left)		7	A	10	A
9. SR 39 / CR 450 N	MLSC				
Eastbound		12	B	15	B
Westbound		13	B	14	B
Northbound (Left)		8	A	8	A
Southbound (Left)		8	A	8	A
10. Witt Road / CR 375	MLSC				
Westbound		Intersection closed			
Southbound (Left)					
11. SR 39 / CR 375 N	MLSC				
Eastbound		17	C	18	C
Westbound		32	D	21	C
Northbound (Left)		10	A	8	A
Southbound (Left)		8	A	8	A
12. Witt Road / CR 300 N	AWSC				
Eastbound		10	A	8	A
Westbound		8	A	10	A
Northbound		8	A	8	A
Southbound		Approach Closed			
13. SR 39 / CR 300 N	SIGNAL				
Eastbound		14	B	22	C
Westbound		10	B	19	B
Northbound		10	A	5	A
Southbound		9	A	5	A
Intersection		11	B	7	A
14. US-52 / CR 300 N	SIGNAL				
Westbound		10	A	15	B
Northbound		5	A	11	B
Southbound		5	A	14	B
Intersection		5	A	13	B

IF 150 W/Witt Road N of 450 N is not used



1,320 Vehicles in the peak hour

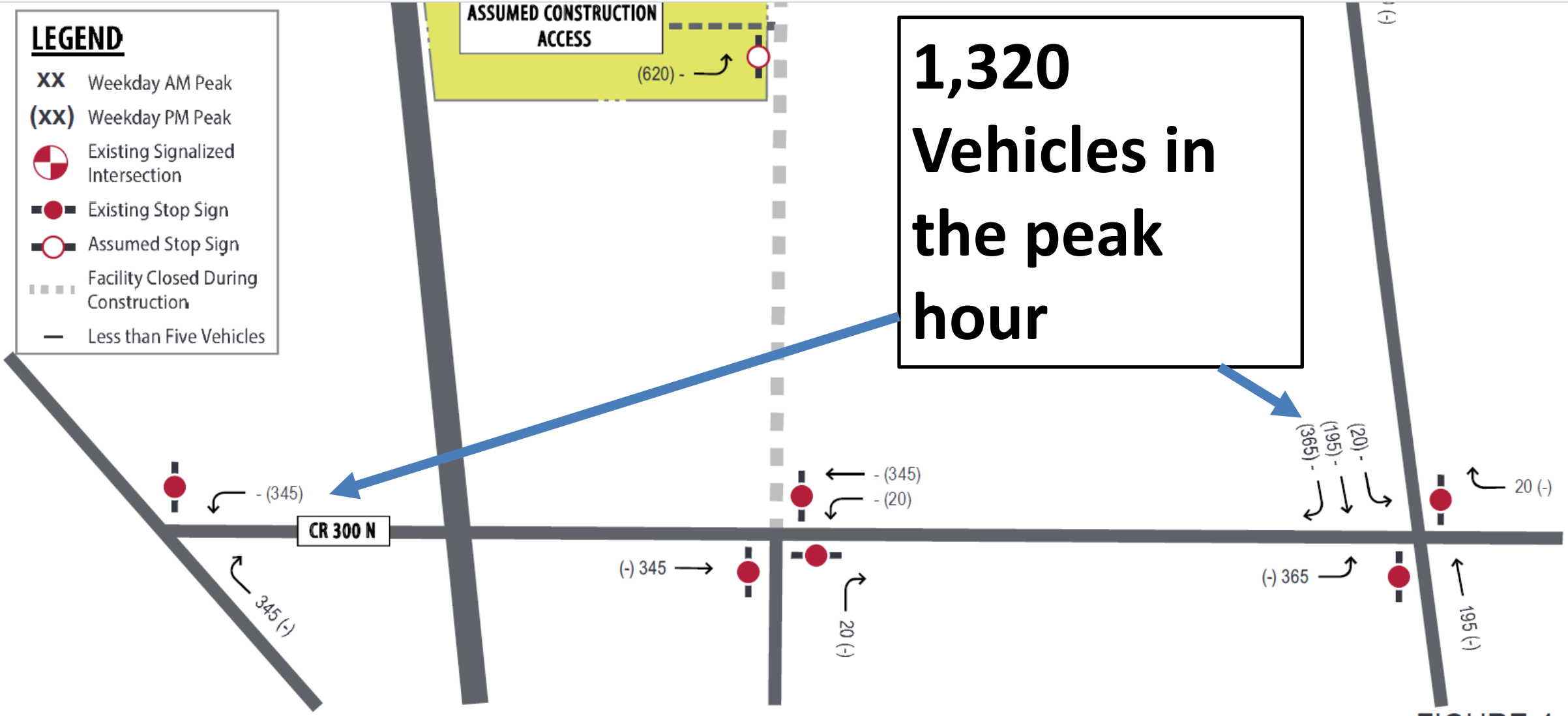


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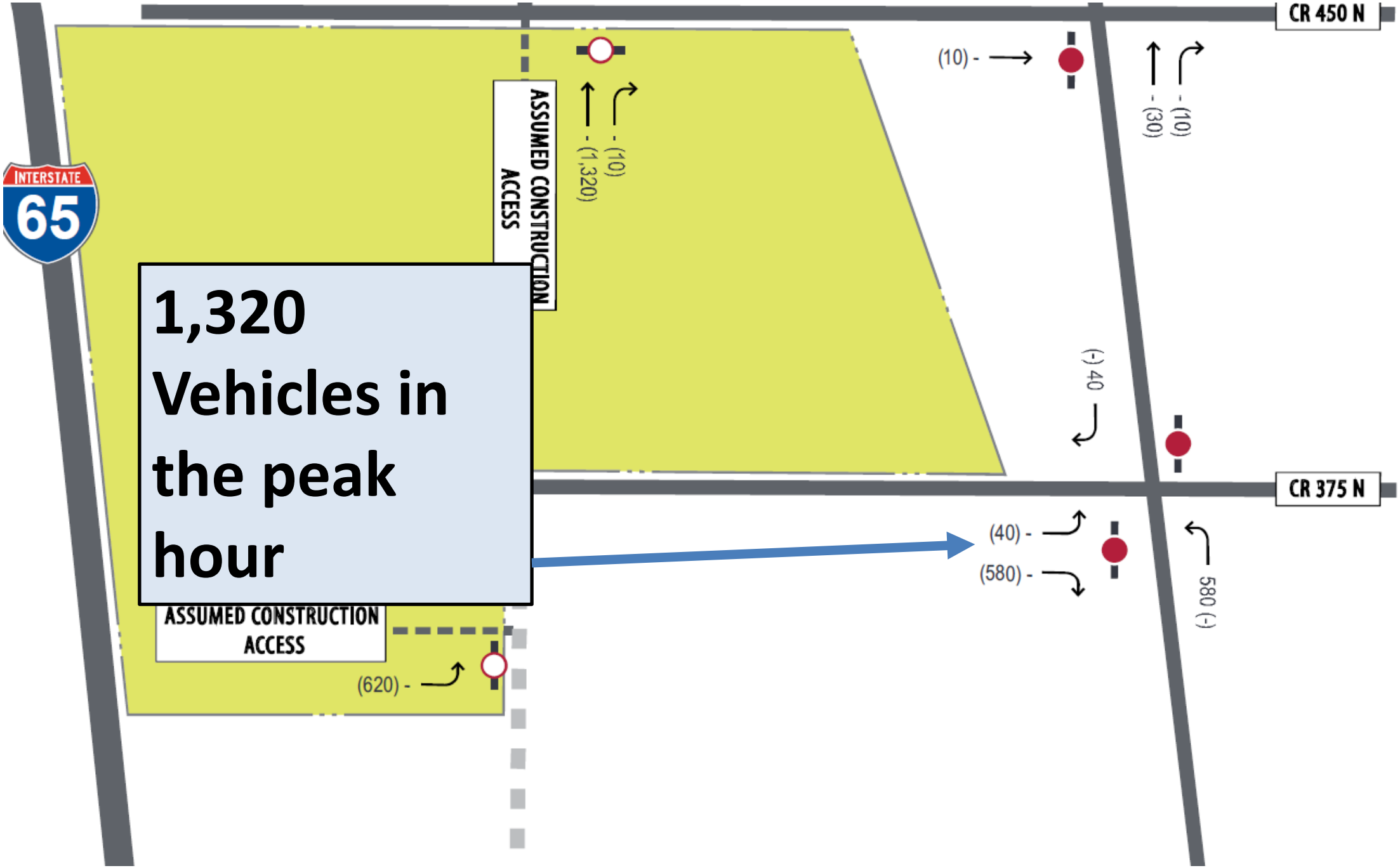
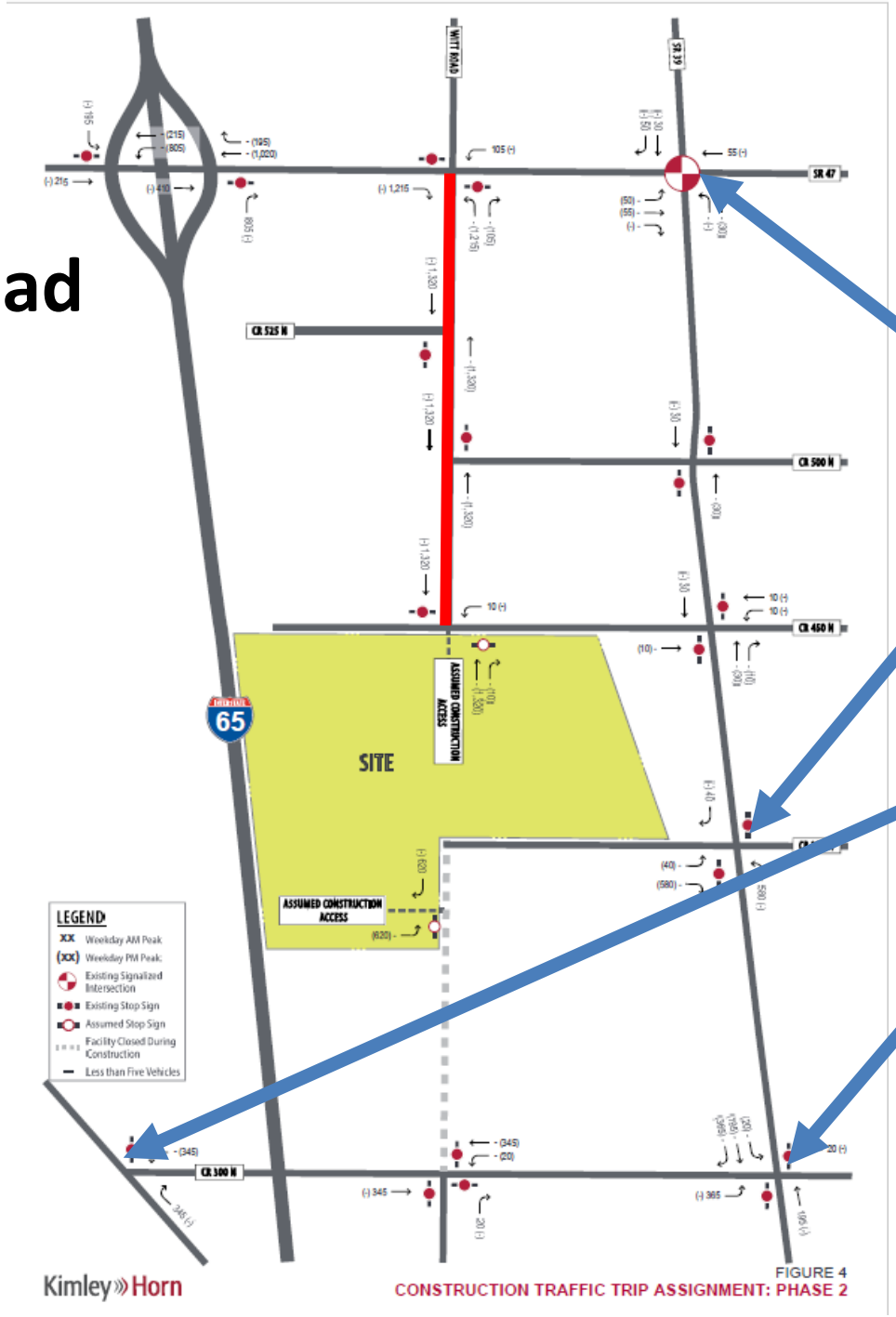
FIGURE 4

CONSTRUCTION TRAFFIC TRIP ASSIGNMENT: PHASE 2


CR 450 N
CR 375 N
INTERSTATE
65
ASSUMED CONSTRUCTION ACCESS
ASSUMED CONSTRUCTION ACCESS
(10) -
- (10)
- (30)
- (10)
- (1,320)
(-) 40
(40) -
(580) -
580 (-)
(620) -
1,320 Vehicles in the peak hour

IF 150 W/Witt Road N of 450 N is not used



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