Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX A2

Interchange Full Build Site Trip Generation for Whitney Road Extension

For Full Calculations See: Trip Gen (Interchange Full Build)

Proposed Shopping Center Trip Generation - Interchange Full Build (IFB)

	Trip Ends	In	Out
Weekday AM Peak Hour Adjacent Street	372	225	147
Weekday PM Peak Hour Adjacent Street	1161	579	582
Weekend SAT Peak Hour	1300	667	633

Proposed Shopping Center Composition - Interchange Full Build (IFB)

	Primary			Pass-By			Diverted Link		
	%	# In	# Out	%	# In	# Out	%	# In	# Out
AM	29%	65	42	36%	80	53	35%	80	52
PM	31%	179	182	35%	204	205	34%	196	195
SAT	31%	205	194	32%	216	205	37%	246	234

Proposed Commercial Trip Generation - Interchange Full Build (IFB)

	Trip Ends	In	Out
Weekday AM Peak Hour Adjacent Street	71	58	13
Weekday PM Peak Hour Adjacent Street	76	17	59
Weekend SAT Peak Hour	61	33	28

Proposed Commercial Composition - Interchange Full Build (IFB)

	Primary			Pass-By			Diverted Link		
	%	# In	# Out	%	# In	# Out	%	# In	# Out
AM	100%	58	13	0%	0	0	0%	0	0
PM	100%	17	59	0%	0	0	0%	0	0
SAT	100%	33	28	0%	0	0	0%	0	0

Proposed Total Site Trip Generation minus Internal Capture - Interchange Full Build (IFB)

AM	Trips	In	Out
Weekday AM Peak Hour Adjacent Street	443	283	160
9% AM Internal Trip Capture Deduction	-40	-25	-15
Total AM Trips	403	258	145

PM	Trips	In	Out
Weekday PM Peak Hour Adjacent Street	1237	596	641
12% PM Internal Trip Capture Deduction	-149	-72	-77
Total PM Trips	1088	524	564

SAT	Trips	In	Out
Weekend SAT Peak Hour of Generator	1361	700	661
12% SAT Internal Trip Capture Deduction	-165	-85	-80
Total SAT Trips	1196	615	581

No SAT Capture data, used PM for SAT

Proposed Total Site Composition minus Internal Capture - Interchange Full Build (IFB)

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
AM	123	55	80	53	80	52
-9%	-11	-5	-7	-5	-7	-5
Total AM	112	50	73	48	73	47

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
PM	196	241	204	205	196	195
-12%	-24	-29	-24	-25	-24	-23
Total PM	172	212	180	180	172	172

	Total Primary		Total Pass-By		Total Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
SAT	238	222	216	205	246	234
-12%	-29	-27	-26	-25	-30	-28
Total SAT	209	195	190	180	216	206

Proposed Site Trip Generation and WRE Internal Trip Interaction - Interchange Full Build (IFB)

AM	Trips	In	Out
Total AM Peak IFB Trips	403	258	145
Internal Trip Interaction based on WED	32	11	21
AM Trips to US4 & Sewalls Falls	371	247	124

PM	Trips	In	Out
Total PM Peak IFB Trips	1088	524	564
Internal Trip Interaction based on WED	79	53	26
PM Trips to US4 & Sewalls Falls	1009	471	538

SAT	Trips	In	Out
Total SAT Peak IFB Trips	1196	615	581
Internal Trip Interaction based on WED	60	32	28
SAT Trips to US4 & Sewalls Falls	1136	583	553

Proposed Site Composition and WRE Internal Trip Interaction - Interchange Full Build (IFB)

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
AM	112	50	73	48	73	47
	11	21	0	0	0	0
Total AM	101	29	73	48	73	47

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
PM	172	212	180	180	172	172
	53	26	0	0	0	0
Total PM	119	186	180	180	172	172

	Total Primary		Total Pass-By		Total Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
SAT	209	195	190	180	216	206
	32	28	0	0	0	0
Total SAT	177	167	190	180	216	206

ITE Trip Generation Manual, 10th Edition
General Urban/Suburban

ITE Trip Generation Handbook, 3rd Edition

Proposed Trip Generation - Whitney Extension Development

Whitney Extension Development represents a development option for lands of the Concord Monitor and Coop that would be located along the Whitney Road Extension.

Land Use A - Multifamily Residential

ITE LUC 221 - Multifamily Housing (Mid-Rise): 350 Apartment Units

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	350	0.36	Rate	126	26%	74%	33	93
Weekday PM Peak Hour Adjacent Street	350	0.44	Rate	154	61%	39%	94	60
Weekend SAT Peak Hour of the Generator	350	0.44	Rate	154	49%	51%	75	79

Proposed Composition - Whitney Extension Development

ITE LUC 221 - Multifamily Housing (Mid-Rise): 350 Apartment Units

	Primary				Pass-By				Diverted Link			
	% In	# In	% Out	# Out	% In	# In	% Out	# Out	% In	# In	% Out	# Out
AM	100%	33	100%	93								
PM	100%	94	100%	60								
SAT	100%	75	100%	79								

Land Use B - Commercial (Office, Industrial, R&D)

ITE LUC 710 - General Office: 140,000 sf

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	140	*	Eq	158	86%	14%	136	22
Weekday PM Peak Hour Adjacent Street	140	*	Eq	157	16%	84%	25	132
Weekend SAT Peak Hour of the Generator	140	0.53	Rate	74	54%	46%	40	34

AM Equation: * T=0.94(X)+26.49
PM Equation: * Ln(T)=0.95*Ln(X)+0.36

ITE LUC 710 - General Office: 140,000 sf

	Primary				Pass-By				Diverted Link			
	% In	# In	% Out	# Out	% In	# In	% Out	# Out	% In	# In	% Out	# Out
AM	100%	136	100%	22								
PM	100%	25	100%	132								
SAT	100%	40	100%	34								

ITE LUC 130 - Industrial Park: 175,000 sf

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	175	0.40	Rate	70	81%	19%	57	13
Weekday PM Peak Hour Adjacent Street	175	0.40	Rate	70	21%	79%	15	55
Weekend SAT Peak Hour of the Generator	175	0.44	Rate	77	32%	68%	25	52

ITE LUC 130 - Industrial Park: 175,000 sf

	Primary				Pass-By				Diverted Link			
	% In	# In	% Out	# Out	% In	# In	% Out	# Out	% In	# In	% Out	# Out
AM	100%	57	100%	13								
PM	100%	15	100%	55								
SAT	100%	25	100%	52								

ITE LUC 760 - Research and Development Center: 115,000 sf (Former Concord Monitor Building)

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	115	0.42	Eq	48	75%	25%	36	12
Weekday PM Peak Hour Adjacent Street	115	0.49	Eq	56	15%	85%	8	48
Weekend SAT Peak Hour of the Generator	115	0.24	Rate	28	50%	50%	14	14

ITE LUC 760 - Research and Development Center: 115,000 sf (Former Concord Monitor Building)

	Primary				Pass-By				Diverted Link			
	% In	# In	% Out	# Out	% In	# In	% Out	# Out	% In	# In	% Out	# Out
AM	100%	36	100%	12								
PM	100%	8	100%	48								
SAT	100%	14	100%	14								

Proposed Total Site Trip Generation - Whitney Extension Development

	Trip Ends		In	Out
Weekday AM Peak Hour Adjacent Street	402		262	140
Weekday PM Peak Hour Adjacent Street	437		142	295
Weekend SAT Peak Hour	333		154	179

Proposed Total Site Composition - Whitney Extension Development

	Primary			Pass-By			Diverted Link		
	%	# In	# Out	%	# In	# Out	%	# In	# Out
AM	100%	262	140	0%	0	0	0%	0	0
PM	100%	142	295	0%	0	0	0%	0	0
SAT	100%	154	179	0%	0	0	0%	0	0

Proposed Residential Trip Generation - Whitney Extension Development

	Trip Ends	In	Out
Weekday AM Peak Hour Adjacent Street	126	33	93
Weekday PM Peak Hour Adjacent Street	154	94	60
Weekend SAT Peak Hour	154	75	79

Proposed Residential Composition - Whitney Extension Development

	Primary			Pass-By			Diverted Link		
	%	# In	# Out	%	# In	# Out	%	# In	# Out
AM	100%	33	93	0%	0	0	0%	0	0
PM	100%	94	60	0%	0	0	0%	0	0
SAT	100%	75	79	0%	0	0	0%	0	0

Proposed Residential Site Trip Generation and IFB Internal Trip Interaction - Whitney Extension Development (WED)

AM	Trips	In	Out
Total AM Peak WED Trips	126	33	93
AM Internal Trip Interaction (8%): IFB & WED	10	3	7
AM Trips to US4 & Sewalls Falls	116	30	86

PM	Trips	In	Out
Total PM Peak WED Trips	154	94	60
PM Internal Trip Interactions (18%): IFB & WED	28	17	11
PM Trips to US4 & Sewalls Falls	126	77	49

SAT	Trips	In	Out
Total SAT Peak WED Trips	154	75	79
SAT Internal Trip Interactions (18%): IFB & WED	28	14	14
SAT Trips to US4 & Sewalls Falls	126	61	65

No SAT Capture data, used PM for SAT

Proposed Residential Site Composition and IFB Internal Trip Interaction - Whitney Extension Development (WED)

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
AM	33	93	0	0	0	0
8%	3	7	0	0	0	0
Total AM	30	86	0	0	0	0

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
PM	94	60	0	0	0	0
18%	17	11	0	0	0	0
Total PM	77	49	0	0	0	0

	Total Primary		Total Pass-By		Total Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
SAT	75	79	0	0	0	0
18%	14	14	0	0	0	0
Total SAT	61	65	0	0	0	0

Proposed Commercial Trip Generation - Whitney Extension Development

	Trip Ends	In	Out
Weekday AM Peak Hour Adjacent Street	276	229	47
Weekday PM Peak Hour Adjacent Street	283	48	235
Weekend SAT Peak Hour	179	79	100

Proposed Commercial Composition - Whitney Extension Development

	Primary			Pass-By			Diverted Link		
	%	# In	# Out	%	# In	# Out	%	# In	# Out
AM	100%	229	47	0%	0	0	0%	0	0
PM	100%	48	235	0%	0	0	0%	0	0
SAT	100%	79	100	0%	0	0	0%	0	0

Proposed Commercial Site Trip Generation and IFB Internal Trip Interaction - Whitney Extension Development (WED)

AM	Trips	In	Out
Total AM Peak WED Trips	276	229	47
AM Internal Trip Interaction (8%): IFB & WED	22	18	4
AM Trips to US4 & Sewalls Falls	254	211	43

PM	Trips	In	Out
Total PM Peak WED Trips	283	48	235
PM Internal Trip Interactions (18%): IFB & WED	51	9	42
PM Trips to US4 & Sewalls Falls	232	39	193

SAT	Trips	In	Out
Total SAT Peak WED Trips	179	79	100
SAT Internal Trip Interactions (18%): IFB & WED	32	14	18
SAT Trips to US4 & Sewalls Falls	147	65	82

No SAT Capture data, used PM for SAT

Proposed Commercial Site Composition and IFB Internal Trip Interaction - Whitney Extension Development (WED)

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
AM	229	47	0	0	0	0
8%	18	4	0	0	0	0
Total AM	211	43	0	0	0	0

	Primary		Pass-By		Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
PM	48	235	0	0	0	0
18%	9	42	0	0	0	0
Total PM	39	193	0	0	0	0

	Total Primary		Total Pass-By		Total Diverted Link	
	# In	# Out	# In	# Out	# In	# Out
SAT	79	100	0	0	0	0
18%	14	18	0	0	0	0
Total SAT	65	82	0	0	0	0

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX B2

Multi-Use Development
Trip Generation and Internal Capture Summary

Analyst: TFMoran Inc.
Project: 95830.00
Time Period: AM

Internal Capture Calculations
For interaction between Interchange Full Build and Whitney Extension Development

Whitney Extension Development
Land Use A: Residential

ITE LU Code: 221
Size: 350 units

	Total	Internal	External
Enter	33	1	32
Exit	93	5	88
Total	126	6	120
%	100%	5%	95%

Exit to External: 88
Enter from External: 32

Whitney Extension Development Commercial
Land Use B: (Office, Industrial, R&D)

ITE LU Code:
Size:

	Total	Internal	External
Enter	229	11	218
Exit	47	13	34
Total	276	24	252
%	100%	9%	91%

Enter from External: 218
Exit to External: 34

Interchange Retail: Shopping Center
Land Use C: (Supermarket, Retail, Restaurant, Bank)

ITE LU Code:
Size:

	Total	Internal	External
Enter	225	18	207
Exit	147	12	135
Total	372	30	342
%	100%	8%	92%

Exit to External: 135
Enter from External: 207

Interchange Commercial
Land Use D: (Office, Industrial)

ITE LU Code:
Size:

	Total	Internal	External
Enter	58	4	54
Exit	13	4	9
Total	71	8	63
%	100%	11%	89%

Enter from External: 54
Exit to External: 9

Interchange	Demand	Balanced	Demand
Whitney Ext. Dev. – Land Use A	0% 0	0	1% 0
Whitney Ext. Dev. – Land Use B	2% 2	2	3% 7
Interchange – Land Use C	32% 72	4	28% 4
Interchange – Land Use D	29% 43	2	4% 2

B-C
Demand 28% 13
Balance 13
Demand 32% 72

A-D
Demand 2% 2
Balance 2
Demand 3% 2

D-A
0% 0 Demand
0 Balance
1% 0 Demand

C-B
4% 9 Demand
9 Balance
29% 43 Demand

Interchange	Demand	Balanced	Demand
Whitney Ext. Dev. – Land Use A	1% 1	1	17% 38
Whitney Ext. Dev. – Land Use B	2% 1	1	14% 21
Interchange – Land Use C	0% 0	0	0% 0
Interchange – Land Use D	0% 0	0	0% 0

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Land Use D	Total
Enter	32	218	207	54	511
Exit	88	34	135	9	266
Total	120	252	342	63	777
Single-Use Trip Gen. Est.	126	276	372	71	845

Internal Capture
8%

Multi-Use Development
Trip Generation and Internal Capture Summary

Analyst: TFMoran Inc.
Project: 95830.00
Time Period: PM

Internal Capture Calculations
For interaction between Interchange Full Build and Whitney Extension Development

Whitney Extension Development
Land Use A: Residential

ITE LU Code: 221
Size: 350 units

	Total	Internal	External
Enter	94	48	46
Exit	60	29	31
Total	154	77	77
%	100%	50%	50%

Exit to External: 31
Enter from External: 46

Whitney Extension Development Commercial
Land Use B: (Office, Industrial, R&D)

ITE LU Code:
Size:

	Total	Internal	External
Enter	48	14	34
Exit	235	50	185
Total	283	64	219
%	100%	23%	77%

Enter from External: 34
Exit to External: 185

Interchange Retail: Shopping Center
Land Use C: (Supermarket, Retail, Restaurant, Bank)

ITE LU Code:
Size:

	Total	Internal	External
Enter	579	83	496
Exit	582	60	522
Total	1161	143	1018
%	100%	12%	88%

Exit to External: 522
Enter from External: 496

Interchange Commercial
Land Use D: (Office, Industrial)

ITE LU Code:
Size:

	Total	Internal	External
Enter	17	7	10
Exit	59	13	46
Total	76	20	56
%	100%	26%	74%

Enter from External: 10
Exit to External: 46

	Demand	Balanced	Demand
A-B	4% 4	4	2% 5
A-C	4% 2	2	57% 27
A-D	42% 25	25	10% 58
B-A	46% 43	43	26% 151
B-C	20% 47	46	8% 46
B-D	0% 0	0	0% 0
C-A	8% 46	12	20% 12
C-B	31% 15	12	2% 12
C-D	2% 12	5	31% 5
D-A	4% 4	1	2% 1
D-B	0% 0	0	0% 0
D-C	0% 0	0	0% 0

A-D
Demand 4% 2
Balance 2
Demand 57% 10

D-A
4% 4 Demand
1 Balance
2% 1 Demand

C-B
31% 15 Demand
12 Balance
2% 12 Demand

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Land Use D	Total
Enter	46	34	496	10	586
Exit	31	185	522	46	784
Total	77	219	1018	56	1370
Single-Use Trip Gen. Est.	154	283	1161	76	1674

Internal Capture
18%

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX C2

AM Distribution - Interchange Full Build to US4 & Sewalls Falls Rd

Primary

	In	Out
AM	101	29

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		18%	0	5
EBT		11%	0	3
WBT	11%		11	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		29%	0	8
WBT	11%		11	0
SBR	32%		32	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		29%	0	8
WBT	43%		43	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		29%	0	8
WBT	43%		43	0
SBR	18%		18	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		29%	0	8
WBL			0	0
WBT	61%		62	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		29%	0	8
EBT		32%	0	9
SWR	61%		62	0

Pass-By

	In	Out
AM	73	48

Note: Pass-By % per Pro-Rata US Route 4

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
SWR				

Diverted Link

	In	Out
AM	73	47

Note: DL % per NHDOT AADT for US3/I93/NH132
[I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		31%	0	15
EBT		4%	0	2
WBT	4%		3	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		35%	0	16
WBT	4%		3	0
SBR	31%		23	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		35%	0	16
WBT	35%		26	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		35%	0	16
WBT	35%		26	0
SBR	57%		42	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		35%	0	16
WBL			0	0
WBT	92%		67	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		35%	0	16
EBT		57%	0	27
SWR	92%		67	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(29) US Route 4 at I93 NB on/off-ramp

(28) US Route 4 at I93 NB off-ramp

(26) US Route 4 at I93 SB off-ramp

(24) US Route 4 at I93 SB off-ramp

(21) US Route 4 at I93 SB on-ramp

(20) US Route 4 at I93 SB on-ramp

AM Total Site Trips
Interchange Full Build

TOTAL: 371

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	20
EBT	5
WBT	14
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	24
WBT	14
SBR	55

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	24
WBT	69
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	24
WBT	69
SBR	60

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	24
WBL	0
WBT	129

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	24
EBT	36
SWR	129

AM Distribution - Interchange Full Build to US4 & Sewalls Falls Rd

Primary

	In	Out
AM	101	29

Note: Primary % per Gravity Model

Pass-By

	In	Out
AM	73	48

Note: Pass-By % per Pro-Rata US Route 4

Diverted Link

	In	Out
AM	73	47

Note: DL % per NHDOT AADT for US3/I93/NH132
[I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

AM Total Site Trips Interchange Full Build

TOTAL: 371

(3) NH Route 4 at Whitney Road/Old Boyce Road

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
EBL			0	0			0	0			0	0		EBL	0
EBT			0	0	-69%		-50	0			0	0		EBT	-50
EBR	28%		28	0	69%		50	0	8%		6	0		EBR	84
WBL	61%		62	0	31%		23	0	92%		67	0		WBL	152
WBT			0	0	-31%		-23	0			0	0		WBT	-23
WBR			0	0			0	0			0	0		WBR	0
NBL		28%	0	8		31%	0	15		8%	0	4		NBL	27
NBT			0	0			0	0			0	0		NBT	0
NBR		61%	0	18		69%	0	33		92%	0	43		NBR	94
SBL			0	0			0	0			0	0		SBL	0
SBT			0	0			0	0			0	0		SBT	0
SBR			0	0			0	0			0	0		SBR	0

(4) Whitney Road at Gas: Right-out

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
WBR			0	0			0	0			0	0		WBR	0
NBT		89%	0	26		100%	0	48		100%	0	47		NBT	121
SBT	89%		90	0	100%		73	0	100%		73	0		SBT	236

(5) Whitney Road at Interchange North Site Driveway

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
EBL			0	0			0	0			0	0	See WED calculations for driveway interaction trips	EBL	0
EBT			0	0			0	0			0	0		EBT	0
EBR			0	0			0	0			0	0		EBR	0
WBL		3%	0	1			0	0			0	0		WBL	1
WBT			0	0			0	0			0	0		WBT	0
WBR		62%	0	18		70%	0	34		70%	0	33		WBR	85
NBL			0	0			0	0			0	0		NBL	0
NBT		27%	0	8		30%	0	14		30%	0	14		NBT	36
NBR	3%		3	0			0	0			0	0		NBR	3
SBL	62%		63	0	70%		51	0	70%		51	0		SBL	165
SBT	27%		27	0	30%		22	0	30%		22	0		SBT	71
SBR			0	0			0	0			0	0		SBR	0

(7) Whitney Road at Interchange South Site Driveway

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
WBL		8%	0	2			0	0			0	0	See WED calculations for driveway interaction trips	WBL	2
WBR		27%	0	8		30%	0	14		30%	0	14		WBR	36
NBT	3%		3	0			0	0			0	0		NBT	3
NBR	8%		8	0			0	0			0	0		NBR	8
SBL	27%		27	0	30%		22	0	30%		22	0		SBL	71
SBT		3%	0	1			0	0			0	0		SBT	1

(9) US Route 4 at Hannah Dustin Drive

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
EBT	28%		28	0					8%		6	0		EBT	34
EBR			0	0							0	0		EBR	0
WBL			0	0							0	0		WBL	0
WBT		28%	0	8						8%	0	4		WBT	12
NBL			0	0							0	0		NBL	0
NBR			0	0							0	0		NBR	0

(11) US Route 4 at Harris Hill Connector

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Whitney Road Internal Trips Primary	AM Total Site Trips Movement	AM Total Site Trips TRIPS
EBT	12%		12	0					8%		6	0		EBT	18
EBR			0	0							0	0		EBR	0
WBL		16%	0	5							0	0		WBL	5
WBT		12%	0	3						8%	0	4		WBT	7
NBL			0	0							0	0		NBL	0
NBR	16%		16	0							0	0		NBR	16

AM Distribution - Interchange Full Build to US4 & Sewalls Falls Rd

Primary

	In	Out
AM	101	29

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT	11%		11	0
SBR			0	0
SBT		11%	0	3

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	8%		8	0
EBT			0	0
WBT			0	0
WBR	3%		3	0
SBL		3%	0	1
SBR		8%	0	2

Pass-By

	In	Out
AM	73	48

Note: Pass-By % per Pro-Rata US Route 4

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBR				
NBL				
NBT				
SBR				
SBT				

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

Diverted Link

	In	Out
AM	73	47

Note: DL % per NHDOT AADT for US3/I93/NH132 [I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT			0	0
SBR			0	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
WBT			0	0
WBR			0	0
SBL			0	0
SBR			0	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(40) Whitney Road Extension at Whitney Extension Development Site Dr

See WED calculations for driveway interaction trips

(41) Sewalls Falls Road at Whitney Road Extension

AM Total Site Trips Interchange Full Build

TOTAL: 371

(40) Whitney Road Extension at Whitney Extension Development Site Dr

Movement	TRIPS
EBL	0
EBR	0
NBL	0
NBT	11
SBR	0
SBT	3

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	8
EBT	0
WBT	0
WBR	3
SBL	1
SBR	2

AM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	30	86

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		7%	0	6
EBT		1%	0	1
WBT	1%		0	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	7
WBT	1%		0	0
SBR	27%		8	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	7
WBT	28%		8	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	7
WBT	28%		8	0
SBR	7%		2	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	7
WBL			0	0
WBT	35%		11	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		8%	0	7
EBT		27%	0	23
SWR	35%		11	0

AM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	211	43

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		11%	0	5
EBT		3%	0	1
WBT	3%		6	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	6
WBT	3%		6	0
SBR	49%		103	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	6
WBT	52%		110	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	6
WBT	52%		110	0
SBR	11%		23	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	6
WBL			0	0
WBT	63%		133	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		14%	0	6
EBT		49%	0	21
SWR	63%		133	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	21	11

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement			In	Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
SWR				

AM Total Site Trips Whitney Extension Development

TOTAL: 402

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	11
EBT	2
WBT	6
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	13
WBT	6
SBR	111

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	13
WBT	118
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	13
WBT	118
SBR	25

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	13
WBL	0
WBT	144

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	13
EBT	44
SWR	144

AM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	30	86

Note: Primary % per Gravity Model

AM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	211	43

Note: Primary % per Gravity Model

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	21	11

AM Total Site Trips Whitney Extension Development

TOTAL:	402

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	4%		1	0
WBL	35%		11	0
WBT			0	0
WBR			0	0
NBL		4%	0	3
NBT			0	0
NBR		35%	0	30
SBL			0	0
SBT			0	0
SBR			0	0

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	7%		15	0
WBL	63%		133	0
WBT			0	0
WBR			0	0
NBL		7%	0	3
NBT			0	0
NBR		63%	0	27
SBL			0	0
SBT			0	0
SBR			0	0

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
EBR				
WBL				
WBT				
WBR				
NBL				
NBT				
NBR				
SBL				
SBT				
SBR				

(3) NH Route 4 at Whitney Road/Old Boyce Road

Movement	TRIPS
EBL	0
EBT	0
EBR	16
WBL	144
WBT	0
WBR	0
NBL	6
NBT	0
NBR	57
SBL	0
SBT	0
SBR	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		39%	0	34
SBT	39%		12	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		70%	0	30
SBT	70%		148	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR				
NBT				
SBT				

(4) Whitney Road at Gas: Right-out

Movement	TRIPS
WBR	0
NBT	64
SBT	160

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		39%	0	34
NBR			0	0
SBL			0	0
SBT	39%		12	0
SBR			0	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		70%	0	30
NBR			0	0
SBL			0	0
SBT	70%		148	0
SBR			0	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	30%		6	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR		30%	0	3
SBL			0	0
SBT			0	0
SBR			0	0

(5) Whitney Road at Interchange North Site Driveway

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	6
WBT	0
WBR	0
NBL	0
NBT	64
NBR	3
SBL	0
SBT	160
SBR	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		39%	0	34
NBR			0	0
SBL			0	0
SBT	39%		12	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		70%	0	30
NBR			0	0
SBL			0	0
SBT	70%		148	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL	70%		15	0
WBR			0	0
NBT		30%	0	3
NBR		70%	0	8
SBL			0	0
SBT	30%		6	0

(7) Whitney Road at Interchange South Site Driveway

Movement	TRIPS
WBL	15
WBR	0
NBT	67
NBR	8
SBL	0
SBT	166

AM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	30	86

Note: Primary % per Gravity Model

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	4%		1	0
EBR			0	0
WBL			0	0
WBT		4%	0	3
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	3%		1	0
EBR			0	0
WBL		1%	0	1
WBT		3%	0	3
NBL			0	0
NBR	1%		0	0

AM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	211	43

Note: Primary % per Gravity Model

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	7%		15	0
EBR			0	0
WBL			0	0
WBT		7%	0	3
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	5%		11	0
EBR			0	0
WBL		2%	0	1
WBT		5%	0	2
NBL			0	0
NBR	2%		4	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	21	11

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

AM Total Site Trips Whitney Extension Development

TOTAL: 402

(9) US Route 4 at Hannah Dustin Drive

Movement	TRIPS
EBT	16
EBR	0
WBL	0
WBT	6
NBL	0
NBR	0

(11) US Route 4 at Harris Hill Connector

Movement	TRIPS
EBT	12
EBR	0
WBL	2
WBT	5
NBL	0
NBR	4

AM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	30	86

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		39%	0	34
EBR		61%	0	52
NBL	61%		18	0
NBT			0	0
SBR	39%		12	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	16%		5	0
EBT			0	0
WBT			0	0
WBR	45%		14	0
SBL		45%	0	39
SBR		16%	0	14

AM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	211	43

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		70%	0	30
EBR		30%	0	13
NBL	30%		63	0
NBT			0	0
SBR	70%		148	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	10%		21	0
EBT			0	0
WBT			0	0
WBR	20%		42	0
SBL		20%	0	9
SBR		10%	0	4

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	21	11

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		100%	0	11
EBR			0	0
NBL			0	0
NBT			0	0
SBR	100%		21	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

AM Total Site Trips Whitney Extension Development

TOTAL: 402

(40) Whitney Road Extension at Whitney Extension Development Site Dr

Movement	TRIPS
EBL	75
EBR	65
NBL	81
NBT	0
SBR	181
SBT	0

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	26
EBT	0
WBT	0
WBR	56
SBL	48
SBR	18

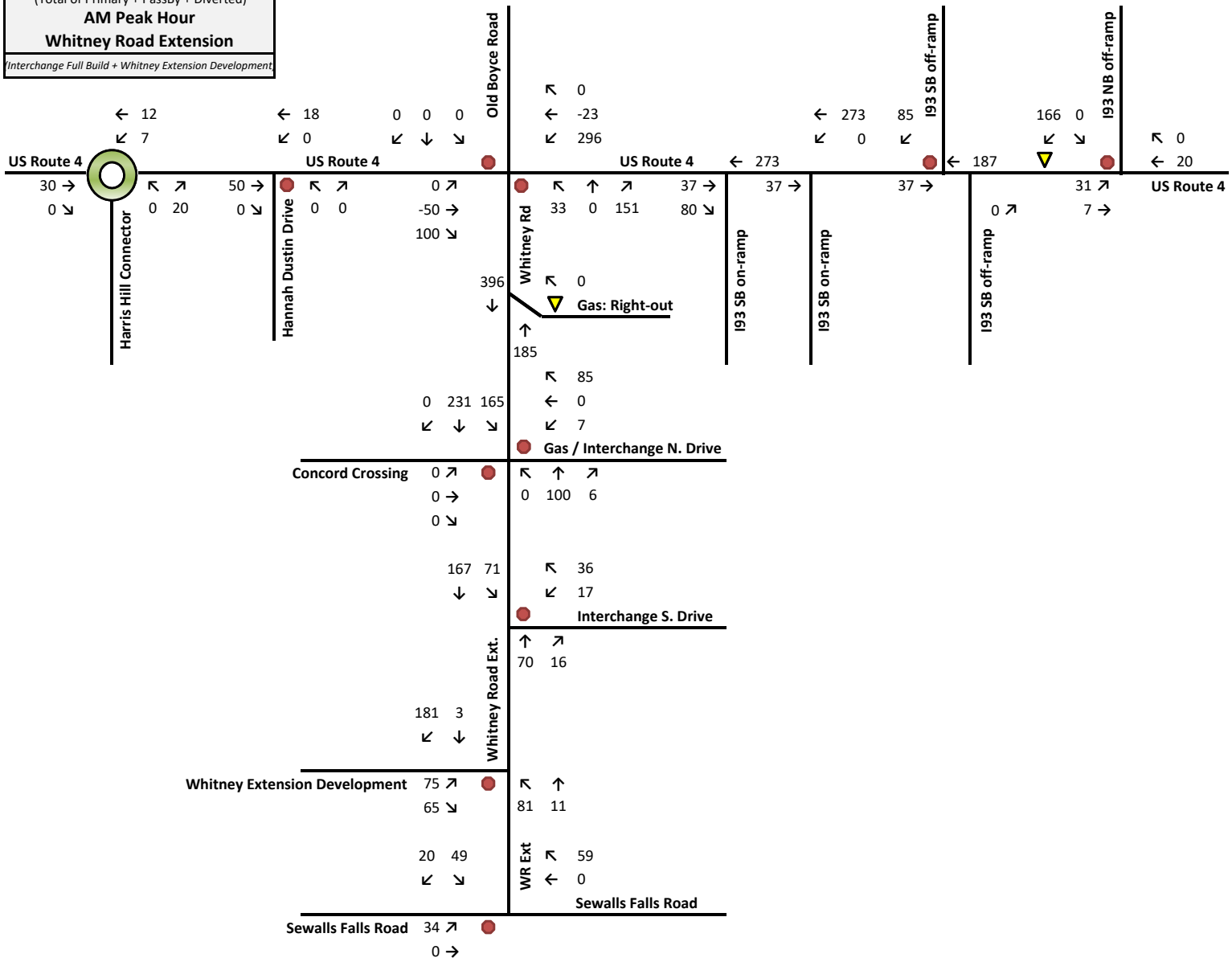
SITE TRIPS

(Total of Primary + PassBy + Diverted)

AM Peak Hour

Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)

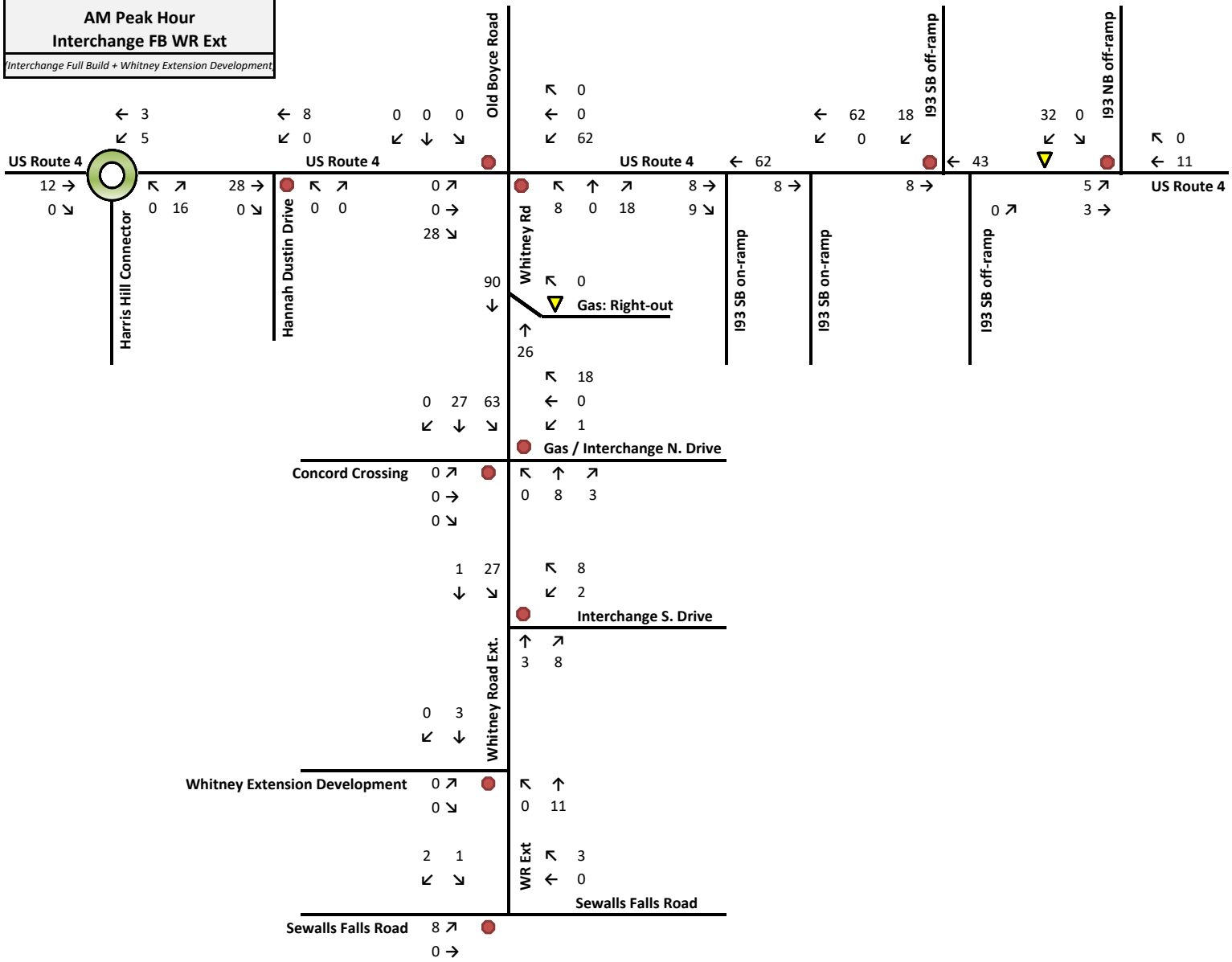


11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY TRIPS

AM Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)



11/3/2019 (Rev1: HDR NHDOT Comments)

PASS-BY TRIPS

AM Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

DIVERTED LINK TRIPS

AM Peak Hour
Interchange FB WR Ext

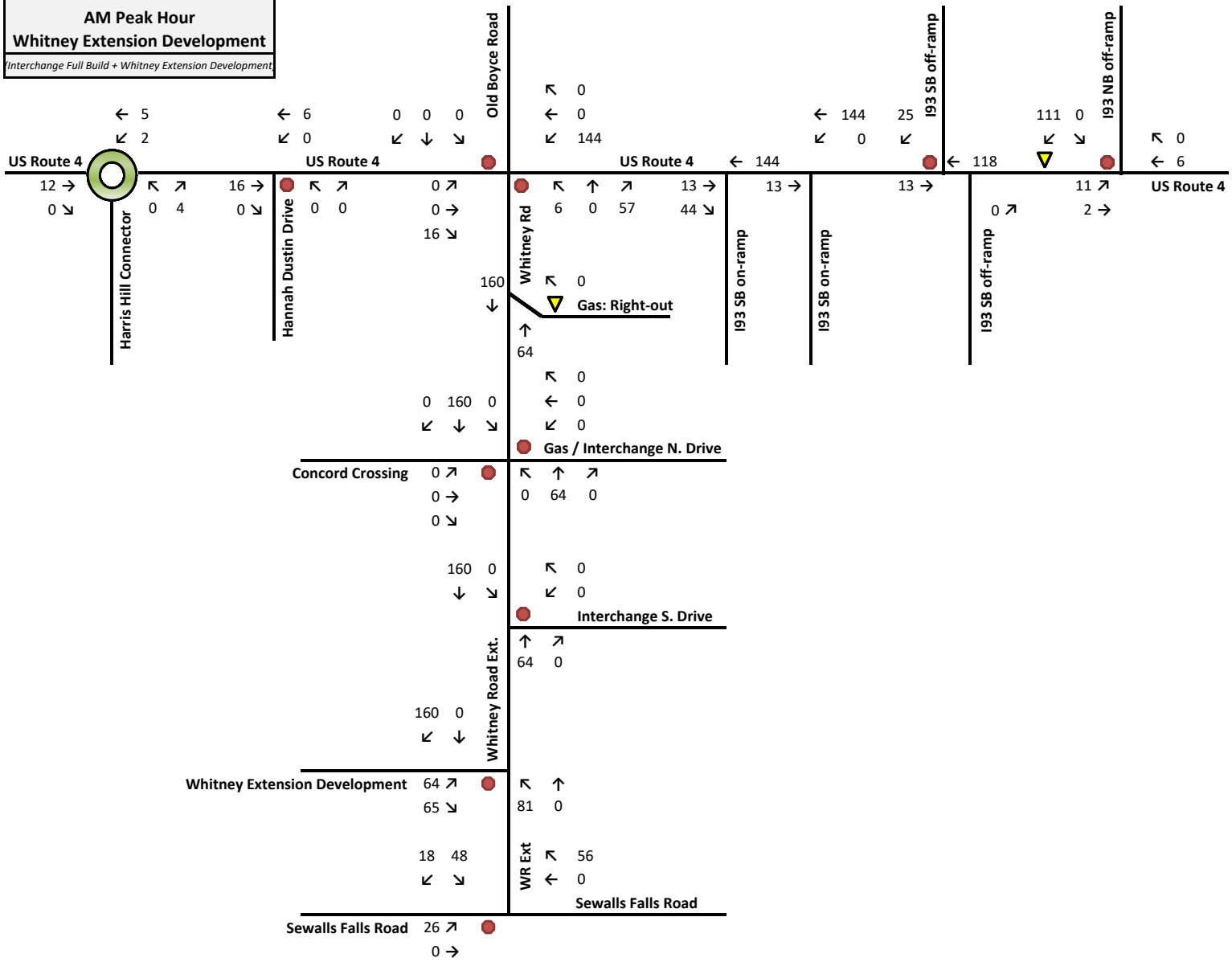
(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY TRIPS

AM Peak Hour
Whitney Extension Development

(Interchange Full Build + Whitney Extension Development)



11/3/2019 (Rev1: HDR NHDOT Comments)

INTERNAL WRE TRIPS

(Trips between IFB & WED)

AM Peak Hour

Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

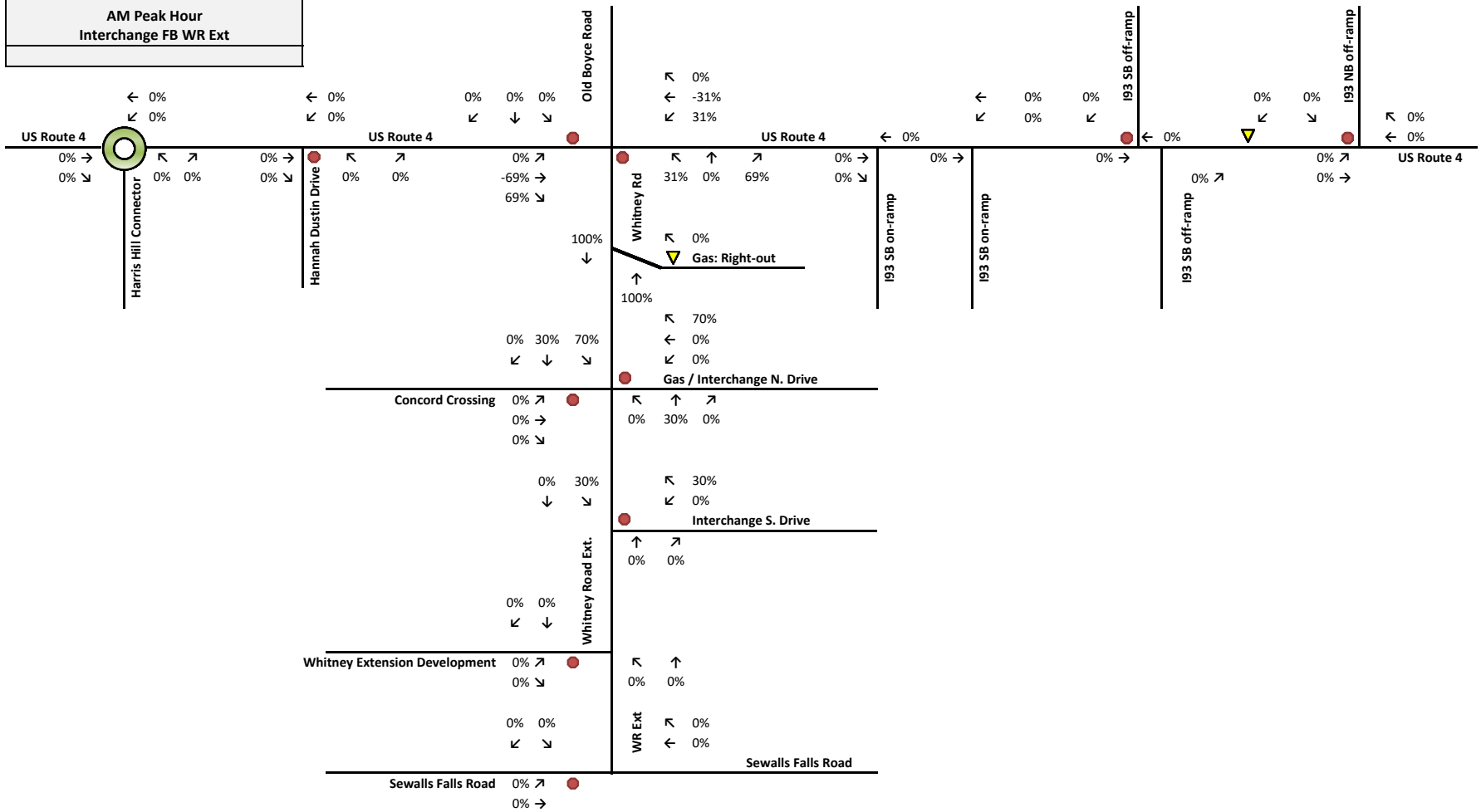
PRIMARY %

AM Peak Hour
Interchange FB WR Ext

11/3/2019 (Rev1: HDR NHDOT Comments)

PASS-BY %

AM Peak Hour
Interchange FB WR Ext



11/3/2019 (Rev1: HDR NHDOT Comments)

DIVERTED LINK %

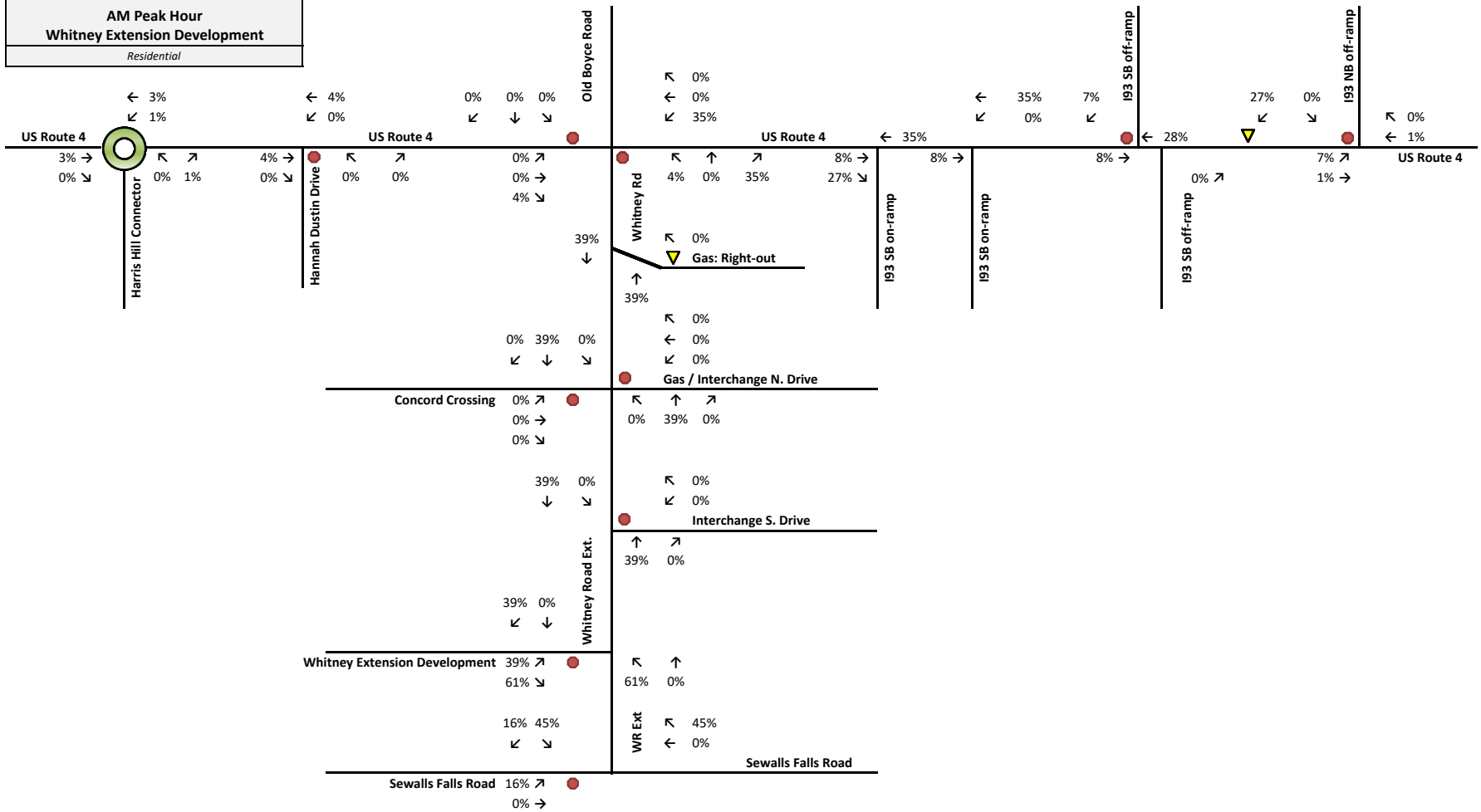
AM Peak Hour
Interchange FB WR Ext

11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY %

AM Peak Hour
Whitney Extension Development

Residential



11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY %

AM Peak Hour
Whitney Extension Development

Commercial

11/3/2019 (Rev1: HDR NHDOT Comments)

CUT-THRU TRIPS

AM Peak Hour
Whitney Road Extension

11/3/2019 (Rev1: HDR NHDOT Comments)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX D2

Sewalls Falls Road Background Traffic Volumes														
Assumed growth rate	**0.01**	[1%]												
May 2018 Seasonal Adjust	**1.03**	NHDOT monthly adjustment factors - Group 4												
June 2018 Seasonal Adjust	**1.00**	NHDOT monthly adjustment factors - Group 5												
AM Peak Hour	**NHDOT ID82099233 [05/23/2019]**	**2019Existing w/ May (1.03) Seasonal Adjustment**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
(41) Sewalls Falls Road at Whitney Road Extension														
Movement														
EBL														
EBT	104	107	108.07	109.15	110.24	111.34	112.45	113.57	114.71	115.86	117.02	118.19	119.37	120.56
WBT	294	303	306.03	309.09	312.18	315.30	318.45	321.63	324.85	328.10	331.38	334.69	338.04	341.42
WBR														
SBL														
SBR														
	**NHDOT counts 2-way*													
	**Used NHDOT ID82099230 Sewalls Falls/First Ave ProRata pattern for directional split (EB 26% WB 74%)*													

AM Background Traffic Volumes: Whitney Road Extension

AM Peak data

AM Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(29) US Route 4 at I93 NB on/off-ramp					
Movement					
EBL	150	20	11	+9	190
EBT	123	5	2		130
WBT	260	14	6		280
WBR	48	0	0		48
SBL	20	0	0		20
(28) US Route 4 at I93 NB off-ramp					
Movement		TRIPS	TRIPS		
EBT	273	24	13	+9	319
WBT	259	14	6		279
SBR	330	55	111	+9	505
(26) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	262	24	13	+9	308
WBT	589	69	118	+9	785
NER	10	0	0		10
(24) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	262	24	13	+9	308
WBT	589	69	118	+9	785
SBR	133	60	25	+16	234
(21) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBT	262	24	13	+9	308
WBL	146	0	0		146
WBT	576	129	144	+25	874
(20) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBL	262	24	13	+9	308
EBT	1085	36	44	+16	1181
SWR	576	129	144	+25	874

AM Background Traffic Volumes: Whitney Road Extension

AM Peak data

AM Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(3) US Route 4 at Whitney Road/Old Boyce Road					
Movement		TRIPS	TRIPS		
EBL	8	0	0		8
EBT	1149	-50	0		1099
EBR	121	84	16		221
WBL	96	152	144	+25	417
WBT	457	-23	0		434
WBR	14	0	0		14
NBL	30	27	6		63
NBT	0	0	0		0
NBR	161	94	57	+25	337
SBL	11	0	0		11
SBT	1	0	0		1
SBR	25	0	0		25
(4) Whitney Road at Gas: Right-out					
Movement		TRIPS	TRIPS		
WBR	157	0	0		157
NBT	34	121	64	+25	244
SBT	218	236	160	+25	639
(5) Whitney Road at Interchange North Site Driveway					
Movement		TRIPS	TRIPS		
EBL	21	0	0		21
EBT	10	0	0		10
EBR	0	0	0		0
WBL	3	1	6		10
WBT	2	0	0		2
WBR	9	85	0		94
NBL	0	0	0		0
NBT	4	36	64	+25	129
NBR	1	3	3		7
SBL	165	165	0		330
SBT	12	71	160	+25	268
SBR	40	0	0		40
(7) Whitney Road at Interchange South Site Driveway					
Movement		TRIPS	TRIPS		
WBL	0	2	15		17
WBR	0	36	0		36
NBT	5	3	67	+25	100
NBR	0	8	8		16
SBL	0	71	0		71
SBT	15	1	166	+25	207
					0
(9) US Route 4 at Hannah Dustin Drive					
Movement		TRIPS	TRIPS		
EBT	1293	34	16		1343
EBR	1	0	0		1
WBL	0	0	0		0
WBT	520	12	6		538
NBL	1	0	0		1
NBR	3	0	0		3
(11) US Route 4 at Harris Hill Connector					
Movement		TRIPS	TRIPS		
EBT	736	18	12		766
EBR	38	0	0		38
WBL	227	5	2		234
WBT	293	7	5		305
NBL	10	0	0		10
NBR	543	16	4		563

AM Background Traffic Volumes: Whitney Road Extension

AM Peak data					
AM Peak Hour	**2031 No Build**	**Site Trips Interchange FB (WR Ext)**	**Site Trips WED (WR Ext)**	**Cut-Thru Trips (500/day)**	**2031 Build WR Ext**
				(I93 ProRata)	
(40) Whitney Road Extension at Whitney Extension Development Site Dr					
Movement	0	TRIPS	TRIPS		
EBL	0	0	75		75
EBR	0	0	65		65
NBL	0	0	81		81
NBT	0	11	0	+25	36
SBR	0	0	181		181
SBT	0	3	0	+25	28
(41) Sewalls Falls Road at Whitney Road Extension					
Movement		TRIPS	TRIPS		
EBL		8	26	+25	59
EBT	121	0	0		121
WBT	341	0	0		341
WBR		3	56		59
SBL		1	48		49
SBR		2	18	+25	45

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX E2

2031 BUILD

AM Peak Hour
Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)

11/21/2019 (Rev2: NHDOT Comments)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX F2

PM Distribution - Interchange Full Build

Primary

	In	Out
PM	119	186

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		18%	0	33
EBT		11%	0	20
WBT	11%		13	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	54
WBT	11%		13	0
SBR	32%		38	0

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	54
WBT	43%		51	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	54
WBT	43%		51	0
SBR	18%		21	0

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	54
WBL			0	0
WBT	61%		73	0

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		29%	0	54
EBT		32%	0	60
SWR	61%		73	0

Pass-By

	In	Out
PM	180	180

Note: Pass-By % per Pro-Rata US Route 4

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL				
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL				
EBT				
SWR				

Diverted Link

	In	Out
PM	172	172

Note: DL % per NHDOT AADT for US3/I93/NH132 [I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		56%	0	96
EBT		4%	0	7
WBT	4%		7	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		60%	0	103
WBT	4%		7	0
SBR	56%		96	0

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		60%	0	103
WBT	60%		103	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		60%	0	103
WBT	60%		103	0
SBR	32%		55	0

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		60%	0	103
WBL			0	0
WBT	92%		158	0

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		60%	0	103
EBT		32%	0	55
SWR	92%		158	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(29) US Route 4 at I93 NB on/off-ramp

(28) US Route 4 at I93 NB off-ramp

(26) US Route 4 at I93 SB off-ramp

(24) US Route 4 at I93 SB off-ramp

(21) US Route 4 at I93 SB on-ramp

(20) US Route 4 at I93 SB on-ramp

PM Total Site Trips Interchange Full Build

TOTAL: 1009

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	129
EBT	27
WBT	20
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	157
WBT	20
SBR	134

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	157
WBT	154
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	157
WBT	154
SBR	76

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	157
WBL	0
WBT	231

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	157
EBT	115
SWR	231

PM Distribution - Interchange Full Build

Primary

	In	Out
PM	119	186

Note: Primary % per Gravity Model

Pass-By

	In	Out
PM	180	180

Note: Pass-By % per Pro-Rata US Route 4

Diverted Link

	In	Out
PM	172	172

Note: DL % per NHDOT AADT for US3/I93/NH132
[I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

Primary (Whitney Road Internal Trips between IFB & WED)

	In	Out
AM	See WED Calculations	

PM Total Site Trips Interchange Full Build

TOTAL: 1009

(3) NH Route 4 at Whitney Road/Old Boyce Road

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
EBL			0	0			0	0			0	0	0
EBT			0	0	-36%		-65	0			0	0	-65
EBR	28%		33	0	36%		65	0	8%		14	0	112
WBL	61%		73	0	64%		115	0	92%		158	0	346
WBT			0	0	-64%		-115	0			0	0	-115
WBR			0	0			0	0			0	0	0
NBL		28%	0	52		64%	0	115		8%	0	14	181
NBT			0	0			0	0			0	0	0
NBR		61%	0	113		36%	0	65		92%	0	158	336
SBL			0	0			0	0			0	0	0
SBT			0	0			0	0			0	0	0
SBR			0	0			0	0			0	0	0

(4) Whitney Road at Gas: Right-out

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
WBR			0	0			0	0			0	0	0
NBT		89%	0	166		100%	0	180		100%	0	172	518
SBT	89%		106	0	100%		180	0	100%		172	0	458

(5) Whitney Road at Interchange North Site Driveway

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
EBL			0	0			0	0			0	0	0
EBT			0	0			0	0			0	0	0
EBR			0	0			0	0			0	0	0
WBL		3%	0	6			0	0			0	0	6
WBT			0	0			0	0			0	0	0
WBR		62%	0	115		70%	0	126		70%	0	120	361
NBL			0	0			0	0			0	0	0
NBT		27%	0	50		30%	0	54		30%	0	52	156
NBR	3%		4	0			0	0			0	0	4
SBL	62%		74	0	70%		126	0	70%		120	0	320
SBT	27%		32	0	30%		54	0	30%		52	0	138
SBR			0	0			0	0			0	0	0

See WED calculations for driveway interaction trips

(7) Whitney Road at Interchange South Site Driveway

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
WBL		7%	0	13			0	0			0	0	13
WBR		27%	0	50		30%	0	54		30%	0	52	156
NBT	3%		4	0			0	0			0	0	4
NBR	7%		8	0			0	0			0	0	8
SBL	27%		32	0	30%		54	0	30%		52	0	138
SBT		3%	0	6			0	0			0	0	6

See WED calculations for driveway interaction trips

(9) US Route 4 at Hannah Dustin Drive

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
EBT	28%		33	0					8%		14	0	47
EBR			0	0							0	0	0
WBL			0	0							0	0	0
WBT		28%	0	52						8%	0	14	66
NBL			0	0							0	0	0
NBR			0	0							0	0	0

(11) US Route 4 at Harris Hill Connector

Movement	Primary PERCENTAGES In	Primary PERCENTAGES Out	Primary TRIPS In	Primary TRIPS Out	Pass-By PERCENTAGES In	Pass-By PERCENTAGES Out	Pass-By TRIPS In	Pass-By TRIPS Out	Diverted Link PERCENTAGES In	Diverted Link PERCENTAGES Out	Diverted Link TRIPS In	Diverted Link TRIPS Out	Total TRIPS
EBT	12%		14	0					8%		14	0	28
EBR			0	0							0	0	0
WBL		16%	0	30							0	0	30
WBT		12%	0	22						8%	0	14	36
NBL			0	0							0	0	0
NBR	16%		19	0							0	0	19

PM Distribution - Interchange Full Build

Primary

	In	Out
PM	119	186

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT	10%		12	0
SBR			0	0
SBT		10%	0	19

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	8%		10	0
EBT			0	0
WBT			0	0
WBR	2%		2	0
SBL		2%	0	4
SBR		8%	0	15

Pass-By

	In	Out
PM	180	180

Note: Pass-By % per Pro-Rata US Route 4

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBR				
NBL				
NBT				
SBR				
SBT				

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

Diverted Link

	In	Out
PM	172	172

Note: DL % per NHDOT AADT for US3/I93/NH132 [I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT			0	0
SBR			0	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
WBT			0	0
WBR			0	0
SBL			0	0
SBR			0	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(40) Whitney Road Extension at Whitney Extension Development Site Dr

See WED calculations for driveway interaction trips

(41) Sewalls Falls Road at Whitney Road Extension

PM Total Site Trips Interchange Full Build

TOTAL: 1009

(40) Whitney Road Extension at Whitney Extension Development Site Dr

Movement	TRIPS
EBL	0
EBR	0
NBL	0
NBT	12
SBR	0
SBT	19

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	10
EBT	0
WBT	0
WBR	2
SBL	4
SBR	15

PM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	77	49

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		7%	0	3
EBT		1%	0	0
WBT	1%		1	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	4
WBT	1%		1	0
SBR	27%		21	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	4
WBT	28%		22	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	4
WBT	28%		22	0
SBR	7%		5	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	4
WBL			0	0
WBT	35%		27	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		8%	0	4
EBT		27%	0	13
SWR	35%		27	0

PM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	39	193

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		11%	0	21
EBT		3%	0	6
WBT	3%		1	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	27
WBT	3%		1	0
SBR	49%		19	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	27
WBT	52%		20	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	27
WBT	52%		20	0
SBR	11%		4	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	27
WBL			0	0
WBT	63%		25	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		14%	0	27
EBT		49%	0	95
SWR	63%		25	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	26	53

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement			In	Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
SWR				

PM Total Site Trips Whitney Extension Development

TOTAL:	437

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	24
EBT	6
WBT	2
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	31
WBT	2
SBR	40

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	31
WBT	42
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	31
WBT	42
SBR	9

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	31
WBL	0
WBT	52

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	31
EBT	108
SWR	52

PM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	77	49

Note: Primary % per Gravity Model

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	4%		3	0
WBL	35%		27	0
WBT			0	0
WBR			0	0
NBL		4%	0	2
NBT			0	0
NBR		35%	0	17
SBL			0	0
SBT			0	0
SBR			0	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		39%	0	19
SBT	39%		30	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		39%	0	19
NBR			0	0
SBL			0	0
SBT	39%		30	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		39%	0	19
NBR			0	0
SBL			0	0
SBT	39%		30	0

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	4%		3	0
EBR			0	0
WBL			0	0
WBT		4%	0	2
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	3%		2	0
EBR			0	0
WBL		1%	0	0
WBT		3%	0	1
NBL			0	0
NBR	1%		1	0

PM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	39	193

Note: Primary % per Gravity Model

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	7%		3	0
WBL	63%		25	0
WBT			0	0
WBR			0	0
NBL		7%	0	14
NBT			0	0
NBR		63%	0	122
SBL			0	0
SBT			0	0
SBR			0	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		70%	0	135
SBT	70%		27	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		70%	0	135
NBR			0	0
SBL			0	0
SBT	70%		27	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		70%	0	135
NBR			0	0
SBL			0	0
SBT	70%		27	0

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	7%		3	0
EBR			0	0
WBL			0	0
WBT		7%	0	14
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	5%		2	0
EBR			0	0
WBL		2%	0	4
WBT		5%	0	10
NBL			0	0
NBR	2%		1	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	26	53

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
EBR				
WBL				
WBT				
WBR				
NBL				
NBT				
NBR				
SBL				
SBT				
SBR				

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR				
NBT				
SBT				

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	30%		8	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR		30%	0	16
SBL			0	0
SBT			0	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL	70%		18	0
WBR			0	0
NBT		30%	0	16
NBR		70%	0	37
SBL			0	0
SBT	30%		8	0

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

PM Total Site Trips Whitney Extension Development

TOTAL:	437

(3) NH Route 4 at Whitney Road/Old Boyce Road

Movement	TRIPS
EBL	0
EBT	0
EBR	6
WBL	52
WBT	0
WBR	0
NBL	16
NBT	0
NBR	139
SBL	0
SBT	0
SBR	0

(4) Whitney Road at Gas: Right-out

Movement	TRIPS
WBR	0
NBT	154
SBT	57

(5) Whitney Road at Interchange North Site Driveway

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	8
WBT	0
WBR	0
NBL	0
NBT	154
NBR	16
SBL	0
SBT	57
SBR	0

(7) Whitney Road at Interchange South Site Driveway

Movement	TRIPS
WBL	18
WBR	0
NBT	170
NBR	37
SBL	0
SBT	65

(9) US Route 4 at Hannah Dustin Drive

Movement	TRIPS
EBT	6
EBR	0
WBL	0
WBT	16
NBL	0
NBR	0

(11) US Route 4 at Harris Hill Connector

Movement	TRIPS
EBT	4
EBR	0
WBL	4
WBT	11
NBL	0
NBR	2

PM Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	77	49

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		39%	0	19
EBR		61%	0	30
NBL	61%		47	0
NBT			0	0
SBR	39%		30	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	16%		12	0
EBT			0	0
WBT			0	0
WBR	45%		35	0
SBL		45%	0	22
SBR		16%	0	8

PM Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	39	193

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		70%	0	135
EBR		30%	0	58
NBL	30%		12	0
NBT			0	0
SBR	70%		27	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	10%		4	0
EBT			0	0
WBT			0	0
WBR	20%		8	0
SBL		20%	0	39
SBR		10%	0	19

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	26	53

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		100%	0	53
EBR			0	0
NBL			0	0
NBT			0	0
SBR	100%		26	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

PM Total Site Trips Whitney Extension Development

TOTAL:	437

(40) Whitney Road Extension at Whitney Extension Development Site Dr

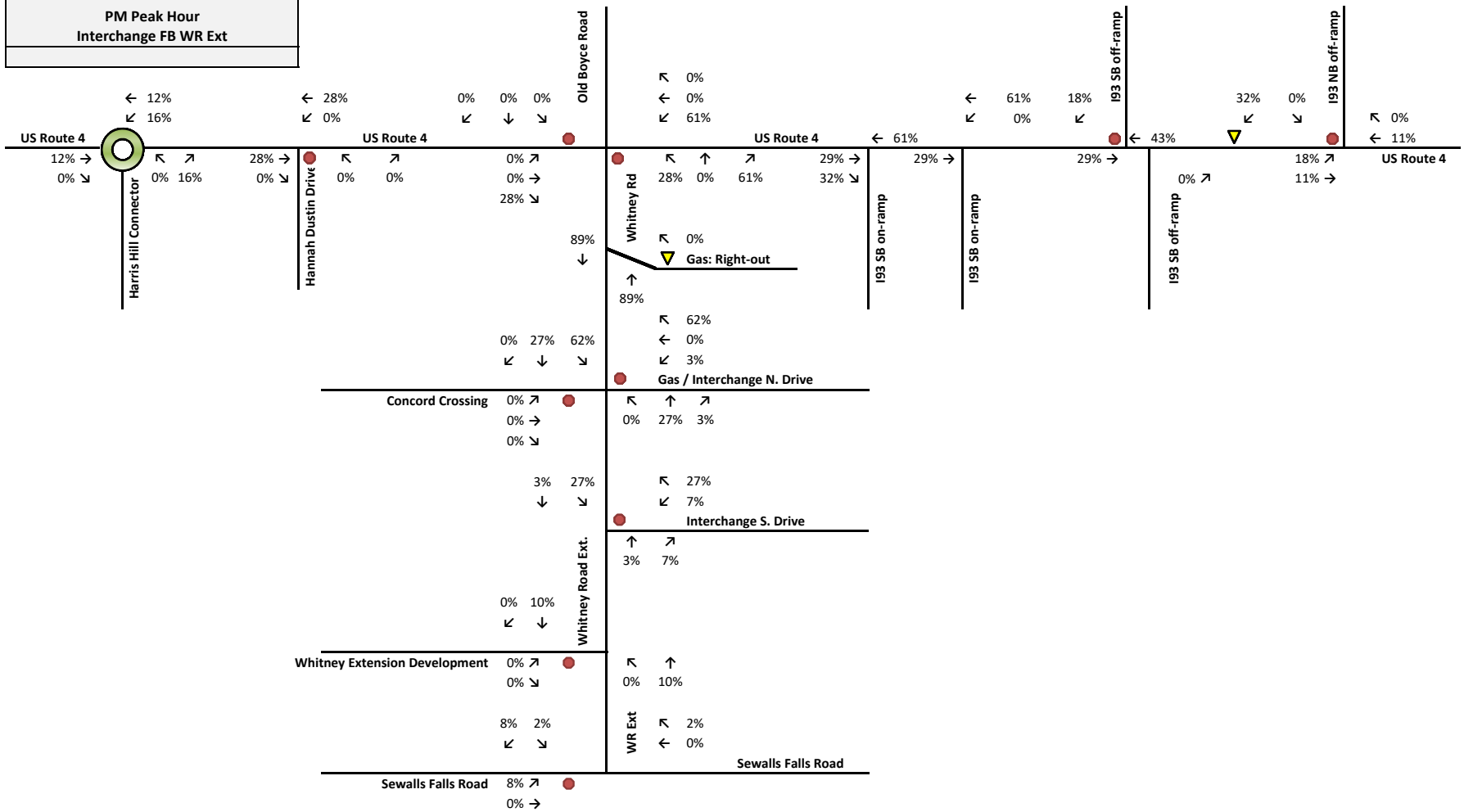
Movement	TRIPS
EBL	207
EBR	88
NBL	59
NBT	0
SBR	83
SBT	0

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	16
EBT	0
WBT	0
WBR	43
SBL	61
SBR	27

PRIMARY %

PM Peak Hour
Interchange FB WR Ext



11/3/2019 (Rev1: HDR NHDOT Comments)

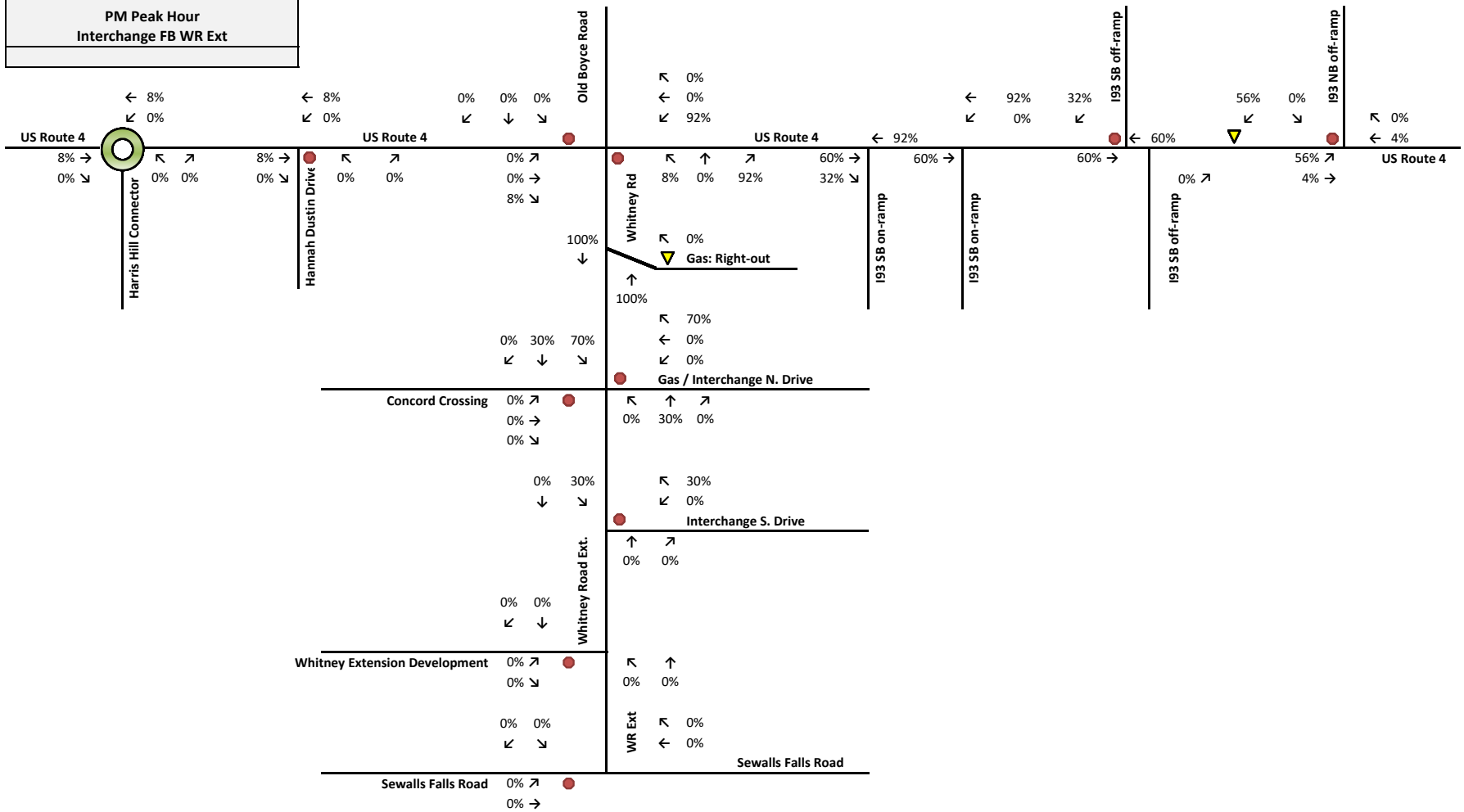
PASS-BY %

PM Peak Hour
Interchange FB WR Ext

11/3/2019 (Rev1: HDR NHDOT Comments)

DIVERTED LINK %

PM Peak Hour
Interchange FB WR Ext

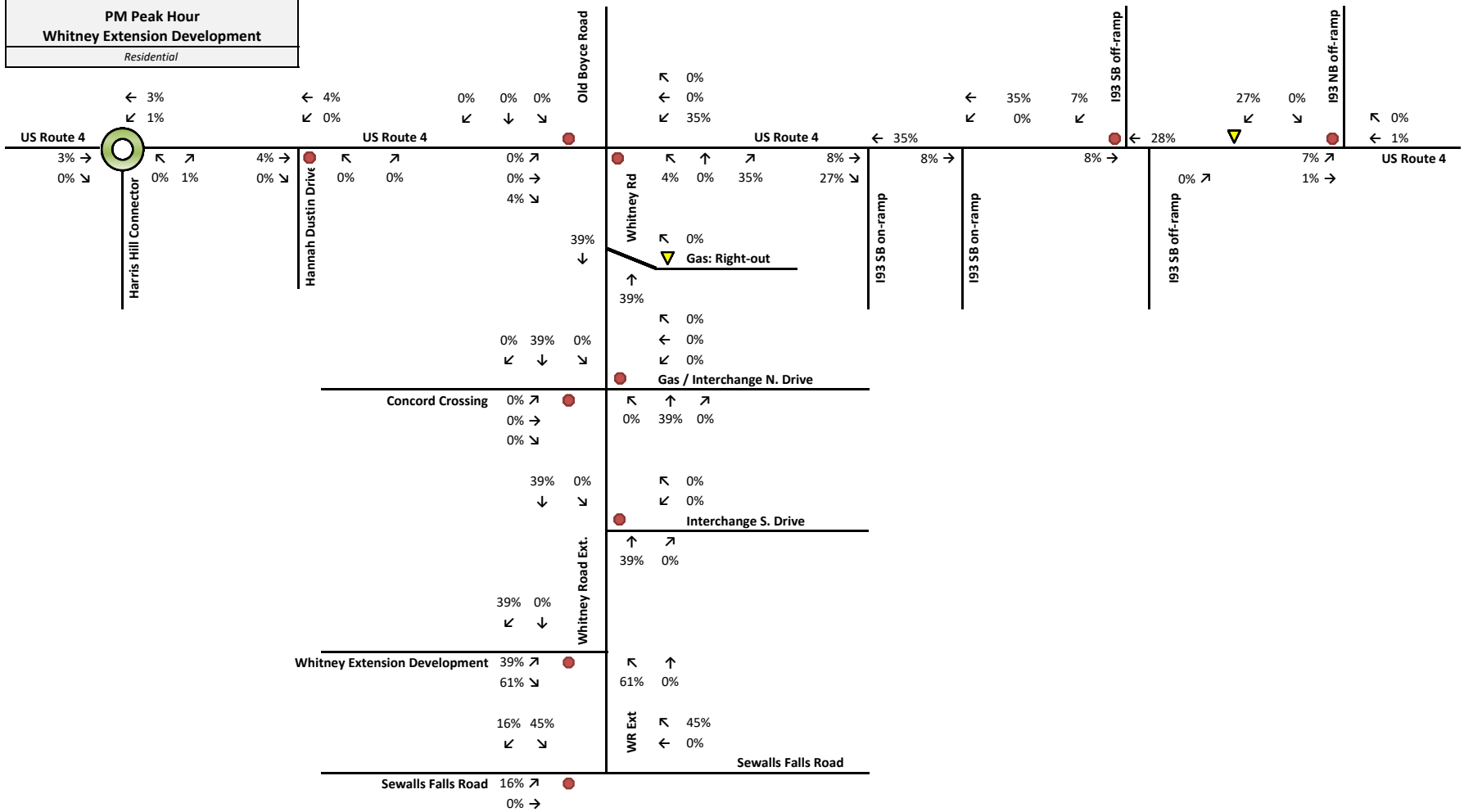


11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY %

PM Peak Hour
Whitney Extension Development

Residential

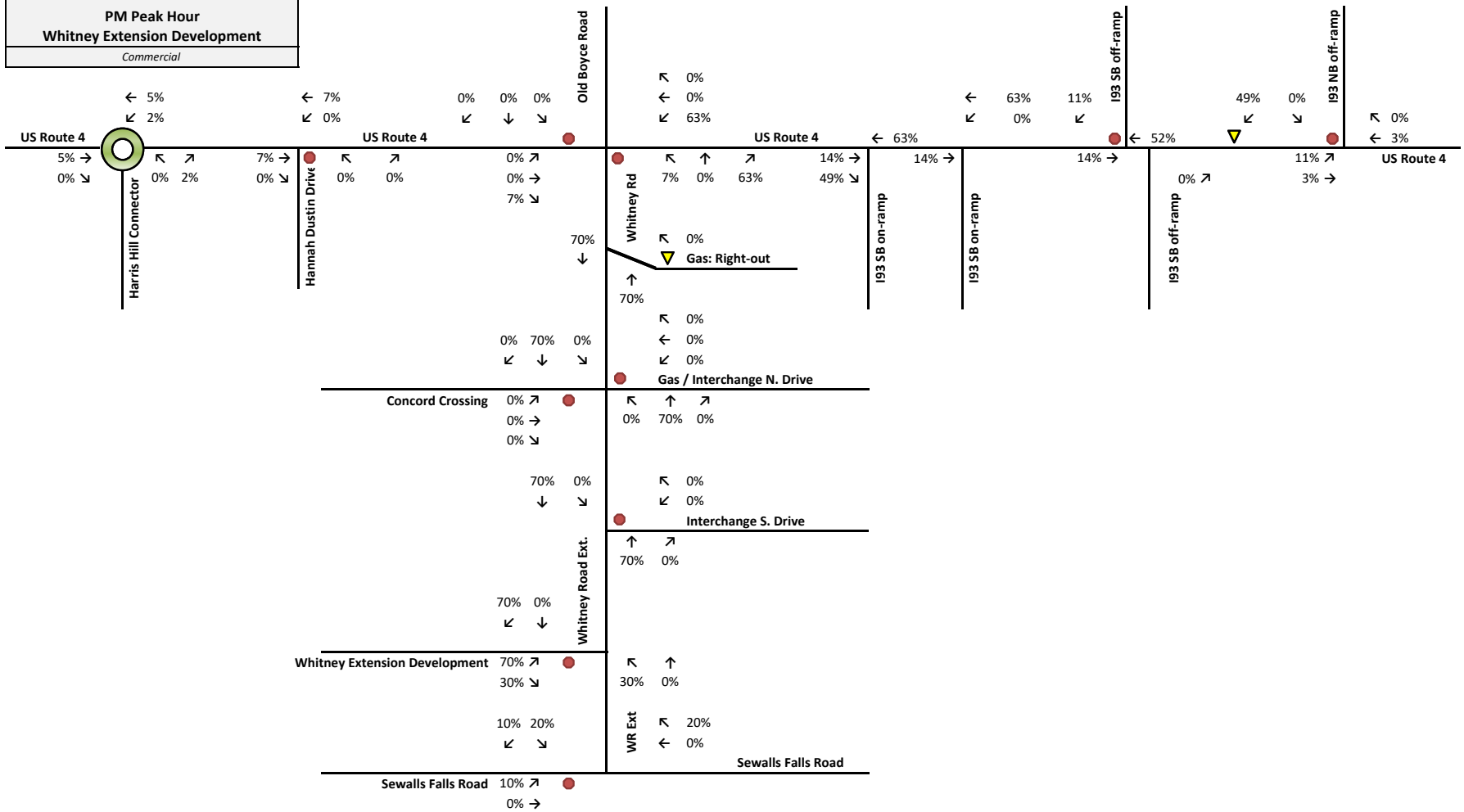


11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY %

PM Peak Hour
Whitney Extension Development

Commercial



11/3/2019 (Rev1: HDR NHDOT Comments)

SITE TRIPS

(Total of Primary + PassBy + Diverted)

PM Peak Hour

Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)

PRIMARY TRIPS

PM Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

PASS-BY TRIPS

PM Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

DIVERTED LINK TRIPS

PM Peak Hour
Interchange FB WR Ext

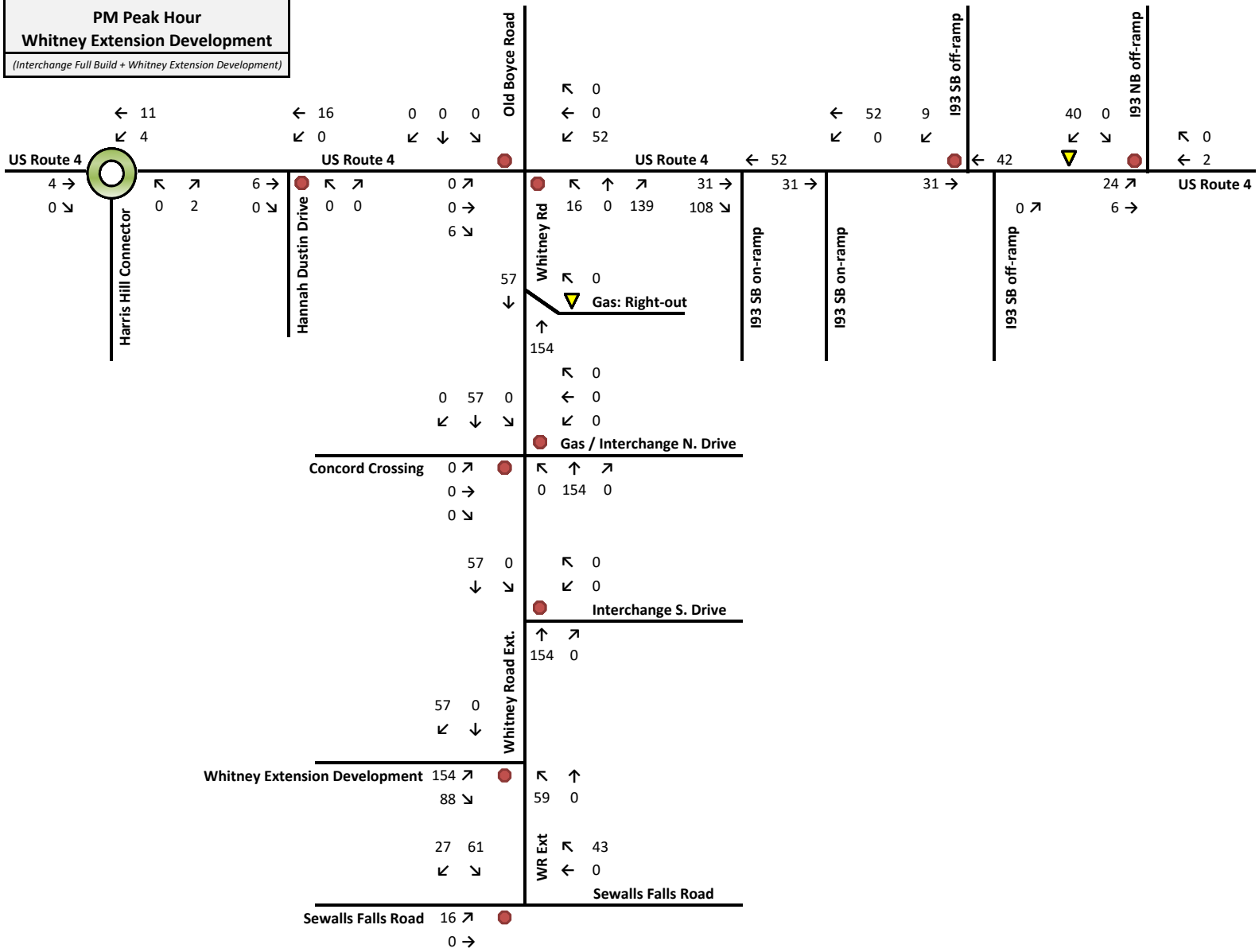
(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY TRIPS

PM Peak Hour
Whitney Extension Development

(Interchange Full Build + Whitney Extension Development)



11/3/2019 (Rev1: HDR NHDOT Comments)

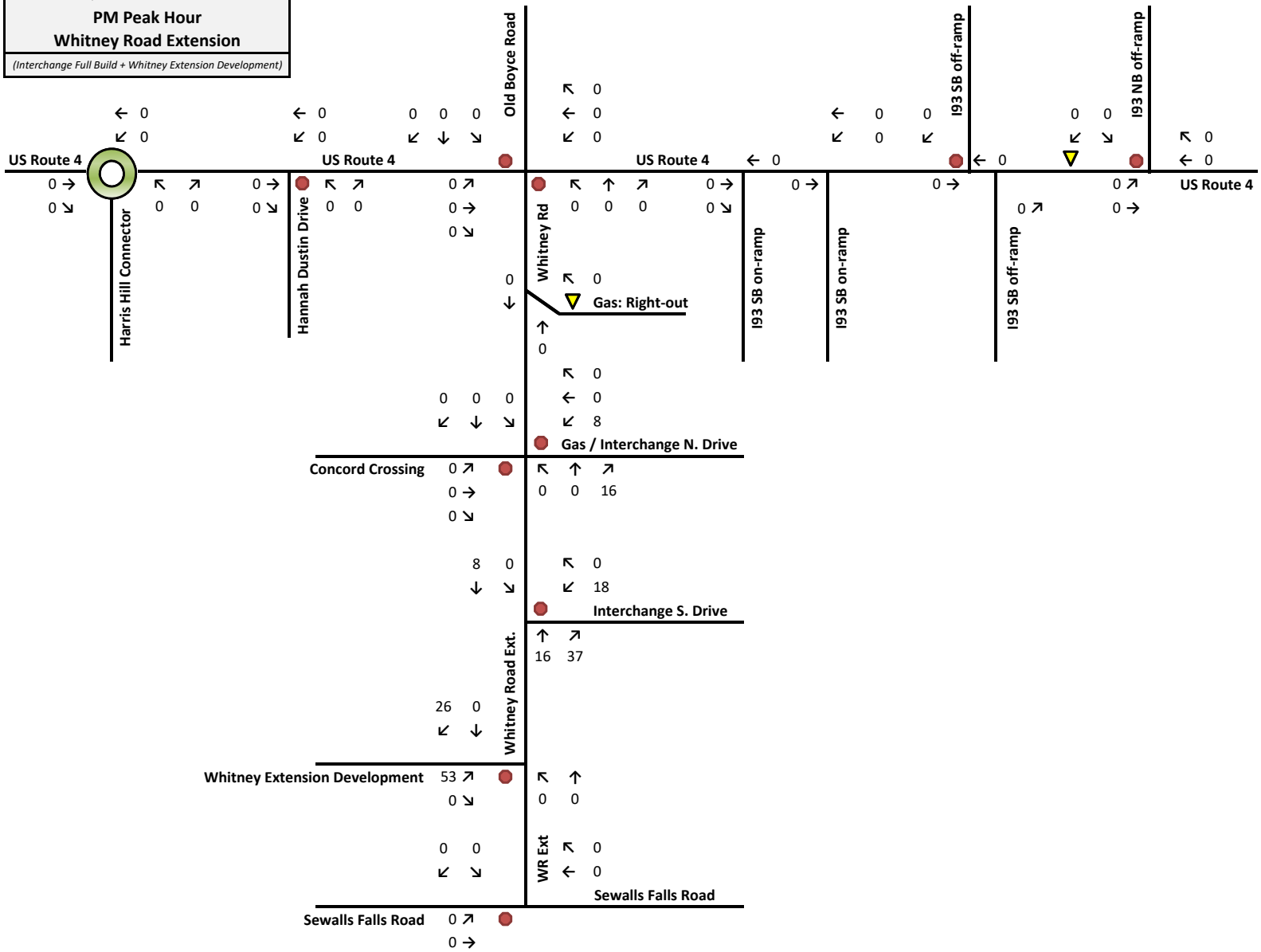
INTERNAL WRE TRIPS

(Trips between IFB & WED)

PM Peak Hour

Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)



11/3/2019 (Rev1: HDR NHDOT Comments)

CUT-THRU TRIPS

PM Peak Hour
Whitney Road Extension

11/3/2019 (Rev1: HDR NHDOT Comments)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX G2

Sewalls Falls Road Background Traffic Volumes														
Assumed growth rate	**0.01**	[1%]												
May 2018 Seasonal Adjust	**1.03**	NHDOT monthly adjustment factors - Group 4												
June 2018 Seasonal Adjust	**1.00**	NHDOT monthly adjustment factors - Group 5												
PM Peak Hour	**NHDOT ID82099233 [05/23/2019]**	**2019Existing w/ May (1.03) Seasonal Adjustment**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
(41) Sewalls Falls Road at Whitney Road Extension														
Movement														
EBL														
EBT	365	376	379.76	383.56	387.40	391.27	395.18	399.13	403.12	407.15	411.22	415.33	419.48	423.67
WBT	135	139	140.39	141.79	143.21	144.64	146.09	147.55	149.03	150.52	152.03	153.55	155.09	156.64
WBR														
SBL														
SBR														
	**NHDOT counts 2-way*													
	**Used NHDOT ID82099230 Sewalls Falls/First Ave ProRata pattern for directional split (EB 73% WB 27%)*													

PM Background Traffic Volumes: Whitney Road Extension

PM Peak data

PM Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(29) US Route 4 at I93 NB on/off-ramp					
Movement					
EBL	127	129	24	16	296
EBT	188	27	6		221
WBT	205	20	2		227
WBR	31	0	0		31
SBL	99	0	0		99
(28) US Route 4 at I93 NB off-ramp					
Movement	0	TRIPS	TRIPS		
EBT	315	157	31	16	519
WBT	211	20	2		233
SBR	887	134	40	16	1077
(26) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	266	157	31	16	470
WBT	1098	154	42	16	1310
NER	49	0	0		49
(24) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	266	157	31	16	470
WBT	1098	154	42	16	1310
SBR	143	76	9	9	237
(21) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBT	266	157	31	16	470
WBL	60	0	0		60
WBT	1180	231	52	+25	1488
(20) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBL	266	157	31	16	470
EBT	497	115	108	9	729
SWR	1180	231	52	+25	1488

PM Background Traffic Volumes: Whitney Road Extension

PM Peak data

PM Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(3) US Route 4 at Whitney Road/Old Boyce Road					
Movement		TRIPS	TRIPS		
EBL	7	0	0		7
EBT	616	-65	0		551
EBR	60	112	6		178
WBL	71	346	52	+25	494
WBT	1077	-115	0		962
WBR	15	0	0		15
NBL	33	181	16		230
NBT	0	0	0		0
NBR	112	336	139	+25	612
SBL	14	0	0		14
SBT	1	0	0		1
SBR	8	0	0		8
(4) Whitney Road at Gas: Right-out					
Movement		TRIPS	TRIPS		
WBR	93	0	0		93
NBT	52	518	154	+25	749
SBT	132	458	57	+25	672
(5) Whitney Road at Interchange North Site Driveway					
Movement		TRIPS	TRIPS		
EBL	41	0	0		41
EBT	7	0	0		7
EBR	0	0	0		0
WBL	4	6	8		18
WBT	2	0	0		2
WBR	10	361	0		371
NBL	1	0	0		1
NBT	2	156	154	+25	337
NBR	0	4	16		20
SBL	97	320	0		417
SBT	3	138	57	+25	223
SBR	31	0	0		31
(7) Whitney Road at Interchange South Site Driveway					
Movement		TRIPS	TRIPS		
WBL	0	13	18		31
WBR	0	156	0		156
NBT	3	4	170	+25	202
NBR	0	8	37		45
SBL	0	138	0		138
SBT	7	6	65	+25	103
					0
(9) US Route 4 at Hannah Dustin Drive					
Movement		TRIPS	TRIPS		
EBT	692	47	6		745
EBR	1	0	0		1
WBL	3	0	0		3
WBT	1119	66	16		1201
NBL	0	0	0		0
NBR	1	0	0		1
(11) US Route 4 at Harris Hill Connector					
Movement		TRIPS	TRIPS		
EBT	375	28	4		407
EBR	21	0	0		21
WBL	468	30	4		502
WBT	651	36	11		698
NBL	7	0	0		7
NBR	310	19	2		331

PM Background Traffic Volumes: Whitney Road Extension

PM Peak data

PM Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(40) Whitney Road Extension at Whitney Extension Development Site Dr					
Movement	0	TRIPS	TRIPS		
EBL	0	0	207		207
EBR	0	0	88		88
NBL	0	0	59		59
NBT	0	12	0	+25	37
SBR	0	0	83		83
SBT	0	19	0	+25	44
(41) Sewalls Falls Road at Whitney Road Extension					
Movement		TRIPS	TRIPS		
EBL		10	16	+25	51
EBT	424	0	0		424
WBT	157	0	0		157
WBR		2	43		45
SBL		4	61		65
SBR		15	27	+25	67

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

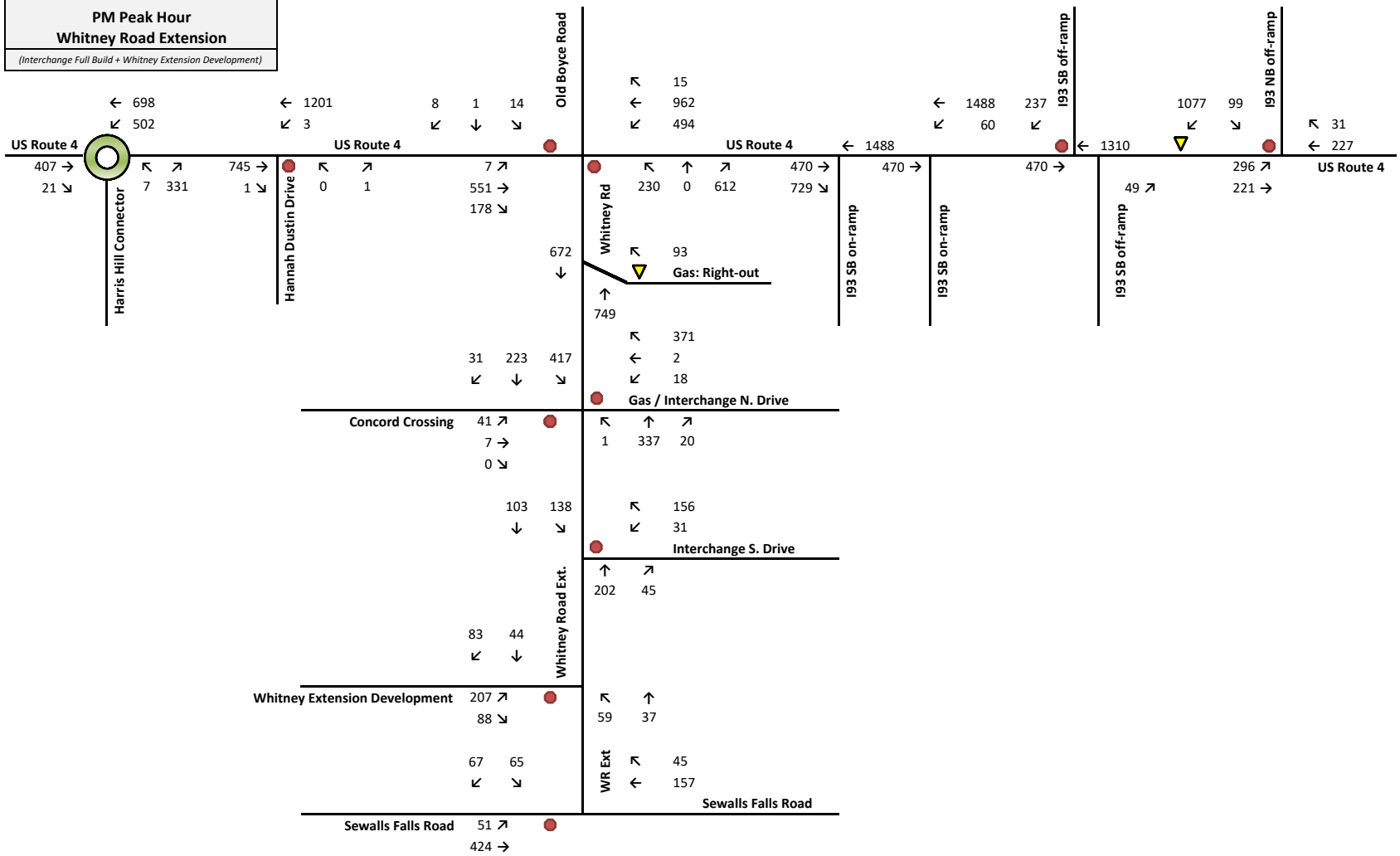
VOLUME 2

APPENDIX H2

2031 BUILD

PM Peak Hour
Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX I2

SAT Distribution - Interchange Full Build

Primary

	In	Out
SAT	177	167

Note: Primary % per Gravity Model

Pass-By

	In	Out
SAT	190	180

Note: Pass-By % per Pro-Rata US Route 4

Diverted Link

	In	Out
SAT	216	206

Note: DL % per NHDOT AADT for US3/I93/NH132
[I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		18%	0	30
EBT		11%	0	18
WBT	11%		19	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	48
WBT	11%		19	0
SBR	32%		57	0

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	48
WBT	43%		76	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	48
WBT	43%		76	0
SBR	18%		32	0

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		29%	0	48
WBL			0	0
WBT	61%		108	0

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		29%	0	48
EBT		32%	0	53
SWR	61%		108	0

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL				
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL				
EBT				
SWR				

(29) US Route 4 at I93 NB on/off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		55%	0	113
EBT		4%	0	8
WBT	4%		9	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		59%	0	122
WBT	4%		9	0
SBR	55%		119	0

(26) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		59%	0	122
WBT	59%		127	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		59%	0	122
WBT	59%		127	0
SBR	33%		71	0

(21) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		59%	0	122
WBL			0	0
WBT	92%		199	0

(20) US Route 4 at I93 SB on-ramp

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		59%	0	122
EBT		33%	0	68
SWR	92%		199	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(29) US Route 4 at I93 NB on/off-ramp

(28) US Route 4 at I93 NB off-ramp

(26) US Route 4 at I93 SB off-ramp

(24) US Route 4 at I93 SB off-ramp

(21) US Route 4 at I93 SB on-ramp

(20) US Route 4 at I93 SB on-ramp

SAT Total Site Trips Interchange Full Build

TOTAL: 1136

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	143
EBT	26
WBT	28
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	170
WBT	28
SBR	176

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	170
WBT	203
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	170
WBT	203
SBR	103

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	170
WBL	0
WBT	307

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	170
EBT	121
SWR	307

SAT Distribution - Interchange Full Build

Primary

	In	Out
SAT	177	167

Note: Primary % per Gravity Model

Pass-By

	In	Out
SAT	190	180

Note: Pass-By % per Pro-Rata US Route 4

Diverted Link

	In	Out
SAT	216	206

Note: DL % per NHDOT AADT for US3/I93/NH132
[I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

Primary

	In	Out
AM	See WED Calculations	

SAT Total Site Trips Interchange Full Build

TOTAL: 1136

(3) NH Route 4 at Whitney Road/Old Boyce Road

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	28%		50	0
WBL	61%		108	0
WBT			0	0
WBR			0	0
NBL		28%	0	47
NBT			0	0
NBR		61%	0	102
SBL			0	0
SBT			0	0
SBR			0	0

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-45%		-86	0
EBR	45%		86	0
WBL	55%		105	0
WBT	-55%		-105	0
WBR			0	0
NBL		55%	0	99
NBT			0	0
NBR		45%	0	81
SBL			0	0
SBT			0	0
SBR			0	0

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	8%		17	0
WBL	92%		199	0
WBT			0	0
WBR			0	0
NBL		8%	0	16
NBT			0	0
NBR		92%	0	190
SBL			0	0
SBT			0	0
SBR			0	0

Whitney Road Internal Trips between IFB & WED

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
EBL	0
EBT	-86
EBR	153
WBL	412
WBT	-105
WBR	0
NBL	162
NBT	0
NBR	373
SBL	0
SBT	0
SBR	0

(4) Whitney Road at Gas: Right-out

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBR			0	0
NBT		89%	0	149
SBT	89%		158	0

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBR			0	0
NBT		100%	0	180
SBT	100%		190	0

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBR			0	0
NBT		100%	0	206
SBT	100%		216	0

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
WBR	0
NBT	535
SBT	564

(5) Whitney Road at Interchange North Site Driveway

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL		3%	0	5
WBT			0	0
WBR		62%	0	104
NBL			0	0
NBT		27%	0	45
NBR	3%		5	0
SBL	62%		110	0
SBT	27%		48	0
SBR			0	0

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR		70%	0	126
NBL			0	0
NBT		30%	0	54
NBR			0	0
SBL	70%		133	0
SBT	30%		57	0
SBR			0	0

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR		70%	0	144
NBL			0	0
NBT		30%	0	62
NBR			0	0
SBL	70%		151	0
SBT	30%		65	0
SBR			0	0

Whitney Road Internal Trips between IFB & WED

See WED calculations for driveway interaction trips

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	5
WBT	0
WBR	374
NBL	0
NBT	161
NBR	5
SBL	394
SBT	170
SBR	0

(7) Whitney Road at Interchange South Site Driveway

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		7%	0	12
WBR		27%	0	45
NBT	3%		5	0
NBR	7%		12	0
SBL	27%		48	0
SBT		3%	0	5

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL			0	0
WBR		30%	0	54
NBT			0	0
NBR			0	0
SBL	30%		57	0
SBT			0	0

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL			0	0
WBR		30%	0	62
NBT			0	0
NBR			0	0
SBL	30%		65	0
SBT			0	0

Whitney Road Internal Trips between IFB & WED

See WED calculations for driveway interaction trips

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
WBL	12
WBR	161
NBT	5
NBR	12
SBL	170
SBT	5

(9) US Route 4 at Hannah Dustin Drive

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT	28%		50	0
EBR			0	0
WBL			0	0
WBT		28%	0	47
NBL			0	0
NBR			0	0

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT	8%		17	0
EBR			0	0
WBL			0	0
WBT		8%	0	16
NBL			0	0
NBR			0	0

Whitney Road Internal Trips between IFB & WED

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
EBT	67
EBR	0
WBL	0
WBT	63
NBL	0
NBR	0

(11) US Route 4 at Harris Hill Connector

Primary

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT	12%		21	0
EBR			0	0
WBL		16%	0	27
WBT		12%	0	20
NBL			0	0
NBR	16%		28	0

Pass-By

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

Diverted Link

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT	8%		17	0
EBR			0	0
WBL			0	0
WBT		8%	0	16
NBL			0	0
NBR			0	0

Whitney Road Internal Trips between IFB & WED

SAT Total Site Trips Interchange Full Build

Movement	TRIPS
EBT	38
EBR	0
WBL	27
WBT	36
NBL	0
NBR	28

SAT Distribution - Interchange Full Build

Primary

	In	Out
SAT	177	167

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT	10%		18	0
SBR			0	0
SBT		10%	0	17

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	8%		14	0
EBT			0	0
WBT			0	0
WBR	2%		4	0
SBL		2%	0	3
SBR		8%	0	13

Pass-By

	In	Out
SAT	190	180

Note: Pass-By % per Pro-Rata US Route 4

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBR				
NBL				
NBT				
SBR				
SBT				

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

Diverted Link

	In	Out
SAT	216	206

Note: DL % per NHDOT AADT for US3/I93/NH132 [I93 directional per Pro-Rata of I93 minus Exit 17 ramps]

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBR			0	0
NBL			0	0
NBT			0	0
SBR			0	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
WBT			0	0
WBR			0	0
SBL			0	0
SBR			0	0

Whitney Road Internal Trips between IFB & WED

Primary

	In	Out
AM	See WED Calculations	

(40) Whitney Road Extension at Whitney Extension Development Site Dr

See WED calculations for driveway interaction trips

(41) Sewalls Falls Road at Whitney Road Extension

SAT Total Site Trips Interchange Full Build

TOTAL:	1136

(40) Whitney Road Extension at Whitney Extension Development Site Dr

Movement	TRIPS
EBL	0
EBR	0
NBL	0
NBT	18
SBR	0
SBT	17

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	14
EBT	0
WBT	0
WBR	4
SBL	3
SBR	13

SAT Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	61	65

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		7%	0	5
EBT		1%	0	1
WBT	1%		1	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	5
WBT	1%		1	0
SBR	27%		16	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	5
WBT	28%		17	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	5
WBT	28%		17	0
SBR	7%		4	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		8%	0	5
WBL			0	0
WBT	35%		21	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		8%	0	5
EBT		27%	0	18
SWR	35%		21	0

SAT Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	65	82

Note: Primary % per Gravity Model

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		11%	0	9
EBT		3%	0	2
WBT	3%		2	0
WBR			0	0
SBL			0	0

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	11
WBT	3%		2	0
SBR	49%		32	0

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	11
WBT	52%		34	0
NER			0	0

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	11
WBT	52%		34	0
SBR	11%		7	0

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT		14%	0	11
WBL			0	0
WBT	63%		41	0

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		14%	0	11
EBT		49%	0	40
SWR	63%		41	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	28	32

(29) US Route 4 at I93 NB on/off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				

(28) US Route 4 at I93 NB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(26) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement			In	Out
EBT				
WBT				
NER				

(24) US Route 4 at I93 SB off-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBT				
SBR				

(21) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
WBL				
WBT				

(20) US Route 4 at I93 SB on-ramp

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
SWR				

SAT Total Site Trips Whitney Extension Development

TOTAL: 333

(29) US Route 4 at I93 NB on/off-ramp

Movement	TRIPS
EBL	14
EBT	3
WBT	3
WBR	0
SBL	0

(28) US Route 4 at I93 NB off-ramp

Movement	TRIPS
EBT	16
WBT	3
SBR	48

(26) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	16
WBT	51
NER	0

(24) US Route 4 at I93 SB off-ramp

Movement	TRIPS
EBT	16
WBT	51
SBR	11

(21) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBT	16
WBL	0
WBT	62

(20) US Route 4 at I93 SB on-ramp

Movement	TRIPS
EBL	16
EBT	58
SWR	62

SAT Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	61	65

Note: Primary % per Gravity Model

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	4%		2	0
WBL	35%		21	0
WBT			0	0
WBR			0	0
NBL		4%	0	3
NBT			0	0
NBR		35%	0	23
SBL			0	0
SBT			0	0
SBR			0	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		39%	0	25
SBT	39%		24	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		39%	0	25
NBR			0	0
SBL			0	0
SBT	39%		24	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		39%	0	25
NBR			0	0
SBL			0	0
SBT	39%		24	0

SAT Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	65	82

Note: Primary % per Gravity Model

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR	7%		5	0
WBL	63%		41	0
WBT			0	0
WBR			0	0
NBL		7%	0	6
NBT			0	0
NBR		63%	0	52
SBL			0	0
SBT			0	0
SBR			0	0

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR			0	0
NBT		70%	0	57
SBT	70%		46	0

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT		70%	0	57
NBR			0	0
SBL			0	0
SBT	70%		46	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL			0	0
WBR			0	0
NBT		70%	0	57
NBR			0	0
SBL			0	0
SBT	70%		46	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	28	32

(3) NH Route 4 at Whitney Road/Old Boyce Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
EBR				
WBL				
WBT				
WBR				
NBL				
NBT				
NBR				
SBL				
SBT				
SBR				

(4) Whitney Road at Gas: Right-out

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBR				
NBT				
SBT				

(5) Whitney Road at Interchange North Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	30%		8	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR		30%	0	10
SBL			0	0
SBT			0	0
SBR			0	0

(7) Whitney Road at Interchange South Site Driveway

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
WBL	70%		20	0
WBR			0	0
NBT		30%	0	10
NBR		70%	0	22
SBL			0	0
SBT	30%		8	0

SAT Total Site Trips Whitney Extension Development

TOTAL: 333

(3) NH Route 4 at Whitney Road/Old Boyce Road

Movement	TRIPS
EBL	0
EBT	0
EBR	7
WBL	62
WBT	0
WBR	0
NBL	9
NBT	0
NBR	75
SBL	0
SBT	0
SBR	0

(4) Whitney Road at Gas: Right-out

Movement	TRIPS
WBR	0
NBT	82
SBT	70

(5) Whitney Road at Interchange North Site Drivewa

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	8
WBT	0
WBR	0
NBL	0
NBT	82
NBR	10
SBL	0
SBT	70
SBR	0

(7) Whitney Road at Interchange South Site Drivew

Movement	TRIPS
WBL	20
WBR	0
NBT	92
NBR	22
SBL	0
SBT	78

SAT Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	61	65

Note: Primary % per Gravity Model

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	4%		2	0
EBR			0	0
WBL			0	0
WBT		4%	0	3
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	3%		2	0
EBR			0	0
WBL		1%	0	1
WBT		3%	0	2
NBL			0	0
NBR	1%		1	0

SAT Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	65	82

Note: Primary % per Gravity Model

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	7%		5	0
EBR			0	0
WBL			0	0
WBT		7%	0	6
NBL			0	0
NBR			0	0

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT	5%		3	0
EBR			0	0
WBL		2%	0	2
WBT		5%	0	4
NBL			0	0
NBR	2%		1	0

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	28	32

(9) US Route 4 at Hannah Dustin Drive

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

(11) US Route 4 at Harris Hill Connector

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBT				
EBR				
WBL				
WBT				
NBL				
NBR				

SAT Total Site Trips Whitney Extension Development

TOTAL: 333

(9) US Route 4 at Hannah Dustin Drive

Movement	TRIPS
EBT	7
EBR	0
WBL	0
WBT	9
NBL	0
NBR	0

(11) US Route 4 at Harris Hill Connector

Movement	TRIPS
EBT	5
EBR	0
WBL	3
WBT	6
NBL	0
NBR	2

SAT Distribution Residential - Whitney Extension Development

Primary

	In	Out
AM	61	65

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		39%	0	25
EBR		61%	0	40
NBL	61%		37	0
NBT			0	0
SBR	39%		24	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	16%		10	0
EBT			0	0
WBT			0	0
WBR	45%		27	0
SBL		45%	0	29
SBR		16%	0	10

SAT Distribution Office/Industrial - Whitney Extension Development

Primary

	In	Out
AM	65	82

Note: Primary % per Gravity Model

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		70%	0	57
EBR		30%	0	25
NBL	30%		20	0
NBT			0	0
SBR	70%		46	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL	10%		7	0
EBT			0	0
WBT			0	0
WBR	20%		13	0
SBL		20%	0	16
SBR		10%	0	8

Whitney Road Internal Trips between WED & IFB

Primary

	In	Out
AM	28	32

(40) Whitney Road Extension at Whitney Extension Development Site Dr

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		100%	0	32
EBR			0	0
NBL			0	0
NBT			0	0
SBR	100%		28	0
SBT			0	0

(41) Sewalls Falls Road at Whitney Road Extension

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL				
EBT				
WBT				
WBR				
SBL				
SBR				

SAT Total Site Trips Whitney Extension Development

TOTAL: 333

(40) Whitney Road Extension at Whitney Extension Development Site Dr

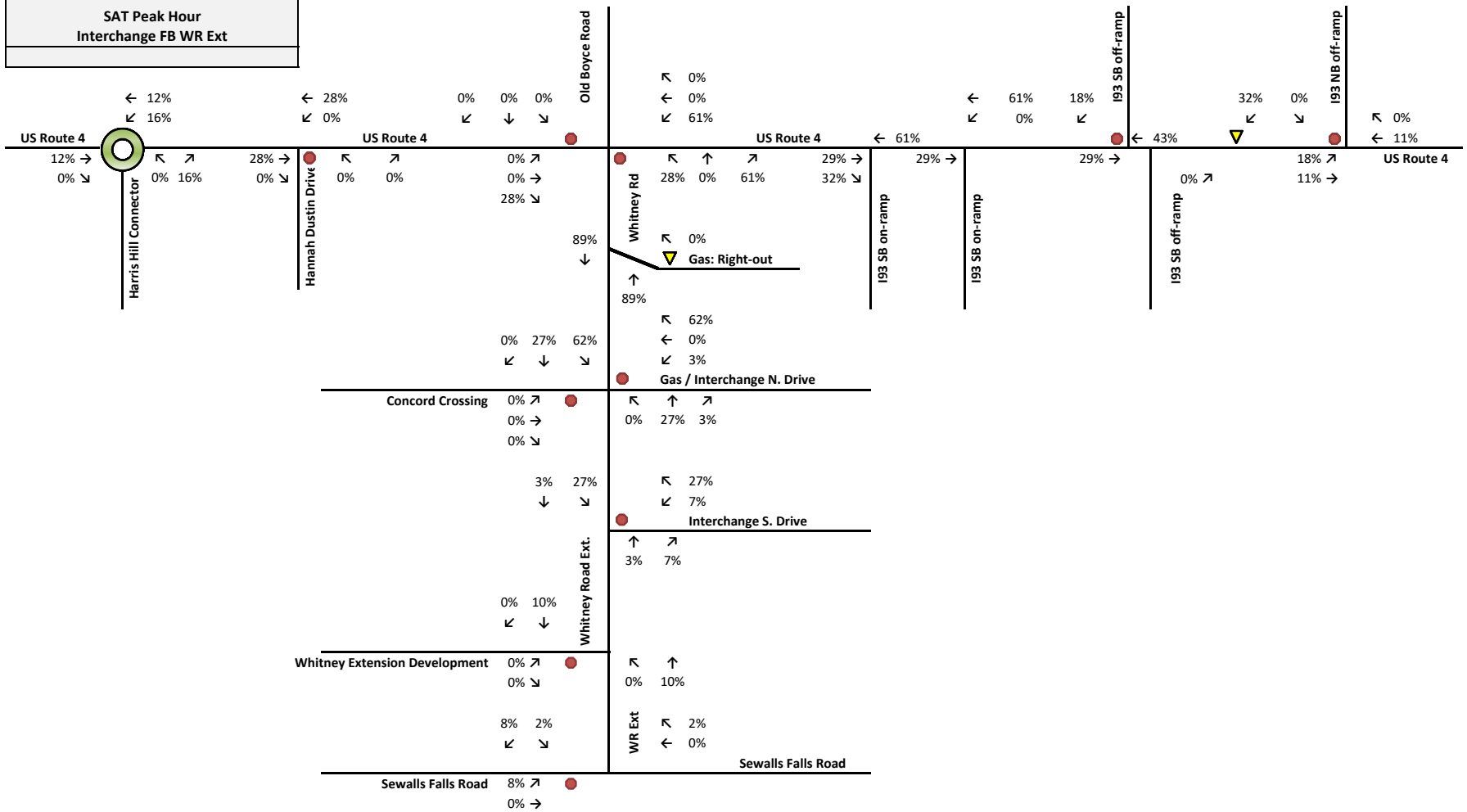
Movement	TRIPS
EBL	114
EBR	65
NBL	57
NBT	0
SBR	98
SBT	0

(41) Sewalls Falls Road at Whitney Road Extension

Movement	TRIPS
EBL	17
EBT	0
WBT	0
WBR	40
SBL	45
SBR	18

PRIMARY %

SAT Peak Hour
Interchange FB WR Ext



11/3/2019 (Rev1: HDR NHDOT Comments)

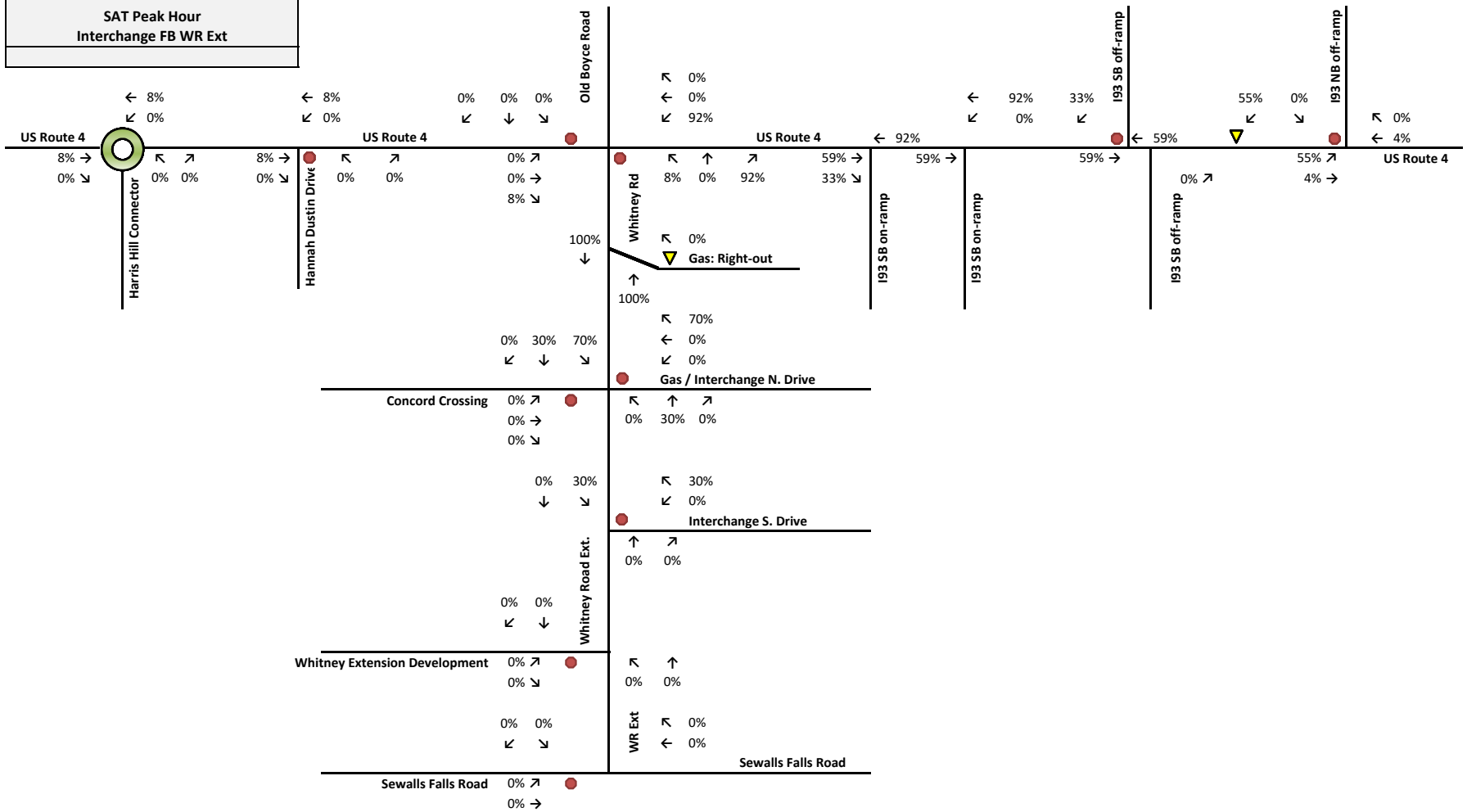
PASS-BY %

SAT Peak Hour
Interchange FB WR Ext

11/3/2019 (Rev1: HDR NHDOT Comments)

DIVERTED LINK %

SAT Peak Hour
Interchange FB WR Ext

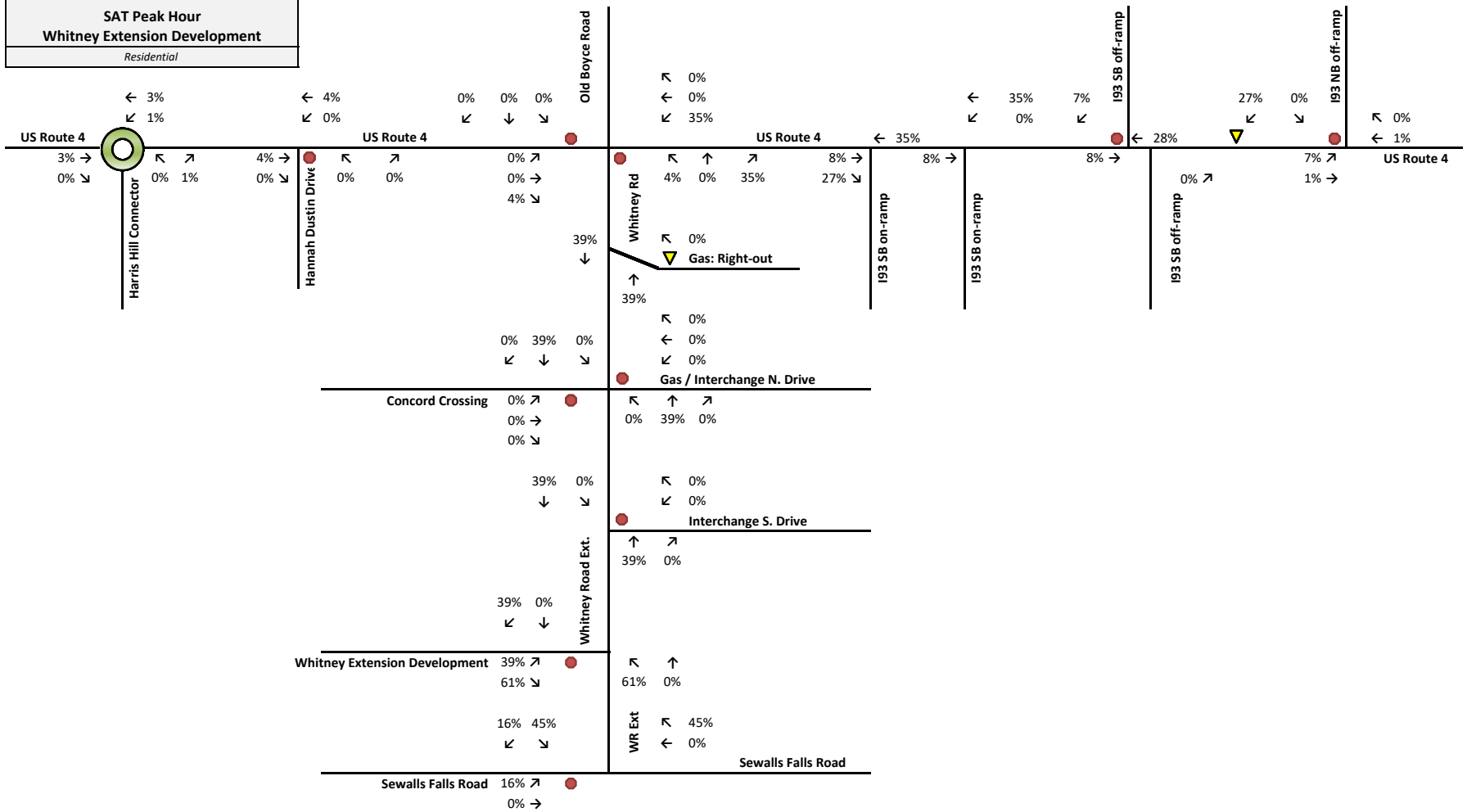


11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY %

SAT Peak Hour
Whitney Extension Development

Residential

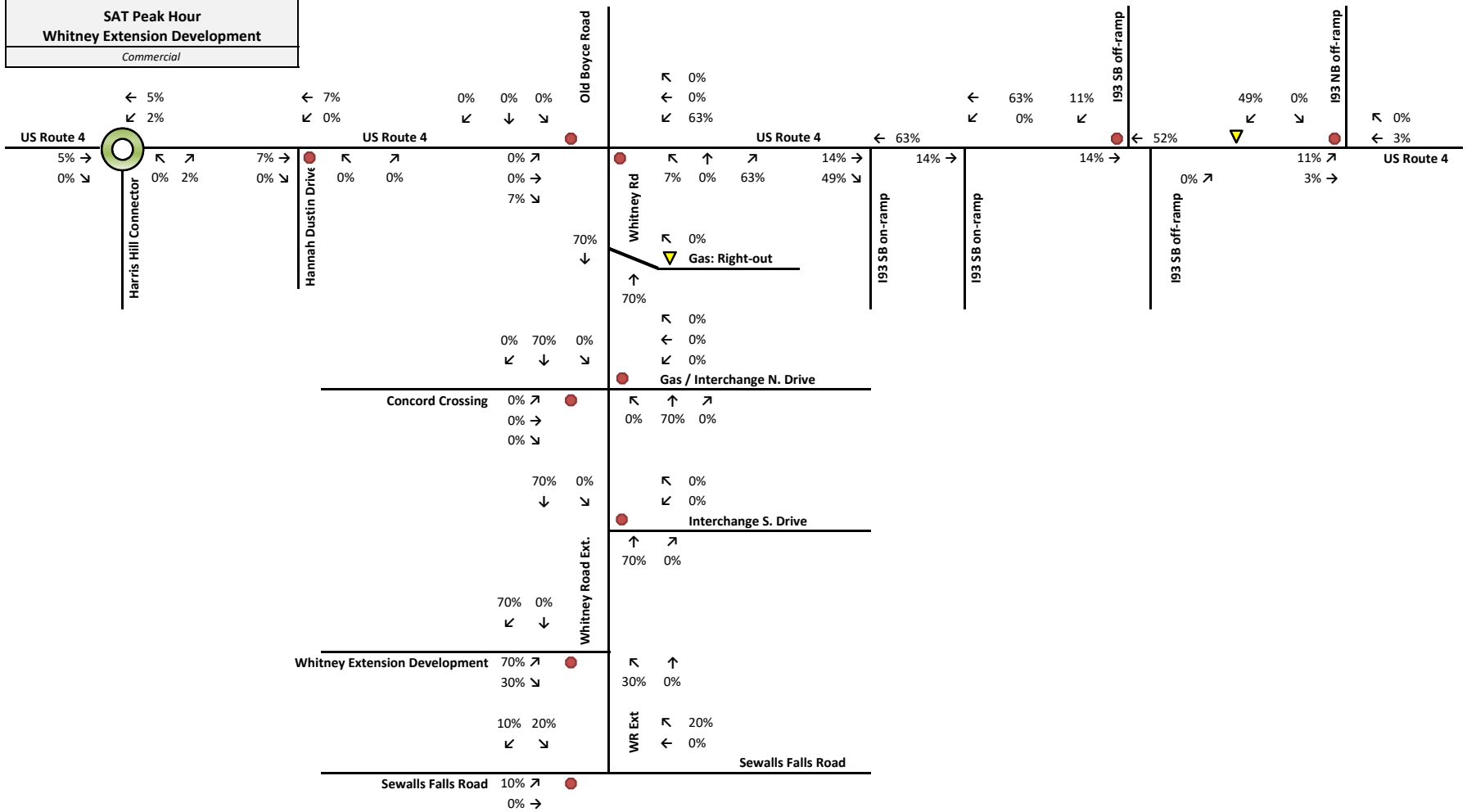


11/3/2019 (Rev1: HDR NHDOT Comments)

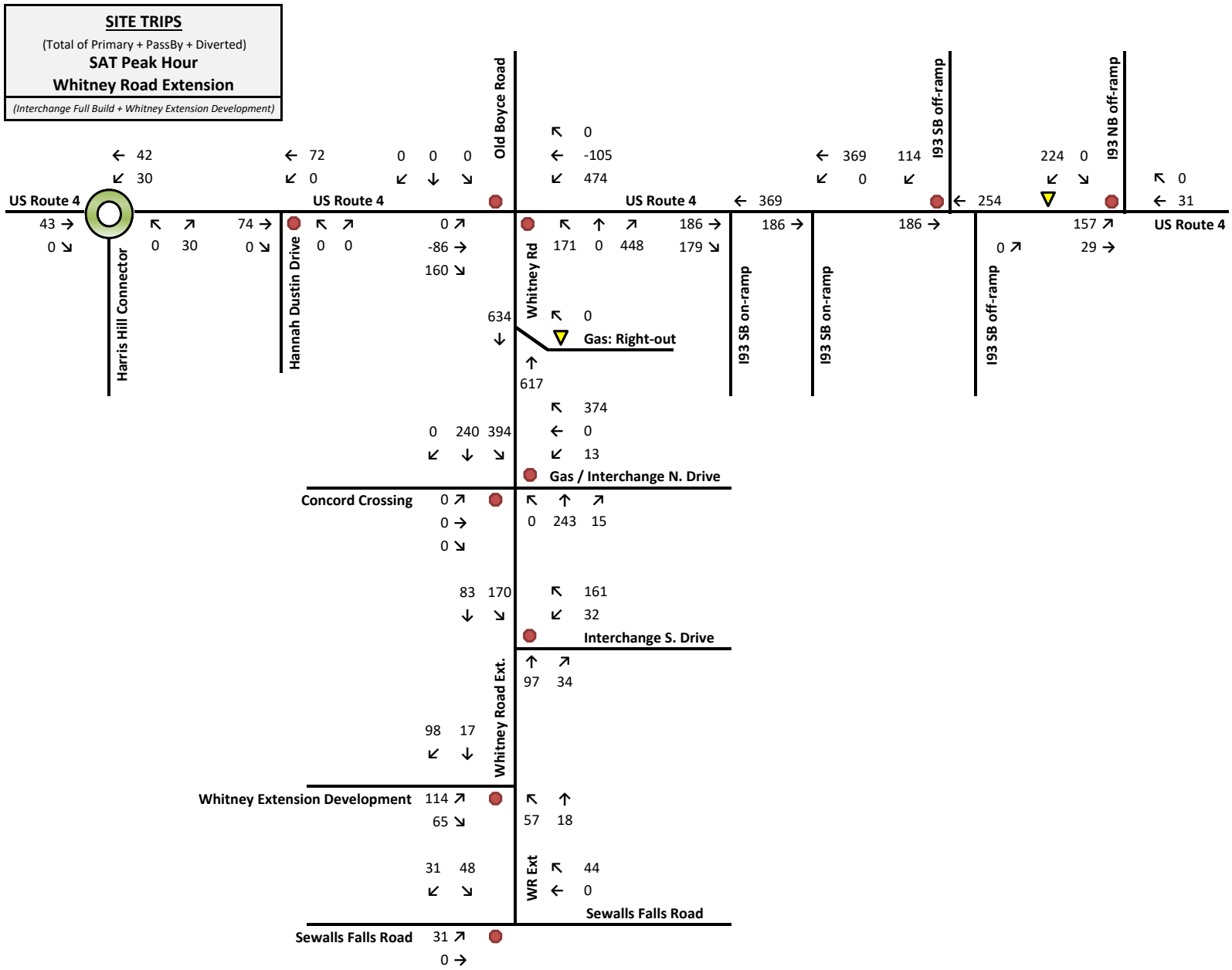
PRIMARY %

SAT Peak Hour
Whitney Extension Development

Commercial



11/3/2019 (Rev1: HDR NHDOT Comments)



11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY TRIPS

SAT Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

PASS-BY TRIPS

SAT Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

DIVERTED LINK TRIPS

SAT Peak Hour
Interchange FB WR Ext

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

PRIMARY TRIPS

SAT Peak Hour
Whitney Extension Development

(Interchange Full Build + Whitney Extension Development)

INTERNAL WRE TRIPS

(Trips between IFB & WED)

AM Peak Hour

Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)

11/3/2019 (Rev1: HDR NHDOT Comments)

CUT-THRU TRIPS

SAT Peak Hour
Whitney Road Extension

11/3/2019 (Rev1: HDR NHDOT Comments)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX J2

Sewalls Falls Road Background Traffic Volumes														
Assumed growth rate	**0.01**	[1%]												
May 2018 Seasonal Adjust	**1.03**	NHDOT monthly adjustment factors - Group 4												
June 2018 Seasonal Adjust	**1.00**	NHDOT monthly adjustment factors - Group 5												
SAT Peak Hour	**NHDOT ID82099233 [06/09/2007]**	**2019 Existing w/ June (1.00) Seasonal Adjustment**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
(41) Sewalls Falls Road at Whitney Road Extension														
Movement														
EBL														
EBT	173	173	174.73	176.48	178.24	180.02	181.82	183.64	185.48	187.33	189.20	191.09	193.00	194.93
WBT	110	110	111.10	112.21	113.33	114.46	115.60	116.76	117.93	119.11	120.30	121.50	122.72	123.95
WBR														
SBL														
SBR														
	**NHDOT counts 2-way*													
	**Used NHDOT ID82099230 Sewalls Falls/First Ave ProRata pattern for directional split (EB 61% WB 39%)*													

SAT Background Traffic Volumes: Whitney Road Extension

SAT Peak data

SAT Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(29) US Route 4 at I93 NB on/off-ramp					
Movement					
EBL	123	143	14	16	296
EBT	179	26	3		208
WBT	246	28	3		277
WBR	26	0	0		26
SBL	63	0	0		63
(28) US Route 4 at I93 NB off-ramp					
Movement		TRIPS	TRIPS		
EBT	302	170	16	16	504
WBT	246	28	3		277
SBR	476	176	48	16	716
(26) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	288	170	16	16	490
WBT	722	203	51	16	992
NER	14	0	0		14
(24) US Route 4 at I93 SB off-ramp					
Movement		TRIPS	TRIPS		
EBT	288	170	16	16	490
WBT	722	203	51	16	992
SBR	149	103	11	9	272
(21) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBT	288	170	16	16	490
WBL	63	0	0		63
WBT	808	307	62	+25	1202
(20) US Route 4 at I93 SB on-ramp					
Movement		TRIPS	TRIPS		
EBL	288	170	16	16	490
EBT	528	121	58	9	716
SWR	808	307	62	+25	1202

SAT Background Traffic Volumes: Whitney Road Extension

SAT Peak data

SAT Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(3) US Route 4 at Whitney Road/Old Boyce Road					
Movement		TRIPS	TRIPS		
EBL	5	0	0		5
EBT	666	-86	0		580
EBR	59	153	7		219
WBL	72	412	62	+25	571
WBT	692	-105	0		587
WBR	8	0	0		8
NBL	35	162	9		206
NBT	1	0	0		1
NBR	120	373	75	+25	593
SBL	9	0	0		9
SBT	2	0	0		2
SBR	12	0	0		12
(4) Whitney Road at Gas: Right-out					
Movement		TRIPS	TRIPS		
WBR	114	0	0		114
NBT	35	535	82	+25	677
SBT	142	564	70	+25	801
(5) Whitney Road at Interchange North Site Driveway					
Movement		TRIPS	TRIPS		
EBL	31	0	0		31
EBT	3	0	0		3
EBR	0	0	0		0
WBL	0	5	8		13
WBT	3	0	0		3
WBR	10	374	0		384
NBL	3	0	0		3
NBT	2	161	82	+25	270
NBR	1	5	10		16
SBL	109	394	0		503
SBT	5	170	70	+25	270
SBR	20	0	0		20
(7) Whitney Road at Interchange South Site Driveway					
Movement		TRIPS	TRIPS		
WBL	0	12	20		32
WBR	0	161	0		161
NBT	6	5	92	+25	128
NBR	0	12	22		34
SBL	0	170	0		170
SBT	5	5	78	+25	113
					0
(9) US Route 4 at Hannah Dustin Drive					
Movement		TRIPS	TRIPS		
EBT	746	67	7		820
EBR	1	0	0		1
WBL	1	0	0		1
WBT	744	63	9		816
NBL	1	0	0		1
NBR	2	0	0		2
(11) US Route 4 at Harris Hill Connector					
Movement		TRIPS	TRIPS		
EBT	407	38	5		450
EBR	107	0	0		107
WBL	291	27	3		321
WBT	453	36	6		495
NBL	103	0	0		103
NBR	331	28	2		361

SAT Background Traffic Volumes: Whitney Road Extension

SAT Peak data

SAT Peak Hour	2031 No Build	Site Trips Interchange FB (WR Ext)	Site Trips WED (WR Ext)	Cut-Thru Trips (500/day)	2031 Build WR Ext
				(I93 ProRata)	
(40) Whitney Road Extension at Whitney Extension Development Site Dr					
Movement	0	TRIPS	TRIPS		
EBL	0	0	114		114
EBR	0	0	65		65
NBL	0	0	57		57
NBT	0	18	0	+25	43
SBR	0	0	98		98
SBT	0	17	0	+25	42
(41) Sewalls Falls Road at Whitney Road Extension					
Movement		TRIPS	TRIPS		
EBL		14	17	+25	56
EBT	195	0	0		195
WBT	124	0	0		124
WBR		4	40		44
SBL		3	45		48
SBR		13	18	+25	56

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

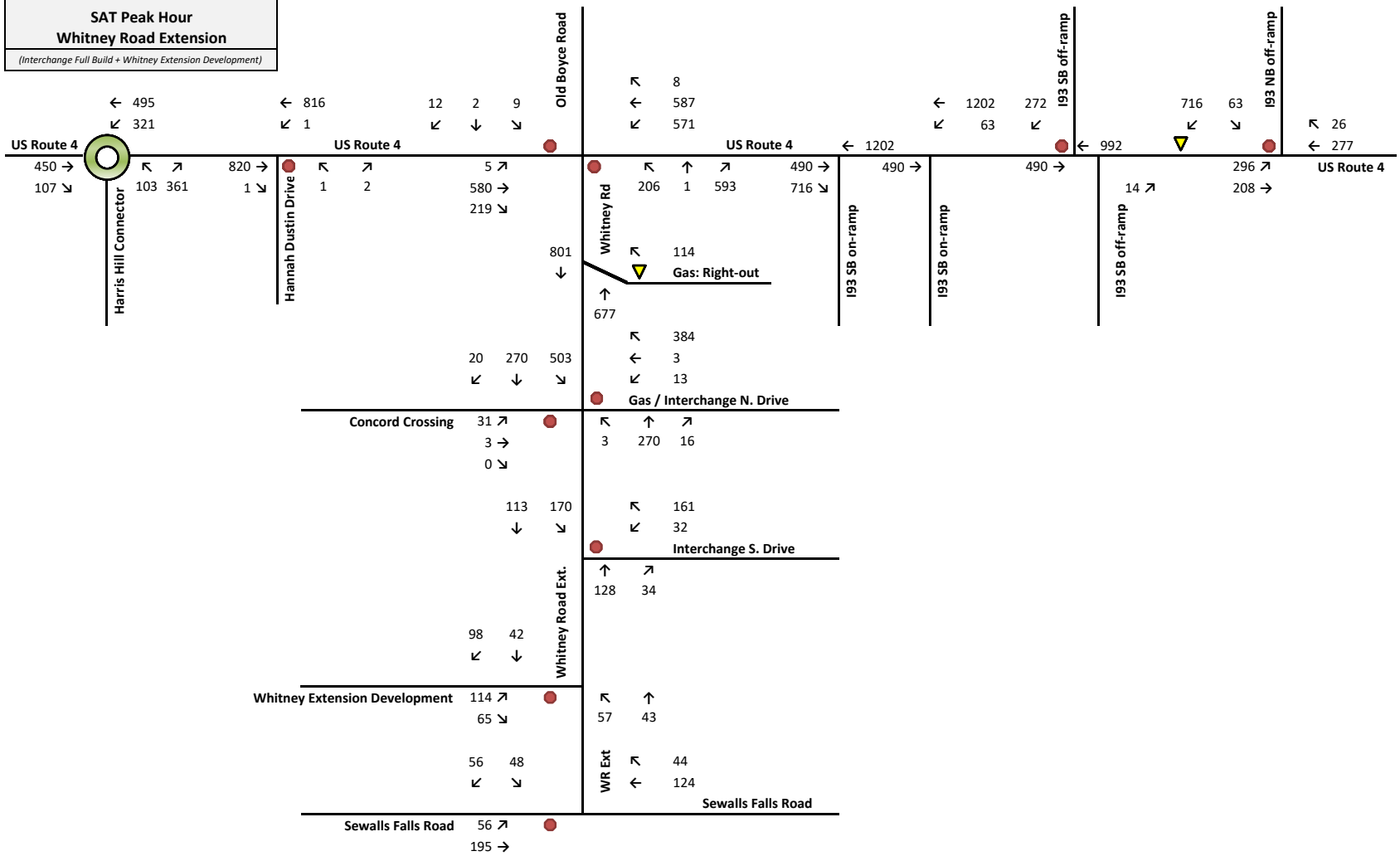
VOLUME 2

APPENDIX K2

2031 BUILD

SAT Peak Hour
Whitney Road Extension

(Interchange Full Build + Whitney Extension Development)



11/21/2019 (Rev2: NHDOT Comments)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX L2

Location Info	
Location ID	82099233
Type	I-SECTION
Functional	5
Located On	Sewalls Falls Rd
Between	AND
Direction	2-WAY
Community	CONCORD
MPO_ID	
HPMS ID	
Agency	New Hampshire DOT

Count Data Info	
Start Date	5/23/2019
End Date	5/24/2019
Start Time	12:00 AM
End Time	12:00 AM
Direction	
Notes	nhdot
Count	8.20992E+11
File Name	820992330000.PRN
Weather	
Study	
Owner	iwong

Interval: 60 mins

Time	Hourly Count	
00:00 - 01:00	20	
01:00 - 02:00	3	
02:00 - 03:00	19	
03:00 - 04:00	17	
04:00 - 05:00	26	
05:00 - 06:00	42	
06:00 - 07:00	195	
07:00 - 08:00	**398**	**AM Peak Hour (EB 69%, WB 31%)**
08:00 - 09:00	267	
09:00 - 10:00	201	
10:00 - 11:00	186	
11:00 - 12:00	207	
12:00 - 13:00	249	
13:00 - 14:00	252	
14:00 - 15:00	321	
15:00 - 16:00	402	
16:00 - 17:00	**500**	**PM Peak Hour (EB 37%, WB 63%)**
17:00 - 18:00	456	
18:00 - 19:00	325	
19:00 - 20:00	215	
20:00 - 21:00	156	
21:00 - 22:00	109	
22:00 - 23:00	26	
23:00 - 24:00	23	
TOTAL	4615	

Location Info	
Location ID	82099233
Type	I-SECTION
Functional Class	5
Located On	Sewalls Falls Rd
Between	AND
Direction	2-WAY
Community	CONCORD
MPO_ID	
HPMS ID	
Agency	New Hampshire DOT

Count Data Info	
Start Date	6/9/2007
End Date	6/10/2007
Start Time	12:00 AM
End Time	12:00 AM
Direction	2-WAY
Notes	
Count Source	
File Name	R:\15291\DATA\Raw_Data.mdb\Total
Weather	
Study	
Owner	NHDOT

Interval: 60 mins

Time	Hourly Count
00:00 - 01:00	36
01:00 - 02:00	24
02:00 - 03:00	28
03:00 - 04:00	12
04:00 - 05:00	17
05:00 - 06:00	27
06:00 - 07:00	78
07:00 - 08:00	131
08:00 - 09:00	184
09:00 - 10:00	250
10:00 - 11:00	232
11:00 - 12:00	268
12:00 - 13:00	283
13:00 - 14:00	306
14:00 - 15:00	290
15:00 - 16:00	304
16:00 - 17:00	330
17:00 - 18:00	275
18:00 - 19:00	261
19:00 - 20:00	199
20:00 - 21:00	190
21:00 - 22:00	122
22:00 - 23:00	93
23:00 - 24:00	77
TOTAL	4017

SAT Peak Hour (EB 45%, WB 55%)

Sewalls Falls Road NHDOT count Station 82099230
Basis for directional splits (NB/SB) along Sewalls Falls Road

Record | 2071 | of 5719 | Goto Record | go

Location ID	82099230	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	Yes
LRS ID	L0990050__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Major Collector	Milepost	
Located On	Sewalls Falls Rd		
Loc On Alias	SEWALLS FALLS RD NORTH OF FIRST ST (SB-NB) (81099100-81099099)		

PR	MP	PT

More Detail

STATION DATA

Directions: 2-WAY NB SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	2,481	278	11	66	2,288 (92%)	193 (8%)	
2017	3,849[3]				3,571 (93%)	278 (7%)	Grown from 2016
2016	3,774[3]				3,442 (91%)	332 (9%)	Grown from 2015
2015	3,700						
2012	3,500						

|<< < > >>| 1-5 of 17

Travel Demand Model

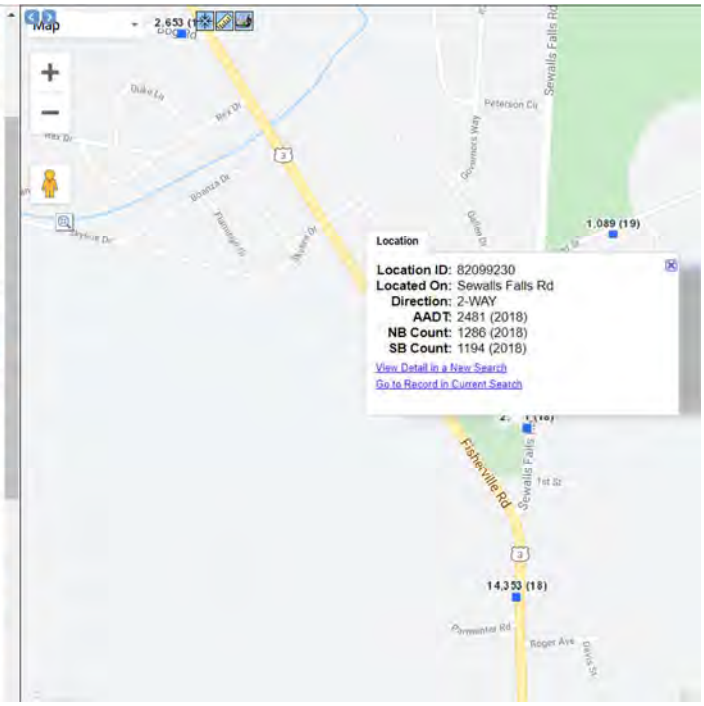
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Thu 7/26/2018	60	2,694
Wed 7/25/2018	60	2,783
Tue 7/24/2018	60	2,861
Thu 5/7/2015	60	4,192

VOLUME TREND

Year	Annual Growth
2018	-36%
2017	2%
2016	2%
2015	2%



Sewalls Falls Road NHDOT count Station 82099230
Basis for directional splits (NB/SB) along Sewalls Falls Road

Volume Count Report

LOCATION INFO	
Location ID	82099230_NB
Type	SPOT
Fnct'l Class	5
Located On	SEWALLS FALLS RD NB NORTH OF FIRST ST (82099230)
Loc On Alias	SEWALLS FALLS RD NORTH OF FIRST ST (SB-NB) (81099100-81099099)
Direction	NB
County	MERRIMACK
Community	CONCORD
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 7/26/2018
End Date	Fri 7/27/2018
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	820992305010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	13
1:00-2:00	5
2:00-3:00	4
3:00-4:00	4
4:00-5:00	3
5:00-6:00	15
6:00-7:00	26
7:00-8:00	46
8:00-9:00	42
9:00-10:00	68
10:00-11:00	62
11:00-12:00	86
12:00-13:00	83
13:00-14:00	87
14:00-15:00	92
15:00-16:00	106
16:00-17:00	170
17:00-18:00	167
18:00-19:00	101
19:00-20:00	70
20:00-21:00	58
21:00-22:00	40
22:00-23:00	27
23:00-24:00	15
Total	1,390
AM Peak	11:00-12:00 86
PM Peak	16:00-17:00 170

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Volume Count Report

LOCATION INFO	
Location ID	82099230_SB
Type	SPOT
Fnct'l Class	5
Located On	SEWALLS FALLS RD SB NORTH OF FIRST ST (82099230)
Loc On Alias	SEWALLS FALLS RD NORTH OF FIRST ST (SB-NB) (81099100-81099099)
Direction	SB
County	MERRIMACK
Community	CONCORD
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 7/26/2018
End Date	Fri 7/27/2018
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	nhdot
Station	820992305010
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	3
1:00-2:00	5
2:00-3:00	8
3:00-4:00	8
4:00-5:00	11
5:00-6:00	43
6:00-7:00	85
7:00-8:00	132
8:00-9:00	109
9:00-10:00	75
10:00-11:00	92
11:00-12:00	85
12:00-13:00	89
13:00-14:00	84
14:00-15:00	66
15:00-16:00	68
16:00-17:00	63
17:00-18:00	62
18:00-19:00	70
19:00-20:00	57
20:00-21:00	49
21:00-22:00	22
22:00-23:00	12
23:00-24:00	8
Total	1,304
AM Peak	07:00-08:00 132
PM Peak	12:00-13:00 89

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Volume Count Report

LOCATION INFO	
Location ID	82099230_SB
Type	SPOT
Fnct'l Class	5
Located On	SEWALLS FALLS RD SB NORTH OF FIRST ST (82099230)
Loc On Alias	SEWALLS FALLS RD NORTH OF FIRST ST (SB-NB) (81099100-81099099)
Direction	SB
County	MERRIMACK
Community	CONCORD
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Sat 8/5/2006
End Date	Sun 8/6/2006
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	SB
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	12
1:00-2:00	4
2:00-3:00	5
3:00-4:00	9
4:00-5:00	4
5:00-6:00	12
6:00-7:00	39
7:00-8:00	46
8:00-9:00	78
9:00-10:00	97
10:00-11:00	124
11:00-12:00	115
12:00-13:00	119
13:00-14:00	113
14:00-15:00	102
15:00-16:00	133
16:00-17:00	137
17:00-18:00	97
18:00-19:00	130
19:00-20:00	94
20:00-21:00	45
21:00-22:00	26
22:00-23:00	29
23:00-24:00	13
Total	1,583
AM Peak	10:00-11:00 124
PM Peak	16:00-17:00 137

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Volume Count Report

LOCATION INFO	
Location ID	82099230_NB
Type	SPOT
Fnct'l Class	5
Located On	SEWALLS FALLS RD NB NORTH OF FIRST ST (82099230)
Loc On Alias	SEWALLS FALLS RD NORTH OF FIRST ST (SB-NB) (81099100-81099099)
Direction	NB
County	MERRIMACK
Community	CONCORD
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Sat 8/5/2006
End Date	Sun 8/6/2006
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	NB
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	
Source	
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	18
1:00-2:00	13
2:00-3:00	9
3:00-4:00	4
4:00-5:00	5
5:00-6:00	31
6:00-7:00	68
7:00-8:00	59
8:00-9:00	80
9:00-10:00	102
10:00-11:00	131
11:00-12:00	181
12:00-13:00	185
13:00-14:00	173
14:00-15:00	98
15:00-16:00	111
16:00-17:00	104
17:00-18:00	103
18:00-19:00	72
19:00-20:00	64
20:00-21:00	44
21:00-22:00	40
22:00-23:00	38
23:00-24:00	27
Total	1,760
AM Peak	11:00-12:00 181
PM Peak	12:00-13:00 185

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX M2

NEW TRIP DISTRIBUTION FOR INTERCHANGE DEVELOPMENT (Supermarket & Associated Mixed Retail)

							Route assignment to site by location					Trip Distribution Contribution				
Origin Town/Tract	2018 OSI population estimate	Travel time to site (minutes)	Distance Factor (1/t)	Factor for nearby supermarkets	Weighted "Population"	Percent of Total	Route 4 from west	Harris Hill Connector from south	I-93 Exit 17 from south	I-93 Exit 17 from north	Hoit Road from east	Route 4 from west	Harris Hill Connector from south	I-93 Exit 17 from south	I-93 Exit 17 from north	Hoit Road from east
Alton	0	42	0.0238	0.50	0	0.0%				50	50	0.0%	0.0%	0.0%	0.0%	0.0%
Barnstead	4,733	30	0.0333	0.75	118	1.5%			80		20	0.0%	0.0%	1.2%	0.0%	0.3%
Belmont	7,365	22	0.0455	0.50	167	2.1%				80	20	0.0%	0.0%	0.0%	1.7%	0.4%
Center Harbor	0	44	0.0227	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%
Gilford	7,259	30	0.0333	0.50	121	1.5%				100		0.0%	0.0%	0.0%	1.5%	0.0%
Gilmanton	3,799	27	0.0370	0.75	106	1.3%				50	50	0.0%	0.0%	0.0%	0.7%	0.7%
Laconia	16,732	28	0.0357	0.50	299	3.8%				100		0.0%	0.0%	0.0%	3.8%	0.0%
Meredith	0	36	0.0278	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%
New Hampton	2,305	25	0.0400	0.50	46	0.6%				100		0.0%	0.0%	0.0%	0.6%	0.0%
Sanbornton	3,006	17	0.0588	0.50	88	1.1%				100		0.0%	0.0%	0.0%	1.1%	0.0%
Tilton	3,679	13	0.0769	0.50	142	1.8%				100		0.0%	0.0%	0.0%	1.8%	0.0%
Allenstown	4,367	23	0.0435	0.50	95	1.2%			100			0.0%	0.0%	1.2%	0.0%	0.0%
Andover	2,383	23	0.0435	0.75	78	1.0%	100					1.0%	0.0%	0.0%	0.0%	0.0%
Boscawen	4,056	7	0.1429	1.00	579	7.3%	80	20				5.9%	1.5%	0.0%	0.0%	0.0%
Bow	7,890	16	0.0625	0.50	247	3.1%			100			0.0%	0.0%	3.1%	0.0%	0.0%
Bradford	0	34	0.0294	0.50	0	0.0%		50	50			0.0%	0.0%	0.0%	0.0%	0.0%
Canterbury	2,396	8	0.1250	1.00	300	3.8%				10	90	0.0%	0.0%	0.0%	0.4%	3.4%
Chichester	2,614	15	0.0667	0.50	87	1.1%			60		40	0.0%	0.0%	0.7%	0.0%	0.4%
Concord 032701 N of Contoocook R	1,597	6	0.1667	1.00	266	3.4%		100				0.0%	3.4%	0.0%	0.0%	0.0%
Concord 044300 Contoocook River t	4,267	8	0.1250	1.00	533	6.8%		80			20	0.0%	5.4%	0.0%	0.0%	1.4%
Concord 032706 w of Rte3 to to Me	3,922	5	0.2000	1.00	784	9.9%		70			30	0.0%	7.0%	0.0%	0.0%	3.0%
Concord 032600 Little Pond Rd to M	4,166	10	0.1000	0.75	312	4.0%		30	40		30	0.0%	1.2%	1.6%	0.0%	1.2%
Concord 032500 SW	3,943	15	0.0667	0.50	131	1.7%		25	50		25	0.0%	0.4%	0.8%	0.0%	0.4%
Concord 032100 South End	3,915	13	0.0769	0.50	151	1.9%			100			0.0%	0.0%	1.9%	0.0%	0.0%
Concord 032200 downtown S	2,831	12	0.0833	0.50	118	1.5%			100			0.0%	0.0%	1.5%	0.0%	0.0%
Concord 032300 downtown N	1,772	11	0.0909	0.50	81	1.0%			100			0.0%	0.0%	1.0%	0.0%	0.0%
Concord 032400 Exit 15 area	3,625	10	0.1000	0.50	181	2.3%			100			0.0%	0.0%	2.3%	0.0%	0.0%
Concord 032800 East Concord	5,146	10	0.1000	0.75	386	4.9%			50		50	0.0%	0.0%	2.4%	0.0%	2.4%
Concord 032900 Heights	4,292	12	0.0833	0.50	179	2.3%			100			0.0%	0.0%	2.3%	0.0%	0.0%
Concord 044100 Southeast	3,602	14	0.0714	0.50	129	1.6%			100			0.0%	0.0%	1.6%	0.0%	0.0%
Danbury	0	33	0.0303	0.50	0	0.0%	100					0.0%	0.0%	0.0%	0.0%	0.0%
Dunbarton	2,892	23	0.0435	0.50	63	0.8%			100			0.0%	0.0%	0.8%	0.0%	0.0%
Epsom	4,788	19	0.0526	0.50	126	1.6%			100			0.0%	0.0%	1.6%	0.0%	0.0%
Franklin	8,748	18	0.0556	0.50	243	3.1%	70			30		2.2%	0.0%	0.0%	0.9%	0.0%
Henniker	4,970	27	0.0370	0.50	92	1.2%		10	90			0.0%	0.1%	1.0%	0.0%	0.0%
Hill	1,104	27	0.0370	0.50	20	0.3%	60			40		0.2%	0.0%	0.0%	0.1%	0.0%
Hooksett	14,668	19	0.0526	0.25	193	2.4%			100			0.0%	0.0%	2.4%	0.0%	0.0%
Hopkinton	5,689	21	0.0476	0.50	135	1.7%		10	90			0.0%	0.2%	1.5%	0.0%	0.0%
Loudon	5,668	11	0.0909	0.75	386	4.9%			10		90	0.0%	0.0%	0.5%	0.0%	4.4%
New London	0	35	0.0286	0.50	0	0.0%	100					0.0%	0.0%	0.0%	0.0%	0.0%
Newbury	0	41	0.0244	0.50	0	0.0%		70	30			0.0%	0.0%	0.0%	0.0%	0.0%
Northfield	4,879	11	0.0909	0.75	333	4.2%				100		0.0%	0.0%	0.0%	4.2%	0.0%
Pembroke	7,118	19	0.0526	0.50	187	2.4%			100			0.0%	0.0%	2.4%	0.0%	0.0%
Pittsfield	4,098	25	0.0400	0.50	82	1.0%			50		50	0.0%	0.0%	0.5%	0.0%	0.5%
Salisbury	1,425	13	0.0769	1.00	110	1.4%	100					1.4%	0.0%	0.0%	0.0%	0.0%

NEW TRIP DISTRIBUTION FOR INTERCHANGE DEVELOPMENT (Supermarket & Associated Mixed Retail)

							Route assignment to site by location					Trip Distribution Contribution					
Origin Town/Tract	**2018 OSI population estimate**	**Travel time to site (minutes)**	**Distance Factor (1/t)**	**Factor for nearby supermarkets**	**Weighted "Population"**	**Percent of Total**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	
Sutton	0	35	0.0286	0.50	0	0.0%		50	50			0.0%	0.0%	0.0%	0.0%	0.0%	
Warner	0	31	0.0323	0.50	0	0.0%		50	50			0.0%	0.0%	0.0%	0.0%	0.0%	
Webster	1,903	15	0.0667	0.75	95	1.2%	100					1.2%	0.0%	0.0%	0.0%	0.0%	
Wilmot	1,384	30	0.0333	0.50	23	0.3%	100					0.3%	0.0%	0.0%	0.0%	0.0%	
Alexandria	0	37	0.0270	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Ashland	2,098	30	0.0333	0.50	35	0.4%				100		0.0%	0.0%	0.0%	0.4%	0.0%	
Bridgewater	0	36	0.0278	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Bristol	3,140	30	0.0333	0.50	52	0.7%				100		0.0%	0.0%	0.0%	0.7%	0.0%	
Campton	0	41	0.0244	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Holderness	0	36	0.0278	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Plymouth	0	33	0.0303	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Rumney	0	43	0.0233	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
Thornton	0	41	0.0244	0.50	0	0.0%				100		0.0%	0.0%	0.0%	0.0%	0.0%	
					7900	1.00						**12.0%**	**19.1%**	**32.4%**	**17.9%**	**18.5%**	**100.0%**
												Route 4 from west	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	

NEW TRIP (PRIMARY) DISTRIBUTION FOR Concord Monitor Site Residential with Whitney Road Extension

Gathered from 2017 ACS data for "all jobs" for selection area=City of Concord, https://onthemap.ces.census.gov/

23,056 **total workers living in Concord**

			Route Assignment FROM SITE							Trip Distribution Contribution						
People who LIVE in Concord- Where they work by Town/Tract	**Workers**	**Percent of Total**	**Route 4 to west**	**Harris Hill Connector to south**	**I-93 Exit 17 to south**	**I-93 Exit 17 to north**	**Hoit Road to east**	**Sewalls Falls Road to the west**	**Sewalls Falls Road to the east**	**Route 4 to west**	**Harris Hill Connector to south**	**I-93 Exit 17 to south**	**I-93 Exit 17 to north**	**Hoit Road to east**	**Sewalls Falls Road to the west**	**Sewalls Falls Road to the east**
Concord 032701 N of Contoocook River	13	0.1%		40				60		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Concord 044300 Contoocook River to Lake View Dr	117	0.5%		20				80		0.0%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%
Concord 032706 w of Rte3 to to Merrimack River	273	1.2%		20				80		0.0%	0.2%	0.0%	0.0%	0.0%	0.9%	0.0%
Concord 032600 Little Pond Rd to Merrimack River	532	2.3%			10			80	10	0.0%	0.0%	0.2%	0.0%	0.0%	1.8%	0.2%
Concord 032500 SW	2254	9.8%			10			80	10	0.0%	0.0%	1.0%	0.0%	0.0%	7.8%	1.0%
Concord 032100 South End	584	2.5%			30			20	50	0.0%	0.0%	0.8%	0.0%	0.0%	0.5%	1.3%
Concord 032200 downtown S	430	1.9%			30			20	50	0.0%	0.0%	0.6%	0.0%	0.0%	0.4%	0.9%
Concord 032300 downtown N	1341	5.8%			20			40	40	0.0%	0.0%	1.2%	0.0%	0.0%	2.3%	2.3%
Concord 032400 Exit 15 area	871	3.8%			20			40	40	0.0%	0.0%	0.8%	0.0%	0.0%	1.5%	1.5%
Concord 032800 East Concord	451	2.0%					20		80	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	1.6%
Concord 032900 Heights	678	2.9%			20				80	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	2.4%
Concord 044100 Southeast	1541	6.7%			40				60	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	4.0%
Allenstown	58	0.3%			40				60	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%
Andover	19	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Boscawen	365	1.6%	80	20						1.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Bow	661	2.9%			20				80	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	2.3%
Bradford	6	0.0%			30			60	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Canterbury	44	0.2%				10	90			0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
Chichester	83	0.4%			10		40		50	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%
Danbury	12	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dunbarton	34	0.1%			40				60	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Epsom	86	0.4%			20				80	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.3%
Franklin	126	0.5%	70			30				0.4%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Henniker	87	0.4%			40				60	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
Hill	2	0.0%	60			40				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hooksett	753	3.3%			40				60	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	2.0%
Hopkinton	255	1.1%		10	90					0.0%	0.1%	1.0%	0.0%	0.0%	0.0%	0.0%
Loudon	163	0.7%					10		90	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.6%
New London	82	0.4%	100							0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Newbury	22	0.1%			30			60	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Northfield	77	0.3%				100				0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
Pembroke	335	1.5%			40				60	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.9%
Pittsfield	161	0.7%			30		20		50	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.3%
Salisbury	5	0.0%	100							0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sutton	13	0.1%	10		20			60	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Warner	68	0.3%	10		20			60	10	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%
Webster	12	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wilmot	7	0.0%	100							0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Belknap County	947	4.1%				70	10		20	0.0%	0.0%	0.0%	2.9%	0.4%	0.0%	0.8%
Carroll County	140	0.6%				100				0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%
Cheshire County	204	0.9%			40				60	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.5%
Coos County	44	0.2%				100				0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Grafton County	673	2.9%	10			90				0.3%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
Hillsborough County	4535	19.7%			40				60	0.0%	0.0%	7.9%	0.0%	0.0%	0.0%	11.8%
Rockingham County	1659	7.2%			40				60	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	4.3%
Strafford County	540	2.3%			40				60	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	1.4%

NEW TRIP (PRIMARY) DISTRIBUTION FOR Concord Monitor Site Residential with Whitney Road Extension

Gathered from 2017 ACS data for "all jobs" for selection area=City of Concord, https://onthemap.ces.census.gov/

23,056 **total workers living in Concord**

			Route Assignment FROM SITE							**Trip Distribution Contribution**							
People who LIVE in Concord- Where they work by Town/Tract	**Workers**	**Percent of Total**	**Route 4 to west**	**Harris Hill Connector to south**	**I-93 Exit 17 to south**	**I-93 Exit 17 to north**	**Hoit Road to east**	**Sewalls Falls Road to the west**	**Sewalls Falls Road to the east**	**Route 4 to west**	**Harris Hill Connector to south**	**I-93 Exit 17 to south**	**I-93 Exit 17 to north**	**Hoit Road to east**	**Sewalls Falls Road to the west**	**Sewalls Falls Road to the east**	
Sullivan County	145	0.6%	30		40			20	10	0.2%	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%	
Maine	103	0.4%			40				60	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.3%	
Massachusetts	1038	4.5%			40				60	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	2.7%	
Vermont	115	0.5%			40				60	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.3%	
Other US States	292	1.3%			40				60	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.8%	
	23056	100%								**2.8%**	**0.8%**	**26.9%**	**6.8%**	**1.3%**	**16.2%**	**45.2%**	100.0%
										Route 4 to west	**Harris Hill Connector to south**	**I-93 Exit 17 to south**	**I-93 Exit 17 to north**	**Hoit Road to east**	**Sewalls Falls Road to the west**	**Sewalls Falls Road to the east**	

NEW TRIP DISTRIBUTION FOR Concord Monitor Site Office/Industrial with Whitney Road Extension

Gathered from 2017 ACS data for "all jobs" for selection area=City of Concord, https://onthemap.ces.census.gov/

41,584	total workers in Conc		Route Assignment TO SITE							Trip Distribution Contribution						
People who WORK in Concord- Where they live by Town/Tract	**Workers**	**Percent of Total**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Sewalls Falls Road from the west**	**Sewalls Falls Road from the east**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Sewalls Falls Road from the west**	**Sewalls Falls Road from the east**
Concord 032701 N of Contoocook River	356	0.9%		40				60		0.0%	0.3%	0.0%	0.0%	0.0%	0.5%	0.0%
Concord 044300 Contoocook River to Lake View Dr	951	2.3%		20				80		0.0%	0.5%	0.0%	0.0%	0.0%	1.8%	0.0%
Concord 032706 w of Rte3 to to Merrimack River	945	2.3%		20				80		0.0%	0.5%	0.0%	0.0%	0.0%	1.8%	0.0%
Concord 032600 Little Pond Rd to Merrimack River	593	1.4%			10			80	10	0.0%	0.0%	0.1%	0.0%	0.0%	1.1%	0.1%
Concord 032500 SW	861	2.1%			10			80	10	0.0%	0.0%	0.2%	0.0%	0.0%	1.7%	0.2%
Concord 032100 South End	930	2.2%			30			20	50	0.0%	0.0%	0.7%	0.0%	0.0%	0.4%	1.1%
Concord 032200 downtown S	601	1.4%			30			20	50	0.0%	0.0%	0.4%	0.0%	0.0%	0.3%	0.7%
Concord 032300 downtown N	414	1.0%			20			40	40	0.0%	0.0%	0.2%	0.0%	0.0%	0.4%	0.4%
Concord 032400 Exit 15 area	725	1.7%			20			40	40	0.0%	0.0%	0.3%	0.0%	0.0%	0.7%	0.7%
Concord 032800 East Concord	1210	2.9%					20		80	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	2.3%
Concord 032900 Heights	712	1.7%			20				80	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	1.4%
Concord 044100 Southeast	787	1.9%			40				60	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	1.1%
Allenstown	410	1.0%			90				10	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.1%
Andover	236	0.6%	100							0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Boscawen	739	1.8%	80	20						1.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Bow	1179	2.8%			50				50	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	1.4%
Bradford	70	0.2%			30			60	10	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%
Canterbury	370	0.9%				10	90			0.0%	0.0%	0.0%	0.1%	0.8%	0.0%	0.0%
Chichester	452	1.1%			10		40		50	0.0%	0.0%	0.1%	0.0%	0.4%	0.0%	0.5%
Danbury	51	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dunbarton	300	0.7%			90				10	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.1%
Epsom	519	1.2%			50				50	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.6%
Franklin	623	1.5%	70			30				1.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
Henniker	402	1.0%			90				10	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.1%
Hill	43	0.1%	60			40				0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hooksett	680	1.6%			90				10	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.2%
Hopkinton	808	1.9%		10	90					0.0%	0.2%	1.7%	0.0%	0.0%	0.0%	0.0%
Loudon	933	2.2%					10		90	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	2.0%
New London	59	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Newbury	98	0.2%			30			60	10	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%
Northfield	462	1.1%				100				0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%
Pembroke	943	2.3%			90				10	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.2%
Pittsfield	437	1.1%			30		20		50	0.0%	0.0%	0.3%	0.0%	0.2%	0.0%	0.5%
Salisbury	138	0.3%	100							0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sutton	75	0.2%	10		20			60	10	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Warner	377	0.9%	10		20			60	10	0.1%	0.0%	0.2%	0.0%	0.0%	0.5%	0.1%
Webster	239	0.6%	100							0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wilmot	59	0.1%	100							0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Belknap County	2911	7.0%				70	10		20	0.0%	0.0%	0.0%	4.9%	0.7%	0.0%	1.4%
Carroll County	486	1.2%				100				0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%
Cheshire County	829	2.0%			90				10	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.2%
Coos County	521	1.3%				100				0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
Grafton County	1224	2.9%	10			90				0.3%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
Hillsborough County	7469	18.0%			90				10	0.0%	0.0%	16.2%	0.0%	0.0%	0.0%	1.8%
Rockingham County	3707	8.9%			90				10	0.0%	0.0%	8.0%	0.0%	0.0%	0.0%	0.9%
Strafford County	1776	4.3%			90				10	0.0%	0.0%	3.8%	0.0%	0.0%	0.0%	0.4%
Sullivan County	588	1.4%	30		40			20	10	0.4%	0.0%	0.6%	0.0%	0.0%	0.3%	0.1%

NEW TRIP DISTRIBUTION FOR Concord Monitor Site Office/Industrial with Whitney Road Extension

Gathered from 2017 ACS data for "all jobs" for selection area=City of Concord, https://onthemap.ces.census.gov/

41,584	total workers in Conc		Route Assignment TO SITE							Trip Distribution Contribution							
People who WORK in Concord- Where they live by Town/Tract	**Workers**	**Percent of Total**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Sewalls Falls Road from the west**	**Sewalls Falls Road from the east**	**Route 4 from west**	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Sewalls Falls Road from the west**	**Sewalls Falls Road from the east**	
Maine	585	1.4%			90				10	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.1%	
Massachusetts	966	2.3%			90				10	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.2%	
Vermont	497	1.2%			90				10	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.1%	
Other US States	238	0.6%			90				10	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.1%	
	41584	100%								**5.2%**	**1.8%**	**48.9%**	**11.7%**	**3.0%**	**10.0%**	**19.5%**	100.0%
										Route 4 from west	**Harris Hill Connector from south**	**I-93 Exit 17 from south**	**I-93 Exit 17 from north**	**Hoit Road from east**	**Sewalls Falls Road from the west**	**Sewalls Falls Road from the east**	

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX N2

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	157	244	0	0	639
Future Vol, veh/h	0	157	244	0	0	639
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	4	4	0	0	8
Mvmt Flow	0	196	305	0	0	799

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	153	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.338	-	-	-	-
Pot Cap-1 Maneuver	0	861	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	861	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	861	-
HCM Lane V/C Ratio	-	0.228	-
HCM Control Delay (s)	-	10.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.9	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	10	0	10	2	94	0	129	7	330	268	40
Future Vol, veh/h	21	10	0	10	2	94	0	129	7	330	268	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	19	10	0	0	0	2	0	10	100	2	10	0
Mvmt Flow	30	14	0	11	2	102	0	140	8	359	291	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1227	1179	313	1182	1196	144	334	0	0	148	0	0
Stage 1	1031	1031	-	144	144	-	-	-	-	-	-	-
Stage 2	196	148	-	1038	1052	-	-	-	-	-	-	-
Critical Hdwy	7.29	6.6	6.2	7.1	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.29	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.29	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.671	4.09	3.3	3.5	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	143	184	732	168	188	903	1237	-	-	1434	-	-
Stage 1	262	301	-	864	782	-	-	-	-	-	-	-
Stage 2	768	760	-	281	306	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	138	732	125	141	903	1237	-	-	1434	-	-
Mov Cap-2 Maneuver	101	138	-	125	141	-	-	-	-	-	-	-
Stage 1	262	226	-	864	782	-	-	-	-	-	-	-
Stage 2	679	760	-	198	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	57.1	12.6	0	4.3
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1237	-	-	111	127	903	1434	-	-
HCM Lane V/C Ratio	-	-	-	0.393	0.103	0.113	0.25	-	-
HCM Control Delay (s)	0	-	-	57.1	36.6	9.5	8.3	-	-
HCM Lane LOS	A	-	-	F	E	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.3	0.4	1	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	36	100	16	71	207
Future Vol, veh/h	17	36	100	16	71	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	80	0	0	53
Mvmt Flow	18	39	109	17	77	225

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	497	118	0	0	126	0
Stage 1	118	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	536	939	-	-	1473	-
Stage 1	912	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	504	939	-	-	1473	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	735	1473	-
HCM Lane V/C Ratio	-	-	0.078	0.052	-
HCM Control Delay (s)	-	-	10.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1343	1	0	538	1	3
Future Vol, veh/h	1343	1	0	538	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	0	0	7	0	0
Mvmt Flow	1460	1	0	585	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1461	0	2046	1461
Stage 1	-	-	-	-	1461	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	469	-	62	160
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	469	-	62	160
Mov Cap-2 Maneuver	-	-	-	-	62	-
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	37.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	115	-	-	469	-
HCM Lane V/C Ratio	0.038	-	-	-	-
HCM Control Delay (s)	37.5	-	-	0	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	308	0	146	874	0	0
Future Vol, veh/h	308	0	146	874	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	90	90	92	92
Heavy Vehicles, %	4	0	0	6	0	0
Mvmt Flow	338	0	162	971	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	338	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	0	1232	-	0	709
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1232	-	-	709
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	1232	-
HCM Lane V/C Ratio	-	-	0.132	-
HCM Control Delay (s)	0	-	8.4	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	308	785	0	0	234
Future Vol, veh/h	0	308	785	0	0	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	5	0	0	2
Mvmt Flow	0	335	853	0	0	254

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	427
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	0	577
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	577
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	577
HCM Lane V/C Ratio	-	-	0.441
HCM Control Delay (s)	-	-	16.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2.2

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	190	130	280	48	20	0
Future Vol, veh/h	190	130	280	48	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	93	93	85	85
Heavy Vehicles, %	4	4	2	2	6	0
Mvmt Flow	224	153	301	52	24	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	353	0	-	0	928	-
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.14	-	-	-	6.46	-
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.236	-	-	-	3.554	-
Pot Cap-1 Maneuver	1195	-	-	-	293	0
Stage 1	-	-	-	-	722	0
Stage 2	-	-	-	-	540	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	238	-
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	21.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1195	-	-	-	238
HCM Lane V/C Ratio	0.187	-	-	-	0.099
HCM Control Delay (s)	8.7	-	-	-	21.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	0.3

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	65	81	36	181	28
Future Vol, veh/h	75	65	81	36	181	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	71	88	39	197	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	427	212	227	0	-	0
Stage 1	212	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	584	828	1341	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	545	828	1341	-	-	-
Mov Cap-2 Maneuver	545	-	-	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	5.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1341	-	648	-	-
HCM Lane V/C Ratio	0.066	-	0.235	-	-
HCM Control Delay (s)	7.9	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	59	121	341	59	49	45
Future Vol, veh/h	59	121	341	59	49	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	132	371	64	53	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	435	0	-	0	663	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	260	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1125	-	-	-	426	647
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1125	-	-	-	402	647
Mov Cap-2 Maneuver	-	-	-	-	402	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1125	-	-	-	491
HCM Lane V/C Ratio	0.057	-	-	-	0.208
HCM Control Delay (s)	8.4	-	-	-	14.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

MOVEMENT SUMMARY

Site: US4 - HHC [2031 AM WRE Build [IFB+WED] Boscawen Roundabout]

4a) 2031 AM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	13	22.0	0.026	7.4	LOS A	0.1	2.2	0.59	0.53	0.59	27.7
18	R2	741	1.0	0.447	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		754	1.4	0.447	0.2	LOS A	0.1	2.2	0.01	0.01	0.01	29.5
East: US4 (Concord)												
1	L2	266	6.0	0.486	7.9	LOS A	3.4	90.2	0.14	0.04	0.14	28.7
6	T1	347	9.0	0.486	8.0	LOS A	3.4	90.2	0.14	0.04	0.14	32.0
Approach		612	7.7	0.486	8.0	LOS A	3.4	90.2	0.14	0.04	0.14	30.4
West: US4 (Boscawen)												
2	T1	880	4.0	0.928	34.2	LOS D	36.1	932.1	1.00	1.79	2.78	23.8
12	R2	44	3.0	0.928	34.1	LOS D	36.1	932.1	1.00	1.79	2.78	21.4
Approach		924	4.0	0.928	34.2	LOS D	36.1	932.1	1.00	1.79	2.78	23.7
All Vehicles		2291	4.1	0.928	15.9	LOS C	36.1	932.1	0.44	0.74	1.16	27.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:23 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

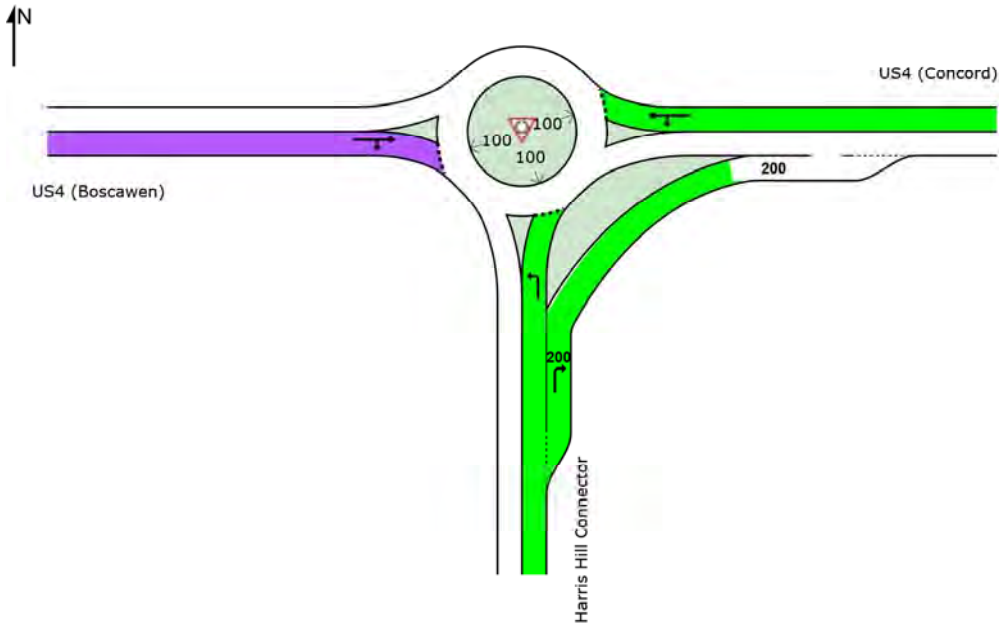
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 AM WRE Build [IFB+WED] Boscawen Roundabout]

4a) 2031 AM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	D	C



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:23 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: US4 - Whit [2031 AM WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 AM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road												
3	L2	68	5.0	0.480	18.8	LOS C	2.2	55.8	0.80	0.95	1.22	15.7
8	T1	1	0.0	0.480	18.3	LOS C	2.2	55.8	0.80	0.95	1.22	15.4
18	R2	366	2.0	0.480	17.2	LOS C	2.2	56.9	0.79	0.93	1.20	16.7
Approach		436	2.5	0.480	17.4	LOS C	2.2	56.9	0.79	0.93	1.21	16.5
East: NH Route 4 (I93)												
1	L2	444	3.0	0.373	6.6	LOS A	2.0	51.4	0.26	0.13	0.26	20.1
6	T1	462	6.0	0.373	6.5	LOS A	2.0	51.4	0.25	0.12	0.25	23.8
16	R2	15	8.0	0.373	6.5	LOS A	1.9	49.2	0.25	0.12	0.25	23.2
Approach		920	4.6	0.373	6.5	LOS A	2.0	51.4	0.26	0.13	0.26	21.8
North: Old Boyce Road												
7	L2	19	18.0	0.133	8.9	LOS A	0.4	10.9	0.61	0.61	0.61	20.8
4	T1	2	0.0	0.133	7.9	LOS A	0.4	10.9	0.61	0.61	0.61	20.0
14	R2	42	32.0	0.133	9.8	LOS A	0.4	10.9	0.61	0.61	0.61	18.6
Approach		63	27.0	0.133	9.5	LOS A	0.4	10.9	0.61	0.61	0.61	19.3
West: NH Route 4 (Village)												
5	L2	9	0.0	0.801	22.9	LOS C	13.1	334.7	0.90	1.45	2.06	13.4
2	T1	1169	3.0	0.801	22.4	LOS C	13.7	348.4	0.90	1.45	2.06	17.1
12	R2	235	1.0	0.801	21.5	LOS C	13.7	348.4	0.89	1.45	2.04	14.3
Approach		1413	2.6	0.801	22.2	LOS C	13.7	348.4	0.90	1.45	2.05	16.6
All Vehicles		2832	3.8	0.801	16.1	LOS C	13.7	348.4	0.67	0.92	1.31	18.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:50:48 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\US4 ROUNDABOUT\US4-Whitney Road Roundabout.sip8

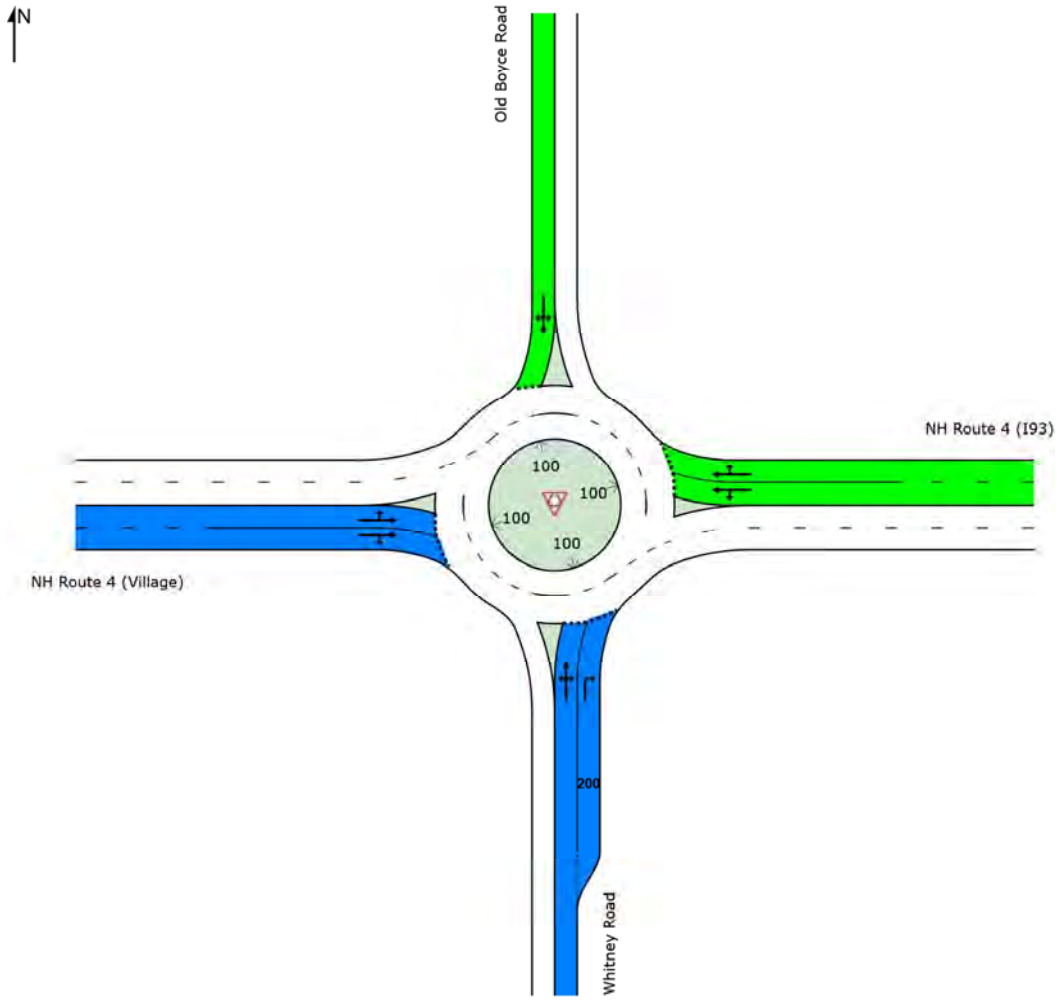
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - Whit [2031 AM WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 AM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	A	A	C	C



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	157	244	0	0	639
Future Vol, veh/h	0	157	244	0	0	639
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	4	4	0	0	8
Mvmt Flow	0	196	305	0	0	799

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	153	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.338	-	-	-	-
Pot Cap-1 Maneuver	0	861	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	861	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	861	-
HCM Lane V/C Ratio	-	0.228	-
HCM Control Delay (s)	-	10.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.9	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	36	100	16	71	207
Future Vol, veh/h	17	36	100	16	71	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	80	0	0	53
Mvmt Flow	18	39	109	17	77	225

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	497	118	0	0	126	0
Stage 1	118	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	536	939	-	-	1473	-
Stage 1	912	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	504	939	-	-	1473	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	735	1473	-
HCM Lane V/C Ratio	-	-	0.078	0.052	-
HCM Control Delay (s)	-	-	10.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1343	1	0	538	1	3
Future Vol, veh/h	1343	1	0	538	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	0	0	7	0	0
Mvmt Flow	1460	1	0	585	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1461	0	2046	1461
Stage 1	-	-	-	-	1461	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	469	-	62	160
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	469	-	62	160
Mov Cap-2 Maneuver	-	-	-	-	62	-
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	37.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	115	-	-	469	-
HCM Lane V/C Ratio	0.038	-	-	-	-
HCM Control Delay (s)	37.5	-	-	0	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	308	0	146	874	0	0
Future Vol, veh/h	308	0	146	874	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	90	90	92	92
Heavy Vehicles, %	4	0	0	6	0	0
Mvmt Flow	338	0	162	971	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	338	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	0	1232	-	0	709
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1232	-	-	709
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	1232	-
HCM Lane V/C Ratio	-	-	0.132	-
HCM Control Delay (s)	0	-	8.4	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	308	785	0	0	234
Future Vol, veh/h	0	308	785	0	0	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	5	0	0	2
Mvmt Flow	0	335	853	0	0	254

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	427
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	0	577
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	577
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	577
HCM Lane V/C Ratio	-	-	0.441
HCM Control Delay (s)	-	-	16.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2.2

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	190	130	280	48	20	0
Future Vol, veh/h	190	130	280	48	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	93	93	85	85
Heavy Vehicles, %	4	4	2	2	6	0
Mvmt Flow	224	153	301	52	24	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	353	0	-	0	928	-
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.14	-	-	-	6.46	-
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.236	-	-	-	3.554	-
Pot Cap-1 Maneuver	1195	-	-	-	293	0
Stage 1	-	-	-	-	722	0
Stage 2	-	-	-	-	540	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	238	-
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	21.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1195	-	-	-	238
HCM Lane V/C Ratio	0.187	-	-	-	0.099
HCM Control Delay (s)	8.7	-	-	-	21.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	0.3

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	65	81	36	181	28
Future Vol, veh/h	75	65	81	36	181	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	71	88	39	197	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	427	212	227	0	-	0
Stage 1	212	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	584	828	1341	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	545	828	1341	-	-	-
Mov Cap-2 Maneuver	545	-	-	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	5.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1341	-	648	-	-
HCM Lane V/C Ratio	0.066	-	0.235	-	-
HCM Control Delay (s)	7.9	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	59	121	341	59	49	45
Future Vol, veh/h	59	121	341	59	49	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	132	371	64	53	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	435	0	-	0	663	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	260	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1125	-	-	-	426	647
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1125	-	-	-	402	647
Mov Cap-2 Maneuver	-	-	-	-	402	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1125	-	-	-	491
HCM Lane V/C Ratio	0.057	-	-	-	0.208
HCM Control Delay (s)	8.4	-	-	-	14.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

MOVEMENT SUMMARY

Site: US4 - HHC [2031 AM WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 AM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	13	22.0	0.026	7.4	LOS A	0.1	2.2	0.59	0.53	0.59	27.7
18	R2	741	1.0	0.447	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		754	1.4	0.447	0.2	LOS A	0.1	2.2	0.01	0.01	0.01	29.5
East: US4 (Concord)												
1	L2	266	6.0	0.236	4.7	LOS A	1.1	28.7	0.09	0.02	0.09	29.0
6	T1	347	9.0	0.236	4.8	LOS A	1.1	28.7	0.09	0.02	0.09	34.4
Approach		612	7.7	0.236	4.8	LOS A	1.1	28.7	0.09	0.02	0.09	31.8
West: US4 (Boscawen)												
2	T1	880	4.0	0.928	34.2	LOS D	36.1	932.1	1.00	1.79	2.78	23.8
12	R2	44	3.0	0.928	34.1	LOS D	36.1	932.1	1.00	1.79	2.78	21.4
Approach		924	4.0	0.928	34.2	LOS D	36.1	932.1	1.00	1.79	2.78	23.7
All Vehicles		2291	4.1	0.928	15.1	LOS C	36.1	932.1	0.43	0.73	1.15	27.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

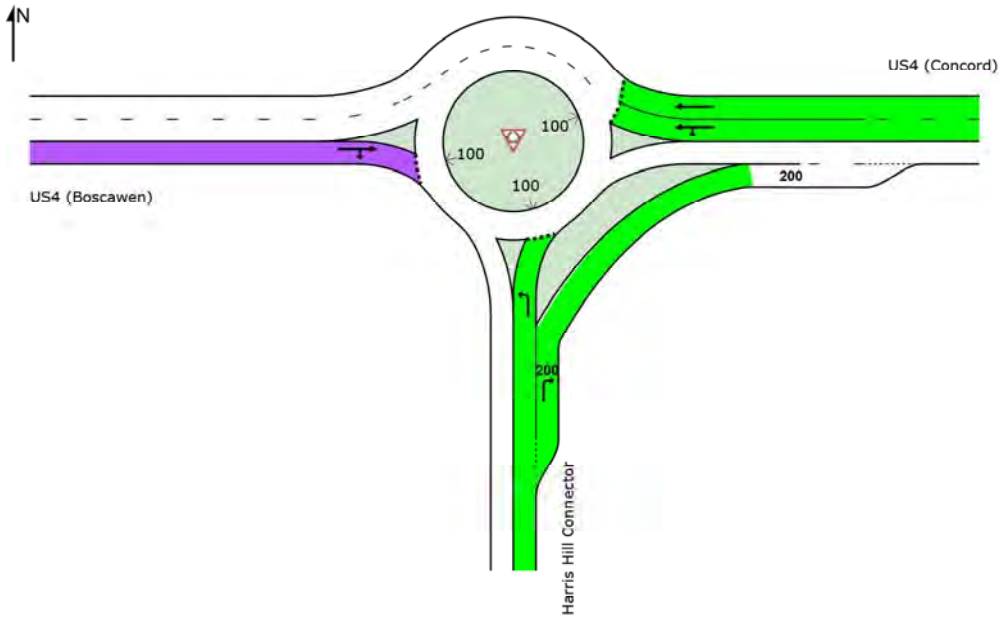
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 AM WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 AM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	D	C



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: Site-Whit [2031 AM WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 AM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road (Dead End)												
3	L2	1	0.0	0.164	5.5	LOS A	0.7	18.1	0.51	0.43	0.51	33.4
8	T1	140	0.0	0.164	5.5	LOS A	0.7	18.1	0.51	0.43	0.51	33.5
18	R2	8	0.0	0.164	5.5	LOS A	0.7	18.1	0.51	0.43	0.51	32.9
Approach		149	0.0	0.164	5.5	LOS A	0.7	18.1	0.51	0.43	0.51	33.5
East: Gas/Initerchange Site Drive												
1	L2	11	0.0	0.117	4.2	LOS A	0.4	12.7	0.32	0.19	0.32	33.6
6	T1	2	0.0	0.117	4.2	LOS A	0.4	12.7	0.32	0.19	0.32	33.8
16	R2	102	20.0	0.117	4.8	LOS A	0.4	12.7	0.32	0.19	0.32	32.5
Approach		115	17.7	0.117	4.7	LOS A	0.4	12.7	0.32	0.19	0.32	32.6
North: Whitney Road (US4)												
7	L2	359	1.0	0.512	8.0	LOS A	4.3	107.8	0.14	0.04	0.14	31.3
4	T1	291	0.0	0.512	8.0	LOS A	4.3	107.8	0.14	0.04	0.14	31.5
14	R2	43	0.0	0.512	8.0	LOS A	4.3	107.8	0.14	0.04	0.14	30.9
Approach		693	0.5	0.512	8.0	LOS A	4.3	107.8	0.14	0.04	0.14	31.3
West: Concord Crossing												
5	L2	31	0.0	0.068	5.9	LOS A	0.3	6.7	0.58	0.52	0.58	32.0
2	T1	15	0.0	0.068	5.9	LOS A	0.3	6.7	0.58	0.52	0.58	32.2
12	R2	1	0.0	0.068	5.9	LOS A	0.3	6.7	0.58	0.52	0.58	31.6
Approach		48	0.0	0.068	5.9	LOS A	0.3	6.7	0.58	0.52	0.58	32.1
All Vehicles		1005	2.4	0.512	7.1	LOS A	4.3	107.8	0.24	0.13	0.24	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:04:46 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\SITE DRIVE ROUNDABOUT\North Site Drive Roundabout.sip8

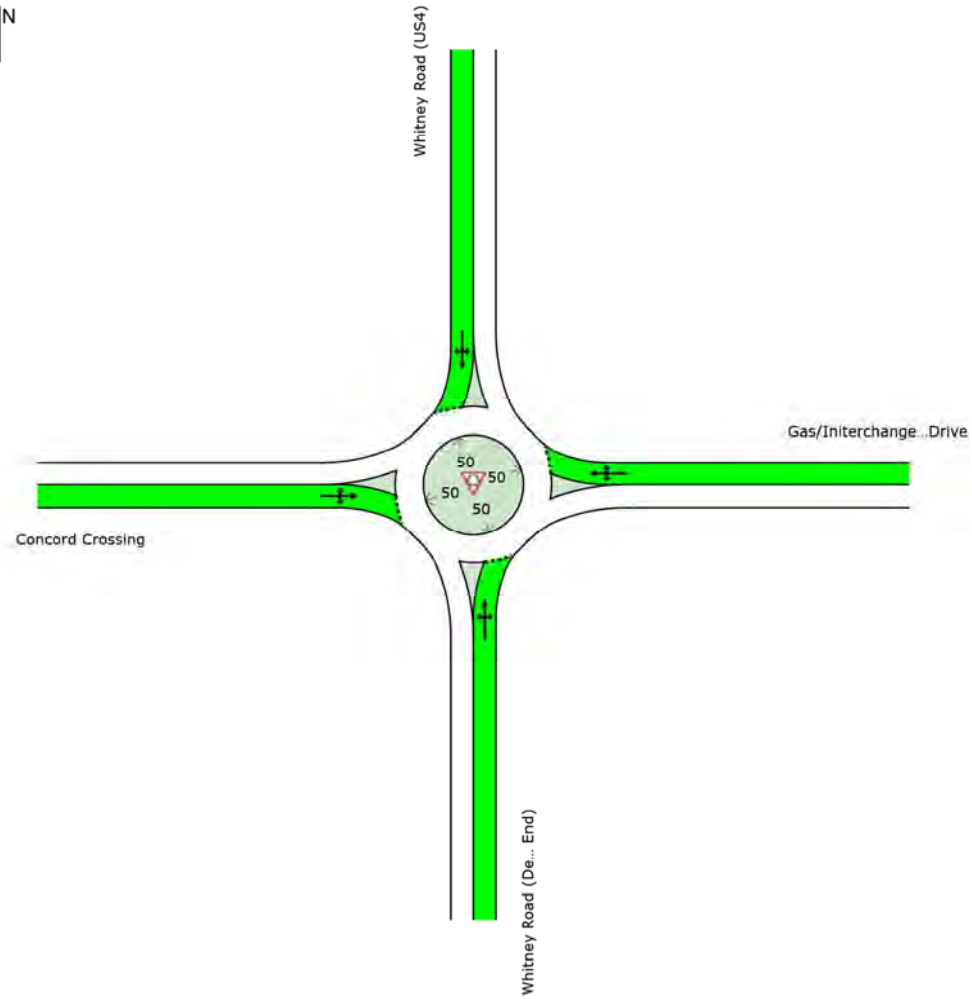
LANE LEVEL OF SERVICE

Lane Level of Service

Site: Site-Whit [2031 AM WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 AM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX O2

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	93	749	0	0	672
Future Vol, veh/h	0	93	749	0	0	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	72	72	91	91
Heavy Vehicles, %	0	3	1	0	0	1
Mvmt Flow	0	116	1040	0	0	738

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	520	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.945	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3285	-	-	-	-
Pot Cap-1 Maneuver	0	500	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	500	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	500	-
HCM Lane V/C Ratio	-	0.233	-
HCM Control Delay (s)	-	14.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.9	-

Intersection	
Int Delay, s/veh	77.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	7	0	18	2	371	1	337	20	417	223	31
Future Vol, veh/h	41	7	0	18	2	371	1	337	20	417	223	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	2	0	0	0	1	0	0
Mvmt Flow	61	10	0	20	2	403	1	366	22	453	242	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1747	1555	259	1549	1561	377	276	0	0	388	0	0
Stage 1	1165	1165	-	379	379	-	-	-	-	-	-	-
Stage 2	582	390	-	1170	1182	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.22	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.318	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	68	114	785	94	113	670	1299	-	-	1176	-	-
Stage 1	239	271	-	647	618	-	-	-	-	-	-	-
Stage 2	502	611	-	237	266	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 18	70	785	59	69	670	1299	-	-	1176	-	-
Mov Cap-2 Maneuver	~ 18	70	-	59	69	-	-	-	-	-	-	-
Stage 1	239	167	-	646	617	-	-	-	-	-	-	-
Stage 2	199	610	-	137	164	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1558.2	22.2	0	6.2
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1299	-	-	20	60	670	1176	-	-
HCM Lane V/C Ratio	0.001	-	-	3.582	0.362	0.602	0.385	-	-
HCM Control Delay (s)	7.8	0	$	1558.2	95.8	18.2	10	-	-
HCM Lane LOS	A	A	-	F	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	9.3	1.3	4	1.8	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	156	202	45	138	103
Future Vol, veh/h	31	156	202	45	138	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	34	170	220	49	150	112

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	657	245	0	0	269	0
Stage 1	245	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	433	799	-	-	1306	-
Stage 1	800	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	799	-	-	1306	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	1306	-
HCM Lane V/C Ratio	-	-	0.301	0.115	-
HCM Control Delay (s)	-	-	12.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	745	1	3	1201	0	1
Future Vol, veh/h	745	1	3	1201	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	810	1	3	1305	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	811	0	2122	811
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	1311	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	824	-	56	383
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	255	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	824	-	55	383
Mov Cap-2 Maneuver	-	-	-	-	55	-
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	252	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	824	-
HCM Lane V/C Ratio	0.003	-	-	0.004	-
HCM Control Delay (s)	14.4	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	470	0	60	1488	0	0
Future Vol, veh/h	470	0	60	1488	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	90	90	92	92
Heavy Vehicles, %	1	0	2	2	0	0
Mvmt Flow	588	0	67	1653	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	588	0	-	588
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.3
Pot Cap-1 Maneuver	-	0	987	-	0	513
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	987	-	-	513
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	987	-
HCM Lane V/C Ratio	-	-	0.068	-
HCM Control Delay (s)	0	-	8.9	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	470	1310	0	0	237
Future Vol, veh/h	0	470	1310	0	0	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	2	0	0	1
Mvmt Flow	0	511	1424	0	0	258

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	712
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.915
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	0	378
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	378
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	32.6
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	378
HCM Lane V/C Ratio	-	-	0.682
HCM Control Delay (s)	-	-	32.6
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	4.9

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	221	227	31	99	0
Future Vol, veh/h	296	221	227	31	99	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	90	90	71	71
Heavy Vehicles, %	2	1	2	0	0	0
Mvmt Flow	336	251	252	34	139	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	1192	-
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	923	-
Critical Hdwy	4.12	-	-	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	-
Pot Cap-1 Maneuver	1276	-	-	-	209	0
Stage 1	-	-	-	-	781	0
Stage 2	-	-	-	-	390	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	154	-
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	390	-

Approach	EB	WB	SB
HCM Control Delay, s	5.1	0	107
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1276	-	-	-	154
HCM Lane V/C Ratio	0.264	-	-	-	0.905
HCM Control Delay (s)	8.8	-	-	-	107
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	-	6.4

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	207	88	59	37	83	44
Future Vol, veh/h	207	88	59	37	83	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	225	96	64	40	90	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	282	114	138	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	708	939	1446	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	676	939	1446	-	-	-
Mov Cap-2 Maneuver	676	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	4.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1446	-	738	-	-
HCM Lane V/C Ratio	0.044	-	0.434	-	-
HCM Control Delay (s)	7.6	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	2.2	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	424	157	45	65	67
Future Vol, veh/h	51	424	157	45	65	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	461	171	49	71	73

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	220	0	-	0	767	196
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1349	-	-	-	370	845
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1349	-	-	-	355	845
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1349	-	-	-	503
HCM Lane V/C Ratio	0.041	-	-	-	0.285
HCM Control Delay (s)	7.8	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

MOVEMENT SUMMARY

Site: US4 - HHC [2031 PM WRE Build [IFB+WED] Boscawen Roundabout]

4b) 2031 PM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	9	0.0	0.010	3.9	LOS A	0.0	0.9	0.44	0.28	0.44	31.2
18	R2	424	2.0	0.258	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		433	2.0	0.258	0.1	LOS A	0.0	0.9	0.01	0.01	0.01	29.6
East: US4 (Concord)												
1	L2	558	0.0	0.992	40.4	LOS E	260.5	6602.8	1.00	0.36	1.20	20.4
6	T1	776	3.0	0.992	40.5	LOS E	260.5	6602.8	1.00	0.36	1.20	22.3
Approach		1333	1.7	0.992	40.5	LOS E	260.5	6602.8	1.00	0.36	1.20	21.5
West: US4 (Boscawen)												
2	T1	428	5.0	0.604	14.9	LOS B	5.2	133.9	0.78	0.99	1.30	29.7
12	R2	22	0.0	0.604	14.7	LOS B	5.2	133.9	0.78	0.99	1.30	26.1
Approach		451	4.8	0.604	14.9	LOS B	5.2	133.9	0.78	0.99	1.30	29.5
All Vehicles		2217	2.4	0.992	27.4	LOS D	260.5	6602.8	0.76	0.42	0.99	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:23 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

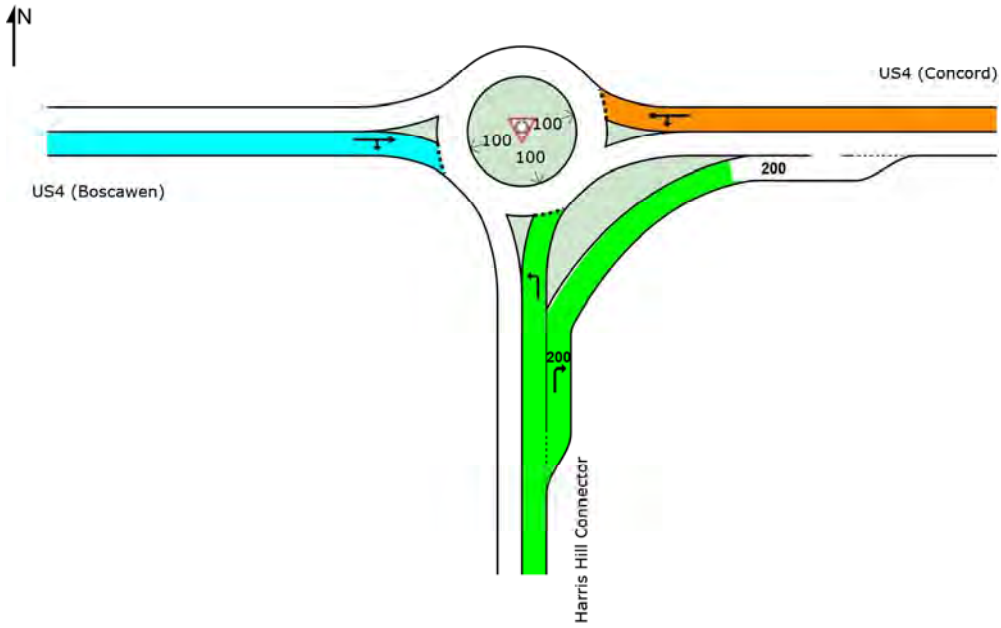
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 PM WRE Build [IFB+WED] Boscawen Roundabout]

4b) 2031 PM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	E	B	D



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:23 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: US4 - Whit [2031 PM WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 PM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road												
3	L2	274	2.0	0.644	16.4	LOS C	5.6	143.4	0.78	1.06	1.42	16.5
8	T1	1	0.0	0.644	16.3	LOS C	5.6	143.4	0.78	1.06	1.42	16.1
18	R2	729	2.0	0.644	15.6	LOS C	5.8	147.0	0.77	1.05	1.41	17.3
Approach		1004	2.0	0.644	15.8	LOS C	5.8	147.0	0.78	1.05	1.41	17.1
East: NH Route 4 (I93)												
1	L2	526	1.0	0.741	16.6	LOS C	13.3	334.8	0.80	1.06	1.45	16.6
6	T1	1023	2.0	0.741	16.0	LOS C	13.3	338.1	0.78	1.03	1.41	18.2
16	R2	16	8.0	0.741	16.0	LOS C	13.3	338.1	0.77	1.02	1.40	18.1
Approach		1565	1.7	0.741	16.2	LOS C	13.3	338.1	0.79	1.04	1.42	17.6
North: Old Boyce Road												
7	L2	24	0.0	0.139	15.0	LOS B	0.4	10.6	0.82	0.82	0.82	18.4
4	T1	2	100.0	0.139	27.3	LOS D	0.4	10.6	0.82	0.82	0.82	16.5
14	R2	14	0.0	0.139	15.0	LOS B	0.4	10.6	0.82	0.82	0.82	15.7
Approach		39	4.3	0.139	15.5	LOS C	0.4	10.6	0.82	0.82	0.82	17.4
West: NH Route 4 (Village)												
5	L2	7	0.0	0.471	10.8	LOS B	2.9	73.0	0.66	0.77	0.91	18.0
2	T1	586	2.0	0.471	10.6	LOS B	2.9	73.0	0.66	0.77	0.90	23.2
12	R2	189	1.0	0.471	10.1	LOS B	2.9	73.0	0.65	0.75	0.88	19.3
Approach		783	1.7	0.471	10.5	LOS B	2.9	73.0	0.65	0.76	0.89	22.2
All Vehicles		3390	1.8	0.741	14.7	LOS B	13.3	338.1	0.75	0.98	1.29	18.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:50:48 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\US4 ROUNDABOUT\US4-Whitney Road Roundabout.sip8

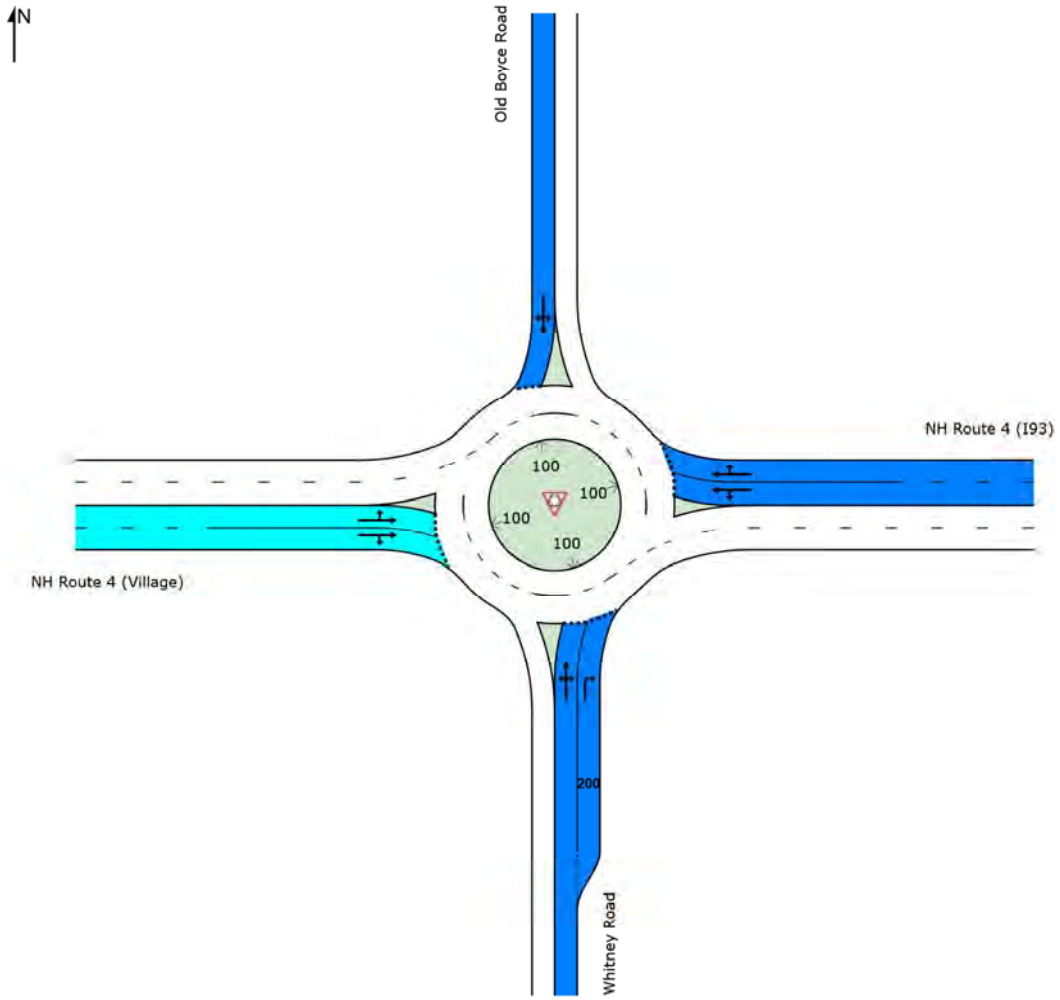
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - Whit [2031 PM WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 PM WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	C	C	B	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	93	749	0	0	672
Future Vol, veh/h	0	93	749	0	0	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	72	72	91	91
Heavy Vehicles, %	0	3	1	0	0	1
Mvmt Flow	0	116	1040	0	0	738

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	520	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.945	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3285	-	-	-	-
Pot Cap-1 Maneuver	0	500	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	500	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	500	-
HCM Lane V/C Ratio	-	0.233	-
HCM Control Delay (s)	-	14.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.9	-

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	156	202	45	138	103
Future Vol, veh/h	31	156	202	45	138	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	34	170	220	49	150	112

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	657	245	0	0	269	0
Stage 1	245	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	433	799	-	-	1306	-
Stage 1	800	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	799	-	-	1306	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	1306	-
HCM Lane V/C Ratio	-	-	0.301	0.115	-
HCM Control Delay (s)	-	-	12.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	745	1	3	1201	0	1
Future Vol, veh/h	745	1	3	1201	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	810	1	3	1305	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	811	0	2122	811
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	1311	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	824	-	56	383
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	255	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	824	-	55	383
Mov Cap-2 Maneuver	-	-	-	-	55	-
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	252	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	824	-
HCM Lane V/C Ratio	0.003	-	-	0.004	-
HCM Control Delay (s)	14.4	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	470	0	60	1488	0	0
Future Vol, veh/h	470	0	60	1488	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	90	90	92	92
Heavy Vehicles, %	1	0	2	2	0	0
Mvmt Flow	588	0	67	1653	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	588	0	-	588
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.3
Pot Cap-1 Maneuver	-	0	987	-	0	513
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	987	-	-	513
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	987	-
HCM Lane V/C Ratio	-	-	0.068	-
HCM Control Delay (s)	0	-	8.9	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	470	1310	0	0	237
Future Vol, veh/h	0	470	1310	0	0	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	2	0	0	1
Mvmt Flow	0	511	1424	0	0	258

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	712
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.915
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	0	378
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	378
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	32.6
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	378
HCM Lane V/C Ratio	-	-	0.682
HCM Control Delay (s)	-	-	32.6
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	4.9

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	221	227	31	99	0
Future Vol, veh/h	296	221	227	31	99	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	90	90	71	71
Heavy Vehicles, %	2	1	2	0	0	0
Mvmt Flow	336	251	252	34	139	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	1192	-
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	923	-
Critical Hdwy	4.12	-	-	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	-
Pot Cap-1 Maneuver	1276	-	-	-	209	0
Stage 1	-	-	-	-	781	0
Stage 2	-	-	-	-	390	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	154	-
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	390	-

Approach	EB	WB	SB
HCM Control Delay, s	5.1	0	107
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1276	-	-	-	154
HCM Lane V/C Ratio	0.264	-	-	-	0.905
HCM Control Delay (s)	8.8	-	-	-	107
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	-	6.4

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	207	88	59	37	83	44
Future Vol, veh/h	207	88	59	37	83	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	225	96	64	40	90	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	282	114	138	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	708	939	1446	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	676	939	1446	-	-	-
Mov Cap-2 Maneuver	676	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	4.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1446	-	738	-	-
HCM Lane V/C Ratio	0.044	-	0.434	-	-
HCM Control Delay (s)	7.6	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	2.2	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	424	157	45	65	67
Future Vol, veh/h	51	424	157	45	65	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	461	171	49	71	73

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	220	0	-	0	767	196
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1349	-	-	-	370	845
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1349	-	-	-	355	845
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1349	-	-	-	503
HCM Lane V/C Ratio	0.041	-	-	-	0.285
HCM Control Delay (s)	7.8	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

MOVEMENT SUMMARY

Site: US4 - HHC [2031 PM WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 PM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	9	0.0	0.010	3.9	LOS A	0.0	0.9	0.44	0.28	0.44	31.2
18	R2	424	2.0	0.258	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		433	2.0	0.258	0.1	LOS A	0.0	0.9	0.01	0.01	0.01	29.6
East: US4 (Concord)												
1	L2	558	0.0	0.482	7.3	LOS A	3.5	88.3	0.09	0.02	0.09	28.2
6	T1	776	3.0	0.482	7.5	LOS A	3.5	88.3	0.09	0.02	0.09	33.7
Approach		1333	1.7	0.482	7.4	LOS A	3.5	88.3	0.09	0.02	0.09	31.1
West: US4 (Boscawen)												
2	T1	428	5.0	0.604	14.9	LOS B	5.2	133.9	0.78	0.99	1.30	29.7
12	R2	22	0.0	0.604	14.7	LOS B	5.2	133.9	0.78	0.99	1.30	26.1
Approach		451	4.8	0.604	14.9	LOS B	5.2	133.9	0.78	0.99	1.30	29.5
All Vehicles		2217	2.4	0.604	7.5	LOS A	5.2	133.9	0.21	0.21	0.32	30.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

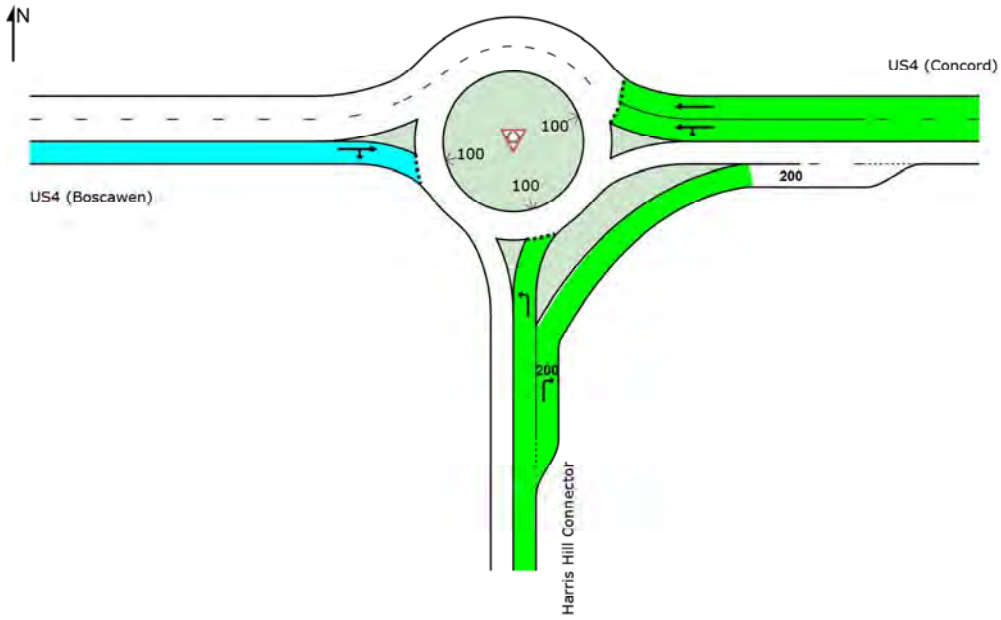
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 PM WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 PM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	B	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: Site-Whit [2031 PM WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 PM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road (Dead End)												
3	L2	1	0.0	0.484	11.0	LOS B	3.3	83.3	0.71	0.80	0.96	30.9
8	T1	366	0.0	0.484	11.0	LOS B	3.3	83.3	0.71	0.80	0.96	31.0
18	R2	22	0.0	0.484	11.0	LOS B	3.3	83.3	0.71	0.80	0.96	30.4
Approach		389	0.0	0.484	11.0	LOS B	3.3	83.3	0.71	0.80	0.96	31.0
East: Gas/Initerchange Site Drive												
1	L2	20	0.0	0.567	13.0	LOS B	4.2	121.8	0.68	0.81	1.07	29.7
6	T1	2	0.0	0.567	13.0	LOS B	4.2	121.8	0.68	0.81	1.07	29.8
16	R2	403	20.0	0.567	13.8	LOS B	4.2	121.8	0.68	0.81	1.07	28.8
Approach		425	19.0	0.567	13.8	LOS B	4.2	121.8	0.68	0.81	1.07	28.8
North: Whitney Road (US4)												
7	L2	453	1.0	0.544	8.6	LOS A	4.8	120.6	0.20	0.06	0.20	30.9
4	T1	242	0.0	0.544	8.6	LOS A	4.8	120.6	0.20	0.06	0.20	31.0
14	R2	34	0.0	0.544	8.6	LOS A	4.8	120.6	0.20	0.06	0.20	30.5
Approach		729	0.6	0.544	8.6	LOS A	4.8	120.6	0.20	0.06	0.20	30.9
West: Concord Crossing												
5	L2	61	0.0	0.110	6.7	LOS A	0.4	10.9	0.61	0.59	0.61	31.4
2	T1	10	0.0	0.110	6.7	LOS A	0.4	10.9	0.61	0.59	0.61	31.5
12	R2	1	0.0	0.110	6.7	LOS A	0.4	10.9	0.61	0.59	0.61	30.9
Approach		73	0.0	0.110	6.7	LOS A	0.4	10.9	0.61	0.59	0.61	31.4
All Vehicles		1617	5.3	0.567	10.4	LOS B	4.8	121.8	0.47	0.46	0.63	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:04:47 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\SITE DRIVE ROUNDABOUT\North Site Drive Roundabout.sip8

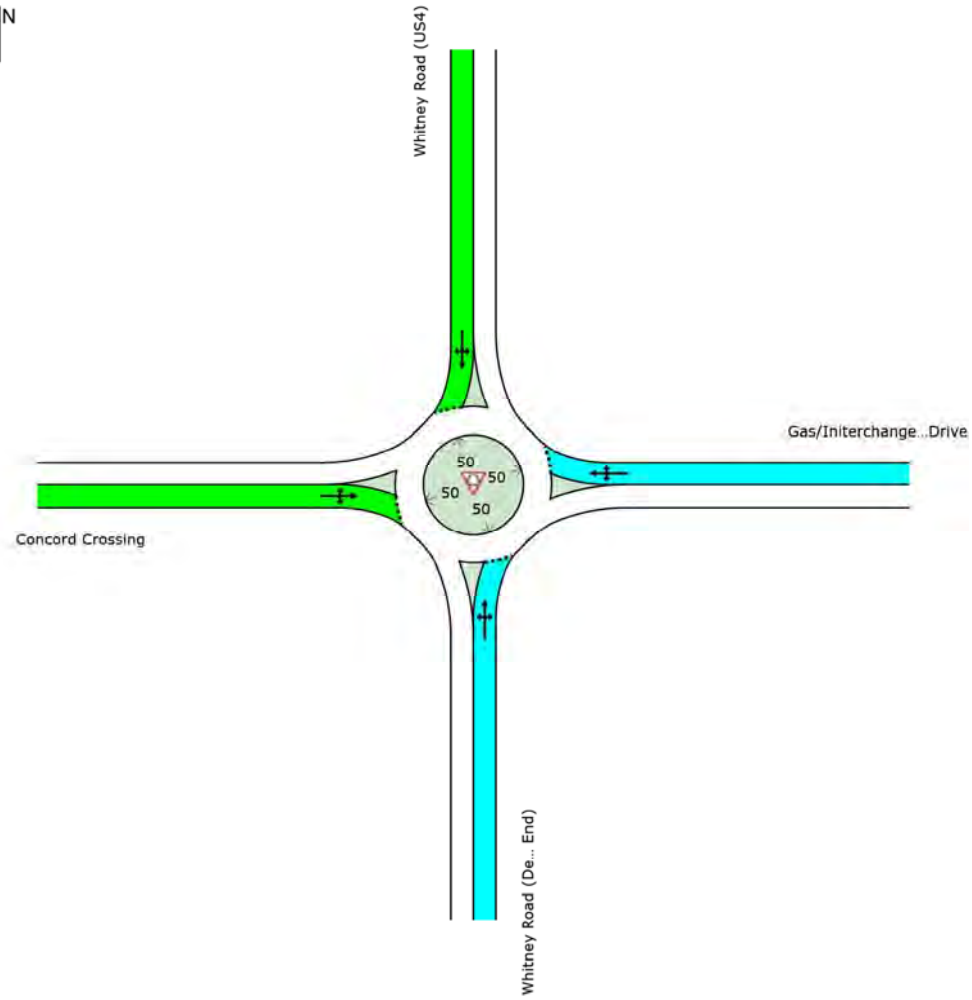
LANE LEVEL OF SERVICE

Lane Level of Service

Site: Site-Whit [2031 PM WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 PM WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	A	A	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

VOLUME 2

APPENDIX P2

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	114	677	0	0	801
Future Vol, veh/h	0	114	677	0	0	801
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	65	65	86	86
Heavy Vehicles, %	0	2	3	0	0	1
Mvmt Flow	0	124	1042	0	0	931

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	521	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	501	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	501	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	501	-
HCM Lane V/C Ratio	-	0.247	-
HCM Control Delay (s)	-	14.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	1	-

Intersection	
Int Delay, s/veh	79.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	3	0	13	3	384	3	270	16	503	270	20
Future Vol, veh/h	31	3	0	13	3	384	3	270	16	503	270	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	55	55	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	1	2	5
Mvmt Flow	56	5	0	14	3	417	3	293	17	547	293	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1916	1714	304	1709	1717	302	315	0	0	310	0	0
Stage 1	1398	1398	-	308	308	-	-	-	-	-	-	-
Stage 2	518	316	-	1401	1409	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	~ 52	91	740	73	91	742	1257	-	-	1256	-	-
Stage 1	176	209	-	706	664	-	-	-	-	-	-	-
Stage 2	544	659	-	175	207	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	51	740	44	51	742	1257	-	-	1256	-	-
Mov Cap-2 Maneuver	~ 14	51	-	44	51	-	-	-	-	-	-	-
Stage 1	175	118	-	704	662	-	-	-	-	-	-	-
Stage 2	236	657	-	94	117	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1915.9	20.4	0.1	6.4
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	15	45	742	1256	-	-
HCM Lane V/C Ratio	0.003	-	-	4.121	0.386	0.563	0.435	-	-
HCM Control Delay (s)	7.9	0	$	1915.9	128.5	15.9	10.1	-	-
HCM Lane LOS	A	A	-	F	F	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	8.6	1.4	3.5	2.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	161	128	34	170	113
Future Vol, veh/h	32	161	128	34	170	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	0	0	40
Mvmt Flow	35	175	139	37	185	123

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	651	158	0	0	176	0
Stage 1	158	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	436	893	-	-	1412	-
Stage 1	875	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	375	893	-	-	1412	-
Mov Cap-2 Maneuver	375	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	4.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	727	1412	-
HCM Lane V/C Ratio	-	-	0.289	0.131	-
HCM Control Delay (s)	-	-	11.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.5	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	1	1	816	1	2
Future Vol, veh/h	820	1	1	816	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	891	1	1	887	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	892	0	1781	892
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	889	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	769	-	91	344
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	405	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	91	344
Mov Cap-2 Maneuver	-	-	-	-	91	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	-	-	769	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	25.5	-	-	9.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	490	0	63	1202	0	0
Future Vol, veh/h	490	0	63	1202	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	92	92	92	92
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	527	0	68	1307	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	527	0	-	527
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.3
Pot Cap-1 Maneuver	-	0	1040	-	0	555
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1040	-	-	555
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	1040	-
HCM Lane V/C Ratio	-	-	0.066	-
HCM Control Delay (s)	0	-	8.7	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	490	992	0	0	272
Future Vol, veh/h	0	490	992	0	0	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	533	1078	0	0	296

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	539
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	0	488
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	488
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	23.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	488
HCM Lane V/C Ratio	-	-	0.606
HCM Control Delay (s)	-	-	23.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	4

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	208	277	26	63	0
Future Vol, veh/h	296	208	277	26	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	96	96	84	84
Heavy Vehicles, %	1	0	2	0	2	0
Mvmt Flow	302	212	289	27	75	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	316	0	-	0	1119	-
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	816	-
Critical Hdwy	4.11	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	-
Pot Cap-1 Maneuver	1250	-	-	-	229	0
Stage 1	-	-	-	-	749	0
Stage 2	-	-	-	-	435	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1250	-	-	-	174	-
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	435	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	40.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1250	-	-	-	174
HCM Lane V/C Ratio	0.242	-	-	-	0.431
HCM Control Delay (s)	8.8	-	-	-	40.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.9	-	-	-	2

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	114	65	57	43	98	42
Future Vol, veh/h	114	65	57	43	98	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	71	62	47	107	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	301	130	153	0	-	0
Stage 1	130	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	691	920	1428	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	660	920	1428	-	-	-
Mov Cap-2 Maneuver	660	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	4.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1428	-	735	-	-
HCM Lane V/C Ratio	0.043	-	0.265	-	-
HCM Control Delay (s)	7.6	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	195	124	44	48	56
Future Vol, veh/h	56	195	124	44	48	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	212	135	48	52	61

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	183	0	-	0	493	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1392	-	-	-	535	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1392	-	-	-	511	886
Mov Cap-2 Maneuver	-	-	-	-	511	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1392	-	-	-	662
HCM Lane V/C Ratio	0.044	-	-	-	0.171
HCM Control Delay (s)	7.7	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

MOVEMENT SUMMARY

Site: US4 - HHC [2031 SAT WRE Build [IFB+WED] Boscawen Roundabout]

4b) 2031 SAT WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	121	0.0	0.141	5.6	LOS A	0.6	14.0	0.53	0.48	0.53	30.5
18	R2	425	0.0	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		546	0.0	0.254	1.3	LOS A	0.6	14.0	0.12	0.11	0.12	29.8
East: US4 (Concord)												
1	L2	345	1.0	0.735	14.5	LOS B	8.1	207.2	0.67	0.42	0.67	26.6
6	T1	532	3.0	0.735	14.6	LOS B	8.1	207.2	0.67	0.42	0.67	29.9
Approach		877	2.2	0.735	14.6	LOS B	8.1	207.2	0.67	0.42	0.67	28.5
West: US4 (Boscawen)												
2	T1	542	2.0	0.709	16.0	LOS C	10.6	270.1	0.83	1.05	1.45	29.6
12	R2	129	3.0	0.709	16.1	LOS C	10.6	270.1	0.83	1.05	1.45	25.7
Approach		671	2.2	0.709	16.0	LOS C	10.6	270.1	0.83	1.05	1.45	28.7
All Vehicles		2094	1.6	0.735	11.6	LOS B	10.6	270.1	0.58	0.54	0.78	28.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:24 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

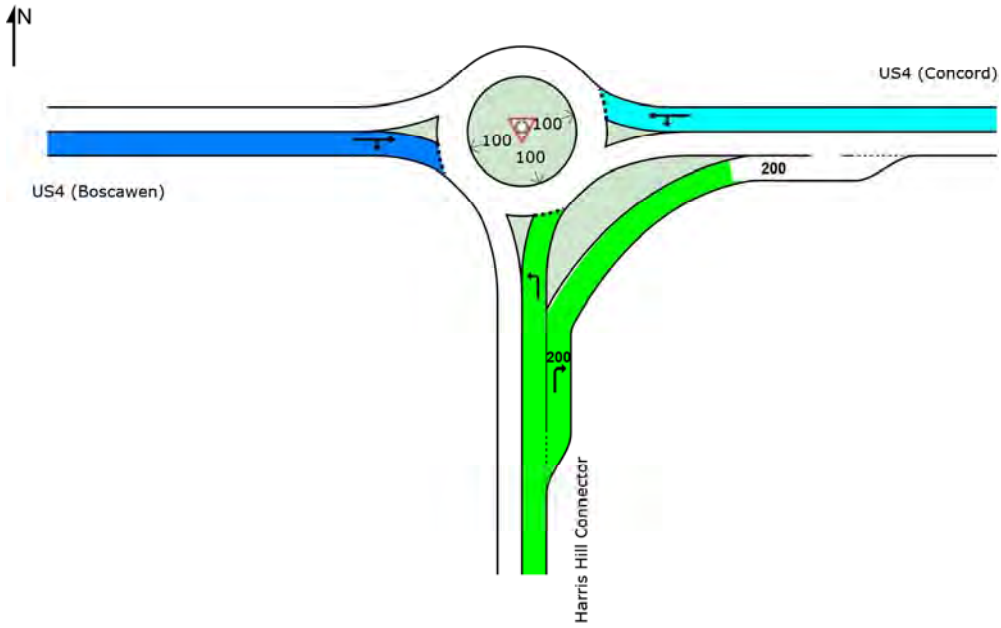
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 SAT WRE Build [IFB+WED] Boscawen Roundabout]

4b) 2031 SAT WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	B	C	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:28:24 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: US4 - Whit [2031 SAT WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road												
3	L2	224	0.0	0.552	13.3	LOS B	4.0	99.4	0.73	0.92	1.16	18.1
8	T1	1	0.0	0.552	13.3	LOS B	4.0	99.4	0.73	0.92	1.16	17.5
18	R2	645	0.0	0.552	12.7	LOS B	4.0	100.9	0.72	0.90	1.14	18.6
Approach		870	0.0	0.552	12.8	LOS B	4.0	100.9	0.73	0.91	1.15	18.5
East: NH Route 4 (I93)												
1	L2	621	1.0	0.574	10.6	LOS B	4.4	111.8	0.58	0.48	0.64	18.3
6	T1	638	2.0	0.565	10.0	LOS A	3.7	93.1	0.54	0.42	0.55	21.6
16	R2	9	0.0	0.565	9.9	LOS A	3.7	93.1	0.54	0.42	0.55	21.1
Approach		1267	1.5	0.574	10.3	LOS B	4.4	111.8	0.56	0.45	0.59	19.8
North: Old Boyce Road												
7	L2	17	0.0	0.116	10.9	LOS B	0.4	9.3	0.74	0.74	0.74	20.8
4	T1	4	0.0	0.116	10.9	LOS B	0.4	9.3	0.74	0.74	0.74	18.9
14	R2	23	8.0	0.116	11.6	LOS B	0.4	9.3	0.74	0.74	0.74	17.7
Approach		44	4.2	0.116	11.3	LOS B	0.4	9.3	0.74	0.74	0.74	19.0
West: NH Route 4 (Village)												
5	L2	5	0.0	0.546	13.3	LOS B	3.8	95.9	0.73	0.91	1.15	16.9
2	T1	611	1.0	0.546	13.0	LOS B	3.9	97.4	0.72	0.90	1.14	21.7
12	R2	231	0.0	0.546	12.3	LOS B	3.9	97.4	0.71	0.89	1.12	18.0
Approach		846	0.7	0.546	12.8	LOS B	3.9	97.4	0.72	0.90	1.14	20.7
All Vehicles		3028	0.9	0.574	11.7	LOS B	4.4	111.8	0.66	0.71	0.91	19.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:50:49 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\US4 ROUNDABOUT\US4-Whitney Road Roundabout.sip8

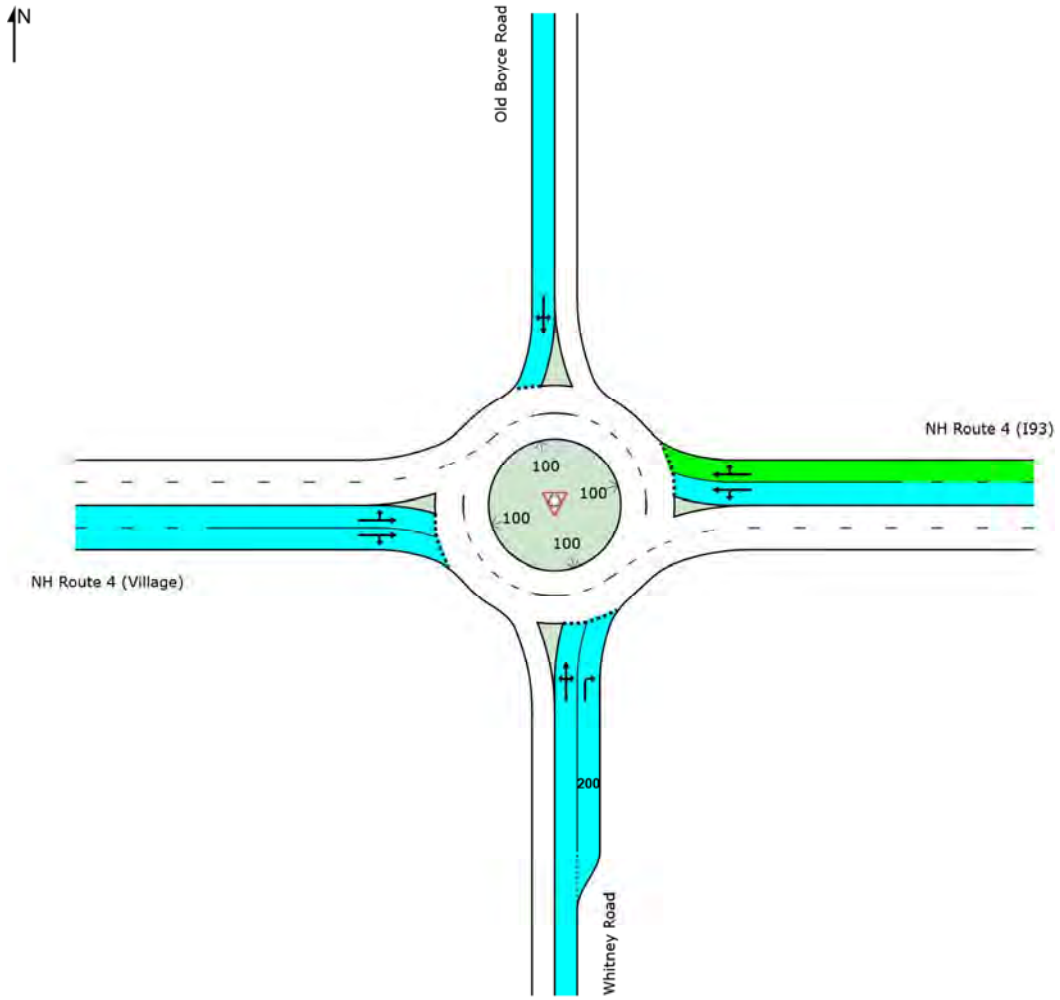
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - Whit [2031 SAT WRE Build [IFB+WED] Proposed US4 Roundabout]

4a) 2031 WRE Build [IFB+WED]
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	B	B	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑			↑
Traffic Vol, veh/h	0	114	677	0	0	801
Future Vol, veh/h	0	114	677	0	0	801
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	50	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	65	65	86	86
Heavy Vehicles, %	0	2	3	0	0	1
Mvmt Flow	0	124	1042	0	0	931

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	521	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	501	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	501	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	501	-
HCM Lane V/C Ratio	-	0.247	-
HCM Control Delay (s)	-	14.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	1	-

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	161	128	34	170	113
Future Vol, veh/h	32	161	128	34	170	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	0	0	40
Mvmt Flow	35	175	139	37	185	123

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	651	158	0	0	176	0
Stage 1	158	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	436	893	-	-	1412	-
Stage 1	875	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	375	893	-	-	1412	-
Mov Cap-2 Maneuver	375	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	4.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	727	1412	-
HCM Lane V/C Ratio	-	-	0.289	0.131	-
HCM Control Delay (s)	-	-	11.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.5	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	1	1	816	1	2
Future Vol, veh/h	820	1	1	816	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	891	1	1	887	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	892	0	1781	892
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	889	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	769	-	91	344
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	405	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	91	344
Mov Cap-2 Maneuver	-	-	-	-	91	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	-	-	769	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	25.5	-	-	9.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↖	↑		↗
Traffic Vol, veh/h	490	0	63	1202	0	0
Future Vol, veh/h	490	0	63	1202	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	92	92	92	92
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	527	0	68	1307	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	527	0	-	527
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	-	3.3
Pot Cap-1 Maneuver	-	0	1040	-	0	555
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1040	-	-	555
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	1040	-
HCM Lane V/C Ratio	-	-	0.066	-
HCM Control Delay (s)	0	-	8.7	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↱
Traffic Vol, veh/h	0	490	992	0	0	272
Future Vol, veh/h	0	490	992	0	0	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	533	1078	0	0	296

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	539
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	0	-	-	0	0	488
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	488
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	23.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	488
HCM Lane V/C Ratio	-	-	0.606
HCM Control Delay (s)	-	-	23.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	4

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	208	277	26	63	0
Future Vol, veh/h	296	208	277	26	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	96	96	84	84
Heavy Vehicles, %	1	0	2	0	2	0
Mvmt Flow	302	212	289	27	75	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	316	0	-	0	1119	-
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	816	-
Critical Hdwy	4.11	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.209	-	-	-	3.518	-
Pot Cap-1 Maneuver	1250	-	-	-	229	0
Stage 1	-	-	-	-	749	0
Stage 2	-	-	-	-	435	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1250	-	-	-	174	-
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	435	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	40.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1250	-	-	-	174
HCM Lane V/C Ratio	0.242	-	-	-	0.431
HCM Control Delay (s)	8.8	-	-	-	40.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.9	-	-	-	2

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	114	65	57	43	98	42
Future Vol, veh/h	114	65	57	43	98	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	71	62	47	107	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	301	130	153	0	-	0
Stage 1	130	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	691	920	1428	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	660	920	1428	-	-	-
Mov Cap-2 Maneuver	660	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	4.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1428	-	735	-	-
HCM Lane V/C Ratio	0.043	-	0.265	-	-
HCM Control Delay (s)	7.6	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	195	124	44	48	56
Future Vol, veh/h	56	195	124	44	48	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	212	135	48	52	61

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	183	0	-	0	493	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1392	-	-	-	535	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1392	-	-	-	511	886
Mov Cap-2 Maneuver	-	-	-	-	511	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1392	-	-	-	662
HCM Lane V/C Ratio	0.044	-	-	-	0.171
HCM Control Delay (s)	7.7	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

MOVEMENT SUMMARY

Site: US4 - HHC [2031 SAT WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 SAT WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Harris Hill Connector												
3	L2	121	0.0	0.141	5.6	LOS A	0.6	14.0	0.53	0.48	0.53	30.5
18	R2	425	0.0	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.6
Approach		546	0.0	0.254	1.3	LOS A	0.6	14.0	0.12	0.11	0.12	29.8
East: US4 (Concord)												
1	L2	345	1.0	0.353	6.2	LOS A	1.9	48.6	0.32	0.18	0.32	28.7
6	T1	532	3.0	0.353	6.3	LOS A	1.9	48.6	0.32	0.18	0.32	34.2
Approach		877	2.2	0.353	6.2	LOS A	1.9	48.6	0.32	0.18	0.32	31.8
West: US4 (Boscawen)												
2	T1	542	2.0	0.709	16.0	LOS C	10.6	270.1	0.83	1.05	1.45	29.6
12	R2	129	3.0	0.709	16.1	LOS C	10.6	270.1	0.83	1.05	1.45	25.7
Approach		671	2.2	0.709	16.0	LOS C	10.6	270.1	0.83	1.05	1.45	28.7
All Vehicles		2094	1.6	0.709	8.1	LOS A	10.6	270.1	0.43	0.44	0.63	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

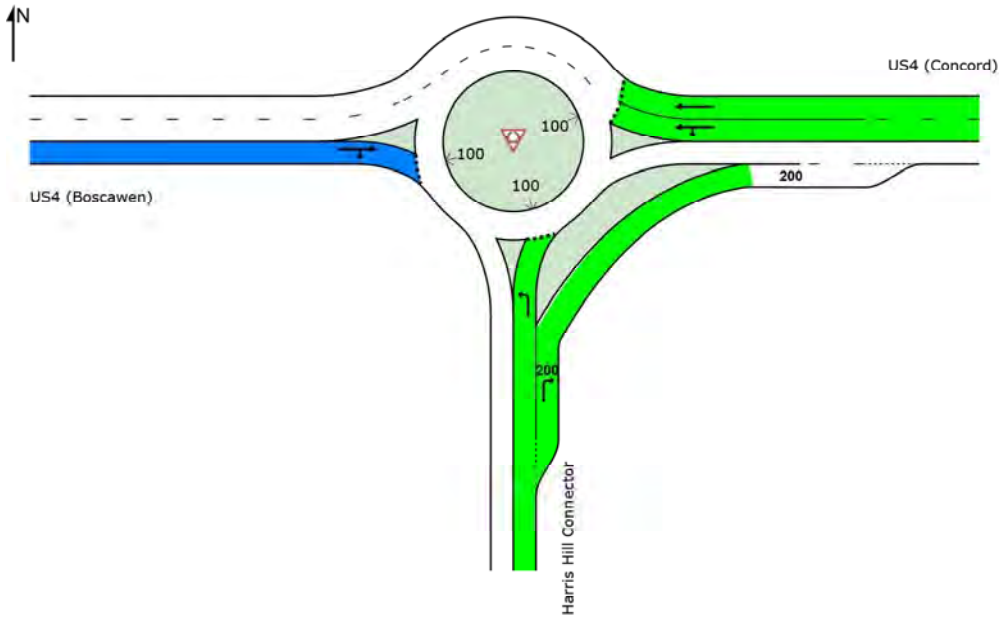
LANE LEVEL OF SERVICE

Lane Level of Service

Site: US4 - HHC [2031 SAT WRE Build [IFB+WED] Mit R2 Boscawen Roundabout]

4b) 2031 SAT WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	C	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:21:28 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\BOSCAWEN ROUNDABUT\Boscawen Roundabout.sip8

MOVEMENT SUMMARY

Site: Site-Whit [2031 SAT WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 SAT WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road (Dead End)												
3	L2	3	0.0	0.421	10.4	LOS B	2.4	60.8	0.70	0.76	0.87	31.1
8	T1	293	0.0	0.421	10.4	LOS B	2.4	60.8	0.70	0.76	0.87	31.3
18	R2	17	0.0	0.421	10.4	LOS B	2.4	60.8	0.70	0.76	0.87	30.7
Approach		314	0.0	0.421	10.4	LOS B	2.4	60.8	0.70	0.76	0.87	31.2
East: Gas/Initerchange Site Drive												
1	L2	14	0.0	0.533	11.3	LOS B	3.6	102.8	0.61	0.64	0.82	30.4
6	T1	3	0.0	0.533	11.3	LOS B	3.6	102.8	0.61	0.64	0.82	30.5
16	R2	417	20.0	0.533	12.0	LOS B	3.6	102.8	0.61	0.64	0.82	29.5
Approach		435	19.2	0.533	12.0	LOS B	3.6	102.8	0.61	0.64	0.82	29.5
North: Whitney Road (US4)												
7	L2	547	1.0	0.642	10.6	LOS B	7.1	178.7	0.23	0.07	0.23	30.0
4	T1	293	0.0	0.642	10.5	LOS B	7.1	178.7	0.23	0.07	0.23	30.2
14	R2	22	0.0	0.642	10.5	LOS B	7.1	178.7	0.23	0.07	0.23	29.7
Approach		862	0.6	0.642	10.6	LOS B	7.1	178.7	0.23	0.07	0.23	30.1
West: Concord Crossing												
5	L2	46	0.0	0.091	7.4	LOS A	0.3	8.7	0.64	0.64	0.64	31.0
2	T1	4	0.0	0.091	7.4	LOS A	0.3	8.7	0.64	0.64	0.64	31.1
12	R2	1	0.0	0.091	7.4	LOS A	0.3	8.7	0.64	0.64	0.64	30.6
Approach		52	0.0	0.091	7.4	LOS A	0.3	8.7	0.64	0.64	0.64	31.0
All Vehicles		1663	5.3	0.642	10.8	LOS B	7.1	178.7	0.43	0.37	0.52	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TFMORAN INC | Processed: Saturday, January 25, 2020 1:04:47 PM
Project: F:\TFM Projects\95830.00 Interchange Dev - Concord Crossing\95830.00 Interchange Dev - Concord Crossing\Traffic\Sidra\2019-2020 TIAS models\SITE DRIVE ROUNDABOUT\North Site Drive Roundabout.sip8

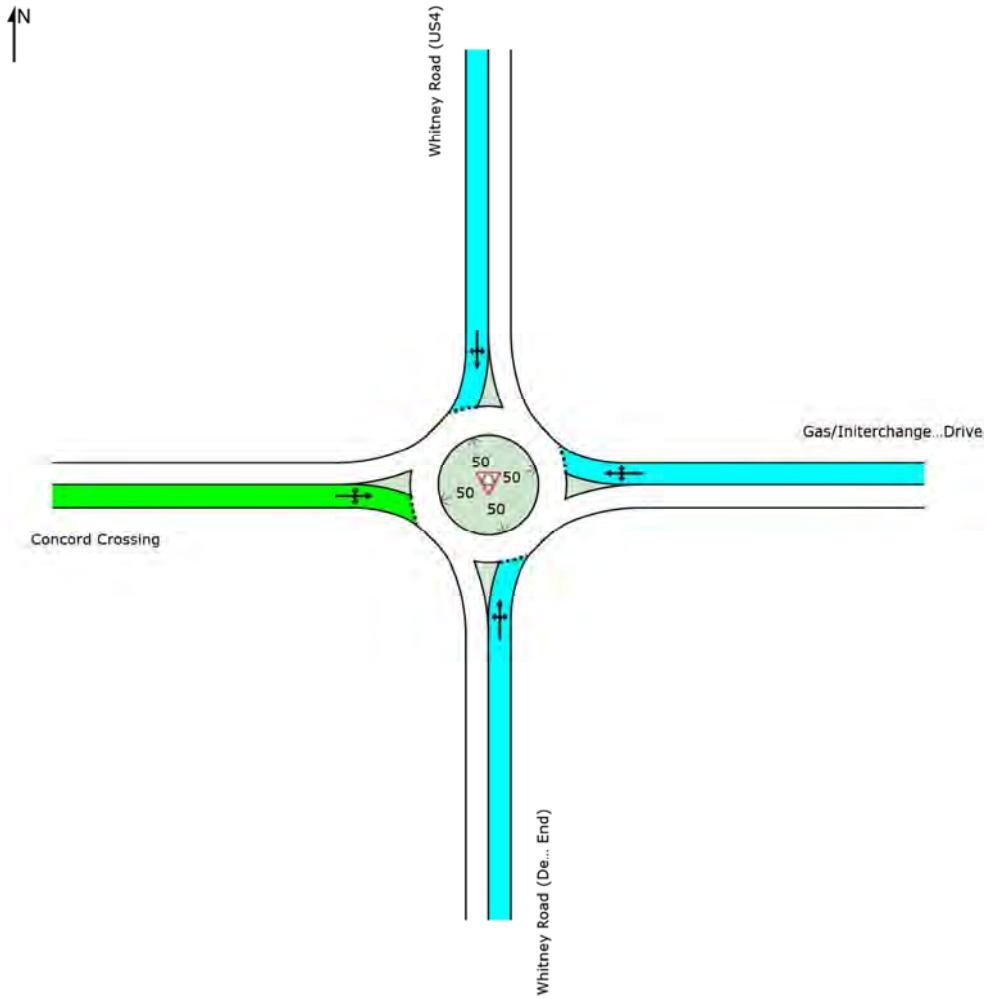
LANE LEVEL OF SERVICE

Lane Level of Service

Site: Site-Whit [2031 SAT WRE Build [IFB+WED] Mit R2 Prop North Site Drive Roundabout]

4b) 2031 SAT WRE Build [IFB+WED] Mit R2
Site Category: TFM 95830 Interchange
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	B	A	B



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com