TECHNICAL APPENDICES

CITY OF INDEPENDENCE TRANSPORTATION SYSTEM PLAN

Prepared for:

CITY OF INDEPENDENCE
240 Monmouth Street
Independence, OR 97351-2424

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TGM
TRANSPORTATION AND GROWTH MANAGEMENT

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APPENDIX A

Existing Transportation System Inventory

1988 TSP Inventory Data, Updated by the City of Independence

Table A-1 EXISTING STREET CLASSIFICATIONS AND STANDARDS

Feature	Major Arterial Streets	Minor Arterial Streets	Collector Streets	Local Streets >20 DUs	Local Streets < 20 DUs
Right-of-way width	84 feet [(a)]	66 feet [(a)]	66 feet [(a)]	60 feet	50 feet
Curb-to-curb width	60 feet	36 feet	36 feet	36 feet	28 feet
Moving Lanes	2-4	2	2	2	2
Turn Lanes	[(b)]	[(b)]	[(b)]	0	0
Bike Lanes	2 @ 6'	2 @ 6'	Ph 1: Shared Ph 2: 2 @ 6'[(c)]	Shared	Shared
Parking Lanes	No [(d)]	No	Ph 1: 2 sides Ph 2: No [(c)]	2 sides	1 side
Sidewalks	2 @ 6'	2 @ 6'	2 @ 5'	2 @ 5'	2 @ 5'

a. Additional right-of-way and roadway improvements may be required at major intersections to provide for turn lanes.

b. At all intersections where separate lanes are needed due to volume of turning movement activity.

c. Collectors with < 2,000 ADT can accommodate on-street parking and shared use of road space by bicyclists and motor vehicles. For collectors with > 2,000 ADT the city will study the need to eliminate on-street parking and provide bike lanes.

d. Parking is currently allowed along some sections of the arterial streets in the downtown business district. Existing on-street parking will be allowed to continue until such time as traffic volumes on roadways increase to a level where significant conflicts between moving traffic and parking occur. Parking needs will be evaluated as a part of roadway projects to improve capacity and meet new design standards.

Table A-2. Existing Street Network: Allocation by Functional Classes

Functional Class	Linear Feet	Average Width[1]	Percent of Network
Local	87,339	29.1	60
Collector	21,486	23.5	15
Arterial	38,149	34.1	25
TOTAL	**146,974**	**29.6**	

Table data is from ODOT inventory information, updated by the City of Independence

[1] This is a "weighted" average for paved roads only and is based on the width of segments of a certain length compared to the entire length.

Table A-3. Summary of Existing Arterial/Collector Streets

Street Name	Functional Class	Intersections[1]	Length (ft)	Jurisdiction	Pavement Width (ft)	1993 Condition[2]
"A" St. (Ash to 4th)	Collector	2	142	City	22	100 New
Ash St. (Polk to "A")	Collector	7	2,200	City	36	100 New
13th St. (Monmouth to S UGB)	Collector	4	1,109	City	26-36	100 New pavement
Corvallis Hwy. (southern city limits to southern UGB)	Arterial	2	3,700	County		Fair
Gun Club Rd. (Hoffman to Monmouth)	Arterial	9	4,450	City	24-30	73-97 Fair/Poor
Hoffman Rd. (West UGB to Stryker)	Arterial	3	5,255	City	36	New construction
				County	24	Good
Main St. (Northern UGB to Monmouth)	Arterial	11	7,778	ODOT	32-42	Northern UGB to Polk St. is new
Main St. (Monmouth to southern city limits)	Arterial	6	1,746	City	34 to 52	Good
Monmouth St. (Main to western UGB)	Arterial	19	7,763	ODOT	34-46	Fair to Good
Polk St. (Stryker to Main)	Arterial	5	1,907	City	29-30	100 New pavement
South River Rd. (Main to eastern UGB)	Collector	1	375	City		
Stryker Rd. (Hoffman to Main)	Collector	9	5,395	City	22-29	90
Talmadge (Monmouth to southern city limits)	Collector	1	975	City	36	95
Walnut St. (Polk to Williams)	Collector	4	838	City	36	95

Table A-3. Summary of Existing Arterial/Collector Streets (Continued)

Street Name	Functional Class	Intersections[1]	Length (ft)	Jurisdiction	Pavement Width (ft)	1993 Condition[2]
Williams St. (Ash to Walnut)	Arterial	2	275	City	36	95
4th St. ("A" to southern city limits)	Collector	14	2,385	City	30-36	59-95 Fair/Poor
7th St. (Monmouth to UGB)	Collector	12	6,000	City	13-38	59-95

[1] Intersection number includes the crossroads at the ends of the segments evaluated.

[2] Conditions have improved on certain streets since the 1993 inventory due to a street improvement program.

[3] Interpreting the condition rating: 0 - 30 reconstruction, 30 - 80 patching and overlay, and 80 - 100 routine maintenance. Some of these conditions have changed due to the street improvement program of 1995-96 and others.

Table A-4. Bridges and Culverts

Structure (Ownership in parentheses)	Location	Construction Date (Dimensions)	Condition
Bridge No. 53B002 (City of Independence)	Ash St. crossing of Ash Creek	1998/1999	Done
Bridge No. 53B001 (City of Independence)	Gun Club Rd. crossing of North Fork of Ash Creek	1983 (32' wide by 56' long)	Sufficiency rating of 81.4. Fair. Needs replacement or widening of ped/bike
Bridge No. 53B003 (City of Independence)	"F" St. crossing of South Fork of Ash Creek.	1968 (32' wide by 61' long)	Sufficiency rating of 67.7. Structurally Deficient. Scheduled for replacement
Bridge / culvert (City of Independence)	13th St. crossing of tributary to the Middle Fork of Ash Creek.		Fair. Needs replacement w/13th improvement
Ash Ck. Bridge (ODOT)	Oregon 51 (Main St.) crossing of Ash Creek.		
South Fork of Ash Ck. Bridge (ODOT)	Oregon 51 (Monmouth St.) crossing of South Fork of Ash Creek.		
South Fork of Ash Ck. Bridge #53C099 (Polk County)	Talmadge Rd. crossing of South Fork of Ash Creek.	1965 (24' wide by 53' long)	70.9
Independence Bridge over Willamette River (#5789A) (Marion County)	"I" St. crossing of Willamette River, "Independence Bridge".	1947 (35' wide by 2,214' long)	Done

Table A-5. Bike Way Facilities

Location	Segment Location	Type[1]	Width (feet)	Condition	Ownership/ Jurisdiction
Gun Club Rd.	Picture St. to Monmouth St.	BL: east side SB: west side	4	Good	City
Talmadge Rd.	Monmouth to South UGB	BL: east side SR: west side	5	Good	City
Hoffman Rd.	West UGB to Stryker	SB	5	Good	City
Stryker Rd.	Polk to Main	SB	<4	Good	City
Polk St.	Stryker to Main	SB	<4		City
"I" St.	4th to Main	SB	<4 (partial)		City
Spruce St.	4th to west end	SB	5-6		City
16th St.	Monmouth to north end	SR	<4		City
4th St.	'I' to Spruce	SB	5		City

[1] Type: BL = bike lane, BP = bicycle path, SR = shared roadway, SB = shoulder bikeway

Table A-6. Arterial or Collector Streets Without Bikeways

Street Name	Segment
ARTERIALS	
Main Street	No bikeway between Polk St. and south UGB
COLLECTORS	
13th Street	No bikeway between Monmouth and UGB
17th (?) Street	No bikeway between Monmouth and south end
4th Street	No bikeway between "A" and south end
Walnut Street	No bikeway between Polk and Williams
Williams Street	No bikeway between Ash and Main
South River Rd.	No bikeway between Main and the UGB

Table A-7. Arterial and Collector Streets Without Sidewalks

Street Name	Segment
	ARTERIALS
Main Street	Stryker (east side) to Hanna Rd
Polk Street	Cabin to Stryker (both sides) = 2,664 feet; Cabin to Marsh (south side) = 300 feet TOTAL: 2,994 feet
Hoffman Road	Airport Rd to UGB (north side)
Gun Club	Hoffman to Monmouth (west side) = 4,450 feet, Picture to Williams (east side) = 652 feet TOTAL: 5,102 feet
	COLLECTORS
Talmadge	Monmouth to UGB (east side)
4th Street	Evergreen to Spruce (east side) = 625 feet
Walnut Street	Williams to Polk (west side) = 1,051, Williams to Picture (east side) = 287 TOTAL: 1,338 feet

Table A-8. Transportation Facility Data

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
Mt Fir Ave	Phase 1 East/West	Local	Local		450	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Rose St	6th to 7th	Local	Local		200	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Chestnut	6th to just past 7th	Local	Local		350	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Sweet Cherry Ln	Randall Way to south UGB	Local	Local		550	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Falcon Lp	West of F St	Local	Local		1200	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Marigold Dr	Gun Club Rd to cul-de-sac	Local	Local		2150	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Jasmine Circle	Marigold East/West	Local	Local		700	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Wisteria St	13th to Northgate Dr	Local	Local		650	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Hyacinth St	Marigold to Northgate Dr	Local	Local		650	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Northgate Dr	Gun Club Rd to Hyacinth	Local	Local		800	36					Y	Y			Additions since 1998, all shared roadway bike use				90
Wild Rose Ct	Northgate Dr to cul-de-sac	Local	Local		350	36					Y	Y			Additions since 1998, all shared roadway bike use				90
Independence Way	Briar Rd to Corvallis Rd	Local	Local		1050	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Mooney St	Stryker Rd to cul-de-sac	Local	Local		600	36					Y	Y			Additions since 1998, all shared roadway bike use				90
Luscumbe St	Stryker Rd to cul-de-sac	Local	Local		600	36					Y	Y			Additions since 1998, all shared roadway bike use				90
Aeronca St	Stryker Rd to cul-de-sac	Local	Local		600	36					Y	Y			Additions since 1998, all shared roadway bike use				90
Corsair Dr	Stryker Rd to cul-de-sac	Local	Local		1000	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Kbel Yelinemi Ln	Stryker Rd to cul-de-sac	Local	Local		150	36					Y	Y			Additions since 1998, all shared roadway bike use				100
Taylors Pl	Randall Way to cul-de-sac	Local	Local		550	36					Y	Y			Additions since 1998, all shared roadway bike use				95
Independence Hwy 51	Styker to Hanna	Arterial	Arterial	ODOT	1600	32	AC	3	Y	Y	N	N	Y	Y	L&R bikelanes	100	100	New	?
Independence Hwy ?	Hanna to Polk	Arterial	Arterial	ODOT	2798	42/32	AC	3	Y	Y	Y	Y	Y	Y	L&R bikelanes	100	100	New	
Main (Hwy 193?)	Polk to boat landing	Arterial	Arterial	ODOT	317	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	Boat landing to Picture	Arterial	Arterial	ODOT	264	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	Picture to Williams	Arterial	Arterial	ODOT	264	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	Williams to Grand	Arterial	Arterial	ODOT	370	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	Grand to Oak	Arterial	Arterial	ODOT	317	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	Oak to B	Arterial	Arterial	ODOT	1267	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Poor	
Main (Hwy 193?)	B to C	Arterial	Arterial	ODOT	317	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Good	
Main (Hwy 193?)	C to Monmouth	Arterial	Arterial	ODOT	264	42	AC	2	Y	Y	Y	Y	N	N	L&R bikelanes proposed			Good	
Hwy 193 Subtotal	**UGB Monmouth**				**7778**														
Main	Monmouth to D	Arterial	Arterial	Independence	288	52	AC	2	Y	90%	Y	Y	N	N	L&R bikelanes proposed	96	80	68	With no improvement
Main	D to E	Arterial	Arterial	Independence	288	45	AC	2	Y	65%	Y	65%	N	N	L&R bikelanes proposed	90	30	67	
Main	E to F	Arterial	Arterial	Independence	297	34	AC	2	Y	N	30%	N	N	N	L&R bikelanes proposed	30	-	59	
Main	F to G	Arterial	Arterial	Independence	297	34	AC	2	Y	N	Y	N	N	N	L&R bikelanes proposed	20	-	67	
Main	G to H	Arterial	Arterial	Independence	288	34	AC	2	Y	N	Y	N	N	N	L&R bikelanes proposed	82	-	54	
Main	H to I	Arterial	Arterial	Independence	288	34	AC	2	Y	N	Y	N	N	N	L&R bikelanes proposed	58	-	61	
Corvallis Hwy (Main)	I to south UGB	Arterial	Arterial	County	3700		AC	2					N	N		-	-	-	
					13224														
Walnut	Polk to boat landing	Collector	Collector	Independence	276	24	AC	2	N	N	N	N	N	N		-	-	73	New
Walnut	Boat landing to Picture	Collector	Collector	Independence	275	24	AC	2	N	N	N	N	N	N		-	-	60	
Walnut	Picture to Williams	Collector	Collector	Independence	287	23	AC	2	N	N	N	N	N	N		-	-	63	
					838														

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
4th	A to B	Collector	Collector	Independence	302	30	AC	2	Y	Y	Y	Y	N	N		95	65	59	
4th	B to C	Collector	Collector	Independence	301	30	AC	2	Y	Y	Y	Y	N	N		95	92	Fair	
4th	C to Monmouth	Collector	Collector	Independence	295	30	AC	2	Y	Y	Y	Y	N	N		96	100	Fair	
4th	Monmouth to D	Collector	Collector	Independence	297	30	AC	2	Y	Y	Y	Y	N	N		96	20	Poor	
4th	D to E	Collector	Collector	Independence	297	30	AC	2	Y	Y	Y	Y	N	N		100	75	Poor	
4th	E to F	Collector	Collector	Independence	302	30	AC	2	Y	Y	Y	Y	N	N		100	50	90	
4th	F to G	Collector	Collector	Independence	299	30	AC	2	Y	Y	Y	Y	N	N		98	88	84	
4th	G to H	Collector	Collector	Independence	292	30	AC	2	Y	Y	Y	Y	N	N		100	50	87	
4th	H to I	Collector	Collector	Independence	260	30	AC	2	Y	Y	Y	Y	N	N		100	98	87	
4th	I to Evergreen	Collector	Collector	Independence	226	34	AC	2	N	N	Y	25%	N	N	Shoulder bikeway proposed	-	-	95	
4th	Evergreen to Maple	Collector	Collector	Independence	402	34	AC	2	N	N	Y	Y	N	N	Shoulder bikeway proposed	-	-	94	
4th	Maple to Spruce	Collector	Local	Independence	223	33	AC	2	40%	40%	Y	Y	N	N	Shoulder bikeway proposed	75	100	96	
4th	Spruce to Fir	Collector	Local	Independence	211	35	AC	2	Y	Y	Y	Y	N	N		100	100	96	
4th	Fir to south end	Collector	Local	Independence	506	36	AC	2	Y	20%	Y	Y	N	N		96	100	92	
					4213														
Ash	Williams to Albert	Collector	Collector	Independence	903	36	AC	2	N	N	N	N	N	N		-	-	64	
Ash	Albert to Butler	Collector	Collector	Independence	275	36	AC	2	N	N	N	N	N	N		-	-	61	New
Ash	Butler to A	Collector	Collector	Independence	290	24	AC	2	N	N	N	N	N	N		-	-	69	
					1468														
Stryker	Hoffman to Airport St	Collector	Collector	Independence		22	AC	2	N	N	3%	N	N	N	Shoulder bikeway proposed	-	-		
Stryker	Airport St to Piper	Collector	Collector	Independence		22	AC	2	N	N	3%	N	N	N	Shoulder bikeway proposed	-	-		
Stryker	Piper to Stinson	Collector	Collector	Independence		22	AC	2	N	N	3%	N	N	N	Shoulder bikeway proposed	-	-		
Stryker	Stinson to Cessna	Collector	Collector	Independence		22	AC	2	N	N	3%	N	N	N	Shoulder bikeway proposed	-	-		
Stryker	Cessna to Stearman	Collector	Collector	Independence	3015	22	AC	2	N	N	3%	N	N	N	Shoulder bikeway proposed	-	-	96	
Stryker	Stearman to Skyrider	Collector	Collector	Independence		29	AC	2	N	N	50%	N	N	N	Shoulder bikeway proposed	-	-		
Stryker	Skyrider to Main	Collector	Collector	Independence	2380	29	AC	2	N	N	50%	N	N	N	Shoulder bikeway proposed	-	-		
					5395														
7th	Monmouth to D	Collector	Collector	Independence	297	38	AC	2	Y	Y	Y	Y	N	N		100	100	82	
7th	D to E	Collector	Collector	Independence	300	34	AC	2	Y	Y	Y	Y	N	N		90	88	97	
7th	E to F	Collector	Collector	Independence	297	36	AC	2	Y	Y	Y	Y	N	N		85	30	96	
7th	F to G	Collector	Collector	Independence	296	36	AC	2	Y	Y	Y	Y	N	N		90	100	64	
7th	G to Arbor	Collector	Collector	Independence	440	18	AC	2	Y	Y	N	Y	N	N		90	90	59	
7th	Arbor to Riverwood	Collector	Collector	Independence	253	20	AC	2	Y	Y	N	Y	N	N		100	100	72	
7th	Riverwood to Becken	Collector	Collector	Independence	420	13	AC	2	Y	N	N	Y	N	N		0		95	
Extension to 7th	***South end to s UGB***	***Collector***	***Collector***	***Independence***	***2775***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***	***N***	***N***		***100***	***100***	***100***	
					2303														
13th	Monmouth to D	Collector	Collector	Independence	291	36	AC	2	10%	Y	Y	Y	N	N		100	100	73	
13th	D to E	Collector	Collector	Independence	294	36	AC	2	N	N	Y	Y	N	N		-	-	74	
13th	E to F	Collector	Collector	Independence	342	26	AC	2	N	N	N	N	N	N		-	-	76	
13th	F to south UGB	Collector	Collector	Independence	182	26	AC	2	Y	N	Y	N	N	N		100	-	77	
					1109														
Gun Club	Hoffman to Picture	Arterial	Minor Arterial	Independence	1692	26	AC	2	N	N	N	Y	N	N	Shoulder bikeways proposed	-	-	97	
Gun Club	Picture to Williams	Arterial	Minor Arterial	Independence	652	30	AC	2	N	N	N	Y	Bike lane	N	Shoulder bikeways proposed	-	-	96	
Gun Club	Williams to Rhoda	Arterial	Minor Arterial	Independence	1330	30	AC	2	N	N	N	50%	Bike lane	N	Shoulder bikeways proposed	-	-	77	
Gun Club	Rhoda to B	Arterial	Minor Arterial	Independence	225	24	AC	2	N	N	N	Y	Bike lane	N	Shoulder bikeways proposed	-	-	74	
Gun Club	B to C	Arterial	Minor Arterial	Independence	236	24	AC	2	N	N	N	Y	Bike lane	N	Shoulder bikeways proposed	-	-	73	
Gun Club	C to Monmouth	Arterial	Minor Arterial	Independence	315	26	AC	2	N	N	N	Y	Bike lane	N	Shoulder bikeways proposed	-	-	83	

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
					4450														
Hoffman	West UGB to Gun Club	Arterial	Minor Arterial	County	1050	24	AC	2	N	N	N	N	Y	N	Proposed shoulder bikeways	-	-		
Hoffman	Gun Club to James	Arterial	Minor Arterial	Independence	740	36	AC	2	N	N	N	N	Y	N	Proposed shoulder bikeways	-	100	100	
Hoffman	James to Airport Rd	Arterial	Minor Arterial	Independence	3450	36	AC	2	Y	N	Y	Y	Y	N	Proposed shoulder bikeways	-	100	100	
Hoffman	Airport Rd to Stryker	Arterial	Minor Arterial	Independence	1065	36	AC	2	Y	Y	Y	Y	Y	Y	Proposed shoulder bikeways	100	100	100	
					6305														
Polk	Stryker to Walnut	Arterial	Minor Arterial	Independence	1020	36	AC	2	Y	Y	Y	Y	Y	Y	Proposed shoulder bikeways	10	100	100	
Polk	Walnut to Log Cabin	Arterial	Minor Arterial	Independence	312	30	AC	2	N	N	Y	Y	N	N	Proposed shoulder bikeways	-	-	82	
Polk	Log Cabin to Marsh	Arterial	Minor Arterial	Independence	300	26	AC	2	50%	N	Y	Y	N	N	Proposed shoulder bikeways	100	-	80	
Polk	Marsh to Main	Arterial	Minor Arterial	Independence	275	29	AC	2	N	N	Y	Y	N	N	Proposed shoulder bikeways	-	-	80	
					1907														
Williams	Ash to Walnut	Collector	Collector	Independence	275	36	AC	2	N	N	N	N	N	N		-	-	62	
Williams	Walnut to Log Cabin	Collector	Collector	Independence	297	36	AC	2	N	N	N	N	N	N		-	-	61	
Williams	Log Cabin to Marsh	Collector	Collector	Independence	318	36	AC	2	Y	N	N	N	N	N		100	-	79	
Williams	Marsh to Main	Collector	Collector	Independence	278	36	AC	2	Y	Y	N	-	N	N		57	96	75	
					1168														
A	Ash to 4th	Collector	Collector	Independence	142	22	AC	2	N	Y	N	N	N	N		-	0	78	
					142														
Monmouth (Hwy 43)	Main to 2nd	Arterial	Arterial	ODOT	264	48	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	2nd to 3rd	Arterial	Arterial	ODOT	370	38	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	3rd to 4th	Arterial	Arterial	ODOT	370	38	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	4th to 5th	Arterial	Arterial	ODOT	370	38	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	5th to 6th	Arterial	Arterial	ODOT	422	38	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	6th to 7th	Arterial	Arterial	ODOT	370	38/34	AC	2	Y	Y			Bike lane	Bike lane				Fair	
Monmouth (Hwy 43)	7th to 8th	Arterial	Arterial	ODOT	422	34	AC	2	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	8th to 9th	Arterial	Arterial	ODOT	106	34/36	AC	2	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	9th to 10th	Arterial	Arterial	ODOT	422	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	10th to 11th	Arterial	Arterial	ODOT	634	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	11th to 12th	Arterial	Arterial	ODOT	370	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	12th to 13th	Arterial	Arterial	ODOT	528	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	13th to Gun Club	Arterial	Arterial	ODOT	581	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	Gun Club to 16th	Arterial	Arterial	ODOT	1478	46	AC	3										Fair	
Monmouth (Hwy 43)	16th to Talmadge Rd	Arterial	Arterial	ODOT	317	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	Talmadge to 17th	Arterial	Arterial	ODOT	317	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
Monmouth (Hwy 43)	Talmadge to west UGB	Arterial	Arterial	ODOT	422	46	AC	3	Y	Y			Bike lane	Bike lane	Built in summer of 1997	-	-	Fair	
					7763														
16th	Main to Ash Creek	Local	Collector	Independence	1343	36	AC	2	Y	Y	Y	Y	Shared roadway	Shared roadway		100	100	100	
Extension of 16th	***North end to Hoffman***	***Collector***	***Collector***	***Independence***	***3000***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***			***N/A***	***-***	***-***	***100***	
					1343														
South River Rd	Main to bridge	Collector	Collector	Independence	375													Fair	
					375														
Talmadge Road	Monmouth to south UGB	Collector	Collector	Independence	975	36	AC	2	Y	N	Y	N				100	N/A	100	
Realignment of Talmadge	***Abuts 16th at Monmouth***	***Collector***	***Collector***	***Independence***	***975***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***	***Shoulder bikeway***	***Shoulder bikeway***		***-***	***-***	***-***	
Picture St	Gun Club to 13th	Local	Collector	Independence	722	36	AC	2	Y	Y	Y	Y				86	86	92	
Picture St	13th to 12th	Local	Collector	Independence	238	36	AC	2	Y	Y	Y	Y				80	80	98	
Picture St	12th to east end	Local	Collector	Independence	437	36	AC	2	Y	Y	Y	Y				94	93	70	
					1397														
James St	Hoffman to Matthew	Local	Collector	Independence															
James St	Matthew to south end	Local	Collector	Independence															

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
Extension of James St	***S end to Picture***	***Unbuilt***	***Collector***	***Independence***	***800***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***				***N/A***	***N/A***	***N/A***	
G Street	7th to 6th	Local	Collector	Independence	409	25	AC	2	N	Y	N	N							
G Street	6th to 5th	Local	Collector	Independence	410	23	AC	2	N	Y	N	N							
G Street	5th to 4th	Local	Collector	Independence	345	24	AC	2	N	Y	N	N							
G Street	4th to 3rd	Local	Collector	Independence	350	24	AC	2	Y	Y	N	N							
G Street	3rd to 2nd	Local	Collector	Independence	230	36	AC	2	Y	Y	Y	Y							
G Street	2nd to Main	Local	Collector	Independence	403	36	AC	2	Y	Y	Y	Y							
					2147														
Spruce St	4th to Hemlock Lp E	Local	Collector	Independence	204	36	AC	2	Y	Y	Y	Y							
Spruce St	W end to Pine Ct	Local	Collector	Independence	280	36	AC	2	Y	Y	Y	Y							
Spruce St	Pine Ct to Hemlock Lp E	Local	Collector	Independence	198	36	AC	2	Y	Y	Y	Y							
Extension of Spruce St	***W end to w UGB (Talmadge)***	***Unbuilt***	***Collector***	***Independence***	***4950***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***	***Bike lane***	***Bike lane***		***N/A***	***N/A***	***N/A***	
Construct unnamed Southern collector	***7th St extension to Corvallis Rd***	***Unbuilt***	***Collector***	***Independence***	***2700***	***36***	***AC***	***2***	***Y***	***Y***	***Y***	***Y***				***N/A***	***N/A***	***N/A***	
**** Left or right is determined by following the direction of travel indicated by the sequene of segments***																			

	Existing Network				Future Network	
SUMMARY	**Total Linear Feet**	**Area**	**Ave Width**	**% of Total Length**	**Total Linear**	**% of Total**
Arterial	33,649	1,146,189	34.1	29	20,987	43
Minor Arterial					12,662	26
Collector	17,986	423,521	23.5	15	15,258	31
Local	65,579	1,905,401	29.1	56		
Total	**117,214**	**3,475,111**	**28.9**		**48,907**	

River	Polk to boat landing	Local			304	30	AC		N	N	Y	Y						74	
River	Boat landing to Picture	Local			293	30	AC		Y	Y	Y	Y							
Thorpe	Oak to Ash Creek	Local			100		G		N	N	N	N						100	
Marsh	Polk to boat landing	Local			274	12	AC		N	N	N	N						100	
Marsh	Boat landing to Picture	Local			284	12	AC		N	N	N	N						100	
Marsh	Picture to Williams	Local			288	12	AC		N	N	N	N						100	
Marsh	Williams to Grand	Local			285	12	AC		N	N	N	N						100	
Marsh	Grand to Oak	Local			270	12	AC		N	N	N	N						100	
2nd	B to C	Local			289	50	AC		Y	Y	Y	Y				50	70	59	
2nd	C to Monmouth	Local			287	44	AC		Y	Y	Y	Y				70	70	64	
2nd	Monmouth to D	Local			294	44	AC		Y	Y	Y	Y						68	
2nd	D to E	Local			298	41	AC		Y	70%	Y	Y						63	
Log Cabin	Polk to boat landing	Local			274	24	AC		60%	20%	N	N				92	100	100	
Log Cabin	Boat landing to Picture	Local			273	24	AC		N	Y	N	N					100	100	
Log Cabin	Picture to Williams	Local			279	22	AC		N	N	N	N				97		100	
Log Cabin	Grand to Ash Creek	Local			214	21	AC		85%	N	N	N				100		79	
Log Cabin	Butler to A	Local			305	21	AC		Y	95%	N	N				82	65	66	
3rd	A to B	Local			302	30	C		Y	Y	90%	Y				96	74	Fair	
3rd	B to C	Local			295	30	C		Y	Y	Y	Y				88	75	Fair	
3rd	C to Monmouth	Local			295	29	C		Y	Y	Y	Y				80	91	Fair	
3rd	Monmouth to D	Local			296	29	C		Y	Y	Y	Y				87	97	Poor	
3rd	D to E	Local			302	29	C		Y	Y	Y	Y				70	100	Poor	
3rd	E to F	Local			298	29	C		Y	N	Y	50%				70		Poor	
3rd	F to G	Local			311	29	C		Y	N	Y	50%				65		Poor	
3rd	G to H	Local			322	23	AC		Y	N	N	N				92		95	
3rd	H to I	Local			319	24	AC		N	N	75%	Y						84	
Walnut	Hoffman to Polk	Local			213	30	AC		N	N	75%	Y						92	
Walnut	Williams to Ash Creek	Local			247	26	AC		N	N	N	N						84	
Walnut	Albert to Butler	Local			268	29	AC		Y	Y	Y	Y						68	
Walnut	Butler to A	Local			293	29	AC		Y	Y	Y	Y				97	100	67	
Evergreen	Evergreen to >>>>>	Local			756	34	AC		N	N	Y	Y						80	
Ash	Picture to Williams	Local			285	13	G		N	N	N	N						Gravel	
5th	A to B	Local			262	30	AC		Y	Y	Y	Y				96	98	97	
5th	C to Monmouth	Local			294	30	AC		Y	Y	Y	Y				95	98	87	

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
5th	Monmouth to D	Local			296	38	AC		Y	Y	Y	Y				90	97	96	
5th	D to E	Local			289	38	AC		Y	Y	Y	Y				91	80	90	
5th	E to F	Local			230	38	AC		Y	Y	Y	Y				100	100	97	
5th	F to G	Local			291	38	AC		Y	Y	Y	Y				86	97	96	
5th	G to I	Local			624	38	AC		70%	30%	N	N				96	94	91	
Pine	Spruce to >>>>>	Local			414	34	AC		Y	Y	Y	Y				90	90	82	
6th	Ash Creek to B	Local			260	22	AC		Y	90%	N	N				97	99	86	
6th	B to C	Local			297	24	AC		Y	Y	N	N				75	100	89	
6th	C to Monmouth	Local			294	30	AC		Y	Y	Y	Y				80	94	61	
6th	Monmouth to D	Local			302	30	AC		Y	Y	Y	Y				95	92	76	
6th	D to E	Local			291	30	AC		Y	Y	Y	Y				90	97	73	
6th	E to F	Local			294	30	AC		Y	Y	Y	Y				93	100	60	
6th	F to G	Local			300	30	AC		Y	Y	Y	Y				100	100	85	
6th	G to >>>>>	Local			160	22	AC		N	N	N	N						88	
8th	Monmouth to D	Local			303	13	G		N	N	N	N						100	
8th	D to E	Local			309	16	G		N	N	N	N						100	
8th	E to F	Local			316	11	G		N	N	N	N						100	
9th	Ash Cr to Monmouth	Local			892	25	AC		N	N	N	N						AC=80	
9th	Monmouth to D	Local			297	18	AC		N	N	N	N						75	
9th	D to E	Local			316	16	AC		N	N	N	N						87	
9th	E to F	Local			301	19	AC		N	N	N	N						85	
10th	Monmouth to D	Local			288	29	AC		Y	N	Y	Y				100	100	100	
10th	D to E	Local			302	30	AC		Y	N	Y	Y				100	100	100	
10th	E to F	Local			302	20	AC		N	N	N	N						95	
10th	F to H	Local			678	20	AC		N	N	N	N						91	
11th	Monmouth to D	Local			273	22	AC		N	N	N	N						84	
11th	D to E	Local			299	23	AC		N	N	N	N						88	
11th	E to Randall	Local			255	34	AC		Y	Y	Y	Y				100	100	95	
11th	Randall to >>>>>	Local			648	34	AC		Y	Y	Y	Y				100	97	89	
Deborah	Randall to >>>>>	Local			230	34	AC		N	N	N	N						93	
Randall	12th to 11th	Local			363	34	AC		Y	Y	Y	Y				100	100	93	
Randall	11th to >>>>>	Local			162	34	AC		Y	Y	Y	Y				100	100	87	
12th	Picture to Howard	Local			246	34	AC		Y	Y	Y	Y				99	97	95	
12th	Howard to Dale	Local			239	34	AC		Y	Y	Y	Y				97	97	95	
12th	Dale to Kelli	Local			216	34	AC		Y	Y	Y	Y				100	100	93	
12th	Kelli to Scott	Local			172	34	AC		Y	Y	Y	Y				100	100	80	
12th	Scott to Kyle	Local			180	34	AC		Y	Y	Y	Y				100	100	94	
12th	Kyle to >>>>>	Local			114	34	AC		N	Y	Y	Y				100	100	96	
12th	Monmouth to D	Local			297	24	AC		N	N	N	N						91	
12th	D to E	Local			287	24	AC		N	N	N	N						85	
12th	E to Randall	Local			258	36	AC		Y	Y	Y	Y				100	100	98	
13th	<<<<< to Picture	Local			112	35	AC		Y	Y	Y	Y				100	100	98	
13th	Picture to Richard	Local			261	34	AC		Y	Y	Y	Y				98	50	93	
13th	Richard to Williams	Local			236	34	AC		Y	Y	Y	Y				95	95	85	
13th	Williams to Wildfang	Local			309	34	AC		Y	Y	Y	Y				91	94	83	
13th	C to Monmouth	Local			316	34	AC		N	N	Y	Y						100	
North Way	Rhoda to B	Local			206	34	AC		N	N	Y	Y						100	
Wildfang	Williams to 13th	Local			550	34	AC		Y	Y	Y	Y				96	95	90	
Wildfang	13th to 12th	Local			234	34	AC		Y	Y	Y	Y				90	99	82	
Picture Pl	Picture to >>>>>	?			311	30	AC		Y	Y	Y	Y				100	100	85	
16th	Ash Cr to Monmouth	Local			450	24	AC		N	N	N	30%						74	
Talmadge	Monmouth to >>>>>	Local			450	24	AC		N	N	N	N						88	
Skyraider	<<<<< to Stryker	Local			1080	36	AC		N	N	Y	Y						98	
Stearman	<<<<< to Stryker	Local			1080	36	AC		N	N	Y	Y						98	
Cessna	<<<<< to Stryker	Local			1050	34	AC		Y	Y	Y	Y				98	98	90	
Stinson	<<<<< to Stryker	Local			800	34	AC		Y	Y	Y	Y				98	98	94	
Piper	<<<<< to Stryker	Local			700	34	AC		Y	Y	Y	Y				100	100	82	
Airport Way	<<<<< to Stryker	Local			720	34	AC		Y	Y	Y	Y				100	100	83	
North St	Stryker to Walnut	Local			926	26	AC		N	N	N	N						89	
Polk	Main to River Dr	Local			376	26	AC		90%	Y	Y	Y				94	96	73	
Boat landing	Ash to Walnut	Local			286	25	AC		N	N	N	N						84	

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
Boat landing	Log Cabin to Marsh	Local			317	20	AC		81%	N	N	N				96		75	
Boat landing	Marsh to Main	Local			276	20	AC		N	N	N	N						82	
Boat landing	Main to River Dr	Local			253	15	G		N	N	N	N						Gravel	
Picture Pl	Gun Club to 13th	Local			722	36	AC		Y	Y	Y	Y				86	86	92	
Picture Pl	13th to 12th	Local			236	36	AC		Y	Y	Y	Y				80	80	98	
Picture Pl	12th to >>>>>	Local			437	36	AC		Y	Y	Y	Y				94	93	70	
Picture Pl	Ash to Walnut	Local			263	24	AC		N	N	N	N						89	
Picture Pl	Log Cabin to Marsh	Local			316	24	AC		N	N	N	N						88	
Picture Pl	Marsh to Main	Local			276	24	AC		N	N	N	N						89	
Picture Pl	Main to River Dr	Local			144	30	AC		N	N	N	N						93	
Howard	<<<<< to 12th	Local			263	30	AC		Y	Y	Y	Y				100	100	67	
Richard	<<<<< to 13th	Local			241	28	AC		Y	Y	Y	Y				88	98	76	
Williams	Gun Club to Wildfang	Local			492	34	AC		Y	Y	Y	Y				100	100	82	
Williams	Wildfang to 13th	Local			236	34	AC		Y	Y	Y	Y				100	100	83	
Dale	12th to >>>>>	Local			262	34	AC		80%	80%	Y	Y				100	100	87	
Kelli	12th to >>>>>	Local			260	30	AC		Y	Y	Y	Y				85	95	87	
Grand	Log Cabin to Marsh	Local			318	24	AC		Y	N	81%	N				100		83	
Grand	Marsh to Main	Local			274	30	AC		Y	N	Y	Y				78		89	
Scott	12th to >>>>>	Local			239	30	AC		Y	Y	Y	Y				100	100	95	
Dawn	<<<<< to 12th	Local			132	34	AC		Y	Y	Y	Y				100	100	96	
Kyle	12th to >>>>>	Local			187	28	AC		Y	Y	Y	Y				100	100	96	
Oak	Marsh to Main	Local			255	24	AC		N	N	N	N						86	
Butler	Ash to Walnut	Local			261	30	AC		94%	70%	Y	Y				96	23	68	
Butler	Walnut to Log Cabin	Local			285	19	AC		N	Y	N	N					83	60	
A	4th to Walnut	Local			97	30	AC		Y	Y	Y	Y				95	100	79	
A	Walnut to 3rd	Local			220	30	AC		Y	Y	Y	Y				90	80	80	
A	3rd to Log Cabin	Local			185	30	AC		N	N	Y	Y						86	
Rhoda	Gun Club to North Way	Local			582	34	AC		N	N	Y	Y						96	
B	Gun Club to North Way	Local			582	34	AC		N	N	Y	Y						78	
B	7th to 6th	Local			340	20	AC		N	N	N	N						84	
B	5th to 4th	Local			349	30	AC		Y	Y	Y	Y				96	94	87	
B	4th to 3rd	Local			347	30	C		Y	Y	Y	Y				97	94	Fair	
B	3rd to 2nd	Local			343	32	AC		Y	Y	Y	Y				94	60	Fair	
B	2nd to Main	Local			331	42	AC		Y	Y	Y	Y				93	95	58	
C	Gun Club to 13th	Local			547	34	AC		N	N	Y	Y						80	
C	7th to 6th	Local			346	30	AC		Y	Y	Y	Y				85	96	82	
C	6th to 5th	Local			412	30	AC		Y	Y	Y	Y				80	75	67	
C	5th to 4th	Local			345	30	AC		Y	Y	Y	50%				50	50	Poor	
C	4th to 3rd	Local			350	30	AC		Y	Y	Y	Y				92	89	Fair	
C	3rd to 2nd	Local			343	30	AC		Y	Y	Y	60%				95	50	Poor	
C	2nd to Main	Local			335	44	C		Y	Y	Y	Y				100	100	Fair	
D	13th to 12th	Local			475	34	AC		N	N	Y	Y						75	
D	12th to 11th	Local			371	34	AC		N	N	N	N						72	
D	<<<<< to 10th	Local			332	20	G		N	N	N	N						Good	
D	10th to 9th	Local			346	24	AC		95%	N	N	N					100	95	
D	9th to 8th	Local			184	24	AC		N	50%	N	N					100	86	
D	Ash Cr to 7th	Local			214	25	AC		N	N	N	N						80	
D	7th to 6th	Local			345	24	AC		N	40%	N	N					100	80	
D	6th to 5th	Local			410	36	AC		Y	Y	Y	Y				92	98	69	
D	5th to 4th	Local			345	30	C		Y	Y	Y	Y				85	88	Good	
D	4th to 3rd	Local			350	30	AC		Y	Y	Y	Y				96	65	64	
D	3rd to 2nd	Local			337	38	AC		Y	Y	Y	Y				65	40	63	
D	2nd to Main	Local			334	38	AC		Y	Y	Y	Y				94	99	76	
E	13th to 12th	Local			478	34	AC		N	N	Y	Y						77	
E	12th to 11th	Local			363	36	AC		Y	N	Y	Y				100		95	
E	11th to 10th	Local			640	36	AC		15%	25%	Y	Y				100	100	94	
E	10th to 9th	Local			351	24	AC		Y	N	N	N				80		85	
E	9th to 8th	Local			178	24	AC		Y	N	N	N				35		92	
E	Ash Cr to 7th	Local			221	24	AC		Y	N	N	N				95		79	
E	7th to 6th	Local			345	23	AC		Y	N	N	N				90		79	
E	6th to 5th	Local			408	36	AC		Y	Y	Y	Y				87	85	75	

Street	Section	Existing Functional Class	Future Functional Class	Jurisdiction	Length (ft)	Pavement Width (ft)	Surface	Lane Number	Right* Sidewalk	Left* Sidewalk	Right* Curb	Left* Curb	Right* Bike Facility	Left* Bike Facility	Other/Notes	1993 Rt Sidewalk Condition	1993 Lt Sidewalk Condition	1993 Street Condition	2006 Street Condition
E	5th to 4th	Local			344	30	AC		Y	Y	Y	Y				100	97	65	
E	4th to 3rd	Local			347	30	AC		Y	Y	Y	Y				94	98	53	
E	3rd to 2nd	Local			301	30	AC		60%	Y	Y	Y				80	80	57	
E	2nd to Main	Local			334	38	AC		Y	50%	Y	Y				65	85	58	
F	10th to 9th	Local			347	18	AC		N	N	N	N						75	
F	9th to 8th	Local			195	19	AC		N	N	N	N						79	
F	8th to 7th	Local			551	34	AC		Y	N	Y	Y				90		72	
F	7th to 6th	Local			346	32	AC		Y	30%	Y	Y				100	100	69	
F	6th to 5th	Local			409	32	AC		Y	Y	Y	Y				90	100	72	
F	5th to 4th	Local			346	32	AC		Y	50%	Y	Y				95	100	79	
F	4th to 3rd	Local			351	32	AC		Y	10%	Y	Y				50	100	84	
G	Ash Cr to 7th	Local			249	25	AC		Y	N	N	N				100		77	
G	7th to 6th	Local			409	23	AC		N	Y	N	N					90	73	
G	6th to 5th	Local			410	24	AC		N	Y	N	N					55	73	
G	5th to 4th	Local			346	24	AC		N	Y	N	N					94	80	
G	4th to 3rd	Local			350	24	AC		Y	Y	N	N				90	70	66	
G	3rd to 2nd	Local			230	24	AC		N	N	N	N						80	
G	2nd to Main	Local			403	24	AC		N	Y	N	N					90	84	
H	4th to 3rd	Local			355	22	AC		Y	Y	Y	Y				100	100	100	
H	2nd to Main	Local			190	17	AC		Y	Y	Y	Y				100	100	100	
Arbor	7th to >>>>>	Local			356	30	AC		Y	Y	Y	Y				100	100	79	
I	5th to 4th	Local			331	26	AC		N	40%	50%	N					85	85	
I	4th to 3rd	Local			355	24	AC		N	N	N	N						85	
I	2nd to Main	Local			494	34	AC		Y	N	Y	Y				90		94	
Riverwood	7th to >>>>>	Local			304	30	AC		Y	60%	Y	Y				100	100	75	
Evergreen	4th to Evergreen	Local			756	34	AC		N	N	Y	Y						80	
Maple Ct	<<<<< to Maple	Local			661	34	AC		N	N	Y	Y						Poor	
Hemlock Ln	W Spruce >> E Spruce	Local			1697	0	AC		Y	Y	Y	Y				88	94	Poor	
Spruce	<<<<< to Hemlock E	Local			280	36	AC		Y	Y	Y	Y				100	75	92	
Spruce	Pine to Hemlock E	Local			196	36	AC		Y	Y	Y	Y				100	75	87	
Spruce	Hemlock to 4th	Local			204	36	AC		Y	Y	Y	Y				100	100	92	
Spruce	4th to >>>>>	Local			206	34	AC		Y	Y	Y	Y				100	91	87	
Fir	4th to >>>>>	Local			148	34	AC		Y	Y	Y	Y				100	94	91	

APPENDIX B

Traffic Data and Analysis
Sections B-1 through B-6

APPENDIX SECTION B-1

Traffic Operations Summary

Traffic Operations

The purpose of this Chapter is to document traffic operations for the TSP roadways and intersections for the following scenarios:

- 2006 (Balanced 30 HV)
- 2026 Without Improvements
- 2026 With Improvements
- Full UGB Build-Out Without Improvements (2042)
- Full UGB Build-Out With Improvements (2042)

This includes an examination of traffic control and geometrics, traffic volumes, intersection levels of service and V/C analysis.

1.1 OPERATIONAL STANDARDS

Within the state of Oregon, traffic operations are evaluated based on two sets of criteria or standards. For many local communities, the quality of traffic performance is assessed in terms of intersection or roadway levels of service (LOS). For state highways, the operative standard is expressed in terms of a volume to capacity (V/C) ratio which is the ratio between traffic volumes and the roadway or intersection's capacity. The City of Independence currently uses LOS standards, however a change to V/C standards is being considered as part of the TSP update. The two operational standards are described below.

Volume-to-Capacity Ratios

As adopted in the 1999 OHP, ODOT uses volume-to-capacity (V/C) ratios to measure state highway performance rather than intersection or roadway levels of service. Various V/C thresholds are applied to all state highways based on the functional classification and highway segment designation of these facilities. Both Highway 193 and 43 (Oregon 51) are district level, non-freight routes inside a non-MPO municipal UGB. In addition, the following highway segment designations apply to portions of these highways:

- Urban Business Area (UBA): Highway 193 (Oregon 51) from Stryker Street to Polk Street (milepoint 4.86 to 5.70)
- Special Transportation Area (STA): Highway 193 (Oregon 51) from B Street to Monmouth Street (milepoint 6.23 to 6.34) and Highway 43 from Main Street to 4th Street (milepoint 2.35 to 2.14)
- Commercial Center (CC): Highway 43 (Oregon 51) from 10th Street to the Independence City Limits (milepoint 1.70 to 0.76)

The peak hour, maximum V/C standards for the various sections of Highway 193 and 43 (Oregon 51) are summarized below.

Highway 193 and 43 (Oregon 51) Peak Hour, Maximum V/C Standards

District Highway, Inside UGB, Non-MPO Designations	Maximum V/C Ratio
STA	0.95
Posted speed <=35 mph or UBA	0.90
Posted speed >35 mph	0.85
Posted speed >=45 mph	0.80

Source: Oregon Highway Plan, Policy 1F Mobility Standards, Table 6.

Intersection Levels of Service

Intersection traffic volumes are evaluated to determine the level of operating performance that occurs within peak travel periods. Operating performance is based on an assessment of average control delay per vehicle entering the intersection. This delay is calculated using equations that take into account turning movement volumes, intersection lane geometry and traffic signal features, as well as characteristics of the traffic stream passing through the intersection, including time required to slow, stop, wait, and accelerate to move through the intersection. Various levels of delay are then expressed in terms of levels of service (LOS) for either signalized or unsignalized intersections. The various levels of service range from LOS A (which reflects free-flow conditions) through LOS F (which reflects operational breakdown). Between LOS A and LOS F, progressively higher LOS grades reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and queues. Characteristics of each LOS are briefly described below.

Level of Service Definitions

	Average Delay/Vehicle (sec.)		
Level of Service	Signalized	Unsignalized	Description
A (Desirable)	<10 seconds	<10 seconds	Very low delay; most vehicles do not stop.
B (Desirable)	>10 and <20 seconds	>10 and <15 seconds	Low delay resulting from good progression, short cycle lengths, or both.
C (Desirable)	>20 and <35 seconds	>15 and <25 seconds	Higher delays with fair progression, longer cycle lengths, or both.
D (Acceptable)	>35 and <55 seconds	>25 and <35 seconds	Noticeable congestion with many vehicles stopping. Individual cycle failures occur.
E (Unsatisfactory)	>55 and <80 seconds	>35 and <50 seconds	High delay with poor progression, long cycle lengths, high V/C ratios, and frequent cycle failures.
F (Unsatisfactory)	>80 seconds	>50 seconds	Very long delays, considered unacceptable by most drivers. Often results from over-saturated conditions or poor signal timing.

Source: 2000 Highway Capacity Manual, Transportation Research Board.

The analysis of traffic operations was conducted using a Synchro traffic simulation model which was developed specifically for study area intersections. This model includes the field-verified geometrics and other relevant physical data for each intersection, as well as existing traffic control. Analysis procedures follow the ODOT Transportation Planning and Analysis Unit's (TPAU) guidelines.

1.2 EXISTING OPERATIONS

Intersection Traffic Control

The analysis of existing traffic conditions within the City of Independence focuses on nine key intersections located throughout the City. These intersections are:

1. Hoffman Road at 16th Street (unsignalized)
2. Hoffman Road at Gun Club Road (unsignalized)
3. Monmouth Street (OR 51) at 16th Street (signalized)
4. Monmouth Street (OR 51) at Gun Club Road (signalized)
5. Monmouth Street (OR 51) at 7th Street (unsignalized)
6. Main Street (OR 51) at Polk Street (unsignalized)
7. Main Street (OR 51) at Stryker Street (unsignalized)
8. Main Street at 'G' Street (unsignalized)
9. Main Street (OR 51) at Monmouth Street (OR 51) (3-way stop controlled)

Each of the unsignalized intersections is stop-controlled on the minor street approach. Two of the intersections operate with traffic signals, one as a three way stop. Existing lane configurations and traffic control for the nine study area intersections are shown in Section B-3.

Traffic Volumes

ODOT provided turning movement counts for seven of the study intersections, the two remaining were supplied by the City of Independence. A review of traffic count data indicated that City streets traffic activity peaked from 5 pm to 6 pm. Independence traffic is characterized as commuter with some season changes in traffic patterns and commuting between cities. Traffic volumes vary with the seasons and adjustments are required for the counts taken outside of the peak season to ensure that they reflect appropriate conditions for use in assessing design/improvement options. The turning movement volume figures in Section B-3 reflects the raw traffic count data and volumes with the application of a seasonal adjustment to ensure that analysis of current operating performance is based on the 30th highest hour conditions. See Section B-4, for a summary of the assumptions used in preparing the traffic volume seasonal adjustments and growth rates.

1.3 2006 TRAFFIC OPERATIONS

Summary of Existing Traffic Operations

Intersection analysis worksheets and traffic analysis methodology are included in Section B-3 and Section B-4, respectively. Currently the intersections generally experience minimal delays and operate within the acceptable LOS standards. The northbound approach of 7th Street experiences the greatest delay.

2006 (30 HV) Operations at Key Intersections in Independence

Signalized Intersections		V/C Ratio	Average Delay (sec/vehicle)	LOS
Monmouth St. (OR 51) @ 16th Street		0.56	36.7	D
Monmouth St. (OR 51) @ Gun Club Road		0.70	31.1	C
Unsignalized Intersections	**Critical Movement**	**Critical V/C Ratio**	**Critical Delay (seconds/vehicle)**	**Critical LOS**
Hoffman Road @ Gun Club Road	Northbound	0.33	15.6	C
Hoffman Road @ 16th Street	Northbound	0.17	12.7	B
Monmouth St. (OR 51) @ 7th Street	Northbound	0.52	48.0	E
	Southbound	0.07	17.1	C
Main St. (OR 51) @ Polk Street	Eastbound	0.38	18.9	C
	Westbound	0.05	17.0	C
Main St. (OR 51) @ Stryker Street	Northbound	0.01	8.4	A
	Eastbound	0.28	18.2	C
Main St. (OR 51) @ Monmouth St. (OR 51)	All-Way Stop		17.1	C
Main St. @ 'G' Street	Eastbound	0.35	20.6	C

Note 1: LOS means intersection level of service.

Note 2: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed

1.4 FUTURE TRAFFIC OPERATIONS

Future traffic operations analysis was conducted for four alternatives, two alternatives for the year 2026 and two for full UGB build-out, which is estimated to occur in 2042.

- Alternative 1 – 2026 Without Improvements
- Alternative 2 – 2026 With Improvements
- Alternative 3 – Full UGB Build-Out Without Improvements (2042)
- Alternative 4 – Full UGB Build-Out With Improvements (2042)

Intersection Improvements

Alternative 1 and 3 retain the same intersection geometry and traffic control as the existing conditions. Alternative 2 and 4 includes the following improvements (see next page).

Alternative 2–2026 With Arterial Transportation System Capital Improvements Program

Project Type	Project Description	Source
Safety/Multimodal	Hoffman/Gun Club Road intersection add NB left turn lane	Analysis
Safety/Multimodal	Hoffman/16th Intersection add NB left turn lane	Analysis
Congestion Relief Safety/Multi-modal	Polk Street/Main add EB left turn lane	Analysis
Congestion Relief	Monmouth/Gun Club Road Intersection add SB left turn lane	Analysis
Congestion Relief	Monmouth/Main-install directional circulator ('C' Street to Monmouth) to accommodate SB to WB traffic.	Analysis
Congestion Relief/High Capital	New Arterial Roadway from Corvallis Rd to OR 99 with limited access	Analysis
Congestion Relief/High Capital	New Arterial Roadway overcrossing at W&P tracks	Analysis
Congestion Relief/High Capital	New North-South Collector Roadways between new arterial and Monmouth at Talmadge, 13th and 7th	Analysis

Alternative 4–Full UGB Build Out (2042) With Arterial Transportation System Capital Improvements Program*

Project Type	Project Description	Source
Congestion Relief/Safety/Multi-modal	7th/Monmouth add NB left turn lane.	Analysis
Congestion Relief Safety/Multi-modal	Polk Street/Main install signal	Analysis
Congestion Relief Safety/Multi-modal	Monmouth/Main install signal	Analysis
Safety/Multimodal	'G" Street/Main Street Intersection add left turn lane	Analysis
Safety/Multimodal	Install roundabouts at new arterial intersections	

*These projects are in addition to the Alternative 2-2026 With Arterial Transportation System Capital Improvements Program

The centerpiece of improvements is a new Arterial Roadway running parallel to, and to the South of, Monmouth Street (OR 51). This new Arterial would provide a new travel route for those living and working in Southern Independence, and draw through traffic from South Salem to Monmouth.

To be an effective alternate route in lieu of Monmouth Street (OR 51), the new Arterial Roadway must:

- Be free of on-street parking and driveways
- Have limited intersections (Corvallis Rd, 7th, 13th, Talmadge/16th)
- Maintain travel speeds with minimal delay at intersections (no signals at 7th and 13th)
- Continue west and connect with OR 99 in the City of Monmouth

The design and alignment of the roadway will be the subject of a future refinement plan however, for planning purposes the roadway will in the interim be classified as a minor arterial according to the City of Independence standards. This standard includes two 12 foot travel lanes, bike lanes and sidewalks, with a posted speed of 35 mph or higher.

To protect function at Monmouth and Main, a directional circulator is needed from Main Street to Monmouth Street at 'C' Street. This improvement would divert the southbound (Main Street) to westbound (Monmouth Street) traffic from Oregon 51 and reroute it west onto 'C' Street, then south somewhere between 2nd and 5th Streets to rejoin Monmouth Street west. Because of existing constraints at Monmouth and Main Street, adding additional turn lanes are not feasible.

The improvements to intersection lane configurations and traffic control, and new roadway connections, are shown in figures found in Section B-4. Supporting analysis for signal warrants are also included in Section B-4.

Future Traffic Volumes and Distribution

Future traffic volumes were estimated according to the Oregon Department of Transportation's (ODOT) Transportation Analysis Procedures Manual (APM) (2006) guidelines for cumulative analysis. The area within the City of Independence's Urban Growth Boundary (UGB) has been divided into 16 Traffic Analysis Zones (TAZs). Parametrix estimated the net buildable acreage for each TAZ, and used the acreage estimates to generate the estimated growth in trips to and from each TAZ by the year 2026 and at full UGB build-out (2042). Through trip growth was estimated using the growth method. Section B-4 describes the methodology in more detail. Future volumes are contained in Section B-5 for Alternative 1 and Alternative 2 and Section B-6 for Alternative 3 and Alternative 4.

Based on existing traffic patterns and discussions with City Staff, a redistribution of through trips was conducted for future scenarios. Hoffman Road is assumed to attract more trips for destinations north of Independence because of congestion along Monmouth (Oregon 51), attractiveness as a freight route, and lack of signals. The proposed new arterial is assumed to have little impact to volumes along Hoffman Road. The proposed new arterial would attract east/west through trips that would otherwise travel on Oregon 51 and trips destined for adjacent properties. Eighty percent of the through trips were reassigned to the new arterial. The remaining trips are internal to external or external to internal trips associated with the properties adjacent to the new arterial.

Summary of Future Traffic Operations

The following tables summarize the operations for each of the alternatives.

Alternative 1: 2026 without Improvements

Operations at Key Intersections in Independence

Signalized Intersections		V/C Ratio	Average Delay (sec/vehicle)	LOS
Monmouth St. (OR 51) @ 16th Street		0.70	63.3	E
Monmouth St. (OR 51) @ Gun Club Road		>1.00	>80.0	F
Unsignalized Intersections	**Critical Movement**	**Critical V/C Ratio**	**Critical Delay (seconds/vehicle)**	**Critical LOS**
Hoffman Road @ Gun Club Road	Northbound	0.81	45.4	E
Hoffman Road @ 16th Street	Northbound	0.31	14.5	B
Monmouth St. (OR 51) @ 7th Street	Northbound	>1.00	>80.0	F
	Southbound	>1.00	>80.0	F
Main St. (OR 51) @ Polk Street	Eastbound	0.99	94.0	F
	Westbound	0.72	>80.0	F
Main St. (OR 51) @ Stryker Street	Northbound	0.04	9.0	A
	Eastbound	0.42	29.1	D
Main St. (OR 51) @ Monmouth St. (OR 51)	Northbound	>1.00	>80.0	F
	Eastbound	>1.00	>80.0	F
Main St. @ 'G' Street	Eastbound	>1.00	>80.0	F

Note 1: LOS means intersection level of service.

Note 2: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed

Alternative 2: 2026 with Improvements

Operations at Key Intersections in Independence

Signalized Intersections		V/C Ratio	Average Delay (sec/vehicle)	LOS
Monmouth St. (OR 51) @ 16th Street		0.52	29.3	C
Monmouth St. (OR 51) @ Gun Club Road		0.65	31.5	C
Unsignalized Intersections	**Critical Movement**	**Critical V/C Ratio**	**Critical Delay (seconds/vehicle)**	**Critical LOS**
Hoffman Road @ Gun Club Road	Northbound	0.51	32.6	D
Hoffman Road @ 16th Street	Northbound	0.28	14.3	C
Monmouth St. (OR 51) @ 7th Street	Northbound	0.57	37.1	E
	Southbound	0.49	27.3	D

Alternative 2: 2026 with Improvements (Continued)

Operations at Key Intersections in Independence

Unsignalized Intersections	Critical Movement	Critical V/C Ratio	Critical Delay (seconds/vehicle)	Critical LOS
Main St. (OR 51) @ Polk Street	Eastbound	0.47	36.7	E
	Westbound	0.47	48.8	E
Main St. (OR 51) @ Stryker Street	Northbound	0.02	8.9	A
	Eastbound	0.51	28.7	D
Main St. (OR 51) @ Monmouth St. (OR 51)	Northbound	0.71	19.8	C
	Eastbound	0.35	12.4	B
Main St. @ 'G' Street	Eastbound	0.43	22.0	C

Note 1: LOS means intersection level of service.

Note 2: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed

Alternative 3: Full UGB Build-out without Improvements (2042)

Operations at Key Intersections in Independence

Signalized Intersections	V/C Ratio	Average Delay (sec/vehicle)	LOS
Monmouth St. (OR 51) @ 16th Street	0.83	>80.0	F
Monmouth St. (OR 51) @ Gun Club Road	>1.00	>80.0	F

Unsignalized Intersections	Critical Movement	Critical V/C Ratio	Critical Delay (seconds/vehicle)	Critical LOS
Hoffman Road @ Gun Club Road	Northbound	>1.00	>80.0	F
Hoffman Road @ 16th Street	Northbound	0.38	16.3	C
Monmouth St. (OR 51) @ 7th Street	Northbound	>1.00	>80.0	F
	Southbound	>1.00	>80.0	F
Main St. (OR 51) @ Polk Street	Eastbound	>1.00	>80.0	F
	Westbound	>1.00	>80.0	F
Main St. (OR 51) @ Stryker Street	Northbound	0.08	9.5	A
	Eastbound	0.70	63.1	F
Main St. (OR 51) @ Monmouth St. (OR 51)	Northbound	>1.00	>80.0	F
	Eastbound	>1.00	>80.0	F
Main St. @ 'G' Street	Eastbound	>1.00	>80.0	F

Note 1: LOS means intersection level of service.

Note 2: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed

Alternative 4: Full UGB Build-out with Improvements (2042)

Operations at Key Intersections in Independence

Signalized Intersections		V/C Ratio	Average Delay (sec/vehicle)	LOS
Monmouth St. (OR 51) @ 16th Street		0.61	31.5	C
Monmouth St. (OR 51) @ Gun Club Road		0.74	35.0	D
Main St. (OR 51) @ Polk Street		0.79	18.6	B
Main St. (OR 51) @ Monmouth St. (OR 51)		0.79	15.6	B
Unsignalized Intersections	**Critical Movement**	**Critical V/C Ratio**	**Critical Delay (seconds/vehicle)**	**Critical LOS**
Hoffman Road @ Gun Club Road	Northbound Left	0.64	48.1	E
Hoffman Road @ 16th Street	Northbound	0.33	16.4	C
Monmouth St. (OR 51) @ 7th Street	Northbound Left	0.61	80.2	F
	Southbound	0.71	49.3	E
Main St. (OR 51) @ Stryker Street	Northbound	0.04	9.3	A
	Eastbound	0.71	52.6	F
Main St. @ 'G' Street	Eastbound Left	0.49	41.3	E

Note 1: LOS means intersection level of service.

Note 2: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed

Intersection analysis worksheets are contained in Section B-5 for Alternative 1 and Alternative 2 and Section B-6 for Alternative 3 and Alternative 4.

APPENDIX SECTION B-2

Volume-to-Capacity Thresholds

Table 6: Maximum volume to capacity ratios for peak hour operating conditions *

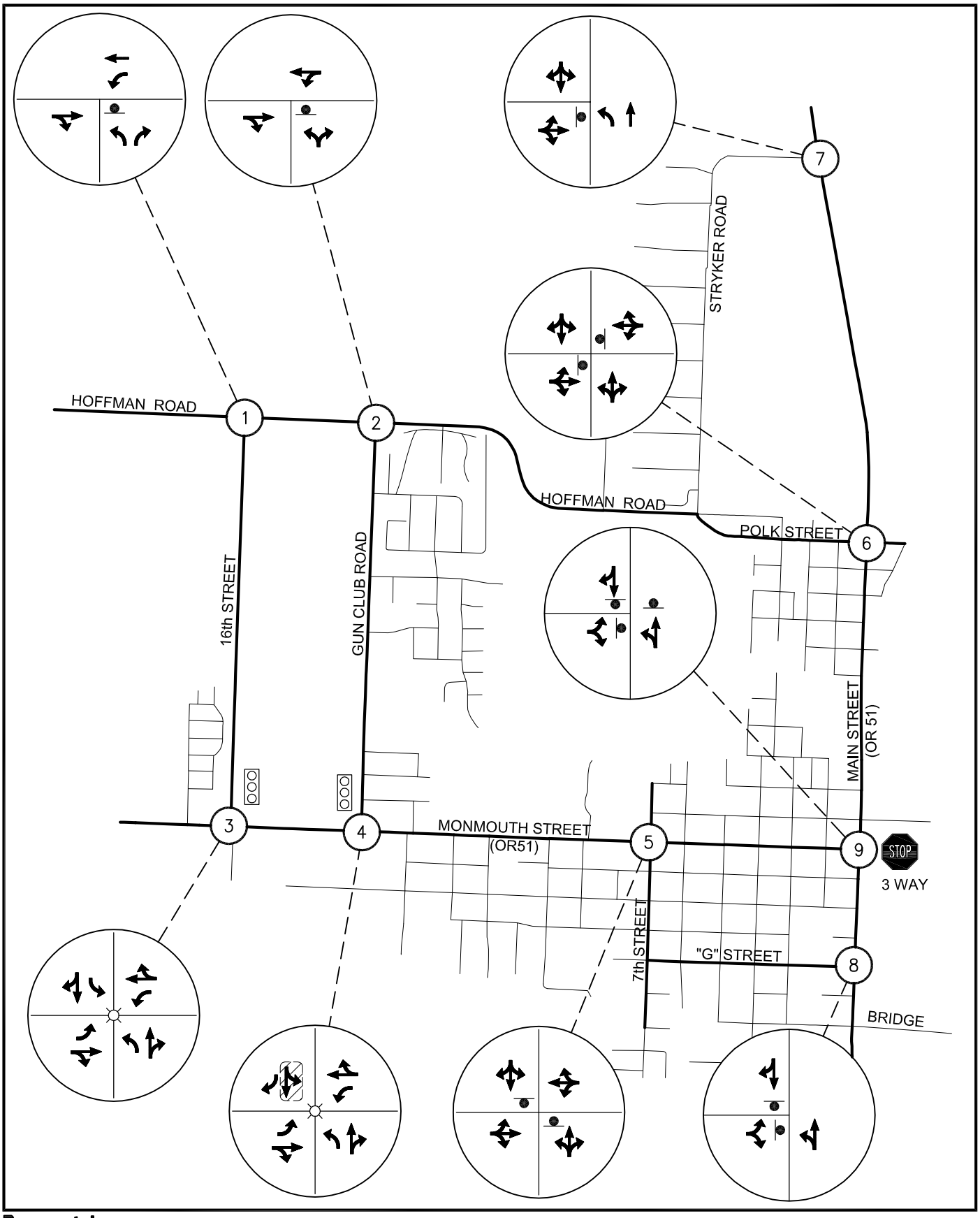
Maximum Volume to Capacity Ratios Outside Metro**							
Highway Category	Inside Urban Growth Boundary					Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA	Non-MPO outside of STAs where non-freeway speed > 35 mph	Non-MPO where non-freeway speed limit >= 45 mph	Unincorporated Communities	Rural Lands
Interstate Highways	N/A	0.80	N/A	0.70	0.70	0.70	0.70
Statewide Expressways	N/A	0.80	0.70	0.70	0.70	0.70	0.70
Freight Route on a Statewide Highway	0.85	0.80	0.80	0.75	0.70	0.70	0.70
Statewide (not a freight route)	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Freight Route on a Regional or District Highway	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.85	N/A	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.85	0.80	0.75	0.75	0.70
District / Local Interest Roads	0.95	0.90	0.90	0.85	0.80	0.80	0.75

*For Portland Metro and the Rogue Valley MPO see also OHP Amendment 00-04 amended Table 7 regarding Metro and established Alternative Mobility Standards for the RVMPO. Where there is a conflict between the Table 6 standards and the established alternative mobility standards, the more tolerant standard (higher v/c ratio) applies. The OHP amendments establishing the RVMPO and Metro alternative standards are located on the web at:
http://www.oregon.gov/ODOT/TD/TP/docs/orhwyplan/registry/0004.pdf

**National Highway System (NHS) highway design requirements are addressed in the Highway Design Manual (HDM)

APPENDIX SECTION B-3

Data and Analysis



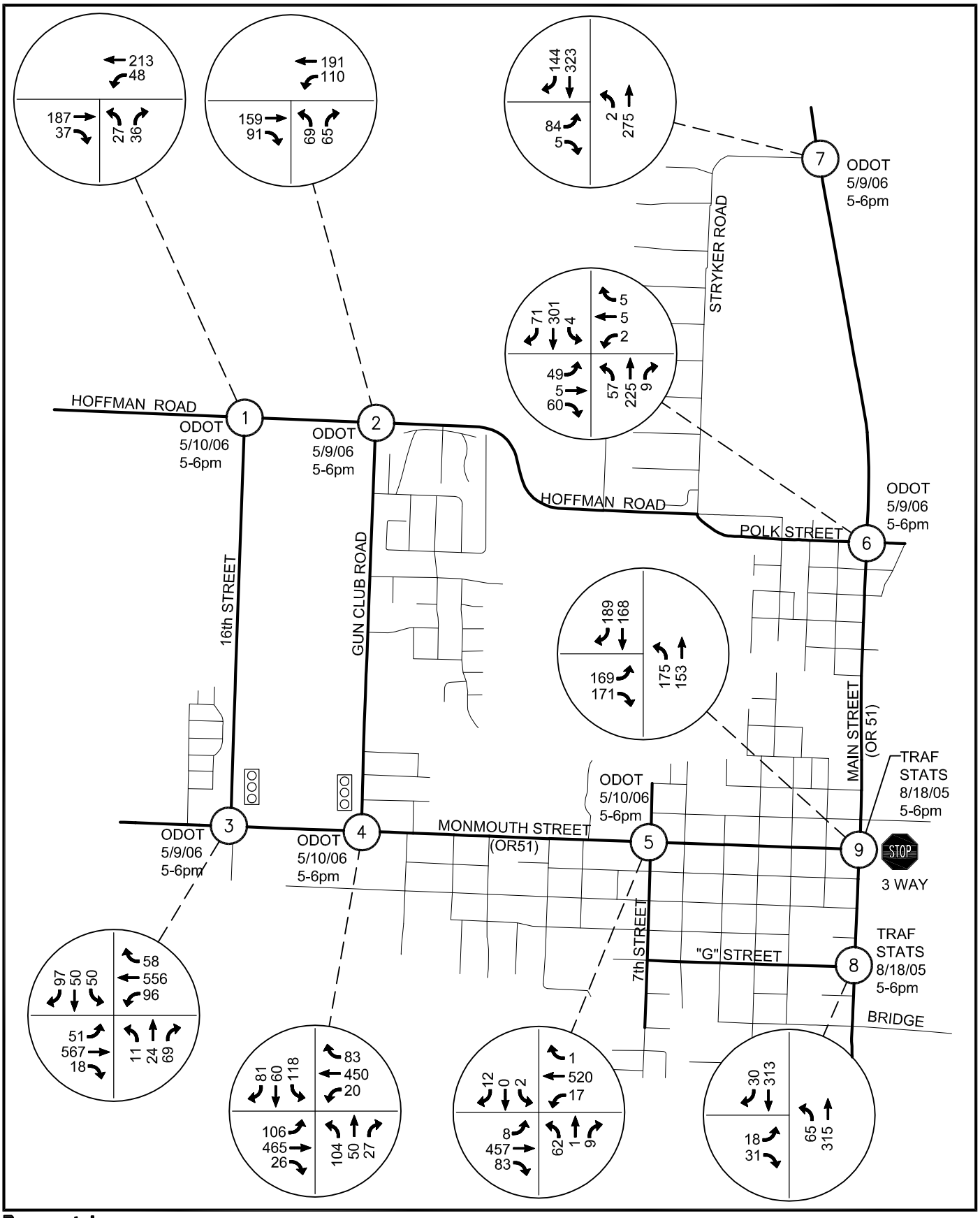
Parametrix DATE: May 01, 2007 FILE: PO2395051P05F-11

N

LEGEND

- SIGNALIZED INTERSECTION
- STOP CONTROLLED
- EXISTING TRAFFIC MOVEMENT
- MOVEMENT ADDED AFTER TRAFFIC ANALYSIS

Figure 4
Existing Intersection Geometry
INDEPENDENCE, OREGON



Parametrix DATE: Feb 09, 2007 FILE: PO2395051P05F-03

N

LEGEND

105 TURNING MOVEMENT BY DIRECTION OF TRAFFIC

PM Peak Traffic Volumes Counts (Raw)

INDEPENDENCE, OREGON

Video Survey Field Sheet

TRAFSTATS PROJECT #	SURVEY DATE
05-202	8-18-05

LOCATION: Main and G St

CITY: Independence

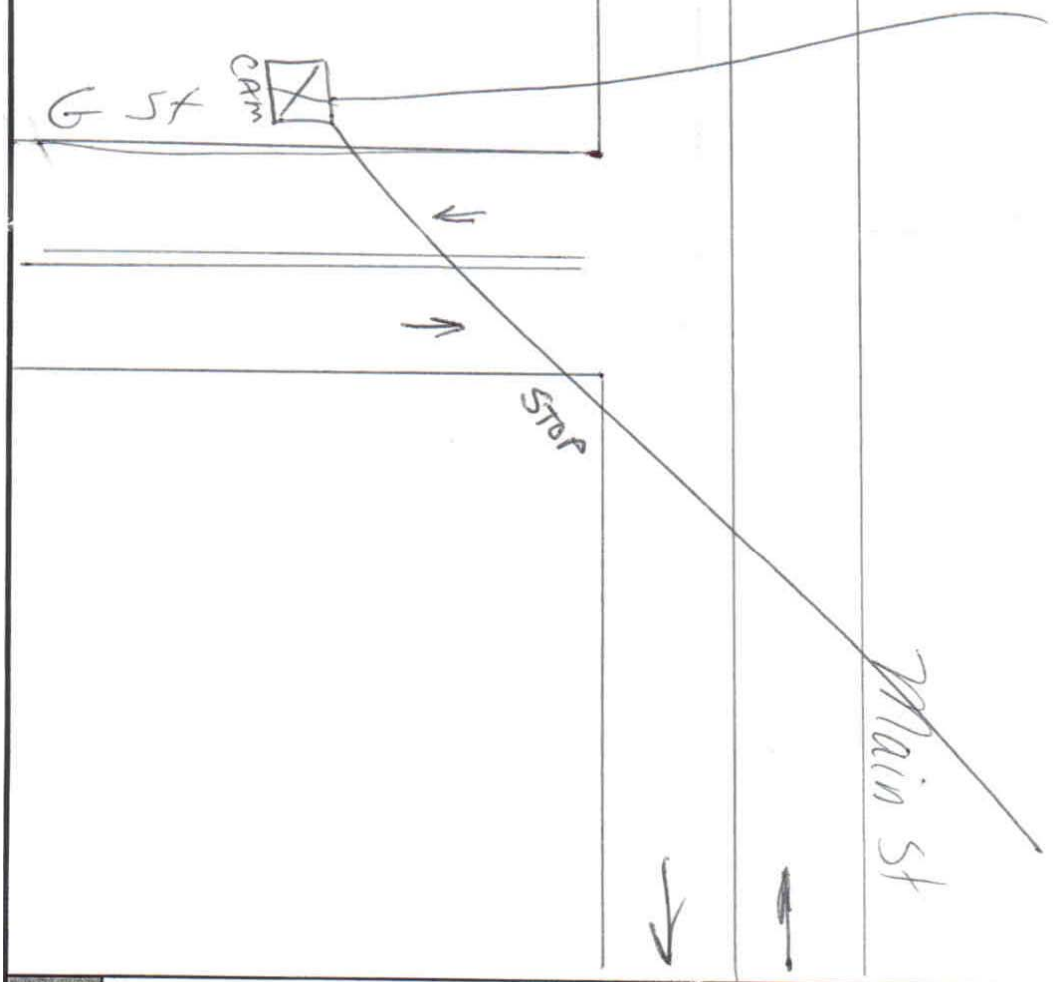
MAP PAGE:

GRID:

TIME: 4p – 6p

WEATHER: ☑ Sunny ☐ Overcast ☐ Rain ☐ Snow ☐ Fog

NORTH



CAMERA -A		R
Number	C14	
Start 1st Film	Date:	8-18-05
	Time:	2:49p
	Film:	T17
	Batt:	B5
Start 2nd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 3rd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 4th Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 5th Film	Date:	
	Time:	
	Film:	
	Batt:	

CAMERA -B		R
Number		
Start 1st Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 2nd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 3rd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 4th Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 5th Film	Date:	
	Time:	
	Film:	
	Batt:	

REMARKS:

Surveyed By: DH / NR

TRAFSTATS
1225 SW Murray Rd Suite 110
Portland, OR 97229

TRAFSTATS
PO Box 13699
Salem, OR 97309
Tel: (503) 646-2942
Fax: (503) 526-0628

Intersection Turning Movement

Summary Report

Location G STREET AT MAIN STREET
Date 8/18/2005
Day of Week Thursday
Time Begin 16:00
Reviewed By: BV

	Eastbound			Westbound			Northbound			Southbound			
Time Period	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Totals**
16:00 - 16:15	2	0	2	0	0	0	0	55	5	4	65	0	133
16:15 - 16:30	5	0	4	0	0	0	0	68	5	3	65	0	150
16:30 - 16:45	5	0	2	0	0	0	0	80	7	10	60	0	164
16:45 - 17:00	8	0	1	0	0	0	0	86	19	6	77	0	197
17:00 - 17:15	6	0	3	0	0	0	0	76	11	2	83	0	181
17:15 - 17:30	5	0	3	0	0	0	0	85	15	11	83	0	202
17:30 - 17:45	10	0	5	0	0	0	0	85	21	12	77	0	210
17:45 - 18:00	10	0	7	0	0	0	0	69	18	5	70	0	179
Movement Totals	51	0	27	0	0	0	0	604	101	53	580	0	1416
Enter Totals	78			0			705			633			
Exit Totals	0			154			631			631			

Two-Hour Totals

Light Trucks	0	0	1	0	0	0	0	5	2	1	6	0	15
Medium Trucks	0	0	0	0	0	0	0	12	0	0	11	0	23
Heavy Trucks	1	0	0	0	0	0	0	4	0	1	2	0	8
% Trucks	2.0%	NA	3.7%	NA	NA	NA	NA	3.5%	2.0%	3.8%	3.3%	NA	3.2%
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	6	0	0	12	0	18

	South	West	East	North	
Pedestrians	0	12	0	0	12

Peak Hour Information

Peak Hour 16:45 17:45

	Eastbound			Westbound			Northbound			Southbound			
	Right	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Totals**
Movement Total	29	0	12	0	0	0	0	332	66	31	320	0	790
Peak Hour Factor	0.73	NA	0.60	NA	NA	NA	NA	0.97	0.79	0.65	0.96	NA	0.94
Enter Totals	41			351			398			0			
Peak Hour Factor	0.68			0.93			0.94			NA			
Exit Totals	0			349			344			97			
Peak Hour Factor	NA			0.98			0.96			0.73			
Light Trucks	0	0	1	0	0	0	0	2	0	1	2	0	6
Medium Trucks	0	0	0	0	0	0	0	5	0	0	5	0	10
Heavy Trucks	1	0	0	0	0	0	0	2	0	0	1	0	4
% Trucks	3.4%	NA	8.3%	NA	NA	NA	NA	2.7%	0.0%	3.2%	2.5%	NA	2.5%
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	5	0	0	10	0	15

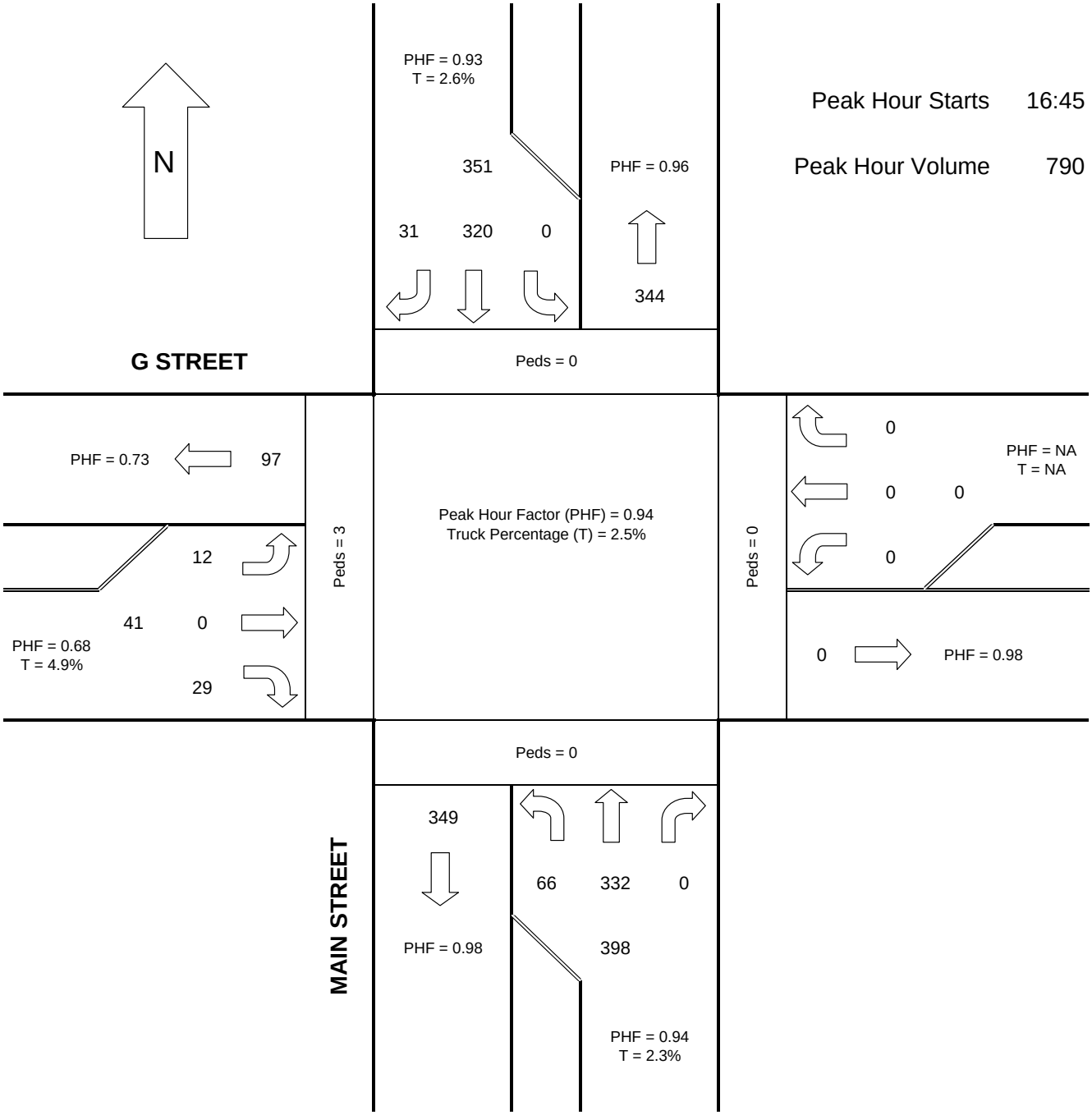
	South	West	East	North	
Pedestrians	0	3	0	0	3

TRAFSTATS
PO Box 13699
Salem, OR 97309
Tel: (503) 646-2942
Fax: (503) 526-0628

Intersection Turning Movement

Peak Hour Diagram

Location G STREET AT MAIN STREET
Date 8/18/2005
Day of Week Thursday
Time Begin 16:00
Reviewed By: BV



Video Survey Field Sheet

TRAFSTATS PROJECT #	SURVEY DATE
05-202	8-18-05

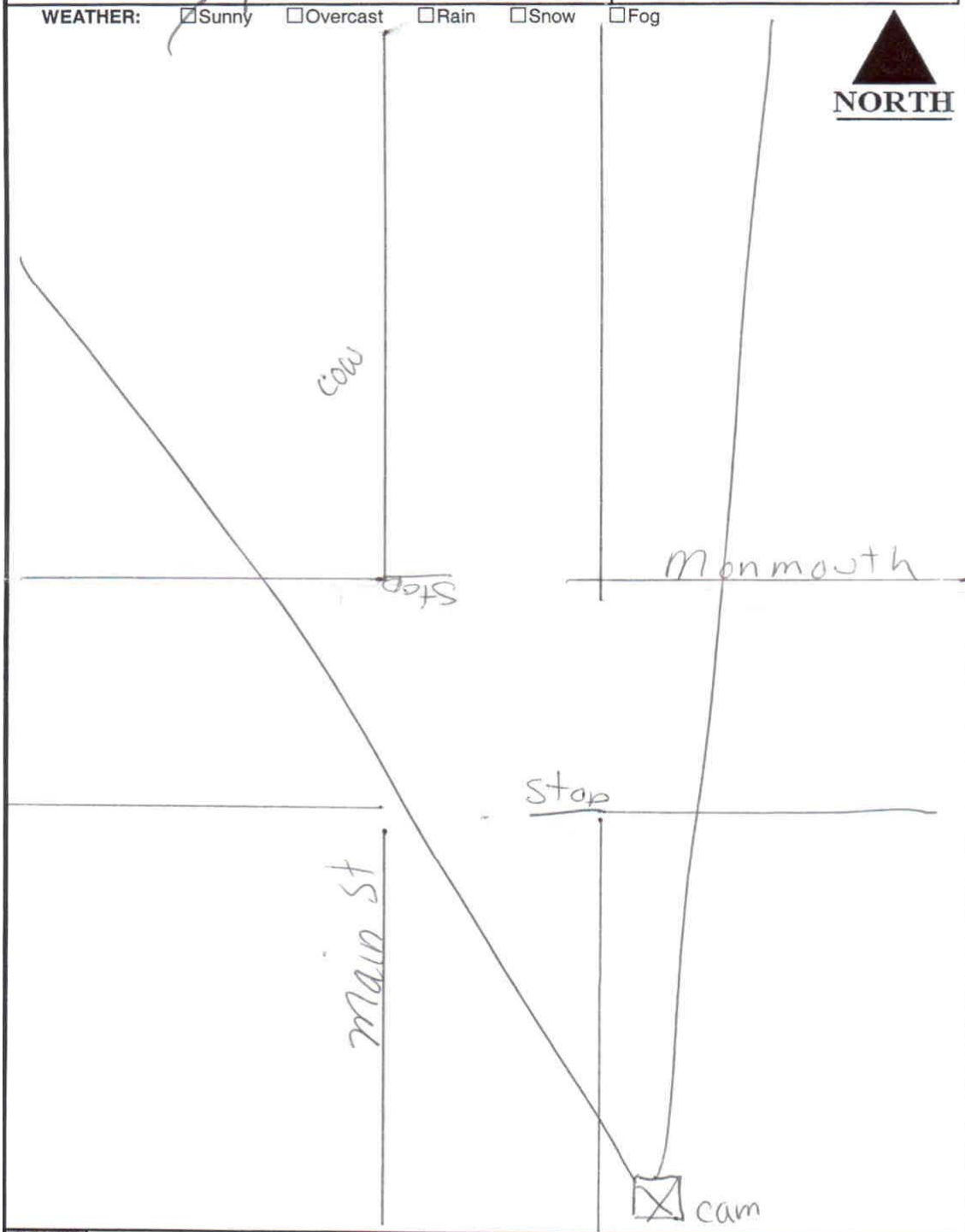
LOCATION: Main st and Monmouth

CITY: Independence

MAP PAGE	GRID

TIME 2p – 6p

WEATHER: ☑ Sunny ☐ Overcast ☐ Rain ☐ Snow ☐ Fog



CAMERA -A		R
Number	C04	
Start 1st Film	Date:	8-18-05
	Time:	2:24p
	Film:	T26
	Batt:	B17
Start 2nd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 3rd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 4th Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 5th Film	Date:	
	Time:	
	Film:	
	Batt:	

CAMERA -B		R
Number		
Start 1st Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 2nd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 3rd Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 4th Film	Date:	
	Time:	
	Film:	
	Batt:	
Start 5th Film	Date:	
	Time:	
	Film:	
	Batt:	

REMARKS:

Surveyed By: DH / NA

TRAFSTATS
1225 SW Murray Rd Suite 110
Portland, OR 97229

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Salem, OR 97309
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Intersection Turning Movement

Summary Report

Location MONMOUTH STREET AT MAIN STREET
Date 8/18/2005
Day of Week Thursday
Time Begin 16:00
Reviewed By: JW

	Eastbound			Westbound			Northbound			Southbound			
Time Period	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Totals**
16:00 - 16:15	43	0	41	0	1	0	0	22	38	27	27	0	199
16:15 - 16:30	34	0	39	0	1	0	0	32	41	43	37	0	227
16:30 - 16:45	30	0	38	0	0	0	0	34	49	36	41	0	228
16:45 - 17:00	36	0	47	0	0	0	0	45	45	38	37	0	248
17:00 - 17:15	48	0	45	0	0	0	0	31	49	43	39	0	255
17:15 - 17:30	42	0	38	0	0	0	0	41	45	55	49	0	270
17:30 - 17:45	42	0	40	0	0	0	0	44	41	59	38	0	264
17:45 - 18:00	39	0	46	0	0	0	0	37	40	32	42	0	236
Movement Totals	314	0	334	0	2	0	0	286	348	333	310	0	1927
Enter Totals	648			2			634			643			
Exit Totals	0			683			620			624			

Two-Hour Totals

Light Trucks	2	0	9	0	0	0	0	7	3	8	6	0	35
Medium Trucks	0	0	1	0	0	0	0	13	0	0	12	0	26
Heavy Trucks	0	0	2	0	0	0	0	3	1	1	3	0	10
% Trucks	0.6%	NA	3.6%	NA	0.0%	NA	NA	8.0%	1.1%	2.7%	6.8%	NA	3.7%
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0

	South	West	East	North	
Pedestrians	15	32	0	18	65

Peak Hour Information

Peak Hour 16:45 17:45

	Eastbound			Westbound			Northbound			Southbound			
	Right	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Right**	**Thru**	**Left**	**Totals**
Movement Total	168	0	170	0	0	0	0	161	180	195	163	0	1037
Peak Hour Factor	0.88	NA	0.90	NA	NA	NA	NA	0.89	0.92	0.83	0.83	NA	0.96
Enter Totals	338			358			341			0			
Peak Hour Factor	0.91			0.86			0.95			NA			
Exit Totals	0			331			331			375			
Peak Hour Factor	NA			0.91			0.90			0.94			
Light Trucks	1	0	5	0	0	0	0	4	2	3	1	0	16
Medium Trucks	0	0	0	0	0	0	0	5	0	0	5	0	10
Heavy Trucks	0	0	2	0	0	0	0	2	0	1	1	0	6
% Trucks	0.6%	NA	4.1%	NA	NA	NA	NA	6.8%	1.1%	2.1%	4.3%	NA	3.1%
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0

	South	West	East	North	
Pedestrians	6	22	0	5	33

TRAFSTATS
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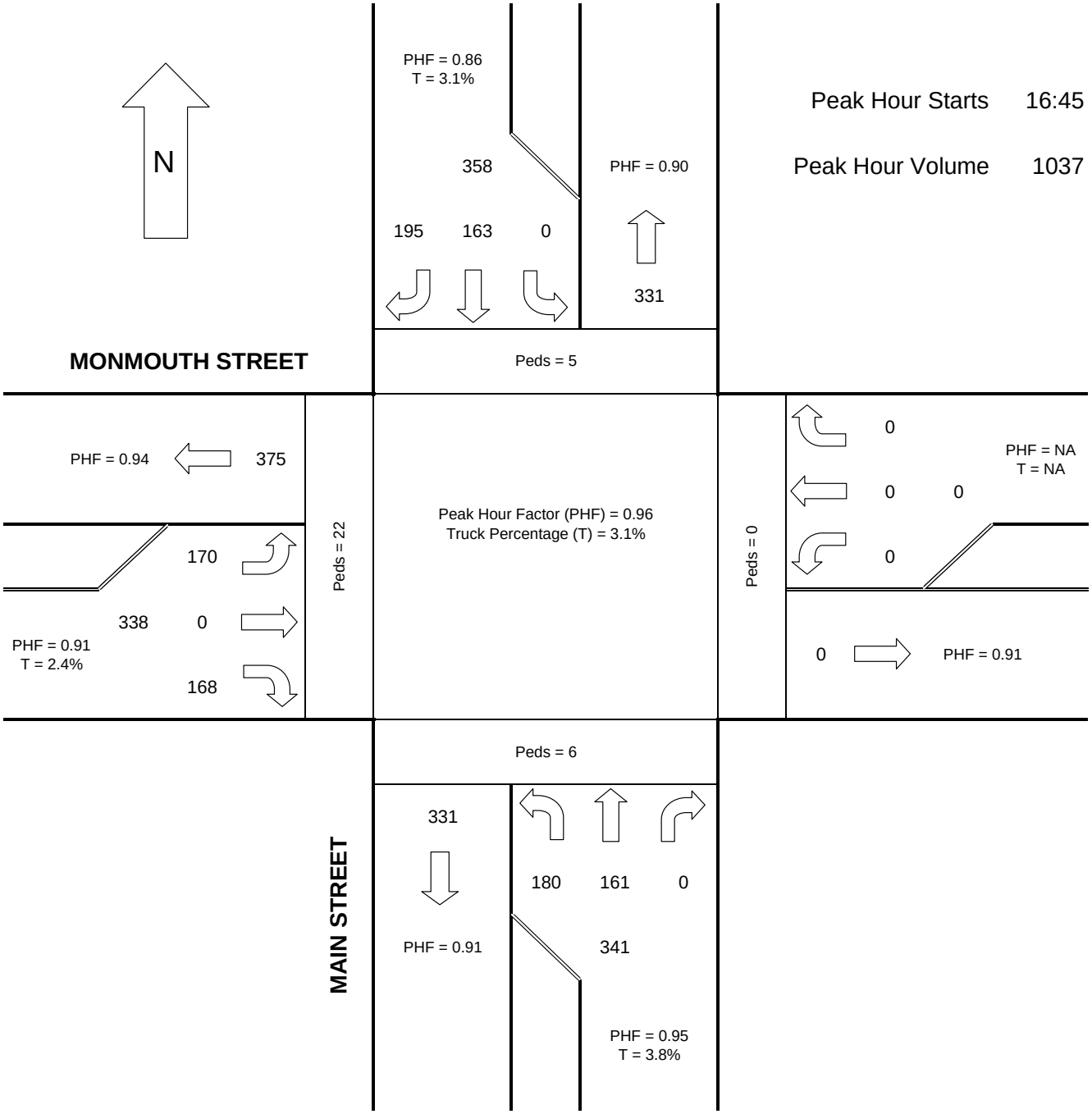
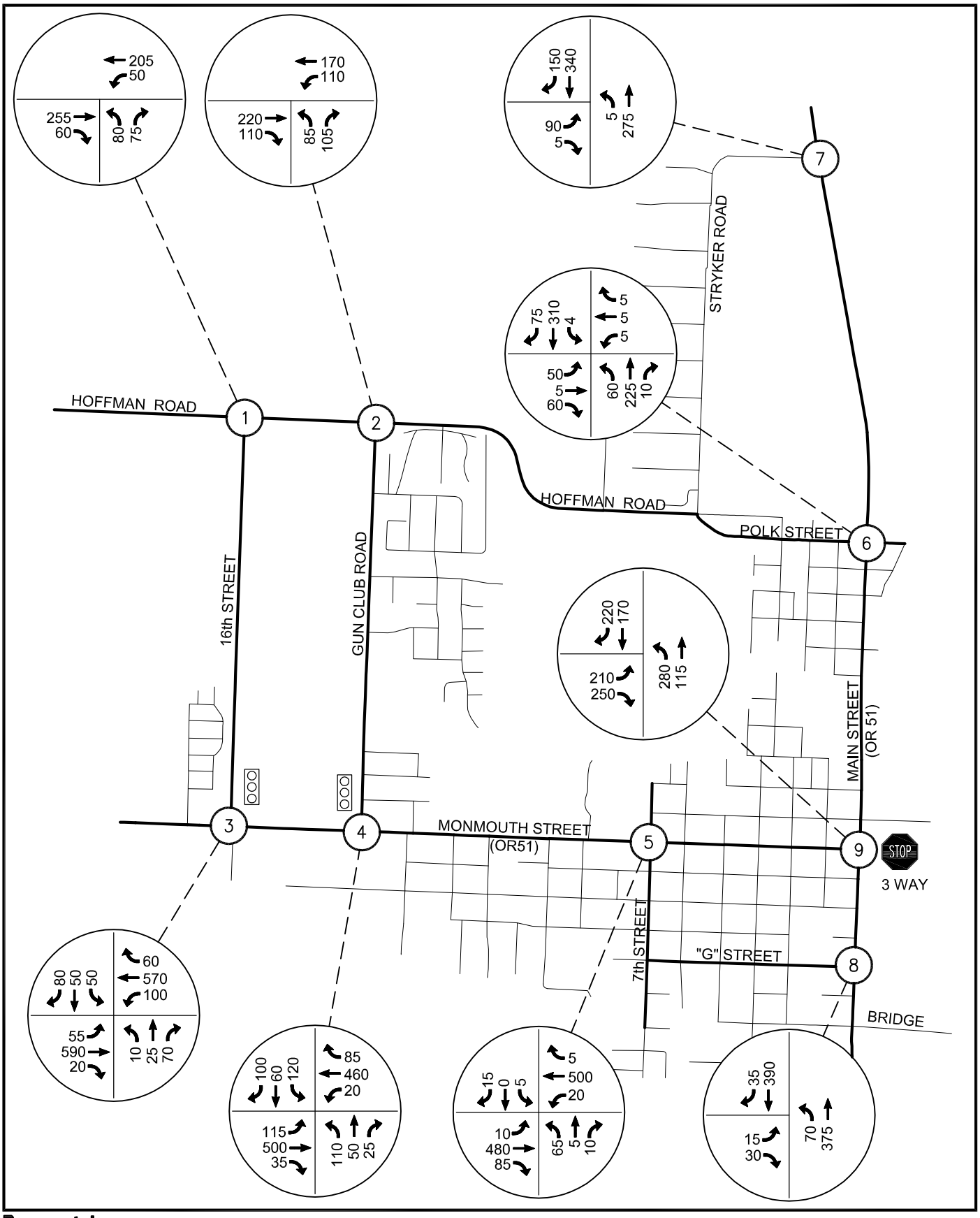
Intersection Turning Movement

Peak Hour Diagram

Location MONMOUTH STREET AT MAIN STREET
Date 8/18/2005
Day of Week Thursday
Time Begin 16:00
Reviewed By: JW



Peak Hour Starts	16:45
Peak Hour Volume	1037



Parametrix DATE: Apr 04, 2007 FILE: PO2395051P05F-02

N

LEGEND

105 TURNING MOVEMENT BY DIRECTION OF TRAFFIC

Figure 5
2006 Balanced Traffic Volumes

INDEPENDENCE, OREGON

1: Hwy 51 & 16th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1756		1676	1742		1676	1567		1676	1598	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00		0.70	1.00	
Satd. Flow (perm)	1676	1756		1676	1742		1210	1567		1236	1598	
Volume (vph)	50	565	20	90	525	50	10	20	60	35	35	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	614	22	98	571	54	11	22	65	38	38	65
RTOR Reduction (vph)	0	1	0	0	3	0	0	47	0	0	47	0
Lane Group Flow (vph)	54	635	0	98	622	0	11	40	0	38	56	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	739		300	733		331	429		338	437	
v/s Ratio Prot	0.03	c0.36		c0.06	0.36			0.06			c0.06	
v/s Ratio Perm							0.01			0.03		
v/c Ratio	0.18	0.86		0.33	0.85		0.03	0.09		0.11	0.13	
Uniform Delay, d1	33.1	24.9		34.0	24.8		25.3	25.7		25.9	26.0	
Progression Factor	1.00	1.00		0.79	1.32		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	12.4		2.0	8.5		0.2	0.4		0.7	0.6	
Delay (s)	34.4	37.4		28.8	41.3		25.5	26.1		26.5	26.6	
Level of Service	C	D		C	D		C	C		C	C	
Approach Delay (s)		37.1			39.6			26.1			26.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2: Hwy 51 & Gun Club Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1676	1749		1676	1723		1676	1664			1653	
Flt Permitted	0.95	1.00		0.95	1.00		0.53	1.00			0.81	
Satd. Flow (perm)	1676	1749		1676	1723		940	1664			1370	
Volume (vph)	105	475	30	20	450	85	110	50	30	120	60	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	516	33	22	489	92	120	54	33	130	65	87
RTOR Reduction (vph)	0	2	0	0	7	0	0	23	0	0	17	0
Lane Group Flow (vph)	114	547	0	22	574	0	120	64	0	0	265	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27			0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	300	736		300	725		257	455			375	
v/s Ratio Prot	c0.07	0.31		0.01	c0.34			0.05				
v/s Ratio Perm							0.13				c0.21	
v/c Ratio	0.38	0.74		0.07	0.79		0.47	0.14			0.71	
Uniform Delay, d1	34.4	23.2		32.4	23.9		28.7	26.1			31.1	
Progression Factor	1.18	0.74		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.3	4.3		0.5	8.6		6.0	0.6			10.7	
Delay (s)	43.0	21.4		32.9	32.5		34.7	26.7			41.8	
Level of Service	D	C		C	C		C	C			D	
Approach Delay (s)		25.1			32.5			31.3			41.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

4: Hwy 51 & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	200	255	300	180	195	240
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	217	277	326	196	212	261

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	495	522	473
Volume Left (vph)	217	326	0
Volume Right (vph)	277	0	261
Hadj (s)	-0.2	0.2	-0.3
Departure Headway (s)	6.3	6.5	6.2
Degree Utilization, x	0.87	0.94	0.81
Capacity (veh/h)	555	545	567
Control Delay (s)	16.5	19.9	14.6
Approach Delay (s)	16.5	19.9	14.6
Approach LOS	C	C	B

Intersection Summary			
Delay	17.1		
HCM Level of Service	C		
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

5: Polk Street & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	60	5	80	5	5	5	65	250	15	5	300	75
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	5	87	5	5	5	71	272	16	5	326	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	807	807	367	889	840	280	408			288		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	807	807	367	889	840	280	408			288		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	98	87	97	98	99	94			100		
cM capacity (veh/h)	279	295	678	216	282	759	1151			1274		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	158	16	359	413
Volume Left	65	5	71	5
Volume Right	87	5	16	82
cSH	414	316	1151	1274
Volume to Capacity	0.38	0.05	0.06	0.00
Queue Length (ft)	44	4	5	0
Control Delay (s)	18.9	17.0	2.1	0.1
Lane LOS	C	C	A	A
Approach Delay (s)	18.9	17.0	2.1	0.1
Approach LOS	C	C		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

6: Stryker Road & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	90	5	5	300	325	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	98	5	5	326	353	163
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	772	435	516			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	772	435	516			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	73	99	99			
cM capacity (veh/h)	366	621	1049			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	103	5	326	516
Volume Left	98	5	0	0
Volume Right	5	0	0	163
cSH	374	1049	1700	1700
Volume to Capacity	0.28	0.01	0.19	0.30
Queue Length (ft)	28	0	0	0
Control Delay (s)	18.2	8.4	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	18.2	0.1		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

8: Hoffman Road & 16th Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	225	60	50	220	40	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	245	65	54	239	43	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			310		625	277
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			310		625	277
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		90	93
cM capacity (veh/h)			1251		429	762

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	310	293	43	54
Volume Left	0	54	43	0
Volume Right	65	0	0	54
cSH	1700	1251	429	762
Volume to Capacity	0.18	0.04	0.10	0.07
Queue Length 95th (ft)	0	3	8	6
Control Delay (s)	0.0	1.8	14.3	10.1
Lane LOS		A	B	B
Approach Delay (s)	0.0	1.8	12.0	
Approach LOS			B	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

9: Hoffman Road & Gun Club Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	175	100	105	190	80	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	109	114	207	87	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			299		679	245
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			299		679	245
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		77	90
cM capacity (veh/h)			1262		379	794

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	299	321	163
Volume Left	0	114	87
Volume Right	109	0	76
cSH	1700	1262	502
Volume to Capacity	0.18	0.09	0.33
Queue Length (ft)	0	7	35
Control Delay (s)	0.0	3.4	15.6
Lane LOS		A	C
Approach Delay (s)	0.0	3.4	15.6
Approach LOS			C

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

14: 'G' Street & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	45	70	75	435	405	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	76	82	473	440	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1101	465	489			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1101	465	489			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	87	92			
cM capacity (veh/h)	217	598	1074			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	125	554	489
Volume Left	49	82	0
Volume Right	76	0	49
cSH	354	1074	1700
Volume to Capacity	0.35	0.08	0.29
Queue Length (ft)	39	6	0
Control Delay (s)	20.6	2.0	0.0
Lane LOS	C	A	
Approach Delay (s)	20.6	2.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

15: Hwy 51 & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	470	85	20	525	5	65	5	10	5	0	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	511	92	22	571	5	71	5	11	5	0	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	576			603			1212	1198	557	1209	1242	573
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	576			603			1212	1198	557	1209	1242	573
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			53	97	98	96	100	97
cM capacity (veh/h)	997			974			150	179	530	149	169	519

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	598	87	22
Volume Left	11	22	71	5
Volume Right	92	5	11	16
cSH	997	974	167	320
Volume to Capacity	0.01	0.02	0.52	0.07
Queue Length (ft)	1	2	65	5
Control Delay (s)	0.3	0.6	48.0	17.1
Lane LOS	A	A	E	C
Approach Delay (s)	0.3	0.6	48.0	17.1
Approach LOS			E	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX SECTION B-4

Future Conditions Analysis

Traffic Analysis Methodology

Count Data

ODOT provided 2006 count data for seven study intersections (Count Data: May 9-11th, 2006). A peak period was selected and was seasonally adjusted.

The City of Independence provided count data for the intersections of Main Street/Monmouth Street and Main Street/"G" Street (Count Data: August 18, 2005 for the PM peak hour). The count data was seasonally adjusted.

Adjustments

The closest Automatic Traffic Recorders (ATRs) were examined to help determine the characteristics for study area highways. The seasonal trend table was consulted to determine the count date seasonal factor and peak seasonal factor.

2005 ATR Characteristics

SEASONAL TRAFFIC TREND	AREA TYPE	# OF LANES	WEEKLY TRAFFIC TREND	2005 AADT	OHP CLASSIFICATION	ATR	COUNTY	HIGHWAY ROUTE, NAME & LOCATION	MP	STATE HWY #
COMMUTER	RURAL	2	WEEKDAY	7600	REGIONAL HIGHWAY	27-005	POLK	OR 99W, PACIFIC HWY WEST, SOUTH OF MONMOUTH	70.9	1W

Oregon Highway 51(State Highway No. 43) Monmouth-Independence Hwy Commuter-Weekday was used to make seasonal adjustments

Seasonal Factor Peak Period		0.9000	
Count Date Factor			Adjustment Factor = Count Date Factor/ Seasonal Peak Period Factor
1-May	0.9409	(0.9409+0.9366)/2	1.0431
15-May	0.9366		
15 -Aug	0.9000		1.0000

Historical trend methods based on data from ODOT 2025 Future Volume Tables. This is used to make adjustments to count data to bring it up to 2006 volumes as well as forecasting future growth for through traffic only.

ODOT Future Volume Table Data					
Hwy	Mp	2005	2025	RSQ	Annual Growth Rate
193	4.89	7900	9500	0.7955	0.0101
43	1.29	12300	16000	0.8263	0.0150
					0.0126

Average Annual Growth Rate

2026 volumes = 2006 Volumes x (1+(20x0.0126)= 2006 Volumes x 1.252
2042 volumes = 2006 Volumes x (1+(36x0.0126)= 2006 Volumes x 1.453

Volume Balancing
A print view from Synchro is provided that illustrates the volume that is added or subtracted between intersections based on the existing raw counts. Counts taken during the same day and time period provide the best information about what is happening along the roadway segments. In some cases these differences are greater than 10% of the adjacent road traffic. These differences were used for balancing and were maintained in all the alternatives.

Saturation Flow Rate
A saturation flow rate of 1800 pcphgl was used for both the existing and future year scenarios.

Signal Timing
ODOT provided signal timing for study area intersections was utilized in modeling for the 2006 condition. For future conditions for signalized intersections, an optimal system cycle length was determined with a 90 second minimum set.

Peak Hour Factors
PHF's are calculated using data from15 minute interval traffic counts. The ODOT traffic counts do not contain 15 minute interval data, therefore a 0.92 PHF was used.

Peak hour selection
All the intersections counts should be adjusted to a single system peak hour which is the highest hourly volume. For our counts this was determined to be between 5 and 6 pm.

Forecasting Cumulative Analysis
The APM was followed in determining External-External (E-E), External-Internal (EI), Internal External (I-I), and Internal-Internal (I-I) trips.

The area within the City of Independence's Urban Growth Boundary (UGB) has been divided into 16 Traffic Analysis Zones (TAZs). An estimate of residential, commercial and industrial net buildable acreage within each TAZ was developed assuming full buildout of the UGB. To estimate buildable acreage for the year 2026, residential acreage assumptions were adjusted down to reflect official Independence population estimates. Parametrix used these two net buildable acreage estimates to generate the estimated growth in trips to and from each TAZ for the year 2026 and when full buildout of the UGB occurs.

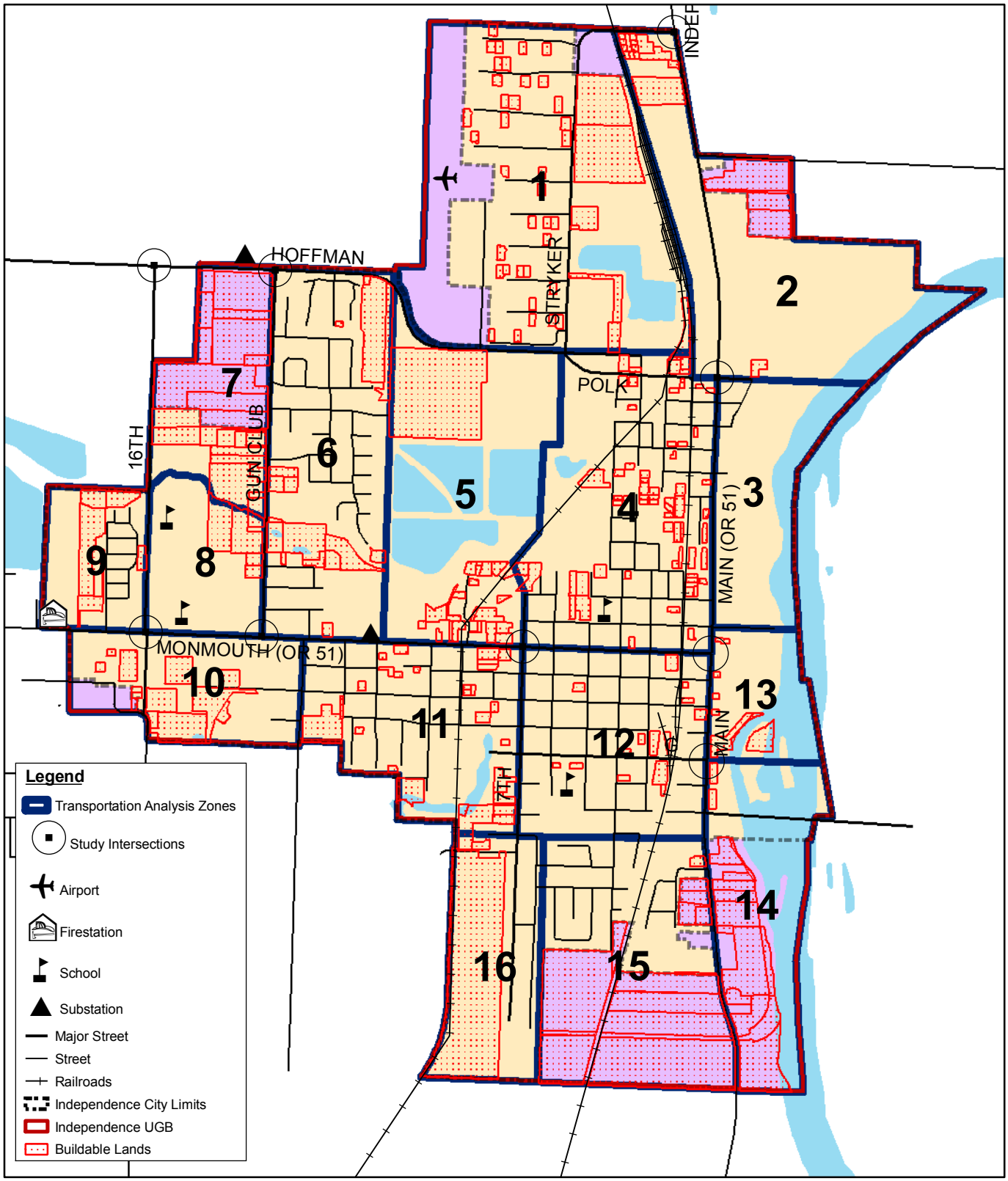
Trip rates from the following ITE Trip Generation Categories were used:

- Industrial = Industrial Park (Code 130)
- Commercial = Shopping Center (Code 820)
- Low Density Residential = Single Family (Code 210)
- Medium Density Residential = Condominium/Townhouse (Code 230)
- High Density Residential = Apartment (Code 220)

External-External trips were determined using nodal stations north, south and west of the City. Volumes were held from Node 1 for eastbound/northbound/southbound traffic, Node 2 for southbound/westbound and Node 3 for northbound/westbound. The percentage of E-E trips were determined first, followed by the increase in E-I and I-E trips for each of the alternative's design years. See attached tables for more information.

The growth in trips were distributed to each of the TAZs based on attraction (entering) and production (exiting) calculations. Internal trips for each zone were determined by subtracting the E-I and I-E trips from the total trips for each zone. The data is summarized in the following tables. Once the trip distribution was determined, the zone trips were assigned to the road network based on knowledge of the network and engineering judgment. The volumes assigned to movements at each of the intersections was added to the 2006 balanced counts volume data. This total volume was evaluated to yield future intersection operations.

The Build Alternatives included a new arterial with significant impact traffic. For these alternatives the through trips and new growth trips from each zone were redistributed.



Parametrix

N

0 0.25 0.5
Miles

Geographic Data Standards:
Projected Coordinate System:
NAD 1983 HARN StatePlane Oregon North

Data Source(s):
Mid-Willamette Valley Council of Governments
Polk County GIS

Date: November 2006

This product is for informational purposes and may not have been prepared for legal, engineering or surveying purposes. Users of this information should review or consult the primary data and information source to ascertain the usability of this information.

Figure 7
Traffic Analysis Zones

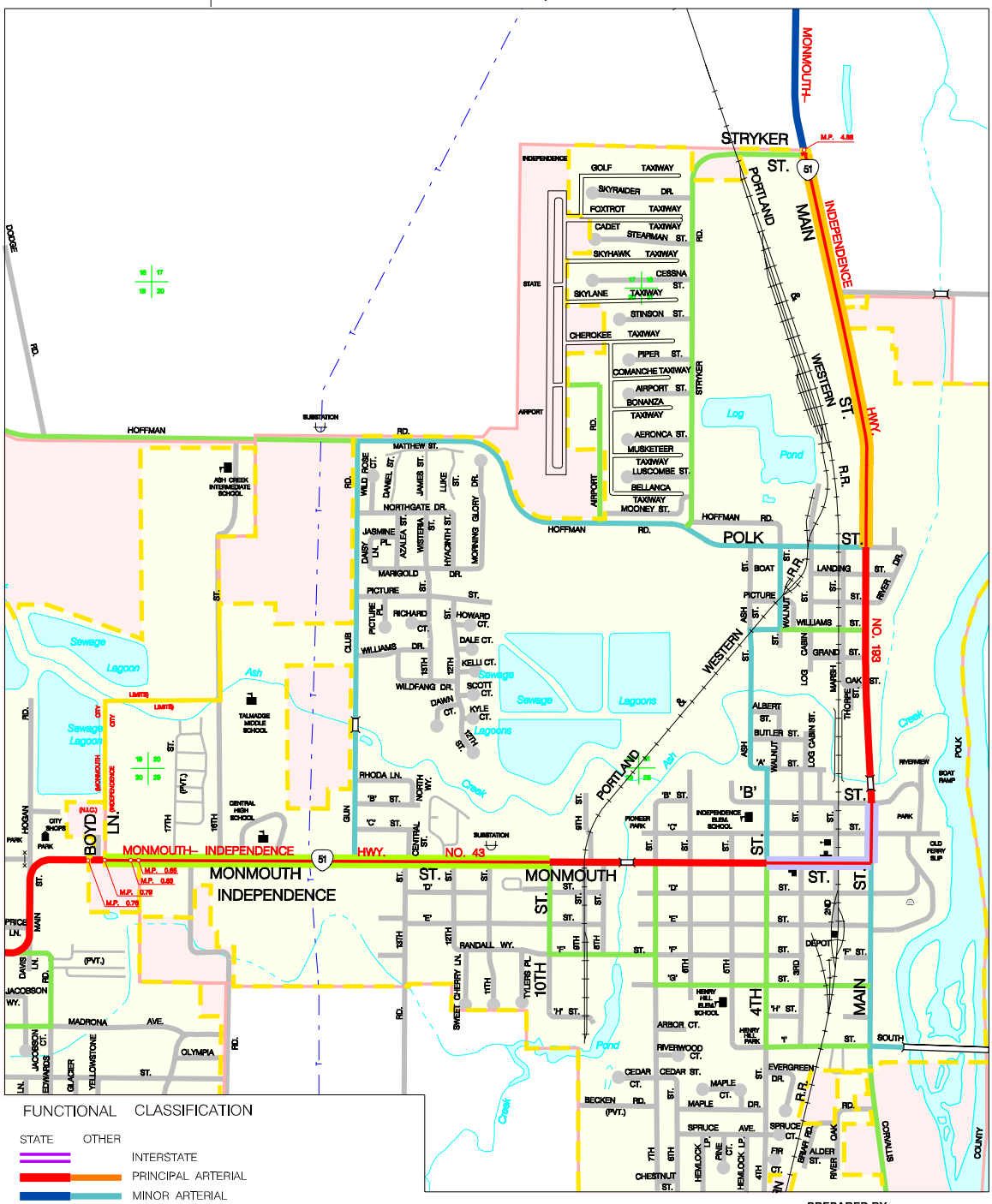
INDEPENDENCE TSP

Analysis by P. Manson; Analysis Date: 28-SEP-2006; Plot Date: 02-OCT-2006; File Name: Independence_TAZs.mxd

DRAFT
PROPOSED HWY. SEGMENT DESIGNATION
INDEPENDENCE, OREGON

SCALE
500 0 500 1000 FEET

Revised: December 8, 2003



FUNCTIONAL CLASSIFICATION

STATE	OTHER
	INTERSTATE
	PRINCIPAL ARTERIAL
	MINOR ARTERIAL
	URBAN COLLECTOR / RURAL MAJOR COLLECTOR
	MINOR COLLECTOR
	LOCAL ROAD

STA
UBA
COMMERCIAL CENTER

PREPARED BY:
OREGON DEPARTMENT OF TRANSPORTATION
TDD - GIS UNIT

Full UGB Build-out 2042

External Trip Table

	Direction	2006 DHV	2006 E-E	E-E Trip Probability	Growth Factor 2042	2042 DHV	2042 E-E trip	2042 E-I trip
Node 1	Enter	635	300	0.47	1.45288	925	135	155
West	Exit	595	190	0.32	1.45288	865	85	185
Node 2	Enter	475	190	0.40	1.45288	690	85	130
North	Exit	390	235	0.60	1.45288	565	105	70
Node 3	Enter	510	235	0.46	1.45288	740	105	125
South	Exit	475	300	0.63	1.45288	690	135	80

Trip Attraction and Production Probabilities

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Total New Trips	233	105	0	159	260	111	362	56	83	406	136	117	71	229	537	265	3130
Entering Trips	78	64	0	84	83	71	228	36	54	210	75	54	29	131	338	167	1702
Attraction Probability	0.046	0.038	0.000	0.049	0.049	0.042	0.134	0.021	0.032	0.123	0.044	0.032	0.017	0.077	0.199	0.098	
Exiting Trips	155	41	0	75	177	40	134	21	29	195	58	63	42	98	199	98	1425
Production Probability	0.109	0.029	0.000	0.053	0.124	0.028	0.094	0.015	0.020	0.137	0.041	0.044	0.029	0.069	0.140	0.069	

External-Internal Trip Distribution

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Node 1	7	6	0	8	8	6	21	3	5	19	7	5	3	12	31	15	155
Node 2	6	5	0	6	6	5	17	3	4	16	6	4	2	10	26	13	130
Node 3	6	5	0	6	6	5	17	3	4	15	6	4	2	10	25	12	125

Internal-External Trip Distribution

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Node 1	20	5	0	10	23	5	17	3	4	25	8	8	5	13	26	13	185
Node 2	8	2	0	4	9	2	7	1	1	10	3	3	2	5	10	5	70
Node 3	9	2	0	4	10	2	8	1	2	11	3	4	2	6	11	6	80

Internal-Internal Trip

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Total New Trips	233	105	0	159	260	111	362	56	83	406	136	117	71	229	537	265	
Total Internal-Internal Trip	178	80	0	121	198	84	276	42	63	310	104	89	54	174	409	202	
Entering Trips	71	58	0	76	75	65	207	33	49	191	68	49	26	119	307	152	1547
Attraction Probability	0.046	0.038	0.000	0.049	0.049	0.042	0.134	0.021	0.032	0.123	0.044	0.032	0.017	0.077	0.199	0.098	
Exiting Trips	135	36	0	65	154	35	117	18	25	170	50	55	37	85	173	85	1240
Production Probability	0.109	0.029	0.000	0.053	0.124	0.028	0.094	0.015	0.020	0.137	0.041	0.044	0.029	0.069	0.140	0.069	

Full UGB Build-out 2042

Internal-Internal Distribution 2042

Zone		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attractions		71	58	0	76	75	65	207	33	49	191	68	49	26	119	307	152
1	0.046	3	3	0	3	3	3	9	1	2	9	3	2	1	5	14	7
2	0.038	3	2	0	3	3	2	8	1	2	7	3	2	1	4	12	6
3	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0.049	3	3	0	4	4	3	10	2	2	9	3	2	1	6	15	7
5	0.049	3	3	0	4	4	3	10	2	2	9	3	2	1	6	15	7
6	0.042	3	2	0	3	3	3	9	1	2	8	3	2	1	5	13	6
7	0.134	9	8	0	10	10	9	28	4	7	26	9	7	4	16	41	20
8	0.021	1	1	0	2	2	1	4	1	1	4	1	1	1	3	6	3
9	0.032	2	2	0	2	2	2	7	1	2	6	2	2	1	4	10	5
10	0.123	9	7	0	9	9	8	26	4	6	24	8	6	3	15	38	19
11	0.044	3	3	0	3	3	3	9	1	2	8	3	2	1	5	14	7
12	0.032	2	2	0	2	2	2	7	1	2	6	2	2	1	4	10	5
13	0.017	1	1	0	1	1	1	4	1	1	3	1	1	0	2	5	3
14	0.077	5	4	0	6	6	5	16	3	4	15	5	4	2	9	24	12
15	0.199	14	12	0	15	15	13	41	6	10	38	14	10	5	24	61	30
16	0.098	7	6	0	7	7	6	20	3	5	19	7	5	3	12	30	15
Zone		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Production		135	36	0	65	154	35	117	18	25	170	50	55	37	85	173	85
1	0.109	15	4	0	7	17	4	13	2	3	18	5	6	4	9	19	9
2	0.029	4	1	0	2	4	1	3	1	1	5	1	2	1	2	5	2
3	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0.053	7	2	0	3	8	2	6	1	1	9	3	3	2	4	9	4
5	0.124	17	4	0	8	19	4	14	2	3	21	6	7	5	11	22	11
6	0.028	4	1	0	2	4	1	3	1	1	5	1	2	1	2	5	2
7	0.094	13	3	0	6	14	3	11	2	2	16	5	5	3	8	16	8
8	0.015	2	1	0	1	2	1	2	0	0	3	1	1	1	1	3	1
9	0.020	3	1	0	1	3	1	2	0	1	3	1	1	1	2	4	2
10	0.137	18	5	0	9	21	5	16	3	3	23	7	8	5	12	24	12
11	0.041	5	1	0	3	6	1	5	1	1	7	2	2	1	3	7	3
12	0.044	6	2	0	3	7	2	5	1	1	8	2	2	2	4	8	4
13	0.029	4	1	0	2	5	1	3	1	1	5	1	2	1	3	5	3
14	0.069	9	2	0	4	11	2	8	1	2	12	3	4	3	6	12	6
15	0.140	19	5	0	9	22	5	16	3	4	24	7	8	5	12	24	12
16	0.069	9	2	0	4	11	2	8	1	2	12	3	4	3	6	12	6

2026

External Trip Table

	Direction	2006 DHV	2006 E-E	E-E Trip Probability	Growth Factor 2026	2026 DHV	2026 E-E trip	2026 E-I trip
Node 1	Enter	635	300	0.47	1.2516	795	75	85
West	Exit	595	190	0.32	1.2516	745	50	100
Node 2	Enter	475	190	0.40	1.2516	595	50	70
North	Exit	390	235	0.60	1.2516	490	60	40
Node 3	Enter	510	235	0.46	1.2516	640	60	70
South	Exit	475	300	0.63	1.2516	595	75	45

2026

Trip Attraction and Production Probabilities

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Total New Trips	191	50	0	117	244	48	157	25	36	348	90	110	71	150	234	115	1986
Entering Trips	52	28	0	58	74	31	99	15	24	174	49	50	29	81	147	73	984
Attraction Probability	0.053	0.028	0.000	0.059	0.075	0.032	0.101	0.015	0.024	0.177	0.050	0.051	0.029	0.082	0.149	0.074	
Exiting Trips	139	22	0	59	170	17	58	9	13	174	41	60	42	69	86	43	1002
Production Probability	0.139	0.022	0.000	0.059	0.170	0.017	0.058	0.009	0.013	0.174	0.041	0.060	0.042	0.069	0.086	0.043	

External-Internal Trip Distribution

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Node 1	4	2	0	5	6	3	9	1	2	15	4	4	3	7	13	6	85
Node 2	4	2	0	4	5	2	7	1	2	12	3	4	2	6	10	5	70
Node 3	4	2	0	4	5	2	7	1	2	12	3	4	2	6	10	5	70

Internal-External Trip Distribution

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Node 1	14	2	0	6	17	2	6	1	1	17	4	6	4	7	9	4	100
Node 2	6	1	0	2	7	1	2	0	1	7	2	2	2	3	3	2	40
Node 3	6	1	0	3	8	1	3	0	1	8	2	3	2	3	4	2	45

Internal-Internal Trip

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Total New Trips	191	50	0	117	244	48	157	25	36	348	90	110	71	150	234	115	
Total Internal-Internal Trip	153	40	0	93	196	38	124	20	28	276	71	87	57	119	185	90	
Entering Trips	48	26	0	53	68	28	90	14	22	159	45	46	26	74	134	67	899
Attraction Probability	0.053	0.028	0.000	0.059	0.075	0.032	0.101	0.015	0.024	0.177	0.050	0.051	0.029	0.082	0.149	0.074	
Exiting Trips	125	20	0	53	153	15	52	8	12	157	37	54	38	62	77	39	902
Production Probability	0.139	0.022	0.000	0.059	0.170	0.017	0.058	0.009	0.013	0.174	0.041	0.060	0.042	0.069	0.086	0.043	

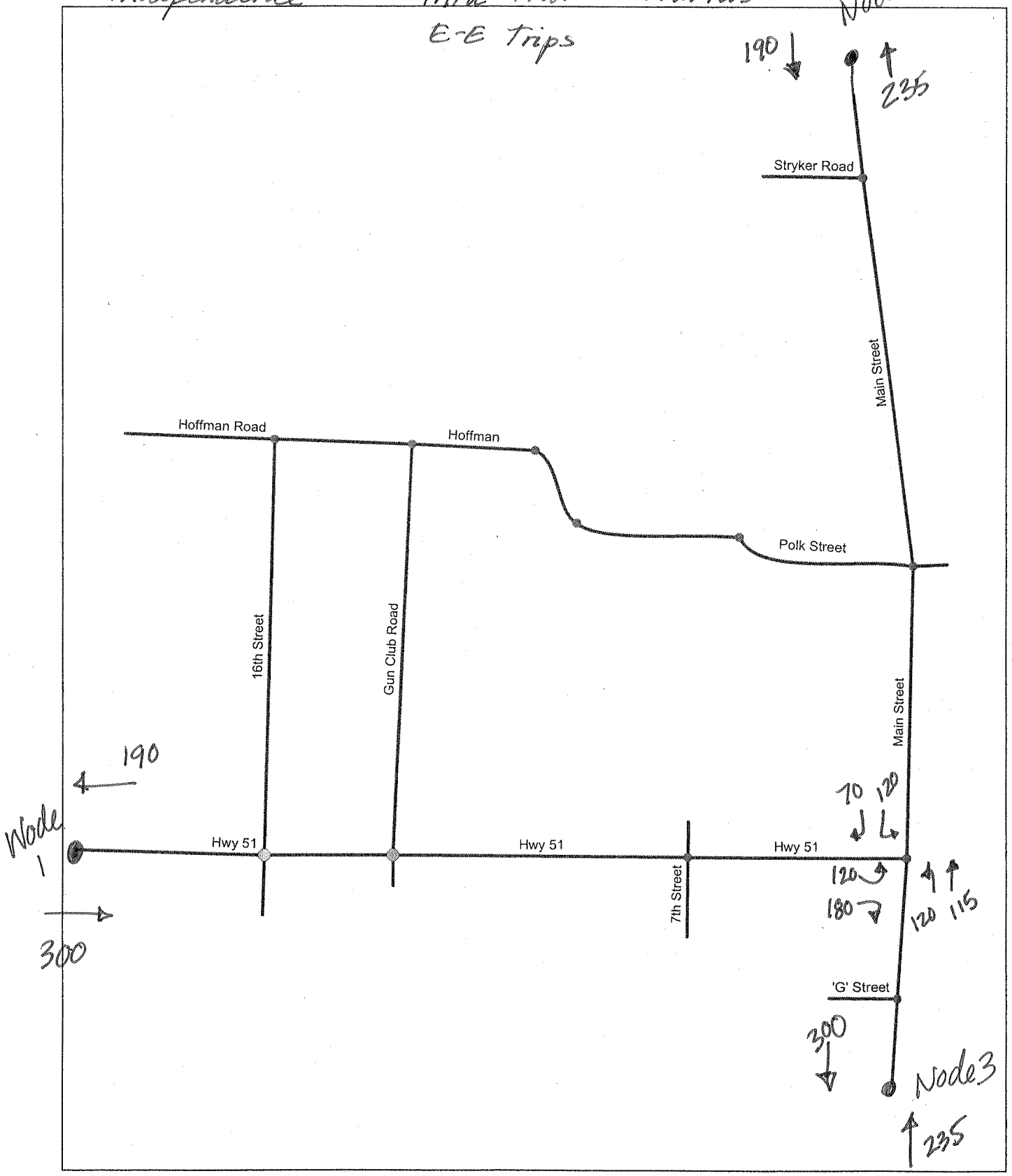
Internal-Internal Distribution 2026

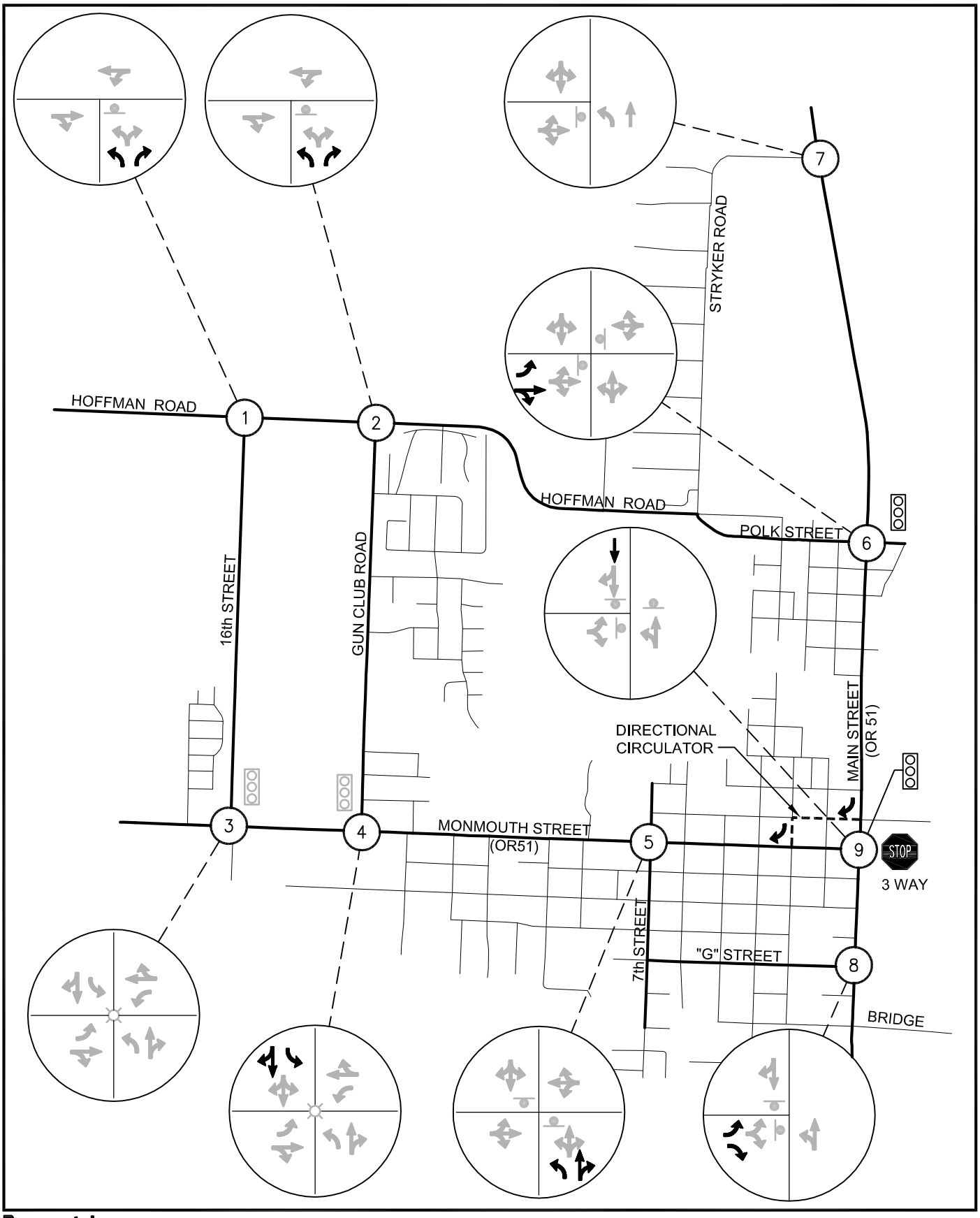
Zone		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attractions		48	26	0	53	68	28	90	14	22	159	45	46	26	74	134	67
1	0.053	3	1	0	3	4	1	5	1	1	8	2	2	1	4	7	4
2	0.028	1	1	0	2	2	1	3	0	1	5	1	1	1	2	4	2
3	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0.059	3	2	0	3	4	2	5	1	1	9	3	3	2	4	8	4
5	0.075	4	2	0	4	5	2	7	1	2	12	3	3	2	6	10	5
6	0.032	1	1	0	2	2	1	3	0	1	5	1	1	1	2	4	2
7	0.101	5	3	0	5	7	3	9	1	2	16	5	5	3	7	14	7
8	0.015	1	0	0	1	1	0	1	0	0	2	1	1	0	1	2	1
9	0.024	1	1	0	1	2	1	2	0	1	4	1	1	1	2	3	2
10	0.177	8	5	0	9	12	5	16	2	4	28	8	8	5	13	24	12
11	0.050	2	1	0	3	3	1	5	1	1	8	2	2	1	4	7	3
12	0.051	2	1	0	3	3	1	5	1	1	8	2	2	1	4	7	3
13	0.029	1	1	0	2	2	1	3	0	1	5	1	1	1	2	4	2
14	0.082	4	2	0	4	6	2	7	1	2	13	4	4	2	6	11	5
15	0.149	7	4	0	8	10	4	14	2	3	24	7	7	4	11	20	10
16	0.074	4	2	0	4	5	2	7	1	2	12	3	3	2	5	10	5
Zone		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Production		125	20	0	53	153	15	52	8	12	157	37	54	38	62	77	39
1	0.139	17	3	0	7	21	2	7	1	2	22	5	7	5	9	11	5
2	0.022	3	0	0	1	3	0	1	0	0	3	1	1	1	1	2	1
3	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0.059	7	1	0	3	9	1	3	0	1	9	2	3	2	4	5	2
5	0.170	21	3	0	9	26	3	9	1	2	27	6	9	6	11	13	7
6	0.017	2	0	0	1	3	0	1	0	0	3	1	1	1	1	1	1
7	0.058	7	1	0	3	9	1	3	0	1	9	2	3	2	4	4	2
8	0.009	1	0	0	0	1	0	0	0	0	1	0	0	0	1	1	0
9	0.013	2	0	0	1	2	0	1	0	0	2	0	1	0	1	1	1
10	0.174	22	3	0	9	27	3	9	1	2	27	6	9	7	11	13	7
11	0.041	5	1	0	2	6	1	2	0	0	6	2	2	2	3	3	2
12	0.060	7	1	0	3	9	1	3	0	1	9	2	3	2	4	5	2
13	0.042	5	1	0	2	6	1	2	0	0	7	2	2	2	3	3	2
14	0.069	9	1	0	4	11	1	4	1	1	11	3	4	3	4	5	3
15	0.086	11	2	0	5	13	1	4	1	1	13	3	5	3	5	7	3
16	0.043	5	1	0	2	7	1	2	0	1	7	2	2	2	3	3	2

2006

Independence – Thru Traffic Volumes

E-E Trips





Parametrix DATE: Feb 09, 2007 FILE: PO2395051P05F-01

N

LEGEND

SIGNALIZED INTERSECTION
STOP CONTROLLED
EXISTING TRAFFIC MOVEMENT
WITH IMPROVEMENTS

Intersection Improvements

INDEPENDENCE, OREGON

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main St. (OR 51)	**Minor Street:**	Polk St.
Project:	Independence TSP	**City/County:**	Polk Co.
Year:	2042	**Alternative:**	4-Build-out of UGB

Preliminary Signal Warrant Volumes

Number of Approach Lanes		ADT on Major Street Approaching From Both Directions		ADT on Minor Street, Highest Approaching Volume	
Major Street	Minor Street	Percent of Standard Warrants		Percent of Standard Warrants	
		100	70	100	70
Case A: Minimum Vehicular Traffic					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
Case B: Interruption of Continuous Traffic					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	1,100	1,350	950
2 or more	2 or more	15,900	1,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	9700	Yes
	Minor	1	2650	3200	Yes
Case B	Major	1	13300	9700	NO
	Minor	1	1350	3200	Yes

Analyst and Date: SAO 1/07 Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main St. (OR 51)	**Minor Street:**	Monmouth St (OR 51)
Project:	Independence TSP	**City/County:**	Polk Co.
Year:	2042	**Alternative:**	Full UGB Build-out

Preliminary Signal Warrant Volumes

Number of Approach Lanes		ADT on Major Street Approaching From Both Directions		ADT on Minor Street, Highest Approaching Volume	
Major Street	Minor Street	Percent of Standard Warrants		Percent of Standard Warrants	
		100	70	100	70
Case A: Minimum Vehicular Traffic					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
Case B: Interruption of Continuous Traffic					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	1,100	1,350	950
2 or more	2 or more	15,900	1,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	10,500	Yes
	Minor	1	2650	3400	Yes
Case B	Major	1	13300	10,500	No
	Minor	1	1350	3400	Yes

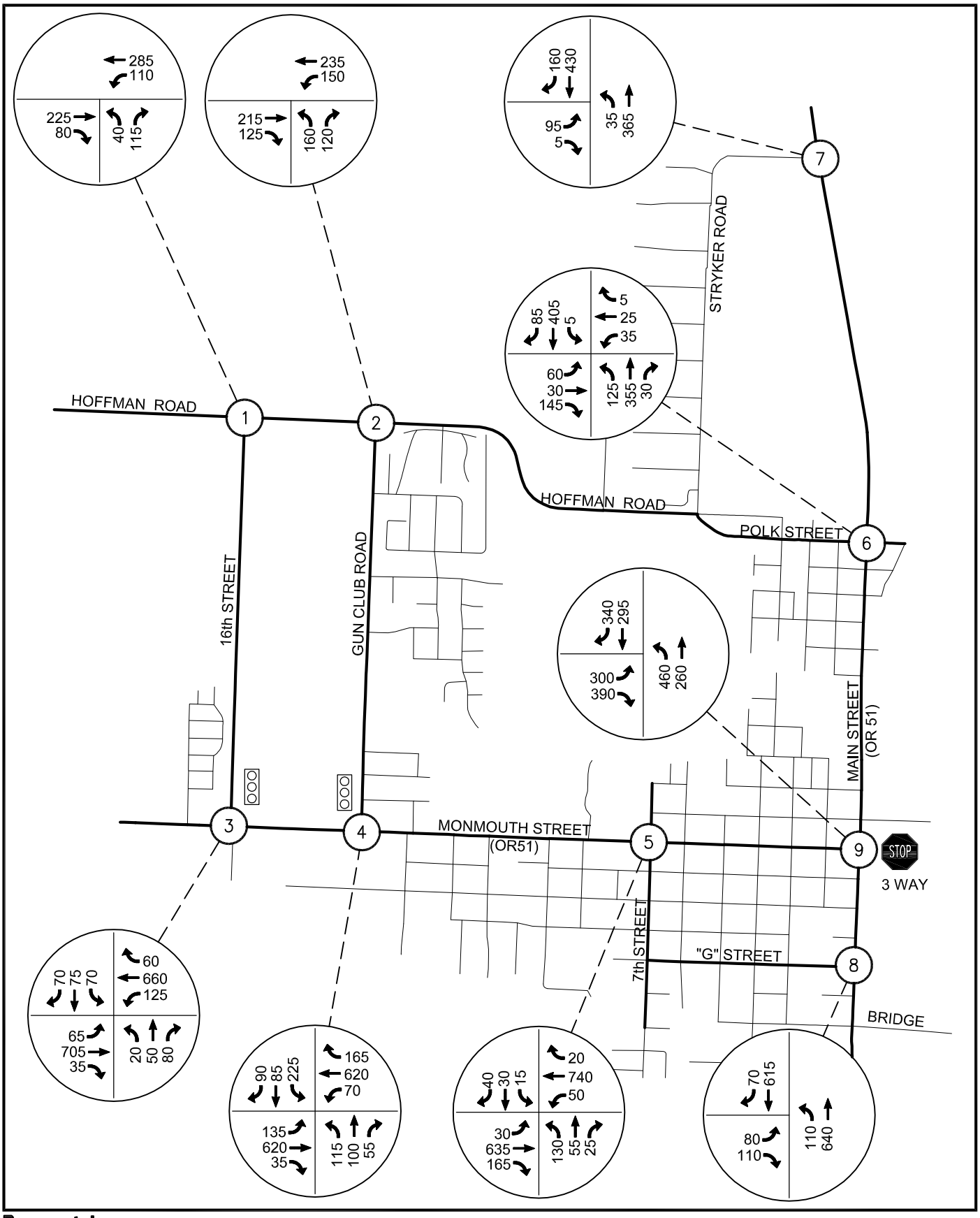
Analyst and Date: SHO 1/07 Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

APPENDIX SECTION B-5

2026 Volumes and Operations Analysis



Parametrix DATE: Feb 09, 2007 FILE: PO2395051P05F-04

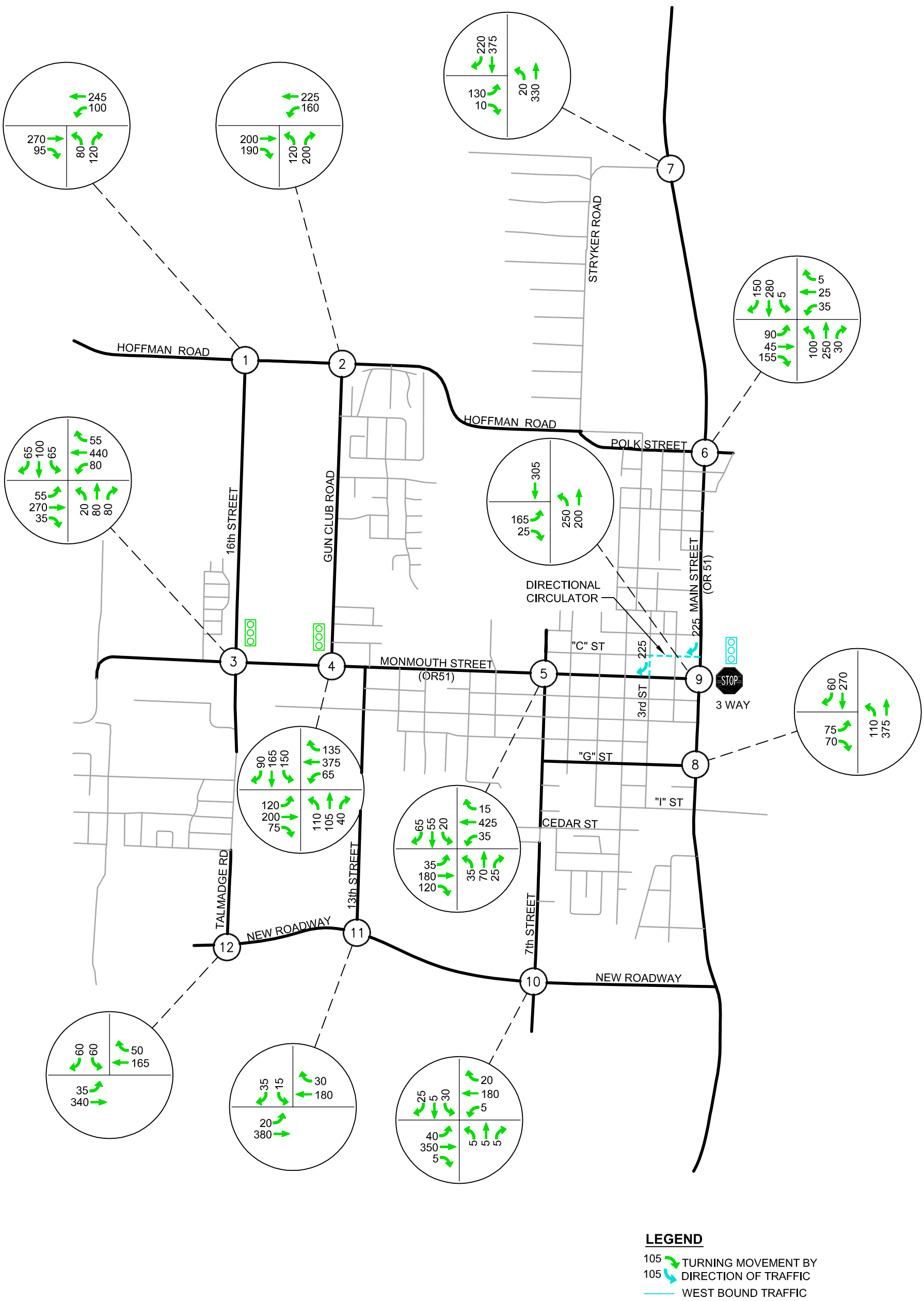
N

LEGEND

105 TURNING MOVEMENT BY DIRECTION OF TRAFFIC

Figure 1-1
Alternative 1: 2026
Without Improvements

INDEPENDENCE, OREGON



LEGEND

105 TURNING MOVEMENT BY
105 DIRECTION OF TRAFFIC

WEST BOUND TRAFFIC

Parametrix DATE: Feb 09, 2007 FILE: PO2395051P05F-07

N

Alternative 2: 2026
With Improvements

INDEPENDENCE, OREGON

1: Hwy 51 & 16th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1752		1676	1743		1676	1601		1676	1637	
Flt Permitted	0.95	1.00		0.95	1.00		0.59	1.00		0.62	1.00	
Satd. Flow (perm)	1676	1752		1676	1743		1041	1601		1093	1637	
Volume (vph)	65	705	35	125	660	60	20	50	80	70	75	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	766	38	136	717	65	22	54	87	76	82	76
RTOR Reduction (vph)	0	2	0	0	3	0	0	61	0	0	35	0
Lane Group Flow (vph)	71	802	0	136	779	0	22	80	0	76	123	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	738		300	734		285	438		299	448	
v/s Ratio Prot	0.04	c0.46		c0.08	0.45			0.05			c0.08	
v/s Ratio Perm							0.02			0.07		
v/c Ratio	0.24	1.09		0.45	1.06		0.08	0.18		0.25	0.27	
Uniform Delay, d1	33.4	27.5		34.8	27.5		25.6	26.4		26.9	27.1	
Progression Factor	1.00	1.00		0.68	1.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	59.3		0.4	30.7		0.5	0.9		2.0	1.5	
Delay (s)	35.3	86.8		24.1	66.5		26.1	27.3		29.0	28.6	
Level of Service	D	F		C	E		C	C		C	C	
Approach Delay (s)		82.6			60.2			27.1			28.7	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM Average Control Delay	63.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2: Hwy 51 & Gun Club Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1676	1751		1676	1709		1676	1671			1664	
Flt Permitted	0.95	1.00		0.95	1.00		0.55	1.00			0.64	
Satd. Flow (perm)	1676	1751		1676	1709		967	1671			1103	
Volume (vph)	135	620	35	70	620	165	115	100	55	225	85	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	674	38	76	674	179	125	109	60	245	92	98
RTOR Reduction (vph)	0	2	0	0	10	0	0	21	0	0	11	0
Lane Group Flow (vph)	147	710	0	76	843	0	125	148	0	0	424	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27			0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	300	737		300	720		265	457			302	
v/s Ratio Prot	c0.09	0.41		0.05	c0.49			0.09				
v/s Ratio Perm							0.13				c0.38	
v/c Ratio	0.49	0.96		0.25	1.17		0.47	0.32			1.40	
Uniform Delay, d1	35.1	26.8		33.5	27.5		28.8	27.5			34.5	
Progression Factor	1.12	0.86		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.9	12.2		2.0	91.4		5.9	1.9			200.7	
Delay (s)	41.3	35.2		35.6	118.9		34.7	29.4			235.2	
Level of Service	D	D		D	F		C	C			F	
Approach Delay (s)		36.2			112.1			31.6			235.2	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM Average Control Delay	98.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

4: Hwy 51 & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	300	390	460	260	295	340
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	326	424	500	283	321	370

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	750	783	690
Volume Left (vph)	326	500	0
Volume Right (vph)	424	0	370
Hadj (s)	-0.22	0.16	-0.29
Departure Headway (s)	6.8	7.1	6.7
Degree Utilization, x	1.41	1.55	1.28
Capacity (veh/h)	535	508	547
Control Delay (s)	215.1	277.9	162.8
Approach Delay (s)	215.1	277.9	162.8
Approach LOS	F	F	F

Intersection Summary			
Delay	221.0		
HCM Level of Service	F		
Intersection Capacity Utilization	132.5%	ICU Level of Service	H
Analysis Period (min)	15		

5: Polk Street & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	60	30	145	35	25	5	125	355	30	5	405	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	33	158	38	27	5	136	386	33	5	440	92
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1190	1188	486	1345	1217	402	533			418		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1190	1188	486	1345	1217	402	533			418		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	49	80	73	47	83	99	87			100		
cM capacity (veh/h)	127	163	581	71	156	648	1035			1141		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	255	71	554	538
Volume Left	65	38	136	5
Volume Right	158	5	33	92
cSH	259	99	1035	1141
Volume to Capacity	0.99	0.72	0.13	0.00
Queue Length 95th (ft)	239	92	11	0
Control Delay (s)	94.0	103.4	3.4	0.1
Lane LOS	F	F	A	A
Approach Delay (s)	94.0	103.4	3.4	0.1
Approach LOS	F	F		

Intersection Summary			
Average Delay	23.5		
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

6: Stryker Road & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	95	5	35	365	430	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	5	38	397	467	174
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1027	554	641			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1027	554	641			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	59	99	96			
cM capacity (veh/h)	249	532	943			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	109	38	397	641
Volume Left	103	38	0	0
Volume Right	5	0	0	174
cSH	256	943	1700	1700
Volume to Capacity	0.42	0.04	0.23	0.38
Queue Length 95th (ft)	50	3	0	0
Control Delay (s)	29.1	9.0	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	29.1	0.8		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

8: Hoffman Road & 16th Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	225	80	110	285	40	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	245	87	120	310	43	125
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			332		837	288
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			332		837	288
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		86	83
cM capacity (veh/h)			1228		304	751

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	332	429	168
Volume Left	0	120	43
Volume Right	87	0	125
cSH	1700	1228	544
Volume to Capacity	0.20	0.10	0.31
Queue Length 95th (ft)	0	8	33
Control Delay (s)	0.0	3.0	14.5
Lane LOS		A	B
Approach Delay (s)	0.0	3.0	14.5
Approach LOS			B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

9: Hoffman Road & Gun Club Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	215	125	150	235	160	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	234	136	163	255	174	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			370		883	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			370		883	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		36	82
cM capacity (veh/h)			1189		273	738

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	370	418	304
Volume Left	0	163	174
Volume Right	136	0	130
cSH	1700	1189	374
Volume to Capacity	0.22	0.14	0.81
Queue Length 95th (ft)	0	12	180
Control Delay (s)	0.0	4.2	45.4
Lane LOS		A	E
Approach Delay (s)	0.0	4.2	45.4
Approach LOS			E

Intersection Summary			
Average Delay	14.3		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

14: 'G' Street & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	80	110	110	640	615	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	120	120	696	668	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1641	707	745			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1641	707	745			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	8	73	86			
cM capacity (veh/h)	95	436	863			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	207	815	745
Volume Left	87	120	0
Volume Right	120	0	76
cSH	173	863	1700
Volume to Capacity	1.19	0.14	0.44
Queue Length 95th (ft)	278	12	0
Control Delay (s)	183.0	3.4	0.0
Lane LOS	F	A	
Approach Delay (s)	183.0	3.4	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	23.0		
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

15: Hwy 51 & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	30	635	165	50	740	20	130	55	25	15	30	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	690	179	54	804	22	141	60	27	16	33	43
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	826			870			1829	1780	780	1826	1859	815
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	826			870			1829	1780	780	1826	1859	815
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			93			0	18	93	1	50	88
cM capacity (veh/h)	805			775			29	73	395	16	65	377

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	902	880	228	92
Volume Left	33	54	141	16
Volume Right	179	22	27	43
cSH	805	775	40	58
Volume to Capacity	0.04	0.07	5.69	1.60
Queue Length 95th (ft)	3	6	Err	211
Control Delay (s)	1.1	1.9	Err	455.8
Lane LOS	A	A	F	F
Approach Delay (s)	1.1	1.9	Err	455.8
Approach LOS			F	F

Intersection Summary			
Average Delay	1106.5		
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

1: Hwy 51 & 16th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.93		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1734		1676	1735		1676	1632		1676	1660	
Flt Permitted	0.95	1.00		0.95	1.00		0.55	1.00		0.56	1.00	
Satd. Flow (perm)	1676	1734		1676	1735		976	1632		994	1660	
Volume (vph)	55	270	35	80	440	55	20	80	80	65	100	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	293	38	87	478	60	22	87	87	71	109	71
RTOR Reduction (vph)	0	5	0	0	5	0	0	38	0	0	25	0
Lane Group Flow (vph)	60	326	0	87	533	0	22	136	0	71	155	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	730		300	731		267	447		272	454	
v/s Ratio Prot	0.04	0.19		c0.05	c0.31			0.08			c0.09	
v/s Ratio Perm							0.02			0.07		
v/c Ratio	0.20	0.45		0.29	0.73		0.08	0.30		0.26	0.34	
Uniform Delay, d1	33.2	19.6		33.8	23.0		25.6	27.3		27.0	27.6	
Progression Factor	1.00	1.00		0.87	1.26		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.0		1.7	4.4		0.6	1.8		2.3	2.0	
Delay (s)	34.7	21.6		31.0	33.3		26.2	29.1		29.3	29.7	
Level of Service	C	C		C	C		C	C		C	C	
Approach Delay (s)		23.6			33.0			28.8			29.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2: Hwy 51 & Gun Club Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1692		1676	1695		1676	1692		1676	1671	
Flt Permitted	0.95	1.00		0.95	1.00		0.40	1.00		0.59	1.00	
Satd. Flow (perm)	1676	1692		1676	1695		698	1692		1044	1671	
Volume (vph)	120	200	75	65	375	135	110	105	40	150	165	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	217	82	71	408	147	120	114	43	163	179	98
RTOR Reduction (vph)	0	14	0	0	14	0	0	15	0	0	21	0
Lane Group Flow (vph)	130	285	0	71	541	0	120	142	0	163	256	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	712		300	714		191	463		286	457	
v/s Ratio Prot	c0.08	0.17		0.04	c0.32			0.08			0.15	
v/s Ratio Perm							c0.17			0.16		
v/c Ratio	0.43	0.40		0.24	0.76		0.63	0.31		0.57	0.56	
Uniform Delay, d1	34.7	19.1		33.4	23.4		30.3	27.4		29.7	29.6	
Progression Factor	1.09	0.82		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	1.6		1.9	7.4		14.6	1.7		8.0	4.9	
Delay (s)	41.9	17.3		35.3	30.8		44.9	29.1		37.7	34.5	
Level of Service	D	B		D	C		D	C		D	C	
Approach Delay (s)		24.8			31.3			35.9			35.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

4: Hwy 51 & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	165	25	250	200	305	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	179	27	272	217	332	0

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	207	489	332
Volume Left (vph)	179	272	0
Volume Right (vph)	27	0	0
Hadj (s)	0.13	0.15	0.03
Departure Headway (s)	6.1	5.2	5.3
Degree Utilization, x	0.35	0.71	0.49
Capacity (veh/h)	538	672	652
Control Delay (s)	12.4	19.8	13.3
Approach Delay (s)	12.4	19.8	13.3
Approach LOS	B	C	B

Intersection Summary			
Delay	16.2		
HCM Level of Service	C		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

5: Polk Street & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	90	45	155	35	25	5	100	250	30	5	280	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	98	49	168	38	27	5	109	272	33	5	304	163
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	921	918	386	1095	984	288	467			304		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	921	918	386	1095	984	288	467			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	53	80	75	66	88	99	90			100		
cM capacity (veh/h)	208	243	662	111	223	751	1094			1256		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	98	217	71	413	473
Volume Left	98	0	38	109	5
Volume Right	0	168	5	33	163
cSH	208	477	150	1094	1256
Volume to Capacity	0.47	0.46	0.47	0.10	0.00
Queue Length 95th (ft)	57	59	55	8	0
Control Delay (s)	36.7	18.7	48.8	3.0	0.1
Lane LOS	E	C	E	A	A
Approach Delay (s)	24.3		48.8	3.0	0.1
Approach LOS	C		E		

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

6: Stryker Road & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	130	10	20	330	375	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	11	22	359	408	239
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	929	527	647			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	929	527	647			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	98	98			
cM capacity (veh/h)	290	551	939			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	152	22	359	647
Volume Left	141	22	0	0
Volume Right	11	0	0	239
cSH	300	939	1700	1700
Volume to Capacity	0.51	0.02	0.21	0.38
Queue Length 95th (ft)	67	2	0	0
Control Delay (s)	28.7	8.9	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	28.7	0.5		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

8: Hoffman Road & 16th Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	270	95	100	245	80	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	293	103	109	266	87	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			397		829	345
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			397		829	345
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		72	81
cM capacity (veh/h)			1162		309	698

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	397	375	87	130
Volume Left	0	109	87	0
Volume Right	103	0	0	130
cSH	1700	1162	309	698
Volume to Capacity	0.23	0.09	0.28	0.19
Queue Length 95th (ft)	0	8	28	17
Control Delay (s)	0.0	3.1	21.2	11.3
Lane LOS		A	C	B
Approach Delay (s)	0.0	3.1	15.3	
Approach LOS			C	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

9: Hoffman Road & Gun Club Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	200	190	160	225	120	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	217	207	174	245	130	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			424		913	321
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			424		913	321
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		49	70
cM capacity (veh/h)			1135		257	720

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	424	418	130	217
Volume Left	0	174	130	0
Volume Right	207	0	0	217
cSH	1700	1135	257	720
Volume to Capacity	0.25	0.15	0.51	0.30
Queue Length 95th (ft)	0	14	66	32
Control Delay (s)	0.0	4.5	32.6	12.1
Lane LOS		A	D	B
Approach Delay (s)	0.0	4.5	19.8	
Approach LOS			C	

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

14: 'G' Street & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	75	70	110	375	270	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	76	120	408	293	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	973	326	359			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	973	326	359			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	89	90			
cM capacity (veh/h)	252	715	1200			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	158	527	359
Volume Left	82	120	0
Volume Right	76	0	65
cSH	366	1200	1700
Volume to Capacity	0.43	0.10	0.21
Queue Length 95th (ft)	52	8	0
Control Delay (s)	22.0	2.7	0.0
Lane LOS	C	A	
Approach Delay (s)	22.0	2.7	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

15: Hwy 51 & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	35	180	120	35	425	15	35	70	25	20	55	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	196	130	38	462	16	38	76	27	22	60	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	478			326			984	891	261	948	948	470
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	478			326			984	891	261	948	948	470
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			75	71	97	87	75	88
cM capacity (veh/h)	1084			1234			155	263	778	172	244	593

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	364	516	141	152
Volume Left	38	38	38	22
Volume Right	130	16	27	71
cSH	1084	1234	248	310
Volume to Capacity	0.04	0.03	0.57	0.49
Queue Length 95th (ft)	3	2	80	64
Control Delay (s)	1.2	0.9	37.1	27.3
Lane LOS	A	A	E	D
Approach Delay (s)	1.2	0.9	37.1	27.3
Approach LOS			E	D

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

16: New Roadway & Talmadge

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	35	340	165	50	60	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	370	179	54	65	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	234				652	207
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	234				652	207
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				84	92
cM capacity (veh/h)	1334				420	834

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	408	234	130
Volume Left	38	0	65
Volume Right	0	54	65
cSH	1334	1700	559
Volume to Capacity	0.03	0.14	0.23
Queue Length 95th (ft)	2	0	22
Control Delay (s)	1.0	0.0	13.4
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	13.4
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

17: New Roadway & 13th Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	380	180	30	15	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	413	196	33	16	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	228				668	212
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228				668	212
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	95
cM capacity (veh/h)	1340				416	828

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	435	228	54
Volume Left	22	0	16
Volume Right	0	33	38
cSH	1340	1700	639
Volume to Capacity	0.02	0.13	0.09
Queue Length 95th (ft)	1	0	7
Control Delay (s)	0.5	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	0.5	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

18: New Roadway & 7th Street

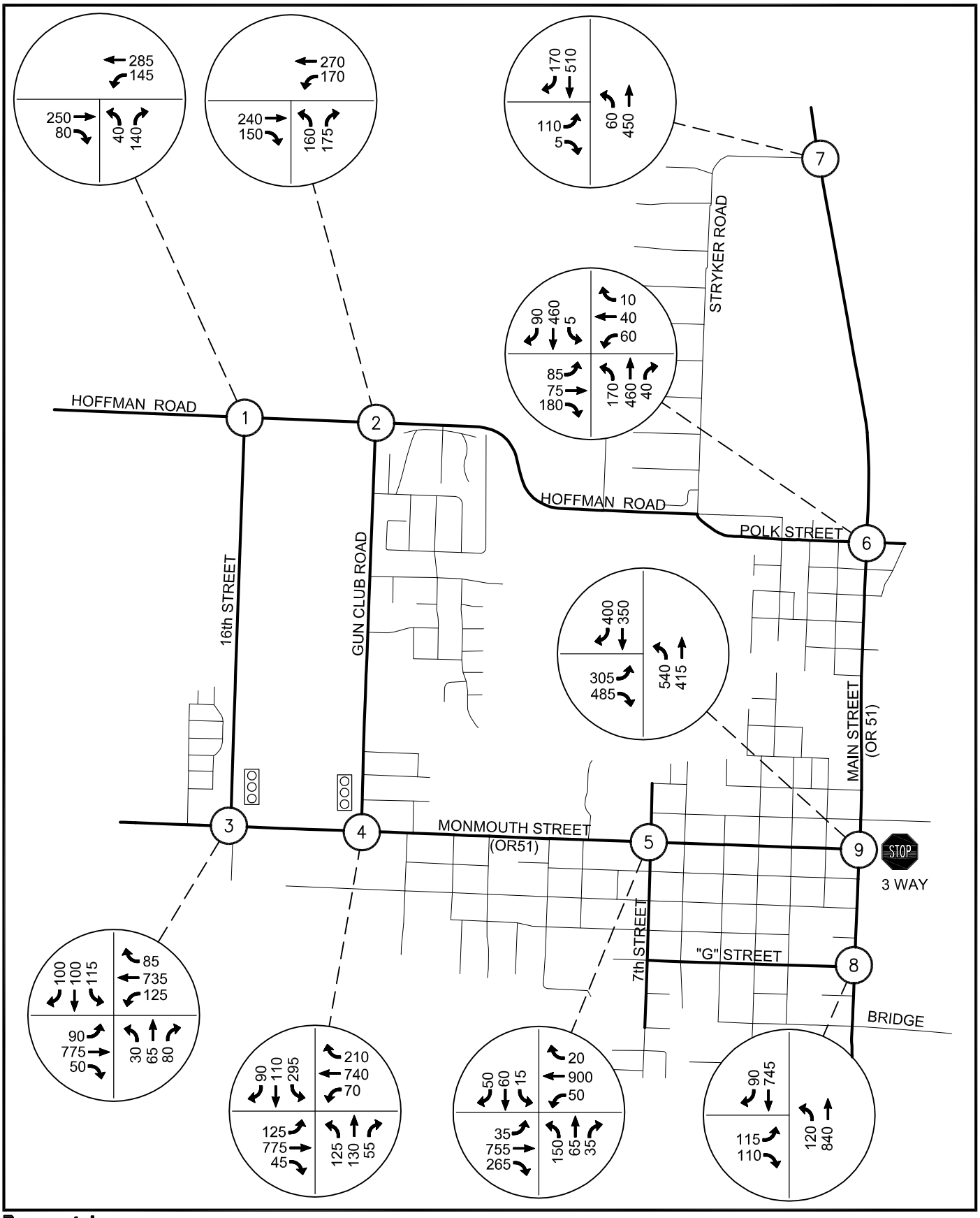
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	40	350	5	5	180	20	5	5	5	30	5	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	380	5	5	196	22	5	5	5	33	5	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	217			386			717	698	383	696	690	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			386			717	698	383	696	690	207
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			98	98	99	90	98	97
cM capacity (veh/h)	1352			1173			320	351	664	339	355	834

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	429	223	16	65
Volume Left	43	5	5	33
Volume Right	5	22	5	27
cSH	1352	1173	401	453
Volume to Capacity	0.03	0.00	0.04	0.14
Queue Length 95th (ft)	2	0	3	12
Control Delay (s)	1.1	0.2	14.4	14.3
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	0.2	14.4	14.3
Approach LOS			B	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX SECTION B-6

Volumes and 2042 Operations



Parametrix DATE: Mar 30, 2007 FILE: PO2395051P05F-06

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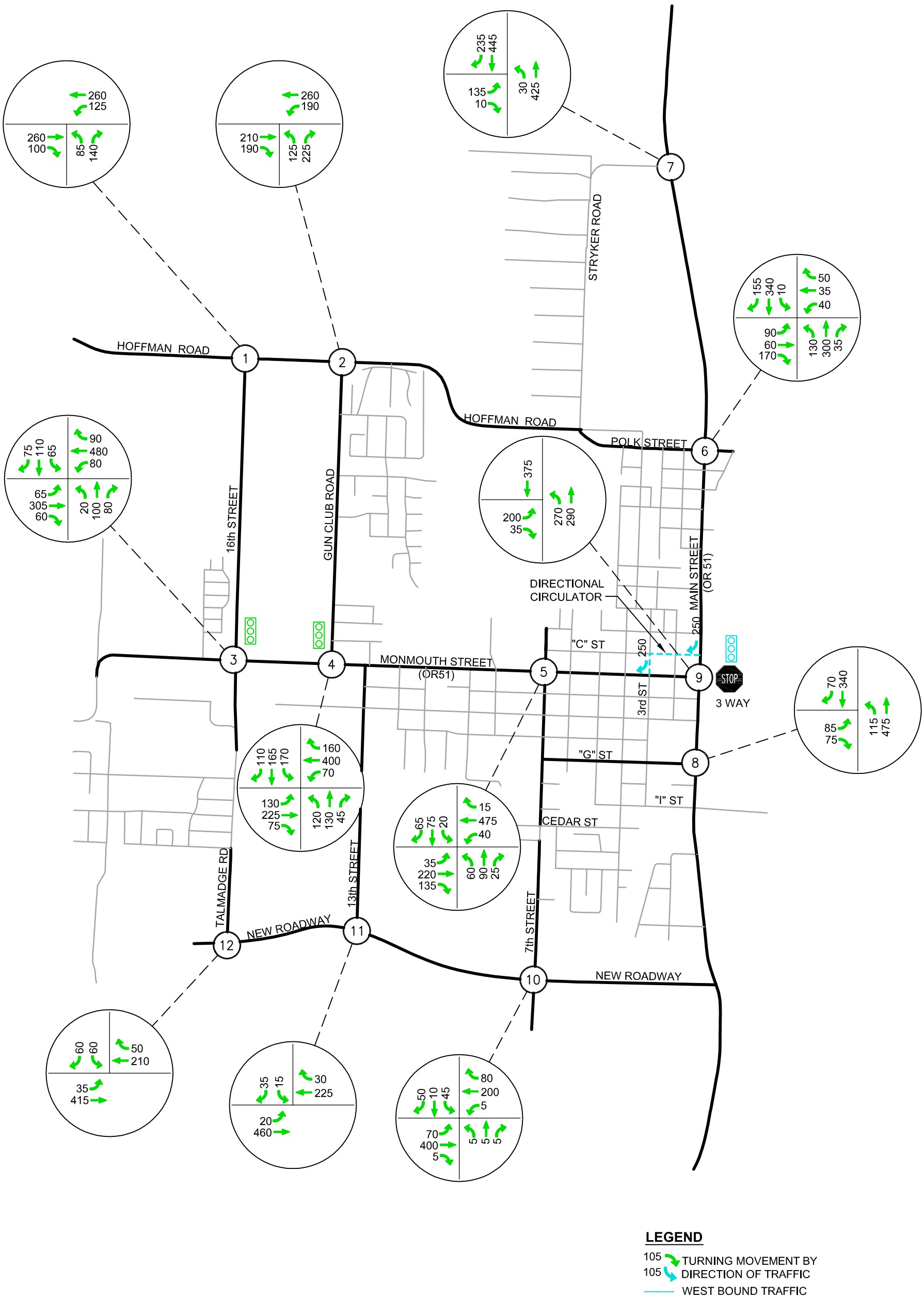
LEGEND

105 TURNING MOVEMENT BY DIRECTION OF TRAFFIC

Alternative 3: Full UGB Build-Out (2042) Without Improvements

INDEPENDENCE, OREGON



Parametrix DATE: Mar 30, 2007 FILE: PO2395051P05F-08

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Alternative 4: (2042)
Full UGB Build-out
With Improvements

INDEPENDENCE, OREGON

1: Hwy 51 & 16th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1749		1676	1737		1676	1619		1676	1632	
Flt Permitted	0.95	1.00		0.95	1.00		0.49	1.00		0.59	1.00	
Satd. Flow (perm)	1676	1749		1676	1737		865	1619		1041	1632	
Volume (vph)	90	775	50	125	735	85	30	65	80	115	100	100
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	842	54	136	799	92	33	71	87	125	109	109
RTOR Reduction (vph)	0	2	0	0	5	0	0	46	0	0	38	0
Lane Group Flow (vph)	98	894	0	136	886	0	33	112	0	125	180	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	736		300	731		237	443		285	447	
v/s Ratio Prot	0.06	0.51		c0.08	c0.51			0.10			c0.13	
v/s Ratio Perm							0.04			0.12		
v/c Ratio	0.33	1.21		0.45	1.21		0.14	0.25		0.44	0.40	
Uniform Delay, d1	34.0	27.5		34.8	27.5		26.1	26.9		28.5	28.2	
Progression Factor	1.00	1.00		0.63	1.32		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	108.7		0.4	96.9		1.2	1.4		4.8	2.7	
Delay (s)	36.9	136.2		22.6	133.2		27.3	28.3		33.3	30.9	
Level of Service	D	F		C	F		C	C		C	C	
Approach Delay (s)		126.4			118.6			28.1			31.8	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	103.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2: Hwy 51 & Gun Club Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1676	1750		1676	1706		1676	1686			1672	
Flt Permitted	0.95	1.00		0.95	1.00		0.58	1.00			0.58	
Satd. Flow (perm)	1676	1750		1676	1706		1021	1686			997	
Volume (vph)	125	775	45	70	740	210	125	130	55	295	110	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	842	49	76	804	228	136	141	60	321	120	98
RTOR Reduction (vph)	0	2	0	0	11	0	0	16	0	0	9	0
Lane Group Flow (vph)	136	889	0	76	1021	0	136	185	0	0	530	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0			26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27			0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	300	737		300	718		279	461			273	
v/s Ratio Prot	c0.08	0.51		0.05	c0.60			0.11				
v/s Ratio Perm							0.13				c0.53	
v/c Ratio	0.45	1.21		0.25	1.42		0.49	0.40			1.94	
Uniform Delay, d1	34.8	27.5		33.5	27.5		28.9	28.1			34.5	
Progression Factor	1.08	0.91		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	93.9		2.0	198.0		6.0	2.6			437.3	
Delay (s)	38.0	119.0		35.6	225.5		34.9	30.7			471.8	
Level of Service	D	F		D	F		C	C			F	
Approach Delay (s)		108.3			212.5			32.4			471.8	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM Average Control Delay	203.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

4: Hwy 51 & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	305	485	540	415	350	400
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	332	527	587	451	380	435

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	859	1038	815
Volume Left (vph)	332	587	0
Volume Right (vph)	527	0	435
Hadj (s)	-0.26	0.15	-0.29
Departure Headway (s)	6.7	7.1	6.7
Degree Utilization, x	1.60	2.06	1.52
Capacity (veh/h)	540	513	542
Control Delay (s)	298.7	498.9	260.6
Approach Delay (s)	298.7	498.9	260.6
Approach LOS	F	F	F

Intersection Summary			
Delay	363.9		
HCM Level of Service	F		
Intersection Capacity Utilization	159.2%	ICU Level of Service	H
Analysis Period (min)	15		

5: Polk Street & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	85	75	180	60	40	10	170	460	40	5	460	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	82	196	65	43	11	185	500	43	5	500	98
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1484	1473	549	1688	1500	522	598			543		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1484	1473	549	1688	1500	522	598			543		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	20	63	0	56	98	81			99		
cM capacity (veh/h)	57	102	536	14	98	555	979			1025		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	370	120	728	603
Volume Left	92	65	185	5
Volume Right	196	11	43	98
cSH	133	23	979	1025
Volume to Capacity	2.78	5.12	0.19	0.01
Queue Length 95th (ft)	842	Err	17	0
Control Delay (s)	873.7	Err	4.4	0.1
Lane LOS	F	F	A	A
Approach Delay (s)	873.7	Err	4.4	0.1
Approach LOS	F	F		

Intersection Summary			
Average Delay	835.8		
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

6: Stryker Road & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	110	5	60	450	510	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	5	65	489	554	185
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1266	647	739			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1266	647	739			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	31	99	92			
cM capacity (veh/h)	172	471	867			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	125	65	489	739
Volume Left	120	65	0	0
Volume Right	5	0	0	185
cSH	177	867	1700	1700
Volume to Capacity	0.70	0.08	0.29	0.43
Queue Length 95th (ft)	108	6	0	0
Control Delay (s)	63.1	9.5	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	63.1	1.1		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

8: Hoffman Road & 16th Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	250	80	145	285	40	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	272	87	158	310	43	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			359		940	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			359		940	315
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		83	79
cM capacity (veh/h)			1200		254	725

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	359	467	196
Volume Left	0	158	43
Volume Right	87	0	152
cSH	1700	1200	514
Volume to Capacity	0.21	0.13	0.38
Queue Length 95th (ft)	0	11	44
Control Delay (s)	0.0	3.8	16.3
Lane LOS		A	C
Approach Delay (s)	0.0	3.8	16.3
Approach LOS			C

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

9: Hoffman Road & Gun Club Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	240	150	170	270	160	175
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	261	163	185	293	174	190
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			424		1005	342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			424		1005	342
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		22	73
cM capacity (veh/h)			1135		224	700

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	424	478	364
Volume Left	0	185	174
Volume Right	163	0	190
cSH	1700	1135	347
Volume to Capacity	0.25	0.16	1.05
Queue Length 95th (ft)	0	15	319
Control Delay (s)	0.0	4.5	96.9
Lane LOS		A	F
Approach Delay (s)	0.0	4.5	96.9
Approach LOS			F

Intersection Summary			
Average Delay	29.6		
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

14: 'G' Street & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	115	110	120	840	745	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	120	130	913	810	98
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2033	859	908			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2033	859	908			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	66	83			
cM capacity (veh/h)	52	356	750			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	245	1043	908
Volume Left	125	130	0
Volume Right	120	0	98
cSH	89	750	1700
Volume to Capacity	2.75	0.17	0.53
Queue Length 95th (ft)	584	16	0
Control Delay (s)	890.0	4.9	0.0
Lane LOS	F	A	
Approach Delay (s)	890.0	4.9	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	101.5		
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
Analysis Period (min)	15		

15: Hwy 51 & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	35	755	265	50	900	20	150	65	35	15	60	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	821	288	54	978	22	163	71	38	16	65	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1000			1109			2226	2149	965	2212	2283	989
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1000			1109			2226	2149	965	2212	2283	989
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			91			0	0	88	0	0	82
cM capacity (veh/h)	692			630			0	42	309	0	34	299

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1147	1054	272	136
Volume Left	38	54	163	16
Volume Right	288	22	38	54
cSH	692	630	0	0
Volume to Capacity	0.05	0.09	Err	Err
Queue Length 95th (ft)	4	7	Err	Err
Control Delay (s)	2.0	2.8	Err	Err
Lane LOS	A	A	F	F
Approach Delay (s)	2.0	2.8	Err	Err
Approach LOS			F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

1: Hwy 51 & 16th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.93		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1721		1676	1723		1676	1647		1676	1657	
Flt Permitted	0.95	1.00		0.95	1.00		0.52	1.00		0.53	1.00	
Satd. Flow (perm)	1676	1721		1676	1723		911	1647		929	1657	
Volume (vph)	65	305	60	80	480	90	20	100	80	65	110	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	332	65	87	522	98	22	109	87	71	120	82
RTOR Reduction (vph)	0	8	0	0	7	0	0	31	0	0	26	0
Lane Group Flow (vph)	71	389	0	87	613	0	22	165	0	71	176	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	725		300	725		249	451		254	453	
v/s Ratio Prot	0.04	0.23		c0.05	c0.36			0.12			c0.12	
v/s Ratio Perm							0.02			0.08		
v/c Ratio	0.24	0.54		0.29	0.85		0.09	0.37		0.28	0.39	
Uniform Delay, d1	33.4	20.6		33.8	24.7		25.7	27.9		27.1	28.0	
Progression Factor	1.00	1.00		0.88	1.21		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	2.8		1.5	7.7		0.7	2.3		2.7	2.5	
Delay (s)	35.3	23.4		31.2	37.5		26.4	30.2		29.9	30.5	
Level of Service	D	C		C	D		C	C		C	C	
Approach Delay (s)		25.2			36.7			29.8			30.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2: Hwy 51 & Gun Club Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1698		1676	1689		1676	1696		1676	1658	
Flt Permitted	0.95	1.00		0.95	1.00		0.36	1.00		0.54	1.00	
Satd. Flow (perm)	1676	1698		1676	1689		637	1696		946	1658	
Volume (vph)	130	225	75	70	400	160	120	130	45	170	165	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	245	82	76	435	174	130	141	49	185	179	120
RTOR Reduction (vph)	0	13	0	0	15	0	0	13	0	0	25	0
Lane Group Flow (vph)	141	314	0	76	594	0	130	177	0	185	274	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	17.0	40.0		17.0	40.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.18	0.42		0.18	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	300	715		300	711		174	464		259	454	
v/s Ratio Prot	c0.08	0.19		0.05	c0.36			0.11			0.18	
v/s Ratio Perm							c0.20			0.20		
v/c Ratio	0.47	0.44		0.25	0.84		0.75	0.38		0.71	0.60	
Uniform Delay, d1	35.0	19.5		33.5	24.6		31.5	28.0		31.1	30.0	
Progression Factor	1.08	0.79		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	1.7		2.0	11.2		25.0	2.4		15.5	5.8	
Delay (s)	42.4	17.2		35.6	35.7		56.5	30.3		46.7	35.8	
Level of Service	D	B		D	D		E	C		D	D	
Approach Delay (s)		24.8			35.7			41.0			40.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

4: Hwy 51 & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	1.00	
Flt Protected	0.96			0.98	1.00	
Satd. Flow (prot)	1659			1723	1765	
Flt Permitted	0.96			0.62	1.00	
Satd. Flow (perm)	1659			1098	1765	
Volume (vph)	200	35	270	290	375	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	38	293	315	408	0
RTOR Reduction (vph)	7	0	0	0	0	0
Lane Group Flow (vph)	248	0	0	608	408	0
Turn Type			pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	14.3			51.9	51.9	
Effective Green, g (s)	14.3			51.9	51.9	
Actuated g/C Ratio	0.19			0.70	0.70	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	320			768	1235	
v/s Ratio Prot	c0.15				0.23	
v/s Ratio Perm				c0.55		
v/c Ratio	0.77			0.79	0.33	
Uniform Delay, d1	28.4			7.5	4.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	11.1			5.6	0.2	
Delay (s)	39.5			13.1	4.5	
Level of Service	D			B	A	
Approach Delay (s)	39.5			13.1	4.5	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

5: Polk Street & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.89			0.95			0.99			0.96	
Flt Protected	0.95	1.00			0.98			0.99			1.00	
Satd. Flow (prot)	1676	1569			1643			1723			1690	
Flt Permitted	0.95	1.00			0.80			0.74			0.99	
Satd. Flow (perm)	1676	1569			1339			1292			1675	
Volume (vph)	90	60	170	40	35	50	130	300	35	10	340	155
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	65	185	43	38	54	141	326	38	11	370	168
RTOR Reduction (vph)	0	117	0	0	28	0	0	3	0	0	16	0
Lane Group Flow (vph)	98	133	0	0	107	0	0	502	0	0	533	0
Turn Type	Split			Perm			Perm			Perm		
Protected Phases	4	4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)	10.4	10.4			8.8			37.1			37.1	
Effective Green, g (s)	10.4	10.4			8.8			37.1			37.1	
Actuated g/C Ratio	0.15	0.15			0.13			0.54			0.54	
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	255	239			173			702			910	
v/s Ratio Prot	0.06	c0.16										
v/s Ratio Perm					c0.10			c0.39			0.33	
v/c Ratio	0.38	0.56			0.62			0.71			0.59	
Uniform Delay, d1	26.1	26.8			28.2			11.6			10.4	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	1.0	2.8			6.5			3.5			1.0	
Delay (s)	27.0	29.6			34.6			15.1			11.4	
Level of Service	C	C			C			B			B	
Approach Delay (s)		28.9			34.6			15.1			11.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

6: Stryker Road & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	135	10	30	425	445	235
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	11	33	462	484	255
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1139	611	739			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1139	611	739			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	32	98	96			
cM capacity (veh/h)	214	493	867			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	158	33	462	739
Volume Left	147	33	0	0
Volume Right	11	0	0	255
cSH	223	867	1700	1700
Volume to Capacity	0.71	0.04	0.27	0.43
Queue Length 95th (ft)	116	3	0	0
Control Delay (s)	52.6	9.3	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	52.6	0.6		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

8: Hoffman Road & 16th Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	260	100	125	260	85	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	283	109	136	283	92	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			391		891	337
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			391		891	337
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		67	78
cM capacity (veh/h)			1167		276	705

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	391	418	92	152
Volume Left	0	136	92	0
Volume Right	109	0	0	152
cSH	1700	1167	276	705
Volume to Capacity	0.23	0.12	0.33	0.22
Queue Length 95th (ft)	0	10	35	20
Control Delay (s)	0.0	3.6	24.4	11.5
Lane LOS		A	C	B
Approach Delay (s)	0.0	3.6	16.4	
Approach LOS			C	

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

9: Hoffman Road & Gun Club Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	210	190	190	260	125	225
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	228	207	207	283	136	245
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			435		1027	332
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			435		1027	332
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		36	66
cM capacity (veh/h)			1125		212	710

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	435	489	136	245
Volume Left	0	207	136	0
Volume Right	207	0	0	245
cSH	1700	1125	212	710
Volume to Capacity	0.26	0.18	0.64	0.34
Queue Length (ft)	0	17	96	38
Control Delay (s)	0.0	4.9	48.1	12.7
Lane LOS		A	E	B
Approach Delay (s)	0.0	4.9	25.3	
Approach LOS			D	

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

14: 'G' Street & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	85	75	115	475	340	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	82	125	516	370	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1174	408	446			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1174	408	446			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	87	89			
cM capacity (veh/h)	188	644	1115			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	92	82	641	446
Volume Left	92	0	125	0
Volume Right	0	82	0	76
cSH	188	644	1115	1700
Volume to Capacity	0.49	0.13	0.11	0.26
Queue Length 95th (ft)	60	11	9	0
Control Delay (s)	41.3	11.4	2.8	0.0
Lane LOS	E	B	A	
Approach Delay (s)	27.3		2.8	0.0
Approach LOS	D			

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

15: Hwy 51 & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	35	220	135	40	475	15	60	90	25	20	75	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	239	147	43	516	16	65	98	27	22	82	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	533			386			1111	1008	312	1076	1073	524
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	533			386			1111	1008	312	1076	1073	524
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			39	56	96	82	60	87
cM capacity (veh/h)	1035			1173			106	223	728	118	204	553

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	424	576	65	125	174
Volume Left	38	43	65	0	22
Volume Right	147	16	0	27	71
cSH	1035	1173	106	263	245
Volume to Capacity	0.04	0.04	0.61	0.48	0.71
Queue Length (ft)	3	3	75	60	120
Control Delay (s)	1.1	1.0	82.2	30.6	49.3
Lane LOS	A	A	F	D	E
Approach Delay (s)	1.1	1.0	48.3		49.3
Approach LOS			E		E

Intersection Summary			
Average Delay	13.8		
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

16: New Roadway & Talmadge

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	35	415	210	50	60	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	451	228	54	65	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	283				783	255
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	283				783	255
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				81	92
cM capacity (veh/h)	1280				352	783

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	489	283	130
Volume Left	38	0	65
Volume Right	0	54	65
cSH	1280	1700	486
Volume to Capacity	0.03	0.17	0.27
Queue Length (ft)	2	0	27
Control Delay (s)	0.9	0.0	15.1
Lane LOS	A		C
Approach Delay (s)	0.9	0.0	15.1
Approach LOS			C

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

17: New Roadway & 13th Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	460	225	30	15	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	500	245	33	16	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	277				804	261
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	277				804	261
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	95
cM capacity (veh/h)	1286				346	778

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	522	277	54
Volume Left	22	0	16
Volume Right	0	33	38
cSH	1286	1700	566
Volume to Capacity	0.02	0.16	0.10
Queue Length (ft)	1	0	8
Control Delay (s)	0.5	0.0	12.0
Lane LOS	A		B
Approach Delay (s)	0.5	0.0	12.0
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

18: New Roadway & 7th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	70	400	5	5	200	80	5	5	5	45	10	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	435	5	5	217	87	5	5	5	49	11	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	304			440			921	905	438	870	864	261
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			440			921	905	438	870	864	261
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			97	98	99	81	96	93
cM capacity (veh/h)	1256			1120			215	258	619	252	273	778

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	516	310	16	114
Volume Left	76	5	5	49
Volume Right	5	87	5	54
cSH	1256	1120	296	376
Volume to Capacity	0.06	0.00	0.06	0.30
Queue Length (ft)	5	0	4	31
Control Delay (s)	1.7	0.2	17.9	18.7
Lane LOS	A	A	C	C
Approach Delay (s)	1.7	0.2	17.9	18.7
Approach LOS			C	C

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX C

Proposed Revisions to City Code

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M E M O R A N D U M

Date: **June 5, 2007**

To: **Independence City Council**

From: **Michael Harrison, Project Manager**

Subject: **Transportation System Plan Update**

Project Number: **274-2395-051**

Project Name: **Independence Transportation System Plan**

In 2006, the City of Independence was awarded a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development, to partially fund an update to the City of Independence's 1998 Transportation System Plan (TSP). The State of Oregon Transportation Planning Rule (TPR) requires cities to prepare local TSPs which are consistent with regional system plans and the state system plan. The TPR also explains how local governments and ODOT should develop and coordinate transportation plans and how provision of transportation facilities and services is linked to land use planning.

To conform to the specific standards set forth in the TPR, it requires that the following topics be addressed:

1) Amend land use regulations to reflect and implement the TSP.

2) Adopt land use or subdivision ordinance measures, consistent with applicable state and federal requirements, to protect transportation facilities, corridors and sites for their identified functions, to cover the following topics:

- Access management and control;
- Protection of public use airports;
- Coordinated review of land use decisions that might affect transportation facilities;
- Conditions to minimize development impacts to transportation facilities;
- Regulations to provide notice to public agencies providing transportation facilities and services of land use applications that might affect transportation facilities; and
- Regulations assuring that amendment to land use applications, densities, and design standards are consistent with the TSP.

3) Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel.

4) Establish street standards that minimize pavement width and total right-of-way.

The City of Independence has reviewed its land use regulations and determined that amendments to the City of Independence Development Code are necessary not only for compliance with the TPR, but also to ensure consistency between the TSP and the Development Code. Some of the proposed changes are not specifically required by the TPR, but are included to better represent the "intent" of the Rule and to create development patterns that facilitate multi-modal travel.

Attached please find a copy of proposed changes to the City of Independence's Development Codes (Subchapters 11, 12, 20-22, 30, 32, 40-42, 48, 50, 57, 73, 80 and 90). New language shown in **bold and underlined**. Language to be deleted is shown ~~struck through~~.

Please review the draft document. A public hearing is scheduled before the Planning Commission on June 4, 2007. A public hearing before the City Council is scheduled for June 12, 2007.

Changes to the City's Development Code include:

- Page 1 – Section 11.015 is amended to require additional notice of land use applications to state and local agencies.

- Page 2 – Section 12.025 is amended to clarify that no zone change may be approved by the Planning Commission or enacted by the City Council unless it conforms to the Transportation System Plan.

- Page 3 to 5 – Sections 20.015, 21.015, 22.015, 30.010, 32.010, 40.010, 41.010, 42.025, 48.025 and 50.010 are amended to make projects identified in the Transportation System Plan permitted uses in all land use zones.

- Page 6 – Section 73.020 was amended to allow up to 25% of required parking surface area to be used for transit oriented uses, such as carpool parking, park-and-ride parking and public transit stations and platforms.

- Page 7 – Section 80.30.005 was amended to require traffic impact analyses for all development permits and land use applications which generate a net increase of 200 or more vehicle trips per day or are likely to increase the V/C ratio or decrease the safety of a State transportation facility. This amendment also modified the required information to be contained in traffic impact analyses.

- Page 8 – Section 80.40 was amended to indicate when right-of-way improvements to the City street network and State highway system shall be required as a part of a land use approval process.

- Page 9 – Section 90.60.030 was amended to require traffic impact analyses for all subdivision and major partitioning applications which generate a net increase of 200 or more vehicle trips per day or are likely to increase the V/C ratio or decrease the safety of a State transportation facility. This amendment also modified the required information to be contained in traffic impact analyses.

- Pages 10 to 13 – Section 57.130 was eliminated and Section 90.90.010 was amended to revise the street standards to make them consistent with the updated TSP and to be consistent with ODOT's revised access standards.

11.015 General Provisions

C. Citizen and Agency Involvement. The City shall provide opportunities for public and agency input in the planning process. The City shall give notice to:

(1) the Oregon Department of Transportation (ODOT) regarding any proposed land use action within 250 feet of**, or affects private access to,** a State transportation facility.

(2) the public works department of any jurisdictions (for example, Polk County), when any action by the City could potentially affect another jurisdiction's transportation facilities.

(3) ODOT, Polk County, and the City of Monmouth of any land use applications that require public hearings or subdivision and partition applications.

(4) Oregon Department of Aviation of applications within airport noise impact boundaries and imaginary surfaces that affect airport operations.

12.025 Standards for Zone Changes

No zone change shall be approved by the Planning Commission or enacted by the City council unless it conforms to the Comprehensive Plan**, including the Transportation System Plan,** and at least one of the following standards is met:

A. The zoning on the land for which the zone change is initiated is erroneous and the zone change would correct the error;

B. Conditions in the neighborhood surrounding the land for which the zone change is initiated have changed to such a degree that the zoning is no longer appropriate and the zone change would conform to the new conditions of the neighborhood;

C. There is a public need for land use of the kind for which the zone change is initiated and that public need can best be met by the zone change.

20.015 Permitted Uses

Within any RS Zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

E. Structure necessary for the City or for a public utility to provide service to the neighborhood in which it is located. Such structures shall include, but not be limited to the following:

5. Streets and sidewalks~~.~~**;**

6. Projects identified in the Transportation System Plan.

21.015 Permitted Uses

Within any RM Zone, no structure shall be used, constructed, or altered and no lot, tract, or parcel of land shall be used or occupied for any purposes except the following:

G. Structure necessary for the City or for a public utility to provide service to the neighborhood in which it is located. Such structures shall include, but not be limited to the following:

5. Streets and sidewalks~~.~~**;**

6. Projects identified in the Transportation System Plan.

22.015 Permitted Uses

Within any RH Zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

I. Structure necessary for the city or for a public utility to provide service to the neighborhood in which it is located. Such structure shall include, but not be limited to the following:

5. Streets and sidewalks~~.~~**;**

6. Projects identified in the Transportation System Plan.

30.010 Permitted Uses

Within any CO zones, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

K. Structure necessary for the city or for a public utility to provide service to the neighborhood in which it is located. Such structures shall include, but not be limited to the following:

5. Streets and sidewalks~~.~~**;**

6. Projects identified in the Transportation System Plan.

32.010 Permitted Uses

Within any CR zone, the following uses shall be permitted:

G. Structure necessary for the city or for a public utility to provide service to the neighborhood in which it is located. Such structures shall include but not be limited to the following:

5. Streets and sidewalks~~.~~**;**

6. Projects identified in the Transportation System Plan.

40.010 Permitted Uses

Within any IL zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

U. Streets and sidewalks;

V. Projects identified in the Transportation System Plan.

41.010 Permitted Uses

Within any IH zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

Y. Streets and sidewalks;

Z. Projects identified in the Transportation System Plan.

42.010 Permitted Uses

Within any IP zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except those uses listed in this section and found to be in conformance with the review procedures of section 42.045 and below:

Q. Streets and sidewalks;

R. Projects identified in the Transportation System Plan.

48.025 Permitted Uses.

The use of the land and buildings must be incompliance with the base zoning district as established by the Official City of Independence Zoning Map, and is further limited to the following permitted uses for the RSA Overlay Zone:

C. Streets and sidewalks;

D. Projects identified in the Transportation System Plan.

50.010 Permitted Uses

Within any PS zone, no structure shall be used, constructed, erected, or altered and no lot shall be used or occupied for any purposes except the following:

O. Streets and sidewalks;

P. Projects identified in the Transportation System Plan.

73.020 General Requirements for Parking and Loading Areas

K. Up to a maximum 25% of required parking facilities for uses, structures, or parcels of land may be satisfied by creation and maintenance of a facility dedicated to transit oriented uses, such as carpool parking, park-and-ride parking and public transit stations and platforms.

80.30 SITE DESIGN REVIEW APPLICATION REQUIREMENTS

80.30.005. Submission of documents. An applicant for a building or other permit who is subject to site design review shall submit to the City, in addition to the requirements of Subsection 90.40 of the Independence City Code, the information listed below. The applicant shall submit three copies each of the required site analysis diagram, site development plan and landscape plan unless authorized by the City to combine the required information into one plan. When a public hearing is required, one additional set shall be submitted which is of a size that is conveniently reproducible, not to exceed 11 inches by 18 inches.

F. **Traffic Impact Analysis – A traffic impact analysis report, prepared by an Oregon professional traffic engineer or an Oregon registered Professional Engineer with expertise in traffic engineering, shall be required for all development permits and land use applications which generate a net increase of 200 or more vehicle trips per day or are likely to increase the V/C ratio or decrease the safety of a State transportation facility. Traffic impact analysis reports shall include:**

1. The total estimated vehicular, pedestrian, bicycle and other transit service trips to be generated from the proposed development;

2. The impact of the total estimated vehicular, pedestrian, bicycle and other transit service trips on the existing street, sidewalk, bicycle and other transit systems within the City; and

3. Identification of improvement necessary to mitigate the total impact from the proposed development as identified in item 2."

~~F~~ **G.** A non-refundable application fee as set by the city council.

~~G~~. **H.** Any other information reasonably required to achieve the intent of this subchapter, the city zoning regulations and the comprehensive plan.

80.40 REVIEW CRITERIA AND STANDARDS

The following standards shall be utilized in reviewing the plans, drawings, sketches and other documents required by this subchapter. These standards are intended to provide a frame of reference for the applicant in the development of site and building plans as well as a method of review for the city. These standards shall not be regarded as inflexible requirements. They are not intended to discourage creativity, invention and innovation.

C. Traffic, parking and circulation considerations. With respect to vehicular, bicycle, and pedestrian circulation, including walkways, interior drives and parking, special attention shall be given to the arrangement and relationships of buildings in terms of pedestrian accessibility, location and number of access points, general interior circulation, separation of pedestrian and vehicular traffic, and arrangement of parking areas that are safe and convenient and, insofar as practicable, do not detract from the design of proposed buildings and structures and the neighboring properties. Based on the anticipated ~~vehicular,~~ bicycle~~,~~ and pedestrian traffic generated, consideration may need to be given to improvements to the right-of-way such as installation of lighting, signalization, turn lanes, paving, curbs, sidewalks, bikeways and other facilities required because of the increased **bicyclist and pedestrian** traffic generated by the development. **Right-of-way improvements shall be required if increased vehicular traffic generated by the development will cause streets within the City of Independence to exceed their V/C standards, as shown in the following two tables:**

Maximum Volume to Capacity Ratios for City-owned Streets	
City-owned streets bounded by B Street to E Street and 2nd Street to Main Street	**.95**
City-owned streets outside of the area bounded by B Street to E Street and 2nd Street to Main Street	**.80**

Maximum Volume to Capacity Ratios for State-owned Streets				
Highway Category	**STAs**	**Outside of STAs where posted speed <= 35 mph, or a Designated UBA**	**Outside of STAs where speed > 35 mph**	**Outside of STAs where speed limit > = 45 mph**
District / Local Interest Roads	**0.95**	**0.90**	**0.85**	**0.80**

New streets built as a part of developments must be designed to meet the V/C standards in the tables above.

Subchapter 90.60 SUBDIVISIONS AND MAJOR PARTITIONING REGULATIONS

90.60.030 Tentative Plat, Information. The following information shall be shown on the tentative plat:

~~Y. Traffic Impact Analysis. Depending on the nature and scope of the proposed development, the City Manager or designee may require a traffic impact analysis report, prepared by a registered transportation engineer, including the following:~~

~~1. The total estimated vehicular, pedestrian, bicycle and other transit service trips to be generated from the proposed development;~~

~~2. The impact of the total estimated vehicular, pedestrian, bicycle and other transit service trips on the existing street, sidewalk, bicycle and other transit systems within the City; and~~

~~3. The estimated level of improvement necessary to mitigate the total impact from the proposed development as identified in item 2.~~

Y. **Traffic Impact Analysis – A traffic impact analysis report, prepared by an Oregon professional traffic engineer or an Oregon registered Professional Engineer with expertise in traffic engineering, shall be required for all subdivision and major partitioning applications which generate a net increase of 200 or more vehicle trips per day or are likely to increase the V/C ratio or decrease the safety of a State transportation facility. Traffic impact analysis reports shall include:**

1. The total estimated vehicular, pedestrian, bicycle and other transit service trips to be generated from the proposed development;

2. The impact of the total estimated vehicular, pedestrian, bicycle and other transit service trips on the existing street, sidewalk, bicycle and other transit systems within the City; and

3. Identification of improvement necessary to mitigate the total impact from the proposed development as identified in item 2."

90.90.010 Streets.

D. Street Standards:

~~Section~~	~~Type of Street~~	~~Right-of-Way Width~~	~~Paving Width~~	~~Sidewalk~~	~~Bicycle Facilities~~
~~A~~	~~Major Arterial~~	~~84 feet~~	~~60 feet~~	~~Yes~~	~~Bikelane~~
	~~Minor Arterial~~	~~66 feet~~	~~36 feet~~	~~Yes~~	~~Bikelane~~
~~B~~	~~Major Collector~~	~~66~~	~~36~~	~~Yes~~	~~Bikelane~~
	~~Minor Collector~~	~~66 feet~~	~~36 feet~~	~~Yes~~	~~Shared Roadway~~
~~C~~	~~Local residential streets serving more than 20 dwelling units~~	~~60 feet~~	~~36 feet~~	~~Yes~~	~~Shared roadway~~
~~D~~	~~Local streets and cul-de-sacs serving less than 20 dwelling units~~	~~50 feet~~	~~28 feet~~	~~Yes~~	~~Shared roadway~~
~~E~~	~~Circular end cul-de-sacs~~	~~112 feet~~	~~90 feet*~~	~~Yes~~	~~Shared roadway~~

Independence Street Design Standards

	Major Arterial Streets	Minor Arterial Streets	Collector Streets	Local Streets(1)
Right-of-way width	**84 feet(2)**	**66 feet(2)**	**66 feet(2)**	**52 feet**
Curb-to-curb width	**60 feet**	**36 feet**	**36 feet**	**28 feet**
Moving Lanes	**2-4**	**2**	**2**	**2**
Turn Lanes	(3)	(3)	(3)	**0**
Bike Lanes	**2 @ 6'**	**2 @ 6'**	(4)	**Shared**
Parking Lanes	(5)	(5)	(4)	**2 sides**
Sidewalks	**2 @ 6'**	**2 @ 6'**	**2 @ 6'**	**2 @ 6'**
Planting Strips(6)	**2 @ 6'**	**2 @ 6'**	**2 @ 5'**	**Allowed**

(1) The City may require up to 36 foot wide (60 foot right-of-way) Local Service streets in or along high density residential, industrial or commercially zoned areas, or those expected to exceed 400 ADT.

(2) Additional right-of-way and roadway improvements may be required at major intersections to provide for turn lanes.

(3) At all intersections where separate lanes are needed due to volume of turning movement activity.

(4) Collectors with < 2,000 ADT can accommodate on-street parking and shared use of road space by bicyclists and motor vehicles. These shared roadways will be designated with "sharrows." "Sharrows" are markings painted directly onto the road to promote the awareness that the road is a shared traffic lane to be used by both motorists and bicyclists. For collectors with > 2,000 ADT the city will study the need to eliminate on-street parking and provide bike lanes.

(5) The City of Independence may allow parking along sections of Major and Minor Arterial Streets, balancing the needs for accessibility to property, public safety, bicycle facilities, and roadway congestion. Parking allowances will be evaluated on an on-going basis as a part of roadway projects.

(6) Planting strips are encouraged, but not required, along Local Service streets. If built along Local Service streets, planting strips should be at least 4 feet wide, to accommodate tree plantings. In commercially zoned areas, the City may require wider sidewalks which encroach into the planting strip area.

~~57.130 Width of Sidewalks~~

~~All sidewalks hereafter constructed or repaired shall be of the following minimum width, exclusive of any curb:~~

~~A. If within a C-2 commercial zone as defined by the zoning ordinance of this city, or adjacent any property owned, used or to be used for school or public education purposes - 8 feet.~~

~~B. Elsewhere - 5 feet, except curb line walks shall be 5 feet, inclusive of curb surface. (Ordinance 927, Sec. 3.)~~

90.90.010 Streets

V. Access Management. New access to arterials and collectors shall be limited. Shared or consolidated access shall be required for development or land divisions adjacent to these facilities unless demonstrated to be unfeasible.

1. Number of Access Points. All proposed development shall have access to a public right-of-way. Spacing requirements for access points and intersections on arterials and collector streets shall be as shown in the following two tables:

~~Access Management Requirements Highway 51~~

			~~Intersection~~				
			~~Public Road~~		~~Private Drive~~		~~Signal~~
~~Functional Class~~	~~ODOT Category*~~	~~ODOT LOI**~~	~~Type~~	~~Spacing~~	~~Type~~	~~Spacing~~	~~Spacing~~
~~Arterial Hwy. 51~~	~~6~~	~~District~~	~~At Grade~~	~~500 feet~~	~~Lt./Rt. Turns~~	~~150 feet~~	~~¼ mile~~

~~* ODOT Category refers to Highway Access Management Categories established by the Oregon Department of Transportation to classify access management needs for state highways.~~

~~** ODOT LOI refers to the "Level of Importance" classification system established by the Oregon Department of Transportation to prioritize highway improvement needs and define operational objectives for state highways.~~

Access Management Spacing Standards for Private and Public Approaches on District Highways(1)(2)(3)(4) (OAR 734-051-0115) (Measurement is in Feet)*

Posted Speed (5)	Urban**	STA
55	700	
50	550	
40 & 45	500	
30 & 35	350	(6)
≤25	350	(6)

NOTE: The numbers in superscript (1) refer to explanatory notes that follow Table 4.

*** Measurement of the approach road spacing is from center to center on the same side of the roadway.**

****These standards also apply to Commercial Centers.**

Notes on Tables 4:

(1) These access management spacing standards are for unsignalized approaches only. Signal spacing standards supersede access management spacing standards for approaches.

(2) These access management spacing standards do not apply to approaches in existence prior to April 1, 2000 except as provided in OAR 734-051-0115(1)(c) and 734-051-0125(1)(c).

(3) For infill and redevelopment, see OAR 734-051-0135(4).

(4) For deviations to the designated access management spacing standards see OAR 734-051-0135.

(5) Posted (or Desirable) Speed: Posted speed can only be adjusted (up or down) after a speed study is conducted and that study determines the correct posted speed to be different than the current posted speed. In cases where actual speeds are suspected to be much higher than posted speeds, the Department reserves the right to adjust the access management spacing accordingly. A determination can be made to go to longer access management spacing standards as appropriate for a higher speed. A speed study will need to be conducted to determine the correct speed.

(6) Minimum access management spacing for public road approaches is the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum access management spacing for driveways is 175 feet (55 meters) or mid-block if the current city block spacing is less than 350 feet (110 meters).