



MEMO

DATE **10/5/2018**
 TIME **2:00 PM**
 PROJECT West Pryor Village Traffic Impact Study

TO Mr. Michael Park, P.E., PTOE
 City Traffic Engineer
 City of Lee's Summit – Public Works
 220 SE Green Street
 Lee's Summit, MO 64063

FROM Paul Parks Jr., P.E.

SUBJECT New West Pryor Village Site Plan Effects on Previous Traffic Impact Study



MEC completed additional analysis comparing the trips generated by the previous site plan, included on the most recently submitted Traffic Impact Study (TIS) on August 10, 2018 with the new proposed site plan. Both site plans are attached to this memo for reference. The largest changes between the site plans is the removal of the Extended Stay Hotel, fewer single family homes, and additional restaurants and retail space near the apartments and in place of the hotel.

The trips for the original site study were generated using data from the data compiled by the Institute of Transportation Engineers (ITE) in their report Trip Generation Manual, 9th Edition. The updated site uses the data from the recently released Trip Generation Manual, 10th Edition, which contains updated trip generation data and equations. A full breakdown of trips generated for both site plans are attached as part of the Appendix of this memo. Below, in Table 1, shows the total trips generated by each site plan as well as the difference of trips generated by each site plan. As can be seen, the number of trips generated between the two site plans is minimal. There is a 9% overall increase in daily trips generated, a decrease of 2% of trips during the morning peak hour, and an increase of 2% during the evening peak hour.

Table 1 - Trips Generated by Site Plan and Comparison

	Daily	AM Total	PM Total	Am Enter	Am Exit	PM Enter	PM Exit
Original Study Site	19,334	1,339	1,741	655	684	968	773
New Site Plan	21,084	1,307	1,781	678	629	988	793
Difference between Original and New Site Plan	1,750	-32	40	23	-55	20	20

While the trips generated closely match the numbers in the previous study, an analysis of the impact of these additional trips were completed to ensure that the previous recommendations are still appropriate. Table 2 below shows the existing levels of service (LOS) as well as the LOS for the complete development (final design) for both the original site plan from the August 10, 2018,

study as well as the LOS for the new site plan. The updated traffic volumes based on the new site plan were input into the proposed Synchro files. The signal timings were not adjusted for a direct comparison as to how the traffic volumes are impacted. As expected, the LOS does not change between the original and new site plans. No signalized intersection has a LOS lower than C, which is still acceptable per the City of Lee's Summit's "Level of Service Policy." Black Twig Lane and Chipman Road, an unsignalized intersection, does still have a LOS B during the peak evening hours.

Table 2 - Existing and Final Development LOS Comparison

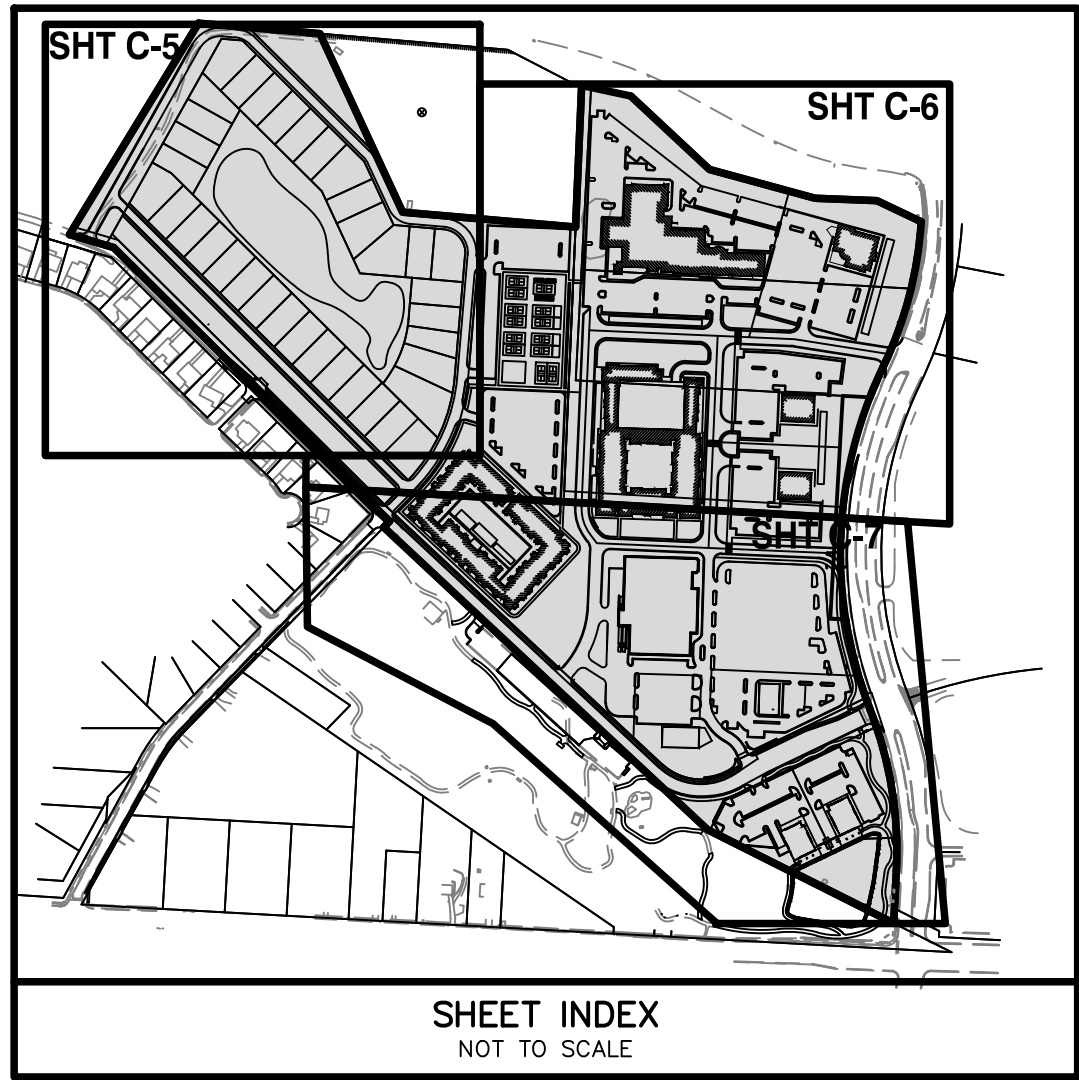
Intersection	Existing AM LOS	Existing PM LOS	Final Design AM LOS (Original)	Final Design LOS (Original)	Final Design AM LOS (New)	Final Design LOS (New)
I-470 South Terminal	B	B	B	C	B	C
Summit Woods						
Crossing	A	B	B	C	B	C
Right-In, Right-Out	N/A	N/A	B*	B*	B*	B*
Lowenstein Drive	B/C*	D/E*	B	B	B	B
Chipman Road & Pryor Road	C	C	B	C	C	C
Black Twig Lane & Lowenstein Drive	A*	A*	A/B*	A/B*	A/B*	A/B*
Black Twig Lane & Chipman Road	B*	C*	B*	D*	B*	D*

When considering the movement LOS, there are more slight changes. Exhibit 3 from the previous report is attached to this memo with the movement LOS for the final development included in red for comparison. This exhibit also shows a change in expected 95%-ile queue lengths when the change in length is over 25 feet. While there are slight changes in some, overall, the movement LOS remain the same. Also, it is important to note, that the priority is given to the Pryor Road corridor over the intersecting side roads giving access to the development. Adjustment in signal timings can provide a better movement LOS to the side roads, while a slight decline would be seen for movements on Pryor Road. Overall, the intersection LOS would remain nearly the same if these adjustments were to be made.

As the LOS are expected to stay at acceptable levels, the previous study's recommendations will remain unchanged. These have been copied below for easy reference:

- For phase one of the development, install a traffic signal at the intersection of Lowenstein and Pryor Roads and improve the intersection as shown in the site plan with a continuous right turn lane for southbound vehicles. This will improve the function of the intersection with the expected increase in traffic. The developer's proposed length for two eastbound left turn lanes 150 feet long with a 100 foot long taper will be adequate. The existing northbound left turn lane onto Lowenstein Drive is also adequate.
- For phase one, construct the proposed 150 feet long right-turn only lane with a 100 feet long taper at the proposed right-in, right-out access point, as shown in the site plan.

- For phase one, add a 150 feet long right-turn lane with a 100 foot long taper on Lowenstein Drive at the eastern development access point to the grocery store, as shown in the site plan.
- For phase two, upgrade the existing signal at Summit Woods Crossing to accommodate a fourth leg for the intersection and the increase in traffic.
- For phase two, add a 150 ft long right-turn only lane with a 100 ft long taper on southbound Pryor Road and a 200 ft long left-turn only lane with a 100 ft long taper on northbound Pryor Road.
- For phase two, have a three lane section on the fourth (west) leg of the Summit Woods Crossing intersection, with one left turn lane with a minimum length of 300 ft long with a taper (or two left-turn lanes of 150'), one through/right turn lane and one through lane for westbound vehicles to enter.
- Improve Lowenstein Drive and Black Twig Lane to City standards.



FIRE DEPARTMENT NOTES:

1. IFC 507.5.1- WHERE A PORTION OF THE FACILITY OR BUILDING HEREAFTER CONSTRUCTED OR MOVED INTO OR WITHIN THE JURISDICTION IS MORE THAN 300 FEET FROM A HYDRANT ON A FIRE APPARATUS ACCESS ROAD, AS MEASURED BY AN APPROVED ROUTE AROUND THE EXTERIOR OF THE FACILITY OR BUILDING, ON-SITE FIRE HYDRANTS AND MAINS SHALL BE PROVIDED WHERE REQUIRED BY THE FIRE CODE OFFICIAL.
2. AERIAL FIRE APPARATUS ACCESS ROADS IFC D105.1 WHERE REQUIRED. WHERE THE VERTICAL DISTANCE BETWEEN THE GRADE PLANE AND THE HIGHEST ROOF SURFACE EXCEEDS 30 FEET (9144 MM), APPROVED AERIAL FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED. FOR PURPOSES OF THIS SECTION, THE HIGHEST ROOF SURFACE SHALL BE DETERMINED BY MEASUREMENT TO THE EAVE OF A PITCHED ROOF, THE INTERSECTION OF THE ROOF TO THE EXTERIOR WALL, OR THE TOP OF PARAPET WALLS, WHICHEVER IS GREATER. D105.2 WIDTH. AERIAL FIRE APPARATUS ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 26 FEET (7925 MM), EXCLUSIVE OF SHOULDERS, IN THE IMMEDIATE VICINITY OF THE BUILDING OR PORTION THEREOF. D105.3 PROXIMITY TO BUILDING. AT LEAST ONE OF THE REQUIRED ACCESS ROUTES MEETING THIS CONDITION SHALL BE LOCATED WITHIN A MINIMUM OF 15 FEET (4572 MM) AND A MAXIMUM OF 30 FEET (9144 MM) FROM THE BUILDING, AND SHALL BE POSITIONED PARALLEL TO ONE ENTIRE SIDE OF THE BUILDING. THE SIDE OF THE BUILDING ON WHICH THE AERIAL FIRE APPARATUS ACCESS ROAD IS POSITIONED SHALL BE APPROVED BY THE FIRE CODE OFFICIAL. D105.4 OBSTRUCTIONS. OVERHEAD UTILITY AND POWER LINES SHALL NOT BE LOCATED OVER THE AERIAL FIRE APPARATUS ACCESS ROAD OR BETWEEN THE AERIAL FIRE APPARATUS ROAD AND THE BUILDING. OTHER OBSTRUCTIONS SHALL BE PERMITTED TO BE PLACED WITH THE APPROVAL OF THE FIRE CODE OFFICIAL.
3. IFC 503.3- WHERE REQUIRED BY THE FIRE CODE OFFICIAL, APPROVED SIGNS OR OTHER APPROVED NOTICES OR MARKINGS THAT INCLUDE THE WORDS NO PARKING-FIRE LANE SHALL BE PROVIDED FOR FIRE APPARATUS ACCESS ROADS TO IDENTIFY SUCH ROADS OR PROHIBIT THE OBSTRUCTION THEREOF. THE MEANS BY WHICH FIRE LANES ARE DESIGNATED SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION AT ALL TIMES AND BE REPLACED OR REPAIRED WHEN NECESSARY TO PROVIDE ADEQUATE VISIBILITY.
4. IFC 903.3.7- FIRE DEPARTMENT CONNECTIONS. THE LOCATION OF FIRE DEPARTMENT CONNECTIONS SHALL BE APPROVED BY THE FIRE CODE OFFICIAL. CONNECTIONS SHALL BE A 4 INCH STORZ TYPE FITTING AND LOCATED WITHIN 100 FEET OF A FIRE HYDRANT, OR AS APPROVED BY THE CODE OFFICIAL.

PHASING SCHEDULE

PHASE #	LOT/BLOCK	START	END
I	BLOCK 1 & BLOCK 2 & LOWENSTEIN		
II	LOT 1, 2 & 3, BLOCK 4		
III	BLOCK 2		
IV	LOTS 4 & 5, BLOCK 4		
V	BLOCK 5		

SITE DATA

BLOCK #	LOT #	USE	LOT SF	LOT AC	FLOOR AREA SF (ENVELOPE)	FLOOR AREA RATIO (FAR)	# OF FLOORS	PARKING SPACES REQUIRED (a) (b) (c) (d)	PARKING SPACES PROVIDED	AUTO ADA SPACES REQUIRED (VAN REQ'D)	AUTO ADA SPACES PROVIDED (VAN PROVIDED)
BLOCK 1	TRACT "A"	-	44,366	1.0	-	-	-	-	-	-	-
1	RESTAURANT (SIT-DOWN)	60,432	1.4	6,500	0.1076	-	-	91	92	4 (1)	4 (2)
2	RESTAURANT (SIT-DOWN)	72,806	1.7	6,500	0.0893	-	-	91	91	4 (1)	4 (2)
BLOCK 2	1	GROCERY	273,118	6.3	63,119	0.2310	-	252	329	8 (1)	8 (0)
2	RETAIL	64,313	1.5	6,500	0.1010	-	-	33	89	4 (1)	0 (0)
3	RESTAURANT W/DRIVE THRU	40,217	0.9	5,500	0.1368	-	-	77	81	4 (1)	3 (0)
BLOCK 3	1	RESTAURANT	124,483	2.9	7,500	0.0602	-	105	157	6 (1)	0 (0)
2	RESTAURANT	112,028	2.6	7,500	0.0669	-	-	105	142	5 (1)	0 (0)
BLOCK 4	1	RESTAURANT (2 TENANTS)	166,647	3.8	12,545	0.0753	-	176	182	6 (1)	8 (0)
2	HOTEL (90 ROOMS) **	137,644	3.2	14,632	0.1063	4	-	135	185	6 (1)	6 (0)
3	HOTEL (130 ROOMS) **	179,415	4.1	22,326	0.1244	4	-	195	217	7 (1)	0 (0)
4	BALL COURTS *	146,587	3.4	-	-	-	-	-	121	5 (1)	0 (0)
TOTAL					152,595 SF						

- (a) OFFICE & GROCERY STORE: 4 / 1,000 SF GFA
(b) RESTAURANT FAST FOOD AND SIT DOWN: 14 / 1,000 SF GFA
(c) HOTEL: 1.5 / ROOM
(d) RETAIL: 5 / 1000 SF GFA
MULTI-FAMILY RESIDENCE
1 / EFFICIENCY OR STUDIO UNIT
1.5 / 1 OR 2 BEDROOM UNIT
2 / 3 OR MORE BEDROOM UNIT
0.5 / UNIT FOR VISITOR PARKING
1 / DWELLING UNIT
1 / EMPLOYEE ON MAX SHIFT
- RETIREMENT COMMUNITY
1 / DWELLING UNIT
1 / EMPLOYEE ON MAX SHIFT

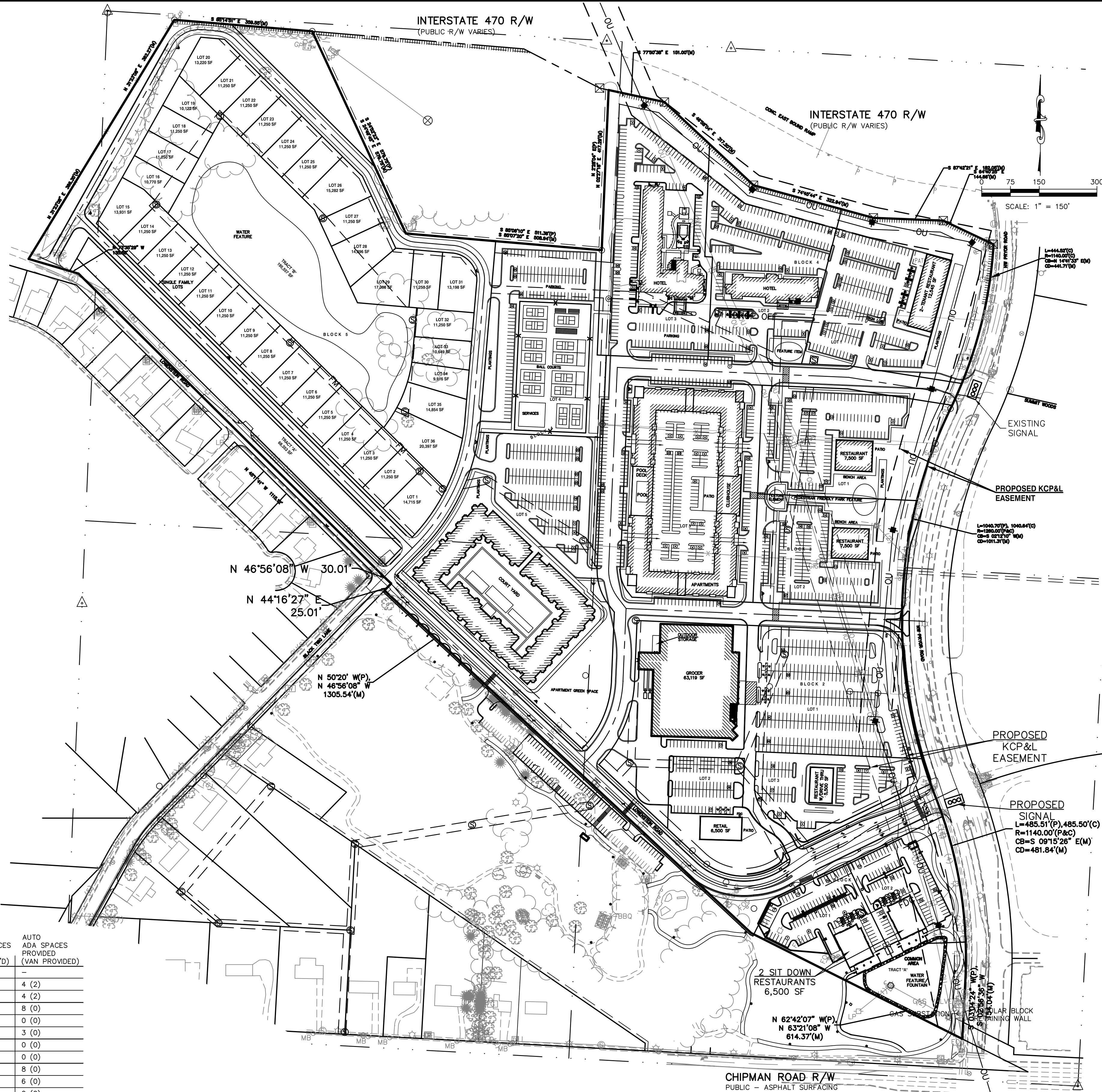
- * OUTDOOR RECREATION FACILITY - TO BE DETERMINED BY DIRECTOR AT PLAN APPROVAL
** POTENTIAL TO BE MORE THAN 4 STORIES

NOTE: BUILDING HEIGHTS TO BE DETERMINED

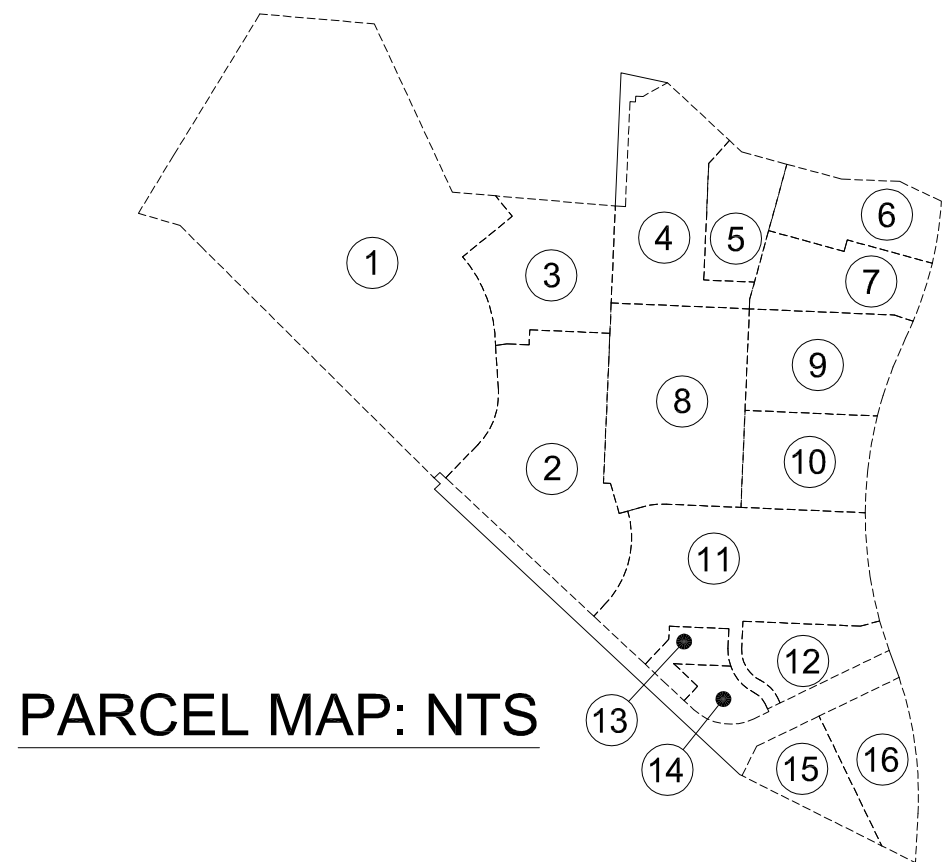
RESIDENTIAL DATA

BLOCK #	LOT #	USE	LOT SF	LOT AC	FLOOR AREA SF (ENVELOPE)	FLOOR AREA RATIO (FAR)	# OF DWELLING UNITS	DWELLING UNITS PER AC	# OF FLOORS	STUDIO 1 BDRM	1 OR 2 BDRM	3 OR MORE BDRM	PARKING SPACES REQUIRED	PARKING SPACES PROVIDED	AUTO ADA SPACES REQUIRED (VAN REQ'D)	AUTO ADA SPACES PROVIDED (VAN PROVIDED)
BLOCK 3	3	APARTMENTS	196,539	4.5	81,164	0.4130	250	55.6	4	113	113	24	331	213	-	-
BLOCK 4	5	SENIOR LIVING ***	68,679	6.5	149,843 SF	0.2442	165	25.4	4	-	-	-	170	186	2 (1)	0 (0)
TOTAL							415									

***5 EMPLOYEES EACH SHIFT



DSN	DWN	CHK
REV	DATE	DESCRIPTION
LEON D. OSBOURN ENGINEER MO # 021726		
2319 N. JACKSON P.O. BOX 1304 JUNCTION CITY, KANSAS 66441 PH. (785) 762-5040 FAX (785) 762-7744 jc@kveeng.com www.kveeng.com		
KAW VALLEY ENGINEERING KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER ENGINEERING SERVICES IN MISSOURI STATE CERTIFICATE OF AUTHORITY # 008942. EXPIRES 12/31/18		
STREETS OF WEST PRYOR NWQ PRYOR ROAD & LOWENSTEIN DRIVE LEE'S SUMMIT, MISSOURI PRELIMINARY DEVELOPMENT PLAN OVERALL SITE PLAN		
PROJ. NO.	A14_7067-1	
DESIGNER	LDO	
DRAWN BY	JT	
CFN	7067-1PDS-SP	
SHEET	C-4	REV



PARCEL MAP: NTS

PLAN NOTES:

**STREETS OF WEST PRYOR - DEVELOPMENT PLAN
SK-31_9/13/18**

PARCEL 1: SINGLE FAMILY RESIDENTIAL (PARCEL 1,051,916 SQFT = 24.1 ACRES)
- SINGLE FAMILY LOTS SURROUNDING WATER FEATURE

PARCEL 2: SENIOR LUXURY APARTMENT COMPLEX (PARCEL 297,278 SQFT = 6.8 ACRES)
- 165 UNIT AGE RESTRICTED APARTMENTS WITH SURFACE PARKING & COURTYARD

PARCEL 3: BALL COURTS (PARCEL 164,385 SQFT = 3.8 ACRES)
- SITE IMPROVEMENTS LIMITED TO COURTS/ PARKING & SERVICE STRUCTURE

PARCEL 4: HOTEL (PARCEL 190,712 SQFT = 4.37 ACRES)
- HOTEL WITH AMENITIES AND POOL & SURFACE PARKING

PARCEL 5: FREE STANDING RESTAURANT (PARCEL 81,134 SQFT = 1.86 ACRES)
- 7,500 SQFT RESTAURANT WITH SURFACE PARKING

PARCEL 6: FREE STANDING RESTAURANT (PARCEL 108,277 SQFT = 2.48 ACRES)
- 7,500 SQFT FULL SERVICE DINE-IN RESTAURANT WITH SITE FEATURES & SURFACE PARKING

PARCEL 7: FREE STANDING RESTAURANT (PARCEL 111,006 SQFT = 2.54 ACRES)
- 7,500 SQFT FULL SERVICE DINE-IN RESTAURANT WITH SITE FEATURES & SURFACE PARKING

PARCEL 8: APARTMENTS WITH CLUBHOUSE & RETAIL/RESTAURANT (PARCEL 302,051 SQFT = 6.9 ACRES)
- MULTI STORY APARTMENTS WITH UNDERGROUND PARKING DECK (PARKING DECK NOT SHOWN), CLUBHOUSE AND POOL
- 250 UNITS
- 15,000 SQFT RETAIL/ RESTAURANT & SURFACE PARKING

PARCEL 9: MULTI-TENANT BUILDING (PARCEL 145,738 SQFT = 3.34 ACRES)
- 6,500 SQFT COMMON WALL BUILDING WITH SITE FEATURES & SURFACE PARKING
- 3,000 SQFT COMMON WALL BUILDING WITH SITE FEATURES & SURFACE PARKING

PARCEL 10: MULTI-TENANT BUILDING (PARCEL 119,926 SQFT = 2.8 ACRES)
- 3,500 SQFT COMMON WALL BUILDING WITH SITE FEATURES & SURFACE PARKING
- 4,000 SQFT COMMON WALL BUILDING WITH SITE FEATURES & SURFACE PARKING

PARCEL 11: GROCERY STORE (PARCEL 311,566 SQFT = 7.1 ACRES)
- 63,119 SQFT GROCERY STORE WITH SURFACE PARKING

PARCEL 12: RESTAURANT (PARCEL 76,395 SQFT = 1.8 ACRES)
5,500 SQFT RESTAURANT WITH DRIVE THRU AND SURFACE PARKING

PARCEL 13: MEDICAL (PARCEL 32,914 SQFT = .75 ACRES)
- 6,500 SQFT MEDICAL WITH SURFACE PARKING

PARCEL 14: DRIVE THRU RESTAURANT (PARCEL 33,421 SQFT = .76 ACRES)
- 706 SQFT DRIVE UP RESTAURANT WITH SURFACE PARKING

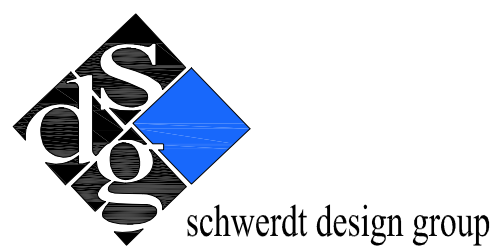
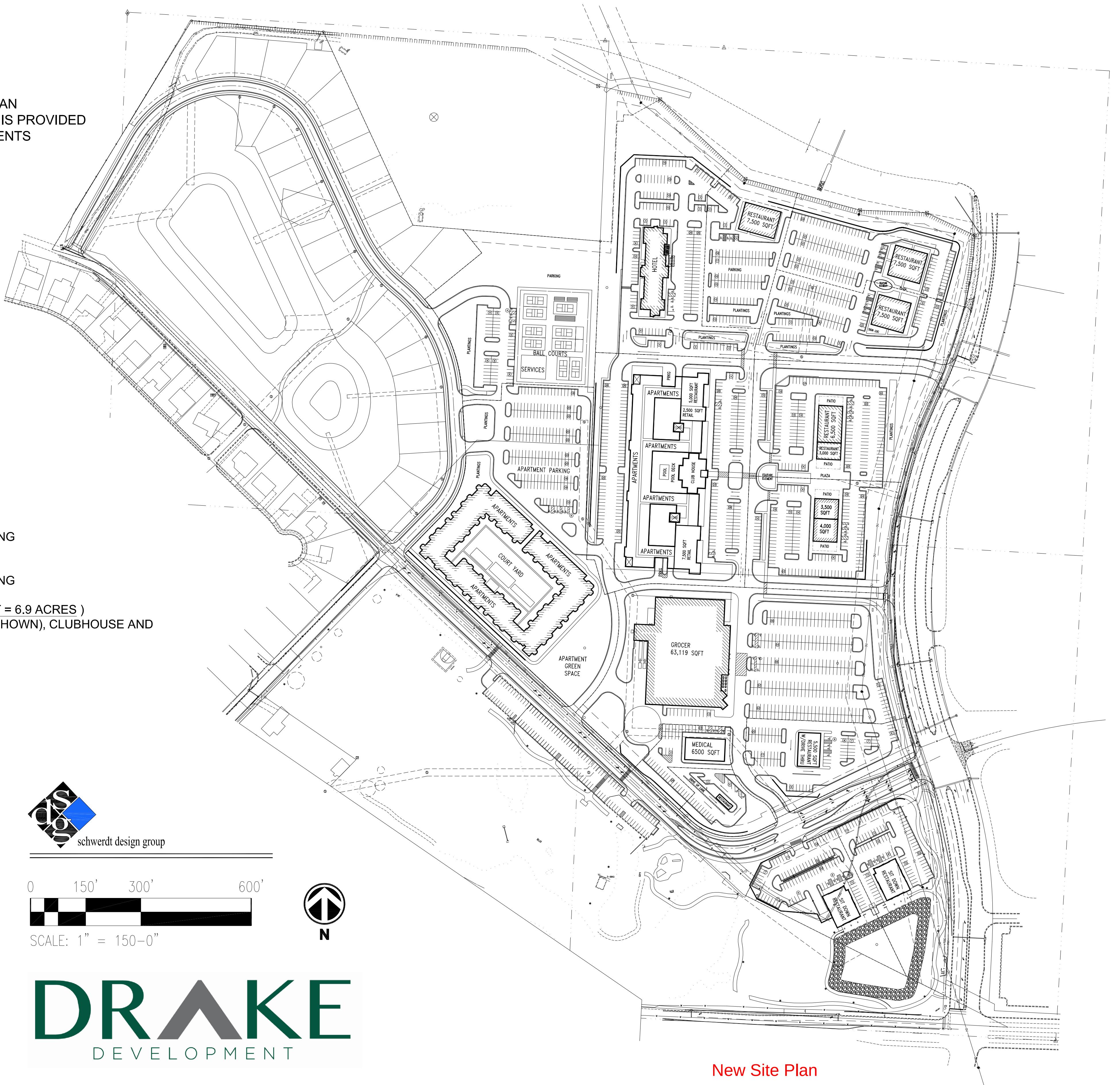
PARCEL 15: RESTAURANT (PARCEL 73,910 SQFT = 1.7 ACRES)
- 6,500 SQFT FULL SERVICE DINE-IN RESTAURANT WITH SURFACE PARKING

PARCEL 16: RESTAURANT (PARCEL 103,695 SQFT = 2.4 ACRES)
- 6,500 SQFT FULL SERVICE DINE-IN RESTAURANT WITH SURFACE PARKING

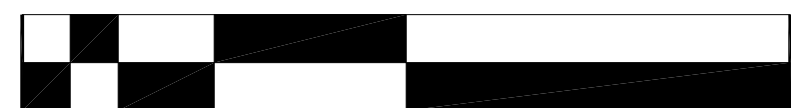
SETBACK & HEIGHT RESTRICTIONS:
MIXED USE - TO BE DETERMINED

PARKING NOTES:

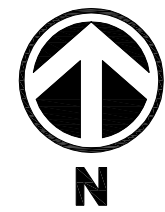
- 1) SURFACE PARKING IS SHOWN IN PLAN
- 2) APARTMENT PARKING OF 300 PLUS IS PROVIDED BY PARKING DECK UNDER APARTMENTS (PARKING DECK NOT SHOWN)



0 150' 300' 600'



SCALE: 1" = 150'-0"



DRAKE
DEVELOPMENT

New Site Plan

Trip Generation - 10th Edition - October 2018 Site Plan

									Trip Ends						
Parcel	Building Use	Phase 1 or 2	Dwelling Units		Building Size Sq Ft	ITE Land Use Code	ITE Page Number	Comments	Daily	AM Total	PM Total	Am Enter	Am Exit	PM Enter	PM Exit
(#)	(text)		(#)		(sq ft)	(#)	(#)	(text)	(trips)	(trips)	(trips)	(trips)	(trips)	(trips)	(trips)
1	Single Family Homes	5	29	29		210	296	Single Family Detached Housing	333	25	31	6	19	20	11
2	Senior Luxury Apartments	4	182	165.0		221	332	Peak Hour of Adjacent Street Used	987	61	79	15	47	48	31
3	Ball Courts	4	9	9.0					273	15	38	8	8	19	19
4	Hotel	2	130			310	613	Hotel	1041	60	71	35	24	36	35
5	Restaurant	2			7,500.0	932	1885	High Turnover (sit-down) restaurant	841	75	73	41	34	45	28
6	Restaurant	2			7,500.0	932	1885	High Turnover (sit-down) restaurant	841		73			45	28
7	Dine-in Restaurant	3			7500	932	1865	High Turnover (Sit-Down) Restaurant	841		73			45	28
9	Dine-in Restaurant	3		9,500.0	9500	932	1865	High Turnover (Sit-Down) Restaurant	1,066	94	93	52	42	58	35
8	Retail	3		10,000.0	10000	820	1561	Shopping Center	1,256	157	99	97	60	47	51
8	Dine-in Restaurant	3		5,000.0	5000	932	1865	High Turnover (Sit-Down) Restaurant	561	50	49	27	22	30	19
8	Apartments & Clubhouse	3	275	250.0		220	332	Peak Hour of Adjacent Street Used	2038	125	145	29	96	92	54
11	Grocery	1		63,119.0	63119	850	1645	Peak Hour of Adjacent Street Used	5,687	241	555	145	96	283	272
13	Medical/Retail	1		6,500.0	6500	820	1561	Shopping Center	937	155	72	96	59	35	37
12	Fast food restaurant	1			5500	934	1912	Fast-Food Restaurant with Drive-Through Wind	2,590	221	180	113	108	93	86
15	Sit down Restaurant	1		6,500.0	6500	932	1865	High Turnover (Sit-Down) Restaurant	729		64			39	24
16	Sit down Restaurant	1		6500	6500	932	1865	High Turnover (Sit-Down) Restaurant	729		64			39	24
14	Fast food restaurant	1		706	706	934	1912	Fast-Food Restaurant with Drive-Through Wind	332	28	23	14	14	12	11
	Total								21,084	1,307	1,781	678	629	988	793

Phase 1	11,005	646	957	368	278	502	455
Phase 2	2,723	134	218	76	58	127	91
Phase 3	5,762	426	459	205	220	272	187
Phase 4	1,260	76	116	22	54	67	50
Phase 5	333	25	31	6	19	20	11
Total	21,084	1,307	1,781	678	629	988	793
Phase 4+5 Combined	1,593	102	147	29	73	86	61

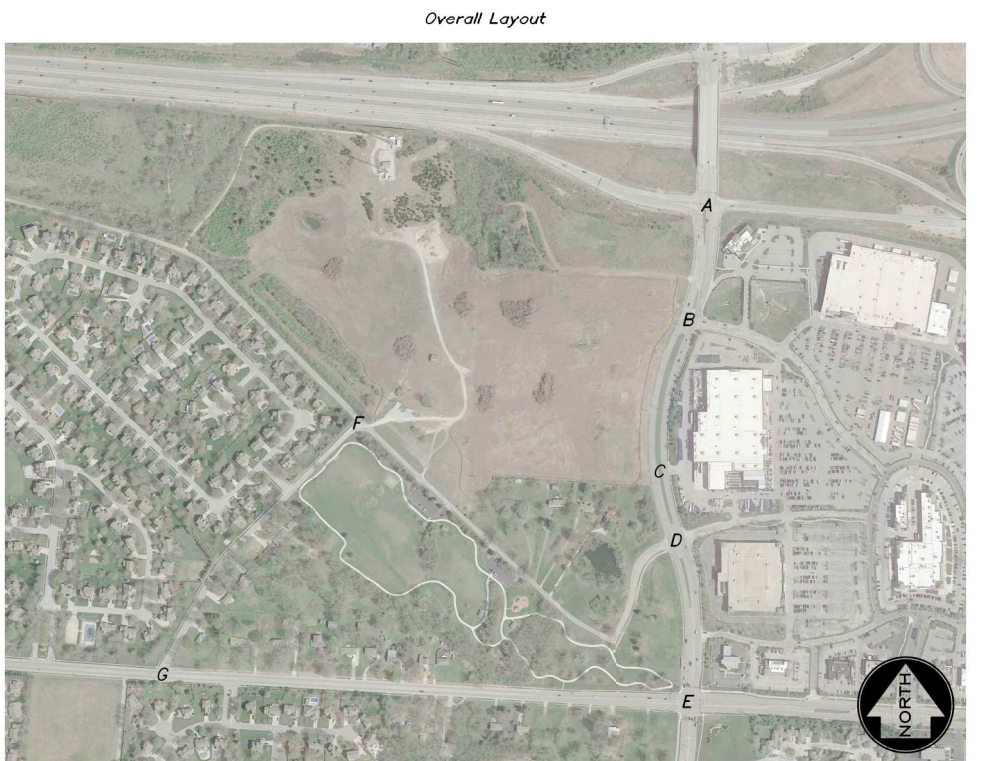
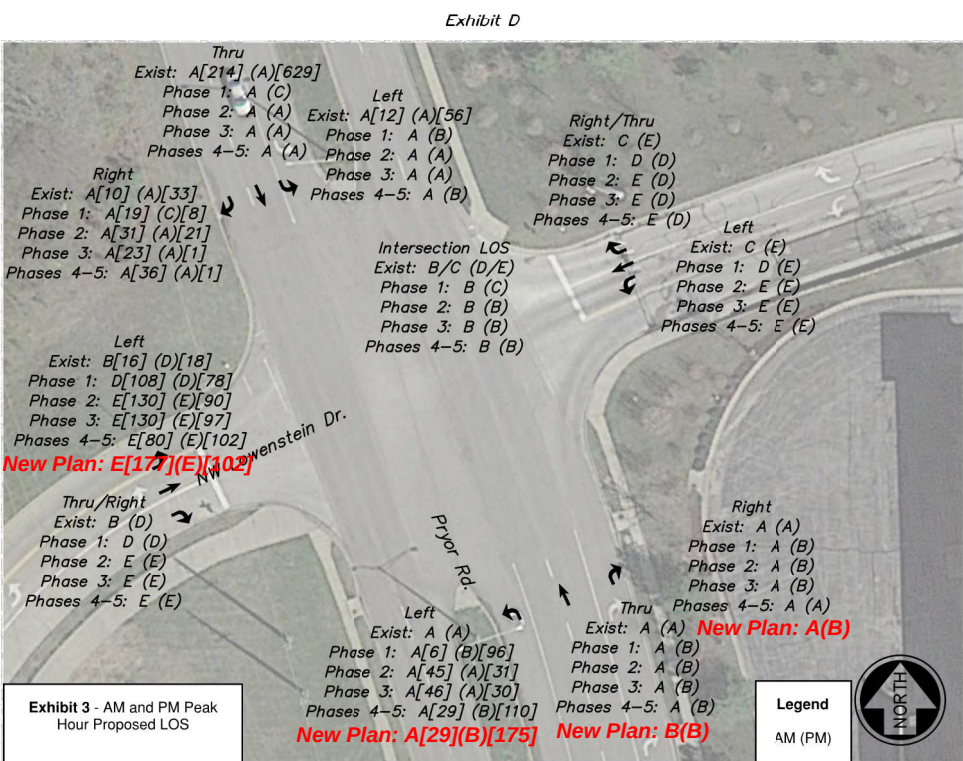
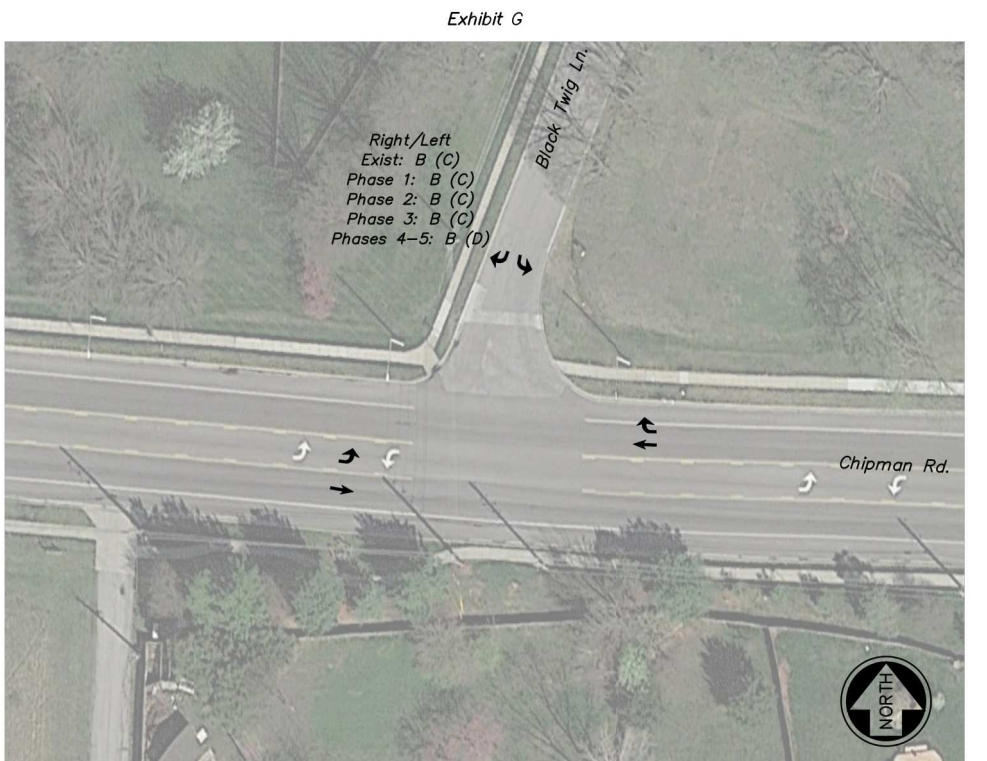
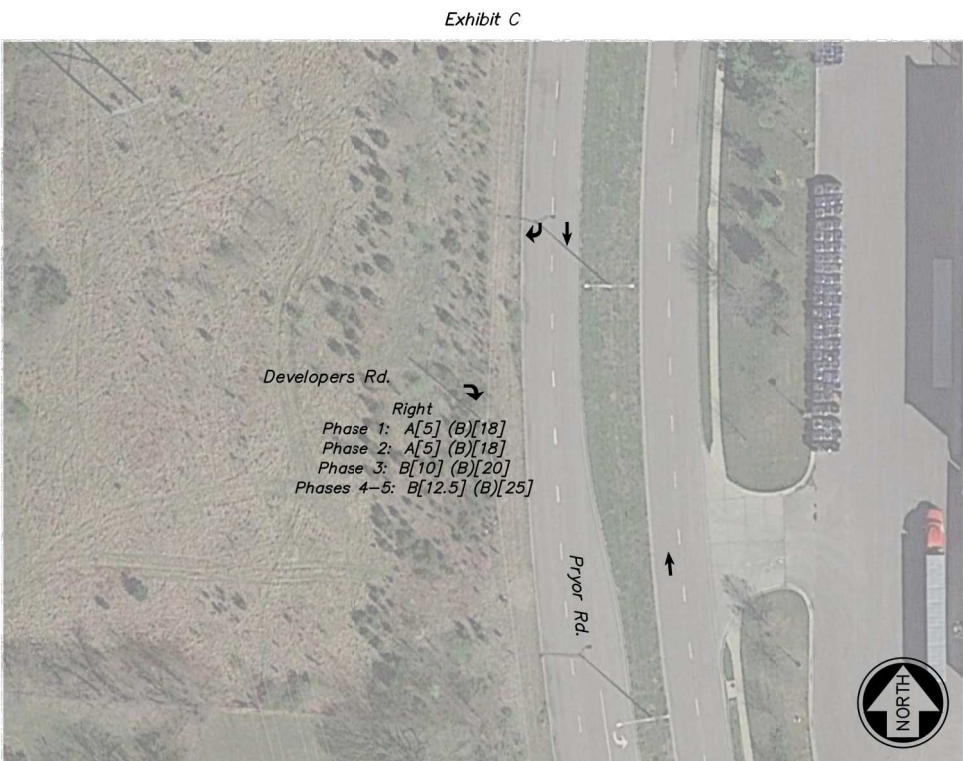
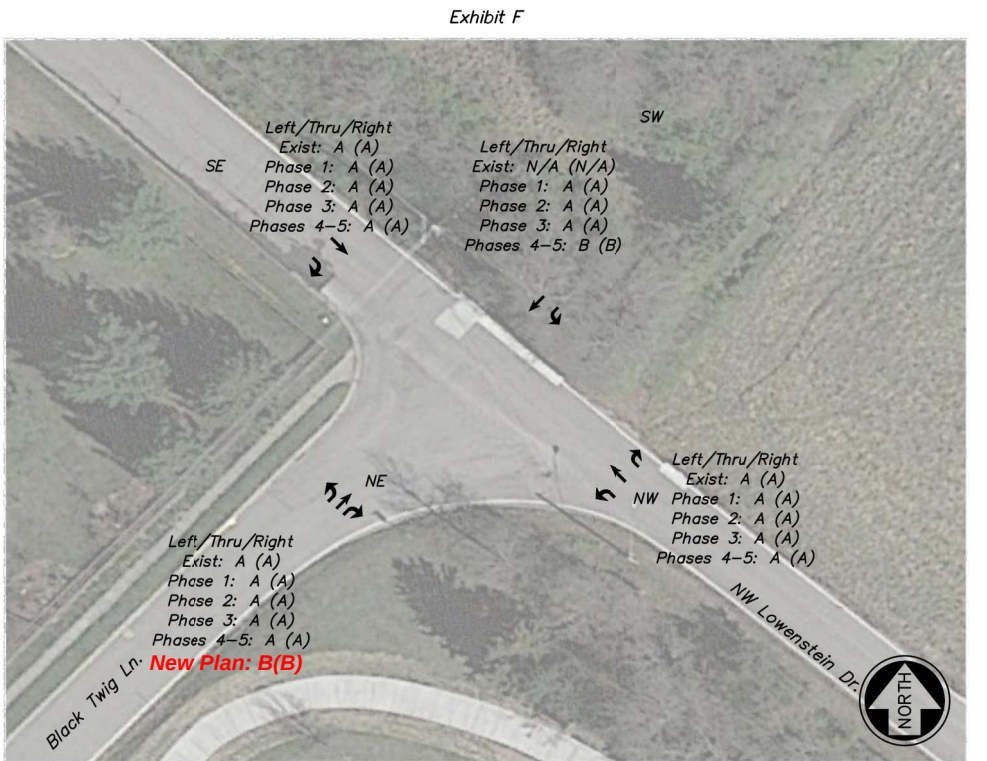
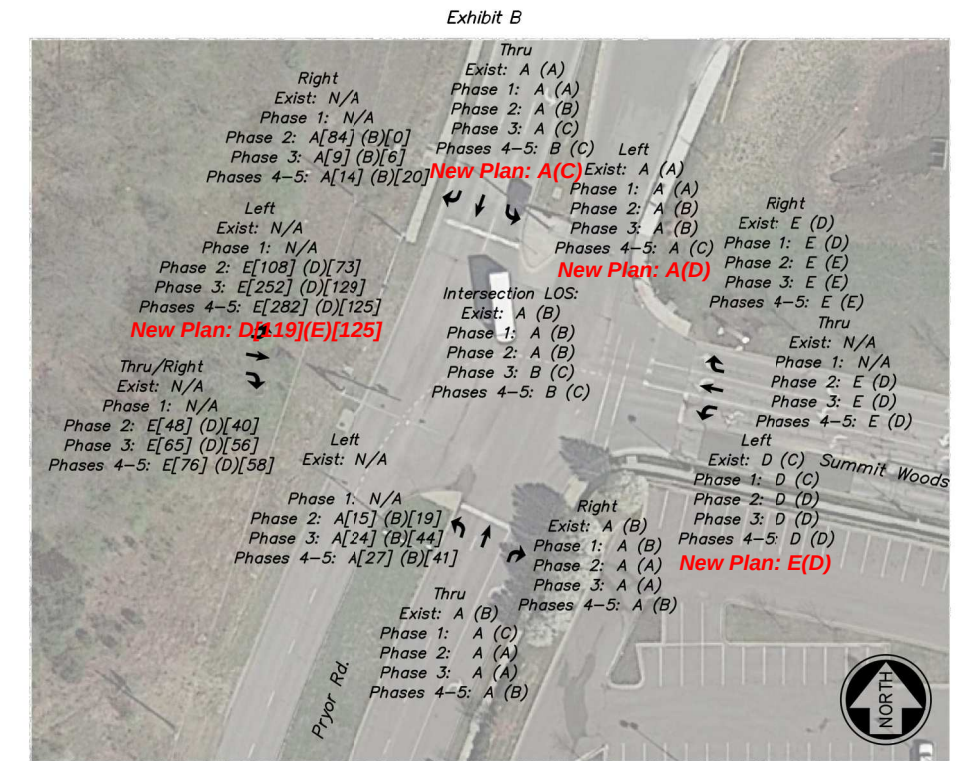
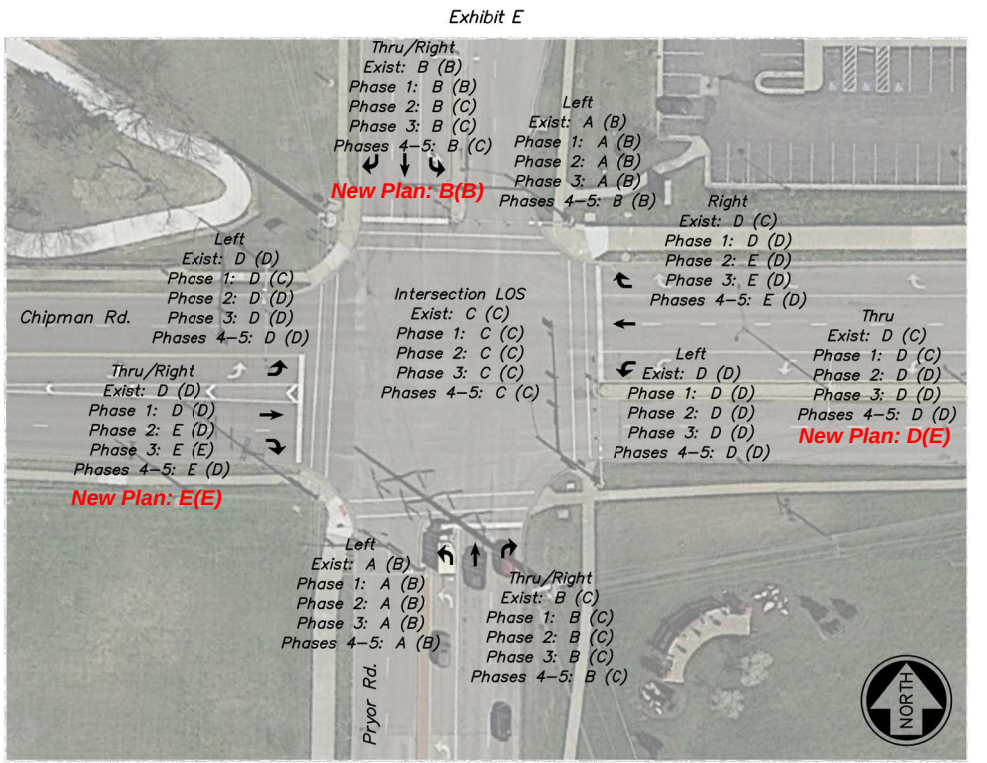
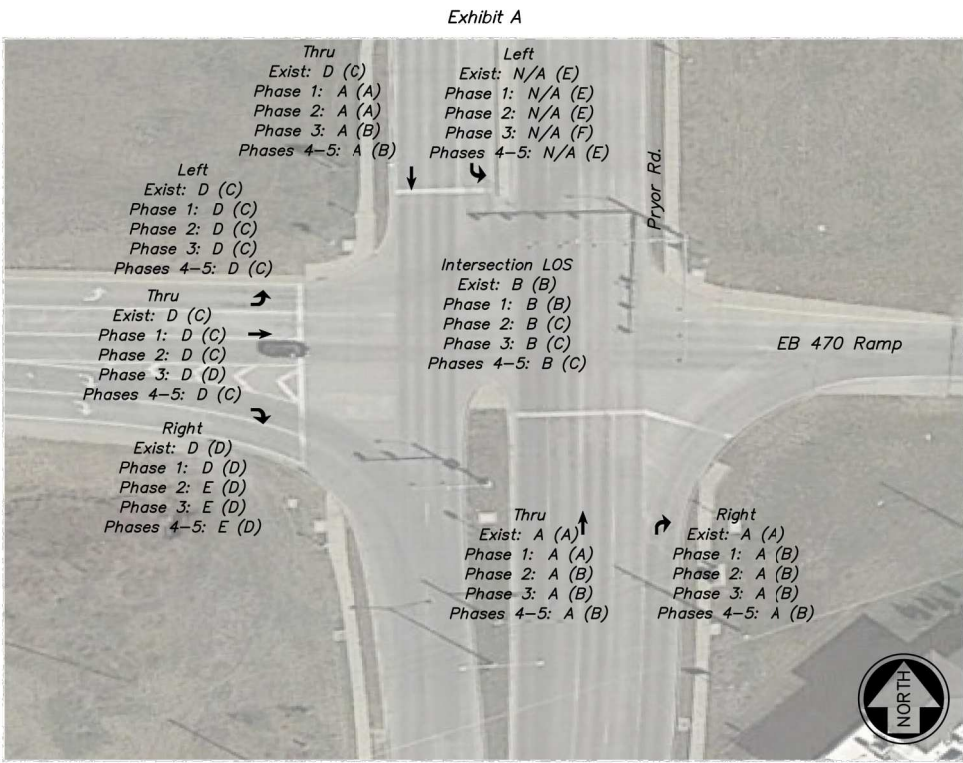
Trip Generation - 9th Edition

								Trip Ends						
Parcel	Building Use	Phase 1 or 2	Dwelling Units	Building Size Sq Ft	ITE Land Use Code	ITE Page Number	Comments	Daily	AM Total	PM Total	Am Enter	Am Exit	PM Enter	PM Exit
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1	Single Family Homes	5	40		210	296	Single Family Detached Housing	448	37	46	9	28	29	17
2	Senior Luxury Apartments	4	182		220	332	Peak Hour of Adjacent Street Used	1223	93	117	19	74	76	41
3	Ball Courts	4	13						22	48	11	11	24	24
4	Extended Stay Hotel	2	90				Hotel	432	48	54	28	20	28	26
5	Hotel	2	130		310	613	Hotel	790	69	78	41	28	40	38
6	Restaurant	2		6,272.5	932	1885	High Turnover (sit-down) restaurant	798	68	62	37	31	37	25
6	Restaurant	2		6,272.5	932	1885	High Turnover (sit-down) restaurant	798	68	62	37	31	37	25
7	Dine-in Restaurant	3		7500	932	1865	High Turnover (Sit-Down) Restaurant	954	81	74	45	36	44	30
8	Dine-in Restaurant	3		7500	932	1865	High Turnover (Sit-Down) Restaurant	954	81	74	45	36	44	30
9	Apartments & Clubhouse	3	275		220	332	Peak Hour of Adjacent Street Used	1790	138	169	28	111	110	59
10	Grocery	1		63119	850	1645	Peak Hour of Adjacent Street Used	5,617	215	554	133	82	283	272
11	Medical/Retail	1		6500	820	1561	Shopping Center	1,149	29	96	18	11	46	50
12	Fast food restaurant	1		5500	934	1912	Fast-Food Restaurant with Drive-Through Windo	2,729	250	180	127	122	93	86
13	Sit down Restaurant	1		6500	932	1865	High Turnover (Sit-Down) Restaurant	826	70	64	39	32	38	26
14	Sit down Restaurant	1		6500	932	1865	High Turnover (Sit-Down) Restaurant	826	70	64	39	32	38	26
			320					19,334	1,339	1,741	655	684	968	773

Phase 1	11,148	634	958	356	278	499	459
Phase 2	2,818	252	256	143	109	141	114
Phase 3	3,697	301	317	117	184	198	118
Phase 4	1,223	114	165	29	85	100	65
Phase 5	448	37	46	9	28	29	17

Total	19,334	1,339	1,741	655	684	968	773
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Phase 4+5 Combined	1,671	152	211	39	113	129	82
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	119	0	773	412	211
Future Volume (vph)	0	119	0	773	412	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3539	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3539	1583
Link Speed (mph)	30			35	35	
Link Distance (ft)	458			555	534	
Travel Time (s)	10.4			10.8	10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	129	0	840	448	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	0	840	448	229
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			30	30	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 25.4% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	119	0	773	412	211
Future Vol, veh/h	0	119	0	773	412	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	129	0	840	448	229
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	224	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	779	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	779	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 779		-	-		
HCM Lane V/C Ratio	- 0.166		-	-		
HCM Control Delay (s)	- 10.5		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.6		-	-		

West Pryor Village
6: W Pryor Rd & I-470 Ramp

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	212	369	0	0	0	0	581	492	0	442	0
Future Volume (vph)	14	212	369	0	0	0	0	581	492	0	442	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		400	0		0	0		311	550		0
Storage Lanes	1		2	0		0	0		1	1		0
Taper Length (ft)	100			25			25			50		
Lane Util. Factor	1.00	0.95	0.88	1.00	1.00	1.00	1.00	0.86	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950											
Satd. Flow (prot)	1770	3539	2787	0	0	0	0	6408	1583	1863	3539	0
Flt Permitted	0.950											
Satd. Flow (perm)	1770	3539	2787	0	0	0	0	6408	1583	1863	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			397						510			
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		297			425			276			300	
Travel Time (s)		6.8			9.7			5.4			5.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	15	228	397	0	0	0	0	625	529	0	475	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	228	397	0	0	0	0	625	529	0	475	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			

West Pryor Village
6: W Pryor Rd & I-470 Ramp

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Minimum Split (s)	11.6	40.6	40.6					35.5	35.5	11.5	41.5	
Total Split (s)	48.0	48.0	48.0					75.5	75.5	11.5	87.0	
Total Split (%)	35.6%	35.6%	35.6%					55.9%	55.9%	8.5%	64.4%	
Maximum Green (s)	42.4	42.4	42.4					70.0	70.0	6.0	81.5	
Yellow Time (s)	3.8	3.8	3.8					4.0	4.0	4.0	4.0	
All-Red Time (s)	1.8	1.8	1.8					1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6					5.5	5.5	5.5	5.5	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					C-Max	C-Max	None	None	
Walk Time (s)		5.0	5.0					5.0	5.0		5.0	
Flash Dont Walk (s)		30.0	30.0					25.0	25.0		31.0	
Pedestrian Calls (#/hr)		0	0					0	0		0	
Act Effect Green (s)	11.3	15.4	15.4					108.5	108.5		108.5	
Actuated g/C Ratio	0.08	0.11	0.11					0.80	0.80		0.80	
v/c Ratio	0.10	0.57	0.59					0.12	0.39		0.17	
Control Delay	54.4	61.6	8.7					0.8	0.9		3.4	
Queue Delay	0.0	0.0	0.0					0.0	0.2		0.0	
Total Delay	54.4	61.6	8.7					0.8	1.1		3.4	
LOS	D	E	A					A	A		A	
Approach Delay		28.6						0.9			3.4	
Approach LOS		C						A			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 29 (21%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 45.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: W Pryor Rd & I-470 Ramp





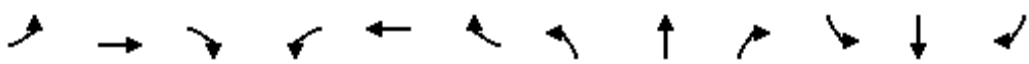
Lane Group	EBL	EBT	EBR	NBT	NBR	SBT
Lane Group Flow (vph)	15	228	397	625	529	475
v/c Ratio	0.10	0.57	0.59	0.12	0.39	0.17
Control Delay	54.4	61.6	8.7	0.8	0.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	54.4	61.6	8.7	0.8	1.1	3.4
Queue Length 50th (ft)	13	101	0	3	0	40
Queue Length 95th (ft)	33	139	50	5	0	66
Internal Link Dist (ft)		217		196		220
Turn Bay Length (ft)	200		400		311	
Base Capacity (vph)	555	1111	1147	5151	1372	2844
Starvation Cap Reductn	0	0	0	0	249	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.35	0.12	0.47	0.17
Intersection Summary						

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	212	369	0	0	0	0	581	492	0	442	0
Future Volume (veh/h)	14	212	369	0	0	0	0	581	492	0	442	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	15	228	397				0	625	529	0	475	0
Adj No. of Lanes	1	2	2				0	4	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	311	620	488				0	4758	1176	1	2628	0
Arrive On Green	0.18	0.18	0.18				0.00	0.74	0.74	0.00	0.74	0.00
Sat Flow, veh/h	1774	3539	2787				0	6669	1583	1774	3632	0
Grp Volume(v), veh/h	15	228	397				0	625	529	0	475	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1393				0	1602	1583	1774	1770	0
Q Serve(g_s), s	0.9	7.7	18.5				0.0	3.8	17.4	0.0	5.4	0.0
Cycle Q Clear(g_c), s	0.9	7.7	18.5				0.0	3.8	17.4	0.0	5.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	311	620	488				0	4758	1176	1	2628	0
V/C Ratio(X)	0.05	0.37	0.81				0.00	0.13	0.45	0.00	0.18	0.00
Avail Cap(c_a), veh/h	557	1112	875				0	4758	1176	79	2628	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	46.3	49.1	53.5				0.0	5.0	6.7	0.0	5.2	0.0
Incr Delay (d2), s/veh	0.1	0.4	3.3				0.0	0.1	1.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.8	7.3				0.0	1.7	7.9	0.0	2.7	0.0
LnGrp Delay(d),s/veh	46.4	49.4	56.9				0.0	5.0	8.0	0.0	5.2	0.0
LnGrp LOS	D	D	E					A	A		A	
Approach Vol, veh/h		640						1154			475	
Approach Delay, s/veh		54.0						6.4			5.2	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	0.0	105.7		29.3		105.7						
Change Period (Y+Rc), s	5.5	5.5		5.6		5.5						
Max Green Setting (Gmax), s	6.0	70.0		42.4		81.5						
Max Q Clear Time (g_c+l1), s	0.0	19.4		20.5		7.4						
Green Ext Time (p_c), s	0.0	7.5		3.2		3.5						
Intersection Summary												
HCM 2010 Ctrl Delay			19.6									
HCM 2010 LOS			B									

West Pryor Village
9: W Pryor Rd & Summit Crossing

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	28	37	2	35	50	88	862	12	84	576	138
Future Volume (vph)	203	28	37	2	35	50	88	862	12	84	576	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	200		0	150		150	300		0
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	150			100			75			100		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.915				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1704	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.471			0.709			0.369			0.223		
Satd. Flow (perm)	1702	1704	0	1321	1863	1583	687	3539	1583	415	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				105			162			162
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		800			358			534			288	
Travel Time (s)		18.2			8.1			10.4			5.6	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	231	32	42	2	40	57	100	980	14	95	655	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	231	74	0	2	40	57	100	980	14	95	655	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

West Pryor Village
9: W Pryor Rd & Summit Crossing

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	43.0		43.0	43.0	43.0	11.0	31.0	31.0	11.0	31.0	31.0
Total Split (s)	22.0	43.0		43.0	64.0	64.0	13.0	38.0	38.0	11.0	36.0	36.0
Total Split (%)	16.3%	31.9%		31.9%	47.4%	47.4%	9.6%	28.1%	28.1%	8.1%	26.7%	26.7%
Maximum Green (s)	16.0	37.0		37.0	58.0	58.0	8.0	33.0	33.0	6.0	31.0	31.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		5.0		5.0	5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		32.0		32.0	32.0	32.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0		0	0
Act Effect Green (s)	26.1	23.7		13.3	8.5	8.5	91.5	83.6	83.6	94.3	85.0	85.0
Actuated g/C Ratio	0.19	0.18		0.10	0.06	0.06	0.68	0.62	0.62	0.70	0.63	0.63
v/c Ratio	0.45	0.22		0.01	0.34	0.29	0.19	0.45	0.01	0.25	0.29	0.15
Control Delay	48.5	24.5		40.5	67.9	4.1	5.9	12.0	0.0	8.0	12.2	1.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	24.5		40.5	67.9	4.1	5.9	12.0	0.0	8.0	12.2	1.5
LOS	D	C		D	E	A	A	B	A	A	B	A
Approach Delay		42.7			30.6			11.3			9.9	
Approach LOS		D			C			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 31 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 15.6

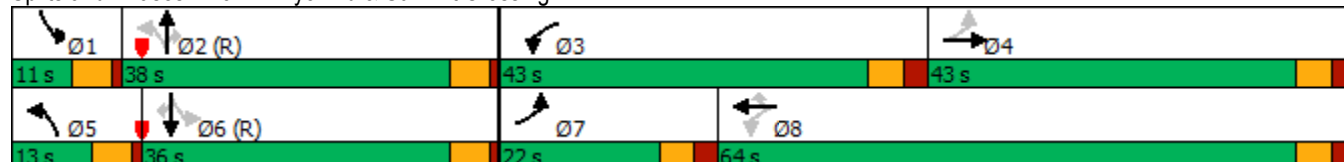
Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: W Pryor Rd & Summit Crossing





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	231	74	2	40	57	100	980	14	95	655	157
v/c Ratio	0.45	0.22	0.01	0.34	0.29	0.19	0.45	0.01	0.25	0.29	0.15
Control Delay	48.5	24.5	40.5	67.9	4.1	5.9	12.0	0.0	8.0	12.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	24.5	40.5	67.9	4.1	5.9	12.0	0.0	8.0	12.2	1.5
Queue Length 50th (ft)	88	23	1	34	0	17	250	0	24	125	0
Queue Length 95th (ft)	119	69	8	71	1	32	290	m0	41	180	14
Internal Link Dist (ft)		720		278			454			208	
Turn Bay Length (ft)	150		200			150		150	300		
Base Capacity (vph)	547	497	485	800	739	537	2191	1041	383	2228	1056
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.15	0.00	0.05	0.08	0.19	0.45	0.01	0.25	0.29	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	28	37	2	35	50	88	862	12	84	576	138
Future Volume (veh/h)	203	28	37	2	35	50	88	862	12	84	576	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	231	32	42	2	40	57	100	980	14	95	655	157
Adj No. of Lanes	2	1	0	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	65	85	194	99	84	521	2340	1047	503	2339	1047
Arrive On Green	0.08	0.09	0.09	0.04	0.05	0.05	0.09	1.00	1.00	0.04	0.66	0.66
Sat Flow, veh/h	3442	732	961	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	231	0	74	2	40	57	100	980	14	95	655	157
Grp Sat Flow(s),veh/h/ln	1721	0	1693	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.4	0.0	5.6	0.1	2.8	4.8	2.4	0.0	0.0	2.3	10.4	5.0
Cycle Q Clear(g_c), s	8.4	0.0	5.6	0.1	2.8	4.8	2.4	0.0	0.0	2.3	10.4	5.0
Prop In Lane	1.00		0.57	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	0	149	194	99	84	521	2340	1047	503	2339	1047
V/C Ratio(X)	0.50	0.00	0.50	0.01	0.40	0.68	0.19	0.42	0.01	0.19	0.28	0.15
Avail Cap(c_a), veh/h	596	0	464	601	800	680	549	2340	1047	505	2339	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	58.7	55.0	61.8	62.8	6.4	0.0	0.0	6.2	9.5	8.6
Incr Delay (d2), s/veh	0.8	0.0	2.5	0.0	2.6	9.2	0.2	0.6	0.0	0.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	2.7	0.1	1.5	2.3	1.2	0.2	0.0	1.1	5.1	2.3
LnGrp Delay(d),s/veh	54.6	0.0	61.2	55.1	64.5	71.9	6.6	0.6	0.0	6.4	9.8	8.9
LnGrp LOS	D		E	E	E	E	A	A	A	A	A	A
Approach Vol, veh/h		305			99			1094			907	
Approach Delay, s/veh		56.2			68.6			1.1			9.3	
Approach LOS		E			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	94.3	12.0	17.9	10.9	94.2	16.7	13.2				
Change Period (Y+Rc), s	5.0	5.0	6.0	6.0	5.0	5.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	33.0	37.0	37.0	8.0	31.0	16.0	58.0				
Max Q Clear Time (g_c+I1), s	4.3	2.0	2.1	7.6	4.4	12.4	10.4	6.8				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.4	0.1	4.7	0.4	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			14.0									
HCM 2010 LOS			B									

West Pryor Village
11: Lowenstein Rd & W Pryor Rd

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	27	64	17	18	12	202	690	27	12	366	139
Future Volume (vph)	274	27	64	17	18	12	202	690	27	12	366	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		150	200		150	215		450
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (ft)	125			25			100			100		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.895			0.941				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1667	0	1770	1753	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.455			0.360		
Satd. Flow (perm)	3433	1667	0	1770	1753	0	848	3539	1583	671	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		71			13				170			222
Link Speed (mph)		30			25			35			35	
Link Distance (ft)		172			227			220			555	
Travel Time (s)		3.9			6.2			4.3			10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	304	30	71	19	20	13	224	767	30	13	407	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	304	101	0	19	33	0	224	767	30	13	407	154
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2		2	6		6

Baseline

Synchro 9 Light Report
Page 11

West Pryor Village
11: Lowenstein Rd & W Pryor Rd

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.5	39.5		12.0	36.5		12.5	30.0	30.0	12.5	32.5	32.5
Total Split (s)	29.0	51.5		14.0	36.5		26.0	55.5	55.5	14.0	43.5	43.5
Total Split (%)	21.5%	38.1%		10.4%	27.0%		19.3%	41.1%	41.1%	10.4%	32.2%	32.2%
Maximum Green (s)	23.0	46.0		8.0	31.0		19.5	50.5	50.5	7.5	38.5	38.5
Yellow Time (s)	3.0	3.5		3.0	3.5		3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	3.0	2.0		3.0	2.0		3.0	1.0	1.0	3.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.5		6.0	5.5		6.5	5.0	5.0	6.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		29.0			26.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	17.2	20.5		6.9	7.4		97.0	93.4	93.4	85.1	80.5	80.5
Actuated g/C Ratio	0.13	0.15		0.05	0.05		0.72	0.69	0.69	0.63	0.60	0.60
v/c Ratio	0.70	0.32		0.21	0.31		0.33	0.31	0.03	0.03	0.19	0.15
Control Delay	64.8	20.7		66.5	49.1		3.7	4.9	0.0	6.2	8.5	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	20.7		66.5	49.1		3.7	4.9	0.0	6.2	8.5	2.6
LOS	E	C		E	D		A	A	A	A	A	A
Approach Delay		53.8			55.5			4.5			6.9	
Approach LOS		D			E			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 52 (39%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.2

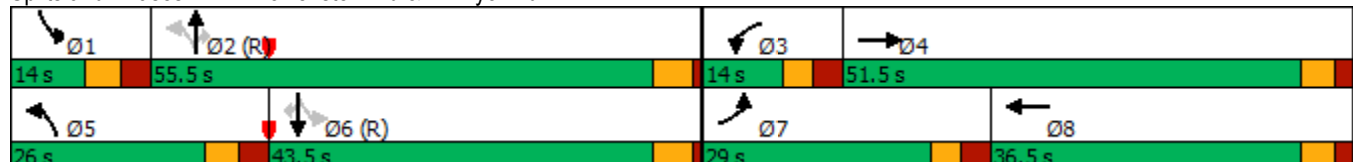
Intersection LOS: B

Intersection Capacity Utilization 52.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Lowenstein Rd & W Pryor Rd





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	304	101	19	33	224	767	30	13	407	154
v/c Ratio	0.70	0.32	0.21	0.31	0.33	0.31	0.03	0.03	0.19	0.15
Control Delay	64.8	20.7	66.5	49.1	3.7	4.9	0.0	6.2	8.5	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	20.7	66.5	49.1	3.7	4.9	0.0	6.2	8.5	2.6
Queue Length 50th (ft)	133	21	16	17	14	24	0	2	85	17
Queue Length 95th (ft)	177	75	43	52	38	224	m0	11	158	60
Internal Link Dist (ft)		92		147		140			475	
Turn Bay Length (ft)	150				200		150	215		450
Base Capacity (vph)	584	614	104	412	742	2447	1147	490	2109	1033
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.16	0.18	0.08	0.30	0.31	0.03	0.03	0.19	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	274	27	64	17	18	12	202	690	27	12	366	139
Future Volume (veh/h)	274	27	64	17	18	12	202	690	27	12	366	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	304	30	71	19	20	13	224	767	30	13	407	154
Adj No. of Lanes	2	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	63	150	40	47	30	685	2341	1047	469	2179	975
Arrive On Green	0.11	0.13	0.13	0.02	0.04	0.04	0.06	0.66	0.66	0.03	1.00	1.00
Sat Flow, veh/h	3442	492	1165	1774	1056	686	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	304	0	101	19	0	33	224	767	30	13	407	154
Grp Sat Flow(s),veh/h/ln	1721	0	1657	1774	0	1742	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	11.7	0.0	7.6	1.4	0.0	2.5	6.0	12.6	0.9	0.4	0.0	0.0
Cycle Q Clear(g_c), s	11.7	0.0	7.6	1.4	0.0	2.5	6.0	12.6	0.9	0.4	0.0	0.0
Prop In Lane	1.00		0.70	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	213	40	0	77	685	2341	1047	469	2179	975
V/C Ratio(X)	0.83	0.00	0.47	0.47	0.00	0.43	0.33	0.33	0.03	0.03	0.19	0.16
Avail Cap(c_a), veh/h	586	0	565	105	0	400	830	2341	1047	537	2179	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	0.0	54.6	65.2	0.0	62.8	7.4	9.9	7.9	9.2	0.0	0.0
Incr Delay (d2), s/veh	5.4	0.0	1.6	8.4	0.0	3.7	0.3	0.4	0.1	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	3.6	0.8	0.0	1.3	3.0	6.3	0.4	0.2	0.1	0.1
LnGrp Delay(d),s/veh	64.5	0.0	56.2	73.6	0.0	66.6	7.7	10.3	7.9	9.2	0.2	0.3
LnGrp LOS	E		E	E		E	A	B	A	A	A	A
Approach Vol, veh/h		405			52			1021			574	
Approach Delay, s/veh		62.4			69.1			9.6			0.4	
Approach LOS		E			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	94.3	9.1	22.8	15.0	88.1	20.4	11.5				
Change Period (Y+Rc), s	6.5	5.0	6.0	5.5	6.5	5.0	6.0	5.5				
Max Green Setting (Gmax), s	7.5	50.5	8.0	46.0	19.5	38.5	23.0	31.0				
Max Q Clear Time (g_c+I1), s	2.4	14.6	3.4	9.6	8.0	2.0	13.7	4.5				
Green Ext Time (p_c), s	0.0	6.1	0.0	0.6	0.5	3.3	0.7	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			19.0									
HCM 2010 LOS			B									

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	24	19	20	23	25	12	23	27	33	28	0
Future Volume (vph)	0	24	19	20	23	25	12	23	27	33	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.940			0.950			0.941				
Flt Protected					0.986			0.990			0.974	
Satd. Flow (prot)	0	1751	0	0	1745	0	0	1735	0	0	1814	0
Flt Permitted					0.986			0.990			0.974	
Satd. Flow (perm)	0	1751	0	0	1745	0	0	1735	0	0	1814	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		866			1603			379			181	
Travel Time (s)		19.7			36.4			8.6			4.1	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	38	30	32	37	40	19	37	43	52	44	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	109	0	0	99	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 24.9%	ICU Level of Service A											
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	6.2											
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	24	19	20	23	25	12	23	27	33	28	0
Future Vol, veh/h	0	24	19	20	23	25	12	23	27	33	28	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	38	30	32	37	40	19	37	43	52	44	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	68	0	0	196	194	53	214	189	57
Stage 1	-	-	-	-	-	-	53	53	-	121	121	-
Stage 2	-	-	-	-	-	-	143	141	-	93	68	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1533	-	-	763	701	1014	743	706	1009
Stage 1	-	-	-	-	-	-	960	851	-	883	796	-
Stage 2	-	-	-	-	-	-	860	780	-	914	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1522	-	-	1533	-	-	713	686	1014	672	690	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	713	686	-	672	690	-
Stage 1	-	-	-	-	-	-	960	851	-	883	778	-
Stage 2	-	-	-	-	-	-	793	763	-	838	838	-
Approach	SE			NW			NE			SW		
HCM Control Delay, s	0			2.2			10.1			11.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1					
Capacity (veh/h)	805	1533	-	-	1522	-	-	680				
HCM Lane V/C Ratio	0.122	0.021	-	-	-	-	-	0.142				
HCM Control Delay (s)	10.1	7.4	0	-	0	-	-	11.2				
HCM Lane LOS	B	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.5				

West Pryor Village
18: Chipman Rd & W Pryor Rd

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	247	83	84	87	83	36	684	127	71	322	70
Future Volume (vph)	122	247	83	84	87	83	36	684	127	71	322	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	200		170	170		0	260		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	70			100			80			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.962				0.850		0.976			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	1770	3539	1583	1770	3454	0	1770	3444	0
Flt Permitted	0.669			0.291			0.495			0.247		
Satd. Flow (perm)	1246	3405	0	542	3539	1583	922	3454	0	460	3444	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32				113		20			25	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		651			831			351			533	
Travel Time (s)		12.7			16.2			6.8			10.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	134	271	91	92	96	91	40	752	140	78	354	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	362	0	92	96	91	40	892	0	78	431	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		

Baseline

Synchro 9 Light Report
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West Pryor Village
18: Chipman Rd & W Pryor Rd

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	12.0	32.0		12.0	35.0	35.0	12.0	34.0		12.0	34.0	
Total Split (s)	17.0	38.0		17.0	38.0	38.0	13.0	63.0		17.0	67.0	
Total Split (%)	12.6%	28.1%		12.6%	28.1%	28.1%	9.6%	46.7%		12.6%	49.6%	
Maximum Green (s)	11.0	33.0		11.0	33.0	33.0	7.0	58.0		11.0	62.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	
All-Red Time (s)	2.5	1.0		2.5	1.0	1.0	2.5	1.0		2.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	5.0		6.0	5.0	5.0	6.0	5.0		6.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max		None	None	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		22.0			25.0	25.0		24.0			24.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	28.1	18.5		26.9	17.9	17.9	82.5	76.8		85.7	80.2	
Actuated g/C Ratio	0.21	0.14		0.20	0.13	0.13	0.61	0.57		0.63	0.59	
v/c Ratio	0.45	0.73		0.46	0.21	0.30	0.07	0.45		0.21	0.21	
Control Delay	45.4	59.6		46.8	51.8	7.1	9.6	18.2		13.4	10.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	45.4	59.6		46.8	51.8	7.1	9.6	18.2		13.4	10.5	
LOS	D	E		D	D	A	A	B		B	B	
Approach Delay		55.8			35.6			17.9			11.0	
Approach LOS		E			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 1 (1%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 27.0

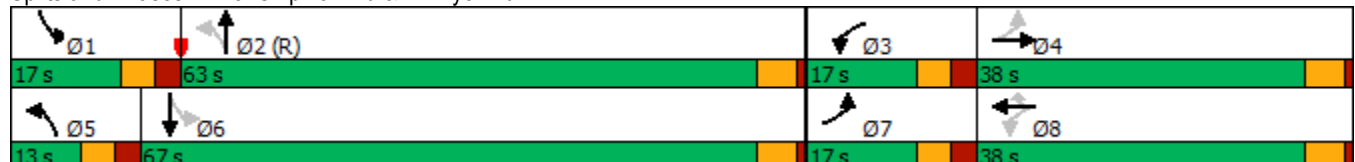
Intersection LOS: C

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 18: Chipman Rd & W Pryor Rd





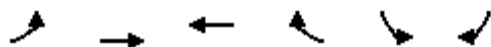
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	134	362	92	96	91	40	892	78	431
v/c Ratio	0.45	0.73	0.46	0.21	0.30	0.07	0.45	0.21	0.21
Control Delay	45.4	59.6	46.8	51.8	7.1	9.6	18.2	13.4	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	59.6	46.8	51.8	7.1	9.6	18.2	13.4	10.5
Queue Length 50th (ft)	95	148	64	40	0	12	227	20	75
Queue Length 95th (ft)	147	196	106	65	32	28	316	56	74
Internal Link Dist (ft)		571		751			271		453
Turn Bay Length (ft)	200		200		170	170		260	
Base Capacity (vph)	305	856	211	865	472	612	1973	406	2055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.42	0.44	0.11	0.19	0.07	0.45	0.19	0.21
Intersection Summary									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	247	83	84	87	83	36	684	127	71	322	70
Future Volume (veh/h)	122	247	83	84	87	83	36	684	127	71	322	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	134	271	91	92	96	91	40	752	140	78	354	77
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	344	113	187	388	173	646	1803	336	421	1776	382
Arrive On Green	0.08	0.13	0.13	0.06	0.11	0.11	0.03	0.60	0.60	0.04	0.61	0.61
Sat Flow, veh/h	1774	2620	861	1774	3539	1583	1774	2980	555	1774	2899	623
Grp Volume(v), veh/h	134	181	181	92	96	91	40	447	445	78	215	216
Grp Sat Flow(s),veh/h/ln	1774	1770	1711	1774	1770	1583	1774	1770	1765	1774	1770	1753
Q Serve(g_s), s	8.9	13.4	13.9	6.1	3.4	7.3	1.1	18.0	18.0	2.2	7.2	7.4
Cycle Q Clear(g_c), s	8.9	13.4	13.9	6.1	3.4	7.3	1.1	18.0	18.0	2.2	7.2	7.4
Prop In Lane	1.00		0.50	1.00		1.00	1.00		0.31	1.00		0.36
Lane Grp Cap(c), veh/h	297	232	225	187	388	173	646	1071	1068	421	1084	1074
V/C Ratio(X)	0.45	0.78	0.81	0.49	0.25	0.52	0.06	0.42	0.42	0.19	0.20	0.20
Avail Cap(c_a), veh/h	299	433	418	227	865	387	677	1071	1068	491	1084	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	56.7	57.0	49.7	55.0	56.8	9.1	14.1	14.1	10.2	11.5	11.6
Incr Delay (d2), s/veh	1.1	5.6	6.7	2.0	0.3	2.4	0.0	1.2	1.2	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	6.9	7.0	3.1	1.7	3.3	0.6	9.2	9.1	1.1	3.5	3.6
LnGrp Delay(d),s/veh	49.0	62.3	63.6	51.8	55.3	59.2	9.2	15.3	15.3	10.4	11.6	11.7
LnGrp LOS	D	E	E	D	E	E	A	B	B	B	B	B
Approach Vol, veh/h		496			279			932			509	
Approach Delay, s/veh		59.2			55.4			15.0			11.4	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	86.7	13.9	22.7	10.7	87.7	16.9	19.8				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	11.0	58.0	11.0	33.0	7.0	62.0	11.0	33.0				
Max Q Clear Time (g_c+l1), s	4.2	20.0	8.1	15.9	3.1	9.4	10.9	9.3				
Green Ext Time (p_c), s	0.1	6.6	0.0	1.9	0.0	2.7	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			29.2									
HCM 2010 LOS			C									

West Pryor Village
21: Chipman Rd & Black Twig Rd

Peak AM - Phase 1-4&5 - Memo Update

09/24/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	271	129	10	39	28
Future Volume (vph)	27	271	129	10	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.944	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1770	1863	1846	0	1709	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1770	1863	1846	0	1709	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		499	1199		944	
Travel Time (s)		9.7	23.4		21.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	31	311	148	11	45	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	311	159	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.8% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	271	129	10	39	28
Future Vol, veh/h	27	271	129	10	39	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	311	148	11	45	32
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	159	0	-	0	527	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1420	-	-	-	512	892
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	696	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1420	-	-	-	501	892
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	696	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		11.7		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1420	-	-	-	613	
HCM Lane V/C Ratio	0.022	-	-	-	0.126	
HCM Control Delay (s)	7.6	-	-	-	11.7	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

Intersection: 3: W Pryor Rd & Rt-In, Rt-Out

Movement	EB
Directions Served	R
Maximum Queue (ft)	46
Average Queue (ft)	23
95th Queue (ft)	47
Link Distance (ft)	389
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: W Pryor Rd & I-470 Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	R	T	T	T	T	R	T	T
Maximum Queue (ft)	23	130	116	179	71	86	80	83	38	62	120	96
Average Queue (ft)	6	113	29	104	32	48	45	35	22	37	64	55
95th Queue (ft)	21	129	103	168	69	88	89	77	45	70	125	107
Link Distance (ft)		235	235			172	172	172	172		276	276
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400					311		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 9: W Pryor Rd & Summit Crossing

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	TR	T	R	L	T	T	L	T	T	R
Maximum Queue (ft)	124	278	74	47	52	88	87	128	50	186	249	47
Average Queue (ft)	31	161	42	9	27	54	43	60	29	45	91	28
95th Queue (ft)	110	258	83	41	54	90	83	127	48	162	224	55
Link Distance (ft)			729	281	281		460	460		201	201	201
Upstream Blk Time (%)										0	2	
Queuing Penalty (veh)										0	4	
Storage Bay Dist (ft)	150	150				150			300			
Storage Blk Time (%)		10								0		
Queuing Penalty (veh)		6								0		

Intersection: 11: Lowenstein Rd & W Pryor Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	L	TR	L	T	T	R	L	T	T
Maximum Queue (ft)	74	84	89	24	60	132	61	64	28	23	98	138
Average Queue (ft)	55	71	62	7	27	60	26	50	12	5	35	54
95th Queue (ft)	77	97	115	22	56	122	67	67	31	20	90	125
Link Distance (ft)			85	162	162		145	145			481	481
Upstream Blk Time (%)	0	5	7			0						
Queuing Penalty (veh)	0	0	6			0						
Storage Bay Dist (ft)	150	150				200			150	215		
Storage Blk Time (%)	0	5	7			0						
Queuing Penalty (veh)	0	5	20			0						

Intersection: 11: Lowenstein Rd & W Pryor Rd

Movement	SB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	22
95th Queue (ft)	40
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	450
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Black Twig Rd & Lowenstein Rd

Movement	NE	SW
Directions Served	LTR	LTR
Maximum Queue (ft)	31	29
Average Queue (ft)	30	28
95th Queue (ft)	32	30
Link Distance (ft)	330	150
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: Chipman Rd & W Pryor Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	114	154	171	71	151	137	91	52	249	216	38	79
Average Queue (ft)	97	89	127	54	101	27	42	28	166	141	15	49
95th Queue (ft)	124	160	172	80	160	118	87	56	250	237	38	85
Link Distance (ft)		567	567		777	777			304	304		448
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			170	170			260	
Storage Blk Time (%)									4			
Queuing Penalty (veh)									2			

Intersection: 18: Chipman Rd & W Pryor Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	75
Average Queue (ft)	41
95th Queue (ft)	86
Link Distance (ft)	448
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 21: Chipman Rd & Black Twig Rd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	28	50
Average Queue (ft)	6	38
95th Queue (ft)	24	54
Link Distance (ft)	473	886
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 44

West Pryor Village
3: Pryor Rd & Rt-In, Rt-Out

Peak PM - Phase 1-4&5
09/24/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	↗
Traffic Volume (vph)	0	144	0	769	881	329
Future Volume (vph)	0	144	0	769	881	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0			150
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3539	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3539	1583
Link Speed (mph)	30			30	30	
Link Distance (ft)	520			555	534	
Travel Time (s)	11.8			12.6	12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	157	0	836	958	358
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	157	0	836	958	358
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			30	30	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.9% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	144	0	769	881	329
Future Vol, veh/h	0	144	0	769	881	329
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	157	0	836	958	358

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	479	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	533	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	533	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	533	-	-
HCM Lane V/C Ratio	-	0.294	-	-
HCM Control Delay (s)	-	14.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	1.2	-	-

West Pryor Village
6: I-470 Ramp

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	132	693	0	0	0	0	560	442	4	834	0
Future Volume (vph)	20	132	693	0	0	0	0	560	442	4	834	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		400	0		0	0		311	550		0
Storage Lanes	1		2	0		0	0		1	1		0
Taper Length (ft)	100			25			25			50		
Lane Util. Factor	1.00	0.95	0.88	1.00	1.00	1.00	1.00	0.86	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	3539	2787	0	0	0	0	6408	1583	1770	3539	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	3539	2787	0	0	0	0	6408	1583	1770	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			199						465			
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		297			425			276			300	
Travel Time (s)		6.8			9.7			5.4			5.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	139	729	0	0	0	0	589	465	4	878	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	139	729	0	0	0	0	589	465	4	878	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			

West Pryor Village
6: I-470 Ramp

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Minimum Split (s)	11.6	40.6	40.6					35.5	35.5	11.5	41.5	
Total Split (s)	53.0	53.0	53.0					54.0	54.0	13.0	67.0	
Total Split (%)	44.2%	44.2%	44.2%					45.0%	45.0%	10.8%	55.8%	
Maximum Green (s)	47.4	47.4	47.4					48.5	48.5	7.5	61.5	
Yellow Time (s)	3.8	3.8	3.8					4.0	4.0	4.0	4.0	
All-Red Time (s)	1.8	1.8	1.8					1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.6	5.6	5.6					5.5	5.5	5.5	5.5	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					C-Max	C-Max	None	None	
Walk Time (s)		5.0	5.0					5.0	5.0		5.0	
Flash Dont Walk (s)		30.0	30.0					25.0	25.0		31.0	
Pedestrian Calls (#/hr)		0	0					0	0		0	
Act Effct Green (s)	19.8	32.7	32.7					73.7	73.7	6.1	76.2	
Actuated g/C Ratio	0.16	0.27	0.27					0.61	0.61	0.05	0.64	
v/c Ratio	0.07	0.14	0.81					0.15	0.40	0.04	0.39	
Control Delay	34.1	31.5	35.9					4.3	1.2	55.0	12.3	
Queue Delay	0.0	0.0	0.0					0.0	0.3	0.0	0.0	
Total Delay	34.1	31.5	35.9					4.3	1.5	55.0	12.3	
LOS	C	C	D					A	A	D	B	
Approach Delay		35.2						3.1			12.5	
Approach LOS		D						A			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.1

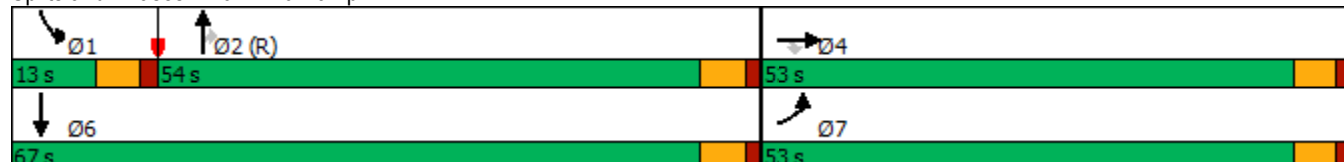
Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: I-470 Ramp



							
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	21	139	729	589	465	4	878
v/c Ratio	0.07	0.14	0.81	0.15	0.40	0.04	0.39
Control Delay	34.1	31.5	35.9	4.3	1.2	55.0	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	34.1	31.5	35.9	4.3	1.5	55.0	12.3
Queue Length 50th (ft)	16	43	223	13	2	3	162
Queue Length 95th (ft)	29	61	268	34	10	15	256
Internal Link Dist (ft)		217		196			220
Turn Bay Length (ft)	200		400		311	550	
Base Capacity (vph)	699	1397	1221	3937	1151	110	2246
Starvation Cap Reductn	0	0	0	0	222	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.60	0.15	0.50	0.04	0.39
Intersection Summary							

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	132	693	0	0	0	0	560	442	4	834	0
Future Volume (veh/h)	20	132	693	0	0	0	0	560	442	4	834	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863				0	1863	1863	1863	1863	0
Adj Flow Rate, veh/h	21	139	729				0	589	465	4	878	0
Adj No. of Lanes	1	2	2				0	4	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	527	1052	828				0	3577	884	11	2160	0
Arrive On Green	0.30	0.30	0.30				0.00	0.56	0.56	0.01	0.61	0.00
Sat Flow, veh/h	1774	3539	2787				0	6669	1583	1774	3632	0
Grp Volume(v), veh/h	21	139	729				0	589	465	4	878	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1393				0	1602	1583	1774	1770	0
Q Serve(g_s), s	1.0	3.4	29.9				0.0	5.4	22.0	0.3	15.4	0.0
Cycle Q Clear(g_c), s	1.0	3.4	29.9				0.0	5.4	22.0	0.3	15.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	527	1052	828				0	3577	884	11	2160	0
V/C Ratio(X)	0.04	0.13	0.88				0.00	0.16	0.53	0.36	0.41	0.00
Avail Cap(c_a), veh/h	701	1398	1101				0	3577	884	111	2160	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.0	30.8	40.1				0.0	12.9	16.6	59.4	12.1	0.0
Incr Delay (d2), s/veh	0.0	0.1	6.7				0.0	0.1	2.2	18.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.7	12.2				0.0	2.4	10.1	0.2	7.5	0.0
LnGrp Delay(d),s/veh	30.0	30.9	46.8				0.0	13.0	18.8	78.0	12.2	0.0
LnGrp LOS	C	C	D					B	B	E	B	
Approach Vol, veh/h		889						1054			882	
Approach Delay, s/veh		43.9						15.6			12.5	
Approach LOS		D						B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	6.2	72.5		41.3		78.7						
Change Period (Y+Rc), s	5.5	5.5		5.6		5.5						
Max Green Setting (Gmax), s	7.5	48.5		47.4		61.5						
Max Q Clear Time (g_c+I1), s	2.3	24.0		31.9		17.4						
Green Ext Time (p_c), s	0.0	6.0		3.8		7.3						
Intersection Summary												
HCM 2010 Ctrl Delay			23.5									
HCM 2010 LOS			C									

West Pryor Village
9: Pryor Rd & Summit Woods Crossing

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	32	55	140	45	234	68	611	85	327	1021	180
Future Volume (vph)	150	32	55	140	45	234	68	611	85	327	1021	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	150		150	300		150
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25			100			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.906				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1688	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.448			0.694			0.251			0.166		
Satd. Flow (perm)	835	1688	0	1293	1863	1583	468	3539	1583	309	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		61				260			182			182
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		589			358			534			288	
Travel Time (s)		16.1			9.8			10.4			5.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	167	36	61	156	50	260	76	679	94	363	1134	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	97	0	156	50	260	76	679	94	363	1134	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Baseline

Synchro 9 Light Report
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West Pryor Village
9: Pryor Rd & Summit Woods Crossing

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	32.5	43.0		12.0	43.0	43.0	11.0	31.0	31.0	11.0	31.0	31.0
Total Split (s)	32.5	63.5		12.0	43.0	43.0	11.0	31.5	31.5	13.0	33.5	33.5
Total Split (%)	27.1%	52.9%		10.0%	35.8%	35.8%	9.2%	26.3%	26.3%	10.8%	27.9%	27.9%
Maximum Green (s)	26.5	57.5		6.0	37.0	37.0	6.0	26.5	26.5	8.0	28.5	28.5
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)	21.0	32.0			32.0	32.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0		0	0
Act Effct Green (s)	31.1	19.5		15.7	9.7	9.7	40.2	32.5	32.5	77.5	67.0	67.0
Actuated g/C Ratio	0.26	0.16		0.13	0.08	0.08	0.34	0.27	0.27	0.65	0.56	0.56
v/c Ratio	0.49	0.30		0.81	0.33	0.71	0.32	0.71	0.17	0.53	0.57	0.21
Control Delay	39.4	19.3		70.9	56.5	17.2	16.7	47.8	3.6	22.5	15.2	1.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	19.3		70.9	56.5	17.2	16.7	47.8	3.6	22.5	15.2	1.4
LOS	D	B		E	E	B	B	D	A	C	B	A
Approach Delay		32.0			39.4			40.1			15.1	
Approach LOS		C			D			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 26.4

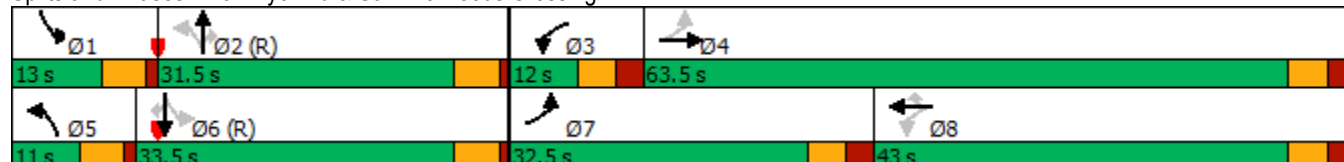
Intersection LOS: C

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Pryor Rd & Summit Woods Crossing



West Pryor Village
9: Pryor Rd & Summit Woods Crossing

Peak PM - Phase 1-4&5
09/24/2018

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	97	156	50	260	76	679	94	363	1134	200
v/c Ratio	0.49	0.30	0.81	0.33	0.71	0.32	0.71	0.17	0.53	0.57	0.21
Control Delay	39.4	19.3	70.9	56.5	17.2	16.7	47.8	3.6	22.5	15.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	19.3	70.9	56.5	17.2	16.7	47.8	3.6	22.5	15.2	1.4
Queue Length 50th (ft)	107	24	99	38	0	27	206	4	119	267	0
Queue Length 95th (ft)	144	64	136	74	78	m64	218	m11	315	365	29
Internal Link Dist (ft)		509		278			454			208	
Turn Bay Length (ft)			150			150		150	300		150
Base Capacity (vph)	431	840	192	574	667	239	958	561	685	1976	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.12	0.81	0.09	0.39	0.32	0.71	0.17	0.53	0.57	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

West Pryor Village
9: Pryor Rd & Summit Woods Crossing

Peak PM - Phase 1-4&5
09/24/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	32	55	140	45	234	68	611	85	327	1021	180
Future Volume (veh/h)	150	32	55	140	45	234	68	611	85	327	1021	180
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	167	36	61	156	50	260	76	679	94	363	1134	200
Adj No. of Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	143	242	384	345	294	245	1667	746	438	1740	778
Arrive On Green	0.09	0.23	0.23	0.05	0.19	0.19	0.06	0.63	0.63	0.07	0.49	0.49
Sat Flow, veh/h	1774	622	1054	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	167	0	97	156	50	260	76	679	94	363	1134	200
Grp Sat Flow(s),veh/h/ln	1774	0	1677	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.9	0.0	5.7	6.0	2.7	19.2	2.6	11.6	2.9	8.0	28.8	8.8
Cycle Q Clear(g_c), s	8.9	0.0	5.7	6.0	2.7	19.2	2.6	11.6	2.9	8.0	28.8	8.8
Prop In Lane	1.00		0.63	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	400	0	384	384	345	294	245	1667	746	438	1740	778
V/C Ratio(X)	0.42	0.00	0.25	0.41	0.14	0.89	0.31	0.41	0.13	0.83	0.65	0.26
Avail Cap(c_a), veh/h	625	0	803	384	574	488	252	1667	746	438	1740	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	37.8	38.7	40.9	47.6	17.9	14.0	12.4	24.3	22.8	17.8
Incr Delay (d2), s/veh	0.7	0.0	0.3	0.7	0.2	10.5	0.7	0.7	0.3	12.5	1.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	2.7	4.2	1.4	9.2	1.3	5.7	1.3	8.9	14.5	4.0
LnGrp Delay(d),s/veh	34.2	0.0	38.2	39.4	41.1	58.2	18.6	14.8	12.8	36.8	24.7	18.6
LnGrp LOS	C		D	D	D	E	B	B	B	D	C	B
Approach Vol, veh/h		264			466			849			1697	
Approach Delay, s/veh		35.7			50.1			14.9			26.6	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	61.5	12.0	33.5	10.5	64.0	17.2	28.2				
Change Period (Y+Rc), s	5.0	5.0	6.0	6.0	5.0	5.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	26.5	6.0	57.5	6.0	28.5	26.5	37.0				
Max Q Clear Time (g_c+l1), s	10.0	13.6	8.0	7.7	4.6	30.8	10.9	21.2				
Green Ext Time (p_c), s	0.0	3.9	0.0	0.6	0.0	0.0	0.4	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			27.6									
HCM 2010 LOS			C									

West Pryor Village
11: Lowenstein Rd & Pryor Rd

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	73	156	63	41	34	184	580	42	56	806	152
Future Volume (vph)	166	73	156	63	41	34	184	580	42	56	806	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	200		150	215		150
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (ft)	125			25			100			100		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.898			0.931				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1673	0	1770	1734	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.229			0.407		
Satd. Flow (perm)	3433	1673	0	1770	1734	0	427	3539	1583	758	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90			34				136			195
Link Speed (mph)		30			25			35			35	
Link Distance (ft)		172			227			220			555	
Travel Time (s)		3.9			6.2			4.3			10.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	178	78	168	68	44	37	198	624	45	60	867	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	246	0	68	81	0	198	624	45	60	867	163
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2		2	6		6

Baseline

Synchro 9 Light Report
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West Pryor Village
11: Lowenstein Rd & Pryor Rd

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	39.5		12.0	36.5		12.5	30.0	30.0	12.5	30.0	30.0
Total Split (s)	16.0	39.5		14.0	37.5		21.0	53.9	53.9	12.6	45.5	45.5
Total Split (%)	13.3%	32.9%		11.7%	31.3%		17.5%	44.9%	44.9%	10.5%	37.9%	37.9%
Maximum Green (s)	10.0	34.0		8.0	32.0		14.5	48.9	48.9	6.1	40.5	40.5
Yellow Time (s)	3.0	3.5		3.0	3.5		3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	3.0	2.0		3.0	2.0		3.0	1.0	1.0	3.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.5		6.0	5.5		6.5	5.0	5.0	6.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		29.0			26.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	9.7	17.2		7.6	15.0		78.1	69.9	69.9	68.8	63.1	63.1
Actuated g/C Ratio	0.08	0.14		0.06	0.12		0.65	0.58	0.58	0.57	0.53	0.53
v/c Ratio	0.64	0.78		0.60	0.33		0.49	0.30	0.05	0.12	0.47	0.18
Control Delay	64.7	47.1		76.9	30.9		23.1	16.3	1.1	6.5	11.1	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	47.1		76.9	30.9		23.1	16.3	1.1	6.5	11.1	0.5
LOS	E	D		E	C		C	B	A	A	B	A
Approach Delay		54.5			51.9			17.1			9.2	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 115 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 22.0

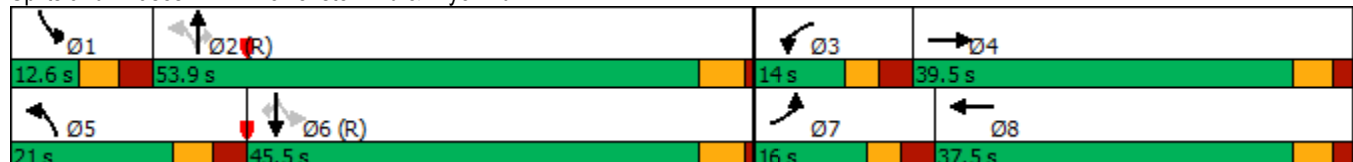
Intersection LOS: C

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: Lowenstein Rd & Pryor Rd





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	178	246	68	81	198	624	45	60	867	163
v/c Ratio	0.64	0.78	0.60	0.33	0.49	0.30	0.05	0.12	0.47	0.18
Control Delay	64.7	47.1	76.9	30.9	23.1	16.3	1.1	6.5	11.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	47.1	76.9	30.9	23.1	16.3	1.1	6.5	11.1	0.5
Queue Length 50th (ft)	70	119	52	33	70	98	0	9	83	1
Queue Length 95th (ft)	108	196	#111	75	175	211	m6	m20	164	m0
Internal Link Dist (ft)		92		147		140			475	
Turn Bay Length (ft)	150				200		150	215		150
Base Capacity (vph)	286	538	118	487	452	2061	978	495	1859	924
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.46	0.58	0.17	0.44	0.30	0.05	0.12	0.47	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	73	156	63	41	34	184	580	42	56	806	152
Future Volume (veh/h)	166	73	156	63	41	34	184	580	42	56	806	152
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	178	78	168	68	44	37	198	624	45	60	867	163
Adj No. of Lanes	2	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	90	194	87	142	120	468	1929	863	479	1832	820
Arrive On Green	0.07	0.17	0.17	0.05	0.15	0.15	0.07	0.54	0.54	0.09	1.00	1.00
Sat Flow, veh/h	3442	527	1135	1774	936	787	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	178	0	246	68	0	81	198	624	45	60	867	163
Grp Sat Flow(s),veh/h/ln	1721	0	1662	1774	0	1724	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.1	0.0	17.3	4.5	0.0	5.0	6.2	11.7	1.6	1.8	0.0	0.0
Cycle Q Clear(g_c), s	6.1	0.0	17.3	4.5	0.0	5.0	6.2	11.7	1.6	1.8	0.0	0.0
Prop In Lane	1.00		0.68	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	284	87	0	262	468	1929	863	479	1832	820
V/C Ratio(X)	0.76	0.00	0.86	0.78	0.00	0.31	0.42	0.32	0.05	0.13	0.47	0.20
Avail Cap(c_a), veh/h	287	0	471	118	0	460	557	1929	863	493	1832	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	0.0	48.4	56.4	0.0	45.3	11.5	15.1	12.8	11.7	0.0	0.0
Incr Delay (d2), s/veh	9.0	0.0	8.9	20.5	0.0	0.7	0.6	0.4	0.1	0.1	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	8.6	2.7	0.0	2.4	3.0	5.8	0.7	0.9	0.2	0.1
LnGrp Delay(d),s/veh	64.0	0.0	57.3	76.9	0.0	45.9	12.1	15.5	12.9	11.8	0.9	0.5
LnGrp LOS	E		E	E		D	B	B	B	B	A	A
Approach Vol, veh/h		424			149			867			1090	
Approach Delay, s/veh		60.1			60.1			14.6			1.4	
Approach LOS		E			E			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	70.4	11.9	26.0	15.0	67.1	14.2	23.7				
Change Period (Y+Rc), s	6.5	5.0	6.0	5.5	6.5	5.0	6.0	5.5				
Max Green Setting (Gmax), s	6.1	48.9	8.0	34.0	14.5	40.5	10.0	32.0				
Max Q Clear Time (g_c+I1), s	3.8	13.7	6.5	19.3	8.2	2.0	8.1	7.0				
Green Ext Time (p_c), s	0.0	4.8	0.0	1.3	0.3	7.8	0.1	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			19.2									
HCM 2010 LOS			B									

West Pryor Village
16: Black Twig Ln & Lowenstein Rd

Peak PM - Phase 1-4&5
09/24/2018

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	29	19	55	31	23	13	23	35	39	35	0
Future Volume (vph)	0	29	19	55	31	23	13	23	35	39	35	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.947			0.972			0.933				
Flt Protected					0.975			0.991			0.974	
Satd. Flow (prot)	0	1764	0	0	1765	0	0	1722	0	0	1814	0
Flt Permitted					0.975			0.991			0.974	
Satd. Flow (perm)	0	1764	0	0	1765	0	0	1722	0	0	1814	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		866			1603			379			362	
Travel Time (s)		19.7			36.4			8.6			8.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	32	21	60	34	25	14	25	38	43	38	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	119	0	0	77	0	0	81	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 28.9%	ICU Level of Service A											
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	6.5											
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	29	19	55	31	23	13	23	35	39	35	0
Future Vol, veh/h	0	29	19	55	31	23	13	23	35	39	35	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	32	21	60	34	25	14	25	38	43	38	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	53	0	0	229	222	43	241	220	47
Stage 1	-	-	-	-	-	-	43	43	-	167	167	-
Stage 2	-	-	-	-	-	-	186	179	-	74	53	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1545	-	-	1553	-	-	726	677	1027	713	678	1022
Stage 1	-	-	-	-	-	-	971	859	-	835	760	-
Stage 2	-	-	-	-	-	-	816	751	-	935	851	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1545	-	-	1553	-	-	672	650	1027	646	651	1022
Mov Cap-2 Maneuver	-	-	-	-	-	-	672	650	-	646	651	-
Stage 1	-	-	-	-	-	-	971	859	-	835	730	-
Stage 2	-	-	-	-	-	-	742	721	-	874	851	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0	3.7	10	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1
Capacity (veh/h)	799	1553	-	-	1545	-	648
HCM Lane V/C Ratio	0.098	0.039	-	-	-	-	0.125
HCM Control Delay (s)	10	7.4	0	-	0	-	11.4
HCM Lane LOS	B	A	A	-	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	0.4

West Pryor Village
18: Chipman Rd & Pryor Rd

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	221	55	268	206	141	73	586	180	210	732	138
Future Volume (vph)	112	221	55	268	206	141	73	586	180	210	732	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	200		170	170		0	260		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	70			100			80			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00		0.99	1.00	1.00		1.00	1.00	
Frt		0.970				0.850		0.965			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3423	0	1770	3539	1583	1770	3404	0	1770	3441	0
Flt Permitted	0.616			0.275			0.254			0.219		
Satd. Flow (perm)	1145	3423	0	512	3539	1561	473	3404	0	408	3441	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				182		35			22	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		599			831			351			533	
Travel Time (s)		13.6			18.9			8.0			12.1	
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	118	233	58	282	217	148	77	617	189	221	771	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	291	0	282	217	148	77	806	0	221	916	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	

Baseline

Synchro 9 Light Report
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West Pryor Village
18: Chipman Rd & Pryor Rd

Peak PM - Phase 1-4&5

09/24/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	12.0	32.0		12.0	35.0	35.0	12.0	34.0		12.0	34.0	
Total Split (s)	12.0	32.0		23.0	43.0	43.0	12.0	42.0		23.0	53.0	
Total Split (%)	10.0%	26.7%		19.2%	35.8%	35.8%	10.0%	35.0%		19.2%	44.2%	
Maximum Green (s)	6.0	27.0		17.0	38.0	38.0	6.0	37.0		17.0	48.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	
All-Red Time (s)	2.5	1.0		2.5	1.0	1.0	2.5	1.0		2.5	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	5.0		6.0	5.0	5.0	6.0	5.0		6.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max		None	None	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		22.0			25.0	25.0		24.0			24.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	19.7	14.7		36.3	25.3	25.3	59.7	52.9		71.2	61.3	
Actuated g/C Ratio	0.16	0.12		0.30	0.21	0.21	0.50	0.44		0.59	0.51	
v/c Ratio	0.54	0.66		0.86	0.29	0.31	0.24	0.53		0.55	0.52	
Control Delay	43.6	53.2		59.7	40.1	4.2	14.0	26.4		24.8	11.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	43.6	53.2		59.7	40.1	4.2	14.0	26.4		24.8	11.4	
LOS	D	D		E	D	A	B	C		C	B	
Approach Delay		50.4			40.4			25.3			14.0	
Approach LOS		D			D			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 2:NBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 27.6

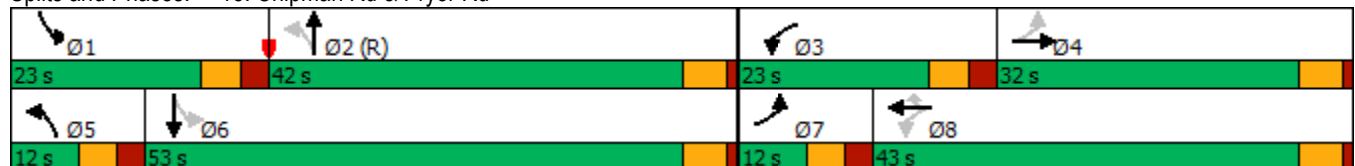
Intersection LOS: C

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 18: Chipman Rd & Pryor Rd





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	291	282	217	148	77	806	221	916
v/c Ratio	0.54	0.66	0.86	0.29	0.31	0.24	0.53	0.55	0.52
Control Delay	43.6	53.2	59.7	40.1	4.2	14.0	26.4	24.8	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	53.2	59.7	40.1	4.2	14.0	26.4	24.8	11.4
Queue Length 50th (ft)	68	105	180	74	0	24	225	41	87
Queue Length 95th (ft)	111	147	#260	106	30	50	336	159	131
Internal Link Dist (ft)		519		751			271		453
Turn Bay Length (ft)	200		200		170	170		260	
Base Capacity (vph)	219	788	332	1120	618	319	1519	444	1768
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.37	0.85	0.19	0.24	0.24	0.53	0.50	0.52

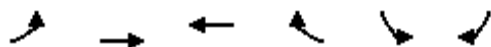
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	221	55	268	206	141	73	586	180	210	732	138
Future Volume (veh/h)	112	221	55	268	206	141	73	586	180	210	732	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	233	58	282	217	148	77	617	189	221	771	145
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	331	81	350	740	330	348	1269	388	419	1521	286
Arrive On Green	0.05	0.12	0.12	0.14	0.21	0.21	0.05	0.48	0.48	0.08	0.51	0.51
Sat Flow, veh/h	1774	2820	687	1774	3539	1579	1774	2670	817	1774	2973	559
Grp Volume(v), veh/h	118	144	147	282	217	148	77	409	397	221	459	457
Grp Sat Flow(s),veh/h/ln	1774	1770	1737	1774	1770	1579	1774	1770	1717	1774	1770	1763
Q Serve(g_s), s	6.0	9.4	9.8	16.4	6.2	9.8	2.6	18.9	19.0	7.5	20.5	20.5
Cycle Q Clear(g_c), s	6.0	9.4	9.8	16.4	6.2	9.8	2.6	18.9	19.0	7.5	20.5	20.5
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.48	1.00		0.32
Lane Grp Cap(c), veh/h	267	208	204	350	740	330	348	841	816	419	905	901
V/C Ratio(X)	0.44	0.69	0.72	0.80	0.29	0.45	0.22	0.49	0.49	0.53	0.51	0.51
Avail Cap(c_a), veh/h	267	398	391	350	1121	500	355	841	816	525	905	901
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	50.9	51.0	38.2	40.0	41.4	15.6	21.5	21.5	15.6	19.3	19.3
Incr Delay (d2), s/veh	1.1	4.1	4.7	12.8	0.2	1.0	0.3	2.0	2.1	1.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.9	4.9	9.2	3.1	4.4	1.3	9.7	9.4	3.7	10.1	10.0
LnGrp Delay(d),s/veh	45.8	55.0	55.7	51.0	40.2	42.4	15.9	23.5	23.6	16.6	19.8	19.8
LnGrp LOS	D	E	E	D	D	D	B	C	C	B	B	B
Approach Vol, veh/h		409			647			883			1137	
Approach Delay, s/veh		52.6			45.4			22.9			19.2	
Approach LOS		D			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	62.0	23.0	19.1	11.5	66.4	12.0	30.1				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	17.0	37.0	17.0	27.0	6.0	48.0	6.0	38.0				
Max Q Clear Time (g_c+I1), s	9.5	21.0	18.4	11.8	4.6	22.5	8.0	11.8				
Green Ext Time (p_c), s	0.4	4.8	0.0	1.4	0.0	6.6	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay			30.2									
HCM 2010 LOS			C									

West Pryor Village
22: Chipman Rd & Black Twig Rd

Peak PM - Phase 1-4&5
09/24/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	272	354	33	50	48
Future Volume (vph)	24	272	354	33	50	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.934	
Flt Protected	0.950				0.975	
Satd. Flow (prot)	1770	1863	1840	0	1696	0
Flt Permitted	0.950				0.975	
Satd. Flow (perm)	1770	1863	1840	0	1696	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		248	1258		980	
Travel Time (s)		5.6	28.6		22.3	
Confl. Peds. (#/hr)	245					
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	286	373	35	53	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	286	408	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 33.0% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.3

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	24	272	354	33	50	48
Future Vol, veh/h	24	272	354	33	50	48
Conflicting Peds, #/hr	245	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	286	373	35	53	51

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	653	0	-	0	972	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	336	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	934	-	-	-	280	478
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	724	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	743	-	-	-	171	380
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	576	-

Approach EB WB SB

HCM Control Delay, s	0.8	0	32
HCM LOS			D

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	743	-	-	-	234
HCM Lane V/C Ratio	0.034	-	-	-	0.441
HCM Control Delay (s)	10	-	-	-	32
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.1

Summary of All Intervals

Start Time	4:50
End Time	6:00
Total Time (min)	70
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intervals	1
Vehs Entered	4968
Vehs Exited	4993
Starting Vehs	150
Ending Vehs	125
Travel Distance (mi)	2097
Travel Time (hr)	148.5
Total Delay (hr)	70.5
Total Stops	6526
Fuel Used (gal)	98.3

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	4968
Vehs Exited	4993
Starting Vehs	150
Ending Vehs	125
Travel Distance (mi)	2097
Travel Time (hr)	148.5
Total Delay (hr)	70.5
Total Stops	6526
Fuel Used (gal)	98.3

3: Pryor Rd & Rt-In, Rt-Out Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0
Total Delay (hr)	0.5	0.3	0.5	0.3	1.5
Total Del/Veh (s)	10.5	1.4	2.1	2.8	2.6
Stop Delay (hr)	0.4	0.0	0.0	0.0	0.5
Stop Del/Veh (s)	9.8	0.1	0.1	0.1	0.9

6: I-470 Ramp Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2
Denied Del/Veh (s)	3.1	0.1	0.3	0.0	0.0	0.1	0.3	0.2
Total Delay (hr)	0.3	1.2	3.7	0.8	0.3	0.0	2.4	8.8
Total Del/Veh (s)	55.6	33.8	19.6	5.0	2.4	32.0	9.9	11.6
Stop Delay (hr)	0.3	1.1	3.5	0.6	0.2	0.0	1.6	7.3
Stop Del/Veh (s)	53.1	30.4	18.3	3.8	1.4	30.5	6.6	9.6

9: Pryor Rd & Summit Woods Crossing Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.2	3.5	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.0	0.4	0.2	1.2	0.7	0.9	0.4	4.1	0.1	2.2	4.7	0.2
Total Del/Veh (s)	39.9	36.5	16.6	35.5	46.8	12.5	21.9	24.3	6.6	24.3	16.4	4.1
Stop Delay (hr)	1.8	0.3	0.2	1.1	0.6	0.8	0.3	3.2	0.1	1.9	3.7	0.2
Stop Del/Veh (s)	36.7	34.0	15.9	33.4	44.2	11.5	19.3	19.1	4.8	21.0	12.8	2.9

9: Pryor Rd & Summit Woods Crossing Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	17.0
Total Del/Veh (s)	20.6
Stop Delay (hr)	14.3
Stop Del/Veh (s)	17.3

11: Lowenstein Rd & Pryor Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	1.1	0.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	26.5	31.1	35.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.5	0.8	0.8	1.2	0.6	0.1	1.5	2.3	0.0	0.3	3.8	0.2
Total Del/Veh (s)	57.7	41.2	17.7	69.6	55.0	15.2	26.9	13.7	3.3	16.6	16.0	4.4
Stop Delay (hr)	2.5	0.7	0.8	1.1	0.6	0.1	1.4	1.9	0.0	0.2	2.8	0.1
Stop Del/Veh (s)	56.9	39.0	17.5	67.5	52.4	14.8	25.1	11.5	3.0	13.6	11.9	2.1

11: Lowenstein Rd & Pryor Rd Performance by movement

Movement	All
Denied Delay (hr)	3.3
Denied Del/Veh (s)	4.9
Total Delay (hr)	14.0
Total Del/Veh (s)	21.0
Stop Delay (hr)	12.3
Stop Del/Veh (s)	18.4

16: Black Twig Ln & Lowenstein Rd Performance by movement

Movement	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.4
Total Del/Veh (s)	0.3	0.2	2.7	0.8	2.1	4.2	5.9	3.3	6.0	6.6	2.2
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.0	0.0	0.2	0.0	0.0	2.5	3.0	2.9	3.8	3.3	0.8

18: Chipman Rd & Pryor Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.8	0.0	0.0	3.3	0.3	3.2	3.2	0.5	0.5	0.0	0.0	0.1
Total Delay (hr)	1.1	3.1	0.5	2.8	1.8	0.4	0.4	4.2	1.2	1.6	3.0	0.4
Total Del/Veh (s)	37.9	47.8	37.4	35.3	34.4	8.7	26.7	24.9	23.2	25.7	14.4	10.7
Stop Delay (hr)	1.0	2.8	0.5	2.4	1.6	0.3	0.3	3.3	1.0	1.4	2.3	0.3
Stop Del/Veh (s)	35.0	43.4	34.9	30.9	30.9	7.4	23.7	19.8	19.3	22.4	10.9	7.9

18: Chipman Rd & Pryor Rd Performance by movement

Movement	All
Denied Delay (hr)	0.6
Denied Del/Veh (s)	0.7
Total Delay (hr)	20.6
Total Del/Veh (s)	24.8
Stop Delay (hr)	17.4
Stop Del/Veh (s)	21.0

22: Chipman Rd & Black Twig Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.5
Total Del/Veh (s)	4.1	0.2	1.8	0.6	11.8	0.1	8.6	2.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3
Stop Del/Veh (s)	2.2	0.0	0.0	0.0	9.9	0.0	8.2	1.3

Total Network Performance

Denied Delay (hr)	4.2
Denied Del/Veh (s)	3.0
Total Delay (hr)	66.3
Total Del/Veh (s)	46.7
Stop Delay (hr)	52.8
Stop Del/Veh (s)	37.1

Intersection: 3: Pryor Rd & Rt-In, Rt-Out

Movement	EB
Directions Served	R
Maximum Queue (ft)	111
Average Queue (ft)	49
95th Queue (ft)	91
Link Distance (ft)	451
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: I-470 Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	R	T	T	T	T	R	L	T
Maximum Queue (ft)	52	120	49	256	240	66	81	73	103	130	30	282
Average Queue (ft)	22	64	10	156	109	22	17	10	28	43	2	118
95th Queue (ft)	48	119	33	235	180	58	51	43	69	106	14	228
Link Distance (ft)		241	241			175	175	175	175			276
Upstream Blk Time (%)				1	0							0
Queuing Penalty (veh)				0	0							0
Storage Bay Dist (ft)	200			400	400					311	550	
Storage Blk Time (%)				1	0							0
Queuing Penalty (veh)				1	0							0

Intersection: 6: I-470 Ramp

Movement	SB
Directions Served	T
Maximum Queue (ft)	226
Average Queue (ft)	106
95th Queue (ft)	211
Link Distance (ft)	276
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Pryor Rd & Summit Woods Crossing

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	T	T
Maximum Queue (ft)	330	111	191	114	141	65	259	320	200	209	287	284
Average Queue (ft)	125	51	66	39	83	31	85	156	30	142	175	187
95th Queue (ft)	228	99	118	87	137	60	189	272	124	230	300	302
Link Distance (ft)	523	523		280	280		462	462			210	210
Upstream Blk Time (%)										1	4	7
Queuing Penalty (veh)										0	30	53
Storage Bay Dist (ft)			150			150			150	300		
Storage Blk Time (%)			1				4	13		1	4	13
Queuing Penalty (veh)			0				2	11		5	13	24

Intersection: 9: Pryor Rd & Summit Woods Crossing

Movement	SB	B2	B2
Directions Served	R	T	T
Maximum Queue (ft)	200	174	225
Average Queue (ft)	58	13	24
95th Queue (ft)	166	74	121
Link Distance (ft)		175	175
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	2
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Lowenstein Rd & Pryor Rd

Movement	EB	EB	EB	B12	WB	WB	NB	NB	NB	NB	B4	B4
Directions Served	L	L	TR	T	L	TR	L	T	T	R	T	T
Maximum Queue (ft)	58	84	139	27	131	107	144	217	218	145	34	33
Average Queue (ft)	42	63	87	2	53	40	88	77	104	19	1	1
95th Queue (ft)	66	92	134	13	107	80	142	165	191	78	11	11
Link Distance (ft)			85	382	162	162		145	145		447	447
Upstream Blk Time (%)		2	16				1	2	5	0		
Queuing Penalty (veh)		0	16				0	10	20	0		
Storage Bay Dist (ft)	150	150					200			150		
Storage Blk Time (%)		2	16				1	2	5	0		
Queuing Penalty (veh)		5	27				2	4	2	0		

Intersection: 11: Lowenstein Rd & Pryor Rd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	123	290	310	250
Average Queue (ft)	25	148	152	51
95th Queue (ft)	65	293	293	163
Link Distance (ft)		481	481	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	215			150
Storage Blk Time (%)		3	7	
Queuing Penalty (veh)		2	11	

Intersection: 16: Black Twig Ln & Lowenstein Rd

Movement	NW	NE	SW
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	55	78
Average Queue (ft)	4	31	34
95th Queue (ft)	21	50	58
Link Distance (ft)	1552	331	331
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 18: Chipman Rd & Pryor Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	118	222	296	265	117	94	92	249	319	319	236	188
Average Queue (ft)	64	96	104	156	64	45	43	42	169	231	94	103
95th Queue (ft)	102	164	190	242	108	82	81	115	267	326	179	175
Link Distance (ft)		524	524		784	784			304	304		447
Upstream Blk Time (%)									0	1		
Queuing Penalty (veh)									0	0		
Storage Bay Dist (ft)	200			200			170	170			260	
Storage Blk Time (%)		1		3					6			
Queuing Penalty (veh)		1		3					4			

Intersection: 18: Chipman Rd & Pryor Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	238
Average Queue (ft)	129
95th Queue (ft)	221
Link Distance (ft)	447
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Chipman Rd & Black Twig Rd

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	73	20	99
Average Queue (ft)	11	1	47
95th Queue (ft)	41	6	80
Link Distance (ft)	226	1193	924
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 250