CEE 416 FINAL PROJECT REPORT

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Executive Summary

Due to the construction of the new Transportation Safety Research and Development building at its new location from Wright St and 4th St to Goodwin Ave and University Ave we at E&M Traffic Consulting Inc. have been hired by the Safe Campus Development company to prepare a TIS report for the resulting traffic changes. The traffic changes will be composed of a relocated Route 150 to Wright St and 4th St, the limitation of vehicular traffic on Springfield Ave beginning at 4th street to 50 vph, and the new building construction. Anticipating a design year of 2023, the building garage will have only one entrance/exit as the peak hour will most likely result in 85% departure and 15% arrival at peak hour. The project began by collecting field data on existing traffic at signalized intersections (total of 6) and conducting balanced volumes procedures on this data in order to understand the changes necessary to accommodate for the building construction. The project is designed for the year 2023, thereby using a growth factor of 2% the volumes were updated. Trip generation was obtained by the size of the TSRD and Trip Generation Handbook. The purpose of the trip generation values were to be added data points for traffic generation in combination with the field data to accommodate those that work in the new TSRD center to be accounted for in traffic optimization. The optimization process was handled using HCS simulations to understand present conditions and our purpose is to work the parameters to focus on establishing a LOS C for all approach and intersection delays juxtaposed to this project. The results of changing the signal timing and the phase plans for the corresponding intersections led to our conclusion that no significant geometric change or construction is necessary, rather just a reallocation of movement and time on lanes. The costs for our proposed project come out to be approximately \$24,500 considering the technician rate and standard for signal timing change fees.

Introduction

A traffic study is necessary to determine what improvements and changes need to be made to optimize traffic flow after the construction of a new building on the corner of Goodwin and University Ave, the change of Route 150 going from University south to Springfield via Fourth St. rather than its current route on Wright St, and the limitation of Springfield Ave to buses and service vehicles. The traffic study is done by Safe Campus Development Inc. (SCDI) and the new building will be a 400,000 square feet Transportation Safety Research and Development center (TSRD). The building will generate trips arriving from Urbana and Champaign and departing to Champaign and Urbana. The building's exit is onto Goodwin Ave and will use University Ave to depart and arrive. The design year is December of 2023, three years from now. SCDI assumes that external traffic increases by 2% each year for three years, that in the pm peak hour 85% of the trips generated from the building will be exiting and 15% will be entering, and that improvements cannot include adding through lanes or change traffic flow patterns. SCDI also assumes that 60% of the trips generated by the building will come from Champaign and 40% from Urbana. The study focuses on the afternoon peak hours (4-6 pm) and data will be collected for vehicles, buses, bicycles, trucks, but not pedestrians. The six intersections studied will be: 4th St. and Springfield Ave, Wright St. and Springfield Ave, University Ave and 4th St., University Ave and Wright St., University Ave and Goodwin Ave, and Springfield Ave and 6th St.

Goals and Objectives

The objective of the study is to begin with field data of trips at the six intersections surrounding the proposed location of the TSRD building, balance that field data, and extrapolate it to the year 2023. Next, SCDI will determine the trips generated from the new building, combine the trips with the external balanced data, and finally include the changes of the Springfield Ave traffic limitations

and the relocation of Route 150 to have combined data to be used in the Highway Capacity Software (HCS). HCS will then use signal timings and phase plans from the field and the combined volumes to determine the delay and level of service of each intersection and then find what improvements are necessary to decrease the delay and optimize the level of service at each intersection.

Procedure

The field data was collected by six different groups, one for each intersection. Each group went to their respective intersection to collect data at 4-6 pm on Tuesday through Thursday as those days have the best data for workdays. The number of cars, buses, large trucks, and bicycles were counted for each movement in 15 minutes intervals for two hours. The movements were from north, south, east, or west and could be a movement through the intersection or turning right or left. Pedestrian data was not counted. Each intersection's geometry was drawn with indications of what movements were allowed. The groups found the cycle length, the green, yellow, red, and all red times for all four approaches by timing the signals 20-30 times for accurate data. The groups determined the phase plan at each intersection and noted whether there was a protected left or permitted left movement. The signals were determined to be either pretimed or actuated or semi-actuated.

Due to the fact that the six groups collected their data on different days, the volumes needed to be balanced so that all trips match each other at the six intersections. The intersection at 4th and University Ave was selected as the control intersection that the other five intersections would be modified to match those volumes. The volumes were balanced by starting at 4th and University and working east and through University and Wright to Goodwin and University. Then starting at 4th and University, they were balanced by working south and then east through 4th and Springfield

over to 6^{th} and Springfield and finally Wright and Springfield. As an example for what was done to balance the intersections, if the eastbound through movement at 4^{th} and University was 320 cars, the southbound left was 12 and the northbound right was 14, the total number of cars moving east to University and Wright would be 320 + 12 + 14 = 346 cars then the eastbound through for University and Wright would be the 346 total cars minus the eastbound left and right turns. This procedure continued through all the intersections until they matched up.

Once all the intersections were balanced, they needed to be updated to the 2023 volumes as the traffic is assumed to grow by 2% each year. Using equation 1 as the growth equation, the 2020 volumes were updated to the 2023 volumes by using the 2% growth rate percentage and the three years of growth.

$$2023 \ Volume = 2020 \ Volume + 2020 \ Volume * ((1+0.02)^3 - 1)$$

For the peak hour factor, the volumes at the intersection of University and 4th were looked at. All the movements of the cars in the two hours were summed up to a total of 3322 cars between 4-6pm. Next, each 15-minute period was summed up to see which was the largest which was 5-5:15 pm at 445 cars. To find the peak hour factor, the 3322 cars was divided by eight times the 445 cars to get a peak hour factor of 0.933 as seen in equation 2. The 445 cars in the peak 15-minute period were multiplied by eight instead of four because the data collection was over two hours, not one.

$$\frac{3333 \ cars \ in \ two \ hours}{8 \frac{15 \ minute \ periods}{two \ hours} * 445 \ cars \ in \ peak \ 15 \ minute \ period} = Peak \ Hour \ Factor = 0.933 \quad 2)$$

To find the trips generated by the TSRD, the Trip Generation Handbook was used. We used the 1,000 square foot research and development center on a weekday at the pm hour with 15% entering and 85% exiting, page 1384 in the handbook. The equation from the handbook can be seen in equation 3 where T is the number of trips generated and X is the number of 1,000 Square feet there are in the research and development center, in this case the TSRD is 400,000 square feet so X is

equal to 400 as seen in equation 4. Equation 5 shows that 417 trips will be generated by the new building and must be considered for the combined volumes.

$$Ln(T) = 0.83 * Ln(X) + 1.06$$
 3)

$$Ln(T) = 0.83 * ln(400) + 1.06$$

$$e^{6.033} = 417 \text{ trips generated}$$
 5)

With a total of 417 trips generated, we know that 85% of the trips, or 354 trips, will be exiting the building and 15% of the trips, or 63 trips, will arrive at the building during the pm peak hour. These trips will come from and leave onto University Ave with 60% to or from Champaign and 40% to or from Urbana. This means that 212 trips will depart from the building west on University, 142 trips depart from the building east on University, 38 trips arrive from Champaign on University, and finally 25 trips arrive from Urbana on University. These trips are simplified in Table 1 below.

	Arrive from to TSRD (trips)	Depart to from TSRD (trips)
Champaign	38	212
Urbana	25	142

Table 1. Trips generated arriving to and departing from TSRD

These generated trips to and from the new building were added into the 2023 volumes assuming the trips all come from University Ave, the generated trips leaving the building were added to the through movements going east and west depending on which city they were coming from. Similarly, the generated trips arriving to the building were assumed to come from the through movements on University Ave.

With the combined volumes, the relocation of Route 150 and limitations of vehicular traffic on Springfield Ave needed to be considered for the final combined volumes. To do this, we assumed that there would be 50 vehicles per hour in both the eastbound and westbound directions for Springfield Ave. We also assumed truck percentage was 2% and bus percentage was 1 % on all movements.

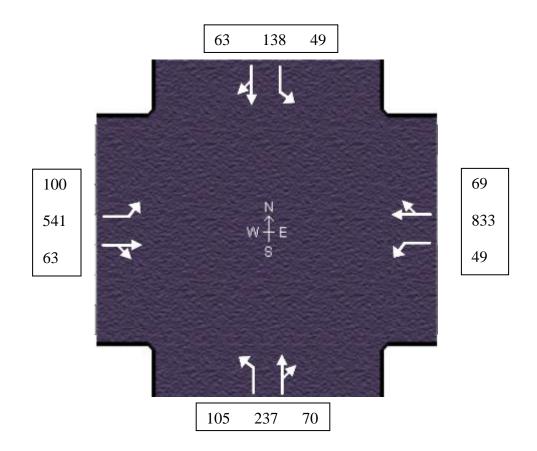
With the combined volumes and the field signal timing and phase plans, we used the Highway Capacity Software to optimize each intersection and reduce the delay. In the HCS software, we assumed that the speed limit for all intersections was 35 mph, a detector length of 40 ft, a peak hour factor of 0.92 for all intersections, and a lane width of 12 feet. We entered the combined volumes for each intersection as well as the geometry, phase plan, and signal timing. Next, we took note of the delay and level of service. Finally, we tried different timing and phase improvements to decrease the delay and took note of the improvements and the improved delay and improved level of service.

Traffic Information

The following section will provide a pictorial representation of all the intersections studied under both external and combined conditions. The Arrival and Departure graphics show the traffic information on the volumes for each direction. Below each graphic is a phase diagram with timing details, in the combined section are the improved phase plans for certain intersections that sometimes required appending more phases.

EXTERNAL: (Volume in vph)

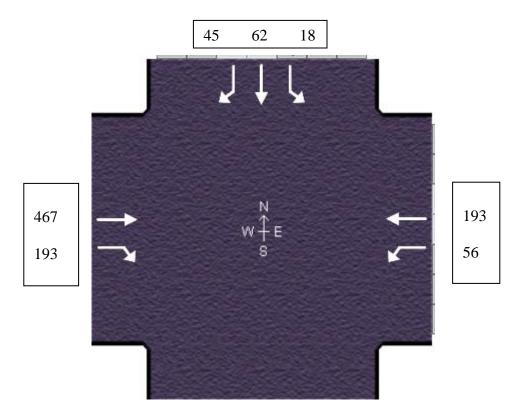
4th and Springfield Arrival and Departure Volumes



4th and Springfield Phase Diagram

	چ پر		1177
	₹ *	"	"
Green	57.0	6.0	16.0
Yellow	3.0	0.0	3.0
Red	2.0	0.0	2.0

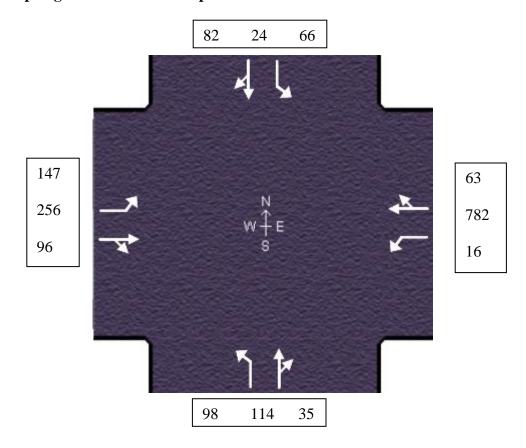
6th and Springfield Arrival and Departure Volumes



 6^{th} and Springfield Phase Diagram

	: =	⇒ 5=	TIT
Green	6.0	84.0	8.0
Yellow	0.0	3.2	3.0
Red	0.0	2.2	2.2

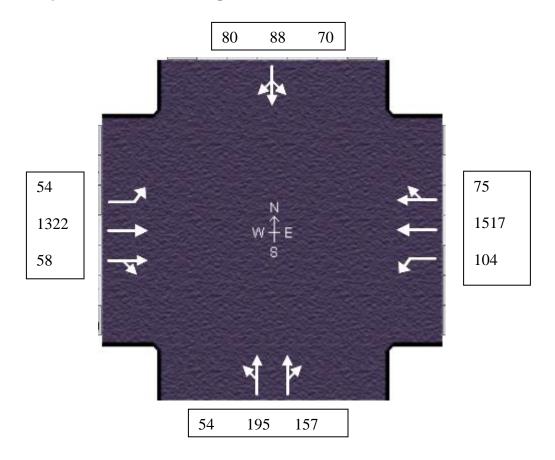
Wright and Springfield Arrival and Departure Volumes



Wright and Springfield Phase Diagram

	≓	#	5 17"	2002 1917
Green	6.0	74.0	6.0	13.0
Yellow	3.0	3.0	3.0	3.0
Red	0.0	2.5	0.0	2.5

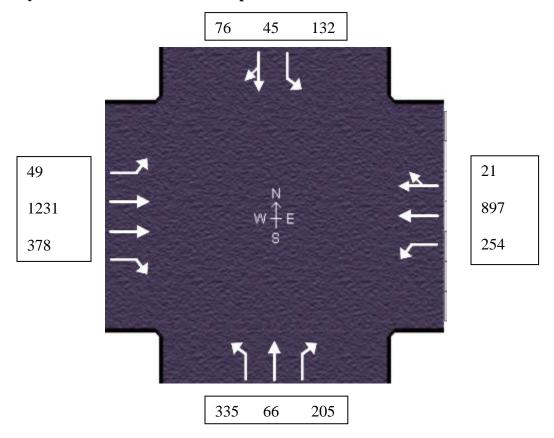
University and 4th Arrival and Departure Volumes



University and 4th Phase Diagram

	₽	24 <u>5</u> 517				
Green	50.0	30.0	0.0	0.0	0.0	0.0
Yellow	2.0	2.5	0.0	0.0	0.0	0.0
Red	1.5	1.0	0.0	0.0	0.0	0.0

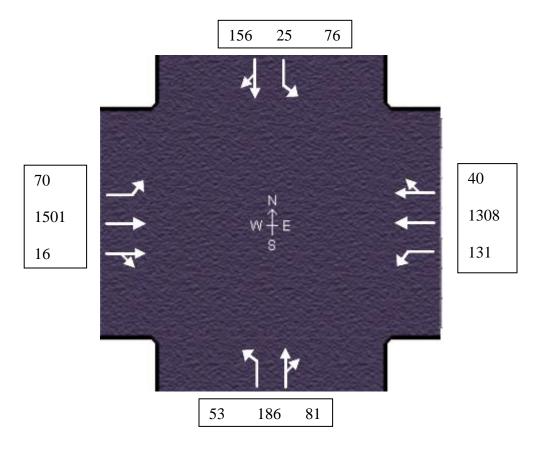
University and Goodwin Arrival and Departure Volumes



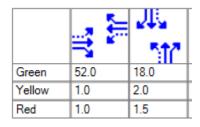
University and Goodwin Phase Diagram

	ے و	≱ ⊱	ا م	200 517
Green	7.0	55.0	10.0	25.0
Yellow	3.2	3.2	3.2	3.2
Red	0.0	0.0	0.0	0.0

University and Wright Arrival and Departure Volumes

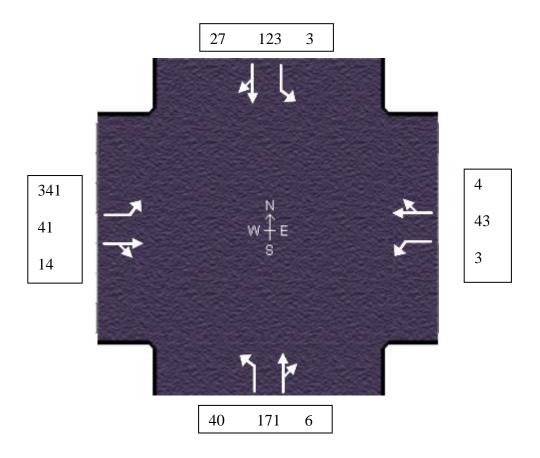


University and Wright Phase Diagram



COMBINED: (Volume in vph)

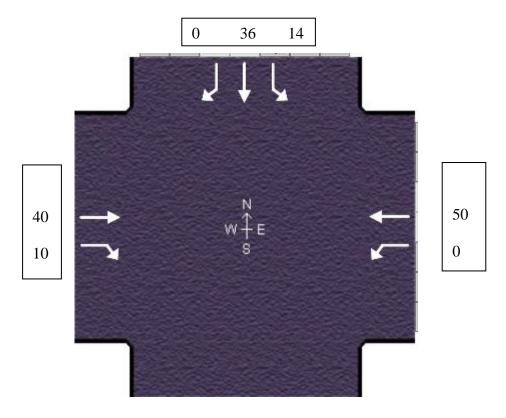
4th and Springfield Arrival and Departure Volumes



4th and Springfield Phase Diagram

	F	5 17	./U\. "11"
Green	60.0	6.0	17.0
Yellow	3.0	0.0	3.0
Red	2.0	0.0	2.0

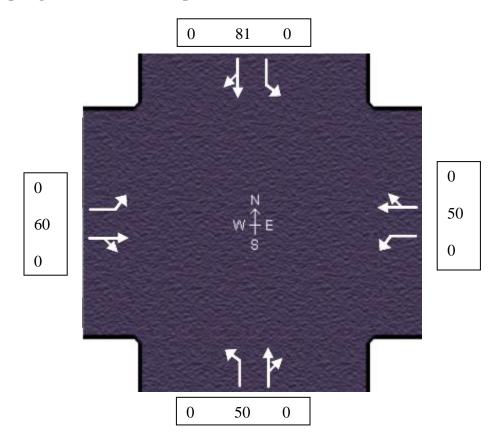
6th and Springfield Arrival and Departure Volumes



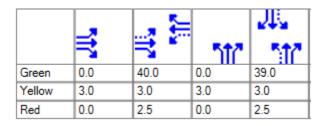
6th and Springfield Phase Diagram

	ţ=	⇒ ‡=	717
Green	0.0	84.0	19.0
Yellow	0.0	3.2	3.0
Red	0.0	2.2	2.2

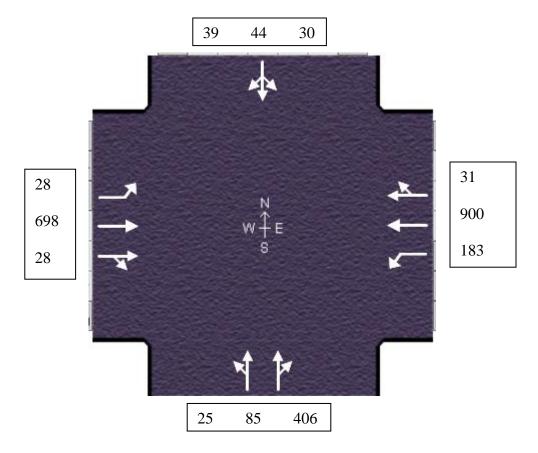
Wright and Springfield Arrival and Departure Volumes



Wright and Springfield Phase Diagram



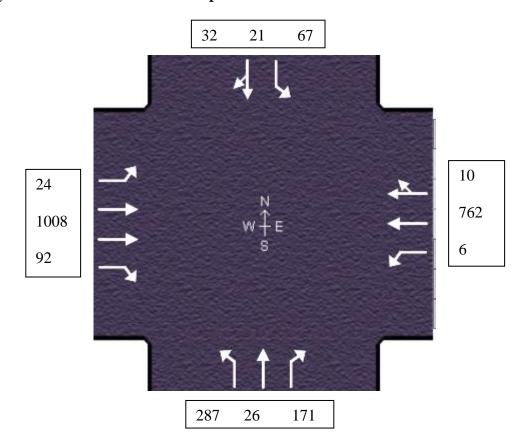
University and 4th Arrival and Departure Volumes



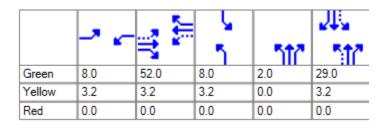
University and 4th Phase Diagram

	, ⊱	117
	=	*
Green	45.0	35.0
Yellow	2.0	2.5
Red	1.5	1.0

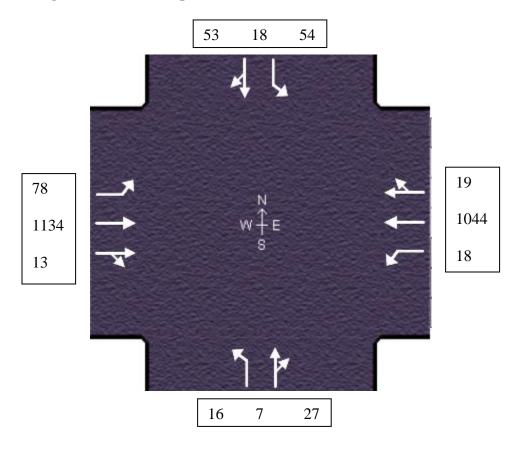
University and Goodwin Arrival and Departure Volumes



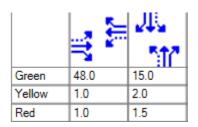
University and Goodwin Phase Diagram



University and Wright Arrival and Departure Volumes



University and Wright Phase Diagram



Results

External Condition

As seen in Table 2, the intersection delay for 4th St. and Springfield Ave external condition before improvements is 25 seconds per vehicle and the level of service is C. For the improved condition (Table 3), the delay dropped to 24.3 seconds per vehicle for a level of service of C. For this small improvement, the north and southbound through movements were increased from 15 seconds to 16 seconds, the northbound left movement decreased from seven seconds to 6 seconds, and the east and westbound movements decreased from 60 seconds to 57 seconds. The cycle length went from a total of 92 seconds down to 89 seconds.

	Eastbound			Westbound			No	rthbo	und	Southbound		
	L	Т	R	L	Т	R	L	Т	R	L	T	R
Level of Service (LOS)	D	В		В	В		С	D		D	D	
Approach Delay, s/veh / LOS	14.7	7	В	17.9		В	42.4	4	D	53.0		D
Intersection Delay, s/veh / LOS	25.0						С					

Table 2. Delay and Level of Service for External Condition of 4th St. and Springfield Ave without Improvements

	Eastbound			Westbound			No	orthbo	ound	Southbound		
	L	Т	R	L	Т	R	L	T	R	L	T	R
Level of Service (LOS)	D	В		В	В		С	D		D	D	
Approach Delay, s/veh / LOS	15.3	3	В	18.9		В	39.	2	D	45.8		D
Intersection Delay, s/veh / LOS	24.3						С					

Table 3. Delay and Level of Service for External Condition of 4th St. and Springfield Ave with Signal Timing Improvements

As seen in Table 4, the intersection delay for 6th St. and Springfield Ave external condition before improvements is 11.8 seconds per vehicle and the level of service is B. For the improved condition (Table 5), the delay dropped to 8.6 seconds per vehicle for a level of service of A. For the signal timing improvement, the southbound through movement was decreased from 19 seconds to 8 seconds, changing the total cycle length of 120 down to 109 seconds.

	Eas	stbou	nd	We	stbou	ınd	No	orthbo	ound	Sou	thbo	und
	L	L T R			T	R	L	T	R	L	T	R
Level of Service (LOS)		Α	Α	Α	В					D	D	D
Approach Delay, s/veh / LOS	7.7		Α	10.3		В	0.0			45.2		D
Intersection Delay, s/veh / LOS			11	.8					E	3		

Table 4. Delay and Level of Service for External Condition of 6th St. and Springfield Ave without Improvements

	Eas	stbour	nd	We	stbou	ınd	No	rthbo	und	Sou	thbo	ınd
	L	L T R			Т	R	L	Т	R	L	T	R
Level of Service (LOS)		Α	Α	Α	Α					D	Е	E
Approach Delay, s/veh / LOS	4.2		Α	5.2		Α	0.0			58.2	2	Е
Intersection Delay, s/veh / LOS				.6					-	Α		

Table 5. Delay and Level of Service for External Condition of 6th St. and Springfield Ave with Signal Timing Improvements

As seen in Table 6, the intersection delay for Wright St. and Springfield Ave external condition before improvements is 103.2 seconds per vehicle and the level of service is F. For the improved condition (Table 7), the delay dropped to 25.8 seconds per vehicle for a level of service of C. For the signal timing improvements, the eastbound left movement was decreased from eight seconds to 6 seconds, the east and westbound through movements were increased from 45 seconds to 74 seconds while the north and southbound through movements were decreased from 39 seconds to 13 seconds, and the northbound left movement was decreased from seven seconds to six seconds. The cycle length stayed at 116 seconds.

	Eas	tboun	d	We	stboı	ınd	No	rthbo	und	Sou	thbo	und
	L	L T R			Т	R	L	Т	R	L	T	R
Level of Service (LOS)	Е	С		С	F		С	С		С	С	
Approach Delay, s/veh / LOS	33.2	2	С	181.	7	F	22.	1	С	28.1		С
Intersection Delay, s/veh / LOS			103	3.2					ı	=		

Table 6. Delay and Level of Service for External Condition of Wright St. and Springfield Ave without Improvements

	Eas	stbour	ıd	We	stbou	nd	No	rthbo	und	Sou	thbou	and
	L	L T R			T	R	L	T	R	L	T	R
Level of Service (LOS)	С	Α		Α	С		D	D		D	E	
Approach Delay, s/veh / LOS	11.3	3	В	20.9)	С	48.	1	D	60.4	1	Е
Intersection Delay, s/veh / LOS			25	.8					(2		

Table 7. Delay and Level of Service for External Condition of Wright St. and Springfield Ave with Signal Timing Improvements

As seen in Table 8, the intersection delay for University Ave and 4th St. external condition before improvements is 20.4 seconds per vehicle and the level of service is C. For the improved condition (Table 9), the delay increased to 21.7 seconds per vehicle for a level of service of C. Although, this may seem counterintuitive this method actually decreased the approach delay for SB traffic by nearly 13 seconds, improving it from LOS D to LOS C. This small improvement was accomplished by increasing the the north and southbound through movements from 22 to 30 seconds and reducing yellow and All red times and the green time by 2 seconds in EW direction. The cycle length changed from 85.1 to 87 seconds overall.

	Eas	stboun	d	We	stbou	nd	No	rthbo	und	Sou	thbou	and
	L	L T R			Т	R	L	T	R	L	Т	R
Approach Delay, s/veh / LOS	15.	15.0 B		18.4	1	В	32.	2	С	47.5	5	D
Intersection Delay, s/veh / LOS			20	.4					(

Table 8. Delay and Level of Service for External Condition of University Ave and 4th St. without Signal Timing Improvements

	Eas	stboun	d	We	stbou	nd	No	rthbo	und	Sou	thbou	ınd
	L	L T R			T	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	18.	4	В	23.	1	С	23.	7	С	28.2		С
Intersection Delay, s/veh / LOS			21	.7					()		

Table 9. Delay and Level of Service for External Condition of University Ave and 4th St. with Signal Timing Improvements

As seen in Table 10, the intersection delay for University Ave and 4th St. external condition before improvements is 57.4 seconds per vehicle and the level of service is E. For the improved condition (Table 11), the delay decreased to 34.3 seconds per vehicle for a level of service of C. This major improvement was accomplished by allowing protected NS direction left turns as a phase for 10 seconds before transitioning to a 25 second permitted signal. The cycle length changed from 129.8.1 to 109.8 seconds overall.

	Eas	stboun	d	We	stbo	ound	No	rthbo	und	Sou	thbou	and
	L	L T R			Т	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	35.2 D		D	77.0)	Е	83.	9	F	48.3	3	D
Intersection Delay, s/veh / LOS			57	.4						E		

Table 10. Delay and Level of Service for External Condition of University Ave and Goodwin

Ave without Signal Timing Improvements

	Eas	stboun	d	We	stbou	nd	No	rthbo	und	Sou	thbou	ınd
	L	L T R		L	T	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	23.	23.6 C		39.	7	D	53.	4	D	33.0	6	С
Intersection Delay, s/veh / LOS	3-			.3						С		

Table 11. Delay and Level of Service for External Condition of University Ave and Goodwin

Ave with Signal Timing Improvements

As seen in Table 12, the intersection delay for University Ave and Wright St. external condition before improvements is 46.1 seconds per vehicle and the level of service is D. For the improved condition (Table 13), the delay decreased to 13.6 seconds per vehicle for a level of service of B. This major improvement was accomplished by severely cutting down the green time in the EW direction from 79 seconds to 52 seconds and dynamically shifting the profile of the signal. Although the EW directions were LOS A in the unimproved state, the NS directions were LOS F, so a significant change was necessary which resulted doubling the green time for NS directions and subtracting nearly 27 seconds from EW directions. The cycle length changed from 98.8 to 75.5 seconds overall.

	Eas	stboun	d	We	stbo	ınd	No	rthbo	und	Sou	thbou	ınd
	L	L T R			Т	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	5.3		Α	5.8		Α	318	.8	F	190.	7	F
Intersection Delay, s/veh / LOS				.1					[)		

Table 12. Delay and Level of Service for External Condition of University Ave and Wright St.

without Signal Timing Improvements

	Eas	tboun	d	We	stbo	ound	No	rthbo	und	Sou	thbo	und
	L	L T R			Т	R	L	Т	R	L	T	R
Approach Delay, s/veh / LOS	9.5 A		10.3	3	В	34.	4	С	32.9	9	С	
Intersection Delay, s/veh / LOS				.6					I	В		

Table 13. Delay and Level of Service for External Condition of University Ave and Wright St.

without Signal Timing Improvements

Combined Condition

As seen in Table 14, the intersection delay for 4th St. and Springfield Ave combined condition before improvements is 21.1 seconds per vehicle and the level of service is C. For the improved condition (Table 15), the delay dropped to 20.5 seconds per vehicle for a level of service of C. For the improvements, the north and southbound through movements were increased from 15 seconds to 17 seconds and the northbound left movement decreased from 7 seconds down to 6 seconds. The cycle length went up from 92 seconds to 93 seconds.

	Eas	tboun	ıd	We	stbou	nd	No	rthbo	und	Sou	thbou	ınd
	L	L T R		L	Т	R	L	Т	R	L	T	R
Level of Service (LOS)	Α	A		Α	Α		С	С		С	D	
Approach Delay, s/veh / LOS	8.8		Α	5.8		Α	31.	7	С	42.6	5	D
Intersection Delay, s/veh / LOS				.1					(С		

Table 14. Delay and Level of Service for Combined Condition of 4th St. and Springfield Ave without Improvements

	Eas	stbour	nd	We	stbou	ınd	No	orthbo	und	Sou	thbo	und
	L	L T R I		L	T	R	L	Т	R	L	Т	R
Level of Service (LOS)	A	A A		Α	Α		С	С		С	D	
Approach Delay, s/veh / LOS	9.3		Α	6.1		Α	31.2	2	С	39.2		D
Intersection Delay, s/veh / LOS			20	.5					C)		

Table 15. Delay and Level of Service for Combined Condition of 4th St. and Springfield Ave with Improvements

As seen in Table 16, the intersection delay for 6th St. and Springfield Ave combined condition before improvements is 17.1 seconds per vehicle and the level of service is B. For the improved condition (Table 17), the delay dropped to 16.3 seconds per vehicle for a level of service of B. For the improved condition, the westbound through movement was decreased from 94 seconds to 84 seconds leading to the cycle length to decrease from 120 seconds to 114 seconds.

	Eas	stbour	nd	We	stbou	ınd	No	rthbo	und	Sou	thbo	und
	L	T	R	L	T	R	L	T	R	L	T	R
Level of Service (LOS)		Α	Α		Α					D	D	
Approach Delay, s/veh / LOS	3.8		Α	3.8		Α	0.0			43.8		D
Intersection Delay, s/veh / LOS			17	'.1					E	3		

Table 16. Delay and Level of Service for Combined Condition of 6th St. and Springfield Ave without Improvements

	Eas	stboun	ıd	We	stbou	nd	No	rthbo	und	Sou	thbo	und
	L	T	R	L	T	R	L	Т	R	L	Т	R
Level of Service (LOS)		Α	Α		Α					D	D	
Approach Delay, s/veh / LOS	4.0		Α	4.0		Α	0.0			40.8		D
Intersection Delay, s/veh / LOS			16	.3					E	3		

Table 17. Delay and Level of Service for Combined Condition of 6th St. and Springfield Ave with Improvements

As seen in Table 18, the intersection delay for Wright St. and Springfield Ave combined condition before improvements is 15.8 seconds per vehicle and the level of service is B. For the improved condition (Table 19), the delay dropped to 14.9 seconds per vehicle for a level of service of B. For the improved condition, the east and westbound through movements were decreased from 45 seconds to 40 seconds leading to the cycle length to decrease from 95 seconds to 90 seconds.

	Eas	stboun	d	We	stbo	und	No	rthbo	und	Sou	thbou	und
	L	Т	R	L	Т	R	L	T	R	L	T	R
Level of Service (LOS)												
Approach Delay, s/veh / LOS	13.8	В	В	13.7	7	В	17.2	2	В	17.6		В
Intersection Delay, s/veh / LOS			15	.8					E	3		

Table 18. Delay and Level of Service for Combined Condition of Wright St. and Springfield Ave without Improvements

	Eas	stbour	nd	We	stbou	ınd	No	rthbo	und	Sou	thbou	ınd
	L	T	R	L	T	R	L	T	R	L	T	R
Level of Service (LOS)												
Approach Delay, s/veh / LOS	14.6	5	В	14.5	5	В	15.0)	В	15.4		В
Intersection Delay, s/veh / LOS			14	l.9					E	3		

Table 19. Delay and Level of Service for Combined Condition of Wright St. and Springfield Ave with Improvements

As seen in Table 20, the intersection delay for University Ave and 4th St combined condition before improvements is 34.8 seconds per vehicle and the level of service is C. For the improved condition (Table 21), the delay dropped to 19.5 seconds per vehicle for a level of service of B. For the improvements, the north and southbound through movements were increased from 22 seconds to 35 seconds and the northbound left movement decreased from 51.9 seconds down to 45 seconds. The cycle length went up from 85.6 seconds to 87 seconds.

	Eas	Eastbound L T R 9.5 A			stbou	nd	No	rthbo	und	Sou	thbou	ınd
	L	L T R		L	Т	R	L	T	R	L	Т	R
Approach Delay, s/veh / LOS	9.5		À	11.9		В	116.	8	F	54.0		D
Intersection Delay, s/veh / LOS			34.	8					C	;		

Table 20. Delay and Level of Service for Combined Condition of University Ave and 4th St. without Improvements

	Eas	stboun	d	We	stbo	und	No	rthbo	ound	Sou	thbo	und
	L	Т	R	L	Т	R	L	Т	R	L	Т	R
Approach Delay, s/veh / LOS	14.	5	В	18.5	5	В	28.	4	С	21.3	3	С
Intersection Delay, s/veh / LOS			19	.5						В		

Table 21. Delay and Level of Service for Combined Condition of University Ave and 4th St.

with Improvements

As seen in Table 22, the intersection delay for University Ave and Goodwin Ave combined condition before improvements is 37 seconds per vehicle and the level of service is D. For the improved condition (Table 23), the delay dropped to 26.1 seconds per vehicle for a level of service of C. For the improvements, more phases were added to accommodate for the heavy traffic going EW from all directions. By adding a protected NS left turning phase and an all thru movement N phase of 8 and 2 seconds each respectively (refer to combined phase diagram) the LOS approach delay for the NS direction decreased by nearly 20 seconds both directions. The cycle length decreased from 128.9 seconds to 111.8 seconds.

	Eas	L T R			stbo	ound	No	rthbo	und	Sou	thbou	and
	L			L	T	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	30.0) (C	28.0)	С	66.	2	E	44.2		D
Intersection Delay, s/veh / LOS			37	.0)		

Table 22. Delay and Level of Service for Combined Condition of University Ave and Goodwin

Ave without Improvements

	Eas	stbour	ıd	We	stbo	ound	No	rthbo	und	Sou	thbou	und
	L	Т	R	L	T	R	L	Т	R	L	Т	R
Approach Delay, s/veh / LOS	24.	3	С	22.8	3	С	34.	5	С	29.2		С
Intersection Delay, s/veh / LOS			26	.1					()		

Table 23. Delay and Level of Service for Combined Condition of University Ave and Goodwin

Ave with Improvements

As seen in Table 24, the intersection delay for University Ave and Wright St. combined condition before improvements is 7.1 seconds per vehicle and the level of service is A. For the improved condition (Table 25), marginally increased to 7.2 seconds per vehicle for a level of service of A. For the improvements, the north and southbound through movements were increased from 9.8 seconds to 15 seconds and the EW green time movement decreased from 79 seconds down to 48 seconds. The cycle length went down from 98.8 seconds to 68.5 seconds.

	Eas	stboun	d	We	stbou	nd	No	rthbo	und	Sou	thbou	ınd
	L	L T F		L	T	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	4.1 A		3.7		Α	45.	0	D	50.3	3	D	
Intersection Delay, s/veh / LOS			7.	1					-	4		

Table 24. Delay and Level of Service for Combined Condition of University Ave and Wright St.

without Improvements

	Eas	stboun	d	We	stbo	und	No	rthbo	ound	Sou	thbo	und
	L			L	T	R	L	T	R	L	T	R
Approach Delay, s/veh / LOS	6.2	2	Α	5.7		A	22.	5	С	23.5		С
Intersection Delay, s/veh / LOS			7.	2						4		

Table 25. Delay and Level of Service for Combined Condition of University Ave and Wright St.

without Improvements

Results Summary

In summary, in order to improve the delay and level of service at the six intersections signal timing and phase improvements were made. The majority of the intersections were improved with signal timing changes, but there were also some phase changes. To estimate the cost, an hourly cost of \$75 for a technician is assumed for them to go to an intersection to adjust the signal timing and phases to the improved versions. Each intersection is assumed to take an hour to update the timing and phases for a total of six hours for the six intersections. Travel must also be added and is assumed to be a total of one hour. The total cost is then calculated to be \$525 for seven total hours of a technician at \$75 an hour.

Conclusions and Recommendations

In order to mitigate the impact of the proposed projects by SCDI we recommend that a majority of the roadway renovations be signal timing improvements in order to efficiently control traffic movement. After conducting the HCS simulations based on both the external and combined conditions we concluded that the most cost effective and efficient solutions would involve both reallocating the green times for certain phases and appending more phases with stricter movements. These decisions were established by adhering to IDOT standards of pursuing a LOS C level; because LOS F is a breakdown condition, LOS E is the bare minimum standard for operational capacity and LOS B is the upper tier of design. Therefore, all the "Improved" sections were optimized for LOS C and any A or B level were a byproduct of already stellar design. After considering all these improvements we also assumed according to the Institute of Transportation Engineers stating that updates to signal timing costed \$3000/intersection in 2005 [1]. Adjusting to inflation (33%) the cost per intersection would be about 4000\$/intersection in

2023 and the total costs of the transportation aspect of this project can be assumed to be \$24,000 plus \$525 of technician cost to a total of \$24,525 for all intersection changes.

Citations

I. (2007, January 19). National Traffic Signal Report Card: Technical Report 2005. Retrieved December 09, 2020, from https://www.itskrs.its.dot.gov/its/benecost.nsf/ID/215f723db93d293c8525725f00786fd8

Appendix

	HCS	7 S ig	n a lize	d In	te rs e c	tion R	Resi	ı 1ts	Sum	nmar	y				
General In formation								In to	ersec	tion In fo	om atio	n	_	11	Ja ly
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Analyst Elliott V	Wittmeyer		Analys	is Dat	e 11/20/	2020		Are	а Тур	e	Other		<u> </u>		
Jurisdiction			Time F	eriod				PH	F		0.92				
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Intersection 4th and	d Springfield		File Na	ıme	4than	dS pring	fie ld u	nimp	proved	l.xus				ጎ ነ	
Project Description													T	4144	7
Dem and Information				EB			W	/B			NB			SB	
Approach Movement			L	Т	R	L	Τ,	Г	R	L	Т	R	L	Т	R
Demand (v), veh/h			100	541	63	49	8:	33	69	105	237	70	49	138	63
			li-												
Signal In formation				, ;	딃									τ .	\mathbf{A}
	ence Phase	2		₿'	' 5 11	7 S1	<u>اح</u>					1	↔ ₂ :] 3	4
	ence Point	End	Green	60.0	7.0	15.0	0.	0	0.0	0.0			Ž.	_	
	. Gap E/W	On	Yellow		0.0	3.0	0.		0.0	0.0			7		V
Force Mode Fixed Simult	. Gap N/S	On	Red	2.0	0.0	2.0	0.	0	0.0	0.0		5	6	7	8
m: D I			EDI	_	EDE	NVD.	·	XX	mm.	NIDI	.	NIDIT	G D	.	G.D.T.
Tim er Results			EBI	-	EBT	WB	L		ВТ	NBI	_	NBT	SBI	_	SBT
Assigned Phase				+	2	_	-	_	6	3		8			4
Case Number			_	+	6.0	\vdash	\rightarrow		.0	1.0	_	4.0	_		6.3
Phase Duration, s			_	+	65.0		\rightarrow		5.0	7.0		27.0			20.0
Change Period, (Y+Rc), s			_	_	5.0	_	-		.0	0.0		5.0	_		5.0
Max Allow Headway (MAH),				_	3.3	_	_		.3	3.1		3.2	_	_	3.2
	eue Clearance Time (g s), s en Extension Time (g e), s				54.2	_	-		3.3	6.7		18.0	-		15.6
	en Extension Time (g e), s				2.9	_	_		.5	0.0		0.0	_		0.0
	ase Call Probability				1.00	_	\rightarrow		00	1.00	_	1.00	_		1.00
Max Out Probability	x Out Probability			_	0.74			0.	10	1.00)	1.00			1.00
Movement Group Results				EB			W	В			NB			SB	
Approach Movement			L	Т	R	L	Т	_	R	L	Т	R	L	Т	R
Assigned Movement			5	2	12	1	6		16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	1		109	657	1	53	980	0	-	114	334		53	218	1
Adjusted Saturation Flow Rate		ln	574	1792		777	184	-		1781	1797		1046	1763	
Queue Service Time (g s), s	(-, /)		16.0	18.5		3.7	36.	-		4.7	16.0		4.6	10.9	
Cycle Queue Clearance Time	(g c), S		52.2	18.5		22.2	36.	_		4.7	16.0		13.6	10.9	
Green Ratio (g/C)	(8 - 7) -		0.65	0.65		0.65	0.6	_		0.26	0.24		0.16	0.16	
Capacity (c), veh/h			226	1169	_	429	120	_		266	430		147	288	
Volume-to-Capacity Ratio (X))		0.481	0.562		0.124	0.81	-		0.430	0.777		0.363	0.760	
Back of Queue (Q), ft/ln (50)	65.4	168.1	_	17.7	358	-		58.1	209.4		36.7	150.5	
Back of Queue (Q), veh/ln (5			2.6	6.6		0.7	14.	-		2.3	8.2		1.4	5.9	
Queue Storage Ratio (RQ)(0.00	0.00	1	0.00	0.0	-		0.00	0.00		0.00	0.00	
Uniform Delay (d1), s/veh			31.3	8.8		14.9	11.	-		27.9	32.7		42.3	36.8	
Incremental Delay (d2), s/vel	• • • • • • • • • • • • • • • • • • • •			2.0		0.6	6.1	_		5.0	12.9		6.8	17.1	
itial Queue Delay (d 3), s/veh			7.1	0.0		0.0	0.0	$\overline{}$		0.0	0.0		0.0	0.0	
ontrol Delay (d), s/veh			38.4	10.7		15.5	18.	_		32.9	45.6		49.1	53.9	
Level of Service (LOS)		D	В		В	В	_		С	D		D	D		
Approach Delay, s/veh / LOS			14.7		В	17.9	_		В	42.4		D	53.0		D
Intersection Delay, s/veh / LOS						5.0							С		
	neisection Being, syven / Bos														
lultim odalResults				EB			W	В			NB			SB	
				_				_						_	
Pedestrian LOS Score / LOS			1.87		В	1.8	7	I	В	1.93	<u> </u>	В	1.94	<u> </u>	В

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Approach Move	ment			L	Т	R	L	Т	R	L	Т	R	L	Т	R
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1 ofce Mode	1 IVER	Sanua. Gap 14/3	Oli	Keu	2.0	10.0	12.0	0.0	10.0	0.0					
T D 14 .				EDI		EDT	WD	r I	WDT	ND	r	NDT	C D		CDT
Tim er Results				EBI	-	EBT	WB	L	WBT	NB:	L	NBT	SB	L	SBT
Assigned Phase	e				_	2	_	-	6	3	_	8	_	_	4
Case Number					_	6.0		_	6.0	1.0		4.0	_	_	6.3
Phase Duration						62.0		\perp	62.0	6.0		27.0			21.0
Change Period,	(Y+R)	c), s				5.0			5.0	0.0		5.0			5.0
Max Allow Head	Allow Headway (MAH), s					3.3			3.3	3.1		3.2			3.2
Queue Clearan	ue Clearance Time (g s), s				:	54.2			38.3	6.4		17.3			15.7
Green Extensio						1.6			5.3	0.0		0.0			0.1
Phase Call Prol	en Extension Time (g e), s se Call Probability					1.00			1.00	1.00)	1.00			1.00
Max Out Proba	se Call Probability					1.00			0.15	1.00)	1.00			1.00
M ovem entGro	un Res	su Its			EB			WB			NB			SB	
Approach Move				L	T	R	L	Т	R	L	Т	R	L	T	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
) voh/h		109	657	12	53	980		114	334	10	53	218	17
Adjusted Flow I				574	1792		777	1845		_	1797		1046	1763	
		ow Rate (s), veh/h/l	11	_					_	1781		-			-
Queue Service				16.0	18.5		3.7	36.3	_	4.4	15.3		4.4	10.3	
Cycle Queue C		e Time (g c), s		52.2	18.5		22.2	36.3	-	4.4	15.3		13.7	10.3	-
Green Ratio (g.				0.64	0.64		0.64	0.64	_	0.27	0.25		0.18	0.18	
Capacity (c), v				214	1148		417	1182		275	444		160	317	
Volume-to-Capa	acity Ra	ttio (X)		0.507	0.572		0.128	0.830)	0.415	0.751		0.333	0.689	
		/ln (50 th percentile)		66.6	168.7		17.8	363.3		55	196.4		34.4	134.7	
Back of Queue	(Q), vo	eh/ln (50 th percenti	le)	2.6	6.6		0.7	14.3		2.2	7.7		1.4	5.3	
Queue Storage	Ratio (RQ) (50 th percent	ile)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay ((d1), s	/ve h		32.3	9.1		15.4	12.3		26.3	31.0		40.1	34.2	
Incremental De	lay (d 2), s/veh		8.3	2.1		0.6	6.8		4.6	11.1		5.5	11.6	
Initial Queue De	-			0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (40.6	11.2		16.0	19.1		30.9	42.1		45.6	45.8	
	evel of Service (LOS)			D	В		В	В		C	D		D	D	
	pproach Delay, s/veh / LOS			15.3		В	18.9		В	39.2		D	45.8		D
	Approach Delay, s/veh / LOS ntersection Delay, s/veh / LOS			15.5			1.3		ь	39.2			C 43.6	,	D
	icisection Beary, s/ven / Los														
MultimodalRe	s u lts				EB			WB			NB			SB	
D - 1 1 OC	destrian LOS Score / LOS		1.87	'	В	1.87	7	В	1.93	3	В	1.93	3	В	
Bicycle LOS Sc															

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Dem and Information	n			EB			W	В		NB			SB	
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Offset, s 0	Reference Point	End	Green	60.0	7.0	15.0	0.0	0.0	0.0					
Uncoordinated Ye	1	On	Yellow		0.0	3.0	0.0	_	0.0			Y		Ψ
Force Mode Fixe	d Simult. Gap N/S	On	Red	2.0	0.0	2.0	0.0	0.0	0.0		5	6	7	8
Time and December			ED		EDT	11/20	r I	WDT	NID		NDT	C D		CDT
Tim er Results Assigned Phase			EBI		EBT 2	WB	L	WBT 6	NBI		NBT 8	SBI	L .	SBT 4
			_		_		+		_			_		
Case Number			_	_	6.0		+	6.0	1.0		4.0		_	6.3
Phase Duration, s	n \		-	_	65.0		+	65.0	7.0		27.0			20.0
Change Period, (Y+			_	_	5.0		-	5.0	0.0		5.0	_	_	5.0
Max Allow Headway			_	_	3.2		-	3.2	3.1		3.1			3.1
Queue Clearance Ti				_	15.3		-	3.2	3.7		10.1		_	9.6
Green Extension Tin				_	1.0		+	1.0	0.0		0.3			0.4
Phase Call Probabil	ty			_	1.00		+	1.00	1.00	_	1.00		_	1.00
Max Out Probability					0.00		_	0.00	0.74		0.24			0.17
MovementGroup R	e s u lts			EB			WB			NB			SB	
Approach Movemen			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Movement			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate			371	60		3	51		43	192		3	163	
	Flow Rate (s), veh/h/l	ln	1354	1745		1343	1842	2	1781	1859		1191	1804	
Queue Service Time			12.4	1.1		0.1	0.9		1.7	8.1		0.2	7.6	1
Cycle Queue Cleara			13.3	1.1		1.2	0.9		1.7	8.1		1.3	7.6	
Green Ratio (g/C)			0.65	0.65		0.65	0.65		0.26	0.24		0.16	0.16	
Capacity (c), veh/h			948	1138		938	120		311	445		258	294	
Volume-to-Capacity	Ratio (X)		0.391	0.053		0.003	0.04		0.140	0.433		0.013	0.554	
	, ft/ln (50 th percentile))	86.6	9.8		0.6	8.2		19.9	98.6		1.7	98.4	
	, veh/ln (50 th percenti		3.4	0.4		0.0	0.3		0.8	3.9		0.1	3.9	
	o(RQ) (50 th percent		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d1)			8.1	5.8		6.0	5.7		26.3	29.7		33.2	35.4	
Incremental Delay (1.2	0.1		0.0	0.1		0.9	3.1		0.1	7.3	
Initial Queue Delay			0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s			9.3	5.9		6.0	5.8		27.2	32.8		33.3	42.8	
Level of Service (LO			A	A		A	A		С	С		С	D	
Approach Delay, s/v			8.8		A	5.8		A	31.7		С	42.6		D
Intersection Delay, s					21							С		
MultimodalResults				EB			WB			NB			SB	
	destrian LOS Score / LOS					1.87	, T	В	1.93	,	В	1.94	1	В
Pedestrian LOS Sco	re / LOS		1.87		В	1.67			1.7.	<u> </u>	ь	1.5-	+	

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	HCS7S	ig n a lize	ed In	te rs e c	tion R	esu	lts S u	n m ar	V				
		Ü							<u> </u>				
General In form ation							In tersec	tion In f	òm ati	on		14741	Jan II.
Agency							Duration	, h	0.250)		41	
Analyst	Elliott Wittmeyer	Analy	sis Dat	e 11/20/	/2020	T	Are a Ty	oe .	Othe	r	4		
Jurisdiction		Time	Period	1		\neg	PHF		0.92				÷
Urban Street		\rightarrow		r 2020		\rightarrow	Analysis	Period	1> 7:	00			
	4th and Springfield	File N			dSnring		provedC					K 4.	·
Project Description	Tur una Springheia	T lie 1	ume	Turum	dopinis	пски	iproveuc	omome	u.xus		- 4	14 14 4	7
Troject Bescription													
Dem and In form ation			EB			W	В		NB			SB	
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		341	41	14	3	43	3 4	40	171	6	3	123	27
			1		1 11:		_						
Signal In formation	n.c. n. 1 -		,		1						,	ζ.	人
Cycle, s 93.0	Reference Phase 2	_	Ħ	' ˌ ፕϯ	7 ST	اح				1	♦ 2	3	-+ -
Offset, s 0	Reference Point Er	- Greer	60.0	6.0	17.0	0.0	0.0	0.0			Ā		
Uncoordinated Yes	Simult. Gap E/W O	n Ye llov	-	0.0	3.0	0.0	_	0.0			7		W
Force Mode Fixed	Simult. Gap N/S O	n Red	2.0	0.0	2.0	0.0	0.0	0.0		5	6	7	1
		1						1					
Tim er Results		EB	L	EBT	WB	L	WBT	NB:	L	NBT	SB	L	SBT
Assigned Phase		_	_	2		_	6	3	_	8	_		4
Case Number		_		6.0		_	6.0	1.0	_	4.0			6.3
Phase Duration, s		_		65.0		\perp	65.0	6.0		28.0	_	_	22.0
Change Period, (Y+R c	·), s	_	_	5.0		_	5.0	0.0		5.0			5.0
Max Allow Headway (M	<i>MAH</i>), s			3.2			3.2	3.1		3.1			3.1
Queue Clearance Time	(g s), s			15.7			3.3	3.7		10.1			9.5
Green Extension Time ((ge), s			1.0			1.0	0.0		0.4			0.4
Phase Call Probability				1.00			1.00	1.00)	1.00			1.00
Max Out Probability				0.00			0.00	1.00)	0.05			0.03
MovementGroupRes	n 1te	_	EB			WB			NB			SB	
Approach Movement	u its	L	Т	R	L	Т	R	L	Т	R	L	Т	R
		5	2	12	1	6	16	3	8	18	7	4	14
Assigned Movement	\ 1.0	_		12	_	-	10		_	18		· ·	14
Adjusted Flow Rate (v		371	60	-	3	51	_	43	192		3	163	-
Adjusted Saturation Flo		1354	1745		1343	1842		1781	1859		1191	1804	
Queue Service Time (g		12.8	1.2		0.1	0.9		1.7	8.1		0.2	7.5	
Cycle Queue Clearance	11me (g c), s	13.7	1.2		1.3	0.9	-	1.7	8.1		2.3	7.5	
Green Ratio (g/C)		0.65	0.65		0.65	0.65	_	0.27	0.25		0.18	0.18	
Capacity (c), veh/h		937	1126		927	1188		317	460		268	330	
Volume-to-Capacity Rat		0.396	_		0.004	0.043	3	0.137	0.418		0.012	0.494	
Back of Queue (Q), ft/		90.1	10.2		0.6	8.6		19.8	98.1		1.7	94	
Back of Queue (Q), ve		3.5	0.4		0.0	0.3		0.8	3.9		0.1	3.7	
Queue Storage Ratio (0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d1), s/		8.5	6.1		6.3	6.0	-	26.0	29.4		32.9	34.1	
Incremental Delay (d 2		1.3	0.1		0.0	0.1		0.9	2.8		0.1	5.2	
Initial Queue Delay (d		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/ve	h	9.8	6.2		6.3	6.1		26.9	32.2		33.0	39.4	
Level of Service (LOS)		A	A		A	A		C	C		C	D	
Approach Delay, s/veh	/ LOS	9.3		A	6.1		A	31.2	2	С	39.2	2	D
Intersection Delay, s/ve	h / LOS			20).5						С		
MultimodalResults			EB			WB			NB			SB	
Pedestrian LOS Score		1.8	-	В	1.87	-	В	1.93	-	В	1.94	-	В
Bicycle LOS Score / LO	S	1.2	0	A	0.58	3	A	0.88	3	A	0.76	5	A

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		HCS	7 S ig	n a lize	d In to	ersec	tion R	esu	lts Sur	n m ar	y				
General In fom	a tio n								In tersec	tion In fo	om atio	o n		네시하니	يا مل
Agency									Duration	, h	0.250)		711	
Analyst		Elliott Wittmeyer		Analys	is Date	11/20/	2020	\neg	Are a Typ	ie	Other		A		4
Jurisdiction				Time I				\neg	PHF		0.92		- 4		
Urban Street				_	is Year	2020		\rightarrow	Analysis	Period	1> 7:	00			'
Intersection		6th and Springfield		File N			dS pring		nimprove		1/ /.	00			-
	tion.	our and 5 pringheid		I'lle IV	anic	Othan	uspring	ne ia o	imipiove	u.xus			- 4	14147	tr (*
Project Descrip	иоп														
Dem and Infom	ation				EB			W	R		NB			SB	
Approach Move				L	T	R	L	T	_	L	T	R	L	T	R
Demand (v), v				L	467	193	56	90	_	L	1		18	62	45
Demand (V), V	C11/11				407	193	30	90	0				10	02	43
Signal In form a	tion				T	T		$\overline{}$	T						$\overline{}$
Cycle, s	119.6	Reference Phase	2	1	2	=∟. :					×	_			小
Offset, s	0	Reference Point	End									1	Y 2	3	4
	-			Green	-	84.0	19.0	0.0	-	0.0					
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		3.2	3.0	0.0	_	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.2	2.2	0.0	0.0	0.0		3	6	7	8
								_							
Tim er Results				EBI	L	EBT	WB	L	WBT	NBI	_	NBT	SB	L	SBT
Assigned Phase	2			\perp		2	1	_	6						4
Case Number						7.3	1.0		4.0						9.0
Phase Duration	ase Duration, s					89.4	6.0		95.4						24.2
Change Period,	(Y+R)	c), s				5.4	0.0		5.4						5.2
Max Allow Head	lway (I	<i>MAH</i>), s				3.1	3.1	\neg	3.1						3.2
Queue Clearan	ce Time	(gs), s				15.3	3.0		34.9						5.8
Green Extensio						4.3	0.0	\neg	4.3					\neg	0.2
Phase Call Prol		(8 - 7/ -				1.00	1.00	-	1.00						1.00
Max Out Proba					_	0.00	1.00	-	0.00					_	0.00
MovementGro	up Res	u lts			EB			WB			NB			SB	
Approach Move	ment			L	T	R	L	Т	R	L	T	R	L	T	R
Assigned Move	ment				2	12	1	6					7	4	14
Adjusted Flow I	Rate (v), veh/h			508	210	61	985					20	67	49
		ow Rate (s) , veh/h/l	n		1870	1579	1781	1870					1781	1870	1579
Queue Service					13.3	5.5	1.0	32.9	_				1.1	3.8	3.2
Cycle Queue C					13.3	5.5	1.0	32.9	_				1.1	3.8	3.2
Green Ratio (g		c inic (g t), s			0.70	0.70	0.77	0.75					0.16	0.16	0.16
Capacity (c), v				_	1314	1109	677	1407	$\overline{}$				283	297	251
		tio (V)				0.189	0.090	0.700					0.069	0.227	0.195
Volume-to-Capa				_	0.386			_							
		/In (50 th percentile)			128.3	44.7	8.5	298.0					13.4	47.8	34.9
		eh/ln (50 th percenti			5.1	1.8	0.3	11.8					0.5	1.9	1.4
		RQ) (50 th percent	hle)		0.00	0.00	0.00	0.00					0.00	0.00	0.00
Uniform Delay (7.3	6.1	4.3	7.7					42.8	43.9	43.7
Incremental De					0.9	0.4	0.3	2.9					0.5	1.8	1.7
Initial Queue De					0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (d), s/ve	eh			8.1	6.5	4.6	10.7					43.3	45.7	45.4
Level of Service	(LOS)				A	A	A	В					D	D	D
Approach Delay	y, s/veh	/ LOS		7.7		A	10.3	3	В	0.0			45.2	2	D
Intersection De							.8						В		
					EB										
	ltim oda1Results							WB			NB			SB	
				1.35	5	A	1.85	5	В	1.96	5	В	1.97	7	В
	cle LOS Score / LOS				7	В	2.21		В				0.71		A

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	HCS	7 S ig :	n a lize	d In t	ersec	tion R	esu	lts Sun	nmar	y				
General In formation								In te rs e c	tion In fo	om atio	on		111	له الر
Agency								Duration,	, h	0.250)		244	1
Analyst	Elliott Wittmeyer		Analys	is Date	11/20/	2020		Are a Typ	e	Other	r	.A.		A. 5-
Jurisdiction			Time I	Period				PHF		0.92		*		-
Urban Street			Analys	is Year	2020			Analysis	Period	1> 7:	00			¥
Intersection	6th and Springfield		File Na	ame	6than	dSpring	fie ld Im	proved.x	us					
Project Description												1	14144	17 17
									1					
Dem and Information			_	EB		-	WI	_	-	NB		-	SB	_
Approach Movement			L	T	R	L	Т	_	L	T	R	L	T	R
Demand (v), veh/h		_	_	467	193	56	90	6				18	62	45
Signal In formation				T	1		1		7					т
Cycle, s 108.6	Reference Phase	2		2	≒ :					×	<u> </u>	_		小
Offset, s 0	Reference Point	End			3						1	Y 2	3	4
Uncoordinated Yes	Simult. Gap E/W	On	Green		84.0	8.0	0.0	-	0.0					
Force Mode Fixed		On	Ye llow Red	0.0	3.2	3.0	0.0	0.0	0.0		5	6	7	8
1 incu	5 mail: Oup 17/0	On-		,	,		10.0	3.0	10.0					
Tim erResults			EBI	.	EBT	WB	L	WBT	NBI	.	NBT	SBI	L	SBT
Assigned Phase					2	1	\neg	6						4
Case Number					7.3	1.0		4.0						9.0
Phase Duration, s					89.4	6.0	\neg	95.4						13.2
Change Period, (Y+R	c), s				5.4	0.0		5.4						5.2
Max Allow Headway (3.1	3.1	-	3.1						3.2
Queue Clearance Tim					11.2	2.6	_	22.7						5.8
Green Extension Time					4.3	0.0	-	4.3						0.0
Phase Call Probability					1.00	1.00	_	1.00				1		1.00
Max Out Probability				_	0.00	0.63	-	0.00						1.00
	,						***							
MovementGroupRe	s u lts		_	EB	1 -		WB	T -	_	NB	T -	_	SB	
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				2	12	1	6					7	4	14
Adjusted Flow Rate (1				508	210	61	985					20	67	49
Adjusted Saturation F		ln		1870	1579	1781	1870	_				1781	1870	1579
Queue Service Time (9.2	3.8	0.6	20.7	_				1.1	3.8	3.2
Cycle Queue Clearand	ce Time (g c), s			9.2	3.8	0.6	20.7	_				1.1	3.8	3.2
Green Ratio (g/C)				0.77	0.77	0.85	0.83					0.07	0.07	0.07
Capacity (c), veh/h			_	1447	1221	779	1550				-	131	138	116
Volume-to-Capacity R				0.351	0.172	0.078	0.635	_				0.149	0.489	0.421
Back of Queue (Q) , f				72.4	25.4	3.4	130.3	5				14.7	55.7	40.7
Back of Queue (Q), v				2.8	1.0	0.1	5.1					0.6	2.2	1.6
Queue Storage Ratio		tile)		0.00	0.00	0.00	0.00					0.00	0.00	0.00
Uniform Delay (d1),				3.8	3.2	1.9	3.4					47.1	48.3	48.1
Incremental Delay (d				0.7	0.3	0.2	2.0					2.4	11.9	10.8
Initial Queue Delay (d				0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (d), s/v				4.5	3.5	2.1	5.4					49.5	60.2	58.9
Level of Service (LOS			4.2	A	A	A 5.2	A	1	0.0			D 50 1	E	E
Approach Delay, s/veh			4.2		A	5.2		A	0.0			58.2	2	Е
Intersection Delay, s/v	cii / LOS				8	.6						A		
				EB			WB			NB			SB	
l M ii ltim oda l Resii lts –	destrian LOS Score / LOS									- 120				
MultimodalResults Pedestrian LOS Score	:/LOS		1.32		A	1.82	2	В	1.96	<u> </u>	В	1.96	5	В

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		HCS	7 S ig:	n a lize	d In to	e rs e c	tion R	l esu l	lts Sur	nmar	y				
General In fom	a tio n							1	In tersec	tion In fo	om atio	n] [[Ja ly
Agency								1	Duration	, h	0.250)		K + A	Y.
Analyst		Elliott Wittmeyer		Analys	is Date	11/20/	2020	1	Are a Typ	e	Other	r	<i>∆</i>		A. 5-
Jurisdiction				Time I	Period			I	PHF		0.92				<u></u>
Urban Street				Analys	is Year	2020		1	Analysis	Period	1>7:0	00	*		ý.
Intersection		6th and Springfield		File Na	ıme	6than	dSpring	fie ld Un	improve	dCombi	ned.xus	s			
Project Descrip	tion												T	14144	7 1
							,			,			_		
Dem and Inform				_	EB		+	WB	_	-	NB		-	SB	
Approach Move				L	T	R	L	Т	R	L	T	R	L	T	R
Demand (v), v	e h/h	_	-		40	10	0	50	_	_			14	36	0
Signal In form a	tion							\Box		\top					
Cycle, s	119.6	Reference Phase	2	1	7	₹ ₹					¥		\leftrightarrow		4
Offset, s	0	Reference Point	End	Green	0.0	90.0	19.0	0.0	0.0	0.0		1	Y 2	3	4
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	-	3.2	3.0	0.0	0.0	0.0	_		✓		
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.2	2.2	0.0	0.0	0.0		5	6	7	8
Tim erResults				EBI		EBT	WB	L	WBT	NBI		NBT	SB	L	SBT
Assigned Phase	e					2	1		6						4
Case Number						7.3	1.0		4.0						9.0
Phase Duration	, s					95.4	0.0		95.4					\neg	24.2
Change Period,	(Y+R)	c), s				5.4	0.0		5.4						5.2
Max Allow Head						3.1	0.0		3.1						3.1
Queue Clearan						2.7			2.9						4.1
Green Extensio						0.2	0.0		0.2						0.0
Phase Call Prol		(8 - 7, -				1.00		\neg	1.00				1		1.00
Max Out Proba					_	0.00			0.00						0.00
M ovem entGro	up Res	s u lts			EB			WB			NB			SB	
Approach Move	ment			L	T	R	L	Т	R	L	T	R	L	Т	R
Assigned Move	ment				2	12	1	6					7	4	14
Adjusted Flow I), ve h/h			43	11	0	54					15	39	0
		ow Rate (s), veh/h/l	ln		1870	1579	1781	1870					1781	1870	1579
Queue Service					0.7	0.2	0.0	0.9					0.9	2.1	0.0
Cycle Queue C					0.7	0.2	0.0	0.9					0.9	2.1	0.0
Green Ratio (g	/C)				0.75	0.75	0.77	0.75	i				0.16	0.16	0.16
Capacity (c), v	e h/h				1407	1188	1079	1407					283	297	251
Volume-to-Capa		tio (X)			0.031	0.009	0.000	0.039					0.054	0.132	0.000
Back of Queue	(Q), ft	/ln (50 th percentile))		6.2	1.5	0	7.8					10.4	27.2	0
		eh/ln (50 th percenti			0.2	0.1	0.0	0.3					0.4	1.1	0.0
		RQ) (50 th percent			0.00	0.00	0.00	0.00					0.00	0.00	0.00
Uniform Delay (,		3.8	3.7	0.0	3.8					42.7	43.2	0.0
Incremental De	. ,.				0.0	0.0	0.0	0.1					0.4	0.9	0.0
Initial Queue De					0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (3.8	3.7	0.0	3.8					43.0	44.1	0.0
Level of Service					A	A		A					D	D	
Approach Delay				3.8		A	3.8		A	0.0			43.8		D
Intersection De							7.1						В		
MultimodalDa	e 11 1te				FR			WP			NR			SR	
M ultim odalRe		/LOS		1.33	EB	A	1.85	WB	В	1.96	NB	В	1.9	SB	В

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	HCS	7 S ig	n a lize	d In t	ersec	tion R	esu	lts Sur	n m ar	y				
General In formation								In tersec	tion In f	om atio	on		141441	له اير
Agency								Duration	, h	0.250)		ገተሰ	
Analyst	Elliott Wittmeyer		Analys	is Date	11/20/	2020		Are a Typ	ne e	Other	r	4		Ž.
Juris diction			Time I	Period				PHF		0.92		*	wit	<u> </u>
Urban Street			Analys	is Year	2020			Analysis	Period	1> 7:	00			¥
Intersection	6th and Springfield		File Na		—ii———	dSpring	fie ld In	provedC	ombine	d.xus				
Project Description												7 7	14144	77 (*
Dem and Information				EB			W	В		NB			SB	
Approach Movement			L	T	R	L	Т	R	L	T	R	L	T	R
Demand (v), veh/h				40	10	0	50)				14	36	0
Signal In formation				Т	T									_
Cycle, s 113.6	Reference Phase	2		2	╡ <u></u>					_	<u> </u>	_		小
Offset, s 0	Reference Point	End							\perp		1	Y 2	3	4
Uncoordinated Yes	Simult. Gap E/W	On	Green		84.0	19.0	0.0	-	0.0					
Force Mode Fixed	Simult. Gap E/W	On	Ye llow Red	0.0	3.2	3.0	0.0	_	0.0		5	6	7	8
roice wode Tixed	Siliul. Gap N/S	Oil	Kcu	10.0	2.2	2.2	10.0	10.0	10.0				-	
Tim er Results			EBI	.	EBT	WB	ī l	WBT	NBI	r I	NBT	SBI	r	SBT
Assigned Phase			EBI	_	2	1	L	6	NDI		NDI	36		4
Case Number					7.3	1.0	-	4.0						9.0
Phase Duration, s			_		89.4	0.0	-	89.4		-			_	24.2
) a				5.4	0.0	-	5.4						5.2
Change Period, (Y+R					3.4	0.0	-	3.4		-			_	3.1
Max Allow Headway (_		2.7	0.0	-	2.9					_	4.0
Queue Clearance Time			_		0.2	0.0	-	0.2		-			_	0.0
Green Extension Time	(g e), s					0.0	_					-		
Phase Call Probability				_	1.00	-	-	1.00	-	-		-	_	1.00
Max Out Probability					0.00			0.00						0.00
MovementGroupRes	s u lts			EB			WB			NB			SB	
Approach Movement			L	T	R	L	Т	R	L	T	R	L	T	R
Assigned Movement				2	12	1	6					7	4	14
Adjusted Flow Rate (v), veh/h			43	11	0	54					15	39	0
Adjusted Saturation Flo	ow Rate (s), veh/h/lr	1		1870	1579	1781	1870					1781	1870	1579
Queue Service Time (g s), s			0.7	0.2	0.0	0.9					0.8	2.0	0.0
Cycle Queue Clearanc	e Time (g c), s			0.7	0.2	0.0	0.9					0.8	2.0	0.0
Green Ratio (g/C)				0.74	0.74	0.76	0.74					0.17	0.17	0.17
Capacity (c), veh/h				1383	1167	1064	1383					298	313	264
Volume-to-Capacity Ra	ntio (X)			0.031	0.009	0.000	0.039)				0.051	0.125	0.000
Back of Queue (Q), ft	/ln (50 th percentile)			6.2	1.5	0	7.8					9.7	25.3	0
Back of Queue (Q), ve		e)		0.2	0.1	0.0	0.3					0.4	1.0	0.0
Queue Storage Ratio (0.00	0.00	0.00	0.00					0.00	0.00	0.00
Uniform Delay (d1), s	•			3.9	3.9	0.0	4.0	_				39.7	40.2	0.0
Incremental Delay (d 2				0.0	0.0	0.0	0.1					0.3	0.8	0.0
Initial Queue Delay (d				0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (d), s/ve				4.0	3.9	0.0	4.0					40.1	41.1	0.0
Level of Service (LOS)				A	A		A					D	D	
Approach Delay, s/veh			4.0		A	4.0		A	0.0			40.8		D
Intersection Delay, s/ve						5.3						В		
MultimodalResults				EB			WB			NB			SB	
Pedestrian LOS Score	/ LOS		1.33	3	A	1.85	5	В	1.96	5	В	1.96	5	В
Bicycle LOS Score / LO	OS		0.58	3	A	0.58	3	A				0.58	3	A

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	HCS	7 S ig 1	n a lize	d In te	ersec	tion R	esu	1ts	Sum	mar	/				
General In formation								In te	rsect	ion In fo	m atio	n	×	4 사수 1	Įs lį
Agency	Ĭ						\neg	Dura	ation,	h	0.250			47	
Analyst	Elliott Wittmeyer		Analys	is Date	11/20/	2020		Are a	а Турс		Other		4)
Jurisdiction	Zmott Withine yer		Time I		11/20/			PHF			0.92				<u>. </u>
Urban Street			-	is Year	2020					Period	1> 7:0	10	- 4		•
Intersection	Wright and Springfi	o ld	File Na			tandS pr	in a fia		-			, o			
Project Description	wight and Spinigh	C IG	THE IN	anic	wiigii	tanus pi	ingiic	IG O II	ширго	vcu.xu	,		- 4	1149	fr (*
1 Toject Description															
Dem and Infomation				EB		Т	W	В			NB			SB	
Approach Movement			L	Т	R	L	Т	·	R	L	T	R	L	T	R
Demand (v), veh/h			143	256	96	16	78	2	63	98	114	35	66	24	82
0: 17.6			1	1		. 1		: 1		-					
Signal In formation	D - f D1	2		ا برا	1.7		11						,	τ .	人
Cycle, s 116.0	Reference Phase			₩	Ħ.	` 5 ↑	י ויז	10				1	♀ 2	3	
Offset, s 0	Reference Point	End	Green	8.0	45.0	7.0	39.	.0	0.0	0.0			Δ	_	
Uncoordinated Yes	Simult. Gap E/W	On	Yellow	+	3.0	3.0	3.0		0.0	0.0		~	7		$-\Psi$
Force Mode Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5		0.0	0.0		5	6	7	:
Tim erResults			EBI		EBT	WB	ı I	WE	RT I	NBI		NBT	SBI		SBT
Assigned Phase			5		2	W.D.	-	6 6	-	3		8	3 10		4
Case Number			1.0		4.0			6.3	-	1.0		4.0		_	6.3
Phase Duration, s			11.0	_	51.5	-	_	50.	_	10.0		54.5		_	44.5
Change Period, (Y+R)) c		3.0		5.5	-	_	5.5	-	3.0		5.5		_	5.5
			3.1	_	3.1	_	-	3.	-	3.1		3.2		_	3.2
Max Allow Headway (7.9	_	18.4	_	\rightarrow	47.	-	6.3		8.7		_	7.8
Queue Clearance Time				_	3.2	-	-		-		-		_	_	
Green Extension Time	(ge), s		0.0	_		_	+	0.0	_	0.0		0.7	-	_	0.7
Phase Call Probability			1.00	_	1.00	-	-	1.0	-	1.00	_	1.00	-	_	1.00
Max Out Probability			1.00) (0.00			1.0)0	1.00		0.00			0.00
MovementGroupRes	ın İte			EB			WB				NB			SB	
Approach Movement	, u 10		L	T	R	L	Т	_	R	L	T	R	L	T	R
Assigned Movement			5	2	12	1	6	_	16	3	8	18	7	4	14
Adjusted Flow Rate (v) vo b /b		155	383	12	17	918	-	10	107	162	10	72	115	14
Adjusted Flow Rate (V	, .	las.	1781	1783		1001	1809	\rightarrow	-	1781	1787		1224	1642	-
		ш	5.9	16.4		1.4	45.0	_	-	4.3	6.7		4.8	5.8	-
Queue Service Time (5.9	16.4		6.8	45.0	_	-	4.3	6.7		4.8	5.8	
Cycle Queue Clearance	e fille (g c), s						-	_	-				_		
Green Ratio (g/C)			0.47	0.48		0.39	0.39	\rightarrow	-	0.41	0.42		0.34 474	0.34	
Capacity (c), veh/h	tio (Y)		185 0.841	861 0.445		0.043	1.30	_	-	535 0.199	755 0.215		0.151	0.209	
Volume-to-Capacity Ra							1.30	\rightarrow	-						
Back of Queue (Q) , ft	m (30 th percentile)	,	105.7	178		8.7	1222			48.5	73.6		37.7	60.8	
Back of Queue (Q), ve	eh/ln (50 th percent	ile)	4.2	7.0		0.3	48.1			1.9	2.9		1.5	2.4	
Queue Storage Ratio (RQ) (50 th percen	tile)	0.00	0.00		0.00	0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d 1), s	/ve h		27.5	19.8		25.6	35.5			21.5	21.3		27.1	27.5	
Incremental Delay (d 2), s/veh		34.6	1.7		0.2	149.	2		0.8	0.6		0.7	0.9	
Initial Queue Delay (d	3), s/veh		0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/ve	eh		62.1	21.4		25.8	184.	7		22.3	21.9		27.8	28.3	
Level of Service (LOS)			Е	С		С	F			С	С		С	С	
Approach Delay, s/veh	/ LOS		33.2	2	С	181.	7	F		22.1		С	28.1		С
Intersection Delay, s/ve					10	3.2							F		
M ultim odalResults			1.91	EB			WB				NB			SB	
D - 1 T OC C	destrian LOS Score / LOS				В	1.92	2	В	3	1.92		В	1.93	; <u> </u>	В
Bicycle LOS Score / LO			1.38		A	2.03		В		0.93		A	0.80		A

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		HCS	7 S ig:	n a lize	d Int	ersec	tion R	esu	lts Sur	n m ar	у				
General In form	ation								In tersec	tion In f	om atio	n	ž.	at state to	Ju ly
Agency								T	Duration	, h	0.250			47	
Analyst		Elliott Wittmeyer		Analys	is Date	11/20/	2020		Area Typ	e e	Other		4		4
Jurisdiction				Time I					PHF		0.92				<u> </u>
Urban Street				-	is Year	2020		\neg	Analysis	Period	1> 7:0	00			v V
Intersection		Wright and Springfi	ald.	File Na			tandSnr	in o fie	ldUnimpr					K 4.	ا ا
Project Descrip	tion	Wight and Spinigh	, IG	The Ive	anic	Wilgin	ands pi	mgne	шентірі	ovedeo	monicu	.Aus	- 4		7
1 loject Bescrip	tion														
Dem and Inform	ation				EB		$\overline{}$	W	В		NB		$\overline{}$	SB	
Approach Move				L	Т	R	L	Т	_	L	Т	R	L	Т	R
Demand (v), v				0	60	0	0	50	_	0	50	0	0	81	0
Bemana (v), v	C 11/11		_		00			, ,	0		30			01	-
Signal Infom a	tion				R				$\overline{}$						Т
Cycle, s	95.0	Reference Phase	2	1	<u> </u>		_						Z	5	Φ
Offset, s	0	Reference Point	End		<u> </u>	1.1	1	4.				1	2	3	4
Uncoordinated	Yes	Simult. Gap E/W	On	Green		39.0	0.0	0.0		0.0		,	→		r + -
Force Mode	Fixed	Simult. Gap N/S	On	Ye llow Red	2.5	2.5	0.0	0.0		0.0		,	6	7	Y
Poice Mode	Pixeu	Siliul. Gap N/S	Oli	Kcu	2.3	2.3	10.0	10.0	0.0	10.0		-		,	
Tim on Doon to				EDI		EDT	WD	т	WDT	NID		NDT	CDI		CDT
Tim er Results				EBI 5	-	EBT	WB	L	WBT	NB	ь	NBT 8	SBI		SBT
Assigned Phase	ase Number					2	_	_	6	3	_		_	_	4
						4.0		-	6.3	1.0	_	4.0			6.3
Phase Duration	nase Duration, s					50.5		_	50.5	0.0		44.5			44.5
Change Period,	hange Period, (Y+R c), s					5.5		_	5.5	3.0		5.5			5.5
Max Allow Head	dway (I	<i>MAH</i>), s		0.0		3.0			3.0	0.0		3.0			3.0
Queue Clearan	ce Time	(g s), s				3.8			3.5			3.7			4.8
Green Extensio	n Time	(g e), s		0.0		0.2			0.2	0.0		0.2			0.2
Phase Call Prob	ba bility					1.00			1.00			1.00			1.00
Max Out Probal	bility					0.00			0.00			0.00			0.00
у		1.			ED						ND			a.p.	
MovementGro		u Its		_	EB			WE	_	_	NB	1 -	_	SB	
Approach Move				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Move	ment			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow I	Rate (v), veh/h		0	0	\square	0	0		0	0		0	0	
		ow Rate (s) , veh/h/l	n	1781	0		1336	0		1781	0		1350	0	
Queue Service	Time (¿	g s), s		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Cycle Queue C	learanc	e Time (g c), s		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Green Ratio (g.	/C)			0.46			0.47			0.40			0.41		
Capacity (c), v	e h/h			695			76			577			76		
Volume-to-Capa	acity Ra	tio (X)		0.000	0.000		0.000	0.00	0	0.000	0.000		0.000	0.000	
Back of Queue	(Q), ft	/ln (50 th percentile)		0	0		0	0		0	0		0	0	
		eh/ln (50 th percenti	le)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
		RQ) (50 th percent		0.00	0.00		0.00	0.00	_	0.00	0.00		0.00	0.00	
			-,	0.0			0.0			0.0			0.0		
	niform Delay (d 1), s/veh cremental Delay (d 2), s/veh						0.0	0.0		0.0	0.0		0.0	0.0	
Initial Queue De		**		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service				0.0			0.0			0.0			0.0		
				12.0		- D	10.5	,	D	17.0		D	17		D.
Approach Delay				13.8		B 15	13.7		В	17.2	2	В	17.6)	В
Intersection Del	iay, s/ve	n / LOS				15	.8						В		
M ultim odalRe	e 11 1te				EB			WE			NB			SB	
	edestrian LOS Score / LOS					В	1.90	_	В	1.91		В	1.91		В
Bicycle LOS Sc				1.90	-	_	0.58	-		_	_		_	-	
Dicycle LOS SC	ole / LC	Ju .		0.60		A	0.38	,	A	0.58	,	A	0.63	'	A

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		HCS	7 S ig:	n a lize	d In to	ersec	tion R	esu	lts Sur	n m ar	y				
General In fom	ation								In tersec	tion In f	om atio	n	k	at state to	ja la
Agency									Duration	, h	0.250	1		47	
Analyst		Elliott Wittmeyer		Analys	is Date	11/20/	2020		Are a Typ	e	Other		4		A
Jurisdiction				Time I	Period			T	PHF		0.92		*	w } L	
Urban Street				Analys	is Year	2020			Analysis	Period	1> 7:0	00	7		¥
Intersection		Wright and Springfi	e ld	File Na	ame	Wright	tandS pr	ingfie	ldImprove	dComb	ined.xu	s		5.14	
Project Descrip	tion												1 7	4144	7
Dem and Infom	n a tio n				EB			W	В		NB			SB	
Approach Move	ment			L	T	R	L	Т	R	L	T	R	L	T	R
Demand (v), v	e h/h			0	60	0	0	50	0	0	50	0	0	81	0
				1											
Signal In form a		n e			🚚 🧲								_	τ .	人
Cycle, s	90.0	Reference Phase	2		B "	- I Matri	7					1	♦ 2	3	4
Offset, s	0	Reference Point	End	Green	40.0	39.0	0.0	0.0	0.0	0.0					
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	+	3.0	0.0	0.0		0.0		7	7		V
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.5	2.5	0.0	0.0	0.0	0.0		5	6	7	8

Tim er Results				EBI	-	EBT	WB	L	WBT	NB	L	NBT	SBI	_	SBT
Assigned Phase	e			1.0		2		_	6	3		8		_	4
Case Number						4.0		_	6.3	1.0		4.0	_	_	6.3
Phase Duration	nase Duration, s					45.5		\rightarrow	45.5	0.0		44.5			44.5
Change Period,	hange Period, $(Y+R c)$, s					5.5		_	5.5	3.0		5.5			5.5
Max Allow Head	lway (I	<i>MAH</i>), s		0.0		3.0		_	3.0	0.0		3.0			3.0
Queue Clearan						3.8		_	3.5			3.5			4.5
Green Extensio	n Time	(g e), s		0.0		0.2		_	0.2	0.0		0.2			0.2
Phase Call Prol	bability					1.00		_	1.00			1.00			1.00
Max Out Proba	bility					0.00			0.00			0.00			0.00
Managara Car	D	160			EB			WE			NB			SB	
Movement Gro		iu its		T		р	L		_	T	i	р	L	Т	D
Approach Move				L	T	R		T	R	L	T	R		4	R
Assigned Move		\ 1_ /L		5	0	12	1	6	16	0	8	18	7		14
Adjusted Flow I				0	0		1226	0			0		1350	0	
		ow Rate (s) , veh/h/l	11	0.0	0.0		0.0	0.0	+	0.0	0.0		0.0	0.0	
Queue Service		· · · ·		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Cycle Queue C		e Tille (g c), s			0.0			0.0	+		0.0			0.0	
Green Ratio (g.				0.43			0.44		_	0.42			0.43		
Capacity (c), v		tio (V)		659	0.000		80	0.00	0	612	0.000		80	0.000	
Volume-to-Capa	<u> </u>			0.000	0.000		0.000	0.00	0	0.000	0.000		0.000	0.000	
		/In (50 th percentile)		0	0		0	0		0	0		0	0	
		eh/ln (50 th percenti		0.0	0.0		0.0	0.0	_	0.0	0.0		0.0	0.0	
Uniform Delay (RQ) (50 th percent	ne)	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Incremental De				0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Initial Queue De		**		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service	,,,			0.0			0.0			0.0			0.0		
				1.4.4		В	1.4.4		D	15 (В	15		D
Approach Delay				14.6	,	В 14	14.5	,	В	15.0	,		15.4		В
Intersection De	iay, s/ve	II / LUS				14	.9						В		
Multimodal Da	e ii Ite				EB			WE			NB			SB	
	ultim odalResults destrian LOS Score / LOS					В	1.90	_	В	1.90		В	1.90		В
Bicycle LOS Sc				0.60	-	A	0.58	-	A	0.58		A	0.63	-	A
Dicycle LOS SC	OIC / LC	75		0.00		Λ	0.56	,	Λ	0.30	,	А	0.03	, l	А

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		HCS	7 Sig	nalize	d Inte	ersect	tion F	Resul	ts Sur	nmary	,				
			ŭ												
General Inform	nation								Intersec	tion Info	ormatio	on	1 4	4.544	le .
Agency								_	Duration.		0.25			•	
Analyst		Mihir Thakar		Analys	is Date	Dec 1	2020		Area Typ	e	Other	-	- 1888		
Jurisdiction				Time F				_	PHF	_	0.92		1.25	, i	
Urban Street					is Year	2020			Analysis	Period	1> 7:	00	- 188		
Intersection		University & 4th		File Na		_	situR4t	_	inedImp				-		
Project Descrip	tion	oniversity at 161		1 112 140		Olliero	Sity of To		ancump.	TOTCU.XI	-		- 4		
T TOJECT DESCRIP															
Demand Inform	nation				EB		$^{-}$	WE	3	$\overline{}$	NB		$\overline{}$	SB	
Approach Move	ment			L	Т	R	L	T	R	L	T	R	L	T	R
Demand (v), v	eh/h			28	698	28	183	900	31	25	85	406	30	44	39
Signal Informa				ı	l , 5	JIL									人
Cycle, s	87.0	Reference Phase	2		≓ "	1 517	•					_, -	€ .□		
Offset, s	0	Reference Point	End	Green	45.0	35.0	0.0	0.0	0.0	0.0		-	5		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		2.5	0.0	0.0	0.0	0.0			7		₩.
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.5	1.0	0.0	0.0	0.0	0.0				T	8
Timer Results				EBI	-	EBT	WB	<u> </u>	WBT	NBL	-	NBT	SBI		SBT
Assigned Phase	e			_	_	2	_	-	6	-	-	8	-	_	4
Case Number					_	6.0	_	_	6.0	_	_	8.0	_	_	8.0
	nase Duration, s					48.5	_	_	48.5	_	_	38.5	_	_	38.5
	ange Period, (Y+R e), s				_	3.5	_	_	3.5	_	_	3.5	_	_	3.5
Max Allow Head				_	_	3.3	_	_	3.3	_	_	3.4	_	_	3.4
Queue Clearan		1 2 2 2				21.5			35.4			24.9			26.6
Green Extensio		(g∗),s				5.7		_	4.1		_	1.3		_	1.2
Phase Call Pro	bability			_		1.00	_	_	1.00		\perp	1.00			1.00
Max Out Probal	bility					0.10		_	0.49			0.06			0.12
Movement Gro	up Res	sults			EB			WB			NB			SB	
Approach Move				L	Т	R	L	Т	R		Т	R		Т	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow F), veh/h		30	403	386	199	518	494	120		441		123	
		ow Rate (s), veh/h/l	n	557	1870	1793	687	1870	_	1668		1442		749	
Queue Service				3.4	11.5	11.5	21.8	16.1	-	0.0		22.9		1.7	
		e Time (ge), s		19.5	11.5	11.5	33.4	16.1	16.1	3.6		22.9		24.6	
Green Ratio (g		(3+)1-		0.52	0.52	0.52	0.52	0.52	_	0.40		0.40		0.40	
Capacity (c), v				268	967	927	347	967	921	722		580		354	
Volume-to-Cap		rtio (X)		0.114	0.416	0.417	0.573	0.536	0.536	0.166		0.761	-	0.347	
	_	An (50 th percentile))	12.3	120.4	114			160.3	38.6		216.5		44.7	
		eh/ln (50 th percenti		0.5	4.7	4.6	3.9	6.7	6.4	1.5		8.7		1.8	
		RQ) (50 th percent		0.00	0.00	0.00	0.00	0.00	_	0.00		0.00		0.00	
				20.5	12.9	12.9	23.2	14.0	_	16.6		22.4		18.6	
	niform Delay (d +), s/veh cremental Delay (d 2), s/veh					1.4	6.7	2.1	2.2	0.5		9.1		2.7	
	tial Queue Delay (d s), s/veh					0.0	0.0	0.0	0.0	0.0		0.0		0.0	
	ntrol Delay (d), s/veh					14.3	29.9	16.2	_	17.1		31.5		21.3	
	vel of Service (LOS)					В	С	В	В	В		С		С	
	proach Delay, s/veh / LOS					В	18.5		В	28.4		С	21.3	_	С
	rsection Delay, s/veh / LOS						.5						В		
M-10- 115	i							1000						65	
	timodal Results							WB	_		NB			SB	_
Pedestrian LOS				1.89	_	В	1.89	_	В	2.27	_	В	2.27	_	В
Bicycle LOS Sc	ore / LC	JS		1.16		Α	1.49	9	Α	0.95		Α	0.69	,	Α

HCS™ Streets Version 7.7

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		HCS	7 Sig	nalize	d Int	ersec	tion F	Resul	ts Sur	nmar	,				
			Ĭ												
General Inform	nation								Intersec	tion Info	ormatic	on	, é	الخابات	I
Agency									Duration,	h	0.25		_	*	-
Analyst		Mihir Thakar		Analys	is Date	Dec 1	. 2020		Area Typ	e	Other	-	- 600		
Jurisdiction				Time F	eriod			1	PHF		0.92		- 50	, i	
Urban Street				Analys	is Year	2020			Analysis	Period	1>7:	00	- 100		
Intersection		University & 4th		File N		-	sitv84t	-	inedUni		xus		-		
Project Descrip	tion	Omversity at 101		1 112 141		- Constitution	- Sity of To	i comi	, incoorni	III O I C			- 4		
T Toject Descrip	UUII														
Demand Inform	mation				EB		$\overline{}$	WE	3	$\overline{}$	NB		$\overline{}$	SB	
Approach Move	ement			┰	T	R		T	R		T	R	1	ΙT	R
Demand (v), v				28	698	28	183	_	_	25	85	406	30	44	39
Demand (V), V	CIVII			20	080	20	100	000	31	20	- 00	700	30		36
Signal Informa	tion					JU	$\overline{}$	${}^{-}$	$\overline{}$	$\overline{}$	-				_
Cycle, s	85.6	Reference Phase	2		įą ž		_						a L		Λ.
Offset, s	0	Reference Point	End			1 1						- 1	€ .	-	- 4
Uncoordinated	Yes	Simult, Gap E/W	On	Green		22.0	0.0	0.0	0.0	0.0			Ð⊢		
				Yellow		3.4 2.6	0.0	0.0	0.0	0.0	-88	_	~		Ψ
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.3	2.0	0.0	U.U	0.0	U.U	-	-	-	_ T	8
											-				
Timer Results				EBI	-	EBT	WB		WBT	NBI	-	NBT	SBI		SBT
Assigned Phase	e			_	-	2	_	-	6	_	-	8	-	_	4
Case Number						6.0		_	6.0			8.0			8.0
Phase Duration	1, 5					57.6			57.6			28.0			28.0
Change Period	(Y+R	e), S				5.7			5.7			6.0			6.0
Max Allow Head	dway (/	MAH), s			т	3.3		т	3.3		т	3.4		\neg	3.4
Queue Clearan	ce Time	(q:), s			\neg	17.6		\neg	28.8		\neg	24.0			24.0
Green Extension	n Time	(g .), s			\neg	5.9		\neg	5.6		\neg	0.0		\neg	0.0
Phase Call Pro					\rightarrow	1.00		_	1.00		\neg	1.00			1.00
Max Out Proba				_	-	0.03	_	_	0.11	_	_	1.00	-	_	1.00
max out i room	Unity					0.00			0.11			1.00			
Movement Gro	oup Res	ults			EB			WB			NB			SB	
Approach Move				L	Т	R	L	Т	R		Т	R		Т	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow F		\ uah/h		30	403	386	199	518	494	120	_	441	H-	123	
		ow Rate (s), veh/h/l		557	1870	1793	687	1870		1675		1442	_	428	
Queue Service				2.7	9.3	9.3	17.5	12.9		0.0		22.0	-	0.0	
					_	_		_	_	-		_	-		
Cycle Queue C		e ⊓me (g ∉),s		15.6	9.3	9.3	26.8	12.9	12.9	4.3		22.0	_	22.0	_
Green Ratio (g				0.61	0.61	0.61	0.61	0.61	0.61	0.26		0.26		0.26	
Capacity (c), v				338	1134	1087	426	1134		482		371	_	163	
Volume-to-Cap				0.090	0.355		0.467	0.457		0.248		1.190	_	0.752	_
		In (50 th percentile)		9.3	88.3	_	_	_	117.1	50.6		463.5		80	
		eh/ln (50 th percenti	_	0.4	3.5	3.3	2.9	4.9	4.7	2.0		18.5		3.1	
Queue Storage	Ratio (RQ) (50 th percent	ile)	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00	
Uniform Delay ((d1), s	/veh		13.4	8.5	8.5	15.2	9.2	9.2	25.2		31.8		27.0	
Incremental De	lay (d 2), s/veh		0.5	0.9	0.9	3.6	1.3	1.4	1.2		109.5		27.0	
Initial Queue De	elay (d	3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	
Control Delay (14.0	9.3	9.4	18.8			26.5		141.3		54.0	
Level of Service				В	A	Α	В	В	В	С		F		D	
Approach Delay	<u> </u>			9.5		A	11.9		В	116.8	2	F	54.0		D
				8.0			11.8			110.0	,		C 34.1	,	
Intersection De	idy, S/VE	H17 LU3				34	7.0								
Multimodal Re	culte				EB			WB			NB			SB	
		11.00		4.00	_	-	4.00	_		0.00	_	_	0.00	_	n
Pedestrian LOS				1.87	_	В	1.87	_	В	2.28	_	В	2.28	_	В
Bicycle LOS Sc	core / LC	JS		1.16		Α	1.49	9	Α	0.95		Α	0.69	,	Α

HCS™ Streets Version 7.7

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		HCS	7 Sig	nalize	d Inte	ersec	tion F	Resul	ts Sur	nmary	,				
General Inform	nation								Intersec	tion Info	ormatio	on	- i	الماحادات	100000
Agency									Duration	, h	0.25		-	•	
Analyst		Mihir Thakar		Analy:	is Date	Nov 2	0, 2020	1	Area Typ	e	Other		1		
Jurisdiction				Time F	eriod	т			PHF		0.92		-52	, i	
Urban Street				Analys	is Year	2020			Analysis	Period	1> 7:0	00	- 100		
Intersection		University & 4th		File N	ame	Unive	rsitv&4t	hlmpro	wed.xus				-	44	100
Project Descrip	tion	,											1 5	4107	
Demand Inform	nation				EB		$\overline{}$	WE	3	$^{-}$	NB		$^{-}$	SB	
Approach Move	ment			L	T	R	L	T	R	L	T	R	L	Т	R
Demand (v), v	eh/h			54	1322	58	104	151	7 75	54	195	157	70	88	80
Signal Informa			_		La 5	JUL							- 1		rt.
Cycle, s	87.0	Reference Phase	2		ją ₹	1.50	7					, –	€ .□		· Y
Offset, s	0	Reference Point	End	Green	_	30.0	0.0	0.0	0.0	0.0			5		1
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		2.5	0.0	0.0	0.0	0.0					Φ.
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.5	1.0	0.0	0.0	0.0	0.0		T.		T	- 1
Timer Results				EBI	-	EBT	WB	L	WBT	NBL		NBT	SBI	_	SBT
Assigned Phase	e					2			6			4			8
Case Number					т	6.0		т	6.0		т	8.0		\neg	8.0
Phase Duration	, 5					53.5		\neg	53.5		\neg	33.5			33.5
Change Period,	(Y+R	e), S			\neg	3.5		\neg	3.5		\neg	3.5			3.5
Max Allow Head					\neg	3.4	-	\neg	3.4		\neg	3.3		\neg	3.3
Queue Clearan				_		52.0		_	52.0	_	_	11.3	_		18.9
Green Extensio				_	_	0.0	_	_	0.0	_	_	1.5	_	_	1.3
Phase Call Pro		(9*).3			-	1.00		-	1.00		-	1.00		_	1.00
Max Out Proba				_	-	1.00	_	-	1.00	_	_	0.00	_	-	0.03
Max Out Floba	Dility					1.00			1.00	_		0.00	_		0.03
Movement Gro	up Res	ults			EB			WB			NB			SB	
Approach Move	ment			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Move	ment			5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow F	Rate (v), veh/h		59	754	746	113	868	862	232		209		259	
Adjusted Satura	ation Flo	ow Rate (s), veh/h/li	n	280	1847	1819	350	1870	1839	1596		1484		1259	
Queue Service				17.3	25.5	25.7	24.3	32.0		0.0		9.3		7.5	-
Cycle Queue C				50.0	25.5	25.7	50.0	32.0		9.0		9.3		16.9	
Green Ratio (g		(90%)		0.57	0.57	0.57	0.57	0.57		0.34		0.34		0.34	
Capacity (c), v						1045			1057	603		512		488	
Volume-to-Cap		tio (Y)			_			_	0.816	_		0.409		0.530	_
		In (50 th percentile)		39.7	_	258.6		_	341.5	92.6		86.1		123.8	
												-	-		
		eh/In (50 th percenti		1.6	10.3	-	3.1	13.6	_	3.7		3.4		4.9	_
		RQ) (50 th percent	iie)	0.00	0.00	0.00	0.00	0.00	-	0.00		0.00	-	0.00	-
Uniform Delay (35.3	13.3	13.3	33.0	14.7	_	21.4		21.7	_	24.2	
Incremental De				9.2	4.0	4.2	15.3	6.5	7.0	1.9		2.4	-	4.1	-
Initial Queue De				0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	_	0.0	
Control Delay (44.5	17.3	17.5	48.4	21.2	_	23.3		24.1	_	28.2	_
Level of Service	<u> </u>			D	В	В	D	C	С	С		С		C	
Approach Delay				18.4		В	23.	1	С	23.7		С	28.2	2	С
Intersection Del	ay, s/ve	h/LOS				2	1.7						С		
Marking 115								1445			NID			00	
Multimodal Re					EB	_		WB		-	NB			SB	_
Pedestrian LOS				1.88	_	В	1.80	_	В	2.27	$\overline{}$	В	2.27	_	<u>B</u>
Bicycle LOS Sc	ore / LC	DS		1.77		В	2.0	1	В	0.85		Α	0.91		A

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		lice	7 Cia	naliza	d Int	05000	tion F	laaul	to Cur						
		HCS	/ Sigi	nanze	ea inc	ersec	uon F	cesui	ts Sur	nmary	_				
General Inform	ation								Intersec	tion Info				4.554.11	le .
Agency	auon								Duration.		0.25		- 1	•	200
		Mihir Thakar		Anaba	in Date	Nov 2	0 2020	\rightarrow			Othe		- 100		
Analyst Jurisdiction		Minir I nakar		_		NOV 2	U, ZUZU	_	Area Typ PHF	e	0.92		- 36	i	
Urban Street				Time F		2020			Analysis	Dorind	1>7		- 35		
		Linius and the		_		-	'A0 AH	_			127	.00	- 888		
Intersection		University & 4th		File Na	ame	Unive	rsity&4t	nunim	proved.x	us			- 4	11	
Project Descripti	ion													4 1 1 1	
Demand Inform	ation				EB		_	WE			NE	1		SB	
Approach Mover				$\overline{}$	ΤŢ	T R	1	T	R	1	T	R	1	T	R
Demand (v), ve				54	1322		104	_		54	198		70	88	80
Demand (F), ve				-	IOZZ	. 00	101	101	, ,,,			101	- 10		
Signal Informat	tion					JU	\top	т	\top	\top	т	-			
Cycle, s	85.1	Reference Phase	2	1	l≰ ³	e sal	,					_	e J		Φ
Offset, s	0	Reference Point	End	Green	_	22.0	0.0	0.0	0.0	0.0		1		_	- 1
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		2.9	0.0	0.0	0.0	0.0	-11		Ð⊢		本
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.3	2.6	0.0	0.0	0.0	0.0				T	Τ,
Timer Results				EBI	$\overline{}$	EBT	WB	L	WBT	NBL	т	NBT	SBI		SBT
Assigned Phase					\neg	2		\neg	6		\neg	4		\neg	8
Case Number					\neg	6.0		\neg	6.0		\neg	8.0		\neg	8.0
Phase Duration, s					\neg	57.6		\neg	57.6		\neg	27.5			27.5
Change Period, (Y+R c), s					\neg	5.7		\neg	5.7		\neg	5.5		\neg	5.5
Max Allow Head					\neg	3.4		\neg	3.4		\neg	3.3			3.3
Queue Clearano					\neg	47.9		\neg	51.9			12.7			22.5
Green Extension				-	\neg	3.4	-	\neg	0.0	-	\neg	1.2		\neg	0.0
Phase Call Prob		, , , , , , , , , , , , , , , , , , , ,			\neg	1.00		\neg	1.00		\neg	1.00			1.00
Max Out Probab	ility			_	\neg	0.98	-	\neg	1.00	-	\neg	0.07	-	\neg	1.00
Movement Gro	up Res	sults			EB			WB			NB			SB	
Approach Mover				L	Т	R	L	T	R	L	T	R	L	T	R
Assigned Moven	nent			5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow R	late (v), veh/h		59	754	746	113	868	862	225		216		259	
Adjusted Satura	tion Flo	ow Rate (s), veh/h/li	n	280	1847	1819	350	1870	1839	1463		1490		1081	
Queue Service 1	Time (g	g *), s		16.6	22.9	23.1	26.9	28.8	29.3	0.0		10.7		9.8	
Cycle Queue Cle	earano	e Time (ge), s		45.9	22.9	23.1	49.9	28.8	29.3	10.4		10.7		20.5	
Green Ratio (g/	C)			0.61	0.61	0.61	0.61	0.61	0.61	0.26		0.26		0.26	
Capacity (c), ve	eh/h			159	1126	1109	203	1141		432		385		334	
Volume-to-Capa	city Ra	rtio (X)		0.369	0.669	0.672	0.557	0.761	0.769	0.522		0.561		0.774	
Back of Queue ((Q), ft/	In (50 th percentile)		34.2	222.6	217.8	68.3	289.8	287.6	107.4		106.5		165.2	
Back of Queue ((Q), ve	eh/ln (50 th percenti	le)	1.3	8.8	8.7	2.7	11.4	11.5	4.3		4.3		6.5	
Queue Storage	Ratio (RQ) (50 th percent	ile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	
Uniform Delay (d 1), s	/veh		29.0	10.9	11.0	27.5	12.1	12.2	26.9		27.3		31.6	
Incremental Dela	ay (d 2), s/veh		6.5	3.2	3.3	10.6	4.8	5.1	4.5		5.8		15.9	
Initial Queue De	nitial Queue Delay (d 3), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	
	Control Delay (d), s/veh			35.5	14.1	14.2	38.1	16.9		31.3		33.1		47.5	
	evel of Service (LOS)			D	В	В	D	В	В	С		С		D	
	Approach Delay, s/veh / LOS			15.0		В	18.4	4	В	32.2		С	47.5		D
Intersection Dela).4						С		
Multimodal Results							1440			NID					
Multimodal Res	sults				EB			WB			NB			SB	
Multimodal Res Pedestrian LOS		/LOS		1.87	_	В	1.87	_	В	2.28		В	2.28	_	В

HCS™ Streets Version 7.7

Generated: 12/8/2020 11:43:11 AM

		HCS	7 Sin	nalizo	d Inte	oreact	tion F) neut	ts Sur	nman	v				
		IICS	ı əıyı	Halize	u iiid	51366	uon	Coul	is sui	mman	y				
General Inform	nation								ntersect	tion Inf	ormatic	vn	1	4.53611	Je ,
_	iauon								Duration.		0.25	,,,,	- 8	44	260
Agency		Milio Thebes		Annha	i- D-t-	ln 1	2020	\rightarrow			_		- 1		
Analyst		Mihir Thakar		_		Dec 1	, 2020	_	Area Typ	e	Other		- 126	Ji.	
Jurisdiction				Time F		0000			PHF		0.92		- 5		7
Urban Street				_	is Year	_		_	Analysis		1> 7:0		-1988		
Intersection		University & Goody	<u>vin</u>	File Na	ame	Univer	rsity&G	oodwin	Combine	edimpro	ved.xus	5		111	
Project Descrip	tion												1 7	4100	FIZ
	4.														
Demand Inform				.	EB	-	+-	WB		 	NB		 	SB	-
Approach Move					T	R	4	T	R		T	R		T	R
Demand (v), v	eh/h			24	1008	92	6	762	19	287	26	171	67	21	32
Signal Informa	tion							_	JI.	_	_			_	7
Cycle, s	111.8	Reference Phase	2		ہ جا	- ja \$	₹ `				ر ا		$a \perp$	< .	小
Offset s	0	Reference Point	End	L		P3 -	1.5		17 N			- 1	(.	2	
Uncoordinated	_			Green		52.0	8.0	2.0	29.0				تح		
	Yes	Simult. Gap E/W	On	Yellow		3.2	3.2	0.0	3.2	0.0		<u> </u>	7	`	- 1
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0	-	-	•	Ŧ	
Timer Results				EBL		EBT	WB		WBT	NBI		NBT	SBI		SBT
						2	WB	-	6 6	NBI 3		8	7	-	
Assigned Phas	e			5		3.0	_	-	_	_	-		_	-	4
Case Number							1.1		4.0	1.1		3.0	1.1		4.0
Phase Duration, s						55.2	11.2		55.2	13.2	-	34.2	11.2		32.2
Change Period						3.2	3.2	_	3.2		_	3.2	3.2	_	3.2
Max Allow Hea				3.1		3.0	3.1	_	3.0	3.1		3.3	3.1		3.3
Queue Clearan				2.8		28.6	2.2		20.0	12.0		12.8	5.2		4.9
Green Extension	n Time	(g∗),s		0.0		5.3	0.0		5.5	0.0		0.5	0.0		0.5
Phase Call Pro	bability			1.00)	1.00	1.00		1.00	1.00		1.00	1.00)	1.00
Max Out Proba	bility			0.02	2 (0.05	0.00		0.01	1.00)	0.00	1.00		0.00
Movement Gro	un Par	ulte			EB			WB			NB			SB	
	_	suits			T	R	L	T	R	L	T	R		T	R
Approach Move				5	2	12		6	16	3	8	18	7	4	14
Assigned Move				_			1						_		14
Adjusted Flow		-		26	1096	100	7	432	417	312	28	186	73	58	_
		ow Rate (s), veh/h/l	n	1781	1781	1522	1781	1870	1802	1781	1870	1579	1781	1687	_
Queue Service				0.8	26.6	4.2	0.2	18.0	18.0	10.0	1.2	10.8	3.2	2.9	\vdash
		e Time (g∘), s		0.8	26.6	4.2	0.2	18.0	18.0	10.0	1.2	10.8	3.2	2.9	_
Green Ratio (g				0.54	0.47	0.47	0.54	0.47	0.47	0.36	0.28	0.28	0.33	0.26	
Capacity (c), v	/eh/h			378	1656	708	300	870	838	538	519	438	535	438	
Volume-to-Cap	acity Ra	rtio (X)		0.069	0.661	0.141	0.022	0.497	0.497	0.580	0.054	0.425	0.136	0.132	
Back of Queue	(Q), ft	In (50 th percentile))	8.5	284	38.8	2.1	205.5	195.4	67.1	14.8	112.6	36	32	
Back of Queue	(Q), ve	eh/ln (50 th percent	ile)	0.3	11.2	1.5	0.1	8.1	7.8	2.6	0.6	4.4	1.4	1.3	
Queue Storage	Ratio (RQ) (50 th percent	tile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	niform Delay (d r), s/veh			14.0	23.1	17.1	15.7	20.8	20.8	29.5	29.6	33.1	26.1	31.7	
	cremental Delay (d 2), s/veh			0.4	2.1	0.4	0.1	2.0	2.1	4.5	0.2	3.0	0.5	0.6	
	itial Queue Delay (d ɔ), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	ontrol Delay (d), s/veh			14.4	25.2	17.5	15.9	22.8	22.9	34.0	29.8	36.1	26.6	32.4	
	evel of Service (LOS)			В	C	В	В	C	C	C	C	D	C	C	
				24.3		С	22.8	_	С	34.5		C	29.2		С
rupur valuit Deld	pproach Delay, s/veh / LOS						3.1	,	•	34.3			C 28.2		
	tersection Delay, s/veh / LOS					20				_			_		
Intersection De	sults				EB			WB			NR			SB	
		/105		2.10	EB	В	1.91	WB	В	2.29	NB	В	2.45	SB	В

HCS™ Streets Version 7.7

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		HCS	7 Sia	nalize	d Inte	ersec	tion F	Result	ts Sur	nmar	v				
		1100	. Oigi	Idilizo	- III	01000	tion i	tooui	to our	· · · · ·					
General Inform	nation							1	ntersec	tion Inf	ormatio	on	1 4	المقتليلة	١٠.
Agency								1	Ouration,	h	0.25			47	
Analyst		Mihir Thakar		Analys	is Date	Dec 1	. 2020	1	Area Typ	e	Other		- 200		
Jurisdiction				Time F	Period			_	PHF		0.92		- 50	, i	
Urban Street				Analys	is Year	2020		1	Analysis	Period	1>7:0	00	- 53		
Intersection		University & Goodw	in	File Na	ame	Unive	rsity&G	oodwin	Combine	edUnim	proved.	xus	-		-
Project Descrip	tion	,											- P	4177	
Demand Inform	mation				EB			WB			NB			SB	
Approach Move	ement			L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), v	eh/h			24	1008	92	6	762	19	287	26	171	67	21	32
Signal Informa					١, ,	١, ١	باللياك					\sim		κ .	人
Cycle, s	128.9	Reference Phase	2		۳.	†¥ °	T 😘	al III				_, _	€.⊔	``	.t.
Offset, s	0	Reference Point	End	Green	7.2	57.5	25.7	25.7	0.0	0.0		-		1	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.2	3.2	3.2	3.2	0.0	0.0		~		\	む
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0				T	×
Timer Results				EBL		EBT	WB	L	WBT	NB	_	NBT	SBI		SBT
Assigned Phas	e			5	-	2	1	_	6	_	-	8	_	_	4
Case Number						3.0	1.1	-	4.0	_	_	9.0	_	_	10.0
	Phase Duration, s				10.4 6		10.4	_	60.7	_	_	28.9		_	28.9
Change Period, (Y+R c), s						3.2	3.2		3.2	_	_	3.2		_	3.2
Max Allow Hea				3.1		3.0	3.1	\perp	3.0	_		3.2			3.2
Queue Clearan				3.0		33.7	2.2	_	23.5			23.9			6.4
Green Extension	n Time	(g∗),s		0.0	_	5.3	0.0	_	5.5			0.3			0.2
Phase Call Pro	bability			1.00)	1.00	1.00)	1.00			1.00			1.00
Max Out Proba	bility			0.11		0.05	0.01	<u> </u>	0.01			1.00		_	0.00
Manager Con	D				EB			WB			NB			SB	
Movement Gro		suits				-			R					T	_ n
Approach Move					T 2	12	L 1	T 6	16	L 3	T 8	18	7	4	R 14
Assigned Move		\						_					_	_	14
Adjusted Flow				26	1096	100	7	432	417	312	28	186	73	58	_
		w Rate (s), veh/h/l	n	1781	1781	1522	1781	1870	1802	1781	1870	1579	1781	1687	-
Queue Service				1.0	31.7	5.0	0.2	21.5	21.5	21.9	1.6	13.8	4.4	3.6	_
Cycle Queue C		e ⊓me (g ∉),s		1.0	31.7	5.0	0.2	21.5	21.5	21.9	1.6	13.8	4.4	3.6	_
Green Ratio (g				0.50 327	0.45 1589	0.45 679	0.50 250	0.45 834	0.45 804	0.20 355	0.20 373	0.20 315	0.20 355	0.20 336	
Capacity (c), v		E- / V)													
Volume-to-Cap						_	_	_	0.518 239.8			_		0.171	
		In (50 th percentile)		11	349.8		2.8				19.7	154.2	52.6	41.4	
		eh/In (50 th percenti	_	0.4	13.8	1.9	0.1	9.9	9.6	12.1	0.8	6.1	2.1	1.6	
		RQ) (50 th percent	ne)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	niform Delay (d +), s/veh			18.5	28.6	21.2	20.5	25.7	25.7	50.1	41.9	46.8	43.1	42.8	
	ncremental Delay (d 2), s/veh			0.5	2.5	0.5	0.2	2.3	2.4	25.1	0.4	7.9	1.3	1.1	-
	nitial Queue Delay (d 3), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Control Delay (d), s/veh			18.9	31.0	21.6	20.7	28.0	28.1 C	75.2	42.3 D	54.7 D	44.4 D	43.9	
	evel of Service (LOS)			B 20.0	С	C	C 20 /	C	_	E			_	D	<u>_</u>
	pproach Delay, s/veh / LOS			30.0	_	C	28.0	,	С	66.2	4	E	44.2	2	D
intersection De	ntersection Delay, s/veh / LOS					31	7.0						D		
Multimodal Re	culte				EB			WB			NB			SB	
Pedestrian LOS		/108		2.11	_	В	1.93	_	В	2.33		В	2.46	_	В
				_	_		1.19	_	A	1.36		A	0.70	-	A
Dicycle LUS 30	cycle LOS Score / LOS				1.50 A				Α	1.30	,	Α	U./L	,	^

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		HCS	7 Sia	nalize	d Int	ersec	tion F	Resul	ts Sur	nmar	v				
General Inform	nation								Intersec	tion Inf	ormatic	on	1 4	4.5441	l
Agency								Ti	Duration,	h	0.25		البرا	44	
Analyst		Mihir Thakar		Analys	is Date	Nov 2	0. 2020		Area Typ	e	Other		- 200		
Jurisdiction				Time F			-,		PHF		0.92		1.00	, i	
Urban Street					is Year	2020			Analysis	Period	1>7:	00	- 20		
Intersection		University & Goodw	in	File N		-	rsitu&G	_	Improve						
Project Descrip	tion	Oniversity & Cookin		T HE IN	arre	Onive	Silyao	OOGWIII	improve	u.xus			- 4		
T Toject Descrip	0011														
Demand Inform	nation				EB		$\overline{}$	WE	3		NB		$\overline{}$	SB	
Approach Move	ment			$\overline{}$	T	R	1	T	R	1 -	T	R	1	ΙT	R
Demand (v), v				49	1231	378	254	897	7 21	335	66	205	132	45	76
Demails (V), V	CIBII				1201		201			-		200	102		-
Signal Informa	tion					T .	ਹਾਰ	J.J.		т	_				\mathbf{I}
Cycle, s	109.8	Reference Phase	2	1	ي ٢٠	d <u>4</u> 3 3	7 J					<u> </u>	4 L	5	4
Offset, s	0	Reference Point	End	Cres	7.0	EE C	100		17	0.0		1	lt.	- 2	- 4
Uncoordinated	Yes	Simult. Gap E/W	On	Green		55.0 3.2	3.2	25.0 3.2	0.0	0.0		,	Ð⊢		st.
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0				¥ ,	Υ.
T GIGE IIIGGE	T DICE	Carrier Cop 140													
Timer Results				EBI		EBT	WB		WBT	NBI		NBT	SBI		SBT
Assigned Phase	p.			5		2	1	_	6	3		8	7		4
Case Number						3.0	1.1	-	4.0	1.1	_	3.0	1.1	_	4.0
Phase Duration	-					58.2	10.2		58.2	13.2	_	28.2	13.2	_	28.2
	Change Period, (Y+R c), s						3.2		3.2	3.2	_	3.2	3.2		3.2
Change Period, (Y+R c), s Max Allow Headway (MAH), s						3.2	3.1		3.1	3.1	_	3.3	3.1		3.3
				3.5	_	35.0	9.0	-	22.0	12.0	-	15.9	8.6	_	9.2
Queue Clearan					_			_	8.9	0.0	_	0.7	0.0	_	0.8
Green Extensio		(g +), s		0.0	_	7.8	0.0	_			_			_	
Phase Call Pro				1.00	_	1.00	1.00	_	1.00	1.00		1.00	1.00		1.00
Max Out Probal	bility			0.52	2	0.26	1.00	_	0.09	1.00	_	0.02	1.00		0.00
Movement Gro	un Res	ults			EB			WB			NB			SB	
Approach Move	•	NII.S		L	T	R		T	I R	L	T	R	Η.	T	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow F		\ unb/b		53	1338	411	276	501	497	364	72	223	143	132	17
), ven/n ow Rate (s), veh/h/l		1781	1781	1585	1781	1870		1781	1870	1585	1781	1680	
Queue Service			11	1.5	33.0	19.2	7.0	20.0	20.0	10.0	3.4	13.9	6.6	7.2	
					_	_	_	_		_		_	_		
Cycle Queue C		e ⊓me (g ∉),s		1.5	33.0	19.2	7.0	20.0	20.0	10.0	3.4	13.9	6.6	7.2	
Green Ratio (g				0.56	0.50	0.50	0.56	0.50	0.50	0.32	0.23	0.23	0.32	0.23	
Capacity (c), v		E- / V)		349	1784	794	254	937	929	409	426	361	465	383	
Volume-to-Capa	_			-	_			_	0.535		_	_	_		
		In (50 th percentile)		16.4	349	_		_	219.9		41.3		75.5	80.6	
		eh/In (50 th percenti	_	0.6	13.7	7.2	9.3	8.9	8.8	7.6	1.6	6.1	3.0	3.2	
		RQ) (50 th percent	ile)	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	
	Iniform Delay (d 1), s/veh			13.2	21.9	18.5	25.8	18.7	18.7	37.6	34.1	38.1	27.9	35.5	
	ncremental Delay (d 2), s/veh			0.0	3.0	2.4	82.1	2.2	2.2	24.1	0.9	7.7	1.7	2.4	
	nitial Queue Delay (d 3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Control Delay (d), s/veh				24.9	20.9	107.9		20.9	61.7	34.9	45.8	29.6	38.0	
	evel of Service (LOS)			В	C	С	F	L C	С	E	С	D	С	D	
	opproach Delay, s/veh / LOS			23.6	3	С	39.7	7	D	53.4	1	D	33.6	3	С
Intersection Del	ntersection Delay, s/veh / LOS					3/	1.3						С		
Multimodal Re					EB			WB			NB			SB	
Pedestrian LOS				2.08	-	В	1.90	_	В	2.30	_	В	2.45	_	В
Bicycle LOS Sc	ore / LC	DS		1.97		В	1.54	4	В	1.57		В	0.94		Α

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		uce	7 Sin	naliza	d Inte	oreoc	tion F) De III	ts Sur	nmar	·				
		ncs	<i>i</i> Siyi	Halize	u iiiu	51366	uon	tesui	is sui	IIIIIai	y				
General Inform	antion								Intersec	tion Inf	ormatic			4.5441	ŀ.
Agency	iauon							_	Duration,		0.25	, III		44	200
		Mihir Thakar		Anaba	ie Date	11/22	2020	\rightarrow	Area Typ		Other		- 1998		
Analyst Jurisdiction		Minir I nakar		Time F		11/22	2020	_	Area iyp PHF	e	0.92		- 26	i i	÷
Urban Street					is Year	2020		_	Analysis	Dorind	1> 7:0	20	- 56		-
Intersection		Hairramitra & Canada	-	_		-		-				JU			
	tion.	University & Goodw	an	File Na	ame	Unive	rsityaG	DOUWIF	Unimpro	vea.xus	•		- 4		
Project Descrip	uon													41-4	
Demand Inform	nation				EB			WE	3		NB			SB	
Approach Move				$\overline{}$	T	R	1	T	R	1	T	R	1	T	R
Demand (v), v				49	1231	_	254	_	_	335	_	205	132	45	76
Demand (), v					1201		201					200	102		
Signal Informa	tion					T .	باليات	т	\top	т	_				Т
Cycle, s	128.9	Reference Phase	2	1	P 4	143 2		,			_	∕ ¬-	4	1	₽
Offset, s	0	Reference Point	End	Green	73	57.5	25.7	25.7	7 0.0	0.0		1	T E	2	- 4
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		3.2	3.2	3.2	0.0	0.0		, I	↔		sta
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0		ı,		T	
Timer Results				EBL		EBT	WB	L	WBT	NB		NBT	SBI		SBT
Assigned Phase	e			5		2	1	\neg	6		$\neg \vdash$	8		\neg	4
Case Number						3.0	1.1	\neg	4.0		\neg	9.0		\neg	10.0
Phase Duration	Phase Duration, s				10.4 60		10.4 60.7		\vdash		28.9		\neg	28.9	
Change Period	Change Period, (Y+R c), s				\neg	3.2	3.2 3.2				3.2		\neg	3.2	
Max Allow Head	dway (/	MAH), s		3.1		3.1	3.1		3.1			3.2			3.2
Queue Clearan	ce Time	(q*), s		4.0		45.0	9.2		28.1			27.7			11.0
Green Extensio				0.0	\neg	6.3	0.0		8.7		\neg	0.0		\neg	0.4
Phase Call Pro				1.00		1.00	1.00)	1.00		\neg	1.00			1.00
Max Out Proba	bility			0.85	,	0.47	1.00	_	0.12	-	\neg	1.00		\neg	0.00
Movement Gro	oup Res	sults			EB			WB			NB			SB	
Approach Move				L	T	R	L	Т	R	L	T	R	L	T	R
Assigned Move	ment			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow F	Rate (v), veh/h		53	1338	411	276	501	497	364	72	223	143	132	
Adjusted Satura	ation Flo	ow Rate (s), veh/h/l	n	1781	1781	1585	1781	1870	1855	1781	1870	1585	1781	1680	
Queue Service	Time (g :), s		2.0	43.0	25.0	7.2	26.1	26.1	25.7	4.1	16.9	9.0	8.8	
Cycle Queue C		e Time (g∘), s		2.0	43.0	25.0	7.2	26.1	26.1	25.7	4.1	16.9	9.0	8.8	
Green Ratio (g	/C)			0.50	0.45	0.45	0.50	0.45	0.45	0.20	0.20	0.20	0.20	0.20	
Capacity (c), v	/eh/h			284	1589	707	195	834	827	355	373	316	355	335	
Volume-to-Cap	acity Ra	rtio (X)		0.188	0.842	0.581	1.415	0.600	0.600	1.025	0.192	0.705	0.404	0.393	
		In (50 th percentile)		23.4	486.5	252.7	376.7	309.3	302.1	424.4	51.5	196	109.8	100.8	
		eh/In (50 th percenti		0.9	19.2	9.9	14.8	12.2	12.1	16.7	2.0	7.7	4.3	4.0	
Queue Storage	Ratio (RQ) (50 th percent	tile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay	(d 1), s	/veh		19.9	31.7	26.7	32.0	27.0		51.6	43.0	48.1	44.9	44.8	
Incremental De	lay (d 2), s/veh		1.5	5.6	3.5	214.3	3.2	3.2	54.4	1.1	12.4	3.4	3.4	
Initial Queue De	nitial Queue Delay (d 3), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (ontrol Delay (d), s/veh			21.3	37.3	30.2	246.3	30.2	30.2	106.0	44.1	60.5	48.3	48.2	
Level of Service	evel of Service (LOS)				D	С	F	С	C	F	D	E	D	D	
Approach Delay	pproach Delay, s/veh / LOS				2	D	77.0)	E	83.9)	F	48.3	3	D
Intersection De	ntersection Delay, s/veh / LOS				57.4					E					
Multimodal Re					EB	_		WB			NB			SB	_
Pedestrian LOS				2.11	_	В	1.92	_	В	2.33	_	В	2.46	_	В
Bicycle LOS So	ore / LC	JS		1.97		В	1.54	1	В	1.57		В	0.94	+	Α

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		HCS	7 Sia	nalize	d Inte	reac	tion F) Desuit	ts Sur	nmar	<i>y</i>				
		ncs	<i>i</i> Siyi	IIdiiZe	u iiid	3550	uon	(csui	ıə əui	mman	y				
General Inform	nation								ntersec	tion Info	ormatic	nn.		-1.54c)	j. ,
Agency	ilacioni	I							Duration.		0.25	,	- L	44	
Analyst		Mihir Thakar		Analys	is Date	Dec 1	2020	_	Area Typ		Other		- 1		
Jurisdiction		I TIGAGE		Time F		Dec .	LULU		PHF		0.92		- 150	i i	
Urban Street					is Year	2020			\nalysis	Period	1> 7:0	10	- 123		
Intersection		University and Wrig	ht	File N		-	reitu&W	_	mbined				-		
Project Descrip	tion	University and vving	iii.	THE IV	anne	Onive	Sityotv	ngnico	HIDHEU	improve	u.xus		- 4		
r roject Descrip	TOO!														
Demand Inform	mation				EB		$\overline{}$	WB		$\overline{}$	NB		$\overline{}$	SB	
Approach Move	ement			L	Т	R	L	T	R	L	T	R	L	T	R
Demand (v), v	eh/h			78	1134	13	18	104	4 19	16	7	27	54	18	53
Signal Informa	_				l , €	JIL									人
Cycle, s	68.5	Reference Phase	2		F\$ *	1 58	7					_, -	€∴		.+-
Offset, s	0	Reference Point	End	Green	48.0	15.0	0.0	0.0	0.0	0.0			N 1		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow		2.0 1.5	0.0	0.0	0.0	0.0			7		坐
Force Mode	Fixed	Simult. Gap N/S	On	Red	Red 1.0		0.0	0.0	0.0	0.0	-	- 1		T	2
Timer Results				EBI	_	EBT	MD		WDT	NBI		NBT	SBI		CDT
Assigned Phas				EDI	-	2	WB	-	WBT 6	NDI	-	8	380	-	SBT 4
Case Number	e			_	-	6.0	_	-	6.0	_	-	6.0	_	-	6.0
Phase Duration				-	-	50.0	_	-	50.0	_	-	18.5	_	-	18.5
	hange Period, (Y+R c), s					2.0	_	-	2.0	_	-	3.5	_	_	3.5
	Aax Allow Headway (MAH), s					3.2	_	-	3.2	_	-	3.2	_	-	3.2
Queue Clearan				_	_	17.8	_		14.1	_	-	5.4	_	_	5.7
Green Extension				-	_	7.5	_	-	7.6	_	-	0.2	_	-	0.2
Phase Call Pro		(90).5		_	_	1.00	_	-	1.00	_	-	1.00	_	_	1.00
Max Out Proba				-	_	0.11	_	-	0.08	_	_	0.00	_	-	0.00
max out i loba	Dility					J. 11			0.00			0.00			0.00
Movement Gro	oup Res	sults			EB			WB			NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow	Rate (v), veh/h		85	639	608	20	591	564	17	37		59	77	
_		ow Rate (s), veh/h/l	n	486	1870	1781	446	1870	1784	1322	1630		1371	1642	
Queue Service				6.3	10.6	10.6	1.4	9.5	9.5	0.7	1.2		2.4	2.6	
		e Time (g o), s		15.8	10.6	10.6	12.1	9.5	9.5	3.4	1.2		3.7	2.6	
Green Ratio (g				0.70	0.70	0.70	0.70	0.70	0.70	0.22	0.22		0.22	0.22	
Capacity (c), v				379	1311	1248	348	1311	1250	344	357		380	360	
Volume-to-Cap	acity Ra	atio (X)		0.224	0.487	0.487	0.056	0.451	0.451	0.051	0.104		0.154	0.215	
	_	/In (50 th percentile)		17.2	75.5	71.4	3.6	67.1	63.5	6.3	12.7		21.2	27.6	
		eh/ln (50 th percenti		0.7	3.0	2.9	0.1	2.6	2.5	0.2	0.5		0.8	1.1	
		RQ) (50 th percent		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay				7.9	4.7	4.7	7.4	4.5	4.5	23.3	21.4		22.9	21.9	
	cremental Delay (d 2), s/veh				1.3	1.4	0.3	1.1	1.2	0.3	0.6		0.9	1.4	
Initial Queue D	itial Queue Delay (d 3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
	ontrol Delay (d), s/veh				6.0	6.0	7.7	5.6	5.7	23.6	22.0		23.7	23.3	
Level of Service	evel of Service (LOS)				Α	Α	Α	Α	Α	С	С		С	С	
Approach Delay, s/veh / LOS				6.2		Α	5.7		Α	22.5	5	С	23.5	5	С
ntersection Delay, s/veh / LOS						7	.2						A		
Multimodal Re				_	EB	_		WB	_		NB	_		SB	
Pedestrian LOS				1.84	_	В	1.84	_	В	2.28	$\overline{}$	В	2.28	-	В
Bicycle LOS So	core / LC	05		1.59		В	1.46	5	Α	0.58	3	Α	0.71		Α

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Assigned Phase			Hee	7.6:		-11-4		F	\ <i>\</i>	- C						
Agency		_	HCS	/ Sigi	nanze	a inte	ersec	uon F	cesui	is Sur	nmar	У	_	_	_	_
Agency	Committee										: I-E				al Ilaia I	te de
Analyst		nation											on	- Bi		200
Signal Information							ln 4	0000	_					- 1		
Urban Street			Minir I hakar		_		Dec 1	, 2020	_		e	_		- 3		
Intersection							2000		_		D : 1	_	20	- 25		
Demand Information					_		-		_					- 1		
Demand Information			University and Wrig	ht	File Na	ame	Unive	rsity&W	nghtCo	mbined	Unimpro	ved.xu	5	- 4	1	
Approach Movement	Project Descrip	tion													4107	-
Approach Movement	Domand Inform	nation				CD			WD			ND			CD	
Demand (v), veh/h					_		T R	+ -			+-		T R	+ -		R
Signal Information					_	_	_	10	_	_	18	_	_	_	_	53
Cycle, s 08.8 Reference Phase 2 2 6 6.0 7 7 7 7 7 7 7 7 7	Demand (V), V	eivii			70	1134	13	10	101	10	10	-	21	- 34	10	33
Cycle, s 88.8 Reference Phase 2 Offset, s 0 Reference Phase 2 Offset, s 0 Reference Phase 2 Uncoordinated Yes Simult. Gap E/W On Red 2.0 0.0	Signal Informa	tion				, K	JE	$\overline{}$	${}^{-}$	$\overline{}$	т	_			_	\mathbf{I}
Offset, s. Ducoordinated Yes Image of the property of			Reference Phase	2		<u> </u>		_						4	1	◆
Uncoordinated Yes Simult. Gap EW On Yellow 3.5 3.0 0.0						_			0.0	0.0			1	V R	- 1	- 4
Find Fixed Simult. Gap N/S On Red 2.0 1.5 0.0 0.0 0.0 0.0 0.0 v v v									_		_			Ð⊢		et-
Timer Results							_								т	· Y
Assigned Phase	2.00		23.12.11. 3447.11.3													
Assigned Phase	Timer Results		EBI		EBT	WB	L	WBT	NBI		NBT	SBI		SBT		
Case Number 6.0 6.0 6.0 6.0 6.0 Phase Duration, s 84.5 84.5 14.3 14 Change Period, (Y+Re), s 5.5 5.5 4.5 4.4 Max Allow Headway (MAH), s 3.2 3.2 3.2 3.2 3.2 Queue Clearance Time (g*), s 17.3 13.7 7.6 8. Green Extension Time (g*), s 7.8 7.9 0.1 0.0 Phase Call Probability 0.01 0.01 1.00 1.00 1.00 Max Out Probability 0.01 0.01 0.01 1.00 1.00 1.00 Max Out Probability 0.01 0.01 0.01 1.00 1.00 1.00 Max Out Probability 0.01 0.01 0.01 1.00 1.00 1.00 Max Out Probability 0.01 0.01 0.01 1.00 1.00 1.00 Adjusted Flow Rate (w), weh/n 85 63.9 80.8 20 591 564 17 37<			EDL				_						-	4		
Phase Duration, s 84.5 84.5 14.3 14. Change Period, (Y+Re), s 5.5 5.5 4.5 4.5 Max Allow Headway (MAH), s 3.2 3.2 3.2 3.2 3.2 3.2 Green Extension Time (g*), s 7.8 7.9 0.1 0.1 0.1 0.1 Phase Call Probability 1.00 1.00 1.00 1.00 1.00 1.00 Movement Group Results EB WB NB SB SB Approach Movement L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L<	•					_			_	6.0		\rightarrow	6.0			6.0
Change Period, (Y+R ∘), s 5.5 5.5 4.5 4.5 Max Allow Headway (MAH), s 3.2 3.2 3.2 3.2 3.2 3.2 Queue Clearance Time (g ∘), s 7.8 7.8 7.9 0.1 0.1 0.1 Phase Call Probability 1.00 1.00 1.00 1.00 1.00 1.00 Max Out Probability 0.01 0.01 0.01 1.00 1.00 1.00 1.00 Movement Group Results EB WB WB NB SB SB Approach Movement L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T					-		84.5	_	_	84.5	_	_	14.3		_	14.3
Max Allow Headway (MAH), s 3.2 3.2 3.2 3.2 Queue Clearance Time (g ≠), s 17.3 13.7 7.8 8 Green Extension Time (g ≠), s 7.8 7.9 0.1 0.0 Phase Call Probability 1.00 1.00 1.00 1.00 Max Out Probability 0.01 0.01 1.00 1.00 1.00 Movement Group Results EB WB NB SB Approach Movement L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T R L T A <td< td=""><td colspan="4"></td><td></td><td>_</td><td></td><td>_</td><td></td><td></td><td></td><td>-</td><td></td><td></td><td>_</td><td>4.5</td></td<>						_		_				-			_	4.5
Queue Clearance Time (g_x), s 17.3 13.7 7.6 8. Green Extension Time (g_x), s 7.8 7.9 0.1 0.1 0.0 Phase Call Probability 1.00 1.00 1.00 1.00 1.00 Max Out Probability 0.01 0.01 1.00 1.00 1.00 Movement Group Results EB WB NB SB Approach Movement L T R					-	_		_	_		-	_		_	-	3.2
Green Extension Time (g *), s 7.8 7.9 0.1 0. Phase Call Probability 1.00 1.00 1.00 1.00 1.00 Max Out Probability 0.01 0.01 1.00 1.00 1.0 Movement Group Results EB WB NB SB Approach Movement L T R L T A							17.3		_	13.7		+				8.1
Phase Call Probability					_	_		-	_		_	_		_	_	0.1
Max Out Probability 0.01 0.01 1.00 1.00 Movement Group Results EB WB NB SB Approach Movement L T R L T A L D A A A A A A A A A A A A A			(90),5			_		_	_			_		_	_	1.00
Movement Group Results					_	-		_	_		_	_			_	1.00
Approach Movement L T R L T R L T R L T R L T R Assigned Movement 5 2 12 1 6 16 3 8 18 7 4 Adjusted Flow Rate (v), veh/h Adjusted Saturation Flow Rate (s), veh/h/ln Agent Saturation Flow Rate (s), veh/h Agent Saturation Flow Rate (s), veh/h/ln Agent Saturation Flow Rate (s), veh/h Agent Saturation Flow Rate (s), veh/h Agent Saturation Flow Rate (s), veh/h Agent Saturation Flow Rate Rate (s), veh/h Agent Saturation Flow Rate Rate Rate Rate Rate Rate Rate Rate	max out i roou	Dinty					0.01			0.01			1.00			1.00
Assigned Movement 5 2 12 1 6 16 3 8 18 7 4 Adjusted Flow Rate (v), veh/h Adjusted Flow Rate (v), veh/h Adjusted Saturation Flow Rate (s), veh/h/ln Adjusted Saturation Flow Rate (s), veh/h Adjusted Saturation Flow Rate (s), veh/h/ln Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), veh/h (s d), siveh Adjusted Saturation Flow Rate (s), siveh Adjusted Saturation Flow Rate (s), siveh Adjusted Saturation Flow Rate	Movement Gro	up Res	ults			EB			WB			NB			SB	
Adjusted Flow Rate (v), veh/h 85 639 608 20 591 564 17 37 59 77 Adjusted Saturation Flow Rate (s), veh/h/ln 486 1870 1781 446 1870 1784 1322 1630 1371 1642 Queue Service Time (g *), s 6.1 10.3 10.3 1.4 9.2 9.2 1.2 2.1 4.1 4.4 Cycle Queue Clearance Time (g *), s 15.3 10.3 10.3 11.7 9.2 9.2 5.6 2.1 6.1 4.4 Green Ratio (g/C) 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.10	Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Adjusted Saturation Flow Rate (s), veh/h/ln	Assigned Move	ment			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Saturation Flow Rate (s), veh/h/ln	Adjusted Flow F	Rate (v), veh/h		85	639	608	20	591	564	17	37		59	77	
Queue Service Time (g *), s 6.1 10.3 10.3 1.4 9.2 9.2 1.2 2.1 4.1 4.4 Cycle Queue Clearance Time (g c), s 15.3 10.3 10.3 11.7 9.2 9.2 5.6 2.1 6.1 4.4 Green Ratio (g/C) 0.80 0.80 0.80 0.80 0.80 0.80 0.10 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 <t< td=""><td></td><td></td><td></td><td>n</td><td>486</td><td>1870</td><td>1781</td><td>446</td><td>1870</td><td>1784</td><td>1322</td><td>1630</td><td></td><td>1371</td><td>1642</td><td></td></t<>				n	486	1870	1781	446	1870	1784	1322	1630		1371	1642	
Green Ratio (g/C) 0.80 0.80 0.80 0.80 0.80 0.80 0.10 0.22 0.326 0.474 0.44 0.35 0.395 0.120 0.229 0.326 0.474 0.43 0.44 0.43 0.45 0.44 0.43 0.44 0.44 0.43 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 <th< td=""><td></td><td></td><td></td><td></td><td>6.1</td><td>10.3</td><td>10.3</td><td>1.4</td><td>9.2</td><td>9.2</td><td>1.2</td><td>2.1</td><td></td><td>4.1</td><td>4.4</td><td></td></th<>					6.1	10.3	10.3	1.4	9.2	9.2	1.2	2.1		4.1	4.4	
Green Ratio (g/C) 0.80 0.80 0.80 0.80 0.80 0.80 0.10 0.22 0.326 0.474 0.44 0.35 0.395 0.120 0.229 0.326 0.474 0.43 0.44 0.43 0.45 0.44 0.43 0.44 0.44 0.43 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 0.44 <th< td=""><td>Cycle Queue C</td><td>learand</td><td>e Time (g e), s</td><td></td><td>15.3</td><td>10.3</td><td>10.3</td><td>11.7</td><td>9.2</td><td>9.2</td><td>5.6</td><td>2.1</td><td></td><td>6.1</td><td>4.4</td><td></td></th<>	Cycle Queue C	learand	e Time (g e), s		15.3	10.3	10.3	11.7	9.2	9.2	5.6	2.1		6.1	4.4	
Capacity (c), veh/h 417 1496 1424 383 1496 1426 145 162 180 163 Volume-to-Capacity Ratio (X) 0.203 0.427 0.427 0.051 0.395 0.395 0.120 0.229 0.326 0.474 Back of Queue (Q), ft/ln (50 th percentile) 16.1 68.9 65 3.4 61.3 57.9 11.9 24.5 40.6 55.4 Back of Queue (Q), veh/ln (50 th percentile) 0.6 2.7 2.6 0.1 2.4 2.3 0.5 1.0 1.6 2.2 Queue Storage Ratio (RQ) (50 th percentile) 0.00 0.0 0.0 0.0					0.80	0.80	0.80	0.80	0.80	0.80	0.10	0.10		0.10	0.10	
Back of Queue (Q), ft/ln (50 th percentile) 16.1 68.9 65 3.4 61.3 57.9 11.9 24.5 40.6 55.4 Back of Queue (Q), veh/ln (50 th percentile) 0.6 2.7 2.6 0.1 2.4 2.3 0.5 1.0 1.6 2.2 Queue Storage Ratio (RQ) (50 th percentile) 0.00 0					417	1496	1424	383	1496	1426	145	162		180	163	
Back of Queue (Q), ft/ln (50 th percentile) 16.1 68.9 65 3.4 61.3 57.9 11.9 24.5 40.6 55.4 Back of Queue (Q), veh/ln (50 th percentile) 0.6 2.7 2.6 0.1 2.4 2.3 0.5 1.0 1.6 2.2 Queue Storage Ratio (RQ) (50 th percentile) 0.00 0	Volume-to-Cap	acity Ra	tio (X)		0.203	0.427	0.427	0.051	0.395	0.395	0.120	0.229		0.326	0.474	
Queue Storage Ratio (RQ) (50 th percentile) 0.00					-	-									_	
Queue Storage Ratio (RQ) (50 th percentile) 0.00						2.7	2.6	0.1	_					1.6		
Uniform Delay (d 1), s/veh 5.1 3.0 3.0 4.8 2.9 2.9 44.7 41.0 43.8 42.1 Incremental Delay (d 2), s/veh 1.1 0.9 0.9 0.3 0.8 0.8 1.7 3.3 4.8 9.6 Initial Queue Delay (d 2), s/veh 0.0			<u> </u>	_	-	-	_	-	-	_				_	-	
Incremental Delay (d 2), s/veh					_	-	_	_	_	_	_			_	_	
Initial Queue Delay (d 3), s/veh									_	_	_			_		
Control Delay (d), s/veh 6.2 3.9 4.0 5.0 3.7 3.7 46.4 44.3 48.6 51.6 Level of Service (LOS) A A A A A A A D D D D D Approach Delay, s/veh / LOS 4.1 A 3.7 A 45.0 D 50.3 D Intersection Delay, s/veh / LOS 7.1 A A NB SB		• • • • • • • • • • • • • • • • • • • •			-	0.0	0.0	0.0	0.0					0.0	_	
Level of Service (LOS) A A A A A A A D D D D D Approach Delay, s/veh / LOS 4.1 A 3.7 A 45.0 D 50.3 D Intersection Delay, s/veh / LOS 7.1 A A							_			_	_				_	
Approach Delay, s/veh / LOS 4.1 A 3.7 A 45.0 D 50.3 D Intersection Delay, s/veh / LOS 7.1 A Multimodal Results EB WB NB SB					_									_		
Intersection Delay, s/veh / LOS 7.1 A Multimodal Results EB WB NB SB		· · ·			_		_		_	_	_	_	D	_		D
Multimodal Results EB WB NB SB		11 - 2-												_		
Detection 100 Corner (100	Multimodal Re	sults				EB			WB			NB			SB	
Pedestrian LOS Score / LOS 1.82 B 1.82 B 2.31 B 2.31 B	Pedestrian LOS	Score	/LOS		1.82	2	В	1.82	2	В	2.31		В	2.31		В
	Bicycle LOS Sc	ore / LC	os		1.59			1.46	3	Α		_	Α	0.71		Α

HCS™ Streets Version 7.7

		HCS	7 Sia	nalize	d Inte	ersec	tion F	Resul	ts Sur	nmar	v				
General Inform	nation							l l	ntersec	tion Inf	ormatio	on	T di	4.5441	
Agency								1	Ouration,	, h	0.25			44	
Analyst		Mihir Thakar		Analys	is Date	Nov 2	0, 2020	1	Area Typ	e	Other		- 88		
Jurisdiction				Time F		-			PHF		0.92		- 23	, i	
Urban Street				Analys	is Year	2020		1	Analysis	Period	1> 7:0	00	- 100		
Intersection		University & Wright		File N		-	rsitv&W	_	proved.				-		
Project Descrip	tion	Oniversity a virigin		1 110 141	ui i ic	United	Janyari	rigitation	proved				- 4		
1 Toject Descrip	UUII														
Demand Inform	nation				EB		$\overline{}$	WB		$\overline{}$	NB		$\overline{}$	SB	
Approach Move	ment			T	T	R	1	T	R	1	T	R	1	T	R
Demand (v), v				70	1501	_	131	130		53	186	_	76	25	156
Demand (V), V	CIVII			70	1001	10	101	100	70	- 55	100	- 01	10	20	100
Signal Informa	tion				_ K	JU	$\overline{}$	т	\top	$\overline{}$	_	$\overline{}$		_	\mathbf{T}
Cycle, s	75.5	Reference Phase	2	1	ją ž		_						⊕ .∐		Λ•
Offset, s	0	Reference Point	End	L	_				0.0			7	Z =	-	- 4
Uncoordinated	Yes	Simult. Gap E/W	On	Green	-	18.0	0.0	0.0 0.0		0.0			Ð-I		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow Red	1.0	2.0 1.5	0.0	0.0	0.0	0.0					'Ý :
roice mode	rixeu	Simult. Gap N/S	OII	INCO	1.0	1.0	0.0	0.0	0.0	0.0		-	_	_	
Timer Results		EBI		EBT	WB		WBT	NBI		NBT	SBI		SBT		
	Assigned Phase		EBI	-	2	VVD	-	6	NB	-	8	38	-		
	e			_	-		_	-	6.0	_	-		_	-	6.0
Case Number				_	-	6.0	_	-		_	-	6.0	_	_	
Phase Duration, s				_	_	54.0	_	-	54.0	_	_	21.5	_		21.5
	Change Period, (Y+R c), s				-	2.0	_	-	2.0	_	-	3.5	_	-	3.5
Max Allow Head				_	_	3.5	_	\rightarrow	3.5	_	_	3.3	_	_	3.3
Queue Clearan	ce Time	(g*),s				27.6			54.0			13.3			18.9
Green Extension	n Time	(g∗),s				14.0			0.0			8.0			0.0
Phase Call Pro	bability					1.00			1.00			1.00			1.00
Max Out Proba	bility					0.58			1.00			0.52			1.00
Maurement Con	un Dec	lte			EB			WB			NB			SB	
Movement Gro		Suits													_
Approach Move				Ļ		R	Ļ	T	R	Ļ	T	R	느	T	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow I				76	825	824	142	736	730	58	290		83	197	-
		ow Rate (s), veh/h/l	n	362	1847	1840	303	1870	1851	1186	1774		1089	1619	
Queue Service				10.3	19.0	19.0	33.0	15.2	15.3	3.3	11.3		5.6	8.0	$\overline{}$
Cycle Queue C	learand	e Time (ge), s		25.6	19.0	19.0	52.0	15.2	15.3	11.3	11.3		16.9	8.0	
Green Ratio (g	/C)			0.69	0.69	0.69	0.69	0.69	0.69	0.24	0.24		0.24	0.24	
Capacity (c), v	/eh/h			271	1272	1267	228	1288	1275	253	423		193	386	
Volume-to-Cap	acity Ra	itio (X)		0.281	0.649	0.650	0.625	0.571	0.573	0.228	0.686		0.429	0.510	
Back of Queue	(Q), ft/	In (50 th percentile)		23.6	152.4	152.2	79.2	121.6	121.4	26.9	139.4		45.6	86.1	
Back of Queue	(Q), ve	eh/ln (50 th percenti	le)	0.9	6.0	6.0	3.1	4.8	4.8	1.1	5.5		1.8	3.4	
		RQ) (50 th percent	•	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay				12.6	6.6	6.6	22.4	6.0	6.0	29.8	26.2		33.9	24.9	
	cremental Delay (d 2), s/veh			2.6	2.6	2.6	12.3	1.8	1.9	2.1	8.8		6.8	4.7	
	nitial Queue Delay (d z), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
_	ontrol Delay (d), s/veh			15.2	9.2	9.2	34.8	7.9	7.9	31.9	35.0		40.7	29.7	
	evel of Service (LOS)			B	A	A	C	A	A	C	C		D	C	
				9.5		A	10.3		В	34.4		C	32.9		С
	upproach Delay, s/veh / LOS ntersection Delay, s/veh / LOS			8.5			3.6			34.4			32.X B		•
intersection De	idy, S/VE	HI / LU3				18	0.0						0		
Multimodal Re	culte				EB			WB			NB			SB	
		11.00		4.00	_	D	4.04	_	D	2.00		D	2.20	_	D
Pedestrian LOS Co				1.85	_	В	1.85	_	В	2.28	-	B	2.28	-	В
Bicycle LOS So	ore / LC	JS .		1.91		В	1.81		В	1.06		Α	0.98		Α

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	HCS	7 Sig	nalize	d Inte	ersect	tion R	lesul	ts Sur	nmar	v				
General Information							T I	ntersect	tion Infe	ormatio	n	T é	4.544.11	l+ .
Agency								Duration,	h	0.25			44	
Analyst	Mihir Thakar		Analys	is Date	Nov 2	0. 2020		Area Typ	e	Other		- 888		
Jurisdiction			Time F	Period				PHF		0.92		- 1	, i	
Urban Street				is Year	2020		A	Analysis	Period	1> 7:0	00	- 188		
Intersection	University & Wright		File N		-	reitu&W	_	improve		1				
Project Description	University & Wright		I lie iv	anne	Onive	Sityotv	ignion	iiiipiove	u.xus			- 4		and a
Project Description														
Demand Information	,			EB		_	WB			NB		_	SB	
Approach Movement			$\overline{}$	T	I R	1	ΤT	R	1	T	I R	1	T	R
Demand (v), veh/h			70	1501	16	131	1308	_	53	186	81	76	25	156
Demand (v), vervn			70	1301	10	131	1300	9 40	33	100	01	70	20	130
Signal Information				T .	JIL	$\overline{}$	_		_	_		_	_	_
Cycle, s 98.8	Reference Phase	2	1	l-₹ \$	-							$a \perp$		小
Offset s 0	Reference Point	End		74	1 M						- 1	€ .	-	- 4
Uncoordinated Yes		On	Green		9.8	0.0	0.0	0.0	0.0			الح		
	-	-	Yellow		3.0	0.0	0.0	0.0	0.0					Ψ
Force Mode Fixed	d Simult. Gap N/S	On	Red 2.0		1.5	0.0	U.U	U.U	U.U		Ŧ		T	8
Timer Results			EBI		EBT	WB		WBT	NBI		NBT	SBI		SBT
			EBI	- -		VVB	-	6	NBI	-		280	-	4
Assigned Phase			_	-	2	_	-	_	_	-	8	_	-	
Case Number			_	$\overline{}$	6.0	_	-	6.0	_	-	6.0	_	-	6.0
Phase Duration, s	hase Duration, s hange Period, (Y+Rc), s			$\overline{}$	34.5	_	-	84.5	_	_	14.3	_	_	14.3
		_	_	5.5	_		5.5	_	_	4.5	_	_	4.5	
Max Allow Headway				_	3.5			3.5			3.3			3.3
Queue Clearance Tin	ne (g ៖), s				23.6			49.8			11.8			11.8
Green Extension Tim	e (g •), s			1	19.6			15.5			0.0			0.0
Phase Call Probability	у			1	1.00		т	1.00		-	1.00			1.00
Max Out Probability				(1.25		工	0.51			1.00			1.00
Movement Group Re	esults			EB			WB			NB			SB	
Approach Movement				T	R		T	R		T	R		T	R
Assigned Movement			5	2	12	1	6	16	3	8	18	7	4	14
	\b./b			825		142		730	58	290	10	83	197	-17
Adjusted Flow Rate (_	76		824		736							_
Adjusted Saturation F		11	362	1847	1840	303	1870	1851	1186	1774		1089	1619	
Queue Service Time			8.7	16.0	16.0	31.8	12.8	12.9	0.0	9.8		0.0	9.8	
Cycle Queue Clearan	ice lime (ge), s		21.6	16.0	16.0	47.8	12.8	12.9	9.8	9.8		9.8	9.8	
Green Ratio (g/C)			0.80	0.80	0.80	0.80	0.80	0.80	0.10	0.10		0.10	0.10	_
Capacity (c), veh/h			315	1477	1471	266	1496	1480	73	176		73	161	
Volume-to-Capacity F						_	_	0.493	_				1.225	_
	ft/In (50 th percentile)		18.6	107.4		60.8	_	85.9	_	499.8		120.2	261.1	
Back of Queue (Q),	veh/In (50 th percent	ile)	0.7	4.2	4.2	2.4	3.4	3.4	2.6	19.7		4.7	10.3	
Queue Storage Ratio	(RQ) (50 th percent	tile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d 1).	niform Delay (d r), s/veh			3.6	3.6	12.3	3.3	3.3	49.4	44.5		49.4	44.5	
	cremental Delay (d 2), s/veh			1.5	1.5	7.5	1.2	1.2	57.8	316.4		146.3	144.1	
Initial Queue Delay (itial Queue Delay (d 3), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
	ontrol Delay (d), s/veh			5.1	5.1	19.8	4.4	4.5		360.9				
	evel of Service (LOS)			A	Α	В	A	A	F	F		F	F	
pproach Delay, s/veh / LOS			5.3		A	5.8	_	A	318.	_	F	190.		F
pproach Delay, s/veh / LOS htersection Delay, s/veh / LOS			0.0	_	46		_		510.			D TOU.		•
meraconon belay, s														
Aultimodal Results				ED			1440			NID			00	
Multimodal Results				EB			WB			NB			SB	
Multimodal Results Pedestrian LOS Scor			1.82	_	В	1.82	_	В	2.31	_	В	2.31	_	В

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