

# Performance Analysis: FM 2818 at George Bush Dr. & Luther St.

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# Introduction

- Location
- Analysis Period
- Purpose
- Data
  - Volume
  - Timing Plan: Initial Green, Yellow, All Red
- Program Approach





# Introduction



# Introduction





# **Program Application Approaches: HCS 2010**

- **Advantages:**
  - Intuitive user interface
  - Powerful timing optimization tools
- **Disadvantages:**
  - Simplistic geometry options
  - Difficulty obtaining a working version

# Program Application

## Approaches: Synchro 7

- Advantages:
  - Comprehensive geometric inputs
  - Diverse timing plan options
- Disadvantages:
  - Complicated to use
  - Expensive

# Performance Analysis: Current Design, AM Peak

		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	14.4	35.6	95.4	92.3
	Approach LOS	B	D	F	F
	Intersection Delay	32.1			
	Intersection LOS	C			
@ Luther St.	Approach Delay	8.7	3.7	98.2	90.3
	Approach LOS	A	A	F	F
	Intersection Delay	8.2			
	Intersection LOS	A			



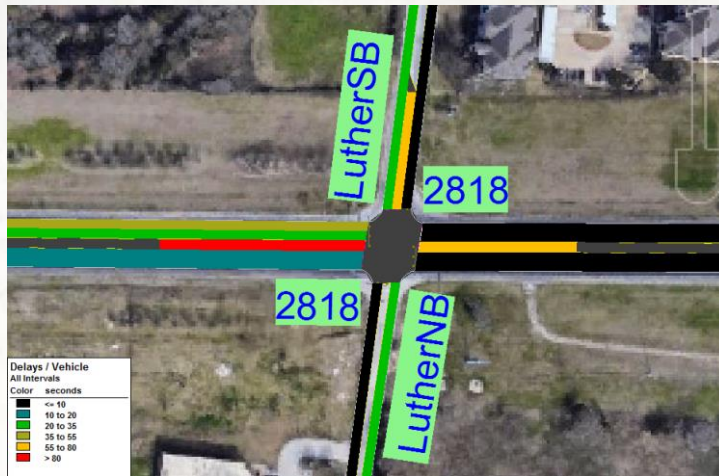
# Performance Analysis: Current Design, AM Peak



		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	22.2	22.3	55.5	28.0
	Approach LOS	C	C	E	C
	Intersection Delay	23			
	Intersection LOS	C			
@ Luther St.	Approach Delay	8.7	38.5	49.3	24.2
	Approach LOS	E	F	D	C
	Intersection Delay	28			
	Intersection LOS	C			



# Performance Analysis: Current Design, AM Peak



# Performance Analysis: Add Lane Case

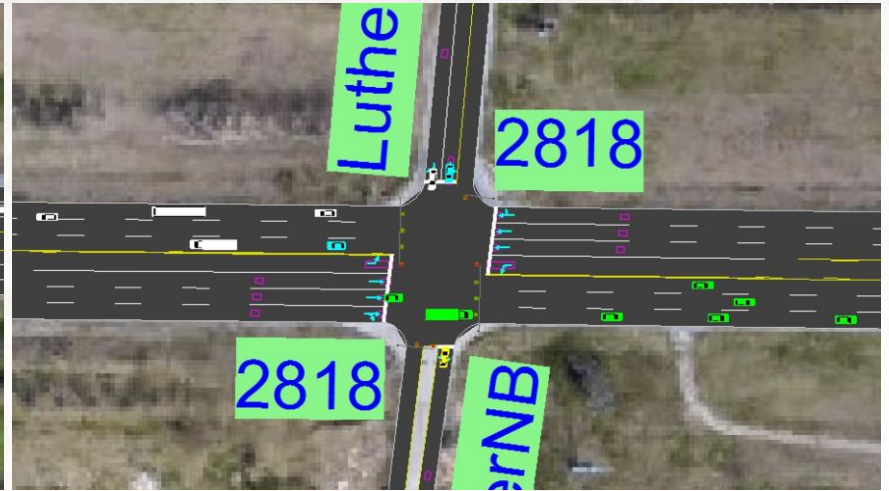
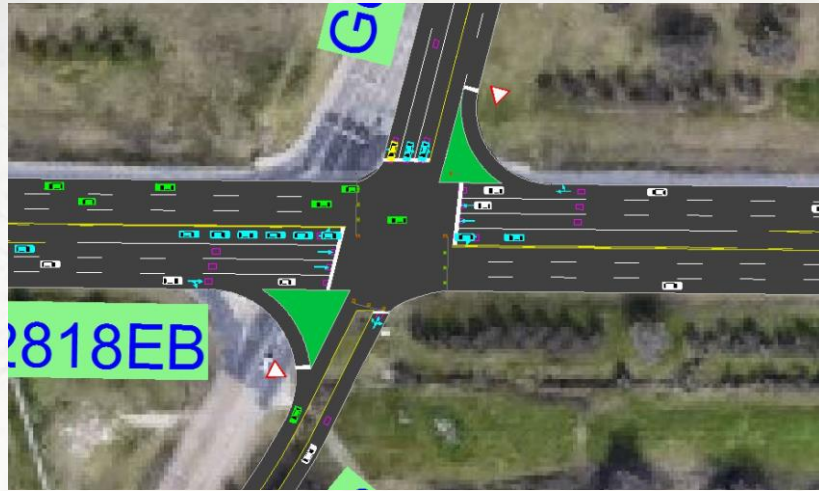
		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	8.5	22.0	58.6	57.0
	Approach LOS	A	C	E	E
	Intersection Delay	19.7			
	Intersection LOS	B			
@ Luther St.	Approach Delay	9.6	3.2	60.5	50.7
	Approach LOS	A	A	E	D
	Intersection Delay	7.0			
	Intersection LOS	A			

# Performance Analysis: Add Lane Case

		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	17.5	21.9	44.8	21.8
	Approach LOS	B	C	D	C
	Intersection Delay		20.3		
	Intersection LOS		C		
@ Luther St.	Approach Delay	18.7	20.4	36.3	18.7
	Approach LOS	B	C	D	B
	Intersection Delay		19.8		
	Intersection LOS		B		



# Performance Analysis: Add Lane Case

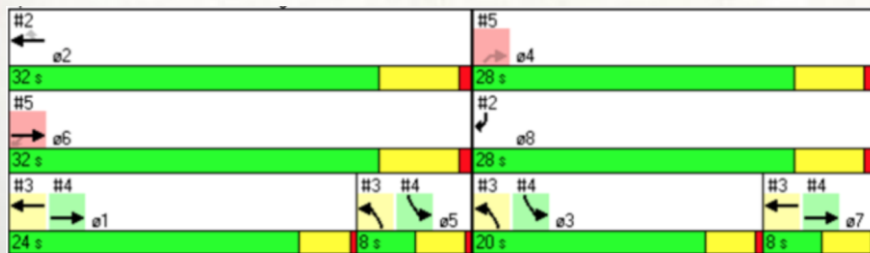


# Performance Analysis: Superstreet No Crossing

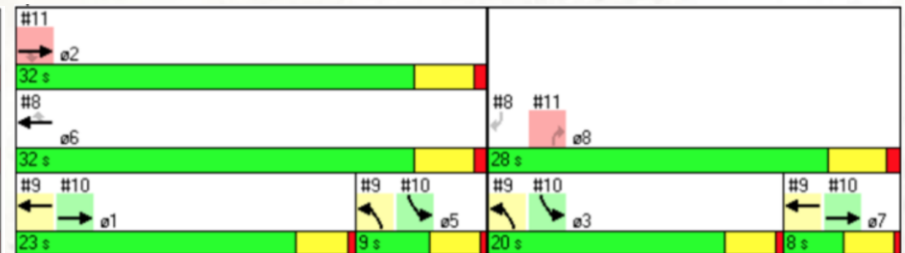
		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	4.8	23.7	93.6	92.2
	Approach LOS	A	C	F	F
	Intersection Delay	21.6			
	Intersection LOS	C			
@ Luther St.	Approach Delay	4.8	4.8	95.9	91.5
	Approach LOS	A	A	F	F
	Intersection Delay	7.4			
	Intersection LOS	A			



# Performance Analysis: Superstreet No Crossing



George Bush



Luther



# Performance Analysis: Superstreet No Crossing



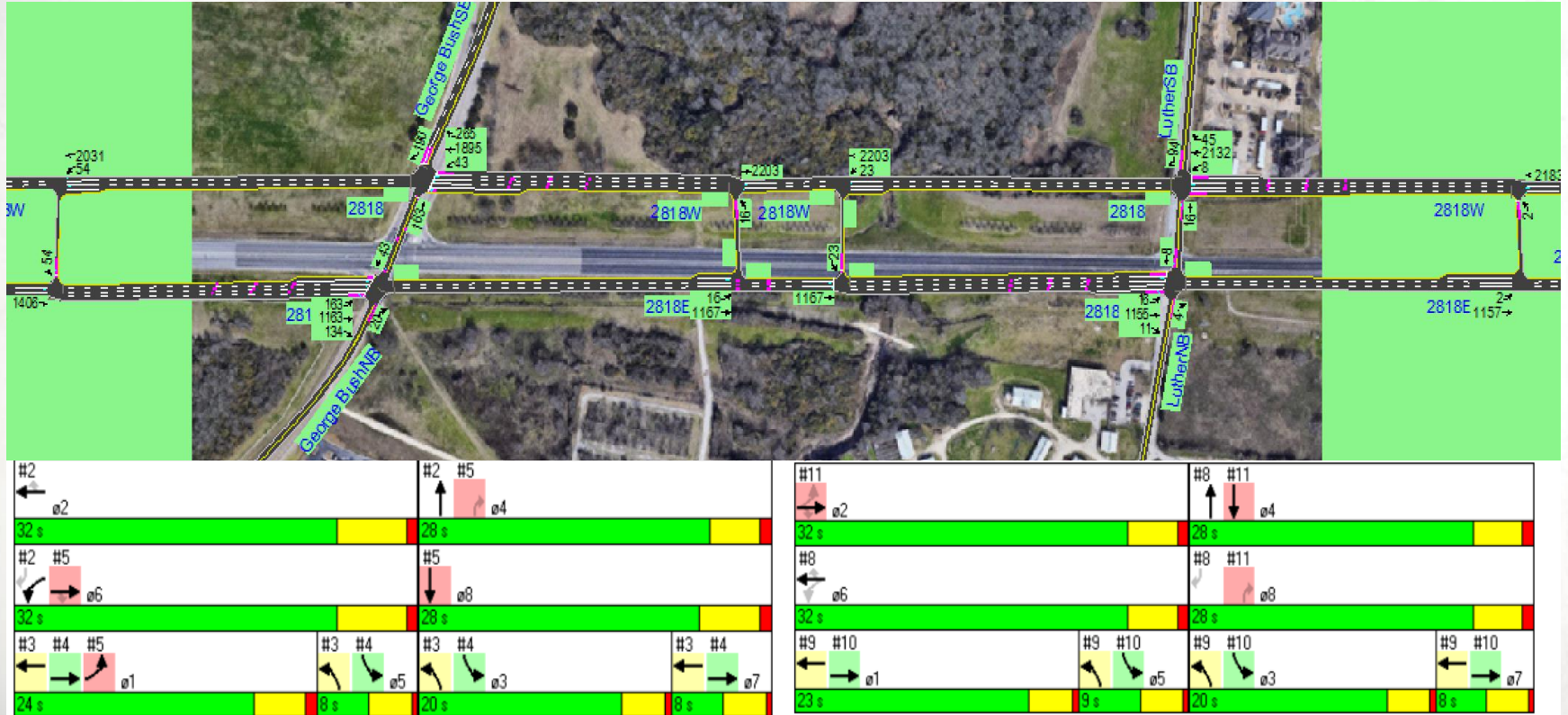
**Table 5.3.1: ICU for Superstreet with no crossing, 2016**

Node	#1	#2	#3	#4	#5	#6	#7	#8
ICU	53.7%	41.9%	60.5%	41.8%	73.1%	71.8%	71.8%	71.2%

# Performance Analysis: Superstreet with Left Turn

		FM 2818		@Minor Road	
		Eastbound	Westbound	Northbound	Southbound
@ George Bush Dr.	Approach Delay	13.2	40.1	91.1	88.7
	Approach LOS	B	D	F	F
	Intersection Delay	34.1			
	Intersection LOS	C			
@ Luther St.	Approach Delay	8.9	8.0	93.4	88.5
	Approach LOS	A	A	F	F
	Intersection Delay	10.7			
	Intersection LOS	B			

# Performance Analysis: Superstreet with Left Turn



# 2818&George Bush

# 2818&Luther

## Actuated-Coordinated Timing Plan for Super Street.





# Performance Analysis: Superstreet with Left Turn



Node#	#1	#2	#3	#4	#5	#6	#7	#8
LOS	B	A	B	B	A	B	B	A
ICU	80.7%	80.7%	53.7%	53.7%	73.1%	71.8%	71.8%	52.2%

## ICU: Intersection Capacity Utilization

# HCS Results Comparison: FM 2818 @ George Bush Dr.

<b>FM 2818 at G.B.</b>	<b>Base</b>	<b>Add Lane</b>	<b>Superstreet with No Left Turns</b>	<b>Superstreet with Left Turns</b>
<b>LOS</b>	<b>C</b>	<b>B</b>	<b>C</b>	<b>C</b>
<b>Delay s/veh</b>	<b>32.1</b>	<b>19.7</b>	<b>21.6</b>	<b>34.1</b>

# HCS Results Comparison: FM 2818 @ Luther St.

<b>FM 2818 at Luther</b>	<b>Base</b>	<b>Add Lane</b>	<b>Superstreet with No Left Turns</b>	<b>Superstreet with Left Turns</b>
<b>LOS</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>
<b>Delay s/veh</b>	<b>8.2</b>	<b>7.0</b>	<b>7.4</b>	<b>10.7</b>



# **SYNCHRO Results Comparison: FM 2818 @ George Bush Dr.**

<b>FM 2818 at G.B.</b>	<b>Base</b>	<b>Add Lane</b>	<b>Superstreet with No Left Turns</b>	<b>Superstreet with Left Turns</b>
<b>LOS</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>A</b>
<b>Delay s/veh</b>	<b>22.8</b>	<b>20.3</b>	<b>12.8</b>	<b>9.2</b>

# **SYNCHRO Results Comparison: FM 2818 @ Luther St.**

<b>FM 2818 at Luther</b>	<b>Base</b>	<b>Add Lane</b>	<b>Superstreet with No Left Turns</b>	<b>Superstreet with Left Turns</b>
<b>LOS</b>	<b>C</b>	<b>B</b>	<b>C</b>	<b>B</b>
<b>Delay s/veh</b>	<b>27.8</b>	<b>19.8</b>	<b>18.1</b>	<b>16.8</b>



# Why Add Lane?

- Reduced delay
- Relative cost savings
- Shorter construction period
- Unfamiliar drivers (game days, NSCs, etc.) will know the navigation
- Provides time for other solutions (??)



# Future Results Comparison

Added Lane: LOS & Delay (s/veh) Results		Base		Future	
		George Bush	Luther	George Bush	Luther
HCS	LOS	C	A	C	A
	Delay	32.1	8.2	26.8	7.3
Synchro	LOS	C	C	C	C
	Delay	22.8	27.8	24.0	31.0

**Questions?**

