LJ Engineering
Building Partnerships

2500 Newmark Drive Miamisburg, OH 45342 | (866) 552-3536 | LJBinc.com

APPENDIX A – DESIGN TRAFFIC PLATES

MEMORANDUM

DATE: 5/10/2023

SUBJECT: PID 117955 FAY-435-1.52 Certified Traffic Plates

PREPARED BY: Sara Senger, PE, PTOE - TEC Engineering, Inc.

Veena Madineni PE, PTOE, RSP2I - LJB

PREPARED FOR: ODOT District 6

ODOT Modeling & Forecasting

The attached traffic plates are being submitted for certification for the FAY-435-1.52 IOS project. The project area includes SR 435 from Garringer-Edgefield Road to SR 729/Bluegrass Boulevard (including the associated ramps at I- 71 and US 35 interchanges) and SR 41 from Carr Road to SR 734 (including the associated I-71 Ramps). Two build alternatives were evaluated:

- 2024BLD (Network assumption: improvements along SR-435 with Roundabout at Bluegrass Blvd; Land Use assumption: Honda/LG plant)
- 2044BLD (Network assumption: improvements along SR-435 with Roundabout at Bluegrass Blvd, plus Bluegrass Link (35mph) and improvements at I-71/SR-41; Land Use assumption: Honda/LG plant and Low-Density Development in the LJB study report)

Separate ADT, AM Peak, PM Peak and Truck Percentage Plates are being submitted for this project.

Traffic Counts

A majority of the traffic counts for the study area were collected in 2022 for the FAY- 435 & 41 Traffic Study. Supplemental counts for intersections not included in the study but added to the IOS study area were collected in Jan 2023. Mainline and ramp count data were also obtained from ODOT's TDMS where available. Since most intersections did not include 24 hours of TMC data, the partial count factor form was utilized to develop ADT data for the project intersections. These spreadsheets are included in the supplemental data files included with this submission.

Traffic counts for mainline I-71 were utilized from the ATR site (ID: 5124) located between SR 435 & SR 41 interchanges.

The peak hours were calculated as: SR 435: 6:30-7:30 & 3:00-4:00 SR 41: 6:45-7:45 & 3:30-4:30

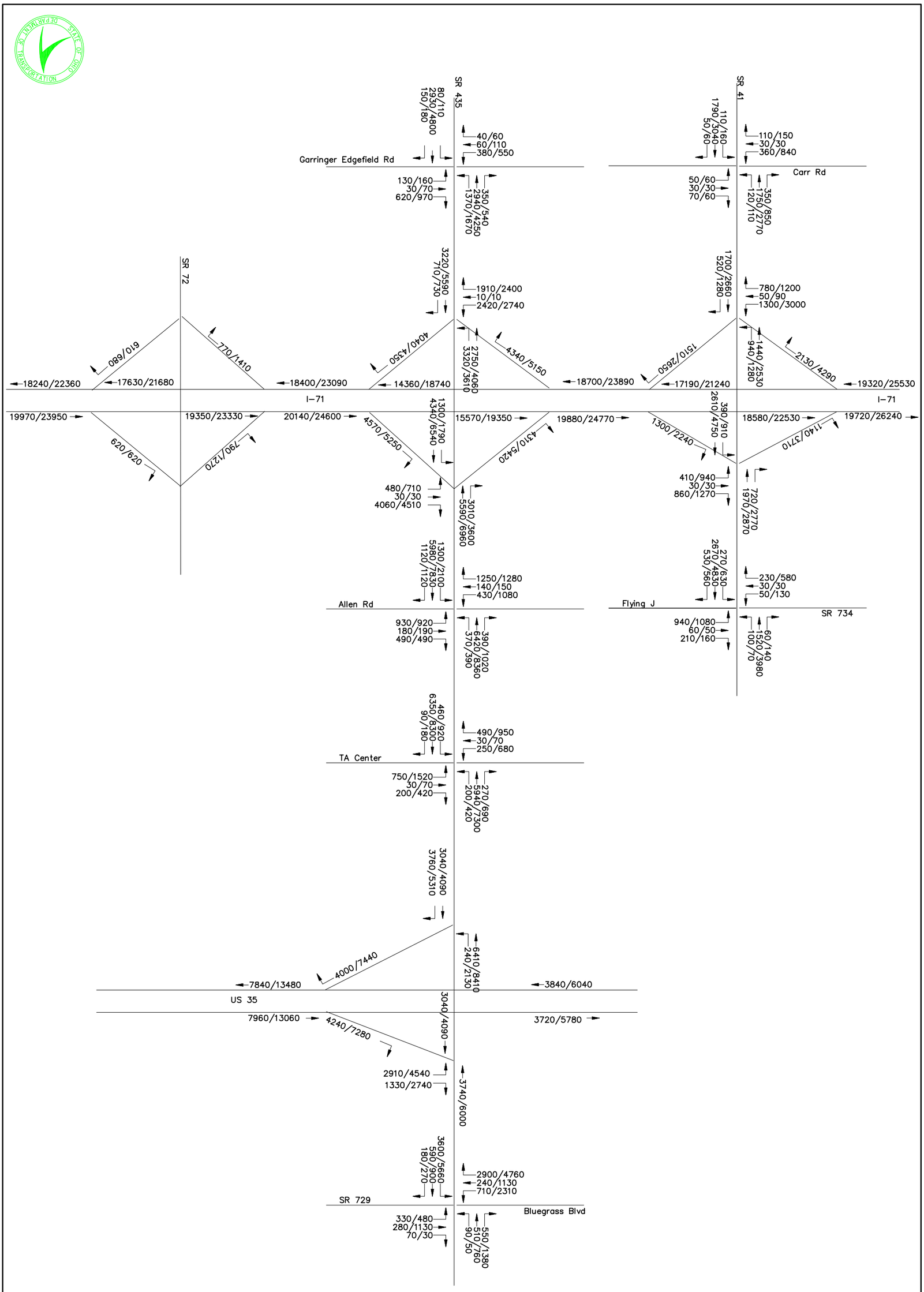
NCHRP Adjustments

The procedures outlined in the ODOT Traffic Forecasting Manual were used to develop future traffic assignments. Travel Demand Model (TDM) output for the 2020 base year, 2025 Build and 2045 Build design year were provided by ODOT M&F.

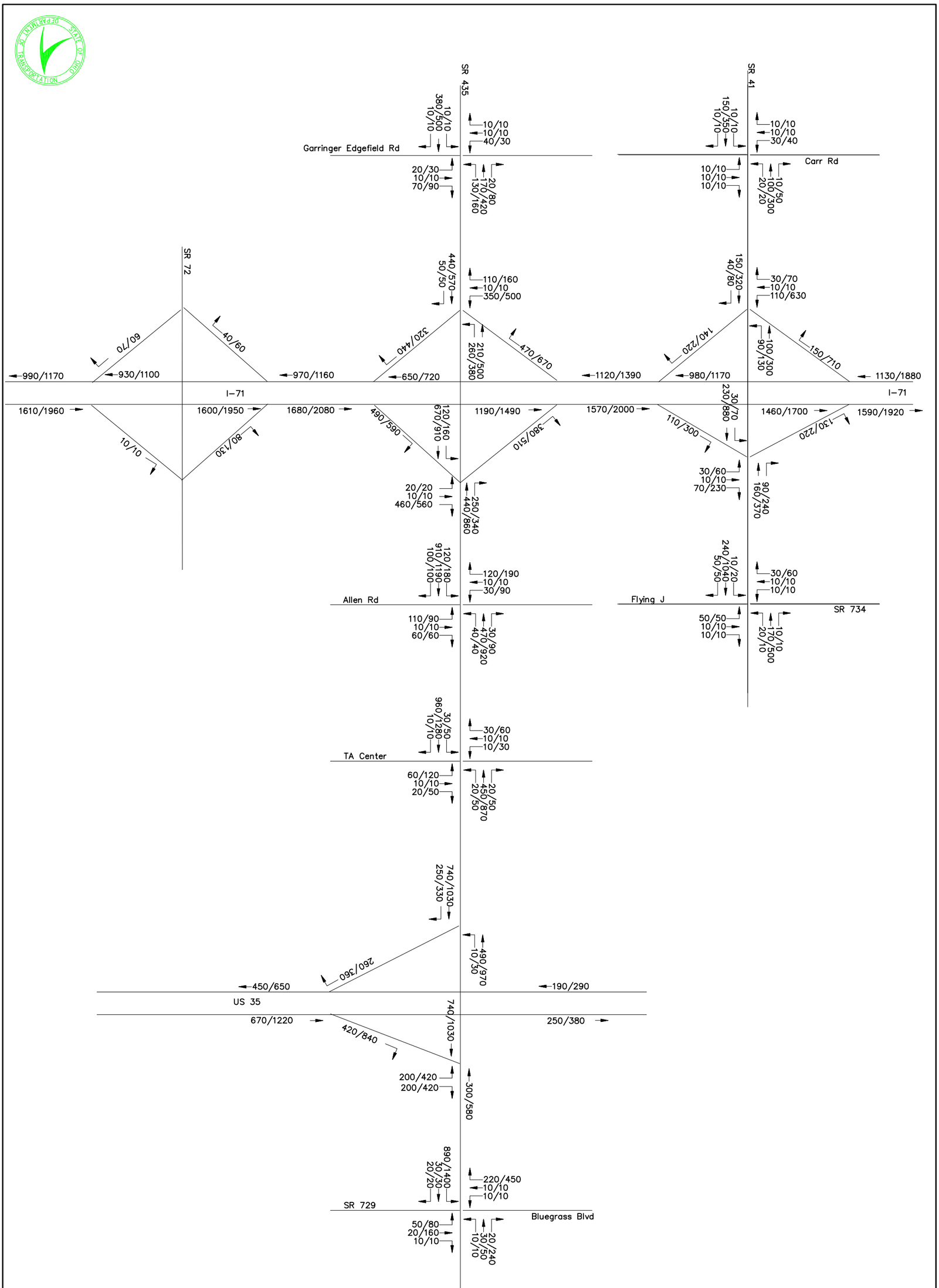
K values were averaged by FC using ODOT's *KandD-Factors-2021-HPMS-FC-Sort* sorted by Rural and the appropriate FC (SR 435 and SR 41 are both FC 5) and the data averaged. Typically, the K factor for SR 435 and SR 41 was 12.1% and the ramps were 10.2%. Spot adjustments to K factor were made within the NCRPC spreadsheets where needed to achieve convergence.

Based on inputs from LJB, spot adjustments were made at the intersection of SR 435 & SR 729/Bluegrass Blvd to better represent the anticipated traffic volumes from the Megasite Traffic Study. These adjustments were carried through the network. The values that were adjusted are shown in the provided Balance spreadsheets (holding Bluegrass) for Opening Year and Design Year Build scenarios. Similar adjustments were made along SR 41 corridor for the 2044 Build scenario only. No adjustments were necessary for SR 41 corridor in the 2024 opening year, as no direct connection to the MegaSite is planned for the 2024 Opening Year.

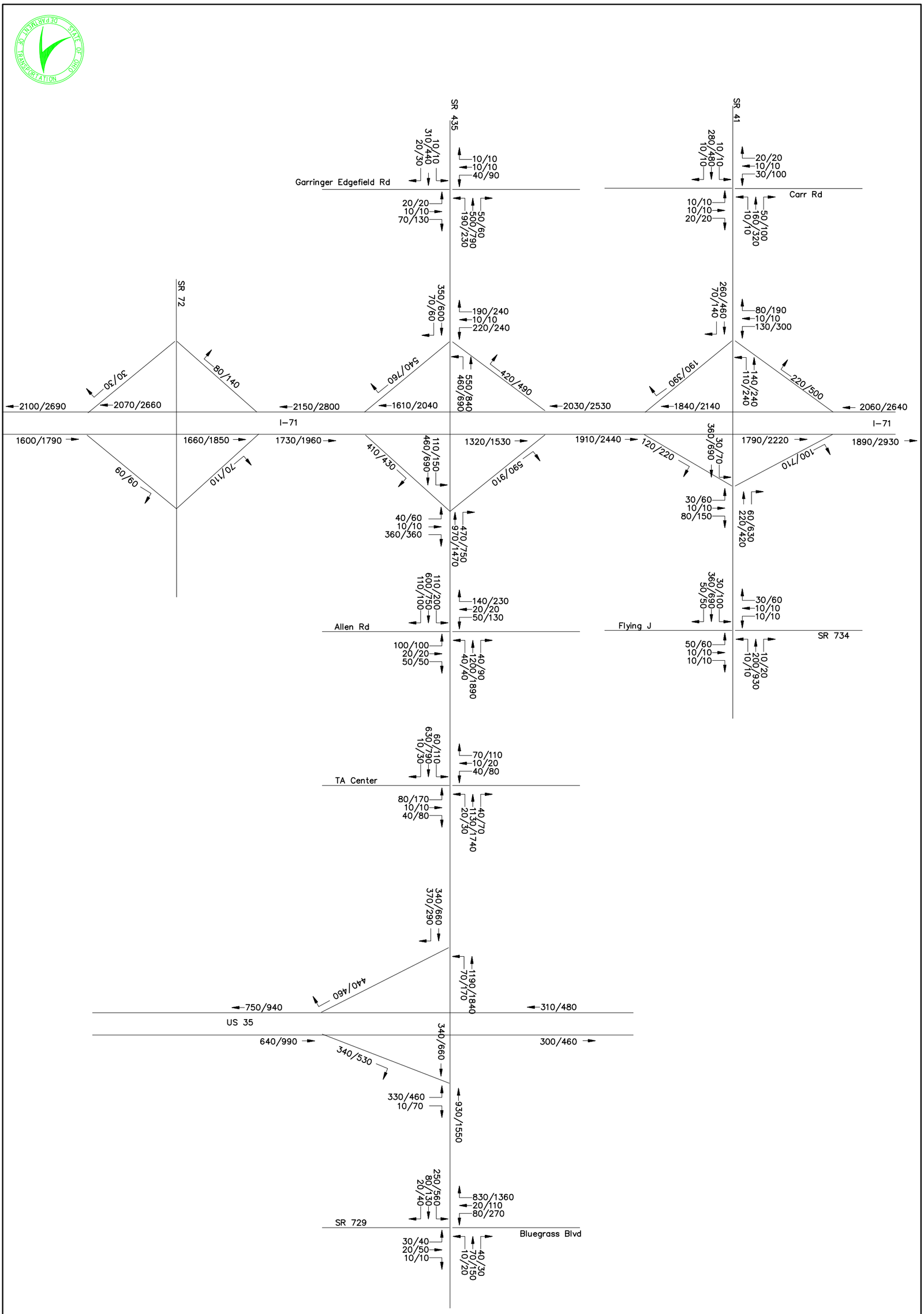
The NCHRP spreadsheets are included in the supplemental data files included with this submission.



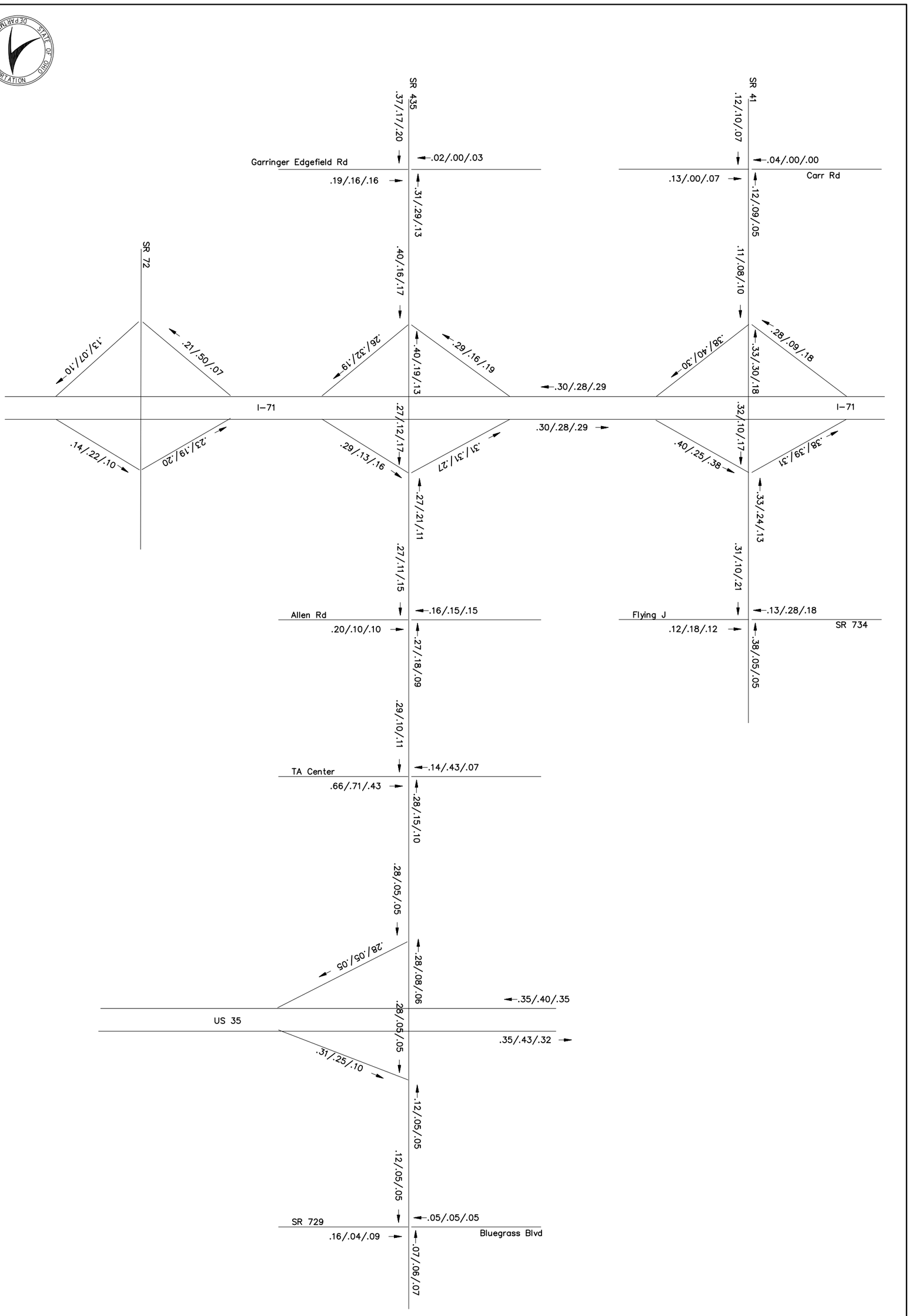
3	2024/2044 BUILD ADT PID 117955	FAY-435-1.52 ODOT OFFICE OF STATEWIDE PLANNING & RESEARCH	ANALYST SMS DATE 05/2023	Text Text Text NOT TO SCALE



3 2	2024/2044 BUILD AM DHV PID 117955	FAY-435-1.52 ODOT OFFICE OF STATEWIDE PLANNING & RESEARCH	ANALYST SMS DATE 05/2023	Text Text Text NOT TO SCALE	



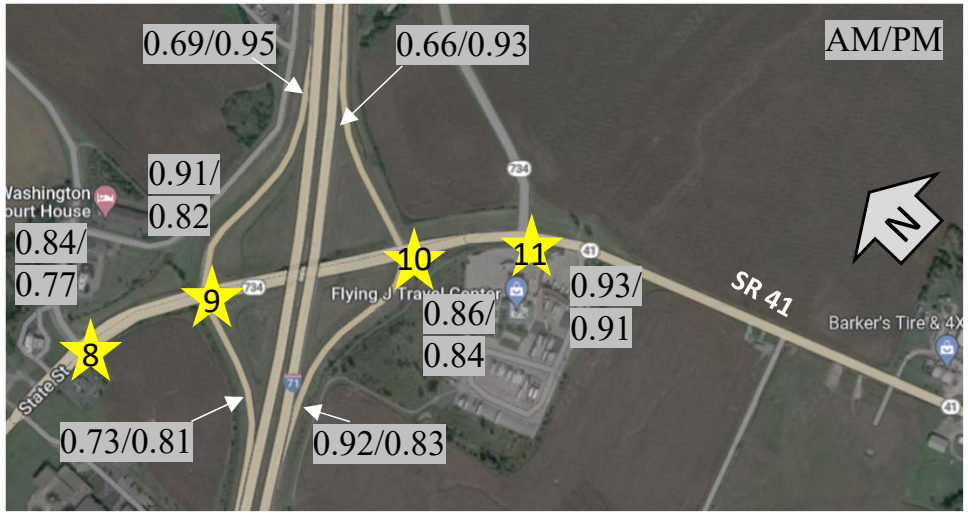
3 of 3	2024/2044 BUILD PM DHV PID 117955	FAY-435-1.52 ODOT OFFICE OF STATEWIDE PLANNING & RESEARCH	ANALYST SMS	Text Text Text NOT TO SCALE	N
			DATE 05/2023		



	TRUCK FACTORS T24/AM TD/PM TD	FAY-435_IOS ODOT OFFICE OF STATEWIDE PLANNING & RESEARCH	ANALYST SMS DATE 05/2023	Text Text Text NOT TO SCALE

Peak Hour Factors

SR 41 Corridor



SR 435 Corridor

* - For design year 2044, the AM peak PHF for SR 435/Bluegrass Blvd. will be assumed to be 0.90 for analysis

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APPENDIX B – BUILD SCHEMATICS

WETLAND B
0.027 AC IN STUDY AREA
0.002 AC IMPACTED

WETLAND C
0.027 AC IN STUDY AREA
NO IMPACTS

DITCH 2
72 LF / 0.005 AC IN STUDY AREA
72 LF / 0.005 AC IMPACTED

PROPOSED WATERLINE

WETLAND D
0.014 AC IN STUDY AREA
0.014 AC IMPACTED

WETLAND A
0.08 AC IN STUDY AREA
0.08 AC IMPACTED

DITCH 1
1,266 LF / 0.465 AC
IN STUDY AREA

760 LF / 0.279 AC
IMPACTED

BLUEGRASS BLVD

71 35 435 729

HORIZONTAL SCALE IN FEET
0 150 300 600

SCHEMATIC PLAN
FAY-35/435-04.68/1.90

FAY-435-1.52

MODEL: Sheet Full PAPERSIZE: 34x22 (in.) DATE: 5/9/2023 TIME: 2:9:41 PM USER: zigmund
G:\DE\Clients\ODOT\0016973_FAY_35_435_0468.0190_Task6\117955\400-Engineering\Roadway\Sheets\117955_GB000.dgn

DESIGN AGENCY
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PROJECT ID
117955

SHEET 1 TOTAL 128

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APPENDIX C – 2044 FREEWAY FACILITIES REPORTS

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	May 1, 2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Facility Name	I-71 NB from SR 72 to SR 41	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	10.47		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-71 NB from SR 72 On-ramp to Add Lane (2-lane)	15980	2
2	Basic	Basic	I-71 NB from Add Lane (3-lane) to SR 435 Off-ramp	17120	3
3	Diverge	Diverge	I-71 , SR 435 Off-ramp	1500	3
4	Basic	Basic	I-71 NB, between SR 435 ramps	2830	3
5	Merge	Merge	I-71 NB, SR 435 on-Ramp	1500	3
6	Basic	Basic	I-71 from SR 435 On-ramp to SR 41 Off-ramp	16360	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	2833	4800	0.59	73.1	19.4	C

Segment 2: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	2833	7200	0.39	75.0	12.6	B

Segment 3: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.91	0.781	0.885	2833	733	7200	2200	0.39	0.33	70.6	67.3	13.4	17.7	B

Segment 4: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	2030	7200	0.28	74.9	9.0	A

Segment 5: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.88	0.781	0.763	2790	760	7200	2200	0.39	0.35	69.1	67.3	13.5	14.2	B

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	2724	7200	0.38	75.0	12.1	B

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	5640	5262	0.89	22.30	74.1	13.7	10.7	8.50	B

Facility Overall Results

Space Mean Speed, mi/h	74.1	Average Density, veh/mi/ln	10.7
Average Travel Time, min	8.50	Average Density, pc/mi/ln	13.7
Total VMT, veh-mi	5640	Total VHD, veh-h	0.89
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	22.30

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	May 1, 2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	I-71 NB from SR 72 On-ramp to Add Lane (2-lane)
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	15980	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2080	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1416
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.59

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	73.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Basic Freeway Report

Project Information

Segment Number	2	Segment Name	I-71 NB from Add Lane (3-lane) to SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	17120	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2080	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	944
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.39

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	12.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	I-71 , SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	520
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	2080	590
Peak Hour Factor (PHF)	0.94	0.91
Total Trucks, %	28.00	13.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.781	0.885
Flow Rate (v_i), pc/h	2833	733
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.39	0.33

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	725
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	67.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2108	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	70.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	13.4
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	17.7

HCS Basic Freeway Report

Project Information

Segment Number	4	Segment Name	I-71 NB, between SR 435 ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1490	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	677
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.28

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	9.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	5	Segment Name	I-71 NB, SR 435 on-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1050
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	1490	510
Peak Hour Factor (PHF)	0.94	0.88
Total Trucks, %	28.00	31.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.781	0.763
Flow Rate (v_i), pc/h	2030	760
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.39	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1537.9	Flow Outer Lanes (v_{OA}), pc/h/ln	798
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	67.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	1232	Outer Lanes Freeway Speed (S_O), mi/h	73.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1992	Ramp Junction Speed (S), mi/h	69.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	13.5
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	14.2

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-71 from SR 435 On-ramp to SR 41 Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16360	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2000	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	908
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.38

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	12.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	C	B	B	A	B	B
Speed (mi/h)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	73.1	75.0	70.6	74.9	69.1	75.0
Density (pc/mi/ln)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	19.4	12.6	13.4	9.0	13.5	12.1
Demand - Capacity Ratio (D/C)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	0.59	0.39	0.39	0.28	0.39	0.38

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Facility Name	I-71 NB from SR 72 to SR 41	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	10.47		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	NB I-71 from SR 72 On-ramp to Add Lane	15980	2
2	Basic	Basic	I-71 NB from Add Lane to SR 435 Off-ramp	17120	3
3	Diverge	Diverge	I-71 -SR 435 off-ramp	1500	3
4	Basic	Basic	I-71 NB_Between SR 435 Ramps	2830	3
5	Merge	Merge	I-71 -SR 435 On-ramp	1500	3
6	Basic	Basic	I-71 NB from SR 435 On-ramp to SR 41 Off-ramp	16360	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	2690	4800	0.56	73.7	18.2	C

Segment 2: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	2690	7200	0.37	75.0	12.0	B

Segment 3: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.83	0.775	0.862	2690	601	7200	2200	0.37	0.27	71.0	67.7	12.6	16.7	B

Segment 4: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	2100	7200	0.29	74.9	9.3	A

Segment 5: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.86	0.775	0.787	3445	1345	7200	2200	0.48	0.61	68.1	66.5	16.9	18.8	B

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	3349	7200	0.47	74.9	14.9	B

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	5834	5415	0.78	19.47	74.3	14.3	11.1	8.50	B

Facility Overall Results

Space Mean Speed, mi/h	74.3	Average Density, veh/mi/ln	11.1
Average Travel Time, min	8.50	Average Density, pc/mi/ln	14.3
Total VMT, veh-mi	5834	Total VHD, veh-h	0.78
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	19.47

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	NB I-71 from SR 72 On-ramp to Add Lane
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	15980	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1960	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1345
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.56

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	73.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.2
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Basic Freeway Report

Project Information

Segment Number	2	Segment Name	I-71 NB from Add Lane to SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	17120	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1960	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	897
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.37

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	12.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	I-71 -SR 435 off-ramp
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	520
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	1960	430
Peak Hour Factor (PHF)	0.94	0.83
Total Trucks, %	29.00	16.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.775	0.862
Flow Rate (v_i), pc/h	2690	601
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.37	0.27

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	700
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	67.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	1990	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	71.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	12.6
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	16.7

HCS Basic Freeway Report

Project Information

Segment Number	4	Segment Name	I-71 NB_Between SR 435 Ramps
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1530	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	700
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.29

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	9.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	5	Segment Name	I-71 -SR 435 On-ramp
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1050
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	1530	910
Peak Hour Factor (PHF)	0.94	0.86
Total Trucks, %	29.00	27.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.775	0.787
Flow Rate (v_i), pc/h	2100	1345
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.48	0.61

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1678.0	Flow Outer Lanes (v_{OA}), pc/h/ln	825
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	66.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1275	Outer Lanes Freeway Speed (S_O), mi/h	73.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2620	Ramp Junction Speed (S), mi/h	68.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	16.9
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	18.8

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-71 NB from SR 435 On-ramp to SR 41 Off-ramp
Analysis Period Number	1	Segment Analysis Period	15:00-15:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16360	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2440	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1116
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.47

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	14.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	C	B	B	A	B	B
Speed (mi/h)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	73.7	75.0	71.0	74.9	68.1	74.9
Density (pc/mi/ln)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	18.2	12.0	12.6	9.3	16.9	14.9
Demand - Capacity Ratio (D/C)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	0.56	0.37	0.37	0.29	0.48	0.47

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Facility Name	I-71 SB from SR 41 to SR 72	Units	U.S. Customary
Project Description	FAY-VAR IOS(PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	10.42		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-71, from SR 41 on-Ramp to SR 435 off-Ramp	16065	3
2	Diverge	Diverge	I-71 SB,SR 435 off-Ramp	1500	3
3	Basic	Basic	I-71 SB, Between SR 435 Ramps	2830	3
4	Merge	Merge	I-71 SB, SR 435 on-ramp	1500	3
5	Basic	Basic	I-71 SB from SR 435 on-ramp to N of SR 72 (3 lane section)	16830	3
6	Basic	Basic	I-71 , SR 435 to SR 72 (2-lane section)	16300	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	1893	7200	0.26	75.0	8.4	A

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.89	0.781	0.862	1893	873	7200	2200	0.26	0.40	69.1	66.8	9.1	13.1	B

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	981	7200	0.14	74.8	4.4	A

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.93	0.781	0.758	1605	624	7200	2200	0.22	0.28	69.3	67.7	7.7	8.4	A

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	1580	7200	0.22	75.0	7.0	A

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.781	1580	4800	0.33	75.0	10.5	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	3357	3123	0.22	5.51	74.6	8.2	6.4	8.40	A

Facility Overall Results

Space Mean Speed, mi/h	74.6	Average Density, veh/mi/ln	6.4
Average Travel Time, min	8.40	Average Density, pc/mi/ln	8.2
Total VMT, veh-mi	3357	Total VHD, veh-h	0.22
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	5.51

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Project Description	FAY-VAR IOS(PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	I-71, from SR 41 on-Ramp to SR 435 off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16065	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1390	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	631
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.26

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	8.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-71 SB,SR 435 off-Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	505
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	1390	670
Peak Hour Factor (PHF)	0.94	0.89
Total Trucks, %	28.00	16.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.781	0.862
Flow Rate (v_i), pc/h	1893	873
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.26	0.40

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	334
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	66.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	1559	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	69.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	9.1
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	13.1

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-71 SB, Between SR 435 Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	720	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	327
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.14

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	4.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-71 SB, SR 435 on-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1020
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	720	440
Peak Hour Factor (PHF)	0.94	0.93
Total Trucks, %	28.00	32.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.781	0.758
Flow Rate (v_i), pc/h	981	624
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.22	0.28

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1271.0	Flow Outer Lanes (v_{OA}), pc/h/ln	387
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	67.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	594	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1218	Ramp Junction Speed (S), mi/h	69.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	7.7
Level of Service (LOS)	A	Density in Ramp Influence Area (D_R), pc/mi/ln	8.4

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-71 SB from SR 435 on-ramp to N of SR 72 (3 lane section)
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1160	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	527
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.22

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	7.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-71 , SR 435 to SR 72 (2-lane section)
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	16300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1160	Heavy Vehicle Adjustment Factor (f_{HV})	0.781
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	790
Total Trucks, %	28.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.33

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	10.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	A	B	A	A	A	A
Speed (mi/h)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	75.0	69.1	74.8	69.3	75.0	75.0
Density (pc/mi/ln)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	8.4	9.1	4.4	7.7	7.0	10.5
Demand - Capacity Ratio (D/C)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	0.26	0.26	0.14	0.22	0.22	0.33

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Facility Name	I-71 SB from SR 41 to SR 72	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	10.42		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I--71 from SR 41 on-Ramp to SR 435 SB off-Ramp	16065	3
2	Diverge	Diverge	I-71,SR 435 off-Ramp	1500	3
3	Basic	Basic	I-71 SB, Between SR 435 Ramps	2830	3
4	Merge	Merge	I-71, SR 435 on-ramp	1500	3
5	Basic	Basic	I-71 SB from SR 435 on-ramp to N of SR 72 (3 lane section)	16830	3
6	Basic	Basic	I-71, SR 435 to SR 72 (2-lane section)	16300	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	3473	7200	0.48	74.7	15.5	B

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.86	0.775	0.840	3473	678	7200	2200	0.48	0.31	71.1	67.4	16.3	21.0	C

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	2800	7200	0.39	74.9	12.4	B

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.87	0.775	0.840	3840	1040	7200	2200	0.53	0.47	67.9	66.1	18.9	20.0	B

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	3844	7200	0.53	74.1	17.3	B

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.775	3844	4800	0.80	65.6	29.3	D

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	7414	6915	5.33	133.18	71.2	19.1	14.8	8.80	C

Facility Overall Results

Space Mean Speed, mi/h	71.2	Average Density, veh/mi/ln	14.8
Average Travel Time, min	8.80	Average Density, pc/mi/ln	19.1
Total VMT, veh-mi	7414	Total VHD, veh-h	5.33
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	133.18

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	5/4/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	I--71 from SR 41 on-Ramp to SR 435 SB off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16065	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2530	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1158
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.48

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	15.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-71,SR 435 off-Ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	505
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	2530	490
Peak Hour Factor (PHF)	0.94	0.86
Total Trucks, %	29.00	19.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.775	0.840
Flow Rate (v_i), pc/h	3473	678
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.48	0.31

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1001
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	67.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2472	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	71.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	16.3
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	21.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-71 SB, Between SR 435 Ramps
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2040	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	933
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.39

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	12.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-71, SR 435 on-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1020
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	2040	760
Peak Hour Factor (PHF)	0.94	0.87
Total Trucks, %	29.00	19.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.775	0.840
Flow Rate (v_i), pc/h	2800	1040
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.53	0.47

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1749.2	Flow Outer Lanes (v_{OA}), pc/h/ln	1103
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	66.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	1697	Outer Lanes Freeway Speed (S_O), mi/h	72.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2737	Ramp Junction Speed (S), mi/h	67.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	18.9
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	20.0

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-71 SB from SR 435 on-ramp to N of SR 72 (3 lane section)
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	16830	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2800	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1281
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.53

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	74.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-71, SR 435 to SR 72 (2-lane section)
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	16300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	2800	Heavy Vehicle Adjustment Factor (f_{HV})	0.775
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1922
Total Trucks, %	29.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.80

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	29.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	B	C	B	B	B	D
Speed (mi/h)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	74.7	71.1	74.9	67.9	74.1	65.6
Density (pc/mi/ln)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	15.5	16.3	12.4	18.9	17.3	29.3
Demand - Capacity Ratio (D/C)						
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6
AP 1	0.48	0.48	0.39	0.53	0.53	0.80

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Facility Name	US 35 EB from Old US 35 to Palmer Road	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	9.21		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	Old US 35 Off-ramp to SR 435 On-ramp	13570	2
2	Merge	Merge	SR 435 On-ramp	1500	2
3	Basic	Basic	SR 435 On-ramp to Palmer Rd Off-ramp	33540	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.714	432	4800	0.09	75.0	2.9	A

Segment 2: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.84	0.714	0.952	882	450	4800	2200	0.18	0.20	67.0	67.0	6.6	7.1	A

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.714	968	4800	0.20	75.0	6.5	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	1340	1239	0.07	1.78	74.7	5.5	3.9	7.40	A

Facility Overall Results

Space Mean Speed, mi/h	74.7	Average Density, veh/mi/ln	3.9

Average Travel Time, min	7.40	Average Density, pc/mi/ln	5.5
Total VMT, veh-mi	1340	Total VHD, veh-h	0.07
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	1.78

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	Old US 35 Off-ramp to SR 435 On-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	13570	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	290	Heavy Vehicle Adjustment Factor (f_{HV})	0.714
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	216
Total Trucks, %	40.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.09

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	2.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	2	Segment Name	SR 435 On-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	810
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	290	360
Peak Hour Factor (PHF)	0.94	0.84
Total Trucks, %	40.00	5.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.714	0.952
Flow Rate (v_i), pc/h	432	450
Capacity (c_{md}), pc/h	4800	2200
Adjusted Capacity (c_{mda}), pc/h	4800	2200
Volume-to-Capacity Ratio (v/c)	0.18	0.20

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	67.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	432	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	882	Ramp Junction Speed (S), mi/h	67.0
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	6.6
Level of Service (LOS)	A	Density in Ramp Influence Area (D_R), pc/mi/ln	7.1

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	SR 435 On-ramp to Palmer Rd Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	33540	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	650	Heavy Vehicle Adjustment Factor (f_{HV})	0.714
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	484
Total Trucks, %	40.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.20

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	6.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	A	A	A
Speed (mi/h)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	75.0	67.0	75.0
Density (pc/mi/ln)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	2.9	6.6	6.5
Demand - Capacity Ratio (D/C)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	0.09	0.18	0.20

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Facility Name	US 35 EB from Old US 35 to Palmer Road	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	9.21		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	Old US 35 Off-ramp to SR 435 on-ramp	13570	2
2	Merge	Merge	SR 435 On-ramp	1500	2
3	Basic	Basic	SR 435 On-ramp to Palmer Rd Off-ramp	33540	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.741	689	4800	0.14	75.0	4.6	A

Segment 2: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.95	0.741	0.952	1198	509	4800	2200	0.25	0.23	66.9	66.9	9.0	9.6	A

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.741	1350	4800	0.28	75.0	9.0	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	1979	1835	0.10	2.55	74.7	7.8	5.8	7.40	A

Facility Overall Results

Space Mean Speed, mi/h	74.7	Average Density, veh/mi/ln	5.8

Average Travel Time, min	7.40	Average Density, pc/mi/ln	7.8
Total VMT, veh-mi	1979	Total VHD, veh-h	0.10
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	2.55

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	Old US 35 Off-ramp to SR 435 on-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	13570	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	480	Heavy Vehicle Adjustment Factor (f_{HV})	0.741
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	344
Total Trucks, %	35.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.14

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	4.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Merge Report

Project Information

Segment Number	2	Segment Name	SR 435 On-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	810
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	480	460
Peak Hour Factor (PHF)	0.94	0.95
Total Trucks, %	35.00	5.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.741	0.952
Flow Rate (v_i), pc/h	689	509
Capacity (c_{md}), pc/h	4800	2200
Adjusted Capacity (c_{mda}), pc/h	4800	2200
Volume-to-Capacity Ratio (v/c)	0.25	0.23

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	66.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	689	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1198	Ramp Junction Speed (S), mi/h	66.9
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	9.0
Level of Service (LOS)	A	Density in Ramp Influence Area (D_R), pc/mi/ln	9.6

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	SR 435 On-ramp to Palmer Rd Off-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	33540	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	940	Heavy Vehicle Adjustment Factor (f_{HV})	0.741
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	675
Total Trucks, %	35.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.28

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	9.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	A	A	A
Speed (mi/h)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	75.0	66.9	75.0
Density (pc/mi/ln)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	4.6	9.0	9.0
Demand - Capacity Ratio (D/C)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	0.14	0.25	0.28

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Facility Name	US 35 WB from SR 435 to Old US 35 On-ramp	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	9.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	Palmer Rd On-ramp to SR 435 Off-ramp	33380	2
2	Diverge	Diverge	SR 435 Off-ramp	1500	2
3	Basic	Basic	SR 435 Off-ramp to Old US 35 On-ramp	15150	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.699	1857	4800	0.39	75.0	12.4	B

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.91	0.699	0.800	1857	1154	4800	2200	0.39	0.52	66.0	66.0	14.1	16.0	B

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.699	578	4800	0.12	75.0	3.9	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	2433	2287	0.17	4.19	74.6	9.9	6.9	7.60	A

Facility Overall Results

Space Mean Speed, mi/h	74.6	Average Density, veh/mi/ln	6.9

Average Travel Time, min	7.60	Average Density, pc/mi/ln	9.9
Total VMT, veh-mi	2433	Total VHD, veh-h	0.17
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	4.19

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	AM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	Palmer Rd On-ramp to SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	33380	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1220	Heavy Vehicle Adjustment Factor (f_{HV})	0.699
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	928
Total Trucks, %	43.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.39

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	12.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	470
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	1220	840
Peak Hour Factor (PHF)	0.94	0.91
Total Trucks, %	43.00	25.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.699	0.800
Flow Rate (v_i), pc/h	1857	1154
Capacity (c_{md}), pc/h	4800	2200
Initial Adjusted Capacity (c_{mda}), pc/h	4800	-
Final Adjusted Capacity (c_{mda}), pc/h	4800	2200
Volume-to-Capacity Ratio (v/c)	0.39	0.52

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	66.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	1857	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.0
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	14.1
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	16.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	SR 435 Off-ramp to Old US 35 On-ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	15150	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	380	Heavy Vehicle Adjustment Factor (f_{HV})	0.699
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	289
Total Trucks, %	43.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.12

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	3.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	B	B	A
Speed (mi/h)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	75.0	66.0	75.0
Density (pc/mi/ln)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	12.4	14.1	3.9
Demand - Capacity Ratio (D/C)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	0.39	0.39	0.12

HCS Freeway Facilities Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Facility Name	US 35 WB from SR 435 to Old US 35 On-ramp	Units	U.S. Customary
Project Description	FAY-VAR IOS (PID 117955)		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	9.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	Palmer Rd On-ramp to SR 435 Off-ramp	33380	2
2	Diverge	Diverge	SR 435 Off-ramp	1500	2
3	Basic	Basic	SR 435 Off-ramp to Old US 35 On-ramp	15150	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.758	1389	4800	0.29	75.0	9.3	A

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.86	0.758	0.909	1389	678	4800	2200	0.29	0.31	67.4	67.4	10.3	12.0	B

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.758	646	4800	0.13	75.0	4.3	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	2091	1965	0.11	2.81	74.7	7.8	5.9	7.60	A

Facility Overall Results

Space Mean Speed, mi/h	74.7	Average Density, veh/mi/ln	5.9

Average Travel Time, min	7.60	Average Density, pc/mi/ln	7.8
Total VMT, veh-mi	2091	Total VHD, veh-h	0.11
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	2.81

HCS Basic Freeway Report

Project Information

Analyst	NH	Date	1/24/2023
Agency	LJB Inc.	Analysis Year	2044 (No Build/Build)
Jurisdiction	ODOT D6	Time Analyzed	PM Peak
Project Description	FAY-VAR IOS (PID 117955)	Units	U.S. Customary
Segment Number	1	Segment Name	Palmer Rd On-ramp to SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	33380	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	990	Heavy Vehicle Adjustment Factor (f_{HV})	0.758
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	694
Total Trucks, %	32.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.29

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	9.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	SR 435 Off-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	470
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	990	530
Peak Hour Factor (PHF)	0.94	0.86
Total Trucks, %	32.00	10.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.758	0.909
Flow Rate (v_i), pc/h	1389	678
Capacity (c_{md}), pc/h	4800	2200
Initial Adjusted Capacity (c_{mda}), pc/h	4800	-
Final Adjusted Capacity (c_{mda}), pc/h	4800	2200
Volume-to-Capacity Ratio (v/c)	0.29	0.31

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	67.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	1389	Outer Lanes Freeway Speed (S_O), mi/h	82.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	67.4
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	10.3
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	12.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	SR 435 Off-ramp to Old US 35 On-ramp
Analysis Period Number	1	Segment Analysis Period	16:00-16:15

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	15150	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	75.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	460	Heavy Vehicle Adjustment Factor (f_{HV})	0.758
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	323
Total Trucks, %	32.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.13

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	75.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	4.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	75.0		

LOS			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	A	B	A
Speed (mi/h)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	75.0	67.4	75.0
Density (pc/mi/ln)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	9.3	10.3	4.3
Demand - Capacity Ratio (D/C)			
	Seg 1	**Seg 2**	**Seg 3**
AP 1	0.29	0.29	0.13

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APPENDIX D – 2044 NO-BUILD INTERSECTION REPORTS

LJ Engineering
Building Partnerships

2500 Newmark Drive Miamisburg, OH 45342 | (866) 552-3536 | LJBinc.com

2044 AM NO-BUILD

HCS Two-Way Stop-Control Report

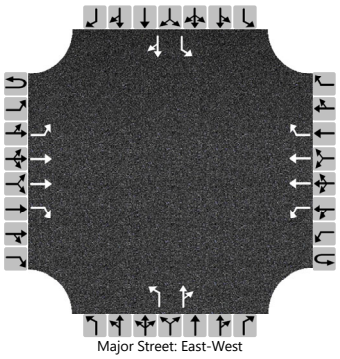
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	5/3/2023
Analysis Year	2044
Time Analyzed	2044 AM Pk NoBuild/Build
Intersection Orientation	East-West
Project Description	FAY-VAR IOS(PID 117955)

Site Information

Intersection	SR 435 & GE Rd
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	Garringer Edgefield Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	1	0	1	2	1		1	1	0		1	1	0
Configuration		L	T	R		L	T	R		L		TR		L		TR
Volume (veh/h)	0	10	500	10	0	160	420	80		30	10	90		10	10	40
Percent Heavy Vehicles (%)	0	17			0	29				16	16	16		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No											
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

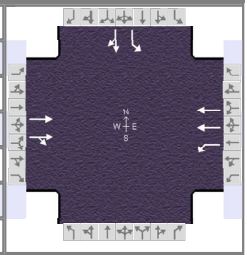
Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.2		7.5	6.5	6.9
Critical Headway (sec)		4.44				4.68				6.86	6.82	6.26		6.86	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.37				2.49				3.66	4.16	3.46		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				180				34		112		11		56
Capacity, c (veh/h)		909				831				450		664		412		627
v/c Ratio		0.01				0.22				0.07		0.17		0.03		0.09
95% Queue Length, Q_{95} (veh)		0.0				0.8				0.2		0.6		0.1		0.3
Control Delay (s/veh)		9.0				10.5				13.6		11.5		14.0		11.3
Level of Service (LOS)		A				B				B		B		B		B
Approach Delay (s/veh)	0.2				2.6				12.0				11.8			
Approach LOS	A				A				B				B			

HCS Signalized Intersection Input Data

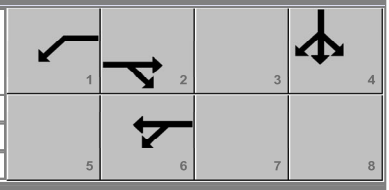
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.6	28.1	41.4	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



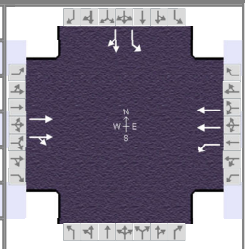
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		16		19	19					16	16	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		1.00	1.00	0.38	0.38					1.00	1.00	1.00
Lane Width (*W*), ft		12.0		12.0	12.0					12.0	12.0	
Turn Bay Length, ft		700		430	645					1100	300	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		34.0	16.0	50.0				60.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

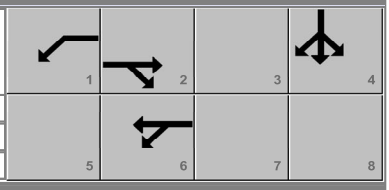
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.6	28.1	41.4	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



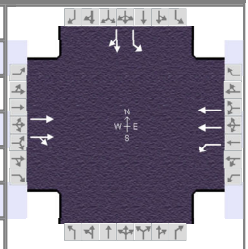
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	1.0	4.0				10.0
Phase Duration, s		34.1	28.6	62.6				47.4
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.1
Queue Clearance Time (*g s*), s			24.5					40.1
Green Extension Time (*g e*), s		0.0	0.0	0.0				1.3
Phase Call Probability			1.00					1.00
Max Out Probability			1.00					0.01

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		327	319	421	554					521	177	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1532	1488	1420	1419					1459	1310	
Queue Service Time (*g s*), s		22.3	22.3	22.5	8.6					38.1	10.7	
Cycle Queue Clearance Time (*g c*), s		22.3	22.3	22.5	8.6					38.1	10.7	
Green Ratio (*g/C*)		0.26	0.26	0.48	0.51					0.38	0.38	
Capacity (*c*), veh/h		391	380	394	1461					549	493	
Volume-to-Capacity Ratio (*X*)		0.836	0.838	1.068	0.379					0.949	0.359	
Back of Queue (*Q*), ft/ln (95 th percentile)		434.9	379.9	411.7	109.7					609.6	162.4	
Back of Queue (*Q*), veh/ln (95 th percentile)		15.4	15.2	14.3	3.8					21.6	5.8	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.62	0.61	0.96	0.17					0.55	0.54	
Uniform Delay (*d 1*), s/veh		38.8	38.8	21.1	9.1					33.3	24.8	
Incremental Delay (*d 2*), s/veh		18.7	19.4	47.9	0.3					17.4	0.2	
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		57.4	58.2	69.0	9.4					50.7	24.9	
Level of Service (LOS)		E	E	F	A					D	C	
Approach Delay, s/veh / LOS	57.8	E		35.1	D		0.0			44.1	D	
Intersection Delay, s/veh / LOS	44.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.42	A	1.67	B	2.32	B	2.15	B
Bicycle LOS Score / LOS	1.02	A	1.24	A			1.64	B

HCS Signalized Intersection Intermediate Values

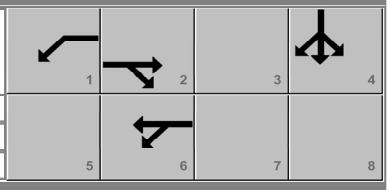
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.6	28.1	41.4	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



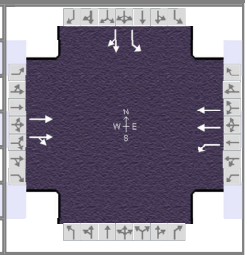
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.875	1.000	0.852	0.852	1.000				0.875	0.875	0.875
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.971	0.971		1.000	1.000					0.855	0.855
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	2776	243	1420	2910	0				1459	77	1233
Proportion of Vehicles Arriving on Green (P)	0.00	0.26	0.26	0.39	0.71	0.00	0.00	0.00	0.00	0.38	0.38	0.38
Incremental Delay Factor (k)		0.50	0.50	0.50	0.50					0.25	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.26	0.48	0.51				0.38
Permitted Saturation Flow Rate (s_p), veh/h/ln		868	679	0				1459
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	30.1	0.0				0.0
Permitted Service Time (g_u), s		0.0	6.1	0.0				0.0
Permitted Queue Service Time (g_{ps}), s			6.1					
Time to First Blockage (g_f), s		28.1	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.681	0.000	0.972	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.137	0.000	0.103	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	510.12	30.52	1029.53	12.95	-90.91	60.11		62.22
Bicycle F_w / F_v	-3.64	0.53	-3.64	0.76	-3.64		-3.64	1.15

HCS Signalized Intersection Results Graphical Summary

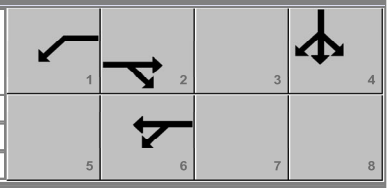
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



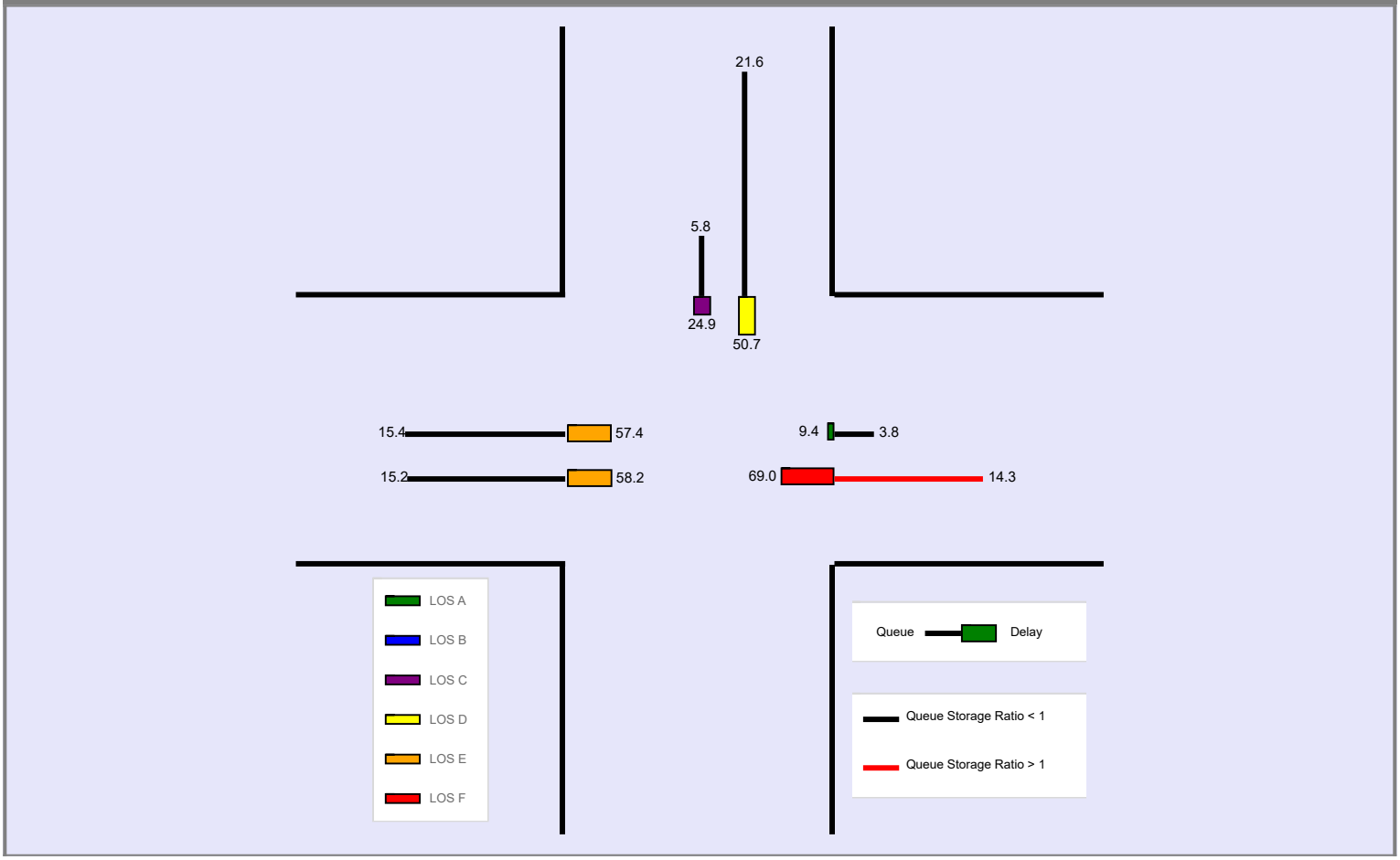
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.6	28.1	41.4	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	2.0	2.0	2.0	0.0	0.0	0.0	

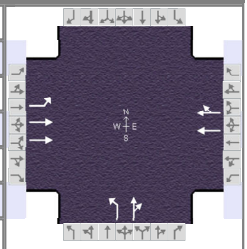


Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		434.9	379.9	411.7	109.7					609.6	162.4	
Back of Queue (*Q*), veh/ln (95 th percentile)		15.4	15.2	14.3	3.8					21.6	5.8	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.62	0.61	0.96	0.17					0.55	0.54	
Control Delay (*d*), s/veh		57.4	58.2	69.0	9.4					50.7	24.9	
Level of Service (LOS)		E	E	F	A					D	C	
Approach Delay, s/veh / LOS	57.8	E		35.1	D		0.0			44.1	D	
Intersection Delay, s/veh / LOS	44.2						D					



HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	78	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	59.0	39.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		5	6	7	8	
Red	2.0	2.0	0.0	0.0	0.0	0.0						

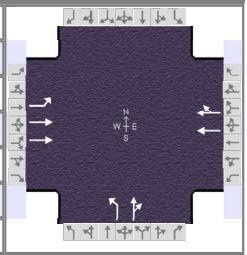
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	12	12			21		13	13				
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.34	0.34			0.45	0.45	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0		12.0	12.0				
Turn Bay Length, ft	305	630			420		1120	575				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	45	45	45			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		65.0		65.0		45.0		
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		
Red Clearance Interval (R_c), s		2.0		2.0		2.0		
Minimum Green (G_{min}), s		20		20		10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s		2.0		2.0		2.0		
Recall Mode		Min		Min		Off		
Dual Entry		Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

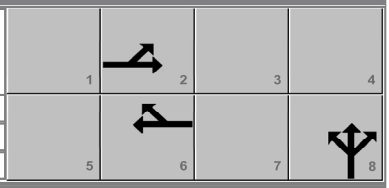
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	78	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	59.0	39.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



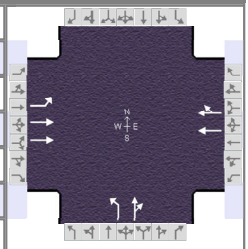
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		6.0		8.0		10.0		
Phase Duration, s		65.0		65.0		45.0		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		
Queue Clearance Time (*g s*), s						41.0		
Green Extension Time (*g e*), s		0.0		0.0		0.0		
Phase Call Probability						1.00		
Max Out Probability						1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	167	948			694	635	21	606				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	379	1510			1463	1322	1498	1336				
Queue Service Time (*g s*), s	17.5	12.3			41.5	34.7	1.0	39.0				
Cycle Queue Clearance Time (*g c*), s	59.0	12.3			41.5	34.7	1.0	39.0				
Green Ratio (*g/C*)	0.54	0.54			0.54	0.54	0.35	0.35				
Capacity (*c*), veh/h	126	1620			785	709	531	474				
Volume-to-Capacity Ratio (*X*)	1.325	0.585			0.884	0.896	0.040	1.280				
Back of Queue (*Q*), ft/ln (95 th percentile)	399.2	110.7			376.2	176.5	17.4	1263.3				
Back of Queue (*Q*), veh/ln (95 th percentile)	14.6	4.0			12.9	7.1	0.6	45.8				
Queue Storage Ratio (*RQ*) (95 th percentile)	1.31	0.18			0.90	0.49	0.02	2.20				
Uniform Delay (*d 1*), s/veh	56.5	5.9			12.4	7.1	23.2	35.5				
Incremental Delay (*d 2*), s/veh	163.9	0.5			7.0	8.4	0.0	141.4				
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0	0.0	0.0				
Control Delay (*d*), s/veh	220.4	6.4			19.3	15.5	23.3	176.9				
Level of Service (LOS)	F	A			B	B	C	F				
Approach Delay, s/veh / LOS	38.4	D		17.5	B		171.7	F		0.0		
Intersection Delay, s/veh / LOS	56.6						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.67	B	1.38	A	2.15	B	2.32	B
Bicycle LOS Score / LOS	1.43	A	1.54	B	1.52	B		

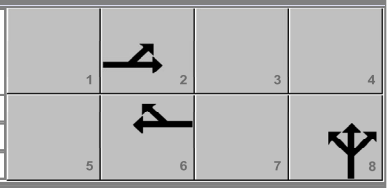
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information					EB		WB		NB		SB		
Cycle, s	110.0	Reference Phase	2										
Offset, s	78	Reference Point	End	Green	59.0	39.0	0.0	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0			



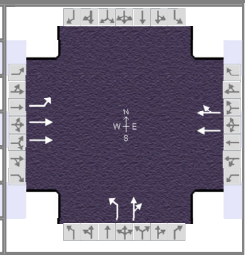
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.906	0.906	1.000	1.000	0.836	1.000	0.899	0.899	0.899			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.217	0.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.904	0.904		0.850	0.850			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00								
Movement Saturation Flow Rate (s), veh/h	379	3096	0	0	2002	784	1498	23	1313			
Proportion of Vehicles Arriving on Green (P)	0.43	0.81	0.00	0.00	0.73	0.91	0.35	0.35	0.35	0.00	0.00	0.00
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.04	0.50				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		4.0		
Green Ratio (g/C)		0.54		0.54		0.35		
Permitted Saturation Flow Rate (s_p), veh/h/ln		379		601		1498		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s		59.0		0.0		0.0		
Permitted Service Time (g_u), s		17.5		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s		17.5						
Time to First Blockage (g_f), s		0.0		59.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.389	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.099	0.000	0.099	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1072.73	11.82	1072.73	11.82		62.22	-90.91	60.11
Bicycle F_w / F_v	-3.64	0.94	-3.64	1.05	-3.64	1.04	-3.64	

HCS Signalized Intersection Results Graphical Summary

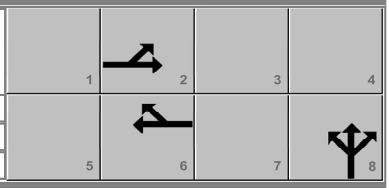
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



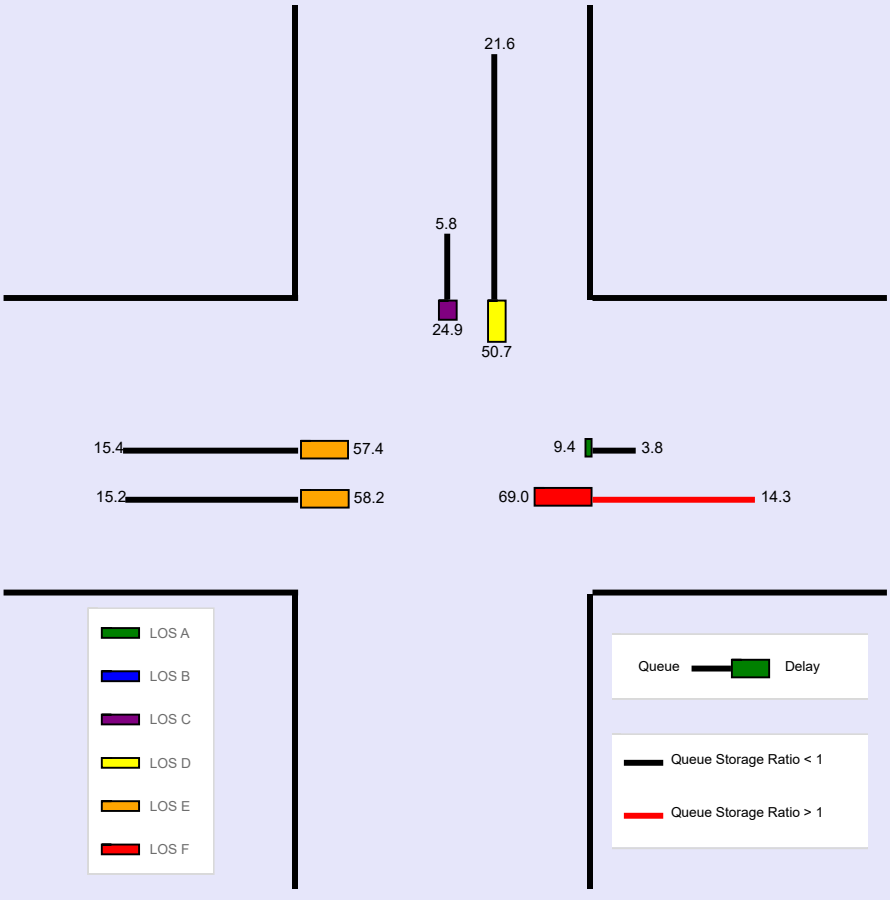
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	78	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	59.0	39.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

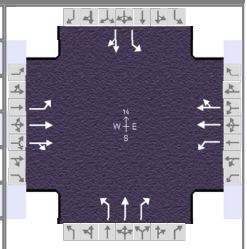


Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	399.2	110.7			376.2	176.5	17.4	1263.3				
Back of Queue (*Q*), veh/ln (95 th percentile)	14.6	4.0			12.9	7.1	0.6	45.8				
Queue Storage Ratio (*RQ*) (95 th percentile)	1.31	0.18			0.90	0.49	0.02	2.20				
Control Delay (*d*), s/veh	220.4	6.4			19.3	15.5	23.3	176.9				
Level of Service (LOS)	F	A			B	B	C	F				
Approach Delay, s/veh / LOS	38.4	D		17.5	B		171.7	F		0.0		
Intersection Delay, s/veh / LOS	56.6						E					



HCS Signalized Intersection Input Data

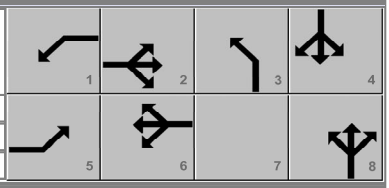
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	54	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.1	3.6	49.5	7.0	20.7	0.0	
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	
Red	2.0	0.0	2.0	2.0	2.0	0.0	



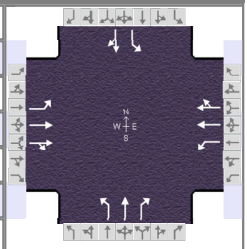
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	11	11		18	18		10	10	10	15	15	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.41	0.41	0.41	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	325	485		385	760		100	1000	65	110	600	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	30.0	20.0	30.0	13.0	60.0		47.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10		10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Off	Min	Off	Min	Off	Off		Off
Dual Entry	No	Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

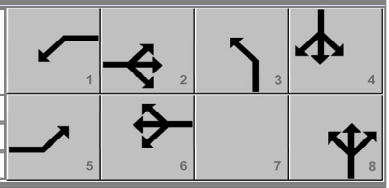
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	54	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.1	3.6	49.5	7.0	20.7	0.0	
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	
Red	2.0	0.0	2.0	2.0	2.0	0.0	



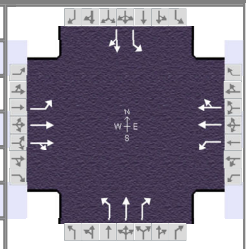
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8		4
Case Number	1.1	4.0	1.1	4.0	1.0	3.0		6.3
Phase Duration, s	14.8	59.1	11.1	55.5	13.0	39.7		26.7
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.1	3.5		3.5
Queue Clearance Time (g_s), s	8.5		3.8		8.9	5.9		19.8
Green Extension Time (g_e), s	0.3	0.0	0.1	0.0	0.0	1.0		0.9
Phase Call Probability	0.99		0.74		0.98	1.00		1.00
Max Out Probability	0.00		0.00		1.00	0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	173	628	612	43	558	540	121	11	66	99	220	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1524	1600	1556	1433	1504	1457	1537	1614	1367	1259	1320	
Queue Service Time (g_s), s	6.5	35.2	35.6	1.8	32.1	32.1	6.9	0.5	3.9	7.6	17.8	
Cycle Queue Clearance Time (g_c), s	6.5	35.2	35.6	1.8	32.1	32.1	6.9	0.5	3.9	7.6	17.8	
Green Ratio (*g/C*)	0.53	0.48	0.48	0.50	0.45	0.45	0.27	0.31	0.31	0.19	0.19	
Capacity (*c*), veh/h	262	772	751	188	677	655	192	495	419	303	249	
Volume-to-Capacity Ratio (*X*)	0.660	0.813	0.815	0.231	0.824	0.824	0.629	0.022	0.157	0.327	0.883	
Back of Queue (*Q*), ft/ln (95 th percentile)	106.6	440.1	439.6	30	429.7	418.5	134.8	9.8	61.1	120.6	284.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	3.9	16.2	16.2	1.0	15.0	14.6	5.0	0.4	2.3	4.3	10.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.33	0.91	0.91	0.08	0.57	0.55	1.35	0.01	0.94	1.10	0.47	
Uniform Delay (d_1), s/veh	22.1	20.8	21.4	21.2	18.3	18.2	33.8	26.6	27.8	39.3	43.4	
Incremental Delay (d_2), s/veh	0.4	3.9	4.1	0.2	8.6	8.9	4.9	0.0	0.1	0.2	4.1	
Initial 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	22.5	24.7	25.5	21.3	26.9	27.1	38.7	26.6	27.8	39.5	47.5	
Level of Service (LOS)	C	C	C	C	C	C	D	C	C	D	D	
Approach Delay, s/veh / LOS	24.8	C		26.8	C		34.4	C		45.0	D	
Intersection Delay, s/veh / LOS	28.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	1.91	B	2.29	B	2.30	B
Bicycle LOS Score / LOS	1.82	B	1.44	A	0.81	A	1.01	A

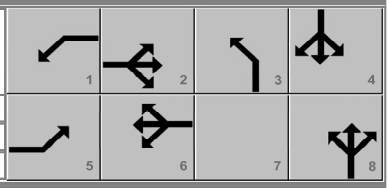
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	54	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.1	3.6	49.5	7.0	20.7	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



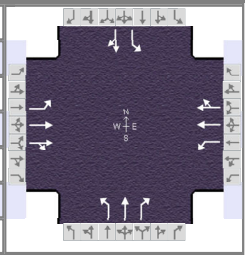
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.914	0.914	0.914	0.860	0.860	0.860	0.922	0.922	0.922	0.883	0.883	0.883
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.719	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.973	0.973		0.968	0.968		0.000	0.847		0.854	0.854
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h	1524	2911	244	1433	2697	264	1537	1614	1367	1259	66	1254
Proportion of Vehicles Arriving on Green (P)	0.04	0.55	0.48	0.01	0.60	0.62	0.06	0.31	0.31	0.19	0.19	0.19
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.04	0.04	0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Green Ratio (g/C)	0.53	0.48	0.50	0.45	0.27	0.31		0.19
Permitted Saturation Flow Rate (s_p), veh/h/ln	477	0	392	0	1088	0		1259
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	49.5	0.0	49.5	0.0	22.7	0.0		20.7
Permitted Service Time (g_u), s	17.3	0.0	15.6	0.0	2.9	0.0		20.7
Permitted Queue Service Time (g_{ps}), s	17.3		4.4		2.5			7.6
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		
Protected Right Effective Green Time (g_R), s						0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.198	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.108	0.000	0.113	0.000	0.131	0.000	0.144
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	965.62	14.71	899.84	16.64	613.54	26.43	377.18	36.21
Bicycle F_w / F_v	-3.64	1.33	-3.64	0.95	-3.64	0.33	-3.64	0.53

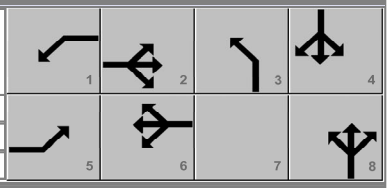
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				

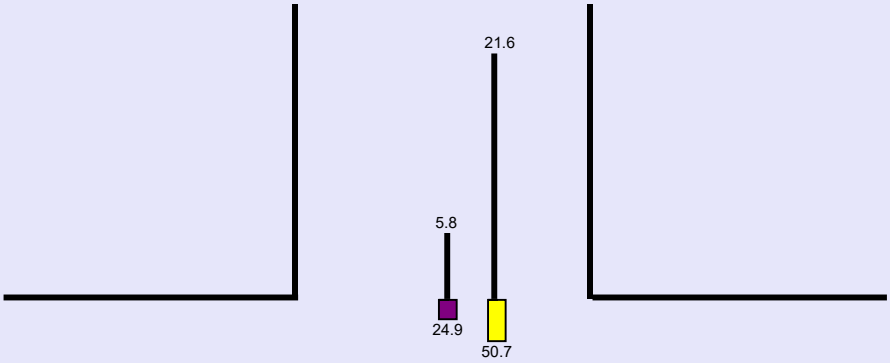


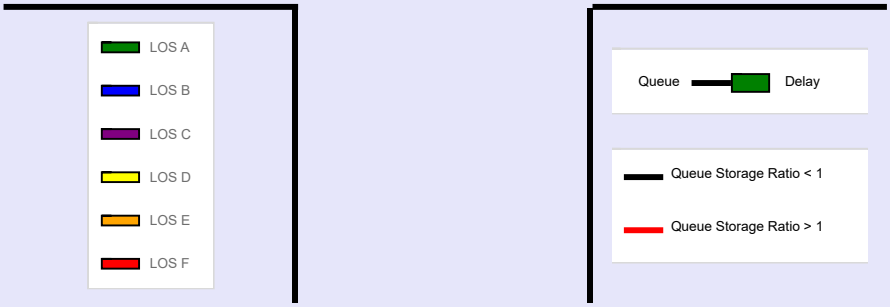
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	54	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.1	3.6	49.5	7.0	20.7	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



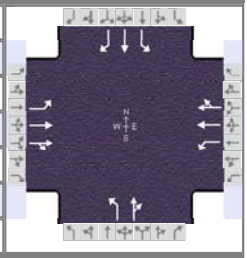
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	106.6	440.1	439.6	30	429.7	418.5	134.8	9.8	61.1	120.6	284.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	3.9	16.2	16.2	1.0	15.0	14.6	5.0	0.4	2.3	4.3	10.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.33	0.91	0.91	0.08	0.57	0.55	1.35	0.01	0.94	1.10	0.47	
Control Delay (*d*), s/veh	22.5	24.7	25.5	21.3	26.9	27.1	38.7	26.6	27.8	39.5	47.5	
Level of Service (LOS)	C	C	C	C	C	C	D	C	C	D	D	
Approach Delay, s/veh / LOS	24.8	C		26.8	C		34.4	C		45.0	D	
Intersection Delay, s/veh / LOS	28.2						C					





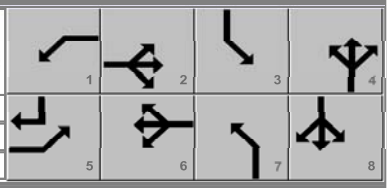
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.92
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	72	Reference Point	End	Green	5.4	0.2	59.4	4.4	0.6	10.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	2.0	2.0		



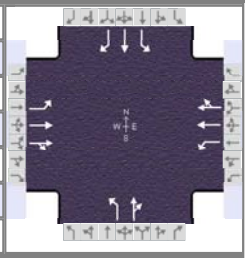
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		15	15		71	71		43	43	43
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.59	0.59	0.59	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	215	740		185	1520		400	100		105	550	550
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	19.0	27.0	39.0	47.0	17.0	27.0	17.0	27.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

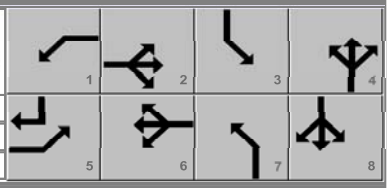
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.92
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	72	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.4	0.2	59.4	4.4	0.6	10.0	
Yellow	4.0	0.0	4.0	4.0	4.0	4.0	
Red	2.0	0.0	2.0	2.0	2.0	2.0	



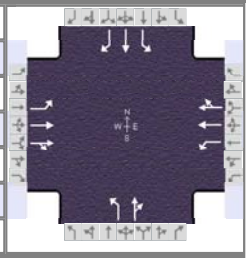
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	7	4	3	8
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	11.4	65.4	11.7	65.6	17.0	22.5	10.4	16.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.3	3.5	3.3	3.5
Queue Clearance Time (g_s), s	3.5		3.7		13.0	11.9	4.9	8.7
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.2
Phase Call Probability	0.78		0.81		0.98	1.00	0.63	1.00
Max Out Probability	0.00		0.00		1.00	0.00	0.01	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	49	631	629	54	505	495	130	65		33	11	65
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1537	1614	1609	1472	1545	1515	744	679		1108	1163	986
Queue Service Time (g_s), s	1.5	16.1	16.0	1.7	24.4	24.4	11.0	9.9		2.9	0.9	6.7
Cycle Queue Clearance Time (g_c), s	1.5	16.1	16.0	1.7	24.4	24.4	11.0	9.9		2.9	0.9	6.7
Green Ratio (*g/C*)	0.59	0.54	0.54	0.59	0.54	0.54	0.21	0.15		0.13	0.09	0.14
Capacity (*c*), veh/h	300	871	869	297	838	821	192	102		148	105	138
Volume-to-Capacity Ratio (*X*)	0.163	0.724	0.725	0.183	0.603	0.603	0.680	0.639		0.221	0.103	0.473
Back of Queue (*Q*), ft/ln (95 th percentile)	24.5	145.8	144.8	27	386.5	380.8	121.5	123.6		49.2	17	101.9
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	5.4	5.4	1.0	13.8	13.6	3.1	3.2		1.5	0.5	3.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.11	0.20	0.20	0.15	0.25	0.25	0.30	1.24		0.47	0.03	0.19
Uniform Delay (d_1), s/veh	13.7	4.7	4.7	10.9	17.1	17.1	43.2	43.9		43.0	45.9	43.6
Incremental Delay (d_2), s/veh	0.1	3.1	3.1	0.1	3.2	3.3	7.7	2.5		0.3	0.2	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		0.0	0.0	0.0
Control Delay (*d*), s/veh	13.8	7.8	7.8	11.0	20.3	20.4	51.0	46.4		43.2	46.1	44.5
Level of Service (LOS)	B	A	A	B	C	C	D	D		D	D	D
Approach Delay, s/veh / LOS	8.0	A		19.9	B		49.5	D		44.3	D	
Intersection Delay, s/veh / LOS	17.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.09	B	2.30	B	2.31	B
Bicycle LOS Score / LOS	1.69	B	1.36	A	0.81	A	0.67	A

HCS Signalized Intersection Intermediate Values

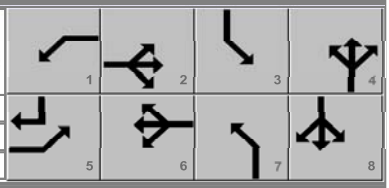
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.92
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	72	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.4	0.2	59.4	4.4	0.6	10.0						
Yellow	4.0	0.0	4.0	4.0	4.0	4.0						
Red	2.0	0.0	2.0	2.0	2.0	2.0						



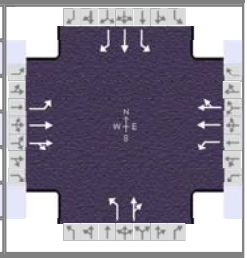
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	0.922	0.883	0.883	0.883	0.446	0.446	0.446	0.665	0.665	0.665
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997	0.997		0.981	0.981		0.870	0.870		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1537	3198	25	1472	2894	166	744	113	566	1108	1163	986
Proportion of Vehicles Arriving on Green (P)	0.00	0.86	0.94	0.05	0.54	0.54	0.10	0.15	0.15	0.04	0.09	0.09
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50	0.21	0.04		0.04	0.04	0.04

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.59	0.54	0.59	0.54	0.21	0.15	0.13	0.09
Permitted Saturation Flow Rate (s_p), veh/h/ln	528	0	395	0	636	0	902	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	59.4	0.0	59.4	0.0	12.0	0.0	10.0	0.0
Permitted Service Time (g_u), s	33.2	0.0	43.3	0.0	9.0	0.0	4.6	0.0
Permitted Queue Service Time (g_{ps}), s	2.8		2.6		9.0		0.2	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								986
Protected Right Effective Green Time (g_R), s								5.4

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.389	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.098	0.000	0.098	0.000	0.148	0.000	0.153
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1079.60	11.65	1084.05	11.54	300.64	39.71	180.93	45.50
Bicycle F_w / F_v	-3.64	1.20	-3.64	0.87	-3.64	0.32	-3.64	0.18

HCS Signalized Intersection Results Graphical Summary

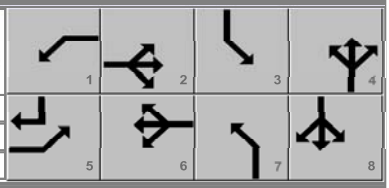
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.92
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



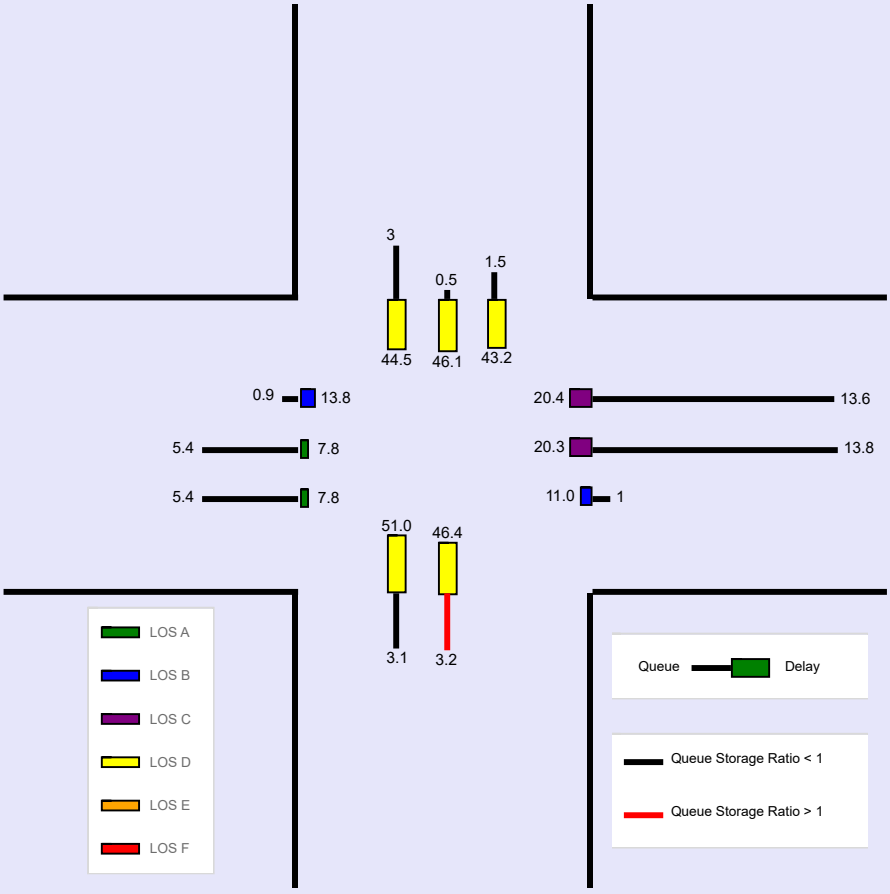
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	72	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.4	0.2	59.4	4.4	0.6	10.0	
Yellow	4.0	0.0	4.0	4.0	4.0	4.0	
Red	2.0	0.0	2.0	2.0	2.0	2.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	24.5	145.8	144.8	27	386.5	380.8	121.5	123.6		49.2	17	101.9
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	5.4	5.4	1.0	13.8	13.6	3.1	3.2		1.5	0.5	3.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.11	0.20	0.20	0.15	0.25	0.25	0.30	1.24		0.47	0.03	0.19
Control Delay (*d*), s/veh	13.8	7.8	7.8	11.0	20.3	20.4	51.0	46.4		43.2	46.1	44.5
Level of Service (LOS)	B	A	A	B	C	C	D	D		D	D	D
Approach Delay, s/veh / LOS	8.0	A		19.9	B		49.5	D		44.3	D	
Intersection Delay, s/veh / LOS	17.2						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: According to input data, upstream feeding volume is equal to 90% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

HCS Two-Way Stop-Control Report

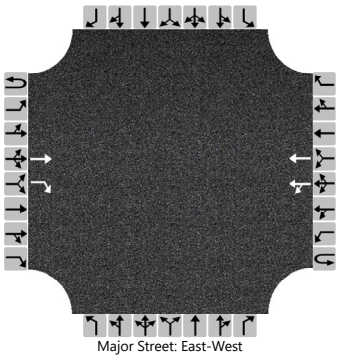
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 AM Pk NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 435 @ US 35 EB On-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 EB On Ramp
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	0
Configuration			T	R		LT	T									
Volume (veh/h)			1030	330		30	970									
Percent Heavy Vehicles (%)						8										
Proportion Time Blocked																
Percent Grade (%)																
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1										
Critical Headway (sec)						4.26										
Base Follow-Up Headway (sec)						2.2										
Follow-Up Headway (sec)						2.28										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						404										
v/c Ratio						0.08										
95% Queue Length, Q_{95} (veh)						0.3										
Control Delay (s/veh)						14.7	1.7									
Level of Service (LOS)						B	A									
Approach Delay (s/veh)						2.1										
Approach LOS						A										

HCS Two-Way Stop-Control Report

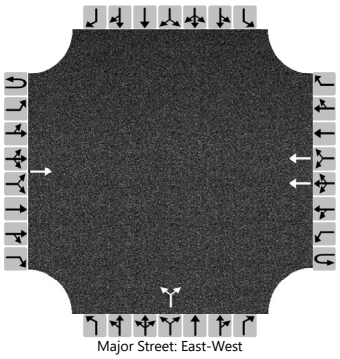
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 AM Pk NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 435 @ US 35 WB Off-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 WB Off-ramp
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	2	0		0	1	0		0	0	0
Configuration			T				T				LR					
Volume (veh/h)			1030				580			420		420				
Percent Heavy Vehicles (%)										25		25				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

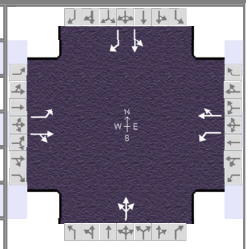
Base Critical Headway (sec)										7.5		6.2				
Critical Headway (sec)										7.30		6.70				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.75		3.55				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)											944					
Capacity, c (veh/h)											127					
v/c Ratio											7.46					
95% Queue Length, Q_{95} (veh)											105.5					
Control Delay (s/veh)											2971.6					
Level of Service (LOS)											F					
Approach Delay (s/veh)										2971.6						
Approach LOS										F						

HCS Signalized Intersection Input Data

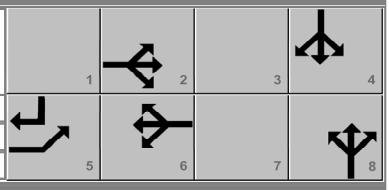
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.81
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1400	30	20	10	50	240	80	160	10	10	10	450

Signal Information			
Cycle, s	151.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	67.0	26.0	17.0	17.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



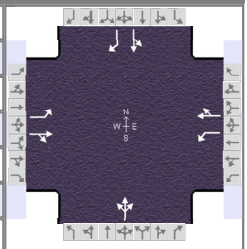
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1400	30	20	10	50	240	80	160	10	10	10	450
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5		6	6			4			5	5
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0			12.0			12.0	12.0
Turn Bay Length, ft	460	1450		200	2000			2000			2000	315
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	67.0	93.0		26.0		17.0		17.0
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s	7	20		20		10		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0		2.0		2.0		2.0
Recall Mode	Off	Min		Min		Off		Off
Dual Entry	No	Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

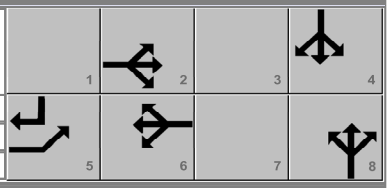
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.81
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1400	30	20	10	50	240	80	160	10	10	10	450

Signal Information			
Cycle, s	151.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	67.0	26.0	17.0	17.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



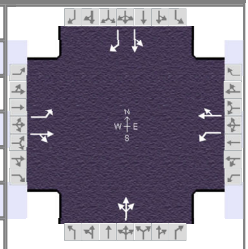
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		6.3		12.0		11.0
Phase Duration, s	73.0	105.0		32.0		23.0		23.0
Change Period, ($Y+R_c$), s	6.0	6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	3.3		3.3		3.1		3.3
Queue Clearance Time (g_s), s	69.0	4.1		28.0		19.0		19.0
Green Extension Time (g_e), s	0.0	1.0		0.0		0.0		0.0
Phase Call Probability	1.00	1.00		1.00		1.00		1.00
Max Out Probability	1.00	0.00		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
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	1728	62		12	358			309			25	556
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1602	1569		1298	1452			1657			1641	1425
Queue Service Time (g_s), s	67.0	2.1		1.2	26.0			17.0			2.0	17.0
Cycle Queue Clearance Time (g_c), s	67.0	2.1		1.2	26.0			17.0			2.0	17.0
Green Ratio (*g/C*)	0.63	0.66		0.17	0.17			0.11			0.11	0.56
Capacity (*c*), veh/h	758	1029		271	250			187			185	793
Volume-to-Capacity Ratio (*X*)	2.279	0.060		0.046	1.432			1.655			0.134	0.701
Back of Queue (*Q*), ft/ln (95 th percentile)	6259.7	34.2		18.7	996.4			960.6			39.7	530.5
Back of Queue (*Q*), veh/ln (95 th percentile)	240.8	1.3		0.7	38.0			37.2			1.5	20.4
Queue Storage Ratio (*RQ*) (95 th percentile)	13.61	0.02		0.09	0.50			0.48			0.02	1.68
Uniform Delay (d_1), s/veh	36.4	9.3		52.2	62.5			67.0			60.4	24.4
Incremental Delay (d_2), s/veh	579.8	0.0		0.0	216.0			317.2			0.1	2.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	616.2	9.3		52.3	278.5			384.2			60.5	26.7
Level of Service (LOS)	F	A		D	F			F			E	C
Approach Delay, s/veh / LOS	595.2	F		270.9	F		384.2	F		28.1	C	
Intersection Delay, s/veh / LOS	426.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.66	B	1.96	B	1.97	B	1.96	B
Bicycle LOS Score / LOS	3.44	C	1.10	A	1.00	A	1.45	A

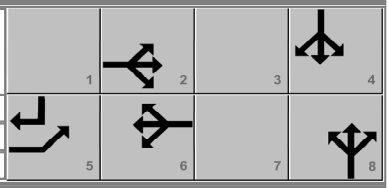
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.81
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1400	30	20	10	50	240	80	160	10	10	10	450

Signal Information												
Cycle, s	151.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	67.0	26.0	17.0	17.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0		
				Red	2.0	2.0	2.0	2.0	0.0	0.0		



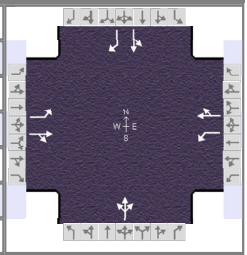
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	0.961	0.953	0.953	0.953	0.969	0.969	0.969	0.961	0.961	0.961
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.742	0.000		0.977	0.977		0.976	0.976	
Right-Turn Adjustment Factor (f_{RT})		0.933	0.933		0.870	0.870		0.000	0.000		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00			1.00			1.00		
Movement Saturation Flow Rate (s), veh/h	1602	941	628	1298	250	1202	530	1060	66	820	820	1425
Proportion of Vehicles Arriving on Green (P)	0.44	0.66	0.66	0.17	0.17	0.17	0.11	0.11	0.11	0.11	0.11	0.11
Incremental Delay Factor (k)	0.50	0.04		0.04	0.50			0.50			0.04	0.22

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.0		4.0
Green Ratio (g/C)	0.63	0.66		0.17		0.11		0.11
Permitted Saturation Flow Rate (s_p), veh/h/ln	999	0		1298		1190		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	28.0	0.0		26.0		17.0		0.0
Permitted Service Time (g_u), s	0.0	0.0		26.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	0.0			1.2				
Time to First Blockage (g_f), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1425
Protected Right Effective Green Time (g_R), s								67.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.088	0.000	0.158	0.000	0.173	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1311.26	8.95	344.37	51.74	-92.72	82.66	225.17	59.46
Bicycle F_w / F_v	-3.64	2.95	-3.64	0.61	-3.64	0.51	-3.64	0.96

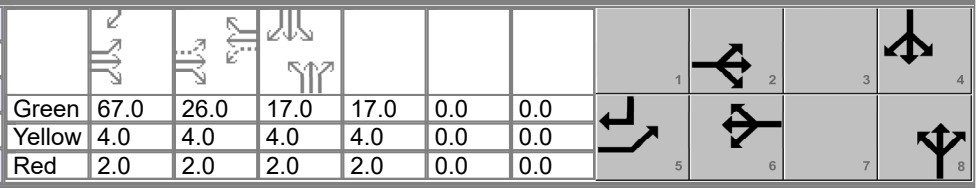
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.81
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 7:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 AM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



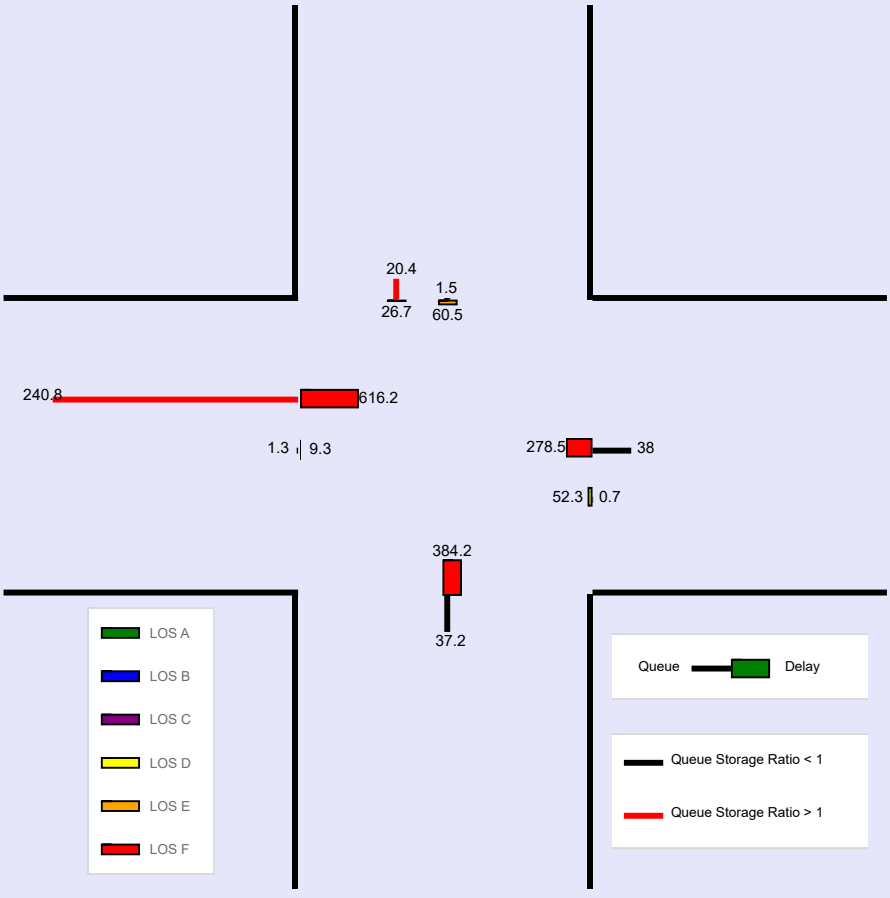
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1400	30	20	10	50	240	80	160	10	10	10	450

Signal Information			
Cycle, s	151.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



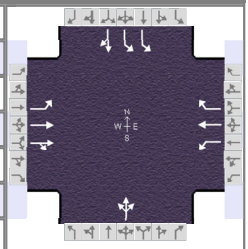
Green	67.0	26.0	17.0	17.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	6259.7	34.2		18.7	996.4			960.6			39.7	530.5
Back of Queue (*Q*), veh/ln (95 th percentile)	240.8	1.3		0.7	38.0			37.2			1.5	20.4
Queue Storage Ratio (*RQ*) (95 th percentile)	13.61	0.02		0.09	0.50			0.48			0.02	1.68
Control Delay (*d*), s/veh	616.2	9.3		52.3	278.5			384.2			60.5	26.7
Level of Service (LOS)	F	A		D	F			F			E	C
Approach Delay, s/veh / LOS	595.2	F		270.9	F		384.2	F		28.1	C	
Intersection Delay, s/veh / LOS	426.6						F					



HCS Signalized Intersection Input Data

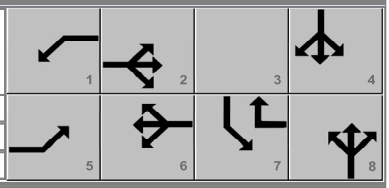
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 6:45
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.1	1.5	66.9	8.9	6.6	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						



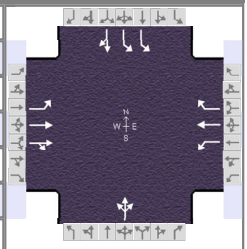
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1900	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		9	9	9		0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0		12.0		12.0	12.0	
Turn Bay Length, ft	150	1550		150	510	610		100		590	595	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	51.0	18.0	56.0		17.0	24.0	24.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20		10	7	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min		Off	Off	Off
Dual Entry	No	Yes	No	Yes		No	No	No
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

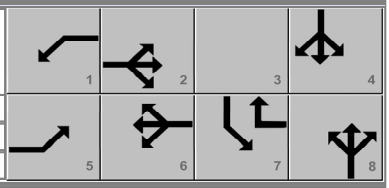
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 6:45
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.1	1.5	66.9	8.9	6.6	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	2.0	0.0	2.0	2.0	2.0	0.0



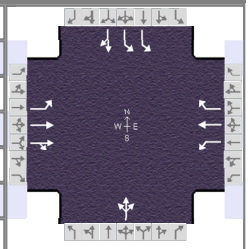
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		12.0		10.0
Phase Duration, s	8.1	72.9	9.6	74.4		12.6		14.9
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.1
Queue Clearance Time (g_s), s	2.3		2.6			4.3		3.5
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.1
Phase Call Probability	0.30		0.52			0.66		0.89
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	12	215	214	24	357	60		36		48	24	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1537	1614	1597	1550	1627	1379		1625		1618	1606	
Queue Service Time (g_s), s	0.3	6.6	6.7	0.6	11.7	1.5		2.3		1.5	1.5	
Cycle Queue Clearance Time (g_c), s	0.3	6.6	6.7	0.6	11.7	1.5		2.3		1.5	1.5	
Green Ratio (*g/C*)	0.63	0.61	0.61	0.64	0.62	0.70		0.06		0.08	0.08	
Capacity (*c*), veh/h	572	981	971	612	1011	968		98		261	130	
Volume-to-Capacity Ratio (*X*)	0.021	0.219	0.220	0.039	0.353	0.061		0.364		0.182	0.184	
Back of Queue (*Q*), ft/ln (95 th percentile)	4.8	113.9	113.2	9.2	199.8	19.4		43.1		26.9	27.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	4.2	4.2	0.3	7.5	0.7		1.7		1.1	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.07	0.07	0.06	0.39	0.03		0.43		0.05	0.05	
Uniform Delay (d_1), s/veh	8.4	9.8	9.8	7.4	10.1	5.1		49.6		47.2	47.2	
Incremental Delay (d_2), s/veh	0.0	0.5	0.5	0.0	1.0	0.1		0.8		0.1	0.3	
Initial 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	8.4	10.3	10.3	7.4	11.1	5.2		50.5		47.3	47.4	
Level of Service (LOS)	A	B	B	A	B	A		D		D	D	
Approach Delay, s/veh / LOS	10.2	B		10.1	B		50.5	D		47.3	D	
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.66	B	2.07	B	2.32	B	2.14	B
Bicycle LOS Score / LOS	0.85	A	1.21	A	0.55	A	0.61	A

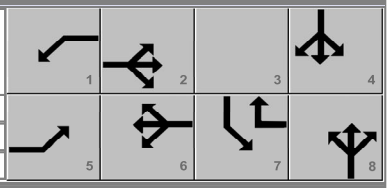
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 6:45
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
				Green	2.1	1.5	66.9	8.9	6.6	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



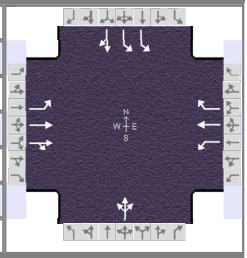
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	0.922	0.930	0.930	0.930	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.929	0.929		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.990	0.990		0.000	0.847		0.000	0.000		0.917	0.917
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1537	3122	89	1550	1627	1379	542	542	542	3333	803	803
Proportion of Vehicles Arriving on Green (P)	0.02	0.61	0.61	0.03	0.62	0.62	0.06	0.06	0.06	0.08	0.08	0.08
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50		0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0		6.0		4.0
Green Ratio (g/C)	0.63	0.61	0.64	0.62		0.06		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	959	0	906	0		0		1667
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	66.9	0.0	66.9	0.0		0.0		0.0
Permitted Service Time (g_u), s	54.6	0.0	60.2	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.2					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1379				
Protected Right Effective Green Time (g_R), s				8.9				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.389	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.086	0.000	0.083	0.000	0.161	0.000	0.156
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1215.76	8.46	1242.73	7.88		62.22	120.77	48.56
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.73	-3.64	0.06	-3.64	0.12

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 6:45
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

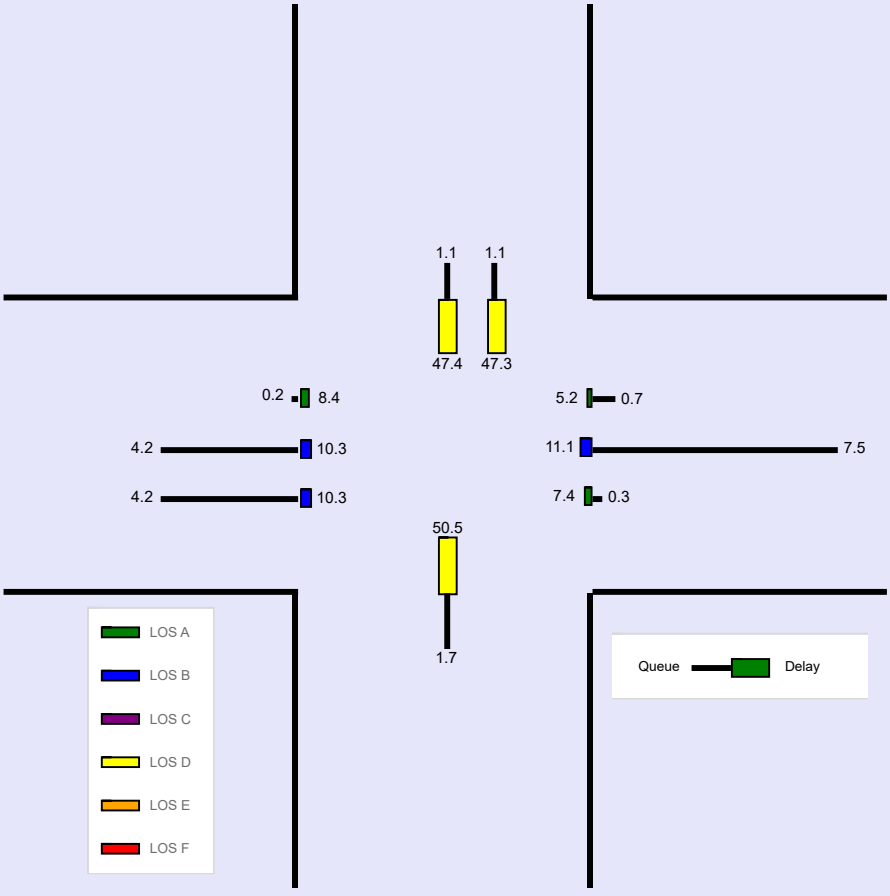


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

							1	2	3	4		
Green	2.1	1.5	66.9	8.9	6.6	0.0	5	6	7	8		
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4.8	113.9	113.2	9.2	199.8	19.4		43.1		26.9	27.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	4.2	4.2	0.3	7.5	0.7		1.7		1.1	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.07	0.07	0.06	0.39	0.03		0.43		0.05	0.05	
Control Delay (*d*), s/veh	8.4	10.3	10.3	7.4	11.1	5.2		50.5		47.3	47.4	
Level of Service (LOS)	A	B	B	A	B	A		D		D	D	
Approach Delay, s/veh / LOS	10.2		B	10.1		B	50.5		D	47.3		D
Intersection Delay, s/veh / LOS	14.3						B					



HCS Two-Way Stop-Control Report

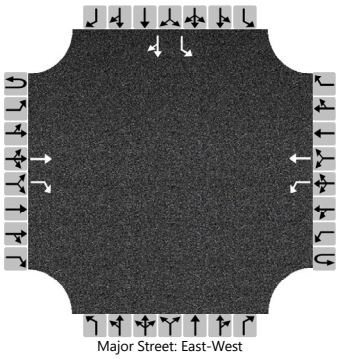
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	AM Peak NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 41 @ I-71 SB Ramps
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	I-71 SB Ramps
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		1	1	0
Configuration			T	R		L	T							L		TR
Volume (veh/h)			320	80		130	300							630	10	70
Percent Heavy Vehicles (%)						30								9	9	9
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.40								7.19	6.59	6.29
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.47								3.58	4.08	3.38

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						143								692		88
Capacity, c (veh/h)						987								181		520
v/c Ratio						0.14								3.82		0.17
95% Queue Length, Q_{95} (veh)						0.5								67.7		0.6
Control Delay (s/veh)						9.3								1322.5		13.3
Level of Service (LOS)						A								F		B
Approach Delay (s/veh)					2.8								1175.0			
Approach LOS					A								F			

HCS Two-Way Stop-Control Report

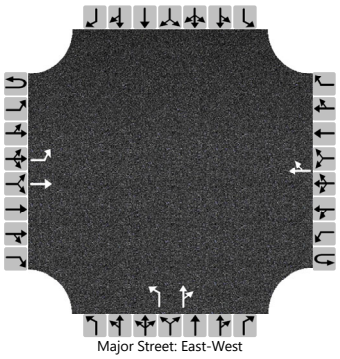
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	AM Peak NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS(PID 117955)

Site Information

Intersection	SR 41 @ I-71 NB Ramps
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	I-71 NB Ramps
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		1	1	0		0	0	0
Configuration		L	T					TR		L		TR				
Volume (veh/h)		70	880				370	240		60	10	230				
Percent Heavy Vehicles (%)		10								25	25	25				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1								7.1	6.5	6.2				
Critical Headway (sec)		4.20								7.35	6.75	6.45				
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3				
Follow-Up Headway (sec)		2.29								3.73	4.23	3.53				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		81								70		279				
Capacity, c (veh/h)		854								53		224				
v/c Ratio		0.10								1.33		1.25				
95% Queue Length, Q_{95} (veh)		0.3								6.3		14.2				
Control Delay (s/veh)		9.7								361.7		186.3				
Level of Service (LOS)		A								F		F				
Approach Delay (s/veh)	0.7								221.3							
Approach LOS	A								F							

HCS Two-Way Stop-Control Report

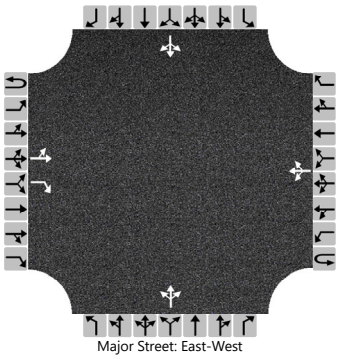
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 AM Pk NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 41 & SR 734
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	SR 734/Flying J
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		20	1040	50		10	500	10		50	10	10		10	10	60
Percent Heavy Vehicles (%)		10				5				18	18	18		28	28	28
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.20				4.15				6.43	6.68	6.38		6.43	6.78	6.48
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		22				11					75				86	
Capacity, c (veh/h)		1004				588					71				198	
v/c Ratio		0.02				0.02					1.06				0.43	
95% Queue Length, Q_{95} (veh)		0.1				0.1					5.6				2.0	
Control Delay (s/veh)		8.7	0.3			11.2	0.3	0.3			225.4				36.4	
Level of Service (LOS)		A	A			B	A	A			F				E	
Approach Delay (s/veh)		0.4				0.5				225.4				36.4		
Approach LOS		A				A				F				E		

LJ Engineering
Building Partnerships

2500 Newmark Drive Miamisburg, OH 45342 | (866) 552-3536 | LJBinc.com

2044 PM NO-BUILD

HCS Two-Way Stop-Control Report

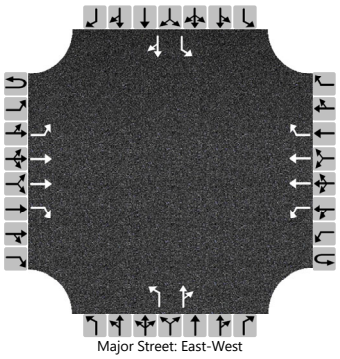
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	5/3/2023
Analysis Year	2044
Time Analyzed	2044 PM Pk NB/build
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 435 & GE Rd
Jurisdiction	ODOT 6
East/West Street	SR 435
North/South Street	Garringer Edgefield Rd
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	1	0	1	2	1		1	1	0		1	1	0
Configuration		L	T	R		L	T	R		L		TR		L		TR
Volume (veh/h)	0	10	440	30	0	230	790	60		20	10	130		90	10	10
Percent Heavy Vehicles (%)	0	20			0	13				16	16	16		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No										
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

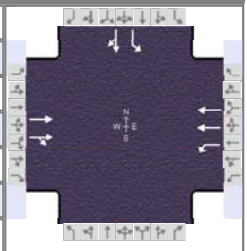
Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.2		7.5	6.5	6.9
Critical Headway (sec)		4.50				4.36				6.86	6.82	6.26		6.86	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.40				2.33				3.66	4.16	3.46		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				245				21		149		96		21
Capacity, c (veh/h)		645				987				438		707		341		398
v/c Ratio		0.02				0.25				0.05		0.21		0.28		0.05
95% Queue Length, Q_{95} (veh)		0.1				1.0				0.2		0.8		1.1		0.2
Control Delay (s/veh)		10.7				9.8				13.6		11.4		19.6		14.5
Level of Service (LOS)		B				A				B		B		C		B
Approach Delay (s/veh)		0.2				2.1				11.7				18.7		
Approach LOS		A				A				B				C		

HCS Signalized Intersection Input Data

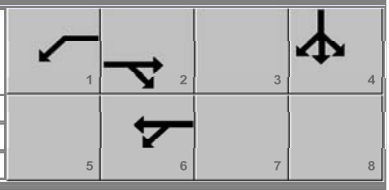
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.2	51.0	28.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



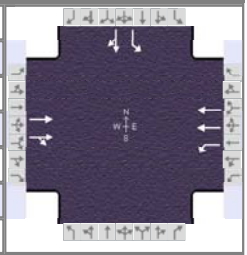
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		17		13	13					19	19	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		1.00	1.00	0.09	0.09					1.00	1.00	1.00
Lane Width (*W*), ft		12.0		12.0	12.0					12.0	12.0	
Turn Bay Length, ft		700		430	645					1100	300	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		57.0	18.0	75.0				45.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

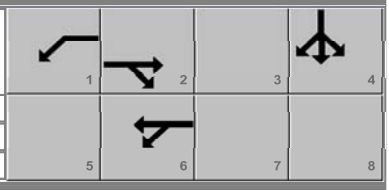
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.2	51.0	28.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



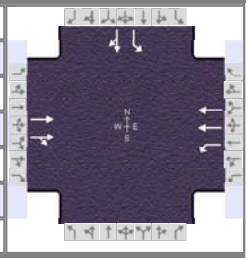
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	1.0	4.0				10.0
Phase Duration, s		57.0	28.2	85.2				34.8
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.2
Queue Clearance Time (*g s*), s			24.2					27.9
Green Extension Time (*g e*), s		0.0	0.0	0.0				0.9
Phase Call Probability			1.00					1.00
Max Out Probability			1.00					0.01

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		377	365	555	675					270	281	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1518	1469	1498	1497					1420	1271	
Queue Service Time (*g s*), s		22.7	22.8	22.2	17.2					21.4	25.9	
Cycle Queue Clearance Time (*g c*), s		22.7	22.8	22.2	17.2					21.4	25.9	
Green Ratio (*g/C*)		0.43	0.43	0.63	0.66					0.24	0.24	
Capacity (*c*), veh/h		645	625	492	1976					341	305	
Volume-to-Capacity Ratio (*X*)		0.583	0.584	1.128	0.342					0.792	0.921	
Back of Queue (*Q*), ft/ln (95 th percentile)		385.1	376.7	475.5	206.9					352	416.7	
Back of Queue (*Q*), veh/ln (95 th percentile)		13.6	13.3	17.2	7.5					12.2	14.5	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.55	0.54	1.11	0.32					0.32	1.39	
Uniform Delay (*d 1*), s/veh		26.4	26.4	20.1	15.4					42.8	44.5	
Incremental Delay (*d 2*), s/veh		3.8	4.0	60.5	0.0					4.5	18.6	
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		30.2	30.3	80.6	15.5					47.3	63.1	
Level of Service (LOS)		C	C	F	B					D	E	
Approach Delay, s/veh / LOS	30.3	C		44.9	D		0.0			55.4	E	
Intersection Delay, s/veh / LOS	42.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.40	A	1.65	B	2.32	B	2.15	B
Bicycle LOS Score / LOS	1.10	A	1.91	B			1.40	A

HCS Signalized Intersection Intermediate Values

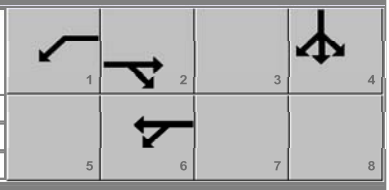
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.2	51.0	28.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



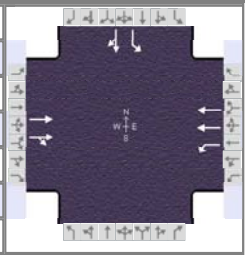
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.867	0.867	0.899	0.899	1.000				0.852	0.852	0.852
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.968	0.968		1.000	1.000					0.853	0.853
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	2716	271	1498	3070	0				1420	51	1220
Proportion of Vehicles Arriving on Green (P)	0.00	0.43	0.43	0.31	0.47	0.00	0.00	0.00	0.00	0.24	0.24	0.24
Incremental Delay Factor (k)		0.50	0.50	0.50	0.50					0.12	0.21	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.43	0.63	0.66				0.24
Permitted Saturation Flow Rate (s_p), veh/h/ln		776	655	0				1420
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	53.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	28.3	0.0				0.0
Permitted Queue Service Time (g_{ps}), s			28.3					
Time to First Blockage (g_f), s		51.0	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.681	0.000	0.972	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.120	0.000	0.078	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	850.23	19.83	1320.10	6.93	-83.33	65.10		67.20
Bicycle F_w / F_v	-3.64	0.61	-3.64	1.42	-3.64		-3.64	0.91

HCS Signalized Intersection Results Graphical Summary

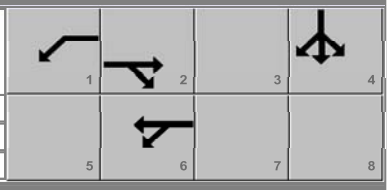
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



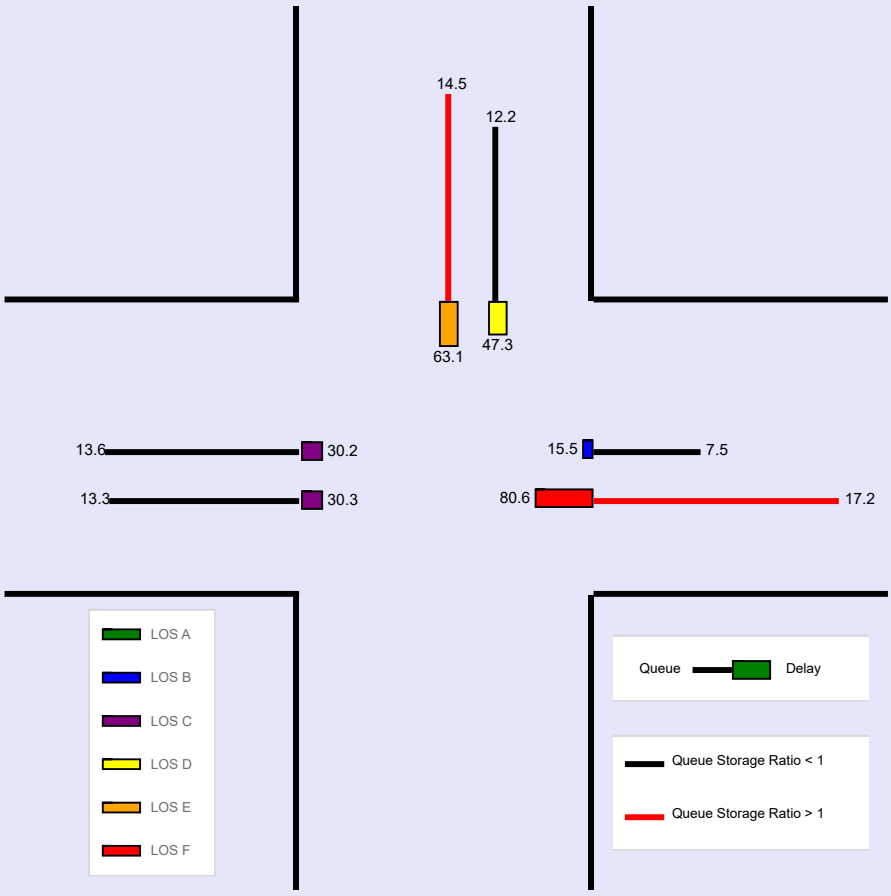
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.2	51.0	28.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		385.1	376.7	475.5	206.9					352	416.7	
Back of Queue (*Q*), veh/ln (95 th percentile)		13.6	13.3	17.2	7.5					12.2	14.5	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.55	0.54	1.11	0.32					0.32	1.39	
Control Delay (*d*), s/veh		30.2	30.3	80.6	15.5					47.3	63.1	
Level of Service (LOS)		C	C	F	B					D	E	
Approach Delay, s/veh / LOS	30.3	C		44.9	D		0.0			55.4	E	
Intersection Delay, s/veh / LOS	42.9						D					



--- Messages ---

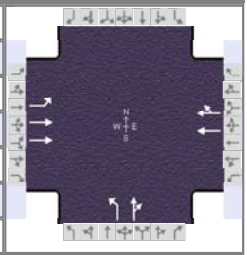
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: According to input data, upstream feeding volume is equal to 52% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

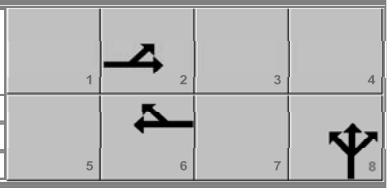
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	48	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	67.6	40.4	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



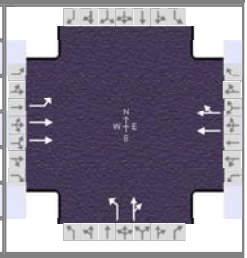
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	17	17			11		16	16				
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.72	0.72			0.09	0.09	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0		12.0	12.0				
Turn Bay Length, ft	305	630			420		1120	575				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	45	45	45			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		37.0		37.0		83.0		
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		
Red Clearance Interval (R_c), s		2.0		2.0		2.0		
Minimum Green (G_{min}), s		20		20		10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s		2.0		2.0		2.0		
Recall Mode		Min		Min		Off		
Dual Entry		Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

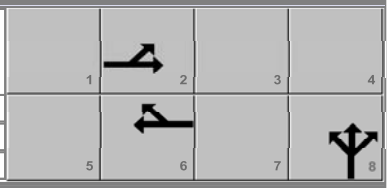
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	48	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	67.6	40.4	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



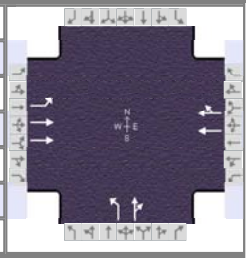
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		6.0		8.0		10.0		
Phase Duration, s		73.6		73.6		46.4		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		
Queue Clearance Time (*g s*), s						39.3		
Green Extension Time (*g e*), s		0.0		0.0		1.1		
Phase Call Probability						1.00		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	169	775			976	976	67	416				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	199	1445			1600	1426	1459	1303				
Queue Service Time (*g s*), s	0.0	8.2			120.0	67.6	3.9	37.3				
Cycle Queue Clearance Time (*g c*), s	67.6	8.2			120.0	67.6	3.9	37.3				
Green Ratio (*g/C*)	0.56	0.56			0.56	0.56	0.34	0.34				
Capacity (*c*), veh/h	60	1629			902	804	491	438				
Volume-to-Capacity Ratio (*X*)	2.809	0.476			1.082	1.214	0.137	0.948				
Back of Queue (*Q*), ft/ln (95 th percentile)	810.4	95.9			656.1	904.7	66.9	496.8				
Back of Queue (*Q*), veh/ln (95 th percentile)	28.5	3.4			24.1	33.3	2.4	17.6				
Queue Storage Ratio (*RQ*) (95 th percentile)	2.66	0.15			1.56	2.15	0.06	0.86				
Uniform Delay (*d 1*), s/veh	48.4	4.6			12.1	9.2	27.7	38.8				
Incremental Delay (*d 2*), s/veh	846.4	0.7			39.1	97.2	0.0	5.0				
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0	0.0	0.0				
Control Delay (*d*), s/veh	894.7	5.4			51.2	106.4	27.8	43.8				
Level of Service (LOS)	F	A			F	F	C	D				
Approach Delay, s/veh / LOS	164.2	F		78.8	E		41.6	D		0.0		
Intersection Delay, s/veh / LOS	97.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.67	B	1.38	A	2.15	B	2.32	B
Bicycle LOS Score / LOS	1.27	A	2.55	C	1.28	A		

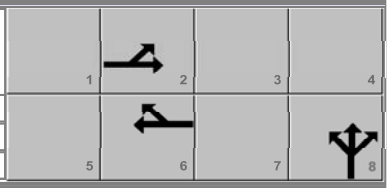
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	48	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	67.6	40.4	0.0	0.0	0.0	0.0		
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



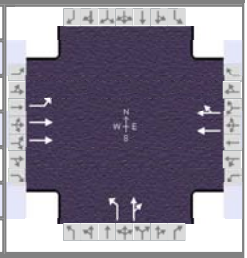
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.867	0.867	1.000	1.000	0.914	0.914	0.875	0.875	0.875			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.114	0.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.892	0.892		0.851	0.851			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00								
Movement Saturation Flow Rate (s), veh/h	199	2963	0	0	2062	964	1459	35	1268			
Proportion of Vehicles Arriving on Green (P)	0.76	0.85	0.00	0.00	0.80	0.87	0.34	0.34	0.34	0.00	0.00	0.00
Incremental Delay Factor (k)	0.50	0.50			0.50	0.50	0.04	0.04				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		4.0		
Green Ratio (g/C)		0.56		0.56		0.34		
Permitted Saturation Flow Rate (s_p), veh/h/ln		199		707		1459		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s		67.6		0.0		0.0		
Permitted Service Time (g_u), s		0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s		0.0						
Time to First Blockage (g_f), s		0.0		67.6		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.389	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.098	0.000	0.098	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1127.40	11.42	1127.40	11.42		67.20	-83.33	65.10
Bicycle F_w / F_v	-3.64	0.78	-3.64	2.06	-3.64	0.80	-3.64	

HCS Signalized Intersection Results Graphical Summary

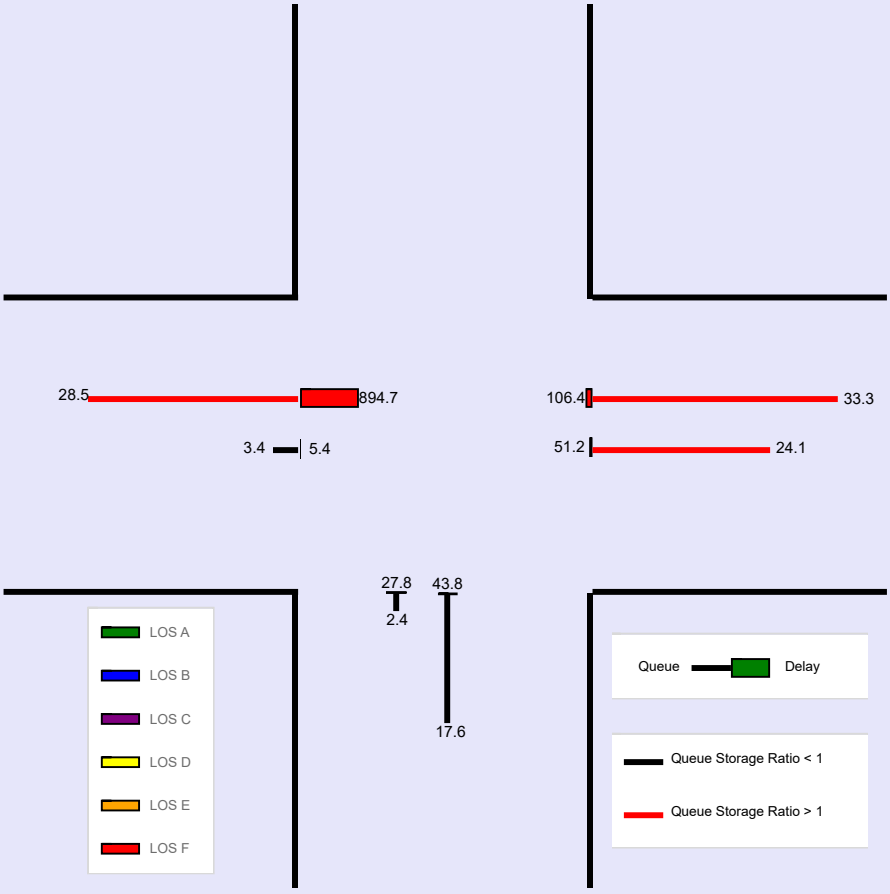
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information					EB		WB				NB			
Cycle, s	120.0	Reference Phase	2								1	2	3	4
Offset, s	48	Reference Point	End	Green	67.6	40.4	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	810.4	95.9			656.1	904.7	66.9	496.8				
Back of Queue (*Q*), veh/ln (95 th percentile)	28.5	3.4			24.1	33.3	2.4	17.6				
Queue Storage Ratio (*RQ*) (95 th percentile)	2.66	0.15			1.56	2.15	0.06	0.86				
Control Delay (*d*), s/veh	894.7	5.4			51.2	106.4	27.8	43.8				
Level of Service (LOS)	F	A			F	F	C	D				
Approach Delay, s/veh / LOS	164.2	F		78.8	E		41.6	D		0.0		
Intersection Delay, s/veh / LOS	97.3						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

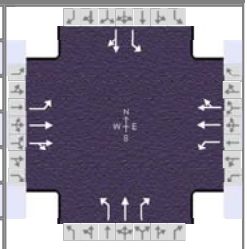
WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 56% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	26	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	5.8	68.0	7.0	10.0	0.0	1	2	3	4		
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	5	6	7	8		
Red	2.0	0.0	2.0	2.0	2.0	0.0						

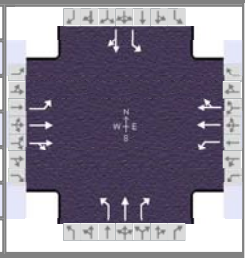
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	15	15		9	9		10	10	10	20	20	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.73	0.73	0.73	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	325	485		385	760		100	1000	65	110	600	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	17.0	71.0	20.0	74.0	13.0	29.0		16.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Off	Min	Off	Min	Off	Off		Off
Dual Entry	No	Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

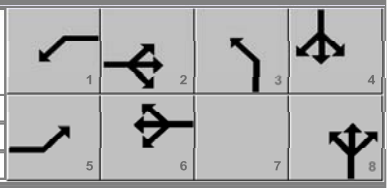
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	26	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	5.8	68.0	7.0	10.0	0.0	
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	
Red	2.0	0.0	2.0	2.0	2.0	0.0	



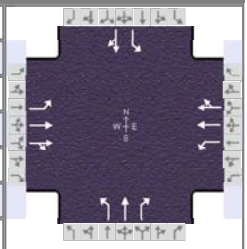
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8		4
Case Number	1.1	4.0	1.1	4.0	1.0	3.0		6.3
Phase Duration, s	17.0	79.8	11.2	74.0	13.0	29.0		16.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.1	3.5		3.5
Queue Clearance Time (g_s), s	13.0		3.3		9.0	6.0		12.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.1		0.0
Phase Call Probability	1.00		0.74		0.97	1.00		1.00
Max Out Probability	1.00		0.00		1.00	0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	225	488	467	40	998	998	108	22	54	140	269	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1472	1545	1481	1550	1627	1601	1537	1614	1367	1192	1267	
Queue Service Time (g_s), s	11.0	18.1	19.1	1.3	68.0	68.0	7.0	1.3	4.0	10.0	10.0	
Cycle Queue Clearance Time (g_c), s	11.0	18.1	19.1	1.3	68.0	68.0	7.0	1.3	4.0	10.0	10.0	
Green Ratio (*g/C*)	0.67	0.62	0.62	0.61	0.57	0.57	0.16	0.19	0.19	0.08	0.08	
Capacity (*c*), veh/h	195	951	911	371	922	907	150	309	262	159	106	
Volume-to-Capacity Ratio (*X*)	1.153	0.513	0.513	0.109	1.082	1.100	0.719	0.070	0.205	0.877	2.545	
Back of Queue (*Q*), ft/ln (95 th percentile)	490.2	245.8	258.8	19.8	696.8	723.9	167	25.4	65.3	288	1143.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	17.5	8.8	9.2	0.7	26.0	27.0	6.2	0.9	2.4	9.9	39.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.51	0.51	0.53	0.05	0.92	0.95	1.67	0.03	1.00	2.62	1.91	
Uniform Delay (d_1), s/veh	44.0	9.9	10.9	10.8	12.7	12.1	47.1	39.7	40.8	56.4	55.0	
Incremental Delay (d_2), s/veh	102.7	1.4	1.5	0.0	39.2	46.9	13.4	0.0	0.1	37.3	722.5	
Initial 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	146.7	11.3	12.4	10.8	51.9	59.0	60.5	39.8	41.0	93.8	777.5	
Level of Service (LOS)	F	B	B	B	F	F	E	D	D	F	F	
Approach Delay, s/veh / LOS	37.5	D		54.6	D		52.3	D		543.6	F	
Intersection Delay, s/veh / LOS	101.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.08	B	1.89	B	2.30	B	2.31	B
Bicycle LOS Score / LOS	1.42	A	2.28	B	0.79	A	1.16	A

HCS Signalized Intersection Intermediate Values

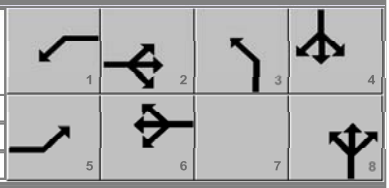
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	26	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	5.8	68.0	7.0	10.0	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						



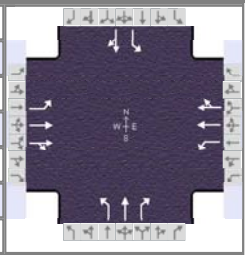
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.883	0.883	0.883	0.930	0.930	0.930	0.922	0.922	0.922	0.844	0.844	0.844
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.681	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.959	0.959		0.984	0.984		0.000	0.847		0.858	0.858
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h	1472	2670	356	1550	3083	146	1537	1614	1367	1192	101	1166
Proportion of Vehicles Arriving on Green (P)	0.04	0.69	0.59	0.01	0.79	0.88	0.06	0.19	0.19	0.08	0.08	0.08
Incremental Delay Factor (k)	0.50	0.50	0.50	0.04	0.50	0.50	0.24	0.04	0.04	0.39	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Green Ratio (g/C)	0.67	0.62	0.61	0.57	0.16	0.19		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	194	0	555	0	1040	0		1192
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	69.8	0.0	68.0	0.0	12.0	0.0		10.0
Permitted Service Time (g_u), s	0.0	0.0	52.7	0.0	0.0	0.0		10.0
Permitted Queue Service Time (g_{ps}), s	0.0		1.2		0.0			10.0
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		
Protected Right Effective Green Time (g_R), s						0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.198	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.088	0.000	0.097	0.000	0.147	0.000	0.157
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1230.43	8.88	1133.35	11.27	383.33	39.20	166.67	50.42
Bicycle F_w / F_v	-3.64	0.93	-3.64	1.79	-3.64	0.30	-3.64	0.67

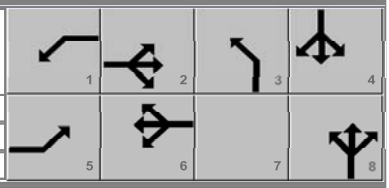
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				

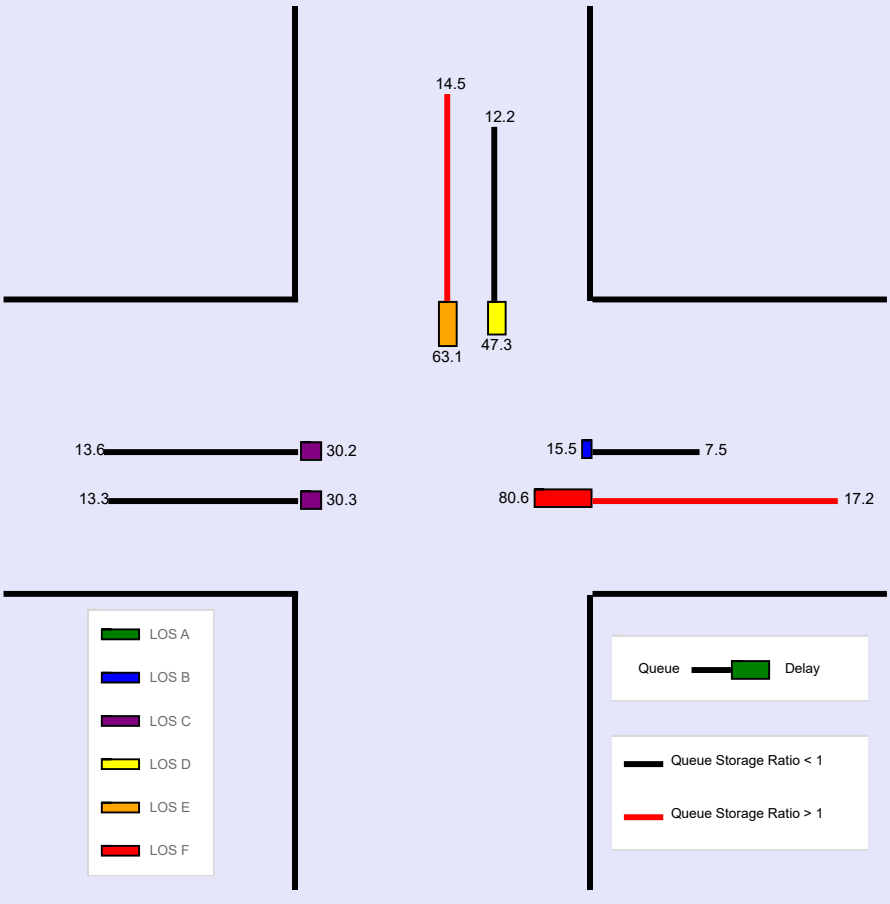


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	26	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.2	5.8	68.0	7.0	10.0	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	490.2	245.8	258.8	19.8	696.8	723.9	167	25.4	65.3	288	1143.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	17.5	8.8	9.2	0.7	26.0	27.0	6.2	0.9	2.4	9.9	39.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.51	0.51	0.53	0.05	0.92	0.95	1.67	0.03	1.00	2.62	1.91	
Control Delay (*d*), s/veh	146.7	11.3	12.4	10.8	51.9	59.0	60.5	39.8	41.0	93.8	777.5	
Level of Service (LOS)	F	B	B	B	F	F	E	D	D	F	F	
Approach Delay, s/veh / LOS	37.5	D		54.6	D		52.3	D		543.6	F	
Intersection Delay, s/veh / LOS	101.7						F					



--- Messages ---

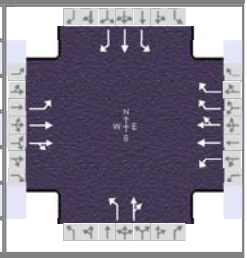
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ---

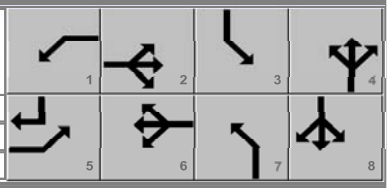
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	10	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	4.7	2.3	64.0	7.8	0.2	11.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0		
				Red	2.0	0.0	2.0	2.0	2.0	2.0		



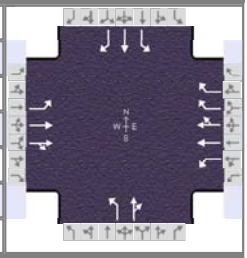
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	11	11		10	10	10	43	43		7	7	7
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	215	740		185	1520	0	400	100		105	550	550
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	47.0	41.0	42.0	36.0	20.0	20.0	17.0	17.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

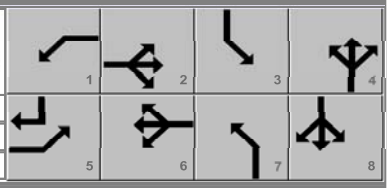
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	10	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	2.3	64.0	7.8	0.2	11.0	
Yellow	4.0	0.0	4.0	4.0	4.0	4.0	
Red	2.0	0.0	2.0	2.0	2.0	2.0	



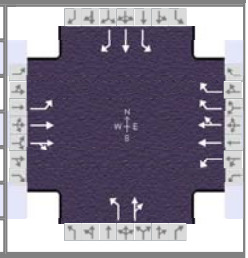
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	7	4	3	8
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	3.0
Phase Duration, s	13.0	72.3	10.7	70.0	20.0	23.2	13.8	17.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.3	3.5	3.3	3.5
Queue Clearance Time (g_s), s	6.9		3.1		16.0	13.5	8.1	11.9
Green Extension Time (g_e), s	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Phase Call Probability	0.98		0.67		1.00	1.00	0.95	1.00
Max Out Probability	0.00		0.00		1.00	0.82	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
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	123	460	454	34	1955	79	191	101		90	22	124
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1524	1600	1579	1537	1614	1367	1108	1003		1576	1654	1402
Queue Service Time (g_s), s	4.9	17.7	17.7	1.1	64.0	1.7	14.0	11.5		6.1	1.5	9.9
Cycle Queue Clearance Time (g_c), s	4.9	17.7	17.7	1.1	64.0	1.7	14.0	11.5		6.1	1.5	9.9
Green Ratio (*g/C*)	0.59	0.55	0.55	0.57	0.53	0.53	0.22	0.14		0.16	0.09	0.15
Capacity (*c*), veh/h	149	884	872	342	1721	1459	263	144		200	152	210
Volume-to-Capacity Ratio (*X*)	0.824	0.520	0.520	0.098	1.136	0.054	0.725	0.702		0.449	0.148	0.588
Back of Queue (*Q*), ft/ln (95 th percentile)	99.9	251.3	247.8	18.7	1480.8	25.1	116.5	205.4		116.8	30.2	173.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.7	9.2	9.1	0.7	54.8	0.9	3.5	6.1		4.4	1.1	6.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.46	0.34	0.33	0.10	0.97	0.00	0.29	2.05		1.11	0.05	0.32
Uniform Delay (d_1), s/veh	33.2	12.0	12.0	12.5	28.0	13.4	44.7	48.9		45.5	50.2	47.6
Incremental Delay (d_2), s/veh	3.6	1.8	1.8	0.0	68.8	0.1	8.3	12.1		0.6	0.2	2.9
Initial 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	36.7	13.8	13.8	12.6	96.8	13.5	53.0	61.1		46.1	50.4	50.5
Level of Service (LOS)	D	B	B	B	F	B	D	E		D	D	D
Approach Delay, s/veh / LOS	16.5	B		92.3	F		55.8	E		48.8	D	
Intersection Delay, s/veh / LOS	64.9						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.26	B	2.60	C	2.31	B
Bicycle LOS Score / LOS	1.35	A	2.19	B	0.97	A	0.88	A

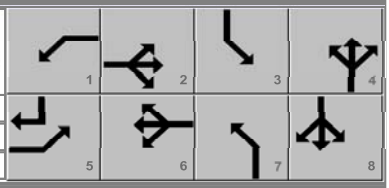
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	10	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	4.7	2.3	64.0	7.8	0.2	11.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	4.0		
				Red	2.0	0.0	2.0	2.0	2.0	2.0		



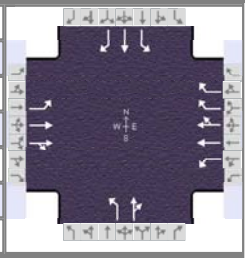
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.914	0.914	0.914	0.922	0.922	0.922	0.665	0.665	0.665	0.945	0.945	0.945
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.987	0.987		0.000	0.847		0.862	0.862		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1524	3062	116	1537	3227	2735	1108	111	891	1576	1654	1402
Proportion of Vehicles Arriving on Green (P)	0.01	0.66	0.68	0.04	0.53	0.53	0.12	0.14	0.14	0.06	0.09	0.09
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50	0.25	0.23		0.04	0.04	0.12

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.59	0.55	0.57	0.53	0.22	0.14	0.16	0.09
Permitted Saturation Flow Rate (s_p), veh/h/ln	209	0	572	0	938	0	1242	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	64.0	0.0	64.0	0.0	13.0	0.0	11.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	46.5	0.0	9.5	0.0	3.7	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		1.1		7.5		0.6	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				1402
Protected Right Effective Green Time (g_R), s				0.0				7.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.557	0.000	1.852	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.100	0.000	0.103	0.000	0.152	0.000	0.156
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1104.58	12.03	1066.89	13.06	287.50	43.99	183.33	49.50
Bicycle F_w / F_v	-3.64	0.86	-3.64	1.71	-3.64	0.48	-3.64	0.39

HCS Signalized Intersection Results Graphical Summary

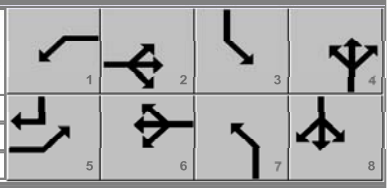
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	ljb	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 SR 435 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



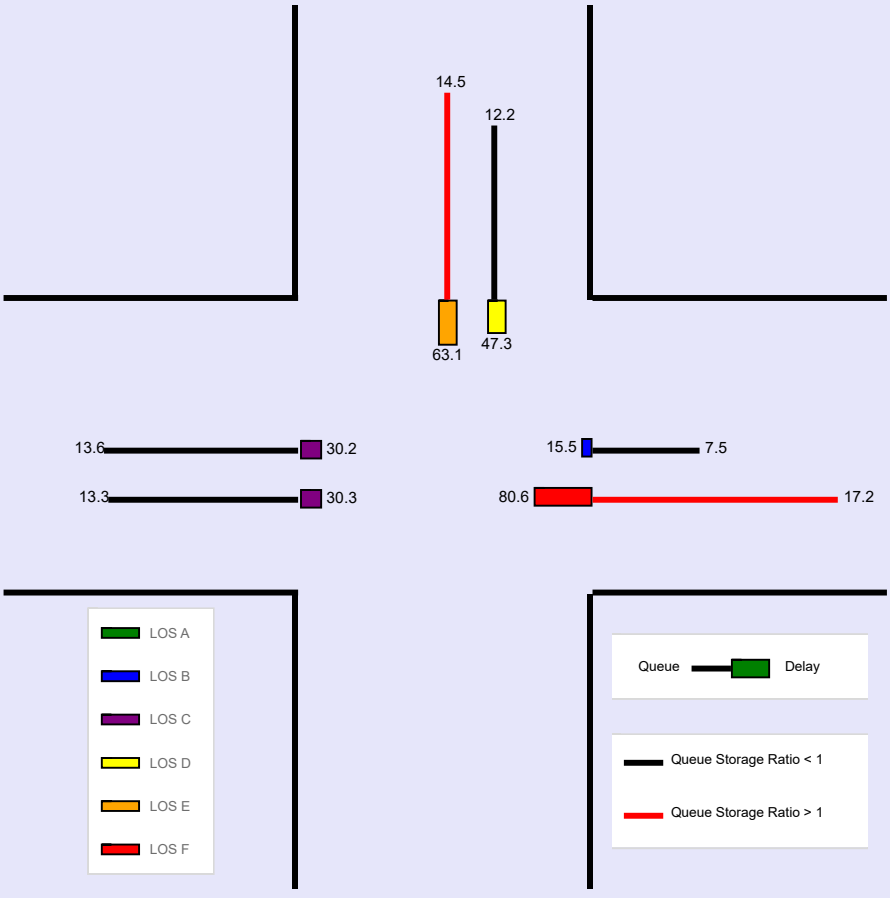
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	10	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	2.3	64.0	7.8	0.2	11.0	
Yellow	4.0	0.0	4.0	4.0	4.0	4.0	
Red	2.0	0.0	2.0	2.0	2.0	2.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	99.9	251.3	247.8	18.7	1480.8	25.1	116.5	205.4		116.8	30.2	173.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.7	9.2	9.1	0.7	54.8	0.9	3.5	6.1		4.4	1.1	6.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.46	0.34	0.33	0.10	0.97	0.00	0.29	2.05		1.11	0.05	0.32
Control Delay (*d*), s/veh	36.7	13.8	13.8	12.6	96.8	13.5	53.0	61.1		46.1	50.4	50.5
Level of Service (LOS)	D	B	B	B	F	B	D	E		D	D	D
Approach Delay, s/veh / LOS	16.5	B		92.3	F		55.8	E		48.8	D	
Intersection Delay, s/veh / LOS	64.9						E					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

HCS Two-Way Stop-Control Report

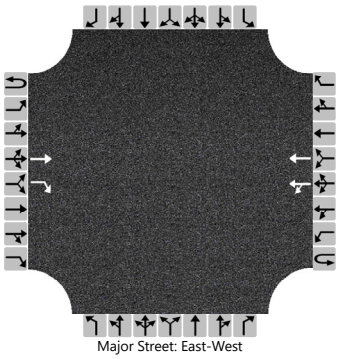
General Information

Analyst	ljb
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 PM Pk NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 435 @ US 35 EB On-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 EB On Ramp
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	0		0	0	0
Configuration			T	R		LT	T									
Volume (veh/h)			660	290		170	1840									
Percent Heavy Vehicles (%)						6										
Proportion Time Blocked																
Percent Grade (%)																
Right Turn Channelized		No														
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1										
Critical Headway (sec)						4.22										
Base Follow-Up Headway (sec)						2.2										
Follow-Up Headway (sec)						2.26										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						198										
Capacity, c (veh/h)						605										
v/c Ratio						0.33										
95% Queue Length, Q_{95} (veh)						1.4										
Control Delay (s/veh)						13.8	9.8									
Level of Service (LOS)						B	A									
Approach Delay (s/veh)						10.1										
Approach LOS						B										

HCS Two-Way Stop-Control Report

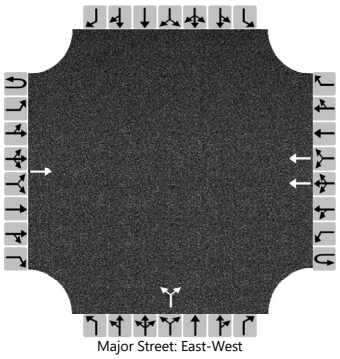
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 PM Pk - NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 435 @ US 35 WB Off-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 WB Off-ramp
Peak Hour Factor	0.87
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	2	0		0	1	0		0	0	0
Configuration			T				T				LR					
Volume (veh/h)			660				1550			460		70				
Percent Heavy Vehicles (%)										10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

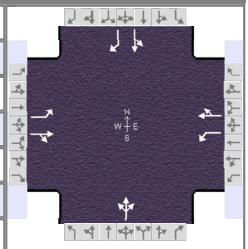
Base Critical Headway (sec)										7.5		6.2				
Critical Headway (sec)										7.00		6.40				
Base Follow-Up Headway (sec)										3.5		3.3				
Follow-Up Headway (sec)										3.60		3.40				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)											609					
Capacity, c (veh/h)											95					
v/c Ratio											6.40					
95% Queue Length, Q_{95} (veh)											67.6					
Control Delay (s/veh)											2517.9					
Level of Service (LOS)											F					
Approach Delay (s/veh)										2517.9						
Approach LOS										F						

HCS Signalized Intersection Input Data

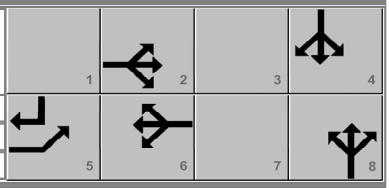
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	560	130	40	20	150	30	40	50	10	270	110	1360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	32.0	20.0	34.0	10.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



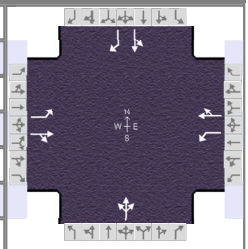
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	560	130	40	20	150	30	40	50	10	270	110	1360
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5		7	7			9			5	5
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0			12.0			12.0	12.0
Turn Bay Length, ft	460	1450		200	2000			2000			2000	315
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	38.0	64.0		26.0		16.0		40.0
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s	7	20		20		10		10
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0		2.0		2.0		2.0
Recall Mode	Off	Min		Min		Off		Off
Dual Entry	No	Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

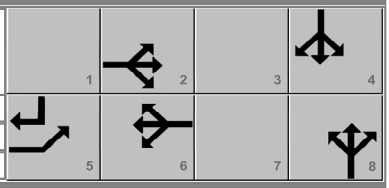
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	560	130	40	20	150	30	40	50	10	270	110	1360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	32.0	20.0	34.0	10.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



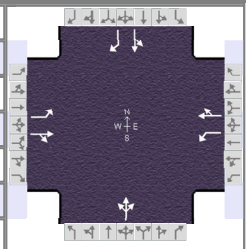
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		6.3		12.0		11.0
Phase Duration, s	38.0	64.0		26.0		16.0		40.0
Change Period, ($Y+R_c$), s	6.0	6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.1		3.3
Queue Clearance Time (g_s), s	34.0					10.4		36.0
Green Extension Time (g_e), s	0.0	0.0		0.0		0.0		0.0
Phase Call Probability	1.00					0.98		1.00
Max Out Probability	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
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	622	189		22	200			111			422	1511
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1602	1613		1147	1606			1568			1624	1425
Queue Service Time (g_s), s	32.0	8.2		2.0	14.2			8.4			30.2	34.0
Cycle Queue Clearance Time (g_c), s	32.0	8.2		2.0	14.2			8.4			30.2	34.0
Green Ratio (*g/C*)	0.45	0.48		0.17	0.17			0.08			0.28	0.55
Capacity (*c*), veh/h	543	780		251	268			131			460	784
Volume-to-Capacity Ratio (*X*)	1.147	0.242		0.088	0.747			0.851			0.918	1.928
Back of Queue (*Q*), ft/ln (95 th percentile)	950.4	148.7		28.9	296.4			218.1			539.7	4452.6
Back of Queue (*Q*), veh/ln (95 th percentile)	36.6	5.7		1.1	11.2			8.1			20.8	171.3
Queue Storage Ratio (*RQ*) (95 th percentile)	2.07	0.10		0.14	0.15			0.11			0.27	14.14
Uniform Delay (d_1), s/veh	29.8	18.1		42.5	47.6			54.3			41.6	27.0
Incremental Delay (d_2), s/veh	85.9	0.7		0.7	17.2			36.8			22.9	422.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	115.7	18.9		43.2	64.8			91.0			64.5	449.2
Level of Service (LOS)	F	B		D	E			F			E	F
Approach Delay, s/veh / LOS	93.1	F		62.7	E		91.0	F		365.2	F	
Intersection Delay, s/veh / LOS	261.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.95	B	1.96	B	1.95	B
Bicycle LOS Score / LOS	1.83	B	0.85	A	0.67	A	3.68	D

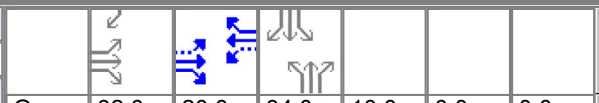
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				

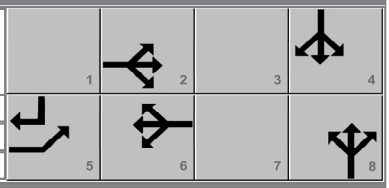


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	560	130	40	20	150	30	40	50	10	270	110	1360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	32.0	20.0	34.0	10.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



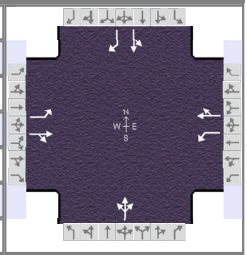
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	0.961	0.945	0.945	0.945	0.930	0.930	0.930	0.961	0.961	0.961
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.655	0.000		0.963	0.963		0.966	0.966	
Right-Turn Adjustment Factor (f_{RT})		0.959	0.959		0.971	0.971		0.000	0.000		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1602	1234	380	1147	1339	268	627	784	157	1154	470	1425
Proportion of Vehicles Arriving on Green (P)	0.27	0.48	0.48	0.17	0.17	0.17	0.08	0.08	0.08	0.28	0.28	0.28
Incremental Delay Factor (k)	0.50	0.50		0.50	0.50			0.36			0.42	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.0		4.0
Green Ratio (g/C)	0.45	0.48		0.17		0.08		0.28
Permitted Saturation Flow Rate (s_p), veh/h/ln	1154	0		1147		0		0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	22.0	0.0		20.0		0.0		0.0
Permitted Service Time (g_u), s	5.8	0.0		20.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	5.8			2.0				
Time to First Blockage (g_f), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1425
Protected Right Effective Green Time (g_R), s								32.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.111	0.000	0.150	0.000	0.164	0.000	0.157
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	966.67	16.02	333.33	41.67		67.20	166.67	50.42
Bicycle F_w / F_v	-3.64	1.34	-3.64	0.37	-3.64	0.18	-3.64	3.19

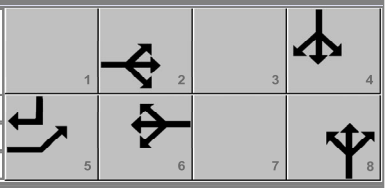
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 No Build	Analysis Period	1> 15:00
Intersection	Bluegrass Blvd	File Name	7 Bluegrass 2044 PM NB.xus		
Project Description	FAY-VAR IOS(PID 117955)				

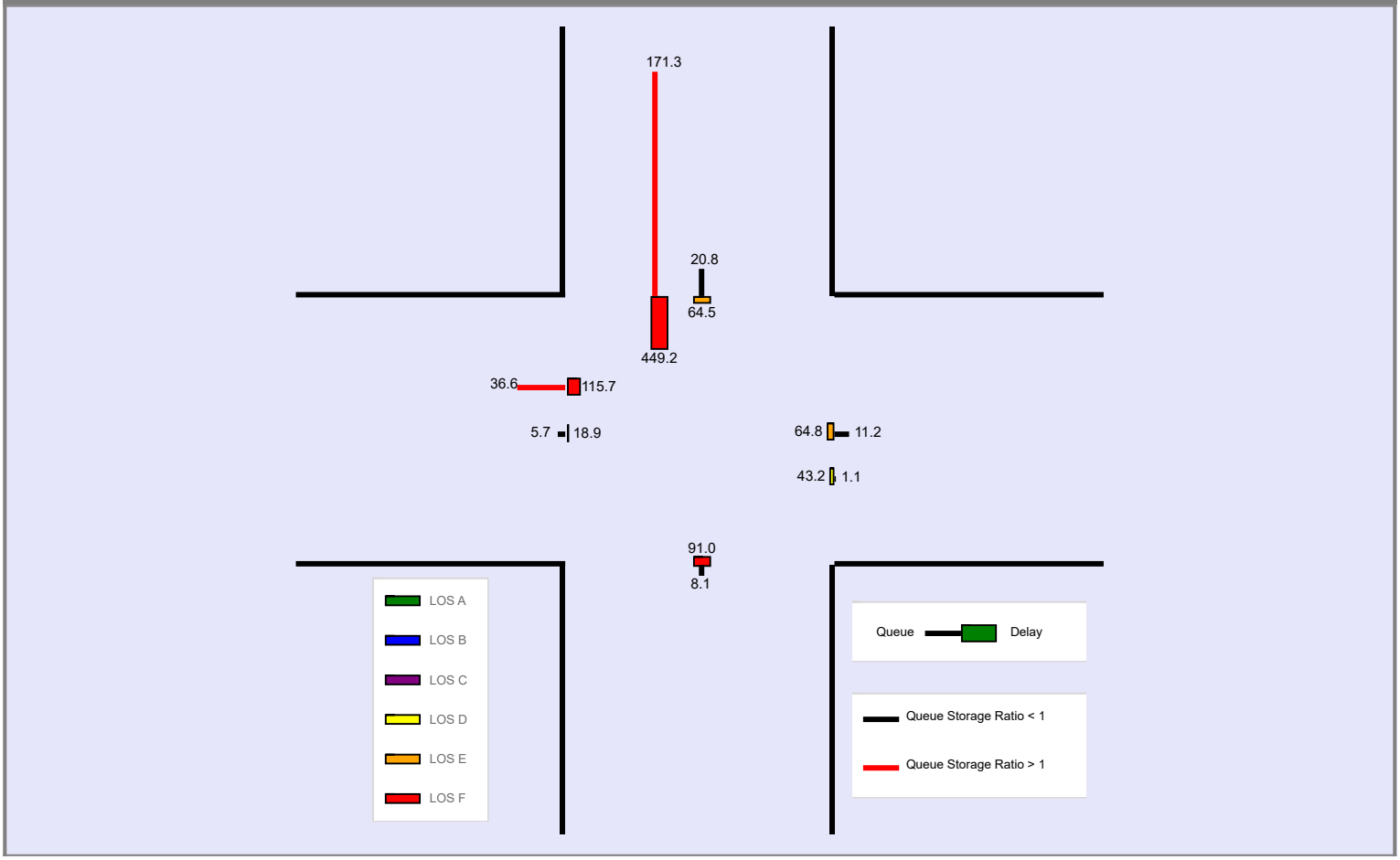


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	560	130	40	20	150	30	40	50	10	270	110	1360

Signal Information					EB			WB			NB			SB		
Cycle, s	120.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	32.0	20.0		34.0	10.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	4.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	2.0	0.0	0.0					

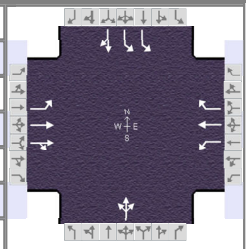


Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	950.4	148.7		28.9	296.4			218.1			539.7	4452.6
Back of Queue (*Q*), veh/ln (95 th percentile)	36.6	5.7		1.1	11.2			8.1			20.8	171.3
Queue Storage Ratio (*RQ*) (95 th percentile)	2.07	0.10		0.14	0.15			0.11			0.27	14.14
Control Delay (*d*), s/veh	115.7	18.9		43.2	64.8			91.0			64.5	449.2
Level of Service (LOS)	F	B		D	E			F			E	F
Approach Delay, s/veh / LOS	93.1	F		62.7	E		91.0	F		365.2	F	
Intersection Delay, s/veh / LOS	261.8						F					



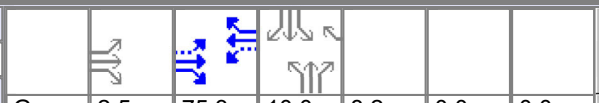
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

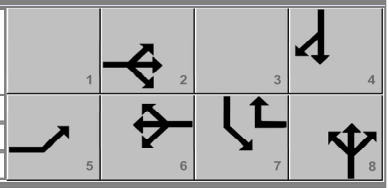


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	20	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off



Green	2.5	75.3	10.0	8.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



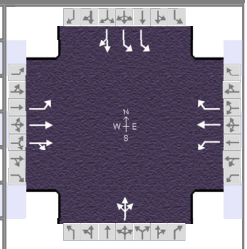
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	20	100	10	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	7	7		5	5	5		7		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0		12.0		12.0	12.0	
Turn Bay Length, ft	150	1550		150	510	610		100		590	595	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	15.0	80.0		65.0		20.0	20.0	20.0
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20		20		10	7	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0		2.0		2.0	2.0	2.0
Recall Mode	Off	Min		Min		Off	Off	Off
Dual Entry	No	Yes		Yes		No	No	No
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

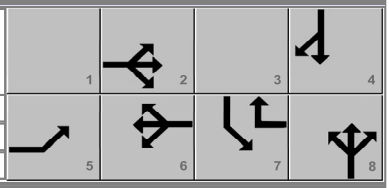
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	20	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.5	75.3	10.0	8.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



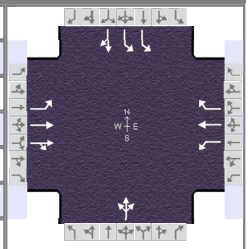
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		5.3		12.0		10.0
Phase Duration, s	8.5	89.8		81.3		14.2		16.0
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.2		3.1
Queue Clearance Time (*g s*), s	2.3					6.0		6.6
Green Extension Time (*g e*), s	0.0	0.0		0.0		0.0		0.2
Phase Call Probability	0.35					0.82		1.00
Max Out Probability	0.00					0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	13	319	317	13	416	130		52		130	39	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1576	1654	1642	773	1682	1425		1501		1618	1563	
Queue Service Time (*g s*), s	0.3	8.7	8.7	0.8	14.7	3.5		4.0		4.6	2.8	
Cycle Queue Clearance Time (*g c*), s	0.3	8.7	8.7	1.0	14.7	3.5		4.0		4.6	2.8	
Green Ratio (*g/C*)	0.67	0.70	0.70	0.63	0.63	0.71		0.07		0.08	0.08	
Capacity (*c*), veh/h	564	1155	1147	544	1056	1013		103		269	130	
Volume-to-Capacity Ratio (*X*)	0.023	0.276	0.277	0.024	0.394	0.128		0.505		0.483	0.300	
Back of Queue (*Q*), ft/ln (95 th percentile)	5	139.3	138.4	6.3	241.2	46.8		73.4		83	49.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	5.3	5.2	0.2	9.3	1.8		2.8		3.3	2.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.09	0.09	0.04	0.47	0.08		0.73		0.14	0.08	
Uniform Delay (*d 1*), s/veh	8.0	6.8	6.8	8.5	11.0	5.5		53.9		52.6	51.7	
Incremental Delay (*d 2*), s/veh	0.0	0.6	0.6	0.1	1.1	0.3		1.4		0.5	0.5	
Initial 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	8.0	7.4	7.4	8.6	12.1	5.8		55.3		53.1	52.2	
Level of Service (LOS)	A	A	A	A	B	A		E		D	D	
Approach Delay, s/veh / LOS	7.4	A		10.6	B		55.3	E		52.9	D	
Intersection Delay, s/veh / LOS	15.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.64	B	2.07	B	2.32	B	2.15	B
Bicycle LOS Score / LOS	1.02	A	1.41	A	0.57	A	0.77	A

HCS Signalized Intersection Intermediate Values

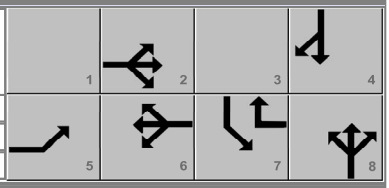
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	20	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.5	75.3	10.0	8.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



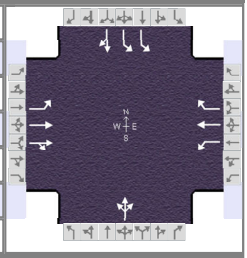
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.945	0.945	0.945	0.961	0.961	0.961	0.945	0.945	0.945	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.442	0.000		0.907	0.907		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.993	0.993		0.000	0.847		0.000	0.000		0.893	0.893
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1576	3230	67	773	1682	1425	375	375	750	3333	521	1042
Proportion of Vehicles Arriving on Green (P)	0.02	0.70	0.70	0.63	0.63	0.63	0.07	0.07	0.07	0.08	0.08	0.08
Incremental Delay Factor (k)	0.04	0.50	0.50	0.50	0.50	0.50		0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.0		4.0
Green Ratio (g/C)	0.67	0.70		0.63		0.07		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	932	0		773		0		1667
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	77.3	0.0		75.3		0.0		0.0
Permitted Service Time (g_u), s	60.7	0.0		75.1		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	0.2			0.8				
Time to First Blockage (g_f), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1425				
Protected Right Effective Green Time (g_R), s				10.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.389	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.068	0.000	0.085	0.000	0.164	0.000	0.158
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1396.76	5.46	1255.76	8.31		67.20	137.17	52.05
Bicycle F_w / F_v	-3.64	0.54	-3.64	0.92	-3.64	0.09	-3.64	0.28

HCS Signalized Intersection Results Graphical Summary

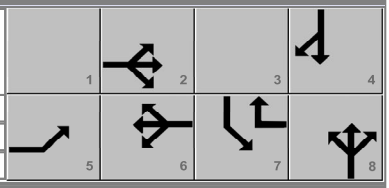
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 No Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8 SR 41 & Carr Rd PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



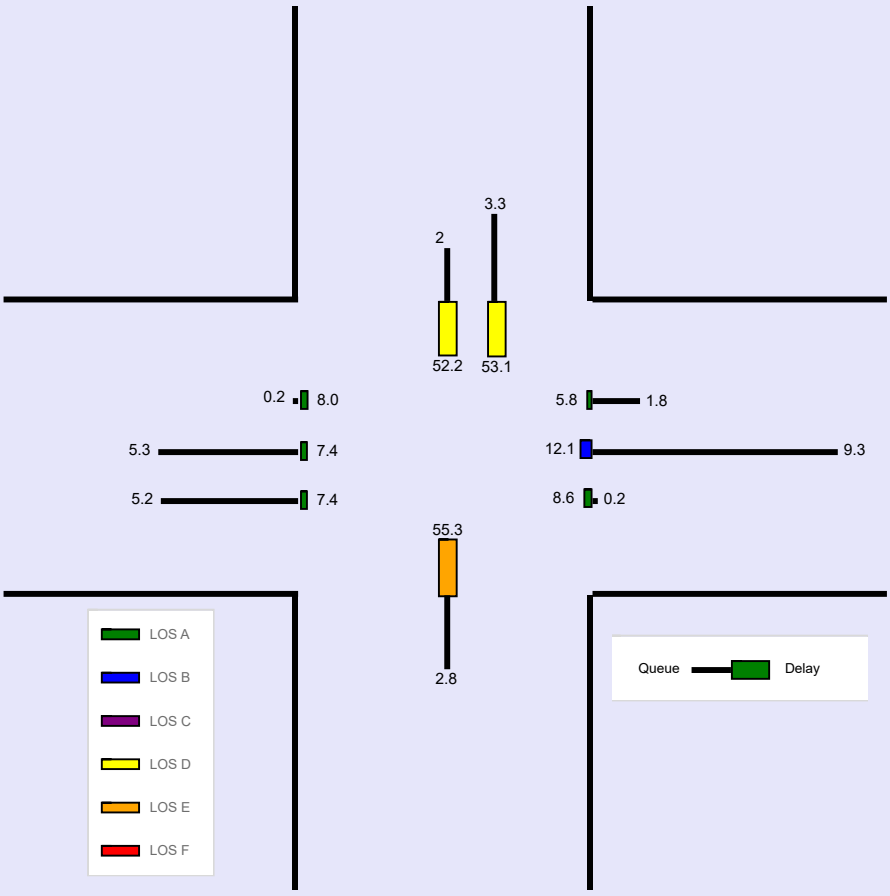
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	20	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.5	75.3	10.0	8.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	2.0	2.0	2.0	2.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	5	139.3	138.4	6.3	241.2	46.8		73.4		83	49.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	5.3	5.2	0.2	9.3	1.8		2.8		3.3	2.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.09	0.09	0.04	0.47	0.08		0.73		0.14	0.08	
Control Delay (*d*), s/veh	8.0	7.4	7.4	8.6	12.1	5.8		55.3		53.1	52.2	
Level of Service (LOS)	A	A	A	A	B	A		E		D	D	
Approach Delay, s/veh / LOS	7.4	A		10.6	B		55.3	E		52.9	D	
Intersection Delay, s/veh / LOS	15.7						B					



HCS Two-Way Stop-Control Report

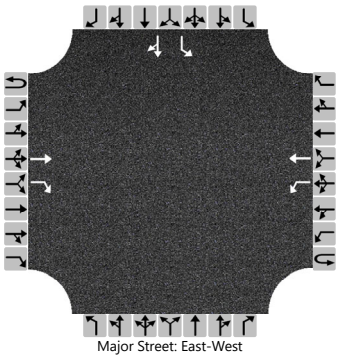
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 PM Peak NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 41 @ I-71 SB Ramps
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	I-71 SB Ramps
Peak Hour Factor	0.82
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		1	1	0
Configuration			T	R		L	T							L		TR
Volume (veh/h)			460	140		240	240							300	10	190
Percent Heavy Vehicles (%)						18								18	18	18
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1								7.1	6.5	6.2
Critical Headway (sec)						4.28								7.28	6.68	6.38
Base Follow-Up Headway (sec)						2.2								3.5	4.0	3.3
Follow-Up Headway (sec)						2.36								3.66	4.16	3.46

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						293								366		244
Capacity, c (veh/h)						804								56		464
v/c Ratio						0.36								6.49		0.53
95% Queue Length, Q_{95} (veh)						1.7								42.0		3.0
Control Delay (s/veh)						12.0								2610.9		21.0
Level of Service (LOS)						B								F		C
Approach Delay (s/veh)						6.0								1575.0		
Approach LOS						A								F		

HCS Two-Way Stop-Control Report

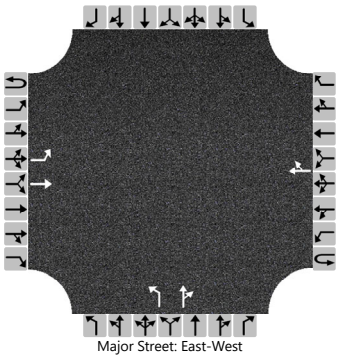
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	PM Peak NB
Intersection Orientation	East-West
Project Description	FAY-435/41 IOS

Site Information

Intersection	SR 41 @ I-71 NB Ramps
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	I-71 NB Ramps
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		1	1	0		0	0	0
Configuration		L	T					TR		L		TR				
Volume (veh/h)		70	690				420	630		60	10	150				
Percent Heavy Vehicles (%)		17								38	38	38				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1								7.1	6.5	6.2				
Critical Headway (sec)		4.27								7.48	6.88	6.58				
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3				
Follow-Up Headway (sec)		2.35								3.84	4.34	3.64				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		83								71		190				
Capacity, c (veh/h)		508								38		195				
v/c Ratio		0.16								1.90		0.98				
95% Queue Length, Q_{95} (veh)		0.6								7.7		8.2				
Control Delay (s/veh)		13.5								653.5		108.9				
Level of Service (LOS)		B								F		F				
Approach Delay (s/veh)	1.2								257.4							
Approach LOS	A								F							

HCS Two-Way Stop-Control Report

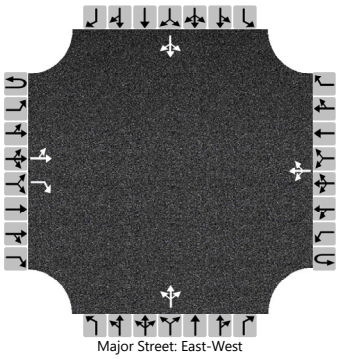
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 PM Pk NB
Intersection Orientation	East-West
Project Description	FAY-VAR IOS (PID 117955)

Site Information

Intersection	SR 41 & SR 734
Jurisdiction	ODOT D6
East/West Street	SR 41
North/South Street	SR 734/Flying J
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		100	690	50		10	930	20		60	10	10		10	10	60
Percent Heavy Vehicles (%)		21				5				12	12	12		18	18	18
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.31				4.15				6.43	6.62	6.32		6.43	6.68	6.38
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		110				11					88				88	
Capacity, c (veh/h)		628				805					29				99	
v/c Ratio		0.17				0.01					3.07				0.89	
95% Queue Length, Q_{95} (veh)		0.6				0.0					10.5				5.1	
Control Delay (s/veh)		11.9	2.1			9.5	0.3	0.3			1219.8				139.0	
Level of Service (LOS)		B	A			A	A	A			F				F	
Approach Delay (s/veh)		3.2				0.4				1219.8				139.0		
Approach LOS		A				A				F				F		

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APPENDIX E – 2044 BUILD INTERSECTION REPORTS

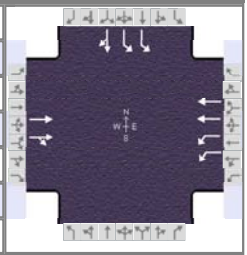
LJ Engineering
Building Partnerships

2500 Newmark Drive Miamisburg, OH 45342 | (866) 552-3536 | LJBinc.com

2044 AM BUILD

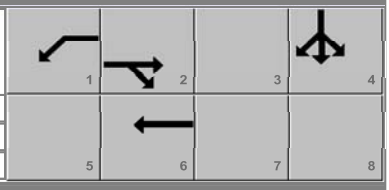
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information					EB			WB			NB			SB		
Cycle, s	110.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	19.1	49.9		23.1	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	0.0	0.0	0.0					



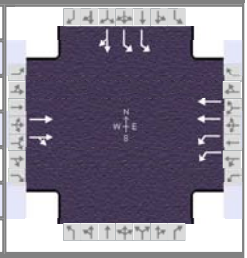
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		16		19	19					16	16	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		1.00	1.00	0.58	0.58					1.00	1.00	1.00
Lane Width (*W*), ft		12.0		12.0	12.0					12.0	12.0	
Turn Bay Length, ft		700		355	645					500	1100	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		44.0	21.0	65.0				45.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	10	20				10
Start-Up Lost Time (*l*t), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

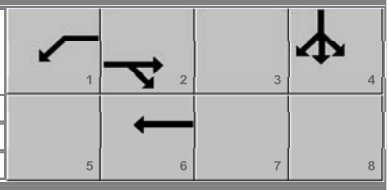
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.1	49.9	23.1	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



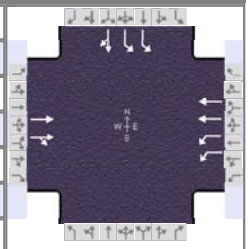
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	2.0	4.0				10.0
Phase Duration, s		55.9	25.1	80.9				29.1
Change Period, ($Y+R_c$), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.1
Queue Clearance Time (g_s), s			18.2					21.6
Green Extension Time (g_e), s		0.0	0.9	0.0				1.5
Phase Call Probability			1.00					1.00
Max Out Probability			0.00					0.00

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		327	319	428	563					521	177	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1532	1488	1378	1419					1416	1310	
Queue Service Time (g_s), s		19.6	16.4	16.2	1.7					19.6	13.6	
Cycle Queue Clearance Time (g_c), s		19.6	16.4	16.2	1.7					19.6	13.6	
Green Ratio (*g/C*)		0.45	0.45	0.17	0.68					0.21	0.21	
Capacity (*c*), veh/h		694	674	478	1933					595	275	
Volume-to-Capacity Ratio (*X*)		0.471	0.473	0.895	0.291					0.876	0.644	
Back of Queue (*Q*), ft/ln (95 th percentile)		286.3	281	205.5	21.2					311.2	216.9	
Back of Queue (*Q*), veh/ln (95 th percentile)		10.2	10.0	7.1	0.7					11.0	7.7	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.41	0.40	0.58	0.03					0.62	0.20	
Uniform Delay (d_1), s/veh		20.9	20.9	35.1	1.1					42.1	39.7	
Incremental Delay (d_2), s/veh		2.3	2.4	3.1	0.2					2.3	0.9	
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		23.2	23.3	38.2	1.3					44.4	40.6	
Level of Service (LOS)		C	C	D	A					D	D	
Approach Delay, s/veh / LOS	23.2	C		17.2	B		0.0			43.5	D	
Intersection Delay, s/veh / LOS	26.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.87	B	2.47	B	2.15	B
Bicycle LOS Score / LOS	1.02	A	1.24	A			1.64	B

HCS Signalized Intersection Intermediate Values

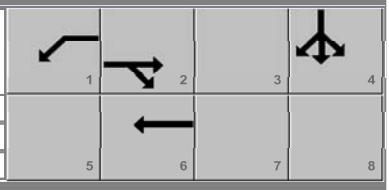
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.1	49.9	23.1	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



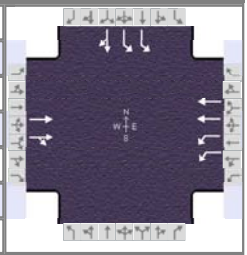
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.875	0.875	0.852	0.852	1.000				0.875	0.875	0.875
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.971	0.952	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.971	0.971		1.000	1.000					0.855	0.855
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	2776	243	2757	2910	0				2917	77	1233
Proportion of Vehicles Arriving on Green (P)	0.00	0.45	0.45	0.35	0.94	0.00	0.00	0.00	0.00	0.21	0.21	0.21
Incremental Delay Factor (k)		0.50	0.50	0.09	0.50					0.06	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.45	0.17	0.68				0.21
Permitted Saturation Flow Rate (s_p), veh/h/ln		861	0	0				1459
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	0.0	0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		49.9	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.710	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.112	0.000	0.069	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	906.41	16.44	1361.93	5.60	-90.91	60.11		62.22
Bicycle F_w / F_v	-3.64	0.53	-3.64	0.76	-3.64		-3.64	1.15

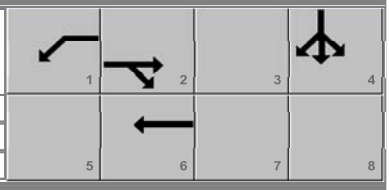
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.96
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				

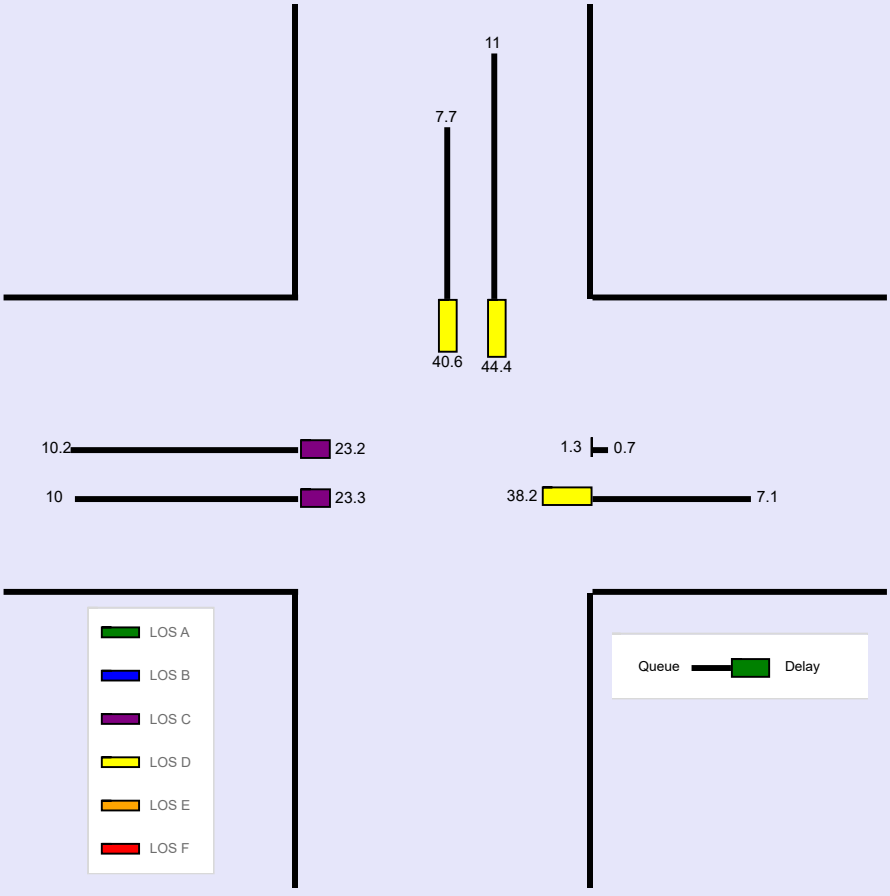


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		570	50	380	500					500	10	160

Signal Information					EB			WB			NB			SB		
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	19.1	49.9		23.1	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	0.0	0.0	0.0					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		286.3	281	205.5	21.2					311.2	216.9	
Back of Queue (*Q*), veh/ln (95 th percentile)		10.2	10.0	7.1	0.7					11.0	7.7	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.41	0.40	0.58	0.03					0.62	0.20	
Control Delay (*d*), s/veh		23.2	23.3	38.2	1.3					44.4	40.6	
Level of Service (LOS)		C	C	D	A					D	D	
Approach Delay, s/veh / LOS	23.2	C		17.2	B		0.0			43.5	D	
Intersection Delay, s/veh / LOS	26.7	C										



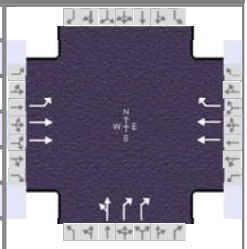
--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 77% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

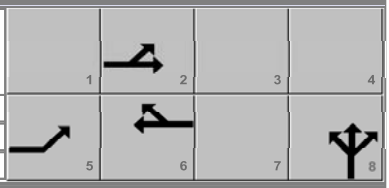
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	69	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	8.1	53.4	30.5	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



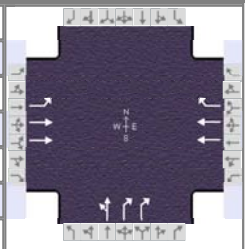
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	12	12			21	21		13	13			
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.70	0.70			0.66	0.66	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0		12.0	12.0			
Turn Bay Length, ft	305	630			420	420		1120	600			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	45	45	45			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	18.0	56.0		38.0		54.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		
Minimum Green (G_{min}), s	7	20		20		10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0		2.0		
Recall Mode	Off	Min		Min		Off		
Dual Entry	No	Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

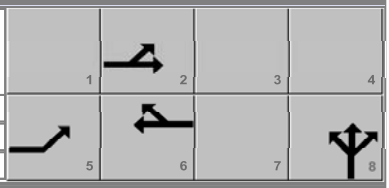
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	69	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	8.1	53.4	30.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



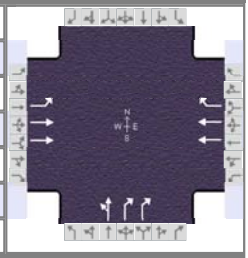
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		7.3		11.0		
Phase Duration, s	14.1	73.5		59.4		36.5		
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.3		
Queue Clearance Time (*g s*), s	7.9					28.9		
Green Extension Time (*g e*), s	0.3	0.0		0.0		1.7		
Phase Call Probability	0.99					1.00		
Max Out Probability	0.00					0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	167	948			969	383		32	596			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1511	1510			1311	1240		1522	1179			
Queue Service Time (*g s*), s	5.9	11.8			29.5	16.4		1.7	26.9			
Cycle Queue Clearance Time (*g c*), s	5.9	11.8			29.5	16.4		1.7	26.9			
Green Ratio (*g/C*)	0.58	0.61			0.49	0.49		0.28	0.28			
Capacity (*c*), veh/h	293	1853			1272	602		422	654			
Volume-to-Capacity Ratio (*X*)	0.569	0.512			0.762	0.637		0.076	0.910			
Back of Queue (*Q*), ft/ln (95 th percentile)	87.9	136.1			331.3	169.9		30.2	344.7			
Back of Queue (*Q*), veh/ln (95 th percentile)	3.2	5.0			11.3	5.8		1.1	12.5			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.22			0.79	0.40		0.03	0.57			
Uniform Delay (*d 1*), s/veh	16.8	5.5			16.6	9.3		29.3	38.4			
Incremental Delay (*d 2*), s/veh	0.5	0.7			2.9	3.4		0.0	5.5			
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0	0.0			
Control Delay (*d*), s/veh	17.3	6.2			19.5	12.7		29.4	44.0			
Level of Service (LOS)	B	A			B	B		C	D			
Approach Delay, s/veh / LOS	7.8	A		17.6	B		43.2	D		0.0		
Intersection Delay, s/veh / LOS	19.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.88	B	1.39	A	2.32	B	2.32	B
Bicycle LOS Score / LOS	1.43	A	1.54	B	1.52	B		

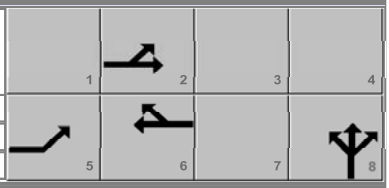
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	69	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	8.1	53.4	30.5	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



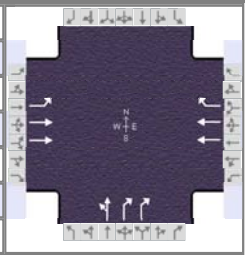
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.906	0.906	1.000	1.000	0.836	0.836	0.899	0.899	0.899			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.896	1.000	1.000	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.968	0.968				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1511	3096	0	0	2774	1240	1015	507	2359			
Proportion of Vehicles Arriving on Green (P)	0.11	0.80	0.00	0.00	0.61	0.75	0.28	0.28	0.28	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50		0.04	0.11			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		4.0		
Green Ratio (g/C)	0.58	0.61		0.49		0.28		
Permitted Saturation Flow Rate (s_p), veh/h/ln	534	0		601		0		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	55.4	0.0		0.0		0.0		
Permitted Service Time (g_u), s	23.9	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s	13.4							
Time to First Blockage (g_f), s	0.0	0.0		53.4		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0		0		
Protected Right Effective Green Time (g_R), s				0.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.681	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.084	0.000	0.107	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1227.00	8.22	970.06	14.59		62.22	-90.91	60.11
Bicycle F_w / F_v	-3.64	0.94	-3.64	1.05	-3.64	1.04	-3.64	

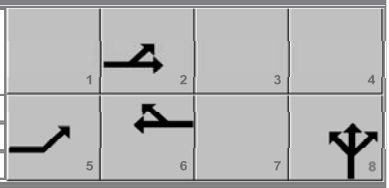
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.94
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				

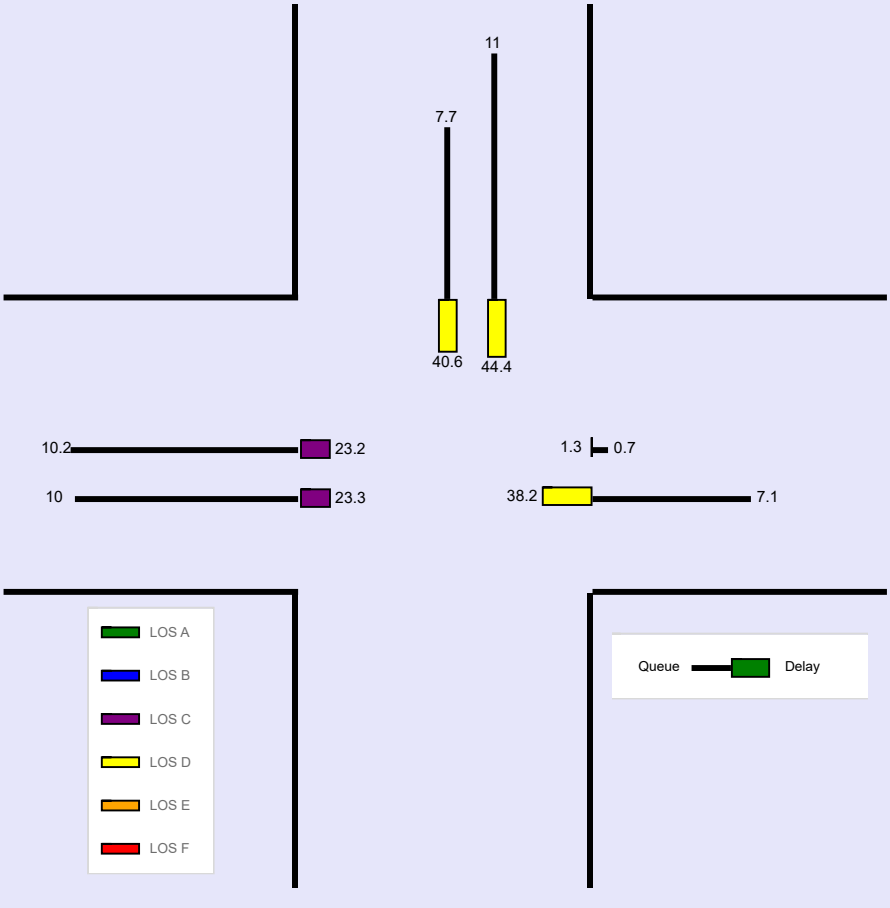


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	910			860	340	20	10	560			

Signal Information										
Cycle, s	110.0	Reference Phase	2							
Offset, s	69	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							
				Green	8.1	53.4	30.5	0.0	0.0	0.0
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	87.9	136.1			331.3	169.9		30.2	344.7			
Back of Queue (*Q*), veh/ln (95 th percentile)	3.2	5.0			11.3	5.8		1.1	12.5			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.22			0.79	0.40		0.03	0.57			
Control Delay (*d*), s/veh	17.3	6.2			19.5	12.7		29.4	44.0			
Level of Service (LOS)	B	A			B	B		C	D			
Approach Delay, s/veh / LOS	7.8	A		17.6	B		43.2	D		0.0		
Intersection Delay, s/veh / LOS	19.3						B					



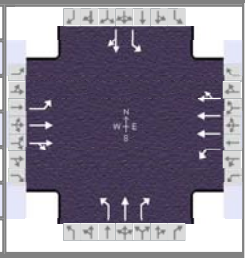
--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 87% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

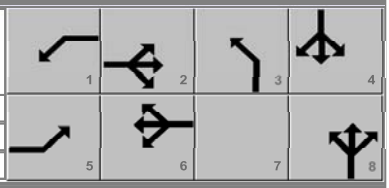
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	43	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.2	4.3	49.0	7.0	20.5	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



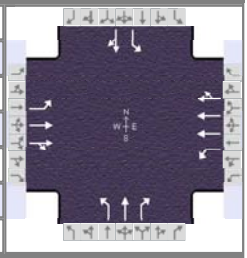
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	11	11		18	18		10	10	10	15	15	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.83	0.83	0.83	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	325	485		385	760		100	1000	65	110	600	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	38.0	50.0	14.0	26.0	13.0	46.0		33.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10		10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Off	Min	Off	Min	Off	Off		Off
Dual Entry	No	Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

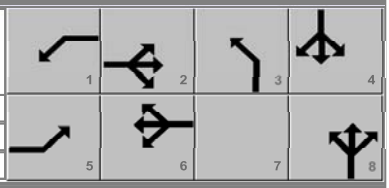
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	4.3	49.0	7.0	20.5	0.0	
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	
Red	2.0	0.0	2.0	2.0	2.0	0.0	



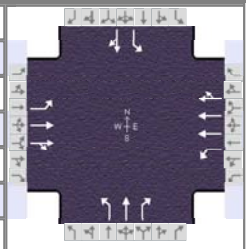
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8		4
Case Number	1.1	4.0	1.1	4.0	1.0	3.0		6.3
Phase Duration, s	15.5	59.3	11.2	55.0	13.0	39.5		26.5
Change Period, (*Y+R c*), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.1	3.5		3.5
Queue Clearance Time (*g s*), s	9.2		3.8		8.9	5.9		19.9
Green Extension Time (*g e*), s	0.3	0.0	0.0	0.0	0.0	0.9		0.6
Phase Call Probability	1.00		0.74		0.98	1.00		1.00
Max Out Probability	0.00		0.00		1.00	0.00		0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	189	685	669	44	696	426	121	11	66	99	220	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1524	1600	1556	1433	1183	1443	1537	1614	1367	1259	1320	
Queue Service Time (*g s*), s	7.2	40.8	41.3	1.8	21.7	21.7	6.9	0.5	3.9	7.6	17.9	
Cycle Queue Clearance Time (*g c*), s	7.2	40.8	41.3	1.8	21.7	21.7	6.9	0.5	3.9	7.6	17.9	
Green Ratio (*g/C*)	0.53	0.48	0.48	0.49	0.45	0.45	0.27	0.30	0.30	0.19	0.19	
Capacity (*c*), veh/h	312	775	754	165	1054	643	189	491	416	300	246	
Volume-to-Capacity Ratio (*X*)	0.605	0.884	0.888	0.269	0.661	0.662	0.639	0.022	0.158	0.330	0.894	
Back of Queue (*Q*), ft/ln (95 th percentile)	121.8	586.1	586.1	31	238.9	290.2	136.6	9.8	61.4	121.2	321.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.5	21.5	21.5	1.1	8.4	10.1	5.1	0.4	2.3	4.3	11.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.37	1.21	1.21	0.08	0.31	0.38	1.37	0.01	0.95	1.10	0.54	
Uniform Delay (*d 1*), s/veh	17.7	21.0	21.4	23.5	16.9	16.8	34.0	26.8	28.0	39.5	43.7	
Incremental Delay (*d 2*), s/veh	0.6	11.9	12.5	0.2	2.5	4.0	5.5	0.0	0.1	0.2	18.2	
Initial 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	18.2	32.9	34.0	23.8	19.3	20.8	39.5	26.8	28.0	39.8	61.9	
Level of Service (LOS)	B	C	C	C	B	C	D	C	C	D	E	
Approach Delay, s/veh / LOS	31.6	C		20.1	C		35.0	C		55.1	E	
Intersection Delay, s/veh / LOS	29.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	1.91	B	2.44	B	2.45	B
Bicycle LOS Score / LOS	1.82	B	1.12	A	0.81	A	1.01	A

HCS Signalized Intersection Intermediate Values

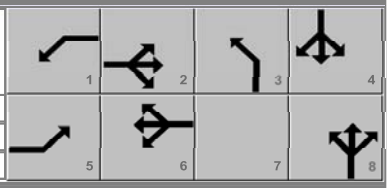
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	4.3	49.0	7.0	20.5	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	2.0	0.0	2.0	2.0	2.0	0.0



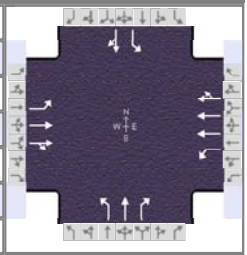
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.914	0.914	0.914	0.860	0.860	0.860	0.922	0.922	0.922	0.883	0.883	0.883
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	0.786	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.719	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.973	0.973		0.959	0.959		0.000	0.847		0.854	0.854
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h	1524	2912	244	1433	3470	339	1537	1614	1367	1259	66	1254
Proportion of Vehicles Arriving on Green (P)	0.07	0.57	0.52	0.01	0.59	0.60	0.06	0.30	0.30	0.19	0.19	0.19
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50	0.17	0.04	0.04	0.04	0.20	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Green Ratio (g/C)	0.53	0.48	0.49	0.45	0.27	0.30		0.19
Permitted Saturation Flow Rate (s_p), veh/h/ln	466	0	351	0	1088	0		1259
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	49.3	0.0	49.0	0.0	22.5	0.0		20.5
Permitted Service Time (g_u), s	27.3	0.0	10.0	0.0	2.6	0.0		20.5
Permitted Queue Service Time (g_{ps}), s	15.5		5.9		2.5			7.6
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		
Protected Right Effective Green Time (g_R), s						0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.198	0.000	1.710	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.108	0.000	0.113	0.000	0.132	0.000	0.144
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	969.22	14.61	891.09	16.91	608.97	26.61	372.60	36.42
Bicycle F_w / F_v	-3.64	1.33	-3.64	0.63	-3.64	0.33	-3.64	0.53

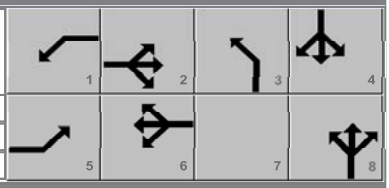
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Allen Rd	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				

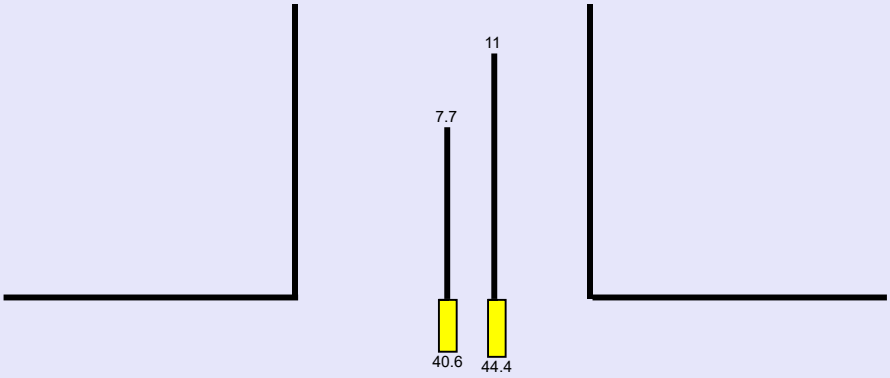


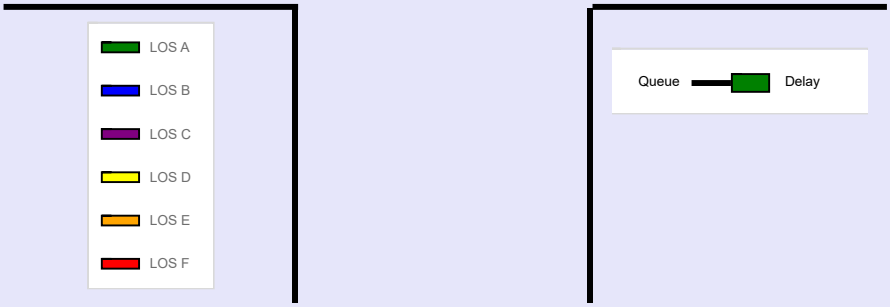
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	1190	100	40	920	90	110	10	60	90	10	190

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	43	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.2	4.3	49.0	7.0	20.5	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	121.8	586.1	586.1	31	238.9	290.2	136.6	9.8	61.4	121.2	321.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.5	21.5	21.5	1.1	8.4	10.1	5.1	0.4	2.3	4.3	11.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.37	1.21	1.21	0.08	0.31	0.38	1.37	0.01	0.95	1.10	0.54	
Control Delay (*d*), s/veh	18.2	32.9	34.0	23.8	19.3	20.8	39.5	26.8	28.0	39.8	61.9	
Level of Service (LOS)	B	C	C	C	B	C	D	C	C	D	E	
Approach Delay, s/veh / LOS	31.6	C		20.1	C		35.0	C		55.1	E	
Intersection Delay, s/veh / LOS	29.9						C					





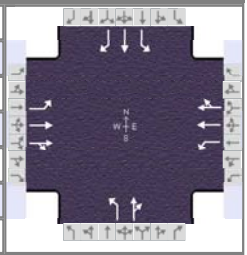
--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

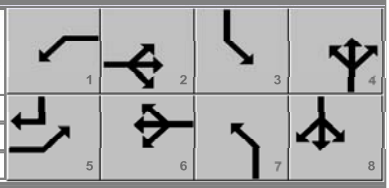
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	62	Reference Point	End	Green	5.6	0.1	60.3	4.5	5.5	10.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0		



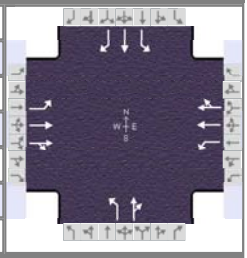
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		15	15		71	71		43	43	43
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	215	740		185	1520		400	100		105	550	550
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	24.0	32.0	24.0	32.0	16.0	27.0	27.0	38.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

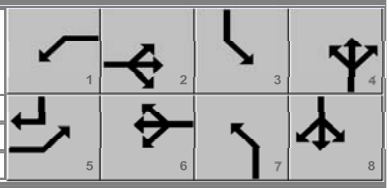
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	62	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.6	0.1	60.3	4.5	5.5	10.0	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	

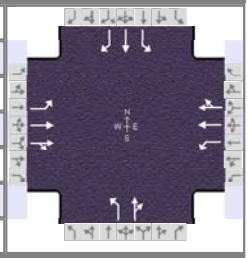
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	7	4	3	8
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	11.6	66.3	11.7	66.4	16.0	21.5	10.5	16.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.3	3.5	3.3	3.5
Queue Clearance Time (g_s), s	3.6		3.7		12.0	12.3	5.0	8.9
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.3
Phase Call Probability	0.80		0.82		0.98	1.00	0.64	1.00
Max Out Probability	0.00		0.00		1.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	53	682	680	56	516	506	133	67		33	11	67
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1537	1614	1609	1472	1545	1515	744	679		1108	1163	986
Queue Service Time (g_s), s	1.6	18.0	17.9	1.7	24.9	24.9	10.0	10.3		3.0	1.0	6.9
Cycle Queue Clearance Time (g_c), s	1.6	18.0	17.9	1.7	24.9	24.9	10.0	10.3		3.0	1.0	6.9
Green Ratio (*g/C*)	0.60	0.55	0.55	0.60	0.55	0.55	0.20	0.14		0.13	0.09	0.14
Capacity (*c*), veh/h	301	885	882	280	849	833	185	96		137	105	139
Volume-to-Capacity Ratio (*X*)	0.175	0.770	0.771	0.199	0.608	0.608	0.720	0.697		0.244	0.106	0.478
Back of Queue (*Q*), ft/ln (95 th percentile)	25.6	137.6	136.7	26.8	390.4	384.7	157.2	129.5		50.3	17.3	104.1
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	5.1	5.1	1.0	13.9	13.7	4.0	3.3		1.5	0.5	3.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.12	0.19	0.18	0.14	0.26	0.25	0.39	1.29		0.48	0.03	0.19
Uniform Delay (d_1), s/veh	13.5	4.3	4.3	10.9	16.8	16.8	44.9	45.0		43.0	45.9	43.5
Incremental Delay (d_2), s/veh	0.0	3.2	3.2	0.1	3.2	3.3	11.2	3.4		0.3	0.2	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		0.0	0.0	0.0
Control Delay (*d*), s/veh	13.5	7.5	7.4	11.0	20.0	20.1	56.0	48.4		43.4	46.1	44.4
Level of Service (LOS)	B	A	A	B	B	C	E	D		D	D	D
Approach Delay, s/veh / LOS	7.7	A		19.6	B		53.5	D		44.3	D	
Intersection Delay, s/veh / LOS	17.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	2.09	B	2.31	B	2.31	B
Bicycle LOS Score / LOS	1.72	B	1.38	A	0.82	A	0.67	A

HCS Signalized Intersection Intermediate Values

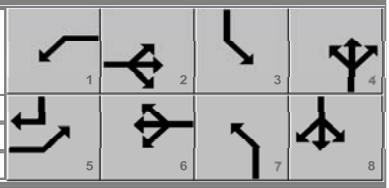
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	62	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.6	0.1	60.3	4.5	5.5	10.0						
Yellow	4.0	0.0	4.0	4.0	0.0	4.0						
Red	2.0	0.0	2.0	2.0	0.0	2.0						



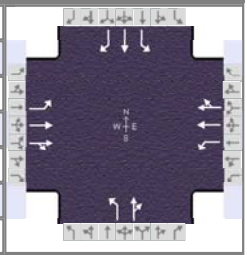
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	0.922	0.883	0.883	0.883	0.446	0.446	0.446	0.665	0.665	0.665
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997	0.997		0.981	0.981		0.870	0.870		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1537	3198	25	1472	2894	166	744	113	566	1108	1163	986
Proportion of Vehicles Arriving on Green (P)	0.00	0.87	0.95	0.05	0.55	0.55	0.09	0.14	0.14	0.04	0.09	0.09
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50	0.24	0.04		0.04	0.04	0.04

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.60	0.55	0.60	0.55	0.20	0.14	0.13	0.09
Permitted Saturation Flow Rate (s_p), veh/h/ln	517	0	358	0	636	0	901	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	60.3	0.0	60.3	0.0	11.5	0.0	10.0	0.0
Permitted Service Time (g_u), s	33.6	0.0	42.3	0.0	9.0	0.0	3.2	0.0
Permitted Queue Service Time (g_{ps}), s	3.2		3.3		9.0		0.3	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								986
Protected Right Effective Green Time (g_R), s								5.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.389	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.097	0.000	0.097	0.000	0.149	0.000	0.153
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1096.81	11.22	1098.88	11.17	281.53	40.61	181.04	45.49
Bicycle F_w / F_v	-3.64	1.23	-3.64	0.89	-3.64	0.33	-3.64	0.18

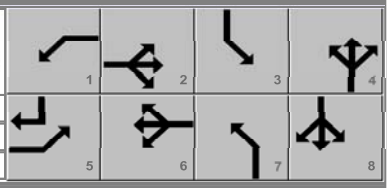
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.90
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 AM Build.xus		
Project Description	FAY-VAR IOS(PID 117955)				

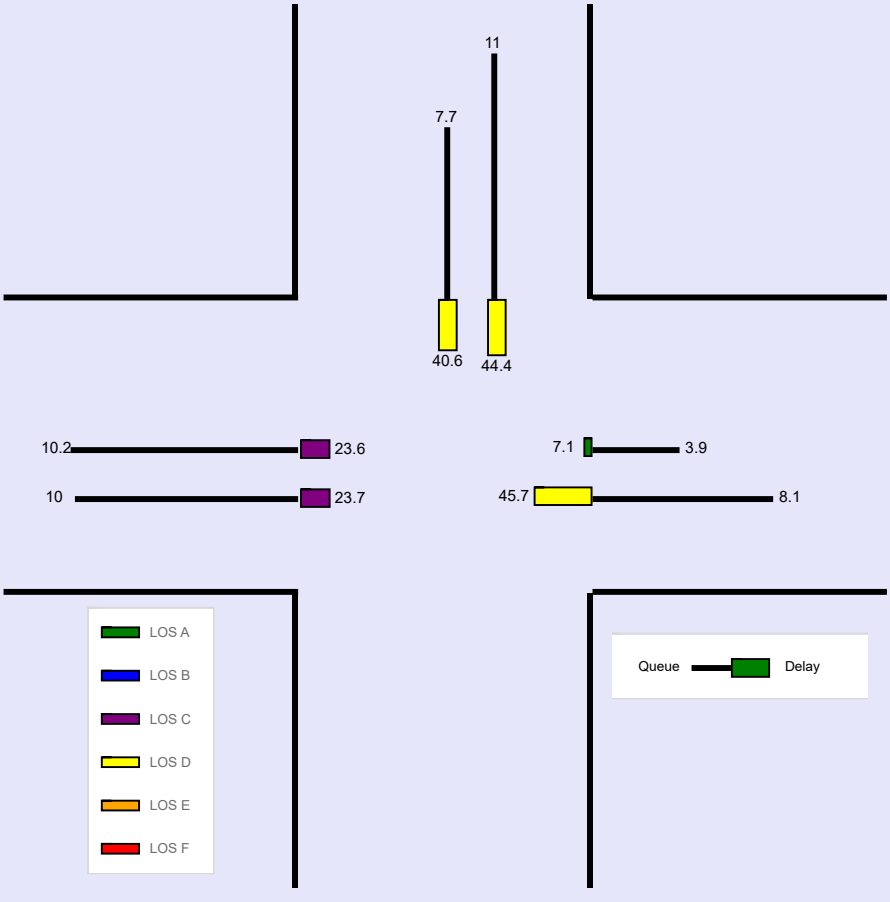


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	1280	10	50	870	50	120	10	50	30	10	60

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	62	Reference Point	End	Green	5.6	0.1	60.3	4.5	5.5	10.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	25.6	137.6	136.7	26.8	390.4	384.7	157.2	129.5		50.3	17.3	104.1
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	5.1	5.1	1.0	13.9	13.7	4.0	3.3		1.5	0.5	3.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.12	0.19	0.18	0.14	0.26	0.25	0.39	1.29		0.48	0.03	0.19
Control Delay (*d*), s/veh	13.5	7.5	7.4	11.0	20.0	20.1	56.0	48.4		43.4	46.1	44.4
Level of Service (LOS)	B	A	A	B	B	C	E	D		D	D	D
Approach Delay, s/veh / LOS	7.7	A		19.6	B		53.5	D		44.3	D	
Intersection Delay, s/veh / LOS	17.0						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

HCS Two-Way Stop-Control Report

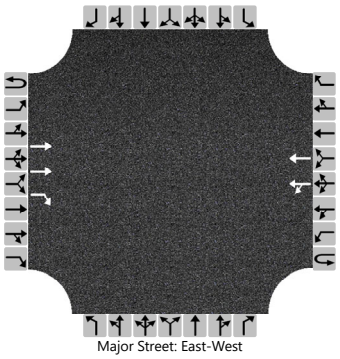
General Information

Analyst	LJB
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 AM Pk Build
Intersection Orientation	East-West
Project Description	FAY-VAR IOS(PID 117955)

Site Information

Intersection	SR 435 @ US 35 EB On-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 EB On Ramp
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	0	2	0		0	0	0		0	0	0
Configuration			T	R		LT	T									
Volume (veh/h)			1030	330		30	970									
Percent Heavy Vehicles (%)						8										
Proportion Time Blocked																
Percent Grade (%)																
Right Turn Channelized		No														
Median Type | Storage			Undivided													

Critical and Follow-up Headways

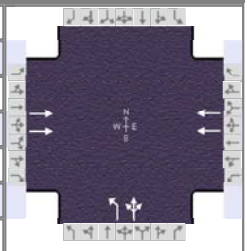
Base Critical Headway (sec)						4.1										
Critical Headway (sec)						4.26										
Base Follow-Up Headway (sec)						2.2										
Follow-Up Headway (sec)						2.28										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						404										
v/c Ratio						0.08										
95% Queue Length, Q_{95} (veh)						0.3										
Control Delay (s/veh)						14.7	1.2									
Level of Service (LOS)						B	A									
Approach Delay (s/veh)						1.6										
Approach LOS						A										

HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 5, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Build	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1030			580		420	0	420			

Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	34.2	33.8	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

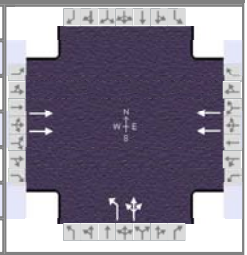
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1030			580		420	0	420			
Initial Queue (Q_b), veh/h		0			0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		1750			1750		1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		5			5		25	25				
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3			3		3	3	3			
Upstream Filtering (*I*)		1.00			1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0			12.0		12.0	12.0				
Turn Bay Length, ft		910			700		1090	700				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35			35		35	35	35			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		34.0		34.0		46.0		
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		
Red Clearance Interval (R_c), s		2.0		2.0		2.0		
Minimum Green (G_{min}), s		20		20		10		
Start-Up Lost Time (*l1*), s		2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0		
Passage (*PT*), s		2.0		2.0		2.0		
Recall Mode		Min		Min		Ped		
Dual Entry		Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

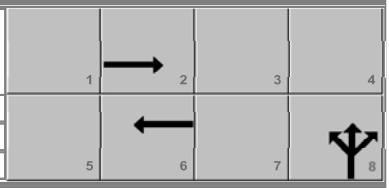
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 5, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Build	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1030			580		420	0	420			

Signal Information			
Cycle, s	80.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	34.2	33.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



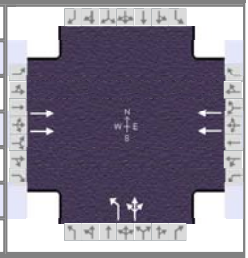
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		10.0		
Phase Duration, s		40.2		40.2		39.8		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		
Queue Clearance Time (*g s*), s						32.2		
Green Extension Time (*g e*), s		0.0		0.0		1.6		
Phase Call Probability						1.00		
Max Out Probability						0.23		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2			6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		1157			652		472	472				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1601			1601		1342	1194				
Queue Service Time (*g s*), s		25.9			11.7		25.1	30.2				
Cycle Queue Clearance Time (*g c*), s		25.9			11.7		25.1	30.2				
Green Ratio (*g/C*)		0.43			0.43		0.42	0.42				
Capacity (*c*), veh/h		1368			1368		567	505				
Volume-to-Capacity Ratio (*X*)		0.846			0.476		0.832	0.935				
Back of Queue (*Q*), ft/ln (95 th percentile)		394.2			194.9		383.1	465.1				
Back of Queue (*Q*), veh/ln (95 th percentile)		15.2			7.5		12.8	15.5				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.43			0.28		0.35	0.66				
Uniform Delay (*d 1*), s/veh		20.5			16.5		20.6	22.0				
Incremental Delay (*d 2*), s/veh		6.6			1.2		6.6	19.1				
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0				
Control Delay (*d*), s/veh		27.1			17.7		27.1	41.1				
Level of Service (LOS)		C			B		C	D				
Approach Delay, s/veh / LOS	27.1	C		17.7	B		34.1	C		0.0		
Intersection Delay, s/veh / LOS	27.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.68	B	1.38	A	2.14	B	2.14	B
Bicycle LOS Score / LOS	1.44	A	1.03	A	2.04	B		

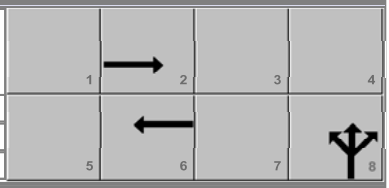
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 5, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Build	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1030			580		420	0	420			

Signal Information					EB			WB			NB			SB		
Cycle, s	80.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	34.2	33.8	0.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0						



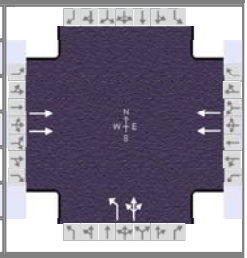
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	1.000	0.977	0.961	1.000	0.805	0.805	0.805			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		1.000	1.000		0.847	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00								
Movement Saturation Flow Rate (s), veh/h	0	3364	0	0	3364	0	1342	0	1194			
Proportion of Vehicles Arriving on Green (P)	0.00	0.43	0.00	0.00	0.43	0.00	0.42	0.00	0.42	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50			0.50		0.23	0.31				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		4.0		
Green Ratio (g/C)		0.43		0.43		0.42		
Permitted Saturation Flow Rate (s_p), veh/h/ln		793		493		1342		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g_p), s		0.0		0.0		0.0		
Permitted Service Time (g_u), s		0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		34.2		34.2		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.103	0.000	0.103	0.000	0.148	0.000	0.148
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	854.52	13.12	854.52	13.12		47.31		45.16
Bicycle F_w / F_v	-3.64	0.95	-3.64	0.54	-3.64	1.56	-3.64	

HCS Signalized Intersection Results Graphical Summary

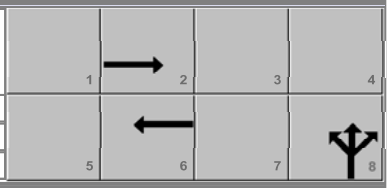
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 5, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Build	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



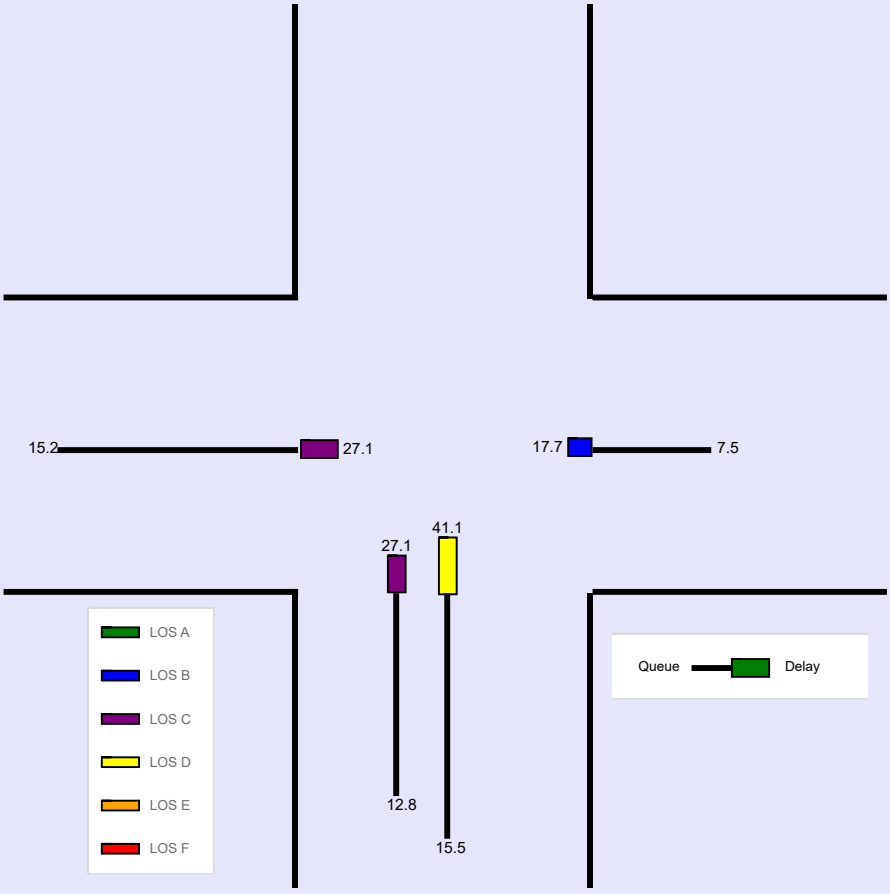
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1030			580		420	0	420			

Signal Information			
Cycle, s	80.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	34.2	33.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		394.2			194.9		383.1	465.1				
Back of Queue (*Q*), veh/ln (95 th percentile)		15.2			7.5		12.8	15.5				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.43			0.28		0.35	0.66				
Control Delay (*d*), s/veh		27.1			17.7		27.1	41.1				
Level of Service (LOS)		C			B		C	D				
Approach Delay, s/veh / LOS	27.1	C		17.7	B		34.1	C		0.0		
Intersection Delay, s/veh / LOS	27.3	C										



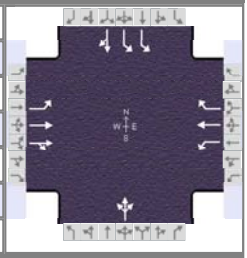
--- Messages ---

WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

HCS Signalized Intersection Input Data

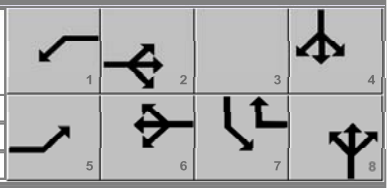
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Carr Rd	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.1	1.2	67.2	8.9	6.6	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						



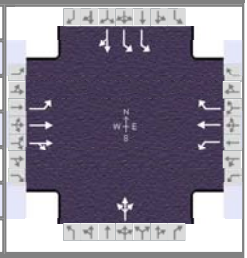
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		9	9	9		0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0		12.0		12.0	12.0	
Turn Bay Length, ft	150	1550		150	510	610		100		590	595	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	61.0	17.0	65.0		16.0	16.0	16.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20		10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min		Off	Off	Off
Dual Entry	No	Yes	No	Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Carr Rd	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	2.1	1.2	67.2	8.9	6.6	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0		5	6	7	8	
Red	2.0	0.0	2.0	2.0	2.0	0.0						

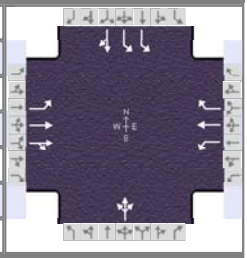
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		12.0		10.0
Phase Duration, s	8.1	73.2	9.3	74.4		12.6		14.9
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.1
Queue Clearance Time (g_s), s	2.3		2.5			4.3		3.5
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.30		0.47			0.66		0.89
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	12	215	214	21	312	52		36		48	24	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1537	1614	1597	1550	1627	1379		1625		1618	1606	
Queue Service Time (g_s), s	0.3	6.6	6.6	0.5	2.8	0.1		2.3		1.5	1.5	
Cycle Queue Clearance Time (g_c), s	0.3	6.6	6.6	0.5	2.8	0.1		2.3		1.5	1.5	
Green Ratio (*g/C*)	0.63	0.61	0.61	0.64	0.62	0.70		0.06		0.08	0.08	
Capacity (*c*), veh/h	673	986	976	611	1011	968		98		261	130	
Volume-to-Capacity Ratio (*X*)	0.018	0.218	0.219	0.034	0.309	0.054		0.364		0.182	0.184	
Back of Queue (*Q*), ft/ln (95 th percentile)	4.8	112.7	112	8.3	43.4	2		43.1		26.9	27.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	4.2	4.1	0.3	1.6	0.1		1.7		1.1	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.07	0.07	0.06	0.09	0.00		0.43		0.05	0.05	
Uniform Delay (d_1), s/veh	7.6	9.6	9.6	7.6	2.1	0.3		49.6		47.2	47.2	
Incremental Delay (d_2), s/veh	0.0	0.5	0.5	0.0	0.7	0.1		0.8		0.1	0.3	
Initial 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	7.6	10.1	10.1	7.6	2.8	0.4		50.5		47.3	47.4	
Level of Service (LOS)	A	B	B	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	10.1	B		2.8	A		50.5	D		47.3	D	
Intersection Delay, s/veh / LOS	11.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.66	B	2.07	B	2.32	B	2.14	B
Bicycle LOS Score / LOS	0.85	A	1.21	A	0.55	A	0.61	A

HCS Signalized Intersection Intermediate Values

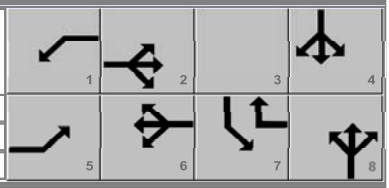
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Carr Rd	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.1	1.2	67.2	8.9	6.6	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	2.0	0.0	2.0	2.0	2.0	0.0



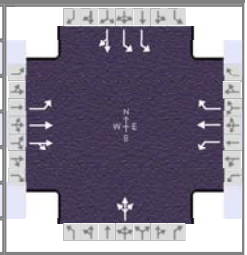
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	0.922	0.930	0.930	0.930	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.929	0.929		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.990	0.990		0.000	0.847		0.917	0.000		0.917	0.917
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1537	3122	89	1550	1627	1379	542	542	542	3333	803	803
Proportion of Vehicles Arriving on Green (P)	0.02	0.61	0.61	0.00	0.90	0.98	0.06	0.06	0.06	0.08	0.08	0.08
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50		0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0		6.0		4.0
Green Ratio (g/C)	0.63	0.61	0.64	0.62		0.06		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	1000	0	906	0		0		1667
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	67.2	0.0	67.2	0.0		0.0		0.0
Permitted Service Time (g_u), s	63.5	0.0	60.6	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.2					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1379				
Protected Right Effective Green Time (g_R), s				8.9				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.389	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.085	0.000	0.083	0.000	0.161	0.000	0.156
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1221.66	8.33	1242.74	7.88		62.22	120.77	48.56
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.73	-3.64	0.06	-3.64	0.12

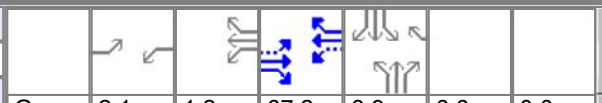
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	Carr Rd	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

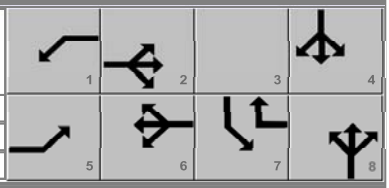


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	350	10	20	300	50	10	10	10	40	10	10

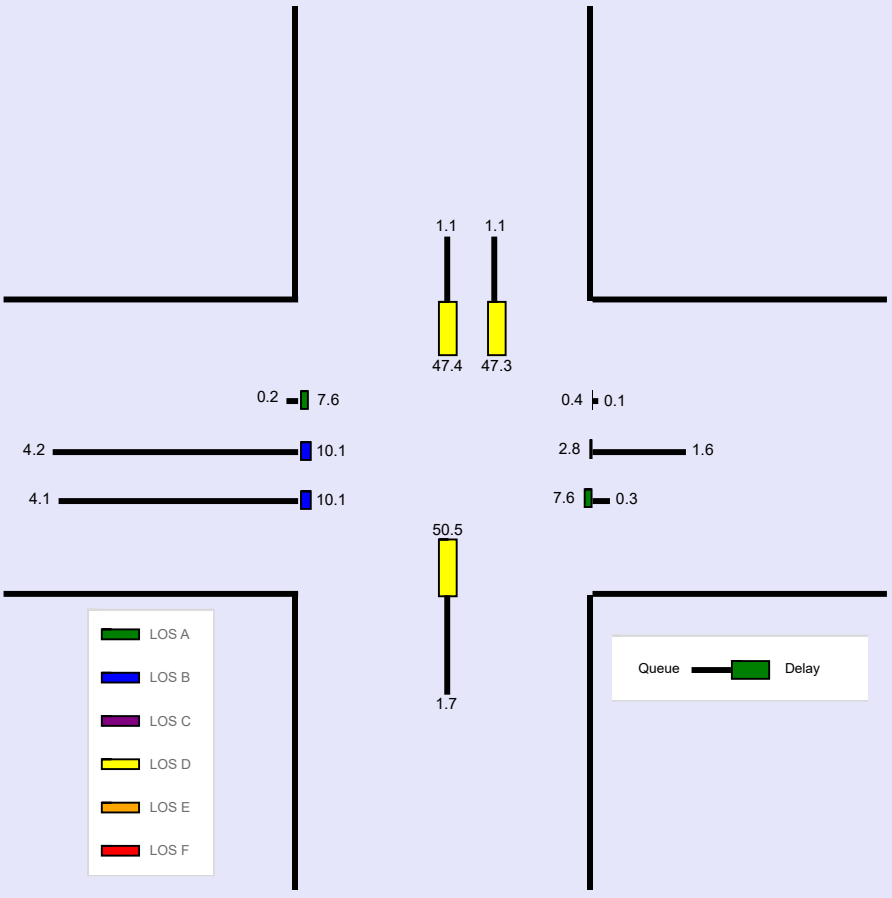
Signal Information										
Cycle, s	110.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							



Green	2.1	1.2	67.2	8.9	6.6	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	2.0	0.0	2.0	2.0	2.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4.8	112.7	112	8.3	43.4	2		43.1		26.9	27.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	4.2	4.1	0.3	1.6	0.1		1.7		1.1	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.07	0.07	0.06	0.09	0.00		0.43		0.05	0.05	
Control Delay (*d*), s/veh	7.6	10.1	10.1	7.6	2.8	0.4		50.5		47.3	47.4	
Level of Service (LOS)	A	B	B	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	10.1		B	2.8		A	50.5		D	47.3		D
Intersection Delay, s/veh / LOS	11.4						B					



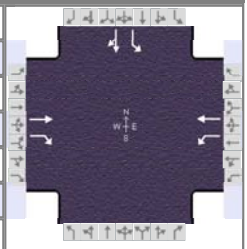
--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 87% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

HCS Signalized Intersection Input Data

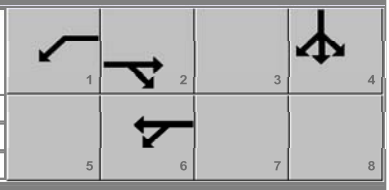
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		320	80	130	300					630	10	70

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	76	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.9	30.9	51.1	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



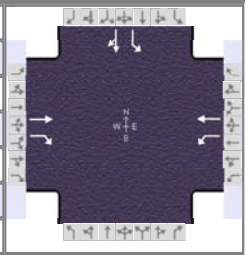
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		320	80	130	300					630	10	70
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		8	8	30	30					9	9	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		0.98	0.98	0.89	0.89					1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0	12.0	12.0					12.0	12.0	
Turn Bay Length, ft		600	630	335	930					760	1150	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		26.0	15.0	41.0				69.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

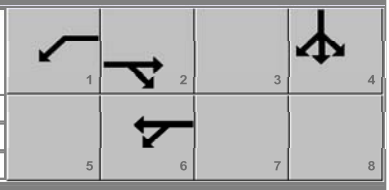
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		320	80	130	300					630	10	70

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	76	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.9	30.9	51.1	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



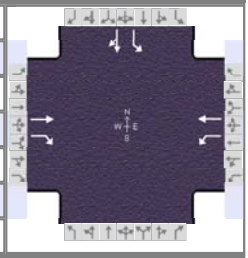
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		7.3	1.0	4.0				10.0
Phase Duration, s		36.9	15.9	52.9				57.1
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.2
Queue Clearance Time (*g s*), s			9.9					49.5
Green Extension Time (*g e*), s		0.0	0.2	0.0				1.6
Phase Call Probability			0.98					1.00
Max Out Probability			0.00					0.02

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		381	95	133	308					692	88	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1641	1391	1277	1341					1550	1406	
Queue Service Time (*g s*), s		22.8	4.7	7.9	16.2					47.5	3.9	
Cycle Queue Clearance Time (*g c*), s		22.8	4.7	7.9	16.2					47.5	3.9	
Green Ratio (*g/C*)		0.28	0.28	0.39	0.43					0.46	0.46	
Capacity (*c*), veh/h		461	391	238	571					720	653	
Volume-to-Capacity Ratio (*X*)		0.826	0.244	0.560	0.539					0.961	0.135	
Back of Queue (*Q*), ft/ln (95 th percentile)		394.7	77.4	120.9	254.6					738.7	60.1	
Back of Queue (*Q*), veh/ln (95 th percentile)		14.8	2.9	3.9	8.2					27.6	2.2	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.66	0.12	0.36	0.27					0.97	0.05	
Uniform Delay (*d 1*), s/veh		30.2	23.2	24.3	18.0					28.5	16.8	
Incremental Delay (*d 2*), s/veh		15.2	1.5	0.7	3.2					18.1	0.0	
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		45.4	24.6	25.0	21.2					46.5	16.8	
Level of Service (LOS)		D	C	C	C					D	B	
Approach Delay, s/veh / LOS	41.2	D		22.4	C		0.0			43.2	D	
Intersection Delay, s/veh / LOS	37.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.41	A	1.69	B	1.96	B	1.96	B
Bicycle LOS Score / LOS	1.21	A	1.27	A			1.77	B

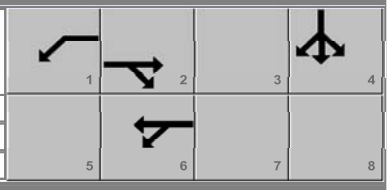
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		320	80	130	300					630	10	70

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	76	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	9.9	30.9	51.1	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



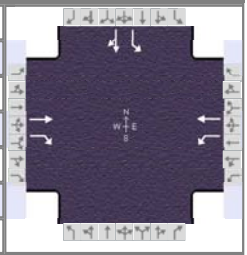
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.938	0.938	0.766	0.766	1.000				0.930	0.930	0.930
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000					0.864	0.864
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	1641	1391	1277	1341	0				1550	176	1230
Proportion of Vehicles Arriving on Green (P)	0.00	0.41	0.45	0.16	0.55	0.00	0.00	0.00	0.00	0.46	0.46	0.46
Incremental Delay Factor (k)		0.50	0.50	0.04	0.50					0.30	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.28	0.39	0.43				0.46
Permitted Saturation Flow Rate (s_p), veh/h/ln		1088	780	0				1550
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	32.9	0.0				0.0
Permitted Service Time (g_u), s		0.0	8.1	0.0				0.0
Permitted Queue Service Time (g_{ps}), s			4.7					
Time to First Blockage (g_f), s		30.9	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.681	0.000	0.972	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.134	0.000	0.116	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	562.50	28.41	852.13	18.12	-90.91	60.11		62.22
Bicycle F_w / F_v	-3.64	0.73	-3.64	0.78	-3.64		-3.64	1.29

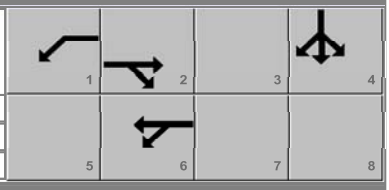
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

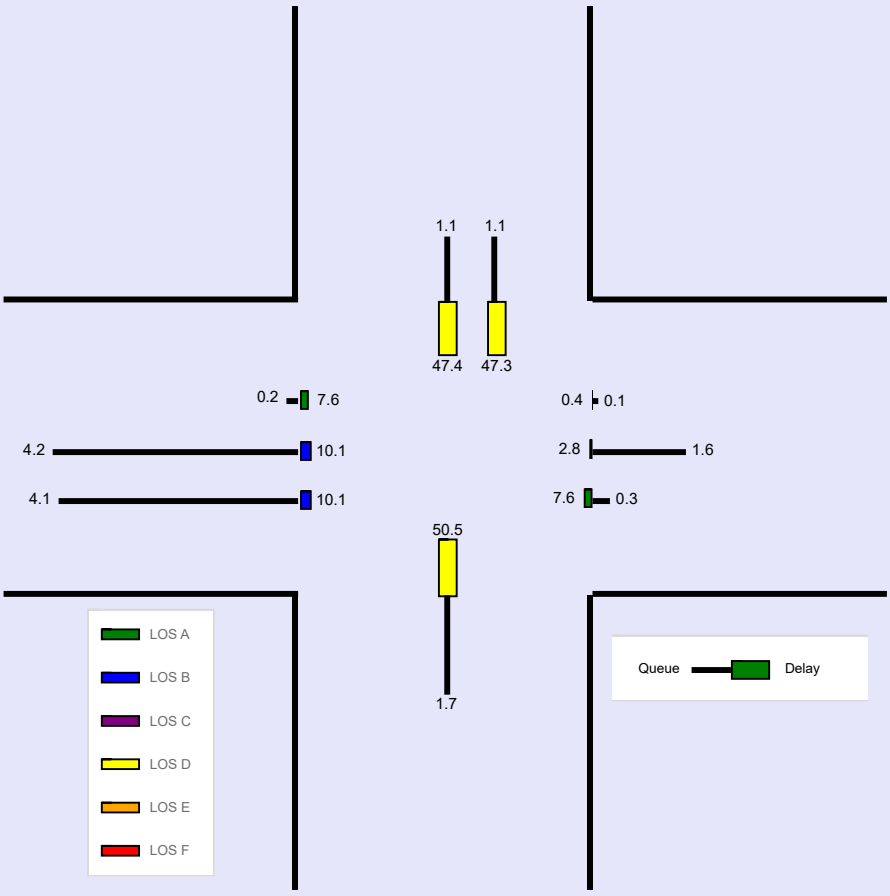


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		320	80	130	300					630	10	70

Signal Information					EB			WB			NB			SB		
Cycle, s	110.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	76	Reference Point	End	Green	9.9	30.9	51.1	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0						

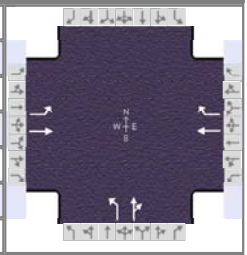


Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		394.7	77.4	120.9	254.6					738.7	60.1	
Back of Queue (*Q*), veh/ln (95 th percentile)		14.8	2.9	3.9	8.2					27.6	2.2	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.66	0.12	0.36	0.27					0.97	0.05	
Control Delay (*d*), s/veh		45.4	24.6	25.0	21.2					46.5	16.8	
Level of Service (LOS)		D	C	C	C					D	B	
Approach Delay, s/veh / LOS	41.2	D		22.4	C		0.0			43.2	D	
Intersection Delay, s/veh / LOS	37.2						D					



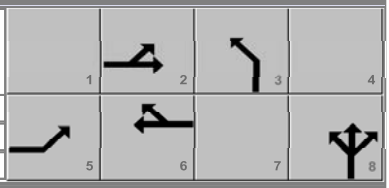
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.86
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	880			370	240	60	10	230			

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	49	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.4	58.1	27.5	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



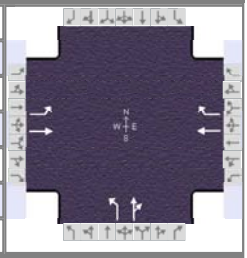
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	880			370	240	60	10	230			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	10	10			24	24	25	25				
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.29	0.29			0.87	0.87	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0	12.0	12.0				
Turn Bay Length, ft	340	930			575	450	310	1000				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	35	35	35			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	15.0	67.0		52.0	43.0	43.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0	4.0	4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0	2.0	2.0		
Minimum Green (G_{min}), s	7	20		20	7	10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0	2.0	2.0		
Recall Mode	Off	Min		Min	Off	Off		
Dual Entry	No	Yes		Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

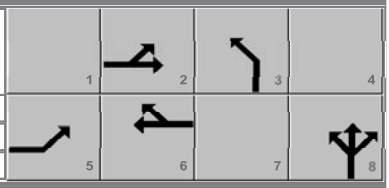
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.86
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	880			370	240	60	10	230			

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	49	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.4	58.1	27.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



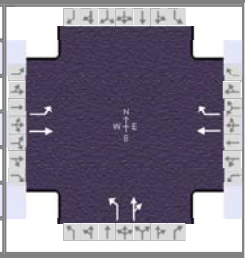
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		7.3		10.0		
Phase Duration, s	12.4	76.5		64.1		33.5		
Change Period, ($Y+R_c$), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.3		
Queue Clearance Time (g_s), s	4.3					26.9		
Green Extension Time (g_e), s	0.1	0.0		0.0		0.6		
Phase Call Probability	0.91					1.00		
Max Out Probability	0.00					0.01		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	79	994			372	241	70	279				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1537	1614			1422	1205	1342	1201				
Queue Service Time (g_s), s	2.3	53.4			19.6	14.3	4.5	24.9				
Cycle Queue Clearance Time (g_c), s	2.3	53.4			19.6	14.3	4.5	24.9				
Green Ratio (*g/C*)	0.60	0.64			0.53	0.53	0.25	0.25				
Capacity (*c*), veh/h	486	1034			751	637	336	301				
Volume-to-Capacity Ratio (*X*)	0.163	0.962			0.495	0.379	0.208	0.928				
Back of Queue (*Q*), ft/ln (95 th percentile)	34.7	216.3			320.9	221.3	79.3	413.7				
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	8.0			10.8	7.4	2.6	13.8				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.10	0.23			0.56	0.49	0.26	0.41				
Uniform Delay (d_1), s/veh	10.9	5.8			18.6	17.8	32.6	40.3				
Incremental Delay (d_2), s/veh	0.0	8.4			2.0	1.5	0.1	20.4				
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0	0.0	0.0	0.0				
Control Delay (*d*), s/veh	10.9	14.2			20.6	19.3	32.7	60.7				
Level of Service (LOS)	B	B			C	B	C	E				
Approach Delay, s/veh / LOS	14.0	B		20.1	C		55.1	E		0.0		
Intersection Delay, s/veh / LOS	22.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	1.38	A	1.96	B	1.96	B
Bicycle LOS Score / LOS	2.31	B	1.66	B	1.06	A		

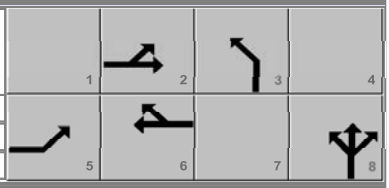
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.86
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	880			370	240	60	10	230			

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	49	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	6.4	58.1	27.5	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



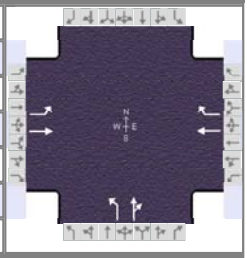
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	1.000	1.000	0.813	0.813	0.805	0.805	0.805			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.853	0.853			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1537	1614	0	0	1422	1205	1342	50	1151			
Proportion of Vehicles Arriving on Green (P)	0.10	0.88	0.00	0.00	0.48	0.46	0.25	0.25	0.25	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50	0.04	0.22				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.0		
Green Ratio (g/C)	0.60	0.64		0.53		0.25		
Permitted Saturation Flow Rate (s_p), veh/h/ln	947	0		575		1342		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	60.1	0.0		0.0		0.0		
Permitted Service Time (g_u), s	38.5	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s	1.9							
Time to First Blockage (g_f), s	0.0	0.0		58.1		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.079	0.000	0.100	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1281.24	7.10	1056.23	12.25		62.22	-90.91	60.11
Bicycle F_w / F_v	-3.64	1.82	-3.64	1.17	-3.64	0.58	-3.64	

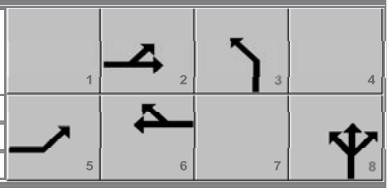
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.86
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

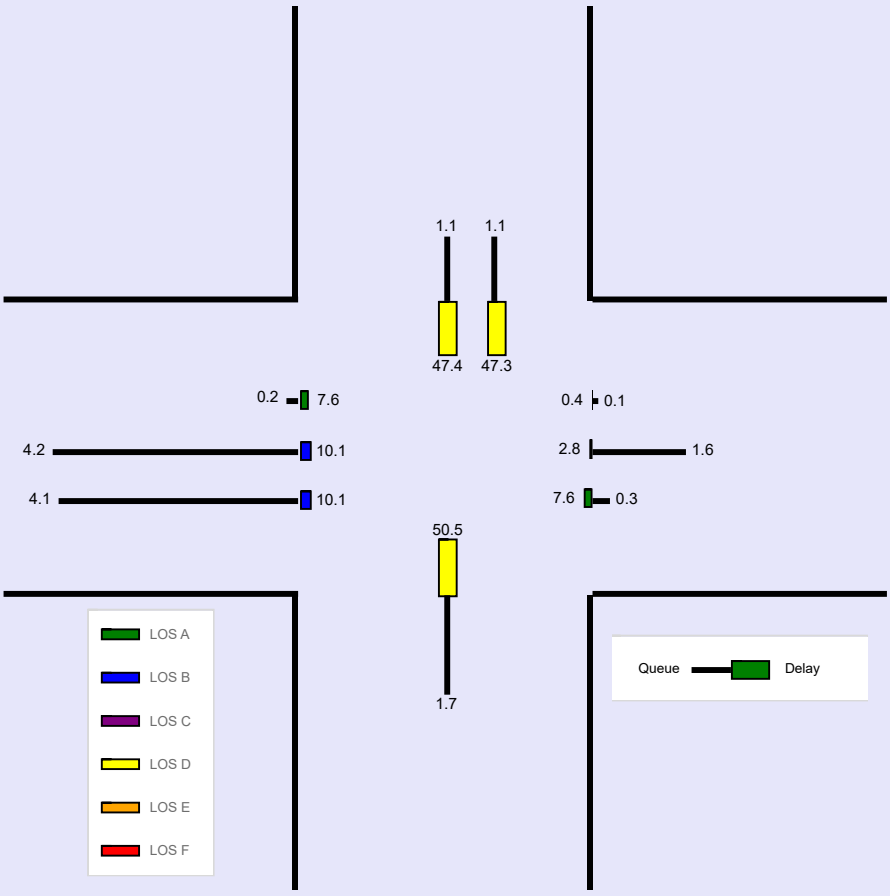


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	880			370	240	60	10	230			

Signal Information										
Cycle, s	110.0	Reference Phase	2							
Offset, s	49	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							
				Green	6.4	58.1	27.5	0.0	0.0	0.0
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	34.7	216.3			320.9	221.3	79.3	413.7				
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	8.0			10.8	7.4	2.6	13.8				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.10	0.23			0.56	0.49	0.26	0.41				
Control Delay (*d*), s/veh	10.9	14.2			20.6	19.3	32.7	60.7				
Level of Service (LOS)	B	B			C	B	C	E				
Approach Delay, s/veh / LOS	14.0		B	20.1		C	55.1		E	0.0		
Intersection Delay, s/veh / LOS	22.9						C					



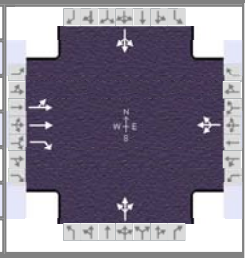
--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 86% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

HCS Signalized Intersection Input Data

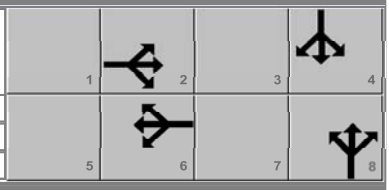
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.93
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	1040	50	10	500	50	10	50	10	10	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	88.1	9.9	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



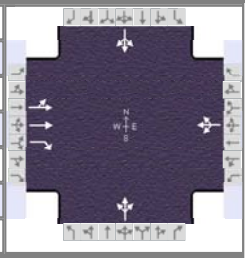
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	1040	50	10	500	50	10	50	10	10	10	60
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		10	10		5			18			28	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.20	0.20	0.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0		12.0			12.0			12.0	
Turn Bay Length, ft		550	185		1400			110			1500	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		90.0		90.0		20.0		20.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		20		10		10		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

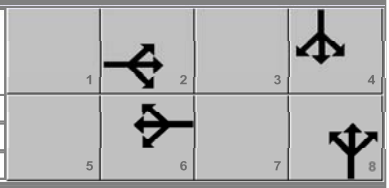
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.93
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	1040	50	10	500	50	10	50	10	10	10	60

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	88.1	9.9	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



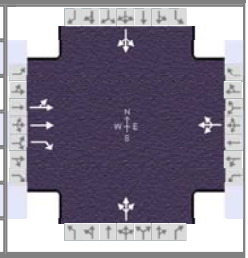
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		7.0		8.0		8.0		8.0
Phase Duration, s		94.1		94.1		15.9		15.9
Change Period, (*Y+R c*), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s						7.4		9.7
Green Extension Time (*g e*), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.99		0.99
Max Out Probability						0.03		0.31

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	626	579	57		602			75			86	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1582	1468	1367		1628			1445			1199	
Queue Service Time (*g s*), s	0.0	16.8	1.4		0.0			0.0			2.2	
Cycle Queue Clearance Time (*g c*), s	16.4	16.8	1.4		12.5			5.4			7.7	
Green Ratio (*g/C*)	0.80	0.80	0.80		0.80			0.09			0.09	
Capacity (*c*), veh/h	1300	1176	1095		1337			168			145	
Volume-to-Capacity Ratio (*X*)	0.481	0.493	0.052		0.450			0.448			0.593	
Back of Queue (*Q*), ft/ln (95 th percentile)	162.1	152.5	13.4		151.4			102.5			129	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	5.6	0.5		5.8			3.6			4.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.28	0.07		0.11			0.93			0.09	
Uniform Delay (*d 1*), s/veh	4.7	4.7	3.5		3.4			48.0			49.0	
Incremental Delay (*d 2*), s/veh	0.3	0.3	0.0		1.1			0.7			1.4	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0		0.0			0.0			0.0	
Control Delay (*d*), s/veh	4.9	5.0	3.5		4.5			48.7			50.4	
Level of Service (LOS)	A	A	A		A			D			D	
Approach Delay, s/veh / LOS	4.9	A		4.5	A		48.7	D		50.4	D	
Intersection Delay, s/veh / LOS	8.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.60	B	1.60	B	1.95	B	2.14	B
Bicycle LOS Score / LOS	1.47	A	1.48	A	0.61	A	0.63	A

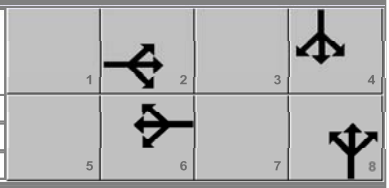
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.93
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	1040	50	10	500	50	10	50	10	10	10	60

Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	88.1	9.9	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



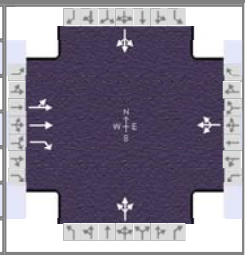
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.922	0.922	0.922	0.961	0.961	0.961	0.860	0.860	0.860	0.782	0.782	0.782
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.980	0.980		0.983	0.968		0.977	0.961		0.981	0.877	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.968		0.000	0.961		0.000	0.877
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00			1.00			1.00		
Movement Saturation Flow Rate (s), veh/h	57	2993	1367	29	1454	145	206	1032	206	150	150	899
Proportion of Vehicles Arriving on Green (P)	0.72	0.76	0.70	0.80	0.80	0.80	0.09	0.09	0.09	0.09	0.09	0.09
Incremental Delay Factor (k)	0.50	0.50	0.50		0.50			0.04			0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.80		0.80		0.09		0.09
Permitted Saturation Flow Rate (s_p), veh/h/ln		838		482		1345		1358
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		1550		0		1442		1320
Permitted Effective Green Time (g_p), s		88.1		88.1		9.9		9.9
Permitted Service Time (g_u), s		75.5		71.3		2.3		4.5
Permitted Queue Service Time (g_{ps}), s		0.0		0.0		0.0		2.2
Time to First Blockage (g_f), s		42.6		55.5		4.5		4.5
Queue Service Time Before Blockage (g_{fs}), s		16.4		10.3		4.3		1.2
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.031	0.000	0.031	0.000	0.153	0.000	0.153
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1601.31	2.19	1601.31	2.19	180.50	45.52	180.50	45.52
Bicycle F_w / F_v	-3.64	0.98	-3.64	0.99	-3.64	0.12	-3.64	0.14

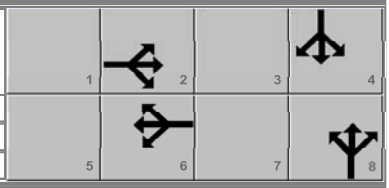
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	AM Peak	PHF	0.93
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 7:00
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build AM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

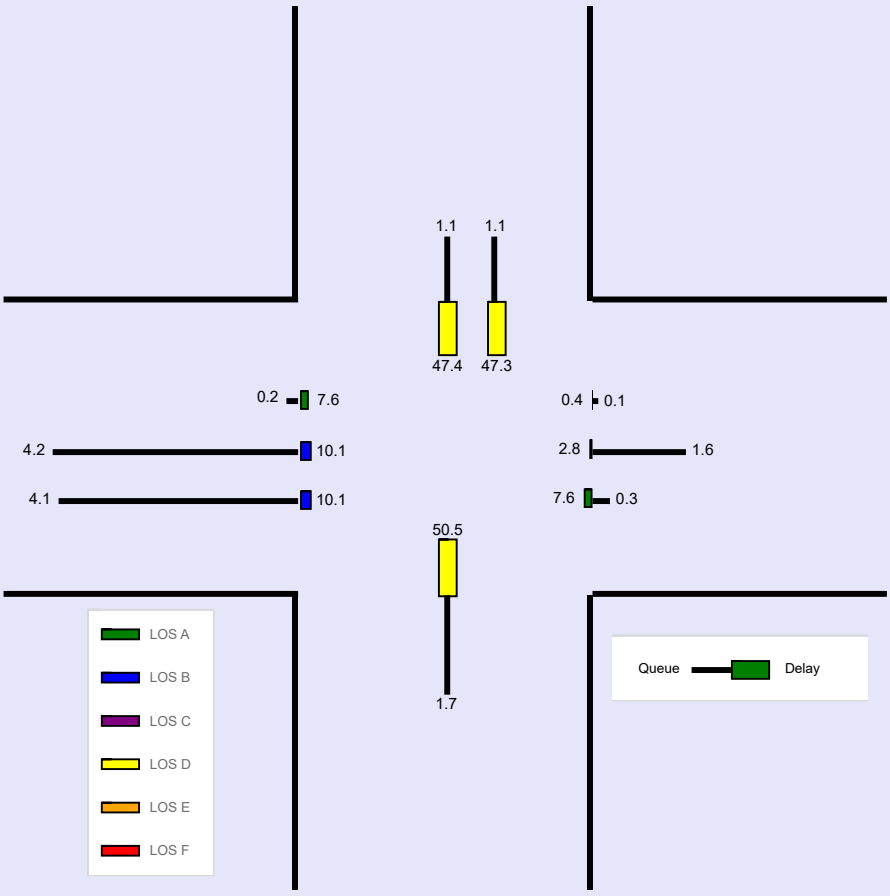


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	1040	50	10	500	50	10	50	10	10	10	60

Signal Information										
Cycle, s	110.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	88.1	9.9	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	162.1	152.5	13.4		151.4			102.5			129	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	5.6	0.5		5.8			3.6			4.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.28	0.07		0.11			0.93			0.09	
Control Delay (*d*), s/veh	4.9	5.0	3.5		4.5			48.7			50.4	
Level of Service (LOS)	A	A	A		A			D			D	
Approach Delay, s/veh / LOS	4.9	A		4.5	A		48.7	D		50.4	D	
Intersection Delay, s/veh / LOS	8.4						A					



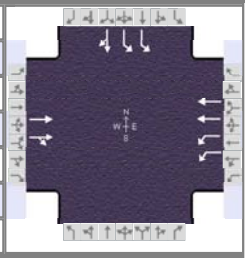
LJ Engineering
Building Partnerships

2500 Newmark Drive Miamisburg, OH 45342 | (866) 552-3536 | LJBinc.com

2044 PM BUILD

HCS Signalized Intersection Input Data

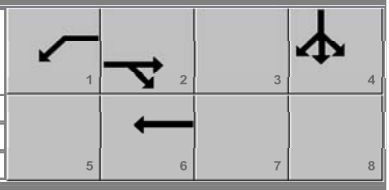
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	34.8	46.3	30.9	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



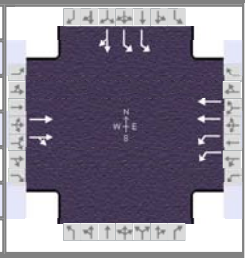
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		17		13	13					19	19	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		1.00	1.00	0.46	0.46					1.00	1.00	1.00
Lane Width (*W*), ft		12.0		12.0	12.0					12.0	12.0	
Turn Bay Length, ft		700		355	645					500	1100	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		31.0	56.0	87.0				43.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

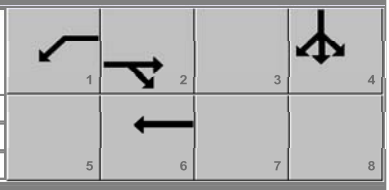
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	34.8	46.3	30.9	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



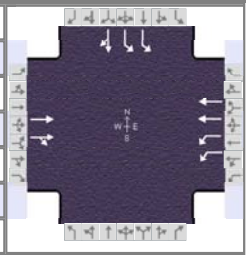
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	2.0	4.0				10.0
Phase Duration, s		52.3	40.8	93.1				36.9
Change Period, ($Y+R_c$), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.2
Queue Clearance Time (g_s), s			33.0					30.1
Green Extension Time (g_e), s		0.0	1.9	0.0				0.8
Phase Call Probability			1.00					1.00
Max Out Probability			0.00					0.11

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		377	365	727	885					270	281	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1518	1469	1454	1497					1378	1271	
Queue Service Time (g_s), s		34.6	27.7	31.0	3.5					10.7	28.1	
Cycle Queue Clearance Time (g_c), s		34.6	27.7	31.0	3.5					10.7	28.1	
Green Ratio (*g/C*)		0.36	0.36	0.27	0.67					0.24	0.24	
Capacity (*c*), veh/h		540	523	779	2005					656	302	
Volume-to-Capacity Ratio (*X*)		0.697	0.698	0.934	0.441					0.411	0.929	
Back of Queue (*Q*), ft/ln (95 th percentile)		473.4	463.1	366	37					186.1	465.5	
Back of Queue (*Q*), veh/ln (95 th percentile)		16.7	16.3	13.3	1.3					6.5	16.2	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.68	0.66	1.03	0.06					0.37	0.42	
Uniform Delay (d_1), s/veh		35.9	35.9	36.0	1.2					41.8	48.5	
Incremental Delay (d_2), s/veh		7.3	7.6	3.0	0.3					0.2	25.5	
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		43.1	43.4	39.0	1.5					42.0	74.0	
Level of Service (LOS)		D	D	D	A					D	E	
Approach Delay, s/veh / LOS	43.3	D		18.4	B		0.0			58.3	E	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.88	B	2.48	B	2.16	B
Bicycle LOS Score / LOS	1.10	A	1.91	B			1.40	A

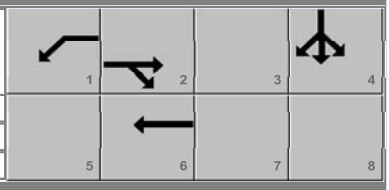
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information					EB			WB			NB			SB		
Cycle, s	130.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	34.8	46.3		30.9	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	0.0	0.0	0.0					



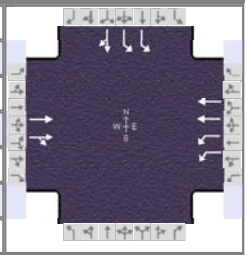
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.867	0.867	0.899	0.899	1.000				0.852	0.852	0.852
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.971	0.952	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.968	0.968		1.000	1.000					0.853	0.853
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	2716	271	2908	3070	0				2839	51	1220
Proportion of Vehicles Arriving on Green (P)	0.00	0.36	0.36	0.43	0.95	0.00	0.00	0.00	0.00	0.24	0.24	0.24
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50					0.04	0.29	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.36	0.27	0.67				0.24
Permitted Saturation Flow Rate (s_p), veh/h/ln		638	0	0				1420
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	0.0	0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		46.3	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.710	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.132	0.000	0.079	0.000	0.167	0.000	0.167
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	711.68	26.97	1339.61	7.09	-76.92	70.10		72.19
Bicycle F_w / F_v	-3.64	0.61	-3.64	1.42	-3.64		-3.64	0.91

HCS Signalized Intersection Results Graphical Summary

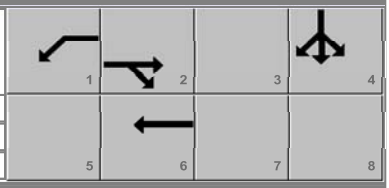
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 SB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



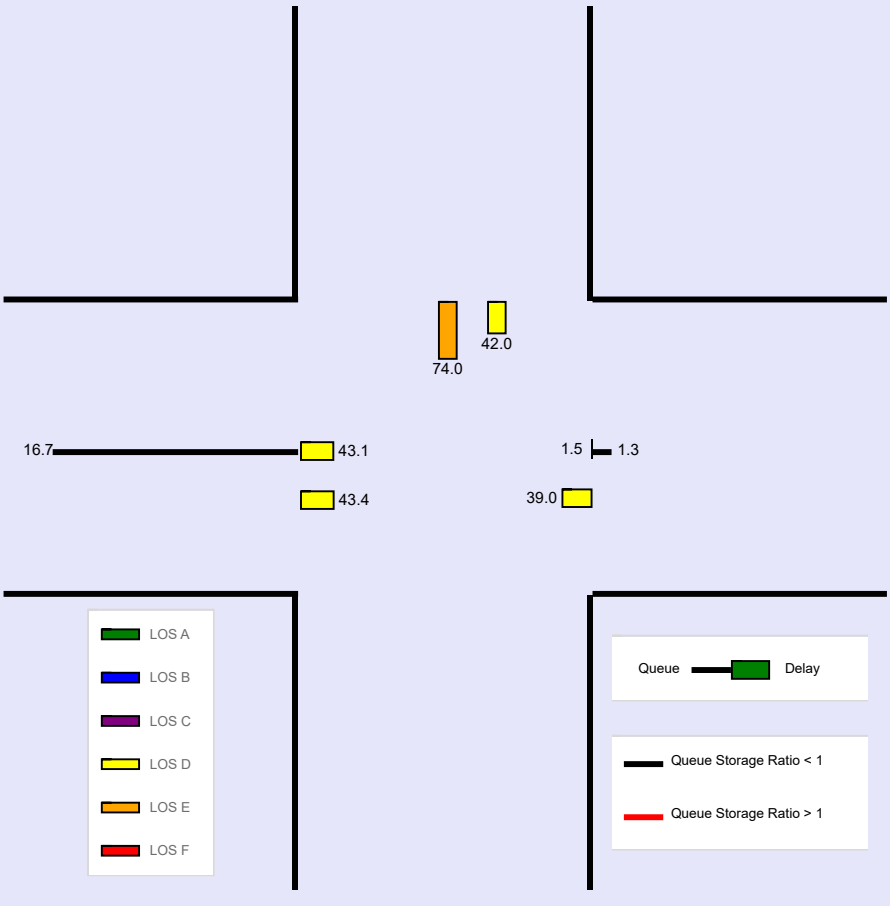
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		600	60	690	840					240	10	240

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	34.8	46.3	30.9	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		473.4	463.1	366	37					186.1	465.5	
Back of Queue (*Q*), veh/ln (95 th percentile)		16.7	16.3	13.3	1.3					6.5	16.2	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.68	0.66	1.03	0.06					0.37	0.42	
Control Delay (*d*), s/veh		43.1	43.4	39.0	1.5					42.0	74.0	
Level of Service (LOS)		D	D	D	A					D	E	
Approach Delay, s/veh / LOS	43.3	D		18.4	B		0.0			58.3	E	
Intersection Delay, s/veh / LOS	32.3						C					



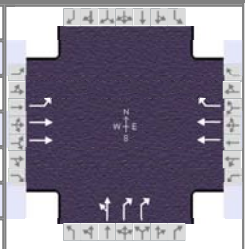
--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

HCS Signalized Intersection Input Data

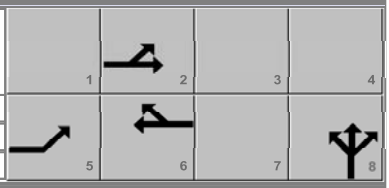
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	103	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	8.1	78.4	25.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



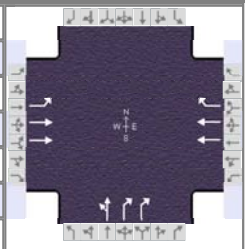
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	17	17			11	11		16	16			
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.75	0.75			0.09	0.09	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0		12.0	12.0			
Turn Bay Length, ft	305	630			420	420		1120	600			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	45	45	45			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	18.0	76.0		58.0		54.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		
Minimum Green (G_{min}), s	7	20		20		10		
Start-Up Lost Time (*lt*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0		2.0		
Recall Mode	Off	Min		Min		Off		
Dual Entry	No	Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

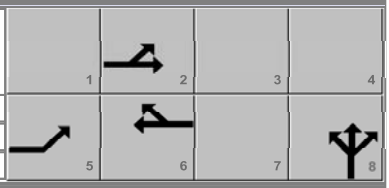
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	103	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	8.1	78.4	25.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



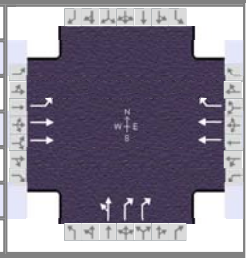
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		7.3		11.0		
Phase Duration, s	14.1	98.5		84.4		31.5		
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.2		
Queue Clearance Time (*g s*), s	7.8					24.3		
Green Extension Time (*g e*), s	0.3	0.0		0.0		1.2		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.00					0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	169	775			1545	788		79	404			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1446	1445			1508	1356		1469	1149			
Queue Service Time (*g s*), s	5.8	14.9			32.2	38.1		5.9	22.3			
Cycle Queue Clearance Time (*g c*), s	5.8	14.9			32.2	38.1		5.9	22.3			
Green Ratio (*g/C*)	0.68	0.71			0.60	0.60		0.20	0.20			
Capacity (*c*), veh/h	250	2056			1818	818		288	451			
Volume-to-Capacity Ratio (*X*)	0.674	0.377			0.850	0.964		0.273	0.897			
Back of Queue (*Q*), ft/ln (95 th percentile)	117.3	214.6			115	66.5		108.1	297.7			
Back of Queue (*Q*), veh/ln (95 th percentile)	4.1	7.6			4.2	2.4		3.8	10.6			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.38	0.34			0.27	0.16		0.10	0.50			
Uniform Delay (*d 1*), s/veh	16.5	8.3			5.2	1.6		44.4	51.0			
Incremental Delay (*d 2*), s/veh	0.9	0.4			0.5	4.2		0.2	2.6			
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0	0.0			
Control Delay (*d*), s/veh	17.4	8.7			5.7	5.8		44.5	53.6			
Level of Service (LOS)	B	A			A	A		D	D			
Approach Delay, s/veh / LOS	10.2	B		5.7	A		52.1	D		0.0		
Intersection Delay, s/veh / LOS	12.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.87	B	1.37	A	2.32	B	2.32	B
Bicycle LOS Score / LOS	1.27	A	2.55	C	1.28	A		

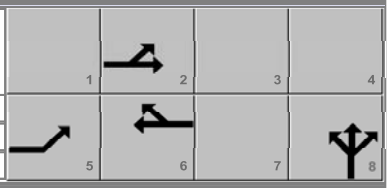
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	103	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	8.1	78.4	25.5	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



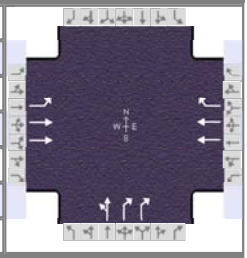
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.867	0.867	0.867	1.000	0.914	0.914	0.875	0.875	0.875			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.942	1.000	1.000	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.959	0.959				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1446	2963	0	0	3107	1356	1259	210	2297			
Proportion of Vehicles Arriving on Green (P)	0.11	0.68	0.00	0.00	0.88	0.96	0.20	0.20	0.20	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50		0.04	0.04			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		4.0		
Green Ratio (g/C)	0.68	0.71		0.60		0.20		
Permitted Saturation Flow Rate (s_p), veh/h/ln	295	0		707		0		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	80.4	0.0		0.0		0.0		
Permitted Service Time (g_u), s	46.2	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s	40.4							
Time to First Blockage (g_f), s	0.0	0.0		78.4		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0		0		
Protected Right Effective Green Time (g_R), s				0.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.681	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.068	0.000	0.093	0.000	0.167	0.000	0.167
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1422.70	5.42	1206.26	10.24		72.19	-76.92	70.10
Bicycle F_w / F_v	-3.64	0.78	-3.64	2.06	-3.64	0.80	-3.64	

HCS Signalized Intersection Results Graphical Summary

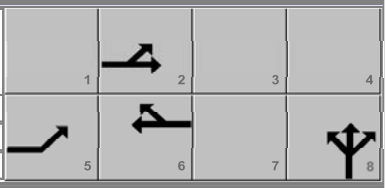
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	I-71 NB Ramps	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



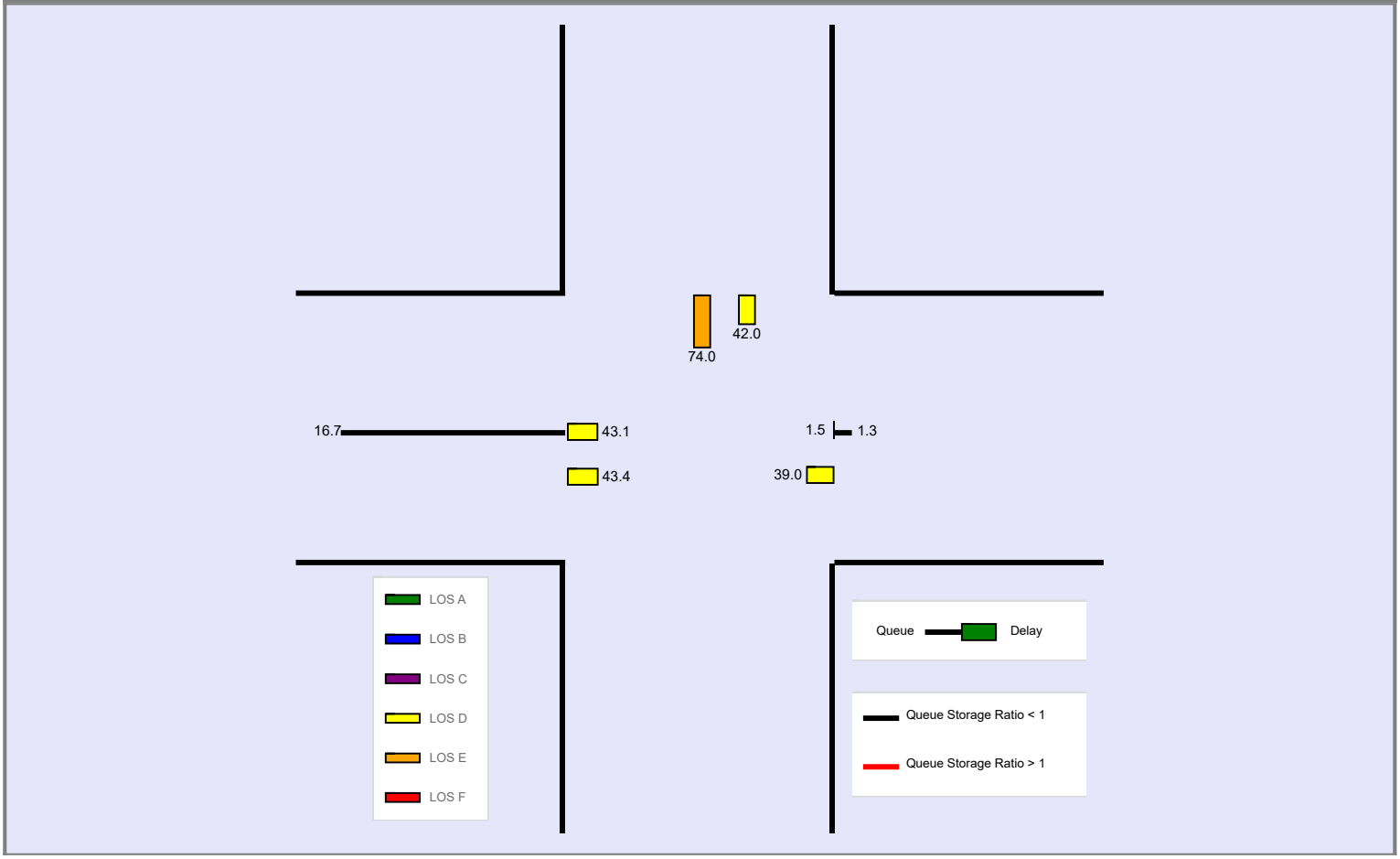
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	150	690			1470	750	60	10	360			

Signal Information										
Cycle, s	130.0	Reference Phase	2							
Offset, s	103	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							

Green	8.1	78.4	25.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	117.3	214.6			115	66.5		108.1	297.7			
Back of Queue (*Q*), veh/ln (95 th percentile)	4.1	7.6			4.2	2.4		3.8	10.6			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.38	0.34			0.27	0.16		0.10	0.50			
Control Delay (*d*), s/veh	17.4	8.7			5.7	5.8		44.5	53.6			
Level of Service (LOS)	B	A			A	A		D	D			
Approach Delay, s/veh / LOS	10.2	B		5.7	A		52.1	D		0.0		
Intersection Delay, s/veh / LOS	12.8						B					



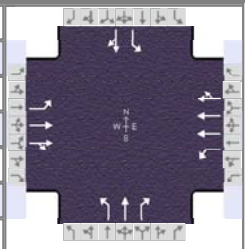
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.6	2.9	69.5	7.0	15.0	0.0	1	2	3	4		
Yellow	4.0	4.0	4.0	4.0	4.0	0.0	5	6	7	8		
Red	2.0	2.0	2.0	2.0	2.0	0.0						

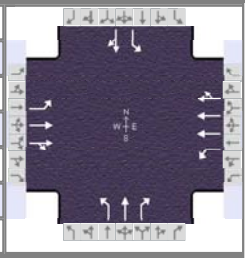
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None		0	L	
Heavy Vehicles (P_{HV}), %	15	15		9	9		10	10	10	15	15	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.92	0.92	0.92	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	325	485		385	760		100	1000	65	110	600	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.5	83.0	13.0	75.5	13.0	34.0		21.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Off	Min	Off	Min	Off	Off		Off
Dual Entry	No	Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

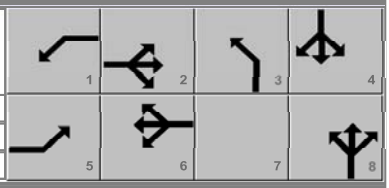
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.6	2.9	69.5	7.0	15.0	0.0	
Yellow	4.0	4.0	4.0	4.0	4.0	0.0	
Red	2.0	2.0	2.0	2.0	2.0	0.0	



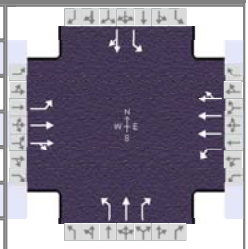
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8		4
Case Number	1.1	4.0	1.1	4.0	1.0	3.0		6.3
Phase Duration, s	20.5	84.4	11.6	75.5	13.0	34.0		21.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.1	3.5		3.5
Queue Clearance Time (g_s), s	15.1		3.6		9.0	6.2		17.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.1		0.0
Phase Call Probability	1.00		0.80		0.98	1.00		1.00
Max Out Probability	1.00		0.66		1.00	0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	225	488	467	44	1385	800	108	22	54	140	269	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1472	1545	1481	1550	1385	1592	1537	1614	1367	1247	1326	
Queue Service Time (g_s), s	13.1	21.7	21.0	1.6	54.1	54.7	7.0	1.4	4.2	14.5	15.0	
Cycle Queue Clearance Time (g_c), s	13.1	21.7	21.0	1.6	54.1	54.7	7.0	1.4	4.2	14.5	15.0	
Green Ratio (*g/C*)	0.66	0.60	0.60	0.58	0.53	0.53	0.18	0.22	0.22	0.12	0.12	
Capacity (*c*), veh/h	238	932	894	356	1481	851	138	348	295	199	153	
Volume-to-Capacity Ratio (*X*)	0.945	0.523	0.523	0.124	0.935	0.940	0.778	0.062	0.183	0.701	1.757	
Back of Queue (*Q*), ft/ln (95 th percentile)	410.7	324.1	300.4	25.4	330.9	373.9	68.6	26.8	69	246.9	935.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	14.7	11.6	10.7	0.9	12.3	14.0	2.5	1.0	2.6	8.8	33.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.26	0.67	0.62	0.07	0.44	0.49	0.69	0.03	1.06	2.24	1.56	
Uniform Delay (d_1), s/veh	39.1	12.8	12.1	13.4	14.0	13.6	49.2	40.6	41.7	57.3	57.5	
Incremental Delay (d_2), s/veh	40.5	1.9	2.0	0.0	1.5	2.7	22.2	0.0	0.1	9.0	366.2	
Initial 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	79.6	14.7	14.1	13.4	15.5	16.3	71.4	40.6	41.8	66.3	423.7	
Level of Service (LOS)	E	B	B	B	B	B	E	D	D	E	F	
Approach Delay, s/veh / LOS	26.8	C		15.8	B		59.1	E		301.4	F	
Intersection Delay, s/veh / LOS	50.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.08	B	1.90	B	2.46	B	2.47	B
Bicycle LOS Score / LOS	1.42	A	1.68	B	0.79	A	1.16	A

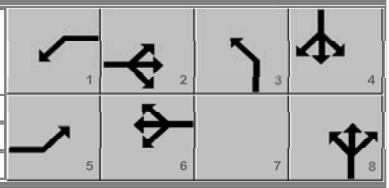
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	82	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	5.6	2.9	69.5	7.0	15.0	0.0		
				Yellow	4.0	4.0	4.0	4.0	4.0	0.0		
				Red	2.0	2.0	2.0	2.0	2.0	0.0		



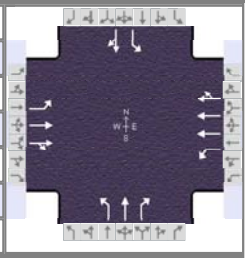
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.883	0.883	0.883	0.930	0.930	0.930	0.922	0.922	0.922	0.883	0.883	0.883
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	0.851	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.713	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.959	0.959		0.978	0.978		0.000	0.847		0.858	0.858
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h	1472	2670	356	1550	4165	198	1537	1614	1367	1247	106	1220
Proportion of Vehicles Arriving on Green (P)	0.12	0.65	0.71	0.00	0.76	0.82	0.05	0.22	0.22	0.12	0.12	0.12
Incremental Delay Factor (k)	0.45	0.50	0.50	0.04	0.50	0.50	0.30	0.04	0.04	0.23	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Green Ratio (g/C)	0.66	0.60	0.58	0.53	0.18	0.22		0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	161	0	555	0	1040	1247		1247
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	71.5	0.0	69.5	0.0	17.0	15.0		15.0
Permitted Service Time (g_u), s	14.8	0.0	54.7	0.0	0.0	0.0		15.0
Permitted Queue Service Time (g_{ps}), s	14.8		1.3		0.0			14.5
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		
Protected Right Effective Green Time (g_R), s						0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.198	0.000	1.710	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.093	0.000	0.106	0.000	0.148	0.000	0.158
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1206.50	10.23	1069.23	14.08	430.77	40.02	230.77	50.87
Bicycle F_w / F_v	-3.64	0.93	-3.64	1.19	-3.64	0.30	-3.64	0.67

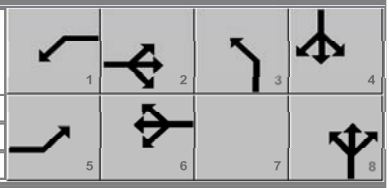
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.93
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	Allen Rd	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				

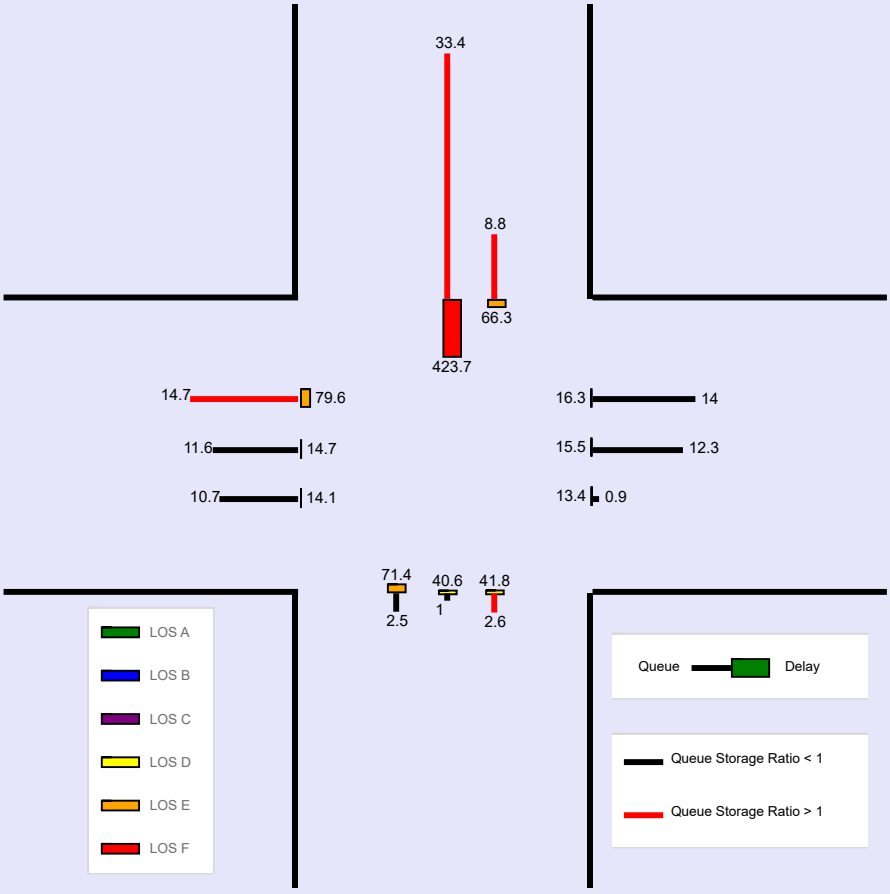


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	200	750	100	40	1890	90	100	20	50	130	20	230

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	82	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	5.6	2.9	69.5	7.0	15.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0		
				Red	2.0	2.0	2.0	2.0	2.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	410.7	324.1	300.4	25.4	330.9	373.9	68.6	26.8	69	246.9	935.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	14.7	11.6	10.7	0.9	12.3	14.0	2.5	1.0	2.6	8.8	33.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.26	0.67	0.62	0.07	0.44	0.49	0.69	0.03	1.06	2.24	1.56	
Control Delay (*d*), s/veh	79.6	14.7	14.1	13.4	15.5	16.3	71.4	40.6	41.8	66.3	423.7	
Level of Service (LOS)	E	B	B	B	B	B	E	D	D	E	F	
Approach Delay, s/veh / LOS	26.8	C		15.8	B		59.1	E		301.4	F	
Intersection Delay, s/veh / LOS	50.2						D					



--- Messages ---

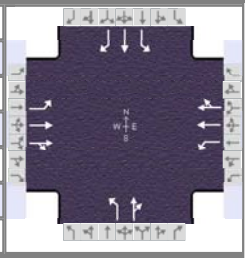
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ---

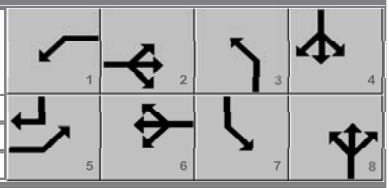
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	73	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	4.9	2.1	82.0	7.0	10.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



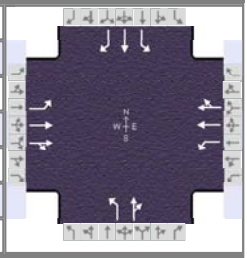
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1900	1750	1750	1750
Parking (N_m), man/h		None			None			R	0		None	
Heavy Vehicles (P_{HV}), %	11	11		10	10		43	43		7	7	7
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.83	0.83	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	215	740		185	1520		400	100		105	550	550
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	88.0	13.0	88.0	13.0	16.0	13.0	16.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

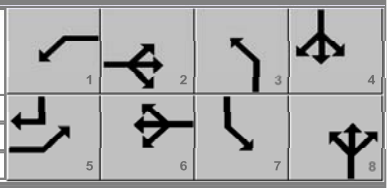
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	73	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.9	2.1	82.0	7.0	10.0	0.0	
Yellow	4.0	0.0	4.0	4.0	4.0	0.0	
Red	2.0	0.0	2.0	2.0	2.0	0.0	



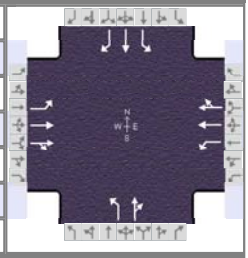
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	13.0	90.1	10.9	88.0	13.0	16.0	13.0	16.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0	3.3	3.5	3.3	3.5
Queue Clearance Time (g_s), s	7.7		3.0		9.0	12.0	8.8	12.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.99		0.70		1.00	1.00	0.96	1.00
Max Out Probability	1.00		0.19		1.00	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
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	123	460	454	34	1017	1017	191	101		90	22	124
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1524	1600	1579	1537	1614	1591	1108	902		1576	1654	1402
Queue Service Time (g_s), s	5.7	13.4	13.4	1.0	81.8	82.0	7.0	10.0		6.8	1.7	10.0
Cycle Queue Clearance Time (g_c), s	5.7	13.4	13.4	1.0	81.8	82.0	7.0	10.0		6.8	1.7	10.0
Green Ratio (*g/C*)	0.68	0.65	0.65	0.67	0.63	0.63	0.13	0.08		0.13	0.08	0.13
Capacity (*c*), veh/h	137	1035	1021	416	1018	1004	161	69		140	127	183
Volume-to-Capacity Ratio (*X*)	0.892	0.444	0.444	0.081	0.999	1.013	1.188	1.457		0.641	0.177	0.674
Back of Queue (*Q*), ft/ln (95 th percentile)	251.4	191.6	189.3	14.9	1238.3	1270.9	494.3	446.1		143.7	33.6	202.7
Back of Queue (*Q*), veh/ln (95 th percentile)	9.2	7.0	7.0	0.6	45.9	47.1	14.7	13.3		5.4	1.3	7.7
Queue Storage Ratio (*RQ*) (95 th percentile)	1.17	0.26	0.26	0.08	0.81	0.84	1.24	4.46		1.37	0.06	0.37
Uniform Delay (d_1), s/veh	43.8	7.1	7.0	8.0	24.0	24.0	59.1	60.0		52.5	56.1	53.9
Incremental Delay (d_2), s/veh	39.7	1.2	1.2	0.0	28.0	31.7	130.4	268.7		7.4	0.2	7.7
Initial 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	83.5	8.2	8.2	8.1	52.0	55.7	189.5	328.7		59.9	56.4	61.6
Level of Service (LOS)	F	A	A	A	D	F	F	F		E	E	E
Approach Delay, s/veh / LOS	17.1	B		53.1	D		237.7	F		60.5	E	
Intersection Delay, s/veh / LOS	58.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.88	B	2.08	B	2.32	B	2.32	B
Bicycle LOS Score / LOS	1.35	A	2.19	B	0.97	A	0.88	A

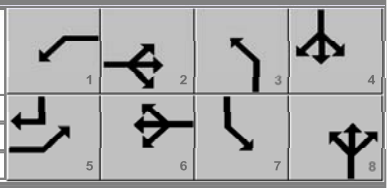
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	73	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	4.9	2.1	82.0	7.0	10.0	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



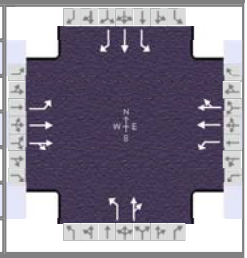
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.914	0.914	0.914	0.922	0.922	0.922	0.665	0.665	0.665	0.945	0.945	0.945
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.900	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.987	0.987		0.986	0.986		0.776	0.776		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1524	3062	116	1537	3082	123	1108	100	802	1576	1654	1402
Proportion of Vehicles Arriving on Green (P)	0.01	0.76	0.77	0.04	0.63	0.63	0.05	0.08	0.08	0.05	0.08	0.08
Incremental Delay Factor (k)	0.40	0.50	0.50	0.04	0.50	0.50	0.50	0.50		0.17	0.04	0.20

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.68	0.65	0.67	0.63	0.13	0.08	0.13	0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	193	0	572	0	938	0	1242	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	82.0	0.0	82.0	0.0	10.0	0.0	10.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	68.6	0.0	6.3	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.8		6.3		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1402
Protected Right Effective Green Time (g_R), s								7.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	1.389	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.084	0.000	0.087	0.000	0.161	0.000	0.161
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1293.42	8.11	1261.54	8.86	153.85	55.38	153.85	55.38
Bicycle F_w / F_v	-3.64	0.86	-3.64	1.71	-3.64	0.48	-3.64	0.39

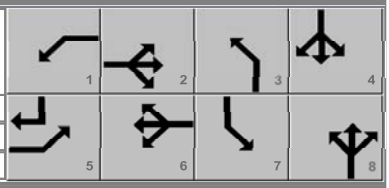
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	May 4, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.89
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	TA Center/Shopping Ce…	File Name	1-4 2044 PM Build-130s.xus		
Project Description	FAY-VAR IOS(PID 117955)				

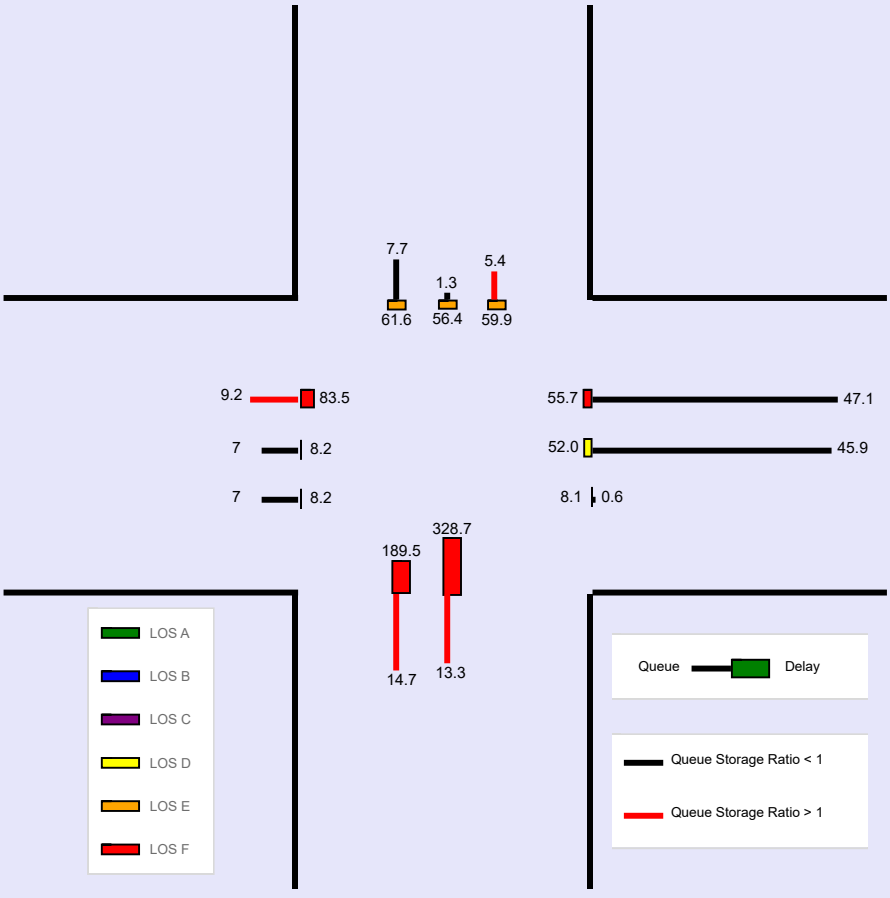


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	790	30	30	1740	70	170	10	80	80	20	110

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	73	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	4.9	2.1	82.0	7.0	10.0	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	251.4	191.6	189.3	14.9	1238.3	1270.9	494.3	446.1		143.7	33.6	202.7
Back of Queue (*Q*), veh/ln (95 th percentile)	9.2	7.0	7.0	0.6	45.9	47.1	14.7	13.3		5.4	1.3	7.7
Queue Storage Ratio (*RQ*) (95 th percentile)	1.17	0.26	0.26	0.08	0.81	0.84	1.24	4.46		1.37	0.06	0.37
Control Delay (*d*), s/veh	83.5	8.2	8.2	8.1	52.0	55.7	189.5	328.7		59.9	56.4	61.6
Level of Service (LOS)	F	A	A	A	D	F	F	F		E	E	E
Approach Delay, s/veh / LOS	17.1	B		53.1	D		237.7	F		60.5	E	
Intersection Delay, s/veh / LOS	58.1						E					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

--- Comments ---

HCS Two-Way Stop-Control Report

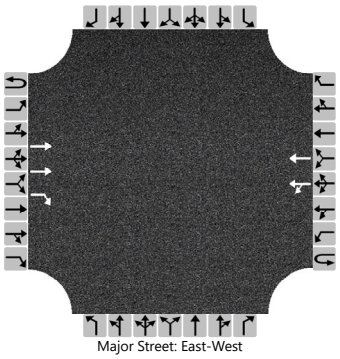
General Information

Analyst	ljb
Agency/Co.	LJB Inc
Date Performed	05/04/2023
Analysis Year	2044
Time Analyzed	2044 PM Pk Build
Intersection Orientation	East-West
Project Description	FAY-VAR IOS(PID 117955)

Site Information

Intersection	SR 435 @ US 35 EB On-ramp
Jurisdiction	ODOT D6
East/West Street	SR 435
North/South Street	US 35 EB On Ramp
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	0	2	0		0	0	0		0	0	0
Configuration			T	R		LT	T									
Volume (veh/h)			660	290		170	1840									
Percent Heavy Vehicles (%)						6										
Proportion Time Blocked																
Percent Grade (%)																
Right Turn Channelized		No														
Median Type | Storage			Undivided													

Critical and Follow-up Headways

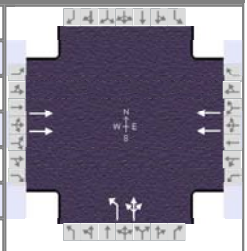
Base Critical Headway (sec)						4.1										
Critical Headway (sec)						4.22										
Base Follow-Up Headway (sec)						2.2										
Follow-Up Headway (sec)						2.26										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						198										
Capacity, c (veh/h)						605										
v/c Ratio						0.33										
95% Queue Length, Q_{95} (veh)						1.4										
Control Delay (s/veh)						13.8	3.8									
Level of Service (LOS)						B	A									
Approach Delay (s/veh)						4.7										
Approach LOS						A										

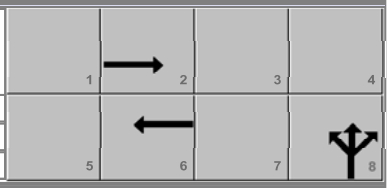
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 9, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Build	PHF	0.87
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp PM.xus		
Project Description	FAY-435/41 IOS				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		660			1550		460	0	70			

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin	Green	61.4	26.6	0.0	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0			



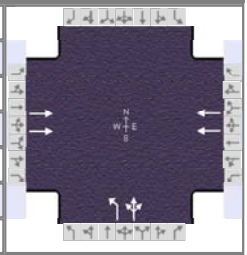
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		660			1550		460	0	70			
Initial Queue (Q_b), veh/h		0			0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		1750			1750		1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		5			5		10	10				
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3			3		3	3	3			
Upstream Filtering (*I*)		1.00			1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0			12.0		12.0	12.0				
Turn Bay Length, ft		910			700		1090	700				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35			35		35	35	35			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		41.0		41.0		59.0		
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		
Red Clearance Interval (R_c), s		2.0		2.0		2.0		
Minimum Green (G_{min}), s		20		20		10		
Start-Up Lost Time (*l1*), s		2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0		
Passage (*PT*), s		2.0		2.0		2.0		
Recall Mode		Min		Min		Off		
Dual Entry		Yes		Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

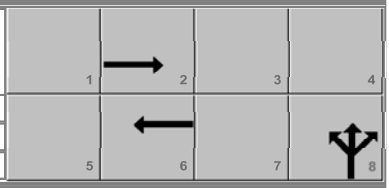
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 9, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Build	PHF	0.87
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp PM.xus		
Project Description	FAY-435/41 IOS				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		660			1550		460	0	70			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	61.4	26.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



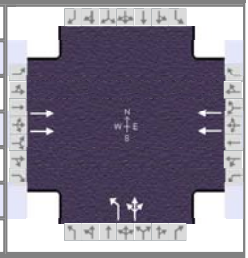
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		8.0		8.0		10.0		
Phase Duration, s		67.4		67.4		32.6		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		
Queue Clearance Time (*g s*), s						25.3		
Green Extension Time (*g e*), s		0.0		0.0		1.3		
Phase Call Probability						1.00		
Max Out Probability						0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2			6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		759			1782		370	239				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1601			1601		1537	1480				
Queue Service Time (*g s*), s		12.0			48.4		23.3	15.6				
Cycle Queue Clearance Time (*g c*), s		12.0			48.4		23.3	15.6				
Green Ratio (*g/C*)		0.61			0.61		0.27	0.27				
Capacity (*c*), veh/h		1967			1967		408	393				
Volume-to-Capacity Ratio (*X*)		0.386			0.906		0.906	0.608				
Back of Queue (*Q*), ft/ln (95 th percentile)		184.4			627.5		368.6	277.6				
Back of Queue (*Q*), veh/ln (95 th percentile)		7.1			24.1		13.7	10.3				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.20			0.90		0.34	0.40				
Uniform Delay (*d 1*), s/veh		9.8			16.8		35.5	40.5				
Incremental Delay (*d 2*), s/veh		0.6			7.5		3.2	0.6				
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0				
Control Delay (*d*), s/veh		10.3			24.3		38.7	41.1				
Level of Service (LOS)		B			C		D	D				
Approach Delay, s/veh / LOS	10.3	B		24.3	C		39.6	D		0.0		
Intersection Delay, s/veh / LOS	23.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	1.36	A	2.15	B	2.15	B
Bicycle LOS Score / LOS	1.11	A	1.96	B	1.49	A		

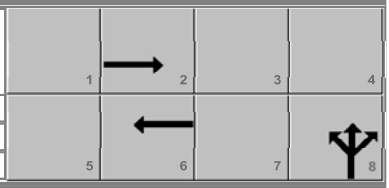
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 9, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Build	PHF	0.87
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp PM.xus		
Project Description	FAY-435/41 IOS				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		660			1550		460	0	70			

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	61.4	26.6	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



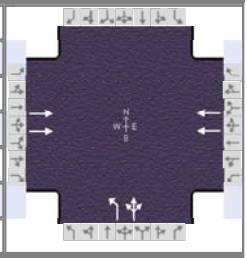
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	1.000	0.977	0.961	1.000	0.922	0.922	0.922			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		1.000	1.000		0.847	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00								
Movement Saturation Flow Rate (s), veh/h	0	3364	0	0	3364	0	1537	0	1480			
Proportion of Vehicles Arriving on Green (P)	0.00	0.61	0.00	0.00	0.61	0.00	0.27	0.00	0.27	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50			0.50		0.04	0.04				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		4.0		
Green Ratio (g/C)		0.61		0.61		0.27		
Permitted Saturation Flow Rate (s_p), veh/h/ln		271		718		1537		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g_p), s		0.0		0.0		0.0		
Permitted Service Time (g_u), s		0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		61.4		61.4		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.080	0.000	0.080	0.000	0.157	0.000	0.157
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1228.39	7.44	1228.39	7.44		57.25		55.13
Bicycle F_w / F_v	-3.64	0.63	-3.64	1.47	-3.64	1.01	-3.64	

HCS Signalized Intersection Results Graphical Summary

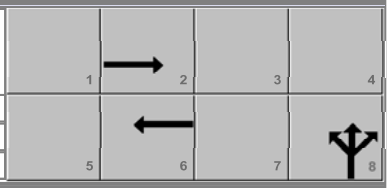
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	TVF	Analysis Date	May 9, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Build	PHF	0.87
Urban Street	SR 435	Analysis Year	2044 Build	Analysis Period	1> 15:00
Intersection	SR-435/US-35 WB Off-…	File Name	6 SR 435 & US 35 WB Off Ramp PM.xus		
Project Description	FAY-435/41 IOS				



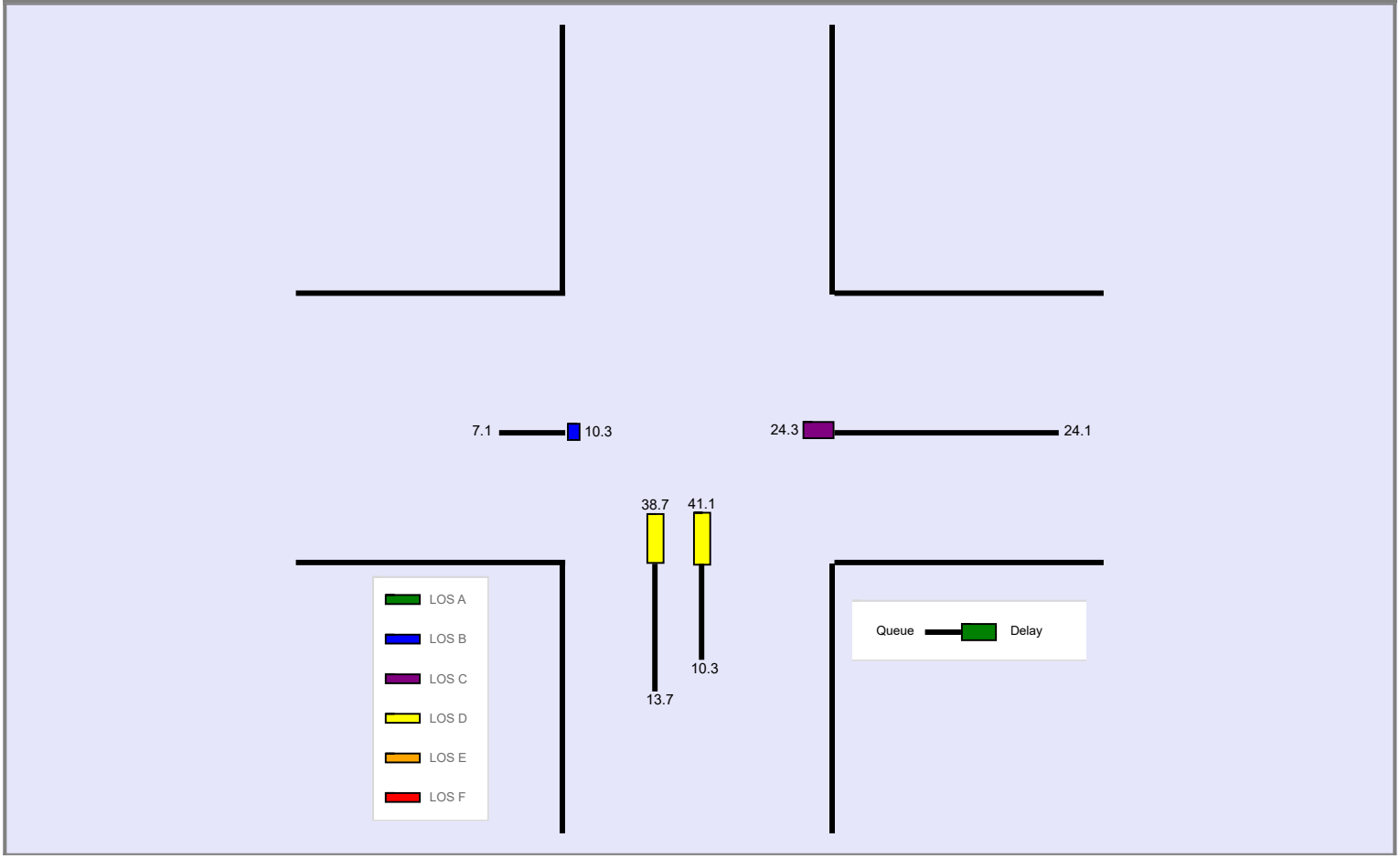
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		660			1550		460	0	70			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	61.4	26.6	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		184.4			627.5		368.6	277.6				
Back of Queue (*Q*), veh/ln (95 th percentile)		7.1			24.1		13.7	10.3				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.20			0.90		0.34	0.40				
Control Delay (*d*), s/veh		10.3			24.3		38.7	41.1				
Level of Service (LOS)		B			C		D	D				
Approach Delay, s/veh / LOS	10.3	B		24.3	C		39.6	D		0.0		
Intersection Delay, s/veh / LOS	23.9						C					



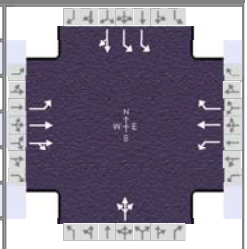
--- Messages ---

WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

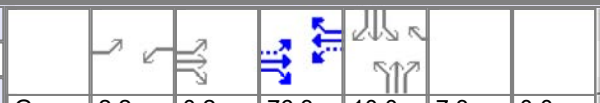
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

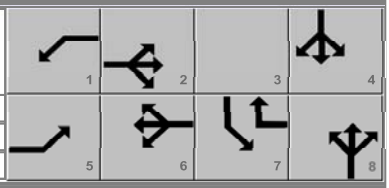


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	10	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.2	0.2	76.3	10.0	7.3	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						



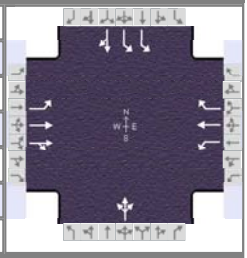
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	10	100	10	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None		0	L			None	
Heavy Vehicles (P_{HV}), %	7	7		5	5	5		7		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0		12.0		12.0	12.0	
Turn Bay Length, ft	150	1550		150	510	610		100		590	595	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	17.0	45.0	22.0	50.0		19.0	34.0	34.0
Yellow Change Interval (*Y*), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Red Clearance Interval (R_c), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Minimum Green (G_{min}), s	7	20	7	20		10	7	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min		Off	Off	Off
Dual Entry	No	Yes	No	Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	10	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	2.2	0.2	76.3	10.0	7.3	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0		5	6	7	8	
Red	2.0	0.0	2.0	2.0	2.0	0.0						

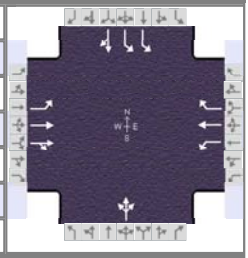
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		12.0		10.0
Phase Duration, s	8.5	82.5	8.2	82.3		13.3		16.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0		6.0		6.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.1
Queue Clearance Time (g_s), s	2.3		2.3			4.9		6.6
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.3
Phase Call Probability	0.35		0.32			0.73		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	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	14
Adjusted Flow Rate (*v*), veh/h	13	319	317	12	371	116		39		130	39	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1576	1654	1642	1602	1682	1425		1537		1618	1563	
Queue Service Time (g_s), s	0.3	10.4	10.4	0.3	17.9	2.0		2.9		4.6	2.8	
Cycle Queue Clearance Time (g_c), s	0.3	10.4	10.4	0.3	17.9	2.0		2.9		4.6	2.8	
Green Ratio (*g/C*)	0.66	0.64	0.64	0.65	0.64	0.72		0.06		0.08	0.08	
Capacity (*c*), veh/h	565	1055	1047	503	1069	1025		93		269	130	
Volume-to-Capacity Ratio (*X*)	0.023	0.303	0.303	0.023	0.347	0.113		0.418		0.483	0.300	
Back of Queue (*Q*), ft/ln (95 th percentile)	5.2	178.8	177.8	4.6	310.8	25.3		55		83	49.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	6.8	6.7	0.2	12.0	1.0		2.1		3.3	2.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.12	0.11	0.03	0.61	0.04		0.55		0.14	0.08	
Uniform Delay (d_1), s/veh	8.5	9.8	9.8	7.9	17.8	3.4		54.3		52.6	51.7	
Incremental Delay (d_2), s/veh	0.0	0.7	0.7	0.0	0.8	0.2		1.1		0.5	0.5	
Initial 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	8.5	10.5	10.5	7.9	18.6	3.6		55.4		53.1	52.2	
Level of Service (LOS)	A	B	B	A	B	A		E		D	D	
Approach Delay, s/veh / LOS	10.5	B		14.8	B		55.4	E		52.9	D	
Intersection Delay, s/veh / LOS	18.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.65	B	2.07	B	2.32	B	2.15	B
Bicycle LOS Score / LOS	1.02	A	1.41	A	0.55	A	0.77	A

HCS Signalized Intersection Intermediate Values

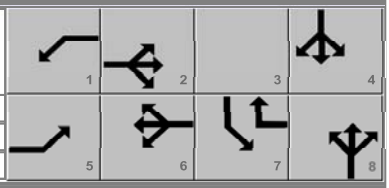
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	10	100	10	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.2	0.2	76.3	10.0	7.3	0.0						
Yellow	4.0	0.0	4.0	4.0	4.0	0.0						
Red	2.0	0.0	2.0	2.0	2.0	0.0						



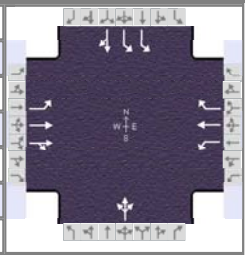
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.945	0.945	0.945	0.961	0.961	0.961	0.945	0.945	0.945	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.929	0.929		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.993	0.993		0.000	0.847		0.000	0.000		0.893	0.893
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1576	3230	67	1602	1682	1425	512	512	512	3333	521	1042
Proportion of Vehicles Arriving on Green (P)	0.02	0.64	0.64	0.01	0.42	0.76	0.06	0.06	0.06	0.08	0.08	0.08
Incremental Delay Factor (k)	0.04	0.50	0.50	0.04	0.50	0.50		0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0		6.0		4.0
Green Ratio (g/C)	0.66	0.64	0.65	0.64		0.06		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	971	0	773	0		0		1667
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	76.3	0.0	76.3	0.0		0.0		0.0
Permitted Service Time (g_u), s	58.4	0.0	64.1	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.2					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				1425				
Protected Right Effective Green Time (g_R), s				10.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.389	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.083	0.000	0.083	0.000	0.164	0.000	0.159
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1275.35	7.88	1271.74	7.96		67.20	121.19	52.95
Bicycle F_w / F_v	-3.64	0.54	-3.64	0.92	-3.64	0.06	-3.64	0.28

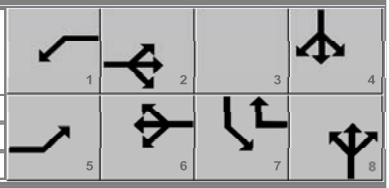
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.77
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	Carr Rd	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

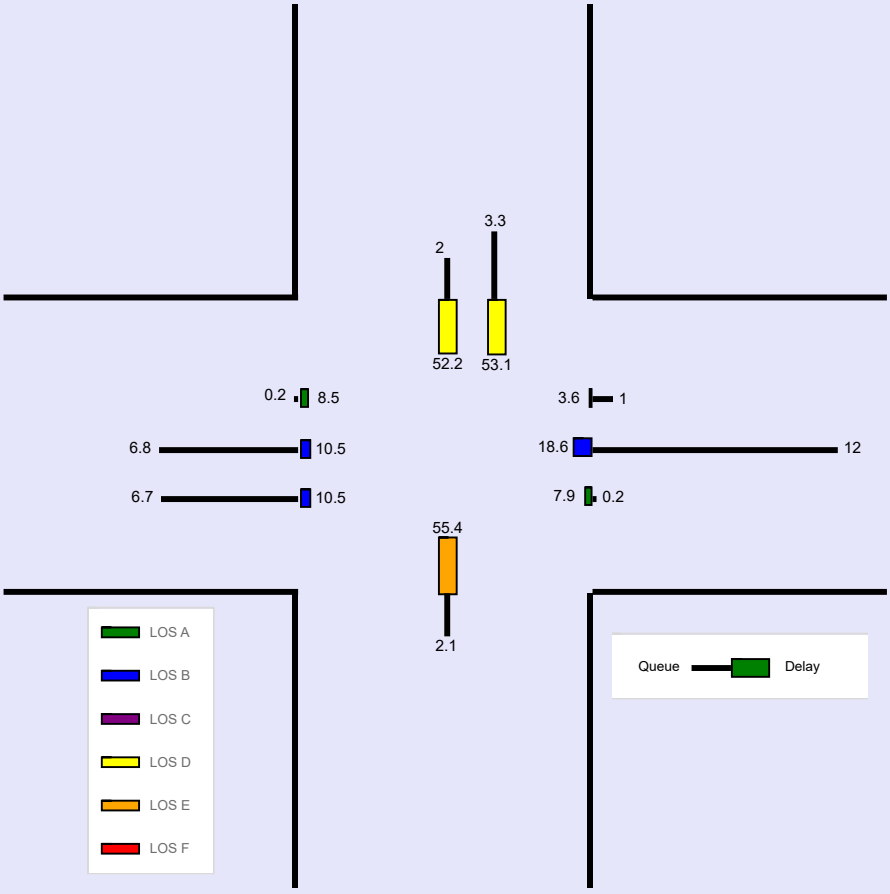


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	480	10	10	320	100	10	10	10	100	10	20

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	2.2	0.2	76.3	10.0	7.3	0.0		
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0		
				Red	2.0	0.0	2.0	2.0	2.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	5.2	178.8	177.8	4.6	310.8	25.3		55		83	49.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	6.8	6.7	0.2	12.0	1.0		2.1		3.3	2.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.12	0.11	0.03	0.61	0.04		0.55		0.14	0.08	
Control Delay (*d*), s/veh	8.5	10.5	10.5	7.9	18.6	3.6		55.4		53.1	52.2	
Level of Service (LOS)	A	B	B	A	B	A		E		D	D	
Approach Delay, s/veh / LOS	10.5	B		14.8	B		55.4	E		52.9	D	
Intersection Delay, s/veh / LOS	18.6						B					



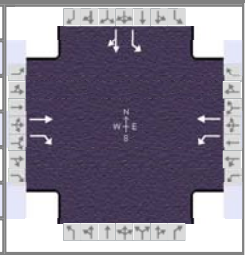
--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 89% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

HCS Signalized Intersection Input Data

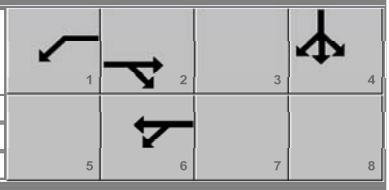
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.82
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		460	140	240	240					300	10	190

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.1	55.0	33.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



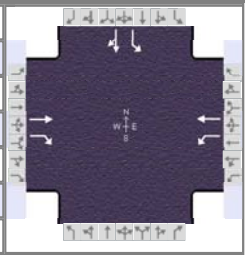
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		460	140	240	240					300	10	190
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1750	1750	1750	1750					1750	1750	1750
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		10	10	18	18					18	18	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		0.95	0.95	0.88	0.88					1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0	12.0	12.0					12.0	12.0	
Turn Bay Length, ft		600	630	335	930					760	1150	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		56.0	14.0	70.0				50.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	2.0	2.0				2.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s				0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

HCS Signalized Intersection Results Summary

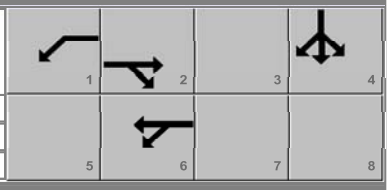
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.82
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		460	140	240	240					300	10	190

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.1	55.0	33.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



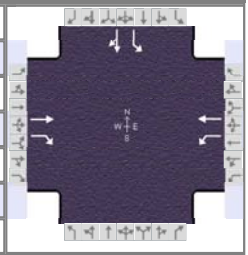
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		7.3	1.0	4.0				10.0
Phase Duration, s		61.0	20.1	81.0				39.0
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0				3.2
Queue Clearance Time (*g s*), s			13.8					31.8
Green Extension Time (*g e*), s		0.0	0.2	0.0				1.1
Phase Call Probability			1.00					1.00
Max Out Probability			0.17					0.01

Movement Group Results	EB			WB			NB			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 (*v*), veh/h		597	182	266	266					366	244	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1614	1367	1433	1504					1433	1285	
Queue Service Time (*g s*), s		34.9	6.6	11.8	7.5					29.8	20.4	
Cycle Queue Clearance Time (*g c*), s		34.9	6.6	11.8	7.5					29.8	20.4	
Green Ratio (*g/C*)		0.46	0.46	0.59	0.63					0.27	0.27	
Capacity (*c*), veh/h		739	626	347	941					394	353	
Volume-to-Capacity Ratio (*X*)		0.808	0.290	0.767	0.283					0.929	0.691	
Back of Queue (*Q*), ft/ln (95 th percentile)		504.9	97.5	187.5	119.9					514.2	304.2	
Back of Queue (*Q*), veh/ln (95 th percentile)		18.7	3.6	6.6	4.2					18.0	10.6	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.84	0.15	0.56	0.13					0.68	0.26	
Uniform Delay (*d 1*), s/veh		20.7	11.9	19.7	7.4					42.4	39.0	
Incremental Delay (*d 2*), s/veh		8.8	1.1	5.2	0.7					17.2	1.3	
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	
Control Delay (*d*), s/veh		29.5	13.0	24.9	8.0					59.6	40.2	
Level of Service (LOS)		C	B	C	A					E	D	
Approach Delay, s/veh / LOS	25.7	C		16.5	B		0.0			51.9	D	
Intersection Delay, s/veh / LOS	31.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.40	A	1.66	B	1.96	B	1.96	B
Bicycle LOS Score / LOS	1.69	B	1.45	A			1.49	A

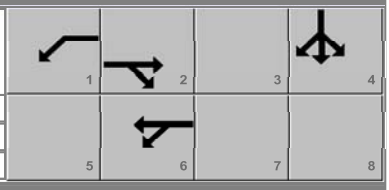
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.82
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		460	140	240	240					300	10	190

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	109	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	14.1	55.0	33.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



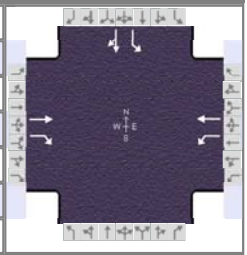
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.922	0.922	0.860	0.860	1.000				0.860	0.860	0.860
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000					0.854	0.854
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	1614	1367	1433	1504	0				1433	64	1220
Proportion of Vehicles Arriving on Green (P)	0.00	0.59	0.67	0.18	0.72	0.00	0.00	0.00	0.00	0.27	0.27	0.27
Incremental Delay Factor (k)		0.50	0.50	0.18	0.50					0.22	0.06	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.46	0.59	0.63				0.27
Permitted Saturation Flow Rate (s_p), veh/h/ln		1130	717	0				1433
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	57.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	20.0	0.0				0.0
Permitted Queue Service Time (g_{ps}), s			19.6					
Time to First Blockage (g_f), s		55.0	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.681	0.000	0.972	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.115	0.000	0.085	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	916.03	17.62	1250.47	8.43	-83.33	65.10		67.20
Bicycle F_w / F_v	-3.64	1.21	-3.64	0.97	-3.64		-3.64	1.01

HCS Signalized Intersection Results Graphical Summary

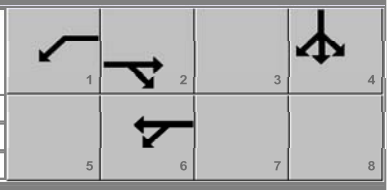
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.82
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 SB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



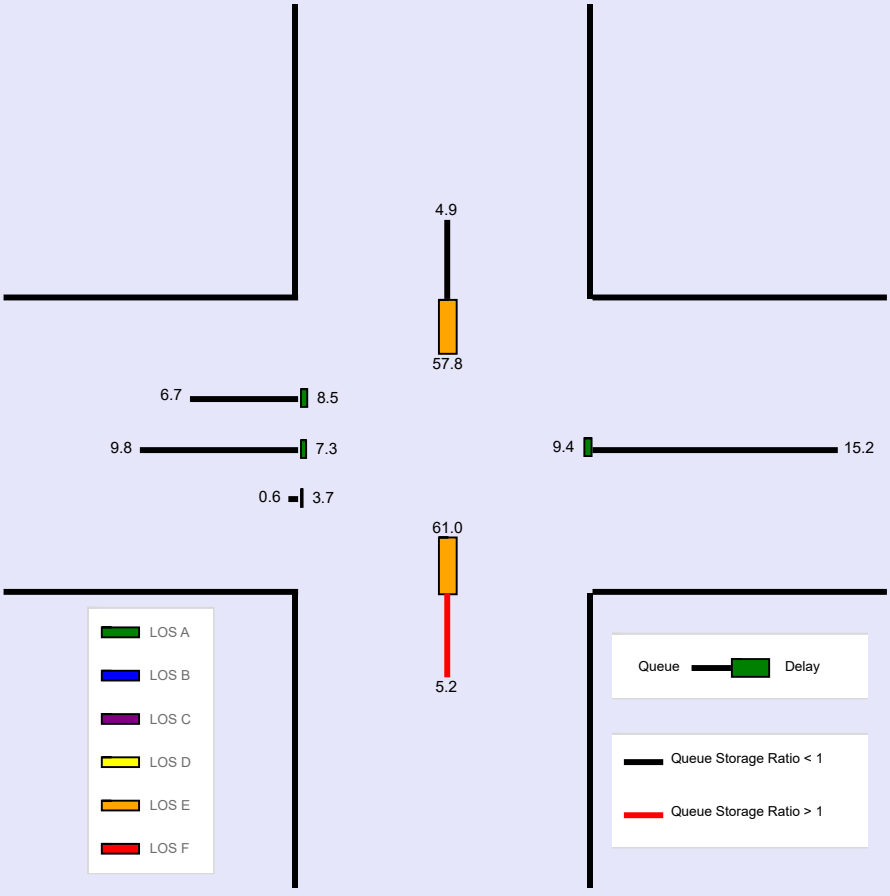
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		460	140	240	240					300	10	190

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	109	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							

Green	14.1	55.0	33.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		504.9	97.5	187.5	119.9					514.2	304.2	
Back of Queue (*Q*), veh/ln (95 th percentile)		18.7	3.6	6.6	4.2					18.0	10.6	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.84	0.15	0.56	0.13					0.68	0.26	
Control Delay (*d*), s/veh		29.5	13.0	24.9	8.0					59.6	40.2	
Level of Service (LOS)		C	B	C	A					E	D	
Approach Delay, s/veh / LOS	25.7	C		16.5	B		0.0			51.9	D	
Intersection Delay, s/veh / LOS	31.4						C					



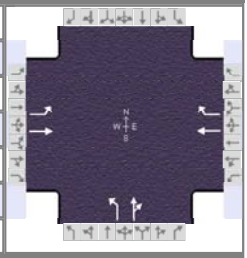
--- Messages ---

No errors or warnings exist.

--- Comments ---

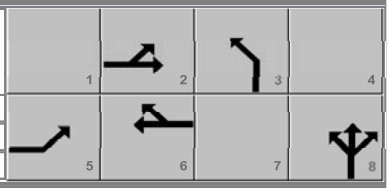
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	690			420	630	60	10	150			

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	55	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.6	71.7	23.7	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



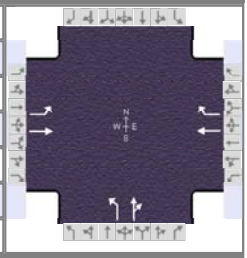
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	690			420	630	60	10	150			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1750	1750			1750	1750	1750	1750	1750			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	17	17			13	13	38	38				
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.40	0.40			0.57	0.57	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0	12.0	12.0				
Turn Bay Length, ft	340	930			575	450	310	1000				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	35	35	35			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	80.0		66.0	16.0	40.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0	4.0	4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0	2.0	2.0		
Minimum Green (G_{min}), s	7	20		20	7	10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0	2.0	2.0		
Recall Mode	Off	Min		Min	Off	Off		
Dual Entry	No	Yes		Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

HCS Signalized Intersection Results Summary

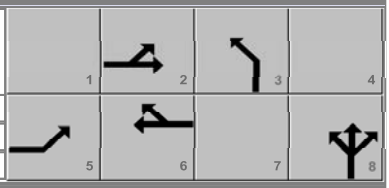
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	690			420	630	60	10	150			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.6	71.7	23.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



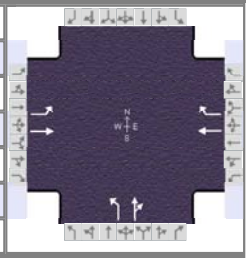
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		7.3		10.0		
Phase Duration, s	12.6	90.3		77.7		29.7		
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.3		
Queue Clearance Time (*g s*), s	4.6					23.3		
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.4		
Phase Call Probability	0.95					1.00		
Max Out Probability	0.00					0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	89	875			462	692	71	190				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1446	1518			1573	1333	1173	1054				
Queue Service Time (*g s*), s	2.6	32.1			23.0	55.4	6.2	21.3				
Cycle Queue Clearance Time (*g c*), s	2.6	32.1			23.0	55.4	6.2	21.3				
Green Ratio (*g/C*)	0.67	0.70			0.60	0.60	0.20	0.20				
Capacity (*c*), veh/h	473	1067			940	796	231	208				
Volume-to-Capacity Ratio (*X*)	0.188	0.820			0.491	0.869	0.309	0.917				
Back of Queue (*Q*), ft/ln (95 th percentile)	36.7	191.9			340.3	757.5	106.7	356.4				
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	6.8			12.3	27.4	3.3	10.9				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.11	0.21			0.59	1.68	0.34	0.36				
Uniform Delay (*d 1*), s/veh	9.5	4.6			17.4	26.4	41.2	47.2				
Incremental Delay (*d 2*), s/veh	0.0	3.0			1.0	7.6	0.3	20.6				
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0	0.0	0.0				
Control Delay (*d*), s/veh	9.6	7.6			18.5	34.0	41.5	67.8				
Level of Service (LOS)	A	A			B	C	D	E				
Approach Delay, s/veh / LOS	7.7	A		27.8	C		60.6	E		0.0		
Intersection Delay, s/veh / LOS	23.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.64	B	1.37	A	1.96	B	1.96	B
Bicycle LOS Score / LOS	1.98	B	2.55	C	0.92	A		

HCS Signalized Intersection Intermediate Values

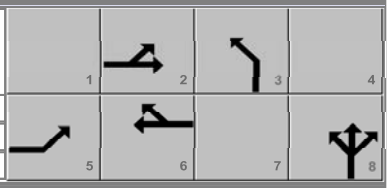
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	690			420	630	60	10	150			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.6	71.7	23.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



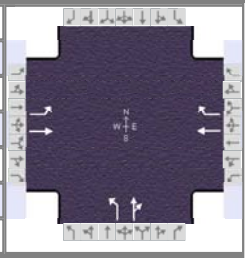
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.867	0.867	1.000	1.000	0.899	0.899	0.704	0.704	0.704			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.856	0.856			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	1446	1518	0	0	1573	1333	1173	66	988			
Proportion of Vehicles Arriving on Green (P)	0.09	0.86	0.00	0.00	0.51	0.49	0.20	0.20	0.20	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50	0.04	0.17				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.0		
Green Ratio (g/C)	0.67	0.70		0.60		0.20		
Permitted Saturation Flow Rate (s_p), veh/h/ln	820	0		644		1173		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	73.7	0.0		0.0		0.0		
Permitted Service Time (g_u), s	48.7	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s	2.9							
Time to First Blockage (g_f), s	0.0	0.0		71.7		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.681	0.000	1.198	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.067	0.000	0.091	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1405.55	5.30	1194.95	9.72		67.20	-83.33	65.10
Bicycle F_w / F_v	-3.64	1.49	-3.64	2.06	-3.64	0.43	-3.64	

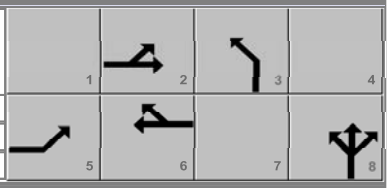
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.84
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	I-71 NB Ramps	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

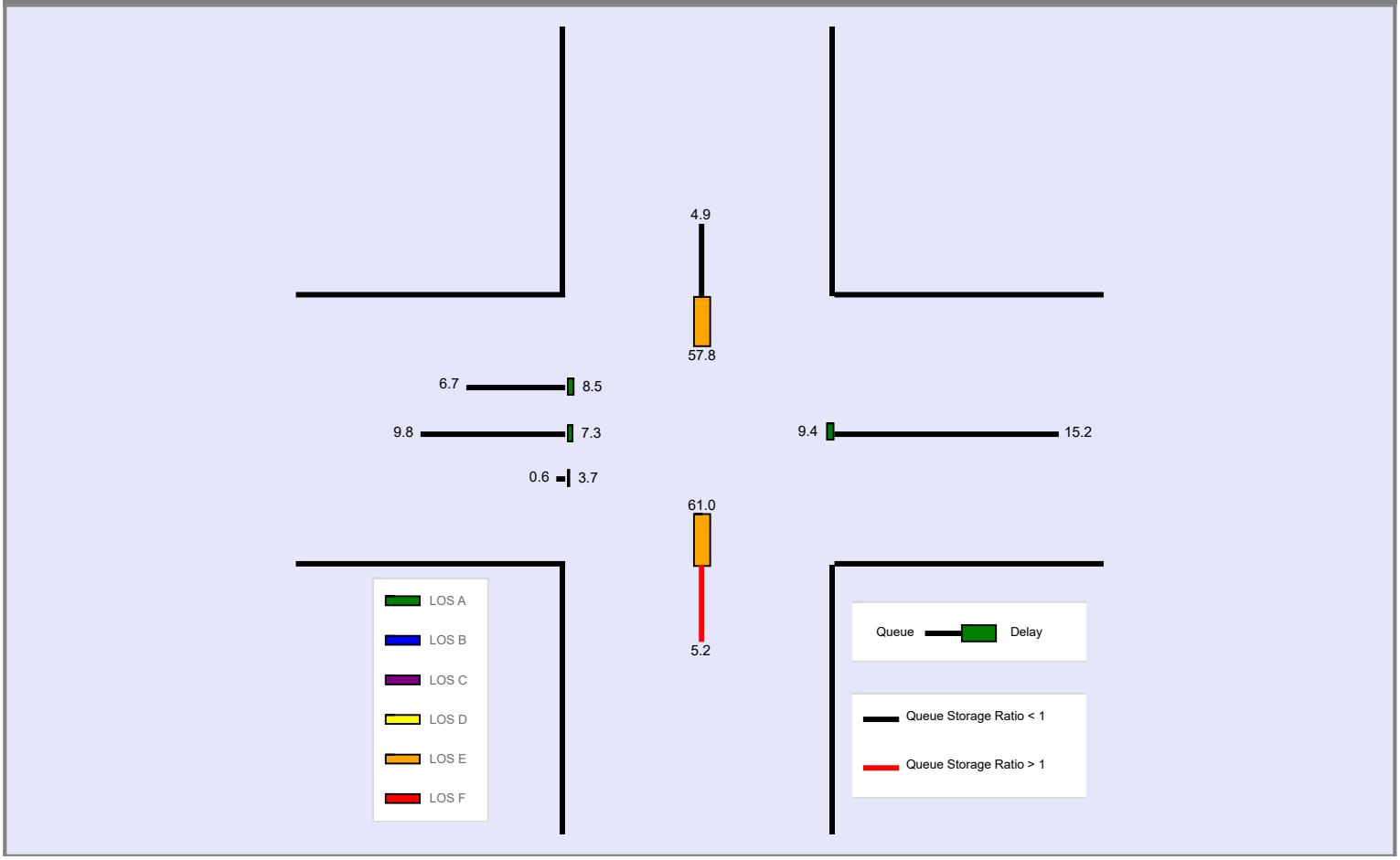


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	690			420	630	60	10	150			

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	55	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	6.6	71.7	23.7	0.0	0.0	0.0		
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.0	0.0	0.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	36.7	191.9			340.3	757.5	106.7	356.4				
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	6.8			12.3	27.4	3.3	10.9				
Queue Storage Ratio (*RQ*) (95 th percentile)	0.11	0.21			0.59	1.68	0.34	0.36				
Control Delay (*d*), s/veh	9.6	7.6			18.5	34.0	41.5	67.8				
Level of Service (LOS)	A	A			B	C	D	E				
Approach Delay, s/veh / LOS	7.7	A		27.8	C		60.6	E		0.0		
Intersection Delay, s/veh / LOS	23.3	C										



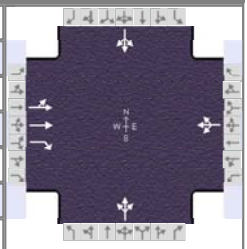
--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

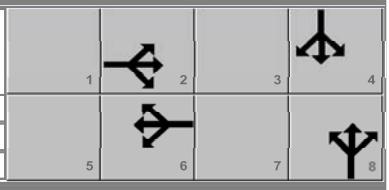
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	690	50	10	930	20	60	10	10	10	10	60

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	98.0	10.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



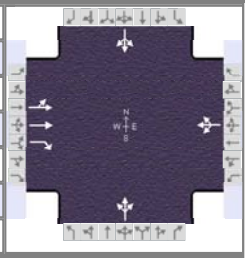
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	690	50	10	930	20	60	10	10	10	10	60
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		21	21		5			12			18	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.44	0.44	0.44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0		12.0			12.0			12.0	
Turn Bay Length, ft		550	185		1400			110			1500	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		104.0		104.0		16.0		16.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0		2.0		2.0		2.0
Minimum Green (G_{min}), s		20		20		10		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS Signalized Intersection Results Summary

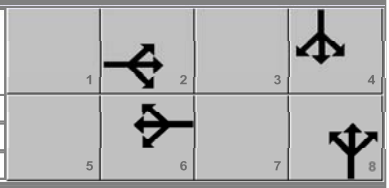
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	690	50	10	930	20	60	10	10	10	10	60

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	98.0	10.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



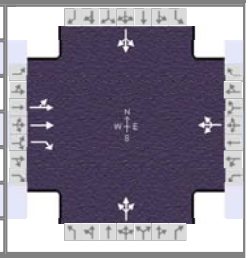
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		7.0		8.0		8.0		8.0
Phase Duration, s		104.0		104.0		16.0		16.0
Change Period, (*Y+R c*), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (*g s*), s						11.8		9.5
Green Extension Time (*g e*), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						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
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	342	648	63		1055			88			88	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	721	1332	1240		1664			1074			1399	
Queue Service Time (*g s*), s	2.0	26.8	1.9		0.0			2.4			0.0	
Cycle Queue Clearance Time (*g c*), s	39.4	26.8	1.9		37.4			9.8			7.5	
Green Ratio (*g/C*)	0.82	0.82	0.82		0.82			0.08			0.08	
Capacity (*c*), veh/h	630	1088	1013		1389			142			150	
Volume-to-Capacity Ratio (*X*)	0.543	0.596	0.062		0.759			0.619			0.585	
Back of Queue (*Q*), ft/ln (95 th percentile)	195.4	285.3	18.5		396.4			141.2			141	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.7	9.8	0.6		15.2			5.2			4.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.36	0.52	0.10		0.28			1.28			0.09	
Uniform Delay (*d 1*), s/veh	7.0	6.2	3.6		5.4			55.1			53.9	
Incremental Delay (*d 2*), s/veh	1.5	1.1	0.1		3.9			6.0			3.9	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0		0.0			0.0			0.0	
Control Delay (*d*), s/veh	8.5	7.3	3.7		9.4			61.0			57.8	
Level of Service (LOS)	A	A	A		A			E			E	
Approach Delay, s/veh / LOS	7.5	A		9.4	A		61.0	E		57.8	E	
Intersection Delay, s/veh / LOS	12.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.60	B	1.60	B	1.95	B	2.15	B
Bicycle LOS Score / LOS	1.25	A	2.23	B	0.63	A	0.63	A

HCS Signalized Intersection Intermediate Values

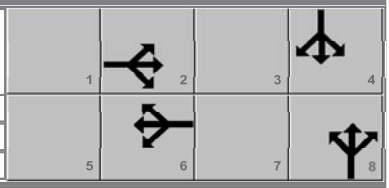
General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	690	50	10	930	20	60	10	10	10	10	60

Signal Information											
Cycle, s	120.0	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								

Green	98.0	10.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0



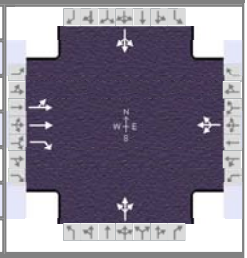
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.836	0.836	0.836	0.961	0.961	0.961	0.906	0.906	0.906	0.860	0.860	0.860
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.493	0.493		0.993	0.990		0.682	0.677		0.984	0.930	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.990		0.000	0.677		0.000	0.930
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)												
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00			1.00			1.00			1.00		
Movement Saturation Flow Rate (s), veh/h	264	1789	1240	17	1612	35	805	134	134	175	175	1049
Proportion of Vehicles Arriving on Green (P)	0.71	0.74	0.70	0.82	0.82	0.82	0.08	0.08	0.08	0.08	0.08	0.08
Incremental Delay Factor (k)	0.50	0.50	0.50		0.50			0.15			0.12	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0		6.0		6.0		6.0
Green Ratio (g/C)		0.82		0.82		0.08		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln		549		650		1343		1412
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		482		0		974		1461
Permitted Effective Green Time (g_p), s		98.0		98.0		10.0		10.0
Permitted Service Time (g_u), s		60.6		71.2		2.5		0.2
Permitted Queue Service Time (g_{ps}), s		2.0		0.0		2.4		0.0
Time to First Blockage (g_f), s		3.5		60.0		0.4		4.3
Queue Service Time Before Blockage (g_{fs}), s		3.5		34.7		0.4		0.7
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	0.972	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.028	0.000	0.028	0.000	0.157	0.000	0.157
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1633.33	2.02	1633.33	2.02	166.67	50.42	166.67	50.42
Bicycle F_w / F_v	-3.64	0.76	-3.64	1.74	-3.64	0.15	-3.64	0.15

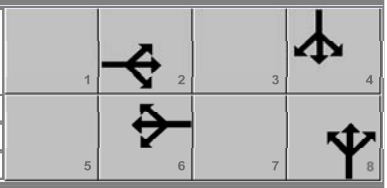
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	LJB Inc			Duration, h	0.250
Analyst	LJB	Analysis Date	Feb 3, 2023	Area Type	Other
Jurisdiction	ODOT D6	Time Period	PM Peak	PHF	0.91
Urban Street	SR 41	Analysis Year	2044 Build	Analysis Period	1> 15:30
Intersection	SR 41 & SR 734	File Name	8-10 SR 41 Build PM.xus		
Project Description	FAY-VAR IOS(PID 117955)				

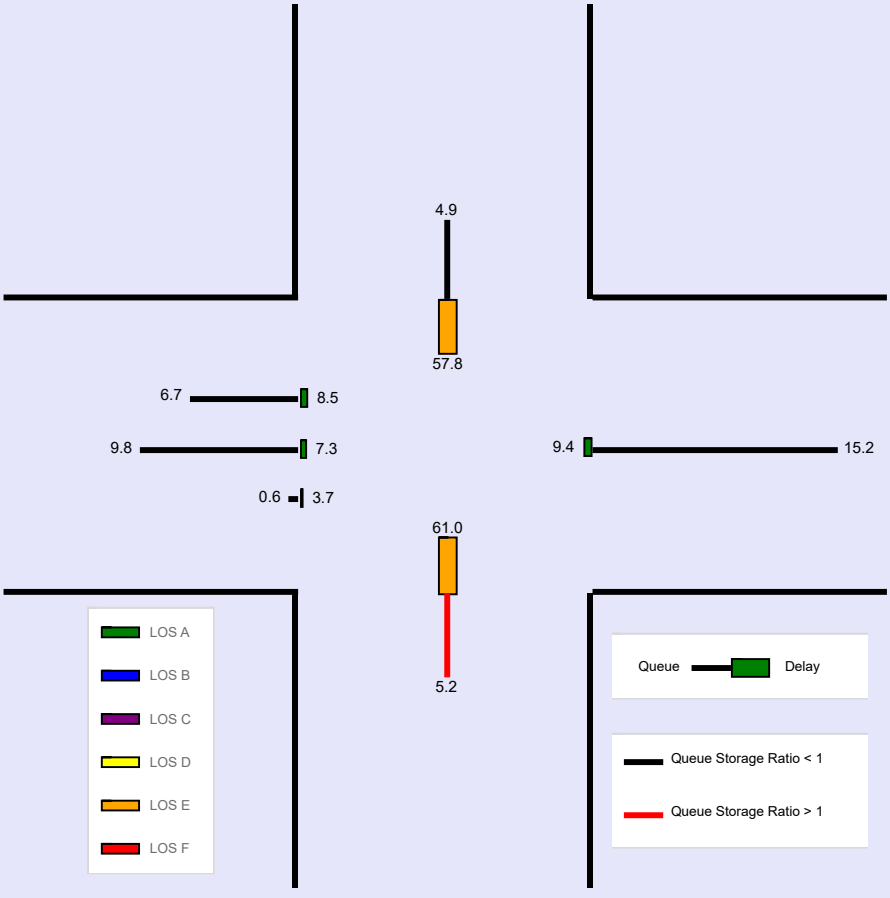


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	690	50	10	930	20	60	10	10	10	10	60

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	98.0	10.0	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	195.4	285.3	18.5		396.4			141.2			141	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.7	9.8	0.6		15.2			5.2			4.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.36	0.52	0.10		0.28			1.28			0.09	
Control Delay (*d*), s/veh	8.5	7.3	3.7		9.4			61.0			57.8	
Level of Service (LOS)	A	A	A		A			E			E	
Approach Delay, s/veh / LOS	7.5	A		9.4	A		61.0	E		57.8	E	
Intersection Delay, s/veh / LOS	12.4						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: According to input data, upstream feeding volume is equal to 114% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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APPENDIX F – SR 435/BLUEGRASS ROUNDABOUT ANALYSIS REPORTS

LJ Engineering
Building Partnerships

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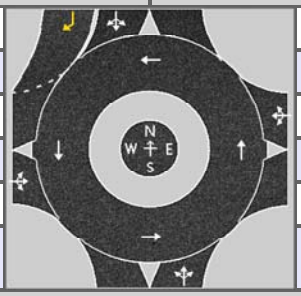
SR 435/BLUEGRASS ROUNDABOUT ANALYSIS – OPENING YEAR REPORTS

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2024
Time Analyzed	AM Peak Build (Single Ln)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	890	30	20	0	10	30	20	0	50	20	10	0	10	10	220
Percent Heavy Vehicles, %	3	5	5	5	5	6	6	6	4	4	4	4	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	1038	35	23	0	12	35	24	0	58	23	12	0	12	12	257
Right-Turn Bypass	None				None				None				Yielding			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	4.9763
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	2.6087

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		1096			71			93			24	257
Entry Volume, veh/h		1044			67			89			23	245
Circulating Flow (v_c), pc/h	36			1119			1085			105		
Exiting Flow (v_{ex}), pc/h	59			93			1085			47		
Capacity (c_{pce}), pc/h		1330			441			456			1240	1255
Capacity (c), veh/h		1267			416			439			1181	1195
v/c Ratio (x)		0.82			0.16			0.20			0.02	0.20

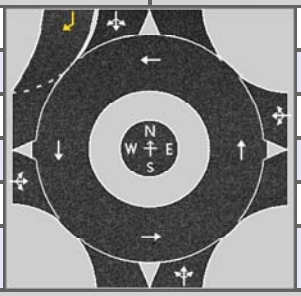
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		18.6			11.1			11.3			3.2	4.8
Lane LOS		C			B			B			A	A
95% Queue, veh		10.3			0.6			0.8			0.1	0.8
Approach Delay, s/veh | LOS	18.6	C		11.1	B		11.3	B		4.7	A	
Intersection Delay, s/veh | LOS	15.2						C					

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2024
Time Analyzed	PM Peak Build (Single Ln)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	250	80	20	0	10	70	40	0	30	20	10	0	80	20	830
Percent Heavy Vehicles, %	3	5	5	5	5	7	7	7	9	9	9	9	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	292	93	23	0	12	83	48	0	36	24	12	0	93	23	968
Right-Turn Bypass	None				None				None				Yielding			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	4.9763
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	2.6087

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		408			143			72			116	968
Entry Volume, veh/h		389			134			66			110	922
Circulating Flow (v_c), pc/h	128			352			478			131		
Exiting Flow (v_{ex}), pc/h	198			119			364			58		
Capacity (c_{pce}), pc/h		1211			964			847			1207	1222
Capacity (c), veh/h		1153			901			778			1150	1164
v/c Ratio (x)		0.34			0.15			0.08			0.10	0.79

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		6.4			5.4			5.5			3.9	17.6
Lane LOS		A			A			A			A	C
95% Queue, veh		1.5			0.5			0.3			0.3	8.8
Approach Delay, s/veh | LOS	6.4	A		5.4	A		5.5	A		16.2	C	
Intersection Delay, s/veh | LOS	12.5						B					

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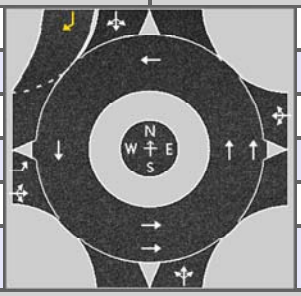
SR 435/BLUEGRASS ROUNDABOUT ANALYSIS – DESIGN YEAR BUILD REPORTS

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2044
Time Analyzed	AM Peak Build (SBR-Yield)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	L		LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1400	30	20	0	10	50	240	0	80	160	10	0	10	10	450
Percent Heavy Vehicles, %	3	5	5	5	6	6	6	6	4	4	4	4	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	1633	35	23	0	12	59	283	0	92	185	12	0	12	12	525
Right-Turn Bypass	None				None				None				Yielding			
Conflicting Lanes	1				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s	4.5436	4.5436			4.3276			4.3276			4.9763	4.9763
Follow-Up Headway, s	2.5352	2.5352			2.5352			2.5352			2.6087	2.6087

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	896	795			354			289			24	525
Entry Volume, veh/h	854	757			334			278			23	500
Circulating Flow (v_c), pc/h	36			1910			1680			163		
Exiting Flow (v_{ex}), pc/h	59			151			2101			47		
Capacity (c_{pce}), pc/h	1374	1374			280			341			1169	1183
Capacity (c), veh/h	1309	1309			264			327			1113	1127
v/c Ratio (x)	0.65	0.58			1.26			0.85			0.02	0.44

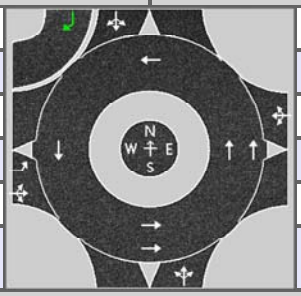
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	11.0	9.3			184.3			54.4			3.4	7.9
Lane LOS	B	A			F			F			A	A
95% Queue, veh	5.2	3.9			16.4			7.6			0.1	2.3
Approach Delay, s/veh | LOS	10.2	B		184.3	F		54.4	F		7.7	A	
Intersection Delay, s/veh | LOS	35.4						E					

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2044
Time Analyzed	AM Pk Build (SBR Bypass)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	L		LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1400	30	20	0	10	50	240	0	80	160	10	0	10	10	450
Percent Heavy Vehicles, %	3	5	5	5	6	6	6	6	4	4	4	4	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	1633	35	23	0	12	59	283	0	92	185	12	0	12	12	525
Right-Turn Bypass	None				None				None				Non-Yielding			
Conflicting Lanes	1				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s	4.5436	4.5436			4.3276			4.3276			4.9763	
Follow-Up Headway, s	2.5352	2.5352			2.5352			2.5352			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	896	795			354			289			24	525
Entry Volume, veh/h	854	757			334			278			23	500
Circulating Flow (v_c), pc/h	36			1910			1680			163		
Exiting Flow (v_{ex}), pc/h	59			151			2101			47		
Capacity (c_{pce}), pc/h	1374	1374			280			341			1169	
Capacity (c), veh/h	1309	1309			264			327			1113	
v/c Ratio (x)	0.65	0.58			1.26			0.85			0.02	

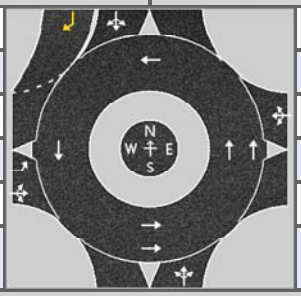
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	11.0	9.3			184.3			54.4			3.4	
Lane LOS	B	A			F			F			A	A
95% Queue, veh	5.2	3.9			16.4			7.6			0.1	
Approach Delay, s/veh | LOS	10.2	B		184.3	F		54.4	F		0.1	A	
Intersection Delay, s/veh | LOS	34.0						D					

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2044
Time Analyzed	PM Peak Build (SBR-yield)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	L		LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	560	130	40	0	20	150	30	0	40	50	10	0	270	110	1360
Percent Heavy Vehicles, %	3	5	5	5	7	7	7	7	9	9	9	9	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	653	152	47	0	24	178	36	0	48	61	12	0	315	128	1587
Right-Turn Bypass	None				None				None				Yielding			
Conflicting Lanes	1				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s	4.5436	4.5436			4.3276			4.3276			4.9763	4.9763
Follow-Up Headway, s	2.5352	2.5352			2.5352			2.5352			2.6087	2.6087

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	452	400			238			121			443	1587
Entry Volume, veh/h	430	381			222			111			422	1511
Circulating Flow (v_c), pc/h	467			762			1120			250		
Exiting Flow (v_{ex}), pc/h	479			226			750			199		
Capacity (c_{pce}), pc/h	928	928			743			548			1069	1096
Capacity (c), veh/h	884	884			694			503			1018	1044
v/c Ratio (x)	0.49	0.43			0.32			0.22			0.41	1.45

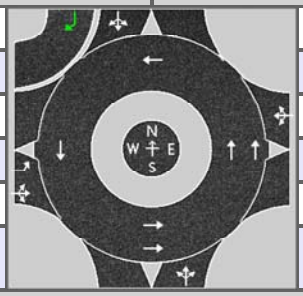
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	10.3	9.3			9.2			10.3			8.1	220.7
Lane LOS	B	A			A			B			A	F
95% Queue, veh	2.7	2.2			1.4			0.8			2.1	66.9
Approach Delay, s/veh | LOS	9.8	A		9.2	A		10.3	B		174.3	F	
Intersection Delay, s/veh | LOS	113.1						F					

HCS Roundabouts Report

General Information

Analyst	VM
Agency or Co.	LJB Inc
Date Performed	5/4/2023
Analysis Year	2044
Time Analyzed	PM Peak Build (Bypass)
Project Description	FAY-VAR IOS(PID 117955)



Site Information

Intersection	SR 435 & Bluegrass
E/W Street Name	SR 435
N/S Street Name	Bluegrass
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.90
Jurisdiction	ODOT D6

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	L		LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	560	130	40	0	20	150	30	0	40	50	10	0	270	110	1360
Percent Heavy Vehicles, %	3	5	5	5	7	7	7	7	9	9	9	9	5	5	5	5
Flow Rate (v_{PCE}), pc/h	0	653	152	47	0	24	178	36	0	48	61	12	0	315	128	1587
Right-Turn Bypass	None				None				None				Non-Yielding			
Conflicting Lanes	1				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s	4.5436	4.5436			4.3276			4.3276			4.9763	
Follow-Up Headway, s	2.5352	2.5352			2.5352			2.5352			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	452	400			238			121			443	1587
Entry Volume, veh/h	430	381			222			111			422	1511
Circulating Flow (v_c), pc/h	467			762			1120			250		
Exiting Flow (v_{ex}), pc/h	479			226			750			199		
Capacity (c_{pce}), pc/h	928	928			743			548			1069	
Capacity (c), veh/h	884	884			694			503			1018	
v/c Ratio (x)	0.49	0.43			0.32			0.22			0.41	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	10.3	9.3			9.2			10.3			8.1	
Lane LOS	B	A			A			B			A	A
95% Queue, veh	2.7	2.2			1.4			0.8			2.1	
Approach Delay, s/veh | LOS	9.8	A		9.2	A		10.3	B		1.8	A	
Intersection Delay, s/veh | LOS	4.7						A					

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APPENDIX G – TURN LANE SIZING CALCULATIONS

FAY-VAR IOS(PID 117955)

Turn Lane Length Calculations

SR-435 & GARRINGER EDGEFIELD RD

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	500	440	vph
Number of Through Lanes	2	2	
Turning Volume	10	10	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	2%	2%	
Vehicles Per Cycle	0.2	0.2	
Storage Length	50	50	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	161	161	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

MOVEMENT: EB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	500	440	vph
Number of Through Lanes	2	2	
Turning Volume	10	30	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	2%	6%	
Vehicles Per Cycle	0.2	0.5	
Storage Length	50	50	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	161	161	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	420	790	vph
Number of Through Lanes	2	2	
Turning Volume	160	230	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	28%	23%	
Vehicles Per Cycle	2.7	3.8	
Storage Length	135	170	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	246	281	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

MOVEMENT: WB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	420	790	vph
Number of Through Lanes	2	2	
Turning Volume	80	60	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	16%	7%	
Vehicles Per Cycle	1.3	1.0	
Storage Length	65	50	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	176	161	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	100	140	vph
Number of Through Lanes	1	1	
Turning Volume	30	20	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	23%	13%	
Vehicles Per Cycle	0.5	0.3	
Storage Length	50	50	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	100	100	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	20	20	vph
Number of Through Lanes	1	1	
Turning Volume	40	40	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	67%	67%	
Vehicles Per Cycle	0.7	0.7	
Storage Length	50	50	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	100	100	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-435 & I-71 SB RAMP

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	500	840	vph
Number of Through Lanes	2	2	
Turning Volume	380	690	vph
Number of Turning Lanes	2	2	
Design Condition	C	C	A, B, or C
Turning Percentage	43%	45%	
Vehicles Per Cycle	5.8	12.5	
Storage Length	240	463	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	351	574	feet
No Block Distance	305	528	feet
No Block Turn Lane Length	351	574	feet

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	50	50	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	170	250	vph
Number of Through Lanes	1	1	
Turning Volume	500	240	vph
Number of Turning Lanes	2	2	
Design Condition	C	C	A, B, or C
Turning Percentage	75%	49%	
Vehicles Per Cycle	7.6	4.3	
Storage Length	305	183	feet
Deceleration/Taper	143	143	feet
Calculated Turn Lane Length	448	326	feet
No Block Distance	205	350	feet
No Block Turn Lane Length	448	400	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-435 & I-71 NB RAMP

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	910	690	vph
Number of Through Lanes	2	2	
Turning Volume	160	150	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	15%	18%	
Vehicles Per Cycle	4.9	5.4	
Storage Length	198	220	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	309	331	feet
No Block Distance	498	460	feet
No Block Turn Lane Length	548	510	feet

MOVEMENT: WB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	860	1470	vph
Number of Through Lanes	2	2	
Turning Volume	340	750	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	28%	34%	
Vehicles Per Cycle	10.4	27.1	
Storage Length	385	888	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	496	999	feet
No Block Distance	478	870	feet
No Block Turn Lane Length	496	999	feet

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	50	50	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	10	vph
Number of Through Lanes	1	1	
Turning Volume	20	60	vph
Number of Turning Lanes	1	1	
Design Condition	B	C	A, B, or C
Turning Percentage	67%	86%	
Vehicles Per Cycle	0.6	2.2	
Storage Length	50	110	feet
Deceleration/Taper	225	143	feet
Calculated Turn Lane Length	225	253	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	225	253	feet

MOVEMENT: NB RIGHT TURN			
Movement	AM	PM	
Design Speed	50	50	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	10	vph
Number of Through Lanes	1	1	
Turning Volume	560	360	vph
Number of Turning Lanes	2	2	
Design Condition	C	C	A, B, or C
Turning Percentage	98%	97%	
Vehicles Per Cycle	8.6	6.5	
Storage Length	340	263	feet
Deceleration/Taper	143	143	feet
Calculated Turn Lane Length	483	406	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	483	406	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)

Turn Lane Length Calculations

SR-435 & ALLEN RD

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	1190	850	vph
Number of Through Lanes	2	2	
Turning Volume	180	200	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	13%	19%	
Vehicles Per Cycle	5.5	7.2	
Storage Length	225	285	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	336	396	feet
No Block Distance	628	533	feet
No Block Turn Lane Length	678	583	feet

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	1010	1980	vph
Number of Through Lanes	3	3	
Turning Volume	40	40	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	4%	2%	
Vehicles Per Cycle	1.2	1.4	
Storage Length	60	70	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	171	181	feet
No Block Distance	380	795	feet
No Block Turn Lane Length	430	845	feet

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	200	250	vph
Number of Through Lanes	1	1	
Turning Volume	90	130	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	31%	34%	
Vehicles Per Cycle	2.8	4.7	
Storage Length	140	193	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	190	243	feet
No Block Distance	253	350	feet
No Block Turn Lane Length	303	400	feet

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	20	vph
Number of Through Lanes	1	1	
Turning Volume	90	100	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	90%	83%	
Vehicles Per Cycle	2.8	3.6	
Storage Length	140	165	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	190	215	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	190	215	feet

MOVEMENT: NB RIGHT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	20	vph
Number of Through Lanes	1	1	
Turning Volume	60	50	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	86%	71%	
Vehicles Per Cycle	1.8	1.8	
Storage Length	90	90	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	140	140	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	140	140	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)

Turn Lane Length Calculations

SR-435 & TA CENTER

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	1290	820	vph
Number of Through Lanes	2	2	
Turning Volume	50	110	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	4%	12%	
Vehicles Per Cycle	1.5	4.0	
Storage Length	75	175	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	186	286	feet
No Block Distance	668	520	feet
No Block Turn Lane Length	718	570	feet

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	920	1810	vph
Number of Through Lanes	2	2	
Turning Volume	50	30	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	5%	2%	
Vehicles Per Cycle	1.5	1.1	
Storage Length	75	55	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	186	166	feet
No Block Distance	500	1053	feet
No Block Turn Lane Length	550	1103	feet

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	20	vph
Number of Through Lanes	1	1	
Turning Volume	30	80	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	75%	80%	
Vehicles Per Cycle	0.9	2.9	
Storage Length	50	145	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	100	195	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	100	195	feet

MOVEMENT: SB RIGHT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	10	20	vph
Number of Through Lanes	1	1	
Turning Volume	60	110	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	86%	85%	
Vehicles Per Cycle	1.8	4.0	
Storage Length	90	175	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	140	225	feet
No Block Distance	0	0	feet
No Block Turn Lane Length	140	225	feet

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	130	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	70	90	vph
Number of Through Lanes	1	1	
Turning Volume	90	170	vph
Number of Turning Lanes	1	1	
Design Condition	A	A	A, B, or C
Turning Percentage	56%	65%	
Vehicles Per Cycle	2.8	6.1	
Storage Length	140	253	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	190	303	feet
No Block Distance	105	155	feet
No Block Turn Lane Length	190	303	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-435 & U.S.-35 EB ON RAMP

MOVEMENT: EB RIGHT TURN			
Movement	AM	PM	
Design Speed	60	60	mph
Cycle Length	60	60	seconds
Control (Stop or Signal)	Stop	Stop	
Through Volume	1030	660	vph
Number of Through Lanes	1	1	
Turning Volume	330	290	vph
Number of Turning Lanes	1	1	
Design Condition	B	B	A, B, or C
Turning Percentage	24%	31%	
Vehicles Per Cycle	5.5	4.8	
Storage Length	225	195	feet
Deceleration/Taper	345	345	feet
Calculated Turn Lane Length	345	345	feet
No Block Distance	N.A.	N.A.	feet
No Block Turn Lane Length	N.A.	N.A.	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)

Turn Lane Length Calculations

SR-435 & U.S.-35 WB OFF RAMP

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	60	60	mph
Cycle Length	80	100	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	420	70	vph
Number of Through Lanes	1	1	
Turning Volume	420	460	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	50%	87%	
Vehicles Per Cycle	9.3	12.8	
Storage Length	358	470	feet
Deceleration/Taper	181	181	feet
Calculated Turn Lane Length	539	651	feet
No Block Distance	358	95	feet
No Block Turn Lane Length	539	651	feet

MOVEMENT: NB RIGHT TURN			
Movement	AM	PM	
Design Speed	60	60	mph
Cycle Length	80	100	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	420	460	vph
Number of Through Lanes	1	1	
Turning Volume	420	70	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	50%	13%	
Vehicles Per Cycle	9.3	1.9	
Storage Length	358	95	feet
Deceleration/Taper	181	181	feet
Calculated Turn Lane Length	539	276	feet
No Block Distance	358	468	feet
No Block Turn Lane Length	539	518	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-41 & CARR RD

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	360	490	vph
Number of Through Lanes	2	2	
Turning Volume	10	10	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	3%	2%	
Vehicles Per Cycle	0.3	0.3	
Storage Length	50	50	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	161	161	feet
No Block Distance	225	328	feet
No Block Turn Lane Length	275	378	feet

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	300	320	vph
Number of Through Lanes	1	1	
Turning Volume	20	10	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	6%	3%	
Vehicles Per Cycle	0.6	0.3	
Storage Length	50	50	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	161	161	feet
No Block Distance	353	390	feet
No Block Turn Lane Length	403	440	feet

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	25	25	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	20	30	vph
Number of Through Lanes	1	1	
Turning Volume	40	100	vph
Number of Turning Lanes	2	2	
Design Condition	A	A	A, B, or C
Turning Percentage	67%	77%	
Vehicles Per Cycle	0.6	1.7	
Storage Length	50	85	feet
Deceleration/Taper	50	50	feet
Calculated Turn Lane Length	100	135	feet
No Block Distance	0	50	feet
No Block Turn Lane Length	100	135	feet

MOVEMENT: WB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	300	320	vph
Number of Through Lanes	1	1	
Turning Volume	50	100	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	14%	24%	
Vehicles Per Cycle	1.5	3.3	
Storage Length	75	158	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	186	269	feet
No Block Distance	353	390	feet
No Block Turn Lane Length	403	440	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-41 & I-71 SB RAMP

MOVEMENT: EB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	320	460	vph
Number of Through Lanes	1	1	
Turning Volume	80	140	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	20%	23%	
Vehicles Per Cycle	2.4	4.7	
Storage Length	120	193	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	231	304	feet
No Block Distance	368	533	feet
No Block Turn Lane Length	418	583	feet

MOVEMENT: WB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	300	240	vph
Number of Through Lanes	1	1	
Turning Volume	130	240	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	30%	50%	
Vehicles Per Cycle	4.0	8.0	
Storage Length	175	325	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	286	436	feet
No Block Distance	353	325	feet
No Block Turn Lane Length	403	436	feet

MOVEMENT: SB LEFT TURN			
Movement	AM	PM	
Design Speed	50	50	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	80	200	vph
Number of Through Lanes	1	1	
Turning Volume	630	300	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	89%	60%	
Vehicles Per Cycle	19.3	10.0	
Storage Length	658	375	feet
Deceleration/Taper	143	143	feet
Calculated Turn Lane Length	801	518	feet
No Block Distance	120	265	feet
No Block Turn Lane Length	801	518	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-41 & I-71 NB RAMP

MOVEMENT: EB LEFT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	880	690	vph
Number of Through Lanes	1	1	
Turning Volume	70	70	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	7%	9%	
Vehicles Per Cycle	2.1	2.3	
Storage Length	105	115	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	216	226	feet
No Block Distance	879	775	feet
No Block Turn Lane Length	929	825	feet

MOVEMENT: WB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	370	420	vph
Number of Through Lanes	1	1	
Turning Volume	240	630	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	39%	60%	
Vehicles Per Cycle	7.3	21.0	
Storage Length	290	725	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	401	836	feet
No Block Distance	415	500	feet
No Block Turn Lane Length	465	836	feet

MOVEMENT: NB LEFT TURN			
Movement	AM	PM	
Design Speed	50	50	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	240	160	vph
Number of Through Lanes	1	1	
Turning Volume	60	60	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	20%	27%	
Vehicles Per Cycle	1.8	2.0	
Storage Length	90	100	feet
Deceleration/Taper	143	143	feet
Calculated Turn Lane Length	233	243	feet
No Block Distance	290	215	feet
No Block Turn Lane Length	340	243	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

FAY-VAR IOS(PID 117955)
Turn Lane Length Calculations
SR-41 & SR-734

MOVEMENT: EB RIGHT TURN			
Movement	AM	PM	
Design Speed	40	40	mph
Cycle Length	110	120	seconds
Control (Stop or Signal)	Signal	Signal	
Through Volume	1060	790	vph
Number of Through Lanes	2	2	
Turning Volume	50	50	vph
Number of Turning Lanes	1	1	
Design Condition	C	C	A, B, or C
Turning Percentage	5%	6%	
Vehicles Per Cycle	1.5	1.7	
Storage Length	75	85	feet
Deceleration/Taper	111	111	feet
Calculated Turn Lane Length	186	196	feet
No Block Distance	555	478	feet
No Block Turn Lane Length	605	528	feet

* - No Block Turn Lane Length adds a 50' taper to No Block Distance

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APPENDIX H - TURN LANE WARRANTS

Project: FAY-VAR IOS (PID 117955)
Location: SR 435 & US 35 EB On Ramp
Scenario: Build (Opening Yr & Design Yr)
Analyst: VM
Date: May 17, 2023

Direction
Westbound

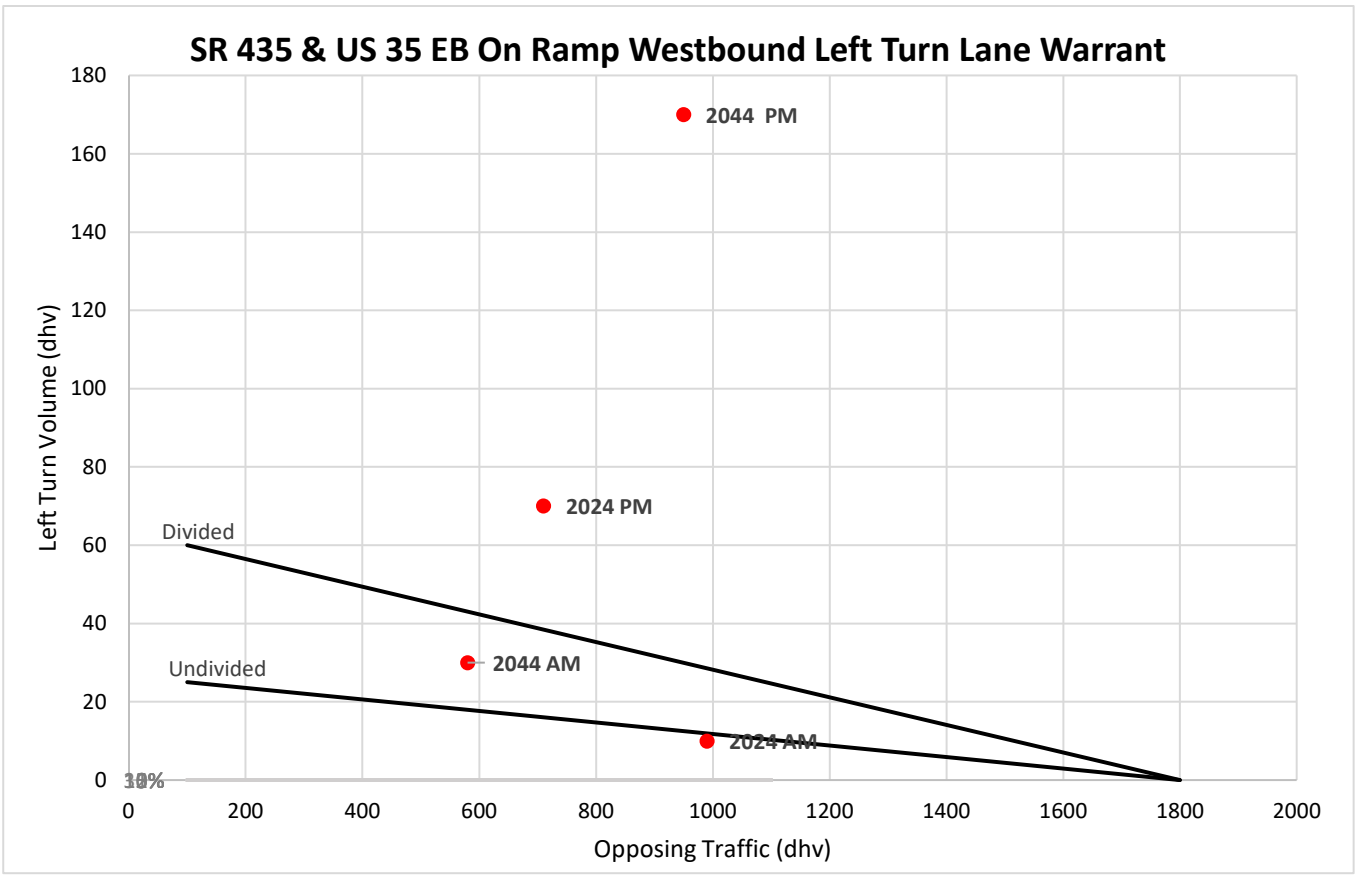
Left/Right Turn
Left Turn

Posted Speed
=< 40 mph

Number of Lanes
4

Median Type
Undivided*

Start Time	Advancing Traffic	Turning Volume	Percent Turning	Opposing Volume	Warrant Met?
6:00 AM					
2024 AM	500	10	2.0	990	NO
2044 AM	1000	30	3.0	580	YES
9:00 AM					
10:00 AM					
11:00 AM					
12:00 PM					
1:00 PM					
2:00 PM					
2024 PM	1260	70	5.6	710	YES
2044 PM	2010	170	8.5	950	YES
5:00 PM					
6:00 PM					
7:00 PM					
8:00 PM					



Points plotted above the corresponding decision line indicate that the warrant is met
*A highway is considered divided as long as median width is adequate for full storage of a left turn vehicle

All warrants in accordance with ODOT State Highway Access Management Manual, Issued 12/2001, Version 8/15/2003

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APPENDIX I – SR 435 @ US 35 WB Off-Ramp Intersection Alternate Concept (Imbalanced lane configuration with WB LT lane)

MATCH LINE C

MATCH LINE D

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Miamisburg, OH 45342
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FAY-435 & 41
CONCEPTUAL PLANS

CALCULATED AIM
CHECKED JRE

0 25 50 100
HORIZONTAL SCALE IN FEET