

# Washington St Dalrymple Dr IMR Appendix C

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HCS Freeway analysis		
INPUT		Notes
Project Properties		
Analyst	Initials of person doing analysis	
Agency	USI- 10-085-2	
Analysis Year	2017	Or 2040 as applicable
Project Description	I-10 Corridor Improvement Stage 1 EA - "analysis location"	Example: I-10 Corridor Improvement Stage 1 EA - I-10 EB Perkins off ramp
Jurisdiction	LADOTD	
Time Period	"Scenario AM"	Example: Existing AM, No Build PM, Build AM
Date	"Date of analysis"	should be autofilled with date analysis is conducted
Geometric Data		
Number of lanes	3	# of lanes in analysis direction (if weaving segment auxiliary lane is included)
Freeway FFS	Posted speed	
Freeway Length	default	
Freeway Terrain Type	level	
Freeway Grade	default	
Freeway Grade Length	default	
Highway or C-D Roadway		Should be unchecked for all Existing and NB analysis. For the Build it may vary by alternative.
Managed Lane	unchecked	
Ramp Lanes	1	# of lanes for ramp. Can be 1 or 2 only.
Ramp FFS	Advisory speed of ramp	
Ramp side	Right	
Ramp Terrain Type	Level	
Ramp Grade	default	
Ramp Grade length	default	
Length of First Accel Lane		Look in Stage 0 analysis files in HCS 2010 file is located in U:\Projects\ENGPROJ\2010Proj\10-085 I-10\10-085-1 initial proj and modeling\A\HCS\Base\Ramp Junctions
Length of Second Accel Lane	default	
Demand Data		
Freeway Demand	I-10 mainline volume	Volume upstream from the merge
Freeway Peak Hour Factor	Calculated mainline PHF	Same day and time as 2017 vol. Print out to document source.
Freeway Total Trucks	HV % from DCR reports	
Freeway Tractor-Trailers	default	
Freeway Single Unit Trucks	default	
Merge Demand	On/Off ramp volume	
Ramp Peak Hour Factor	Calculated mainline PHF	use same as mainline PHF
Ramp Total Trucks	HV % from DCR reports	
Ramp Single Unit Trucks	default	
Ramp Tractor-Trailers	default	
Adjustment Factors		
Freeway Driver Population	default	All familiar
Freeway Weather Type	default	Non-severe Weather
Freeway Speed Adjustment Factor	default	1.00
Freeway Capacity Adjustment Factor	default	1.00
Freeway Demand Adjustment Factor	default	1.00
Incident Type	default	no incident
Ramp Driver Population	default	All familiar
Ramp Weather Type	default	Non-severe Weather
Ramp Speed Adjustment Factor	default	1.00
Ramp Capacity Adjustment Factor	default	1.00
Ramp Demand Adjustment Factor	default	1.00
Adjacent Ramps		
Upstream Ramp	**	Merge or Diverge
Distance to Upstream Ramp		Distance in ft
Upstream Ramp Terrain	default	level
Upstream Ramp Demand	Ramp volume	volume from figure
Upstream Ramp PHF	Calculated mainline PHF	use same as mainline PHF
Upstream Ramp Trucks	HV % from DCR reports	
Downstream Ramp	**	Merge or Diverge
Distance to Downstream Ramp		Distance in ft
Downstream Ramp Terrain	default	level
Downstream Ramp Demand	Ramp volume	volume from figure
Downstream Ramp PHF	Calculated mainline PHF	use same as mainline PHF
Downstream Ramp Trucks	HV % from DCR reports	

NOTES\*\* Be sure to put both upstream and downstream ramp information in the same analysis file. HCS 7 will report whichever is the "worst" condition

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp to Dalrymple Dr		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	175
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	5698	179
Peak Hour Factor (PHF)	0.97	0.81
Total Trucks, %	13.00	2.90
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.885	0.972
Flow Rate (v <sub>i</sub> ), pc/h	6638	227
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.96	0.12

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	3504.5	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	36.8
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1109	Speed Index (D <sub>S</sub> )	0.513
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	444.2	Flow Outer Lanes (V <sub>OA</sub> ), pc/h/ln	2667
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	4631	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	50.8
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.584	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.3
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	3971	Ramp Junction Speed (S), mi/h	53.9
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	41.1
Level of Service (LOS)	E		

# HCS7 Freeway Merge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	300
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (Vi), veh/h	6720	459
Peak Hour Factor (PHF)	0.95	0.93
Total Trucks, %	8.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.926	0.992
Flow Rate (vi), pc/h	7639	498
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.18	0.25

## Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1302.7	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	45.8
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	950	Speed Index (M <sub>s</sub> )	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	5130	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	38.5
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.564	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	51.1
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4939	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	5437	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Merge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	300
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (Vi), veh/h	6588	346
Peak Hour Factor (PHF)	0.98	0.73
Total Trucks, %	6.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.943	0.917
Flow Rate (vi), pc/h	7129	517
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.11	0.26

## Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1197.6	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	42.0
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	950	Speed Index (M <sub>s</sub> )	-
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	5130	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	44.7
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.570	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	51.1
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4429	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	4946	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Merge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	375
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	6719	243
Peak Hour Factor (PHF)	0.96	0.86
Total Trucks, %	8.00	1.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.926	0.987
Flow Rate (v <sub>i</sub> ), pc/h	7558	286
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.14	0.14

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	1273.3	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	43.2
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	860	Speed Index (M <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	1974.2	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1100	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	42.7
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.619	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	51.1
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4858	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	5144	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

## HCS7 Freeway Merge Report

### Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

### Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	375
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

### Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

### Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	6720	268
Peak Hour Factor (PHF)	0.98	0.72
Total Trucks, %	6.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.943	0.992
Flow Rate (v <sub>i</sub> ), pc/h	7272	375
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.11	0.19

### Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	1231.2	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	43.4
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	860	Speed Index (M <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	3131.7	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2465
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1100	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	42.2
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.661	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	52.5
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4807	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	5182	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Louise St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	100
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	6962	242
Peak Hour Factor (PHF)	0.95	0.84
Total Trucks, %	8.00	2.60
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.926	0.975
Flow Rate (v <sub>i</sub> ), pc/h	7914	295
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.15	0.16

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	1241.2	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	48.2
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1300	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	260	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	50.6
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.549	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	5214	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		



# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Louise St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	100
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	6988	400
Peak Hour Factor (PHF)	0.98	0.90
Total Trucks, %	6.00	5.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.943	0.948
Flow Rate (v <sub>i</sub> ), pc/h	7562	469
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.10	0.25

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	1792.8	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	45.2
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1300	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	260	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	50.4
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.549	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4862	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	7002	283
Peak Hour Factor (PHF)	0.96	0.83
Total Trucks, %	8.00	0.40
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.926	0.996
Flow Rate (v <sub>i</sub> ), pc/h	7877	342
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.14	0.18

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	2889.2	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	46.5
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	3370	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	860	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	50.6
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.547	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	5177	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	7168	448
Peak Hour Factor (PHF)	0.98	0.76
Total Trucks, %	6.00	0.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.943	0.995
Flow Rate (v <sub>i</sub> ), pc/h	7756	592
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.12	0.31

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	4222.4	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	45.5
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	3370	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	860	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.539	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	5056	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Merge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Braddock St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (Vi), veh/h	4579	1009
Peak Hour Factor (PHF)	0.89	0.94
Total Trucks, %	11.00	1.70
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.901	0.983
Flow Rate (vi), pc/h	5710	1092
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.99	0.55

## Speed and Density

Upstream Equilibrium Distance (LEQ), ft	950.4	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	38.5
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1609	Speed Index (M <sub>s</sub> )	0.633
Downstream Equilibrium Distance (LEQ), ft	683.5	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2387
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1100	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	48.6
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.582	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	52.9
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	3323	Ramp Junction Speed (S), mi/h	50.0
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	4415	Average Density (D), pc/mi/ln	45.3
Level of Service (LOS)	E		

# HCS7 Freeway Merge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI-10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Braddock St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (LA), ft	1500	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (Vi), veh/h	5104	594
Peak Hour Factor (PHF)	0.85	0.84
Total Trucks, %	13.00	2.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.885	0.978
Flow Rate (vi), pc/h	6785	723
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.09	0.36

## Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1101.5	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	41.8
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1609	Speed Index (M <sub>s</sub> )	-
Downstream Equilibrium Distance (LEQ), ft	1809.8	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2694
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1100	On-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	45.8
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FM</sub> )	0.603	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	51.1
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4091	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	4814	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	530
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	4624	45
Peak Hour Factor (PHF)	0.89	0.96
Total Trucks, %	11.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.901	1.000
Flow Rate (v <sub>i</sub> ), pc/h	5766	47
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.84	0.02

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	5246.0	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	30.1
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	4970	Speed Index (D <sub>S</sub> )	0.562
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (V <sub>OA</sub> ), pc/h/ln	2208
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1350	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	49.9
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.614	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	61.1
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	3558	Ramp Junction Speed (S), mi/h	53.7
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	35.8
Level of Service (LOS)	D		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	530
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	5367	263
Peak Hour Factor (PHF)	0.85	0.77
Total Trucks, %	13.00	2.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.885	0.973
Flow Rate (v <sub>i</sub> ), pc/h	7135	351
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.03	0.18

## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	5354.3	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	37.6
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	4970	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	-	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	1350	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	49.4
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.565	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4435	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

# HCS7 Freeway Diverge Report

## Project Information

Analyst	SJH	Date	4/30/2018
Agency	USI 10-085-2	Analysis Year	2040
Jurisdiction	LADOTD	Time Period Analyzed	No Build PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp to Dalrymple Dr		

## Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L <sub>D</sub> ), ft	1500	114
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

## Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

## Demand and Capacity

Demand Volume (V <sub>i</sub> ), veh/h	5588	73
Peak Hour Factor (PHF)	0.83	0.85
Total Trucks, %	11.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f <sub>HV</sub> )	0.901	1.000
Flow Rate (v <sub>i</sub> ), pc/h	7472	86
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	1.08	0.05

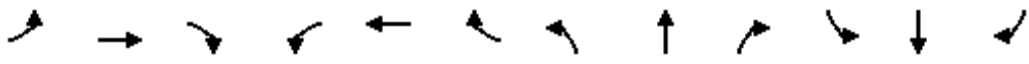
## Speed and Density

Upstream Equilibrium Distance (L <sub>EQ</sub> ), ft	4619.4	Density in Ramp Influence Area (D <sub>R</sub> ), pc/mi/ln	44.3
Distance to Upstream Ramp (L <sub>UP</sub> ), ft	1109	Speed Index (D <sub>s</sub> )	-
Downstream Equilibrium Distance (L <sub>EQ</sub> ), ft	203.7	Flow Outer Lanes (v <sub>OA</sub> ), pc/h/ln	2700
Distance to Downstream Ramp (L <sub>DOWN</sub> ), ft	4631	Off-Ramp Influence Area Speed (S <sub>R</sub> ), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (P <sub>FD</sub> )	0.569	Outer Lanes Freeway Speed (S <sub>O</sub> ), mi/h	59.2
Flow in Lanes 1 and 2 (v <sub>12</sub> ), pc/h	4772	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v <sub>R12</sub> ), pc/h	-	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		



# HCM 2010 Signalized Intersection Summary 3: Kentucky St/I-10 EB off ramp & Washington St No Build AM

6/6/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↰↰			↰	↰		↰↰	
Volume (veh/h)	0	289	10	38	169	0	2	0	114	82	20	161
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1770	1900	1900	1811	0	1900	1900	1743	1976	1923	1976
Adj Flow Rate, veh/h	0	413	14	54	241	0	3	0	163	117	29	0
Adj No. of Lanes	0	1	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	0	7	7	6	6	0	0	0	9	0	0	0
Cap, veh/h	0	681	23	206	912	0	733	0	593	552	124	0
Arrive On Green	0.00	0.40	0.40	0.40	0.40	0.00	0.40	0.00	0.40	0.40	0.40	0.00
Sat Flow, veh/h	0	1702	58	265	2362	0	1472	0	1482	1055	309	0
Grp Volume(v), veh/h	0	0	427	141	154	0	3	0	163	146	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1760	979	1566	0	1472	0	1482	1364	0	0
Q Serve(g_s), s	0.0	0.0	9.6	0.8	3.3	0.0	0.0	0.0	3.7	2.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	9.6	10.4	3.3	0.0	0.0	0.0	3.7	3.4	0.0	0.0
Prop In Lane	0.00		0.03	0.38		0.00	1.00		1.00	0.80		0.00
Lane Grp Cap(c), veh/h	0	0	704	491	626	0	733	0	593	675	0	0
V/C Ratio(X)	0.00	0.00	0.61	0.29	0.25	0.00	0.00	0.00	0.28	0.22	0.00	0.00
Avail Cap(c_a), veh/h	0	0	704	491	626	0	733	0	593	675	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	11.9	10.2	10.0	0.0	9.0	0.0	10.1	10.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.9	1.5	0.9	0.0	0.0	0.0	1.1	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	9.2	2.6	2.8	0.0	0.0	0.0	3.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	15.7	11.7	10.9	0.0	9.0	0.0	11.3	10.7	0.0	0.0
LnGrp LOS			B	B	B		A		B	B		
Approach Vol, veh/h		427			295			166			146	
Approach Delay, s/veh		15.7			11.3			11.2			10.7	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		25.0		25.0		25.0		25.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		20.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		11.6		5.4		12.4		5.7				
Green Ext Time (p_c), s		1.6		1.0		1.5		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			13.0									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	258	231	226	88	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	10	1	4	6	0	0
Mvmt Flow	374	335	328	128	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	328	0	1243
Stage 1	-	-	328
Stage 2	-	-	915
Critical Hdwy	4.2	-	6.6
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.29	-	3.5
Pot Cap-1 Maneuver	1188	-	181
Stage 1	-	-	734
Stage 2	-	-	356
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1188	-	124
Mov Cap-2 Maneuver	-	-	124
Stage 1	-	-	734
Stage 2	-	-	244










Approach	EB	WB	SB
HCM Control Delay, s	5	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1188	-	-	-	-
HCM Lane V/C Ratio	0.315	-	-	-	-
HCM Control Delay (s)	9.4	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	1.4	-	-	-	-

# HCM 2010 Signalized Intersection Summary No Build AM

## 15: Dalrymple Dr & I-10 EB Off Ramp

6/6/2019


								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	27	152	0	412	684	0		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1842	1900	0	1863	1881	0		
Adj Flow Rate, veh/h	31	173	0	468	777	0		
Adj No. of Lanes	0	0	0	2	2	0		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Percent Heavy Veh, %	0	0	0	2	1	0		
Cap, veh/h	38	212	0	2390	2414	0		
Arrive On Green	0.16	0.16	0.00	0.68	0.68	0.00		
Sat Flow, veh/h	241	1344	0	3725	3762	0		
Grp Volume(v), veh/h	205	0	0	468	777	0		
Grp Sat Flow(s),veh/h/ln	1593	0	0	1770	1787	0		
Q Serve(g_s), s	7.5	0.0	0.0	3.0	5.4	0.0		
Cycle Q Clear(g_c), s	7.5	0.0	0.0	3.0	5.4	0.0		
Prop In Lane	0.15	0.84	0.00			0.00		
Lane Grp Cap(c), veh/h	252	0	0	2390	2414	0		
V/C Ratio(X)	0.81	0.00	0.00	0.20	0.32	0.00		
Avail Cap(c_a), veh/h	531	0	0	2390	2414	0		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	24.4	0.0	0.0	3.6	4.0	0.0		
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.2	0.4	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	6.2	0.0	0.0	2.7	4.9	0.0		
LnGrp Delay(d),s/veh	26.9	0.0	0.0	3.8	4.4	0.0		
LnGrp LOS	C			A	A			
Approach Vol, veh/h	205			468	777			
Approach Delay, s/veh	26.9			3.8	4.4			
Approach LOS	C			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		45.5				45.5		14.5
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		30.0				30.0		20.0
Max Q Clear Time (g_c+I1), s		7.4				5.0		9.5
Green Ext Time (p_c), s		11.8				12.5		0.3
Intersection Summary								
HCM 2010 Ctrl Delay			7.4					
HCM 2010 LOS			A					
Notes								
User approved volume balancing among the lanes for turning movement.								

I-10 EB Off ramp at Washington St AM  
mhm - USI Proj # 10-085-2

Synchro 8 Report  
Page 4



















# HCM 2010 Signalized Intersection Summary7: Dalrymple Dr & I-10 WB off Ramp/Lakeshore Dr No Build AM

6/6/2019

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔		↙	↕			↕		
Volume (veh/h)	47	1	400	28	22	22	207	202	29	20	259	37	
Number	3	8	18	7	4	14	1	6	16	5	2	12	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1900	1896	1900	1900	1900	1900	1881	1842	1900	1900	1885	1900	
Adj Flow Rate, veh/h	53	1	0	31	25	0	233	227	0	22	291	0	
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	1	1	1	
Cap, veh/h	227	2	0	153	60	0	865	2631	0	156	1912	0	
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.08	0.75	0.00	0.58	0.58	0.00	
Sat Flow, veh/h	1546	29	0	854	861	0	1792	3593	0	151	3354	0	
Grp Volume(v), veh/h	54	0	0	56	0	0	233	227	0	166	147	0	
Grp Sat Flow(s),veh/h/ln	1575	0	0	1714	0	0	1792	1750	0	1791	1629	0	
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.7	1.0	0.0	0.0	2.5	0.0	
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.0	2.7	1.0	0.0	2.4	2.5	0.0	
Prop In Lane	0.98		0.00	0.55		0.00	1.00		0.00	0.13		0.00	
Lane Grp Cap(c), veh/h	229	0	0	213	0	0	865	2631	0	1115	953	0	
V/C Ratio(X)	0.24	0.00	0.00	0.26	0.00	0.00	0.27	0.09	0.00	0.15	0.15	0.00	
Avail Cap(c_a), veh/h	608	0	0	646	0	0	954	2631	0	1115	953	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	26.7	0.0	0.0	26.7	0.0	0.0	3.3	2.0	0.0	5.7	5.7	0.0	
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.6	0.0	0.0	0.1	0.1	0.0	0.3	0.3	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.6	0.0	0.0	1.7	0.0	0.0	2.2	0.9	0.0	2.4	2.1	0.0	
LnGrp Delay(d),s/veh	27.3	0.0	0.0	27.4	0.0	0.0	3.3	2.0	0.0	5.9	6.0	0.0	
LnGrp LOS	C			C			A	A		A	A		
Approach Vol, veh/h		54			56			460			313		
Approach Delay, s/veh		27.3			27.4			2.7			6.0		
Approach LOS		C			C			A			A		
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	1	2		4		6		8					
Phs Duration (G+Y+Rc), s	40.0	40.1		9.9		50.1		9.9					
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7					
Max Green Setting (Gmax), s	16.0	16.0		* 20		29.0		* 20					
Max Q Clear Time (g_c+I1), s	4.5	4.5		3.7		3.0		3.7					
Green Ext Time (p_c), s	0.2	3.3		0.3		4.7		0.3					
Intersection Summary													
HCM 2010 Ctrl Delay	6.9												
HCM 2010 LOS	A												
Notes													

# HCM 2010 Signalized Intersection Summary 3: Kentucky St/I-10 EB off ramp & Washington St No Build PM

6/6/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	440	8	45	213	0	3	0	138	17	1	27
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1854	0	1900	1900	1881	1976	1976	1976
Adj Flow Rate, veh/h	0	463	8	47	224	0	3	0	145	18	1	0
Adj No. of Lanes	0	1	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	3	3	0	0	0	1	0	0	0
Cap, veh/h	0	730	13	196	934	0	722	0	640	644	32	0
Arrive On Green	0.00	0.40	0.40	0.40	0.40	0.00	0.40	0.00	0.40	0.40	0.40	0.00
Sat Flow, veh/h	0	1826	32	243	2420	0	1446	0	1599	1259	81	0
Grp Volume(v), veh/h	0	0	471	128	143	0	3	0	145	19	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1858	976	1603	0	1446	0	1599	1340	0	0
Q Serve(g_s), s	0.0	0.0	10.2	0.7	2.9	0.0	0.0	0.0	3.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.2	10.9	2.9	0.0	0.0	0.0	3.0	0.4	0.0	0.0
Prop In Lane	0.00		0.02	0.37		0.00	1.00		1.00	0.95		0.00
Lane Grp Cap(c), veh/h	0	0	743	489	641	0	722	0	640	676	0	0
V/C Ratio(X)	0.00	0.00	0.63	0.26	0.22	0.00	0.00	0.00	0.23	0.03	0.00	0.00
Avail Cap(c_a), veh/h	0	0	743	489	641	0	722	0	640	676	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	12.1	10.2	9.9	0.0	9.0	0.0	9.9	9.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	4.1	1.3	0.8	0.0	0.0	0.0	0.8	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	9.9	2.4	2.5	0.0	0.0	0.0	2.6	0.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.1	11.5	10.7	0.0	9.0	0.0	10.7	9.2	0.0	0.0
LnGrp LOS			B	B	B		A		B	A		
Approach Vol, veh/h		471			271			148			19	
Approach Delay, s/veh		16.1			11.1			10.7			9.2	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		25.0		25.0		25.0		25.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		20.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		12.2		2.4		12.9		5.0				
Green Ext Time (p_c), s		1.6		0.5		1.5		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			13.6									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	400	246	244	59	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	4	0	0
Mvmt Flow	430	265	262	63	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	262	0	1254
Stage 1	-	-	262
Stage 2	-	-	992
Critical Hdwy	4.1	-	6.6
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1314	-	179
Stage 1	-	-	786
Stage 2	-	-	324
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1314	-	120
Mov Cap-2 Maneuver	-	-	120
Stage 1	-	-	786
Stage 2	-	-	218










Approach	EB	WB	SB
HCM Control Delay, s	5.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1314	-	-	-	-
HCM Lane V/C Ratio	0.327	-	-	-	-
HCM Control Delay (s)	9.1	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	1.4	-	-	-	-

# HCM 2010 Signalized Intersection Summary No Build PM

15: Dalrymple Dr & I-10 EB off Ramp

6/6/2019







								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	11	62	0	602	548	0		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	0	1881	1863	0		
Adj Flow Rate, veh/h	12	70	0	684	623	0		
Adj No. of Lanes	0	0	0	2	2	0		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Percent Heavy Veh, %	0	0	0	1	2	0		
Cap, veh/h	15	88	0	2751	2724	0		
Arrive On Green	0.06	0.06	0.00	0.77	0.77	0.00		
Sat Flow, veh/h	238	1386	0	3762	3725	0		
Grp Volume(v), veh/h	83	0	0	684	623	0		
Grp Sat Flow(s),veh/h/ln	1644	0	0	1787	1770	0		
Q Serve(g_s), s	3.0	0.0	0.0	3.3	3.0	0.0		
Cycle Q Clear(g_c), s	3.0	0.0	0.0	3.3	3.0	0.0		
Prop In Lane	0.14	0.84	0.00			0.00		
Lane Grp Cap(c), veh/h	105	0	0	2751	2724	0		
V/C Ratio(X)	0.79	0.00	0.00	0.25	0.23	0.00		
Avail Cap(c_a), veh/h	548	0	0	2751	2724	0		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	27.7	0.0	0.0	2.0	1.9	0.0		
Incr Delay (d2), s/veh	5.0	0.0	0.0	0.2	0.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	2.7	0.0	0.0	2.9	2.6	0.0		
LnGrp Delay(d),s/veh	32.7	0.0	0.0	2.2	2.1	0.0		
LnGrp LOS	C			A	A			
Approach Vol, veh/h	83			684	623			
Approach Delay, s/veh	32.7			2.2	2.1			
Approach LOS	C			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.2				51.2		8.8
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		30.0				30.0		20.0
Max Q Clear Time (g_c+I1), s		5.0				5.3		5.0
Green Ext Time (p_c), s		13.1				13.1		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			4.0					
HCM 2010 LOS			A					
Notes								
User approved volume balancing among the lanes for turning movement.								

I-10 EB Off ramp at Washington St PM  
mhm - USI Proj # 10-085-2

Synchro 8 Report  
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# HCM 2010 Signalized Intersection Summary7: Dalrymple Dr & I-10 WB off Ramp/Lakeshore Dr No Build PM

6/6/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	5	228	24	10	29	212	361	36	34	296	21
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1893	1900	1900	1900	1900	1863	1883	1900	1900	1884	1900
Adj Flow Rate, veh/h	54	5	0	26	11	0	230	392	0	37	322	0
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	2	1	1	1	1	1
Cap, veh/h	210	9	0	173	43	0	835	2702	0	217	1800	0
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.08	0.76	0.00	0.59	0.59	0.00
Sat Flow, veh/h	1422	132	0	1063	640	0	1774	3672	0	246	3134	0
Grp Volume(v), veh/h	59	0	0	37	0	0	230	392	0	187	172	0
Grp Sat Flow(s),veh/h/ln	1554	0	0	1704	0	0	1774	1789	0	1666	1629	0
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	2.6	1.8	0.0	0.0	2.9	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.1	0.0	0.0	2.6	1.8	0.0	2.7	2.9	0.0
Prop In Lane	0.92		0.00	0.70		0.00	1.00		0.00	0.20		0.00
Lane Grp Cap(c), veh/h	218	0	0	215	0	0	835	2702	0	1055	961	0
V/C Ratio(X)	0.27	0.00	0.00	0.17	0.00	0.00	0.28	0.15	0.00	0.18	0.18	0.00
Avail Cap(c_a), veh/h	564	0	0	584	0	0	1016	2702	0	1055	961	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.1	0.0	0.0	26.7	0.0	0.0	3.3	2.0	0.0	5.6	5.6	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.4	0.0	0.0	0.1	0.1	0.0	0.4	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	0.0	1.1	0.0	0.0	2.2	1.6	0.0	2.7	2.5	0.0
LnGrp Delay(d),s/veh	27.7	0.0	0.0	27.0	0.0	0.0	3.3	2.1	0.0	6.0	6.0	0.0
LnGrp LOS	C			C			A	A		A	A	
Approach Vol, veh/h		59			37			622			359	
Approach Delay, s/veh		27.7			27.0			2.6			6.0	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.9	40.4		9.7		50.3		9.7				
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7				
Max Green Setting (Gmak), s	15.0	15.0		* 18		31.0		* 18				
Max Q Clear Time (g_c+I), s	4.9	4.9		3.1		3.8		4.1				
Green Ext Time (p_c), s	0.2	4.3		0.2		7.1		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				5.9								
HCM 2010 LOS				A								
Notes												



**Freeway Segment Comparison  
Existing And No Build Conditions**

Location	AM		PM	
	Existing	No Build	Existing	No Build
	Density	Density	Density	Density
	(pc/ln/mi)	(pc/ln/mi)	(pc/ln/mi)	(pc/ln/mi)
<i>I-10 Eastbound Diverge to Washington St</i>	36.7	--	29.2	35.8
<i>I-10 Eastbound Merge from Braddock St</i>	--	--	24.4	45.3
<i>I-10 Eastbound Diverge to Dalrymple Dr</i>	39.9	41.1	27.0	--
<i>I-10 Westbound Diverge to Dalrymple Dr</i>	39.5	--	39.9	--
<i>I-10 Westbound Merge from Dalrymple Dr</i>	40.5	--	41.6	--
<i>I-10 Westbound Merge from Washington St</i>	38.4	--	37.6	--
<i>I-10 Westbound Diverge to Louise St</i>	38.1	--	40.1	--

**Intersection Comparison  
Existing and No Build Conditions**

Location	AM						PM					
	Existing			No Build			Existing			No Build		
	Delay (sec)	V/C Ratio	95 <sup>th</sup> % Queues	Delay (sec)	V/C Ratio	95 <sup>th</sup> % Queues	Delay (sec)	V/C Ratio	95 <sup>th</sup> % Queues	Delay (sec)	V/C Ratio	95 <sup>th</sup> % Queues
<b>I-10 WB ramps at Dalrymple Dr</b>	<b>6.9</b>	<b>-</b>	<b>-</b>	<b>6.9</b>	<b>-</b>	<b>-</b>	<b>5.9</b>	<b>-</b>	<b>-</b>	<b>5.9</b>	<b>-</b>	<b>-</b>
<i>I-10 ramp Eastbound</i>	27.3	0.23	40	27.3	0.24	40	27.7	0.27	45	27.7	0.27	45
<i>E Lakeshore Dr Westbound</i>	27.4	0.25	40	27.4	0.26	43	27.1	0.17	28	27	0.17	28
<i>Dalrymple Dr Northbound</i>	2.7	0.26	55	2.7	0.27	55	2.5	0.27	55	2.6	0.28	55
<i>Dalrymple Dr Southbound</i>	5.9	0.15	58	6	0.15	60	5.9	0.17	65	6	0.18	68
<b>I-10 EB off ramp at Dalrymple Dr</b>	<b>7.3</b>	<b>-</b>	<b>-</b>	<b>7.4</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>-</b>	<b>-</b>
<i>I-10 ramp Eastbound</i>	27	0.81	150	26.9	0.81	155	32.9	0.79	68	32.7	0.79	68
<i>Dalrymple Dr Northbound</i>	3.7	0.19	63	3.8	0.2	68	2.1	0.24	70	2.2	0.25	73
<i>Dalrymple Dr Southbound</i>	4.2	0.31	118	4.4	0.32	123	2.1	0.22	63	2.1	0.23	65
<b>I-10 WB on ramp at Washington St</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Washington St Eastbound</i>	4.7	0.26	25	5	0.32	35	5.4	0.27	28	5.6	0.33	35
<b>I-10 EB off ramp at Washington St</b>	<b>12.1</b>	<b>-</b>	<b>-</b>	<b>13</b>	<b>-</b>	<b>-</b>	<b>12.5</b>	<b>-</b>	<b>-</b>	<b>13.6</b>	<b>-</b>	<b>-</b>
<i>I-10 ramp Eastbound</i>	14.2	0.52	195	15.7	0.61	230	14.4	0.55	213	16.1	0.63	248
<i>E Lakeshore Dr Westbound</i>	10.7	0.23	58	11.3	0.29	70	10.5	0.21	53	11.1	0.26	63
<i>Dalrymple Dr Northbound</i>	10.8	0.24	65	11.2	0.28	75	10.4	0.2	55	10.7	0.23	65
<i>Dalrymple Dr Southbound</i>	10.4	0.18	55	10.7	0.22	68	9.2	0.02	8	9.2	0.03	8

## **Washington/Dalrymple 2040 Build Volume Estimation Methodology**

### *2040 Build Traffic Volumes*

Volumes for the design year were developed for use in Build conditions analysis to compare to the No Build analysis results. The objective is to assess the operational impact of the proposed interchange modifications with an additional lane on I-10. The proposed modifications include the combination of the Washington St and Dalrymple Dr interchanges which will provide access to I-10 EB from Dalrymple Dr. Separate IMRs are being prepared for proposed modifications to the Acadian Thwy /Perkins Rd interchanges and directional ramps to College Dr from I-10 and I-12.

### *TransCAD Data*

TransCAD volume output from the Capitol Region Planning Commission's (CRPC) regional transportation models was reviewed to assist with estimating projected Build volumes. Model output is a useful tool as it predicts changes to traffic patterns with proposed interchange modifications and also takes into account other projects that are included in the financially constrained long-range transportation plan.

Models were provided for the following scenarios:

- 2037 No Build condition with the existing configuration
- 2037 Build conditions with the following proposed improvements:
  - An additional lane on I-10
  - College Dr Directional Ramps from I-10 and I-12
  - Perkins Ramp Removal
  - Washington St/Dalrymple Dr combined interchange

The model output was reviewed to confirm the links and number of lanes matched the existing and proposed conditions within the study area. These are presented on pages Appendix C 42-C 49.

The intersection flow diagrams were reviewed for the AM and PM peak periods. The intersection flow diagrams are presented on pages Appendix C 56-C 119. The ADTs were also reviewed and are presented on pages Appendix C 50-C 55. The results are presented in Table C-1.

**Table C-1**  
**TransCAD Data Comparison**

					AM			PM			ADT				
					Peak Period		Peak Hour	Peak Period		Peak Hour					
No Build Node	Build Node	Location	Approach	Movement	TransCAD No Build	TransCAD Build	Proposed Build Volumes*	TransCAD No Build	TransCAD Build	Proposed Build Volumes*	No Build	Build			
N/A	8660	I-10 EB Off Ramp Diverge to W/D	I-10 EB	Mainline	N/A	6175	2470	N/A	7916	3166	N/A	54666			
			I-10 EB Off Ramp	Off Ramp	N/A	250	100	N/A	269	108	N/A	1231			
5928	5928	I-10 EB Off Ramp @ Washington	I-10 EB Off Ramp	Eastbound Left	222	182	73	241	195	78	10196	1231			
	Eastbound Thru			873	328	131	770	480	192						
7583	5928		Washington St	Eastbound Right	1089	580	232	1516	315	126	7615	12125			
				Northbound Thru	1060	1193	477	2308	2087	835					
				Northbound Right	7	864	346	17	1295	518					
				Southbound Left	149	64	26	218	123	49					
Southbound Thru	539	944	378	637	1257	503	3447	5472							
5683	5981	I-10 EB On Ramp Merge From Braddock	I-10 EB	Mainline	12424	12475	4990	16133	17736	7094	86945	90351			
5921		I-10 EB Off Ramp @ Dalrymple	On Ramp	On Ramp	840	1247	499	1410	1927	771	4763	6676			
			Dalrymple	Northbound Thru	2084	2254	902	2353	2651	1060	9464	11680			
				Southbound Thru	2178	2852	1141	2110	2641	1056	10072	12082			
			I-10 EB off Ramp	Eastbound Left	7	0	**	6	0	**	3906	794			
				Eastbound Right	969	169	68	607	188	75					
5982	5684	I-10 WB Off Ramp Diverge to Dalrymple	I-10 WB	Mainline	13860	15124	6050	14339	15461	6184	92685	88813			
5984		I-10 WB Off Ramp @ Dalrymple	Off Ramp	Off Ramp	1957	2700	1080	1969	2784	1114	9063	12030			
			Dalrymple	Northbound Left	1118	1125	450	1104	1355	542	9489	11680			
				Northbound Thru	932	1094	438	1218	1268	507					
				Northbound Right	41	36	14	37	28	11					
				Southbound Left	127	112	45	154	124	50					
				Southbound Thru	915	1333	533	879	1227	491					
				Southbound Right	0	0	**	0	0	**					
			I-10 WB Off Ramp	Eastbound Left	615	104	42	687	150	60	9063	7241			
				Eastbound Thru	99	104	42	85	94	38					
				Eastbound Right	1244	1502	601	1196	1375	550					
			Lakeshore Dr	Westbound Left	19	17	7	34	39	16	720	897			
				Westbound Thru	57	85	34	99	151	60					
				Westbound Right	54	52	21	54	83	33					
			5985		I-10 WB On Ramp Merge from Dalrymple	I-10 WB	Mainline	13860	15124	6050	14339	15461	6184	83622	88813
						On Ramp	On Ramp	1174	1039	416	1203	1280	512	5208	6063
			5909		I-10 WB On Ramp Merge from Washington	I-10 WB	Mainline	14303	16164	6466	14969	16742	6697	86180	94882
On Ramp	On Ramp	1446				1228	491	2664	2097	839	9346	7754			
5992	8654	Washington @ Mc Calop	Washington St	Northbound Left	1270	1069	428	2476	1912	765	11610	8440			
	Northbound Thru			598	305	122	747	369	148						
	Southbound Thru			688	306	122	855	385	154						
	Southbound Right			200	157	63	210	186	74						
	5992		McCalop	Westbound Left		201	280		995	398	N/A	4834			
				Westbound Thru	N/A	173	69	N/A	108	43					
N/A	8642	EB Frontage Rd merge with I-10 EB to Washington	I-10 EB Ramp	Westbound Right		125	50		72	29	N/A	1231			
				Eastbound Thru	N/A	177	71	N/A	173	69					
			Frontage Rd	Eastbound Right	N/A	72	29	N/A	95	38					
N/A	8649	I-10 WB off ramp at WB Frontage Rd	I-10 WB Off Ramp	Off Ramp	N/A	990	396	N/A	1165	466	N/A	5438			
			WB Frontage Rd	Frontage Rd	N/A	170	68	N/A	226	90					
N/A	8651	I-10 WB off ramp to Washington and Dalrymple Split	I-10 WB Off Ramp	To Dalrymple Dr	N/A	1710	684	N/A	1619	648	N/A	12030			
			WB Frontage Rd	To Washington St	N/A	990	396	N/A	1165	466					
5983		I-10 WB on ramp from McCalop St	I-10 WB On Ramp	On Ramp	1446	1228	491	2663	2097	839	9436	8309			
			McCalop	Northbound Thru	23	172	69	23	109	44	91	555			
N/A	8634	WB Frontage Rd U-turn to EB Frontage Rd	U turn	U turn	N/A	160	64	N/A	216	86	N/A	604			
			WB Frontage Rd	Frontage Rd	N/A	1000	400	N/A	1175	470	N/A	4834			
N/A	8641	EB Frontage Rd to I-10 EB on Ramp/Dalrymple Dr	I-10 EB On Ramp	To I-10 EB	N/A	1247	499	N/A	1927	771	N/A	6676			
			EB Frontage Rd	To Dalrymple Dr	N/A	169	68	N/A	188	75	N/A	794			
5801		Dalrymple @ May***	Dalrymple	Northbound Thru	1813	1850	740	2269	2393	957	11158	11576			
				Northbound Right	490	298	119	687	353	141					
				Southbound Left	6	0	0	26	9	4					
				Southbound Thru	2943	2581	1032	2477	2433	973					
			May	Southbound Right	197	437	175	214	386	154	13953	1288			
				Eastbound Left	20	233	93	15	197	79					
				Eastbound Thru	241	242	97	285	292	117					
				Westbound Left	141	129	52	125	138	55					
6325		Morning Glory @ Stanford***	Stanford	Westbound Thru	149	84	34	106	98	39	1672	1340			
				Westbound Right	252	171	68	69	60	24					
				Northbound Left	150	81	32	50	12	5			14143	13756	
				Northbound Thru	2808	2920	1168	3319	3205	1282					
			Southbound Left	0	0	0	14	5	2	13894	13870				
			Southbound Thru	2456	2454	982	3519	3360	1344						
			Southbound Right	237	154	62	178	177	71						
			Morning Glory	Eastbound Left	696	505	202	901	568			227	140	140	
Eastbound Thru	10	9		4	17	17	7								
Eastbound Right	7	5		2	14	14	6								
Westbound Thru	56	42		17	23	15	6								
				Westbound Right	5	17	7	5	10	4	3523	2440			

\* 40% of TransCAD Peak Period Volume

\*\* Volume from Figure 2.6 - see C-39

\*\*\* Included for informational purposes only

The proposed Build volumes were calculated by using 40% of the 3-hour peak period volumes from the TransCAD intersection flow diagrams. The resulting Build volumes are presented in black on Figure C-1 for the AM and Figure C-2 for the PM.

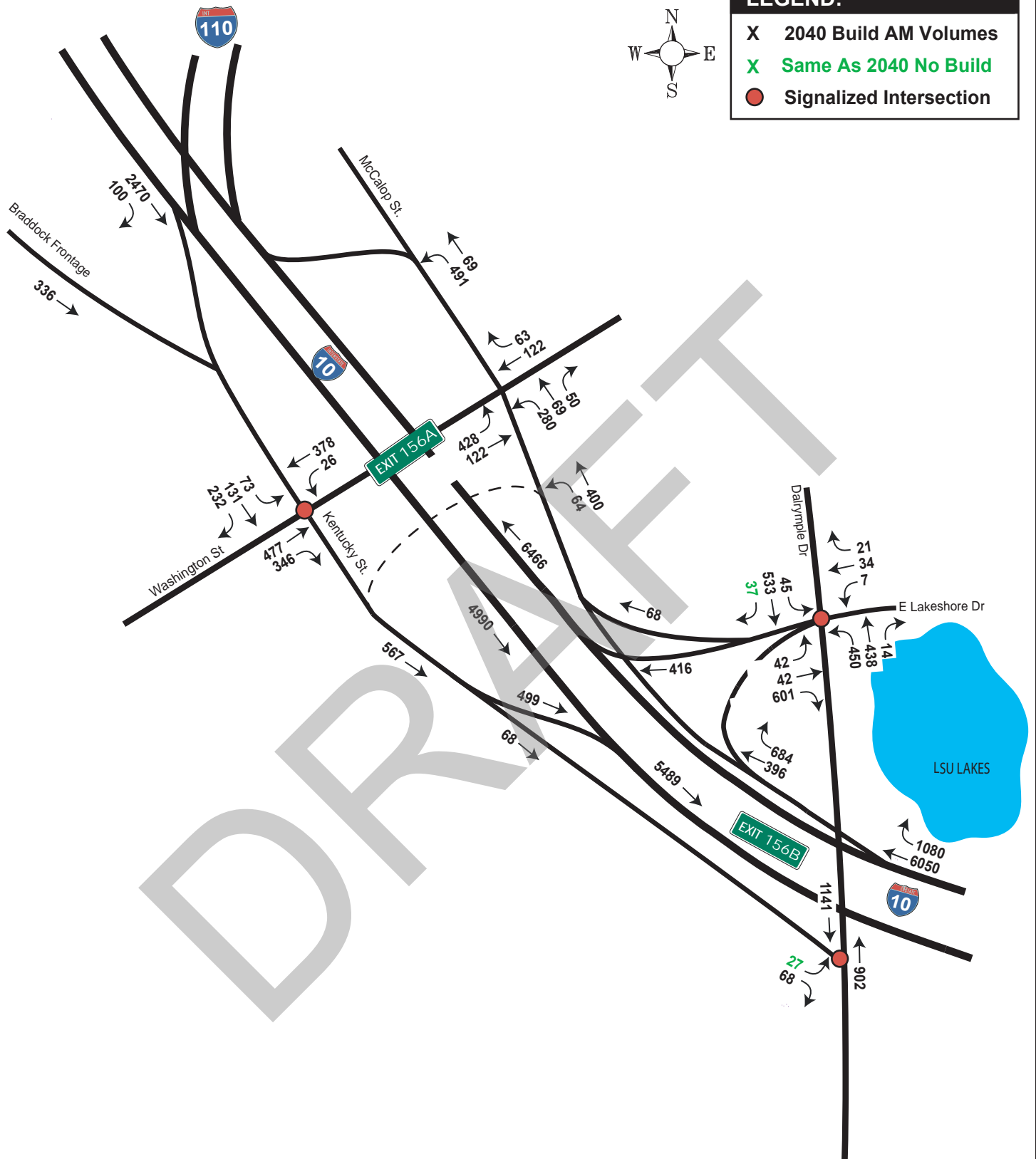
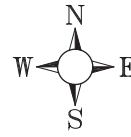
The TransCAD build model results indicated zero volume for the SB right turn on Dalrymple Dr to the I-10 WB on ramp and for the EB left turn from the EB Frontage Rd to Dalrymple Dr. To represent the possibility of motorists still making these movements, the 2040 No Build volumes were used as the 2040 Build Volumes. These are presented in green on Figure C-1 for the AM and Figure C-2 for the PM.

The intersections of Morning Glory at Stanford and Dalrymple at May were included in Table C-1 for informational purposes only. These intersections will not be analyzed and therefore are not included on Figures C-1 and C-2. Based on the results of Table C-1 the following can be concluded regarding the turning movement volumes at these intersections:

- Dalrymple at May
  - Most of the movements either decrease or remain approximately the same in both the AM and PM peaks
  - The southbound right turn from Dalrymple Dr to May and the eastbound left turn from May to Dalrymple Dr indicates a meaningful increase in the Build scenario in both the AM and PM peaks
- Morning Glory at Stanford
  - Most of the movements either decrease or remain approximately the same in both the AM and PM peaks

# LEGEND:

- X 2040 Build AM Volumes
- X Same As 2040 No Build
- Signalized Intersection



**Figure C-1**

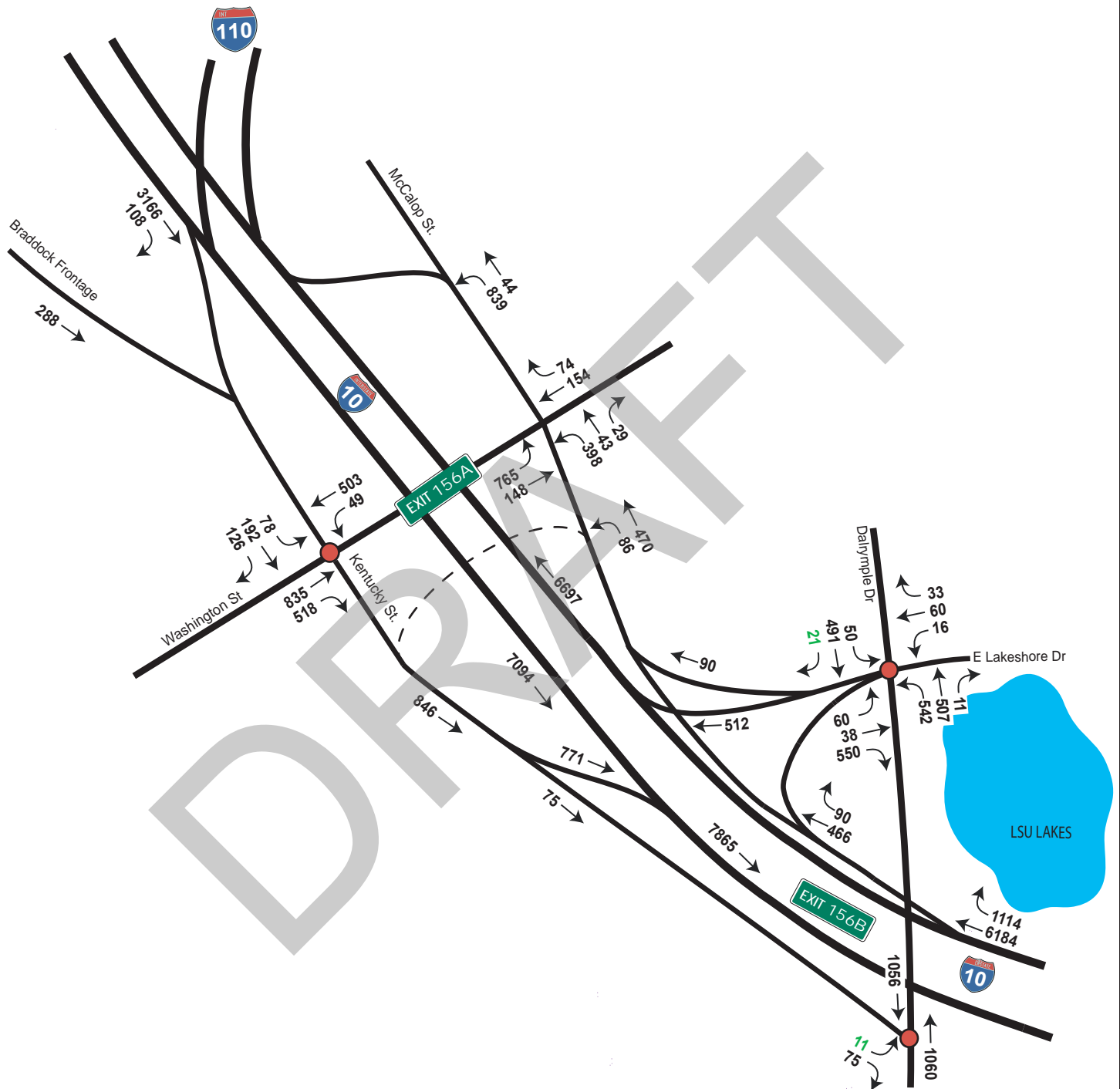
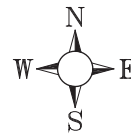
AM 2040 Build Volumes  
Washington/Dalrymple IMR

**I-10 Stage 1 Feasibility Study  
East Baton Rouge Parish, LA**



# LEGEND:

- X 2040 Build PM Volumes
- X Same As 2040 No Build
- Signalized Intersection



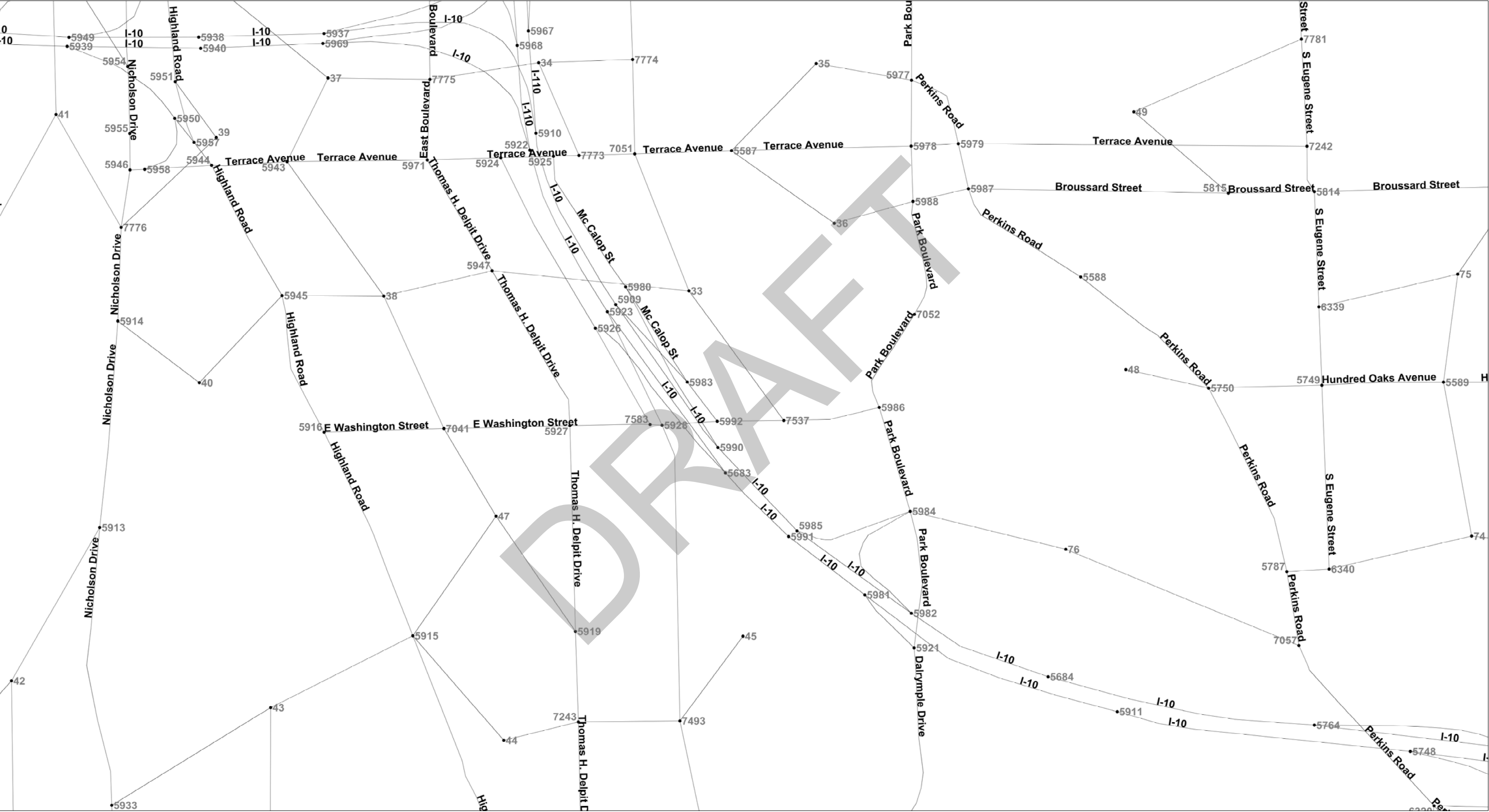
**Figure C-2**

PM 2040 Build Volumes  
Washington/Dalrymple IMR

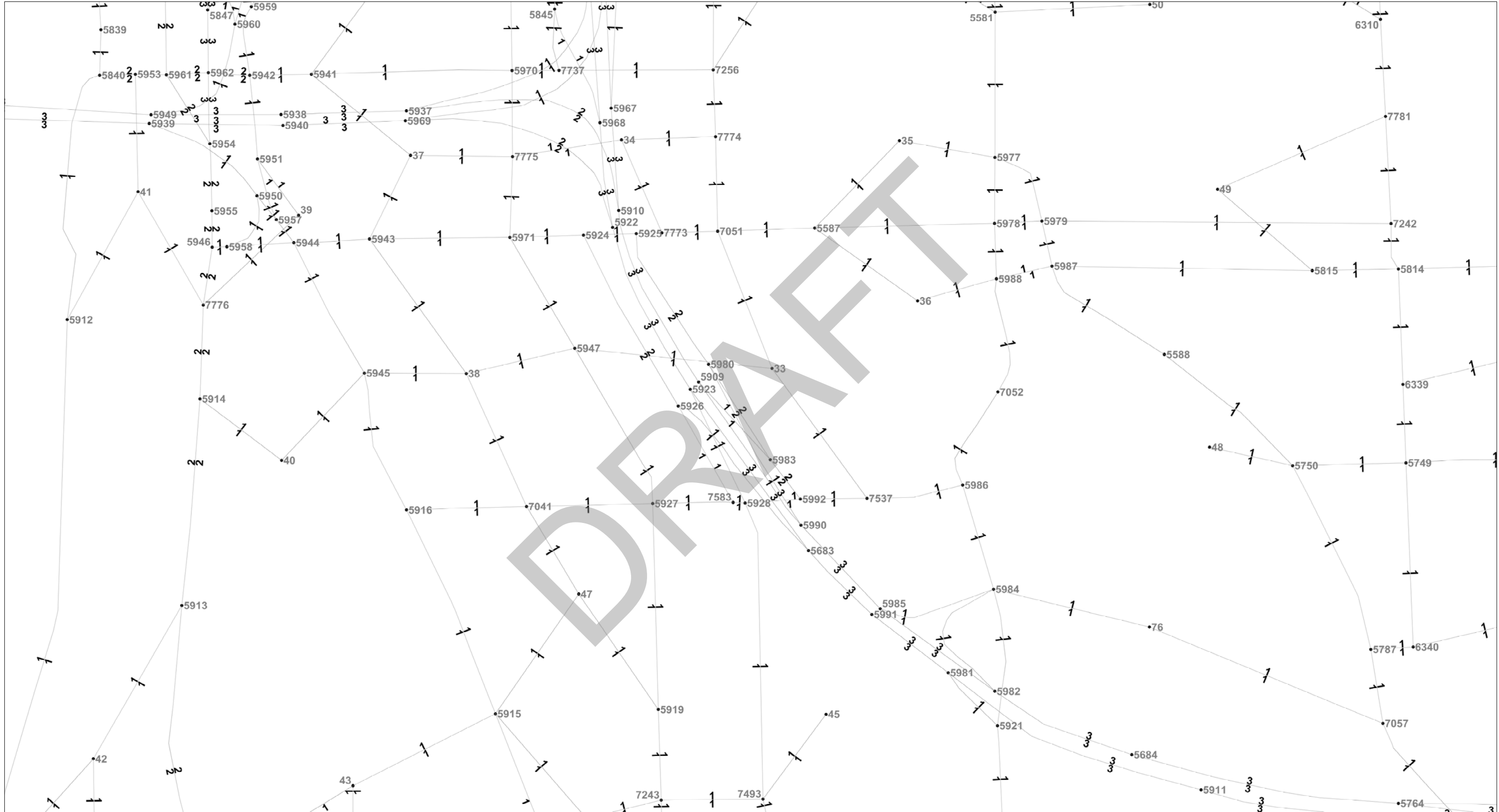
**I-10 Stage 1 Feasibility Study  
East Baton Rouge Parish, LA**



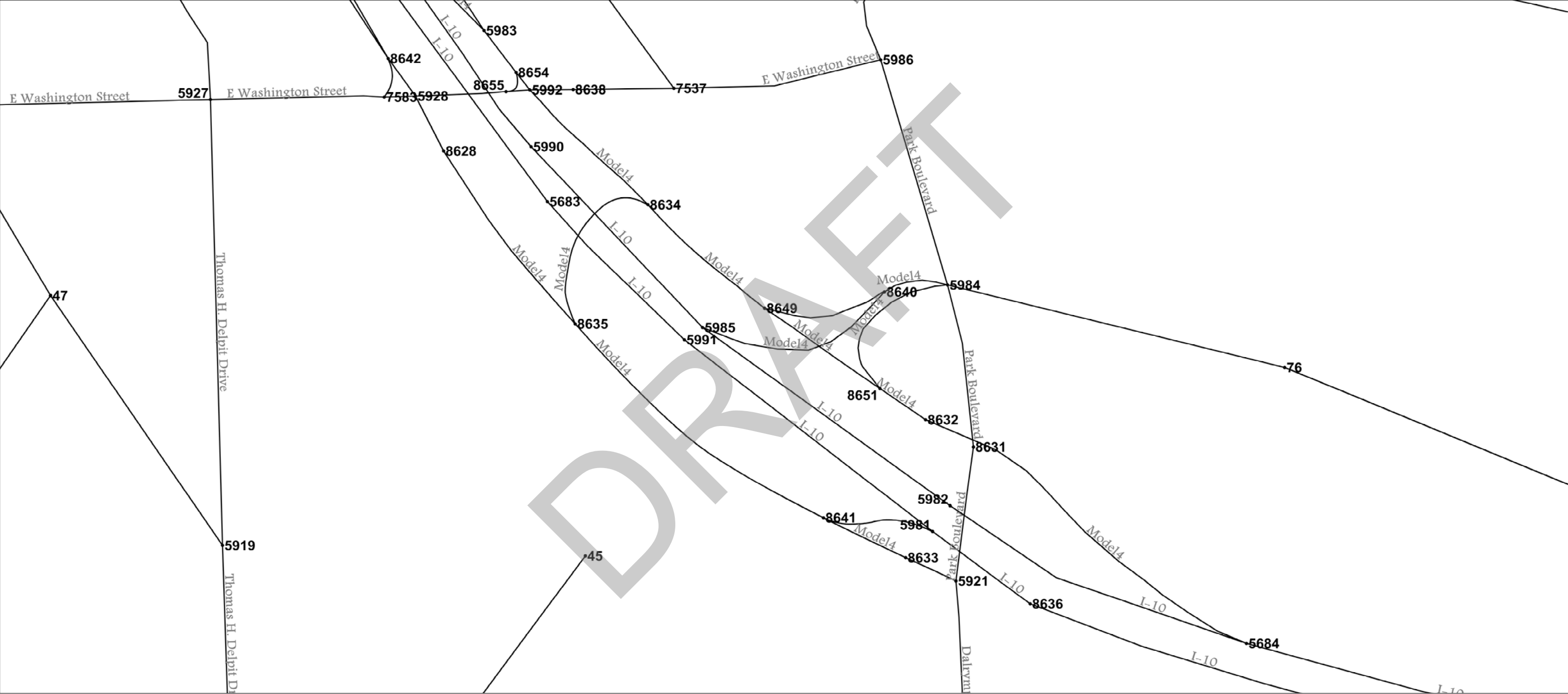
**DRAFT**



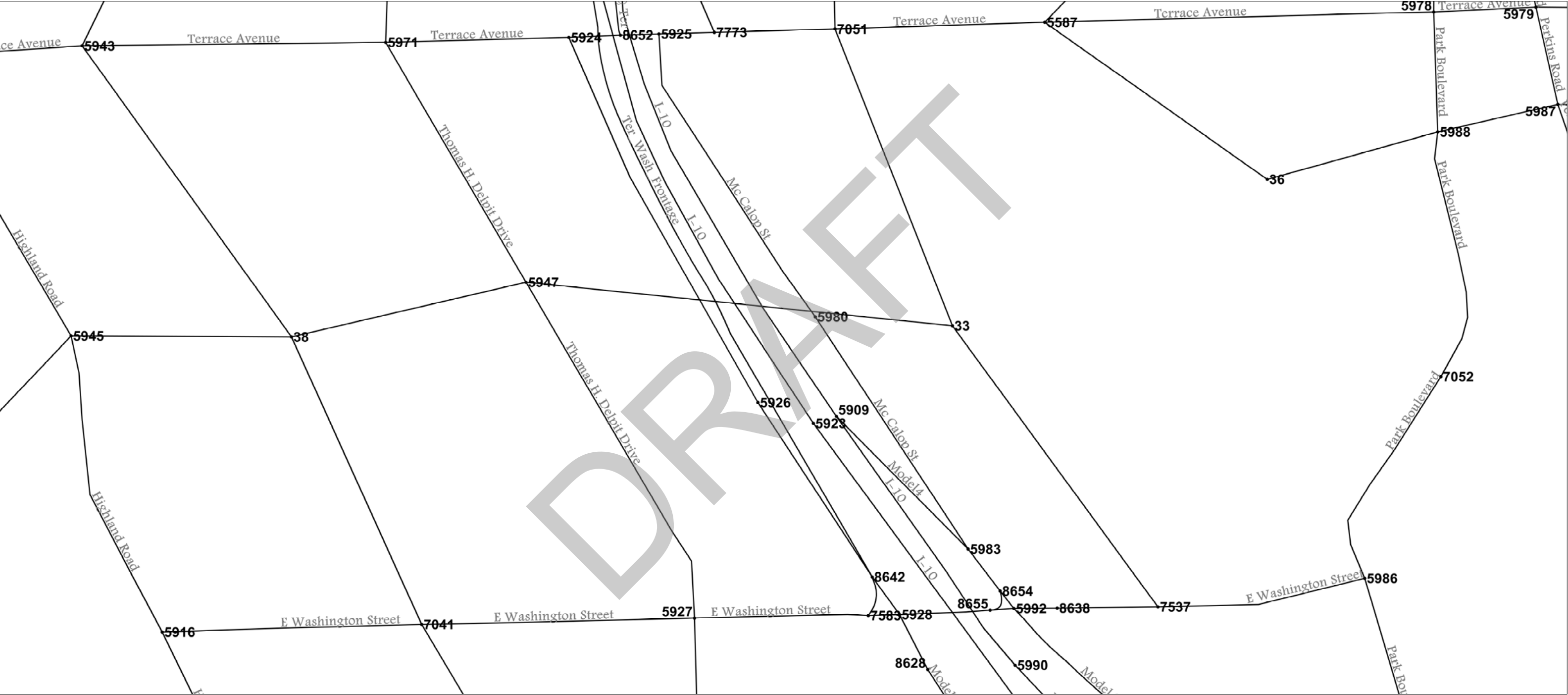
Washington St / Dalrymple Dr IMR  
2037 No Build - Nodes and Lanes

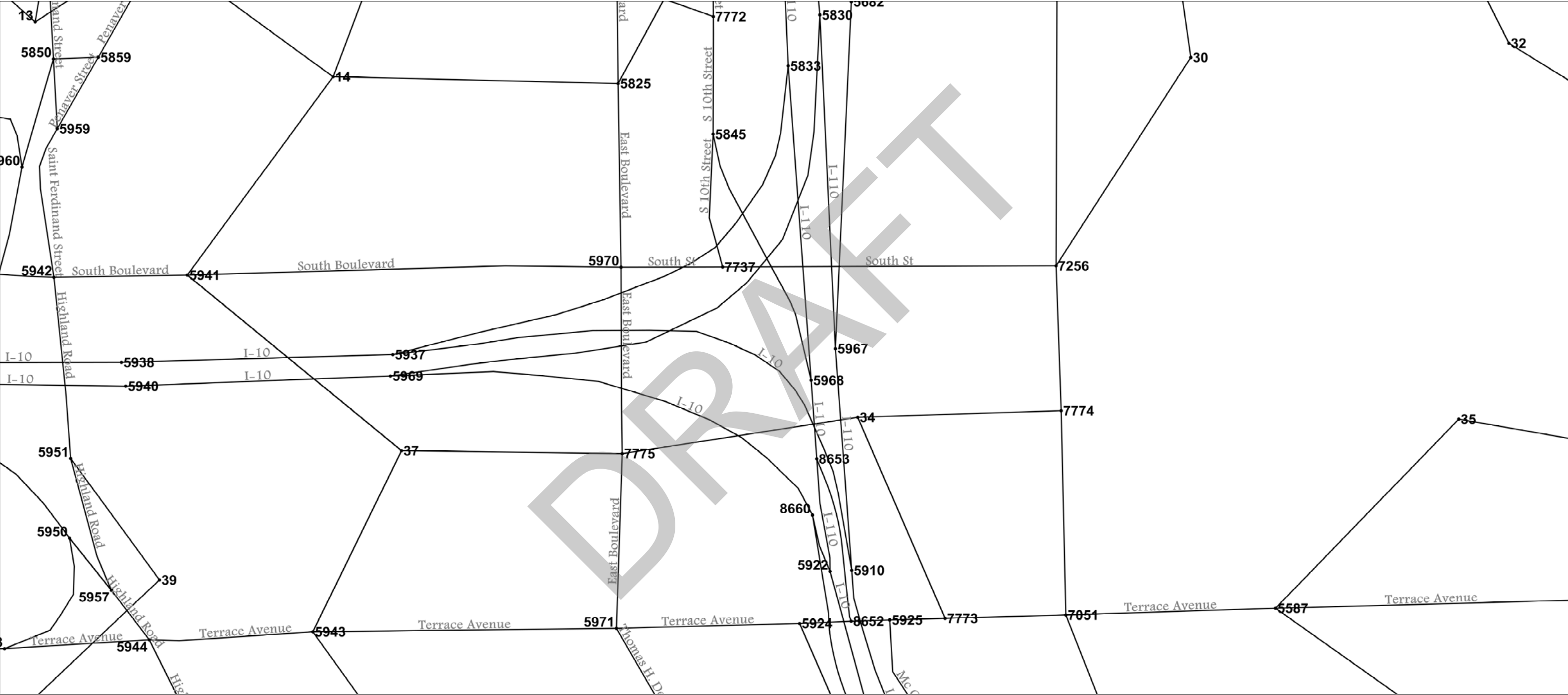


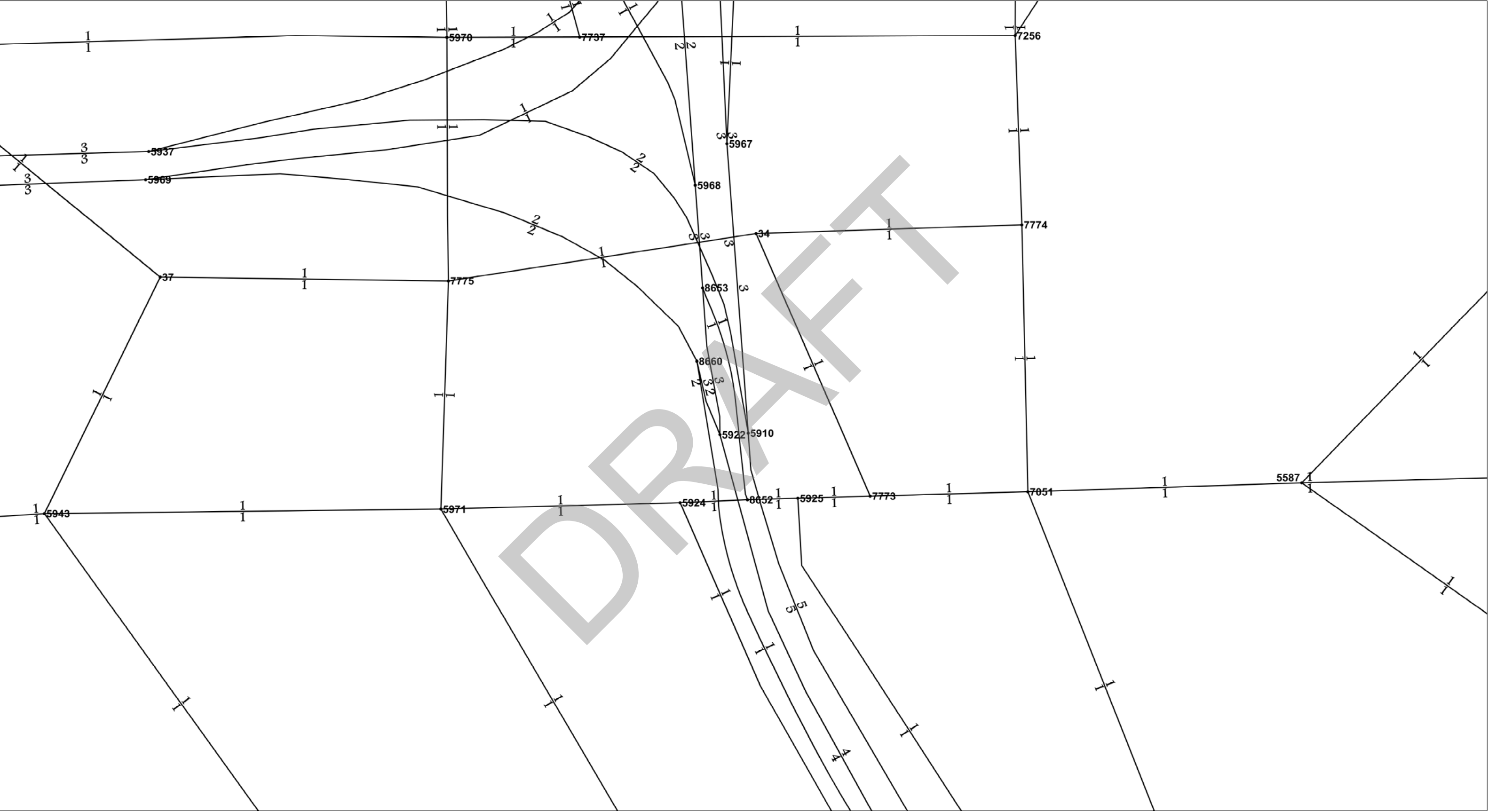


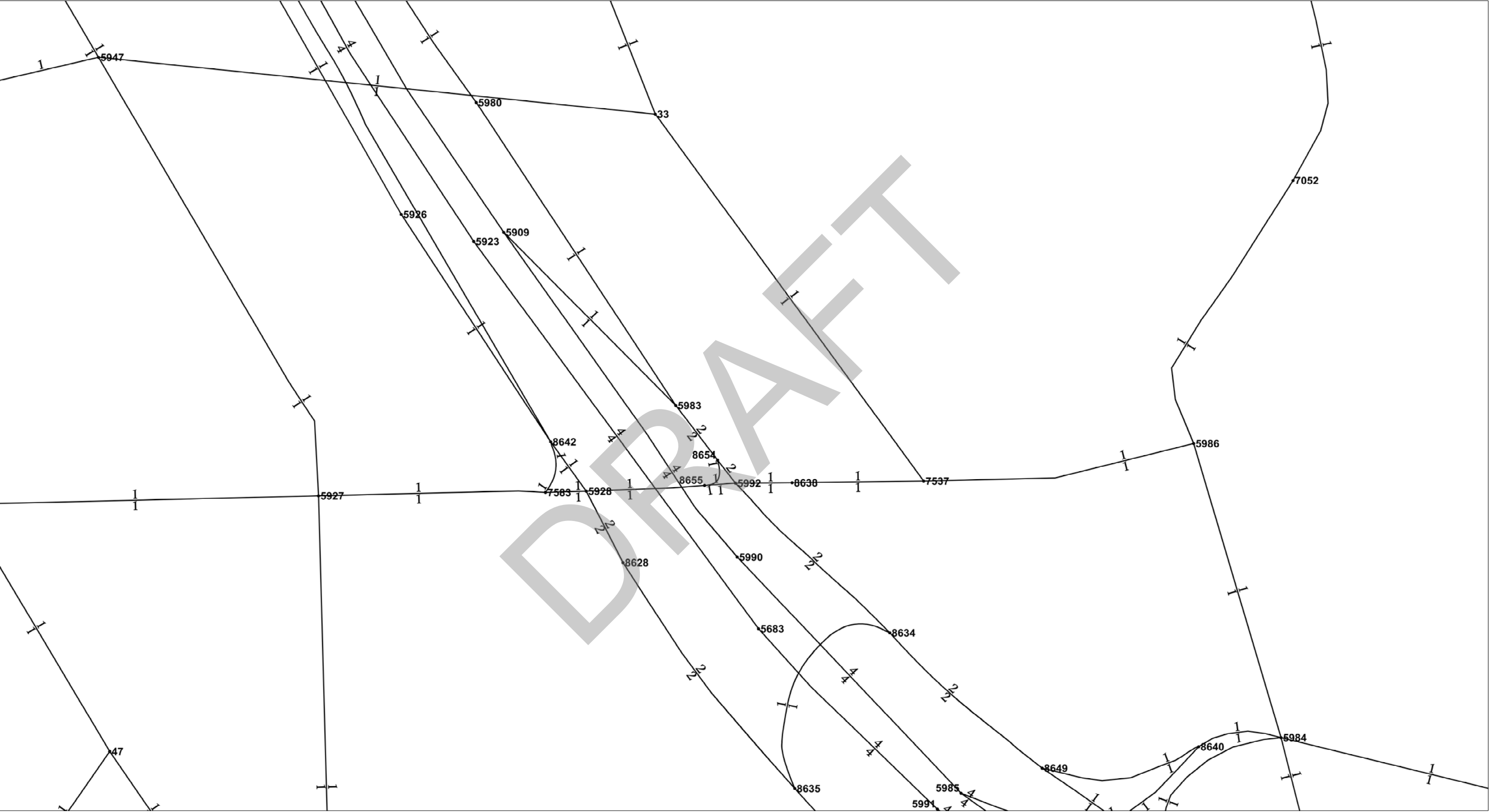


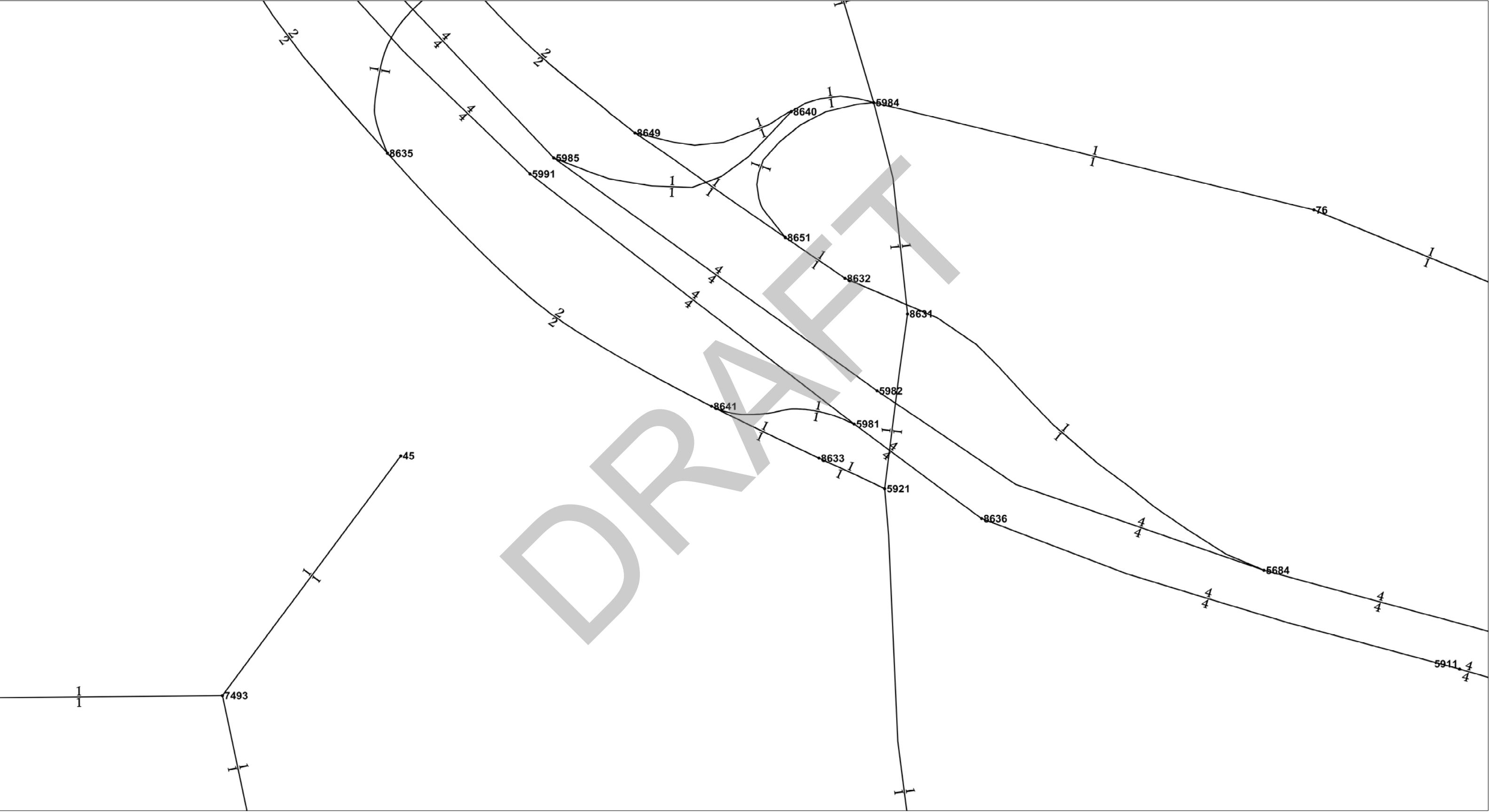
Washington St / Dalrymple Dr IMR  
2037 Build - Nodes and Names 2 of 3

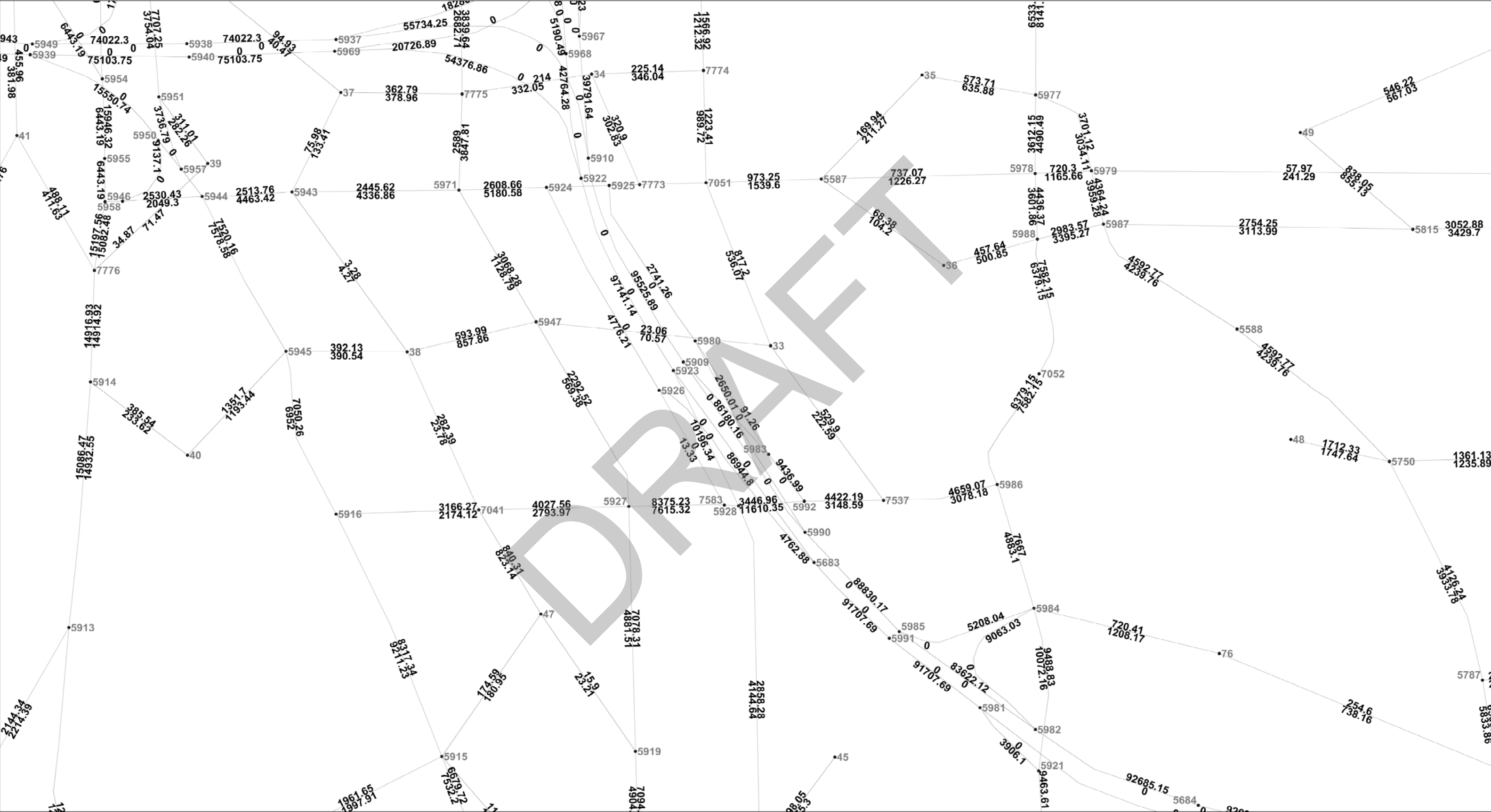






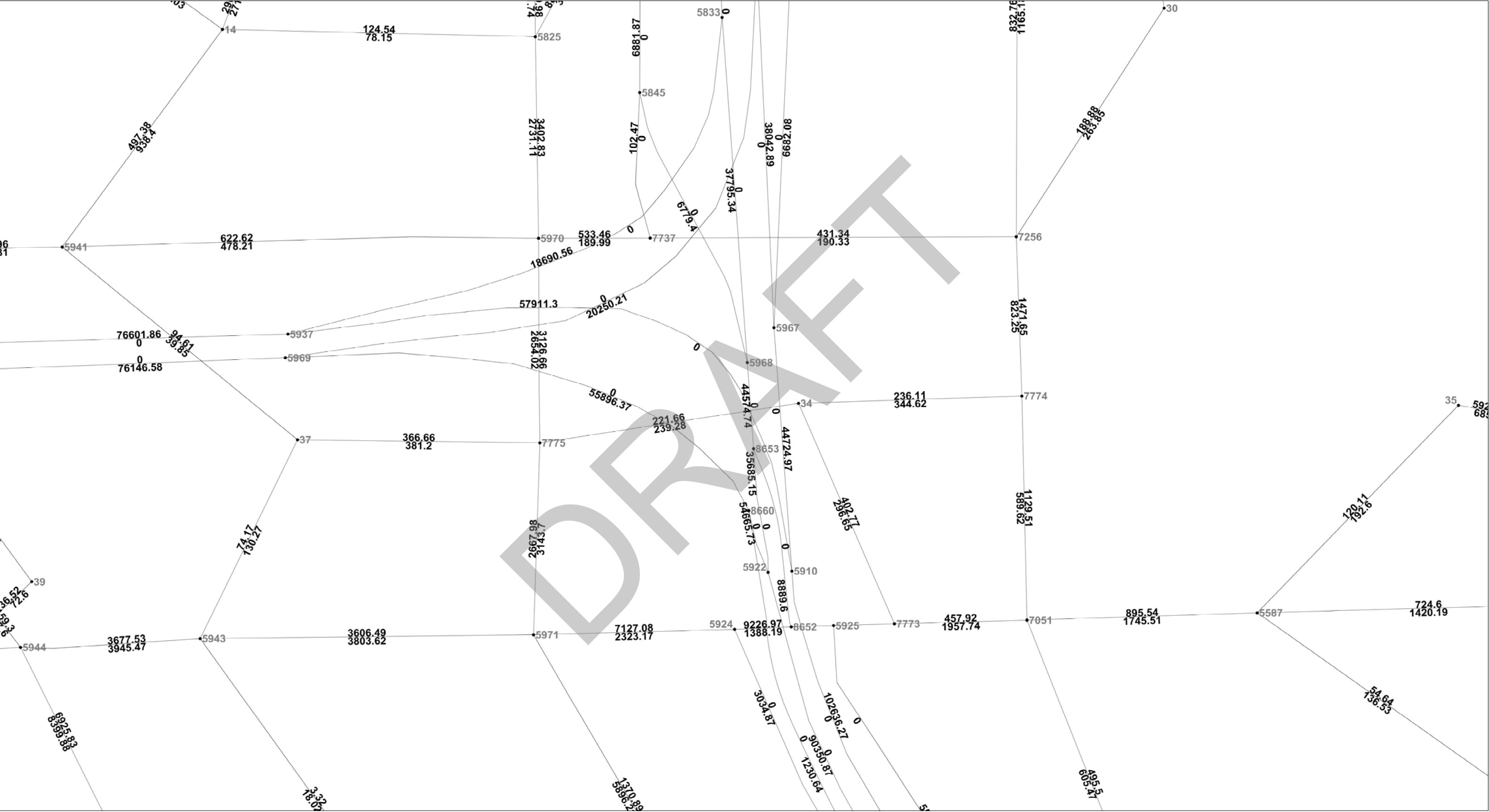


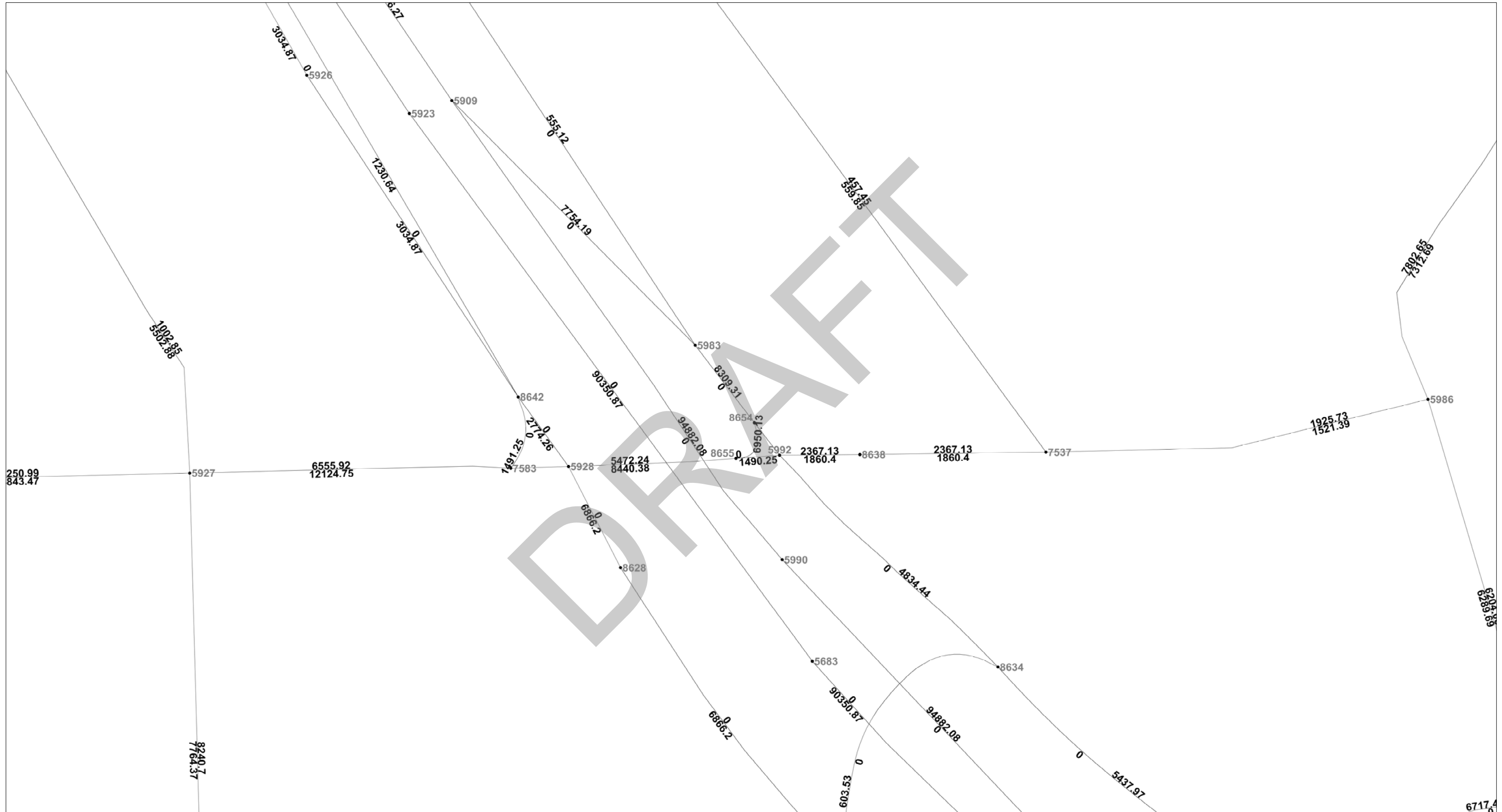


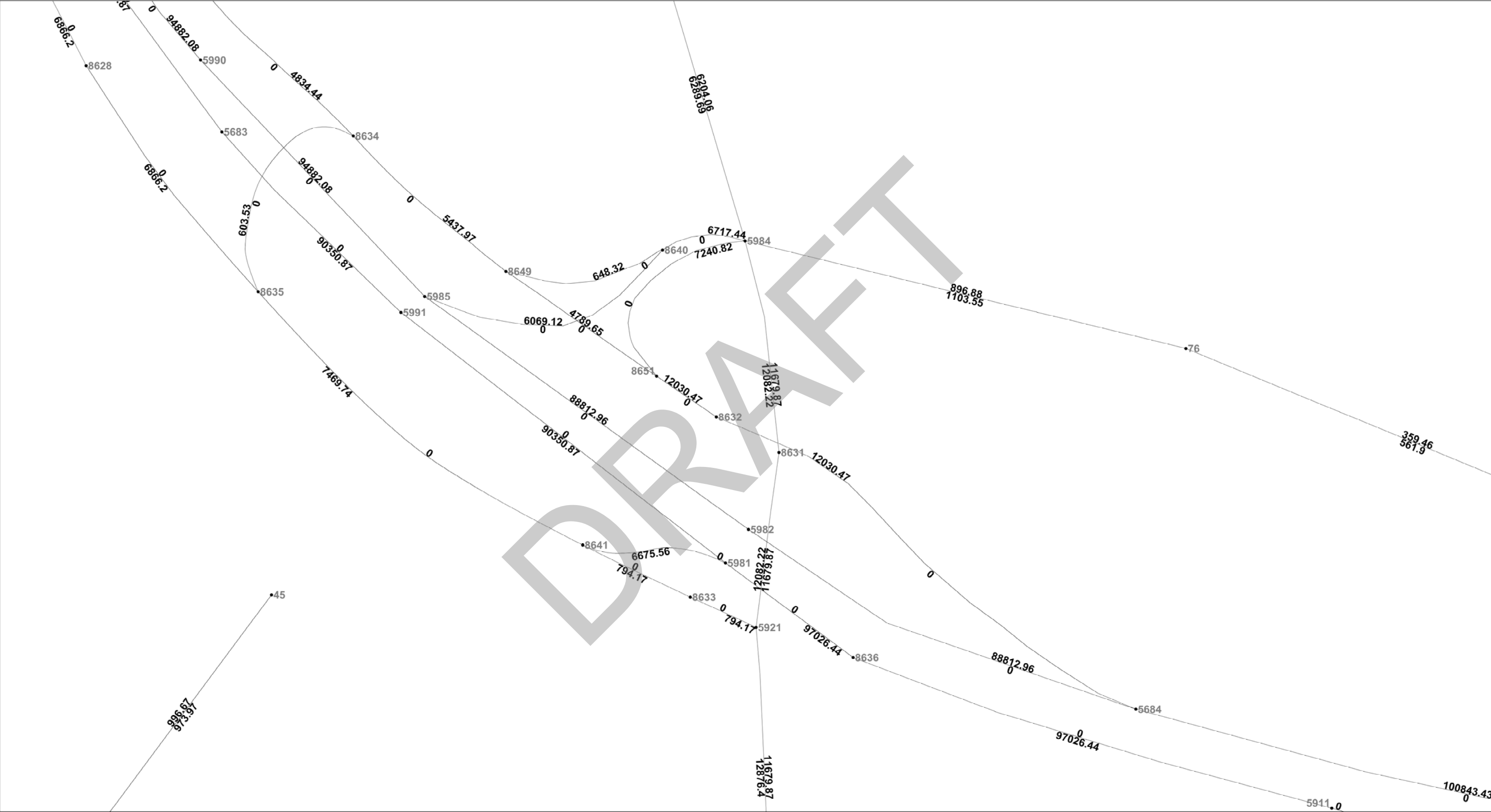








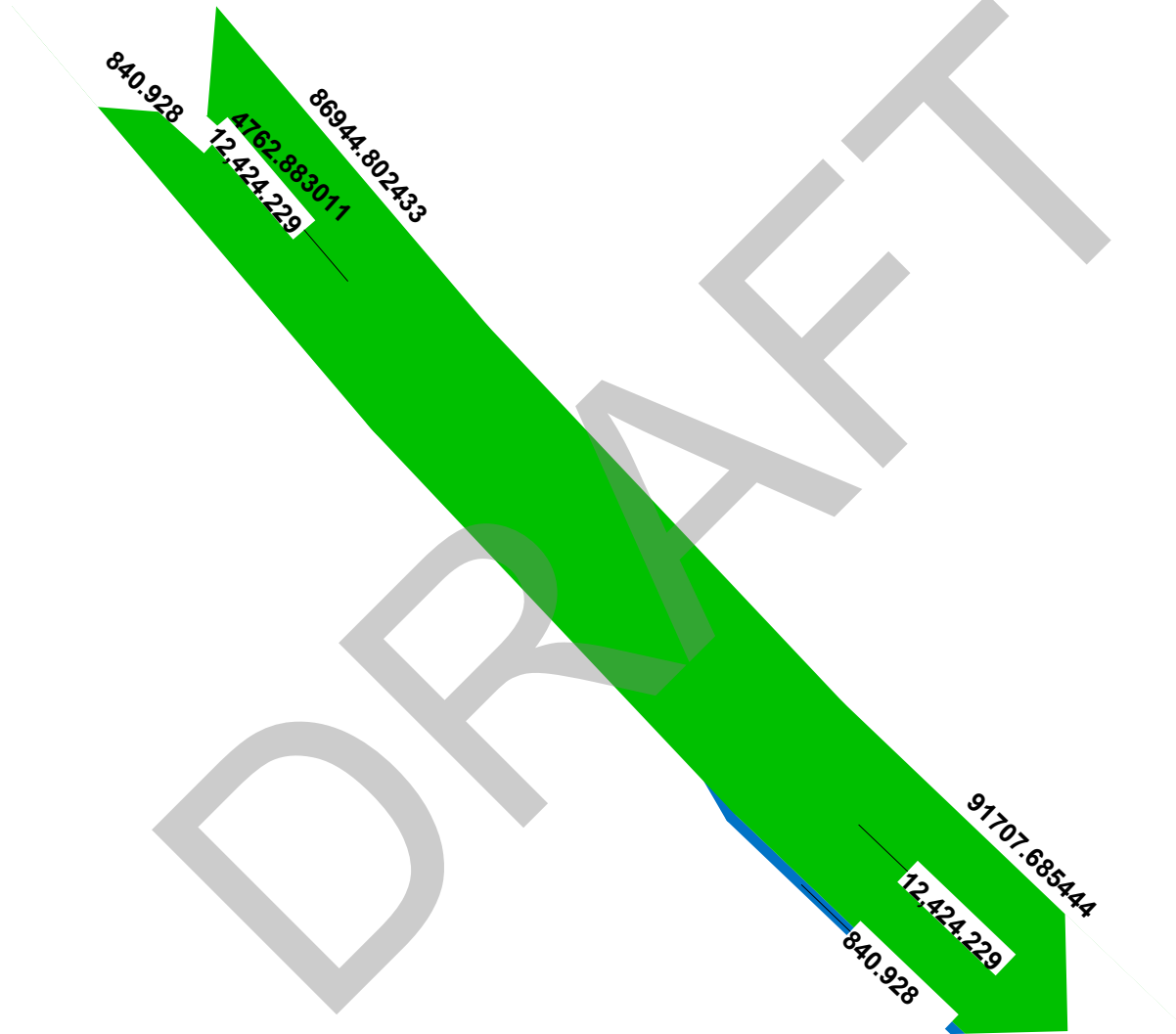




Washington St / Dalrymple Dr IMR  
2037 Build - Nodes and ADTs 4 of 4

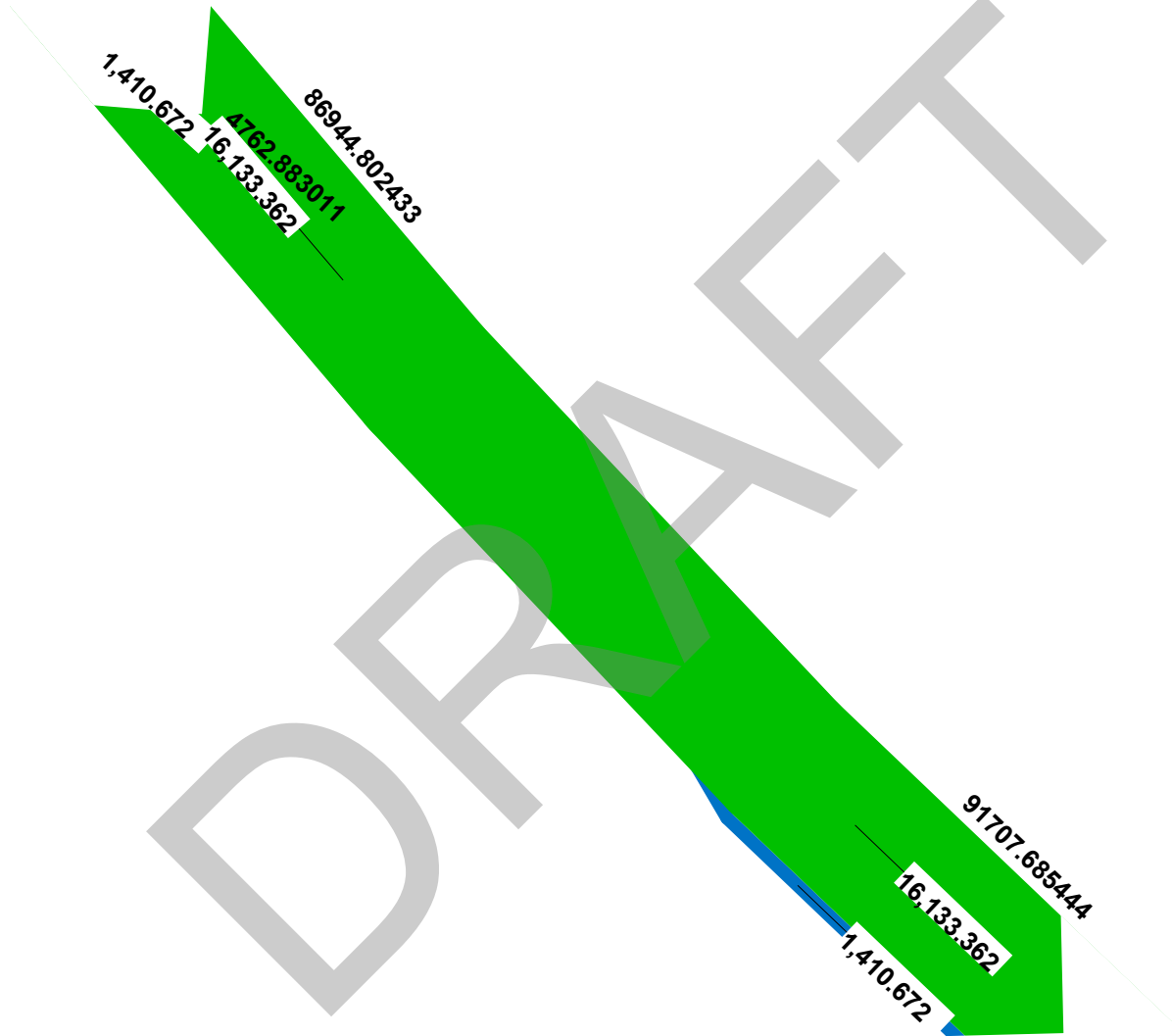


## I-10 EB On Ramp Merge from Braddock



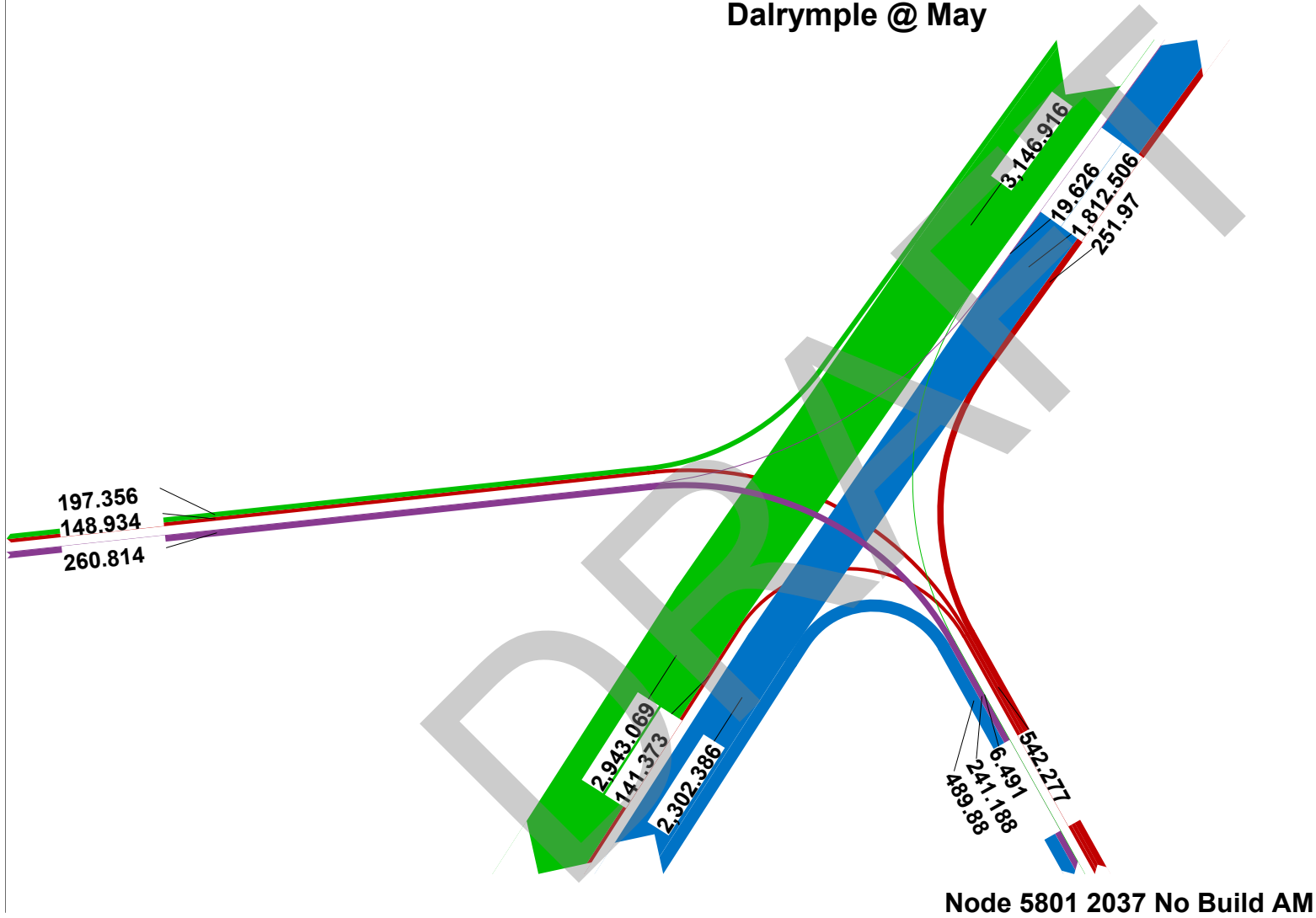
Node 5683 2037 No Build AM

## I-10 EB On Ramp Merge from Braddock

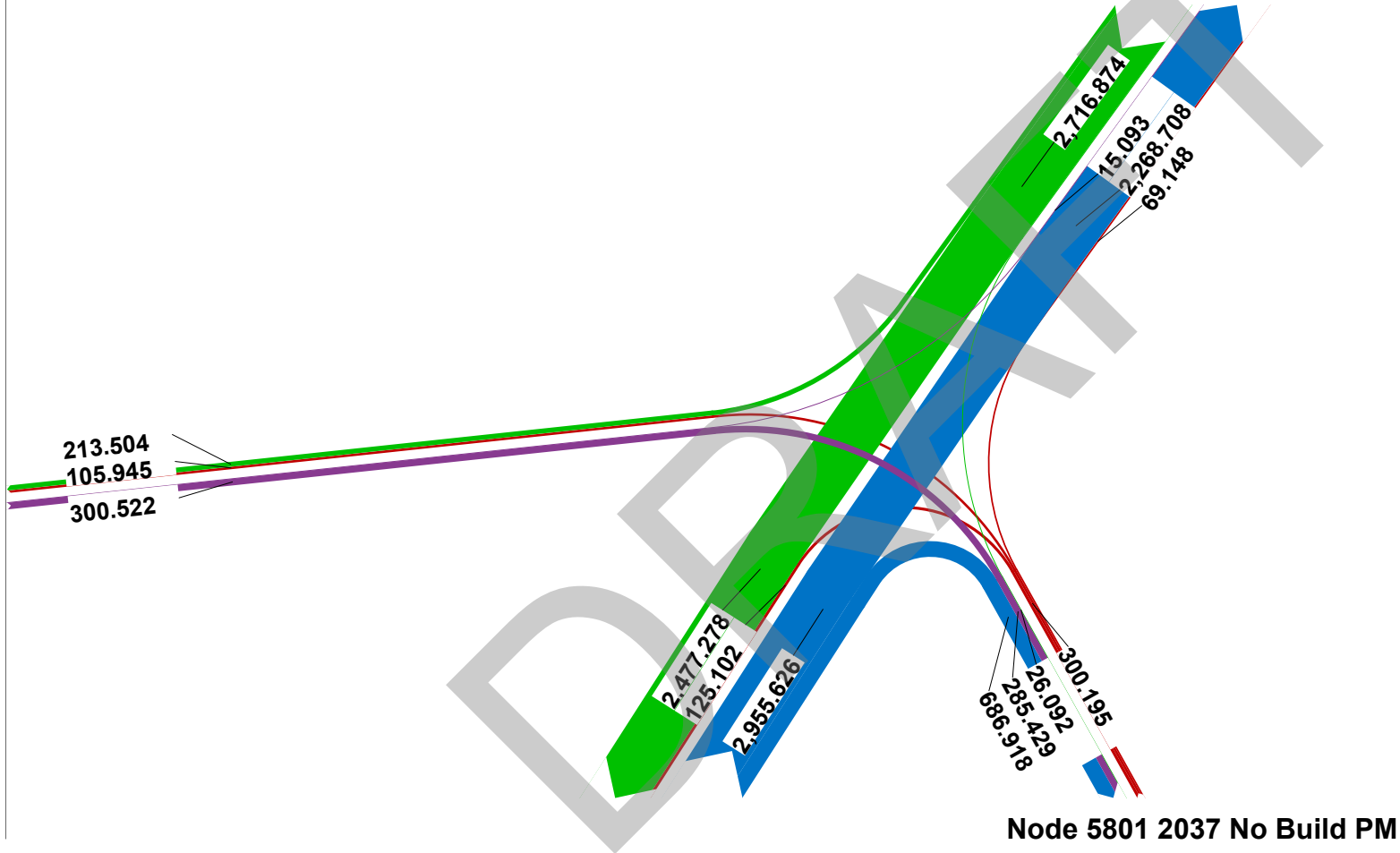


Node 5683 2037 No Build PM

## Dalrymple @ May

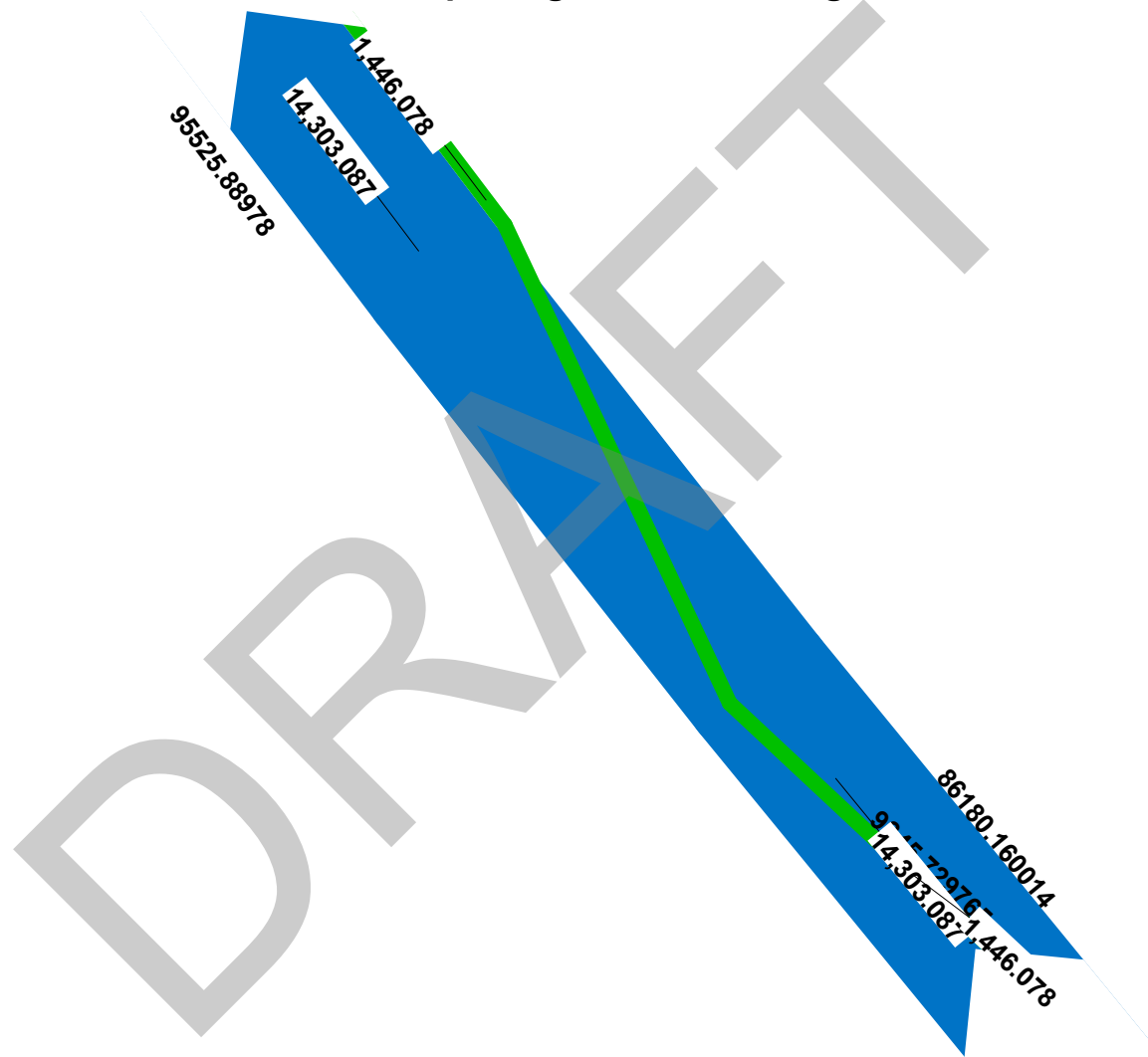


## Dalrymple @ May



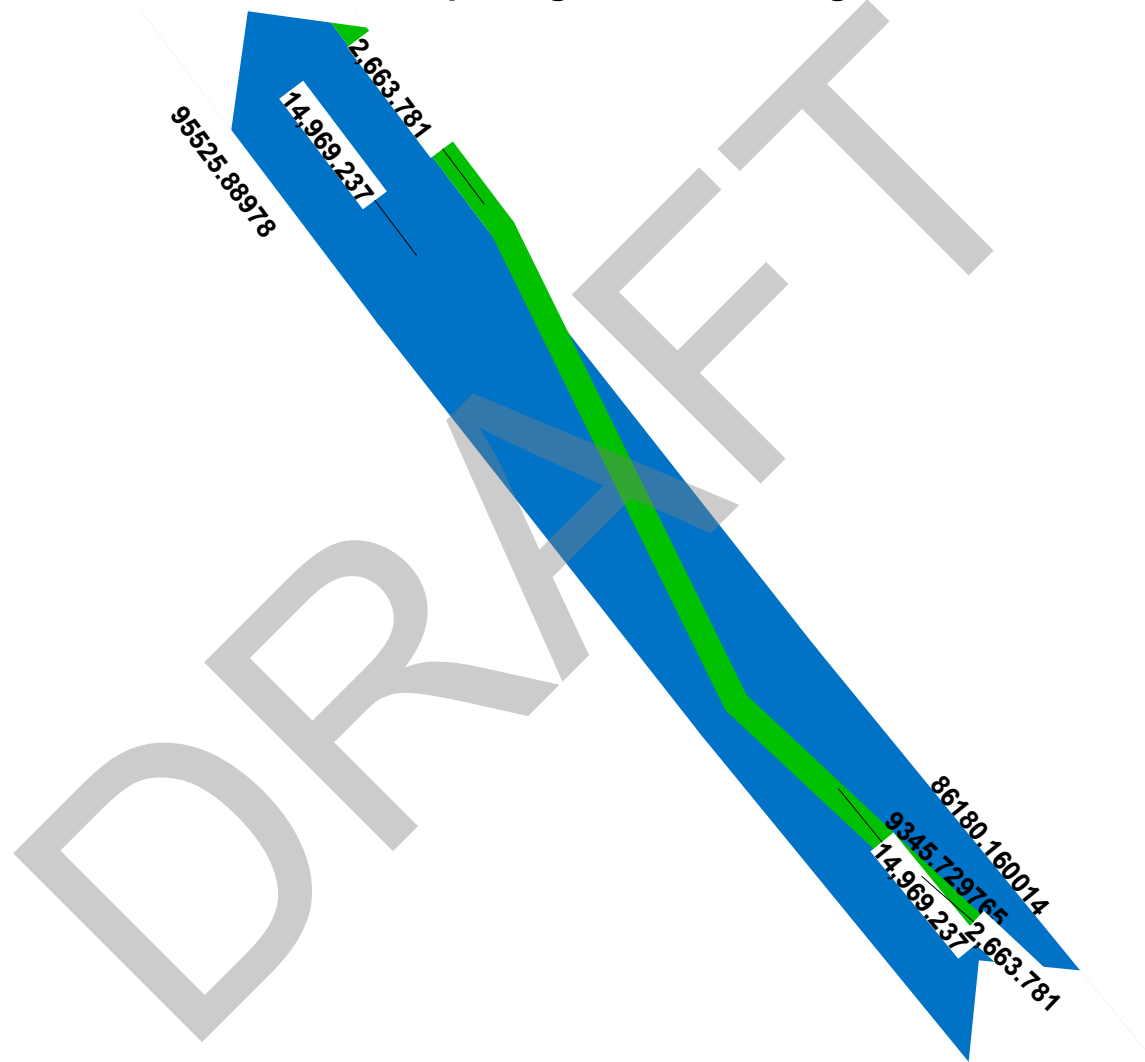


## I-10 WB On Ramp Merge from Washington



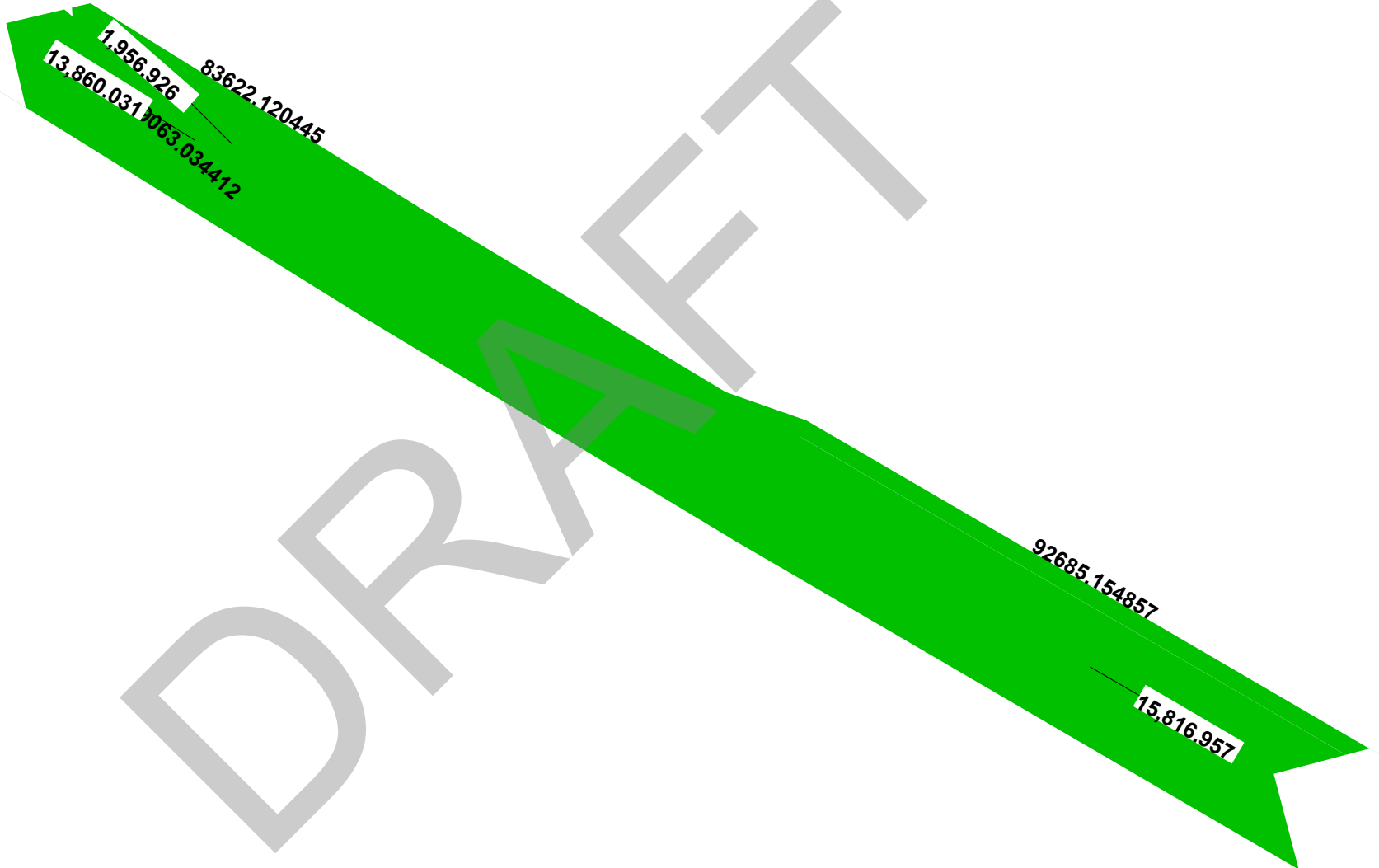
Node 5909 2037 No Build AM

## I-10 WB On Ramp Merge from Washington



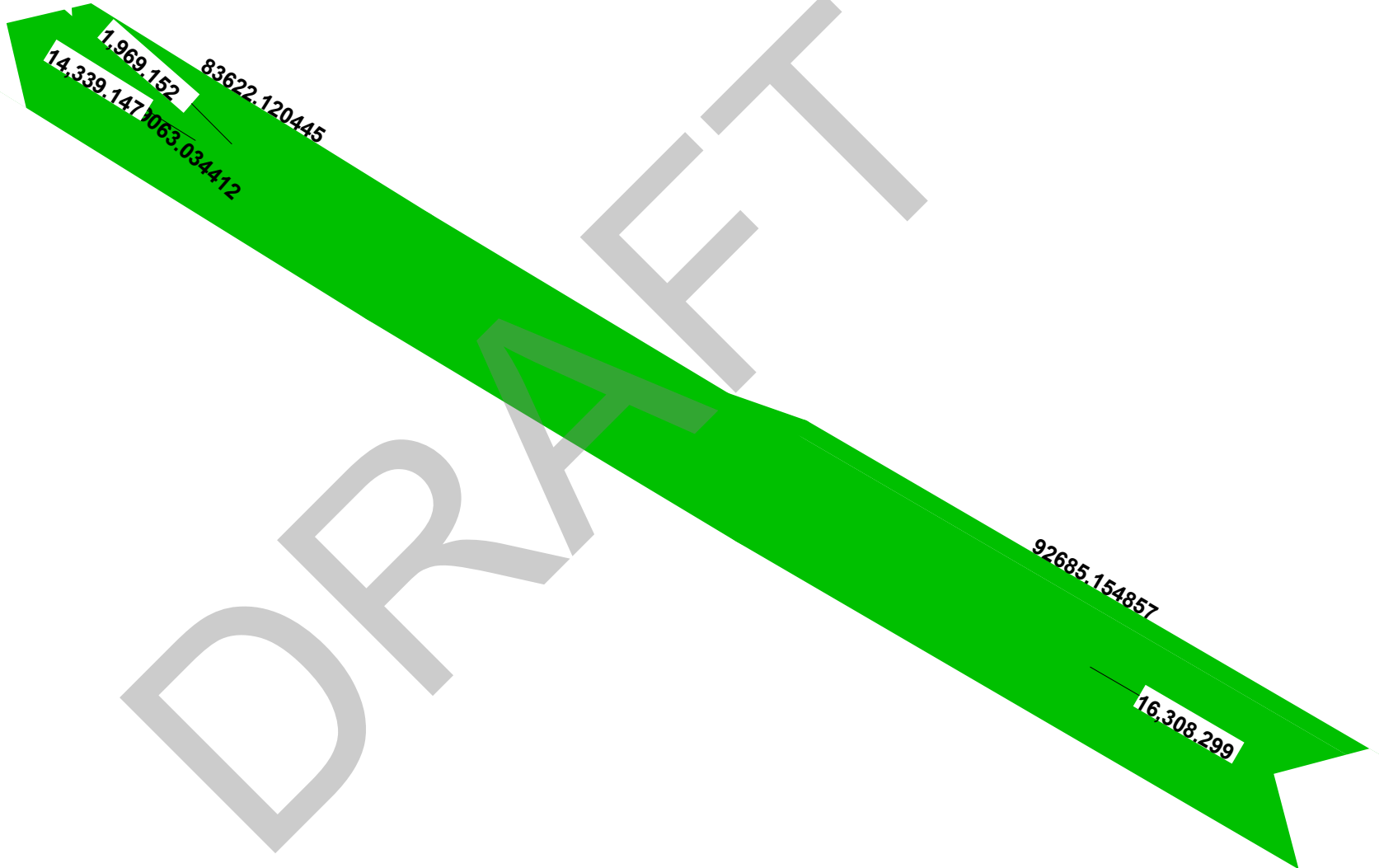
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## I-10 WB Off Ramp Diverge to Dalrymple



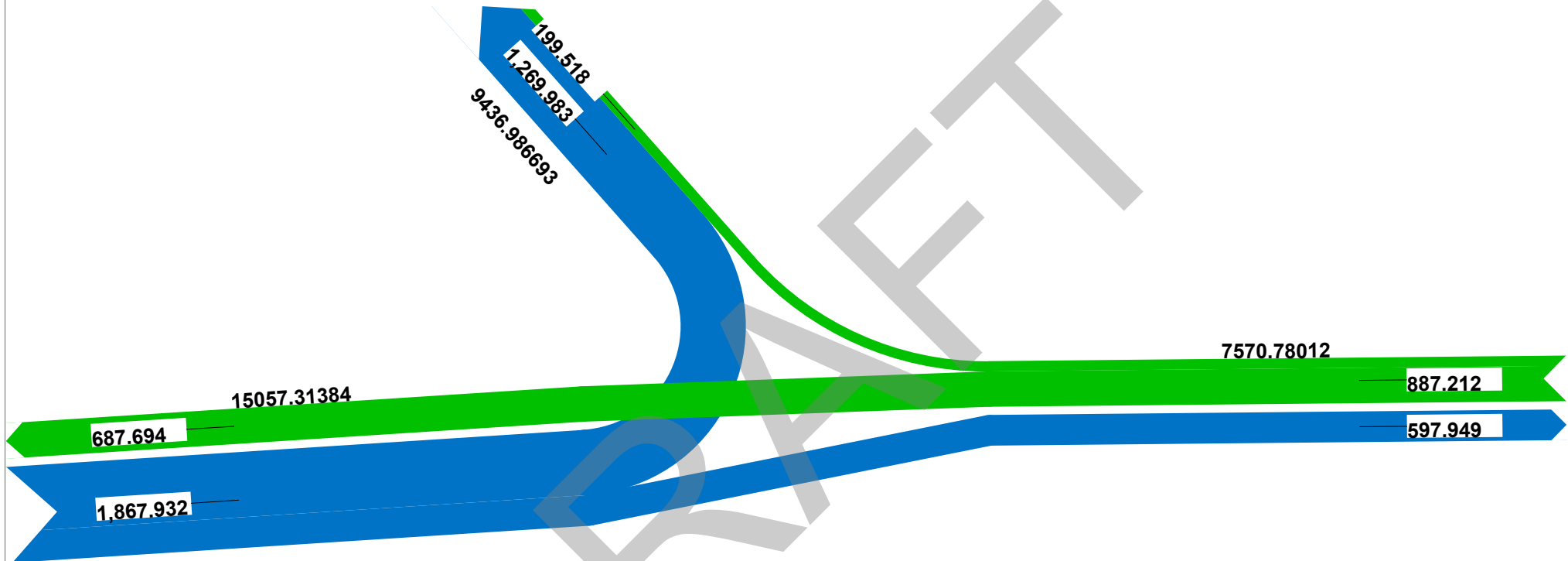
Node 5982 2037 No Build AM

## I-10 WB Off Ramp Diverge to Dalrymple



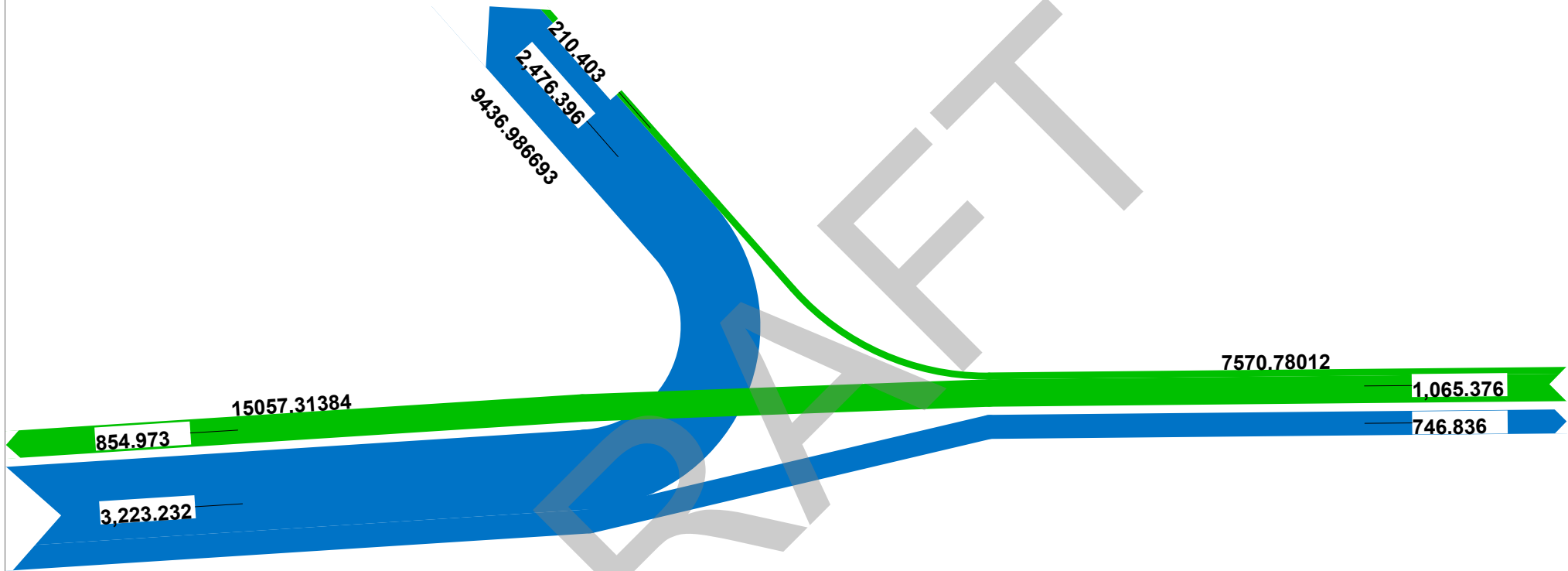
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## Washington @ Mc Calop



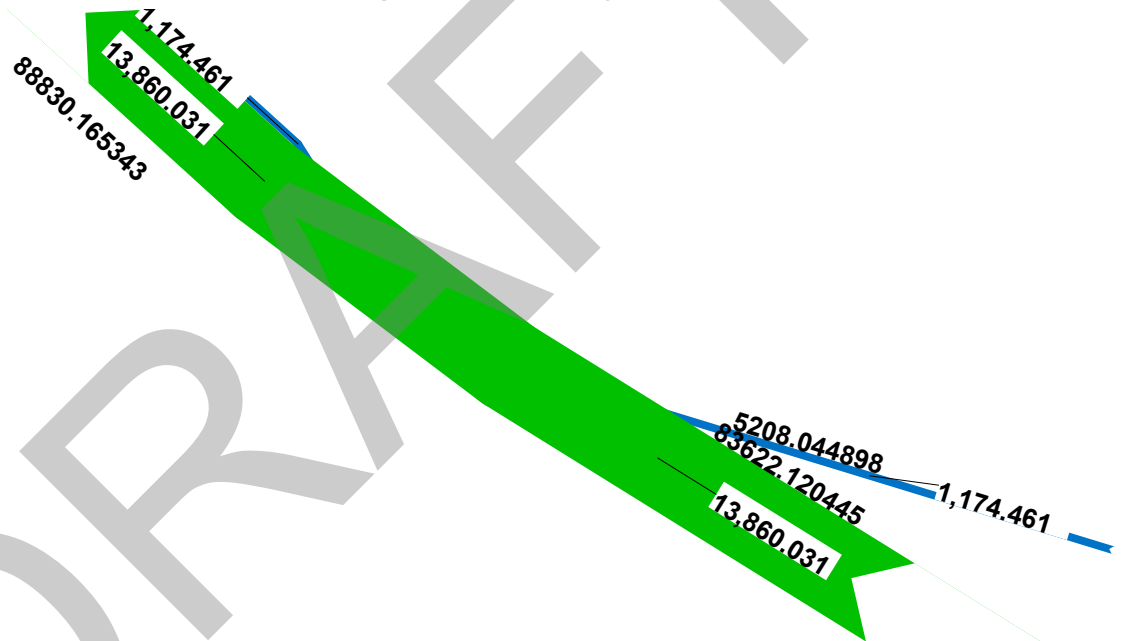
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## Washington @ Mc Calop



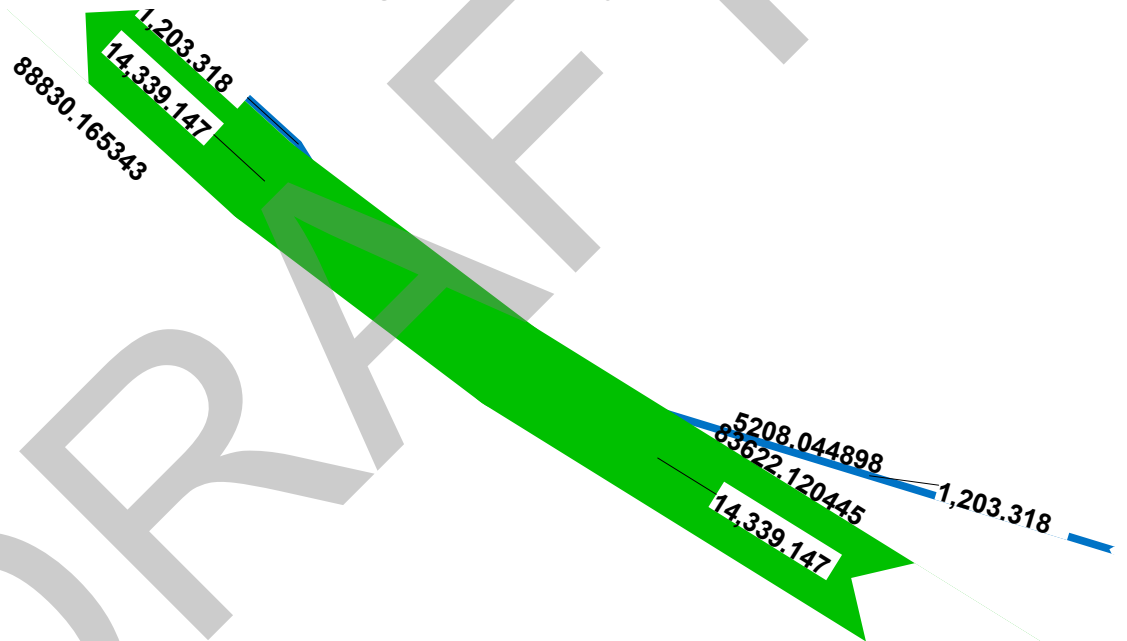
Node 5992 2037 No Build PM

## I-10 WB On Ramp Merge From Dalrymple



Node 5985 2037 AM

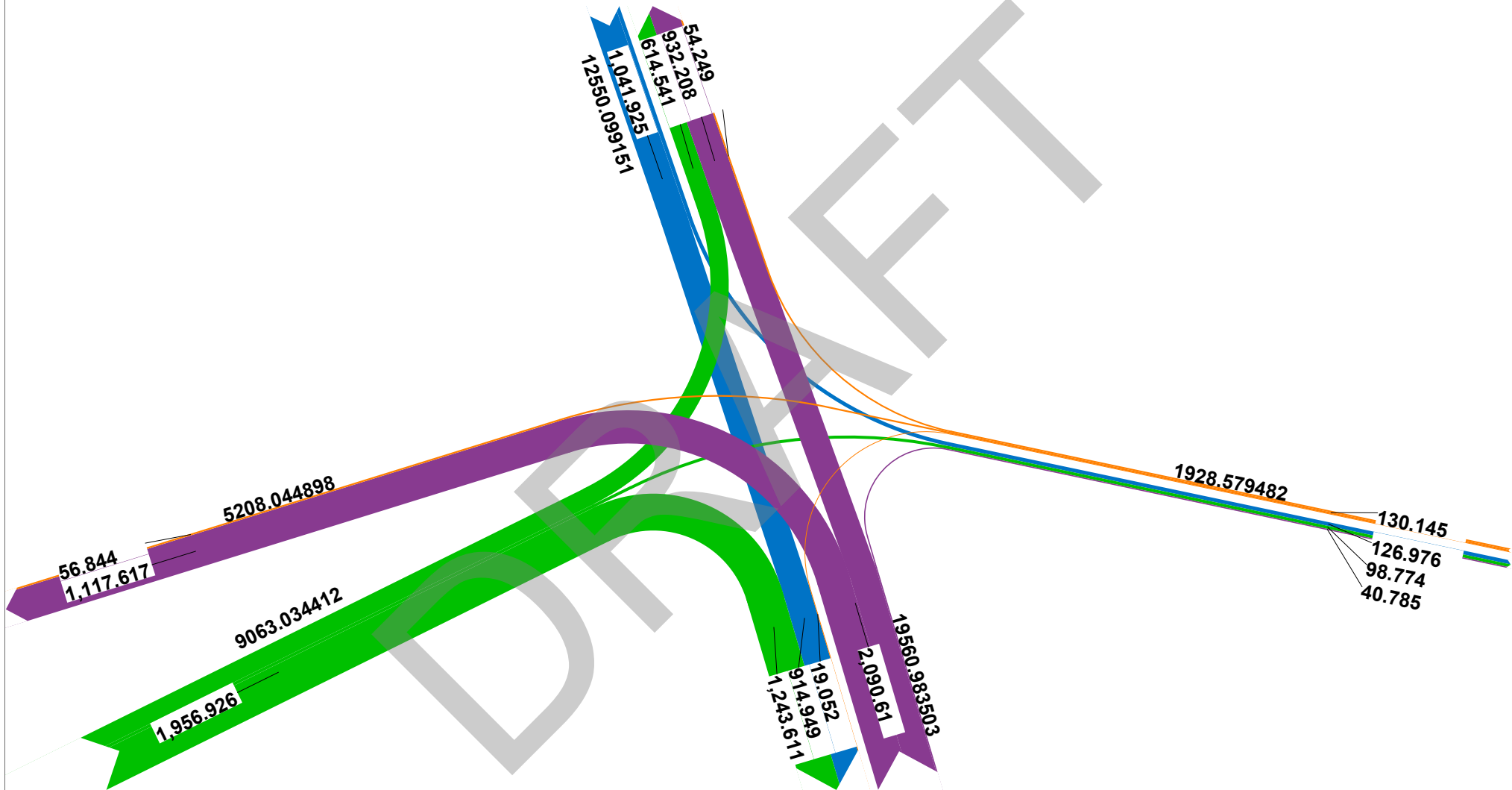
## I-10 WB On Ramp Merge From Dalrymple



Node 5985 2037 PM

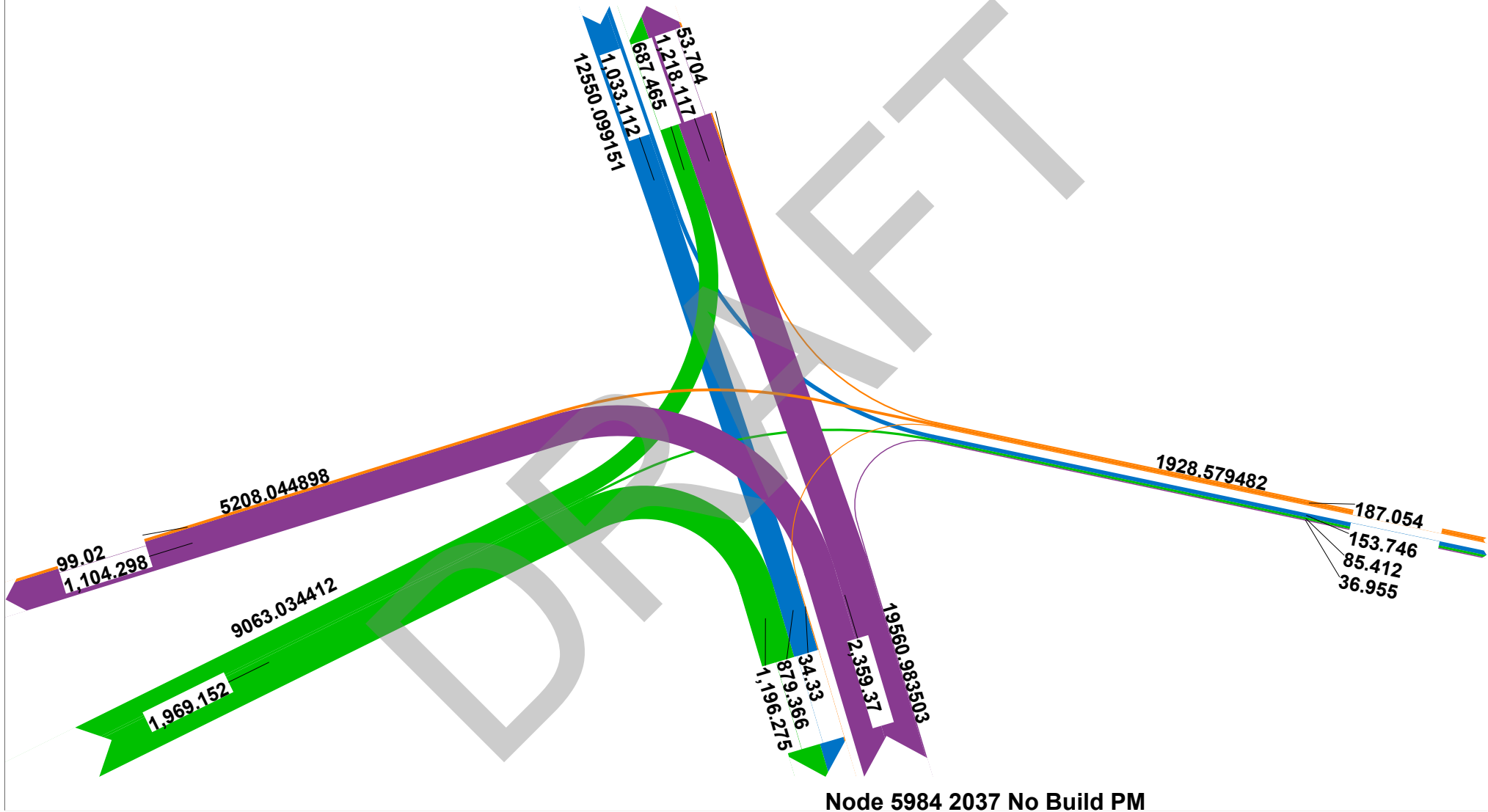


# I-10 WB Off Ramp @ Dalrymple

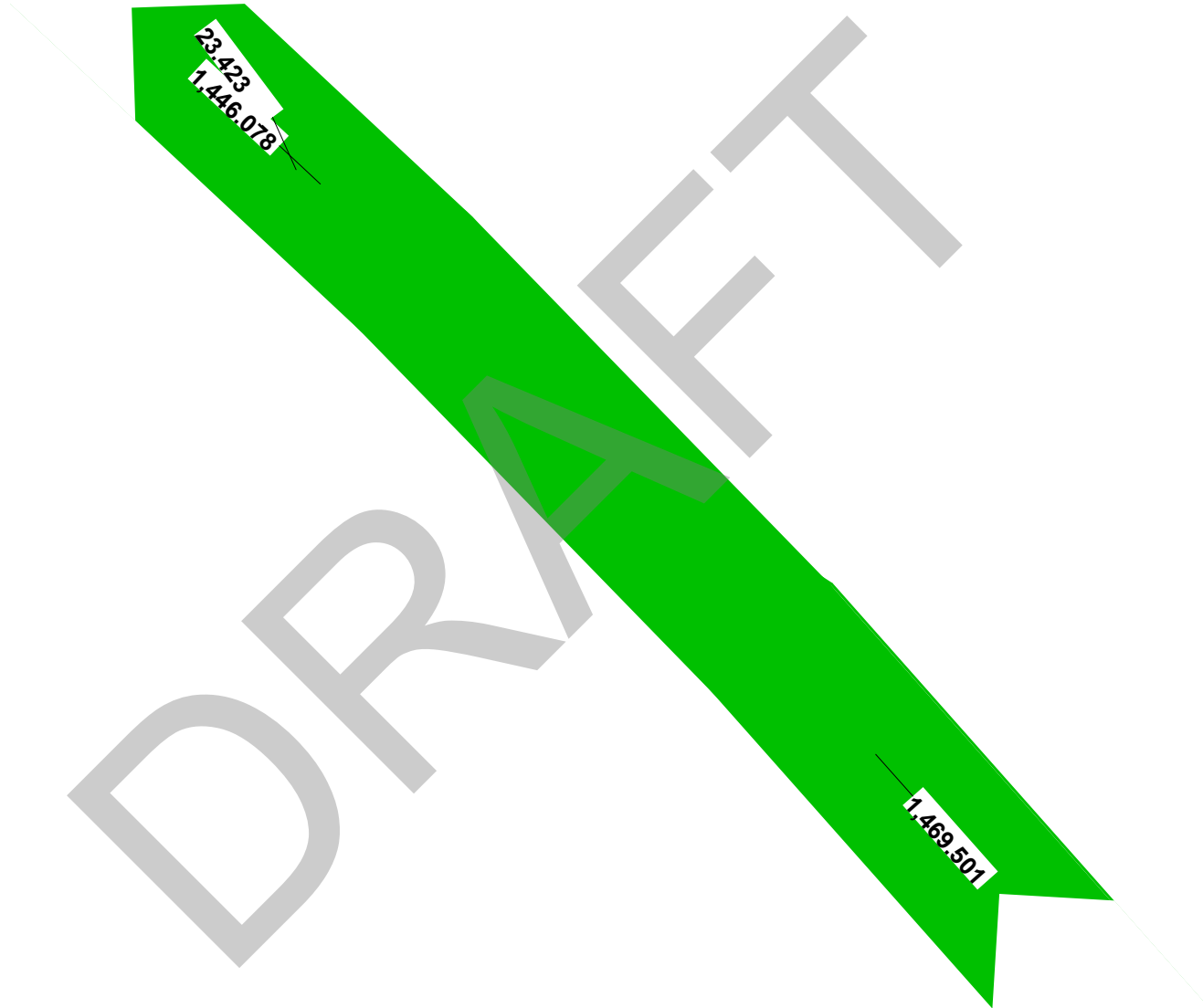


Node 5984 2037 No Build AM

# I-10 WB Off Ramp @ Dalrymple



## I-10 WB On Ramp from McCalop St



**Node 5983 No Build AM**

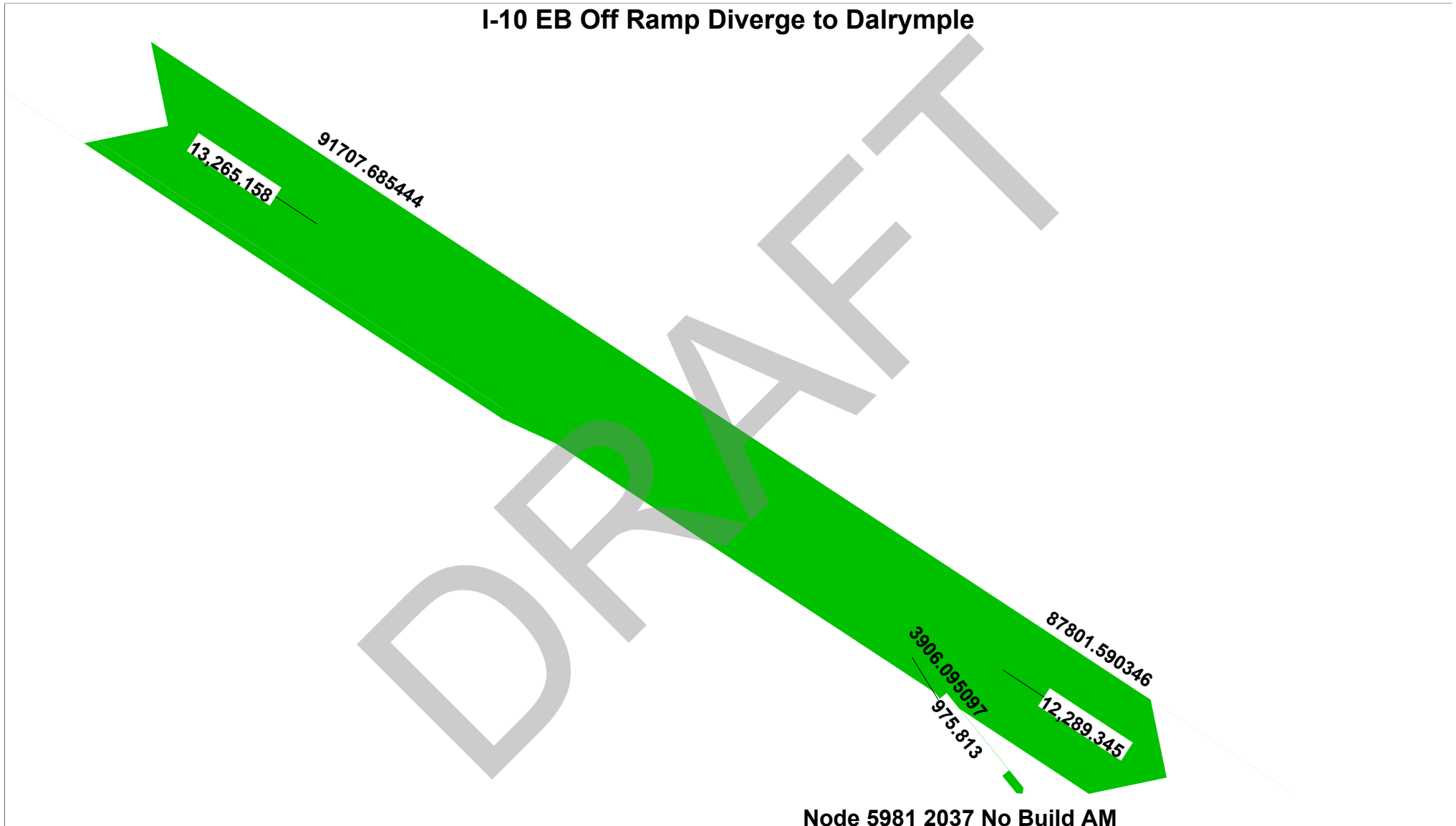
**I-10 WB On Ramp from McCalop St**

23.018  
2.663.781

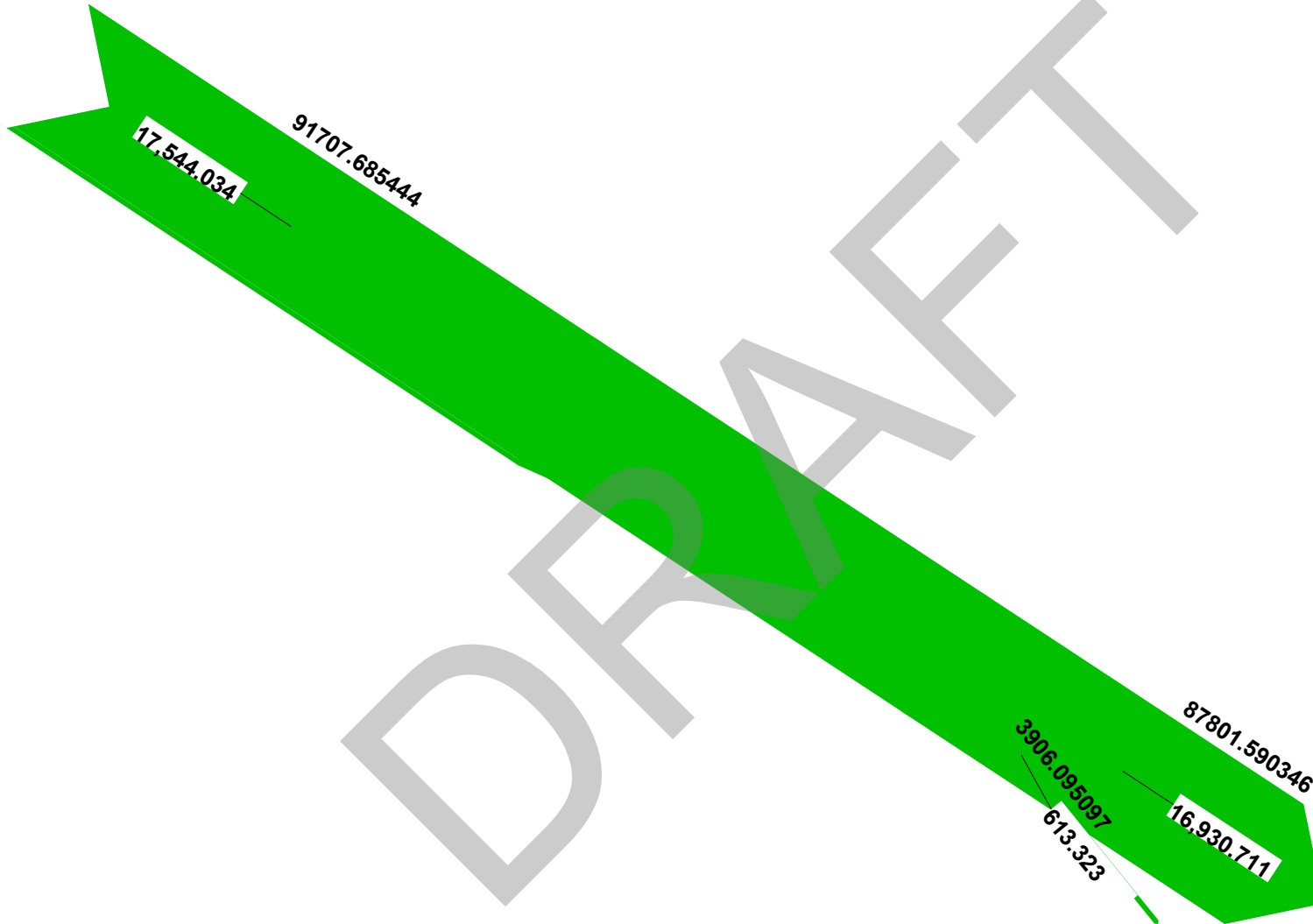
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**Node 5983 No Build PM**

## I-10 EB Off Ramp Diverge to Dalrymple

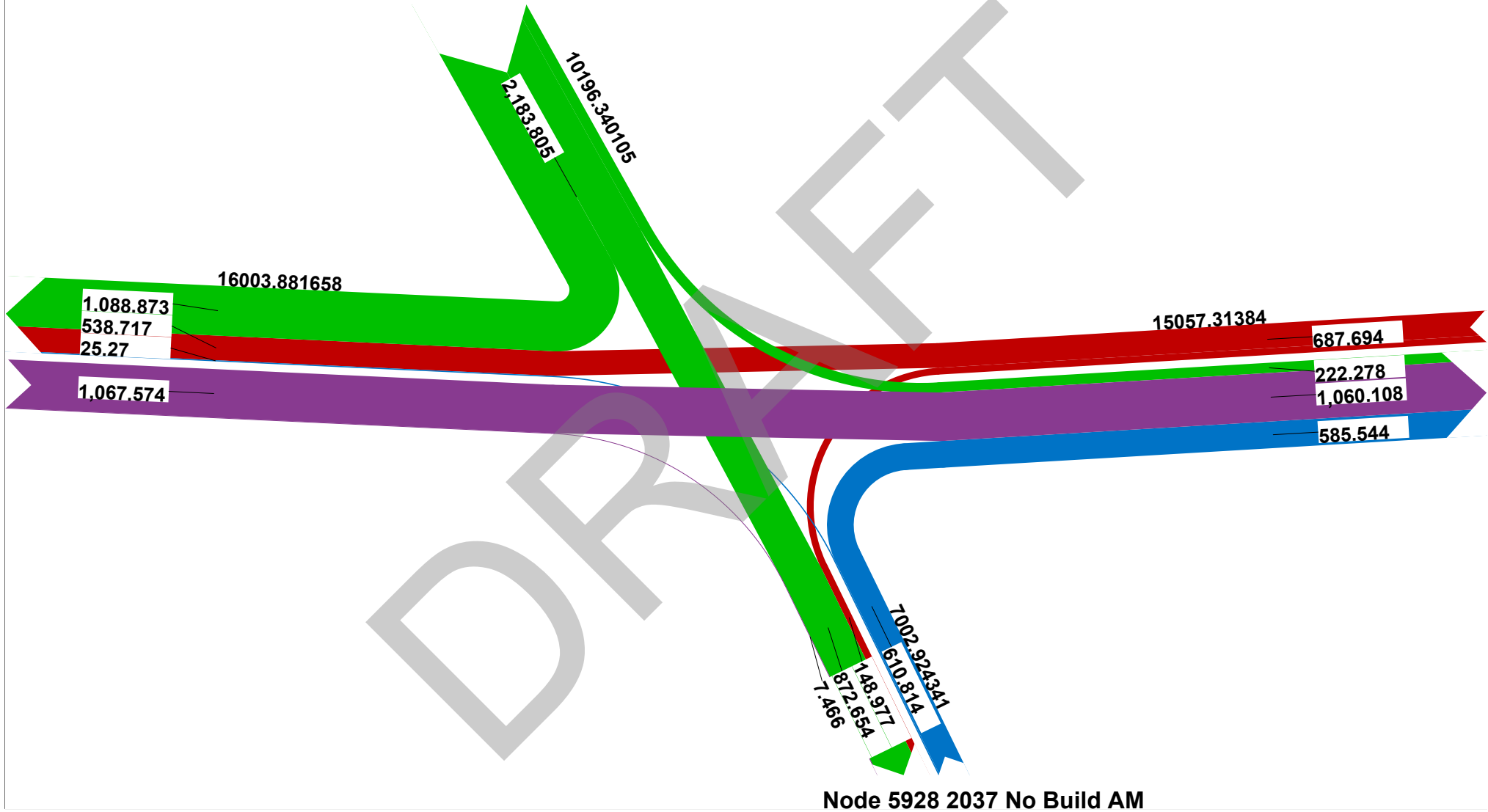


## I-10 EB Off Ramp Diverge to Dalrymple

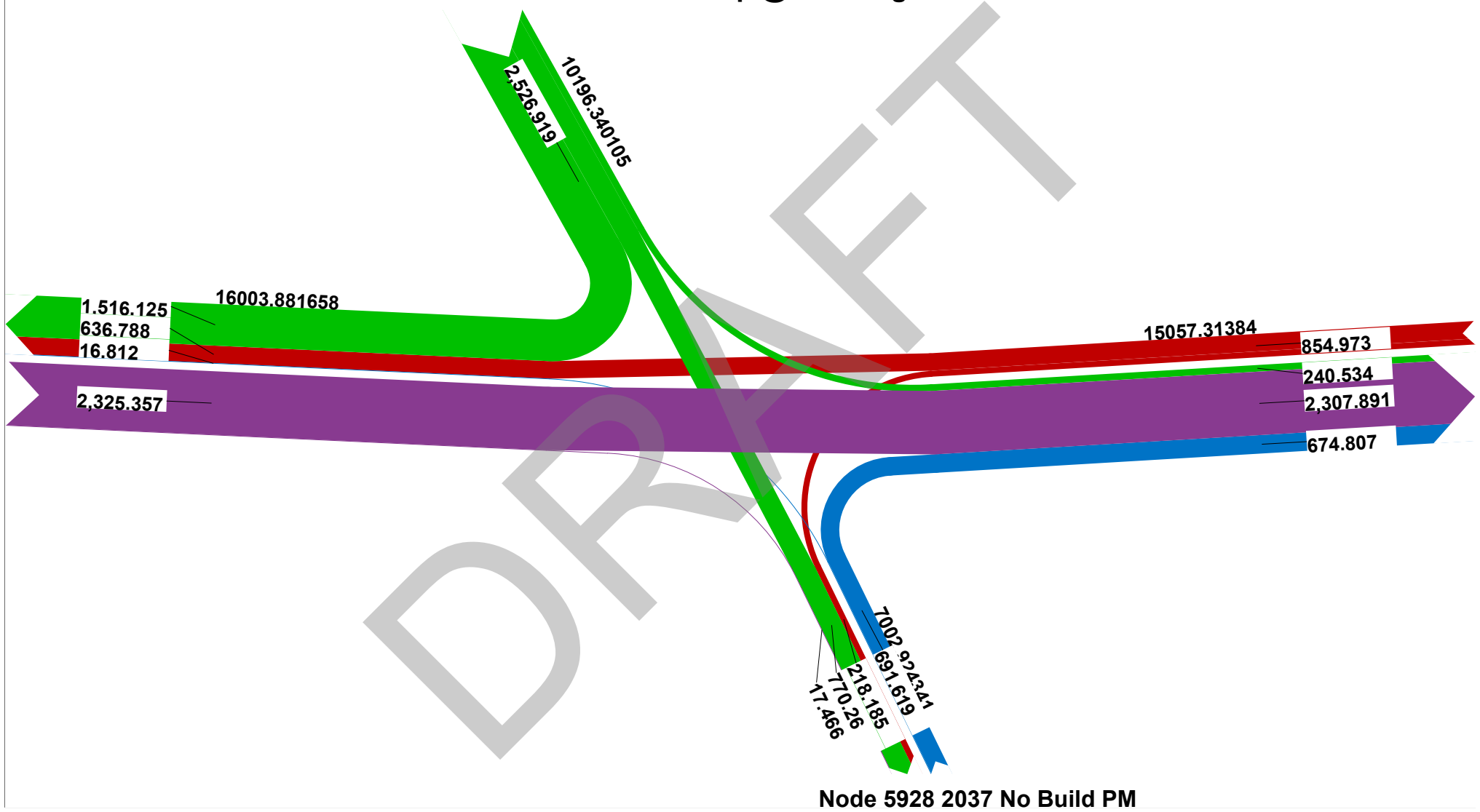


Node 5981 2037 No Build PM

## I-10 EB Off Ramp @ Washington

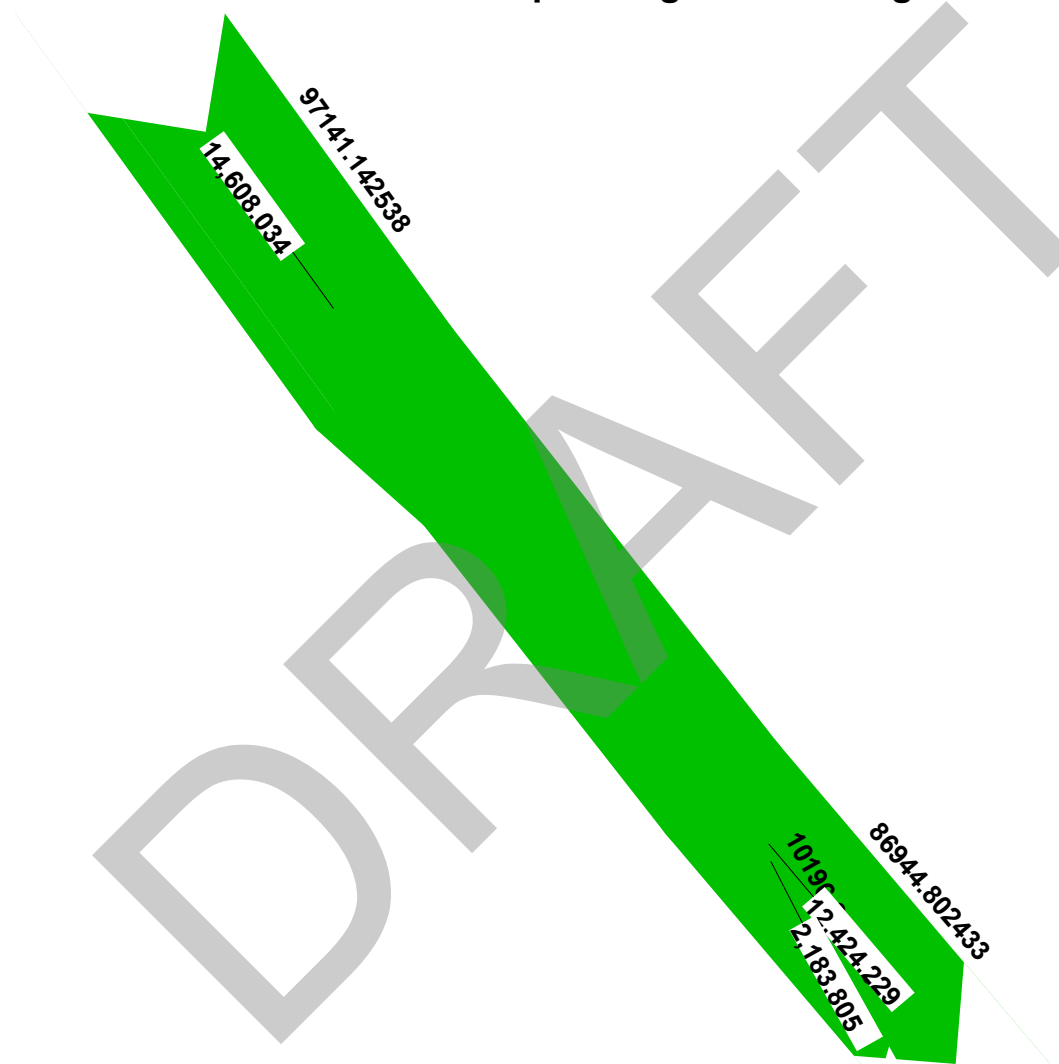


## I-10 EB Off Ramp @ Washington



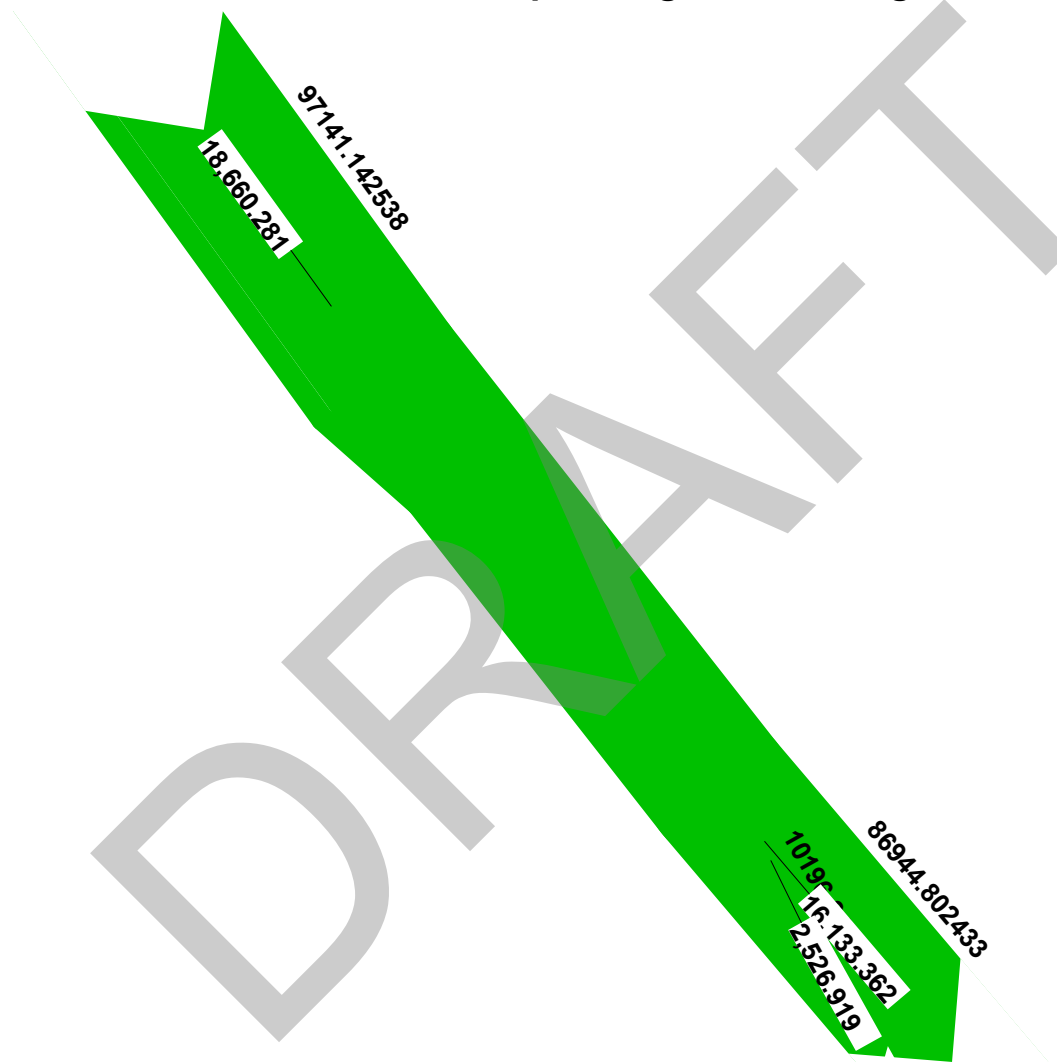


## I-10 EB Off Ramp Diverge to Washington



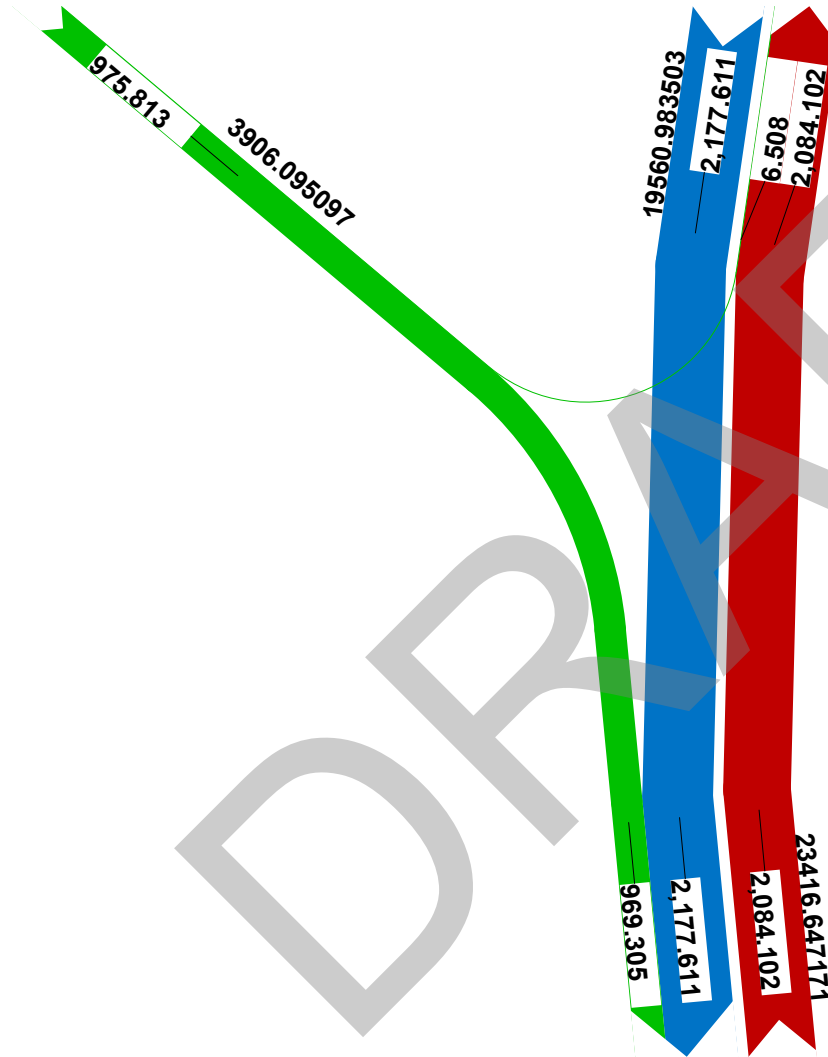
Node 5923 2037 No Build AM

## I-10 EB Off Ramp Diverge to Washington



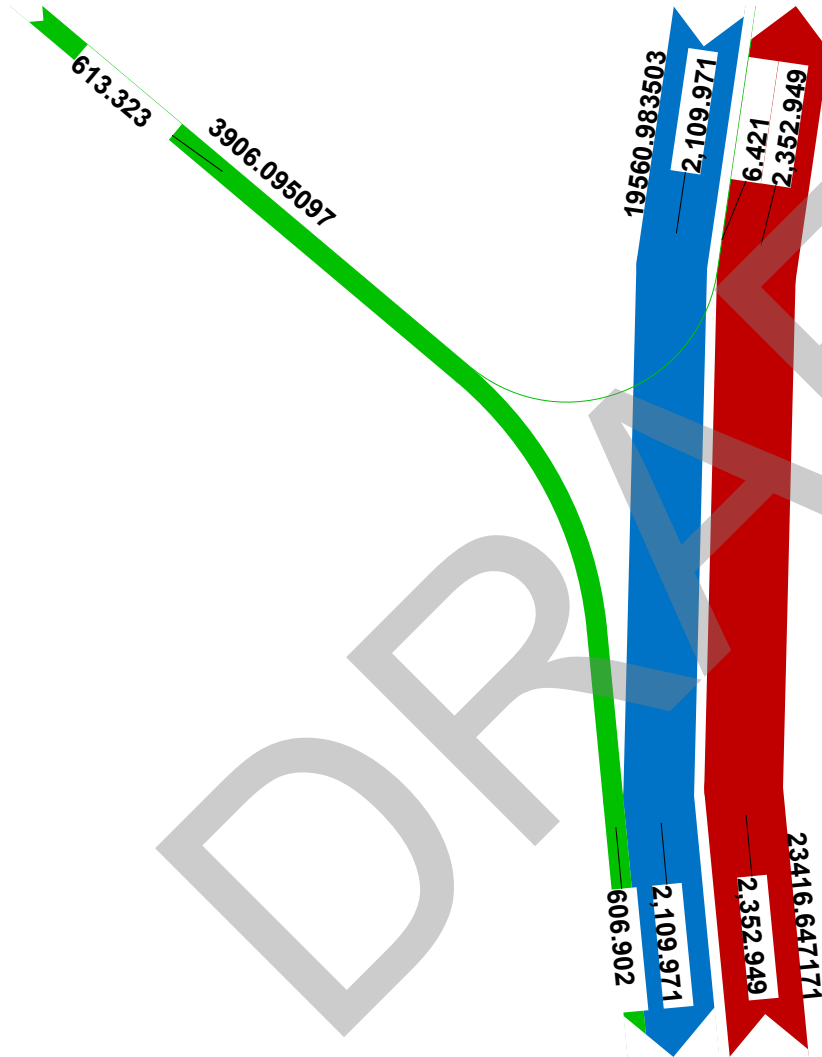
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## I-10 EB Off Ramp @ Dalrymple



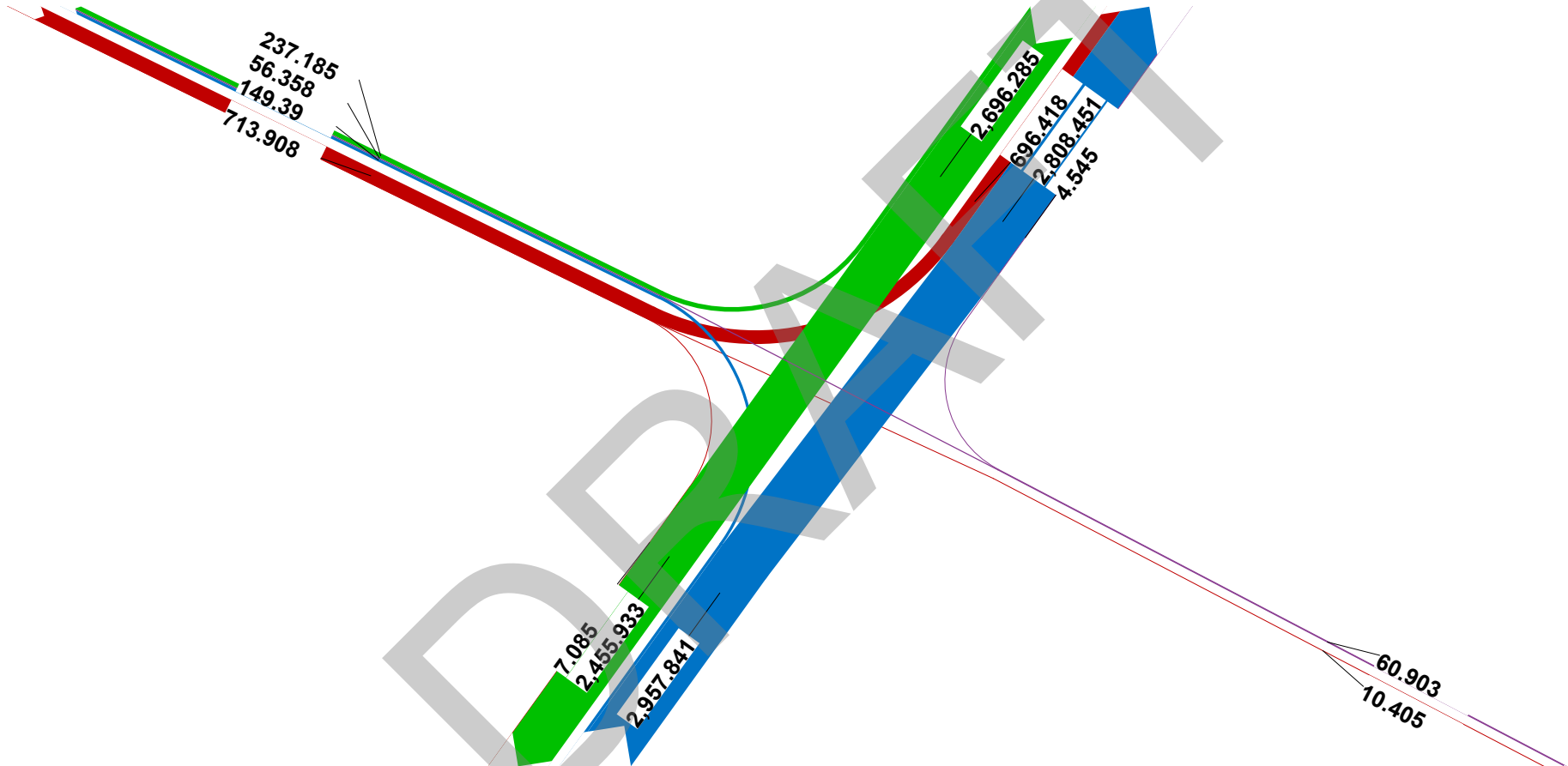
Node 5921 2037 No Build AM

## I-10 EB Off Ramp @ Dalrymple



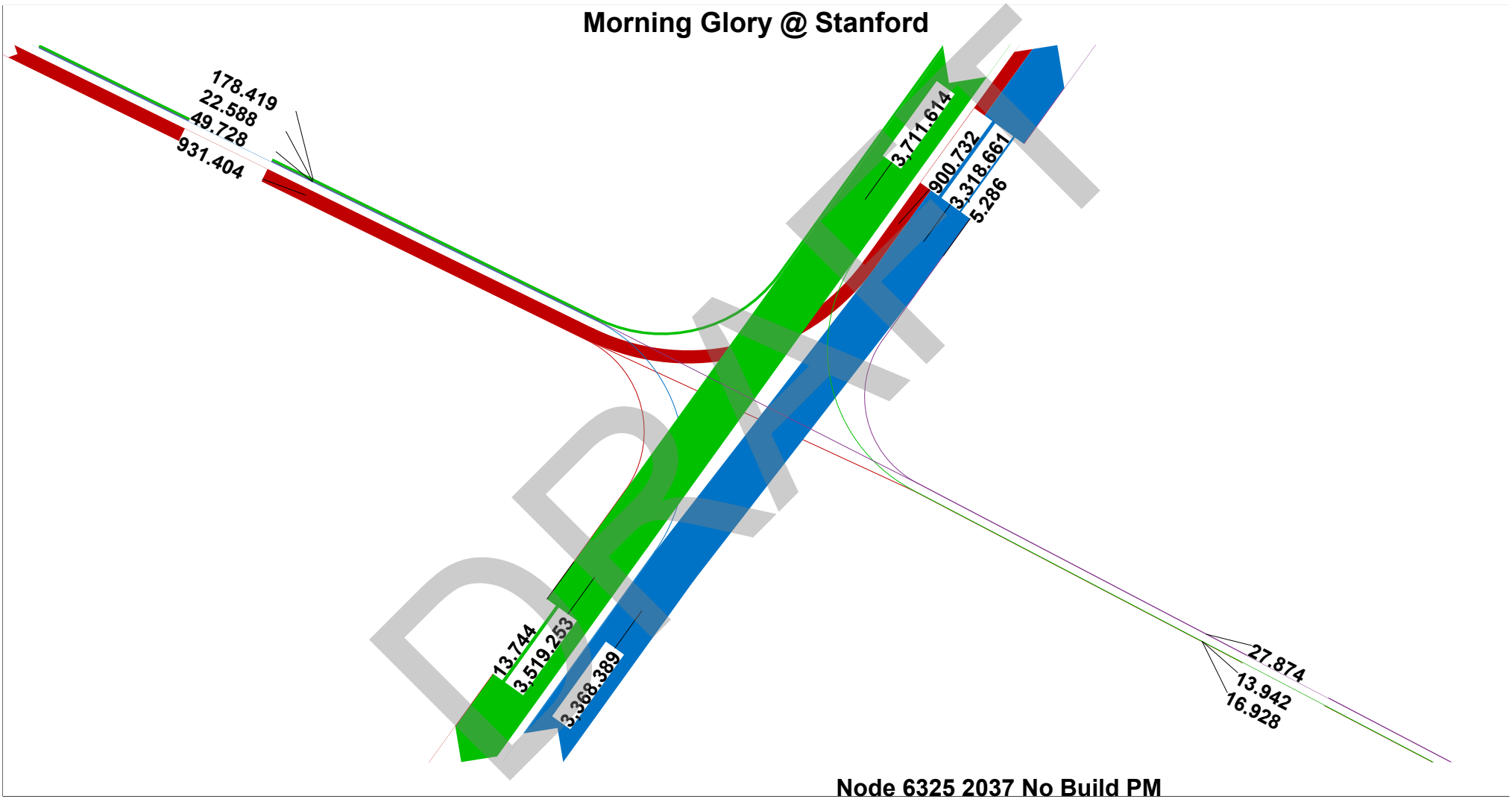
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## Morning Glory @ Stanford

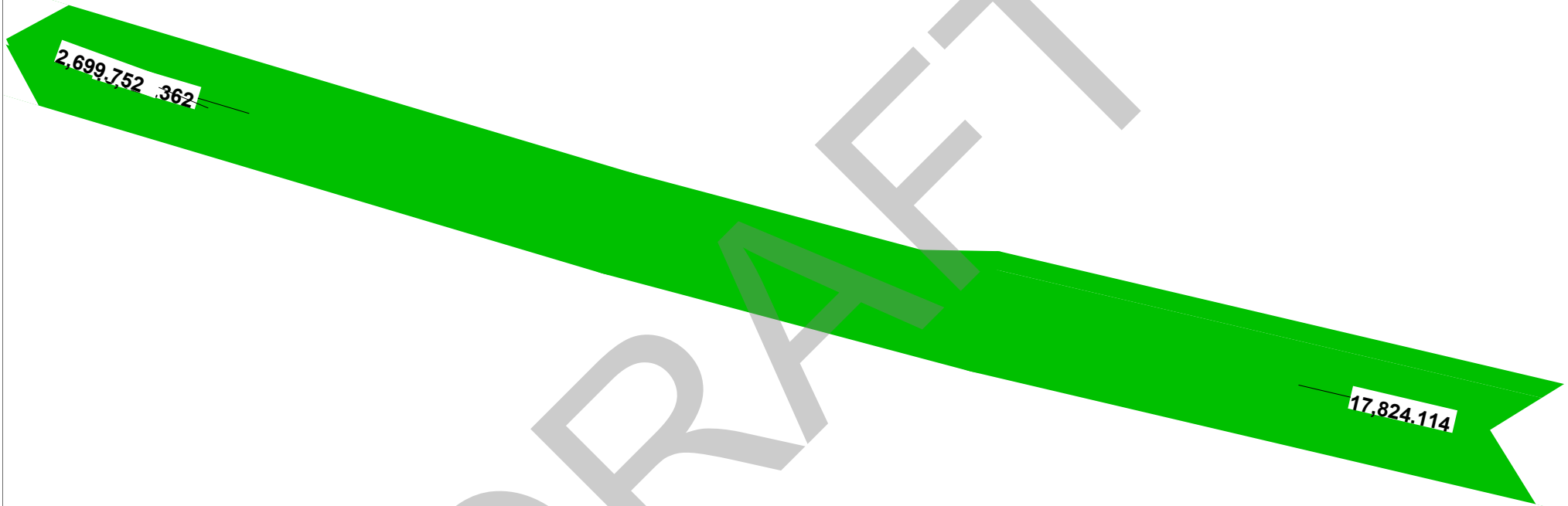


Node 6325 2037 No Build AM

## Morning Glory @ Stanford

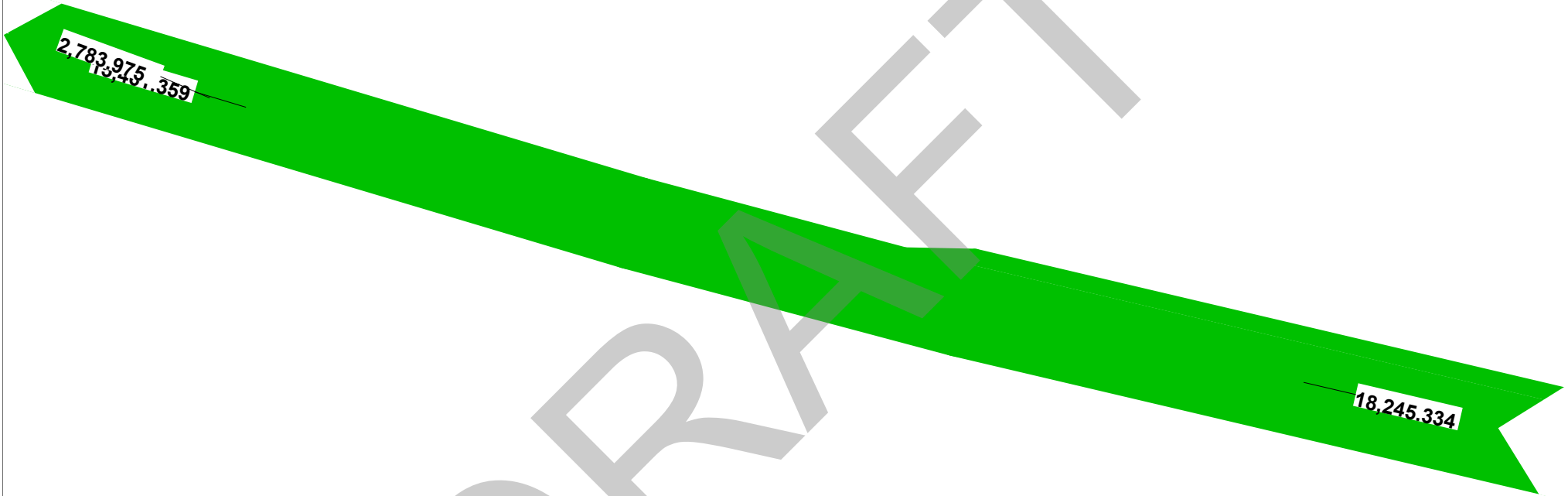


## I-10 WB Off Ramp to Washington and Dalrymple



**Build AM Node 5684**

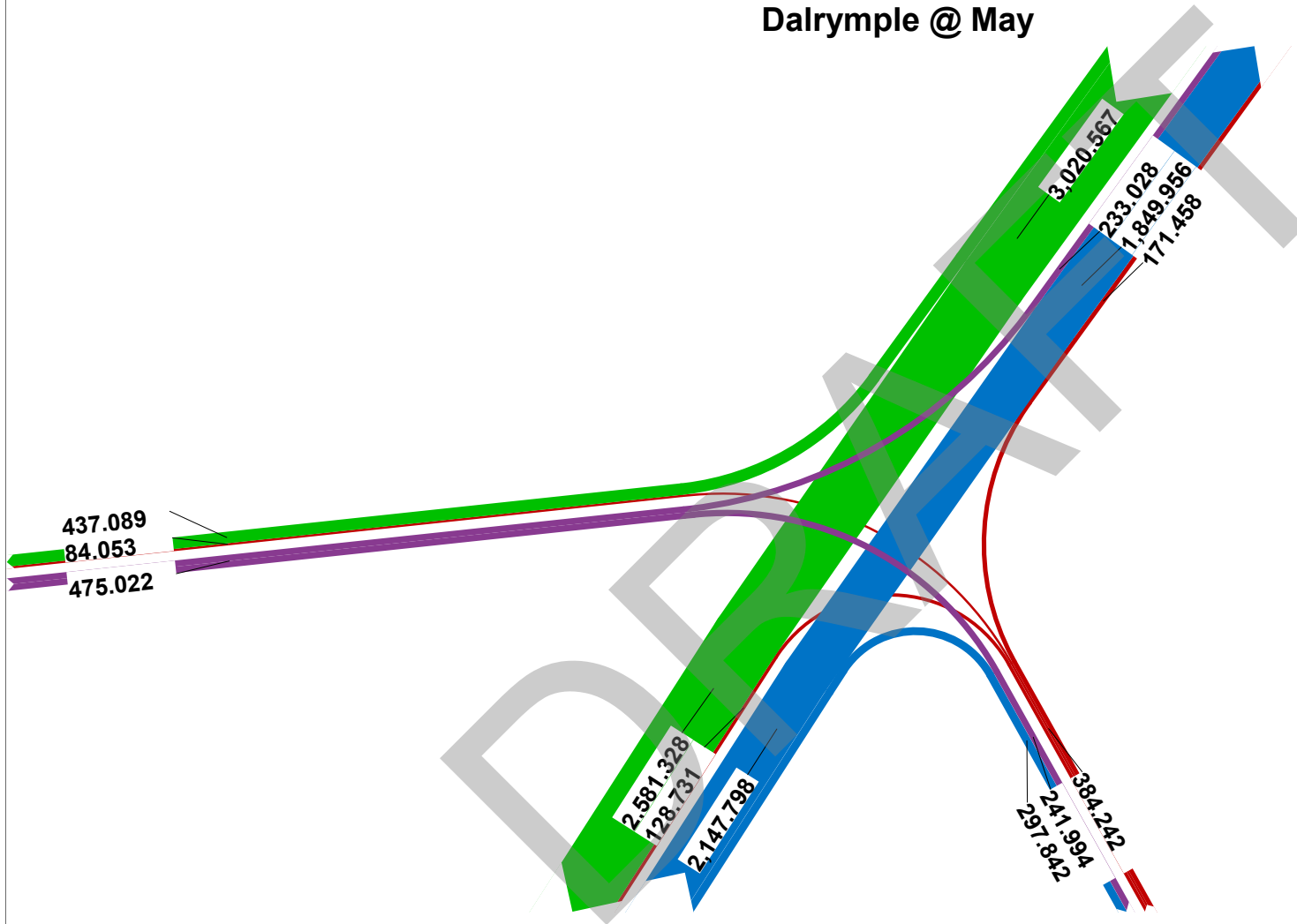
## I-10 WB Off Ramp to Washington and Dalrymple



**Build PM Node 5684**

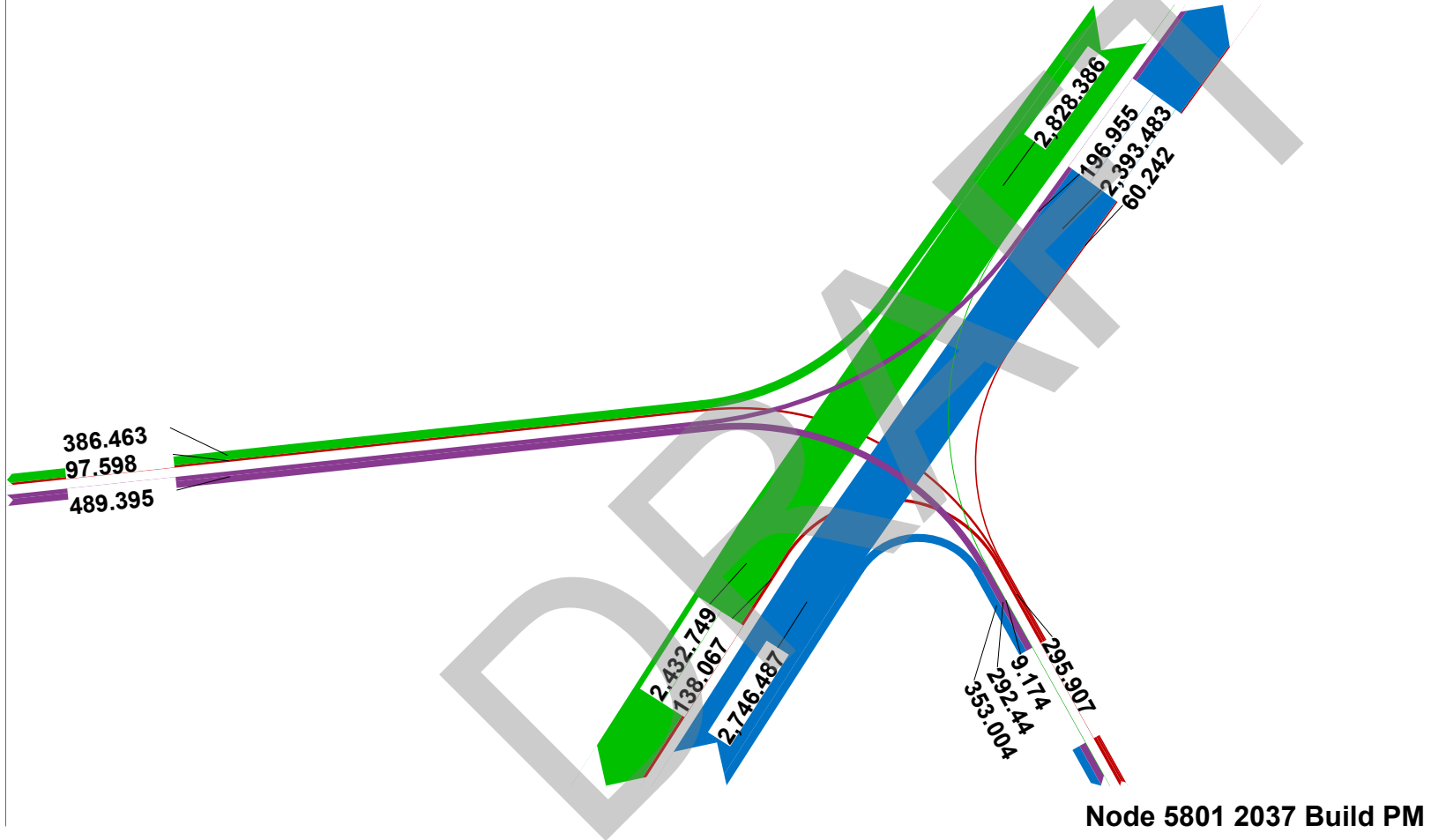


Dalrymple @ May

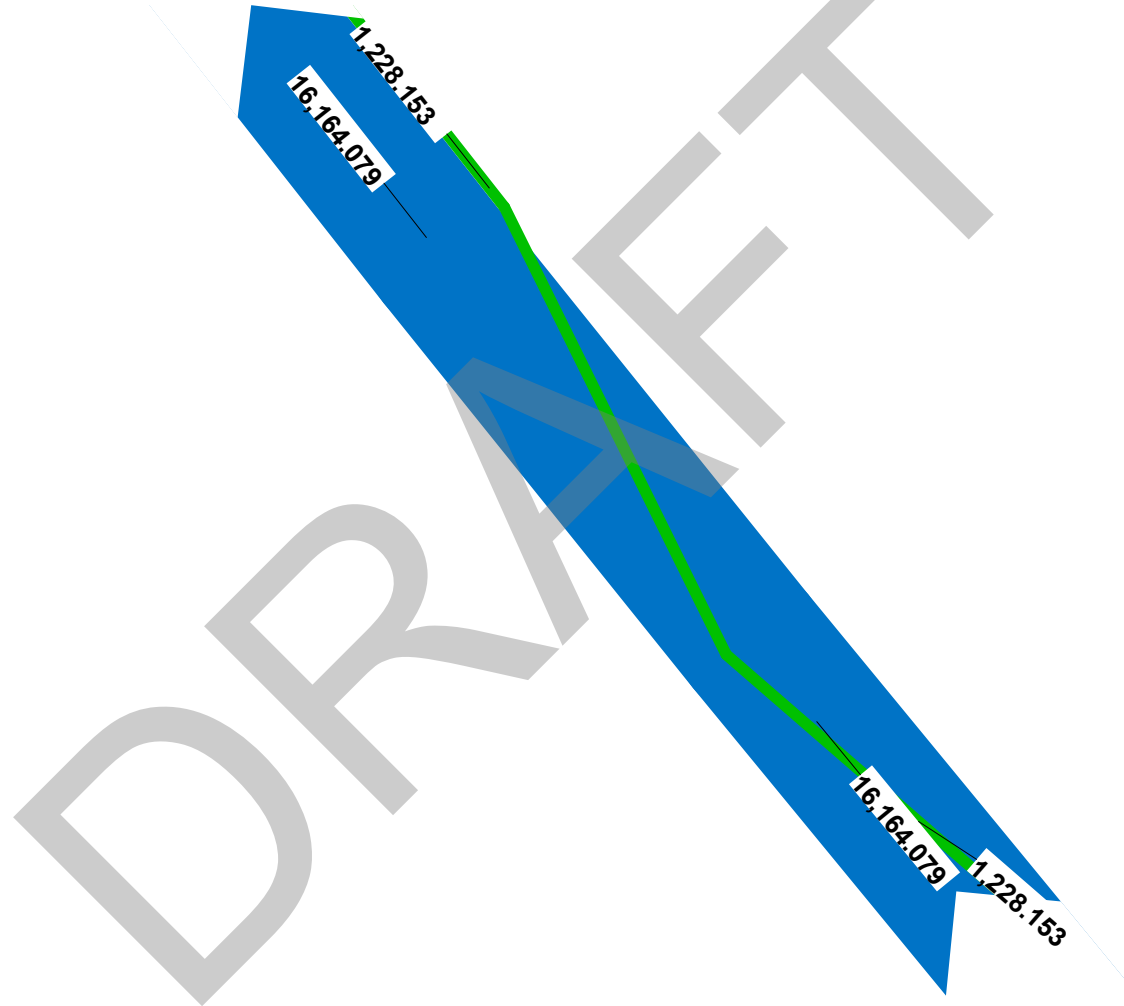


Node 5801 2037 Build AM

## Dalrymple @ May

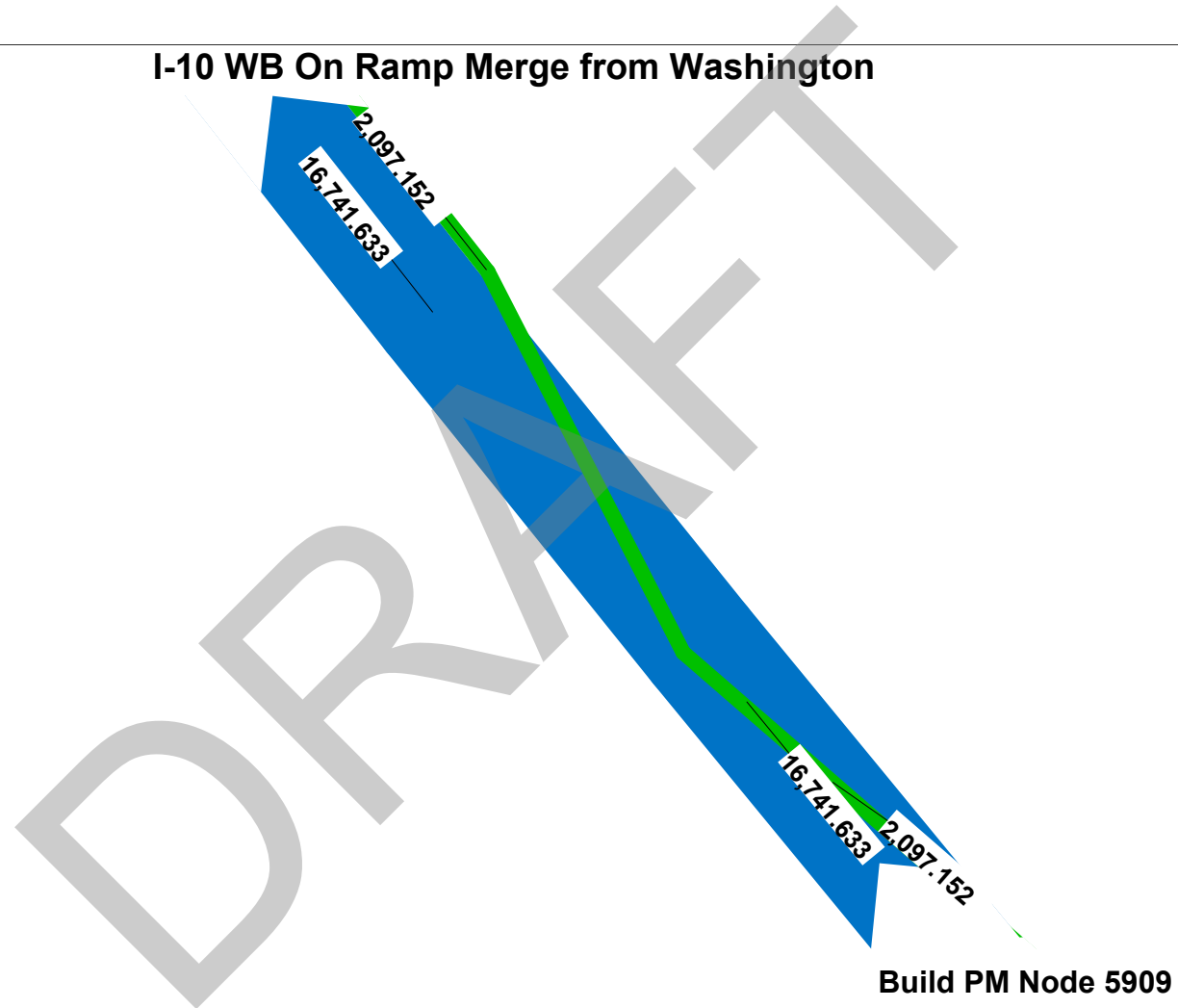


## I-10 WB On Ramp Merge from Washington

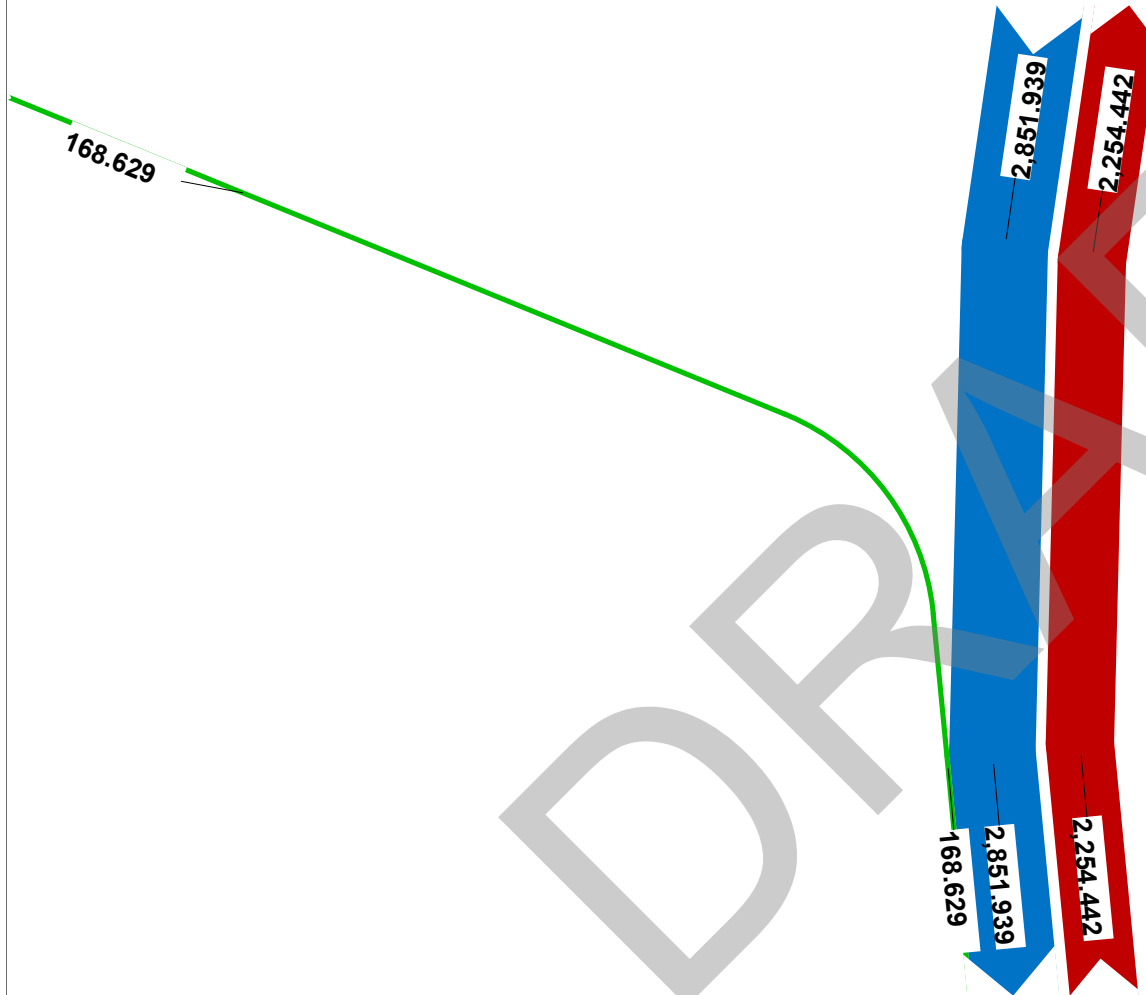


Build AM Node 5909

## I-10 WB On Ramp Merge from Washington

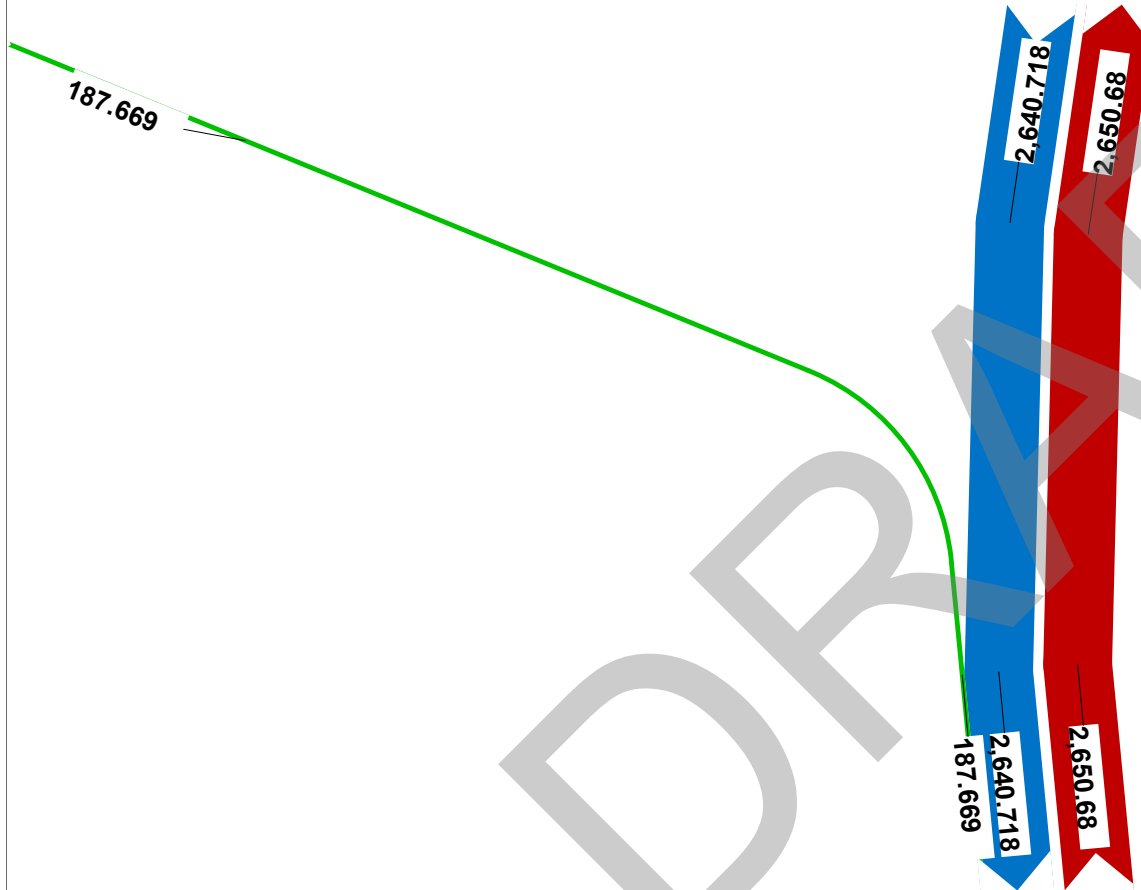


## I-10 EB Off Ramp at Dalrymple



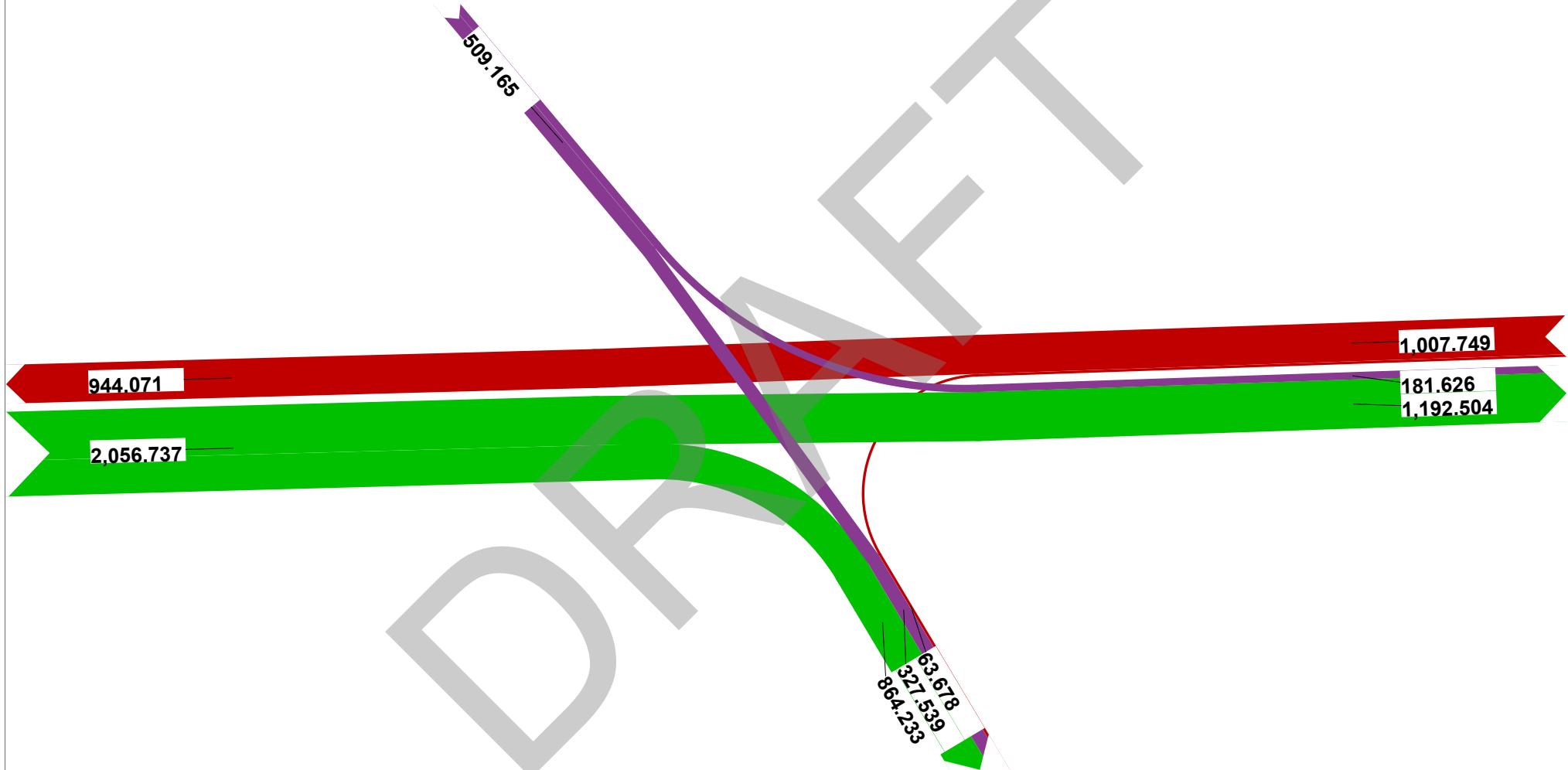
Build AM Node 5921

## I-10 EB Off Ramp at Dalrymple



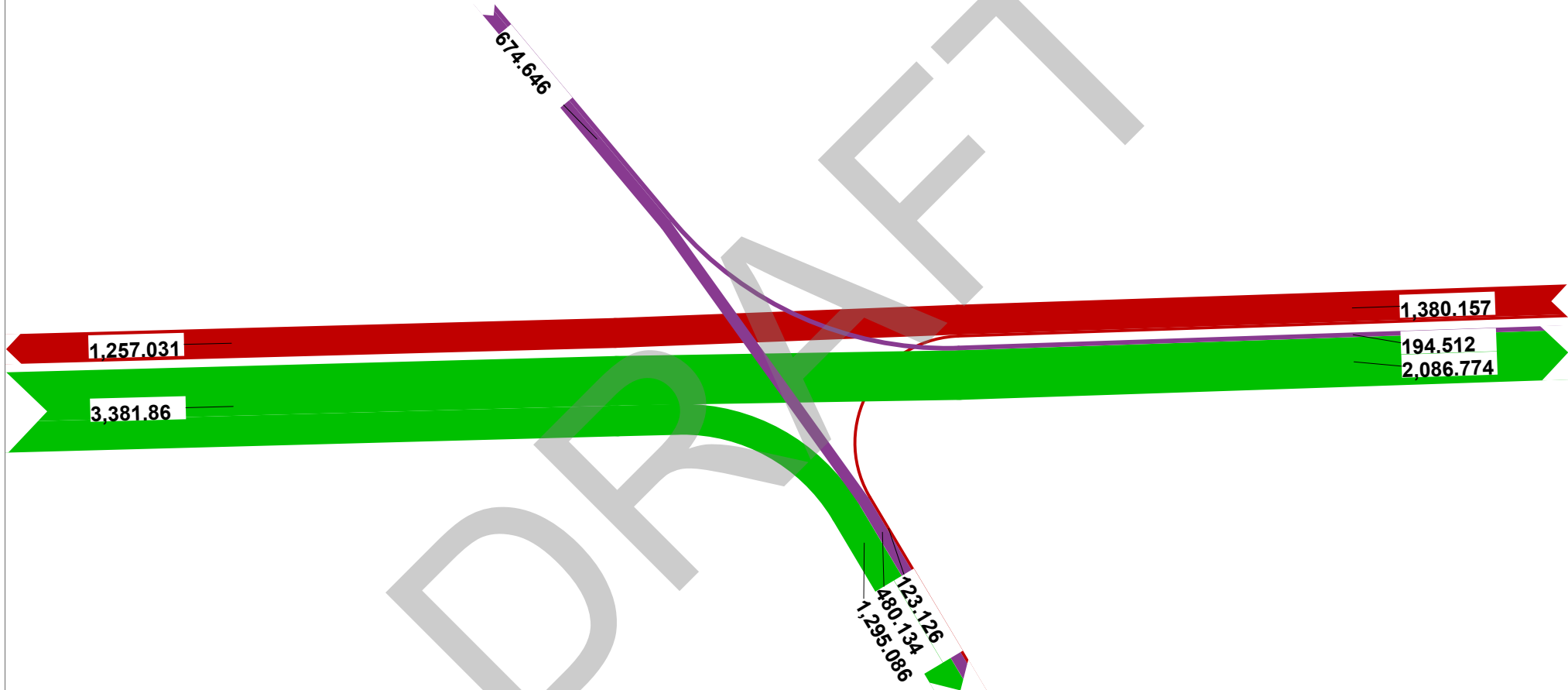
Build PM Node 5921

## I-10 EB Off Ramp @ Washington



Build AM Node 5928

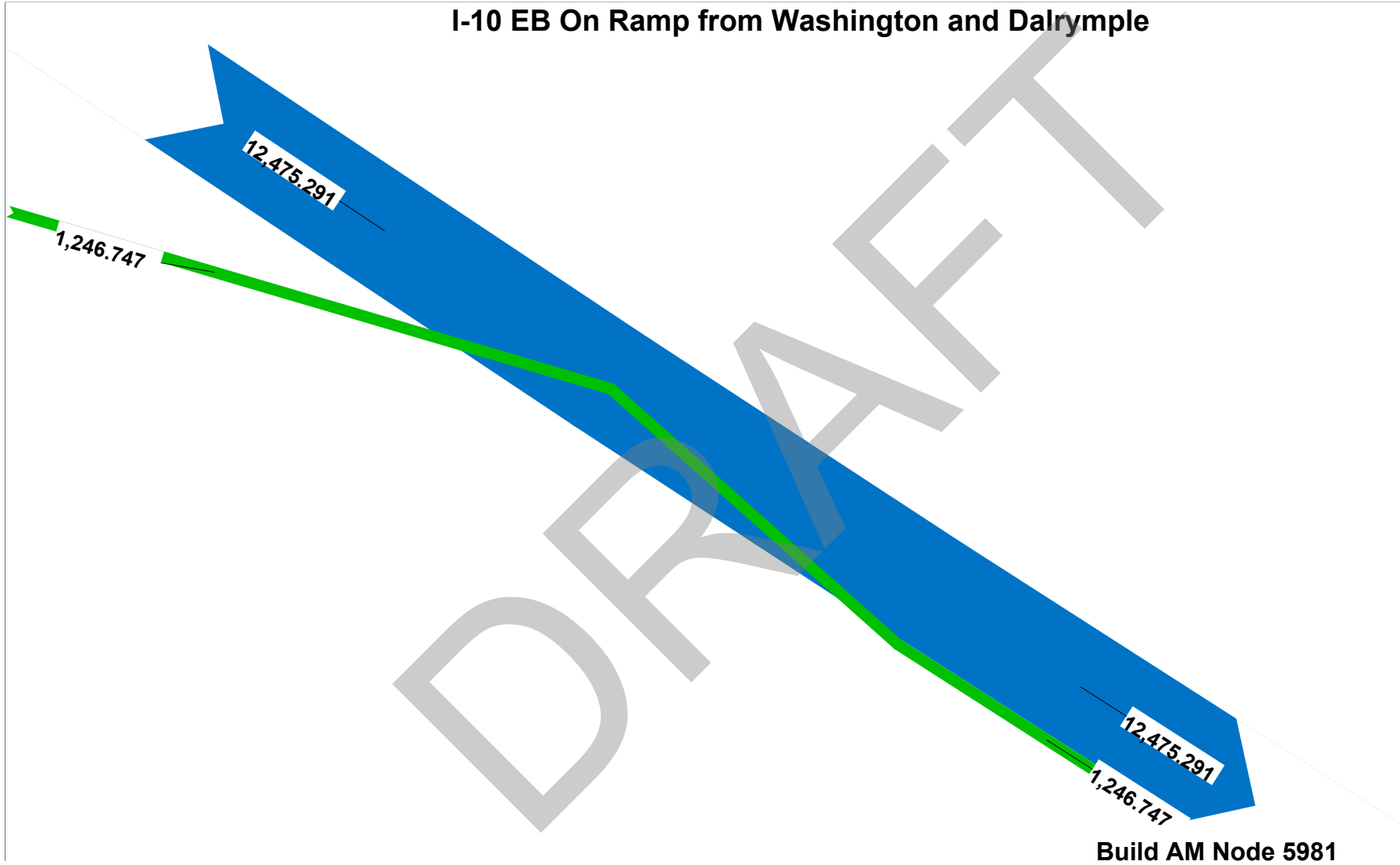
## I-10 EB Off Ramp @ Washington



**Build PM Node 5928**

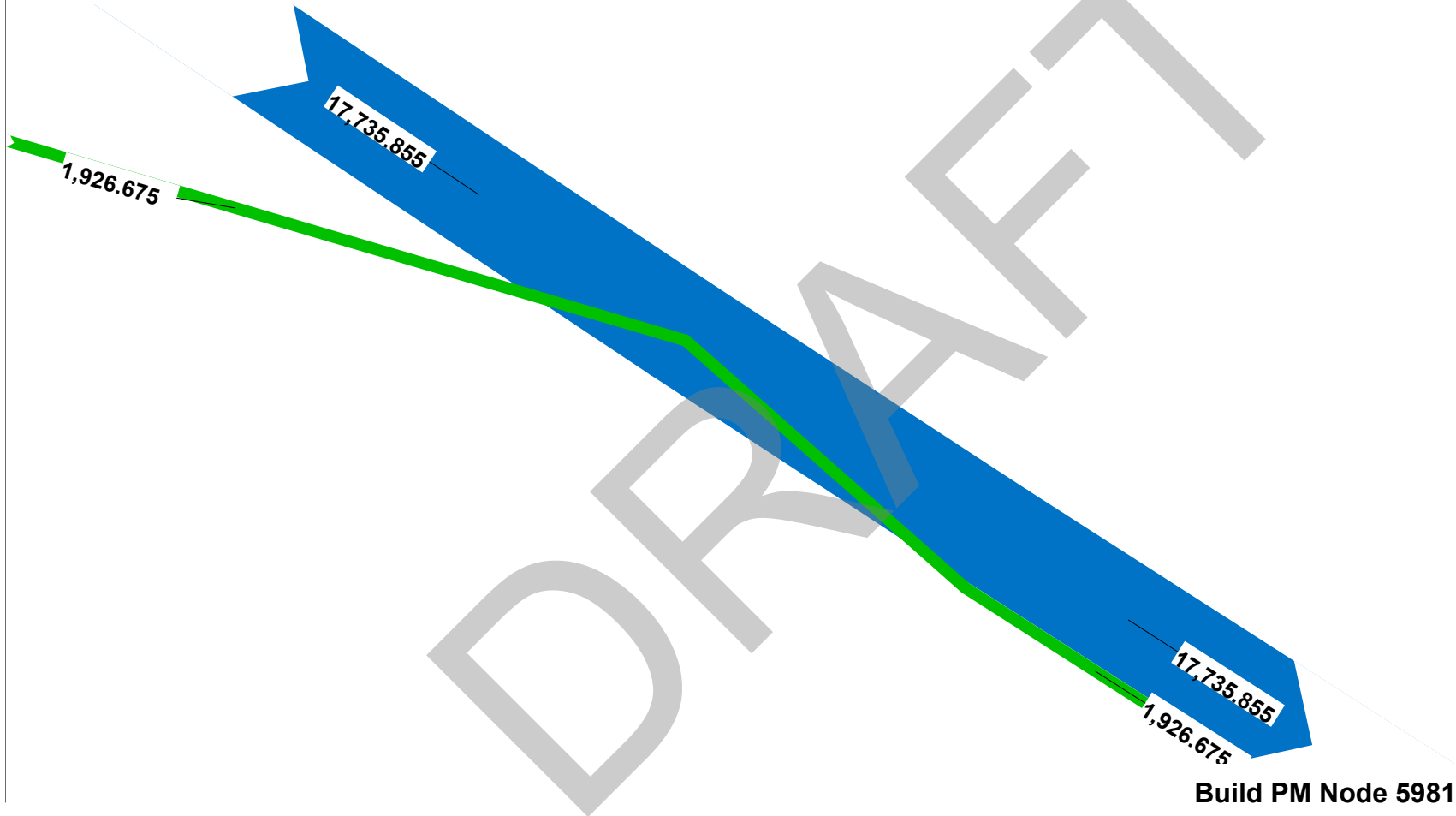


## I-10 EB On Ramp from Washington and Dalrymple

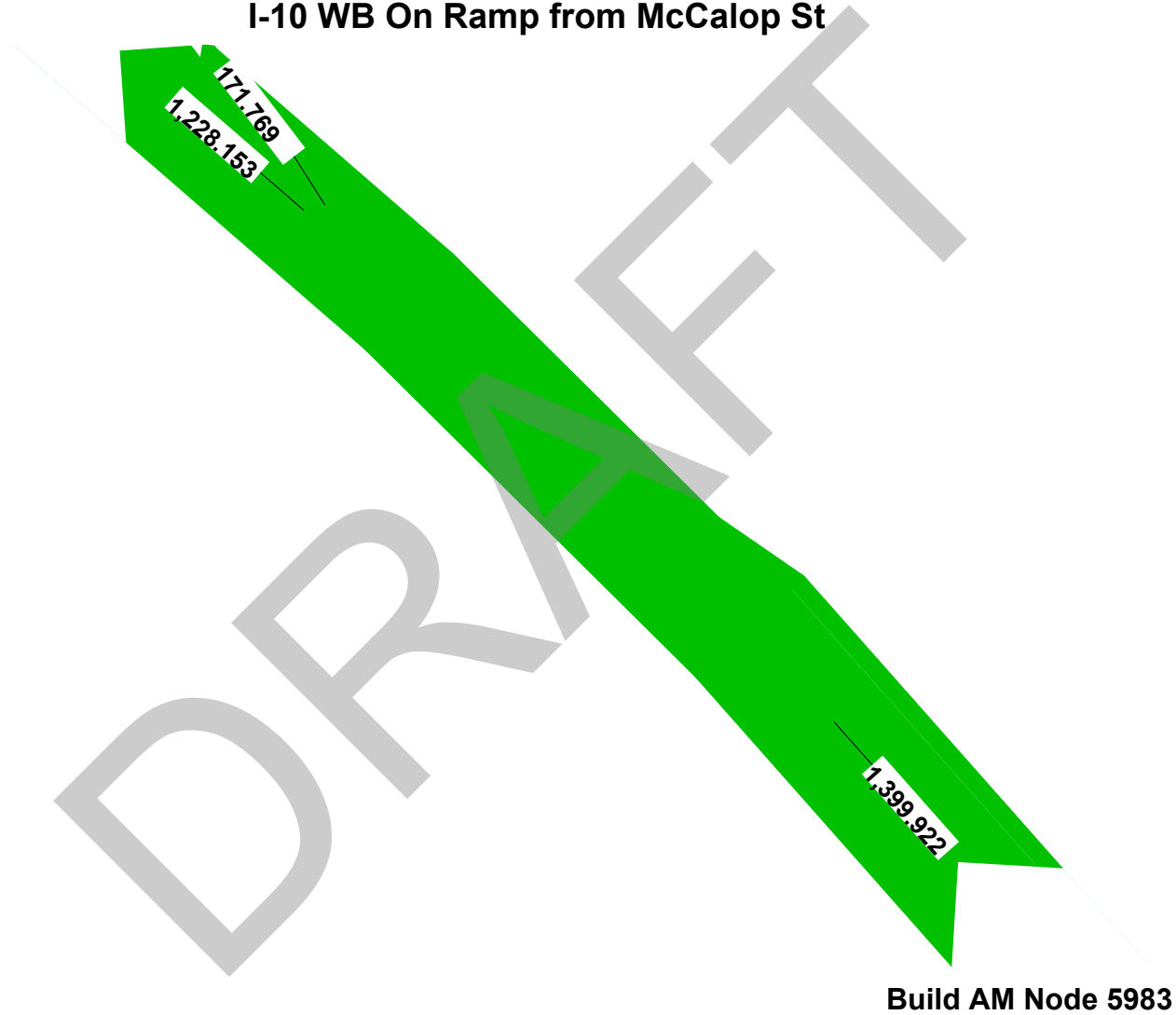


Build AM Node 5981

## I-10 EB On Ramp from Washington and Dalrymple

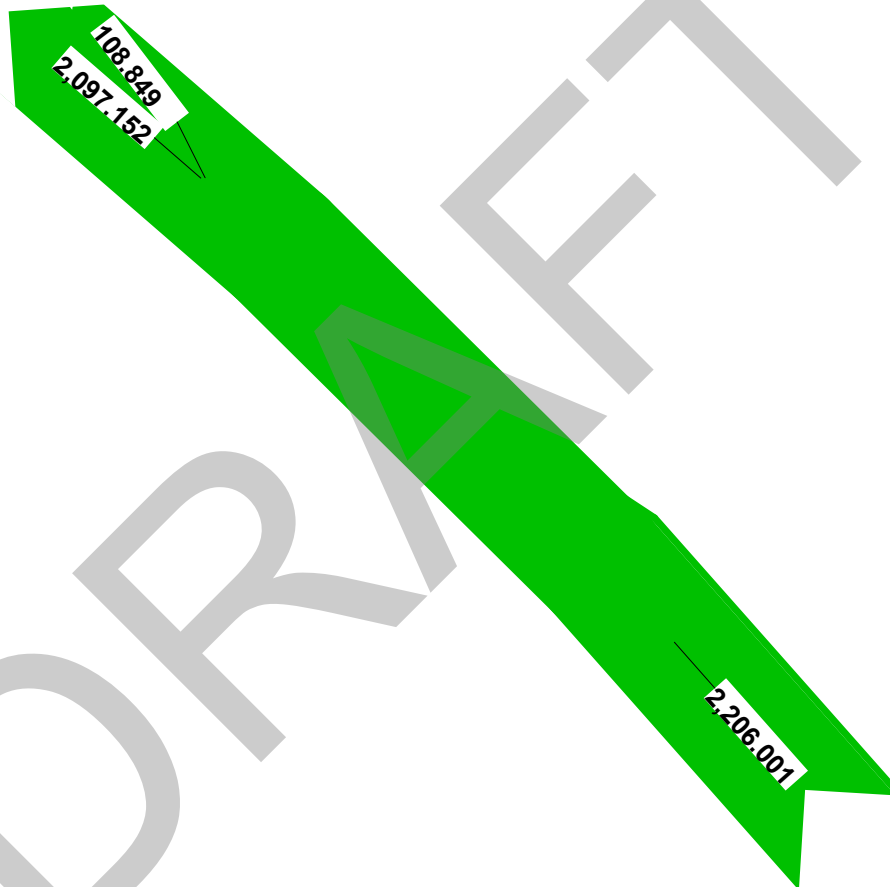


**I-10 WB On Ramp from McCalop St**



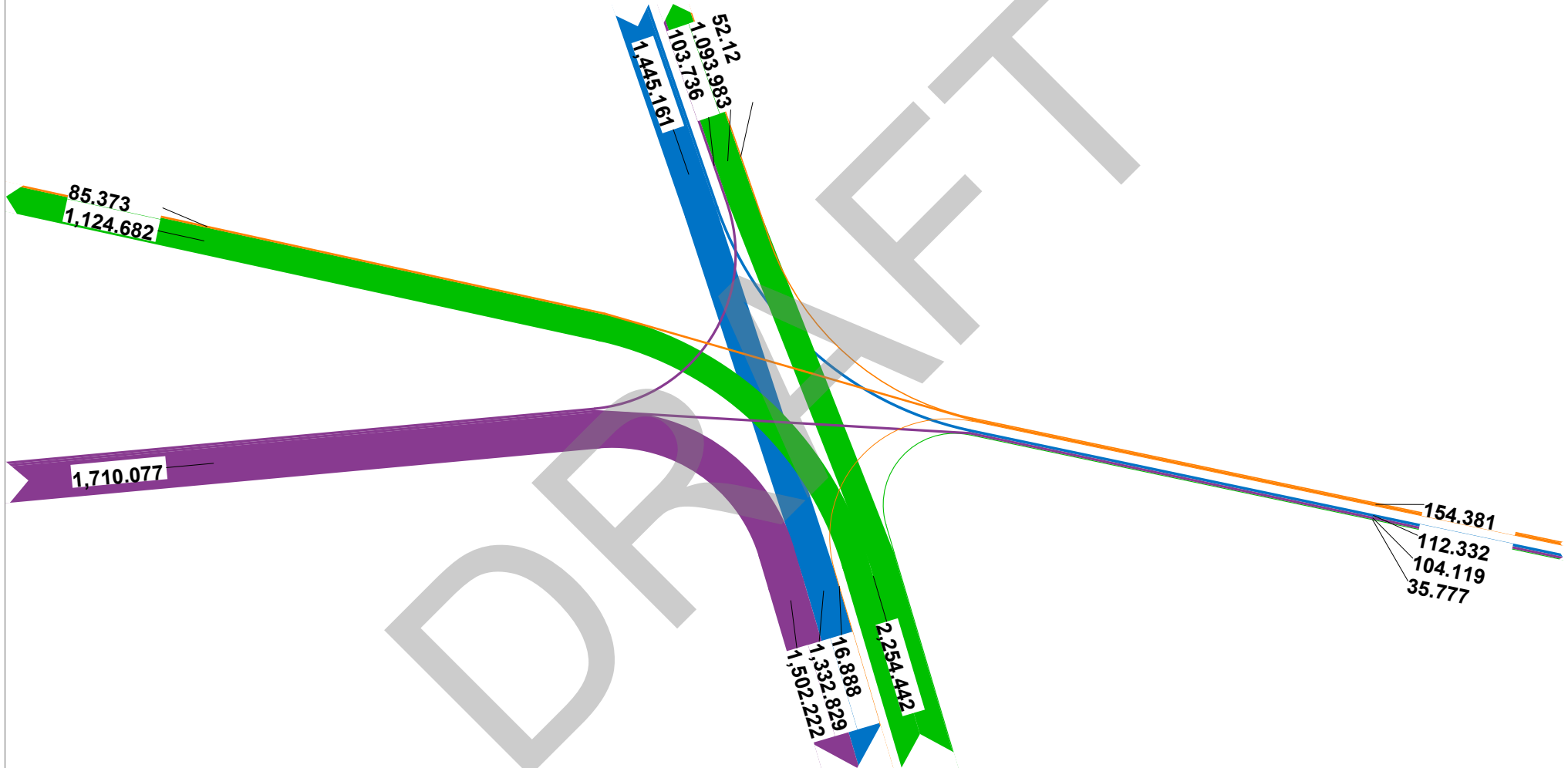
**Build AM Node 5983**

## I-10 WB On Ramp from McCalop St



Build PM Node 5983

## I-10 WB Off Ramp at Dalrymple



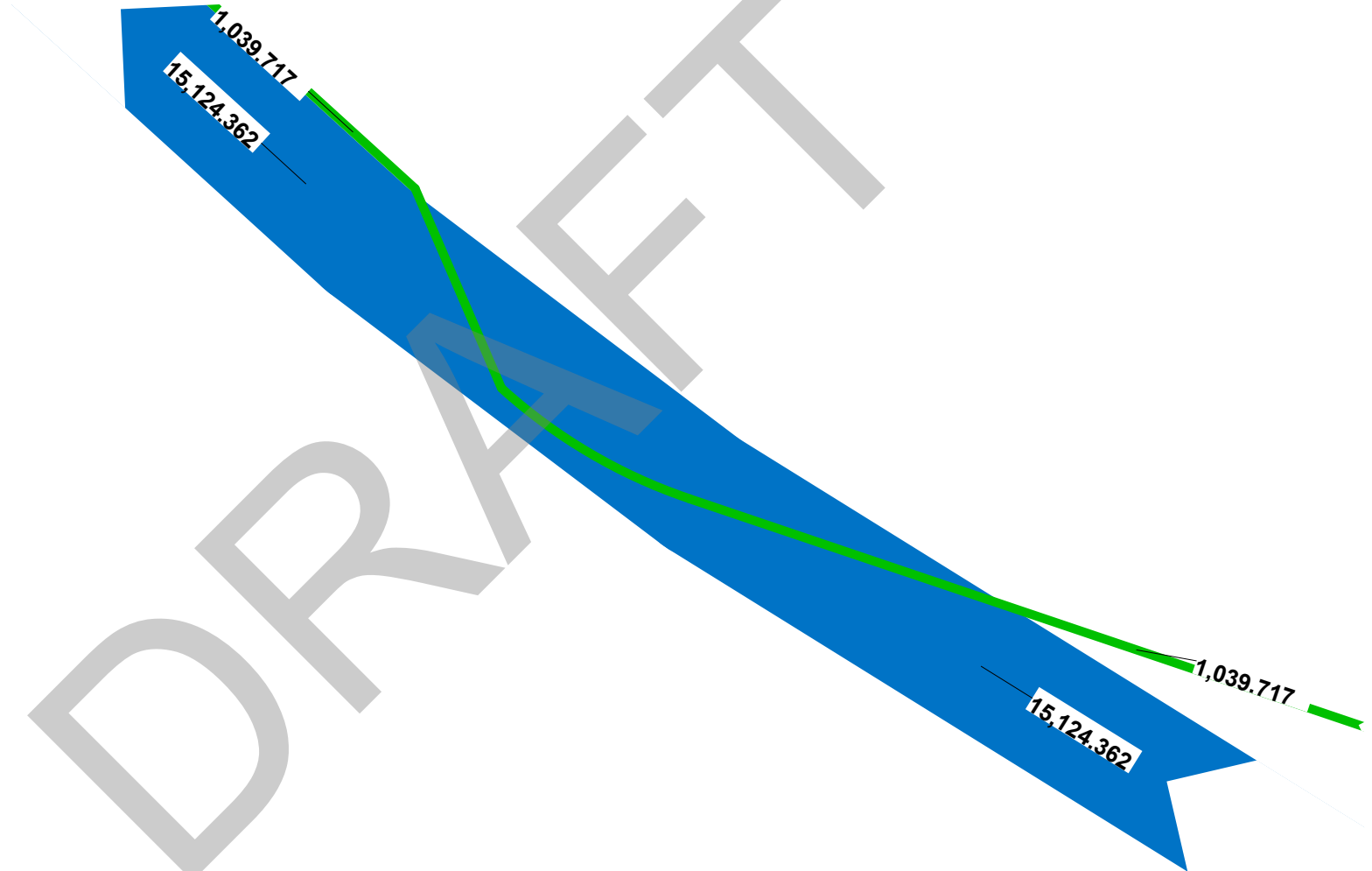
Build AM Node 5984

## I-10 WB Off Ramp at Dalrymple



Build PM Node 5984

## I-10 WB On Ramp Merge From Dalrymple



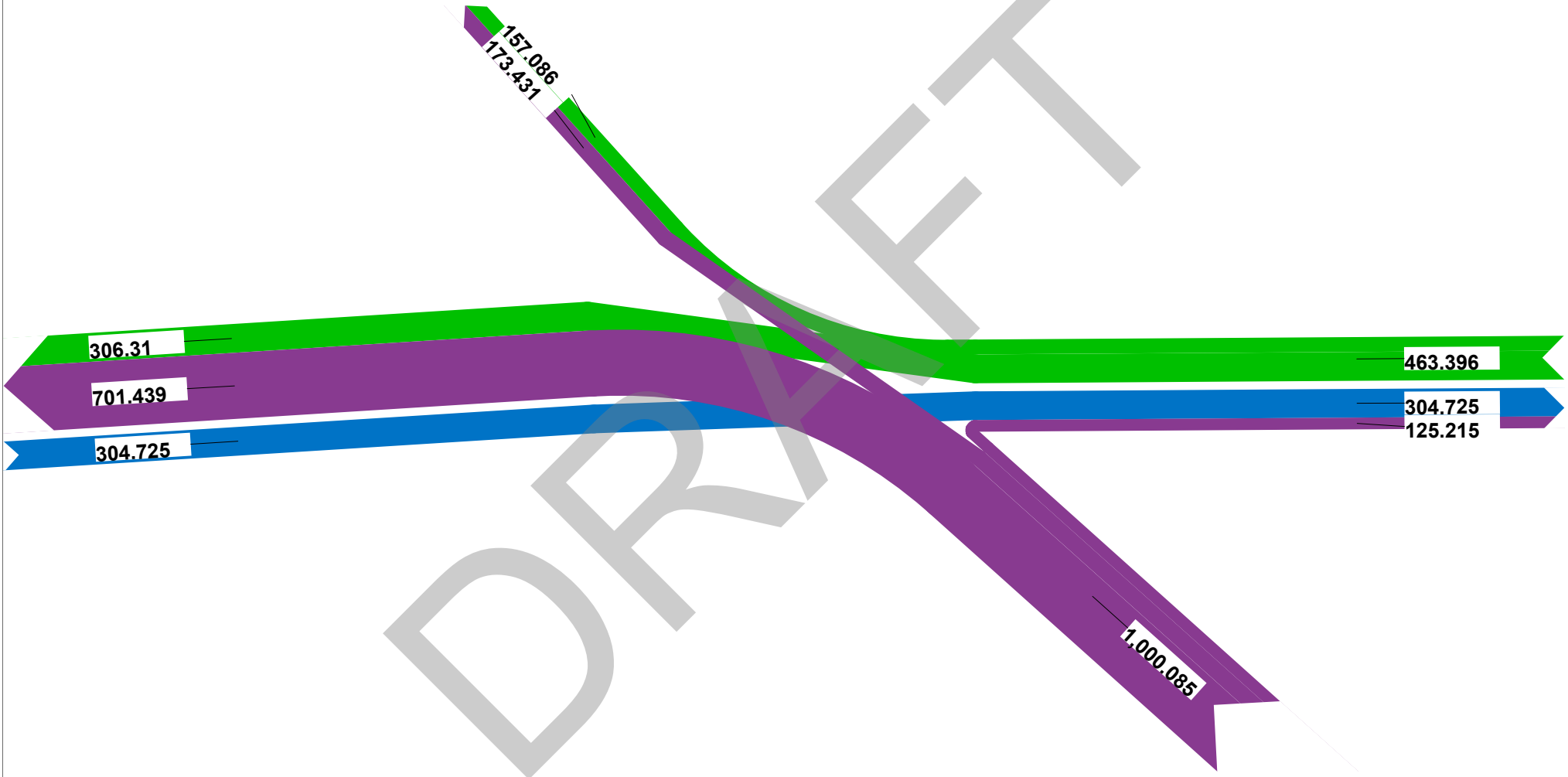
Build AM Node 5985

## I-10 WB On Ramp Merge From Dalrymple



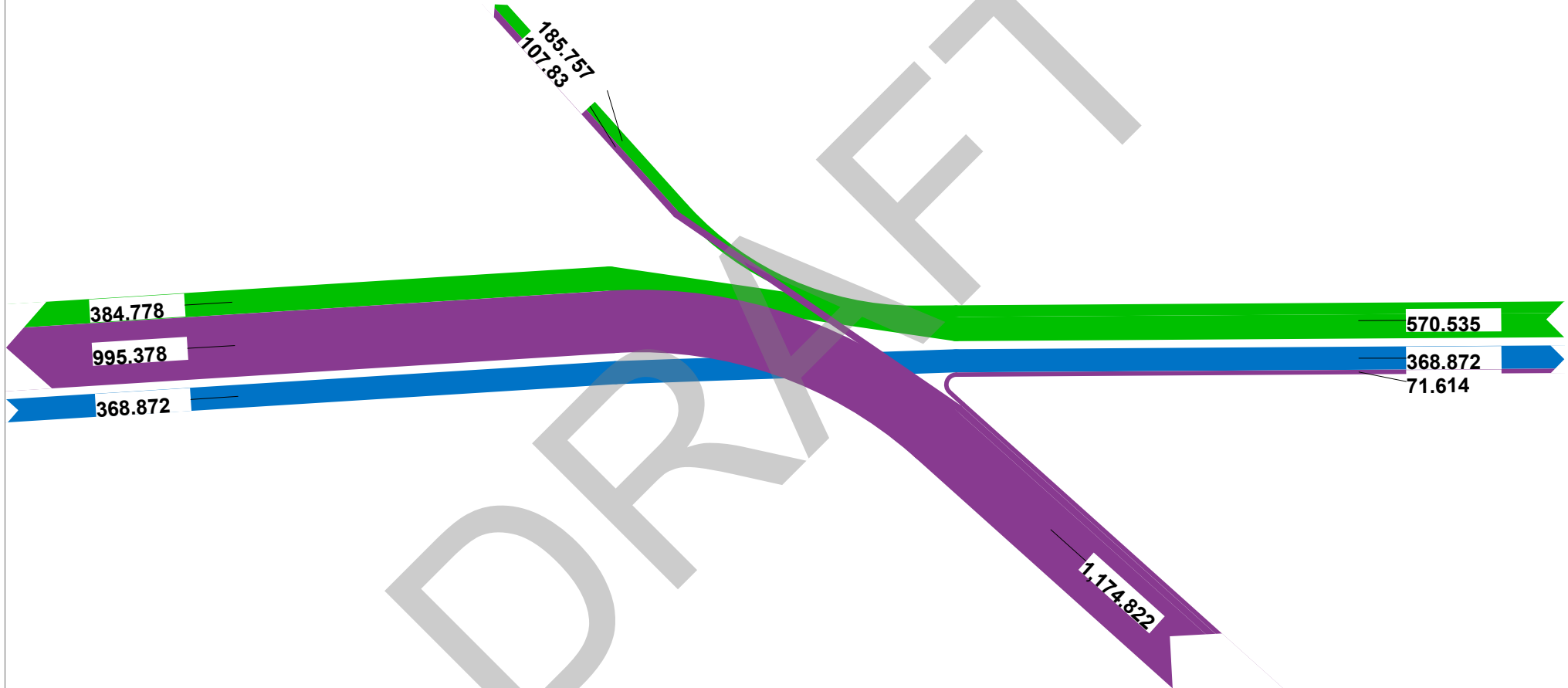


**Washington St at McCallop St**



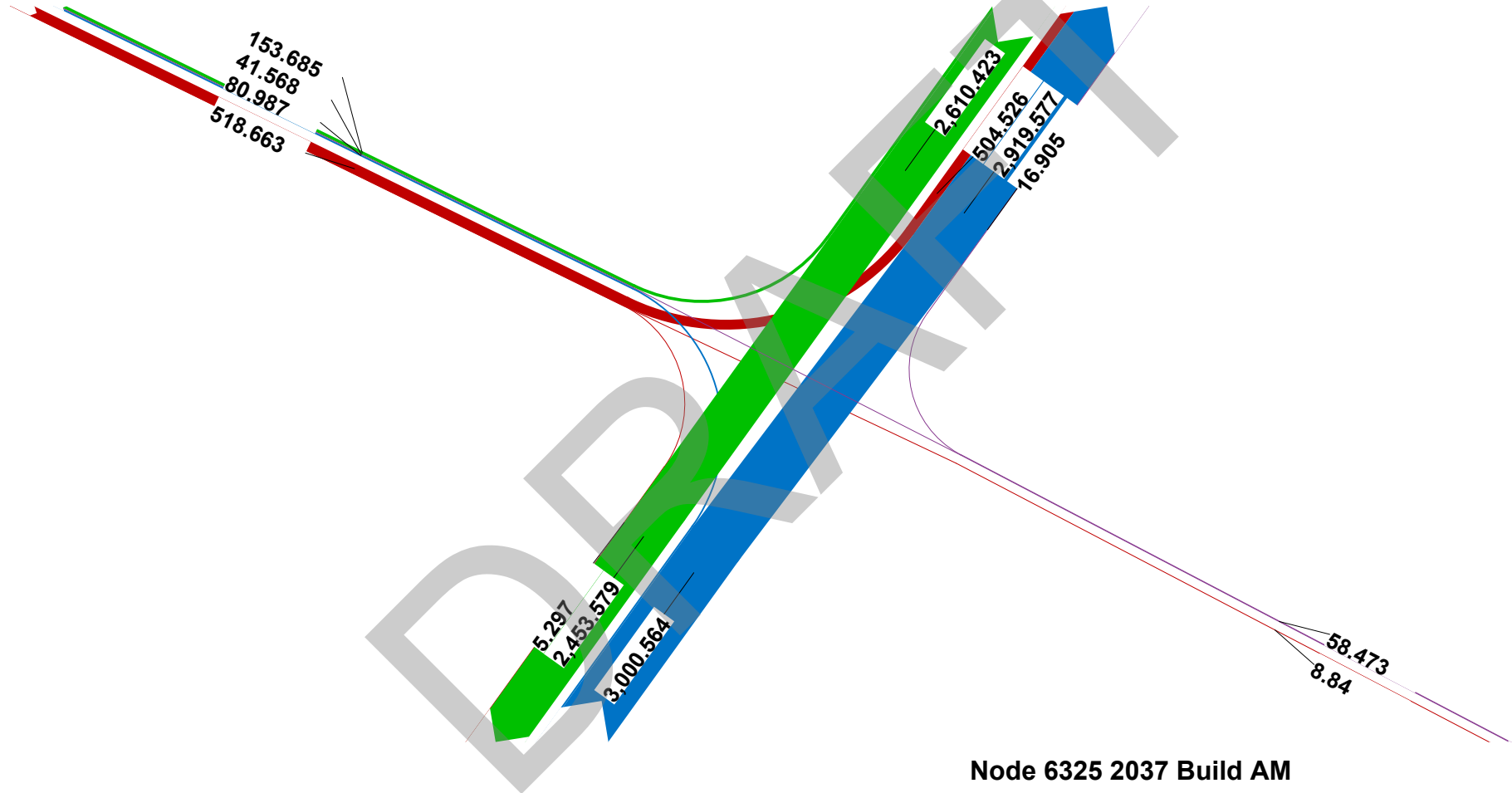
**Build AM Node 5992**

## Washington St at McCallop St

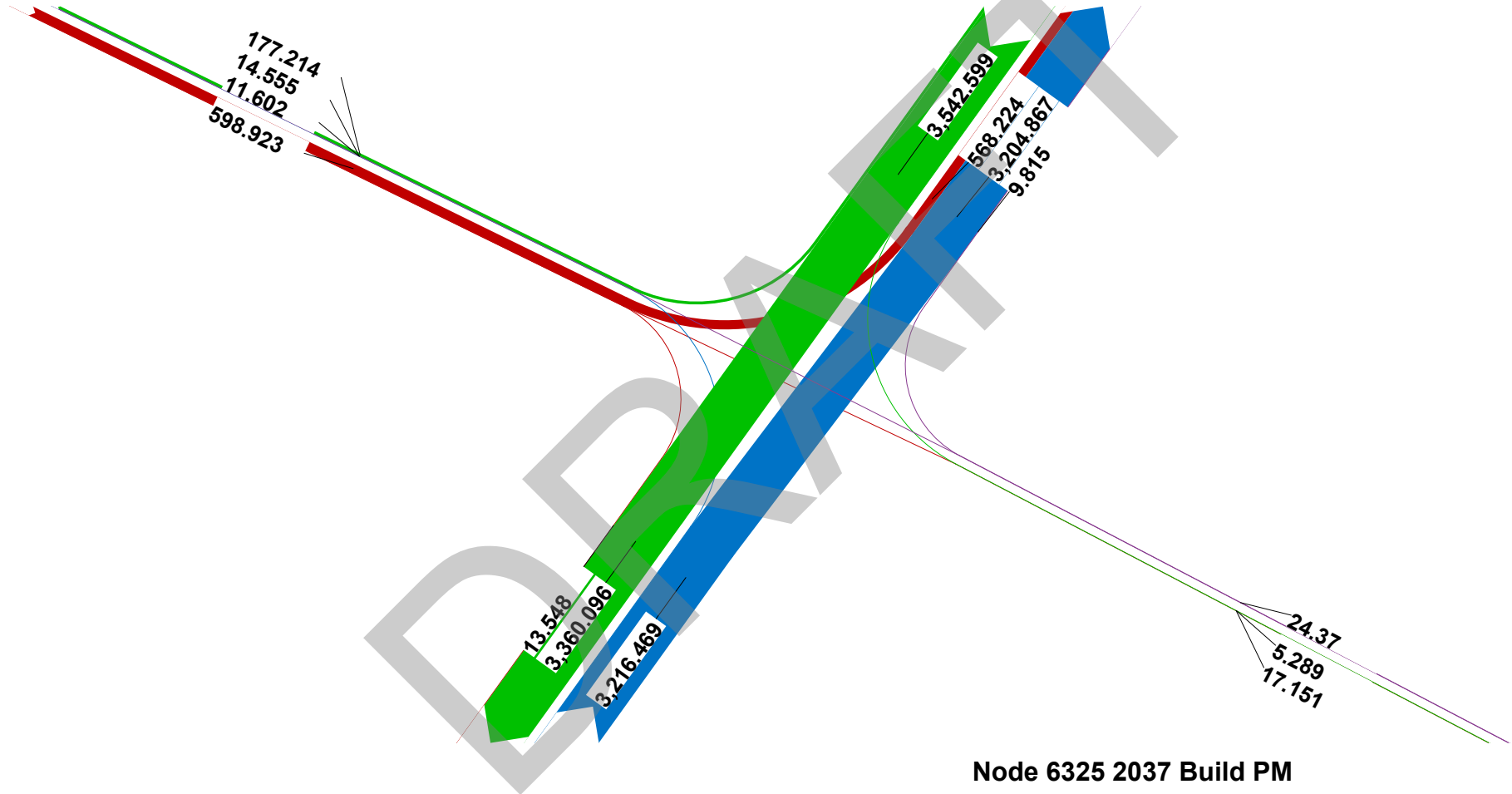


Build PM Node 5992

## Morning Glory @ Stanford

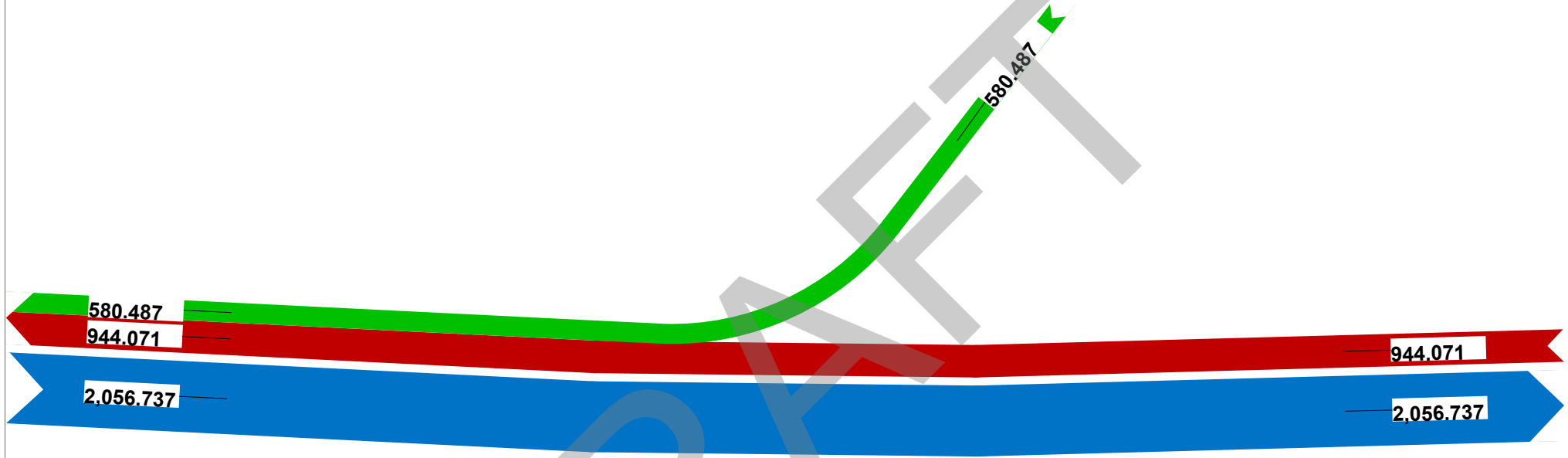


## Morning Glory @ Stanford



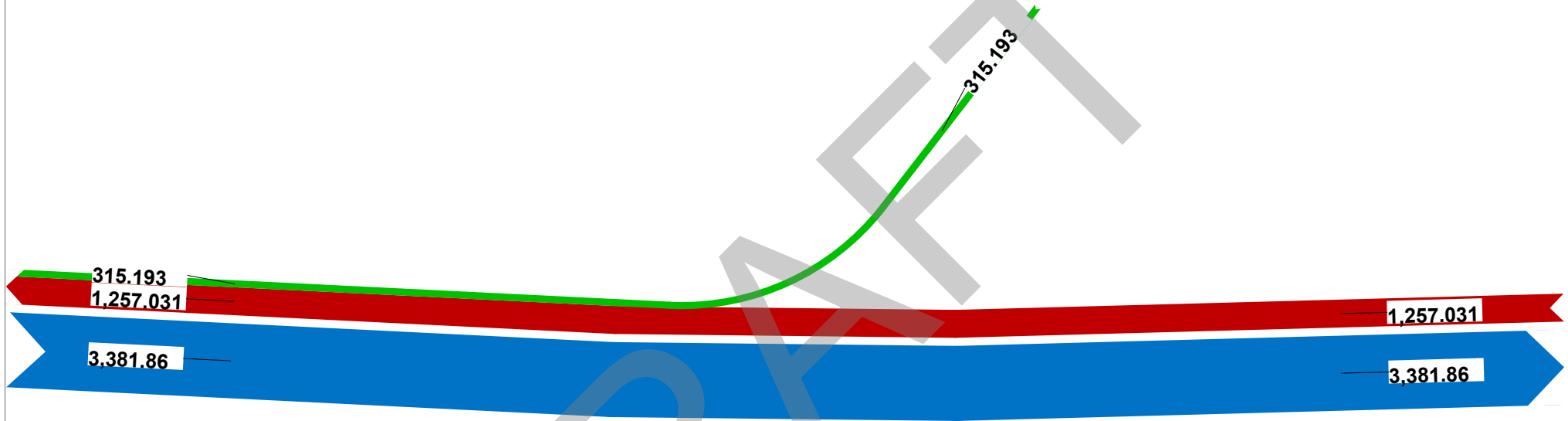
Node 6325 2037 Build PM

## I-10 EB Off Ramp Right Turn to Washington



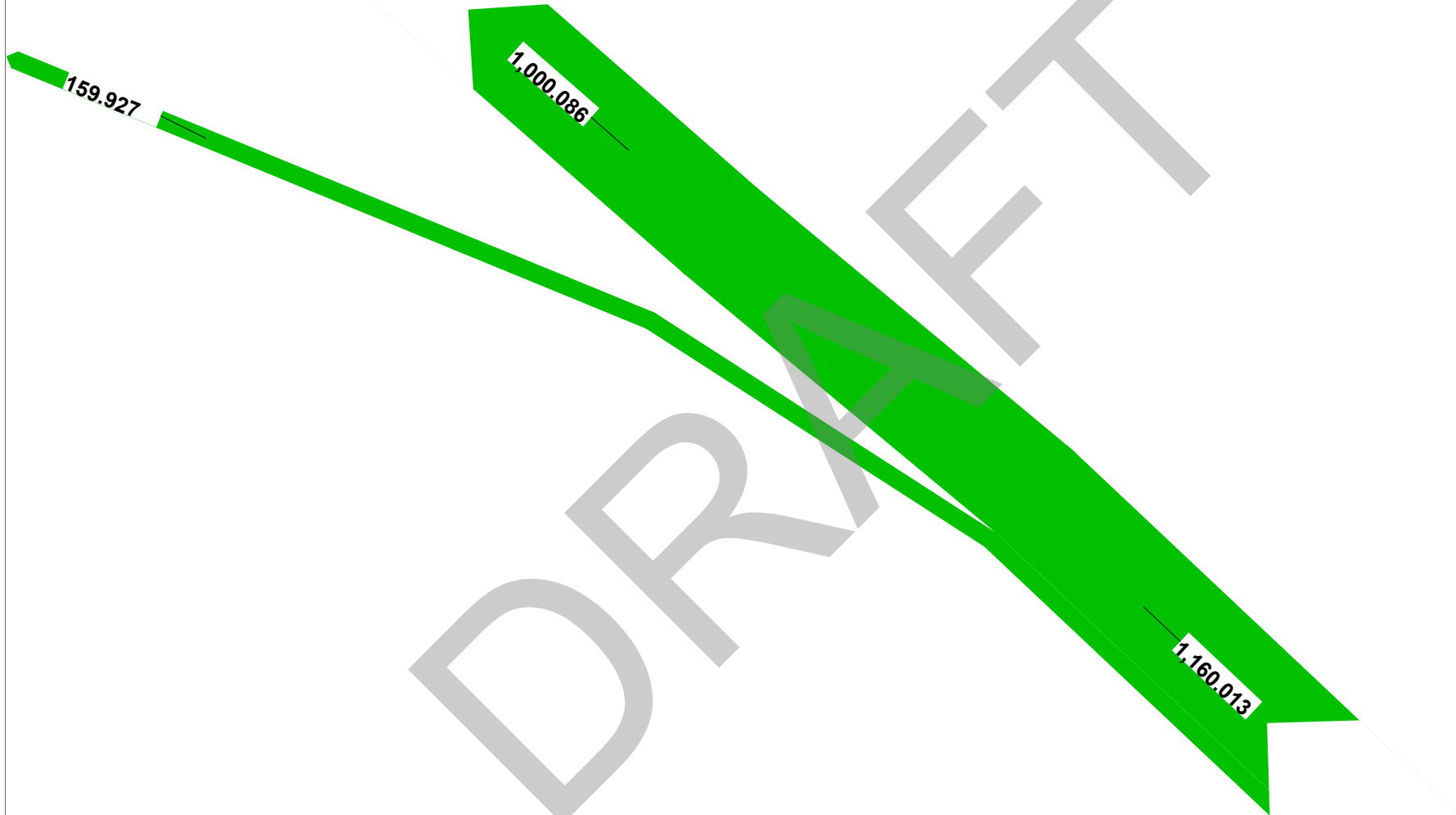
Build AM Node 7583

## I-10 EB Off Ramp Right Turn to Washington



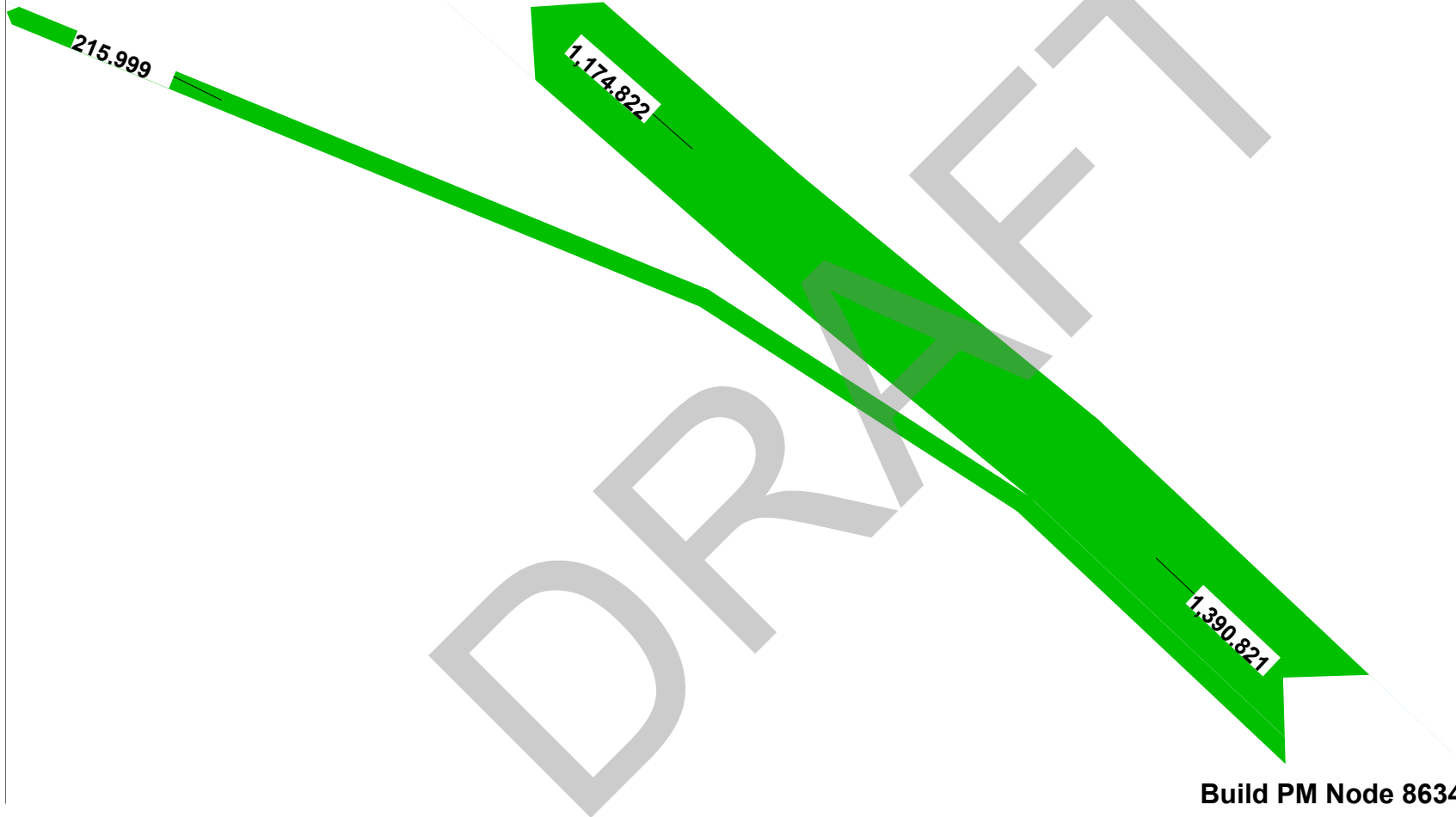
Build PM Node 7583

## WB Frontage Rd U-turn to EB Frontage Rd



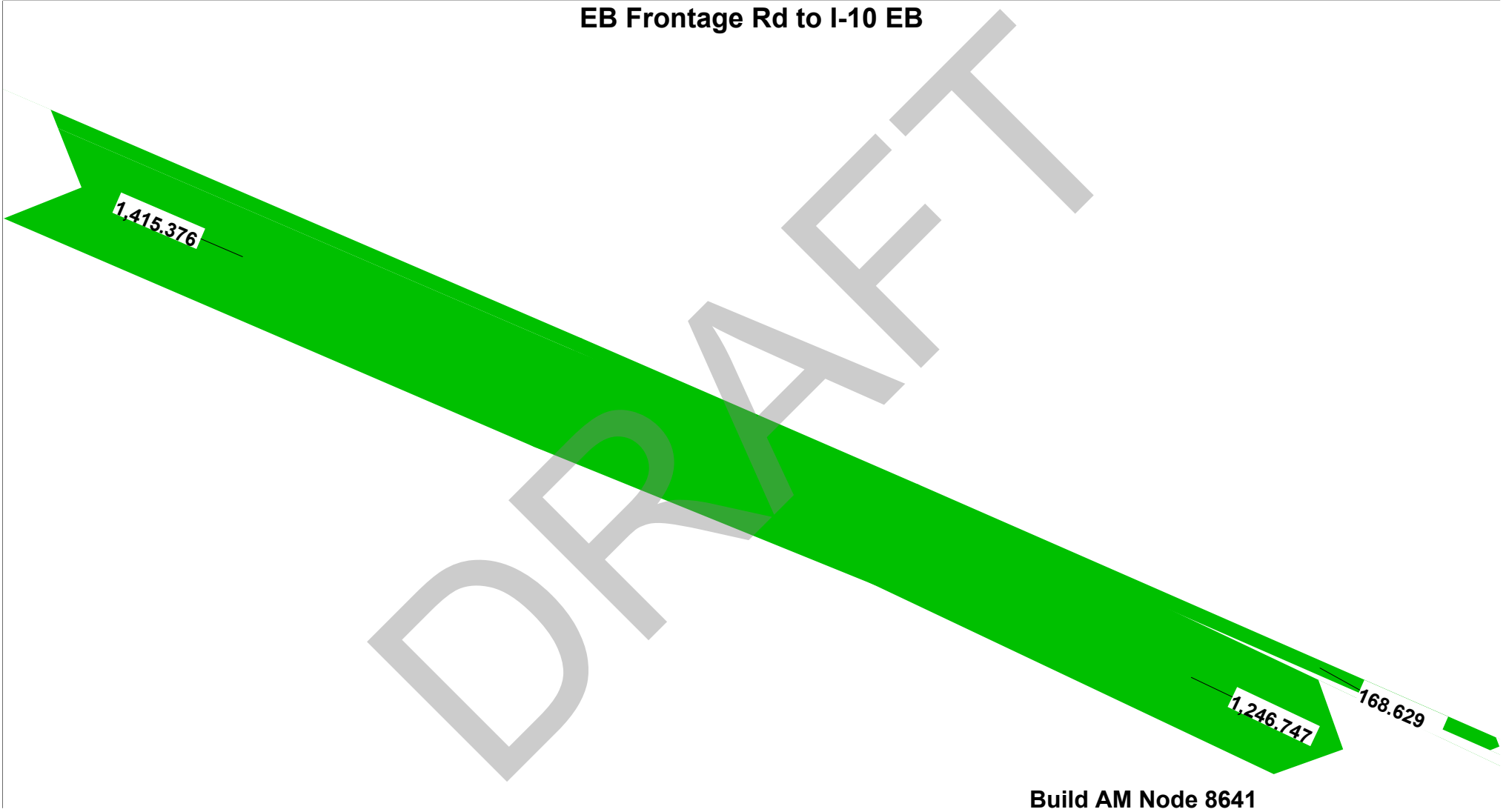
**Build AM Node 8634**

## WB Frontage Rd U-turn to EB Frontage Rd





## EB Frontage Rd to I-10 EB

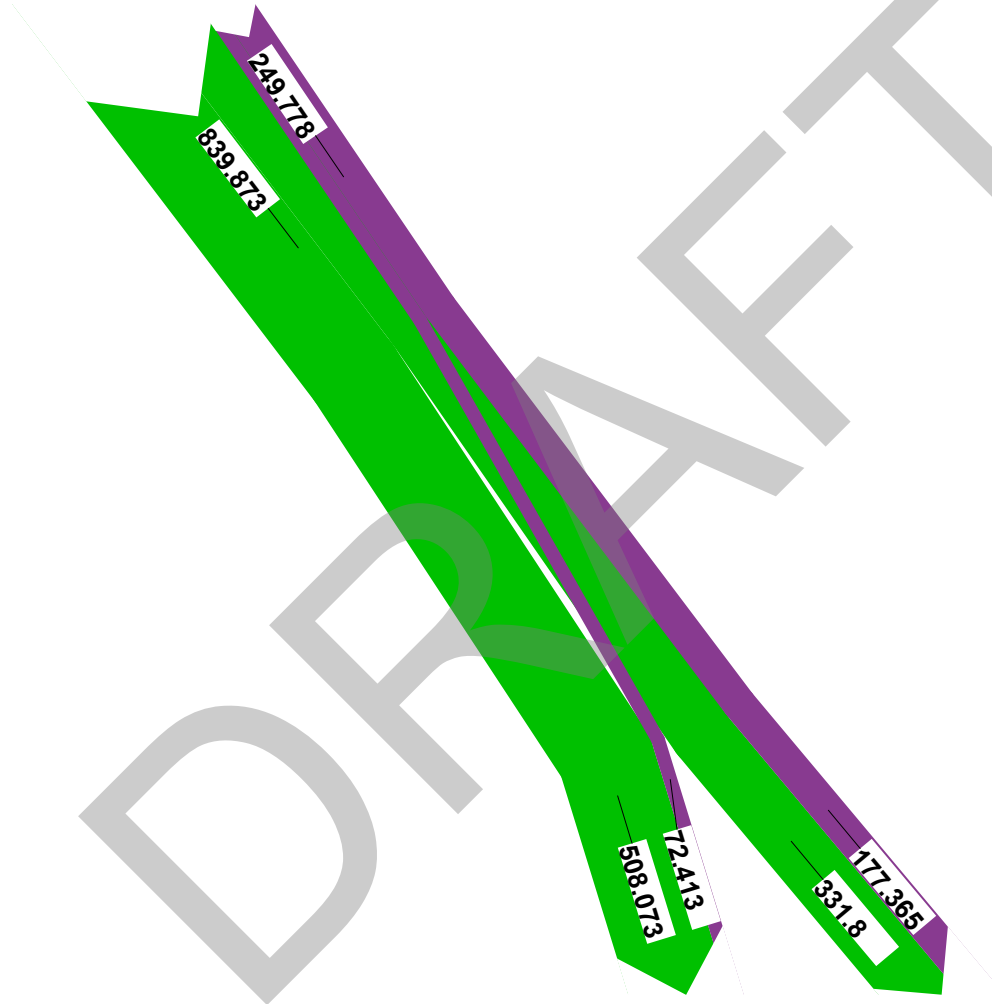


## EB Frontage Rd to I-10 EB



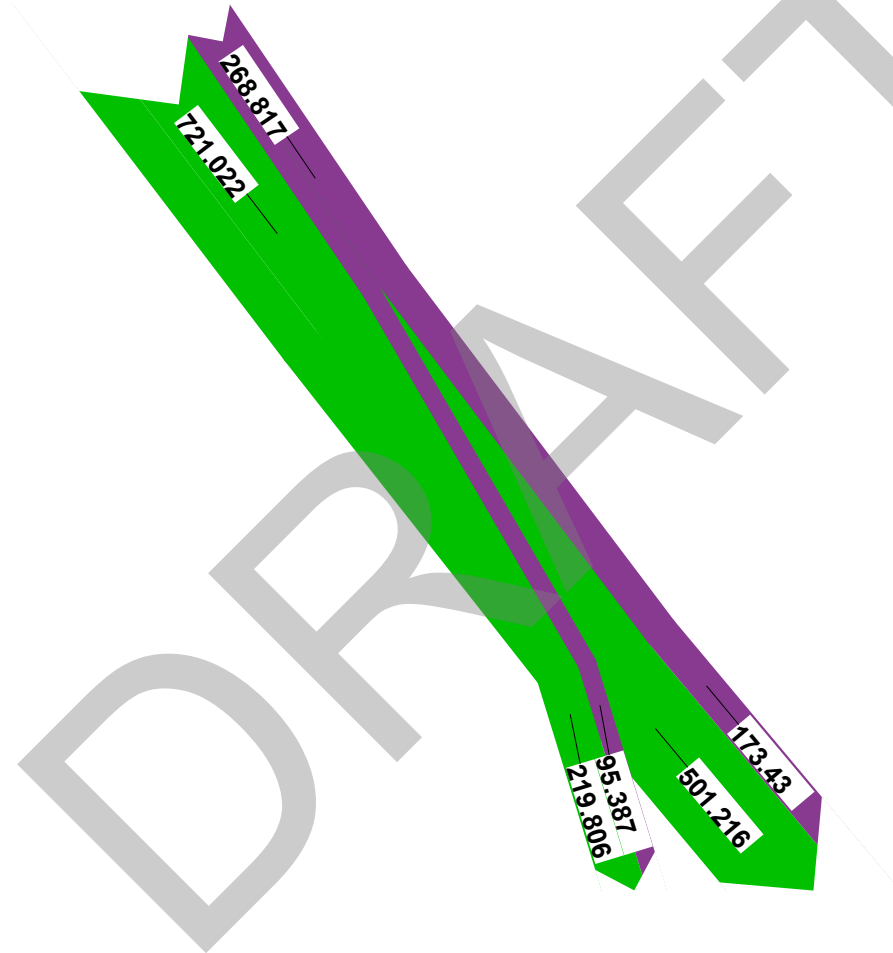
**Build PM Node 8641**

## EB Frontage Rd merge with I-10 EB Off Ramp to Washington



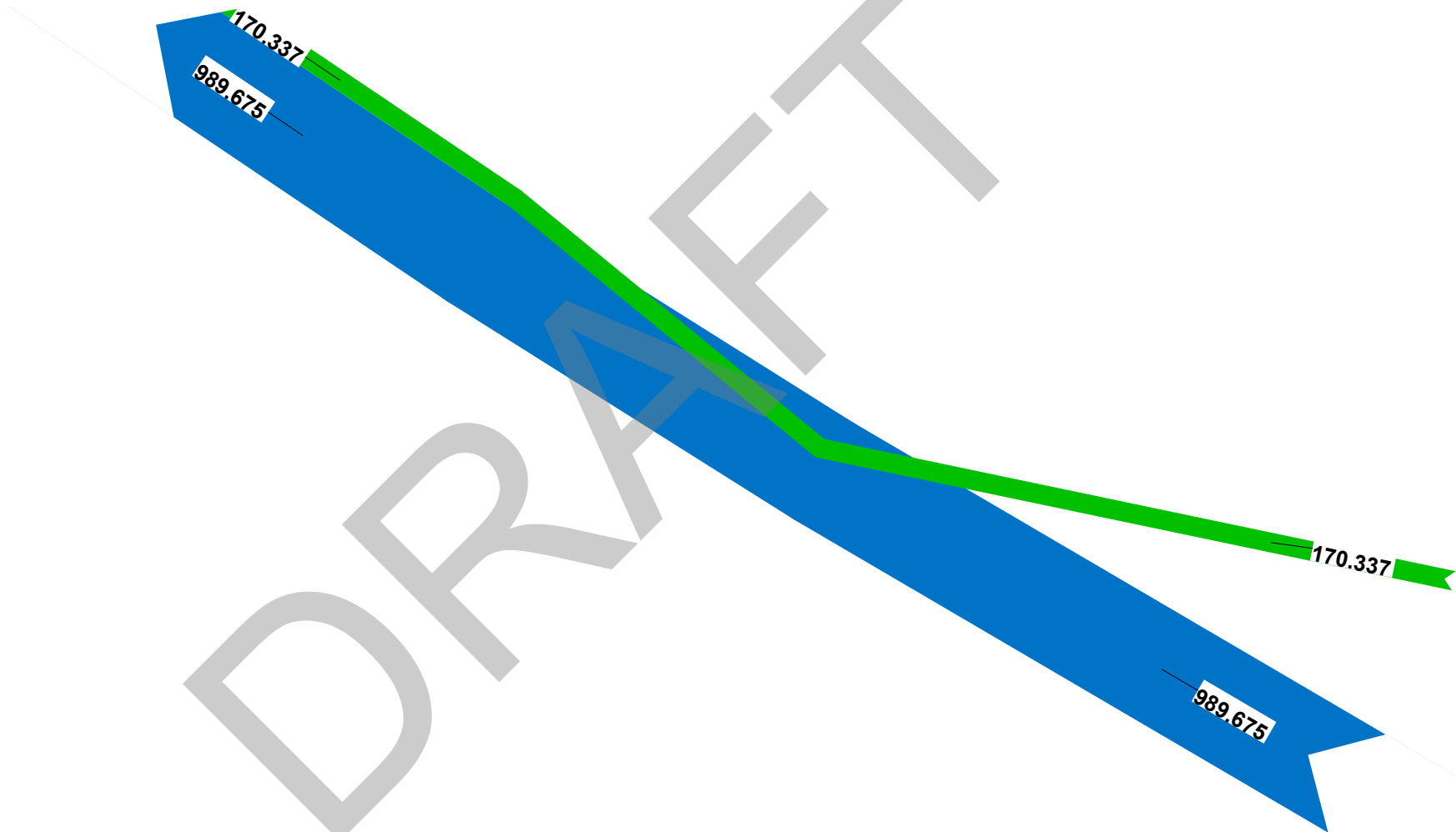
Build AM Node 8642

## EB Frontage Rd merge with I-10 EB Off Ramp to Washington



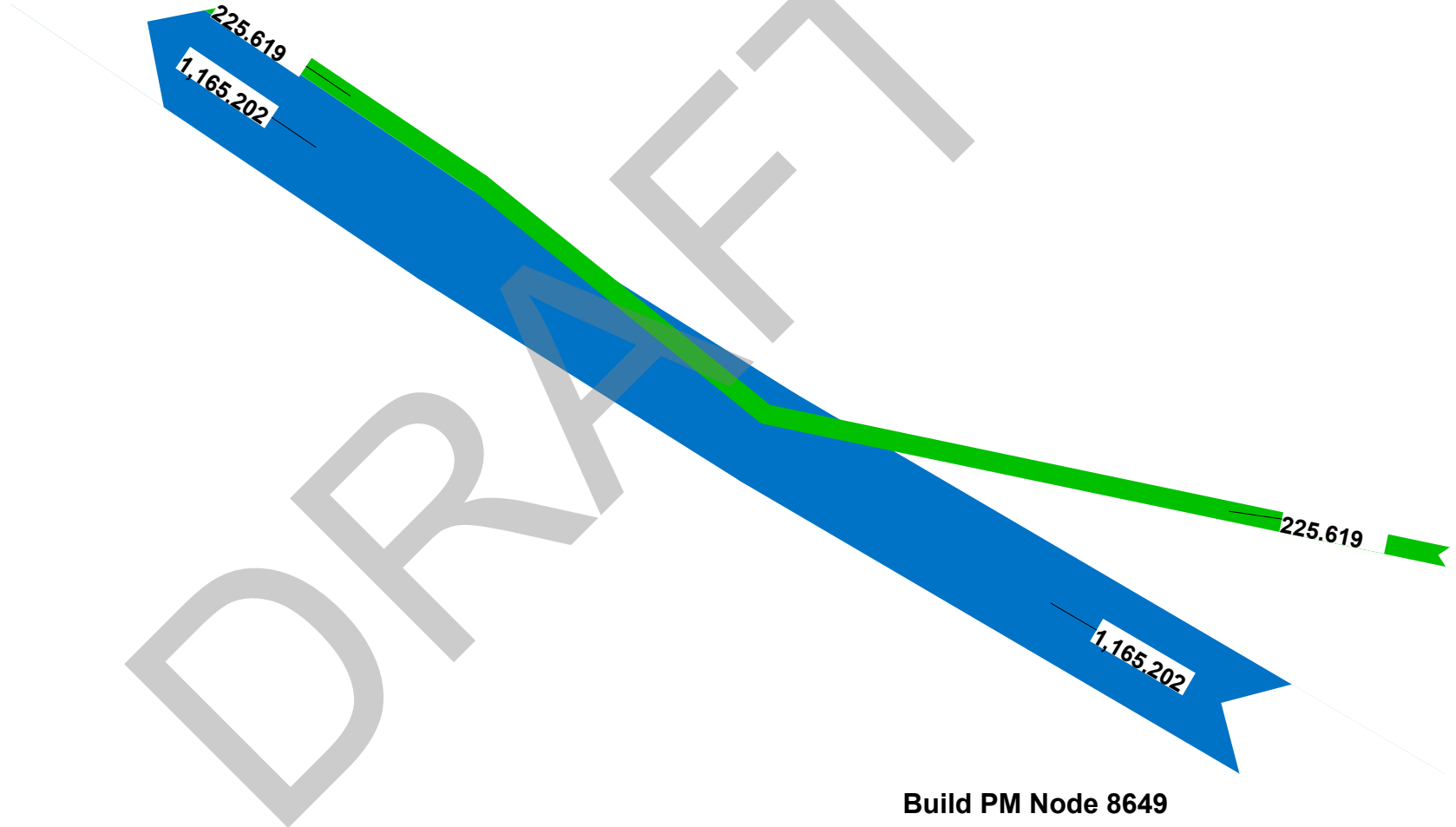
**Build PM Node 8642**

## I-10 WB Off Ramp to Washington/Dalrymple merge with WB Frontage Rd

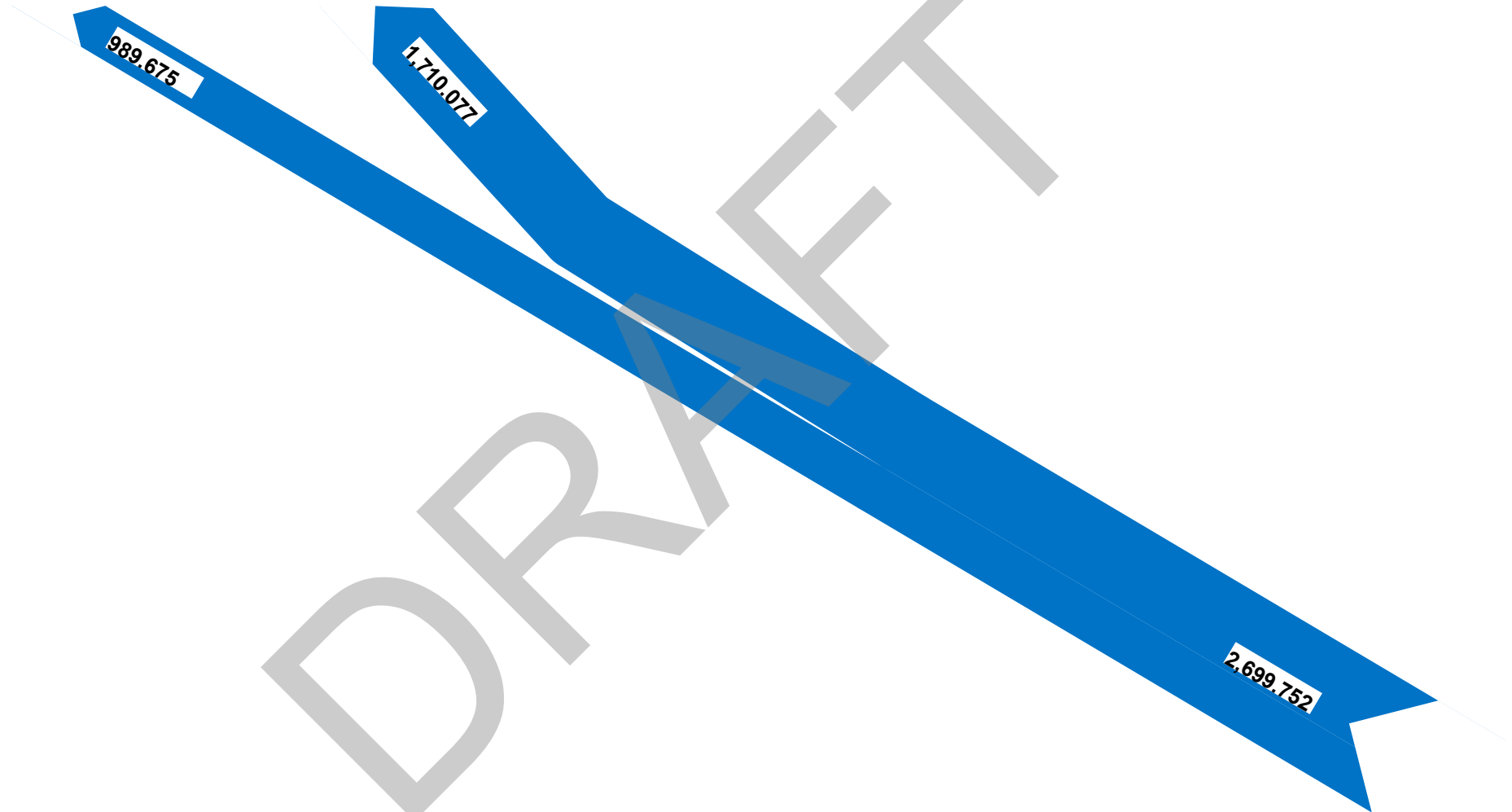


**Build AM Node 8649**

## I-10 WB Off Ramp to Washington/Dalrymple merge with WB Frontage Rd

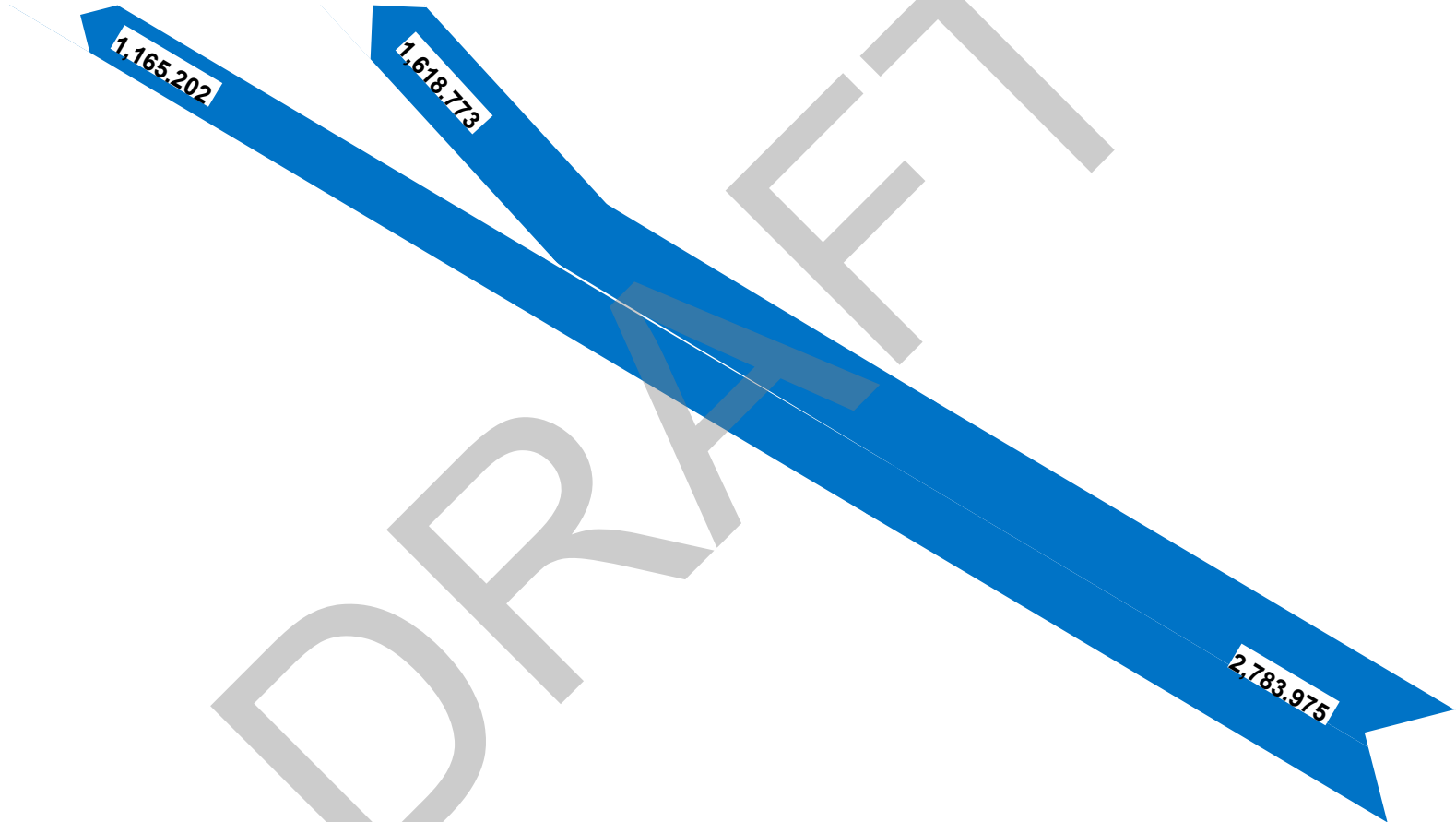


## I-10 WB Off Ramp Split to Washington and Dalrymple



**Build AM Node 8651**

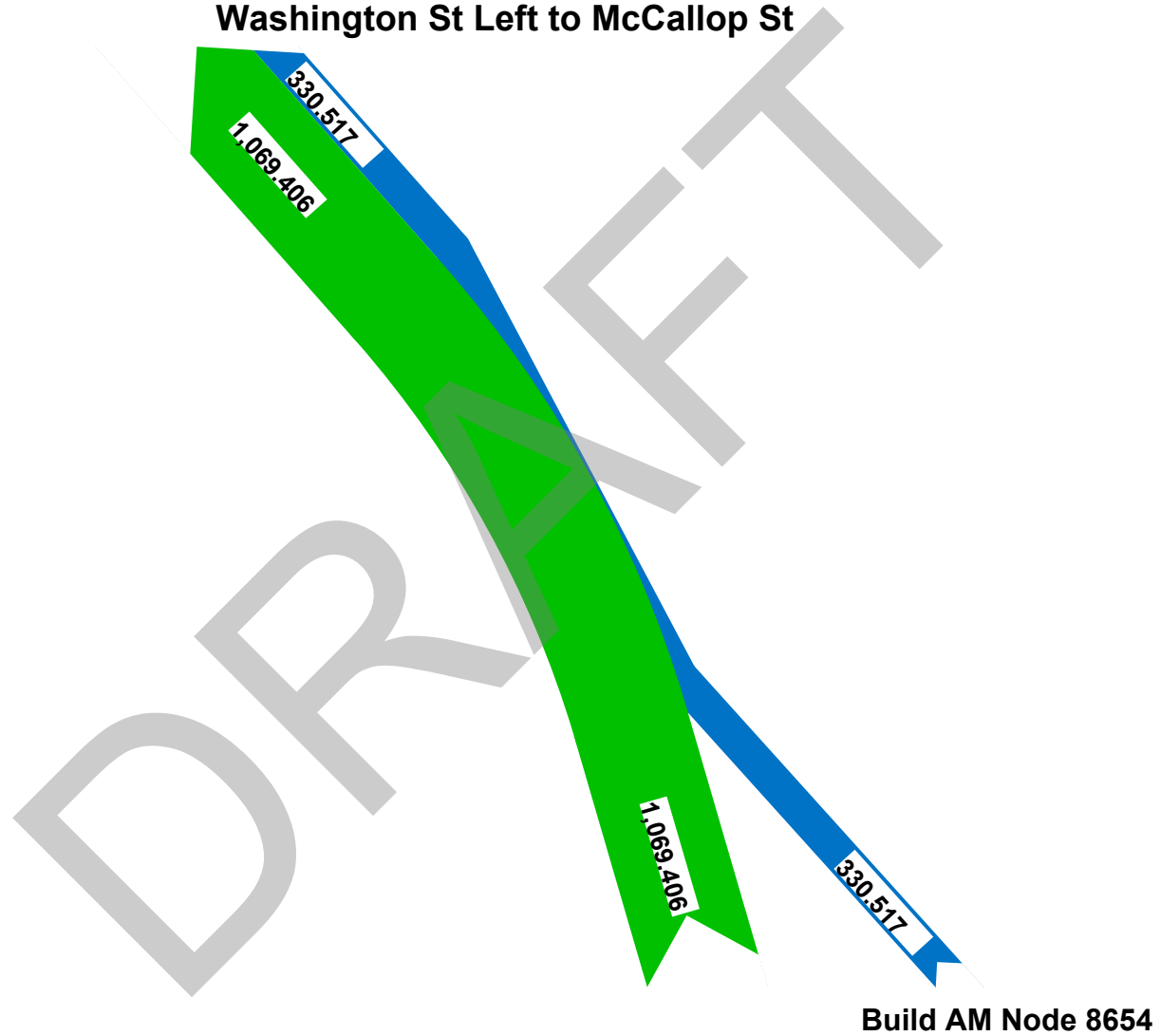
## I-10 WB Off Ramp Split to Washington and Dalrymple



**Build PM Node 8651**

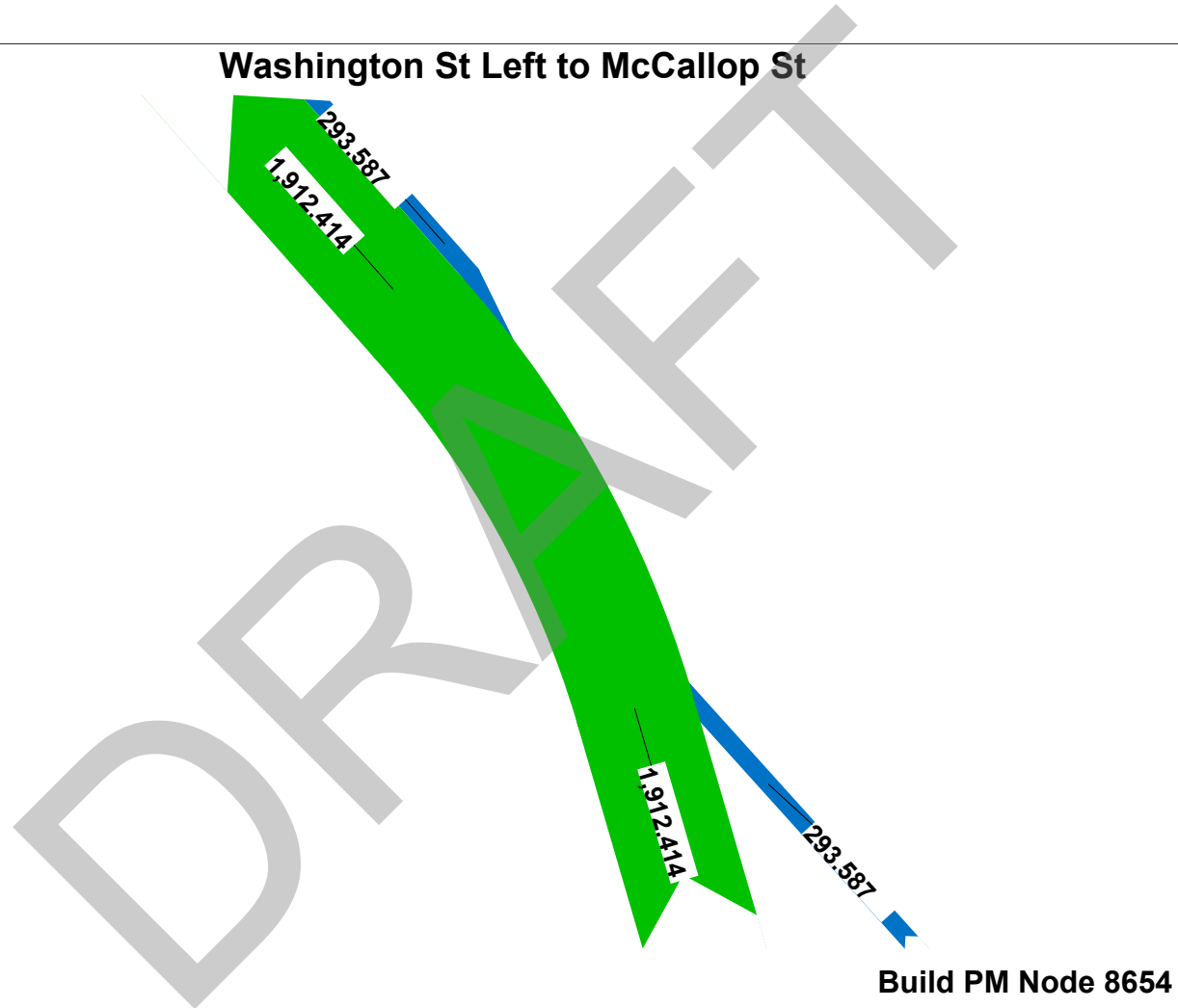


**Washington St Left to McCallop St**

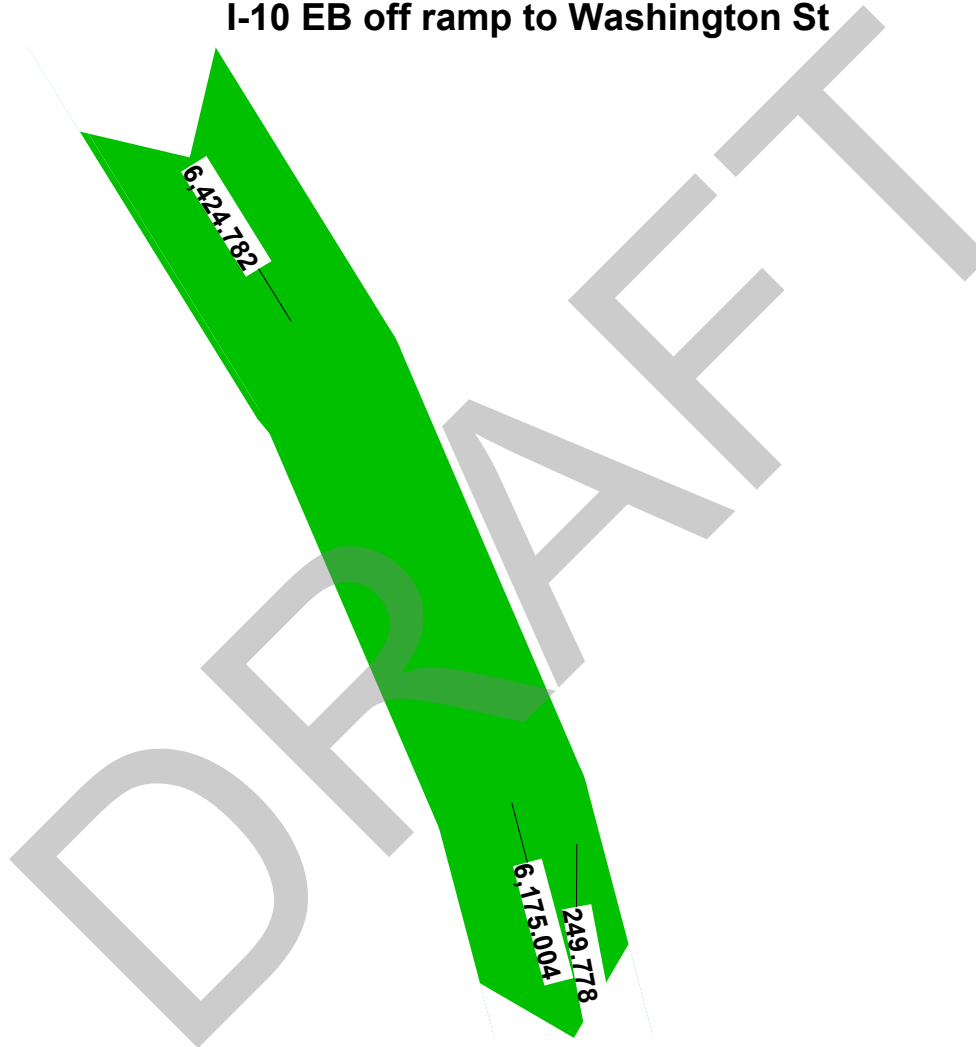


**Build AM Node 8654**

Washington St Left to McCallop St

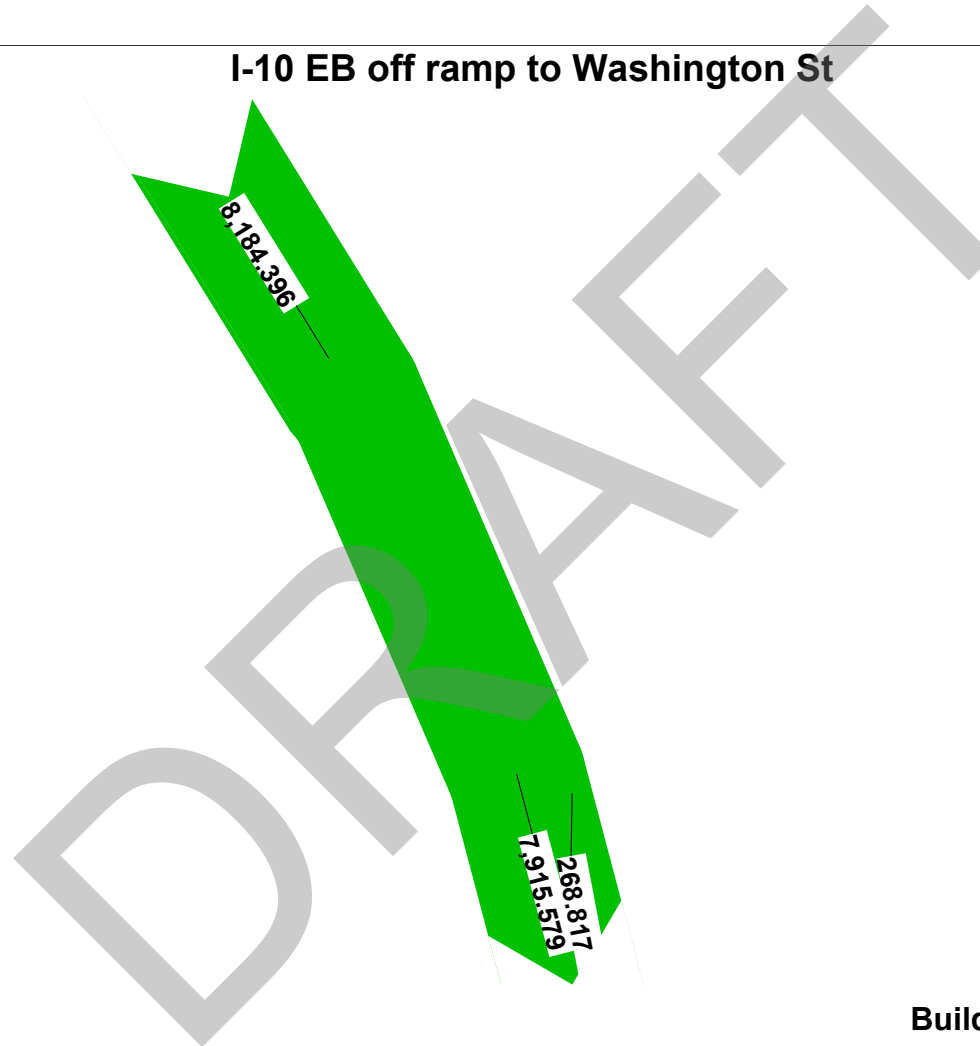


## I-10 EB off ramp to Washington St



**Build AM Node 8660**

## I-10 EB off ramp to Washington St



**Build PM Node 8660**

## Chapter 2 and Appendices B & C QA/QC

Task	Chapter/Appendix	Done by and Date	Checked by and Date	Notes
Archive Ch 2 pdf and word with "submittal" and the submittal date in the title	Ch 2	mhm 6-6-19	apc 7-9-19	
Update analysis software verbiage in report text	Ch 2	mhm 6-6-19	apc 7-9-19	
Update Table 2.4 and 2.6 with HCM 10 report MOE's for Existing and no build	Ch 2	mhm 6-6-19	amb 6-6-19	
Revised text formatting based on comments provided by Providence	Ch 2	mhm 8-2-19	apc 8-5-19	
Create a pdf and print	Ch 2	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2	mhm 8-6-19	apc 8-6-19	
Update QA/QC	Ch 2	mhm 8-6-19	apc 8-6-19	
Archive App B with word "submittal" and the submittal date in the title	Ch 2 App B	mhm 6-11-19	apc 7-9-19	
Update Existing Analysis files and Table in Ch 2 App B	Ch 2 App B	mhm 6-11-19	apc 7-9-19	
Create a pdf and print	Ch 2 App B	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2 App B	mhm 8-6-19	apc 8-6-19	
Update APP B QA/QC	Ch 2 App B	mhm 8-7-19	apc 8-7-19	
Archive App C with the word "submittal" and the submittal date in the title	Ch 2 App C	mhm 6-11-19	apc 7-9-19	
Update analysis files in APP C	Ch 2 App C	mhm 6-11-19	apc 7-9-19	
Create a pdf and print	Ch 2 App C	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2 App C	mhm 8-6-19	apc 8-6-19	
Update App C QA/QC	Ch 2 App C	mhm 8-7-19	apc 8-7-19	

Alyssa Bigles  
Alyssa Bigles, E.I.

Mathew Morgan  
Mathew Morgan, E.I.

Alben Cooper III  
Alben Cooper III, P.E., PTOE

8/7/19

Date

8/17/19

Date

8/2/19

Date