

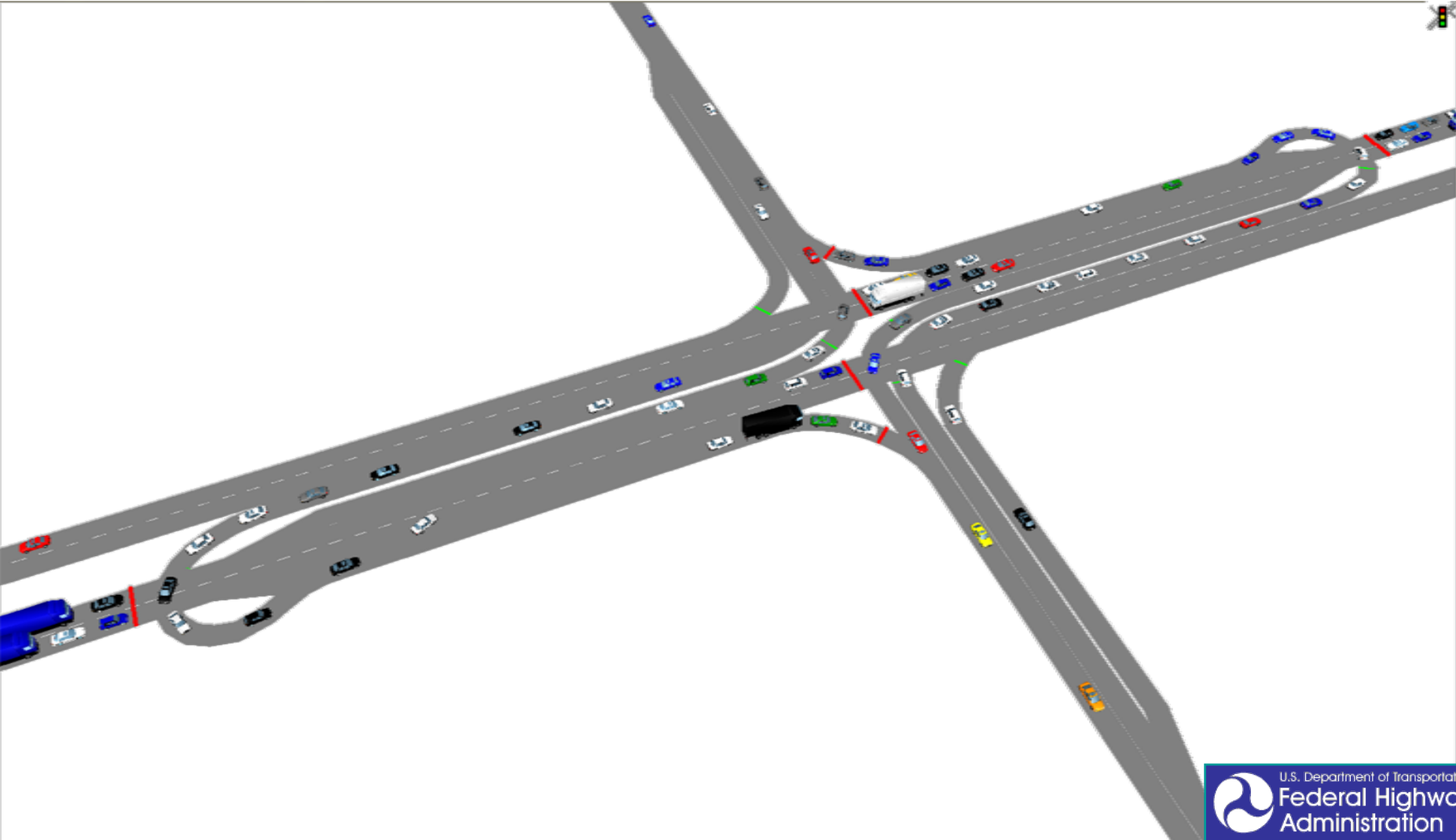
Restricted-Crossing U-turn Intersection (RCUT), Called Superstreet or J-Turn

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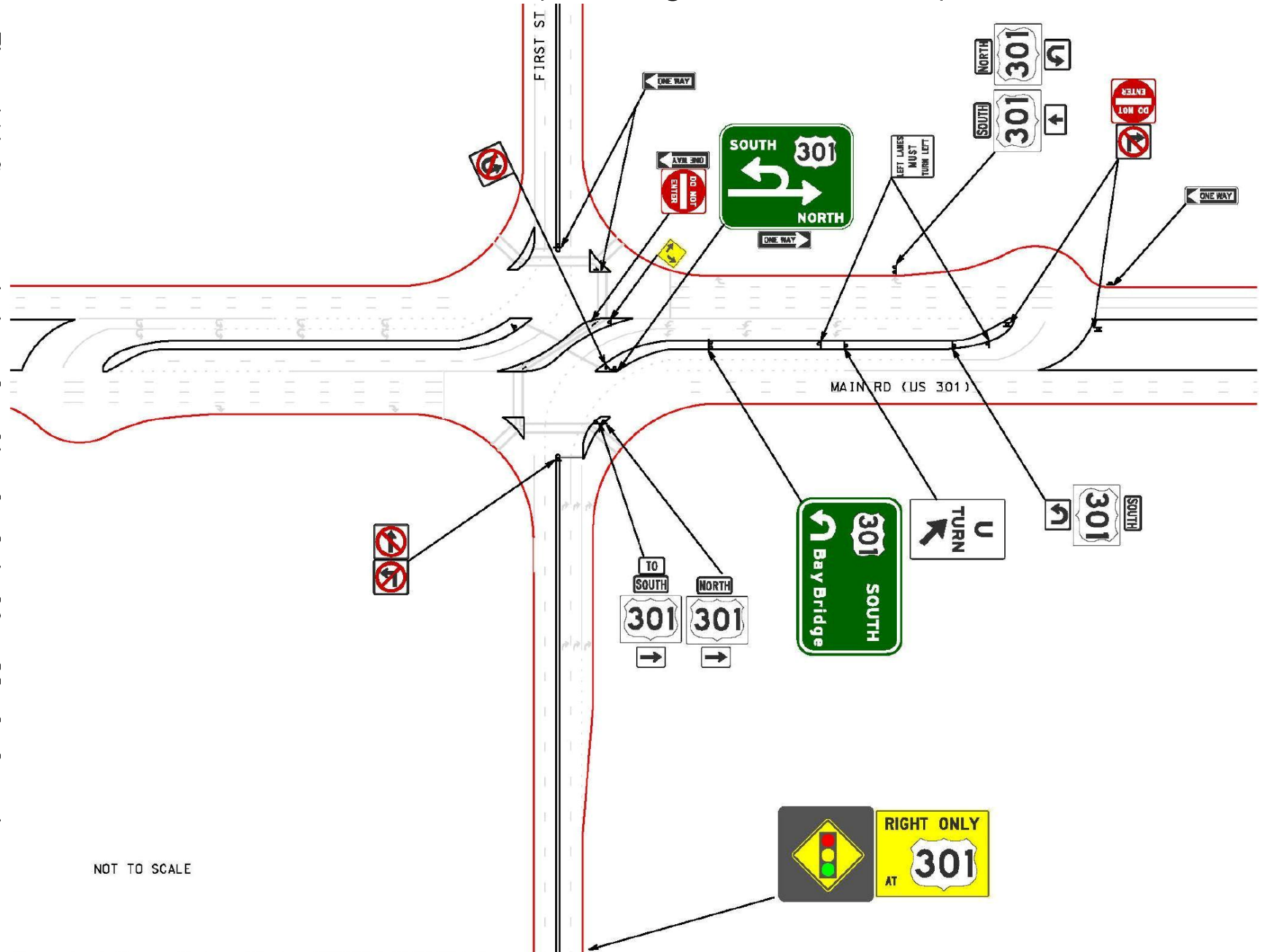


Typical RCUT Signalized Intersection Design

(VISSIM video)



(Wilmington, NC videos)



NOT TO SCALE

Willmington, NC, US 17



NC

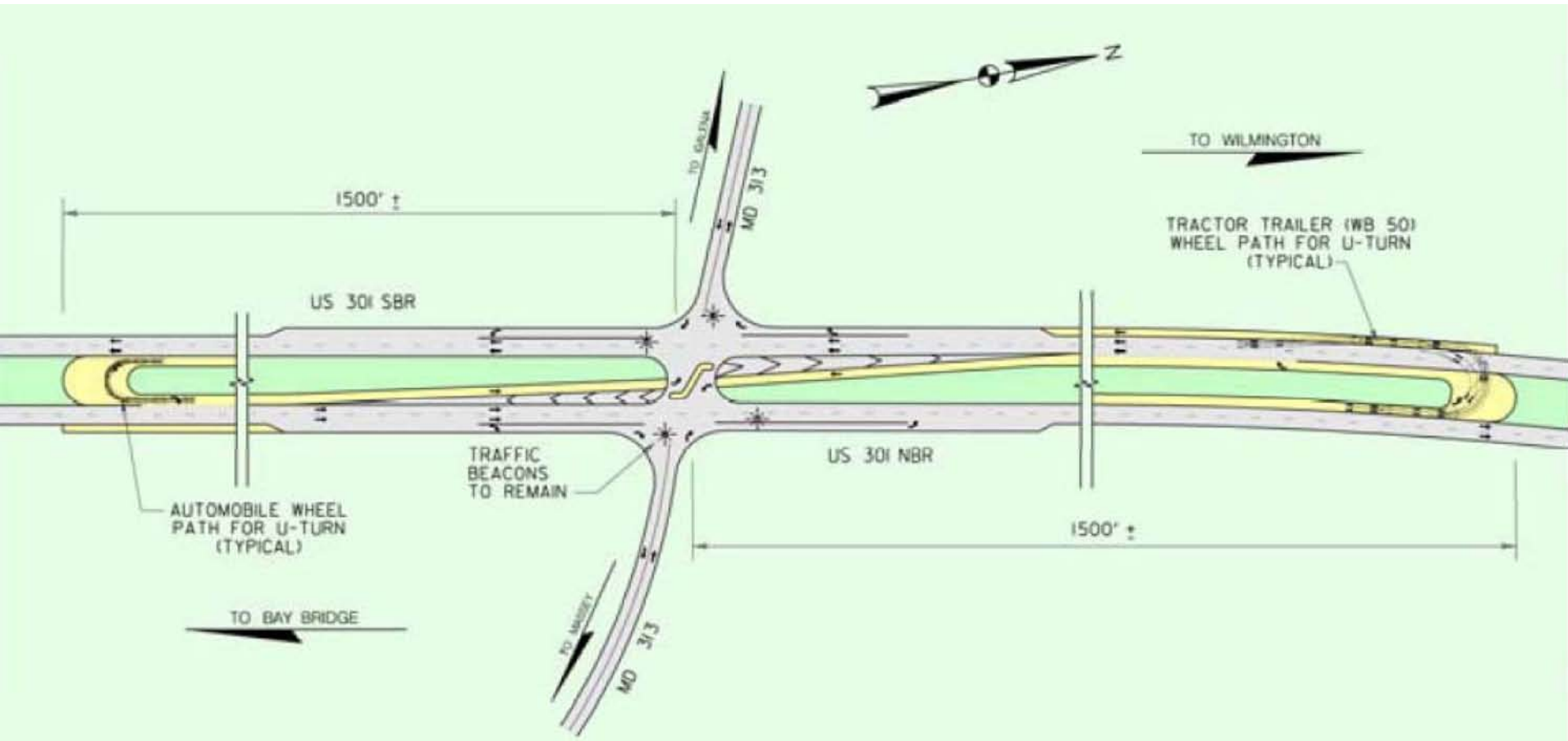


Background

- First proposed by Richard Kramer in Alabama.
- Then studied by Hummer and Reid.

- Several built in rural MD areas called J-turn intersection with non-signalized u-turn channelization.
- At one site, crashes were reduced from 9 to less than 1 per year.

Non-Signalized RCUT Intersection



LEGEND

-  EXISTING PAVEMENT
-  NEW PAVEMENT

US 301 / MD 313 INTERSECTION LEFT TURN MODIFICATION



DISTRICT NO. 2

NOT TO SCALE
APRIL 2009

US 301 & MD 313



Refer to video from
Maryland



Emmitsburg, MD

(MD video)



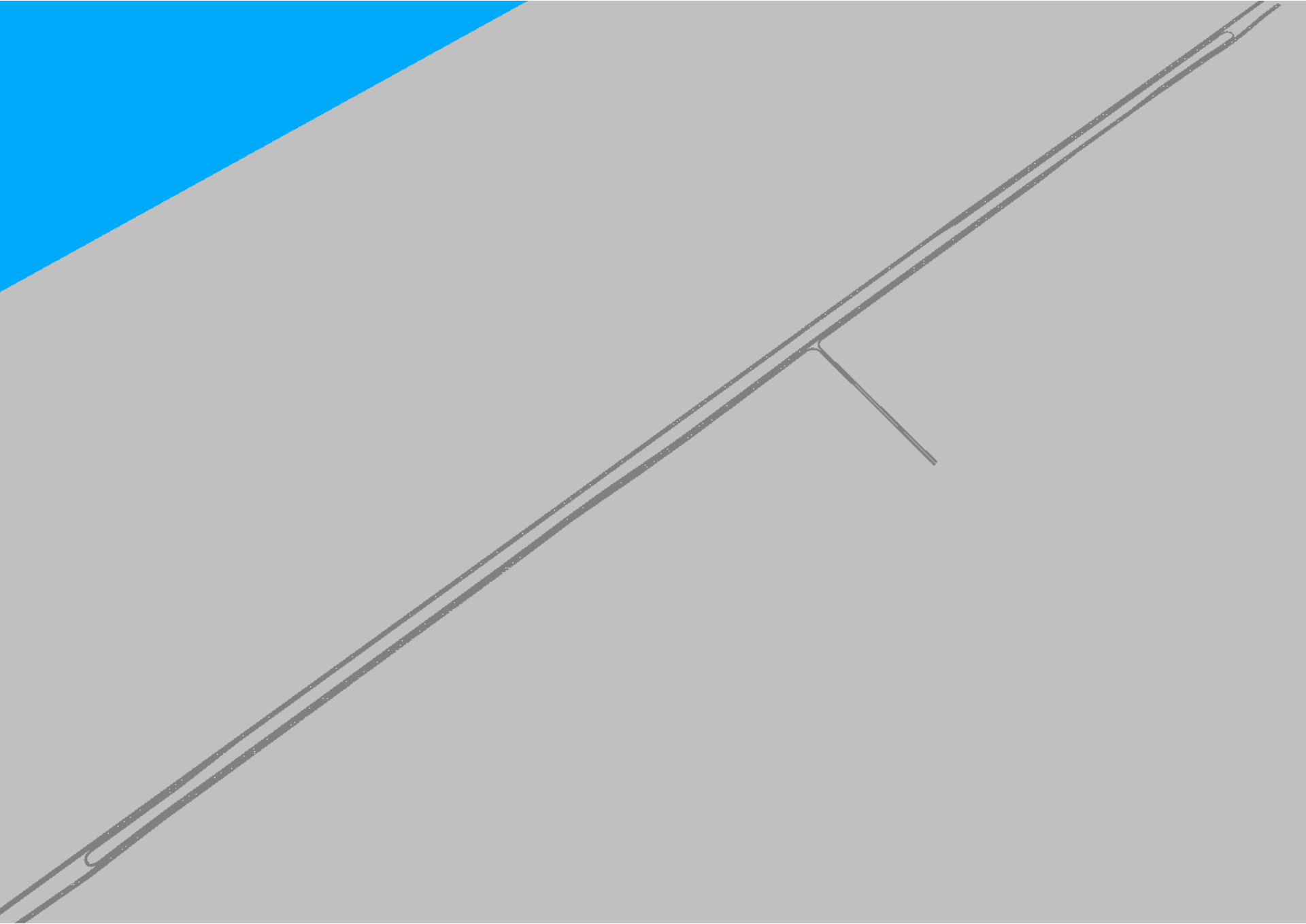
US 101 & Indianola Cutoff, CA

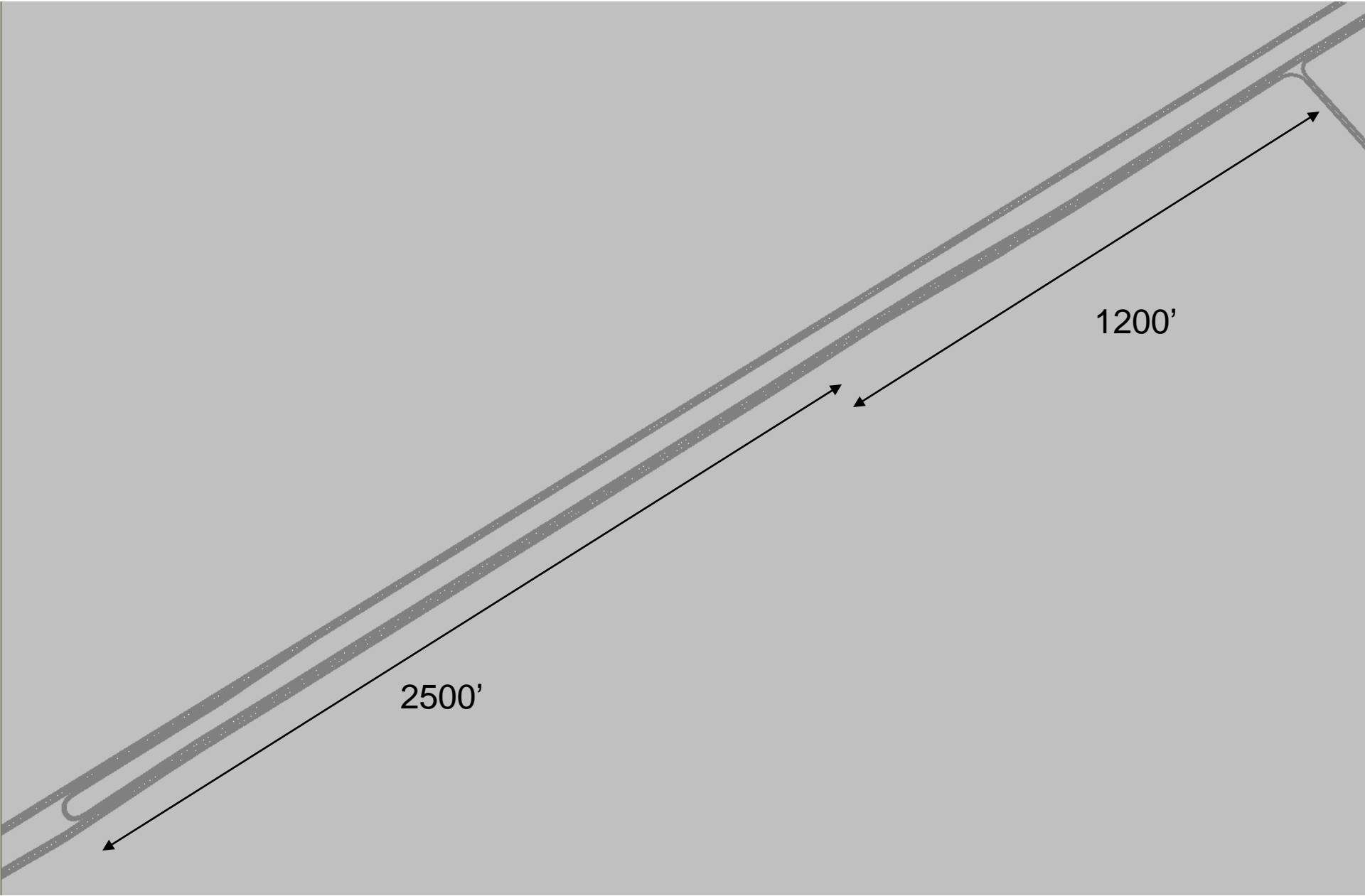


More...

10'ft
10 m

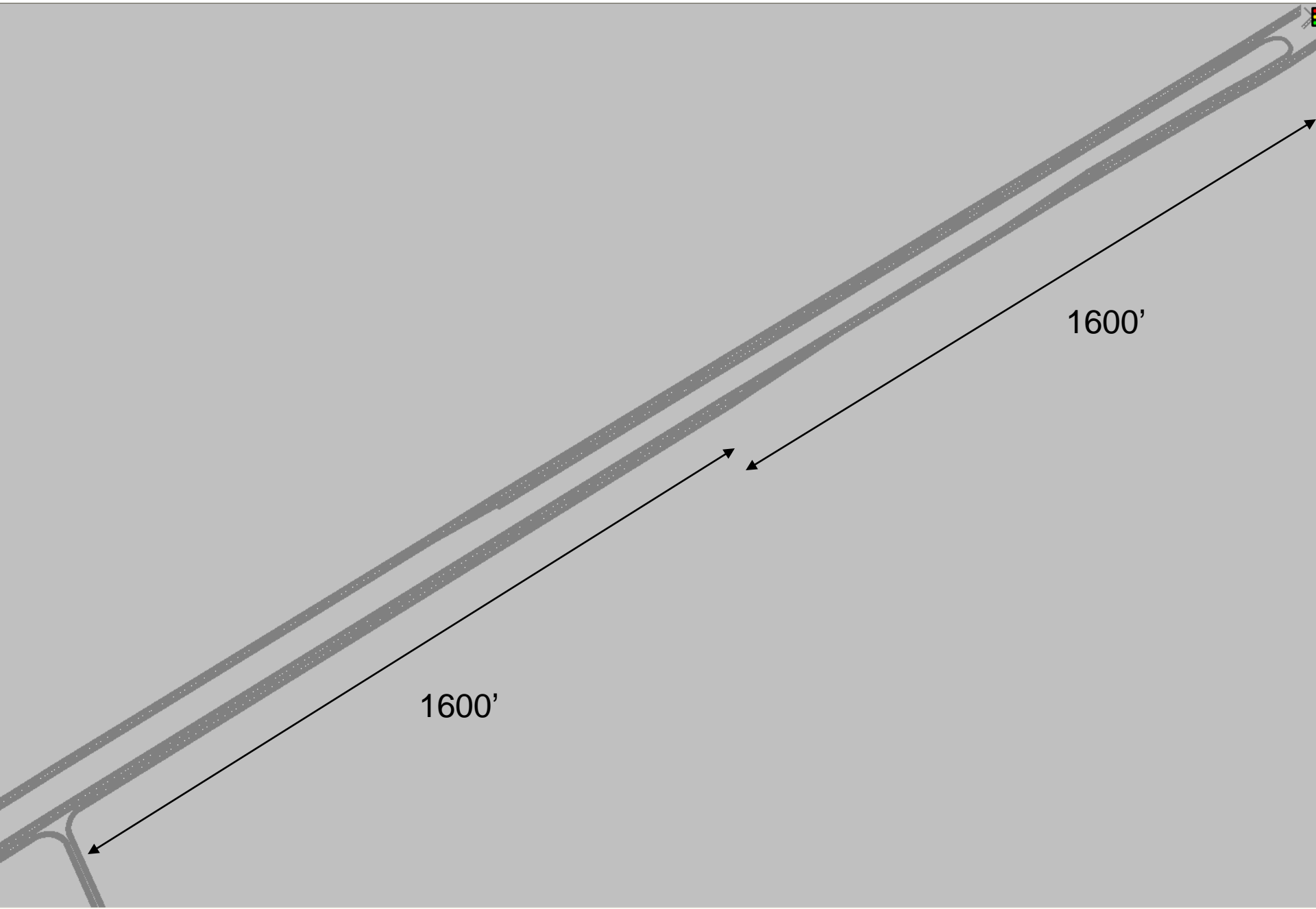
Refer to Video of Proposed design





2500'

1200'



1600'

1600'

Refer to video for existing design



Traffic performance comparison from **VISSIM**

NETWORK PERFORMANCE (Average of Random seeds 42 and 52)

	Existing	J-turn	Difference in %
Average delay time per vehicle(s), all vehicle types	237.7985	4.232	-98.2%
Average speed (mph), all vehicle types	15.6825	53.1265	238.8%
Average stopped delay per vehicle (s), all vehicle types	141.904	0.1645	-99.9%
Total stopped delay(hr), all vehicle types	134.9445	0.2085	-99.8%
Number of stops, all vehicle types	27168	76.5	-99.7%
Total travel time (hr), all vehicle types	317.4815	142.252	-55.2%

NODE EVALUATION (Random seed 42)

	Existing					J-Turn				
	Movement (S-W)	Movement (E-W)	Movement (E-S)	Movement (W-E)	Movement (All)	Movement (S-E)	Movement (E-W)	Movement (W-S)	Movement (W-E)	Movement (All)
Average Queue	587.8	1382	103	0	518.2	0	0	0	0	0
Average Delay per vehicle(sec)	753.6	3.3	517.3	0.3	39.5	0	0.1	0.8	0.6	0.4
Maximum queue	827	1673.9	165	0	1673.9	0	0	0	0	0
Stops	7.7	0.06	9.77	0	0.62	0	0	0.01	0	0

Safety performance comparison from the **Surrogate Safety Assessment Model (SSAM)**

**Frequency of conflicts in one hour of simulation
Time to collision < 1.5 seconds**

	Existing	J-Turn	Mean difference %	Significance
Total	1260	27	97.80%	Significant

**Frequency of conflicts in one hour of simulation
Time to collision < 1 second**

	Existing	J-Turn	Mean difference %	Significance
Total	279.5	20.5	90.20%	Significant

