

CEEn-2016CPST-009

BRT Bus Station Location and Traffic Flow Enhancement Study

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Introduction

- Project Description:
 - Locate 2 BRT side stations on 900 North in Provo.
 - Redesign the 700 East / 900 North intersection to maintain direct traffic flow.
 - Redesign nearby sidewalks to meet ADA requirements.
- Project Restrictions:
 - The stations will be 12 feet wide by 60 feet long with a 13-inch platform height.
 - The project can not physically impact private property, and must have minimal impacts to BYU property, including parking areas.

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Study Area



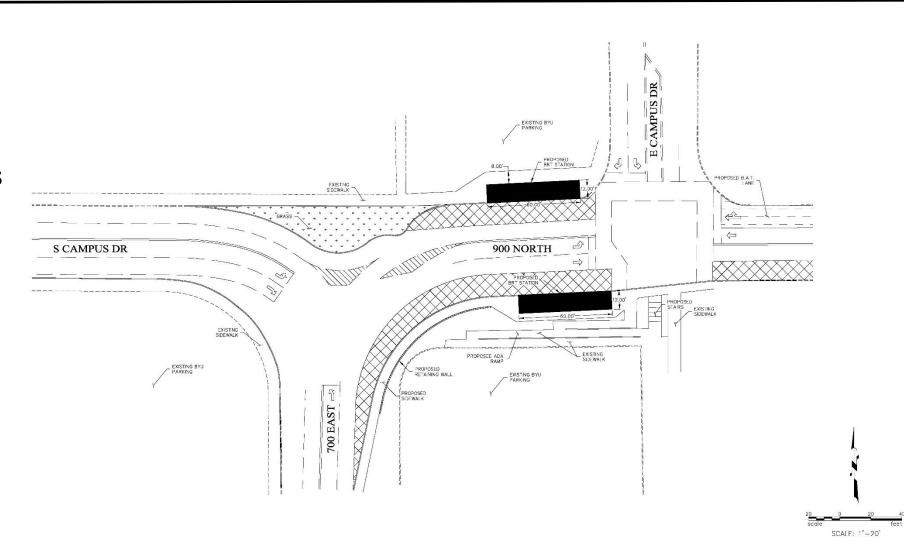
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Design

Site Plan:

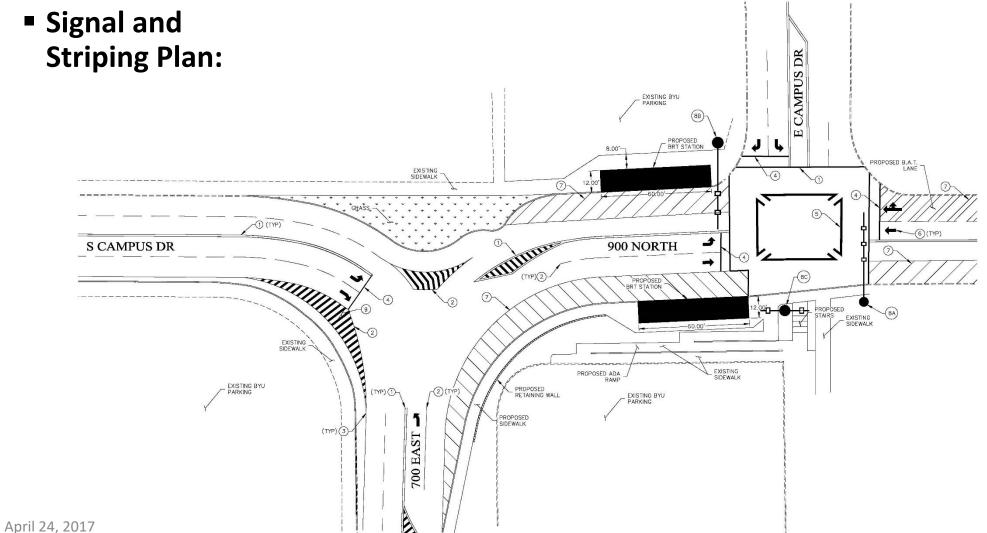
- Direct flow of traffic now from south to east leg.
- BRT stations and bus stops placed just west of E Campus Dr / 900 N intersection.
- Ramps designed to meet ADA requirements.
- Pedestrian crosswalks left in existing locations.





Design





VICINITY MAP

1	CENTER LANE MARKING PER UTAH MUTCD 3B.01 AND 3B.03				
2	WHITE LANE LINE MARKING PER UTAH MUTCO 3B.04				
3	EDGE LINE MARKING PER UTAH MUTCD 3B.06 AND 3B.07				
4	STOP LINES PER UTAH MUTCD 3B.16				
5	CROSSWALK MARKINGS PER UTAH MUTCD 3B.18				
6	PAVEMENT MARKING PER UTAH MUTCD 3B.20				
7	BUS LANE MARKINGS PER THIS SHEET				
88	SIGNAL LIGHTING PER UTAH MUTCD 4D-20 AND 4E-04				
88	SIGNAL LIGHTING PER UTAH MUTCD 4D-24 AND 4E-04				
80	SIGNAL LIGHTING PER UTAH MUTCD 4D-26 AND 43-04				
9	STOP SIGN PER UTAH MUTCD 5B.02				

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Traffic Analysis

- Intersection Level of Service measured by delay and stops per vehicle.
- Synchro 9 / SimTraffic 9 software used for analysis
 - Due to limitations, the UTA and new BRT buses were not modeled. Only regular vehicle traffic was modeled.
- Two models created:
 - Existing conditions
 - "Plus project" conditions with redesigned 700 East / 900 North intersection

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Traffic Analysis

Existing Conditions:

Intersection	Volume (vph)	Delay (sec/veh)	Stops / Veh	
700 East / 900 North	581	5	0.54	
900 North / East Campus Dr	568	14	0.35	
900 East / 900 North	2152	11	0.41	





Traffic Analysis

Plus project conditions:

Intersection	Volume (vph)	Delay (sec/veh)	Stops / Veh	
700 East / 900 North	581	2	0.16	
900 North / East Campus Dr	568	14	0.34	
900 East / 900 North	2152	11	0.41	

Scenario		Delay (s	sec/veh)			Stops	/ Veh	
Scenario	EB	NB	WB	Tot	EB	NB	WB	Tot
Existing	0	11	2	5	0.00	1.00	0.35	0.54
Plus Project	12	1	0	2	1.00	0.10	0.35	0.16





Conclusions & Recommendations

- Triple J Engineering recommends the given proposed design, which will:
 - improve traffic flow in the area.
 - provide easy access to the BRT system from BYU campus.
 - not negatively impact neighboring properties.
- Triple J Engineering also recommends the following:
 - Leave pedestrian crosswalks in existing locations.
 - Investigate other signal timing options at E Campus Dr. / 900 East intersection.

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Questions?