# CEEn-2016CPST-009

# BRT Bus Station Location and Traffic Flow Enhancement Study

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# Introduction

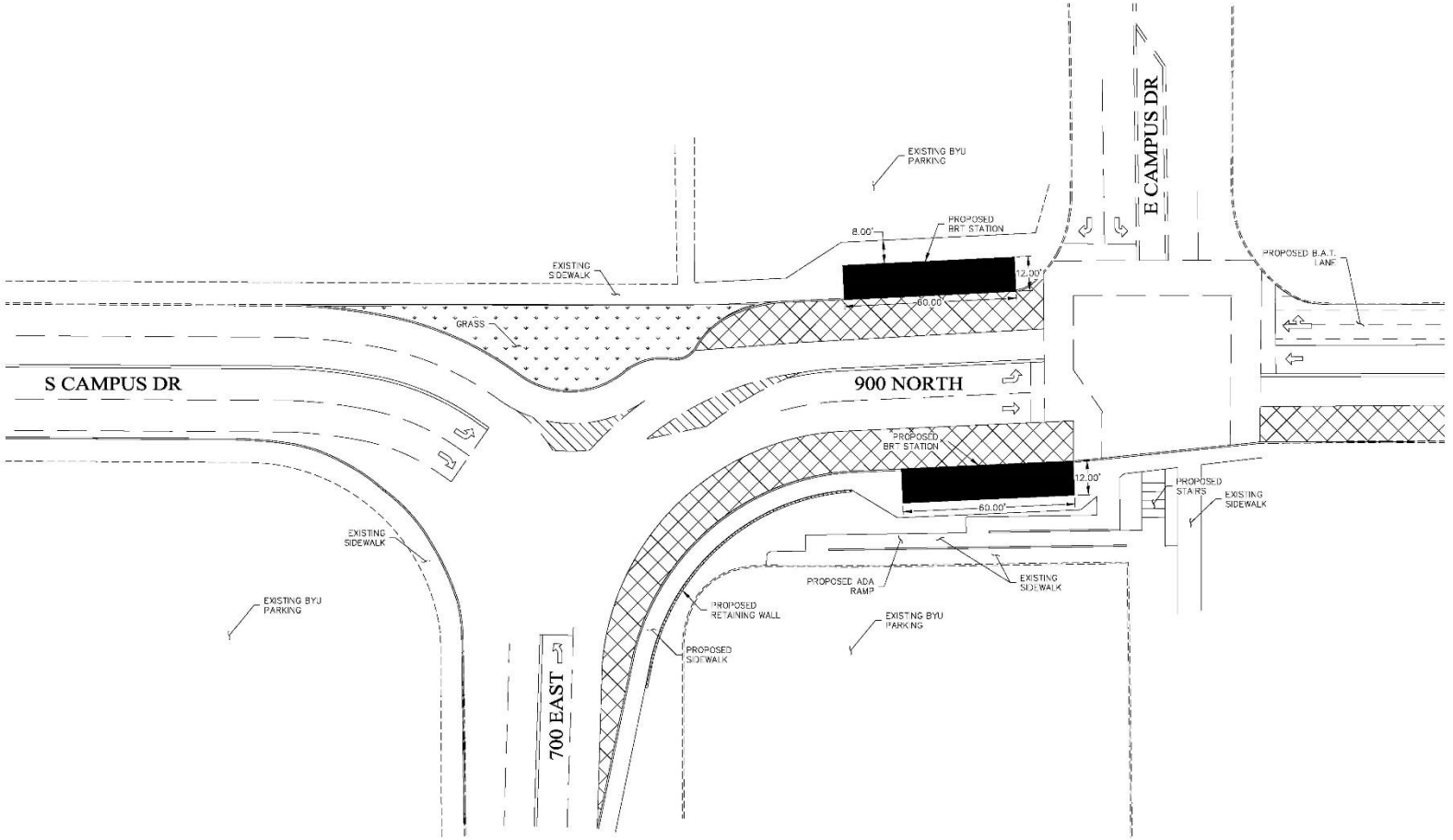
- **Project Description:**
  - Locate 2 BRT side stations on 900 North in Provo.
  - Redesign the 700 East / 900 North intersection to maintain direct traffic flow.
  - Redesign nearby sidewalks to meet ADA requirements.

- **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.

# Study Area

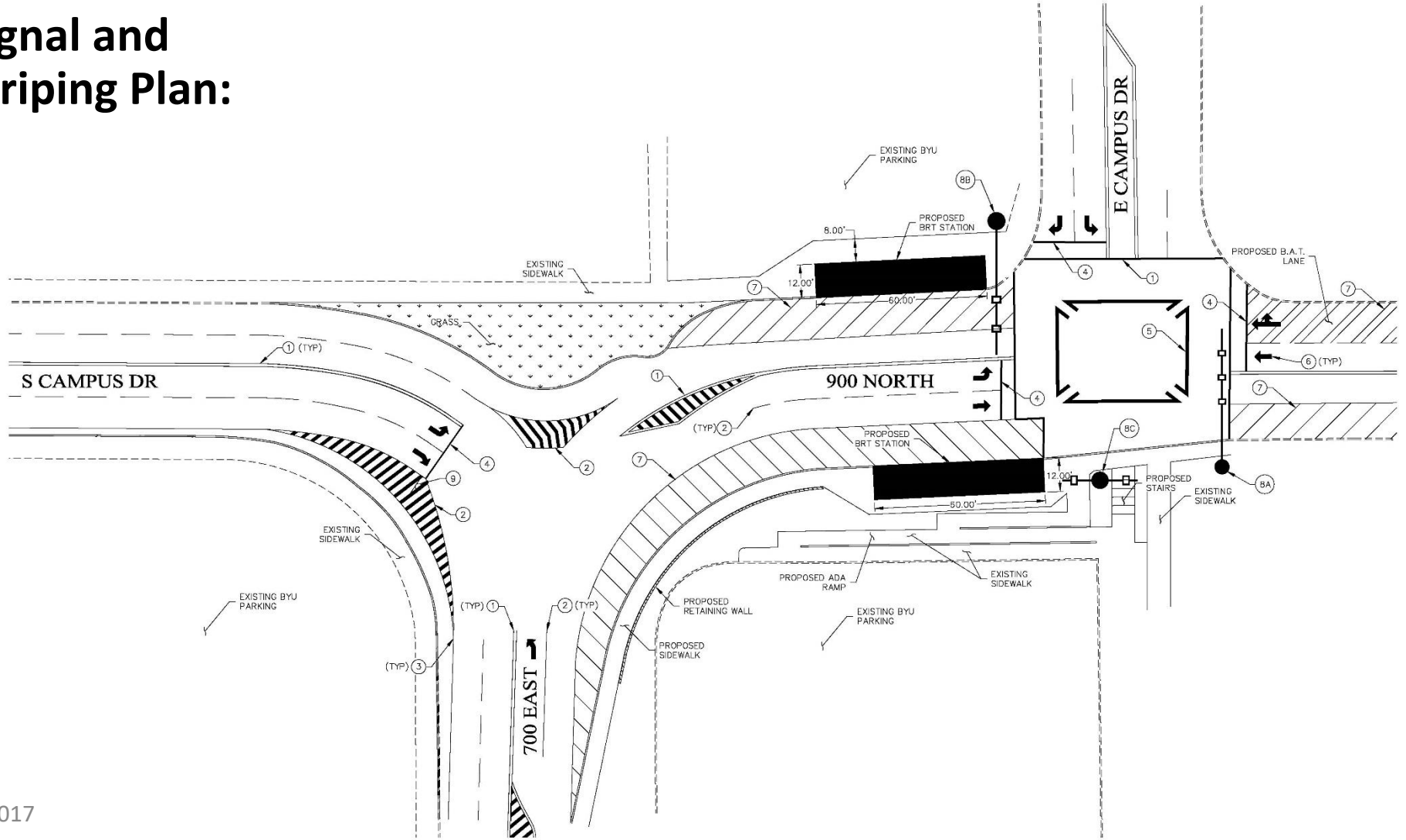
# Design

- **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

- **Signal and Striping Plan:**



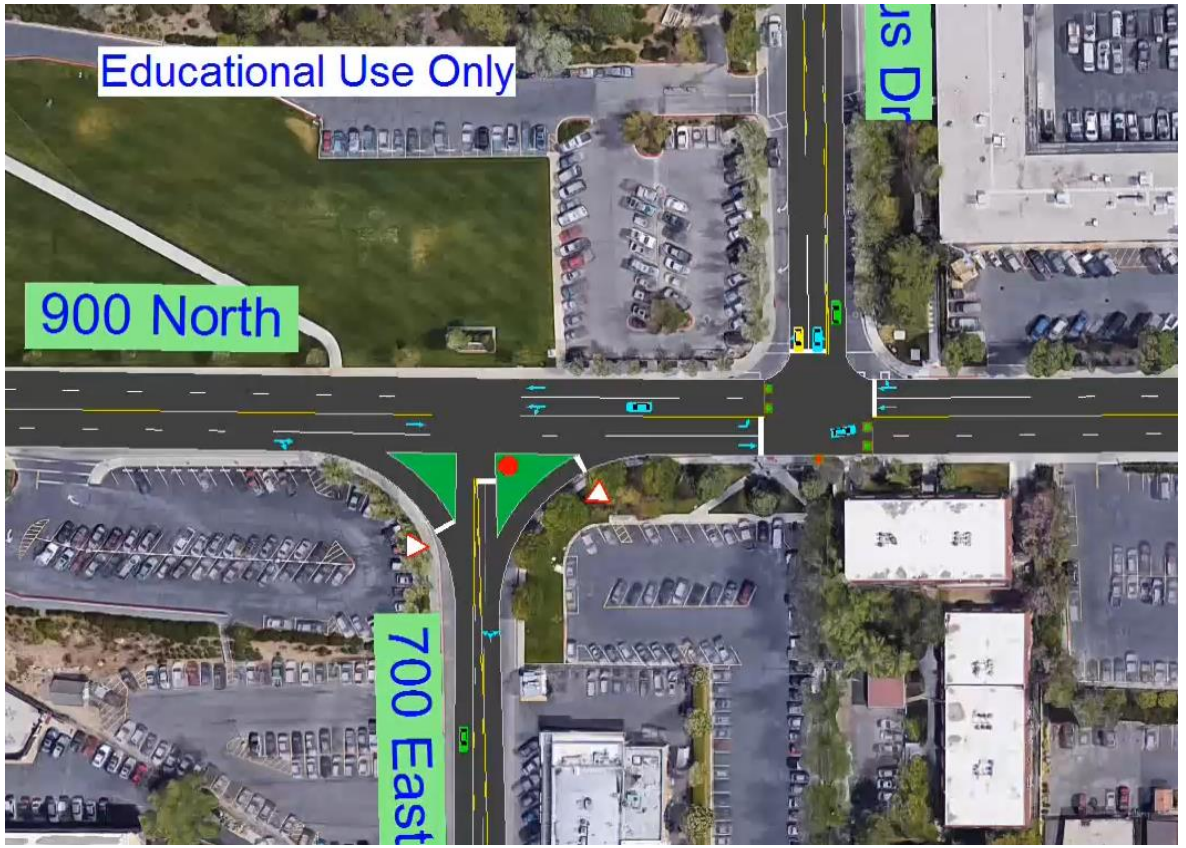
# Traffic Analysis

- 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

# 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 (sec/veh) | | | | Stops / Veh | | | |
|---|---|---|---|---|---|---|---|---|
| | 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.**

# Questions?