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2015

### Design of a Pedestrian Bridge Over Babcock Street

Alexandria Boddy

Steven Moodie

Mohammad Awad

Alexis Miller

William Mitchell

*See next page for additional authors*

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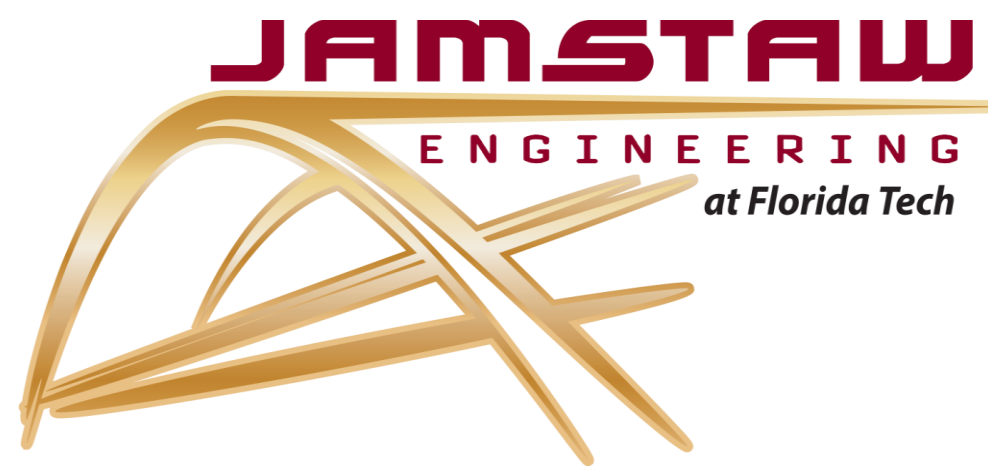
**Authors**

Alexandria Boddy, Steven Moodie, Mohammad Awad, Alexis Miller, William Mitchell, and Tariq Alamri

# Design of a Pedestrian Bridge Over Babcock Street

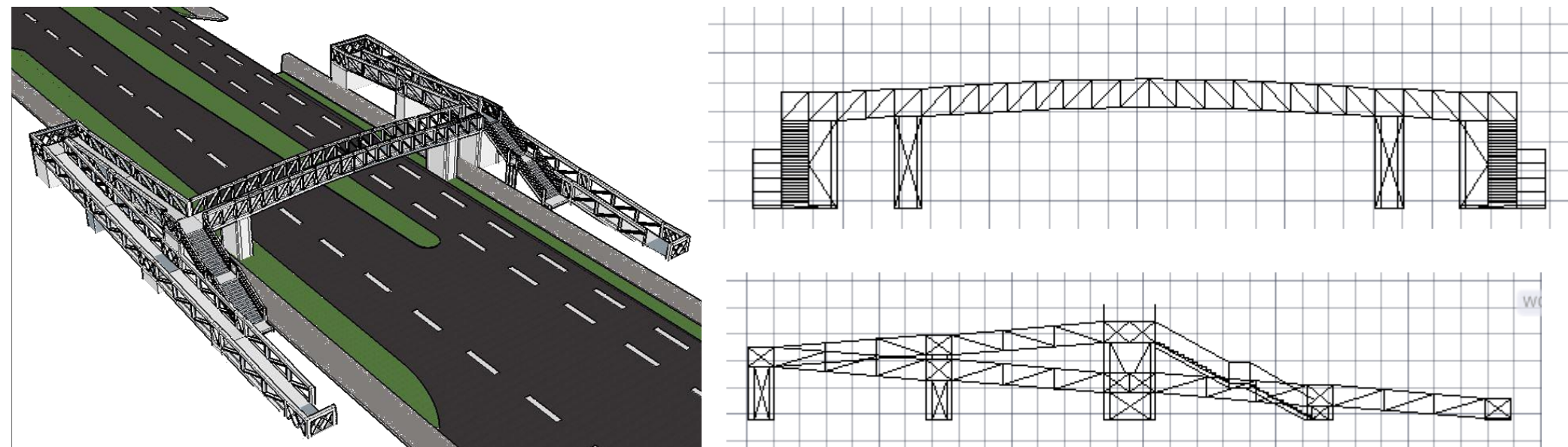
Alexandria Boddy, Steven Moodie, Mohammad Awad, Alexis Miller, William Mitchell, Tariq Alamri

Department of Civil Engineering, Florida Institute of Technology



## STRUCTURAL ENGINEERING

William Mitchell  
Adv. Dr. Pinelli, Dr. Suksawang



- 80 foot span with 16 foot road clearance.
- Bridge design used is a light weight steel truss design as the primary structural support for the bridge with majority of connections being welds.
- The long ramp is to ensure conformity with the American with Disabilities Act Regulations while stairs were also provided for a more rapid access to the bridge.
- The primary spanning structure of the bridge is designed to be built off site, lifted into place and secured in one night, to speed up construction and minimize traffic delays on Babcock Street.

## PROJECT MANAGEMENT

Alexandria Boddy  
Adv. Prof. Locurcio

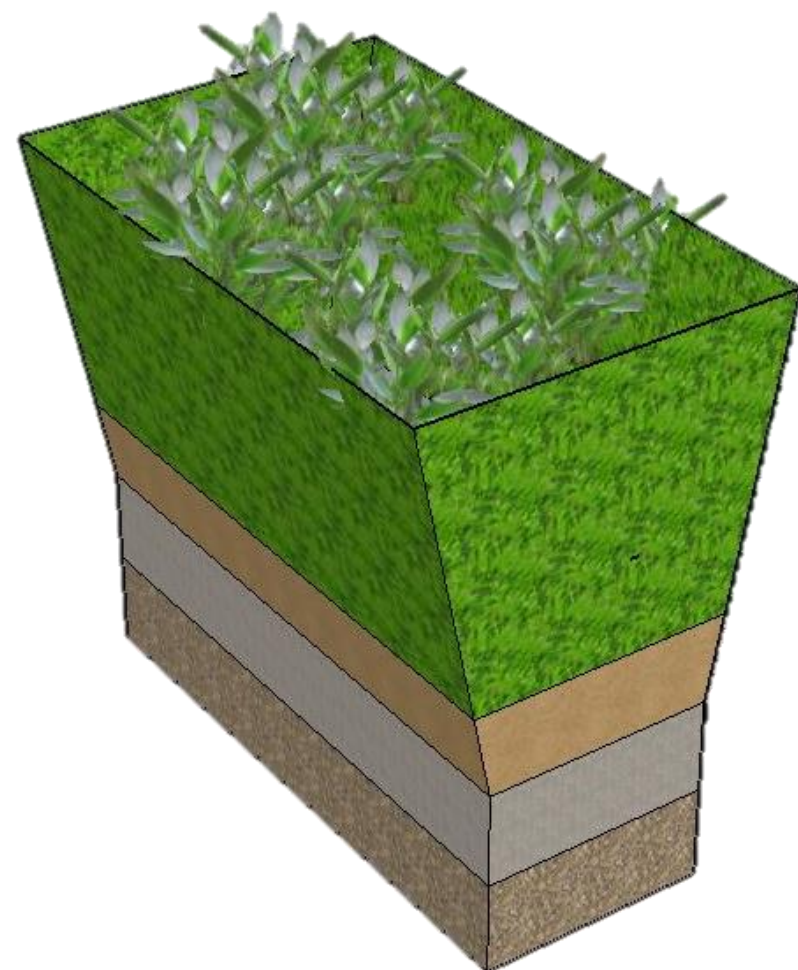
### Objectives:

- Design a safe and functional Pedestrian Bridge over Babcock Street.
- Design a Pedestrian Safety Plan for W. University Blvd.
- Make all designed environmentally and ecologically friendly.

## STORMWATER ENGINEERING

Alexandria Boddy  
Adv. Dr. Pandit

- Stormwater Management designed for a 25 year, 24 hour storm
- A major societal issue is stormwater treatment and runoff, so a bioretention area was designed in order to treat the stormwater before entering into the current Babcock system.
  - Allows for native plants to treat the water.
  - Reduces the amount of stormwater runoff.
  - All water from the bridge is collected through a series of pipes and collected in the bioretention area.
- Post-development conditions do not exceed the pre-development conditions.



## GEOTECHNICAL ENGINEERING

Tariq Alamri  
Adv. Dr. Cosentino

- By using a previous subsurface investigation, a geotechnical report was devised and viable foundation and geotechnical plan was designed.
- For economic reasons a shallow spread foot foundation was selected as the foundation type under columns.
- Continuous footings used where spacing did not allow individual footings.
- Steel columns joined to foundation using anchor bolts..

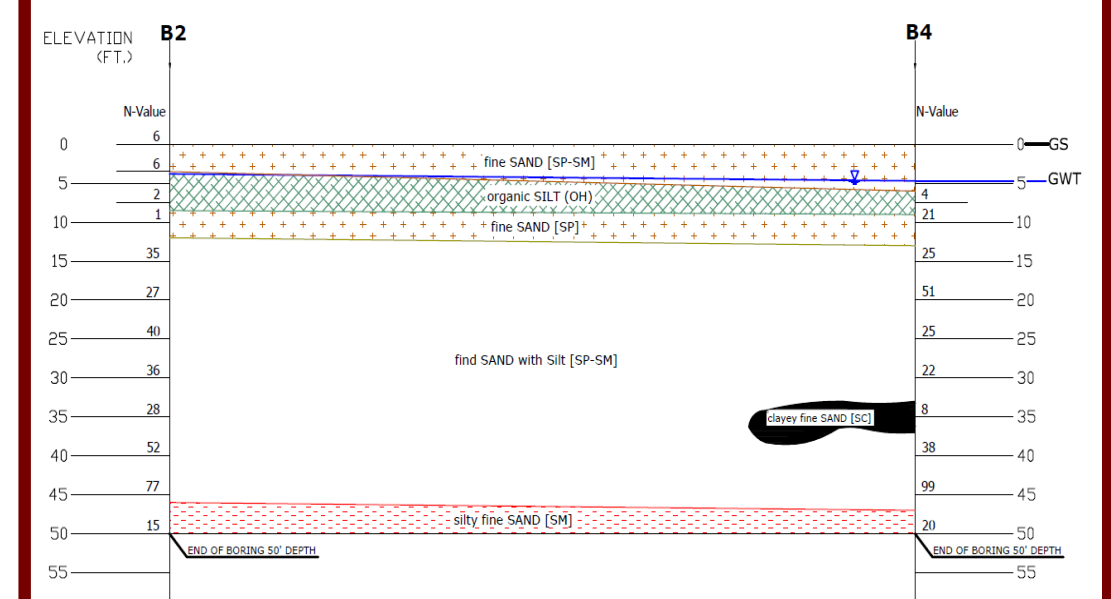
## TRANSPORTATION ENGINEERING

Steven Moodie, Mohammad Awad, Alexis Miller  
Adv. Prof. Schroeder

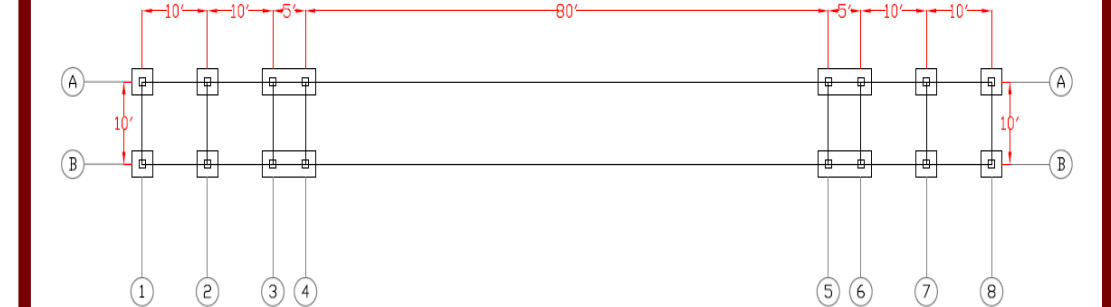
- Performed pedestrian traffic study along Babcock St. between the University Blvd intersection and the Florida Ave. intersection
- Performed pedestrian traffic study on W. University Blvd at the three major crosswalks. Pedestrians crossing without the aid of the crosswalk were accounted for.
- Developed a Maintenance of Traffic (MOT) plan for both W. University and the section of the Babcock thoroughfare.

W. University Blvd.		Babcock Street.		Intersection	
February 10, 2015 for 1.5 hrs		Jan. 21, 2015 from 10-2 pm		Feb. 10, 2015 from 11-2 pm	
Location	Total	Location	Total	Location	Total
<b>Crosswalk 1 (WFIT-Clemente)</b>		<b>Landmark Apartment</b>		<b>North Side</b>	
North to South	794	West to East	135	West to East	9
South to North	723	East to West	187	East to West	21
<b>Crosswalk 2 (Olin - Skurla)</b>		<b>Florida Tech Common (South Exit)</b>		<b>South Side</b>	
North to South	454	West to East	30	West to East	211
South to North	392	East to West	34	East to West	245
<b>Crosswalk 3 (Country Club)</b>		<b>Mary Star of the Sea</b>			
North to South	40	West to East	48		
South to North	28	East to West	54		

### Soil Profile



### Foundation Plan



**NORTHROP GRUMMAN**



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