Complete Street Project
(W Columbus Dr)

University of South Florida
Department of Civil and Environmental Engineering
CGN6933 Sustainable Transportation Spring 2018
Group 4: Shrut Shah, Abhinava Paul,
Akhil Reddy, Sam Gibbons
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Goals and Objectives

1. 1st Goal: Increasing safety and reduce fatalities
   1) Enhancing safety at intersections
   2) Eliminating traffic fatalities and injuries
   3) Introducing traffic calming and increase driver awareness

2. 2nd Goal: Enhancing accessibility and mobility
   1) Improve pedestrian and bicycle facilities
   2) Accessible for all kinds of road users

3. 3rd Goal: Increase environmental quality and promote alternate modes of transportation
   1) Applying sustainable and energy harvesting infrastructure
   2) Awareness about alternate modes of transportation
Road Signs (For 2025)
Signals/signs (For 2025)

- During nights, the use of LED lights commands driver’s attention hence reduces crash rate
- Implement solar LED lights
- Introduction of a roundabout helps in reduction of speed
- Reduce speeds from 40 to 25 East of Columbus and Himes
Bike Lanes (For 2025)

Highlighted bike lanes on both sides of the West Columbus Drive where posted speed is 25 mph
Intersection Design (For 2040 Design Concept)
Future pedestrian Crossover

Smart Zebra Crossing for Pedestrian

Holographic Laser Pedestrian Crossing
Intersection Design (For 2040 Design Concept)

Columbus Dr and Himes Ave ~ 210 feet/64 meters

40th and Hanna Ave
2040 Intersection Design Columbus Ave and Himes Ave

Hovenring suspended bicycle path

220 feet/67 meters Eindhoven, Netherlands
Natural shade for bus stops or multimodal paths.

Confederate Jasmine
Smells wonderful

No root flair
Natural Shade for bus stops or multimodal paths

- Oak Tree - Negative - Root Flare trees
  Positives - erosion control and reduced heat island

Grafted citrus tree - lemon, lime, oranges
Align street 2040 plan

Approximately 100 graves to be carefully moved to southern section of cemetery
Solid Waste Management (For 2040)

- Automatic Collection, Transportation and Segregation System
- The waste is thrown into a disposal chute
- Computer controlled access
- Waste sucked through pipes at a speed of 90 km/hr
- Treatment through plasma gasification.
Measures to reduce VMT

- Transit pass subsidy
  - Employers, building managers, or developers can provide a subsidized transit pass to employees or residents.
- Rideshare program (bike share & rideshare)
- Shuttle service
  - Employment sites that are not close to transit service can benefit from an employer-sponsored shuttle service.
- Preferential & subsidize parking for rideshare vehicles (For other vehicles we should charge market price)
Next Steps Recommendations

- As the segment width is limited, ariel transportation for speeds exceeding 25 mph would be preferred (passive magnetic levitation)
  - Require minimal footprint for support pillars, so require minimal space both horizontally and vertically.
  - Improves pedestrian safety/prioritizes safe speeds on ground level
- Advanced Storm Water Harvesting system
- Solar pedestrian which runs on piezoelectric charging
  - When pedestrian walks, it collect energy from the vibrations of pedestrian and traffic moving around.
Photo sources

- Crape Myrtle: https://www.amazon.com/Muskogee-Lavender-Crape-Myrtle-Trees/dp/B00J9QF38U
- Confederate Jasmine: https://www.newlifenursery1.net/products/confederate-jasmine-fragrant-vine-1
- Grafted fruit trees: https://www.pinterest.com/pin/252060910364298240/
- Root Flare - https://preservationtree.com/blog/what-is-destroying-your-pipes-or-sidewalk-could-be-your-trees-roots
- Hovenring - http://ipvdelft.com/
Thank You!

Go Bulls

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