Civil Express has defined the installation of the park space as an area of cultural significance that will impact the culture of Flint because it will help to emphasize good social behaviors and activities. The development of the park space will encourage community unity and development. Civil Express has defined the installation of the park space as an area of encouraging citizen activity with both more space for general community events, but also as a connection point between vehicle, pedestrian, and public bus transportation avenues.

### Cultural Statement
- This project will impact the culture of Flint because it will help emphasize good social behaviors and activities.
- The development of the park space will encourage community unity and development.
- Civil Express has defined the installation of the park space as an area of encouraging citizen activity with both more space for general community events, but also as a connection point between vehicle, pedestrian, and public bus transportation avenues.

### Project Overview
Civil Express's goal is to enhance community connections through the improvements of deteriorating infrastructure. The I-475 Reconstruction Project delivers a revitalization of the transportation and Flint City area needs.

### Design Criteria and Justification
- **Existing Conditions**
- **I-475 Reconstruction North Segment**
- **Cultural Impact**
- **Social Impact**
- **Public Health**
- **Public Welfare**
- **Economic Interests**

### Sustainability
- Civil Express will implement the 3 R's initiative: Reduce, Recycle and Reuse.
- Steel recycling consists of shredding and melting it to create new metal sheets.
- Old concrete to be recycled by breaking, removing, and crushing it from existing locations.
- The Low Impact Development (LID) technology for a roundabout use in the center circle to plant vegetation and create an engineered medium.
- Extraction of trees for park with minimal demolition of surrounding trees.
- The park would also use long-lasting materials, easy-to-maintain plants and landscaping, organic mulch, and recycling bins for park patrons.

### Structural Scope of Work
- **Load Analysis**
- **Superstructure**
  - Live Load Distribution
  - Beam, Deck and Overhang Design
- **Substructure**
  - Load Distribution
  - Pier Cap, Pier Columns, Footing Design
- **Minor Soil Evaluations**

### Potential Site for the Park
- **Geometric Designs**
  - Parking Lot
  - Roundabout
- **Flexible Pavement Designs**
  - Component Values
  - Parking Cross Section
- **Sight Lighting Needs**

### Cross Section for Parking Lot
- **Highway Cross Section Thicknesses**
  - HMA
  - Aggregate Base/Sub-Base
  - Subgrade
- **Roundabout Cross Section Thicknesses**
  - HMA Layer (15"
  - Base Layer (15"
  - Subbase Layer (2"

### Environmental Scope of Work
- **Pollution Management**
  - Sedimentation Control
  - Surface Water Pollution
- **Community Park Water Main Design**
- **Community Park Wastewater Design**

### Water Resources Scope of Work
- **Impact on Surrounding Stormwater**
- **Site Topography Examination**
- **Sewer System**
  - StormCAD and EPA SWMM
  - Implementation of BMPs
  - Bioretention Cells
  - Detention Pond

### Skills Garnered and Developed
- Development of soft skills in student collaboration emphasizing problem solving, professional communication, critical thinking, empathy, adaptability, and time management.

### Construction Scope of Work
- **Scope Management**
- **Detailed Final Estimate**
- **Schedule Management**
- **Permitting & Approval Plan**
- **SUE Plan - Quality Level B**
- **Logistics Plan**
- **Safety Plan**

### Professional Collaboration
- Industry Professionals and Faculty Advisors provided support and recommendations throughout the project deliverables. Utilization of (4) presentations to faculty and engineering professionals, (2) industry technical breakout sessions with professionals, (5) reports, (32) meetings with student team members and faculty, and (2) display board submittals encouraged further quality to engineering designs and solutions.
- (27) professionals have involved themselves in the capstone design course.
  - (24) PE Licensed Professionals
  - (3) Non-PE Licensed Professionals
- (8) Faculty Members for mentorship and resource management.

### Project Components
- **Roundabout Installation at Dort Highway and Stewart Avenue**
- **4500' Highway Pavement Reconstruction**
- **Bridge Redesign for Dort Highway Overpass**
- **Merging On and Off Ramps for Stewart Avenue**
- **Community Park Installation at Pierson Road**