

SANTAQUIN CITY TRAIL CORRIDOR AND RIGHT OF  
WAY 50%DESIGN

Project ID: CEEEn\_2016CPST\_010

by

Silverstone Engineering & Surveying  
Savannah Keane  
Joel Whitmer  
Clay Hansen  
Brandon Walker

A Capstone project submitted to

Norm Beagley  
Santaquin City

Department of Civil and Environmental Engineering  
Brigham Young University

2/27/2017

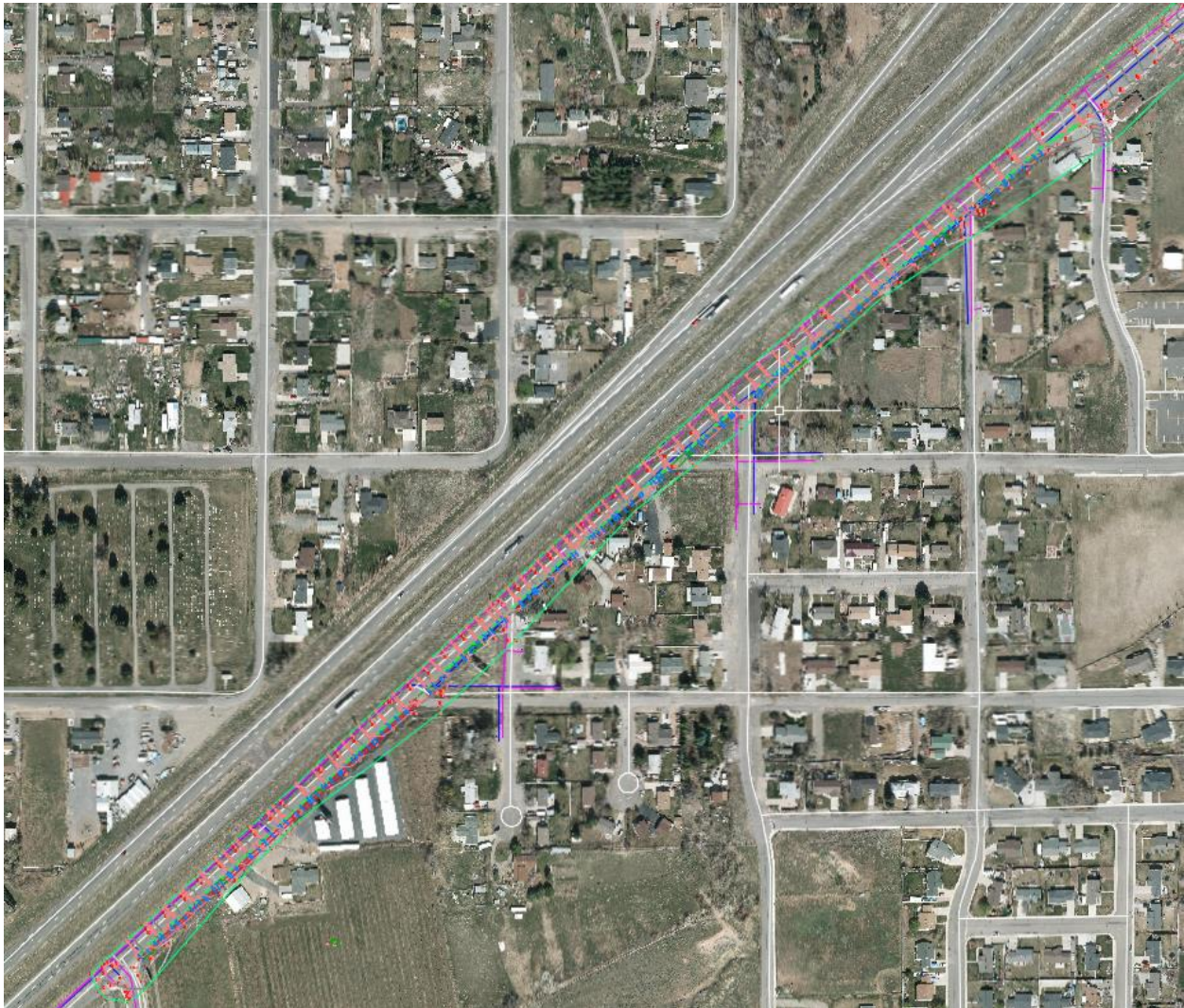
## Introduction

The objective of this project is to complete a full functioning design of a trail and right of way corridor for the city of Santaquin. The purpose is to provide a safe, comfortable route for pedestrians to travel along the existing frontage road. This trail will also serve as a showpiece that will be visible from the Interstate 15 freeway. Our team will do a full engineering assessment for the trail and right of way corridor. Components of the project will include:

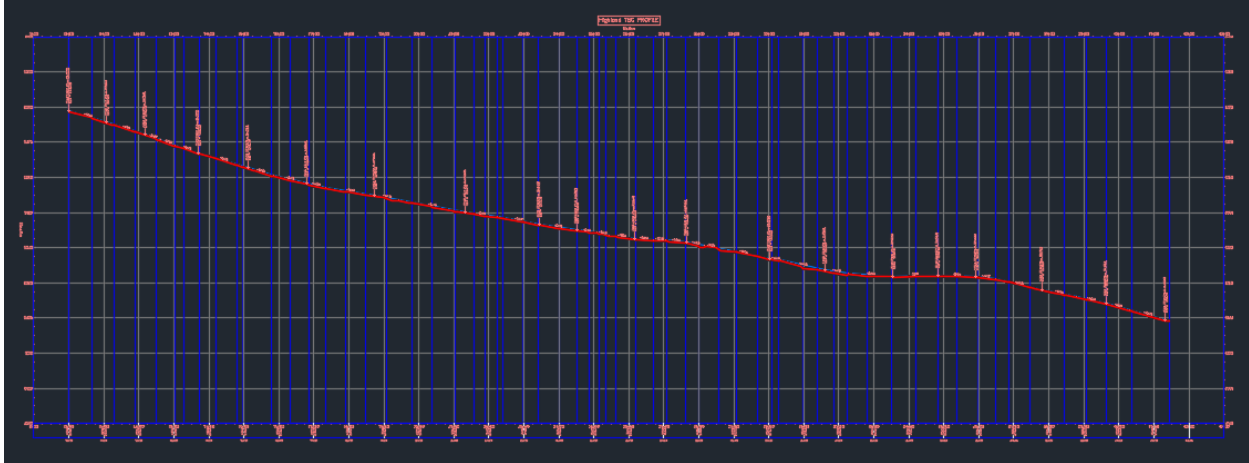
- Complete design of an 8 ft wide trail along Highland Drive from 120 East to approximately 130 South. Design aspects include:
  - Full cut and fill design for the corridor
  - Meandering curve trail as per Santaquin City Standards.
  - Full runoff and drainage analysis
  - Possible property acquisition to complete all Right-of-Way improvements
  - Rerouting or relocation of driveways directly connecting onto Highland Drive, as is practical.
  - Full curb & gutter design on the southeast side of the frontage road
  - Design of landscaping
  - Design of water/power lines along the corridor to supply sprinklers/drinking fountains
  - Full design of storm drainage facilities to accommodate storm drain capture, collection & conveyance
  - Financial analysis and cost calculations of the entire project

## Current Status

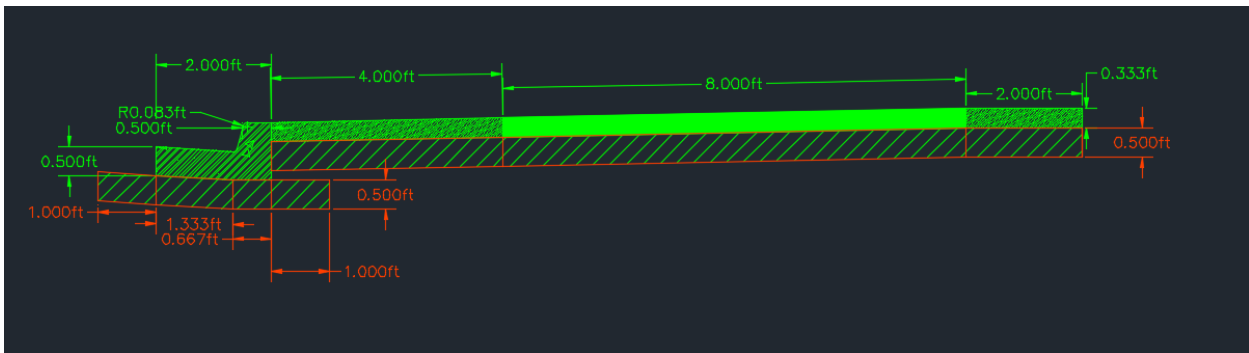
We have completed the main design of the trail corridor, including plan view design, grading design, and curb and gutter design. This design is made up of existing grade surfaces overlaid by proposed grade surfaces. The proposed grade surface was created using an assembly attached to an alignment to create a corridor. From this corridor we were also able to determine cut and fill requirements for the trail.

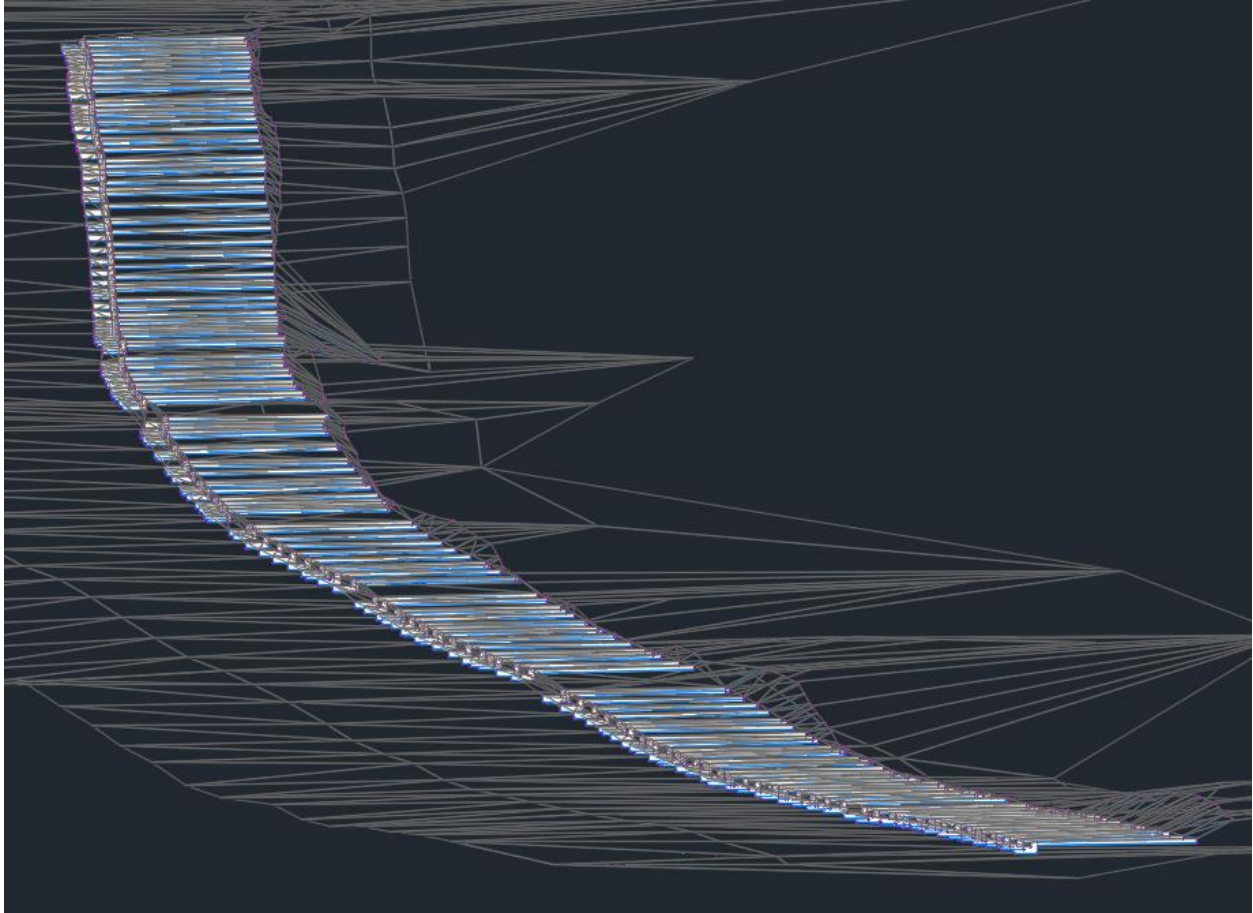






The above profile was created to visualize the elevations associated with the existing grade and the proposed trail grade. This profile corresponds to the 3-D corridor below, which shows the curb and gutter assembly with the trail assembly.





## Current Cost Analysis

The table below displays the current estimates for the construction of the highland drive trail. Originally we thought of planting grass and other plants along the trail but as we are look at construction and maintenance costs this doesn't seem practical. Our hope is to utilize some kind of xeriscape primarily based around the use of landscape gravel. One thing thing we are very happy about is the limited amount of fill that will be need to be hauled from off site in order to construct the trail.

Cost items	Quantity	Units	Unit Cost	Cost
Total fill	577.45	yd <sup>3</sup>	25.00	\$ 14,436.25
Cut	255.75	yd <sup>3</sup>	25.00	\$ 6,393.75
Fill that must be hauled	73.9	yd <sup>3</sup>	50.00	\$ 3,694.58
Sub grade prep	22581.54	ft <sup>2</sup>	2.00	\$ 45,163.08
Curb and gutter	3696	ft	15.00	\$ 55,440.00
Pavement	20072.48	ft <sup>2</sup>	4.50	\$ 90,326.16
ADA ramps	11		1,000.00	\$ 11,000.00
Bench	1		1,000.00	\$ 1,000.00
Trash can	2		200.00	\$ 400.00
Property	0.022	acre	65,328.87	\$ 1,430.97
landscape gravel	116	yd <sup>3</sup>	TBD	
Sanitize base	20072.48	ft <sup>2</sup>	TBD	

**Total Cost \$ 229,284.79**