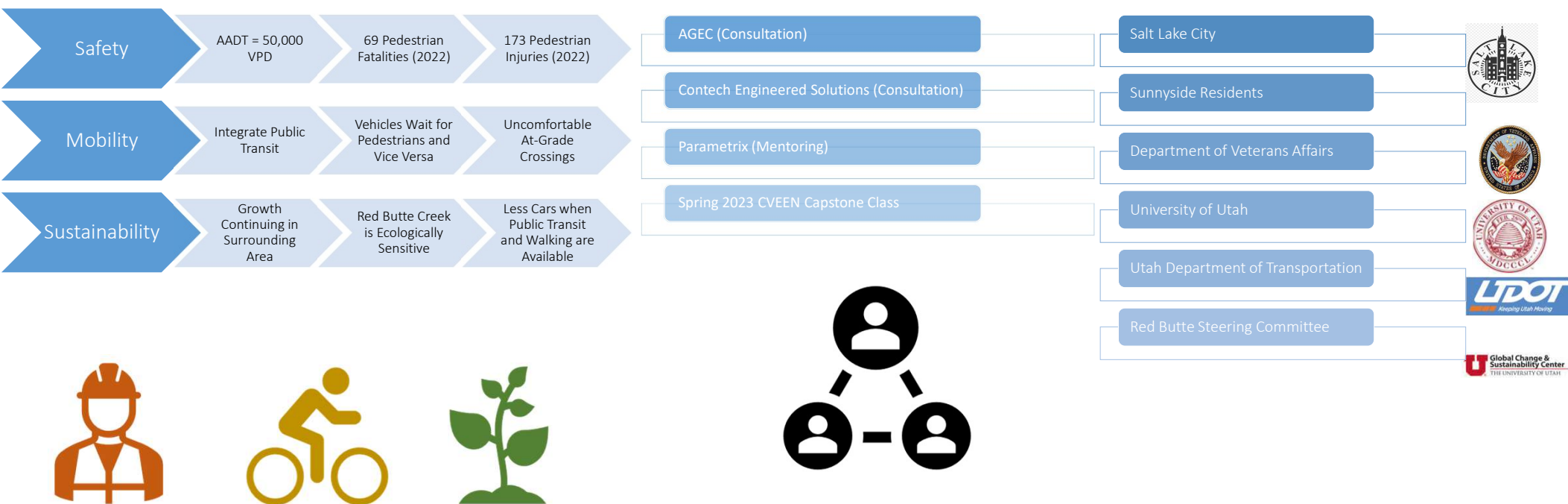


Prepared by: Kevin Biel, Jadon Maloy, Hannah Morrison, Reed Wood

Wakara Way Underpass

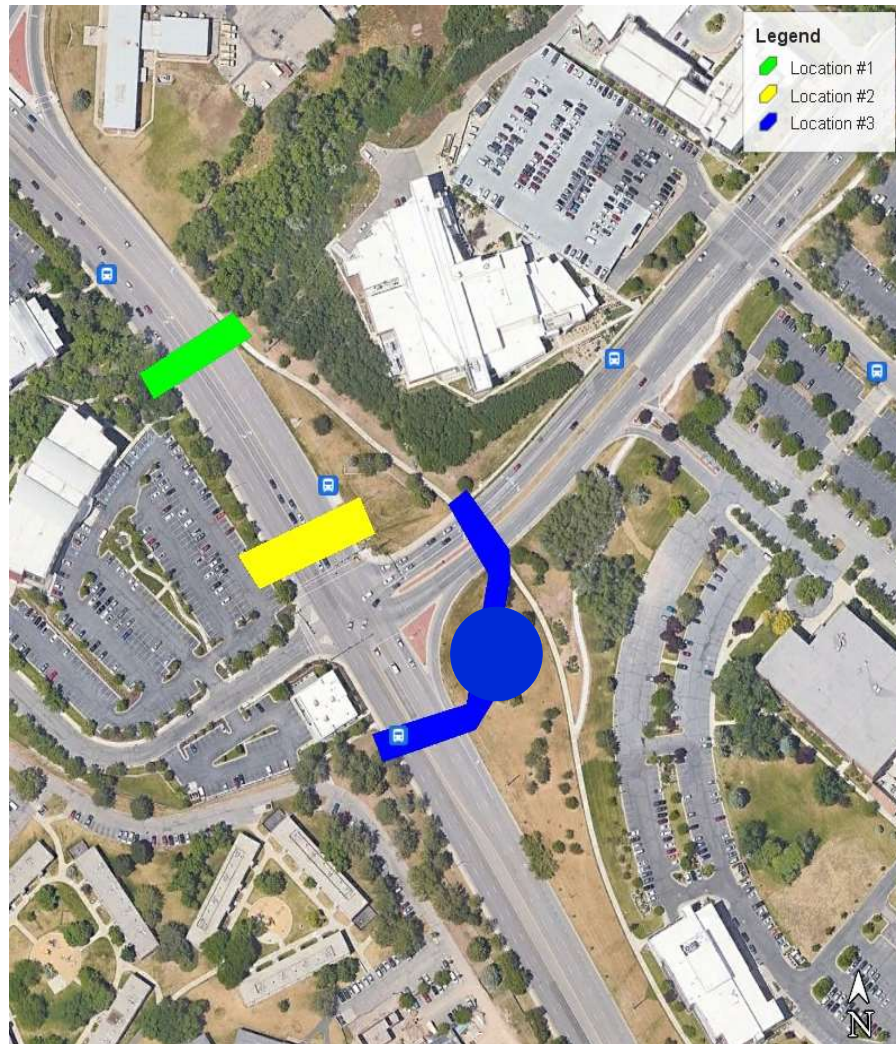
Project Goals and Vision: Create a sustainable design that enhances the quality of life of the community, protects the natural world, and incorporates the needs of all stakeholders.



Summary of Criteria

Criteria	Description	Implementation
City Standards	<p>Goals include:</p> <ul style="list-style-type: none"> • Crossing to improve pedestrian safety • Serve the local community • Connect to Red Butte Creek trail <p>• Width of 12 ft, clearance of 10 ft, and 2 ft shoulders for the underpass design.</p>	<ul style="list-style-type: none"> • Width of 12 ft, Clearance of 10 ft, 2 ft shoulders • Walkways connect to trail, and existing sidewalks on Wakara Way • Access to bus stop
UDOT Standards	<p>Goals include:</p> <ul style="list-style-type: none"> • Improve pedestrian safety • Serve the surrounding communities • Cause minimal disruption to traffic <p>• 1 ft culvert walls</p>	<ul style="list-style-type: none"> • 1 ft culvert walls • Walkways connect to trail, and existing sidewalks on Wakara Way and Foothill Drive • Access to bus stop • MOT plan developed
University of Utah Interests	<p>Goals include:</p> <ul style="list-style-type: none"> • Improve pedestrian safety • Promote accessibility to different campus locations and surrounding neighborhood, i.e., Research Park and Red Butte Creek trail 	<ul style="list-style-type: none"> • Walkways connect to trail, and existing sidewalks on Wakara Way and Foothill Drive • Access to bus stop • Connect to Red Butte trail further north
ADA Access	Walkways need to be wide enough with gradual slopes to ensure individuals of all ages, backgrounds and abilities can equitably access the underpass and nearby facilities.	<ul style="list-style-type: none"> • Walkways are wide to be inclusive of individuals of a range of abilities • Underpass is spacious and flat to make accessible regardless of background or ability
Safety	Underpasses cause specific concerns with safety as they can create dark, below grade areas.	<ul style="list-style-type: none"> • Safety features such as skylight and blue call boxes.
Sustainability	<p>Sustainability concerns:</p> <ul style="list-style-type: none"> • Reducing disruption of the Red Butte Creek riparian corridor while connecting to the Red Butte Creek trail • Concerns about drainage with the addition of impervious surfaces 	<ul style="list-style-type: none"> • Designed to include "green" space to encourage drainage, usability, reduce heat island, etc. • Drainage features, like grate covered channels, to mitigate flooding risk.

Design Alternatives



Alternative #1 (Green)

- This location was initially an overpass concept with concrete foundations or a box culvert underpass. Neither alternative had been ruled out yet.
- Design Issues:
 - Overhead Power Lines
 - Red Butte Creek Riparian Corridor
 - Government Land Easements
 - Room for Concrete Foundations

Alternative #2 (Yellow)

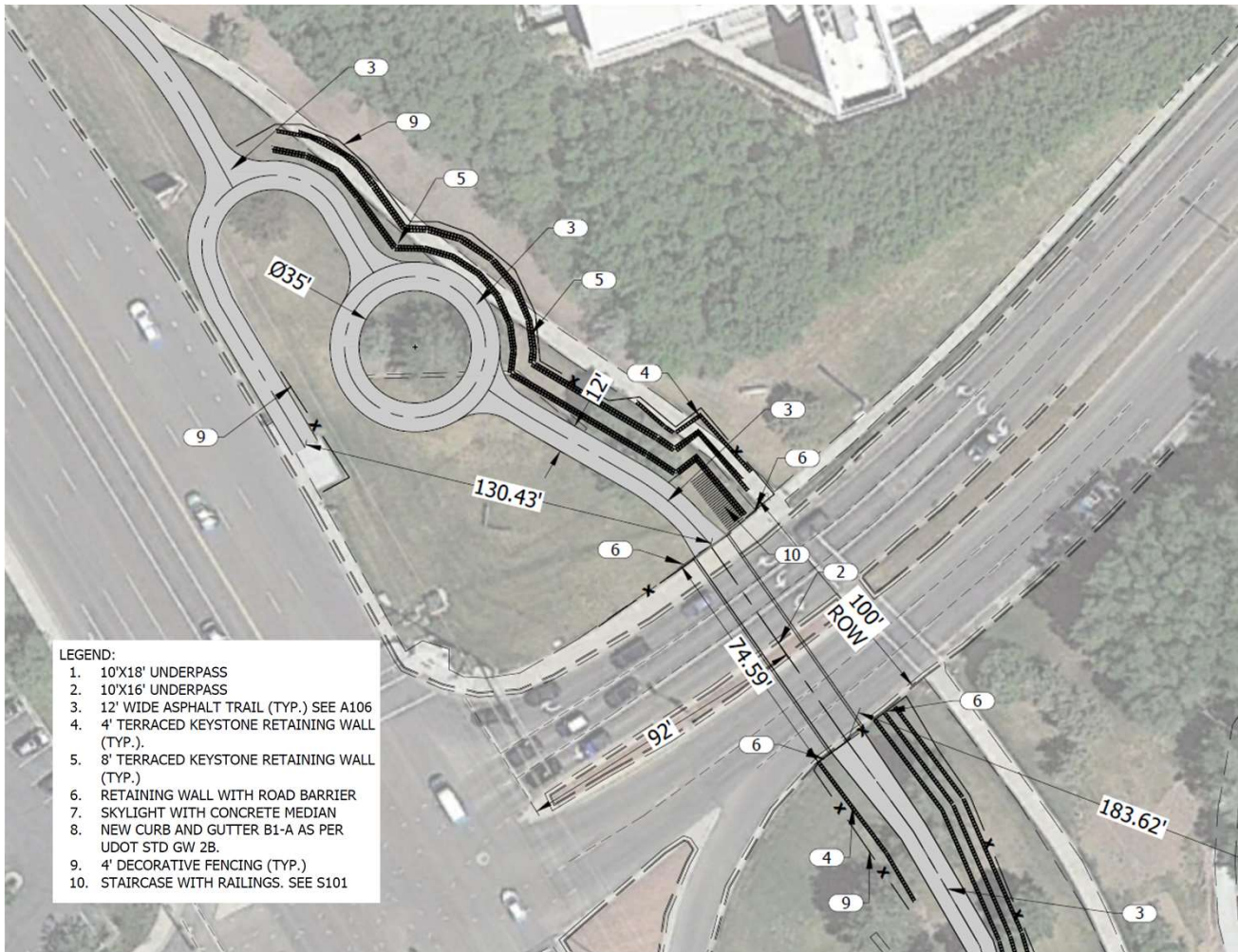
- The second location moved South to just before the Wakara Way intersection. At this point, an overpass and an underpass were both still in consideration.
- Design Issues:
 - Connection to Existing Red Butte Trail System
 - Stopping Sight Distance for Mario Capecchi Drive Signal - Overpass
 - Government Land Easements (VA Office)
 - Fear of Users preferring Jaywalking instead of Structure

Alternative #3 (Blue)

- When the group was assigned this area to work on, an underpass was selected as the crossing method of choice. This design alternative included a secondary underpass under Foothill Drive designed by another group.
- Design Issues:
 - Connection to Existing Red Butte System on Southwest side of road
 - Additional construction costs due to multiple underpasses and roundabout
 - Drainage concerns due to elevation (below creek)

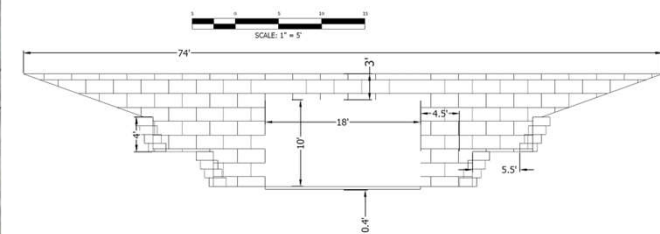


Design Summary



• Design Summary

- 16' wide (12' right-of-way w/ 2' shoulders on each side) x 10' tall precast box culvert underpass.
- 74.59' long from furthest extents of the sidewalk/roadway.
- Pedestrian roundabout w/ 35' diameter and recreational/picnic area in the center.
- Connections to Foothill Drive underpass, Wakara Way, Foothill Drive / Wakara Way (NB) bus stop, and Red Butte Creek trail system (future).
- 12' wide asphalt trails (typ.).



Effectiveness and Cost Estimate



Cost Estimate (Foothill Drive and Wakara Way)	
Labor	\$2.5 million
Materials	\$2.5 million
Utility Relocation	\$0.4 million
Environmental Study	\$0.1 million
Total	\$5.5 million

Design Criteria	Description	Effectiveness
Safety	Increase pedestrian and bicyclist safety of those who live, work, or recreate in the area.	A grade-separated crossing removes the interaction between the roadway and the sidewalks. The chosen location means no part of the underpass or construction will be on VA owned property.
Mobility	Improve ease of travel for vehicles and increase accessibility for pedestrians as well as decrease traffic.	The underpass removes the need for pedestrians to cross the street which decreases the time vehicles are required to wait at traffic lights.
Sustainability	Provide access to local areas and promote public transit and walking.	Connects the future Red Butte Creek trail on either side of Foothill Drive. Makes public transit stops more accessible and makes walking easier.