165 South 600 West Roundabout Improvement Project

Civil Engineering Capstone Spring 2025

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Project Objectives

The primary objective of this project is to improve the safety and functionality of the existing 165 S 600 W intersection with cost-efficient solutions. More specifically, we want to address the following issues:

- High vehicle speeds
- Vehicles not following striping
- Unsafe pedestrian crossings
- Replace pavement in poor condition

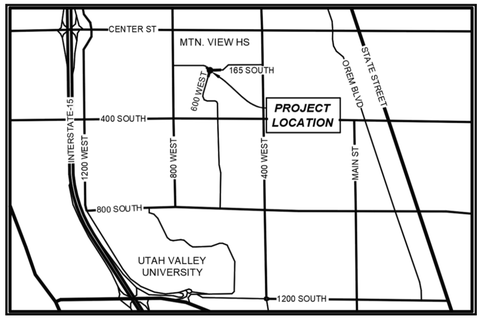


Figure 1. Vicinity Map

Design Requirements

- Minimize curb removal and parking impacts
- Maintain existing drainage pattern
- Maintain 13’ wide lanes for snowplows
- Allow trailer trucks (WB-50) to use the intersection for right-hand turns.

Alternatives

Alternative 1 – Low Cost

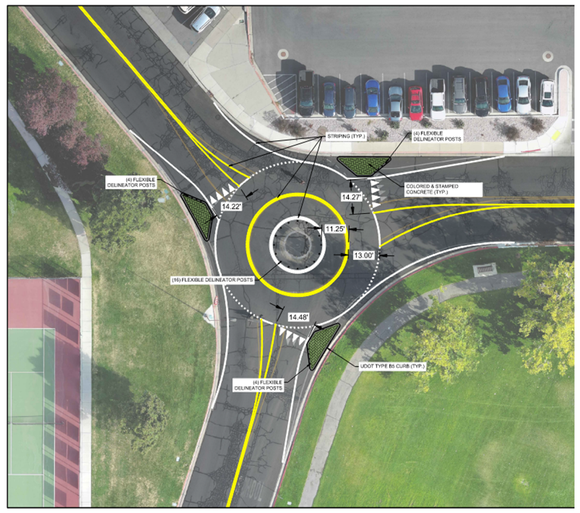


Figure 2. Bump-out Alternative

Alternative 2 – Medium Cost

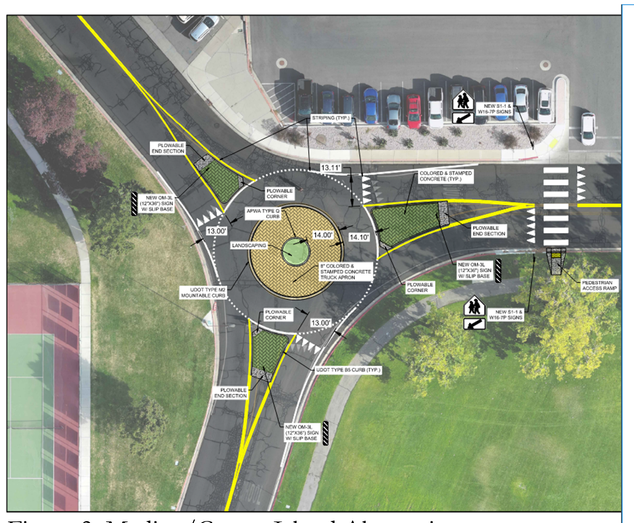


Figure 3. Median/Center Island Alternative

Alternative 3 – High Cost

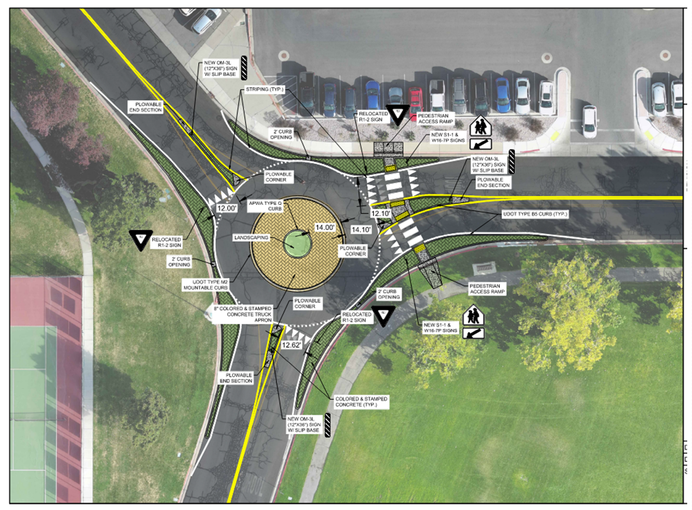


Figure 4. Center Island w/ Mid-Block Crossing Alternative

Final Design

Incorporates the best features from each alternative into one design. Includes bump-out and bollards from Alt. 1, median island from Alt. 2 and pedestrian refuge areas from Alt. 3.

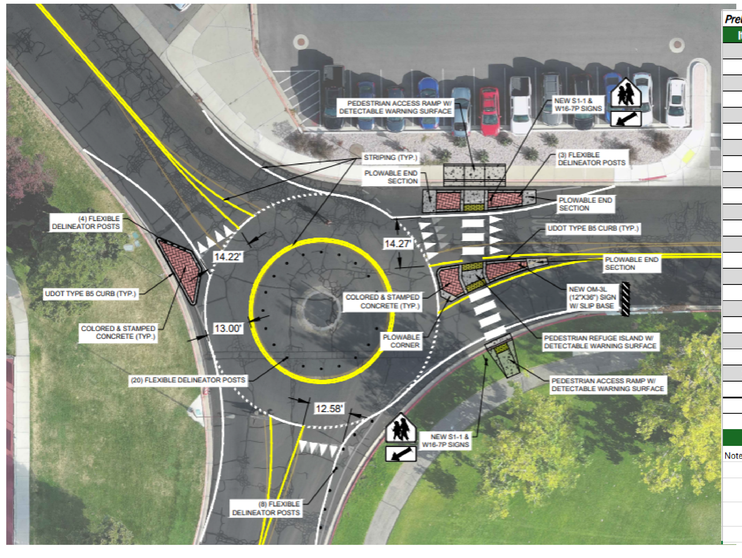


Figure 5. Final Design

Preliminary Engineer's Estimate - Final Design REV 01

Item	Description	Quant	Unit	Unit Pric	Item Pric
1	Mobilization & Demobilization	1	LS	$11,387.00	$ 11,387.00
2	Traffic Control	1	LS	$4,555.00	$ 4,555.00
3	Site Clearing	1	LS	$2,278.00	$ 2,278.00
4	Temporary Controls	1	LS	$5,694.00	$ 5,694.00
5	Construction Layout & Staking	1	LS	$3,417.00	$ 3,417.00
6	Remove Curb and Gutter	50	LF	$6.00	$ 300.00
7	Remove Concrete Flatwork	115	SF	$3.00	$ 345.00
8	2-Inch Asphalt Rotomilling	20740	SF	$2.00	$ 41,480.00
9	Hot Mix Asphalt (3/4" PG 58-28)	270	TON	$125.00	$ 33,750.00
10	2' Curb and Gutter	22	LF	$75.00	$ 1,650.00
11	UDOT Type B5 Curb	125	LF	$50.00	$ 6,250.00
12	Colored and Stamped Concrete	235	SF	$30.00	$ 7,050.00
13	Plowable End Section	70	SF	$42.00	$ 2,940.00
14	Pedestrian Access Ramp	200	SF	$20.00	$ 4,000.00
15	Pedestrian Refuge Area	115	SF	$20.00	$ 2,300.00
16	4" Pavement Marking Paint - White	455	LF	$0.50	$ 227.50
17	4" Pavement Marking Paint - Yellow	1150	LF	$0.50	$ 575.00
18	Pavement Message Paint	23	EA	$200.00	$ 4,600.00
19	Sign Panel	8	EA	$500.00	$ 4,000.00
20	Sign Post	4	EA	$450.00	$ 1,800.00
21	Sign Panel and Post w/ Slip Base	1	EA	$1,000.00	$ 1,000.00
22	Flexible Delineator Post	32	EA	$50.00	$ 1,600.00
				Subtotal	$141,198.50
				Contigency 10%	$ 14,120.00
				Construction Total	**$155,318.50**

Notes:
1- Quantities shown in the EOC are purely estimates based off preliminary design.
2- Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3- The EOC does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
4- LS = Lump Sump; EA = Each; SF = Square Feet; LF = Linear Feet; CY = Cubic Yard; TON = Ton

Figure 6. Final Cost Estimate

Safety Impacts

New roundabout will have the following impacts:

- Reduce vehicle speeds
- Decrease jaywalking
- Decrease user confusion
- Increase pedestrian safety



Figure 7. Existing Conditions

Future Improvements

A traffic calming plan was prepared for the 165 S corridor.



Figure 8. Traffic Calming Plan Limits