



EXECUTIVE SUMMARY



Executive Summary

The Utah Department of Transportation (UDOT) is proposing to construct a single-point urban interchange (SPUI) at the existing intersection of Bangerter Highway and 13400 South in Riverton, Utah. The project is state-funded and requires a State Environmental Study (SES) to analyze the improvements and document environmental resources, permitting, and mitigation, if required.

ALTERNATIVES

Alternatives were developed through a process that used current regional and local transportation plans, existing conditions and future (2050) conditions traffic analysis, and coordination with jurisdictional agencies including Cities, school districts, and utility companies.

The current regional transportation plan for the area is the Wasatch Front Regional Council's 2019–2050 *Wasatch Front Regional Transportation Plan* (RTP). The plan indicates that Bangerter Highway will be converted to a freeway system by changing the remaining at-grade intersections into grade-separated interchanges. The 2019–2050 RTP includes proposed bike lanes on 13400 South from Rose Canyon Road to Redwood Road that will connect to other transit options on 3600 West as well as Redwood Road and planned bike lanes to the west in Herriman. The *Riverton City Active Transportation Plan* also identifies future bike lanes along 13400 South in the study area. The SPUI project is forward-compatible with these alternative transportation plans.

Coordination began early in the environmental process with Riverton City staff and the city council and the Jordan School District. Input from these meetings shaped the alternatives development process by identifying design preferences, resources to avoid, and acceptable mitigation for impacts.

The public had opportunities to provide input and receive information throughout the project. The main public events included a scoping meeting held in mid-July 2021, a neighborhood meeting held in early December 2021, and a public hearing held in mid-January 2022. Coordination with property owners who would be impacted by partial or full acquisitions began in November 2021.

Existing conditions traffic analysis for Bangerter Highway and 13400 South showed that intersections in the study area operate at level of service (LOS) D or better during the AM and PM peak hours except for the intersection of Bangerter Highway and 13400 South which operates at LOS E for both the AM and PM peak hours (see Figure 1). Individual turning movements at Bangerter Highway and 13400 South operate at LOS E and F during the AM and PM peak hours.

Bangerter Highway at 13400 South

Intersection	LOS / Delay (sec / hr)	
	AM Peak Hour	PM Peak Hour
12600 South & Bangerter Hwy	D / 46	F / 99
13400 South & Bangerter Hwy	E / 58	E / 64
2700 West & Bangerter Hwy	E / 74	D / 52
13400 South & 4050 West	C / 23	B / 11
13400 South & Market Center	B / 11	C / 28
13400 South & Hamilton View	B / 20	D / 47

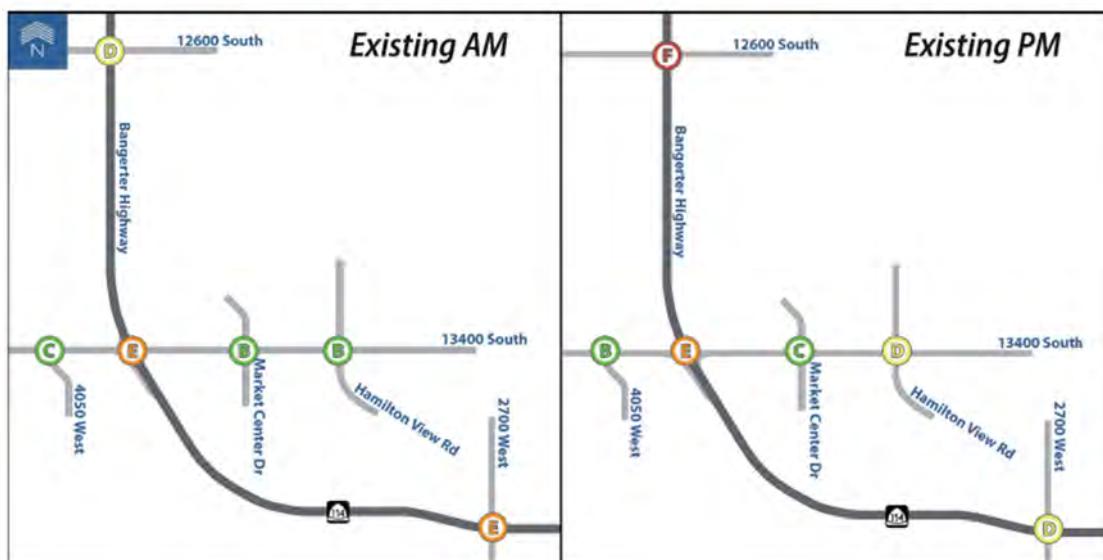


Figure 1. Existing Conditions: AM and PM Peak-hour Intersection LOS

Future (2050) No Build conditions show that these existing conditions are expected to deteriorate further without improvements at Bangerter Highway and 13400 South. Traffic analysis for the AM and PM peak hours shows that, on 13400 South, the 4050 West, Bangerter Highway, Market Center Drive, and Hamilton View Road intersections are expected to operate at LOS F except for Market Center Drive during the PM peak hour. Turning movements are expected to worsen at Bangerter Highway and 13400 South with 21 of the 22 turning movements operating at LOS F during the PM peak hour (see Figure 2). These conditions will cause extensive vehicle queuing that affects the operations of adjacent intersections and interchanges on Bangerter Highway and 13400 South.

Bangerter Highway at 13400 South

Location	LOS / Delay (sec / hr)	
	AM Peak Hour	PM Peak Hour
13400 South & 4050 West	F / >180	F / >180
13400 South & Bangerter Hwy	F / >180	F / >180
13400 South & Market Center Dr	F / 97	D / 44
13400 South & Hamilton View Rd	F / 107	F / >180



Figure 2. Future (2050) No Build Conditions: AM and PM Peak-hour Intersections LOS

INTERCHANGE ALTERNATIVES

The Future (2050) Build conditions traffic analysis evaluated two interchange alternatives: a single-point urban interchange (SPUI) and a tight diamond interchange. Although both interchange alternatives would improve both traffic performance and vehicle queue lengths compared to not constructing the improvements, traffic analysis showed that the SPUI would perform better than the tight diamond interchange, particularly during the 2050 PM peak hour (see Figure 3). During the PM peak hour, the SPUI would operate at LOS C, while the tight diamond interchange would operate at LOS E. The adjacent intersections on 13400 South would generally perform about the same between the two alternatives, with the SPUI alternative being a little better at 4050 West during the PM peak hour.

Based on its better traffic performance, the SPUI interchange was selected as the preferred interchange alternative. For this initial screening analysis, UDOT assumed that both the SPUI and tight diamond alternatives would have dual-lane left turns and single-lane right turns for all movements except the eastbound right-turn movement, which was assumed to have two lanes. The final SPUI interchange proposed in this SES was revised to include single-lane ramps for the southbound and westbound left-turn movements, and it would operate at LOS D. The change to single-lane ramps for these movements was made to reduce cost and minimize impacts to adjacent properties.

Bangerter Highway at 13400 South

Location	2050 AM Peak Hour			2050 PM Peak Hour		
	No Build ¹	Diamond ¹	SPUI ¹	No Build ¹	Diamond ¹	SPUI ¹
13400 South & 4050 West	F />180	C / 35	D / 36	F />180	C / 33	C / 28
13400 South & Bangerter Hwy	F />180	D / 43	C / 32	F />180	E / 62	C / 35
13400 South & Market Center Dr	F / 97	B / 12	B / 11	D / 44	C / 24	C / 23
13400 South & Hamilton View Rd	F / 107	C / 23	C / 24	F />180	D / 52	D / 53

1. Average delay reported in seconds/vehicle

Figure 3. Future (2050) No Build and Build Intersection Delay and LOS Comparison

HORIZONTAL ALIGNMENT ALTERNATIVES

Horizontal alignment alternatives were evaluated by comparing impacts to environmental resources, businesses, residents, and the South Bangerter Health Center. The team analyzed the following horizontal alignment alternatives: east shift, hybrid shift (both sides), and west shift. The west shift was selected as the preferred horizontal alignment alternative because it would avoid commercial property relocations.

VERTICAL ALIGNMENT OPTIONS

Three vertical alignment options were considered with the west shift alternative: Bangerter Highway over 13400 South, Bangerter Highway under 13400 South, and a hybrid option where Bangerter Highway would go over 13400 South and 13400 South would be lowered below the existing grade. All three vertical alignment options would have similar impacts with the exception of anticipated costs and utility considerations. Because all three options would have similar impacts and because the availability of both state and local funding is uncertain, UDOT decided to evaluate all three vertical alignment options in this SES. This decision will continue to be coordinated with Riverton City, and a final decision will be made at a future date. Once a decision is made, UDOT will communicate this decision using various outreach channels.

PROPOSED ACTION

The Proposed Action is a SPUI Interchange with a west shift horizontal alignment at Bangerter Highway and 13400 South. Some of the improvements identified as part of the Proposed Action will not be constructed unless additional funding is obtained, and this might happen as part of a later phase. These improvements include adding a dual northbound off-ramp, extending the southbound on-ramp east of 3600 West, constructing auxiliary lanes between the 13400 South northbound on-ramp and the 12600 South northbound off-ramp, and constructing auxiliary lanes between the 12600 South southbound on-ramp and the 13400 South southbound off-ramp. A noise wall would be added on the east side of Bangerter Highway from about 13650 South to 13750 South near the clear zone for northbound Bangerter Highway traffic and across the bridge that spans 3600 West if the auxiliary lanes are constructed. Construction of this wall would occur only when funding is available for the extension of the northbound off-ramp and southbound on-ramp east of 3600 West and approved balloting.

Bangerter Highway at 13400 South

A summary of the affected environment and mitigation commitments for the various environmental resources is provided in Table 1. A full mitigation list for preliminary engineering and construction activities is provided in the Mitigation Commitments section.

The SES follows UDOT's Environmental Electronic Project Management (ePM) form to remain consistent with UDOT standards. This form is used for different types of environmental clearances, so some sections might not apply to the current project but are included to maintain the UDOT standard.

Table 1. Summary of Affected Environment and Mitigation Commitments for the SPUI Interchange with the West Shift Alternative

PROPOSED ACTION	MITIGATION
Right of Way	
Bangerter Highway Over Option <ul style="list-style-type: none">● Partial ROW acquisition from 14 parcels and full ROW acquisition from 1 parcel● Approximately 14.53 acres of total property acquisition	Compensate property owners according to the requirements of the Utah Relocation Assistance Act.
Bangerter Highway Under Option <ul style="list-style-type: none">● Partial ROW acquisition from 14 parcels and full ROW acquisition from 1 parcel● Approximately 19.43 acres of total property acquisition	
Bangerter Highway Hybrid Option <ul style="list-style-type: none">● Partial ROW acquisition from 14 parcels and full ROW acquisition from 1 parcel● Approximately 15.59 acres of total property acquisition	
Streams	
Bangerter Highway Over Option <ul style="list-style-type: none">● 1,305 linear feet of impact to Rose Creek	Relocate Rose Creek. Comply with all conditions and findings in the U.S. Army Corps of Engineers Nationwide 14 Permit and the Stream Alteration Permit from the Utah Division of Water Rights.
Bangerter Highway Under Option <ul style="list-style-type: none">● 1,305 linear feet of impact to Rose Creek	
Bangerter Highway Hybrid Option <ul style="list-style-type: none">● 1,508 linear feet of impact to Rose Creek	

Bangerter Highway at 13400 South

PROPOSED ACTION	MITIGATION
Utilities	
<u>Bangerter Highway Over Option</u> <ul style="list-style-type: none">Would require utility relocations for AT&T, First Digital, Summit Infrastructure Group, Syringa, and Zayo Group fiber lines; and Rocky Mountain Power underground and overhead power lines in a new alignment where it crosses Bangerter Highway.	Work with utility companies on final design of utility relocations.
<u>Bangerter Highway Under Option</u> <ul style="list-style-type: none">Would require utility relocations for Riverton City sewer, water, and irrigation lines; South Valley Sewer District sewer lines; a Jordan Valley Water Conservation District water line; AT&T, CenturyLink, Comcast Cable, First Digital, Summit Infrastructure Group, Syringa, and Zayo Group fiber lines; Dominion Energy gas lines; and Rocky Mountain Power underground and overhead power lines in a new alignment where it crosses Bangerter Highway.	
<u>Bangerter Highway Hybrid Option</u> <ul style="list-style-type: none">Would require utility relocations for Riverton City sewer, water, and irrigation lines; South Valley Sewer District sewer lines; AT&T, CenturyLink, Comcast Cable, First Digital, Summit Infrastructure Group, Syringa, and Zayo Group fiber lines; Dominion Energy and Kern River Gas Transmission Company gas lines; and Rocky Mountain Power underground and overhead power lines in a new alignment where it crosses Bangerter Highway.	
Invasive Species	
<ul style="list-style-type: none">There is potential to introduce or spread invasive weed species.	Comply with UDOT Special Provision Section 02924S, <i>Noxious Weed Control</i> , requirements by properly cleaning all earth-moving construction equipment before mobilizing onto the project site and avoiding unnecessary earth disturbances.

PROPOSED ACTION	MITIGATION
Noise	
<u>Bangerter Highway Over Option</u> <ul style="list-style-type: none"> • 5-dBA noise level increase • 78 receptors would exceed noise-abatement criteria • No receptors would experience noise levels greater than 10 dBA above existing noise levels 	One noise wall was found to be both feasible and reasonable and met the requirements of UDOT's Noise Abatement Policy. This wall would be constructed only if the extension of the northbound off-ramp and southbound on-ramp east of 3600 West is built and the noise wall is approved through the balloting process.
<u>Bangerter Highway Under Option</u> <ul style="list-style-type: none"> • 4-dBA noise level increase • 65 receptors would exceed noise-abatement criteria • No receptors would experience noise levels greater than 10 dBA above existing noise levels 	<u>Bangerter Over Option</u> 14-foot-high noise wall from approximately 13650 South to 13750 South for northbound Bangerter Highway (6-foot-high noise wall across bridge).
<u>Bangerter Highway Hybrid Option</u> <ul style="list-style-type: none"> • 4-dBA noise level increase • 54 receptors would exceed noise-abatement criteria • No receptors would experience noise levels greater than 10 dBA above existing noise levels 	<u>Bangerter Under and Hybrid Options</u> 18-foot-high noise wall from approximately 13650 South to 13750 South for northbound Bangerter Highway (6-foot-high noise wall across bridge).
Visual	
<u>Bangerter Highway Over Option</u> <ul style="list-style-type: none"> • The vertical alignment for 13400 South would stay at the existing grade, and Bangerter Highway would go over 13400 South above the existing grade. The visual changes would be the elevated Bangerter Highway road and structure. This option would have visual changes similar to the Bangerter Highway interchange projects at Redwood Road, 9000 South, 7800 South, 7000 South, 6200 South, and 5400 South. 	Reclaim all disturbed areas per UDOT standard specifications.
<u>Bangerter Highway Under Option</u> <ul style="list-style-type: none"> • The vertical alignment for 13400 South would be at the existing grade, and Bangerter Highway would go under 13400 South below the existing grade. This option would have visual changes similar to the Bangerter Highway interchange projects at 10400 South and 11400 South. 	

Bangerter Highway at 13400 South



PROPOSED ACTION	MITIGATION
<u>Bangerter Highway Hybrid Option</u> <ul style="list-style-type: none">The vertical alignment for 13400 South would be lower than the existing grade, and Bangerter Highway would go over 13400 South above the existing grade. Both Bangerter Highway and 13400 South would be at lower elevations compared to the Bangerter Highway Over Option. This option would have visual changes similar to the Bangerter Highway interchange project at 12600 South.	
Construction	
<ul style="list-style-type: none">Delays and temporary east-west closures of 13400 South are possible during construction of the project.	Comply with UDOT 2022 Standard Specifications.