

BANGERTER

4700 SOUTH 

EXECUTIVE SUMMARY



Executive Summary

The Utah Department of Transportation (UDOT) is proposing to construct a grade-separated Interchange at the existing intersection of Bangerter Highway (SR-154) and 4700 South intersection in West Valley City and Taylorsville, 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 utilized current regional and local transportation plans, existing conditions and future (2050) conditions traffic analysis, 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 2019-2050 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 4700 South from 6400 West, through Bangerter Highway, to 2700 West.

The West Valley City Active Transportation Plan identifies future on-street bike lanes on 4700 South in the study area. Additionally, the Midvalley Active Transportation Plan identifies a future cycle track on 4700 South in the study area. The traffic analysis and preliminary design used these transportation plans to inform the traffic projections and accommodate identified future plans. As a result, the project design is forward compatible with these facilities at 4700 South.

Coordination began early in the environmental process with West Valley City and Taylorsville City staff and the city council, the Granite School District, and the Jordan Valley Water Conservancy District. Input from these meetings helped inform the alternative 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 duration of the project. The main public events included Public Scoping Meeting opportunities held online on July 20, 2021, and in-person on July 21, 2021; in-person Business and Neighborhood Meeting opportunities held January 13, 2022 (held in two sessions); and Public Hearing opportunities held in-person on February 1, 2022, and online on February 2, 2022.

Traffic analysis of the existing conditions at the Bangerter Highway and 4700 South intersection showed that it operates at an unacceptable level-of-service (LOS) during the AM peak hour (LOS E) and an acceptable LOS during the PM peak hour (LOS D) (see Table 1 and Figure 1).

Table 1. Existing Intersection Level of Service / Delay Results

Location	AM Peak Hour		PM Peak Hour	
	Worst Approach ²	AM LOS / Delay ¹	Worst Approach ²	PM LOS / Delay ¹
4100 South & Bangerter Highway	-	D / 44	-	D / 38
4700 South & Bangerter Highway	-	E / 67	-	D / 54
5400 South & Bangerter Highway	-	B / 25	-	C / 44
4700 South & 4000 West	-	C / 22	-	C / 32
4700 South & Muirhouse Drive	-	A / 7	-	B / 11
4700 South & 3860 West	SB	A / 8	SB	A / 8
4700 South & 3740 West	SB	A / 9	SB	C / 23
4700 South & 3600 West	-	B / 14	-	B / 19

¹ Average delay reported in seconds/vehicle

² Worst approach delay is reported for unsignalized intersections

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

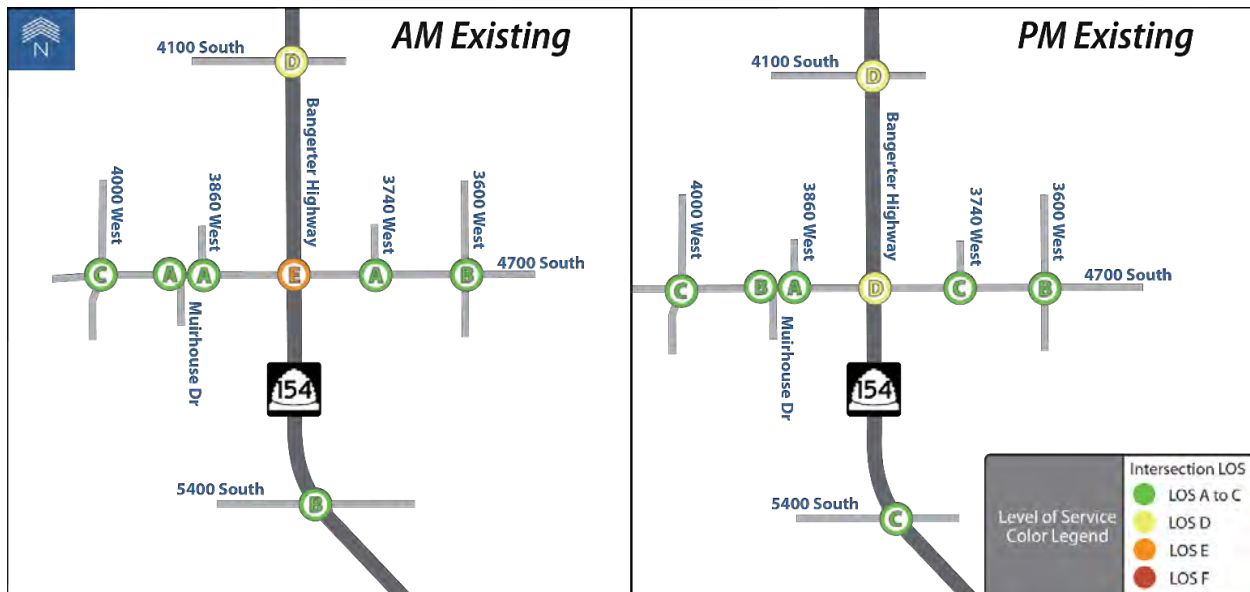


Figure 1. Existing Conditions: AM and PM Peak Hour Intersection LOS

INTERCHANGE ALTERNATIVES

Future (2050) No Build conditions show that the existing conditions are expected to deteriorate without improvements at Bangerter Highway and 4700 South. PM peak hours show that along 4700 South the signalized intersections at 4000 West, Muirhouse Drive, Bangerter Highway, and 3600 West are expected to operate at LOS F (see Table 2 and Figure 2).

These conditions will cause extensive queuing that affects the operations of adjacent intersections and interchanges on Bangerter Highway and 4700 South.

Table 2. 2050 No Build Intersection Delay and Level of Service Results

Location	AM Peak Hour		PM Peak Hour	
	Worst Approach ²	LOS / Delay ¹	Worst Approach ²	LOS / Delay ¹
4700 South & Bangerter Highway	-	F / 143	-	F / 112
4700 South & 4000 West	-	F / >180	-	F / 177
4700 South & Muirhouse Drive	-	F / 178	-	F / 123
4700 South & 3860 West	SB	A / 7	SB	E / 40
4700 South & 3740 West	SB	F / 135	SB	F / 132
4700 South & 3600 West	-	B / 17	-	F / >180

¹ Average delay reported in seconds/vehicle
² Approach with the worst delay is reported for unsignalized intersections

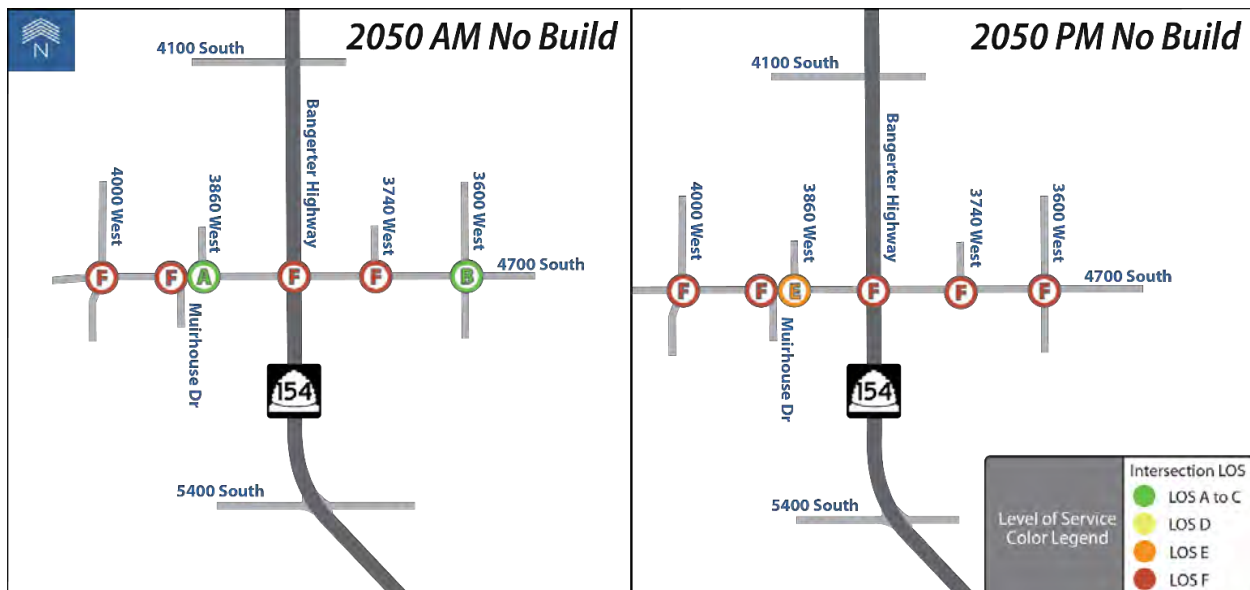


Figure 2. Future (2050) Conditions: AM and PM Peak Hour Intersections LOS

Bangerter Highway at 4700 South

The Future (2050) Build conditions traffic analysis evaluated two interchange alternatives: a Tight Diamond Interchange and a Single Point Urban Interchange (SPUI). Both interchanges show improvement compared to 2050 No Build. However, the SPUI was selected over the Tight Diamond because it is projected to better alleviate congestion and improve operations at the Bangerter Highway and 4700 South intersection by: 1) providing a better 2050 LOS at the Bangerter Highway and 4700 South intersection, 2) reducing future congestion throughout the local street network by providing a better LOS at two (4000 West and 3600 West) of three local signalized intersections in both the AM and PM Peak hours, and 3) providing shorter queues at three of the four approaches in both the AM and PM peak hours. The SPUI is also projected to provide an improved AM and PM LOS at the signalized intersection of Muirhouse Drive; LOS A and LOS B, respectively. See Table 3 Table 4, and Figure 3 for supporting information.

Table 3. 2050 No Build and Build Intersection Delay and Level of Service

Location	2050 AM Peak Hour ¹			2050 PM Peak Hour ¹		
	No Build	Tight Diamond	SPUI	No Build	Tight Diamond	SPUI
4700 South & 4000 West	F / >180	C / 23	B / 19	F / 179	D / 55	D / 46
4700 South & Muirhouse Drive	F / 179	A / 7	A / 9	F / 126	A / 9	B / 11
4700 South & Bangerter Hwy	F / 143	D / 36	B / 19	F / 107	D / 47	C / 25
4700 South & 3600 West	B / 17	B / 15	A / 10	F / >180	D / 42	C / 22

¹ Average delay reported in seconds/vehicle

Table 4. 2050 Interchange Alternatives 95th Percentile Queue Lengths (feet)

Intersection	Approach	2050 AM Peak Hour ¹			2050 PM Peak Hour ¹		
		No Build	Tight Diamond	SPUI	No Build	Tight Diamond	SPUI
4700 South & Bangerter Hwy	Northbound	5,350	150	200	1,200	2,450	250
	Southbound	475	125	75	5,350	325	375
	Eastbound	500	300	275	500	550	300
	Westbound	800	650	225	1,200	545	350

¹ 95th percentile queue lengths presented in Table 4 are of the longest estimated 2050 queue for each intersection approach

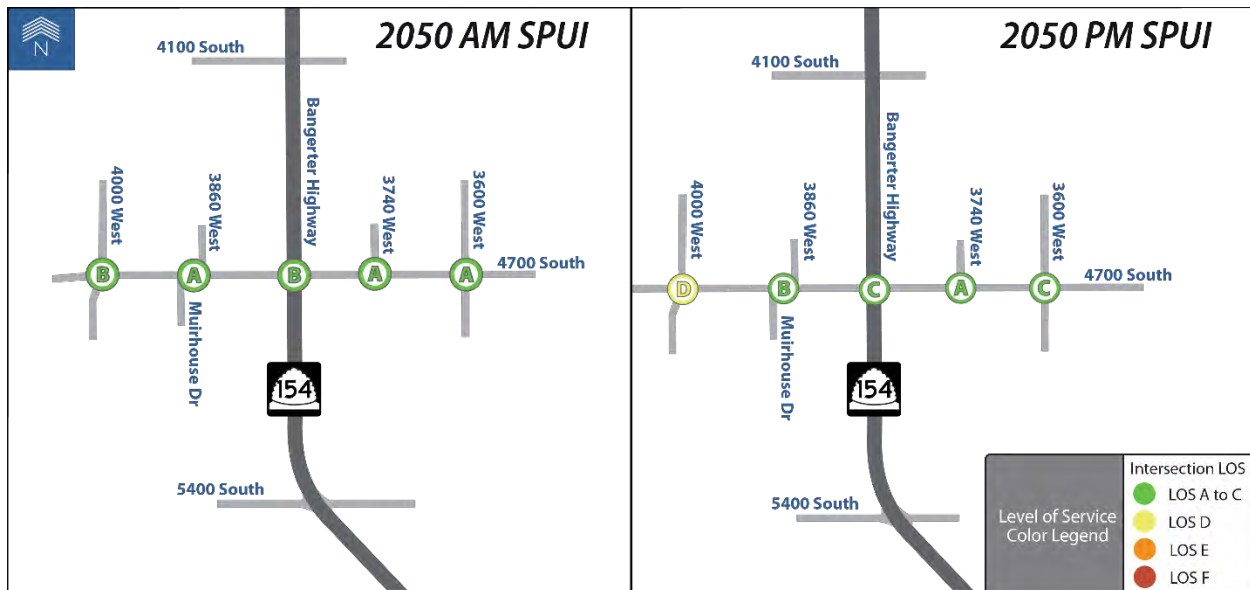


Figure 3. SPUI 2050 AM and PM Intersections LOS

HORIZONTAL ALIGNMENTS

Horizontal alignment alternatives were determined by comparing impacts to businesses, residents, the Jordan Valley Aqueduct, and cell phone towers. The evaluation also looked at design exceptions, constructability, and maintenance of traffic. The team analyzed the following horizontal alignment alternatives: East Shift, Hybrid (both sides) Shift, and West Shift. The East Shift was selected as the preferred SPUI horizontal alignment alternative because it minimized impacts to commercial and residential properties, it does not require design exceptions, and it would have fewer constructability issues.

VERTICAL ALIGNMENT OPTIONS

The vertical alignment options under consideration are Bangerter Highway over 4700 South and Bangerter Highway under 4700 South. The key environmental impacts for both the under and over options are similar except for the noise impacts. The most notable differences between the two options are impacts to the Jordan Valley Aqueduct, re-routing other utilities, and estimated cost. This decision will continue to be coordinated with West Valley City and Taylorsville 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. Delays and temporary east/west closures of 4700 South are anticipated to last up to 9 to 12 months during the construction of the project.

PROPOSED ACTION

The proposed action is a SPUI with an east horizontal alignment shift at Bangerter Highway and 4700 South. Some of the improvements identified will not be constructed unless funding is available, this may happen as part of a later phase. This includes replacement of old portions of pavement not removed with the Bangerter 5400 South project between 4700 South and 5400 South; installation of auxiliary lanes between the 5400 South entrance ramp and the 4700 South exit ramp; and construction of north

and southbound pavement between 4700 South and 4100 South that is forward compatible with a future interchange at 4100 South.

A summary of the affected environment and mitigation commitments for the various environmental resources are found in Table 4. A full mitigation list for preliminary engineering and construction activities is found in the Mitigation Commitments section.

Table 4: Summary of Affected Environment and Mitigation Commitments

PROPOSED ACTION	MITIGATION
Right of Way	
<p><u>Impacts applicable to both options:</u></p> <ul style="list-style-type: none"> ● ROW acquisition from 91 parcels ● Approximately 17.42 acres of total property acquisition ● Temporary construction easements and perpetual easements required 	<p>Compensate property owners according to the requirements of the Utah Relocation Assistance Act.</p>
Cultural	
<p><u>Impacts applicable to both options:</u></p> <p>The Finding of Effect is Adverse Effect:</p> <ul style="list-style-type: none"> ● Adverse Effect for 7 architectural properties ● No Adverse Effect for 1 archaeological site and 10 architectural properties ● Finding of No Historic Properties Affected for all remaining architectural properties and archaeological sites. 	<p>In accordance with the Memorandum of Agreement (MOA) between UDOT and the Utah State Historic Preservation Officer (SHPO), document the following seven (7) buildings according to the Utah State Intensive Level Survey Standards (ILS) as required by SHPO:</p> <p style="padding-left: 40px;">3739 West 4700 South</p> <p style="padding-left: 40px;">4534 South Orleans Way</p> <p style="padding-left: 40px;">4526 South Orleans Way</p> <p style="padding-left: 40px;">4502 South Orleans Way</p> <p style="padding-left: 40px;">4486 South Orleans Way</p> <p style="padding-left: 40px;">4472 South Orleans Way</p> <p style="padding-left: 40px;">4412 South Orleans Way</p> <p>Prepare ILS Historic Site Forms, based partly on title searches and obituary research, photographs of the exterior of the buildings, a sketch map of the property layout, aerial photograph maps indicating the location of the buildings, and a U.S. Geological Survey map</p>

Bangerter Highway at 4700 South

PROPOSED ACTION	MITIGATION
	<p>(scale 1:24,000) indicating the location of the buildings.</p> <p>Completed documentation is required prior to any demolition activities to the building or surrounding property.</p>
Invasive Species	
<ul style="list-style-type: none"> There is potential to introduce or spread invasive weed species 	<p>Comply with UDOT Special Provision Section 02924S NOXIOUS WEED CONTROL requirements by properly cleaning all earthmoving construction equipment before mobilizing onto the project site and avoiding unnecessary earth disturbances.</p>
Noise	
<p><u>Bangerter Highway Over Option:</u></p> <ul style="list-style-type: none"> 420 receptors impacted by project noise levels 364 receptors exhibit noise levels greater than 10 dBA above existing noise levels Walls 1-3 and 6 are recommended for balloting. Wall 4 was not feasible and reasonable and is not recommended for balloting. Wall 5 will be replaced "in-kind". Wall 7 will remain in place. 	<p><u>Bangerter Highway Over Option Evaluated Walls:</u></p> <ul style="list-style-type: none"> Wall 1: 14 feet tall located on the west side of Bangerter Highway south of 4700 South recommended for balloting Wall 2: 14 feet tall located on the west side of Bangerter Highway south of 4700 South recommended for balloting Wall 3: 13 feet tall located on the east side of Bangerter Highway south of 4700 South recommended for balloting Wall 4: Not recommended for balloting Wall 5: 15 feet tall located on the east side of Bangerter Highway north of 4700 South recommended to be replaced "in-kind" Wall 6: 13 feet tall located on the west side of Bangerter Highway north of 4700 South recommended for balloting Wall 7: 13 feet tall located on the west side of Bangerter Highway north of 4700 South to remain in place

PROPOSED ACTION	MITIGATION
<p><u>Bangerter Highway Under Option:</u></p> <ul style="list-style-type: none"> ● 321 receptors impacted by project noise levels ● 286 receptors exhibit noise levels greater than 10 dBA above existing noise levels ● Walls 1-3 and 6 are recommended for balloting. Wall 4 was not feasible and reasonable and is not recommended for balloting. Wall 5 will be replaced “in-kind”. Wall 7 will remain in place. 	<p><u>Bangerter Highway Under Option Evaluated Walls:</u></p> <ul style="list-style-type: none"> ● Wall 1: 13 feet tall located on the west side of Bangerter Highway south of 4700 South recommended for balloting ● Wall 2: 17 feet tall located on the west side of Bangerter Highway south of 4700 South recommended for balloting ● Wall 3: 13 feet tall located on the east side of Bangerter Highway south of 4700 South recommended for balloting ● Wall 4: Not recommended for balloting ● Wall 5: 15 feet tall located on the east side of Bangerter Highway north of 4700 South recommended to be replaced “in-kind” ● Wall 6: 13 feet tall located on the west side of Bangerter Highway north of 4700 South recommended for balloting ● Wall 7: 13 feet tall located on the west side of Bangerter Highway north of 4700 South to remain in place.
<p>Wetlands and Water Resources</p>	
<p><u>Impacts applicable to both alternatives:</u></p> <ul style="list-style-type: none"> ● Less than 2,000 square feet of impacts (including the canal bank and surface water) to the South Jordan Canal. 	<ul style="list-style-type: none"> ● Complete work on the canal outside of the irrigation season. ● Comply with the conditions outlined in Nationwide Permit 14 – Linear Transportation Projects for impacts to the Utah and Salt Lake Canal and the South Jordan Canal.

Bangerter Highway at 4700 South

PROPOSED ACTION	MITIGATION
Hazardous Waste	
<p><u>Bangerter Highway Over Option:</u></p> <ul style="list-style-type: none"> No impacts to hazardous waste sites. <p><u>Bangerter Highway Under Option</u></p> <ul style="list-style-type: none"> A contaminated ground water plume is located beneath the Bangerter Highway and 4700 South intersection. Based on available information, the depth to ground water is 24.5 feet at the Life Church USGS Monitoring Well. 	<ul style="list-style-type: none"> Complete Phase I Environmental Site Assessment and/or Phase II Investigation per UDOT procedures if the Bangerter Highway Under Option is selected. Comply with UDOT 2022 Standard Specification 01355 regarding the treatment and disposal of hazardous material, if encountered.
Relocations	
<p><u>Relocations applicable to both options:</u></p> <ul style="list-style-type: none"> 27 residential relocations 1 potential residential relocation 3 commercial relocations 	<p>Compensate property owners according to the requirements of the Utah Relocation Assistance Act.</p>
Visual	
<p><u>Bangerter Highway Over Option:</u></p> <ul style="list-style-type: none"> A structure would be constructed over 4700 South and result in visual changes similar to the Bangerter Highway and 9000 South interchange <p><u>Bangerter Highway Under Option:</u></p> <ul style="list-style-type: none"> A structure would be constructed under 4700 South and result in visual changes similar to the Bangerter Highway and 11400 South interchange 	<p>Reclaim all disturbed areas per UDOT standard specifications.</p>

Bangerter Highway at 4700 South

PROPOSED ACTION	MITIGATION
Social	
<p><u>Impacts applicable to both alternatives:</u></p> <ul style="list-style-type: none"> Both the Bangerter Highway Over Option and Bangerter Highway Under Option would remove the Bible Baptist Church. Displacing the church could negatively affect the congregation. 	<p>Compensate property owners according to the requirements of the Utah Relocation Assistance Act.</p>
Construction	
<p><u>Bangerter Highway Over Option:</u></p> <ul style="list-style-type: none"> Delays and temporary east/west closures of 4700 South are possible during construction of the project. <p><u>Bangerter Highway Under Option:</u></p> <ul style="list-style-type: none"> East and west closures of 4700 South are anticipated for up to 12 months. 	<p>Comply with UDOT 2022 Standard Specifications.</p>

This SES follows UDOT’s Environmental Electronic Project Management (ePM) Environmental Study form to remain consistent with UDOT’s Environmental Manual of Instruction. This Environmental Study form is used for different types of environmental documents so some sections may not apply to the project but are included to maintain consistency. The Environmental Study appendix contains all relevant clearance memos, determinations, correspondence, and technical studies.