

## APPENDIX A – JURISDICTIONAL TRANSFER

**To: Wendell Rigby, P.E.**      **Bryan Adams, P.E.**  
**Public Works Director**      **Region 2 Deputy Director**  
**West Jordan City**      **Utah Department of Transportation**

**From: Tracy Conti, P.E.**

**Date:** November 3, 2014

**Memorandum**

**Subject: West Jordan Road Transfer Evaluation**

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## **Introduction**

UDOT and West Jordan City agreed to study whether 9000 South (from Redwood Road to 5600 West) and 7800 South (from New Bingham Highway to SR-111) meet the requirements to become a state highway. Currently SR-48 is defined in Utah State Code 72-4-110: *From the Kennecott gate in Copperton northeasterly on New Bingham Highway and 9000 South to 5600 West; then northerly on 5600 West to 8600 South; then easterly on 8600 South, New Bingham Highway, and 7800 South to Route 68 in West Jordan; then beginning again at Route 68 easterly on 7000 South and 7200 South to Route 89.* The SR-48 roadway (from Redwood Road to 5600 West) was also evaluated using the same criteria. West Jordan City is requesting that ownership and maintenance of 9000 South and 7800 South roadways be transferred over to UDOT in exchange for the ownership and maintenance of SR-48. The request for consideration of jurisdictional transfer is included in the Appendix. This memorandum presents the findings of this assessment. The evaluation process included:

- Collect pertinent data on affected roadways for analysis (maintenance costs; traffic data; lane configurations; etc.)
- Evaluate 9000 South, 7800 South, and SR-48 roads using the criteria in Utah State Code 72-4-102.5
- Evaluate 9000 South, 7800 South, and SR-48 roads using AASHTO Criteria for the 13 Critical Design Elements
- Identify the required funding amount for transfer implementation.

## **Background**

The 9000 South, 7800 South, and SR-48 roads are located in Salt Lake County and provide east-west access in the Salt Lake Valley. 9000 South and SR-48 roads are classified as Urban Principal Arterials and 7800 South is classified as a Minor Arterial.

### Traffic Volumes (Annual Average Daily Traffic)

Route	Length (mi)	2012 Traffic on Utah Highways	2040 Projected
7800 South (SR-111 to MVC)	1.1	7,750	53,000
7800 South (MVC to 5600 West)	0.5	7,750	44,000
7800 South (5600 West to New Bingham Highway)	2.5	7,750	32,000
9000 South (5600 West to Old Bingham Highway)	1.7	11,500	38,000
9000 South (Old Bingham Highway to Bangerter Highway)	0.8	18,510	60,000
9000 South (Bangerter Highway to 3200 West)	0.5	33,860	62,000
9000 South (3200 West to Redwood Road)	1.5	37,875	56,000
SR-48 (5600 West to 4800 West)	1.2	7,015	30,000
SR-48 (4800 West to 4000 West)	1.1	21,535	30,000
SR-48 (4000 West to Bangerter Highway)	0.6	40,025	48,000
SR-48 (Bangerter Highway to Redwood Road)	2.0	30,240	40,000

### 9000 South Construction Plan Findings

Segment	Construction Year	Pavement Section	Drainage	Notes
Redwood Road to Bangerter Highway	1995	1" PMSC 6" HMA 9" UTBC 24" GB	18" to 36" Smooth Lined Pipe	
	2011	2" Rotomill 3" HMA Overlay		
Bangerter Highway to 4000 W	Unknown			Pavement appears to be in good condition
	2008	3" Rotomill and Overlay		
4000 W to 4800 W	2004/2005	1" PMSC 5" HMA 8" UTBC 12" GB	24" to 36" Reinforced Concrete Pipe	PMSC needs removal & replacement
4800 W to 5600 W	2000	4" HMA 8" UTBC		
	2015	Pavement Reconstruction TBD		

## Roadway Overview

Route	Travel Lanes	Median	Shoulders	Needs/Concerns
9000 South	Two lanes in each direction	12 -14 feet	Sufficient	Reconstruct pavement from 4800 W to 5600 W (due to poor pavement) & update signs to bring to standards; Transmission power lines and cemetery adjacent to corridor
7800 South (Airport Road to Grizzly Way)	Two lanes in each direction	12-14 feet	Sufficient	
7800 South (Grizzly Way to SR-111)	One lane in each direction	No Median	No Shoulders	Add shoulders and drainage system including curb inlets and trunk line
SR-48 (7800 S and New Bingham Hwy)	Two lanes in each direction	12-14 feet	Sufficient	
SR-48 (5600 W)	Two lanes in each direction	12-14 feet	Sufficient	

UDOT operates the West Jordan maintenance station that is located at 7800 South near 4500 West. If SR-48 is exchanged, the station will not be located on a state route but is still situated in the geographic center of the station area.

The Wasatch Front 2011-2040 Unified Transportation Plan includes the following projects for 7800 South and 9000 South roads:

1. 7800 South, SR-111 to New Bingham Highway, 3.7 mile, Widening (From 2 Lanes to 4 Lanes) \$45 M. Phase 1 2011-2020
2. 9000 South, Bangerter to I-15, 4.0 mile, Widening (From 4 Lanes to 6 Lanes) \$89 M. Phase 2 2021-2030
3. 9000 South, 5600 West to Bangerter, 2.5 mile, Widening (From 4 Lanes to 6 Lanes) \$62M. Phase 3 2031-2040
4. 9000 South West Side Corridor-Sandy/South Jordan FrontRunner to Mid-Jordan TRAX, Enhanced Bus Service \$146M\*. Phase 3 2031-2040

\* Project 4 was not included in the 2015-2040 Unified Transportation Plan Draft. Projects 1-3 are included in the same phase and have the same project limits as in the 2011-2040 Unified Transportation Plan.

As discussed in a meeting with West Jordan City, a portion of the 9000 South roadway from 4800 West to 5600 West is funded by Wasatch Front Regional Council (WFRC) and will be reconstructed in 2015.

A map of the roadways is included in the Appendix.

## State Code Criteria

State Code 72-4-102.5 provides the criteria to be used in evaluating additions or deletions to the state highway system. The full State Highway Criteria Evaluation is included in the Appendix. SR-48 and 9000 South meet all the criteria with the exception of the 10 mile proximity to other state route criteria. It is obvious that an east-west state route south of 5400 South is necessary. 7800 South meets many of the items in the State Code criteria, but does not satisfy all of the criteria. The primary reasons it doesn't qualify to be a state road are:

- 1) Although 7800 South provides connections from MVC to SR-111, there are parallel state routes (5400 South and SR-48) that provide the same service. Each route is within 2.3 miles of 7800 South.
- 2) 7800 South is classified as a Minor Arterial and continuity with state routes is provided by 5400 South and SR-48.

Since 7800 South fails to meet the criteria for a state highway, it will be excluded from further evaluation and discussion in this document for transfer. The remainder of this analysis will focus on exchanging SR-48 and 9000 South.

## AASHTO Critical Design Elements

FHWA performed a technical review of the design criteria included in the *AASHTO Green Book* and identified 13 controlling criteria as having substantial importance to the operational and safety performance of highways. 9000 South and SR-48 roadway segments were evaluated for these 13 criteria based on a project site visit and the construction plans available. The full 13 Critical Elements Matrix is included in the appendix. Posted speeds vary from 35 mph to 50 mph.

The existing 9000 South and SR-48 roadways satisfy all of the critical elements, based on roadway speed and classification.

## Final Recommendations

Based on the preceding analysis, it is recommended that UDOT and West Jordan City exchange ownership and maintenance of 9000 South (Redwood Road to 5600 West) and SR-48 (Redwood Road to MVC). 9000 South provides better connectivity between I-15, Bangerter Highway and MVC than SR-48. 7800 South should remain a local road under West Jordan jurisdiction.

Other transfer options that could be considered are:

1. West Jordan transfer 9000 South from Redwood to 5600 West to UDOT without taking any of SR-48.
2. West Jordan transfer 9000 South from Redwood to 5600 West to UDOT and accept SR-48 from Bangerter to MVC. SR-48 from Redwood to Bangerter would remain a state owned facility.

## Cost Analysis

To determine the financial obligations of this transfer, the annual maintenance costs were developed (a ten year period was used). This cost analysis resulted in UDOT owing \$126,000 to West Jordan for the exchange of SR-48 for 9000 South. A simplified cost comparison is shown in the following table:

<b>FINAL COST COMPARISON*</b>		
<b>9000 South &amp; SR-48</b>		
	<b>10-Year Maintenance</b>	<b>Total</b>
9000 South	\$810,000	<b>\$810,000</b>
SR-48	\$936,000	<b>\$936,000</b>
	<b>Total Difference</b>	<b>\$126,000</b>

\*These costs were determined based on the assumption that 9000 South reconstruction (due to poor pavement) from 4800 West to 5600 West will be constructed as currently planned. It was also assumed that the current drainage on 9000 South is functioning properly. A unit price of \$3000 per surface area per year was used for maintenance costs. A surface area is defined as an area one mile long and twelve feet wide.

These costs would be the starting point for negotiations between the City and UDOT to transfer jurisdiction to UDOT. Some signs on 9000 South will require upgrading to current standards when they are replaced. It is also recommended that pavement cores and video of storm drains be collected at various locations to verify that additional funding transfers are unnecessary. A more detailed cost estimate is in the Appendix.

It should be noted that UDOT will be assuming approximately \$150 M in future costs to widen 9000 South as identified in WFRC's Long Range Plan.

Since the UDOT Maintenance Station will no longer be located on a state route, an agreement to share services between UDOT and West Jordan could be implemented on the subject roads.

The associated costs for the alternate options are:

1. West Jordan pays UDOT \$936,000 to accept 9000 South as a state highway.
2. West Jordan pays UDOT \$360,000 to trade 9000 South for SR-48 from Bangerter to MVC.

## Appendix

Request for Consideration of Jurisdictional Transfer Letter

Location Map

State Code Evaluation Matrix

AASHTO Critical Design Element Evaluation Matrix

Cost Estimates



March 14, 2014

Nathan Lee, P.E.  
Region 2 Director  
Utah Department of Transportation  
2010 South 2760 West  
Salt Lake City, Utah 84104

Re: Request for Consideration of Jurisdictional Transfer of Roadways

We appreciate you and Brian Adams taking the time to meet with us today and discuss the possibility of completing a jurisdictional transfer of several roadways in the City of West Jordan.

As we discussed, the City is requesting that the Utah Department of Transportation (UDOT) evaluate the following options for jurisdictional transfer of roadways:

1. UDOT assumes ownership of 9000 South, from Redwood Road to 5600 West – The City is requesting that UDOT evaluate assuming ownership of this portion of 9000 South as it will now act as a major arterial connector between I-15 and Mountain View Highway. With the completion of the Mountain View Highway, 9000 South will continue to increase in traffic volumes, resulting in substantial operations and maintenance costs which are not the responsibility of the City of West Jordan and should be borne by UDOT. Please see the ‘blue’ line on the attached map which shows this portion of roadway.
2. UDOT assumes ownership of 7800 South from Jordan Landing Blvd. to SR-111, the City assumes ownership of New Bingham Highway from Jordan Landing Blvd. to 5600 West - The City is requesting that UDOT evaluate taking over ownership of this portion of 7800 South as it will now act as a major arterial connector between Bangerter Highway and Mountain View Highway. It will also act as a major arterial collector between Mountain View Corridor, now that the Mountain View Highway is complete. With the completion of the Mountain View Highway, 7800 South will continue to increase in traffic volumes, resulting in significant operations and maintenance costs which should be the responsibility of UDOT. In exchange for UDOT taking over responsibility for these two sections of 7800 South, the City would take ownership of New Bingham Highway from Jordan Landing Blvd. to 5600 West. Please see the ‘green’ line on the attached map which indicates this portion of roadway.
3. Exchanging Ownership of 9000 South, from Redwood Road to 5600 West for 7800 South, from Redwood Road to 5600 West. – As an alternative to Option Nos. 1 and 2 listed above, the City would request that UDOT to take over ownership of this portion of 9000 South in exchange for the City taking over ownership of 7800 South from Redwood Road to Jordan Landing Blvd. and New Bingham Highway from Jordan Landing Blvd. to 5600 West, which are currently UDOT roadways. Please see the ‘blue’ and ‘red’ lines on the attached map which indicates these portions of roadways.

The City is also requesting to form a partnership for evaluation of these options in accordance with State Code sections 72-4-104 and 72-4-102.5 which are attached. We would propose a 50/50 split of engineering costs to complete this evaluation.

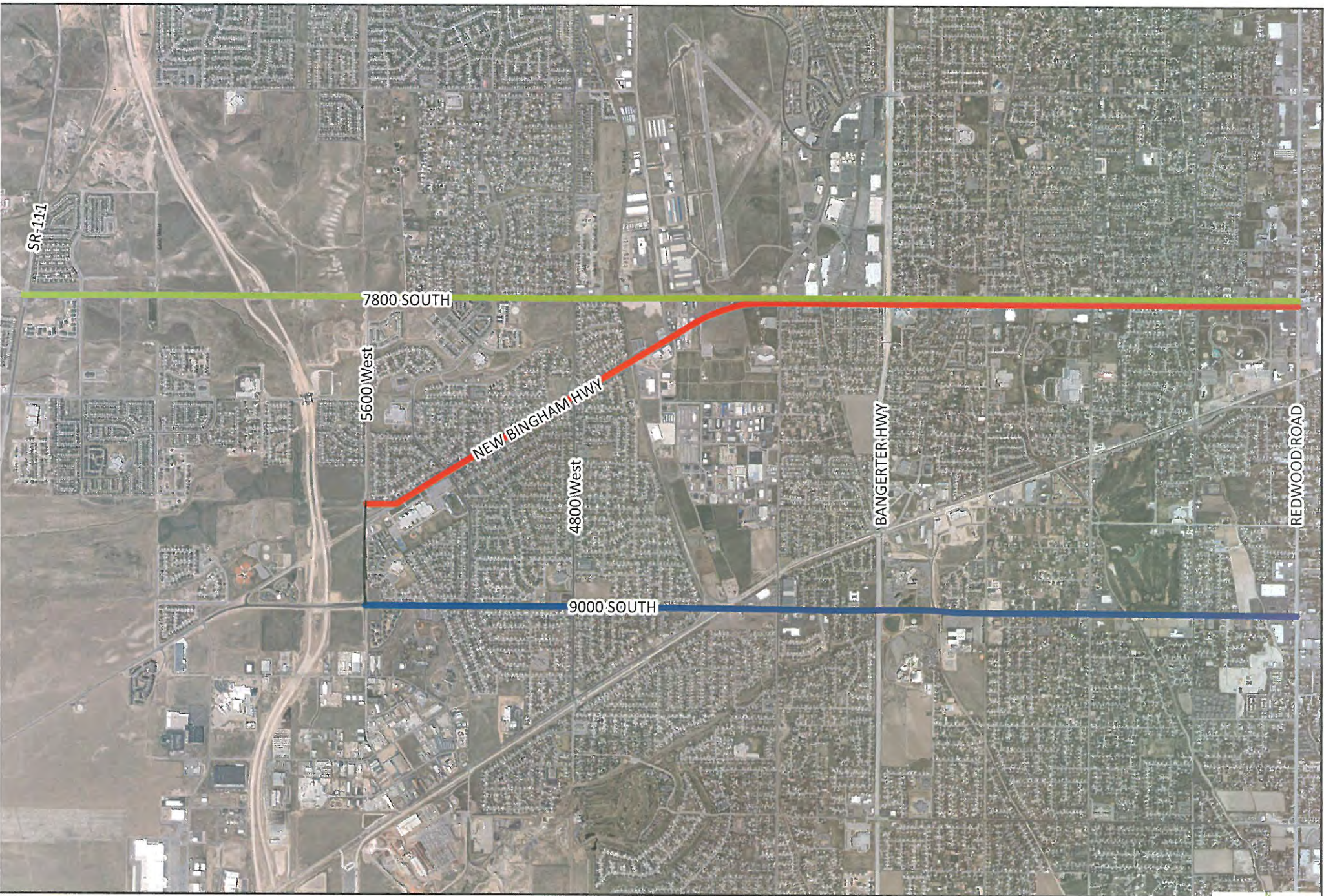
Again, we want to thank you for your time today and ask that you accept this letter as the City's official request for consideration of these three options for jurisdictional transfer of roadways. Please let me know if you have any questions.

Sincerely,


Kim V. Rolfe  
Mayor, City of West Jordan

cc: Rick Davis, City Manager  
Wendell Rigby, Director of Public Works  
David Murphy, Manager of Capital Improvement Programs





7800 SOUTH FROM REDWOOD TO NEW BINGHAM HWY TO 5600 WEST (25,192 FEET) 

9000 SOUTH FROM REDWOOD TO 5600 WEST (23,750 FEET) 

7800 SOUTH FROM REDWOOD TO SR-111 (32,410 FEET) 



All Locations Approximate  
Not For Use As Legal Property Description  
or Engineering Design Purposes  
Some Items Subject to Change Without Notice

## State Highway Criteria Evaluation

WEST JORDAN / UDOT (9000 S, SR-48, & 7800 S)

Relevant Criteria in State Code 72-04-102.5	9000 South (From Redwood Rd to 5600 West)	SR-48 (From Redwood Rd to 9000 South)	7800 S (From New Bing. Hwy to SR-111)	Notes
Primary function is to provide safe and efficient movement of traffic, access to property is a secondary function.	Meets	Meets	Meets	
Shall serve a statewide purpose by accommodating interstate movement of traffic or interregional movement of traffic within the state.	Meets. Provides connections to I-15, Bangerter and MVC.	Somewhat meets. Provides connectivity with Bangerter and MVC.	Somewhat meets. Provides connectivity with SR-111 and MVC.	
There are no other state routes within 10 miles.	Does not meet. Several state routes within 10 miles (SR-111; 5400 South; Bangerter, MVC; Redwood Road; I-15).	Does not meet. Several state routes within 10 miles (SR-111; 5400 South; Bangerter, MVC; Redwood Road; I-15).	Does not meet. Several state routes within 10 miles (SR-111; 5400 South; Bangerter, MVC; Redwood Road; I-15).	Most of these routes run north-south. If none of these were a state route there would be no east-west routes south of 5400 South to access SR-111.
Avoids duplicate routes.	Meets. Assuming current SR-48 is transferred. Nearest east-west route is 5400 South (4.5 miles) and 10400 South (1.8 miles).	Meets. Assuming current 9000 South and 7800 South are not state routes. Nearest east-west route (3 to 4.5 miles) is 5400 South.	Does not meet. Parallel routes (5400 South and New Bingham Highway) are within 2.3 miles on each side of 7800 South from MVC to SR-111.	

<p>Provides state highway system continuity and efficiency of state highway system operation and maintenance activities.</p>	<p>Meets. Provides links to other state routes. Location of current UDOT Maintenance Station on 7800 South will lead to some inefficiencies.</p>	<p>Meets. Provides links to other state routes.</p>	<p>Meets. Provides links to other state routes.</p>	
<p>Classified as Urban Principal Arterial.</p>	<p>Yes.</p>	<p>Yes.</p>	<p>Does not meet. Classified as Minor Arterial.</p>	
<p>Classified as a Minor Arterial that provides continuity for state highway system by providing major connections between other state highways; will be a Principal Arterial within 10 years; or is needed to provide access to state highways.</p>	<p>N/A</p>	<p>N/A</p>	<p>Does not meet. Continuity and access to state highways are provided by adjacent state routes.</p>	

### 13 CRITICAL ELEMENTS

#### 9000 South (Redwood Road to 5600 West)

(Analysis based on project site visit and aerial imagery)

Item	Design Element	Standard	9000 South	Remarks
1	Design Speed	30 mph - 60 mph	Posted=35-40mph Design Speed=40-45mph	35mph (4800 W to 5600 W)
2	Lane Width	10-12 FT, 12 FT Desirable	12 FT	
3	Shoulder Width	Min. 4'	4' Bike Lane, 6' Shoulder	
4	Superelevation	Max 6%	Unknown.	Normal Crown
5	Horizontal Alignment	Using Low Speed Urban, at $V_D = 40\text{mph}$ , Min. Radius = 485'	Unknown.	No Known Issues
6	Vertical Alignment	K Crest = 44 K Sag = 64	Unknown.	No Known Issues
7	Grade	Min. 0.35% Max- based on highway type, terrain type, design speed	Unknown.	No Known Issues
8	Cross-Slope	2%	Unknown.	No Known Issues
9	Stopping-Sight Distance	305	Unknown.	No Known Issues
10	Structural Capacity	HS20 for Existing	N/A (no roadway structures)	
11	Bridge Width	Shoulder + 2' Shy	N/A (no roadway structures)	
12	Vertical Clearance	16.5' over road, 21.5' over rail	N/A (no roadway structures)	
13	Lateral Offset to Obstruction	Clear Zone (14' for 6:1 for flatter @ 40 mph)	< 14'	Trees, Poles

**13 CRITICAL ELEMENTS****SR-48 (Redwood Road to 5600 West)**

(Analysis based on project site visit and aerial imagery)

Item	Design Element	Standard	7800 South	Remarks
1	Design Speed	30 mph - 60 mph	Posted=40-50mph	
2	Lane Width	10-12 FT, 12 FT Desirable	12 FT	
3	Shoulder Width	Min. 4'	10-12 FT	
4	Superelevation	Max 6%	Unknown.	Normal Crown
5	Horizontal Alignment	Using Low Speed Urban, at $V_D = 40\text{mph}$ , Min. Radius = 485'	Unknown.	No Known Issues
6	Vertical Alignment	K Crest = 44 K Sag = 64	Unknown.	No Known Issues
7	Grade	Min. 0.35% Max- based on highway type, terrain type, design speed	Unknown.	No Known Issues
8	Cross-Slope	2%	Unknown.	No Known Issues
9	Stopping-Sight Distance	305	Unknown.	No Known Issues
10	Structural Capacity	HS20 for Existing	N/A (no roadway structures)	
11	Bridge Width	Shoulder + 2' Shy	N/A (no roadway structures)	
12	Vertical Clearance	16.5' over road, 21.5' over rail	N/A (no roadway structures)	
13	Lateral Offset to Obstruction	Clear Zone (14' for 6:1 for flatter @ 40 mph)	< 14'	Trees, Poles

9000 SOUTH TRANSFER COST										
	FROM	TO	Length (mi)	Condition	Approximate Width	Reconstruct (SF)	Mill & Overlay (SF)	Guardrail (LF)	Curb and Gutter (LF)	Notes
1	Redwood Rd	Bangerter Hwy	2.0	Good						
2	Bangerter Hwy	4800 West	1.5	Good						
3	4800 West	5300 West	0.7	Reconstruct						Excluded from estimate- West Jordan Funded, to be constructed 2015
4	5300 West	5600 West	0.3	Good						
<b>TOTAL</b>			<b>4.5</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Average Yearly Maintenance Costs							
FROM	TO	Length (mi)	Lanes	Years	\$/Surface Area	Total Cost	Remarks
Redwood Rd	5600 West	4.5	6	10	\$3,000.00	<b>\$810,000.00</b>	5 Lanes + 2 Shoulders Less than 12'

SR-48 (7800 South/New Bingham Highway/5600 West) TRANSFER COST										
	FROM	TO	Length (mi)	Condition	Approximate Width	Reconstruct (SF)	Mill & Overlay (SF)	Guardrail (LF)	Curb and Gutter (LF)	Notes
1	Redwood Rd	2700 West	1.0	Good						7800 South
2	2700 West	New Bingham Highway	1.5	Good						7800 South
3	7800 South	5600 West	2.1	Good						New Bingham Highway
4	New Bingham Highway	9000 South	0.6	Good						5600 West
			<b>TOTAL</b>	<b>5.2</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Average Yearly Maintenance Costs							
FROM	TO	Length (mi)	Lanes	Years	\$/Surface Area	Total Cost	Remarks
Redwood Rd	2700 West	1.0	6	10	\$3,000.00	<b>\$180,000.00</b>	7800 South 5 Lanes + 2 Shoulders Less than 12'
2700 West	New Bingham Highway	1.5	6	10	\$3,000.00	<b>\$270,000.00</b>	7800 South 5 Lanes + 2 Shoulders Less than 12'
7800 South	5600 West	2.1	6	10	\$3,000.00	<b>\$378,000.00</b>	New Bingham Highway 5 Lanes + 2 Shoulders Less than 12'
New Bingham Highway	9000 South	0.6	6	10	\$3,000.00	<b>\$108,000.00</b>	5600 West 5 Lanes + 2 Shoulders Less than 12'
						<b>TOTAL</b>	<b>\$936,000.00</b>