

Foothill Boulevard Corridor Study

Saratoga Springs, Utah

December 2018





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Prepared for
Utah Department of Transportation and
Mountainland Association of Governments

by Avenue Consultants
December 2018

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ES EXECUTIVE SUMMARY

The Foothill Boulevard corridor is envisioned as a southward extension of the Mountain View Corridor (MVC) from its currently planned terminus at SR-73. The corridor is included in the transportation plans for the Mountainland Association of Governments (MAG) and Saratoga Springs to accommodate future traffic demands in the area. Redwood Road is currently the only north-south arterial in Saratoga Springs and will be inadequate to handle future traffic demand due to projected socioeconomic growth. By 2050 the study area population is expected to be approximately 86,000 with about 18,000 jobs, whereas all of Saratoga Springs would have 124,000 people and 39,000 jobs.

This study looks closely at the Foothill Boulevard corridor to determine what type of facility is appropriate, the roadway alignment, the cross-section of the roadway, the location of access points, and when it needs to be built. Using this information, the city, MAG, and UDOT can preserve right-of-way for the corridor with a better understanding of future needs.

The projected 2050 traffic volumes show that daily traffic demand will exceed 70,000 vehicles per day (vpd) on the northern section of the corridor. When considering whether the corridor should be an expressway or a freeway, traffic analysis confirms that a freeway would adequately handle the anticipated future volumes while an expressway would experience heavily congested conditions. Sensitivity testing confirmed the adequacy of a freeway to handle traffic demand in potential scenarios of a bridge across Utah Lake, high growth in the Goshen Valley, and the potential conversion of Pioneer Crossing into a freeway.

The proposed Foothill Boulevard corridor would include a parallel one-way frontage road system between SR-73 and Pony Express Parkway. The frontage road system would be an extension of one being built between SR-73 and Redwood Road, which is itself an extension 2100 North frontage roads between I-15 and Redwood Road. The frontage road system would provide for better local circulation and may increase corridor accessibility. Corridor crossings are envisioned for Rattler Road, Buffalo Drive/Market Street, Talus Ridge Drive, and 400 North.

There is the potential to have the frontage road system extend down to Grandview Boulevard. Because this area is not developed yet, there is little benefit to local circulation from this segment. As such, the decision as to whether one-way frontage roads would be used through this area largely rests with the property owner and what their plans are for their internal circulation and whether they would be willing to contribute right-of-way to the corridor.

The alignment of Foothill Boulevard is built off previous work by the City of Saratoga Springs. Adjustments were made to this previous alignment to accommodate a freeway design speed and UDOT maximum desired grades of 4%. Between SR-73 and Pony Express, the roadway is proposed to take the place of the existing Foothill Boulevard and run parallel to that road, although shifted east so that the west right-of-way line for the new corridor is 100 feet east of the existing roadway to provide a buffer between the corridor and the adjacent Sunrise Meadows neighborhood. Additionally, it is recommended that freeway be depressed between SR-73 and Pony Express to minimize noise and visual impacts while the frontage roads would be at-grade.

South of Pony Express Parkway, the corridor shifts about 1,200 feet west through the LDS Church property down to about 1200 South where it would curve back to the east to travel along the foothills above the existing developments. This alignment maximizes the distance between the corridor and the Grandview neighborhood rather than using the right-of-way adjacent to the neighborhood that has already been preserved.

The recommended right-of-way width to be preserved for the Foothill Boulevard corridor is generally 410 feet at the north end where there would be frontage roads and 320 feet in areas without frontage roads. The corridor width would widen out to about 525 feet at interchange locations to provide adequate space for the

interchange ramps. These corridor widths provide room for four travel lanes in each direction (three through lanes and an auxiliary lane) and an adjacent pedestrian/bicycle trail system while minimizing the need for retaining walls. Traffic volumes suggest that the freeway should have three travel lanes per direction north of Grandview Boulevard and two travel lanes south of Grandview Boulevard. While the southern portion will not need as many lanes, it is recommended that the same right-of-way width be preserved to allow for greater construction flexibility due to the grade issues inherent in constructing a roadway on the foothills of Lake Mountain.

Interchanges or major access points are proposed for the following locations: SR-73, Pony Express Parkway, the future 800 South, Grandview Boulevard, a future roadway around 2700 South, Village Parkway, a future roadway around 4200 South, and Redwood Rd. **Figure 1** shows an overview map of the corridor, including interchange locations.

It is estimated that by the year 2025, portions of Redwood Road will begin to fail despite current widening projects. It is assumed that construction of the Foothill Boulevard corridor will be phased like the Mountain View Corridor, being built as an expressway first with the outer freeway lanes and ramps and then being converted to a freeway as demand warrants.

Due to the corridor being needed for congestion relief within 10 years and the need to resolve the alignment option issues, it is recommended that the Foothill Boulevard corridor proceed as quickly as possible into an environmental study. The environmental process has a robust public involvement component and will allow for finalization of the Foothill Boulevard alignment and enable more active corridor preservation.

Figure 1. Foothill Boulevard Overview Map



1 INTRODUCTION

Foothill Boulevard is a proposed north-south roadway in Saratoga Springs that runs along the foothills of Lake Mountain. This study was commissioned by the Utah Department of Transportation (UDOT) and the Mountainland Association of Governments (MAG) and performed in close coordination with the City of Saratoga Springs. The goal of this corridor study is to determine the facility type, alignment, and right-of-way requirements of the Foothill Boulevard corridor and to determine when it would need to be built. The information developed by this study can be used by Saratoga Springs, MAG, and UDOT for corridor preservation purposes as development occurs.

1.1 Study Area

The Foothill Boulevard Corridor study area is located within Saratoga Springs west of Redwood Road (SR-68) and east of Lake Mountain from SR-73 down to Pelican Point. A map of the study area is shown in **Figure 2**.

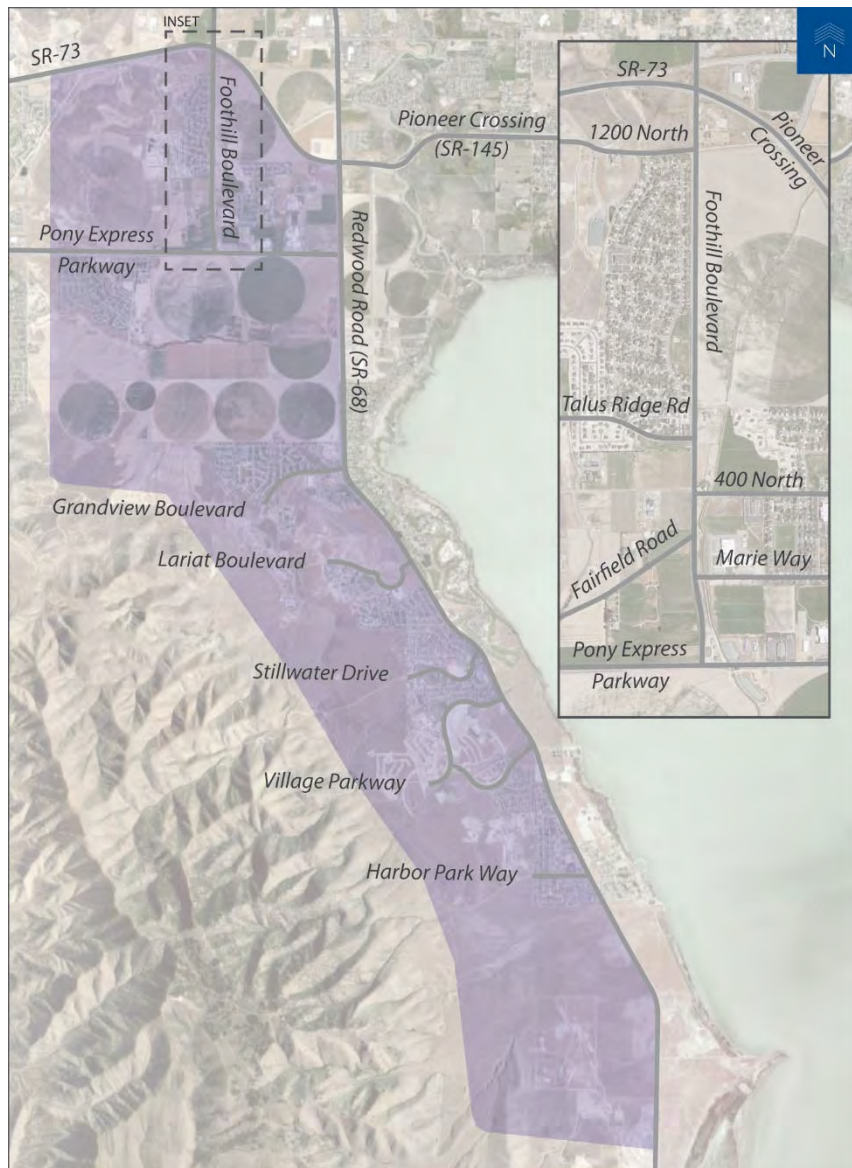


Figure 2. Foothill Boulevard Corridor Study Area

1.1.1 Logical Termini

The termini for Foothill Boulevard are SR-73 (at the terminus of the future Mountain View Corridor) on the north and Redwood Road near Pelican Point on the south. The northern terminus makes the Foothill Boulevard corridor an extension of the Mountain View Corridor providing a high capacity connection between the study area and Salt Lake County. The southern terminus was determined by constraints from topography in the area where the foothills of Lake Mountain significantly narrows the area of developable land as well as a desire to provide maximum flexibility for the future by lining up with the potential Utah Lake crossing shown as a vision project in the MAG 2040 Regional Transportation Plan.

1.1.2 Existing Roadway Network

The existing roadway network consists of arterial streets like SR-73, Pioneer Crossing, Pony Express Parkway and Redwood Road with supporting collectors and residential streets. An understanding of the existing network is essential in the understanding roadway alignment and interchange locations along Foothill Boulevard.

NORTH-SOUTH ROADWAYS

- **Redwood Road (SR-68)** is the only north-south arterial in Saratoga Springs. North of Pony Express Parkway, Redwood Road has a five-lane cross-section with a center two-way-left-turn lane. Between Pony Express Parkway and Centennial Boulevard, Redwood Road has a three-lane cross section with a center two-way-left-turn lane. South of Centennial Boulevard, it is a two-lane roadway with turning bays added at intersections. The speed limit of Redwood Road through the study area ranges from 45 to 50 mph.
- **Foothill Boulevard (800 West)** as it exists today is a two-lane collector that extends two miles from Aspen Hills Boulevard on the north to Pony Express Parkway on the south. Adjacent to the Sunrise Meadows neighborhood there is a wide shoulder on the west side of the road with curb and gutter. There is angled on-street parking on the west side of Foothill Boulevard at Sunrise Park.

EAST-WEST ARTERIALS

- **SR-73 (Cory B. Wride Memorial Highway)** is the primary arterial heading west into Eagle Mountain and Cedar Valley. Through the study area it is a five-lane roadway with a center two-way-left-turn lane. SR-73 connects to Pioneer Crossing at Crossroads Boulevard. The speed limit on SR-73 is 50 mph in the study area.
- **Pioneer Crossing (SR-145)** is a principal arterial serving as the primary connection between Saratoga Springs / Eagle Mountain and the Provo/Orem area. Pioneer Crossing is a limited access expressway with a five-lane cross section between SR-73 and I-15. The speed limit on Pioneer Crossing is 50 mph in the study area.
- **Market Street** is a two-lane minor arterial with a raised center median. As it exists today, the road connects Redwood Road and Pioneer Crossing in their northwest quadrant. The roadway is planned to extend farther west to connect to Foothill Boulevard at Buffalo Drive and provide access to the planned commercial development in this area.
- **Pony Express Parkway** is an east-west major arterial running from Redwood Road on the east into Eagle Mountain to the west. For the one-mile stretch between Redwood Road and Foothill Boulevard, Pony Express Parkway has a three-lane cross-section with a center two-way-left-turn lane. In this section of roadway, Westlake High School and Vista Heights Middle School have direct access to Pony Express Parkway. West of Foothill Boulevard it has a two-lane cross-section.

EAST-WEST COLLECTORS

As defined in the Saratoga Springs 2017 Transportation Master Plan, collectors are two-lane streets that provide access to local streets. Collectors typically have speed limits of 30-35 mph. These collectors typically have raised or striped medians and generally do not provide direct access to adjacent single-family homes. The following existing collectors are listed from north to south.

- **Talus Ridge Drive** is a three-lane roadway with a center two-way-left-turn lane connecting Foothill Boulevard to the Talus Ridge neighborhood west of Sunrise Meadows. Talus Ridge Road is planned to connect on the west to the future Mt. Saratoga Boulevard.
- **400 North** connects Foothill Boulevard to Redwood Road. Neptune Park and Lakeview Academy have direct access to the roadway. Along the southern edge of Neptune Park angled on-street parking is provided on the shoulder.
- **Grandview Boulevard** has a landscaped raised median and provides access to a residential neighborhood on the west side of Redwood Road. Saratoga Shores Elementary School has direct access to the roadway. Grandview Boulevard currently ends on the western edge of the neighborhood with plans to continue it to the west.
- **Village Parkway** has a landscaped raised median provides access to a residential neighborhood on the west side of Redwood Road. Fox Hollow Park is located on the north side of the roadway with some off-street parking. Village Parkway currently ends on the western edge of the neighborhood with plans to continue it to the west.
- **Wildlife Boulevard** has a landscaped raised median and provides access to a residential neighborhood on the west side of Redwood Road. Access control restricts single-family home driveways on the roadway. The western terminus of Wildlife Boulevard is Village Parkway.

EAST-WEST LOCAL COLLECTORS

Local collectors are similar to collectors, described above, but have two distinct differences. Like collectors, they are two-lane residential streets that provide access between neighborhood streets and Redwood Road. Unlike collectors, local collectors are narrower having no medians and contain driveways that give direct access to adjacent single-family homes. Local collectors that currently intersect Foothill Boulevard are 1200 North, Buffalo Drive, and Marie Way (210 North). Three east-west local collectors that may continue west and intersect the Foothill Boulevard corridor are Lariat Boulevard, Stillwater Drive, and Harbor Park Way.

1.2 Purpose and Need

The context, the need, and the purpose of the Foothill Boulevard corridor are discussed in this section.

1.2.1 Planning Context

Mountainland Association of Governments (MAG) and the Wasatch Front Regional Council (WFRC) are the two Metropolitan Planning Organizations (MPOs) along the Wasatch Front. In terms of transportation planning, MAG is responsible for Utah County and WFRC covers Weber, Davis, and Salt Lake Counties. Each agency develops a regional transportation plan (RTP) for their respective areas of responsibility. The RTP is the long-range plan for the development of the future transportation system and includes a list of projects that will be built in each of the three phases of the plan.

MAG and WFRC jointly own and maintain a regional travel demand model (TDM) used in developing the RTP as well as analyzing projects such as Foothill Boulevard. The travel model predicts how many person trips will be

generated in the region, where those trips will go, the transportation mode that they will take (e.g., transit or personal vehicle), and the transportation facilities that will be used to get there. The travel model has two primary inputs: land use (residential and employment) data and transportation system data (roadway and transit networks). The travel model inputs are prepared for the base year (in this case, 2015) and for future years corresponding with RTP phases (in this case, 2024, 2034, and 2040). In consultation with the cities, MAG prepares future land use projections for each of these years.

In an effort to be conservative and allow for maximum flexibility in the future, the planning year for this study is 2050 rather than the 2040 horizon year of the current RTP. Because the horizon year goes beyond the RTP, assumptions were made regarding household and employment numbers and transportation projects. Land use data for 2050 were taken from the Wasatch Front Central Corridor Study, which developed the projections in coordination with the MPOs. This data was used as the baseline land use assumption for this study. Unfunded roadway projects from the 2040 RTPs were assumed to be built by 2050.

With 2050 socioeconomic data determined and roadway projects identified, this study used the travel demand model to test the viability of transportation improvements to address the needs of the study area. Version 8.1 of the travel model was used.

1.2.2 Project Need

Transportation problems due to the high growth planned for the study area and the limited transportation network define the needs for this project. Projections show significant growth in population and employment for the study area. Currently there are approximately 15,000 residents and 1,700 jobs within the study area. By the year 2050, there are projected to be about 86,000 residents and 18,000 jobs within the study area (see **Table 1**) and 124,000 people and 39,000 jobs in all of Saratoga Springs.. With this amount of growth, the existing transportation network will be unable to handle the increased vehicle demand, especially with Redwood Road as the only north-south corridor.

Table 1. Estimated Study Area Population and Employment by Year

Portion of Study Area	Population/ Employment	2015	2019	2024	2034	2040	2050
Between Pioneer Crossing and Pony Express Pkwy	Population	2,000	3,000	5,000	13,000	14,000	17,000
	Employment	700	1,200	2,300	5,400	8,900	13,000
Between Pony Express Parkway and Grandview Blvd	Population	6,000	6,000	9,000	15,000	24,000	31,000
	Employment	0	100	200	400	700	900
Between Grandview Blvd and Village Parkway	Population	4,000	4,000	7,000	11,000	12,000	16,000
	Employment	200	200	300	500	800	1,100
South of Village Parkway	Population	3,000	5,000	8,000	13,000	15,000	22,000
	Employment	200	200	200	1,200	1,900	3,400
Total	Population	15,000	18,000	29,000	52,000	65,000	86,000
	Employment	1,100	1,700	3,000	7,500	12,200	18,400

Future traffic volumes for Redwood Road resulting from the increase in population and employment were forecasted for the 2050 horizon year. Base assumptions for Redwood Road in this future year include widening to seven lanes between Pioneer Crossing and Pony Express Parkway and five lanes between Pony Express Parkway and Village Parkway, and three lanes south of Village Parkway. **Table 2** presents the resulting traffic volumes on Redwood Road for 2050 if no additional north-south roadway capacity is added to the study area. By 2050, the daily demand for Redwood Road is expected to be quite high at around 70,000 to 80,000 vehicles per day at the north end of the corridor down to almost 20,000 vehicles per day at the southern end. Those volumes at the high end of the range are typical for a freeway but not for an arterial like Redwood Road.

Table 2. 2050 Average Daily Weekday Traffic on Redwood Road without Foothill Boulevard

Concept	Redwood Road Segment							
	Pioneer Xing to Pony Exp	Pony Exp to 800 South	800 South to Grandview	Grandview to Stillwater	Stillwater to Village Pkwy	Village Pkwy to Harbor Park	Harbor Park to 4400 South	4400 South to Foothill
Without Foothill Boulevard	67,000	69,000	83,000	67,000	41,000	31,000	21,000	23,000

1.2.3 Project Purpose

As part of the current RTP, the solution to north-south traffic demand was identified to be an extension of the Mountain View freeway running parallel to Redwood Road and terminating at Redwood Road near Pelican Point. Because this extension follows the alignment of the existing Foothill Boulevard, which is currently a two-lane roadway between SR-73 and Pony Express Parkway, the proposed corridor adopts the Foothill Boulevard name.

The purpose of Foothill Boulevard is to relieve congestion on Redwood Road by providing an alternative route for north-south travel through the study area. This corridor needs to be flexible enough to handle growth and projects beyond those reflected in the 2040 RTP and to accommodate other possibilities, such as a bridge over Utah Lake or explosive growth in the Elberta/Goshen area.

2 FACILITY TYPE EVALUATION

This study considers two potential facility types for Foothill Boulevard that may sufficiently reduce demand on Redwood Road. Using the MAG Travel Demand Model, each facility type was tested to quantify traffic demand in 2050. Based on projected 2050 traffic, the appropriate facility type and resulting cross section are identified to best meet the demand. Because the horizon year goes beyond the current 2040 RTP, additional sensitivity scenarios were run to test potential population and employment growth or transportation projects that may have a significant impact on Foothill Boulevard.

2.1 Facility Type Concepts

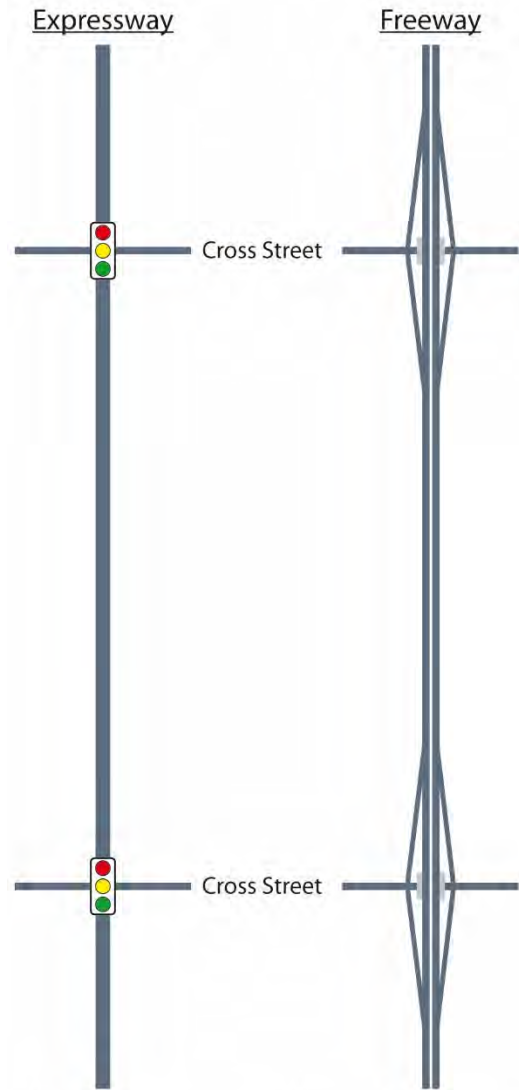
Serving as an extension of the Mountain View Freeway, Foothill Boulevard is envisioned to be a high speed, high capacity roadway that would serve as an attractive alternative to Redwood Road. The two facility types that fit into this category are an expressway and a freeway. These two concepts were modeled in the horizon year 2050 to determine what facility type would be appropriate for the corridor demand. The Expressway and Freeway concepts were both tested to determine what 2050 volumes would be served by the facility. Both facility types were modeled with three lanes in each direction.

2.1.1 Expressway

The Expressway concept is an at-grade roadway with three travel lanes per direction on Foothill Boulevard and an assumed speed limit of 60 mph. Access would be limited to signalized intersections at select points along the corridor with no driveway or local street access, similar to Pioneer Crossing. For this concept, at-grade intersections are included at streets that were assumed to cross the corridor, including: 1200 North, Market Street, Talus Ridge Drive, 400 North, Pony Express Parkway, 400 South, 800 South, Grandview Boulevard, Lariat Boulevard, Stillwater Drive, Village Parkway, Harbor Park Way, and 4400 South.

2.1.2 Freeway

The Freeway concept is a grade separated six-lane facility with three travel-lanes per direction, similar to Legacy Parkway. For the facility type analysis, this concept included interchanges at the following cross streets: SR-73, Pony Express Parkway, 800 South, Grandview Boulevard, Stillwater Drive, and Harbor Park Way. The following cross streets were assumed to cross the corridor with no access to the corridor: 1200 North, Market Street, Talus Ridge Drive, 400 North, 400 South, Lariat Boulevard, Village Parkway, 4800 South. The existing Foothill Boulevard was modeled as a parallel collector from 1200 North to 400 North with no access to SR-73 and Pony Express Parkway. The freeway concept was assumed to have a speed limit of 70 mph.



Note: Access to expressway / freeway allowed only at indicated cross streets. All other access restricted.

Figure 3. Facility Types

2.2 Sensitivity Testing

With a 2050 horizon year, land use projections for the region and associated roadway projects are highly speculative. As such, three scenarios dealing with land use and transportation network possibilities were tested to determine possible impacts to Foothill Boulevard: a bridge across Utah Lake, high growth in the Goshen Valley, and Pioneer Crossing as a freeway from I-15 to Foothill Boulevard. To be conservative by being on the higher end of volumes, the Freeway concept was used as a base for these sensitivity tests.

2.2.1 Utah Lake Bridge

On March 25, 2010, an application was submitted to the Utah Division of Forestry, Fire and State Lands proposing a 5.8-mile bridge across Utah Lake between Pelican Point in Saratoga Springs and Orem 800 North in Vineyard.¹ Since that time, no additional information has come forth regarding additional planning or engineering for the bridge. Since that time the Utah Lake Bridge has been included in the MAG RTP as a vision project, which is a category for projects that may be built sometime beyond the horizon year of the RTP. As the population continues to grow in Utah County, there is an increased emphasis in the region on building out a robust roadway grid of freeways, arterials, and collectors to provide better transportation system connectivity and choice. Because of the barrier that Utah Lake is to the transportation system, a bridge across it would provide a valuable link in the grid network.

If the Utah Lake Bridge were constructed, it would be a route to the Provo/Orem area that would draw traffic off the Pioneer Crossing corridor, bringing more volume onto Foothill Boulevard. The additional volume could influence the facility choice for Foothill Boulevard. For this study, two causeway scenarios were tested, one with an eastern terminus on I-15 around 800 North in Orem, which is what was previously proposed, and the other with an eastern terminus on I-15 around 1800 North in Provo, which is what is shown in the RTP (see **Figure 4**).

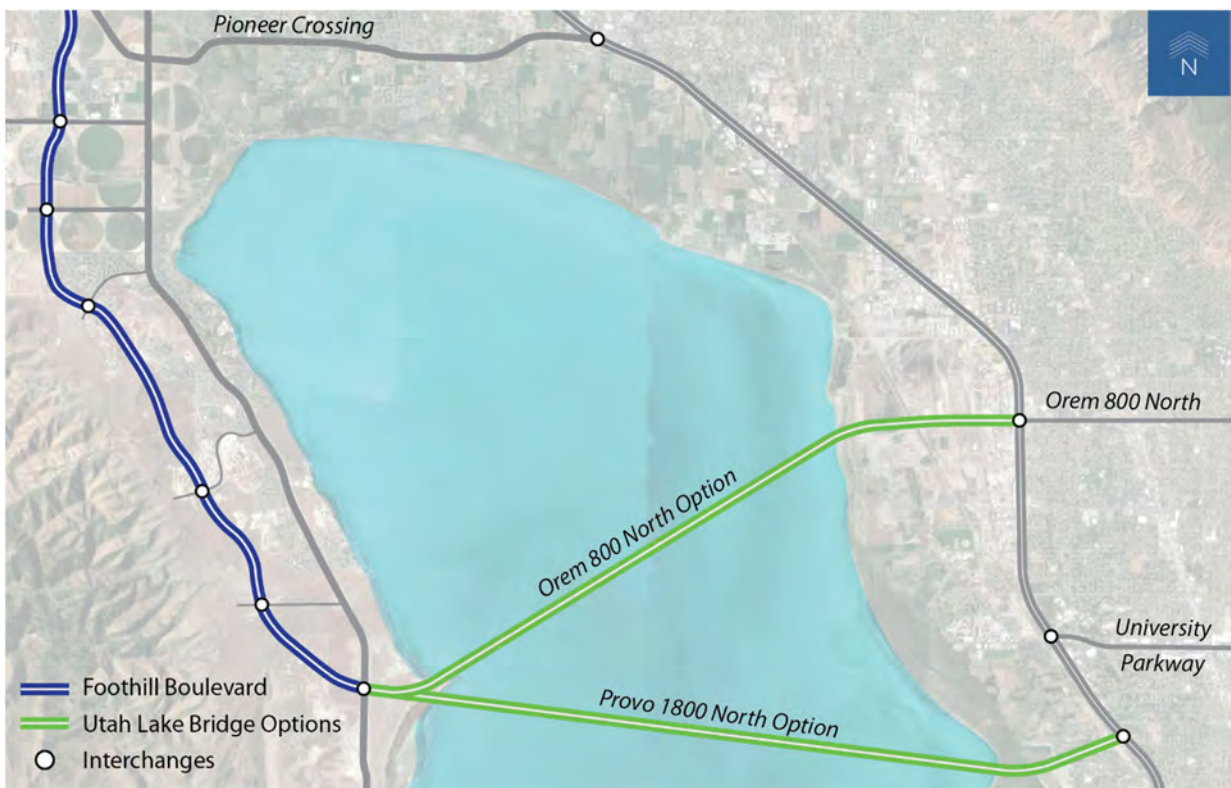


Figure 4. Utah Lake Bridge Options

2.2.2 Goshen Valley High Growth

South of the study area, Redwood Road continues into the Goshen Valley where the current rural communities of Elberta and Goshen are located. In other studies MAG has looked at high growth scenarios in the Goshen Valley. For this study, a high growth sensitivity test was performed where 150,000 residents would be living in

¹ http://utahcrossing.com/uploads/Utah_Crossing_Lease_Application_Received.pdf

the Goshen Valley by 2050. It was assumed that additional jobs in the area would be similar to the residential/employment mix in 2050 for Eagle Mountain. Foothill Boulevard would be an attractive corridor for residents in Goshen Valley who would travel to Salt Lake County via the Mountain View Corridor.

2.2.3 Pioneer Crossing Freeway

The traffic volume demand on Pioneer Crossing are such that by 2050, Pioneer Crossing is serving volumes well in excess of what an expressway facility would be able to handle. Pioneer Crossing as a freeway facility is a concept that is likely to be considered in the next RTP. The logical western terminus of Pioneer Crossing as a freeway would be Foothill Boulevard. This sensitivity test measures the additional traffic on Foothill Boulevard that would result from a direct connection to a potential Pioneer Crossing freeway.

2.3 Evaluation Criteria

The Expressway and Freeway concepts, including sensitivity tests, were evaluated based on the following traffic volumes and traffic congestion. This section describes each of these evaluation criteria. The application and results of these evaluation categories are presented in subsequent sections.

2.3.1 Traffic Volumes

Traffic volume was the primary metric used to select the appropriate facility concept for the new roadway. The travel demand model follows the process described in Section 1.2.1 to estimate the demand volume for individual roadway segments. Volumes are summarized as Average Weekday Daily Traffic (AWDT) for individual roadway segments. For the purposes of this study, roadway volumes were calculated between arterials, collectors, and local collectors as shown in the Saratoga Springs 2017 Transportation Master Plan.

Traffic volumes for Foothill Boulevard will be compared to 2015 daily volumes for expressways and freeways along the Wasatch Front to see what facility type is appropriate given the expected volume of Foothill Boulevard. Along the length of Bangerter Highway (SR-154) volumes by segment range from 14,000 to 60,000 vehicles per day. Along Pioneer Crossing volumes by segment range from 21,000 to 32,000 vehicles per day. For freeways, I-15 daily volumes by segment range from 59,000 to 260,000 vehicles per day, I-215 volumes by segment range from 28,000 to 117,000 per day, and Legacy Parkway volumes by segment range between 21,000 to 23,000 vehicles per day.

2.3.2 Traffic Congestion

Volume-to-capacity (v/c) ratio was used to evaluate the concepts and identify a recommended improvement concept. The v/c ratio measures a roadway’s ability to accommodate vehicular traffic. Traffic volumes and roadway capacities are needed to calculate v/c ratios.

Lane capacity varies by facility. Expressway capacity is generally between 900 and 1,100 vehicles per hour per lane, while freeway capacity is generally between 1,700 and 2,100 vehicles per hour per lane. Capacity is also affected by the number of lanes on a roadway. As more lanes are added to a roadway, the capacity per lane drops. Traffic capacity for various roadway types and number of lanes are coded into the travel demand model.

By dividing the volume estimates by the associated roadway capacity, the travel demand model calculates a v/c ratio for each modeled roadway segment. When reporting v/c ratios in this study, the maximum v/c ratio between the AM and PM peak periods was used.

2.4 Evaluation Results

The results of the analysis in terms of traffic volumes and traffic congestion for Foothill Boulevard in 2050 are presented in this section.

2.4.1 Traffic Volumes

Daily volumes along Foothill Boulevard for the two facility concepts, as well as the sensitivity tests, were estimated using the TDM. The resulting traffic volumes for future year 2050 along Foothill Boulevard are shown in **Table 3**. Segments are divided at arterial, collectors, and local collectors along Foothill Boulevard. The Expressway concept included at-grade intersections at each cross street. The Freeway concept included interchanges at Pioneer Crossing, Pony Express Parkway, 800 South, Grandview Boulevard, Stillwater Drive, Harbor Park Way, and Redwood Road with grade separations at all other cross streets.

Table 3. 2050 Average Weekday Daily Traffic on Foothill Boulevard

Concept / Sensitivity Test	Foothill Boulevard Segment								
	Pioneer Xing to Market St	Market St to Pony Expwy	Pony Expwy to 800 South	800 South to Grandview	Grandview to Stillwater	Stillwater to Village Pkwy	Village Pkwy to Harbor Park	Harbor Park to 4400 South	4400 South to Redwood Rd
Expressway	69,000	69,000	73,000	53,000	56,000	38,000	31,000	28,000	21,000
Freeway	76,000	76,000	66,000	57,000	50,000	38,000	38,000	21,000	21,000
Sensitivity Tests on Freeway Concept									
Bridge - Orem 800 N	71,000	71,000	61,000	56,000	52,000	44,000	44,000	34,000	34,000
Bridge - Provo 1800 N	80,000	80,000	74,000	69,000	65,000	57,000	57,000	46,000	46,000
Pioneer Crossing Freeway	102,000	113,000	80,000	67,000	57,000	43,000	43,000	24,000	24,000
Goshen High Growth	100,000	100,000	93,000	85,000	78,000	67,000	67,000	50,000	50,000

Between the Expressway and Freeway concepts, the volumes on Foothill Boulevard are similar with the Freeway concept having about 10% more volume on the segments between Pioneer Crossing and Stillwater Drive. For both concepts, the highest volumes are more than 70,000 daily vehicles. As a matter of comparison, Bangerter Highway in its current expressway configuration experiences around 60,000 vehicles per day in some segments. Currently intersections along Bangerter Highway are being converted into interchanges to handle this much demand. As the Foothill Boulevard continues south, volumes drop consistently at each cross street to about 20,000 at Redwood Road.

For the Utah Lake Bridge-Orem 800 North scenario, volumes decrease slightly at the northern end of the corridor and increase on the southern end. The Utah Lake Bridge-Provo 1800 North scenario shows increases along the entire length of the corridor, demonstrating that there are more through trips using Foothill Boulevard than in the Orem scenario. This is because the Orem-800 North scenario has some out of direction travel by having vehicles in Saratoga Springs head south to the bridge and then head back north for three miles to 800 North. Drivers don't like out of direction travel and thus fewer of them would use the Utah Lake bridge if it goes to Orem 800 North.

For both the Pioneer Crossing Freeway and the Goshen High Growth sensitivity tests, volumes at the northern end dramatically increase to around 100,000 vehicles per day.

While volumes at the southern end of Foothill Boulevard are still low in 2050 for the Expressway and Freeway concepts, the sensitivity test show the potential for some higher volumes. In both bridge tests and the Goshen High Growth test, volumes at the southern end of Foothill Boulevard increase significantly to between 34,000 and 50,000 vehicles per day, with the highest volume resulting from the Goshen High Growth test.

The magnitude of volumes along Foothill Boulevard indicate the Freeway concept is the more appropriate facility type for planning Foothill Boulevard to accommodate 2050 traffic demands and to preserve maximum flexibility in the future.

2.4.2 Traffic Congestion

Peak hour congestion by segment for Foothill Boulevard was determined using v/c ratios as discussed in **Section 2.3.2**. The resulting peak hour congestion levels are shown in **Figure 5**. For the Expressway concept, Foothill Boulevard is heavily congested between SR-73 and Stillwater Drive and approaching congested conditions between Stillwater Drive and Harbor Park Way. In the Freeway concept, congestion levels are lower with congested conditions between SR-73 and the interchange just south of Pony Expressway and approaching congested conditions to Grandview Boulevard. South of Grandview Boulevard, traffic in the Freeway concept has minimal delay.

In comparing the concept by traffic congestion, the Freeway concept has lower congestion in 2050. More than half the corridor in the Expressway concept has heavily congested conditions, when there are no levels of heavy congestion in the Freeway concept. The study team didn't think that an eight-lane expressway would be a reasonable mitigation to the heavy congestion.

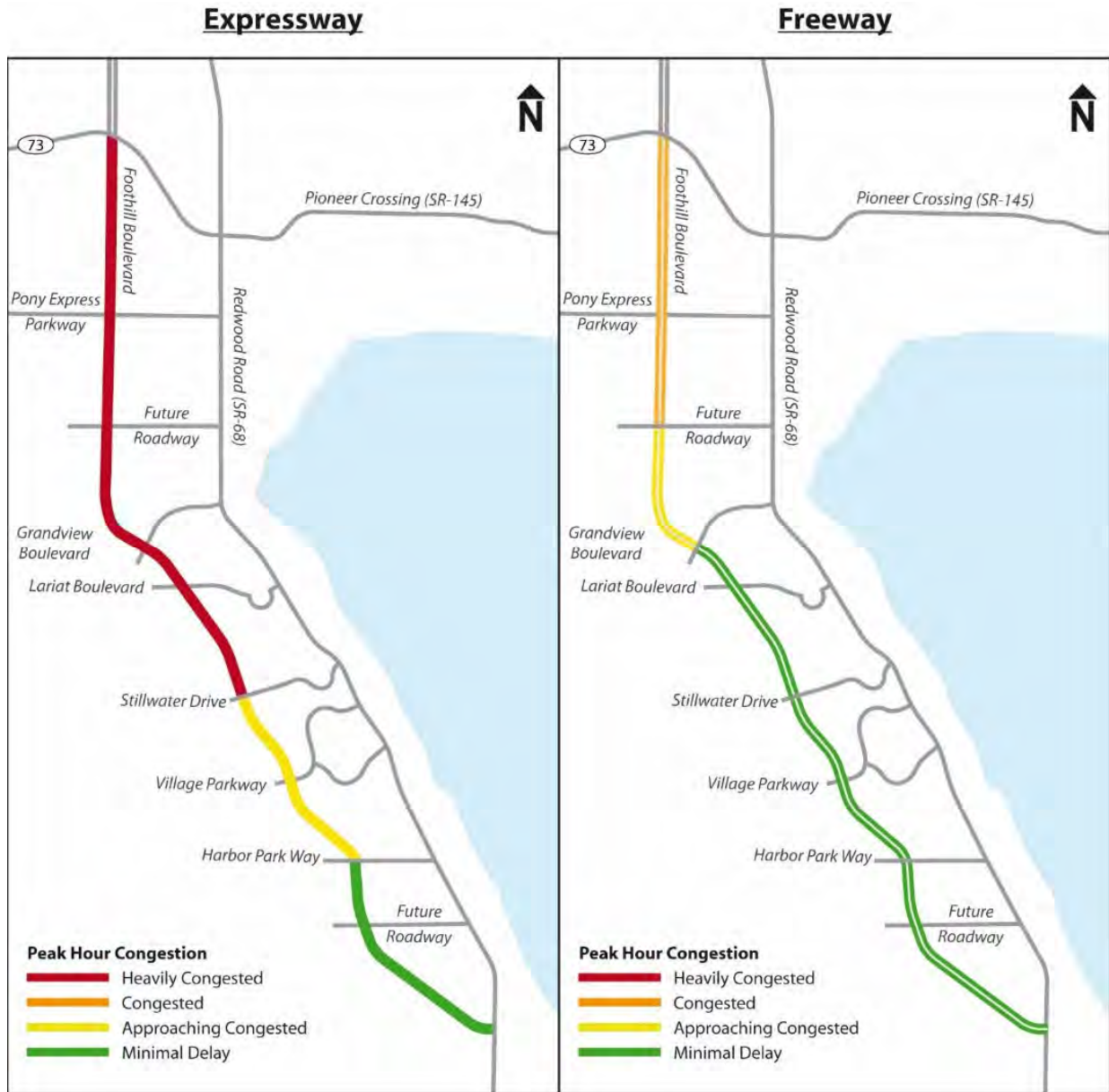


Figure 5. Foothill Boulevard Corridor 2050 Peak Hour Congestion

2.4.3 Facility Type Recommendation

The evaluation shows that the anticipated Foothill Boulevard corridor volumes, particularly at the north end, are consistent with freeway facilities and that a freeway would operate more efficiently than an expressway. The sensitivity tests show that a Utah Lake Bridge or high growth in the Goshen Valley would result in freeway type volumes at the south end of the corridor. As such, the study recommends that the Foothill Boulevard corridor be planned as a freeway facility to accommodate expected 2050 demands and to provide maximum corridor flexibility for the future.

As described in Section 4 - Phased Implementation, it is expected that the corridor will not initially be built as a freeway, but rather that a phased approach will be used to initially build the corridor as an expressway that would be converted to a freeway when warranted by traffic demand.



3 CONCEPT DEVELOPMENT

Once the determination was made that the Foothill Boulevard corridor should be planned as a freeway facility, the study moved on to development of the freeway concept to determine the corridor alignment, if frontage roads should be included, the roadway cross-sections, corridor right-of-way widths, interchange locations and layouts, and identification of major utilities in or near the corridor.

3.1 Horizontal and Vertical Alignments

The initial horizontal alignment built upon previous work done by Saratoga Springs to identify a corridor alignment between Pony Express Parkway and Redwood Road. However, that work did not envision the corridor as a freeway and thus applied different engineering criteria. The alignment had to be updated in light of the recommendation that the corridor be planned as a freeway. One of the key assumptions used in trying to minimize deviation from the previous alignment while still having a 70-mph design speed is that horizontal curve superelevations of up to 6% would be utilized. Key areas of alignment refinement included portions adjacent to Sunrise Meadows (between SR-73 and Talus Ridge Drive) and The Benches (near Grandview Boulevard).

Two main options were considered for the corridor between SR-73 and Talus Ridge Drive. The first option curved the alignment east away from the subdivision as much as possible without affecting the canal and realizing that the endpoints at SR-73 and Talus Ridge Drive could not be moved. The result was an alignment that on average was a little over 200 feet from the subdivision with a maximum offset of nearly 400 feet just north of Rattler Road. The second option kept the alignment straight with an offset of 100 feet from the subdivision to provide a buffer that would also be used to minimize utility impacts and to access the parking for Sunrise Meadows Park.

The study recommends the straight alignment as the preferred concept. Realizing that there would likely be noise and visual impact concerns from residents in the Sunrise Meadows neighborhood, the study team evaluated the feasibility of depressing the freeway adjacent to the neighborhood. A freeway approximately 25 feet below the ground would mitigate both noise and visual impacts. One of the challenges associated with a depressed freeway is utilities. However, discussions with the owners of major utilities in the corridor did not raise any fatal flaws with the concept, as such it was deemed feasible and is included as part of the proposed corridor concept, which would have the freeway crossing over SR-73 and Pony Express Parkway and crossing under Rattler Road, Buffalo Drive/Market Street, Talus Ridge Drive, and 400 North.

Just south of Pony Express Parkway, the corridor was curved approximately 1,200 feet to the west for about a mile in accordance with the desires of the LDS Church who owns the land. As the corridor exit the church's land is curves back to the east to Grandview Boulevard. Shifting the alignment west minimize impacts to The Benches neighborhood, which was another area of concern. While the city already owns right-of-way designated for the corridor immediately adjacent to The Benches, they are supportive of shifting the corridor away from that right-of-way, which they will likely trade or sell.

Other adjustments were made to minimize impacts to large parcels and to avoid future utility impacts. Appendix A contains detailed figures showing the proposed corridor alignment, cross-section, and associated right-of-way, while Appendix B contains a vertical profile figures for the corridor, which were developed using existing terrain data obtained from the Utah Automated Geographic Reference Center.

3.2 Frontage Roads

One-way freeway frontage road systems are becoming a common approach in Utah to providing freeway access. One of the main benefits is that they provide freeway access to multiple streets instead of focusing that

access on just a few roads, while providing flexibility on where the actual freeway ramps are located. Frontage roads are also a good way to maintain local circulation in developed areas where a new freeway will be built. Frontage road systems have one-way at-grade streets running parallel to the freeway with occasional ramps between the frontage road and the freeway. This allows vehicles to enter the frontage road at any location knowing that there will be freeway access point ahead. Existing or planned frontage road systems include:

- I-15 between SR-92 and Lehi 2100 North (construction began in 2018)
- Mountain View Corridor between Old Bingham Highway and Porter Rockwell Boulevard and between Redwood Road and SR-73 (frontage road built or being built in advance of the planned freeway)
- Lehi 2100 North between I-15 and Redwood Road (frontage road built in advance of the planned freeway)
- SR-73 from Mountain View Corridor to Six Mile Cutoff Road (planned)

An analysis was performed considered two potential reasons why one-way frontage roads could be recommended for the Foothill Boulevard corridor: (1) providing regional traffic benefits by reducing traffic on arterial streets, namely Redwood Road and (2) providing local circulation and access benefits.

3.2.1 Regional Traffic

To determine the traffic need for frontage roads between SR-73 and Pony Express Parkway, traffic volumes were compared between scenarios with and without frontage roads. The thought was that adding frontage roads would decrease volumes on Redwood Road by providing a more direct alternative route to access the freeway for those traveling to or from Pioneer Crossing east of Redwood Road. However, this did not prove to be the case.

With Foothill Boulevard as a traditional freeway, the only way to get from Pioneer Crossing to Foothill Boulevard would be via interchanges at SR-73 or Pony Express Parkway. It was expected that a frontage road system with ramps at Market Street would remove most of the out of direction travel for this movement and thus draw a significant amount of traffic off Redwood Road. However, the analysis shows that frontage roads do not remove enough traffic from Redwood Road to substantially affect traffic operations. Only 3,500 vehicles per day in 2050 are removed when frontage roads are included. Frontage roads do put an additional 5,300 vehicles per day on Foothill Boulevard south of Pony Express Parkway, which suggests that traffic is being drawn from more than just Redwood Road. Nevertheless, these numbers aren't compelling enough to justify frontage due to regional traffic benefits

3.2.2 Local Circulation and Access

With frontage roads major streets would have full access to the frontage roads and the freeway, while minor streets would have right-in/right-out access that would require U-turns at major intersections for vehicles desiring to turn left. With standard interchanges, major streets would cross the freeway while minor streets would be closed at the freeway. The study assumed that major streets would be Rattler Road, Buffalo Drive/Market Street, Talus Ridge Drive, and 400 North. Minor streets were assumed to be 1200 North, Marie Way, and Fairfield Road.

Though frontage roads are of limited benefit from a traffic standpoint, they are desirable to improve access to adjacent property and the surrounding roadway network. Without frontage roads, there would not be another north-south road in the Foothill Boulevard area between SR-73 and Pony Express Parkway to provide local access. The existing Foothill Boulevard could remain as two-way freeway frontage road, but it would not provide access to either SR-73 or Pony Express Parkway. (Interchanges at SR-73 and Pony Express Parkway would

prohibit nearby intersections for other roads.) This means that traffic would have to use Mount Saratoga Boulevard, Pioneer Crossing, or Redwood Road to get access to the freeway.

One notable example of how study area access would be substantially modified without frontage roads is Thunder Ridge Elementary School located just east of Foothill Boulevard with access via Marie Way. Without frontage roads, there would no longer be a connection between Pony Express Parkway and Marie Way. Vehicles heading for the school would have to access Marie Way via 400 North and travel through a residential neighborhood to get to the school, which would essentially be at the end of a cul-de-sac. However, in the freeway frontage roads scenario, vehicles on Pony Express Parkway could turn onto the frontage road, which would intersect Marie Way, thus keeping access similar to its current configuration. Vehicles exiting the school would turn right onto the frontage road and then make a U-turn at 400 North.

Another access benefit is that they may provide more flexibility in locating freeway ramps. In the past, the idea of an interchange at the future Market Street intersection (which is assumed to line up with the existing Buffalo Drive) has been suggested. Unfortunately, that location is about 0.8 miles from both SR-73 and Pony Express Parkway, which is less than the minimum recommended interchange spacing of 1.0 mile, making an interchange difficult and unlikely. However, with frontage roads it may be possible to stagger the ramps along the length of the frontage road to get the appropriate ramp spacing while providing additional ramps to and from the north near the future Market Street. Additional freeway ramps would benefit nearby property owners by giving them better freeway access.

Based on this criterion, the study recommends a one-way frontage road system between SR-73 and Pony Express Parkway.

3.2.3 Frontage Road Limits

The analysis considered extending the frontage roads farther to south of Pony Express Parkway to Grandview Boulevard. Just like the northern segment, the analysis showed that frontage roads down to Grandview Boulevard would also not serve a regional traffic. Given that there is currently no roadway system around this segment of the corridor, there is also no current benefit to local circulation. However, as the property develops frontage roads could play an important role in future circulation and corridor access. Because there is no regional traffic or local circulation benefit to frontage roads between Pony Express Parkway and Grandview Boulevard, a decision on extending frontage roads south would likely be the result of negotiations between the benefitted property owners, Saratoga Springs, and UDOT that would likely involve some type of property dedication for the corridor. The LDS Church, which owns most of the land for this segment of the corridor has expressed some interest in frontage roads through their property. As such, the detailed corridor figures shown in Appendix A show frontage roads down to Grandview Boulevard.

3.3 Cross Sections

Foothill Boulevard cross-sections were developed for a traditional freeway with interchanges and a freeway with frontage roads. The typical freeway cross-section is 320 feet wide, while the freeway with frontage roads cross-section is 410 feet wide. The detailed cross-sections are shown in *Error! Reference source not found.* At interchanges, the right-of-way width increases to approximately 525 feet to account for the ramps and terminal intersections. Both cross-sections include the following:

- Three through lanes one auxiliary lane per direction
- A four-foot buffer in each direction in case high occupancy vehicle (HOV) lanes are ever considered for the corridor



- 10-foot inside and 12-foot outside shoulders
- An open 30-foot median
- 50 feet on either side for side slopes
- Park strips of various widths
- 10-foot multi-use trail for bicycles and pedestrians on one side of the corridor

Additionally, the cross-sections for the frontage road sections include the following for two one-way roads on each side of the freeway:

- Two 12-foot travel lanes
- 4-foot inside and 8-foot outside shoulders
- 2.5-foot outside curb and gutter
- 12 feet on the inside for side slopes
- A 6' sidewalk on the opposite side of the multi-use trail

The traffic volume forecasts suggest that three through lanes per direction would be needed north of Grandview Boulevard and that two lanes per direction would be needed south of Grandview Boulevard. While the lane requirements are less south of Grandview, it is recommended that right-of-way width still be 320 feet to allow more room to accommodate the terrain challenges associated with constructing a freeway on the foothills of Lake Mountain. Narrowing the right-of-way width increases the likelihood of retaining walls or other expensive methods to get the roadway to fit within the challenging topography.

3.4 Interchanges

This section contains a description of how interchange locations were determined and typical layouts for the interchanges.

3.4.1 Location Determination

There are at least fifteen arterials and collectors that are might intersect the Foothill Boulevard corridor as shown in *Error! Reference source not found.*. These were all considered as potential locations for interchanges. Ultimately, interchange location was determined by which cross streets were appropriately designed to handle the additional traffic while still maintaining appropriate interchange spacing.

Figure 6. Foothill Boulevard Cross Sections

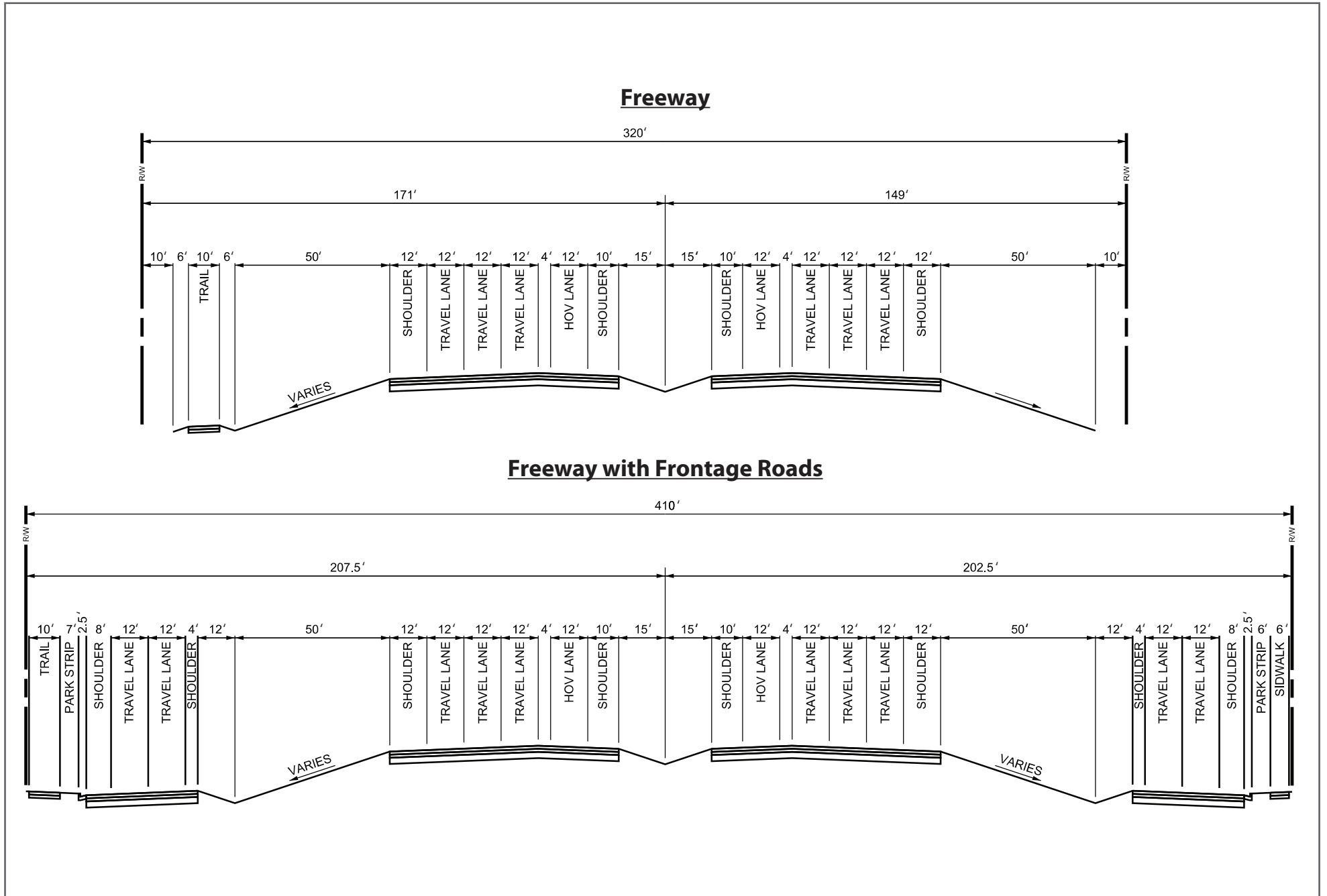


Table 4. Arterial and Collector Cross Streets along Foothill Boulevard

Cross Street	Roadway Classification	Distance (mi) from previous Cross Street
SR-73 (northern terminus)	Principal Arterial	--
Buffalo Drive / Market Street (future)	Local / Collector	0.8
Talus Ridge Drive	Collector	0.2
400 North	Collector	0.2
Pony Express Parkway	Major Arterial	0.3
400 South (future)	Minor Arterial	0.5
800 South (future)	Minor Arterial	0.5
1000 South (future)	Collector	0.3
Grandview Boulevard	Collector	1.0
Lariat Boulevard	Local Collector	0.6
Stillwater Drive	Local Collector	1.2
Village Parkway	Collector	0.9
Harbor Park Way	Local Collector	1.0
4800 South (future)	Collector	0.5
Redwood Road (southern terminus)	Major Arterial	1.6

Given the number of arterial and collector roads planned north of Grandview Boulevard, there is a high potential for interchanges in this the area. Interchanges can safely be assumed for the two principal and major arterials: SR-73 / Pioneer Crossing and Pony Express Parkway. As mentioned in the frontage roads section, having frontage roads may allow for additional freeway ramps between SR-73 and Pony Express Parkway.

Two minor arterials are planned at 400 South and 800 South. Interchange spacing precludes 400 South from consideration given its proximity of one-half mile to Pony Express Parkway. 800 South was selected as the potential interchange location since it is one mile south of Pony Express Parkway, which is the typically the minimum spacing recommended for freeway crossings. The 800 South interchange would be the connection point for the potential Hidden Valley Parkway that would be another road connecting Saratoga Springs and Eagle Mountain. The analysis presented in this report does not include the Hidden Valley Parkway because it is not included in the current RTP, although it is still shown in the Saratoga Springs Transportation Master Plan.

South of 800 South, there are no planned arterials until the southern terminus at Redwood Road. Vehicular demand for an interchange at any single collector in this area is not high. Stillwater Drive and Harbor Parkway were considered good locations for interchanges based on spacing, but these roads are not appropriate facility types for interchanges. As local collectors, these streets have driveway access to adjacent single-family homes causing safety and quality of life concerns due to increased traffic. To maintain appropriate interchange spacing, interchanges were located in the vicinity of these two roadways at approximately 2700 South, but without the connections to the local roadway network. The city will need to plan how the local street network will connect to these new interchanges.

Grandview Boulevard, 2700 South (future), Village Parkway, and 4200 South (future) were selected as interchange locations. It is worth mentioning that these four interchanges are very much expected to be

community interchanges. They will serve the needs of the immediate area rather than draw regional traffic from outside the study area. Future traffic volumes on each of the cross streets are not expected to exceed the normal range for a collector street of 8,000 to 12,000 vehicles per day, as such, no additional lanes should be needed on any of the collector cross streets.

For the Foothill Boulevard corridor to be successful, it is important that there be local street connectivity through the neighborhoods between Foothill Boulevard and Redwood Road, so that traffic using Foothill Boulevard does not need to Redwood Road to access an interchange. The idea of frontage roads along the entire length of the corridor was considered to address this connectivity, but the same condition can be created for much less money and fewer impacts by connecting neighborhoods as they are built.

Error! Reference source not found. shows the final interchange locations and the estimated 2050 daily volumes as generated by the TDM. Toward the northern end of the Foothill Boulevard corridor, interchange spacing is quite frequent at about 1-mile. Farther south, the interchange spacing increases to about 1.5 miles, which is appropriate for the planned development density of the area.

Table 5. Average 2050 Daily Interchange Traffic Volumes

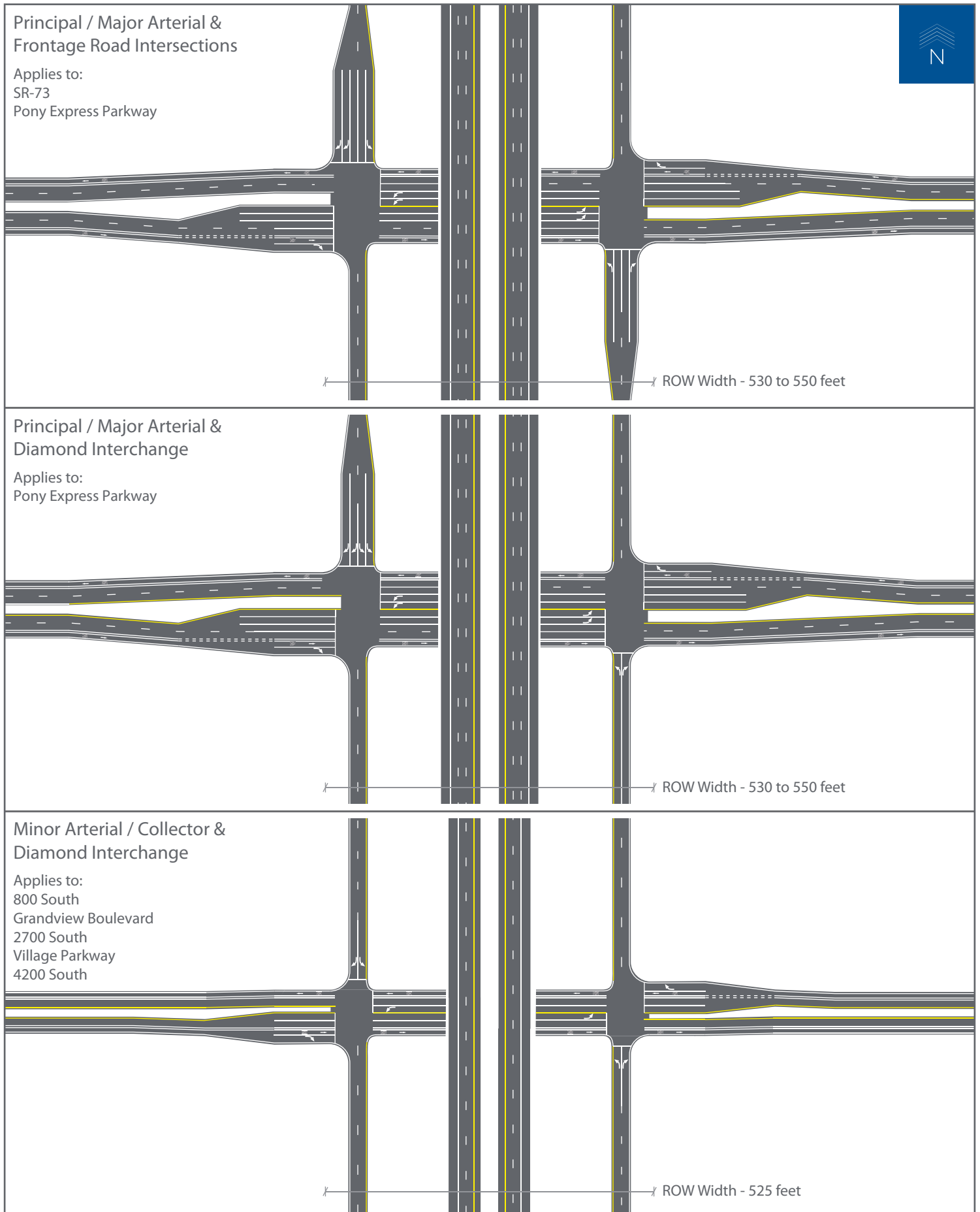
Interchange	Interchange Daily Volume	Distance (mi) from previous Interchange
SR-73 (northern terminus) ¹	13,000 - 14,000	--
Pony Express Parkway	17,000 - 22,000	1.6
Future Roadway (near 800 South)	18,000	1.0
Grandview Boulevard	7,900	1.3
Future Roadway (near 2700 South)	8,900	1.6
Village Parkway	20,000	1.0
Future Roadway (near 4200 South)	5,200	1.2
Redwood Road (southern terminus)	15,000	1.9

1. SR-73/Pioneer Crossing (northern terminus) daily interchange volumes are only for the ramps to/from the south.

3.4.2 Typical Interchange Layouts

Typical layouts were developed for the interchanges along Foothill Boulevard. Two layouts were prepared for frontage road intersections: one for principal / major arterial cross streets and one for a minor arterial / collector cross streets. Another layout was prepared for a standard diamond interchange at minor arterial / collector cross street intersections. In each of these configurations, the right-of-way width of the Foothill Boulevard corridor flares out to about 525 feet to provide adequate space for the interchange ramps. The cross-street configuration is based on the standard Saratoga Springs typical sections for their respective roadway function types, but with additional lanes to accommodate turning movements. The typical sections for arterials and collectors have large amounts of park strip width that could be utilized for these turn pockets reducing or eliminating the need for additional right-of-way on the cross street. **Figure 7** shows a plan view of these three typical interchange configurations.

Figure 7. Typical Interchange Layouts



3.5 Utility Issues

As with any major roadway project, there will be numerous utility issues to be addressed. Four of the most important were identified during the study and are discussed in this section. They are: the Central Utah Water Conservancy District (CUWCD) aqueduct, the Utah Lake Distributing Canal, a 54-inch storm drain line, and an 8-inch high-pressure gas line. Portions of each of first three utilities will likely need to be relocated, while alignment shifts may have eliminated the need to relocate the gas line.

3.5.1 CUWCD Aqueduct

The aqueducts and the canal affect the alignment of Foothill Boulevard between SR-73 and Pony Express Parkway. A 60-inch aqueduct runs along the west side of Foothill Boulevard (800 West) between SR-73 and approximately 600 North where it turns to the east and crosses the road and continues east to Pioneer Crossing. A 48-inch aqueduct branches off this line and runs south along the east side of Foothill Boulevard to a pump station and turnout valve located on the northeast quadrant of the intersection of Foothill Boulevard and Pony Express Parkway. It is estimated that 500 feet of 60" aqueduct will need to be relocated where it crosses the corridor at 600 North and about 2,000 feet of the 48" aqueduct from about 600 North to 300 North. An important consideration when relocating the aqueduct or nearby corridor construction will be limiting aqueduct settlement to less than one inch. It is likely that 500 to 600 feet of the 48" aqueduct will need to be located under the northbound frontage road, where it run closest to the Utah Lake Distributing Canal.

3.5.2 Utah Lake Distributing Canal

The Utah Lake Distributing Canal runs north-south through Saratoga Springs and is adjacent to the corridor from about 800 North to Pony Express Parkway. There is a bit of "knuckle" in the canal where it juts out to the west to within 50 feet of the existing Foothill Boulevard roadway. To minimize impacts to adjacent property, it is likely that 300 to 400 feet of the canal will need to be piped and shifted east by 30 to 40 feet.

3.5.3 Storm Drain

The City of Saratoga Springs has a storm drain line that comes down the existing Foothill Boulevard corridor. North of Talus Ridge Drive the line has a 24-inch diameter. Just south of there the line becomes 42 inches when it intersects a line coming from a detention basin. Midway to 400 North, the line increases in diameter again to 48 inches. The line then turns onto 400 North where the line increases to 54 inches. Portions of the 24, 42, and 48-inch lines and the 54-inch crossing would need to be relocated. The crossing is approximately 10 feet deep and would be a challenge to the depressed freeway concept, since the freeway would need to cross under the 54-inch pipe. It is estimate that approximately 1,500 feet of storm drain line would need to be relocated.

3.5.4 High Pressure Gas Line

There is an 8-inch high-pressure gas line that runs north-south along the existing Foothill Boulevard corridor from SR-73 to the 1200 South coordinate. For the straight option, the proposed alignment for the corridor would likely require relocation of the line in the pinch point area of Talus Ridge Drive and 400 North.

4 PHASED IMPLEMENTATION

Because the costs to construct a new freeway facility are high compared to the availability of transportation funding, this study considered opportunities for implementing the Foothill Boulevard in phases over time. A phased implementation approach would allow capacity to be added in the near term while allowing future expansions with minimal "waste" (or tear-out). The idea is to initially build the corridor as an expressway facility by constructing the outside lanes of the freeway and ramps at cross streets where there are planned

interchanges, just like the Mountain View Corridor north of Old Bingham Highway in Salt Lake County. This is referred to in this report as Phase 1. As traffic demands increase over time, grade separation at interchange locations would comprise Phase 2.

Part of the Phase 1 concept would be for the city to build a two-lane connector between on the east side of the corridor between Lariat Boulevard and Grandview Boulevard. Assuming that an initial phase of the Foothill Boulevard corridor would be to Grandview Boulevard, this would provide Foothill Boulevard access to the Jacobs Ranch subdivision. When the Foothill Boulevard corridor is extended south of Grandview Boulevard, the Lariat Boulevard connection would be revised to connect to Landview Drive and become a frontage road to the corridor providing connectivity between subdivisions.

To determine when Phase 1 of Foothill Boulevard would be needed, a congestion analysis was performed for Redwood Road without Foothill Boulevard for each interim year of the RTP, which includes the Redwood Road widening that begins in 2017. For this analysis, it also was assumed that Redwood Road would be widened to three travel lanes in each direction between Pioneer Crossing and Pony Express Parkway, which is not part of the RTP, but consistently shows up as congested in the future without widening (with the exception of the Pioneer Crossing Freeway sensitivity test described in Section 2.2.3).

The appendix contains the detailed results of the analysis as a gradient of color bands showing the approximate congestion levels over time. The segment of Redwood Road from Pioneer Crossing to Pony Express Parkway is expected to become congested between 2020 and 2025 and severely congested around 2030. The segment from Pony Express Parkway to Grandview Boulevard is also anticipated to become congested between 2020 and 2025 and to become severely congested between 2020 and 2025. The Grandview Boulevard to Village Parkway segment becomes congested between 2025 and 2030, and then severely congested conditions 2035. The southernmost segment lags its northern neighbor by about 5 years.

These results suggest that the need for the Foothill Boulevard corridor at the north end of the study area could be as early as 2025. A subsequent analysis was performed to determine when Phase 2 would be required (i.e. when would the corridor need to be converted to a freeway facility). The analysis was performed in the same manner as for Phase 1, but with the assumption that the Foothill Boulevard corridor would be built in its Phase 1 configuration. Congestion on Redwood Road was reviewed along with congestion on the corridor itself. Again, the appendix contains the detailed results of the analysis.

The first Redwood Road segment that is expected to fail is between Pony Express Parkway and Grandview Boulevard where heavily congested conditions are anticipated to occur around 2035, which is also about the same time that the Phase 1 Foothill Boulevard corridor would begin to be congested. This would suggest that Phase 1 of the Foothill Boulevard corridor has a life span of 10 to 15 years before a freeway would be needed. For the segment between Pioneer Crossing and Pony Express Parkway, Redwood Road is expected to become congested between 2035 and 2040. The southern segments (south of Grandview Boulevard) don't become congested until between 2040 and 2050, showing that the Phase 1 corridor would also have a life span of 10 to 15 years in this location.

Figure 8 graphically shows when the Phase 1 and Phase 2 roadways need to be built.

Phase 1 (Expressway)

Phase 2 (Freeway)



Figure 8. Foothill Boulevard Estimated Congested

5 CONCLUSION

UDOT and MAG, in close coordination with the City of Saratoga Springs, commissioned this study to aid in the advancement of the Foothill Boulevard corridor by determining what type of facility it should be, where access points should be, what the right-of-way width should be, when it should be built, and what alignment it should follow. The study has come to the following conclusions:

- **Facility Type** – Estimated 2050 traffic demands led to a determination that the Foothill Boulevard corridor should be planned as a freeway facility. At the north end of the corridor a freeway is needed to handle the expected traffic, while at the south end there is a desire to maintain long term flexibility by having a corridor that would accommodate additional growth or a bridge across Utah Lake. Consistent with other freeway type facilities being planned throughout the state, a parallel multi-use trail was also envisioned as part of the corridor.
- **Alignment** – A preferred alignment was identified that should be actively preserved. Between SR-73 and Talus Ridge Drive, a straight alignment offset 100 feet east of the neighborhood is recommended. Additionally, it is recommended that the freeway be depressed through that area to mitigate noise and visual impacts. Detailed figures of the horizontal and vertical alignments can be found in the appendices.
- **Frontage Roads** – A one-way parallel frontage road system is recommended for the corridor from SR-73 to Pony Express Parkway. The frontage roads could extend south to Grandview Boulevard if desired by the LDS Church who own most of the corridor in that area and if a deal can be worked out with Saratoga Springs and/or UDOT. Freeway access to the frontage road system would be via ramps between the freeway and the frontage roads.
- **Access Points** – As a planned freeway facility access to the corridor needs to be tightly controlled. Interchanges were identified at SR-73, Pony Express Parkway, 800 South (future road), Grandview Boulevard, 2700 South (future road), Village Parkway, 4200 South (future road), and Redwood Road. Most of these roads are identified in the Saratoga Springs Transportation Master Plan as arterial or collector streets, although some modification to the local roadway network to access an interchange. Additionally, it is important that there be local street connectivity through the neighborhoods between Foothill Boulevard and Redwood Road to make it easy for people to access an interchange,
- **Right-of-Way Width** – A desired right-of-way width of 320 feet was identified for the majority of the corridor. At proposed interchange locations, this width would flare out to about 525 feet to provide 1 room for the interchange ramps. The segments with parallel one-way frontage roads would have a desired right-of-way width of 410 feet.
- **Utilities** – Construction of the Foothill Boulevard corridor will likely require relocation of portions of the 60" and 48" CUWCD aqueduct, the Utah Lake Distributing Canal, a 54-inch storm drain line, and an 8" high pressure gas line.
- **Timing of Need** – Traffic analyses suggest that sections of Redwood Road at the north end of the corridor will be failing by 2025, which can be mitigated by construction of Phase 1 of the Foothill Boulevard corridor as an expressway with traffic signals at future interchange locations. Following the model of the MVC, these intersections would be converted to interchanges when the needed arises, which is expected to be 10 to 15 years after initial construction.

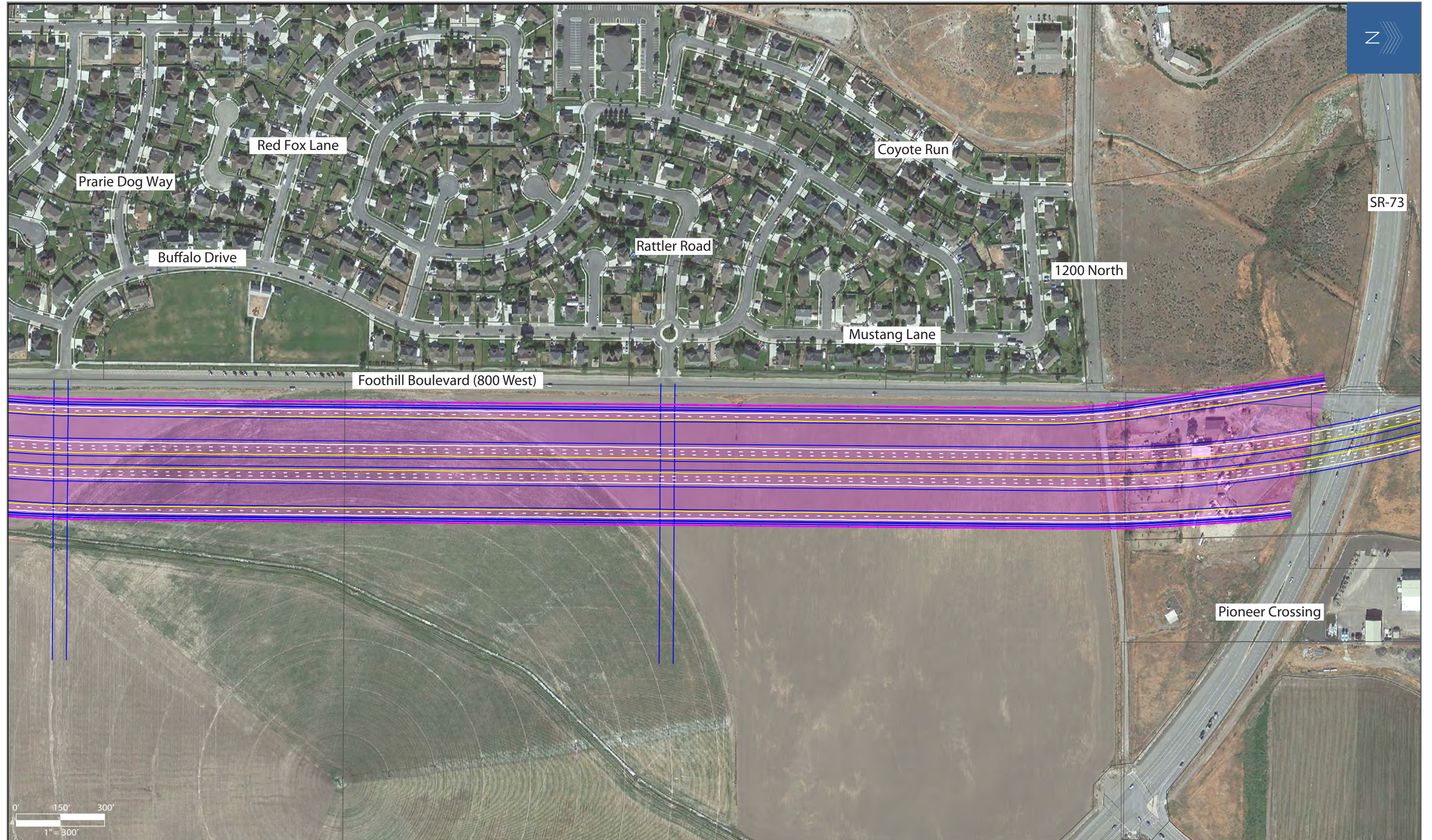
It is recommended that the Foothill Boulevard corridor proceed as quickly as possible to an environmental study where the alignment can be refined with the benefit of public input that was beyond the scope of this study.

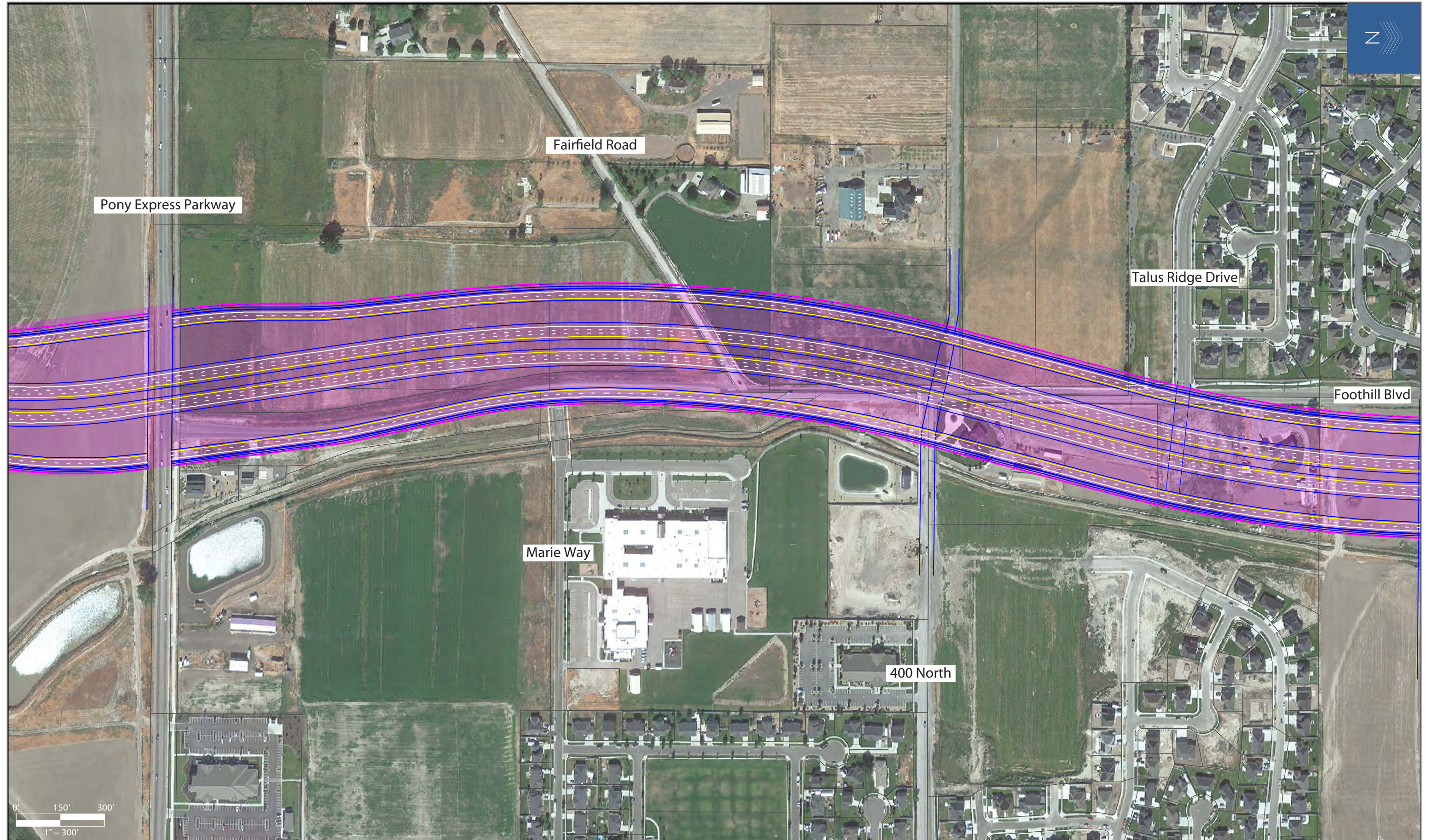


APPENDIX A

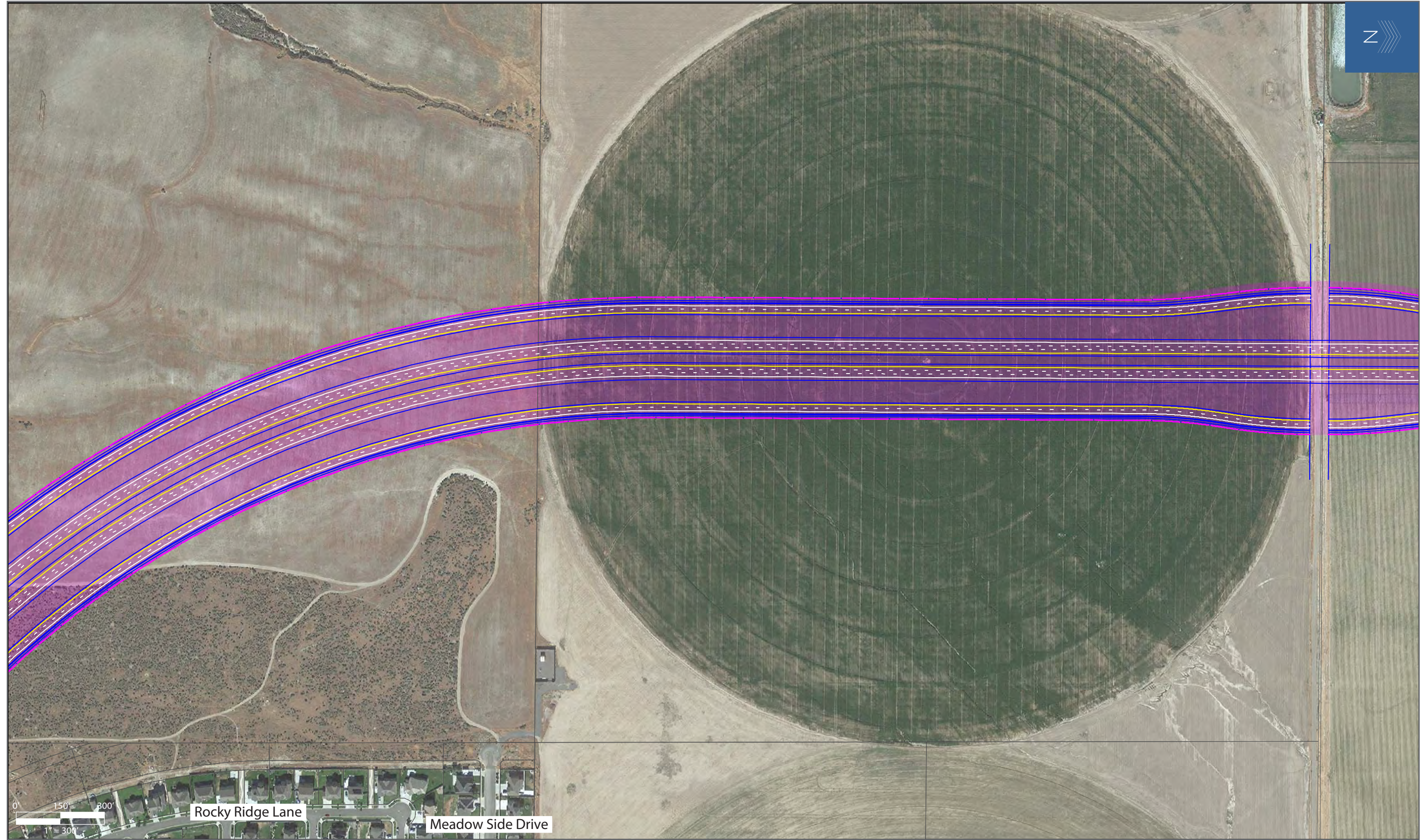
FOOTHILL BOULEVARD PLAN SHEETS

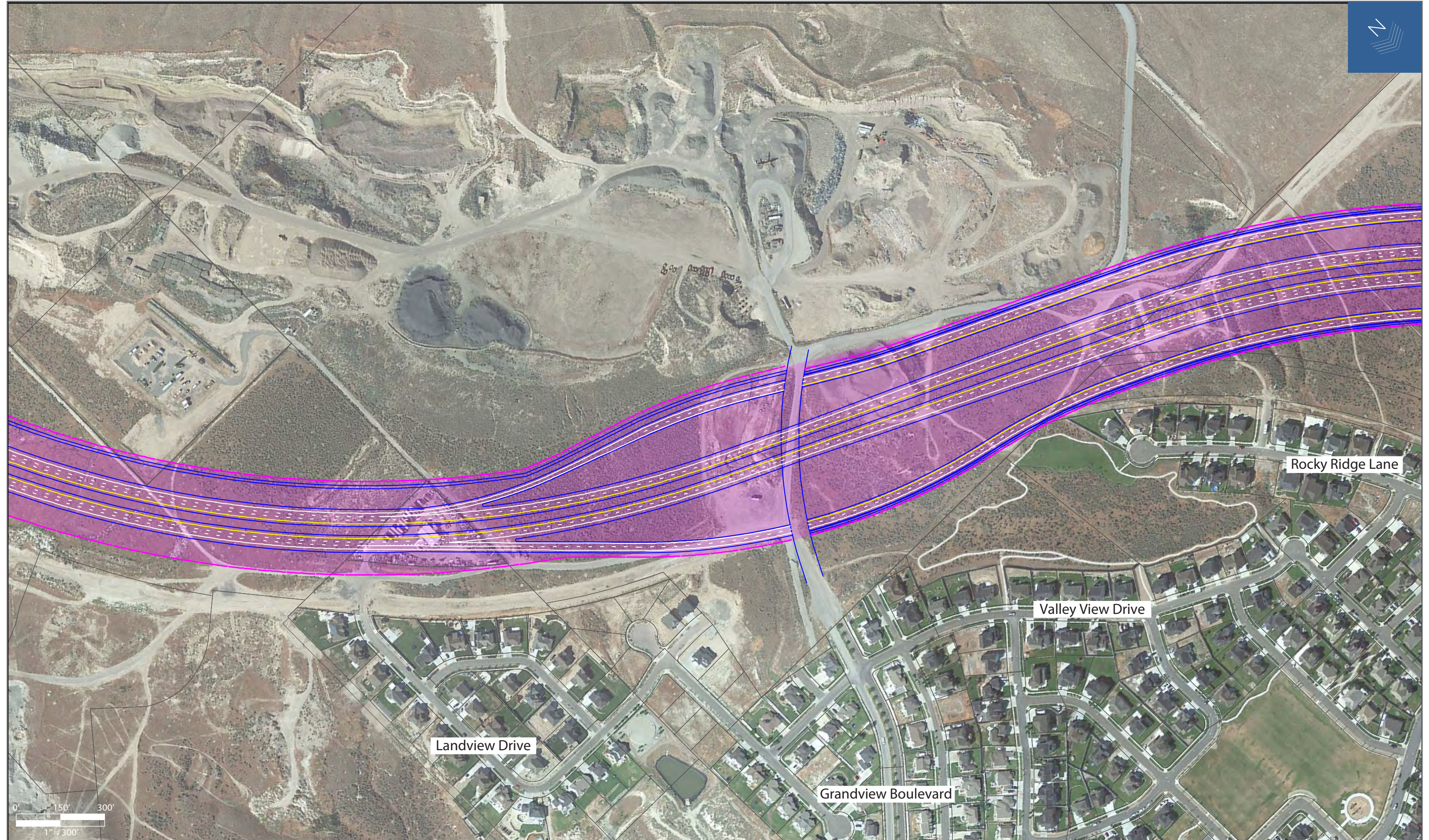


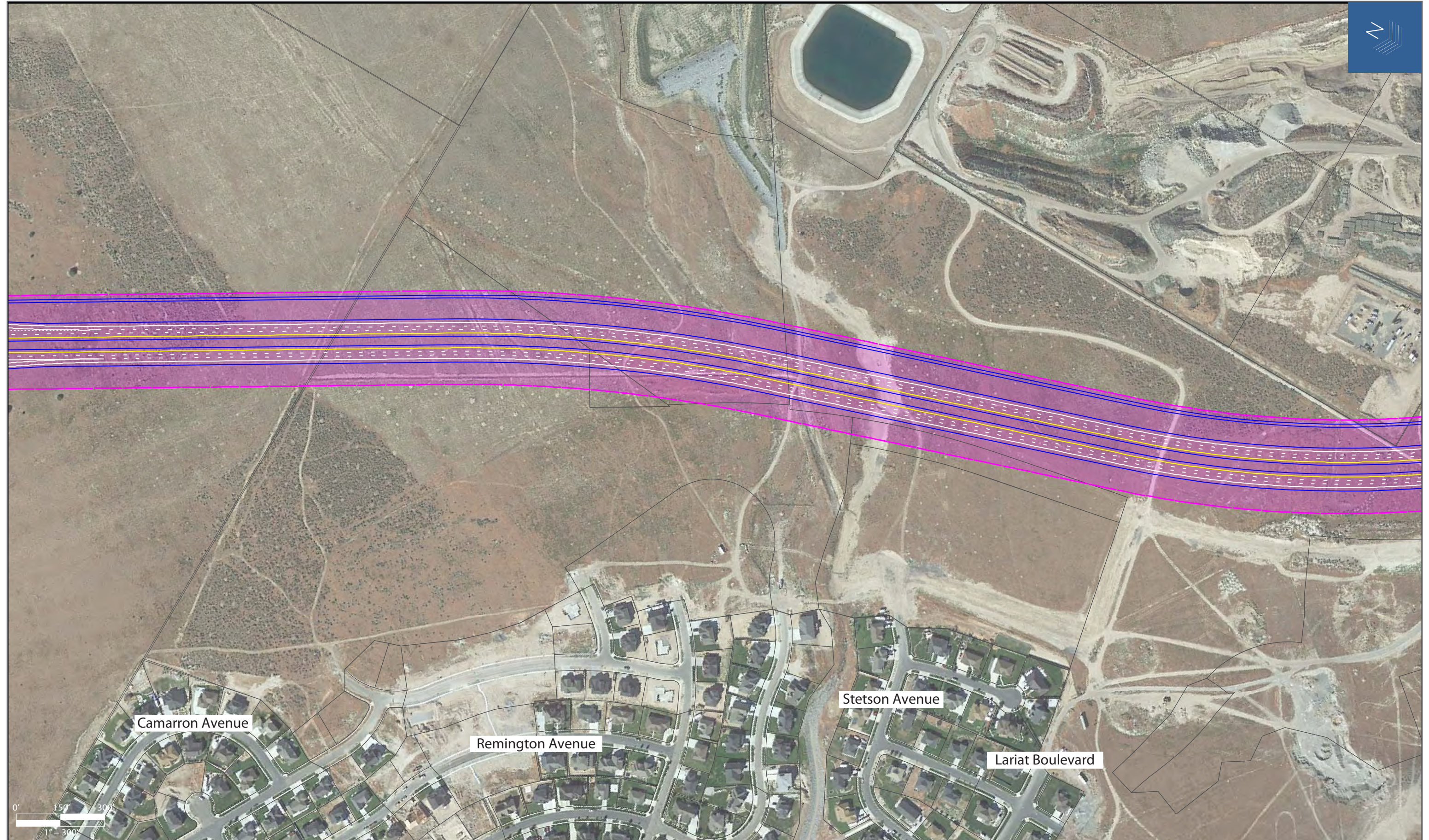


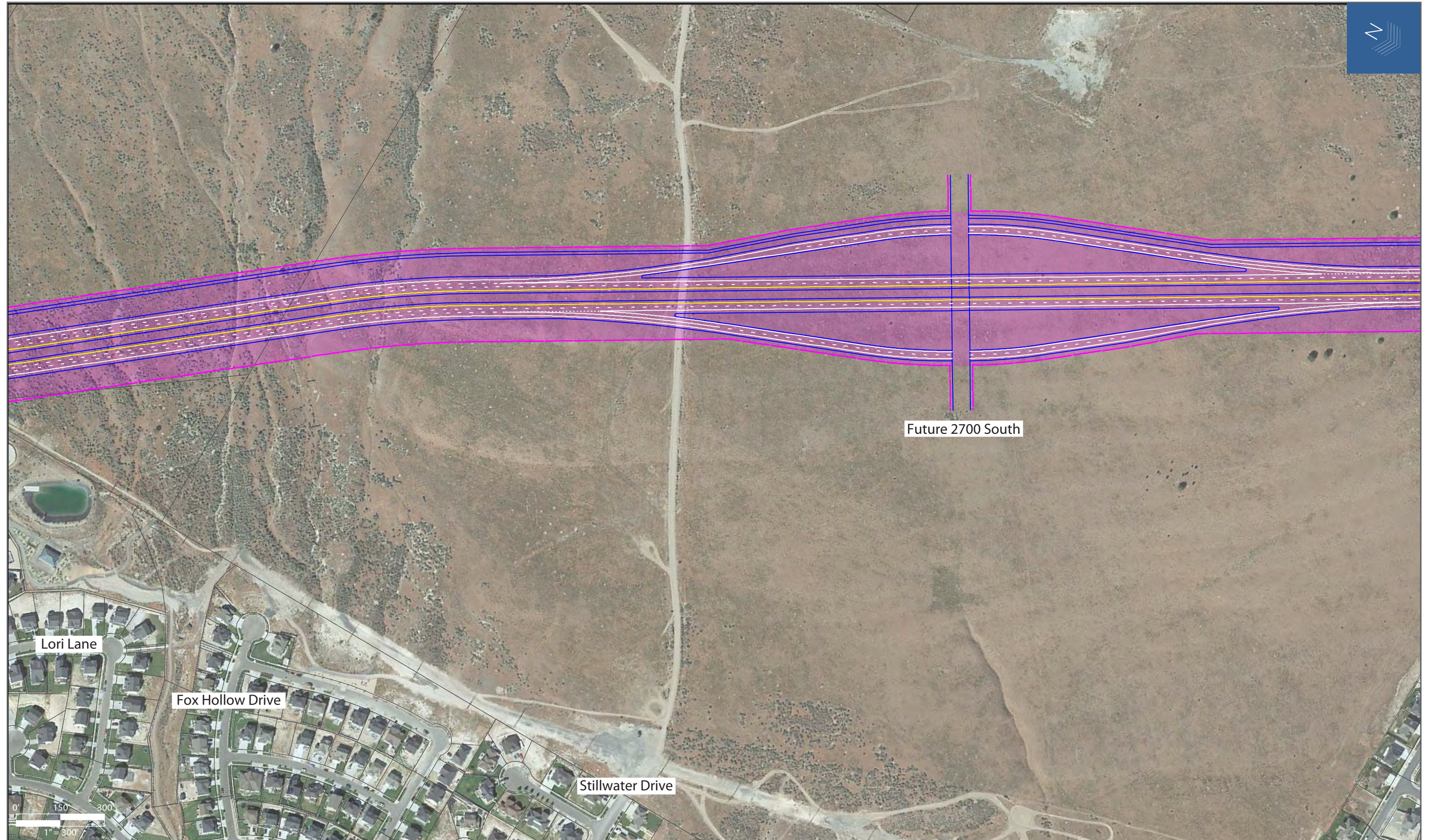


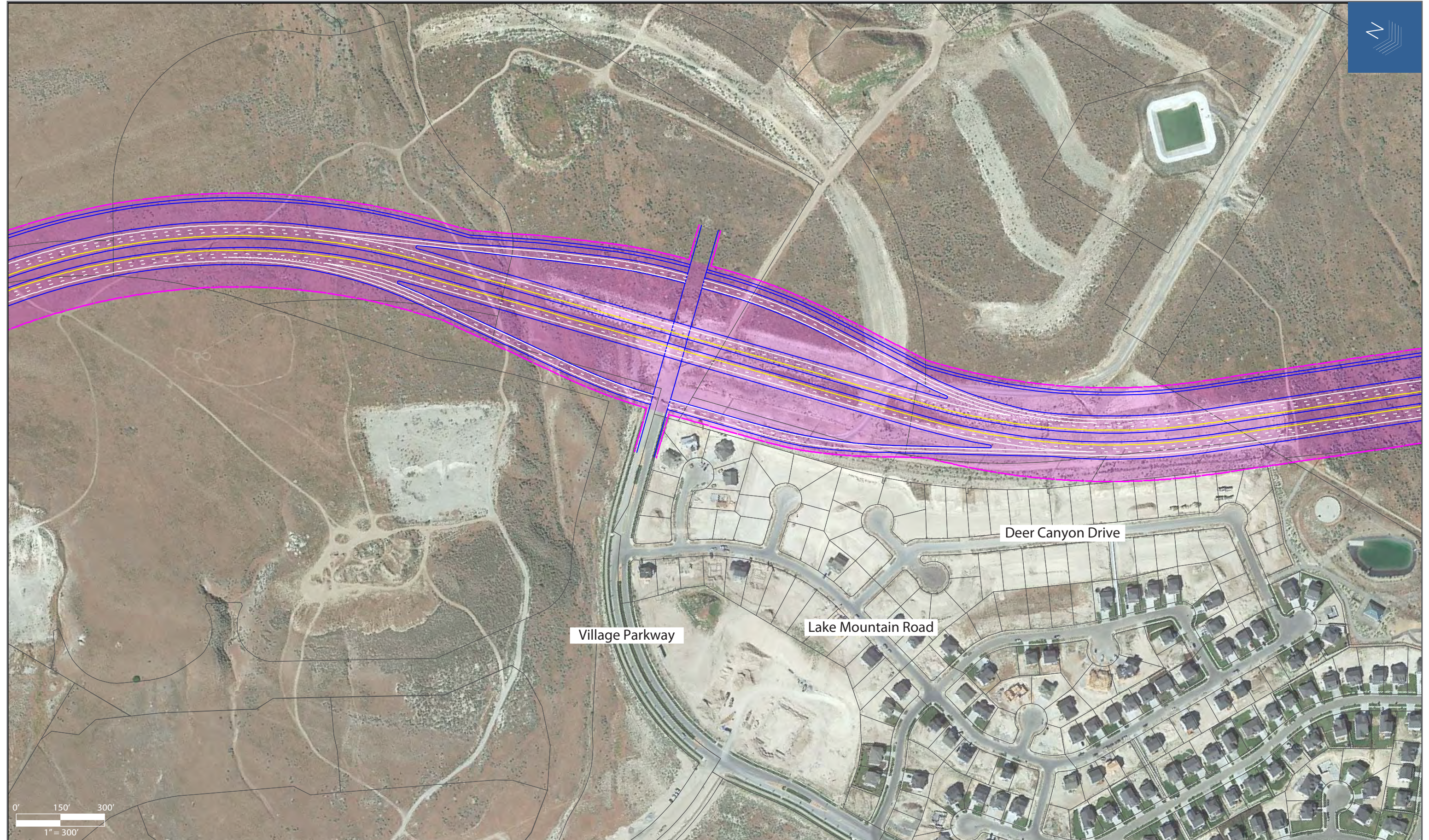








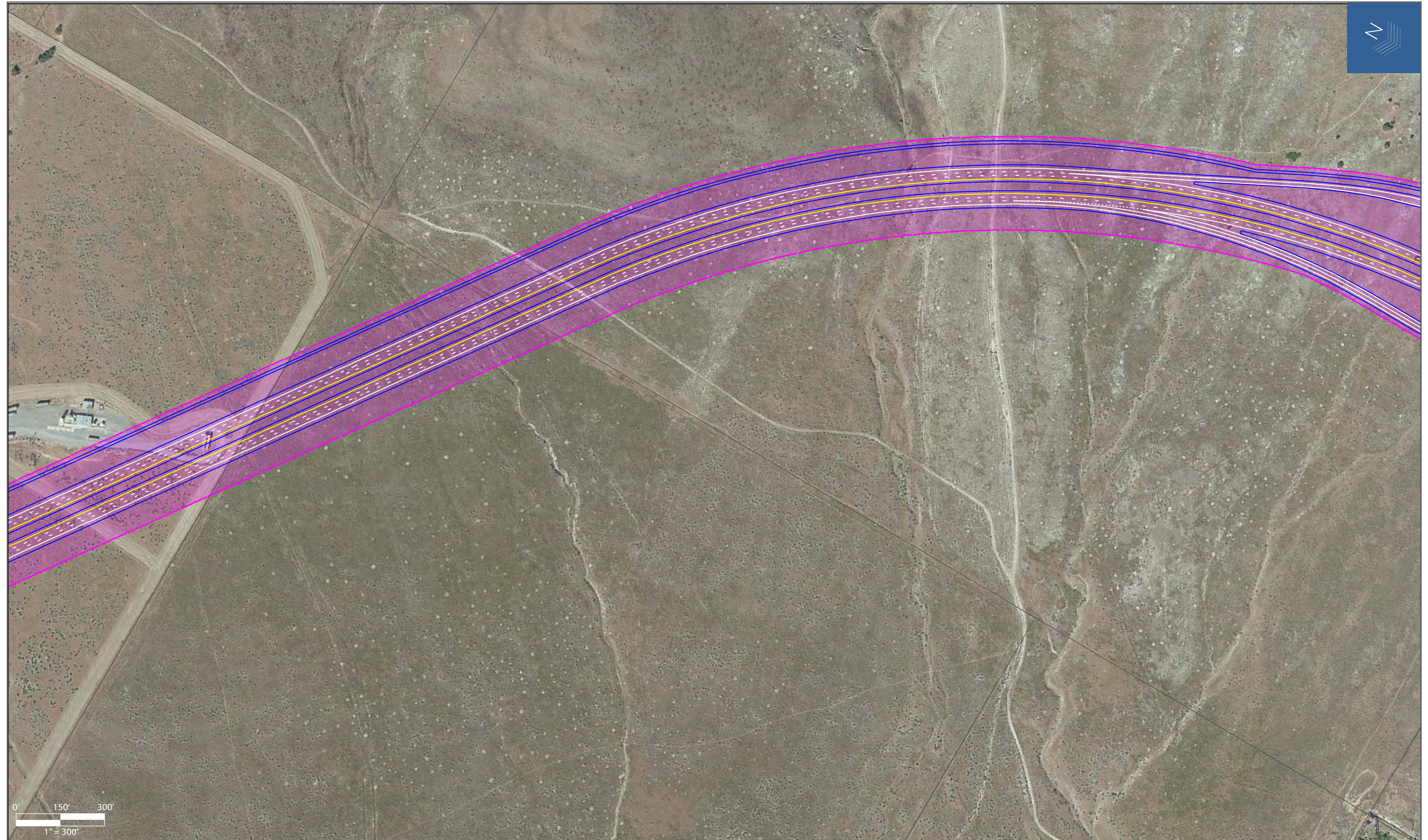






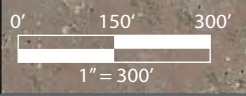
Future 4200 South







Redwood Road

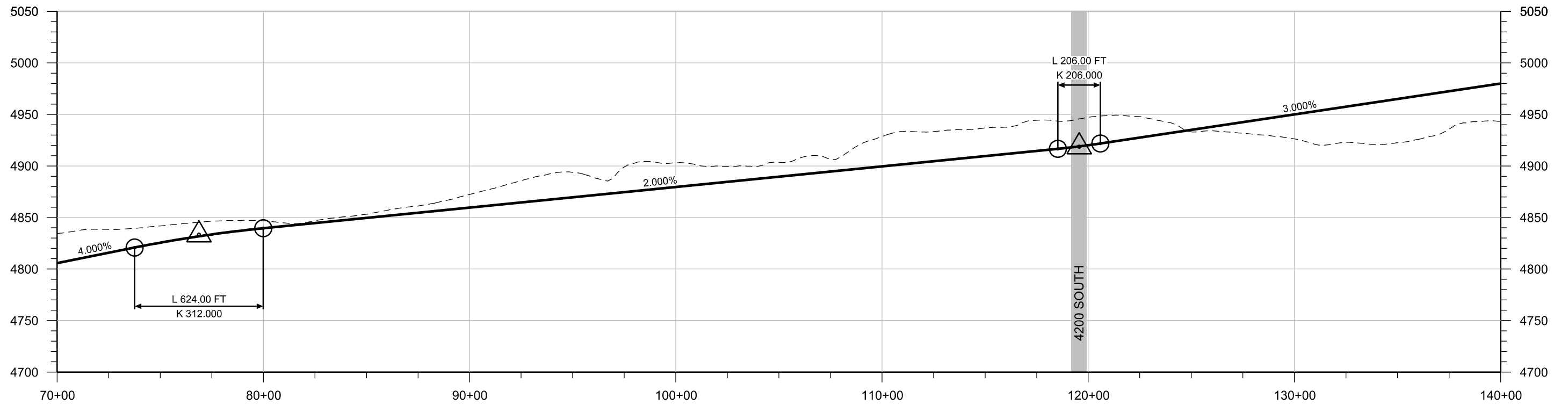
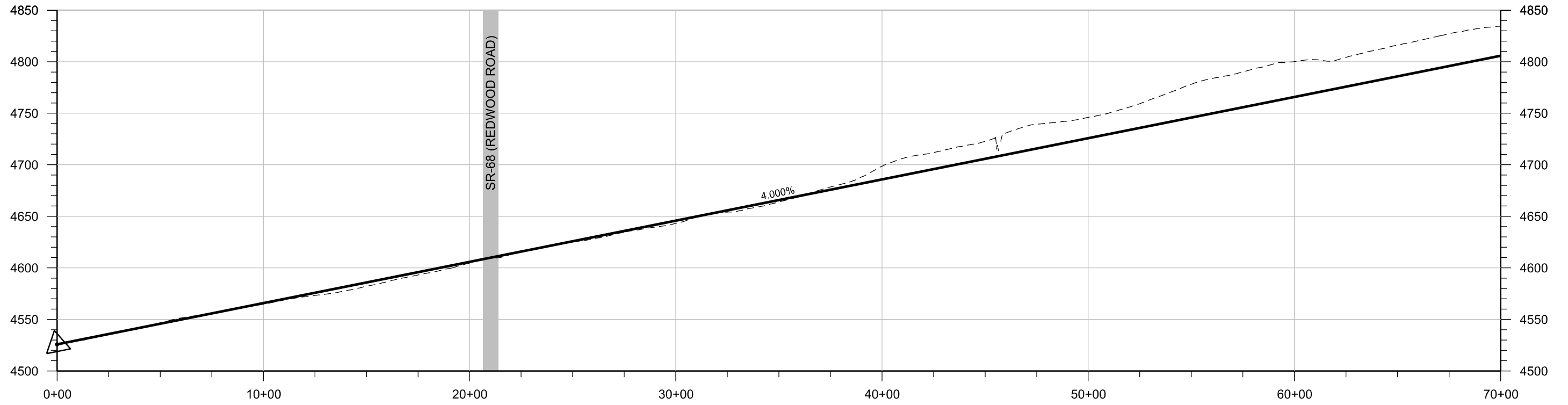


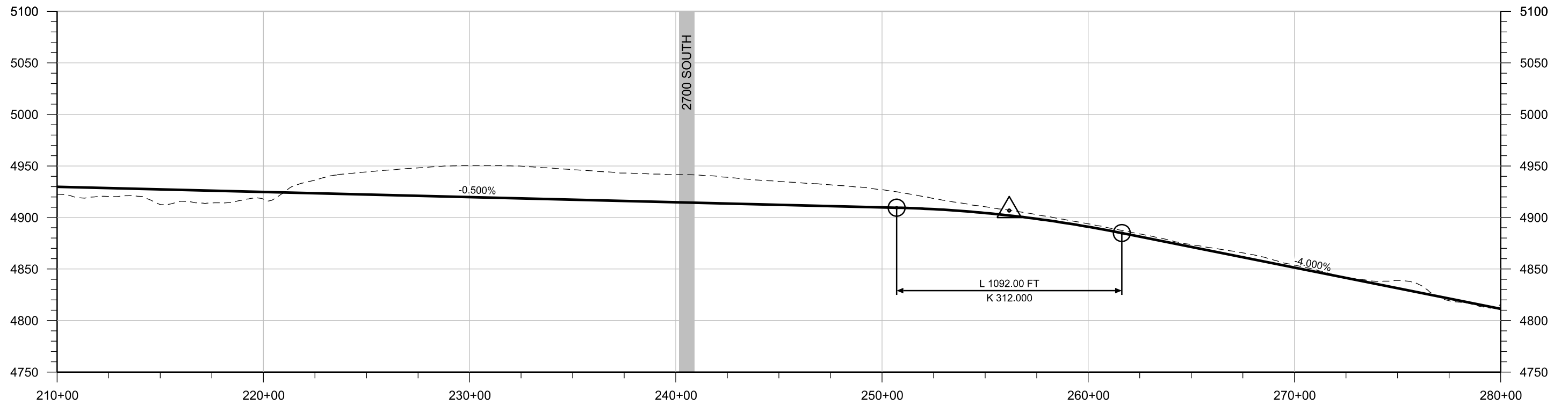
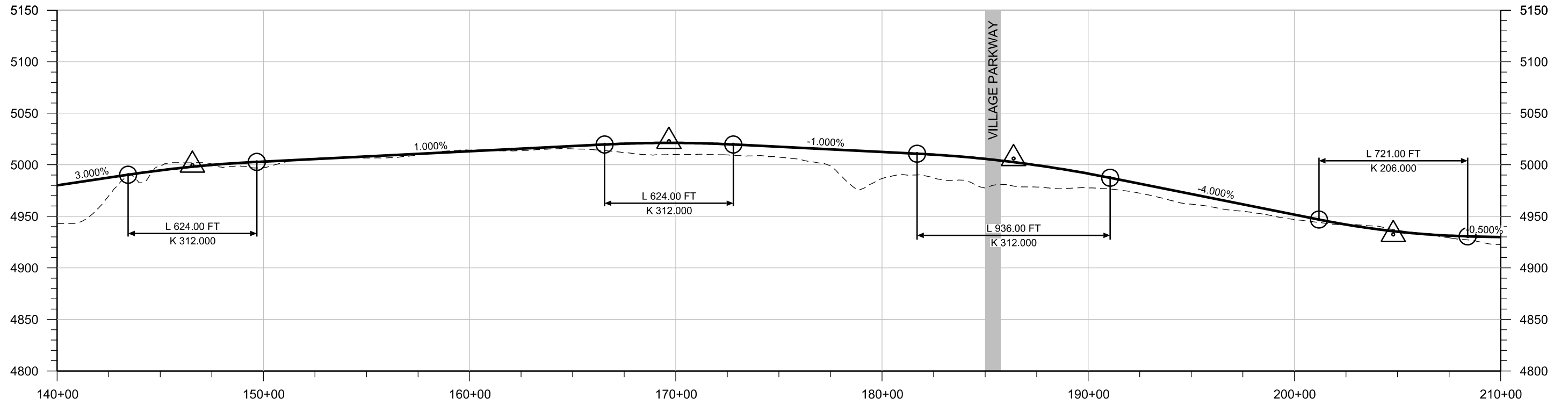


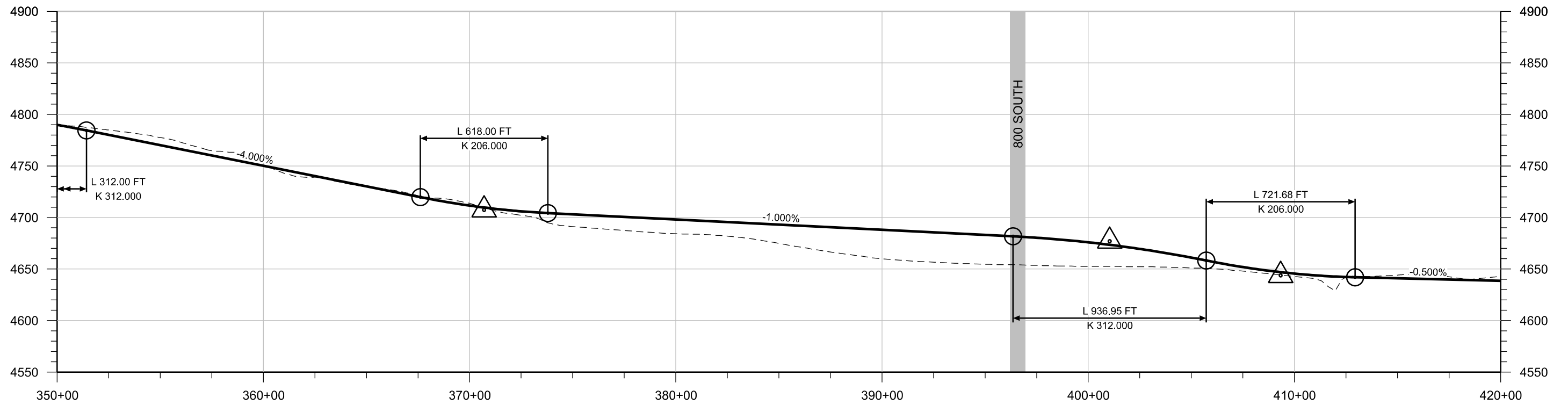
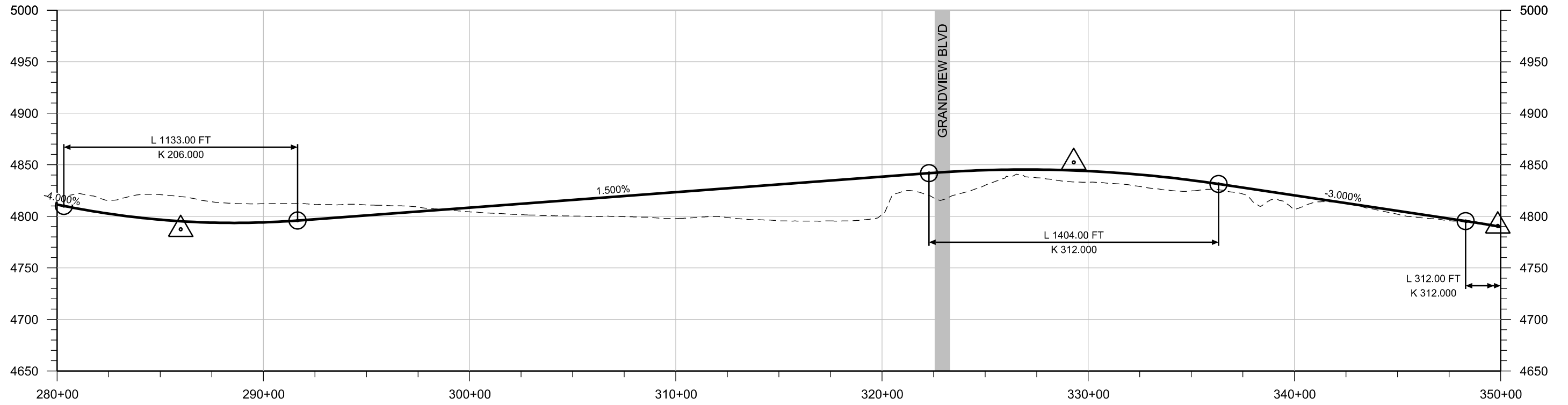
APPENDIX B

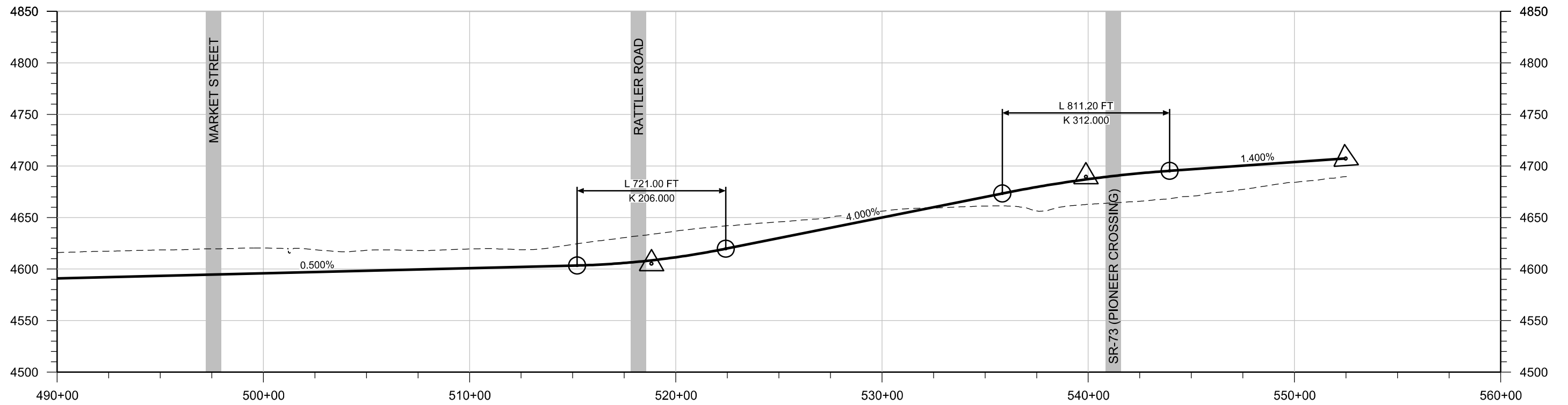
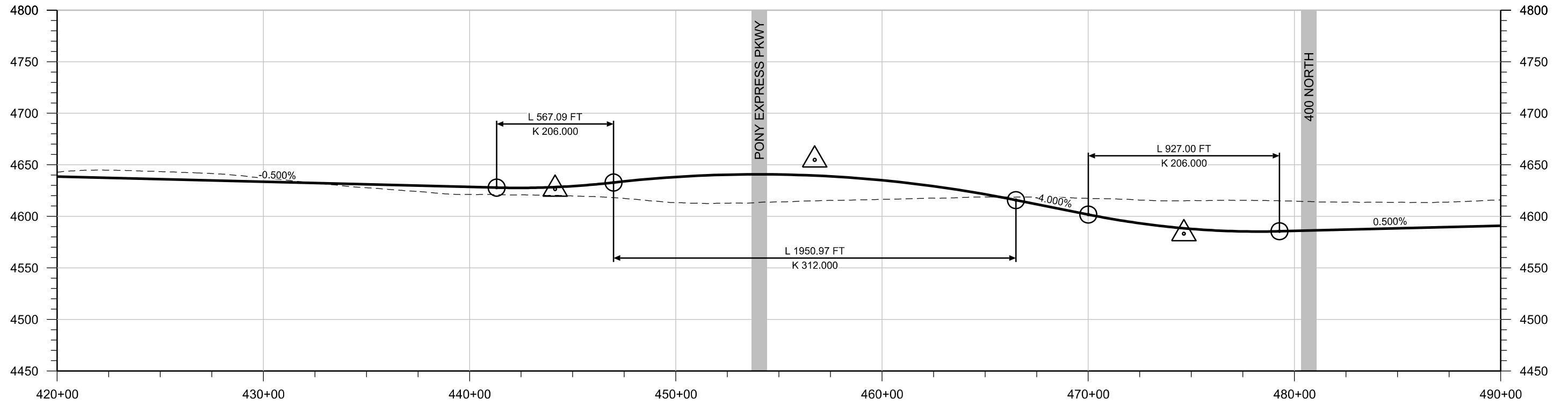
FOOTHILL BOULEVARD PROFILE SHEETS













APPENDIX C

REDWOOD ROAD CONGESTION LEVELS BY YEAR



Redwood Road Congestion Levels - PM Peak Period

