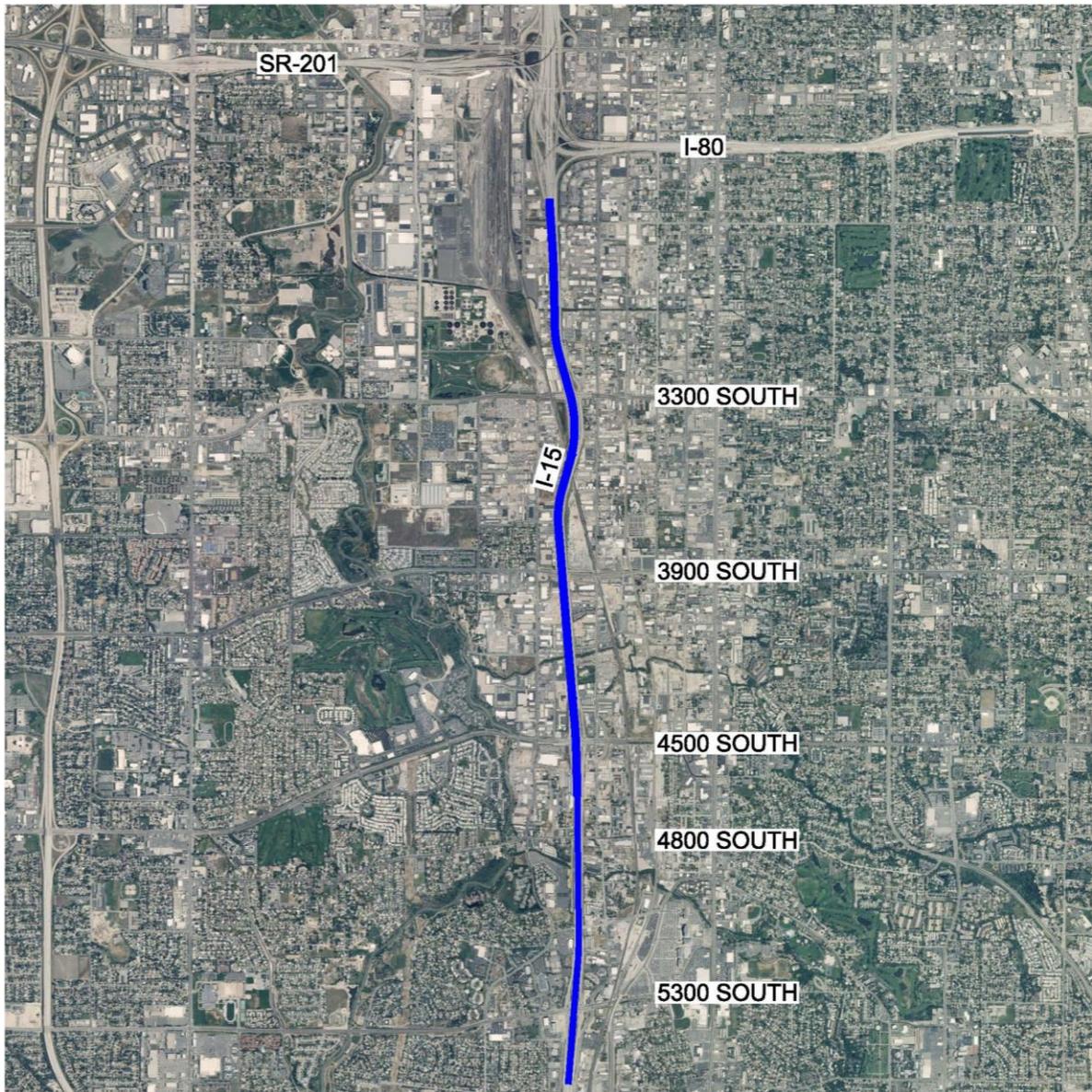


**UTAH DEPARTMENT OF TRANSPORTATION
Region 2**

**CONCEPT REPORT
For**

**Project 2: I-15 Southbound General Purpose Lane;
SR-201 to 5300 South**

March 21, 2014



CONCEPT REPORT

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SECTION 1: General Information

| | | | |
|---|---|---|------------------------------|
| Project Name: | Project 2: I-15 Southbound General Purpose Lane; SR-201 to 5300 South | | |
| Project Manager: | | County: | Salt Lake |
| Pin Number: | 12382 | Begin Mile Post: | 300.00 |
| Project Number: | S-I15-7(322)301 | End Mile Post: | 304.70 |
| Route Number: | 15 | Design Year: | 2014 |
| Functional Classification: | Interstate | Design Speed: | 70 mph |
| Regional Traffic PM % Delay Reduction | 2.0% | 2020 LOS (NB) 2020 LOS | D – F D – E |
| I-15 Corridor Total PM Delay Reduction | Projects 1 and 2 Combined: 1164 Hours (55% reduction from No Build) (545 Hours from Project 1 and 619 Hours from Project 2) | | |

Project Estimate and Timeline:

| | | | |
|---|---------------------|--|--|
| Planning Estimate: | | Proposed Construction FY: | |
| Total Project Cost (Current Year): | \$32,723,710 | Estimated Construction Duration: | |
| Construction Year Estimate (2014): | \$33,706,000 | Recommended Commission Approved Amount: | |

Project Phasing Costs Based on Variable Shoulder Widths:

| Segment | Total Project Cost (Current Year) | | |
|--------------------------------------|--|----------------------|----------------------|
| | 12 FT Shoulder | 8 FT Shoulder | 4 FT Shoulder |
| SR 201 to 5300 South on-ramp | \$32,723,710 | - | - |
| SR 201 to 5300 South off-ramp | \$26,161,670 | \$20,234,350 | \$16,539,950 |
| SR 201 to 4500 South | \$18,701,610 | \$14,009,610 | \$11,137,190 |
| SR 201 to 3300 South | \$5,166,480 | \$4,047,750 | \$3,558,070 |

Signature Block:

| | | | |
|-----------------------------------|-------------|--|-------------|
| | | | |
| Project Manager | Date | Region Preconstruction Engineer | Date |
| | | | |
| Region STIP Workshop Chair | Date | Region Director | Date |
| | | | |
| Prepared By | Date | | |

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Project Summary:

The I-15 Southbound General Purpose Lane; SR-201 to 5300 South project (Project 2) adds a general purpose lane on southbound (SB) I-15 from the SR-201/I-80 CD on-ramp to SB I-15 to the 5300 South on-ramp (the northern limits of Project 1). In addition, a third left turn lane will be added to the 3300 South SB off-ramp to eastbound 3300 South.

Describe the Purpose/Need for this Project:

The purpose of the I-15 Southbound General Purpose Lane; SR-201 to 5300 South project is to address current traffic operations and safety conditions and future 2020 traffic needs by:

- Reducing congestion in “weave” zones for vehicles entering and exiting the freeway between the 3300 South and 5300 South Interchanges
- Reducing queuing on the 3300 South SB off-ramp
- Increasing freeway capacity

The project would address the following needs:

- Current and future congestion on the SB I-15 corridor. The SB I-15 corridor between the SR-201/I-80 on-ramp to SB I-15 and the 5300 South interchange currently operates at level-of-service (LOS) D/F and will operate at LOS D/F in 2020 with projected development and growth.
- An accident cluster was identified at the 3300 South off-ramp “weave” zone (MP 303.75). The spacing between the SR-201/I-80 CD ramp to SB I-15 and the 3300 South off-ramp coupled with the 3300 South off-ramp capacity and freeway capacity creates unsafe congestion levels.
- Corridor and regional PM travel delays.

Major Project Risks:

Elimination of the outside shoulder on the 3300 South, 4500 South, and 5300 South bridges to avoid structure widening (an 11 foot lane and a one foot shy distance to the bridge parapet will be maintained).

Maintenance access will be eliminated along the 4500 South SB on-ramp to accommodate ramp widening.

Noise wall heights and limits may increase as a result of the addition of the general purpose lane.

Coordination and approval with Federal Agencies.

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SECTION 2: Design Information (Executive Summary)

| Roadway / Pavement Summary (Activities 54C, 58C, 76C) | Estimated Construction Cost: | \$9,190,762 |
|--|---|--------------------|
| <p>A SB general purpose lane will be added from the SR-201/I-80 CD ramp to SB I-15 to the 5300 South on-ramp. In addition, the 3300 South SB off-ramp will be widened and re-striped to accommodate a triple left-turn movement to EB 3300 South. The 3300 South SPUI will also be re-striped and the medians re-configured to accept the triple left-turn movement. The project will consist of pavement widening, striping, cast-in-place barrier construction to address clear zone requirements, re-construction of ramp gore areas, construction of retaining walls along sections of the project to avoid ROW impacts, and noise wall relocation.</p> <p>No major drainage issues were identified for this project however; the area will require roadside ditches and integration with the existing drainage system.</p> <p>The preliminary pavement section consists of 13” Portland Cement Concrete Pavement, 4” open graded base course, 6” untreated base course, and 15” granular borrow. This pavement section is consistent with the existing I-15 pavement section.</p> | | |

| Traffic and Safety Summary (Activity 64C) | Estimated Construction Cost: | \$1,370,898 |
|---|---|--------------------|
| <p>A VISSIM analysis was performed of this design alternative with anticipated traffic volumes for the year 2020. When network performance results are compared, the proposed design is anticipated to reduce delay by 22.7 seconds per vehicle, from 228.0 seconds per vehicle to 205.3 seconds per vehicle. The average speed is anticipated to increase by 1.9 miles per hour, from 39.4 to 41.3 miles per hour.</p> <p>Capacity improvements are anticipated to improve safety by reducing crashes. Front to rear crash types are common in congested freeway conditions. From 2008 to 2010 this 5 mile segment had 2839 total crashes 24 of which were severe, meaning there was an incapacitating injury or fatality.</p> | | |

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| Structures Summary (Activity 62C) | Estimated Construction Cost: | \$10,377,805 |
|--|---|---------------------|
| <p>Two box culverts to be lengthened - Big Cottonwood Creek structure #E1201 (MP 302.12) and Mill Creek structure #E1200 (MP 303.90).</p> <p>Two bridges to be widened – bridge over 4800 South, structure #F 649N (MP 301.19) and the bridge over D&RG Railroad, structure #F 618N (MP 303.03).</p> <p>Partial slope paving removal at the 3900 South bridge, structure #C 812 (MP 302.53) and the 5080 South bridge, structure # C 814 (MP 300.74). Slope paving to be replaced with cast-in-place retaining barrier.</p> <p>Precast Noise Walls and Precast Retaining/Noise Walls will be relocated where necessary.</p> <p>Retaining walls will be constructed where applicable to avoid right-of-way impacts associated with roadway and ramp widening.</p> | | |

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| Environmental Summary (Activity 52C) | Estimated Mitigation Cost: | \$445,750 |
|---|---------------------------------------|------------------|
| <p>Potential environmental concerns:</p> <ul style="list-style-type: none">• No ROW acquisition required, although impacts to billboards and other structures or utilities should be evaluated.• Type I project requiring a noise impacts analysis; noise walls already present in the majority of the project area• Potential for wetlands alongside roadway (likely to be non-jurisdictional and of low quality and functionality)• Potential for discovery of hazardous waste; updated review of federal and state databases recommended• Project compatible with land use in the area• Project area is in a non-attainment area for particulate matter (both PM10 and PM2.5), sulfur dioxide, and ozone and is adjacent to the Salt Lake City maintenance area for carbon monoxide (CO), requiring an analysis as to conformity with the State Implementation Plan (SIP) and a qualitative hotspot analysis for particulate matter and potentially a quantitative hotspot analysis for CO• Temporary construction impacts to traffic mobility and thereby, to social and economic conditions in the vicinity; no disproportionately high and adverse impacts on environmental justice populations anticipated.• No impacts anticipated to farmlands, floodplains, wild and scenic rivers, cultural resources, threatened and endangered species, wildlife, visual and aesthetic resources and pedestrian/bicycle routes.• Best management practices needed to address air and water quality issues during construction (e.g., fugitive dust, erosion and sediment control, pollution control, invasive species) | | |

| Right of Way Summary (Activity 56C) | Estimated Property Cost: | \$0 |
|--|-------------------------------------|------------|
| No right-of-way conflicts expected. | | |

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| | | |
|--|---------------------------------------|------------------|
| Utility and Railroad Summary (Activity 68C) | Estimated Relocation Cost: | \$250,000 |
| <p>Possible utility impacts:</p> <ul style="list-style-type: none">• 42-inch sewer line north of 3300 South that crosses I-15. The existing casing should extend to the current ROW reducing negative impacts to the utility.• 36-inch HDPE sewer line crosses I-15 at approximate MP 302.79. The existing casing should extend to the current ROW reducing negative impacts to the utility.• 24-inch sewer line at 3900 South. The existing casing should extend to the current ROW reducing negative impacts to the utility.• 12-inch water line at approximate MP 303.91. The existing casing will need to be extended to accommodate pavement widening. <p>Other notable utility information:</p> <ul style="list-style-type: none">• Significant number of utilities in 3300 South. No impacts anticipated with the information available.• Fiber duct bank-running parallel to railroad corridor (approximate MP 303.03). No impacts anticipated with the information available.• Assumed utilities are from previous projects.• Establish a contingent sum for further utility investigation and possible relocation. | | |

| | | |
|---|---|------------|
| ITS Summary (Activity 66C) | Estimated Construction Cost: | \$0 |
| <p>It is anticipated that there will be ITS impacts as a result of the project. Possible impacts to the UDOT fiber backbone as well as ramp metering systems may occur however, further evaluation is necessary to determine the extent of those impacts.</p> | | |

| | | |
|--|------------------------|-----------------|
| Public Involvement Summary (Activity 60C) | Estimated Cost: | \$30,000 |
| <p>Public involvement will require coordination with local municipalities and local media regarding project construction schedule and related traffic impacts.</p> | | |

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Design Exceptions, Deviations, Waivers Summary:

Design Exceptions

- Lane width - 11 foot outside lane over the 3300 South, 4500 South, and 5300 South bridges to avoid structure widening.
- Shoulder width – no shoulder with 1 foot shy distance to bridge parapet over the 3300 South, 4500 South, and 5300 South bridges.

Design Waivers

- None

Standards Deviations

- None

**PIN 8721 PROJECT # F-R299(114) PROJECT NAME North-South Study
Project 2: I-15 Southbound General Purpose Lane; SR-201 to 5300 South**

Cost Estimate - Concept Level

Prepared By Horrocks Engineers (TCA) Date 3/15/2014

| | | | |
|--|---------|---------------------|-----------|
| Approximate Route Reference Post (BEGIN) = | 300.620 | (END) = | 304.700 |
| Accumulated Mileage (BEGIN) = | 300.620 | (END) = | 304.700 |
| Project Length = | 4.080 | miles | 21,542 ft |
| Current Year = | 2014 | | |
| Assumed Construction Year = | 2015 | | |
| Construction Items Inflation Factor = | 1.03 | 1 yrs for inflation | |
| Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = | 3.0% | | |
| Assumed Yearly Inflation for Urban Residential Right of Way (%/yr) = | 1.0% | | |
| Assumed Yearly Inflation for Urban Commercial Right of Way (%/yr) = | 1.0% | | |
| Assumed Yearly Inflation for non-Urban Right of Way (%/yr) = | 1.0% | | |
| Items not Estimated (% of Construction) = | 20.0% | | |
| Preliminary Engineering (% of Construction + Incentives) = | 10.0% | | |
| Construction Engineering (% of Construction + Incentives) = | 6.0% | | |

| Construction Items | Cost | Remarks |
|---|------------------------|-----------------|
| Roadway and Drainage | \$9,190,762 | |
| Traffic and Safety | \$1,370,898 | |
| Structures | \$10,377,805 | |
| Environmental Mitigation | \$445,750 | |
| ITS | \$0 | |
| | | |
| Subtotal | \$21,385,215 | |
| Contingency (for items not listed) (20%) | \$4,277,043 | |
| Construction Subtotal | \$25,662,258 | |
| P.E. Cost | P.E. Subtotal | \$2,576,000 10% |
| C.E. Cost | C.E. Subtotal | \$1,546,000 6% |
| Right of Way Urban/Suburban Residential | Right of Way Subtotal | \$0 |
| Right of Way Urban Suburban Commercial | Right of Way Subtotal | \$0 |
| Right of Way non-Urban/Suburban | Right of Way Subtotal | \$0 |
| Utilities | Utilities Subtotal | \$250,000 |
| Incentives | Incentives Subtotal | \$100,000 |
| Miscellaneous | Miscellaneous Subtotal | \$0 |

| Cost Estimate (ePM screen 505) | 2014 | 2015 |
|--------------------------------|---------------------|---------------------|
| P.E. | \$2,576,000 | \$2,653,000 |
| Right of Way | \$0 | \$0 |
| Utilities | \$250,000 | \$258,000 |
| Construction | \$25,662,000 | \$26,432,000 |
| C.E. | \$1,546,000 | \$1,592,000 |
| Incentives | \$100,000 | \$103,000 |
| Aesthetics | 1% \$257,000 | \$265,000 |
| Change Order Contingency | 9% \$2,332,710 | \$2,403,000 |
| UDOT Oversight | \$0 | \$0 |
| Miscellaneous | \$0 | \$0 |
| TOTAL | \$32,723,710 | \$33,706,000 |

| | | |
|------------------------------------|---------------------------|---------------------------|
| PROPOSED COMMISSION REQUEST | TOTAL \$32,723,710 | TOTAL \$33,706,000 |
|------------------------------------|---------------------------|---------------------------|

Roadway and Drainage

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| Item # | Item | Quantity | Price | Units | Cost | Remarks |
|--------------------------------------|---|----------|----------------|-------|--------------------|------------------------------|
| Roadway and Drainage | | | | | | |
| 012850010 | Mobilization | 1 | \$2,550,000.00 | Lump | \$2,550,000 | 10% of construction |
| 013150010 | Public Information Services | 1 | \$30,000.00 | Lump | \$30,000 | |
| 015540005 | Traffic Control | 1 | \$1,300,000.00 | Lump | \$1,300,000 | 5% of construction |
| 01557001* | Maintenance of Traffic | 1 | \$25,000.00 | Lump | \$25,000 | |
| 017210010 | Survey | 1 | \$125,000.00 | Lump | \$125,000 | |
| 020560015 | Granular Borrow (Plan Quantity) | 14251 | \$19.00 | Cu yd | \$270,769 | |
| 023160020 | Roadway Excavation (Plan Quantity) | 37606 | \$10.00 | Cu yd | \$376,060 | |
| 027210020 | Untreated Base Course (Plan Quantity) | 9501 | \$28.00 | Cu yd | \$266,028 | |
| | Portland Cement Concrete Pavement 13 inch Thick | 34202 | \$80.00 | Sq yd | \$2,736,160 | |
| 027710017 | Concrete Curb Type B5 | 1305 | \$9.00 | ft | \$11,745 | |
| | Drainage | 1 | \$1,500,000.00 | Lump | \$1,500,000 | |
| Roadway and Drainage Subtotal | | | | | \$9,190,762 | Back to Main |

Traffic, Safety & ITS

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| Item # | Item | Quantity | Price | Units | Cost | Remarks |
|------------------------------------|---|----------|----------|-------|--------------------|------------------------------|
| Traffic, Safety & ITS | | | | | | |
| Traffic | | | | | | |
| 028440030 | Cast-in-Place Concrete Constant Slope Barrier - 42 Inch | 18675 | \$60.00 | ft | \$1,120,500 | |
| 028440190 | Cast-in-Place Concrete Constant Slope Retaining Barrier - 42 Inch | 1835 | \$120.00 | ft | \$220,200 | |
| | Pavement Marking Paint (Epoxy) | 370 | \$30.00 | gal | \$11,100 | |
| | Pavement Grinding | 54050 | \$0.35 | ft | \$18,918 | |
| 027650020 | Pavement Message Paint | 9 | \$20.00 | Each | \$180 | |
| Traffic and Safety Subtotal | | | | | \$1,370,898 | |
| ITS | | | | | | |
| ITS Subtotal | | | | | \$0 | Back to MAIN |

Structures

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| Item # | Item | Quantity | Price | Units | Cost | Remarks |
|---------------------|-----------------------------------|----------|-------------|-------|---------------------|------------------------------|
| Structures | | | | | | |
| Bridges | | | | | | |
| | Bridge Widening | 11250 | \$300.00 | sq ft | \$3,375,000 | Assumed LxW (deck area) |
| Walls | | | | | | |
| | Retaining Wall | 78233 | \$85.00 | sq ft | \$6,649,805 | Assumed LxH (wall area) |
| | Moment Slab/Retaining Wall Coping | 165 | \$200.00 | ft | \$33,000 | |
| Sign Structures | | | | | | |
| | Modify Overhead Sign Structure | 4 | \$15,000.00 | Each | \$60,000 | Includes signing |
| | Modify Overhead Sign Foundation | 4 | \$20,000.00 | Each | \$80,000 | |
| | Modify Cantilever Sign Structure | 5 | \$10,000.00 | Each | \$50,000 | Includes signing |
| | Cantilever Sign Foundation | 5 | \$20,000.00 | Each | \$100,000 | |
| Hydraulics | | | | | | |
| | Extend Box Culvert | 30 | \$1,000.00 | ft | \$30,000 | |
| Structures Subtotal | | | | | \$10,377,805 | Back to MAIN |

Environmental and Landscaping

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| Item # | Item | Quantity | Price | Units | Cost | Remarks |
|--|------------------------------------|----------|----------|-------|------------------|------------------------------|
| Environmental & Landscaping | | | | | | |
| Environmental | | | | | | |
| 028610060 | Precast Noise Wall 14 ft | 970 | \$230.00 | ft | \$223,100 | |
| 028610110 | Precast Retaining/Noise Wall 14 ft | 730 | \$305.00 | ft | \$222,650 | |
| Environmental Mitigation Subtotal | | | | | \$445,750 | Back to MAIN |

Miscellaneous

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| Item # | Item | Quantity | Price | Units | Cost | Remarks |
|------------------------------|--------------------------|----------|--------------|-------|------------------|------------------------------|
| Utilities | | | | | | |
| | Extend Water Line Casing | 1 | \$50,000.00 | Lump | \$50,000 | |
| | Utility Contingency | 1 | \$200,000.00 | Lump | \$200,000 | 1.0% of construction |
| Utilities Subtotal | | | | | \$250,000 | |
| Right-of-way | | | | | | |
| Right-of-Way Subtotal | | | | | \$0 | |
| Incentives | | | | | | |
| | Early Completion | 1 | \$100,000.00 | Lump | \$100,000 | 0.5% of construction |
| Incentives Subtotal | | | | | \$100,000 | |
| | | | | | | Back to MAIN |



LEGEND

- NEW PAVEMENT
- NEW BRIDGE DECK

DESIGN EXCEPTIONS

- LANE WIDTH
- SHOULDER WIDTH

NORTH SOUTH STUDY
I-15 SOUTHBOUND GENERAL PURPOSE LANE; SR-201 TO 5300 SOUTH
PROJECT 2: I-15 ALTERNATIVE #25A AND #26
PLAN SHEET

SHEET NO.
25A-3

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LEGEND

- NEW PAVEMENT
- NEW BRIDGE DECK

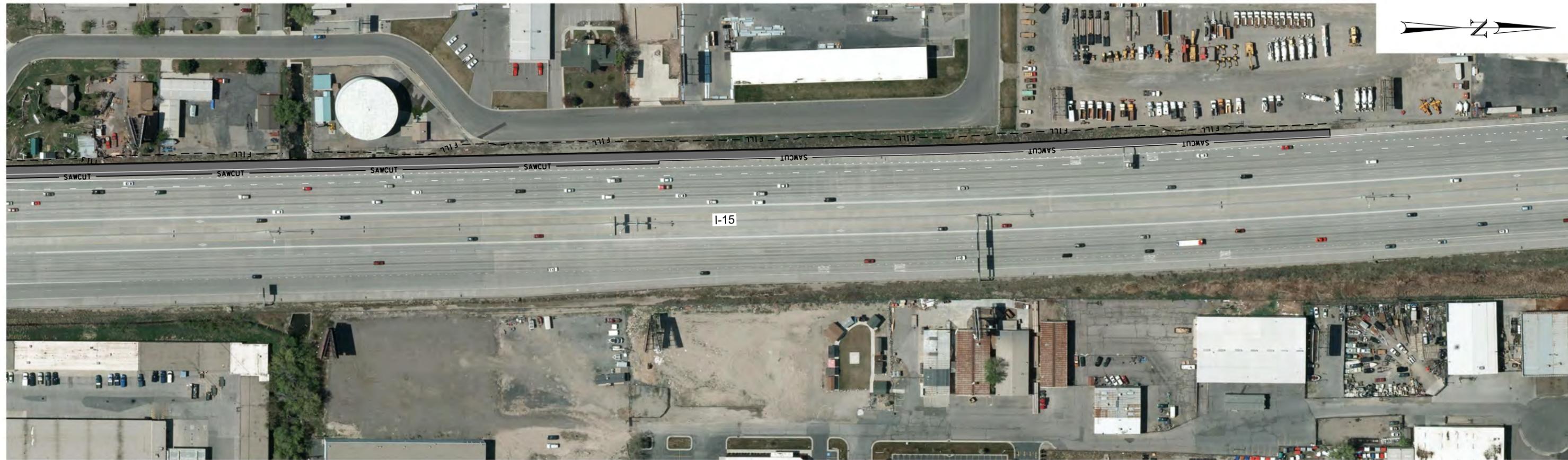
DESIGN EXCEPTIONS

- LANE WIDTH
- SHOULDER WIDTH

NORTH SOUTH STUDY
I-15 SOUTHBOUND GENERAL PURPOSE LANE; SR-201 TO 5300 SOUTH
PROJECT 2: I-15 ALTERNATIVE #25A AND #26
PLAN SHEET

SHEET NO.
25A-4

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LEGEND

- NEW PAVEMENT
- NEW BRIDGE DECK

DESIGN EXCEPTIONS

- LANE WIDTH
- SHOULDER WIDTH

NORTH SOUTH STUDY
I-15 SOUTHBOUND GENERAL PURPOSE LANE; SR-201 TO 5300 SOUTH
PROJECT 2: I-15 ALTERNATIVE #25A AND #26
PLAN SHEET

SHEET NO.
25A-6

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