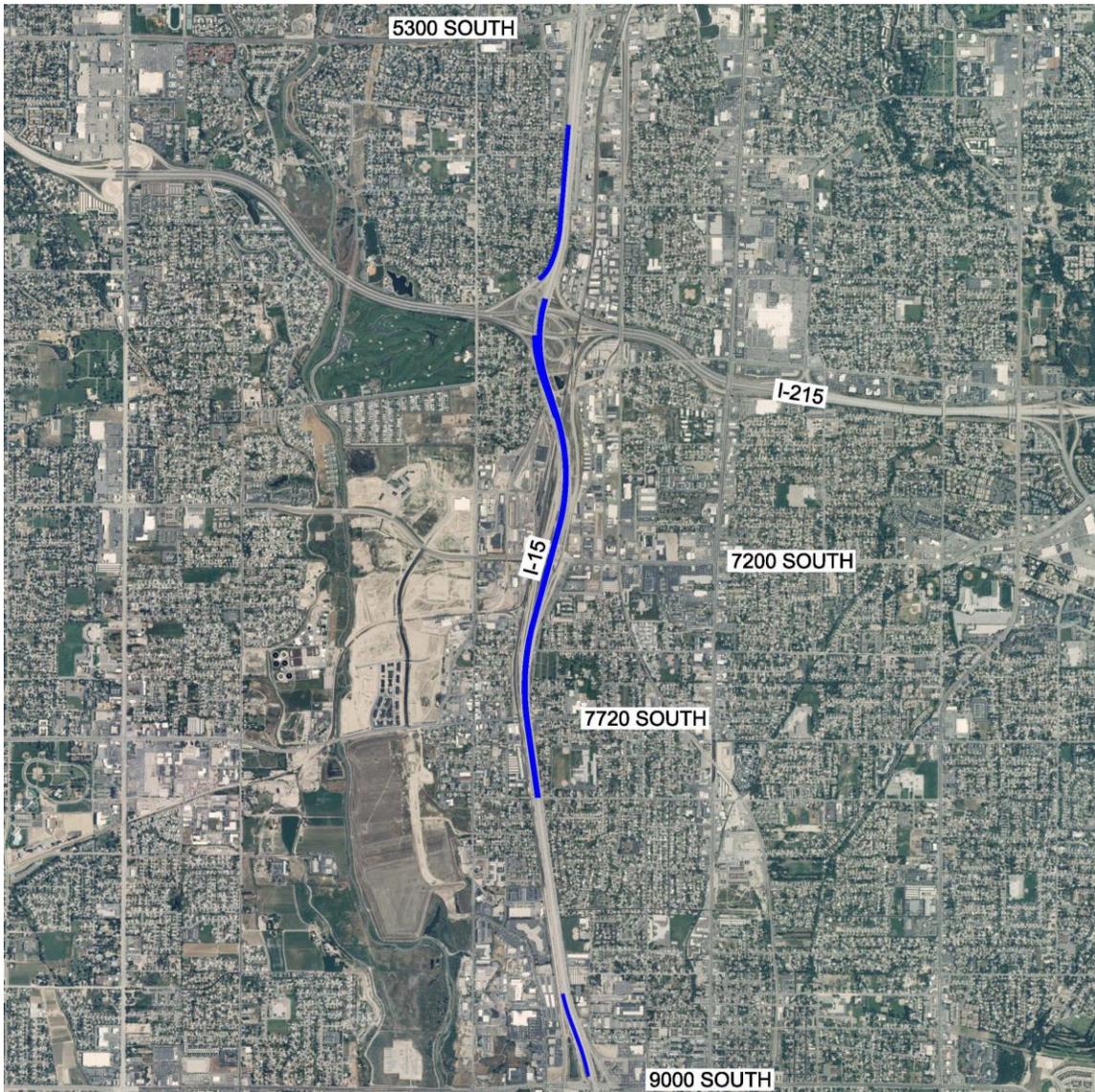


**UTAH DEPARTMENT OF TRANSPORTATION
Region 2**

**CONCEPT REPORT
For**

**Project 1: I-15/I-215 Interchange Improvements; 5300 S to 9000 S
(North-South Study; I-15 Alternative #11E (Full Build))
(North-South Study; I-15 Alternative #11G (Phase I))**

March 21, 2014



CONCEPT REPORT

Table of Contents

Table of Contents
General Information
Executive Summary
Preliminary Roadway Design (Activity # 54C)
Pavement Design (Activity # 58C/76C)
Region Traffic and Safety Recommendations (Activity # 64C)
Bridge Inventory & Recommendation Report (Activity # 62C)
Environmental Concept (Activity # 52C)
Right of Way Concept (Activity # 56C)
Utility Inventory (Activity # 68C)
ITS Recommendations (Activity # 66C)
Public Involvement Plan (Activity # 60C)
Design Exceptions Summary
Appendix
Concept Estimate
Plan Sheets
Typical Sections

CONCEPT REPORT

1 of 6

SECTION 1: General Information

Project Name:	I-15/I-215 Interchange Improvements; 5300 S to 9000 S		
Project Manager:		County:	Salt Lake
Pin Number:	12382	Begin Mile Post:	295.666
Project Number:	S-I15-7(322)301	End Mile Post:	300.004
Route Number:	15	Design Year:	2014
Functional Classification:	Interstate	Design Speed:	50 mph, 70 mph
Regional Traffic PM % Delay Reduction	Alt #11E – 2.3% Alt #11G – 0.7%	2020 LOS (NB) 2020 LOS	D – F D – E
I-15 Corridor Total PM Delay Reduction	Project 1 (Alt #11E): 545 Hours (26% reduction from No Build)		

Project Estimate and Timeline:

Planning Estimate:		Proposed Construction FY:	
Total Project Cost (Current Year):	Alt #11E \$56,449,230 Alt #11G \$5,242,230	Estimated Construction Duration:	
Construction Year Estimate (2015):	Alt #11E \$58,144,000 Alt #11G \$5,400,000	Recommended Commission Approved Amount:	

Signature Block:

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

CONCEPT REPORT

2 of 6

Project Summary:

The I-15/I-215 Interchange Improvements project (Project 1) is a multiple phase project. The full build-out (Alternative #11E) provides an additional southbound (SB) auxiliary lane from 5300 South to the I-215 off-ramp. The westbound (WB) I-215 off-ramp will merge directly onto SB I-15, adding 2 auxiliary lanes from I-15/I-215 Interchange to 7200 South off-ramp. One added auxiliary lane will continue from the 7200 South off-ramp to the 7200 South on-ramp. The SB I-15/I-215 collector/distributor (CD) ramp will be reduced to 2 lanes. During Phase I (Alternative #11G), the SB I-15/I-215 CD ramp will merge with the 7200 South on-ramp prior to SB I-15. The consolidated ramp will merge on to SB I-15 at the current location of the 7200 South on-ramp.

Describe the Purpose/Need for this Project:

The purpose of the I-15/I-215 Interchange Improvements 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 I-15/I-215 SB CD ramp between the WB I-215 on-ramp and the 7200 South exit.
- Reducing congestion in “weave” zones for vehicles entering and exiting I-15 between the 5300 South and I-15/I-215 Interchanges.
- Reducing congestion in “weave” zones for vehicles entering and exiting I-15 between the I-15/I-215 and 9000 South Interchanges.
- 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 and the SB I-15/I-215 CD ramp between the 5300 South interchange and the 9000 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 I-15/I-215 CD on-ramp and 7200 South on-ramp “weave” zones (MP 297.50 to MP 298.00). The spacing between the I-15/I-215 CD ramp to SB I-15 and the 7200 South on-ramp coupled with the I-15/I-215 CD ramp and freeway capacity creates unsafe congestion levels.
- Corridor and regional PM travel delays.

Major Project Risks:

Noise wall heights and limits may increase as a result of the new flyover ramp connecting the SB I-15 off-ramp to I-215 to the I-15/I-215 SB collector/distributor (CD) ramp.

Potential utility conflicts from the construction of retaining walls and the new flyover ramp.

Coordination with Railroad Agencies regarding bridge widening.

Coordination and approval with Federal Agencies.

CONCEPT REPORT

SECTION 2: Design Information (Executive Summary)

Roadway / Pavement Summary (Activities 54C, 58C, 76C)	Estimated Construction Cost:	E - \$17,467,319 G - \$2,638,569
<p>The I-15/I-215 Interchange Improvements project (Project 1) is a multiple phase project. The full build-out (Alternative #11E) adds an additional auxiliary lane to southbound (SB) I-15 from the 5300 South on-ramp to the I-215 Interchange off-ramp. The westbound (WB) I-215 off-ramp to the SB I-15 CD ramp will be re-configured after the cloverleaf merging two lanes on to SB I-15 prior to the existing 7200 South off-ramp. One of these lanes becomes a trap lane terminating at the 7200 South exit; the other lane continues SB to the new I-15/I-215 CD ramp gore area. During Phase I (Alternative #11G), the SB I-15/I-215 CD ramp will merge with the 7200 South on-ramp prior to I-15. The 7200 South on-ramp ramp meter will be moved back and the ramp will be re-stripped to two lanes (the HOV lane will be eliminated). During the full build-out, the SB I-15/I-215 CD ramp will be re-stripped to two lanes (currently there are three). At 9000 South, the off-ramp gore will be reconfigured from two trap lanes to one trap lane and one auxiliary lane that will merge to the existing configuration prior to the 9000 South structure. The project will consist of pavement widening, striping, cast-in-place barrier construction to address clear zone requirements, re-construction of ramp gore areas, and construction of retaining walls along sections of the project to avoid ROW impacts.</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:	E - \$1,384,940 G - \$92,151
<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 48.5 seconds per vehicle, from 210.7 seconds per vehicle to 162.2 seconds per vehicle. The average speed is anticipated to increase by 4.7 miles per hour, from 40.4 to 45.1 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 1 mile segment had 2163 total crashes 25 of which were severe, meaning there was an incapacitating injury or fatality.</p>		

CONCEPT REPORT

4 of 6

Structures Summary (Activity 62C)	Estimated Construction Cost:	E - \$16,729,650 G - \$505,750
<p>Five bridges to be widened – bridge over 7200 South, structure #F 610N (MP 297.94), bridge over railroad, structure #C 829S (MP 298.55), bridge over railroad, structure #F 611S (MP 298.65), bridge over 6800 South (Winchester Street), structure #F 613S (MP 298.76), and the bridge over 5900 South, structure #C 836S (MP 299.50).</p> <p>Three bridges to be modified on the I-15/I-215 CD ramp – the modifications (removing a girder line) will make room for the bridge widening discussed above.</p> <p>Retaining walls will be constructed where applicable to avoid right-of-way impacts associated with roadway and ramp widening.</p>		

Environmental Summary (Activity 52C)	Estimated Mitigation Cost:	E- \$0 G - \$0
<p>Potential environmental concerns:</p> <ul style="list-style-type: none">• No right-of-way acquisition required, although impacts to billboards and other structures or utilities should be evaluated• No relocations anticipated• Potential for wetlands alongside roadway (likely to be non-jurisdictional and of low quality and functionality)• Low 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 in a 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 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 bicycle and pedestrian issues• 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)		

CONCEPT REPORT

5 of 6

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

Utility and Railroad Summary (Activity 68C)	Estimated Relocation Cost:	E - \$625,500 G - \$50,000
Possible utility impacts: <ul style="list-style-type: none">• Relocate 8-inch Midvale City water line under 7200 South structure widening• Relocate UDOT Lighting under 7200 South bridge, structure #F 610N (MP 297.94)• Reconstruct miscellaneous utility manholes• Relocate UTA Mid Jordan Rail utilities• Relocate two Century Link Telephone Lines with Winchester Street Widening• Relocate Utopia Fiber Line with Winchester Street Widening• Relocate Buried Electric Line with Winchester Street Widening• Relocate 8-inch water line with Winchester Street Widening• Relocate UDOT Lighting along I-15		
Other notable utility information: <ul style="list-style-type: none">• Establish a contingent sum for further utility investigation and possible unknown utility relocation.• Assume fiber lines can be relocated with split duct. If relocation isn't possible, the lines will have to be re-laid to the splice box.• If Federal Funds are used, 'Buy America' will apply to utility costs increasing overall project costs.		

ITS Summary (Activity 66C)	Estimated Construction Cost:	E - \$100,500 G - \$20,000
Possible ITS impacts: <ul style="list-style-type: none">• Relocate the ramp metering system on the 7200 South on-ramp to SB I-15• Relocate 30-feet of 2d ATMS under 7200 South Structure widening• Relocate 50-feet of 4d ATMS under UPRR and UTA bridge widening• Relocate Miscellaneous ATMS by the I-215 interchange		
It is anticipated that there will be other ITS impacts as a result of the project; however, further evaluation is necessary to determine the extent of those impacts.		

CONCEPT REPORT

6 of 6

Public Involvement Summary (Activity 60C)	Estimated Cost:	\$50,000
Public involvement will require coordination with local municipalities and local media regarding project construction schedule and related traffic impacts.		

Design Exceptions, Deviations, Waivers Summary:
Design Exceptions <ul style="list-style-type: none">• Lane width – 11 foot outside lane on I-15, 11 foot lanes on the 7200 South on-ramp and the I-15/I-215 CD ramp.
Design Waivers <ul style="list-style-type: none">• None
Standards Deviations <ul style="list-style-type: none">• None

**PIN 8721 PROJECT # F-R299(114) PROJECT NAME North-South Study
I-15/I-215 Interchange Improvements; Project 1 (2-lane CD Road) (I-15 Alternative #11E)**

Cost Estimate - Concept Level

Prepared By Horrocks Engineers (TCA) Date 2/13/2014

Approximate Route Reference Post (BEGIN) =	295.689	(END) =	300.004
Accumulated Mileage (BEGIN) =	295.689	(END) =	300.004
Project Length =	4.315	miles	22,783 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) =	2.0%		
Assumed Yearly Inflation for Urban Commercial Right of Way (%/yr) =	2.0%		
Assumed Yearly Inflation for non-Urban Right of Way (%/yr) =	2.0%		
Items not Estimated (% of Construction) =	20.0%		
Preliminary Engineering (% of Construction + Incentives) =	10.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Roadway and Drainage	\$17,467,319	
Traffic and Safety	\$1,384,940	
Structures	\$16,729,650	
Environmental Mitigation	\$0	
ITS	\$100,500	
Subtotal	\$35,682,409	
Items not Estimated (20%)	\$7,136,482	
Construction Subtotal	\$42,818,891	
P.E. Cost	P.E. Subtotal	\$4,292,000 10%
C.E. Cost	C.E. Subtotal	\$4,292,000 10%
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	\$625,500
Incentives	Incentives Subtotal	\$100,000
Miscellaneous	Miscellaneous Subtotal	\$0

Cost Estimate (ePM screen 505)	2014	2015
P.E.	\$4,292,000	\$4,421,000
Right of Way	\$0	\$0
Utilities	\$626,000	\$645,000
Construction	\$42,819,000	\$44,104,000
C.E.	\$4,292,000	\$4,421,000
Incentives	\$100,000	\$103,000
Aesthetics	1% \$428,000	\$441,000
Change Order Contingency	9% \$3,892,230	\$4,009,000
UDOT Oversight	\$0	\$0
Miscellaneous	\$0	\$0
TOTAL	\$56,449,230	\$58,144,000

PROPOSED COMMISSION REQUEST	TOTAL \$56,449,230	TOTAL \$58,144,000
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Roadway and Drainage

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Roadway and Drainage						
012850010	Mobilization	1	\$4,300,000.00	Lump	\$4,300,000	10% of construction
013150010	Public Information Services	1	\$50,000.00	Lump	\$50,000	
015540005	Traffic Control	1	\$2,150,000.00	Lump	\$2,150,000	5% of construction
01557001*	Maintenance of Traffic	1	\$100,000.00	Lump	\$100,000	
017210010	Survey	1	\$450,000.00	Lump	\$450,000	Usually 1% of construction
020560005	Borrow (Plan Quantity)	15510	\$15.00	Cu yd	\$232,650	
020560015	Granular Borrow (Plan Quantity)	16911	\$19.00	Cu yd	\$321,309	
022210015	Remove Bridge	20826	\$200.00	Sq ft	\$4,165,200	
027210020	Untreated Base Course (Plan Quantity)	6770	\$28.00	Cu yd	\$189,560	
027520020	Portland Cement Concrete Pavement 13 inch Thick	40586	\$100.00	Sq yd	\$4,058,600	Includes OGBC
	Drainage	1	\$1,450,000.00	Lump	\$1,450,000	
Roadway and Drainage Subtotal					\$17,467,319	Back to Main

Structures

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Structures						
Bridges						
	Bridge Widening	39094	\$400.00	sq ft	\$15,637,600	Assumed LxW (deck area)
Walls						
	Retaining Wall	10730	\$85.00	Sq ft	\$912,050	Assumed LxH (wall area)
Sign Structures						
	Modify Overhead Sign Structure	1	\$15,000.00	Each	\$15,000	
	Modify Overhead Sign Foundation	3	\$20,000.00	Each	\$60,000	
	Modify Cantilever Sign Structure	1	\$10,000.00	Each	\$10,000	
	Modify Cantilever Sign Foundation	1	\$20,000.00	Each	\$20,000	
	Replace Overhead Sign Structure	1	\$75,000.00	Each	\$75,000	
Structures Subtotal					\$16,729,650	Back to MAIN

Environmental and Landscaping

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
	Environmental & Landscaping					
	Environmental					
	Temporary Erosion Control					
	Landscaping					
	Environmental Mitigation Subtotal				\$0	Back to MAIN

Miscellaneous

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Utilities						
	Relocate Water Line	1	\$23,000.00	Lump	\$23,000	
	Relocate Fiber Optic	1	\$5,000.00	Lump	\$5,000	
	Relocate Phone Line	2	\$1,250.00	Each	\$2,500	Assume UDOT will pay 50% of phone line relocation cost
	Reconstruct Manhole	1	\$10,000.00	Lump	\$10,000	
	Relocate Buried Electrical Line	1	\$25,000.00	Lump	\$25,000	
	Relocate I-15 Lighting	1	\$50,000.00	Lump	\$50,000	
	Relocate Bridge Lighting	1	\$30,000.00	Lump	\$30,000	
	Relocate Light Rail Utilities	1	\$30,000.00	Lump	\$30,000	
	Utility Contingency	1	\$450,000.00	Lump	\$450,000	1% of construction
	S.U.E	1		Lump	\$0	Assume \$1.00 per foot per utility
Utilities Subtotal					\$625,500	
Right-of-way						
Right-of-Way Subtotal					\$0	
Incentives						
	Early Completion	1	\$100,000.00	Lump	\$100,000	
Incentives Subtotal					\$100,000	
						Back to MAIN

**PIN 8721 PROJECT # F-R299(114) PROJECT NAME North-South Study
Project 1_Interim: I-15/I-215 Interchange Improvements; I-15 Alternative #11G**

Cost Estimate - Concept Level

Prepared By Horrocks Engineers (TCA) Date 2/21/2014

Approximate Route Reference Post (BEGIN) =		(END) =	
Accumulated Mileage (BEGIN) =		(END) =	
Project Length =	0.000	miles	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) =	10.0%		

Construction Items	Cost	Remarks
Roadway and Drainage	\$2,638,569	
Traffic and Safety	\$92,151	
Structures	\$505,750	
Environmental Mitigation	\$0	
ITS	\$20,000	
Subtotal	\$3,256,470	
Items not Estimated (20%)	\$651,294	
Construction Subtotal	\$3,907,764	
P.E. Cost	P.E. Subtotal	\$400,000 10%
C.E. Cost	C.E. Subtotal	\$400,000 10%
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	\$50,000
Incentives	Incentives Subtotal	\$90,000
Miscellaneous	Miscellaneous Subtotal	\$0

Cost Estimate (ePM screen 505)	2014	2015
P.E.	\$400,000	\$412,000
Right of Way	\$0	\$0
Utilities	\$50,000	\$52,000
Construction	\$3,908,000	\$4,025,000
C.E.	\$400,000	\$412,000
Incentives	\$90,000	\$93,000
Aesthetics	1% \$39,000	\$40,000
Change Order Contingency	9% \$355,230	\$366,000
UDOT Oversight	\$0	\$0
Miscellaneous	\$0	\$0
TOTAL	\$5,242,230	\$5,400,000

PROPOSED COMMISSION REQUEST	TOTAL \$5,242,230	TOTAL \$5,400,000
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Roadway and Drainage

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Roadway and Drainage						
012850010	Mobilization	1	\$375,000.00	Lump	\$375,000	10% of construction
013150010	Public Information Services	1	\$10,000.00	Lump	\$10,000	
015540005	Traffic Control	1	\$180,000.00	Lump	\$180,000	5% of construction
01557001*	Maintenance of Traffic	1	\$40,000.00	Lump	\$40,000	
017210010	Survey	1	\$40,000.00	Lump	\$40,000	1% of construction
020560015	Granular Borrow (Plan Quantity)	6327	\$19.00	Cu yd	\$120,207	
023160020	Roadway Excavation (Plan Quantity)	16030	\$10.00	Cu yd	\$160,300	
027210020	Untreated Base Course (Plan Quantity)	4218	\$28.00	Cu yd	\$118,098	Includes OGBC
027520020	Portland Cement Concrete Pavement 13 inch Thick	15184	\$100.00	Sq yd	\$1,518,400	
020560015	Granular Borrow (Plan Quantity)	276	\$19.00	Cu yd	\$5,239	
027210020	Untreated Base Course (Plan Quantity)	184	\$28.00	Cu yd	\$5,147	Includes OGBC
027520020	Portland Cement Concrete Pavement 13 inch Thick	662	\$100.00	Sq yd	\$66,178	
Roadway and Drainage Subtotal					\$2,638,569	Back to Main

Traffic, Safety & ITS

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Traffic, Safety & ITS						
Traffic						
028440030	Cast-in-Place Concrete Constant Slope Barrier - 42 inch	860	\$60.00	ft	\$51,600	
	Cast-in-Place Concrete Constant Slope Barrier - 42 inch	525	\$60.00	ft	\$31,500	
	Pavement Marking Paint (Epoxy)	91	\$30.00	gal	\$2,730	
	Pavement Grinding	18060	\$0.35	ft	\$6,321	
Traffic and Safety Subtotal					\$92,151	
ITS						
	Relocate Ramp Meter	1	\$20,000.00	Lump	\$20,000	
ITS Subtotal					\$20,000	Back to MAIN

Structures

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Structures						
Bridges						
Walls						
	Retaining Wall	5950	\$85.00	Sq ft	\$505,750	Assumed LxH (wall area)
Sign Structures						
Structures Subtotal					\$505,750	Back to MAIN

Environmental and Landscaping

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
	Environmental & Landscaping					
	Environmental					
	Temporary Erosion Control					
	Landscaping					
	Environmental Mitigation Subtotal				\$0	Back to MAIN

Miscellaneous

[Back to MAIN](#)

Item #	Item	Quantity	Price	Units	Cost	Remarks
Utilities						
	Relocate I-15 Lighting	1	\$50,000.00	Lump	\$50,000	
Utilities Subtotal					\$50,000	
Right-of-way						
Right-of-Way Subtotal					\$0	
Incentives						
	Early Completion	1	\$90,000.00	Lump	\$90,000	
Incentives Subtotal					\$90,000	
						Back to MAIN



LEGEND

-  NEW PAVEMENT
-  NEW BRIDGE DECK

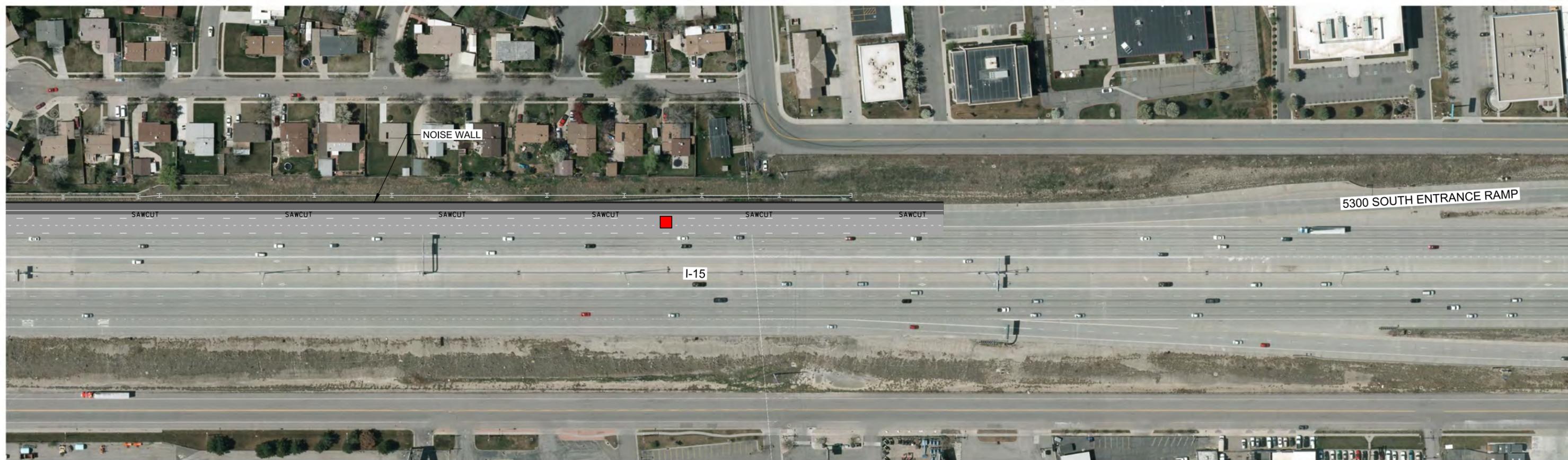
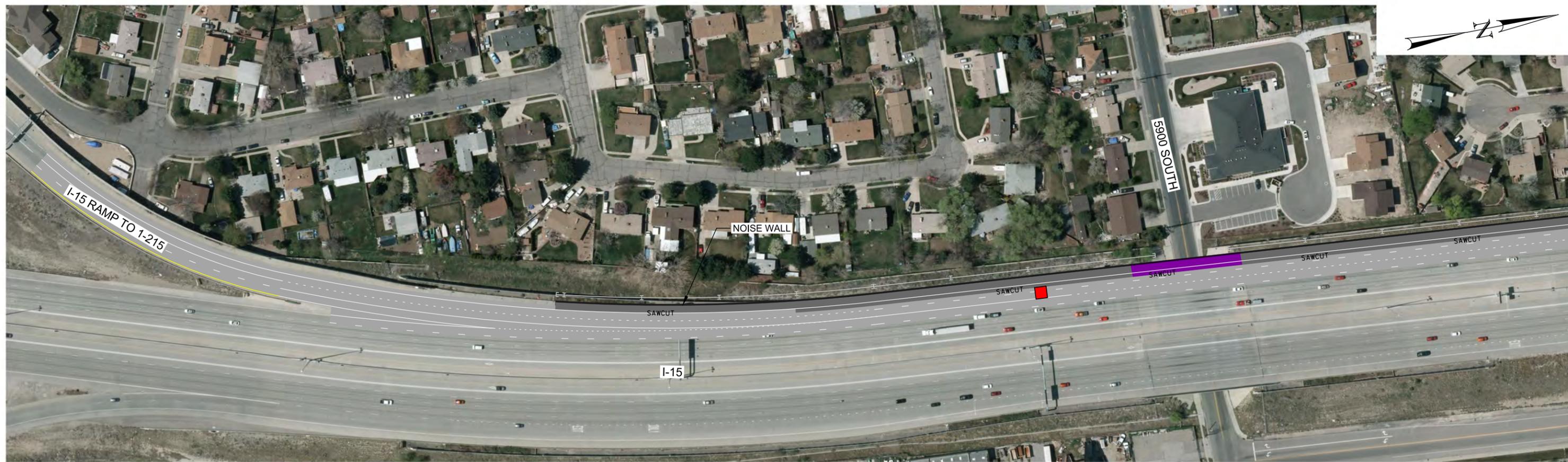
DESIGN EXCEPTIONS

-  LANE WIDTH

NORTH SOUTH STUDY
I-15/ I-215/ INTERCHANGE IMPROVEMENTS
PROJECT 1: I-15 ALTERNATIVE #11E & #11G
PLAN SHEET

SHEET NO.

11EG-3



LEGEND

-  NEW PAVEMENT
-  NEW BRIDGE DECK

DESIGN EXCEPTIONS

-  LANE WIDTH

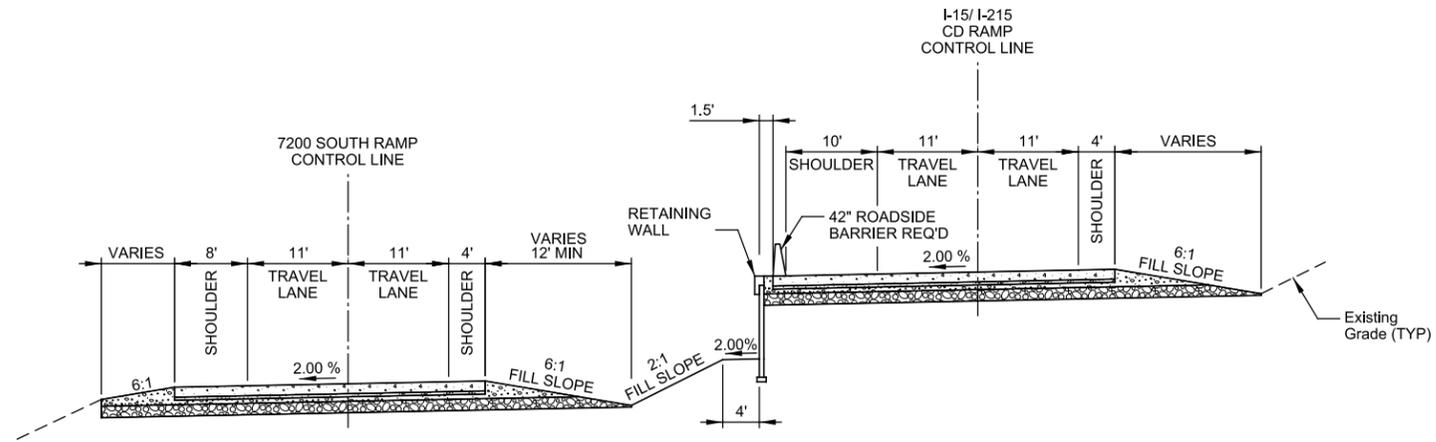
NORTH SOUTH STUDY
I-15/ I-215/ INTERCHANGE IMPROVEMENTS
PROJECT 1: I-15 ALTERNATIVE #11E & #11G
PLAN SHEET

SHEET NO.

11EG-5

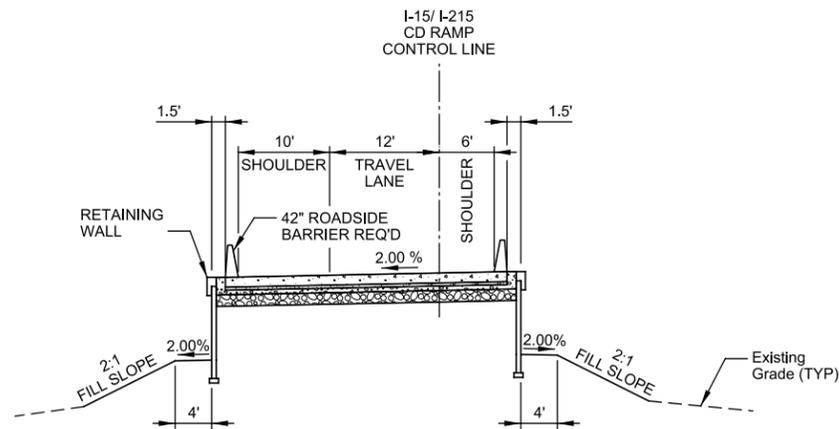
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TYPICAL SECTION NO 05



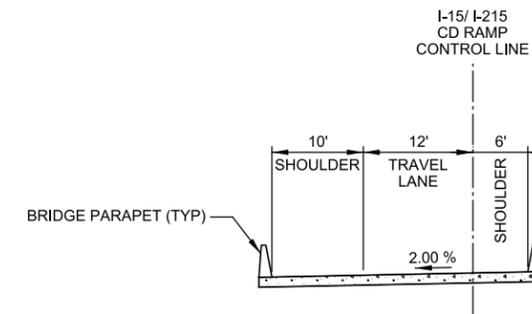
I-15/I-215 CD RAMP TYPICAL SECTION
 DESIGN SPEED 50 MPH
 I-15 ALTERNATIVE #11E

TYPICAL SECTION NO 06



I-15/I-215 CD RAMP TYPICAL SECTION
 DESIGN SPEED 50 MPH
 I-15 ALTERNATIVE #11E

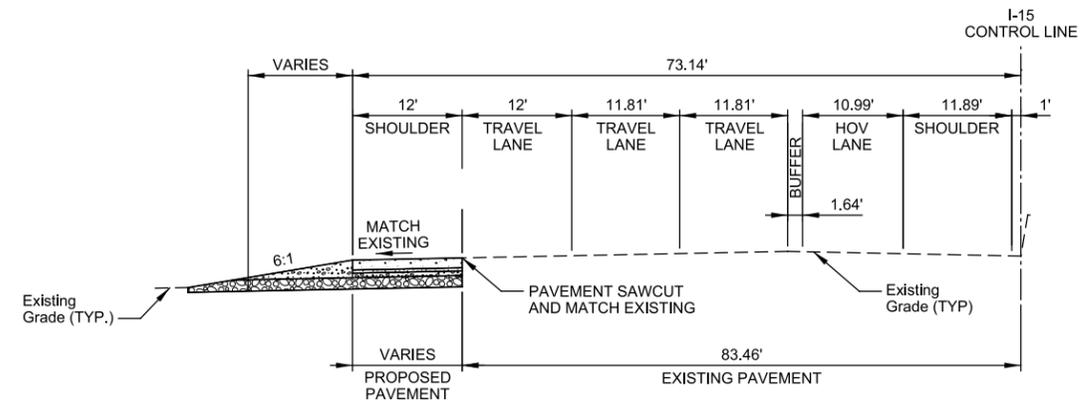
TYPICAL SECTION NO 07



I-15/I-215 CD RAMP TYPICAL SECTION
 DESIGN SPEED 50 MPH
 I-15 ALTERNATIVE #11E

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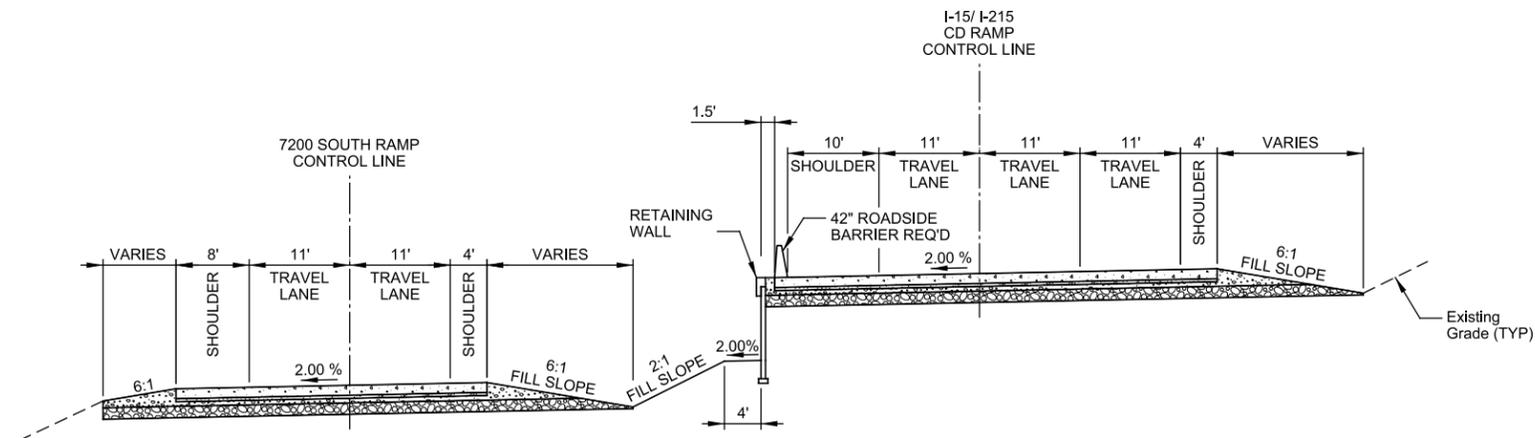
TYPICAL SECTION NO 08



I-15 TYPICAL SECTION

DESIGN SPEED 70 MPH
I-15 ALTERNATIVE #11G

TYPICAL SECTION NO 09



I-15/I-215 CD RAMP TYPICAL SECTION

DESIGN SPEED 50 MPH
I-15 ALTERNATIVE #11G

NORTH SOUTH STUDY
I-15/ I-215/ INTERCHANGE IMPROVEMENTS
PROJECT 1: I-15 ALTERNATIVE #11E & #11G
TYPICAL SECTIONS

SHEET NO.

11EG-8

4/22/14 9:20:14 AM I:\projects\111515\1115_0700-Interchange_11E_11G\11150721_11E_11G\11150721_11E_11G_TypicalSection.dwg