

3D Construction

Improving Efficiency of Contractor Operations

March 2, 2016

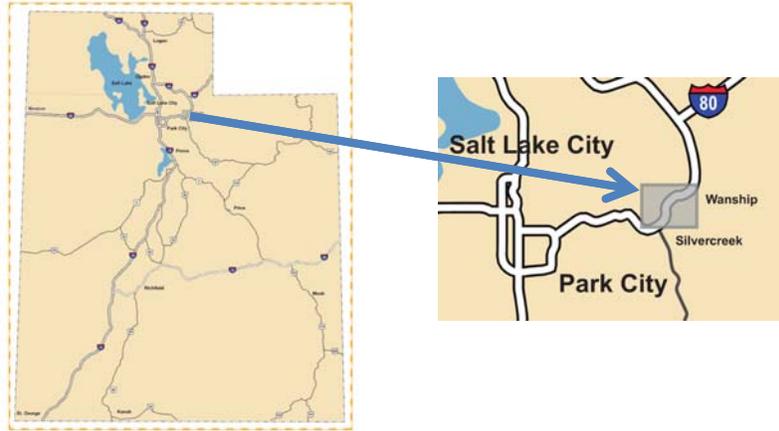


I-80; Silvercreek to Wanship

Project Overview



Map



Map



Scope

- Two-year project
- \$36 million budget
- Existing asphalt surface
- 380,000 SY CTAB
- 12" PCCP overlay
- Drainage work
- Bridge replacement



Challenges

- Traffic crossover
- One lane in each direction
- Super elevations
- Geography
 - Canyon
 - Divided highway
 - Elevation



Challenges

- Environmental sensitivities
 - Silver Creek
 - Historic Union Pacific Rail Trail
- Stakeholder groups
- Accelerated schedule



Making 2D into 3D - Step 1 Survey Control

Project Survey Control Points

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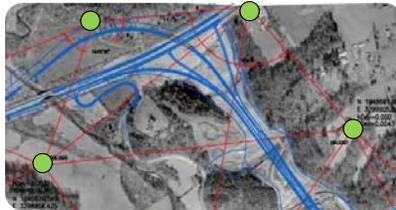
NOTE: PROJECT COORDINATES SHOWN ARE IN US SURVEY FEET.

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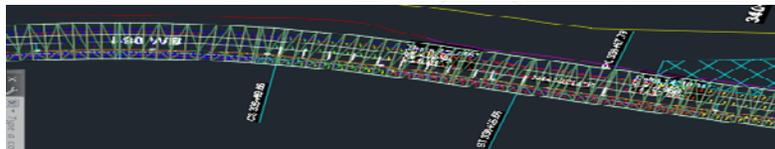
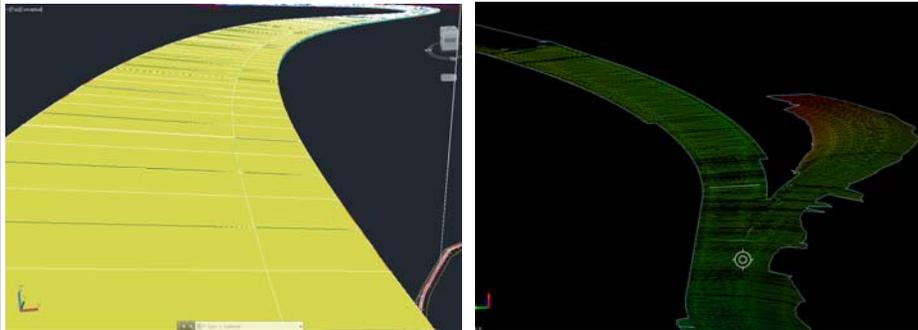
Making 2D into 3D - Step 4 Proper AMG Selection



- Alignment
- Control Point
- Control Network



Making 2D into 3D - Step 5 3D Model(s) Creation - Verification



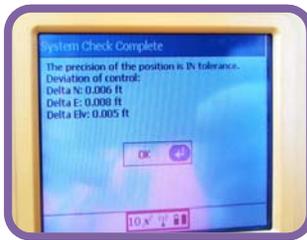
Making 2D into 3D - Step 6 AMG Implementation



Making 2D into 3D - Step 6 AMG Implementation



Making 2D into 3D - Step 7 Verification – QA/QC



- D. Thickness
1. Contractor obtains cores for thickness according to AASHTO T 24.
 - a. The Engineer marks core location.
 - b. One thickness core per 12,000 ft².
 2. Determine the acceptability and pay factors for deficient thickness areas using Table 1.

Table 1
Price Reductions for Deficient Thickness

Deficient Thickness (inches)	Pay Factor
0 to 1/4	1.00
1/4 to 1/2	0.90
1/2 to 3/4	0.75
3/4 to 1	0.60
1 to 1 1/2	0.50
1 1/2 to 2	0.40
2 to 3	0.30
3 to 4	0.20
4 to 5	0.10
5 to 6	0.05
6 to 7	0.02
7 to 8	0.01
8 to 9	0.00
9 to 10	0.00
10 to 11	0.00
11 to 12	0.00
12 to 13	0.00
13 to 14	0.00
14 to 15	0.00
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40 to 41	0.00
41 to 42	0.00
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94 to 95	0.00
95 to 96	0.00
96 to 97	0.00
97 to 98	0.00
98 to 99	0.00
99 to 100	0.00

- a. The Engineer may accept pavement deficient by more than 1/4 inch at 50 percent pay or require removal and replacement.
- b. Make all corrections, including removal and replacement, at no additional cost to the Department.

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Year over Year Results – 2D to 3D - PCCP Only -

600 hour reduction in Wireline Between 14 and 15
 100 hour reduction in paver time between 14 and 15 – negligible
 Wet Haul truck Access 10-15% Overall Gain - Job Dependent

Grinding 2014	27,680 cost	51,000 bonus
Grinding 2015	21,145 cost	75,000 bonus
Profile PI 2014	3.29	
Profile PI 2015	2.37	
Yield Thickness 2014	8.5 %	
Yield Thickness 2015	7.0 %	



Questions?



