

Estimated Cost of Design, Construction and Maintenance of Access Road and Additional Clearance Requested by Union Pacific Railroad

Access Road

Design	\$1,000.00
Materials	\$12,000.00
Labor	\$17,000.00
Total Cost	\$30,000.00

Additional Clearance

Design costs	\$0.00
Design Cost Savings to UPRR	\$3,000.00

Based on the good faith assumption that the UPRR would pay for the additional clearance required to accommodate a future track expansion, the Department incorporated the UPRR's request into the original design. The Department estimates that 50 man-hours would be required to complete a re-design of the project to remove the additional clearance requested by UPRR. Based on the savings of 50 man-hours, the Department has contributed a savings of \$3,000.00 by incorporating the UPRR's request into the original design.

Additional Construction Costs \$88,589

The design to accommodate the UPRR's request requires an extension of the Center Span of 20 feet. The additional length will require an increase in the strength of the structural steel from W30 X 108 to W33 X 118.

Additional Steel = $6(20')(118) + 6(172)(118-108) = 24,480$ pounds @ \$1.20/lb = \$29,376

Additional Concrete = $(20')(35.17')(8/12) + 2(30 \text{ cub lb/ft})(20') = 21.8$ cubic yards
 \$665/cy = \$14,497

Additional Reinforcement = $(240 \text{ lb/cy})(21.8) = 5,240$ pounds @ \$0.90/lb = \$4,716

Additional Labor **\$20,000.00**

Additional Maintenance over Life of Structure **\$20,000.00**

Total Cost = $\$29,376 + \$14,497 + \$4,716 + \$20,000 + \$20,000 = \$88,589$