

# IDAHO – 2016 SEP-14 FBVQ CONTRACTING REPORT

## FIXED BUDGET VARIABLE QUANTITY CONTRACTING REPORT

**PROJECT LOCATION:** E FERNAN LAKE ROAD SAFETY IMPROVEMENTS  
**KEY NO:** 13870  
**PROJECT MANAGER:** LHTAC  
**REPORT DATE:** January 17, 2017

### Introduction

This report has been written to document the performance of Fixed Budget / Variable Quantity Contracting on the referenced project. This report is required by FHWA following completion of the project and final acceptance by ITD. This report contains an overall evaluation of the project construction and design, because the warranty period is still in place until approximately September 1, 2017.

### Project Description

The project purpose is to improve safety on a 1.7 mile stretch of E. Fernan Lake Road. Chip sealing was selected as the safety countermeasure to help reduce crashes. Chip sealing the road provides improved surface friction and helping cars stay on the road, especially around curves. An additional countermeasure used was edge and centerline striping. Edge line and centerline striping helps drivers better recognize and prepare for curvilinear alignment of the road. Used concurrently, these countermeasures help reduce the severity and frequency of lane departure crashes on E. Fernan lake Road.

### Initial Budget

Engineer's Estimate (\$)	\$177,000.00
Engineer's Estimate (Quantity)	76,349 SY
Contract Time Determination:	1 Day
Initial Duration:	1 Day
Time Restraints:	15 days between seal coat and pavement markings

### Bidding Results

Total number of Bidders:	1
Bid Opening Date:	April 26, 2016
Contractor (Low Bid):	Poe Asphalt Paving, Inc.
Award Date:	June 1, 2016
Contract's Bid (\$):	\$177,000.00
Contractor's Bid (quantity):	76,349 SY (Bid to complete entire area)
Contract Time Determination:	1 day
Contractor's Bid (Time):	1 day

## EVALUATION OF FIXED BUDGET VARIABLE QUANTITY CONTRACTING TECHNIQUE

### Metric 1- Cost of Inspection

The Construction Engineering and Inspection Agreement was written with D.E.A. Inc. for \$17,300.00 which is approximately 9.8% of the construction contract with an additional \$7,800.00 for the warranty

phase. To date, D.E.A. has fulfilled their initial scope and has invoiced \$17,163.51. The final amount is anticipated to be under the originally budgeted amount for Construction Engineering & Inspection (CEI). The project was performed for the amount estimated and budgeted and is therefore, a success. This project presented standard CEI budget which required minor adjustments because of the all-inclusive bid item.

**Metric 2 – Final Construction Cost**

The Contractor bid 1 working day for this work. However, the work required a delay between chip seal application, cleaning, and application of the striping per construction standards. There were actually several days needed to complete the various aspects. The Contractor completed the work before the cut-off date established by the contract.

This contract established a warranty that is currently in effect until approximately September 1, 2017.

**Metric 3 – Industry Reaction**

All reaction received from this project appears to be very positive. The Contractor was eager to participate and complete the project. The CEI seems pleased with the outcome to date and the work was easily tracked because of the inclusion of all items within the single item for the seal coat square yardage.

**Actual Project Statistics**

Cost of Inspection (CE):	\$25,100.00 (\$17,300 for CEI, \$7,800 for Warranty)
Final Construction Costs (CN):	\$176,999.89
Change Orders (CN):	-none-
Other CN Adjustments:	-none-
Total (CN)	\$176,999.89
Final Quantity:	76,349.0 SY
Actual Construction Duration:	2 days
Project Completion Date:	8/31/2016 construction, 9/1/2017 warranty

**RECOMMENDATIONS USING THE FIXED BUDGET VARIABLE QUANTITY CONTRACTING TECHNIQUE**

This contracting method is very useful for some types of construction projects. Some problems identified were:

- The need to anticipate a larger than anticipated environmental clearance. If the quantities allow then there needs to be area covered environmentally to expand the constructed zone to fully use the allocated funds without delays or other impacts.
- Specification language needs to be refined that if the entire area is completed and there is available funds will be paid only for those quantities installed, to avoid having to pay for area(s)/ material(s) not actually constructed.
- There needs to be additional care taken during the design phase to accurately measure the area to be constructed to account for potential over-runs and under-runs of material prior to contracting.

- We need to have specification language that establishes a construction window rather than duration. Then competitive bidding will determine the duration for construction and give a useful means of analyzing the various bids individually.
- Since the project was one bid item, testing was not fully addressed. While the warranty period will supply a means to measure the effectiveness of the materials and construction methods, there still needs to be some controls for us to administer the construction.

## **CONCLUSION**

Eastside Highway District and LHTAC are pleased with the execution of the project. However, the warranty period will determine the relative effectiveness of the application(s) from an administrative standpoint. This contracting method could prove very effective on future projects because of the rapid delivery and ease of administration. It will also prove very effective in the control of budgeted amounts.

**Idaho Transportation Department  
District 2**

2016 Report regarding Fixed Cost Variable Quantity Contracting  
State Funded D2 District Wide Sealcoats Project No. A012(999) & A013(439) KN12999 & KN13439: FY16  
& 17  
December 9, 2016

**Introduction**

This report was written to document the performance of the Fixed Cost Variable Quantity bidding technique on the above-mentioned projects. These projects were state-funded; therefore, the generation of this report is not required by either the ITD or FHWA.

**Project Description**

There were two District Wide Sealcoat packages completed last season - Fiscal Year 16 and Fiscal Year 17. The Fixed Cost Variable Quantity bidding technique required the contractor to bid the total square yardage of sealcoating that could be completed for \$1,521,000 (FY16) and \$1,236,275 (FY17). There were 10 different prioritized sealcoat sections, for the two projects, totaling 1,274,892 SY available for bidding. Both projects required a completion date of August 15. The FY16 contract allowed for the work to be completed over two years and hence the overlap of FY16 onto the FY17 season (for clarification the state fiscal year begins on July 1st of each year).

**Bidding Results**

Bids were opened on November 18, 2014 for FY16 and October 27, 2015 for FY17 and the low bidder, or the bidder that proposed the most quantity for the fixed budget, was Knife River with a bid of 509,296 (FY16) and 529,509 (FY17) square yards totaling 1,038,805 SY of seal coat to be completed. There were 3 bidders for the FY16 sealcoat with one contractor withdrawing due to a clerical error. There were 2 bidders for the FY17 seal coat. The successful contractor, Knife River, elected to delay the FY16 seal coat until the following year. They bid and were awarded the FY17 seal coat and proceeded to complete both contracts during the 2016 construction season.

**Evaluation of Fixed Cost Variable Quantity Bidding Technique**

*Metric 1 – Cost of Inspection*

The cost of inspection (CE) for the project was about \$6,182 for FY16 and costs to date for FY17 is \$7,005. The cost of inspection was 0.4% (FY16) and to date 0.6% for FY17 of the construction cost. Inspection was very efficient and well below the 10% that is typically allotted for construction inspection of a project when considered separately or together. All contract requirements were met, to date, regarding material acceptance.

*Metric 2 – Final Construction Cost*

FY16 Seal Coat

The original project budget/bid was \$1,521,000 and matches what has been expended to date. Final inspection will be performed in April of 2017. Final costs could vary dependent on performance of the warranty. It is expected that this project will be well within 105% of the budget. To date, the seal coat is performing well. There was one change order written for this project. The change order revolved around the asphalt and fuel escalation clauses. The price of oil had declined such that there was \$171,280 credit coming from the contractor as a result of the contract asphalt and fuel escalations. The

change order utilized the credit to extend the seal coat by 99,790 SY. In addition, there was a minor deletion of a quantity of seal coat in the change order due to the Leggett Creek culvert replacement project.

#### FY17 Seal Coat

The original project budget/bid was for \$1,236,275. There were 4 of the 5 priority sections completed and final inspection will be performed for these in April of 2017. One priority project could not be completed due to a landslide that closed the road for five months. A change order was prepared to move that seal coat into 2017 – final inspection on this will be conducted in April of 2018. Final costs could vary dependent on performance of the warranty. It is expected that this project will be well within 105% of the budget. To date the seal coat is performing well. A second change order was written for this project. This change order revolved around the asphalt and fuel escalation clauses. The price of oil had declined such that there was a \$45,213 credit coming from the contractor. The change order utilized a portion of the credit to complete the seal coat that had been deleted (Leggett Creek) under the FY16 seal coat involving the culvert replacement. There is \$14,847 left over from the project that will be swept at closeout.

#### *Metric 3 – Industry Reaction*

Dave Kuisti (D2 District Engineer), Doral Hoff (D2 District Engineering Manager), Bob Schumacher (D2 Operations Manager) and Josh Smith (Project Manager for Knife River) were asked for their input regarding the Fixed Cost Variable Quantity Bidding technique. The overall consensus is that this method of bidding works exceedingly well for the seal coat process. There have been 4 (FY12, 13, 14 and 15) previous seal coats projects completed using this method. They too all worked well to control the budget, reduce administration with inspection forces and produce a quality product. There are no major issues concerning this technique.

#### **Recommendations Using the Fixed Cost Variable Quantity Bidding Technique**

The bidding technique worked very well and no recommendations to improve the technique were made.

#### **Conclusion**

The fixed-cost variable-quantity bidding technique worked well and the District recommends using it for future sealcoat projects. The contractor did not have any issues with the bidding technique.