

Indiana Department of Transportation

WORK PLAN
for
Special Experimental Project, SEP-14
With Alternate Bids on Pavement Type
Contract # R-30106, US 31 at Kokomo, Indiana

PURPOSE

The Indiana Department of Transportation (INDOT) has scheduled one (1) Federal-aid project that will incorporate a choice of alternate pavement type designs, Hot Mix Asphalt (HMA) pavement or Portland Cement Concrete Pavement (PCCP), for the contractor. INDOT has developed an innovative procedure for the implementation of alternate pavement bidding for this project and are processing it as an experimental feature to use of alternate bids to determine the pavement type on the project. INDOT has actively involved the Asphalt Pavement Association of Indiana (APAI), the Indiana Chapter of the American Concrete Pavement Association (ACPA) and a good representative contingent of contractors that are members of these associations in the development of this procedure. These industry representatives generally approve of utilizing this experimental process to determine if there is merit in it as a sound procedure to promote competition and provide economic benefits to the tax payers and stakeholders.

SCOPE

INDOT has selected the US 31 project in Howard County (Contract # R-30106, from 2.5 miles S to 0.5 miles S of SR 22/US 35) for utilizing alternate bids to determine the pavement type. The project (contract) length is approximate 2 miles long on new alignment and constructing new pavement.

INDOT will submit all documentation required for a complete evaluation under SEP14. INDOT plans to use American Recovery and Reinvestment Act funds and has scheduled this project in their May 20, 2009 bid letting.

The INDOT Alternate Pavement Bidding procedure is a non-traditional construction contracting technique which deviates from the competitive bidding provisions in 23 USC 112. INDOT expects to evaluate this procedure by measuring three (3) benefits from the process:

1. Attract more bidders and competition.
2. Obtaining true cost savings over similar conventional bid projects.
3. Provides a more competitive market, i.e. lower bid costs on paving items using this procedure versus the standard procedure where the pavement type is pre-determined.

SCHEDULE

The contract will be advertised approximately four weeks prior to the May 20, 2009 letting date. The target for award date will be one week after the letting date. The date for work to proceed will be approximate two weeks after the award date. The target for completion of construction for this contract will be the end of 2010 year.

MEASURES

The project will be evaluated to determine if the low bid alternate was the same alternate determined to be most economical by INDOT's standard Pavement Type Selection (PTS) process. INDOT will also evaluate the process for its success in attracting more bidders than under the conventional bidding method.

INDOT will compare each bid to the appropriate estimated alternate design, and review all bids to determine whether there were irregularities associated with this bidding process. There will be no adjustments made to the method of payment for either asphalt or concrete. Concrete pavements are paid by the square yard with cores taken to determine the thickness. Asphalt pavements are paid by the ton and the contractor is required to place the material at the proper rate to achieve the specified thickness, density, air voids, and VMA.

The successful low bid will be evaluated to determine if alternate bidding provides true cost savings to the State. The bids received will be evaluated to determine if alternate bidding is providing a more competitive market, such that lower bid costs on paving items are being received than on like projects on which the pavement type was specified. INDOT will document the actual cost of the selected alternate and compare to the estimated cost. The evaluation will also include the industry's comments on the alternate bidding process.

PROPOSED BIDDING PROCEDURE

- 1) INDOT uses Mechanistic Empirical Pavement Design Guide (MEPDG) software to design HMA and PCCP pavements. MEPDG determined that 14 inches of HMA or 10 inches of PCCP will be required on US 31.
- 2) Two separate sets of plans will be developed and two separate contracts bids will be solicited on one project, one for HMA pavement and other one for PCCP.
- 3) INDOT will use FHWA real cost software to perform Life Cycle Cost Analysis (LCCA) on the pavement designs for both HMA pavement and PCCP.
- 4) Both HMA pavement and PCCP will be analyzed for a 50 year service life. The strategy for LCCA is as follows:

HMA Pavement:

- a) 20 Year Design
- b) Joint Seal at year 3, 6, 9, 12, 15, & 18
- c) At year 20 Functional Overlay and cost of items as follow:
 - 1) 1" mill on Travel Lanes and Inside and Outside shoulder
 - 2) Overlay on Travel lanes and inside shoulder (same pay items) with 1.5" Surface on 2.5" Intermediate.
 - 3) Overlay on Outside shoulder with 1.5" Surface on 2.5" Intermediate.
 - 4) Traffic Maintenance (5%).
- d) Joint Seal at year 23, 26, 29, & 32
- e) At year 35 mill and resurface and cost of items as follow:
 - 1) 1" mill on Travel Lanes and Inside and Outside shoulder.
 - 2) Overlay on Travel lanes and inside shoulder (same pay items) with 1.5" Surface.
 - 3) Overlay on Outside shoulder with 1.5" Surface.
 - 4) Traffic Maintenance (5%).
- f) Joint Seal at year 38, 41, 44, & 47
- g) At year 50 salvage value \$0.00.

PCCP:

- a) 30 year Design
- b) Joint Seal at year 8, 16, and 24
- c) At year 30 Functional Overlay and cost of items as follow:
 - 1) Mill PCCP on Travel Lanes.
 - 2) 1" mill on Inside and Outside HMA shoulder.
 - 3) Full depth PCCP patch on Travel Lanes about 1.5% of areas.
 - 4) Overlay on Travel lanes and inside shoulder (same pay items) with 1.5" Surface on 2.5" Intermediate.
 - 5) Overlay on Outside shoulder with 1.5" Surface on 2.5" Intermediate.
 - 6) Traffic Maintenance (5%).
- d) Joint Seal at year 33, 36, & 39
- e) At year 42 mill and resurface and cost of item as follow:
 - 1) 1" mill on Travel Lanes and Inside and Outside shoulder.
 - 2) Full depth patch on Travel Lanes about 0.75% of areas.
 - 3) Overlay on Travel lanes and inside shoulder (same pay items) with 1.5" Surface.
 - 4) Overlay on Outside shoulder with 1.5" Surface.
 - 5) Traffic Maintenance (5%).
- f) Joint Seal at year 45 & 48
- g) At year 50 salvage value \$0.00.

INDOT uses a 4.0% Discount Rate, No user cost, and No future miscellaneous cost associated with rehabilitation of pavement contracts such as sign, guardrail, etc. Both the Asphalt and Concrete Pavement industries participated in the development of the 50 year service life pavement strategies that INDOT uses; however, both believe that treatment life and year of application need to continue to be monitored

- 5) Cost of the items for both HMA pavement and PCCP will come from the data base maintained by the Office of Pavement Engineering as unit price averages.
- 6) Pavement design and LCCA will yield two Present Worth (PW) Costs, one for HMA pavement and one for PCCP.
- 7) Both bids will be compared to each other with bid amount plus present worth cost as follows:

HMA Bid = HMA Pavement Bid Amount + PW of Future HMA Rehab.

PCCP Bid = PCCP Bid Amount + PW of Future PCCP Rehab.

Low Bidder = Lower of HMA Bid versus Lower of PCCP Bid

The low bidder contract will be executed for that type pavement and the other pavement type bids will be cancelled. This procedure will be published when the solicitation for bids is advertised. The PW of Future HMA Rehab and PW of Future PCCP Rehab will not be published until the bids are opened.

REPORTING

INDOT will prepare and submit to FHWA an initial and final report on the project. The initial report will include the paving industries' reaction to the alternate bid type selection process. It will also contain the letting procedures, individual bid items, quantities, and cost for the work as well as the life cycle cost procedures and estimated costs. The initial report will be issued in December 2009.

INDOT will prepare and submit to FHWA a final report at the completion of the project construction and when the contract is finalized. The final report will contain an overall evaluation of the process along with any suggestions and recommendations for improving the process. Additional information will be obtained and included in the final report in regard to the feasibility of this type of procedure being utilized on future projects. The advantages and disadvantages of this type of bidding process from both the INDOT's and Industries' points of view will be evaluated further.