

MDOT Innovative Contracting Fixed Price-Variable Scope (FPVS)

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OUTLINE FOR TODAY'S DISCUSSION

- FPVS Projects Overview
- Project Selection, Approval, Project Management
- Project Development
- Construction Considerations
- Example Projects
- Questions

FPVS OVERVIEW

- Fixed Price-Variable Scope projects are intended to maximize the amount of work constructed within a pre-established budget.
 - This method is most effective for projects where need far outweighs available funding.
 - MDOT has developed three primary types of FPVS procurements.



TRADITIONAL VS. FPVS

Traditional

The Project **SCOPE** is Fixed

Rejection limit is bid 10% more than
Estimate of **COST**

FPVS

The Project **Budget** is Fixed

Rejection Limit is 10% less work
bid than estimate of **WORK**

FPVS PROS/CONS

- **Advantages**

- Will not exceed programmed budget
- Possible opportunity to get more work done than originally planned

- **Disadvantages**

- Potential to get less work done than originally planned in the current year
- Developing contract language on new projects can add time to the design schedule
- Commitment to complete the Project

RECOMMENDATIONS FOR USE

- Preferred candidates for FPVS projects include:
 - Projects that can be split into definable elements for bidding
 - CPM work
 - Resurfacing projects
 - Projects with the desired scope or limits of work with estimates that exceed the budget

FPVS TYPE 1

- Type 1 FPVS : Bidding by Amount of Work
- Has been used for:
 - HMA Crack Seal
 - Chip Seal
 - Fog Seal Projects

FPVS TYPE 1 EXAMPLE

Project: HMA Crack Treatment

Locations: 20 Locations/Priorities, 5 miles each for a total project length of 100 miles

Budget: \$200,000

0 20 40 60 80 100

Total Lane Miles for Project (All priorities),
Programmed Budget of \$200,000

Bidder 1 – 82 miles

2nd Place

Bidder 2 – 92 miles

Winning Bid

Consider rejecting bid – 10% Less

Bidder 3 – 78 miles

3rd Place

What we want to accomplish

Bidder 4 – 75 miles

4th Place

FPVS TYPE 2

- Type 2 FPVS Projects: Bidding by Work and Price
- Has been used for:
 - Bridge Deck Epoxy Overlays
 - ITS Projects

FPVS TYPE 2 EXAMPLE

Project: Installation of ITS devices

Locations: 10 Locations/Priorities

Budget: \$1,000,000

0 2 4 6 8 10

All priorities, Programmed
Budget of \$1,000,000

Bidder 1 – 8 Locations for
\$950,000

Consider Rejecting

Bidder 2 – 9 Locations for
\$900,000

Bidder 3 – 9 Locations for
\$875,000

Bidder 4 – 7 Locations
for \$600,000

Winning Bid – Max
Work, Lowest Cost

FPVS TYPE 3

- Type 3 FPVS Projects: Traditional Bidding Process and Managing the Project to a fixed price
 - Priority 1 should include enough work to complete approximately 90% of the construction budget.
 - Additional work in Priority 2 is not included in the schedule of items.
 - Priority 2 is included in the design and contains “informational” pay items and quantities.

FPVS TYPE 3

- Work should be relatively uniform throughout the entire project.
- Has been used for:
 - HMA Cold Milling and Resurfacing
 - HMA Crush and Shape

FPVS TYPE 3 EXAMPLE

Project: HMA Cold Milling and Resurfacing

Location: From Point A to I

Budget: \$5,000,000



Base Bid: Bids received for pay items and quantities in Priority 1

Selected Contractor: Low Bid, with careful review of bids for any unbalanced bidding

FPVS TYPE 3 EXAMPLE

Project: HMA Cold Milling and Resurfacing

Location: From Point A to I

Budget: \$5,000,000



Low Bid is less than \$5,000,000

Add work from
Priority 2 until
construction
cost equals
\$5,000,000

Low Bid is greater than
\$5,000,000

- Complete Priority 1

FPVS PROJECT APPROVAL

- Local Agency submits project information to MDOT LAP Staff Engineer
- MDOT LAP Review
- Innovative Contracting Committee Review
- Engineering Operations Committee Review
- FHWA Review through SEP-14 Program
 - Initial Work Plan Review (MI and D.C.)
 - Evaluation Report
 - Completion of the Project

FHWA SEP-14 PROCESS

- Active Project List:

<http://www.fhwa.dot.gov/programadmin/contracts/sep14list.cfm>

<u>State</u>	<u>Contracting / Project Delivery Technique</u>	<u>Brief Description / Location</u>	<u>Workplan</u>	<u>FHWA Approval</u>	<u>Evaluations</u>
AK	Construction Manager / General Contractor Delivery	Parks Highway MP 237 Riley Creek Bridge Replacement	April 24, 2012 (.pdf)		October 20, 2014 (.pdf)
AL	Alternate Pavement Type Bidding	Appalachia corridor projects	June 22, 2004		
AZ	Construction Manager at Risk	City of Phoenix, Downtown traffic management system.	January 28, 2002 (.pdf)		February 01, 2003
AZ	Construction Manager at Risk	City of Flagstaff, Florence-Walnut Railroad Underpass	October 06, 2010		
AZ	Construction Manager at Risk	Programmatic / State-wide approval	November 30, 2012 (.pdf)		

(OR just [Google](#) FHWA SEP-14 Project list)

FHWA CONSIDERATIONS

- FHWA views FPVS as single project with multiple phases.
 - Phase 1 – Portion completed based on the contractors bid
 - Phase 2 – Remainder of work advertised, but included in bid
 - Current direction from FHWA is to complete Phase 2 work within 3 years.
- Failure to complete all work may jeopardize federal funding

FPVS DEVELOPMENT

- Project Timing
 - Approval Process
 - Development of Contract Provisions
 - Letting Date (Wednesday after normal letting)
 - Completion of the Project
- Development Considerations
 - Early Coordination with ICU
 - Project Limits and Scope ($\pm 25\%$ more work than budget is typical)
 - Determine the type of FPVS Procurement

FPVS DEVELOPMENT CONTINUED

- Environmental Clearance
 - Cleared for entire project
- Permits and ROW
 - Obtain for the entire Project
- Completion of the Project
 - Within 3 years
- STIP
 - See Examples in Innovative Contracting Guide
 - Coordination recommended with ICU and Planning
 - Development of Contracts Provisions

PLAN AND SPECIFICATION DEVELOPMENT

- **Special Provisions**
 - Some Previously Approved SPs are available
 - New SPs may need MDOT and/or FHWA approval
- **Design Plans**
 - Plans include the entire project
 - Priorities need to be clearly defined
 - Logical termini
- **Progress Clause**
 - Accounts for completion of the entire project
- **Maintaining Traffic SP**
 - Accounts for all priorities

PLAN AND SPECIFICATION DEVELOPMENT

- Link to Special Provisions:
<http://mdotcf.state.mi.us/public/specprov/index.cfm?sy=658570>

Fixed Price Variable Scope

- [Capital Preventive Maintenance Work on Fixed Price Variable Scope Projects-12DS102\(G030\)](#)
- [Extension of Time on Calendar Date Fixed Price-Variable Scope Projects-12DS108\(F620\)](#)
- [Fixed Price Variable Scope Project for Road And Bridge Concrete Joint Resealing And Penetrating Sealer-12DS102\(I755\)Rev](#)
- [Fog Seal On Fixed Price-Variable Scope Projects-12TM500\(A250\)-01-16-14](#) 
- [Hot Mix Asphalt Crack Treatment and Overband Crack Fill on Fixed Price Variable Scope Projects, 12TM502\(A255\)-01-27-14](#)
- [Overband Crack Fill on Fixed Price-Variable Scope Projects-12DS502\(G035\)](#)
- [Performance Warranty, Thin Epoxy Bridge Deck Overlay-12RC712\(A410\)](#) 
- [Preparation Delivery and Consideration of Bid on Fixed Price Variable Scope Projects-12DS102\(H330\)](#) 
- [Preparation Delivery and Consideration of Bid on Fixed Price Variable Scope Projects-12TM102-A260-02_03-24-15](#) 
- [Significant Changes in the Character of Work on Fixed Price-Variable Scope Projects-12DS103\(F510\)](#)
- [Slope Restoration For Fixed Cost Variable Scope Projects-12DS816\(G675\)](#)
- [Warranty Work Requirements for Double Chip Seals On Fixed Price-Variable Scope Projects-12DS505\(G085\)](#)
- [Warranty Work Requirements for Hot Mix Asphalt Crack Treatment On Fixed Price Variable Scope Projects-12TM502\(A240\)-11-26-13](#) 

TRNS*PORT-TYPE 1

- Trns*port – must include each priority segment in one category

Line Num	Alt Set	Alt Mmbr	Item ID - Description	Quantity	Units	Unit Price
0020			5027004 - __Priority 01, HMA Crack Treatment, Lane, Warranty	8.800	Lnmi	
0030			5027004 - __Priority 02, HMA Crack Treatment, Lane, Warranty	6.510	Lnmi	
0040			5027004 - __Priority 03, HMA Crack Treatment, Lane, Warranty	4.900	Lnmi	
0050			5027004 - __Priority 04, HMA Crack Treatment, Lane, Warranty	8.360	Lnmi	
0060			5027004 - __Priority 05, HMA Crack Treatment, Lane, Warranty	12.030	Lnmi	
0070			5027004 - __Priority 06, Overband Crack Fill, Lane	3.750	Lnmi	

TRNS*PORT-TYPE 2

- Trns*port – must include all the applicable pay items for each priority in a Section.

Section Information

Section ID	Section Description	Section Total	Alternate Set ID	Alternate
0001	Fixed price variable scope sites1 to 6	\$826,872.70	AA	1

Item Prices

Line Num	Alt Set	Alt Mmbr	Item ID - Description	Quantity	Units	Unit Price	Extended Amount
0010			1500001 - Mobilization, Max. _____	1.000	LSUM	\$35,326.60	\$35,326.60
0020			2040025 - Fence, Rem	100.000	Ft	\$1.43	\$143.00
0030			2040080 - Exploratory Investigation, Vertical	35.000	Ft	\$31.60	\$1,106.00
0040			2050010 - Embankment, CIP	64.000	Cyd	\$19.37	\$1,239.68
0050			2050016 - Excavation, Earth	30.000	Cyd	\$16.66	\$499.80
0060			2050031 - Non Haz Contaminated Material Handling and Disposal, LM	15.000	Cyd	\$45.19	\$677.85

TRNS*PORT-TYPE 3

- Includes only the pay items and quantities for Priority 1
- Priority 1 is typically $\pm 10\%$ less \$\$\$ than available funding
- Developed similar to traditional design-bid-build projects.

ADVERTISING/BIDDING

- **Letting Date**
 - Wednesday after normal monthly MDOT letting
- **Bidding:**
 - Paper Bids – Type 1
 - Electronic Bids – Type 3
 - Paper or Electronic – Type 2, depending on the project
- **Pre-Bid Meetings**
 - May be used only if necessary
- **RID Data**
 - Example of acceptable and non-responsive paper bids

CONSTRUCTION ACTIVITIES

- **Construction Engineering and Inspection**
 - Typical oversight still required
- **Payments (Type 1, 2 and 3)**
 - Payment is made based on the verifiable work completed.
 - Construction Staff need to be involved in the development so they are aware of differences in the project and payment mechanism.
- **Type 3 Projects: Managing to a budget**
 - Construction staff will work closely with designers after letting to establish final construction limits.
 - Contract Modification to revise work limits, to meet the project budget/fixed price.

EXAMPLE PROJECTS

- Kent County / Newaygo County C&S -- Type 3
- Cypress Avenue in Newaygo County
 - Approximately 4.4 miles of needed work
- Engineer's Estimate / Budget = \$1,106,250
 - Expected to only complete 3.4 miles
- Low Bid = \$1,126,400
- Pros and cons

EXAMPLE PROJECTS

- University Region – ITS Camera Project -- Type 2
- Budget = \$950,000
- Results – wanted 6, hoped for 8, got 7
- Pros and cons

EXAMPLE PROJECTS

- Superior Region Crack Seal -- Type 1
- Budget = \$1,272,731 (estimated 637.952 miles)
- Results – 647.7 miles bid
- Pros and cons

2014 FPVS OVERVIEW

- Type 1: Eight Type 1 FPVS projects let (7 HMA Crack Treatment Projects, 1 Chip Seal Project)
 - 61.9 miles of additional crack sealing than estimated
 - Chips seal and bridge rehab was very close to estimated amount of work
- Type 2: ITS Project – obtained one more site for \$909,627
- Type 3: Six Type 3 FPVS projects let (two crush and shape and HMA overlay, three HMA mill and resurface, and one bridge epoxy overlay/approaches)
 - Four of the projects the limits were extended and more work was completed than if the traditional process was used
 - 2 of the projects were over engineer's estimate and they either found the funds to complete the original work or reduced the limits

ADDITIONAL RESOURCES

- Innovative Contracting Unit Staff
 - Charlie Stein, steinc@Michigan.gov
 - Phil Grotenhuis, grotenhuisp@Michigan.gov
 - Dina Tarazi, tarazid@Michigan.gov
 - Mark Dubay, dubaym@Michigan.gov
- Innovative Contracting Guide: On MDOT Website and at:
http://michigan.gov/documents/mdot/Innovative_Construction_Contracting_340000_7.pdf



Questions