

Route 367 St. Louis County Freeway Conversion



Presented by:

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CRAWFORD, MURPHY & TILLY, INC.

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Presentation Goals

- Present a real world example of VE principles that produced significant savings on a major roadway project
- Demonstrate how M-E PDG played a key role in those savings
- Highlight the relationship between all parties to achieve the results

The Project – Rt 367 Conversion



St. Louis County, MO

Phase 1 - \$45 million, 2.05 miles

Phase 2 - \$15.6 million, 1.62 miles

Total: \$60.6 million, 3.67 miles

Existing Conditions



367/Dunn Road

Existing Conditions



367/New Jamestown Road

Existing Conditions



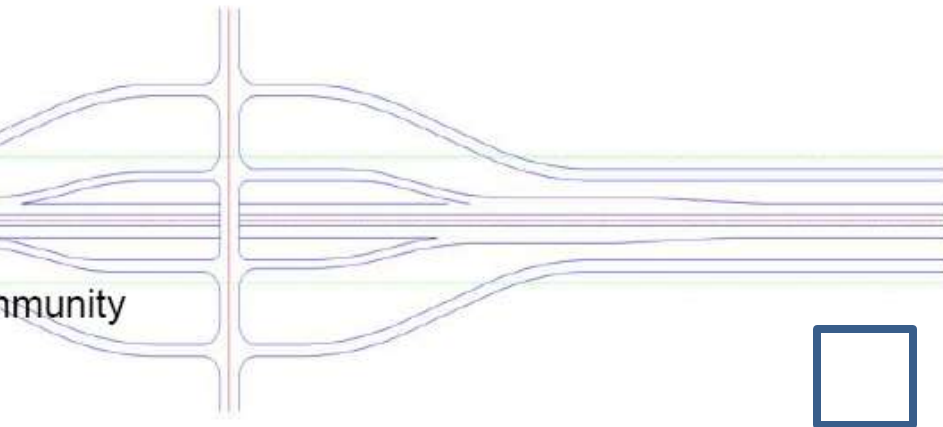
367 Problems

- ⦿ High Accident Rate
- ⦿ Frequent Fatalities
- ⦿ Driver Confusion
- ⦿ Very Long Delays
- ⦿ Poor Access
- ⦿ No Pedestrian Accommodations

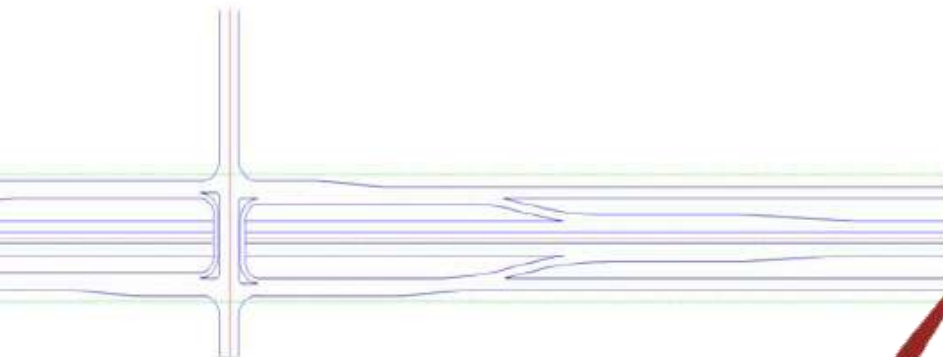
*56 possible movements
per crossing*

Design Alternatives & Solution

- Less Safe
- More Signals
- More R/W
- More Utility Conflicts
- More Disruption to Community



- Safety
- Reduces Congestion
- Reduces Signals
- Less R/W
- Less Utility Conflicts
- More Traffic to Business Locations



One way vs. Two way outer roads

The Construction Phase Challenges

- First consultant-led construction project in the state
- Construction schedule
- Highly constrained suburban area with high levels of traffic
- Extensive community involvement and Stakeholder Coordination
- MoDOT Savings goal of <2% over bid price

Key Success Factors

1. Alignment with MoDOT Goals
2. 367 Partner Coordination & Cooperation
3. Community Advisory Group
4. Value Engineering (primary focus of this presentation)

1. Alignment with MoDOT Goals

- Radical Cost Control – Includes Practical Design and Value Engineering

“ *Many states have delayed or cancelled projects because of rising construction, material and fuel costs and declining state and federal revenue. MoDOT, on the other hand, has delivered \$5.5 billion in road improvements within less than one-tenth of one percent of the budgeted amount since 2003* ”



MoDOT press release
March 12, 2008

2. 367 Partner Coordination & Cooperation

Agency



Designer



Partnering
Charter

Construction Manager



Contractor



Area Stakeholders

- Barnes Jewish Hospital
- North County Incorporated
- Community Advisory Group
- Hazelwood East High School
- Metropolitan Congregations United of St. Louis
- St. Louis County Police
- St. Louis MetroLink

3. Community Advisory Group



- ...During Construction

Value Engineering

Phase 1

Value Engineering Savings

Example: Utilize A2 Shoulders for part of project
(\$19,831 Savings)



Value Engineering Savings cont.

Other Phase 1 VE Savings

\$47,046	Striping and Outer Road Staging
\$77,716	Engineered Fill Over 14x10 Box Culvert
\$83,944	Stage 5 Dunn Road By-Pass Elimination
\$172,480	Staging South End of Project
\$195,534	Dunn By-Pass Elimination

ME Pavement Design VE Savings

Thickness Reduction from 12" to 10" PCCP
(\$210,460 savings)



ME Pavement Design

- In use @ MoDOT for 4 Years
- Using nationally calibrated model and refining for MoDOT
- Prior to ME PDG used the AASHTO “Guide for Design of Pavement Structures” 1986 version. Based on past experience and best practices and is very conservative.

ME Pavement Design cont.

- Typical Thickness Reduction of 2 to 3 inches for concrete pavements.
- Typical thickness reduction of 5 to 6 inches for heavy duty asphalt pavements or 1/4 to 1/3 of a ton per square yard.
- **\$\$\$ Significant Savings \$\$\$**

Value Engineering cont.

Total Phase 1 VE Savings

\$807,011

Total MoDOT Phase 1 VE Savings

\$408,488

Value Engineering Phase 2

Phase 2/CMT, Inc.

- \$15.6 million Freeway Conversion
- **New Contractor:** Gershenson Construction Company, Inc.
- MoDOT awarded CMT, Inc. with a contract to perform Construction Management Services of Phase 2

“CMT’s ability and success to provide quality contract administration and inspection, gave MoDOT the confidence and comfort to continue to use consultants for other contract administration and inspection projects to help reduce MoDOT’s workload.”

John Lewis
MoDOT



Phase 2 Contractor VE Savings

- Ramp 1 Rock Fill \$148,368
- Rte 367 Rock Fill/Profile Adjustments \$595,716
- Highway Signing Spread Footings \$22,000

Total Phase 2 VE Savings

\$766,084

Total MoDOT Phase 2 VE Savings (50%)

\$383,042

Profile Adjustments / Rock Fill VE



CMT Coordinated VE Concepts

- ME Pavement Design and A2 Shoulder VE from Phase 1 incorporated into Phase 2 Design of the Project.
- Savings
 - ME PD - \$171,200
 - A2 Shld - \$202,800

100% MoDOT Savings =

\$374,000



**Outcome of
Proactive
Partnering**

Other CMT Initiated Savings

- Lowered profiles on outer roads to reduce asphalt quantities
- Bridge mount vs. ground mount sign structures
- Reduced ITS pull box, conduit, fiber, and power cable quantities
- Use in place pavement and shoulders - outer roads and side roads
- Video MSD In Place Sewers
- Strict cost controls

Other CMT Initiated Savings cont.

- Waterborne Pavement Markings
- Quantity controls
- Commercial Bridge Fence

Estimated Savings:

\$250,000

VE Impact to Total Project (Phases 1 & 2)

SAVINGS		
Total Project	to MoDOT	
\$1,573,095	\$791,530	Contractor VE savings proposals
\$374,000	\$374,000	CMT-Coordinated VE concepts from Phase 1 rolled into Phase 2 Design
\$1,947,095	\$1,165,530	Total Savings related to Value Engineering
\$250,000	\$250,000	Other (quantifiable) CMT-initiated savings
\$2,197,095	\$1,415,530	TOTAL SAVINGS

Phase 1 & 2 Underruns

Ultimate Result

\$60,556,388	Original Contract Cost (both phases)
\$59,892,385	Actual Construction Costs (both phases)
\$664,003	UNDER BID PRICE
1.10%	UNDER BID PRICE

- Without VE Process: **Would have overrun**
- Without Partnering Process and CMT, Inc. Cost Controls: **Overrun substantially**

The Challenges Addressed

- First consultant-led construction project in the state
 - **Result:** Set the stage for future Consultant-led projects



Redman Road/367

The Challenges Addressed

- Construction Schedule

- Result:**

- Phase 1: 250 days ahead of schedule

- Phase 2: 191 days ahead of schedule



The Challenges Addressed



- Highly constrained urban area with high levels of traffic
 - **Result:** Excellent traffic flow

“The traffic flows better during construction than before MoDOT started the project.”

Shirley Paro, Alderman
Bellefontaine Neighbors

The Challenges Addressed

- Extensive Community Involvement & Stakeholder Coordination
 - **Result:** Excellent rapport and synergy resulted in project enhancements



Dunn Road / 367

The Challenges Addressed

- Savings goal of <math><2\%</math> over bid price
 - **Result:** Total \$664,000, or 1% under bid price



Success

MoDOT and Team

- ⦿ **Challenges Addressed**
 - ⦿ **Goals Exceeded**

Thank You