

2007 APPLICATION FORM

(required for each entry)

Job No. J2P0733

Route 36

County Linn / Livingston

STIP Description (Scoping or Construction, state which STIP)

05-09

06-10

07-11

(Construction STIP) Rehabilitation and reconstruction from 0.1 mile east of Rte. 130 east to 0.2 mile west of Huron Drive. Project may involve bridges A4639, A4640, A0845, A0793. May also include rehabilitation or reconstruction of bridges over Big Turkey Creek and overflow.

Project Manager (could have both)

MoDOT Brian Haeffner

Consultant _____

Active core team members as approved by the MoDOT PM (may include consultants)

Chuch Schumann

Brad Gates

Dennis Brucks

Keith Killen

Brenda Harris

Tim Redmond

James Gillespie

Jason Blomberg

Phil Sandifer

Buck Brooks

Project Contacts (will have both for consultant entry)

District Brian Haeffner

Consultant \$ _____

STIP budget \$17,983,000 (11.2 Lane Miles) or

Award cost \$21,760,000 (46.7 Lane Miles)

Value Engineering study during design? yes no (if yes) Project Stage Conceptual

VE Contact person Tom Allen

Construction-stage VE (VECP)? yes no (if yes) Explain _____

Total VECP savings \$ _____

VECP Contact Person _____

Why is this entry the "poster" image for MoDOT's practical design philosophy?

Pre-practical design, it was estimated that the complete rehabilitation of the Highway 36 corridor between Brookfield and Chillicothe would cost approximately \$60 million. After application of practical design, the complete corridor will be rehabilitated for \$21,760,000, or approximately 1/3 of the pre-practical design estimated cost. Originally, the new EBL was to be placed within the existing median, and the WBL was to be overlaid with 8" unbonded concrete. The project scope was revised from a long-term to an intermediate-term strategy calling for 4.75" of asphalt overlaid over EBL and WBL, with base widening of narrow sections.

Send entries to: MoDOT Design Division, ATTN: Jay Bestgen
1320 Creek Trail Dr.
Jefferson City, Missouri 65109

All entries must be received no later than close of business on February 1, 2007

Missouri
Department
of Transportation



Daniel Niec, District Engineer

North Central District
Route 63
P.O. Box 8
Macon, MO 63552
(660) 385-3176
Fax (660) 385-4195
Toll free 1-888 ASK MoDOT
www.modot.org

February 1, 2007

Jay Bestgen
MoDOT Design Division
1320 Creek Trail Dr.
Jefferson City, MO 65109

Dear Mr. Bestgen:

The implementation of "Practical Design" has provided a great opportunity for our district to showcase our ability to innovate and meet our customers' transportation needs in the most cost effective manner available. The recently awarded J2P0733 project on Route 36 between Chillicothe and Brookfield is a "poster" image of our ability to meet the public's needs during a time of increasing fiscal pressures.

Project Purpose and Need (as defined in a core team meeting, 12/04)

Age and traffic volume have caused this section of roadway and its shoulders to deteriorate beyond the scope of maintenance operations. Pavement widths in some locations are less than standard, 10' wide, and some of the sections have narrow aggregate shoulders. The highway is so rough that members of the public, state legislators, county commissioners and RPCs consistently identify it as a top priority and a MoDOT credibility problem. New construction of dual lanes on both sides of this project, with highway 36 becoming a 4-lane corridor across the state by 2010, makes rehabilitation of this roadway segment a priority.

Scope Comparison

Before Practical Design: The segments of this corridor that have standard pavement widths were going to be overlaid with 8" unbonded concrete, as this was foreseen as a long-term solution to the pavement deficiency. The segments that have substandard pavement widths were going to be relocated. Throughout much of this corridor, the median has sufficient width to facilitate the placement of new lanes within its limits and still maintain an adequate clear zone. The pavement segments that have substandard widths also have some deficiencies relating to sight distance, profile grade, clear zone, and shoulder width. It was proposed that we replace these segments with new segments constructed within the median, and then obliterate/abandon the old, substandard segments. This scope met our primary need, the pavement condition, while meeting these other secondary needs. A typical section illustrating this scope's intention is attached; see "Before Application of Practical Design".

After Practical Design: Upon re-evaluation, it was determined that a scope reduction was practical, and we could maximize the effectiveness of this project (cost vs. output) without constructing new lanes in the substandard areas. It was also decided that an intermediate-term strategy was more consistent with current MoDOT policy. The scope was changed to include pavement widening in the substandard areas, versus relocation, and 4.75" asphalt overlay throughout the project limits, versus 8" unbonded concrete overlay. A 5" unbonded concrete overlay alternate pavement design was added to increase bidding opportunities and potentially reduce project cost. This reduced scope effectively addresses the primary need, the pavement condition, and partly addresses the secondary needs through pavement widening on the existing alignment. In addition, a 2.8 mile segment of the Route 36 westbound lanes immediately east of the original project limits are also in poor condition, but were not included in the original scope. In line with the practical design philosophy, the incurred savings from the revised scope allowed the inclusion of this 2.8-mile segment in the new project limits. A typical section illustrating this new scope's intention is attached; see "After Application of Practical Design".

Cost & Time Savings

The amount estimated in the 05-09 STIP for J2P0733 only incorporated 11.2 lane-miles of the Route 36 corridor as estimated under the original scope. Three other projects, J2P0739, J2P0740, and J2P0741, had also been programmed for PE Only. These four projects would, upon their eventual completion, rehabilitate the corridor between Chillicothe and Brookfield, approximately 46.7 lane-miles. To simplify the design and letting process, and because their needs were similar, these other three projects were incorporated into J2P0733. It was estimated to completely rehabilitate the corridor, under the original scope, would cost approximately \$60 million. Under the revised scope, the complete corridor will be rehabilitated for \$21,760,000, or approximately 1/3 of the pre-practical design estimated cost. Furthermore, this corridor's rehabilitation can now be completed in 2007, whereas the original completion date was beyond 2011.

Through the application of practical design policies, we will be able to meet our customers' expectations for this corridor at a reduced cost and much more expediently. Furthermore, we feel that this project is but one example of how our district is striving to meet our customers' expectations under the current economic climate.

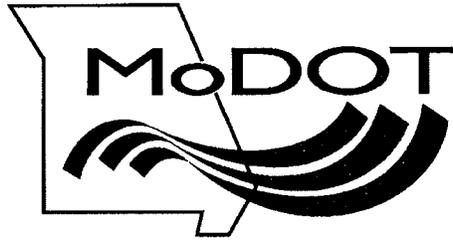
If you have any further question regarding this project, please contact Brian Haeffner or myself.

Sincerely,



Daniel Niec, PE
District Engineer

Missouri
Department
of Transportation



Daniel Niec, District Engineer

North Central District
Route 63
P.O. Box 8
Macon, MO 63552
(660) 385-3176
Fax (660) 385-4195
Toll free 1-888 ASK MoDOT
www.modot.org

Effects from Practical Design Implementation

Summarized

Job J2P0733, Linn/Livingston County

	Pre-practical Design	Post-practical Design
Estimated Cost to Rehabilitate Corridor	\$60 Million	\$21.8 Million
Percentage of Original Estimate	----	36%
Estimated Completion Date for Corridor Rehabilitation	Beyond 2011 (As budget allowed)	December, 2007
Lane Miles Completed Under J2P0733	11.2	46.7
Additional Lane Miles Resurfaced	----	35.5
Remedy for Substandard Pavement Segments	Construction of New Lanes on New Alignment	Widen Existing Lanes on Current Alignment
Remedy for Poor Pavement Condition	Long-term Strategy 8" Unbonded Concrete Overlay	Intermediate-term Strategy 4.75" Asphalt Overlay

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION PLANS FOR PROPOSED STATE HIGHWAY LIVINGSTON/LINN COUNTIES

DESIGN DESIGNATION
ROUTE 66 TO ROUTE B
A.D.T. - 2007 = 10,630
A.D.T. - 2017 = 13,080
D.H.V. = 14%
T = 17%
V = 55 M.P.H.

ROUTE B TO ROUTE 139
A.D.T. - 2007 = 7,490
A.D.T. - 2017 = 9,460
D.H.V. = 14%
T = 17%
V = 55 M.P.H.

ROUTE 139 TO BROOKFIELD
A.D.T. - 2007 = 9,720
A.D.T. - 2017 = 12,230
D.H.V. = 14%
T = 22%
V = 55 M.P.H.

NO NEW RIGHT OF WAY

CONVENTIONAL SYMBOLS
(USED IN PLANS)

- BUILDINGS AND STRUCTURES
- CONCRETE RIGHT-OF-WAY MARKER
- STEEL RIGHT-OF-WAY MARKER
- PELVIS LINK
- WOMEN WIRE
- UTILE
- TELEPHONE
- POWER
- GAS
- WATER
- EXIST. MANHOLE
- EXIST. FIRE HYDRANT
- EXIST. WATER VALVE
- EXIST. WATER METER
- EXIST. DROP INLET
- DITCH BLOCK
- EXIST. GROUND MOUNTED SIGN
- EXIST. LIGHT POLE
- EXIST. H-FRAME POWER POLE

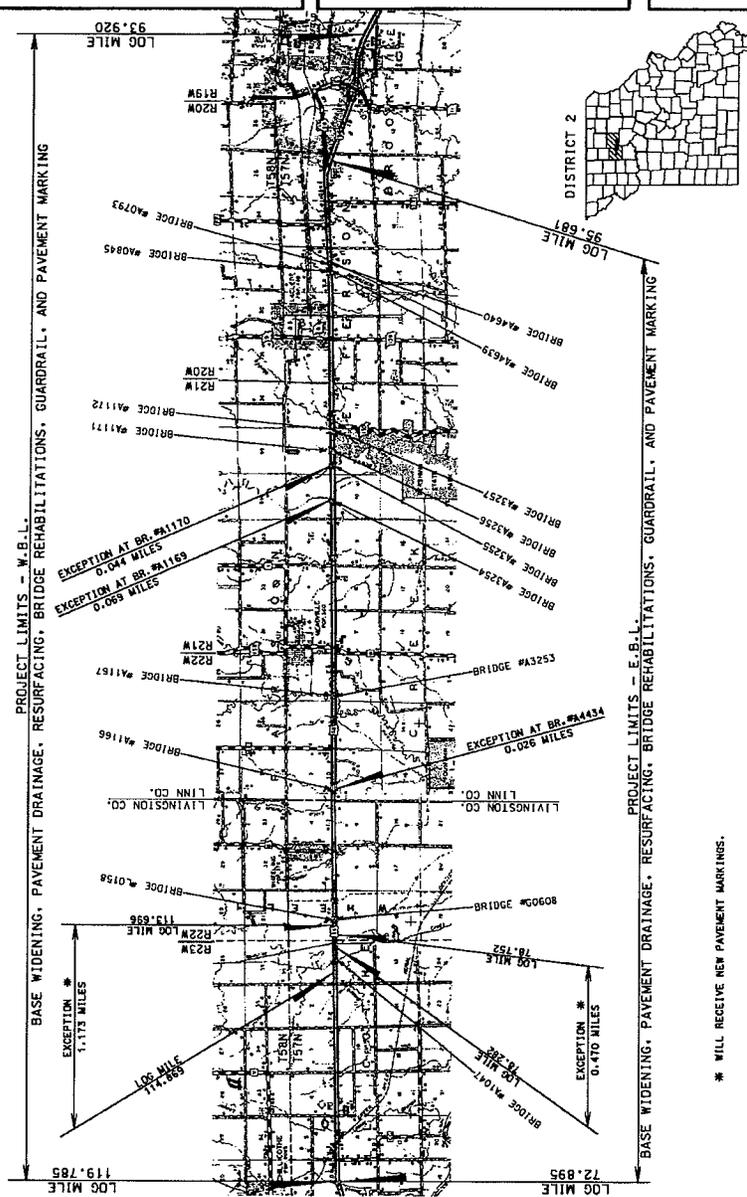
DATE	STATE	SHEET
36	MO	2
JOB NO. J2P0733		
PROJECT NO.		
COUNTY LIVINGSTON-LINN		

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (4 SHEETS)	2
SUMMARY (2 SHEETS)	2-A
PLAN SHEETS	3-11
REFERENCE POINTS	12-13
COORDINATE POINTS	14
EROSION CONTROL SHEETS	15-21
CULVERT SECTIONS	16
ENTRANCE CROSS SECTIONS	17
STANDARD PLANS INDEX	18
CROSS SECTIONS	19
LIGHTING PLANS	20
SIGNALS	21
SIGNING	22

LENGTH OF PROJECT

END OF PROJECT - W.B.L.	CONT. LOG MILE
BEGINNING OF PROJECT - W.B.L.	119.785
APPARENT LENGTH - W.B.L.	93.920
EQUATIONS AND EXCEPTIONS - W.B.L.	25.865 MILES
NET LENGTH - W.B.L.	1,420 MILES
END OF PROJECT - E.B.L.	95.681
BEGINNING OF PROJECT - E.B.L.	72.895
APPARENT LENGTH - E.B.L.	22.786 MILES
EQUATIONS AND EXCEPTIONS - E.B.L.	0.486 MILES
NET LENGTH - E.B.L.	22.290 MILES
TOTAL NET LENGTH - BOTH LANES	46.735 MILES



W.B.L. BRIDGE REHABILITATION

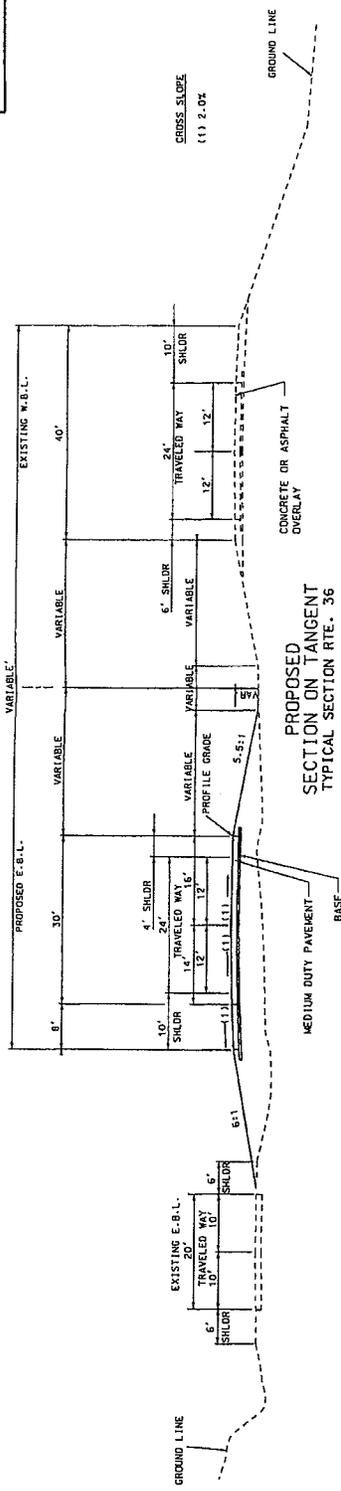
BRIDGE	LOG MILE	LOG MILE LENGTH	MILES
A0793	99.318	99.342	0.024 21" ALTERNATE CONCRETE WEARING SURFACE
A0843	99.444	99.461	0.017 21" ALTERNATE CONCRETE WEARING SURFACE
A1172	102.740	102.833	0.093 MAINTENANCE, PAINTING, SEALING
A1171	103.331	103.372	0.041 PAINTING AND SEALING
A110	103.572	103.616	0.044 EXCEPTION-NO WORK
A187	108.744	108.840	0.096 21" ALTERNATE CONCRETE WEARING SURFACE
A1166	110.854	110.879	0.025 REDECK
L0158	113.602	113.631	0.031 REDECK

E.B.L. BRIDGE REHABILITATION

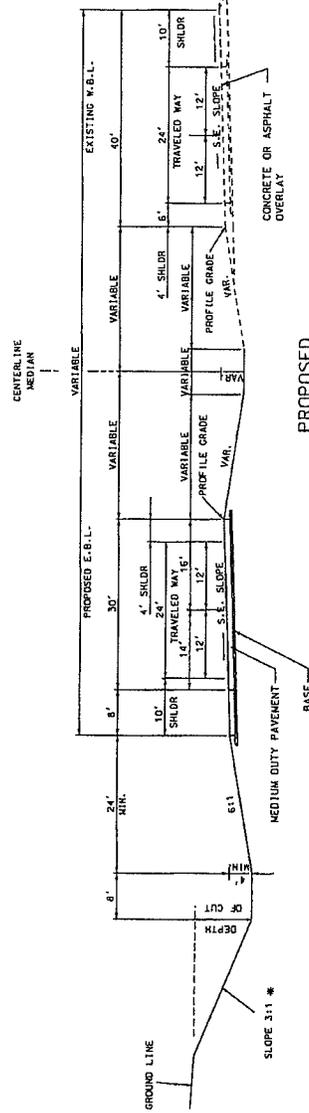
BRIDGE	LOG MILE	LOG MILE LENGTH	MILES
A1047	78.016	78.044	0.028 21" ALTERNATE CONCRETE WEARING SURFACE
D0608	79.031	79.066	0.035 2" ASPHALT OVERLAY
A4334	81.983	82.011	0.028 EXCEPTION-NO BRIDGE WORK
A3252	82.150	82.183	0.033 ALTERNATE CONCRETE WEARING SURFACE
A3255	89.066	89.110	0.044 21" ALTERNATE CONCRETE WEARING SURFACE
A3256	89.308	89.349	0.041 21" ALTERNATE CONCRETE WEARING SURFACE
A3257	89.853	89.945	0.092 21" ALTERNATE CONCRETE WEARING SURFACE
A4639	93.221	93.237	0.016 EPDM POLYMER OVERLAY
A4640	93.347	93.371	0.024 EPDM POLYMER OVERLAY

DATE: _____
JOB NO. J2P0733
PROJECT NO. _____
COUNTY LIVINGSTON-LINN

DATE	36	MONTH	MO	YEAR	2
JOB NO.	42P0733				
CONTRACT ID					
PROJECT NO.					
COUNTY	LINN				
DATE					



PROPOSED SECTION ON TANGENT
TYPICAL SECTION RTE. 36



PROPOSED SECTION ON SUPERELEVATED CURVE
TYPICAL SECTION RTE. 36

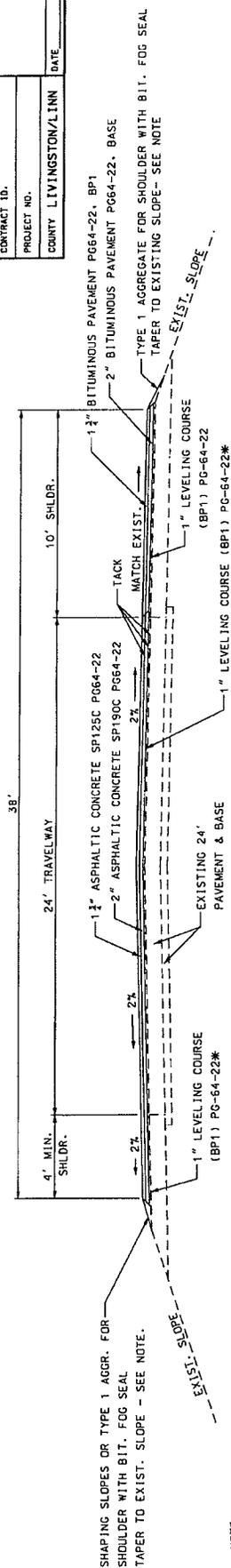
* BACKSLOPE DETERMINED BY SOIL SURVEY.
 ** THE FILL SLOPE SHALL BE 5:1 OR FLATTER WHEN THE FILL HEIGHT IS EQUAL TO OR LESS THAN 4 FEET (I.E., 4 FEET FROM THE TOP OF FILL TO THE SHOULDER OR FROM THE TOP OF FILL TO THE PROFILE GRADE). TO MEET THIS REQUIREMENT, FOR FILL HEIGHTS GREATER THAN 4 FEET, THE SLOPE SHALL NOT EXCEED THE MAINTAIN SLOPE DETERMINED BY THE SOIL SURVEY.

TYPICAL SECTION
SHEET 1 OF 1

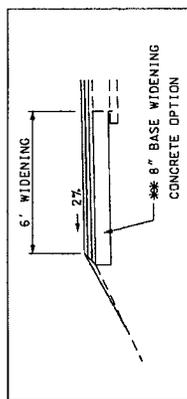
BEFORE APPLICATION OF PRACTICAL DESIGN.

DATE	PROJECT	SHEET NO.
36	MO	2
JOB NO. J2P0733	CONTRACT ID.	
PROJECT NO.		DATE
COUNTY LIVINGSTON/LINN		

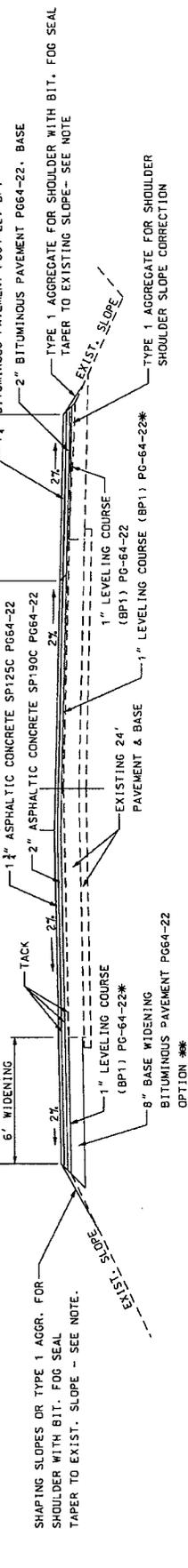
ALTERNATE A



E.B.L. LOG MILE	72.895 TO 84.333
	87.566 TO 90.295
	95.367 TO 95.681
W.B.L. LOG MILE	93.920 TO 111.883
	112.783 TO 119.785



- NOTE:
- 1) LIMIT LEVEL COURSE ON DEPTH TRANSITION AREAS.
 - 2) LIMIT LEVEL COURSE ON EXISTING CONCRETE PAVEMENT SECTIONS AT THE FOLLOWING LOG MILES: 87.1 TO 82.275, 87.1 TO 82.275, 83.190 TO 84.525, 83.190 TO 84.525, 87.566 TO 90.350.
 - 3) SHAPING SLOPES WILL BE USED ON THE INSIDE SHOULDER IN AREAS THAT HAVE BASE WIDENING AND ON THE W.B.L. AND E.B.L. PREVIOUS SHOULDER AREAS THAT HAVE BEEN PREVIOUSLY WIDENED.
 - 4) GEOTECHNICAL AREAS TO AGGREGATE BASE SHALL BE PLACED AND COATED WITH BITUMINOUS FOG SEAL AS SHOWN ON THE TYPICAL SECTION.
 - 5) EXISTING CROSS SLOPES ARE VARIABLE.



W.B.L. LOG MILE	111.883 TO 112.783
-----------------	--------------------

* LEVEL COURSE - VARIABLE THICKNESS IN THE LEFT LANE FOR CROWN SHIFT AND/OR THE LEFT SHOULDER FOR SLOPE CORRECTION.