

December 1, 2008

Mr. Joe Jones
MoDOT Design Division
1320 Creek Trail Drive
Jefferson City, Missouri 65109

**Re: MoDOT 2009 Practical Design Awards for Excellence
Route 100 Widening, Large Project Category**

Dear Mr. Jones and Members of the Selection Committee:

We appreciate the opportunity to submit this application for the MoDOT/Practical Design 2009 Awards for Excellence. The application is attached for your review.

The project we are submitting is **J6P1004**, Route 100 Widening/Improvements in Franklin County, Missouri. In 2005, City of Washington voters passed a half-cent transportation sales tax to fund the 50-50 percent cost-sharing agreement with MoDOT to upgrade Route 100 to a four-lane facility. The overall project was approximately ten miles of roadway widening, grading, drainage and bridge construction extending from Route 47 to Interstate 44. The project was divided into three phases – Culvert Replacement (J6P1004C) at Station 1286; Phase 1 (J6P1004B) – westerly 1.6 miles of roadway; and Phase 2 (J6P1004) – easterly 8.5 miles. This submittal is for Phase 2 which upgraded Route 100 from a two-lane highway to a four-lane divided highway for the majority of the project length. The western 1.1 miles and the eastern 0.9 miles were designed using a five-lane typical section with a center turn lane for access to adjacent properties and to assist development.

Below is a brief summary of how this project compares to the Practical Design 2009 rating guidelines.

A. Purpose and Need:

This project improved the capacity and safety of Route 100 by adding two additional lanes to the existing roadway between Route 47 and Interstate 44. Traffic data from the Final Environmental Assessment for the upgrading and improvement of Route 100 indicate if the roadway is not improved, it will function at a Level of Service (LOS) of F in the design year 2020 for morning and evening rush hours. The current total accident rate is greater than the statewide average with a high percentage of “rear end” accidents. After construction, this project is anticipated to have an LOS rating of a B or C; a significant improvement for efficiency and safety. The project will also facilitate economic development in the City of Washington and surrounding areas.

B. Cost Savings:

Construction cost listed in the 2008-2012 STIP was \$28.9 million. Through the project development process, including one value engineering study, the core team applied practical design concepts at every opportunity and the final PS&E estimate was reduced to \$24 million. The project was listed in the April 2008 bid letting and the bids were very competitive, yielding very favorable bids with the low bid at \$21.1 million. This was a 27 percent overall reduction in construction costs compared to the 2008-2012 STIP.

The significant reduction in construction and right of way acquisition costs were a direct result of the following practical design measures:

- Applying roadway pavement thickness was reduced to 8.5-inches non-reinforced PCCP with 15-foot joints and 18-inch rock base and A2 shoulders.
- The shoulder pavement (Type A2) revised to Type A3 shoulders, reducing thickness from 5-3/4-inch to 3-3/4-inch asphalt or 4-inch concrete.
- The pavement slab narrowed from 28-feet to 26-feet.

- There was an alternate bid option for mainline pavement: asphalt vs. concrete. The low bidder chose concrete.
- To reduce right-of-way and construction costs, proposed median widths were reduced from the MoDOT standard 60-foot typical section to narrower widths varying from 34- to 50-feet depending on site conditions.
- Two costly MSE walls were eliminated by increasing backslopes from 3:1 to 2:1 while still meeting geotechnical approval.
- There were optional grading concepts for the median ditch. See additional comments below.
- The following alternate technical concepts were incorporated:
 - Alternate slope stabilization to allow construction of tall embankments, and
 - Drainage pipes met criteria to substitute material.
- The profile grade was adjusted to reduce excessive earthwork and retaining walls.
- Ditch grades, widths, and depths were narrowed and/or reduced to save excavation costs and right of way acquisition costs.
- Coordination with utility companies was done early, including large pipeline conflicts that called for early relocations.

C. Innovation:

An optional grading concept for the median ditch is detailed in the specifications. This proposed eliminating the sawcutting and removal of the outer six feet of the existing 10-foot shoulder on the existing lanes, and subsequent grading of the median cross slopes. The specification states the contractor can not submit a value engineering proposal.

Another alternate technical concept was provided in the specifications for alternate slope stabilization. This allows the use of an alternate typical section (see attachment) for the construction of tall embankments in portions of the project where rock fill is shown on the plans. The project also utilized an award winning pavement smoothness job special provision that was successfully used on Route 367 in St. Louis County.

D. Amount of Improvement:

The design team was committed to identify and provide the most cost effective design for this project while never compromising safety. The final improvements included eight miles of two additional through lanes, improvements at all side road intersections, outer road relocation or rehabilitation, upgraded traffic signals at Route M, and a center turn lane for portions of the project length.

In addition to the roadway design, the design team prepared construction documents for a new bridge over the Central Missouri Railroad tracks, the widening and deck replacement of the existing bridge over Dubois Creek, and the extension of all drainage culverts; including two double box culverts. The project also included several retaining walls and a major relocation and stabilization of Dubois Creek which was threatening the existing roadway. The project required extensive coordination between the City of Washington; MoDOT District 6 Office and Bridge Division; and the developers of two large commercial/retail projects located adjacent to the roadway. Construction is scheduled for completion in mid 2010.

We are excited to submit this project for consideration in the 2009 Awards of Excellence.

Sincerely,
HNTB Corporation

Brian Langenbacher, PE
Enclosures

2009 APPLICATION FORM

(required for each entry)

Complete this section for (check one): **Small Project** **Large Project**
 Post-Design Solution **Off System Project**

Job No. J6P1004 Route Route 100 County / LPA Franklin

Description (attach separate sheet if necessary) Approximately 10 miles of roadway widening, grading, drainage and bridge construction from Route 47 to Interstate 44. Phase I (J6P1004B) - westerly 1.5 miles (designed by CMT); Phase 2 (J6P1004B) - easterly 8.5 miles (designed by HNTB).

Complete this section for: **Process Improvement**

Process or Product _____

Description (attach separate sheet if necessary) _____

Project Leader Tim Schroeder (MoDOT PM)

Key Team Members (include key personnel irrespective of employer-nine individuals maximum)

<u>Tim Hellebusch, MoDOT RE</u>	<u>Jeff Smith, HNTB</u>	<u>Bob Pavlicek, Terracon</u>
<u>Judy Wagner, Area Engineer</u>	<u>Larry Rolwes, HNTB</u>	<u>Cassie Reiter, CMT</u>
<u>Brian Langenbacher, HNTB</u>	<u>Ron Leible, RGL</u>	_____

Project Budget:

Initial Cost / Estimate \$ 28,971,000.00 **Final Cost / Award** \$ 21,126,324.42

What would make this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy? (In layman's terms - 200 words or fewer-attach separate sheet if necessary) See attachment.

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

ALL ENTRIES MUST BE RECEIVED NO LATER THAN CLOSE OF BUSINESS ON DECEMBER 1, 2008



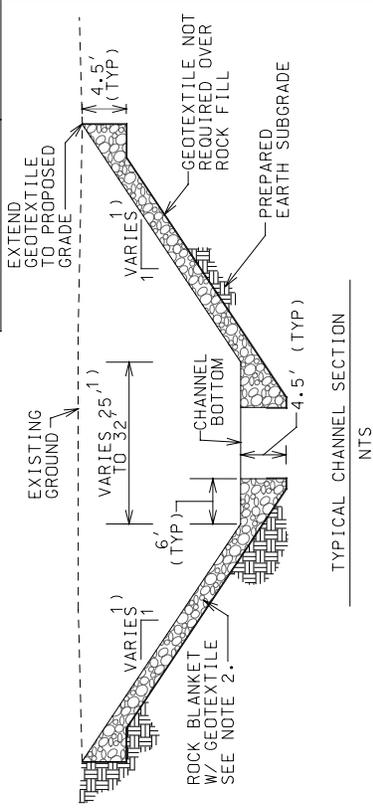
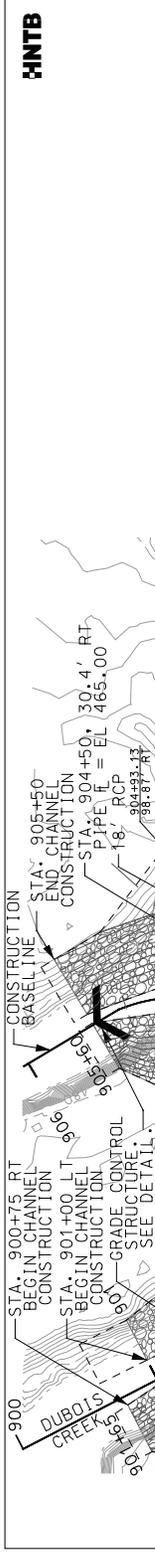
Attachment

Why would this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy? (In layman's terms - 200 words or fewer-attach separate sheet if necessary)

Innovation and collaboration were key components in delivering a practical solution to replace critical infrastructure needs. The primary goal of the project is to improve the capacity and safety of Route 100 by adding two additional lanes to the existing roadway between Route 47 and Interstate 44. This project is especially important to drivers who are coming and going during rush hour. The current total accident rate is greater than the statewide average with a high percentage of "rear end" accidents. After construction, this project is anticipated to have a Level of Service (LOS) rating of a B or C; a significant improvement for efficiency and safety. The project will also facilitate economic development for the City of Washington and surrounding areas.

Practical design concepts were applied at every opportunity to reduce the final cost to \$24 million. The design team was committed to identify and provide the most cost effective design for this project while never compromising safety. The final improvements included eight miles of two additional through lanes, improvements at all side road intersections, outer road relocation or rehabilitation, upgraded traffic signals at Route M, and a center turn lane for portions of the project length.

ROUTE	STATE	DISTRICT	SHEET NO.
100	MO	6	64
JOB NO. J6P1004		CONTRACT ID.	
PROJECT NO.		DATE	
COUNTY FRANKLIN		EXTEND GEOTEXTILE TO PROPOSED GRADE	



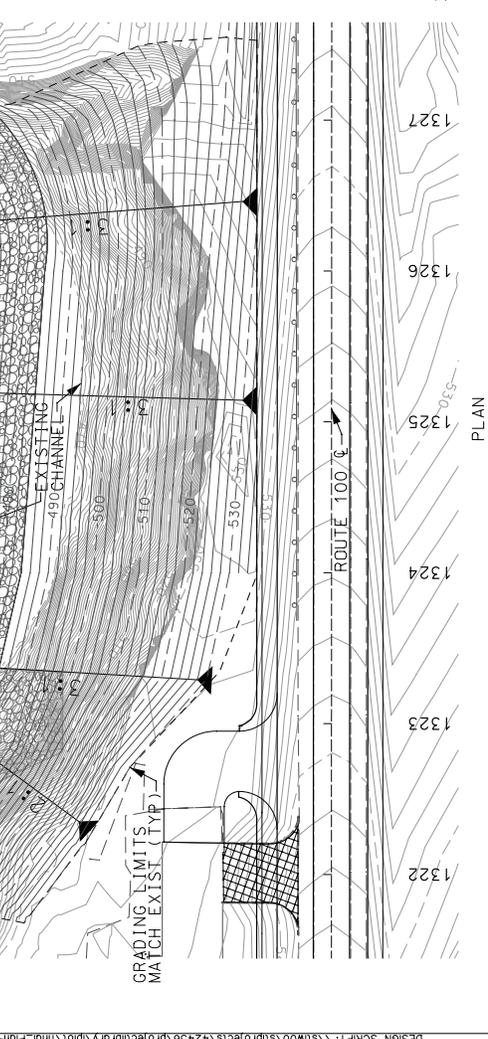
NOTES:
 1) CHANNEL SIDE SLOPES AND BOTTOM WIDTH VARY. SEE CROSS SECTIONS.
 2) ROCK BLANKET MATERIAL AND THICKNESS SHALL BE ACCORDING TO THE FOLLOWING:

LOCATION	ROCK BLANKET TYPE	'B'	THICKNESS
STA 900+75 RT TO STA 903+00 RT	TYPE I	4'	4'
STA 903+00 RT TO STA 904+50 RT	TYPE II	3'	3'
STA 904+50 RT TO STA 905+50 RT	TYPE I	4'	4'
STA 901+00 LT TO STA 904+75 LT	TYPE II	2'	2'
STA 904+75 LT TO STA 905+50 LT	TYPE I	4'	4'

3) BETWEEN RTE 100 & STA. 1323+35 AND STA 1327+10 CONSTRUCT BACK DRAINS BETWEEN THE NEW ROADWAY EMBANKMENT AND THE EXISTING GROUND. SEE DETAIL.
 4) CONSTRUCT SLOPE DRAINS AT 25' INTERVALS STARTING AT DUBOIS CREEK & STA. 901+50 AND ENDING @ STA. 903+00. SEE DETAIL AND CHANNEL CROSS SECTIONS.

DUBOIS CREEK
CHANNEL RELOCATION
DETAILS

SPECIAL SHEET 1 OF 39



STATION	STATE PLANE N. COORD.	STATE PLANE E. COORD.	STATE PLANE DISTANCE
P.O.T. 900+00.00	984183.3683	685085.8619	901+79.17
P.C. 901+79.17	984004.3518	685092.8914	905+30.26
P.T. 905+30.26	984002.4319	685322.6440	174° 55' 27.4" (LT)
C.C. 904+08.4815	984008.4815	685207.8127	49° 49' 20.1" (LT)
P.O.T. 906+03.37	984075.1564	685315.2746	351.10', 20.1"
			2,594.58'
			115.00'

NOTE: THE RECIPROCAL OF THE AVERAGE GRID FACTOR IS USED AS A MULTIPLIER FROM STATE PLANE DISTANCE TO GROUND DISTANCE.

Missourian

Online Edition

04/25/2008

'Awesome' Bids on Highway 100 Phase 2 Project

By Ed Pruneau , Missourian Managing Editor

Strong competition for Missouri road construction projects yielded very favorable bids on the second phase of the Highway 100 widening project, officials said.

The Missouri Department of Transportation opened six bids Friday on the project to extend the four lanes of Highway 100 east of Washington to Interstate 44. All the bids were substantially below the engineer's estimate of \$24,321,318.46.

Companies that bid on the project were all within 5 percent of each other, according to Judy Wagner, MoDOT area engineer, which indicates the design plans and specifications are on the mark. "It's awesome news," she said of the bids.

"Timing was everything," Wagner said Monday during the Washington Area Highway Transportation Committee meeting.

"There was a big push to get in on the April bid letting. All the bids came in very tight," she added. "We feel we got a good cost."

The Bids

Millstone Bangert Inc. is the apparent low bidder at \$21,126,324.42, almost \$3.2 million below the engineer's estimate.

The other bidders are:

Dave Kolb Grading Inc., \$21,995,548.03;

Fred Weber, Inc., \$22,074,659.11;

Gershenson Construction Inc., \$22,292,889.00;

N.B. West Contracting Co., \$22,415,149.53; and

Pace Construction Co. LLC., \$22,418,000.00.

Wagner said a recommendation to award the contract will be made to the Missouri Highways and Transportation Commission which will act on it at its May meeting. Plans are for a formal groundbreaking ceremony Friday, June 6, when the commission will hold its meeting in Washington.

After that, the contractor will be given the notice to proceed with construction, which will start at the western end, just east of South Point Road, Wagner said.

The additional two lanes that will be constructed on the north side of the existing highway will be concrete under the low bid submitted, Wagner said.

The state anticipates the project will be completed in late 2009 or 2010, depending on the number of work crews the contractor devotes to the project.

The city and MoDOT have a 50-50 cost-sharing agreement on widening the highway to four lanes. The first phase, from Highway 47 to South Point Road, was completed last fall at a cost of \$7,083,936.

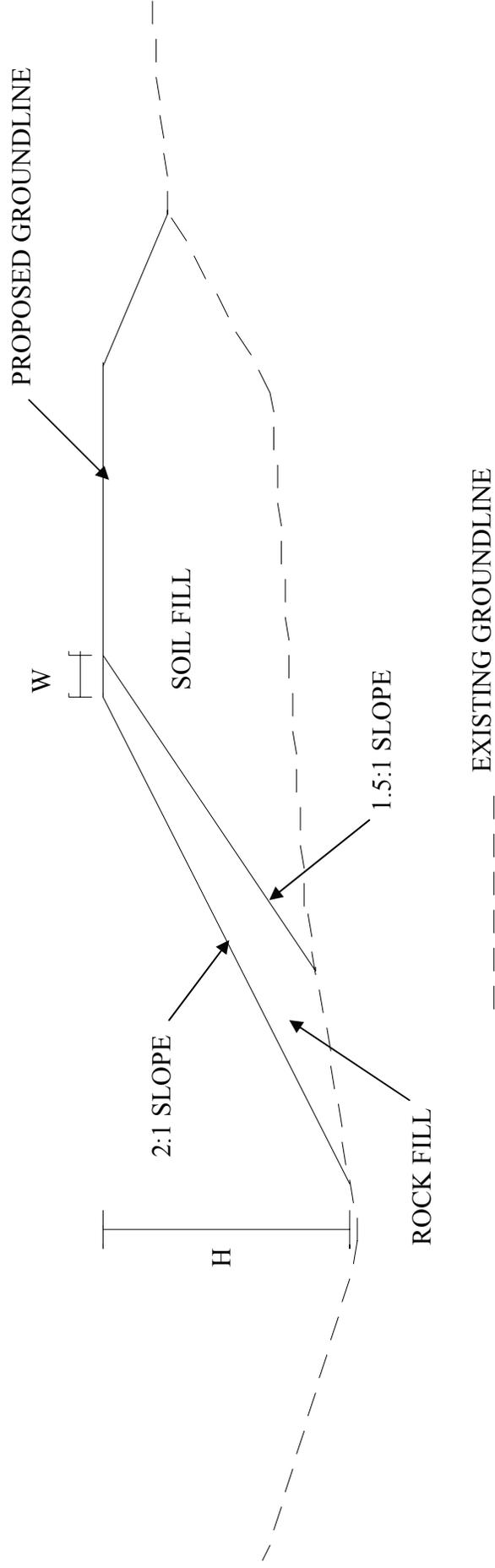
As a result of the highly competitive bidding on Phase 2, the total cost of the entire project is substantially lower than the original 2005 estimate of \$47 million. The city's share of that was \$23.5 million.

Under the new estimated total of \$39,038,536, the city's and MoDOT's projected shares will be \$19,519,268 each.

That will free up an estimated \$3,908,731 for future projects, according to City Administrator Jim Briggs. MoDOT will maintain the money in its Local Road Fund where it will accrue interest until needed, Briggs said.

Alternate Slope Stabilization Detail

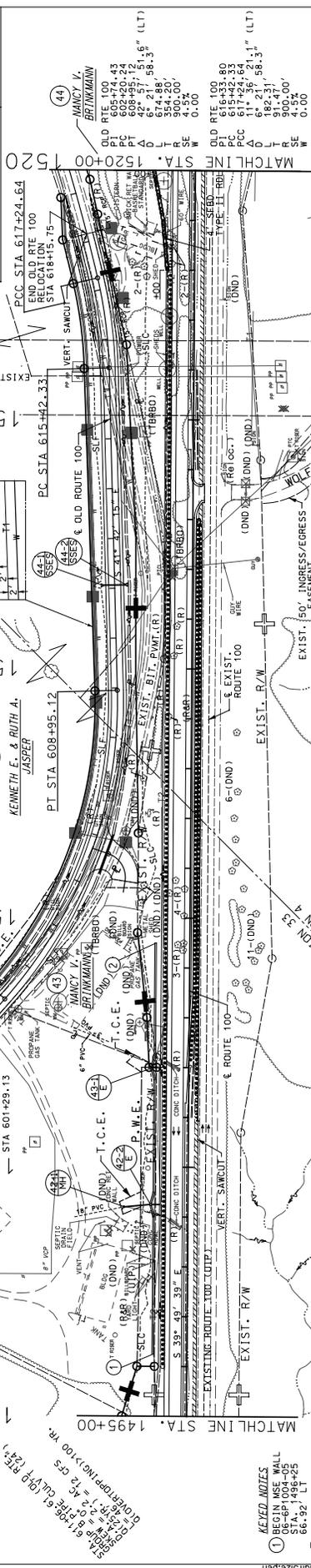
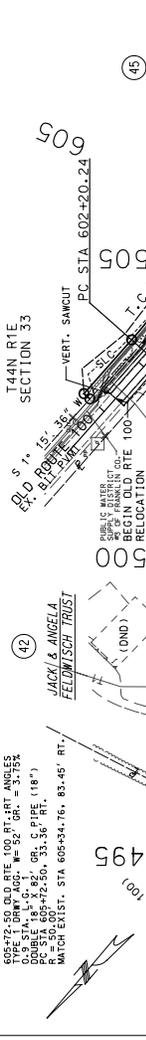
WIDTH OF ROCK FILL AT TOP OF EMBANKMENT, $W=H/2.75$



DATE	100 MD	6	16
PROJECT NO.	FRANKLIN		
CONTRACT ID.	JOB NO. J6P1004		
DATE			

HNTB

NOTE: PARCEL 44 NANCY V. BRINKMANN T43N RTE 100 ALL STRUCTURES, WELLS AND SEPTIC TANKS WILL BE REMOVED BY OTHERS.



KEYED NOTES

- BEGIN MSE WALL 08-6P1004-05 66'-32" L.T. 425
- END MSE WALL 08-6P1004-05 STA 1504+50
- CLARENCE F. JR., PATRICK ET AL.

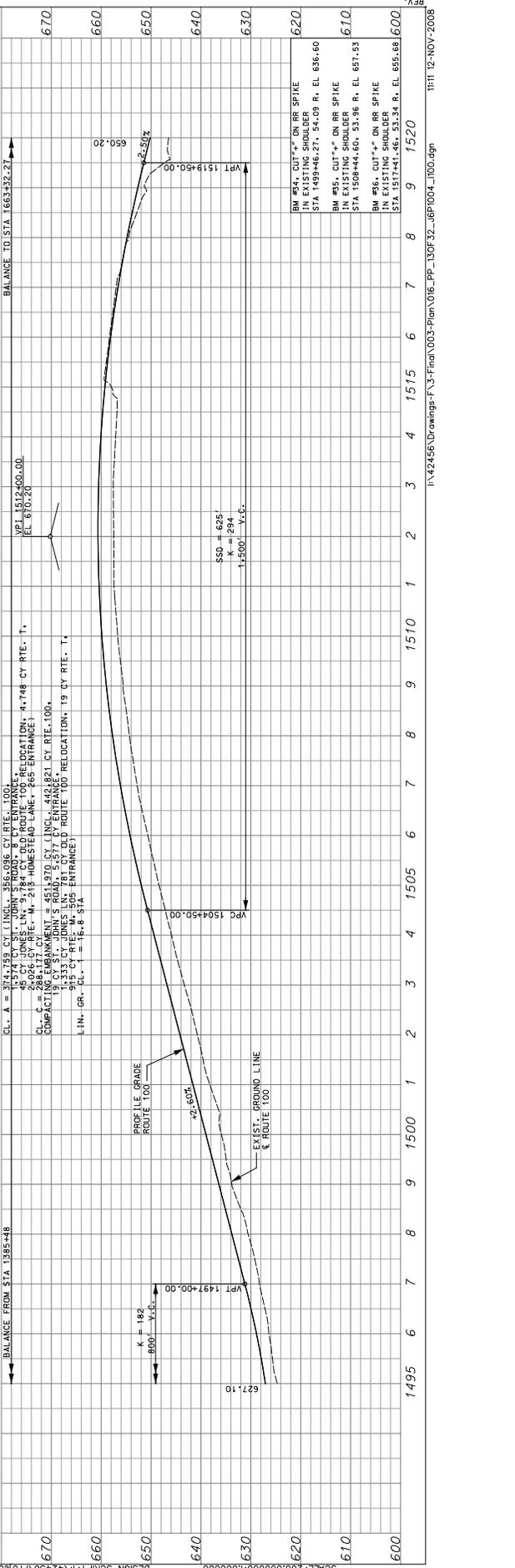
LEGEND

UTILITIES	NEW	EXISTING
AT&T TELEPHONE	—T—	—T—
LEVEL COMMUNICATIONS	—L—	—L—
WASHINGTON SCHOOL FIBER	—W—	—W—

SECTION 4

CL. A = 374.759 CY (INCL. 356.086 CY RTE. 100, 45.57 CY DITCH, 73.09 CY ROAD) - ROAD RELOCATION - 4,748 CY RTE. T. 2,006 CY RTE. M-215 HOMESTEAD LANE, 265 ENTRANCE).
 CL. C = 451.870 CY (INCL. 442.821 CY RTE. 100, 19 CY JOHN'S ROAD, 5.577 CY ENTRANCE, 90.473 CY JOHN'S ROAD, 100 RELOCATION, 19 CY RTE. T. LIN. GR. BL. 1 = 15.8 STA

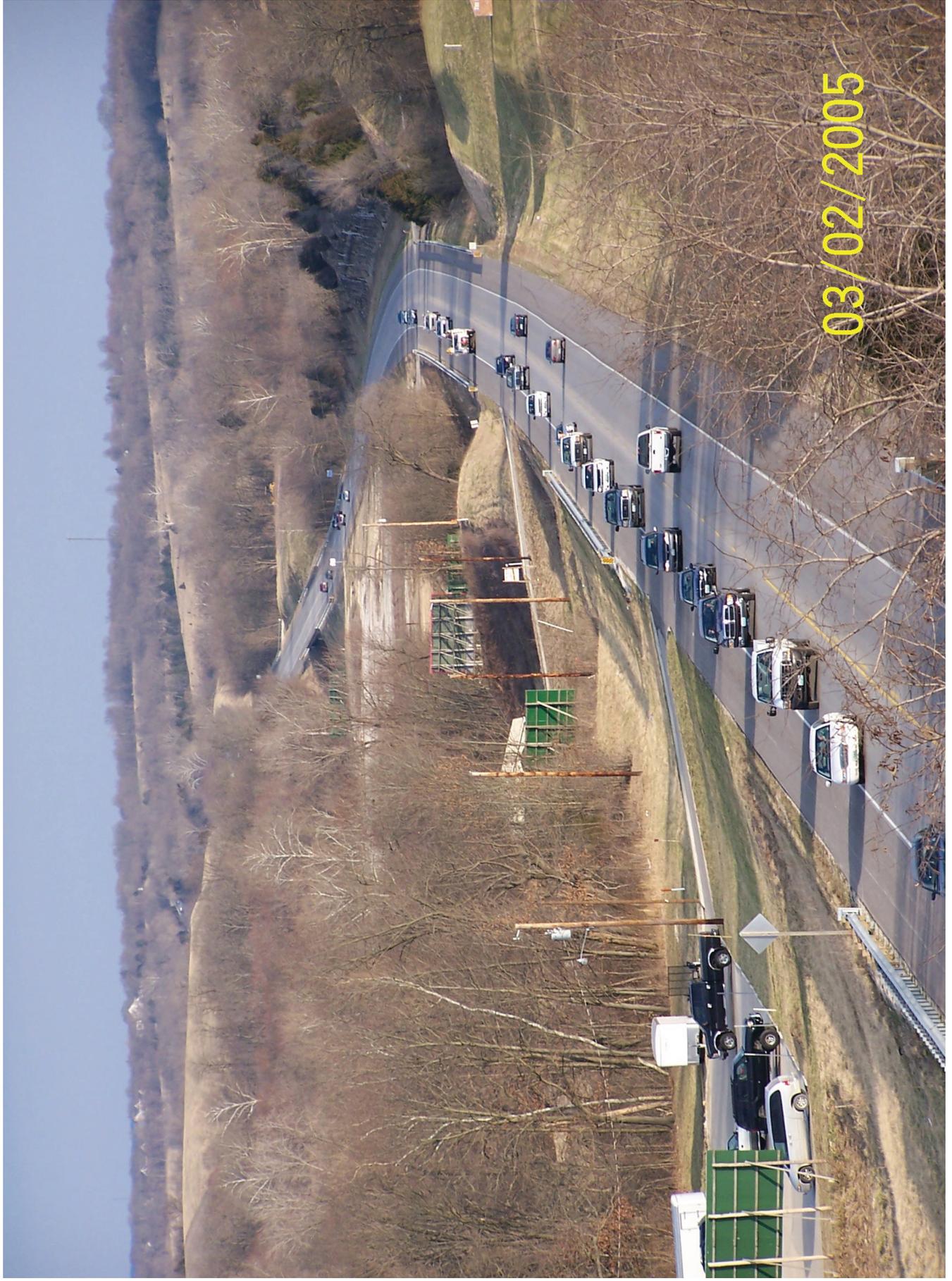
EXTRANCES CONSTRUCTED THROUGH NEW CONTROLLED ACCESS RIGHT OF WAY BEYOND STA. 1619+00 AND STA. 1732+00.00 MAY BE WIDENED BY PERMIT TO A MAXIMUM WIDTH OF 60 FEET UNLESS OTHERWISE NOTED.



SCALE: 200.000000:1.000000

DESIGN SCRIPT: I:\42456\Drawings\F-3\Final\003-Plan\016_PP_130F32_J6P1004_100.dgn

DATE: 11/12/2008



Existing Route 100 East of St. John's Road



Existing Route 100 - Beginning of Project Looking East



Route 100 Grading East of St. John's Road



Route 100 Grading Near Entrance at STA 1450