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Rowan/Carter Counties

Preliminary Line and Grade Inspection

TO: Rachel Cactchings, PE  
Project Manager, KYTC District 9

FROM: Wendy Southworth, PE

DATE: April 30, 2015

SUBJECT: US 60 – Reconstruction from Glenwood Road to KY 3296  
09-8401.00  
Preliminary Line and Grade Inspection Meeting



The Preliminary Line and Grade Inspection for the reconstruction of US 60 from Glenwood Hollow Road to just east of Trumbo Hill Road (KY 3296) project was held April 30, 2015 at the KYTC District 9 office in Flemingsburg, Kentucky. The following people were in attendance:

NAME	REPRESENTING	E-MAIL ADDRESS
Darrin Eldridge	KYTC D9 Project Development	<a href="mailto:darrin.eldridge@ky.gov">darrin.eldridge@ky.gov</a>
James Simpson	KYTC CO Design	<a href="mailto:jim.simpson@ky.gov">jim.simpson@ky.gov</a>
Karen Mynhier	KYTC D9 Environmental Coord.	<a href="mailto:karen.mynhier@ky.gov">karen.mynhier@ky.gov</a>
Rachel Catchings	KYTC D9 Design	<a href="mailto:rachel.catchings@ky.gov">rachel.catchings@ky.gov</a>
Robyn Ramey	KYTC D9 Right of Way	<a href="mailto:robyn.ramey@ky.gov">robyn.ramey@ky.gov</a>
David Leach	KYTC D9 Morehead Section of PD&P	<a href="mailto:david.leach@ky.gov">david.leach@ky.gov</a>
Randy Stull	KYTC D9 PD&P	<a href="mailto:randy.stull@ky.gov">randy.stull@ky.gov</a>
Brian Wallace	KYTC D9 Utilities	<a href="mailto:brian.wallace@ky.gov">brian.wallace@ky.gov</a>
Zane Alexander	KYTC D9 Utilities	<a href="mailto:zane.alexander@ky.gov">zane.alexander@ky.gov</a>
Brian Gillum	KYTC D9 Grayson Section of PD&P	<a href="mailto:brian.gillum@ky.gov">brian.gillum@ky.gov</a>
Kevin Martin	KYTC CO Design	<a href="mailto:kevin.martin@ky.gov">kevin.martin@ky.gov</a>
Troy Woodyard	KYTC CO Design	<a href="mailto:troy.woodyard@ky.gov">troy.woodyard@ky.gov</a>
Wendy Southworth	KYTC CO Design	<a href="mailto:wendy.southworth@ky.gov">wendy.southworth@ky.gov</a>

KYTC Central Office Design began the meeting with an overview of the existing roadway deficiencies. These deficiencies included:

1. 10 horizontal curves in only 1.178 miles of roadway
2. Substandard radii on most of the horizontal curves
3. Limited passing sight distance
4. Limited sight distance around horizontal curves
5. Limited intersection sight distances
6. K-values are too low for the vertical curvature. K-values for this section of roadway are between 25 ft/% and 50 ft/%, with current design standards these values should be 114 ft/%.

The history of the project started several years ago when local elected officials received several letters from concerned citizens about the number of accidents within the first curve of the project limits. This project as noted in the Highway Plan is described as the Reconstruction of US 60 from west of Glenwood Hollow Road to east of KY 3296 (Trumbo Hill Road). This project shall include 12' lanes, wide paved shoulders, unobstructed clear zones and flatter vertical curves.

The design parameters for this project include the following:

1. 55 mph design speed
2. 12' lanes, 10' shoulders (8' being paved)
3. Design passing sight distance of 900'
4. Design stopping sight distance of 495'
5. Rate of Vertical Curvature (K-Value) of 114 ft/% for a crest vertical curve and 115 ft/% for a sag vertical curve.
6. Minimum horizontal radius of 960'
7. Maximum grade for rolling terrain and 55 mph of 7%
8. Current ADT (2013) of 2,992 vehicles per day
9. Future ADT (2033) of 3,306 vehicles per day
10. US 60 is a Rural Major Collector, a Drive Smart Corridor, on the State Highway System as a State Secondary Roadway and is an alternate detour route for I-64 traffic.

### **ALTERNATES**

There are currently three preliminary alternates for this project.

Alternate 1 is approximately 7,721 feet in length and is an off- alignment alternate that begins on a tangent of US 60 approximately 700 feet west of Glenwood Hollow Road in Rowan County. This alternate then traverses south of existing US 60 so as to minimize impacts to a blue-line stream also located to the right of existing US 60. While minimizing impacts to the stream, this alternate (with the use of a normal ditch and cut slope) has rather large property impacts to the ridge located on the right side of the alignment. Alternate 1 continues on the south side of existing US 60 past Bailey Road and Trumbo Hill Road where it ties into existing US 60 on a tangent approximately 1,000 feet east of Trumbo Hill in Carter county. This alternate includes:

1. Approximately 900,000 CY of excavation
2. 230 feet of stream impact
3. 19 entrances and 19 parcels impacted
4. 4 residential relocations and 4 barns/outbuildings/garages taken\*
5. 3,287 feet of waterline impacted and 3,487 feet of overhead electric line impacted
6. Environmental impacts include impacts to streams and bat habitat\*\*
7. Total estimated cost of \$7,699,500\* \*\*

\*4. and 7. Relocations prior to changes made as a result of the meeting, updated relocations and cost estimates are shown on page 6, under Alternate Preliminary Cost Estimates

\*\* 6. Impacts and Cost due to a 1½:1 cut slope; acreage forested, stream impacts and total cost will be adjusted upon the geotechnical recommendation of 2:1 cut slopes for this alternate

Alternate 2 is approximately 7,785 feet in length and is an off-alignment alternate that begins on a tangent of US 60 approximately 700 feet west of Glenwood Hollow Road in Rowan County. This alternate then traverses south of existing US 60 so as to minimize impacts to a blue-line stream located to the right of existing US 60. Like Alternate 1, while minimizing impacts to the blue-line stream, this alternate also has rather large property impacts to the ridge located on the right side of the alignment. Alternate 2 continues south of existing US 60 to a point approximately 4,000 feet from the beginning where it crosses existing US 60 and then traverses north of existing US 60. This alternate continues on

the north side for its entirety where it ties into existing US 60 on a tangent approximately 880 feet east of Trumbo Hill Road in Carter County. This alternate includes:

1. Approximately 800,000 CY of excavation
2. 450 feet to 800 feet of stream impacts
3. 21 entrances and 26 parcels impacted
4. 11 residential relocations and 16 barns/outbuildings/garages taken\*
5. 4,135 feet of waterline impacted and 6,105 feet of overhead electric line impacted
6. Environmental impacts include impacts to streams and bat habitat\*\*
7. Total estimated cost of \$7,851,200\* \*\*

\*4. and 7. Relocations prior to changes made as a result of the meeting, updated relocations and cost estimates are shown on page 6, under Alternate Preliminary Cost Estimates

\*\* 6. Impacts and Cost due to a 1½:1 cut slope; acreage forested, stream impacts and total cost will be adjusted upon the geotechnical recommendation of 2:1 cut slopes for this alternate

Alternate 3 is approximately 7,548 feet in length and is mostly an along existing US 60 alignment that begins on a tangent of existing US 60 approximately 700 feet west of Glenwood Hollow Road in Rowan County. This alternate continues with an alignment just south of existing US 60 for approximately 2,060 feet where it then shifts onto existing US 60 for approximately 1,390 feet. Alternate 3 then shifts to the south of existing US 60 for approximately 2,500 feet where it crosses the existing roadway and traverses north for approximately 1,050 feet where it ties into existing US 60 on a tangent approximately 870 feet east of Trumbo Hill Road. This alternate includes:

1. Approximately 500,000 CY of excavation
2. 1,800 feet of stream impacts
3. 17 entrances and 26 parcels impacted
4. 8 residential relocations and 17 barns/outbuildings/garages taken\*
5. 4,565 feet of waterline impacted and 9,078 feet of overhead electric line impacted
6. Environmental impacts include impacts to streams and bat habitat\*\*
7. Total estimated cost of \$6,732,100\* \*\*

\*4. and 7. Relocations prior to changes made as a result of the meeting, updated relocations and cost estimates are shown on page 6, under Alternate Preliminary Cost Estimates

\*\* 6. Impacts and Cost due to a 1½:1 cut slope; acreage forested, stream impacts and total cost will be adjusted upon the geotechnical recommendation of 2:1 cut slopes for this alternate

## **ALTERNATE DISCUSSION**

Alternate 1 discussion included:

1. Leave existing US 60 as a frontage road for residential properties located north of existing US 60 so that entrances at LT Station 108+70, LT Station 111+36, LT Station 113+70, LT Station 118+20 and LT Station 123+80 can be eliminated
2. Provide a tie-in to existing US 60 off of the Glenwood Hollow Road approach at LT Station 106+81

3. Provide a tie-in to existing US 60 to the east and west at Eden Hollow Road approach at LT Station 134+60
4. Include an overlay of existing US 60 where it will operate as a frontage road
5. Because of the close proximity of the disturb limits to an existing house located at approximately LT Station 115+00, an additional residential relocation will be required
6. Check with the Geotechnical Services Branch to ensure that benching can be accomplished on the right side of the alignment where there are large property impacts to the ridge located south of existing US 60.
7. Eliminate the guardrail at Bailey Road (Station 123+80) by flattening fill slopes and look at the extension of the 60" culvert pipe and any additional stream impacts
8. Label all houses, barns, garages and outbuildings on the plan sheets
9. At RT Station 147+60 eliminate the entrance to the barn and include the barn as a take
10. Because of the close proximity of the disturb limits to two existing houses located at LT Station 148+00 and LT Station 149+20, two additional residential relocations will be required
11. Eliminate guardrail at Station 158+80 to Station 160+60 by flattening fill slopes and look at the extension of the 36" culvert pipe
12. Look at shifting Trumbo Hill Approach (RT Station 166+40) to the east to pull the approach away from the stream and proposed 42" culvert pipe.
13. From Station 168+00 to Station 174+00, look at either pulling the alignment to the south or pulling just the vertical alignment down so that it is closer to existing US 60
14. Parcel 29 should be Parcel 28 and the name should be Hobert Thomas instead of Thomas Hobert.

Alternate 2 discussion included:

1. Leave existing US 60 as a frontage road for residential properties located north of existing US 60 so that entrances at LT Station 108+76, LT Station 111+58, LT Station 114+00, LT Station 116+80 and LT Station 125+14 can be eliminated
2. Provide a tie-in to existing US 60 off of the Glenwood Hollow Road approach at LT Station 106+93
3. Provide a tie-in to existing US 60 to the east and west at Eden Hollow Road approach at LT Station 133+41
4. Include an overlay of existing US 60 where it will operate as a frontage road
5. Because of the close proximity of the disturb limits to an existing house located at approximately LT Station 116+00, an additional residential relocation will be required
6. Eliminate the guardrail at Bailey Road (Station 123+25) by flattening fill slopes and look at the extension of the 60" culvert pipe and any additional stream impacts
7. Label all houses, barns, garages and outbuildings on the plan sheets
8. Parcel 29 should be Parcel 28 and the name should be Hobert Thomas instead of Thomas Hobert.

When discussing Alternate 2 at the shifting of the alignment to the north side of existing US 60, it was determined that this alternate would not be the preferred alternate due to the fact the most of the residential relocations were located along this section of the alternate.

Alternate 3 discussion included:

1. Label all houses, barns, garages and outbuildings on the plan sheets
2. Include an overlay of existing US 60 where it will operate as a frontage road
3. Parcel 29 should be Parcel 28 and the name should be Hobert Thomas instead of Thomas Hobert.
4. Because of the area disturbed for temporary drainage at approximate Station 320+75, an additional residential relocation will be required.
5. Existing culvert pipes are to be safeloaded and water will be ditched downstream to a proposed 36" pipe.
6. A channel change is required to provide temporary drainage at approximate Station 367+00.
7. This alternate will be more difficult to construct than the other 2 alternates.

When discussing Alternate 3 it was determined that this alternate would not be the preferred alternate due to the fact that it would be more difficult to construct than the other alternates.

#### **ADDITIONAL DISCUSSION AND PREFERRED ALTERNATE**

Once all three alternates were discussed, it was brought to the attention of the project team that some of the deeds may show one owner but someone else may own the mineral rights for that property so it was suggested to research the mineral rights for the properties located on the ridges to ensure that the mineral rights are not deeded to someone else.

Also discussed was the cost that was used in the pavement estimates for the asphalt surface and it was noted by construction that current prices are between \$85 and \$90 per ton. It was suggested that the asphalt surface pricing for each alternate be adjusted to the current pricing.

It was noted that for maintenance of traffic purposes 20 feet of the existing roadway would need to be utilized during construction where the alignment is running along or tying into existing US 60.

When discussing the possible benching for all alternates, it was noted that the current typical section utilized a 1 and ½ to 1 slope when the slope exceeds a vertical distance of 20 feet. This slope was used to illustrate the disturb limits and indicate where benching would be evident. It was determined that the Geotechnical Services Branch would need to be contacted to perform a preliminary geotechnical investigation on the ridges located to the right of the alternates to determine whether or not a 1 and ½ to 1 slope can be utilized in the benching areas.

When discussing the possibilities of existing US 60 becoming a frontage road, it was suggested that when all tie-in alignment profiles are complete, the plan and profile information should be given to District 9 Planning so that they can be submitted to the County and a resolution signed.

The recommendation of the project team is to further develop Alternate 1 with the caveat that if the geotechnical investigation finds that a 2:1 cut slope must be utilized and the excavation is drastically increased for Alternate 1, then Alternate 3 may be reviewed further.

**PROJECT SCHEDULE**

1. KYTC Design will provide the Geotechnical Services Branch with information to begin an investigation.
  - a. Obtain Digital Elevation Model and create an existing surface digital terrain model (dtm) file to illustrate the disturb limits based upon a 2:1 cut slope
  - b. Provide plan, profile, cross-sections and topographic map containing any and all information that Geotech will need for a preliminary geotechnical investigation.
2. Preliminary Geotechnical Investigation recommendation needed within the next 2 months
3. May need additional survey if the geotechnical investigation recommends a 2:1 cut slope to be utilized. If this is the case, KYTC will need to quickly secure any additional survey to provide adequate time for the development of the preferred alternate.
4. This project has SPP funding. R phase and U phase is scheduled for FY2014. C phase is scheduled for FY 2017.

**FOLLOW UP TO PROJECT SCHEDULE**

The Geotechnical Services Branch has had to opportunity to look at the geology for the project area to determine whether at 2:1 cut slope is to be utilized for this project. It is the recommendation of the branch that an overall 2:1 cut slope configuration be used for this project because of the weak bedrock that would be encountered and the close proximity of the proposed ditches to the existing ground and the fact that the existing ground line slopes are currently 2:1 to 2 ½:1.

**ALTERNATE PRELIMINARY COST ESTIMATES**

**With 2:1 Cut Slopes and additional residential relocations (Alt 1-7 total, Alt 2-12 total, Alt 3-9 total)**

Pavement Estimate		\$1,403,608.00	\$1,414,007.00	\$1,375,551.00
Roadway Excavation		\$6,176,660.00	\$5,218,230.00	\$5,251,810.00
Drainage Structures		\$323,360.00	\$305,250.00	\$121,820.00
Contingency (30%)		\$2,371,090.00	\$2,081,250.00	\$2,024,755.00
Utility Estimate		\$1,343,030.00	\$1,635,000.00	\$1,540,000.00
R/W Estimate				
Environmental Estimate		\$0.00	\$528,000.00	\$1,173,480.00
<b>Total Estimate</b>		<b>\$11,617,748.00</b>	<b>\$11,181,737.00</b>	<b>\$11,451,416.00</b>