

# THE RIPPLE EFFECT:

Implications of Changes Occurring  
Late in Project Development

Presented by

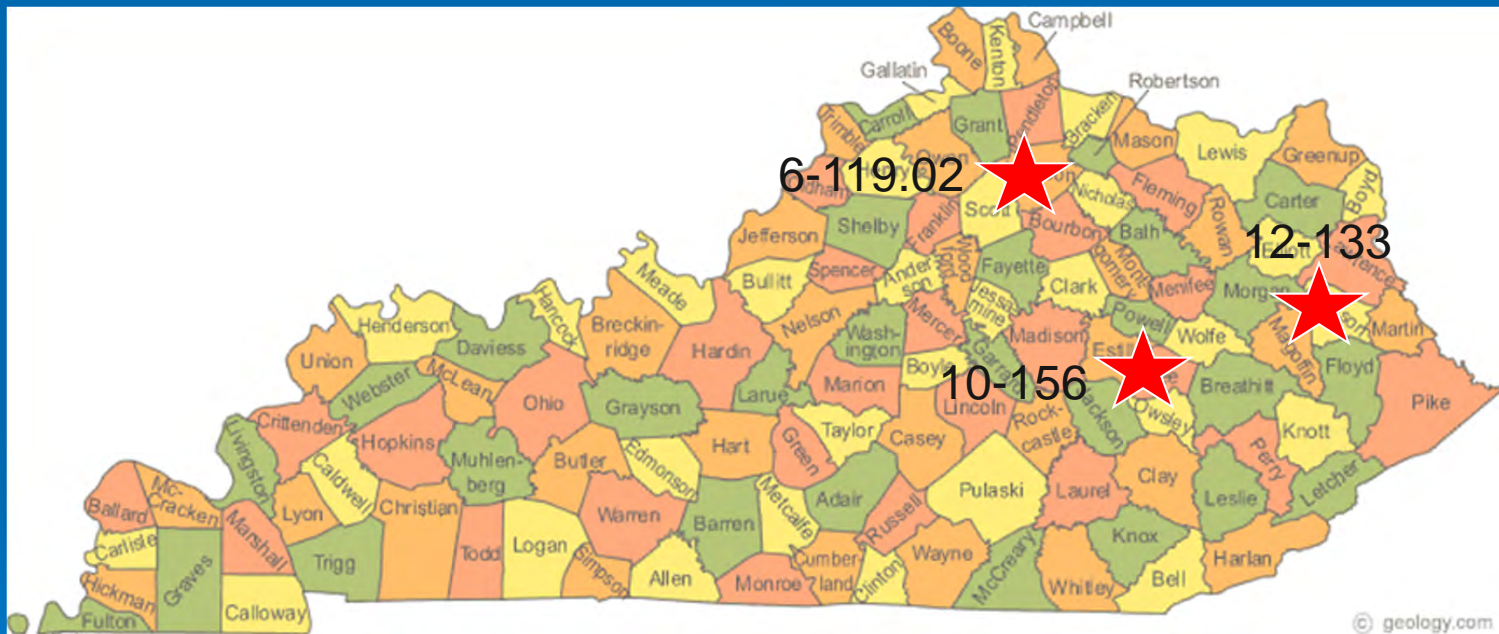
Phil Logsdon, Carol Callan-Ramler, Brad  
Eldridge and John Michael Johnson



# Three Projects

- 6-119.02 Cynthiana Bypass in Harrison County
- 10-156 Beattyville Underpass in Lee County
- 12-133 Bridge Across the Levisa Fork of the Big Sandy River at Concord in Johnson County

# Project Locations



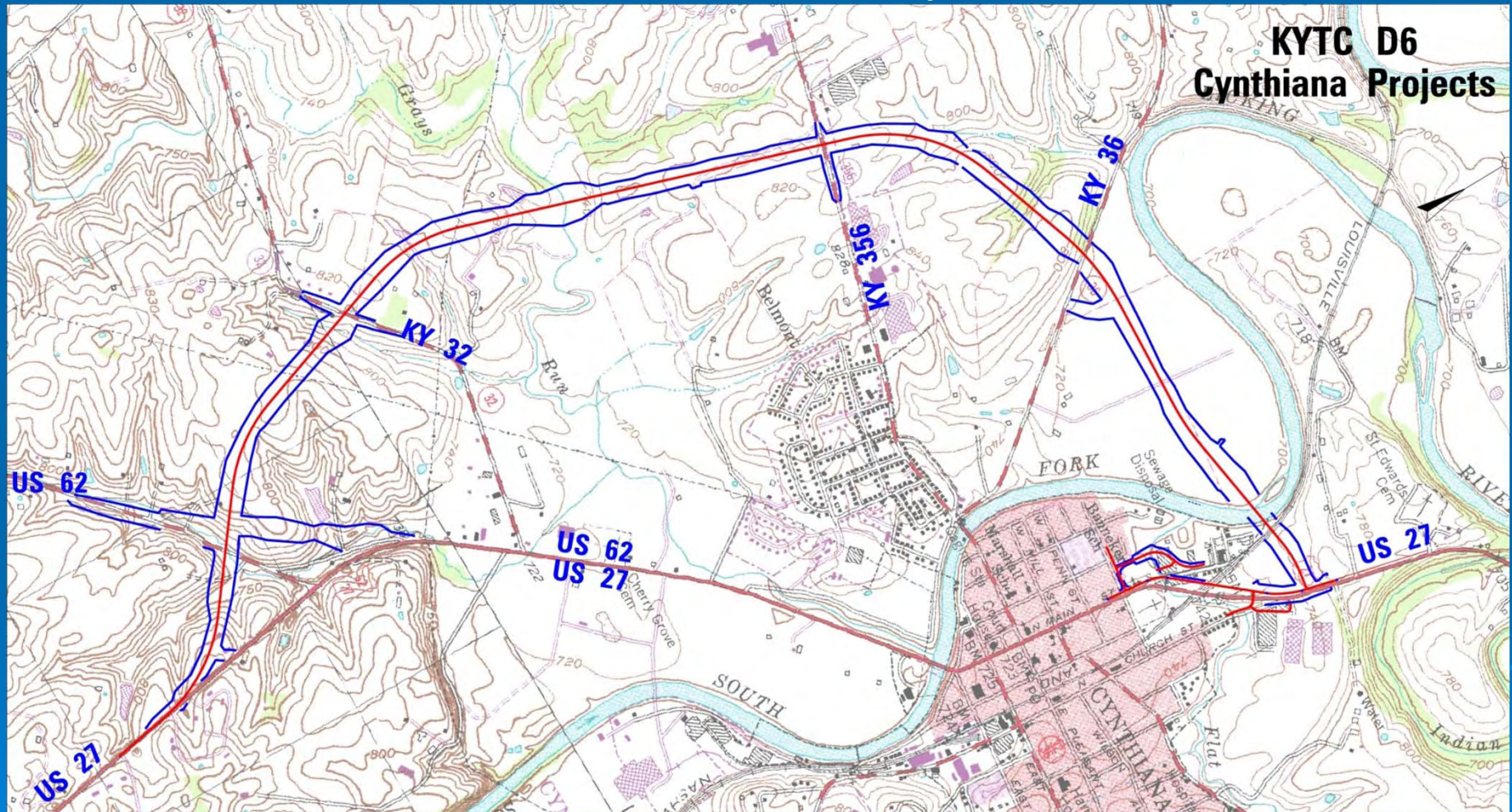
6-119.02

US 127 Cynthiana Bypass – Harrison  
County

Carol Callan-Ramler, PE  
KYTC District 6



# 6-119.02 – US 27 Cynthiana By-Pass Harrison County



**2 Lane Initial, 4 Lane Ultimate / 3.5 Miles / Partial  
Access / 2 Bridges / 6 At-Grades Intersections**

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

- Project Costs – State Funded
  - Design \$ 2.9 Million
  - R/W \$ 5.0 Million
  - Utilities \$ 0.5 Million
  - Construction \$33.3 Million (estimated)

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County


### ■ Schedule

- 1993 Design Authorized
- 2006 Mylars submitted to Plan Processing
- 2007 R/W Clearance Letter Submitted
- 2007 Construction funding on “3000 List”
- 2007 Partnering Conference: *“Safety and Operational Evaluation of New By-pass Roads”*
- 2007-2008 Project Specific Safety Enhancements



**-THE RIPPLE EFFECT**

## 6-119.02 – US 27 Cynthiana By-Pass Harrison County

- *Safety and Operational Evaluation of New By-pass Roads*
    - Nine By-passes studied
    - Presented factors that caused recently constructed by-passes to experienced high crash rates
    - Presented counter-measures to reduce high crash rates
- 



## 6-119.02 – US 27 Cynthiana By-Pass Harrison County

- *Safety and Operational Evaluation of New By-pass Roads, Cont.* Pattern of High Crashes:
  - Intersections of new by-passes with existing local roads
    - New intersections “introduced” changes on approach roads requiring adjustments to drivers long-held perception of the existing facility
      - Horizontal / Vertical alignments
      - Sight Distance
      - Changed Signage

## 6-119.02 – US 27 Cynthiana By-Pass Harrison County

- *Safety and Operational Evaluation of New By-pass Roads, Cont.* Pattern of High Crashes:
  - Opening and Early operation
    - Provide a transition period to “adjust” the users to the changed facilities

## 6-119.02 – US 27 Cynthiana By-Pass Harrison County

- *Safety and Operational Evaluation of New By-pass Roads, Cont.* Counter Measures:
  - Lane width, e.g. exist. 10 ft. lanes widened to 12 ft.
  - Warning Signs: use more; increase size; provide flashing beacons
  - Oversize STOP signs
  - Install thermoplastic rumble strips on approaches
  - Installation of minimal lighting
  - Slight Flaring of Approaches
  - Roundabout Consideration

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

- Project Team Decisions
  - Imperative to evaluate project based on Study
  - A methodical procedure followed by the Consultant to assess each intersection
  - Intersection specific recommendations made
    - Most consequential: single lane roundabout at US 62 Intersection

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

### ■ Implications / Considerations

- Time: plenty available – 3000 list
- R/W: No impacts, within limits already acquired
- Environmental: No impacts, within current limits
- Utilities: No impacts
- Design Changes: easy to implement

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

- Implications / Considerations
  - Maintenance of Traffic
    - Minimal Concern – Roundabout located at a new intersection
  - Maintenance
    - Conventional overhead lighting was required for two intersections. Local agreements will be needed.

# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

- Implications / Considerations
  - Cost
    - Design – a manageable amount, especially given the safety concerns
    - Construction – net difference



# 6-119.02 – US 27 Cynthiana By-Pass

## Harrison County

- Conclusion
  - Many Benefits
  - Decision to incorporate changes was obvious



**10-274.00**

Beattyville Underpass – Lee County

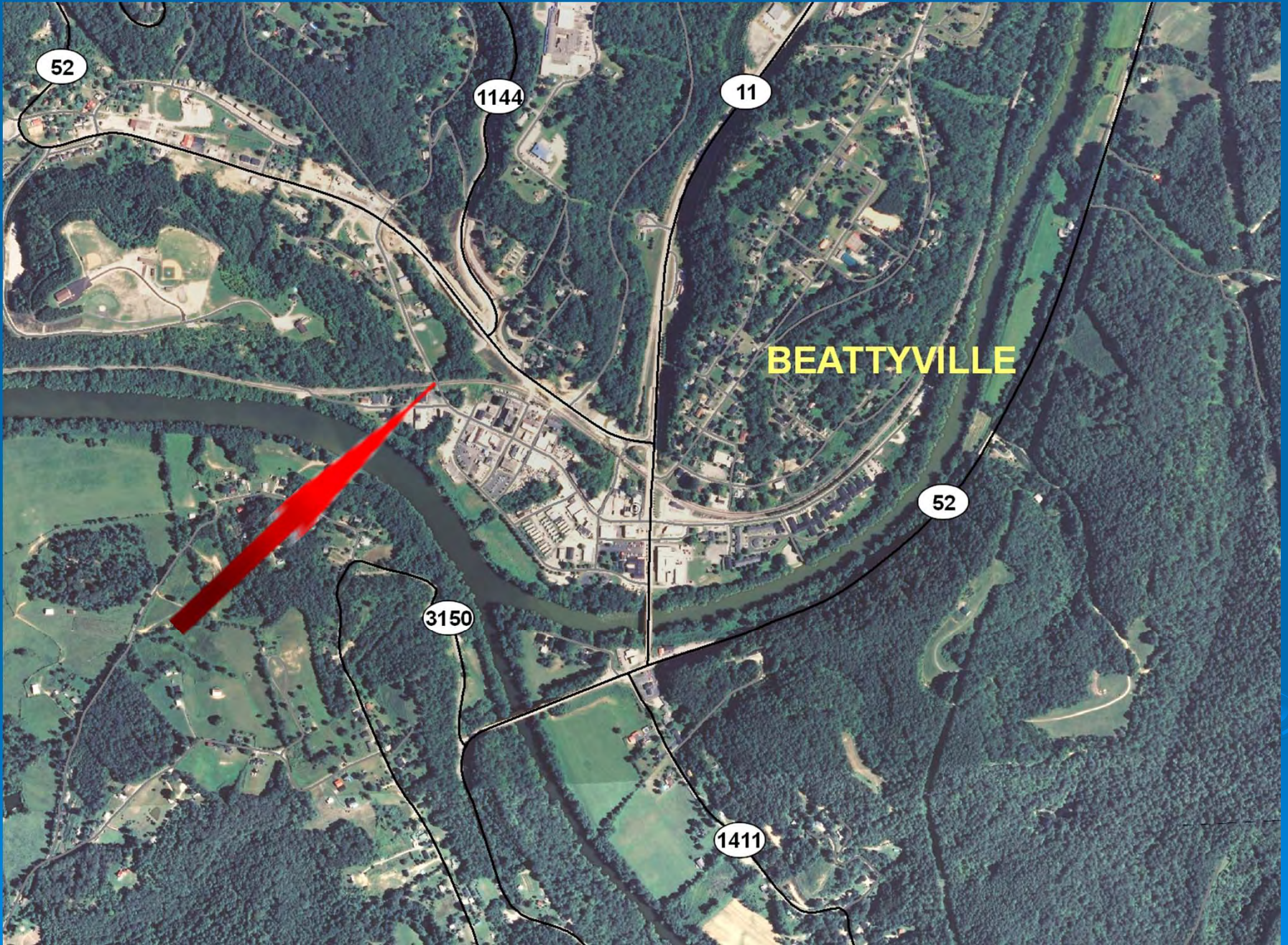
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KYTC Central Office

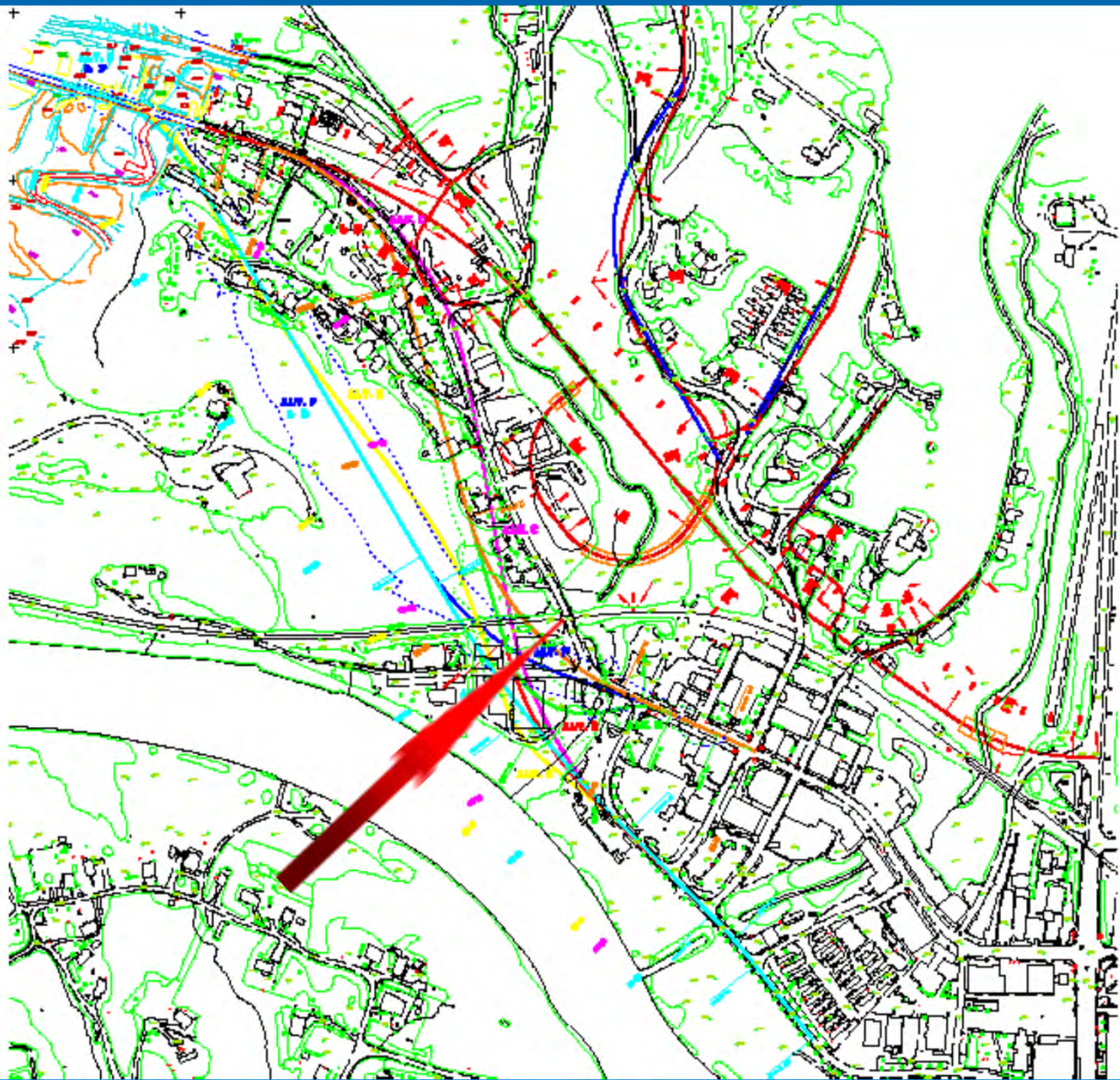


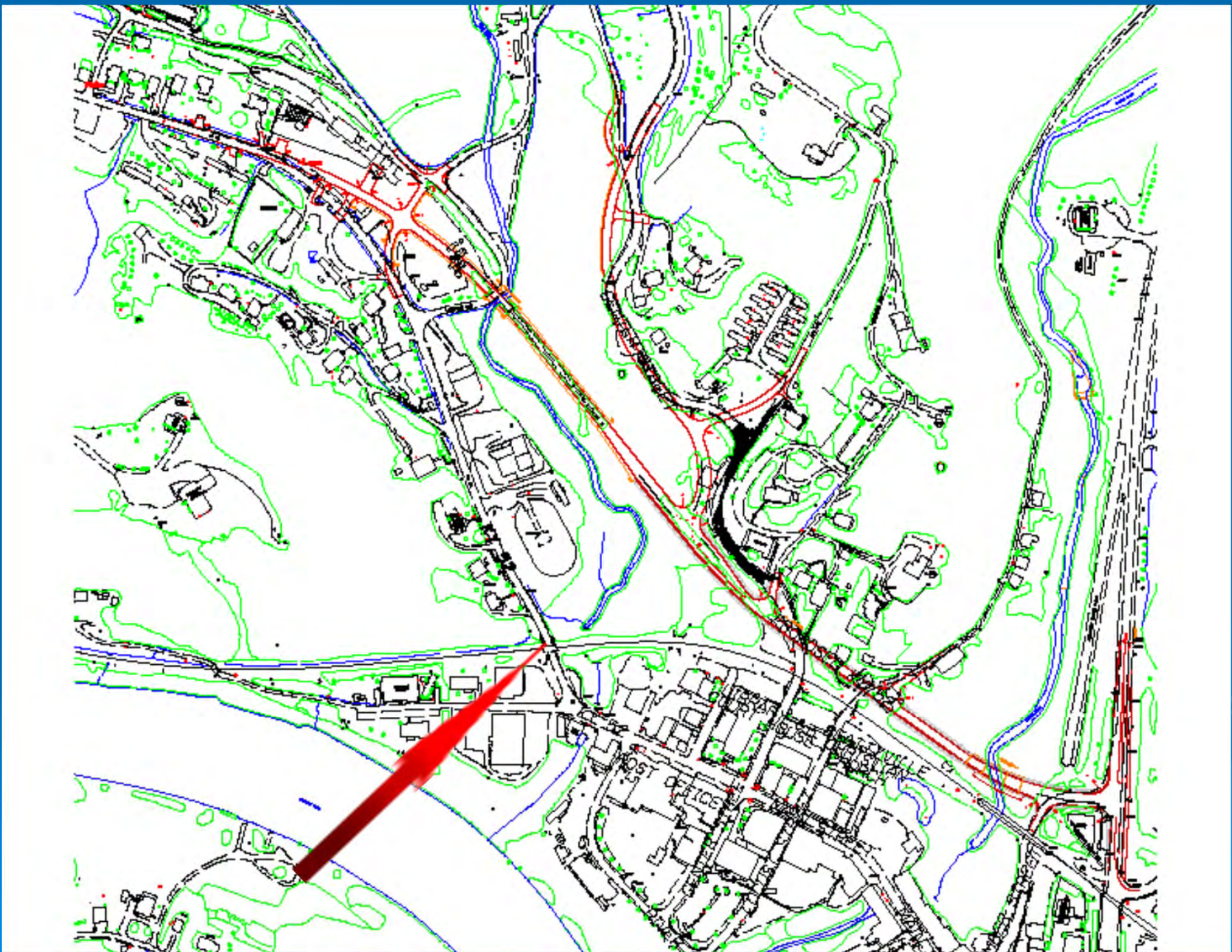
# Beattyville RR Underpass

## Appeared in 1990 Highway Plan

LEE	10- 199.00	KY-587	0.400	BEATTYVILLE-IRVINE FR KY-399 TO .36 E OF BEGINNING  SCOPE: RELOCATION	FUNDING PHASE	YEAR	AMOUNT	
					D			
					S	R	FY-92	20,000
					S	U	FY-92	10,000
S	C	FY-94	2,550,000					
					TOTAL=		2,580,000	
LEE	10- 274.00	KY-52	0.000	GRADE SEPARATION RECONST UNDERPASS WITH CSX R.R.  SCOPE: RECONSTRUCTION	FUNDING PHASE	YEAR	AMOUNT	
					RRS	D	FY-93	150,000
					RRS	R	FY-95	200,000
					RRS	U	FY-95	100,000
RRS	C	FY-96	1,800,000					
					TOTAL=		2,250,000	
LEE	10- 902.00	CR-512Z	0.100	COAL BRANCH-LONG SHOUL, BR & APPRS AT LYMAN CREEK AT KY-708 (C17) SCOPE: BRIDGE REPLACEMENT	FUNDING PHASE	YEAR	AMOUNT	
					BRZ	D	FY-90	14,000
					BRZ	R	FY-90	10,000
						U		
BRZ	C	FY-90	110,000					
					TOTAL=		134,000	













06/01/2009





06/01/2009





# Nine Factors to Help Establish Need

FHWA's technical advisories list 9 factors that may be helpful in establishing the need for a proposed action. Eight of those are relevant to this discussion and include: system linkage, capacity, transportation demand, legislation, social demands or economic development, modal interrelationships, safety, and roadway deficiencies. The ninth addresses project status, and is not relevant to this discussion.

## **Purpose:**


- The Purpose is analogous to the problem. It is the “what” of the proposal.
- The Purpose is the problem statement.
- The Purpose should focus on the state transportation system. Other important issues to be addressed by the project such as local transportation systems, livability, and the environment should be identified as Goals and Objectives. As such, it may reflect other priorities and limitations in the area, such as environmental resources, growth management, land use planning, and economic development.
- The Purpose should be stated concisely in a single sentence.
- The Purpose should be stated as the positive outcome that is expected. For example, the purpose is to reduce congestion in the interstate corridor.
- It should avoid stating a solution as a purpose—as in—the purpose of the project is to build a bypass. Therefore, it should not be so specific as to “reverse engineer” a solution.
- Where appropriate, it should be stated broadly enough so that more than one mode can be considered and multi-modal solutions are not dismissed prematurely.

12-133

Bridge Across the Levisa Fork of the Big  
Sandy River at Concord in Johnson  
County

John Michael Johnson  
KYTC District 12



- The purpose of the project is to construct a new bridge across the Levisa Fork of the Big Sandy River to Concord
  - The project is funded with State Bond Monies
  - A CE was required for Environmental Clearance
- 

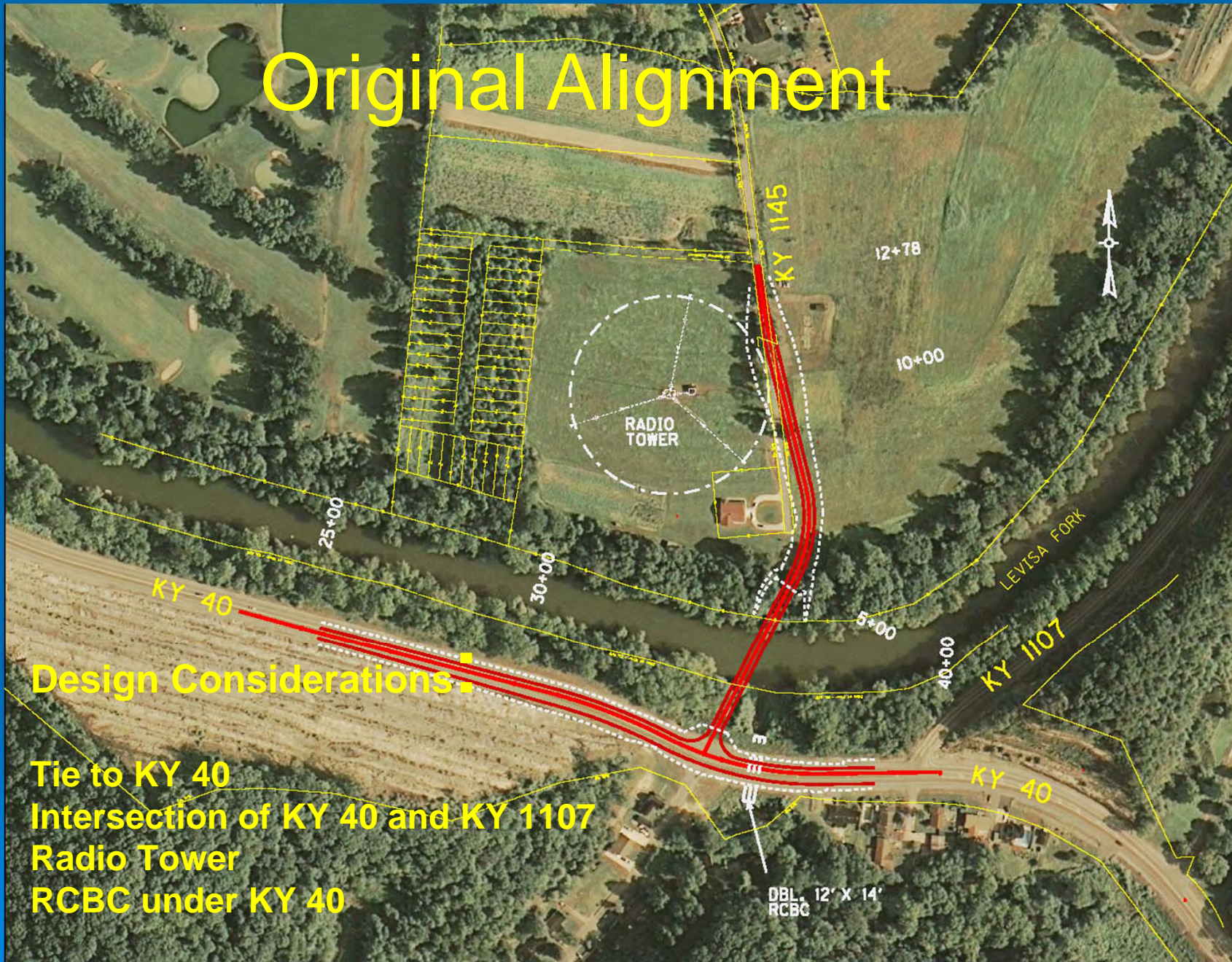
➤ You may ask, “Why do the people of Concord need a new bridge???”





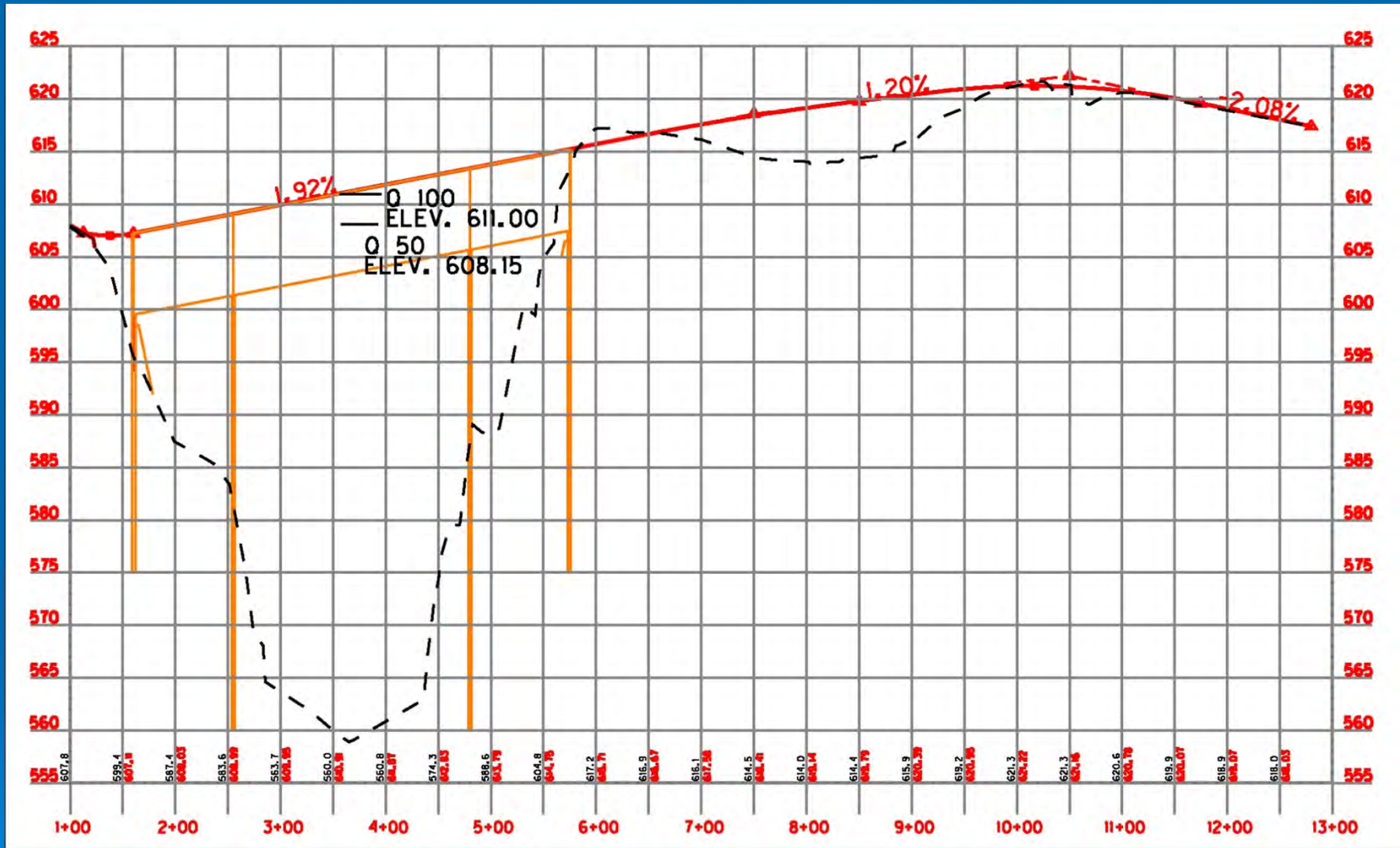


# Original Alignment



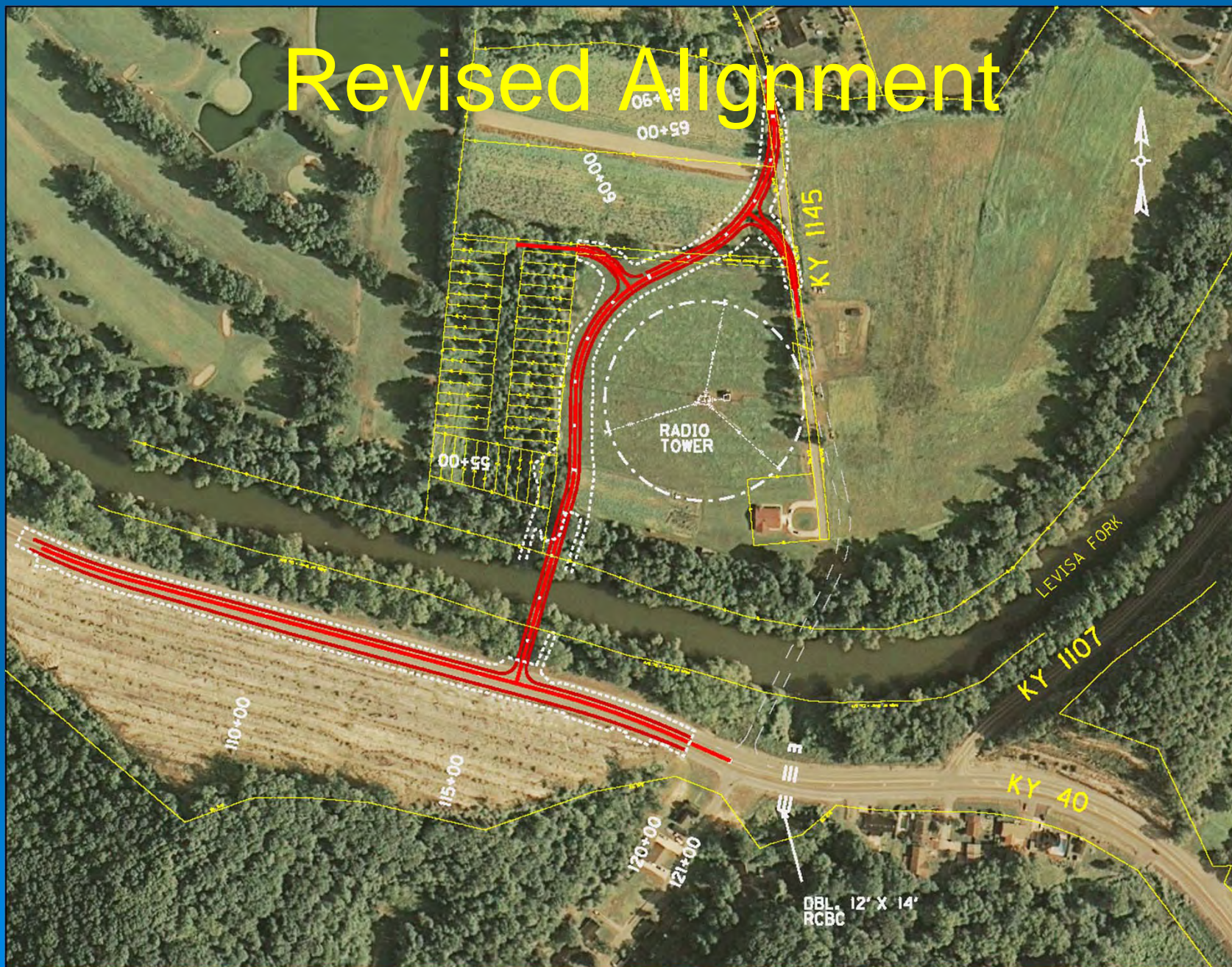
## Design Considerations:

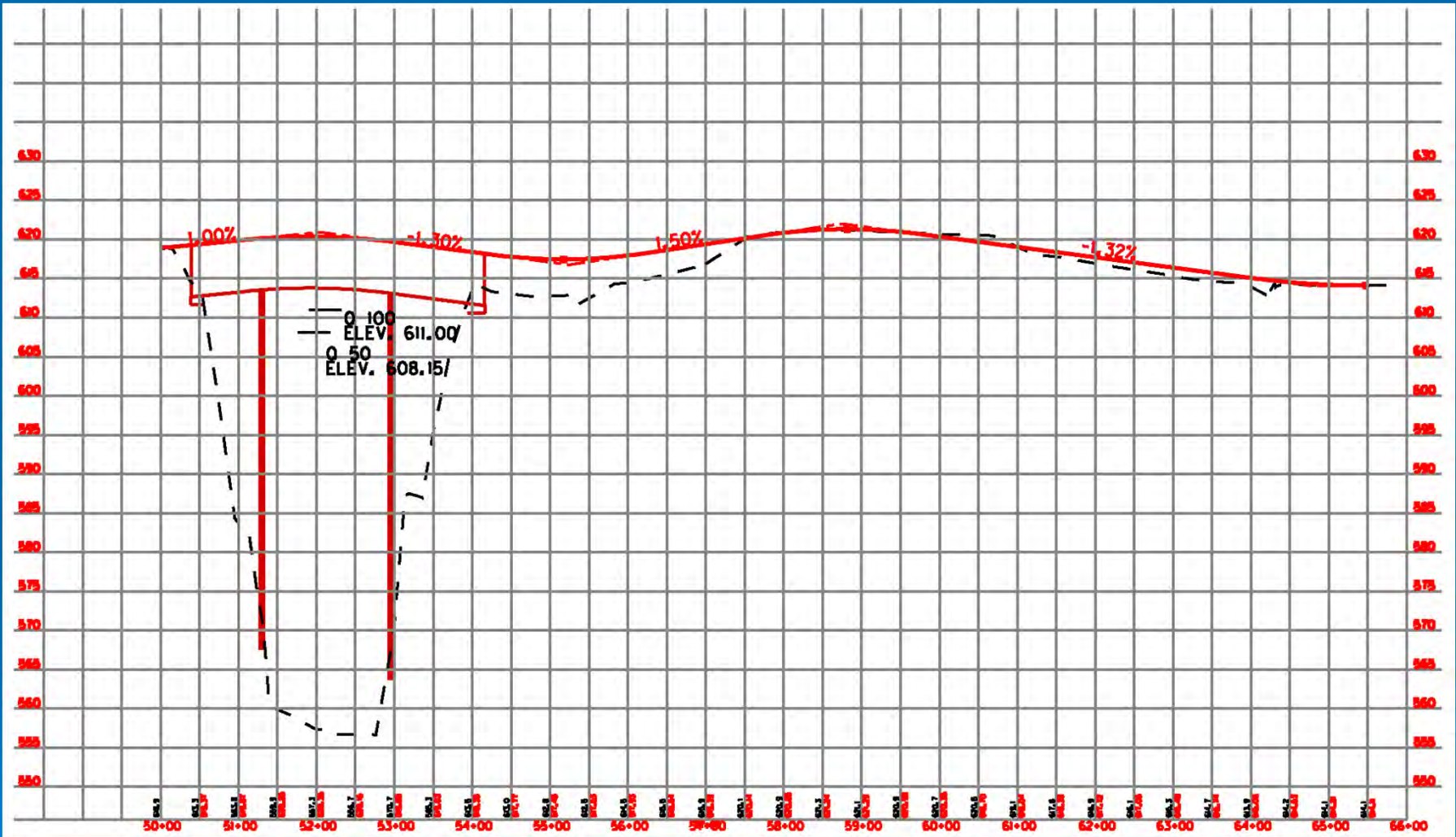
- Tie to KY 40
- Intersection of KY 40 and KY 1107
- Radio Tower
- RCBC under KY 40



- D-12 design completed the project to ROW plans. It was decided to do Phase II design under a Statewide Design Contract. The project was assigned to HMB Professional Engineers in May 2009
- A preliminary drainage folder had been submitted, but approval had not been obtained.
- HMB began work on the Advanced Folder and discovered that the structure proposed in the original alignment would have an adverse impact on the existing flood plain.
- The project team decided to revisit an alignment that did not impact the flood plain. This alignment was initially rejected due to potential impacts to the radio tower and an adjacent subdivision.

# Revised Alignment





# Implications

- The most significant impact was to the project schedule. The Revised Alignment added an additional year to the design process.
- Minimal effort was required to modify the CE. (We were very fortunate. The environmental impacts often drive the selection of an alignment.)
- The Revised Alignment forced us to address the impacts to the Radio Tower. The Original Alignment consisted of one parcel vs the Revised Alignment containing 8 parcels and the acquisition of a radio tower.

# Questions?





# Conclusion

## Cross-cutting Themes

Phil Logsdon, Asst. Director  
Division of Environmental Analysis



# Conclusion

- It's never too late to do the right thing
- Recognize the difference between a description in the KYTC Six Year Plan and the Purpose and Need for the project
- Early consideration of information that is typically developed later in the design process (geotech, utilities, excess excavation, property owner input, maintenance of traffic, etc.)

# Conclusion

- Anticipate your range of alternatives early
- Be flexible, especially with decisions that require additional ROW