EA Partners, PLC

CIVIL ENGINEERS • LAND SURVEYORS • LANDSCAPE ARCHITECTS
3111 WALL STREET
LEXINGTON, KENTUCKY 40513
PHONE (859) 296-9889
FACSIMILE (859) 296-9887

F I N A L
M E M O R A N D U M

DATE: September 28, 2010

TO: Rob Sprague, P.E.
Design Section Supervisor

FROM: Darin Hensley, P.E.
EA Partners, PLC

RE: I-64/Mountain Parkway Interchange
Clark County
Item No. 7-8506.01

An Interchange Type Selection Meeting for the captioned project was held on August 25, 2010 at the District Office. The following is a list of attendees:

Becky Barrick	KYTC District 7 Environmental
Keith Caudill	KYTC Central Office Design
Jerry Cottingham	EA Partners, PLC
Les Haney	EA Partners, PLC
Darin Hensley	EA Partners, PLC
Don Lawson	KYTC District 7 Utilities
Bob Nunley	KYTC District 7 Proj. Development
Jeff Ray	KYTC District 7 Right of Way
Matt Simpson	KYTC District 7 PD&P
Rob Sprague	KYTC District 7 Design
Ron Terry	KYTC District 7 Right of Way

The following enumerated items were discussed:

1. The District presented new historic information that was obtained from the Heritage Council.

a. The Vance property to the northeast of the existing interchange may contain some historic features or may be considered as a historic farm. The house has had some improvements made to it. The property should be considered as a potential historic impact until further research is completed in Phase I Design.

b. The Tackett property to the southwest of the existing interchange may also contain some historic features; possibly a stone culvert and barns. It appears that the house is no longer there. The property should be considered as a potential historic impact until further research is completed in Phase I Design.

c. It was discussed again that the Rest Area is potentially historic and should be avoided. The Rest Area is listed on FHWA list of Nationally and Exceptionally Significant Features of the Federal Interstate Highway System.

2. The purpose of the project is to evaluate alternate designs for a full interchange at the I-64 and Mountain Parkway junction. Existing today is a partial interchange made up of a northbound Mountain Parkway to westbound I-64 ramp and an eastbound I-64 to southbound Mountain Parkway ramp. The other movements for this interchange are completed by utilizing the KY 627 interchange and making a U-turn movement.

3. The following alternates were presented for consideration:

Alternate 1 is a classic trumpet interchange configuration (See Exhibit 1). The movements projected to have the lowest traffic volumes make up the legs of the interchange that have the lowest design speeds. The interchange would be reconstructed and contain one new grade separation structure. The northbound Mountain Parkway to westbound I-64 and the westbound I-64 to southbound Mountain Parkway movements would both utilize the new structure crossing I-64. The eastbound I-64 to southbound Mountain Parkway movement would be maintained on the existing ramp. The northbound Mountain Parkway to eastbound I-64 movement would be at a reduced design speed and merge onto a collector-distributor road. A collector-distributor road is utilized so that exiting eastbound I-64 traffic to the rest area and entering

northbound Mountain Parkway traffic can weave without impeding the flow of mainline I-64 traffic. The entrance and exit ramp tapers on to and off of the collector-distributor road meet the minimum criteria established in the AASHTO green book. Given the low traffic volumes of these movements, it is felt that this would be acceptable. A detailed analysis needs to be performed during the final design to determine if the collector-distributor road needs to be one or two lanes at this location. This alternate impacts six parcels containing approximately eighteen acres of Right-of-Way and two structures. This alternate does not directly impact any of the sites considered to be potentially historic.

Alternate 2 is a fully directional interchange configuration and was eliminated because it had a direct impact on the existing rest area.

Alternate 2A is a fully directional interchange configuration. This alternate avoids impacting the existing rest area and provides an alternative to constructing a collector-distributor road. This alternate was developed to the point of a preliminary construction cost estimate and stopped at that point due to its high anticipated construction cost. This alternate would be better suited for a location where high traffic volumes on all ramps are present. This alternate impacts nine parcels and approximately eighty-eight acres of Right of Way and nine structures. This alternate would impact both of the potential historic sites previously discussed.

Alternate 3 would construct a flyover ramp and maintains both existing ramps in place (See Exhibit 2). The westbound I-64 to southbound Mountain Parkway movement would be constructed on a third level flying over the existing northbound Mountain Parkway to westbound I-64 bridge. In order to facilitate this movement the up grade would be approximately four percent and the down grade approximately six percent. The resulting bridge would be approximately sixty feet in the air. This alternate would also contain the northbound Mountain Parkway to eastbound I-64 movement as described with Alternate 1, including the collector-distributor road.

This alternate impacts four parcels and approximately fourteen acres of Right-of-Way and four structures. This alternate would impact the Vance Property, noted as being a potentially historic site.

Alternate 4 provides the same concept as Alternate 3; but, shifts the westbound to southbound movement to the west in order to keep the bridge at a lower elevation. It also maintains both existing ramps in place (See Exhibit 3). This alternate incorporates the same northbound Mountain Parkway to eastbound I-64 movement as described with Alternate 1, including the collector-distributor road. This alternate impacts six parcels and approximately thirty-eight acres of Right-of-Way and four structures. This alternate would impact the Tackett Property, noted as being a potentially historic site.

Alternate 5 is similar to Alternate 4 but provides an alternative method to avoid the existing rest area. A collector-distributor road would not be required with this configuration. This alternate would reconstruct all movements. This alternate impacts five parcels and approximately forty-four acres of Right-of-Way and four structures. This alternate would impact the Tackett Property, noted as being a potentially historic site. This alternate would be better suited for a location where higher traffic volumes are present.

4. The following cost matrix was utilized by the project team.

Alternate	Construction Cost	Right-of-Way Cost	Utility Cost	Total Cost
Alt 1	$11,039,000	$1,600,000	$900,000	$13,539,000
Alt 2A	$18,984,000	$2,700,000	$900,000	$22,584,000
Alt 3	$13,503,000	$1,000,000	$900,000	$15,403,000
Alt 4	$12,530,000	$1,240,000	$900,000	$14,670,000
Alt 5	$15,323,000	$1,270,000	$900,000	$17,493,000

5. An analysis of the level of service for each alternate has not been completed, however given the projected volumes and the fact that all alternates will incorporate the same number of lanes for the various movements, it is felt that they would operate at similar overall levels of service. A

merge-diverge analysis will be needed in Phase I Design to check the capacity of the weaving sections.

6. The District will prepare a utility estimate. It was noted that each alternate is very similar as the only real impact is the water and sewer service for the existing rest area.

7. Construction phasing would be required, but extended road closures are not anticipated for any of the alternates.

8. EA Partners discussed the decision making process for the concept of the collector-distributor road. The layout shown separates the exit points for the southbound Mountain Parkway traffic and the rest area traffic. The successive exit gores shown meet the minimum spacing criteria as set forth in the AASHTO green book. An alternate design would extend the collector-distributor road to west and require all exiting traffic for the Mountain Parkway and rest area to exit at the same time. The Project Team felt that separating these decision points would provide for a more efficient operation.

9. It was noted that a permanent retaining wall would be necessary to separate the northbound Mountain Parkway movements with Alternates 1, 3 and 4.

10. The Project Team decided to eliminate Alternate 2A for the following reasons:

    a. This alternate has the highest anticipated construction cost.

    b. This alternate impacted both of the sites that are potentially historic.

    c. This alternate is more suited for a high traffic volume interchange.

11. The Project Team decided to eliminate Alternate 5 for the following reasons:

    a. This alternate has a higher construction cost.

    b. This alternate impacted one of the sites considered to be potentially historic.

c. This alternate is more suited for a high traffic volume interchange.

12. The Project Team decided to carry Alternates 1, 3 and 4 forward to Phase I Design. Alternate 1 provided the lowest cost and least amount of impact to the sites considered as potentially historic and is considered as the preferred alternate. Alternate 3 and Alternate 4 provide reasonable construction cost estimates but potentially impact historic sites. The Project Team decided to develop the environmental document in Phase I before selecting a final alternate.

RDH:rdh