

14.0 LEVEL 3 EVALUATION – DETAILED ANALYSIS

14.1 Final Refinement

Based on the Level 2 analysis, the remaining alternatives were refined for the Level 3 evaluation. This included minor modifications to the preliminary corridors and the typical sections based on available technical analyses as well as public and agency input. The typical sections shown in Figure 22 reflect the adjustments made for the Level 3 analysis and are the final conceptual typical sections used for cost estimating purposes. Construction phasing was also considered for each alternative when applicable. The refinements were made to give the best corridors for future highway design and to yield reasonable cost estimates for the final evaluation.

14.2 Alternative Refinement and Phasing

Alternative 2A – US 51 / US 62 / Front Street Intersection

The refined Alternative 2A includes the following major elements:

- Installation of a traffic actuated signal;
- Construction of left turn lanes on US 51 (north and south);
- Closure of the intersection's fifth leg (Elm Street);
- Reconstruction of curbs, gutters, and drainage structures;
- Increased northeast intersection corner radius for truck turning movements; and
- Sidewalks if construction is possible within the existing right-of-way.

Although this alternative closes Elm Street at US 51, access to Greg's Supermarket and the nearby residential area will be maintained via Ashford Street. (Refer to Figure 26 in Appendix B)

Alternative 2B – US 51 / Jennings Street Intersection

Alternative 2B involves no construction work, only the removal of the current traffic signal and associated re-striping of the intersection. (Refer to Figure 27 in Appendix B)

Alternative 2C – US 51 / KY 123 (Elsy Avenue) Intersection

A minimum of construction is proposed for Alternative 2C as well. Curb and gutter is to be placed along both corners of KY 123 (Elsy Avenue) where it intersects with US 51 to provide adequate turning radii for trucks. In addition, installation of a traffic signal is proposed in 2020. A signal warrant analysis using the forecasted volumes shows that the signal will be warranted by 2020. (Refer to Figure 28 in Appendix B)

Alternative 2D Curve – US 51 at Curve by Methodist Church

As part of the refinement process, Alternative 2D was broken into two projects (realign curve and lower hill). Each of these improvements can be implemented independent of the other and should be evaluated with respect to individual merit.

For Alternative 2D Curve, the only improvement would be to the curve by the Methodist Church. The roadway would be realigned to flatten the curve. The travel lane and shoulder widths would be increased and the line of sight would be improved. (Refer to Figure 29 in Appendix B)

Alternative 2D Hill – US 51 at Hill by the Lions Club Building

For Alternative 2D Hill, the only improvement would be to the hill by the Community Center (Lions Club). The hill would be lowered to improve the transition to the curve, and lane and shoulder widths could be increased. (Refer to Figure 29 in Appendix B)

Alternative 3 – Reconstruct US 51 as Two-Lane Roadway with Turn Lanes

Alternative 3 is a composite of the proposed spot improvements with the addition of full reconstruction of US 51 from just north of town to KY 1181 and spot improvements to the hills and curves south of town. (Refer to Figure 30 in Appendix B) Due to the nature and extent of the proposed improvements, it is possible to construct Alternative 3 in phases. The benefits of phased construction are defrayed construction costs and almost immediate results for the community. One possible phasing plan would be to complete all spot improvements excluding Alternatives 2D Curve and Hill as Phase 1 including reconstructing US 51 through town. The spot improvements require minimal to moderate construction and can be finished in a timely manner. The reconstruction of US 51 through town will be more difficult and should be undertaken once the spot improvements have been completed. Phase 2 would likely consist of Alternatives 2D Curve and Hill. These improvements could be a stand-alone project due to the extensive construction work required to realign the roadway and the associated traffic delays. The final phase (Phase 3) would be improvements to the hills and curves south of town. Improvements to the hills and curves south of town are proposed as the last phase since they are likely to provide the least overall benefit.

Alternative 4B – US 51 Realignment

Alternative 4B is a variation of Alternative 3. (Refer to Figure 31 in Appendix B) Instead of the proposed Alternative 2D improvements, the curve and hill would be bypassed with a realignment of US 51 from the curve by the Methodist Church to between KY 1377 and KY 1181. Originally Alternative 4B tied into the current alignment of US 51 east of the Methodist Church and Alternative 4A tied into the current alignment of US 51 west of the church. However, Alternative 4A was dismissed during the Level 2 evaluation because it was determined to have multiple environmental impacts including stream relocation. In addition it was longer than Alternative 4B, leading to higher construction costs. The major issue with construction of Alternative 4B involves the potential relocation of a house located in the curve by the church. The initial cultural

historic survey recommended the house as potentially eligible for listing in the National Register of Historic Places (NRHP). Subsequent analysis has shown that this site is not a particularly outstanding example of the Tudor style and was removed from consideration for listing in the NRHP. Therefore Alternative 4B was determined to be the preferential realignment alternative. However, during a field visit, the optimal route was determined to be a combination of Alternatives 4B and 4A. For this analysis, the realignment was refined to begin to the east of the church, but then curve slightly west, avoiding the floodplain and stream areas. To determine the optimal route, further analysis is recommended to identify all environmental and cultural / historic features in this area. Therefore, if Alternative 4B is recommended, a broad corridor will be designated as the area of potential realignment to allow for adequate flexibility in design.

In addition to realigning a portion of US 51, Spot Improvements 2A, 2B, and 2C are included in this alternative as well as reconstruction of US 51 north of the realignment. This alternative can be constructed in phases, with a phasing scheme similar to the one proposed in Alternative 3. Instead of realigning the curve and lowering the hill as Phase 2, the realignment of US 51 would be the second phase.

14.3 Level 3 Analysis Summary

After refining each of the four alternatives advanced from Level 2, they were subjected to a detailed analysis to determine which alternative or combination of alternatives should be recommended for implementation. A discussion of the results from this analysis is included below for each alternative. An evaluation matrix for each of the four primary categories (Traffic Operations, Environment, Community, and Implementation / Construction) is included as Tables 25 – 28 in Appendix A. For reference the traffic forecasts for each of the alternatives are included in Appendix G. In the next chapter, the recommended alternative or set of alternatives is presented.

Alternative 1 – No-Build

Traffic Operations - Between 2002 and the design year of 2030, traffic volumes on US 51 in town are expected to increase. This additional traffic is likely to affect intersection operating conditions at the major intersections in the study area. Level of service (LOS) analysis for the current operating conditions (2002) and the design year of 2030 showed a decline in LOS for both the intersection of US 51 at US 62 and the intersection of US 51 at KY 123. Currently, the intersection of US 51 at US 62 operates at a LOS A on the northbound and southbound approaches (US 51), and operates at a LOS B on the eastbound and westbound approaches (US 62). By the year 2030, the eastbound and westbound approaches (US 62) are expected to fall below the desirable LOS threshold, giving the intersection an overall rating of LOS F. The intersection of US 51 at KY 123 currently does not have significant operational issues. In the design year of 2030, the northbound and southbound approaches (US 51) are expected to remain at a desirable LOS, but the eastbound approach (KY 123) is expected to decline to a LOS F.

This alternative proposes no improvements to address these LOS deficiencies. In addition, truck traffic will continue to go through town on an unimproved highway,

thereby not improving safety or efficiency for through trucks, other highway vehicles, and bicyclists / pedestrians. Other safety issues including the high crash rate in town, and discontinuous sidewalks through Bardwell are not addressed with this alternative.

Environment - Alternative 1 is a No-Build alternative, and is not expected to have any significant impact to the environment other than increased noise from predicted increases of traffic in town.

Community - The No-Build alternative is not expected to impact the community in a negative way, nor is it expected to enhance the community.

Based on comment forms received at the second public meeting, the highest percentage (57%) of respondents thought that doing nothing was the worst alternative. As a result, Alternative 1 was rated the lowest of all of the alternatives.

Implementation / Construction - There are no physical improvements associated with this alternative, therefore no additional new right-of-way (ROW) is required, and there is no cost for this alternative.

Alternative 1 Conclusion: The No-Build alternative has been developed as a baseline for alternative comparison throughout the entire study process. It has the least direct impact to the environment, but also has the least benefit for the community and transportation system. Also, the traffic analysis indicates that there are current safety problems and future traffic deficiencies at two intersections on US 51 in town. Because this alternative does nothing to address these concerns (and therefore the project goals) and is not supported by the public, it is not recommended as the preferred alternative.

Alternative 2A – US 51 / US 62 / Front Street Intersection

Traffic Operations - Traffic volumes at US 51 / US 62 are expected to increase between 2002 and 2030, causing delays for westbound and eastbound traffic. The current (2002) level of service for this intersection is LOS A/B, but in 2020 the west leg (US 62) will be LOS F with no improvements. With the proposed intersection improvements including constructing northbound and southbound left turn lanes along with the installation of a traffic signal, the LOS is expected to operate at LOS B/C, which is within the desirable range of operations.

In addition to the construction of turn lanes and the installation of a traffic signal, several other aspects of this alternative have been included to improve safety at this intersection as well as facilitate truck turning movements. Access is to be limited on all four legs of the intersection, thereby reducing the potential points of vehicle conflict with the through movements. The placement of the curb and gutter at the northeast corner of the intersection will be such that the turning radius for trucks is increased to facilitate turning movements to/from US 51 and US 62. Improvements to this intersection were strongly supported by Mead WestVaco and could be expected to have wide shipper / trucker support.

Environment - There are no known environmental impacts associated with this alternative except for possible impacts to up to two potential hazardous materials sites, including Huck's gas station.

Community - The benefits associated with this alternative are local in nature and primarily are associated with traffic flow. Access will be limited for the development around the intersection, particularly Huck's gas station and Greg's Supermarket; however, adequate access to the development will be maintained. In fact, as a result of limiting access at the intersection, additional land may be added to Huck's gas station to be used as alternative parking. Comment form respondents at the second public meeting gave this alternative an average score between "Fair" and "Good", which was one of the highest ratings given to any of the alternatives.

Implementation / Construction - The estimated construction cost for Alternative 2A is \$800,000. The total estimated cost (including right-of-way, utilities, and design) is \$1,700,000. This includes modifications to access, property acquisition, closure of the fifth leg, and relocation of business signage. Utility work includes relocating the utility pole on the northeast corner of the intersection to provide adequate space for turning truck movements. The required new right-of-way is low, with less than one acre expected to be required for construction.

Alternative 2A Conclusion: Traffic flow, safety, and geometric issues have been identified at this intersection. Some of these issues are already a problem, while others will become a problem as traffic grows. The proposed improvements directly address these deficiencies and meet the goals of the study. The public, local officials, and local shippers also support the improvements. The project team recognizes the need for improvements and supports the recommendation of this alternative. Therefore, Alternative 2A is to be included in the final recommendation for this study.

Alternative 2B – US 51 / Jennings Street Intersection

Traffic Operations - Currently, this intersection operates at LOS B as shown in Table 25. If the traffic signal remains in place, intersection operations remain at a LOS B in the design year of 2030 for the eastbound and westbound directions of travel, and degrade to a LOS C for the northbound and southbound directions of travel. If the traffic signal is removed, the forecasted LOS for this intersection in 2030 is a LOS C for the eastbound and westbound movements, and LOS A for the northbound and southbound movements. Therefore, intersection operations are expected to remain at or above the desirable threshold for operations with or without the traffic signal. To eliminate unnecessary stops, the traffic signal could be removed without detrimental impact to intersection operations. The signal also does not meet warrants currently and is not expected to meet warrants in the future (2030).

Environment - There are no known environmental impacts associated with this alternative.

Community - There are no known negative impacts to the community with implementation of this alternative. Based on responses received via comment forms at

the second public meeting, this alternative was given an average score between “Fair” and “Good” which was one of the highest ratings given to any of the alternatives.

Implementation / Construction - Of the proposed spot improvements, this alternative has the least cost associated with it (\$13,000). There is to be no construction, only the cost associated with the removal of the signal and restriping the intersection. There is no impact to the existing utilities associated with this alternative, nor is acquisition of new right-of-way required.

Alternative 2B Conclusion: The removal of the traffic signal is unlikely to have any significant impacts to the community and environment. Furthermore, the traffic analysis shows that there are no expected major impacts to traffic flow conditions through the intersection. Public response for this alternative has been favorable, and the project team agrees that this is a beneficial improvement to US 51. Therefore, Alternative 2B is to be included in the final recommendation for this study.

Alternative 2C – US 51 / KY 123 (Elsey Avenue) Intersection

Traffic Operations - The current level of service for this intersection is LOS A/B, with operations expected to degrade to LOS F for the west leg (KY 123) by the design year 2030. Installation of a traffic signal would reduce the overall intersection delay, resulting in LOS C for the intersection in 2030. The intersection currently does not warrant the installation of a traffic signal; however, based on the forecasts the signal may be warranted in 2020 when the west leg becomes a LOS D. Because of the expected poor LOS, a traffic signal is recommended at this location when warranted. The improvements proposed for Alternative 2C are also designed to facilitate truck turning movements to/from US 51 and KY 123. The increase in the turning radii are expected to benefit vehicle safety by reducing crossover of trucks into opposing travel lanes.

Environment - There are no known environmental impacts associated with this alternative.

Community - Based on comment form responses received at the second public meeting, this alternative received an average score between “Fair” and “Good”. Compared to the other proposed alternatives, this alternative received one of the highest ratings.

Implementation / Construction - In order to increase the turning radii at this intersection, minimal construction is necessary. As a result, the estimated construction cost is \$30,000. There is likely to be minimal impact to the existing utilities. Right-of-way would need to be acquired for these improvements. The overall total cost for this spot improvement (including design, right-of-way, and utilities) is estimated at \$180,000.

Alternative 2C Conclusion: Alternative 2C benefits traffic movement, particularly truck traffic movements. The estimated construction cost is low for the proposed improvements, and there is general support for this alternative. The project team agrees that this is a project that should be done. Therefore, Alternative 2C is to be included in the final recommendation for this study.

Alternative 2D Curve – US 51 at Curve by Methodist Church

Traffic Operations - The improvements proposed in this alternative are in response to identified safety issues with the curve located on US 51 near the First United Methodist Church. The crash analysis performed for US 51 in the study area revealed a high crash section that begins at Ashford Street and continues through town to East Court Street, encompassing the curve by the First United Methodist Church. The proposed realignment of the curve is expected to reduce the potential for crashes at this location through improved sight distance.

Traffic analysis of US 51 at this location does not indicate any capacity or congestion issues. As a result, the proposed improvements are not likely to impact traffic flow aside from increasing roadway safety.

Environment - There are no streams, wetlands, or floodplains within the vicinity of the proposed Alternative 2D Curve improvements; therefore, there is no expected impact to these environmental features. To the south of the curve is one site (Methodist Church) that is eligible for the National Register of Historic Places (NRHP). To the north is another site (Tudor Revival House) that was potentially eligible for the NRHP, but subsequent review has determined it to not be recommended as eligible. Impacts to the church building are not expected. The property surrounding the church may be impacted, but efforts can be made to avoid the church property. The second site will need to be relocated or demolished in order to realign the curve.

Community - One of the benefits to fixing the current alignment of US 51 is the visibility of all businesses located along US 51 is maintained. Because the proposed improvements will require major reconstruction of US 51 at the curve by the Methodist Church, the Tudor Revival house will need to be relocated or demolished. In addition to the acquisition of this building, right-of-way may be required from several land owners located along this portion of US 51, including at least one additional home.

Despite the property impacts associated with this alternative, the community of Bardwell recognizes the need for improvements to this section of US 51. When asked to score the refined alternatives, respondents at the second public meeting gave Alternative 2D Curve a high average rating, higher than the average rating for Alternative 4B which consists of a realignment of US 51 to bypass the curve and hill. Also, when asked to identify the worst alternative, no respondents selected Alternative 2D Curve, but several respondents selected Alternative 4B.

Implementation / Construction - Construction complexity is likely to be high for the proposed improvements due to the constraints imposed by limited right-of-way along this section of US 51. The estimated construction cost is \$500,000 (estimated total cost is \$1.5 million), which is high for a spot improvement, but is of a similar magnitude as Alternative 2A which also includes substantial improvements. Compared to Alternative 4B, fixing the current alignment of US 51 at the curve and hill south of town is less costly than constructing a new highway south of town. Also, the estimated right-of-way acquisition for Alternative 2D Curve is significantly less than that estimated for Alternative 4B.

Alternative 2D Curve Conclusion: Improvements to the curve by the First United Methodist Church is a project that has been recognized by the community and the project team as beneficial to reduce the high crash rate on that section of US 51. Both Alternatives 2D Curve and 4B specify means for reducing the high crash rate. The main difference between the two alternatives is Alternative 2D Curve is a proposal to fix the current alignment of US 51 whereas Alternative 4B is a proposal for realigning US 51 to bypass the curve and hill. A comparison of the two alternatives shows that fixing the current alignment of US 51 is likely to impact less property overall, require less right-of-way acquisition, costs less, and has more community support. The complexity of construction is likely to be higher for Alternative 2D with significant maintenance of traffic issues. However, the design and construction of the tie-ins to US 51 of a new highway are also likely to be difficult considering the limited right-of-way availability, particularly by the Methodist Church. Furthermore, community response is in favor of fixing the curve on US 51. Based on the acknowledged need for improvements to reduce the crash rate and comparisons of the two alternatives that address this need, Alternative 2D Curve is the preferred alternative to be included in the final recommendation.

Alternative 2D Hill – US 51 at Hill by the Lions Club Building

Traffic Operations - The improvements proposed in this alternative are in response to identified safety issues with the hill located on US 51 near the First United Methodist Church. The hill leads into the high crash section identified on US 51 through Bardwell. The lowering of the hill is expected to improve safety by reducing the grade leading into the curve, thereby lowering speeds and improving sight distance. These improvements particularly benefit truck traffic since trucks traveling on this portion of US 51 typically pick up speed going down the hill, making it difficult to negotiate the sharp curve.

Traffic analysis of US 51 at this location does not indicate any capacity or congestion issues. As a result, the proposed improvements are not likely to impact traffic flow aside from increasing roadway safety.

Environment - There are no streams, wetlands, or floodplains within the vicinity of the proposed Alternative 2D Hill improvements; therefore there is no expected impact to these environmental features. There is one site eligible for the National Register of Historic Places (T-plan house) located along US 51 where the roadway begins to curve to the south. The building is not likely to be impacted, but portions of the surrounding property that front US 51 may be required for the construction project of lowering the hill.

Community - One of the benefits to fixing the current alignment of US 51 is the visibility of all businesses located along US 51 is maintained. Because the proposed improvements will require major reconstruction of US 51 from the curve at the Methodist Church to where US 51 curves to the south, several buildings located along this portion of US 51 may need to be relocated. These buildings include the Bardwell Lion's Club and a chiropractor's office. (Detailed design may reveal other possible impacts but no others are known at present.). In addition to the acquisition of these buildings, right-of-way may be required from several land owners located along this portion of US 51.

Despite the property impacts associated with this alternative, the community of Bardwell recognizes the need for improvements to this section of US 51. When asked to score the refined alternatives, respondents at the second public meeting gave Alternative 2D Hill a high average rating, higher than the average rating for Alternative 4B which consists of a realignment of US 51 to bypass the curve and hill. Also, when asked to identify the worst alternative, no respondents selected Alternative 2D Hill, but several respondents selected Alternative 4B.

Implementation / Construction - Construction complexity is likely to be high for the proposed improvements to the hill due to the constraints imposed by limited right-of-way along this section of US 51. The estimated construction cost is \$900,000 (total estimated cost is \$3 million) which is higher compared to the other spot improvements as shown in Table 28. Compared to Alternative 4B, fixing the current alignment of US 51 is less costly than constructing a new highway. Also, the estimated right-of-way acquisition for Alternative 2D Hill is significantly less than that estimated for Alternative 4B (<3 acres for Alternative 2D Hill compared to 30 acres for Alternative 4B).

Alternative 2D Hill Conclusion: Improvements to the hill leading into the curve is a project that has been recognized by the community and the project team as beneficial to reduce the crash rate on US 51. Both Alternatives 2D Hill and Alternative 4B specify means for reducing the crash rate. Alternative 2D Hill is favored over Alternative 4B for the same reasons as Alternative 2D Curve. Therefore, Alternative 2D Hill is the preferred alternative to be included in the final recommendation.

Alternative 3 – Reconstruct US 51 as Two-Lane Roadway with Turn Lanes

Traffic Operations - Current traffic operations on US 51 in Bardwell are good at LOS C or better. In the design year 2030, traffic operations will remain at a good level of service except for side street traffic at the US 51 / US 62 and US 51 / KY 123 intersections, which will degrade to LOS F without any improvements. The main north-south traffic flow on US 51 will remain at a good level of service in 2030. The reconstruction of US 51 does not significantly increase capacity, but instead is proposed to improve congestion at key locations and to improve safety. Safety will be improved (particularly for the high crash section), and congestion will be decreased through the removal of an unwarranted signal, widening of corner radii, widening of travel lanes, widening of shoulders (rural section), installation of curbs, gutters and sidewalks (urban section), limiting access to US 51, installation of signals at US 51 / US 62 and US 51 / KY 123, improvements to the curve and hill, and the installation of turn lanes. This alternative benefits all highway users (both through and local traffic).

Environment - As shown in Table 26, impacts to streams, wetlands, floodplains, and threatened and endangered species are unlikely. Through Bardwell, 6-7 sites that are eligible for listing on the National Register of Historic Places are located along US 51. The proposed reconstruction can remain close to the existing right-of-way, but some acquisition from these properties may be necessary. Efforts to minimize impacts to these sites will be made and preliminary discussions seem to indicate that minor work in the front of some of these buildings (which will ultimately benefit the properties) may be

viewed as having no adverse affect. Other sites that may be impacted include up to seven potentially hazardous materials sites.

Community - US 51 is the primary route through Bardwell, and reconstruction of this road with the addition of sidewalks will greatly benefit the aesthetics of the town. Currently there are small sections of sidewalk scattered along US 51 with no continuity between the sections. Furthermore, installing curb and gutter through town is expected to improve drainage and reduce the amount of standing water in the front of properties bordering US 51 through town. Detention basins could be included if necessary.

Based on ratings obtained through comment forms distributed at the second public meeting, the average rating of Alternative 3 was “Fair”, which was lower than the ratings assigned to the spot improvements. However, when asked to identify the best short-term (5+ years) alternative, the majority of respondents selected Alternative 3.

Implementation / Construction - The reconstruction of US 51 will be an extensive construction project with major utility impacts through town due to the location of several municipally owned utilities in the highway right-of-way. To construct the proposed improvements, including all of the spot improvements, approximately ten acres of new right-of-way will be required with much of the right-of-way being acquired for the Alternative 2D improvements. The construction cost estimate for this alternative is \$5.7 million with a total estimated cost of \$13.4 million (including design, right-of-way, and utilities). According to the table, the construction cost of Alternative 3 is similar to the estimated construction cost for Alternative 4B. For Alternative 3, the reconstruction through town to the southern end of 2D including the spot improvements is the largest portion of the cost estimate at \$3.6 million for construction and \$8.5 million total.

Alternative 3 Conclusion: A significant traffic capacity increase was not an issue identified for this study and therefore highway widening is not warranted. However, several intersections have been recognized as being deficient and a high crash rate through town has been identified. Therefore, the Alternative 3 and spot improvements have been developed to address the issues identified as warranting improvement. The spot improvements target the deficient intersections while the reconstruction of US 51 improves safety through access control and improved design. In addition, the community benefits from improved drainage and sidewalk construction through town. Improvements south of where Alternative 2D ends are a low priority but have been proposed to improve the curves and hills south of town. Therefore, all phases of Alternative 3 are included in the final recommendation.

Alternative 4B – US 51 Realignment

Traffic Operations - Construction of a new highway from the Methodist Church to between KY 1181 and KY 1377 would divert most of the traffic using the current alignment of US 51. The diverting traffic includes the majority of truck traffic, thereby removing large, heavy trucks from the sharp curve and steep grade on the current alignment of US 51. As shown in Table 25, the level of service for both current year and the design year of 2030 was determined to be LOS C for both the realignment and old US 51.

Environment - The proposed corridor for the realignment primarily runs through farmland, and may split one agricultural district. Depending upon the alignment within the proposed corridor, up to two streams, one to two farm ponds, and five acres or less of floodplain may be impacted.

Community - There are several advantages and disadvantages associated with Alternative 4B from a community standpoint. One advantage is most of the businesses in Bardwell are not bypassed. However, the realignment will bypass the few businesses located between the First United Methodist Church and KY 1181 and KY 1377. These businesses include a car wash and a chiropractor's office. The proposed realignment would tie into the existing US 51 alignment in the vicinity of the curve by the First United Methodist Church. At the tie-in location, several properties could be impacted including one to two houses and the Carlisle County Maintenance Barns.

Alternative 4B was given an average rating of "Fair" by respondents at the second public meeting. When asked which alternative was the worst regardless of timeframe, the greatest number of respondents said doing nothing (Alternative 1) was the worst, with the second greatest number of respondents selecting Alternative 4B as the worst.

Implementation / Construction - Construction costs for realigning US 51 are likely to be the highest cost for any of the build alternatives. As shown in Table 28, the estimated cost for the realignment only is approximately \$2.4 million for construction and \$5.0 million overall. This is \$500,000 more than the cost of realigning the curve and lowering the hill on the current alignment of US 51 (Alternatives 2D Curve and Hill). Because this is new construction, this alternative requires the acquisition of the greatest amount of new right-of-way of any of the alternatives. Furthermore, particularly at the tie-in locations to US 51, a realignment of US 51 is constrained by limited right-of-way and utilities.

Alternative 4B Conclusion: Compared to Alternatives 2D Curve and Hill, this alternative has more disadvantages associated with it. The proposed realignment of US 51 is likely to impact as many properties as Alternatives 2D Curve and Hill with the addition of potentially dividing prime farmland. The construction cost is higher for this alternative than Alternatives 2D Curve and Hill, especially with more new right-of-way required. Public response indicates that the community thinks this alternative would have negative impacts. The safety issues associated with the curve and hill have been identified as being projects that need to be addressed, and the response of the project team was to recommend Alternatives 2D Curve and Hill instead of Alternative 4B based on the reasons listed above.