IV. ALTERNATIVES ANALYSIS

Several alternative alignments were investigated for the SH 36 and Spur 10 (Hartledge / Gerken Road) roadway improvements. For Spur 10, the alternative alignments included widening existing Hartledge / Gerken Road and various new location alignments (Alternatives A, B, C, D, and E) within the Spur 10 project area (**Appendix A**). Additionally, three alternatives for the SH 36 alignment were investigated. These alternatives were evaluated along the existing alignment including an east, west, and center alignment to accommodate the roadway widening. The no-build alternative was also considered for SH 36 and Spur 10. Both design and environmental constraints were evaluated in determining the preferred alignment (**Exhibit 5**).

A. Spur 10

Spur 10 would connect to SH 36 at the northern end of the project and would extend northwest and tie into the existing Spur 10 north of US 59.

Widen Existing Hartledge Road (Preferred)
The proposed improvements to Spur 10 within the project limits of this alternative would consist of a four-lane divided rural roadway with a grassy median and open ditches along approximately 4 mi of the existing Hartledge Road alignment. The median openings would allow for left-turn movements; intersections would remain at grade. The total typical ROW width for this alternative is 220 ft. Approximately 57 ac of proposed ROW would need to be acquired from the north side of the road for this alignment. Refer to **Table 6** to view the various ROW alignments along Spur 10 and SH 36.

This alternative is the preferred alternative because it would not only accommodate the future traffic and safety needs of the area, but it would use the existing roadway rather than building a new roadway. By using the existing roadway, there would be a significant decrease in environmental impacts, ROW acquisition, and bisecting of properties. Refer to **Appendix A** for a list of the impact analyses of the Spur 10 alternatives.

Numerous design alternatives to the Spur 10 and SH 36 intersection were analyzed to determine the safest type of intersection and most effective intersection for traffic flow and turning movements. The preferred intersection would include an interchange allowing the SH 36 traffic to flow continuously on an overpass over Spur 10, whereas the Spur 10 traffic would have access onto SH 36 by signalized frontage roads. Other design options were considered for this intersection; however, they were not feasible once environmental and design impacts were quantified.

Alternative A
This alternative is a new location alternative northwest of the existing Hartledge Road and would include constructing Spur 10 on new location approximately 2,000 ft (0.38 mi) to the northwest of existing Hartledge Road from US 59 to the abandoned Southern Pacific Transportation Corporation Railroad (SPTC RR) easement. Alternative A would run parallel with the existing Hartledge Road until reaching the SPTC RR at which point it would connect to the existing SH 36 by one of three other alternatives C, D, or E.

This alternative was not preferred due to costs and environmental impacts that would result from constructing on new location which would require 220 ft of proposed ROW. Costs would

be greater for this new location alternative than the other alternatives evaluated in this area. Additionally, the environmental impacts and bisecting of farmlands were also greater for this alternative. A Limited Public Meeting held in September 2000 for the Spur 10 project area also showed that the general public was not in favor of constructing a new roadway.

Alternative B

Alternative B is a new location alternative southeast of existing Hartledge Road. This alternative was also not warranted for the same reasons as Alternative A. This alternative included constructing Spur 10 on new location approximately 2,600 ft (0.49 mi) to the southeast of the existing Hartledge Road from US 59 to the abandoned SPTC RR easement. Alternative B would also run parallel with the existing Hartledge Road until reaching the SPTC RR at which point it would connect to the existing SH 36 by one of three other alternatives C, D, or E.

Alternatives C, D, and E

Alternatives C, D, and E are new location alternatives south of the SPTC RR Easement. These alternatives were considered connecting alternatives south of the abandoned SPTC RR easement. These alternatives were also proposed on new location with 220 ft of ROW. These alternatives were quantified and compared independently from Alternative A, Alternative B, and existing Hartledge Road.

Alternative C, from the point at which Alternative A intersects the railroad easement, would travel south along the SPTC RR easement for approximately 2,000 ft (0.38 mi) and then turn southwest off of the easement and travel approximately 1.7 mi until it intersects with SH 36. Alternative C would be a continuation of Alternative B as it crosses over the railroad easement and then turns southwest to connect to SH 36. Alternative D, from the point at which Alternative A intersects the SPTC RR easement, would travel south along the easement for approximately 1.52 mi and then turn southwest and travel for approximately 1.33 mi until it intersects SH 36. Alternative D, from the point at which Alternative B intersects the SPTC RR, would travel approximately 3,000 ft (0.57 mi) along the easement and then turn southwest off of the easement for approximately 1.33 mi until it intersects with SH 36. Alternative E, from the point at which Alternative A intersects the SPTC RR, would travel approximately 2.18 mi along the easement and then turn southwest off of the easement and travels approximately 0.9 mi until it intersects SH 36. Alternative E, from the point at which Alternative B intersects the SPTC RR, would travel approximately 1.33 mi along the railroad easement before turning southwest off of the easement and traveling approximately 4,500 ft (0.85 mi) until it intersects SH 36.

These alternatives were not carried forward because of the increase in costs due to construction on new location and ROW acquisition, bisecting properties, farmlands, and residential communities, and a substantial increase in environmental impacts due to the number of additional stream crossings, forested areas and floodplain crossings.

All of the connecting alternatives would have required, at varying amounts, the use of the abandoned railroad easement which is currently owned by Reliant Energy-HL&P. Costs to purchase this property were not economically feasible for this proposed project.

B. SH 36 – Rural Areas

The preferred facility consists of a four-lane divided facility with open ditches and generally a 76-ft wide depressed center grassy median. **Table 5** shows a brief description of the proposed facilities throughout the length of the project.

Alternative 1 (Preferred)
This alternative is a combination of Alternatives 2, 3, and 4 described below. The alignment of this facility would vary throughout the project limits, based on the direction from SH 36 that proposed ROW is acquired. The variation in design, however, was based on current design and safety standards and impact analyses to the surrounding communities, travelling public and the environment. A concerted effort was made during the design phase to avoid numerous curves in the road, and at the same time, avoid numerous impacts to adjacent commercial and residential structures and various environmental constraints. Approximately 738 acres of ROW would be required for the preferred alternative. **Table 6** briefly summarizes the direction of the proposed ROW shifts along the project.

Alternative 2
This facility would center the alignment down the existing SH 36 facility thus dividing the additional ROW needs from both the west and east sides of the roadway. This alternative alone was not preferred due to environmental impacts, floodplain issues, displacements and design constraints.

Alternative 3
This facility would require additional ROW from the west side of the existing SH 36. This alternative alone was not warranted for the same reasons listed above in Alternative 2.

Alternative 4
This facility would require additional ROW needs from the east side of the existing SH 36. This alternative alone was not warranted for the same reasons listed above in Alternative 2.

Table 6: Proposed ROW Alignment Shifts

Section	Existing ROW Width (ft)	Proposed ROW Width (ft)	Proposed ROW Shift (direction)
Spur 10: Hartledge Rd. / Gerken Rd.	100	220	North
SH 36: FM 2218 to Foster School Rd.	100	Varies 150-220	West
SH 36: Foster School Rd. to N of School St.	100	220	East
SH 36: N of School St. to Old Needville / Fairchilds Rd.	100	120	West
SH 36: Old Needville / Fairchilds Rd. to Buffalo Creek	80	95	West
Buffalo Creek to FM 442	100	Varies 120-150	East
SH 36: FM 442 to Walcik Rd.	100	150	West
SH 36: Walcik Rd. to Vrilla Rd. / FM 1994	100	150	East
SH 36: Vrilla Rd. / FM 1994 south for approx. 0.4 mi; through Guy, TX	100	Varies 100-150	East
SH 36: Approx. 0.4 mi south of Vrilla Rd. to Richmond Rd. / FM 1462	100	220-260	East
SH 36: Richmond Rd. / FM 1462 through Damon, TX	100	150	West
SH 36: South of Damon to CR 467 / Hogg Ranch Rd.	100	220	West
SH 36: CR 467 / Hogg Ranch Rd. to FM 522	Varies 100-200	Varies 130-150	Centered
SH 36: FM 522 to CR 490 / Bernard St.	Varies 100-270	Varies 220-310	East
SH 36: CR 490 / Bernard St. through Brazoria, TX	Varies 80-100	Existing	None
SH 36: South of Brazoria to FM 2004 / FM 2611	150	Varies 220-270	West
SH 36: FM 2004 / FM 2611 to Live Oak Rd.	100-200	Varies 220-250	East
SH 36: Live Oak Rd. in Jones Creek to FM 1495	Varies 100-325	Existing	None

Note: North = Additional proposed ROW taken the north side of the existing road
East = Additional proposed ROW taken the east side of the existing road
West = Additional proposed ROW taken the west side of the existing road
Centered = Additional proposed ROW taken both the east and west sides of the road
Existing = No proposed ROW taken

C. SH 36 – Urban Areas

Alternatives within the urban areas along the project initially considered the east, west and center alignments and then further considered design alternatives to minimize impacts. **Exhibit 4**, shows the proposed preferred roadway alignment within the project limits and **Exhibit 3** shows the existing and proposed typical sections.

Needville
The preferred alternative through Needville would consist of a combination of east and west additional ROW based on the impact analyses. The preferred alternative for the town of Needville would consist of a curb and gutter section. This alternative was selected because it would impose the least amount of impacts to the town while accommodating the drainage needs resulting from the roadway improvements. An open-ditch section was not warranted because the location of the businesses and residences along the existing roadway were too close to accommodate the additional ROW needs for this type of design. However, they were not so close that a curb and gutter design could not expand the road.

Guy
The preferred alternative for the town of Guy would acquire additional ROW from the west side of the road. The town of Guy consists of less than 1 mi of frontage along SH 36. Within this town there is a gas station and a post office located on the east side of the road. Due to these constraints and their proximity to the existing roadway, taking additional ROW from the west side of the road resulted in the least amount of impact to this area.

Damon
The preferred alternative for the town of Damon would consist of an open ditch section with additional ROW acquisition from the west side of the existing roadway. Due to the proximity of the residences and businesses through this town, ROW acquisition to the west side created the least amount of impacts. The impact analyses show, in building displacements alone, the west ROW acquisition alignment displaced two residences and three commercial structures, while the center and east ROW alignments displaced three residences and seven commercial structures each.

West Columbia
The preferred alternative for the town of West Columbia would consist of a curb and gutter section with additional ROW needs for this alternative coming from the east side of the road where there would be the least amount of impacts to businesses and residences for the proposed alignment. The environmental impacts would also be the least on this side of the road because the woodlands and wetlands associated with Bell Creek are located on the west side of the road.

Brazoria
The preferred alternative for the town of Brazoria consists of adding two through lanes in each direction. The northern area of Brazoria would have an open ditch section, while the southern end of Brazoria would have a curb and gutter design. The proposed improvements are within the existing ROW through this area due to the location of several businesses and residences which are immediately adjacent to the road. Acquiring additional ROW is not proposed because widening the road beyond the existing ROW would impact every structure on both sides of the road. Further studies are planned as part of a separate TxDOT project to analyze a proposed new location bypass for the City of Brazoria.

Jones Creek

The preferred alternative for the town of Jones Creek is to widen within existing ROW and construct a curb and gutter facility. This alternative was selected because it would impose the least amount of impacts to the town while accommodating the drainage needs resulting from the roadway improvements. An open-ditch section was not warranted because the location of the businesses and residences along the existing roadway were too close to accommodate the additional ROW needs for this type of design. The impact analyses showed that the ROW required for an open ditch section would displace between 23 and 37 residences, three to seven businesses, and up to two churches. Additionally, the environmental impacts to wetlands, historical structures, parklands, and forested areas were not feasible for the acquisition of additional ROW in this area. Existing ROW was adequate to accommodate the undivided four-lane facility with a curb and gutter design.

D. No-Build Alternative

The no-build alternative would not improve the future safety and mobility needs of these areas of Fort Bend and Brazoria counties. SH 36 and future Spur 10 would serve as a hurricane evacuation route, evacuating citizens from the low-lying coastline in Freeport to US 59 in Fort Bend County. Due to current and future increases in population, a no-build alternative would not provide the safety standards for a roadway needed to evacuate the populations of these areas in the event of a major hurricane. In addition, the no-build alternative would not accommodate the mobility needs of the public resulting from increased growth of the Port of Freeport and towns along SH 36 within the project limits.