



APPENDIX F: BOLES HOMES ALTERNATIVE ALIGNMENTS (SUPPLEMENTAL ANALYSIS)



SH 34 Feasibility Study

IH-30 to CR 2312, Hunt County, Texas
CSJ: 0173-06-042, 0173-07-054
Supplemental Exhibit - Boles Home Alternatives

March 2020

Introduction

The Boles Home Supplemental Exhibit is part of the State Highway (SH) 34 feasibility study from US Highway 82 in Honey Grove, TX, to Interstate Highway (IH) 35E in Italy, TX. Existing SH 34 is typically a rural two (2)-lane roadway that expands to add a center turning lane in populated areas along the alignment. There is an existing section horizontal geometry of SH 34 near the Boles Children's Home at FM 2101 in Quinlan, TX near Boles Children's Home that has an existing sharp curve and runs between multiple Boles Children's Home properties, located on each side of SH 34. The SH 34 Boles Home Alternative Study is evaluating options that would flatten the existing sharp curve along SH 34 and FM 2101 and reduce the impacts of SH 34 to Boles Children's Home.

Study Area

The study area for SH 34 Boles Home Alternative feasibility analysis is approximately 1 mile in length and extends from north of FM 2101 to south of Caddeo Creek in Quinlan, TX. The entire study area is within the Hunt County limits. SH 34 connects to multiple driveways that access Boles Children's Home facilities on both sides of highway. SH 34 at FM 2101 provides local access to a neighborhood, Boles High School, Middle and Elementary Schools and a church. SH 34 at FM 2101 is a signalized T - intersection. FM 2101 is a two (2)-lane two (2)-way street with additional dedicated right turn lanes to and from SH 34 at the SH 34 intersection. Existing corridor features are: design Speed is 55 mph, radius of existing curve is 1600 ft, and existing typical section is two (2)-12 ft lanes with 10 ft shoulders. Quinlan is a rural community with an estimated population of 1,500 people and located in the southern part of Hunt County. Quinlan is a developed community that is experiencing significant growth in both residential and commercial development. With continued development, SH 34 traffic safety and accidents leading to injuries have become significant factors, warranting review of this section of the corridor to identify opportunities to improve safety.

Supplemental Study Alternatives

The proposed base condition is based upon the SH 34 feasibility study to widen and reconstruct the roadway. The planned SH 34 improvements include widening the existing two (2)-lane road to a four (4)-lane road, existing FM 2101 signal replacement and reconstruction of two bridges along the alignment and proposed ROW of 130' width. The total running length of the two bridges is 900 feet.

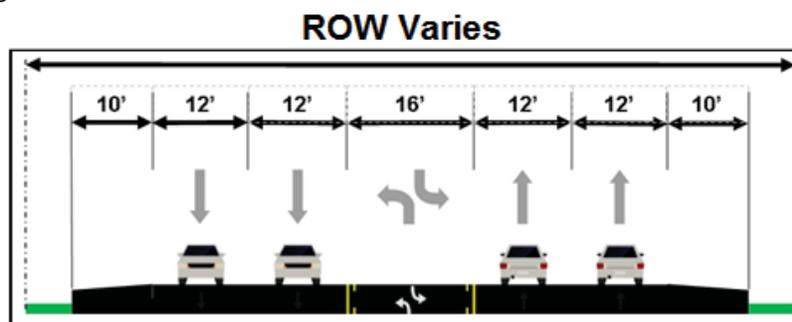


Figure 1- Proposed Typical Section



Figure 2- Project Location and Map

As part of the analysis, two alternatives were considered to evaluate alignment options and the optimal location for acquiring new right-of-way. The alternatives were compared to the base schematic condition for analysis.

Base Condition: Widens existing SH 34. Existing 1600 ft curve radii remains. Requires minimal proposed ROW widening. Existing superelevation 5.5%.

Alternative 1: Approximately 2000 ft new alignment adjacent to existing ROW. Proposed 2840 ft curve radii. Requires proposed ROW widening. Proposed superelevation 4%.

Alternative 2: Approximately 5000 ft new alignment offset from existing. Proposed 7000 ft curve radii. Requires proposed ROW offset from existing ROW. Proposed superelevation 2%.

Crash Data

Corridor crash data provided by TxDOT was summarized for the period between January 2012 and December 2017. Within the Boles Home Supplemental Study area before and after the sharp curve, there were a very significant number of crashes including 3 head on fatalities within close proximity to the study area. Flattening the curves combined with the SH 34 widening project improvements have potential to significantly improve corridor safety.

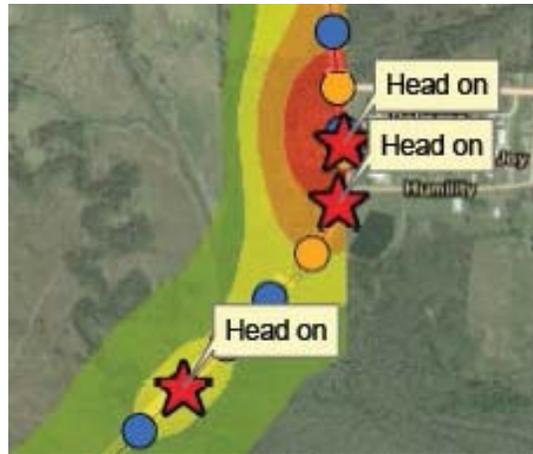


Figure – 3 Boles Home Area Crash Data: 2012-2017

Construction Cost

Below is a summary of the costs involved in implementing these changes:

- Base Condition: \$16.31 million, \$31.5K in ROW and \$200K in utilities
- Alternative 1: \$16.35 million, \$61.3K in ROW and \$220K utilities
- Alternative 2: \$16.46 million, \$187.3K in ROW and \$250K utilities

Safety Benefits

Base Condition: Low Moderate – Reconstruction and widening with turn lanes and improve overall project safety.

Alternative 1: High Moderate – Increasing the radius of the sharp curve would improve safety in front of Boles Home properties.

Alternative 2: High – Increasing the radius and re-aligning the corridor to be offset from the Boles Homes properties would further improve safety

All Options: Similar to the base condition, reconstruction and widening would improve safety and minimize the potential for unsafe passing scenarios and head on collisions. Increasing the number of lanes at the FM 2101 intersection would provide safer turning movements to and from SH 34.

Construction Disruption

Base Condition: High – Very disruptive construction option, due to widening and reconstruction within the existing corridor. This would increase delays along the route and construction between the Boles Home properties.

Alternative 1: Moderate – For the section with the alignment shifted, there would be less disruption to existing traffic. There would be moderate delays and construction between Boles Home properties.

Alternative 2: Low – For the new alignment offset from the existing corridor, there would be minimal disruption to existing traffic. There would be minimal delays and construction between Boles Home properties would be limited to the local access road.

All Options: To reconstruct the bridge sections, there would need to be nighttime and weekend closures along SH 34 to place bents and beams.

Community Impacts

Base Condition: Moderate – Widening of the existing corridor would allow more traffic to pass in front of the Boles Home properties. This would increase inconvenience.

Alternative 1: Moderate – Shifting the existing alignment adjacent to the existing corridor would only shift the location of higher traffic slightly away from the property, not solve it.

Alternative 2: Moderate – Shifting the alignment offset from the existing corridor, would reduce traffic inconvenience by constructing a driveway to access Boles Home properties. However, as in the other two cases, increased traffic would negatively impact the properties.

Drainage Impacts

Base Condition: Low – Existing drainage patterns would remain similar for widening of the existing corridor alignment. Driveway pipes near the intersection may need to be relocated if the ditch needs to be adjusted.

Alternative 1: Moderate – Drainage would need to be determined for the re-aligned section of SH 34. Given it is adjacent to the existing ROW, there would be potential for drainage patterns to remain similar. Driveway pipes would need to be installed for the re-aligned section with a new ditch alignment.

Alternative 2: High – Drainage would need to be determined for the new alignment offset from the existing corridor. Given the alignment is offset from the existing corridor, new drainage patterns would need to be developed to determine how to minimize area impacts.

Potential Environment Constraints in Study Area

Land Uses: The majority of the land use within the study area is residential, followed by undeveloped, which is frequently used for agricultural purposes.

Streams: One body of water was identified in the study area: Caddo Creek.

100-Year Floodplain: Portions of Caddo Creek are part of the 100-year floodplain.

Right-of-way Impacts

Base Condition: Low – Minimal ROW acquisition would be required to accommodate the widening of the existing corridor alignment. 1.8 acres proposed ROW would be limited to the front of properties.

Alternative 1: Moderate – ROW acquisition on west side only would be required to flatten the existing curve and re-align a section of SH 34. 3.5 acres of proposed ROW, including an additional impact to 2 Owners and 3 Parcels compared to the base condition.

Alternative 2: High – New ROW offset from the existing corridor would be required to increase the radius and re-align the corridor to be offset from the Boles Homes properties. 10.7 acres of proposed ROW, including an additional impact to 6 Owners and 10 Parcels.

All Options: Each scenario's proposed ROW would not require acquisition of existing structures. Alternatives 1 and 2 each have residential structures that will not need to be acquired.

Summary

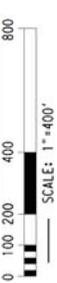
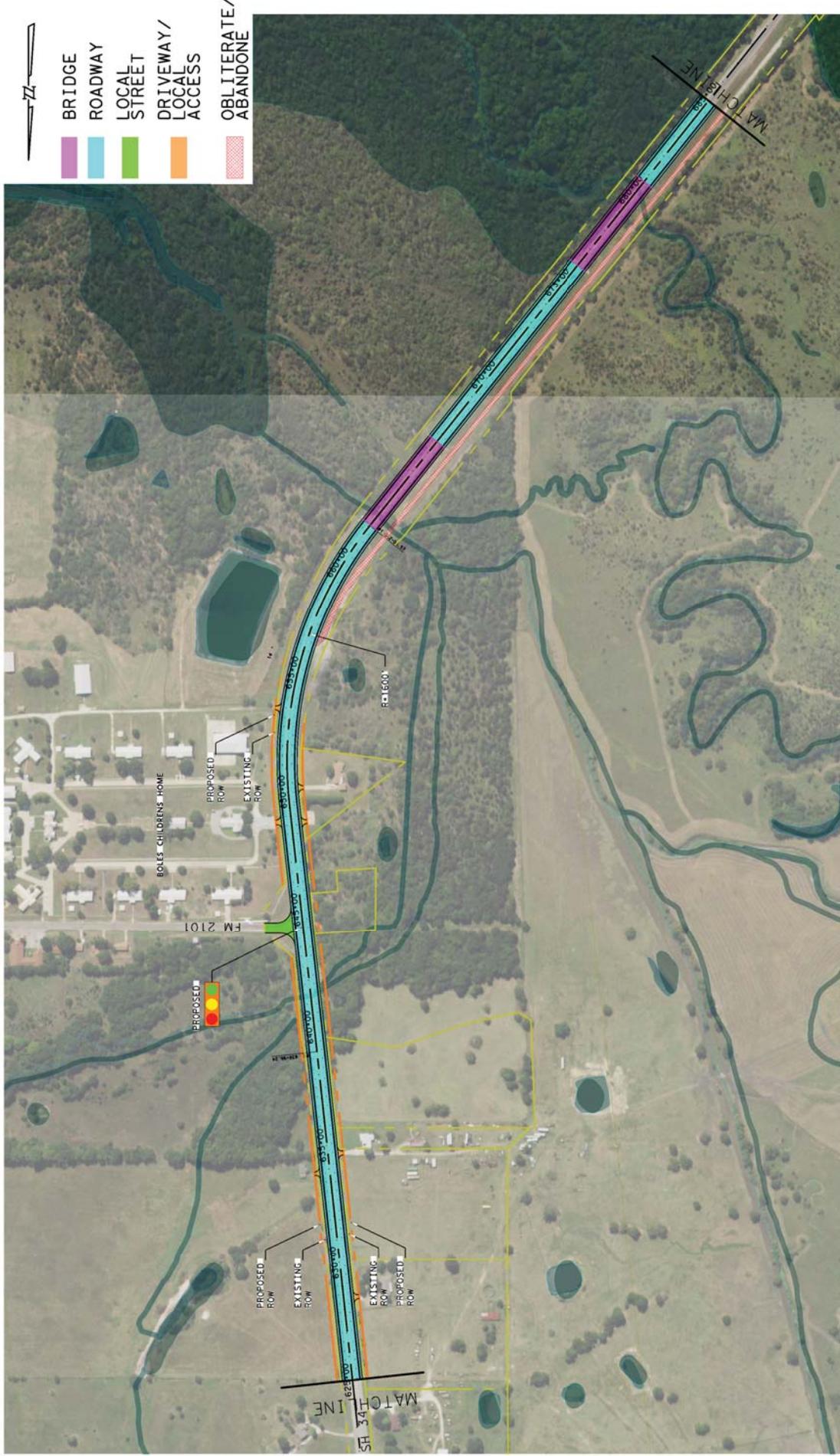
The Boles Home Supplemental Alternatives improve safety and limit potential negative impacts of the SH 34 widening project to the local community and Boles Children's Home. TxDOT will coordinate with Stakeholders and community leader to gather feedback and review potential impacts associated with the base condition and alternative alignments. The Boles Home Alternative alignments will be evaluated to determine the preferred SH 34 alignment to be incorporated into the SH 34 feasibility study.

Attachments:

Exhibits: Base Condition, Alternative 1, Alternative 2

Cost Estimates: Base Condition, Alternative 1, Alternative 2

BOLES HOME EXHIBIT - BASE CONDITION

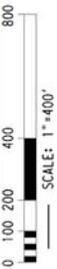
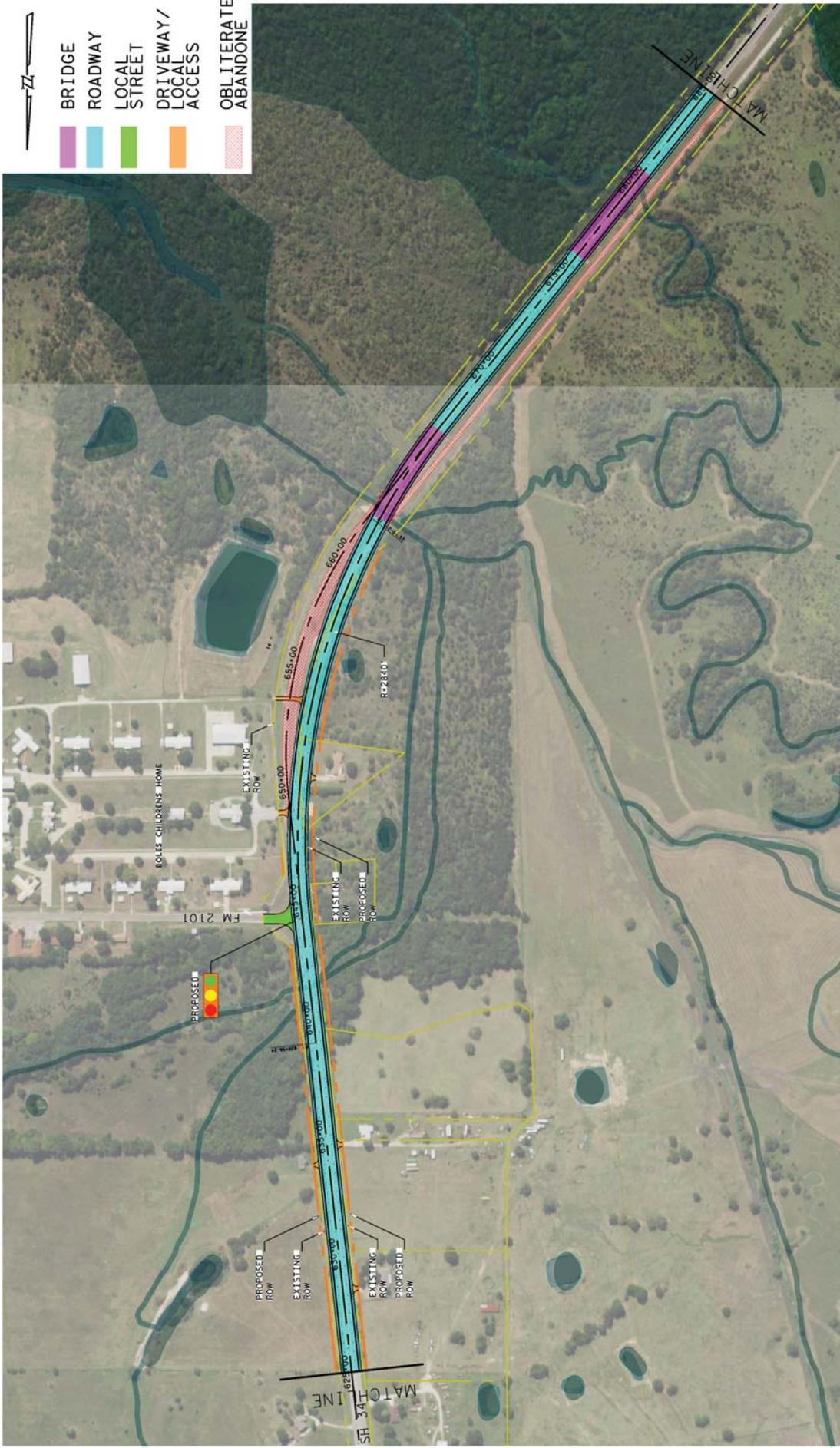


HUNT COUNTY SH 34

CSJ: 0173-07-054, 0173-06-042

SH 34 Feasibility Study | Appendix F: Boles Home Alternative Analysis (Supplemental Analysis)

BOLES HOME SUPPLEMENTAL EXHIBIT 1

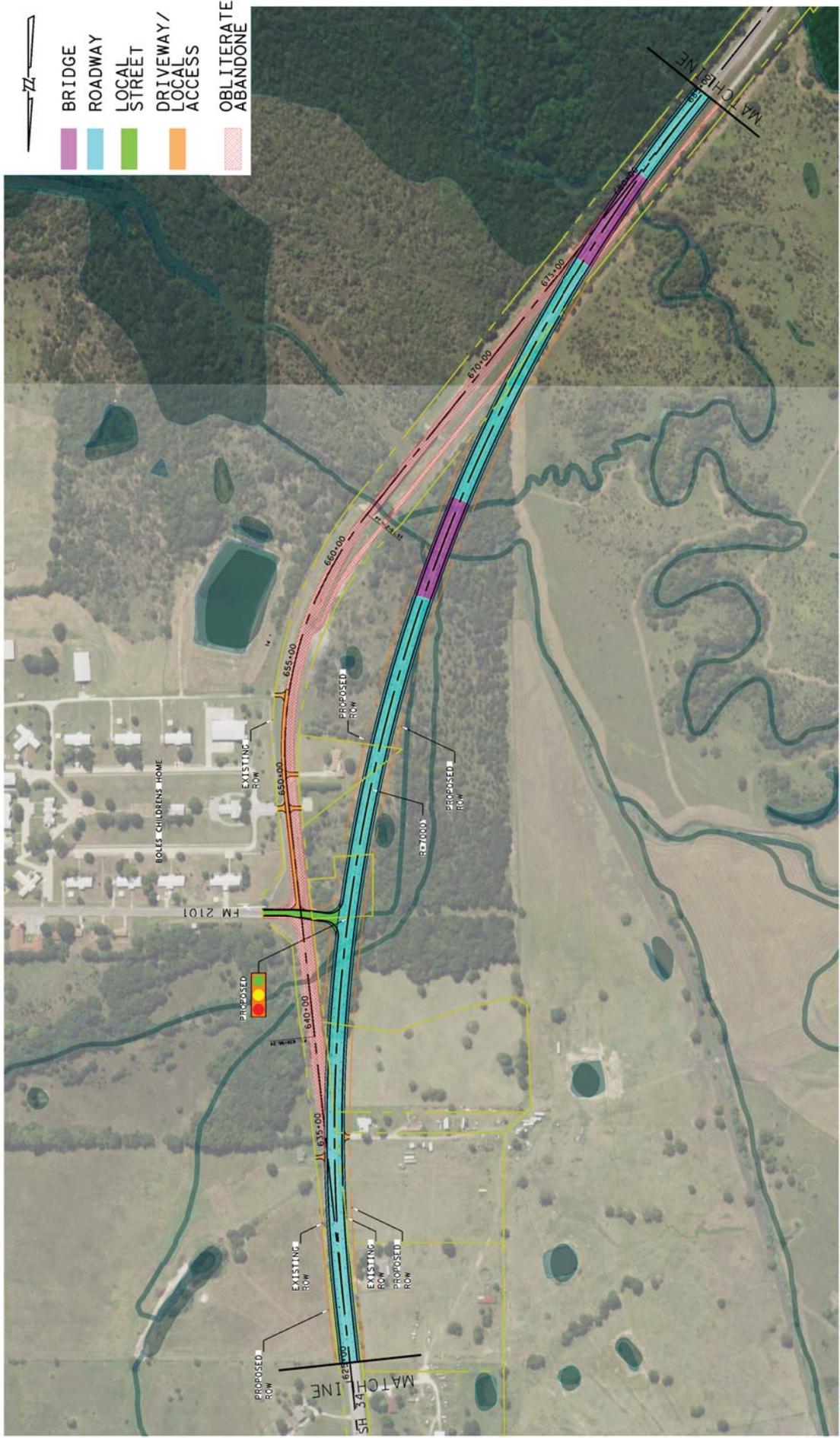


HUNT COUNTY
SH 34

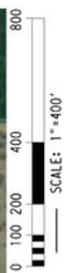
CSJ: 0173-07-054, 0173-06-042

SH 34 Feasibility Study | Appendix F: Boles Home Alternative Analysis (Supplemental Analysis)

BOLES HOME SUPPLEMENTAL EXHIBIT 2



- BRIDGE
- ROADWAY
- LOCAL STREET
- DRIVEWAY/LOCAL ACCESS
- OBLITERATE/ABANDONE



HUNT COUNTY
SH 34

CSJ: 0173-07-054, 0173-06-042

SH 34 Feasibility Study | Appendix F: Boles Home Alternative Analysis (Supplemental Analysis)

CONTROL: 0173-07-054, 0173-06-042

HIGHWAY: SH 34

COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Boles Home Supplemental Base Option

LENGTH: FEET 6000

MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
BRIDGE	-		BRIDGE, 1 Bridges	SF	75600	\$100.00	\$7,560,000
100	6002		PREPARING ROW	STA	60	\$3,000.00	\$180,000
106	6001		OBLITERATING ABANDONED ROAD	STA	60	\$7,300.00	\$438,000
110	6001		EXCAVATION (ROADWAY)	CY	4444	\$13.40	\$59,556
132	6004		EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	96667	\$9.00	\$870,000
247	6076		FL BS (CMP IN PLC)(TY D GR 4) (6")	SY	49460	\$9.75	\$482,231
275	6000		CEMENT	TON	501	\$159.28	\$79,764
275	6003		CEMENT TREAT (NEW BASE)(6")	SY	49460	\$2.24	\$110,789
310	6012		PRIME COAT (RC-250)	GAL	24730	\$5.00	\$123,649
316	6403		AGGR (TY-B GR-5 OR TY-L GR-5)	CY	5496	\$131.25	\$721,285
316	6405		ASPH (AC-20-5TR OR AC-20XP)	GAL	13849	\$4.85	\$67,166
341	6022		D-GR HMA TY-C PG64-22	TON	2720	\$79.60	\$216,534
422	6015		APPROACH SLAB	CY	180	\$511.97	\$92,155
STRIPING	-		STRIPING	LF	6000	\$4.00	\$24,000
			SIGNING	LS	1	\$20,000.00	\$20,000
			MOBILIZATION	LS	1	\$1,254,112.86	\$1,254,113
			BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4	\$4,000.00	\$16,000
			TRAFFIC CONTROL	LS	1	\$600,000.00	\$600,000
			SWPPP	LS	1	\$100,000.00	\$100,000
			DRAINAGE	LS	1	\$80,000.00	\$80,000
			AESTHETICS & LANDSCAPING	LS	1	\$500,000.00	\$500,000
SIGNALS	-		SIGNALS	LS	1	\$200,000.00	\$200,000
			SUB-TOTAL				\$13,595,242
			CONTINGENCY (20%)				\$2,719,048
			TOTAL				\$16,314,290

CONTROL: 0173-07-054, 0173-06-042

HIGHWAY: SH 34

COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Boles Home Supplemental Option 1

LENGTH: FEET 6000

MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
BRIDGE	-		BRIDGE, 1 Bridges	SF	75600	\$100.00	\$7,560,000
100	6002		PREPARING ROW	STA	60	\$3,000.00	\$180,000
106	6001		OBLITERATING ABANDONED ROAD	STA	60	\$7,300.00	\$438,000
110	6001		EXCAVATION (ROADWAY)	CY	4444	\$13.40	\$59,556
132	6004		EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	96667	\$9.00	\$870,000
247	6076		FL BS (CMP IN PLC)(TY D GR 4) (6")	SY	49590	\$9.75	\$483,499
275	6000		CEMENT	TON	502	\$159.28	\$79,974
275	6003		CEMENT TREAT (NEW BASE)(6")	SY	49590	\$2.24	\$111,081
310	6012		PRIME COAT (RC-250)	GAL	24795	\$5.00	\$123,974
316	6403		AGGR (TY-B GR-5 OR TY-L GR-5)	CY	5510	\$131.25	\$723,183
316	6405		ASPH (AC-20-5TR OR AC-20XP)	GAL	13885	\$4.85	\$67,343
341	6022		D-GR HMA TY-C PG64-22	TON	2727	\$79.60	\$217,104
422	6015		APPROACH SLAB	CY	180	\$511.97	\$92,155
STRIPING	-		STRIPING	LF	6000	\$4.00	\$24,000
			SIGNING	LS	1	\$20,000.00	\$20,000
			MOBILIZATION	LS	1	\$1,256,586.86	\$1,256,587
			BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4	\$4,000.00	\$16,000
			TRAFFIC CONTROL	LS	1	\$600,000.00	\$600,000
			SWPPP	LS	1	\$110,000.00	\$110,000
			DRAINAGE	LS	1	\$90,000.00	\$90,000
			AESTHETICS & LANDSCAPING	LS	1	\$500,000.00	\$500,000
SIGNALS	-		SIGNALS	LS	1	\$200,000.00	\$200,000
			SUB-TOTAL				\$13,622,456
			CONTINGENCY (20%)				\$2,724,491
			TOTAL				\$16,346,947

CONTROL: 0173-07-054, 0173-06-042

HIGHWAY: SH 34

COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Boles Home Supplemental Option 2

LENGTH: FEET 6000

MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
BRIDGE	-		BRIDGE, 2 Bridges	SF	75600	\$100.00	\$7,560,000
100	6002		PREPARING ROW	STA	58	\$3,000.00	\$174,000
106	6001		OBLITERATING ABANDONED ROAD	STA	60	\$7,300.00	\$438,000
110	6001		EXCAVATION (ROADWAY)	CY	4296	\$13.40	\$57,570
132	6004		EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	96667	\$9.00	\$870,000
247	6076		FL BS (CMP IN PLC)(TY D GR 4) (6")	SY	50196	\$9.75	\$489,408
275	6000		CEMENT	TON	508	\$159.28	\$80,951
275	6003		CEMENT TREAT (NEW BASE)(6")	SY	50196	\$2.24	\$112,438
310	6012		PRIME COAT (RC-250)	GAL	25098	\$5.00	\$125,489
316	6403		AGGR (TY-B GR-5 OR TY-L GR-5)	CY	5577	\$131.25	\$732,020
316	6405		ASPH (AC-20-5TR OR AC-20XP)	GAL	14055	\$4.85	\$68,166
341	6022		D-GR HMA TY-C PG64-22	TON	2761	\$79.60	\$219,757
422	6015		APPROACH SLAB	CY	180	\$511.97	\$92,028
STRIPING	-		STRIPING	LF	5800	\$4.00	\$23,200
			SIGNING	LS	1	\$22,000.00	\$22,000
			MOBILIZATION	LS	1	\$1,265,102.72	\$1,265,103
			BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4	\$4,000.00	\$16,000
			TRAFFIC CONTROL	LS	1	\$600,000.00	\$600,000
			SWPPP	LS	1	\$150,000.00	\$150,000
			DRAINAGE	LS	1	\$120,000.00	\$120,000
			AESTHETICS & LANDSCAPING	LS	1	\$500,000.00	\$500,000
SIGNALS	-		SIGNALS	LS	1	\$200,000.00	\$200,000
			SUB-TOTAL				\$13,716,130
			CONTINGENCY (20%)				\$2,743,226
			TOTAL				\$16,459,356

CONTROL: 0173-07-054, 0173-06-042
HIGHWAY: SH 34
COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Right of Way & Utility Relocation - Boles Home Supplemental Base Option

LENGTH: FEET 6000
MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
-	-		COMMERCIAL LAND ROW PURCHASE	SF	0	\$7.00	\$0
-	-		NON-COMMERCIAL ROW PURCHASE	AC	1.8	\$17,500.00	\$31,500
UTILITY	-		UTILITY RELOCATION	LS	1.00	\$200,000.00	\$200,000
			SUB-TOTAL				\$231,500
			CONTINGENCY (20%)				\$ 46,300.00
			TOTAL				\$277,800

CONTROL: 0173-07-054, 0173-06-042
HIGHWAY: SH 34
COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Right of Way & Utility Relocation - Boles Home Supplemental Option 1

LENGTH: FEET 6000
MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
-	-		COMMERCIAL LAND ROW PURCHASE	SF	0	\$7.00	\$0
-	-		NON-COMMERCIAL ROW PURCHASE	AC	3.5	\$17,500.00	\$61,250
UTILITY	-		UTILITY RELOCATION	LS	1.00	\$220,000.00	\$220,000
			SUB-TOTAL				\$281,250
			CONTINGENCY (20%)				\$ 56,250.00
			TOTAL				\$337,500

CONTROL: 0173-07-054, 0173-06-042
HIGHWAY: SH 34
COUNTY: HUNT

**PRELIMINARY ESTIMATE
TEXAS DEPARTMENT OF TRANSPORTATION**

TYPE: Right of Way & Utility Relocation - Boles Home Supplemental Option 2

LENGTH: FEET 6000
MILES = 1.14

LIMITS: _____

PREPARED BY: GUNDA

Date: 03/23/20

ITEM NO.	DESC NO.	SPEC NO.	DESCRIPTION	UNIT	QTY	PRICE	AMOUNT
-	-		COMMERCIAL LAND ROW PURCHASE	SF	0	\$7.00	\$0
-	-		NON-COMMERCIAL ROW PURCHASE	AC	10.7	\$17,500.00	\$187,250
UTILITY	-		UTILITY RELOCATION	LS	1.00	\$250,000.00	\$250,000
			SUB-TOTAL				\$437,250
			CONTINGENCY (20%)				\$ 87,450.00
			TOTAL				\$524,700