

GILEAD ROAD WIDENING PROJECT FUNDING APPLICATION ASSISTANCE

Prepared for

HUNTERSVILLE, NC

I. PROJECT DESCRIPTION

The Town of Huntersville desires to provide improvements along Gilead Road from just west of the intersection of Wynfield Creek Parkway to the existing widened section east of McCoy Road. The improvements will include the widening of the existing two lane section to a four lane median-divided section as referenced in the Town's NC 73 Transportation/Land Use Corridor Plan. The proposed widening will include two vehicular lanes and one bicycle lane in each direction with a median/turn lanes at intersections. Sidewalks will be provided on both sides of the roadway as well. Within the area of the project, a concept plan will be designed to match the proposed widening section and tie to the existing widened section. The Town is taking steps to initiate construction to lengthen the existing culvert crossing of Torrence Creek to accommodate the roadway widening.

The Town of Huntersville has developed a funding request application package to be submitted to the Charlotte Regional Transportation Planning Organization (CRTPO) for the widening of Gilead Road to a median divided, four-lane road with bicycle lanes and sidewalks. STV Engineers, Inc. (STV) has assisted in the preparation.

When submitting a project to CRTPO, the submitting agency must fill out a questionnaire about the project. Additionally, the following items must also be submitted (via email): line item cost estimate with source of unit costs listed and date of estimate, project map and photos, and GIS shapefiles.

II. CRTPO QUESTIONNAIRE ANSWERS

The following information can be copied into the online questionnaire:

1. Enter project information:
 - a. Name of Project: Gilead Road widening from McCoy Road to Wynfield Creek Parkway
 - b. TIP Number: N/A
 - c. Municipality: Town of Huntersville
2. Fill in the following information about the project manager:
 - a. Project Manager Name: Max Buchanan, PE
 - b. Agency Name: Town of Huntersville
 - c. Project Manager Telephone Number: 704-766-2220
 - d. Project Manager Email Address: mbuchanan@huntersville.org
3. Describe Project Manager Experience in managing federally-funded projects:
 - a. The project manager has had experience in managing several town projects that have received federal funding.
4. Select the project mode: Highway

5. Identify the problem and explain how the proposed project will solve the problem:
 - a. Gilead Road between McCoy Road and Wynfield Creek Parkway is currently a narrow, two-lane undivided roadway. There are turn lanes at the intersections, however capacity issues do arise, particularly during peak hours. Sidewalks do exist along portions of the roadway, but there is a gap in the sidewalk along Gilead Road across Torrence Creek due to the culvert being too narrow. Additionally, the Torrence Creek greenway, which runs along the creek and through the culvert, does not have any pedestrian connectivity to sidewalks along Gilead Road, even though they are adjacent to each other. This project will carry the four lane cross section found to the east on Gilead Road through this area, adding travel lanes, bike lanes, sidewalks, and planting strips and medians; it could be referred to as a “farm-to-market” style conversion. The project will also connect the greenway into the new sidewalks on the roadway and provide a crosswalk across Gilead Road at Ranson Road, tying multiple sidewalks together that lead to several neighborhoods and hundreds of houses. A sidewalk on Ranson Road that currently ends only 400 feet away from Gilead Road may be extended, connecting Torrence Creek Elementary School to surrounding neighborhoods and providing a safe way for kids to walk to school. Aesthetically, the project will make the roadway more consistent with the cross section to the east and can include planted medians, and multiple street trees along the sides of the roadway.
6. Explain how the project will address the goals and objectives in the MTP:
 - a. This project will address the following goals in the MTP:
 - i. #1 - Provide, manage and maintain a safe, efficient and sustainable transportation system for all modes, intended to serve all segments of the population.
 1. Widening the roadway will increase efficiency of the network and the installation of a median will increase safety of the roadway. New bike lanes, sidewalks, and crosswalks will make the area safer for bicyclists and pedestrians.
 - ii. #2 - Encourage walking, bicycling and transit options, integrated with motor vehicle transportation, by providing a transportation system that serves the public with mobility choices.
 1. New bike lanes and sidewalks connecting to the greenway and existing areas to the east will encourage bicycling and walking. Residents in this area will be provided with a safe way to walk to commercial areas to the east, which are within walking distance (< 1 mile) but currently do not have sidewalks connecting to them. Additionally, a new crosswalk at Ranson Road could connect to sidewalks to the north that connect to Torrence Creek Elementary School, creating a safe pedestrian pathway from neighborhoods south of Gilead Road to the school.
 - iii. #3 - Provide a sustainable transportation system that improves the quality of life for residents, promotes healthy living and is sensitive to significant features of the natural and human environments.
 1. This project will improve safety along this roadway for vehicular travel as well as bicycles and pedestrians. The addition of sidewalk connections (and the connection to the greenway) will help promote a healthier lifestyle for people living in this area.
 - iv. #5 - Encourage regional collaboration and linkages between transportation and land use planning.
 1. Gilead Road is shown on the transportation plan as a four lane, median divided roadway from its current narrowing at McCoy Road extending to Beatties Ford Road. This project will help bring this section of Gilead

Road up to the vision of the plan. It will also construct bicycle lanes and sidewalks which will connect several large neighborhoods with the dense commercial areas to the east (in the vicinity of the I-77 interchange). Once the I-77 interchange project is completed, there will be a continuous sidewalk from this area to downtown Huntersville.

- v. #7 - Maximize travel and transportation opportunities for the movement of people and goods.
 1. Widening Gilead Road will reduce travel times along the roadway and provide a more efficient vehicular access for Gilead Road, which will reduce commute times for people living in this area that use this road.
7. Select the following plans that this proposed project is identified as a recommendation to improve an aspect of a transportation deficiency:
 - a. 2040 MTP: Gilead Road is on the MTP as a four lane roadway.
 - b. Other: NC 73 Area Plan identifies the cross section for Gilead Road as a four-lane median divided roadway with bike lanes and sidewalks.
8. How does the proposed project enhance the transportation network:
 - a. This project will reduce congestion, improve safety, and provide many important bicycle and pedestrian connections in the area.
9. Identify the total \$ amounts of STP-DA funding needed for the following activities. Note: The completion of this question does not fulfill the separate requirement of the e-mail submittal of a detailed line item cost estimate.
 - a. Alternative 1 – Asymmetrical Widening
 - i. Preliminary Engineering/Design: \$710,000
 - ii. Right-of-Way Acquisition: \$760,000
 - iii. Construction: \$3,572,000
 - iv. Transit Vehicle/Equipment Purchase: \$0
 - b. Alternative 2 – Symmetrical Widening
 - i. Preliminary Engineering/Design: \$700,000
 - ii. Right-of-Way Acquisition: \$760,000
 - iii. Construction: \$3,511,000
 - iv. Transit Vehicle/Equipment Purchase: \$0
10. Identify the TOTAL PROJECT COSTS for the following activities. Note: The completion of this question does not fulfill the separate requirement of the e-mail submittal of a detailed line item cost estimate.
 - a. Alternative 1 – Asymmetrical Widening
 - i. Preliminary Engineering/Design: \$710,000
 - ii. Right-of-Way Acquisition: \$760,000
 - iii. Construction: \$3,572,000
 - iv. Transit Vehicle/Equipment Purchase: \$0
 - b. Alternative 2 – Symmetrical Widening
 - i. Preliminary Engineering/Design: \$700,000
 - ii. Right-of-Way Acquisition: \$760,000
 - iii. Construction: \$3,511,000
 - iv. Transit Vehicle/Equipment Purchase: \$0

12. Identify the percentage of other funding that the proposed project has committed:

a. XX

13. Identify the source(s) of other funds:

a. Town funds, payments in lieu (PILs) by developers

14. Please enter the dates for the expected schedule for the proposed project. Enter date as MM/YYYY or leave blank if not applicable.

a. Completion of Planning/Environmental Document: 12/2019

b. Begin Right of Way Acquisition: 01/2020

c. Let Date (Date of Opening Bids): 01/2021

d. Completion Date of Project: 01/2022

15. If applicable, please describe the time-sensitivity and/or construction continuity issues associated with this proposed project. The proposed project will be scored based upon the response as an imminent or relative need.

a. The most recent AADT data available from 2012 indicates that 16,000 vehicles per day use this road. This is an increase of 4,000 vpd in eight years and is nearing the capacity of a two lane roadway. If volumes increase, the level of service along this corridor may degrade quickly. With projected growth and several new developments planned, the sooner this roadway can be widened, the better. The sidewalk and bicycle connections will also improve connectivity with the greenway and to Torrence Creek Elementary School, enabling more people to walk to school.

III. ALIGNMENT CONCEPTS

STV has prepared two roadway corridor concepts. These concepts were also used to develop cost estimates for the project. The concepts are included in this submittal in **Appendix A**.

IV. DETAILED COST ESTIMATE

STV has prepared line item cost estimates with quantities and unit costs, and the cost estimates are included with this submittal in **Appendix B**.

V. PROJECT SCHEDULE

STV has prepared a project schedule that includes completion of planning/environmental documents, right-of-way acquisition, let date of the project, and completion date of the project. The schedule includes two years for planning and design, one year for right of way acquisition, and one year for construction.

VI. PROJECT MAP AND PHOTOS

STV has prepared a project map and it is included with this submittal in **Appendix C**. STV also visited the project site and took several photos, and they are included in **Appendix C** as well.

VII. GIS SHAPEFILES

STV has created shapefiles for the project that are required for the submittal to CRTPO, and they are included with this submittal (in a zip file).

VIII. TRAFFIC INFORMATION

Level of Service Information

A recent traffic impact analysis (TIA) for a development to the west included the three signalized intersections within this project area. The delay (seconds per vehicle) and LOS for existing conditions are listed in the tables below:

Table VIII.1: Delay and LOS Information for Gilead Road at Wynfield Creek Parkway

Gilead Road at Wynfield Creek Parkway				
Approach	AM		PM	
	Delay	LOS	Delay	LOS
Overall	30.2	C	10.7	B
EB	26.4	C	7.9	A
WB	5.4	A	9.7	A
NB	35.5	D	22	C
SB	70.6	E	27.2	C
ICU LOS	84.50%	E	63.50%	B

Table VIII.2: Delay and LOS Information for Gilead Road at Ranson Road

Gilead Road at Ranson Road				
Approach	AM		PM	
	Delay	LOS	Delay	LOS
Overall	28.6	C	25.6	C
EB	20.3	C	11.1	B
WB	8.1	A	28.9	C
SB	64.8	E	40	D
ICU LOS	87.30%	E	76.30%	D

Table VIII.3: Delay and LOS Information for Gilead Road at McCoy Road

Gilead Road at McCoy Road				
Approach	AM		PM	
	Delay	LOS	Delay	LOS
Overall	18.7	B	31	C
EB	14.6	B	20.1	C
WB	3.2	A	28.8	C
NB	49.5	D	52.2	D
SB	41.5	D	45.5	D
ICU LOS	78.20%	D	92.90%	F

Overall, all three intersections operate at LOS B or C in both peak hours. The ICU LOS, which Huntersville uses as a metric for determining if developers are required to mitigate impacts, are LOS E or F for all three intersections during one peak hour.

Crash Information

Fifty crashes were reported on Gilead Road (SR 2136) from 500 feet east of McCoy Road (SR 2138) to 400 feet west of Wynfield Creek Parkway (SR 5117) in the last five years (September 2011 to August 2016). No fatal crashes were reported during this time period. Thirteen injury crashes, including one Injury A crash were reported. These 13 injury crashes resulted in 18 personal injuries. Table VIII.4 summarizes the crash data based on crash severity.

Table VIII.4: Crash Summary by Crash Severity (2011-2016)

Severity Types	Number of Crashes
Fatal Crashes	0
Non-Fatal Injury Crashes	13
Property Damage Only Crashes	37
<i>Total Crashes</i>	<i>50</i>

The majority of the crashes occurred on dry pavement conditions (35 crashes) and day time lighting conditions (34 crashes).

Table VIII.5 summarizes the crash data based on crash type. As can be seen from Table 2, rear end collisions are the most predominant crash type (approximately 36%) followed by left turn crashes, same roadway and left turn crashes, and different roadway crashes. Rear end collisions and left turn collisions also accounts for majority of the injury crashes as can be seen from Table VIII.6.

Table VIII.5: Crash Summary by Crash Type (2011-2016)

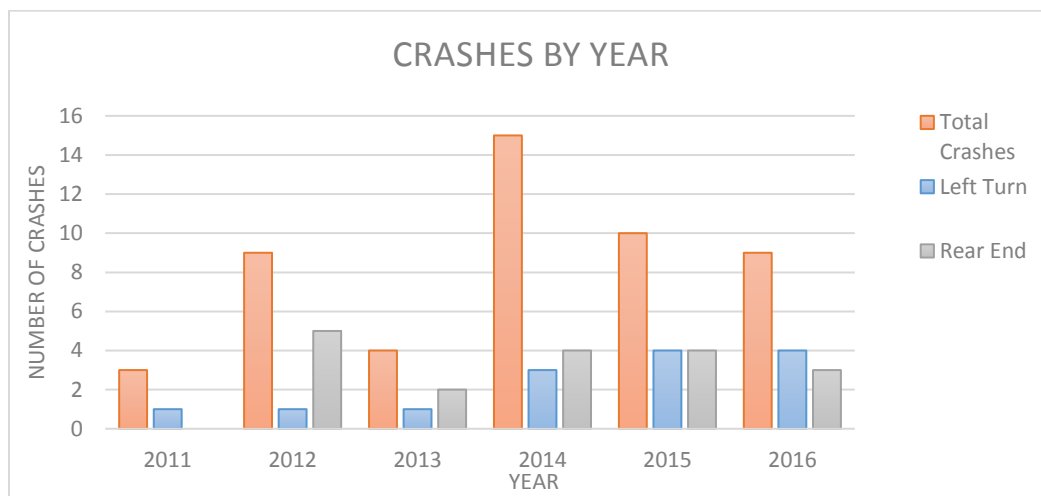
Crash Type	Number of Crashes	Percent of Total
Angle Crashes	3	6%
Backing Up	1	2%
Fixed Object Crashes	2	4%
Left Turn, Different Roadways	6	12%
Left Turn, Same Roadways	8	16%
Run off Road Crashes	4	8%
Rear End Crashes	18	36%
Right Turn, Different Roadways	2	4%
Side Swipe Crashes	4	8%
Other	2	4%
<i>Total Crashes</i>	<i>50</i>	<i>100%</i>

Table VIII.6: Injury Crash Summary by Collision Type (2011-2016)

Collision Type	Injury Type				Person Injured
	Fatal	Class A	Class B	Class C	
Rear End				8	6
Left Turn		1		6	5
Right Turn				2	1
Angle				1	1

Figure VIII.1 shows the number of crashes in each year between September 2011 and August 2016.

Figure VIII.1: Yearly Crash Data (2011-2016)



As can be seen from Figure VIII.1, the total number of crashes is consistently high from 2014. The corridor also experiences a significant number of rear end collisions each year. Also notable is the fact that left turn collisions have increased significantly since 2014.

Roadway widening has the potential to reduce rear end collisions. The potential for left turn collisions can also be reduced by intersection improvements, changing left turn phasing, and implementing access control strategy. Therefore, the proposed widening project has the potential to significantly improve safety along this segment of the corridor.

LOS data and crash information is included in **Appendix D**.

IX. ENVIRONMENTAL INFORMATION

STV has conducted a field review to determine the presence of jurisdictional waters of the US and identify potential environmental concerns related to this project. This information has been summarized in a memo that is included in this submittal in **Appendix E**.

STV has also identified potential environmental concerns in and around the project area (within ¼ mile of the project limits). Gilead Road is currently a NCDOT Bike Route (NC 6/Piedmont Spur Route), and the Torrence Creek Greenway is identified as a bicycle facility also. There are two medical facilities and one school in the vicinity. There are three streams: Torrence Creek, Torrence Creek Tributary #1, and Torrence

Creek Tributary #2. These three streams also have flood plains along them and a wetland is located along Torrence Creek Tributary #2. Related to environmental justice, 19.3% of people in the area belong to a minority (county average is 50.4%), and 4.7% of people in the area are in a low-income demographic (county average is 24.7%). The complete screening matrix is included with this submittal.

X. STRUCTURAL INFORMATION

Part of this project would include the extension of an existing culvert over Torrence Creek. The STV structures group visited the site to assess the existing culvert and investigated structural options and feasibility for widening this culvert.

The existing culvert is a CON-SPAN structure. It is feasible to widen the culvert in either (or both) directions. If the culvert is widened to the north, the new portion could be kinked a few degrees to account for a curve in the creek and greenway. This would likely avoid having to substantially rebuild the stream and greenway. If the culvert is widened to the south, it would have more significant impacts on the creek and greenway. The estimated cost of widening the culvert is approximately \$10,000 per foot of extension. This would result in an estimated cost of \$470,000 and \$340,000 for Alternatives 1 and 2, respectively.

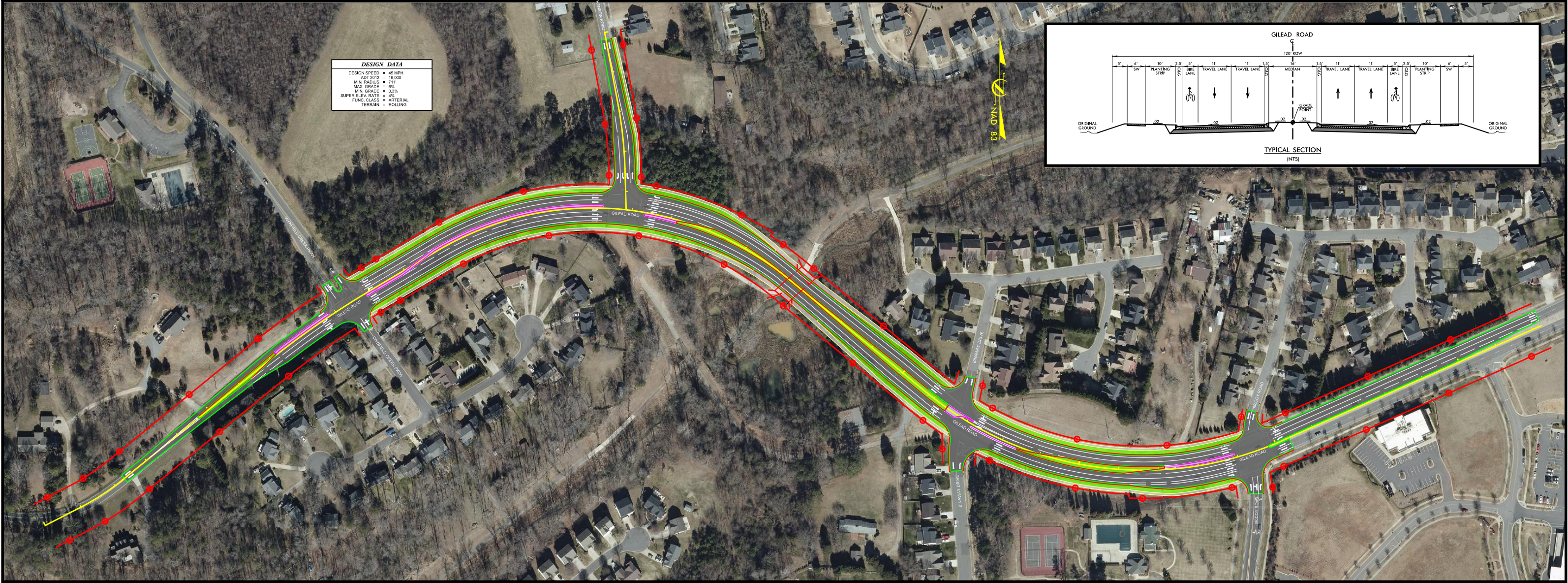
XI. UTILITY INFORMATION

There are above ground power lines on wooden poles along the corridor. In the vicinity of the culvert and Torrence Creek, the power lines follow an old alignment of Gilead Road. Some of the wooden poles would be impacted by the widening and would have to be relocated.

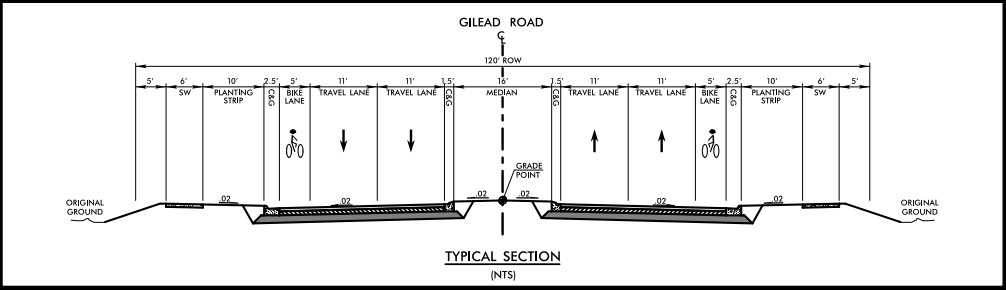
Underground, there are water/sewer lines, telephone lines, and several gas lines. The gas lines include a two inch high pressure line along Gilead Road, a four inch high pressure line at McCoy Road, and a four inch line near Wynfield Creek Parkway. Some utilities are near the edge of the existing pavement, so their relocation would depend if the utilities owners would allow them to remain under new pavement.

APPENDIX A

ALIGNMENT CONCEPTS



DESIGN DATA	
DESIGN SPEED	= 45 MPH
ADT 2012	= 16,000
MIN. RADIUS	= 711'
MAX. GRADE	= 6%
MIN. GRADE	= 0.3%
SUPER ELEV. RATE	= 4%
FUNC. CLASS	= ARTERIAL
TERMIN	= ROLLING



GILEAD ROAD WIDENING – ALTERNATIVE 2

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

APPENDIX B

COST ESTIMATE

CONCEPTUAL FEE ESTIMATE SUMMARY

GILEAD ROAD WIDENING - HUNTERSVILLE, NC

Estimate By: STV Engineers, Inc.

Prepared For: Town of Huntersville

Date: 10/19/2016

ITEM	ALT 1 Asymmetrical Widening	ALT 2 Symmetrical Widening
Roadway Construction	\$ 3,572,000.00	\$ 3,511,000.00
Non-Construction		
Planning & Design (20% of Roadway)	\$ 710,000.00	\$ 700,000.00
Private Utility Relocation	\$ 250,000.00	\$ 250,000.00
Right of Way Acquisition	\$ 760,000.00	\$ 760,000.00
Project Subtotal	\$ 5,292,000.00	\$ 5,221,000.00
Project Contingency (10%)	\$ 530,000.00	\$ 520,000.00
Project Total	\$ 5,822,000.00	\$ 5,741,000.00
Total: Say	\$ 5,800,000.00	\$ 5,700,000.00

PRELIMINARY ESTIMATE (Existing Road)

Project: Gilead Road Widening, Alternative 1

Limits: East of McCoy Road to west of Wynfield Creek Parkway

EST. BY: Sean Stephens

DATE:

10/20/2016

Item Description Roadway Items	Unit	Unit Cost		
			Quantity	Amount
Mobilization	LS		1	\$137,800
Grading	LS		1	\$417,500
Storm Drainage	LS		1	\$210,000
Asphalt Concrete Base Course, Type B25.0	TON	\$55.00	3,570	\$196,300
Asphalt Concrete Binder Course, Type I19.0	TON	\$55.00	2,380	\$130,900
Asphalt Concrete Surface Course, Type S9.5	TON	\$50.00	5,292	\$264,600
Asphalt Binder for Plant Mix	TON	\$610.00	609	\$371,700
2'-6" Concrete Curb & Gutter	LF	\$17.00	7,000	\$119,000
1'-6" Concrete Curb & Gutter	LF	\$15.00	3,500	\$52,500
4" Concrete Sidewalk	SY	\$25.00	4,667	\$116,700
Misc Items	LS		1	\$187,800
Erosion Control	LS		1	\$187,800
Environmental Impact Remediation	LF	\$450.00	0	\$0
Water/Sewer Utilities	LS		1	\$250,300
Pavement Markings/Traffic Control	LS		1	\$125,200
Landscaping	LS		1	\$126,000
Traffic Signal Upgrades	LS	\$50,000.00	2	\$100,000

Subtotal	\$2,994,100
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PCCO Cost	\$129,000
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Construction Contingency (15%)	\$449,000
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Subtotal - Roadway Construction	\$3,572,000
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Planning & Design (20% of Roadway)	\$714,000
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Private Utility Relocation Cost	\$250,000
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Right of Way Acquisition	\$755,000
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Subtotal - Non-construction Costs	\$1,700,000
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Project Subtotal	\$5,272,000
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Project Contingency (10%)	\$527,000
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Estimated Project Cost	\$5,800,000
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PRELIMINARY ESTIMATE (Existing Road)

Project: Gilead Road Widening, Alternative 2

Limits: East of McCoy Road to west of Wynfield Creek Parkway

EST. BY: Sean Stephens

DATE:

10/20/2016

Item Description Roadway Items	Unit	Unit Cost		
			Quantity	Amount
Mobilization	LS		1	\$135,300
Grading	LS		1	\$410,100
Storm Drainage	LS		1	\$210,000
Asphalt Concrete Base Course, Type B25.0	TON	\$55.00	3,469	\$190,800
Asphalt Concrete Binder Course, Type I19.0	TON	\$55.00	2,313	\$127,200
Asphalt Concrete Surface Course, Type S9.5	TON	\$50.00	5,261	\$263,100
Asphalt Binder for Plant Mix	TON	\$610.00	600	\$365,900
2'-6" Concrete Curb & Gutter	LF	\$17.00	6,800	\$115,600
1'-6" Concrete Curb & Gutter	LF	\$15.00	3,400	\$51,000
4" Concrete Sidewalk	SY	\$25.00	4,533	\$113,300
Misc Items	LS		1	\$184,000
Erosion Control	LS		1	\$184,000
Environmental Impact Remediation	LF	\$450.00	0	\$0
Water/Sewer Utilities	LS		1	\$245,400
Pavement Markings/Traffic Control	LS		1	\$122,700
Landscaping	LS		1	\$122,400
Traffic Signal Upgrades	LS	\$50,000.00	2	\$100,000

Subtotal	\$2,940,800
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PCCO Cost	\$129,000
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Construction Contingency (15%)	\$441,000
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Subtotal - Roadway Construction	\$3,511,000
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Planning & Design (20% of Roadway)	\$702,000
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Private Utility Relocation Cost	\$250,000
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Right of Way Acquisition	\$755,000
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Subtotal - Non-construction Costs	\$1,700,000
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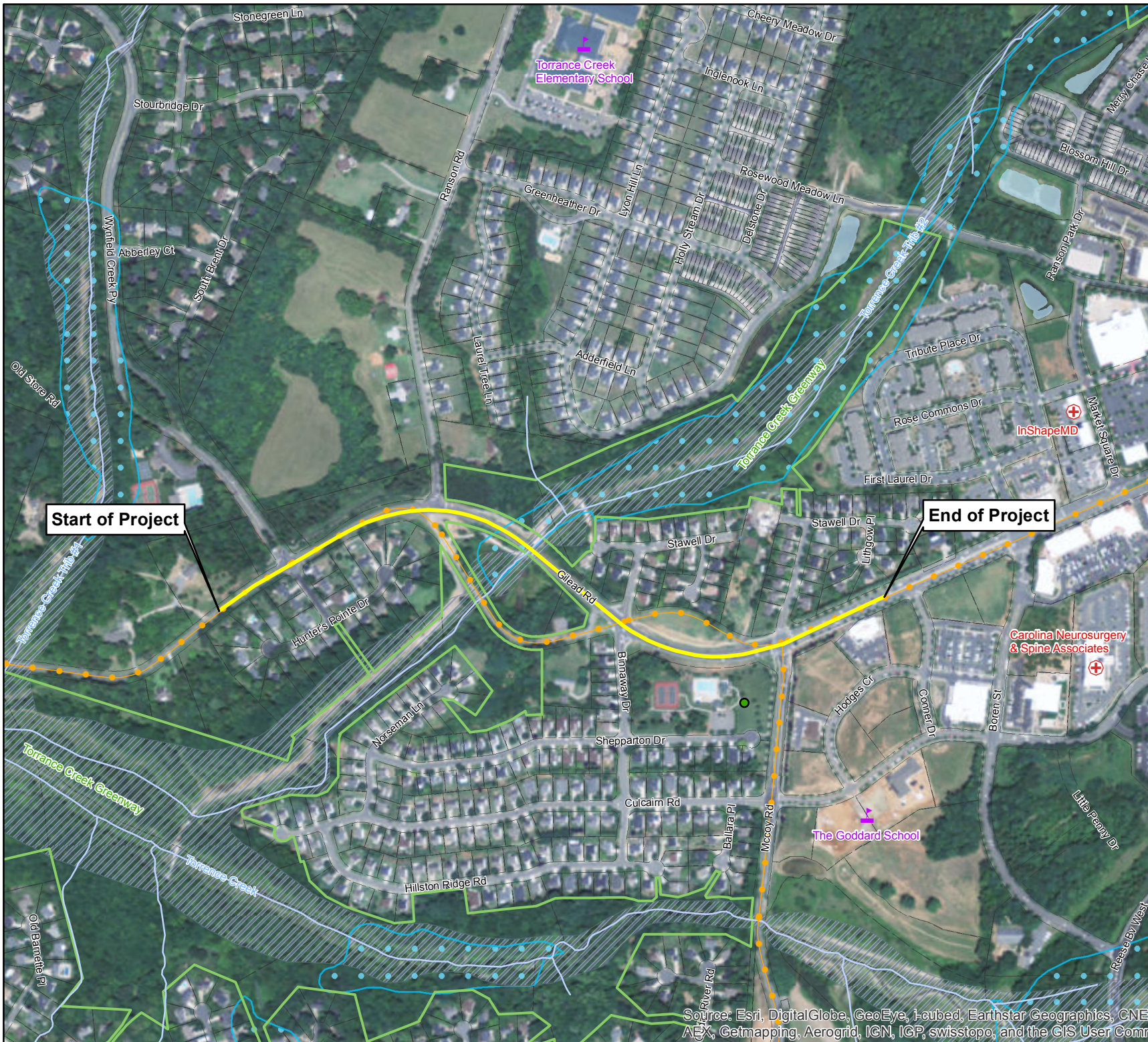
Project Subtotal	\$5,211,000
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Project Contingency (10%)	\$521,100
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Estimated Project Cost	\$5,700,000
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APPENDIX C

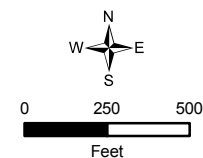
PROJECT MAP AND PHOTOS



**Gilead Road Widening
from Wynfield Creek Parkway
to McCoy Road
Huntersville
North Carolina**

Project Extents Map

October 2016

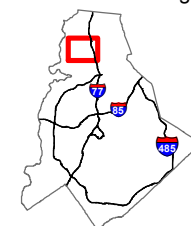


LEGEND

- Project Extent
- NCDOT Bike Route
- Stream
- Floodplain
- NWI Wetland
- Park
- Parcel
- Water Body
- ⊕ Medical
- 🏫 School
- Underground Storage Tank

Town of Huntersville

Mecklenburg County



Gilead Road Pictures



Existing Torrence Creek culvert from the north side.



Existing Torrence Creek culvert from the south side.



Looking east on Gilead Road at Torrence Creek culvert.



Looking west on Gilead Road at Torrence Creek culvert.

Gilead Road Pictures



Gilead Road at Wynfield Creek Parkway intersection.



Existing sidewalk and landscaping on the north side of Gilead Road east of Wynfield Creek Parkway.



Marker for existing gas line near the Gilead Road / Binnaway Drive intersection.



Existing crosswalk at the Gilead Road / McCoy Road intersection.