Chapel Hill transit

Chapel Hill Town Council Workshop

October 16, 2019

NORTH SOUTH BUS RAPID TRANSIT

Agenda

- Welcome and Introductions
- Project background
- Project Schedule
- Traffic Engineering and Design Update
- Questions / Next Steps / Action Items

NSBRT Background

LPA updated January 2019

- Chapel Hill Town Council request NSBRT project staff to review the opportunity for converting existing travel lanes to dedicated bus only lanes between Eubanks Road and North Street along Martin Luther King Jr. Boulevard.
- Completion of the traffic analysis is important in finalizing the LPA with a convert or construct decision in the northern portion of the corridor, in order to complete 30% design and Environmental review
- The right-of-way for the corridor is controlled by NCDOT
  - Traffic analysis methodology was approved by NCDOT
  - NCDOT representatives have reviewed the preliminary results
- Representatives from Kimley-Horn's Raleigh Office conducted the traffic analysis

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

Get on Board!

PROJECT SCHEDULE

NEPA and 30% Design Schedule

- Applied for rating with FTA on August 23, 2019
- **Fall 2019** – LPA finalized
- **Late Fall 2019** – Request Revised NEPA Class of Action
- **Late Fall 2019** – Draft 30% design plans handed over to NEPA Team
- **Late Fall/Winter 2019** – 30% design plans are finalized based on FTA feedback
- **Early Fall 2020** – NEPA document published for review

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

Get on Board!

TRAFFIC ENGINEERING UPDATES

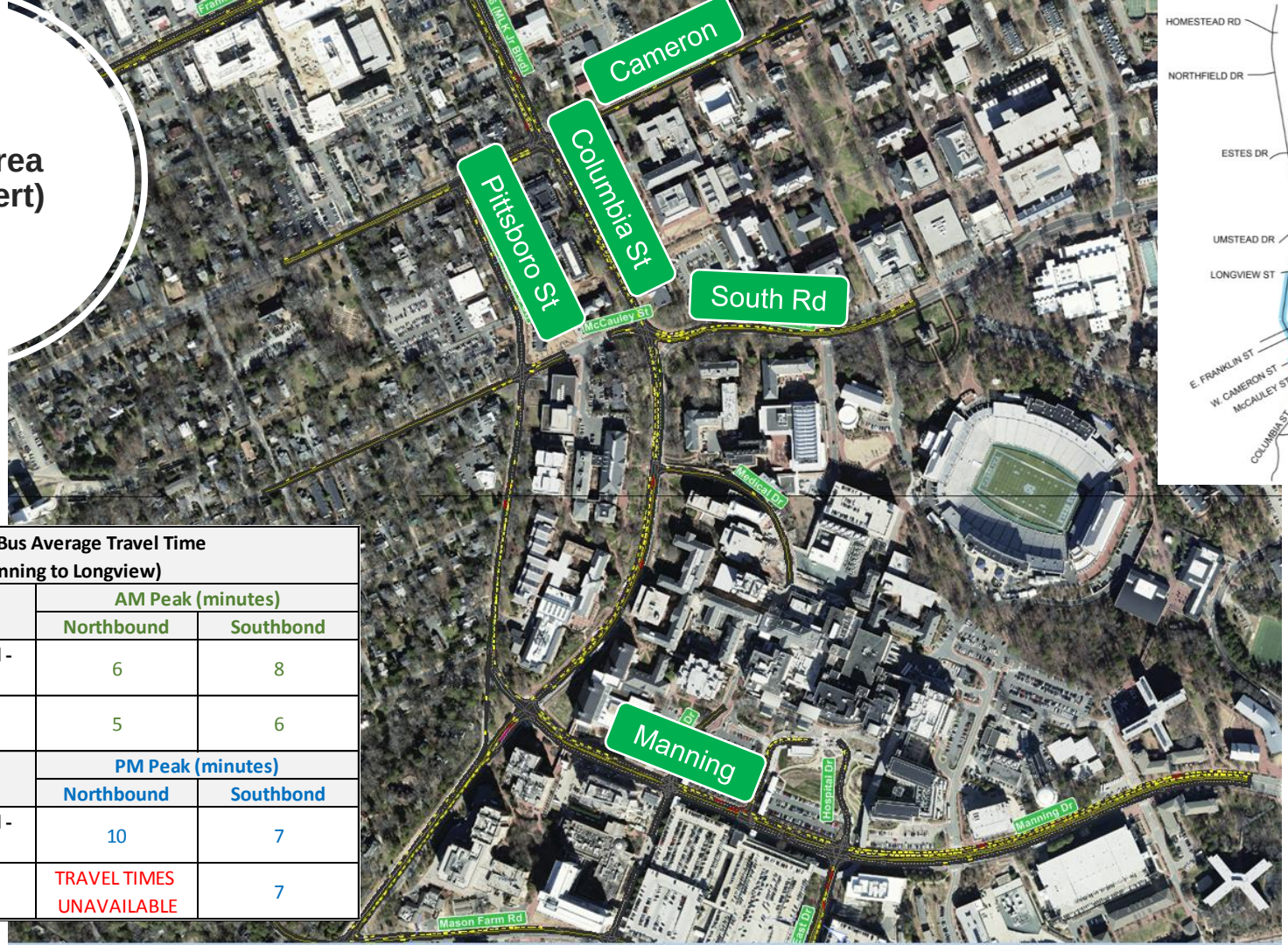
Traffic Engineering

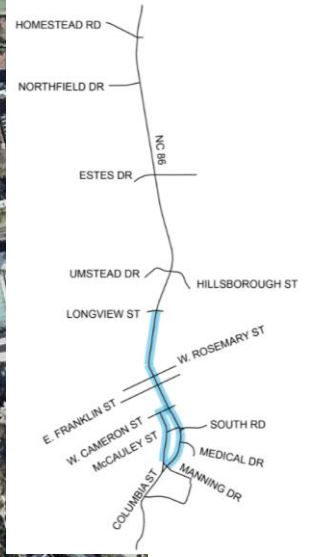
- Existing Conditions Model
  - Approved by NCDOT
- Build Models
  - Range of Alternatives Evaluated
  - Meetings held with NCDOT on August 5 and August 20, 2019
  - Meetings with Technical/Policy Committee and Transit Partner in September 2019
  - Initial analysis of current traffic volumes

Traffic Engineering Alternatives

MIXED
CONSTRUCT
CONVERT

Hospital Area (Full Convert)





NS Route Bus Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	8
Base Year (2018) Build - *Full Convert*	5	6
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	10	7
Base Year (2018) Build - *Full Convert*	TRAVEL TIMES UNAVAILABLE	7

Hospital Area (Convert Except at Cameron)

NS Route Bus Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	8
Base Year (2018) Build - *Full Convert*	5	6
Base Year (2018) Build - *Convert except at Cameron*	5	6
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	10	7
Base Year (2018) Build - *Full Convert*	TRAVEL TIMES UNAVAILABLE	7
Base Year (2018) Build - *Convert except at Cameron*	8	5

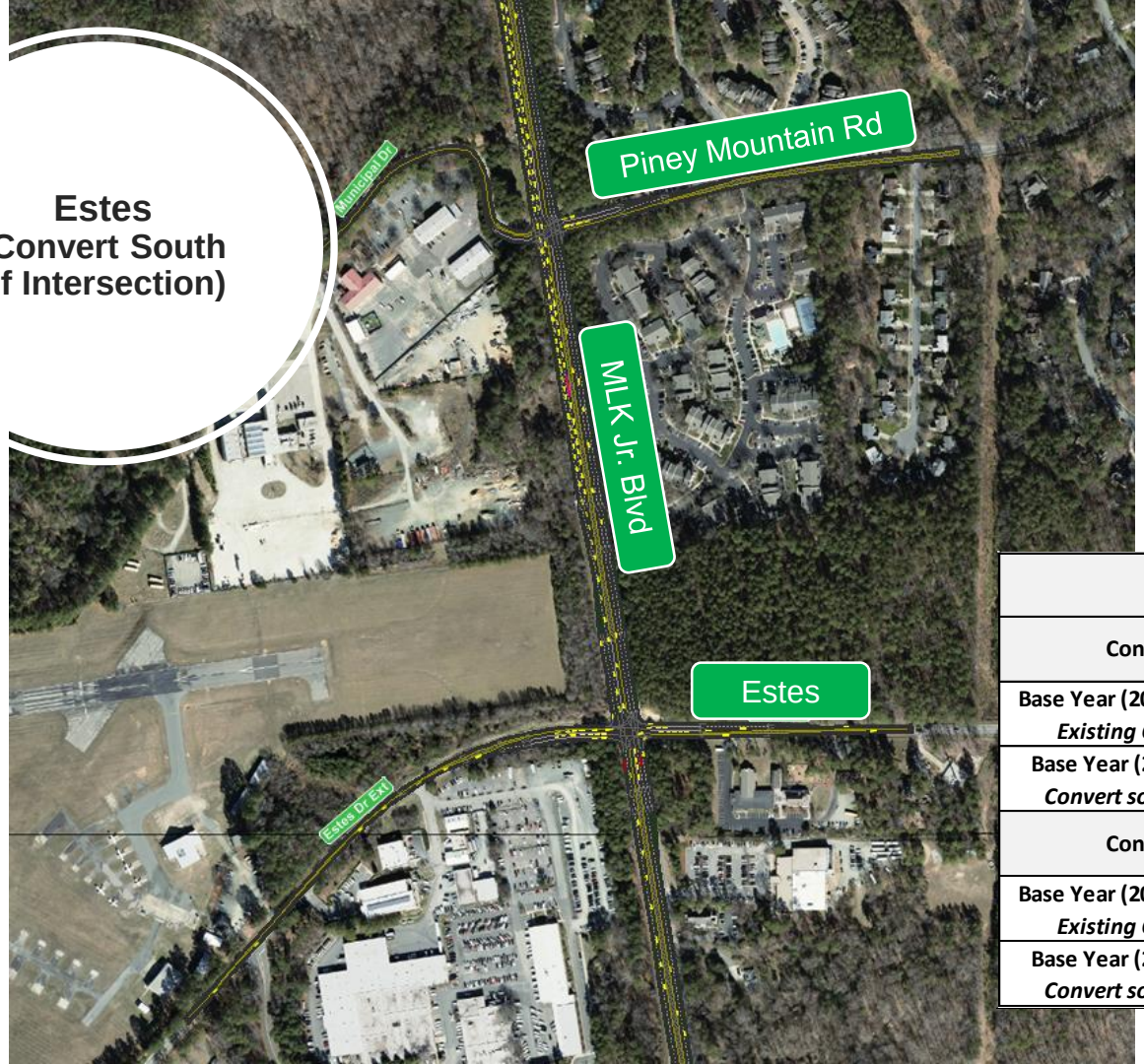
Hospital Area (Full Convert)

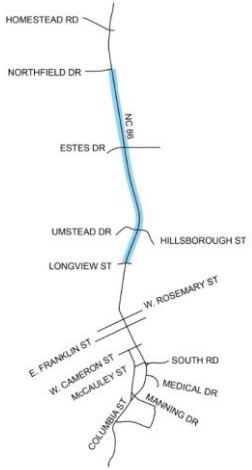
General Purpose Vehicle Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Full Convert*	5	8
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	5
Base Year (2018) Build - *Full Convert*	14	11

Hospital Area (Convert Except at Cameron)

General Purpose Vehicle Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Full Convert*	5	8
Base Year (2018) Build - *Convert except at Cameron*	5	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	5
Base Year (2018) Build - *Full Convert*	14	11
Base Year (2018) Build - *Convert except at Cameron*	8	5

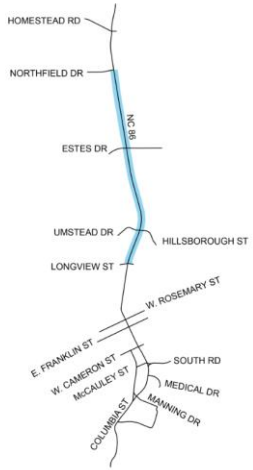
Estes (Convert South of Intersection)





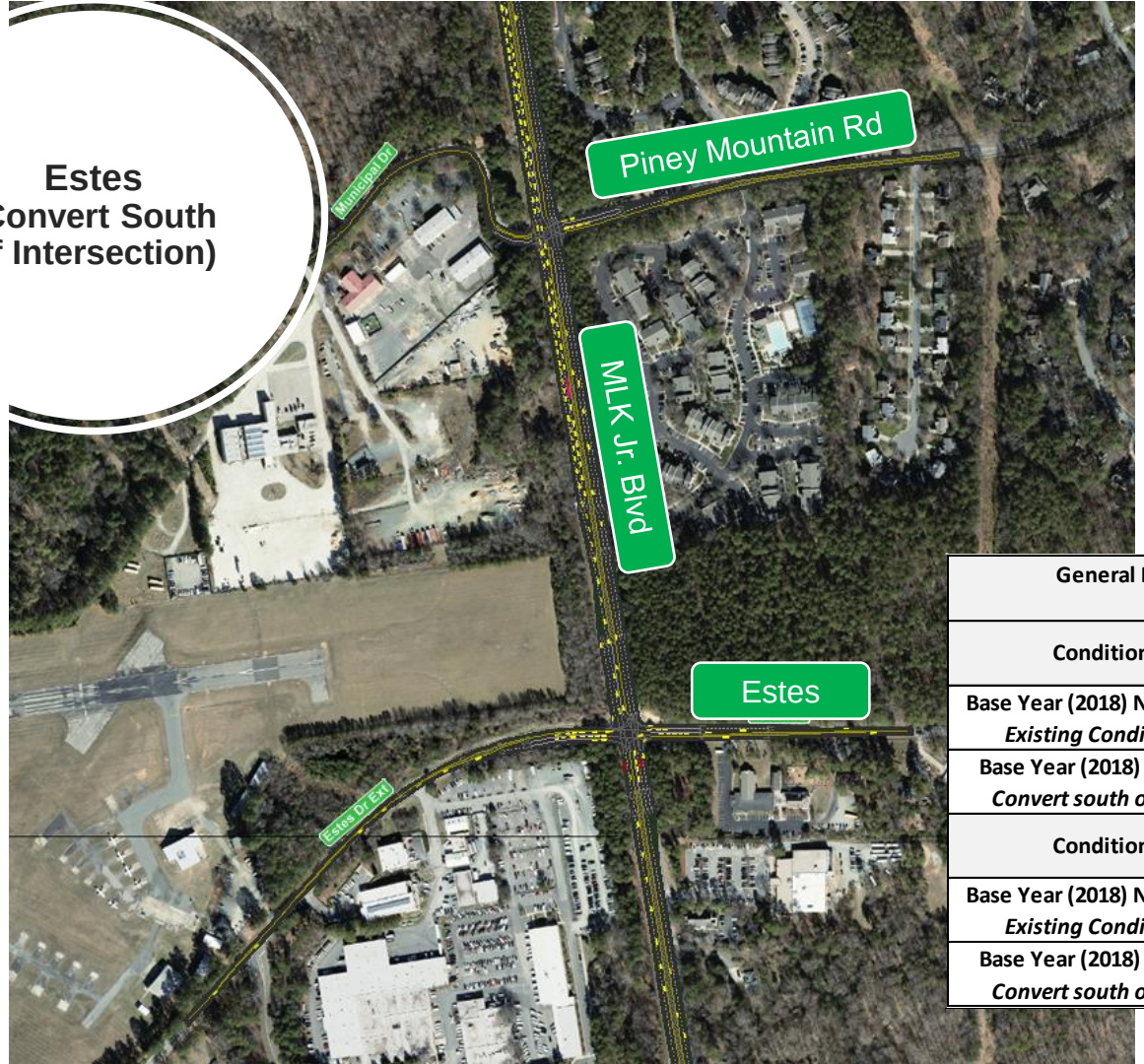
NS Route Bus Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	7
Base Year (2018) Build - *Convert south of Estes*	5	6
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	6
Base Year (2018) Build - *Convert south of Estes*	6	4

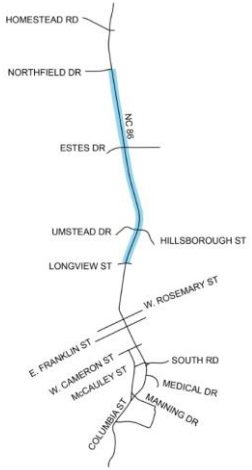
Estes
(Construct South of Intersection)



NS Route Bus Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	7
Base Year (2018) Build - *Convert south of Estes*	5	6
Base Year (2018) Build - *Construct south of Estes*	5	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	6
Base Year (2018) Build - *Convert south of Estes*	6	4
Base Year (2018) Build - *Construct south of Estes*	5	4

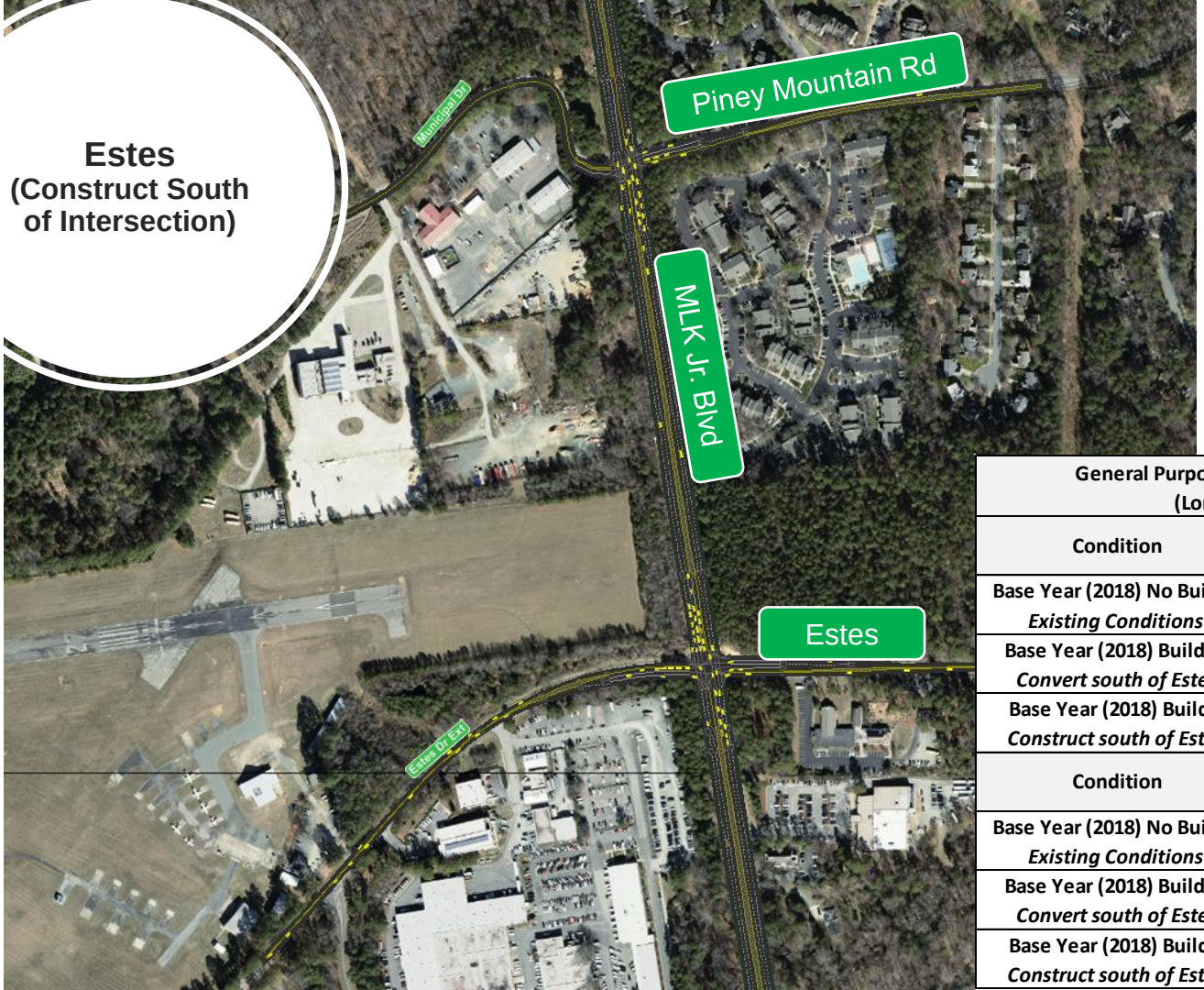
Estes (Convert South of Intersection)

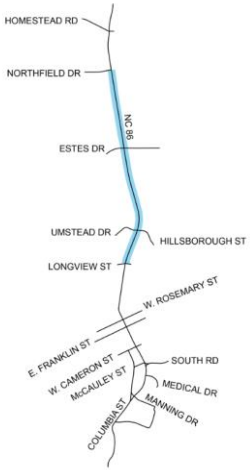




General Purpose Vehicle Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Convert south of Estes*	4	11
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	5	4
Base Year (2018) Build - *Convert south of Estes*	7	7

Estes
(Construct South of Intersection)





General Purpose Vehicle Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Convert south of Estes*	4	11
Base Year (2018) Build - *Construct south of Estes*	4	4
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	5	4
Base Year (2018) Build - *Convert south of Estes*	7	7
Base Year (2018) Build - *Construct south of Estes*	4	4

Chapel Hill transit

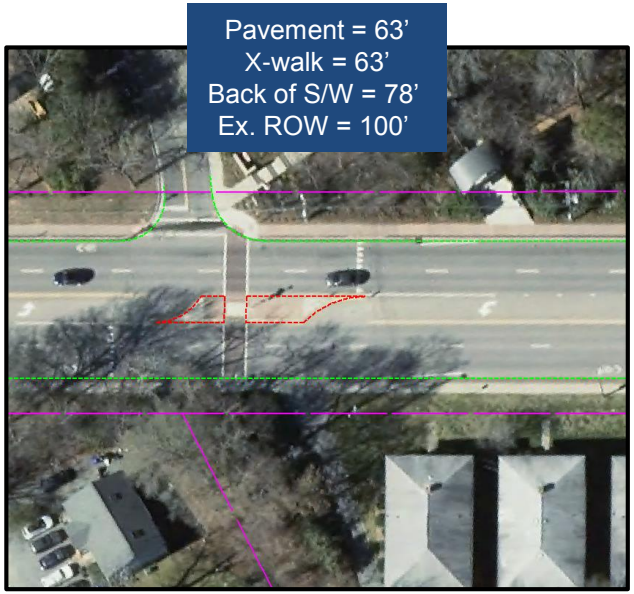
NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

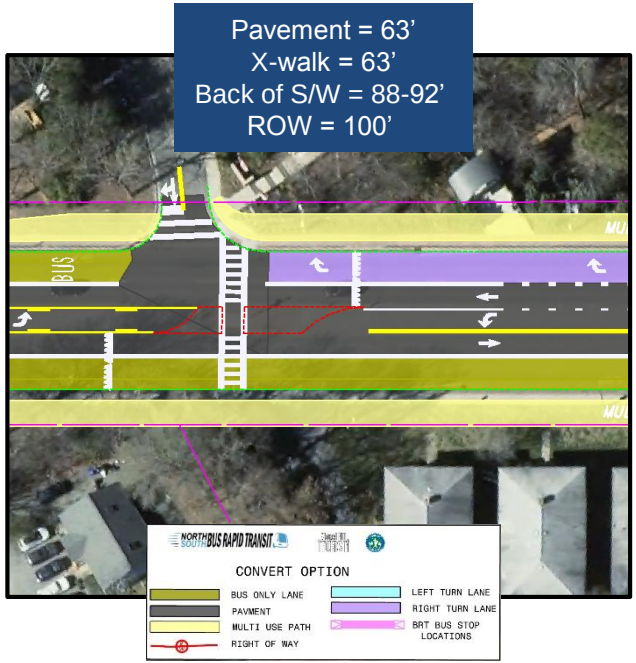
Get on Board!

CONVERT VS. CONSTRUCT

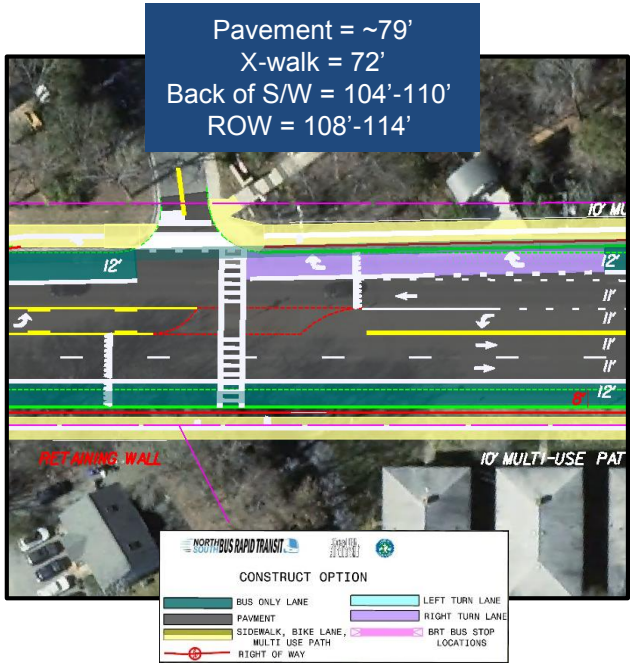
At Town Hall



Existing



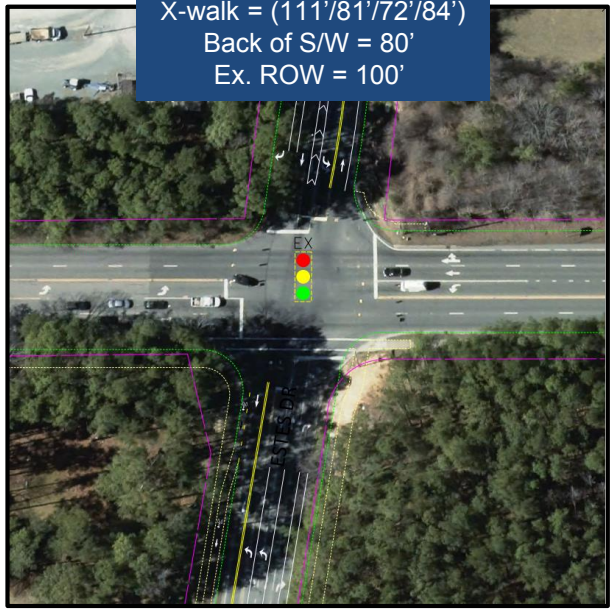
Convert



Construct

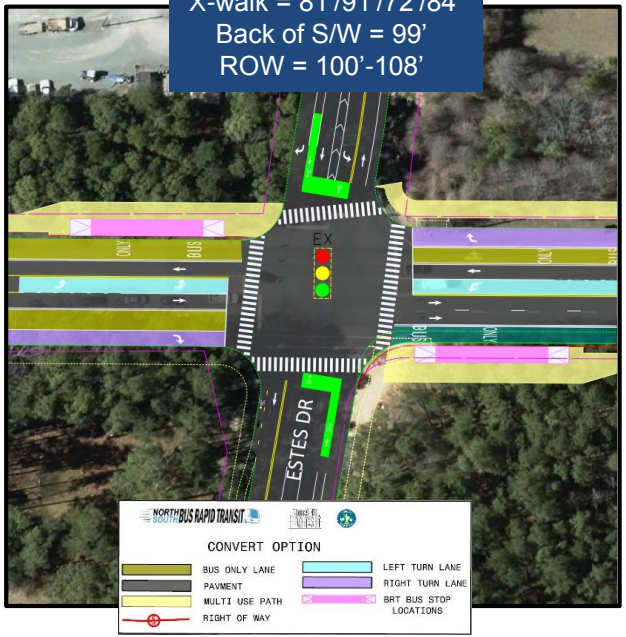
Estes Drive

Pavement = 65’
X-walk = (111’/81’/72’/84’)
Back of S/W = 80’
Ex. ROW = 100’



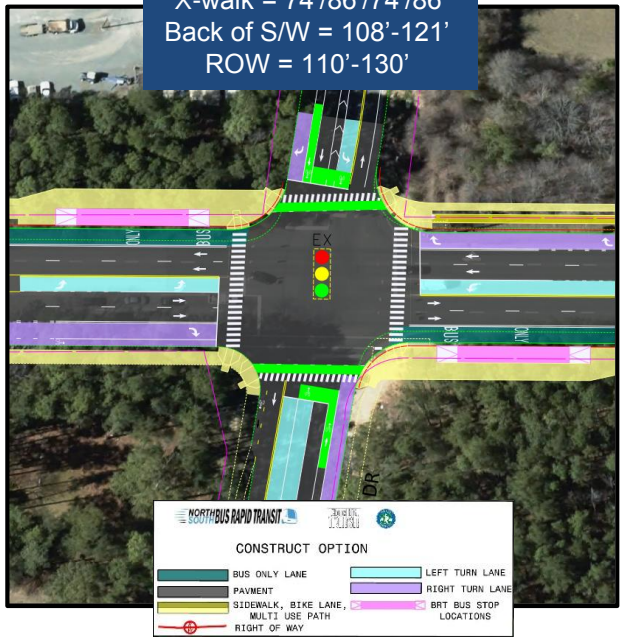
Existing

Pavement = 65’
X-walk = 81’/91’/72’/84’
Back of S/W = 99’
ROW = 100’-108’



Convert

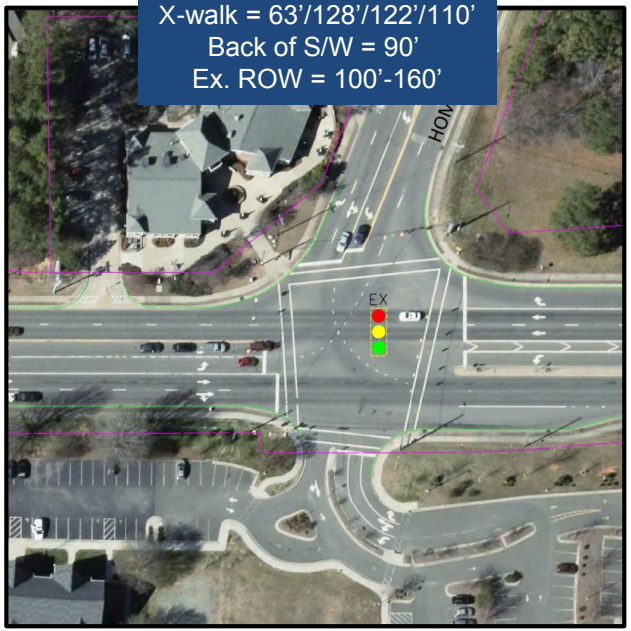
Pavement = 79’
X-walk = 74’/86’/74’/86’
Back of S/W = 108’-121’
ROW = 110’-130’



Construct

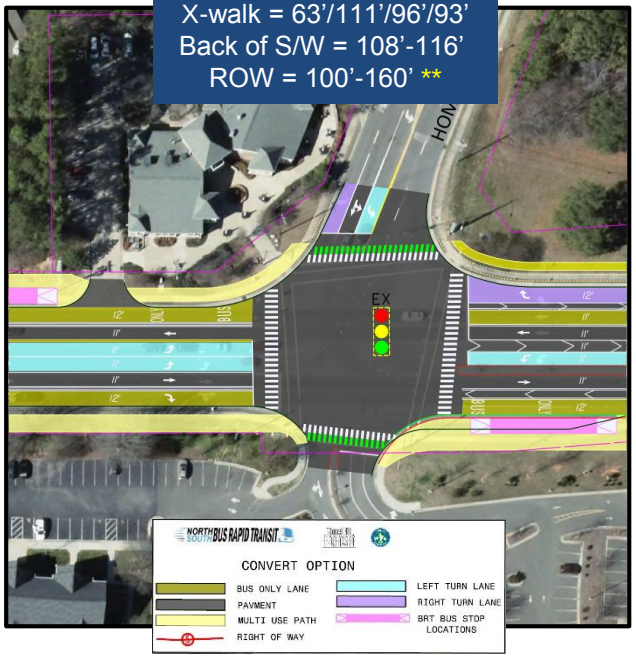
Homestead Road

Pavement = 72’
X-walk = 63’/128’/122’/110’
Back of S/W = 90’
Ex. ROW = 100’-160’



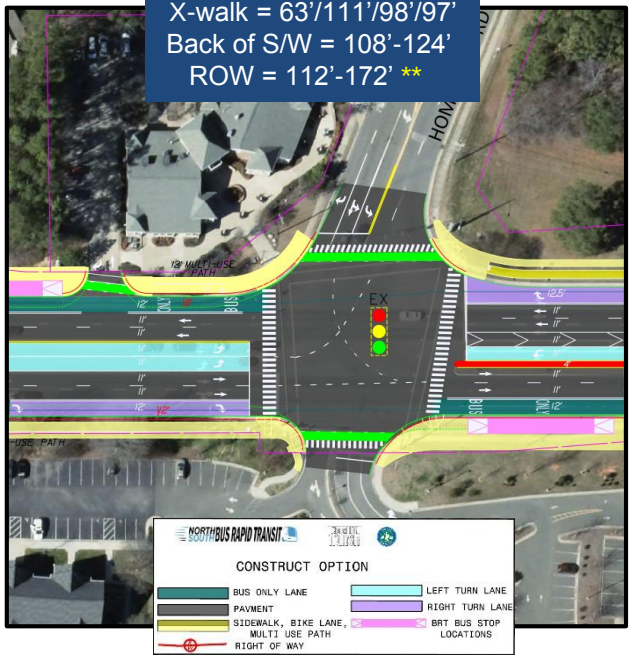
Existing

Pavement = 72’
X-walk = 63’/111’/96’/93’
Back of S/W = 108’-116’
ROW = 100’-160’ **



Convert

Pavement = 72’-76’
X-walk = 63’/111’/98’/97’
Back of S/W = 108’-124’
ROW = 112’-172’ **



Construct

Next Steps (NCDOT Recommendations)

- Finalize traffic analysis for the future traffic condition
  - Committees have seen the results of evaluating Existing volumes
  - Evaluating a Future opening year (2024) and Horizon year (2045) from a development/traffic growth standpoint
  - This is consistent with what NCDOT expects from the analysis
- Submit a draft traffic report to the Town of Chapel Hill and NCDOT for review
- Town of Chapel Hill and NCDOT provide review and

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

QUESTIONS / NEXT STEPS / ACTION ITEMS

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

Get on Board!

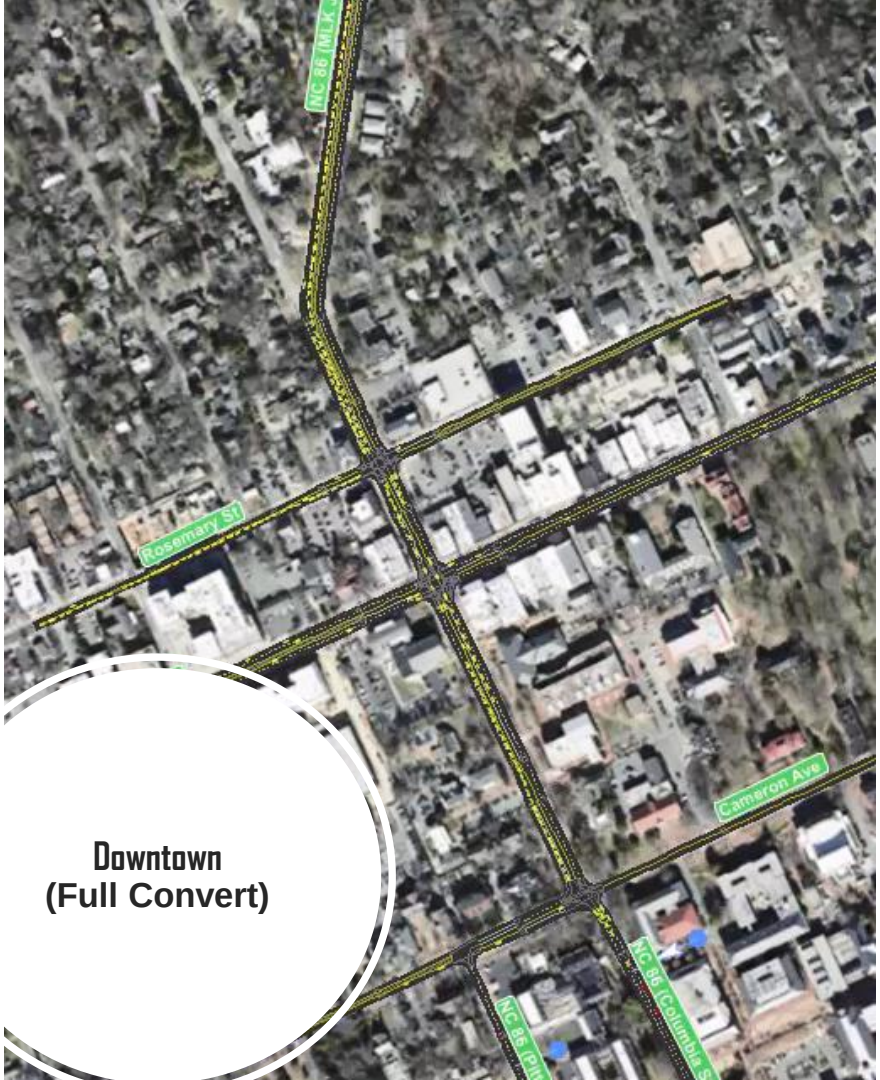
ADDITIONAL SLIDES FOR INFOMATION

Hospital Area (Existing Conditions)

NS Route Bus Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	8
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	10	7

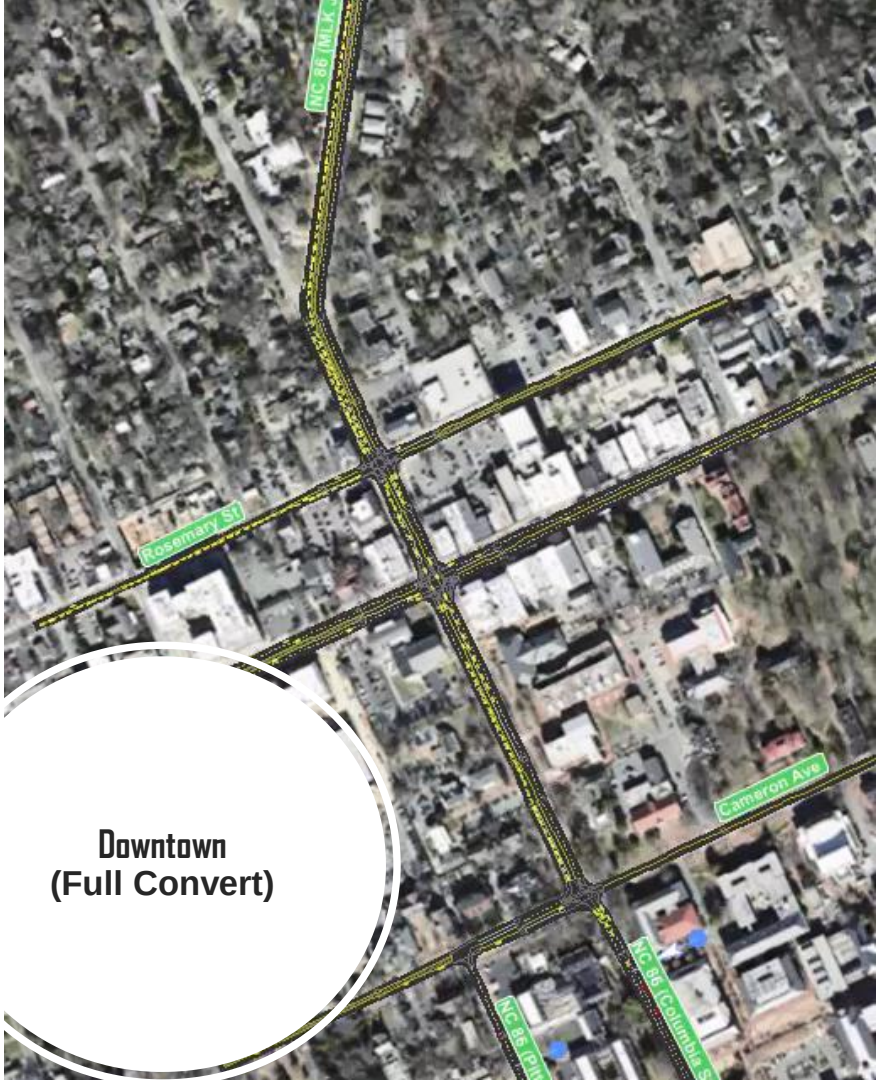
Hospital Area (Existing Conditions)

General Purpose Vehicle Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	5



Downtown
(Full Convert)

Downtown
(Existing
Conditions)



Downtown
(Full Convert)

Downtown
(Convert Except
at Cameron)

Rosemary Street – Preliminary Level of Service (Delay) Results

Condition	AM Peak	PM Peak
Base Year (2018) No Build	C (27.4)	E (69.9)
Base Year (2018) Build - *Full Convert*	F (232.1)	F (174.8)
Base Year (2018) Build - *Convert Except at Cameron*	D (50.5)	F (89.2)

Cameron Street – Preliminary Level of Service (Delay) Results

Condition	AM Peak	PM Peak
Base Year (2018) No Build	E (57.2)	E (74.7)
Base Year (2018) Build - *Full Convert*	F (103.2)	F (147.1)
Base Year (2018) Build - *Convert Except at Cameron*	F (81.2)	F (82.8)

Estes (Existing Conditions)

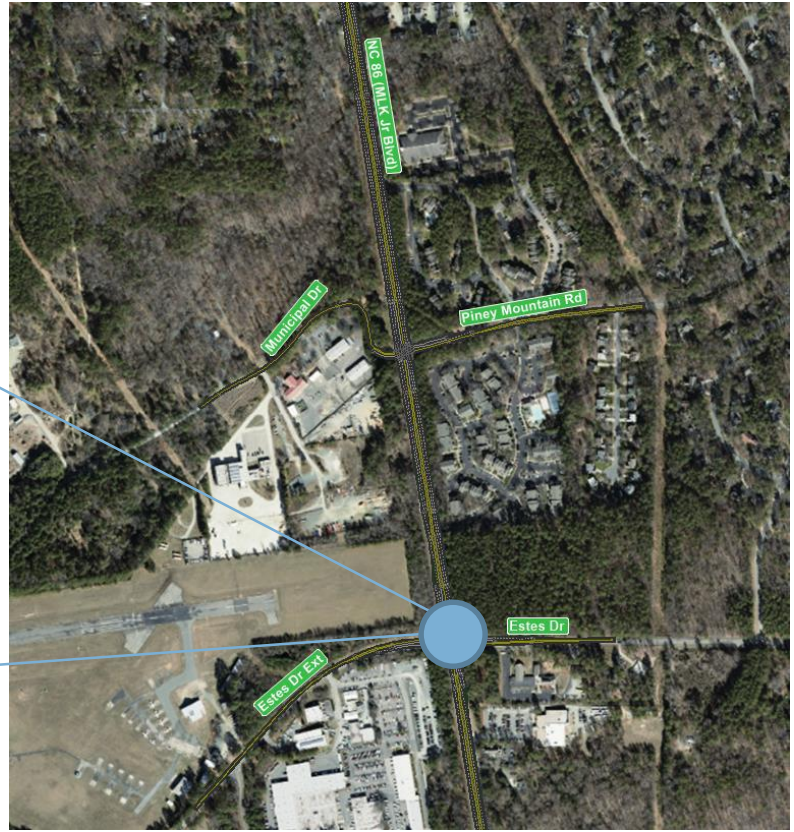
NS Route Bus Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	7
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	6

Estes (Existing Conditions)

General Purpose Vehicle Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	5	4

Estes Drive – Preliminary Level of Service (Delay) Results

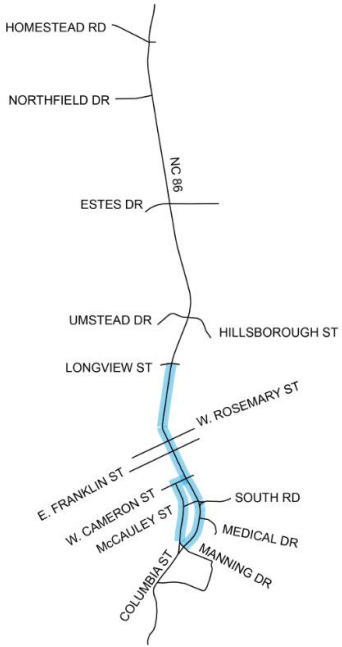
Condition	AM Peak	PM Peak
Base Year (2018) No Build	D (38.6)	E (67.5)
Base Year (2018) No Build - *with committed improvements*	D (35.3)	D (54.5)
Base Year (2018) Build - *Convert South of Estes*	E (65.4)	F (105.8)
Base Year (2018) Build - *Construct South of Estes*	C (30.5)	D (46.6)



Travel Time Recap (Downtown)

NS Route Bus Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	8
Base Year (2018) Build - *Full Convert*	5	6
Base Year (2018) Build - *Convert except at Cameron*	5	6
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	10	7
Base Year (2018) Build - *Full Convert*	TRAVEL TIMES UNAVAILABLE	7
Base Year (2018) Build - *Convert except at Cameron*	8	5

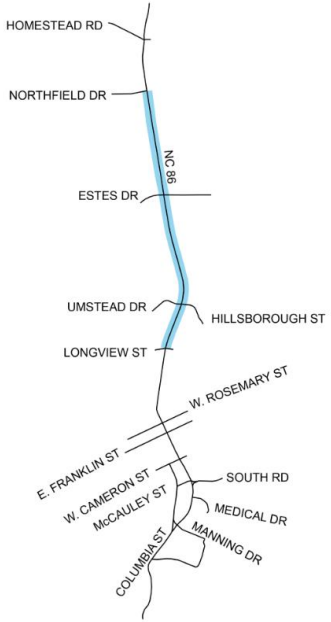
General Purpose Vehicle Average Travel Time (Manning to Longview)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Full Convert*	5	8
Base Year (2018) Build - *Convert except at Cameron*	5	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	6	5
Base Year (2018) Build - *Full Convert*	14	11
Base Year (2018) Build - *Convert except at Cameron*	8	5



Travel Time Recap (North of Downtown)

NS Route Bus Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	7
Base Year (2018) Build - *Convert south of Estes*	5	6
Base Year (2018) Build - *Construct south of Estes*	5	5
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	7	6
Base Year (2018) Build - *Convert south of Estes*	6	4
Base Year (2018) Build - *Construct south of Estes*	5	4

General Purpose Vehicle Average Travel Time (Longview to Northfield)		
Condition	AM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	4	5
Base Year (2018) Build - *Convert south of Estes*	4	11
Base Year (2018) Build - *Construct south of Estes*	4	4
Condition	PM Peak (minutes)	
	Northbound	Southbond
Base Year (2018) No Build - *Existing Conditions*	5	4
Base Year (2018) Build - *Convert south of Estes*	7	7
Base Year (2018) Build - *Construct south of Estes*	4	4

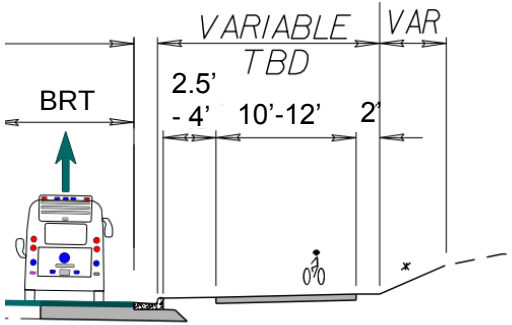


Pavement Width Comparison

	S. Columbia 15-501 4-lane divided w/ 4' shoulders & grass median	**MLK from Downtown to Estes** 5-lane c&g, no shoulder	**MLK from Estes to Homestead** 5-lane, 4'-6' shoulders; C&G in sections	**MLK Homestead to Westminster** 4-lane divided w/ 4' shoulders; C&G in section	**MLK Westminster to Eubanks** 2SB/3NB divided with 4' shoulders, C&G and 16' grass median
Existing	28' with 16' median	63'-65'	66'-72'	28' / 28' with 16' median	28' / 39' with 16' median
Convert	N/A	63'-65'	72'	28' / 28' with 16' median	28' / 39' with 16' median
Construct	34' with 16' median	79'	79'	34' / 34' with 4'-16' median	34' / 45' with 4'-16' median

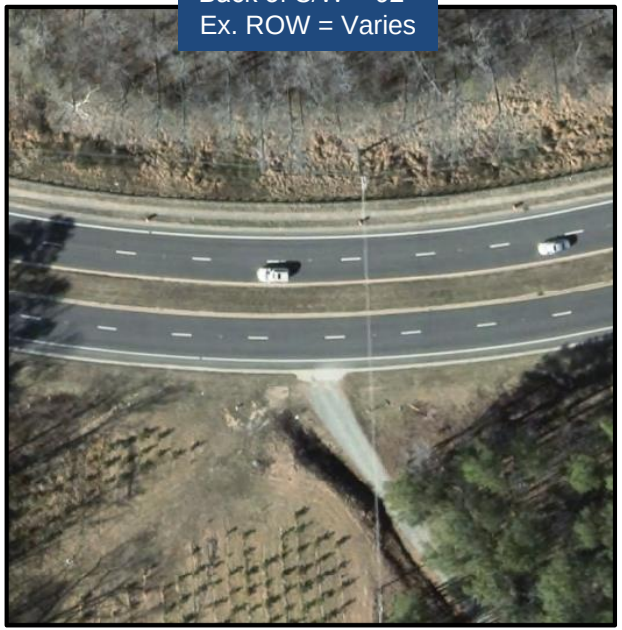
Shoulder Width Comparison

- Existing 8’-10’ berm for 5’ sidewalk with 2’-4’ grass strip
- Proposed 14’-19.5’ width for:
  - 2.5’-4’ grass strip behind curb
  - 10’-12’ Multi-Use Path
  - Separated 6’ bike / 3’ buffer / 5’ sidewalk
  - 1’-2’ back edge (grass)



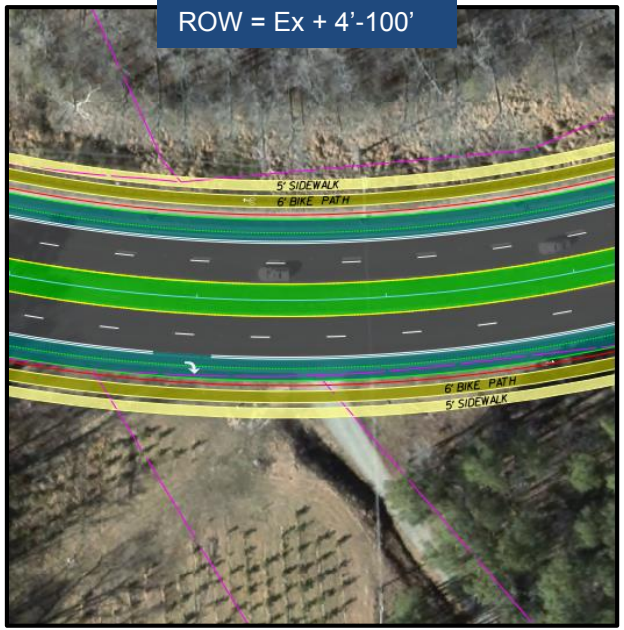
US 15-501 S. Columbia St

Pavement = 72’
Back of S/W = 92’
Ex. ROW = Varies



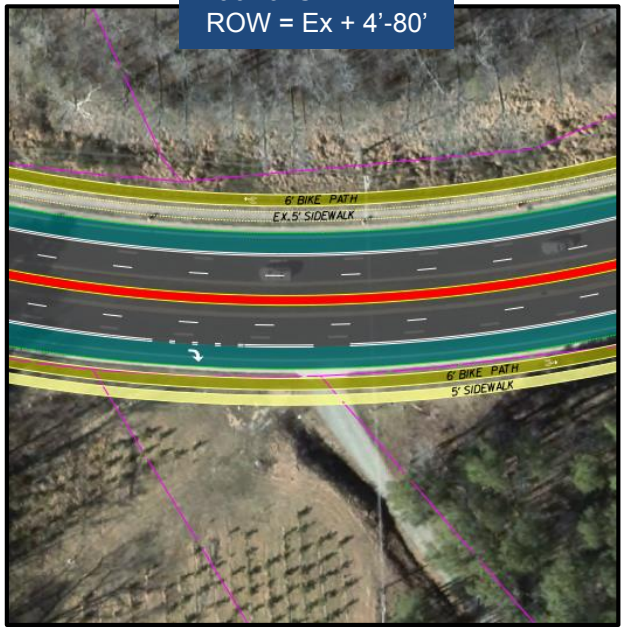
Existing

Pavement = 85’
Back of S/W = 125’
ROW = Ex + 4’-100’



Maintain Median

Pavement = 72’
Back of S/W = 111’
ROW = Ex + 4’-80’



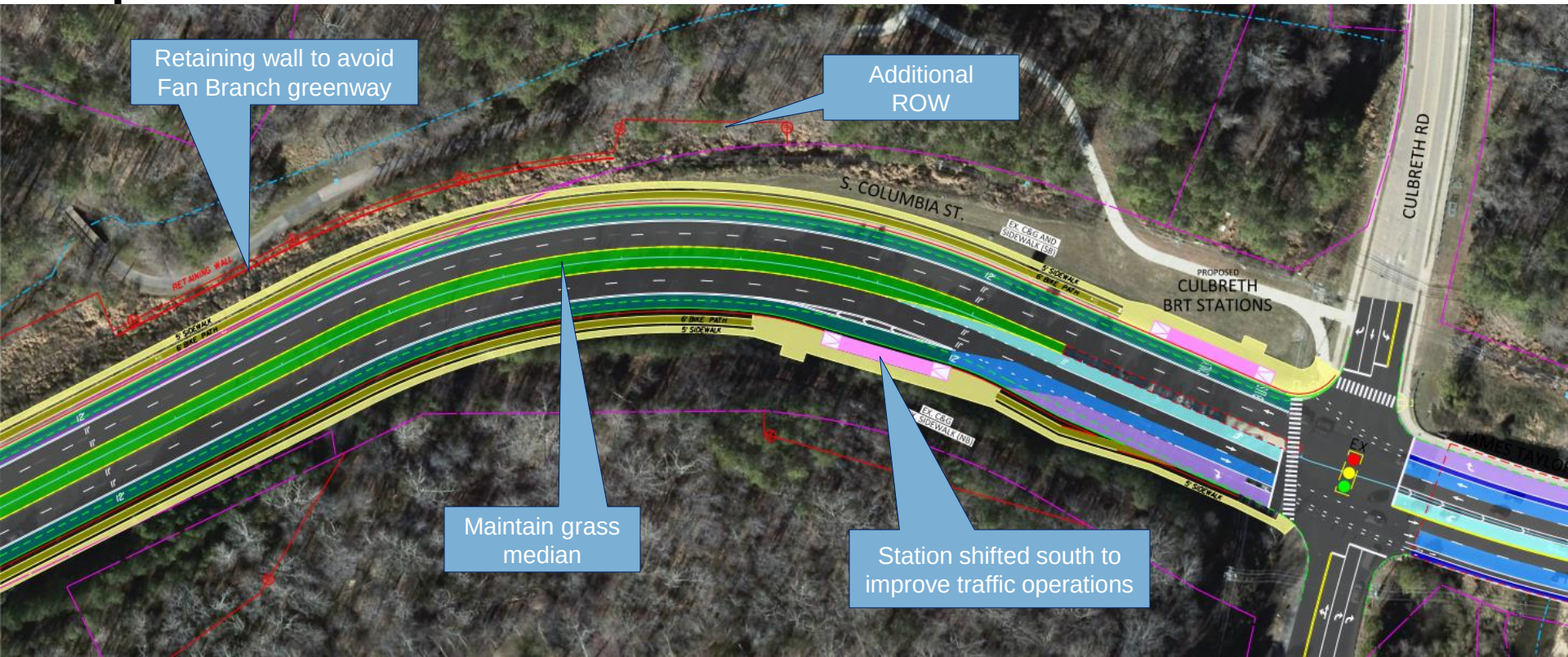
Median Widening

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

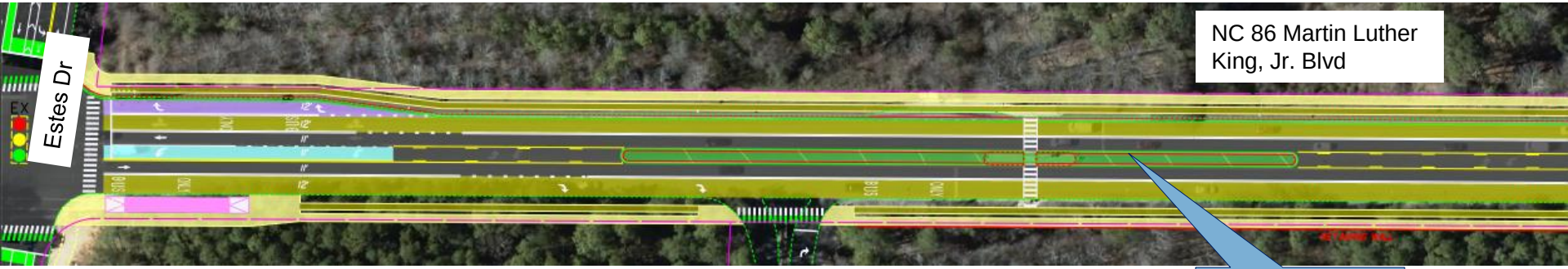
www.nsbrt.org

Update - US 15-501 / S. Columbia St



NC 86 / MLK – Median islands

NC 86 / MLK – Median islands



NC 86 / MLK – Median islands

Chapel Hill transit

NORTH SOUTH BUS RAPID TRANSIT

www.nsbrt.org

NC 86 / MLK – Intersections

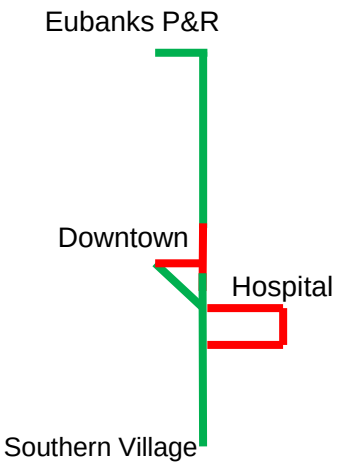
Change in Roadway Ownership

- Placeholder slide – perhaps best to put in the back

NCDOT Landscaping Guidelines

- Setbacks
- Sight distance
- Native species
- Maintenance
  - Root systems
  - Utility lines

Bicycle & Pedestrian Facilities



Facility	Northbound Length	Southbound Length
6’ Bike Path / 5’ Sidewalk	3.0 mi	2.9 mi
12’ Multi-Use Path	1.4 mi	1.0 mi
10’ Multi-Use Path	0.5 mi	0.9 mi
<10’ Multi-Use Path	0.0 mi	0.1 mi
Total New	4.9 mi	4.9 mi
5’ Bike Lane	1.9 mi	1.9mi
Project Total	**6.8 mi**	**6.8 mi**

Capital Costs

- $141M (Year of Expenditure)
- Unit Costs
  - Adjusted 2018 NCDOT Ave Bid Unit Costs
  - Other transit projects
- Contingencies
  - Infrastructure Costs 30%
  - Right of Way 10%
  - Vehicles 5%
  - Professional Services 0%

Preliminary Conceptual Opinion of Probable Cost

Chapel Hill Transit		Today's Date	8/21/2019
North South BRT - Chapel Hill, NC		Yr of Base Year $	2019
Applic. for SSGA		Yr of Revenue Ops	2024

Segment: One (1) US 15-501 Option: SSGA v1 Runningway: Mixed - Sumac/Curbside Construct 15-501

				Project Summary			
Road Name:	S. Columbia St / US 15-501	Segment Length		Subtotal	% Contingency	$ Contingency	Summary Total (Year 2019 $)
From:	Sumac Road (Southern Village EOL)	Miles	1.13	$ 16,464,212	29%	$ 4,723,453	$ 21,187,666
To:	Culbreath Rd / Mt Carmel Church Rd	LF	5,990			Cost/Route-Mile ($ million)	$ 18.68

Description	Unit	2019 Unit Cost ($)	Quantity	Notes	Subtotal	% Contingency	$ Contingency	Summary Total (Year 2019 $)
10 GUIDEWAY & TRACK ELEMENTS (route miles)					$ 2,002,035		$ 600,610	$ 2,602,645
10.02 Guideway At-Grade Semi-Excl. Bituminous Guideway Reconstruction	SFT	$ 16	58,222	Roadway widening and reconstruction for BRT	$ 931,552	30%	$ 279,466	$ 1,211,018
10.02 Guideway At-Grade Semi-Excl. Concrete Guideway Pavement	EA	$ 19,000	2	150'x12' conc bus pad at each platform	$ 38,000	30%	$ 11,400	$ 49,400
10.02 Guideway At-Grade Semi-Excl. Mill and Resurface	SY	$ 12	50,763	For existing pavement	$ 583,041	30%	$ 175,152	$ 758,193
10.02 Guideway At-Grade Semi-Excl. 2'-6" C&G	LF	$ 18	8,406	Widening locations	$ 150,467	30%	$ 45,140	$ 195,608
10.02 Guideway At-Grade Semi-Excl. New Drainage	LF	$ 41	-	Drainage at locations with no ex. drg systems	$ -	30%	$ -	$ -
10.02 Guideway At-Grade Semi-Excl. Drainage	LF	$ 26	9,075	Drainage at locations with existing drg systems	$ 235,950	30%	$ 70,785	$ 306,735
10.02 Guideway At-Grade Semi-Excl. 1'-6" Median C&G	LF	$ 15	-	Median curb	$ -	30%	$ -	$ -
10.02 Guideway At-Grade Semi-Excl. Conc. Monolithic Island	SY	$ 59	-	Keyed in	$ -	30%	$ -	$ -
10.02 Guideway At-Grade Semi-Excl. Pvt Marking and Signing	LF	$ 6	5,990	Thermoplastic w/ pvt markers and new signs	$ 35,018	30%	$ 10,505	$ 45,523
10.02 Guideway At-Grade Semi-Excl. Pvt Marking and Signing at Intersections	EA	$ 4,534	6	Hi-Vis crossing, arrows, BUS ONLY & signs	$ 27,207	30%	$ 8,162	$ 35,369
10.02 Guideway At-Grade Semi-Excl.	EA	$ -	-		$ -	30%	$ -	$ -
10.02 Guideway At-Grade Semi-Excl.	EA	$ -	-		$ -	30%	$ -	$ -
10.02 Guideway At-Grade Semi-Excl.	EA	$ -	-		$ -	30%	$ -	$ -
10.03 Guideway At-Grade Mixed Traffic: Mill and Overlay	SY	$ 12	-	For existing pavement	$ -	30%	$ -	$ -
10.03 Guideway At-Grade Mixed Traffic: Pvt Marking and Signing	LF	$ 6	-	Thermoplastic w/ pvt markers and new signs	$ -	30%	$ -	$ -
10.03 Guideway At-Grade Mixed Traffic: Pvt Marking and Signing at Intersections	EA	$ 4,534	-	Hi-Vis crossing, arrows, BUS ONLY & signs	$ -	30%	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)					$ 1,200,000		$ 360,000	$ 1,560,000
20.01 BRT Station - Curbside Loading Platform, Shelter & amenities	EA	$ 400,000	3	Platform count for stations	$ 1,200,000	30%	$ 360,000	$ 1,560,000
20.01 BRT Station	EA	$ 400,000	-		$ -	30%	$ -	$ -
20.06 Structured Parking - per space	Pkg Space	$ 25,000	-		$ -	30%	$ -	$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS					$ –		$ –	$ -
30.02 Administration Building: Office, sales, storage, revenue counting	LS	$ 25,000	-	Additional supplies/equipment for BRT admin	$ -	30%	$ -	$ -
30.02 Light Maintenance Facility	per bus	$ 25,000	-	New equipment for BRT bus fleet	$ -	30%	$ -	$ -
30.02 Storage or Maintenance of Way Building	LS	$ -	-	Use existing facility	$ -	30%	$ -	$ -
40 SITEWORK & SPECIAL CONDITIONS					$ 4,460,854		$ 1,338,256	$ 5,799,110
40.01 Sitework for Stations	EA	$ 25,000	3	per platform location	$ 75,000	30%	$ 22,500	$ 97,500
40.02 Utility Relocation Allowance - Low	LF	$ 25	-	areas with minimal, but some expected conflicts	$ -	30%	$ -	$ -
40.02 Utility Relocation Allowance - Medium	LF	$ 100	-	areas with minor but expected conflicts	$ -	30%	$ -	$ -
40.02 Utility Relocation Allowance - High	LF	$ 200	5,040	areas with numerous and expected conflicts	$ 1,008,000	30%	$ 302,400	$ 1,310,400
40.02 Utility Relocation for Stations	EA	$ 10,000	3	per platform location	$ 30,000	30%	$ 9,000	$ 39,000
40.02 Street lighting Modification Allowance	Per Platform	$ 6,000	3	per platform location	$ 18,000	30%	$ 5,400	$ 23,400
40.04 Haz mat/ contaminated soil removal/mitigation, ground water	LS	$ 50,000	-	For minor impact to coal fly ash	$ -	30%	$ -	$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LS	1%	59,836		$ 598	30%	$ 180	$ 778
40.05 Widen Bridge	SFT	$ 125	-	No bridge work	$ -	30%	$ -	$ -
40.05 Retaining walls (Std CIP)	SFT	$ 150	4,919	Minimize impacts and ROW takes	$ 737,902	30%	$ 221,371	$ 959,273