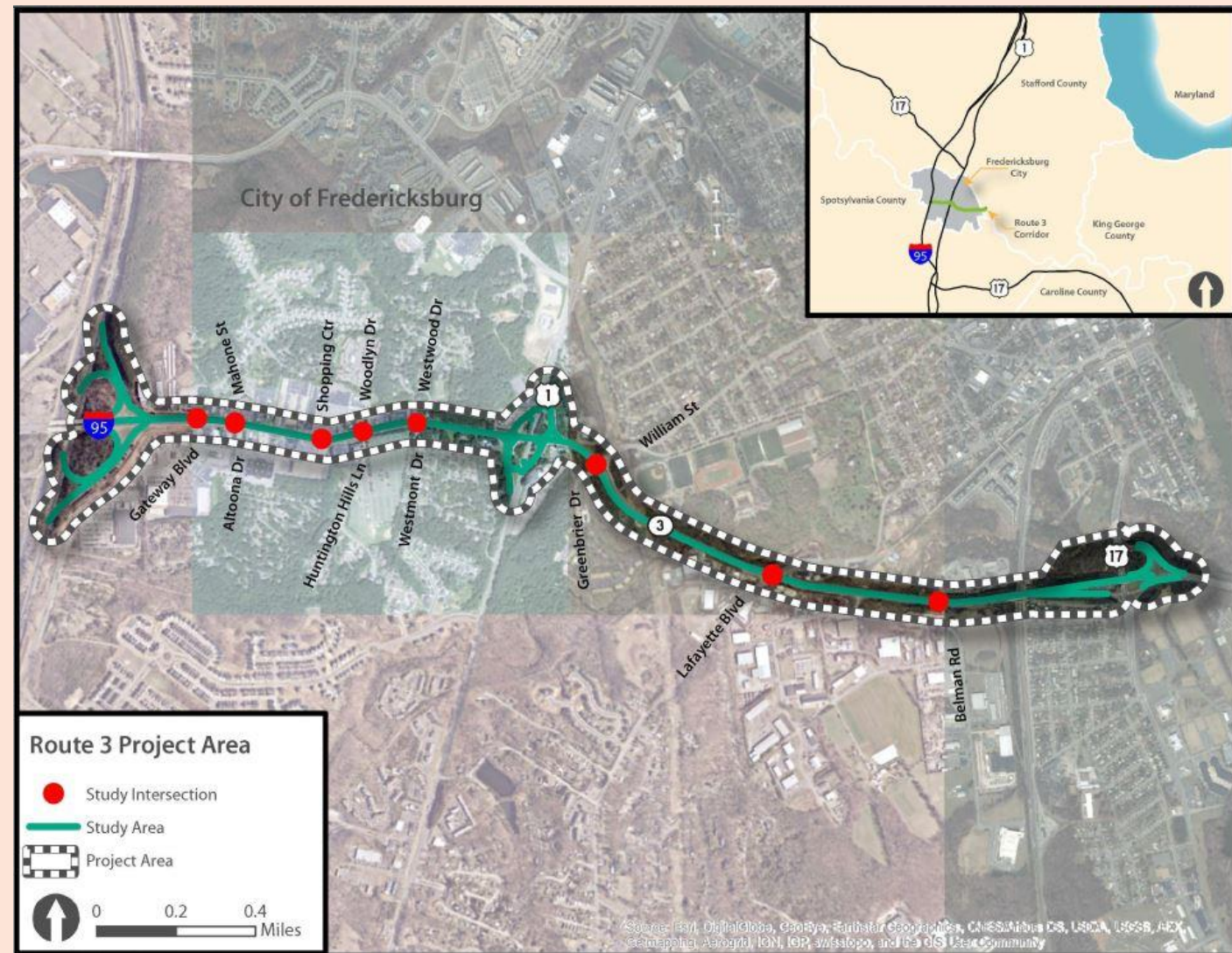


ROUTE 3 (PLANK ROAD/WILLIAM STREET/BLUE AND GRAY PARKWAY) CORRIDOR STUDY FROM INTERSTATE-95 TO ROUTE 2 (DIXON STREET)

Project Description

The Route 3 corridor through the Fredericksburg area is extremely congested and experiences a higher than the statewide average number of crashes. Route 3 from east of I-95 to Route 2 presents high degree of congestion, a high crash count and is now on the National Highway System (NHS) and contains both corridor and intersection Potential for Safety Improvement (PSI) sites. The corridor's operational and safety characteristics may be improved by providing improvements such as turn lanes, signal timing optimization, and access management strategies.

Route 3 Project Area and Location Map



Planning Level Cost Estimate

Phase	Six Year Improvement Program
Preliminary Engineering	\$1,363,000
ROW and Utility Relocation	\$390,000
Construction	\$8,892,000
Total Cost =	\$10,645,000

Note: Cost estimates reported in 2017 dollars

Traffic Operations Improvements

- Addition of lane capacity
- Turn lane storage length extensions
- Traffic signal timing/phasing improvements
- Lane re-configurations
- Traffic signage modifications and improvements

Targeted Safety Improvements

- Access management measures
- Geometric improvements
- Pavement marking improvements
- Pedestrian/bike facilities improvements
- Sight Distance improvements

Crash Reduction

2030 – No Build	2030 – Build
251 Expected Crashes	229 Expected Crashes
9% REDUCTION	

Project Benefits

Traffic Operations Measures	
2030 No Build Delay*	3,427,617 seconds
2030 Build Delay*	2,409,580 seconds
Δ Delay (% Change)	-1,018,038 seconds (-30%)
20-Year Operations Savings	\$57,217,996.00

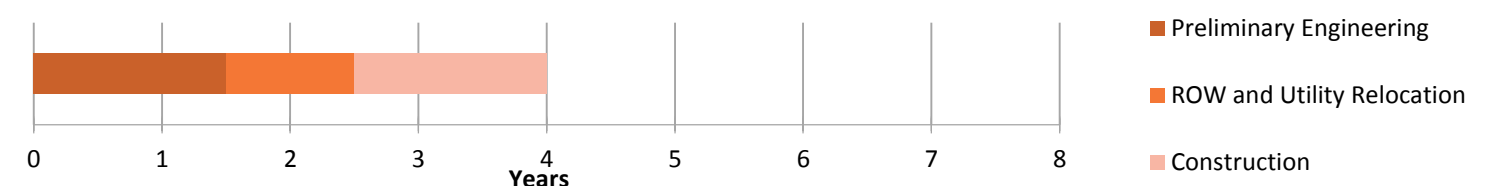
*Compounded AM and PM weekday travel delay in the influence area of all the proposed improvements within the corridor

- Reduced travel time and delay through the corridor
- Improved travel speeds through the corridor
- Improved signal timing and phasing
- Improved pavement markings and signing
- Improved sight distances
- Improved safety for road users

Benefit/Cost Ratio: 5.3

Benefit/Cost calculated using the midpoint of the cost estimate range

Project Schedule



ROUTE 3 (PLANK ROAD/WILLIAM STREET/BLUE AND GRAY PARKWAY) CORRIDOR STUDY

PREFERRED IMPROVEMENT, GATEWAY BLVD & ALTOONA DR/MAHONE ST INTERSECTIONS (ALTERNATIVES A & B)

Existing Conditions

Route 3/Gateway Boulevard Intersection

- Minor Collector
- 4-leg signalized intersection
- Posted speed limit = 30 mph

Route 3/Altoona Drive/Mahone Street

- 4-legged signalized intersection
- Posted speed limit = 25 mph
- Minor street movements experience heavier delay and a LOS D or worse
- Northbound directions experience lengthy queues for both intersections

Planning Level Cost Estimate

Phase	Six Year Improvement Program	
	Alternative A	Alternative B
Preliminary Engineering	\$141,000	\$112,000
ROW and Utility Relocation	\$0	\$45,000
Construction	\$921,000	\$733,000
Total Cost =	\$1,062,000	\$890,000

Note: Cost estimates reported in 2017 dollars



Northbound Approach of Gateway Blvd



Southbound Approach of Mahone Street

Operational Results - Delay(LOS)

Intersection	2030 No-Build		2030 Build	
	AM	PM	AM	PM
Gateway Blvd/Ramseur Street (Signalized)	46.0(D)	50.5(D)	31.6(C)	34.0(C)
Altoona Drive/Mahone Street (Signalized)	10.7(B)	86.6(F)	12.1(B)	15.3(B)

Project Benefits

Traffic Operations Measures

2030 No Build Delay*	991,676 seconds
2030 Build Delay*	482,396 seconds
Δ Delay(% Change)	-509,280 seconds (-51%)
20-Year Operations Savings	\$28,623,782.00

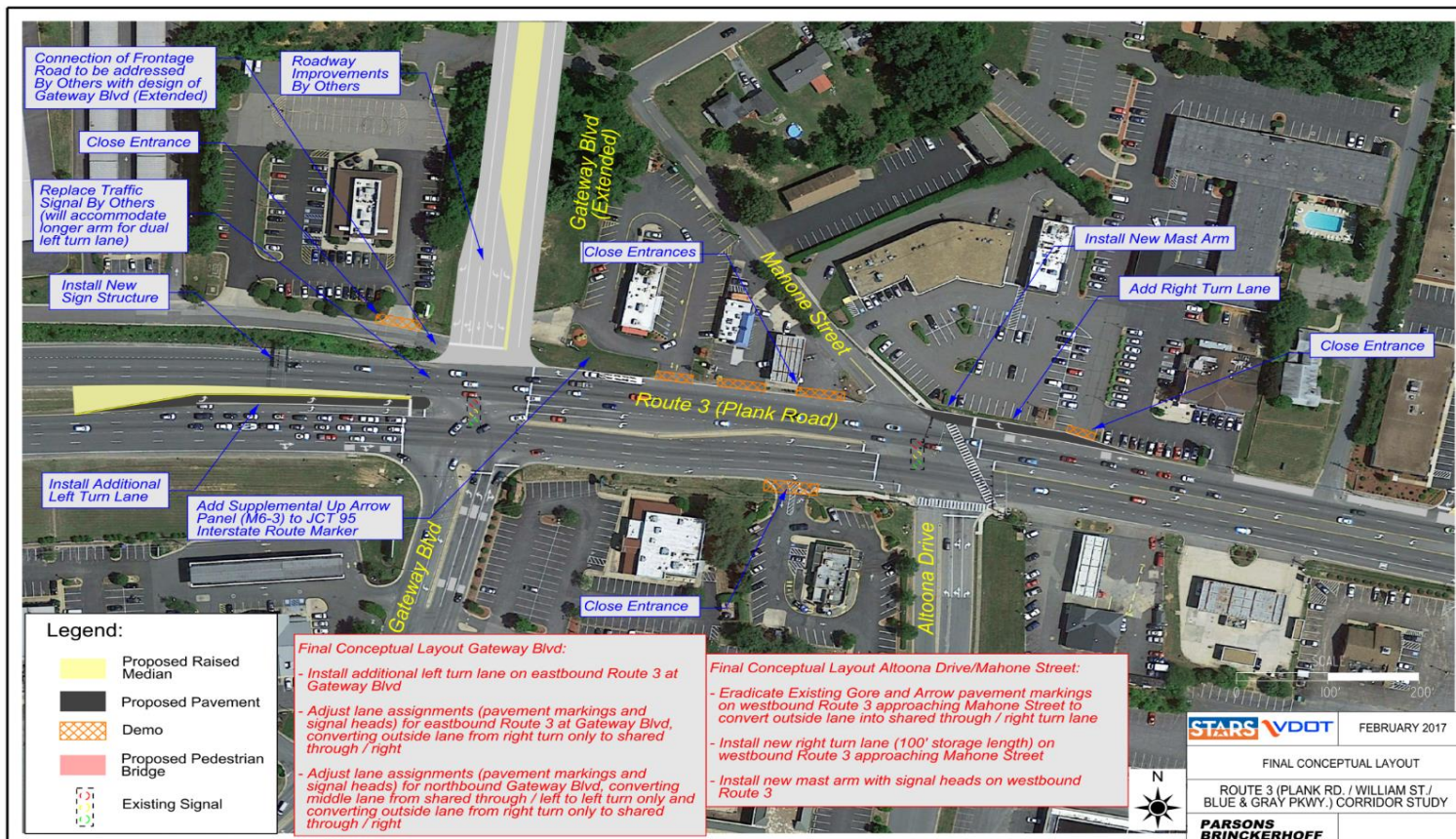
*Compounded AM and PM weekday travel delay in the influence area of the proposed improvement alternatives A & B

- Provides additional capacity for westbound Route 3; reduced congestion
- Reduced congestion for eastbound left turns at Gateway Boulevard with dual lefts
- Safety improvement by access management measures

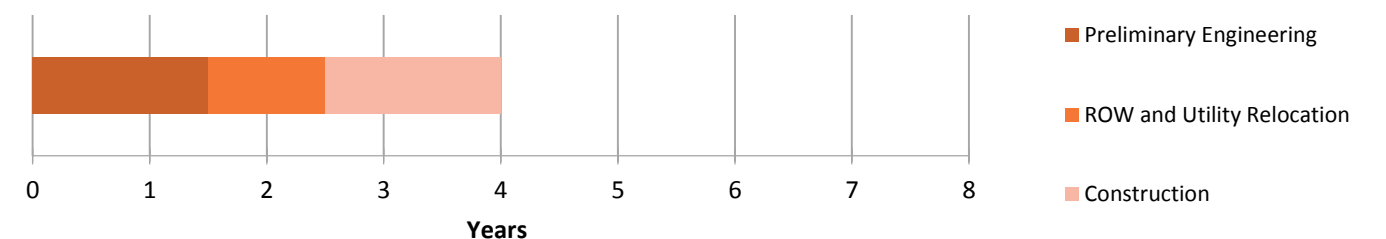
Benefit/Cost Ratio: 14.7

Benefit/Cost calculated using the midpoint of the cost estimate range

Final Conceptual Alternative, Alternatives A & B



Project Schedule



ROUTE 3 (PLANK ROAD/WILLIAM STREET/BLUE AND GRAY PARKWAY) CORRIDOR STUDY

PREFERRED IMPROVEMENT, GREENBRIER DRIVE/WILLIAM STREET INTERSECTION (ALTERNATIVE E)

Existing Conditions

William Street

- Minor Arterial
- Posted speed limit = 25 mph

Greenbrier Drive

- Collector Street
- Posted speed limit = 25 mph
- 4-legged signalized intersection
- Minor street movements experience heavier delay and a LOS D or worse
- PM peak hour southbound right movement experiences lengthy queues

Planning Level Cost Estimate

Phase	Six Year Improvement Program
Preliminary Engineering	\$19,000
ROW and Utility Relocation	\$0
Construction	\$127,000
Total Cost =	\$146,000

Note: Cost estimates reported in 2017 dollars



Northbound Approach



Eastbound Approach

Operational Results – Delay (LOS)

Intersection	2030 No-Build		2030 Build	
	AM	PM	AM	PM
Lafayette Blvd (Signalized)	33.0 (C)	33.0 (C)	45.8 (D)	42.4 (D)

Project Benefits

Traffic Operations Measures

2030 No Build Delay*	366,265 seconds
2030 Build Delay*	349,646 seconds
Δ Delay (% Change)	-16,619 seconds (-4.5%)
20-Year Operations Savings	\$935,000

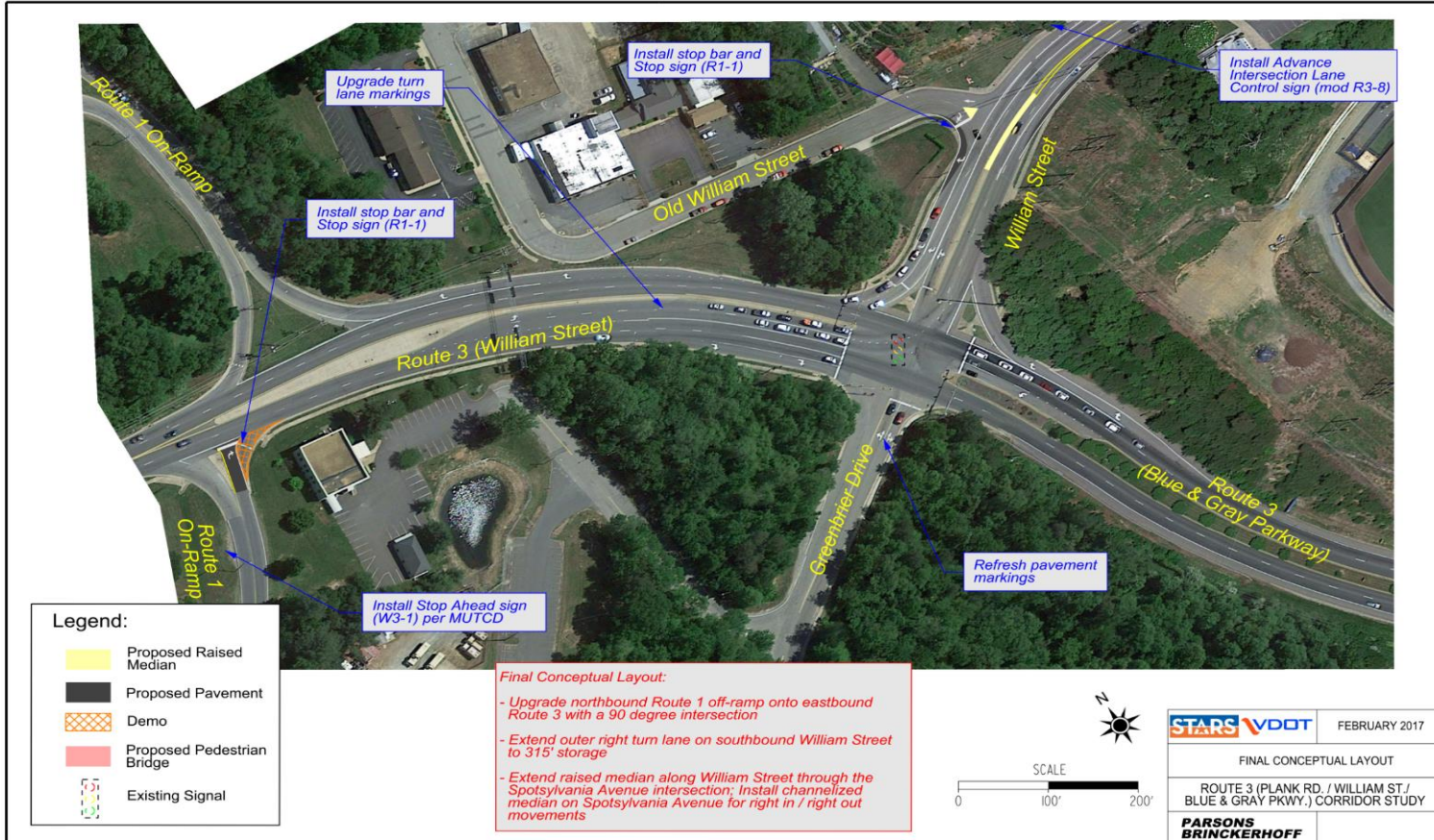
*Compounded AM and PM weekday travel delay in the influence area of the proposed improvement

- Addresses queuing issue for southbound (William Street) right turning movements by providing additional storage capacity
- Improves safety at Old William Street access from William Street
- Improved pavement markings provide better guidance to drivers

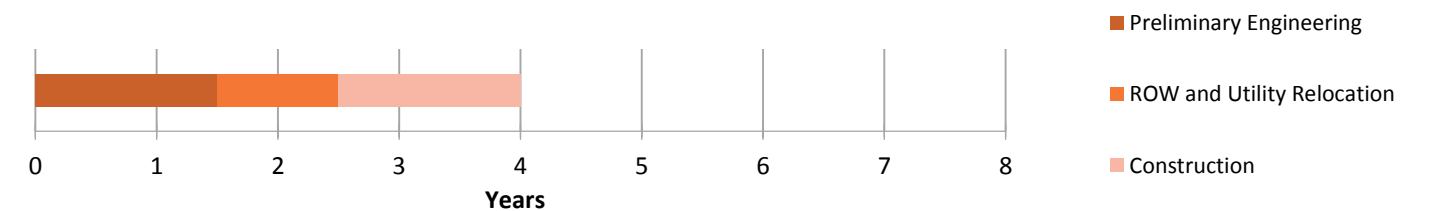
Benefit/Cost Ratio: 6.4

Benefit/Cost calculated using the midpoint of the cost estimate range

Final Conceptual Layout, Alternative E



Project Schedule



ROUTE 3 (PLANK ROAD/WILLIAM STREET/BLUE AND GRAY PARKWAY) CORRIDOR STUDY

PREFERRED IMPROVEMENT, LAFAYETTE BOULEVARD INTERSECTION (ALTERNATIVE F)

Existing Conditions

Lafayette Boulevard

- Minor Arterial
- Posted speed limit = 35 mph
- 4-legged signalized intersection
- LOS D during AM peak hour
- LOS E during PM peak hour
- All approaches operate at LOS D or worse for both the AM and PM peak hour
- Heavy demand from both major and minor approaches causes heavy utilization

Planning Level Cost Estimate

Phase	Six Year Improvement Program
Preliminary Engineering	\$864,000
ROW and Utility Relocation	\$345,000
Construction	\$5,634,000
Total Cost =	\$6,843,000

Note: Cost estimates reported in 2017 dollars



Eastbound Approach



Southbound Approach

Operational Results – Delay (LOS)

Intersection	2030 No-Build		2030 Build	
	AM	PM	AM	PM
Lafayette Blvd (Signalized)	91.4 (F)	157.4 (F)	91.4(F)	83.1(F)

Project Benefits

Traffic Operations Measures	
2030 No Build Delay*	1,579,344 seconds
2030 Build Delay*	1,089,930 seconds
Δ Delay (% Change)	-489,414 seconds (-30%)
20-Year Operations Savings	\$27.5 Million

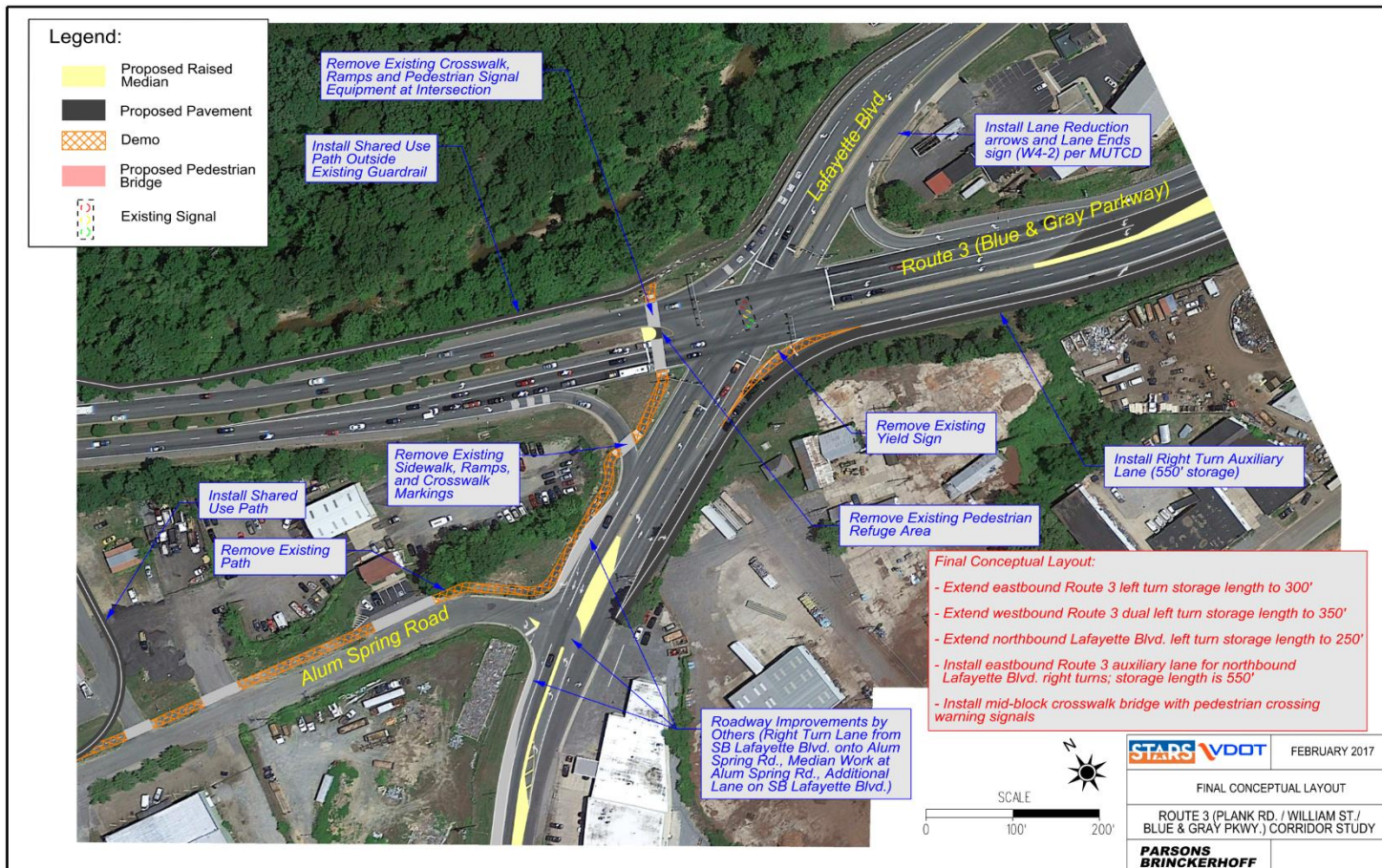
*Compounded AM and PM weekday travel delay in the influence area of the proposed improvement

- Increased intersection throughput
- Reduced queuing
- Safer bike/pedestrian accommodation
- Improved capacity/operations for northbound right turning vehicles

Benefit/Cost Ratio: 4.0

Benefit/Cost calculated using the midpoint of the cost estimate range

Final Conceptual Layout, Alternative F



Project Schedule

