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.

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 $3,977,722

Benefit/Cost Ratio: 5.3
Benefit/Cost calculated using the midpoint of the cost estimate range

Crash Reduction
- 2030 – No Build: 251 Expected Crashes
- 2030 – Build: 229 Expected Crashes
- 9% REDUCTION

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

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

Planning Level Cost Estimate

<table>
<thead>
<tr>
<th>Phase</th>
<th>Six Year Improvement Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Engineering</td>
<td>$1,363,000</td>
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<tr>
<td>ROW and Utility Relocation</td>
<td>$390,000</td>
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<tr>
<td>Construction</td>
<td>$8,892,000</td>
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<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$10,645,000</strong></td>
</tr>
</tbody>
</table>

Note: Cost estimates reported in 2017 dollars

Project Schedule

- Preliminary Engineering
- ROW and Utility Relocation
- Construction

Benefit: Cost ratio calculated using the midpoint of the cost estimate range

Project Benefits
- 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

Note: Cost estimates reported in 2017 dollars
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**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Six Year Improvement Program</th>
<th>Alternative A</th>
<th>Alternative B</th>
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<td><strong>$890,000</strong></td>
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Note: Cost estimates reported in 2017 dollars

**Operational Results - Delay (LOS)**

Intersection 2030 No-Build 2030 Build
Preliminary Engineering 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

**Project Schedule**

<table>
<thead>
<tr>
<th>Years</th>
<th>Preliminary Engineering</th>
<th>ROW and Utility Relocation</th>
<th>Construction</th>
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Project Benefits

- 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
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

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<tr>
<th>Phase</th>
<th>Six Year Improvement Program</th>
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<tr>
<td>Preliminary Engineering</td>
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<td>Construction</td>
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Total Cost = $146,000

Note: Cost estimates reported in 2017 dollars

Operational Results – Delay (LOS)

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<tr>
<th>Intersection</th>
<th>2030 No-Build</th>
<th>2030 Build</th>
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<tbody>
<tr>
<td>Lafayette Blvd (Signalized)</td>
<td>AM</td>
<td>PM</td>
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<tr>
<td>2030 No Build Delay*</td>
<td>366,265 seconds</td>
<td>349,646 seconds</td>
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<tr>
<td>Δ Delay (% Change)</td>
<td>-16,619 seconds (-4.5%)</td>
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</table>

20-Year Operations Savings $935,000

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

Project Benefits

- 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

Project Schedule

- Preliminary Engineering
- ROW and Utility Relocation
- Construction
ROUTE 3 (PLANT 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

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<tr>
<th>Phase</th>
<th>Six Year Improvement Program</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Preliminary Engineering</td>
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<td>Construction</td>
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<tr>
<td><strong>Total Cost</strong></td>
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Note: Cost estimates reported in 2017 dollars

Operational Results – Delay (LOS)

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<tr>
<th>Intersection</th>
<th>2030 No-Build</th>
<th>2030 Build</th>
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<tbody>
<tr>
<td>Lafayette Blvd (Signalized)</td>
<td>AM</td>
<td>PM</td>
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<td>2030 No Build Delay*</td>
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<td>Δ Delay (% Change)</td>
<td>-489,414 seconds (-30%)</td>
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Project Benefits

*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

Project Schedule

<table>
<thead>
<tr>
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<th>Preliminary Engineering</th>
<th>ROW and Utility Relocation</th>
<th>Construction</th>
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