Route 7 (East Market Street) Interchange at Battlefield Parkway

Town of Leesburg

Project No: 0007-253-109  UPC 106573

Presentation to Town Council

June 26, 2017
Council Decisions

- East Market Street / Battlefield Parkway Interchange Locally Preferred Alternative
- Cardinal Park Drive Intersection Locally Preferred Alternative
- Endorse Project Delivery Method
Project Purpose

- Improve safety
- Improve vehicle operations / reduced congestion
- Improve pedestrian access

Project Scope

Construct a grade-separated interchange at Battlefield Parkway and modify the intersection of Cardinal Park Drive to allow Route 7 to become a limited-access highway within the project limits
Public Information Meeting
May 16, 2017

- 26 attendees signed in
- 10 comment sheets received
- 2 comment letters received

Comment responses

Do you support this project?

- Yes, with suggestion 58%
- Yes 42%
- No 0%
Route 7 at Battlefield Pkwy Interchange Alternatives

• Alternative 1 – Single Loop Hybrid Interchange

• Alternative 2 – Compressed Diamond Interchange

• Alternative 3 – Diverging Diamond Interchange (DDI)

• Alternative 4 – Single Point Urban Interchange (SPUI)
Alternative 1
Single Loop Hybrid Interchange

Disadvantages
• Greater right of way impacts
• Less opportunities for access to properties north of Route 7
• Less desirable spacing between Interchange Ramps and Potomac Station Shopping Center
• One additional signal compared to Alternate 4

Advantages
• Good traffic Level of Service
• Minimized number of lanes on bridge
• Desirable spacing between Interchange Ramps and Russell Branch Pkwy
• Improved pedestrian and bicycle accommodations
Alternative 2
Compressed Diamond Interchange

Advantages

- Less right of way impacts
- Desirable spacing between interchange ramps and Russell Branch Parkway and Potomac Station Shop Center
- Improved pedestrian and bicycle accommodations

Disadvantages

- Poor traffic Level of Service
- 10-lane Battlefield Parkway bridge over Route 7
- One additional signal compared to Alternate 4

NOT RECOMMENDED FOR FURTHER CONSIDERATION
Alternative 3
Diverging Diamond Interchange (DDI)

Advantages
- Good traffic Level of Service
- Minimized number of lanes on Battlefield Parkway bridge

Disadvantages
- Impacts undeveloped portions of Leegate and Lowe’s developments
- Inadequate spacing between Ramps A/D and Russell Branch Pkwy
- Pedestrian and bicycle accommodations less desirable
- One additional signal compared to Alternate 4
- Transmission utility poles will be located inside of Ramps A and D

NOT RECOMMENDED FOR FURTHER CONSIDERATION
Alternative 4
Single Point Urban Interchange (SPUI)

Advantages
- Less right of way impacts compared to Alternate1
- Maximized distance between interchange ramps and Russell Branch Pkwy and Potomac Station Shopping Center
- Adequate traffic Level of Service at interchange ramp traffic signal
- Greater flexibility for access to properties on north side of Route 7
- One less signal compared to other Alternatives

Disadvantages
- Larger, more complex, and more expensive bridge
- Pedestrian and bicycle accommodations less desirable
Property Access and Impacts

- Three businesses currently have access directly to Route 7:
  - Meadows Farms Nurseries
  - This n’ That Amish Outlet
  - Consignment Solutions

- **All** Alternatives will eliminate their current access
Property Access & Impacts

- Tolbert Elementary School proffer provides future access road to Potomac Station Drive for alternate access to properties east of Battlefield Parkway.
- Consignment Solutions is part of larger development tract. Several access options are available.
- VDOT and Town will work with impacted businesses as part of the design and right-of-way acquisition process.

Alternative 4 – SPUI results in the least property impacts and greatest opportunity for future access improvements.
Public Comments

Interchange Alternatives

*What interchange alternatives do you support most and why?*

*Which do you dislike?*
Route 7 at Battlefield Pkwy Interchange Alternatives

- **Alternative 1** – Single Loop Hybrid Interchange

- **Alternative 2** – Compressed Diamond Interchange
  Not recommended due to poor LOS

- **Alternative 3** – Diverging Diamond Interchange (DDI)
  Not recommended due to right of way impacts and intersection spacing to Russell Branch Parkway

- **Alternative 4** – Single Point Urban Interchange (SPUI)
# Route 7 at Battlefield Pkwy Alternatives Comparison

## Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Alt 1: Single Loop Hybrid</th>
<th>Alt 4: Single Point Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection Design Year Level of Service (LOS)</td>
<td>○ LOS C</td>
<td>○ LOS D</td>
</tr>
<tr>
<td>Weave operations along WB Route 7</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Distance between interchange ramps and Russell Branch Pkwy</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Distance between interchange ramps and Potomac Station Shop Ctr</td>
<td>○ 2 signals</td>
<td>○ 1 signal</td>
</tr>
<tr>
<td>Number of interchange signals along Battlefield Pkwy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right of way impacts</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Compatibility with developments on the north side of Route 7</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Pedestrian and bicycle facilities</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Size/complexity of bridge</td>
<td>○</td>
<td>●</td>
</tr>
</tbody>
</table>

## Legend

- **Green** (●): Excellent
- **Yellow** (○): Favorable
- **Orange** (○): Fair
- **Red** (○): Unfavorable
- **Black** (●): Poor

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**RECOMMENDED ALTERNATIVE**
Route 7 at Cardinal Park Drive
Intersection Options

- Option A: Green T
- Option B: Left In/Right In/Right Out
- Option C: Right In/Right Out
  - Option C-1: Stop Control
  - Option C-2: Traffic Signal
  - Option C-3: Auxiliary Lane
- Option D: Right In
Option A: Green T

Advantages
- No WB Route 7 signal
- Minimized impacts to Cardinal Park Drive traffic
- No weaving between Cardinal Park Drive and Battlefield Parkway

Disadvantages
- EB Route 7 queues extend past Bypass on-ramp
- Poor traffic Level of Service
- Signal remains on EB Route 7
- EB rear end crash potential
- No access to Bypass from Cardinal Park Drive

NOT RECOMMENDED FOR FURTHER CONSIDERATION
Advantages

• No WB Route 7 signal
• Allows left turns to Cardinal Park Drive
• Reduces diversion to Battlefield Pkwy and Russell Branch Pkwy
• No weaving between Cardinal Park Drive and Battlefield Pkwy

Disadvantages

• EB Route 7 queues extend past Bypass on-ramp
• Poor traffic Level of Service
• Signal remains on EB Route 7
• EB rear end crash potential
• Prohibits left turns from Cardinal Park Drive

NOT RECOMMENDED FOR FURTHER CONSIDERATION
Route 7 at Cardinal Park Drive
Option C-1: Right In/Right Out – STOP CONTROL

Advantages
- Eliminates all Route 7 signals
- Reduced potential for rear end crashes
- EB Route 7 queues do not extend to Bypass on-ramp
- No weaving between Cardinal Park Drive and Battlefield Pkwy

Disadvantages
- Safety - high potential for angle crashes
- Poor LOS and long delays for right turns from Cardinal Park Drive
- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy

NOT RECOMMENDED FOR FURTHER CONSIDERATION
Option C-2: Right In/Right Out – TRAFFIC SIGNAL

Advantages
- Eliminates the WB Route 7 signal
- EB Route 7 queues do not extend to Bypass
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

Disadvantages
- Signal remains on EB Route 7
- EB rear end crash potential
- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy
Route 7 at Cardinal Park Drive
Option C-3: Right In/Right Out – AUXILIARY LANE

Advantages
- Eliminates all signals on Route 7
- Reduces the potential for rear end crashes
- EB Route 7 queues do not extend to Bypass
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

Disadvantages
- Diverts Cardinal Park Drive left turns to Russell Branch Pkwy and Battlefield Pkwy
- Creates a weave on EB Route 7 between Cardinal Park Drive and Ramp D
Route 7 at Cardinal Park Drive

Option D: Right In

Advantages
- Eliminates all signals on Route 7
- Reduces the potential for rear end crashes
- EB Route 7 morning queues do not extend to Bypass
- No LOS deficiencies
- Prevents weaving from Battlefield Pkwy to Cardinal Park Drive

Disadvantages
- Diverts Cardinal Park Drive outbound traffic to Russell Branch Pkwy and Battlefield Pkwy impacting LOS
- Dependent on timing of Leegate construction of Trailview Blvd
Cardinal Park Drive Options

Which Cardinal Park Drive options do you support most and why? Which do you dislike?

Number Responding

<table>
<thead>
<tr>
<th>INTERSECTION OPTION</th>
<th>SUPPORT</th>
<th>DISLIKE</th>
</tr>
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<tbody>
<tr>
<td>A: GREEN T</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>B: R-I/R-O/L-I</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>C: R-I/R-O</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>D: R-I</td>
<td>1</td>
<td>4</td>
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</table>
Route 7 at Cardinal Park Drive
Intersection Options

• **Option A: Green T** - Not recommended
• **Option B: Left In/Right In/Right Out** - Not recommended
• **Option C: Right In/Right Out**
  - Option C-1: Stop Control - Not recommended
  - Option C-2: Traffic Signal
  - Option C-3: Auxiliary Lane

• **Option D: Right In**
# Route 7 at Cardinal Park Drive Options Comparison

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Option C-2: Right In/ Right Out with Traffic Signal</th>
<th>Option C-3: Right In/ Right Out with Auxiliary Lane</th>
<th>Option D: Right In</th>
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<tbody>
<tr>
<td>Removal of signals along Route 7</td>
<td>○</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Minimizes the potential for EB queues to extend to the Bypass</td>
<td>○</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Intersection Level of Service (LOS) and delays</td>
<td>○</td>
<td>○</td>
<td>●</td>
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<tr>
<td>Reduces the potential for rear end and angle crashes along Route 7</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Accommodates existing turning movements at Route 7 and Cardinal Park Drive intersection</td>
<td>○</td>
<td>○</td>
<td>●</td>
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<tr>
<td>Dependent on timing of Leegate development</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Emergency access</td>
<td>○</td>
<td>○</td>
<td>●</td>
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<tr>
<td>Weave/conflicts along EB Route 7 between Cardinal Park Drive and Ramp D</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Project cost</td>
<td>○</td>
<td>○</td>
<td>○</td>
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### Legend

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Favorable</th>
<th>Fair</th>
<th>Unfavorable</th>
<th>Poor</th>
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</thead>
<tbody>
<tr>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>●</td>
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**Recommended Option:** Option D: Right In
## Project Funding

### Construction Phase Budget

<table>
<thead>
<tr>
<th>Construction Phase</th>
<th>Budget</th>
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<tbody>
<tr>
<td>Preliminary Engineering</td>
<td>$4 million</td>
</tr>
<tr>
<td>Right-of-Way &amp; Utilities</td>
<td>$9 million</td>
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<tr>
<td>Construction</td>
<td>$45 million</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$58 million</strong></td>
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### Funding Source

<table>
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<tr>
<th>Funding Source</th>
<th>Amount</th>
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<tbody>
<tr>
<td>NVTA Funding to Date</td>
<td>$33 million</td>
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<tr>
<td>Additional Funding Needed</td>
<td>$25 million</td>
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## Project Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
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<tbody>
<tr>
<td>Council Endorse Locally Preferred Alternative</td>
<td>June 27</td>
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<tr>
<td>Conditional IJR Approval</td>
<td>Fall 2017</td>
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<tr>
<td>NVTA Funding Application</td>
<td>Fall 2017</td>
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<tr>
<td>VDOT Request Design-Build Qualifications</td>
<td>Fall 2017</td>
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<tr>
<td>Public Hearing</td>
<td>Early 2018</td>
</tr>
<tr>
<td>Town and County Endorsements</td>
<td>Early 2018</td>
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<tr>
<td>VDOT Approve Major Design Elements</td>
<td>Spring 2018</td>
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<tr>
<td>VDOT Award Design-Build Contract</td>
<td>Summer 2019</td>
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<tr>
<td>Begin Construction</td>
<td>Early 2020</td>
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</tbody>
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Project Delivery Method

Options

1. Design – Bid – Build
   - Sequential process, complete each phase prior to starting next phase
   - More control, more responsibility, more risk for contracting agency
   - Longer overall schedule

2. Design/Build
   - Phases completed concurrently
   - Responsibilities and risk transferred to design-build contractor
   - Potential to significantly reduce schedule
   - Typically higher cost
   - Common delivery method used by VDOT and other jurisdictions on larger projects. Recent local examples include:
     - Belmont Ridge Road interchange
     - Sycolin Road Overpass
     - Battlefield Parkway from Kincaid Blvd to Route 7
     - Route 7 Truck Climbing Lane
Council Decisions

- East Market Street / Battlefield Parkway Locally Preferred Alternative
  
  *Recommend Alternate 4: Single Point Urban Interchange*

- Cardinal Park Drive Intersection Locally Preferred Alternative
  
  *Recommend Option 3-C: Right In / Right Out with Auxiliary Lane*

- Endorse Delivery Method
  
  *Recommend Design-Build Process to complete project on schedule*
Questions ?
Thank you

Contact Information:

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Alternative 4
Single Point Urban Interchange (SPUI)