Existing Transportation Conditions Review

May 20, 2019

Mill Creek Towne Elementary School
Evening Agenda

- 2006 Vision
- Bus Rapid Transit
- Existing Conditions
  - Vehicle Mobility & Safety
  - Walking and Bicycling Mobility & Safety
  - Transit and Multimodal Goals
- Next Steps
- Stations Overview
  - Roadways
  - Walking and Bicycling
  - Transit
Project Purpose

Questions Minor Master Plan Amendment Process Should Answer:

1. Are the proposed staging interchanges necessary, feasible, and realistic?

2. Have the 2006 Plan’s transportation recommendations kept pace with best practices and new policy, such as:
   1. Bus Rapid Transit Planning
   2. Vision Zero
   3. Bicycle Master Plan
Current Transportation Considerations

VISION ZERO
NO TRAFFIC DEATHS BY 2030
IN MONTGOMERY COUNTY

OUR PLAN TO ELIMINATE FATALITIES AND
SEVERE INJURIES ON OUR ROADS BY 2030
TWO-YEAR ACTION PLAN • NOV 2017

MD 355 BUS RAPID TRANSIT
CORRIDOR PLANNING STUDY
CONCEPTUAL ALTERNATIVES REPORT
APRIL 2017

Corridor Cities Transitway

The Bicycle Master Plan

Shady Grove Minor Master Plan Amendment – Existing Transportation Conditions Review

05/20/2019
2006 Plan Vision
2006 Sector Plan Road Network

- Intercounty Connector
- 3 Proposed Interchanges
- Crabbs Branch Way
- Streets Network in Metro Station Neighborhood

Rebuilt Crabbs Branch Way
Shared Use Path: Crabbs Branch Way

Shared Use Path: Metro Access Road

2006 Sector Plan Bicycle Network

Implemented Bikeway Recommendations
Corridor Cities Transitway (CCT)
MD 355 Bus Rapid Transit (BRT)

- 4 alternatives under study concurrently with Amendment:
  1. Curb running
  2. Center running
  3. Transportation Systems Management
  4. No-Build

- BRT Stations: Shady Grove Metrorail Station and potentially Indianola Drive vicinity
## 2006 Staging Plan

<table>
<thead>
<tr>
<th>Residential Dwelling Units (DUS)</th>
<th>Non-Residential (Jobs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sector Plan Stage 1 Limit</strong></td>
<td></td>
</tr>
<tr>
<td>2,540</td>
<td>1,570</td>
</tr>
<tr>
<td><strong>1. Townes at Shady Grove</strong></td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>NA</td>
</tr>
<tr>
<td><strong>2. Shady Grove Station-Westside</strong></td>
<td></td>
</tr>
<tr>
<td>1,521</td>
<td>204</td>
</tr>
<tr>
<td><strong>3. Shady Grove Station-Jeremiah Park</strong></td>
<td></td>
</tr>
<tr>
<td>689</td>
<td>NA</td>
</tr>
<tr>
<td><strong>4. Equipment Maintenance and Transit Operations Center</strong></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>720</td>
</tr>
<tr>
<td><strong>5. ICC Maintenance and Police</strong></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td>2,366</td>
<td>943</td>
</tr>
<tr>
<td><strong>Remaining Stage 1</strong></td>
<td></td>
</tr>
<tr>
<td>174</td>
<td>627</td>
</tr>
</tbody>
</table>
## 2006 Staging Plan

### Staging Sequence: Relocation of the County Service Park

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3 – Remaining Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,540 dus 40%</td>
<td>3,540 dus 55%</td>
<td>6,340 dus</td>
</tr>
<tr>
<td>1,570 jobs 22%</td>
<td>2,650 jobs 40%</td>
<td>7,000 jobs</td>
</tr>
</tbody>
</table>

### Before Stage 1
- Adopt zoning and sectional map amendments
- Establish TMD

### Before Stage 2
- Evaluate need for new school and ask MCPS to program accordingly
- Fund/dedicate one park
- Evaluate TMAgs and intersections for conformance to standards
- Fund Metro Access Partial Interchange
- Fund MD 355/Gude Drive interchange or other improvements to achieve acceptable service level
- Planning Board finding to proceed to Stage 2

### Before Stage 3
- Fund library
- Construct elementary school unless MCPS has alternative means to serve children
- Fund construction of second local park
- Review all public facilities and determine whether any changes to the Plan are required
- Fund Redland Road and Crabb’s Branch Way roadway improvements
- Fund pedestrian underpass
- Fund area-wide pedestrian and bikeways
- Planning Board finding to proceed to Stage 3
Existing Conditions
Existing Conditions Vehicular Mobility

- **Delay**: The average number of seconds it takes a vehicle to pass through an intersection, weighted by each approach’s respective volume (2019 Minor Master Plan).

- **Critical Lane Volume**: The volume of the most constrained movement through the intersection (2006 Sector Plan).

- **Volume to Capacity**: A ratio of the number of vehicles moving through an intersection against the amount of capacity of a given intersection (2006 Sector Plan).
Existing Delay
Vehicular Mobility

Gaither Road & Shady Grove Road (Rockville)
Standard: 63 seconds/vehicle
AM Delay: 42.7 seconds/vehicle
PM Delay: 54.2 seconds/vehicle

MD 355 & Crabbs Branch Way
Standard: 59 seconds/vehicle
AM Delay: 34.4 seconds/vehicle
PM Delay: 38.1 seconds/vehicle

MD 355 & Gude Drive
Standard: 63 seconds/vehicle
AM Delay: 86.3 seconds/vehicle
PM Delay: 71.0 seconds/vehicle
Existing Average Delay (Seconds/Vehicle)

Shady Grove Metro
Station Policy Area

Rockville
Policy Area

Derwood
Policy Area

Shady Grove & Gaither
MD 355 & Watkins Pond/Indianola
Gaither & Piccard
Gude & Watkins Pond
Crabbs Branch & Gude
Needwood & Redland
Gaither & King Farm
Gude & Piccard
Crabbs Branch & Indianola
Shady Grove & Oakmont
Redland & Somerville
Redland & Shady Grove Metro Access
Crabbs Branch & King Farm
Crabbs Branch & Redland
MD 355 & Shady Grove

Morning  Evening
## Vehicular Mobility Measures

<table>
<thead>
<tr>
<th>What Does Delay Measure?</th>
<th>2019 Priority?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Throughput</td>
<td>✓ Less important than safety, per Vision Zero Plan</td>
</tr>
<tr>
<td>Person Throughput</td>
<td>✗ Yes, per 2006 Plan’s Vision</td>
</tr>
<tr>
<td>Non-Motorist Delay</td>
<td>✗ Yes, per 2006 Plan’s Vision</td>
</tr>
<tr>
<td>Transit Delay</td>
<td>✗ Yes, per 2006 Plan’s Vision</td>
</tr>
<tr>
<td>Driver and Passenger Safety</td>
<td>✓ +/- Yes, per 2030 Vision Zero Policy</td>
</tr>
<tr>
<td>Pedestrian Safety</td>
<td>✗ Yes, per 2030 Vision Zero Policy</td>
</tr>
<tr>
<td>Transit Performance &amp; Competitiveness</td>
<td>✗ Yes, per 2006 Plan’s Vision</td>
</tr>
</tbody>
</table>
Plan Area Crashes

January 2015
March 2019

High Frequency Locations

Crashes

Fatal Crashes
Severe Crashes
Nonmotorist Crashes & Comfort

January 2015
March 2019

Crashes with Pedestrians and Bicyclists

High Frequency Locations

Pedestrian Level of Comfort
- Very Comfortable
- Comfortable
- Uncomfortable
Vision Zero

Moving safely within one’s community is a right, regardless of mode choice:

- Traffic-related deaths are **preventable**.
- Designers assume that all users—drivers, bicyclists, and pedestrians—make **imperfect** choices.
- Designers emphasize the **prevention of severe and fatal crashes**, which includes assessment of user **vulnerability**.
- Takes a **systems** approach to transportation

![Missing crosswalk, insufficient median width, and confusing tactile warning strips in median](image1)

![Tactile warning strips orient pedestrians in center of intersection; insufficient sidewalk buffer](image2)

![Pedestrian crosses during unprotected phase because actuated phasing cycle is too long](image3)
High Pedestrian and Bicycle Crash Locations

- Crabbs Branch Way & Redland Road
- Crabbs Branch Way & Shady Grove Road
- Shady Grove Road & MD 355
- Shady Grove Road & Epsilon/Tupelo Drive
- Redland Road & Somerville Drive
- Crabbs Branch Way & Indianola Drive
Vision Zero

How do we improve safety?

- Reduce **crash frequency**

- Reduce **crash severity**

- Acknowledge reduction in **severity** is more important than reduction in **frequency**
  
  - **Example**: ten low-speed rear end collisions resulting in minor property damage > one collision resulting in a pedestrian fatality
Vision Zero

Speed is especially lethal for vulnerable users like people walking or riding a bicycle. The risk of severe injury or death increases as a driver’s field of vision narrows.

Graphic Credit – Seattle DOT
Transit Mobility

Average Number of Weekday Bus Riders by Line

- **RideOn**
  - FY 14
  - FY 15
  - FY 16
  - FY 17
  - FY 18

- **WMATA Q Lines**
Transit Mobility

Shady Grove Metrorail: Average Weekday Boardings & Alightings

<table>
<thead>
<tr>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
<th>FY 16</th>
<th>FY 17</th>
<th>FY 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>Exit</td>
<td>Entry</td>
<td>Exit</td>
<td>Entry</td>
<td>Exit</td>
<td>Entry</td>
</tr>
</tbody>
</table>

How Do People Reach Metrorail? (WMATA 2016 Passenger Survey)

- Drove Alone: 18.8%
- Commuter Bus: 18.8%
- Dropped Off: 10.1%
- Walked: 7.1%
- Metrobus: 6.5%
- Shuttle Service: 5.1%
- Carpool: 1.7%
- Personal Bike: 0.7%
- Taxi/Rideshare: 0.7%
- Other: 46.3%
## Transit Mobility

<table>
<thead>
<tr>
<th>MTA Commuter Bus Route</th>
<th>Service Route</th>
<th>Vicinity Stop</th>
<th>Average Weekday Ridership FY2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>Gaithersburg to BWI Business District via ICC</td>
<td>Gaithersburg Park &amp; Ride Stop</td>
<td>373</td>
</tr>
<tr>
<td>202</td>
<td>Gaithersburg to Fort Meade via ICC (discontinued)</td>
<td>Shady Grove Metro Station</td>
<td>54</td>
</tr>
<tr>
<td>204</td>
<td>Frederick to College Park via ICC</td>
<td>Gaithersburg Park &amp; Ride (beyond Plan Area)</td>
<td>249</td>
</tr>
<tr>
<td>505</td>
<td>Hagerstown to Rock Spring via I-70 and I-270</td>
<td>Shady Grove Metro Station</td>
<td>376</td>
</tr>
<tr>
<td>515</td>
<td>Monocacy to Rock Spring via MD 355 and I-270</td>
<td>Shady Grove Metro Station</td>
<td>643</td>
</tr>
</tbody>
</table>
Transit Mobility

2006 Non-Auto Driver Mode Share Goals

Goals for transit users, walkers, and bicyclists:

- **35%**: Residents within Shady Grove Policy Area
- **25%**: Residents within Shady Grove Plan Area, but beyond Metro Station Policy Area
- **12.5%**: Residents traveling to places of work within the plan area
Transit, Walking, and Biking Goals & Induced Demand

- **INDUCED DEMAND**: If demand for vehicular capacity already exceeds supply OR vehicular mobility provides more utility than alternatives, then additional capacity will quickly be “filled” until equilibrium is attained.

Existing capacity is full.

New capacity is provided to meet demand.

Convenience/desirability cause new capacity to be filled up...

...to the point where demand again meets or slightly exceeds supply.
Next Steps

June 2019

- Complete Transportation Modeling/Forecasting
- Identify Recommendations

July

- Briefing to the Planning Board (July 18, 2019)

August/September 2019

- Community Feedback on Recommendations
Questions?

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