Evaluating Economic Development Impacts on Roadway Improvement Investments

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CRAWFORD, MURPHY & TILLY, INC.

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Presentation Goals

- Present Case Study demonstrating economic development considerations in evaluation process, in particular:
  - Railroad crossing alternatives
  - Interchange type selection
The Project – Wentzville Parkway South Extension

Wentzville, MO
Outer Suburb of St. Louis
Population:
2000 = 6,896
2010 = 29,070
2017 = 39,414
The Project – Wentzville Parkway South Extension

Commercial Corridor
- 2.8 mile Loop
- Widened from 2-5 lanes

Southern Extension Limited by Railroad
The Project – Wentzville Parkway South Extension

Project Challenges

- Interchange Improvements
- Closely Spaced Outer Road
- Railroad Crossing Options
  - Overpass
  - At-Grade Crossing
Interchange Evaluation

- Southern extension of Wentzville Parkway would make Outer Road signal worse
- Options developed address closely spaced Outer Road
Interchange Options

- One Sided Jughandle
- Two Sided Jughandle
- Crossover Roundabout
- EB Ramp Roundabout
Interchange Evaluation

- Costs
  - Construction
  - Right-of-Way
- Operational Performance
- Safety Performance
- Design Challenges
- Economic Impacts

![Table 10 - Evaluation Matrix](image)
Economic Impact Evaluation

- Acquisition of Right of Way
  - Businesses Acquired
- Access Impacts
  - Direct Impacts and indirect
- New Development Potential with Interchange Improvements

- Conclusions – Economic Impacts tied closely to property impacts and delay reduction
Railroad Crossing Evaluation

- At-Grade or Grade Separation ($4.8 million cost difference)
- Other Evaluation Criteria
  - Safety
  - Traffic Operations
  - Economic Development
  - Cost Share Potential
Safety Evaluation

- Factors impacting safety
  - Proximity to interchange
  - Large-slow moving trains leaving General Motors Plant 1.8 miles away
  - Nearby active railroad siding
  - Lack of nearby overpass ~ 2 miles away
  - 15 trains per day
  - 2035 ADT = 18,000
Safety Evaluation – Traffic Modeling

- Estimate impact of train crossing on roadway network (focus on Interstate operations)

- Scenarios modeled:
  - Crossing at full speed (50 mph)
    - 2.5 minute closure
  - Crossing at observed speed (18 mph)
    - 5.0 minute closure
  - Crossing from nearby siding (10 mph)
    - 8.5 minute closure
Queue Estimates

- Mainline Train (50 mph)
  - 1,300 feet
- Observed Train (18 mph)
  - 2,200 feet
  - Ramp Impacts
- Reduced Speed (10 mph)
  - 4,800 feet
  - Mainline I-70 Impacts
Safety Evaluation – Crash Estimates

- Considered crossing consolidation with closure of two adjacent at-grade crossings
- USDOT’s Accident Prediction and Severity Model

<table>
<thead>
<tr>
<th>Wentzville Parkway Crossing Type</th>
<th>Hepperman &amp; Wilmer Crossings</th>
<th>Predicted Annual Corridor Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Open</td>
<td>Fatal: 0.011649 Injury: 0.027291 PDO: 0.051910 Total: 0.090850</td>
</tr>
<tr>
<td>At-Grade</td>
<td>Open</td>
<td>Fatal: 0.012936 Injury: 0.032253 PDO: 0.065214 Total: 0.110404</td>
</tr>
<tr>
<td>At-Grade</td>
<td>Closed</td>
<td>Fatal: 0.009597 Injury: 0.024031 PDO: 0.051368 Total: 0.084996</td>
</tr>
<tr>
<td>Overpass</td>
<td>Open</td>
<td>Fatal: 0.009496 Injury: 0.021930 PDO: 0.042632 Total: 0.074058</td>
</tr>
<tr>
<td>Overpass</td>
<td>Closed</td>
<td>Fatal: 0.005941 Injury: 0.013095 PDO: 0.027293 Total: 0.046328</td>
</tr>
</tbody>
</table>
Economic Evaluation

- Conducted by SB Friedman Development Advisors
- Direct Impact to Existing Businesses
- New Development Potential for Vacant Sites
- Increased Retail Market Reach and Sales Potential for Existing Retailers
- New Development Potential
  - (Residential, Commercial and Industrial)
- Improved Commute Times
# Economic Evaluation – Direct Impact

- **Minimize Business Impacts**

<table>
<thead>
<tr>
<th></th>
<th>Original Jughandle</th>
<th>Two-Sided Jughandle</th>
<th>Eastbound I-70 Roundabout</th>
<th>Crossover Roundabout</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Right-of-Way</td>
<td>N/A</td>
<td>5 properties; 9.08</td>
<td>4 properties; 4.63 acres</td>
<td>7 properties; 6.38</td>
</tr>
<tr>
<td>Way Acquired (Full and</td>
<td></td>
<td>acres</td>
<td></td>
<td>acres</td>
</tr>
<tr>
<td>Partial)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Businesses Acquired</td>
<td>- Super 8</td>
<td>- Super 8 - Safe</td>
<td>- Super 8</td>
<td>- Super 8 - Bandana’s BBQ - Safe Lock Storage - Part of Rural King parking lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lock Storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access Impacts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of businesses</td>
<td>14 businesses</td>
<td>1 business</td>
<td>2 businesses</td>
<td>0 businesses</td>
</tr>
<tr>
<td>impacted</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Access Changes for</td>
<td>- Circuitous access</td>
<td>- Bandana’s BBQ will</td>
<td>- Car Credit City will</td>
<td>- There are minimal</td>
</tr>
<tr>
<td>Existing Businesses</td>
<td>to South Outer Road from Wentzville Parkway via the jughandle will adversely impact businesses on South Outer Road. - It adversely impacts access to Westinn Kennels and Tri-County Threaded Products on Swantnerville Drive.</td>
<td>have full access point from South Outer Road removed and replaced with right-in and right-out access to west jughandle. - Access to all other properties on South Outer Road will remain the same.</td>
<td>retain one entrance with full access and one entrance will convert to right-in-right-out access. - BP will gain direct access from the roundabout while the other entrance will revert to right-in and right-out only access. - Access to all other properties on South Outer Road will remain the same.</td>
<td>anticipated changes to access on South Outer Road.</td>
</tr>
</tbody>
</table>
Economic Evaluation – Development Potential

- Site Access
  - At-grade crossing allows for partial access onto Wentzville Parkway
  - Overpass either restricts direct access or is costly due to elevation differences
Economic Evaluation – Increased Market Reach

- Overpass will help spread market reach for existing businesses
- At-grade option with potential for delays would deter new customers

Figure 4: Retail Clusters and Current 10-Minute Drive Times

Source: Esri Business Analyst, SB Friedman
Economic Evaluation – New Developments

- Southern extension makes new areas attractive for development
- Provides improved connection and removes railroad barrier
Investment in overpass provides economic development benefits

- Increases market area for existing businesses
- Improves development potential for undeveloped areas to the south

Important factor in City’s decision to invest in overpass and rail crossing consolidation plan
Recommended Alternative

- Eastbound Roundabout Interchange
- 2-lane Overpass (initial phase)
Recommended Alternative

Advantages

- Combines EB Ramp and Outer Road Intersections
- Provides direct access to businesses along Outer Road
- Limited property acquisition
- Increased market area to south for existing businesses
- Potential cost-share from railroad and MoDOT
- Multi-modal for crossing consolidation
- Interchange Improvements can be phased
Thank You