BROADWAY CORRIDOR STUDY

Presentation of Alternatives

Wednesday, December 11th, 2019
AGENDA

- Project review
- What we heard
- Intersection Alternatives
- Review of Traffic Analysis
- Feasibility Matrix

VOTE!
PROJECT REVIEW
PROJECT AREA

- McCrosky to Glenwood
- Focus on Broadway / HOF and Broadway / Cecil intersections
BROADWAY TODAY

PEDESTRIAN CONDITIONS

- Newer intersections lack complete pedestrian facilities such as sidewalks or signed crosswalks at ADA ramps located at all corners. This creates barriers to safe pedestrian and bicycle movement.

- Final Creek Greenway's proposed extend will still connect across Broadway. It is important for the connection be safe and easy to navigate for all users.

- Lack of sidewalks at intersections can contribute to increased crossing at uncontrolled locations, which creates unsafe scenarios for both pedestrians and drivers.

VEHICULAR CONDITIONS

- Pedestrians crossing Broadway can be challenging for drivers, pedestrians, and bicyclists. These situations often create visibility for people walking, reducing driver response time and conflict points.

- Pedestrians crossing intersections are inclined to enter the road at the intersection and could pose a safety hazard to other roadway users, creating a challenge for drivers after crossing.

- Unusual turning movements pose the safety of other drivers and users of this Broadway Corridor. Facilities for protected intersections could reduce these unsafe movements that drivers take and improve safety for all other users on the street.
ROADWAY SAFETY

- This hotspot analysis indicates where bicyclist and pedestrian crashes have occurred from 2008-2017
- Groups of crashes are brighter than places with fewer crashes
SAFE CROSSINGS

**MEDIAN REFUGE**
- Shortens crossing distances at intersections with many travel lanes.
- Allows for street plantings while also calming traffic speeds.
- Helps people who must cross streets feel more comfortable.

**HAWK SIGNAL**
- Push button actuated signal that stops traffic for people walking or bicycling at otherwise unsignalized crossings.
- Allows for safe trail, bikeway, or pedestrian crossings of high speed and congested roadways.

**RAPID FLASHING BEACON**
- Flashing light encourages drivers to yield to people at crosswalks.
- Often used at mid-block crossings (i.e., crossings not at intersections).
- Creates additional visibility at crossings during at night.
Conflicts At a Four-Way Intersection

- 32 Vehicle to vehicle conflicts
- 24 Vehicle to pedestrian conflicts
Conflicts At Roundabouts

- 8 Vehicle to vehicle conflicts
- 8 Vehicle to pedestrian conflicts
SAFE CROSSINGS - VIDEO

- Video: Pedestrians crossing a roundabout
WHAT WE HEARD
Balancing Priorities for
Local User

People use streets for many different reasons - life, work, school, accessing a destination. Residents, visitors all utilize the Broadway Corridor with different purposes in mind. Local user refers to daily users that access commerce, work, home, and other destinations within their community.

Please place your sticker dot below the Local User Spectrum to indicate your priority.

- Reduce the number of traffic signals
- Increase the speed limit
- Remove sidewalks and add additional travel lanes
- Everyone drives personal vehicles to all destinations
- Vehicle focused design

- Keep the current speed limit
- Provide bicycle lanes and sidewalks in and throughout the Broadway Corridor
- Provide some strategic connections for bicycle and pedestrian uses

- Reduce the speed limit throughout the Broadway Corridor
- The corridor accommodates all users without prioritizing a single mode over another
- Narrow the lane widths to encourage lowered speed limits
- Focus on creating a sense of place and community destination
- People focused design

3% 0% 11% 34% 51%
Balancing Priorities for Access Management

When a person driving a car decides to stop, turn, or change lanes, there is the potential for conflict with other people driving, walking, and bicycling. Access management organizes vehicle movements through strategic driveway placement, left-turn consolidation, and property connectivity.

Please place your sticker dot 0% below the Access Management Spectrum to indicate your priority.

- Unlimited driveways
- Left turns permitted wherever desired
- Higher potential for traffic congestion
- Higher potential for crashes
- Many conflicts between cars, bicyclists, and pedestrians

- Number of driveways are limited per property
- Left turns consolidated to serve multiple commercial properties
- Reduced traffic congestion
- Reduced potential for crashes
- Reduced number of conflicts between cars, bicyclists, and pedestrians

- Multiple commercial properties accessed by shared driveway
- Left turns limited to signalized intersections with connections back to individual commercial property
- Limited periods of traffic congestion
- Lower potential for crashes
- Few conflicts between cars, bicyclists, and pedestrians

LOW FOCUS ON ACCESS MANAGEMENT  LOW to MODERATE  MODERATE FOCUS ON ACCESS MANAGEMENT  MODERATE to HIGH  HIGH FOCUS ON ACCESS MANAGEMENT

0%  0%  22%  31%  47%
Balancing Priorities for

Mobility Choice

There are many ways that people can travel - driving a car, walking, and bicycling to name a few. The types of transportation facilities we provide influence our mobility choices.

Please place your sticker dot ○ below the Mobility Choice Spectrum to indicate your priority.

- Sidewalks on Broadway only
- Everyone drives personal vehicle to all destinations
- No bicycle facilities
- Long block lengths designed for automobile travel

- Sidewalks on Broadway and major streets connecting to Broadway
- Some people carpool but most drive personal vehicle to all destinations
- On-street bike lanes present on Broadway only
- Moderate block lengths that could be walked if absolutely necessary

- Sidewalks in all areas
- Incentives to encourage people to carpool and vanpool
- Buffered and/or separated bike lane network throughout the Broadway Corridor
- Trails/greenways connect residential areas to surrounding shopping, dining, and recreation
- Short block lengths make walking easy

3%  0%  13%  16%  68%
WHAT DO YOU PREFER?
DEVELOPMENT TYPES

We want to know your preferences for development types along Broadway Corridor.

Please consider each of the photos below, then use the sticker dots to select three (3) development types that you would like to see along the Broadway Corridor.

Thank you for your participation!

1. Larger Lot Single-Family Residential
   - 1%

2. Shopping Centers
   - 3%

3. Smaller Lot Single-Family Residential
   - 13%

4. Mixed Use Villages
   - 37%

5. Multi-Family Residential
   - 18%

6. Parks & Open Space
   - 28%
SURVEY RESULTS
Is there a need for improvements to the Broadway Corridor?

- Yes, very high need: 86%
- There is a need, but works well as it is: 11%
- Neutral: 3%
- No, the road is fine as it is: 0%
Please provide the level of safety you feel when driving on the Broadway Corridor.

- Very unsafe: 11%
- Unsafe: 45%
- Safe: 44%
- Very safe: 0%
Please provide the level of safety you feel, or would feel, when walking on the Broadway Corridor's sidewalks.

- Very unsafe: 39%
- Unsafe: 57%
- Safe: 4%
- Very safe: 0%
Please provide the level of safety you feel, or would feel, when biking on the Broadway Corridor.
For what purposes do you travel on the Broadway Corridor? (Select all that apply)

- Commute to work: 22%
- Commute to school: 5%
- Visiting church or community center: 5%
- Fitness / recreation: 8%
- Dining, group outings, or entertainment: 20%
- Shopping / errands: 26%
- I live on the corridor: 14%
- I don't travel on Broadway: 0%

0% 5% 10% 15% 20% 25% 30%
What are your primary concerns with the Broadway Corridor? (Select two)

- Bike and pedestrian safety: 24%
- Auto safety: 15%
- Speeding: 9%
- Commuter traffic: 9%
- Access to businesses: 8%
- Aesthetics: 20%
- Lighting: 1%
- Ability to turn left: 1%
- Safer bus stops: 1%
- Bus stops: 1%
What is your top priority on the Broadway Corridor? (Select two)

- Connected sidewalk network: 12%
- Lighting and security: 18%
- Ensuring accessibility for people with disabilities: 6%
- Sidewalk maintenance: 12%
- Repaired or replaced curb ramps: 5%
- Safer pedestrian crossings: 14%
- Safer intersections for all modes: 33%
Which are the most important in your community?
(Select two)

- Accessibility: 16%
- Environmental protection: 9%
- Diversity: 16%
- Encouraging economic growth: 21%
- Preservation of community fabric: 21%
- Health and fitness: 4%
- Equity: 14%
What types of improvements are needed along the Broadway Corridor? (Select three)

- Controlled development: 12%
- Crosswalks and sidewalks: 16%
- Safety: 19%
- Landscaping / beautification: 22%
- Congestion management: 18%
- Bike lanes: 7%
- Faster/more frequent public transportation: 1%
- Bus stops: 1%
- Widening: 4%
STAKEHOLDER FEEDBACK

- Broadway Corridor Task Force
- Knoxville Police Department
- Knoxville Fire Department
- Knoxville Area Transit
- Fourth and Gill Neighborhood
- Old North Knox Neighborhood
- TDOT
ALTERNATIVE 1
T-INTERSECTION

ALTERNATIVE 2A
ROUNDABOUT

ALTERNATIVE 2B
ROUNDABOUT
SUMMARY

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>T-INTERSECTION</th>
<th>ROUNDABOUT 1</th>
<th>ROUNDABOUT 2</th>
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<td>KAT</td>
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<td>4th &amp; Gill</td>
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<td>Old North Knox</td>
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KEY POINTS

- KFD: If the intersection is traversable, then any of the starter ideas are acceptable.
- KAT: The roundabout would positively impact Routes 21 and 22
- KPD, 4th and Gill, TDOT: Concerned about pedestrian crossings at roundabout; no dedicated pedestrian signal
- TDOT: Roundabouts are valid intersection designs provided traffic analysis shows that they’ll function properly
GUIDING PRINCIPLES

The Broadway Corridor should:

- Provide multimodal connections across Broadway and between places
- Be safe for all ages, abilities, and users
- Contribute to community placemaking that stitches the urban fabric back together
- Accommodates commuter traffic to and from I-40 while balancing needs of all users
- Contribute to local character, a sense of place, and an attractive environment
- Encourage opportunities for economic vibrancy and business diversity
INTERSECTION ALTERNATIVES
ALTERNATIVE 1

SIGNALIZED T
HOF + BROADWAY
ALTERNATIVE 3

ROUNDABOUT
BROADWAY + HOF
ALTERNATIVE 4

PROTECTED INTERSECTION
BROADWAY + CECIL AVENUE
PRELIMINARY TRAFFIC ANALYSIS
# OVERALL TRAFFIC ANALYSIS

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<th>Alternative 1</th>
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<tr>
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<td>2029 Broadway T</td>
<td>2029 Hall of Fame T</td>
<td>2029 Roundabout</td>
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<td><strong>Delay (seconds)</strong></td>
<td><strong>LOS</strong></td>
<td><strong>Queue</strong></td>
<td><strong>Delay (seconds)</strong></td>
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<td><strong>Mid-day</strong></td>
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<td><strong>PM</strong></td>
<td>27.7</td>
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ALTERNATIVE 1 (2029)

- The eastbound approach is the problematic leg
- Operates at LOS E with long queues
- AM peak is the most challenging time period for this concept
**ALTERNATIVE 2 (2029)**

- The northeast-bound approach is the problematic leg
- Operates at LOS E with long queues
- Mid-day and PM peak are the most challenging times for this concept
- The left turn from HOF backs up during the PM peak
ALTERNATIVE 3 (2029)

- The roundabout is expected to perform exceptionally in both delays and queues
- Operates at LOS C during the PM peak; this is the most challenging period for drivers
TRAFFIC ANALYSIS: TAKEAWAYS

- The roundabout is expected to perform exceptionally in both delays and queues and is the clear winner.
- T intersections overall perform well, with some exceptions that were noted earlier.
TRAFFIC ANALYSIS: TAKEAWAYS

- What about latent interstate demand?
- What about existing conditions?
BICYCLE NETWORK
LOCAL BICYCLE NETWORK

- Proposed pedestrian bridge at Glenwood and Luttrell
- Bike boulevards / shared lanes
- First Creek Greenway Connection
- Pedestrian improvements on Broadway
FEASIBILITY MATRIX
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**Encourage opportunities for economic vibrancy and business diversity**

- Accommodate future development sites from reconfigured Broadway / HOF
- New development has the ability to stitch the urban fabric back together
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**Contribute to local character, a sense of place, and an attractive environment**

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**Accommodates commuter traffic to and from I-40 while balancing needs of all users**

- Minimizes delay during commute
- Minimizes queuing
- Maximizes level of service (LOS)
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NEXT STEPS

• Opinion of probable cost
• Implementation strategy for the preferred concept
VOTE!