Downtown Tappahannock

Existing Conditions

Transportation issues in Downtown Tappahannock today include the following:

- Daily traffic congestion where back-ups extend through adjacent intersections.
- High crash rates, specifically at:
    - Queen Street at Church Lane
    - Queen Street at Cross Street
    - Church Lane at Duke Street
- Narrow travel lanes and sidewalks on Church Lane.

A recently completed intersection improvement project at the intersection of Queen Street and Church Lane modified the westbound Queen Street approach. The new configuration, shown in the graphic to the right:

IMPROVEMENTS RECENTLY COMPLETED ON THE WESTBOUND APPROACH OF QUEEN STREET AT U.S. 17

- Removed the existing painted median and eastbound left turn lane at Cross Street
- Extended the length of the westbound right turn lane
- Increased the westbound right turn radius
- Reconstructed entrances to the parking lot on the north side of Queen Street
- Installed a sidewalk on the north side of Queen Street
- Relocated and rebuilt the existing pedestrian crossing and curb ramps

While this project provided improvements to the westbound approach, it does not address all of the issues present at this intersection.

Improvement Alternatives

One-Way Grid

In this concept, travel lanes and sidewalks would be widened. Church Lane, Cross Street, and Queen Street would be converted to one-way streets. The traffic signals along Church Lane would be removed. A new traffic signal would be installed at Cross Street and Queen Street.

How would this concept reduce congestion?

This concept improves traffic flow. Traffic waiting at the traffic signal would not block any upstream intersections, according to a model of forecasted future traffic.

On average, this concept saves 10-16 seconds of travel time through the areas most congested today – a time savings of 9-14 percent. Travel time savings are more for some movements and less for others.

For example, if you are coming from the Downing Bridge and heading south on Church Lane in the afternoon, a model of forecasted future traffic predicts it will take 73 seconds to travel four blocks. The one-way grid concept saves more than 20 seconds for this movement.

How would this concept improve safety?

The one-way grid concept has potential to reduce crashes because it reduces conflict points at intersections. Conflict points are locations in or on the approaches to an intersection where vehicle paths merge, diverge, or cross.

- At Church Lane and Duke Street, conflict points reduce from 32 to 5

- At Church Lane and Queen Street, conflict points reduce from 32 to 4

- At Queen Street and Cross Street, conflict points reduce from 32 to 4

Travel lanes and sidewalks on Church Lane would be widened.

Partial Quadrant

The Partial Quadrant concept converts Church Lane between Queen Street and Duke Street to three lanes. Vehicles coming from the south and headed to the bridge will turn right at Duke Street and travel north on Cross Street.

How would this concept reduce congestion?

This concept improves traffic flow. Traffic waiting at the traffic signals would not block any upstream intersections, according to a model of forecasted future traffic.

On average, this concept saves 15-20 seconds of travel time through the areas most congested today – a time savings of 20 percent. Travel time savings are more for some movements and less for others.

For example, if you are coming from the Downing Bridge and heading south on Church Lane in the afternoon, a model of forecasted future traffic predicts it will take 73 seconds to travel four blocks. The partial quadrant concept saves 11 seconds for this movement.

How would this concept improve safety?

The partial quadrant concept has potential to reduce crashes because it reduces conflict points at Church Lane and Queen Street from 32 to 11. Conflict points are locations in or on the approaches to an intersection where vehicle paths merge, diverge, or cross.

Travel lanes and sidewalks on Church Lane would be widened.