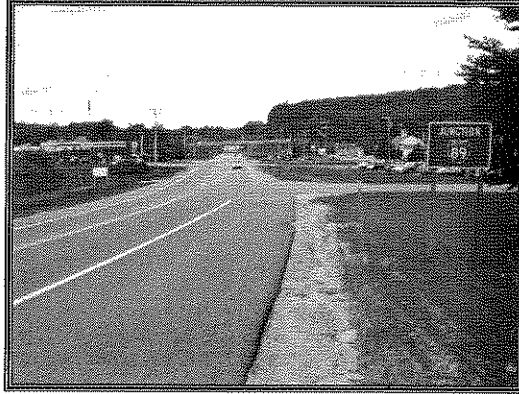


NH Route 103 Alternatives Evaluation



Presented to:

Town of Warner
November 3, 2008

Presented by:

Hoyle, Tanner
& Associates, Inc.

Presentation Outline

- Introduction and Purpose
- Existing Conditions
 - Physical Layout
 - Traffic and Accidents
 - Existing Traffic Operations
- Proposed Improvements
 - Alternative 1A – Stop Control @ Market Basket
 - Alternative 1B – Traffic Signal @ Market Basket
 - Alternative 2 – Roundabout @ Market Basket
 - SB On-Ramp Reconfiguration
- Construction Cost Estimate
- Q & A



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Introduction and Purpose

- Evaluate and advance concepts from “NH 103 Access Management Study”
- Prepare submission to NHDOT as part of application for funding assistance under the Municipally Managed State Highway Aid Program



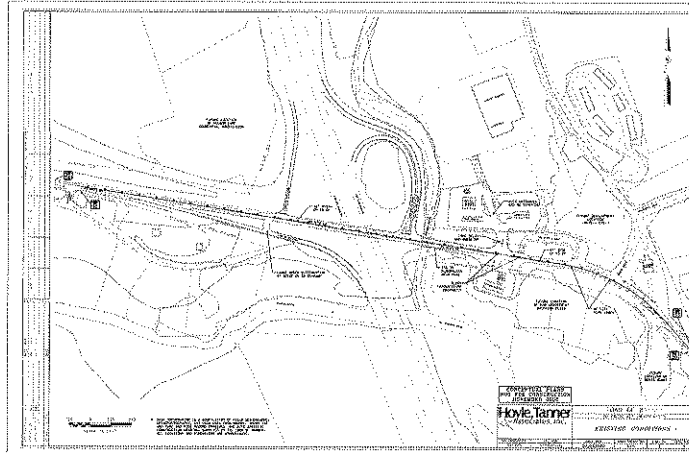
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Study Area



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Existing Condition



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Existing Conditions

➤ PHYSICAL LAYOUT

- Approx. 3000' Study Area along NH 103
- NHDOT maintained arterial with 35 mph speed limit
- Min. 44' pavement width with two 12' travel lanes and variable 4'-10' shoulders
- Left turn pockets at I-89, Market Basket Plaza, and the Citgo Drive
- Stop controlled intersections at drives and side streets
- Pavement appears to be in good shape
- Commercially developed with future potential
- Large NHDOT Right of Way



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Existing Conditions

➤ CHALLENGES TO THE CURRENT DESIGN

- Many closely spaced driveways between I-89 and North Road
- Multiple Access/Egress points from Citgo and the Park and Ride
- Lack of storage space, no striping, and wide driveways along the Market Basket Plaza driveway
- Difficult internal circulation on Citgo parcel
- Minimal pedestrian and bicycle accommodations
- The speed differential at I-89 SB On slip-ramp



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Existing Conditions

➤ Traffic Volumes

- Based on 2005 Access Management Study counts
- 8000 vpd (2007 NHDOT count)
- Heavy EB left and SB right turns to and from Market Basket Plaza

➤ Accidents

- Provided by NHDOT Bureau of Planning
- Approx. 8 accidents per year within study area
- 137% of Statewide crash rate average



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higher than average

Existing Conditions

- Existing Traffic Operations
 - **Plaza Drive:** LOS F, long delays and queuing
 - **I-89 Ramps:** LOS C and D, slight delay and queuing
 - **North Road:** LOS B, minimal delay and queuing
- Signal Warrants Analysis
 - Four-Hour warrant for justifying a traffic signal may be met at Market Basket Plaza intersection
 - Data is indeterminate for Crash warrant
 - Should be re-evaluated during the design process



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*CD - good
operating
system*

Proposed Improvements

- Goals:
 - Increase traffic channelization
 - Reduce conflict points
 - Add turn lanes to improve major/minor road operations
 - Realign access points to oppose
- Three Alternatives for improvements East of the I-89 interchange
- SB On-ramp reconfiguration – West of the I-89 interchange



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Proposed Improvements

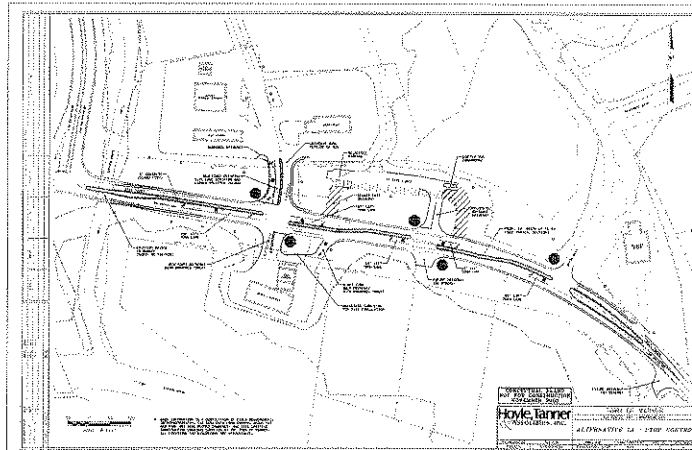
➤ General:

- Continue to provide 2 - 12' lanes and 4' min. shoulders
- Provide left turn pockets at all median breaks
- Construct 6' wide raised concrete median
- Minor realignment of the Market Basket and Citgo drives
- Align Park and Ride drive with proposed shopping plaza drive
- Close secondary Park and Ride drive
- Restrict secondary Citgo drive to right in/out



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Alternative 1A – Stop Control @ Plaza Drive



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LOS = level of service

Proposed Improvements

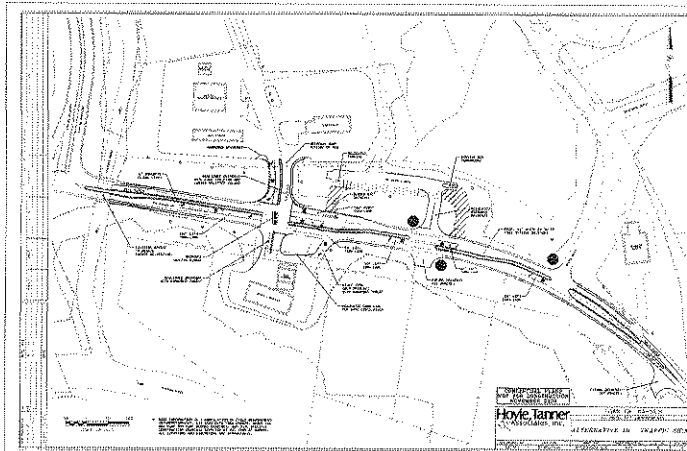
Alternative 1A – Stop Control @ Plaza Drive

- Future Traffic Operations (2010/2020)
 - Continued LOS F at Plaza SB, long delay and queuing
 - I-89 Ramp approaches nearing capacity by 2020
 - North Road and Park and Ride drives operating at good LOS
- PROS:
 - Reduces conflict points
 - Provides Left turn pockets
 - Easily upgraded to traffic signal
 - Cheaper than traffic signal
 - Minimal impact to NH 103 operations
- CONS:
 - No improvement to Plaza delay and queuing
 - No improvement to left turning safety to/from Plaza



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Alternative 1B – Traffic Signal @ Plaza Drive



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Proposed Improvements

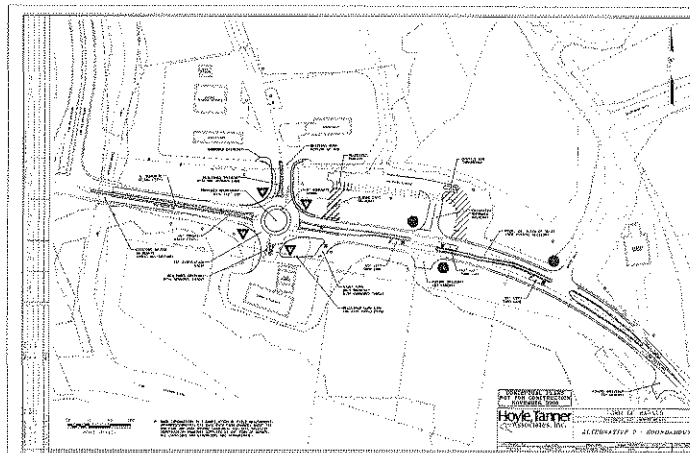
Alternative 1B – Traffic Signal @ Plaza Drive

- Construct 3-phase signal and WB right turn lane
- Future Traffic Operations (2010/2020):
 - Plaza drive @ LOS C out to 2020, moderate SB queue
 - Large EB LT queue at Plaza Drive by 2020
- PROS:
 - Reduces SB queue
 - Improves left turning safety to/from Plaza
 - Consistent with commercial traffic control measures
 - Can be coordinated with additional future signals
- CONS:
 - Adds delay to EB/WB thru movements
 - Most costly alternative



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Alternative 2 – Roundabout @ Plaza Drive



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Proposed Improvements

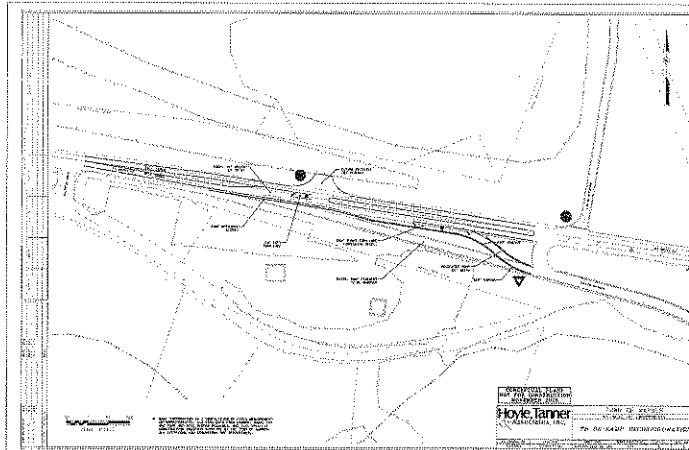
Alternative 2 – Roundabout @ Plaza Drive

- Construct 115' diameter Roundabout
- Future Traffic Operations (2010/2020):
 - Roundabout functions at LOS A with minimal queue and delay thru 2020
- PROS:
 - Minimal Delay (LOS A)
 - Allows for U-turns
 - Eliminates left turn storage need
 - Can be coordinated with additional future signals
- CONS:
 - Inconsistent with corridor traffic control measures
 - Approach speeds on NH 103
 - Difficult to increase capacity in future
 - Complicated geometry with close driveways



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SB On-Ramp Reconfiguration



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Proposed Improvements

SB On-Ramp Reconfiguration

- Reconstruct SB On-ramp as a parallel decel-lane and change to an EB yield condition
- Provide left turn pocket for Hudson Lane subdivision



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Associated Design Considerations

- No new sidewalk construction, provide pedestrian signals if traffic signal is constructed
- Minor utility impacts
- No ROW takings, construction easements needed for some driveway work
- Possible 100 year flood plain impact
- Stormwater BMP's due to increased pavement area



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design cost - add 10%

Construction Cost Estimates

- Estimate Assumptions:
 - Step box widening matching existing materials
 - 20% drainage line item
 - Cold plane/overlay of existing pavement surfaces, if not required could remove up to \$130,000
- Alternative 1A – Stop Control = \$1,220,000
- Alternative 1B – Traffic Signal = \$1,370,000
- Alternative 2 – Roundabout = \$1,130,000
- SB On-Ramp Reconfiguration = \$320,000



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Questions & Answers



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