

SECTION 2. EXISTING CONDITIONS

The study kick-off meeting held on February 10, 2009 was attended by nearly 30 people, including both the committee members and the public. Each person in attendance was provided an opportunity to express their near-term concerns about road safety within the corridor study area. The results of this discussion are displayed below.

Alton

- ❑ Stockbridge Corner Road
- ❑ Prospect Mountain/Dudley Road
- ❑ Lot Line Road, Abednego Road
- ❑ No sidewalks near school
- ❑ Fragmented sidewalk network

Barnstead

- ❑ North Barnstead Road
- ❑ Peacham Road/White Oak Road/Lakeshore Drive
- ❑ Colony Drive

Chichester

- ❑ Kelly Corner Road (80-unit development proposed)
- ❑ NH Route 28/Main Street intersection (42-unit development pending)
- ❑ Epsom/Chichester town line (poorly banked, dangerous curve)

Epsom

- ❑ Entrances to businesses surrounding traffic circle (access management)
- ❑ Elkins Road
- ❑ Mill House Road
- ❑ Shoulders throughout

Pittsfield

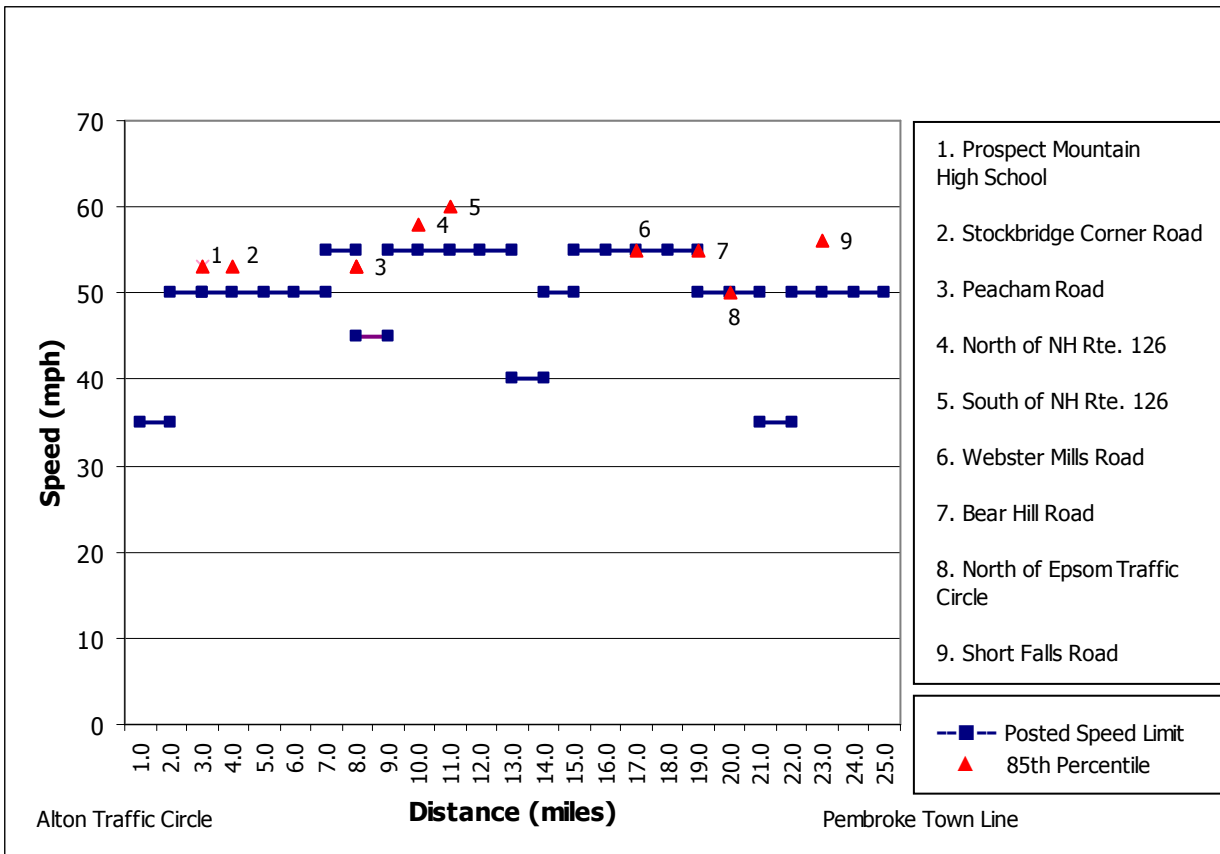
- ❑ Leavitt Road (foot traffic problem)
- ❑ NH Route 28/107 intersection ("yield on green" sign, sight distance issues)
- ❑ Concord Hill Road (sight distance issues)
- ❑ Need for sidewalks and crosswalks at intersection of Route 28 & 107 (foot traffic)

The list of concerns served as guidance for the Safety Audit Team assessment when conducting the road safety audits. Each of the location specific concerns assessed through the audit process are presented on Maps 2.1 and 2.2 in order from north to south. In addition, the general theme of bicycle access is addressed in a level of service analysis presented later in this section, and the topic of access management is discussed in the land use section of this document. Through public input an additional location, NH Route 28 at the entrance to King's Grant, a modular home park in Epsom, was added to the road safety audits.

Traffic Data

Speed data were collected at nine locations to assess safe travel patterns at posted speed limits. Automatic traffic counters were used to collect the speed data over the course of one week in the fall of 2008. As depicted in Graph 2.1, the posted speed limit (blue) was compared to travel speeds of 85 percent of the vehicles passing the recorder at a given location (red). Generally, recorded speeds were within 5 miles per hour of the posted speed limit. Excessive speed, more than 15 miles per hour over the posted speed limit, was generally one percent of the traffic or less.

Graph 2.1 Comparisons of Southbound Posted Speeds with Traveled Speeds



Graphs of the speeds recorded at each location are included in Appendix B. The perception of vehicles traveling too fast for conditions was a recurring theme raised at public meetings during the study and also by many members of the Safety Audit Team who were in close proximity to traffic while conducting field assessments. A second speed study was conducted for comparative purposes. Supplemental weekday commuter peak hour travel speed data was collected by providing local residents that drive the corridor for their daily commute to/from work with a GPS unit. The GPS unit continuously recorded travel speeds along the corridor. The resulting data provides a snapshot of average northbound and southbound travel speeds along each segment of the corridor during weekday commuting hours. Table 2.1 summarizes the commuter speeds recorded in July 2009.

Table 2.1 NH Route 28 Travel Speeds During Weekday Commuter Hours

Weekday Morning Travel Speeds Southbound			
Segment from NH Route 11 to:	Posted Speed	Avg. Speed	Max. Speed
Lot Line Road	50	40.6	46.9
Stockbridge Corner Road	50	46.5	52.0
Prospect Mountain Road	50	44.4	49.6
North Barnstead Road	55	42.2	48.7
Colony Drive	55	45.2	49.7
Peacham Road	55	44.0	48.4
Maple Street	55	50.5	60.1
NH Route 126	55	49.5	55.0
NH Route 107	55	53.7	61.3
Leavitt Road	55	50.4	56.5
Concord Hill Road	55	53.1	57.7
Kelly Corner Road	55	53.7	58.2
Main Street	50	53.7	59.9

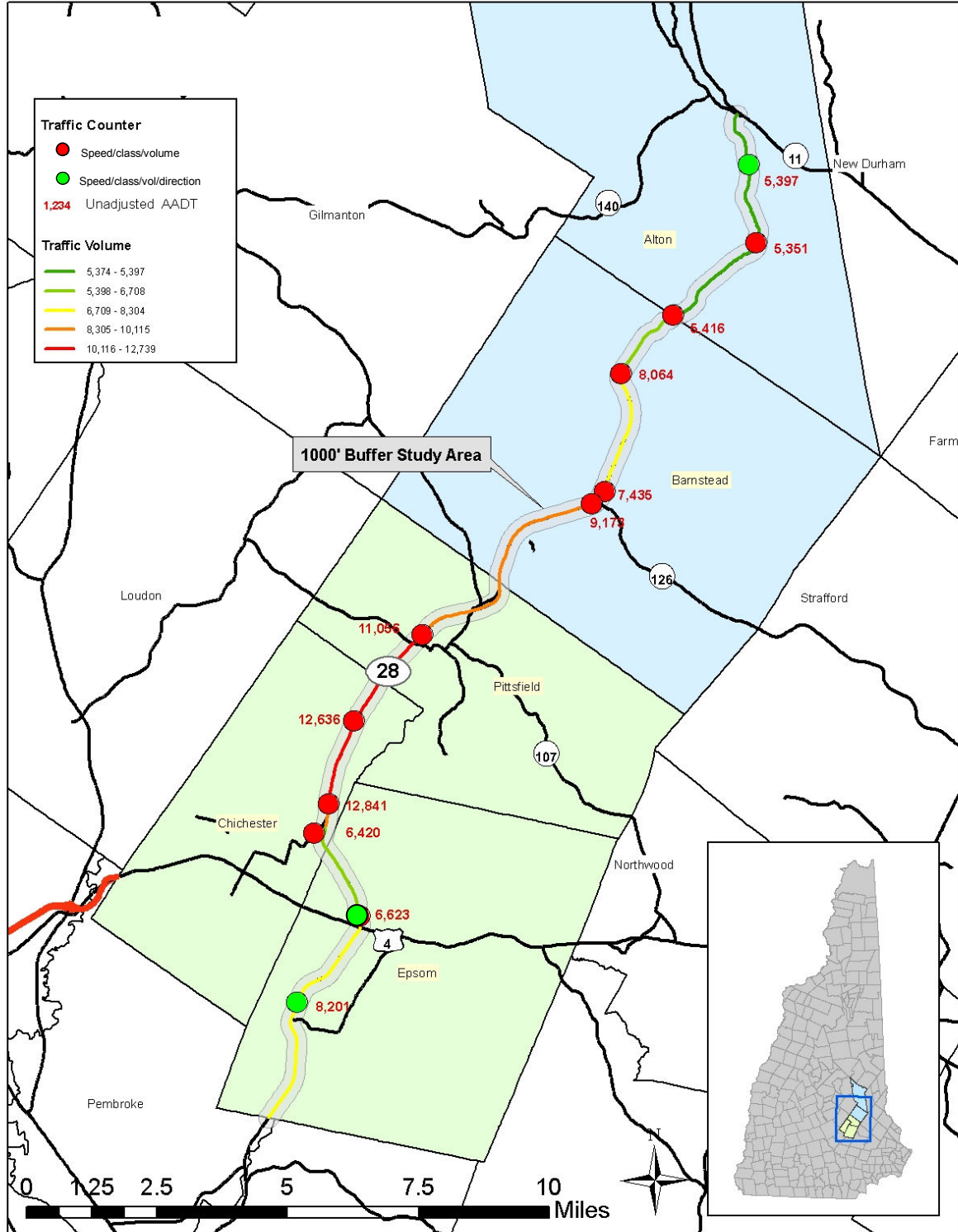
Weekday Evening Travel Speeds Northbound			
Segment from Epsom Circle to:	Posted Speed	Avg. Speed	Max. Speed
Main Street	50	47.5	55.1
Kelly Corner Road	55	52.0	56.3
Concord Hill Road	55	53.6	57.8
Leavitt Road	55	54.8	57.4
NH Route 107	55	51.2	55.3
NH Route 126	55	45.1	56.0
Maple Street	55	49.2	56.1
Peacham Road	55	52.1	61.0
Colony Drive	55	41.0	49.0
North Barnstead Road	55	46.7	50.0
Prospect Mountain Road	50	44.0	48.6
Stockbridge Corner Road	50	42.6	44.8
Lot Line Road	50	45.8	50.0

Speeds represented in miles per hour.

In general, the data show that average travel speeds during the weekday commuter peak hours (AM southbound and PM northbound) tend to be lower than the posted speed limit, as would be expected when the corridor is carrying its heaviest volumes of traffic. The highest travel speeds recorded during the morning southbound commute occurred in the vicinity of Maple Street and NH Route 107 where maximum speeds exceeded 60 MPH. During the weekday evening northbound commute the highest recorded speeds occurred in the vicinity of Peacham Road where speeds also exceeded 60 MPH.

Map 2.3 indicates the annual average daily traffic (AADT) within the corridor based on automatic recorders deployed in the fall of 2008. It should be noted that the data is not seasonally adjusted and therefore is not comparable to historic NHDOT traffic counts at the same locations.

Map 2.3 2008 Annual Average Daily Traffic Counts



Noteworthy from the traffic volume data is the significant decrease in traffic on NH Route 28 south of Main Street in Chichester. This change is due largely to the alternative route that Main Street provides from NH Route 28 to US Route 4 for vehicles traveling to Concord and points west. Also noteworthy is the declining traffic north of Pittsfield and NH Route 126 where commercial development is less prominent. Detailed traffic volume and vehicle classification graphs are provided in Appendix B of this document.

Accident Data

Each corridor community was asked to provide local historic accident data for analysis and support of conclusions drawn about safety issues raised during the road safety audit process. Local accident data is preferable to accident data compiled by NHDOT. This is because the NHDOT data is not as comprehensive due to a reporting threshold that excludes damage below \$1,500 from being reported, and the level of detail required to diagram accident locations is lacking in the NHDOT data. Where detailed historic accident data were available for Alton and Barnstead, NHDOT prepared crash summaries for the intersections of Peacham Road, North Barnstead Road, Stockbridge Corner Road, Prospect Mountain Road, and Colony Drive. This information is included in Appendix B of this document. These crash summaries are also referenced where applicable when discussing location specific recommendations in the next section.

Interviews were conducted with local police, fire, and town personnel to supplement the crash data for the study area. These testimonies provided valuable insights into driver behavior, safety related conditions along the corridor, and ultimately about the likely causes of the crashes that have occurred. A common opinion heard throughout the interviews was that the crash data does not reflect the high frequency of near misses at several of the corridor intersections.

Some of the specific insights and their sources are as follows:

Alton Police Captain Heath

- ❑ Considers Hamwoods Drive to be more hazardous than Lot Line Road since it is more populated, has a narrow entrance, has a 6-foot drop off culvert nearby, and has limited sight lines.
- ❑ Some northbound drivers go off the road into the triangular island at the Stockbridge Corner Road split due to driver confusion on which way NH Route 28 goes.
- ❑ Prospect Mountain Road needs street lighting and access management.
- ❑ A lot of vehicles slide through the Dudley Road stop sign due to the approach grade.
- ❑ A lot of single vehicle, run off the road crashes occur due to the lack of shoulders and the adjacent drainage ditches. He feels the shoulders and the roadway profile should be fixed before the intersections.

Chichester Fire Lieutenant Cole

- ❑ There are frequent rear-end crashes on Main Street due to inattention.
- ❑ There are serious side impacts and rear end crashes as vehicles enter NH Route 28 from Main Street to fill gaps that are too short.
- ❑ The weekday evening delays on Main Street can reach the elementary school, nearly ½ mile away. This causes driver frustration and risk taking, and it forces fire engines to use the wrong side of the street to get to NH Route 28, including going around the small turning ramp the wrong way at NH Route 28.
- ❑ There are all varieties of crashes at Kelly Corner Road, mostly due to poor judgment of distances and speeds from the side road.

Epsom Police Captain Moulton

- ❑ Very few crashes at Elkins Road and these are frequently in winter due to sharp curve and grade.
- ❑ Millhouse Road is a low priority.
- ❑ Epsom Circle experiences a high number of crashes, but the severity is generally low. The yield conditions at the entry points are the sources of frequent rear-end crashes when the lead vehicle stops and the motorist in the moving second vehicle is looking to the left to merge.

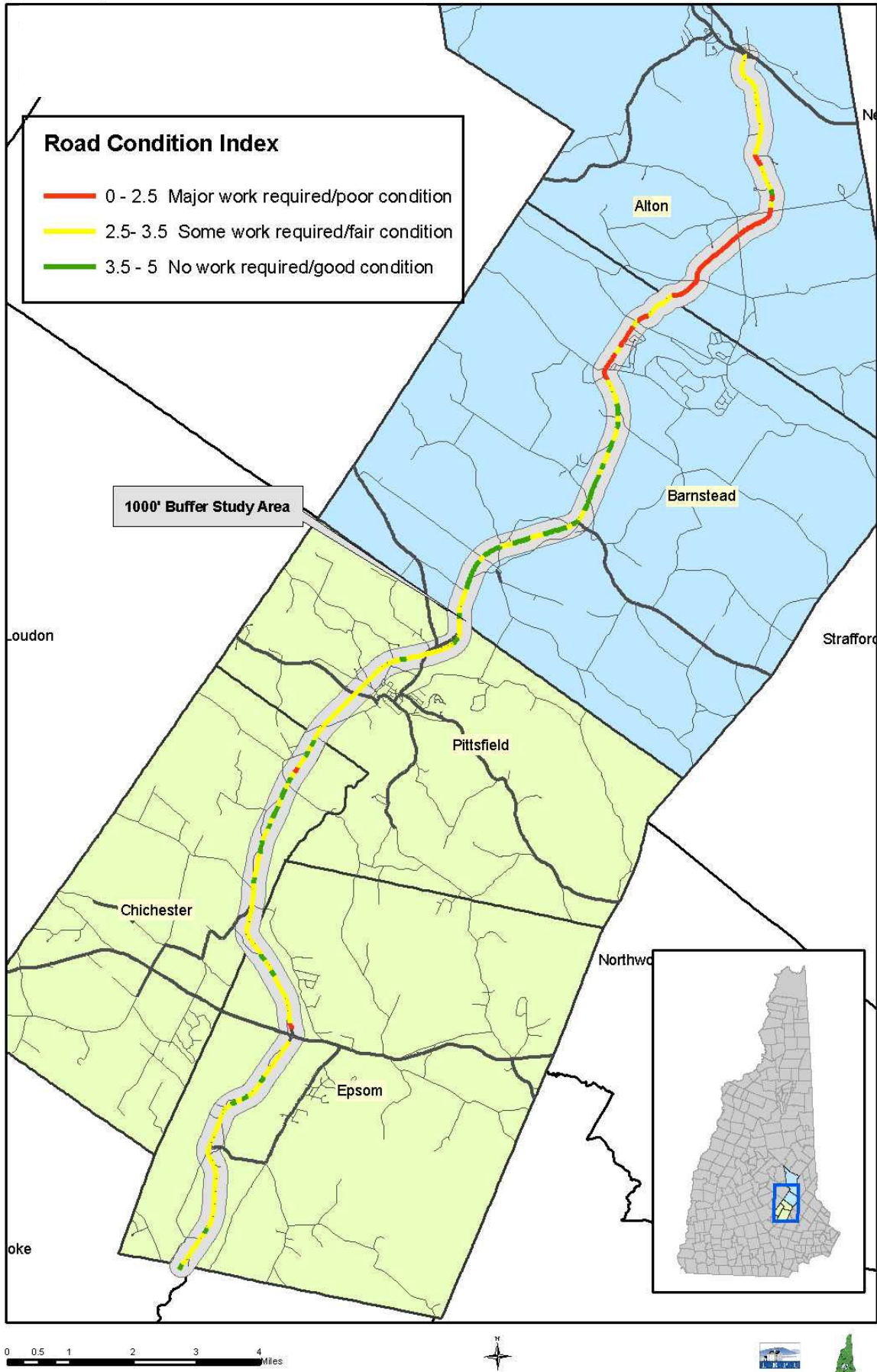
Pittsfield Police Chief Wharem

- ❑ The negative offset left turns at NH Route 107 are a significant cause of serious crashes because some motorists are misled to think they are in exclusive left turn lanes and the opposing left turning vehicles obstruct their view of the oncoming through traffic.

Pavement Condition

The NHDOT conducts assessments of road pavement conditions statewide and maintains a database of this information. This assessment is based on what is referred to as a Ride Comfort Index (RCI), which measures the amount of work needed to improve a roadway based on the roughness of the surface. The planning commissions acquired this data for the NH Route 28 corridor in 2008. Map 2.4 displays the level of work to improve the ride on NH Route 28 in the study area based on the most recent assessment conducted by NHDOT.

Map 2.4 Existing Pavement Conditions

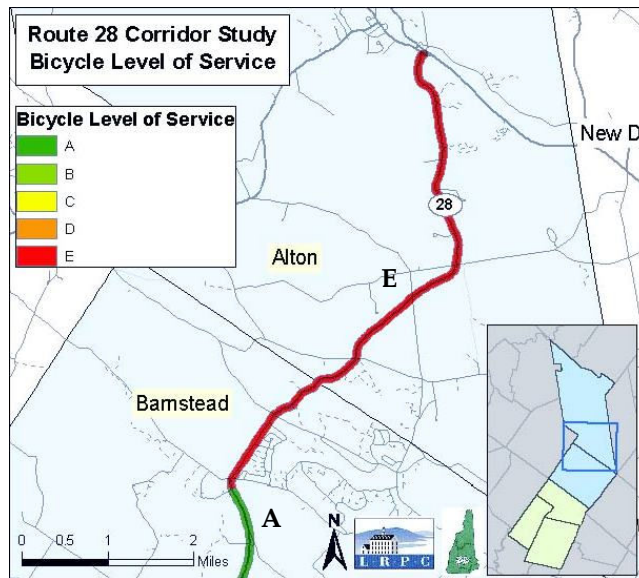


Bicycle Level of Service Assessment

A bikability assessment was conducted by LRPC and CNHRPC in the NH Route 28 corridor as a measure of the quality of service for this mode of travel. The Bicycle Level of Service (BLOS) assessment tool measures bicycle conditions of shared roadway environments and is based on industry research published by the Transportation Research Board².

Criteria such as volume and composition of traffic (percent heavy vehicles), pavement condition, curb side lane width, presence of parking, presence of bike lanes, presence of drainage structures, and roadway speed were documented and evaluated according to the bicycle model procedures. The northern section of the study area, displayed in Map 2.5 is the most critical section of the corridor according to the results of the bikability assessment. As the map below shows, the level of service for bicyclists in this section is graded “E”. This low grade is attributable to poor road conditions and limited shoulder width.

Map 2.5 Alton – Barnstead Bicycle Level of Service

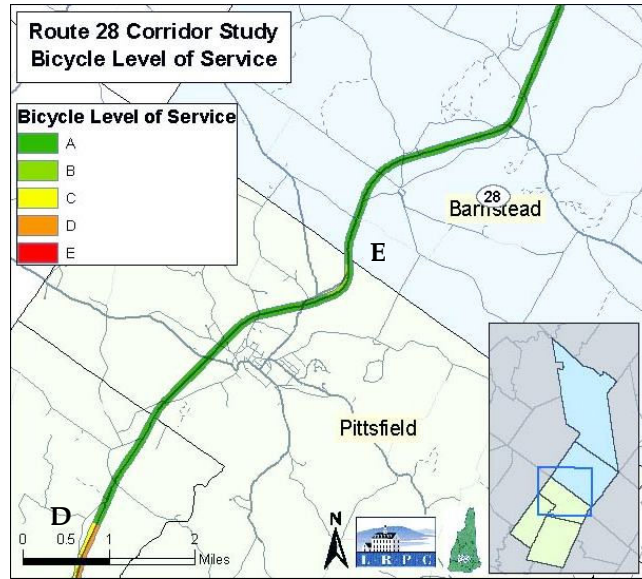


The southern Barnstead and Pittsfield section of the study area (see map below) has different characteristics. This section received the best bicycle rating along the corridor due to its wide shoulders and good pavement condition. Although speed data are not formally considered in the Bicycle Level of Service (BLOS) model, the speed data collected for this study were explored. Even though the BLOS rating for this section was high, this section may not be recommended for inexperienced bicyclists due to high-speed traffic.

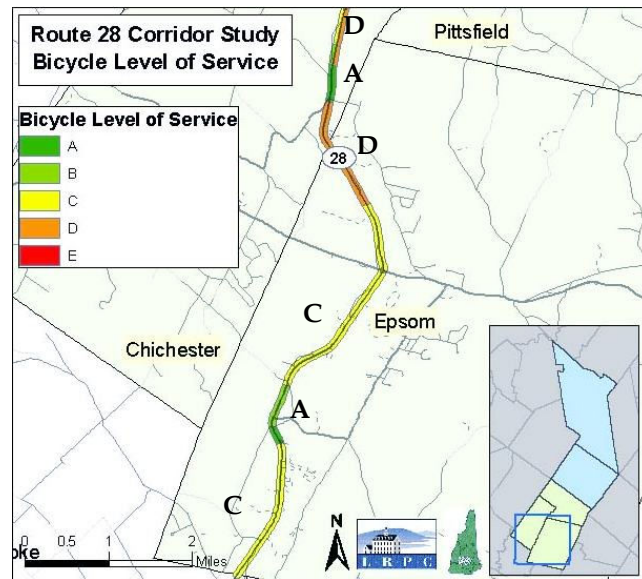
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² Landis, Bruce W. “Real-Time Human Perceptions: Toward a Bicycle Level of Service” Transportation research Record 1578, Transportation Research Board, Washington DC 1997

The central section from Barnstead to Pittsfield, displayed in Map 2.6, reflects the overall average grade of the corridor. The roadway characteristics in this section vary from one point to the other. Traffic volume and shoulder width are key components that vary considerably.

Map 2.6 Barnstead - Pittsfield Bicycle Level of Service



Map 2.7 Chichester – Epsom Bicycle Level of Service



The BLOS displayed in Map 2.7 shows that the bicycle level of service along the southern corridor is marginal. The presence of heavy vehicles, mediocre conditions of the road, and the lack of a dedicated bicycle lane contribute to the overall LOS “C” rating along this section of the study area.

Sign Inventory

A sign inventory was conducted in the corridor study area in the fall of 2008. The inventory consists of GPS locations for all information, direction, and advisory signs within the study area. Commercial signs were not included in this inventory, but are discussed in this report where they present a safety concern. Each sign identified in the inventory is referenced by the Manual of Uniform Traffic Control Devices (MUTCD) reference number. The inventory, which is too detailed to present in map form in this document, can be accessed by contacting the Lakes or Central Planning Commissions.

Concurrent Studies

The NHDOT is currently investigating a reconstruction project that would upgrade portions of the section of NH Route 28 from the Alton traffic circle south approximately 7.0 miles to address safety and pavement conditions. This section is referenced in this document as the northern segment, and is significantly different than the southern section (Barnstead to Epsom) in that it tends to be narrower with more rolling terrain and horizontal shifts in the alignment.

The state project calls for major modifications to the NH Route 28 horizontal and vertical alignment. A cursory review of the NHDOT's preliminary design plans indicate that the reconstruction will substantially improve the existing deficient sight lines and other safety concerns that were identified by the Safety Audit Team. More than \$4.75 million have been allocated for improvements to this segment of NH Route 28, which according to the current NHDOT schedule, become available in two installments (\$1.25 million in 2010 and \$3.5 million in 2015).

NHDOT engineers recently presented two horizontal and vertical alignment alternatives to the towns of Alton and Barnstead at a public officials meetings to obtain preliminary input on what the design speed should be in each community. Based on the preliminary feedback at these meetings, it appears that Alton may select a 50 MPH design speed and Barnstead may select a 40 MPH design speed. The 50 MPH design is generally straighter and requires more cuts, fills and right-of-way impacts. The 50 MPH design also tends to cost more than the 40 MPH design. The NHDOT proposed typical section would include 12 foot lanes and 4 foot shoulders.

To remain consistent with this on-going state project, any long range or high cost solutions that are discussed in this NH Route 28 study that fall within the northern section of the corridor will be compatible with both the 40 MPH (Barnstead) and 50 MPH (Alton) potential design parameters and alignments.