New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

July 29, 2019

Board of Selectmen
Town of Plainfield
P.O. Box 380
Plainfield, NH 03770

Re: NH Route 120 Speed Limit evaluation/recommendations
Claremont to Lebanon

Dear Sirs:

The NHDOT Bureau of Traffic was asked to change the limits of the 35 mph speed limit through Cornish Flat, effectively modifying the state speed zone (RSA 265:62). Since NH Route 120 is a fairly homogenous route between Claremont and Lebanon, it was determined that it would be appropriate to evaluate the speed limit along the entire route rather than limit the evaluation to one short segment. As part of the segment passes through the town of Plainfield (and more specifically, the village of Meriden, this letter summarizes the results of that evaluation.

In order to conduct a comprehensive evaluation of the posted speed limit along a segment of this length, speed studies were conducted at eleven different points along the 20 mile length of the study area. The locations were picked to be representative of the various changes in character along the route in order to determine what the prevailing speed would be for each unique segment. Along with the speed data, we utilized a web based program, USLIMITS2, developed by the Federal Highway Administration (FHWA) specifically for use by traffic professionals to evaluate speed limits consistently based on similar criteria. USLIMITS2 considers factors other than measured speed, such as length of the section(s), statutory speed limit, current posted speed limit, horizontal and vertical alignment, roadside hazards, traffic volumes, and crash history, along with the measured 50^{th} and 85^{th} percentile speeds. Using the input data, the program then processes a recommended speed limit utilizing data from similar segments throughout the country. While the recommended value does not supersede engineering judgment, it does provide an objective measure upon which to base that judgment. The engineering and traffic investigation described above was completed in November, 2018 and is provided herein for your information.

Given the nature of the evaluation and the number of segments involved, a subsequent field evaluation was conducted in February, 2019. The field evaluation involved driving the segment in both directions to determine the logical locations where the character of the highway changes, resulting in the differing values of measured speeds. The character is defined by a number of subjective factors, such as building density, number and type of access points, offset to physical structures, and the like. Based on the data from the engineering and traffic investigation and the subsequent field evaluation, we developed a matrix detailing the locations of each of the speed studies, posted speed limit, measured 85^{th} percentile

speed, USLIMITS2 recommended speed limit, and NHDOT proposed speed limit values and locations. This matrix is also provided for your information.

The town of Plainfield includes segments 3, 4, 5, 6, and 7, with existing speed limits of 40 mph, 35 mph, 50 mph, 35 mph, and 50 mph. As shown in the attached matrix, the measured prevailing speed and USLIMITS recommended speed limits are significantly higher than those values in most cases. In particular, the measured 85th percentile speed in segment 4 is 48 mph, 13 miles per hour higher than the 35 mph posted speed limit, but essentially the same as the abutting segments 2 and 3 to the north. It is our recommendation that the posted speed limit for segments 2, 3, and 4 be increased to 45 mph so that there is one common speed limit for this relatively uniform segment that reflects the character of the road. We also recommend increasing the speed limit for segment 6 from 35 mph to 40 mph to reflect the actual conditions present. Please understand that we are in no way proposing that motorists travel faster on these segments, we are simply recommending speed limits that are credible for conditions so that they would be respected by the majority of drivers.

Due to the nature of this speed limit evaluation, we are also sharing the results and our recommendations with the affected municipalities of Cornish and Lebanon. We would not expect to make any changes to the speed limit until we have communicated with each community. In addition, while the commissioner of transportation has the statutory authority to establish state speed zones, it is our intent to do so in cooperation with the communities that are most directly affected.

Lastly, traffic speed (not necessarily the same thing as "speed limit") is a very complicated and often emotional issue. There is a common misconception that lowering the value of the posted speed limit will result in a similar reduction in the speed of traffic. That is frankly not the case. Each motorist determines their speed based on the character and condition of the road, vehicle performance, weather, and the perceived risk of enforcement. We have collected data throughout the state that demonstrates that changes to the posted speed limit without complimentary changes to the road itself have virtually no effect on the speed of traffic. We also believe that inappropriately lowering speed limits below what is credible leads to disrespect of that value by drivers, which can lead to their dismissal of similar posted speed limits where they may be applicable.

Traffic speeds and speed management has become a much debated topic of interest throughout the country in recent months, prompting a comprehensive report by the National Transportation Safety Board (NTSB) and the dedication of a full monthly journal by the Institute of Transportation Engineers (ITE). While there is a general acceptance of the risks associated with excessive speed, we live in a culture that seems to believe the posted speed limit is a minimum, not a maximum value. There are many factors that contribute to this culture, including the design of highways, vehicle operating characteristics, and driver distraction. The challenge is to change this culture by identifying road design elements that effectively reduce traffic speed without creating unanticipated safety risks.

As you can see setting state speed zones, and the broader concept of speed management, is a very complicated subject. I would ask that the board formally respond to the proposed speed limit changes described herein and as shown in the attached speed matrix. All comments will be considered in the final decision.

I would be happy to meet with the town at your request to discuss these recommendations.

Sincerely,

William R. Lambert, PE
Traffic Engineer/Administrator

CC: Sen. Martha Hennessey, Senate District 5
Rep. John Cloutier, House District 10
Rep. Lee Walker Oxenham, House District 1
Victoria Sheehan, NHDOT Commissioner
David Rodrigue, NHDOT Director of Operations
Doug King, NHDOT District 2 Engineer

STATE OF NEW HAMPSHIRE

- INTRA-DEPARTMENT COMMUNICATION -

DATE: November 21, 2018

FROM: Nick Sanders, P.E.
Vishwanathan Raja Gopalan, E.I.T.

AT (OFFICE)
Department of Transportation
Bureau of Traffic

SUBJECT: Track-It 3372, 3480
NH 120
Speed Data

TO: William R. Lambert, P.E.
Administrator, Bureau of Traffic

MEMORANDUM

Per your request, the Research group of the Bureau of Traffic has completed a speed study along NH 120 in the communities of Lebanon, Plainfield, Cornish, and Claremont. Speed data were collected at eleven locations along NH 120 in June of 2018. The results of this effort are summarized in Table 1, and the raw data sheets are attached for your use and review.

In addition to collecting speed data, the speed limits along these segments of NH 120 were evaluated with the USLIMITS2 web based tool, which was designed by the Federal Highway Administration. USLIMITS2 weighs the existing speed profile, crash history, and other geometric and operating characteristics of the highway under study. Based on the results of this evaluation, USLIMITS2 generally recommends speed limits 5 to 10 mph higher than the posted speed limits. Only two (#5 Plainfield and #10 Claremont) of the eleven roadway segments had a USLIMITS2 recommended speed limit the same as the posted speed limit. None of the USLIMITS2 recommended speed limits were lower than the posted speed limits.

Based on the empirical free-flow speed data and the USLIMITS2 evaluation, there appears to be no justification for lowering the posted speed limit, as requested by the residents of the Town of Cornish. Should you require any additional information or clarification on this matter, please contact me directly.

Attachments

Cc: M. O'Donnell, Bureau of Traffic
File

Table 1: NH Route 120 Speed Study (Lebanon - Claremont)
Track IT 3372 & 3480

Town		Lebanon			Plainfield			Cornish			Claremont	
Location		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
		north of Kinne St	South of Barden Hill Rd	North of Plainfield Town Line	North of Croydon TPK	North of Chellis Rd	South of Main St	North of Plainfield Town Line	North of Cornish Flat	North of Center Rd	North of Claremont City Line	South of Thrasher Rd
Observations	NB	4,554	10,994	10,321	11,372	11,232	11,567	17,405	18,039	19,770	19,775	17,815
	SB	4,078	10,715	9,192	11,208	11,082	11,443	17,418	18,046	19,919	20,196	18,722
	Combined	8,632	21,709	19,513	22,580	22,314	23,010	34,823	36,085	39,689	39,971	36,537
Average Speed (mph)	NB	36	43	44	43	47	37	50	41	51	47	43
	SB	35	43	44	42	46	37	50	38	52	47	42
	Combined	36	43	44	42	46	37	50	40	52	47	42
50th Percentile Speed (mph)	NB	37	43	44	43	47	37	51	41	52	48	43
	SB	36	43	45	42	46	37	51	38	52	48	42
	Combined	**36**	**43**	**44**	**42**	**47**	**37**	**51**	**40**	**52**	**48**	**43**
85th Percentile Speed (mph)	NB	42	48	49	48	52	41	56	46	58	54	49
	SB	41	48	50	48	52	42	55	43	58	54	48
	Combined	**42**	**48**	**49**	**48**	**52**	**42**	**56**	**45**	**58**	**54**	**48**
10 mph Pace (mph)	NB	30 to 40	40 to 50	40 to 50	40 to 50	40 to 50	30 to 40	45 to 55	35 to 45	50 to 60	45 to 55	40 to 50
	SB	30 to 40	40 to 50	40 to 50	35 to 45	40 to 50	30 to 40	45 to 55	35 to 45	50 to 60	45 to 55	35 to 45
	Combined	30 to 40	40 to 50	40 to 50	35 to 45	40 to 50	30 to 40	45 to 55	35 to 45	50 to 60	45 to 55	40 to 50
Posted Speed Limit (mph)		**30**	**40**	**40**	**35**	**50**	**35**	**50**	**35**	**50**	**50**	**40**
USLIMITS2 Recommended Speed Limit (mph)		**35**	**45**	**45**	**45**	**50**	**40**	**55**	**45**	**55**	**50**	**45**
Data Collected (2018)		6/21-6/23	6/21-6/28	6/21-6/28	6/21-6/28	6/21-6/28	6/21-6/28	6/13-6/28	6/13-6/28	6/13-6/28	6/13-6/28	6/13-6/28

Location	*Corresponding Roadway Segment*
#1	*30 mph zone: North of Kinne St to Churchill Way (0.93 miles).*
#2	*40 mph zone: Churchill Way to north of Merry Lane (1.55 mile).*
#3	*40 mph zone: North of Merry Lane to north of Old Stage Coach Rd (1.25 mile).*
#4	*35 mph zone: North of Old Stage Coach Rd to south of Croydon Turnpike (0.98 mile).*
#5	*50 mph zone: South of Croydon Turnpike to north of Red Hill Rd (1.42 mile).*
#6	*35 mph zone: North of Red Hill Rd to south of Andrews Lane (1.68 mile).*
#7	*50 mph zone: South of Andrews Lane to north of Burr Road (2.44 miles).*
#8	*35 mph zone: North of Burr Rd to Creamery Road (0.8 mile).*
#9	*50 mph zone: Creamery Rd to Jackson Rd (3.64 miles).*
#10	*50 mph zone: Jackson Rd to north of Thrasher Rd (3.29 miles).*
#11	*40 mph Zone: North of Thrasher Rd to north of Dunning St (1.39 mile).*