

Harrisville

Hancock Road Improvement Project Speed Remediation

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INTRODUCTION:

The Harrisville Board of Selectmen are proposing a roadway project for the summer of 2015 which will improve the wearing surface and drainage features of about 7000' of Hancock Road. Concerns have been raised that the proposed improvements might permit the traveling public to drive the road at a higher rate of speed than they currently are. This could have an adverse affect on the many abutters that live beside and frequently walk along or across Hancock Road to access Lake Statutakee. The select board wanted to investigate the current traffic and speed conditions and to review any possible speed reduction measures that could be incorporated in the roadway project to mitigate any speed increases of the motoring public. This report will review the findings of a traffic and speed study conducted by the Southwest Regional Planning Commission, techniques used to slow traffic and will provide recommendations for the Hancock Road project.

Discussion of Traffic and Speed Study:

At the request of the Town, The Southwest Regional Planning Commission conducted a comprehensive traffic and speed study of Hancock Road within the proposed boundaries of the improvement project. They sampled and recorded the volume, speed and time of day of all the vehicles that traveled on Hancock Road for a period of time running from May 23, 2015 thru May 31, 2015 (nine days of collected data). The data was collected in three locations that represented the approximate beginning, middle and end of the project limits. This corresponds to a location approximately 0.17miles from the intersection of Main Street, the middle one about 0.9miles east of Main Street and the last location was about 0.15 miles east of the bridge where Lake Skatutakee outlets under Hancock Road. In addition to the raw data graphs are also provided that depict

the percentage of vehicles exceeding the posted speed limit of 25 MPH as well as those exceeding 30 and 35 MPH. The report contains a lot of useful and pertinent information for enforcement agencies and other parties interested in the traffic flow and speed of vehicles on Hancock Road. The entire speed study has been forwarded to the Town under separate cover.

The recorder at site number 1 (Westerly end) had the highest counts which indicates that traffic was coming in from the west, stopping at a residence and either turning around or remaining there. The average daily traffic for a weekday is 452. Saturday is higher than the weekday average with a count of 531. Sunday had the least traffic with only 295 vehicles traveling the road. The distribution of traffic by the hour was quite evenly distributed for each day starting around 7:00 am until 8:00pm with a rate of 25 -45 vehicles per hour. Peak hour traffic for the morning was 76 vehicles while the afternoon peak was a little lower at 56 vehicles. It was interesting to note that there did not appear to be a heavy commuting time on either end of the day instead there appeared to be a steady flow throughout the day.

TABLE 1

Vehicles per day By Recorder Site

Location	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Site 1	462	489	450	429	473	512	517	531	295
Site 2	431	465	420	406	455	481	476	499	276
Site 3	422	458	373	402	446	472	471	501	276
Site 1- Site 3 =	40	31	77	27	27	40	46	30	19

The observed vehicle speed portion of the study also noted several interesting facts. Perhaps most telling was that traffic was traveling the fastest on the westerly end of the road where over 75% of the vehicles on a week day were

exceeding the posted 25 MPH limit. By comparison the middle section had a violation rate of 52.4% and the easterly section saw 59% of the vehicles going faster than 25 MPH. Also of note was the fact that the 85th percentile for all vehicles, averaged over the three sites, was 30.1 MPH. This is significant as the 85th percentile speed is used extensively throughout the United States as a basis for determining appropriate speed limit postings. It also observed that speeds on the weekdays are slightly higher than weekends.

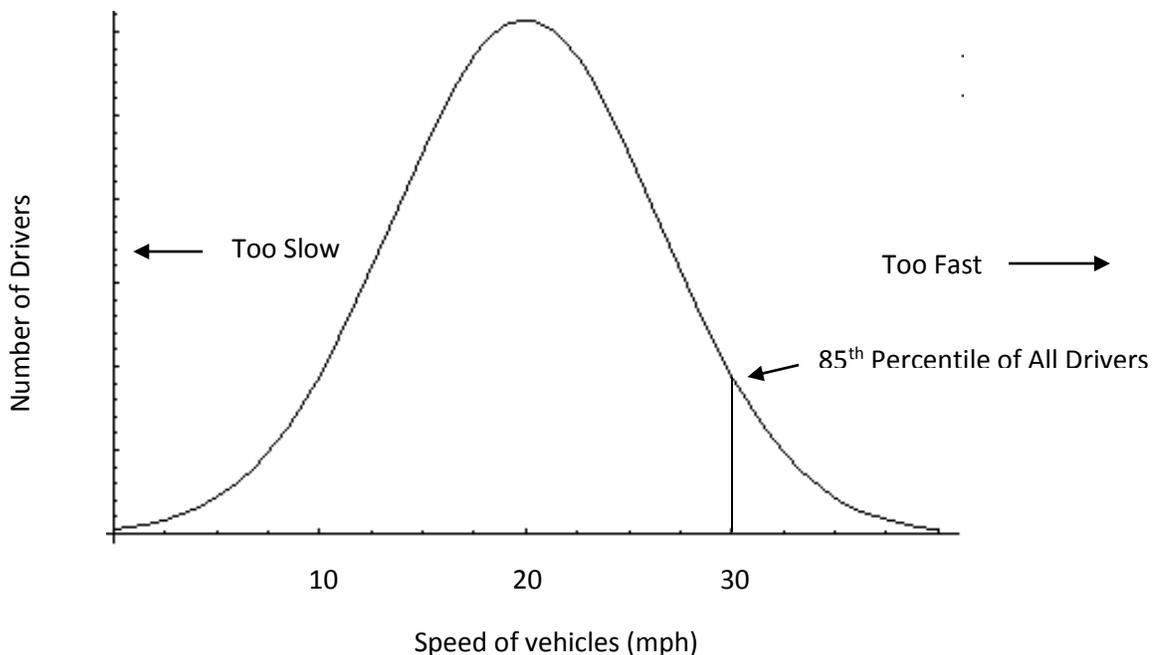
Speed Limit Laws in New Hampshire:

NH speed limits are governed by RSA 265:60 which states: "No person shall drive a vehicle at a speed greater than is reasonable and prudent under the conditions and having regard to the actual and potential hazards then existing." It goes on to say that the prima facie speed limit for a Class 5 road in a rural setting shall be 35 MPH. RSA 265:63 permits the lowering of this limit based on an engineering or traffic investigation by municipal authorities. This lower speed limit should be documented to prevent challenges that may be raised by ticketed drivers. The setting of speed limits results in a conflict between the motoring public and those abutters residing along the road. The motorist wants to minimize his travel time while the abutter has quality of life concerns and the middle ground can often be hard to find. Reasonable mobility and safety don't necessarily go hand in hand. Unreasonable posted speed limits are routinely ignored by the motorist who sets his driving speed according to his perceived idea of the roadway conditions, degree of curves, roadside congestion and visibility. Regulatory intervention is made when drivers may not be taking into account the risk they are imposing on themselves or others. The setting of speed limits should be done without due consideration to these many factors.

A wide spread method of determining speed limits is to do a speed study of the roadway and then plot the speed of the vehicles versus the number of drivers this results in a bell curve similar to the one shown. Setting the speed limit near the 85th percentile, that is the speed at or below which 85 % of drivers operate

their vehicles assumes that most drivers are capable of judging the speed at which they can safely operate their motor vehicle. The implication for enforcement is that no more than 15% of motorists will be out of compliance.

While most jurisdictions use the 85th percentile in setting speed limits other factors in selecting a proper speed limit include roadside development, accident history, traffic and roadway condition.



Effects of Raising or Lowering Speed limits:

As noted above, motorists select a travel speed to reach their destination by taking into account the shortest travel time possible while avoiding injuries to themselves and others. This collective judgment of the majority represents a level of reasonable travel for existing conditions. This speed is accepted as the speed which 85 % of the motorists traveling a road travel at or below. The primary reason speed limits are set lower than this speed is based on the belief

that lower speeds reduce accidents. Another reason often given is that the court system frequently gives a 5 to 10 MPH leeway in establishing fines for violations. It is also widely believed that raising speed limits contributes to more accidents. Studies have shown that setting arbitrary or unrealistic either high or low has little effect on traffic; instead they continue to proceed at the speed they feel is appropriate. Researchers have also found that one of the largest factors in roadway accidents is when the speed of a vehicle is much lower or higher than the majority of the other vehicles. A study at over 100 rural sites in 22 states found a speed reduction of less than 1.5 MPH at sites where speed limits were lowered. Clearly motorists still drive at a speed they feel comfortable with.

Possible traffic Calming Techniques:

If lowering the speed limit on a road is ineffective in reducing the traffic speeds then jurisdictions need to investigate a more permanent way to change the road's appearance and comfort level for the driver. These are relatively new techniques and are still being tried and evaluated in the US. There are advantages and disadvantages for each treatment and many are quite expensive or not appropriate for Hancock Road. However there are a few which are worthy of discussion. They can be broken down into three categories: traffic control devices, roadway design and traffic calming countermeasures. A brief description of items within these categories follows.

TRAFFIC CONTROL DEVICES:

Erections of signs, pavement markings or speed activated signs are relatively low cost actions that can be quite effective in controlling the motorists' speed. Warning signs for curves, pedestrian crossing, children at play or narrow pavements could all be used. A complete listing of signs logos, color and intent is available in the "Manual On Uniform Traffic Control Devices" (www.mutcd.fhwa.dot.gov/) Painted centerlines and edge lines often can control

vehicular speed as the driver tries not to stray over the lines and on narrow roads this can only be done by traveling at reduced speeds. On roads with paved shoulders converging chevrons can be painted there to give the appearance of a narrow roadway. Painted speed limits and other advisory words can also be done at selected locations to emphasize speed limits or other hazards. Electronic feedback speed signs have been found to be effective in reducing speed anywhere from 2-10 MPH. They work best on first time or infrequent users of the roadway. Usually they are paired with a standard speed limit sign. These signs flash the speed of approaching traffic alerting drivers that they are exceeding the posted speed limit. The placement of tubular plastic centerline poles or traffic cones is another measure used. The permanent poles become a maintenance headache as they get broken, stolen or deliberately run over. The placement of traffic cones can also be a problem as they should be reserved for daytime use which means someone would have to be responsible for their placement and removal on a daily basis.

ROADWAY DESIGN:

The goal with these treatments is to trick the motorist into thinking that the roadway will not permit him to travel at high speeds. A driver's perception that a roadway is too narrow or that there are roadway features that cannot be navigated around without slowing down is the illusion that needs to be presented. Unfortunately many of these techniques require quite a bit of roadway width and can be costly. The cheapest is the reducing of the travel lane width. Most roadways have an overall travel width of between 22' -24' with shoulders of 2'-8' adjacent to the travel lanes. By reducing the available travel lane width down to 10' the driver feels confined and unable to navigate within the designated lane at higher speeds. An additional benefit is that this allows more shoulder width for pedestrian or bicyclists use. Other design techniques might involve the construction of a center island or raised median. These are expensive, require additional roadway width and limit left hand turning

movements. Roundabouts and roadside islands are also devices that force traffic to slow down to navigate around them.

TRAFFIC CALMING COUNTERMEASURES:

These measures involve the retro fitting of existing roadways to attempt to regulate and encourage uniform vehicular speeds. Speed bumps and speed humps were some of the early attempts in this category to control speed. Many communities tried these methods and ended up removing them due to the complaints from safety services groups who felt they were prevented from responding to emergencies in a timely manner and that expensive equipment was damaged by riding over the bumps. Highway maintenance personnel also experienced difficulties during winter maintenance operations due to plows striking the objects. Speed tables are similar to speed humps but are of a longer duration and serve the same purpose. Another measure to reduce speed is the construction of small roundabouts even at locations where there are no intersecting roads. To navigate the roundabout traffic is forced to slow down to safely negotiate the turning movements. These roundabouts do require widened right of ways and serve only to reduce speed at one location.

The final calming method concerns the condition of the roadway surface. A rough textured surface tends to slow down traffic as does the addition of rumble strips. The problem with these treatments is that traffic generates considerable more noise which abutters can find to be annoying.

Pictures of some of these suggested treatments are presented below.



Pavement marked speed limit



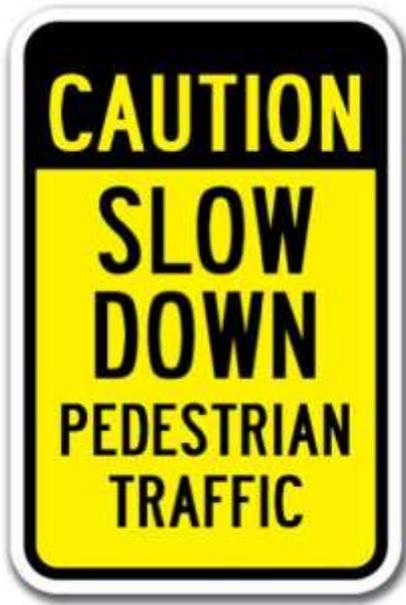
Electronic Feedback Sign



Speed Humps



Tubular channelization



Pedestrian Sign



Curve Sign

Recommendations:

Hancock Road does not lend itself to many of the suggested methods of reducing the speed of the motoring public. It is densely populated with 41 houses in about a mile with the majority of them (28) on the north side of the road. This means that to reach the shore of the lake the residents of the households must cross the road. Certainly the construction of 28 cross walks with appropriate signing would not be feasible. Additionally the road is currently only 19' to 21' wide which negates the creation of pedestrian/bike lanes. Plans for the improvement do not involve any roadway widening, relocation or improvement to the roadway's horizontal or vertical alignment. Given these restraints the following recommendations are made.

1. A double yellow centerline should be painted on the new roadway surface. Additionally a white edge line should be painted so that the roadway will have two 9'-6" travel lanes. This should pinch down the allowable room for vehicles and cause them to go at a slower speed to stay in their own lane and not cross over the centerline.
2. Painted reminder speed limits and the word slow should be placed in the the boat launch area for eastbound traffic and near the bridge over the lake outlet for westbound traffic.
3. The area should be resigned with new 25 MPH speed limit signs. Signs should be placed at beginning, middle and end of the proposed project. In addition signs indicating pedestrian use should be erected in at least 3 locations for both east and west bound traffic. If funds permit the purchase of electronic feedback signs, they too should be erected on the same posts as the regulatory speed signs.
4. Consideration should be given to the placement of 36" orange traffic cones on the centerline of road during periods of heavy pedestrian traffic. Perhaps this task could be assigned to a few abutters on the road with the understanding that the cones needed to be maintained in an upright position, only used during day time hours and evenly spaced about 150' -200' apart.

5. In those areas where overhanging brush obstruct a driver site distance, primarily on horizontal curves, selective cutting of the brush should be performed. This would increase a driver's view of the roadside so that persons at or near the side of the road could be seen.

6. Consideration should be given as to the texture of the final wearing course. A coarser surface such as a chip seal would create a little more noise to alert pedestrians of oncoming traffic and might keep the driver a little more alert.

7. Police Chief Driscoll should be consulted as to the enforcement effort which the town wishes to make on Hancock Road.

Speed enforcement and management is a difficult task for communities as well as NHDOT. Traffic calming is becoming more prevalent with technology playing a major role in new techniques. The traveling public wishes to minimize their time spent in a vehicle and with today's cars they often travel faster than is safe and prudent for abutters/pedestrians. Law enforcement alone cannot solve the problem but by utilizing them along with other community groups significant changes can be realized which will contribute to enhanced safety for all the parties.

Respectively Submitted By:

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