



PAVEMENT SPACE REALLOCATION FOR HIGHWAY MAINTENANCE AND CONSTRUCTION PROJECTS



The NHDOT Traffic Bureau operates under the New Hampshire Statewide Bicycle and Pedestrian Plan (<http://www.nh.gov/dot/programs/bikeped/documents/BikePedPlan.pdf>), adopted in May of 2000, which includes the objective: ‘The NHDOT will, as part of its normal road striping operations on resurfaced roads, restripe roads to allow for paved shoulders where none exist now, as long as travel lanes meet width requirements.’”

Where more than 24 feet of pavement width is available, the Department’s practice is generally to mark travel lanes at no more than 11 to 12 feet wide. Reaching beyond Traffic Bureau's commitment to the 2000 Bicycle and Pedestrian Plan, the Bicycle and Pedestrian Program is available to assist interested municipalities requesting an innovative and more customized approach to the allocation of pavement space that better fits the community’s values. The Bicycle and Pedestrian Program can coordinate with the NHDOT Bureau of Highway Design, the NHDOT Bureau of Materials and Research Pavement Section and the NHDOT Bureau of Traffic toward formulating and returning a Department response to community inquiries.

The AASHTO Policy on Geometric Design of Highways and Streets recommends that "where bicycles and pedestrians are to be accommodated on the shoulders, a minimum usable shoulder width (i.e., clear of rumble strips) of 4 feet should be considered." The 2004 AASHTO Pedestrian Guide notes that "where a shoulder serves as part of a pedestrian access route, it must meet ADA requirements for pedestrian walkways to the maximum extent possible." When doing overlays on limited budgets, therefore, several municipalities in New Hampshire have considered such resurfacing projects as an opportunity to reallocate the existing pavement space to better meet shoulder space requirements for cyclists and/or pedestrians.

In the Department’s [Context Sensitive approach](#), the allocation of pavement space preferred by the municipality may be related to prevailing operating speeds, traffic volumes, expected truck traffic percent, land use context and/or community values. Pavement space re-allocation does not, of course, create more total room across the pavement surface. However, alternative allocation of pavement space through pavement markings may calm traffic speeds, provide a designated safer space for pedestrians (which include wheelchair users) to navigate the public way in accordance with [NH RSA 265:39](#), provide a designated space for the separate operation of bicycles on the way and generally encourage non-motorized transportation – all at no additional project cost.

USDOT/FHWA publishes “[Incorporating On-Road Bicycle Networks into Resurfacing Projects](#)” on line at https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf and the “[Small Town and Multimodal Networks Guide](#)” on line at

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/page00.cfm . These publications provide guidance innovative pavement space re-allocation options for public highways. Because of the variety of existing conditions, contexts, community values and desired outcomes, there is no single formula for municipalities to follow in seeking to reclaim space in the public way for safe pedestrian and bicycle access. Below are documented a dozen unique New Hampshire examples of how pavement space re-allocation has been advanced, or at least considered, for State-maintained highways over the last several years:

Concord NH 13: Prior to a 2009 overlay, NH 13 (Clinton Street) lanes under I-89 (<http://goo.gl/maps/dy03d>) were striped at 1-12-4-12-12-1 (shoulder - NB through lane - painted median – SB left turn lane - SB through lane – shoulder). A City Alderman, Dick Lemieux noticed that the overlay construction signs went up. Dick approached the Department to see if improvements could be made to make the highway more accessible to cyclists and pedestrians. At the request of the City and with an engineering drawings from the City, the re-striping of the 2009 overlay re-striped the Clinton Street lanes to 4.5-11-0-11-11-4.5 and made similar improvements for traffic calming and bicycle and pedestrian access all along the length of the overlay.



Pembroke US 3: Lanes were striped at about 5-13-13-5. The Department used a 2009 overlay project as an opportunity to explore a three-lane section for US 3 from NH 106 to Academy Road (<http://goo.gl/maps/qTpqa>) , which would have permanently laid out lanes at about 1-11-12-11-1 in places. The temporary and experimental three-lane layout created a two-way left turn lane and two through travel lanes and provided narrower shoulder space than was available with the original striping layout. Local travelers expressed concern during the Department's observation of the traffic operation. Subsequently, the pavement was permanently marked at the original striping dimensions of about 5-13-13-5.

US 3 Pembroke. Picture shows travel lane layout tick mark just under the bicycle pedal. The tick mark shows the location of the southbound edge of travel lane had an additional lane been marked on US 3.



Hopkinton NH 9: In 2010, the local Safe Routes to School coordinator, Natalie Duval, noticed that the overlay construction signs went up along NH 9 in Hopkinton. Ms. Duval notified Hopkinton Town Administrator Leon Kenison and the Select Board. The Town administrator agreed to request the Department for lane space re-allocation. The Town Administrator asked for - and received - 10-foot lanes within the Hopkinton Historic District and 10.5-foot lanes outside the Historic District (<http://goo.gl/maps/dCDMa>).



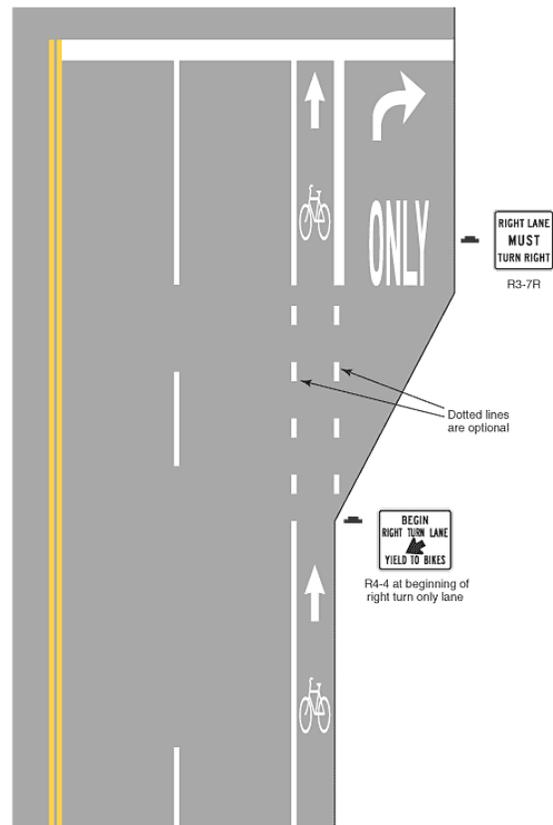
New London NH 11 at NH 114: In 2010, the Department had nearly completed a substantial NH 11 reconstruction project. The project eliminated truck passing lanes along NH 11 at the approaches to the NH 114 intersection (<http://goo.gl/maps/iKw0X>) and provided median protection. As the construction layout and temporary pavement surfaces and markings began clarifying the project intent, Mary Eysenbach, approached the Department about the lack of shoulder space provided in the design. Ms. Eysenbach invited the Department’s Bicycle and Pedestrian Coordinator out to field review the highway with a dozen local citizens and officials using bicycles. Through the town administrator, Jessie Levine, the Town of New London requested reconsideration of the striping shown on the contract plans. Before the final striping, the Department agreed to change the Eastbound NH 111 approach to NH 114 striping from 2-12-4 to 1.5-11-5.5. Most travelers along the highway can concur

that the public right of way generally provides adequate separated space, safety and access for non-motorized activities.



Lebanon NH 120: In 2013, a proposed resurfacing project along NH 120 in Lebanon from Hanover Street to Etna Road (<http://goo.gl/maps/hqbM2>) was reviewed by the City’s bicycle and pedestrian committee. At the Committee’s recommendation, City of Lebanon Senior Planner David Brooks requested that the lane use at several intersection approaches be reallocated to include a bicycle through lane per the Example of Bicycle Lane Treatment at a Right Turn Only Lane found on page 811 of the MUTCD. <http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part9.pdf> . The Department agreed to the City’s request with the condition that the City would maintain the bicycle-specific lane markings in the future. Unable to add new maintenance responsibilities to its inventory, the City declined to take on new maintenance functions from an otherwise State-maintained highway and the NH 120 lane markings remain unchanged from the previous lane marking regime.

Figure 9C-3. Example of Bicycle Lane Treatment at a Right Turn Only Lane



Lebanon US 4 at NH 4A: As the Department readied the Lebanon 13951 bridge replacement project (<http://goo.gl/maps/bLfbj>) for advertising in March of 2014, the City Planning director requested that the proposed 4-12-12-4 lane section proposed for US 4 be changed to 5-11-11-5. The Department had proposed 12-foot travel lanes with 4-foot shoulders. The bridge over the Mascoma River would include curb and rail, which would result in the shoulder width failing to meet the AASHTO recommended minimum shoulder width of 5 feet for the accommodation of bicycles when curb is present. The Department agreed to the lane space reallocation prior to finalizing the plans.



Wentworth NH 25: The Baker River separates the main village of Wentworth along NH 25 from the Village's convenience store. For many years, an old truss bridge off the highway that was open strictly to non-motorized use had connected pedestrians to the business just east of the village. See <https://goo.gl/maps/HuLBg>. The old bridge decayed to the point where even pedestrian use became prohibited. In response, the Town had explored various means to provide new pedestrian space on New Hampshire 25 to cross the Baker River but no solution was found feasible. A 2014 Department overlay project offered an opportunity to reallocate lane space with narrower travel lanes and wider shoulders along the narrow section of NH 25. The Select Board learned of the possibility of lane space reallocation late in the resurfacing project process and the Board requested reallocation of the lane space to provide decreased travel way space and additional shoulder width. Unfortunately, in this case, the request came on the same day as the lanes were striped and the lane striping therefore was not implemented.



Nashua-Merrimack US 3

This example demonstrates that communities who were once desirous of re-allocated pavement space may reverse their approach for the next resurfacing project.



Before, around #54 Daniel Webster Highway, Merrimack



After, around #54 Daniel Webster Highway, Merrimack

In a resurfacing project that occurred around 2000, the communities of Nashua and Merrimack had received reallocated pavement space along US 3 that improved safety and access for non-motorized users. The project had marked the 5-lane highway surface section to approximately a 10.5-10.5-10.5-10.5-10.5 typical section that left shoulders of approximately 3.5 feet (see “Before” view). Neither the City of Nashua nor the Town of Merrimack supported continued interest in the reallocated pavement space layout along US 3. The Department, therefore, striped the 5-lane section with travel lanes consistent with its normal practice to provide lanes as close as practicable to 12 feet wide as supported by the existing pavement width. Since the existing paved width would only support lanes of approximately 11.5 feet, the pavement marking operation resulted in a typical section of about 11.5-11.5-11.5-11.5-11.5 leaving shoulders of about a foot (about the minimum width constructible with curb) (see “After” view).

Bridgewater-Hebron NH 3A

[Newfound Pathways](#) introduced their vision to NHDOT through a bicycle transportation field review organized by Newfound Pathways Committee member Jan Collins in 2010. Since that time, Newfound pathways has progressively worked with local municipalities for a several years toward the accommodation of 17 miles of non-motorized connectivity around Newfound Lake. For NH 3A in Bridgewater and Hebron, the Towns requested a re-allocation of pavement space along a 4-mile segment of the 25-foot wide paved NH 3A highway surface in Bridgewater and Hebron. When the time for a periodic $\frac{3}{4}$ " paver shim treatment finally came in the summer of 2015, Newfound Pathways and the communities of Bridgewater and Hebron were ready with an affordable solution to improve non-motorized safety and access along the 4 miles of NH 3A that runs by the eastern shore of Newfound Lake. In 2015, accordingly, the four-mile stretch of NH 3A became the longest segment of State-maintained highway striped, by design, with 10-foot travel lanes, (10'-0" measured from the center of the center line to the center of the edge stripe). See

[http://www.nh.gov/dot/programs/bikeped/documents/Newfound Lake Bike Loop 0723 15.pdf](http://www.nh.gov/dot/programs/bikeped/documents/Newfound_Lake_Bike_Loop_0723_15.pdf) for more of the story about how Newfound Pathways extended its steps of successes in creating a pathway around Newfound Lake.



Bristol-Alexandria-Hebron West Shore Road
Newfound Pathways worked with the Towns of Bristol, Alexandria and Hebron to request a re-allocation of pavement space and NHDOT approval for 20 shared lane use markings along West Shore Road. When the time for a periodic resurfacing came early in the Fall of 2017, Newfound Pathways and the communities of Bristol, Alexandria and Hebron were ready with an affordable solution to improve non-motorized safety and access along the western shore of Newfound Lake. In 2017, accordingly, the seven-mile stretch of West Shore Road became the first segment of State-maintained highway marked with *Shared Lane Use Markings*

For more pictures illustrating the Town of Bristol's and Newfound Pathways Volunteers stenciling day, see https://drive.google.com/drive/folders/1WIL4SaTSXCkdkPgn0X_tDi_32liLa3Kr?usp=sharing



Harrisville - Main Street and Chesham Road, Nelson Road and Breed Road

The Harrisville Transportation Committee invited the NHDOT Bicycle and Pedestrian coordinator to visit Harrisville early in the summer of 2017. The Department had scheduled resurfacing (chip seal) projects along Main Street and Chesham Road, Nelson Road and Breed Road for the 2017 and 2018 construction seasons. The Committee introduced the Town's wish for a wider allocation of shoulder space to NHDOT through a pedestrian transportation field review. The Town Selectmen followed up with an official request for re-allocation of pavement space along the highway surfaces with the intent to limit the travel lane widths to 10 feet.



Concord - US 202

Recognizing the value of the existing US 202 intermodal connection to the [bus station on Stickney Avenue](#) from Concord's North End, the City requested enhanced consideration for non-motorized safety and access along US 202. For the US 202 eastbound lanes, the normal Department practice might have been to mark the paved space as indicated by the ground-out striping shown in the picture. To provide safety and access for bicycle access, however, the City requested that the paved space be marked as shown by the white and yellow markings in the picture at right. For the Westbound lanes, the City suggested a wide shared-use outboard travel lane to indicate more flexible bicycle access to the double left turn lanes at the US 202 WB approach to US 3.



The Department publishes the proposed resurfacing projects program for 3 years out at <https://www.nh.gov/dot/org/projectdevelopment/planning/amps/facts-figures.htm> . To learn of proposed NHDOT re-surfacing program projects in advance, transportation stakeholders can also use the Paving Program On-line Viewer mapping tool at <http://nh.maps.arcgis.com/apps/webappviewer/index.html?id=c82ded68653d41f4a1f26d80ede584e4> . Stakeholders can find the summer and winter maintenance jurisdiction for all highways in New Hampshire with the on line “[NH Roads](#)” web tool at <http://gis.dot.nh.gov/nh-roads/> .

Plans for highway projects at all stages of project development from planning to completion can be found on line using the on-line NHDOT Project Viewer at <http://gis.dot.nh.gov/projectviewer/> . This interactive mapping tool shows all projects in the construction, design and planning stages and provides contacts for each project.

Any special requests for pavement space allocation must originate directly from municipal officials and should allow adequate time for review and the preparation of the contract proposal. Please contact Larry Keniston at 603-271-1668 and we can answer your questions and connect the special municipality request with the NHDOT [Bureau of Highway Design](#), which will make a recommendation to [NHDOT Pavement Management Section](#) for implementation by the [NHDOT Bureau of Traffic](#) regarding each community request.

For more information about improving non-motorized transportation, visit the NHDOT Bicycle and Pedestrian Program's "[Document Library](#)" web page at <https://www.nh.gov/dot/programs/bikeped/documents.htm> where communities can find more links and information, including the Department's Guide to Promoting Walking and Bicycling Accommodations in New Hampshire at https://www.nh.gov/dot/programs/bikeped/documents/NHDOT_BPGuide.pdf .