

**LOWELL/BIRCH/BELKNAP ROAD –DESIGN &**  
**PERMITTING PHASE**  
**REQUEST FOR APPROVAL OF FUNDS**

Attached, please find a request from the Town Engineer for the Planning Board to approve the release of funds in amount of \$200,000.00 from accounts 2070-000-701 and 2070-000-702 for the purpose of road design and permitting an extension to Belknap Road.

**SITE:** Lowell, Birch, and Belknap Road

**ATTACHMENTS:**

- A. Memorandum from Elvis Dhima, dated July 17, 2024 – Attachment “A”
- B. Belknap Road Extension - Conceptual Plans and Cost Estimates, Prepared by VHB – Attachment “B”
- C. NHDOT Ten-Year Plan Application, dated July 17, 2024 – Attachment “C”

**STAFF COMMENTS:**

The project in question is an extension of Belknap road to connect directly to Lowell road via a 4-way intersection with Birch Street. This project was first assessed in 2019, with further discussion occurring at the Highway Safety Committee and Board of Selectmen due to the high rate of accidents (14 in 4 years) at the southern intersection of Lowell and County Roads. VHB completed several conceptual plans, which have been narrowed down to concepts 3 & 4 for consideration and engineering. The funds to be released are for the design and permitting phases of the project, with construction to follow once NHDOT funds are approved via the 10-year plan. Staff recommend approval for the expenditure of funds.

**DRAFT MOTION:**

I move to approve the expenditure of \$200,000.00 to the Board of Selectmen, using funds received after August 2018 on account Zone 1 Traffic Improvements 2070-000-701 and Zone 2 Traffic Improvements 2070-000-702, as presented in the memorandum from the Town Engineer, Elvis Dhima, to Jay Minkarah, Interim Town Planner, dated July 17, 2024.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_



# TOWN OF HUDSON

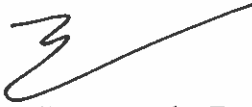
## Engineering Department



12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-816-1291

TO: Planning Board  
Jay Minkarah, Acting Town Planner

FROM: Elvis Dhima, P.E., Town Engineer

DATE: July 17, 2024 

RE: Lowell / Birch / Belknap Road – Design & Permitting Phase

RECEIVED

JUL 18 2024

TOWN OF HUDSON  
PLANNING DEPARTMENT

In 2019 Planning Board initiated an assessment and evaluation of Lowell and County Road improvements which resulted in multiple scenarios, including the building a new road segment from Belknap Road to Lowell Road and converting the three way intersection to a four way intersection, as a long term solution.

We have recently discussed this matter again at the Highway Safety Committee and Board of Selectmen due to accidents and request for improvements. If the Planning Board wishes to pursue this project, the first step would be the completion of engineering, permitting and right of way required for this project. Completing these tasks would make it easier for the Town to secure funds for the construction phase, similar to Melendy Road bridge rehabilitation, where 1.2 million dollars was secured from the state, with only a 20 percent match required by the Town.

We recently filed with NRPC to include this project in the 10 Year Plan, which provided 80/20 match, and are waiting for the outcome of the evaluation phase.

The engineering and permitting, approximately \$200,000, could be completed by utilizing Corridor 1 and Corridor 2 funds that have been collected since August of 2018.

Below is a motion for your consideration.

**Motion**

To approve the expenditure of \$200,000 to Board of Selectmen, using funds received after August 2018 on account Zone 1 Traffic Improvements 2070-000-701 and Zone 2 Traffic Improvements 2070-000-702, as recommended by Town Engineer.



To: Elvis Dhima, PE  
Hudson Town Engineer

Date: August 21, 2019

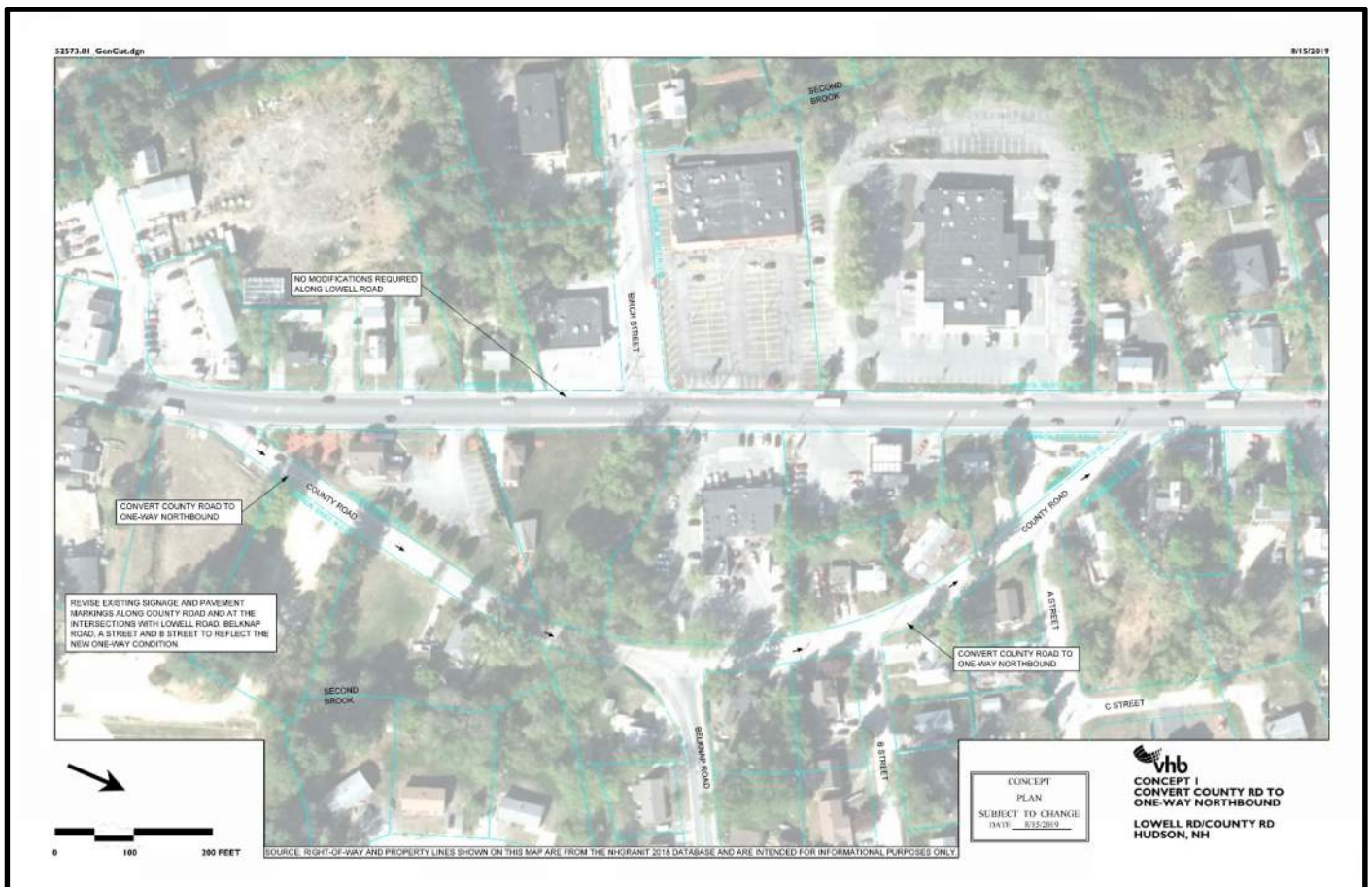
Project #: 52573.01

From: Frank Koczalka, PE

Re: Town of Hudson  
Belknap Road Extension - Conceptual Plans and Cost Estimates

VHB has developed conceptual plans and cost estimates for converting County Road to a one-way roadway and proposed extension of Belknap Road, adding a 4<sup>th</sup> leg to the Lowell Road intersection, and remedying certain stormwater routing problems. In coordination with the Town of Hudson, the following four (4) concepts were developed and estimated.

### Concept 1 – Convert County Road to One-Way Northbound



Concept 1 converts the existing two-way County Road to one-way northbound. This concept would address the accident concerns at the southern intersection with Lowell Road. This would also be the least intrusive and lowest cost

2 Bedford Farms Drive  
Suite 200  
Bedford, NH 03110-6532  
P 603.391.3900

Ref: 52573.01  
August 21, 2019  
Page 2

concept for the Town and residents as the only improvement would be modifications to the signage and pavement markings along County Road.

Installation of "One-Way" and "Do Not Enter" signage would be required along County Road and at the intersections with Lowell Road, Belknap Road, A Street, and B Street. Removal of the solid double yellow line and convert the left travel way line color from white to yellow. No modifications would be required along Lowell Road.

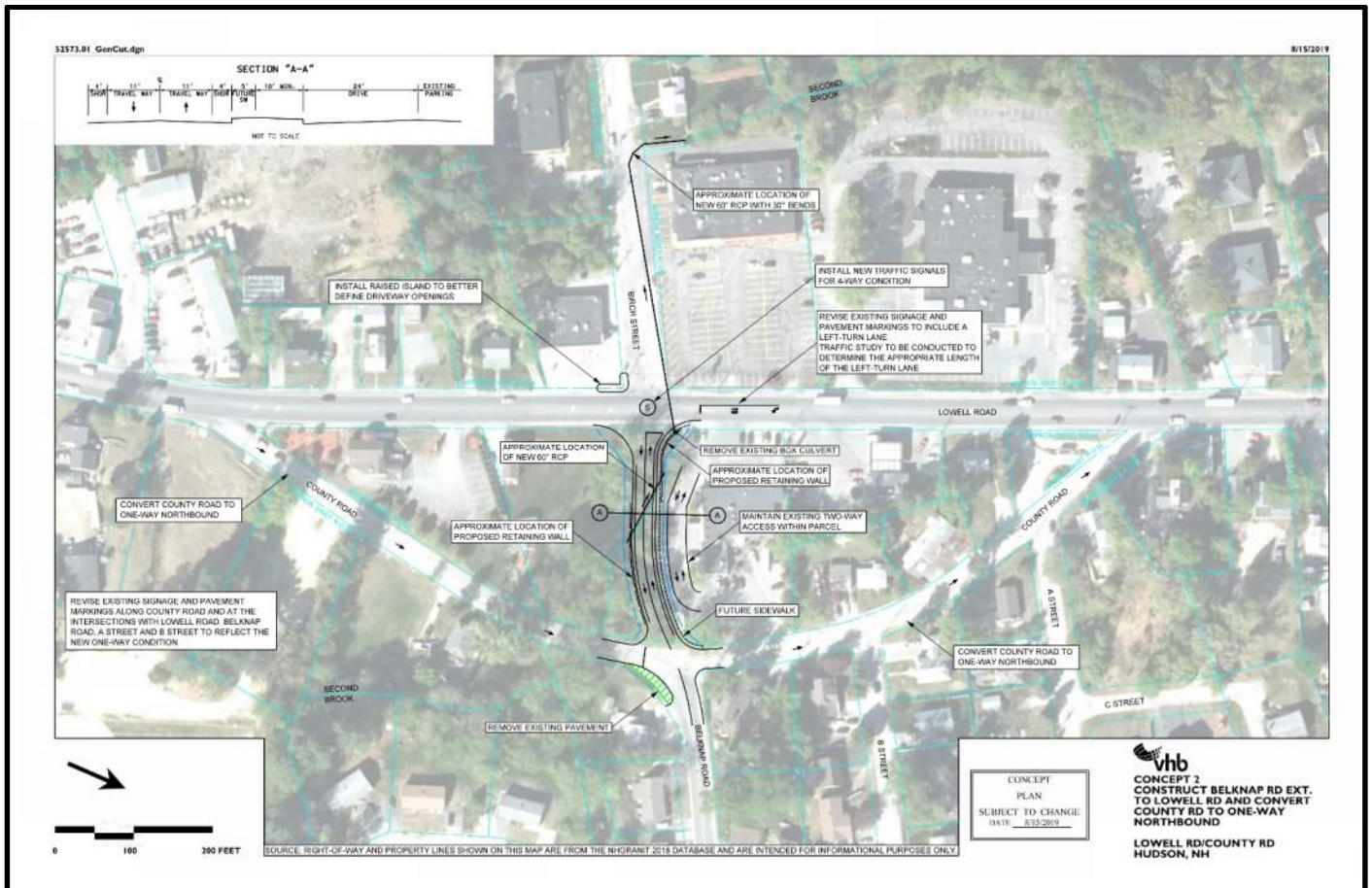
### Concept 1 – Conceptual Cost Estimate

Signage Cost	\$4,000
Pavement Marking Cost	\$4,000
Contingencies	\$1,000
Construction Engineering	<u>\$1,000</u>
<b>Total Estimated Cost</b>	<b>\$10,000</b>

Given the minimal cost and effort to install Concept 1, the Town could consider implementing it on a trial basis and monitor its effectiveness prior to implementing Concepts 2-4.

Ref: 52573.01  
 August 21, 2019  
 Page 3

## Concept 2 – Construct Belknap Road Extension to Lowell Road and Convert County Road to One-Way Northbound



Concept 2 constructs the proposed extension of Belknap Road, adding a 4<sup>th</sup> leg to the Lowell Road intersection, while maintaining the proposed one-way conversion of County Road from Concept 1.

A 11'-4' typical section was assumed for the Belknap Road extension, with a structural box of 4" pavement, 8" crushed gravel, 8" gravel, and 8" sand. A future sidewalk was shown on the northern side that would tie into the existing sidewalk on Lowell Road. The Belknap Road extension was located so there would be a 10' buffer between the future sidewalk and the existing two-way access within the commercial parcel.

In addition to the roadway improvements, Concept 2 will require two drainage modifications. The installation of a new 60" rcp culvert under Belknap Road extension to convey Second Brook and the replacement of the existing box

Ref: 52573.01  
 August 21, 2019  
 Page 4

culvert under Lowell Road with a new 60" rcp culvert that will run along Birch Street and outlet to Second Brook. The Birch Street culvert will abandon the existing drainage system that runs under the 77 Lowell Road commercial site.

Retaining walls will be required on each side of Belknap Road extension in order to maintain the open channel flow of Second Brook to/from the 60" rcp culverts.

The proposed Belknap extension will require replacement of the existing span-wire traffic signal at the Lowell Road/Birch Street intersection with a new traffic signal for the 4-way condition.

Lowell Road will require minor roadway modifications. Revisions to the existing signage and pavement markings to include a left-turn lane and installation of a raised island at the Hudson Mini Mart corner to better define the existing driveway openings.

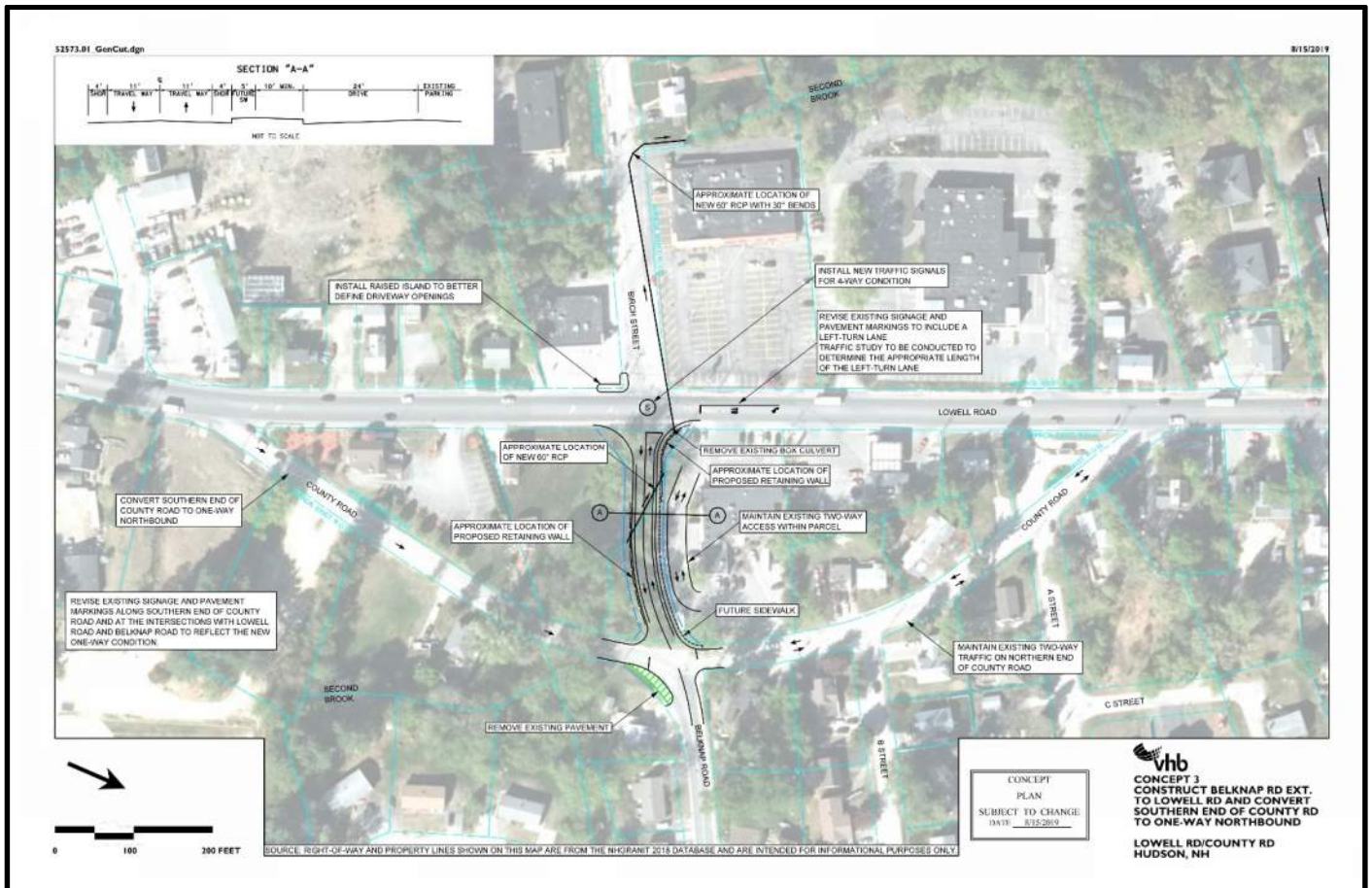
Though Concept 2 does not show extensive stream relocation, there will be environmental work associated with the Belknap Road extension – Data Collection, NHDES Permit Application (Major Impact), and Mitigation. NHDES will likely review this project closely – impacting this length of stream would need to have a clearly defined and justified "Purpose and Need" (i.e., addressing public safety issues) and we would need to provide a detailed "Alternatives Analysis" that clearly shows that culverting the stream is the least impacting alternative. Without strong justification, there's some risk that NHDES or the Army Corps could deny the proposal. The best way to manage this risk is to consult with these agencies prior to expending a lot of engineering time to ensure we address their concerns in the application.

### Concept 2 – Conceptual Cost Estimate

Roadway Cost (incl. Traffic Control)	\$250,000
Drainage Costs	
~ Drainage under Belknap Road Ext.	\$60,000
~ Drainage under Birch Street	\$200,000
Retaining Wall Cost	\$360,000
Traffic Signal Cost	<u>\$200,000</u>
<b>Subtotal</b>	<b>\$1,070,000</b>
Contingencies	\$100,000
Mobilization	<u>\$100,000</u>
<b>Total Estimated Construction Cost</b>	<b>\$1,270,000</b>
PE Cost	\$120,000
Environmental Cost	\$115,000
Right-of-Way Cost	\$375,000
Utility Impact Costs	\$25,000
Construction Engineering	<u>\$100,000</u>
<b>Total Estimated Project Cost</b>	<b>\$2,005,000</b>

Ref: 52573.01  
 August 21, 2019  
 Page 5

## Concept 3 – Construct Belknap Road Extension to Lowell Road and Convert Southern End of County Road to One-Way Northbound

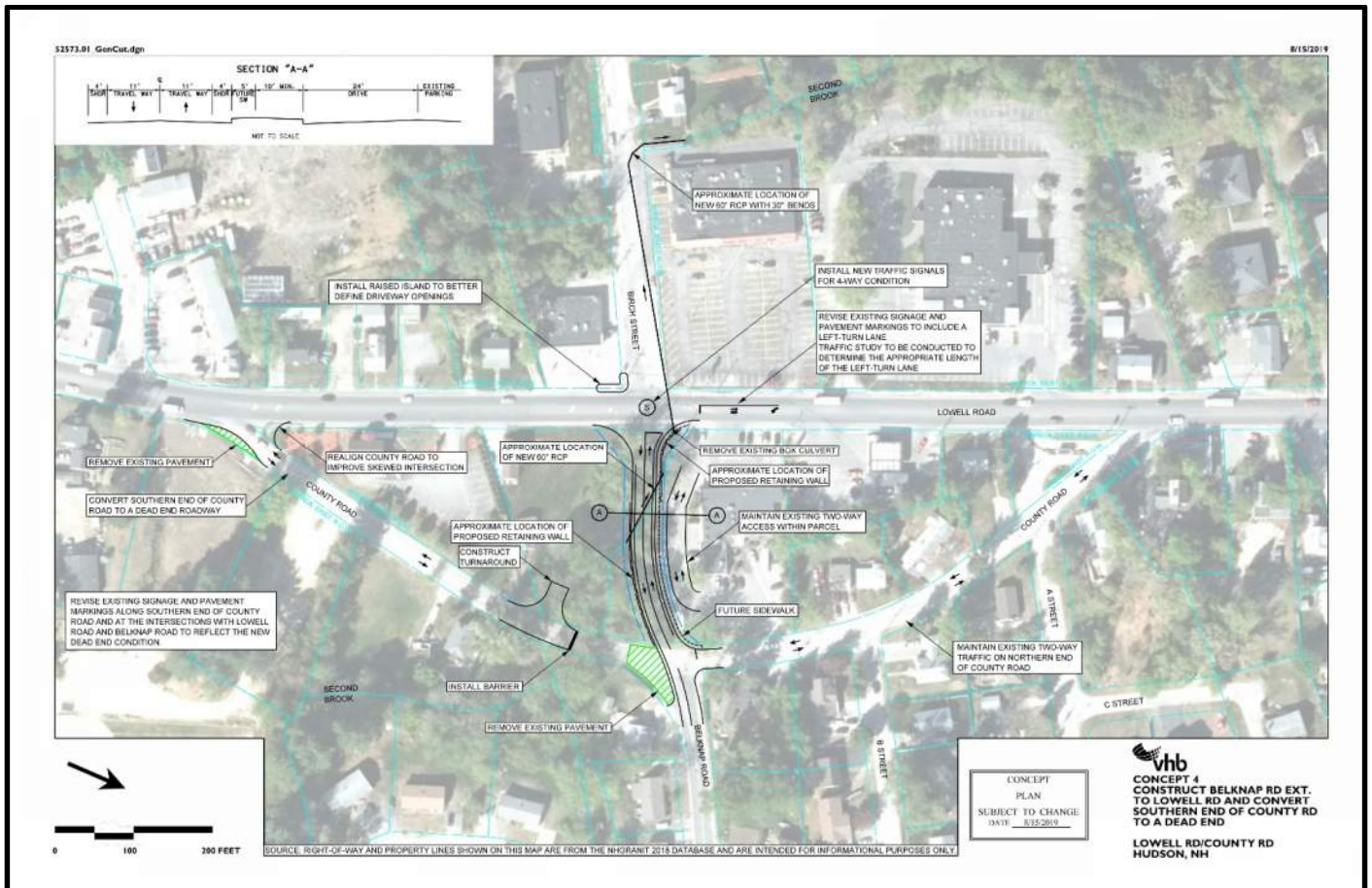


Concept 3 is similar to Concept 2 except that only the southern end of County Road will be converted to a one-way roadway. The northern end will remain in its present condition as a two-way roadway. One benefit would be that the existing business, Five Star Expresso, located at the northern intersection of County Road and Lowell Road would maintain its current two-lane drive thru access.

All improvements to Belknap Road and Lowell Road outlined in Concept 2 will occur with Concept 3 as well. Therefore, the **Total Estimated Project Cost** for Concept 3 will be the same as Concept 2 - **\$2,005,000**.

Ref: 52573.01  
 August 21, 2019  
 Page 6

## Concept 4 – Construct Belknap Road Extension to Lowell Road and Convert Southern End of County Road to a Dead End



Concept 4 is similar to Concept 3 except that all of County Road will remain in its present condition as a two-way roadway and the southern end will be converted to a dead end. A proposed turnaround will be required to provide vehicles an efficient way to reverse direction. The southern intersection to Lowell Road would be realigned to improve the existing skew angle.

All improvements to Belknap Road and Lowell Road outlined in Concept 3 will occur with Concept 4 as well. The only additional cost would be for the construction of the new turnaround, realignment of County Road at the intersection with Lowell Road, and modification to existing signage and pavement markings. This additional cost would be approximately \$50,000. Therefore, the **Total Estimated Project Cost** for Concept 4 would be **\$2,055,000**.



## Attachment "B"

Ref: 52573.01  
August 21, 2019  
Page 7

One benefit would be that the existing County Road stream crossing could be abandoned and/or removed. This may be seen as a mitigation strategy for culverting the stream under the Belknap Road extension.

# Transportation Project Proposal Form

## Contact Information

**Full Name** Elvis Dhima **Municipality** Town Of Hudson  
**Email** edhima@hudsonnh.gov **Affiliation** Staff  
**Phone Number** 603-886-6008 **Title/Position** Town Engineer

## Transportation Project Information

**Name/Title of Project** Belknap Road Extension

**Please select the project type(s):**

- |   |   |
|---|---|
| <p><input checked="" type="checkbox"/> <b>Highway Improvements</b> (operational improvements, access management, intelligent transportation systems, widening, technology operation improvements)</p> <p><input type="checkbox"/> <b>Asset Management</b> (bridge rehabilitation, bridge replacement, pavement repair/replacement)</p> <p><input type="checkbox"/> <b>Bicycle and Pedestrian Improvements</b> (sidewalks, bike trails, multi-use paths, traffic calming improvements)</p> | <p><input type="checkbox"/> <b>Planning Studies</b> (road diets, corridor studies, network studies, pedestrian/cyclist safety studies)</p> <p><input type="checkbox"/> <b>Infrastructure-related Travel Demand Management</b> (park &amp; ride lots, transit or HOV lanes, priority signalization, bus shelters, intermodal transportation centers)</p> |
|---|---|

**Where is this project located?** *(road names, nearby facilities/landmarks)*

The project is located at the intersection of Lowell Rd & Birch St, and the intersection of Belknap Rd & County Rd.

**What is the scale of this project?** *(please provide approximate measurements in feet; you can use Google Maps measuring tool to estimate distances)*

The total road length is approximately 290 feet, with 2 11+1 lanes. 4 foot sidewalks are proposed for North side.

## Purpose, Need, and Scope

**Please provide the Purpose Statement for this project.**

*ex: "The purpose of this project is to support increased non-motorized activity by addressing safety issues resulting from unsafe vehicle speeds and inadequate protections for pedestrians on Main Street between 1st and 2nd Street."*

The purpose of this project is to address traffic and safety issues stemming from poor access out of Belkap and County Road. This project is intended to reduce left-hand turn based accidents exiting County Road, and help ease traffic congestion attempting to enter Lowell Road.

**Please provide the Need Statement for this project.**

*ex: "The section of Main St between 1st Street and 2nd Street is unsafe for pedestrians. This section is in the center of the city's commercial district concentrated with jobs and small businesses. In the past 5 years there have been 15 crashes in this section of Main St: two resulted in serious injuries to pedestrians and one resulted in a pedestrian fatality. Continued local economic development depends on increased walkability and safety for pedestrians."*

The two intersections of County Road and Lowell Road are currently non-signalized, unsafe, and lack available measures to remediate via reconstruction of the intersections. The Hudson Highway Safety Committee has recorded 14 accidents at the southern intersection of County and Lowell road (next to Mickey's Pizza) in the past 4 years, thankfully none with personal harm. As traffic loads increase on Lowell Road, the problem will only be exacerbated. (4)

**Please outline the project scope.**

*ex: "Install pedestrian crossings on Main Street at 1st and 2nd street intersections and at mid-block, including pedestrian refuge medians, other streetscaping and traffic calming infrastructure."*

The project scope is to construct an extension to Belknap road connecting it directly to Lowell Road via a 4-way signalized intersection. County Road may be partially converted to a one-way. The project is for construction only, as the Town of Hudson shall be undertaking engineering and permitting independently. (1,2)

**Please provide any additional information about this project. (local knowledge/insight, relevant studies/data, infrastructure needs, etc.)**

Accident counts may be located in the Hudson Highway Safety Committee meeting minutes from July 3, 2024. (4) Due to having several baseball fields located on County Road, traffic can come in bursts before and after games, and long lines of left-hand traffic attempting to enter Lowell road generates unsafe conditions. All traffic projections point to traffic on Lowell road only growing worse over time, so the problem will only continue to develop. (3)

Supplementary Information

Please note that these questions are not required to make an initial submission. If you are not able to provide answers to some or all of these questions at this time, please leave the question(s) blank and [RPC name] staff will reach out to provide assistance.

**How involved has the public been in this project proposal so far?**

*(please make note of any dates, agenda items, minutes from public meetings, and decisions influenced by public involvement)*

The safety issue has been identified by the Highway Safety Committee on July 3, 2024. (4)

## Attachment "C"

### Are there opportunities for further public discussion of this project in the near future?

The attached concepts are scheduled to appear before the Board of Selectmen on July 23, 2024, followed by the Planning Board on July 24, 2024. Future public meetings shall be scheduled as required.

### Will the project be managed locally?

The project will be managed by the Town of Hudson Engineering Department.

### What alternative options or methods have been considered to address this need and what makes this project proposal the best option?

Three alternatives were considered in 2019 by the Planning Board, and the designs of concept 3 or 4 (see attached) have been determined to be the best options moving forward. It has been identified that no amount of re-alignment or reorganization of the County Road intersection will fix the problem long term, so moving to a signalized, standard 4-way intersection will provide the safest option long term

### Please provide evidence supporting this project, including letters of support.

*(review list of documents, letters of support, data sources, plans, guidance, maps, etc. that will serve as sources of information to bolster the application; please note what and where you are referencing from)*

Please find attached :

1: Belknap Road Extension - Conceptual Plans and Cost Estimaes, provided by Vanasse Hangen Brustlin, Inc.

2: Concepts 3 & 4, provided by Vanasse Hangen Brustlin, Inc.

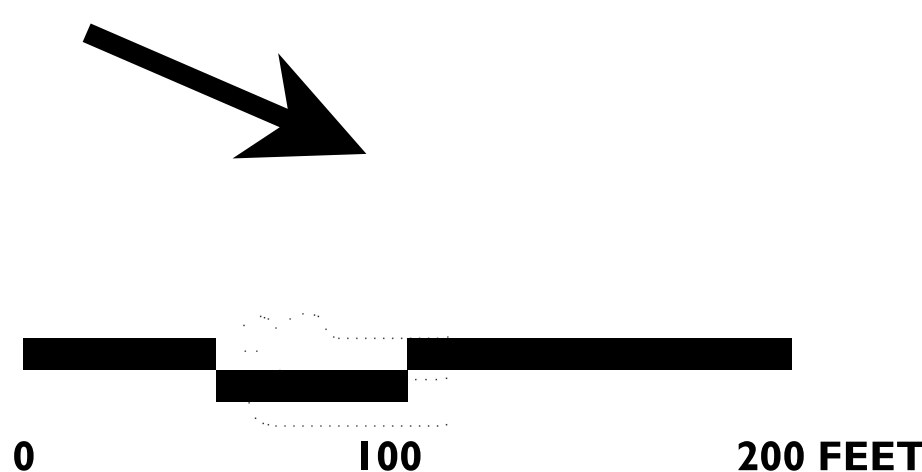
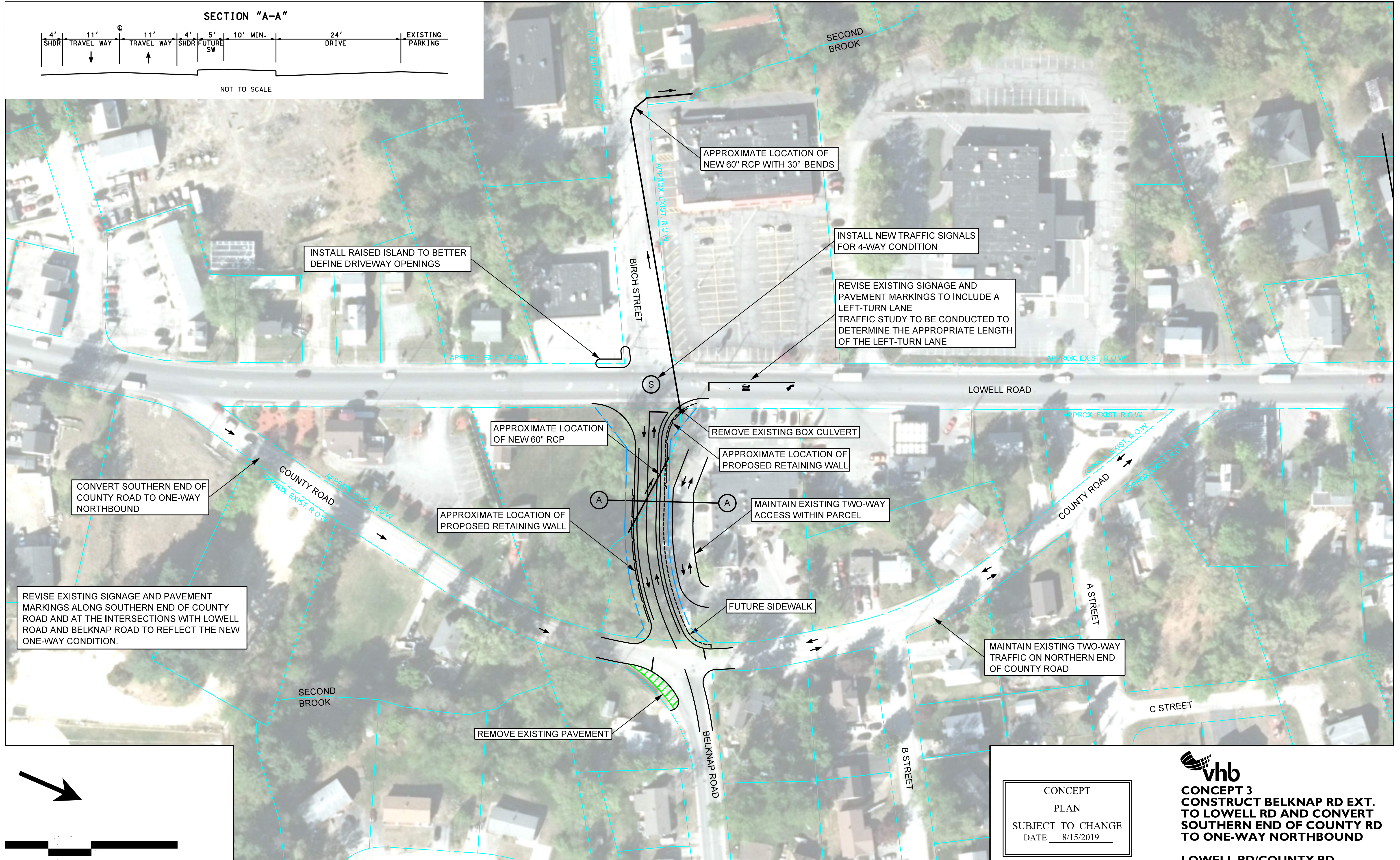
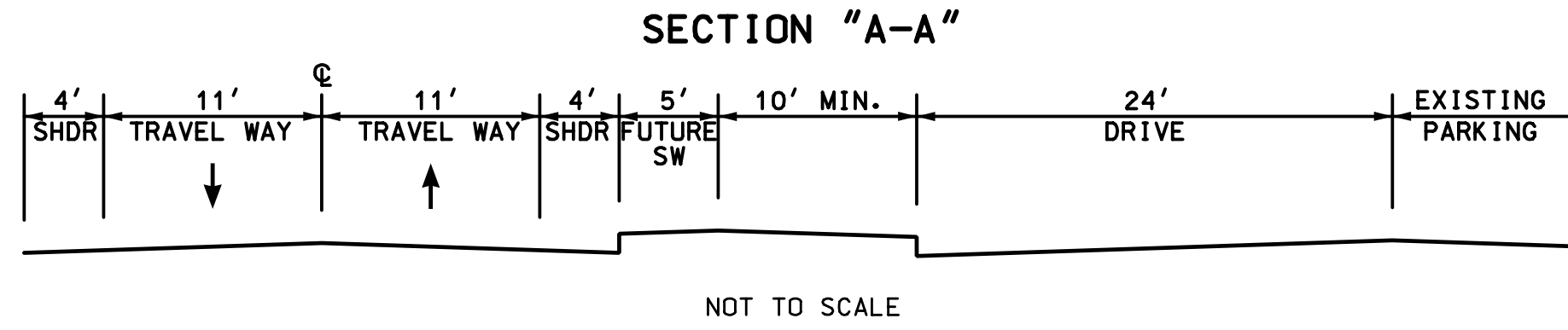
3: 2023 Townwide Traffic Study pages 18 - 20, provided by NRPC

4: 7-3-24 Highway Safety Committee minutes

## Submission

Please return this form to [INSERT RPC NAME] at: [INSERT ADDRESS, FAX, EMAIL]. Please attach any relevant documents, maps, cost estimates, and data to this project along with the form that you have:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Local Plans/Master Plans | <input type="checkbox"/> Maps                  | <input type="checkbox"/> Bike/Pedestrian Surveys       |
| <input checked="" type="checkbox"/> Cost Estimate | <input type="checkbox"/> Transit Operator Data | <input type="checkbox"/> Project Scope                 |
| <input type="checkbox"/> Local Police Crash Data  | <input type="checkbox"/> Development Studies   | <input checked="" type="checkbox"/> Conceptual Designs |

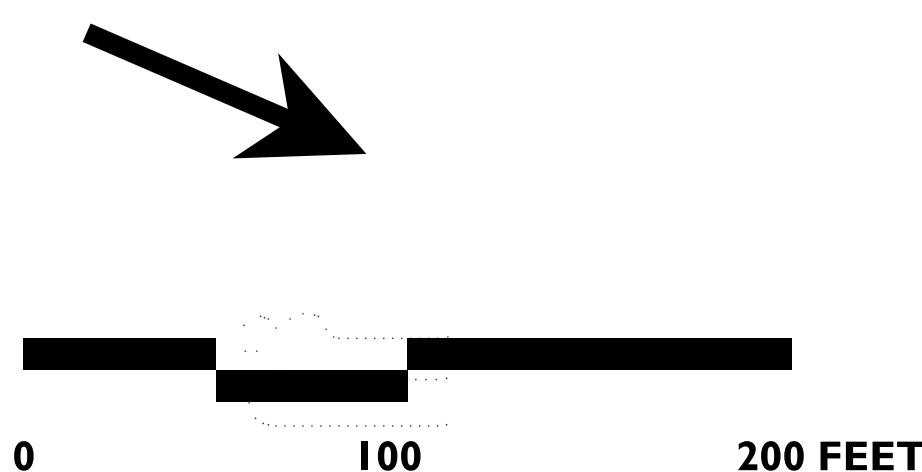
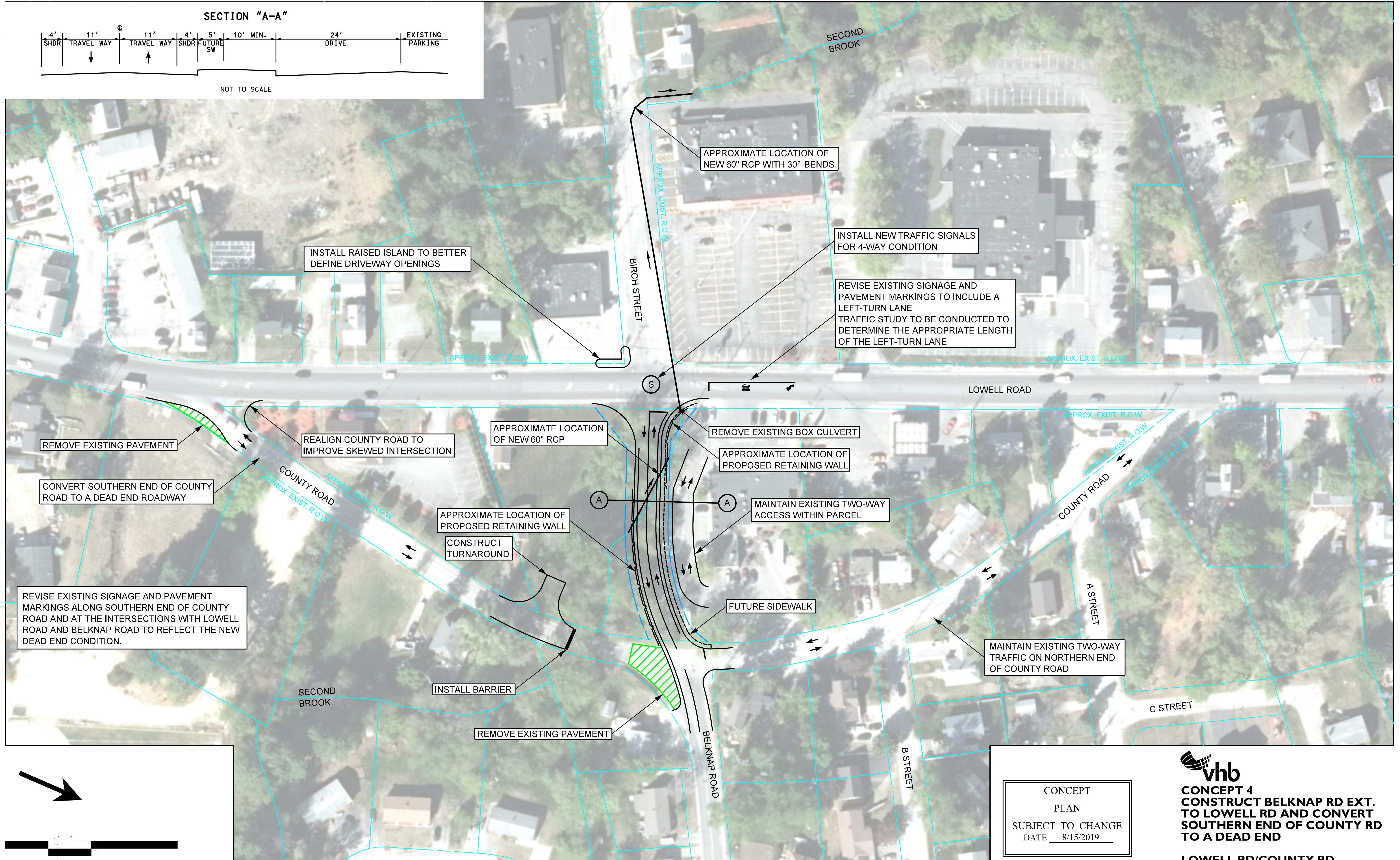
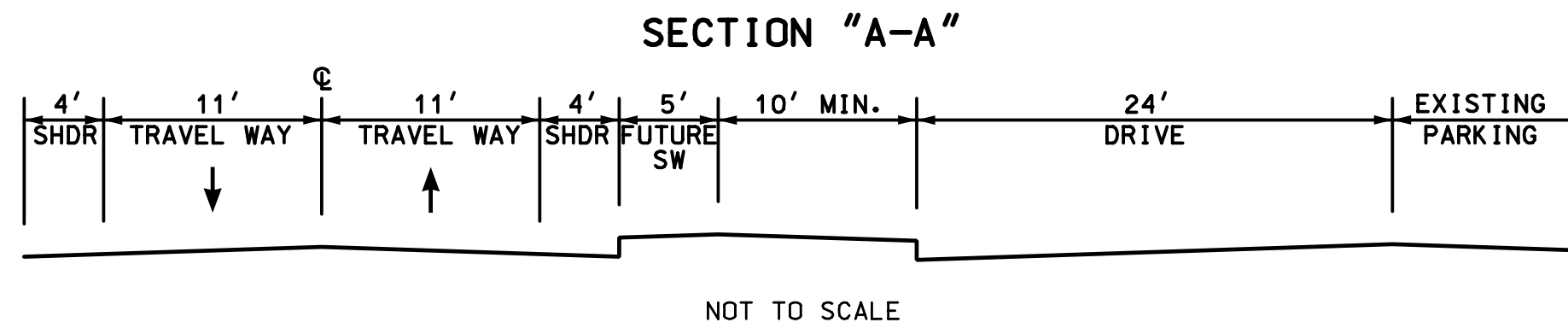


SOURCE: RIGHT-OF-WAY AND PROPERTY LINES SHOWN ON THIS MAP ARE FROM THE NHGRANT 2018 DATABASE AND ARE INTENDED FOR INFORMATIONAL PURPOSES ONLY.

CONCEPT  
PLAN  
SUBJECT TO CHANGE  
DATE 8/15/2019

**vhb**  
CONCEPT 3  
CONSTRUCT BELKNAP RD EXT.  
TO LOWELL RD AND CONVERT  
SOUTHERN END OF COUNTY RD  
TO ONE-WAY NORTHBOUND

LOWELL RD/COUNTY RD  
HUDSON, NH



SOURCE: RIGHT-OF-WAY AND PROPERTY LINES SHOWN ON THIS MAP ARE FROM THE NHGRANT 2018 DATABASE AND ARE INTENDED FOR INFORMATIONAL PURPOSES ONLY.

CONCEPT  
PLAN  
SUBJECT TO CHANGE  
DATE 8/15/2019

**vhb**  
**CONCEPT 4**  
**CONSTRUCT BELKNAP RD EXT. TO LOWELL RD AND CONVERT SOUTHERN END OF COUNTY RD TO A DEAD END**

**LOWELL RD/COUNTY RD HUDSON, NH**

TOWN OF HUDSON  
TOWNWIDE TRAFFIC STUDY

**Table 10: Segment Volume-to-Capacity Ratio and Level of Service (LOS)**

#	Segment	AM Peak						PM Peak					
		2022		2030		2045		2022		2030		2045	
		V/C	LOS	V/C	V/C	LOS	V/C	V/C	LOS	V/C	LOS	LOS	V/C
A	NH 3A (Central St) west of Library St	0.4	C	0.5	C	0.5	C	0.6	D	0.7	D	0.7	D
B	NH 3A (Central St) east of Library St	0.5	C	0.6	D	0.6	D	0.7	D	0.8	D	0.8	E
C	Lowell Rd south of Central St	0.9	E	1.0	E	1.0	F	1.1	F	1.2	F	1.3	F
D	Lowell Rd south of Pelham Rd	0.7	D	0.7	D	0.7	D	0.8	D	0.9	D	0.9	E
E	Lowell Rd south of Wason Rd <sup>#</sup>	0.6	D	0.7	D	0.8	D	0.8	E	1.0	E	1.0	F
F	Lowell Rd south of Rena Ave <sup>#</sup>	0.5	C	0.5	C	0.5	C	0.7	D	0.6	D	0.7	D
G	River Rd at Mass State Line	0.2	B	0.3	B	0.3	B	0.3	B	0.4	B	0.4	C
H	NH 102 at Litchfield Town Line <sup>#</sup>	0.3	B	0.5	C	0.5	C	0.4	B	0.6	C	0.6	C
I	NH 102 north of Easy St	0.5	C	0.5	C	0.6	C	0.7	D	0.7	D	0.7	D
J	NH 102/3A north of Ledge Rd	0.7	D	0.7	D	0.7	D	0.9	E	0.9	E	0.9	E
K	NH 111 (Ferry St) east of Library St	0.4	C	0.5	C	0.5	C	0.5	C	0.5	C	0.5	C
L	NH 111 (Burnham Rd) north of Central St	0.5	D	0.5	C	0.5	C	0.6	D	0.6	D	0.6	C
M	NH 111 (Central St) west of Kimball Hill Rd	0.8	E	0.9	E	0.9	E	0.9	E	1.0	F	1.0	F
N	Belknap Rd south of Central St	0.2	B	0.2	B	0.2	B	0.2	B	0.3	B	0.3	B
O	Kimball Hill Rd south of NH 111	0.3	B	0.4	B	0.4	B	0.4	B	0.4	C	0.4	C
P	Dracut Rd at Mass State Line <sup>#</sup>	0.2	A	0.2	B	0.2	B	0.3	B	0.4	C	0.4	C
Q	Wason Rd east of NH 3A	0.4	C	0.4	C	0.4	C	1.0	E	1.0	E	1.0	F
R	Bush Hill Rd north of Wason Rd	0.2	A	0.2	A	0.2	A	0.3	A	0.4	B	0.4	B

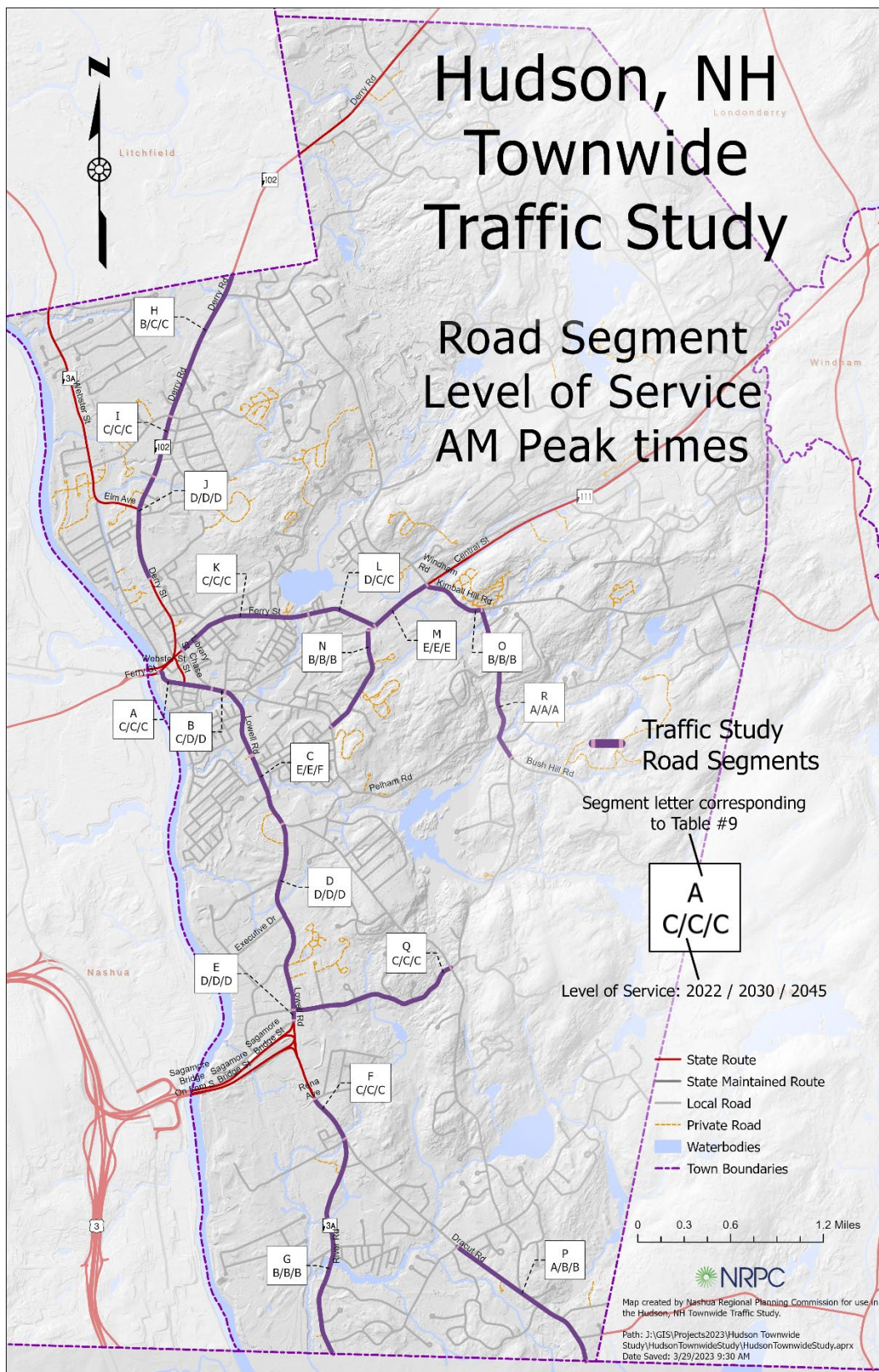
\* Unsignalized intersection in various configurations.

# Improvement made to the intersection in 2030 and 2045

Blue LOS indicates an improvement In LOS and Red LOS indicates a decline in LOS

TOWN OF HUDSON  
TOWNWIDE TRAFFIC STUDY

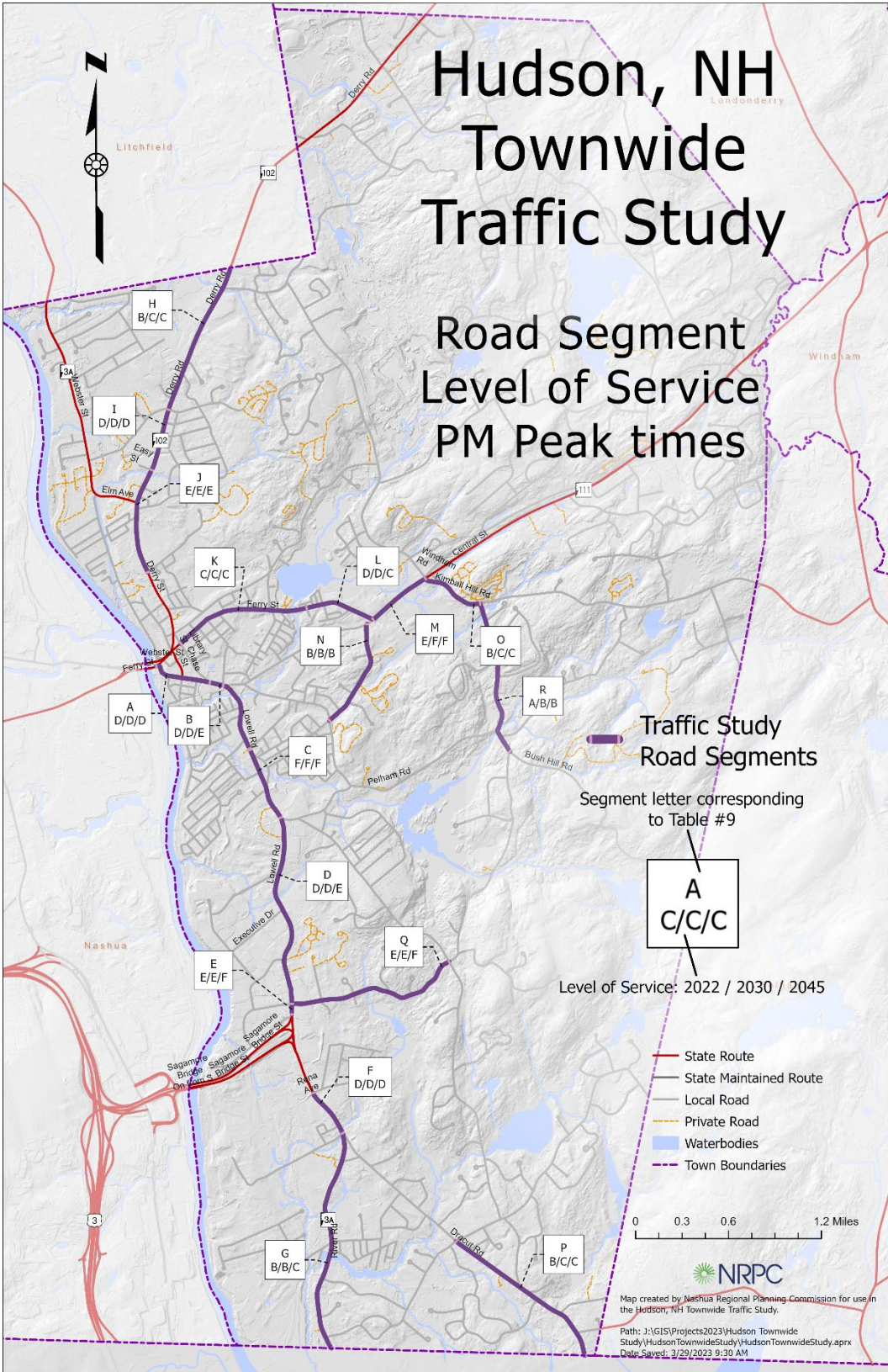
Map 3: Road Segment Level of Service AM Peak Times





TOWN OF HUDSON  
TOWNWIDE TRAFFIC STUDY

Map 4: Road Segment Level of Service PM Peak Times





# TOWN OF HUDSON

## Engineering Department



12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-816-1291

### Highway Safety Committee Minutes July 3, 2024

- I. Call to order at 8:43 AM.
- II. Attendance:  
  
Tad Dionne, Police Chief  
Jay Twardosky, DPW Director  
Elvis Dhima, Town Engineer  
Scott Tice, Fire Chief  
Tim Malley , Planning Board Chairman (excused )  
BOS Liaison - Selectmen Jacoby
- III. Review of previous meeting
  1. Cross Walk on Wason Road , between Holly Street and Colson. (Denied)
  2. Stop sign request on Highland Road, adjacent to Power Street. (Denied)
  3. Traffic light request for Lowell and County Road. (Denied)/ Evaluate other options
  4. Derry and Abbott Farm Lane Intersection Crosswalk. Additional warning sign to be installed by the entrance / Right out. Starbucks will add the sign to their site plan.
- IV. Items discussed
  1. Lowell and County Road intersection (close to Mikey's Pizza) possible improvements. Multiple concepts and funding discussed. 14 accidents have been recorded in the past 4 years with no reported injuries. Two options were considered for further evaluation and for the Board of Selectmen to review.

#### **Concept 1**

Motion by DPW Director, Second by Fire Chief to recommend to BOS having a public meeting about temporary improvements on a trial basis, passed 4-0. This consist of installing jersey barriers to only allow traffic to come from Lowell Road to County Road.

#### **Concept 2**

Motion by Police Chief , Second by Fire Chief to recommend to BOS to support an engineering and environmental warrant article for the permanent and long term solution, for Lowell / Birch / Belknap Intersection, passed 4-0. This consist of extending Belknap Road to Lowell road and converting the existing three way intersection to a four way intersection.

**Next Meeting is scheduled for August 7, 2024**