

---

# Village Sidewalk Study

## Conceptual Design Report

---



**Moultonborough, New Hampshire**

**Executive Summary**

**November 2013**

**(Revised as per Addendum dated 11/21/13)**

**KVPartners**  
CONSULTING ENGINEERS

## **EXECUTIVE SUMMARY**

### **Background:**

This report documents the findings and assessments of a feasibility study to construct sidewalks in the Village area of Moultonborough, New Hampshire. The study was initiated by a citizen's petition and subsequently approved by warrant article at the 2013 March Town Meeting. The warrant article called for the SelectBoard to present a plan for construction of a sidewalk or sidewalks in the Village area at the March 2014 Town meeting. The scope of work performed for the study included:

1. Identification of the study area (refer to Figure1).
2. Completion of five public meetings to solicit community input and provide feedback regarding sidewalk location, type and project implementation.
3. Review of previous work completed by the Town relevant to constructing sidewalks in the Village area.
4. An assessment of existing conditions by visual inspection to better define site constraints, challenges and opportunities for the construction of a sidewalk network.
5. Development of base plans showing existing conditions information, conceptual plans showing potential sidewalk routes and alignments, recommendations for the preferred sidewalk network and order of magnitude estimates for probable project costs.
6. Documentation of assessments, findings and results of the conceptual design process.

### **Evaluation Criteria:**

Sidewalks are pedestrian lanes that provide people with space to travel within the public right-of-way separated from motor vehicles and on-road bicycles. As a public facility, there are design standards and guidelines that should be considered to ensure the facilities are a safe and provide an enjoyable mode of travel. The standards and guidelines that were established for the Village Sidewalk Study included:

1. SelectBoard guidelines defining a sidewalk as a designated hard surfaced walkway for pedestrians to travel from a point of origin to a point of destination within the study area alongside a roadway. The sidewalks, to the extent reasonable and practicable, should be 6 feet wide and separated vertically or horizontally from the roadway.
2. Public Comments: Comments from meeting participants reflect key considerations to be taken into account including: keep children safe; address business owner concerns; make the Village area more pedestrian friendly and "walkable"; make provisions for future development of the Village

area; retain the character of the Village area; address emergency response needs and concerns; be practical and cost effective; minimize property impacts; develop a plan that can get Town Meeting support; phase construction for a multi-year buildout; and coordinate with the Planning Board and School Board.

3. **General Design Guidelines:** When constructing sidewalks, the following engineering standards should be considered: provide a continuous and accessible network; provide a level, hard and slip-resistant surface; provide a minimum sidewalk width of 5 to 6 feet; minimize the number of street crossings; provide appropriate crossings at driveways; provide appropriate crosswalks; maintain natural walking patterns; provide separation from vehicle traffic; provide for snow storage; provide street lighting; and meet Americans with Disabilities Act (ADA) requirements.
4. **NHDOT Requirements:** Because the study area is in the NH Route 25 corridor, the Town must coordinate with the NHDOT regarding sidewalk segments located within the NHDOT right-of-way. Based on discussions with the NHDOT, NHDOT requirements include: maintain 16 foot travel way and shoulder; maintain a minimum sidewalk width of 5 feet; provide separation from the roadway; and meet ADA requirements.

### **Results of Public Participation Process:**

To assist in the process of screening alternative sidewalk networks, the Town engaged in a comprehensive public participation process. Over the course of several meetings, alternative alignments were discussed and vetted by the participants. The process culminated in a plan that identified all the alignments the participants thought feasible for further consideration (refer to Figure 2). The alignments were then benchmarked against the evaluation criteria defined above and key opportunities and constraints were identified for each sidewalk segment (refer to Table 1). Estimates of probable project costs were developed for each segment (refer to Table 2).

### **Recommendations:**

The following are recommendations for a sidewalk network within the study area defined by the Town. The recommendations are based on input received from the public participation process and KVPartner's understanding of the consensus opinion expressed by the community at large, coordination and input received from NHDOT and standard engineering practice. The recommendations are conceptual and should be used for planning purposes only. A more detail assessment must be completed to fully understand project requirements and impacts. In summary, the recommendations are as follows:

1. KVPartners recommends that the Town take a long term view when considering a sidewalk network. To that end KVPartners recommends that the Town plan for a buildout of sidewalks on both sides of NH Route 25 from the Central School to the Town Complex (Library, Recreation Department, Town Hall) located at the intersection with NH Route 109 (refer to Figure 4 and Table 3).
2. KVPartners recommends that the Town phase the buildout of the sidewalk network over time. Completing the sidewalk in phases addresses the cost concerns raised during the public participation process and gives the Town an opportunity to achieve objectives and observe the suitability and functionality of a first phase before committing to a more comprehensive network. As a first phase, KVPartners recommends that the Town consider constructing sidewalks on portions of the north side and south side of NH Route 25 (refer to Figure 5 and Table 4).

Once sidewalks are installed, the Town, by virtue of case law and NHDOT policy (refer to Appendix B, Exhibit 8), is required to maintain them. Therefore as part of the sidewalk evaluation, Town staff prepared estimates to maintain the sidewalk network including capital expenditures for equipment as well as labor and materials cost for on-going maintenance activities (refer to Table 5).

Based on the work completed to date, KVPartners recommends the following steps be taken to determine the suitability of the recommended sidewalk alignments.

1. Contact the Bank of New Hampshire to formalize access to their property for a designated sidewalk or pathway.
2. Contact property owners along the proposed alignment to discuss potential impacts to their property and business operations.
3. Complete field survey through the NH Route 25 corridor and conduct the necessary evaluations to better define the requirements and cost of construction and to confirm the limits of the NHDOT right-of-way. There is conflicting information on the record regarding the right-of-way width through the study area.

**Extract from Village Sidewalk Study Conceptual Design Report**  
**November 13, 2014**  
**Page 12**

**5.3 Operation and Maintenance Cost**

Once sidewalks are installed, the Town is required to maintain them; this is consistent with New Hampshire case law and NHDOT policy for sidewalks constructed within their right-of-way (refer to Exhibit 8). Therefore as part of the sidewalk evaluation, Town staff prepared cost estimates to maintain this sidewalk network. The estimates include capital expenditures for equipment as well as labor and materials cost for on-going maintenance activities. The following is an opinion of probable operation and maintenance costs for the Department of Public Works.

**Table 5**  
**Operation and Maintenance Cost**

<b>Item</b>	<b>Type</b>	<b>Cost</b>
Equipment (Sidewalk Plow)	Capital	\$110,000 - \$130,000
Equipment Replacement	Capital	\$10,000 per year
Labor, Materials	O & M	\$4,000 per year

FIGURE 4: SIDEWALK NETWORK BUILDOUT



**Legend**

- Contours
- Parcel Lines
- Buildings
- Drainage Structures
- Drainage Pipes
- Wetlands
- Village Zone C Boundary
- Limits of Study Area

**Comprehensive Shoreland Protection Area**

- 50' Waterfront Buffer/Primary Building Setback
- 150' Natural Woodland Buffer
- 250' Protected Shoreland

**NWI Wetlands**

- Locustrine
- Palustrine
- Riverine

**Proposed Sidewalk Routes**

- Route 1
- Route 2
- Route 3
- Route/Segment Designations (S1, S2, S3, S4A, S1A, S2A, S1-CS)
- Crosswalks
- Property owners object to sidewalks in these areas

# Proposed Sidewalk Routes & Crosswalks

Moultonborough, New Hampshire  
2012-2013

**Revisions:**

Plan Labels	7-5-13
Conceptual Walk Layout	8-22-13
Conceptual Walk Layout REV	8-30-13
Conceptual Walk Layout REV 2	9-5-13
Conceptual Walk Layout REV 3	9-12-13
Conceptual Walk Layout REV 4	9-17-13
Conceptual Walk Layout REV 5	9-24-13
Conceptual Walk Layout REV 6	10-2-13

**NOTES**

THIS MAP IS BASED ON THE TOWN OF MOULTONBOROUGH, NH PROPERTY MAPS PREPARED IN 2009 BY CARTOGRAPHIC ASSOCIATES, INC. IT IS INTENDED FOR REFERENCE AND PLANNING PURPOSES ONLY.

PROPERTY LINES CURRENT TO APRIL 1, 2012

Prepared by:

**KV Partners**  
CONSULTING ENGINEERS

g2<sup>41</sup> LLC  
Landscape Architecture Site Planning Graphics

70 New Road, Salisbury New Hampshire 03248  
pff 603 648 4454 www.g241.com

Scale: 1" = 150'

**Table 3**  
**Opinion of Probable Project Cost**  
**Recommended Sidewalk Network Buildout**

Sidewalk				Construction	Engineering	Construction Oversight	Easements	Legal	Contingency	Total
Route	Segment	Type	Length (ft)							
1	S1	A	530	\$83,000	\$12,000	\$10,000	\$6,000	\$2,000	\$22,000	\$135,000
1	S2	C	1040	\$106,000	\$16,000	\$13,000	\$9,000	\$2,000	\$29,000	\$175,000
1	S3	B	330	\$34,000	\$4,000	\$3,000	\$5,000	\$1,000	\$9,000	\$56,000
1	S4A	B	950	\$145,000	\$22,000	\$17,000	\$14,000	\$3,000	\$40,000	\$241,000
2	S1-CS	D	140	\$5,000	\$1,000	\$1,000	\$0	\$0	\$1,000	\$8,000
2	S2	C	990	\$56,000	\$6,000	\$5,000	\$12,000	\$1,000	\$16,000	\$96,000
2	S3	B	1050	\$154,000	\$23,000	\$18,000	\$11,000	\$3,000	\$41,000	\$250,000
3	S1A	D	350	\$17,000	\$2,000	\$2,000	\$0	\$0	\$4,000	\$25,000
3	S2A	D	780	\$29,000	\$3,000	\$3,000	\$19,000	\$1,000	\$11,000	\$66,000
Year: 2013:			6160	\$629,000	\$89,000	\$72,000	\$76,000	\$13,000	\$173,000	\$1,052,000
Year 2014:			6160	\$642,000	\$91,000	\$73,000	\$78,000	\$13,000	\$176,000	\$1,073,000
Year 2015:			6160	\$655,000	\$93,000	\$74,000	\$80,000	\$13,000	\$180,000	\$1,094,000

FIGURE 5: SIDEWALK NETWORK PHASE 1



Scale: 1" = 150'

**Legend**

- Contours
- Parcel Lines
- Buildings
- Drainage Structures
- Drainage Pipes
- Wetlands
- Village Zone C Boundary
- Limits of Study Area

**Comprehensive Shoreland Protection Area**

- 50' Waterfront Buffer/Primary Building Setback
- 150' Natural Woodland Buffer
- 250' Protected Shoreland

**NWI Wetlands**

- Locustrine
- Palustrine
- Riverine

**Proposed Sidewalk Routes**

- Route 1
- Route 2
- Route 3
- Route/Segment Designations
- Crosswalks
- Property owners object to sidewalks in these areas

# Proposed Sidewalk Routes & Crosswalks

Moultonborough New Hampshire  
2013

**Revisions:**

Plan Labels	7-5-13
Conceptual Walk Layout	8-22-13
Conceptual Walk Layout REV 1	8-30-13
Conceptual Walk Layout REV 2	9-5-13
Conceptual Walk Layout REV 3	9-12-13
Conceptual Walk Layout REV 4	9-17-13
Conceptual Walk Layout REV 5	9-24-13
Conceptual Walk Layout REV 6	10-5-13

**NOTES**

THIS MAP IS BASED ON THE TOWN OF MOULTONBOROUGH, NH PROPERTY MAPS PREPARED IN 2009 BY CARTOGRAPHIC ASSOCIATES, INC. IT IS INTENDED FOR REFERENCE AND PLANNING PURPOSES ONLY.

PROPERTY LINES CURRENT TO APRIL 1, 2012

Prepared by:

**KV Partners**  
CONSULTING ENGINEERS

g2<sup>41</sup> LLC  
Landscape Architecture Site Planning Graphics

70 New Road, Safford New Hampshire 03248  
pff 603 648 4454 www.g241.com

**Table 4**  
**Opinion of Probable Project Cost**  
**Recommended Sidewalk Network Phase 1**

Sidewalk				Construction	Engineering	Construction Oversight	Easements	Legal	Contingency	Total
Route	Segment	Type	Length (ft)							
1	S1-CS	B	150	\$16,000	\$3,000	\$2,000	\$0	\$0	\$4,000	\$25,000
1	S3	B	330	\$34,000	\$5,000	\$3,000	\$5,000	\$1,000	\$9,000	\$57,000
1	S4A	B	950	\$145,000	\$26,000	\$17,000	\$14,000	\$3,000	\$41,000	\$246,000
2	S1-CS	D	140	\$5,000	\$1,000	\$1,000	\$0	\$0	\$1,000	\$8,000
2	S2	C	990	\$56,000	\$8,000	\$6,000	\$12,000	\$1,000	\$16,000	\$99,000
3	S1A	D	350	\$17,000	\$3,000	\$2,000	\$0	\$0	\$4,000	\$26,000
3	S2A	D	780	\$29,000	\$4,000	\$3,000	\$19,000	\$1,000	\$11,000	\$67,000
Year: 2013:			3690	\$302,000	\$50,000	\$34,000	\$50,000	\$6,000	\$86,000	\$528,000
Year 2014:			3690	\$308,000	\$51,000	\$35,000	\$51,000	\$6,000	\$88,000	\$539,000
Year 2015:			3690	\$314,000	\$52,000	\$36,000	\$52,000	\$6,000	\$90,000	\$550,000