

Village of Rhinebeck Sidewalk Study

February 24, 2011

The logo for the Poughkeepsie-Dutchess County Transportation Council (PDCTC) features the acronym "PDCTC" in a large, bold, purple serif font. The letters are slightly shadowed and appear to be resting on a light-colored, horizontal surface that creates a subtle reflection effect.

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The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

1. Background

The Village of Rhinebeck is an historic and unique center in northwest Dutchess County, New York, containing over 300 buildings listed on the National Register of Historic Places. The Village also hosts a very active commercial district with many outside visitors, which contribute to one of the highest levels of pedestrian activity in the area. These pedestrians are supported by a sidewalk system that is similar in breadth and composition to other traditional Villages and hamlet-like settings in the greater northeast region. Pedestrian friendly places such as Rhinebeck Village provide residents and visitors with the opportunity to explore their environs without having to drive a car, promoting a more sustainable environment that keeps people connected to their community.

Recognizing how a safe pedestrian environment supports its community character, the Village of Rhinebeck requested assistance from the Council and Dutchess County Department of Planning and Development (“Planning Department”) to inventory and evaluate the Village’s sidewalk system. Staff developed a scope of work for the project in July 2010 and conducted field work in August 2010. Throughout the study, Council and Planning Department staff worked closely with the Village’s Pedestrian Task Force, which was organized by the Village Board in July 2010 to spearhead research on sidewalks and develop a plan for eventual sidewalk improvements.

The Village of Rhinebeck Sidewalk Study continues a tradition of transportation related community planning projects conducted and funded by the Poughkeepsie-Dutchess County Transportation Council (PDCTC): the designated Metropolitan Planning Organization (MPO) for Dutchess County. In accordance with the provisions set forth in 23 U.S.C. 134 and 49 U.S.C. 5303, the PDCTC (“Council”) is tasked with carrying out a continuing, cooperative, and comprehensive multimodal transportation planning process. This includes the development of plans and programs that promote the safe and efficient development, management, and operation of the surface transportation system, to include the development and promotion of accessible pedestrian walkways and bicycle transportation facilities, such as those present in the Village of Rhinebeck.

2. Scope of Work

Representatives from the Village Board and Pedestrian Task Force worked with the Council and Planning Department to develop a scope of work to guide the study. The scope of work identified two major components to the study: an inventory of existing sidewalk conditions, and the development of recommendations to guide future sidewalk improvements. The scope also addressed items related to the formation of a Village Pedestrian Task Force, data to be collected during the sidewalk inventory, breadth of study recommendations, composition of final products, and number of study related meetings.

3. Meetings

Council and Planning Department staff attended the following meetings during the study:

- Project kick-off meeting: July 14, 2010.
- Pedestrian Task Force meetings: September 2010-February 2011.

- Village Board workshop (public meeting): November 10, 2010.
- Village Board meeting: January/February 2011.

4. Sidewalk Inventory

The first component of the study involved an inventory and assessment of existing sidewalk conditions, which would be used to inform subsequent recommendations. The inventory gathered data on a variety of attributes related to sidewalks and associated pedestrian features. Three attributes were of particular importance: overall sidewalk condition, type of material, and specific issues related to sidewalks. The inventory also collected data on crosswalk locations, curb ramp conditions, buffer (median) widths, and handicap accessibility. A catalog of geo-coded photos was also compiled to show and locate sidewalk issues identified during the inventory. The data was collected August 9-13, 2010.

a. Sidewalk Condition

The inventory used four condition ratings (Excellent, Good, Deficient, and Damaged) to measure the overall condition of existing sidewalks in the Village. Map 1 shows the results of the sidewalk condition evaluation.

1. Excellent: No maintenance required.
2. Good: Unlikely to hinder mobility of the average pedestrian. Sidewalk free from significant cracking, buckling, gravel surfaces, or other debris which would impede pedestrian traffic.
3. Deficient: Uneven and distressed surface that hinder mobility of the average pedestrian. Contains surface cracks, negligible vegetation overgrowth, or debris.
4. Damaged: Impassable to mobility impaired pedestrian; hinders mobility of average pedestrian. Deep cracking or buckling, significant vegetative overgrowth, and/or debris such that pedestrian travel would be impeded.

The inventory identified a total of 11.2 miles or approximately 59,500 linear feet of existing sidewalks in the Village. Of this total, 54% (almost 32,000 linear feet) was rated as either excellent or good, with the remaining 46% (almost 27,000 linear feet) rated as deficient or damaged. Table 1 shows the results of the condition inventory.

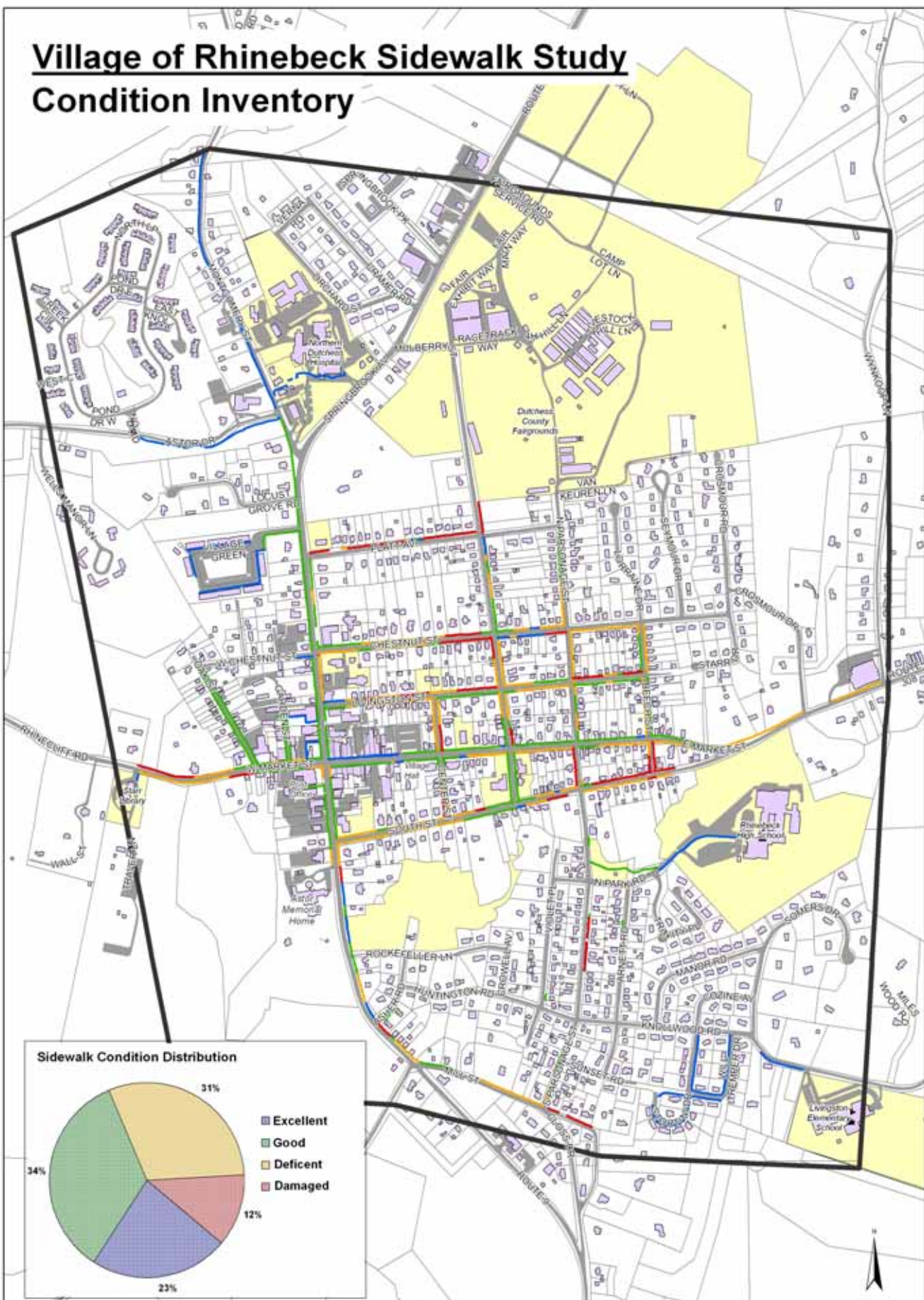
Table 1. Sidewalk Conditions

Condition	Length (feet)	Length (miles)	Percent
Excellent	13,719	2.6	23%
Good	18,250	3.5	31%
Deficient	19,877	3.8	34%
Damaged	7,090	1.3	12%
	58,937	11.2	

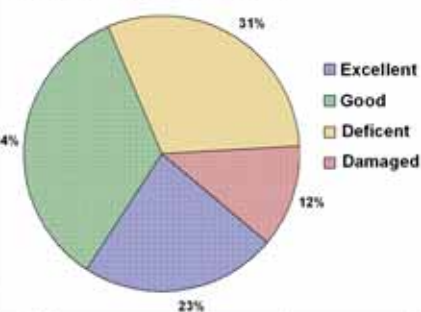
b. Sidewalk Material

Village of Rhinebeck Sidewalk Study

Condition Inventory



Sidewalk Condition Distribution



Activity Centers	Excellent	Deficient
Public Schools	Good	Damaged

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0 250 500 1,000 1,500 2,000 Feet

The inventory identified the types of materials used to construct existing sidewalks in the Village. Six material types were captured: concrete, bluestone, stone aggregate, asphalt, brick, and other (e.g. gravel). The inventory indicated that concrete was the most prevalent type of construction material, making up 54% (almost 32,000 linear feet) of all existing sidewalks. This was followed by bluestone, which made up 28% (over 16,000 linear feet) of existing sidewalks. The remaining materials made up approximately 18% (over 10,000 linear feet). Map 2 shows the results of the sidewalk material evaluation.

Table 2 shows the results of the material inventory, including the number of issues associated with each type of material. When measured as a rate (linear feet/number of issues), concrete sidewalks had fewer issues per foot than those sidewalks constructed with bluestone, stone aggregate, or bricks/pavers.

Table 2. Sidewalk Material

Construction Material	Length (feet)	Length (miles)	Percent	Number of Issues	Issue Frequency
Concrete	31,906	6.0	54%	175	1 per 182 ft
Bluestone	16,345	3.1	28%	211	1 per 77 ft
Stone Aggregate	5,594	1.1	9%	67	1 per 83 ft
Asphalt	4,682	0.9	8%	11	1 per 426 ft
Brick/Other	410	0.1	1%	23	1 per 18 ft
	58,937	11.2			

c. Sidewalk Issues

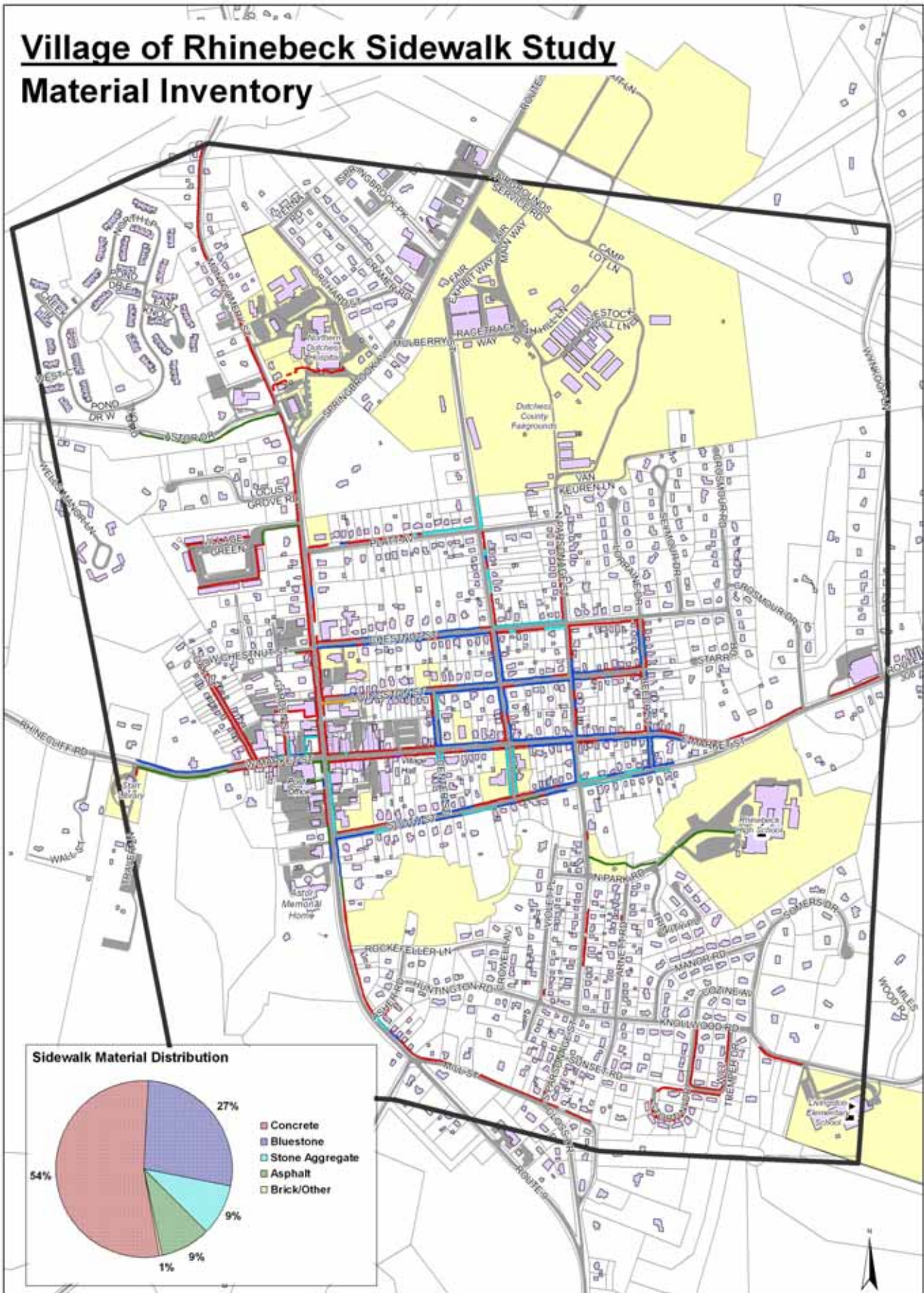
The inventory identified seven types of issues related to sidewalks: lifted, cracked, removed, clearance, obstruction, worn, and other. Map 3 shows the results of the sidewalk issues evaluation.

1. Lifted: Pieces of sidewalk lifted up with uneven surfacing.
2. Cracked: Cracking or broken pieces in the sidewalk.
3. Removed: Sidewalk sections have been removed or are missing.
4. Clearance: Insufficient room to walk due to branches, bushes, trash, or parked cars (temporary).
5. Obstruction: Utilities, signs, etc. in the sidewalk itself, limiting walkability (permanent).
6. Worn: Sidewalk surface worn to an unsafe level.
7. Other: Any issue not captured above.

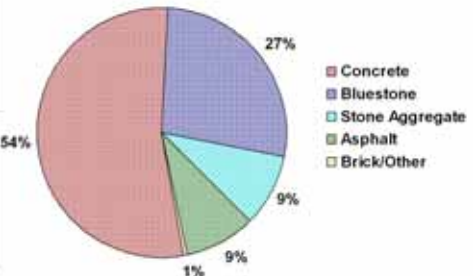
A total of 487 specific issues were identified during the inventory, with lifting and cracking issues most prevalent. Table 3 shows the results of the issues inventory.

Village of Rhinebeck Sidewalk Study

Material Inventory



Sidewalk Material Distribution



Material

Activity Centers	Concrete	Asphalt
Public Schools	Bluestone	Brick
	Stone Aggregate	Other

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Table 3. Sidewalk Issues

Issue	Count	Percent
Lifted	206	42%
Cracked	169	35%
Removed	55	11%
Clearance	41	8%
Obstruction/Worn/Other	16	3%
	487	

d. Field Observations

Council and Planning Department staff made the following observations during their field work in August 2010.

1. Sidewalk Condition

- a) Excellent and damaged sidewalks stood out.
- b) Sometimes difficult to differentiate between a good or deficient sidewalk.
- c) Tree roots appeared to lift up sidewalks, regardless of sidewalk material type.
- d) Conditions/ratings could change frequently along individual blocks.
- e) Pronounced lack of sidewalks in the area south of South Street; random sidewalk placement when present.
- f) Lack of connecting sidewalks to the eastern part of the Village.
- g) Some streets have sidewalks on only one side of the street.
- h) Isolated cases of sidewalk encroachment or removal by property owners.

2. Sidewalk Material

- a) Type of material could change often along individual blocks.
- b) Most new sidewalks made of concrete with similar construction techniques.

3. Sidewalk Issues

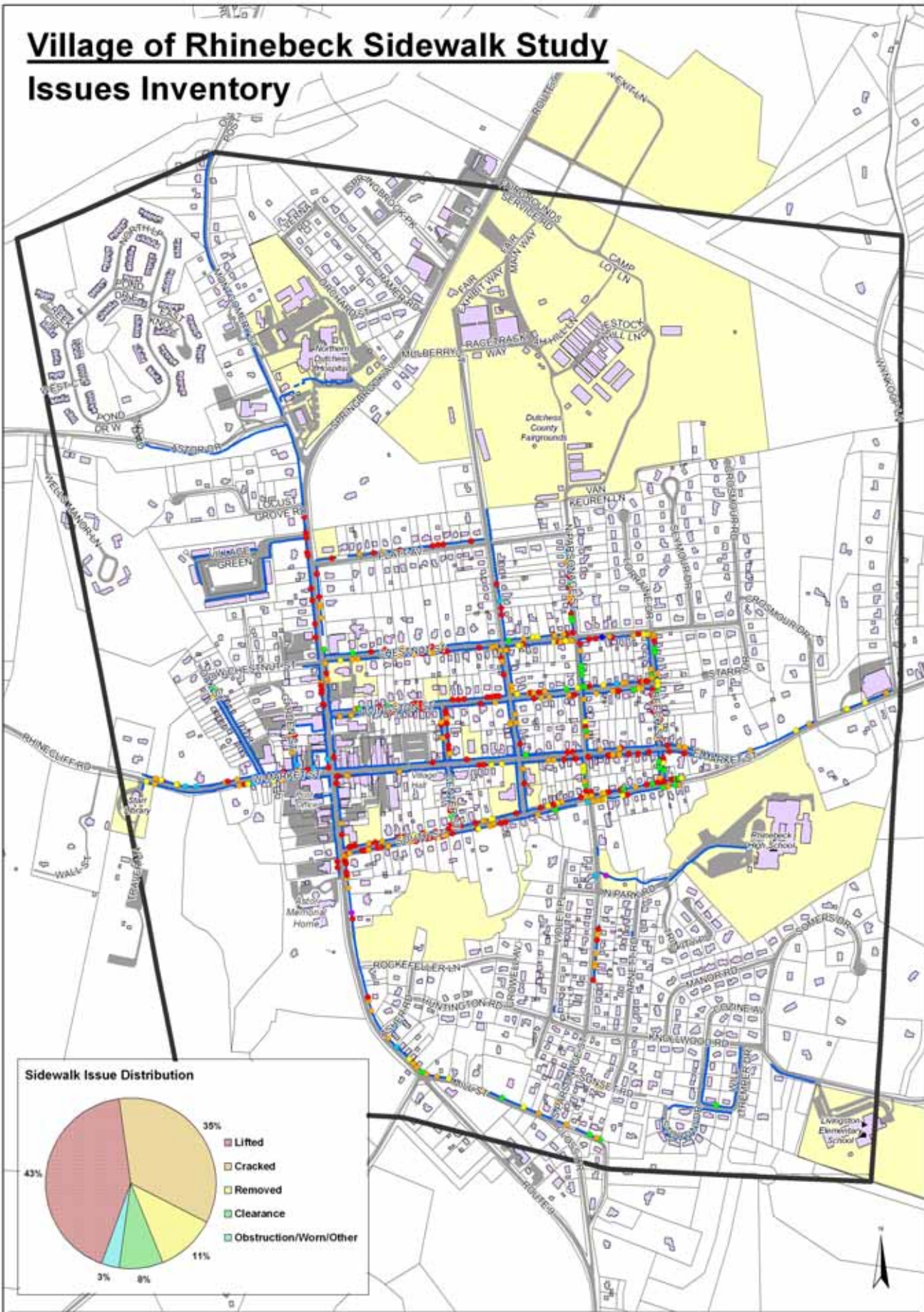
- a) Sections categorized as damaged often had too many issues to single-out.
- b) Lack of crosswalks at key intersections.
- c) Street ramps at intersections often in deficient or damaged condition.

5. Sidewalk Improvement Strategy

The second component of the study involves the formation of a sidewalk improvement strategy to assist the Village with prioritizing future sidewalk infrastructure investments. Council and Planning Department staff developed the strategy through a study of existing conditions and feedback from the Village Board and Pedestrian Task Force; staff also reviewed responses from the written survey conducted by the Village in November 2010 and comments from the public

Village of Rhinebeck Sidewalk Study

Issues Inventory



Existing Sidewalks	Issues	Clearance
Activity Centers	Lifted	Obstruction
Public Schools	Cracked	Worn
	Removed	Other

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0 250 500 1,000 1,500 2,000 Feet

Map 3 of 4

made at the Village Board workshop held on November 10, 2010.

The sidewalk improvement strategy has three major objectives:

- Improve pedestrian access within the Village center, defined as the area within a ½ mile walking distance from the Route 9 (Montgomery/Mill Street) and Route 308 (Market Street) intersection (or the “four corners”).
- Improve pedestrian access to public facilities (e.g. library and schools).
- Improve pedestrian access to the Village center from the northern and southern sections of the Village.

Given the cost and complexities associated with achieving these objectives, the Council and Planning Department recommend a three-phased sidewalk improvement strategy that identifies first, second, and third priority work items, which systematically meet the above objectives. A specific timeframe for accomplishing these recommendations has not been established, since their implementation will rely on the availability of future funding and competing Village priorities. Map 4 shows the locations of first, second, and third priority work items.

a. First Priority Recommendations

The sidewalk improvement strategy includes a number of recommendations that the Village should consider as first priority work items that will improve pedestrian safety and access. These first priority recommendations address the core aspects of the strategy’s objectives.

1. Village Center (first priority streets)

The historic Village center should be supported by a safe and contiguous sidewalk system that is in excellent or good condition. To achieve this, deficient or damaged sidewalks along Route 9 (Montgomery/Mill Street) and Route 308 (West-East Market Street) and nearest to the Village center (Four Corners intersection) should be reconstructed. These improvements should specifically focus on sidewalks located one to two blocks north or south of the intersection and two-blocks to the east or west. The following sidewalk segments were identified as first priority work items (listed in priority):

a) Route 9 (Montgomery/Mill Street)

- (1) South of East Market Street: Reconstruct the existing 75 foot segment of sidewalk, rated as deficient, on the east-side of Route 9 (southeast corner of the Four Corners intersection).
- (2) Chestnut Street to Livingston Street: Reconstruct the existing 315 foot segment of sidewalk, rated as both damaged and deficient, along the east-side of Route 9.

b) West-East Market Street

- (1) Oak Street to Garden Street: Reconstruct the 70 foot segment of sidewalk, rated as deficient, on the north-side of West Market Street.

Village of Rhinebeck

Sidewalk Improvement Strategy

The Task Force recommends a multi-phased process to repair/replace sidewalks rated as *deficient or damaged* and to construct several new sidewalks and multiple crosswalks over the next three to five years.

Phase One (Marked Red)

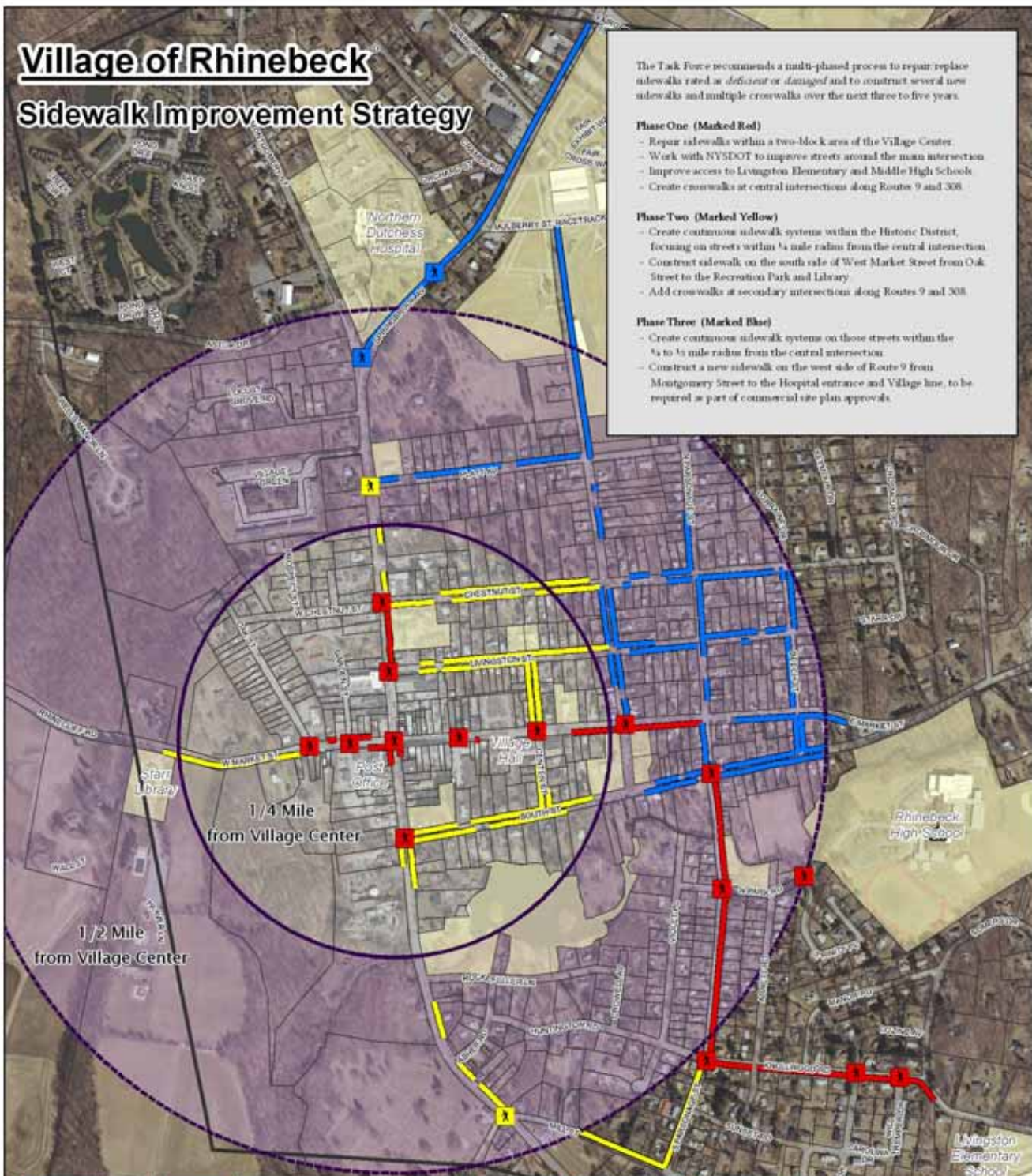
- Repair sidewalks within a two-block area of the Village Center.
- Work with NYSDOT to improve streets around the main intersection.
- Improve access to Livingston Elementary and Middle High Schools.
- Create crosswalks at central intersections along Routes 9 and 308.

Phase Two (Marked Yellow)

- Create continuous sidewalk systems within the Historic District, focusing on streets within 1/4 mile radius from the central intersection.
- Construct sidewalk on the south side of West Market Street from Oak Street to the Recreation Park and Library.
- Add crosswalks at secondary intersections along Routes 9 and 308.

Phase Three (Marked Blue)

- Create continuous sidewalk systems on those streets within the 1/4 to 1/2 mile radius from the central intersection.
- Construct a new sidewalk on the west side of Route 9 from Montgomery Street to the Hospital entrance and Village line, to be required as part of commercial site plan approvals.



Village Center Pedestrian Projects

- Shorten crosswalks to increase pedestrian safety & visibility.
- Add diagonal parking on West Market Street to calm traffic.
- Provide extra shade trees, landscaping, and sitting places.
- Enhance central green as unifying symbol of Village history.
- Add hotel patio & rear walkway to activate center green.

Sidewalk Recommendations	Crosswalk Recommendations	Activity Centers
█ First Priority	█ First Priority	█ Activity Centers
█ Second Priority	█ Second Priority	
█ Third Priority	█ Third Priority	

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Map 4

- (2) Garden Street to Route 9 (Montgomery/Mill Street): Reconstruct the 115 foot segment of sidewalk, rated as deficient, on the north-side of West Market Street.
- (3) Route 9 (Montgomery/Mill Street) to Center Street: Reconstruct the 40 foot segment of sidewalk, rated as deficient, on the south-side of East Market Street.
- (4) Center Street to Mulberry Street: Reconstruct the 300 foot segment of sidewalk, rated as deficient, on the south-side of East Market Street.

c) Four Corners Intersection

The New York State Department of Transportation (NYSDOT) intends to make signal improvements at the Four Corners intersection in 2011. As part of that project, the Village, Council, and Planning Department recommend that pedestrian oriented improvements also be included in the project. Specifically, three features are recommended:

- (1) Add bulb-outs (sidewalk extensions) at each corner to shorten walking distances across each approach.
- (2) Realign the crosswalk at the northern leg so that it is perpendicular to the near street curb.
- (3) Add pavement markings and signs to encourage pedestrians to cross diagonally (e.g. pedestrian scramble).

The improvements identified as first priority work items in the Village center total 915 linear feet of reconstructed sidewalks.

2. Pedestrian Crosswalks

Except for a few locations, such as the Four Corners intersection, there is a pronounced lack of pedestrian crosswalks throughout the Village, most notably across Route 9 (Montgomery/Mill Street) and Route 308 (West-East Market Street). This recommendation calls for the placement of crosswalks at key intersections within the Village center, which will improve pedestrian safety and encourage pedestrians to use vary their walking routes. Crosswalks will also allow for better access to commercial establishments with the Village center. Crosswalks should therefore be added at each of the following locations (listed in priority):

a) Route 9 (Montgomery Street/Mill Street)

- (1) Route 9 at Livingston Street: Install three crosswalks; two across Route 9 (northern and southern legs) and one across Livingston Street (eastern leg).
- (2) Route 9 at South Street: Install two crosswalks; one across Route 9 (northern leg) and one across South Street (eastern leg). The existing

crosswalk on Route 9 (southern leg) might also be replaced to be consistent with the new crosswalks.

- (3) Route 9 at Chestnut Street: Install four crosswalks; two across Route 9 (northern and southern legs), one across West Chestnut Street (western leg), and one across Chestnut Street (eastern leg).

b) West-East Market Street

- (1) West Market Street at Garden Street: Install three crosswalks; two across West Market St (western and eastern legs) and one across Garden Street (northern leg).
- (2) West Market Street at Oak Street: Install three crosswalks; two across West Market St (western and eastern legs) and one across Oak Street (northern leg).
- (3) Mid-block across East Market Street: Install one mid-block crosswalk across East Market Street between Route 9 and Center Street, east of the CVS pharmacy driveway.
- (4) East Market Street at Center Street: Install four crosswalks; two across East Market Street (western and eastern legs) and two across Center Street (northern and southern legs).
- (5) East Market Street at Mulberry Street: Install two crosswalks; one across East Market Street (eastern leg) and one across Mulberry Street (northern leg). The two existing crosswalks might also be replaced to be consistent with the new crosswalks.

3. Livingston Elementary School Access

Improve pedestrian access to Livingston Elementary School and better connect the southern part of the Village to the Village Center, by creating a contiguous sidewalk from the Elementary School to the Village center. This recommendation focuses on adding or improving sidewalks along four road segments:

- a) Knollwood Road: Construct a new sidewalk from Somers Drive to South Parsonage Street (1,255 linear feet). The new sidewalk should run along the south-side of Knollwood Road, connecting to existing sidewalks on Will Temper and Stortini Drive. Three crosswalks should also be added where the new sidewalk meets Stortini Drive, Will Temper Drive, and Arnett Road.
- b) South Parsonage Street: Construct/reconstruct a new sidewalk on the east-side from Knollwood Road to North Park Road (940 linear feet). A crosswalk should also be added where the sidewalk meets North Park Road.
- c) South Parsonage Street: Construct a new sidewalk on the east-side from North Park Road to South Street, connecting with the Park entrance (525 linear feet).
- d) South Parsonage Street: Reconstruct the existing sidewalk, rated as damaged, on the west-side between South Street and East Market Street (300 linear feet).

These improvements entail 3,020 linear feet of new or reconstructed sidewalks.

4. Rhinebeck High School Access

Improve pedestrian access to Rhinebeck High School, by creating a safe pedestrian connection from the school driveway, through the Park, and to the South Parsonage Street sidewalk. This includes closing a 140 foot gap between the existing sidewalk across the bridge on the east-side of South Parsonage Street. Two new crosswalks should also be added: 1) At the High School entrance; and 2) Across South Parsonage Street at the Park entrance.

Combined, these four sets of first priority recommendations entail the construction or reconstruction of almost 4,075 linear feet of new or existing sidewalks (including improvements at the Four Corners intersection).

b. Second Priority Recommendations

The sidewalk improvement strategy includes four sets of recommendations that the Village should consider as second priority work items, which will build upon the first priority improvements. These second priority recommendations further the strategy’s three objectives.

1) Village Center (second priority streets)

Create a contiguous sidewalk system within the historic district of the Village center, focusing on those streets that are within a ¼ mile walking distance from the Route 9 (Montgomery/Mill Street) and Route 308 (Market Street) intersection (e.g. Four Corners intersection). This recommendation involves the reconstruction of 7,000 feet of sidewalks that are rated deficient or damaged within the ¼ mile walking distance. In addition to reconstructing deficient and damaged sidewalks on Chestnut Street, Livingston Street, South Street, Center Street, and Mulberry Street, the following sidewalk segments on Route 9 (Montgomery/Mill Street), Route 308 (Market Street), should be reconstructed:

- (1) Route 9 (Montgomery Street): From Chestnut Street to Platt Street, construct a new 110 foot sidewalk in front of the Ruge’s Subaru service garage (east-side), and reconstruct the 108 foot segment, rated as deficient, on the east-side (220 feet total).
- (2) Route 9 (Mill Street): Immediately south of South Street, reconstruct the 290 foot section of sidewalk rated as deficient and damaged on the east-side, and reconstruct the 115 foot segment rated as deficient on the west-side (407 feet total).
- (3) Route 308 (East Market Street): From Mulberry Street to North Parsonage Street, reconstruct the 530 foot segment of sidewalk rated as deficient along the south-side.

2) Crosswalks

Upon completion of the first priority crosswalks, additional crosswalks should be installed on Route 9 (Montgomery/Mill Street) and Route 308 (East Market Street) at the following intersections:

- a. Route 9 (Montgomery Street) at Platt Avenue: Install three crosswalks; two across Route 9 (northern and southern legs) and one across Platt Avenue (eastern leg).
- b. Route 308 (East Market Street) at North/South Parsonage Street: Install four crosswalks; two across Route 308 (western and eastern legs), one across North Parsonage (northern leg), and one across South Parsonage Street (southern leg).
- c. Route 9 (Mill Street) at Mill Street: Install a crosswalk across Route 9.

3) Starr Library & Park Access

Improve pedestrian access to the Starr Library and adjoining Park, two key public facilities for the Village and Town of Rhinebeck. This recommendation entails the reconstruction of 890 feet of sidewalk on the south-side of West Market Street, from Oak Street to the shared Starr Library/Park entrance. This sidewalk is rated as deficient or damaged.

4) Southern Access

Continue to improve pedestrian access to the Village center from the southern part of the Village. This recommendation identifies the construction/reconstruction of 1,835 linear feet of new or existing sidewalks along three roads:

- a. South Parsonage Street: From Knollwood Road to Mill Street, construct/reconstruct 510 feet of sidewalk on the west-side.
- b. Mill Street: From South Parsonage Street to Route 9 (Mill Street), construct/reconstruct 700 feet of sidewalk on the north-side.
- c. Route 9 (Mill Street): From Mill Street to Rockefeller Street, reconstruct 625 feet of sidewalk rated deficient or damaged on the east-side. Install crosswalks where the sidewalk meets Asher Road and Rockefeller Street.

Combined, these four sets of second priority recommendations entail the construction or reconstruction of 10,880 linear feet of new or existing sidewalks.

c. Third Priority Recommendations

The sidewalk improvement strategy includes three sets of recommendations that the Village should consider as third priority work items, which will build upon the first and second priority improvements. These third priority recommendations complete the strategy's three objectives.

1) Village Center (third priority streets)

Create a contiguous sidewalk system within the Village center, focusing on those streets

located within the ¼ mile to ½ mile walking distance from the Route 9 (Montgomery/Mill Street) and Route 308 (Market Street) intersection (e.g. Four Corners intersection). This recommendation seeks to improve sidewalks that are rated deficient or damaged and not included under the second priority recommendations. These improvements total approximately 12,400 linear feet of new or improved sidewalks on seven streets: Platt Street, Chestnut Street, Livingston Street, South Street, Mulberry Street, Parsonage Street, and Beech Street. Route 9 (Montgomery Street).

- a. Construct a new 610 foot sidewalk on the west-side from Montgomery Street to the Northern Dutchess Hospital entrance. A crosswalk should also be added across Montgomery Street.
- b. In addition, a 1,400 foot sidewalk should be added along Route 9 (west-side) from the Northern Dutchess Hospital entrance to the Dutchess County Fairgrounds Main Entrance.

2) Dutchess County Fairgrounds Access

The Dutchess County Fairgrounds hosts a number of major events during the year that generate large volumes of vehicular traffic through the Village. In order to minimize these traffic impacts, and draw visitors into the Village’s commercial district, the Village, in coordination with NYSDOT, should consider sidewalk improvements on the east-side of Mulberry Street from Platt Avenue to the Mulberry Street Fairground entrance (Gate 2).

Combined, these three sets of third priority recommendations entail the construction or reconstruction of over 14,400 linear feet of new or existing sidewalks.

d. Sidewalk Improvement Strategy Summary

The Sidewalk Improvement Strategy identifies specific work priorities that the Village should pursue to improve their sidewalk system. In total it includes the construction or reconstruction of over 29,000 linear feet of new or existing sidewalks, coupled with the placement of crosswalks at 17 street intersections. These numbers point to the scope of the challenge facing the Village Board as they attempt to create a safe and seamless walking environment throughout the Village. This strategy addresses this challenge by establishing a logical, systematic approach to improving the sidewalk system.

6. Unit Cost Estimates

Unit cost estimates were gathered from NYSDOT. According to the Pay Item Catalog maintained by NYSDOT, the statewide average cost to construct a concrete sidewalk in 2009 was \$60-65 per linear foot. This assumes a 4-inch deep, 5-foot wide concrete sidewalk with a 6-inch sub-base and associated excavation work. This does not include costs associated with design, right-of-way acquisition, or tree work. Table 4 shows the price histories of sidewalk related materials, which factor in construction costs for each item.

Table 4. NYSDOT Pay Item Catalog Price Histories (2009) (Rounded to nearest dollar)

Item No.	Item Description	Pay Unit	Average Cost
Sidewalk Material			
608.0101	Concrete Sidewalks & Driveways	Cubic Meter	\$535
		Cubic Foot	\$15
608.0511	Bluestone Sidewalk Pavers (Mortar Setting Bed)	Square Meter	\$300
		Square Foot	\$28
608.1103	Bluestone Sidewalk (Mortar Setting Bed)	Square Meter	\$509
		Square Foot	\$47
608.0800	Grouted Stone Block Paved Sidewalks (Sand Setting)	Square Meter	\$418
		Square Foot	\$39
608.0400	Brick Paved Sidewalk & Driveway (Mortar Setting Bed)	Square Meter	\$234
		Square Foot	\$22
608.0301	Precast Concrete Pavers for Driveways, Sidewalks, & Paths	Square Meter	\$300
		Square Foot	\$28
608.0102	Colored & Imprinted Portland Cement Concrete Sidewalk	Cubic Meter	\$832
		Cubic Foot	\$24
608.0103	Colored Portland Cement Concrete Sidewalk	Cubic Meter	\$525
		Cubic Foot	\$15
608.0106	Concrete Sidewalk Curb Ramp	Square Meter	\$244
		Square Foot	\$23
608.0205	Asphalt Concrete Sidewalks, Driveways, & Paths	Metric Tons	\$255
Curb Material			
609.0401	Cast in Place Concrete Curb (Type VF150)	Meter	\$64
		Foot	\$20
609.0201	Stone Curb, Granite (Type A)	Meter	\$132
		Foot	\$40
Other Material/Work			
304.1100	Sub-base Course (Type 1)	Cubic Meter	\$96
		Cubic Foot	\$3
203.0200	Unclassified Excavation & Disposal	Cubic Meter	\$9
		Cubic Foot	\$0.25
Crosswalks			
	Colored Polymer Crosswalk (e.g. Raymond Avenue, C/Pok)	Square Meter	\$200
		Square Foot	\$19
	Pavement Texturing (Street Print)	Square Meter	\$85
		Square Foot	\$8
	Epoxy Striping	Meter	\$0.96
		Foot	\$0.29

7. Funding Options

There are a variety of funding sources available for pedestrian projects, ranging from local municipal funds to federal transportation funds.

a. Local Funds

Although local resources are extremely limited, local funds are more flexible and require less reporting and administrative work than federal funds; some municipalities find that it is less expensive to use local funds than federal funds. Local funding mechanisms include the following:

1. General Fund/Discretionary Funds: Though local general funds are the most flexible funding source, they are also the most limited. The Village will need to weigh the project against other local priorities.
2. Local Bond: The Village might seek pursue a local bond to fund sidewalk improvements.
3. Development Condition of Approval: Depending on the level of redevelopment expected in the Village, sidewalks could be funded through a condition of approval on proposed development projects. Prospective developers would have to construct or provide funding for construction of the pedestrian improvements as part of their project.
4. Foundation Grants: Foundations may have funding for pedestrian and/or school-related projects. The Foundation Center website has a national database of grant-makers and grants, as well as other tools for grant-seekers; see <http://foundationcenter.org>.

b. Federal Funds

Most federal transportation funding originates from the multi-modal federal transportation law in effect at the time; the most recent being the Safe, Accountable, Flexible, Efficient Transportation Equity Act-a Legacy for Users (SAFETEA-LU), which expired in 2009. SAFETEA-LU has been extended through a number of Continuing Resolutions and will eventually be superseded by the next federal transportation law. As of the date of this report, Congress has not yet passed a new transportation funding bill, making the status of current funding programs uncertain. Current funding programs may end or be re-organized. However, the Administration's focus on "livability" and "smart growth" implies that funding for pedestrian improvements would be included in federal programs.

To use federal transportation funding, a project must be consistent with an overall transportation plan, such as *New Connections* (2007) and be included in the PDCTC's Transportation Improvement Program (TIP).

Federal transportation funding sources that could be used include the following:

1. National Highway System (NHS): These funds may be used to construct pedestrian facilities on land adjacent to any highway on the National Highway System, which includes Route 9.
2. Surface Transportation Program (STP): These funds may be used either for the construction of bicycle transportation facilities and pedestrian walkways, or non-construction projects (such as brochures, public service announcements, and route maps) related to safety. A portion of each State's STP funds must be used for Transportation Enhancement Activities (see below).
3. Transportation Enhancement Program (TEP): This is a reimbursement program that provides funding for pedestrian and/or bicycle infrastructure, as well as scenic easements, landscaping, historic preservation, and other projects. The program is funded by a set-aside under the federal Surface Transportation Program. Projects must have a municipal sponsor, a minimum total cost of \$200,000, and include a minimum twenty percent non-federal match. Eligible costs include studies, design, construction, and right-of-way acquisition. Administrative and maintenance costs are not eligible. For more information on the program, see www.dot.state.ny.us/progs/tep.html.
4. Congestion Mitigation Air Quality Program (CMAQ): These funds may be used either for the construction of bicycle transportation facilities and pedestrian walkways or non-construction projects (such as brochures, public service announcements, and route maps) intended to reduce single occupant vehicle use by increasing bicycle and pedestrian use. These projects must be primarily for transportation rather than recreation, and must have a demonstrated impact on improving existing congestion or air quality. Funding is available for areas that do not meet the National Ambient Air Quality Standards (nonattainment areas) as well as former nonattainment areas that are now in compliance (known as maintenance areas). Because Dutchess County is part of a nonattainment area for ozone, CMAQ funds are available for local projects. More information is available on FHWA's CMAQ webpage.
5. Safe Routes to School (SRTS): This is a federal reimbursement program that provides funding for engineering as well as enforcement, education, and encouragement activities that support walking and bicycling to school by elementary and middle school students. SRTS funds can be used for projects that will improve safety and reduce vehicular traffic, fuel consumption and air pollution within a two-mile vicinity of primary and middle schools (grades K-8). In New York State, the program is managed by NYSDOT. NYSDOT will reimburse up to 100 percent of eligible project costs, which include planning, design, construction, outreach, education and enforcement. Right-of-way acquisition, relocation of utilities, and wetland remediation are not eligible costs. Applicants can be a County, City, Village, Town, public school district, individual public, charter, private or parochial school, or a non-profit organization. More information is available on NYSDOT's SRTS website.
6. Community Development Block Grants (CDBG): These are federal funds from the U.S. Department of Housing and Urban Development and are administered by the Dutchess

County Department of Planning and Development. Eligible activities include economic development and infrastructure improvements (such as sidewalk construction, road work, and drainage) in areas defined as low and moderate income, or in some cases to benefit disabled persons or the elderly. CDBG could fund construction and engineering work, but not an engineering study or administrative costs.

The federal share of the costs of projects under the NHS, STP, CMAQ and TEP programs is generally 80 percent. If these funds were used, the project sponsor would be responsible for the required local match and any costs that are not covered by the federal funds.

Engineering studies can be funded by local funds, TEP, or SRTS funds. The design and construction of pedestrian facilities could be funded by any of the sources above, and could be a stand-alone project or combined with a roadway project. A large project could also be split into several smaller pieces with funding from different programs.

8. Final Thoughts

Communities across the nation face the challenge of prioritizing the repair of aging infrastructure or constructing additional improvements to meet future needs. Such improvements take time and funding, both of which can be in short supply. That said, all communities must start somewhere; this study hopefully provides the Village with that start. First, by identifying the scope of the challenge through an assessment of existing sidewalk facilities and second, by presenting priority work improvements to improve the sidewalk system and reinforce pedestrian connections throughout the Village.