



COMMUNITY
connectivity program

Ridgefield

Danbury Road (Route 35) & Farmingville Road (Route 61)

Multi-Use Trail – Road Safety Audit

June 14, 2016



AECOM

Built to deliver a better world

Acknowledgements:

OFFICE OF INTERMODAL PLANNING
BUREAU OF POLICY AND PLANNING
CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

Contents

1	Introduction to the Ridgefield (Multi-Use Trail) RSA.....	5
1.1	Location	5
2	Pre-Audit Assessment	8
2.1	Pre-Audit Information.....	8
2.2	Prior Successful Efforts.....	12
2.3	Pre-Audit Meeting	12
3	RSA Assessment.....	13
3.1	Field Audit Observations	13
3.2	Post-Audit Workshop - Key Issues.....	14
4	Recommendations	16
4.1	Short Term	16
4.2	Medium Term	19
4.3	Long Term.....	21
4.4	Summary.....	22

Figures

Figure 1.	Danbury Road and Farmingville Road	6
Figure 2.	Danbury Road and Farmingville Roads Regional Context.....	7
Figure 4.	Crashes that Occurred in 2015 (Connecticut Crash Data Repository)	9
Figure 5.	Danbury Road and Farmingville Road Geometrics.....	10
Figure 6.	No Crossing to Sidewalk	13
Figure 7.	Stone Wall to be Set Back.....	13
Figure 8.	Overgrown Stone Wall	13
Figure 9.	Existing ADA Ramps Not Compliant.....	14
Figure 10.	Existing Advanced Intersection Warning	14
Figure 11.	Insufficient Space Between Trail and Roadway	15
Figure 12.	No ADA Compliant Button	15
Figure 13.	Inconsistent Signage	15
Figure 14.	Move Sign for Improved Visibility	17
Figure 15.	Fix Tilted Sign.....	17
Figure 16.	Update All Signage to Indicate Correct Number of Stop Approaches	17
Figure 17.	Countdown Signal.....	17
Figure 18.	Realign Tactile Warning Strips to Face Direction of Crosswalk	17

Figure 19. Add Missing Crosswalks	17
Figure 20. Short Term Recommendations	18
Figure 21. Guiderail Between Trail and Roadway	19
Figure 22. Widen Sidewalk	19
Figure 23. Medium Term Recommendations	20
Figure 24. Long Term Recommendations	21

Tables

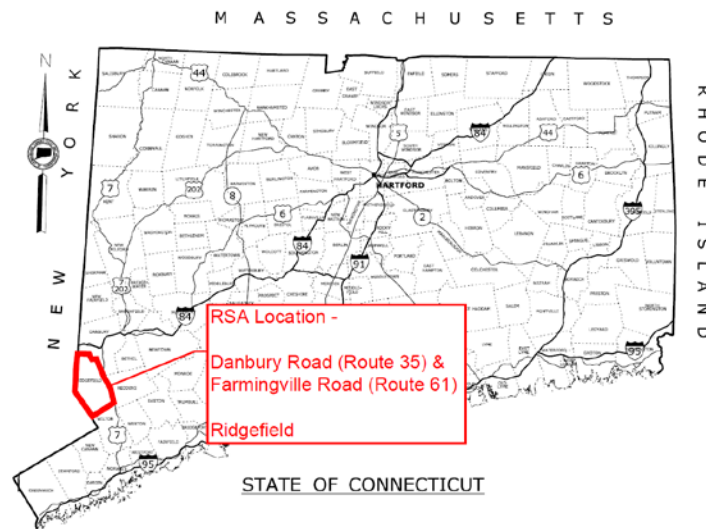
Table 1. Crash Severity	8
Table 2. Crash Type.....	9
Table 3. Intersection Street Inventory	11



The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this program is conducting Road Safety Audits (RSA's) at selected locations. An RSA is a formal safety assessment of the existing conditions of walking and biking routes and is intended to identify the issues that may discourage or prevent walking and bicycling. It is a qualitative review by an independent team experienced in traffic, pedestrian, and bicycle operations and design that considers the safety of all road users and proactively assesses mitigation measures to improve the safe operation of the facility by reducing the potential crash risk frequency and severity.

The RSA team is made up of CTDOT staff, municipal officials and staff, enforcement agents, AECOM staff, and community leaders. An RSA team is established for each municipality based on the requirements of the individual location. They assess and review factors that can promote or obstruct safe walking and bicycling routes. These factors include traffic volumes and speeds, topography, presence or absence of bicycle lanes or sidewalks, and social influences.

Each RSA was conducted using RSA protocols published by the FHWA. For details on this program, please refer to www.ctconnectivity.com. Prior to the site visit, area topography and land use characteristics are examined using available mapping and imagery. Potential sight distance issues, sidewalk locations, on-street and off-street parking, and bicycle facilities are also investigated using available resources. The site visit includes a "Pre-Audit" meeting, the "Field Audit" itself, and a "Post-Audit" meeting to discuss the field observations and formulate recommendations. This procedure is discussed in the following sections.



1 Introduction to the Ridgefield (Multi-Use Trail) RSA

The Town of Ridgefield submitted an application to complete an RSA on the proposed extension of their multi-use trail at the intersection of Danbury Road and Farmingville Road. In the study area the existing sidewalks lack continuity and the proposed multi-use trail will cross the road at two locations. These crossings will occur at the signalized intersection of Danbury Road and Farmingville Road and the three-way stop controlled intersection of Farmingville Road and Ligi's Way. The town has listed traffic volumes and speeds, collisions, traffic signage, traffic signalization, drainage, ADA accommodations and street maintenance as additional safety concerns in the study area.

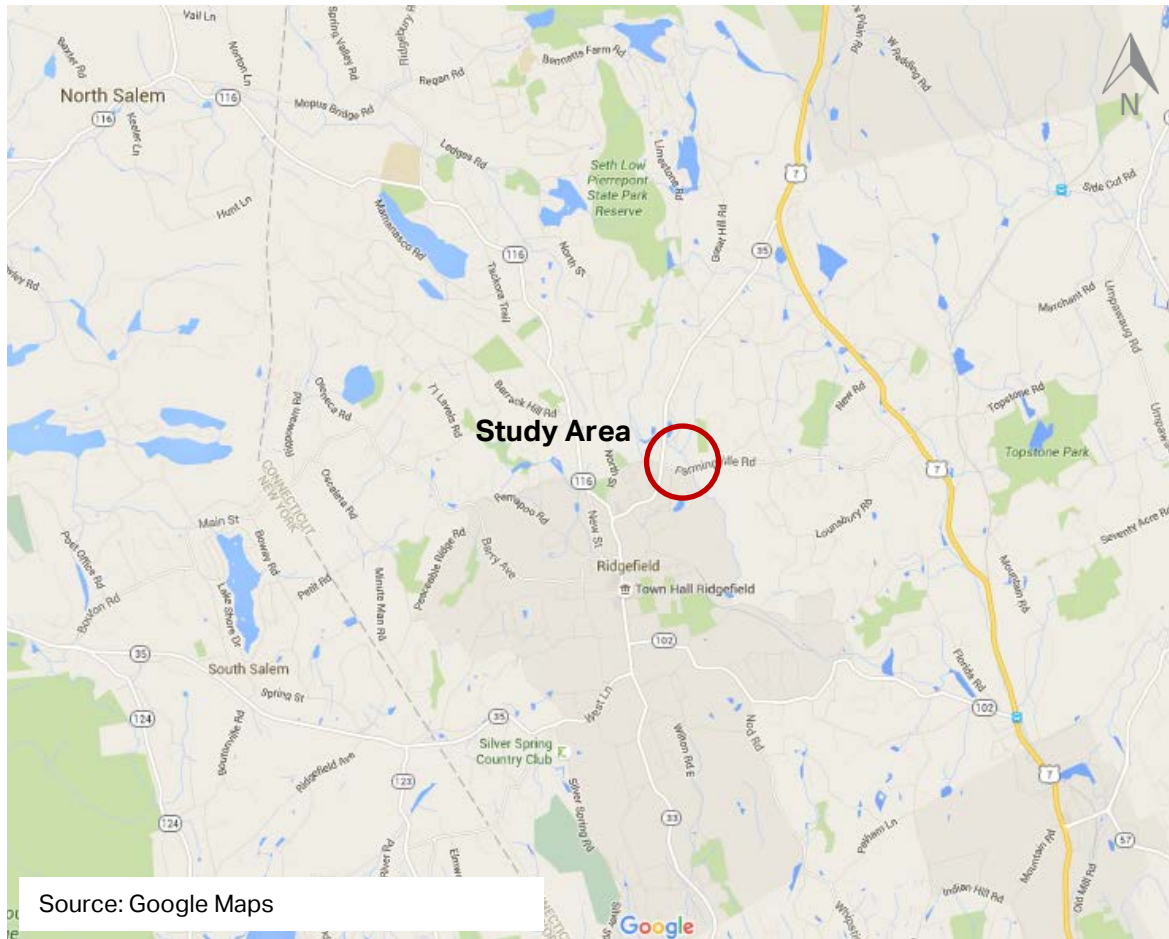
The Town of Ridgefield's application contained a map of the proposed combined use walkway at the audit location, and a Multi-Use Path Study report prepared by Fuss and O'Neill, Inc. in December of 2013. The application and supporting documentation are included in Appendix A.

1.1 Location

The study (Figure 1) includes the section of Danbury Road (Route 35) between a pedestrian bridge over Ridgefield Brook and the intersection with Farmingville Road. It then continues along Farmingville Road for 0.18 miles to the location where the proposed multi-use trail will continue into woodlands (Figure 5). The regional location is presented in Figure 2. Average Daily Traffic (ADT) on Danbury Road north of Farmingville Road is 19,200 vehicles per day (vpd) and the ADT south of Farmingville Road is 16,600 vpd. These are significant volumes of traffic for an intersection to process.



Figure 1. Danbury Road and Farmingville Road



Source: Google Maps

Figure 2. Danbury Road and Farmingville Roads Regional Context

Danbury Road is a state owned and maintained facility that runs in a relatively straight north/south direction. Farmingville Road runs in an east/west direction and is a town owned and maintained facility. The northbound, eastbound and westbound legs of the intersection consist of a single through/right turn lane and an exclusive left turn lane. The southbound approach has two through lanes and an exclusive left turn lane, with right turns sharing the curb lane. All four approaches have protected/permitted left turn phasing, and the intersection also has an exclusive pedestrian signal phase, although there are only painted crosswalks on the northern and western legs.

Sidewalks along Danbury Road and at the intersection with Farmingville Road are not continuous. There are gaps on the east side just south of the intersection, and on the west side just north of the intersection. In general, the existing sidewalks are concrete and 5 feet wide, and in good condition. Most areas have a snow shelf or buffer from the roadway traffic, although the width of the buffer varies significantly from place to place. An inventory of existing conditions at the intersection can be found in Table 3.

2 Pre-Audit Assessment

2.1 Pre-Audit Information

Between 2012 and 2014 there were 131 crashes in the RSA area. Figure 4 displays the geographic distribution of these crashes during 2015. For the most part, crashes are evenly dispersed throughout Danbury Road, although there appears to be a cluster near the intersection with Farmingville Road. The majority of crashes were rear-end collisions followed by angle crashes. This is not unusual for a corridor with heavy traffic volumes. Most of these reported crashes resulted in property damage only, however 15 crashes reports injuries to involved parties. Table 1 and Table 2 provide more detail on the crash severity and collision type.

Severity Type	Number of Accidents	
Property Damage Only	116	89%
Injury of any type (Serious, Minor, Possible)	15	11%
Injury (No fatality)	0	0%
Total	131	

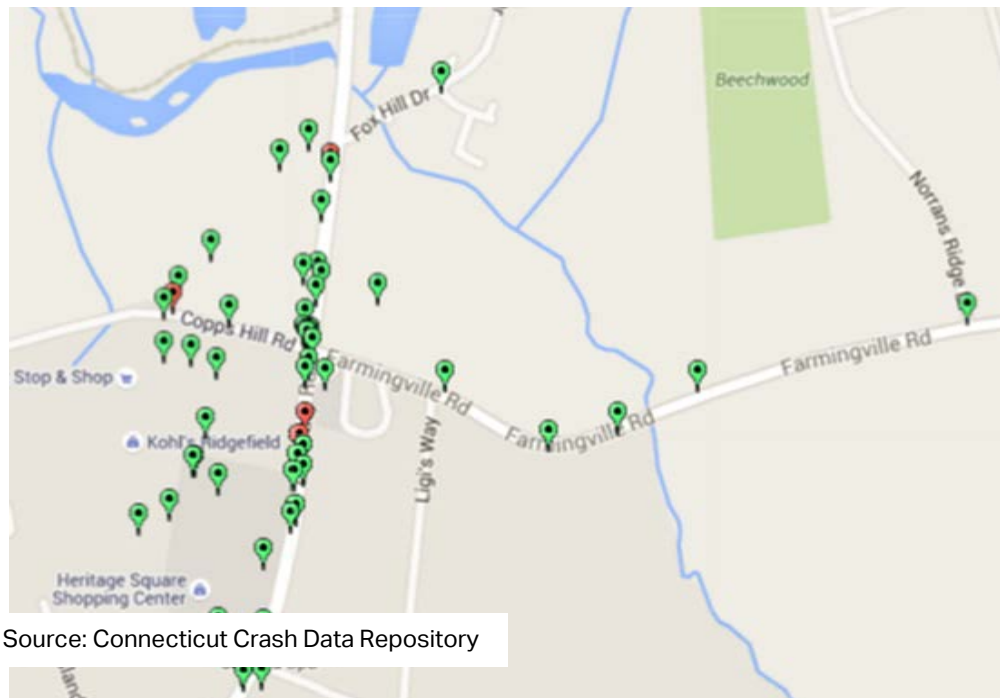
Table 1. Crash Severity

Source: UConn Connecticut Crash Data Repository (2012 – 2014)

Manner of Crash / Collision Impact	Number of Accidents	
Turning-Intersecting Paths	0	0%
Sideswipe-Same Direction	9	7%
Rear-end	66	50%
Angle	22	17%
Backing	6	5%
Turning-Opposite Direction	11	8%
Turning-Same Direction	0	0%
Fixed Object	5	4%
Sideswipe-Opposite Direction	3	2%
Head-on	4	3%
Not Applicable	0	0%
Front to rear	2	2%
Rear to rear	0	0%
Front to front	0	0%
Sideswipe, same direction	3	2%
Sideswipe, opposite direction	0	0%
Total	131	

Table 2. Crash Type

Source: UConn Connecticut Crash Data Repository (2012 – 2014)



Source: Connecticut Crash Data Repository

Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

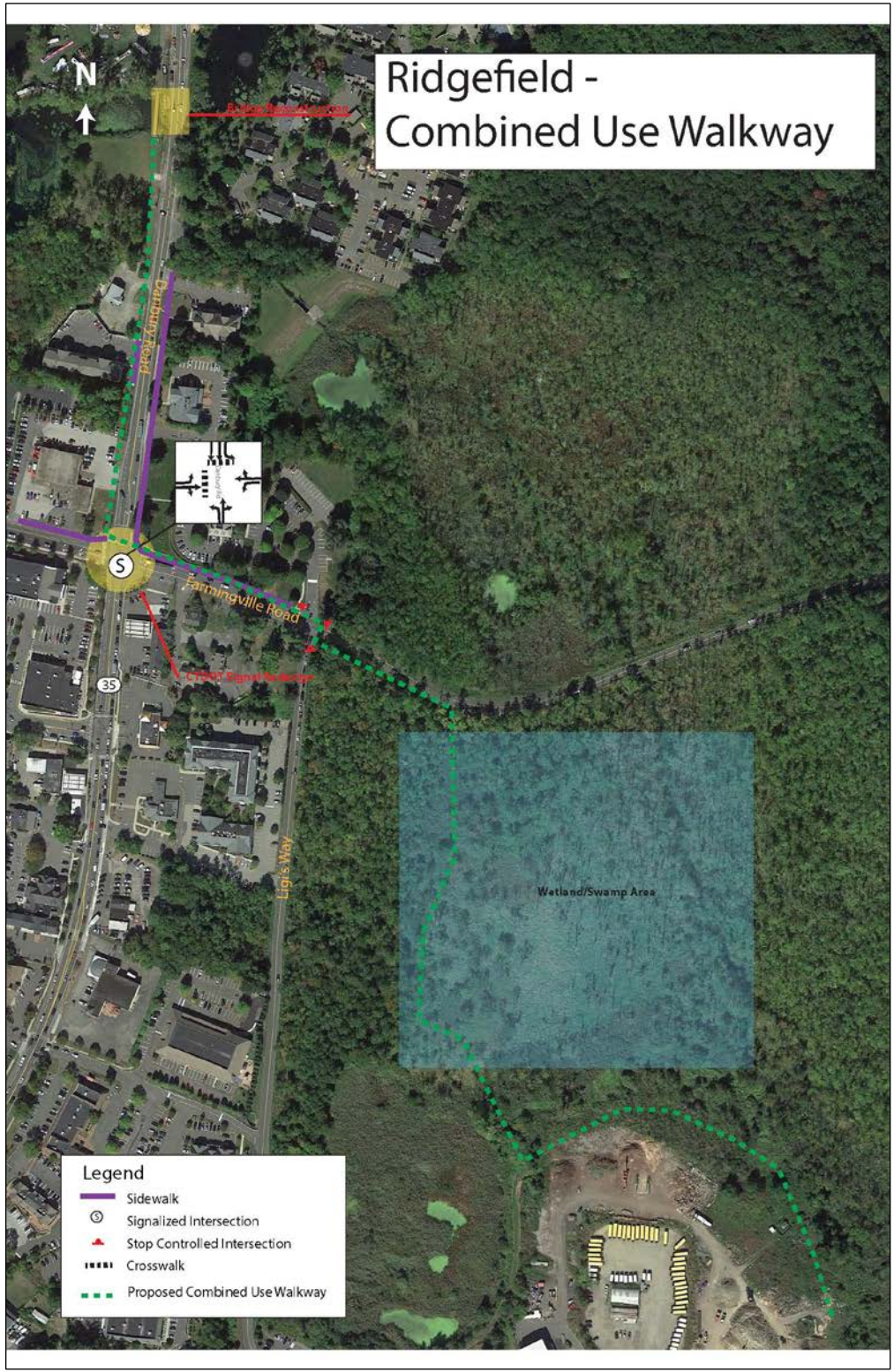


Figure 4. Danbury Road and Farmingville Road Geometrics

Ridgefield - Danbury Road and Farmingville Road Intersection Street Inventory

Street	Route	Approach	Travel Direction	Width	Sidewalk				Curb	Parking	Shoulder	Ramps	
					Side	Type	Width	Condition *				Exist	Compliant
Danbury Road	35	North	2 Way	2 Thru, LT	East	Concrete	5'	Good	Asphalt	No	2'	Yes	No
				1 Departure	West	None	None	None	None	No	2'	Yes	No
Danbury Road	35	South	2 Way	Thru, LT	East	None	None	None	Concrete/Asphalt	No	2'	No	No
				2 Departure	West	Paver	5'	Good	Asphalt	No	2'	Yes	No
Farmingville Road		East	2 Way	Thru, LT	North	Concrete	5'	Good/Fair	Asphalt	No	No	Yes	No
				1 Departure	South	None	None	None	Asphalt	No	No	No	No
Cops Hill Road		West	2 Way	Thru, LT	South	Concrete	5'	Good	Concrete	No	No	Yes	No
				1 Departure	North	Concrete	5'	Fair	Asphalt	No	No	Yes	No

***CONDITION – “Good” is Serviceable Condition that meets current design standards. “Fair” is generally serviceable, but may need minor repairs, or may not completely align with current design standards. “Poor” is not serviceable, and generally inadequate for continued long-term use.**

Table 3. Intersection Street Inventory

2.2 Prior Successful Efforts

A number of best practices have already been applied to this area of Ridgefield. In 2013, Ridgefield completed a Multi-Use Path Study with assistance from Fuss & O'Neill. The Town of Ridgefield applied for and received Local Transportation Capital Improvement Program (LOTICIP) funding that can be used to fund the multi-use trail connection through the RSA study area. Ridgefield has also spoken to the private developer building a housing development in the study area about allowing an easement through the property. This would complete the final link between the Parks and Recreation Center and the Rails to Trails southern terminus.

2.3 Pre-Audit Meeting

The RSA was conducted on June 14, 2016. The Pre-Audit meeting was held at 9:00 AM in the Ridgefield Town Hall Annex located at 66 Prospect Street in Ridgefield.

The RSA Team was comprised of staff from CTDOT and AECOM, and representatives from several Ridgefield departments and organizations including the Engineering Department, Police Department, Public Works Department, and Parks and Recreation. The complete list of attendees can be found in Appendix B. Materials distributed to the RSA Team, including the agenda, audit checklist, ADT counts, crash data and road geometrics, can be found in Appendix C.

RSA Team members from Ridgefield presented relevant information for the audit, including:

- There is heavy AM peak traffic along Danbury Road and traffic queues can back up 1-2 miles.
- The town has requested that the CTDOT look into coordinating the signalized intersections along Danbury Road.
- A traffic study determined that 19% of the traffic on Danbury Road is thru traffic that does not have a destination in Ridgefield. This is lower than the town expected.
- Ridgefield is in discussion with the CTDOT regarding the proposed signal upgrade at the intersection at Danbury Road, Farmingville Road and Copps Hill Road. This upgrade will consist of signal equipment replacement and is marked primarily as a safety project.
- When CTDOT upgrades the intersection, they will make changes so that the facility complies with current ADA standards.
- Currently the sidewalks in the study area are discontinuous and the town would like to create a more connected sidewalk facility for pedestrians on Danbury Road and Farmingville Road.

3 RSA Assessment

3.1 Field Audit Observations

- In front of 162 Danbury Road the sidewalk ends on the west side with no means of crossing to continuation of sidewalk on east side of the road at Fox Hill Road (Figure 6).
- The bridge on Danbury Road north of the intersection with Farmingville Road has been under construction by CTDOT for several years (Figure 6).
- There are no guiderails between the roadway and the multi-use trail on Danbury Road north of the intersection with Farmingville Road. The buffer between the pavement and path is less than five feet wide.
- Ridgefield would like to relocate the stone wall in front of 165 Danbury Road further back from road to keep the path consistent (Figure 7).
- The stone wall, covered by overgrown vegetation, near Pamby's (Figure 8) poses one of the biggest obstacles for the trail way. The trail will most likely need to continue behind the stone wall. Ridgefield would prefer to not relocate the major utility pole behind this wall.
- The driveway entrance to Pamby's is excessively wide. It should be narrowed, pedestrian tactile warning strips should be added on either side of the driveway.



Figure 5. No Crossing to Sidewalk



Figure 6. Stone Wall to be Set Back



Figure 7. Overgrown Stone Wall

- Targets for the Danbury Road and Farmingville Road signal upgrade include:
 - Relocating span poles.
 - Connecting sidewalks throughout intersection.
 - Upgrading pedestrian equipment to be ADA compliant (audible).
 - Installing or repositioning ADA detectable warning strips (Figure 9).
- Ridgefield would prefer to not install a sidewalk across the Shell Gas Station entrance due to safety concerns.
- Intersection of Farmingville Road and Ligi's Way may need a pedestrian warning sign if the trail crosses Farmingville Road at this intersection (Figure 10).
- Panels attached to stop signs indicating the number of approaches where traffic will stop are wrong and inconsistent.
- The Department of Environmental and Energy Protection (DEEP) would not allow a walkway on Ligi's Way due to proximity to wetlands.
- Extra signing on Farmingville Road curve may need to accompany the trail's entrance/exit into the woods.



Figure 8. Existing ADA Ramps Not Compliant



Figure 9. Existing Advanced Intersection Warning

3.2 Post-Audit Workshop - Key Issues

1. The existing multi-use trail from the Ridgefield Athletic Center crosses the Ridgefield Brook on a bridge that is located west of Danbury Road, and then ends opposite Fox Hill Drive. At approximately this same location, the sidewalk on

the east side of Danbury Road begins, and runs along the east side to Farmingville Road. There is no crosswalk to connect these two walkways, and drivers have no warning that pedestrians may be crossing here. This creates a challenging environment for pedestrians since Danbury Road experiences high vehicle volumes and speeds.

2. South of the pedestrian bridge, the buffer between the multi-use trail and Danbury Road is less than five feet wide (Figure 11). When a trail is located less than five feet from the street, a guiderail should be installed as a visual barrier between cars and trail users. This will give trail users a better perception of safety and better indicate to drivers the space that is allocated for pedestrians and bikes.
3. The intersection pedestrian facilities are not ADA compliant. There are no auditory warnings to assist visually impaired pedestrians (Figure 12). There are also no ADA pedestrian buttons. In addition the ramps and detectable warning strips are angled at 45 degrees, directing pedestrians diagonally into the intersection. They should be aligned with crosswalks to guide disabled users in the correct direction.
4. There are currently no pedestrian facilities at the intersection of Farmingville Road and Ligi's Way except for a sidewalk on the north-west corner. Since the trail is planned to cross this intersection, there should be a crosswalk, and it is suggested that advance pedestrian warning signs also be installed.
5. The stop sign controls at the intersection of Farmingville Road and Ligi's Way are inconsistent on the three stop signs (Figure 13). This may create unnecessary conflict.



Figure 10. Insufficient Space Between Trail and Roadway



Figure 11. No ADA Compliant Button



Figure 12. Inconsistent Signage

4 Recommendations

From the discussions during the Post-Audit meeting, the RSA team compiled a set of recommendations that are divided into short-term, mid-term, and long-term categories. For the purposes of the RSA, **Short-term** is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of way acquisition.) **Mid-term** recommendations may be more costly and require establishment of a funding source, or they may need some additional study or design in order to be accomplished. Nonetheless, they are relatively quick turn-around items, and should not require significant lengths of time before they can be implemented. Generally, they should be completed within a window of eighteen months to two years if funding is available. **Long-term** improvements are those that require substantial study and engineering, and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more when funding is available.

4.1 Short Term

1. Signage:
 - a. Relocate Farmingville Road sign so that it does not block the pedestrian head (Figure 14).
 - b. Fix tilted traffic sign (Figure 15).
 - c. Update stop sign panels at intersection of Farmingville Road and Ligi's Way indicating which approaches stop so that they are correct and consistent (Figure 16).
2. Coordinate with CTDOT regarding the signal upgrade at Danbury Road and Farmingville Road and request the following:
 - a. Install countdown pedestrian signal heads (Figure 17) and ADA buttons and specify preferred pedestrian signal locations.
 - b. Modify ADA ramps so that separate ramps point towards crosswalks instead of only one 45 degree ramp pointing into the intersection (Figure 18).
 - c. Widen ramps to eight feet to match trail way.
 - d. Install tactile warning strips the entire length of the ramp.
3. Add striped crosswalks on all sides of the intersection (Figure 19).

Figure 20 depicts these recommendations.



Figure 13. Move Sign for Improved Visibility



Figure 14. Fix Tilted Sign



Figure 15. Update All Signage to Indicate Correct Number of Stop Approaches



Figure 16. Countdown Signal



Figure 17. Realign Tactile Warning Strips to Face Direction of Crosswalk



Figure 18. Add Missing Crosswalks

- 1a. Relocate Farmingville Road sign
- 1b. Fix tilted traffic sign
- 1c. Update stop sign panels that indicate which approaches stop
- 2a. Install countdown pedestrian signal heads
- 2b. Install ADA ramps that point separately towards crosswalks
- 2c. Widen ramps to 8 feet
- 2d. Install tactile warning strips
- 3. Install striped crosswalks on all sides of intersection

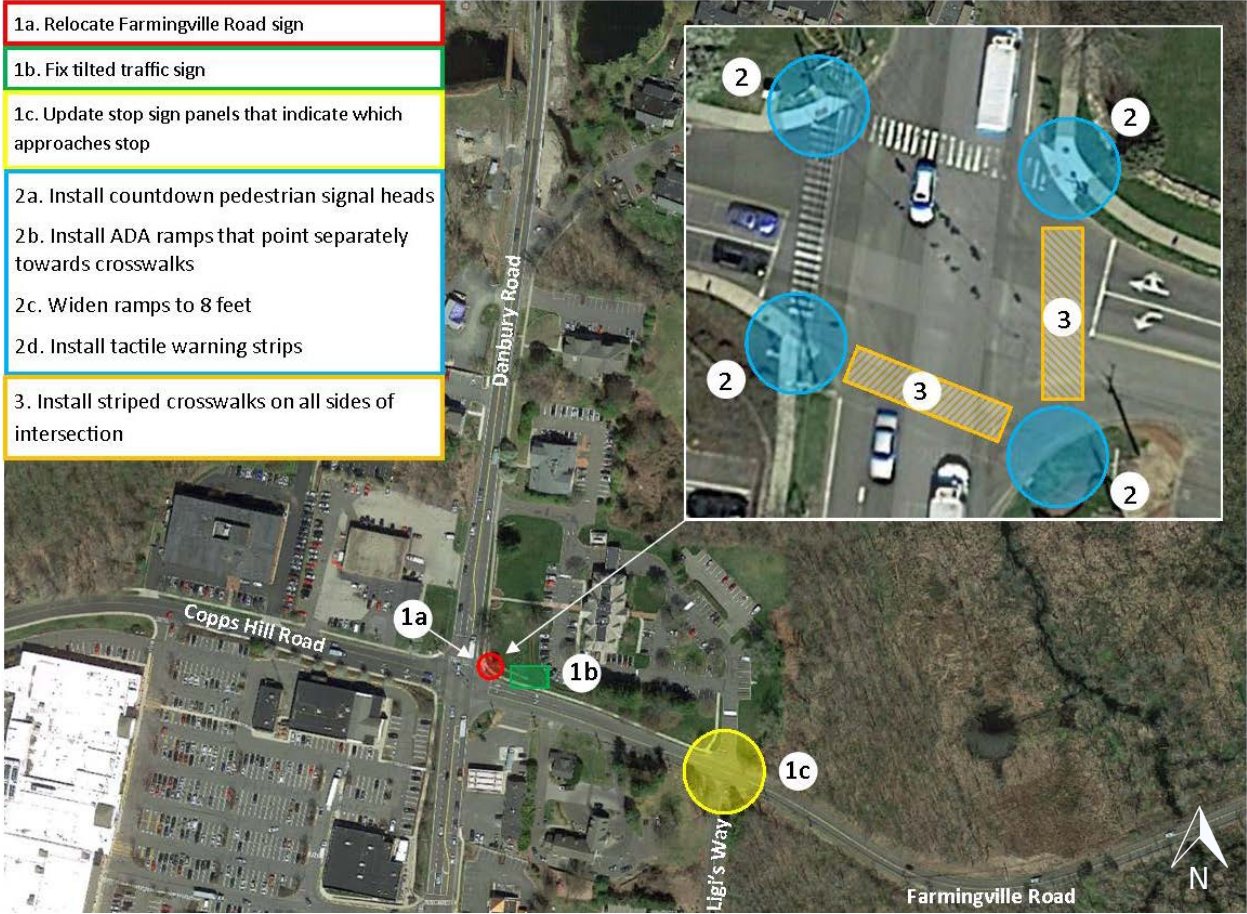


Figure 19. Short Term Recommendations

4.2 Medium Term

1. Install a visual barrier between the trail and Danbury Road in the vicinity of Fox Hill Road (Figure 21).
2. Widen sidewalk on north side of Farmingville Road (Figure 22) where trail is planned (8 – 10 feet).

Figure 23 depicts these recommendations.



Figure 20. Guiderail Between Trail and Roadway



Figure 21. Widen Sidewalk

- 1. Install a visual barrier between trail and Danbury Road
- 2. Widen existing sidewalk to eight to ten feet

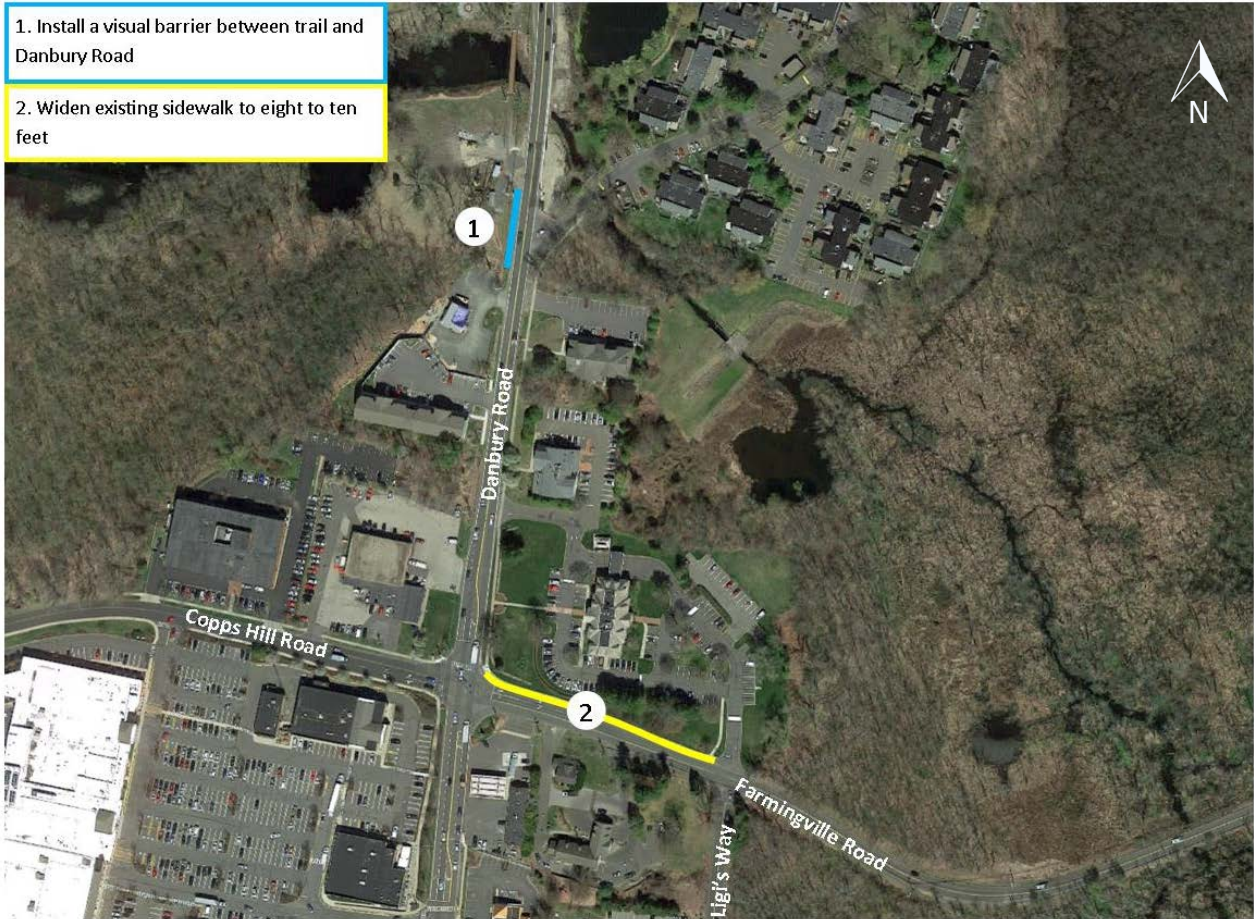


Figure 22. Medium Term Recommendations

4.3 Long Term

1. Complete multi-use trail through Danbury Road and connect to sidewalk on Farmingville Road.
2. Where the trail will cross Farmingville Road near Ligi's Way:
 - a. Paint crosswalk.
 - b. Install ADA compliant ramps.
 - c. Install Rectangular Rapid Flashing Beacon (RRFB) at the crosswalk.
3. Evaluate feasibility of adding a middle turning lane on Danbury Road near Fox Hill Road. This lane will allow southbound motorists to turn left into Fox Hill Road without blocking traffic from behind and also allow motorists to safely pass on the right without traversing over the trail.

Figure 24 depicts these recommendations.



Figure 23. Long Term Recommendations

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the Town of Ridgefield's RSA and provides Ridgefield with an outlined strategy to improve the transportation network on Danbury Road and Farmingville for all road users particularly focusing on pedestrians and cyclists. Moving forward, Ridgefield may use this report to prepare strategies for funding and implementing the improvements, and as a tool to plan for including these recommendations into future development Danbury Road and Farmingville Road.



COMMUNITY
connectivity program

Appendix A



AECOM
Built to deliver a better world

Welcome to the Community Connectivity Program Application



Please fill in the following information to provide the Audit team leaders with a comprehensive description of the area contained in this application.

1. Applicant contact information

Name

Title

Email Address

Telephone Number

2. Location information

Address

Description

City / Town

3. Roadway type
(Please select all that apply)

State road

Local road

Private Road

Other (please specify)

Easement areas

4. Zoning
(Please select all that apply)

Industrial

Residential

Commercial

Mixed Use

Retail

N/A (not applicable)

Other (please specify)

5. Approximate mile radius around the location

1/2 mile



Other (Please Specify)

6. Community Sites
(Please select all that apply)

Community Centers

Business Districts

Restaurant/Bar Districts

Churches

Housing Complexes

Proximity to Schools

Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc...)

N/A (not applicable)

Other (please specify)

7. Employment Facilities
(Retail, Industrial, etc...)

Yes

No

If Yes please describe (please specify)

Retail, banking, and business areas along with government centers are located along the routh of the combined use walkway.

8. Educational facilities

(Please select all that apply)

Public, Parochial, Private Schools (more than 1 school within a ½ mile)

University / Community Colleges

N/A (not applicable)

Other (please specify)

9. Transit facilities

(Please select all that apply)

Bus

Rail

Ferry

Airport

Park and Ride Lot

N/A (not applicable)

Other (please specify)

10. Safety Concerns

(Please select all that apply)

Traffic (volumes & speed)

Collisions

Sidewalks

Traffic Signals

Traffic Signs

Parking Restrictions / Additions

Drainage

ADA Accommodations

Agricultural & Live Stock crossing

Maintenance issues (cutting grass, leaves, snow removal)

N/A (not applicable)

Other (please specify)

11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

Yes

If Yes please describe and list all projects.

The State of Connecticut is currently reconstructing the Route 35 (Danbury Road) bridge immediately upstream of the Town's existing pedestrian bridge located at the northerly terminus of the proposed combined use walkway. It is also our understanding that the State of Connecticut will be installing new signalization at the Danbury Road/Farmingville Road intersection. A private developer is currently constructing a new housing development in the immediate vicinity of the proposed link between the combined use walkway and the "Rails to Trails" pathway. The developer has committed to the provision of an easement through his property to construct the final link between the Town of Ridgefield Parks & Recreation Center and the southerly end point of the existing "Rails to Trails" pathway.

12. Environmental Concerns:

Wetlands

If Yes please describe and list.

Construction will occur within wetland areas and upland review areas of the Great Swamp. Inland wetland permits will be required from the Town of Ridgefield Inland Wetland Commission, the State of Connecticut DEEP, and the Army Corps of Engineers. The extent of wetland disturbance will not be known until the exact route of combined use pathway has been surveyed and the wetlands have been flagged and mapped. Utilization of elevated boardwalks through the wetlands will minimize wetland disturbance through the use of piers. Construction methods discussed within the attached "Multi Use Path Study" will further limit the amount of wetland disturbance.

13. Please explain why this location should be considered for an RSA

The route of the combined use walkway crosses several at-grade local road intersections and runs parallel to Danbury Road that experiences the passage of 25,000 vehicles on a daily basis. Completion of a road safety audit along this route will enhance the public's safety at the crossings and along Danbury Road while allowing both pedestrians and bicyclists to safely utilize this important facility simultaneously.

14. Are there plans to expand the area?

(Transportation Oriented Development, Economic Development, housing, etc...)

Yes

As noted within section 11, housing is currently being constructed at the southern end of the "Rails to Trails" pathway link.

15. Any other pertinent information that is unique to this location?

Yes

Reference is made to the town-financed "Multi-use Path Study" date December 27, 2013 and completed by Fuss & O'Neill. The study is attached to this application and is intended to provide a more in-depth review of the Town of Ridgefield's efforts to provide combined-use walkways and provide project specifics related to this application.

Thank you for completing the Community Connectivity application.

Please click on the "submit button" below and include the following attachments

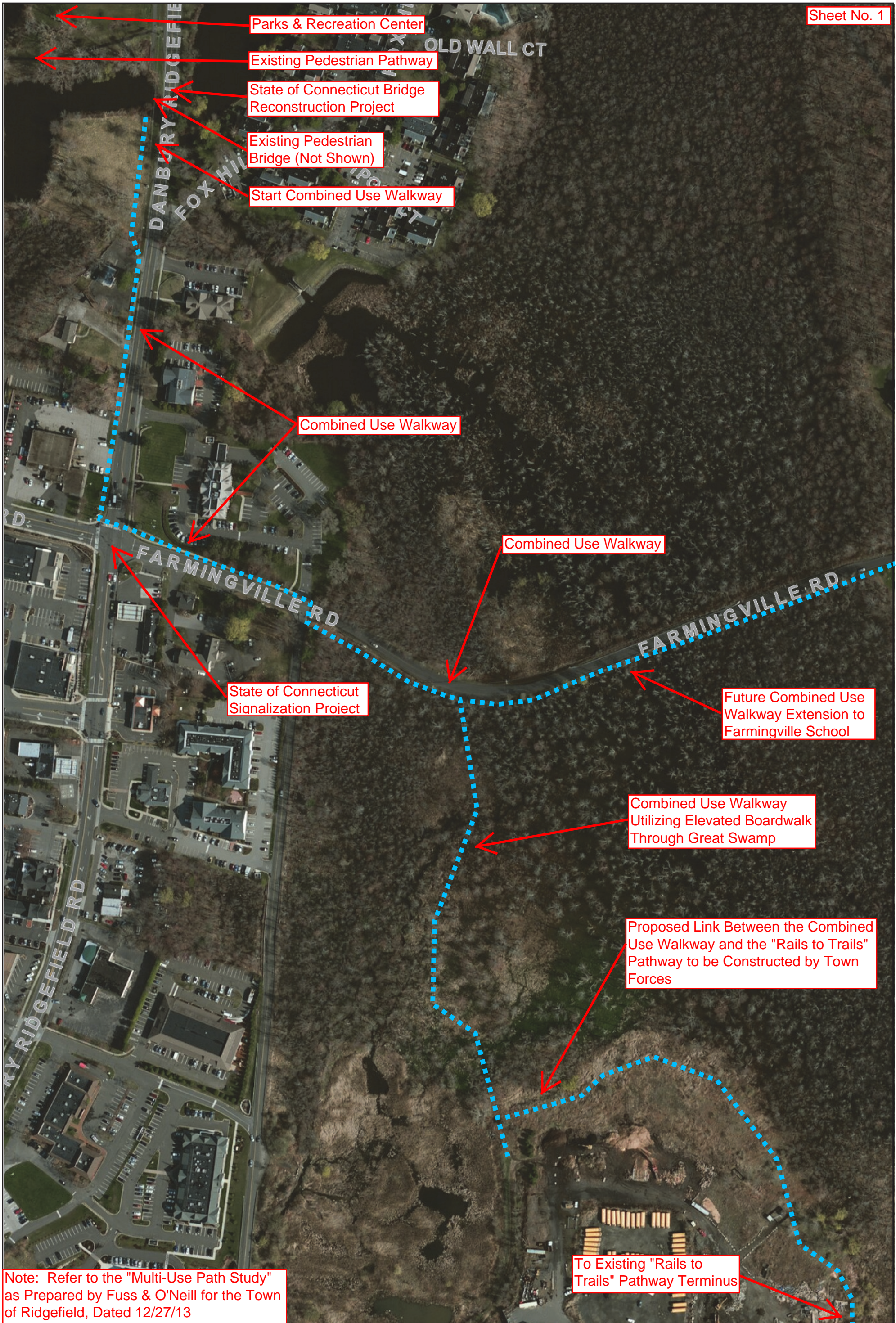
- 1 Location map (google, GIS) **(Required)**
- 2 Collision data (If available)
- 3 Traffic data (ADT or VMT) (If available)
- 4 Pedestrian/bicycle data (If available)



Submit Application

Appendix A

Location Plans



Note: Refer to the "Multi-Use Path Study" as Prepared by Fuss & O'Neill for the Town of Ridgfield, Dated 12/27/13

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Town of Ridgfield, RSA Application, Phase 2, Combined Use Walkway

3/1/2016 10:17:26 AM



1:2400
1"=200'



Appendix B

Multi-Use Path Study

December 27, 2013

MULTI-USE PATH STUDY

Town of Ridgefield, Connecticut Parks & Recreation Commission and Leading Initiatives for New Connections (LINC)

RIDGEFIELD, CONNECTICUT

August 12, 2013

Revised December 27, 2013



FUSS & O'NEILL

146 Hartford Road
Manchester, CT 06040



Table of Contents

MULTI-USE PATH STUDY Town of Ridgefield, Connecticut Parks & Recreation Commission and Leading Initiatives for New Connections (LINC)

MANAGEMENT SYSTEMS CORPORATION 10000 WOODBURY ROAD, WOODBURY, NEW YORK 11797-1000 TEL: 845.351.1000 FAX: 845.351.1001 WWW.MANAGEMENTSYSTEMS.COM

- 1 INTRODUCTION 1**
- 2 EXISTING CONDITIONS and RECOMMENDED ROUTE..... 2**
 - 2.1 Overview..... 2
 - 2.2 Existing Rail-Trail..... 3
 - 2.3 Connector to Prospect Ridge 3
 - 2.4 Connector from Prospect Ridge to Main Street..... 4
 - 2.5 Parks & Recreation Center to Farmingville Road / Great Swamp..... 6
 - 2.6 Great Swamp and Ligi's Way 7
 - 2.7 Town Facilities..... 8
 - 2.8 Town-Owned Land (Former Schlumberger Property) to Existing Rail-Trail..... 9
- 3 PATH DEFINITIONS..... 9**
 - 3.1 Bicycle Routes..... 9
 - 3.2 Bicycle Lanes..... 10
 - 3.3 Shared Use Paths (Multi-Use Path)..... 10
- 4 PARKING 11**
- 5 INFORMATIONAL PLAQUES 11**
- 6 LANDSCAPING..... 11**
- 7 REST AREAS..... 12**
- 8 RIGHT-OF-WAY 12**
 - 8.1 Easements (Permanent or Temporary)..... 12
 - 8.2 Donations of Land..... 12
 - 8.3 Fee Acquisition..... 13
 - 8.4 Condemnation of Property 13
 - 8.5 Lease Agreements 13
 - 8.6 Temporary Construction Rights 13
- 9 ENVIRONMENTAL PERMITS 13**
- 10 TRAIL ETIQUETTE 14**

11 SUMMARY OF APPROXIMATE COSTS 15

Figures

- 1 Recreation Center to Farmingville Road / Great Swamp
- 2 Great Swamp to Existing Rail-Trail
- 3 Existing Rail-Trail and Connector to Prospect Ridge
- 4 Connector from Prospect Ridge to Main Street

Photographs

1 INTRODUCTION

There are more than 100,000 miles of trails across America. These trails come in all forms and cater to multiple user groups that include walkers, runners, joggers, strollers, wheelchair users, in-line skaters, cyclists and more of all ages from seniors to toddlers. Some are paved, some are gravel, some long-distance and some simply from one part of town to another. They all share one purpose; to increase quality of life of the trail user.

Trails create healthier places and healthier people by encouraging more mobile lifestyles. They develop healthier economies by promoting tourism and local businesses while increasing property values. They support a healthier climate and environment by making active transportation a viable alternative to the automobile. Trails provide an opportunity for more vibrant community interaction by connecting people to the places they work, live and play.

This study presents conceptual recommendations for providing improved pedestrian and bicycle travel from the Ridgefield Parks and Recreation Center to the Florida Refuge with connections to Prospect Ridge and Main Street. The route would include existing trails, such as those at the Recreation Center, and the rail-trail along the former rail bed that connects Prospect Street to the Florida Refuge. The trail would offer the user a diverse journey as it winds its way through suburban, residential, commercial and natural surroundings, including Great Swamp. Scenic views of natural resources, connections to residential, recreational and other amenities, compatibility with possible future trail systems and anticipated user type were considered. The routes recommended in this study will likely help set the standard for future trail development in Ridgefield.

Our recommended improvements are based on the 2012 version of the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 4th Edition. This publication is the national standard to which bicycle and multi-use trails across America are designed. The proposed improvements are also guided by conversations with the members of the Leading Initiatives for New Connections (LINC) Committee, representatives of the Ridgefield Parks & Recreation Department and the Bicycle Trail Study dated November 12, 2004 prepared by Fuss & O'Neill, Inc. It should be noted that following the AASHTO guidelines helps the project qualify for federal and state grants.

Of special note are the existing natural resources that abound in the proposed corridor. Significant effort was made to avoid or minimize disturbance to environmentally sensitive areas such as Great Swamp.

2 EXISTING CONDITIONS and RECOMMENDED ROUTE

2.1 Overview

Fuss & O'Neill investigated routing for a multi-use path that would connect the Recreation Center to the Florida Refuge, Prospect Ridge and Main Street. For environmental, economic and aesthetic reasons, it is our opinion that the existing rail-trail corridor, which begins at the intersection of Sunset Lane and Prospect Street, should be included as part of this multi-use path.

Beginning at the Recreation Center we investigated in detail the existing roadway network and adjacent properties in hopes of finding a safe route for a "split" multi-use path. This split path would utilize on-street bike lanes (for bikes only) and off-road sidewalks (for pedestrians) to make the connection to the rail-trail. These split-use paths offer some cost savings compared to multi-use paths and are sometimes a good choice for some communities. Danbury, Copps Hill, Farmingville and Old Quarry Roads, South Street and Jigi's Way were all analyzed. It quickly became clear that these streets do not meet even the minimum safety standards required for young or inexperienced bicyclists and other user groups. In fact, most of these streets would typically be used primarily by very experienced riders. High traffic volumes (including significant truck traffic), vehicle speeds, multiple driveway entrances and exits, poor roadway geometry (hills and curves) and congestion are all existing negative factors that would prevent the bicycle user group from safely using this facility. Therefore, we shifted our focus to finding a route where a completely off-street multi-use path could be created.

We found a viable route for the off-street path to follow. It would meet all the nationally accepted design criteria for multi-use paths except where noted otherwise. We recommend that it be 10 feet wide and paved with bituminous concrete for its entire length except for sections that are boardwalk or noted otherwise. Bituminous concrete offers a minimum 20-year lifespan and has been used on trails across the nation for decades. It provides a stable surface for all user groups and is the surface of choice. Maintenance is very minimal the first ten years with only sealing of an occasional crack in the second decade of its life cycle. It can easily be overlaid with an additional layer of bituminous concrete after 20 years. The current cost for such an overlay is approximately \$1.50 per square foot. Current crack sealing costs are approximately \$1000 per mile every other year beginning in year 14.

The proposed path from the Recreation Center (beginning just south of Ridgefield Brook) to the existing rail-trail at the end of Sunset Lane would be approximately 7,100 feet long. The existing rail-trail is approximately 12,000 feet long between Sunset Lane and Florida Road. The proposed connector path from the rail-trail to Prospect Ridge Street would be 2,200 feet long. The proposed connector path from Prospect Ridge to Main Street would be 4,200 feet in length.

After discussions with the Town of Ridgefield and LINC, the recommended route has been divided into three phases. The phases are described in the following section.



PHASE 1

2.2 Existing Rail-Trail

The existing rail-trail property is owned by Northeast Utilities and runs from Sunset Lane to Florida Road (please see Figure 3). Any improvements to this corridor would require their concurrence. This trail is in good condition and has a stone screenings surface. It is currently open only to pedestrian traffic. Portions of it do not currently meet the width and side slope protection criteria for multi-use path travel set forth in the AASHTO guidelines. Therefore, portions of the railbed would have to be widened or the trail alignment shifted to achieve the recommended 10 foot trail width. Additionally, wherever side slopes exceed steepness standards for cyclists (there are several locations where this occurs) railings would have to be erected to protect errant cyclists from tumbling down slopes. These protective rails would require the railbed top width to be increased to a total of at least 18 feet to account for rail offset from the trails edge and provide enough back slope to properly support the protective rail. Increased top width would also result in fill being placed on the side slopes.

One implication of these widenings is they could cause filling of wetlands adjacent to the railbed. This would trigger additional permitting. Filling wetlands may or may not be allowed by regulatory agencies and would be determined during the design permitting process. Filling watercourses (streams, brooks, etc.) would likely have to be avoided by the use of retaining walls as this is typically prohibited.

It should be noted that although rare, Northeast Utility transmission line service trucks may travel in this corridor. It is possible that these heavy trucks could damage the proposed bituminous trail surface as it would not be designed to accommodate this type of load. Constructing a paved path that could handle these trucks would be prohibitively expensive.

The approximate construction costs for this section is \$1,800,000. This cost includes a 10 foot wide paved path with 2 foot wide grassed shoulders, protective railing where required, rest areas with informational kiosks or plaques, enhanced street crossings, storm drainage improvements, intersection sight distance improvements and some privacy landscaping. The sight distance improvements could require easements from private property owners. Exact wetland and other environmental impacts cannot be determined until the design phase of any project and can affect construction costs. Not paving the existing rail-trail but making all other improvements in this corridor would save approximately \$750,000.

2.3 Connector to Prospect Ridge

A connector path could be constructed from the existing rail-trail to Prospect Ridge (please see Figure 3). This is a very important link as it would offer path users safe access to the Playhouse, Veterans Park, East Ridge Recreational Area, museums, East Ridge Middle School, Main Street, restaurants and many other places of interest. The Town Engineer would develop this plan however, we investigated a possible route for this link.



The connection could diverge from the rail-trail onto town-owned property in the vicinity of the existing O. W. Greene Trail, a point approximately 1,400 south of the Sunset Lane end of the rail-trail. There is a significant elevation difference between the rail-trail and Prospect Ridge at this point (approximately 80 feet). Therefore, the route of the connector path through the town-owned dog park property would have to be circuitous to create enough length to keep grades to acceptable levels.

As the path approaches the dog park, we recommend that it turn to the south and follow and rise along the east slope (adjacent to the woods) of the soccer fields which lie just north of the ice arena. This would help keep the grade of the path acceptable in this area as it comes up from the rail-trail and approaches a safe crossing point of Prospect Ridge. It would also preclude encroaching and regrading a portion of the existing soccer fields. A spur path could also take path users the short distance to the dog park entrance and Scalza Field.

At the south end of the fields the path would turn westward and travel between the north end of the ice arena and the soccer fields to a point approximately 75 feet short of Prospect Ridge. It would then turn southward again and travel between the street and the arena maintenance parking area. This would provide the space and distance for the path to make a reasonable descent to the existing Prospect Ridge crosswalk immediately north of the arena egress drive. This crosswalk, although mid-block, has excellent sight distance in both directions. Please note that the existing crosswalk north of it appears to have marginal sight distance because of a crest curve in the street. For this reason alone we do not recommend using it. If the town wishes to pursue using it for this path, we recommend that a sight distance analysis be conducted in accordance with Connecticut Department of Transportation standards and, if found deficient, the crosswalk and the steps leading to it should be removed. When conducting this analysis, we recommend being conservative since young children would be using this path and their perception/reaction time is slower than adults. Additionally, getting the path down to this crosswalk, given the existing adjacent soccer field grades (approximately 8 feet higher than the street), would require significant earthwork, retaining walls, drainage improvements or all three along the road and into the soccer fields.

It should be noted that relatively steep grades are the reason we eliminated Halpin Lane as a possible link to Prospect Ridge. Grades on Halpin Lane approach 10 percent. It also has narrowed or non-existent shoulders. These conditions make Halpin Lane much less desirable than the dog park route.

This connection would be approximately 2,200 feet long. The approximate construction costs for the connection from the rail-trail path to Prospect Ridge would be approximately \$325,000.

2.4 Connector from Prospect Ridge to Main Street

Once on the west side of Prospect Street, the path would be on the property of the East Ridge Middle School (please see Figure 4). It would travel northward parallel to the street crossing two very low volume driveways which appear to serve a school maintenance entrance. Crosswalks would be painted across these two drives. Immediately north of the northernmost driveway the path would turn westward and follow an existing gravel/grass pathway in the woods. The proposed path would then merge with



the existing paved walkway on the north side of the school for a short distance. It would continue westward and merge with the existing concrete sidewalk on the north edge of the school parking lot that leads directly to East Ridge Road. This existing sidewalk does not need to be replaced or widened.

The path would then turn northward and follow the route of the existing concrete sidewalk on the east side of East Ridge Road. We recommend that the path along East Ridge Road be 8 feet wide to reduce grading impacts to adjacent properties, especially in the area between Market and Governor Streets. Some grading would still be required with particular attention paid to the existing driveway crossings. Currently, the sidewalk makes abrupt transitions at most of these crossings. This entire sidewalk should be replaced with a new 8 foot wide concrete sidewalk.

The final leg of the path would take it to Main Street. Existing topography, proximity to development, utilities and traffic patterns create a challenge for this final leg. A balance must be reached between many factors including encroachment onto private property, acceptable grades, vehicular conflicts, sight distances and above all, user safety.

We investigated using Market Street as a link to Main Street. However, users would have to cross East Ridge Road using a new mid-block crosswalk and encounter a "Y" shaped Market Street intersection once they cross. This would be confusing and therefore, unacceptable given the vehicular speeds and volumes on East Ridge Road.

We also investigated several off-street routes but they were quickly discounted for lack of physical space, significant encroachment on private property, steep topography and more.

We recommend the path utilizes the existing crosswalks at the 4-way, stop sign controlled intersection of East Ridge Road and Governor Street. The path would then continue westward on the north side of Governor Street. There are no utility poles on this side of the street which is an advantage. There is a new, existing 5 foot sidewalk on this side of the street that ends in the vicinity of the Boys and Girls Club. We recommend widening this walk to 8 feet. From this point westward the existing sidewalk should be replaced with an 8 foot concrete walk. There would likely be minor easements required from at least four businesses to widen the existing sidewalk to 8 feet. The businesses are the Bissell Pharmacy, the Ridgefield Library Plaza, Fairfield County Bank and Wells Fargo Bank. None of these easements should negatively affect these businesses. It should be noted that the shoulder of the westbound lane of Governor Street along the frontage of three of these businesses is several feet wider than it is east and west of this location. We see no reason why this shoulder couldn't be narrowed to match adjacent shoulder width possibly lessening impact to adjacent private properties caused by widening the sidewalk. The path would then connect to Main Street at the corner of Governor and Main Streets.

The grade of the sidewalk in two locations on Governor Street exceeds that recommended in the AASHTO design guidelines. These grades cannot be reduced because of adjacent topography and development. Although these grades would be clearly visible to path users, we recommend posting advance warning signs in accordance with federal sign standards.

The approximate cost of this connection would be \$550,000.



PHASE 2

2.5 Parks & Recreation Center to Farmingville Road / Great Swamp

The Center includes the parks and recreation building, Founders Hall, a soccer field, two paved vehicular parking areas and a paved access drive. The center is bounded by Danbury Road (Route 35) to the east, Ridgefield Brook to the south and west. Wetlands and forested uplands surround the center. A small pond occupies the southeast portion of the site and is very visible from the access drive.

There are two trails immediately adjacent to the Center. They are the Recreation Loop and the Woodland Walk. Trail surfaces are asphalt. The terrain is relatively flat and provides an excellent opportunity for passive recreational activities which include birding, hiking, jogging, picnicking, fishing, biking and simply enjoying the great outdoors. The Recreation Center and these two trails create the perfect trailhead for the multi-use path.

The multi-use path would begin on the west side of Danbury Road at Ridgefield Brook (please see Figure 1). It is our understanding that a pedestrian bridge is being proposed to be constructed by others to span the Brook and connect to the existing Woodland Trail on the north side of the Brook which then connects to the Recreation Center. We recommend that this bridge be a minimum of 12 feet wide.

The path would then continue due south along the west side of Danbury Road and pass in front of the Enchanted Garden, the medical office building and Pamby Chrysler Jeep Dodge located at the corner of Danbury Road and Copps Hill Road. The path in this area would likely be 8 feet wide because of limited right-of-way. It would then cross from the west to east side of Danbury Road at the existing Danbury, Copps Hill and Farmingville Road signalized intersection utilizing the existing pedestrian signal. This would preclude the need for any mid-block crosswalks on Danbury Road.

Once on the east side of Danbury Road the path would continue along the existing sidewalk corridor on the north side of Farmingville Road adjacent to the Fairfield Bank. The path would be 10 feet wide along this corridor. It would continue east and cross the Fairfield County Bank access drive which is directly across from Ligi's Way and forms a 3-way intersection with Farmingville Road. Immediately after crossing the access drive it would turn south and cross Farmingville Road using a conventional painted crosswalk. We recommend investigating upgrading this intersection from a 3-way to 4-way stop sign controlled pattern. Currently, vehicles on the eastbound approach of Farmingville Road do not have to stop. Placing a stop sign on this approach might cause queuing issues back to the intersection of Danbury, Copps Hill and Farmingville Roads. A traffic analysis would reveal if queuing would be an issue.

The approximate construction cost for this section is \$220,000.

2.6 Great Swamp and Ligi's Way

Once across Farmingville Road there is an opportunity to provide path users a unique educational experience by allowing them to pass over Great Swamp with minimal environmental impact (please see Figure 2). This could be accomplished using a pile supported boardwalk. We have designed pile supported boardwalks in similar situations on other paths with excellent results. It is our opinion that a pile supported boardwalk could be used here to minimize disturbance to the swamp. Support piles are driven into the soil by machinery using the just-completed decking as a working platform. This means the swamp floor is never touched by man or machine. Rest areas could be created along the boardwalk by widening the decking and integrating benches into the side rails. The boardwalk path through Great Swamp would be approximately 1100 feet long and 10 feet wide.

There are many choices of building materials for boardwalks. The least expensive and most common material is pressure treated pine. The decking and railing members have a minimum lifespan of approximately 25-30 years before needing repair or replacement. Occasionally applying a preservative can add years to the lifespan. There is very little maintenance during the first 15-20 years of the life cycle with only limited maintenance to year 25. The piles that support the boardwalk have a lifespan of approximately 50 years. Exotic hardwoods and man-made composites are also available and are longer lasting than pine. They are also significantly more expensive.

Informational signing could be placed along the path to describe what the user is viewing and what they might be viewing during a different season. It has been proven many times that education helps foster a desire for users to protect what they are experiencing compared to those who never experience it at all.

Great Swamp is a regulated wetland owned by the State of Connecticut. The Connecticut Department of Energy and Environmental Protection (DEEP) would have primary jurisdiction over the use of this property.

We reviewed the DEEP Natural Diversity Data Base (NDDB). The NDDB maps represent approximate locations of endangered, threatened and special concern species and significant natural communities in Connecticut. The June 2013 NDDB map for Ridgefield lists Great Swamp as an area of special concern. The NDDB is general in nature and is used in the preliminary stages of a project as a screening tool. Further investigation, including conducting an environmental assessment and discussing it with the DEEP, would be necessary to determine the exact extent and nature of the concern. This is best done early in the design process, typically after the study phase and during conceptual design. The DEEP could prohibit any disturbance in specific areas of Great Swamp if they deem the areas environmentally sensitive. However, they also could allow the boardwalk in less sensitive areas if a strong case is presented to them based on the environmental assessment.

The United States Army Corps of Engineers and the Ridgefield Inland Wetlands Board could also have input into the choice of routes. As with the DEEP, these agencies would review the environmental assessment and determine if the proposed activities pose a significant impact to the environment. This is also discussed in Section 9, Environmental Permits.



We recommend that an environmental assessment be conducted as part of a conceptual design to determine the exact function and value of the corridor through Great Swamp. This assessment would also clarify the permits required and to what extent regulatory agencies would be involved. The cost of an assessment would be approximately \$25,000.

As an alternative we also investigated placing the path on the west side of Ligi's Way. There are significant physical constraints on the west side of the road including a row of vehicle parking at Beachtree Manor which is very close to the edge of road. This parking would be lost if the path were located on the west side of the road. There does not appear to be another location at the Beachtree Manor site where this lost parking could be recovered. We are assuming that this parking is required and that the owners would not look favorably upon eliminating it. Doing so might cause a non-conforming zoning issue. Additionally, the path would cross several driveway entrances which can create conflicts and safety issues.

We also investigated placing the path on the east side slope of Ligi's Way adjacent to Great Swamp. This would be accomplished by placing fill in the Great Swamp wetland to create a "shelf" or extension of the roadway fill to support the path. Based on preliminary discussions with town representatives this option is not viable because of the impacts to Great Swamp.

The approximate construction cost for this work (raised pressure treated pine boardwalk through Great Swamp including two rest areas) would be \$1,090,000.

PHASE 3

2.7 Town Facilities

Once across Great Swamp the path would enter and traverse the north slope of the vegetative materials storage area of the town facilities located east of South Street (please see Figure 2). It would hug the perimeter of the storage area following the top of slope around the east and south sides of this complex. Favoring the perimeter would separate the user from the industrial nature of the facility while keeping them closer to Great Swamp located to the east and south. A vegetative buffer could be planted between the path and the facilities to soften the view and keep users on the path and away from facility operations. Our experience has shown that a fence would not be necessary to keep users on the path in this setting. However, more input from the town would be welcomed. The path would then travel along the south side of the town maintenance building that is closest to the Goodwill trailer. It would then pass south of the Goodwill trailer and on to the town-owned land formerly owned by Schlumberger.

There is an opportunity to create a small 6 car parking area behind the Goodwill trailer. Additionally, this would also be a good location for a bicycle pump track. Pump tracks are closed course tracks that include "rollers" throughout the track and berms at each end. They are designed to be ridden without pedaling. They provide a full-body workout as riders use their body to "pump" or push down into the dip of a roller and then pull up before the crest of a mound. This technique is continued around the entire track. The area would require some regrading for these improvements.



The approximate construction cost for this work \$290,000.

2.8 Town-Owned Land (Former Schlumberger Property) to Existing Rail-Trail

South of the Goodwill trailer is forested land that is relatively steep, although fairly uniform in slope. The slope appears to be such that it would be better to locate the path in the wooded area east of the existing buildings and parking lots on the property (please see Figures 2 and 3). The route would be circuitous with a switchback or two since it is preferred for the path not to exceed 5 percent slope (5 foot rise in 100 feet). The trail would continue southward a short distance and exit the Town-owned property where it fronts Sunset Lane. It would then follow the north side of Sunset Lane for approximately 200 feet where it would meet the existing rail-trail.

The existing parking lots on this Town-owned property offer a unique opportunity to provide convenient parking and a trailhead for path users and can easily be intersected by the path. We strongly recommend that this existing amenity become part of the path system.

The approximate construction cost for this section is \$385,000.

3 PATH DEFINITIONS

The AASHTO guidelines referenced in the Introduction above define several types of multi-use path facilities. The following are included to compare what facilities are available to a community. The multi-use path facility is the best option for the Town of Ridgefield along this corridor.

3.1 Bicycle Routes

A bicycle route is a suggested route to a destination. It may consist of signs designating a way to get from a residential area to a town center. The bicycle route concept does not require that the road include any special bicycle facilities such as pavement markings, however, elimination of hazards is important. Virtually any road can be designated as a bicycle route provided it has reasonable geometry and traffic conditions. Considerations include user type, sufficient roadway width, pavement quality, intersection complexity, curves, hills, traffic volume, speed, and type. Additionally, directness, scenery, and available services should also be considered.

Bicycle routes should be considered the least expensive and simplest system to employ. But, because they basically utilize existing facilities, they can be restrictive with respect to which user groups can safely use them. Most experienced cyclists can ride on virtually any roadway and anticipate dangers posed by motor vehicles and other hazards. Inexperienced, especially younger bicyclists typically do not have these abilities. This can lead to accidents and injury. Therefore, bicycle routes must be carefully chosen based on the previously mentioned considerations.



Bicycle routes cannot accommodate pedestrians. Sidewalks must be provided separately if pedestrian traffic is anticipated along the route.

3.2 Bicycle Lanes

The guide provides, among other things, design parameters for bicycle lanes. Bicycle lanes are portions of the roadway designated exclusively or primarily for bicycles. These facilities should always be one-way in the same direction as adjacent motor vehicles. For roads with no curb, gutter or on-street parking, the minimum width for a bicycle lane is 4 feet with a 5 foot width being desirable. The width of the lane is from the face of curb or guiderail to the bike lane stripe. The bike lane should be delineated in the roadway by 6 inch white lines. Additional pavement markings within the lane indicating direction of flow and the purpose of the lane are also required. Two-way bicycle lanes on one side of the roadway are unacceptable because they promote riding against the flow of traffic. Wrong-way riding is a major cause of bicycle accidents and violates the rules of the road in Connecticut.

While there are no universally accepted objective criteria for determining the need for bicycle lanes, several factors are important. Bicycle demand, potential origins and destinations, age and experience of bicyclists, available alternatives, surrounding land use, traffic conditions, and geometric conditions all must be considered. When considering routes for bicycle lanes it should be remembered that most bicyclists will choose the route that best combines direct access with low traffic volumes.

Bicycle lanes cannot accommodate pedestrians. Therefore, wherever bicycle lanes are proposed and pedestrians are to be accommodated, a sidewalk must be included in the design.

3.3 Shared Use Paths (Multi-Use Path)

Design guidelines are also provided for shared use paths, also known as a multi-use path. A multi-use path is defined by AASHTO as a pathway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Multi-use paths may be used by pedestrians, skaters, wheelchair users, joggers, cyclists and other non-motorized users.

When a two-way multi-use path is located adjacent to a roadway, and the separation distance between the edge of roadway shoulder and the edge of the path is less than 5 feet, a physical barrier is recommended. The barrier must be a minimum of 48 inches high to prevent bicyclists from toppling over it. The barrier should not impose a sight distance obstruction or be a hazard to motorists. The minimum recommended width for a two-directional path is 10 feet. A lesser width may be acceptable for short distances in special circumstances where right-of-way is limited. In some instances it may be desirable to increase the width to 12 or 14 feet if there will be heavy use, steep grades, and sharp curves or will be used by large maintenance vehicles. A graded shoulder with a minimum 2 foot width adjacent to both sides of the path is required. A 3 foot width is more desirable to provide clearance from lateral obstructions such as trees, fences and utility poles. A minimum clearance of 8 feet from vertical obstructions is required with 10 feet being desirable.



4 PARKING

A new multi-use path will attract more non-motorized users to the area. It is very important to provide dedicated, controlled parking areas immediately adjacent to the facilities. Doing so not only provides users a safe parking area, but significantly reduces the occurrence of illegal, unwanted and unsafe parking.

The parking area adjacent to the Parks and Recreation Center is a perfect location for trail users to park as is the parking area adjacent to the soccer field. Because this is a relatively busy area, signs should be erected guiding users to the path.

As previously mentioned, an additional parking area for approximately 6 vehicles could be provided behind the Goodwill trailer. Parking could also be provided in the town-owned lots on the former Schlumberger property.

5 INFORMATIONAL PLAQUES

Informational plaques could be placed at areas of interest or at rest areas along the path. These include the boardwalk at Great Swamp and the former Schlumberger facility and even the Town facilities to describe recycling operations there. Plaques can tell a story of geologic, manufacturing, industrial or land use history, wildlife habitat, wetland type (wood swamp, wet thicket, wet meadow), the route taken by a river, and endangered plant and animal species, just to name a few. These plaques add only minimal cost to a project but help create an educational journey instead of just a trip between points.

Plaques can be made of many vandal-resistant materials in various cost categories. Lexan laminated plaques mounted on pressure treated lumber or large boulders are a very popular option. They are very durable and offer the best value over time. Etched aluminum is also another popular choice. Costs range from \$1,000 to \$3,000 per location, depending on plaque and mounting material. Aluminum is the less expensive of the two options.

6 LANDSCAPING

Landscaping at select points along the way enhances the journey for the path user. Carefully chosen native plantings can also serve to feed wildlife during the winter months. Plants such as highbush blueberry, inkberry, honeysuckle, crabapple and cotoneaster achieve these goals. Careful placement is necessary to maintain environmental sensitivity or not interrupt the view to scenic areas.

Vegetative screening, especially along the industrial areas may be desirable. There are many varieties of evergreens that would serve this purpose. In recent years some species of evergreens have become susceptible to insect damage. Obviously, these species should be avoided.

Landscaping along residential areas requires careful consideration. It is not unusual for residents to initially be concerned about a significant onslaught of new path users travelling passed their homes when in fact; this is almost never the case.



7 REST AREAS

It has been our experience that users enjoy, and to an extent need, a safe place to pull off the path and rest. Providing rest areas moves those wishing to rest completely off the path and out of the way of users wishing to continue on. This reduces conflicts, thereby reducing the chances for accidents and injury. Rest areas are usually provided approximately every one-half mile. This distance can vary depending on overall path length and the paths proximity to other possible places of rest (parks, businesses, etc.).

Rest areas can be created to fit their surroundings. In rural settings, such as adjacent to the Recreation Center, wood chips could be used to create the surface for the area. Benches could be provided. We have found that using large, roughly square or rectangular boulders has worked very well as benches. Their initial cost can be low, especially if there is a nearby quarry or other development is in progress. The stone benches are virtually indestructible. We have not found a more vandal resistant bench. We have used them on many trails with great success. Municipalities have been very happy with their performance.

8 RIGHT-OF-WAY

The routing of many path projects requires the improvements to encroach upon property not within the state or town right-of-way but owned by others. To do so requires legal steps be taken. This may be the case for some sections of the path, especially a portion along Danbury Road, Farmingville Road, the existing rail-trail and the Main Street connection. For convenience we are providing the following summary of various ways that property can be obtained or utilized. These methods are fairly typical for path projects.

8.1 Easements (Permanent or Temporary)

Easements can be granted by the property owner to the project proponent. The easement allows the project proponent the right to make use of another person's land for specific purposes. The property owner still retains all ownership rights to the property, but allows access to the property for purposes outlined in the easement for a specified length of time.

8.2 Donations of Land

Donations of land can be given from a private property owner to the project proponent. Under this scenario, the private owner donates land to the project proponent for the project. Title to the property is transferred from the owner to the project proponent. The property owner will need to waive their right for compensation and appraisal for the property.



8.3 Fee Acquisition

Fee acquisition of property is another mechanism through which property can be obtained. Under this scenario the project proponent purchases the land from a private owner for an agreed upon price. Title to the property is transferred from the owner to the project proponent.

8.4 Condemnation of Property

Condemnation of property is typically a last resort for obtaining property for a project. Under this process property is appropriated for public use under the right of eminent domain. This is typically done if it is determined that it is a public necessity.

8.5 Lease Agreements

Lease Agreements can be granted from the State to municipalities for use of State land for a specific purpose. This is similar to an easement described above.

8.6 Temporary Construction Rights

Temporary construction rights can be granted for performing work on private property during construction of the project. This is similar to a temporary easement, however, there is typically no compensation to the property owner and it expires once construction is completed.

9 ENVIRONMENTAL PERMITS

Some of the path routing in this study could require environmental permitting by the Town of Ridgefield, State of Connecticut DEEP and/or United States Army Corps of Engineers. Most permitting would be triggered by encroachment into environmentally regulated areas such as wetlands, wetland upland review areas, and areas of rare or endangered species. From a permitting standpoint it is best to totally avoid environmentally regulated areas. However, there are circumstances that leave no reasonable choice but to encroach into them or areas immediately adjacent. Since environmental permits can require more time to acquire than other permits, we are providing a general list of them for convenience. In some cases, the funding source for the path dictates which agency has legal jurisdiction over permitting issues. As previously stated, an environmental assessment performed during conceptual design will clarify which permits would be necessary, which agencies would be involved and suggest a strategy to move forward.

Please note that pile supported boardwalks through wetlands or wetland upland review areas are generally viewed by regulatory agencies as less impact than filling or excavating wetlands. If an applicant can prove that no feasible or prudent alternative exists, that the improvements would not negatively impact rare and endangered species or high value wetlands, then the boardwalk typically has a very good



chance of being approved. The stronger the case for the proposed improvements the more likely it would be approved.

The following agencies could be involved in the development of the path.

Town of Ridgefield Inland Wetlands Board (IWB) – there could be several scenarios if State-defined wetlands are disturbed. In general, if an application to the IWB is required, a presentation to the board would be necessary. If the board deemed the work a significant activity then a public hearing would be scheduled. This process could take anywhere from 2-6 months.

United States Army Corps of Engineers (ACOE) – if the proposed disturbance to ACOE defined wetlands is less than 5,000 square feet, it would be considered non-reporting and the ACOE might not be involved. However, recently the Corps has become interested in the “shadowing” effect that structures such as boardwalks may have on the environment and may comment on the proposal. If the disturbance exceeds the 5,000 square foot limit, then a Category I permit would be required. Depending on the results of their Category I review, the Category I process could take 4-8 months. It is possible that during their review of the Category I information the ACOE could determine that the work requires an Individual Permit. This would extend the review time 4-8 months for a total of 8-16 months.

Connecticut DEEP - the DEEP would likely review any disturbance to wetlands on State property. This is especially true for the Great Swamp route, a location that is listed in the States Natural Diversity Data Base (NDDDB). This review could take 2-8 months. Disturbances deemed significant activities could take significantly longer to review and the process could become more involved.

It should be noted that much of the work for these permits can be done concurrently if multiple permits are required. It is critical that all these agencies be contacted during conceptual design so that design delays can be minimized or avoided.

10 TRAIL ETIQUETTE

For path users to have a safe and enjoyable experience they need to follow a set of guidelines. These guidelines should be posted at a trailhead and included in any path brochures. The following are suggested guidelines used on many paths in the United States and should be seriously considered for this facility. Path-specific guidelines can be created by the Town or advocacy groups.

- Stay to the right
- Be courteous
- Cyclists and skaters yield to walkers/joggers
- Cyclists yield to skaters
- Downhill users yield to uphill users
- Faster users yield to slower users
- Groups should be in single file when other path users are present
- Respect nature. Observe wildlife from a distance, don't pick the flowers
- Do not trespass on private property.



- Park only in designated areas
- Path hours are dawn to dusk
- Non-motorized activities only
- No horses are allowed
- No pets off-leash
- No alcoholic beverages
- No glass containers
- No fires, firearms, paintball, fireworks
- Leave only footprints, take only photographs, keep only memories

11 SUMMARY OF APPROXIMATE COSTS

The following costs are approximate. They are based on the conceptual routing stated in this study. Prices are based on 2013 construction costs. A three percent per year inflation rate should be added to costs for subsequent years. Costs can vary significantly with the price of petroleum, a primary ingredient in bituminous concrete pavement. Costs do not include property acquisition, easements or rights, fees or utility relocations, rock excavation or hazardous soil removal or environmental permitting requiring remediation.

<u>Path Segment</u>	<u>Approximate Costs</u>
<u>Phase 1</u>	
Existing Rail-Trail Improvements.....	\$1,800,000
Connector to Prospect Ridge	\$325,000
Connector from Prospect Ridge to Main Street	\$550,000
Sub Total.....	\$2,675,000
<u>Phase 2</u>	
Parks & Recreation Center to Farmingville Road/Great Swamp.....	\$220,000
Great Swamp and Ligi's Way	\$1,090,000
Sub Total	\$1,310,000
<u>Phase 3</u>	
Town Facilities	\$290,000
Town-Owned Land (Former Schlumberger Property) to Rail-Trail	\$385,000
Sub Total	\$675,000
Construction Total (Phases 1, 2 & 3 above).....	\$4,660,000
Design (including Environmental Assessment).....	\$695,000
Part-Time Construction Administration	\$95,000
Total.....	\$5,450,000



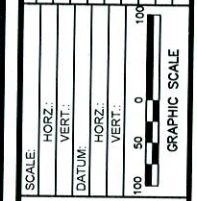
FUSS & O'NEILL

Figures



FIG. 1

TOWN OF RIDGEFIELD PARKS & RECREATION COMMISSION AND LINC COMMITTEE
 MULTI-USE PATH STUDY
 RIDGEFIELD CONNECTICUT



No	DATE	GENERAL	DESCRIPTION	DESIGNER	REVIEWER
1.	12/27/2013				

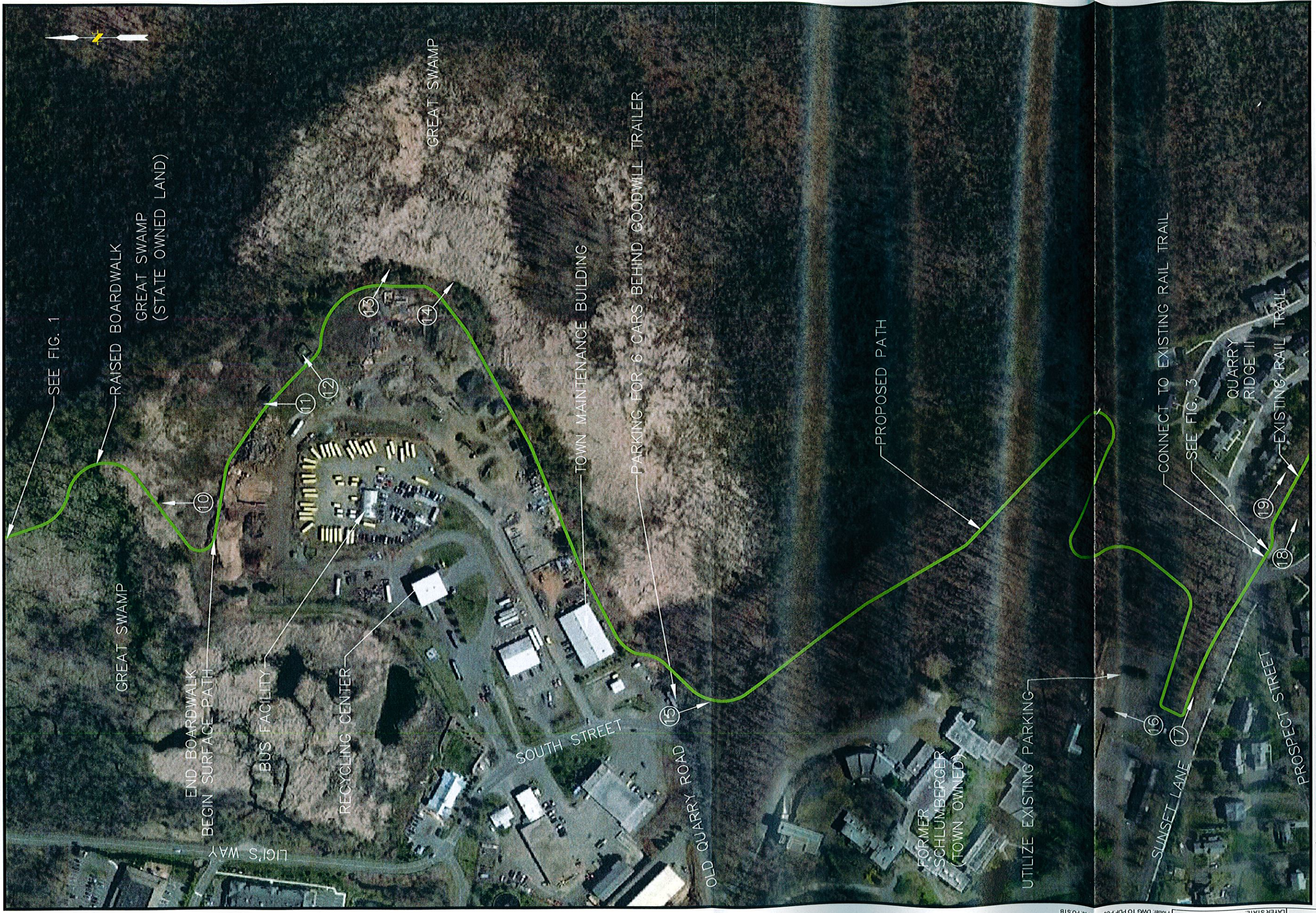


FIG. 2

PROJ. No.: 20040436 A20
DATE: 06/06/2013

TOWN OF RIDGEFIELD PARKS & RECREATION COMMISSION AND LINC COMMITTEE
MULTI-USE PATH STUDY
CONNECTICUT
RIDGEFIELD

FUSS & O'NEILL
146 HARTFORD ROAD
MIDDLETOWN, CONNECTICUT 06450
www.fuss.com

SCALE: HORZ.: VERT.: DATUM: HORZ.: VERT.: GRAPHIC SCALE: 1" = 100'

No.	DATE	GENERAL	DESCRIPTION	DESIGNER	REVIEWER
1.	12/27/2013	GENERAL			

File Path: J:\DWG\2004\0436\A20\CAD\1\Final\20040436A20_CN01.dwg Layout FIG 2 Plotted Wed, January 15, 2014 10:13 AM User: sberman
Layer: LAYER STATE
Printer: DWG TO PDF.PC3 C:\Program Files\Foxit Software\Foxit Reader\Foxit Reader.exe

File Path: J:\DWG\2010\06\06\A20\Civil\Plan\20040436A20_CON01.dwg Layout: FIG.3 Plotted: Wed, January 15, 2014 - 10:18 AM User: sberman
 Plotter: DWG TO PDF.PC3 CTB File: FO.5TB
 LAYER STATE

No.	DATE	GENERAL	DESCRIPTION	DESIGNER	REVIEWER
1.	12/27/2013	GENERAL			

SEAL

SEAL

SCALE:
 HORZ: _____
 VERT: _____
 DATUM: _____
 HORZ: _____
 VERT: _____
 350 175 0 350
 GRAPHIC SCALE



FUSS & O'NEILL
 146 HARTFORD ROAD
 MANCHESTER, CONNECTICUT 06040
 860.646.2469
 www.fando.com

TOWN OF RIDGEFIELD PARKS & RECREATION
 COMMISSION AND LINC COMMITTEE
 EXISTING RAIL TRAIL AND PROPOSED CONNECTOR PATH
 TO PROSPECT RIDGE
 RIDGEFIELD CONNECTICUT

PROJ. No.: 20040436 A20
 DATE: 06/06/2013

FIG. 3





FUSS & O'NEILL

Photographs



Photo 1: Figure 1



Photo 2: Figure 1



Photo 3: Figure 1



Photo 4: Figure 1



Photo 5: Figure 1



Photo 6: Figure 1



Photo 7: Figure 1



Photo 8: Figure 1



Photo 9: Figure 1



Photo 10: Figure 2



Photo 11: Figure 2



Photo 12: Figure 2



Photo 13: Figure 2



Photo 14: Figure 2



Photo 15: Figure 2



Photo 16: Figure 2



Photo 17: Figure 2



Photo 18: Figure 2



Photo 19: Figure 2



Photo 20: Figure 3



Photo 21: Figure 3



Photo 22: Figure 3



Photo 23: Figure 3



Photo 24: Figure 3



Photo 27: Figure 4



Photo 28: Figure 4



Photo 29: Figure 4



Photo 30: Figure 4



Photo 31: Figure 4



Photo 32: Figure 4



Photo 33: Figure 4



Photo 34: Figure 4



Photo 35: Figure 4



Photo 36: Figure 4



COMMUNITY
connectivity program

Appendix B



AECOM
Built to deliver a better world



COMMUNITY
connectivity program

Road Safety Audit

Town: Ridgefield
RSA Location: Combined Use Walkway
Meeting Location: Town Hall Annex
Address: 66 Prospect Street
Date: 6/14/2016
Time: 9:30am

Participating Audit Team Members

Audit Team Member	Agency/Organization
Audit Team Member	Agency/Affiliation
Kristin Hadjstylianos	Aecom
Mark Caswell	Ridgefield PD
Charles Fisher	RI
Jake Miller	RDG ENG
Craig Babowicz	CTDOT
Tony Phillips	Ridgefield
Paul Roch	Ridgefield
Rudy Mardoni	Town
Steve Mitchell	Aecom
Lorenzo Varone	Aecom
Ryan Carey	Intern



COMMUNITY
connectivity program

Appendix C



AECOM
Built to deliver a better world



Road Safety Audit – Ridgefield

Meeting Location: Town Hall Annex
Address: 66 Prospect Street
Date: 6/14/2016
Time: 9:30 AM

Agenda

- Type of Meeting:** Road Safety Audit – Pedestrian Safety
- Attendees:** Invited Participants to Comprise a Multidisciplinary Team
- Please Bring:** Thoughts and Enthusiasm!!
- 9:30 AM** **Welcome and Introductions**
- Purpose and Goals
 - Agenda
- 9:45 AM** **Pre-Audit**
- Definition of Study Area
 - Review Site Specific Data:
 - Average Daily Traffic
 - Crash Data
 - Geometrics
 - Issues
 - Safety Procedures
- 11:00 AM** **Audit**
- Visit Site
 - As a group, identify areas for improvements
- 12:30 PM** **Post-Audit Discussion / Completion of RSA**
- Discussion observations and finalize findings
 - Discuss potential improvements and final recommendations
 - Next Steps
- 2:30 PM** **Adjourn for the Day – but the RSA has not ended**

Instruction for Participants:

- Before attending the RSA, participants are encouraged to observe the intersection and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.



Audit Checklist

Pedestrians and Bicycles	Comment
<p>Pedestrian Crossings</p> <ul style="list-style-type: none">• Sufficient time to cross (signal)• Signage• Pavement Markings• Detectable warning devices (signal)• Adequate sight distance• Wheelchair accessible ramps<ul style="list-style-type: none">○ Grades○ Orientation○ Tactile Warning Strips• Pedestrian refuge at islands• Other	
<p>Pedestrian Facilities</p> <ul style="list-style-type: none">• Sidewalk<ul style="list-style-type: none">○ Width○ Grade○ Materials/Condition○ Drainage○ Buffer• Pedestrian lighting• Pedestrian amenities (benches, trash receptacles)• Other	



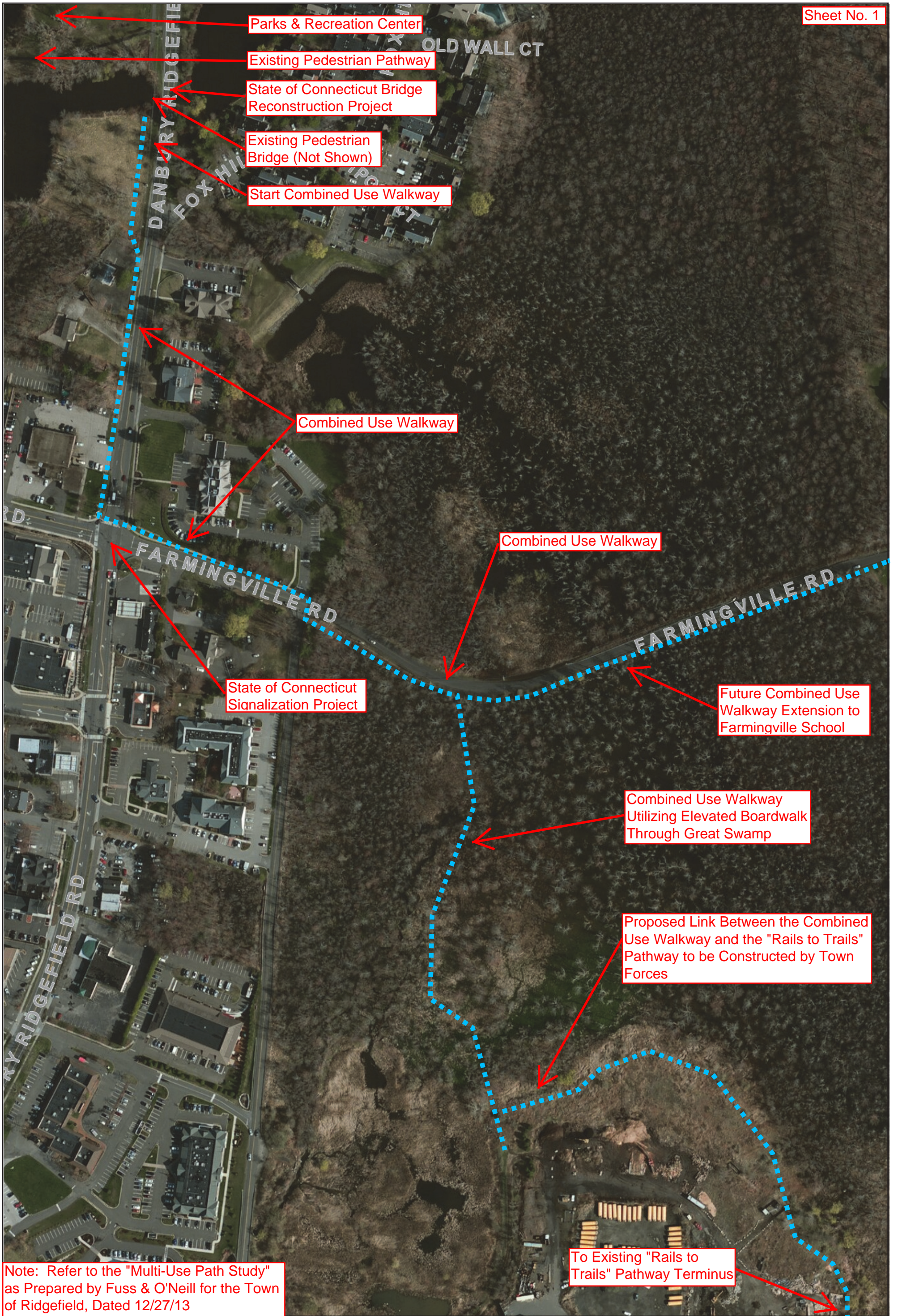
Bicycles <ul style="list-style-type: none">• Bicycle facilities/design• Separation from traffic• Conflicts with on-street parking• Pedestrian Conflicts• Bicycle signal detection• Visibility• Roadway speed limit• Bicycle signage/markings• Shared Lane Width• Shoulder condition/width• Traffic volume• Heavy vehicles• Pavement condition• Other	
--	--

Roadway & Vehicles	
<ul style="list-style-type: none">• Speed-related issues<ul style="list-style-type: none">○ Alignment;○ Driver compliance with speed limits○ Sight distance adequacy○ Safe passing opportunities	
<ul style="list-style-type: none">• Geometry<ul style="list-style-type: none">○ Road width (lanes, shoulders, medians);○ Access points;○ Drainage○ Tapers and lane shifts○ Roadside clear zone /slopes○ Guide rails / protection systems	

<ul style="list-style-type: none">• Intersections<ul style="list-style-type: none">○ Geometrics○ Sight Distance○ Traffic control devices○ Safe storage for turning vehicles○ Capacity Issues	
--	--



<ul style="list-style-type: none">• Pavement<ul style="list-style-type: none">○ Pavement Condition (excessive roughness or rutting, potholes, loose material)○ Edge drop-offs○ Drainage issues• Lighting Adequacy	
<ul style="list-style-type: none">• Signing<ul style="list-style-type: none">• Correct use of signing• Clear Message• Good placement for visibility• Adequate retroreflectivity• Proper support	
<ul style="list-style-type: none">• Signals<ul style="list-style-type: none">○ Proper visibility○ Proper operation○ Efficient operation○ Safe placement of equipment○ Proper sight distance○ Adequate capacity	
<ul style="list-style-type: none">• Pavement Markings<ul style="list-style-type: none">○ Correct and consistent with MUTCD○ Adequate visibility○ Condition○ Edgelines provided	
<ul style="list-style-type: none">• Miscellaneous<ul style="list-style-type: none">○ Weather conditions impact on design features.○ Snow storage	



Note: Refer to the "Multi-Use Path Study" as Prepared by Fuss & O'Neill for the Town of Ridgfield, Dated 12/27/13

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Town of Ridgfield, RSA Application, Phase 2, Combined Use Walkway

3/1/2016 10:17:26 AM



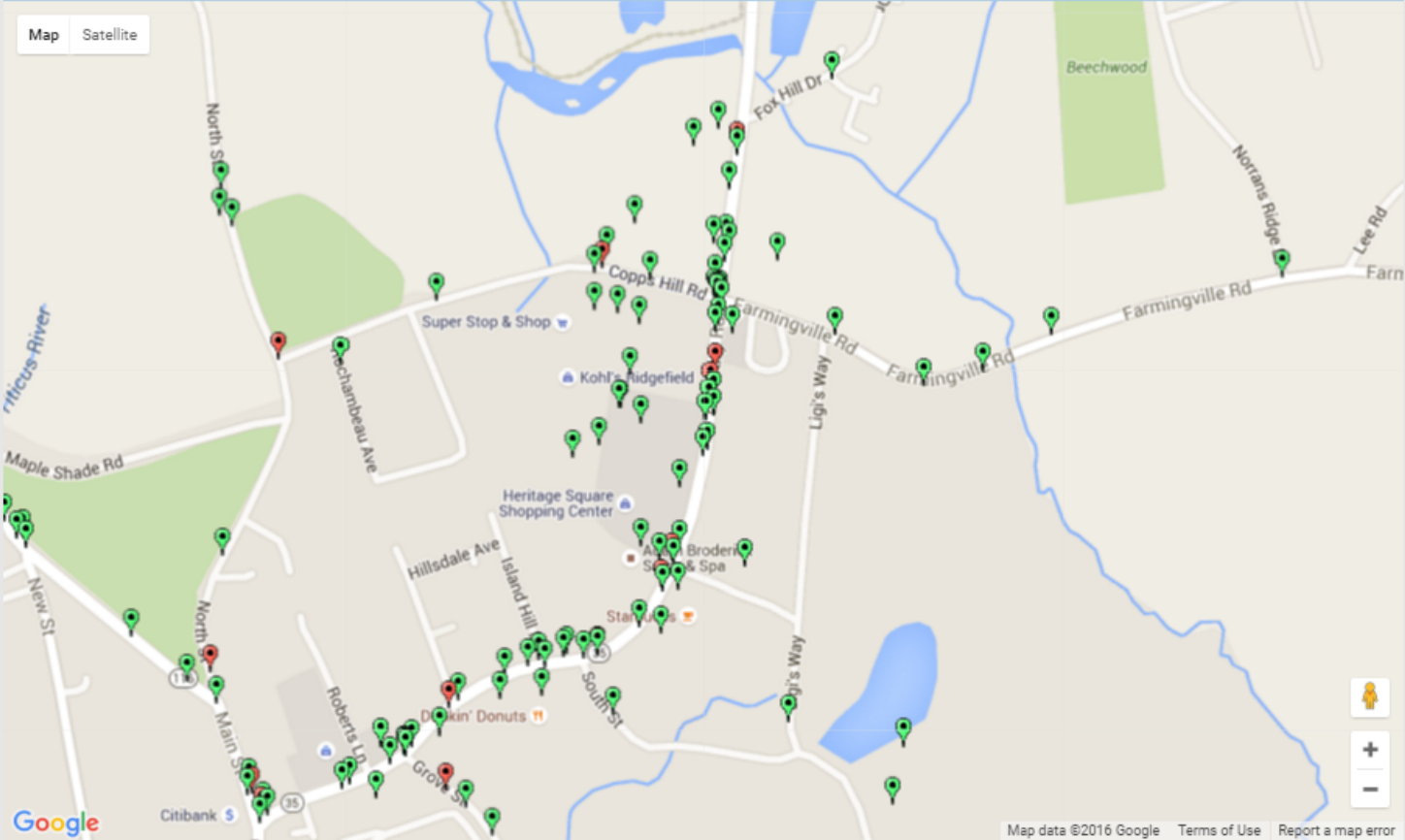
1:2400
1"=200'



2015 Crashes

UConn Connecticut Crash Data Repository

Search Criteria:
Dataset: mmucc
Towns: Ridgefield
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
Case Status: Complete



Markers Heatmap Select & Query Query Selection

Injury of any type (Serious, Minor, Possible) Fatal (Kill)
 Property Damage Only

Select All Deselect All



Road Safety Audit – Ridgefield

Crash Summary

Data: 3 years (2012-2014)

Two crashes involved pedestrians, both resulted in injuries.

One accident involved a cyclist and resulted in an injury.

Severity Type	Number of Accidents	
Property Damage Only	116	89%
Injury (No fatality)	15	11%
Fatality	0	0%
Total	131	

Manner of Crash / Collision Impact	Number of Accidents	
Unknown	0	0%
Sideswipe-Same Direction	9	7%
Rear-end	66	50%
Turning-Intersecting Paths	22	17%
Turning-Opposite Direction	6	5%
Fixed Object	11	8%
Backing	0	0%
Angle	5	4%
Turning-Same Direction	3	2%
Moving Object	4	3%
Parking	0	0%
Pedestrian	2	2%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	3	2%
Miscellaneous- Non Collision	0	0%
Total	131	



Weather Condition	Number of Accidents	
Snow	11	8%
Rain	20	15%
No Adverse Condition	99	76%
Unknown	0	0%
Blowing Sand, Soil, Dirt or Snow	1	1%
Other	0	0%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Total	131	

Light Condition	Number of Accidents	
Dark-Not Lighted	8	6%
Dark-Lighted	8	6%
Daylight	113	86%
Dusk	1	1%
Unknown	0	0%
Dawn	1	1%
Total	131	

Road Surface Condition	Number of Accidents	
Snow/Slush	12	9%
Wet	28	21%
Dry	89	68%
Unknown	0	0%
Ice	2	2%
Other	0	0.0%
Total	131	



Time		Number of Accidents	
0:00	0:59	1	1%
1:00	1:59	1	1%
2:00	2:59	1	1%
3:00	3:59	0	0%
4:00	4:59	0	0%
5:00	5:59	2	2%
6:00	6:59	1	1%
7:00	7:59	9	7%
8:00	8:59	11	8%
9:00	9:59	9	7%
10:00	10:59	13	10%
11:00	11:59	6	5%
12:00	12:59	12	9%
13:00	13:59	5	4%
14:00	14:59	11	8%
15:00	15:59	10	8%
16:00	16:59	12	9%
17:00	17:59	13	10%
18:00	18:59	6	5%
19:00	19:59	2	2%
20:00	20:59	0	0%
21:00	21:59	2	2%
22:00	22:59	3	2%
23:00	23:59	1	1%
Total		131	

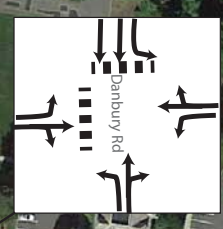
Ridgefield - Combined Use Walkway



Bridge Reconstruction

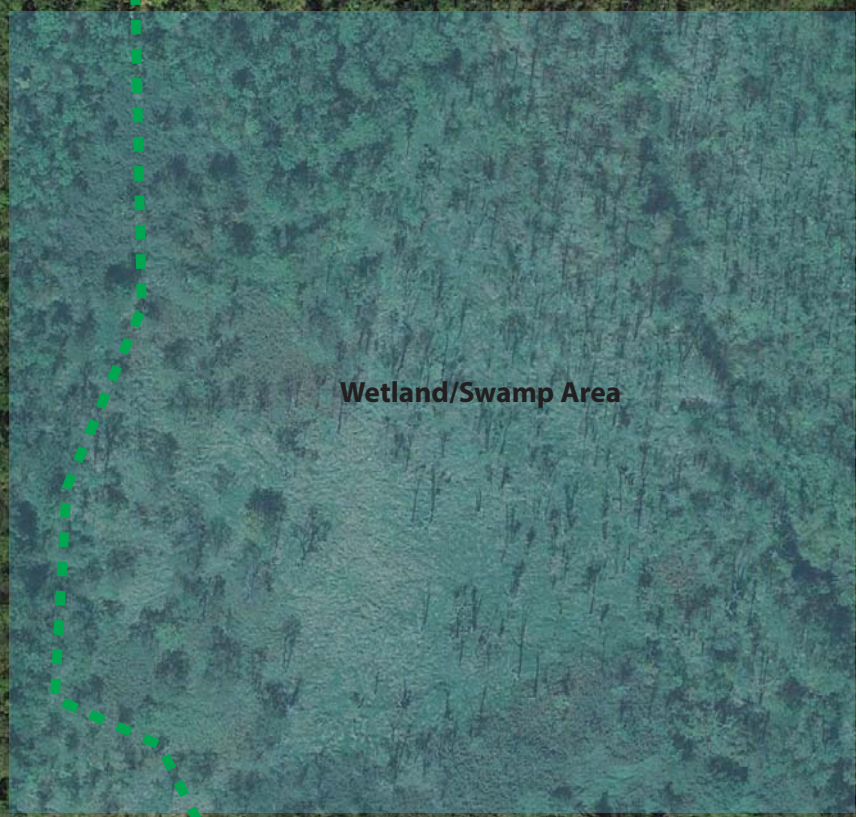
Farmingville Road
Speed =
Roadway width =
Shoulder width =
Sidewalk width =

Danbury Road
Speed =
Roadway width =
Shoulder width =
Sidewalk width =








S

CTDOT Signal Redesign



Wetland/Swamp Area

Legend

-  Sidewalk
-  Signalized Intersection
-  Stop Controlled Intersection
-  Crosswalk
-  Proposed Combined Use Walkway

DRAFT



Road Safety Audit – Ridgefield

Fact Sheet

Functional Classification:

- Danbury Road is classified as a Principal Arterial
- Farmingville Road is classified as a Collector

ADT

- ADT at the Danbury Road and Farmingville Road intersection ranges between 16,600 and 19,200.

Population and Employment Data (2014):

- Population: 25,025
- Employment: 10,573

Urbanized Area

- The study area is located within the Bridgeport-Stamford Urbanized Area

Demographics

- The statewide average percentage below the poverty line is 10.31%. There are no areas in Ridgefield exceeding the state's average.
- The statewide average percentage minority population is 30.53%. There are no areas in Ridgefield exceeding the state's average.

Air Quality

- Ridgefield's CIPP number is 115
- Ridgefield is within the NY/NJ/CT Marginal Ozone Area and PM_{2.5} Attainment/Maintenance Area
- Ridgefield is within a CO Maintenance Area