

City of Rutland Sidewalk Inventory Report

2012-2013

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Introduction

The following report details the current status of the City of Rutland's sidewalk network. The network is maintained by the Department of Public Works (DPW).

Overview and Background of Current Sidewalk Network

The City of Rutland currently has in existence and maintains roughly 43 miles of sidewalk. These sidewalks have been largely constructed and maintained by the DPW street crews and only minimally supplemented by outside construction forces.

Financial Considerations

Currently, the City of Rutland's Board of Aldermen has allocated \$70,000 a year into a dedicated "concrete/pre-cast curbing" fund to be used primarily for sidewalk and curbing repairs. It has been assumed that \$50,000 of this fund is used yearly for sidewalks. This amount has been increased through the years to provide more investment to the City's sidewalk infrastructure and to address deficiencies in this system. Grants have also been pursued and used in the past for repairs that included sidewalks within the City network by City and outside organizations.

Current Methods of Repairs

Nearly all sidewalk repairs are currently carried out by the Department of Public Works staff. However under the current Union agreement, property owners are permitted to construct or repair 60 linear feet per year to their property without Union approval.

Repairs currently in progress are selected using a method of best available information. Sidewalks that are known to be in high pedestrian traffic areas, subject to multiple complaints, and/or high priorities for the City and Department are also given higher priority in the yearly planning process for DPW. Previous to this report, no other City wide network study had been completed.

Americans with Disabilities Act (ADA) Considerations

The City of Rutland addresses ADA considerations within the sidewalk network when a portion of the adjacent sidewalk is included in a project. An adjacent project is generally described as when a construction project or sidewalk repair is done in the near vicinity, though this can be modified to address known problems in a wider area. It is DPW policy that all sidewalk repairs and rehabilitations will be compliant with the latest ADA standards.

Introduction of StudyIn the fall of 2012, the Engineering Division was instructed to conduct a sidewalk inventory of all sidewalks within the City Right of Way. This study was to be used to get a better understanding of the adequacy of current funding levels, evaluate the network for present conditions, provide a system of criteria for selection of sidewalk repairs and new construction, a list of highest priority repairs needed, and a means to project future liabilities and needed funding levels for the City.

The Study consisted of three phases—collection of data/inspection of sidewalks, cataloguing and attribution of collected data, computation of highest priority sidewalks and cost estimates.

Phase 1—Collection of Data/Inspection of Sidewalks

Sidewalks in the City have previously been mapped using the 2001 aerial flyover. This information was stored in the City’s GIS database.

Using this data, DPW drove all streets where traffic flows were slow enough to view the condition of the sidewalks. This was done when time and weather permitted between October 2012 and May 2013. These inspections were carried out by the same two man crew (driver and data recorder) to eliminate differences in the condition assessments that would be made had multiple people conducted the inspection.

Segments were updated as needed to the 2001 database to make it reflect the present in-field conditions.

Segments were rated on a visual inspection as follows:

<u>Condition</u>		<u>Factor</u>
Failed	Sidewalk in complete deterioration; impassable	1.0
Poor	Sidewalk mostly deteriorated or heaved; not ADA compliant; possibly passable	0.75
Good	Sidewalk not heaved; slight cracking at most; ADA compliant	0
Excellent	Sidewalk has no cracks; in as-poured condition	0

See Appendix B for photographic examples.

For the streets where traffic flows and speeds were higher (Main, Woodstock, etc.) sidewalks were walked and categorized with the same visual inspection as explained above. All data was recorded on paper maps with notations made corresponding to sections of sidewalks.

In addition, sidewalk material types were also noted (concrete, asphalt, other).

Sidewalk ramps were also inspected and noted. These were given a simple rating of whether ADA compliant truncated domes were present or not.

Phase 2—Cataloging and Attribution of Collected Data

Data was attributed to the existing public sidewalk GIS maps where available. Fields were created for both the condition (Failed, Poor, Good or Excellent) and the material type (concrete, asphalt, other). This allows us to analyze and breakdown the data into groups. A condition factor was assigned to each segment of sidewalk according to the condition of the sidewalk as shown above.

Where sidewalks had changed in location, been constructed, or removed since 2001, new sidewalk polygons were created.

A sidewalk ramp point file was created to represent the ramps at each intersection of our concrete network. These ramps were created, in large part, in correspondence with crosswalk data supplied by the State of Vermont in fall of 2012.

All Lineal Feet calculations are based on a sidewalk width of 5 feet.

Driveway Crossings

Crossings for motor vehicles and driveways were not included in the physical condition assessment. A GIS catalogue was not available and the creation of such would have greatly increased the time needed to complete the assessment.

DPW determined it to be necessary to estimate a value for capital replacement cost for driveway crossings. An average of .019 crossings/LF of sidewalk was developed by looking at a handful of “typical” streets in each road class. This number was used along with a standard crossing size of 14 feet length x 5 feet wide x 7 inches thick. This calculation, shown below, found a value of 303,795 square feet of crossings and 6,563 cubic yards of concrete.

<u>LF Sidewalk</u>	<u>Crossings/LF</u>	<u>Crossings</u>	<u>Crossing (ft²)*</u>	<u>Crossing CY**</u>
228,417	0.019	4,340	303,795	6563

*Assumed a 14ft Length and 5ft Width.

**7 inch thickness

Attributing Levels of Importance to Sidewalk Segments

In order to prioritize which sidewalks should be constructed, DPW felt it necessary to not just look at a sidewalk’s condition and material type but to take into consideration other factors such as proximity to a pedestrian generating facility or whether it was located along a highly connective corridor. These analyses were done using GIS tools and are individually explained in the sub-sections below. Points were assigned for each factor and will be tabulated to determine the priority of replacement.

Road Use

See map of Current Road Classification in Appendix F.

Road use (class) was also included in the scoring of each sidewalk segment. This was done by creating a road classification layer using centerlines of all accepted streets in Rutland City. These classifications were based off the VT AOT General Highway Map from 2011. Sidewalks were manually designated in the GIS database.

The street segment with which the sidewalk was aligned was how the sidewalk received the designation.

Road classes considered:

	<u>Road Class Factor</u>
• Class 1 Example: Rt. 4 & Rt. 7	3
• Class 2 Example: Grove St., Killington Ave.	2
• Class 3 Example: most other residential streets	1

The scoring for each sidewalk is reflected in the above list.

Material of Sidewalk

The material sidewalks were constructed from was also considered. All materials other than concrete were given an additional 0.5 score.

There is currently an equivalent of 194,031 LF* sidewalks that are not constructed from concrete.

**All LF calculations are based on a sidewalk width of 5 feet.*

Schools

See Appendix C for location of School Parcels.

Sidewalks surrounding schools were included due to their likelihood of being heavy pedestrian routes for children. Often times, schools hold other functions such as polling places or gathering places for other events like athletics, community theatre, etc.

A school data layer was acquired and updated from the Rutland Regional Planning Commission. This layer had each school attributed as a polygon representing the parcel size of the school.

A buffer was created that selected each sidewalk within ¼ mile, 1/8 mile and 100 ft. radii of the parcels. The selected sidewalks were given a score of 1, 2 and 3 respectively.

The table below shows the equivalent LF of sidewalk found in the radii.

<u>Distance from</u>	
<u>School</u>	<u>LF of Sidewalk</u>
1/4 mile	156,772
1/8 mile	46,134
100 ft.	18,524

Business Areas

See Appendix D for Zoning Map

The business areas were determined using the 2004 Zoning Maps. Only districts determined to have a “business like use” were used and are listed below:

- GBs All Gateway Business Districts
- NB Neighborhood Business Districts
- I Industrial Districts
- DB Downtown Business Districts
- CH Courthouse District
- POP Planned Office Park District

The boundaries for the districts were extracted and used to select all sidewalk segments located within the district. These segments were given a score of 1.

The equivalent of approximately 63,254 LF feet of sidewalk was found within these districts.

Bus Routes

See map of Bus Routes in Appendix E

Layers of the existing bus routes were acquired from Rutland Regional Planning Commission. These are the most updated routes available from the Marble Valley Regional Transit District. These data layers had simple lines drawn along the corridors that the bus traveled.

Using these layers, all sidewalks within 75 feet of the line file were selected and attributed with a score of 1. The value of 75 feet was chosen due to the desire to see all sidewalks selected along South Main St. This value allowed all sidewalks to be selected and most sidewalk segments connected to the intersection ramps. The radii were extended to 150 ft. to include sidewalks that may encompass travel to/around the bus stops and a score of 0.5 was given for these.

Using the above methods, the equivalent of 133,931 LF and 9,326 LF were found within 75 ft. and 150 ft. respectively.

Hospital

The Rutland Regional Medical Center was used to select sidewalks within 1 mile, ½ mile, ¼ mile and each sidewalk was attributed an additional score of 1.5, 1, and 0.5 respectively.

City Parks and Trails

City parks were used to select sidewalks within ¼ mile, 1/8 mile and 100 ft. radii of park facilities and attributed with additional scores of 0.5, 1, and 1.5 respectively. The newly constructed East Creek trail and the pathway/trail behind Downtown Plaza were used to select sidewalks within ¼ mile and given a score of 0.5.

Large Public Housing Developments

Public housing, based upon the Section 8 housing in Rutland City, was selected by parcel and used to select sidewalks within ¼ mile, 1/8 mile and 100 ft. These selected sidewalks were given additional scores of 0.5, 1, and 1.5 respectively.

Phase 3—Computation of Highest Priority Sidewalks and Cost Estimates

The following subsections and tables show the breakdown of sidewalk results and costs. These computations were done by calculating areas and sorting using attributes in ArcGIS. All computations were done using a spreadsheet analysis.

Condition and Cost of Replacement

See full table in Appendix G

The following table shows the breakdown of sidewalks per their condition and the corresponding cost of replacement.

Sidewalk Condition	Lineal Feet	Linear Miles	CY	Replacement (@\$670/CY)	
Failed	15,928	3.02	983	\$ 658,734	
Poor	75,814	14.36	4,680	\$ 3,135,526	
Good	100,399	19.02	6,197	\$ 4,152,313	
Excellent	38,700	7.33	2,389	\$ 1,600,539	
Crossings	60,759	11.51	6,563	\$ 2,999,506	***
Total	230,841	55.23	14,249	\$ 4,986,263	*
				\$ 12,546,617	**

*Total of Sidewalks (Conditions 1 & 2) and Crossings (~40%) Needing Replaced

**Capital Replacement Cost (All sidewalks and crossings)

***Value of \$457/CY used to account for 7" slabs needing more concrete but same labor/equipment

The \$670/CY value was estimated using average costs for sidewalk projects in the DPW construction season of 2012. While DPW conducts a large portion of sidewalk replacements now, it is not feasible to greatly increase the amount of planned sidewalk replacement by DPW crews without greatly sacrificing the other critical duties of the department. The cost estimate above therefore includes materials, labor, equipment and removals with the assumption that much of the new work will be completed by contractors.

Timelines for Replacement

Two calculations are shown below to examine the cost of replacement.

Sidewalks Currently In Need of Replacement

The table in the previous section listed the estimated cost of replacing sidewalks that are currently inadequate at \$3,794,260. Assuming that the same proportion of driveway crossings needs replacement, this number increases to \$4,986,263. At current funding levels of \$50,000/yr., it would take approximately 99.7 years (not accounting for inflation) to replace all sidewalks and crossings currently in need of replacement. This is beyond the assumed life cycle of concrete sidewalks of 50 years and shows that we can expect the sidewalks to continue to deteriorate faster than they can be replaced at current funding levels.

Capital Replacement Cost

Assuming a 50 year life cycle of sidewalks and using the total value of all sidewalk material, \$12,546,617, the City would have to budget \$250,932 annually (not accounting for inflation) to replace sidewalks at the same rate at which they deteriorate. Put another way, to complete the capital replacement cycle at the current budget of \$50,000 it would take 250.9 years. At this higher funding level, all portions of sidewalk currently in need of replacement can be expected to be replaced in 19.9 years.

<u>Replacement Cycle</u>	<u>Current Funding</u> <u>(\$50,000/yr.)</u>	<u>Increased Level</u> <u>(\$250,932/yr.)</u>
Currently in Need of Replacement	99.7 yrs.	19.9 yrs.
All Sidewalks	250.9 yrs.	50 yrs.

Sidewalk Condition by Road Class

The following tables show the breakdown by Road Class of Sidewalk Conditions and the corresponding cost of repair.

Class 1

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	507	101	0.02	6	\$ 4,194
Poor	26,305	5,261	1.00	325	\$ 217,585
Good	125,710	25,142	4.76	1,552	
Excellent	58,672	11,734	2.22	724	
Total	211,194	42,239	8.00	2,607	\$ 221,778

Class 2

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	18,114	3,623	0.69	224	\$ 149,832
Poor	78,968	15,794	2.99	975	\$ 653,192
Good	141,564	28,313	5.36	1,748	
Excellent	47,819	9,564	1.81	590	
Total	286,465	57,293	10.85	3,537	\$ 803,024

Class 3

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	61,016	12,203	2.31	753	\$ 504,700
Poor	273,610	54,722	10.36	3,378	\$ 2,263,194
Good	253,144	50,629	9.59	3,125	
Excellent	102,208	20,442	3.87	1,262	
Total	689,978	137,996	26.14	8,518	\$ 2,767,894

Sidewalk Condition by Material Composition

Sidewalk material was found to be composed of four types. Those types as well as their condition have been displayed in the tables below.

Concrete

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	61,043	12,209	2.31	754	\$ 504,924
Poor	295,911	59,182	11.21	3,653	\$ 2,447,659
Good	443,319	88,664	16.79	5,473	
Excellent	193,307	38,661	7.32	2,387	
Total	993,580	198,716	37.64	12,266	\$ 2,952,582

Asphalt

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	18,568	3,714	0.70	229	\$ 153,587
Poor	59,380	11,876	2.25	733	\$ 491,168
Good	77,099	15,420	2.92	952	
Excellent	15,392	3,078	0.58	190	
Total	170,439	34,088	6.46	2,104	\$ 644,755

Marble

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Poor	554	111	0.02	7	\$ 4,582
Total	554	111	0.02	7	\$ 4,582

Brick

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Poor	23,038	4,608	0.87	284	\$ 190,561
Total	23,038	4,608	0.87	284	\$ 190,561

The presence of brick sidewalks is explained by the inclusion of Center St. Alley as a sidewalk.

Condition of Sidewalks Near Schools

The table below shows the breakdown of sidewalks by condition within ¼ mile of schools excluding the sidewalks within 1/8 mile or less.

1/4 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Miles</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	4,464	893	0.17	55	\$ 36,924
Poor	283,291	56,658	10.73	3,497	\$ 2,343,271
Good	371,328	74,266	14.07	4,584	\$ -
Excellent	124,777	24,955	4.73	1,540	\$ -
Total	783,860	156,772	29.69	9,677	\$ 2,380,196

The table below shows the breakdown of sidewalks by condition within 1/8 mile (660 ft.) of schools, excluding the sidewalks within 100 ft.

1/8 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Miles</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	20,492	4,098	0.78	253	\$ 169,502
Poor	97,250	19,450	3.68	1,201	\$ 804,414
Good	119,419	23,884	4.52	1,474	\$ -
Excellent	18,610	3,722	0.70	230	\$ -
Total	255,771	51,154	9.69	3,158	\$ 973,915

The table below shows the breakdown of sidewalks by condition within 100 ft. of schools.

100 Feet

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Miles</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	5,818	1,163.60	0.22	72	\$ 48,124
Poor	28,783	5,756.60	1.09	355	\$ 238,082
Good	45,367	9,073.40	1.72	560	\$ -
Excellent	12,654	2,530.80	0.48	156	\$ -
Total	92,622	18,524.40	3.51	1,143	\$ 286,206

Condition of Sidewalks within Business Areas

The table below shows the breakdown of sidewalks located within the Zoned Districts that have a business like function and are listed in Phase 2.

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Miles</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	4,322	864	0.16	53	\$ 35,750
Poor	73,135	14,627	2.77	903	\$ 604,944
Good	155,576	31,115	5.89	1,921	
Excellent	83,239	16,648	3.15	1,028	
Total	316,272	63,254	11.98	3,905	\$ 640,694

Sidewalks near Bus Routes

The table below shows the sidewalks and their condition that were located within 75 ft. of the transit route.

75 Feet

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	27,267	5,453	1.03	337	\$ 225,542
Poor	176,971	35,394	6.70	2,185	\$ 1,463,834
Good	307,820	61,564	11.66	3,800	
Excellent	157,599	31,520	5.97	1,946	
Total	669,657	133,931	25.37	8,267	\$ 1,689,376

The table below shows the sidewalks and their condition that were located within 150 ft. of the transit route not included in the 75 ft. radius.

150 Feet

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	5,804	1,161	0.22	72	\$ 48,008
Poor	17,231	3,446	0.65	213	\$ 142,528
Good	17,810	3,562	0.67	220	
Excellent	5,783	1,157	0.22	71	
Total	46,628	9,326	1.77	576	\$ 190,536

Hospital

The results of sidewalk conditions within 1 mile, ½ mile and ¼ mile of the Rutland Regional Medical Center are shown in the tables below. All sidewalks calculations exclude sidewalks included in a smaller radius.

1 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	23,158	4,632	0.88	286	\$ 191,554
Poor	93,746	18,749	3.55	1,157	\$ 775,430
Good	124,344	24,869	4.71	1,535	
Excellent	33,632	6,726	1.27	415	
Total	274,880	54,976	10.4	3,394	\$ 966,984

1/2 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	2,071	414	0.08	26	\$ 17,130
Poor	2,702	540	0.10	33	\$ 22,350
Good	9,785	1,957	0.37	121	
Excellent	1,480	296	0.06	18	
Total	16,038	3,208	0.61	198	\$ 39,480

1/4 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	499	100	0.02	6	\$ 4,128
Poor	4,024	805	0.15	50	\$ 33,285
Good	11,954	2,391	0.45	148	
Excellent	-	-	-	-	
Total	16,477	3,295	0.62	203	\$ 37,412

City Parks and Trails

The tables below detail the sidewalks found in each radius of selection. All sidewalks calculations exclude sidewalks included in a smaller radius.

1/4 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	30,666	6,133	1.16	379	\$ 253,657
Poor	112,435	22,487	4.26	1,388	\$ 930,018
Good	132,432	26,486	5.02	1,635	
Excellent	58,541	11,708	2.22	723	
Total	334,074	66,815	12.65	4,124	\$ 1,183,675

1/8 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	18,870	3,774	0.71	233	\$ 156,085
Poor	86,483	17,297	3.28	1,068	\$ 715,353
Good	153,543	30,709	5.82	1,896	
Excellent	67,026	13,405	2.54	827	
Total	325,922	65,184	12.35	4,024	\$ 871,438

100 Feet

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	1,057	211	0.04	13	\$ 8,743
Poor	37,990	7,598	1.44	469	\$ 314,238
Good	62,709	12,542	2.38	774	
Excellent	54,401	10,880	2.06	672	
Total	156,157	31,231	5.92	1,928	\$ 322,981

The table below details the sidewalks within a ¼ mile of trails in the city.

1/4 Mile--Trail

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	20,084	4,017	0.76	248	\$ 166,127
Poor	116,688	23,338	4.42	1,441	\$ 965,197
Good	170,500	34,100	6.46	2,105	
Excellent	129,933	25,987	4.92	1,604	
Total	437,205	87,441	16.56	5,398	\$ 1,131,324

Large Public Housing Developments

The tables below detail the sidewalks found in each radius of selection. All sidewalks calculations exclude sidewalks included in a smaller radius.

1/4 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	32,946	6,589	1.25	407	\$ 272,516
Poor	129,203	25,841	4.89	1,595	\$ 1,068,716
Good	151,614	30,323	5.74	1,872	
Excellent	45,661	9,132	1.73	564	
Total	359,424	71,885	13.61	4,437	\$ 1,341,232

1/8 Mile

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	34,895	6,979	1.32	431	\$ 288,638
Poor	164,171	32,834	6.22	2,027	\$ 1,357,958
Good	238,142	47,628	9.02	2,940	
Excellent	103,530	20,706	3.92	1,278	
Total	540,738	108,148	20.48	6,676	\$ 1,646,595

100 Feet

<u>Sidewalk Condition</u>	<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Cost @ \$670/CY</u>
Failed	5,611	1,122	0.21	69	\$ 46,412
Poor	47,681	9,536	1.81	589	\$ 394,398
Good	44,793	8,959	1.70	553	
Excellent	52,686	10,537	2.00	650	
Total	150,771	30,154	5.71	1,861	\$ 440,810

Linear Feet of Roads by Sidewalk Presence

A map of the current sidewalks per street can be found in Appendix A.

In many cities sidewalk repairs and new installations have been prioritized by the number of sidewalks present on a said street. This was not taken into account in this study but a breakdown for Rutland City was able to be calculated.

This calculation was done by attributing street center lines manually to the number of sidewalks on either side of the line.

The table below shows the results with:

Miles of Roads			
	Number of Sidewalks		
Road Class	<u>0</u>	<u>1</u>	<u>2</u>
1	0.00	0.84	5.24
2	4.68	3.99	5.11
3	34.20	9.47	12.98
Totals	38.87	14.31	23.33

This table is generally shared as informational. The calculation was done (shown below) towards the monetary requirements for every street in the city having at least one sidewalk for a rough estimate of future policy goals.

Total Miles	LF	CY	\$/CY	Total Cost
38.87	205,250	12,670	670	\$8,488,743

Possible Removals without Replacement

Through a manual examination, sidewalks were selected which were either “islands” or unconnected by large distances and did not appear to be likely candidates to be included in a future project connecting to current sidewalks. Also the selected sidewalks were of the condition of Failed or Poor to be included. A total of 15,246 sq ft or 3,049.2 equivalent LF were found to be likely candidates. These sidewalks were included in the calculations found in the previous sections, and would represent a cost savings in those calculations with their removal and subsequent non-replacement. The cost of removing these sidewalks is shown below.

Removals						
<u>Square Feet</u>	<u>Equivalent LF</u>	<u>Mileage</u>	<u>Cubic Yards</u>	<u>Removal Cost @ \$20/CY</u>	<u>Removal Cost @ \$670/CY</u>	<u>Potential Cost Savings</u>
15,246	3,049	0.58	188	\$ 3,764	\$ 126,108.89	\$ 122,344.44

Shortcomings of Sidewalk Study

- When possible, sidewalk segments were divided to represent small localized issues but on occasion entire segments were attributed by localized issues. This only happened on segments that were deficient. A more detailed survey would likely create a more conservative estimate of sidewalk areas to be repaired, and cost savings may be found with scattered salvageable sidewalk segments.
- Overlapping pedestrian generators such as schools, when calculated, did not double count sidewalks that would have been within the distance denoted. For example, if a sidewalk was within ¼ mile of Rutland Middle School and also Rutland Area Christian School, the sidewalk only received a single score of 0.5.
- Some sidewalk segments are isolated and their condition, use, and neighborhood characteristics make it feasible to remove and not replace these. These segments were included in the calculations, so their permanent removal would lead to some cost savings in the report’s estimates.
- Connectivity of the sidewalk network was not addressed by this report. This report primarily focuses on the replacement of existing sidewalk and not the expansion or contraction of the sidewalk system. There are gaps in the City sidewalk network that range from tens of feet to the majority of entire blocks. In order to eliminate these gaps, sections of sidewalk can either be removed in outlying areas or new segments of sidewalk can be installed where the gaps exist. It

is the opinion of the DPW that a policy decision must be made as to the level of sidewalk service that is to be provided throughout the City before recommendations or studies can be carried out to estimate the magnitude of sidewalks to be removed and/or constructed to address this issue.

List of Sidewalk Priorities

Sidewalks were scored by adding all scores together excluding the condition factor. The sum of the scores was then multiplied by the condition factor (1, 0.75 for Conditions of Failed and Poor, respectively) A total maximum score of 13.5 was possible.

A “top ten” list of sidewalks was generated and is provided below. Their score breakdowns can be found in **Appendix H**.

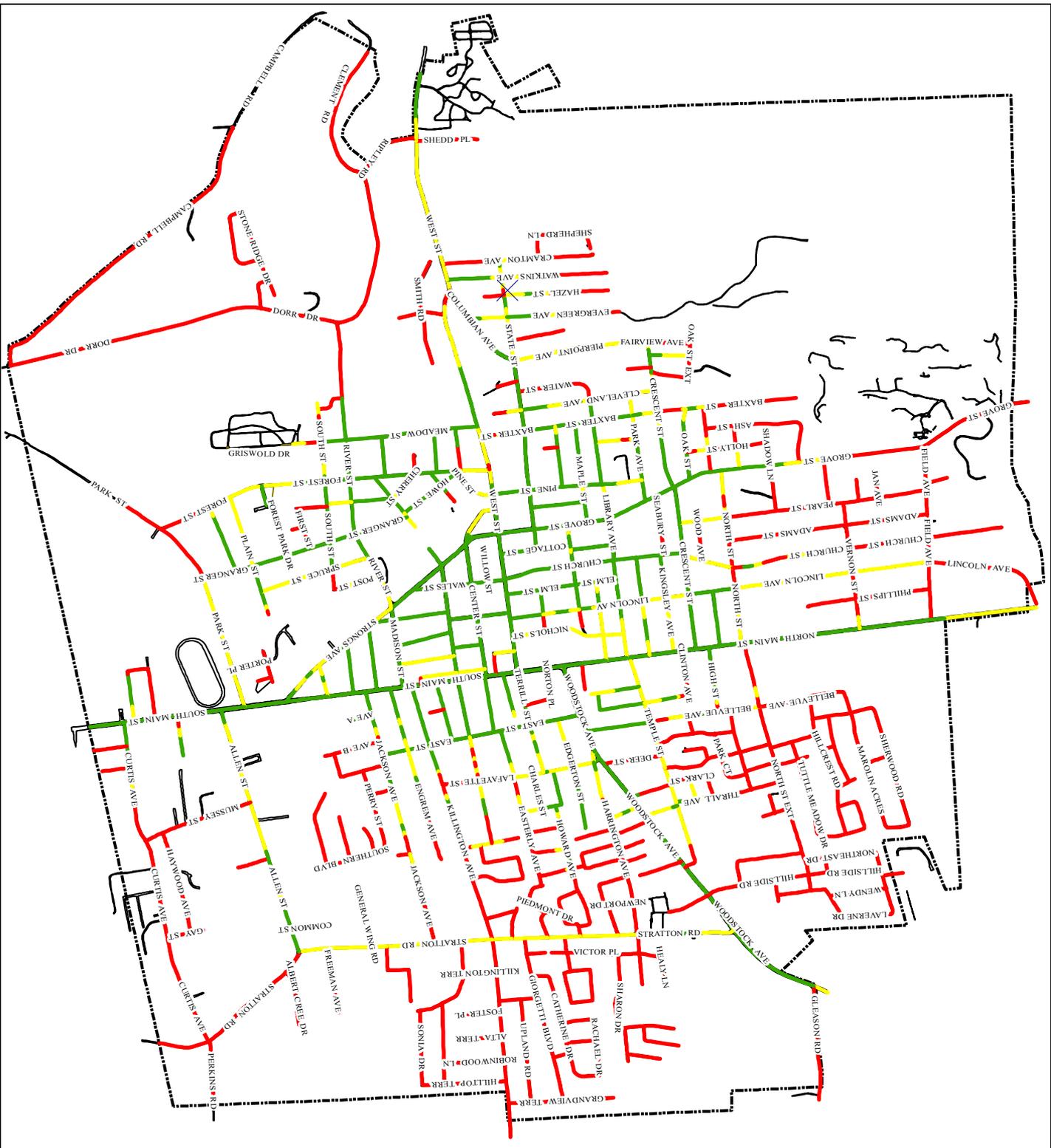
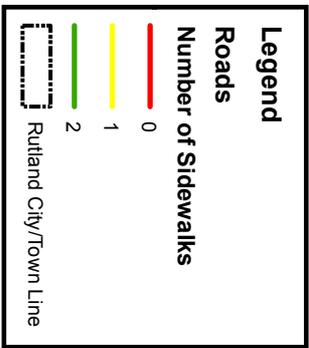
It should be stressed that while planning each project, the area immediately around each sidewalk is/will be inspected to determine the appropriate scope of work.

Top 10

<u>Rank</u>	<u>Location</u>	<u>Score</u>	<u>Sidewalk Condition</u>	<u>Material</u>	<u>Square Feet</u>	<u>Equivalent LF</u>
1	S of Allen between Mahoney and Mussey	9.5	Failed	Asphalt	179	36
2	S of Allen between Mahoney and Mussey	9.5	Failed	Asphalt	320	64
3	N of Temple between School and Thrall	8	Failed	Asphalt	253	51
4	W of Pierpoint across from jail	8	Failed	Asphalt	1,369	274
5	W of Forest along MSJ	8	Failed	Asphalt	1,509	302
6	S of Crescent between Fairview and Earle	7.5	Failed	Asphalt	252	50
7	S of Allen St between Mahoney and Hospital	7.5	Poor	Asphalt	1,777	355
8	S of Allen between Mahoney and Mussey	7.13	Poor	Asphalt	668	134
9	S of Allen between Mahoney and Mussey	7.13	Poor	Asphalt	245	49
10	S of Allen between Mahoney and Mussey	7.13	Poor	Asphalt	135	27

Appendices

Appendix A-- Number of Sidewalks Per Street



Appendix B—Examples of Sidewalk Conditions



Failed



Poor



Good



Excellent

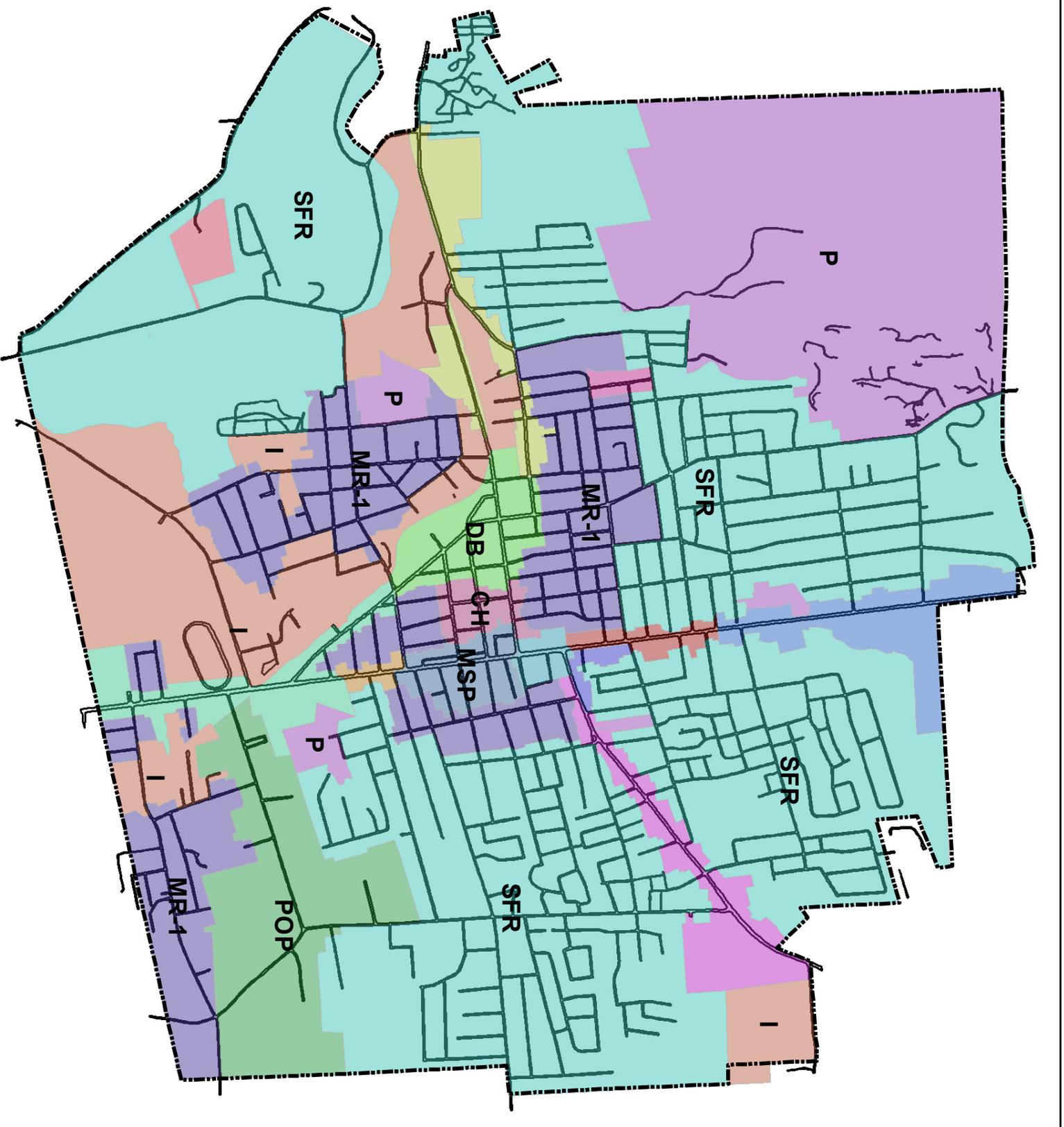
Legend

Rutland City/Town Line

2004 Zoning Map

ZONE

- CH
- DB
- GB-47
- GB-GH
- GB-I
- GB-II
- GB-NMS
- GB-SMS
- GB-SWS
- GB-WA
- I
- MR-1
- MR-2
- MSP
- NB
- P
- POP
- SFR

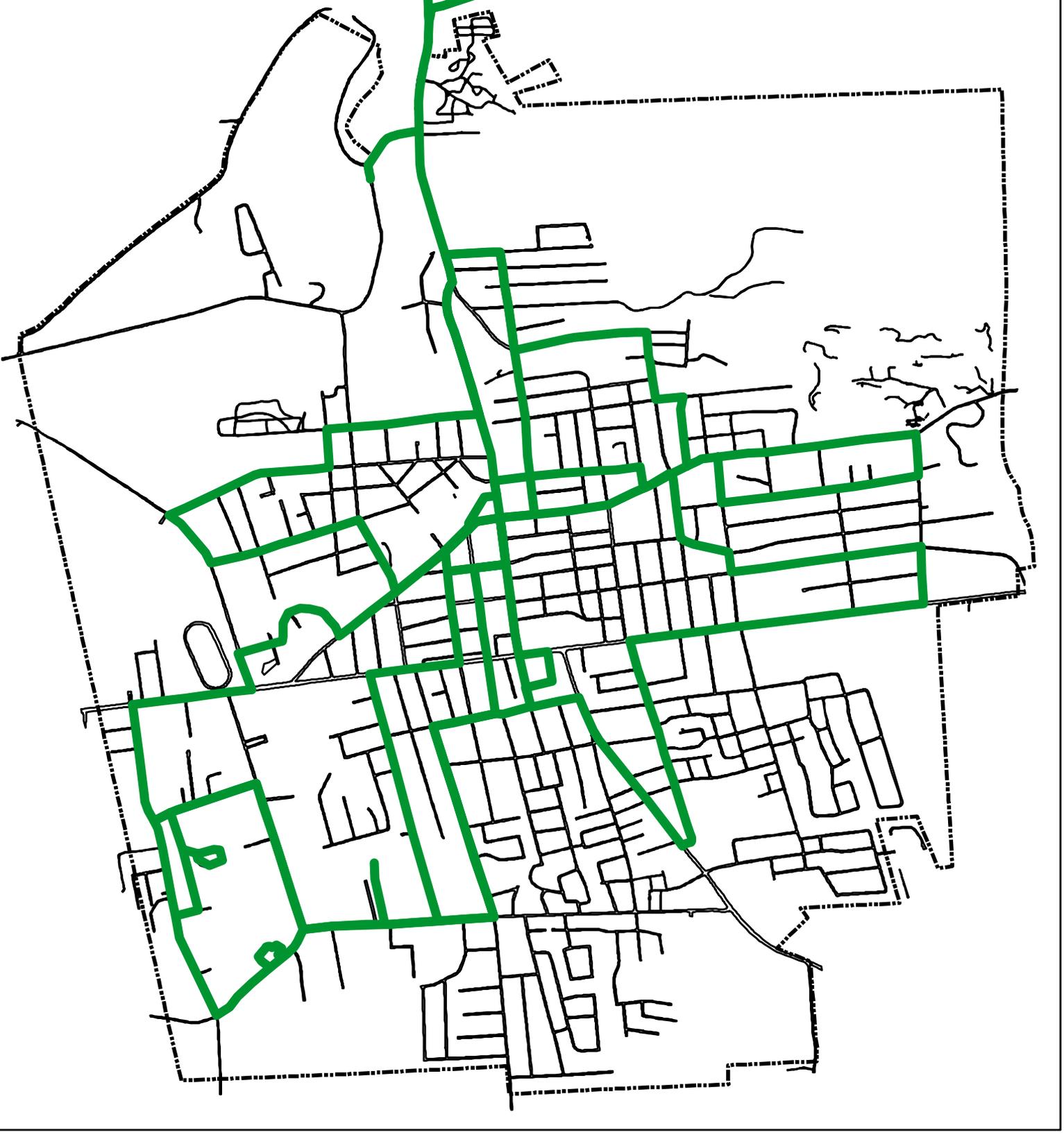


**Appendix D--
2004 Zoning**

Appendix E-- Transit Routes

Legend

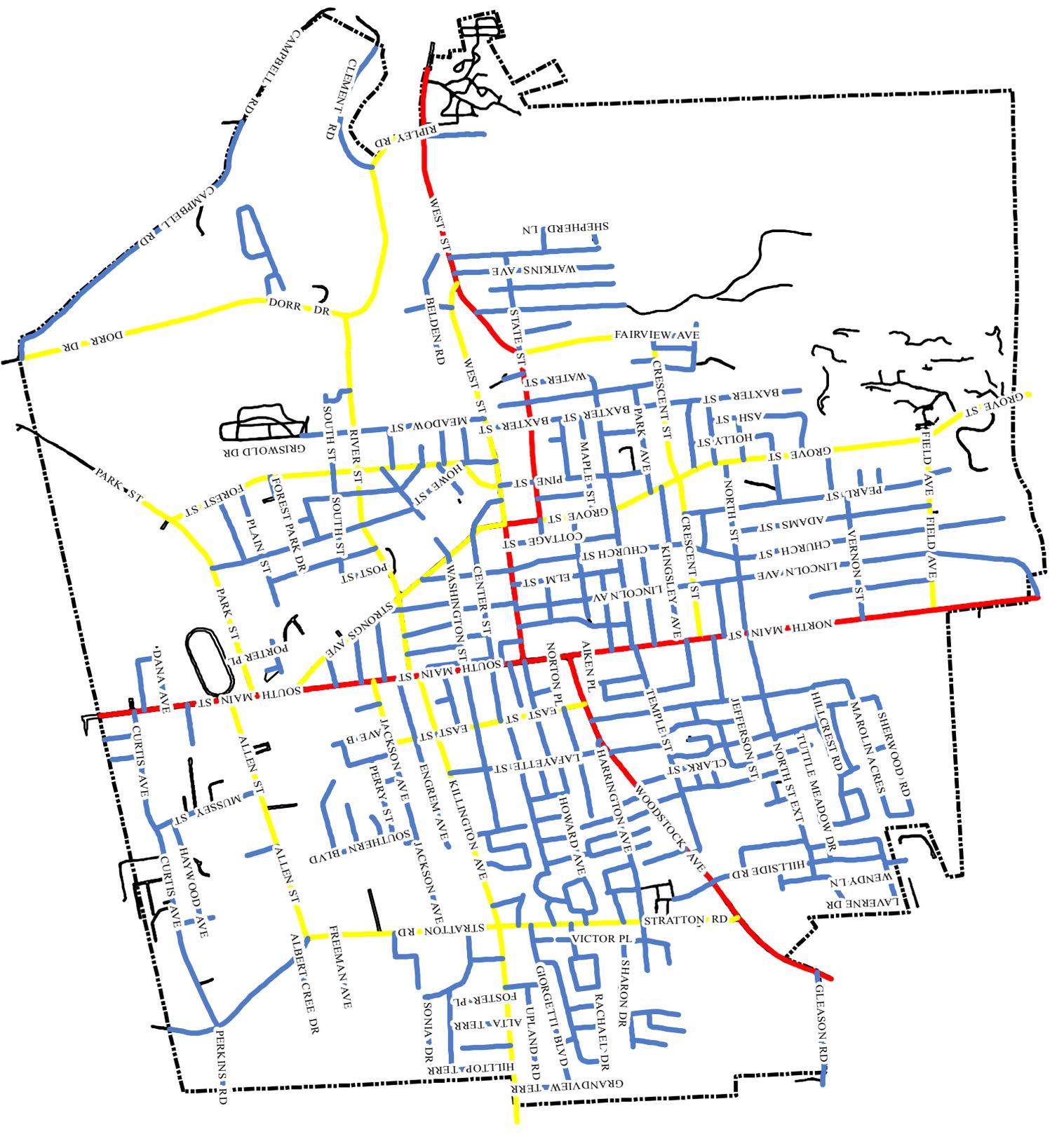
-  Rutland City/Town Line
-  Transit Routes



Appendix F-- Road Class

Legend

-  Rutland City/Town Line
- Road Classification**
-  Class 1
-  Class 2
-  Class 3



Appendix H--Score Breakdown

Rank	Location	Condit ion	Area (Sq Ft.)	Material Type	Road Class	Condition Factor	Road Class	Not Concrete	1/4 Mi School	1/8 Mi School	100 Ft. School	Business District	200 Ft. Bus Route	75 Ft. Bus Route	1 Mi Hospital	1/2 Mi Hospital	1/4 Mi Hospital	1/4 Mi Parks	1/8 Mi Parks	100 Ft. Parks	1/4 Mi Trails	1/4 Mi Section 8 Housing	1/8 Mi Section 8 Housing	100 Ft. Section 8 Housing	Total Score	
1	S of Allen between Mahoney and Mussey	1	179	ASPHALT	2	1	2	0.5	0	2	0	1	0	1	0	0	1.5	0.5	0	0	0	0	0	1	0	9.5
2	S of Allen between Mahoney and Mussey	1	320	ASPHALT	2	1	2	0.5	0	2	0	1	0	1	0	0	1.5	0.5	0	0	0	0	0	1	0	9.5
3	N of Temple between School and Thrall	1	253	ASPHALT	3	1	1	0.5	0	0	3	0	0	1	0	0	0	0	0	1.5	0	0	0	1	0	8
4	W of Pierpont across from Jail	1	1369	ASPHALT	2	1	2	0.5	0	2	0	0	0	1	0	0	0	0	1	0	0.5	0	0	1	0	8
5	W of Forest along Christ the King	1	1509	ASPHALT	2	1	2	0.5	0	0	3	0	0	0	0	0	0	0	1	0	0.5	0	0	1	0	8
6	S of Crescent between Fairview and Earle	1	252	ASPHALT	2	1	2	0.5	0	2	0	0	0	1	0	0	0	0	1	0	0.5	0.5	0	0	0	7.5
7	S of Allen St between Mahoney and Hospital	2	1777	ASPHALT	2	0.75	2	0.5	0	0	3	1	0	1	0	0	1.5	0	0	0	0	0	0	1	0	7.5
8	S of Allen between Mahoney and Mussey	2	688	ASPHALT	2	0.75	2	0.5	0	2	0	1	0	1	0	0	1.5	0.5	0	0	0	0	0	1	0	7.13
9	S of Allen between Mahoney and Mussey	2	245	ASPHALT	2	0.75	2	0.5	0	2	0	1	0	1	0	0	1.5	0.5	0	0	0	0	0	1	0	7.13
10	S of Allen between Mahoney and Mussey	2	135	ASPHALT	2	0.75	2	0.5	0	2	0	1	0	1	0	0	1.5	0.5	0	0	0	0	0	1	0	7.13