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DEPARTMENT OF INFRASTRUCTURE ENGINEERING

MEMORANDUM

TO: James Kern, Town Manager
Board of Selectmen

FROM: Jason L. Mammone, P.E., Director of Engineering
Joseph M. Flanagan, Director of Public Works

DATE: March 9, 2016

SUBJECT: Recommended Pavement Improvements for FY2017-FY2019

As part of the annual pavement management program, please find an analysis of the costs associated with the FY2016 Pavement Management road improvements which are currently being undertaken this contract year along with the recommended FY2017-FY2019 pavement improvements for review and consideration..

The FY2016 Recommended Pavement Improvements were presented to the Board and approved on February 12, 2015 as part of the continuing three year FY2016-FY2018 Recommended Pavement Management Improvements. A summary of the work as originally proposed and approved can be found in Table 1.

Table 1 – FY2016 Approved Road Improvements

Repair Type	Length in Feet	Cost
Reclamation	19,022	\$1,839,135.24
Mill and Overlay	3,680	\$214,045.29
Overlay	0	\$0
Preventative Maintenance	4,064	\$126,335.06
Routine Maintenance	38,664	\$106,054.44
Totals	65,430	\$2,285,570.03

Construction of the planned improvements began in July of 2015 and is anticipated to be completed by the end of June 2016. The preventative maintenance work was completed by All States Asphalt, Inc., the routine maintenance work was completed by Crack-Sealing, Inc. and the reclamation and mill & overlay work is being completed by Lorusso Corporation under the FY2016 Paving Contract. There were a few of adjustments to the planned FY2016 work. Nova Chip was not installed on Ames Street or Court Street due

to Eversource Gas conducting utility work along this roadway during the previous year. Instead, these roads required a slightly more aggressive rehabilitation through mill & overlay. We completed slightly more than half of the FY2016 roadwork during the first half of the contract year and will finish the remainder of the roadwork in the second half which we anticipate will begin sometime this month. There is approximately \$975,000 worth of roadwork remaining for FY2016. The majority of these roads are to be rehabilitated by reclamation.

Due to the extraordinary 2014-2015 winter season, the Commonwealth provided all 351 cities and towns with additional money for repairs as a result of the harsh winter through the “Winter Recovery Assistance Program” (WRAP). The Commonwealth also funded an additional \$100 million on top of the \$200 million originally funded to Chapter 90 for FY2016, which yielded a total allotment to Dedham from Chapter 90 and the WRAP of \$1,141,352.00. The additional money in Chapter 90 and WRAP programs was utilized in the reclamation of Westchester Circle, Grant Avenue and Rockland Street along with replacement of the existing sidewalks for Westchester Circle.

A summary of the completed work to date can be found below in Table 2.

Table 2 – FY2016 Completed Improvements To Date

Repair Type	Length in Feet	Cost
Reclamation	9,574	\$799,804
Mill and Overlay	8,517	\$537,211
Overlay	0	\$0
Preventative Maintenance	4,899	\$183,607
Routine Maintenance	40,912	\$63,579
Totals	63,902	\$1,584,201

A summary of the estimated versus actual unit costs for FY2016 to date is shown below in Table 3.

Table 3 – FY2016 Units Costs To Date (Estimated vs. Actual)

Repair Type	Estimated Unit Cost (per SY)	Actual Unit Cost (per SY)
Reclamation (Major Collector)	\$40.00	-
Reclamation (Minor Collector & Residential)	\$35.00	\$29.55
Mill and Overlay	\$20.00	\$18.12
Overlay	\$15.00	-
Preventative Maintenance	\$12.00	\$8.89
Routine Maintenance	\$0.75	\$0.47

Based upon our favorable contract prices and oversight of the contract with in-house personnel, the Town was also able to complete the wholesale sidewalk replacement for a majority of the roads that have been reclaimed to date in FY2016. In total, the Town replaced approximately 6,988 linear feet of asphalt sidewalk and approximately 947 linear feet of concrete sidewalk.

The Town is now entering into our tenth year of Pavement Management and as a continuation of last year's FY2016-FY2018 Pavement Management Plan we have prepared new recommendations for FY2019.

As of December 31, 2015 our overall roadway network pavement condition index (PCI) was 86 which is up significantly from our initial PCI of 70 from nine years ago. If the proposed improvements are approved and implemented we can anticipate maintaining the roadway PCI at 86 by the end of FY2019. In comparison, other Town and Cities in the Commonwealth strive to achieve an overall PCI ranging from 78 to 82.

The funding scenario for the recommended FY2017 – FY2019 pavement improvements is based on the assumption of a continued local funding level of \$1.5 million per year and utilizing approximately \$500,000 from State Chapter 90 funds for years 1 & 2 and a local funding level of \$1 million and utilizing approximately \$500,000 from State Chapter 90 funds for year 3. As always, if the Town receives more than the assumed State Chapter 90 funding, we will utilize that money during the current construction season to rehabilitate roads identified in the following year's program. As of 12/31/15, the Town's current backlog of repairs is \$9,491,755.

The recommended improvements proposed in this document are associated with asphalt pavement only. Sidewalks, curbing, drainage, and other geometric changes are not included in this proposal, however if during the design process these improvements are found to be necessary or desirable we will work to incorporate those items within the available budget(s).

In summary, the DPW and Engineering Departments are pleased to report that we are on target to successfully complete the FY2016 Pavement Management Plan approved last year within the available budget. Through the diligent efforts of both departments we believe we are able to deliver these improvements in an efficient and cost effective manner. All oversight of the design, bidding, contract administration, field engineering, and inspection was performed using in-house resources. Through these efforts we have been able to raise the Town's PCI to 86 from the initial rating of 70 nine years ago.

The proposed work throughout Town over the course of FY2017-FY2019 is summarized in the attached table and maps. Please review the attached information and provide us with any questions or comments.

Cc: Nancy A. Baker, Assistant Town Administrator
Nathan S. Buttermore, P.E., Infrastructure Engineer
Ronald I. Lawrence, Project Engineer

Town of Dedham - Pavement Management Road Program

Name	From	To	PCI	Length (ft)	Area (sy)	Cost
7/1/2016						
Repair Type: <i>Reclamation Minor Collector and Local</i>						
ALPENA AVENUE	VINCENT RD	WINFIELD ST	51	410	1,140	\$43,937.80
ALPENA AVENUE	WINFIELD ST	RIDGEWAY ST	46	462	1,283	\$47,548.79
BOOTH ROAD	350' S OF HIGH STREET	ROBERT ROAD	95	290	806	\$28,213.89
BOOTH ROAD	945' S OF HIGH STREET	RIDLEY ROAD	54	600	1,667	\$58,333.33
BOOTH ROAD	HIGH STREET	350' S OF HIGH STREET	80	350	972	\$34,027.78
BOOTH ROAD	ROBERT ROAD	945' S OF HIGH STREET	39	305	846	\$29,613.89
COMMONWEALTH AVENUE	100' S OF RIVERVIEW STREE	BRIDGE STREET	52	1,329	3,692	\$129,218.06
COMMONWEALTH AVENUE	145' S OF MARLBORO STRE	100' S OF RIVERVIEW ST	54	180	520	\$20,035.92
COMMONWEALTH AVENUE	MARLBORO STREET	145' S OF MARLBORO STREE	62	145	387	\$13,533.33
CRANBERRY LANE	INDIAN PA	VINCENT RD	47	649	1,801	\$66,776.72
CRANE STREET	ETNA RD	DEAD END	51	1,045	2,903	\$101,596.66
CRANE STREET	TURNER ST	SAVIN ST	50	693	1,926	\$74,243.42
FISHER ROAD	AMES STREET	MAYNARD ROAD (E)	41	816	2,175	\$83,629.48
GREENSBORO ROAD	100' E OF GLEN RD	68' W OF GLEN RD	62	169	431	\$15,098.22
LINDALE AVENUE	NEEDHAM STREET	MARLBORO STREET	39	709	1,891	\$72,895.06
MASSACHUSETTS AVENUE	RIVERVIEW STREET	DEAD END	34	1,728	4,607	\$161,233.33
MAYNARD ROAD	FISHER ROAD	BINGHAM AVENUE	41	1,066	2,843	\$109,338.75
PACELLA DRIVE	HIGHLAND ST	FAY RD	46	2,042	5,218	\$193,426.58
POPLAR STREET	TARBOX ST	479' S OF TARBOX ST	39	479	1,332	\$49,364.32
RIDLEY ROAD	ROBERT RD	CUL DE SAC	44	460	1,597	\$50,078.00
ROBERT ROAD	BOOTH RD	CUL-DE-SAC S	44	1,236	3,380	\$115,339.39
ROBERT ROAD	CUL-DE-SAC N	BOOTH RD	60	409	1,174	\$38,136.00
TARBOX STREET	CRANE ST	ETNA RD	49	643	1,787	\$68,878.36
TARBOX STREET	ETNA RD	DEAD END	40	860	2,389	\$88,550.89

Town of Dedham - Pavement Management Road Program

Name	From	To	PCI	Length (ft)	Area (sy)	Cost
TOWER STREET	DRESSER AV	TURNER ST	48	766	2,127	\$78,834.63
TOWER STREET	TURNER ST	ETNA RD	51	790	2,195	\$84,618.17
VINCENT ROAD	379' S OF CRANBERRY LA	GREENLEAF ST	62	929	2,477	\$86,685.96
Repair Type Sum				19,558	53,565	\$1,943,186.73
Repair Type: Routine Maintenance						
AMES STREET	PLEASANT ST	333' S OF PLEASANT ST	92	333	1,037	\$787.63
BINGHAM AVENUE	56' E OF CREST AVENUE	MAYNARD ROAD	91	760	2,026	\$1,669.43
COMMON STREET	240' N OF WEST STREET	900' N OF WEST STREET	91	980	2,524	\$2,079.82
COMMON STREET	HIGH ST	BRIDGE ST	91	409	1,452	\$1,196.77
DEPOT AVENUE	GREENWOOD AV	CEDAR ST	86	170	454	\$374.19
GAINSVILLE ROAD	38' N OF GLEN RD	GREENSBORO RD	86	377	920	\$758.33
HILLCREST AVENUE	BRIDGE STREET	14' W OF KIELY RD	91	670	1,787	\$1,472.32
KIELY ROAD	BRIDGE STREET	42' N OF HILLCREST AVENUE	91	707	2,041	\$1,682.14
MILTON STREET	WALNUT ST	150' S OF MYRTLE ST	91	588	4,114	\$3,390.10
NEEDHAM STREET	100' S OF LYNCH AV	CLAY BANK RD	92	1,268	3,803	\$3,133.74
NEEDHAM STREET	CLAY BANK RD	1508' E OF TOWNLINE	92	1,114	3,341	\$2,753.27
ODYSSEY LANE	EMMITT AV	CUL DE SAC	91	380	1,494	\$1,231.14
PINE HILL ROAD	NEEDHAM STREET	VALLEY ROAD	91	568	1,514	\$1,247.95
SAVIN STREET	TURNER ST	CRANE ST	91	775	2,153	\$1,774.02
WALNUT STREET	MT VERNON ST	EAST ST	92	1,065	2,366	\$1,797.70
WILDWOOD DRIVE	FAIRBANKS RD	CENTRAL ST	91	588	1,568	\$1,292.34
Repair Type Sum				10,749	32,594	\$26,640.89
Year Grand Total				30,307	86,159	\$1,969,827.62

7/1/2017

Repair Type: Mill/Overlay

Town of Dedham - Pavement Management Road Program

<i>Name</i>	<i>From</i>	<i>To</i>	<i>PCI</i>	<i>Length (ft)</i>	<i>Area (sy)</i>	<i>Cost</i>
MARLBORO STREET	LINDALE AVENUE	MASSACHUSETTS AVENUE (63	234	677	\$14,910.91
Repair Type Sum				234	677	\$14,910.91
Repair Type: <i>Reclamation Minor Collector and Local</i>						
ALTOONA ROAD	SHERMAN RD	TRENTON RD	56	1,091	3,152	\$121,516.34
ARDMORE ROAD	SHERMAN RD	TRENTON RD	51	858	2,289	\$88,236.27
BEACON STREET	BRIDGE STREET	COMMONWEALTH AVENUE	52	815	2,173	\$83,774.59
BELOIT ROAD	SHERMAN RD	TRENTON RD	58	594	1,716	\$66,142.93
BLUEBERRY HILL	LEDGEWOOD RD	CUL DE SAC	47	564	1,734	\$60,674.60
BONAD ROAD	LOWER EAST ST	DEAD END	52	469	1,303	\$45,772.30
CASS AVENUE	206' E OF HAVELNUT PL	WALNUT ST	63	610	1,695	\$59,330.95
COLBURN STREET	HYDE PARK ST	100' E OF BUSSEY ST	48	1,566	5,918	\$228,127.89
CYNTHIA ROAD	CUL DE SAC LOOP (N)	CUL DE SAC LOOP (S)	49	1,153	3,332	\$116,621.56
FAIRFIELD STREET	BRIDGE STREET	COMMONWEALTH AVENUE	58	911	2,631	\$101,436.24
GOSHEN ROAD	TRENTON RD	LORAIN RD	51	850	2,078	\$80,119.93
HERITAGE HILL	INTERVALE RD	CUL DE SAC	38	877	2,919	\$88,674.44
HYDE PARK STREET	200' S OF BISMARK ST	COLBURN ST	31	794	1,765	\$61,763.33
INTERVALE ROAD	LEDGEWOOD RD	FOX MEADOW LA	50	1,180	3,410	\$131,461.73
JUDITH CIRCLE	ROSEN RD	CUL DE SAC LOOP	51	624	1,802	\$63,063.00
MARLBORO STREET	MASSACHUSETTS AVENUE (LINDALE AVENUE	50	682	1,893	\$72,990.50
METCALF STREET	WASHINGTON ST	WILLOW ST	47	360	1,039	\$38,530.94
MYRTLE STREET	MILTON ST	WALNUT ST	53	531	1,415	\$54,557.83
RICHARDS STREET	WASHINGTON ST	205' W OF WASHINGTON ST	47	205	524	\$19,439.28
RIVERVIEW STREET	BRIDGE STREET	160' S OF COMMONWEALTH	50	860	2,294	\$88,452.16
ROSEN ROAD	GREENLODGE ST	CYNTHIA RD	52	465	1,344	\$51,820.69
SUMNER STREET	75' W OF WASHINGTON ST	LOWER EAST ST	43	266	738	\$27,359.40
VALLEY ROAD	HILLSIDE ROAD	RIVERSIDE DRIVE	49	722	1,925	\$74,224.15

Town of Dedham - Pavement Management Road Program

Name	From	To	PCI	Length (ft)	Area (sy)	Cost
WILLIS STREET	75' W OF WASHINGTON ST	LOWER EAST ST	44	339	941	\$34,865.80
WINTER STREET	BONAD RD	WILLIS ST	46	386	1,071	\$39,705.63
Repair Type Sum				17,772	51,101	\$1,898,662.48

Repair Type: Routine Maintenance

COMMON STREET	240' N OF WEST STREET	900' N OF WEST STREET	95	980	2,524	\$1,892.90
COMMON STREET	36' W OF HAVEN ST	1155' W OF WEST ST	91	2,161	7,202	\$5,949.84
COMMON STREET	BRIDGE ST	DEXTER ST	91	250	888	\$733.72
HIGH STREET	80' W OF MILTON ST	MAVERICK ST	91	1,654	9,189	\$7,591.39
MERRALL ROAD	WARREN ROAD	CUL-DE-SAC	89	561	1,897	\$1,422.93
MILTON STREET	140' S OF RIVER ST	TOWNLINE	91	1,067	3,911	\$3,231.06
MILTON STREET	150' S OF MYRTLE ST	200' N OF RIVER ST	91	1,650	6,598	\$5,450.93
MILTON STREET	200' N OF RIVER ST	140' S OF RIVER ST	91	389	2,552	\$2,108.27
MT. VERNON STREET	HIGH ST	RECREATION RD	91	252	839	\$693.09
RIVER STREET	180' W OF MILTON ST	CEDAR ST	91	1,838	5,310	\$4,386.62
RIVER STREET	TOWNLINE	180' W OF MILTON ST	95	1,219	4,604	\$3,453.27
WARREN ROAD	WHITCOMB ROAD CUL-DE-S	CUL-DE-SAC	90	921	2,881	\$2,160.40
WASHINGTON STREET	METCALF ST	378' N OF COURT ST	91	1,454	5,168	\$4,269.28
WASHINGTON STREET	SPRUCE ST	METCALF ST	91	961	2,991	\$2,470.62
WHITCOMB ROAD	WARREN ROAD	COMMON STREET	94	695	2,007	\$1,505.18
Repair Type Sum				16,050	58,562	\$47,319.50
Year Grand Total				34,057	110,340	\$1,960,892.89

7/1/2018

Repair Type: Mill/Overlay

CURVE STREET	COLBURN ST	MAVERICK ST	89	1,170	3,120	\$62,400.00
CURVE STREET	MAVERICK ST	100' E OF WASHINGTON ST	87	1,690	3,755	\$75,106.60

Town of Dedham - Pavement Management Road Program

Name	From	To	PCI	Length (ft)	Area (sy)	Cost
MCDONALD STREET	SPRAGUE ST	DEAD END	66	959	2,345	\$46,899.20
QUAKER LANE	WALNUT ST	DEAD END	67	382	890	\$17,808.00
SANDERSON AVENUE	MT VERNON ST	EAST ST	70	1,127	3,005	\$65,855.98
SANDERSON AVENUE	RIVER ST	MT VERNON ST	94	1,534	5,112	\$102,246.60
Repair Type Sum				6,862	18,229	\$370,316.38

Repair Type: Preventative Maintenance

BRIDGE STREET	COMMON STREET	HIGH STREET	90	463	1,542	\$18,504.00
COMMON STREET	HIGH ST	BRIDGE ST	95	409	1,452	\$17,429.28
HIGH STREET	716' W OF WESTFIELD ST	STATE SECTION	82	1,814	5,642	\$74,182.33
HIGH STREET	AMES ST	BULLARD ST	95	395	1,493	\$17,915.76
HIGH STREET	BRIDGE ST	WESTFIELD ST	89	1,138	3,541	\$42,489.12
HIGH STREET	BULLARD ST	COMMON ST	95	1,637	4,547	\$54,560.04
HIGH STREET	COMMON ST	BRIDGE ST	89	685	1,903	\$22,833.36
HIGH STREET	WESTFIELD ST	716' W OF WESTFIELD ST	83	716	1,910	\$25,118.38
Repair Type Sum				7,256	22,030	\$273,032.27

Repair Type: Reclamation Minor Collector and Local

ASHCROFT STREET	DEAD END (N)	CUL DE SAC (S)	44	1,565	4,291	\$150,172.75
COACH LANE	GREENLODGE ST	CUL DE SAC	57	309	1,478	\$51,716.00
DALE STREET	RIVER ST	BORDER STREET	58	2,107	7,022	\$245,781.55
FILLMORE ROAD	277' E OF GREENLODGE ST	DEAD END	56	414	1,149	\$40,230.40
FLINTLOCKE LANE	GREENLODGE ST	CUL DE SAC	41	932	3,646	\$127,610.00
GREENLODGE STREET	200' S OF FLINTLOCKE LA	TRUMAN RD	52	321	713	\$24,943.45
LANCASTER ROAD	SPRAGUE ST	DEAD END	50	1,104	2,943	\$103,021.45
PATTY LEE LANE	GREENLODGE ST	DEAD END	52	361	963	\$33,693.45
ROOSEVELT ROAD	FILLMORE RD	DEAD ED	51	400	1,066	\$37,207.45
Repair Type Sum				7,512	23,271	\$814,376.50

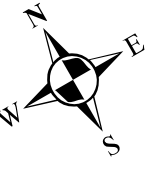
Town of Dedham - Pavement Management Road Program

Name	From	To	PCI	Length (ft)	Area (sy)	Cost
<i>Repair Type: Routine Maintenance</i>						
BINGHAM AVENUE	56' E OF CREST AVENUE	MAYNARD ROAD	89	760	2,026	\$1,519.40
BINGHAM AVENUE	BRIDGE STREET	56' E OF CREST AVE	88	298	794	\$595.60
CALVIN ROAD	SCOTT CIR	DEAD END	87	318	884	\$663.33
CIRCUIT ROAD	MADISON ST	CEDAR ST	93	1,187	3,165	\$2,374.00
COLWELL DRIVE	GREENLODGE ST	100' N OF SCOTT CIR	87	1,852	5,143	\$3,199.17
CRESTON AVENUE	VINCENT RD	DEAD END	88	976	2,712	\$2,034.17
DEERPATH ROAD	HIGH STREET	CUL-DE-SAC	88	827	2,219	\$1,663.88
HAVEN STREET	WESTFIELD STREET	COMMON STREET	83	2,179	4,358	\$3,268.65
HILLSIDE ROAD	NEEDHAM STREET	VINE ROCK STREET	93	1,271	3,389	\$2,541.80
LOWDER STREET	570' N OF HIGHLAND ST	SAWYER DR	88	1,073	2,146	\$1,609.50
LOWDER STREET	SAWYER DR	HIGH ST	83	1,605	3,210	\$2,407.20
STONEY LEA ROAD	SANDY VALLEY RD	709' E OF STONEY LEA RD	89	3,557	7,508	\$2,627.86
VINCENT ROAD	EAST ST	379' S OF CRANBERRY LA	94	3,012	8,033	\$6,024.80
WESTFIELD STREET	HAVEN STREET	3060' W OF HAVEN STREET	89	3,060	6,799	\$5,099.33
WESTFIELD STREET	HIGH STREET	HAVEN STREET	86	475	1,056	\$791.67
<i>Repair Type Sum</i>				22,449	53,443	\$36,420.36
Year Grand Total				44,079	116,972	\$1,494,145.51
Grand Total of All Years				108,443	313,472	\$5,424,866.02

PAVEMENT MANAGEMENT
FY2017 - FY2019 ROAD PROGRAM



TOWN OF DEDHAM
Norfolk County
Massachusetts

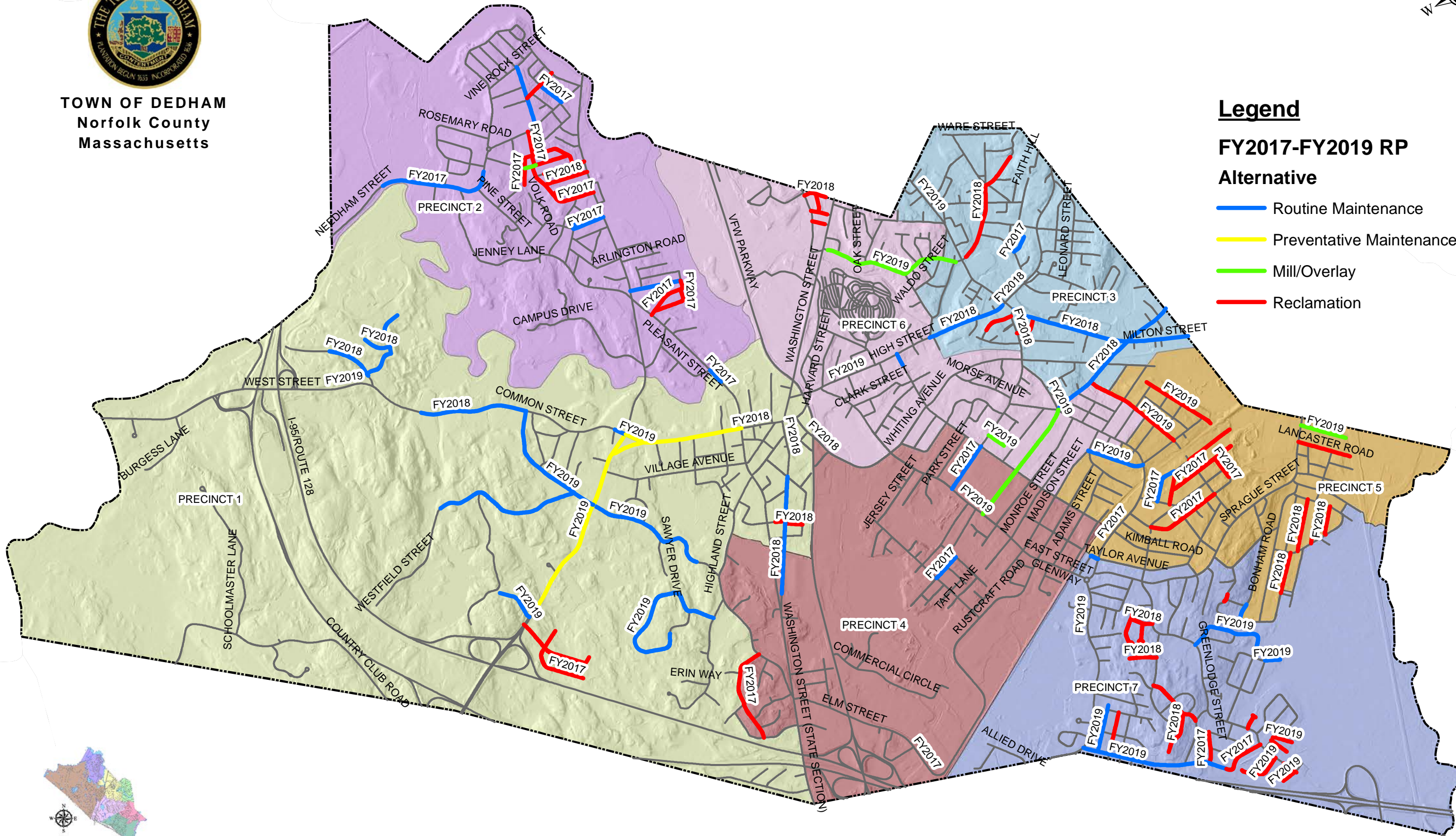


Legend

FY2017-FY2019 RP

Alternative

- Routine Maintenance
- Preventative Maintenance
- Mill/Overlay
- Reclamation



DEDHAM GIS

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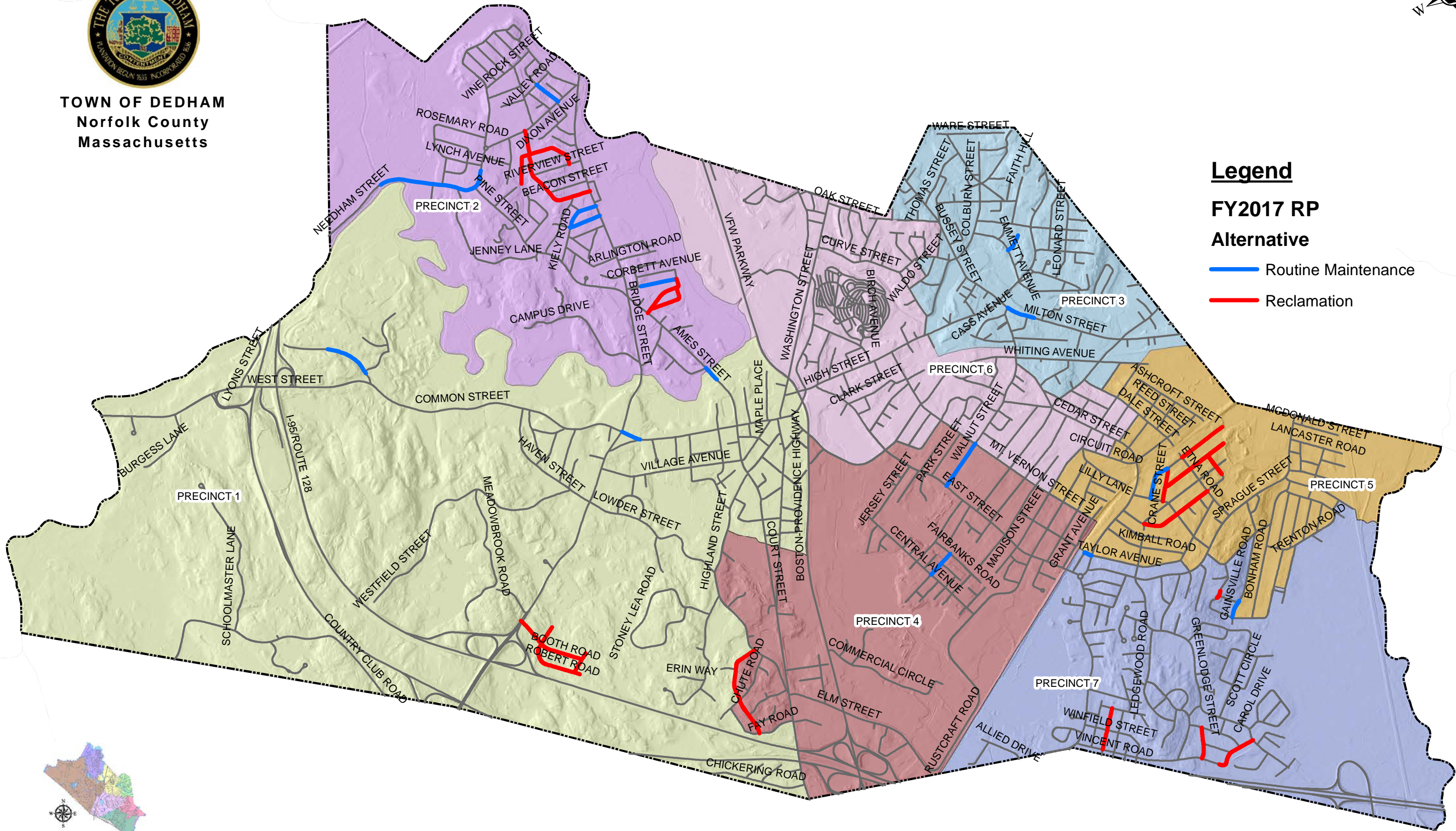
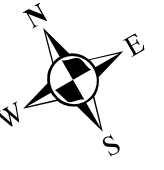
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PAVEMENT MANAGEMENT
FY2017 - FY2019 ROAD PROGRAM



TOWN OF DEDHAM
Norfolk County
Massachusetts



Legend

FY2017 RP

Alternative

- Routine Maintenance
- Reclamation



DEDHAM GIS

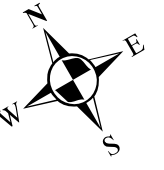
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Massachusetts

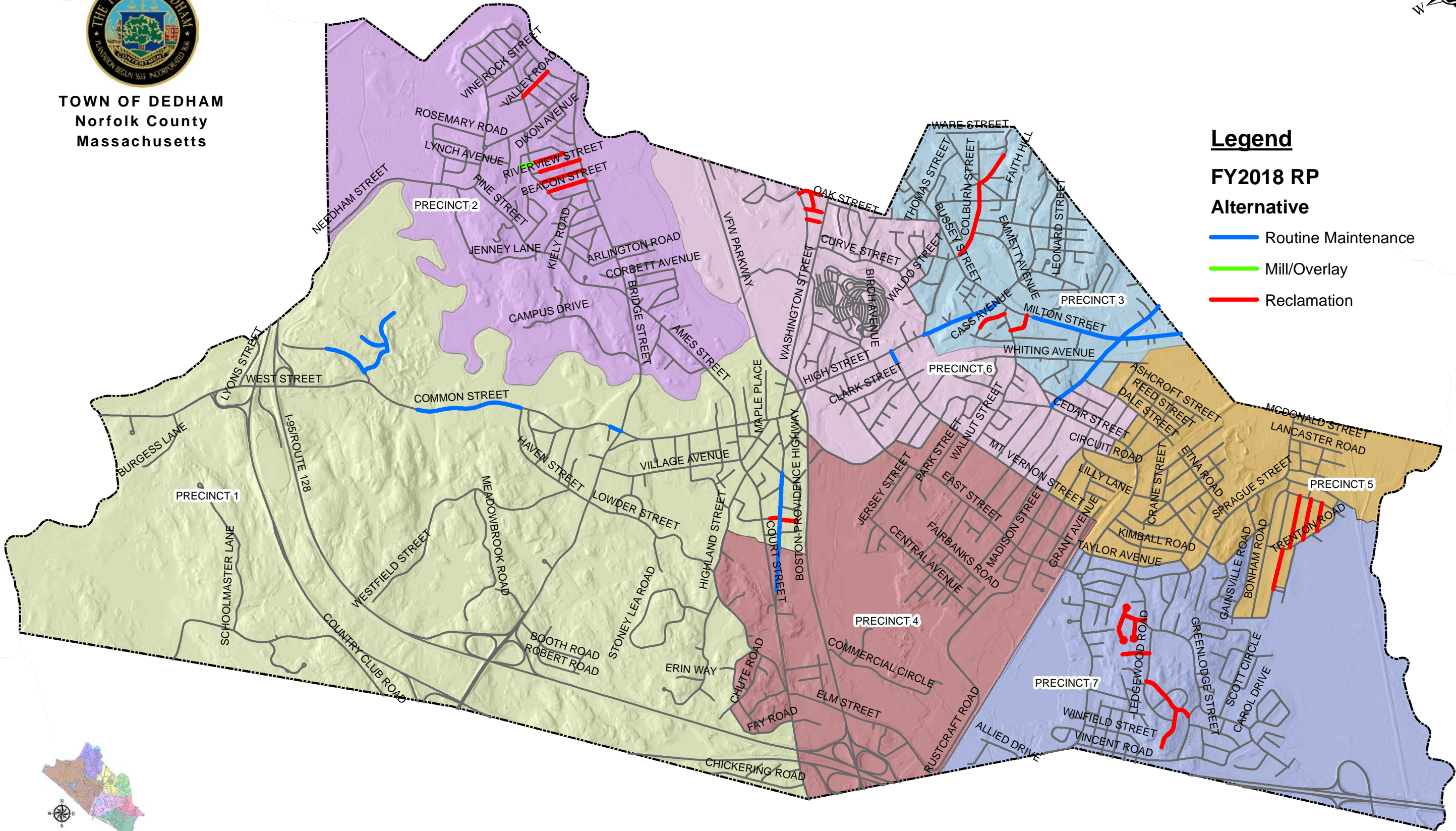


Legend

FY2018 RP

Alternative

- Routine Maintenance
- Mill/Overlay
- Reclamation



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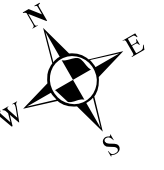
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PAVEMENT MANAGEMENT
FY2017 - FY2019 ROAD PROGRAM



TOWN OF DEDHAM
Norfolk County
Massachusetts

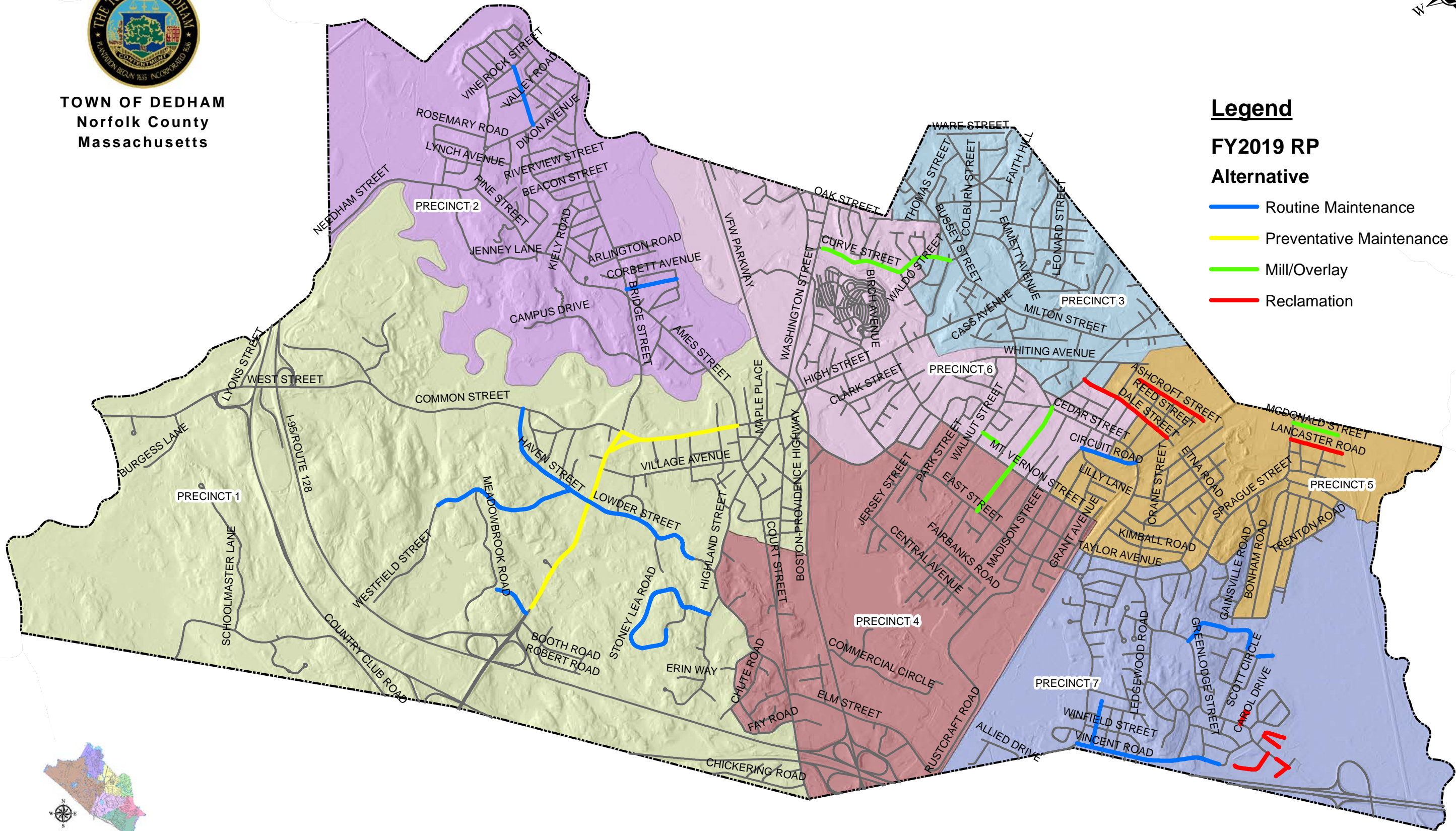


Legend

FY2019 RP

Alternative

- Routine Maintenance
- Preventative Maintenance
- Mill/Overlay
- Reclamation



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