

Street Resurfacing Program

April 11, 2016



Agenda

1. General History of Paving Program
2. FY16 Program and Estimated Cost
3. FY16 Funding Sources
4. General Overview of FY16 Program
5. Current Five Year Plan

General History of Paving Program in Somerville

Process prior to 2013:

1. DPW identifies streets based on institutional knowledge
2. Presents list to Mayor's office
3. Once approved technical evaluation is done to assess utility needs in street (public and private)
4. Streets that need utility work get deferred and a new plan is prepared by DPW
5. Circle back to Mayor
6. Once list is finalized, contractor hired to do work, funded through Ch. 90 funds

Essentially a "worst case first" model that had to change.

General History of Paving Program in Somerville

Pavement Management System Initiated in late 2012.

- City hired FST (now Stantec).
- City-wide roadway inventory and assessment conducted.
- Data collected included:
 - Pavement segments
 - Width & length
 - Surface material type
 - Pavement distresses (potholes, cracking, rutting, etc....)
- Roads given a Pavement Condition Index (PCI)
- We also conducted a complete sidewalk and ramp assessment.

General History of Paving Program in Somerville

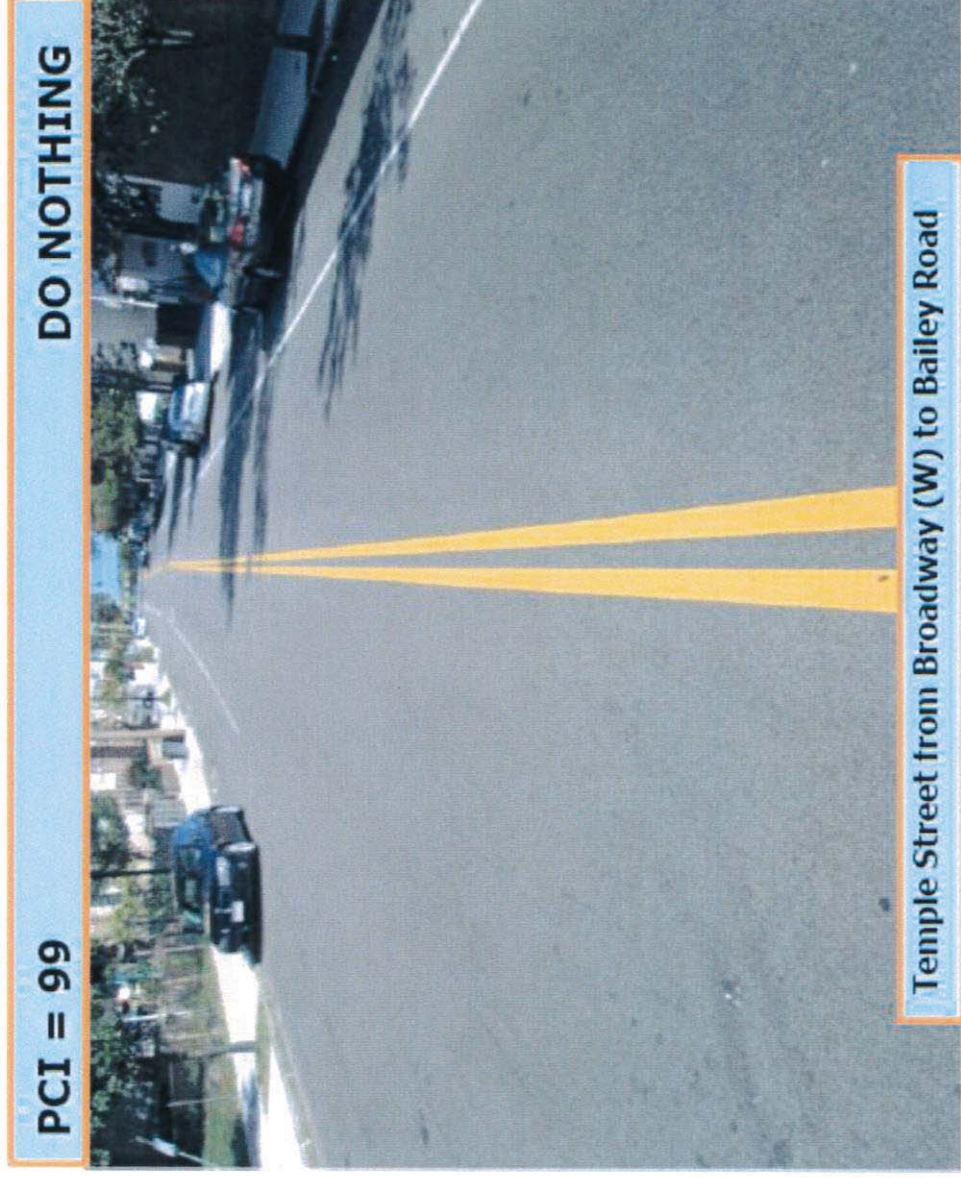
Using information collected, roads were classified into treatment band ranges:

Table 1
(PCI) Treatment Band Ranges¹

DO NOTHING PCI Band #1 (100 - 88 PCI)	Excellent Condition - in need of no immediate maintenance.
ROUTINE MAINTENANCE PCI Band #2 (87 - 68 PCI)	Good Condition - may be in need of crack sealing and minor localized repair.
PREVENTIVE MAINTENANCE PCI Band #3 (67 - 47 PCI)	Fair Condition - pavement surface in need of patching and thin overlay or surface sealing.
STRUCTURAL IMPROVEMENT PCI Band #4 (46 - 25 PCI)	Poor Condition - pavement structure in need of additional thickness to resist traffic loading.
BASE REHABILITATION PCI Band #5 (24 - 0 PCI)	Failure Condition - in need of full depth reconstruction/reclamation.

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General History of Paving Program in Somerville



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General History of Paving Program in Somerville



General History of Paving Program in Somerville



General History of Paving Program in Somerville



Condition of Somerville Streets in 2014

Pavement Condition Index

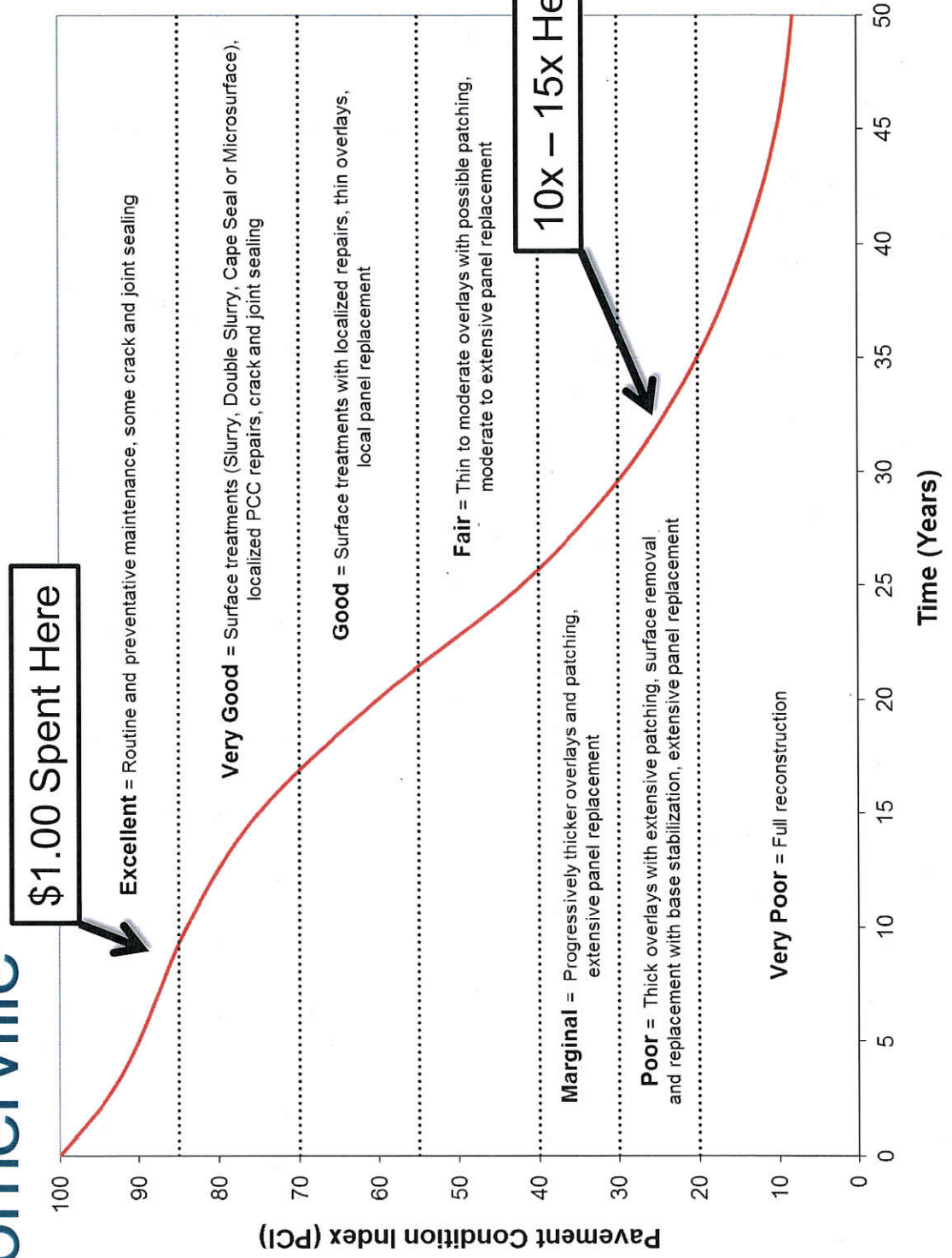


PCIs should be updated every 3 years. The consultant will be re-evaluating all the streets in 2016.

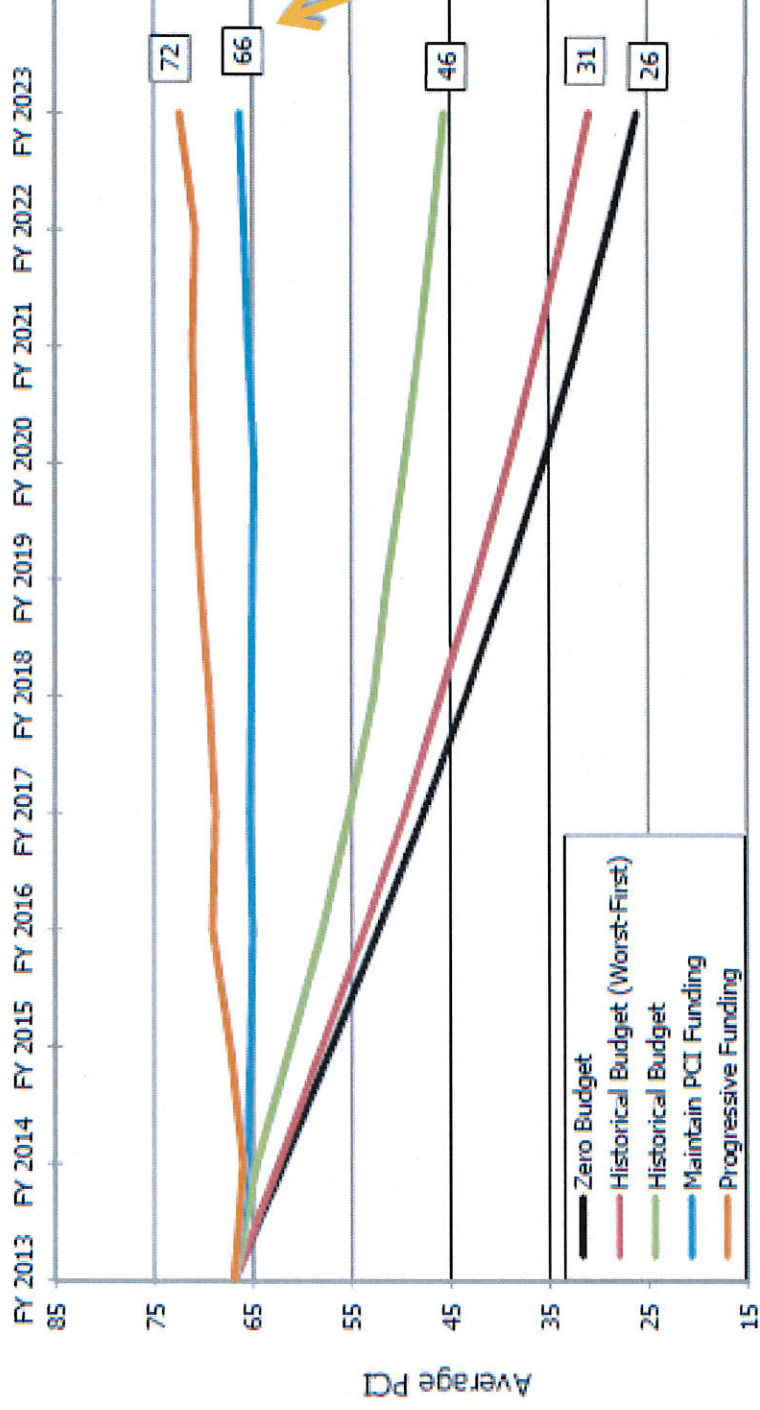
General History of Paving Program in Somerville

- Computer model predicts how roads will deteriorate over time.
 - Identifies opportunities to improve roads prior to them falling into more expensive repair bands.
 - Prioritizes selection and treatment methods based on identified budget.
-
- WHY?

General History of Paving Program in Somerville



General History of Paving Program in Somerville



Maintaining PCI Requires: \$4,500,000 / year

FY16 Program and Estimated Cost

The Total Cost of the FY16 Program is \$4,500,000 for

- Cracksealing
- MicroSurfacing/Slurry Sealing
- Mill & Overlay
- Sidewalk rehabilitation
- APS

Bond Authorization Request for \$3,350,000 to supplement
Ch. 90 funds.

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FY16 Program and Estimated Cost

COST VERSES METHOD COMPARISON

Costs are based on actual unit prices from the D&R Construction 2015 Paving Contract with the City of Somerville and Sealcoating Inc. quotes, Braintree, MA 2016 bid price

EXAMPLE:

Pave a 3000 foot long, 26 foot wide straight roadway using various methods.

	total cost	approx. age of rd.	cost / sq. yard
Full Depth reclaim/reconstruct *	\$ 529,137.09	25+ years	\$ 61.05
3" Mill and overlay	\$ 193,079.09	20+ years	\$ 22.28
2" Mill and overlay	\$ 144,545.76	12-20 years	\$ 16.68
1" level and Microsurface w/ crackseal	\$ 89,079.09	7-12 years	\$ 10.28
Double Microsurface w/ crackseal	\$ 46,886.00	6-8 years	\$ 5.41
Single Microsurface w/ crackseal	\$ 36,833.00	5-8 years	\$ 4.25
Single Microsurface (Slurry Seal)	\$ 28,166.00	5-7 years	\$ 3.25

*reconstruct w 4" BASE, 3"BINDER, 2"TOP

est. by CQ 9/15

General Overview of FY16 Program

- Cracksealing
- MicroSurfacing/Slurry Seal
- Mill & Overlay (also requires sidewalk rehabilitation)

Cracksealing

Pavement Preservation

STREET	FROM	TO	APPROX.LENGTH
Kidder Ave	Willow Ave	Boston Ave	1186
Melville Road	Ten Hills Rd	Shore Dr	324
Morrison Ave	Cedar St	Willow Ave	1437
Prospect St	Washington Street	Webster Ave	1060
Prospect St	Webster Ave	Cambridge City Line	1028
Stone Place	Stone Ave	Dead End	157
Washington St (W)	Boston City Line	Medford St	2540
Central St	Summer St	Broadway (East)	3802

MicroSurfacing/Slurry Seal

Pavement Preservation

STREET	FROM	TO	APPROX. LENGTH
Vernon St	Central St	Lowell St	1,420
Moreland St	Main St	Mystic Ave	1,555
Meacham St	Medford C.L.	End	1,053
Summer St	Belmont St	Bow St	3,850
School St	Broadway	Medford St	1,600
Boston Ave	Medford C.L.	Pritchard St	1,105
Alpine St	Cedar St	Lowell St	1,406
Princeton St	Alpine St	Lowell St	680
Hooker Ave	Victoria St	End	730

Mill and Overlay (with sidewalk rehab)

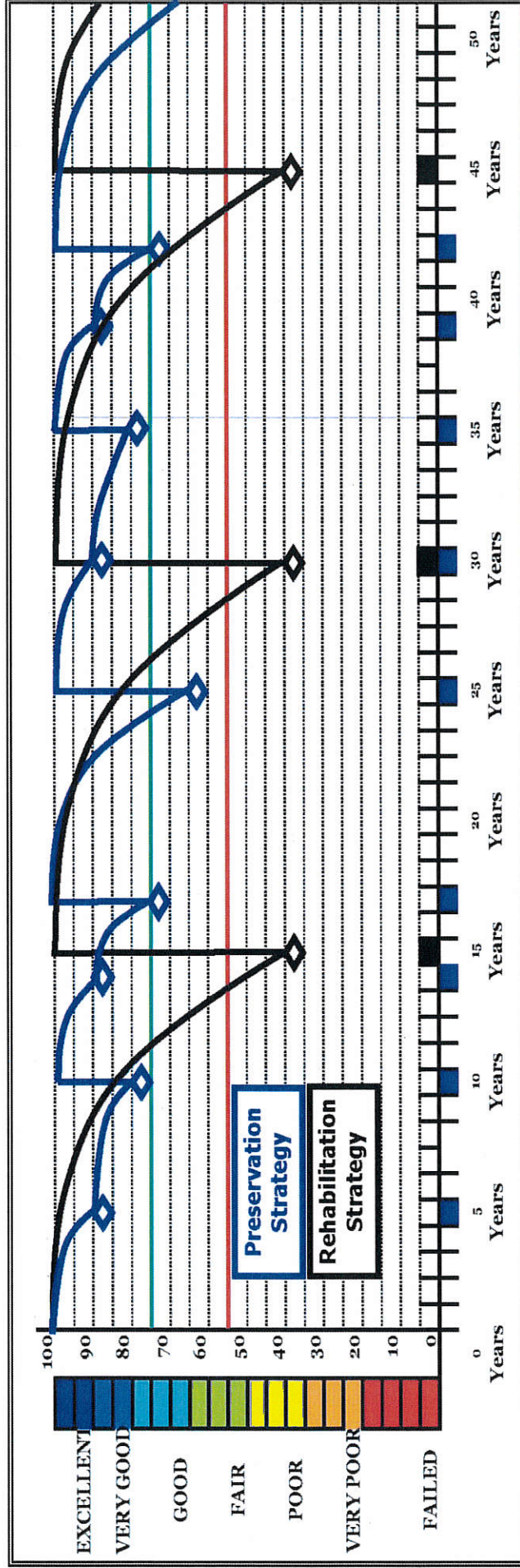
Pavement Rehabilitation

STREET	FROM	TO	APPROX. LENGTH
Banks St	Elm St	Summer St	660'
Concord Ave	Beacon St	Springfield St	1000'
Cooney St	Beacon St	Line St	260'
Crest Hill Rd	Ten Hills Road	Shore Dr	270'
Dane St	Somerville Ave	Village St	700'
Forest St	Cambridge Line	Beacon St	130'
Forster St	Sycamore St	Central St	470'
Highland Ave	Ellington St	College Ave	975'
Museum St	Cambridge Line	Beacon St	205'
Park Ave	College Ave	Wallace St	550'
Thurston St	Medford St	Broadway	1400'

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Progressive Pavement Management

Preservation vs. Rehabilitation



PRESERVATION STRATEGY:

Years 5, 14, 30 & 39: Cracksealing

Years 10 & 35: Microsurfacing (Double)

Years 17 & 42: Cape Seal

Year 25: Mill & Pave

TOTAL COST/SY OVER 50 YEARS = \$29.60

REHABILITATION STRATEGY:

Year 15: FDR plus 4" Hot Mix Overlay

Year 30: FDR plus 4" Hot Mix Overlay

Year 45: FDR plus 4" Hot Mix Overlay

TOTAL COST/SY OVER 50 YEARS = \$60.00

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Current Five-Year Street Mill and Overlay Plan (2016-2020)*
City of Somerville - April 11, 2016

Year	Route	From	To	Length	PCI	Engineering Comments
2012	CALVIN ST	WASHINGTON ST	BEACON ST	722		complete
2012	HARRISON ST	IVALOO ST	KENT ST	690		complete
2012	LINDEN AV	ELM ST	MOUNTAIN AV	1427		complete
2012	CEDAR AVE	LINDEN AVE	CEDAR ST	122		deferred for drainage and gas improvements.
2012	MONDAMIN CT (PVT)	HARRISON ST	IVALOO ST	275		complete
2013	CEDAR ST	HIGHLAND AV	BROADWAY (E)	2615		deferred for drainage and gas improvements. To be completed in 2016
2013	DIMICK CT (PVT)	HOLTS AV (PVT)	DEAD END	145		complete
2013	MEDFORD ST	SOUTH ST	CAMBRIDGE CITY LINE	128		complete
2013	SYCAMORE ST	EVERGREEN ST	DAVIS SQ	819		50% - Completed from South St to RR tracks. To be completed in 2016
2014	DOVER ST	CAMBRIDGE CITY LINE	PEARL ST	975		complete
2014	FRANKLIN ST	BROADWAY (E)	MEACHAM RD	1080		complete
2014	GLOVER CIR (PVT)	BROADWAY (E)	PEARL ST	126		pending sidewalk design
2014	MT VERNON ST	MEDFORD ST	CAMBRIDGE CITY LINE	1068		complete
2014	WARREN ST	MEDFORD ST	PROSPECT ST	135		complete
2014	WASHINGTON ST	MORRISON AVE	KIDDER AVE	1122		deferred to TBD for utility improvements
2015	JOSEPHINE AVE	KIDDER AVE	WILLOW AVE	793	18.7	deferred to 2017 for gas improvements
2015	KIDDER AVE	SOMERVILLE AVE	MEDFORD TOWNLINE	1422	31.5	complete
2015	MAIN ST	POWDER HOUSE ROTARY	ELM ST	4848	26.8	deferred to 2017 for gas improvements
2015	POWDER HOUSE BLVD	CAMBRIDGE TOWNLINE	BEACON ST	1013	24.6	deferred to 2017 for gas improvements
2016	DAY ST	CAMBRIDGE TOWNLINE	HIGHLAND AVE	1477	26.0	deferred to 2017 for gas improvements
2016	MUSEUM ST	SUMMER ST	HIGHLAND AVE	960	17.1	may be deferred to 2017 for gas improvements
2016	PORTER ST	CAMBRIDGE TOWNLINE	BEACON ST	200	7.7	
2016	ROSELAND ST	HANSON ST	BEACON ST	844	11.9	may be deferred to 2017 for gas improvements
2016	PROPERZI WAY (S)	ELM ST	HIGHLAND AVE	159	19.5	to be paved by Cambridge due to water improvements
2016	CHERRY ST	SOMERVILLE AVE	ELLINGTON RD	681	12.5	deferred to 2017 for water improvements
2016	HIGHLAND AVE	COLLEGE AVE	WALLACE ST	1696	26.9	may be deferred to 2017 for gas improvements
2016	PARK AVE	COLLEGE AVE	WALLACE ST	700	25.9	
2016	POWDER HOUSE BLVD	MASON ST	CURTIS ST	975	27.4	
2016	POWDER HOUSE BLVD	MASON ST	CURTIS ST	516	45.1	
2016	CREST HILL RD	TEN HILLS RD	NORTH ST	1415	26.9	deferred to 2017 for water improvements
2017	FORSTER ST	SYCAMORE ST	CENTRAL ST	1401	31.0	deferred to 2017 for water improvements
2017	BANKS ST	ELM ST	SUMMER ST	295	13.3	advanced to 2016 due to deferrals
2017	THURSTON ST	MEDFORD ST	BROADWAY (E)	494	13.1	advanced to 2016 due to deferrals
2017	WASHINGTON ST (E)	WEBSTER AVE	LINE ST	688	12.3	advanced to 2016 due to deferrals
2017	MOUNT VERNON ST	PEARL ST	WASHINGTON ST	1383	12.8	advanced to 2016 due to deferrals
2017	MIDDLESEX AVE	FOLEY ST	FELLSWAY WEST	3019	28.8	deferred to TBD for water improvements
2018	PEARL ST	CRESCENT ST	FRANKLIN ST	655	36.2	water planned for clean and line 2020
2018	FOREST ST	JOSEPHINE AV	BEACON ST	1395	26.7	may be advanced to 2016 due to deferrals (state)
2018	BROADWAY	CONCORD AVE	SPRINGFIELD ST	1401	22.5	water planned for clean and line 2016
2018	PEARL ST	CROSS ST	CROSS ST	1027	27.0	advanced to 2016 due to deferrals
2018	PEARL ST	100' E OF WALNUT ST	SKILTON AV	985	31.3	advanced to 2016 due to deferrals
2018	PEARL ST	100' E OF WALNUT ST	SKILTON AV	1044	25.2	water planned for clean and line 2016
2018	MIDDLESEX AVE	MYSTIC AVE	FOLEY ST	1445	23.3	water planned for clean and line 2016
2019	COONEY ST	BEACON ST	CAMBRIDGE TOWNLINE	511	33.7	water planned for clean and line 2016
2019	BROADWAY	WALLACE ST	COLLEGE AVE	723	25.8	may be advanced to 2016 due to deferrals (state)
2019	DANE ST	120' S OF VILLAGE ST	WASHINGTON ST	294	22.6	advanced to 2016 due to deferrals
2019	HIGHLAND AVE	MEDFORD ST	SCHOOL ST	1095	24.9	
2019	HIGHLAND AVE	CENTRAL ST	LOWELL ST	708	34.8	may be advanced to 2016 due to deferrals
2020	MOUNTAIN AVE	PORTER ST	DEAD END	2005	24.0	
2020	BEDFORD ST	SOUTH ST	CAMBRIDGE TOWNLINE	1387	24.3	
2020	MALLET ST	WILLOW AVE	LIBERTY AVE	360	22.2	
2020	NORTH ST	BROADWAY (E)	MEDFORD TOWNLINE	174	22.7	
2020	ELM ST	RUSSELL ST	DAY ST	700	22.1	
2020	HOLLAND ST	DOVER ST	BROADWAY (E)	2642	23.9	
2020				991	25.8	
2020				2767	26.6	

*Does not include streets slated for pavement preservation.
The plan is subject to change without notice.
The PCIs are based on 2014 inspection data. The roads will be re-inspected in late 2016 and PCIs will be updated.