

**FINAL REPORT OF THE
BELMONT PAVEMENT MANAGEMENT COMMITTEE**

May, 2007

<u>Table of Contents</u>	<u>Page</u>
Objectives of the Committee	4
Committee Membership	5
Background and General Observations	6
Recommended Policies:	
Road classification criteria	11
Treatment within the public right-of-way	12
Coordination with utility work	19
Street opening permits and enforcement	21
Sidewalk maintenance	23
Priorities and funding	24

<u>Addenda</u>	<u>Page</u>
1 - Sample pavement condition index (PCI) report	30
2 - Detailed hard cost estimate by street classification and reclamation/reconstruction work required	32
3 – Arterial and collector road segments by functional classification	34
4 – Selected provisions in the Massachusetts DTE regulations	36
5 – Article 20.5 of the Town Bylaws	39

Objectives of the Committee

- To create a policy which:
 - Prioritizes how future pavement management resources will be expended
 - Maintains predictability and fairness in decision-making
 - Manages the tradeoffs among
 - taxpayer financial impact
 - time
 - functionality and maintenance suitability, and
 - aesthetics
 - safety
 - Maintains consistency in the treatment of non-road surfaces within the Town right-of-way
- To devise a funding mechanism to bring our streets to an acceptable standard
 - within fifteen years for arterials and collectors, and
 - within twenty-five years for local roadsand maintain them to this standard thereafter
- To assure an adequate and consistent source of funding so as to work off the existing sidewalk repair back-log within fifteen years; and
- To address procedures and enforcement related to the street opening permit process

Committee Membership

John Brady

Peter Castanino (ex-officio)

Glenn Clancy (ex-officio)

Tom DiPace

Karen Freidberg

Frank French

Fred Haggerty

Michelle Oishi

Mario Rathle

Ron Sacca

Lee Slap

Mike Speidel

The Committee's "Pavement Management 101" self-education was supplemented by a guided tour with Glenn and Peter and by personal site visits

Background and General Observations

Current status review

- Since the mid-1990s, the Community Development Department has utilized a pavement management software system in order to prioritize funding by condition of street
- This system utilizes a pavement condition index (PCI) concept, which grades street condition on a scale of 1 to 100. (Sample report in Addendum 1.)
- With respect to repair work needed, PCI rankings may be interpreted roughly as follows:
 - 93-100: Nothing required
 - example: Pine Street
 - 85-92: Crackseal only
 - example: Bow Road
 - 72-84: Crackseal and patch required
 - example: Lincoln Street
 - 60-71: Overlay only or mill & overlay
 - example: Hurley Road
 - 0-59: Road beyond repair – reclamation needed
 - examples: Poplar Street, Grant Avenue

Background and General Observations, continued

- Belmont has approximately seventy miles of public streets to maintain¹. Currently,
 - 9.6 miles (14%) are in “do-nothing” condition
 - 6.5 miles (9%) need only routine maintenance (cracksealing or crackseal & patch)
 - 5.6 miles (8%) require mill & overlay treatment
 - 47.8 miles (69%) require full depth reconstruction
- Assuming that the Committee’s recommendations regarding curbing and sidewalk treatment for future projects are adopted and then applied consistently, the total cost (2007 dollars) of the treatment and reconstruction required is approximately \$63 million
 - Hard costs only – does not include soft costs such as design, surveying and police details
 - A more detailed cost breakout by type of street is shown in Addendum 2
- In addition, the Public Works Department has a backlog of nearly 800 sidewalk repair requests, with a minimum cost of \$1.2 million

¹ Excluding Pleasant Street and Trapelo Road/Belmont Street, which are eligible to be reconstructed with Federal highway funding

Background and General Observations, continued

Current funding review

- On June 3, 2002, Belmont voters approved a \$2.4 million operating override, of which \$1 million was dedicated to pavement management. Since that time, the annual capital budget for roads has averaged approximately this \$1 million funding level
- In addition, the Town generally appropriates another \$300,000 per year in state “Chapter 90” funds
- On average, of the roughly \$1.3 million available to the Community Development Department for pavement management projects annually, only \$800,000 is available for hard costs. The remainder represents
 - seed money for design and survey for Federally-funded projects such as Pleasant Street and Trapelo Road (\$250K)
 - design, survey and police details for Town-funded projects (\$200K), and
 - pavement maintenance, primarily crack-sealing (\$50K).
- In addition, the Public Works Department spends, on average, \$115,000 per year (including labor, supplies and equipment) for pothole patching
- The annual Public Works budget for sidewalk repair has ranged from \$6,459 to \$182,043
 - In FY07, supplemented with \$148,000 of one-time Chapter 90 funds

Background and General Observations, continued

Other observations

- The pavement management program is now separated from, but still coordinated with, the water main replacement program
- Since FY01, the Selectmen have directed the Community Development Department to direct available funding towards the Town's arterials and collectors
 - No established definition distinguishes arterial, collector and local roads
 - Using the Committee's proposed definition to follow, without increased funding it could take another twenty years or more to address the remaining arterials and collectors – without addressing local roads at all
- At this time, there is no formal policy governing sidewalk, parking, shoulder, curbing and/or driveway treatment within the right-of-way in conjunction with pavement management projects
- Recent policy incorporates "traffic calming" measures into pavement management projects, where warranted, under the guidance of the Traffic Advisory Committee
- With regard to establishing standards for street opening permits for independent public utilities, in the opinion of Town Counsel:
 - The Massachusetts Department of Telecommunications and Energy (DTE) has the sole authority to establish post-excavation road restoration standards for public utilities; the Town may not set different standards

Background and General Observations, continued

- Under the current DTE regulations, utilities are not required to restore a road surface to a higher standard than its existing condition
- The Town cannot:
 - make utilities guarantee their work or maintain it after one year
 - impose inspection fees, although a modest administrative fee is permissible
- Nevertheless, the Town can enforce the DTE regulations. As set forth in Addendum 4, these existing regulations do offer the Town significant leverage with public utilities

Recommended Policies: Road classification criteria

- Arterials, collectors and local roads are to be classified according to their average daily traffic counts (ADTs), as follows:
 - Arterial: > 10,000 ADT
 - example: Concord Avenue from Leonard Street to the Cambridge line
 - Major collector: 6000-10,000 ADT
 - example: Cross Street from Brighton Street to Channing Road
 - Minor collector 1: 4000-6000 ADT
 - example: School Street from Common Street to Washington Street
 - Minor collector 2: 1000-4000 ADT
 - example: Beech Street
 - Local: < 1000 ADT
- The estimated fifty road segments which fall under the arterial and collector categories are shown in Addendum 3. The remainder are local roads
- As soon as practicable, ADTs should be recorded by the Community Development Department where data is estimated. Classifications of individual roads may change based upon actual data

Recommended Policies: Treatment within the public right-of-way

- In all cases, the following standards are effective if the Town is performing a pavement management project involving overlay, mill & overlay, or reclamation, and will be implemented by the Community Development Department.
- The Community Development Department will continue to make ongoing monitoring of the work of its contractors a priority.
- Conversely, the standards will not be effective if the Town is merely patching or crackseal & patching, in which event the existing conditions will be left in place.
- Sidewalks not falling under the standards will continue to be repaired on as-needed basis by the Department of Public Works.

Sidewalks

- A. If a sidewalk exists currently:
 - Retain a sidewalk in that location
 - Replace existing asphalt sidewalks with concrete
 - Replace or retain existing concrete sidewalk panels on a case-by-case basis, in the judgment of the Community Development Director
- B. If a sidewalk does not exist currently:
 - The classification of the road is not relevant per se

Recommended Policies: Treatment within the public right-of-way, continued

- Place concrete sidewalks adjacent to walking demand generators on both sides of the street, and on both sides² of the primary pedestrian collector streets associated with them. For this purpose, a ‘walking demand generator’ is defined as a:
 - Primary school bus collection point
 - Public transit stop
 - Town office
 - House of worship
 - Commercial or retail establishment
 - School
 - Playground
- Place concrete sidewalks adjacent to other attractions accessible primarily by vehicular traffic, but only if adequate off-street parking does not exist

² Exact length to be determined by the Community Development Department

Recommended Policies: Treatment within the public right-of-way, continued**On-street Parking**

- A. If the pavement width³ of the road is less than 23 feet: Parking permitted on one side only, with no designated parking lane
- example: Pine Street at Belmont Street
- B. If the pavement width is 23 feet or more:
- No walking demand generator: Parking permitted on both sides, with no designated parking lane
 - example: Walnut Street
 - Arterial or major collector, adjacent to or leading to a walking demand generator:
 - If pavement width is less than 38 feet: Parking permitted on one side only, within a designated parking lane^{4 5}
 - example: White Street
 - If pavement width is 38 feet or more: Parking permitted on both sides, within designated parking lanes
 - example: Cross Street

³ Regardless of the width of the right-of-way.

⁴ For roads leading to a walking demand generator, the designated parking lane should be of sufficient length to accommodate six cars given restrictions. Same for minor collectors 1 or 2

⁵ Whether to stripe a designated parking lane for specific parking stalls is at the discretion of the Community Development Director

Recommended Policies: Treatment within the public right-of-way, continued

- Minor collector 1 or 2, adjacent to or leading to a walking demand generator:
 - If pavement width is 34 feet or less: Parking permitted on one side only, without a designated parking lane
 - example: Beech Street
 - If pavement width exceeds 34 feet: Parking permitted on both sides, without designated parking lanes
- Local road, adjacent to or leading to a walking demand generator: Parking permitted on both sides, without designated parking lanes, pavement width permitting⁶
 - example: Hull Street

Shoulder Treatment If Sidewalk

- A. No planting strip⁷ if:
- Adjacent to a walking demand generator
 - Adjacent to a designated parking lane serving a walking demand generator
 - It is not physically possible to contain it within the right-of-way
- B. Otherwise, a planting strip of three feet or more in width

⁶ In the judgment of the Traffic Division of the Belmont Police Department

⁷ Note that the removal of existing shade trees if necessary to implement these standards is regulated by existing Commonwealth of Massachusetts law

Recommended Policies: Treatment within the public right-of-way, continued**Curbing**

- A. On arterials and major collectors: Straight granite curbing on both sides where there is a sidewalk on at least one side of the street, and cape cod berm elsewhere
 - examples: straight granite: Brighton Street, cape cod: Winter Street
- B. On minor collectors 1 and 2: Sloped granite curbing on both sides where there is a sidewalk on at least one side of the street, and cape cod berm elsewhere
 - example: sloped granite: Washington Street
- C. On local roads:
 - Abutting a walking demand generator: Straight granite curbing on both sides of the street
 - examples: Palfrey Road at Common Street (Methodist Church), Grosvenor Road at Grove Street (Grove Street Playground)
 - Leading to a walking demand generator: Straight granite curbing on both sides of the street to the next adjacent residential driveway
 - example: Worcester Street at Belmont Street (Linda's Donuts)
 - Otherwise, on a slope of 4% or more, or connecting two slopes of 4% or more: Cape cod berm on the entire block
 - example: Winn Street from Pleasant Street to Claflin Street
 - All other cases: No curbing

Recommended Policies: Treatment within the public right-of-way, continued

D. Resident-installed granite curbing:

- If installed prior to pavement management project: Grandfather if the resident so requests; Town to reset
- After a pavement management project is completed: Five-year moratorium on new road cuts applies

Treatment at driveways

A. Edge treatment

- If straight granite curbing, slope greater than or equal to 4%: Granite corner rounds
- If straight granite curbing, slope less than 4%: Transitional granite curbing
- If sloped granite curbing, cape cod berm or no curbing: No edge treatment

B. Apron treatment:

- If sidewalk: Concrete apron
- If no sidewalk: Asphalt apron

Recommended Policies: Treatment within the public right-of-way, continued

Traffic calming

- Include traffic calming measures in pavement management projects, where required, and continue their funding within the pavement management program
- Continue the existing process for determining need and design:
 - The Traffic Advisory Committee, assisted by the Belmont Police Department and the Community Development Department, recommends specific measures to the Board of Selectmen
 - Selectmen make the final determination on recommended measures

Police details

- The Selectmen will evaluate ways in which the Town can reduce the cost of pavement management projects by reducing the reliance on details

Recommended Policies: Coordination with utility work

Coordination with sewer improvements⁸

- Sewer projects which involve pavement excavation are to be completed prior to pavement management projects
- In cases where pavement conditions of potential projects are equal, preference is to be given to projects which can also solve existing drainage problems within the road right-of-way
- Funding:
 - If in connection with solving a local drainage condition: Within the pavement management program
 - example: Acorn Street
 - If in connection with addressing a system-wide need: Within the Sewer Department budget
 - example: Washington Street

⁸ Includes the Town's inflow/infiltration (I/I) program

Recommended Policies: Coordination with utility work, continued

Coordination with other utility work⁹

- Utility projects which involve pavement excavation are to be completed prior to pavement management projects
 - Notes:
 - Utilities typically need a one-to-two year notice in order to coordinate their own plans and budgets
 - If pavement management policy is stabilized and funding is assured, the Community Development Department should be able to publish its pavement management project plan up to five years in advance
- The existing five-year moratorium on excavation after a pavement management restoration is affirmed, except in true emergencies
 - Notes:
 - Such a moratorium conforms to Massachusetts DTE regulations
 - In event of an emergency excavation, the Department of Public Works can dictate pavement repair method

⁹ Includes the Town's storm sewer upgrade and water main replacement programs as well as the work of third-party utilities

Recommended Policies: Street opening permits and enforcement

- The Public Works Department already possesses most of the regulatory tools it needs within the existing Massachusetts DTE regulations. The Town should not attempt to create a separate set of pavement restoration standards, even for private contractors not subject to the DTE regulations
- Instead, more resources should be devoted to enforcement of those regulations
- Specifically:
 - Town Counsel will review and modernize Article 20.5 of the Town Bylaw, the “street opening permit” bylaw (Addendum 5), particularly so as to:
 - Incorporate the Massachusetts DTE standards by reference, making them applicable uniformly to private contractors, public utilities, and Town departments
 - Include “streets and other public ways” in the bylaw
 - Include “occupy” in the list of activities requiring a street opening permit
 - Require that all additions or changes to vehicular access from a public to a private way (including a driveway) necessitate a street opening permit, with prior Office of Community Development review and approval
 - The Public Works Department will update the street opening application form, regulations, and process in accordance with the modernized bylaw
 - The Public Works Department will charge a reasonable administrative fee for each permit
 - The Selectmen or Public Works Department will deny permits as necessary, including to public utilities, in order to enforce compliance with the street opening permit bylaw

Recommended Policies: Street opening permits and enforcement, continued

- To the extent possible, the Public Works Department will make the street opening permit process a higher priority:
 - All permit recipients will be held to the letter of the DTE regulations to the degree practical
 - Any training required to accomplish a stepped-up level of enforcement will occur thoroughly and quickly
 - Street opening inspection and compliance duties will be rotated regularly among DPW supervisory staff
- Every morning, the DPW staff will monitor the prior evening's emergency Dig-Safe requests for unreported utility work, and inspect such work as soon as possible
- The Town will purchase a software application to help monitor street opening permits, and this application will be linked to the Town's existing pavement management and GIS software

Recommended Policies: Sidewalk maintenance

- Sidewalk maintenance will remain the responsibility of the Public Works Department
- However, the sidewalk maintenance funding will be removed from the Public Works operating budget and funded instead within the capital budget, pursuant to the funding recommendations in the section following

Recommended Policies: Priorities and funding

- At our existing funding level:
 - The focus of the pavement management funding will continue to be on mill & overlay and reclamation of the Town's arterial and collector streets
 - With effectively only \$800,000 of annual hard cost capital, diverting a portion to local roads will make no practical difference, while serving to dilute the effectiveness of the arterial/collector effort
 - Sole exception: Add another \$50,000 to the annual crackseal & patch budget
 - \$100,000 total for crackseal & patch
 - \$750,000 total for mill & overlay/reclamation (hard cost only)
 - The DPW's current \$115,000 annual expenditure on pothole repair appears to be adequate, particularly if the Town adopts a more aggressive pavement management program
- At a proposed enhanced funding level:
 - Bring all Belmont streets to a minimum PCI of 65, within fifteen years for the arterials and collectors and within twenty-five years for local roads, starting with those in the worst condition
 - A 65 PCI provides a five-point PCI cushion against the need for reclamation
 - Alternatives considered:
 - A more aggressive pace than fifteen/twenty-five years is probably beyond the current human resource capacity of the Community Development Department

Recommended Policies: Priorities and funding, continued

- A less aggressive pace would probably allow the streets which have already been addressed to deteriorate to the point where they too will need reclamation before the proposed program is completed
 - ❖ The lifespan¹⁰ of a newly-reconstructed arterial or collector is approximately twenty years, and that of a local road is approximately thirty years
- Within each category, continue to prioritize funding by severity of road condition (PCI)
- Work off the sidewalk maintenance backlog within fifteen years
- Specific proposal to achieve this objective:
 - Create a special-purpose stabilization fund limited to the pavement management and sidewalk maintenance programs, pursuant to Sections 14 and 50 of Chapter 46 of the Massachusetts Acts of 2003
 - Add \$2.5 million to the pavement management program through a future Proposition 2½ operating override
 - In the initial year, this represents an additional \$363 in property tax for the owner of Belmont's \$803,600 median-value single-family home
 - Accommodates a 4% expected average annual rate of increase in program costs

¹⁰ I.e., the length of time after which, with normal maintenance, the road may need mill & overlay treatment, but not reclamation

Recommended Policies: Priorities and funding, continued

- Into the stabilization fund, place:
 - All unexpended capital budget and Chapter 90 funds previously appropriated for pavement management and sidewalk maintenance
 - \$2.5 million from the Town's \$5 million FY07 free cash surplus¹¹
 - The \$1 million approved in the June 3, 2002 override, plus an additional 2.5% per year
 - The \$2.5 million proceeds from the proposed override, plus an additional 2.5% per year
 - All interest earned on these amounts
- Limit withdrawals from the stabilization fund to the legally-specified purposes
- After the minimum 65-PCI objective has been achieved and the sidewalk maintenance backlog has been addressed, the stabilization fund might not be needed and the override amounts might be reduced
 - Note that the curbing and sidewalk portions of the pavement management program will then be fully in place, and, if the twenty-five-year plan has been completed diligently and effectively, the need for reclamation during the next round of the program will have been eliminated
 - However, sustained investment in our pavement and sidewalk infrastructure will always be required

¹¹ Represents the first year's worth of additional funding for the program (FY08), with the proposed \$2.5 million override beginning in year two (FY09)

Recommended Policies: Priorities and funding, continued

- The recommended expenditure increases to which the additional funding will be devoted are summarized in the following table
 - All cost figures shown are in 2007 dollars. It is assumed that the 2.5% compound increase in the \$1 million and \$2.5 million override proceeds will offset inflationary increases in the program of up to 4% annually. If not, the practical effect will be to lengthen the amount of time it will take to achieve the stated objectives
 - The figures include an allowance for traffic calming

Summary of Recommended Funding Scenarios

	Current funding allocation	Recommendation with current funding	Recommendation with future \$2.5M override	Comments
Sources:				
Chapter 90 funds	\$300,000	\$300,000	\$300,000	
Approved within 6/3/02 override	\$1,000,000	\$1,000,000	\$1,000,000	
Proposed future override			\$2,500,000	A
Average annual expenditure	\$1,300,000	\$1,300,000	\$3,800,000	

Uses:				
Seed money for Federal projects	\$250,000	\$250,000	\$250,000	B
Design, survey, details (14%)	\$200,000	\$200,000	\$400,000	
Cracksealing and patching – all	\$50,000	\$100,000	\$100,000	C
Sidewalk maintenance	\$0	\$0	\$100,000	D
Reconstruct or mill & overlay arterials & collectors	\$800,000	\$750,000	\$1,200,000	E
Reconstruct or mill & overlay local streets	\$0	\$0	\$1,750,000	F
Average annual expenditure	\$1,300,000	\$1,300,000	\$3,800,000	

Comments

A – In initial year (FY09), represents an additional \$363 in property tax on \$803,600 FY07 median single-family home assessment. Would increase by 2.5% annually (compounded)

Comments, continued

- B – To the extent that the need for funding this line item at this level diminishes in the future (expected after year five), the unneeded portion is available to help absorb future cost increases in excess of the 4% projected average annual increase in the program, or to fund needs unanticipated at this time
- C – Required for roads with PCI ratings of 72-92
- D – Required for at least the next fifteen years
- E – 0-71 PCI. \$18.0M over 15 years in 2007 dollars. After year 15, assume annual \$1,200,000 is devoted instead to local streets through year 25
- F – 0-71 PCI. \$55.75M over 25 years, including extra \$1,200,000 in annual funding in years 16-25

Addendum 1

Sample pavement condition index (PCI) report

Remove this page and substitute Addendum 1 pdf file

Addendum 2

Detailed hard cost estimate by street classification and reclamation/reconstruction work required

Remove this page and substitute Addendum 2 pdf file

Addendum 3

Arterial and collector road segments by functional classification

Remove this page and substitute Addendum 3 pdf file

Addendum 4

Selected provisions in the Massachusetts DTE regulations

Remove these pages and substitute Addendum 4 pdf file

Remove these pages and substitute Addendum 4 pdf file

Addendum 5

Article 20.5 of the Town Bylaws