

**Capital Improvement Plan**  
**FY2016-FY2020**

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The Following is the Capital Improvement Plan (CIP) for the Town of Tewksbury which covers the next five (5) Fiscal Years, 2016-2020. The plan outlines the project requests from each Department and the year in which the project is proposed for funding. The funding sources are either Raise and Appropriate (R & A), transfer from the Stabilization fund, transfer from the Free Cash (FC), transfer from the Enterprise Fund Retained Earnings, Chapter 90 or borrowing.

### **Part I: Glossary of Financial Terms**

### **Part II: Five (5) year CIP**

The first page is a summary of the requests by Department, potential funding sources, and the amount requested each of the next five (5) Fiscal Years.

Second page is a summary of the projects that will be funded by either Raise and Appropriate (R & A), transfer from the Stabilization fund, transfer from the Free Cash (FC), transfer from the Enterprise Retained Earning.

Third page is a summary of the projects that will be funded by Chapter 90 funds.

Fourth page is a summary of the General Fund projects that will be funded by borrowing. The summary outlines the annual debt service costs.

Fifth page is a summary of the Enterprise Fund projects, specifically Water Enterprise Fund Projects that will be funded by borrowing. The summary outlines the annual debt service costs.

### **Part III: Project Narratives**

List of all of specific request Project and Narratives submitted by the Departments with proposed funding for each year.

# Glossary of Financial Terms

## Part I

## Glossary of Financial Terms

**Appropriation** – An authorization granted by a town meeting, city council or other legislative body to expend money and incur obligations for specific public purposes. An appropriation is usually limited in amount and as to the time period within which it may be expended.

**Bond** – A means to raise money through the issuance of debt. A bond issuer/borrower promises in writing to repay a specified sum of money, alternately referred to as face value, par value or bond principal, to the buyer of the bond on a specified future date (maturity date), together with periodic interest at a specified rate. The term of a bond is always greater than one year.

**Bond Authorization** – The action of town meeting or a city council authorizing the executive branch to raise money through the sale of bonds in a specific amount and for a specific purpose. Once authorized, issuance is by the treasurer upon the signature of the mayor, or selectmen.

**Bond Issue** – The actual sale of the entire, or a portion of, the bond amount authorized by a town meeting or city council.

**Bond Rating (Municipal)** – A credit rating assigned to a municipality to help investors assess the future ability, legal obligation, and willingness of the municipality (bond issuer) to make timely debt service payments. Stated otherwise, a rating helps prospective investors determine the level of risk associated with a given fixed-income investment. Rating agencies, such as Moody's and Standard and Poor's, use rating systems, which designate a letter or a combination of letters and numerals where AAA is the highest rating and C1 is a very low rating.

**Bonds Authorized and Unissued** – Balance of a bond authorization not yet sold. Upon completion or abandonment of a project, any remaining balance of authorized and unissued bonds may not be used for other purposes, but must be rescinded by town meeting or the city council to be removed from community's books.

**Capital Improvements Program** – A blueprint for planning a community's capital expenditures that comprises an annual capital budget and a five-year capital program. It coordinates community planning, fiscal capacity and physical development. While all of the community's needs should be identified in the program, there is a set of criteria that prioritizes the expenditures.

**Capital Outlay** – The exchange of one asset (cash) for another (capital asset), with no ultimate effect on net assets. Also known as "pay as you go," it is the appropriation and use of available cash to fund a capital improvement, as opposed to incurring debt to cover the cost.

**Chapter 90 Highway Funds** – State funds derived from periodic transportation bond authorizations and apportioned to communities for highway projects based on a formula under the provisions of MGL Ch. 90 §34. The Chapter 90 formula comprises three variables: local road mileage (58.33 percent) as certified by the Massachusetts Highway Department (MHD), local employment level (20.83 percent) derived the Department of Employment and Training (DET), and population estimates (20.83 percent) from the US Census Bureau. Local highway projects are approved in advance. Later, on the submission of certified expenditure reports to MHD, communities receive cost reimbursements to the limit of the grant.

**Community Preservation Fund** – A special revenue fund established pursuant to MGL Ch. 44B to receive all monies collected to support a community preservation program, including but not limited to, tax surcharge receipts, proceeds from borrowings, funds received from the Commonwealth, and proceeds from the sale of certain real estate.

**Debt Authorization** – Formal approval by a two thirds vote of town meeting or city council to incur debt, in accordance with procedures stated in MGL Ch. 44 §§1, 2, 3, 4a, 6-15.

**Debt Exclusion** – An action taken by a community through a referendum vote to raise the funds necessary to pay debt service costs for a particular project from the property tax levy, but outside the limits under Proposition 2½. By approving a debt exclusion, a community calculates its annual levy limit under Proposition 2½, then adds the excluded debt service cost. The amount is added to the levy limit for the life of the debt only and may increase the levy above the levy ceiling.

**Debt Service** – The repayment cost, usually stated in annual terms and based on an amortization schedule, of the principal and interest on any particular bond issue.

**Enterprise Fund** – An enterprise fund, authorized by MGL Ch. 44 §53F½, is a separate accounting and financial reporting mechanism for municipal services for which a fee is charged in exchange for goods or services. It allows a community to demonstrate to the public the portion of total costs of a service that is recovered through user charges and the portion that is subsidized by the tax levy, if any. With an enterprise fund, all costs of service delivery—direct, indirect, and capital costs—are identified. This allows the community to recover total service costs through user fees if it chooses. Enterprise accounting also enables communities to reserve the "surplus" or net assets unrestricted generated by the operation of the enterprise rather than closing it out to the general fund at year-end. Services that may be treated as enterprises include, but are not limited to, water, sewer, hospital, and airport services.

**Free Cash (Also Budgetary Fund Balance)** – Remaining, unrestricted funds from operations of the previous fiscal year including unexpended free cash from the previous year, actual receipts in excess of revenue estimates shown on the tax recapitulation sheet, and unspent amounts in budget line-items. Unpaid property taxes and certain deficits reduce the amount that can be certified as free cash. The calculation of free cash is based on the balance sheet as of June 30, which is submitted by the community's auditor, accountant, or comptroller. Important: free cash is not available for appropriation until certified by the Director of Accounts.

**Levy** – The amount a community raises through the property tax. The levy can be any amount up to the levy limit, which is re-established every year in accordance with Proposition 2½ provisions.

**Local Appropriating Authority** – In a town, the town meeting has the power to appropriate funds, including the authorization of debt. In a city, the city council has the power upon the recommendation of the mayor.

**Long-Term Debt** – Community borrowing, or outstanding balance at any given time, involving loans with a maturity date of 12 months or more.

**Net Assets Unrestricted (formerly Retained Earnings)** – An equity account reflecting the accumulated earnings of an enterprise fund that may be used to fund capital improvements, to reimburse the general fund for prior year subsidies, to reduce user charges and to provide for enterprise revenue deficits (operating loss).

**Short-Term Debt** – Outstanding balance, at any given time, on amounts borrowed with a maturity date of 12 months or less.

**Stabilization Fund** – A fund designed to accumulate amounts for capital and other future spending purposes, although it may be appropriated for any lawful purpose (MGL Ch. 40 §5B). Communities may establish one or more stabilization funds for different purposes and may appropriate into them in any year an amount not to exceed ten percent of the prior year's tax levy. The total of all stabilization fund balances shall not exceed ten percent of the community's equalized value, and any interest shall be added to and become a part of the funds. A two-thirds vote of town meeting or city council is required to establish, amend the purpose of, or appropriate money into or from the stabilization fund.

**Capital Improvement Plan**  
**Five (5) Year Plan FY2016-FY2020**  
**Part II**

**TOWN OF TEWKSBURY  
CAPITAL PLANNING PROGRAM  
FISCAL YEAR 2016-2020  
SUMMARY**

DEPARTMENT	PROJECT/PROGRAM	FUNDING SOURCE	FY2016	FY2017	FY2018	FY2019	FY2020	Total
<b>All Departments</b>								
	Facility and Equipment Upgrades and Improvements	R&A/Stab. Fund/Free Cash	-	50,000	50,000	50,000	50,000	200,000
<b>Total All Departments</b>			-	50,000	50,000	50,000	50,000	200,000
<b>Fire Department</b>								
	New Ambulance and Equipment	R&A/Stab. Fund/Free Cash	145,000	-	145,000	-	-	290,000
	Pick-Up Truck	R&A/Stab. Fund/Free Cash	41,000	-	-	-	-	41,000
	Firefighting Structural Gear	R&A/Stab. Fund/Free Cash	110,000	-	-	-	-	110,000
	Response/Administrative Vehicle (Car 1)	R&A/Stab. Fund/Free Cash	-	-	35,000	-	-	35,000
	Command Vehicle	R&A/Stab. Fund/Free Cash	-	48,000	-	-	-	48,000
	New Ladder Truck	Borrowing/Stab. Fund/Free Cash	-	1,100,000	-	-	-	1,100,000
	New Center Fire Station	Borrowing	-	8,105,000	-	-	-	8,105,000
<b>Total Fire Department</b>			296,000	9,253,000	180,000	-	-	9,729,000
<b>Public Works Department</b>								
<b>Stormwater and Drainage</b>								
	Stormwater and Drainage Maintenance and Repair	R&A/Stab. Fund/FC/Borrowing/CH90	145,000	120,000	55,000	20,000	270,000	610,000
	Stormwater and Drainage Improvement Projects	R&A/Stab. Fund/FC/Borrowing/CH90	-	150,000	120,000	145,000	-	415,000
	Stormwater and Drainage Project Development	R&A/Stab. Fund/FC/Borrowing/CH90	55,000	35,000	85,000	45,000	-	220,000
	Stormwater and Drainage System Compliance	R&A/Stab. Fund/FC/Borrowing/CH90	400,000	450,000	200,000	200,000	200,000	1,450,000
<b>Total Stormwater and Drainage</b>			600,000	755,000	460,000	410,000	470,000	2,695,000
<b>Public Works Department</b>								
<b>Transportation</b>								
	Pavement Management Preventative Maintenance	R&A/Stab. Fund/FC/Borrowing/CH90	50,000	50,000	250,000	190,000	250,000	790,000
	Pavement Management Reconstruction/Resurfacing	R&A/Stab. Fund/FC/Borrowing/CH90	919,000	1,050,000	395,000	370,000	570,000	3,304,000
	Traffic Intersection Signal Improvement Projects	R&A/Stab. Fund/FC/Borrowing/CH90	120,000	100,000	-	-	-	220,000
	Traffic Sign Improvement	R&A/Stab. Fund/FC/Borrowing/CH90	140,000	-	-	-	-	140,000
	Sidewalks	R&A/Stab. Fund/FC/Borrowing/CH90	-	-	-	-	-	-
	Transportation Project Development/Design	R&A/Stab. Fund/FC/Borrowing/CH90	40,000	-	-	25,000	-	65,000
<b>Total Transportation</b>			1,269,000	1,200,000	645,000	585,000	820,000	4,519,000
<b>Public Works Department</b>								
<b>Facilities/Misc.</b>								
	Parks	R&A/Stab. Fund/FC/Borrowing/CH90	165,000	200,000	175,000	-	-	540,000
	DPW Garage and Building	R&A/Stab. Fund/FC/Borrowing/CH90	160,000	1,092,000	20,000	125,000	-	1,397,000
	Town-Wide	R&A/Stab. Fund/FC/Borrowing/CH90	75,000	-	-	-	-	75,000
	Tree and Stump Removal Town-Wide	R&A/Stab. Fund/FC/Borrowing/CH90	140,000	-	-	-	-	140,000
<b>Total Facilities/Misc.</b>			540,000	1,292,000	195,000	125,000	-	2,152,000
<b>Public Works Department</b>								
<b>Fleet and Equipment</b>								
	Vehicles and Equipment	R&A/Stab. Fund/Free Cash	280,000	111,000	96,000	170,000	170,000	827,000
<b>Total Fleet and Equipment</b>			280,000	111,000	96,000	170,000	170,000	827,000
<b>Grand Total DPW</b>			2,689,000	3,358,000	1,396,000	1,290,000	1,460,000	10,193,000
<b>Grand Total General Fund</b>			2,985,000	12,661,000	1,626,000	1,340,000	1,510,000	20,122,000
<b>Public Works (Sewer)</b>								
	Inflow and Infiltration I/I control	Borrowing/R&A/Retained Earnings	-	250,000	20,000	250,000	250,000	770,000
<b>Public Works (Sewer)</b>								
	Sewer Pump Station Improvements	Borrowing/R&A/Retained Earnings	-	-	-	-	50,000	50,000
<b>Public Works (Sewer)</b>								
	Collections System Upgrades	Borrowing/R&A/Retained Earnings	120,000	-	1,750,000	-	-	1,870,000
<b>Public Works (Sewer)</b>								
	Fleet and Equipment Replacement Program	R&A/Ent. Fund	-	-	-	-	-	-

Total Sewer Enterprise Fund		120,000	250,000	1,770,000	250,000	300,000	2,890,000
Public Works (Water)	Hydrant Replacement Program	125,000	125,000	125,000	125,000	125,000	625,000
Public Works (Water)	Eng./Design Water Distribution System Imp.	45,000	-	50,000	-	50,000	145,000
Public Works (Water)	Water Distribution System Improvements	400,000	1,500,000	-	1,000,000	-	2,900,000
Public Works (Water)	Water Tank Maint. And Upgrades	65,000	35,000	650,000	-	-	750,000
Public Works (Water)	Water Treatment Plant Upgrade	13,100,000	-	-	-	-	13,100,000
Public Works (Water)	Fleet and Equipment Replacement Program	-	-	60,000	-	-	60,000
<b>Total Water Enterprise Fund</b>		<b>13,735,000</b>	<b>1,660,000</b>	<b>885,000</b>	<b>1,125,000</b>	<b>175,000</b>	<b>17,580,000</b>
<b>Public Works Water/Sewer</b>	<b>Fleet and Equipment Replacement Program</b>	<b>-</b>	<b>240,000</b>	<b>125,000</b>	<b>120,000</b>	<b>170,000</b>	<b>655,000</b>
<b>Grand Total Per Year</b>		<b>16,840,000</b>	<b>14,811,000</b>	<b>4,406,000</b>	<b>2,835,000</b>	<b>2,155,000</b>	
<b>Grand Total All Projects All Years</b>							<b>41,047,000</b>

TOWN OF TEWKSBURY  
 CAPITAL PLANNING PROGRAM  
 FISCAL YEAR 2016-2020  
 GENERAL FUND PROJECTS THAT WILL BE FUNDED BY RAISE AND APPROPRIATE, TRANSFER FROM STABILIZATION FUND OR FREE CASH

DEPARTMENT	PROJECT/PROGRAM	FY2016	FY2017	FY2018	FY2019	FY2020	Total
<b>All Departments</b>							
	Facility and Equipment Upgrades and Improvements	-	-	50,000	50,000	50,000	150,000
<b>Total All Departments</b>		-	-	50,000	50,000	50,000	150,000
<b>Fire Department</b>							
	New Ambulance and Equipment	145,000	-	145,000	-	-	290,000
	Pick-Up Truck	41,000	-	-	-	-	41,000
	Firefighting Structural Gear	110,000	-	-	-	-	110,000
	Response/Administrative Vehicle (Car 1)	-	-	35,000	-	-	35,000
	Command Vehicle	-	48,000	-	-	-	48,000
	New Ladder Truck	-	1,100,000	-	-	-	1,100,000
<b>Total Fire Department</b>		296,000	1,148,000	180,000	-	-	1,624,000
<b>Public Works Department</b>							
<b>Stormwater and Drainage</b>							
	Stormwater and Drainage System Compliance	400,000	450,000	200,000	200,000	200,000	1,450,000
<b>Total Stormwater and Drainage</b>		400,000	450,000	200,000	200,000	200,000	1,450,000
<b>Public Works Department</b>							
<b>Facilities/Misc.</b>							
	Parks	165,000	200,000	175,000	-	-	540,000
	DPW Garage and Building	160,000	-	20,000	125,000	-	305,000
	Town-Wide	75,000	-	-	-	-	75,000
	Tree and Stump Removal Town-Wide	140,000	-	-	-	-	140,000
<b>Total Facilities/Misc.</b>		540,000	200,000	195,000	125,000	-	1,060,000
<b>Public Works Department</b>							
<b>Fleet and Equipment</b>							
	Vehicles and Equipment	280,000	111,000	96,000	170,000	170,000	827,000
<b>Total Fleet and Equipment</b>		280,000	111,000	96,000	170,000	170,000	827,000
<b>Grand Total DPW</b>		1,220,000	761,000	491,000	495,000	370,000	3,337,000
<b>Grand Total General Fund</b>		1,516,000	1,909,000	721,000	545,000	420,000	5,111,000

**TOWN OF TEWKSBURY  
CAPITAL PLANNING PROGRAM  
FISCAL YEAR 2016-2020  
PROJECTS FUNDED BY CHAPTER 90**

DEPARTMENT	PROJECT/PROGRAM	FY2016	FY2017	FY2018	FY2019	FY2020	Total
<b>Public Works Department</b>							
<b>Stormwater and Drainage</b>							
Public Works (General Fund)	Stormwater and Drainage Maintenance and Repair	145,000	120,000	55,000	20,000	270,000	610,000
Public Works (General Fund)	Stormwater and Drainage Improvement Projects	-	150,000	120,000	145,000	-	415,000
Public Works (General Fund)	Stormwater and Drainage Project Development	55,000	35,000	85,000	45,000	-	220,000
<b>Total Stormwater and Drainage</b>		<b>200,000</b>	<b>305,000</b>	<b>260,000</b>	<b>210,000</b>	<b>270,000</b>	<b>1,245,000</b>
<b>Public Works Department</b>							
<b>Transportation</b>							
Public Works (General Fund)	Pavement Management Preventative Maintenance	50,000	50,000	250,000	190,000	250,000	790,000
Public Works (General Fund)	Pavement Management Reconstruction/Resurfacing	919,000	1,050,000	395,000	370,000	570,000	3,304,000
Public Works (General Fund)	Traffic Intersection Signal Improvement Projects	120,000	100,000	-	-	-	220,000
Public Works (General Fund)	Sidewalks	-	-	-	-	-	-
Public Works (General Fund)	Transportation Project Development/Design	40,000	-	-	25,000	-	65,000
<b>Total Pavement Management</b>		<b>1,129,000</b>	<b>1,200,000</b>	<b>645,000</b>	<b>585,000</b>	<b>820,000</b>	<b>4,379,000</b>
<b>Grand Total Per Year</b>		<b>1,329,000</b>	<b>1,505,000</b>	<b>905,000</b>	<b>795,000</b>	<b>1,090,000</b>	<b>5,624,000</b>
<b>Grand Total All Projects All Years</b>							

TOWN OF TEWKSBURY  
CAPITAL PLANNING PROGRAM  
FISCAL YEAR 2016-2020

ENTERPRISE FUND PROJECTS THAT WILL BE FUNDED BY RAISE AND APPROPRIATE OR TRANSFER FROM FROM RETAINED EARNINGS

DEPARTMENT	PROJECT/PROGRAM	FY2016	FY2017	FY2018	FY2019	FY2020	Total
<b>Public Works Department</b>							
Public Works (Sewer)	Inflow and Infiltration I/I control	-	250,000	20,000	250,000	250,000	770,000
Public Works (Sewer)	Sewer Pump Station Improvements	-	-	-	-	50,000	50,000
Public Works (Sewer)	Collections System Upgrades	120,000	-	1,750,000	-	-	1,870,000
Public Works (Sewer)	Fleet and Equipment Replacement Program	-	-	-	-	-	-
<b>Total Sewer Enterprise Fund</b>		<b>120,000</b>	<b>250,000</b>	<b>1,770,000</b>	<b>250,000</b>	<b>300,000</b>	<b>2,690,000</b>
Public Works (Water)	Hydrant Replacement Program	125,000	125,000	125,000	125,000	125,000	625,000
Public Works (Water)	Eng./Design Water Distribution System Imp.	45,000	-	50,000	-	50,000	145,000
Public Works (Water)	Water Distribution System Improvements	400,000	1,500,000	-	1,000,000	-	2,900,000
Public Works (Water)	Water Tank Maint. And Upgrades	65,000	35,000	650,000	-	-	750,000
Public Works (Water)	Water Treatment Plant Upgrade	-	-	-	-	-	-
<b>Total Water Enterprise Fund</b>		<b>635,000</b>	<b>1,660,000</b>	<b>825,000</b>	<b>1,125,000</b>	<b>175,000</b>	<b>4,420,000</b>
<b>Public Works Water/Sewer</b>	<b>Fleet and Equipment Replacement Program</b>	<b>-</b>	<b>240,000</b>	<b>125,000</b>	<b>120,000</b>	<b>170,000</b>	<b>655,000</b>
<b>Grand Total Per Year</b>		<b>755,000</b>	<b>2,150,000</b>	<b>2,720,000</b>	<b>1,495,000</b>	<b>645,000</b>	<b>7,765,000</b>
<b>Grand Total All Projects All Years</b>							

CAPITAL PROJECT TO BE APPROPRIATED THROUGH BORROWING FY16-FY20									
	Amount	Debt Term	Interest Rate	FY2016	FY2017	FY2018	FY2019	FY2020	
FISCAL YEAR 2016 CAPITAL PROJECTS									
TOTAL FY16 Debt									
FISCAL YEAR 2017 CAPITAL PROJECTS									
Fire	8,105,000	20	3.75%	151,969	701,589	686,392	671,195	655,998	
DPW	1,092,000	10	3.75%	20,475	148,103	144,008	139,913	135,818	
TOTAL FY17 Debt				172,444	849,692	830,400	811,108	791,816	
FISCAL YEAR 2018 CAPITAL PROJECTS									
TOTAL FY18 Debt									
FISCAL YEAR 2019 CAPITAL PROJECTS									
TOTAL FY19 Debt									
FISCAL YEAR 2020 CAPITAL PROJECTS									
TOTAL FY20 Debt									

TOTAL ALL NEW DEBT				172,444	849,692	830,400	811,108	791,816
TOTAL EXISTING DEBT AND UNISSUED DEBT		FY2015	117,717.16	93,965	85,995	73,164	65,171	40,803
GRAND TOTAL EXISTING AND NEW DEBT SERVICE				266,409	935,687	903,563	876,278	832,619
INCREASE OVER PREVIOUS FISCAL YEAR'S DEBT SERVICE				148,691	669,278	(32,123)	(27,285)	(43,659)

All borrowing anticipates approving the project at Annual Town Meeting, Borrowing the funds in the specific Fiscal Year listed and have only an Interest payment in the first year and principal and interest there after.

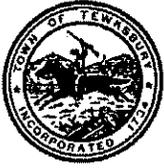
CAPITAL PROJECT WATER AND SEWER ENTERPRISE FUNDS TO BE APPROPRIATED THROUGH BORROWING FY16-FY20									
	Amount	Debt Term	Interest Rate	FY2015	FY2016	FY2017	FY2018	FY2019	
<b>FISCAL YEAR 2016 CAPITAL PROJECTS</b>									
Public Works (Water)	13,100,000	20	3.75%	245,625	1,133,969	1,109,406	1,084,844	1,060,281	
<b>TOTAL FY16 Debt</b>	<b>13,100,000</b>			<b>245,625</b>	<b>1,133,969</b>	<b>1,109,406</b>	<b>1,084,844</b>	<b>1,060,281</b>	
<b>FISCAL YEAR 2017 CAPITAL PROJECTS</b>									
<b>TOTAL FY17 Debt</b>	-			-	-	-	-	-	
<b>FISCAL YEAR 2018 CAPITAL PROJECTS</b>									
<b>TOTAL FY18 Debt</b>	-			-	-	-	-	-	
<b>FISCAL YEAR 2019 CAPITAL PROJECTS</b>									
<b>TOTAL FY19 Debt</b>	-			-	-	-	-	-	
<b>FISCAL YEAR 2020 CAPITAL PROJECTS</b>									
<b>TOTAL FY20 Debt</b>	-			-	-	-	-	-	

TOTAL ALL NEW DEBT	13,100,000			245,625	1,133,969	1,109,406	1,084,844	1,060,281	
TOTAL EXISTING DEBT AND UNISSUED DEBT WATER		2,015	1,780,094.32	2,106,817	2,046,352	1,816,602	1,566,642	1,239,403	
GRAND TOTAL EXISTING AND NEW DEBT SERVICE				2,352,442	3,180,321	2,926,009	2,641,485	2,299,684	
INCREASE OVER PREVIOUS FISCAL YEAR'S DEBT SERVICE				572,347	827,879	(254,312)	(284,523)	(341,802)	

All borrowing anticipates approving the project at Annual Town Meeting, Borrowing the funds in the specific Fiscal Year listed and have only an interest payment in the first year and principal and interest there after.

Capital Plan Summary	FY2016	FY2017	FY2018	FY2019	FY2020	Total
General Fund	2,985,000	12,661,000	1,626,000	1,340,000	1,510,000	20,122,000
Sewer Enterprise Fund	120,000	250,000	1,770,000	250,000	300,000	2,690,000
Water Enterprise Fund	13,735,000	1,660,000	885,000	1,125,000	175,000	17,580,000
Water/Sewer Enterprise Fund	-	240,000	125,000	120,000	170,000	655,000
<b>Total Capital Plan Funded</b>	<b>16,840,000</b>	<b>14,811,000</b>	<b>4,406,000</b>	<b>2,835,000</b>	<b>2,155,000</b>	<b>41,047,000</b>
<b>Annual Capital Improvement Plan Cost</b>						
R&A or Transfer from Stabilization Fund or Free Cash	1,516,000	1,909,000	721,000	545,000	420,000	5,111,000
Chapter 90	1,329,000	1,505,000	905,000	795,000	1,090,000	5,624,000
General Fund Debt Service	172,444	849,692	830,400	811,108	791,816	3,455,459
R&A or Transfer from Sewer Enterprise Fund	120,000	250,000	1,770,000	250,000	300,000	2,690,000
R&A or Transfer from Water Enterprise Fund	635,000	1,660,000	825,000	1,125,000	175,000	4,420,000
R&A or Transfer Sewer/Water Enterprise Fund	-	240,000	125,000	120,000	170,000	655,000
Water Enterprise Funds Debt Service	245,625	1,133,969	1,109,406	1,084,844	1,060,281	4,634,125
<b>Total Fiscal Year Cost</b>	<b>4,018,069</b>	<b>7,547,660</b>	<b>6,285,806</b>	<b>4,730,952</b>	<b>4,007,097</b>	<b>26,589,584</b>

**Capital Improvement Plan**  
**Project Narratives**  
**Part III**



## Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

**Project Name:** Facility Upgrades and Improvements

**Date:** 1/26/15

**Submitted By:** Richard Montuori

**Department:** All Department Facilities and Buildings

**First Year Submission:** FY2014

### Description of Project:

Update and Upgrade buildings and facilities. Work to include but not limited to new carpeting, painting, HVAC improvements, roofing, and windows

### Justification/Benefit:

All town buildings (non-school) are in need of improvements and if upgrades are not undertaken it will cost more in the long run.

### Impact if not completed:

Cost to make improvements later will be more and the longer the buildings go without proper maintenance the better chance for system failure or structural problems.

**Timeframe:** Annual

**Replace. Freq:**  
Years

**Stakeholders:** Police, Fire, DPW, Library Town Hall Annex, Senior Center

**Operating Budget Impact:** Less will be needed in Department operating budgets for ongoing maintenance.

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$50,000.00	\$50,000.00	\$50,000.00	\$50,000.00	\$200,000
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$0.00</b>	<b>\$50,000.00</b>	<b>\$50,000.00</b>	<b>\$50,000.00</b>	<b>\$50,000.00</b>	<b>\$200,000</b>

### Basis of Cost Projection:

Budget number only, no estimates



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

Project Name: New Ambulance & Equipment

Date: 1/10/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Chief Michael Hazel

Department: Fire

First Year Submission: 2014

Priority: High

**Description of Project:** Replace 2009 Ford E-450 Horton Ambulance with like model to maintain two-year ambulance replacement program. Project cost is based on replacing the chassis and retaining the rear body. The radios will be retained along with the most of the electronic equipment. Existing equipment such as emergency lights, sirens, and interior lighting will update and upgraded as needed to meet current industry standards. Replacing the aging patient stretcher in this ambulance is included in the equipment cost. The replacement stretcher will be of the power lift type.

**Justification/Benefit:** The ambulance is the most frequently used emergency resources in the Department. They are driven by a variety of people under extreme conditions on a daily basis. Ambulances are prone to mechanical failure and require extensive maintenance as they age. Purchasing a new ambulance or replacing the chassis every two years allows us to maintain a fleet of three ambulances under six years old. Replacing the chassis addresses the most common mechanical issues that we have with the ambulances. The rear body components have historically not created ongoing maintenance issues. The power stretcher is an option that can save thousands of pounds of lifting each week for our EMTs. One lifting injury to an EMT can be costly to the Town and the affected EMT. The purchase of a power stretcher can greatly reduce the chance of employee injury and provide the patient with a greater level of safety during the lifting and transition times.

**Impact if not completed:** Costly repairs and the potential of break downs during critical emergency responses as these vehicles age. Most service work is covered under factory warranty at no cost the Department when the primary and secondary ambulances are in service. The backup ambulance, the oldest in the fleet, is only placed in service during mass casualty incidents or when one of the primary ambulances require maintenance or repair. Repair costs and ambulance downtime increases when the two-year replacement schedule is not followed. Not transitioning to power stretchers will increase the likelihood of back and lifting injuries to our EMTs.

**Timeframe:** FY 2016 FY 2018

**Replace. Freq:**  
2 Years

**Stakeholders:** Town Residents / Firefighters / Ambulance Patients

**Operating Budget Impact:** Reduced maintenance and increased vehicle reliability in a vehicle critical to the Department.

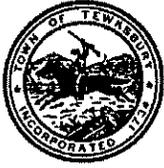
**Funding Source:** Raise and Appropriate

**Capital Funding Request**

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$145,000.00	\$0.00	\$145,000.00	\$0.00	\$0.00	\$290,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$145,000.00</b>	<b>\$0.00</b>	<b>\$145,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$290,000.00</b>

Recurring Cost  
\$0.00  
Maintenance Cycle  
\_\_\_\_ Years  
**CPA Purpose**  
 Open Space  
 Recreation  
 Historic  
 Housing

**Basis of Cost Projection:** Current State, Plymouth County Cooperate, Metropolitan Area Planning Council bid process.



**Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment**

**Project Name:** Replacement of Pickup Truck

**Date:** 1/10/2015

**Project ID Number:** \_\_\_\_\_

**Revision Date:** \_\_\_\_\_

**Submitted By:** Chief Michael Hazel

**Department:** Fire

**First Year Submission:** 2014

**Priority:** Medium

**Description of Project:** Replace existing utility pickup truck utilized at the Central Fire Station for brush fires, plowing, towing, equipment transfers, select details, and emergency responses. The Department would purchase a 4-wheel drive Ford F-350 pickup truck, or like vehicle, with a 10,000 GVRW through the State, Plymouth County Cooperate, or Metropolitan Area Planning Council bid process. Purchase would include emergency and safety lighting, Rhino Coat Bedliner, Meyer/Diamond 8' Plow package, and tow package.

**Justification/Benefit:** The current vehicle is a 2001 Ford pickup truck in fair condition. Electrical and front end driveline issues have been ongoing maintenance concerns. This vehicle experiences heavy usage during the winter plowing the Center and North Stations along with responding with fire engines and ambulances when snow impedes responses. It's all terrain capability is used to access remote areas of Town during brush fire season and it is used to tow the Department's rescue boat and confined space trailer as needed. The current plow package has deteriorated due to rust and age. Temporary welding repairs were performed on the plow assembly to maintain its functionality. Once removed from frontline service, vehicle will be used at sub-fire station as a support vehicle.

**Impact if not completed:** Vehicle currently is in working order and will continue in service until replaced.

**Timeframe:** FY 2016

**Replace. Freq:**  
10 Years

**Stakeholders:** Town Residents / Firefighters

**Operating Budget Impact:** Increased vehicle reliability. Reduced maintenance costs.

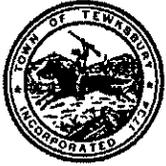
**Funding Source:** Raise and Appropriate

**Capital Funding Request**

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$41,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$41,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$41,000.00</b>
CPA Amt. Req.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Recurring Cost	\$0.00
Maintenance Cycle	_____ Years
<b>CPA Purpose</b>	
<input type="radio"/>	Open Space
<input type="radio"/>	Recreation
<input type="radio"/>	Historic
<input type="radio"/>	Housing

**Basis of Cost Projection:** Current State, Plymouth County Cooperate, Metropolitan Area Planning Council bid process.



**Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment**

Project Name: Replace Fire Fighter Structural Gear Date: 1/10/2015

Project ID Number: \_\_\_\_\_ Revision Date: \_\_\_\_\_

Submitted By: Chief Michael Hazel Department: Fire

First Year Submission: 2011 Priority: High

**Description of Project:** Replace 41 sets of structural firefighting gear and personal protective equipment to comply with National Fire Protection Association Standard 1851, 2008 Edition (NFPA 1851-2008) and NFPA 1971-2007. NFPA 1851 states that structural firefighting gear and ensembles shall be removed from service no more than ten (10) years from the date of manufacture. Purchase includes protective turnout gear and personal protective equipment for four new hires in FY'16 and related one time uniform expenses.

**Justification/Benefit:** The Department replaced firefighting gear for all firefighters with FireAct Grant Funds in 2006. In 2015 the gear will be 10 years old and will be in need of replacement based on our Department's use of equipment. Members of our Department are issued and responsible for one set of structural turnout gear at a time. Personal protective gear includes coats, pants, helmets, gloves, footwear, hoods, and suspenders. This gear is required by SOGs and Department Policy to be worn by firefighters and fire officers on the vast majority of emergency responses and at training events. The gear is subject to repeated exposure to uncontrolled environments and contaminants which degrade the integrity of the outer shell and interior liner components. Annual gear inspections are performed to document and address premature wear and repair needs.

**Impact if not completed:** Members with worn or obsolete gear are subject to equipment failure while performing in immediately dangerous to life and health (IDLH) environments through the course of their work. This would pose an unacceptable risk to the firefighter and the community and is a liability the Town and individual should not be exposed to. Town would not be in compliance with NFPA 1851 if personal protective gear exceeds 10 years in age.

**Timeframe:** FY 2016

**Replace. Freq:**  
10 Years

**Stakeholders:** Town Residents/ Firefighters

**Operating Budget Impact:** Slight reduction in replacement and/or annual repair costs.

**Funding Source:** Raise and Appropriate

**Capital Funding Request**

	2016	2017	2018	2019	2020	Total
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$110,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$110,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$110,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$110,000.00</b>
CPA Amt. Req.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Recurring Cost  
\$0.00  
Maintenance Cycle  
\_\_\_\_\_ Years

- CPA Purpose**
- Open Space
  - Recreation
  - Historic
  - Housing

**Basis of Cost Projection:** State and Plymouth County Cooperative bid list pricing.



Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

Project Name: Response/Administrative Vehicle (Car 1)

Date: 1/10/2015

Project ID Number:

Revision Date:

Submitted By: Chief Michael Hazel

Department: Fire

First Year Submission: 2015

Priority: Medium

Description of Project: Replace Fire Chief's response and administrative vehicle (Car 1). The Department would purchase a Ford Police Interceptor or equivalent vehicle through the State, Plymouth County Cooperate, or Metropolitan Area Planning Council bid process. Purchase would include new emergency and safety lighting and onboard computer and related fire officer operational equipment. The vehicle will be used by the Chief of Department to support his job functions and 24-hour response to emergencies.

Justification/Benefit: The current vehicle used by the Chief is a 2013 Ford Expedition and is in excellent condition. Being an all-wheel drive vehicle, it has proven efficient and capable for both administrative and emergency response. The vehicle will be turned over to the Deputy Fire Chief for the same use. The Deputy Chief's vehicle, a 2006 Ford Explorer in very good condition, will be turned over to the Fire Investigator for Departmental use and response. The Fire Investigator's current vehicle is a 1999 Ford Explorer in poor condition. This vehicle was originally purchased as the Fire Chief's primary vehicle and has been in continuous service since 1999.

Impact if not completed: Vehicle currently is in good working order and will continue in service. The Fire Investigator's vehicle is in poor condition and may need to be replaced sooner than FY2018.

Timeframe: FY 2018

Replace. Freq: 5 Years

Stakeholders: Town Residents / Firefighters

Operating Budget Impact: Increased vehicle reliability. Reduced maintenance costs.

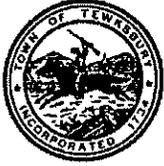
Funding Source: Raise and Appropriate

Capital Funding Request

Table with 7 columns: 2016, 2017, 2018, 2019, 2020, Totals. Rows include Site Acquisition, Design/Engineer, Construction, Equipment, Contingency, Totals, and CPA Amt. Req.

Recurring Cost \$0.00
Maintenance Cycle Years
CPA Purpose
Open Space
Recreation
Historic
Housing

Basis of Cost Projection: Current State, Plymouth County Cooperate, Metropolitan Area Planning Council bid process.



**Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment**

**Project Name:** Incident Command Vehicle (Car3)

**Date:** 1/10/2015

**Project ID Number:** \_\_\_\_\_

**Revision Date:** \_\_\_\_\_

**Submitted By:** Chief Michael Hazel

**Department:** Fire

**First Year Submission:** 2014

**Priority:** Medium

**Description of Project:** Replace Incident Command Vehicle (Car 3). The Department would purchase a Ford Expedition or equivalent vehicle through the State, Plymouth County Cooperate, or Metropolitan Area Planning Council bid process. The Expedition is large enough to transport the equipment that is needed by the Captains in performing their duties. Purchase would include new emergency and safety lighting and onboard computer and related fire officer operational equipment.

**Justification/Benefit:** The current vehicle is a 2011 Ford Expedition and is in good condition. Electrical and front end driveline issues have been ongoing maintenance concerns. This vehicle experiences heavy usage by the officer in charge. It's all terrain capability is used to access remote areas of Town during inclement weather and it is used to tow the Department's rescue boat as needed. Depending on condition at end of front line service life, vehicle may be used as a support vehicle within the Department.

**Impact if not completed:** Vehicle currently is in good working order and will continue in service until replaced.

**Timeframe:** FY 2017

**Replace. Freq:**  
5 Years

**Stakeholders:** Town Residents / Firefighters

**Operating Budget Impact:** Increased vehicle reliability. Reduced maintenance costs.

**Funding Source:** Raise and Appropriate

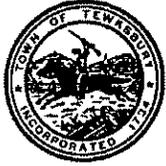
**Capital Funding Request**

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$48,000.00	\$0.00	\$0.00	\$0.00	\$48,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	\$0.00	\$48,000.00	\$0.00	\$0.00	\$0.00	\$48,000.00
CPA Amt. Req.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Recurring Cost  
\$0.00  
Maintenance Cycle  
\_\_\_\_\_ Years

- CPA Purpose**
- Open Space
  - Recreation
  - Historic
  - Housing

**Basis of Cost Projection:** Current State, Plymouth County Cooperate, Metropolitan Area Planning Council bid process.



## Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

**Project Name:** Replacement Ladder Truck

**Date:** 1/10/2015

**Project ID Number:** \_\_\_\_\_

**Revision Date:** \_\_\_\_\_

**Submitted By:** Chief Michael Hazel

**Department:** Fire

**First Year Submission:** 2009

**Priority:** High

**Description of Project:** Replace the Fire Department's 1986 Emergency-One Ladder truck with a new aerial truck to gain additional ISO public classification credit and come in to compliance with applicable NFPA standards for aerial equipment. New vehicle specification will also include a water supply, centrifugal fire pump, and supply and fire attack hose for independent firefighting capabilities.

**Justification/Benefit:** Our ladder truck will be 30 years old in 2016. It lacks significant safety and technological advancements required in apparatus built after 1991; particularly in the area of fire fighter safety. It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. How long that is depends on many factors including cost of maintenance, operational function, availability of parts, downtime, and quality of the manufacturer to name a few. A key element in assessing apparatus life span is fire fighter safety; older apparatus do not meet the same safety standards that newer apparatus must meet. ISO sets response areas with 5 buildings that are 3 stories or 35 feet or more in height, or with 5 buildings that have a needed fire flow greater than 3,500 gallons per minute of water as districts in need of an aerial unit. All three of Tewksbury's response districts currently meet this criterion.

**Impact if not completed:** The Department will continue to operate and maintain an obsolete ladder truck to the best of our ability. The ability to quickly access and deploy at fire and/or other rescue scenes will not be gained. Firefighter safety will continue to be a concern when ladder truck operations are carried out.

**Timeframe:** FY 2017

**Replace. Freq:**  
25 Years

**Stakeholders:** Town Residents / Firefighters / Hotels / State Hospital Complex / Condominiums & Apartment Complexes

**Operating Budget Impact:** Reduced maintenance cost, reduction in likelihood of ladder failing annual certification test, initial increased training cost to familiarize all members with operational function.

**Funding Source:** Raise and Appropriate

### Capital Funding Request

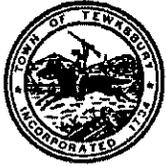
	2016	2017	2018	2019	2020	Total
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$1,100,000.00	\$0.00	\$0.00	\$0.00	\$1,100,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	\$0.00	\$1,100,000.00	\$0.00	\$0.00	\$0.00	\$1,100,000.00
CPA Amt. Req.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Recurring Cost  
\$0.00  
Maintenance Cycle  
\_\_\_\_\_ Years

**CPA Purpose**

- Open Space
- Recreation
- Historic
- Housing

**Basis of Cost Projection:** Current State, Plymouth County Cooperate, Metropolitan Area Planning Council bid process.



**Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment**

Project Name: New Center Fire Station

Date: 1/10/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Chief Michael Hazel

Department: Fire

First Year Submission: 2009

Priority: High

**Description of Project:** Replace the existing Center Fire Station with a modern facility. A report by the Carell Group dated January 22, 2007 recommended the replacement of the station as the most cost effective method of meeting the needs of the Fire Department. The report recommended against renovating the current facility or adding on to it as a practical and efficient use of financial resources.

**Justification/Benefit:** The Current Center Fire Station was put into service in 1966 and is currently 46 years old. It does not meet the current needs of the Fire Department and does not meet the current building and fire codes nor does it comply with NFPA standards. A new station would provide the Department with a facility that meets all current building, life safety, and occupational health codes. A facility that provides adequate meeting, training, living, community accessibility, and equipment and storage space supports our firefighting personnel and assists the Department in the delivery of excellent services to our community.

**Impact if not completed:** The Fire Department will continue to operate in a building that does not meet safety and building codes. The Town will have to invest in a new roof, heating system, windows, interior ceiling tiles and insulation for the current building that will cost over \$1,000,000 in a building that has been deemed not worth the investment of funds. Department will continue to operate with inefficient apparatus, office, storage, and training space. Current station is not ADA compliant, has not public restrooms, has no female firefighter showers or accommodations and does not meet current NFPA Standards.

**Timeframe:** FY 2017

**Replace. Freq:**  
50 Years

**Stakeholders:** Town Residents/ Firefighters

**Operating Budget Impact:** More efficient building with less repair and operational costs.

**Funding Source:** Raise and Appropriate

**Capital Funding Request**

	2016	2017	2018	2019	2020	Total
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$625,000.00	\$0.00	\$0.00	\$0.00	\$625,000.00
Construction	\$0.00	\$7,000,000.00	\$0.00	\$0.00	\$0.00	\$7,000,000.00
Equipment	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$500,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	\$0.00	\$8,125,000.00	\$0.00	\$0.00	\$0.00	\$8,125,000.00

Recurring Cost  
\$0.00  
Maintenance Cycle  
\_\_\_\_ Years

- CPA Purpose**
- Open Space
  - Recreation
  - Historic
  - Housing

**Basis of Cost Projection:** Report by Carell Group and evaluations conducted by CBI Consulting, Inc.

**Drain-Stormwater  
5-Year Project Cost Estimates**

**Drainage/Stormwater**

Budget Cost Elements	2016	2017	2018	2019	2020	TOTAL
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Eng.	\$55,000.00	\$35,000.00	\$85,000.00	\$45,000.00	\$0.00	\$220,000.00
Construction	\$545,000.00	\$710,000.00	\$375,000.00	\$365,000.00	\$470,000.00	\$2,465,000.00
<b>TOTAL</b>	<b>\$600,000.00</b>	<b>\$755,000.00</b>	<b>\$460,000.00</b>	<b>\$410,000.00</b>	<b>\$470,000.00</b>	<b>\$2,685,000.00</b>

**Fiscal Year**

<u>Project Category</u>	<u>Location</u>	<u>Schedule</u>	<u>Treatment</u>	<u>Cost</u>	<u>Fund</u>
FY2016	Cal2015-2016	Est. Timeframe			

**Drains**

CB/Manhole adjustment and re	Backlog Inventory	Annual	Adjust, Repair, Replace	Drain and Struct's	\$20,000.00	Chapter90
Repair Culvert(s)	Pinnacle St		Pipe and headwall replacement		\$50,000.00	Chapter90
	31 Shawsheen St				\$75,000.00	Chapter90
					<b>\$145,000.00</b>	

**Project Development**

Engineer Streambank Stabilizati	Bridge Str bridge			Engineering Services	\$30,000.00	Chapter90
Engineer culvert per new DEP F	31 Shawsheen St Culvert			Engineering Services	\$25,000.00	Chapter90
					<b>\$55,000.00</b>	

**Stormwater Compliance**

Stormwater Mapping	Throughout Town			Engineering Services	\$200,000.00	General Fund
Detention Basin Rehabilitation	Throughout Town			Engineering Services	\$200,000.00	General Fund
					<b>\$400,000.00</b>	

**Total Cost FY16 \$600,000.00**

**FY2017**

**Cal 2016-2017**

**Drains**

CB/Manhole adjustment and re	Backlog Inventory	Annual	Adjust, Repair, Replace	Drain and Struct's	\$20,000.00	Chapter90
Install Infiltration system	Veranda Ave				\$100,000.00	Chapter90
					<b>\$120,000.00</b>	

**Improvement Projects**

Bridge St bridge repairs	Culvert/Bridge structure repair		Sreambank stablization and Culvert maint		\$150,000.00	Chapter90
					<b>\$150,000.00</b>	

**Project Development**

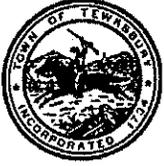
Engineer culvert per new DEP F	Haz Hit Grant Shawsheen St	75% Grant Share		Engineering Services	\$35,000.00	Chapter90
					<b>\$35,000.00</b>	

**Stormwater Compliance**

Stormwater Mapping	Throughout Town			Engineering Services	\$250,000.00	General Fund
Detention Basin Rehabilitation	Throughout Town			Engineering Services	\$200,000.00	General Fund
Requirements of MS4 Permit	To be Determined				\$0.00	No Funding Source Identified
					<b>\$450,000.00</b>	

**Total Cost FY17 \$755,000.00**

<u>Fiscal Year</u>	<u>Project Category</u>	<u>Location</u>	<u>Schedule</u>	<u>Treatment</u>	<u>Cost</u>	<u>Fund</u>
<b>FY2018</b>		<b>Cal 2017-2018</b>				
	<b>Drains</b>					
	CB/Manhole adjustment and re	Backlog Inventory	Annual	Adjust, Repair, Replace	Drain and Struct's	\$20,000.00 Chapter90
	CB install and connection	Old Boston Rd connection to Rt 38 Main St drain			Drain and Struct's	\$35,000.00 Chapter90
						<b>\$55,000.00</b>
	<b>Improvement Projects</b>					
	Construct Roadway and Drain	Shawsheen St Constr Haz Hit	75% Grant Share	Flood Mitigation Construction		\$120,000.00 Chapter90
						<b>\$120,000.00</b>
	<b>Project Development</b>					
	Engineer Roadway, drain and c	HazMit Grant South St	75% Grant Share		Engineering Services	\$50,000.00 Chapter90
	Engineer culvert per new DEP F	HazMit Trull Brook Culvert slip li	75% Grant Share		Engineering Services	\$35,000.00 Chapter90
						<b>\$85,000.00</b>
	<b>Stormwater Compliance</b>					
	Detention Basin Rehabilitation	Throughout Town			Engineering Services	\$200,000.00 General Fund
	Requirements of MS4 Permit	To be Determined				\$0.00 No Funding Source Identified
						<b>\$200,000.00</b>
					<b>Total Cost FY18</b>	<b>\$460,000.00</b>
<b>FY2019</b>		<b>Cal 2018-2019</b>				
	<b>Drains</b>					
	CB/Manhole adjustment and re	Backlog Inventory	Annual	Adjust, Repair, Replace	Drain and Struct's	\$20,000.00 Chapter90
						\$0.00
						<b>\$20,000.00</b>
	<b>Improvement Projects</b>					
	Culvert modifications	Trull Brook Culvert slip line	75% Grant Share	Culvert Construction		\$60,000.00 Chapter90
	Construct Roadway and Drain	Haz Mit Grant South St	75% Grant Share	Flood Mitigation Construction		\$85,000.00 Chapter90
						<b>\$145,000.00</b>
	<b>Project Development</b>					
	Cayuga St Drain design				engineering	\$20,000.00 Chapter90
	South St Road Design	Brown St to Main St			engineering	\$25,000.00 Chapter90
						<b>\$45,000.00</b>
	<b>Stormwater Compliance</b>					
	Detention Basin Rehabilitation	Throughout Town			Engineering Services	\$200,000.00 General Fund
	Requirements of MS4 Permit	To be Determined				\$0.00 No Funding Source Identified
						<b>\$200,000.00</b>
					<b>Total Cost FY19</b>	<b>\$410,000.00</b>
<b>FY2020</b>		<b>Cal 2019- 2020</b>				
	<b>Drains</b>					
	CB/Manhole adjustment and re	Backlog Inventory	Annual	Adjust, Repair, Replace	Drain and Struct's	\$20,000.00 Chapter90
	Vanburen Area drainage				installation of drainage	\$150,000.00 Chapter90
	(phase 1)					\$100,000.00 Chapter90
	Cayuga Pipe and structure repair					\$270,000.00
						<b>\$270,000.00</b>
	<b>Improvement Projects</b>					<b>\$0.00</b>
	<b>Project Development</b>					<b>\$0.00</b>
						<b>\$0.00</b>
	<b>Stormwater Compliance</b>					
	Detention Basin Rehabilitation	Throughout Town			Engineering Services	\$200,000.00 General Fund
	Requirements of MS4 Permit	To be Determined				\$0.00 No Funding Source Identified
						<b>\$200,000.00</b>
					<b>Total Cost FY20</b>	<b>\$470,000.00</b>



## Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Drain/Stormwater System Management

Date: 2/18/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@teWKsbury-ma.gov

### Description of Project:

This program is an annual request to improve the Town's drainage system by repairing failed drainage structures and culverts, and the installation of new drainage facilities where existing drainage problems endanger public safety and/or private property. Staff plan, coordinate and perform drainage improvements in conjunction with the Transportation Improvement Program to minimize disruptions and inconveniences and to reduce overall program expenditures. Additional drain repairs for incidental/minor upkeep have been included in the Town's operational budget.

The capital construction projects identified for this program in Fiscal Year (FY) 2016 are for adjusting, replacing and repairing catch basin and manholes, repairing the headwall to a culvert on upper Pinnacle St. and replacement of the culvert at 31 Shawsheen St. as per DEP's new stream crossing guidelines. Project Development Costs preparing design and specifications for the repair/maintenance of the Bridge Street culvert/bridge A five-year project schedule and budget has been attached.

### Justification/Benefit:

Improving failed drainage infrastructure throughout Town eliminates a potential public health and safety hazard while efficiently and effectively managing the stormwater runoff for these areas in Town. In addition, the cost to maintain and repair infrastructure elements is substantially less compared to a complete rebuilding of a failed structure. These improvements help to maintain compliance with EPA's MS4 NPDES Phase 2 Stormwater permit to the maximum extent possible with the budget available.

### Impact if not completed:

Potential fines and penalties from the EPA for failing to comply with the MS4 NPDES Phase 2 Stormwater permit, loss in function of the drain systems with increase difficulty to minimize and/or eliminate flooding and damage to public and private property, danger to public travel, increased mosquito breeding causing nuisance as well as health hazards, increased exposure for infiltration into sewer collection systems, deterioration of the roadway surface accelerated by the effect of poorly drained roadways and, in some cases, culverts that are in poor condition have a high rate for failure which would cause the roadway to collapse and result in full road closure, delayed travel times and unsafe conditions for all vehicle travel.

### Timeframe:

Projects are included on the attached spreadsheet inclusive of Fiscal Year's 2016-2020.

Replace. Freq: 25 Years

### Stakeholders:

The Town as a MS4 official for the NPDES Phase 2 Stormwater permit and residents that live near the water bodies prone to stormwater flooding; taxpayers, the motoring public, and Highway/Forestry Division.

### Operating Budget Impact:

Engineering Division and Highway/Forestry Division personnel time will be required to support the projects to be completed. Repairs will eliminate the cost for expensive emergency repairs, formation of potholes, scouring of the roadway edge, all of which result in the loss of production efficiency and increased supply costs.

### Cost Analysis:

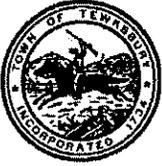
Funding Source: ● Levy ○ CPA ○ Revolving ● State Aid ○ Water ○ Sewer ○ Recreation ● Private ○ Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$55,000.00	\$35,000.00	\$85,000.00	\$20,000.00	\$35,000.00	\$230,000.00
Construction	\$145,000.00	\$120,000.00	\$175,000.00	\$165,000.00	\$270,000.00	\$875,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$200,000.00</b>	<b>\$155,000.00</b>	<b>\$260,000.00</b>	<b>\$185,000.00</b>	<b>\$305,000.00</b>	<b>\$1,105,000.00</b>

### Basis of Cost Projection:

Cost project based on current bid pricing; Does not include cost for MS4 Stormwater permit projects



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Drain-Stormwater: Project Development and Design

Date: 2/18/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dept Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewbury-ma.gov

### Description of Project:

This project will contract Engineering Services to draft design plans and specifications for reconstruction and improvement projects related to drain and stormwater facilities. In most instances project construction will be scheduled for the following fiscal year. The following projects will be development during the FY16: Stream-bank stabilization and culvert maintenance at Bridge St., and culvert replacement at 31 Shawsheen St.

### Justification/Benefit:

The Town must provide engineering design specifications for certain construction projects to ensure engineering and construction standards are met. In addition, various metrics are applied to ensure a plan will work as designed given site criteria. In some instances, where the Town seeks construction funding from the State, design specifications are the responsibility of the town.

The State Dept of Transportation (MADOT) annually inspects the Shawsheen River stream-crossing at Bridge St and provides reports to the Town. The reports have identified scoring and wear to the stream's banking and undermining of the culvert. A scope of work, design and specification need to be developed to stabilize the wearing action of the stream for bidding purposes.

The culvert headwall at 31 Shawsheen St has failed; requiring the DPW to provide temporary measures to stabilize the edge of roadway. The headwall, metal corrugated pipe needs to be replaced and guardrail installed. Reconstruction and replacement, given new DEP stream crossing standards, need to be specified and procured.

### Impact if not completed:

Shawsheen River culverts will continue to wear leading to greater costs and invasive measures within the stream channel to correct the deficiencies. Stream flow will be restricted and could be obstructed effecting upstream properties leading to flooding.

### Timeframe:

**Replace. Freq:** 25 Years

Generally, project development will be completed in the year preceding project construction. Design for Bridge St culverts will be completed during FY16 with construction scheduled for FY17. The culvert replacement design should be completed in calendar 2015, with construction in the early part of summer calendar year 2016

### Stakeholders:

All traveling public, property owners adjacent to Shawsheen River south of Bridge St; property owners adjacent to the open channel drainage west of Shawsheen St

### Operating Budget Impact:

There should be no operating budget impact

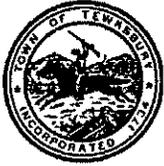
### Cost Analysis:

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$55,000.00	\$35,000.00	\$85,000.00	\$20,000.00	\$35,000.00	\$230,000.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$55,000.00</b>	<b>\$35,000.00</b>	<b>\$85,000.00</b>	<b>\$20,000.00</b>	<b>\$35,000.00</b>	<b>\$230,000.00</b>

Basis of Cost Projection: Engineering estimates



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Stormwater System Mapping

Date: 02/24/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

Data for the entire drainage system of the Town needs to be collected and mapped through survey and GPS instrumentation. This data is required to be completed within the Town's new Non-point Pollution Discharge Elimination System (NPDES) permit that has been pending for the past three years. This permit and its requirements are expected to be released January 2016 and must be completed within the first two years of the permit. In order for the Town to collect this information, the engineering division is requesting the help of a third-party consultant to assist with the field work and expedite the process to meet the pending compliance deadline. In the first phase of the project the consultant would be asked to focus on importing data from various document and plan formats and field check the information to ensure accuracy. The second phase will include collecting the remaining system data directly through field efforts such as GPS surveying. Catchment areas associated with each outfall location can then be delineated.

### Justification/Benefit:

The Town is under agreement with EPA to satisfy the requirements for the NPDES Small MS4 Permit. As part of the requirements, the entire drainage system needs to be mapped with attribute data, collected through survey, GPS and existing plans, linked to the system elements. The development of a GIS database and map will help meet further requirements of the NPDES Phase 2 Stormwater permit requiring the testing of outfall effluent for water quality and help facilitate further investigation if water quality does not meet compliance. In addition to the EPA permit, it is of great benefit to have the Town's infrastructure mapped and detailed in a GIS system for institutional purposes. The collected data is useful in prioritizing and solving drainage problems, provide valuable information during flooding events and emergency situations, as well as providing knowledge needed for future capital improvement projects as they relate to road reconstruction, drainage, storm-water capacity and private development impacts.

### Impact if not completed:

The NPDES Small MS4 Permit is nationwide program. In Massachusetts the permit is administered by the EPA. Each municipality that is classified as having a Small Municipal Separate Storm Sewer System (MS4) is required to comply. It is important to abide by this permit not only for the protection of town water bodies and to maintain records of the Town's stormwater assets, such as drainage structures and piping, but also to avoid penalties and fines from the EPA. If the Town was found to be in non-compliance with their MS4 Permit, the penalties faced by the EPA may exceed the budget request amount.

### Timeframe:

The goal is to phase this project to have it completed within the next three years.

### Replace. Freq:

Updated Annually

### Stakeholders:

The Town as a MS4 official for the NPDES Small MS4 Permit, developers, residents, commercial businesses, industrial facilities.

### Operating Budget Impact:

Engineering Division personnel time will be required to define the scope of work to establish a GIS database and support the project's consultant in populating the tables with data available within the various plans and electronic files of the DPW.

### Cost Analysis:

Funding Source: ● Levy ○ CPA ○ Revolving ● State Aid ○ Water ○ Sewer ○ Recreation ● Private ○ Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
						Total
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$200,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$450,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$200,000.00</b>	<b>\$250,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$450,000.00</b>

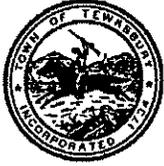
### Basis of Cost Projection:

Estimated cost of project based on scope of proposals submitted by Engineering Consulting firms.

Transportation						
5-Year Project Cost Estimates						
Budget Cost Elements	2016	2017	2018	2019	2020	TOTAL
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Eng.	\$40,000.00	\$0.00	\$0.00	\$0.00	\$35,000.00	\$75,000.00
Construction	\$1,229,000.00	\$1,200,000.00	\$645,000.00	\$560,000.00	\$820,000.00	\$4,214,000.00
<b>TOTAL</b>	<b>\$1,269,000.00</b>	<b>\$1,200,000.00</b>	<b>\$645,000.00</b>	<b>\$560,000.00</b>	<b>\$855,000.00</b>	<b>\$3,160,000.00</b>

Fiscal Year	Project Category	Location	Schedule	Treatment	Cost	Fund
<b>FY2016</b>		<b>Cal2015-2016</b>	Est. Timeframe			
	<b>Road Preventative Maintenance</b>					
	Cracksealing	Various locations based on PCI Report	Annual	Cracksealing	\$50,000.00	Chapter90
					<b>\$50,000.00</b>	
	<b>Reconstruction/Resurface</b>					
	Grind and Overlay	Various locations based on PCI Report			\$200,000.00	Chapter90
	Resurfacing: Grind and overlay	North St - from Northgate to 495 overpass			\$237,000.00	Chapter90
		Pleasant St - from Main St to Pilsbury			\$202,000.00	Chapter90
		Clark Rd - From Eastern Ave beyond Village			\$280,000.00	Chapter90
					<b>\$919,000.00</b>	
	<b>Sidewalks</b>				<b>\$0.00</b>	
	<b>Improvement Projects</b>					
	Traffic Light and Intersection Improve	East x Dascomb x Shawsheen MADoT Non-participating items			\$120,000.00	Chapter90
	Traffic Sign Install and Upgrade	Town-wide based on Sign Inventory (Article should be broad enough to incl Traffic Signals)			\$140,000.00	General Fund
	Traffic Light/Signal Upgrade	***Survey town intersection signals w/operating funds for capital request 2017			\$0.00	
					<b>\$260,000.00</b>	
	<b>Project Development</b>					
	Engineer Roadway and Intersection	East St and East X Maple		Engineering Services	\$40,000.00	
					<b>\$40,000.00</b>	
				<b>Total Cost FY16</b>	<b>\$1,269,000.00</b>	
<b>FY2017</b>		<b>Cal 2016-2017</b>				
	<b>Road Preventative Maintenance</b>					
	Cracksealing	Various locations based on PCI Report	Annual	Cracksealing	\$50,000.00	Chapter90
					<b>\$50,000.00</b>	
	<b>Reconstruction/Resurface</b>					
	Full-Depth Reconstruction	East St - RR to Maple St w/Maple St intersection improvement		4000 Reconstruct with drain improvements	\$850,000.00	Chapter90
	Grind and Overlay vs. Novachip	Various Locations			\$200,000.00	Chapter90
					<b>\$1,050,000.00</b>	
	<b>Sidewalks</b>				<b>\$0.00</b>	
	<b>Improvement Projects</b>					
	Traffic Light Signal Updates	Update Intersection signals based on 2016 Survey		Various Intersections throughout Town	\$100,000.00	General Fund
					<b>\$100,000.00</b>	
	<b>Project Development</b>				\$0.00	
					<b>\$0.00</b>	
				<b>Total Cost FY17</b>	<b>\$1,200,000.00</b>	
<b>FY2018</b>		<b>Cal 2017-2018</b>				
	<b>Road Preventative Maintenance</b>					
	Cracksealing	Various locations based on PCI Report	Annual	Cracksealing	\$50,000.00	Chapter90
	Nova Chip Microsurface	Grind and Overlay vs. Novachip: Heath St vs North St South		Micro-surface	\$200,000.00	Chapter90
					<b>\$250,000.00</b>	
	<b>Reconstruction/Resurfacing</b>					
	Grind and Overlay	Various locations based on PCI Report			\$200,000.00	Chapter90
	Full-Depth Reconstruction	Old Boston Rd			\$195,000.00	Chapter90
					<b>\$395,000.00</b>	
	<b>Sidewalks</b>				<b>\$0.00</b>	
	<b>Improvement Projects</b>				<b>\$0.00</b>	
	<b>Project Development</b>				<b>\$0.00</b>	
				<b>Total Cost FY18</b>	<b>\$645,000.00</b>	

<u>Fiscal Year</u>	<u>Location</u>	<u>Schedule</u>	<u>Treatment</u>	<u>Cost</u>	<u>Fund</u>
<b>FY2019</b>	<b>Cal 2018-2019</b>				
<b>Road Preventative Maintenance</b>					
Cracksealing	Various locations based on PCI Report	Annual	Cracksealing	\$40,000.00	Chapter90
Nova Chip	Grind and Overlay vs. Novachip: Heath St vs North St South		Mirco Surface	\$150,000.00	Chapter90
				<b>\$190,000.00</b>	
<b>Reconstruction/Resurfacing</b>					
Grind and Overlay	Shawsheen St: Main St to Arlington		Reclaim and Pave	\$170,000.00	Chapter90
Grind and Overlay	Various locations based on PCI Report		Reclaim and Pave	\$200,000.00	Chapter90
				<b>\$370,000.00</b>	
<b>Sidewalks</b>				<b>\$0.00</b>	
<b>Improvement Projects</b>				<b>\$0.00</b>	
<b>Project Development</b>				<b>\$0.00</b>	
			<b>Total Cost FY19</b>	<b>\$560,000.00</b>	
<b>FY2020</b>	<b>Cal 2019- 2020</b>				
<b>Road Preventative Maintenance</b>					
Cracksealing	Various locations based on PCI Report	Annual	Cracksealing	\$50,000.00	Chapter90
Nova Chip	Grind and Overlay vs. Novachip: Heath St vs North St South		Mirco Surface	\$200,000.00	Chapter90
				<b>\$250,000.00</b>	
<b>Reconstruction/Resurfacing</b>					
Full-Depth Reconstruction	South St: from Brown St to Main St		Reclaim and Pave	\$300,000.00	Chapter90
Full-Depth Reconstruction	Cayuga Rd		Reclaim and Pave	\$270,000.00	Chapter90
				<b>\$570,000.00</b>	
<b>Sidewalks</b>				<b>\$0.00</b>	
<b>Improvement Projects</b>				<b>\$0.00</b>	
<b>Project Development</b>					
Engineer Roadway and drain	Woburn St/Felker drain design		engineering	\$35,000.00	Chapter90
				<b>\$35,000.00</b>	
			<b>Total Cost FY20</b>	<b>\$865,000.00</b>	



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Transportation: Pavement Management

Date: 2/18/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

**Description of Project:**

This request proposes the funding of an annual Transportation/street Improvement Program including: preventative maintenance, resurfacing and reconstruction, traffic improvements and project development.

In FY16 the Town proposes the following roadway treatments: crack-seal of approximately 2.5 miles of roadway; resurfacing portions of North St., Pleasant St., Clark Rd and Crest Rd. Additional locations of spot grind and overlay techniques will be used as preventative measures to extend a road's remaining useful life. Resurfacing projects will include expenses for permitting, catch basin/manhole repair, drain flushing and repair, installation of new drains and shoulder/driveway berm installation.

**Justification/Benefit:**

The lack of additional Town funding for a regular street improvement program over many years has resulted in the deterioration of Tewksbury's roads. In the calendar years 2004-2010, the sewer installation project injected approximately \$10,560,000 to improve many of the Town roads. However, there remained numerous miles of roads in disrepair and those in need of preventative maintenance. At this time roads treated during the sewer project are showing signs of failure. The large number of roads currently in need of preventative maintenance will begin to degrade into poor condition if regular investment and preventative maintenance practices are withheld. Roads more recently treated should be maintained through crack-sealing techniques to gain the greatest return on investment while avoiding higher costs for repair. Continued funding through State programs and Town accounts will increase the quality and safety of Tewksbury's roads. Preventative measures will prolong road life-cycles while elevating the quality of roads without having to rehabilitate at higher unit costs.

**Impact if not completed:**

The life cycle of roads will be reduced, road surface quality will diminish, operating and resurfacing costs increase, safety is diminished, while damage to private property escalates.

**Timeframe:**

**Replace. Freq:** 5-25 Years

Projects are included on the attached spreadsheet FY16-FY20.

**Stakeholders:**

Taxpayers, the motoring public, residents near the area that utilize these roads the most, and Highway/Forestry Division.

**Operating Budget Impact:**

Engineering Division, Highway/Forestry Division and Water & Sewer Division personnel time will be required to support the projects to be completed.

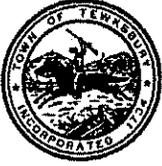
**Cost Analysis:**

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

**Capital Funding Request**

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$969,000.00	\$1,100,000.00	\$645,000.00	\$560,000.00	\$820,000.00	\$4,094,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$969,000.00</b>	<b>\$1,100,000.00</b>	<b>\$645,000.00</b>	<b>\$560,000.00</b>	<b>\$820,000.00</b>	<b>\$4,094,000.00</b>

**Basis of Cost Projection:** Cost project based on current bid pricing.



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Transportation: Intersection-Signal Improvement

Date: 2/18/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dept Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewbury-ma.gov

### Description of Project:

Intersection realignment and the installation of a new traffic control signal at Shawsheen, Dascomb and East St(s), was included in the State's Transportation Improvement Program (TIP). The Program funds construction costs provided design/engineering plans are developed by the local community. Project construction began in the fall of 2014 and will continue through the construction season of 2015.

As per the funding agreement, a (10%) maximum limit in project construction overruns is funded by the MADOT. Costs over the ten percent limit are the responsibility of the Town. Other local costs include As-built drawings, design engineer response to Requests-for-Information and field reviews.

The second project, Traffic Signal Upgrades, requests General Fund support. A survey will be conducted during the next year to determine the extent and scope of the project with a funding request for FY17. A third project, Street Sign Installation and upgrade has been described on a separate Capital Projects narrative and requests General Fund support in FY16 to meet MADOT and Federal Highway Standards outlined in the MUTCD

### Justification/Benefit:

The Town is under contract with the State to cover costs over the ten percent maximum limit, costs not related to the roadway reconstruction and light installation and costs associated with design engineer reviews.

Clearly defining the intersection's lanes and markings and pedestrian right-of-way will greatly increase traffic and pedestrian safety at this intersection.

### Impact if not completed:

The project has been bid and contract documents with the State executed; the identified funding is for additional costs associated with the Project

### Timeframe:

Construction completion late 2015

Replace. Freq: 25 Years

### Stakeholders:

All traveling public

### Operating Budget Impact:

Operating budget impacts include: costs to maintain traffic signals and electric power, maintaining line painting and stormwater BMP's

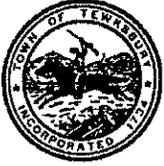
### Cost Analysis:

Funding Source: ● Levy ○ CPA ○ Revolving ● State Aid ○ Water ○ Sewer ○ Recreation ○ Private ○ Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$120,000.00	\$100,000.00	\$0.00	\$0.00	\$0.00	\$220,000.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$120,000.00</b>	<b>\$100,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$220,000.00</b>

Basis of Cost Projection: Approximately 10% of Construction costs



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Transportation: Traffic Sign Improvements

Date: 2/8/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. of Public Works Department: Public Works Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

Projects under this category are specific, one-time projects intended to improve aspects of design and/or function of roadway infrastructure; enhancements that will help safety and preservation of public and private property. Development of a Pavement Management System would be an example of a Project with in this category. The project scheduled for FY16 will upgrade roadway signage to current Federal Highway standards found in the Manual for Uniform Traffic Control Devices (MUTCD) and develop a maintenance management plan and tracking system to ensure future compliance.

### Justification/Benefit:

Adequately maintained retro-reflective signs and pavement markings improve highway safety and prevent roadway departure crashes by reflecting light from vehicle headlights, making the signs and markings more visible especially at night and during inclement weather. During FY15 an inventory of all road signs was completed. The inventory outlined all non-compliant signs and identified locations where signage should be installed. A total of (XXX) signs not meeting current standards need to be replaced or installed. Further, because retro-reflective properties of traffic control devices deteriorate over time, the Town must actively manage the maintenance of signs and pavement markings in order to ensure that they are clearly visible.

### Impact if not completed:

Efficiently managing sign replacement and provide an inventory of signs that meet visibility standards will be more cumbersome and could prove ineffective if approached on an incremental basis. Since approximately 50% of all accidents happen during night-time conditions when only 25% of driving occurs, efforts to enhance safety should be implemented with the goal of accident avoidance. If sign installation and maintenance is managed ineffectively a higher rate of accidents may occur.

In addition, the Town must demonstrate that it is actively engaged in managing sign retro-reflectivity. The State has required Towns to develop an inventory of signs and plan for their replacement. If the Town is unable to demonstrate compliance, future funding through Chapter 90 could be withheld.

### Timeframe:

**Replace. Freq:** 25 - 50 Years

The inventory was conducted in the calendar year 2014; sign replacement would be scheduled during the construction season of 2016 if funding is approved in full.

### Stakeholders:

The immediate stakeholders include the staff at DPW responsible for sign replacement and installation. As the plan is developed/implemented and a tracking mechanism initiated the motoring public will become more aware of sign visibility during evening hours. Drivers with poor night-time vision and/or weather conditions that create poor visibility at night will benefit from sign installations. Police responding to vehicle accidents

### Operating Budget Impact:

An increase in sign cost will result due to the sign material costs. However, sign replacement and maintenance has been an on-going responsibility of the Department with an annual operating cost of \$17,000. At this time, there is no intention to increase the current budget.

### Cost Analysis:

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$140,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$140,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$140,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$140,000.00</b>

Basis of Cost Projection: Engineer's estimate



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Transportation: Project Development and Design Date: 2/18/2015

Project ID Number: \_\_\_\_\_ Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dept Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

This project will contract Engineering Services to draft design plans and specifications for reconstruction and improvement projects related to roadway facilities. In most instances project construction will be scheduled for the following fiscal year. The following projects will be development during the FY16: Intersection realignment at East and Maple and East St roadway from Whittemore St to Maple St.

### Justification/Benefit:

The Town must provide engineering design specifications for certain construction projects to ensure engineering and construction standards are met. In addition, various metrics are applied to ensure a plan will work as designed given site criteria. In some instances, where the Town seeks construction funding from the State, design specifications are the responsibility of the town.

At the intersection of East and Maple Streets an acute angle exists, reducing vehicular safety at this intersection. A new design will realign Maple to East St. at a right-angle greatly improving site lines and visibility. Along East St drainage patterns and roadway metrics from the Whittemore to Maple St will also be reviewed.

### Impact if not completed:

Safety concerns will remain at the intersection of East and Maple Street, with deficiencies in design and construction along the East St corridor given the traffic counts and vehicle class. The expectations for traffic control devices may not meet anticipated outcomes.

### Timeframe:

Generally, project development will be completed in the year preceding project construction. Design and specifications shall be drafted during the summer and fall of 2015, with construction scheduled for spring/summer 2016.

**Replace. Freq: 25 Years**

### Stakeholders:

All traveling public and adjacent residents along the corridor

### Operating Budget Impact:

Realignment of East and Maple will not have any Operating budget impacts;

### Cost Analysis:

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$40,000.00	\$0.00	\$0.00	\$25,000.00	\$0.00	\$65,000.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$40,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$25,000.00</b>	<b>\$0.00</b>	<b>\$65,000.00</b>

### Basis of Cost Projection:

**Facilities Program and Programs**

Budget Cost Elements	2016	2017	2018	2019	2020	TOTAL
Park	\$165,000.00	\$200,000.00	\$175,000.00	\$0.00	\$0.00	\$ 540,000
DPW	\$300,000.00	\$1,092,900.00	\$20,000.00	\$125,000.00	\$0.00	\$ 1,537,900
Town-wide	\$75,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$ 75,000
<b>Total</b>	<b>\$540,000.00</b>	<b>\$1,292,900.00</b>	<b>\$195,000.00</b>	<b>\$125,000.00</b>	<b>\$0.00</b>	<b>\$ 2,152,900</b>

Fiscal Year	Department	Work	Location	Cost	Comments	Funding
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**FY2016 Cal 2015-2016**

Parks	Baseball/Softball Fencing	(5) lower fields at Livingston St Park	\$140,000.00		Comm Preservation
	Service Box Installation/replacement	Memorial Softball field	\$25,000.00	Need accurate cost est.	Comm Preservation
			<b>\$165,000.00</b>		
DPW	Design Building/Envelope Repair and cold storage facility	DPW Maintenance Facility	\$160,000.00		General Fund
	Tree and Stump Removal	Town-wide based on Tree risk survey	\$140,000.00		General Fund
Town-wide	Dumpster Pads and Fencing	(15) Town facility locations	\$75,000.00		General Fund

**FY2017 Cal 2016-2017**

Parks	Park Maintenance facility Modification		\$35,000.00	Building Constructions Plans	
	Tennis Court Modification and Fence Replacement		\$165,000.00		Comm Preservation
			<b>\$200,000.00</b>		
DPW	Construct Building/envelope repairs	DPW Maintenance Facility	\$947,900.00		General Fund
	Construct Cold Storage facility		\$125,000.00		
	Security Cameras	DPW Maintenance Facility	\$20,000.00		General Fund
			<b>\$1,092,900.00</b>		
Town-wide			\$0.00		

**FY2018 Cal 2017-2018**

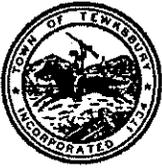
Parks	Park Maintenance facility Modification		\$175,000.00		Comm Preservation
				Construct Motor repair shop and material storage Demo existing Motor repair shop and landscape	
DPW	Fuel Depot Evaluation and Engineering		\$20,000.00	Plans and specifications	General Fund
Town-wide			\$0.00		

**FY2019 Cal2018-2019**

Parks			\$0.00		
DPW	Modifications to Fuel Depot		\$125,000.00		General Fund/Enterprise (W/S)
Town-wide			\$0.00		

**FY2020 Cal2019-2020**

Parks			\$0.00		
DPW			\$0.00		
Town-wide			\$0.00		



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: \_\_\_\_\_ Department of Public Works Building Repairs \_\_\_\_\_

Date: 2/20/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dept Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

This project addresses building envelope concerns outlined in an annual inspection report conducted by the Town's insurance provider (MIA) for the Department of Public Works facility, located at 999 Whipple Road, and outlined in an inspection report by a representative of CBI Consulting Architects and Engineers. The project will address construction deficiencies that will preserve the building's function and remaining useful life. In addition the consultant will include the engineering and construction of a cold storage facility.

### Justification/Benefit:

A number of tasks have been included in this request as outlined below. The more critical include the block wall waterproofing and roof repair. As indicated in the MIA report sections of the exterior wall may actually fail, presenting even greater costs to repair and would render portions of the building unusable. The report identifies numerous locations where the roof gutters have been ineffective in controlling storm-water, which cascades over the face of the exterior block resulting in deterioration of the outer and interior block wall. The deterioration of the block and the mortared joints need to be repaired and waterproofed, including replacement of individual blocks. In addition the porosity of the block and joints has resulted in isolated pockets of mold on the interior of the building. Areas where molds exist need to be cleaned, sanitized and interior walls replaced.

#### Estimated Costs for Repair:

Exterior Block waterproofing	\$ 75,000
Roof – Remove and replace install metal edge	\$ 625,000
New Roof Access Ladders	\$ 6,700
Extend Roof Edge and Install Commercial gutters	\$ 30,000
Replacement of (4) Office, 750 sf Garage Windows	\$ 59,700
Weather Strip Garage Doors	\$ 23,000
Modification of Interior walls	\$ 18,000
Interior Structural Wall Repair	\$ 7,000
Restroom renovation	\$ 36,000
Interior Rug Replacement	\$ 12,500
Cold Storage facility construction	\$ 125,000
Sub-Total	\$ 1,017,900
Plan and Specs, Bonding, Overhead and Profit	\$ 160,000
Contingency (5%)	\$ 55,000
Total Cost	\$ 1,232,900

### Impact if not completed:

Portions of the DPW building are (50) years old, while the newer section is (35) years old. The building requires a number of improvements in order to preserve the functioning of the building. Portions of the exterior block wall will continue to deteriorate and may fail if not addressed; an environment conducive for mold growth will continue to exist which could render the building unsafe. Replacement of windows and weather stripping will help to lower energy costs, which can be costly due to the space and functioning of the building.

### Timeframe:

Engineering work could begin fall 2016, with Construction fall 2017

**Replace. Freq:** 25 Years

### Stakeholders:

Town staff working in the building and visitors doing business with Town departments occupying the building.

### Operating Budget Impact:

A possible energy savings if weather stripping, insulation and double pane windows are installed; further deterioration of the building surface will save on going repairs; cost for mold removal.

### Cost Analysis:

Funding Source: ● Levy ○ CPA ○ Revolving ○ State Aid ○ Water ○ Sewer ○ Recreation ○ Private ○ Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$160,000.00	\$0.00	\$0.00	\$0.00	\$160,000.00
Construction	\$0.00	\$0.00	\$1,017,900.00	\$0.00	\$0.00	\$1,017,900.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$55,000.00	\$0.00	\$0.00	\$55,000.00
<b>Totals</b>	\$0.00	\$160,000.00	\$1,072,900.00	\$0.00	\$0.00	\$1,232,900.00

Basis of Cost Projection: CBI Engineering Preliminary Cost Estimate; Garland Company Preliminary Cost estimate for roof repair



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

Project Name: Town Facility Dumpster Screening

Date: 3/3/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Superintendent of Public Works

Department: Public Works

First Year Submission: Yes

Priority: \_\_\_\_\_

### Description of Project:

This project requests funding to install bituminous dumpster pads and fencing to screen and enclose trash dumpsters as per Board of Health's Rules and Regulations.

### Justification/Benefit:

As part of the Town's compliance with the Board of Health Rules and Regulations: Chapter 5 Dumpster Regulations, this request proposes to site, enclose and provide proper surface for all Town building dumpsters. There are (15) locations included in this proposal: Water Treatment Plant, (3) Fire Stations, Police Station, Town Hall, Library, Food Pantry, DPW Facility, (4) Livingston Park Recreation Complex. Construction includes the installation of an asphalt pad, chain link fence with gate and vinyl slates for screening. In some instances the dumpster can be moved to eliminate the cost for a pad.

### Impact if not completed:

Town buildings will be out of compliance with its own Rules and Regulations. By enclosing the dumpsters within a fenced area the gate can be locked to discourage illegal dumping. Fencing will also improve the aesthetics of the properties

### Timeframe:

Replace. Freq: 15 Years

Each building operator will coordinate with the contractor, selected through a Chapter 30B procurement process for pads and fencing to be installed by spring 2016, or at a period of time following funding approval.

### Stakeholders:

Brd of Health, Town Departments, residents

### Operating Budget Impact:

Minor impact due to periodic maintenance of the fence

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$75,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$75,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$75,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$75,000.00</b>

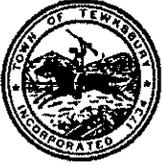
### Basis of Cost Projection:

Contractor's written estimates

**Fleet: Equipment Replacement Program**

Budget Cost Elements	2016	2017	2018	2019	2020	TOTAL
Site Acquisition						
Design/Eng.						
Construction						
Equipment	\$300,000.00	\$351,000.00	\$281,000.00	\$290,000.00	\$340,000.00	\$1,562,000.00

Appropriation Year				Cost	Cost	Comments
Veh #	Year	Description	Department	GenFund	Enterprise	
<b>FY2016</b>						
	4	2002	Dodge Pickup	Fleet	\$130,000.00	Road service Truck
New			Wing-Plow Assembly and controls	Snow	\$25,000.00	Trk #51
64	1998		Ford Backhoe	Highway	\$125,000.00	Replacement
New			Cold Planer Attachment	Highway	\$10,000.00	Holder attachment
			Reprogram ATM14, Art 4			Forks for Loader
			<b>Sub-total DPW</b>		<b>\$290,000.00</b>	
New			Cold Planer Attachment	Water/Sewer		\$10,000.00 Holder attachment
			<b>Sub-total Utility</b>			<b>\$10,000.00</b>
			<b>Total FY16</b>		<b>\$300,000.00</b>	
<b>FY2017</b>						
602	1994		753 Bobcat	Highway	\$45,000.00	Highflow Hydraulics
New			Ford-550 Dump w/toolbox	Highway	\$66,000.00	
			<b>Sub-total DPW</b>		<b>\$111,000.00</b>	
81	2003		Sterling Vac Truck	Water/Sewer		\$240,000.00 Replace Tank and Vac Unit
			<b>Sub-total Utility</b>			<b>\$240,000.00</b>
			<b>Total FY17</b>		<b>\$351,000.00</b>	
<b>FY2018</b>						
3	2002		Winstar Engineering Van	Engineering	\$30,000.00	Ford Transit Van
91	2002		F-550 4x4 Chip Dump	Forestry	\$66,000.00	
			<b>Sub-total DPW</b>		<b>\$96,000.00</b>	
86	2006		Ford 550 Utility w/crane and box	Water/Sewer		\$125,000.00
11	2008		Ford 550 Rack Service	Water Plant		\$60,000.00
			<b>Sub-total Utility</b>			<b>\$185,000.00</b>
			<b>Total FY18</b>		<b>\$281,000.00</b>	
<b>FY2019</b>						
54	1990		Mack 5-ton Dump w/snow package	Highway	\$170,000.00	
			<b>Sub-total DPW</b>		<b>\$170,000.00</b>	
85	2006		Ford 550 Utility with crane	Water/Sewer		\$120,000.00
			<b>Sub-total Utility</b>			<b>\$120,000.00</b>
			<b>Total FY19</b>		<b>\$290,000.00</b>	
<b>FY2020</b>						
57	1990		Mack 5-ton Dump w/snow package	Highway	\$170,000.00	
			<b>Sub-total DPW</b>		<b>\$170,000.00</b>	
52	2000		Mack 5-ton Dump w/snow package	Water/Sewer		\$170,000.00
			<b>Sub-total</b>			<b>\$170,000.00</b>
			<b>Total FY20</b>		<b>\$340,000.00</b>	



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Equipment Replacement Program

Date: 1/27/2015

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dept Priority: 1

First Year Submission:  Phone #: \_\_\_\_\_ Email: \_\_\_\_\_

### Description of Project:

The Department of Public Works has an inventory of 91 pieces of DPW/Utility equipment, not inclusive of all smaller motorized equipment and attachments. The current replacement value of all rolling stock and specialized equipment is approximately \$4,323,111. Each piece of equipment is inventoried with the current replacement value, condition and replacement time interval. Replacement intervals vary from 5-25 years and are based on recommendations by the American Public Works Association member organizations.

The selection process of vehicles to be replaced begins with the proposed replacement date. Then each vehicle is assessed as to its Remaining Useful Life, mechanical condition and work requirements. Lastly, each piece of equipment is prioritized for replacement and/or modification.

In FY16 the DPW requests replacement of the following vehicles: Trk #4, a 2002 road service truck used by the Fleet Division; 1998 Ford Backhoe used by the Highway Division. Purchases of new equipment to enhance efficiency of the DPW include a road cold-planner tractor attachment to address repair of asphalt delamination, improve quality of driveway and roadside berm installation and edge treatment on trench repairs; and a Wing-plow assembly to be installed on an existing truck to cutback roadside snow accumulations.

### Justification/Benefit:

The DPW's systematic replacement program defines what equipment is expected to be replaced during the next five years, with the intent of preventing any unexpected emergency purchases, lockout-tagout conditions due to safety concerns or loss of service. Annual updates are conducted by the Road Machinery Division and reviewed by the Department's Superintendent. The equipment scheduled for replacement in FY16 are described on accompanied attachments.

### Impact if not completed:

The lack of a detailed replacement schedule will result in a jumbled inventory and the haphazard replacement of machinery. This could lead to a fleet ineffective in meeting the needs of the work program; budgetary problems if a piece of machinery had to be replaced in an emergency; and personnel safety issues if the machinery was operated beyond its reasonable life. Costs will rise due to repairs of older equipment. Staff time to repair other Stakeholder Department's vehicles will see delays and increased costs for out-sourcing. Tasks/programs may go unaddressed such as Street-sweeping, drain repair, sidewalk plowing etc. due to unavailability of equipment

### Timeframe:

This is an on-going capital request

### Replace. Freq:

5-25 Years

### Stakeholders:

DPW operations staff and mechanics; Police, Community Development and Recreation Departments; Residents, businesses and Town government agencies dependent on DPW for snow removal, while some of the same Departments rely to DPW mechanics for repairs.

### Operating Budget Impact:

Replacement of older vehicles will reduce repair costs within the operating budget. In addition, costs due to downtime, i.e. during snow plowing events will result in a reduction in overall storm event cost. Departments that depend on DPW mechanics to repair their vehicles will see delays in equipment being serviced and increased costs due to the postponement of those repairs. Outsourcing repair of all vehicles will increase costs across departments.

### Cost Analysis:

Funding Source: ● Levy ○ CPA ○ Revolving ○ State Aid ● Water ● Sewer ○ Recreation ○ Private ○ Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	\$280,000.00	\$351,000.00	\$281,000.00	\$290,000.00	\$340,000.00	\$1,542,000.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$280,000.00</b>	<b>\$351,000.00</b>	<b>\$281,000.00</b>	<b>\$290,000.00</b>	<b>\$340,000.00</b>	<b>\$1,542,000.00</b>

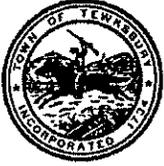
**Basis of Cost Projection:** Cost Projection based on manufacturer's current estimated price with 2.5% added per year.

**SEWER**

**5-Year Project Cost Estimates**

Budget Cost Elements	2015	2016	2017	2018	2019	TOTAL
Site Acquisition						
Design/Eng.	\$120,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$120,000.00
Construction	\$0.00	\$250,000.00	\$1,770,000.00	\$250,000.00	\$300,000.00	\$2,570,000.00
Equipment						\$0.00
Contingency						\$0.00
<b>TOTAL</b>	<b>\$120,000.00</b>	<b>\$250,000.00</b>	<b>\$1,770,000.00</b>	<b>\$250,000.00</b>	<b>\$300,000.00</b>	<b>\$2,690,000.00</b>

Fiscal Year	Work Description	Location	Cost
<b>FY2016</b>	Cal yr. 2015-2016		
	<b>Infiltration and Inflow (I/I) Control</b>		
	Pipe and Manhole Repair/adjust		\$0.00
	<b>Pump Station Improv'ts</b>		\$0.00
	<b>Collection System Upgrades</b>		
	Pipe Replacement	Design: Andover St force main upgrade and pump assessment	\$120,000.00
		<b>Total Cost FY16</b>	<b>\$120,000.00</b>
<b>FY2017</b>	Cal yr. 2016-2017		
	<b>Infiltration and Inflow (I/I) Control</b>		
	Pipe Repair and Replace	Dig and Replace/Line Based on FY15-16 Camera/Investigation	\$200,000.00
	Manhole Repair	Various Locations	\$50,000.00
	<b>Pump Station Improv'ts</b>		
		<b>Total Cost FY17</b>	<b>\$250,000.00</b>
<b>FY2018</b>	Cal yr. 2017-2018		
	<b>Infiltration and Inflow (I/I) Control</b>		
	Pipe Repair and Replace		\$0.00
	Manhole Repair	Various Locations	\$20,000.00
	<b>Pump Station Improv'ts</b>		\$0.00
	<b>Collection System Upgrades</b>		
	Pipe Replacement	Upgrade Andover St Force main (5400 ft)	\$1,750,000.00
		<b>Total Cost FY18</b>	<b>\$1,770,000.00</b>
<b>FY2019</b>	Cal yr. 2018-2019		
	<b>Infiltration and Inflow (I/I) Control</b>		
	Pipe Repair and Replace	Dig and Replace/Line To be determined based on FY16-18 Camera	\$200,000.00
	Manhole Repair	Various Locations	\$50,000.00
	<b>Pump Station Improv'ts</b>		
		<b>Total Cost FY19</b>	<b>\$250,000.00</b>
<b>FY2020</b>	Cal yr. 2019-2020		
	<b>Infiltration and Inflow (I/I) Control</b>		
	Pipe Repair and Replace	Dig and Replace/Line To be determined based on FY17-18 Camera	\$200,000.00
	Manhole Repair/ adjustment	Various Locations	\$50,000.00
	<b>Pump Station Improv'ts</b>		\$50,000.00
		<b>Total Cost FY20</b>	<b>\$300,000.00</b>



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Sewer Inflow and Infiltration

Date: 2/17/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewbury-ma.gov

### Description of Project:

This project is an on-going annual request for the rehabilitation of sewer manholes and repair pipe reaches and connections that have been found to be sources of Inflow and Infiltration (I/I). Initial investigations by Coughlin Environmental Services, LLC (CES) have identified (3) sub-basins with the greatest potential for (I/I). A more detailed investigation of these sub-basin pipes and manholes is required to specifically identify locations where openings and failures can be targeted. In FY15, (27,000) feet of pipe within the Andover St. sub-basin was filmed. Review of the film is being conducted to determine means and methods of repair.

In FY16 no additional funding is requested until such time that prior Fiscal Year allocations appropriated for construction have been exhausted.

Prior year funding identified rehabilitation of manholes, adjustment of sunken frames and covers and pipe repairs. The Town will contract these repairs during the 2015 construction season.

Funding included in the FY16 operating budget will be used to continue investigation in preparation of capital funding requests for repairs. These repairs are scheduled FY 2017-2020, it is anticipated that older system pipe will have been identified for replacement and more extensive repairs to manholes will be undertaken. The higher program costs are only estimated funding levels and included below.

### Justification/Benefit:

Infiltration and Inflow (I/I) is extraneous water entering the wastewater collection system. Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes/manholes or deteriorated joints. Inflow is extraneous flow entering the system through point sources. Inflow may be directly related to storm water runoff from sources such as roof leaders, yard and area drains, sunken manholes and sump pumps etc. The extraneous flow produced from I/I sources restricts the potential for new growth by reducing the available capacity in the system and increases the cost of treatment operations. More importantly, the reduction in pipe capacity has the potential to cause Sewer System Overflows during periods of the year with high groundwater recharge and rain events. By removing I/I sources a greater percent of the system's total capacity is available for new construction, reduces operating costs and helps to prevent Sewer System overflows. Flows originating from the East Street, Burnham Road and Andover sub-basins have been estimated to operate with peak infiltration at 15%, 68%, 31% respectively, during high groundwater season.

### Impact if not completed:

Tewksbury's sewer enterprise operates under regulations promulgated by the Department of Environmental Protection. Each year Tewksbury is required to investigate its system and make repairs. The investigation for I/I sources also allows staff to review the structural condition of the pipe and structures to prioritize repairs. Although this is a requirement of the Town's discharge permit, it is a beneficial program designed to ensure a long range return on the investment made in the new sewer network. By finding and eliminating extraneous flow, the increased capacity of the new system is maintained over a greater number of years. Also, peak flows may surcharge sewer collection pipe capacity and contribute to residential sewer system backup causing damage and cost to the Town.

### Timeframe:

**Replace. Freq:** 5-25 Years

The rehabilitation of the manholes and pipe repair will be contracted out for calendar year 2015 using previous year appropriations.

### Stakeholders:

All sewer enterprise customers, DPW Water & Sewer Division, MA Department of Environmental Protection, City of Lowell Wastewater Treatment

### Operating Budget Impact:

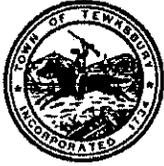
Engineering Division and Water & Sewer Division personnel time will be required to support the projects to be completed.

### Cost Analysis:

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$250,000.00	\$20,000.00	\$250,000.00	\$250,000.00	\$770,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	\$0.00	\$250,000.00	\$20,000.00	\$250,000.00	\$250,000.00	\$770,000.00



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Sewer Pump Station Improvements

Date: 02/17/15

Project ID Number: \_\_\_\_\_ Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

This project requests reauthorization of ATM 2013, Article 14 to include replacement of pump station wet-well floats with high and low level transducer sensors or other pump station improvements as necessary.

### Justification/Benefit:

The town wide sewer collection system utilizes (46) sewer pump stations. Of these, (30) stations are equipped with Flygt pumps suitably constructed for retrofitting with mixing valves. The mixing valves help reduce the build-up of fat, oils and grease in the wet-well, and the need and cost for other means of grease reduction. However, after the initial installation of (10) mixers their use was determined to be limited by pump size and composition of waste. Therefore, this project requests funds appropriated for mixing valves be reauthorized to include retrofitting mechanical ball floats and bubbler-tube sensors with transducer sensors for high and low wet-well levels and other small improvements to enhance maintenance and pump station reliability. The benefit of the transducer eliminates the mechanical function of the ball-float and bubbler tube, which are subject to failure for a number of reasons including grease/debris build-up and bubbler tube pressure. Reliability of the transducer will improve the measurement of the wet-well level and should reduce pump station alarms and emergency response.

### Impact if not completed:

Pump station alarms for high/low levels due to malfunction of ball floats and bubble tubes will continue; the time dedicated to maintain the existing sensors to ensure reliability will remain high; and possible backups can occur if sensors malfunction

### Timeframe:

Transducer installation shall continue through FY16

Replace. Freq: 10-25 Years

### Stakeholders:

All sewer customers connected to a sewer ump station, DPW Water & Sewer Division, MA Department of Environmental Protection

### Operating Budget Impact:

Water & Sewer Division personnel time will be required to support the project modifications. Otherwise, additional Water & Sewer Division personnel time will be required for general maintenance/emergency response.

### Cost Analysis:

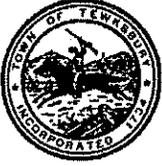
Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$50,000.00	\$50,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$50,000.00</b>	<b>\$50,000.00</b>

### Basis of Cost Projection:

Quotations from product suppliers.



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Sewer Collection System Upgrades

Date: 2/17/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewbksbury-ma.gov

### Description of Project:

This project anticipates the need to replace the sewer force main that pumps from the Andover St. pump station to a manhole at the intersection of Andover and Fiske Streets. Funding for design and engineering to provide plans, specifications and bidding services is requested. The approximate distance of the new pipe is 5,500 feet.

### Justification/Benefit:

The Andover St. pump station serves the North St area north of Rt 495, Fiske St and the neighborhoods off of Fiske St, Andover St east of Fiske St including Deering Rd and Highwood Dr., portions of Catamount, International Place, Ames Pond and Prospect Hill Dr. The station is at the high range of its pump capacity, which is being limited by two factors: Inflow/Infiltration and the size of the force main on Andover St. The high Pump-run times result in wear on motors and pumps requiring increased maintenance. In addition, the force main has experienced (4) breaks in the last (10) years, due to the interaction of the piping material, corrosive nature of the soils and road salts.

Infiltration and Inflow (I/I) is extraneous water entering the wastewater collection system. Infiltration is groundwater that enters the collection system through physical defects, whereas inflow is extraneous flow entering the system through point sources. I/I within the Andover St Pump Station sub-basin is being investigated so that repairs and sources can be eliminated. However, I/I will always be present in the system where new sources are always developing. I/I is also replaced by development and increased sanitary flows. The potential development capacity in the Andover St sub-basin is high and lack of excess pump station capacity could limit development in this area.

The installation of a new and larger force main will provide extra pipe capacity allowing the sizing of pumps to be increased. The increased capacity of the station is in anticipation of potential development, while mitigating the excess run-times of the smaller pumps. In addition, a new main will alleviate the certainty of another sewer main break.

### Impact if not completed:

When peak flows surcharge sewer collection pipe capacity, sewer system backups occur. These backups cause damage to public and private property potentially resulting in health hazards, costing the Town and property owners undo expense and time. Development may be limited due to the potential time and cost associated with replacement of the line. The potential for more sewer main breaks and cost to repair is high.

### Timeframe:

The design/engineering producing plans and specifications will be completed through FY16;

Replace. Freq: 30-50 Years

### Stakeholders:

All sewer enterprise customers, DPW Water & Sewer Division, MA Department of Environmental Protection, City of Lowell Wastewater Treatment

### Operating Budget Impact:

Increased maintenance due to excess run-times on pumps;

### Cost Analysis:

Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

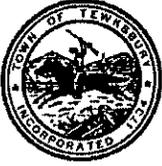
	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$120,000.00	\$0.00	\$1,750,000.00	\$0.00	\$0.00	\$1,870,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$120,000.00</b>	<b>\$0.00</b>	<b>\$1,750,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$1,870,000.00</b>

Basis of Cost Projection: Engineering proposal

**Water**  
**PROJECT COST ESTIMATES**

Budget Cost Elements	2016	2017	2018	2019	2020	TOTAL
Site Acquisition						\$0.00
Design/Eng.	\$75,300.00	\$35,000.00	\$50,000.00	\$0.00	\$50,000.00	\$210,300.00
Construction	\$13,625,000.00	\$1,625,000.00	\$775,000.00	\$1,125,000.00	\$125,000.00	\$17,275,000.00
Equipment	\$35,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35,000.00
<b>TOTAL</b>	<b>\$13,735,300.00</b>	<b>\$1,660,000.00</b>	<b>\$825,000.00</b>	<b>\$1,125,000.00</b>	<b>\$175,000.00</b>	<b>\$17,520,300.00</b>

Fiscal Year Program	Project Name	Work Description	Location	Cost
<b>FY2016</b>	<b>Cal 2015-2016</b>			
	<b>Water Distribution Improvements</b>			
	Hydrant Replacement and installation	Replace older and terminal hydrants at various locations based on survey		\$125,000.00
	Water Distribution Upgrades	Engineer/Design Distribution Main upgrades      Reprogram ATM2013, Art 12 Reassess CDM pipe improvement option; determine best approach and design	Woburn St Industrial \$27,253 Reprogrammed; add \$45.3	\$45,300.00
		Replace 2" and 6" at various locations		\$400,000.00
	<b>Water Plant Improvement</b>			
	Water Treatment Plant Upgrade Construction		WTP	\$13,100,000.00
	<b>Water Tank Maint. And Upgrades</b>			
	Astle Street Tank Renovations	Engineering Services: Tank structural evaluation and project programming	Astle St	\$30,000.00
	Water Quality	(3) Tank Mixers    Install	Ames Hill Water Tank	35,000.00
			<b>Total Cost FY16</b>	<b>\$13,735,300.00</b>
<b>FY2017</b>	<b>Cal 2016-2017</b>			
	<b>Water Distribution Improvements</b>			
	Hydrant Replacement and Installation	Replace older and terminal hydrants at various locations based on survey		\$125,000.00
	Water Distribution Upgrades	Construct Distribution Main upgrades	Woburn St Industrial	\$1,500,000.00
	<b>Water Plant Improvement</b>			
	Continue Plant Upgrades	Construct Facility Improvements		N/A
	Astle Street Tank Renovations	Project Design, Plans and specifications	Astle St	\$35,000.00
			<b>Total Cost FY17</b>	<b>\$1,660,000.00</b>
<b>FY2018</b>	<b>Cal 2017-2018</b>			
	<b>Water Distribution Improvements</b>			
	Hydrant Replacement and Installation	Replace older and terminal hydrants at various locations based on survey		\$125,000.00
	Water Distribution Upgrades	Engineer Distribution Main upgrades: Various Locations	2" and 6" inch Water Main	\$50,000.00
	<b>Water Plant Improvement</b>			
	Astle Street Tank Renovations	Construction: Catwalk repair/Carrier reorganization and painting		\$650,000.00
			<b>Total Cost FY18</b>	<b>\$825,000.00</b>
<b>FY2019</b>	<b>Cal2018-2019</b>			
	<b>Water Distribution Improvements</b>			
	Hydrant Replacement	Replace older and terminal hydrants at various locations based on survey		\$125,000.00
	Water Distribution Upgrades	Construct Distribution Main upgrades	2" and 6" inch Water Main	\$1,000,000.00
	<b>Water Plant Improvement</b>			
			<b>Total Cost FY19</b>	<b>\$1,125,000.00</b>
<b>FY2020</b>	<b>Cal2019-2020</b>			
	<b>Water Distribution Improvements</b>			
	Hydrant Replacement	Replace older and terminal hydrants at various locations based on survey		\$125,000.00
	Water Distribution Upgrades	Engineer Distribution Main upgrades: Various Locations	2" and 6" inch Water Main	\$50,000.00
	<b>Water Plant Improvement</b>			
				\$0.00
			<b>Total Cost FY20</b>	<b>\$175,000.00</b>



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Hydrant Replacement Program

Date: 2/14/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Public Works Dépt. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440

Email: bgilbert@tewksbury-ma.gov

### Description of Project:

This annual program is intended to replace aging, malfunctioning, and/or out of service hydrants throughout town and to standardize, town-wide, the type hydrant employed. The project began in 2006 and was reinstated in 2010 to address a large number of out-of-service hydrants. Since 2010 over (223) hydrants have been replaced. In 2006, it had been estimated that 600 of the approximate 1600 hydrants needed replacement. Funding for (5) years of the program has been approved at various Town Meetings at differing amounts beginning in FY06. This year's request, and continuing appropriations through 2020 included the installation of (5) additional hydrants. These hydrants will be placed at the end of dead-end water mains to facilitate the full flushing /cleaning of the water main and to improve water quality at these locations.

### Justification/Benefit:

A number of hydrants within the system have out-lived their useful life cycle and show signs of fatigue or, in some instances, may be difficult to operate. Upgrading existing hydrants that are inoperable and/or do not meet the Town-wide hydrant standard is important to fire protection efforts and ISO ratings. In addition, there are (11) different types of hydrants within the system reducing consistency of operation; some open left, some open right. Parts are not interchangeable requiring procurement of a variety of parts and distributors for repairs. To eliminate inconsistency and provide better firefighting capabilities, the older non-standardized apparatus should be replaced. In addition, a number of the older developments had been built without the inclusion of a hydrant at the end of the water main to ensure the complete flushing of the water main. These sections of pipe need to be flushed and cleaned to improve water quality as is required by the rest of the system.

### Impact if not completed:

Malfunctioning or out of service hydrants may delay the suppression of firefighting capabilities; water quality is diminished; increased cost for repairs and inefficiency may result.

**Replace. Freq:** 25 Years

### Timeframe:

Depending on contracted bid price, (25-30) hydrants will be programmed for replacement/installation in the Spring of Fiscal Year (FY) 2016.

### Stakeholders:

Fire Department personnel, Tewksbury residents/businesses, and Department of Public Works, Water Division staff.

### Operating Budget Impact:

Engineering Division and Water & Sewer Division personnel time will be required to support the project.

### Cost Analysis:

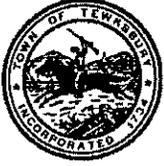
Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$125,000.00	\$125,000.00	\$125,000.00	\$125,000.00	\$125,000.00	\$625,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$125,000.00</b>	<b>\$125,000.00</b>	<b>\$125,000.00</b>	<b>\$125,000.00</b>	<b>\$125,000.00</b>	<b>\$625,000.00</b>

### Basis of Cost Projection:

Cost Projection based on similar contract bid by the Town of Tewksbury in FY15.



## Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Water Distribution System Improvements

Date: 2/14/15

Project ID Number: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt DPW Department: Department of Public Works Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440

Email: bgilbert@tewbury-ma.gov

### Description of Project:

This project requests funding to upgrade the Town's water distribution system; the objectives of the program are to improve water quality, pressure and flow for fire protection capabilities, convey additional flow to demand centers, while reducing the frequency and severity of water-main breaks and shutdowns. When applicable, proposed water-main installations are scheduled prior to roadway improvements. The focus for the FY16 improvements is to reprogram the remaining balance from the following appropriation and request additional funding for the purposes outlined:

- ATM 2013, Article 12 – anticipated remaining balance \$27,253.28; to be used to engineer and design upgrades to the water-mains serving the Woburn Street Industrial area from the Astle Street Water tank. An additional \$45,300 is required for this purpose

### Upgrades include:

Astle Street Tank to Woburn St – Engineering (FY16), Construction (FY17); and short lengths of various 6" AC and 2" iron mains as determined by the Water Supervisor and the Town Engineer.

### Justification/Benefit:

The installation and replacement of existing water mains from the Astle Street water tank to Woburn Street with a 8" and 12" water-mains will enhance fire protection and improve water flows/pressures in this area. The upgrade was outlined in the 2004 Water Distribution System Master Plan (CDM) due to deficiencies in fire flow (ISO standards). The engineer will use the Town's water model to investigate and chose the best option for this upgrade. The precise locations and sizing of pipe need to be engineered/established and specifications developed prior to construction. Connections at the Lowell line and Billerica town line will be reviewed and is intended to provide interconnectivity between the municipalities.

### Impact if not completed:

Fire flows to the Woburn St area are inadequate to meet the needs of residents and businesses. ISO standards require between 1,750 – 2,000 gpm; whereas existing flows are between 890-1,110 gpm. The flows restrict economic development and affect the Town's ISO rating. The necessity to replace 2" iron and 6" AC mains needs to be an on-going top priority of the Water Enterprise, where these pipes have out lived their life-cycle and are the cause of more than 50% of the Town annual water-break count per year.

### Timeframe:

**Replace. Freq: 50 Years**

The schedule for engineering Woburn Street improvements will be completed in FY16; replacement of 2" and 6" pipe pipes may begin as early as FY16; Woburn Street improvement/construction will beginning (FY17).

### Stakeholders:

Tewksbury Fire Department, Town residents/businesses, water customers.

### Operating Budget Impact:

Replacement of 6" AC mains will help to reduce operating cost for repair of water-breaks

### Cost Analysis:

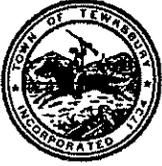
Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$45,300.00	\$0.00	\$50,000.00	\$0.00	\$50,000.00	\$145,300.00
Construction	\$400,000.00	\$1,500,000.00	\$0.00	\$1,000,000.00	\$0.00	\$2,900,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$445,300.00</b>	<b>\$1,500,000.00</b>	<b>\$50,000.00</b>	<b>\$1,000,000.00</b>	<b>\$50,000.00</b>	<b>\$3,045,300.00</b>

### Basis of Cost Projection:

Engineering cost for Woburn improvement is based on Engineer's proposal; Construction costs to be provided after engineering is completed.



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Water Treatment Plant Upgrade Date: 2/14/15

Project ID Number: \_\_\_\_\_ Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewksbury-ma.gov

### Description of Project:

The Tewksbury Water Treatment Plant was built and came on-line in 1988. The plant is beyond its initial 20-year design life. Plant improvements began in FY13 with an assessment of the plant building and mechanical systems. The assessment has identified numerous deficiencies and needed upgrades. In FY14 funding was approved to design and engineer the upgrades of the building envelope, expansion of the building footprint, replacement of existing mechanical equipment, and other ancillary equipment currently in critical condition. In addition, modifications to the treatment process to meet changes in water quality standards were incorporate into the plant’s renovation scope. This project seeks to construct the renovations and upgrades, with construction phases scheduled to begin in the late part of calendar year 2015.

### Justification/Benefit:

The Water Treatment Plant is beyond its initial 20-year life cycle, reliability and performance of the plant must be considered. Some elements of the plant show signs of deteriorations and need considerable investment, while new Federal regulations (Long Term 2 Enhanced Surface Water Treatment Rule and Stage 2 Disinfection Bi-products Rule) for water quality may not be met under the plant’s current treatment process. The Town must meet requirements of the Federal Clean Water Act, promulgated by the State’s Department of Environmental Protection (MassDEP). The MassDEP may restrict or even revoke the Town’s permit to withdraw water if not in compliance. In addition, older mechanical systems need to be upgraded, while guidelines for Water Treatment Plant layout and design have also changed since the plant’s original construction which will be addressed in the renovation.

### Impact if not completed:

The Town may not meet the requirements of Federal and State water regulations which are essential to providing water to Tewksbury’s citizens. Failure to meet these requirements may lead to Administrative Consent Orders with mandated conditions and schedules for compliance. Equipment malfunction and/or failure may interrupt the provision of water. While unattended improvements to the building envelope and building mechanical systems will lead to more costly repairs if not addressed.

### Timeframe:

Project bidding and award of contracts will be completed by late summer 2015 w/construction scheduled to commence the end of 2015 and continue to late 2017/early part of 2018.

**Replace. Freq:** 25 Years

### Stakeholders:

All water enterprise customers, Town Manager, Board of Selectman, Finance Committee, DPW Water & Sewer Division and Water Treatment Plant, MassDEP, and EPA.

### Operating Budget Impact:

Water Treatment Plant operations will require swing space for the duration of the planned work; space will be included in the project costs.

### Cost Analysis:

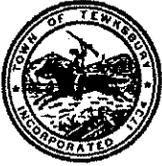
Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction	\$13,100,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$13,100,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$13,100,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$13,100,000.00</b>

### Basis of Cost Projection:

Cost Projection based on engineer’s construction estimate and other region-wide projects.



# Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects

Project Name: Water Tank Maintenance and Upgrades: Astle Street Tank Assessment Date: 2/14/15

Project ID Number: \_\_\_\_\_ Revision Date: \_\_\_\_\_

Submitted By: Brian Gilbert, Supt. DPW Department: Public Works Dept. Priority: \_\_\_\_\_

First Year Submission:  Phone #: 978-640-4440 Email: bgilbert@tewbksbury-ma.gov

### Description of Project:

This project is requesting funds to assess inspection reports and establish a program for Engineering and Design for maintenance and improvements to the Astle Street water tank. The assessment shall include: analysis of existing cellular equipment inventory and determine requirements to remove any and all abandoned equipment; provide conceptual design to organize and move all municipal and Carrier equipment, including cabling, off the catwalk and onto the top of the water tank; identify any structural deficiencies and necessary modifications to meet or exceed OSHA regulations regarding fall protection. The report shall also take into account the requirement to move all municipal radio equipment into the radio shack provided by Sprint.

### Justification/Benefit:

The tank is a (1) million gallon steel tank built in 1970 and then refurbished in 2000 due to deferred maintenance and support structures for cell carriers being welded to the outside structure. Since 2000 numerous installations and reinstallations of cell carrier components have been installed on the tank, where no standard specifications and organization of the equipment were provided. The result is a myriad of cables and antennas gone unchecked and installed in locations not designed for the purpose of cell tower equipment. In previous Capital Plans, the Astle Street Tank was scheduled for inspection, structural repair and an application of exterior coating in FY17. However, it has been observed that partial failure of the exterior coatings located near the base of the tank has occurred due to the presence of excessive moisture when the coatings were applied in 2000; observations have been made that the catwalk sections flex and may need reinforcement to prevent walkway failure; while the weight of numerous antenna equipment and cable exceed structural specifications of the superstructure. A scheme for equipment organization is necessary for the long-term maintenance and use of the tank.

### Impact if not completed:

Continued use of the catwalk for cell tower antennas shall cause damage to the surface of the water tank due to physical movement of a structural element (Catwalk) not designed for this use. The catwalk uses the bulk of the tank as its "foundation" of support. A ½ inch thick belt of steel is also contained in that area to act as the attachment point and to hold the diameter of the tank in place. Constant stress on this portion of the tank will eventually cause the catwalk to fail or even a possibility of a major failure of the tank surface. A secondary consideration is the loss of metal due to damage to the coatings which protect the tank surfaces. In the last refurbishment the coating was allowed to decay and additional damage due to cell antenna installation required over 10,000 welds to repair the loss of metal.

### Timeframe:

**Replace. Freq:** 25 Years

This work will be scheduled during FY16 to establish a program of work to be funded in FY17 requesting engineering and design services.

### Stakeholders:

All water enterprise customers, DPW Water & Sewer Division and Water Treatment Plant, MassDEP/EPA, Cell Carriers and aerial workers

### Operating Budget Impact:

The project impact has more bearing on Capital and asset protection than Operating budget impact. However, maintenance of the municipal radio and microwave system(s) will be more accessible.

### Cost Analysis:

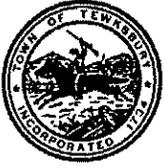
Funding Source:  Levy  CPA  Revolving  State Aid  Water  Sewer  Recreation  Private  Other

### Capital Funding Request

	2016	2017	2018	2019	2020	Totals
Site Acquisition	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design/Engineer	\$30,000.00	\$30,000.00	\$0.00	\$0.00	\$0.00	\$60,000.00
Construction	\$0.00	\$0.00	\$650,000.00	\$0.00	\$0.00	\$650,000.00
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Contingency	\$0.00	\$5,000.00	\$0.00	\$0.00	\$0.00	\$5,000.00
<b>Totals</b>	<b>\$30,000.00</b>	<b>\$35,000.00</b>	<b>\$650,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$715,000.00</b>

### Basis of Cost Projection:

Cost based Engineering estimate as outlined in proposal.



Town of Tewksbury FY2016 - FY2020 Capital Improvements Projects/Equipment

Project Name: Water Tank Maintenance and Upgrades: Tank Mixers

Date: 2/14/15

Project ID Number:

Revision Date:

Submitted By: Brian Gilbert, Supt of Public Works

Department: Department of Public Works

First Year Submission:

Priority:

Description of Project:

Water tank mixing pumps circulate water within the tank, eliminating ice and thermal stratification. Ameshill water storage tank has two chambers, with one chamber having two sections. This project proposes to add a mixer to each tank/section, for a total of (3) mixers. The pumps are very low powered, high volume mixers that keep the water moving. Power will need to be brought up to the tanks via underground cables.

Justification/Benefit:

The Town has incrementally added water tank mixing pumps to the town's water storage tanks, (2) at Astle Street and (1) at Colonial Dr., to improve the quality of the water and to help keep the interior of the storage tanks cleaner.

The mixers function by circulating water, which helps eliminate stratification of water within the tank. Water stratification can cause issues such as pockets of "old" water and sedimentation build up over time diminishing water quality. Water quality is also improved by helping to mitigate the formation of chemical bonds or TTHM's. Also, mixers help to protect the Town's assets from damage by mitigating the creation of an "ice lens", which in the winter have a tendency to scrape the inside of the tank walls and damage equipment as the water surface level changes.

Impact if not completed:

Storage tank mixers are used to preserve water quality and to insure that ice formation is minimized or eliminated. If not installed the selected storage tanks will continue to load up with sediment and cause brown water complaints during the summer and any ice formation will cause seasonable damage to the tank walls. Mixers also insure that the water age in the tank is kept at a minimum. "Older" water has less disinfectant and more disinfection by-products such as Total tri-halomethanes which is a class of compounds that our water system has had issues before.

Timeframe:

Contractor will be hired to bring electric power to the two tanks in the fall of 2015; The devices will be installed prior to the winter of 2016

Replace. Freq: 15 Years

Stakeholders:

Water Treatment Plant Operators, Tewksbury water users, Dept of Environment Protection,

Operating Budget Impact:

Cost Analysis:

Funding Source: Levy CPA Revolving State Aid Water Sewer Recreation Private Other

Capital Funding Request

Table with 7 columns: Category, 2016, 2017, 2018, 2019, 2020, Totals. Rows include Site Acquisition, Design/Engineer, Construction, Equipment, Contingency, and Totals.

Basis of Cost Projection:

Manufactures' list price for equipment and estimate for installing underground conduits to supply power.