



City of Framingham
Department of Public Works
Construction Standards

March 2009

Revised
March 2018



This page intentionally left blank.



	Page
Glossary	v
1 General	1-1
1.1 Preamble	1-1
1.2 Regulatory Framework	1-1
1.2.1 Application/Plan Review	1-2
1.2.2 Construction.....	1-2
1.2.3 As-Built/Record Documents	1-2
1.3 General Requirements.....	1-2
1.3.1 Brand Name or Equal	1-2
1.3.2 FEMA Regulations	1-2
1.3.3 Easements	1-3
1.3.4 Roadway Bounds and Monumentation	1-3
1.3.5 Traffic Management Plans	1-3
1.3.6 Construction Site Maintenance	1-3
1.4 Erosion Control.....	1-3
1.4.1 Stormwater Management During Construction	1-3
1.4.2 Stormwater Management Post Construction.....	1-5
1.5 Tree Planting and Protection.....	1-5
1.6 Asbestos Cement Pipe Encountered during Construction	1-7
1.7 Conditions for Street Acceptance	1-7
1.8 Items Not Covered in This Document	1-8
1.9 References.....	1-8
2 Water Construction Standards.....	2-1
2.1 General.....	2-1
2.1.1 Description.....	2-1
2.1.2 Submittals	2-1
2.1.3 Inspection.....	2-2
2.1.4 Delivery, Storage and Handling.....	2-2
2.2 Materials	2-3
2.2.1 Lead Free	2-3
2.2.2 Pipe	2-3
2.2.3 Piping Connections	2-4
2.2.4 Hydrants.....	2-5
2.3 Execution	2-6
2.3.1 Piping.....	2-6
2.3.2 Valves	2-8
2.3.3 Tapping.....	2-8
2.3.4 Thrust Restraint	2-8
2.3.5 Electrical Grounding.....	2-9
2.3.6 Fire Suppression	2-9
2.3.7 Pipe, Valve and Structure Abandonment / Removal	2-9
2.4 References.....	2-10
3 Sewer Construction Standards	3-1
3.1 General.....	3-1
3.1.1 Description.....	3-1
3.1.2 Submittals	3-1
3.1.3 Inspection.....	3-2
3.1.4 Delivery, Storage and Handling.....	3-2



3.2	Materials – Gravity Sewer Systems	3-3
3.2.1	Polyvinyl Chloride Pipe (PVC) (Gravity).....	3-3
3.2.2	Couplings.....	3-3
3.2.3	Ductile Iron Pipe (Gravity) – where required by City	3-3
3.2.4	Cast Iron Pipe (Gravity) (For Plumbing Code Areas Only).....	3-3
3.2.5	Cleanouts	3-4
3.2.6	Manholes	3-4
3.2.7	Manholes & Sewer Structures – Bitumastic Coatings	3-5
3.2.8	Sewer Piping Connections	3-5
3.3	Execution – Gravity Sewer Systems.....	3-6
3.3.1	Piping.....	3-6
3.3.2	Testing of Public Sewer.....	3-12
3.4	General – Pressure Sewers.....	3-14
3.5	Materials – Pressure Sewers	3-15
3.5.1	Pressure Sewer Pipe and Fittings.....	3-15
3.5.2	Couplings and Connectors	3-16
3.5.3	Air Release Valves.....	3-16
3.5.4	SDR 21 PVC Force Main, Flange Adapter and Thrust Blocks.....	3-17
3.6	Execution – Pressure Sewers	3-17
3.6.1	Sleeve Couplings	3-17
3.6.2	Piping.....	3-17
3.6.3	Testing Pressure Sewer Pipe.....	3-18
3.6.4	Pipe and Structure Abandonment	3-19
3.7	Grease Traps	3-19
3.7.1	Exterior Grease Traps	3-19
3.7.2	Interior Grease Traps	3-20
3.8	References.....	3-20
4	Drainage Construction Standards.....	4-1
4.1	General.....	4-1
4.2	Private Connections to City Drainage System.....	4-2
4.3	Materials	4-2
4.3.1	Bedding Material	4-2
4.3.2	Pipe	4-2
4.3.3	Drainage Structures.....	4-4
4.3.4	Frames and Covers.....	4-5
4.3.5	Granite Curb Inlets (Throat Stones).....	4-5
4.3.6	Box Culverts, Headwalls, Wing Walls, and Endwalls	4-6
4.3.7	Perforated Drain Pipe Trenches (Subdrain)	4-6
4.3.8	Dry Wells.....	4-6
4.3.9	Subsurface Infiltration	4-7
4.3.10	Drainage Swales	4-8
4.4	Execution	4-8
4.4.1	Pipe Laying.....	4-8
4.4.2	Manholes, Catch Basins, and Leaching Basins.....	4-10
4.4.3	Box Culverts, Headwalls, Wingwalls, and Endwalls.....	4-11
4.4.4	Perforated Drain Pipe Trenches (Subdrain)	4-11
4.4.5	Dry Wells.....	4-12
4.4.6	Drainage Swales	4-12
4.4.7	Separation of Storm Drains and Water or Sewer Mains	4-12
4.5	Maintenance.....	4-13
4.5.1	Maintenance of Drainage Systems on Private Property	4-13



4.5.2	Access for Maintenance of Drainage within Easements	4-13
4.6	Definitions	4-13
4.7	References.....	4-13
5	Roadway Construction Standards	5-1
5.1	Roadway Design	5-1
5.1.1	General.....	5-1
5.1.2	Streets and Roadways	5-1
5.1.3	Curbing	5-2
5.1.4	Sidewalks.....	5-2
5.1.5	Walls or Slopes	5-2
5.1.6	Driveways	5-2
5.1.7	Protection of Utilities.....	5-2
5.2	Roadway Materials	5-3
5.2.1	Special Borrow	5-3
5.2.2	Processed Gravel for Subbase.....	5-3
5.2.3	Gravel Borrow	5-3
5.2.4	Crushed Stone for Subbase	5-3
5.2.5	Dense Graded Crushed Stone for Subbase	5-3
5.2.6	Loam Borrow.....	5-3
5.2.7	Fertilizer.....	5-3
5.2.8	Grass Seed	5-3
5.2.9	Hot Mix Asphalt	5-3
5.2.10	A. Hot Mix Asphalt (HMA) shall conform to MassDOT Standard Section M 3.11.00.Superpave ...	5-3
5.2.11	Portland Cement Concrete for Sidewalks	5-3
5.2.12	Granite Curbing	5-4
5.2.13	Granite Curb Inlets.....	5-4
5.2.14	HMA Berm and Curb	5-4
5.2.15	Retaining Walls	5-4
5.2.16	Granite Bounds	5-4
5.2.17	Guard Rail.....	5-4
5.2.18	Pavement Markings	5-4
5.2.19	Street Signs	5-4
5.2.20	Traffic Signs	5-5
5.2.21	Dust Control.....	5-5
5.2.22	Handholes	5-5
5.2.23	Handhole Frame and Covers.....	5-5
5.2.24	Manhole Frame and Covers.....	5-5
5.3	Roadway Execution	5-6
5.3.1	General Conditions	5-6
5.3.2	Procedure	5-6
5.3.3	Clearing (including excavating or stripping poor material)	5-7
5.3.4	Preparation of Subgrade.....	5-7
5.3.5	Gravel Sub-base	5-8
5.3.6	Dense Graded Crushed Stone	5-8
5.3.7	Hot Mix Asphalt Roadways.....	5-8
5.3.8	Sidewalks and Driveway Aprons.....	5-8
5.3.9	Granite Curbing	5-9
5.3.10	Retaining Walls	5-9
5.3.11	Slopes.....	5-9
5.3.12	Granite Bounds	5-9
5.3.13	Guard Rail.....	5-10
5.3.14	Pavement Markings	5-10



5.3.15 Traffic Signs 5-10

5.3.16 Street Signs 5-10

5.3.17 Inspections 5-10

5.3.18 Handhole Installation 5-11

5.4 References..... 5-11

6 Existing Road Openings..... 6-1

6.1 General.....6-1

6.2 Traffic Management.....6-2

6.3 Excavation6-2

6.3.1 Backfill 6-3

6.3.2 Temporary Pavement..... 6-4

6.3.3 Permanent Pavement..... 6-6

6.3.4 Material Specification – Trenches 6-7

6.4 Special Condition(s).....6-8

6.5 References.....6-9

Appendices

Appendix A Plan Content and As Built Plan Requirements

Appendix B Construction Details

Glossary



AAB	Architectural Access Board
AASHTO	American Association of State Highway and Transportation Officials
AC	Asbestos Cement
ACM	Asbestos containing material
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials. Note: ASTM International is originally known as the American Society for Testing and Materials, is an international standards organization that develops and publishes voluntary technical standards for a wide range of materials, products, systems, and services
AWWA	American Water Works Association
ATSSA	American Traffic Safety Services Association
BMP	Best Management Practice
CDF	Controlled Density Fill
CLOMR	Conditional Letter of Map Revisions
CMR	Code of Massachusetts Regulations
DBH	Diameter at Breast Height (the diameter of a tree trunk at 4.5 feet above ground)
DI	Ductile Iron
DPW	Framingham Department of Public Works
Engineer	A member of the Framingham Department of Public Works Engineering & Transportation Division or an authorized representative thereof
FEMA	Federal Emergency Management Agency
HDPE	High Density Polyethylene
HMA	Hot Mix Asphalt
ID	Inner Diameter
LOMR	Letter of Map Revisions



Mandrel Test	The roundness of a pipeline is tested by moving a slightly smaller steel shank, called a mandrel, through the inside of the pipeline. If the pipeline is out of round, the mandrel will be held and kept from moving forward.
MGL30 §39M	Massachusetts General Law “General Provisions Relative to State Departments, Commissions, Officers and Employees: Contracts for Construction and Materials; Manner of Awarding”
mg/l	milligrams per liter
MassDEP	Massachusetts Department of Environmental Protection
Mass DLS	Massachusetts Department Labor and Standards
MassDOT	Massachusetts Department of Transportation (formerly Massachusetts Highway Department)
MUTCD	Manual on Uniform Traffic Control Devices
NPDES	National Pollutant Discharge Elimination System
OD	Outer Diameter
OSHA	Occupational Safety and Health Administration
PE	Polyethylene
PP	Polypropylene
PVC	Polyvinyl Chloride
ppm	Parts per million
psi, psig	Pounds per square inch, pounds per square inch (gauge)
RCP	Reinforced Concrete Pipe
SOP	Street Opening Permit
SDR	Standard Diameter Ratio
US DOT	U.S. Department of Transportation
US EPA	U.S. Environmental Protection Agency

Add PM, Owner, Consultant, and Contractor to this list to define those roles

This list is not complete regarding abbreviations used in the details – should it be?