

# **RULES AND SPECIFICATIONS**

For

EXCAVATION ACTIVITY WITHIN

THE TOWN OF MILLBURY, MASSACHUSETTS



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## SECTION 1.00

### INTENT AND PURPOSE

#### **SEC. 1.01 INTENT AND PURPOSE**

The Town of Millbury experiences demand for its public right-of-way from the public, municipal servers, utility providers, and other services to the public. This demand shall be properly managed through the Department of Public Works and enforced through these Rules and Specifications.

Working in the right-of-way or private property without knowing the rules and regulations could result in damage to underground utilities risking both lives and property. Permits require individuals performing work in the right-of-way or private property be properly insured against personal injury and property damage.

1. Permits ensure that work being done is in accordance with Town of Millbury specifications, codes and requirements, thereby providing for proper restoration of public property.
2. Permits help coordinate schedules among numerous agencies and individuals so that they do not attempt to perform work at the same location at the same time.
3. Permits ensure vehicular and pedestrian traffic are adequately maintained.
4. Permits provide a record of who performed a kind of work and where (in case problems are later discovered after completion of work)
5. Permits are required to prevent unauthorized access by general public to unattended trenches (Jackie's Law)

These Rules and Specifications have been enacted by the Department of Public Works (DPW) to regulate the use of public right-of-ways in the interest of public safety and convenience, and to operate and protect the Town's infrastructure. Excavation and restoration standards are required to preserve the integrity, operational safety, and function of the public right-of-way.

The Director of Public Works through the Town Manager and Board of Selectmen is granted the authority under General By-Law Section 14-18 to administer and enforce the requirements of these Rules and Specifications. The Director of Public Works or his agent(s) shall require such actions as necessary to enforce adherence and compliance to these Rules and Specifications.

#### **SEC. 1.02 UTILITY COORDINATION**

It is the intent of the Town of Millbury to promote cooperation and reduce wasteful spending among all users of the public right-of-way. All public utilities, agencies, or parties excavating streets and/or sidewalks in the Town of Millbury right-of-way are required to attend quarterly Utility Coordination meetings (on the last Tuesday in the months of January, April, July and October) with the Director of Public Works, or representative, held at 9:00 AM at Millbury Town Hall, 127 Elm Street to discuss and coordinate current/future excavations. These meetings are intended to review each other's long-term (1 – 3 year) capital improvement plans and to improve inter-agency communication and coordination.

The DPW strongly discourages excavation in newly constructed, reconstructed, rehabilitated or resurfaced streets. The current Protected Street List showing newly constructed, reconstructed, rehabilitated, and resurfaced streets shall be available at the Department of Public Works. Whenever the Town of Millbury has developed plans to construct, reconstruct, rehabilitate, or resurface a roadway, the Director of Public Works, or its representative, shall give written notice through local newspapers to all abutting property owners. The Director of Public Works shall provide a separate written notice addressed to all Town of Millbury departments, and to all public utilities, that have or may wish to lay pipes, wires, or other facilities in or under the street. Upon receipt of such written notice, such person or utility shall have (60) sixty days in which to repair, install or lay any facility in the specified locations.

Should utility work require more time, the Director of Public Works requires notification of amount of time required to finish the work along with a detailed explanation as to why an extension should be granted. No extension granted shall exceed one year from the original date of notification.

Locations identified as conflicts to Town of Millbury's roadway repair programs are to be completed within the following timeframe from time of notification:

- |    |                                |                  |
|----|--------------------------------|------------------|
| 1. | Repairs to Existing Facilities | 60 days maximum  |
| 2. | Service Connections            | 6 months maximum |
| 3. | New Installations              | 1 year maximum   |

Locations identified as "cleared" by a Utility, are expected to have been investigated of material, age and found to be highly reliable, showing little to no signs of failure and/or frequent emergencies. The DPW considers the "clearing" of a street as a "sign off" and assumes no frequent maintenance work will be required for the following DPW repair activities and time frame:

- |    |                |                  |
|----|----------------|------------------|
| 1. | Resurfacing    | 5 years minimum  |
| 2. | Reconstruction | 10 years minimum |

The DPW expects the Utility to provide the age, pipe size, material type and history of maintenance repairs when requested by DPW. Should the Town find utilities neglecting underground facilities resulting in repetitive public user delays, the Town will recommend that the utilities explore improving their infrastructure.

## SECTION 2.00

### DEFINITIONS

#### **SEC 2.01 Definitions**

For the purpose of understanding the Rules and Specifications, all words shall have their standard meanings. These words are more particularly defined as follows:

**AAB** shall be defined as the Architectural Access Board, a regulatory agency within the Massachusetts Office of Public Safety. Its legislative mandate states that it shall develop and enforce regulations designed to make public buildings accessible to, as well as functional and safe for use by persons with disabilities.

**ADA** shall be defined as the Americans with Disabilities Act and all the requirements set forth therein.

**Arterial/Collector** shall mean major vehicular thoroughfares within the Town of Millbury and include the following: Elm Street, Elmwood Street, Grafton Road, Grafton Street, Greenwood Street, Howe Avenue, McCracken Road, Millbury Avenue, West Main Street, North Main Street, Providence Street, Riverlin Street, and Wheelock Avenue.

**Backfill** shall mean the placement of specified material in all spaces excavated and not occupied by substructures, and the bedding up to the elevation of the bottom of the pavement structure, or other surface material.

**Bonded Contractor** shall mean the person(s) or utilities that have met the insurance requirement of all applying Permittees before the Issuance of any Permit.

**Compaction** shall mean the act of firmly packing together construction material to ensure stability of substructures, bedding materials, backfill/base gravels, and surface materials.

**Dig Safe** shall mean the current existing underground facility damage prevention system established by Massachusetts State statute, the American Public Works Association, and the Utilities Location and Coordination Council to provide for safe underground excavation. Local utilities such as sewer and water are under Town jurisdiction and to be contacted directly at the Highway Department.

**Distortion** shall mean localized pavement surface areas having elevations lower or higher than those of the surrounding pavement.

**Driveway** shall mean the portion of a street from the private property line to the curb, including the curbing and/or lack thereof, or to the Improved or traveled section of street. This area is used to provide vehicular access, parking, and/or storage from the private property to the curb, or to the improved or traveled section of street.

**Emergency** shall mean any event which may threaten public health or safety, including but not limited to: damaged or leaking water or gas conduit systems; damaged, plugged or leaking sewer or storm drain conduit systems; damaged underground electrical and communications facilities; or downed overhead pole structures.

**Encroach** shall mean:

1. The placing, depositing, or parking of any ladder, staging, scaffolding, rigging, tower, fence, wall, material, equipment, machinery, dumpster, container, refuse, debris or any other such object, article or thing used in connection with, or arising out of, any building, construction, reconstruction, remodeling, repair, excavation, demolition or other like work. Encroach shall also include the placing, depositing, or parking of any trailer, truck or like vehicle adjacent to or in close proximity to aforementioned work, and which is being so used for such purposes.

2. An intrusion or use caused by the draining or pumping of water in any manner that may in any way obstruct, impede, or endanger public use or travel, or could cause any icy condition which in any way may obstruct, impede or endanger public use or travel or the Town of Millbury drainage system.
3. The placing of any booth, stall, stand, display, goods or merchandise for sale, vending machine, billboard, sign, advertising instrument or apparatus, or any other such object, article or thing;
4. The placing or erecting of any shed building, tower, pole, pole line, pipe, wall, fence or any other such structure or object.
5. The placing of steel plates not properly fastened, not properly ramped, or not properly recessed and fastened.

**Excavation** shall mean any action of digging up, drilling, auguring, tunneling, milling, reclaiming, or cable and pipe driving. Excavation does not involve the tilling of soil, gardening, or displacement of earth, rock or other material for agricultural purposes, nor the installation or maintenance of signs performed by the DPW or the MHD. This term includes the establishment, construction, resurfacing, repaving or reconstruction of any sidewalk and/or driveway approach, or the placing of any substructure.

**Facility** shall mean any pipe, pipeline, tube, main, service, trap, vent, vault, manhole, meter, gauge, regulator, valve, conduit, wire tower, antenna or ancillary equipment, pole, pole line, anchor, cable, pay phone, junction box, or any other material, structure, or object of any kind or character, whether enumerated herein or not, which is or may be lawfully constructed, left, placed or maintained in, upon, along, across, under, or over any public place.

**Protected Street** shall mean any resurfaced or rehabilitated street that has been resurfaced or rehabilitated within the past (5) five years.

**Jackie's Law** shall refer to the Commonwealth of Massachusetts General Law Title XIV: Chapter 82A Excavation and Trench Safety.

**Licensed Contractor** shall mean the Permittee is currently a qualified, licensed and bonded Contractor in the State of Massachusetts.

**MassDOT** shall mean the Massachusetts Department of Transportation.

**Moratorium** shall mean the restrictive delay period from second Friday in November through the second Monday in April.

**Obstruction** shall mean an adverse impact to the right-of-way on the citizens of the Town of Millbury or others who are required to alter travel routes and times resulting from right-of-way disruptions or encroachments. See **Encroach.**

**Patch** shall mean an area normally excavated to accommodate a substructure, its appropriate bedding material, backfill, and subsequent pavement structure. Patch area is less than (400 sq. ft.) four hundred square feet.

**Pavement Structure** shall mean a utility patch founded on approved backfill material comprising of a surface course and intermediate course of hot-mixed asphalt (HMA) material, Portland cement concrete, or block/brick materials founded on a dense, granular, or other approved base material.

**Pedestrian Ramp** (Wheelchair Ramp) shall mean a curb cut area that acts as a transition from the roadway to a sidewalk. The purpose of this transition is for ease of access to the sidewalk from the roadway for the use of pedestrian traffic. The Town of Millbury's "Pedestrian Ramp" and the **MassDOT** "Wheelchair Ramp" shall have the same denotation. Pedestrian ramps must adhere to AAB standards and are held to the **MassDOT** specifications.

**Permanent Pavement Restoration** shall mean the restoration of pavement disturbed by excavation activity to a condition that meets or exceeds the DPW's Rules and Specifications, and can reasonably be expected to remain in good condition for at least the remainder of the street's existing pavement life before rehabilitation.

**Permittee** shall mean any person who has obtained a permit as required by DPW and these Rules & Specifications.

**Pole Placement** shall mean an excavation associated solely with a single placement or replacement of a utility pole.

**Private Way** shall mean a way specified by the local public authorities for the accommodation of individuals, and wholly or chiefly at their expense but not restricted to their exclusive use, and subject to the public easement of passage.

**Public Right-of-Way** shall mean the area on, below, or above present streets and sidewalks, alleys, avenues, roads, boulevards, curbs, gutters, shoulders, or public easements, or any parking lot maintained by or in the possession or control of the Town of Millbury, or other public lands including easements dedicated for Town of Millbury use, or the assignment of use in parcels by the Town of Millbury, but not including the airwaves above.

**Public Safety** an act that endangers the life or safety of the citizenry, and/or severe damage to property.

**Public Utility** shall mean any public service company incorporated under the provisions of the General Statutes or by Special Act for the purpose of collecting, transmitting, or distributing gas, water, electricity, telephone, cable television or telecommunications.

**Recycled and Re-used Gravel** shall mean any material removed from an excavated jobsite that, after being tested by a professional Engineer certifying that the gravel adheres to MassDOT M1.03.1 standard and approved by the Town of Millbury prior to use, may be used as proper backfilling material.

**Rideability** shall mean the effect of street pavement conditions on vehicular traffic. Acceptable rideability is typically achieved from pavement surfaces that are smooth, dense, and uniform. A patch should perform over time greater than or equal to that of the adjacent permanent pavement within the same street.

**Security** shall mean a cash deposit submitted to the Town of Millbury to assure timely and proper completion of required work.

**Sidewalk** shall mean any public area within a Town of Millbury right-of-way (including driveways) that is available to pedestrian traffic.

**Substructure** shall mean any pipe, conduit, duct, tunnel, manhole, vault, buried cable, wire, utility system appurtenance, or any other similar structures located below the surface of any public place.

**Temporary Pavement Repair** shall mean the replacement of excavated pavement in accordance with Section 4.07.B utilizing (3") three inches of MassDOT Type I Top hot mix asphalt.

**Travel Way** shall mean the entire portion of a street between curb lines intended for motor vehicle use, or if there is not a curb line the improved or traveled section of a street, including shoulders, intended for motor vehicle use.

**Trench** shall mean an area normally excavated to accommodate a substructure, its appropriate bedding material, backfill, and subsequent pavement structure. Trench area is greater than or equal to (400 sq. ft.) four hundred square feet.

**Utility** shall mean any corporation, Town, or other governmental subdivision, partnership, organization, or any individual or persons engaged within the Commonwealth in any business that is in any respect made subject to the supervision or regulation by the Department of Telecommunications and Energy. For the purposes of these Rules and Specifications, a Utility shall also mean any person or entity engaged by, or on behalf of, a Utility to perform street opening work.

## **SECTION 3.00**

### **PERMIT REQUIREMENTS**

#### **Sec. 3.01 Activities Requiring Permit**

Work requiring a permit shall include, but shall not be limited to the installation of utilities, driveways, curbing, or sidewalks; excavation or filling for grading purposes; encroachment in a street or public property; obstruction of a street or drain, or any other modification which could either damage the Town of Millbury infrastructure, or conflict with existing or planned utility infrastructure locations. Typical activities include:

1. Any type of excavation in the public right-of-way such as installing, repairing or replacing utility laterals or mains, any type of under utilities; utility pole relocation, etc. (Water and sewer utilities shall be placed in separate trenches (ten feet apart) in accordance with Mass DEP Guidelines.);
2. Repairing or replacing any sidewalk or walkways in the public right-of-way;
3. Resurfacing, widening or closing in an existing driveway;
4. Installing a new driveway;
5. Storing materials, dumpsters or equipment in the public right-of-way;
6. Parking of heavy equipment such as cranes in a public street;
7. Installing a new street and driveway that will, upon acceptance, become officially dedicated to the Town upon completion;
8. Installing or placing planters or other decorative ornaments in the public right-of-way.

#### **Sec. 3.02 Refundable Security Deposit**

In addition to the permit fee, the Permittee must submit a certified bank check deposit with the Department of Public Works in the amount of two thousand dollars (\$2,000) for driveway permits and/or five thousand dollars (\$5,000) for excavation permits. The certified bank check deposit shall be paid to the order of the Town of Millbury – DPW. All certified bank checks will be held in an Individual Roadway Opening Permit Project Account for a period of two (2) years for driveway permits and five (5) years for excavation permits.

Deposits shall be returned upon written notification by the Permittee after the allotted time period and record of completed satisfactory of work. In the event the work does not meet these Rules and Specifications, the Permittee's security deposit will be used to correct such condition(s).

#### **Sec. 3.03 Insurance Requirements**

Before any person, utility, corporation, or company is granted a permit to occupy or excavate a public way in the Town of Millbury the Permittee must first submit insurance under which the Town of Millbury shall be named as an additional insured, carried with an insurance company licensed to write such insurance in the Commonwealth of Massachusetts. Town of Millbury's insurance requirements are as follows:

##### ***A. Worker's Compensation***

- a. Statutory State – Massachusetts
- b. Coverage Limit \$100,000 each employee
- c. Additional Endorsements
  - i. Voluntary Compensation

##### ***B. General Liability of (Comprehensive Form of Policy)***

- a. Limits of Liability
  - i. Bodily Injury and Property Damage – Combined Single Limit of \$1,000,000 with a \$2,000,000 Annual Aggregate Limit. The Town of Millbury should be named as "Additional Insured."
  - ii. Property Damage
- b. Arrangement of Coverage
  - i. Premises Operations
  - ii. Products – Completed Operations
  - iii. Owners & Contractors Protective
  - iv. Explosion, Collapse and Underground

- v. Broad Form Comprehensive General Liability endorsement or equivalent (to include Broad Form Contractual, Personal Injury, Broad Form Property Damage, Incidental Malpractice, etc.)
- vi. Cross Liability

**C. Umbrella**

Limit of Liability: \$2,000,000 (minimum) occurrence, \$2,000,000/aggregate. The Town of Millbury should be named as "Additional Insured."

**D. Automobile Liability (Comprehensive Form of Policy)**

- a. Limits of Liability
  - i. Bodily Injury and Property Damage and Combined Single Limit of \$1,000,000. The Town of Millbury should be named as "Additional Insured."
- b. Arrangement of Coverage
  - i. Employer Non-Owned
  - ii. Hired Car
  - iii. All Owned or Leased Vehicles

**Sec. 3.04 Permit Fees**

No newly constructed or reconstructed pavement less than five (5) years old will be cut into except in case of emergency, in which case an extended maintenance fee will be charged for cuts in newly paved streets.

The extended maintenance fee shall be waived for public and private utilities in all cases where the DPW has not provided a minimum advance notice of sixty (60) days for roadway improvement work to them so that they can complete all necessary work prior to the roadway improvement. If a newly constructed roadway requires excavation due to an emergency, the following items will be required:

1. The patch or trench shall be filled with Controlled Density Fill (CDF)
2. After excavation work has been completed in accordance to these specifications, the permittee shall restore the paved area by milling and overlaying the length of the roadway opening (min. of 50' long, from curb to curb, of where the excavation is performed. See Appendix C for "Permanent Paving Restoration"

The DPW has established a list of streets Resurfaced or Reconstructed within the preceding five (5) years, (Protected Street List). Permittee shall be responsible for restoring incidentals such as pavement markings and loop detectors.

See Appendix A for current permit fees.

**Sec. 3.05 Indemnification**

The Permittee agrees, as a condition governing the issuance of a permit, that they shall hold harmless the Town of Millbury, the Department of Public Works, and its agents and employees from any and all claims and actions whatsoever arising from the execution of said permit.

**Sec. 3.06 Emergency Permits**

It is the policy of the DPW that emergency permits are issued only when an emergency situation arises. The abuse of emergency Permits could result in the suspension of all permits and further legal action taken by the Town of Millbury.

When an utility emergency is declared, the Permittee is mandated to notify the Director of Public Works citing the location and reason for the emergency. Within 48 hours the DPW will expect a standard Permit application to be filled out and filed. Failure to comply with the rules for emergency excavation shall be in violation of these Rules and Specifications- Excavation without Permit.

Emergencies shall be worked on continuously until the repairs are complete and the disturbed pavement restored to grade level with hot mix asphalt.

### Sec. 3.07 Permit Application

No permit shall be issued, unless a current application form provided by the DPW has been completed, submitted to, and approved by the DPW. See Appendix B for permit application. All applications require at least (5) five business days for approval. The written application shall include a minimum of the following:

1. Name, address, and telephone number(s) of the (a) applicant, accessible (24) twenty-four hours a day); (b) person for whom the work or activity is being done; and (c) owner of the private premises affected. If the applicant is not the person doing the actual excavation or encroachment work, the applicant must give to the DPW in writing, at least three full working days prior to the starting of any such work, the name, address and telephone number of the person responsible for said work.
2. Beginning and ending date of proposed work.
3. Purpose, scope, and limits of work to be done, including a diagram showing the location size, and number of paved area cutouts anticipated of the work or encroachment in relation to the outstanding features of the street such as property lines, pavement lines, sidewalks, curbs, trees, intersecting roads, drainage facilities, traffic control appurtenances, and utility poles by number. Depending upon the type, complexity, and extent of the intended excavation or encroachment, one or more sets of complete plans and related documents may be required to facilitate the determination of the exact locations of the various parts of the work, the risk of injury to street users, and the effect upon private property, trees, shrubs, and street structures. All new or existing driveways require plans. The Permittee shall provide an "as built plan" showing location and grades of all utilities affected by this permit. Plans stamped by a Professional registered Land Surveyor may be required.
4. Traffic management plan is required for all arterial/collector streets. The Permittee will be required to submit for approval plans and specifications, which include a traffic control plan certified by a registered Professional Engineer in the State of Massachusetts, prior to the issuance of a permit. Police detail is required on all arterial/collector streets. Efforts shall be made to maintain normal traffic flow. All road closures shall be communicated to the Police Chief within 24-hours of their expected closure. Any changes to proposed road closure plans shall be communicated to the Police Chief as soon as possible as they occur.
5. Proposed method of backfill including submittal of the lab-certified current sieve analysis, maximum dry density and corresponding moisture content (ASTM D 1557) of the granular material to be used. Granular backfill material reports must include stockpile location address, and a detailed description of tested material stockpiled in the event additional testing is necessary.

Single source documentation shall be acceptable for multiple permits in a season, provided that every stockpile utilized is accounted for. These documents must be updated every season.

If recycled gravel backfill is proposed, laboratory test results signed by a Professional Engineer must be submitted and shall include:

- 1.) Sieve Analysis
- 2.) Maximum Dry Density
- 3.) Moisture Content
- 4.) Aggregate Soundness Test
- 5.) Los Angeles Abrasion Test
- 6.) Percentage Volume by Weight of material classification (i.e. brick, concrete, etc.) in Backfill

If proposed backfill lift thickness methodology exceeds (8") eight-inch loose layers, additional certified reports signed by a registered Professional Engineer shall be required. All Contractors must demonstrate proof of proper compaction and maximum dry density through a control test strip. Certified reports must document the name of the Contractor engaged in backfilling operations of Millbury streets, control test strip location address, model name and type of equipment used, certified maximum dry density and corresponding moisture content (ASTM D 1557), material lift thickness, and statement certifying the minimum and maximum material thickness to achieve a minimum of

95% laboratory maximum dry density. Note that these reports must be updated each spring; lab reports from the previous season shall not be accepted.

6. An approved "Dig Safe" authorization number shall be maintained.
7. In the event that work, encroachment, or repairs not designated in the original permit must be performed in the same location, the Permittee shall make a new application to the DPW for a permit authorizing such additional work, encroachment or repairs.
8. Any person making, causing or maintaining any excavation or encroachment has the responsibility and obligation to determine whether or not all or any part of such excavation or encroachment traverses a Town roadway, and to determine from the DPW whether or not any such excavation or encroachment requires a permit under these Rules and Specifications.
9. (3) Three references, preferably from municipalities, are required for all new Contractors.
10. Contractor must forewarn all impacted abutters, providing them with a phone number and the name of a contact person to answer any questions.
11. Signature of Permit applicant.
12. Security and permit fees based upon the reasonable cost of administering the Rules and Specifications enacted by the Town of Millbury as established by the Director of Public Works and confirmed by the Town Accountant.
13. The Permittee must call 508-865-9143 to notify the DPW 24 hours in advance of each of the following activities listed below. Failure to notify the DPW may result in project shut down and subsequent police enforcement, unless otherwise approved by DPW.
  - 1) Work starting
  - 2) Backfilling
  - 3) Paving Operations
  - 4) Completion of work

The following information should be provided during the phone call:

- 1) Permit Number
- 2) Type of Activity
- 3) Date and Time of the Activity
- 4) Foreman name and phone number

### **Sec. 3.08 Penalties**

If an excavation is made in the public right-of-way without obtaining a permit, a \$1,000 fine will be assessed. After obtaining a permit, the permittee will be allowed to complete the work. However, the permittee will be on a probationary period for the remainder of the construction season or 6 months, whichever is longer.

Any person, firm, or corporation who violates any of these Rules and Specifications shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than \$500. A violation shall be issued for each day a worksite remains in violation and is subject to a fine of not less than \$500 or each issued offense. If the work or any part thereof mentioned in the permit is unskillfully or improperly done, the DPW shall make any necessary repairs and shall keep an account of the expense thereof. The Permittee responsible for said work shall pay the DPW an amount equal to the whole of said expense incurred by the DPW with an additional amount of (15%) fifteen percent to cover indirect costs.

Thereafter, upon completion of the work and the determination of the costs thereof, the DPW shall issue no further permits to any person or utility until it receives payment of said costs.

Any person or utility that continues to violate any regulation of this manual shall receive no future permits until such a time as the Director of Public Works or designee is satisfied that the person or utility shall comply with the terms of these Rules and Specifications.

## **SECTION 4.00**

### **TECHNICAL STANDARDS**

#### **Sec. 4.01 General**

Any person or utility having obtained a street or sidewalk opening permit shall be fully responsible for restoring streets, sidewalks, walkways, driveways and their appurtenances (i.e. granite curb, underdrain, filter fabric, sewer and drainage structures, median strips, signage pavement markings, traffic signal loops, handicap access ramps, etc.) in complete compliance with the DPW's Rules and Specifications. All persons and utilities are encouraged to obtain a current copy of the DPW Rules and Specifications from the DPW's office. If directed by the DPW, photographs shall be taken prior to the start of work to insure the restoration of designated areas back to, or better than, their pre-construction conditions. Copies of the photographs shall be delivered to the DPW to be kept in the files.

All Town General By-Laws, Subdivision Regulations, contract specifications, and DPW Rules and Specifications must be strictly complied with for all operations connected with the work defined by the permit. The materials, workmanship, manner and method of executing the work are to be performed to the complete satisfaction of the Director of Public Works or designee.

The Permittee is required to furnish all materials and shall be responsible for the job to be executed in an orderly, timely, quality-controlled manner utilizing proper workmanship and construction techniques conducted in accordance with industry standards for the successful completion of the work, backfilling, appurtenant restorations, and pavement repair.

The Permittee shall keep a competent foreman overseeing sufficient competent employees to perform the work with all proper speed in accordance with the requirements of the law, other public authorities, and to the reasonable satisfaction of the DPW.

The Permittee shall conduct the work in such a manner as not to unreasonably interfere with other work being done by the DPW, by contract or otherwise. As deemed necessary by the DPW, the work done under these specifications shall conform to the progress of said other work. The Permittee shall cooperate with the contractors or employees who may be doing work for the DPW, and with public service corporations affected by the work, in arranging for storage places, temporary support for structures, repairs, etc.

All temporary repairs shall be properly maintained by the Permittee to assure acceptable conditions until the permanent repairs have been made.

All Work performed under the Permit shall meet the requirement of Massachusetts Department of Transportation Specification dated 1988, latest revisions, except as otherwise specified.

#### **Sec. 4.02 Safety**

All work must be conducted in strict accordance with the latest Regulations of OSHA. All work shall be performed in accordance with the DPW Rules and Specifications, or in a manner as prescribed by the DPW for circumstances not covered by the Rules and Specifications.

- A. Provisions shall be made for the safety and protection of pedestrian and vehicular traffic during the construction period.
- B. The Permittee shall be responsible to furnish and erect all required signs and traffic safety devices.
- C. Cones and non-reflecting warning devices shall not be left in operation on the roadway when daytime operations have ceased, unless otherwise directed by the DPW. If it becomes necessary for the DPW to remove any construction-warning device, or the appurtenances from the project due to negligence by the Permittee, all cost for this work shall be charged to the Permittee.
- D. Flashing arrow boards shall be used as directed when operations occupy the roadway, and shall be available for use at all times.

- E. All signs and devices shall conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD), unless otherwise directed by the DPW.
- F. When in the opinion of the DPW the work constitutes a hazard to pedestrians and/or vehicular traffic in any area, the Permittee may be required to suspend operations during certain hours, and is obligated to remove any equipment from the roadway.
- G. The roadway surface shall be kept clean of debris at all times, and shall be thoroughly cleaned upon the completion of any work at the end of every shift.
- H. Blasting, if necessary, shall be done in accordance with state law and local ordinance.
- I. Massachusetts Department of Transportation Standards for Line Clearance shall conform to the National Electric Safety Code Standard Clearance for Highway Crossings.
- J. All Permittees shall conduct and carry out excavation work in such a manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of the neighboring property. The Permittees shall take appropriate measures to reduce to the fullest extent possible any noise, dust, or unsightly debris between the hours of 7:00 a.m. and 6:00 p.m. The Permittee shall not use, except with the express written permission of the DPW or in case of an emergency as herein otherwise provided, any tool, appliance, or equipment producing noise of sufficient volume to disturb the sleep of the neighboring property.
- K. The Permittee shall be required to take all necessary precautions to protect private property from damage and to prevent unnecessary inconvenience to residents in the Town of Millbury by providing a safe means of access to private and commercial property throughout the duration of any construction project.

Any public safety hazard shall not be tolerated. If such a condition exists the Permittee is required to respond and resolve this issue immediately. Failure to respond to a public hazard and rectify the situation shall result in work stoppage and suspension of permits.

#### **Sec. 4.03 Excavation Requirements**

Street Openings deeper than (5') five feet shall require shoring and bracing, adhering to the Occupational Safety and Health Act (OSHA). This includes where unsafe conditions are created due to composition of the soil, climatic conditions or construction operations.

##### **A. Cutting pavement in streets:**

- 1. The Permittee shall make every effort to minimize damage to the pavement. The Permittee shall promptly repair any pavement damage created by the excavation.
- 2. Initial excavations into paved street surfaces shall be pre-cut to the full depth of the existing pavement using one of the following methods: motorized wheel cutting, saw cutting, or cold planning, or pneumatic chiseling.
- 3. No irregular shapes or jagged edges shall be acceptable. No cut shall be shaped in such a way that it would prevent compaction rollers and plates from being adequately utilized in the area. The shape of pavement cutouts shall be rectangular, unless otherwise agreed to by the DPW and the Permittee. All irregular shaped cuts or damaged pavement shall be repaired at the expense of the Permittee.
- 4. Pavement edges shall be trimmed to a neat vertical face, free of loose materials and neatly aligned with the centerline of the trench.
- 5. Unstable pavement shall be removed over undermined areas and over-breaks, and the sub-grade shall be treated as the main trench.
- 6. Prior to permanent paving (see Section 4.07.B.2) the Permittee will be required to saw cut the opening larger for final pavement restoration.

#### B. Cutting Sidewalks:

1. All cuts on concrete sidewalks shall be made from the nearest joint or score line on one side of the excavation to the nearest joint or score line on the other side of the excavation.
2. All cuts on asphalt sidewalks shall be made by neatly squaring all edges to form a rectangular shape at a 90° (degree) angle. Minimum length repair shall be 20' long.
3. If the sidewalk is to be closed at any time the Permittee must provide (2) two **MUTCD R9-10** "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements.

#### C. Cutting Driveways:

1. Driveway excavation shall incorporate the full width of the driveway opening and extend from the gutter line on the street to the street right-of way. If the driveway opening is greater than or equal to (20') twenty feet in width from radius to radius, the DPW may require a reduction in excavated area.

After cutting, all excavated material shall be removed from the jobsite. The trench area shall be backfilled with either new processed gravel conforming to Massachusetts Department of Transportation standard specification M1.03.1 "Processed Gravel for Sub-base", or the Permittee may re-use suitable excavated material for backfill provided that this material is tested and certified by a Professional Engineer to meet specification requirements under Section 4.05.E. All testing expenses shall be the responsibility of the Permittee.

Under no circumstances shall an open excavation be left unattended overnight, unless properly plated.

#### **Sec. 4.04 Steel Plates**

Steel plates may be used when temporary patching or permanent paving can not be the same day excavation occurs. No excavation shall remain open unattended. All excavations and trenches shall be backfilled or steel plated prior to the cessation of work on every day unless otherwise directed by the DPW. Two-way traffic must be maintained at all times.

It is the responsibility of the Permittee to perform a daily monitor of all active plate(s) or unattended plate(s) location(s), and where necessary take appropriate measures should plate(s) shift or move, exposing part of or all the excavation creating a public safety hazard.

If steel plates are used to protect an excavation they shall be of sufficient thickness to resist bending, vibration, loud banging etc. under traffic loads. All steel plates must be securely anchored to prevent movement.

All steel plates must meet ASTM A 36 steel (minimum), having a thickness sufficient for supporting the intended traffic load with a maximum allowable deflection of (3/4") three-quarter inch. Steel plates must completely cover the open trench and have a minimum overlap on adjacent shoulder areas of (18") eighteen inches. Sandy gravelly soils with large angles of repose, as determined by the DPW, may require larger plated shoulder areas.

All steel plates must be treated with an asphalt based sound dampener, such as Soundamp E available from SOUND SEAL, or an approved industry equivalent.

All plates will be recessed to the adjacent pavement surface or secured by other DPW approved method. If plates are NOT recessed the plate must be ramped with a (2') two-foot width of hot mix asphalt or modified Unique Paving Material (UPM) or high-performance cold patch in the travel direction and a (1') one-foot ramp in the non-traveled direction. All modified Unique Paving Material (UPM) or high-performance cold patch shall be blotted with a stone dust to prevent tracking.

The DPW may require recessed steel plates in special situations such as Public events, etc.

#### Sec. 4.05 Backfill Requirements

- 5/10/2011 6/11
- A. Excavation openings shall be backfilled using approved MassDOT M1.03.1 Processed Gravel for sub-base or approved recycled gravel, see section 4.05.E, compacted in (8") *eight-inch loose layers* to 95% of maximum density, unless otherwise approved by the DPW. In most cases backfilling shall occur on the same day as the excavation, however if not possible due to the complex nature of work, emergency, or unpreventable conditions, the Permittee must immediately notify the DPW.
  - B. Temporary or permanent sheeting, shoring or bracing shall be used to support the sidewalls of the trench, preventing the undermining of the full depth of (12") twelve inches, stable shelf of undisturbed street base and the existing adjacent pavement. This installation shall be required to maintain the safety of personnel and traffic. Steel sheeting, shoring, or bracing shall be driven or placed for all depths over (5') five feet. When sheeting and bracing are to be wholly or partly removed, this shall be done as backfilling progresses. When backfilling has reached the bottom of a brace, its horizontal ranger shall be removed. This procedure shall be repeated throughout the backfilling operation. The sheeting shall be pulled in short increments with every precaution taken to avoid significant lateral movement at the sides of the trench. All backfill in the space formerly occupied by the sheeting shall be thoroughly and properly compacted during and after pulling the sheeting.
  - C. Whenever standing water is located in the excavation area, the water and saturated soils shall be removed by pump or other means before backfilling operations begin. If water remains due to a high water table then the following backfilling methods shall apply:
    1. Filter fabric shall be placed to form a lining for the crushed stone backfill to be wrapped in. The filter fabric must completely cover the stone backfill when placed. Crushed stone meeting MassDOT standard specifications must be placed to the height of saturation and completely wrapped in filter fabric.
    2. Backfill requirements shall be dependent upon vertical trench area absent of saturation. A minimum of (24) twenty-four inches of processed or approved recycled gravel shall be spread in layers not exceeding (8") eight inches in loose depth and compacted to no less than 95% of the maximum dry density of the material, ASTM D1557, up to the base of temporary pavement.
  - D. If a layer of concrete, cobblestone, granite pavers, or other supporting material exists, the Permittee shall install concrete, conforming to Section 4.08.C, to match the existing depth prior to the installation of pavement.
  - E. The DPW may perform nuclear field density testing (AASHTO T-238 and T-239) for compaction verification at the Permittee's expense.

#### MassDOT M1.03.1 Processed Gravel for sub-base Backfill Specification:

All backfill material shall be free from rubbish, organic material, frozen material, broken pavement, other debris, stones larger than 3" in diameter, or other deleterious material.

<u>Sieve</u>	<u>Percent Passing</u>
3"	100
1-1/2"	70 – 100
3/4"	50 – 85
#4	30 – 55
#200	0 – 10

Recycled backfill material may be used after approval from the DPW. Approval shall be made on a case by case basis after the Permittee submits test results signed by a registered Professional Engineer certifying that:

1. Recycled material is inert consisting of hard, durable stone, coarse sand and allowable recycled material.

2. Not more than 50% of the material shall be comprised of recycled material. Not more than 5% of the recycled material shall be clay brick. All clay brick shall be fractured into portions smaller than (1/2) one half standard brick length.
  3. Concrete shall have (<12%) less than twelve percent volume by weight after (5) five cycles by the magnesium sulfate soundness test.
  4. The recycled material shall be free of loam, clay, roots, wood and other deleterious material.
  5. The gradation shall meet the requirements for MassDOT's Processed Gravel for Sub-base M.1.03.1.
  6. The coarse aggregate shall have a percentage of wear, by the LA Abrasion Test, of not more than 50.
- F. When gravel backfill cannot effectively be compacted to 95% of the maximum dry density of the material with traditional equipment due to multiple conduits, ducts and pipes, or manhole/catch basin structures then Control Density Fill (CDF) may be required.
- G. When small holes such as bar holes, and cores are made, they will be backfilled hydraulic cement and sealed with asphalt emulsion or plugs. Holes in sidewalks will be filled with Portland cement concrete to match the existing depth.

#### **Sec. 4.06 Control Density Fill (CDF)**

- A. Certain circumstances as determined by the DPW may require Controlled Density Fill (CDF) as an alternate backfill material. The DPW will allow Controlled Density Fill (CDF) under the following conditions:
1. *When gravel backfill cannot be effectively compacted around existing structures, multiple conduit, ducts, pipes, and/or trenches exhibiting pockets and voids along the trench walls.*
  2. When it is necessary for any Permittee to make an opening into a Protected Street.
- B. Only Type 1E Excavatable Flowable Fill shall be allowed. These mixtures are designed to exhibit very flowable characteristics ideal for filling small, hard to reach areas such as multiple duct trenches whereby maneuvering compaction equipment would be difficult. Type 2E Excavatable Flowable Fill can also be used, however, Type 2E is not as flowable as Type 1E. The DPW further requires:
1. CDF is not to be used in situations that shall cause floating of utility lines, or in the presence of ductile iron, cast iron or steel pipes.
  2. CDF placement in trenches must be fully barricaded or under police supervision for a minimum of twenty-four (24) hours after the pour, or until a set is reached that shall prevent a hazard to animals or humans.
  3. Certain utility lines may be separated with a cover of sand bedding material prior to CDF.

#### **Control Density Fill Specification:**

- A. The CDF ingredients shall comply with the following:

a. Portland Cement	AASHTO M85
b. FLY ASH	AASHTO M295, Class F
c. Fine Aggregate	M.4.02.02
d. Air Entraining Admixtures	M.4.02.05

B. The CDF must meet the following requirements:

- a. Compressive Strength @ 28 days = 30 - 80 psi (210-550kPa)
- b. Compressive Strength @ 90 days = 100 psi max. (700kPa max.)
- c. Slump = 10 -12 inches (250-300 mm)
- d. Air = 1%-3.0%

Fly Ash CDF shall not be placed if the temperature falls below 20 degrees Fahrenheit.

#### **Sec. 4.07 Paving Requirements**

The permanent restoration of patches and trenches must be completed no later than (45) forty-five days after completion of any temporary restoration. At the Permittees discretion, the paving can take place immediately after backfilling operations without any temporary paving.

The Permittee shall take every reasonable measure to completely install permanent paving on the same day excavation occurs. If same day paving is not achievable due to size of work, the Permittee must notify the DPW and take appropriate measures to install temporary paving until permanent paving work recommences. In no case will Unique Paving Material (UPM) or high-performance cold patch be allowed as a temporary paving for more than 72 hours or over weekend.

At the close of each day all openings that are backfilled must be made safe and level with the adjacent roadway utilizing either steel plates, hot mix asphalt, or temporary Unique Paving Material (UPM) or high-performance cold patch to prevent the spread of dust and debris from inclement weather and/or traffic. Temporary Unique Paving Material (UPM) or high-performance cold patch must be replaced with hot mix asphalt within 72 hours.

#### **A. High Performance Unique Paving Material (UPM) or high-performance cold patch**

The bituminous material shall be either UPM Liquid Asphalt Blend (Unique Paving Materials-Cleveland, Ohio 1-800-441-4880), or an approval equal. The material must be prepared from a base asphalt stock meeting the following requirements:

ASTM D-1310	Flash Point (TOC) 94°C (200°F) min.				
ASTM D-2170	Kinematic Viscosity @ 60°C (140°F) 400-650				
ASTM D-95	Water: 0.2% Max.				
ASTM D-402	Distillate	Test	(Volume	of original	sample)
	To	225°C		(437°F):	None
	To	260°C		(500°F):	None
	To	315°C		(600°F):	0-18%
Residue from Distillate at 360°C (680°F): 72-95%					
Tests on Residue:					
ASTM D-2171	Abs. Viscosity at 60°C (140°F): 125-425 Poises				
ASTM D-5*	Penetration: 180 min. (using cone method)*				
ASTM D-113	Ductility at 4°C (39°F) 1cm/min: 100 min.				
ASTM D-2042	Solubility in Trichloroethylene: 99% min.				

\* Same procedure as ASTM D-5 except using a penetration cone conforming to ASTM D-217 in lieu of the standard penetration needle. The total moving weight of the cone and attachments shall be 150g ± 0.1 grams. The transfer dish water level shall be lowered to less than the height of the sample followed by decanting water from the top of the sample before transferring from the bath to the electrometer.

The bituminous material shall be available in various grades so that one such grade shall enable a stockpile to remain pliable and workable at a temperature of -15°F (-26°C).

#### **B. Temporary Asphalt Pavement**

1. All temporary pavements shall be MassDOT M3.11.00 Class I hot-mix asphalt, placed in (2) two compacted lifts each having a depth of (1½") one-and-one-half inches resulting in a total depth of (3") three inches. Temporary pavement shall be installed according to these specifications, which includes the placement, compaction and workmanship in accordance with the applicable provisions of the MassDOT Standard Specifications for this material.
2. Hot-mixed asphalt materials shall be laid upon an approved, clean, dry, compacted surface, spread and struck off to the established grade and elevation giving regard to the loss in depth between loose and compacted mixtures. Immediately after the hot mix asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted. Tack coat shall be applied to provide a tight seal preventing water infiltration to the existing pavement.

### C. Permanent Asphalt Pavement

Trenches (greater than 400 sq. ft.) will require an overlay/inlay. The width of the overlay/inlay will be a minimum travel lane width, approximately ten (10) feet wide; however the actual width could vary according to the trench configuration. Patches (less than 400 sq. ft.) may require overlays/inlays whenever a number of patches are made in close proximity to one another. See Appendix C "Permanent Paving Details".

1. All backfill materials placed, compacted and the involved workmanship shall be in accordance with the applicable provisions of these DPW Rules and Specifications prior to permanent hot-mix asphalt pavement.
2. When excavations are laid out for permanent repair, chalk lines will be laid out six (6) inches minimum beyond the trench line on each side of the trench. When pavement fracture occurs (blowouts/undermined areas) or projections are made at short intervals outside the trench line (line scored by pavement breaker) or where recessed plates are used, the chalk lines will be placed out to this dimension to insure a straight trench line. Excavation must be rectangular in shape with all corners being of a (90°) ninety-degree angle.
3. Where excavations are placed two (2) feet or less from the curb, edge of roadway, or an existing patch, the remaining pavement shall be removed and replaced to the curb, edge of the roadway, or old patch as part of the opening.
4. Existing paving and gravel materials shall be saw-cut and neatly removed. The pavement structure granular foundation of compacted Processed Gravel for Sub-base shall be brought to true line and grade.
5. All vertical faces of existing pavement shall be neat, free of loose materials, and tack coated with an approved asphalt emulsion to provide a tight seal preventing water infiltration at the joints.
6. Hot-mixed asphalt materials shall be laid upon an approved, clean, dry, compacted surface, spread and struck off to the established grade and elevation giving regard to the loss in depth between loose and compacted mixtures. Immediately after the hot mix asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted.
7. The placing temperature of hot-mixed asphalt shall be between 255°F (degrees Fahrenheit) and 325°F (degrees Fahrenheit). All compaction by mechanical roller shall be completed before the mixture cools below 150°F (degrees Fahrenheit), or that temperature allowed by the asphalt binder manufacturer. This shall be checked using a thermometer suitable for this type of work.
8. All patches and trenches shall have the following **minimum cross section**:
  - A. **Arterial/Collector**: (6-1/2") six-and-one-half inches, and shall be composed of approved hot mix asphalt. (2) two compacted lifts of MassDOT Dense Binder measuring (2-1/2") two-and-one-half-inches each, resulting in a total of (5") five inches, followed by (1) one compacted course of (1-1/2") one-and-one-half inch of MassDOT Modified Top.

- B. Local Street: (4") four inches, and shall be composed of approved hot mix asphalt. (1) one lift of MassDOT Dense Binder measuring (2-1/2") two and half inches, followed by (1) one compacted course of (1-1/2") one-and-one-half inch of MassDOT Modified Top.
- 9. Patches and trenches on protected streets will require additional curb to curb and/or lane width milling and overlaying in accordance to details in Appendix D and/or directed by the DPW and shall have the following minimum cross-section:
  - A. Arterial/Collector: 1-3/4" MassDOT Modified Top over 1-3/4" milling.
  - B. Local Street: 1-1/2" MassDOT Top over 1-1/2" milling.
- 10. The top wearing surface must be applied to all openings within one week of installing the Dense Binder.
- 11. Each layer of hot-mixed asphalt shall be compacted separately meeting the minimum requirement of 92% compaction of standard laboratory maximum theoretical density for the specific HMA material. Compaction testing shall be performed. All testing expenses shall be the responsibility of the Permittee.
- 12. Each course is to be thoroughly compacted by a power vibratory roller weighing not less than (5) five tons. Where space does not permit the use of a roller, each course shall be thoroughly tamped or otherwise compacted by a method approved by the DPW and to the level of compaction equivalent to that achieved by a vibratory roller.
- 13. All top surface joints between the permanent pavement repair and the existing pavement are to be sealed with a hot rubber joint sealant to prevent water infiltration to the satisfaction of the DPW.

#### A. Castings and Substructures

- 1. All existing cast iron structures to be reset shall be adjusted to change in line or grade per the individual utility. All castings shall be set on brick masonry, where necessary, to conform to the line and grade required. After casting has been set to grade on masonry using 50/50 cement and sand Type 3 mixture. Cast iron structures must be encased in bituminous concrete binder or high early strength concrete with a minimum depth of (6") six inches, and for a distance of (18") eighteen inches around the outside of the casting.
- 2. Contractors are not allowed to use mortar, brick pieces, or brick chips to construct the structural shim between the catch basin frame, or manhole casting frame, and the lower structure. If a full brick cannot be accommodated between the catch basin frame, or manhole casting frame, and the lower structure then galvanized steel plates must be used to construct the structural shims.
- 3. If used, steel shims must be a minimum of (4") four inches in width and eight inches in length. Steel plates may vary in thickness as required.

#### B. Loop Detectors

- 1. Slots in the bituminous concrete pavement shall be cut with a concrete sawing machine to a uniform depth and as required in order to accommodate all necessary loop turns or leads. Dry cutting shall not be allowed. Diagonal saw cuts of at least (12") twelve inches in length must be made at each corner to prevent sharp bends in the wire. The diagonal cuts shall overlap the main cuts so that each wire-bearing slot has full depth.
- 2. The cut shall be cleared of debris and thoroughly dried before installation of the wire loop. The wire shall be inserted in the cleared, dried slot with a blunt wooden or plastic tool that shall not damage the insulation.

3. Loop wire crossing joints or noticeable cracks shall be protected with an approved insulating sleeve for at least (6") six inches on either side of the joint or crack, and the ends of the sleeving material shall be taped to prevent entry of slot sealing compound in order to prevent bonding of the wire to the pavement. The sleeving shall be furnished and installed at no extra cost, and shall be incidental to the induction loop item. The end of the (1½") one-and-one-half inch PVC conduit shall be plugged with an approved material, and loop wires entering the conduit shall be sleeved and taped as outlined above
4. No splice shall be used in the installation of any inductive loop or its lead-in to the appropriate pull box. Loop lead-in wire shall be spliced to the loop in the hand hole or pull box and shall be installed to the controller cabinet without any additional splices.
5. The pavement slots for the hot-mix asphalt pavements shall all be filled with an approved two-component embedding sealer strictly in accordance with the directions of the manufacturer. The sealer shall be specifically recommended by the manufacturer for this use in new and existing hot-mix asphalt pavements.

#### **C. Pavement Markings**

1. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after the completion of work, or as directed by the DPW. If work disturbs centerlines or lane markings on arterial/collector streets, the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost, including incidental items such as tack coat, crack seal, towing, and police details used in making all repairs is the sole responsibility of the Permittee.
2. The Permittee is responsible for replacing the entire crosswalk, even when only a small portion is removed, unless otherwise approved by DPW.
3. All reflectorized pavement markings and equipment shall be furnished and applied in accordance with Massachusetts Department of Transportation Specification dated 1988, Sections 860 and M7 subsection X7.01.20, latest revisions, except as otherwise specified.

#### **Sec. 4.08 Sidewalk and Driveway Requirements**

The permanent restoration of sidewalks and driveways must be completed no later than (30) thirty days after completion of any temporary repair. It shall be the responsibility of the Permittee to perform the necessary restoration beyond the limits of the sidewalk or driveway. This shall include, but shall not be limited to, restoration of lawns, shrubs, gardens, curbing, underdrains, cross-culverts, fabrics, fences, walls, signage, etc. All work, operations, and activities shall be performed in a manner that shall leave any lawn, garden, or grassy area clean of debris and in the same condition that existed before the work began. The Permittee shall not remove, even temporarily, any trees or shrubs within the public right-of-way without first obtaining the consent of the DPW.

All disturbed pedestrian ramp(s) shall be reconstructed to current ADA and AAB regulations. All costs of reconstruction of the Pedestrian ramp are the responsibility of the Permittee. All repairs must fully comply with ADA and AAB standards. Any repairs found to be in violation of ADA or AAB standards become the sole responsibility of the Permittee. The Permittee is required to maintain a compliant temporary pedestrian access, including signage, around the construction area according to ADA and AAB standards. The Permittee must maintain safe, unobstructed vehicular traffic throughout construction. If the sidewalk is to be closed at any time, the Permittee must provide (2) two *MUTCD R9-10* "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements. Appendix E contains the MassDOT Construction and Traffic Standard Details section regarding pedestrian ramps and should be referred to for any construction issues.

- A. Gravel for sub-base shall conform to the requirements of Section 4.05.A of the DPW's Standard Specifications. Gravel material installed for sidewalk and/or driveway base shall be either "MassDOT M1.03.1 Processed Gravel for sub-base" or a DPW approved Recycled Backfill Material, compacted to no less than

95% of the maximum dry density of the processed gravel materials, ASTM D1557, to the depth required by the DPW.

- B. Bituminous concrete (hot-mix asphalt) sidewalks shall be MassDOT M3.11.00 Class I hot-mix asphalt placed in (2) two compacted lifts each having a depth of (1½") one-and-one-half inches resulting in a total depth of (3") three inches. Driveways and pedestrian ramps shall be placed in (2) two compacted lifts each having a depth of (2.0") two inches resulting in a total depth of (4") four inches.
- C. Concrete sidewalks shall be air entrained, 4000 psi, and (¾") three-quarter-inch maximum size aggregate with 660 lbs of cement per cubic yard of concrete. Entrained air shall be between 5.5% and 7.5% with a slump not to exceed (4½") four-and-one-half inches. ASTM C150 Type 11 cement shall be used. The use of mineral additives or supplements such as Ground Granulated Blast Furnace Slag, Fly Ash, Silica Fume or Micro Silica is prohibited. Normal weight aggregate shall conform to ASTM C33, containing no deleterious substances, which cause surface spalling. The Permittee must certify in writing that no alkali reactivity is produced with the proposed aggregate-cement combinations when tested in accordance with ASTM C227.
  - 1. All concrete shall be produced in accordance with the approved mix designs. The Permittee shall comply with ACI 304 and 309 as herein specified.
  - 2. The Permittee shall be allowed to add water for slump adjustment, but is required to adhere to the standards of ASTM C94. This standard allows for slump adjustment on site if the truck arrives with a concrete slump less than (4½") four-and-one-half inches. This shall only be allowed if the following conditions are satisfied:
    - a) The water addition shall not increase the water cement ratio above the maximum permitted by the specification.
    - b) The water shall be added to the entire batch, not in the middle or end of the batch.
    - c) Water addition is not allowed to by-pass the 1½ hour or 300 revolution criteria.
    - d) Water shall be added into the batch at the head section of the drum or by injection into the head and discharge section of the drum.
    - e) Water added requires an additional 30 revolutions at mixing speed.
    - f) The driver's delivery ticket shall document any water withheld at the batching plant.
  - 3. Concrete with a slump exceeding (4½") four-and-one-half inches, air entrainment outside of the allowable range, or of a temperature exceeding (90°F) ninety degrees Fahrenheit is not to be installed. All concrete must be placed within 90 minutes of when it was batched as recorded on the delivery slip.

D. Workmanship

- 1. Sufficiently compacted gravel shall be placed upon the sub-grade so that the top of the gravel shall be (4") four inches for sidewalks and (6") six inches for driveways and pedestrian ramps below and parallel to the proposed finished surface.
- 2. All forms shall conform to the various subsections of the specifications listed below.
  - a. The forms for Portland Concrete Cement (PCC) shall be smooth, free from warp, of sufficient strength to resist springing out of shape, and of a depth to conform to the thickness of the proposed walk.
  - b. All mortar and dirt shall be completely removed from the forms that have been previously used.
  - c. The forms shall be well staked, thoroughly braced, and set to the established lines with their upper edge conforming to the grade of the finished walk. The finished walk shall have sufficient pitch from the outside to the edge of the walk providing adequate surface drainage at a rate of (¼") one-quarter inch per foot, unless otherwise directed by the DPW.

- d. Before concrete is placed for PCC sidewalks and driveways the sub-grade shall be thoroughly dampened so that it is moist throughout, but without puddles of water.
  - e. The concrete shall be placed as near to its final position as possible with precautions taken not to overwork the concrete while it is still fluid.
  - f. The concrete shall be thoroughly spaded along the forms, or screeded to eliminate voids or honeycombs at the edges.
  - g. All concrete slabs shall be (30') thirty feet in length and separated by (¼") one-quarter inch preformed transverse expansion joints, unless otherwise directed by the DPW. Preformed expansion joint filler shall be placed adjacent to or around existing structures and as directed by the DPW.
3. Concrete shall be laid on the sub-base, specified above, and shall conform to the various subsections of the specifications listed below.
- a. The concrete shall be thoroughly consolidated in place over an approved sub-base. It shall be (4") four inches in depth for PCC sidewalks and (6") six inches in depth for PCC driveways. The PCC for sidewalks and driveways shall be worked and floated so as to give a smooth, uniform and attractive surface finish. In conveying the concrete from the place of mixing to the place of deposit, the operation must be conducted in such a manner that no mortar shall be lost, and the concrete must be handled so that the concrete remains of uniform composition exhibiting neither excess, nor lack of, mortar in any one place. The concrete materials shall be mixed to produce a consistency where the water shall flush to the surface under heavy tamping. Revamping of the concrete shall not be permitted. The application of neat cement to the surface in order to hasten hardening is prohibited. Inspection and testing of cast-in-place concrete work, either at the plant or in the field, shall be performed by, and at the discretion of, the DPW. Such inspection and testing shall not relieve the Permittee of his responsibility to provide his own quality control as necessary to furnish materials and workmanship in accordance with requirements of these Rules and Specifications.
  - b. The material shall adhere to the surface and make a tight bond with the concrete, but shall have a fugitive dye. The compound shall form a uniform, continuous coherent film that shall not check, crack, or peel and shall be free from pinholes or any other imperfections. Whenever the temperature is (90°F) ninety degrees Fahrenheit or more, the DPW shall have the right to require a second application of compound at no additional expense to the DPW. Any section damaged by rain, or in any other way, before the compound has dried to a stable coating shall be retreated by the contractor at no additional expense to the DPW. The concrete surface to which compound has been applied shall be protected for a period of at least (3) three days. All vehicular and pedestrian traffic shall be considered detrimental to the film of applied compound and shall be prohibited. Any damage to the film in the (3) three-day period shall be promptly repaired by reapplication of the compound at no additional cost to the DPW.
  - c. Adequate protection must be provided when temperatures of (40°F) forty degrees Fahrenheit or lower occur during the placing of concrete, and during the early curing period. The minimum temperature of fresh concrete after placement, and for the first (3) three days shall be maintained above (55°F) fifty-five degrees Fahrenheit. An additional (3) three days of protection from freezing shall be maintained if required
  - d. The Permittee shall make every effort to protect the newly poured concrete surface against vandalism, marking, or defacing and must stand ready to replace any blocks which, in the opinion of the DPW, are excessively marked or defaced without any additional cost compensation to the Permittee from the DPW.
4. Concrete shall be finished and shall conform to the various subsections of the specifications listed below.

- a. The finishing of the concrete surface shall be performed by experienced and competent cement finishers. Pre-formed (1/4") one-quarter inch expansion joint filler shall be used in the transverse expansion joints for a PCC sidewalk, and the joints shall conform to the requirements of AASHTO designation M-33, Type 2 liquid membrane-forming compounds for curing that shall be used in accordance with ASTM designation C-15 designation M148-57, or the latest revisions. The concrete surface shall be stuck off to the required elevation and cross-section, followed by the roller, and then leveled with a bull float, or scrape the minimum if necessary to remove irregularities. No finishing operation shall be performed while free water is present. Finishing operations shall be delayed until all bleed water and water sheen has left the surface and the concrete has begun to stiffen. All joints shall be round and cut to a minimum of one-quarter of the concrete depth. Concrete shall be finished utilizing a steel trowel with all finishing to be done by hand. After tooling, the surface shall be brushed by drawing a soft-bristled push broom with a long handle over the surface of the concrete to produce a non-slip surface.
- b. Type 2 pigmented liquid membrane-forming curing compound shall be applied immediately following final finishing, and before any marked dehydration of the concrete or surface checking occurs. The compound shall be applied in one or two applications as directed by the DPW. When the compound is applied in two applications the second shall follow the first within (30) thirty minutes. The compound shall be applied in a continuous film by means of power-operated pressure spraying equipment at a rate not less than (1) one gallon per (200) two hundred square feet of surface. Sufficient pressure shall be applied to the spray machine to force the compound to leave the nozzle as a fine spray.
- E. Loam shall conform to MassDOT Standard Specification Section M.1.07.0 "Topsoil and Plantable Soil Borrow". Loam shall have a minimum finished depth of (4") four inches
- F. Seeding shall conform to MassDOT Standard Specification Section M.6.03 or as required by the DPW. Permittees shall be required to continually seed areas of loam with seed until a satisfactory growth of grass is established as determined by the DPW. The Permittee is required to establish a healthy (90%) ninety percent grass growth through (2) two consecutive mowing of any lawn repair. The DPW strongly recommends that the Permittee photograph and date any horticultural restorations and healthy grass growth after (2) two mowing, and submit this documentation to the DPW.
- G. If subsequent testing on hardened concrete by the DPW shows that the concrete does not meet the specification requirements, the contractor shall in addition to being responsible to replace any material or workmanship which is rejected, and shall also be responsible for the cost of the testing.

#### **Sec. 4.09 Special Conditions**

##### **A. Geofabric Material**

1. If an excavation cuts through an area that has been constructed with Geofabrics, the following restoration procedures shall be strictly followed:
  - a. A fabric replacement piece that has similar properties as that of the damaged fabric must be used. The most important property is that of the O<sub>95</sub> Sieve Test, which has an opening allowing (5%) five percent of the glass beads to pass through when sieved (ASTM D4751-87).
  - b. The trench walls must be cut a minimum of (4") four inches in the area of Geofabric replacement with every precaution taken so as not to disturb the exposed fabric. A minimum of a (4") four-inch overlap of new fabric is required. Soil migration in this seam area shall not be allowed. The seam width shall increase if the sub-grade is determined to be very soft. If a soft sub-grade exists and the trench lies directly beneath a wheel-path, the seam width shall increase to (12") twelve inches.

- c. Seams shall be sewn or stapled in accordance with manufacturer's recommendation. If sewn, the Permittee shall use colored thread, shall not sew near the edge of the fabric, shall not double sew at 10-15 stitches per inch, and shall use thread material that closely matches fabric properties. If stapled or pinned, the Permittee shall pin on 2 foot (0.6m) centers and use 6"x 1" wide staples which can be applied by foot activated guns.
- d. Caution shall be exercised when placing and compacting the first (12") twelve inches of material so as to not damage the Geofabric material.

#### B. Under-drain

1. If an excavation cuts through an existing under-drain system it shall be repaired by the Permittee, in accordance with the DPW's Rules and Specifications or as directed by DPW, at no additional cost to the DPW.
2. The DPW reserves the right to require a Permittee to install an under-drain within any major excavation zone if the DPW determines the existing conditions warrant the use of under-drains

#### C. Driveways

Prior to driveway construction or modification plans must be submitted and approved by the Director of Public Works. Driveways shall not obstruct the flow of water along existing roadside drainage swales and require the placement of a cross-culvert to allow the flow of storm water runoff. Provisions must be made to prevent storm runoff from flowing down the proposed driveway into the street and prevent street runoff from flowing into the subject property via the proposed driveway. See Appendix E - Driveway Detail.

1. When Contractor/Developer is constructing a driveway on a private road, the Consultant hired by the Town to monitor subdivision construction will coordinate with DPW for each driveway, notification from the Consultant indicating they have inspected and approved the installed driveway must be submitted to the DPW, the Contractor/Developer is responsible for any fees due the Consultant for inspection services, the Contractor/Developer may request sign off on the driveway permit from the DPW upon furnishing proof of the approved inspection report and payment for the said inspection/plan review from the Consultant.
2. A culvert of HDPE, or its equivalent (as determined by DPW) shall be installed under all driveways constructed across existing drainage ditches or at any location where the topography would indicate future need. The size of the culvert shall be based on the hydraulic requirements, but with a minimum diameter of twelve inches (12"). The pipe to be located within the public right-of-way. Whenever feasible, new driveway culverts shall be placed a minimum of ten feet (10') from the existing or proposed edge of pavement. In no case shall the culvert be placed closer to the pavement than the existing ditch/swale. The driveway pipe shall be of adequate length, so that side slopes of the driveway shoulders do not exceed a two to one (2:1) slope.
3. Residential driveways shall have an angle of entry between 60 - 90 degrees, width between 10 - 20 feet, and curb radius between 3 - 10 feet. Common residential driveways shall have an angle of entry between 75 - 90 degrees, width between 18 - 24 feet and 3 foot minimum shoulder width.
4. Commercial driveways shall have an angle of entry between 75 - 90 degrees, width between 20 - 40 feet, and curb radius between 20 - 50 feet.
5. Temporary off-road access for construction/logging machinery will require a temporary driveway or construction tracking pad to protect the existing roadway pavement edge from vehicular damage. Construction tracking pad shall conform to commercial driveways Section 4.09.C.4 and Appendix E Driveway Section Detail B-B. The pad shall have a 4' minimum paved driveway. If construction pad impedes drainage flow due to existing swale/ditch, construction of a cross-culvert is required.

#### D. Utility poles

Activities involving new pole installation, pole removal, and/or relocation shall be completed no later than (45) forty-five days from date of permit issuance. The sidewalk surface shall be kept clean of debris at all times, and shall be thoroughly cleaned upon the completion of any work at the end of every shift. No stockpiling of materials.

E. Signs

All traffic control signs (i.e. STOP, YIELD, DO NOT ENTER, ONE WAY, NO PARKING, SPEED LIMIT, CURVE WARNINGS, etc.) approved by the DPW for removal, relocation, replacement, etc. must be immediately replaced by the Permittee, unless otherwise directed by the DPW. No such traffic control sign shall be removed, relocated or replaced without approval from the DPW.

## SECTION 5.00

### QUALITY ASSURANCE

#### Sec. 5.01 Inspections

The Director of Public Works may detail an inspector to supervise the opening, occupancy, obstruction, construction or use made under this Permit. The Director's representative shall have the full cooperation of the Permittee to rectify any deficiencies observed during a site visit. Failure to take action or exhibition of any hostile behavior towards the Town will result in the revocation of the Permit.

- A. The Permittee is required to contact the DPW at 508-865-9143 at least (24) twenty-four hours in advance of the start of work, backfilling, or paving operations. The DPW shall have an operator available Monday through Friday from 9 am until 3 pm. Outside office hours the Permittee can access an answering machine. All required information can be left on voicemail. The DPW requires the following information on all call ins:
  - (1) Permit Number
  - (2) Location
  - (3) Type of Activity
    - a. Starting Excavation
    - b. Backfilling
    - c. Temporary Paving
  - (4) Date and Time of the Activity
  - (5) Foreman Name and Cell Phone Number
- B. DPW inspectors will complete a field log, containing a 15-point inspection, for each street opening site visit. Anytime during street opening construction, if the Permittee is found in violation of these inspection points, the Inspector shall document and cite a violation to the Permittee.
- C. The DPW will use the Inspector's daily field logs to compile an overall street opening construction rating for each Permittee. The rating, expressed as a percentage, shall equal the number of violations over the number of site visits minus 100.
- D. During any time the Permittee's rating becomes unacceptable (<90%) all permits shall be suspended and the Permittee will be placed on probation for three (3) months.
- E. DPW shall conduct testing on a random basis to insure compliance with these Rules and Specifications. Testing may include procedures to confirm rideability, proper soils and pavement materials, depths, and compaction.
- F. All street opening failures will be reconstructed at the expense of the Permittee.

# APPENDIX A – PERMIT FEES

## **Refundable Security Deposit (per project)**

Excavation	\$5,000
Driveway	\$2,000

<b>Annual Trench Permit (Jackie's Law) per year</b>	<b>\$100</b>
<b>Application Fee (Each applicable activity - Sec.3.01)</b>	<b>\$100</b>

## **Excavations – Inspection Fee**

150 sq. ft. or less	\$175
Each additional 150 sq. ft.	\$35

## **Non-Excavation or Public Obstruction**

Per Day	\$25
Per Month	\$200

## **Driveways/Aprons**

New, Reconstruction or Enlargement	
Residential	\$50
Commercial	\$150
Resurfacing Existing Driveway	
Each Driveway	\$20

## **Coring or Shut off Holes**

Up to 5 Corings	\$15
6 Corings or More	\$35
Shut off holes (each)	\$35

## **Extended Maintenance Fee – New Pavement**

0 – 12 Months Old	\$2,500
13 – 24 Months Old	\$2,000
25 – 36 Months Old	\$1,500
37 – 48 Months Old	\$1,000
49 – 60 Months Old	\$500
61 Months or Older	Standard Permit Fee

BY SIGNING THIS FORM, THE APPLICANT, OWNER, AND EXCAVATOR ALL ACKNOWLEDGE AND CERTIFY THAT THEY ARE FAMILIAR WITH, OR, BEFORE COMMENCEMENT OF THE WORK, WILL BECOME FAMILIAR WITH, ALL LAWS AND REGULATIONS APPLICABLE TO WORK PROPOSED, INCLUDING OSHA REGULATIONS, G.L. c. 82A, 520 CMR 7.00 et seq., AND ANY APPLICABLE MUNICIPAL ORDINANCES, BY-LAWS AND REGULATIONS AND THEY COVENANT AND AGREE THAT ALL WORK DONE UNDER THE PERMIT ISSUED FOR SUCH WORK WILL COMPLY THEREWITH IN ALL RESPECTS AND WITH THE CONDITIONS SET FORTH BELOW.

THE UNDERSIGNED OWNER AUTHORIZES THE APPLICANT TO APPLY FOR THE PERMIT AND THE EXCAVATOR TO UNDERTAKE SUCH WORK ON THE PROPERTY OF THE OWNER, AND ALSO, FOR THE DURATION OF CONSTRUCTION, AUTHORIZES PERSONS DULY APPOINTED BY THE MUNICIPALITY TO ENTER UPON THE PROPERTY TO MONITOR AND INSPECT THE WORK FOR CONFORMITY WITH THE CONDITIONS ATTACHED HERETO AND THE LAWS AND REGULATIONS GOVERNING SUCH WORK.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO REIMBURSE THE MUNICIPALITY FOR ANY AND ALL COSTS AND EXPENSES INCURRED BY THE MUNICIPALITY IN CONNECTION WITH THIS PERMIT AND THE WORK CONDUCTED THEREUNDER, INCLUDING BUT NOT LIMITED TO ENFORCING THE REQUIREMENTS OF STATE LAW AND CONDITIONS OF THIS PERMIT, INSPECTIONS MADE TO ASSURE COMPLIANCE THEREWITH, AND MEASURES TAKEN BY THE MUNICIPALITY TO PROTECT THE PUBLIC WHERE THE APPLICANT OWNER OR EXCAVATOR HAS FAILED TO COMPLY THEREWITH INCLUDING POLICE DETAILS AND OTHER REMEDIAL MEASURES DEEMED NECESSARY BY THE MUNICIPALITY.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO DEFEND, INDEMNIFY, AND HOLD HARMLESS THE MUNICIPALITY AND ALL OF ITS AGENTS AND EMPLOYEES FROM ANY AND ALL LIABILITY, CAUSES OR ACTION, COSTS, AND EXPENSES RESULTING FROM OR ARISING OUT OF ANY INJURY, DEATH, LOSS, OR DAMAGE TO ANY PERSON OR PROPERTY DURING THE WORK CONDUCTED UNDER THIS PERMIT.

**CONDITIONS AND REQUIREMENTS PURSUANT TO G.L.C.82A AND 520 CMR 7.00 et seq. (as amended)**

By signing the application, the applicant understands and agrees to comply with the following:

- i. No trench may be excavated unless the requirements of sections 40 through 40D of chapter 82, and any accompanying regulations, have been met and this permit is invalid unless and until said requirements have been complied with by the excavator applying for the permit including, but not limited to, the establishment of a valid excavation number with the underground plant damage prevention system as said system is defined in section 76D of chapter 164 (DIG SAFE);
- ii. Trenches may pose a significant health and safety hazard. Pursuant to Section 1 of Chapter 82 of the General Laws, an excavator shall not leave any open trench unattended without first making every reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving said open trench unattended. Excavators should consult regulations promulgated by the Department of Public Safety in order to familiarize themselves with the recognized safety hazards associated with excavations and open trenches and the procedures required or recommended by said department in order to make every reasonable effort to eliminate said safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry.
- iii. Persons engaging in any in any trenching operation shall familiarize themselves with the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et seq., entitled Subpart P "Excavations".
- iv. Excavators engaging in any trenching operation who utilize hoisting or other mechanical equipment subject to chapter 146 shall only employ individuals licensed to operate said equipment by the Department of Public Safety pursuant to said chapter and this permit must be presented to said licensed operator before any excavation is commenced;
- v. By applying for, accepting and signing this permit, the applicant hereby attests to the following: (1) that they have read and understands the regulations promulgated by the Department of Public Safety with regard to construction related excavations and trench safety; (2) that he has read and understands the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et seq., entitled Subpart P "Excavations" as well as any other excavation requirements established by this municipality; and (3) that he is aware of and has, with regard to the proposed trench excavation on private property or proposed excavation of a city or town public way that forms the basis of the permit application, complied with the requirements of sections 40-40D of chapter 82A.
- vi. This permit shall be posted in plain view on the site of the trench.

For additional information please visit the Department of Public Safety's website at [www.mass.gov/dps](http://www.mass.gov/dps)

**Summary of Excavation and Trench Safety Regulation (520 CMR 14.00 et seq.)**

This summary was prepared by the Massachusetts Department of Public Safety pursuant to G.L.c.82A and does not include all requirements of the 520 CMR 14.00. To view the full regulation and G.L.c.82A, go to [www.mass.gov/dps](http://www.mass.gov/dps)  
Pursuant to M.G.L. c. 82, § 1, the Department of Public Safety, jointly with the Division of Occupational Safety, drafted regulations relative to trench safety. The regulation is codified in section 14.00 of title 520 of the Code of Massachusetts Regulations. The regulation requires all excavators to obtain a permit prior to the excavation of a trench made for a construction-related purpose on public or private land or rights-of-way. All municipalities must establish a local permitting authority for the purpose of issuing permits for trenches within their municipality. Trenches on land owned or controlled by a public (state) agency requires a permit to be issued by that public agency unless otherwise designated.

In addition to the permitting requirements mandated by statute, the trench safety regulations require that all excavators, whether public or private, take specific precautions to protect the general public and prevent unauthorized access to unattended trenches. Accordingly, unattended trenches must be covered, barricaded or backfilled. Covers must be road plates at least ¾" thick or equivalent; barricades must be fences at least 6' high with no openings greater than 4" between vertical supports; backfilling must be sufficient to eliminate the trench. Alternatively, excavators may choose to attend trenches at all times, for instance by hiring a police detail, security guard or other attendant who will be present during times when the trench will be unattended by the excavator.

The regulations further provide that local permitting authorities, the Department of Public Safety, or the Division of Occupational Safety may order an immediate shutdown of a trench in the event of a death or serious injury; the failure to obtain a permit; or the failure to implement or effectively use adequate protections for the general public. The trench shall remain shutdown until re-inspected and authorized to re-open provided, however, that excavators shall have the right to appeal an immediate shutdown. Permitting authorities are further authorized to suspend or revoke a permit following a hearing. Excavators may also be subject to administrative fines issued by the Department of Public Safety for identified violations.

### Summary of 1926 CFR Subpart P - OSHA Excavation Standard

This is a worker protection standard, and is designed to protect employees who are working inside a trench. This summary was prepared by the Massachusetts Division of Occupational Safety and not OSHA for informational purposes only and does not constitute an official interpretation by OSHA of their regulations, and may not include all aspects of the standard.

For further information or a full copy of the standard go to [www.osha.gov](http://www.osha.gov).

- **Trench Definition per the OSHA standard:**
  - An excavation made below the surface of the ground, narrow in relation to its length.
  - In general, the depth is greater than the width, but the width of the trench is not greater than fifteen feet.
- **Protective Systems** to prevent soil wall collapse are always required in trenches deeper than 5', and are also required in trenches less than 5' deep when the competent person determines that a hazard exists. Protection options include:
  - Shoring. Shoring must be used in accordance with the OSHA Excavation standard appendices, the equipment manufacturer's tabulated data, or designed by a registered professional engineer.
  - Shielding (Trench Boxes). Trench boxes must be used in accordance with the equipment manufacturer's tabulated data, or a registered professional engineer.
  - Sloping or Benching. In Type C soils (what is most typically encountered) the excavation must extend horizontally 1 ½ feet for every foot of trench depth on both sides, 1 foot for Type B soils, and ¾ foot for Type A soils.
  - A registered professional engineer must design protective systems for all excavations greater than 20' in depth.
- **Ladders** must be used in trenches deeper than 4'.
  - Ladders must be inside the trench with workers at all times, and located within 25' of unobstructed lateral travel for every worker in the trench.
  - Ladders must extend 3' above the top of the trench so workers can safely get onto and off of the ladder.
- **Inspections** of every trench worksite are required:
  - Prior to the start of each shift, and again when there is a change in conditions such as a rainstorm.
  - Inspections must be conducted by the competent person (see below).
- **Competent Person(s) is:**
  - Capable (i.e., trained and knowledgeable) in identifying existing and predictable hazards in the trench, and other working conditions which may pose a hazard to workers, and
  - Authorized by management to take necessary corrective action to eliminate the hazards. Employees must be removed from hazardous areas until the hazard has been corrected.
- **Underground Utilities** must be:
  - Identified prior to opening the excavation (e.g., contact Digsafe).
  - Located by safe and acceptable means while excavating.
  - Protected, supported, or removed once exposed.
- **Spoils** must be kept back a minimum of 2' from the edge of the trench.
- **Surface Encumbrances** creating a hazard must be removed or supported to safeguard employees. Keep heavy equipment and heavy material as far back from the edge of the trench as possible.
- **Stability of Adjacent Structures:**
  - Where the stability of adjacent structures is endangered by creation of the trench, they must be underpinned, braced, or otherwise supported.
  - Sidewalks, pavements, etc. shall not be undermined unless a support system or other method of protection is provided.
- **Protection from water accumulation hazards:**
  - It is not allowable for employees to work in trenches with accumulated water. If water control such as pumping is used to prevent water accumulation, this must be monitored by the competent person.
  - If the trench interrupts natural drainage of surface water, ditches, dikes or other means must be used to prevent this water from entering the excavation.
- **Additional Requirements:**
  - For mobile equipment operated near the edge of the trench, a warning system such as barricades or stop logs must be used.
  - Employees are not permitted to work underneath loads. Operators may not remain in vehicles being loaded unless vehicles are equipped with adequate protection as per 1926.601(b)(6).
  - Employees must wear high-visibility clothing in traffic work zones.
  - Air monitoring must be conducted in trenches deeper than 4' if the potential for a hazardous atmosphere exists. If a hazardous atmosphere is found to exist (e.g., O<sub>2</sub> <19.5% or >23.5%, 20% LEL, specific chemical hazard), adequate protections shall be taken such as ventilation of the space.
  - Walkways are required where employees must cross over the trench. Walkways with guardrails must be provided for crossing over trenches > 6' deep.
  - Employees must be protected from loose rock or soil through protections such as scaling or protective barricades.



TOWN OF MILLBURY  
MILLBURY, MASSACHUSETTS 01527

PERMIT NO:

DEPARTMENT OF PUBLIC WORKS  
STREET OCCUPANCY & TRENCH PERMIT REQUEST FORM

**APPLICANT INFORMATION**

Name of Permit Holder: \_\_\_\_\_  
Street Address: \_\_\_\_\_  
Phone No: \_\_\_\_\_ Cell No: \_\_\_\_\_

**EXCAVATOR INFORMATION**

Name of Excavator: \_\_\_\_\_ Contact No: \_\_\_\_\_  
Street Address: \_\_\_\_\_  
MA Hoisting License No.: \_\_\_\_\_ Exp Date: \_\_\_\_\_  
License Restrictions: \_\_\_\_\_  
(Attach a copy of the license to request form)  
Name of Competent Person (If different from Excavator): \_\_\_\_\_  
Street Address: \_\_\_\_\_

**INSURANCE INFORMATION**

Insurer Name: \_\_\_\_\_ Insurer Contact No.: \_\_\_\_\_  
Policy No.: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

**INFORMATION FOR PROPOSED TRENCH**

Specific Location of the Trench (circle all that apply):

**STREET STATE HIGHWAY SIDE OF ROAD SIDEWALK TREE/LAWN DRIVEWAY PRIVATE**

Trench Purpose/Description

**DRAWING OR SKETCH OF PROPOSED EXCAVATION MUST BE ATTACHED TO THIS REQUEST**

Label Trench (water, gas, etc)	Type:	Type:	Type:	Type:
Dimensions	Depth			
	Length			
	Width			
Total Surface Area (L x W)				

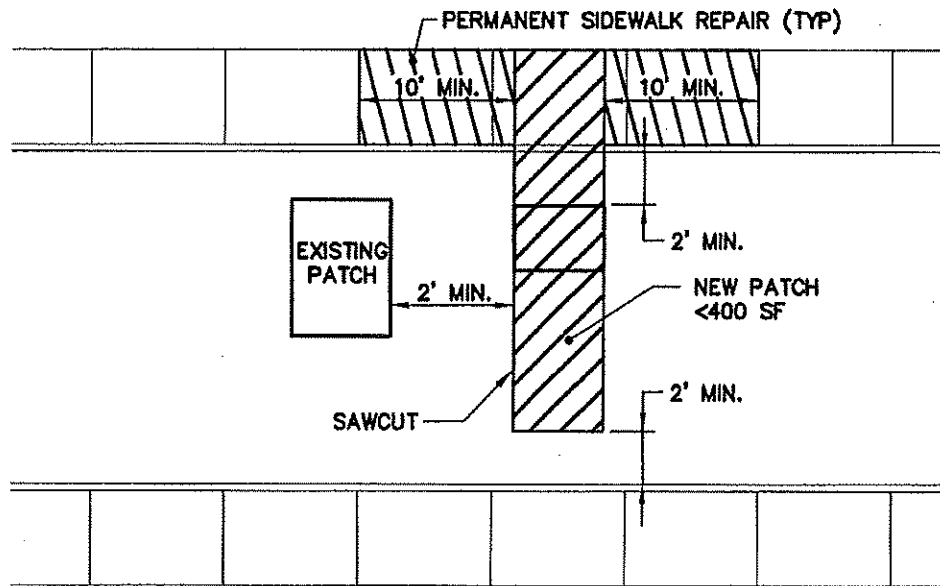
Purpose of Permit: **CABLE** **ELECTRIC** **WATER** **SEWER** **GAS**  
**TELEPHONE** **DRIVEWAY/RECONSTRUCT** **OTHER:** \_\_\_\_\_  
Excavation Work On; (circle) **Public** **Private** **Both**  
Excavation Start Date: \_\_\_\_\_ End Date: \_\_\_\_\_  
Dig Safe No.: \_\_\_\_\_ Project Address: \_\_\_\_\_

Applicant's Signature: \_\_\_\_\_

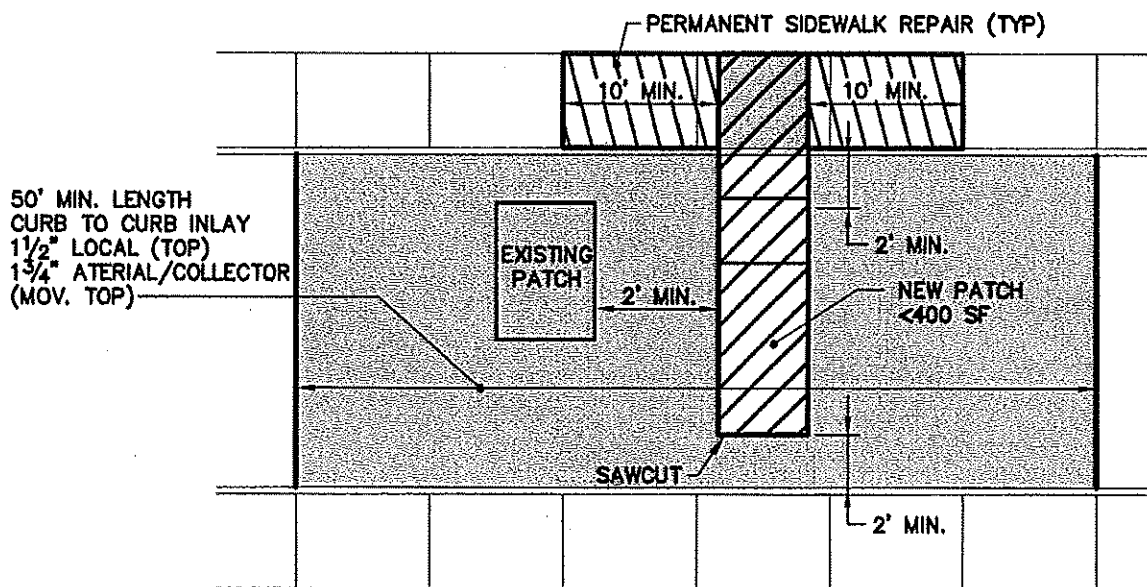
For DPW use only-(Do not write in section below)

Permit Approved By:	Date:	Exp Date of Permit:	Permit Fee Amount:
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**PATCH ON STREET (>60 MONTHS OLD)**  
NOT TO SCALE



**PATCH ON PROTECTED STREET <60 MONTHS OLD)**  
NOT TO SCALE

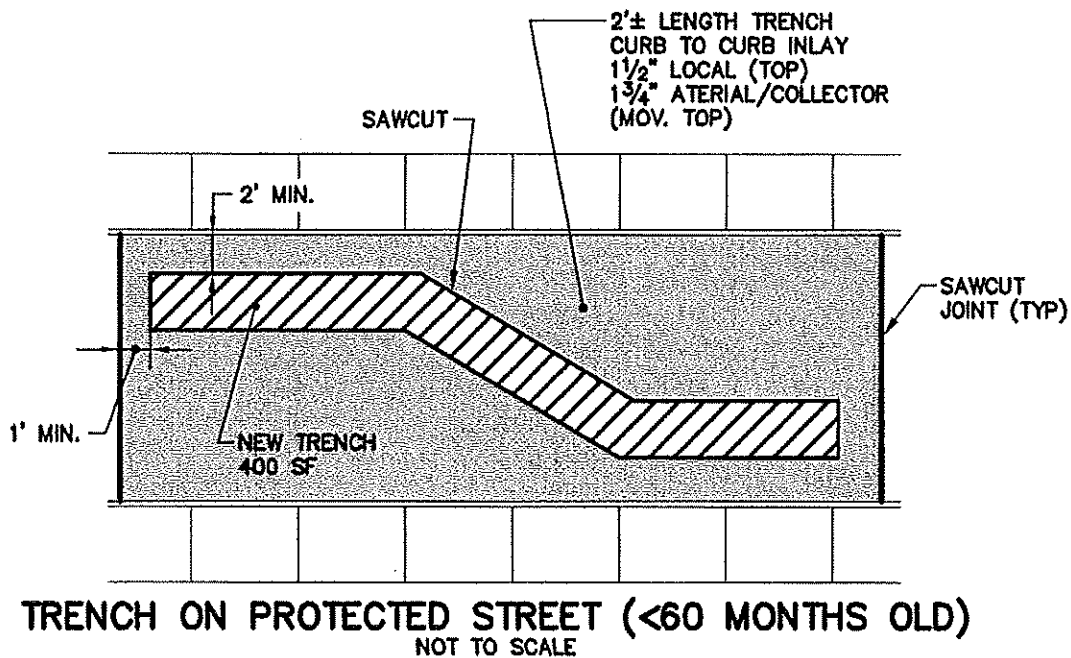
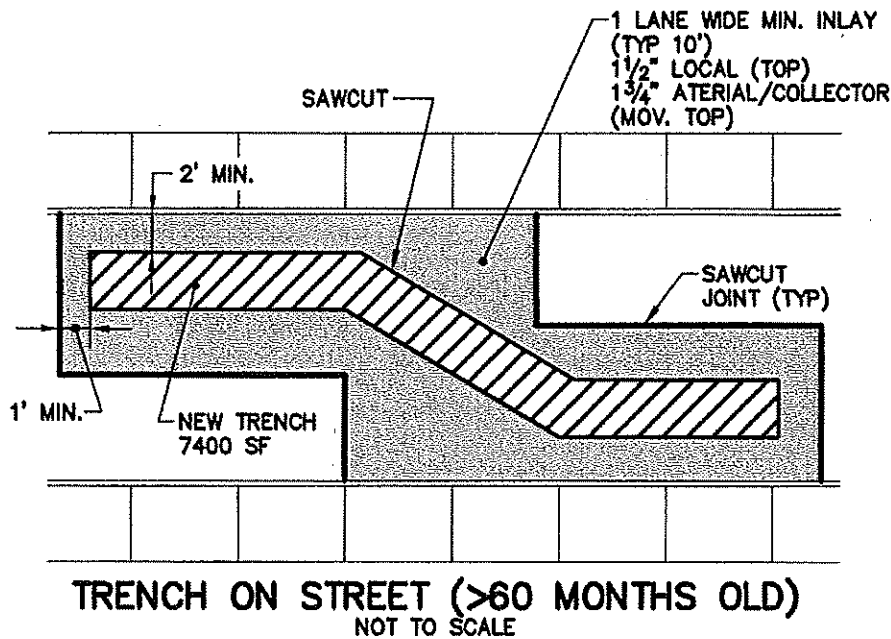
PREPARED BY:



**FAY, SPOFFORD & THORNDIKE, LLC**  
ENGINEERS • PLANNERS • SCIENTISTS  
5 BURLINGTON WOODS, BURLINGTON, MA 01803

**APPENDIX C**

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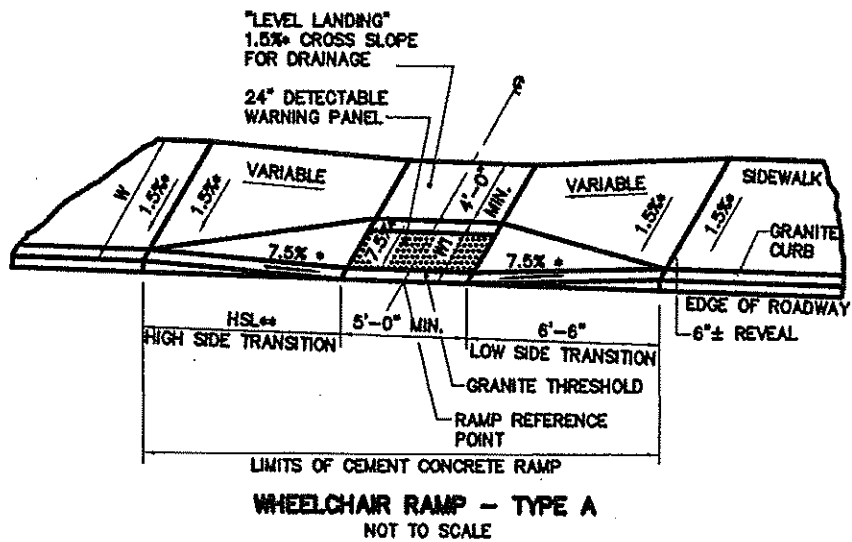
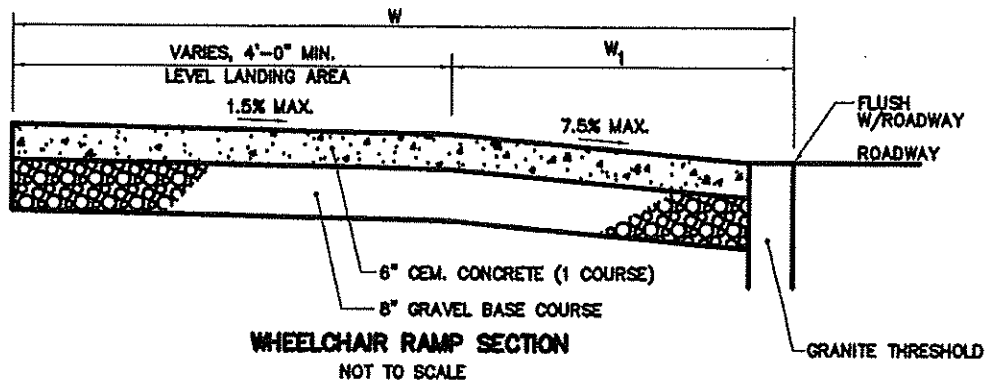


PREPARED BY:

ENGINEERS  
**FST**  
Since 1914

FAY, SPOFFORD & THORNDIKE, LLC  
ENGINEERS · PLANNERS · SCIENTISTS  
8 BURLINGTON WOODS, BURLINGTON, MA 01803

APPENDIX C



**NOTES:**

\* TOLERANCE FOR CONSTRUCTION  $\pm 0.5\%$

\*\* 15'-0" MAXIMUM

REFER TO CONSTRUCTION STANDARD M/E 107.2.1R  
FOR WHEELCHAIR RAMP ON NARROW SIDEWALK

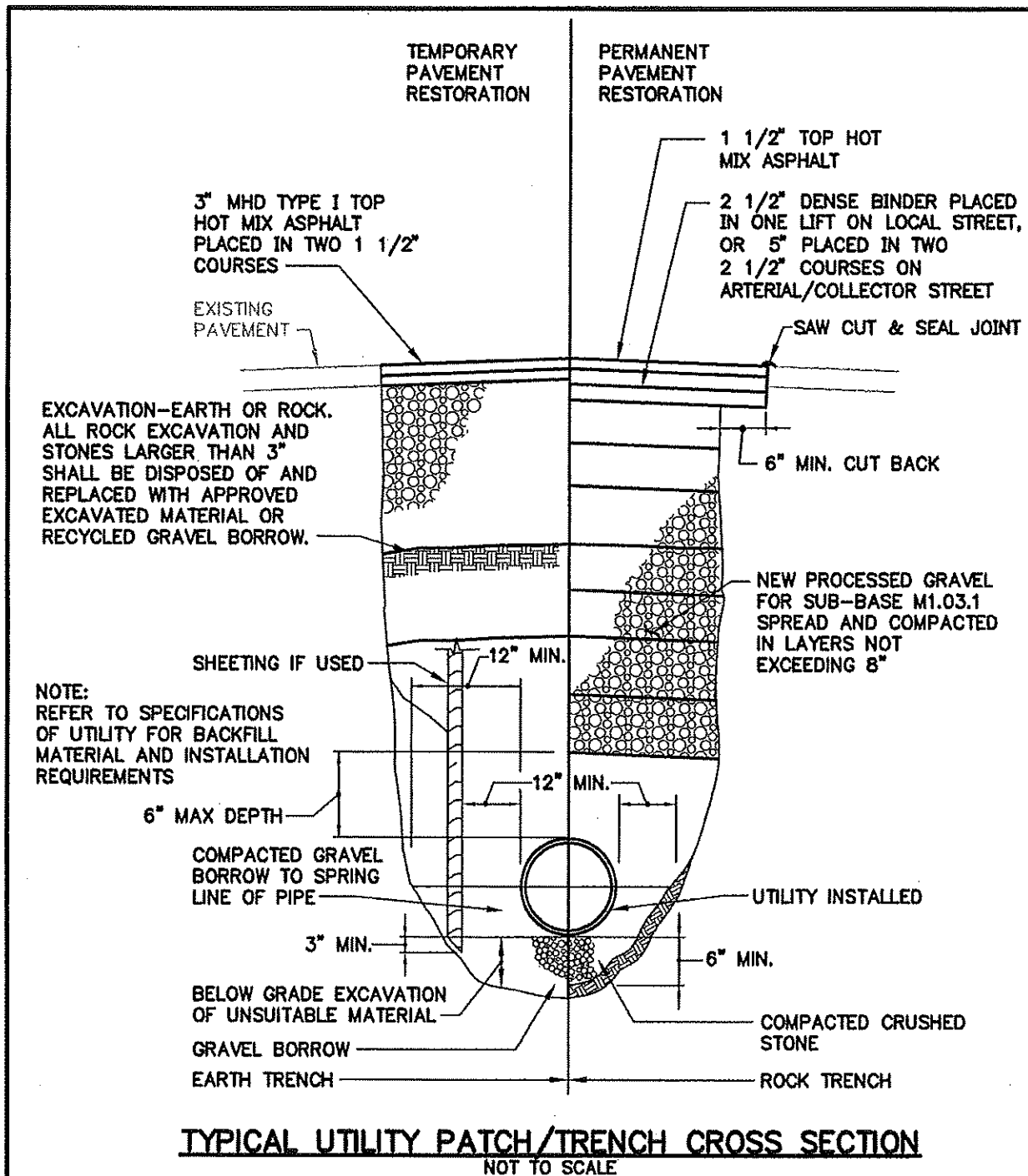
**APPENDIX C**

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**FST**  
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5 BURLINGTON WOODS, BURLINGTON, MA 01803

FIGURE NO. .

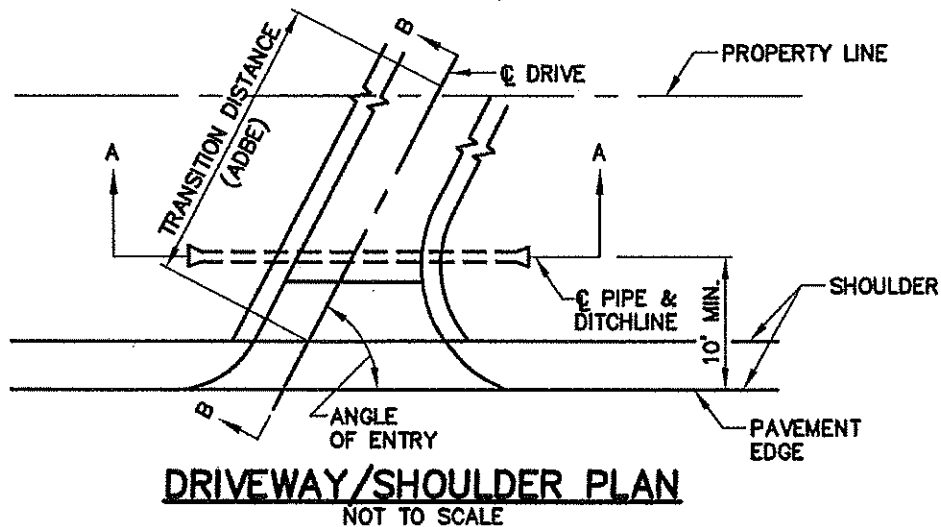
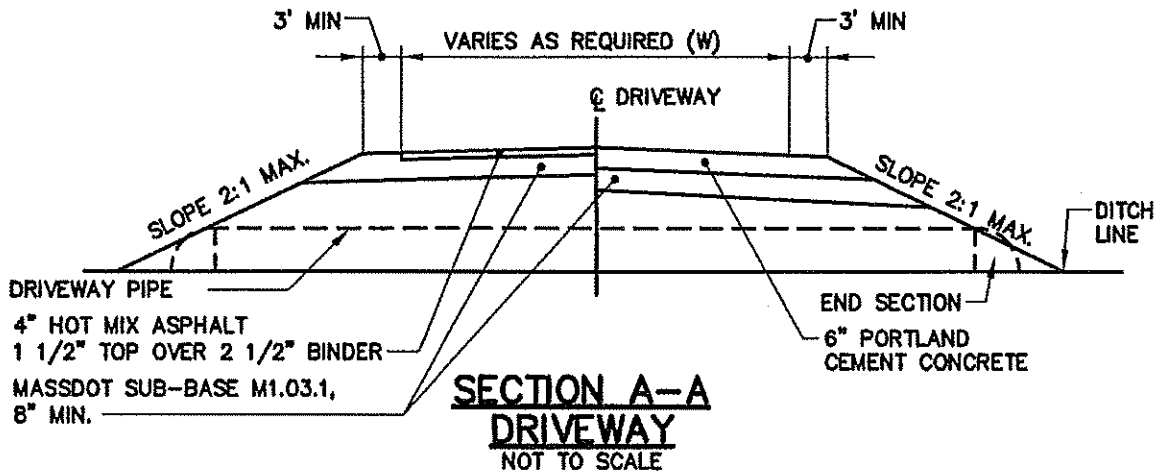
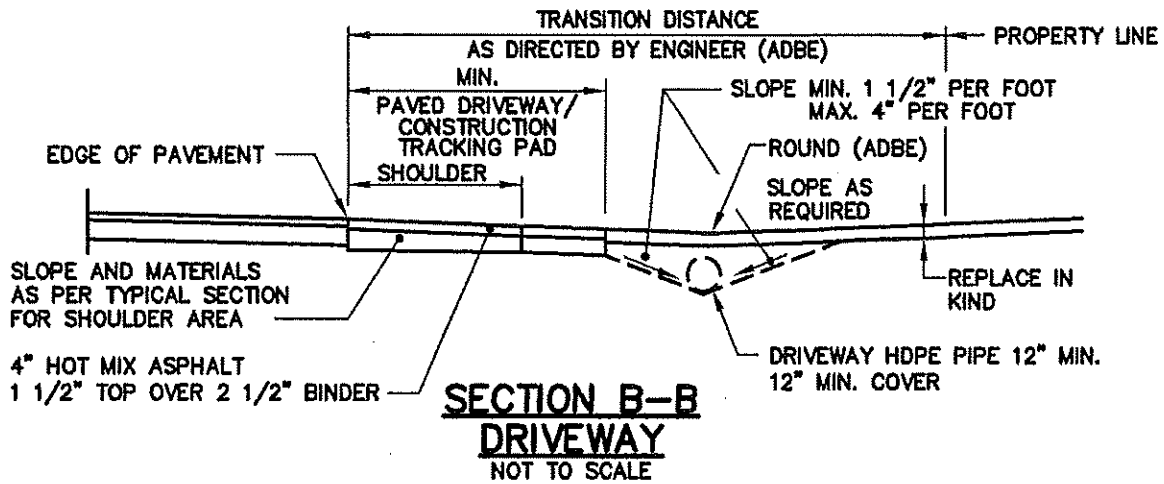


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**APPENDIX D**



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**APPENDIX E**