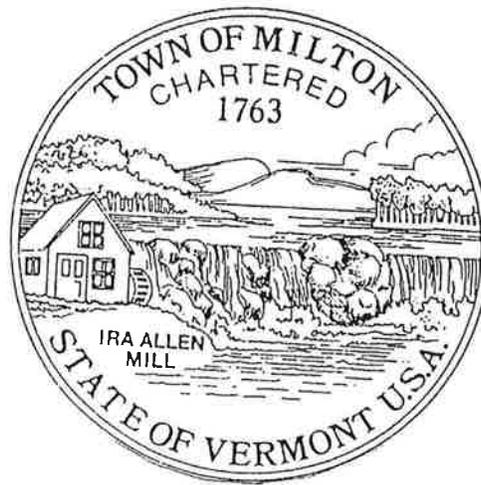


# Town of Milton, Vermont



## PUBLIC WORKS SPECIFICATIONS

Adopted October 6, 1997  
Amended September 23, 2002  
Amended May 19, 2008



*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
**PREFACE**

The Town of Milton Public Works Specifications shall become effective upon adoption by the Selectboard. All construction within the Town, which takes place subsequent to adoption, shall conform to the requirements of this document.

Amendments to this document shall from time to time be made in order to keep pace with the introduction of new technology, materials and testing pertinent to public works infrastructure.

Adopted by the Town of Milton Selectboard on the 6<sup>th</sup> day of October, 1997.  
Amended by the Town of Milton Selectboard on the 23<sup>rd</sup> day of September, 2002.  
Amended by the Town of Milton Selectboard on this 19<sup>th</sup> day of May, 2008.

**T A B L E O F C O N T E N T S**

**PREFACE**..... 1

**PART I GENERAL CONDITIONS AND REQUIREMENTS** ..... 7

**SECTION 100 GENERAL CONSTRUCTION REQUIREMENTS**

110 GENERAL PROCEDURES FOR ACCEPTANCE OF PUBLIC INFRASTRUCTURE ..... 9

120 WORKMANSHIP ..... 12

130 PERMITS..... 12

140 SAFETY AT THE WORK SITE..... 13

150 CONSTRUCTION AND WARNING SIGNS..... 13

160 TRAFFIC MAINTENANCE..... 14

170 EMERGENCY NOTIFICATIONS ..... 14

180 UNDERGROUND UTILITIES REQUIRED..... 14

190 PRE-DESIGN MEETING ..... 15

**SECTION 200 SECURITY AND LEGAL DOCUMENTATION**

210 LEGAL DOCUMENTATION..... 16

220 SECURITY IN LIEU OF CONSTRUCTION ..... 16

230 MAINTENANCE SECURITY..... 16

**SECTION 300 PRECONSTRUCTION MEETING**

310 PURPOSE AND ATTENDANCE ..... 17

320 PRECONSTRUCTION MEETING AGENDA ..... 18

**SECTION 400 CONSTRUCTION INSPECTION SCHEDULE**

410 STREETS ..... 19

420 WATER DISTRIBUTION ..... 20

430 SANITARY SEWER..... 21

440 PUMP STATIONS ..... 22

450 STORM DRAINAGE ..... 23

**SECTION 500 RECORD DRAWINGS**

510 RECORD DRAWINGS REQUIRED..... 25

520 STREETS ..... 25

530 WATER DISTRIBUTION ..... 26

540 SANITARY SEWER..... 26

550 PUMP STATIONS ..... 27

560 STORM DRAINAGE ..... 27

**PART II TECHNICAL SPECIFICATIONS**

**SECTION 600 EROSION CONTROL SPECIFICATIONS**

610 GENERAL PROVISIONS .....	28
620 TEMPORARY EROSION CONTROL .....	30
630 MATERIALS .....	31
640 INSTALLATION .....	32

**SECTION 700 STREET SPECIFICATIONS**

710 GENERAL PROVISIONS .....	34
720 GEOMETRIC STANDARDS .....	35
730 HIGHWAY ACCESS .....	37
740 MATERIALS .....	37
750 INSTALLATION .....	38
760 TESTING .....	43

**SECTION 800 CONCRETE SIDEWALKS, CURBS AND APRONS**

810 GENERAL PROVISIONS .....	44
820 GEOMETRIC STANDARDS .....	44
830 MATERIALS .....	45
840 INSTALLATION .....	45
850 TESTING .....	46

**SECTION 900 RECREATION PATHS/SHARED USE PATHS**

910 GENERAL PROVISIONS .....	47
920 GEOMETRIC STANDARDS .....	47
930 MATERIALS .....	47
940 INSTALLATIONS .....	47
950 TESTING .....	47

**SECTION 1000 MISCELLANEOUS SPECIFICATIONS**

1010 STREET NAMES, SIGNS AND NUMBERS .....	48
1015 PAVEMENT MARKING .....	49
1020 STREET GUARD RAILS .....	49
1030 STREET SIDELINE MONUMENTS.....	50
1040 ROAD CUTS.....	50
1050 DRIVEWAYS .....	51
1060 STREET LIGHTING.....	52
1070 EMERGENCY VEHICLE ACCESS.....	52

<b>SECTION 1100</b>	<b>WATER DISTRIBUTION SPECIFICATIONS</b>	
1110	GENERAL PROVISIONS .....	53
1120	GEOMETRIC STANDARDS .....	54
1130	MATERIALS .....	55
1140	INSTALLATION .....	60
1145	JACK AND BORE .....	65
1150	TESTING .....	66
<b>SECTION 1200</b>	<b>SANITARY SEWER SPECIFICATIONS</b>	
1210	GENERAL PROVISIONS .....	68
1220	GEOMETRIC STANDARDS .....	69
1230	MATERIALS .....	69
1240	INSTALLATION .....	72
1250	TESTING .....	76
1260	GENERAL PROVISIONS FOR PUMP STATIONS.....	78
1270	GEOMETRIC STANDARDS FOR PUMP STATIONS .....	79
1280	MATERIALS FOR PUMP STATIONS.....	79
1290	INSTALLATION OF PUMP STATIONS.....	81
<b>SECTION 1400</b>	<b>STORM DRAINAGE</b>	
1410	GENERAL PROVISIONS .....	82
1420	DESIGN SPECIFICATIONS .....	83
1420	GEOMETRIC STANDARDS .....	83
1430	MATERIALS .....	84
1440	INSTALLATION .....	86
1450	TESTING .....	86
<b>SECTION 1500</b>	<b>CLASS 4 HIGHWAYS AND TRAILS</b>	
1510	DEFINITIONS .....	87
1520	EXISTING USE.....	87
1530	MAINTENANCE.....	87
1540	RESTRICTIONS .....	87
1550	CHANGE IN CLASSIFICATION .....	88
1560	POSTING.....	88
1570	COMPLIANCE WITH OTHER REGULATIONS.....	88
<b>SECTION 1600</b>	<b>TRAFFIC CALMING DEVICES</b>	
1610	GENERAL PROVISIONS .....	89

### **PART III STANDARD DETAILS**

- Drawing 1 - ROAD CROSS-SECTION WITHOUT CURBS AND SIDEWALKS
- Drawing 2 - ROAD CROSS-SECTION WITH CURBS AND SIDEWALKS
- Drawing 3 - PRIVATE ROAD CROSS-SECTION
- Drawing 4 - STREET PLAN DETAIL
- Drawing 5 - TURN AROUND HAMMERHEAD OR "Y" SYSTEM
- Drawing 6 - RESIDENTIAL DRIVE HIGHWAY ACCESS
- Drawing 7 - TWO-WAY UNDIVIDED COMMERCIAL DRIVE HIGHWAY ACCESS
- Drawing 8 - MINIMUM HORIZONTAL SEPARATION BETWEEN DRIVES AND INTERSECTING SIDE ROADS
- Drawing 9 - PROFILE OF INTERSECTION (CUT AND FILL)
- Drawing 10 - CROSS SECTION OF INTERSECTION
- Drawing 11 - UNDERDRAIN
- Drawing 12 - SIDEWALK
- Drawing 13 - SIDEWALK RAMPING DETAILS
- Drawing 14 - CONCRETE CURB
- Drawing 15 - RECREATION PATH
- Drawing 16 - MAILBOX DETAIL
- Drawing 17 - PAVEMENT REPLACEMENT DETAIL
- Drawing 18 - E TRENCH
- Drawing 19 - RANT AND VALVE
- Drawing 20 - PORATION STOP AND CURB BOX
- Drawing 21 - ER/SEWER CROSSING
- Drawing 22 - UST BLOCKS FOR WATERLINES
- Drawing 23 - TIPLE UNIT METER PIT
- Drawing 24 - ER/VALVE VAULT
- Drawing 25 - PING SLEEVE AND VALVE
- Drawing 26 - UAL AIR RELEASE AND/OR CHLORINATION INJECTION
- Drawing 27 - W- OFF HYDRANT
- Drawing 28 - K AND BORE
- Drawing 29 - K AND BORE SLEEVE CONNECTION
- Drawing 30 - SANITARY MANHOLE
- Drawing 31 - IDE DROP SEWER MANHOLE
- Drawing 32 - SANITARY SEWER SERVICE PROFILE
- Drawing 33 - MANHOLE CHANNEL PIPE INSERTION
- Drawing 34 - CLEANOUT (STORM AND SANITARY) DETAIL
- Drawing 35 - WASTEWATER PUMP STATION
- Drawing 36 - PRECAST CATCH BASIN

**PART IV STANDARD FORMS**

LETTER OF CREDIT AGREEMENT  
ESCROW AGREEMENT  
IRREVOCABLE OFFER OF DEDICATION  
PROJECT COST ESTIMATE FORM  
PROJECT MODIFICATION FORM  
HIGHWAY ACCESS PERMIT

**PART V BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL**

**PART VI BEST MANAGEMENT PRACTICES FOR STORMWATER CONTROL AND WATERCOURSE BUFFERS**

## **PART I GENERAL CONDITIONS AND REQUIREMENTS**

The purpose of the Town of Milton Public Works Specifications is to establish a uniform level of quality for all infrastructure within the Town and to reduce the time necessary for review of all proposed improvements. This document details the requirements for all new construction as well as reconstruction projects involving roads, sidewalks and bikepaths, street lights, street trees, erosion and sediment control practices, storm drainage, multi-modal transportation projects and water and sewer infrastructure within the Town of Milton. The Town of Milton Public Works Specifications are designed to conform to the latest edition of the State of Vermont Agency of Transportation Standard Specifications for Construction.

The standards presented are considered minimum acceptable standards and no deviations shall be permitted without the filing of a **Project Modification Form** and approval by the Town Engineer or designated representative. The use of material or change of project without an approved Project Modification form shall be cause for denial of infrastructure acceptance by the Town of Milton.

Where the design of an item is not specifically covered by these specifications, the submittal of such a design shall include a description of the item, materials information or reference to universally recognized standards, a description of the methods to be used for construction, and any testing necessary to verify the quality of the installation. The intent of this document is not to prevent alternative solutions; however, the burden of proof for acceptability of alternative solutions lies with the applicant.

Within this document, the term **Developer** shall refer to the individual, partnership, corporation or authorized agent developing a parcel(s) of land. The term **Contractor** shall refer to the individual, partnership, corporation or authorized agent constructing the infrastructure in question, to include all levels of subcontractors involved. The term **Town Engineer or designated representative** shall refer to the Town Engineer or designated representative appointed to perform the duties of monitoring project construction and conformance.

The Town reserves the right to modify the design and construction standards for a particular project, where, because of unique physical circumstances or conditions, there is no possibility that the project can be completed in strict conformance with these provisions. Fiscal reasons are not a basis for modification of the standards. The Selectboard authorizes the Town Engineer to review and accept, modify or deny any requested modifications to these design and construction standards by a Developer or Contractor as good engineering practices dictate.

The Town Engineer shall review and update these specifications for any new technology, materials and testing pertinent to public works for inclusion to these Public Works

5/20/2008  
Last printed

*Town of Milton Public Works Specifications*

Specifications as needed to keep these specifications current with new technology, materials and testing to better protect the health and welfare of the public.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
**SECTION 100 GENERAL CONSTRUCTION REQUIREMENTS**

**SECTION 110 GENERAL PROCEDURES FOR ACCEPTANCE OF PUBLIC INFRASTRUCTURE**

The procedures for proposing and accepting public infrastructure projects are as follows:

**Planning Process**

**Plan Review**

1. The Development Review Board (DRB) shall approve all proposed public infrastructure as part of the Subdivision process. The following items are required as part of the Subdivision process:
  - A Construction Estimate Form for the entire project or the phase(s) of development the Developer wishes to construct. The Town Engineer or designated representative will review this Construction Estimate and any comments will need to be addressed by the Developer.
  - A construction escrow account agreement letter from the Town Engineer or designated representative stating the costs for regular inspections throughout the construction period.
  - A draft of the Irrevocable Offer of Dedication and Warranty Deed. The Town Attorney will review these documents and any comments will need to be addressed by the Developer.
  - An infrastructure phasing plan if applicable.
  - A draft of the private Water and/or Wastewater Main Operations and Maintenance Agreement, if applicable.
  - A report from the Town Engineer or designated representative regarding the proposed design of the proposed infrastructure in relation to these Public Works Specifications.

All engineering plans or documentation of an engineering nature submitted to the Town must be prepared by a Vermont licensed professional engineer practicing within his or her specialty.

**Surety Amount Approval**

2. Based on the Town Engineers review, the Planning Office shall make a recommendation to the Selectboard regarding the amount to be required for surety for the entire project or the phase(s) of development. The Selectboard shall approve or deny the request

**Surety and Escrow Account Establishment**

4. If the Developer wishes to obtain building permits for lots within the subdivision that the proposed infrastructure is in, a form of surety in the amount approved by the Selectboard shall be provided to the Town of Milton prior to the pre-

construction meeting.

5. Prior to the pre-construction meeting, an escrow account shall be established by the Developer through the Planning Office based on the construction escrow account agreement letter provided by the Town Engineer or designated representative to cover regular inspections during construction as defined in the Public Works Specifications.

### **Construction Phase**

#### **Construction Time Limit**

6. The proposed public infrastructure construction shall be completed on November 15<sup>th</sup> in the subsequent year of the date of Selectboard approval of the surety. If construction is anticipated to extend beyond the November 15<sup>th</sup> date, the Developer shall notify the Town Engineer or designated representative and the Planning Department. An extension may be granted for one (1) year and the Developer must update the construction costs. The Developer shall only be allowed two (2) extensions to complete all public infrastructure. The Developer will agree to extend the surety period for construction to cover each additional year requested.

No work will be permitted within the Town right-of-way or on infrastructure to be dedicated to the Town after November 15 or before April 1, including emergency water/sewer connections unless waived by the Town Engineer or designated representative. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.

#### **Construction Inspections**

7. Once the proposed infrastructure is under construction, regular construction inspections will take place with the Town Engineer or designated representative following the procedures outlined in Section 400 of the Public Works Specifications. The Developer at his/her own expense shall correct non-conforming work.

In addition the Developer shall provide, at his/her own expense, full or part time construction inspection performed under the supervision of a Registered Professional Engineer. Minimum on-site inspection efforts by the Developer's Engineer shall be as follows:

General site improvements	2 hours/week
Sewer line installation	2 hours/day
Water line installation	2 hours/day

<i>Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard</i>	
Storm line installation	2 hours/day
Road base installation	2 hours/day
Paving Operations	Continuous

The Registered Professional Engineer shall submit copies of all daily inspection reports/ field notes and testing results to the Town Engineer or designated representative on a timely basis. Inspection reports shall be provided as evidence of inspection effort. A project certification will be accepted by the Town only if at least the minimum inspection effort is made as evidenced by inspection reports.

**Final Inspection**

- 8. When the Developer has completed the construction of the proposed infrastructure, the Town Engineer or designated representative shall be given notice to inspect as per the Surety Agreement and the Public Works Specifications. Any defects or incomplete work noted during this final inspection shall be corrected by the Developer before proceeding to the next step.

**Final Inspection Report**

- 9. The Town Engineer shall prepare a final inspection report detailing any specific warranty items and surety reduction if any. When the final inspection report has been completed by the Town Engineer or designated representative and the Developer’s record drawings have been accepted, the Planning Department will present a memorandum to the Selectboard requesting acceptance of the Irrevocable Offer of Dedication and begin the two (2) year warranty period.

**Start of Warranty Period**

- 10. The Selectboard shall review the final inspection report by the Town Engineer or designated representative and the recommendation from the Planning Department regarding the infrastructure. The Selectboard shall accept or deny the Irrevocable Offer of Dedication. The two (2) year warranty period will become effective upon Selectboard approval of the request.

**Warranty Responsibility**

- 11. The Developer shall be responsible for all maintenance during the two (2) year warranty period. Exceptions are winter maintenance as specified in the current Winter Operations Plan, and public water system extensions in which case the Milton Water Division will operate and maintain the water system and the Developer is financially responsible for any warranty items.

**End of Warranty Inspection**

- 13. No less than sixty (60) days before termination of the two(2) year warranty period, the Developer shall contact the Town Engineer or designated representative to review the condition of the infrastructure. Prior to the end of the warranty period,

all valves, curb stops, catch basins, and manholes, must be set to final grade.

### **Final Warranty Report**

14. The Town Engineer or designated representative shall prepare a final inspection report regarding the condition of the infrastructure. Any defects or incomplete work will need to be corrected before proceeding to the next step.

### **Acceptance Request**

15. When the infrastructure has been reviewed by and found acceptable to the Town Engineer or designated representative and the Planning Department, then a memorandum will be presented to the Selectboard requesting acceptance of the infrastructure and the Warranty Deed.

### **Final Acceptance**

16. The Selectboard shall review the Town Engineer or designated representative and Planning Department's recommendation for acceptance, and shall either approve or deny the request.
17. Once the Town of Milton has recorded the Warranty Deed, the Town will then be responsible for maintenance of the infrastructure.

## **SECTION 120 WORKMANSHIP**

All work affecting Town of Milton owned infrastructure shall be performed only by persons/contractors with demonstrated experience in this type of work and this person/contractor shall be approved by the Town Engineer or designated representative. All materials, design and workmanship must meet nationally and State of Vermont accepted standards and practices and all applicable standards of the Municipality. The Developer must obtain approval from the Town Engineer or designated representative before performing work on Town of Milton infrastructure and the Town Engineer reserves the right to suspend work that is not being constructed in a suitable manner. The Developer/Contractor will be required to obtain a Highway Access Permit to obtain permission to work within the Town of Milton right-of-way.

## **SECTION 130 PERMITS**

1. It shall be the Developer's responsibility to obtain all necessary Federal, State, Regional, Local and utility company permits prior to initiation of construction and file copies of all permits with the Town Engineer's Office.
2. It shall be the Developer's responsibility to obtain all necessary agreements to

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
enter onto private property prior to start of the construction.

3. It shall be the Developer's responsibility to contact DIG SAFE prior to start of construction. The Developer must notify the Town of Milton Water and Wastewater Division to mark Town owned water and wastewater infrastructure. The Developer is required to contact the Champlain Water District, (CWD) if construction is to occur along U.S. Route 7 from the Colchester/Milton town line to the location near the intersection of Haydenberry Drive (Town Highway # 14) where the CWD transmission line ends.
4. Whenever existing culverts, sewers, drains, manholes, catch basin connections, water mains, valve chambers, electric conduits, telephone conduits, utility poles, overhead lines or other existing facilities are encountered they shall be protected and firmly supported by the Developer at his own expense until excavation is backfilled and the existing structures are made secure. Damage to any structures caused by or resulting from the Developer's operations shall be repaired at the Developer's expense within a time period that will not place an unreasonable burden on the users. The authority having charge of any particular underground structure shall be notified immediately of any damage.

#### **SECTION 140 SAFETY AT THE WORK SITE**

Maintaining a safe work site is the responsibility of the Developer. This includes protecting workers and the public from any and all hazards connected with the construction work. Open trenches, material, or equipment within the working limits of the public right-of-way are to be guarded by the use of adequate barricades, flag persons, and, after dark, proper lighting. The Developer shall be held responsible for all damages, to property and otherwise, growing out of his failure to protect persons or property from the hazards of open trenches, material, or equipment at any time of the day or night within the working area. All work performed shall be in conformance with applicable VOSHA regulations, State of Vermont Agency of Transportation, and Federal Highway Administration Construction Safety Standards. The Town of Milton shall have the authority to suspend any activity within a town right-of-way that does not conform to applicable regulations and require correction of non-conforming activities or conditions.

#### **SECTION 150 CONSTRUCTION AND WARNING SIGNS**

1. Construction and warning signs shall appear at each end of a public highway under construction and on all intersecting public highways. The placement of signs will depend upon the alignment of the highway and the character of the roadside. The placement and dimensions associated with the signs shall comply with the Vermont Agency of Transportation design standards.

5/20/2008  
Last printed

2. The design and placement of the signs shall conform to the current standards in the Manual on Uniform Traffic Control Devices prepared by the National Joint Committee on Uniform Traffic Control Devices, latest edition.

## **SECTION 160 TRAFFIC MAINTENANCE**

1. When work associated with any project infringes on the usable pavement, flag persons shall be employed to aid the flow of traffic so that there will be no undue traffic delays or unsafe conditions caused by the infringement. Traffic maintenance will conform to the State of Vermont, Agency of Transportation, Standard Specifications for Construction and Design Standards.
2. If the Town Engineer or designated representative requires the services of uniformed traffic police or flag persons to assist with the maintenance of traffic due to reasons associated with the project's work, they shall be provided in a timely fashion by the Developer who shall pay any expense associated with securing their services. The presence of such persons shall not relieve the Developer of any responsibility or liability associated with the project.
3. In the event that a street needs to be closed, the Developer/Contractor shall notify the Town Engineer or designated representative at least two (2) calendar weeks in advance that they want to close a town highway and 48 hours prior to the highway closure. The Developer shall work with the Town to establish a suitable alternate route for traffic and shall provide well marked and appropriately lighted detour signs at his own expense and shall include such media as deemed required to inform the traveling public. The media shall be local newspapers, Chittenden County Metropolitan Planning Organization Traffic Alert program, on site signage, radio and TV spots if required.

## **SECTION 170 EMERGENCY NOTIFICATIONS**

If an emergency situation occurs, the Developer or his/her representative shall notify the Town Engineer that an incident has occurred.

## **SECTION 180 UNDERGROUND UTILITIES REQUIRED**

All new utilities shall be placed underground. Furthermore, in accordance with the Subdivision Regulations, utility easements shall be of sufficient width and length to serve both the proposed subdivision and existing and anticipated development outside of the subdivision. Utility easements may comprise but not limited to one or all of the following: stormwater, electrical, digital, cable, telephone, slope,

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
potable water, sewer line, multi-modal transportation and temporary construction easements. Typically a utility easement outside of the public right-of-way for a single sewer line or water line will be 20' wide and an easement for a combined utility shall be 30'.

## **SECTION 190 PREDESIGN MEETING**

A pre-design meeting with the Town Engineer or designated representative, the Developer, and the developer's design staff is strongly recommended. It has been shown that the review process is smoother and shorter when this is undertaken.

**SECTION 200 SECURITY AND LEGAL DOCUMENTATION**

**SECTION 210 LEGAL DOCUMENTATION**

1. Prior to recording the mylar of an approved subdivision, all legal agreements associated with the project are to be completed and recorded in accordance with Development Review Board's review and approval.
2. Standard forms for the Letter of Credit Agreement, Escrow Agreement and Irrevocable Offer of Dedication are included as Part IV of these Public Works Specifications.

**SECTION 220 SECURITY IN LIEU OF CONSTRUCTION**

1. In many cases, the Developer will want to pull a building permit prior to completion of the required public improvements. In such cases, the Developer may obtain building permits by providing security equal to 100% of the construction cost in lieu of completion of the required public improvements.
2. In order to determine the amount of security, the Developer must complete a Project Cost Estimate Form and have it reviewed by the Town Engineer or designated representative and approved by the Selectboard prior to the Pre-construction Meeting. The Developer shall provide surety in an amount equal in cost to all the public improvements and ancillary construction necessary to install the public improvements, such as erosion control. The surety will be held in its entirety for the entire construction period until the start of the warranty period as approved by the Selectboard. No partial reductions in surety shall be released except if constructed in accordance with a phasing plan required by the Development Review Board.

**SECTION 230 MAINTENANCE SECURITY**

In any event, the Developer must provide security for a two (2) year period, in an amount to be determined by the Selectboard, which will not be less than ten percent (10%) of the approved Project Cost Estimate, prior to acceptance of any public improvements by the Town.

**SECTION 300 PRECONSTRUCTION MEETING**

**SECTION 310 PURPOSE AND ATTENDANCE**

1. Once construction plan approval has been obtained and before any site work begins, the Developer shall request a preconstruction meeting, at least five (5) working days in advance. The purpose of this meeting is to clarify any outstanding issues, review the plans and make sure everyone involved has a clear understanding of the construction schedule. A phased development will have a preconstruction meeting prior the beginning of each phase.
2. The preconstruction meeting shall be attended by the Town Engineer or designated representative who will conduct the meeting, the Town Planner, the Developer, the Contractor for the project, the Project Engineer and any other persons deemed appropriate by either the Town or the Developer.
3. Prior to the preconstruction meeting, the following shall be completed:
  - All necessary legal documents relating to the project shall have been approved by the Town Attorney and recorded.
  - The final approved and corrected engineering plans shall be on file with the Town.
  - Security to guarantee the completion of the improvements shall be established and the necessary forms completed and approved by the Selectboard.
  - The Town shall be notified who the Contractor is for the work and the anticipated start date of any construction.
  - All required permits, such as Highway Access Permits, Water Connections and Sewer Connections, shall be obtained and copies submitted to the Town Engineer or designated representative.
  - A copy of all Agency of Natural Resources permits including Permit to Construct by the Water Supply Division, Wastewater and Potable Water Supply Permit by the Wastewater Management Division, General Permits for Stormwater Runoff from Construction Sites and Authorization to Discharge Stormwater by the Water Quality Division.
4. The Contractor/Developer will receive a Contractor/Developer packet at the preconstruction meeting that will include at a minimum:
  - Curb Stop Tie Form
  - Valve Tie Form
  - Wastewater Collection System Tie Form
  - Project Modification Form
  - Inspection Request Form

- Erosion and Sediment Inspection Form
- Notice of Project Completion Form

## **SECTION 320 PRECONSTRUCTION MEETING AGENDA**

1. The preconstruction meeting agenda shall include, at a minimum:
  - Review of approved plans and construction schedule as well as submittals by contractor and any shop drawings.
  - Review of pertinent sections of these Public Works Specifications with emphasis on the Construction Inspection Schedule, the Record Drawing Requirements, and the Project Modification Form.
  - Discussion of the project's specific circumstances.
  - Establishment of the contact persons involved including addresses and phone numbers.
  - Review of Erosion and Sediment Control Plan and plan implementation.

**SECTION 400 CONSTRUCTION INSPECTION SCHEDULE**

**SECTION 410 STREETS**

1. A street construction inspection schedule for each project will be determined at the preconstruction meeting.
2. Two (2) working days notice for all inspections shall be given to the Town Engineer or designated representative on the proper notification form. The Developer shall provide, at his/her expense, full or part time construction supervision performed under the supervision of a Registered Professional Engineer at a minimum of two 2 hours per day during road base construction. The Registered Professional Engineer shall submit copies of all daily inspection reports/field notes and testing results to the Town Engineer or designated representative in a timely manner.
3. Samples of all subbase and base materials will be tested, by a testing lab approved by the Town Engineer or designated representative, for compliance with the requirements of these Public Works Specifications. A sieve analysis to the 270 sieve for base materials shall be performed for all changes in subgrade or base materials or as required by the Town Engineer or designated representative. The subbase and base material compaction shall be tested by the AASHTO T99, Method A (Standard Proctor) test in fill sections at minimum 100 foot intervals at two feet (2') of depth, at changes in material, and as required by the Town Engineer or designated representative. All testing shall be at the Developer's expense.
4. The Town Engineer or designated representative shall be notified two (2) working days in advance to inspect the construction of any and all streets at the following phases of construction. The Town Engineer or designated representative may request additional inspections.
  - Preparation of subbase and proof-roll.
  - Installation of base material.
  - Completion of finished grading and crown measurement.
  - During and after the placement of the base coat of bituminous pavement.
  - During and after the placement of the top coat of bituminous pavement.
5. The Town Engineer or designated representative will inspect work during the placement of curbs, sidewalks and driveway aprons.
6. A pre-paving meeting will be held at the site prior to paving the base coat of asphalt. The meeting shall include the Town Engineer, developer's engineer,

contractor, paving contractor, and developer. Grades will be shot and verified by the Developer's Engineer after the finished grading of the road base. The Town Engineer shall approve the final grading prior to paving. A schedule for paving shall be determined. The Developer's Engineer shall provide continuous inspection during the paving operation. A final inspection by the Town Engineer or designated representative will be made after the completion of all roads, curbs, driveways, sidewalks, and bicycle paths. The final inspection shall include, but not be limited to, the following general checklist:

- Settlement, depression, or imperfections in finish surface.
  - Seeding, stabilization, and erosion control on cut and fill slopes.
  - Town of Milton Standard requires ninety percent (90%) growth coverage.
  - Surface drainage (during rainstorm).
  - Stormwater devices and structures.
  - General appearance.
  - Material testing results and all lab reports and field notes.
  - Record drawings complete and on file.
8. Any work deviating from the approved plans and specifications or that contains faulty workmanship shall be removed, replaced and/or repaired at the Developer's expense prior to acceptance by the Town of Milton.
9. Traffic Calming devices can only be installed according to the Traffic Calming Policy of the Town of Milton. All Traffic Calming devices will conform to State of Vermont, Agency of Transportation "Standards" and must comply with the Manual on Uniform Traffic Control Devices, latest edition.

## **SECTION 420 WATER DISTRIBUTION**

1. A water construction inspection schedule for each project will be determined at the preconstruction meeting.
2. Two (2) working days notice shall be given to the Town Engineer or designated representative to inspect all materials on the site before construction begins. The Town Engineer or designed representative shall validate the on-site material versus material list submitted by the Developer/Contractor.
3. The Town Engineer or designated representative shall be notified two (2) working days before any connections are made to the existing water system and before any testing, flushing, disinfecting, or sampling of new mains on a Request for Inspection Form. The Town Engineer or designated representative shall be present during any such work. The Developer shall provide, at his/her expense, full or part time construction supervision performed under the supervision of a

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Registered Professional Engineer at a minimum of two 2 hours per day during pipeline construction. The Registered Professional Engineer shall submit copies of all daily inspection reports/field notes and testing results to the Town Engineer or designated representative in a timely manner. Testing shall be witnessed by the Developer's Engineer.

4. Prior to final inspection, a Notice of Completion form must be submitted to the Town of Milton Water/Wastewater Division.
5. The final inspection shall include, but not be limited to, the following general checklist:
  - Valves, hydrants, and curb stops are properly orientated and operating properly.
  - Pipe constructed true and straight to line and grade.
  - Valve box covers set at proper elevations.
  - General appearance including proper restoration of site.
  - Tie information and record drawings complete and the work's associated tie forms are completed and returned to the Water/Wastewater Division.
  - Material testing results, lab reports, pressure and leakage test results, and disinfection test results are complete and on file.
  - Copies of all completed/approved Project Modification forms have been filed with the Water/Wastewater Division.
6. Any work deviating from the approved plans and specifications or that contains faulty workmanship shall be removed, replaced and/or repaired at the Developer's expense prior to acceptance by the Town of Milton.

#### **SECTION 430 SANITARY SEWER**

1. A sewer construction inspection schedule for each project will be determined at the preconstruction meeting.
2. Two (2) working days notice shall be given to the Town Engineer or designated representative to inspect all materials on the site before construction begins. The Town Engineer or designated representative shall validate the on-site material versus material list submitted by the Developer/Contractor.
3. The Town Engineer or designated representative shall visit the site not less than four (4) times during the construction of the project, not including material inspection of final air test and visual inspection. The Developer shall provide, at his/her expense, full or part time construction supervision performed under the supervision of a Registered Professional Engineer at a minimum of two 2 hours per day during pipeline construction. The Registered Professional Engineer shall

submit copies of all inspection reports/field notes and testing results to the Town Engineer or designated representative in a timely manner. Testing shall be witnessed by the Developer's Engineer.

4. Two (2) working days notice shall be given to the Town Engineer or designated representative before air testing of the pipe and manholes.
5. The Contractor shall make available all grade readings at the project site. A copy of the complete grade readings and air test results shall be given to the Town Engineer or designated representative.
6. The final inspection shall include, but not be limited to, the following general checklist:
  - Manholes, pipelines, and appurtenances clean.
  - Inverts and shelves completed to plans with smooth transitions.
  - Pipe constructed true and straight to line and grade.
  - Manhole frames and covers set at proper elevation.
  - General appearance including proper restoration of site.
  - Material testing results, lab reports, leakage, and deflection tests complete and on file.
  - Record drawings.
  - Manhole covers properly labeled.
  - Manhole location ties will be supplied on the proper form.
7. Any work deviating from the approved plans and specifications or that contains faulty workmanship shall be removed, replaced and/or repaired at the Developer's/Contractor's expense prior to acceptance by the Town of Milton.

## **SECTION 440 PUMP STATIONS**

1. A construction inspection schedule for each project will be determined at the preconstruction meeting.
2. Two (2) working days notice for all inspections shall be given to the Town Engineer or designated representative.
3. The Town Engineer or designated representative shall inspect the excavation and base material prior to setting a prefabricated unit or forming for a cast-in-place station and prior to backfilling. The Developer shall provide, at his/her expense, full or part time construction supervision during all critical phases of the station installation. The Registered Professional Engineer shall submit copies of all

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
inspection reports/field notes and testing results to the Town Engineer or designated representative on a weekly basis.

4. The Town Engineer or designated representative shall inspect the structure and all pipe connections for watertightness.
5. The Town Engineer or designated representative shall be present during testing of the operation of the pump station. Items to be checked include, but not limited to:
  - Proper pump operation including pump alternation.
  - Proper pump control elevations.
  - Proper alarm elevations.
  - Alarms work properly.
  - Standby power generation (if specified) works properly.
6. The final inspection shall include, but not be limited to, the following general checklist:
  - Two copies of an Operation and Maintenance manual that includes pump design specifications, manufacturer cut sheets, material testing results, manufacturer's certificate and record drawings.
  - Pump station operation inspection documented and on file.
  - General appearance and restoration of site.
7. Any work deviating from the approved plans and specifications or that contains faulty workmanship shall be removed, replaced and/or repaired at the Developer's expense prior to acceptance by the Town of Milton.

#### **SECTION 450 STORM DRAINAGE**

1. A construction inspection schedule for each project will be determined at the preconstruction meeting.
2. Two (2) working days notice for all inspections shall be given to the Town Engineer or designated representative.
3. No backfilling shall occur until the installation of storm drains and culverts have been inspected and approved by the Town Engineer or designated representative.
4. The Developer shall provide, at his/her expense, full or part time construction supervision performed under the supervision of a Registered Professional Engineer at a minimum of two 2 hours per day during underground construction. The Registered Professional Engineer shall submit copies of all inspection reports/field notes and testing results to the Town Engineer or designated representative in a timely manner.

5. The Town Engineer or designated representative shall inspect and approve all storm drain and culvert joints and connections to catch basins. The Town Engineer or designated representative shall inspect all catch basins during installation.
6. Other storm drainage facilities, such as detention basins and ponds, shall be inspected during construction and upon completion.
7. The final inspection shall include, but not be limited to, the following general checklist:
  - Catch basins, manholes and pipelines clean.
  - Ditches and outlets clean.
  - Pipe constructed true and straight to line and grade.
  - Erosion control measures completed.
  - Buffer areas are as designed or set aside.
  - General appearance including proper restoration of site.
  - Material testing results, lab reports and manufacturer's certificates.
  - Record as built drawings complete and on file.
8. Any work deviating from the approved plans and specifications or that contains faulty workmanship shall be removed, replaced and/or repaired at the Developer's expense prior to acceptance by the Town of Milton.

**SECTION 500 RECORD DRAWINGS**

**SECTION 510 RECORD DRAWINGS REQUIRED**

1. Record drawings are to be prepared from actual field surveys of the completed construction and, at a minimum, shall include the information listed in the following sections.
2. Record drawings shall be accompanied by catalog cuts of all materials used, test results for water, sewer and force mains, manhole test results, bacteriological tests for water mains and pump station testing results in table format. The valve/manhole/hydrant/blowoff/curb stop location ties forms shall accompany the record drawings.
3. After the initial set of record drawings has been submitted, there will be a field inspection by the Town Engineer or designated representative to verify that the hydrants, valve boxes, curb boxes, etc., are properly raised to ground level. A letter of approval of the record drawings by the Town Engineer or designated representative is required before the record drawings may be considered as accepted by the Town of Milton.
4. A final set of record drawings, including one set of mylar reproducible, (one) set of prints and an electronic (AutoCad) set of prints, shall be submitted to the Town within forty-five (45) days of the completion of construction. The final set of the project record drawings shall be stamped by the Developer's Engineer with a signed and dated statement by the Engineer that the construction materials were installed and the work was performed substantially in accordance with the approved plans and specifications. The record drawings shall also contain a stamped and signed statement by a licensed Land Surveyor that all property corner markers have been set in accordance with the approved final plat.
5. All Operations and Maintenance Manuals shall be submitted as part of the Record Drawing Review.

**SECTION 520 STREETS**

1. Accurate locations of all streets and storm drain lines, underdrains, culverts, and other facilities.
2. For streets, the following shall be shown:
  - Width of pavement from curb to curb or shoulder to shoulder.
  - Right-of-way dimension for streets.
  - Width of sidewalks and bike paths.

- Location of street lights.
- Location of driveways.
- Location and size of planter islands.
- Typical cross-section of streets, as installed.
- Location of all underground electric, telephone, television, gas, and other utilities.

## **SECTION 530 WATER DISTRIBUTION**

1. Accurate location of all water lines and “as constructed” profiles.
2. Accurate measurements to all valves, tees, elbows 22.5 degrees or greater, curbstops, and any other fittings from permanent fixtures such as telephone poles, hydrants, buildings, transformers, etc., along with depths of water lines. These shall be included on the record drawings and be submitted on the proper location tie form with three (3) swing ties minimum
3. All curb boxes shall be marked with stakes so contractors can easily locate them before building services are connected.
4. All Operations and Maintenance Manuals shall be submitted as part of the Record Drawing Review.

## **SECTION 540 SANITARY SEWER**

1. Accurate location of all sewer lines and “as constructed” profiles.
2. Accurate measurements to all tees and wyes for building connections. The wye distances shall be noted on the record drawings as measured from the nearest downstream manhole. These shall be included on the record drawings and be submitted on the proper location tie form.
3. All service connection stubs shall be marked with stakes so contractors can easily locate them before building services are connected.
4. Location of all manholes. These shall be included on the record drawings and be submitted on the proper location tie form.
5. Invert and manhole rim elevations, distances between manholes, size of pipe in manholes, and pitch of pipe.
6. All Operations and Maintenance Manuals shall be submitted as part of the

## **SECTION 550 PUMP STATIONS**

1. Location of pump station and valve chambers, as applicable.
2. Location of all exterior piping with depths, size and material.
3. Accurate piping diagrams of interior piping including all fittings and valves.
4. Accurate wiring diagram of electrical controls. Two copies of the operation and maintenance manuals for the pumps, controls and standby generator shall accompany the record drawing submittal. The Developer will be required to provide two hours of training to a representative of the Town and will be required to pay a fee for the connection of the pump station to the municipal sewer system.

## **SECTION 560 STORM DRAINAGE**

1. Depth, size, location, and type of all storm drain lines and culverts, including underdrains and services.
2. Location of all catch basins and drywells.
3. Location and details for all storm drainage facilities, such as detention ponds.
4. Location of all drainage ways, water courses, etc.
5. Location and width of drainage easements.
6. Location and width of all buffers.
7. Locations of and maintenance procedures for all Permanent Erosion and Sediment Control Devices and Structures.

## **PART II TECHNICAL SPECIFICATIONS**

### **SECTION 600 EROSION CONTROL SPECIFICATIONS**

#### **SECTION 610 GENERAL PROVISIONS**

1. Any construction activity that disturbs one (1) or more acres of land, or is part of a larger development plan that will disturb one (1) or more acres, requires coverage under State of Vermont General Permit 3-9020 for Stormwater Runoff from Construction Sites.. Disturbances less than one acre shall comply with the latest Town of Milton ordinances and specifications related to erosion and sediment control and the State of Vermont "Low Risk Site Handbook for Erosion Prevention and Sediment Control".
2. The Developer will submit to the Town Engineer an Erosion and Sediment Control Plan that shall at minimum contain:
  - Name of on-site person responsible for implementation of the plan.
  - Emergency storm response procedures and inspections. The definition of a storm event shall be one inch of precipitation in a twenty-four (24) hour period.
  - Proposed locations for use of silt fence and alternative erosion control devices.
  - Silt fence and silt curtain inspection frequency (minimum weekly) for removal of collected sediment, including how sediment will be removed and where it will be disposed of and stabilized.
  - Temporary mulching procedures for disturbed soils areas.
  - Temporary sediment control at the inlet and outlet of existing and proposed catch basins, and culverts.
  - Dust control procedures for staging areas, stockpile areas, and on haul roads.
  - Stormwater runoff diversions, where needed, and their outlet locations
  - Inspection and maintenance schedules for all soil erosion and water pollution control measures. Inspection and maintenance records to be maintained on site for inspection by Town Engineer or designed representative.
  - The location of all sediment basins used for de-watering any site cofferdams.
2. All areas must have temporary or permanent stabilization within 14 days of initial disturbance.
3. There shall be no disturbance within 50 feet of a stream, lake, pond, or wetland unless approved under jurisdiction of the State of Vermont Agency of Natural Resources and/or the Army Corps of Engineers.

4. No work shall be performed until all sedimentation and erosion control measures are in place.
5. The discharge of sediment-laden water from the project site is prohibited. The Town of Milton, upon investigation of a sediment release, will inform the proper permitting authorities. The Town of Milton will assess an unpermitted discharge fine equal to fifty percent (50%) of any fine assessed and collected by the State of Vermont.
6. The Contractor shall install all erosion control measures as depicted on plans and attached details or as recommended by the Town Engineer, Vermont Agency of Natural Resources, the Soil Conservation Service, or the U. S. Army Corps of Engineers, prior to any construction. The Contractor shall also be responsible for inspecting and maintaining all erosion control measures until the Town of Milton accepts the project.
7. The Contractor shall delineate the construction limits to prevent machinery and debris from entering buffer strips and to limit the disturbance of soil and vegetation to an absolute minimum.
8. The Contractor shall limit soil disturbance and seeding application to between May 1st and October 15th. If soil disturbance occurs later than October 15th and prior to May 1st, winter erosion control measures will be necessary. The Contractor shall consult with the Town Engineer for additional site-specific winter erosion control measures.
9. All stockpiled material (topsoil, borrow, etc.) shall have a hay bale dike or silt fence constructed around the perimeter. Stockpiled material shall be seeded and mulched as soon as possible to prevent soil erosion and sedimentation off site. Stockpiles shall be located on the uphill side of disturbed areas, if possible. During windy conditions, stockpiled material shall be covered or watered appropriately to prevent wind erosion. Stockpiles left to winter over shall be seeded and mulched before October 1<sup>st</sup> to become grass covered.
10. The Town of Milton has adopted an Erosion and Sediment Control Best Management Practices manual to help the Developer and Contractor develop an Erosion and Sediment Plan and protect the environment from any construction disturbance.
11. Slopes greater than 3:1 shall have erosion control netting installed to stabilize the slope and reduce erosion potential. Prepare soil surface, fertilize, lime, seed and mulch slopes as described in the following sections. Install

netting over mulched slopes so that all parts are in contact with the soil and mulch.

12. Drainage courses with slopes greater than five percent (5%) shall be lined with riprap. Riprap shall be a minimum of 5" stone. Riprap level spreaders shall be placed at outlets of drainage culverts and in all drainage courses with a slope greater than five percent (5%). Riprap check dams are temporary and shall be removed after the site and channel are stabilized with vegetation. Riprap check dams shall be placed as shown in the following table:

Detail for Rip Rap Swale Check Dams

Slope	Placement
< 3%	100 feet
3.5%	75 feet
> 5%	50 feet

## SECTION 620 TEMPORARY EROSION CONTROL

1. The Contractor shall install snow fence, silt fence, apply vegetative soil stabilization practices, spread protective layers of straw or hay mulch, terrace or scarify slopes, provide gravel inlet filters for storm drains and ditches, and employ other means, as directed by the Town of Milton or as recommended by the Soil Conservation Service or the Vermont Agency of Natural Resources to prevent erosion and to prevent highly turbid water from being discharged to streams and lakes. These preventive measures may involve construction of stream bypasses, sediment basins, cofferdams and other means.
2. Sites requiring de-watering during any period of construction shall provide sediment traps to ensure that the discharge water will not carry sediment off site.
3. A stabilized road entrance, for the purpose of preventing the tracking of sediment onto public rights-of-way, shall be located at all points where traffic will be accessing a construction site from a public right-of-way or street.
4. Stabilized road entrances shall consist of an eight (8) inch layer of 1 ½" to 4" stone. The stone pad shall extend the full width of the entrance and shall have a minimum length of fifty (50') feet. The stabilized road entrance shall be top dressed with additional stone if the existing stone becomes clogged with sediment.
5. Any disturbed site or stockpile, which remains or is to remain unworked for more than one month shall be seeded with an annual rye and mulched.

6. All erosion control measures shall be inspected weekly and repaired and replaced as needed. A record of inspections and maintenance including date and time of inspection, who conducted the inspection and any action taken will be maintained by the Contractor on site.
7. All erosion control measures shall be inspected after any storm event that produces one inch of precipitation in a twenty-four (24) hour period.
8. Straw mulch is subject to wind action. Mulch may require anchoring as weather conditions warrant. See Erosion and Sediment Control Best Management Practices Manual.
9. It shall be the responsibility of the Developer/Contractor, at his/her expense, to ensure that no dust is created as a result of any work associated with the construction which would constitute a nuisance or safety hazard. The Developer shall wet sections of the construction area with water or apply calcium chloride or sweep the roadway with a wetted power broom as needed or when deemed necessary by the Town Engineer or designated representative. See Erosion and Sediment Control Best Management Practices Manual.

#### **SECTION 630 MATERIALS**

1. Grassed materials shall consist of fresh, clean, new crop seed complying with tolerance for purity and germination established by the Official Seed Analysts of North America. Seed mixture composed of grass species, in proportions and minimum percentages of purity and germination, shall be provided as specified. Seed that has become wet, moldy or otherwise damaged will not be acceptable. The grass seed requirements shall be provided as specified on the approved plans or by a professional landscape architect.
2. Lime shall consist of natural dolomitic limestone containing not less than eighty-five percent (85%) total carbonates with a minimum of thirty percent (30%) magnesium carbonates, ground so that not less than ninety percent (90%) passes a 10 mesh sieve and not less than fifty percent (50%) passes a 100 mesh sieve.
3. Provide fertilizer as recommended by soil test. Phosphorus free or phosphorus reduced fertilizers are encouraged.
4. Anti-erosion mulch for grassed areas shall be clean, mildew free straw, free from seed or other deleterious material. No hay is allowed. Erosion control netting shall be jute netting consisting of undyed and unbleached yarn woven into a uniform open plain weave mesh with biodegradable staples. The use of commercial tactifiers, hydro mulch, or paper mulch shall to be applied at a rate of 29 Kg/ 1000

m<sup>2</sup>, (64lb./1200 yd<sup>2</sup>).

5. When silt fence is required the geotextile shall meet Vermont Standard Specification 720.04A for silt fence.

## **SECTION 640 INSTALLATION**

### **Seeding**

1. Loosen subgrade to a minimum depth of four (4) inches. Remove stones over one and one half inch (1½") in any dimension and sticks, roots, rubbish, construction debris, and other extraneous matter. Limit preparation to areas, which will be seeded promptly after preparation.
2. Spread top soil (if applicable) to a minimum depth of six (6) inches (unless otherwise specified), and as required to meet lines, grades and elevations shown on the approved plans, after light rolling and natural settlement.
3. Add fertilizer as recommended by soil tests otherwise at a rate of ten (10) pounds per thousand (1,000) square feet and mix thoroughly into upper four inch (4") of topsoil and soil. Apply ground stone lime, unless otherwise specified, at a rate of fifty (50) pounds per one thousand (1,000) square feet.
4. Fine grade grass areas to smooth, even surface with loose uniformly fine texture. Roll, rake and drag lawn areas, remove ridges and fill depressions, as required to set finish grades. Limit fine grading to areas which can be planted immediately after grading.
5. Moisten prepared lawn areas before seeding if soil is dry. Water thoroughly and allow surface moisture to dry before seeding lawns. Do not create a muddy soil condition.
6. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and prior to seeding.
7. Sow seed using a mechanical spreader. Do not seed when wind velocity consistently exceeds five (5) miles per hour. Distribute seed evenly over the entire area by sowing equal quantity in two (2) directions at right angles to each other. Rake seed lightly into top one eighth inch (1/8") of topsoil, roll lightly and water with a fine spray.
8. Protect seeded areas against erosion by spreading mulch after completion of

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
seeding operations. Spread uniformly to form a continuous blanket not less than one inch (1") and not more than three inch (3") loose measurement over seeded areas.

9. For hydroseeding a grass area mix specified seed, fertilize and pulverized mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application. Apply slurry uniformly to all areas to be seeded. Use a rate of application required to obtain specified seed sowing rate.
10. Seed mixtures shall be used that meet the required need of the material being seeded.

**SECTION 700 STREET SPECIFICATIONS**

**SECTION 710 GENERAL PROVISIONS**

1. The purpose of these specifications is to establish a set of standards to ensure consistency of all future construction. The Town will also benefit and attempt in the future to upgrade its roadway system in accordance with these standards.
2. All roads shall be designed in accordance with these Public Works Specifications and the standards of Section 720 and Figures 1 through 7 of the standard details, by a professional engineer registered in the State of Vermont. The Developer shall provide an engineer registered in the State of Vermont to oversee construction and to certify in writing to the Town that all construction was performed in compliance with these Public Works Specifications.
3. As a minimum, all rights-of-way and roadway drainage must meet the latest version of Standard Specifications for Construction as published by the Vermont Agency of Transportation. These Public Work Specifications may require higher standards.
4. All materials, design, and workmanship shall meet nationally accepted standards and practices and, when applicable, those of the State and Town.
5. In the case where a road may be realigned, widened, or extended, the Town may require that such an area be marked on the plat "reserved for future road alignment, widening, or extension." Areas shown in this manner shall be dedicated to the Town.
6. Private roads shall be designed to State of Vermont A-76 standards. Town of Milton geometric standards and highway access standards apply to private roads at the intersection with public roads. No grades for private roads shall be greater than 10% as recommended in the A-76 standard. The width of the road shall be a minimum of 20 feet plus additional two (2) foot aggregate shoulders on each side.

**SECTION 720 GEOMETRIC STANDARDS**

<u>Public Road Design Standards</u>	MAJOR	COLLECTOR	MINOR
Minimum Right-of-Way Width	60'	60'	60'
Minimum Pavement Width <sup>1</sup>	26'/24'	26'/24'	26'/24'
Maximum Grade <sup>2</sup>	8%	8%	8%
Minimum Grade	0.5%	0.5%	0.5%
Minimum Stopping Site Distance of Vertical Curves,	250'	200'	155'
Minimum Radius of Horizontal Curves Centerline of Street	460'	300'	180'
Minimum Tangent Length Between Reverse Curves	100'	100'	100'
Minimum Distance between Centerline Offsets of Adjacent Intersections	200'	200'	200'
Minimum Angle at Intersections of Street Center Lines <sup>2</sup>	80°	80°	80°
Minimum Curb Radius at Intersections	30'	30'	25'
Maximum Grade within 100 Feet of Intersection Centerline of Two Streets	3%	3%	3%
Shoulder Width each side (aggregate)	4'	4'	2'

<sup>1</sup> The width of the bituminous concrete surface of a curbed street shall be 26' and the width for an uncurbed street is 24'.

<sup>2</sup> For short grades less than 500' in length the maximum grade may be 10%.

<sup>3</sup> A 90° angle is preferred.

1. Minor streets are those with an Average Daily Traffic (ADT) which does not exceed 250. The maximum number of dwelling units on a minor residential street shall not exceed 25.
2. Collector streets are those with an ADT which does not exceed 500. The maximum number of dwelling units on a collector street shall not exceed 50.
3. Major streets are those with an ADT which exceeds 500. Streets with more than 3000 ADT shall be designed to standards established at the time of plan approval.

5. Roadway subbase shall meet the following minimum standards for all streets:

*Ledge Subgrade* shall be shattered to 12" below subgrade with 12" Gravel meeting VTrans Standard 704.04A and 6" Crusher Run meeting VTrans Standard 704.05A fine and installation of Geotextile Road Separator Fabric.

*Clay/Silt Subgrade* with a plasticity index of 6 and a liquid limit greater than 25, when the subgrade soils contain more than 8% by weight of particles finer than a #200 sieve or when the seasonal high groundwater is within 3' of the finish grade underdrain shall be required and Geotextile Road Separator Fabric with 24" Gravel meeting VTrans Standard 704.04A and 6" Crusher Run meeting VTrans Standard 704.05A fine.

*Granular Subgrade* 12" Gravel meeting VTrans Standard 704.04A and 6" Crusher Run meeting VTrans Standard 704.05A fine

Note: 18" of 704.05A fine may be substituted for the 12" Gravel meeting VTrans Standard 704.04A and 6" Crusher Run meeting VTrans Standard 704.05A fine.

6. Roadway pavement shall meet the following minimum standards:

*Residential Streets*

Base Course	2.5" Type II
Wearing Course	1.5" Type III

*Commercial Streets*

Base Course	3.0" Type II
Wearing Course	2.0" Type III

7. Side slopes shall have a 3:1 slope under normal conditions and a 1:6 slope for rock cuts. For rock cuts with a vertical face greater than 10 feet, a 3 foot bench shall be provided at each 10 foot level above grade.

## **SECTION 730 HIGHWAY ACCESS**

1. Standards

The Vermont Agency of Transportation Standards for Design: B-71, and the attached Drawings shall be the design standards for access onto all highways located within the Town unless otherwise noted in these specifications. Redevelopment of lots shall require any new drives to meet these standards.

2. Horizontal Offsets

Horizontal offsets shall conform to Drawing 8 of these specifications and the Town of Milton Zoning Regulations.

3. Number of Access Points

The Town of Milton Zoning regulations have special rules for access onto state and principal town highways. Please see Section 816: Access Management, Town of Milton Zoning Regulations.

## **SECTION 740 MATERIALS**

1. Embankment

To replace unsuitable soil material, backfilling shall be done with rock or granular borrow consisting of 20-100% passing the No. 4 Sieve and 0-12% passing the No. 200 Sieve.

2. Underdrain

Pipe shall be Perforated Polyvinyl Chloride (PVC) SDR 35 conforming to VTrans Standard Specifications for Construction 710.06 The minimum diameter shall be 6".

Stone shall be clean, hard, durable 3/4" to 1 1/2" stone and underdrain trench lining geotextile in accordance with Vermont Standard Specification 720.04A shall envelope the stone.

When underdrain trench lining is required the geotextile shall meet for underdrain trench lining

3. Road Stabilization Fabric

Geotextile fabric for road stabilization shall meet Vermont Standard Specification 720.04A for roadbed separator.

4. Sand

Sand shall consist of material free from silt, loam, clay, or organic matter. Sand

shall conform to Vermont Standard Specification 703.03 for sand borrow

5. Base Course Gravel

The base course shall consist of angular and round fragments of hard durable rock conforming to Vermont Standard Specification 704.04A gravel for subbase. This material shall also meet the State requirements for percent wear and fractured faces.

6. Top Course Gravel

The top course shall consist of angular and round fragments of hard durable rock conforming to Vermont Standard Specification 704.05A for crushed gravel for subbase (fine).

This material shall also meet the State requirements for percent wear and fractured faces.

7. Aggregate for Shoulders and Surface Course

Aggregate for shoulders and surface course shall conform to Vermont Standard Specification 704.12A for aggregate for surface course and shoulders or approved equal.

8. Bituminous Concrete Pavement

Bituminous concrete (asphalt) pavement and driveway aprons shall conform to Vermont Standard Specification 406 for bituminous concrete pavement.

Binder course shall conform to Vermont Standard Specification 406.03 for Type II, "Composition of Mixture."

Wearing surface shall conform to Vermont Standard Specification 406.03 for Type III, "Composition of Mixture."

9. Emulsified Asphalt

Emulsified asphalt shall conform to Vermont Standard Specification RS-1 for emulsified asphalt.

## SECTION 750 INSTALLATION

1. Staking and Layout

Centerline locations shall be established at no greater than fifty foot intervals. At each station, relevant information, cut, fill, elevation and station offset, shall be provided.

2. Excavation

All excavation work, general cut excavation, or trenching shall conform to the following provisions, as applicable.

All material resulting from clearing and grubbing shall be disposed of in a manner approved in advance by the Town and in compliance with local ordinances and state law.

Sufficient topsoil shall be stripped from areas to be filled or excavated to provide a minimum of six inches of cover over all finished slopes.

No excavation is to be performed until the sedimentation and erosion control measures are followed as specified in the Erosion Control Specifications of these Public Works Specifications. Excavations shall be to elevations and dimensions indicated in approved plans and specifications, plus sufficient space to permit erection of forms, drains, construction of structures, and the inspection of the work. In all areas where unsuitable material is found, the Contractor shall notify the Town Engineer or designated representative immediately. Any unsuitable material found under the proposed roadway or structure shall be excavated in full and suitable material used to bring the area up to grade. The extent of unsuitable material excavation shall be determined by the Town Engineer or designated representative.

Excavated material shall be stockpiled on site with proper erosion control until completion of grading operations. All stockpiles shall be protected from erosion as specified in the Erosion Control Specifications of these Public Works Specifications.

Excavated material, if suitable, may be used in making embankments, filling low areas, or as required. Removal of excavated material from the site shall require appropriate permits.

3. Embankments

All embankments shall be left neat, trim, and stable in conformity with the lines and grades indicated on the approved plans.

Frozen material shall not be used in the construction of embankments, nor shall the embankment be placed on frozen ground. Embankments shall not be formed when the temperature falls below 32°F, for long enough to cause soil freezing during placement and compaction of the fill material.

Construction across wet areas or through unstable soils requires that the unsuitable soil be removed down to a material that has a suitable bearing capacity.

Installation of road separation fabric shall conform to the manufacturer's directions.

The first layer of the embankment shall be rock or granular borrow to a minimum thickness which will support equipment. The material shall be placed in horizontal layers of uniform thickness across the full width of the embankment in a maximum of 6" lifts and compacted. Proper spreading equipment shall be used on each layer to obtain uniform thickness prior to compacting. Each layer shall be crowned to shed water to the outside edge of the embankment.

When soft or wet clays are used, the layers shall not be more than eight inches in loose measurement and shall be allowed to dry out to the extent required to obtain satisfactory compaction before successive layers are placed. During construction, should bulging, cracking or unstable movement occur, all placement of fill material shall stop and the embankment stabilized prior to any further filling.

Alternate layers of wet clay or silt and dry excavation or borrow may be used. The combined total of the two layers shall not exceed sixteen inches (16").

Stumps, trees, rubbish and any other unsuitable material shall not be used in the embankment.

Compaction layers shall be 95% maximum dry density conforming to the AASHTO T99 Method A (Standard Proctor) test.

Earth embankments shall have a six inch (6") cover of top soil and be grassed in accordance with the Erosion Control Specifications of these Public Works Specifications.

Rock embankments shall be constructed with caution to ensure a solid embankment and the fill shall be made in uniform layers consistent with the size of rock being used, but not to exceed two feet in thickness.

All excavated rock, ledge, boulders and stone shall be placed at the base of an embankment.

No rocks having a dimension greater than 1" in the upper 12" of fill or embankment are allowed, except of rock slopes designed for drainage.

**4. Underdrain**

The trench shall be excavated to the depth and width shown on Figure 8 of the standard details and as required on the design plans or as directed by the Town

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Engineer or designated representative. Underdrain fabric shall be placed in the trench prior to placing the stone with sufficient material for a 6" fabric overlap at the top. The stone fill shall be placed to a depth of six inches below pipe invert.

Underdrains shall be placed on center of the trench with perforations downward.

The trench shall be backfilled to the gravel road base with sand borrow.

Underdrains in the right-of-way shall be 6" diameter pipe meeting the Town of Milton Public Works Specifications.

Fittings used shall be those approved by the manufacturer.

Upgrade ends shall be closed with suitable plugs to prevent entry of soil material.

Underdrain cleanouts and flushing basins shall be constructed as shown on approved plans with cast iron covers.

Pipes used at road crossings shall be non-perforated unless otherwise directed by the Town Engineer or designated representative.

Underdrains shall be installed if frost or a high water table is present or as specified by the Town Engineer or designated representative.

**5. Preparation of Subgrade**

The subgrade shall be shaped to the slope shown on the Typical Roadway Detail and to grades and lines shown on approved subgrade drawings. (Refer to Figures 1 through 4 of the standard details).

Soil conditions may warrant the need for underdrain, sand cushion, and/or road stabilization fabric. Unsuitable material shall be replaced with approved granular borrow. The Town Engineer or designated representative shall be notified if the material encountered differs from that shown on the plans or from that normally expected.

Subgrade is to be approved by the Town Engineer or designated representative prior to placement of any subbase material.

**6. Subbase**

The subbase and base material shall be placed in 6" lifts to the depths indicated on the Typical Roadway Detail and compacted to 95% dry density as determined by the AASHTO T99 Method A (Standard Proctor) test.

7. Bituminous Concrete Pavement

Prior to placing bituminous concrete, a pre-paving meeting will be held at the site. The meeting shall include the Town Engineer, developer's engineer, contractor, paving contractor, and developer. The Town Engineer shall approve the final grading prior to paving. A schedule for paving shall be determined. The Developer's Engineer shall provide continuous inspection during the paving operation.

If not otherwise stated or shown in the approved plans and specifications, the bituminous concrete shall be placed to the thickness shown on Figure 6 of the standard details in accordance with Vermont Standard Specification Section 406. A mechanical spreading and finishing machine shall be utilized for placement with an activated screen and heaters, if required. The machine shall be capable of spreading the mix without segregation of materials. The surface shall be compacted by rolling, hand or mechanical tampers, smoothing irons, or trench rollers for depressed areas.

There shall be at least two rollers that meet Vtrans minimum specifications with minimum gross weight not less than 8 tons on site at all times. Immediately after the bituminous mixture has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling to achieve at least 92% but not more than 96% of the corresponding daily average maximum specific gravity of each type of mix used during the day. Longitudinal joints that have become cold shall be coat with emulsified asphalt before the adjacent mat is placed.

If the wearing course is applied in a subsequent construction season (which may be required), the base course shall be cleaned and sprayed with an application of emulsified asphalt. The emulsion shall be applied under pressure at a rate of 0.3 to 0.5 gallons per square yard, just prior to placement of the wearing course.

Paving is dependant on the weather. Pavement shall not be placed during inclement weather based on the sole discretion of the Town. The base course shall not be placed when the air temperature at the paving site in the shade and away from artificial heat is below 40°F. The top course shall not be placed when the air temperature at the paving site in the shade and away from artificial heat is below 50°F. Bituminous material shall not be placed between November 15 and April. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.

**SECTION 760 TESTING**

1. Soil Testing

Sieve analysis shall be made on all subbase material including sand, gravel, crusher run gravel, aggregate material for surface course, and shoulders.

2. Compaction

Standard Proctor tests may be required for compaction.

3. Bituminous Surfaces

Bituminous surfaces shall be tested using a sixteen foot straight edge parallel to the centerline to check for depressions and irregularities.

## **SECTION 800 SIDEWALKS, CURBS AND APRONS**

### **SECTION 810 GENERAL PROVISIONS**

1. All sidewalks, curbs, and aprons shall be designed and constructed in accordance with these Public Works Specifications, VTrans Standard Specification of Construction 618.03 and the standard details.
2. All sidewalks shall be designed to be handicapped accessible in accordance with American with Disabilities Act (ADA) and state standards.
3. Sidewalks and curbs shall be made of concrete. Aprons shall be made of either concrete or bituminous concrete and bike paths shall be bituminous concrete or gravel surfaced.

### **SECTION 820 GEOMETRIC STANDARDS**

1. Sidewalks shall be no less than 5 inches thick except where the sidewalk crosses a driveway. The thickness of sidewalks at residential driveways shall not be less than 6 inches. The thickness of sidewalks at commercial driveways shall not be less than 8 inches.
2. Subbase for sidewalks shall be at least 6 inches thick except where the sidewalk crosses a driveway. The thickness of base and subbase at all driveways shall not be less than twelve inches with a base of 6" crushed gravel meeting VTrans Standard Specification 704.05A Fine and 6" min. subbase gravel meeting VTrans Standard Specification 704.04A or as directed by the Town Engineer. Note: Driveways and cut sections having a subbase or native soil meeting the 704.04 standard shall only need 6" of crushed gravel meeting VTrans Standard Specification 704.05A Fine. All fill sections shall have 12" of material meeting this standard.
3. Sidewalks shall be no less than five feet wide. All sidewalks shall have ramps to provide handicapped access. All ramps shall have detectable warnings as required by the ADA. Refer to Figure 21 of the standard details.
4. Driveway aprons shall meet the same specifications as sidewalks and driveways.

## **SECTION 830 MATERIALS**

1. All concrete shall be Portland Cement Air Entrained (5%-7%), with a 28 day compressive strength of 3,500 psi in accordance with Class B Concrete as found in the Vermont Standard Specifications, 501.03.
2. Base material shall be crusher run gravel as described in the Street Specifications of these Public Works Specifications.
3. Curing compound shall conform to the requirements of Section 725.01(d) of the Vermont Standard Specifications.
4. Silicone admixture shall conform to the requirements of Section 725.02(e) of the Vermont Standard Specifications. The anti-spalling compound shall penetrate the concrete surface of a non-slip damp proof surface. All anti-spalling compounds shall be Silane by Dow Coring or approved equal.
5. Truncated domes shall be two(2) cast iron plates, Neenah Foundry or equal.

## **SECTION 840 INSTALLATION**

1. Preparation of Subbase  
The subgrade shall be prepared by shaping to the required grade and slope as indicated in the standard details and as required on the design plans. All boulders, silt, clay, organic matter or other objectionable material shall be removed. No work shall be performed on frozen ground.  
  
Subbase for sidewalks and driveways shall be compacted, crusher run gravel placed on the prepared subgrade to the depth indicated in the standard details.
2. Forms  
Forms for concrete shall be of metal or of acceptable planed and matched lumber. All forms shall be oiled.
3. Placing and Finishing  
No concrete shall be poured on frozen or thawing subgrade during unseasonable weather conditions or when the temperature is 38 degrees Fahrenheit and falling. The Contractor shall conform to ACI 306 for cold weather concreting and ACI 305 for warm weather concreting. In hot weather, the temperature of freshly placed concrete shall not be allowed to exceed 85 degrees Fahrenheit.

For placing and finishing concrete, the subgrade shall be moistened, and the properly mixed concrete shall be placed in the forms and thoroughly tamped in place. The surface shall be broom finished.

Expansion joints shall be provided with 1/2 inch preformed joint filler installed in these joints. Curbs and sidewalks shall have expansion joints at 20 foot intervals, except for driveways where the expansion joints shall be placed between the sidewalk and pavement. Dummy joints shall be placed every five feet, formed by a jointing tool or other acceptable means.

**4. Curing**

The concrete shall be kept moist for no less than three days, and shall be protected from the elements. An approved curing compound may be used in lieu of the three day cure.

**5. Anti-Spalling Compound**

All exposed surfaces shall receive two coats of a protective compound after the initial curing period (approximately 28 days after placement). The compound shall be Silane by Dow Corning or Equal.

**6. Backfilling**

Backfilling shall be of bank run gravel and shall follow immediately after forms have been removed.

**SECTION 850 TESTING**

1. Subbase material shall be tested in accordance with the procedures described in the Street Specifications of these Public Works Specifications.
2. The Town Engineer or designated representative may require testing to verify the compressive strength of concrete.

## **SECTION 900 RECREATION PATHS/SHARED USE PATHS**

### **SECTION 910 GENERAL PROVISIONS**

1. All recreation/shared use paths shall be designed and constructed in accordance with these Public Works Specifications, VTrans Standard Specifications of Construction and the Vermont Pedestrian and Bicycle Facility Planning and Design Manual.
2. All recreation/shared use paths shall be designed to be handicapped accessible in accordance with the Americans with Disabilities Act (ADA) and state standards.
3. Recreation/shared use paths shall be bituminous concrete or gravel surfaced.

### **SECTION 920 GEOMETRIC STANDARDS**

1. Paved recreation/shared use paths shall have 2 inches Type II base course and 1" Type IV wearing course conforming to VTrans Standard Specification of Construction Section 702.
2. The thickness of subbase and base shall not be less than sixteen inches with a base of 4" Crushed Gravel meeting VTrans Standard Specification 704.05A Fine and 12" min. gravel meeting VTrans Standard Specification 704.04A or as directed by the Town Engineer.
3. Recreation/shared use paths shall be no less than ten feet wide.

### **SECTION 930 MATERIALS**

All materials for a recreation/shared use path shall conform to the standards for highway construction in Section 700 of the Milton Public Works Specifications.

### **SECTION 940 INSTALLATION**

All installations for a recreation/shared use path shall conform to the standards for highway construction in Section 700 of the Milton Public Works Specifications.

### **SECTION 950 TESTING**

All testing for a recreation/shared use path shall conform to the standards for highway construction in Section 700 of the Milton Public Works Specifications.

5/20/2008  
Last printed

## **SECTION 1000 MISCELLANEOUS SPECIFICATIONS**

### **SECTION 1010 STREET NAMES, SIGNS AND NUMBERS**

1. Street Names

No duplicate or near duplicate street names shall be allowed.

All street names shall be submitted in writing to the Zoning Administrator for review for any possible duplication within the Town of Milton.

Final street names shall be submitted in writing to the Milton Police Department and Fire Department no less than one month prior to any occupancy on a new street or road.

2. Street Name Signs

All street signs shall be constructed in accordance with the accepted drawings. The Developer is responsible for purchase and installation of signs and posts. The street sign shall indicate the name of all intersecting streets.

The sign post shall be a 10 foot 2 inch square steel post and anchor post in accordance with Vermont Standard Specification 750.01 .

The sign post shall have a total length of 10'-6", with an approximate exposed length of 8'-0". The remaining 2'-6" shall have four 12 inch anchors welded in a staggered arrangement to prevent rotation.

All street signs shall be of aluminum with a green background and white retroreflective letters on both sides.

The sign post shall be located in the strip between the sidewalk and street edge at a point which will not interfere with pedestrian or vehicular travel.

3. Other Street Signs

Street signs, including regulatory, warning and informational signs, shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices.

4. Street Numbers

The Developer shall contact the Zoning Administrator prior to numbering any new units.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
The numbers shall be 2" high Arabic contrasting in color to their background.

The numbers shall be placed on a roadside post or on a United States Post Office approved mailbox at roadside, and at a point no more than 22" from the frame of the front door. If the front door is within 50 feet of the roadside and the number is visible from the road, a mailbox or roadside post is not required.

## **SECTION 1015 PAVEMENT MARKING**

Pavement marking shall be installed as warranted by the MUTCD or as determined by the Town Engineer. All pavement markings shall be durable in accordance with VTrans Standard Specification 708.10 (thermoplastic) or 708.12 (tape).

Crosswalks on Town Roads shall be durable markings in one (1) foot block patterns with one (1) foot spacing. Crosswalks across State roads shall be inlaid brick red colorized bituminous asphalt with brick style imprints. The inlaid asphalt shall be bordered with a one (1) foot white durable marking. Crosswalk markings shall be consistent throughout Town in order to establish recognizable pedestrian corridors.

Crosswalks shall be located to encourage pedestrians to cross at a predictable location where they can be easily seen by motorists and cross safely.

Crosswalks shall be required in accordance with the VTrans publication "Guideline for Installation of Crosswalk Markings and Pedestrian Signing at Marked and Unmarked Crossings" latest revision or as required by the Town Engineer. Crosswalks shall be warranted if necessary to define a pedestrian corridor such as a school travel route. The 20 or more pedestrians necessary to warrant a "mid-bloc" or "uncontrolled intersections" for State roads does not apply to Town roads.

## **SECTION 1020 STREET GUARD RAILS**

1. Street guard rails shall be standard twelve gauge steel beam and post guard rail, conforming to Sections 621 and 728 of the Vermont Standard Specifications and pages G-1 and G-1d of the Vermont Design Standards.
2. Guard rails shall be erected when the height of fill at the shoulder is greater than 10 feet, when the slope is steeper than 1:3, or as required by the Town Engineer or designated representative.

## **SECTION 1030 STREET SIDELINE MONUMENTS**

1. Monuments shall be installed at all street intersections, at all points of curve and tangency, and at all other critical points of intersection.
2. Monuments shall be 4" x 4" x 36" concrete with a marked center on the top to be used as a point of reference.
3. Monuments shall be located and placed by a State of Vermont licensed surveyor. The monuments shall be set after all construction work is complete and shall be set with their top surfaces ½" above the finished ground surface.

## **SECTION 1040 ROAD CUTS**

1. No public road cuts are allowed. Trenching may be allowed if conditions at the site prevent trenchless methods for utility installation. Requests for road cuts for utility connections must be approved by the Town Engineer or designated representative.
2. The Contractor shall notify the Town Engineer or designated representative at least two (2) working days in advance of commencement of the work.
3. The Town Engineer or designated representative may inspect the work at various stages including: initial cut, preparation of sand base, installation of gravel base, paving cut and re-surfacing.
4. All road cuts shall be paved within 30 days of the initial cut.
5. Road cuts shall not be allowed between November 15 and April 1. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.
6. Road cuts shall be performed in a neat and workmanlike manner. Cutting shall be limited to straight lines and acute angles shall be avoided. A pavement saw shall be used to make all cuts.
7. Native material may be used for backfill at the discretion of the Town Engineer or designee. If native material is unsuitable then the trench shall be backfilled with road base or flowfill concrete (lean concrete) as deemed appropriate.

**SECTION 1050 DRIVEWAYS**

1. The Vermont Agency of Transportation Standards for Design: B-71, and the attached Drawings shall be the design standards for access onto all highways located within the Town unless otherwise noted in these specifications. Redevelopment of lots shall require any new drives to meet these standards. New driveway locations shall be approved by the Town Engineer or designated representative in accordance with the following table. Intersection sight distances shall be applied to road intersections, non-residential driveways, and residential driveways serving more than one unit. Stopping sight distances shall be applied to individual residential driveways.

	<u>Design Speed (mph)</u>			
	20	30	40	50
Minimum Intersection Sight Distance (feet)	200	300	400	500
Minimum Stopping Sight Distance (feet)	120	200	300	425

2. Driveways shall have a metal, reinforced concrete, or a High Density polyethylene pipe meeting the VTrans Standard Specifications of Construction 710.03 or 711.01 with a minimum diameter of 18 inches when they cross ditches or as otherwise required by the highway access permit. The minimum length of a drive culvert will be 20 feet and the maximum length is 40 feet for an individual drive.
3. The installation of culverts on new driveways as required by the Town Engineer or designated representative as a result of approval for access for a new driveway onto an existing Town road shall be the responsibility of the property Developer.
4. The property Developer or owner shall accept responsibility for all typical maintenance of driveway culverts including, but not limited to:
  - periodic cleaning of the culvert from silt and debris;
  - gradual movement through frost action and/or erosion;
  - regular replacement as needed due to normal wear and tear.
5. The Town of Milton will be responsible for culvert maintenance under the following circumstances only:
  - blockage of a culvert through freezing;
  - enlargement or enhancement of the culvert through the Town's redesign of the drainage system in the area caused by increased runoff from above or

- near the property;
- construction of an alternate drainage system by the Town such as sub-surface catch basins and lateral drainage.

## **SECTION 1060 STREET LIGHTING**

1. Street lighting shall be installed within the Village of Milton and where otherwise required by the Development Review Board.
2. Street lighting shall be spaced a maximum of 300 feet apart, or as otherwise approved by the Town Engineer or designated representative.
3. Street lighting shall be installed at all street intersections, at the end of dead end roads and on the sidewalk side of the street, where applicable.
4. All street lights shall have cut-off fixtures and use metal halide lamps. All street lighting shall conform to the guidelines in the *Outdoor Lighting Manual for Vermont Municipalities*.

## **SECTION 1070 EMERGENCY VEHICLE ACCESS**

Emergency access shall be in accordance with a Life Safety Ordinance if one is adopted by the Town.

**SECTION 1100 WATER DISTRIBUTION SPECIFICATIONS**

**SECTION 1110 GENERAL PROVISIONS**

1. All work shall comply with the latest edition of the State of Vermont "Environmental Protection Rules, "Chapter 21, Water Supply Rule" the latest approved AWWA requirements, the Vermont Department of Health Standards, and the latest Town of Milton ordinances and specifications. All water distribution systems shall be designed to provide adequate fire protection in accordance with the Town of Milton Life Safety Ordinance if one is adopted by the Town.
2. Public water mains shall be installed in designated road Right-Of-Way. Water mains should not be installed under sidewalks, curb, landscaping, drainage ditches or stormwater ponds. If, as deemed by the Town Engineer or designated representative, it is not practical to make such an installation in a designated road ROW, water mains may be installed in exclusive easements.
3. A professional engineer, registered in the State of Vermont shall design all water distribution systems in accordance with these Public Works Specifications. The Developer shall provide an engineer registered in the State of Vermont or the engineer's designated representative to oversee construction and to certify in writing to the Town that all construction was performed in compliance with these Public Works Specifications.
4. Water distribution design drawings shall include mains, services, valves, curbstops, fittings including elbows, hydrants, pump stations, storage tanks, profiles and other related appurtenances and submittals, as required.
5. All water distribution systems shall be installed at the locations shown on the approved design drawings in accordance with the typical details.
6. Water system installation includes clearing and grubbing, excavation, installation, backfilling, compaction, restoration and soil erosion control.
7. Storage of pipe and materials shall be in accordance with the manufacturer's recommendations.
8. Utility or service lines encountered during construction shall be maintained at all times. Sewer, water and utility supply lines shall not be interrupted for any residence, business or other establishment, whether within or outside the construction limits.

No work will be permitted within the Town right-of-way or on infrastructure to be

5/20/2008  
Last printed

dedicated to the Town after November 15 or before April 1, including emergency water/sewer connections unless waived by the Town Engineer or designated representative. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.

## **SECTION 1120 GEOMETRIC STANDARDS**

1. The minimum water main size shall be eight inches (8"). Any proposed increase from the minimum diameter shall require a hydraulic analysis considering future use.
2. The minimum service for a single family residence shall be 3/4". The minimum service for a duplex shall be one inch (1"). Services for triplexes or larger units and service lines longer than 100 feet shall be evaluated on a case by case basis to determine the proper service line size. Each individual residential unit shall have its own individual water meter. Mixed use or multiple unit residential buildings may have this requirement
3. Saddles and corporation stops shall be provided for all service connections up to two inches (2") on PVC, asbestos cement and cast iron mains. Direct taps and corporation stops shall be required on ductile iron mains. Taps on high density polyethylene mains shall be thermally fused to the main. A tapping sleeve and valve shall be used for all connections four inches (4") or larger.
4. Gate valves shall be placed a maximum of five hundred (500) feet apart. Tee intersections shall have a minimum of two gate valves. Cross sections (four way intersections) shall have a minimum of three valves.
5. The minimum service for a hydrant shall be six inches (6").
6. Hydrants shall be located away from the radius of an intersection but within 50 feet of the intersection. Hydrants shall be placed every 500 feet of water distribution main in residential developments and every 300 feet in commercial developments. Hydrants/Valves must be placed every 1000 feet of water transmission main. For single-family residential subdivision, there should be a minimum fire flow of 500 gallons per minute at the flow hydrant with a 20 psi pressure at the residual hydrant.
7. Hydrants shall be located between the curb or shoulder of a road and the sidewalk. When set in lawn space between the curb and sidewalk no portion of the hydrant or nozzle cap will be less than one foot off the gutter face of the curb or edge of the sidewalk. In the absence of a curb or sidewalk no hydrant shall be

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
placed less than four feet (4') or more than six feet (6') from the edge of the pavement. Hydrants shall be located so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians. Hydrants shall be installed so the breakaway flange is not less than two (2) inches or more than six (6) inches above the established grade.

8. Ductile iron pipe shall be used on all transmission mains as defined by the Town Engineer. Polyvinyl Chloride (PVC) pipe may be used on distribution mains. Polyethylene (PE) may be used as determined by the Town Engineer.
9. Ductile iron pipe shall be used under all road crossings and at other unusual or difficult installations at the direction of the Town Engineer or designated representative. Water mains designed for surface slopes greater than 5% shall be ductile iron.
10. No parallel underground utility shall be designed or installed within four (4) feet of the water main on either, or above the water main from the bottom of the main to finish grade with the exception of crossings in accordance with these specifications.
11. Water distribution main extensions shall be continuous to the furthest property line of the project. A "dead-end" water main shall have a fire hydrant installed at the end and appropriate drainage for high volume flushing, as required in these specifications, unless approved otherwise by the Town Engineer or designated representative. If flows and pressure do not meet minimum standards than a flushing hydrant or blowoff shall be installed for flushing purposes.

## **SECTION 1130 MATERIALS**

### **1. Pipe and Fittings**

Water lines, fittings and appurtenances shall meet all applicable latest AWWA standards, Vermont Water Supply Rule Chapter 21 Standards, and local standards.

PVC Water lines and fittings shall be equal to PVC AWWA C900, DR14 Pressure Class 200 with push on joints.

Ductile iron pipe shall be Class 52, cement lined and petroleum asphaltic coated with push-on joints conforming to all applicable AWWA, Chapter 21, Water Supply Rules, and local standards.

Ductile iron fittings shall be Class 350 mechanical joint compact fittings in accordance with ANSI A21.53 or AWWA C153 and ANSI A21.4 or AWWA C104

for cement linings. Mechanical joint nuts and bolts shall be at a minimum high strength, low alloy steel in accordance with ANSI A21.11.

Where approved by the Town Engineer or designated representative, High Density Polyethylene (HDPE) pipe may be used in place of Ductile Iron or PVC pipe. PE pipe shall be DR 9.0, class 200 with heat fused joints and fittings, except as otherwise specified. Generally, HDPE pipe may be required in areas with known or suspected corrosive soil conditions, or areas where minimal ground or surface disturbance is required. HDPE pipe shall be compatible with Ductile Iron fittings. The installation of HDPE pipe shall comply with the installation procedures found in AWWA Manual M55 current edition. HDPE pipe shall not be installed in locations where there is a likelihood of low molecular weight petroleum products or organic solvents or their vapors are present. Tracer wire imbedded in the HDPE pipe may be utilized at the discretion of the Town Engineer or designated representative.

HDPE joints , valves, flanges and fittings shall be designed specifically for use with HDPE pipe and shall be joined utilizing heat fusion in accordance with ASTM 2657. Fittings shall be pressure rated in accordance with ASTM 2657. Thrust restraints shall be provided for each dead end, fire hydrants and blowoffs. Mechanical or compression type joints on new HDPE mains shall not be allowed.

Service connections fittings made to HDPE shall conform to ASTM D3261 and/or ASTM F2206. Connections to existing HDPE pipe shall require a saddle tapping tee as described in AWWA Manual M55. Only saddle tapping tees manufactured specifically for HDPE pipe shall be used. The saddle tapping tee shall be designed to provide a drip tight connection. Service connections to newly installed mains shall be electrofused to the HDPE Main. Only installers skilled in the installation and joining of HDPE shall be allowed to install HDPE water lines, and must be pre-approved by the Town Engineer or designated representative.2.

## **2. Valves and Valve Boxes**

Gate valves shall be Mueller iron body single resilient seat A2370-20, or approved equal. Valves shall conform to AWWA C509 or C515 current edition. Valves shall be rated 200 psi working pressure and 400 psi test pressure. Valves shall be mechanical joint on both ends. Valves shall have a non-rising stem and shall open counter-clockwise with a two inch (2") operating nut.

Valve boxes shall be cast iron, three piece, sliding type with a top flange and a minimum inside shaft diameter of 5 ¼" or approved equal. Boxes shall have the word "water" clearly cast into the cover.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Valve boxes deeper than 6' in height to the valve operating shall have a gate valve extension rod and centering sleeve.

3. Tapping Sleeves and Tapping Valves

Ductile iron tapping sleeves shall be used on ductile iron pipe. Tapping sleeves shall be of the split sleeve design constructed with two solid half-sleeves bolted together. Tapping sleeves shall be mechanical joint ends with end and side gasket seals. . The sleeve must be air tested before the tap is made at 200 psi for a period of 15 minutes.

Stainless steel tapping sleeves shall be used on all non-metallic pipe. Tapping sleeves shall be mechanical joint Powerseal Model 349MJ stainless steel tap sleeve or equal. The tapping sleeve shall be hydrostatically tested to a minimum pressure of 300 psi with zero leakage to verify proper fit and weld. All outlet sealing gaskets shall be factory installed.

Tapping valves shall conform to ANSI/AWWA C509 Standard for Resilient-Seated Gate Valves for Water and Sewerage Systems. Valves shall open counterclockwise and shall have a minimum working pressure of 150 psi. Inlet flanges shall be Class 125 conforming to ANSI Specification B16.1 or ANSI/AWWA C110/A21.10, and outlet connection shall be Standardized Mechanical Joint unless specified otherwise on the drawings for the type of pipe required for the branch or lateral pipeline.

4. Hydrants

Hydrants shall be Kennedy Guardian K81, Mueller Super Centurion 250, Waterous Pacer WB67 250, or American Darling B-62-B and shall conform to AWWA C502 with 18" nozzle section, 5 ¼" left opening with National Standard Thread (NST) threads with two nozzle threads 2 ½" and one 4 ½" suction or approved equal. The operating nut shall be 1 ½" pentagon counterclockwise opening. All hydrants shall be non-draining and marked accordingly.

Service lines for hydrants shall tap into the main line with a Class 350 Hydrant Tee. Hydrant valves shall use "Mega-Lug" or equivalent retaining glands. Rodding is not allowed. Hydrants shall be red enamel.

All hydrants shall be provided with a galvanized spring flag with reflective bands.

Bollards shall protect the hydrant as required by the Town Engineer or designated representative.

5. Blowoff

Hydrant assemblies shall be used in lieu of blow-offs on mains greater than or

equal 8" in diameter.

The Town Engineer or designated representative may require the installation of a Kupferle TF-500 two-inch (2") or a Kupferle TF-800 four-inch (4") blow-off/flushing hydrant, or approved equal, at various points on a water line. Blow-off/flushing hydrants are typically required at the end of small diameter water lines that are not designed to support a fire hydrant. Blow-off/flushing hydrants shall be installed according to manufacturer recommendations, and include the above ground piping as requested by the Town Engineer or designated representative.

Blow-offs shall not be connected to any sewer, submerged in any stream or ditch, or installed in any manner that will permit back siphon into the distribution system.

**6. Backflow Prevention**

No water service connection shall be approved or maintained by the Milton Water Division unless the water supply is protected as required by State laws, and local water system regulations and ordinances. The type of protective device shall depend on the degree of hazard that exists or may be created. Approved backflow prevention devices shall be located so as to provide containment protection, and may be supplemented with the installation of internal protection backflow protection devices. In general, protection shall be provided by an air gap or an approved RPZ or DCV as a complete unit, installed in a horizontal alignment in all commercial buildings, unless otherwise approved by the Town Engineer.

Only the following types of backflow prevention devices shown below shall be used for the containment of commercial on-premise hazards for low and high hazard situations respectively:

<i>Low Hazard</i>	<i>High Hazard</i>
Air gap	Air gap
Atmospheric vacuum breaker (Where bacteria hazards aren't present)	Reduced pressure/ backflow device
Pressure vacuum breaker	Or combination of the above
Double check valve assembly	
Reduced pressure backflow device	
Or combination of the above	

Any domestic, commercial, institutional, and fire protection service line, including each line of a multiple service line, and a multi family building serving more than two units shall be equipped with an approved backflow device or an approved air gap separation on each line. All other connections to the any water main, including standpipes leading to elevated tanks, temporary ferules, hose

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
connections, and irrigation systems shall be equipped with approved backflow prevention devices. All new residential buildings will be required to install an approved residential dual check device immediately downstream of the water meter, ex. Watts Series 7. Provisions may have to be made by the builder to provide for thermal expansion within this closed loop internal plumbing system, i.e. the installation of thermal expansion devices and/or pressure relief valves.

7. Water Services

Water services and fittings up to and including two inches (2") shall be type "K" copper and shall conform to most recent edition of all applicable AWWA, ANSI, State and Local codes, standards and regulations, and the VT Water Supply Rule. The minimum specification for alternative pipe on long water services shall be class 200 SDR-9 Cross Linked High Density Polyethylene (HDPE) tubing. All non-conductive water services shall be marked with conductive marking tape as per PVC water main installation. In no case shall PVC or plastic services (2" or less) be used under a road. If SDR-9 is used, ONE CONTINUOUS PIECE of tubing must be used from the curb stop to the meter valve connection. Class 160 PVC may be approved on a case by case basis and shall be sleeved in paved areas.

Saddles and taps shall be as noted in Section 1120.

Corporation stops and curbstops shall be brass compression couplings conforming to AWWA C800.

Curbstops shall be ¼ turn, plug with "O" ring type seal, open left with positive stop and service rod. Curbstops shall be installed on concrete blocks.

Erie boxes shall be sliding adjustable (5'-6') arch type base. The upper section shall have a one inch (1") diameter for ¾" to 1" curbstops. For larger curbstops, the upper section shall have a 1 ¼" diameter cover with a countersunk brass pentagon plug. All Erie box covers shall be countersunk brass pentagon plugs.

A Mueller/Hunt Thermal Coil Meter Box shall be used for meter applications susceptible to freezing.

8. Pipe Bedding

Bedding material shall consist of crushed stone and/or natural stone conforming to VTrans Standard Specification 704.02B & ASTM D2321.

Bedding and blanket material conforming to VTrans Standard Specification for Construction 704.08A and be Class II material (ASTM D2321) consisting of clean, granular material (sand).

**9. Thrust Blocks and Retainers**

Concrete for thrust blocks or pipe encasement shall comply with Vermont Standard Specifications for Class D, 3000 psi concrete. Retainer glands may be used in lieu of concrete thrust blocks with the approval of the Town Engineer or designated representative.

**10. Detector Wire**

Non-metallic pipe shall be installed with an approved tracing wire accessible in a Buffalo Box at Department approved locations. Tracing wire shall be placed at the top of the sand blanket over the pipe. The wire shall have a one-inch (1") PVC conduit under roadway and sidewalk crossings. Tracing wire may be Kris-Tech Wire Company #12 Solid PE 45 Blue, direct bury or approved equal.

**11. Insulation**

Insulation shall be structural grade extruded rigid polystyrene or Styrofoam in board form. Size and thickness shall be as shown in detail on the approved drawings.

**SECTION 1140 INSTALLATION**

**1. General**

All water mains, fittings, hydrants, and appurtenances shall be installed in a workmanlike manner and under the continuous supervision of the Developer's Registered Professional Engineer or designated representative and the Town Engineer or designated representative. Before any water line work is started, the installer shall notify, in writing, the Town Engineer or designated representative of his intentions to proceed with construction. This notification shall be at least two (2) working days prior to the water line installation.

Connection to an existing water main shall be done under the supervision of the Town Engineer or designated representative and the water system's Developer. It is the Contractor's responsibility to secure all permits and permission to make the connection, and to coordinate all parties involved in the process. The Town shall be notified at least two (2) working days in advance of the proposed connecting date.

The water line shall be installed in a sequence to minimize any interruption in water service. The Contractor shall submit a schedule to the Town Engineer or

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard* designated representative for approval prior to construction. Installations which require the services of municipal employees shall be performed during normal working hours.

All work must conform to VTrans Standard Specifications for Construction 629 – Water Systems and in accordance with AWWA C 600 latest revision.

2. Excavation

Water lines shall be six feet below finished grade. In those locations where unusual conditions are encountered, shallower depths may be approved by the Town Engineer or designated representative in accordance with the following guidelines: For every foot of cover less than six (6) feet, 2" of polystyrene insulation at least three feet in width shall be placed 6" above the water line. The minimum depth with insulation shall be four (4) feet. Joints shall overlap so there is no gap that will allow for frost to penetrate. Wrap insulation may be used on services 2" in diameter or less and must still have 2" layer of polystyrene over the water service. All water mains and services under a plowed surface shall be insulated no matter the depth.

Material which is unstable or cannot support the pipe shall be removed and replaced with appropriate material. Excavation shall be at least six (6) inches below the pipe invert if the existing material is unsuitable.

Backfilling shall be compacted in one (1) foot lifts to 95% of its maximum dry density as determined by the Standard Proctor test.

No pipe is to be placed on ledge. All trenches are to be kept dry.

3. Trenches

Trench width shall be sufficient to permit proper installation of the work and bottoms of trenches shall be evenly graded. Trench excavation shall be to depths and widths not greater than necessary for laying and bedding of pipe. The trench excavation shall be carried to a grade 6 inches below the bottom of the piping. All piping shall be bedded in a minimum of 6 inches of crushed stone, and covered with an engineering filter fabric and a minimum of 12 inches of sand. All conduits shall be bedded in 6 inches of fine sand and covered with 6 inches of fine sand.

Native material conforming to the bedding or blanket material specification may be used as approved by the Town Engineer or designated representative.

Unsuitable material below grade shall include any soft, unstable, organic or other material encountered. This material shall be removed to a depth as directed by the Developers' Engineer with the concurrence of the Town Engineer or

designated representative.

Bedding shall be shaped to provide full bearing for pipe and conduit. Excavation for pipe bells shall be provided to ensure uniform bearing for pipes if required. All piping shall be sloped for positive drainage of the pipe.

Piping scheduled to be installed in fill areas shall have trenches excavated after the fill has been placed and properly compacted.

Bedding shall be compacted by mechanical tamping in no more than six inch lifts.

All material for backfilling shall be free of roots, stumps, and frost. Materials used for backfilling trenches shall be free of stones weighing over 50 lbs or measuring larger than six (6) inches. No stones measuring over one (1) inch shall be placed within one (1) foot of the pipeline being backfilled

#### 4. Water Lines

Pipe not laid to proper depth and alignment shall be re-laid.

PVC pipe shall not be exposed to sunlight for an extended period of time without being covered with an opaque material allowing for air circulation. PVC pipe shall not be installed in locations where there is a likelihood of low molecular weight petroleum products or organic solvents or their vapors are present.

Pipes shall be kept clean at all times. Open ends of pipes shall be temporarily plugged.

All joint deflections shall be in accordance with the manufacturer's specifications. Pipe deflections are to be kept at a minimum and fittings used to change pipe directions.

Bells on all pipe and fittings shall face upstream except where piping geometry makes this impossible. In some cases, long radius elbows, particular types of reducers, or other particular fittings are called for on the drawings. These fittings shall be supplied as called for unless otherwise approved by the Town Engineer or designated representative. The run and branch of a tee or cross, or the connection shall be made by means of a tapped tee, branch fitting and tapped plug, or reducing flange, or tapping tee and tapping valve; all as indicated or approved.

Joints shall be made with oil resistant compression rings in accordance with ASTM C425. The manufacturer's instructions for installation shall be followed.

Soil Corrosivity tests may be required for any ductile iron pipe installation. In lieu of testing where required the pipe shall be poly wrapped.

Gate valve covers shall be installed flush with the finished grade.

PVC pipe shall be laid only when the temperature is between 32°F and 100°F. Metallic conductivity tape shall be installed 24 inches below finished grade for all PVC pipe.

**5. Service Connections**

The connection can only take place in the presence of a Milton Water Division employee.

Connects or taps shall be made by Milton Water Division approved contractors only. Work will only be allowed after a current certificate of insurance is provided by the tapping contractor.

Connects or taps shall be scheduled with the Milton Water Division at least five business days in advance

All drilling and tapping of pipe shall be done normal to the longitudinal axis of the pipe; fittings shall be drilled and tapped similarly, as appropriate. Taps shall be a minimum of three pipe diameters away from any joint in the waterline being tapped. Drilling and tapping shall be done only by skilled and qualified pre-approved by the Town of Milton with liability insurance on file with the Town. Tools shall be adequate for the work and in good condition so as to produce good, clean cut threads of the correct size, pitch, and taper.

Where applicable, the regulations and specifications of the Champlain Water District pertaining to the use of its water transmission main shall be followed, as well as the regulations and specifications of the Milton Water Division.

No service connection shall be made prior to the installation, disinfection, and testing of the main and approval by the Town. No house service connection shall be made without an approved water permit from the Town.

The Contractor shall install the tap and service, including the saddle or corporation stop, curbstop and box.

Curbstops shall be located at least one foot INSIDE the town right-of-way with proper ties submitted to the Water Division and noted on the record drawings. Curbstops set outside of the right-of-way must have an easement for their use and

maintenance to the Water Division. It's the responsibility of the Developer/Contractor to secure the easement in name of the Town of Milton. . Covers shall be set to final finished grade.

All services shall be one continuous piece of copper/tubing from the curbstop to the meter stop or main water valve inside the structure. NO COUPLINGS ARE ALLOWED except as may be approved by the Town Engineer or designated representative.

**6. Separation from Sewer Facilities**

Water mains shall be laid at least ten feet horizontally from any existing or proposed sewer line. This distance shall be measured edge to edge.

Water mains crossing sewer lines shall be laid to provide a minimum vertical distance of eighteen (18") inches between the outside of the water main and the outside of the sewer line. Refer to Figure 24 of the standard details. At such crossings, one (1) full length of water pipe shall be located so both joints will be as far as possible from the sewer pipe. Special structural support for the water and sewer pipes may be required. No water pipe shall pass through or come in contact with any part of a sewer manhole. All water main fittings and appurtenances shall meet all applicable AWWA, State, and local standards.

**7. Hydrants**

Hydrant nozzles shall be installed between eighteen (18) and twenty four (24) inches above the finished grade. In the event that the height of the hydrant needs to be increased, no more than one (1) extension kit may be used. The breakaway traffic flange shall be left exposed a minimum of 1 inch and maximum 6 inches.

**8. Thrust Blocks**

Thrust blocks for water mains shall be located at all hydrants, tees, reducers, changes of angle 22.5 degrees and greater, and caps (refer to Figure 25 of the standard details). Retaining glands or megalugs may be used as alternate methods with approval of the Town Engineer or designated representative.

Concrete for thrust blocks shall not come into contact with bolts or glands, which shall be protected with plastic.

**9. Meters, Meter Stops and Meter Check Valves**

Meters, valves and check valves are provided at the developer's expense by the Milton Water Division for services 1" or less. For services larger than 1", the Milton Water Division will at the developer's expense provide the meter only.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Water Services greater than 1 inch in diameter must be provided with a backflow prevention device in accordance with Section 1130-4.

## **SECTION 1145 JACK AND BORE**

All requests to construct new water lines across existing municipal streets requires a Town of Milton Highway Access Permit.

The wall thickness of the steel casing pipe shall be 3/8" as indicated on the drawings and steel plate for steel casing pipe shall conform to ASTM A36. The steel plate shall be rolled and welded to the diameter size as indicated on drawings. Welding shall be done by approved standard welding practice. When more than one section of casing is to be used, the ends of the section to be joined shall be welded in accordance with approved standard welding practices for the use intended. Services up to two inches (2") may use PVC pipe for a sleeve with approval of the Town Engineer or designated representative. PVC service sleeves shall be Schedule 80.

All carrier pipes larger than two inches (2") shall be ductile iron. Sleeves shall be at the same elevation as the water main. It is extremely important that the jacking apparatus be strongly constructed, set, and maintained in proper relative position and alignment in order to minimize forces that would tend to bend the pipe, cause it to deflect from true alignment, or displace the reaction blocks. Joints of steel casing pipe shall be welded before being subjected to the jacking operation. All welds shall conform to the AWWA C206 for Field Welding of Steel Water Pipe Joints.

Once jacking has started, it shall be a continuous operation until completion of the jacking operation in order to reduce the possibility of a so-called "stuck" pipe, even though this may involve working outside the normal workday. Care shall be taken during excavation and jacking operations to ensure that the jacked pipe remains true to line and grade. Maximum deviation from line and grade shall be 1/2"/100' for carrier pipe and casing pipe. Steel sleeve jacking and boring shall be performed in such a manner so as to avoid any bends or extra fittings on the water main. During jacking operations, voids shall be prevented outside of the sleeve being jacked. If they occur they shall be filled with a lean grout to the satisfaction of the Town Engineer or designated representative.

The carrier pipe shall be installed in the sleeve, using casing spacers described below, two (2) per each section of pipe. Pipe shall be Tyton-Joint or approved flexible restrained joint pipe. Following installation, the carrier pipe shall be tested for leakage in accordance with testing procedures outlined. The sleeve ends shall

be plugged using hydraulic cement or rubber seal Cascade model or equal with stainless steel bands.

Casing spacers shall be bolt on style with a two-piece shell made from T-304 stainless steel of a minimum 14-gauge thickness. Casing spacers shall be model CCS as manufactured by Cascade Waterworks Mfg. Co. or prior approved equal. Annular space may remain void as directed by the Town Engineer or designated representative when casing spacer's fit tightly within the casing.

## SECTION 1150 TESTING

### 1. General

All water lines and appurtenances shall be flushed, hydrostatically pressure tested, disinfected, and flushed again before being placed in service, according to standards outlined in AWWA Specification C651 and Chapter 21, Water Supply Rules. Contractors shall account for and reimburse all water used for flushing and construction activities. The longest length of test pipe shall be 1000 feet.

### 2. Pressure and Leakage Testing

All new water mains shall be filled at a maximum velocity of 1ft/sec (slowly) while venting air.

The pipe to be tested shall be sufficiently backfilled to prevent movement while under test pressure.

Thrust blocks should be permanent and constructed to withstand the test pressure. If poured in-place concrete thrust blocks are used, a minimum of seventy two (72) hours must be allowed before testing to permit the concrete to cure.

Test ends shall be capped and braced to withstand the thrusts developed under the test pressure.

The testing shall be carried out in accordance with the manufacturer's recommendations. Care shall be exercised to assure that all air is removed from the line to be tested prior to starting the test.

The test pressure shall be a minimum of 200 psi. The Engineer representing the Developer shall notify the Town Engineer or designated representative two (2) working days before the test is to be conducted. The Developer's Engineer or designated representative shall be present during all testing. Allowable leakage shall be computed by the formula  $N \times D \times P^{1/2} \div 7400 = Q$  where Q is the number

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
of gallons of allowed leakage for one (1) hour, N is the number of joints, D is the nominal pipe diameter in inches, and P is the test pressure. The results of the pressure test shall be supplied to the Town.

If the system fails the test, the Contractor shall locate and repair or replace the system as required. All test results shall be provided to the Town prior to acceptance of the system.

The HDPE leakage testing specifications require that the pipe be filled, purged of air, and allowed to thermally stabilize overnight at a minimum pressure before testing. Testing procedures are in accordance with ASTM F2164. All other leakage testing procedures for HDPE pipe are the same as all other materials.

### 3. Disinfection

All water lines, before being put into service, shall be flushed and disinfected in accordance with AWWA Standard C651, or as directed by the Town Engineer or designated representative. The lines shall first be flushed to remove all dirty or discolored water from them. The Contractor shall install a three quarter inch ( $\frac{3}{4}$ " diameter tap in the water main for chlorine injection. The tap shall be located as directed by the Town Engineer or designated representative. Chlorination shall be accomplished by introducing a concentration of fifty (50) parts per million of available chlorine into the tap while water is withdrawn at the other end. The disinfecting solution, after remaining in the water main for twenty-four (24) hours, shall have a concentration of at least twenty five (25) parts per million of chlorine. The test shall be repeated if this residual concentration is not met at the end of the twenty four (24) hour period. All chlorinated water discharged while flushing shall be dechlorinated in accordance with the most recent AWWA, State, and Federal requirements. Following disinfection and flushing procedures, at least two (2) samples must be collected, in approved sample bottles, from representative sample points and sent to the State Health Department laboratory in Burlington, VT 05401, for bacteriological testing or other private laboratory certified by the State for drinking water analysis. "Coliform Agent" results are required before the system may be placed "on-line" for drinking. Samples showing positive for bacteriological contamination shall be disinfected again and re-tested. The process shall be repeated until negative sample results are obtained.

**SECTION 1200 SANITARY SEWER SPECIFICATIONS**

**SECTION 1210 GENERAL PROVISIONS**

1. All work shall comply with the latest edition of the State of Vermont Environmental Protection Rules Chapter 1, the latest approved Vermont Department of Health Standards, NEWPCC TR16, "Guideline for the Design of WW Treatment Works", VTrans Standard Specifications for Construction Section 628 and the latest Town of Milton ordinances and specifications.
2. All sanitary sewer systems shall be designed in accordance with these Public Works Specifications by a professional engineer, registered in the State of Vermont. The Developer shall provide an engineer registered in the State of Vermont or the engineer's designated representative shall continuously oversee construction and to certify in writing to the Town that all construction was performed in compliance with these Public Works Specifications.
3. Sanitary sewer system design drawings shall include plans and profiles, invert elevations, slope and size of pipe, and locations for building connections.
4. All sanitary sewer systems shall be installed at the locations shown on the approved design drawings in accordance with the typical details.
5. Sewer installation includes clearing and grubbing, excavation, installation, backfilling, compaction, restoration and soil erosion control shall conform to VTrans Standard Specification for Construction 628 – Sanitary Sewer Systems.
6. Storage of pipe and materials shall be in accordance with the manufacturer's recommendations.
7. Utility or service lines encountered during construction shall be maintained at all times. Sewer, water and utility supply lines shall not be interrupted for any residence, business or other establishment, whether within or outside the construction limits.
8. No work will be permitted within the Town right-of-way or on infrastructure to be dedicated to the Town after November 15 or before April 1, including emergency water/sewer connections unless waived by Town Engineer or designated representative. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.

9. Public sewer mains shall be installed in designated road Right-Of-Way. Sewer mains should not be installed under sidewalks, curb, landscaping, drainage ditches or stormwater ponds. If, as deemed by the Town Engineer or designated representative, it is not practical to make such an installation in a designated road ROW, sewer mains may be installed in exclusive easements.

## **SECTION 1220 GEOMETRIC STANDARDS**

1. Sewer collection mains shall have a minimum diameter of eight (8) inches. Residential collection lines shall have a minimum diameter of four (4) inches and commercial collection lines shall have a minimum diameter of six (6) inches.
2. The minimum slope for all sewer collection mains shall be in accordance with the State of Vermont Environmental Protection Rules assuming minimum cleansing velocities of 2 ft/sec can be attained. The minimum slope for sewer services shall be one quarter ( $\frac{1}{4}$ " ) inch per foot.
3. Manholes shall be located at all changes in slope, changes in pipe size, and changes in alignment. Manholes shall also be located so that the maximum distance between manholes is three hundred (300') feet.
4. Cleanouts shall be placed in all service lines in excess of one hundred (100') feet in length and changes in direction greater than 45 degrees. 90 degree changes in direction shall be accomplished with two 45 degree elbows.
5. PVC gravity pipe shall be furnished in the longest nominal lengths available from the manufacturer.
6. Sewer Force Mains shall be a single pipe from pump station to receiving manhole. NO other sewer force main shall be allowed to connect into a planned or existing sewer force main. Sewer force mains shall be sized to maintain a minimum hydraulic capacity of 2 ft/sec.

## **SECTION 1230 MATERIALS**

1. Pipes and Fittings  
Sewer pipe shall be PVC SDR 35 gravity drainage pipe manufactured in conformance with VTrans Standard Specification 710.07, 740.07 and ASTM D3034 (4" to 16"). Push-on joints, fittings, and accessories shall also conform to the appropriate specifications for PVC pipe size.

Gaskets used in joining PVC pipe shall conform to the requirements of VTrans Standard Specifications for Construction 707.11 and ASTM F477.

Ductile iron pipe may be required in wet, saturated or unstable soils, for very deep water lines, at stream crossings, or in other unusual circumstances.

**2. Manholes**

Manholes shall be constructed at the locations, to the elevations, and in accordance with notes and details shown on the approved drawings and typical sections. . Barrels and cone sections shall be precast reinforced concrete. Base sections shall be monolithic to a point six (6") inches above the crown of the incoming pipe, and shall be precast reinforced concrete. Precast concrete barrel sections, cones, and bases shall conform to ASTM C478 except as otherwise shown on the typical sections.

All precast sections and bases shall have the date of manufacture and the name or trademark of the manufacturer impressed or indelibly marked on the inside wall. Cone sections shall be eccentric; refer to the standard details.

Horizontal joints between sections of precast concrete barrels shall be of a type approved by the Engineer, where watertightness will depend upon a double layer of flexible bitumastic sealant. Pipe to manhole joints shall be only as approved by the Engineer where watertightness will depend upon a manufacturer installed rubber gasket. The inside connection shall also be grouted with non-shrink grout around the full circumference of the pipe.

Dimensions and construction of drop and special manholes are to be similar to manholes shown in the standard details, except as shown on the approved plans.

All structures shall be rated for H-20 loading. Inverts shall be precast or cast in place concrete. Rim adjustments shall be precast or poured in place concrete or rubber adjustment risers equal to or greater than those manufactured by GNR Technologies. Approval of rubber risers shall be made on a case by case basis by the Town Engineer or designated representative.

**3. Force Mains**

Sanitary force main pipe shall be equal to PVC conforming to ASTM D2241 with a pressure rating equal to one and one half times the working pressure at the lowest point with a minimum of 125 psi. Ductile iron pipe may be required or acceptable in certain circumstances.

Joints, fittings, and accessories shall conform to the appropriate specifications for the PVC pipe size and pressure rating.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Sewer forcemains shall enter the the gravity sewer system at a point not more than two (2) feet above the flow line of the receiving manhole.

4. Manhole Frames and Covers

Manhole frames and covers shall provide a minimum clear opening diameter of thirty (30") inches. Manhole covers shall have the word "SEWER" cast into the top surface in three inch letters. Frames and covers shall be LeBaron, Neenah, or approved equal.

The casting shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be matched at the foundry, before shipment to prevent rocking of covers in any orientation.

All castings shall be thoroughly cleaned and subject to a careful hammer inspection.

Castings shall be at least Class 30 conforming to the ASTM Standard Specification for Gray Iron Castings, Designation A4B.

Before being shipped from the foundry, castings shall be sandblasted and given two coats of coal-tar pitch varnish, applied in a satisfactory manner so as to make a smooth coating. Coatings damaged in transit or handling shall be repaired by the Contractor to the satisfaction of the Town.

Manhole covers shall be of the solid type with two (2) indentations in the circumference for the insertion of picks or other sharp tools to assist in the removal of the cover. The pick hole shall, when seated in the frame, at no time extend beyond the seating ring of the frame nor shall provide an opening into the manhole.

Waterproof covers shall be provided as required by the Town.

5. Pipe Bedding

Bedding material shall consist of crushed stone and/or natural stone conforming to VTrans Standard Specifications for Construction 704.02B and ASTM D2321.

Bedding and blanket material shall conform to VTrans Standard Specification for Construction 704.06B and be Class II material (ASTM D2321) consisting of clean, granular material (sand).

6. Brick Masonry  
Brick inverts shall not be permitted. Brick adjustment courses may be used with the approval of the Town Engineer or designated representative
7. Insulation  
Insulation shall be structural grade extruded rigid polystyrene or Styrofoam in board form. Size and thickness shall be as given in detail on the approved drawings.

## **SECTION 1240 INSTALLATION**

1. General  
All sewer lines, manholes, and appurtenances shall be installed in a workmanlike manner and under the general supervision of the Town Engineer or designated representative. Before any sewer line work is started, the installer shall notify, in writing, the Town Engineer or designated representative of his intentions to proceed with the construction. This notification shall be at least five (5) working days prior to the start of the sewer line installation.

Connection to an existing sewer line shall be done under the supervision of the Town Engineer or designated representative and the sewer system's Developer. It is the Contractor's responsibility to secure all permits and permission to make the connection, and to coordinate all parties involved in the process. The Town shall be notified at least two (2) working days in advance of the proposed connecting date.

All pipes shall be installed in conformance with the approved engineering plans and specifications and the manufacturer's recommendations and in conformance with VTrans Standard Specifications for Construction Section 628 Sanitary Sewer Systems and ASTM recommended practice D2321.

2. Excavation  
Sewer lines in plowed areas shall be six (6') feet below finished grade, while in unplowed areas they shall be four and one-half (4 ½) feet below finished grade. Where proper depth over sewer lines cannot be maintained due to unusual conditions, shallower depths may be approved by the Town Engineer or designated representative in accordance with the following guidelines: for every foot of cover less than six feet, two inches (2") of polystyrene insulation at least three (3') feet wide shall be placed six inches (6") above the sewer line. Minimum depth with insulation shall be three feet (3').

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
Backfilling shall be compacted in one foot lifts to ninety five percent (95%) of its maximum dry density as determined by the Standard Proctor test.

Unsuitable material, which is unstable or cannot support the pipe, shall be removed and replaced with appropriate material. Excavation shall be at least six inches (6") below the pipe invert if the existing material is unsuitable.

No pipe is to be placed on ledge. All trenches are to be kept dry.

Trenches shall be as described in the Water Distribution Specifications of these Public Works Specifications.

### 3. Sewer Lines

Pipe shall be laid accurately to line and grade. Bedding in earth shall be a minimum of 6" below the outside of the pipe barrel. Bedding shall extend up to the spring line. Material around and to a height of one foot (1') above the pipe shall be sand backfill. Bedding and sand cushion shall be compacted by mechanical tamping in one foot lifts. Refer to Figure 23 of the standard details.

PVC pipe shall not be exposed to sunlight for an extended period of time without being covered with an opaque material allowing for air circulation. PVC pipe shall not be installed in locations where there is a likelihood of low molecular weight petroleum products or organic solvents or their vapors are present.

Pipe shall be plugged with a water tight plug at night or when work is suspended. Sewers shall not be used to carry ground water from the trench. The Contractor shall clean all soil deposits and other debris from sewers at the completion of the work.

Completed pipelines shall be free from offsets or deviations from line and grade when examined with lights or mirrors. Visible leaks, broken pipes, etc., shall be repaired.

Pipe shall be laid with the spigot ends pointing in the direction of flow, and on a dry bedding.

Joining procedures shall conform with the manufacturer's recommendations.

Sanitary force mains shall be installed using the same construction procedures used for water mains.

### 4. Separation from Water Facilities

Sewer lines shall be laid in compliance with the separation requirements of the

Water Distribution System Installation Specifications of these Public Works Specifications.

5. Manholes

Manholes shall be constructed at the locations, to the elevations, and in accordance with notes and details shown on the approved drawings as well as the standard details. Dimensions and construction of drop and special manholes are to be as shown in typical manhole details.

Frames and covers shall be placed on the top of all manholes to prevent accidental entry of unauthorized persons, children, animals, etc., until the Contractor is ready to make final adjustments to grade.

Precast monolithic bases shall be placed on a six inch (6") layer of compacted bedding material. The excavation shall be properly de-watered while placing bedding material and setting the base or pouring concrete. Water stops shall be used at the horizontal joint of poured-in-place manholes.

Inlet and outlet stubs shall be connected and sealed in accordance with the manufacturer's recommended procedure as shown on the typical sections, or cast integrally with the poured base. Barrel sections and cones of the appropriate combination of heights shall then be placed, using manufacturer's recommended procedures for sealing the horizontal joints, and as shown on the typical sections.

The below grade portion of all manholes shall be coated on the outside with a asphaltic sealant.

Manhole leakage testing shall be performed prior to backfilling each manhole.

Manholes shall be backfilled evenly in layers with suitable backfill material and compacted to achieve 95% maximum dry density as determined by the Standard Proctor test.

Sheeting and bracing shall be used when required.

Connections to existing manholes shall be made by coring. A water tight rubber gasket shall be installed and the pipe shall be mortared from the inside. The pipe shall lay on the invert and be modified as directed to accommodate flow from the new pipe.

A drop pipe shall be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
between the incoming sewer and manhole invert is less than 24 inches, the invert should be filleted to prevent deposition of solids. Drop inlets will be inside drops only unless waived by the Town Engineer or designated representative. The minimum size for a drop inlet manhole shall be six foot (6').

6. Brick Masonry

Brickwork for manholes shall only be used with the approval of the Town Engineer or designated representative.

7. Setting Frames and Covers

Manhole frames shall be set with the tops conforming accurately to the grade of the pavement, or finished ground surface, or as indicated on the drawings. Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. For manholes located in roadways, frames shall be set after the base course of paving is completed. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

Manhole frames shall be set with precast concrete riser rings or approved equal. The rings and the manhole frames shall be purged with three quarters of an inch ( $\frac{3}{4}$ ") of mortar and struck off to shed water.

Manhole covers shall be left in place in the frames on completion of other work at the manholes.

Finish grade for the top of all manhole frames shall be one quarter of an inch ( $\frac{1}{4}$ ) below the finish surface of the highway.

8. Sanitary Service Connections

A wye branch shall be provided for each new or existing service, together with a four inch (4") minimum diameter line sufficient to connect to the building services. Two building services connected together shall increase to 6" minimum. New sanitary service connections to existing sewer mains ( where a wye branch is not already installed) shall use a "Romac CB6" stainless steel saddle or equivalent. Connections shall be made by the Contractor. All adapters, caulking and necessary connectors shall be provided to make satisfactory and leak-proof connections. Refer to Figure 26 of the standard details. Service connections which enter manholes shall conform to Figure 29.

The service connection shall be six feet (6') below existing grade unless otherwise indicated on the plans or as directed by the Town Engineer. If a service is less

than six feet (6') deep, three inches (3") of polystyrene insulation at least three feet (3') wide shall be placed six inches (6") above the sewer line. The end shall be located by two intersecting ties by the Engineer before being backfilled and shall be marked with a 2" by 4" pressure treated board coated with preservative extending from the connection invert to six inches (6") below existing grade and with metal tape or a metal marker suitable for detection with a metal detector.

Sewer services shall be bedded in the same material as required for sewer collection mains.

## **SECTION 1250 TESTING**

### **1. Sewer Lines**

Before acceptance of completed sewers, the sewer pipes shall be inspected by shining light between the manholes. Any imperfections, such as cracks, displaced joints, objectionable variations from line or grade, or leaks, shall be repaired to the satisfaction of the Town Engineer or designated representative.

The Contractor shall perform and the sewers shall pass a low pressure air test witnessed by the Town Engineer or designated representative prior to acceptance of the sewers. The low pressure air test shall be performed as follows:

- All ends of lateral stubs shall be suitably capped to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. Existing sewer service connections shall be plugged at the test tee with pneumatic plugs.
- After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs. The design of the pneumatic plugs shall be such that they will hold against the line test pressure without requiring external blocking or bracing. One of the plugs shall have three hose connections. Air for inflation of the triple connection pneumatic plug shall be supplied through a factory equipped control panel. There shall be three (3) hose connections from the control panel to the pneumatic plug. One hose shall be used for inflation of the plug. Another hose shall be used for continuously reading the air pressure in the sealed line. And the third hose shall be used for introducing low pressure air into the sealed line.
- There shall be a three inch (3") or larger diameter, 0-30 psi gauge mounted on the control panel for reading the internal pressure in the line being tested. Calibrations from the 0-10 psig range shall be in tenths of a pound and the 0-10 psig portion shall cover ninety percent (90%) of the complete dial range.
- An air pressure correction is required for the effect of ground water back pressure when the prevailing ground water is above the sewer line being

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*

tested. Under this condition, the air test pressure must be increased .433 psi for each foot the ground water level is above the invert of the pipe. The Contractor is responsible for determining the level of ground water.

- Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any ground water that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period, the third (3<sup>rd</sup>) hose shall be quickly disconnected from the control panel.
- The portion of the line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cfm per square foot of internal pipe surface when tested at an average pressure of 3.0 psig greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.
- This test shall be performed as follows: The time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe), shall not be less than the time shown for the given diameters in the following table:

<u>Pipe Diameter (in Inches)</u>	<u>Minutes per 100 Feet of Pipe</u>
4	0.3
6	0.7
8	1.2

- If the installation fails to meet this requirement, the Contractor shall determine, at his/her own expense, the source of leakage. He/she shall repair or replace all defective materials and workmanship.
- Tight, leak-proof sewers are of the essence in the sewer system. Testing shall be carried out as sewers are constructed. Testing shall be conducted manhole to manhole.

The contractor shall test the deflection of the pipe. This test requires that the Contractor be able to pull a five percent (5%) deflection mandrel through the pipe without the use of mechanical means. Deflection testing shall be performed not less than thirty (30) days following installation. Locations with excessive deflection shall be repaired by re-bedding or replacement of the pipe. The Town Engineer or designated representative reserves the right to also have a camera run through the sewer after flushing to determine if the pipe has any sags.

## 2. Sanitary Manholes

Leakage tests shall be performed by the Contractor and observed by the Town Engineer or designated representative on each manhole. The test shall be a vacuum test as described below.

After the manhole has been assembled in place, all lifting holes as well as those exterior joints within six (6) feet of the ground surface shall be filled and pointed with an approved non-shrinking mortar. If the ground water table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test. All pipes and other openings into the manhole shall be suitably plugged with plugs braced to prevent blowout. The manhole shall not be backfilled until after it has passed and been accepted by the Town Engineer or designated representative.

The vacuum test shall be conducted as follows:

- The Contractor shall plug the pipe openings and place the vacuum testing apparatus in the manhole using a 60 inch/lb torque to tighten the external clamps. The compression band shall then be inflated to seal the vacuum base. The vacuum pump shall be connected to the outlet port of the base with the valve open. A vacuum of 10" Hg. shall be drawn. The valve shall then be closed.
- The test shall pass if the vacuum remains at 10" Hg. or drops to 9" Hg. in a time greater than two (2) minutes. If the manhole fails the initial test, the Contractor shall locate the leak and make the proper repairs. Leaks may be filled with a wet slurry of quick setting material as approved by the Engineer.
- The vacuum test shall not be an acceptable method for manholes backfilled with non-granular material.

3. Sanitary Force Mains

Sanitary force mains shall be leakage tested as for water mains.

Pipe shall be furnished as required for laboratory testing. Damaged pipe shall be rejected and removed from the job. The Contractor shall pay for all costs associated with the furnishing and testing of all pipe.

4. Cleaning and Flushing Required

All manholes, mains and forcemains shall be professionally cleaned and flushed prior to placing in service. The contractor/developer shall notify the Town Engineer at least 24 business hours in advance of cleaning or flushing activities.

**SECTION 1260 GENERAL PROVISIONS FOR PUMP STATIONS**

Pump station design standards shall comply with the latest edition of the State of Vermont Environmental Protection Rules Chapter 1 except as noted in these Public Works Specifications.

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
All pump stations shall be designed in accordance with these Public Works Specifications by a professional engineer, registered in the State of Vermont.

Pump station sizing and design shall be such that the station can be easily expanded to handle future development within the immediate area of the proposed development. The design shall provide that, with changes to detention times and pump sizes, the immediate area can be serviced. The planned area to be served shall be determined by the Town Engineer or designated representative.

All stations shall be provided with a stabilized access able to support maintenance vehicles meeting the emergency access loading requirements in the Public Works Specifications

All pump stations shall be provided with spare parts including, but not limited to, a contactor for the control panel, a pump, a float switch, and extra electrical blocks in the control panel, as well as original sets of manuals and electrical schematics for the pumps and controls. Two (2) copies of an operation and maintenance manual shall be provided with equipment and design details.

## **SECTION 1270 GEOMETRIC STANDARDS FOR PUMP STATIONS**

Minimum force main size shall be four inches (4") with minimum velocity of two (2) feet per second.

The structures shall be backfilled using eight inch (8") lifts comprised of granular backfill for structures conforming to VTrans Standard Specification for Construction 704.08A and compacted to a ninety five percent (95%) maximum dry density.

All stations shall provide emergency storage of a minimum of four (4) hours. Storage can be provided in either the wet well or in an adjoining structure or a combination of the two.

## **SECTION 1280 MATERIALS FOR PUMP STATIONS**

All pump stations shall be an above grade wet well mounted pump station. The package pump station shall be provided by Gorman-Rupp Company, Smith & Loveless, Inc., or equal approved by the Town Engineer or designated representative. All major equipment (pumps, control system, enclosure) shall be manufactured, assembled, and tested as a single unit by the pump station manufacturer. No submersible type pump stations will be allowed.

Wet wells and emergency storage tanks shall be precast or cast-in-place concrete

reinforced to withstand an H-20 loading, and shall include aluminum access hatches. Any below grade structures shall be designed to counteract any forces of buoyancy with a safety factor of 2.

Each pump station shall be provided with:

- Two (2) self priming or vacuum priming centrifugal pumps with premium efficient motors.
- Duplex pump control panel with pump run lights, elapsed time meters, HOA switch, and automatic pump alternation. The panel shall be UL certified.
- Fiberglass enclosure with access panels on all sides. The enclosure shall contain an exhaust blower, electric heater, 1" cell foam insulation, and thermostat.
- A 110 volt electric receptacle and hand lamp.
- Internal piping and valves (check valves, plug valves, and air release valves).
- Liquid level controller with submersible transducer.
- One (1) set of spare parts for a mechanical seal, cover plate o-ring, rotating assembly o-ring, and impeller clearance shims.

The pump station control panel shall include an external alarm light and provide remote notification of alarm conditions by telephone with an alarm dialer or radio telemetry. As a minimum, the alarm conditions shall include: power outage, high water level, and low interior station temperature. Battery back-up shall be provided to maintain continuous operation during a power outage.

All stations shall have a source of water available on-site utilizing an Eclipse yard hydrant or equal.

All pump stations shall be provided with an emergency power outlet or standby power.

Pump stations shall be designed and constructed to meet all current design standards for operator and public safety, conforming to Vermont Agency of Natural Resources, Department of Environmental Conservation, Facilities Engineering Division standards and regulations, NEWPCC TR-16 Guidelines for the Design of WW Treatment Works, and Vermont Occupational Safety and Health Administration, Safety and Health Standards for Construction and Safety and Health Standards for General Industry.

## **SECTION 1290 INSTALLATION OF PUMP STATIONS**

The excavation shall conform to the dimensions and elevations shown on the approved drawings. Excavations shall extend a sufficient distance from the foundation wall to allow for proper installation and inspection of the structures. All construction and material shall conform to the latest addition of VTrans Standard Specifications for Construction. Appropriate sheeting and bracing shall be used to assure safety of the workers and to assure proper installation.

Where muck, peat, organic material or other unsuitable soil underlies the floor area or structural foundations, such material shall be removed and replaced with compacted gravel fill.

A minimum of twelve inches (12") of compacted crushed gravel fill shall be placed under all structures and footings conforming to VTrans Standard Specifications for Construction 704.05A.

No structure shall rest partially on rock and partially on soil. If rock is encountered the rock shall be over excavated one (1) foot and replaced with approved crushed stone material.

All below grade structures shall be coated on the outside with a asphaltic sealant.

## **SECTION 1400 STORM DRAINAGE**

### **SECTION 1410 GENERAL PROVISIONS**

All work resulting in impervious surfaces of equal to or greater than one (1) acre shall comply with the latest edition of the State of Vermont Environmental Protection Rules and Stormwater Regulations and the latest Town of Milton ordinances and specifications.

Stormwater design for all development no matter the amount of impervious acreage developed shall be in compliance with the current edition of the Vermont Stormwater Management Manual including the requirement that the post-development peak discharge shall not exceed the pre-development peak discharge for the 10-year 24 hour storm event. A stormwater narrative with appropriate calculations to determine compliance shall be submitted to the Town Engineer for all development.

A professional engineer, registered in the State of Vermont, shall design all storm drainage systems in accordance with these Public Works Specifications. The Developer shall provide an engineer registered in the State of Vermont to oversee construction and to certify in writing to the Town that all construction was performed in compliance with these Public Works Specifications.

Storm drainage design drawings shall include plans and profiles indicating pipe sizes, slopes and inverts as well as catch basin sizes and invert elevations. All storm drainage systems shall be installed at the locations shown on the approved design drawings in accordance with the typical details.

Storm drainage system installation includes clearing and grubbing, excavation, installation, backfilling, compaction, restoration and soil erosion control.

Storage of pipe and materials shall be in accordance with the manufacturer's recommendations.

Utility or service lines encountered during construction shall be maintained at all times. Sewer, water and utility supply lines shall not be interrupted for any residence, business or other establishment, whether within or outside the construction limits.

All catch basin inlets within the Municipal Separate Storm Sewer System (MS4) boundary shall be marked by the Town: DUMP NO WASTE, DRAINS IN TO

*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
**SURFACE WATER.**

No work will be permitted within the Town right-of-way or on infrastructure to be dedicated to the Town after November 15 or before April 1. However, the Town reserves the right to restrict work before November 15 and after April 1 during adverse weather conditions.

## **SECTION 1420 DESIGN SPECIFICATIONS**

Site designs shall minimize stormwater runoff and utilize pervious areas for stormwater treatment. The use of Buffers between development sites and any watercourse is required. Developments should try to maintain as natural flow off site as possible. (See Stormwater BMPs for watersheds with a high probable impact from changes in stormwater flows.)

Stormwater management shall generally be provided through a combination of structural and non-structural practices. Where practical and feasible, non-structural practices shall be incorporated into a site's design to reduce the reliance on structural practices.

The use of Low Impact Development techniques such as stormwater treatment islands in parking lots and rain gardens should be considered.

The design of all infiltration swales and basins shall include cold climate considerations such as overflows, design for infiltration beneath the frost layer, or storage of the entire 10 year design storm.

## **SECTION 1420 GEOMETRIC STANDARDS**

All storm sewers shall have a minimum diameter of twelve (12") inches and roadway culverts shall have a minimum diameter of eighteen (18") inches.

Driveway aprons shall have HDPE or reinforced concrete culverts with a minimum diameter of eighteen (18") inches and a minimum length of 20 feet maximum 40 feet or as may otherwise be required by the highway access permit.

The minimum grade for swales and drainage ditches shall be 0.02 feet per linear foot. The minimum slope for storm drainage pipes and culverts shall be 0.5%.

Catch basin and drywell sumps shall be at least eighteen (18") inches.

Design standards for bridge and culvert structures shall be designed to meet a 25year storm event or Q-25 Standard.

Catch basins and grates shall not be placed in front of sidewalk ramps.

Roadside ditches and drainage swales shall be treated to minimize erosion and sediment damage. See Town of Milton Erosion and Sediment Control Best Management Practices. An erosion and sediment control plan is required under these Public Works Specifications.

Any culvert greater than or equal to forty-eight (48) inches in diameter will be designed according to the latest VTrans Hydraulics Manual. End Treatments (inlet and outlet) will also be evaluated in accordance with this manual.

All bridges (structures with spans greater than six (6') feet) will have waterway openings.

## **SECTION 1430 MATERIALS**

### **1. Pipe for Culverts**

All culverts located within or used to convey stormwater within the Town of Milton shall be Corrugated Aluminum Alloy Pipe meeting VTrans Standard Specification for Construction 711.02 or Corrugated Polyethylene pipe meeting VTrans Standard Specification for Construction 710.03. Reinforced Concrete pipe meeting VTrans Standard Specification for Construction 710.01 and reinforced concrete pipe end sections 710.02. Loading for bridges and box culverts shall be H-25.

Stormwater culverts will require inlet and outlet protection. See Town of Milton Best Management Practices for Erosion and Sediment for greater detail.

### **2. Storm Drainage Pipe**

Polyvinyl Chloride (PVC) pipe shall conform to Vermont Standard Specifications for Construction 710.06 and AASHTO-M278 for 4" to 15", ASTM F679 for 18" to 27". Polyethylene shall conform to Vermont Standard Specifications for Construction 710.03. Push-on elastic gaskets shall be used.

### **3. Manholes**

Manholes and junction boxes for storm drainage systems shall be the same as those described in the Sanitary Sewer Specifications of these Public Works Specifications.

### **4. Catch Basins and Drywells**

Catch basins shall be constructed of precast reinforced concrete and shall be able to withstand an H-20 loading.

Catch basins shall be sufficiently large to accept the required pipes with sufficient concrete between pipes and above and below each pipe to provide the required structural strength. Refer to Figures 18 through 20 of the standard details. Catch basins shall have a minimum 18" sump. The manufacturer's certification on the fabrication of the structures shall be provided prior to installation.

Pipe inlet and outlets for all structures shall be pre-cast with manufacturer installed rubber boots. If installing pipe in an existing catch basin the basin shall be cored and rubber boot installed.

Drywells for pipe up to eighteen (18") inches in diameter may be S. T. Griswold #530, or approved equal. For larger diameter pipe, four (4') foot manholes shall be required as described in the Sanitary Sewer Specifications of these Public Works Specifications.

5. Frames and Grates

Frames and grates shall be as generally described for manhole frames and covers as described in the Sanitary Sewer Specifications of these Public Works Specifications. However, storm manhole covers shall have the word "STORM" cast into the top surface in three inch letters.

Catch basin grates shall be cast iron of the size and type as shown on the Typical Details.

Roadway frames and grates shall be Neenah or Lebaron type approved by Town Engineer or designated representative.

Swale/ditch frames and covers shall be Neenah or Lebaron type "beehive" grates approved by Town Engineer or designated representative.

6. Pipe Bedding

Pipe bedding shall be as described in the Sanitary Sewer Specifications of these Public Works Specifications.

7. Stone for Ditches

Stone for drainage ditches shall be Type I stone fill. High velocity outflows will require Type II stone fill as required by the Town Engineer or designated representative. Check dams will be required to control water velocity. See Town of Milton Erosion and Sediment Control Best management Practices for greater detail.

## **SECTION 1440 INSTALLATION**

Installation of underground storm drainage systems shall be the same as described in the Sanitary Sewer Specifications of these Public Works Specifications and conforming to VTrans Standard Specifications for Construction, latest edition.

In order to control erosion, headwalls and end sections may be required at locations as required by the Town Engineer or designated representative.

In order to ensure proper drainage, driveway culverts within a development shall be installed only after ditches and swales have been constructed to the proper slope.

Swales and ditches are required to be stone lined in areas where slopes exceed five percent (5%). Such swales and ditches shall be excavated and lined with geotextile filter fabric prior to placement of stone fill in the ditch.

Trenches shall be as described in the Water Distribution Specifications of these Public Works Specifications.

## **SECTION 1450 TESTING**

Storm drainage systems shall be visually inspected after the system has been cleaned and flushed. Catch basins shall be cleaned at the end of the warranty period.

**SECTION 1500 CLASS 4 HIGHWAYS AND TRAILS**

**SECTION 1510 DEFINITIONS**

**Class 4 Highways** These are all other highways not falling under the State definitions of Class 1, 2 and 3 highways.

**Trail** A public right-of-way which is not a highway and which was:

- previously a designated highway having the same width as the designated town highway, or
- a lesser width if so designated, or
- a new public right-of-way laid out as a trail by the Selectboard for the purpose of recreational use.

**SECTION 1520 EXISTING USE**

Existing rights-of way of Class 4 highways and trails depicted on the "General Highway Map for the Town of Milton" shall be retained by the Town for purposes of recreational activities, access to property, and agricultural and forest management.

**SECTION 1530 MAINTENANCE**

The Town shall provide maintenance of Class 4 highways only as required by State of Vermont law.

The Town shall not provide any winter maintenance on Class 4 highways and trails.

The Selectboard may grant approval for private contractor repair, maintenance, improvement, or restoration of any Class 4 highway or trail. The highway or trail shall be left in as good or better condition as before said repair, maintenance, improvement or restoration as when permission is granted.

Plowing by private parties shall be only with permission of the Selectboard. Any winter plowing of a Class 4 road allowed by the Selectboard to parties other than a municipality shall not nullify the privileges under Vermont Law Title 23, VSA 3206 (b) (2).

**SECTION 1540 RESTRICTIONS**

The Selectboard shall exercise control of Class 4 highways and trails to ensure a public right-of-way by means, which may include, but are not limited to, the following:

- establishment of vehicle weight limits;
- prohibition or restriction of wheeled vehicle use during mud and snow season; signs and barriers may be utilized to accomplish this purpose;
- requirements for temporary permits for heavy equipment access may be imposed and the stipulation included that any highway damaged will be repaired by or at the expense of the user; posting of bond or other security to guarantee that repairs are made may be required as a condition of any permits;
- speed limits may be established; and
- naming of said roadways.

## **SECTION 1550 CHANGE IN CLASSIFICATION**

Class 4 highways may be reclassified to trails and/or recreation paths, discontinued, or upgraded to recreation trails or Class 3 or higher status. Trails may be discontinued or upgraded to Class 4 or higher status. Reclassification will be done in accordance with Title 19, VSA, and Sections 708-716 pursuant to findings by the Selectboard. At a minimum, no Class 4 highway or trail may be upgraded in status or discontinued without permission of the Selectboard.

The Selectboard may provide for an alternative travel easement or right-of-way replacing the travel route upgraded or discontinued pursuant to Vermont Law Title 19, Section 708B.

The Selectboard may require that the cost of upgrading a trail or a Class 4 highway be borne by the petitioner(s).

## **SECTION 1560 POSTING**

No Class 4 trail or highway may be intentionally closed by a gate or other obstruction except upon approval of the Selectboard (19 VSA, Section 1105). The Selectboard may post a highway in accordance with 19, VSA, Section 1110. The Selectboard may post a highway for the purposes of preserving the integrity of the road (19, VSA, Section 304).

## **SECTION 1570 COMPLIANCE WITH OTHER REGULATIONS**

This Section is written to establish and clarify standards of construction and the authority of the Selectboard and their agents.

All other Ordinances and Regulations adopted by the Town of Milton shall remain in full force and effect.

**SECTION 1600 TRAFFIC CALMING DEVICES**

**SECTION 1610 GENERAL PROVISIONS**

The Town of Milton Public Works Specifications hereby sets the design standards for traffic calming devices. The installation of traffic calming devices is managed by Policy 00-05, dated August 29, 2000.

Traffic calming devices constructed within the Town of Milton shall conform to VTrans Standard Specifications for Construction, latest edition and VTrans Design Standards for such devices.



*Town of Milton Public Works Specifications Amended 5/19/08 by the Milton Selectboard*  
**PART III STANDARD DETAILS**

*Town of Milton Public Works Specifications*

**PART IV STANDARD FORMS**

Town of Milton, Vermont

LETTER OF CREDIT AGREEMENT

THIS AGREEMENT, in triplicate, by and among \_\_\_\_\_, hereinafter referred to as "Developer", the TOWN OF MILTON, VERMONT, hereinafter referred to as "Municipality", and \_\_\_\_\_, hereinafter referred to as "Bank".

WITNESSETH:

WHEREAS, Developer has received final site plan/subdivision approval from the Municipality's Development Review Board by Notice of Decision, dated \_\_\_\_\_, which is hereby incorporated in this Agreement by reference, for the development of as depicted on a site/subdivision plan entitled, \_\_\_\_\_, dated \_\_\_\_\_ ("Approval"); and,

WHEREAS, Developer is required by the Approval, at its expense, to complete certain public improvements ("Improvements"); and,

WHEREAS, the parties to this Agreement wish to establish a mechanism to secure the obligations of the Developer as set forth above; and,

WHEREAS, the Bank executes this Agreement solely in the capacity of issuer of the Letter of Credit hereinafter specified.

NOW, THEREFORE, the parties hereby covenant and agree as follows:

1. Developer will at its own expense complete the following Improvements in connection with its development:

- Utilities:  Landscaping
- Water
- Sewer
- Stormwater
  
- Roads:
- Paving
- Curbs
- Sidewalks/Bikepaths
- Street Lights
- Drainage/Erosion Control

Note: See attached Construction Estimate Form for associated costs and breakdown of expenses.



2. Developer will convey to the Municipality by properly executed Warranty Deed, free and clear of all encumbrances, the roadways, easements and other Improvements required to be transferred to the Municipality by the Approval prior to the Municipality granting any zoning permits to the Developer.
3. The Developer shall notify the Municipality in writing immediately upon completion of the Improvements, which shall be no later than \_\_\_\_\_. The Municipality shall within twenty (20) days of receipt of such notice, inspect the Improvements and in turn advise the Developer in writing whether the Improvements are completed to its satisfaction or whether there remains work to be completed. If the Municipality does not notify the Developer of its inspection results within twenty-five (25) days of its receipt of the Developer's notice of completion, the Improvements shall be deemed completed to the satisfaction of the Municipality.
4. The Developer shall repair or replace any faulty or defective work or material which may appear in the Improvements within two (2) years of completion of all the Improvements. Completion shall be deemed to be the date of the Municipality's notice to the Developer pursuant to paragraph 3, indicating the Improvements have been completed to its satisfaction, or if the Municipality fails to notify the Developer, as set forth in paragraph 3, the date of completion shall be deemed to be twenty-five (25) days after the Municipality receives the Developer's notice of completion.
5. For the guaranty of the Developer's performance of all requirements set forth in this Agreement, Developer has caused the Bank to issue its Irrevocable Letter of Credit in favor of the Municipality in the amount of \$\_\_\_\_\_, the original of which is attached to the Municipality's copy of this Agreement, and copies of which are attached to the Developer's and Bank's copy. It shall be the continuing responsibility of the Developer to maintain in effect, and to renew if necessary, the Irrevocable Letter of Credit, until the Improvements have been deemed complete, and for two years thereafter, all as more particularly provided in Paragraphs 3 and 4 above.
6. Upon the Developer's default of any obligations under this Agreement, the Municipality shall send to the Developer, by certified mail, return receipt requested, a notice setting forth what items are in default (Notice of Default).
7. Should the Developer fail to remedy the items set forth in the Notice of Default within sixty (60) days of the date of said Notice, the Municipality may file a written statement with the Bank indicating that the Developer is in default under the terms of this Agreement. The Municipality's statement shall include a certification that the Municipality has complied with the notice requirements set forth in paragraph 6. Upon receipt of the Municipality's statement, the Bank shall make payments to the Municipality under the Irrevocable Letter of Credit in amounts not to exceed the total certified by the Municipality to be reasonable required to complete the items in default. The Municipality shall, upon sending any statement to the Bank under this paragraph, simultaneously send a copy thereof to the Developer by certified mail, return receipt requested.
8. The Bank shall incur no liability to the Developer on account of making payments to the Municipality, nor shall the Bank be required to inquire into the propriety of any default claim by the Municipality, or into the use of such funds by the Municipality in completing the Improvements.



9. All funds paid to the Municipality pursuant to the Irrevocable Letter of Credit shall be used by the Municipality solely for the purpose of performing obligations in which the Developer is in default under this Agreement. Any work to be performed by the Municipality may be accomplished in such manner as the Municipality in its discretion deems appropriate.
10. If payments are made by the Bank to the Municipality pursuant to the Irrevocable Letter of Credit, and it shall later develop that a portion of the released monies are surplus to the Municipality's need, such surplus shall be refunded by the Municipality to the Developer.
11. The Bank will not refuse or delay to make payments to the Municipality in accordance with the Irrevocable Letter of Credit when proper application is made by the Municipality. The Developer's consent to payments shall not be required and the Developer will not interfere with or hinder the Bank in making payments.
12. This Agreement shall terminate and shall be of no force or effect upon performance of all requirements contemplated hereby and the completion of the warranty period set forth in paragraph 4.
13. The amount of the Irrevocable Letter of Credit shall NOT be reduced to less than \$ \_\_\_\_\_ until certification to the Bank by the Municipality that the Improvements have entered into the warranty period set forth in paragraph 4.
14. The Bank may not reduce the amount of, or terminate the Irrevocable Letter of Credit, without first receiving written consent of the Municipality.
15. This Agreement shall not only be binding upon parties hereto, but also their respective heirs, executors, administrators, successors and assigns.

DATED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

**IN THE PRESENCE OF:**

_____ Witness	<p style="text-align: center;"><b>(Developer)</b></p> By: Its Duly Authorized Agent
_____ Witness	<p style="text-align: center;"><b>Town of Milton</b></p> By: Its Duly Authorized Agent
_____ Witness	<p style="text-align: center;"><b>(Bank)</b></p> By: Its Duly Authorized Agent

\\escrow\agreements\letter of credit revised 12.6.07



**Town of Milton, Vermont**

**ESCROW AGREEMENT**

**THIS AGREEMENT**, in triplicate, by and among \_\_\_\_\_, hereinafter referred to as "**Developer**", the TOWN OF MILTON, VERMONT, hereinafter referred to as "**Municipality**", and \_\_\_\_\_, hereinafter referred to as "**Bank**".

*WITNESSETH:*

**WHEREAS**, Developer has received final site plan/subdivision approval from the Municipality's Development Review Board by Notice of Decision, dated \_\_\_\_\_, which is hereby incorporated in this Agreement by reference, for the development of as depicted on a site/subdivision plan entitled, \_\_\_\_\_, dated \_\_\_\_\_, by \_\_\_\_\_ ("Approval"); and,

**WHEREAS**, Developer is required by the Approval, at its expense, to complete certain public improvements ("Improvements"); and,

**WHEREAS**, the parties to this Agreement wish to establish a mechanism to secure the obligations of the Developer as set forth above; and,

**WHEREAS**, the Bank executes this Agreement solely in the capacity of escrow agent.

**NOW, THEREFORE**, the parties hereby covenant and agree as follows:

1. Developer will at its own expense complete the following Improvements in connection with its development:

- |   |   |
|---|---|
| <input type="checkbox"/> <b>Utilities:</b>        | <input type="checkbox"/> <b>Landscaping</b> |
| <input type="checkbox"/> Water                    |   |
| <input type="checkbox"/> Sewer                    |   |
| <input type="checkbox"/> Stormwater               |   |
| <input type="checkbox"/> <b>Roads:</b>            |   |
| <input type="checkbox"/> Paving                   |   |
| <input type="checkbox"/> Curbs                    |   |
| <input type="checkbox"/> Sidewalks/Bikepaths      |   |
| <input type="checkbox"/> Street Lights            |   |
| <input type="checkbox"/> Drainage/Erosion Control |   |

Note: See attached Construction Estimate Form for associated costs and breakdown of expenses.



2. The Developer will convey to the Municipality by properly executed Warranty Deed, free and clear of all encumbrances, the roadways, easements and other Improvements required to be transferred to the Municipality by the Approval prior to the Municipality granting any zoning permits to the Developer.
3. The Developer shall notify the Municipality in writing immediately upon completion of the Improvements, which shall be no later than \_\_\_\_\_. The Municipality shall within twenty (20) days of receipt of such notice, inspect the Improvements and in turn advise the Developer in writing whether the Improvements are completed to its satisfaction or whether there remains work to be completed. If the Municipality does not notify the Developer of its inspection results within twenty-five (25) days of its receipt of the Developer's notice of completion, the Improvements shall be deemed completed to the satisfaction of the Municipality.
4. The Developer shall repair or replace any faulty or defective work or material which may appear in the Improvements within two (2) years of completion of all the Improvements. Completion shall be deemed to be the date of the Municipality's notice to the Developer pursuant to paragraph 3, indicating the Improvements have been completed to its satisfaction, or if the Municipality fails to notify the Developer, as set forth in paragraph 3, the date of completion shall be deemed to be twenty-five (25) days after the Municipality receives the Developer's notice of completion.
5. For the guaranty of the Developer's performance of all requirements set forth in this Agreement, Developer and Bank agree that the sum of \$\_\_\_\_\_ shall be set aside and held in escrow by the Bank, and shall be available for payment to the Municipality, in accordance with the terms of this Agreement. It shall be the continuing responsibility of the Developer to maintain in effect, and to renew if necessary, the escrow, until the Improvements have been deemed complete, and for two years thereafter, all as more particularly provided in Paragraphs 3 and 4 above.
6. Upon the Developer's default of any obligations under this Agreement, the Municipality shall send to the Developer, by certified mail, return receipt requested, a notice setting forth what items are in default (Notice of Default).
7. Should the Developer fail to remedy the items set forth in the Notice of Default within sixty (60) days of the date of said Notice, the Municipality may file a written statement with the Bank indicating that the Developer is in default under the terms of this Agreement. The Municipality's statement shall include a certification that the Municipality has complied with the notice requirements set forth in paragraph 6. Upon receipt of the Municipality's statement, the Bank shall from time to time pay monies from the escrow account to the Municipality in amounts not to exceed the total certified by the Municipality to be reasonable required to complete the items in default. The Municipality shall, upon sending any statement to the Bank under this paragraph, simultaneously send a copy thereof to the Developer by certified mail, return receipt requested.
8. The Bank shall incur no liability to the Developer on account of making payments to the Municipality, nor shall the Bank be required to inquire into the propriety of any default claim by the Municipality, or into the use of such funds by the Municipality in completing the Improvements.



9. All funds paid to the Municipality from the escrow agent shall be used by the Municipality solely for the purpose of performing obligations in which the Developer is in default under this Agreement. Any work to be performed by the Municipality may be accomplished in such manner as the Municipality in its discretion deems appropriate.
10. If payments are made by the Bank to the Municipality from the escrow account, and it shall later develop that a portion of the released monies are surplus to the Municipality's need, such surplus shall be refunded by the Municipality to the Developer.
11. The Bank will not refuse or delay to make payments to the Municipality from the escrow account when proper application is made by the Municipality. The Developer's consent to payments shall not be required and the Developer will not interfere with or hinder the Bank in making payments.
12. This Agreement shall terminate and shall be of no force or effect upon performance of all requirements contemplated hereby and the completion of the warranty period set forth in paragraph 4.
13. The amount of the escrow account shall NOT be reduced to less than \$\_\_\_\_\_ until certification to the Bank by the Municipality that the Improvements have entered into the warranty period set forth in paragraph 4.
14. The Bank may not reduce the amount of, or terminate the escrow, without first receiving written consent of the Municipality.
15. This Agreement shall not only be binding upon parties hereto, but also their respective heirs, executors, administrators, successors and assigns.

DATED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**IN THE PRESENCE OF:**

\_\_\_\_\_  
 Witness

**(Developer)**  
 By:  
 Its Duly Authorized Agent

\_\_\_\_\_  
 Witness

**Town of Milton**  
 By:  
 Its Duly Authorized Agent

\_\_\_\_\_  
 Witness

**(Bank)**  
 By:  
 Its Duly Authorized Agent



Town of Milton, Vermont

IRREVOCABLE OFFER OF DEDICATION

**AGREEMENT** by and between \_\_\_\_\_, hereinafter referred to as **Owner** and the **Town of Milton**, hereinafter referred to as **Municipality**.

**WITNESSETH:**

**WHEREAS**, the Municipality's Planning Commission has approved a final subdivision plat entitled \_\_\_\_\_ dated \_\_\_\_\_ and prepared by \_\_\_\_\_; and

**WHEREAS**, the final approval of the Planning Commission contains conditions that the Owner dedicate to the Municipality right-of-ways, easements and licenses which may be needed for public improvements, including public roads, storm drainage discharge, water, sewer, or future utilities in said subdivision; and

**WHEREAS**, the above described lands and/or interest therein are to be dedicated to Municipality free and clear of all encumbrances, pursuant to said final approval and final plat; and

**WHEREAS**, the Owner has delivered to the Municipality an appropriate deed of conveyance for the above described lands and/or interest therein.

**NOW, THEREFORE**, in consideration of the final approval of the Municipality's Planning Commission and for other good and valuable consideration, it is covenanted and agreed as follows:

1. The Owner herewith delivers to the Municipality a deed of conveyance, the descriptive portion of which is attached as Exhibit A, said delivery constituting a formal offer of dedication to the Municipality to be held by the Municipality until the acceptance or rejection of such offer of dedication by the legislative body of the Municipality.
2. The Owner agrees that said formal offer of dedication is irrevocable and can be accepted by the Municipality at any time.
3. This irrevocable offer of dedication shall run with the land and shall be binding upon all assigns, grantees, successors and/or heirs of the Owner.

Dated this \_\_\_\_ day of \_\_\_\_\_, 20\_\_

IN THE PRESENCE OF:

TOWN OF MILTON

\_\_\_\_\_

By: \_\_\_\_\_  
Its Duly Authorized Agent

\_\_\_\_\_

OWNER  
By: \_\_\_\_\_  
Its Duly Authorized Agent

STATE OF VERMONT  
CHITTENDEN COUNTY, ss.

At \_\_\_\_\_, in said County, this \_\_\_\_ day of \_\_\_\_\_ 20\_\_, before me personally appeared \_\_\_\_\_, and he acknowledged this instrument by him subscribed, to be his free act and deed. (and the free act and deed of \_\_\_\_\_.)

Before me: \_\_\_\_\_  
Notary Public

STATE OF VERMONT  
CHITTENDEN COUNTY, ss.

At Milton, in said County, this \_\_\_\_ day of \_\_\_\_\_ 20\_\_, before me personally appeared \_\_\_\_\_, duly authorized agent of the **Town of Milton**, and he acknowledged this instrument by him sealed and subscribed, to be his free act and deed and the free act and deed of the **TOWN OF MILTON**.

Before me: \_\_\_\_\_  
Notary Public

**PROJECT MODIFICATION FORM**

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

Phase: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

Owner: \_\_\_\_\_ Developer: \_\_\_\_\_

Engineer: \_\_\_\_\_ Contractor: \_\_\_\_\_

**DESCRIPTION OF PROPOSED MODIFICATION**

**REASON FOR CHANGE FROM ORIGINAL PLANS**

**CHANGE IN COST ESTIMATE (Attach copy of cost estimate)** \_\_\_\_\_

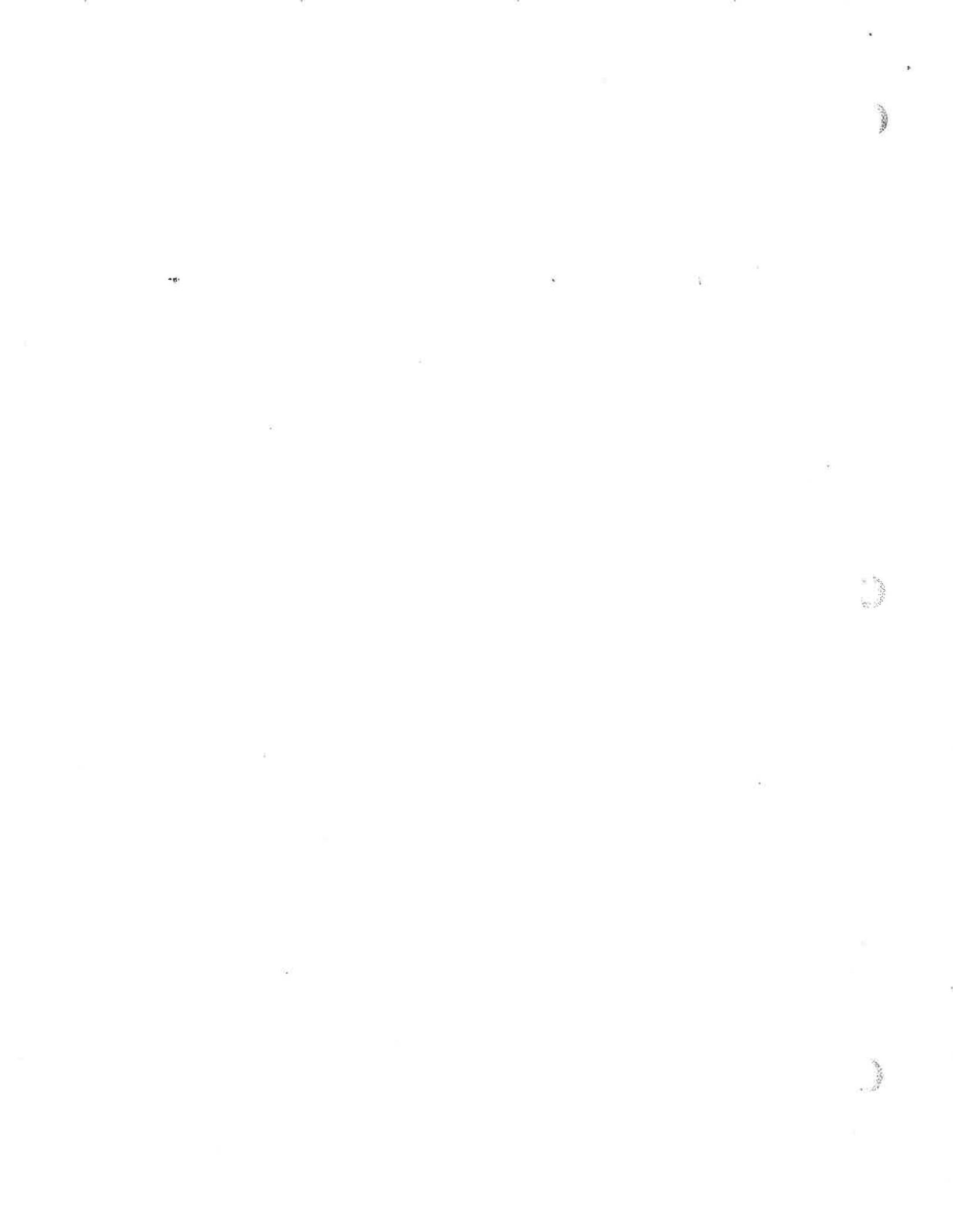
REQUESTED BY \_\_\_\_\_

DATE \_\_\_\_\_

APPROVED BY \_\_\_\_\_

DATE \_\_\_\_\_

**CONDITIONS OF APPROVAL:**





# TOWN OF MILTON, VERMONT 05468-3205

Public Works Department  
43 Bombardier Road • 802-893-6030 • FAX: 893-1005

## APPLICATION FOR HIGHWAY ACCESS PERMIT

PERMIT # \_\_\_\_\_

TAX MAP REF. \_\_\_\_\_

FEE \_\_\_\_\_

DEPOSIT REQUIRED: YES / NO AMOUNT \_\_\_\_\_

All permit applications shall be submitted to the Public Works Department for review and approval. A 48-hour notice is required prior to construction. The permit holder is responsible to: NOTIFY "DIG SAFE" 48-hours prior to work, provide protection of excavation area at all times until the project is completed, provide necessary traffic controls as to not endanger or interrupt public travel, restore the excavated area to its original condition and meet all erosion and sediment control requirements. Authorized emergency work will be allowed from Friday 12:00 noon to Monday 8:00 am and on holiday weekends. Digging in the Town right-of-ways will not be permitted from November 15<sup>th</sup> through April 1<sup>st</sup> unless prior approval from the Town Engineer is obtained. Approval is on a case by case basis. A refundable deposit as determined by the Town Engineer of designee may be required and is refundable upon satisfactory completion of job.

This permit, pursuant to Title 19 V.S.A., § 1111 covers rights vested in the Town and does not release the permit holder from the requirement of any other statutes, ordinances, required State or Federal permits, etc.

(Completed by Applicant)

Owner \_\_\_\_\_

Applicant \_\_\_\_\_

Address: \_\_\_\_\_

Address \_\_\_\_\_

Phone # (Home) \_\_\_\_\_ (Work) \_\_\_\_\_

Phone # (Home) \_\_\_\_\_ (Work) \_\_\_\_\_

Property Address: \_\_\_\_\_

(Where work is being performed, use reverse side for sketch if needed.)

### DESCRIPTION OF WORK:

DESCRIPTION OF WORK: \_\_\_\_\_

WORK PERFORMED BY: \_\_\_\_\_ phone # \_\_\_\_\_

**I, the applicant, in consideration of approval of this permit, having read the contents herein, agree to the conditions set forth in this permit.**

Signature: \_\_\_\_\_

Date \_\_\_\_\_

(Completed by Town)

### CONDITIONS OF APPROVAL:

\_\_\_\_\_  
\_\_\_\_\_

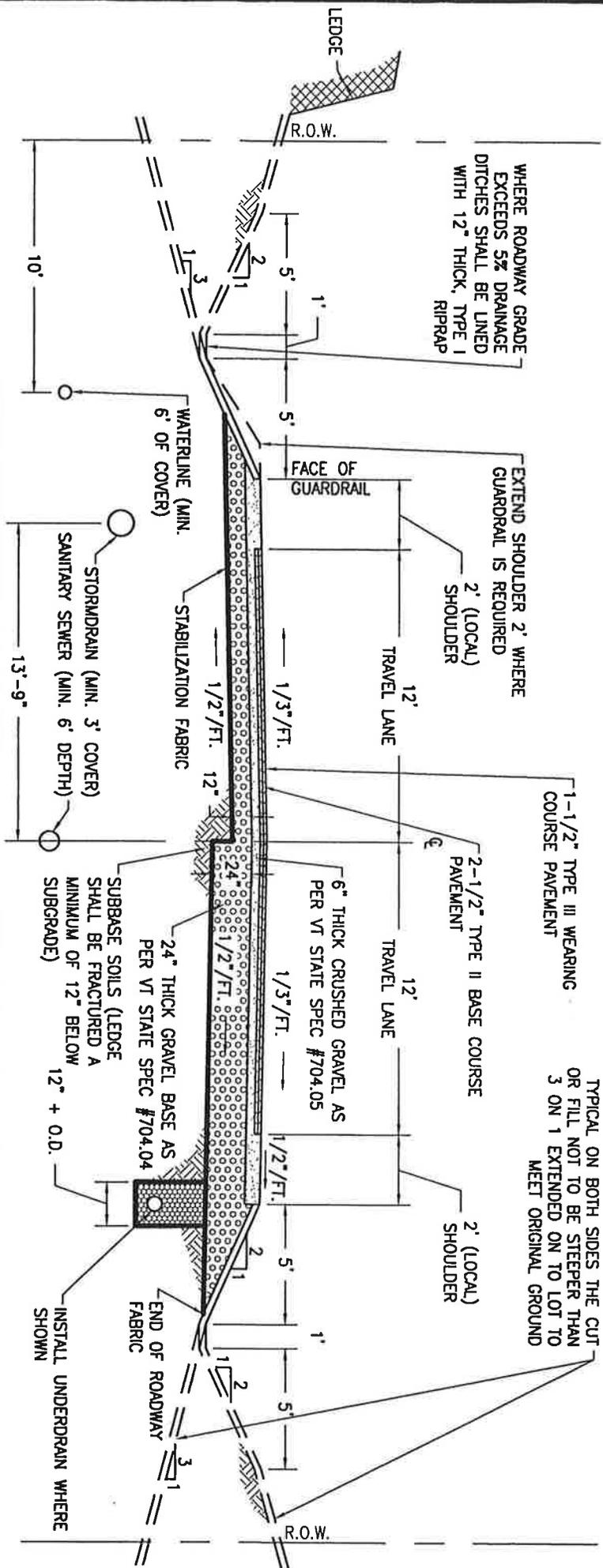
Signed: \_\_\_\_\_, Town Engineer or Designee Date: \_\_\_\_\_

**All work HAS / HAS NOT (CIRCLE ONE) been completed to the satisfaction of the Town. If not, applicant will be notified.**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Funds Released: \_\_\_\_\_ Date: \_\_\_\_\_





**NOTES:**

1. SOIL BORINGS AND TEST PITS MAY BE REQUIRED BY THE TOWN TO DETERMINE WHETHER THE STANDARD OR SPECIAL CROSS-SECTION SHALL BE USED.
2. THE SPECIAL SECTION WITH THE 24" GRAVEL BASE AND UNDERDRAIN SHALL BE USED WHEN THE PLASTICITY INDEX OF THE SUBGRADE IS MORE THAN 6 AND THE LIQUID LIMIT IS GREATER THAN 25. WHEN THE SUBGRADE SOILS CONTAIN MORE THAN 8% BY WEIGHT OF PARTICLES FINER THAN A #200 SIEVE OR WHEN THE SEASONAL HIGH GROUNDWATER IS WITHIN 3' OF THE FINISH GRADE.

TYPICAL ON BOTH SIDES THE CUT OR FILL NOT TO BE STEEPER THAN 3 ON 1 EXTENDED ON TO LOT TO MEET ORIGINAL GROUND



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

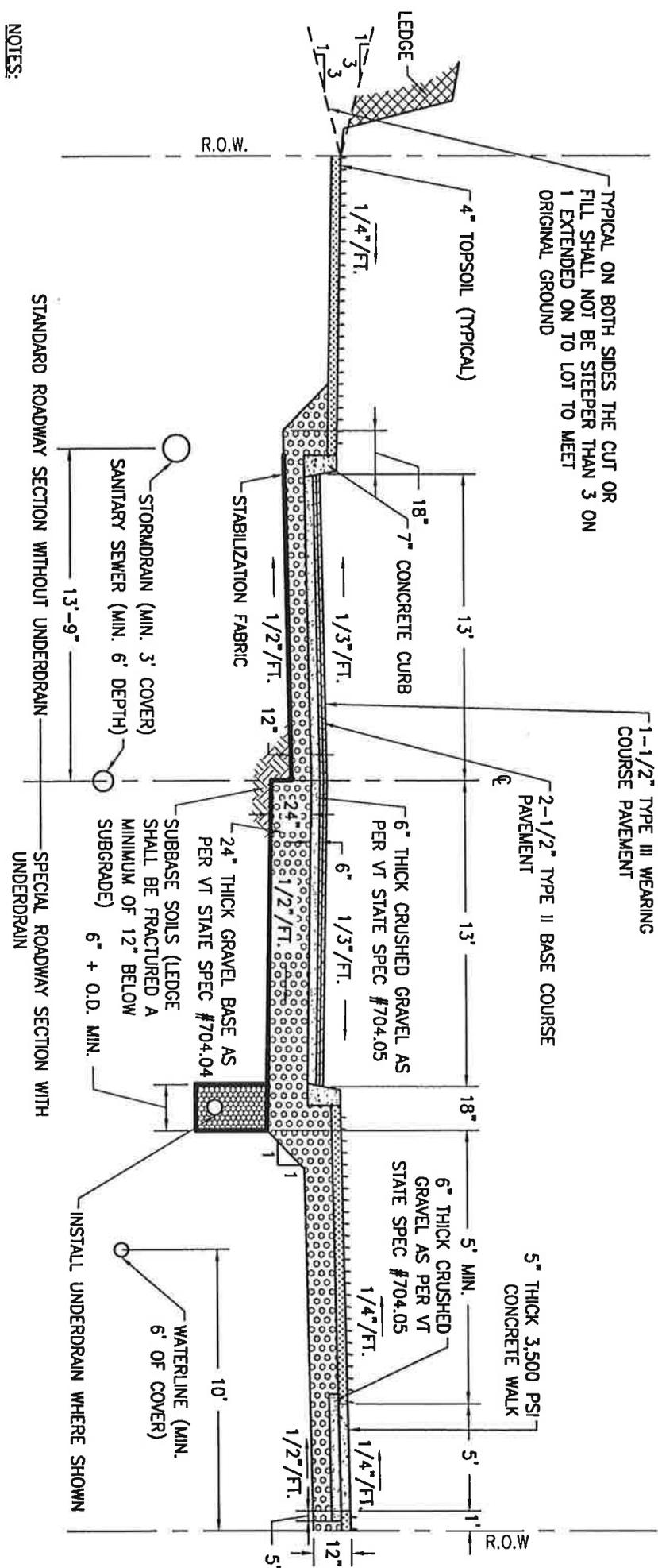
DATE: FEB. 2008

DRAWING #: 1

DRAWN BY: F&A&A

TYPICAL ROAD CROSS-SECTION WITHOUT CURBS AND SIDEWALKS





TYPICAL ON BOTH SIDES THE CUT OR FILL SHALL NOT BE STEEPER THAN 3 ON 1 EXTENDED ON TO LOT TO MEET ORIGINAL GROUND

1. SOIL BORINGS AND TEST PITS MAY BE REQUIRED BY THE TOWN TO DETERMINE WHETHER THE STANDARD OR SPECIAL CROSS-SECTION SHALL BE USED.

**NOTES:**

2. THE SPECIAL SECTION WITH THE 24" GRAVEL BASE AND UNDERDRAIN SHALL BE USED WHEN THE PLASTICITY INDEX OF THE SUBGRADE IS MORE THAN 6 AND THE LIQUID LIMIT IS GREATER THAN 25. WHEN THE SUBGRADE SOILS CONTAIN MORE THAN 8% BY WEIGHT OF PARTICLES FINER THAN A #200 SIEVE OR WHEN THE SEASONAL HIGH GROUNDWATER IS WITHIN 3' OF THE FINISH GRADE.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

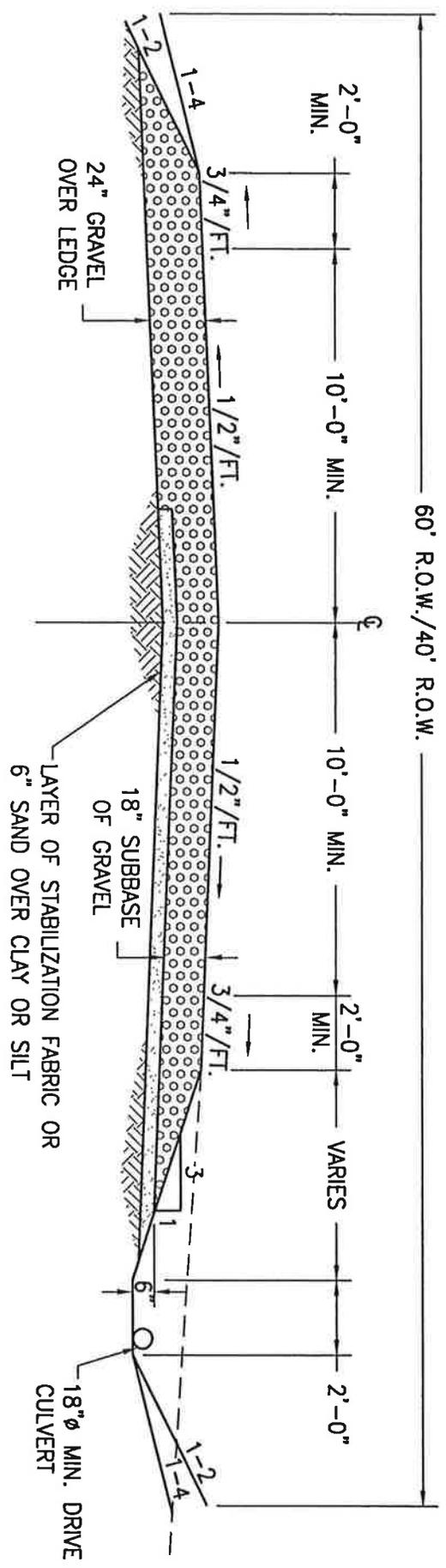
DATE: FEB. 2008

DRAWING # 2

DRAWN BY: F&A&A

TYPICAL ROAD CROSS-SECTION WITH CURBS AND SIDEWALKS





1. POSITIVE DRAINAGE TOWARD DRAINAGE DITCH SHALL BE MAINTAINED ON ALL SUBGRADE AREAS. LEDGE SHALL BE SHATTERED 12" BELOW GRADE.

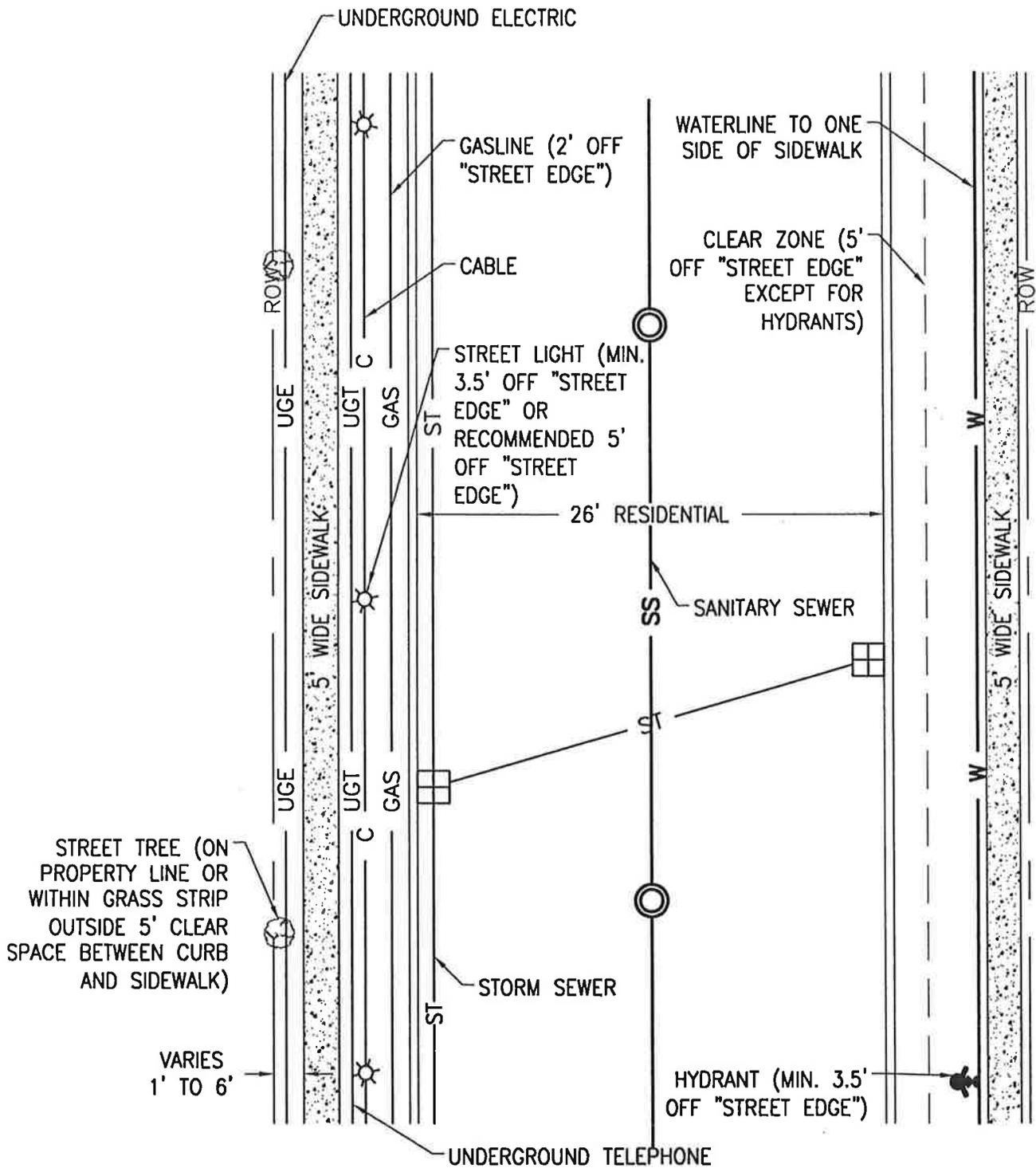
NOTES:

	
<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
SCALE: NTS	DATE: FEB. 2008

DRAWING # 3	DRAWN BY: F&A
-------------	---------------

**TYPICAL PRIVATE R.O.W. CROSS-SECTION**



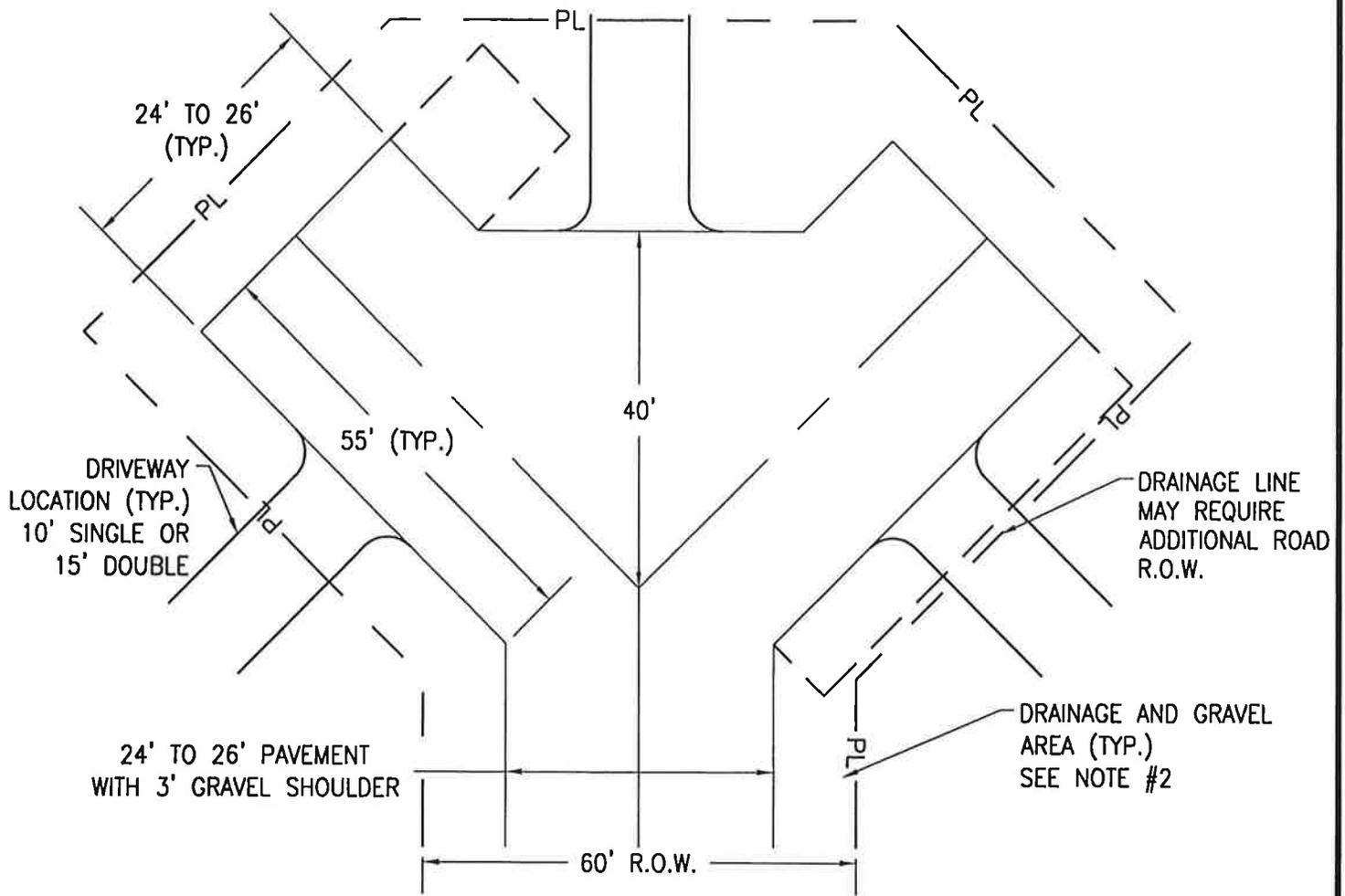


**NOTES:**

1. UNDERGROUND UTILITIES SHALL BE INSTALLED WITH CONDUCTIVE MARKING TAPE OR TRACING WIRE WHERE NECESSARY:

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING #: 4	DRAWN BY: FA&A	
<b>TYPICAL STREET PLAN DETAIL</b>		



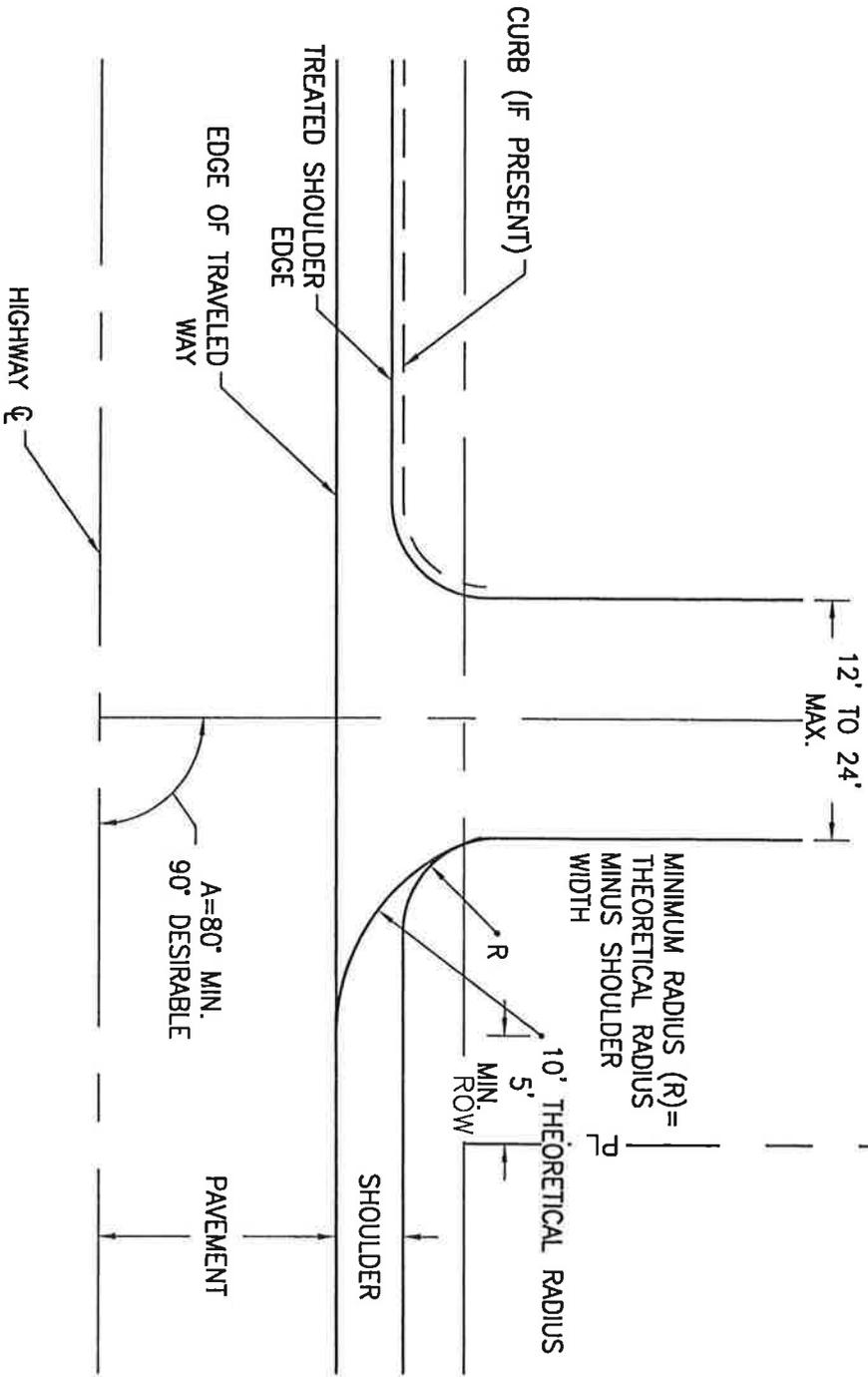


**NOTES:**

1. PROVIDE DRAINAGE AROUND TURN-AROUND.
2. 12' WIDE GRAVEL AREA FOR SNOW STORAGE IN WINTER OTHERWISE THIS AREA TO BE KEPT CLEAN.
3. THIS SKETCH WAS LAYED OUT WITH A 72' PASSENGER SCHOOL BUS AND CONE SET-UP. IT APPEARS PLOWING CAN BE DONE FASTER AND FIRE TRUCKS CAN TURN AROUND BETTER THAN A CUL-DE-SAC.

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING #: 5	DRAWN BY: FA&A	
<b>TYPICAL TURN AROUND</b> <b>HAMMERHEAD OR "Y" SYSTEM</b>		





DRAWING #: 6

DRAWN BY: F&A

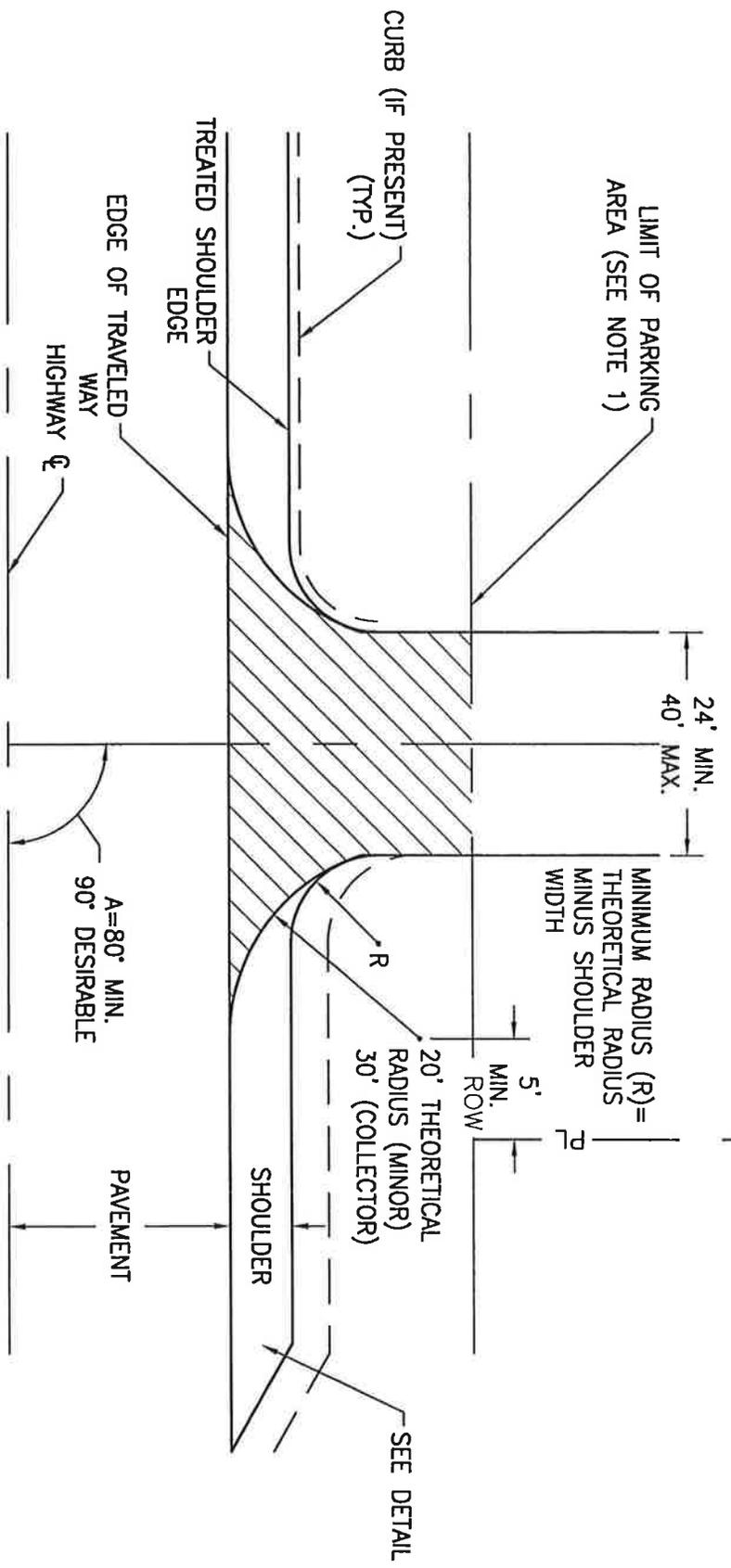
SCALE: NTS

DATE: FEB. 2008

TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

TYPICAL RESIDENTIAL DRIVE  
HIGHWAY ACCESS





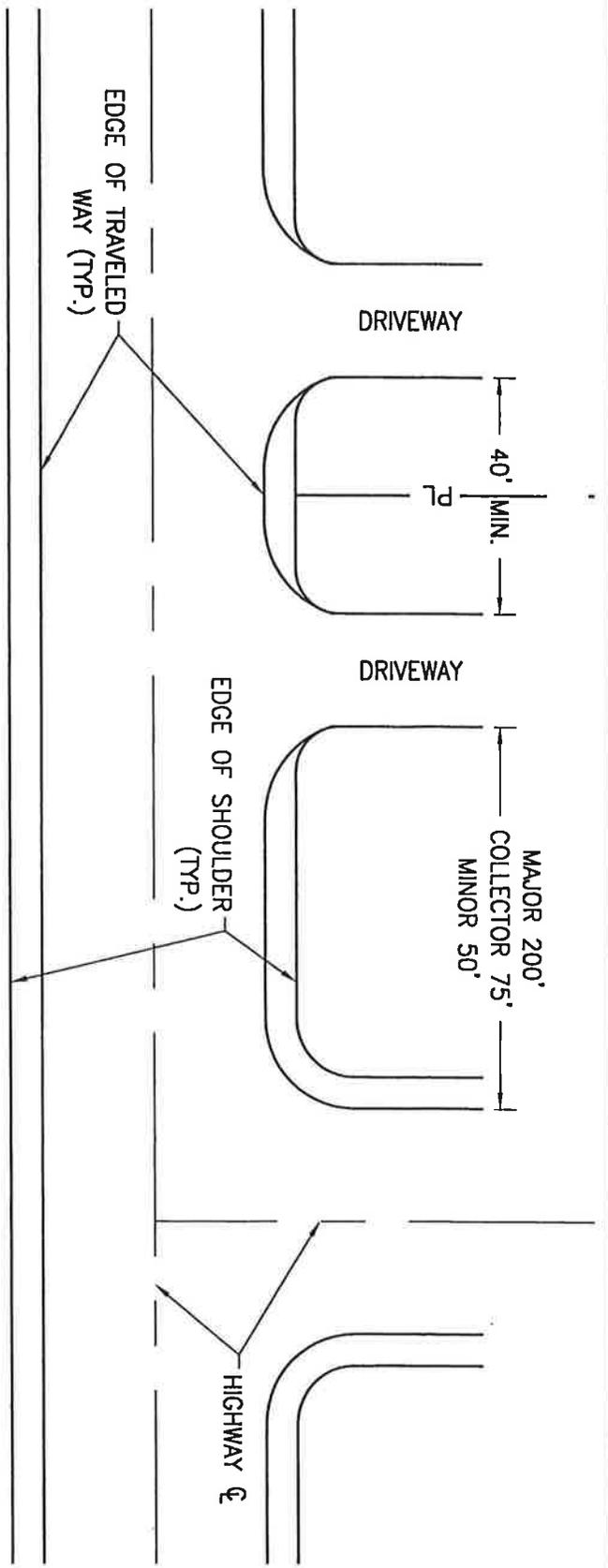
THIS DETAIL WILL ALSO APPLY TO COMMERCIAL SERVICE DRIVES, WHEN AUTHORIZED, HAVING A MAXIMUM WIDTH OF 20'. THE SERVICE DRIVE WILL HAVE A "SERVICE VEHICLES ONLY" SIGN PLACED AT THE HIGHWAY R.O.W. LINE. SIGN SHALL BE 18"x24" AS PRESCRIBED IN THE STANDARD HIGHWAY SIGN BOOKLET, A SUPPLEMENTAL PUBLICATION TO MUTCD.

**NOTES:**

1. VEHICULAR ACCESS FROM PARKING AREAS TO THE RIGHT-OF-WAY AT OTHER THAN APPROVED ACCESS POINTS WILL BE PREVENTED BY THE CONSTRUCTION OF CURBING OR OTHER SUITABLE PHYSICAL BARRIER.

		<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
SCALE: NTS	DATE: FEB. 2008		
DRAWING #: 7	DRAWN BY: FA&A		
<b>TYPICAL TWO-WAY UNDIVIDED</b> <b>COMMERCIAL DRIVES HIGHWAY ACCESS</b>			





**NOTES:**

1. MINIMUM UNLESS NO OTHER REASONABLE ACCESS IS AVAILABLE AND PRIOR APPROVAL IS GRANTED BY VTRANS OTHER ITEMS SUCH AS TRAFFIC SIGNALS, HIGH TRAFFIC VOLUMES, OR FUNCTIONAL CLASS OF HIGHWAY SHOULD BE CONSIDERED WHEN DETERMINING APPROPRIATE OFFSET DISTANCE.
2. U.S. ROUTE 7 HAS SPECIAL HIGHWAY ACCESS CONTROL SEE TOWN OF MILTON PLANNING AND ZONING REGULATIONS SECTION 816 HIGHWAY ACCESS.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

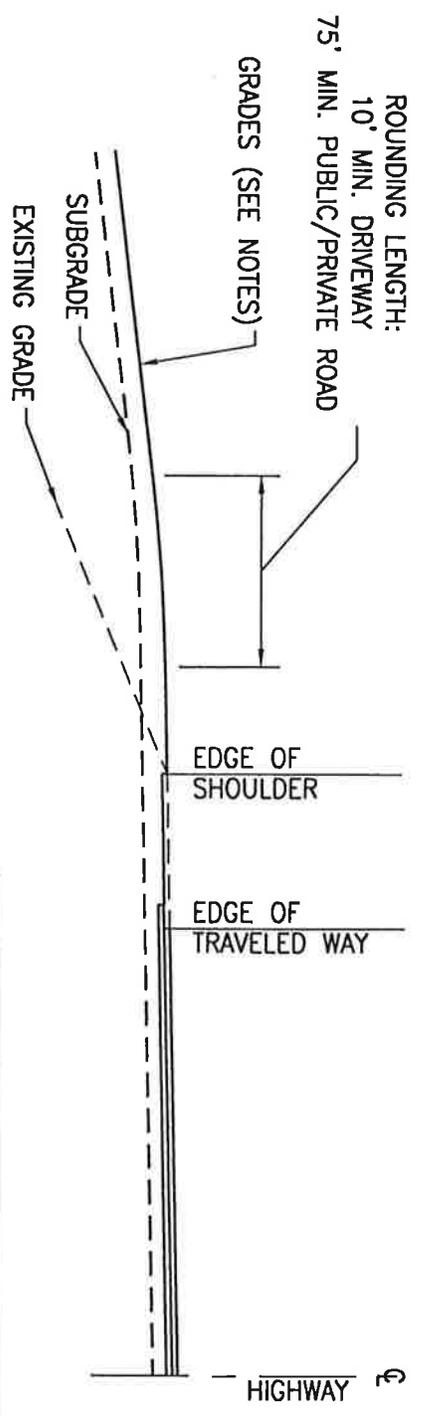
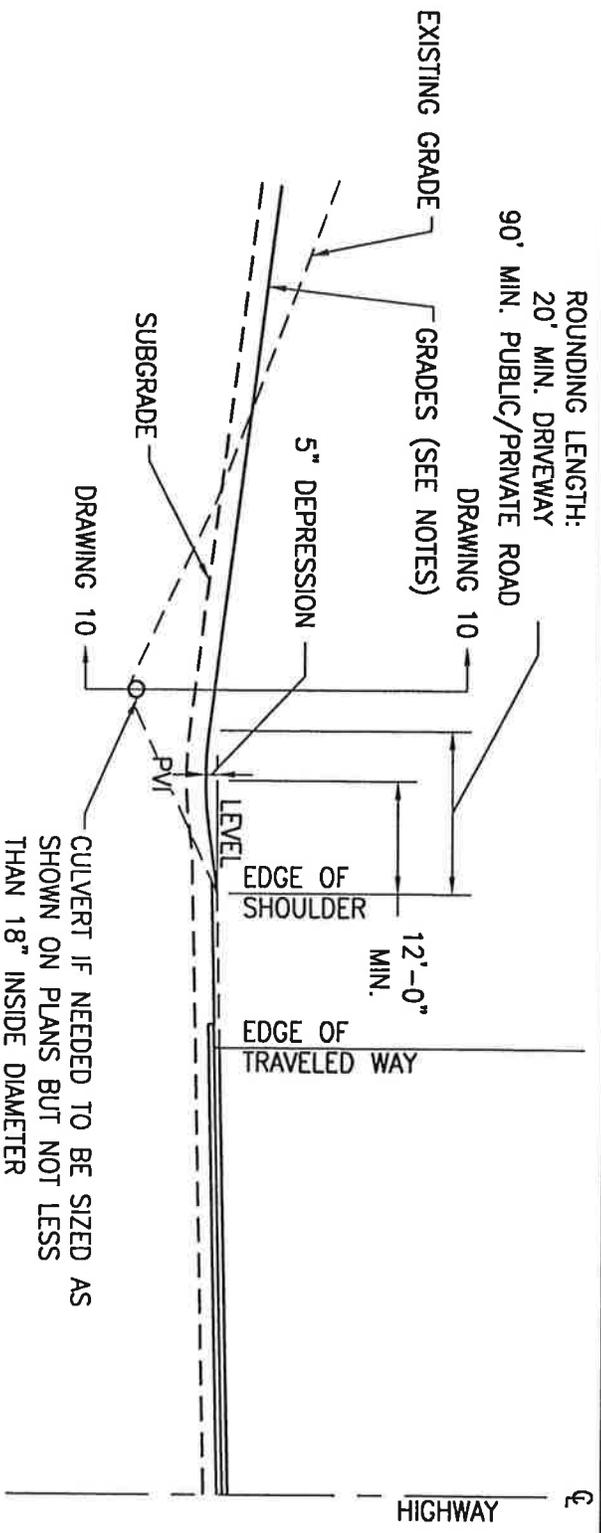
DATE: FEB. 2008

DRAWING #: 8

DRAWN BY: F&A

TYPICAL MINIMUM HORIZONTAL SEPARATION BETWEEN  
DRIVES AND INTERSECTING SIDEROADS





- NOTES:**
1. DRIVEWAY MAX GRADE 3% FOR 35' FROM  $\mathcal{C}$  INTERSECTION AND 15% THEREAFTER.
  2. PUBLIC ROADS MAX. GRADE 3% FOR 100' FROM  $\mathcal{C}$  INTERSECTION AND 8% THEREAFTER
  3. PRIVATE ROADS MAX. GRADE 3% FOR 100' FROM  $\mathcal{C}$  INTERSECTION AND 10% THEREAFTER

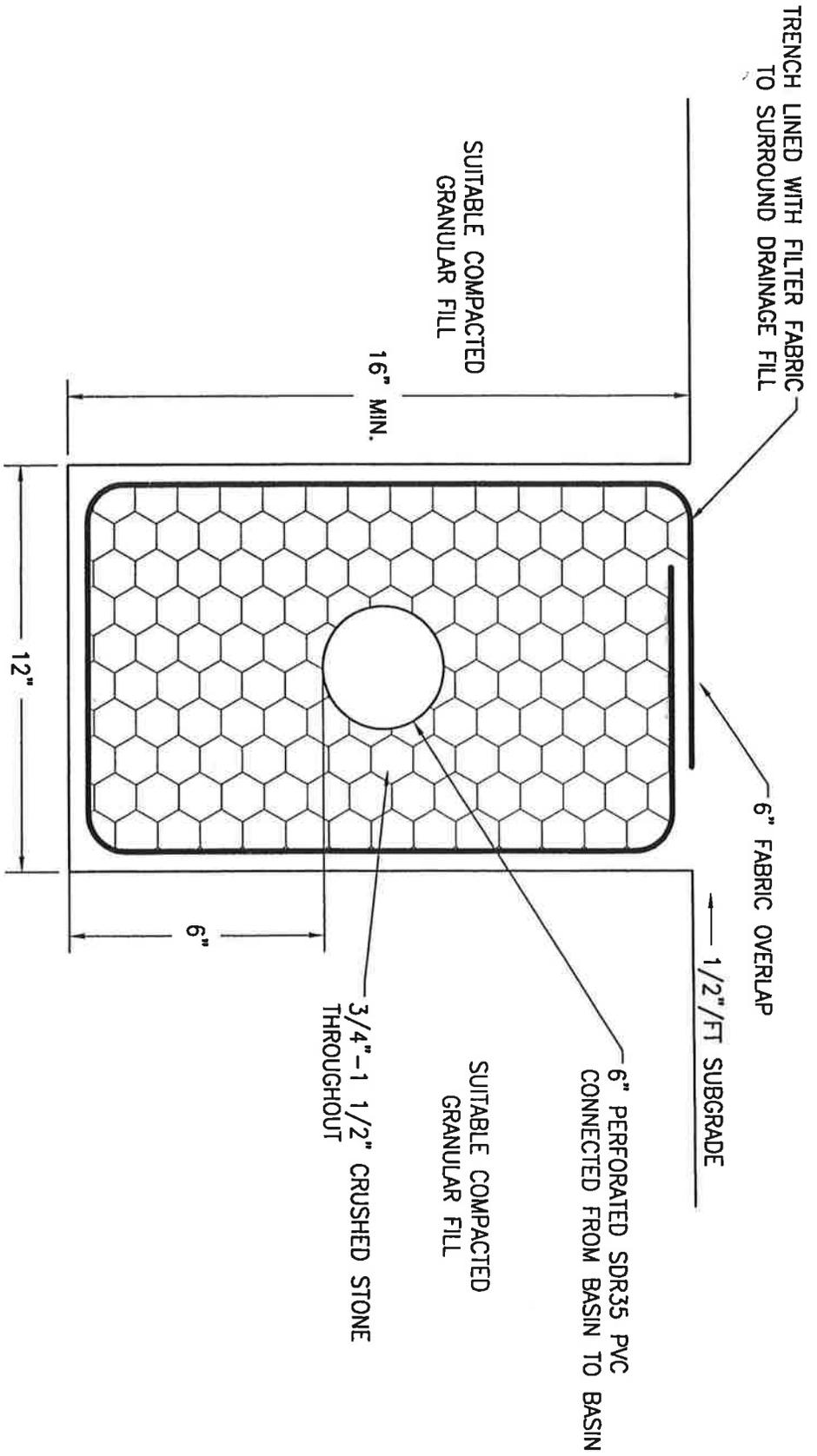
	TOWN OF MILTON	
	PUBLIC WORKS DEPARTMENT	
SCALE: NTS	DATE: FEB. 2008	

DRAWING #:	9	DRAWN BY:	FA&A
TYPICAL PROFILE OF INTERSECTION (CUT AND FILL)			
HIGHWAY ACCESS			









**NOTES:**

1. MINIMUM DEPTH 7'-0".



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

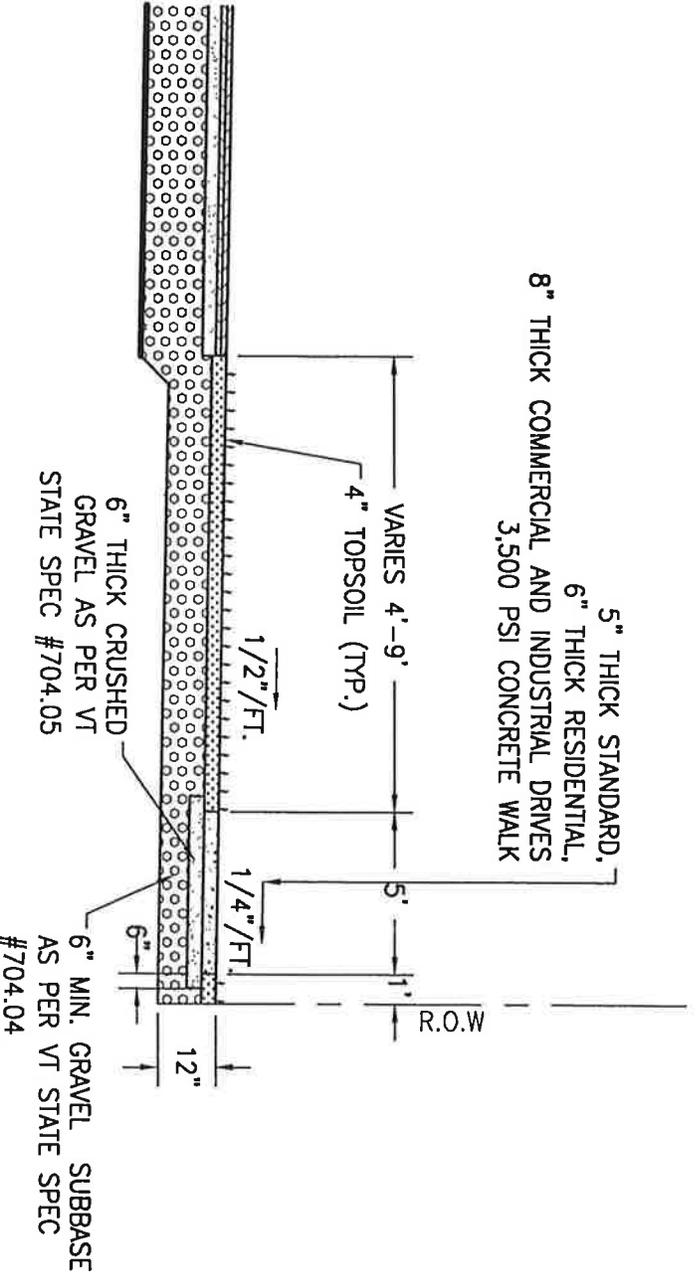
DATE: FEB. 2008

DRAWING #: 11

DRAWN BY: FA&A

TYPICAL UNDERDRAIN





**NOTES:**

1. CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 3,500 PSI AND MEET SECTION 501 OF THE VERMONT STANDARD SPECIFICATIONS FOR CLASS B CONCRETE.
2. HALF INCH (1/2") TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY FEET (20'). SIDEWALKS SHALL BE SCORED EVERY FIVE FEET (5'). CURB AND SIDEWALK SECTIONS SHALL BE SEPARATED BY A PREMOULDED JOINT FILLER.
3. AFTER THE INITIAL CURING PERIOD IS OVER (APPROXIMATELY 28 DAYS) ALL EXPOSED SURFACES SHALL RECEIVE TWO COATS OF ANTI-SPALLING COMPOUND.
4. SEE WRITTEN SPECIFICATION FOR APPROVED CONSTRUCTION METHODS AND MATERIAL REQUIREMENTS.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

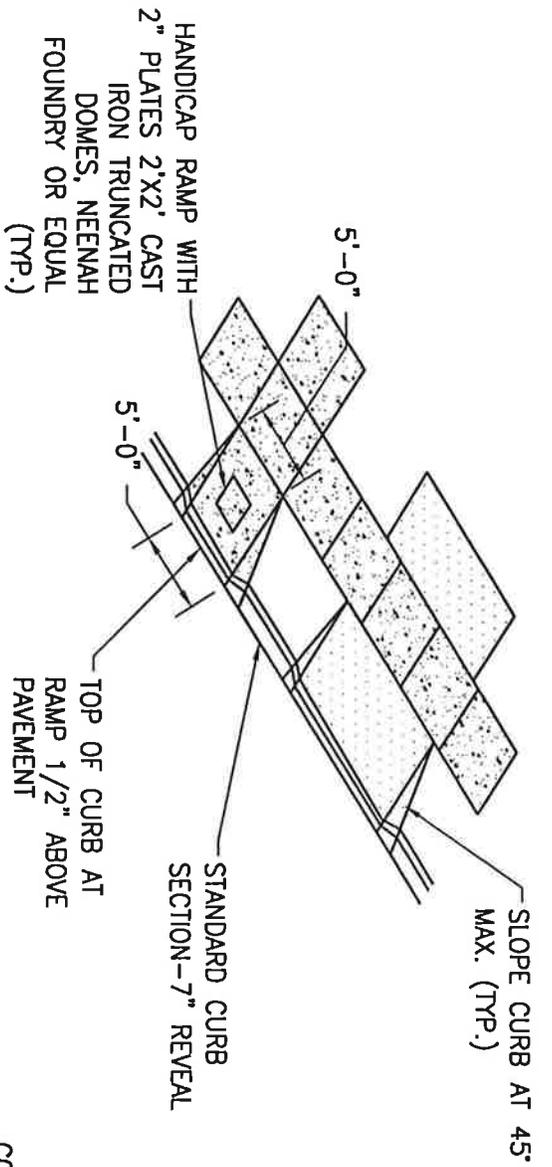
DATE: FEB. 2008

DRAWING #: 12

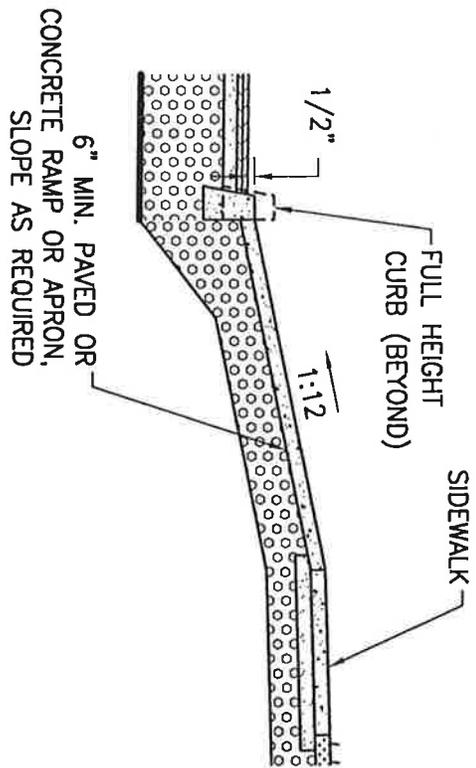
DRAWN BY: F.A&A

TYPICAL SIDEWALK

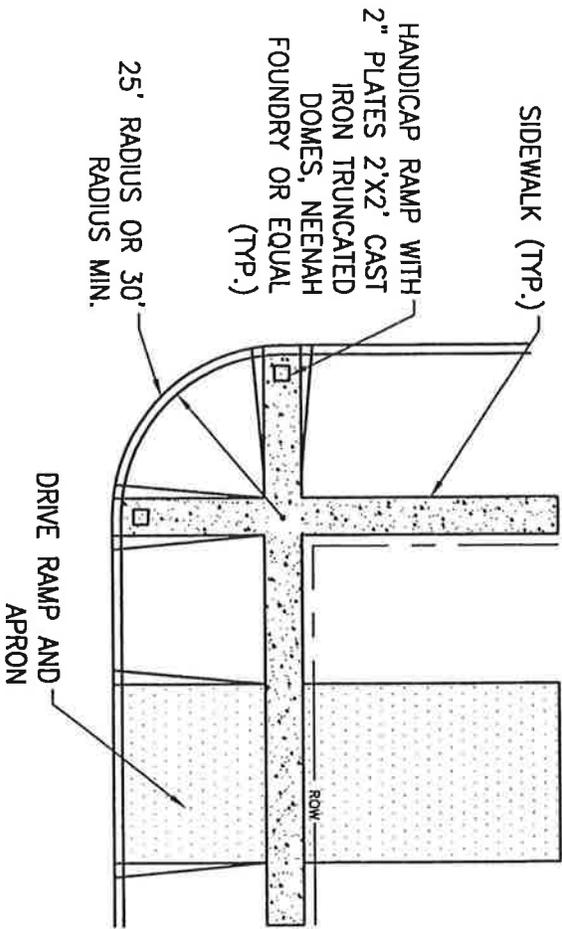




SIDEWALK & RAMP-ISOMETRIC VIEW



SIDEWALK & RAMP-SECTION



SIDEWALK & RAMP-PLAN VIEW

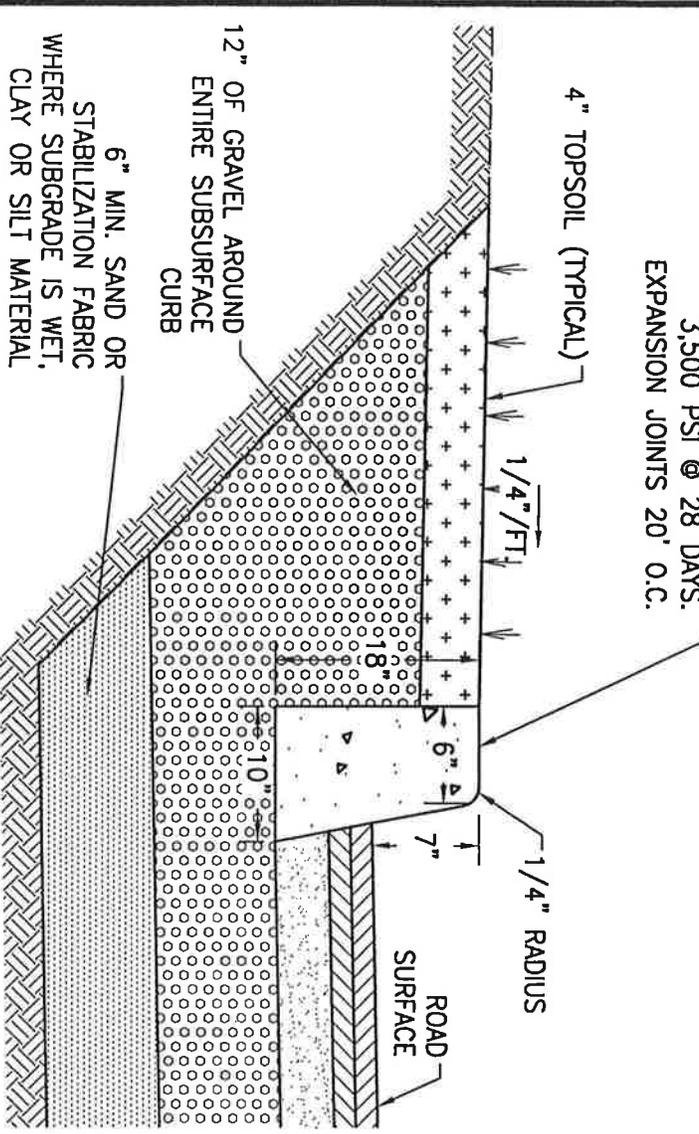
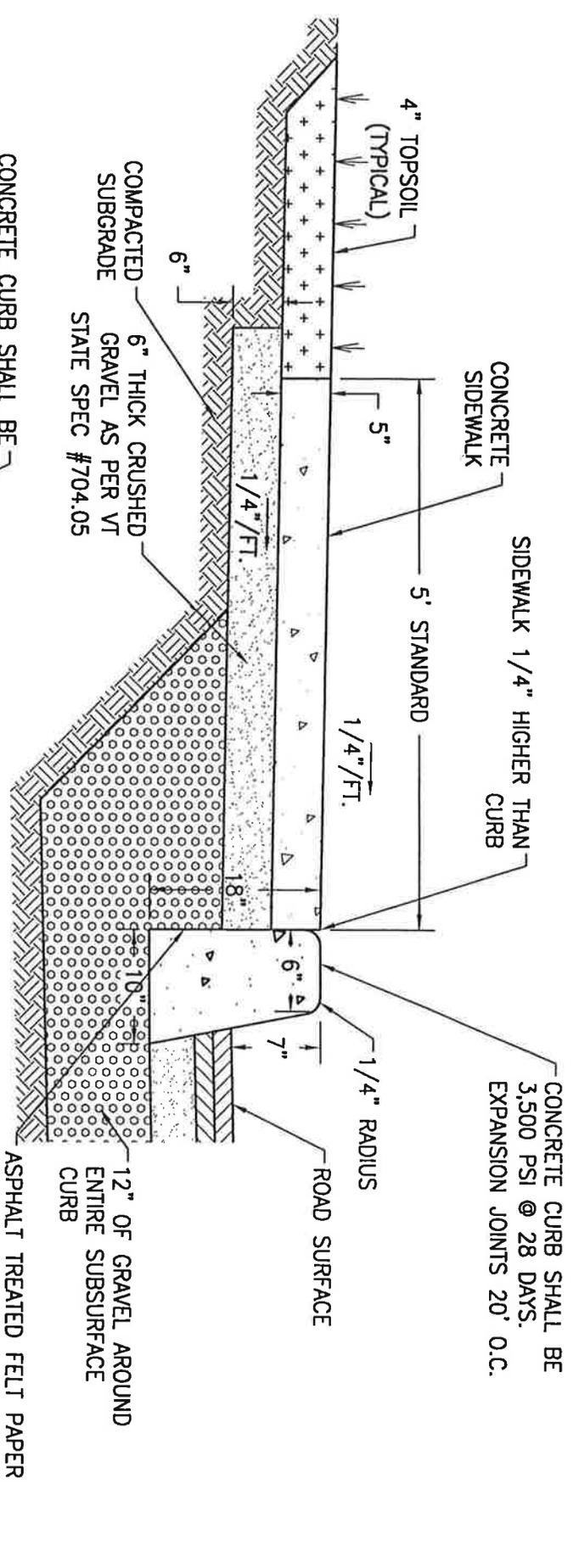


TOWN OF MILTON	
PUBLIC WORKS DEPARTMENT	
SCALE: NTS	DATE: FEB. 2008

DRAWING #: 13	DRAWN BY: F&A
---------------	---------------

TYPICAL SIDEWALK RAMPING DETAILS





TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

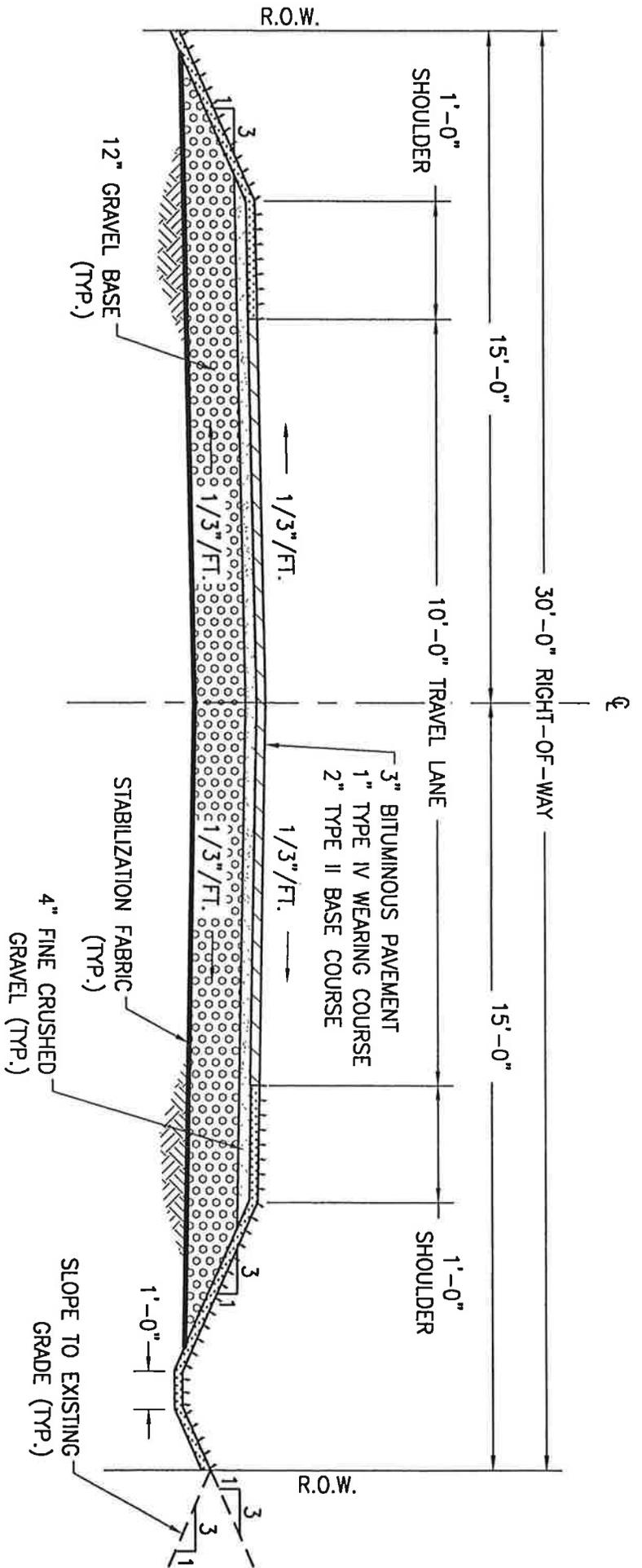
DATE: FEB. 2008

DRAWING #: 14

DRAWN BY: FA&A

TYPICAL CONCRETE CURB





TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

DATE: FEB. 2008

DRAWING #: 15

DRAWN BY: F&A

TYPICAL RECREATION PATH



TYPICAL MAILBOX DETAIL

DRAWN BY: FA&A

DRAWING #: 16

DATE: FEB. 2008

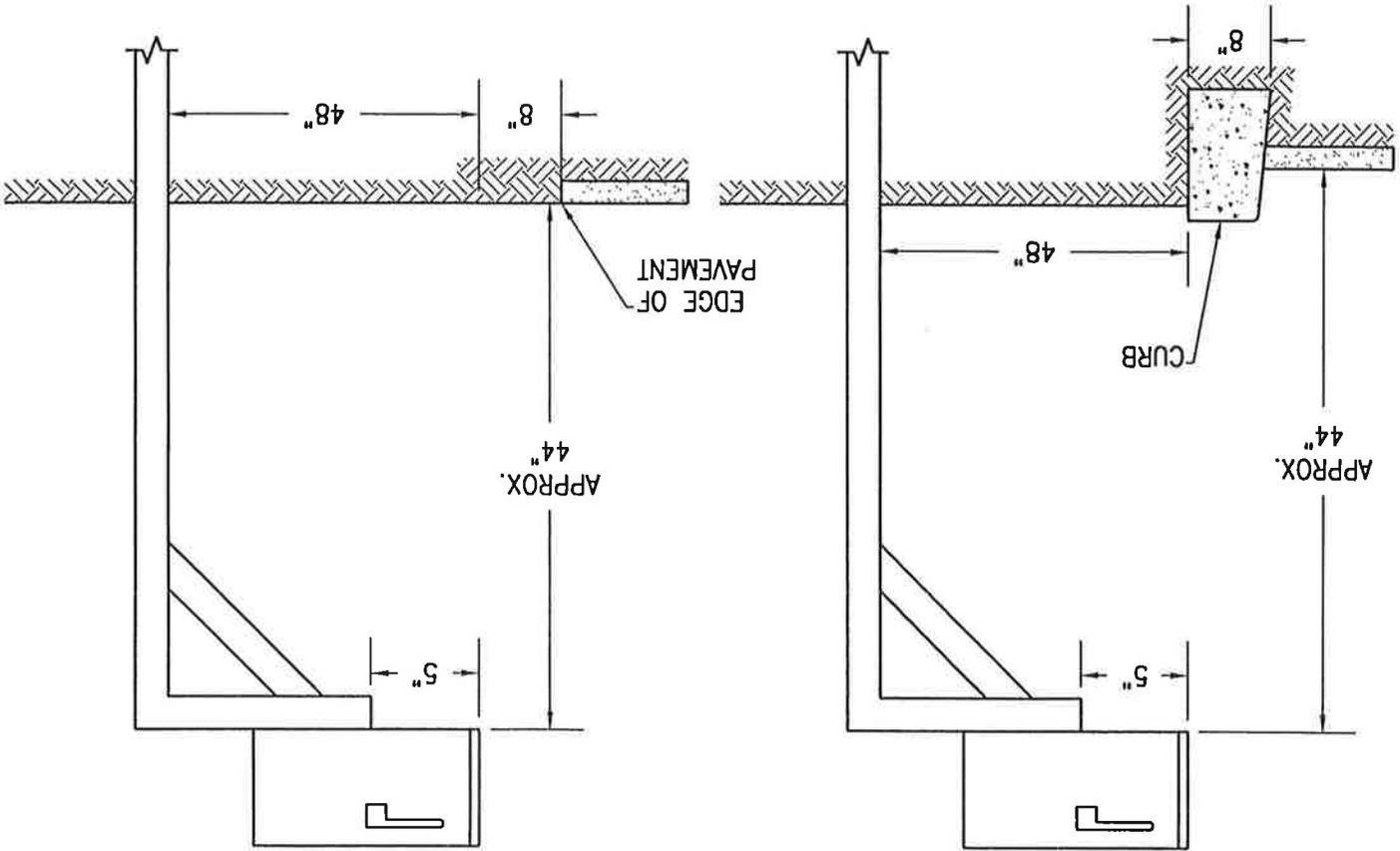
SCALE: NTS



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

1. POST MUST BE NEAT AND OF ADEQUATE STRENGTH AND SIZE.
2. BOXES MUST BE PLACED TO CONFORM WITH STATE LAWS AND HIGHWAY REGULATIONS.

NOTES:



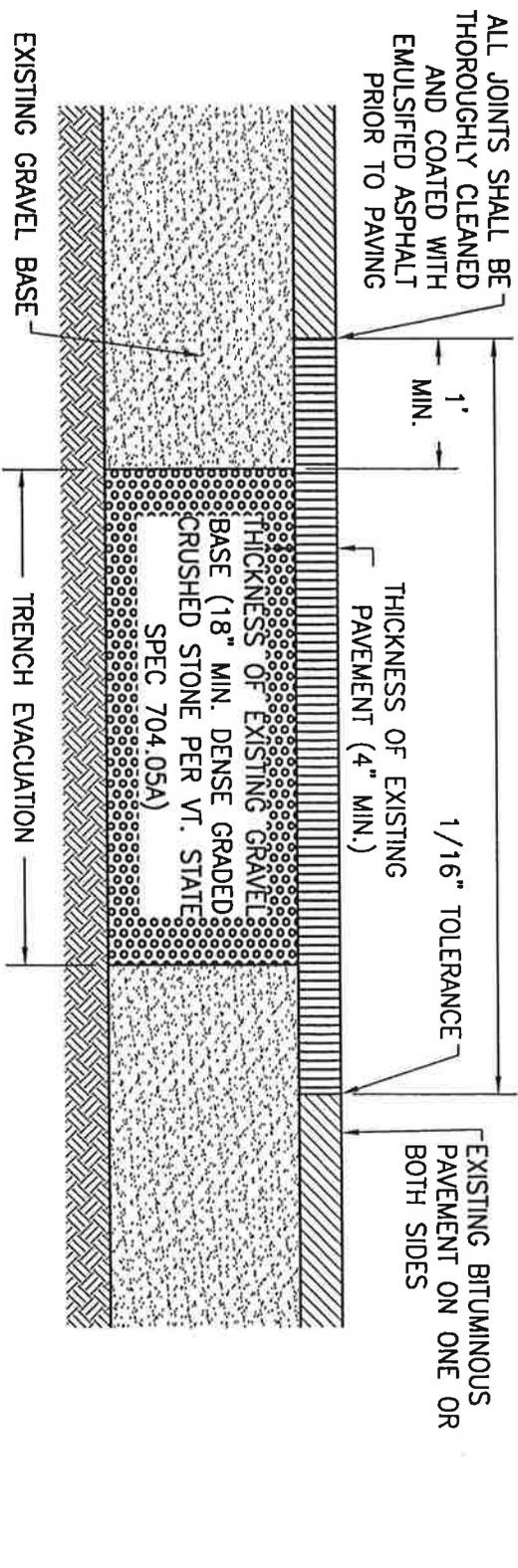
INSTALLATION WITHOUT CURB

INSTALLATION WITH CURB

SUGGESTED MAILBOX INSTALLATION WHERE  
SNOW REMOVAL IS A PROBLEM



SMOOTH CUT EXISTING BITUMINOUS PAVEMENT PRIOR TO PAVING



**NOTES:**

1. SET-UP AND MAINTAIN SIGNS AND OTHER SAFETY CONTROL DEVICES.
2. RESHAPE HOLE AND PATCH AREA BY CUTTING WITH A CONCRETE SAW INTO SQUARE OR RECTANGULAR SHAPE AND CUT SIDE FACES VERTICALLY. RESHAPE DOWNWARD TO SOLID MATERIAL AND AROUND HOLE TO SOUND PAVEMENT.
3. BACKFILL TRENCH IN 6" LIFTS AND COMPACT EACH LIFT TO 95% OF MAXIMUM DENSITY OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM 0698 STANDARD PROCTOR.
4. REMOVE ALL LOOSE MATERIAL AND THOROUGHLY SWEEP THE HOLE AREA CLEAN OF MUD AND STANDING WATER.
5. APPLY LIQUID ASPHALT TACK TO VERTICAL FACES IN A UNIFORM MANNER. DO NOT PUDDLE TACK COAT ON BOTTOM OF HOLE.
6. FILL TOP OF HOLE WITH TYPE III BITUMINOUS CONCRETE AND COMPACT IN LIFTS NO MORE THAN 2" THICK. EACH LIFT SHOULD BE THOROUGHLY COMPACTED WITH A VIBRATORY PLATE COMPACTOR OR A PORTABLE ROLLER. EXPERIENCE HAS SHOWN THAT 15 TO 20 PASSES WITH A VIBRATORY ROLLER AND MIX TEMPERATURE ABOVE 250° F (121° C) ARE NECESSARY TO ENSURE GOOD COMPACTION. HAND TAMP SHOULD ONLY BE USED FOR SMALL AREAS (LESS THAN 1 S.F.).
7. CLEAN UP AREA. DO NOT LEAVE EXCESS FILL OR EXCAVATED MATERIAL ON THE PAVEMENT. REMOVE SAFETY SIGNS.
8. FINAL PAVEMENT WITHIN 30 DAYS.
9. FLOW-FILL (LEAN) CONCRETE MAY BE REQUIRED TO REPLACE NATIVE MATERIAL.

	<b>TOWN OF MILTON</b>	
	<b>PUBLIC WORKS DEPARTMENT</b>	
SCALE: NTS	DATE: FEB. 2008	

DRAWING #: 17

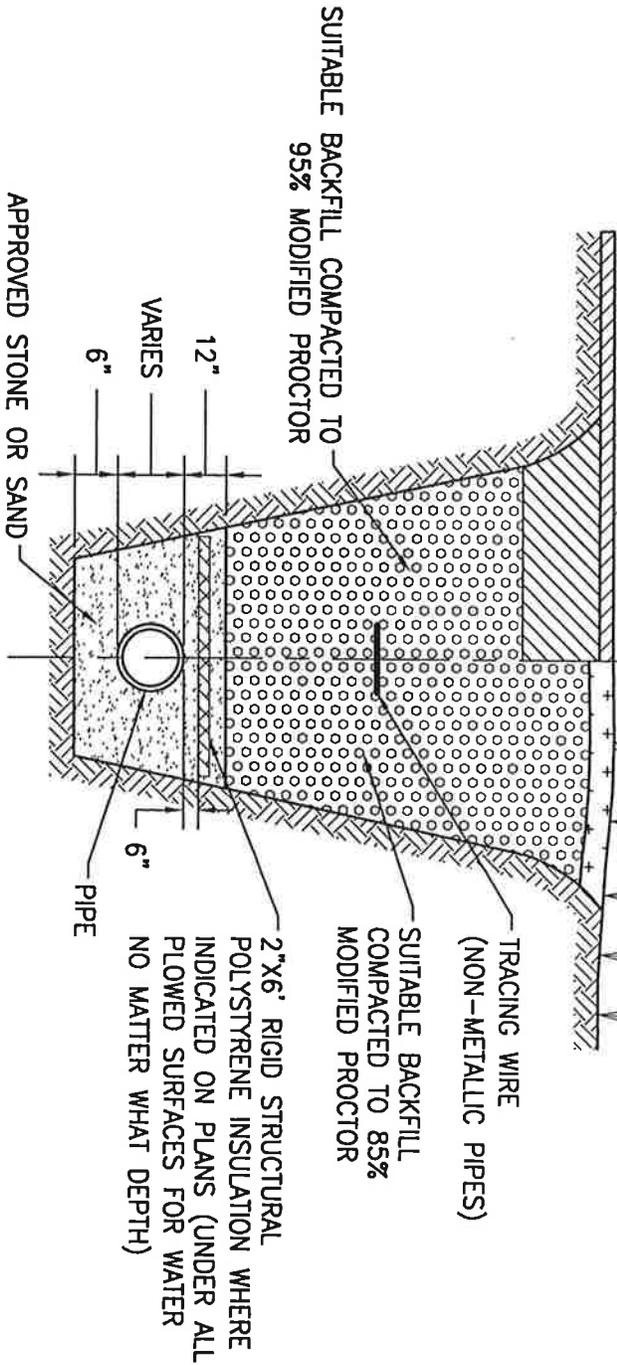
DRAWN BY: F&A

**TYPICAL PAVEMENT REPLACEMENT DETAIL**



IN ROADWAY AREAS REPLACE BITUMINOUS PAVEMENT AND GRAVEL BASE (COMPACTED TO 95% MODIFIED PROCTOR) TO MATCH EXISTING CONDITIONS UNLESS OTHERWISE DIRECTED

IN GREEN AREAS PROVIDE 6" MOUND ABOVE EXISTING GRADE FOR SETTLEMENT



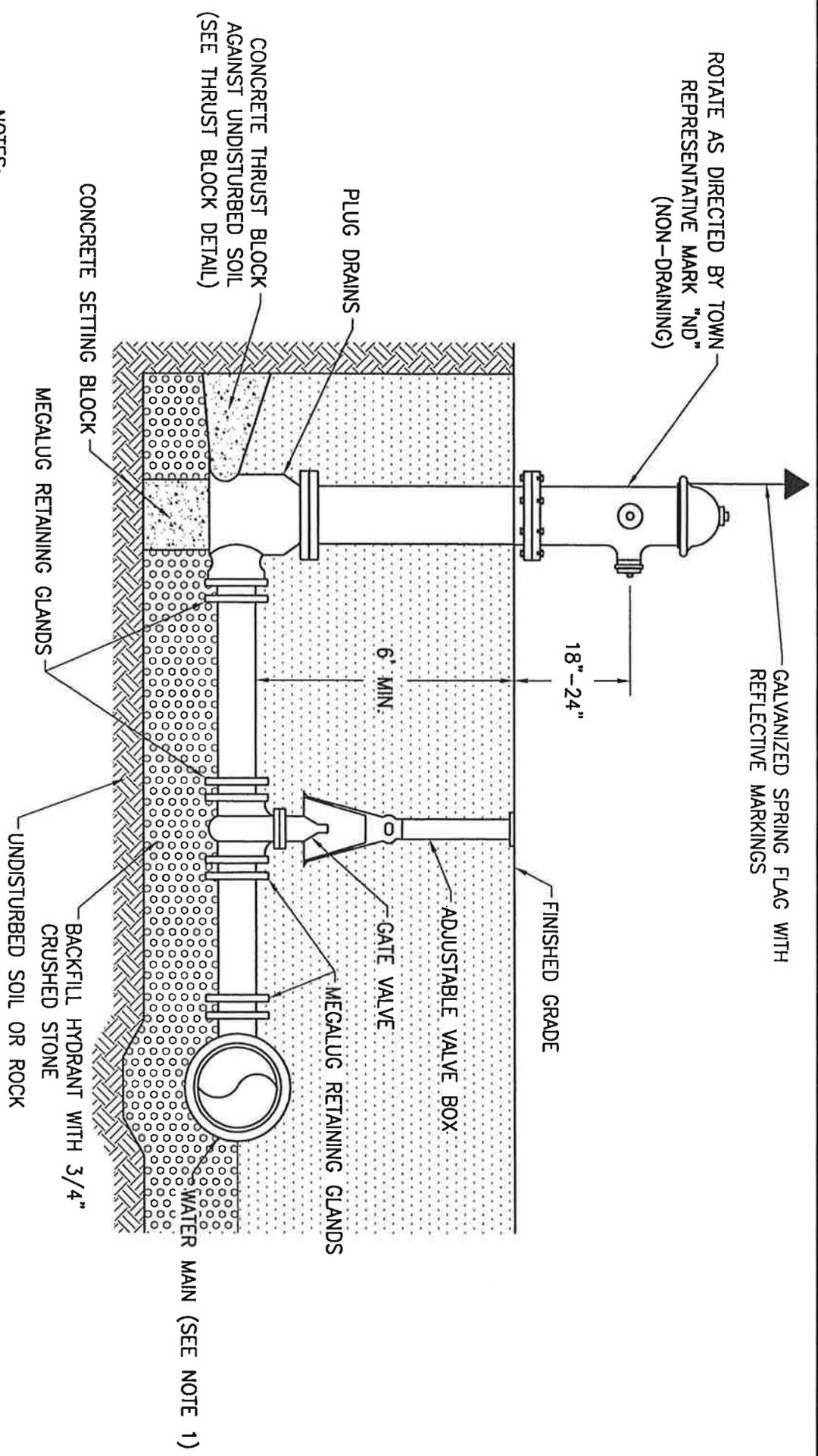
MINIMUM DEPTHS:  
 WATER - 6'  
 SEWER - 6' PLOWED  
 SEWER - 4.5' UNPLOWED



TOWN OF MILTON	
PUBLIC WORKS DEPARTMENT	
SCALE: NTS	DATE: FEB. 2008
DRAWING #: 18	DRAWN BY: FA&A

TYPICAL PIPE TRENCH

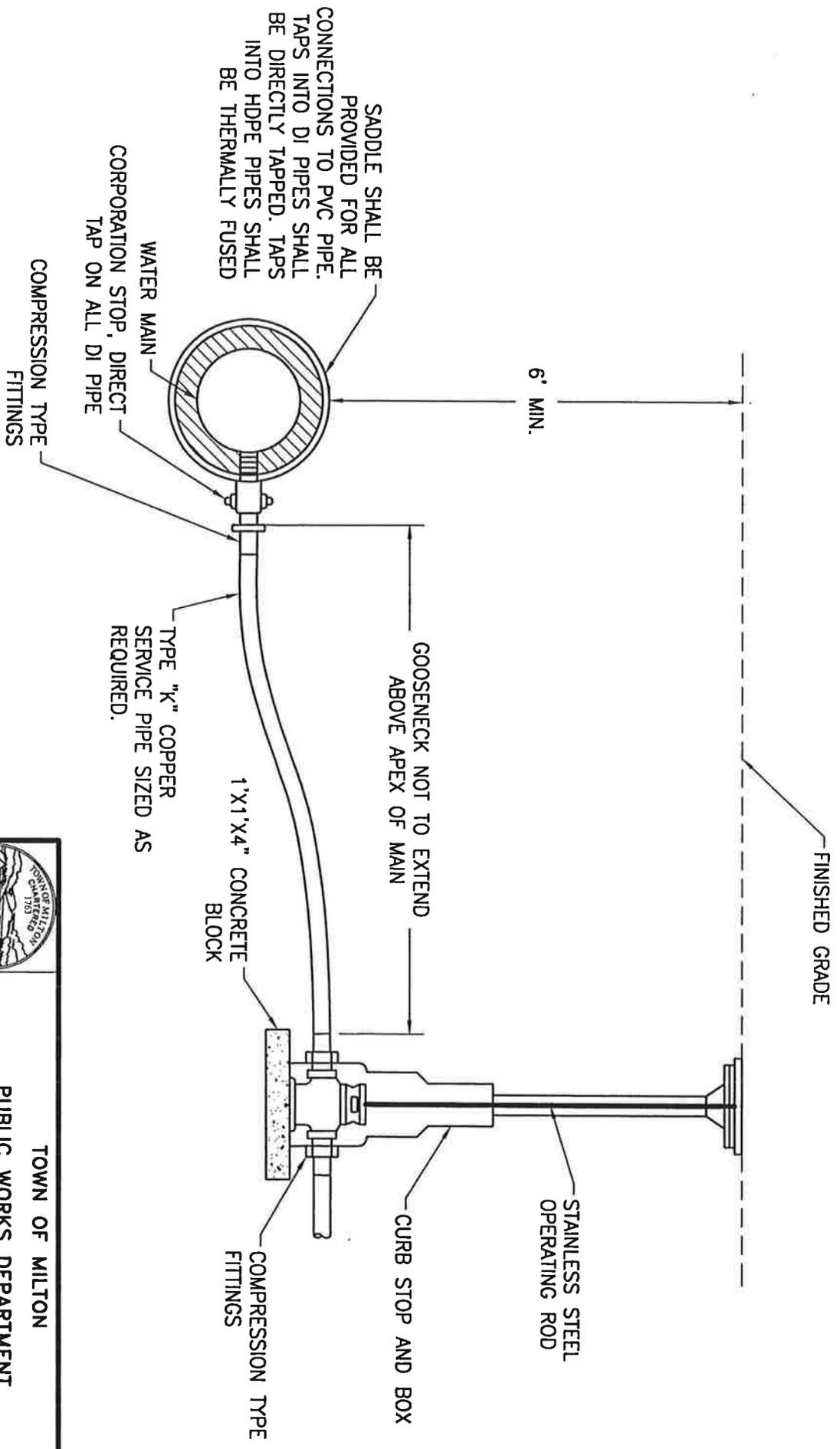




- NOTES:**
1. USE HYDRANT TEE OR NORMAL TEE (DEPENDING ON PROPOSED LOCATION OF VALVE WITH APPROVAL OF TOWN) FOR NEW WATER MAINS. USE TAPPING SLEEVE AND VALVE FOR EXISTING WATER MAINS.
  2. HYDRANTS ADJACENT TO PARKING AREAS SHALL BE PROTECTED BY BOLLARDS.

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING # 19	DRAWN BY: FA&A	
<b>TYPICAL HYDRANT AND VALVE</b>		





- NOTES:**
1. TAP FOR SERVICE SHALL BE AT 3 OR 9 O'CLOCK.



DRAWING # 20

SCALE: NTS

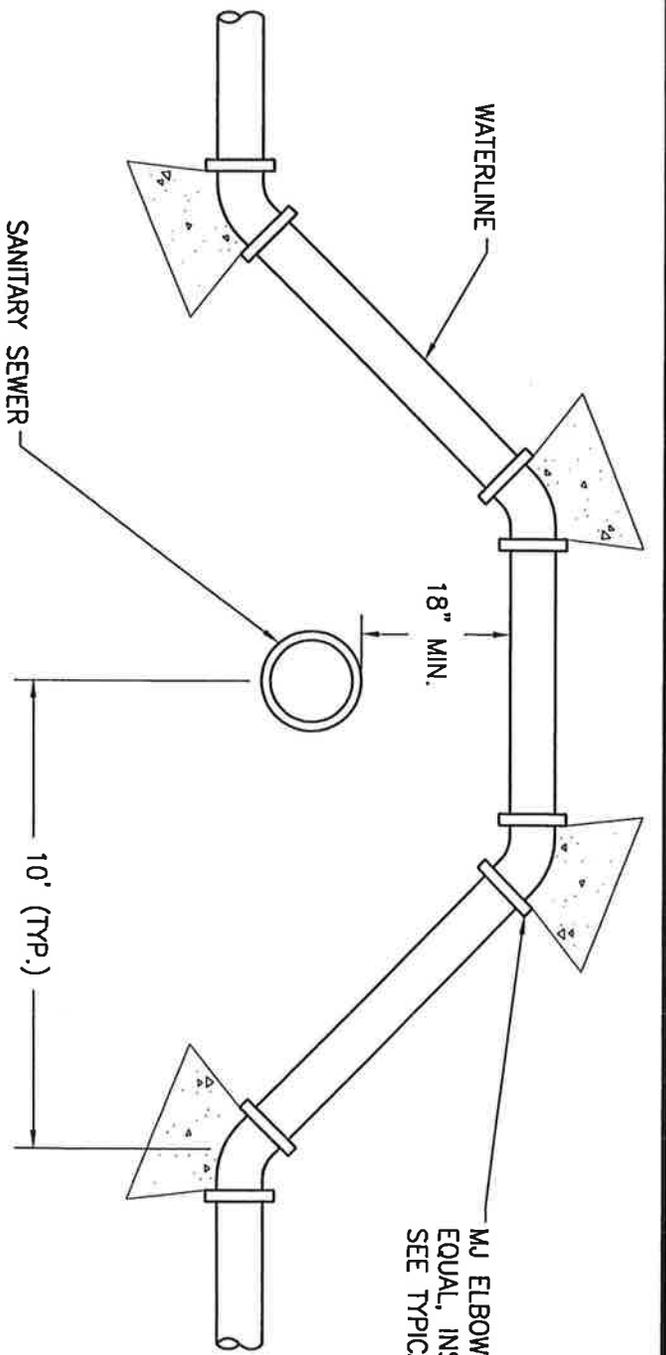
DATE: FEB. 2008

TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

DRAWN BY: FA&A

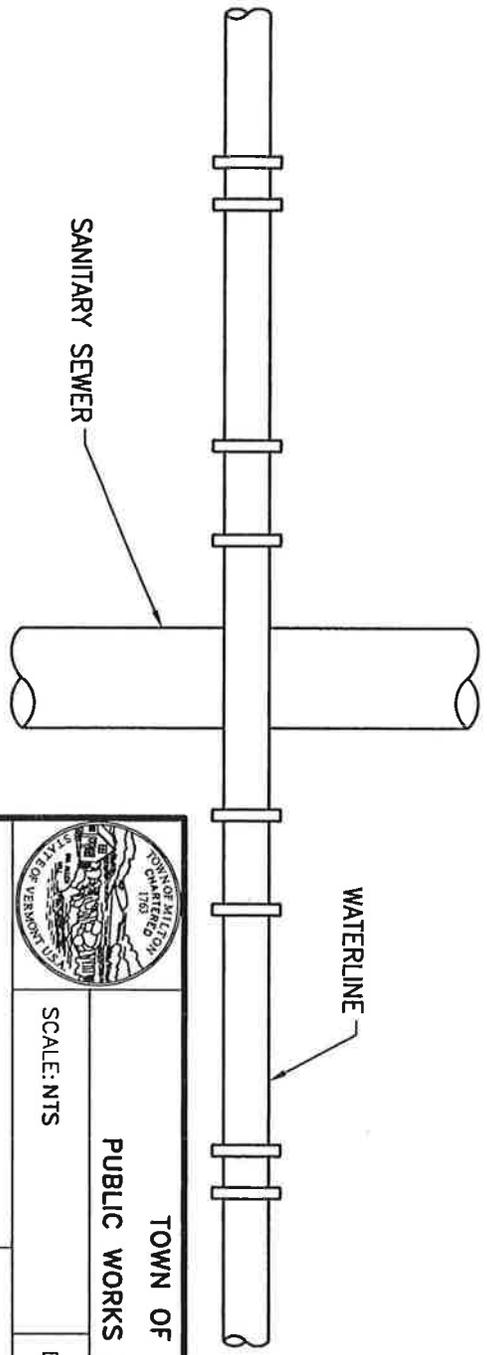
TYPICAL CORPORATION STOP AND CURB BOX





MJ ELBOWS W/ MEGALUG OR EQUAL, INSTALL THRUST BLOCKING. SEE TYPICAL TRENCH DETAIL.

SECTION



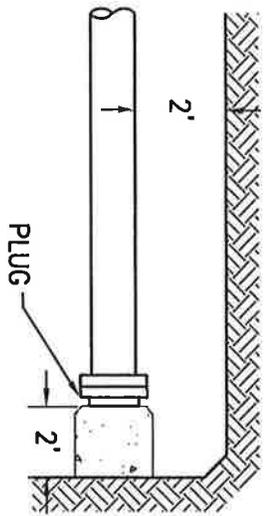
PLAN

1. THE CROSSING SHALL BE ARRANGED AS SHOWN SO THAT THE SEWER JOINTS ARE AS FAR AS POSSIBLE AND EQUIDISTANT FROM THE POINT OF INTERSECTION.

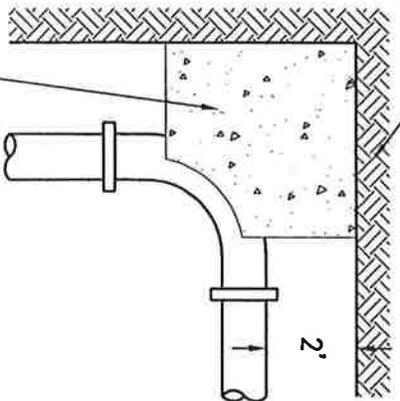
NOTES:

		TOWN OF MILTON	
		PUBLIC WORKS DEPARTMENT	
SCALE: NTS		DATE: FEB. 2008	
DRAWING #:	21	DRAWN BY:	FA&A
TYPICAL WATER/SEWER CROSSING			

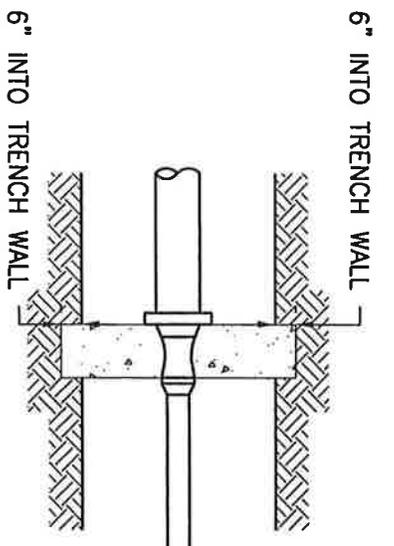




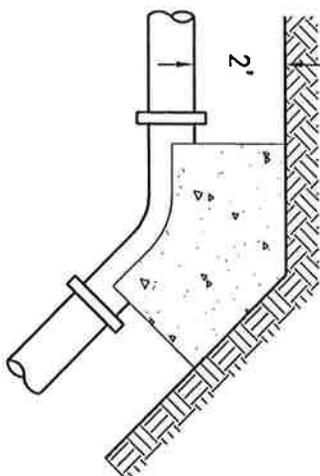
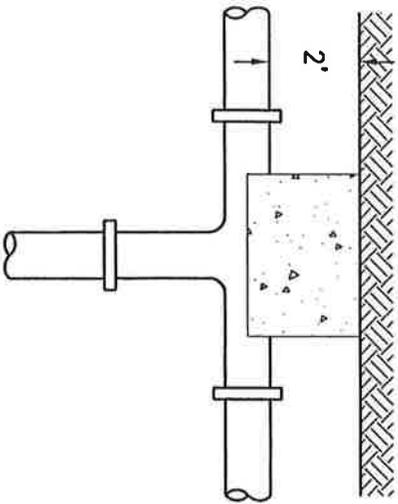
UNDISTURBED SOIL (TYP.)



CONCRETE (TYP.)



6" INTO TRENCH WALL



MINIMUM BEARING SURFACES					
SQUARE FEET					
PIPE DIA.	TEE	HYD.	90° BEND <sup>1</sup>	45° BEND	END CAP
10"	14	-	17	10	14
8"	8	-	14	7	8
6"	5	6	6	4	5
4"	2	-	3	2	2
2"	1	-	1	1	1

**NOTES:**

- THRUST BLOCKS SHALL BE PROVIDED AT ALL WATERLINE TEES, HYDRANTS, 90° AND 45° BENDS, REDUCERS, AND END CAPS. ALL CONCRETE SHALL BE 2,500 PSI MIN. BEARING SURFACE BASED ON 150 PSI WORKING PRESSURE AND SOIL BEARING CAPACITY OF 1,000 LBS/SQ.FT.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

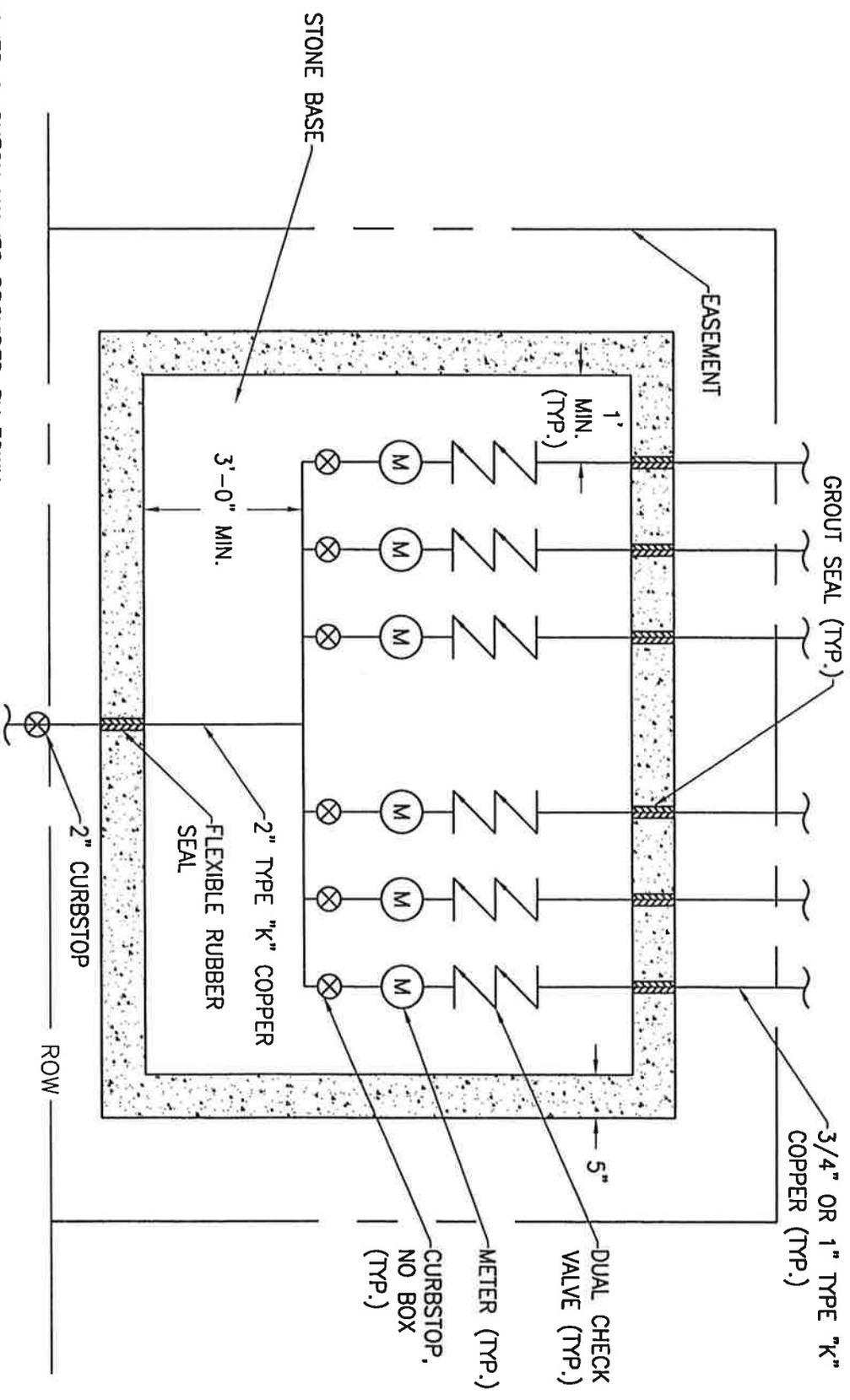
DATE: FEB. 2008

DRAWING #: 22

DRAWN BY: FAZA

TYPICAL THRUST BLOCKS FOR WATERLINES





**NOTES:**

1. METERS, METER VALVES & CHECK VALVES PROVIDED BY TOWN.
2. A 6' DIA MANHOLE MAY BE SUBSTITUTED FOR 4 OR LESS METERS.
3. IF NO PROFILE, PIT HEIGHT TO CEILING ≥ 6'-0" FLOOR TO BE 1" WASHED STONE.
4. MINIMUM METER HEIGHT 12" FROM BASE.
5. HATCH TO BE BILCO TYPE PDCM (30" MIN. OPENING) OR APPROVED EQUAL.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

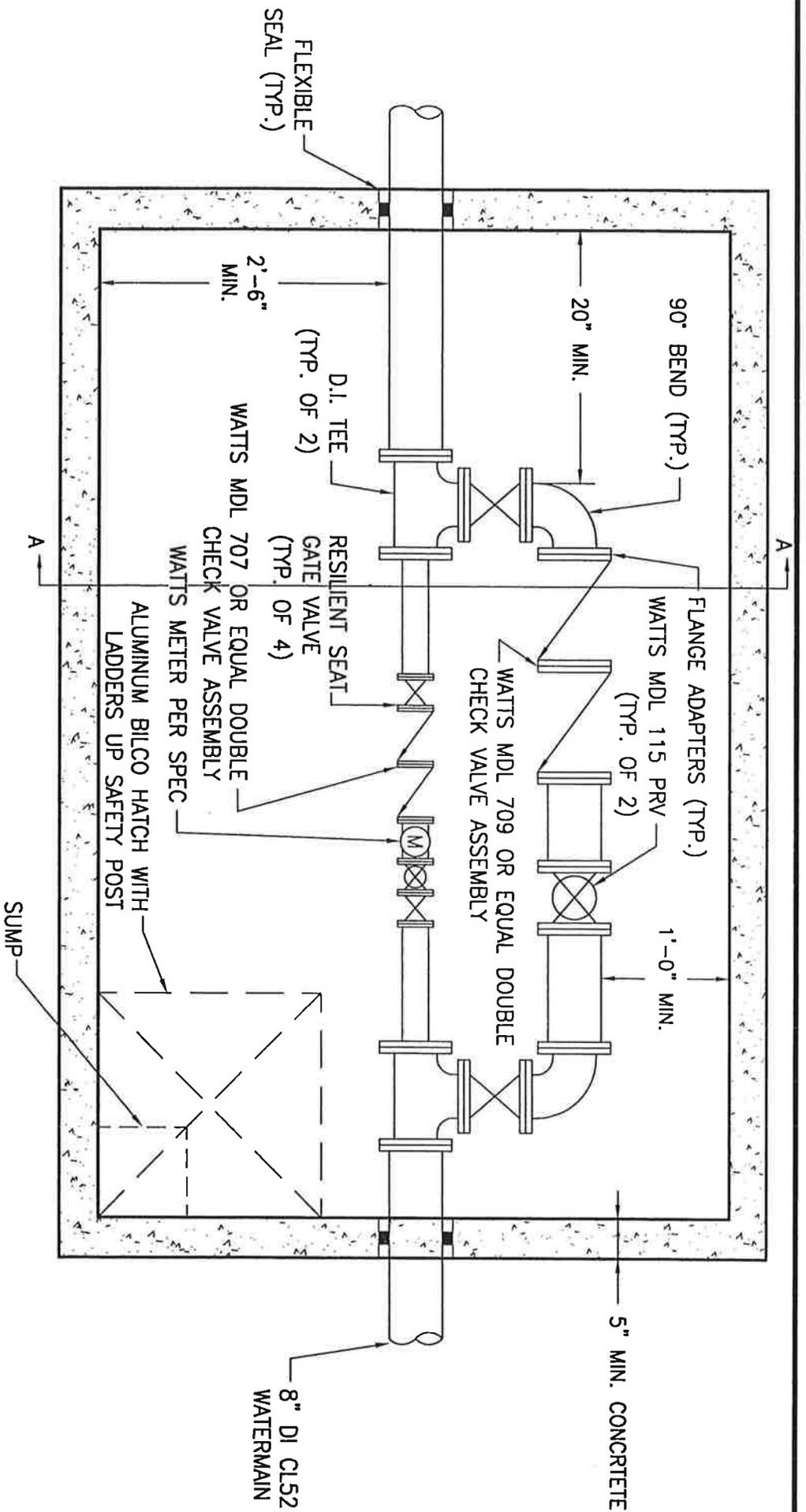
SCALE: NTS  
DATE: FEB. 2008

DRAWING # 23

DRAWN BY: F&A

TYPICAL 2" MULTIPLE UNIT METER PIT





**NOTES:**

1. MINIMUM 4" BACKFLOW, METER & PRESSURE REDUCING VALVE VAULT WITH BYPASS. MAY BE USED AS A STANDARD FOR OTHER METERING AND FLOW CONTROL APPLICATIONS.
2. FOR 8" OR LARGER PRV/FIRE FLOW VALVE VAULT-HORIZONTAL ALIGNMENT FOR SECTION A-A.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

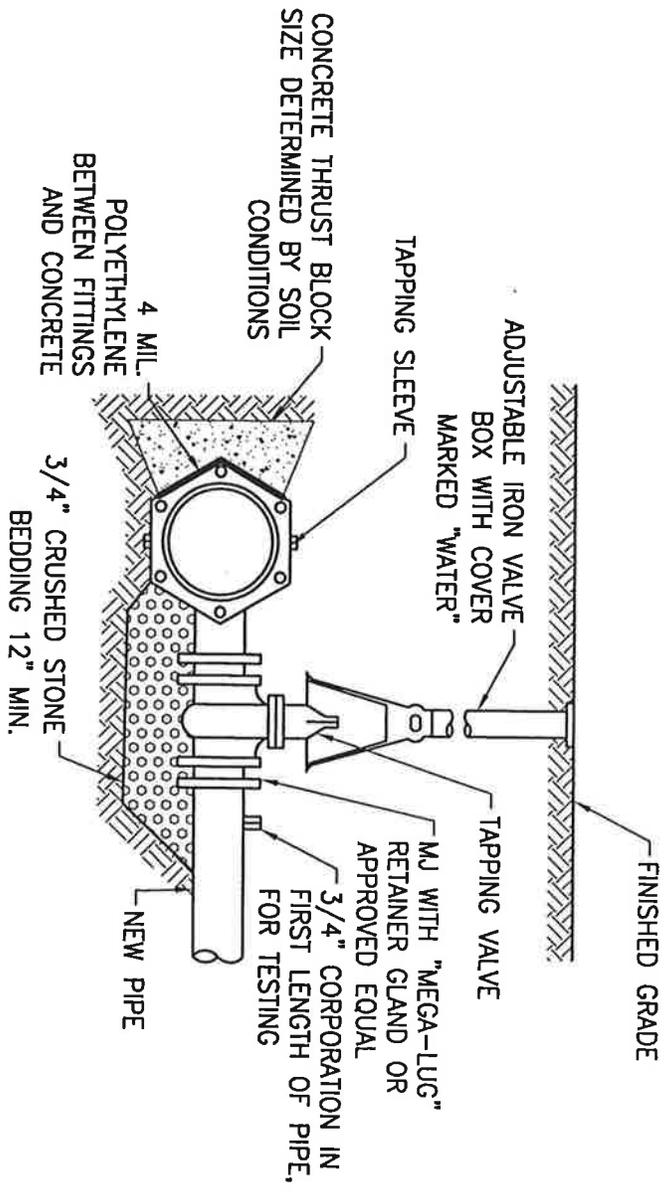
DATE: FEB. 2008

DRAWING #: 24

DRAWN BY: FA&A

TYPICAL METER / VALVE VAULT



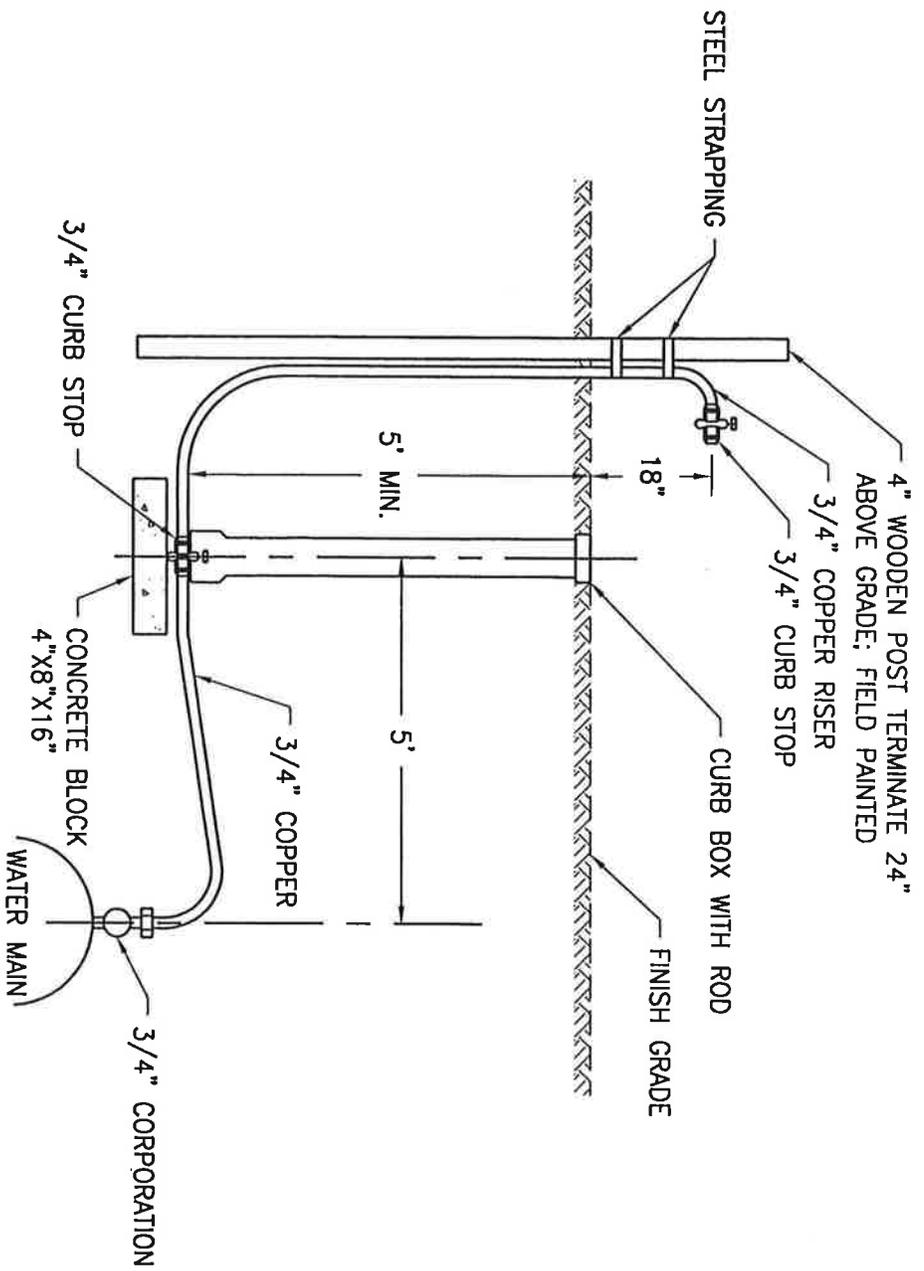


NOTES:

1. TAPPING SLEEVE AND VALVES ON CWD TRANSMISSION MAINS ARE TO MEET CHAMPLAIN WATER DISTRICT "STANDARD SPECIFICATION FOR TAPPING SLEEVES AND TAPPING VALVES" ALL OTHER TAPPING SLEEVES AND TAPPING VALVES ARE TO MEET APPROPRIATE DISTRIBUTION SYSTEM SPECIFICATIONS.
2. WET TAPS SHALL BE PERFORMED BY PRE-APPROVED FIRMS ONLY.
3. ALL FITTINGS THAT ARE TO HAVE CONCRETE POURED AROUND THEM ARE TO BE WRAPPED WITH 4 MIL. POLYETHYLENE PRIOR TO CONCRETE PLACEMENT.

		<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
SCALE: NTS		DATE: FEB. 2008	
DRAWING #: 25		DRAWN BY: FA&A	
<b>TYPICAL TAPPING SLEEVE AND VALVE DETAIL</b>			





- NOTES:**
1. INSTALLATION MUST BE REMOVED TO THE CORPORATION UPON SUCCESSFUL COMPLETION OF ALL TESTING AND DISINFECTION PROCEDURES.



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

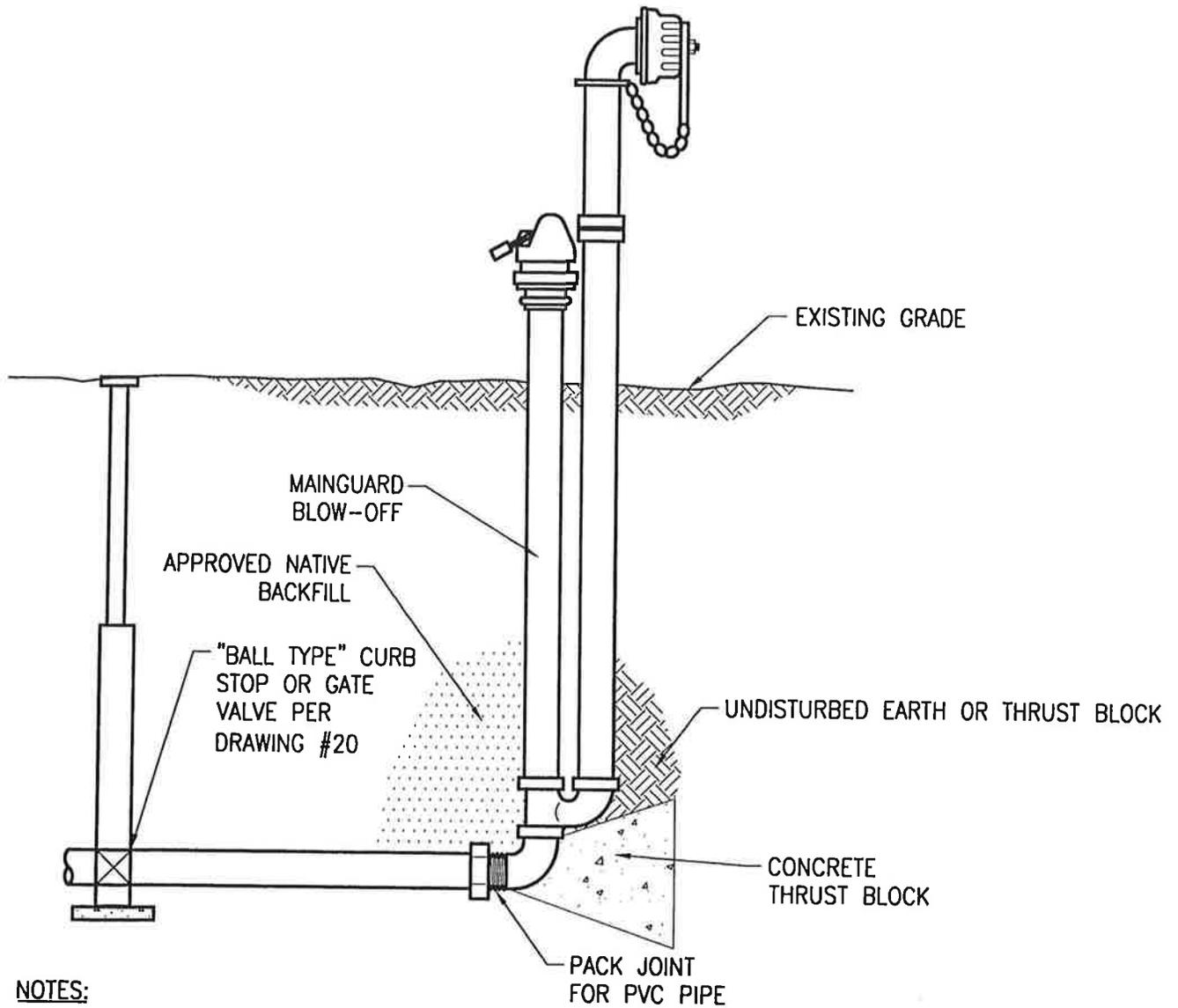
DATE: FEB. 2008

DRAWING # 26

DRAWN BY: F&A

TYPICAL MANUAL AIR RELEASE AND/OR  
CHLORINATION INJECTION INSTALLATION



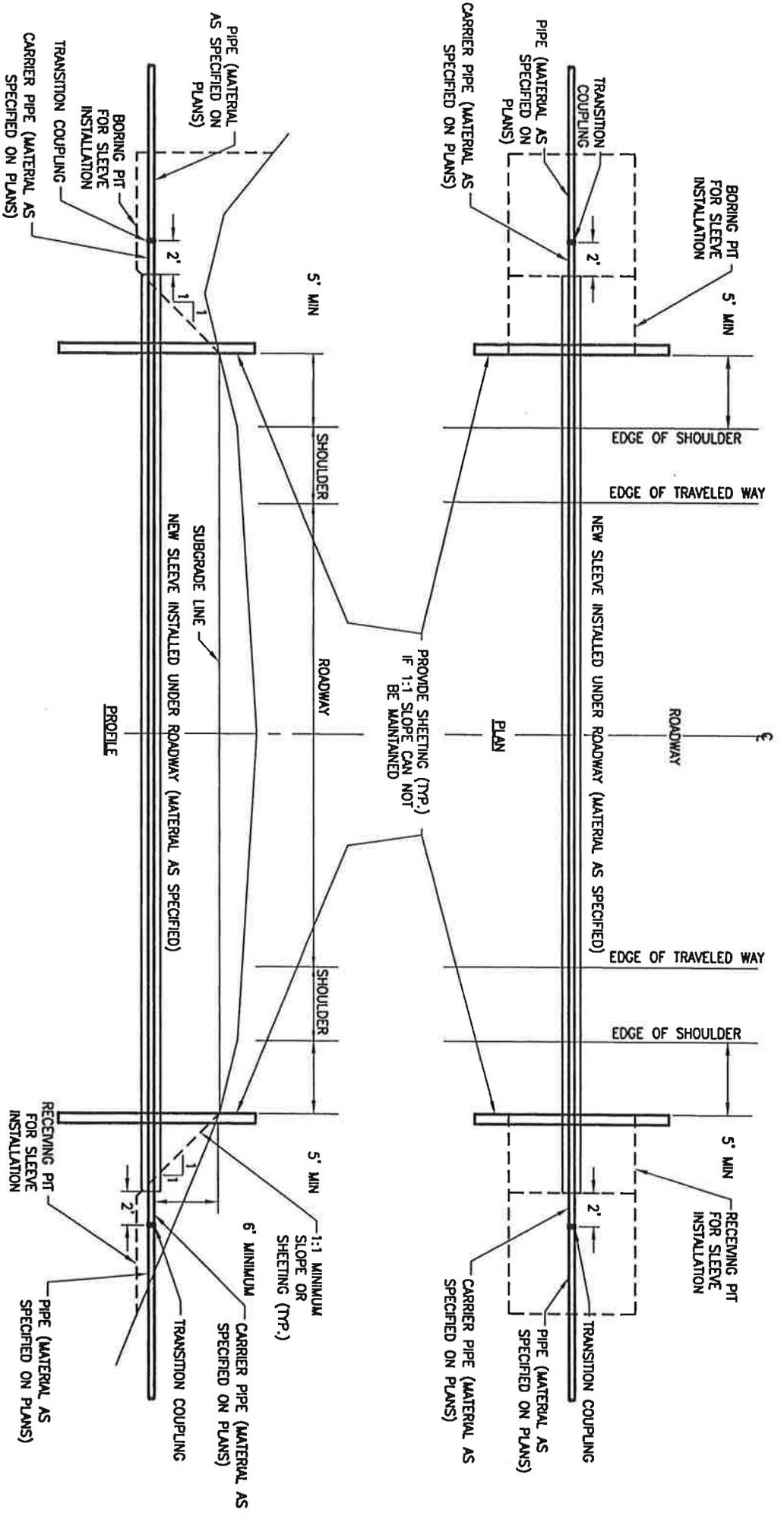


**NOTES:**

1. POST HYDRANTS SHALL BE NON-DRAINING TYPE WITH A 6' BURY DEPTH. THESE HYDRANTS SHALL BE FURNISHED WITH A HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN TO THE LEFT. ALL OF THE WORKING PARTS SHALL BE OF BRONZE-TO-BRONZE DESIGN, AND BE SERVICEABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE AS MANUFACTURED BY KUPFERLE FOUNDRY Co., St. LOUIS, MO, OR APPROVED EQUAL. SUGGESTED DETAIL FOR DEADENDS, 8" IN DIA. OR LESS. 2" FOR MAINS ≤ 6". 4" FOR MAINS ≥ 8".

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING #: 27	DRAWN BY: FA&A	
<b>TYPICAL BLOW-OFF HYDRANT WITH HORIZONTAL INLET</b>		





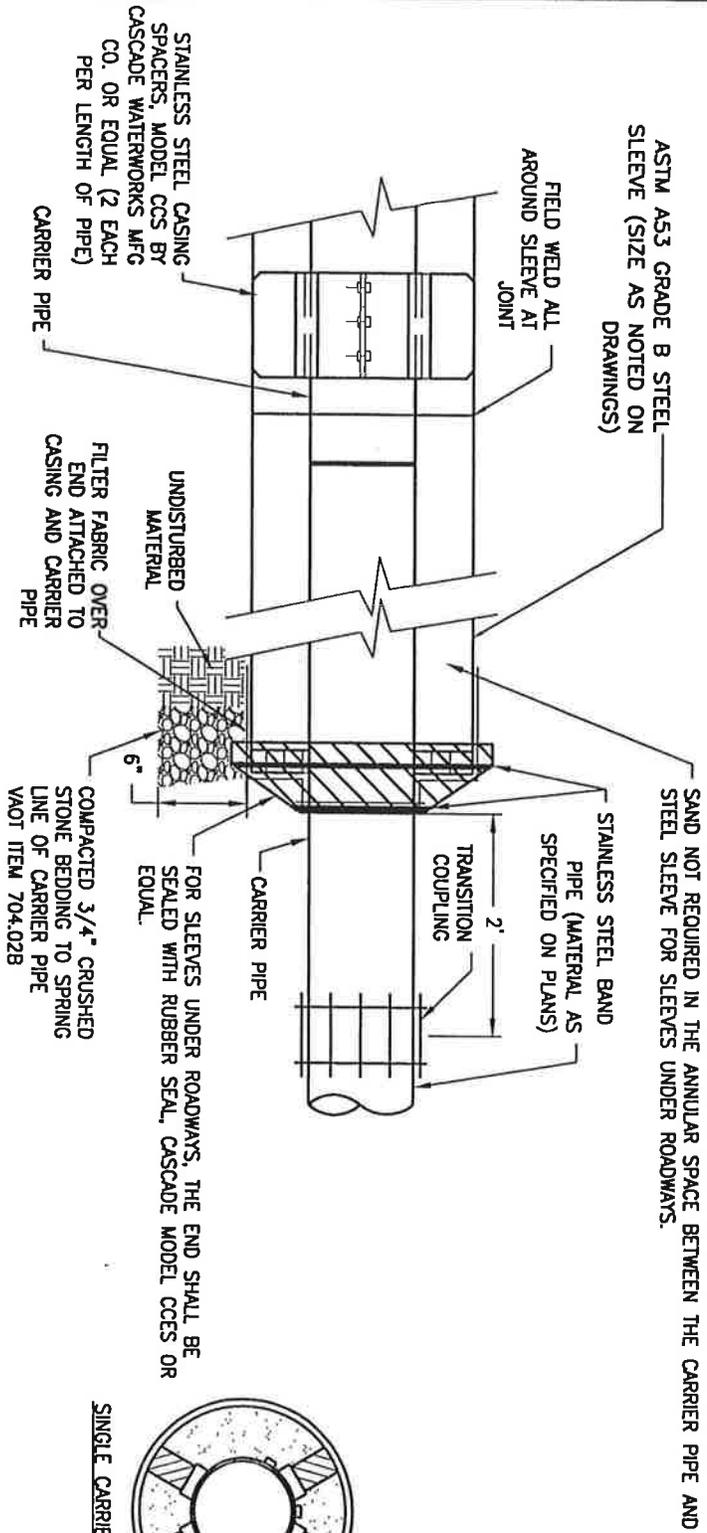
**TOWN OF MILTON**  
**PUBLIC WORKS DEPARTMENT**

SCALE: NTS      DATE: FEB. 2008

DRAWING #: 28      DRAWN BY: F&A

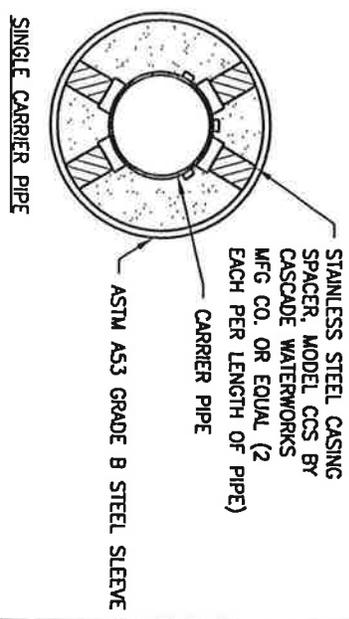
**TYPICAL JACK AND BORE PLAN**





SAND NOT REQUIRED IN THE ANNULAR SPACE BETWEEN THE CARRIER PIPE AND STEEL SLEEVE FOR SLEEVES UNDER ROADWAYS.

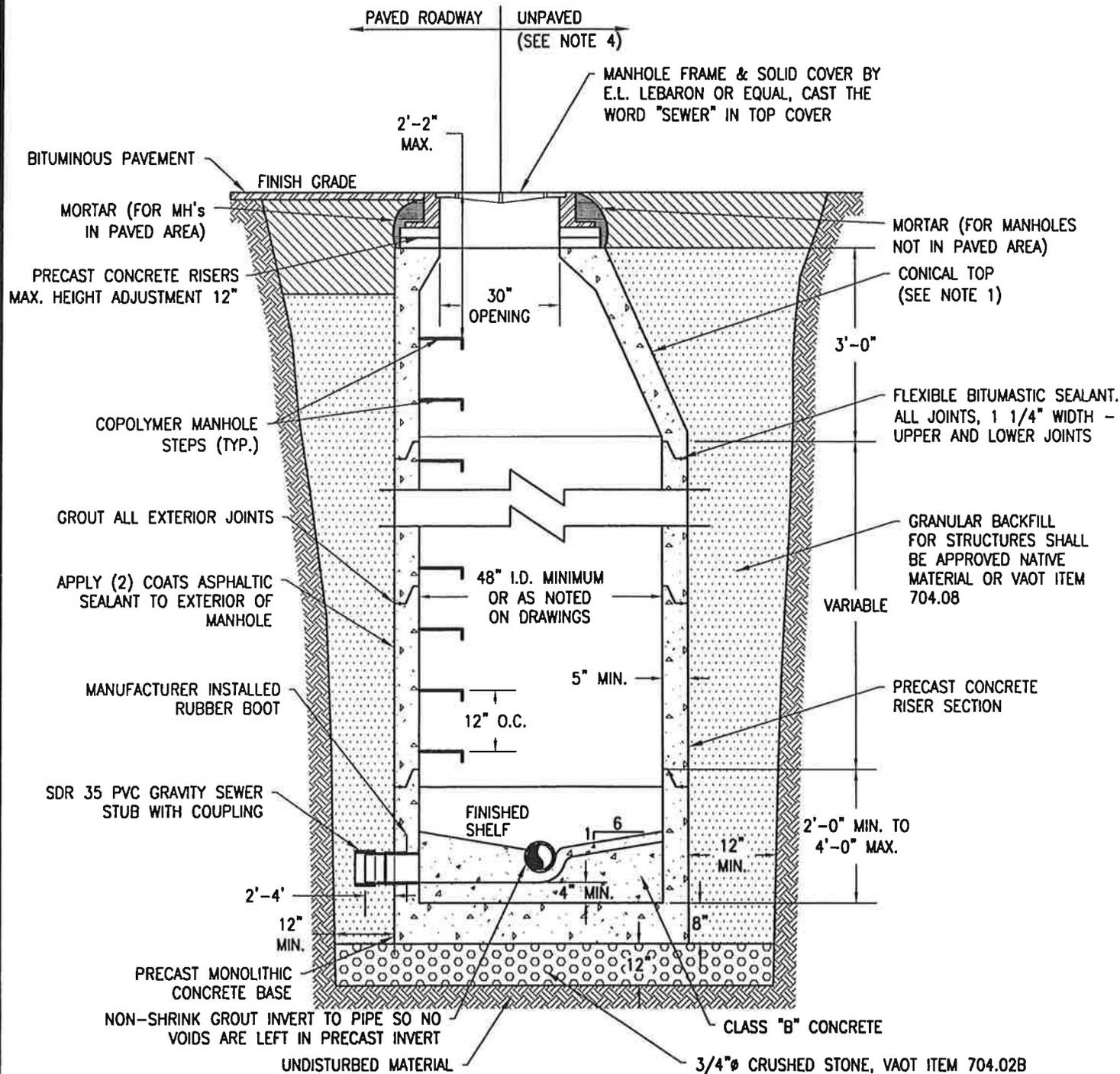
FOR SLEEVES UNDER ROADWAYS, THE END SHALL BE SEALED WITH RUBBER SEAL, CASCADE MODEL CCS OR EQUAL.  
 COMPACTED 3/4" CRUSHED STONE BEDDING TO SPRING LINE OF CARRIER PIPE  
 VAOT ITEM 704.02B



- NOTES:
1. FOR SLEEVES UNDER ROADWAYS, THE STEEL CASING SHALL HAVE A MINIMUM WALL THICKNESS OF 0.375 INCHES (3/8").

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING # : 29	DRAWN BY: F&A	
<b>TYPICAL JACK AND BORE SLEEVE SECTION</b>		





**NOTES:**

1. IF DEPTH OF MANHOLE IS 7 FEET OR LESS FROM RIM TO INVERT THEN A FLAT TOP SHALL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO INVERT IS MORE THAN 7 FEET THEN A CONICAL TOP SHALL BE INSTALLED.

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING #: 30	DRAWN BY: FA&A	
<b>TYPICAL SANITARY SEWER MANHOLE</b>		



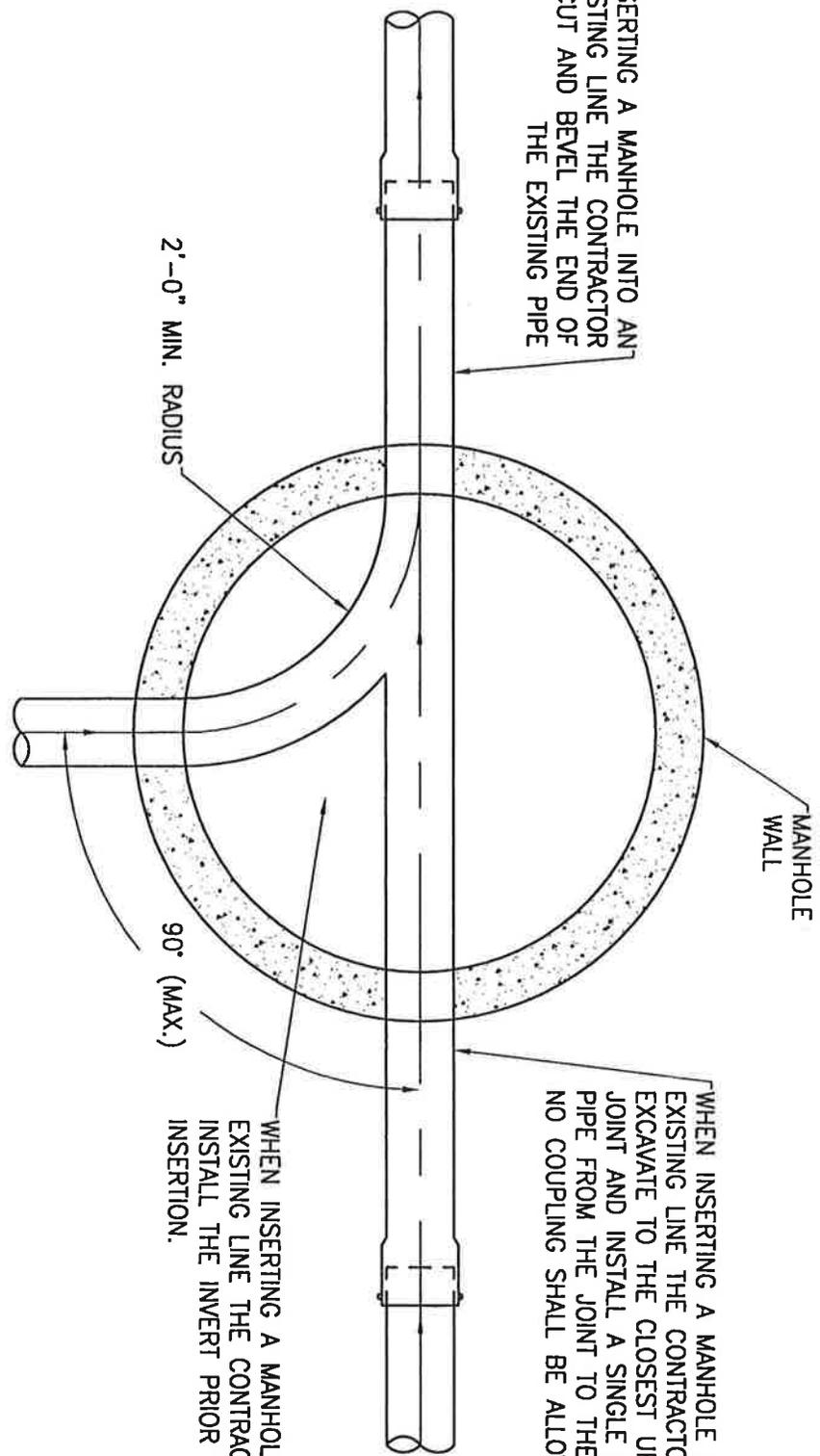








WHEN INSERTING A MANHOLE INTO AN EXISTING LINE THE CONTRACTOR SHALL CUT AND BEVEL THE END OF THE EXISTING PIPE



WHEN INSERTING A MANHOLE INTO AN EXISTING LINE THE CONTRACTOR SHALL EXCAVATE TO THE CLOSEST UPSTREAM JOINT AND INSTALL A SINGLE LENGTH OF PIPE FROM THE JOINT TO THE MANHOLE - NO COUPLING SHALL BE ALLOWED.

WHEN INSERTING A MANHOLE INTO AN EXISTING LINE THE CONTRACTOR SHALL INSTALL THE INVERT PRIOR TO THE INSERTION.

2'-0" MIN. RADIUS

90° (MAX.)

MANHOLE WALL



TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

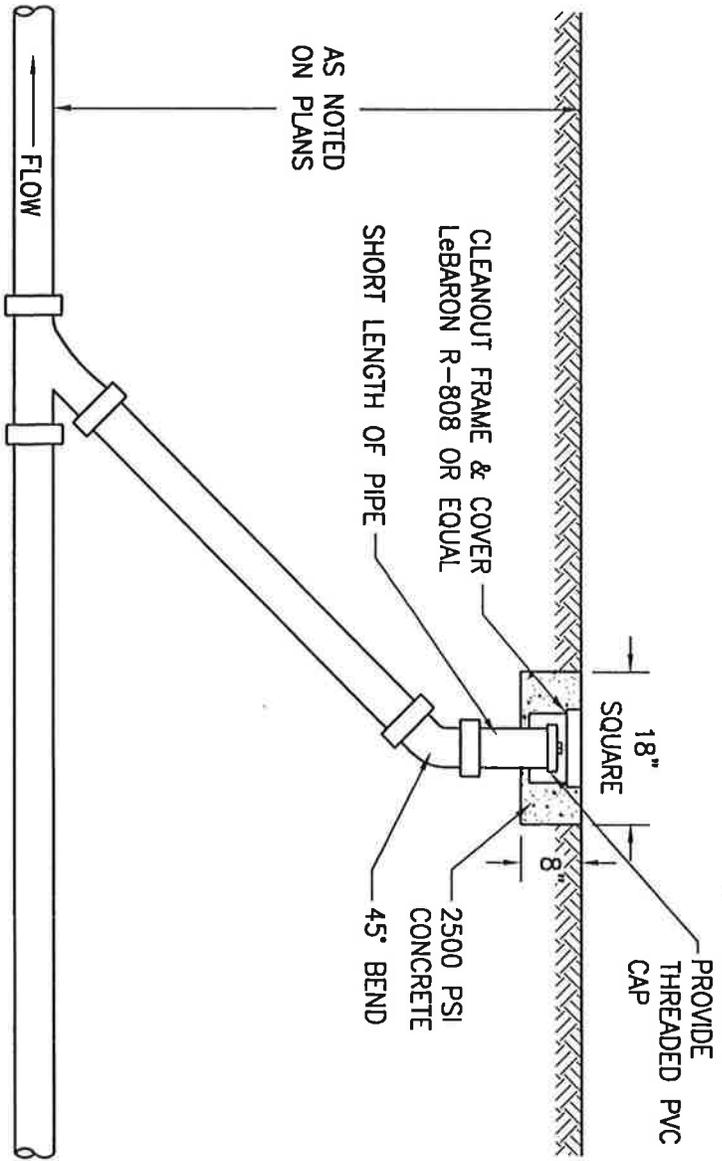
DATE: FEB. 2008

DRAWING #: 33

DRAWN BY: F&A

TYPICAL MANHOLE CHANNEL PIPE INSERTION DETAIL





TOWN OF MILTON  
PUBLIC WORKS DEPARTMENT

SCALE: NTS

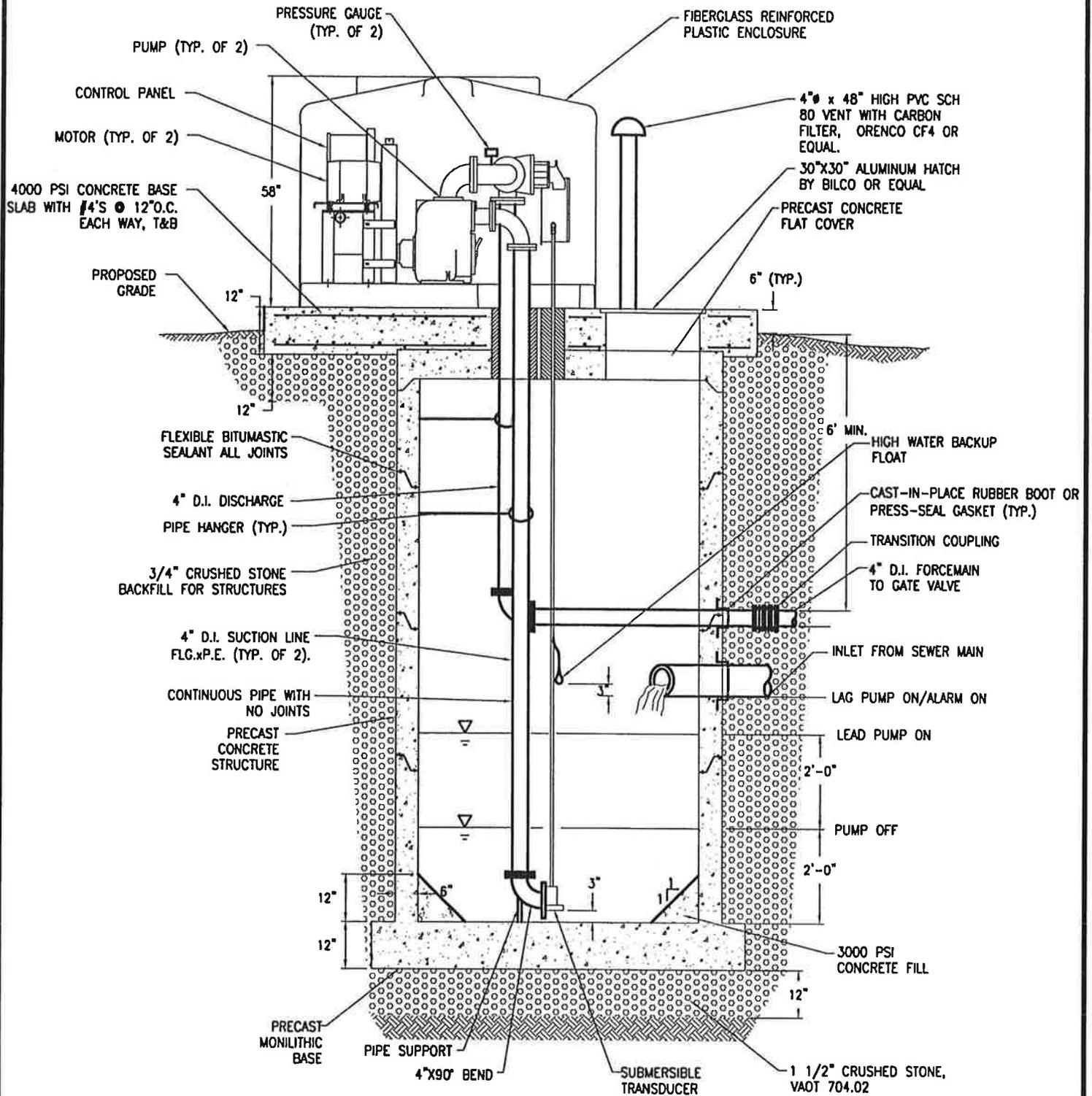
DATE: FEB. 2008

DRAWING # 34

DRAWN BY: FA&A

TYPICAL STORM AND SANITARY SEWER CLEANOUT





**NOTES:**

1. THE PUMP STATION SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER AND SHALL INCLUDE AN EVALUATION ON THE STRUCTURES BUOYANCY.

	<b>TOWN OF MILTON</b> <b>PUBLIC WORKS DEPARTMENT</b>	
	SCALE: NTS	DATE: FEB. 2008
DRAWING #: 35	DRAWN BY: FA&A	
<b>TYPICAL WASTEWATER PUMP STATION</b>		





