

# CITY OF MILTON

KING/PIERCE COUNTY

WASHINGTON



## DEVELOPMENT GUIDELINES AND PUBLIC WORKS STANDARDS

**ADOPTED BY ORDINANCE NO. 1681-06**  
**EFFECTIVE DATE: NOVEMBER 28, 2006**  
**STANDARDS ISSUED: MARCH 2007**  
**UPDATED: JUNE 2010**

**G&O NO. 07461**



**Gray & Osborne, Inc.**

CONSULTING ENGINEERS  
SEATTLE • YAKIMA • OLYMPIA • TRI-CITIES

**DEVELOPMENT GUIDELINES AND PUBLIC WORKS  
STANDARDS**

**Table of Contents**

<u>Section</u>	<u>Subject</u>	<u>Begins on Page</u>
<b>1.</b>	<b>SECTION 1 - INTRODUCTION</b>	<b>1-1</b>
1.01	APPLICATION	1-1
1.02	GENERAL REFERENCES	1-1
1.03	WSDOT DOCUMENT AS PRIMARY DESIGN AND CONSTRUCTION REFERENCES	1-2
1.04	OTHER SPECIFICATIONS	1-2
1.05	DEFINITIONS	1-3
1.06	DEVELOPER TO BE INFORMED	1-7
1.07	AUTHORITY OF THE PUBLIC WORKS DIRECTOR (PWD)	1-7
1.08	PAYMENT FOR CITY SERVICES	1-7
<b>2.</b>	<b>SECTION 2 - PERMITS</b>	<b>2-1</b>
2.01	PERMIT REQUIRED	2-1
2.02	PERMIT APPLICATION	2-1
2.03	PERMIT ISSUED	2-1
2.04	VARIANCES	2-1
2.04A	General	2-1
2.04B	Conditions	2-2
2.04C	Procedure for Application of a Variance	2-2
2.04D	Public Notice	2-2
2.04E	Expiration	2-3
2.05	BONDING	2-3
<b>3.</b>	<b>SECTION 3 - PUBLIC WORKS CONSIDERATIONS</b>	<b>3-1</b>
3.01	SUBMITTAL OF PLANS	3-1
	GENERAL REQUIREMENTS	3-1
	COVER SHEET	3-2
	EXISTING SITE SURVEY	3-2
	PROPOSED SITE/GRADING PLAN	3-3
	CROSS SECTION DETAILS	3-4
	LANDSCAPE PLAN	3-4

## TABLE OF CONTENTS

<u>Section</u>	<u>Subject</u>	<u>Begins on Page</u>
	STORM DRAINAGE PLAN	3-5
	ROADWAY PLAN	3-6
	WATER PLAN	3-7
3.02	STANDARD PLAN NOTES	3-7
	GENERAL NOTES	3-8
	EROSION AND SEDIMENT CONTROL (ESC) NOTES	3-9
	DRAINAGE NOTES	3-11
	WATER MAINS AND FITTINGS NOTES	3-12
	CONSTRUCTION SEQUENCE	3-16
3.03	NON-INTERFERENCE	3-16
3.04	WORK STANDARDS	3-17
3.05	INSPECTION	3-17
3.05A	General	3-17
3.05B	Requirements within City Right-of-Way	3-17
3.05C	Final Inspection	3-19
3.06	AS-BUILT DRAWINGS	3-19
<b>4.</b>	<b>SECTION 4 – STREET, PEDESTRIAN PATHS, AND BIKEWAYS</b>	<b>4-1</b>
4.01	GENERAL CONSIDERATIONS	4-1
4.02	STREETS	4-1
4.02A	General	4-1
4.02B	Design Standards	4-1
4.03	STREET FRONTAGE IMPROVEMENTS	4-6
4.04	PRIVATE STREETS	4-7
4.04A	General	4-7
4.04B	Approval	4-7
4.04C	Acceptance of Private Streets	4-8
4.04D	Internal Streets Serving Commercial Developments	4-8
4.05	CUL-DE-SACS AND EYEBROWS	4-8
4.06	INTERSECTIONS	4-9
4.07	HALF STREETS	4-10
4.08	ONE-WAY STREETS	4-10
4.09	BUS ZONES AND TURN-OUTS	4-10

Begins on

## TABLE OF CONTENTS

---

<u>Section</u>	<u>Subject</u>	<u>Page</u>
4.10	ACCESS AND CIRCULATION REQUIREMENTS	4-10
4.11	SECOND ACCESS REQUIREMENTS	4-12
4.12	ACCESS REQUIREMENTS	4-12
4.13	STREET NAMES	4-13
4.14	SIGNING	4-13
4.15	SLOPE, WALL AND DRAINAGE EASEMENTS	4-13
4.16	PAVEMENT MARKINGS, MARKERS, AND PAVEMENT TAPERS	4-14
4.17	RIGHT-OF-WAY	4-14
4.18	SIGNALS	4-14
4.19	PARKING LOTS	4-14
4.20	SURVEY STAKING	4-15
4.21	DRIVEWAYS	4-15
4.21A	General	4-15
4.21B	Location of New Driveways	4-16
4.21C	Dimension, Width, Slope, Details	4-18
4.21D	Commercial Driveways	4-19
4.22	SIGHT OBSTRUCTION	4-20
4.23	SIDEWALKS, CURBS AND GUTTERS	4-21
4.23A	General	4-21
4.23B	Design Standards	4-22
4.23C	Sidewalks	4-22
4.23D	Curb and Gutter	4-22
4.23E	Wheelchair Ramps	4-24
4.23F	Survey Staking	4-24
4.23G	Testing	4-24
4.24	SEPARATED WALKWAYS, BIKEWAYS, AND TRAILS	4-25
4.25	SCHOOL ACCESS	4-26
4.26	BIKEWAYS	4-26
4.27	SIDE SLOPES	4-27
4.28	ROADSIDE FEATURES	4-28
4.28A	Survey Monuments	4-28
4.28B	Mailboxes	4-29
4.28C	Guardrails	4-29
4.28D	Rock Walls	4-30
4.28E	Street trees and Landscaping Items	4-32
4.28F	Roadside Obstacles	4-32

## TABLE OF CONTENTS

<u>Section</u>	<u>Subject</u>	<u>Begins on Page</u>
4.28G	Roadway Barricades	4-33
4.28H	Adjacent and Offsite Areas	4-33
4.29	UTILITIES CROSSING IN EXISTING STREETS	4-33
4.30	TRENCH BACKFILL AND RESTORATION	4-33
4.31	TEMPORARY STREET PATCHING	4-35
4.32	MATERIAL AND CONSTRUCTION TESTING	4-36
4.33	SUBGRADE PREPARATION	4-37
4.34	CRUSHED SURFACING (BASE AND TOP COURSE)	4-37
4.35	SURFACING REQUIREMENTS	4-38
4.36	ADJUSTMENTS OF NEW AND EXISTING UTILITY STRUCTURES TO GRADE	4-39
4.37	EROSION CONTROL	4-40
4.38	FINISHING AND CLEANUP	4-41
	<b>STANDARD DETAILS</b>	
	STREET DETAILS	
	TRAFFIC CONTROL DETAILS	
	MISCELLANEOUS DETAILS	
<b>5.</b>	<b>SECTION 5 - STORM DRAINAGE STANDARDS</b>	<b>5-1</b>
5.01	GENERAL	5-1
5.02	AMENDMENTS TO THE 2005 WASHINGTON STATE DEPARTMENT OF ECOLOGY (WSDOE) STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON	5-1
5.03	DESIGN STANDARDS	5-4
5.04	CONVEYANCE	5-5
5.05	CONNECTIONS	5-6
5.06	SURVEY STAKING	5-7
5.07	TRENCH EXCAVATION	5-7
5.08	BEDDING	5-8
5.09	BACKFILLING	5-8
5.10	CLEANING AND TESTING	5-8
5.11	INSPECTION	5-9
5.12	STREET PATCHING AND RESTORATION	5-9
5.13	EROSION CONTROL	5-9
5.13A	Trench Mulching	5-10
5.13B	Cover-Crop Seeding	5-10

## TABLE OF CONTENTS

<u>Section</u>	<u>Subject</u>	<u>Begins on Page</u>
	<b>STANDARD DETAILS</b> EROSION CONTROL DETAILS STORM SEWER DETAILS	
<b>6.</b>	<b>SECTION 6 – WATER SYSTEM STANDARDS</b>	<b>6-1</b>
6.01	GENERAL	6-1
6.02	DESIGN STANDARDS	6-1
6.03	GENERAL REQUIREMENTS	6-3
6.04	WATER PIPE TESTING AND DISINFECTION	6-14
6.05	BACKFLOW PREVENTION AND SPRINKLER SYSTEMS	6-17
6.06	STAKING	6-17
6.07	TRENCH EXCAVATION	6-17
6.08	BACKFILLING	6-18
6.09	STREET PATCHING AND RESTORATION	6-19
6.10	FINISHING AND CLEANUP	6-19
6.11	GENERAL GUARANTEE AND WARRANTY	6-20
	<b>STANDARD DETAILS</b> WATER SYSTEM DETAILS	
<b>7.</b>	<b>SECTION 7 – MISCELLANEOUS UTILITY SERVICES AND ADDITIONAL DEVELOPMENT REQUIREMENTS</b>	<b>7-1</b>
7.01	GENERAL	7-1
7.02	UTILITY SERVICES	7-1
7.03	STREET LIGHTING	7-1
7.04	CABLE TELEVISION	7-1
7.05	STREET NAME AND TRAFFIC SIGNS	7-1
7.06	LANDSCAPING	7-1
<b>8.</b>	<b>SECTION 8 – MISCELLANEOUS CITY DOCUMENTS</b>	<b>8-1</b>
	DEVELOPER AGREEMENT AFFIDAVIT OF NO LIENS BILL OF SALE DEVELOPER EXTENSION CHECKLIST DEVELOPER BOND EASEMENT FOR UTILITY MAINS AND APPURTENANCES PERMIT FOR WORK IN STREET RIGHT-OF-WAY PLAN CHECKLIST	

**SECTION 1**  
**INTRODUCTION**

## **SECTION 1 INTRODUCTION**

### **1.01 Application**

These Standards shall apply to all improvements within the public right-of-way and/or public easements, to all improvements required within the proposed public right-of-way of new subdivisions, for all improvements intended for ownership, operation and maintenance by the City and for all other improvements (on or offsite) for which the City Code requires approval from the Public Works Director, and/or City Engineer, and/or City Council. These Standards are intended as guidelines for designers and developers in preparing their plans and for the City in reviewing plans. Where minimum values are stated, greater values should be used whenever practical; where maximum values are stated, lesser values should be used where practical. The developer/proponent is however cautioned that higher standards and/or additional studies and/or environmental mitigation measures may, and will, in all likelihood, be imposed by the City when developing on, in, near, adjacent, or tributary to sensitive areas to include, but not be limited to, steep slopes, creeks, ponds, lakes, certain wildlife habitat, unstable soils, etc.

### **1.02 General References**

The Standards implement and are intended to be consistent with:

- A. City of Milton Municipal Code, as amended, including:
  - Title 10, Vehicles and Traffic
  - Title 12, Street Requirements
  - Title 13, Public Services
  - Title 16, Subdivisions
  - Title 18, Environment
  
- B. The 2005 Edition of the Department of Ecology Stormwater Management Manual for Western Washington (DOE Manual).
  
- C. City of Milton Comprehensive Plan 2003

Where improvements are not covered by these Standards nor by the Standard Specifications (defined in 1.03A below), the City will be the sole judge in establishing appropriate standards. Where these Standards conflict with any existing City ordinances or discrepancies exist within the body of this text, the higher standards shall be utilized as determined by the Public Works Director.

**1.03 WSDOT Document as Primary Design and Construction References**

Except where these Standards provide otherwise, design detail, construction workmanship, and materials shall be in accordance with the following publications produced separately by Washington State Department of Transportation (WSDOT).

- A. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, current edition, as amended. These will be referred to as the “Standard Specifications.”
- B. The WSDOT Standard Plans for Road and Bridge Construction, to be referred to as the “Standard Plans,” current edition as amended.
- C. WSDOT Design Manual, current edition as amended.

**1.04 Other Specifications**

The most recent additions of the following shall be applicable when pertinent, when specifically cited in these Standards or when required by state or federal funding authority.

- A. Local Agency Guidelines, WSDOT, as amended.
- B. Guidelines for Urban Arterial Program, WSDOT, as amended.
- C. Design criteria for federal agencies include the Federal Housing Administration, Department of Housing and Urban Development, and the Federal Highway Administration, Department of Transportation.
- D. A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO), 1984, or current edition when adopted by WSDOT.
- E. Standard Specifications for Highway Bridges, Adopted by AASHTO, current edition.
- F. US Department of Transportation Manual on Uniform Traffic Control Devices, “MUTCD,” as amended and approved by Washington State Department of Transportation, current edition.
- G. Guide for the Development of Bicycle Facilities, adopted by AASHTO, current edition.
- H. Associated Rockery Contractors, Standard Rock Wall Construction Guidelines.

- I. American Society for Testing and Materials (ASTM).
- J. Institute of Transportation Engineers, Traffic Engineering Handbook, current edition.
- K. Illumination Engineering Society of America (IES) National Standards Practices for Roadway Lighting, RP-8, current edition.

### **1.05 Definitions**

“ADA”: Americans with Disabilities Act

“ADT”: Average Daily Traffic

“Alley”: A thoroughfare or right-of-way, usually narrower than a street, which provides access to the rear boundary of two or more residential properties and is not intended for general traffic circulation; privately maintained.

“AWWA”: American Water Works Association.

“Auxiliary Lane”: The portion of roadway adjoining the traveled way for parking, turning or other purposes supplementary to through-traffic movement.

“Bridge”: Structure with a span greater than 20 feet in width.

“Bulb”: Round area for vehicle turnaround typically located at the end of a cul-de-sac street.

“City”: Means the City of Milton, Washington, Pierce/King County, a municipal corporation, existing under and by virtue of the laws of the State of Washington.

“Contract Documents”: The contract documents shall consist of the following and in case of conflicting provisions, the first mention shall have precedence. These documents shall form the contract:

- A. Developers Agreement
- B. City of Milton Public Works Standards
- C. Other Applicable City Municipal Codes
- D. City Right-of-Way Use Permit
- E. Specifications - Conditions and Standards of the Contract (As Approved by City)
- F. Plans
- G. City Approved Addenda
- H. City Approved Change Orders

- I. Standard Details (WSDOT Specifications)
- J. General Conditions

“Contractor”: Means the Developer's contractor or subcontractor.

“Council”: The City Council of Milton

“Cul-de-Sac”: Short street having one end open to traffic and the other temporarily or permanently terminated by a vehicle turnaround.

“Culvert”: A pipe or similar element with a span/diameter less than 20 feet.

“Design Speed”: The speed approved by the City of Milton for the design of the physical features of a road as established for neighborhood access streets or equal to 10 miles per hour above the current or expected posted speed limit for arterials.

“Developer” means the party having an agreement with the City to cause the installation of certain improvements (public and private), to become a part of the City's utility and/or roadway system upon completion and acceptance. The term shall also include the Developer's contractor employed to do the work or the contractor's employees.

“Development” means the construction, reconstruction, conversion, structural alteration, relocation, enlargement, or change in use of any structure or property, or any project, which will increase vehicle trips per day during peak hour traffic, or any project, which negatively impacts the service level, safety, or operational efficiency of serving roads and storm drainage systems. Individual single family residences are excluded from this definition.

“Developers Agreement” means any written agreement such as SEPA mitigation conditions, conditions of approval for subdivisions, conditions associated with any permit, approved plans, and any other written agreement between the City and a Developer.

“Director”: Public Works Director, City of Milton.

“Driveway”: A privately maintained access to no more than two residential, commercial, or industrial properties.

"Engineer" means the City's Engineer, whether a staff engineer or consultant.

“Eyebrow”: A partial bulb located adjacent to the serving road that provides access to lots and serves as a vehicle turnaround.

“Half-Street”: Street constructed along edge of development, utilizing a portion of the regular width of right-of-way and permitted as an interim facility pending construction of the remaining width of the street by the adjacent owner.

“IES” Illumination Engineering Society.

“Joint-Use Driveway Tract”: A jointly owned and maintained tract or easement serving two properties.

“Keyway”: A shallow trench of minimum 12-inch depth for rockery and slightly inclined toward the face being protected.

“Landing”: A road or driveway approach area to any public or private road.

“Loop”: Road of limited length forming a loop, having no other intersecting road, and functioning mainly as direct access to abutting properties. A loop may be designed for one-way or two-way traffic.

“Maintenance Bond” means a bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the Developer will repair any defects found in the work within the time period as further identified herein. The City shall approve the amount of the bond.

“Mayor” means the mayor of the City of Milton or his/her authorized representative.

“Off-Street Parking Space”: An area accessible to vehicles, exclusive of roadways, sidewalks, and other pedestrian facilities, that is improved, maintained, and used for the purpose of parking a motor vehicle.

“Pavement Width”: Paved area or paved surface between curb, or ditch lines roads.

“Performance Bond” means a bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the work will be completed in accordance with the plans and specifications. The City shall approve the amount of the bond.

“Permitee” means any party applying for or being a signator to a permit.

“Plans” mean Drawings, including reproductions thereof, of the work to be done as an extension to the City's infrastructure, prepared by an engineer licensed in the State of Washington.

“Private Street”: A privately owned and maintained access provided for by a tract, easement, or other legal means.

“Professional Engineer”: A professional civil engineer licensed to practice in the State of Washington.

“Public Street”: Publicly owned facility providing access, including the roadway and all other improvements, inside the right-of-way.

“Public Works Director” means the City's duly appointed Public Works Director, or their Authorized Representative.

“Reviewing Agency” means the Public Works Department.

“Right-of-Way”: Land, property, or property interest (e.g., an easement), usually in a strip, acquired for or devoted to transportation purposes.

“Road”: A facility providing public or private access including the roadway and all other improvements inside the right-of-way.

“Road” and “Street” will be considered interchangeable terms for the purpose of these Standards.

“Roadway”: Pavement width plus shoulders.

“Shoulder”: The paved or unpaved portion of the roadway outside the traveled way that is available for emergency parking or non-motorized use.

“Specifications” means the directions, provisions, and requirements designated by an engineer licensed in the State of Washington for the performance of the work and for the quantity and quality of materials, as contained or referenced herein.

“Standard Details” means the current WSDOT/APWA Standard Plans for Road and Bridge Construction, State of Washington.

“Traveled Way”: The part of the road made for vehicle traffic excluding shoulders and auxiliary lanes.

“Utility”: A company providing public services such as gas, electric power, telephone, telegraph, water, sewer, or cable television, whether or not such company privately owned or owned by a governmental entity.

“WSDOT”: Washington State Department of Transportation.

“Work” means the labor or materials or both, superintendence, equipment, transportation, and other facilities necessary to complete the Contract.

**1.06 Developer to be Informed**

The Developer is expected to be fully informed regarding the nature, quality, and the extent of the work to be done, and, if in doubt, to secure specific instructions from the City. Any changes, deletions, or additions to an approved plan or specification shall be permitted only upon written approval by the City.

**1.07 Authority of the Public Works Director (PWD)**

The Public Works Director shall have the authority to stop work whenever, in their opinion it is deemed to be necessary to insure compliance with the plans and specifications and shall have authority to reject work and materials which do not so conform and to decide questions which may arise in the execution of the work, and have the authority to determine the amount, quality, acceptability and fitness of the several kinds of work, material and equipment and to decide all questions relative to the classification of materials and the fulfillment of the Contract, and to reject or condemn all work or material which does not conform to the terms of the Contract. The City Public Works Director's decision in all matters is the decision of the City, and can only be changed by the City. Moreover, the City has not so delegated, and the City Public Works Director does not purport to be a safety expert, is not so engaged in that capacity under the Contract, and has neither the authority nor the responsibility to enforce construction safety laws, rules, regulations or procedures, or to order the stoppage of work for claimed violations thereof. The furnishing by the City of resident project representation and/or inspection shall not be construed by the Contractor or Developer that the City is responsible for the identification or enforcement of such laws, rules, or regulations.

**1.08 Payment for City Services**

The Developer shall be responsible for promptly reimbursing the City for all costs and expenses incurred by the City in the pursuit of project submittal, review, approval, and construction. These costs include, but are not limited to, the utilization of staff and "other" outside consultants as may be necessitated to adequately review and inspect construction of the project(s). All legal, administrative, and engineering fees for project review, meetings, approvals, site visits, construction inspection, etc., shall be subject to prompt reimbursement. The Developer shall pay all such invoices within 30 calendar days after receipt of the same. The City retains the right to charge additional administration and interest costs for unpaid balances exceeding the due date. The Developer is cautioned that project approval (City acceptance) and occupancy permits will be denied until all bills are paid in full. The City may, at its sole discretion require that funds be placed in an account at the City by which the City may draw from to reimburse said costs.

**SECTION 2**  
**PERMITS**

**SECTION 2 PERMITS**

**2.01 Permit Required**

No person, firm, or corporation shall commence work on the construction, alteration, or repair of any facility located either in the public right-of-way or a public easement without any necessary permit(s) first having been obtained from the City.

**2.02 Permit Application**

Any party requesting such permit shall file written application therefore with the City at least 10 working days before construction is proposed to start. Such application shall be made on a standard City form provided for that purpose

The City may require, at their discretion, the filing of any other information when in their opinion such information is necessary to properly enforce the provisions of these Standards or other applicable codes.

**2.03 Permit Issued**

No permit shall be issued until the proposed work has been approved by the appropriate official. Adjudication of disagreements regarding approvals shall be made by the Public Works Director whose decision shall be final.

No plan shall be approved nor a permit issued where it appears that the proposed work, or any part thereof, conflicts with the provisions of these Standards or any other applicable codes of the City of Milton, nor shall issuance of a permit be construed as a waiver of the Zoning code or other code requirements concerning the Plan.

A fee of an amount as designated by the City's fee schedule shall accompany all applications for permits.

**2.04 Variances**

A. General

The Public Works Director shall have the authority to grant a variance from the requirements of this specification and from the requirements of this ordinance after considering the matter. No application for a variance shall be granted by unless the following conditions are found to exist:

1. That special conditions and circumstances exist which are peculiar to the land such as size, shape, topography or location, not applicable to other lands in the same neighborhood, and that literal interpretation of the provisions of this ordinance would deprive the property owner of rights commonly enjoyed

by other properties similarly situated in the same neighborhood.

2. That the special conditions and circumstances do not result from the actions of the applicant, and are not self-imposed hardships;
3. That granting the variance requested will not confer a special privilege to the subject property that is denied other lands in the same neighborhood;
4. That the granting of the variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the neighborhood in which the subject property is situated;
5. That the granting of the variance requested will be in harmony with the general purpose and intent of these standards, and any applicable Land Use Ordinance(s);
6. That the purpose of the variance is not merely to permit the subject property to be utilized more profitably by the owner or to economize on the cost of improving the property.

B. Conditions

In granting any variance the Director may prescribe appropriate conditions and safeguards that will ensure that the purpose and intent of the specifications shall not be violated. Further, the Director may require the applicant to post a performance bond guaranteeing compliance with such conditions.

C. Procedure for Application of a Variance

The following information, accompanied by variance application fee as specified in the City's latest fee ordinance, shall be submitted:

1. The City of Milton's "variance application attachment."
2. Any other information reasonably necessary to make a decision on the variance request. (Ord. 1405 § 2, 1999).

D. Public Notice

Proper notice of a variance application shall be as follows:

1. Written notice mailed to the owner or reputed owners of property within 300 feet of the property line(s) which is the subject matter of the application, which ownership is deemed

to be that of the last owner of record in the current files of the County Assessor, said notice to be mailed at least 10 calendar days prior to the date of the hearing.

2. The City Clerk shall be responsible for the mailing and publication of all required notices. The Clerk shall diligently observe the foregoing requirements, but minor inaccuracies in giving such notice shall not invalidate the proceedings of the Board of Adjustments.
3. A party with standing may appeal the Director's final decision to the hearing examiner upon filing of a written appeal, stating the reasons for the appeal, with the Public Works Department within 14 calendar days from the issuance of the decision. A party with standing may appeal the hearing examiner's final decision pursuant to the provision of the state's Land Use Petition Act, RCW 36.70C.005 through 36.70C.140.

E. Expiration

Any variance shall become null and void 5 years from the date of granting or approval, if not exercised within that period.

## **2.05 Bonding**

Developers and Contractors performing work within the public right-of-way or publicly owned easement(s) shall be prepared to satisfy the following bonding requirements.

- A. Furnishing an assignment of funds, a cash deposit, or a performance bond, approved as to surety by the Public Works Director, and as to form by the City Attorney, and as to cost by the City Engineer which bond shall be conditioned upon faithful completion of that portion of the work performed pursuant to the permit which will require completion by the City should the permittee or his contractor default. The amount of such bond shall be in the amount of 125 percent of the City-approved value of the improvements.
- B. Furnishing a Warranty Bond. All work shall be guaranteed by the Developer for a 2 year period from the time of inspection and final approval of the construction by the City. The amount of such bond shall be the greater of 25 percent of the project cost (as approved by the City) or \$5,000.00.

**SECTION 3**  
**PUBLIC WORKS CONSIDERATIONS**

## **SECTION 3 PUBLIC WORKS CONSIDERATIONS**

### **3.01 Submittal of Plans**

All construction plans shall be submitted to the City and when applicable shall include the following required minimum information. The developer shall submit 5 copies of the plan set.

#### **GENERAL REQUIREMENTS**

1. The pertinent City's Standard Plan notes, as shown in Section 3.02 of the project shall be shown in the Plan Set.
2. All City Standard Details required for project construction.
3. All plan sheets are to have a north arrow with north oriented toward the top of the sheet or to the right edge.
4. All plan sheets are to be the same size (24" x 36") and of legible professional quality.
5. All plan drawings shall be numbered and include all plan titles and referenced by name.
6. All plans shall be based on and at the same scale, 1" = 40', and at the same orientation as the site survey.
7. Topographic plans shall extend 50 feet beyond the exterior property lines and detail all natural and manmade features which occur immediately offsite.
8. All plans are to include the preparer, address, and title approval block.
9. All plans are to include the City of Milton signature block.
10. Label all street names.
11. All existing utilities, features, and facilities shall be faded back on the Plan Set.
12. Provide a composite drawing when the Site Plan or Landscape Plan is broken into multiple sheets.
13. Datum shall be NGVD for vertical control and NAD 83/91 for horizontal unless otherwise approved by the City.

**COVER SHEET**

1. Title of Proposal.
2. Legal owner's address.
3. Name, address, and phone number of all agencies working on development, i.e. engineer, architect, etc.
4. Small scale vicinity map.
5. Legal description.
6. Gross site area in square feet and acres.
7. Total square footage of impervious and pervious surface called out by type, including building footprint.
8. Total number of proposed compact, standard, and barrier free/van parking stalls.
9. Any manufacturing process/hazardous materials to be used on site.
10. Material Safety Data Sheets (MSDS) for hazardous materials to be used or stored.
11. Listing of any and all permits, required, including those outside the City of Milton.
12. City of Milton standard signature block.

**EXISTING SITE SURVEY**

1. The survey will be stamped by a licensed surveyor.
2. Show property lines, including distances, bearings, and corner markings.
3. Locate and label all existing adjacent right-of-way improvements including centerline, curb, sidewalk, and all surface hardware. Distances from property line to right-of-way centerline and width of right-of-way are required.
4. Show the location of all existing utility, open space, drainage, native growth protection, and access easements. Include recording number with all easements. Underground utilities shall be shown in the profile drawings.
5. Indicate existing location of mailboxes, waterlines, sewer lines, storm lines, utility vaults, hydrants, fire department connection, electrical conduit and equipment

- pads, power poles, all exposed HVAC equipment, traffic signs, and all other pertinent above and underground features.
6. Show all trees 6-inches in diameter or larger as measured at 4-1/2 feet above the ground, stands of trees and other vegetation such as wetlands and brush, and a key to abbreviations.
  7. Show surface elevation at each corner of the site and existing contours at 2-foot intervals.
  8. Indicate all streams, ditches, channels, bridges, culverts, catch basins, and show direction of flow.
  9. Show all setbacks (building, stream, lake, etc.) within 50 feet of the project property.

#### **PROPOSED SITE/GRADING PLAN**

1. Show finished grade contours at 2-foot intervals.
2. Show property lines including bearings, distances, and corner markings.
3. Show all on-site easements (include width and type), dedicated areas and open space areas.
4. Topographic plans shall extend 50 feet beyond the exterior property lines and detail all natural and manmade features which occur immediately offsite.
5. Show location and overall dimensions of all existing and proposed on-site buildings. Show distances from building walls to property lines.
6. Label, number and dimensions of all standard, compact, and handicapped parking stalls, and loading areas.
7. Show roads and driveway slopes in percent of grade.
8. Indicate width, materials, and location of all internal walkways and connection to public sidewalks or right-of-way.
9. Indicate existing (faded back) and proposed mailboxes, waterlines, sewer lines, storm lines, utility vaults, hydrants, fire department connection, electrical conduit and equipment pads, power poles, all exposed HVAC equipment, traffic signs, and all other pertinent above and underground features.
10. Indicate all existing as well as proposed rockeries and retaining walls and indicate their length, height, color treatment, and materials.

11. Indicate all improvements to be placed within public right-of-way.
12. All exterior light fixtures shall be noted as to location, type, and wattage.
13. Show existing driveways adjacent to the site and on properties on the opposite side of roadway or easements facing the property.

### **CROSS SECTION DETAILS**

1. All roadway, sidewalks, and pedestrian trails shall be detailed in a cross sectional scaled drawing.
2. All rockeries and retaining walls taller than 4 feet shall be detailed in a single line cross sectional scaled drawing. This sectional drawing shall extend through the rockery/retaining wall, and end at the outer boundaries of grade disturbance resulting from construction activity.
3. All right-of-way improvements shall be detailed, including distance to centerline or right-of-way, grades, materials, sidewalk width, landscaping area, curb, and gutter and other required improvements.
4. All landscape berms shall be detailed in a single line scale drawing.
5. All detention ponds shall be detailed in a single line scale drawing that includes construction materials and pond depth.

### **LANDSCAPE PLAN**

1. Locate and label all existing and proposed vegetation and indicate vegetation to be saved.
2. List all proposed plants and existing plants that are to remain, including symbol, quantity, size, common, and botanical names, and spacing.
3. All trees 6-inches and larger as measured at 4-1/2 feet aboveground scheduled to be saved shall be shown with a temporary orange plastic fence located at the actual drip lines prior to any on-site grading. Accurately locate these significant trees using the site survey.
4. Provide planting details (root barrier, support systems, soil, mix, planting, depth, spacing, and width, and bark mulch depth).
5. Show all existing and proposed utilities, i.e., power vault, hydrants, overhead wires, lights, poles, signs, etc., in relation to plantings, in a faded layer.

6. Show proposed berm locations and size.
7. Indicate location of existing and proposed rockeries and retaining walls.
8. Show location of proposed buildings, parking areas, accessory structure, and all other pertinent site features.
9. Underground irrigation system plan if required.

#### **STORM DRAINAGE PLAN**

1. Indicate all proposed finished contours at intervals of no greater than 2-feet.
2. Topographic plans shall extend 50 feet beyond the exterior property lines and detail all natural and manmade features.
3. Indicate all surface water features, floodplains, and/or wetlands.
4. Location of all contributing off-site drainage.
5. Indicate existing and proposed detention/retention ponds.
6. Indicate existing and proposed biofiltration areas.
7. Indicate existing and proposed rockeries and retaining walls.
8. All trees 6-inches and larger as measured at 4-1/2 feet aboveground scheduled to be saved shall be shown with a temporary orange plastic fence located at the actual drip lines prior to any on-site grading. These trees shall be accurately located on the Plans.
9. Show location of all utility, open space, drainage, native growth protection, and access easements.
10. Indicate all streams, ditches, and show direction of flow.
11. Indicate location of all existing (faded back) and all proposed storm drainage system improvements, note pipe size, length, slope, type, class, and include catch basins and manhole rims to include elevations and invert elevation of all associated storm pipes.
12. Provide storm drainage calculations in accordance with City Standards.
13. Provide a temporary erosion and sedimentation control plan.

#### **ROADWAY PLAN**

1. Plan and profile;
2. Street name;
3. Right-of-way and width;
4. Centerline bearings;
5. Centerline/baseline stationing;
6. Centerline elevations every 50 feet;
7. Gutter line elevations every 50 feet;
8. Gutter line elevations around curb radii, 5 points;
9. Slope shall be in percent;
10. Transverse slope: 2 percent standard crown (to be used unless otherwise approved by City);
11. Longitudinal slope;
12. Horizontal and vertical curves shall be required when a change of centerline grade occurs greater than one percent:
  - 50 feet minimum length;
  - Elevations required at 25-foot stations and at the P.C., P.I., P.T. and low point or high point;
13. Longitudinal gutter line slope;
14. Pavement cross sections per City standard detail;
15. Accurate locations of existing and proposed monuments at all centerline intersections, cul-de-sacs, P.C.s, P.T.s, and P.R.Cs;
16. Width of sidewalks and driveways;
17. The location of all existing fire hydrants within 300 feet of the Project shall be indicated;
18. Curb and gutter;
19. ADA ramps;

20. Illumination. All illumination plans shall conform to IES standards for the classification of roadway being illuminated. Plans shall include the following:
  - Luminaries - location, material, height, and wattage.
  - Service cabinet - location and material.
  - Conduits and wire - location, material size, and depth.
  - Junction boxes - location and material;
21. Channelization and Signing:
  - Lane markers - location and type.
  - Pavement markings - location and type.
  - Signs - location and type.

## **WATER PLAN**

1. Indicate all existing pertinent underground utilities and aboveground features (fade back).
2. Indicate all existing and proposed water system improvements, note pipe size, length, type, class, fittings, valves, hydrants, blow-offs, air relief assemblies, water sampling stations, water services, back flow assemblies, etc.
3. Indicate all existing fire hydrants within 300 feet of the project boundaries.

### **3.02 Standard Plan Notes**

Standard plan notes must be included on all plans. At the applicant's discretion, notes which in no way apply to the project may be omitted with a "N/A;" however, the remaining notes must not be renumbered.

**GENERAL NOTES**

1. All construction shall be in accordance with the Milton Municipal Code (MMC), Milton Public Works Standards, and the City of Milton's conditions of approval. It shall be the sole responsibility of the applicant to correct any error, omission, or variation from the above requirements found in these plans. All corrections shall be at no additional cost or liability to the City.
2. All work and material shall be in accordance with the latest revision, of the City of Milton Development Guidelines and Public Works Standards. Any variance from the City's standards is not allowed unless specifically approved by the City prior to construction.
3. The Contractor shall have a copy of the City of Milton's Development Guidelines and Public Works Standards onsite at all times.
4. Before any construction or development activity, a preconstruction meeting must be held between the Public Works Department, the applicant, and the applicant's Construction Representative.
5. A copy of the approved plans must be on the job site whenever construction is in progress.
6. Work hours shall be limited to workdays only excluding City recognized holidays between the hours of 7:00 a.m. and 7:00 p.m. unless otherwise approved in advance by the City.
7. It shall be the applicant's/contractor's responsibility to obtain all construction easements necessary before initiating offsite work within the road right-of-way.
8. Franchised utilities or other installations that are not shown on these approved plans shall not be constructed unless a permit has been issued by the City of Milton or its designated representative agency, e.g., Pierce County for Sanitary Sewer.
9. Datum shall be NGVD 29 for vertical control and NAD 83/91 for horizontal unless otherwise approved by the City.
10. All utility trenches shall be backfilled and compacted to 95 percent maximum density, modified proctor. Test results shall be provided to the City.
11. All roadway subgrade shall be backfilled and compacted to 95 percent maximum density (WSDOT 2-06.3). Test results shall be provided to the City.
12. All asphalt shall be compacted to a minimum of 91 percent of the reference maximum density as determined by WSDOT FOP for AASHTO T209.

13. Open cutting of existing roadways is not allowed unless specifically approved by the City and noted on these approved plans. Any open cut shall be restored in accordance with the Milton Public Works Standards.
14. The contractor shall be responsible for providing adequate safeguards, safety devices, protective equipment, flaggers, and any other needed actions to protect the life, health, and safety of the public, and to protect property in connection with the performance of work covered by the contractor. Any work within the traveled right-of-way that may interrupt normal traffic flow shall require at least one flagger for each lane of traffic affected. Section 1-07.23, "Traffic Control," of the Standard Specifications shall apply in its entirety.
15. Call underground utility locate line 1-800-424-5555 a minimum of 2 working days prior to any excavation.
16. The Contractor shall keep a set of plans onsite at all times for recording "as-built" information. One set shall be submitted to the City of Milton at completion of construction.
17. These Plans are approved for a period of 180 days from the date of approval. Every permit issued shall become invalid unless the work on the site authorized on the site by such permit is commenced within period of 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The City reserves the right to make revisions, modifications, and changes should construction be delayed beyond this time limit. The Public Works Director may grant, in writing, one or more extensions of time. The extension shall be requested in writing and justifiable cause demonstrated.
18. All fees, bonding, and proof of liability insurance shall be submitted to the City prior to the preconstruction meeting.

**EROSION AND SEDIMENT CONTROL (ESC) NOTES**

1. The implementation of these ESC plans and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the applicant/ESC supervisor until all construction is approved.
2. The boundaries of the clearing limits shown on this plan shall be clearly flagged by a continuous length of orange protection fencing prior to construction. During construction, no disturbance beyond the clearing limits shall be permitted. The clearing limits shall be maintained by the applicant/ESC supervisor until all construction is approved.
3. The ESC facilities shown on this plan must be constructed prior to or in

- conjunction with all clearing and grading so as to ensure that the transport of sediment to surface waters, drainage systems, and adjacent properties is prevented.
4. The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the course of construction, these ESC facilities shall be upgraded as needed for unexpected storm events and modified to account for changing site conditions.
  5. The ESC facilities shall be inspected daily by the applicant/ESC supervisor and maintained to ensure continued proper functioning. Written records shall be kept of weekly reviews of the ESC facilities during the wet season (October 1 to April 30) and of monthly reviews during the dry season (May 1 to September 30).
  6. Any areas of exposed soils, including roadway embankments, that will not be disturbed for 2 days during the wet season or 7 days during the dry season shall be immediately stabilized with the approved ESC methods (e.g., seeding, mulching, plastic covering, etc.).
  7. Any area needing ESC measures that do not require immediate attention shall be addressed within 15 days.
  8. The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within 48 hours following a storm event.
  9. At no time shall more than 1 foot of sediment be allowed to accumulate within a catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system.
  10. Stabilized construction entrances and roads shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wash pads, may be required to ensure no dirt or mud is tracked off-site and that all paved areas are kept clean for the duration of the project.
  11. Any permanent flow control facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the facility is to function ultimately as an infiltration system, the temporary facility must be graded so that the bottom and sides are at least 2 feet above final grade of the permanent facility.
  12. Where straw mulch for temporary erosion control is required, it shall be applied at a minimum thickness of 2-inches.
  13. Prior to September 15, all disturbed areas shall be reviewed to identify which ones can be seeded in preparation for the winter rains. Disturbed areas shall be

seeded prior to October 1. A sketch map of those areas to be seeded and those areas to remain uncovered shall be submitted to the City inspector. The City inspector can require seeding of additional areas in order to protect surface waters, adjacent properties, or drainage facilities.

### **DRAINAGE NOTES**

1. All storm lines and retention/detention areas shall be staked for grade and alignment by an engineering or surveying firm capable of performing such work, and currently licensed in the State of Washington to do so.
2. All pipe and appurtenances shall be laid on a properly prepared foundation in accordance with WSDOT 7-02.3(1). This shall include leveling and compacting the trench bottom, the top of the foundation material, and any required pipe bedding to a uniform grade so that the entire pipe is supported by a uniformly dense unyielding base.
3. When appropriate, storm drain pipelines shall be sized and installed to the far property line(s) to serve tributary areas. They shall be appropriately sized to accommodate anticipated flows as further identified herein.
4. All pipe for storm mains shall be "preapproved" by the City's Engineer based on localized conditions and comply with the following types:
  - a. Polyvinyl Chloride: PVC pipe shall conform to ASTM D3034, SDR 35 or ASTM F789 with joints and rubber gaskets conforming to ASTM D3212 and ASTM F477.
  - b. Plain Concrete: Plain concrete pipe per Standard Specifications as set forth in Section 7-04.
  - c. Reinforced Concrete: Reinforced concrete pipe shall be Class IV per Standard Specifications as set forth in Section 7-04.
  - d. Ductile Iron: Ductile iron pipe shall conform to AWWA C151 Class 50 and have a cement mortar lining conforming to AWWA C104. All pipes shall be joined using non-restrained joints, which shall be rubber gaskets, push on type or mechanical joint, conforming to AWWA C111.
  - e. Polyethylene: PE smooth wall pipe per Advanced Drainage Systems (ADS) N-12 (bell and spigot), or City approved equal, constructed per Standard Specifications 7-04.
  - f. High Density Polyethylene Pipe (HDPE): HDPE pipe shall be SDR 25 butt-fused welded pipe high density, black, PE 3408. Pipe shall be made

from premium high density polyethylene resin, qualified as Type III, Category 5, Class C, Grade P34 in ASTM D1248-81.

5. All drainage structures, such as catch basins and manholes shall have locking lids.
6. All catch basin grates shall conform to City of Milton drawings, and shall include the stamping "OUTFALL TO STREAM, DUMP NO POLLUTANTS."
7. All driveway culverts located within the right-of-way shall be of sufficient length to provide a minimum 3:1 slope from the edge of the driveway to the bottom of the ditch. Culverts shall have beveled end sections to match the side slope.
8. Rock for erosion protection for roadway ditches, where required, must be of sound quarry rock, placed to a depth of one foot, and must meet the following specifications: 4- to 8-inch rock/40- to 70-percent passing; 2- to 4-inch rock/30- to 40-percent passing; and 2-inch minus rock/10- to 20-percent passing.

#### **WATER MAINS AND FITTINGS NOTES**

1. All water mains shall be furnished and installed as shown on the Plans as approved by the City.
2. Water mains to be installed shall be ductile iron pipe for all sizes, unless specifically noted otherwise.
3. The ductile iron pipe shall conform to ANSI/AWWA C151/A21.51-91 Standards, and current amendments thereto, except the ductile iron pipe shall be thickness Class 52 for 4 inch through 14 inch diameter pipe (except for 6-inch hydrant spools which shall be Cl. 53) and Class 50 for 16 inch and larger. Grade of iron shall be a minimum of 60-42-10. The pipe shall be cement lined to a minimum thickness of 1/16 of an inch, meeting NSF standards for potable water, and the exterior shall be coated with an asphaltic coating.
4. Type of joint shall be mechanical joint or push-on type, employing a single gasket, such as "Tyton," except where otherwise calling for flanged ends shall conform to AWWA C111. Bolts furnished for mechanical joint pipe and fittings shall be high strength ductile iron, with a minimum tensile strength of 50,000 psi.
5. Restrained joint pipe, where shown on the Plans shall be push-on joint pipe with "Field LOK®" gaskets as furnished by U.S. Pipe or equal for 24 inch diameter and smaller pipe.
6. All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards for 350 psi pressure rating for mechanical joint fittings and 250 psi pressure rating for flanged fittings. All fittings shall be cement lined and either mechanical joint or flanged, as indicated on the Plans.

7. Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, Star Pipe Products, or approved equal.
8. All bend fittings and tees shall be installed to include concrete blocking with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be Mega Lug (retainer glands) or City approved equal.
9. All couplings shall be ductile iron mechanical joint (long pattern) sleeves.
10. The pipe and fittings shall be inspected for defects before installation. All lumps, blisters and excess coal tar coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and dry, and free from oil and grease before the pipe is laid.
11. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. If water is in the trench when work resumes, the seal shall remain in place until the trench is pumped completely "dry." No pipe shall be laid in water or when trench conditions are unsuitable or unsafe.
12. The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe or cement lining, and so as to leave a smooth end at right angles to the axis of the pipe. Pipe shall be laid with bell ends facing in the direction of the laying, unless approved otherwise by the City. Wherever it is necessary to deflect pipe from a straight line, the amount of deflection allowed shall not exceed the pipe manufacturer's recommendations.
13. For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before jointing, and shall be jointed according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom, and sides, so pressure on gasket is even.
14. For connection of push on type joints, the jointing shall be done according to manufacturer's recommendations, with special care used in cleaning gasket seat to prevent any dirt or sand from getting between the gasket and pipe. Lubricant to be used on the gasket shall be non-toxic and free from contamination. When a pipe length is cut, the outer edge of the cut shall be beveled with a file to prevent damage to the gasket during jointing.

15. Fittings shall be “blocked” with poured-in-place concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. Thrust blocks shall be poured as soon as possible after setting the fittings in place to allow the concrete to “set” before applying the pressure test. The concrete thrust blocks shall be in place before beginning the pressure test. Anchor blocks shall be allowed to set sufficiently to develop the necessary bond strength between the reinforcing rods and the concrete anchor before beginning the pressure test. Concrete shall be commercial Class 3000 psi. A visqueen barrier shall be provided to protect glands, bolts, and other miscellaneous materials required for this type of connection.
16. All of the new piping, valves and blocking shall have been installed, disinfected, and tested up to the point of cutting into existing lines before the crossover is made. The crossover to the existing system shall be in full readiness, including the cut and sized specials. 48-hour notice shall be given the City in advance of the planned “cut-ins.”
17. All valves 14 inches and larger shall be butterfly valves. All valves 12 inches and smaller shall be resilient seat gate valves.
18. All resilient-seated gate valves shall conform to AWWA C509 or C515 Standards for resilient-seated, high strength, bronze stemmed gate valves. The valve shall be rated at 250 psi or higher. The valves shall be ductile iron-bodied, iron disk completely encapsulated with polyurethane rubber and bronze, non-rising stem with “O” ring seals. The polyurethane sealing rubber shall be fusion bonded to the wedge to meet ASTM D429 tests for rubber to metal bond. The valves shall open counter-clockwise and be furnished with 2-inch square-operating nuts except valves in vaults shall be furnished with handwheels. All surfaces, interior, and exterior shall be fusion-bonded epoxy coated, acceptable for potable water. Valves shall be Mueller, M&H, American AVK, or approved equal.
19. Butterfly valves shall be of the tight closing rubber seat type with rubber seat either bonded to the body or mechanically retained in the body with no fasteners or retaining hardware in the flowstream. Where threaded fasteners are used, the fasteners shall be retained with a locking wire or equivalent provision to prevent loosening. Rubber seats attached to the valve vane shall be equipped with stainless steel seat ring integral with the body, and the body internal surfaces shall be epoxy coated. Valve discs shall rotate 90 degrees from the full open position to the tight shut position. The valves shall meet the full requirements of AWWA C504, Class 150B. The valve shall be Henry Pratt Company “*Groundhog*,” or owner approved equal.
20. Tapping sleeves and tapping valves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two sections to permit assembly around the main without interrupting service. Mechanical joint style sleeves shall be ductile iron or

- fabricated steel style sleeves, ductile iron mechanical joint style sleeves are required for size-on-size connections as manufactured by Clow, Dresser, Mueller, Tyler, U.S. Pipe, or owner approved equal.
21. Fabricated steel style sleeves shall be fusion bonded coated, acceptable for potable water, and is acceptable for A.C. pipe taps only. Fabricated steel sleeves shall be manufactured by JCM, Romac or approved equal.
  22. Tapping valves shall be provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings. In all other respects, the tapping valves shall conform to the resilient seat gate valves herein specified with regards to operation and materials.
  23. The tapping sleeve and valve shall be tested to 100 psi (air) prior to tapping the main.
  24. The location of the water mains, valves, hydrants, and principal fittings including modifications shall be staked by the Developer. No deviation shall be made from the required line or grade. The developer shall verify and protect all underground and surface utilities encountered during the progress of this work.
  25. All pipelines shall be tested and disinfected to City and AWWA Standards submitted to the City for approval.
  26. Before acceptance of the water system by the City, all pipes, appurtenances, vaults, meter boxes, etc., shall be cleaned of all debris and objectionable material. Mechanical systems shall be field checked for performance. Operation and maintenance manuals shall be provide after a “start-up” is satisfactorily witnessed.
  27. All fire hydrants shall be approved by the National Board of Fire Underwriters and conform to AWWA Specification C502, breakaway type. The fire hydrants shall be M&H “Reliant” #929, Mueller A423, American AVK, or City approved equal. The hydrant barrel shall have a diameter of not less than 8-1/2 inches, and the valve diameter shall be not less than 5-1/4 inches. Each hydrant shall be equipped with two 2-1/2 inch hose ports (National Standard Thread), and one 4-1/2 inch pumper connection (National Standard Thread), with a permanent anodized short profile style Storz hydrant adaptor and anodized Storz blind flange shall be installed on the pumps port. The size of the adaptor will be 4-inches in areas within City limits and 5 inches outside City limits. The Contractor shall get the City’s approval of size prior to ordering fire hydrant. Between the time that the fire hydrant is installed and the completed facility is placed in operation, the fire hydrant shall at all times be wrapped in burlap, or covered in some other suitable manner to clearly indicate that the fire hydrant is not in service.

## **CONSTRUCTION SEQUENCE**

---

A recommended construction sequence is provided below:

1. Clearing limits, trees to be retained, and sensitive areas flagged, fenced, and inspected by the City.
2. Hold a pre-construction meeting.
3. Post a sign with the name and phone number of the project supervisor.
4. Install catch basin protection.
5. Grade and install construction entrance(s).
6. Install perimeter protection.
7. Construct sediment ponds and traps.
8. Grade and stabilize construction roads and staging areas.
9. Construct surface water controls (interceptor ditches, pipe slope drains, etc.) simultaneously with clearing and grading for project development.
10. Maintain erosion control measures in accordance with City standards and manufacturer's recommendations.
11. All other work item shall be of the Contractor's option in keeping with good construction practice.

The Contractor shall conduct the order of work to allow all existing facilities to remain operational except as noted herein during the construction of this project, and to minimize disruption of any utility service.

### **3.03 Non-Interference**

The permittee shall be responsible for minimum interference with:

Traffic Routing  
Fire Facility Clearance  
Adjoining Property  
Utility Facilities and Service  
Natural Surface Drainage  
Refuse Service  
US Mail and Postal Service  
Emergency Service

Prior to construction, these items are to be discussed with the City Public Works Department, and/or local Fire and Police Departments and/or the City Building Inspector, and special provisions may be included in any applicable City Permit(s).

### **3.04 Work Standards**

All work performed pursuant to a permit issued shall be done in accordance with these Standards and with Adopted Standards as specified in Section No. 1.

### **3.05 Inspection**

#### **A. General**

The City shall exercise full right of inspection of all survey, excavation, grading, stockpiling, construction, and other invasion into or upon City right-of-way or public easements. The Public Works Director shall be notified 5 working days prior to commencing any work in the City's rights-of-way or public easements. The Public Works Director is authorized to and may issue immediate stop work orders in the event of noncompliance with this chapter, safety issues, erosion control issues and/or any of the terms and provisions of the permit or permits issued hereunder.

Timely notification by the developer as noted herein is essential for the City to verify through inspection that the work meets the standard. Failure to notify in time may oblige the City to arrange appropriate sampling and testing after-the-fact, with certification, by a professional engineer. Costs of such testing and certification shall be borne by the developer. At the time that such action is directed by the Public Works Director further work on the development may prohibit or limited until all directed tests have been completed and corrections made to the satisfaction of the Public Works Director. If necessary the City may take further action as set forth in the Milton Municipal Code.

#### **B. Requirements within City Right-of-Way.**

On all water, road and drainage facility construction, proposed or in progress, which relates to subdivision, binding site plan, commercial and right-of-way development, control and inspection will be done by the City. Unless otherwise instructed by the City, construction events which require monitoring or inspection along with notice requirements for requested inspections are identified as follows:

1. Preconstruction Conference. 5-working days prior notice. Conference must precede the beginning of construction and include contractor, designing engineer, utilities, and other parties

affected. Plan approvals and permits must be in hand prior to the conference.

2. Clearing and Temporary Erosion/Sedimentation Control. 1-working days notice prior to initial site work involving drainage and installation of temporary water retention/detention and siltation control. Such work to be in accordance with the DOE Manual and the approved Plans.
3. Utility Installation. 1-working days notice prior to trenching and placing of underground utilities such as storm, sanitary, water, gas, power, telephone, and TV lines.
4. Utility Backfill and Compaction. 1-working days notice before backfill and compaction of storm sewers and underground utilities.
5. Subgrade Completion. 1-working day's notice at stage that underground utilities and roadway grading are complete, to include placement of gravel base if required. Inspection to include compaction tests and certifications described in the WSDOT standard specifications.
6. Curb and Sidewalk Forming. 1-working days notice to verify proper forming and preparation prior to pouring concrete.
7. Curb and Sidewalk Placement. 1-working days notice to check placement of concrete.
8. Crushed Surfacing Placement. 1-working days notice to check placement and compaction of crushed surfacing base course and top course.
9. Paving. 3-working days notice in advance of paving with asphalt or Portland cement concrete.
10. Structural. 3-working days notice prior to each critical stage such as placing foundation piling or footings, placement and assembly of major components, and completion of structure and approaches. Tests and certification requirements will be as directed by the Public Works Director.

C. Final Inspection

Prior to final approval of construction, the City will make a visual inspection of the job site. Restoration of the area shall be complete with all improvements being restored to substantially their original or superior

condition. The City may, at its discretion also require additional non-destructive testing to insure the quality of the work. When such is required (compaction testing, television inspection, engineering inspection, etc.) it shall be subject to full reimbursement by the Developer.

### **3.06 As-Built Drawings**

Permittees who install systems over, across, along, within, on, or below the City's public rights-of-way or public easements shall furnish the City with accurate drawings, plans, and profiles, showing the location and curvature of all underground structures installed, including existing facilities encountered and abandoned facilities. Horizontal locations of utilities are to be referenced to street centerlines, as marked by survey monuments, and shall be accurate to a tolerance of plus or minus 1/2 foot. The depth of such structure may be referenced to the elevation of the finished street above said utility, with depths to the nearest 0.1 foot being shown in a minimum of 50-foot intervals along the location of said utility.

Such as-built drawings shall be submitted to the City within 30 calendar days after completion of the work. As-built drawings shall be stamped, signed, and dated by an engineer or professional land surveyor currently licensed in the State of Washington.

In the event that the permittee does not have qualified personnel to furnish the as-built drawing required by this section, he shall advise the Public Works Director (2 working days notice) in advance of covering underground facilities in order that necessary field measurement may be taken during construction by the City for the preparation of as-built drawings. All costs of such field inspection and measurement, to include the preparation of the as-built drawings, shall be at the sole expense of the permittee.

#### Drawing Standards:

Sheet size 24" x 36"

Minimum scale - 1" = 20' horizontal; 1" = 5' vertical

Detail scale - Larger as necessary

Paper as-built drawings shall be submitted with a signature and date which verifies the "as-built" condition of the project. An electronic file in PDF and AutoCAD format (current edition) shall also be provided.

**SECTION 4**  
**STREET, PEDESTRIAN PATHS, AND BIKEWAYS**

## SECTION 4 STREET, PEDESTRIAN PATHS, AND BIKEWAYS

### 4.01 General Considerations

Grid systems shall be encouraged and developments must provide for the extension of roadways to accommodate and promote “grid” systems. Dead end streets and cul-de-sacs are discouraged. Single entrance/exit roadways are strongly discouraged.

This chapter provides minimum street design standards as well as minimum design standards for “stand alone” pedestrian and/or bike trails/paths. Higher design and construction standards may be warranted due to localized design and construction parameters.

### 4.02 Streets

#### A. General

All plans submitted for channelization, traffic control and road construction or reconstruction shall be prepared by a professional engineer licensed in the State of Washington. All street design must provide for the maximum traffic loading and capacity conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity.

#### B. Design Standards

The design of streets and roads shall depend upon their type and usage. The design elements of streets shall conform to City standards as set forth herein.

The layout of streets shall provide for the continuation of existing arterial and neighborhood collector streets in adjoining subdivisions or of their proper projection when adjoining property is not yet subdivided. Local access streets, which serve primarily to provide access to abutting property, shall be designed to discourage through traffic. See Road Section Details and Table 4.1 for the Minimum Street Design Standards.

1. Maximum and minimum grades as shown in Table 4.1 may be exceeded for short distances of 300 feet or less, upon showing that no practical alternative exists. Exceptions, which exceed 15 percent, will require the approval of the Public Works Director and verification by the fire marshal that additional fire protection requirements will be met.

2. The pavement and right-of-way width depend upon the street classification. The Standard Road Sections show the minimum required widths. Pavement widths shall be measured from face of vertical curb to face of vertical curb on streets with cement concrete curb and gutter.
3. There shall be no islands in the middle of any residential cul-de-sac.
4. The developer may be required to retain a licensed soils engineer to make soils tests and to provide engineering recommendations for design of the pavement based on “in place” soils, depth of “free draining” structural materials, projected pavement loadings, roadway classification, average daily traffic volume, etc.
5. In special circumstances, as may be specifically approved/required by the Public Works Director, due to local conditions and/or geometric restrictions, paving widths or improvement standards may be required which are different than those specifically listed herein.
6. The City intends to promote connectivity of roadways within plats and throughout the City. To facilitate future development within the City, streets, and rights-of-way shall be planned to give access to or permit the future subdivision of adjoining land. Streets shall be extended to the plat boundary to accommodate extensions into future subdivisions or adjoining land and the resulting dead end street shall be barricaded pursuant to WSDOT standards, signed as described in Section 4.11, and provided with a temporary cul-de-sac. The cul-de-sac shall be paved per standards. In designing streets, existing development, proposed development and possible future development shall all be considered in the recommendation of right-of-way widths, street widths, paving sections, sidewalks, and other applicable standards.
7. Street jogs with centerline offsets less than 125 feet are prohibited.

8. The location and alignment of streets shall generally conform to existing street layouts, and to the City's policy of extending transportation corridors unless topography or some physical or environmental feature prohibits the reasonable extension or connection of these streets now or in the future. The City Council shall approve of all street names.
9. Streets and lots shall be placed in relationship to natural topography so that grading and filling and/or other alternations of existing conditions is minimized.
10. Streets shall conform to all requirements of the latest edition of the International Fire Code as adopted by the City, and all requirements of the Fire Marshall.
11. Dead end/cul-de-sacs shall terminate in a circular turnaround having minimum pavement diameter of 80 feet.
12. All new utility systems such as power, gas, cable TV, and telephone shall be buried. Design and installation of the system shall be done by the franchised utility company. Design shall be submitted to the City for review and approval prior to installation;
13. Roads are to be sawcut or ground before permanent patch is made or new AC pavement is installed abutting the existing road;
14. The street system (in residential subdivisions and short subdivisions) shall be laid out with a minimum number of intersections with arterial streets. No streets shall intersect at intervals closer than 125 feet, unless, in the judgment of the Public Works Director, an exception to this rule would be in the public interest and welfare;
15. Streets shall be laid out so as to intersect as nearly as possible at right angles, and in any event, no street shall intersect with any other street at an angle of less than 80 degrees without specific written City approval.
16. All public streets, sidewalks, and alleys shall conform as a minimum to one of the herein referenced construction standards and shall be adjusted as necessary to match existing facilities, service the proposed development, and meet the needs of anticipated future development.

17. At street intersections, property line corners shall be rounded by an arc, the minimum radii of which shall be 20-feet. A chord may be substituted for such arc if specifically approved by the City Engineer.
18. Cul-de-sacs for residential and rural streets shall be 400 feet maximum in length, and constructed with a 40 foot minimum radius of pavement at the bulb. Right-of-way at the cul-de-sac bulb shall be 50 feet minimum in radius. All other requirements shall be in accordance with the applicable street standards.
19. Projects of 16 dwelling units or more, accessing off of an arterial road will likely require the design and construction of a center turn lane on the adjacent arterial;

**TABLE 4.1****Street Design Standards**

<b>Classification</b>	<b>Arterial Streets</b>	<b>Minor and Collector Arterial Streets</b>	<b>Local Access Streets</b>	<b>Minor Access Street</b>	<b>Dead-End Cul-De-Sac</b>	<b>Half Streets</b>
A. Typical Road Type	Vertical curb and gutter	Vertical curb and gutter	Vertical curb and gutter	Vertical curb and gutter	Vertical curb and gutter	Vertical curb and gutter
B. Design speed <sup>(3)</sup> mph	45	40	35	35	30	
C. Maximum superelevation ft/ft <sup>(4)</sup>	0.06	0.06	--	--	--	--
D. Horizontal curvature	See Table 4.2	See Table 4.2	See Table 4.2	See Table 4.2	275	
E. Minimum/maximum grade (%) <sup>(3)</sup>	0.5 – 8	0.5 – 8	0.5 – 15	0.5 – 15	0.5 – 15	0.5 – 15
F. Standard stopping sight distance(ft) <sup>(6)</sup>	See Table 4.2	See Table 4.2	See Table 4.2	See Table 4.2	See Table 4.2	
G. Standard entering sight distance (ft) <sup>(7)</sup>	See Table 4.2	See Table 4.2	See Table 4.2	See Table 4.2	See Table 4.2	
H. Intersection curb radius (ft)	30	30	30	25	25	15

- (1) Within the above parameters, geometric design requirements shall be determined for specific arterial roads consistent with AASHTO.
- (2) Direct access allowed only if no other access potential exists.
- (3) Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed. Curves shall be designed within parameters of B, C, and D in Table 4.1.
- (4) Superelevation may be used, upon approval of the City Engineer.
- (5) Maximum grade may be exceeded for short distances of 300 feet or less, upon showing that no practical alternative exists. All roads with grades exceeding 15 percent shall be paved with Portland cement concrete.
- (6) Standard stopping sight distance (SSD) shall apply unless otherwise approved by the City Engineer.
- (7) Standard entering sight distance (ESD) shall apply at intersections and driveways unless otherwise approved by the City Engineer. ESD shall not apply to residential driveways and local access streets.

**TABLE 4.2****Street Design Values**

Design Speed (mph)	25	30	35	40	45
Minimum Horizontal Curvature, Radius, (Feet)	180	300	460	(1)	(1)
Stopping Sight Distance (Feet)	155	200	250	305	360
Entering Sight Distance (Feet)	280	335	390	495	500

(1) Horizontal curvature to be designed by Engineer.

**4.03 Street Frontage Improvements**

- A. All industrial, commercial, and residential development, as well as, subdivisions and short plats shall install street frontage improvements at the time of construction. Such improvements shall include, but not limited to, paving, concrete curb and gutter, concrete sidewalk, street storm drainage, street lighting system, utility relocation, landscaping and irrigation, street pavement widening and underground utilities all per these Standards and/or as required by their Public Works Director. Plans shall be prepared and signed by a licensed civil engineer currently registered in the State of Washington.
- B. All frontage improvements shall be made across the full frontage of the property, and may include tapers and transitions to existing facilities beyond the boundary or the property improvements.
- C. Exceptions:
1. When the proponent requests that the Public Works Director evaluate if the required frontage improvements cannot be reasonably performed due to unique conditions, the Public Works Director will consider a request from the proponent that an “equal” and voluntary monetary amount be deposited with the City and retained by the City for The installation of street and/or sidewalk improvements in another area of the City where such improvements will better serve the residents of the City and of the proposed development per applicable RCWs. The equivalent cost shall be approved by the City and include design, administration, construction, and construction inspection costs.
  2. When improvements cannot be reasonably accomplished in a timely manner a recorded agreement alone with an appropriate financial guarantee on forms provided by the City shall be

completed which provide for these improvements to be installed at a later date by the proponent.

- D. Right-of-way shall be conveyed to the City by a right-of-way dedication deed. All costs of same to be borne by the property owner/developer.

**4.04 Private Streets**

- A. General

While community street requirements are usually best served by public streets, owned and maintained by the City, private streets may be appropriate for some local access streets.

- B. Approval

Private streets may be approved by the Public Works Director only when they are:

1. Permanently established by right-of-way, tract or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required improvements, to include provision for future use by adjacent property owners when applicable; and
2. Built to City standards, as set forth herein, or secured under the provisions of the subdivision regulations; and
3. Accessible at all times for emergency and public service vehicle use; and
4. Not obstructing, or part of, the present or future public neighborhood circulation plan developed in processes such as the City comprehensive plan, or capital improvement program; and
5. Not going to result in land locking of present or future parcels; and
6. Not needed as public roads to meet the minimum road spacing requirements of these standards; and
7. Not capable of being extended.
8. Maintained by a capable and legally responsible owner or homeowners' association or other legal entity made up of all

benefited property owners, under the provisions of the applicable codes; and

9. Clearly described on the face of the plat, short plat, or other development authorization and clearly signed at street location as a private street, for the maintenance of which the City is not responsible.

C. Acceptance of Private Streets

The City will not accept private streets for maintenance as public streets until such streets are brought into conformance with current City standards.

D. Internal Streets Serving Commercial Developments

Internal streets, parking lots, aisles, and alleys serving private commercial, industrial, or multi-family developments shall require the approval of the City. In all cases, adequate provisions shall be made for emergency access, maintenance and delivery access, and shall provide adequate space for turning and parking movements and pedestrian circulation and access. Where determined by the City, pedestrian areas shall be separated from vehicle areas by a physical barrier such as a vertical curb or raised sidewalk. Also, the City may require walls, curbs, fences, landscaping, or some other approved facilities to protect adjacent properties, provide screening, or prevent unsafe conditions in and around the parking areas. At a minimum, parking aisles and spaces shall be dimensioned in accordance with MMC Title 18.18.

**4.05 Cul-De-Sacs and Eyebrows**

- A. Any permanent cul-de-sac shall not be longer than 400 feet measured from centerline of intersecting street to the center of the bulb section. Proposed exceptions to this rule will be considered by the Public Works Director based on pertinent traffic planning factors such as topography, sensitive areas, and existing development. The cul-de-sac length may extend to 1,000 feet if there is provision for emergency turnaround near mid-length.
- B. The Public Works Director may require an off-street walk or an emergency vehicle access to connect a cul-de-sac at its terminus with other streets, parks, schools, bus stops, or other pedestrian traffic generators, if the need exists.
- C. If a street temporarily terminated at a property boundary serves more than six lots or is longer than 150 feet, a temporary bulb shall be constructed

near the plat boundary. All portions of the temporary bulb lying outside a typical street right-of-way shall be placed in an easement. Building setback shall be measured from the boundary of the easement. Removal of the temporary cul-de-sac, extinguishment of the easement, and extension of the sidewalk shall be the responsibility of the developer who extends the road.

- D. The maximum cross slope in a bulb shall not exceed 6 percent.
- E. Use of a “hammer head” turnaround shall not be used in place of a bulb and shall only be used as an emergency turnaround where approved by the Fire Marshal.

#### **4.06 Intersections**

- A. Traffic control will be as specified in the Manual on Uniform Traffic Control Devices (MUTCD) or as may be specifically modified by the City Public Works Director, as a result of appropriate traffic engineering studies.
- B. Street intersections shall be laid out so as to intersect as nearly as possible at right angles. Sharp angled intersections shall be avoided. For reasons of traffic safety, a “T” intersection (three-legged) is preferable to the cross-road (four-legged) intersection for local access streets. For safe design, the following types of intersection features should be avoided:
  - 1. Intersections with more than four intersecting streets;
  - 2. “Y” type intersections where streets meet at acute angles;
  - 3. Intersections adjacent to bridges and other sight obstructions.
- C. On sloping approaches at an intersection, landings shall be provided with grade not to exceed one foot difference in elevation for a distance of 30-feet approaching any arterial or neighborhood collector or 20-feet approaching an local access street, measured from nearest right-of-way line (extended) of intersecting street. The City may require the landing to be measured from the face of future curb or edge of traveled way, if there exists the question of compliance with this standard when the street is improved.
- D. Spacing between adjacent intersecting streets, whether crossing or T-connecting, shall be as follows:

When Highest Classification involved is:	Minimum centerline offset shall be:
Major arterial	330 feet
Minor arterial	300 feet
Collector Arterial	300 feet
Local Access	150 feet

- E. Curb radii at intersections shall be as indicated in Table 4.1.

**4.07 Half Streets**

When constructing a half street, the Developer may be required to extend the grading onto adjacent areas to accommodate future completion of the opposite half. No half street will be constructed that presents a vertical separation at the property line that will not allow reasonable completion of the opposite half.

**4.08 One-Way Streets**

Local access streets, including loops, may be designated one-way upon a finding by the Public Works Director that topography or other site features make two-way traffic impractical.

**4.09 Bus Zones and Turn-Outs**

During the design of arterials and neighborhood collectors, the designer shall contact the service provider, and the local school district to determine bus zone (stop) locations and other bus operation needs. The road project shall provide wheelchair accessible landing pads at designated bus zones as per Americans with Disabilities Act (ADA) and where required shall include turn-outs and shelter pads. Pedestrian and wheelchair access improvements within the right-of-way to and from the bus loading zone or turn-out from nearby businesses or residences shall also be provided as part of the road improvement. Surfacing requirements may also be affected, particularly on shoulders.

**4.10 Access and Circulation Requirements**

- A. A future street plan shall:

1. Be filed by the applicant in conjunction with an application for a subdivision or development. The plan shall show the pattern of existing and proposed land division and shall include other parcels within 660 feet surrounding and adjacent to the proposed land division. At the applicant's request, the City shall prepare a future streets proposal. A street proposal may be modified when subsequent subdivision proposals are submitted.
  2. Identify existing or proposed bus routes, pullouts or other transit facilities, bicycle routes and pedestrian facilities on or within 500 feet of the site.
- B. All local access streets and local collector arterials, which abut a development site, shall be extended within the site to provide through circulation when not precluded by environmental or topographical constraints, existing development patterns, or strict adherence to other portions of the City standards. A street connection or extension is considered precluded when it is not possible to redesign or reconfigure the street pattern to provide required extensions. In the case of environmental or topographical constraints, the mere presence of a constraint is not sufficient to show that a street connection is not possible. The applicant must show why the constraint precludes some reasonable street connection.
- C. The location, width, and grade of all streets shall conform to the City standards and shall be considered in their relation to existing and planned streets, to the continuation or appropriate projection of existing streets in the surrounding areas, to topographic conditions, to public convenience and safety, and in their appropriate relation to the proposed use of the land to be served by such streets.
- D. All development shall provide an internal network of connecting streets that minimize travel distances within the development.
- E. Where necessary to give access or permit a satisfactory future division of adjoining land, streets shall be extended to the boundary lines of the tract to be developed, and
1. These extended streets or street stubs to adjoining properties are not considered to be permanent cul-de-sacs since they are intended to continue as through streets at such time as the adjoining property is developed. A temporary cul-de-sac shall be constructed in accordance with Section 4.06.

2. When permitted by the City a barricade shall be constructed at the end of the street by the developer, which shall not be removed until authorized by the Public Works Director, the cost of which is to be included in the street construction cost.

#### **4.11 Second Access Requirements**

In order to provide a second access to a residential subdivision, short subdivision, binding site plan or planned unit development, no residential street shall serve as an access street to any development of more than 50 lots or dwelling units unless the access street is connected in at least two locations with other streets that have a vehicle carrying capacity the same as or greater than the access street. A local access road may be separated by a median, but the median separation may not constitute or substitute for a second access.

The second access requirement may be satisfied through use of connecting a new street to an existing street in an adjacent neighborhood if:

1. No other practical alternative exists; or
2. Existing street was previously stubbed indicating intent for future access;  
or
3. An easement has been recorded specifically for said purpose.

These provisions are not intended to preclude the state statute on land locking. This section does not preclude a commercial project from gaining access through a residential development; however, such an access is strongly discouraged. Traffic impacts for such projects will be analyzed during the SEPA process.

#### **4.12 Access Requirements**

- A. In order to provide for increased traffic movement on arterial streets and to eliminate turning movement conflicts, the Public Works Director may restrict the location of driveways on such streets and require that the location of driveways be placed on adjacent streets upon the finding that the proposed access would:
  1. Cause or increase existing hazardous traffic conditions; or
  2. Provide inadequate access for emergency vehicles; or

3. Cause hazardous conditions to exist, which would constitute a clear and present danger to the public health, safety, and general welfare.
- B. In order to eliminate the need to use public streets for movements between commercial or industrial properties, parking areas shall be designed to connect with parking areas on adjacent properties unless not feasible. The Public Works Director shall require access easements between properties where necessary to provide for parking area connections.
  - C. In order to facilitate pedestrian and bicycle traffic, access and parking area plans shall provide efficient sidewalk and/or pathway connection between neighboring developments or land uses.
  - D. Proposed street or street extensions shall be located to provide direct access to existing or planned transit stops or other neighborhood activity centers, such as schools, shopping areas, and parks.

#### **4.13 Street Names**

The developer must receive approval from the City regarding the naming of streets. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. The correct street names must be shown on all engineering drawings. The Public Works Director will insure that the name assigned to a new street is consistent with policies of the City. The City may require that addresses be assigned at the time of final plat recording.

An address number will be assigned to all new buildings at the time the building permit is issued. It is then the owner's responsibility to see that the house numbers are placed clearly and visibly on the structure and at the main entrance to the property or at the principal place of ingress.

#### **4.14 Signing**

The developer is responsible for providing all traffic control signs. Traffic control signing shall comply with the provisions as established by the most recent edition of the U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).

Street designation signs, including poles and hardware, shall be paid for by the developer. Street designation signs shall display street names or grid numbers as applicable. Street signs for private streets shall state "Private" directly on the sign. All signs shall conform to City standards and the Public Works Director will have the authority to reject signage, which is considered not in conformance.

#### **4.15 Slope, Wall and Drainage Easements**

Either the functional classification or particular design features of a road may necessitate slope, sight distance, wall, or drainage easements beyond the right-of-way line. Such easements may be required by the City in conjunction with dedication or acquisition of right-of-way.

#### **4.16 Pavement Markings, Markers, and Pavement Tapers**

Pavement markings, markers, or striping shall be used to delineate channelization, lane endings, crosswalks and longitudinal lines to control or guide traffic per MUTCD. Channelization plans or crosswalk locations shall be approved by the City. The Developer is responsible for designing and installing all pavement markings. The Developer shall submit a pavement marking and channelization plan for the City's review and approval.

#### **4.17 Right-of-Way**

Right-of-way is determined by the functional classification of a street. Arterials shall have a right-of-way consistent with the minimum street design standards.

Right-of-way requirements may be increased if additional lanes, pockets, transit lanes, bus loading zones, change in speed limit, bike lanes, utilities, schools, or other factors are proposed and/or required by the City.

Right-of-way shall be conveyed to the City on a recorded plat or by a right-of-way dedication deed. All costs of same to be borne by the property owner/developer.

#### **4.18 Signals**

Signalization will be required if warranted as determined by an existing traffic study traffic study performed by the Developer at the request of the City. The developer shall pay the entire cost of signalization if signalization is warranted. All components of the signals shall become property of the City.

#### **4.19 Parking Lots**

Plans and specifications shall be required to be submitted for review and approval by the City with respect to storm drainage, matching street and/or sidewalk grades, access locations, parking layout, and to check for future street improvement conformity and City zoning regulations.

Parking lot surfacing materials shall satisfy the requirement for a permanent all-weather surface. Hot Mix Asphalt pavement and cement concrete pavement satisfy this requirement and are approved materials. Gravel surfaces are not acceptable or approved

surface material types. Combination grass/paving systems are approved surface material types, however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems will be irrigated and maintained. If the Public Works Director determines the grass/paving system is not appropriate for the specific application, alternate approved surfacing materials shall be utilized.

#### **4.20 Survey Staking**

All surveying and staking shall be performed by an engineering or surveying firm employed by the Developer and capable of performing such work. The engineer or surveyor performing and directing such work shall be currently licensed by the State of Washington to perform said task. Vertical datum shall be NAVD29 and the horizontal datum shall be NED 83/91.

A pre-construction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of streets shall be as follows:

- A. Stake centerline alignment every 25 feet (50 feet in tangent sections) with cuts and/or fills to subgrade.
- B. Stake top of ballast and top of crushed surfacing at centerline and edge of pavement every 25 feet.
- C. Stake top back of curb at a consistent offset for vertical and horizontal alignment.

#### **4.21 Driveways**

- A. General
  - 1. Notwithstanding any other provisions, driveways will not be allowed where they are prohibited by separate City Council action or where they are determined by the Public Works Director to create a hazard, invite or compel illegal or unsafe traffic movements, or impede the operation of traffic on the roadway. Driveways giving direct access onto arterials may be denied if alternate access is available.

2. All abandoned driveway areas on the same frontage shall be removed and the curbing and sidewalk or shoulder and ditch section shall be properly restored, at the Property Owner's expense.
3. Maintenance of driveway approaches and culverts shall be the responsibility of the owners whose property they serve.
4. No person shall begin work on the construction, alteration, or removal of any driveway or the paving of any parking strip on and/or adjacent to any street, alley or other public place in the City without first obtaining a street work permit from the City. Exceptions to permit acquisition requirements may be granted at the discretion of the Public Works Director, for emergency repairs only.
5. Existing driveways may be reconstructed or repaired as they exist provided such reconstruction is compatible with the adjacent road. A street work permit shall be required for driveway reconstruction or repair.
6. For driveways crossing an open ditch section, culverts shall be adequately sized to carry anticipated stormwater flows and in no case be less than 12 inches in diameter. The property owner making the installation shall be responsible for determining proper pipe size. The Public Works Director may require the owner to verify the adequacy of pipe size. Concrete pipe shall have a minimum cover of 6 inches to finish grade. All other pipes shall have a minimum cover of 12 inches.
7. Unless otherwise approved by the Public Works Director, all driveways shall be constructed of asphalt concrete (2 inch min.) or Portland Concrete Cement Class 4000 as detailed herein.
8. No commercial driveway shall be allowed where backing onto the sidewalk or street will occur. Exceptions to this may be granted by the Public Works Director due to extenuating circumstances.
9. No driveway apron shall extend into the street further than the face of the curb.
10. The two edges of each driveway approach shall be parallel, where possible.

B. Location of New Driveways.

1. A residential driveway shall typically serve only one parcel. A driveway serving more than one parcel shall be classed as a commercial driveway, except as allowed in subsections (2)(a) and (2)(b) of this section.
2. No portion of driveway width shall be allowed within 5 feet of side property lines in residential areas or 9 feet in commercial areas except as follows:
  - a. A joint use driveway tract or easement may be used to serve a maximum of two parcels:
    - 1) Minimum width of the driveway tract shall be 32 feet with a 24-foot paved driving surface, with appropriate slopes and gutters for drainage control. The remaining 8 feet of tract width (4 feet on each side) shall be used for landscaping purposes. Minimum tract length shall be 20 feet as measured from right-of-way line.
    - 2) Driving surface of a joint use driveway tract shall be paved to the edge of pavement of intersecting street.
    - 3) The Public Works Director may allow use of an easement if the only access to a serving roadway is through an adjacent parcel not owned by the applicant.
  - b. Existing driveways may utilize full width of narrow “panhandle” parcels or easements if approved by Director.
  - c. By use of an easement, a commercial driveway may be located on or over the property line if approved by Director. The Director may require a shared driveway easement for commercial properties as a means of limiting the number of driveways and proximity to other driveways and streets.
3. Every driveway must provide access to a garage, carport, parking area or other structure on private or public property requiring the entrance of vehicles. No public curb shall be cut unless a

driveway is installed. A single-family residence shall be allowed only one driveway connection to the street or access road.

4. No driveway shall be constructed in such a manner as to be a hazard to any existing street lighting standard, utility pole, traffic regulating device or fire hydrant. At a minimum all portions of the driveway shall be located a minimum of 5 feet from these and similar appurtenances. The cost of relocating any such object when necessary to do so shall be paid by the abutting property owner. The relocation of any object shall be allowed with the specific written approval of the Owner of the object involved.
5. Parking lot circulation and signing needs shall be met on site. The public right-of-way shall not be utilized as part of parking lot circulation.
6. No driveway access shall be allowed onto an arterial street within 100 feet of the nearest right-of-way line of an intersecting street.
7. No driveway shall be located within 20 feet of a crosswalk or traffic calming device.
8. No driveway may access an arterial streets within 75 feet (measured along the arterial) of any other such arterial street access on either side of the street; provided, that such access may be located directly opposite another access.
9. Within the limitations set forth above, access to arterial streets within the City shall be limited to one driveway for each tract of property separately owned, except that certain commercial and business sites, such as automobile service stations, for example, may be allowed multiple driveways as approved by the City.

C. Dimensions, Width, Slope, Details

1. Except as otherwise provided, the maximum width of any residential driveway shall be 20 feet (exclusive of the taper). The Public Works Director may authorize additional residential driveway widths for three-car garages, but no residential driveway shall be wider than 30 feet. A street approach or wider driveway may be approved by the Public Works Director where a substantial percentage of oversized vehicle traffic exists, where divisional islands are required/desired, or where multiple exit or entrance lanes are needed. The maximum width for any commercial driveway shall be 60 feet.

2. The width of any driveway shall not be less than 10 feet, exclusive of the taper.
3. The length of any driveway shall not exceed 150 feet, without approval of the Public Works Director and Fire Marshal.
4. Driveway slopes or grades shall not exceed 12 percent unless otherwise authorized/approved by the Public Works Director in writing. The Public Works Director will consider authorizing driveway slopes exceeding 12 percent, up to a maximum of twenty percent, if it is determined that all of the following apply:
  - a. The driveway location is the only economically and environmentally reasonable alternative.
  - b. The driveway will not present a traffic, pedestrian, bicycle or safety hazard.
  - c. The Fire Marshal concurs in allowing the increased driveway slope.
  - d. The public health, safety and general welfare will not be adversely affected.
5. The angle between any driveway and the street shall be not less than 60 degrees.
6. Curb tapers between driveways shall reach the full height of the curb. In addition, at least 5 feet of full-height curb shall be constructed between driveways in residential areas and 8 feet in commercial areas.
7. With the exception of panhandle/flag lots when approved, the total width of all driveways for any one ownership on a street shall not exceed 30 percent of that ownership along the street. When approved any driveway which has become abandoned or unused through a change of the conditions for which it was originally intended or which for any other reason has become unnecessary, shall be removed, and the owner shall replace any such driveway curb-cut with a standard curb, gutter, sidewalk, parking lanes, etc., according to the City's standards.

#### D. Commercial Driveways

For commercial or industrial driveways with heavy traffic volumes or significant numbers of trucks, the Public Works Director may require construction of the access as a street intersection. This requirement will be based on traffic engineering analysis submitted by the applicant that considers, among other factors, intersection spacing, sight distance, and traffic volumes. No commercial or industrial type driveway shall be constructed, where backing onto the sidewalk or street is required. Street approaches and/or ingress and egress tapers may be required in industrial and commercially zoned areas as directed by the City Engineer.

#### 4.22 Sight Obstruction

The following sight clearance requirements take into account the proportional relationship between speed and stopping distance.

The sight distance area is a clear-view triangle formed on all intersections by extending two lines of specified length (A) and (B) as detailed within these Standards. The area within the triangle shall be subject to restrictions to maintain a clear view on the intersection approaches.

Sight Distance Triangle:

##### Stop or yield controlled intersection:

Length (A) shall be measured from the center of the intersecting streets along the centerline of the major road.

Length (B) shall be measured from a point on the minor road 15 feet from the edge (extended) of the major road pavement and measured from a height of eye at 3.50 feet on the minor road to height of object at 4.25 feet on the major road.

Speed Limit	Sight Distance (feet)	
	(A) - Major Street	(B) - Minor Street
20 mph	200	*
25 mph	250	*
30 mph	300	*
35 mph	350	*
40 mph	400	*

Uncontrolled Intersection:

Length (A) and (B) as shown below are from the center of the intersecting streets along the centerlines of both streets and connecting these endpoints to form the hypothesis of the triangle.

Speed Limit	Sight Distance (feet)	
	(A) - Major Street	(B) - Minor Street
20 mph	90	90
25 mph	110	110
30 mph	130	130
35 mph	155	155
40 mph	180	180

The vertical clearance area within the sight distance triangle shall be free from obstructions to a motor vehicle operator's view between a height of 3 feet and 10 feet above the existing surface of the street.

Sight obstructions that may be excluded from these requirements include: fences in conformance with this chapter, utility poles, regulatory signs, trees trimmed from the base to a height of 10 feet above the street, places where the contour of the ground is such that there can be no cross visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge which are so planted and trimmed as to leave at all seasons a clear and unobstructed cross view, buildings constructed in conformance with the provisions of appropriate zoning regulations and preexisting buildings.

#### 4.23 Sidewalks, Curbs and Gutters

##### A. General

All properties within commercial zones of the City, properties abutting arterial streets, neighborhood collectors or local access streets shall, in conjunction with new construction on such properties or alterations, reconstruction, or improvements, where the total cost of construction, reconstruction or remodeling in the opinion of the City warrants frontage improvements, shall be required to provide sidewalks, curbs and gutters along abutting streets, in accordance with the details provided herein.

Where a project is connected to an improved public street by an "unimproved" right-of-way and "off-site" improvements to the unimproved right-of-way are required, an approved walkway or sidewalk will be required as part of the "off-site" improvements.

B. Design Standards

Plans for the construction of sidewalks, curbs and gutters are to be submitted as part of the street plans when applicable.

The City has set forth minimum standards as shown in the details, which must be met in the design and construction of sidewalks, curbs and gutters. Because these are minimum standards, they may be modified by the City should the Public Works Director or City Engineer feel circumstances require variances to minimum design standards.

C. Sidewalks

1. Sidewalks, curbs and gutters shall be required on both sides of all streets interior to the development. Sidewalks, curbs and gutters and half street improvements shall also be required on the development side streets abutting the exterior of said development.
2. Form and subgrade inspection by the City, are required before sidewalk is poured.
3. Monolithic pour of curb, gutters, and sidewalk will not be allowed.
4. Obstructions or tripping hazards, shall not be permitted within the sidewalk, including poles, rock walls, manhole covers, utility structures, or other that the Public Works Director deems as a hazard or maintenance problem.
5. All portions of the sidewalk shall meet applicable ADA standards.

D. Curb and Gutter

Cement concrete curb and gutter shall be used for all street edges unless otherwise approved by the Public Works Director. All cement concrete curbs and gutters shall be constructed in accordance with Section 8-04 of the WSDOT Standard Specifications. Curbs shall be of the vertical face type. No rolled curb and gutter profile will be allowed without specific approval of the Public Works Director. When rolled curbs are approved, all sidewalks abutting the rolled curb shall be a minimum 6 inches thick.

Extruded curb and gutter per WSDOT Standard Specifications is allowed only with the specific approval of the Public Works Director.

Form and subgrade inspection by the City are required before curb and gutter are poured.

Sufficient support shall be given to the form to prevent movement in any direction, resulting from the weight of the concrete or the concrete placement. Forms shall not be set until the subgrade has been compacted within one inch of the established grade. Forms shall be clean and well oiled prior to setting in place. When set, the top of the form shall not depart from grade more than 1/8 inch when checked with a 10-foot straightedge. The alignment shall not vary more than 1/4 inch in 10 feet. Immediately prior to placing the concrete, forms shall be carefully inspected for proper grading, alignment and rigid construction. Adjustments and repairs as needed shall be completed before placing concrete.

The subgrade shall be properly compacted and brought to specified grade before placing concrete. The subgrade shall be thoroughly dampened immediately prior to the placement of the concrete. Concrete shall be spaded and tamped thoroughly into the forms to provide a dense, compacted concrete free of rock pockets. The exposed surfaces shall be floated, finished and brushed with a fiber hair brush approved by the City's inspector.

The face form of the curb shall be stripped at such time in the early curing as will enable inspection and correction of all irregularities that appear thereon.

Forms shall not be removed until the concrete has set sufficiently to retain its true shape. The face of the curb shall be trowled with a tool cut to the exact section of the curb and at the same time maintain the shape, grade and alignment of the curb. The exposed surface of the curb shall be brushed with a fiber hair brush.

White pigmented or transparent curing compounds shall be applied to all exposed surfaces immediately after finishing. Transparent curing compounds shall contain a color dye of sufficient strength to render the film distinctly visible on the concrete for a minimum period of 4 hours after application.

When the curb section is to be placed separately, the surface of the gutter directly underneath the curb section shall be covered with a protective cover to protect that area from the curing agent when the gutter is sprayed. This cover must remain in place until the curb is placed. Care shall be taken in the placing of this cover to prevent the steel dowels from puncturing the cover.

If, at any time during the curing period any of the forms are removed, a coat of curing compound shall be applied immediately to the exposed surface. The curing compound shall be applied in sufficient quantity to obscure the natural color of the concrete as approved by the City Inspector.

Joints shall be constructed in the manner and at the locations shown in the Standard Details. They shall be cleaned and edged as shown on the drawings. All expansion and contraction joints shall extend entirely through the curb section above the pavement surface. Joint filler in the curb shall be normal to the pavement and in full but contact with pavement joint filler.

E. Wheelchair Ramps

All sidewalks must be constructed to provide for wheelchair ramps in accordance with the current standards of applicable state law. Details provided herein are minimum and subject to change. It is the Developer's responsibility to verify current ADA requirements and install same per current standards even if City has approved of construction drawings with non-compliant ADA requirements.

Wheelchair Ramps shall be constructed of Portland Cement Concrete. Form and subgrade inspection by the City are required before wheelchair ramp is poured.

Detectable warnings or truncated domes shall be required per State and Federal ADA requirements.

F. Survey Staking

The minimum staking of curb, gutter, and sidewalk shall be as follows:

Stake top back of curb at a consistent offset for vertical and horizontal alignment every 25 feet (50 feet in tangent sections).

G. Testing

Testing shall be required at the developer's or contractor's expense on all materials and construction as specified in the WSDOT Standard Specifications.

At a minimum, one slump test and one test cylinders shall be taken each day. All other testing frequencies shall be as specified in the Testing and Sampling Table in Section 4.35.

In addition, the City shall be notified before each phase of sidewalk, curb and gutter construction commences.

#### **4.24 Separated Walkways, Bikeways, and Trails**

Separated pedestrian, bicycle and equestrian facilities shall be provided where designated in the Comprehensive Plan or where required by the Public Works Director because of anticipated significant public usage. Separated facilities are typically located on an easement, tract, or within the right-of-way when separated from the roadway by a drainage ditch or barrier. Where separated walkways, bikeways, or equestrian facilities intersect with motorized traffic, sight distance, marking and signalization (if warranted) shall be as provided in MUTCD. Facilities shall be designed as follows:

- A. **Primary Trail.** Primary trails are intended for pedestrian and bicycle use, are meet ADA requirements, and located conveniently so as to connect several community facilities. Primary trails shall be paved with a minimum paved surface width of 10 feet and graded shoulders of at least 2 feet. Primary trails shall include provisions for signage, access, lighting, drainage, visibility, landscaping, and other necessary appurtenances as required by the City. Tract width shall be a minimum of 20 feet in width.
- B. **Secondary Trail.** Secondary trails are intended for pedestrians and bicycles, are located so as to connect community facilities or neighborhoods or to provide access to primary trails. Secondary trails shall have a minimum width of 6 feet with 2 feet of clearance on both sides and shall be paved, and may not meet ADA requirements along the entire length. Tract width shall be a minimum of 15 feet in width.
- C. **Footpaths.** Footpaths are typically soft surface facilities designed for pedestrians. Such pathways shall have a minimum width of 4 feet with at least 2 feet of clearance on both sides and shall be soft surface or paved, where required by the Public Works Director. Tract width shall be a minimum of 12 feet in width.
- D. **All separated walkways, bikeways, and trails not located within a public park, or right-of-way shall be located in a tract dedicated to the City and identified by survey along the centerline of the tract. Survey shall be recorded at the County Assessor's Office or described and dedicated upon final plat recording.**
- E. **Soft surface construction shall include 2-1/2 inches of crushed surfacing top course or wood chips over cleared and compacted native material as approved by the Public Works Director. Paved surface construction shall include 2 inches of Hot Mix Asphalt over 4-inches of crushed surfacing**

top course; or as identified in Section 4.37 for facilities located within the roadway. Provisions for drainage shall be included for all separated facilities.

- F. Where located alongside individual parcels, fencing adjacent to the trail shall be open so as to allow clear visibility into the trail corridor. Fencing on adjacent properties may be required to be located a specific distance from the tract, in order to accomplish the intent of this requirement.

#### **4.25 School Access**

School access required as part of development approval shall be provided by a concrete sidewalk unless another alternative is available and approved by the Public Works Director through a road variance request.

#### **4.26 Bikeways**

- A. Bikeways are generally shared with other transportation modes, although they may be provided exclusively for bicycle use. Bikeways are categorized below per the WSDOT Design Manual based on degree of separation from motor vehicles and other transportation modes. This classification does not denote preference of one type over another. The planning and design of bikeways in any category shall be in accordance with Section 1020 of the WSDOT Design Manual as modified herein, and the AASHTO Guide for the Development of Bicycle Facilities, current edition. Bikeways are categorized as follows:
  - 1. **Bike Path (Class I Bikeway).** A separated paved path for the principal use of bicycles. Bike paths shall be 10 feet wide except in high usage areas or areas serving maintenance vehicles, where they shall be 12 feet wide. Graded shoulders of 2 feet shall be provided adjacent to the pavement.
  - 2. **Bike Lane (Class II Bikeway).** A portion of the road that is designated by pavement striping for exclusive bicycle use. Bicycle lanes may be signed as part of a directional route system. Bicycle lanes shall be 5 feet wide, measured from the face of curb on a curbed road, and 5 feet wide, measured from the edge of the traveled way (painted fog line) on a shouldered road. Bike lanes shall be provided on all arterials designated as bicycle routes in the City's Comprehensive Plan and where designated in the Parks, Trails, and Open Space Comprehensive Plan.
  - 3. **Bike Routes (Class III Bikeway).** A road that provides a widened paved outer lane to accommodate bicycles in the same lane as

motor vehicles. These widened lanes may also be used for parking where allowed. Lane width shall be increased at least 3 feet. In areas of high turnover for on street parking, a Bike Lane may be required. Typically, Bike Routes shall be designated by signs and shall connect to higher use bicycle facilities. Bike Routes shall be provided, but not necessarily designated by signs, on all arterial streets.

4. Shared Roadway With No Designation (Class IV Bikeway). All roads not categorized above where bicycles share the roadway with motor vehicles.
- B. Striping and signing shall be implemented as follows:
1. Pavement markings shall be used on bike lanes and paths according to WSDOT Design Manual and MUTCD.
  2. The design of all signalized intersections shall consider bicycle usage and the need for bicyclists to actuate the signal.

#### **4.27 Side Slopes**

Side slopes shall generally be constructed no steeper than 2:1 on both fill slopes and cut slopes. Steeper slopes may be approved by the Public Works Director upon showing that the steeper slopes, based on soils analyses, will be stable. Side slopes on projects funded by federal grants shall be constructed in conformance with local agency guidelines.

Side slopes shall be permanently stabilized by grass sod or seeding or by other planting or surfacing materials acceptable to the Public Works Director.

All fill slopes shall be compacted in accordance with the developer's geotechnical engineer's recommendations, as approved by the City, and in no case will be less than 92 percent maximum density, per ASTM D1557, Modified Proctor. Slope compaction shall be accomplished using methods and equipment that ensure compaction through the full depth of the fill material, including the face of the slope. Where fill is placed on existing or cut slopes, appropriate measures shall be taken to support the fill (benches) and to provide sub-surface drainage between the fill and native materials.

All slopes shall be hydroseeded or landscaped upon completion of the construction. Irrigation may be required to allow the vegetation to grow in order to provide adequate erosion protection by the onset of the wet season.

#### 4.28 Roadside Features

Miscellaneous features included herein shall be developed and constructed to encourage the uniform development and use of roadside features wherever possible. The design and placement of roadside features included herein shall adhere to the specific requirements as listed for each feature.

##### A. Survey Monuments

1. All existing (or new) survey control monuments and/or markers which are disturbed, lost, or destroyed during surveying or building shall be replaced with the proper monument as outlined below by a land surveyor currently registered (licensed) in the State of Washington at the expense of the responsible contractor, builder or developer. Reference RCW 58.24.040(8), RCW 58.09.130, and WAC 332-120.
2. Permanent control monuments shall be established at each and every controlling corner on the boundaries of the parcel of land being subdivided. Permanent monuments shall also be provided at the street intersections of new streets.
3. A precast concrete monument with cast iron monument case and cover installed per City of Milton Standards is required for all new development.
4. Monument Locations:  
  
Appropriate monuments shall be placed:
  - a. At all street intersections;
  - b. At the PI, PC, PTs, and PRCs of all horizontal curves;
  - c. At all corners, control points and angle points around the perimeter of subdivisions as determined by the City;
  - d. At all section corners, quarter corners, and sixteenth corners that fall within the right-of-way.
  - e. At all termini of streets that will be extended in the future, or that terminate in a permanent cul-de-sac.
  - f. At all center of cul-de-sacs.

B. Mailboxes

1. During construction, existing mailboxes shall be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocation shall be coordinated with the local U.S. Postal Service. The mailboxes shall be reinstalled at the original location or to a new location as may be required by the local Postmaster, as further outlined below and approved by the U.S. Postal Service.
2. Location
  - a. Bottom or base of box shall be 36 inches to 42 inches above the road surface.
  - b. Front of mailbox 6 inches behind vertical curb face or outside edge of shoulder.
  - c. New developments. Clustered mailboxes will, in all likelihood, be required. Contact the U.S. Postal Service for details. Sidewalks shall be constructed to facilitate same.
  - d. Buck-outs in sidewalks and sidewalk re-alignment are required. A clear walkway of 5 feet minimum is required.
3. Mailboxes shall be set on posts strong enough to give firm support but not to exceed 4 x 4-inch pressure treated wood or one 1-1/2-inch-diameter galvanized pipe, or material and design with comparable breakaway characteristics. Deviations may be allowed only with the written approval of the City.

C. Guardrails

Guardrails shall be designed by a licensed engineer in accordance with the criteria of the “Washington State Department of Transportation Design Manual,” current edition.

Where a project impacts an existing guardrail, the engineer shall assess whether the guard rail is needed and if it meets current standards. The developer may be required to remove, relocate, or replace portions of existing guardrail if its existing location cannot be justified or does not meet current standards. Unless otherwise specified in the WSDOT Design Manual, guardrails shall meet the following design criteria:

1. Guardrails shall be W-Beam of Type 1 or 1A, per WSDOT Standard Plan C-1, with wood post assembly.
2. Guard rail terminals, when flared, shall be flared with a taper of 9:1 or greater.
3. Guardrail anchors and terminals shall be of Type 1, per WSDOT Standard Plan C-6.
4. Guardrail end sections shall be of Design C, per WSDOT Standard Plan C-7.
5. Guardrails placed near the top of retaining walls shall be located so as to avoid damage to the wall upon impact and deflection of the guardrail.
6. Guardrails shall be located at least 3 feet from the object they are protecting. The distance shall be measured from the face of the guardrail to the object.
7. Where guardrail is to be placed in conjunction with curbs, the face of guardrail shall be placed at least 18 inches from the face of the curb, to prevent a hazard to bicycles, pedestrians, and vehicles.

D. Rock Walls

1. Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of 6 feet in stable soil conditions, which will result in no significant foundation settlement or outward thrust upon the walls. For heights over 6 feet, or walls of any height supporting an outward thrust (surcharge), or when soil is unstable, an engineered wall of acceptable design stamped by an engineer currently licensed in the State of Washington shall be used. A building permit shall be required for any wall over 4 feet in height or any wall supporting a surcharge, regardless of height. Design and construction shall be per the Association of Rockery Contractors (ARC) Specifications, applicable engineering recommendations, these standards and MMC 14.15.

All walls affecting public property shall be subject to review, approval, and inspection by the City. All walls for which a permit is required shall be subject to inspection by the City and walls requiring design by an engineer, shall be subject to inspection by the owner's engineer. The owner's engineer shall continuously

inspect the installation of the wall as it progresses and shall submit inspection reports, including compaction test results and photographs taken during the construction, documenting the techniques used and the degree of conformance to the engineer's design.

The City shall inspect the wall on at least two occasions. The first inspection shall occur after placement of the first course of rocks and the inspector shall witness burial of the drain pipe. The second inspection shall occur after completion of the wall, including placement of the backfill material and grading behind and in front of the wall.

2. The rock material shall be as nearly rectangular as possible. No stone shall be used which does not extend through the wall. The rock material shall be hard, sound, durable and free from weathered portions, seams, cracks and other defects. The rock density shall be a minimum of 160 pounds per cubic foot.
3. The rock wall shall be started by excavating a trench having a depth below subgrade of one half the base course or one foot (whichever is greater).
4. Rock selection and placement shall be such that there will be minimum voids and, in the exposed face, no open voids over 6 inches across in any direction. The final course shall have a continuous appearance and shall be placed to minimize erosion of the backfill material. The larger rocks shall be placed at the base of the rockery so that the wall will be stable and have a stable appearance. The rocks shall be placed in a manner such that the longitudinal axis of the rock shall be at right angles or perpendicular to the rockery face. The rocks shall have all inclining faces sloping to the back of the rockery. Each course of rocks shall be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks shall be chinked on the back with quarry rock (2-4 inch) to eliminate any void sufficient to pass a 2-inch-square probe.
5. The wall backfill shall consist of quarry rock with a maximum size of 4 inches and a minimum size of 2 inches or as specified by a licensed engineer. This material shall be placed to a 12-inch minimum thickness between the entire wall and the cut or fill material. The backfill material shall be placed in lifts to an elevation approximately 6 inches below the top of each course of

rocks as they are placed, until the uppermost course is placed. Any backfill material on the bearing surface of one rock course shall be removed before setting the next course.

6. Perforated rigid drainage pipe shall be installed as required by the City. Minimum pipe diameter shall be 4 inches. Drainage pipe shall be placed below the bottom course of rocks and shall be bedded and buried with free-draining material, as shown on the drawings, up to a depth of 18 inches. The top of the wall, including the backfill shall be configured so as to prevent surface drainage from flowing over the wall.

Rock walls having heights over 6 feet or walls to be constructed in conditions when soil is unstable require a structural wall having a design approved by the City of Milton. The design of structural walls shall be by a professional engineer currently licensed in the State of Washington qualified in retaining wall design.

E. Street Trees and Landscaping Items

1. The design of planting strips must be approved by the Public Works Director and must include a landscaping plan in which plant maintenance, utilities and traffic safety requirements are discussed. Landscaping plan must include and identify the features in and near the right-of-way such as underground utilities, mailboxes, street lights, walls, driveways, signs, etc.
2. Existing trees and landscaping shall be preserved where desirable and placement of new trees shall be compatible with other features of the environment. In particular, maximum heights and spacing shall not conflict unduly with overhead utilities, or root development with underground utilities.
3. New trees shall not include poplar, cottonwood, soft maples, gum, any fruit bearing trees or any other tree or shrub whose roots are likely to obstruct sanitary or storm sewers or cause damage to the adjacent infrastructure improvements (e.g., sidewalks).

F. Roadside Obstacles

Non-yielding or non-breakaway structures, including rockeries and retaining walls, which may be potential hazards to the traveling public shall be placed with due regard to safety. On roads with a shoulder or mountable curb, hazardous objects shall be placed as close to the right-of-way line as practicable and a minimum of 10 feet from the edge of the

traveled way or auxiliary lane. On urban roads with a vertical curb section, hazardous objects shall be placed as far from the edge of the traveled way or auxiliary lane as practical. Such an object shall not be placed in a sidewalk or with the object edge nearest the roadway less than 2 feet from face of curb. Placement of any utility structures shall be in accordance with requirements of Section 4.31.

G. Roadway Barricades

Temporary and permanent barricades shall conform to the standards described in Section 6F.60 and 3F.01 of MUTCD.

H. Adjacent and Offsite Areas

Where City-required improvements affect adjacent improvements, whether within the public right-of-way or on private property, the construction drawings shall clearly identify these impacts and the repair, replacement, or mitigation for those impacts. It shall be the developer's responsibility to inform the City and all affected property owners of the impacts and to negotiate, if necessary with these property owners with respect to remedy for the affected areas.

Prior to the start of construction, the Contractor and City inspector shall observe all adjacent areas for the purposes of reviewing these affected areas. Specifically, the Contractor and City inspector shall review the condition of the road surface, utilities, structures, curbs, gutters, sidewalks, vegetation, and the storm drainage system to establish the existing condition of the areas. Upon completion of the Project, the Contractor shall repair any damaged areas and shall clean the storm drainage system to an equal or better condition than prior to construction. All debris, equipment, extra materials, and other construction related items shall be removed from the site and disposed.

**4.29 Utility Crossings in Existing Streets**

For smaller diameter pipes and wires the crossing shall be made without surface cut of the traveled portion. The crossing shall be made by pushing or boring a pipe under the road. Where rock is known or expected in the area of the crossing, open cutting will be permitted, but prior approval of the City is required.

**4.30 Trench Backfill and Restoration**

Trench restoration shall be either by a patch or patch plus overlay as required by the City, and as shown in the Drawings.

- A. All trench and pavement cuts shall be made by sawcut or grinding. The cuts or grinding shall be a minimum of 1 foot outside the trench width.
- B. All trenching shall be backfilled with bankrun gravel or, crushed surfacing controlled density fill (CDF), materials conforming to Section 4 of the WSDOT Standard Specifications. The trench shall be compacted to 95 percent maximum density, as described in Section 2-03 of the WSDOT Standard Specifications. The City will be the sole judge of approving materials to be utilized for backfill. Typically, crushed surfacing top course CDF shall be placed and compacted in the trench sections for all right angle street crossings.

If the existing material is approved by the City to be suitable for backfill, the Contractor may use the native material except longitudinal trench sections within the pavement section the top 12 inches of the trench section shall be crushed surfacing top course or other structurally suitable material as approved by the City. Horizontal trench sections within the pavement section shall be backfilled with crushed surfacing top course. Exceptions may be granted by the City based on site evaluation of excavated materials. All trench backfill materials shall be compacted to 95 percent density.

Backfill compaction shall be performed in 6 inch lifts, unless otherwise approved by the City.

Replacement of the asphalt concrete or Portland concrete cement shall match existing asphalt concrete or concrete cement depth, except asphalt shall be a minimum compacted thickness of 3 inches and concrete cement shall be a minimum thickness of 6 inches.

- C. Tack shall be applied to the existing pavement and edge of cut and shall be emulsified asphalt grade CSS-1 as specified in Section 9-02.1(6) of the WSDOT Standard Specifications. Tack coat shall be applied as specified in Section 5-04 of the WSDOT Standard Specifications.
- D. Hot Mix Asphalt (HMA) Class B PG 58-22 shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the applicable requirements of Section 5-04 of the WSDOT Standard Specifications, except that longitudinal joints between successive layers of Hot Mix Asphalt shall be displaced laterally a minimum of 12 inches unless otherwise approved by the City. Fine and coarse aggregate for Hot Mix Asphalt shall be in accordance with Section 9-03.8 of the WSDOT Standard Specifications. Hot Mix Asphalt over 2 inches thick shall be placed and compacted in equal lifts not to exceed 2 inches each.

All street surfaces, walks or driveways within the street trenching areas affected by the trenching shall be sawcut or ground and paved to an extent that provides a smooth-riding connection and expeditious drainage flow for the newly paved surface. Feathering shall not be allowed.

Surface smoothness shall be per Section 5-04.3(13) of the WSDOT Standard Specifications. The paving shall be corrected by removal and repaving of the trench only.

- E. All joints and cracks shall be sealed using paving asphalt AR 4000W.
- F. When trenching within the roadway shoulder(s), the shoulder shall be restored to its original or better condition.
- G. The final patch shall be completed as soon as possible and shall be completed within 30 days after first opening the trench. This time frame may be adjusted if delays are caused by inclement paving weather, or other adverse conditions that may exist. However, delaying of final repair is allowable only subject to the Public Works Directors approval. The Public Works Director may deem it necessary to complete the work within the 30 days time frame and not allow any time extension. If this occurs, the Contractor shall perform the necessary work as required by the City.

#### **4.31 Temporary Street Patching**

Temporary restoration of trenches shall be accomplished by using 2-inch HMA Class B PG 58-22 when available or 4-inch medium-curing (MC-250) liquid asphalt (cold mix), 3-inch Asphalt Treated Base (ATB), or steel plates suitable for H-20 traffic loading conditions. Steel plates shall be provided with a cold mix “lip” to accommodate a smooth transition from pavement to steel plate.

ATB used for temporary restoration may be dumped directly into the trench, bladed and rolled. After rolling, the trench must be filled flush with ATB pavement to provide a smooth riding surface.

All temporary patches shall be maintained by the Contractor until such time as the permanent pavement patch is in place. All temporary patch materials shall be loaded and hauled to waste by the Contractor, in compliance with applicable government regulations.

If the Contractor is unable to maintain a patch for whatever reason, the City will patch it at actual cost plus overhead and materials. The property owner/developer/permittee shall be invoiced for any City expenses incurred to comply with this Contractor requirement.

### 4.32 Material and Construction Testing

Testing shall be required at the developer's or contractor's expense. The testing shall be ordered by the developer or contractor and the chosen testing lab shall be preapproved by the City. Testing shall be done on all materials and construction as specified in the WSDOT Standard Specifications and with frequency as specified herein.

In addition, the City shall be notified before each phase of street construction commences (i.e., staking, grading, subgrade, ballast, base, top course, and surfacing).

#### CITY OF MILTON TESTING AND SAMPLING FREQUENCY GUIDE

<u>ITEM</u>	<u>TYPE OF TESTS</u>	<u>MIN. NO.</u>	<u>FREQUENCY</u>
GRAVEL BORROW	GRADING & SE	1 EACH	1-4000 TON
SAND DRAINAGE BLANKET	GRADING	1 EACH	1-4000 TON
CSTC	GRADING, SE & FRACTURE	1 EACH	1-2000 TON
CSBC	GRADING, SE & FRACTURE	1 EACH	1-2000 TON
BALLAST	GRADING, SE & DUST RATIO	1 EACH	1-2000 TON
BACKFILL/SAND DRAINS	GRADING	1 EACH	1-2000 TON
GRAVEL BACKFILL FOR:			
FOUNDATIONS	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
WALLS	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
PIPE BEDDING	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
DRAINS	GRADING	1 EACH	1-100 TON
PCC STRUCTURES: (Sidewalk, Curb and Gutter, Foundations)			
COARSE AGGREGATE	GRADING	1 EACH	1-1000 TON
FINE AGGREGATE	GRADING	1 EACH	1-500 TON
CONSISTENCY	SLUMP	1 EACH	1-100 CY
AIR CONTENT	AIR	1 EACH	1-100 CY
CYLINDERS (28 DAY)	COMPRESSIVE STRENGTH	2 EACH	1-100 CY
CEMENT:	CHEMICAL & PHYSICAL CERT.	1	1-JOB
ASPHALT CEMENT CONCRETE:			
BLEND SAND	SE	1 EACH	1-1000 TON
MINERAL FILLER	S.G. & PI, CERTIFICATION	1	1-JOB
COMPLETED MIX	FRACTURE, SE, GRADING, ASPHALT CONTENT	1 EACH	1-1000 TON
	COMPACTION	2 EACH	5-400 TON
ASPHALT TREATED BASE:			
COMPLETED MIX	SE, GRADING, ASPHALT	1 EACH	1-1000 TON

<u>ITEM</u>	<u>TYPE OF TESTS</u> <u>CONTENT</u>	<u>MIN. NO.</u>	<u>FREQUENCY</u>
	COMPACTION	1 EACH	5-Control Lot*
ASPHALT MATERIALS	CERTIFICATION	1	1-JOB
RUBBERIZED ASPHALT:	CERTIFICATION	1	1-JOB
COMPACTION TESTING:			
EMBANKMENT	COMPACTION	1 EACH	1-500 lf
CUT SECTION	COMPACTION	1 EACH	1-500 lf
CSTC	COMPACTION	1 EACH	1-500 lf
CSBC	COMPACTION	1 EACH	1-500 lf
BALLAST	COMPACTION	1 EACH	1-500 lf
TRENCH BACKFILL	COMPACTION	1 EACH	1-500 lf

SE = Sand Equivalency

\* A control lot shall be a normal day's production. For minor quantities 200 tons or less per day, a minimum of 2 gauge readings shall be taken.

### **4.33 Subgrade Preparation**

The subgrade area of the street right-of-way shall be cleared of brush, weeds, vegetation, grass and debris, per Section 2-01 of the WSDOT Standard Specifications. All cleared and grubbed material shall be satisfactorily removed and disposed of properly. All depressions, or ruts, which contain water, shall be drained. At a minimum, the subgrade of the road shall consist of free-draining materials to a depth of 12 inches below finish grade.

The subgrade shall then be bladed and dragged to remove inequalities and secure a uniform surface. The existing subgrade will be compacted to a minimum density as defined in the WSDOT Standard Specifications and as witnessed by the City Inspector. Compaction tests will be required to be conducted at the discretion of the City to verify same.

### **4.34 Crushed Surfacing (Base and Top Course)**

Crushed surfacing material shall be uniform in quality and substantially free from wood, roots, bark and other extraneous material. It will compact into a dense and unyielding mass, which will be true to line, grade and cross-section. Crushed surfacing shall conform to Section 9-03 of the Standard Specifications.

Base courses and top courses shall be placed in accordance with the approved cross-section. Compaction shall be a minimum of 95 percent of standard density as determined by the compaction control test for granular materials.

### **4.35 Surfacing Requirements**

All streets in the City of Milton will be paved with either Hot Mix Asphalt Class B PG 58-22 or Portland Cement Concrete, in strict compliance with these standards. All pavement sections shall be designed by an engineer licensed in the State of Washington. The pavement design shall meet the requirements in the latest publication of the AASHTO Guide for Design of Pavement Structures. Any pavement shall be designed using currently accepted methodology that considers the load bearing capacity of the soils and the traffic carrying capacity requirements of the roadway. Plans shall be accompanied by a pavement thickness design based on soil strength parameters reflecting actual field tests and traffic loading analyses. The analysis shall include the traffic volume and axle loading, the type and thickness of roadway materials and the recommended method of placement.

When an existing asphalt paved street is to be widened or utilities installed, the edge of pavement shall be sawcut or ground to provide a clean, vertical edge for joining to the new asphalt as detailed herein. After placement of the new asphalt section, the joint shall be sealed and the street overlaid 1-1/2 inches, plus a prelevel course, full width throughout the widened area along the length of the utility. The requirement for overlay may be waived by the Public Works Director based on the condition of existing pavement, roadway drainage, and the extent of required changes to channelization. As required by the Public Works Director, grinding and prelevel shall be required in order to restore the street surface to conditions equal to or better than prior to the widening or utility work.

One soil sample per each 500 lf of centerline with three minimum per project representative of the roadway subgrade shall be taken by the Developer and delivered to a City approved soils lab in order to determine a statistical representation of the existing soil conditions.

Soil tests shall be performed by an engineering firm specializing in soils analysis and currently licensed in the State of Washington.

The soils report, signed and stamped by a soils engineer licensed by the State of Washington, shall be based on actual soils tests and submitted with the plans. All depths indicated are a minimum compacted depth.

Construction of streets paved with Hot Mix Asphalt shall conform to Section 5-04 of the Standard Specifications. Pavement material will be Hot Mix Asphalt 1/2" PG 58-22. Mechanical spreading and finishing will be as described in Section 5-04.3(9) of the Standard Specifications. Compaction will be performed by the equipment and methods presented in Section 5-04.3(10) of the Standard Specifications, and Surface Smoothness shall satisfy the requirement of Section 5-04.3(13) of the Standard Specifications.

Permanent pavement patching will be performed as described in the pavement repair detail listed herein, and in compliance with Section 5-04 of the Standard Specifications. All fill material will be placed in lifts no thicker than six inches and mechanically compacted to 95 percent of standard density, as described in Section 2-03 of the Standard Specifications and to the satisfaction of the City Inspector.

The City has established minimum surfacing requirements. These minimum standards are to be used in lieu of a pavement design by a licensed engineer on neighborhood collector or local access streets only and only upon approval by the City:

	Hot Mix Asphalt Class <u>1/2" PG 58-22</u>	Asphalt Treated <u>Base</u>	Crushed Surfacing Top <u>Course</u>	Crushed Surfacing Base <u>Course</u>
Option 1	3"	2"	2"	--
Option 2	3"	--	2"	4"

Concrete shall be minimum of 4,000 psi with fiber mesh reinforcement. Steel rods will be required at all cold joints. Minimum thickness shall be 6 inches of concrete over 4 inches of crushed surfacing. Contraction joints shall be installed along the centerline of the roadway and approximately every 12 feet, to create roughly square panels. Joints are to be sealed. Manholes and other utilities shall be boxed out with construction joints to avoid breaking panel corners. Surface shall be finished with a tine rake pulled perpendicular to the slope.

**4.36 Adjustment Of New And Existing Utility Structures To Grade**

This work consists of constructing and/or adjusting all new and existing utility structures encountered on the Project to finished grade.

On Hot Mix Asphalt paving projects, the manholes shall not be adjusted until the pavement is completed, at which time the center of each manhole lid shall be relocated from references previously established by the Developer and/or Contractor. The pavement shall be cut as further described and base material removed to permit removal of the cover. The manhole shall then be brought to proper grade.

As soon as the street is paved past each manhole, the Hot Mix Asphalt mat shall be scored around the location of the manhole, catch basin, meter boxes or valve box. After rolling has been completed and the mat has cooled, it shall be cut along the scored lines. The manholes, catch basins, meter boxes and valve boxes shall then be raised to finished pavement grade. Before making the asphalt repair, the edges of the existing asphalt pavement and the outer edge of the casting shall be tack coated with hot asphalt cement. The annular spaces shall be filled with Portland cement concrete (8 inch thick) to within 2 inches of the finished grade. The remaining 2 inches shall be filled with Hot Mix

Asphalt Class 1/2" PG 58-22 and compacted with hand tampers and a patching roller to give a smooth finished appearance.

After pavement is in place, all joints shall be sealed with hot asphalt cement (AR 4000W). A sand blanket shall be applied to the surface of the AR 4000W hot asphalt cement binder to help alleviate "tracking."

Hot Mix Asphalt patching shall not be carried out during wet ground conditions or when the ambient air temperature is below the specified values per the most current WSDOT Standards. Hot Mix Asphalt mix shall be at required temperature when placed.

All debris such as asphalt pavement, cement bags, etc., shall be removed and disposed of by the Developer and/or his Contractor.

#### **4.37 Erosion Control**

The detrimental effects of erosion and sedimentation shall be minimized by conforming with the following general principles:

- A. Soil shall be exposed for the shortest possible time.
- B. Reducing the velocity and controlling the flow of runoff.
- C. Detaining runoff on the site to trap sediment.
- D. Releasing runoff safely to downstream areas.
- E. Best Management Practices shall be employed.

In applying these principles, the Developer and/or Contractor shall provide for erosion control by conducting work in workable units; minimizing the disturbance to cover crop materials; providing mulch and/or temporary cover crops, sedimentation basins, and/or diversions in critical areas during construction; controlling and conveying runoff; and establishing permanent vegetation and installing erosion control structures as soon as possible.

##### **A. Trench Mulching**

Where there is danger of backfill material being washed away due to steepness of the slope along the direction of the trench, backfill material shall be compacted and held in place by covering the disturbed area with straw and held with a covering of jute matting or wire mesh anchored in place.

##### **B. Cover-Crop Seeding**

A cover crop shall be sown in all areas excavated or disturbed during construction that were not paved, landscaped, and/or seeded prior to construction. Areas landscaped and/or seeded prior to construction shall be restored to their original or superior condition.

Cover-crop seeding shall follow backfilling operations. Mix shall be approved by the City.

The Developer and/or Contractor shall be responsible for protecting all areas from erosion until the cover crop affords such protection. The cover crop shall be re-seeded if required and additional measures taken to provide protection from erosion until the cover crop is capable of providing protection.

During winter months, the Contractor may postpone seeding, if conditions are such that the seed will not germinate and grow. The Developer and/or Contractor will not, however, be relieved of the responsibility of protecting all areas until the cover crop has been sown and affords protection from erosion.

The cover crop shall be sown at a rate of 10 to 15 pounds of seed per acre using a hand or power operated mechanical seeder capable of providing a uniform distribution of seed.

#### **4.38 Finishing and Cleanup**

After all other work on the Project is completed and before final acceptance, the entire roadway, including the roadbed, planting, sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly smoothed finished to the lines, grades and cross sections of a new roadway consistent with the original section, and as hereinafter specified.

Upon completion of the cleaning and dressing, the Project shall appear uniform in all respects. All graded areas shall be true to line and grade. Where the existing surface is below sidewalk and curb, the area shall be filled and dressed out to the walk. Wherever fill material is required in the planting area, the finished grade shall be elevated to allow for final settlement, but nevertheless, the raised surface shall present a uniform appearance.

All excavated material from the Project shall be removed entirely. Trash of all kinds resulting from operations shall be removed and not placed in areas adjacent to the Project. Where operations have broken down brush and trees beyond the lateral limits of the Project, the Developer and/or Contractor shall remove and dispose of same and restore said disturbed areas at his own expense.

Drainage facilities such as inlets, catch basins, culverts, and open ditches shall be cleaned of all debris, which are the result of the Developer and/or Contractor's operations.

All pavements and oil mat surfaces, whether new or old, shall be thoroughly cleaned. Existing improvements such as Portland cement concrete curbs, curb and gutters, walls, sidewalks, and other facilities, which have been sprayed by the asphalt cement, shall be cleaned to the satisfaction of the City Inspector.

Castings for monuments, water valves, vaults and other similar installations, which have been covered with the asphalt material, shall be cleaned to the satisfaction of the City Inspector.

TITLE OF DRAWING

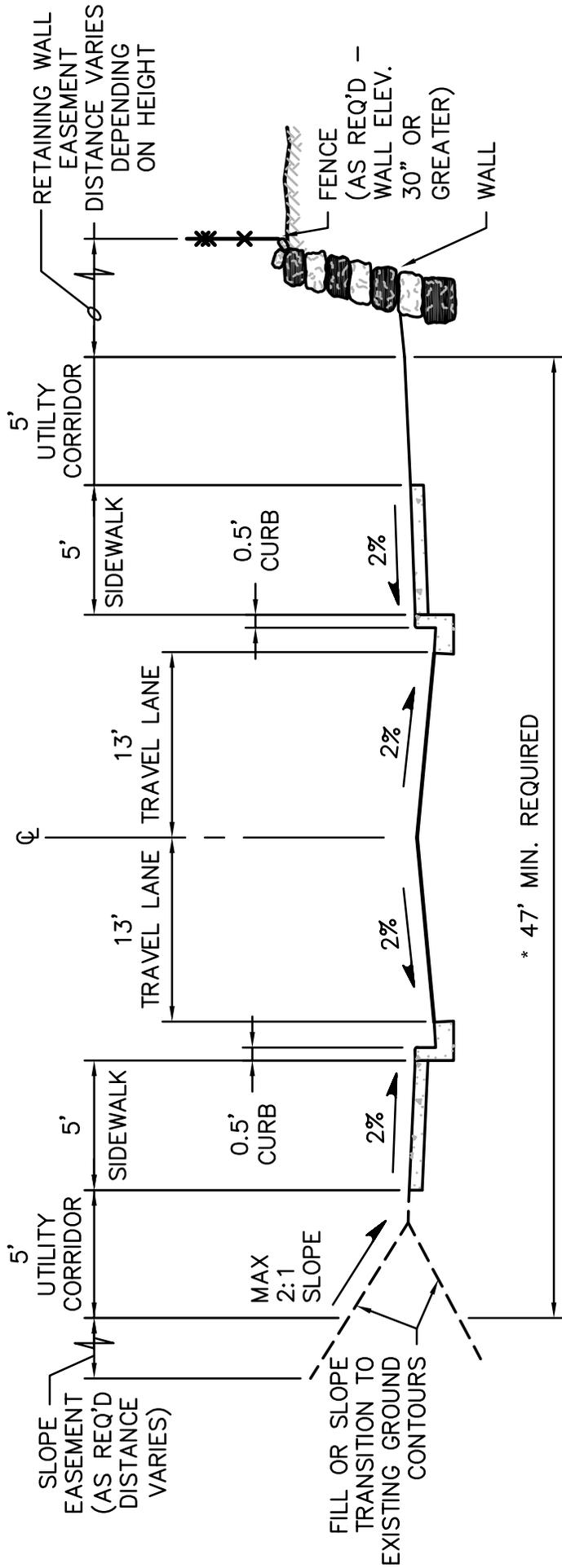
DRAWING NO.

**STREET DETAILS**

Street Section 1	ST-1
Street Section 1A	ST-2
Street Section 2	ST-3
Street Section 2A	ST-4
Street Section 3	ST-5
Street Section 4	ST-6
Street Section 5	ST-7
Street Section 6	ST-8
Street Section 7	ST-9
Street Section 7A	ST-10
Street Section 8	ST-11
Fire Department Hammerhead Turnaround	ST-12
Sight Distance	ST-13
Sight Distance Landscaping Requirements	ST-14
Trench-Pavement Restoration	ST-15
Asphalt Patch	ST-16
Not Used	ST-17
Not Used	ST-18
Not Used	ST-19
Manhole or Catch Basin Grade Adjustment Detail	ST-20
Valve Box Adjustment Detail	ST-21
Butt Joint	ST-22
Concrete Curb End Section	ST-23
Asphalt Sidewalk Transition Section	ST-24
Sidewalk with Planting Strip	ST-25
Sidewalk without Planting Strip	ST-26
Curb Ramp Detail Type 1A	ST-27
Modified Curb Ramp Detail Type 1A	ST-28
Curb Ramp Detail Type 1B	ST-29
Curb Ramp Detail Type 2B	ST-30
Detectable Warning Pattern Detail	ST-31
Cement Concrete Driveway Type 1	ST-32
Cement Concrete Driveway Type 2	ST-33
Not Used	ST-34
Concrete Curb and Gutter	ST-35
Concrete Curb Types	ST-36
Extruded Asphalt Concrete Sections	ST-37
Extruded Cement Concrete Curb	ST-38
Not Used	ST-39

TITLE OF DRAWINGDRAWING NO.

Not Used	ST-40
Pedestrian Railing	ST-41
Pedestrian Railing Notes	ST-42
Cement Concrete Stairway	ST-43
Cement Concrete Steps	ST-44
Not Used	ST-45
Pavement Marking	ST-46
Raised Pavement Lane Marking	ST-47
Two-Way Left Turn Lane Marking	ST-48
Pavement Marking Typical	ST-49
Symmetrical Left Turn Packet	ST-50
Two-Way Left Turn to Left Turn Lane	ST-51
Typical Loop Layout New Installation	ST-52
Typical Crosswalk Alignment Arterial/Local Access	ST-53
Not Used	ST-54
Stop Bar/Crosswalk	ST-55
Bike Lane Symbol	ST-56
Turn Arrow Details	ST-57
Lane Markers (Dimensions)	ST-58
Not Used	ST-59
Street Name Sign Detail	ST-60
Street Sign for Private Streets	ST-61
Street Sign Installation	ST-62
Sign Location	ST-63
Signage and Bike Lane Markings	ST-64
Fire Lane Marking and Signage Private Streets	ST-65
No Parking Public Streets	ST-66
Type III Barricades for Future Extended Roadways	ST-67
Not Used	ST-68
Not Used	ST-69
Mailbox Detail	ST-70
Surface Monument	ST-71
Poured Monument In Place	ST-72
Not Used	ST-73
Not Used	ST-74
Rock Wall - Fill Section	ST-75
Rock Wall - Cut Section	ST-76
Tree Staking	ST-77
Deciduous Tree Planting	ST-78
Shrub and Ornamental Grass Planting	ST-79
Topsoil Installation	ST-80
Shrubs and Groundcover Spacing	ST-81



\* 47' MIN. REQUIRED

50' MIN. RECOMMENDED

**NOTES:**

- 1. LARGER R/W REQUIRED AT INTERSECTIONS TO FACILITATE TURNING MOVEMENTS
- 2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

- 1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
- 2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

**STREET SECTION 1**

FOR USE ON LOCAL ACCESS STREETS

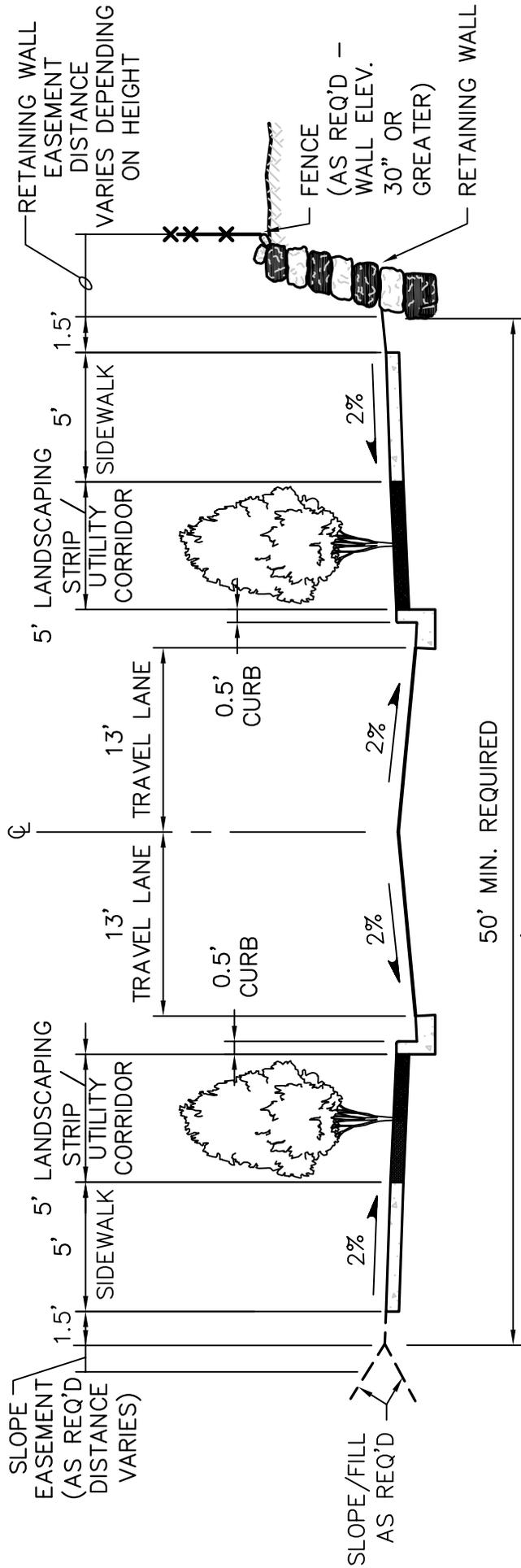
TRAVEL LANES	2 @ 13' EA. (RESIDENTIAL) 14' ARTERIAL
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	NO
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	NO
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	2 @ 5' EA.
SLOPE/FILL/WALL EASEMENTS	REQ'D IF INSUFFICIENT R/W EXISTS



CITY OF MILTON

**STREET SECTION 1**

REVISION DATE:	SCALE:	DWG. NO.
10/19/09	NONE	<b>ST-1</b>



50' MIN. RECOMMENDED

**NOTES:**

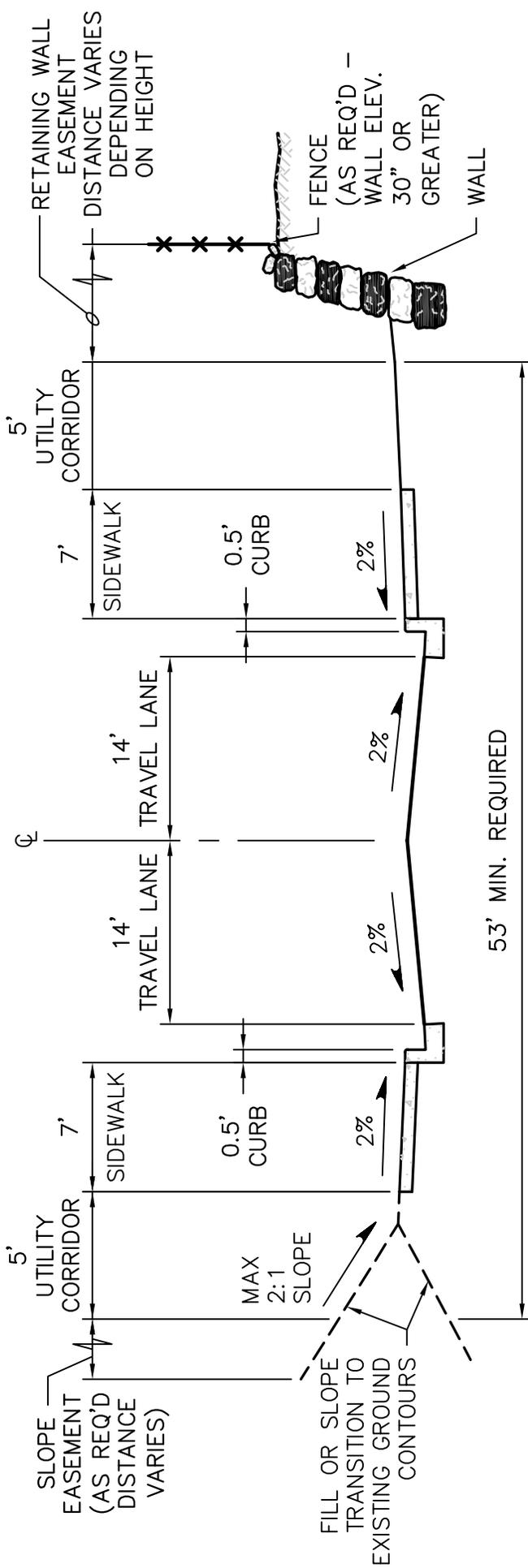
- UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
- PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

**STREET SECTION 1A**  
FOR USE ON LOCAL ACCESS STREETS

TRAVEL LANES	2 @ 13' EA. (RESIDENTIAL) 14' (ARTERIAL)
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	NO
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	2 @ 5' EA.
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS

**CITY OF MILTON**  
**STREET SECTION 1A**

REVISION DATE:	SCALE:	DWG. NO.
10/19/09	NONE	<b>ST-2</b>



**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

\* LARGER R/W REQUIRED AT INTERSECTIONS TO FACILITATE TURNING MOVEMENTS

**STREET SECTION 2**

FOR USE ON MINOR ARTERIAL, COLLECTOR ARTERIAL, AND LOCAL ACCESS STREET

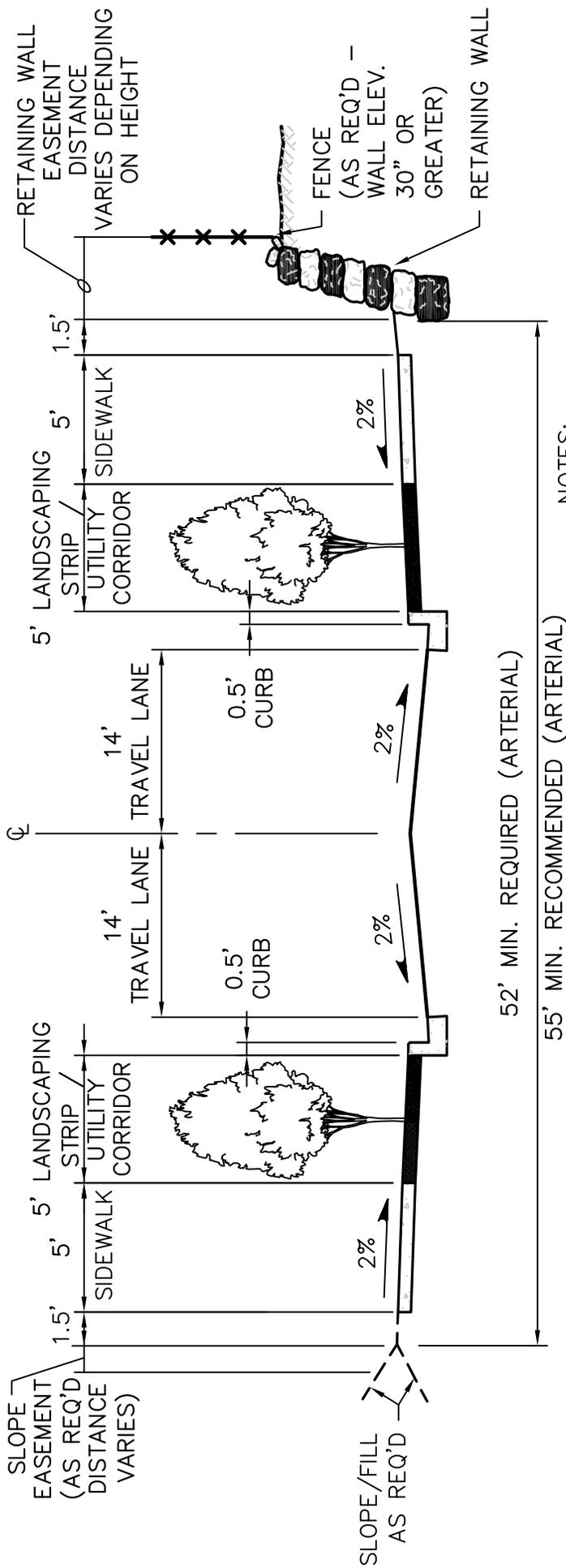
TRAVEL LANES	2 @ 14' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	NO
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	NO
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 7' EA.
UTILITY CORRIDORS	2 @ 5' EA.
SLOPE/FILL/WALL EASEMENTS	REQ'D IF INSUFFICIENT R/W EXISTS



**CITY OF MILTON**

**STREET SECTION 2**

REVISION DATE: 10/19/09	SCALE: NONE
DWG. NO. <b>ST-3</b>	



**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

**STREET SECTION 2A**

FOR USE ON MINOR ARTERIAL, COLLECTOR ARTERIAL, AND LOCAL ACCESS STREETS

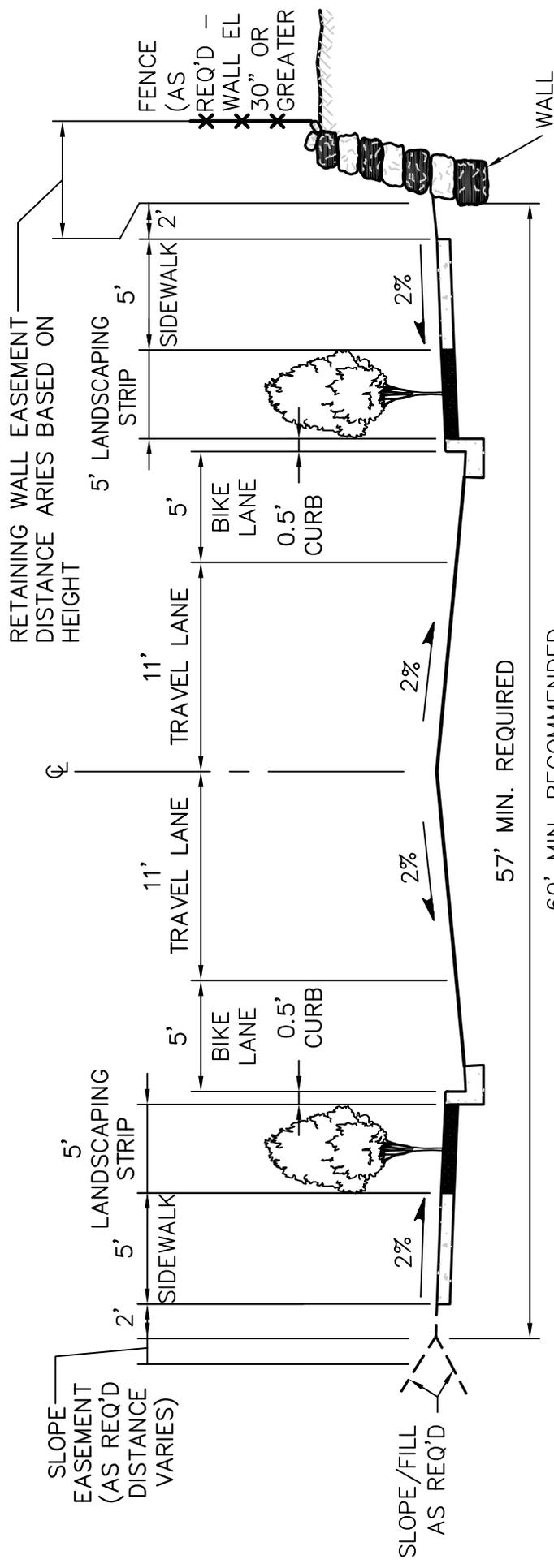
TRAVEL LANES	2 @ 14' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	NO
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	2 @ 5' EA.
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



**CITY OF MILTON**

**STREET SECTION 2A**

REVISION DATE:	SCALE:	DWG. NO.
10/19/09	NONE	<b>ST-4</b>



60' MIN. RECOMMENDED

### STREET SECTION 3

FOR USE ON MINOR ARTERIAL, COLLECTOR ARTERIAL, AND LOCAL ACCESS STREETS LOCATED ON ESTABLISHED BIKE ROUTES SHOWN IN COMPREHENSIVE PLAN

**NOTES:**

- UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
- PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

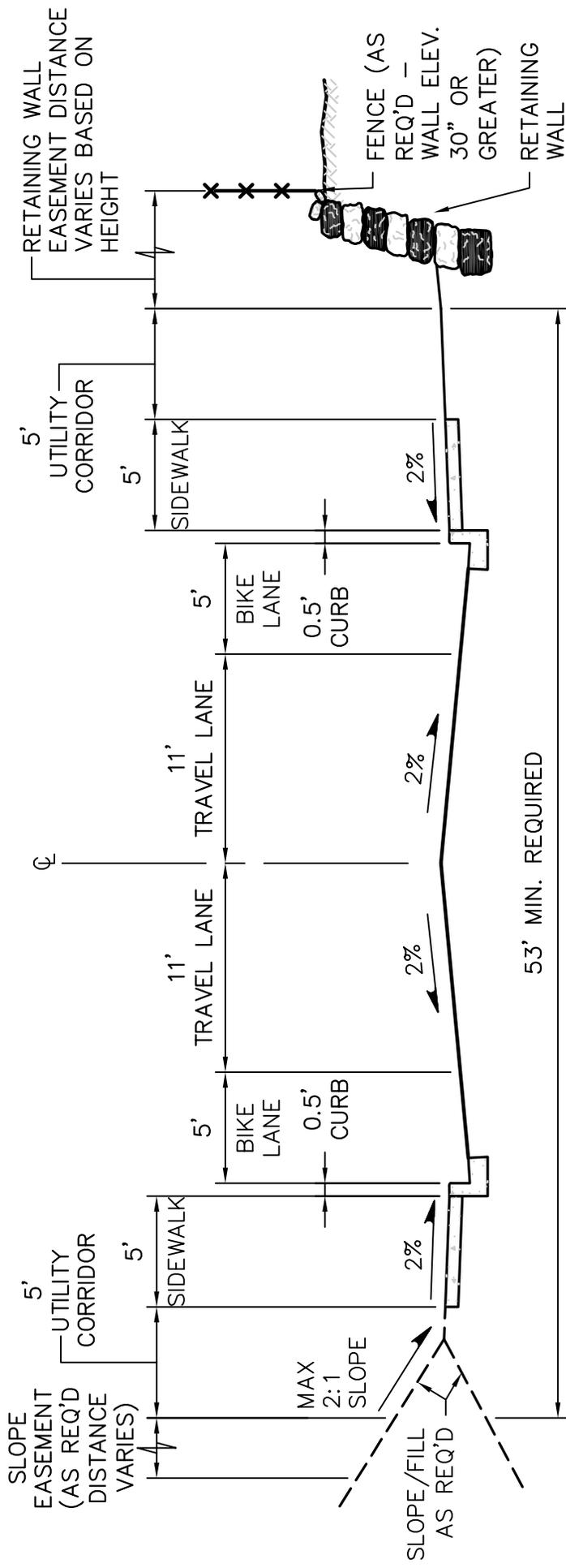
TRAVEL LANES	2 @ 11' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	2 @ 5' EA.
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



**CITY OF MILTON**  
**STREET SECTION 3**

REVISION DATE: 3/30/07  
SCALE: NONE

DWG. NO. **ST-5**



**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

**STREET SECTION 4**

FOR USE ON MINOR ARTERIAL, COLLECTOR ARTERIAL, AND LOCAL ACCESS STREETS LOCATED ON ESTABLISHED BIKE ROUTES SHOWN IN COMPREHENSIVE PLAN

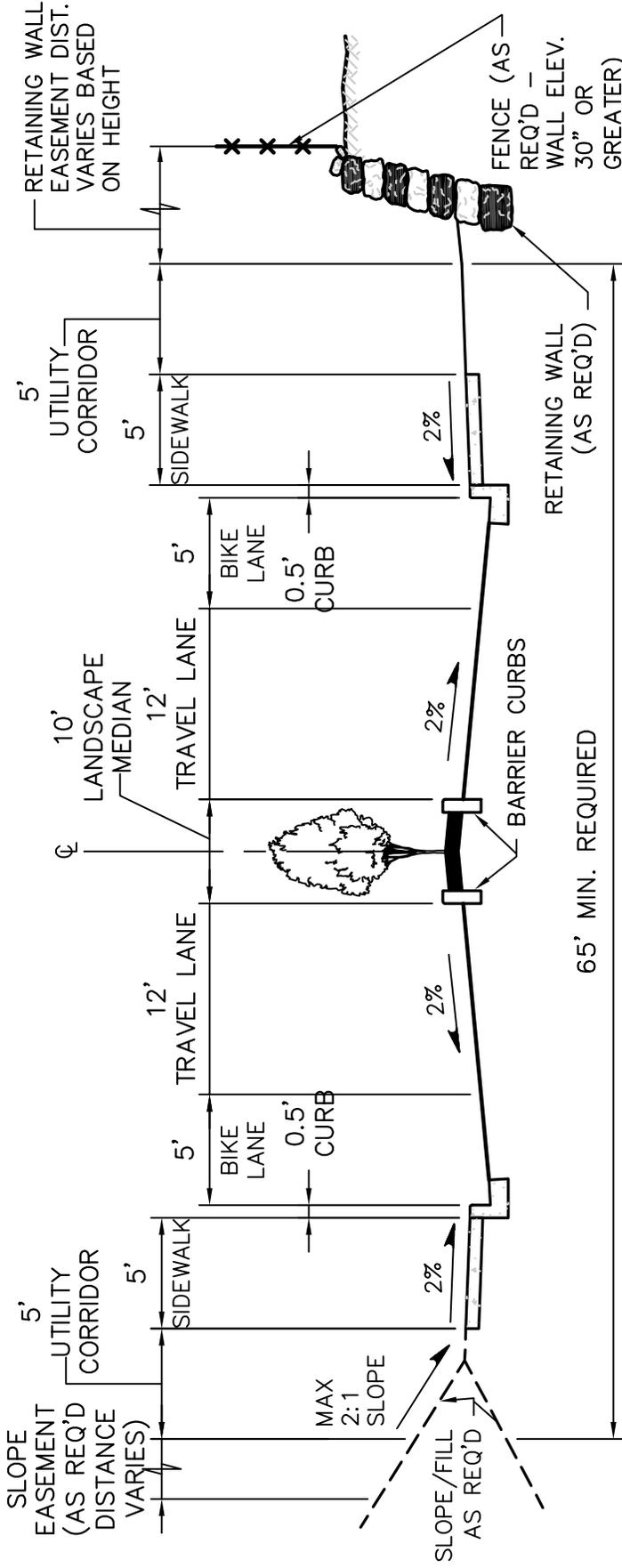
TRAVEL LANES	2 @ 11' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	NO
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	2 @ 5' EA.
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



**CITY OF MILTON**

**STREET SECTION 4**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-6</b>



**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC,
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

**STREET SECTION 5**

FOR USE ON MINOR ARTERIALS

TRAVEL LANES	2 @ 12' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	1 @ 10' WIDE
LANDSCAPING/PLANTER STRIP	NO
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	2 @ 5' EA.
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



CITY OF MILTON

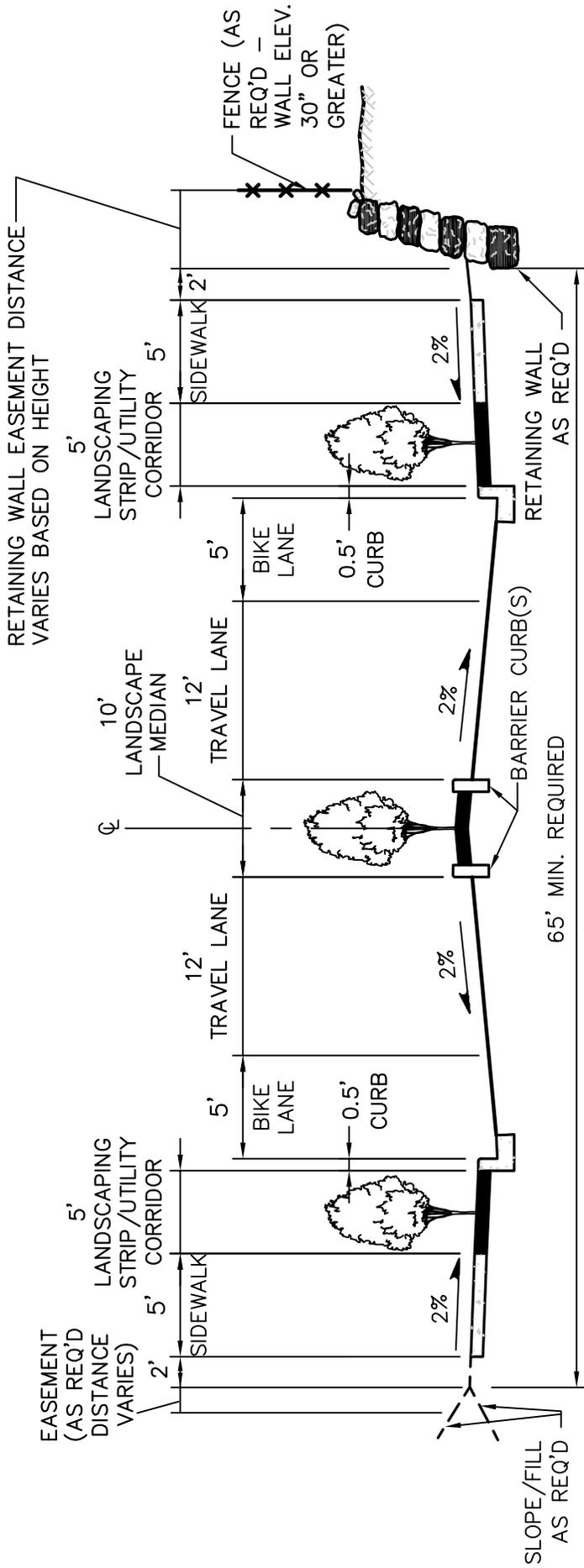
STREET SECTION 5

REVISION DATE: SCALE:

3/30/07 NONE

DWG. NO.

ST-7



**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

THIS CROSS SECTION PREVENTS LEFT TURNS TO BE USED IN SELECTED LOCATIONS.

**STREET SECTION 6**

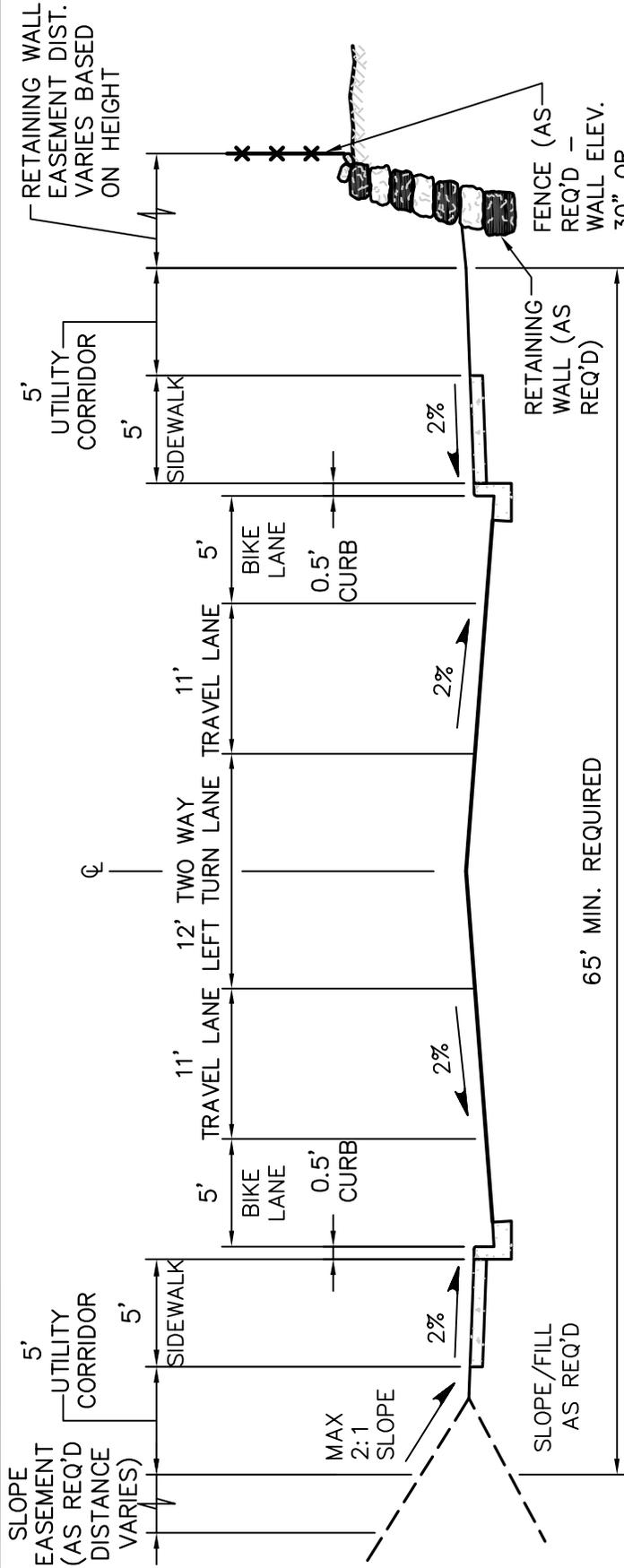
FOR USE ON MINOR ARTERIAL STREETS THAT ARE LOCATED ON BIKE ROUTES SHOWN IN COMPREHENSIVE PLAN

TRAVEL LANES	2 @ 12' EA.
TWO WAY LEFT TURN LANE	NO
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	1 @ 10' WIDE
LANDSCAPING/PLANTER STRIP	2 @ 5' EA.
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



**CITY OF MILTON**  
**STREET SECTION 6**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-8</b>



65' MIN. REQUIRED

65' MIN. RECOMMENDED

**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

## STREET SECTION 7

FOR USE ON PRINCIPLE AND MINOR ARTERIAL STREETS  
 LOCATED ON ESTABLISHED BIKE ROUTES SHOWN  
 IN THE COMPREHENSIVE PLAN

TRAVEL LANES	2 @ 11' EA.
TWO WAY LEFT TURN LANE	1 @ 12' WIDE
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	NO
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	2 @ 5' EA.
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



CITY OF MILTON

STREET SECTION 7

REVISION DATE: SCALE:

3/30/07 NONE

DWG. NO.

**ST-9**

EASEMENT OR R/W DISTANCE VARIES

2' SIDEWALK  
5' LANDSCAPING STRIP/UTILITY CORRIDOR

RETAINING WALL EASEMENT DIST. VARIES BASED ON HEIGHT

5' LANDSCAPING STRIP/UTILITY CORRIDOR

ϕ

11' TRAVEL LANE  
12' TWO WAY LEFT TURN LANE  
11' TRAVEL LANE

5' BIKE LANE  
0.5' CURB

2' SIDEWALK

FENCE (AS REQ'D - WALL ELEV. 30" OR GREATER)

2%  
2%  
2%  
CUT/FILL AS REQ'D

69' MIN. REQUIRED

RETAINING WALL AS REQ'D

70' MIN. RECOMMENDED

NOTES:

- UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
- PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

## STREET SECTION 7A

FOR USE ON PRINCIPLE AND MINOR ARTERIALS LOCATED ON ESTABLISHED BIKE ROUTES SHOWN IN COMPREHENSIVE PLAN

TRAVEL LANES	2 @ 11' EA.
TWO WAY LEFT TURN LANE	1 @ 12' WIDE
PARKING LANE	NO
BIKE LANES	2 @ 5' EA.
BIKE/PEDESTRIAN PATH	NO
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	2 @ 5' EA.
CURBS & GUTTERS	YES
SIDEWALKS	2 @ 5' EA.
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



CITY OF MILTON

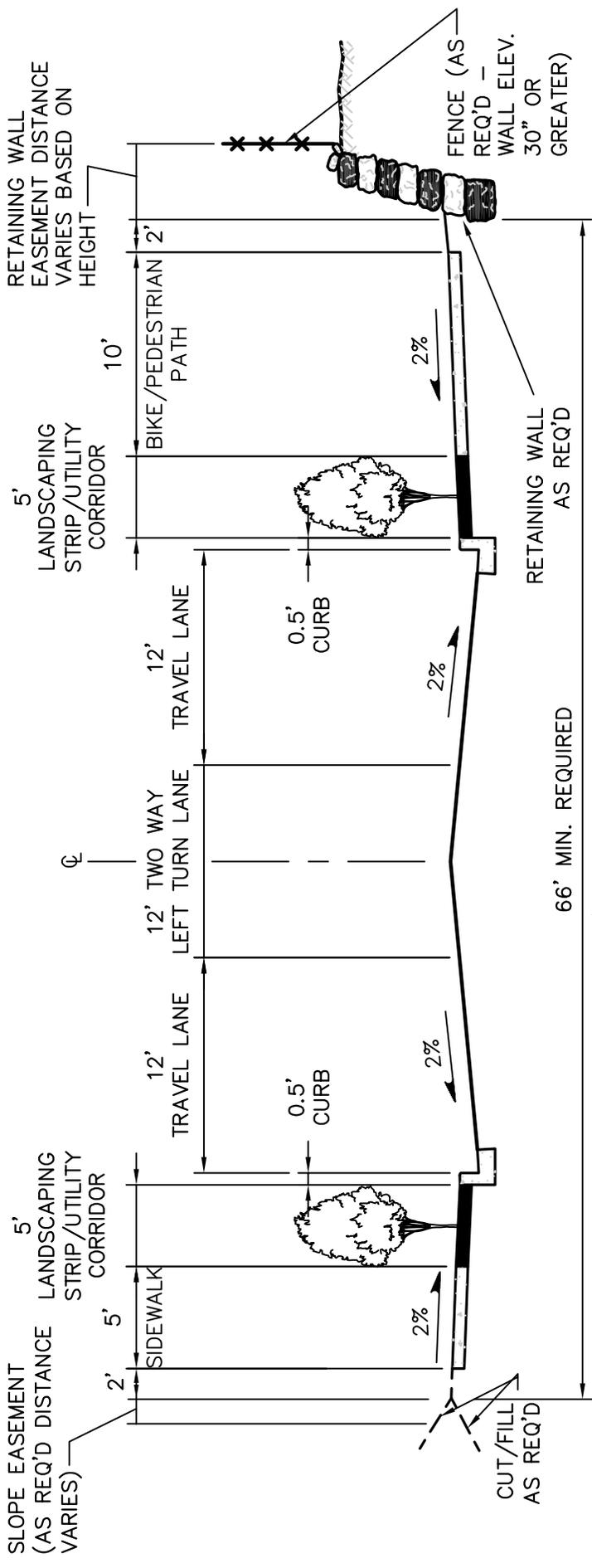
STREET SECTION 7A

REVISION DATE: SCALE:

3/30/07 NONE

DWG. NO.

ST-10



66' MIN. REQUIRED  
70' MIN. RECOMMENDED

**NOTES:**

1. UTILITY CORRIDOR REQ'D FOR TELEPHONE PEDESTALS, FIRE HYDRANTS, UTILITY POLES, LUMINAIRES, SIGNS, ETC.
2. PAVEMENT DESIGN BY CURRENT WASHINGTON STATE LICENSED CIVIL ENGINEER AND AS APPROVED BY THE CITY ENGINEER.

## STREET SECTION 8

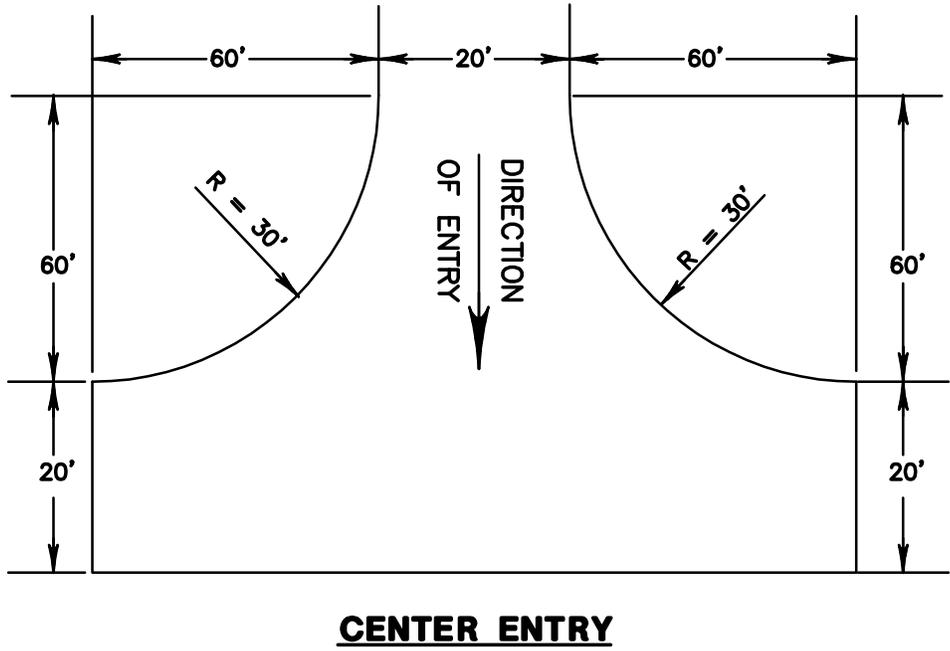
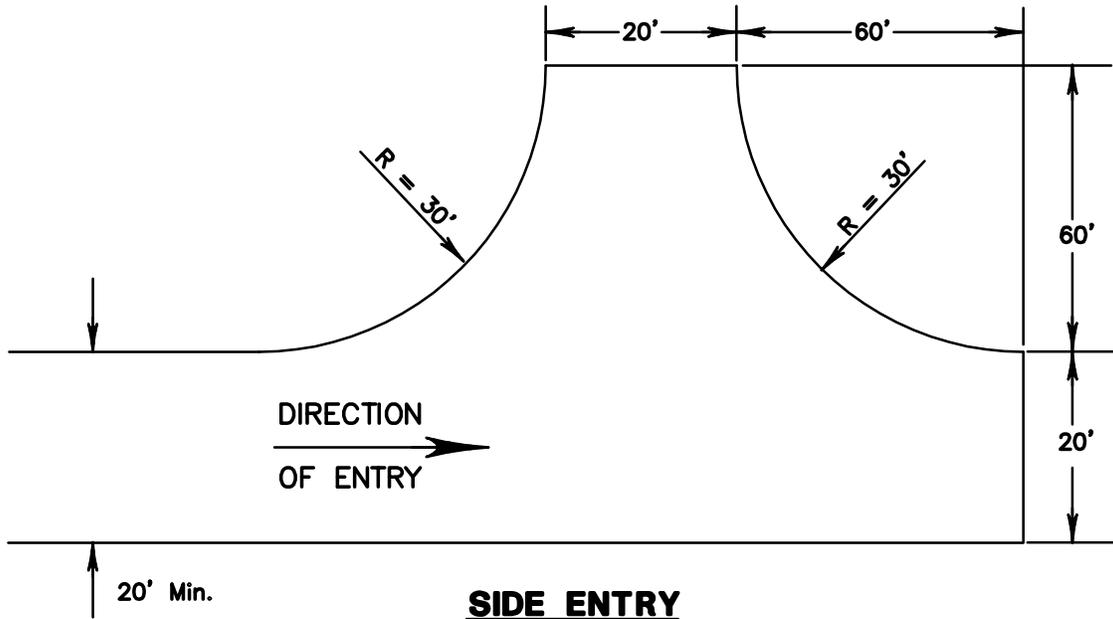
FOR USE ON PRINCIPLE AND MINOR ARTERIAL STREETS

TRAVEL LANES	2 @ 12' EA.
TWO WAY LEFT TURN LANE	1 @ 12' WIDE
PARKING LANE	NO
BIKE LANES	NO
BIKE/PEDESTRIAN PATH	1 @ 10' WIDE
LANDSCAPE MEDIAN	NO
LANDSCAPING/PLANTER STRIP	2 @ 5' WIDE EA.
CURBS & GUTTERS	YES
SIDEWALKS	1 @ 5' WIDE
UTILITY CORRIDORS	IN LANDSCAPING STRIP
SLOPE/FILL/WALL EASEMENTS	REQUIRED IF INSUFFICIENT R/W EXISTS



### CITY OF MILTON STREET SECTION 8

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-11</b>

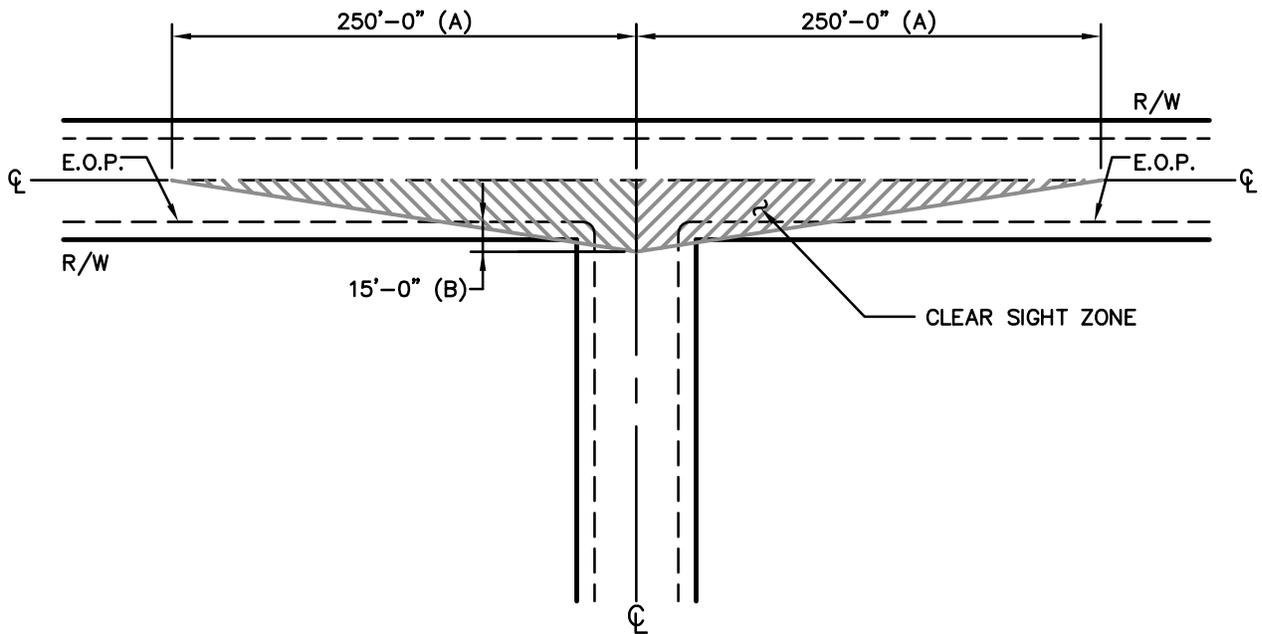


**CITY OF MILTON  
FIRE DEPARTMENT  
HAMMERHEAD TURNAROUND**

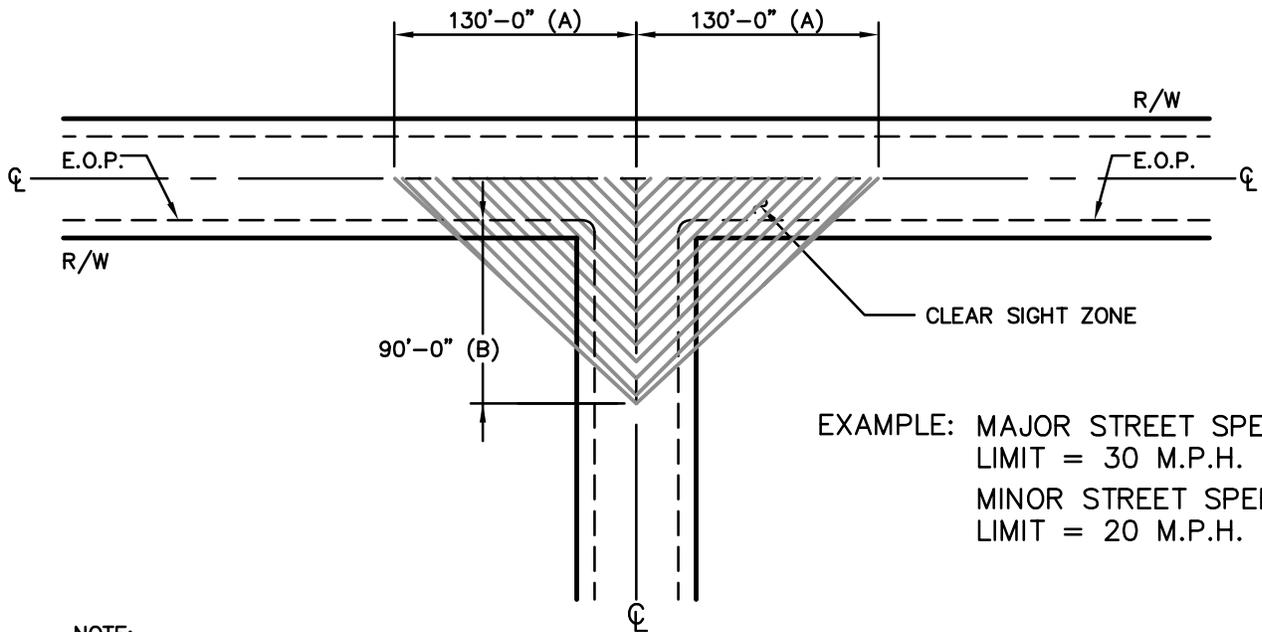
REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-12</b>

## STOP OR YIELD CONTROLLED INTERSECTIONS

EXAMPLE: MAJOR STREET SPEED LIMIT = 25 M.P.H.



## UNCONTROLLED INTERSECTIONS



EXAMPLE: MAJOR STREET SPEED  
LIMIT = 30 M.P.H.  
MINOR STREET SPEED  
LIMIT = 20 M.P.H.

**NOTE:**  
SEE SECTION 4.22 SITE OBSTRUCTION  
DISTANCES A & B



**CITY OF MILTON**  
**SIGHT DISTANCE**

REVISION DATE:

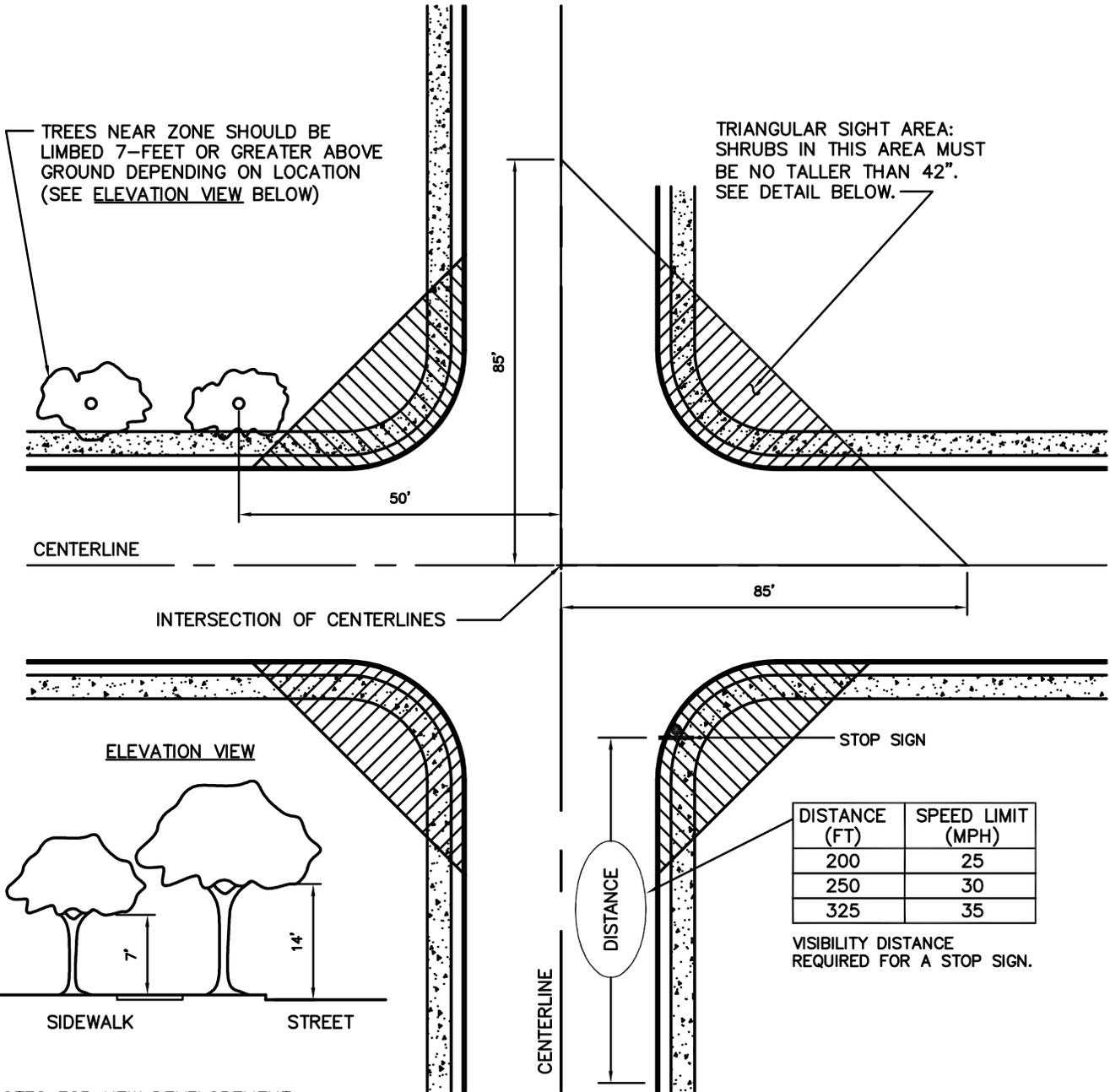
10/19/09

SCALE:

NONE

DWG. NO.

**ST-13**



**NOTES FOR NEW DEVELOPEMENT**

1. TREES SHALL NOT BE PLACED IN SUCH A WAY THAT THEY IMPEDE THE SAFE FLOW OF TRAFFIC BY BLOCKING THE VIEW OF TRAFFIC SIGNS, AND/OR IMPEDE PEDESTRIANS AND VEHICLES. ABOVE ARE CITY VISIBILITY STANDARDS.
2. ALL BOULEVARD TREES SHALL BE PLANTED BEHIND THE SIDEWALK. PLANTER STRIPS SHALL ONLY CONTAIN UTILITIES, SIGNS, GRASS AND/OR LOW GROWTH SHRUBS, UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.
3. LANDSCAPER SHALL COORDINATE WITH SIGN INSTALLER TO ASSURE NO CONFLICT BETWEEN THE TWO WILL BE CREATED.

**NOTES FOR EXISTING VEGETATION:**

1. TO ENSURE SAFE PASSAGE FOR EVERYONE, TREE LIMBS OVER STREETS MUST BE LIMBED UP 14 FEET. LIMBS OVER SIDEWALKS MUST BE LIMBED UP 7 FEET.



**CITY OF MILTON**

**SIGHT DISTANCE LANDSCAPING REQUIREMENTS**

REVISION DATE:

10/19/09

SCALE:

NONE

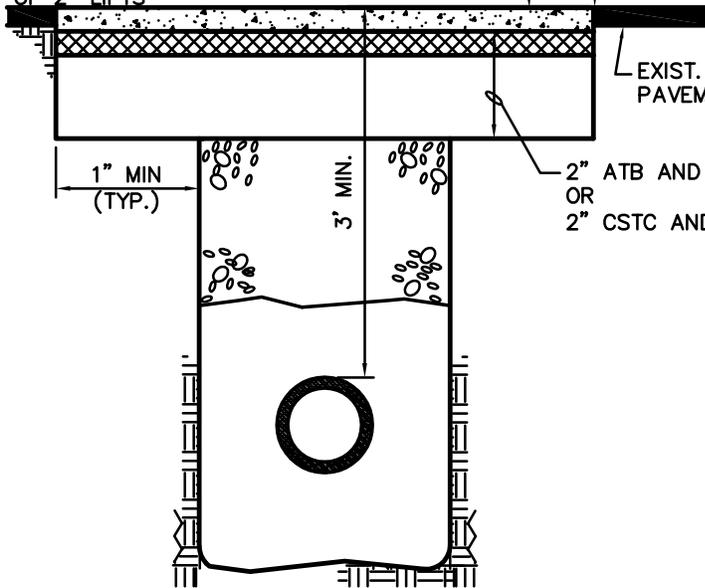
DWG. NO.

**ST-14**

EMULSIFIED ASPHALT GRADE CSS-1 TACK SHALL BE APPLIED TO EDGES OF EXISTING PAVEMENT. ALL JOINTS SHALL BE SEALED USING PAVING ASPHALT AR4000W, AND SAND BLANKET.

3" MIN. ASPHALT CONCRETE (COMPACTED DEPTH) OR MATCH EXIST. PLUS 1", WHICHEVER IS GREATER. APPLY IN MAXIMUM OF 2" LIFTS

4" OF TOPSOIL OR CSTC AS REQUIRED



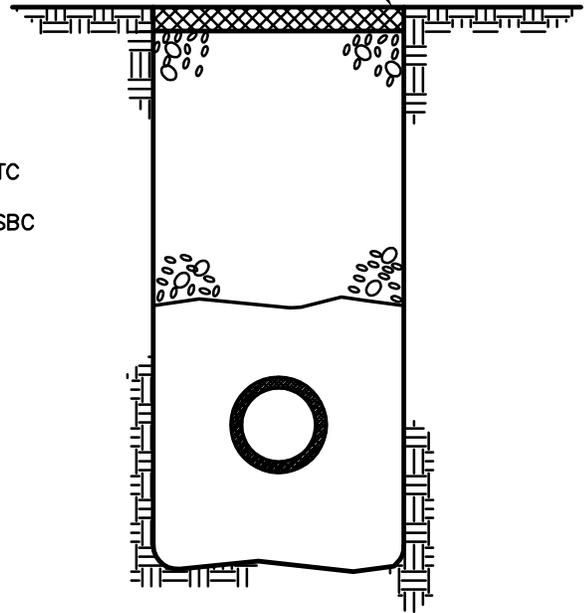
EXIST. A.C. PAVEMENT

2" ATB AND 2" CSTC OR 2" CSTC AND 4" CSBC

1" MIN (TYP.)

3" MIN.

**WITHIN ASPHALT SECTION**



**OUT OF ASPHALT SECTION**

**NOTES:**

1. ALL MATERIALS EXCEPT A.C.P. AND BEDDING MATERIAL SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY.
2. BEDDING SHALL CONFORM TO CITY STANDARDS OF STANDARD SPECIFICATIONS.
3. COMPACTION: BEDDING SHALL BE COMPACTED TO 95% MAX. AS DETERMINED BY ASTM D1557. BACKFILL SHALL BE COMPACTED TO 85% IN UNPAVED AREA, AND 95% IN PAVED OR SHOULDER AREAS AS DETERMINED BY ASTM D1557.
4. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY STANDARDS.
5. FOR LONGITUDINAL CUTS THE CITY MAY REQUIRE THE ENTIRE DRIVING LANE TO BE OVERLAID.



**CITY OF MILTON  
TRENCH – PAVEMENT  
RESTORATION**

REVISION DATE:

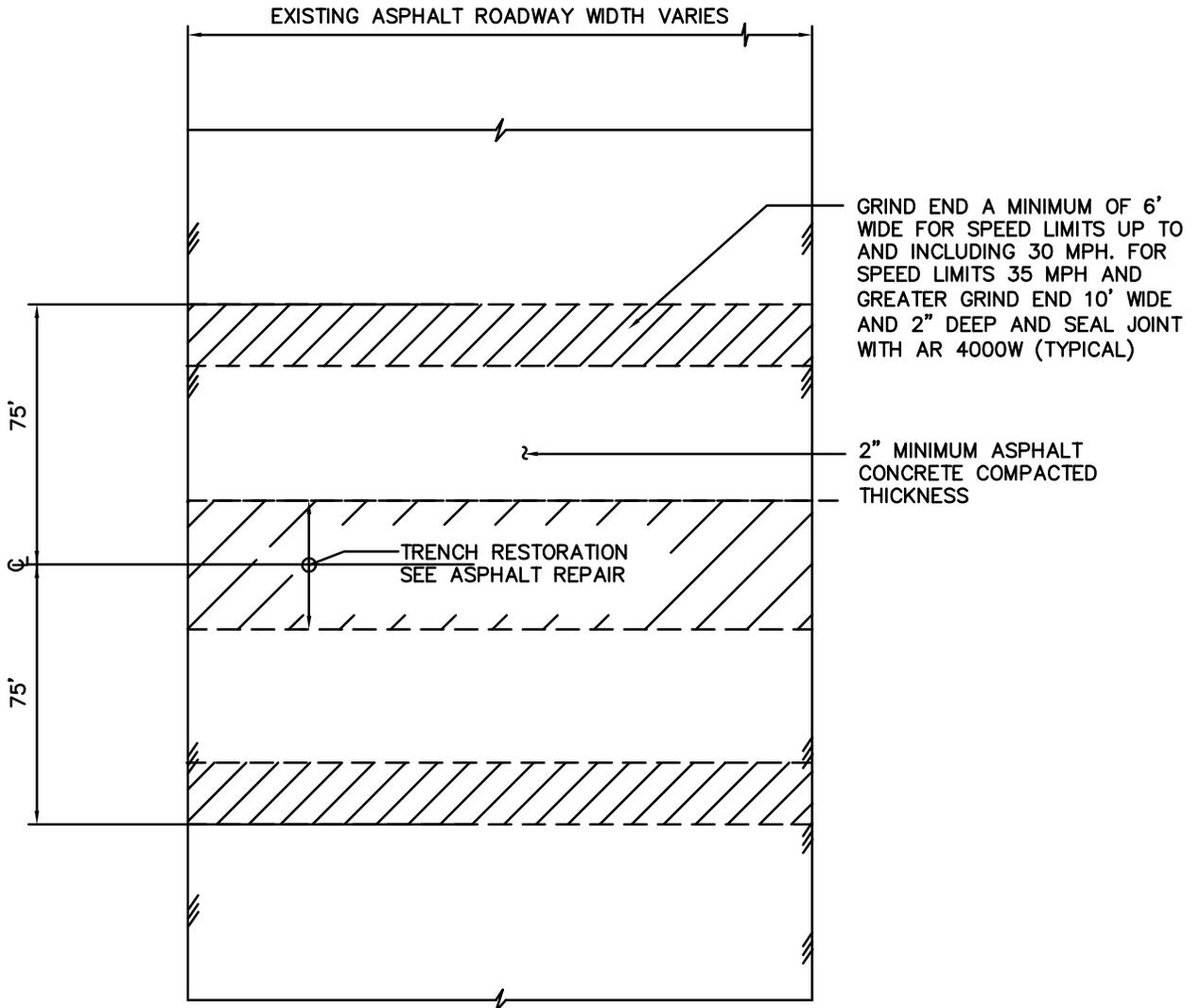
10/19/09

SCALE:

NONE

DWG. NO.

**ST-15**



CITY OF MILTON  
ASPHALT PATCH

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-16**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-17**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-18**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

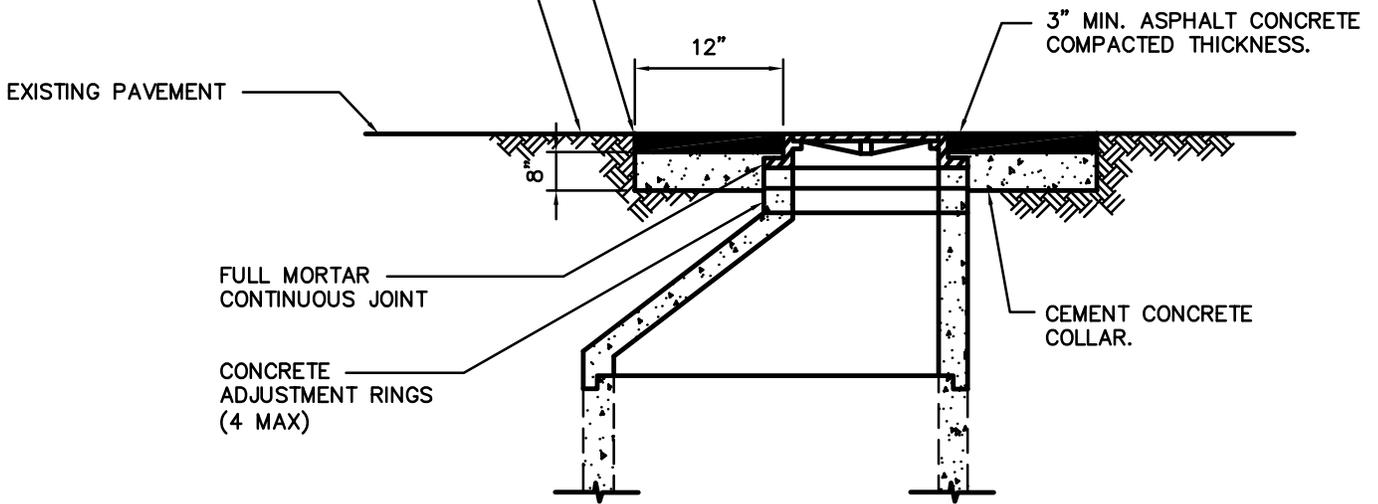
NONE

DWG. NO.

**ST-19**

SAW CUT AS REQUIRED. CLEAN AND TACK EDGES WITH SEALER CSS-1 AND SEAL JOINTS WITH HOT ASPHALT CEMENT (AR-4000W) AND SAND.

REMOVE EXISTING ASPHALT AND RESTORE PER ASPHALT PAVEMENT REPAIR DETAIL



**NOTES:**

1. ALL JOINTS SHALL BE SEALED WITH MATERIALS AND IN A MANNER TO PREVENT "TRACKING" OF SEALANT.



**CITY OF MILTON  
MANHOLE OR CATCH BASIN  
GRADE ADJUSTMENT DETAIL**

REVISION DATE:

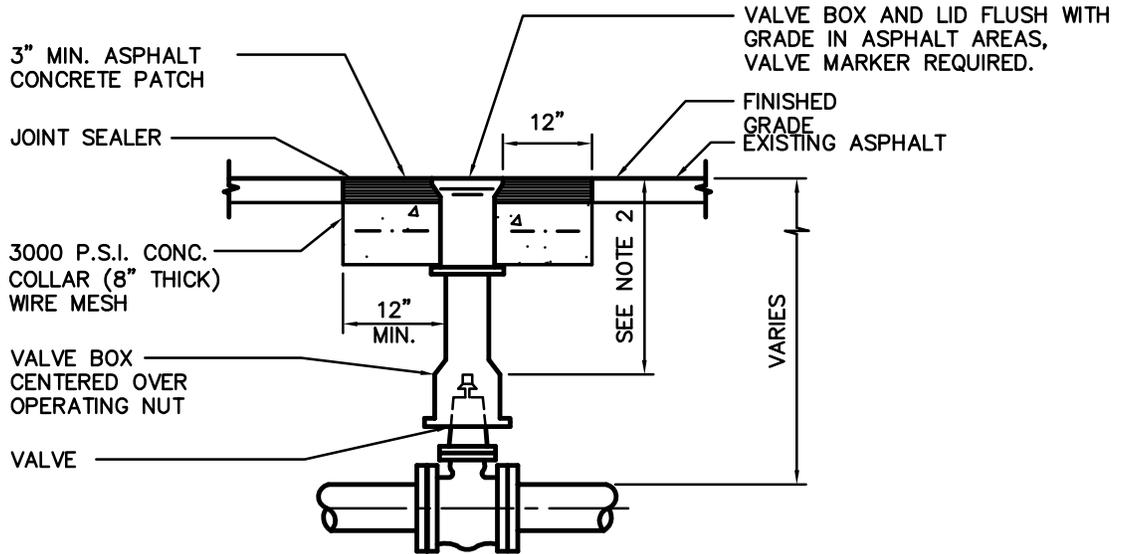
10/19/09

SCALE:

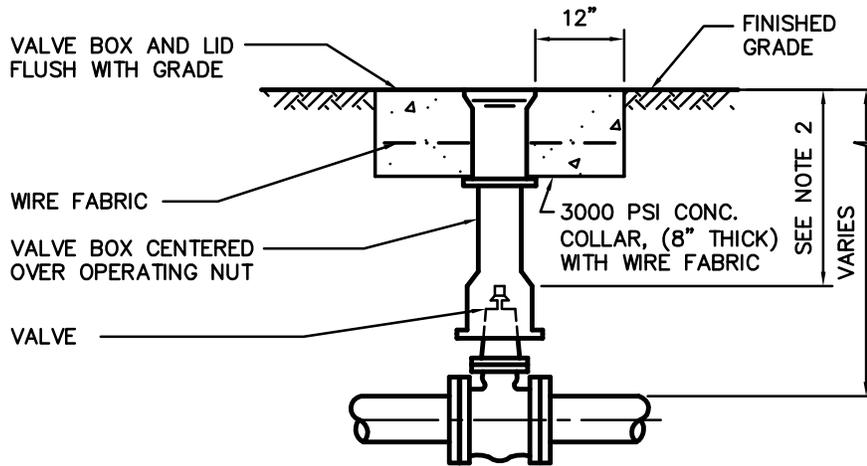
NONE

DWG. NO.

**ST-20**



**VALVE BOX IN ASPHALT AREA**



**VALVE BOX IN UNIMPROVED AREA**

**NOTES:**

1. EACH VALVE SHALL BE PROVIDED WITH AND ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.
2. 15" MINIMUM, 36" MAXIMUM FOR OPERATOR NUT. EXTENSION MAY BE REQUIRED.



**CITY OF MILTON  
VALVE BOX ADJUSTMENT  
DETAIL**

REVISION DATE:

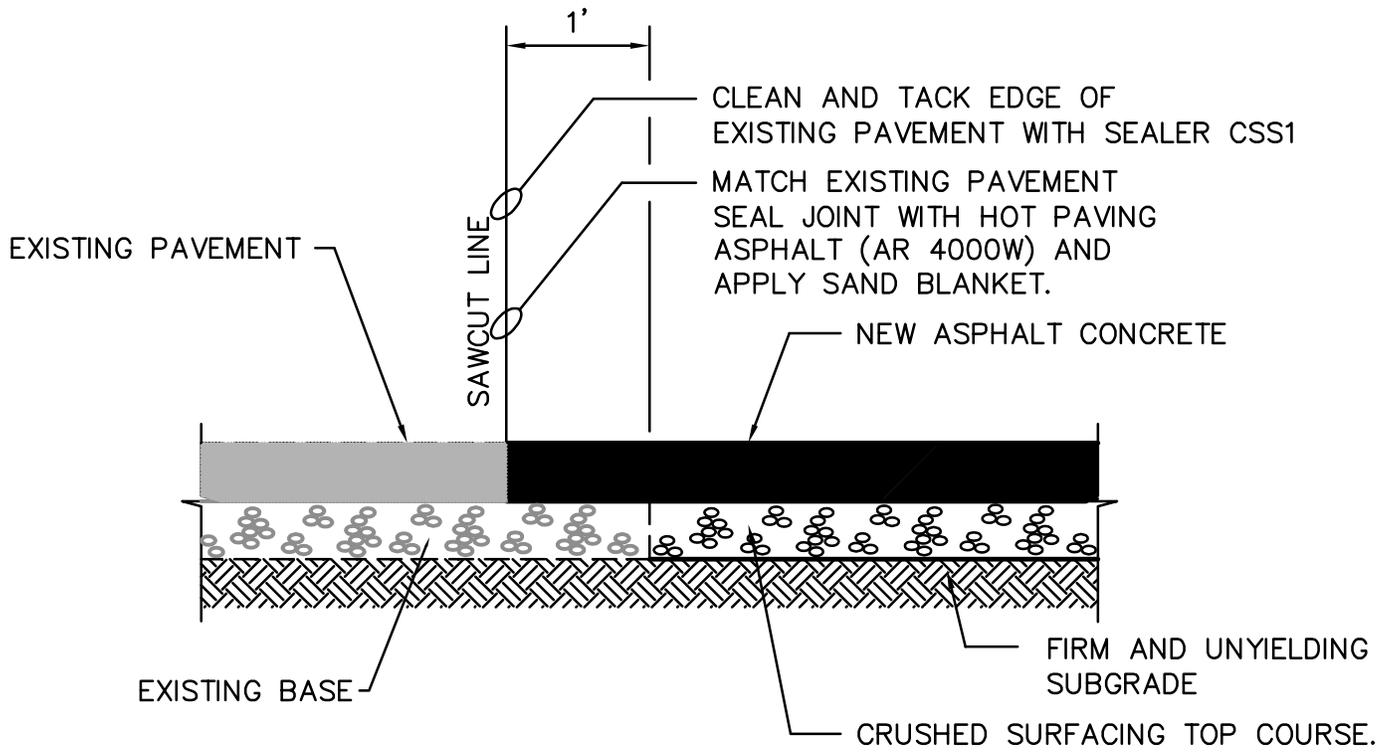
10/19/09

SCALE:

NONE

DWG. NO.

**ST-21**



CITY OF MILTON

BUTT JOINT

REVISION DATE:

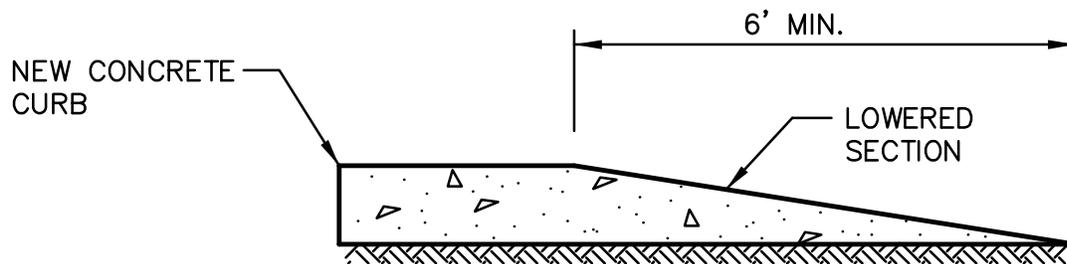
10/19/09

SCALE:

NONE

DWG. NO.

**ST-22**



NOTE:

CONCRETE CURB END SECTION TO BE USED AT ALL LOCATIONS WHERE NEW CURB DOES NOT MEET EXISTING CURB OR AS REQUIRED IN THE FIELD



CITY OF MILTON  
 CONCRETE CURB  
 END SECTION

REVISION DATE:

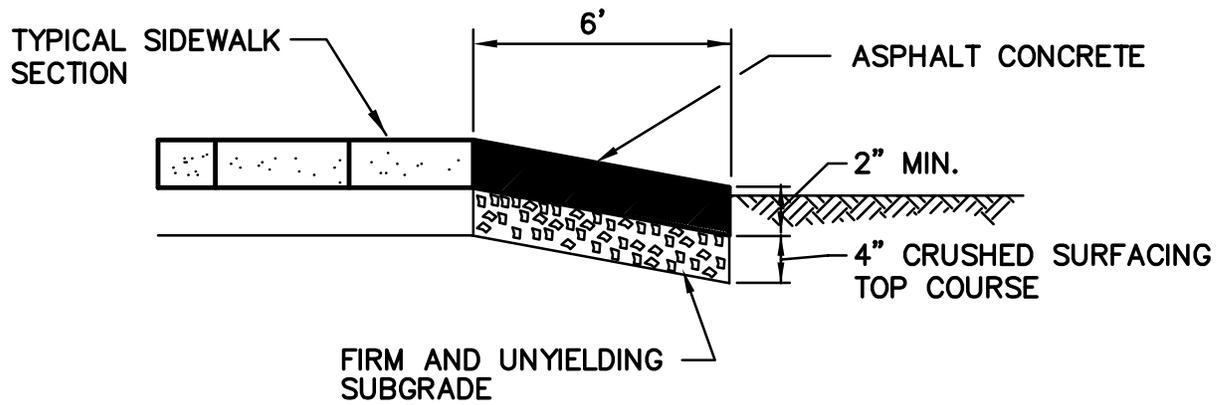
3/30/07

SCALE:

NONE

DWG. NO.

**ST-23**



CITY OF MILTON  
 ASPHALT SIDEWALK  
 TRANSITION SECTION

REVISION DATE:

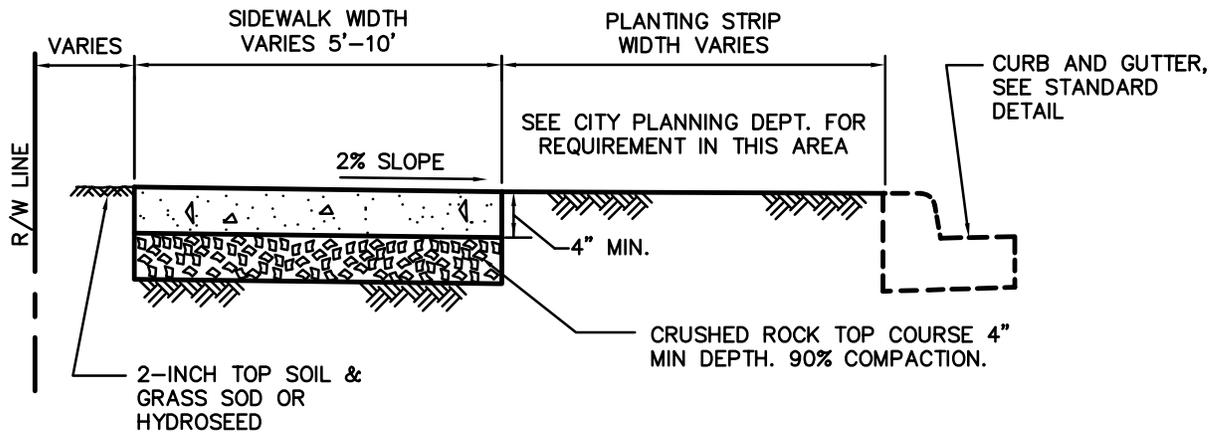
10/19/09

SCALE:

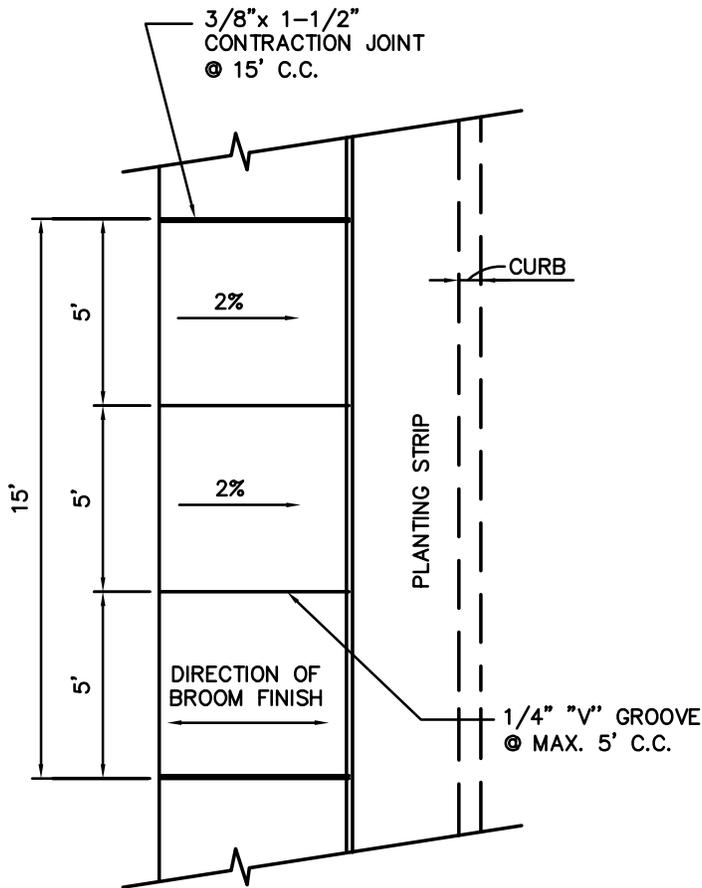
NONE

DWG. NO.

**ST-24**



**SECTION**



**PLAN**

MINIMUM SIDEWALK WIDTHS

5' MINIMUM, 10' MAXIMUM SEE DESIGN STANDARDS

NOTES:

1. THRU JOINTS AND DUMMY JOINTS SHALL BE AS SHOWN ABOVE. THRU JOINTS SHALL ALSO BE PLACED IN THE SIDEWALK SECTION AT DRIVEWAY AND ALLEY RETURNS. ALL JOINTS SHALL BE CLEAN AND EDGED WITH AN EDGE HAVING 1/4" RADIUS. JOINTS SHALL BE FLUSH WITH THE FINISHED SURFACE.
2. ALL UTILITY POLES, METER BOXES, ETC. IN SIDEWALK AREAS SHALL HAVE 3/8" JOINT MATERIAL (FULL DEPTH) PLACED AROUND THEM BEFORE PLACING CONCRETE.
3. PREMOLDED JOINT FILLER SHALL BE 3/8" x 2" ASPHALT SATURATED FELT OR PAPER.
4. CONCRETE SHALL BE COMMERCIAL CLASS 3000 PSI.



**CITY OF MILTON  
SIDEWALK WITH  
PLANTING STRIP**

REVISION DATE:

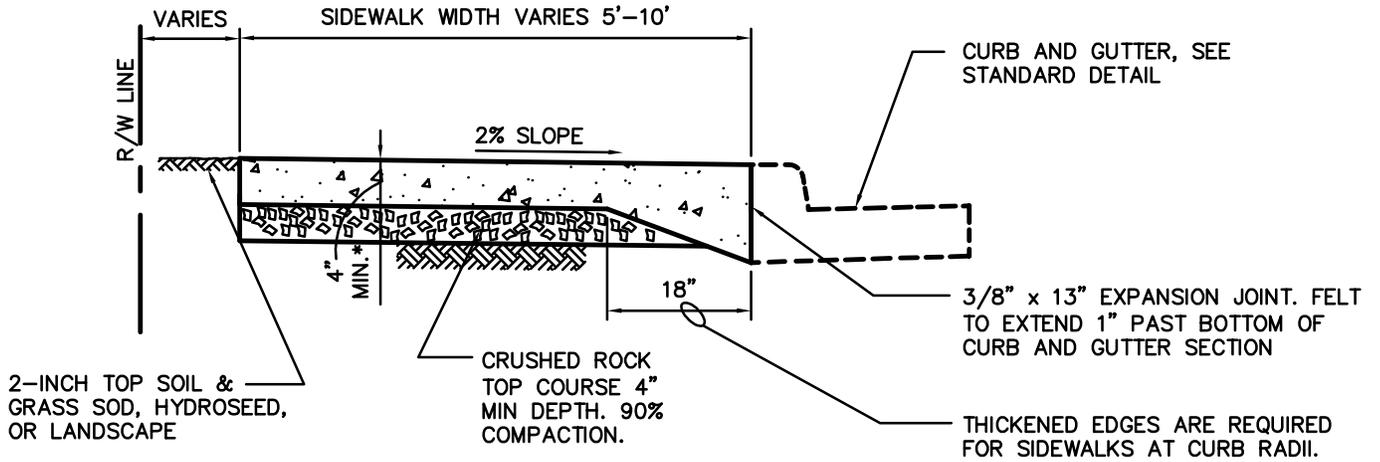
10/19/09

SCALE:

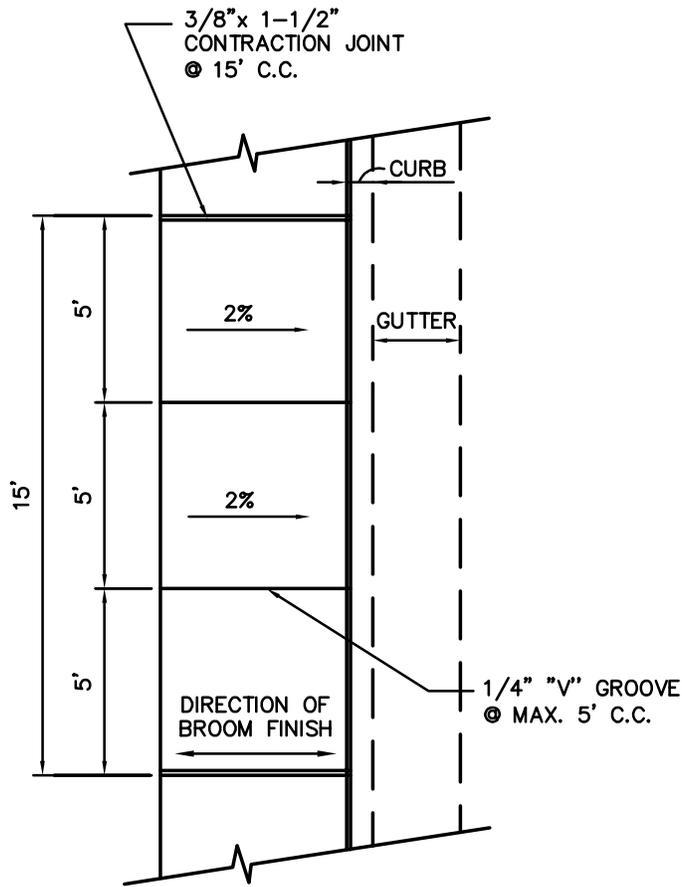
NONE

DWG. NO.

**ST-25**



**SECTION**



**PLAN**

MINIMUM SIDEWALK WIDTHS

5' MINIMUM, 10' MAXIMUM SEE DESIGN STANDARDS

NOTES:

1. THRU JOINTS AND CONTRACTION JOINTS SHALL BE AS SHOWN ABOVE. THRU JOINTS SHALL ALSO BE PLACED IN THE SIDEWALK SECTION AT DRIVE-WAY AND ALLEY RETURNS. ALL JOINTS SHALL BE CLEAN AND EDGED WITH AN EDGE HAVING 1/4" RADIUS. JOINTS SHALL BE FLUSH WITH THE FINISHED SURFACE.
2. ALL UTILITY POLES, METER BOXES, ETC. IN SIDEWALK AREAS SHALL HAVE 3/8" JOINT MATERIAL (FULL DEPTH) PLACED AROUND THEM BEFORE PLACING CONCRETE.
3. PREMOLDED JOINT FILLER SHALL BE 3/8"x 2" ASPHALT SATURATED FELT OR PAPER.
4. CONCRETE SHALL BE COMMERCIAL CLASS 3000 PSI



**CITY OF MILTON  
SIDEWALK WITHOUT  
PLANTING STRIP**

REVISION DATE:

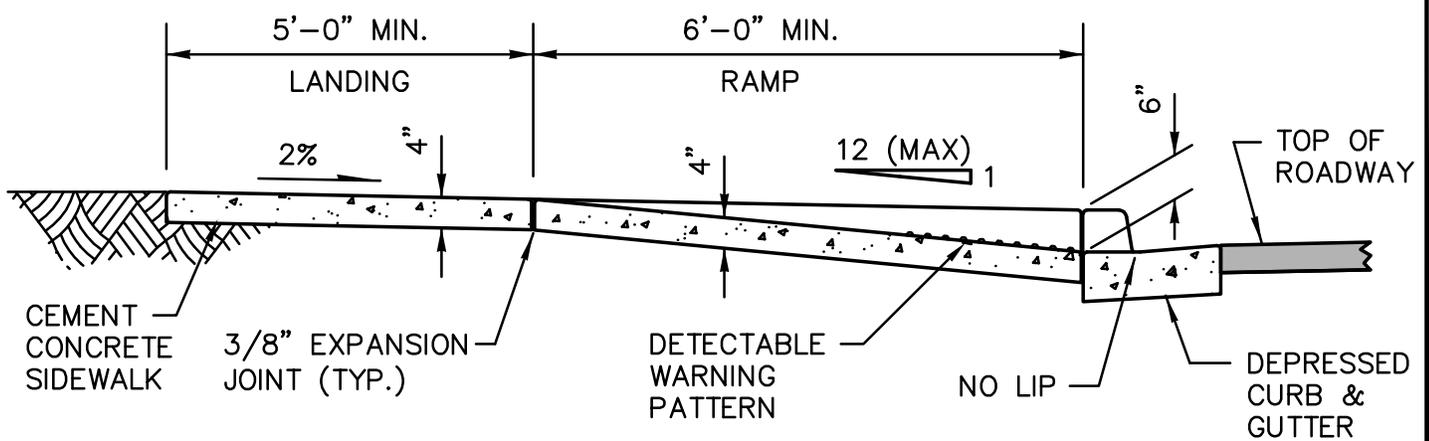
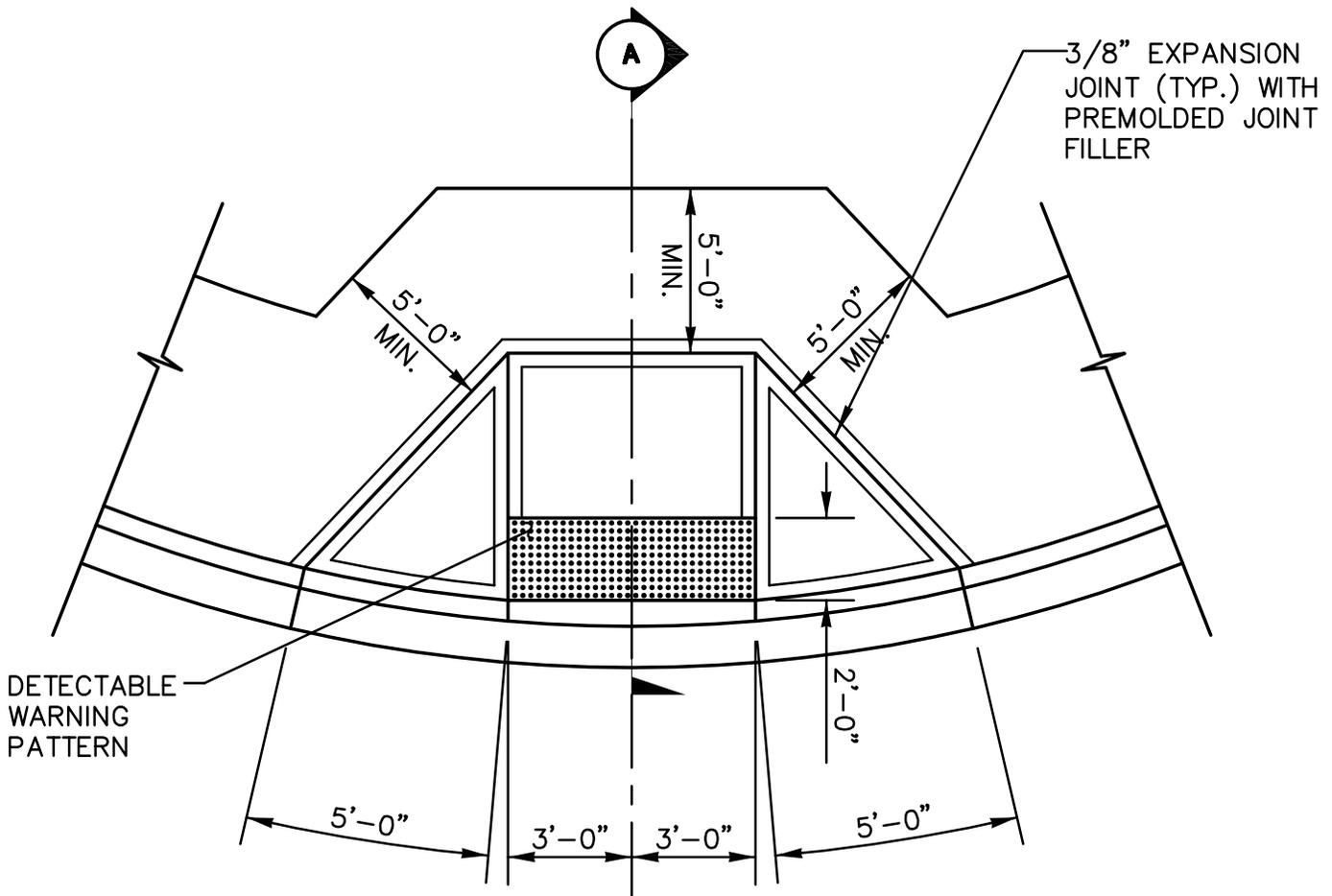
10/19/09

SCALE:

NONE

DWG. NO.

**ST-26**



**SECTION A**

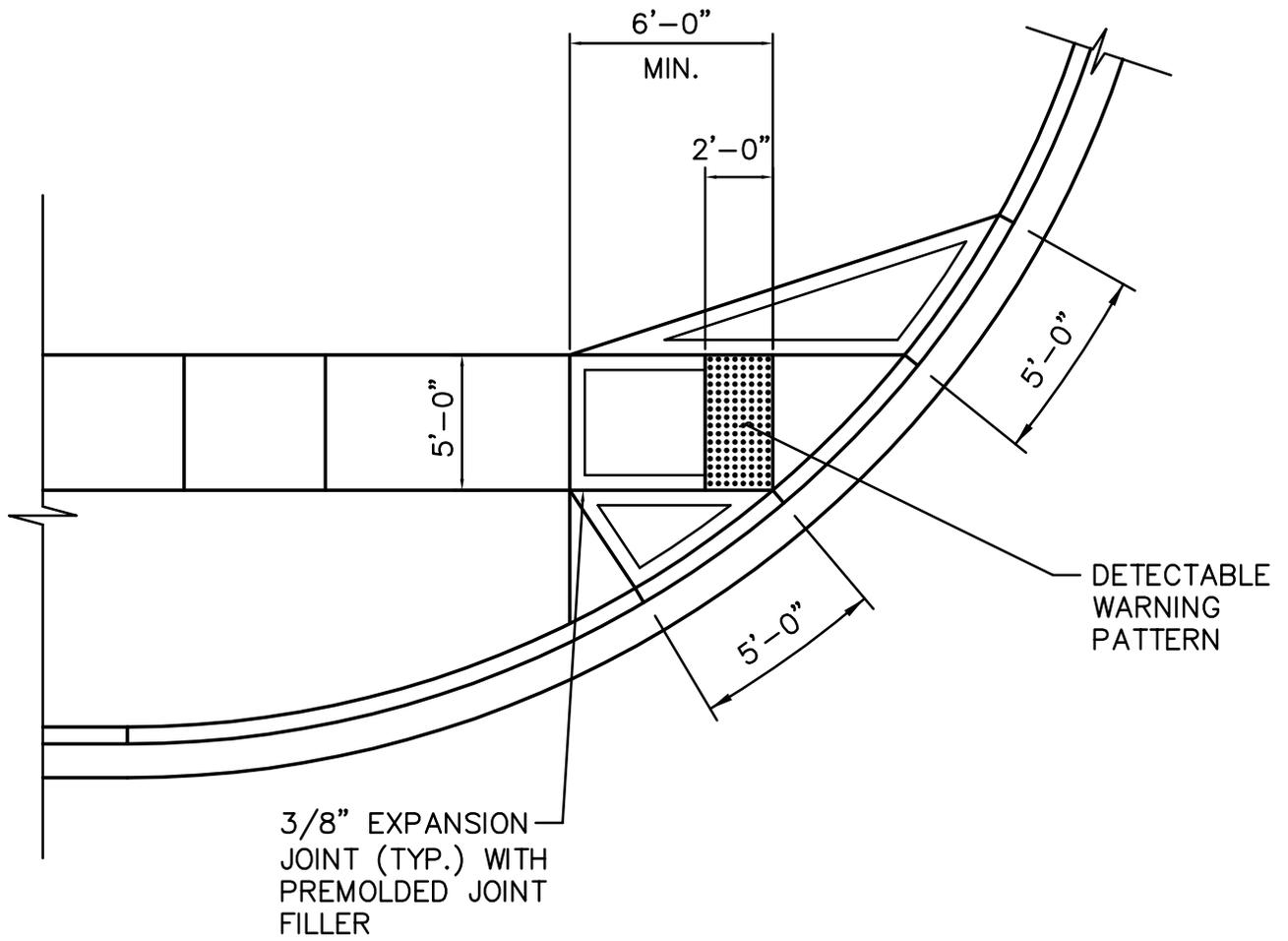
**NOTE:**

TYPE 1A RAMP IS USED TO PROVIDE ACCESS TO TWO CROSSWALKS ONLY WHEN IT IS NOT FEASIBLE TO PROVIDE TO PROVIDE A SEPERATE RAMP TO EACH CROSSWALK



**CITY OF MILTON  
CURB RAMP DETAIL  
TYPE 1A**

REVISION DATE: <b>3/30/07</b>	SCALE: <b>NONE</b>	DWG. NO. <b>ST-27</b>
----------------------------------	-----------------------	--------------------------



CITY OF MILTON  
 MODIFIED CURB  
 RAMP DETAIL TYPE 1A

REVISION DATE:

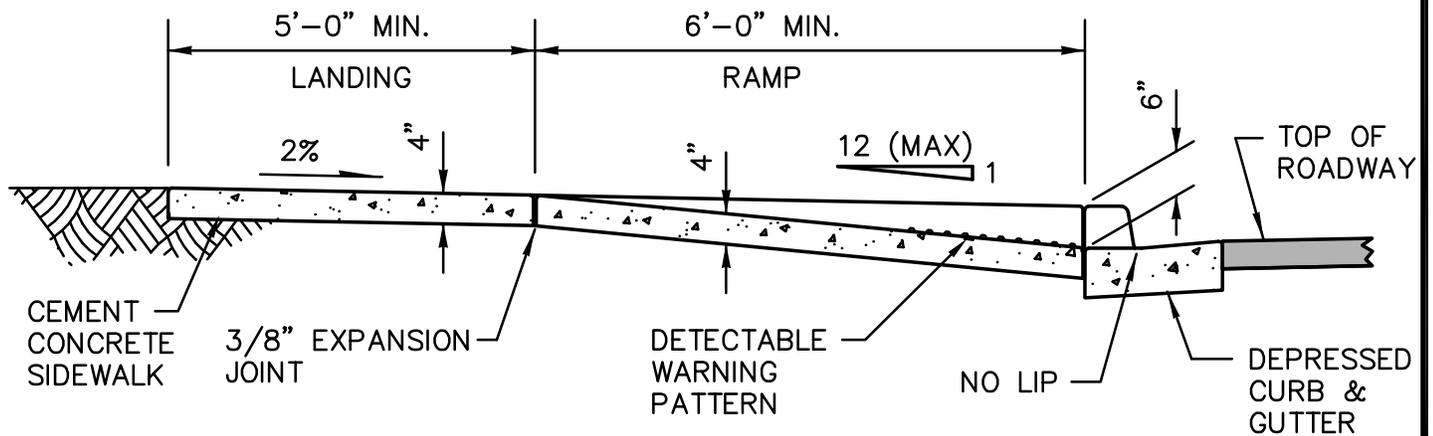
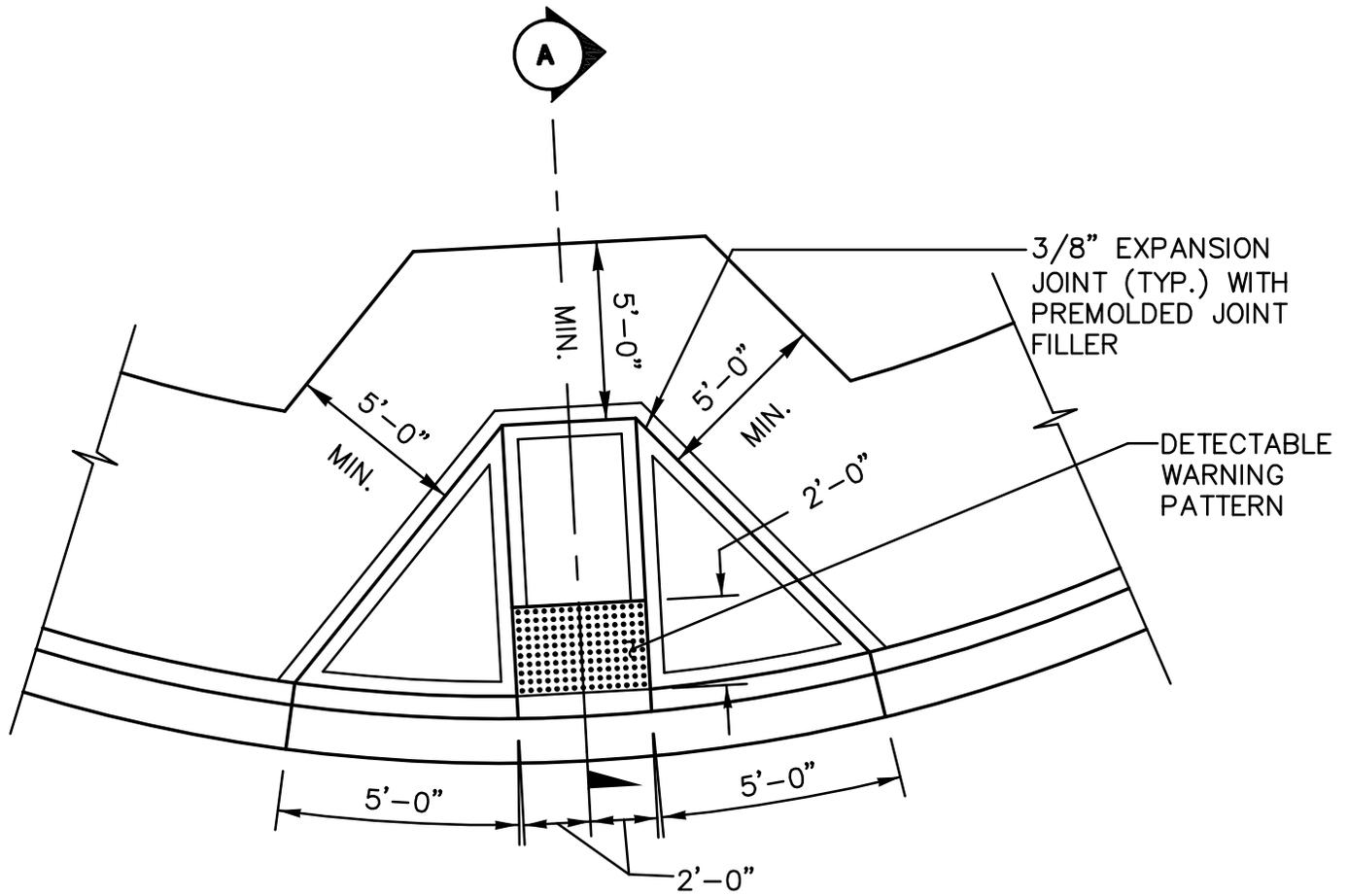
3/30/07

SCALE:

NONE

DWG. NO.

**ST-28**

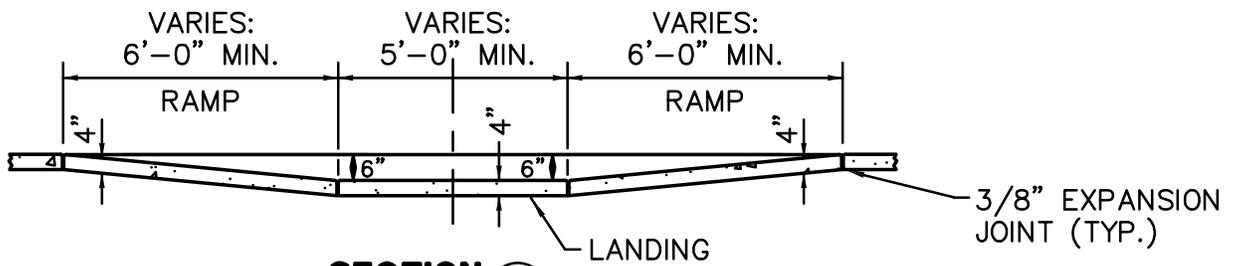
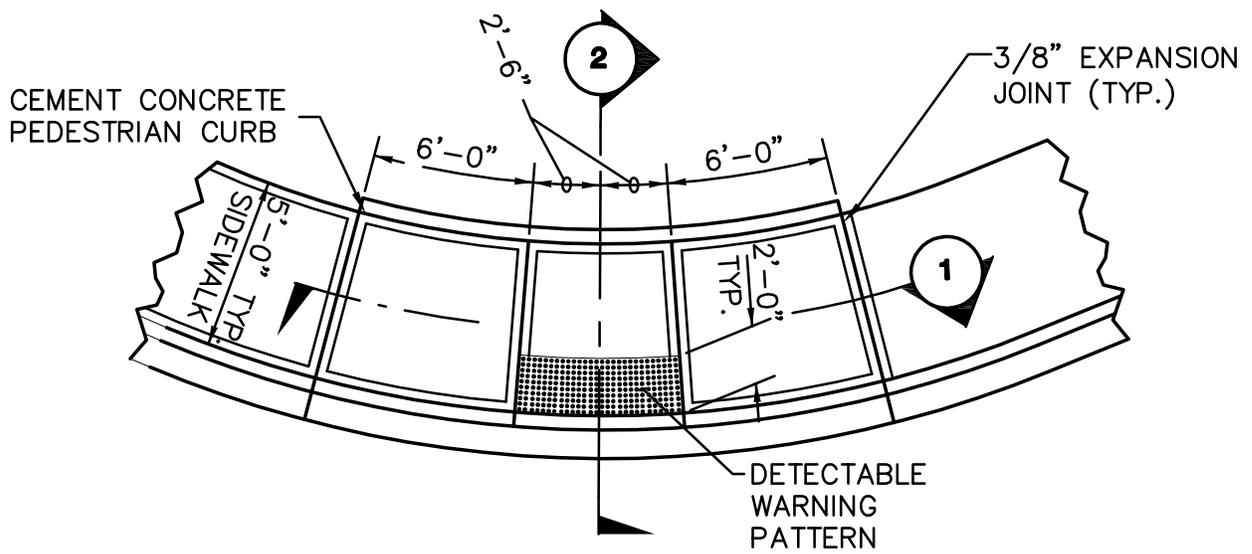


**SECTION A**

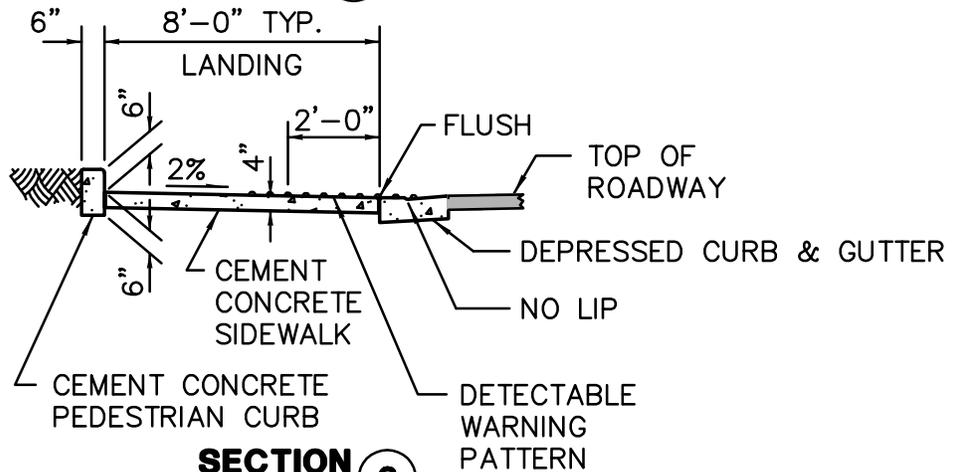


**CITY OF MILTON  
CURB RAMP DETAIL  
TYPE 1B**

REVISION DATE: <b>3/30/07</b>	SCALE: <b>NONE</b>	DWG. NO. <b>ST-29</b>
----------------------------------	-----------------------	--------------------------



**SECTION 1**



**SECTION 2**



**CITY OF MILTON  
CURB RAMP DETAIL  
TYPE 2B**

REVISION DATE:

3/30/07

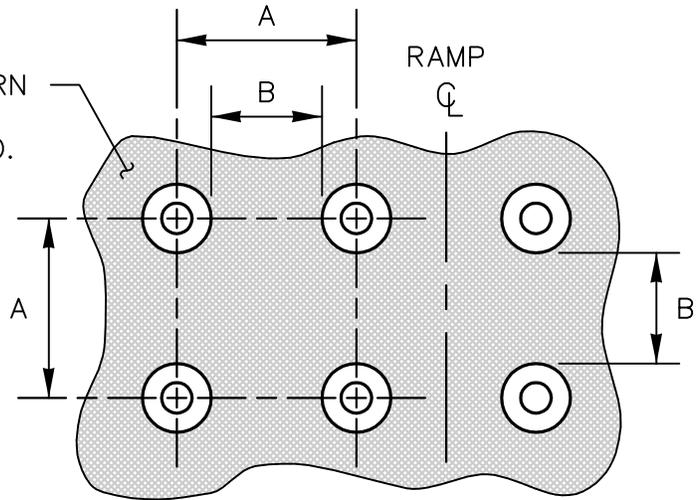
SCALE:

NONE

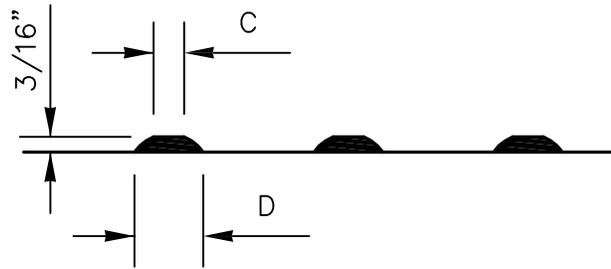
DWG. NO.

**ST-30**

DETECTABLE WARNING PATTERN  
 AREA SHALL BE YELLOW, IN  
 COMPLIANCE WITH WSDOT STD.  
 SPEC. 8-14.3(3)



**PLAN**



**ELEVATION**

	MIN.	MAX.
A	1 5/8"	2 3/8"
B	5/8"	1 1/2"
C	7/16"	3/4"
D	7/8"	1 7/16"

**TRUNCATED DOMES**



**CITY OF MILTON  
 DETECTABLE WARNING  
 PATTERN DETAIL**

REVISION DATE:

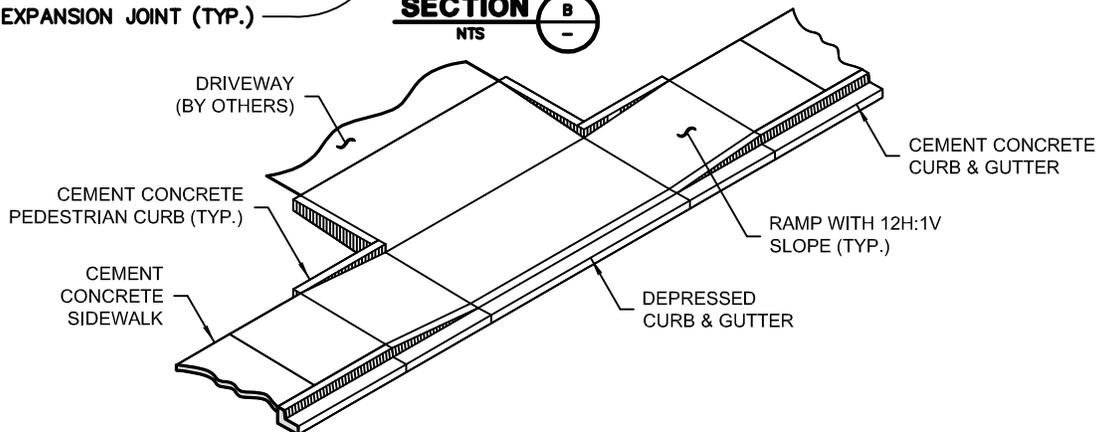
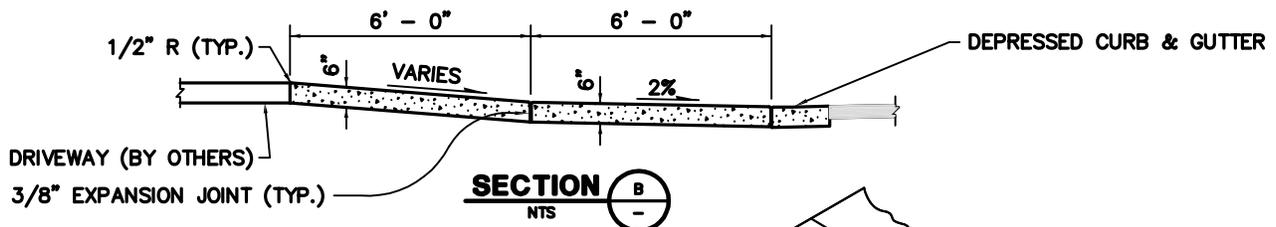
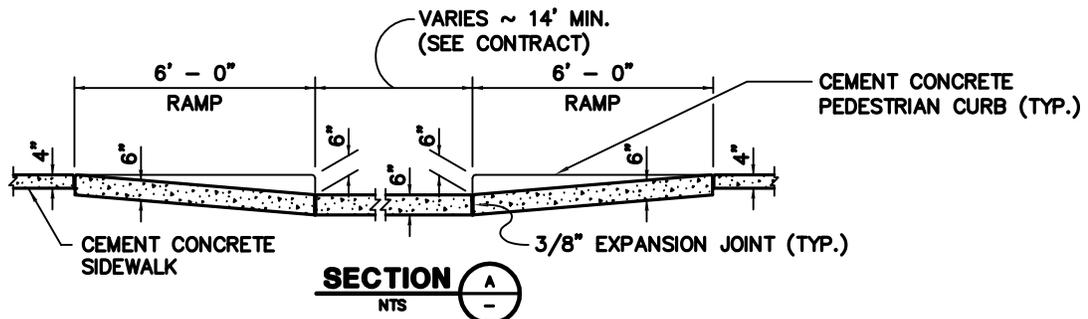
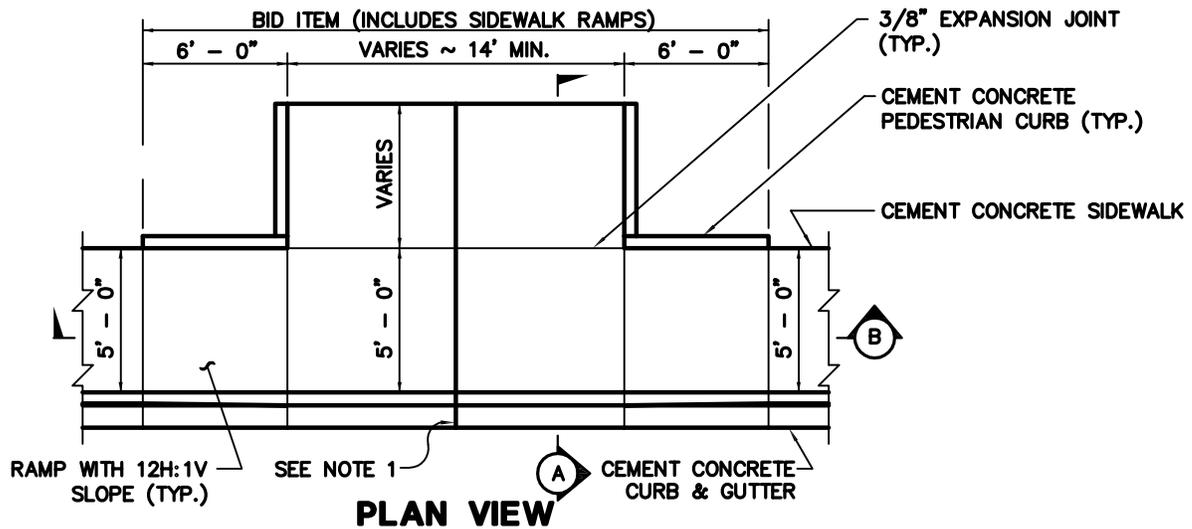
3/30/07

SCALE:

NONE

DWG. NO.

**ST-31**



**NOTES:**

1. WHEN THE DRIVEWAY WIDTH EXCEEDS 15 FEET, CONSTRUCT A FULL DEPTH EXPANSION JOINT WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15' MAXIMUM SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'.
2. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF DRIVEWAY ENTRANCES.



**CITY OF MILTON  
CEMENT CONCRETE  
DRIVEWAY TYPE 1**

REVISION DATE:

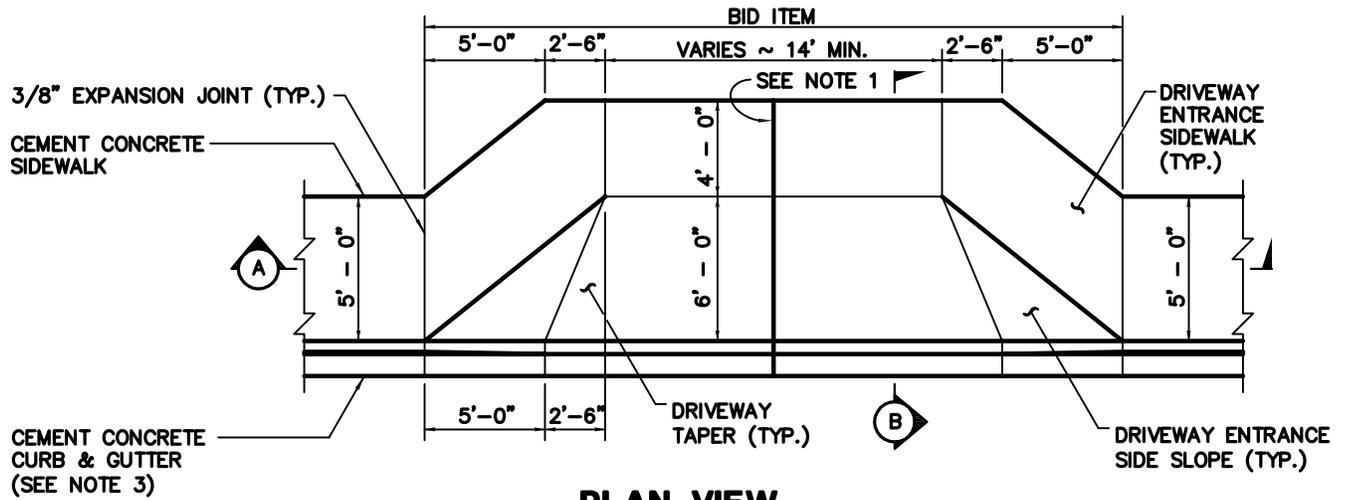
10/19/09

SCALE:

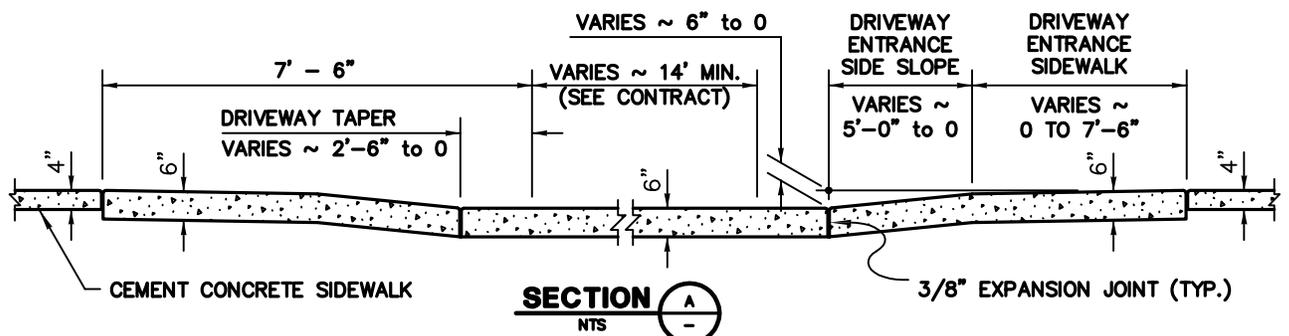
NONE

DWG. NO.

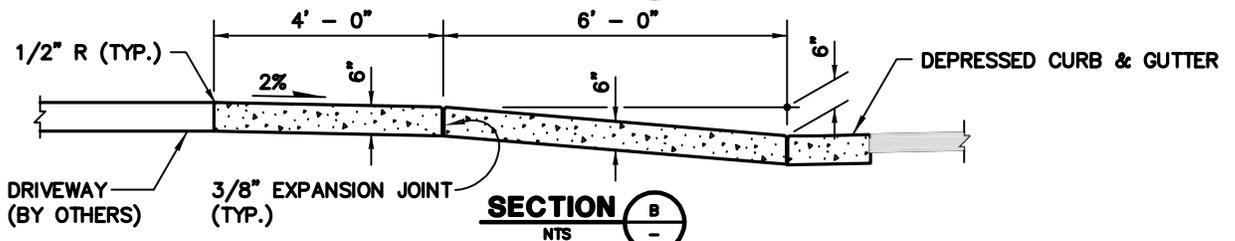
**ST-32**



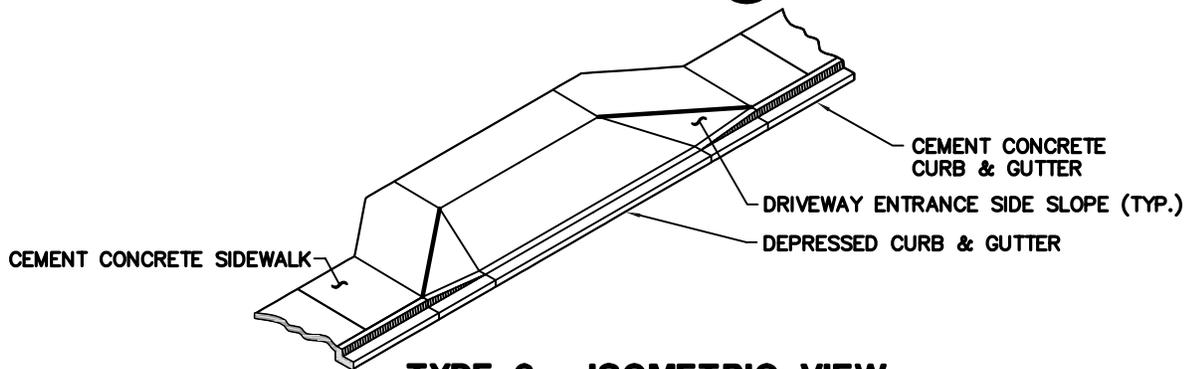
**PLAN VIEW**



**SECTION A**  
NTS



**SECTION B**  
NTS



**TYPE 2 - ISOMETRIC VIEW**

**NOTES:**

1. WHEN THE DRIVEWAY WIDTH EXCEEDS 15 FEET, CONSTRUCT A FULL DEPTH EXPANSION JOINT WITH 3/8" JOINT FILLER ALONG THE DRIVEWAY CENTERLINE. CONSTRUCT EXPANSION JOINTS PARALLEL WITH THE CENTERLINE AS REQUIRED AT 15' MAXIMUM SPACING WHEN DRIVEWAY WIDTHS EXCEED 30'.
2. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF DRIVEWAY ENTRANCES.



**CITY OF MILTON  
CEMENT CONCRETE  
DRIVEWAY TYPE 2**

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-33**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

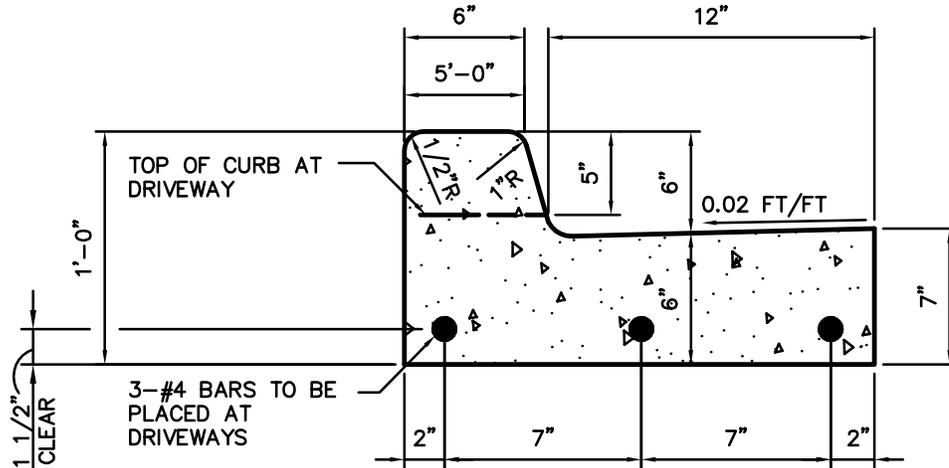
10/19/09

SCALE:

NONE

DWG. NO.

**ST-34**



**NOTES:**

1. FORMS SHALL BE TRUE TO LINE AND GRADE AND SECURELY STAKED.
2. FULL DEPTH EXPANSION JOINTS SHALL BE PLACED ON 10 FOOT CENTERS.
3. THRU JOINTS SHALL BE PLACED ADJACENT TO CATCH BASINS, INLETS AND AT POINTS OF TANGENCY ON STREETS, ALLEY AND DRIVEWAY RETURNS. MAXIMUM SPACING SHALL BE 30 FT. PRE-MOLDED JOINT FILLER SHALL BE 1/2" WIDE AND CONFORM TO AASHTO DESIGN M213.
4. ALL JOINTS SHALL BE CLEAN AND EDGED.
5. CONCRETE SHALL BE CEMENT CONCRETE, CLASS 4000 FROM AN APPROVED SUPPLIER.
6. STEEL FORMS SHALL ONLY BE USED ON TANGENT SECTIONS. WOOD FORMS MAY BE USED ON CURVED SECTIONS.
7. FINISH SHALL BE LIGHT BROOM FINISH.
8. THE FINISHED CURB SHALL BE SPRAYED WITH A TRANSPARENT CURING COMPOUND AND COVERED BY WATERPROOF PAPER OR PLASTIC MEMBRANE IN THE EVENT OF RAIN OR OTHER UNSUITABLE WEATHER. CURING TIME SHALL BE A MINIMUM OF 72 HOURS.
9. ALL CURB AND GUTTER SHALL BE PLACED ON A MIN OF 4" OF CRUSHED SURFACING TOP COURSE.



**CITY OF MILTON  
CONCRETE CURB  
AND GUTTER**

REVISION DATE:

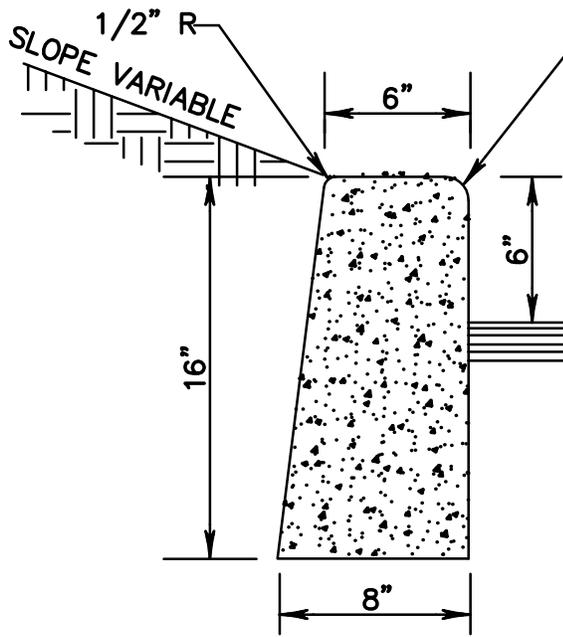
10/19/09

SCALE:

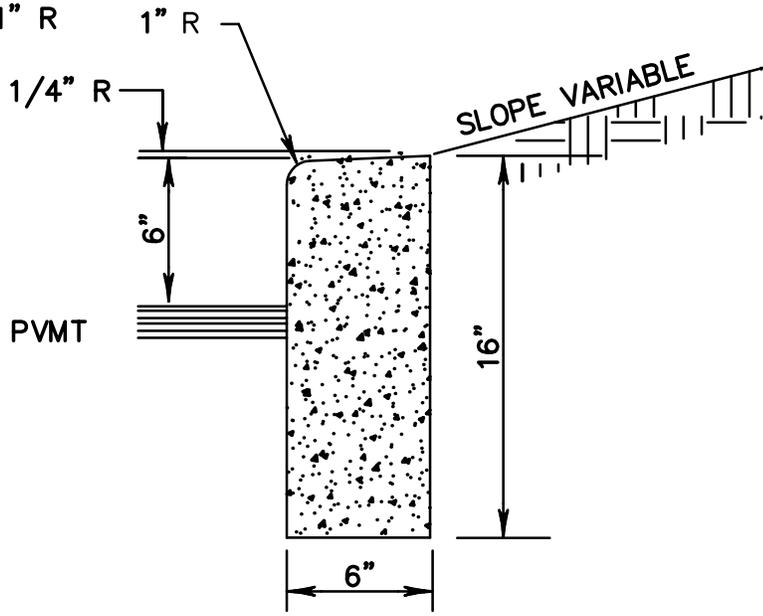
NONE

DWG. NO.

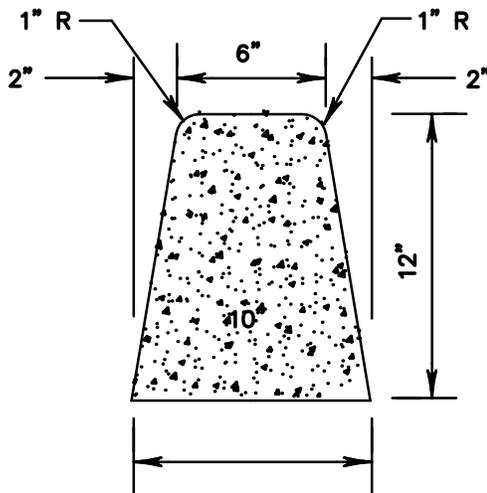
**ST-35**



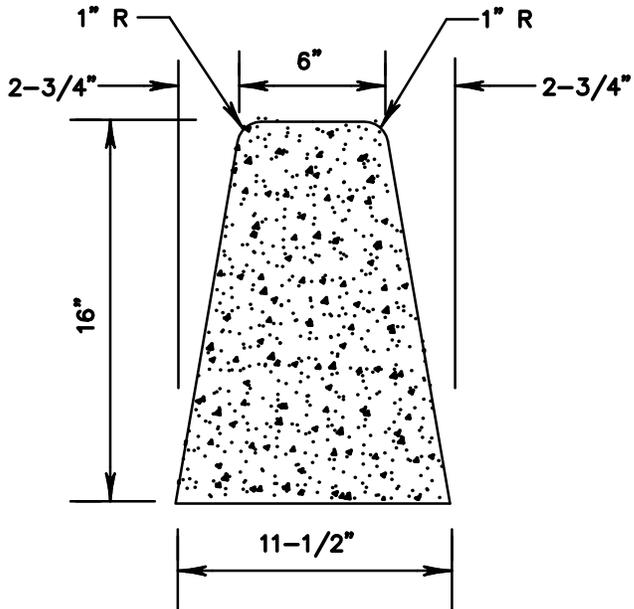
**TYPE E-1 CURB**



**TYPE E-2 CURB**



**TYPE E-3 CURB**



**TYPE E-4 CURB**

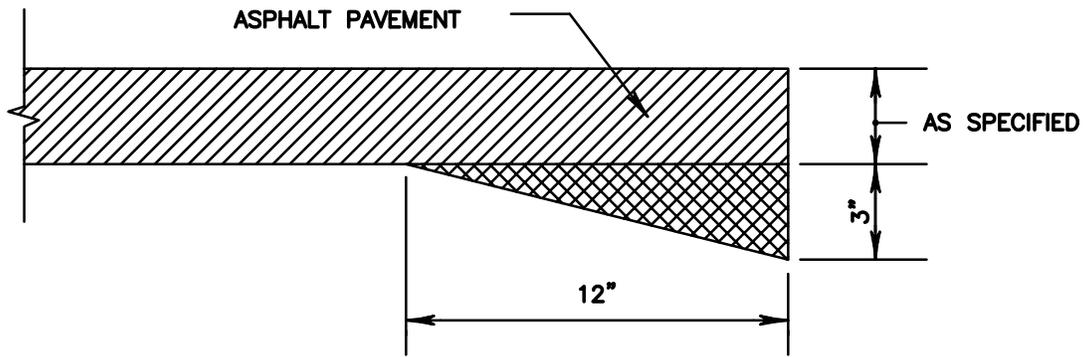


**CITY OF MILTON  
CONCRETE CURB TYPES**

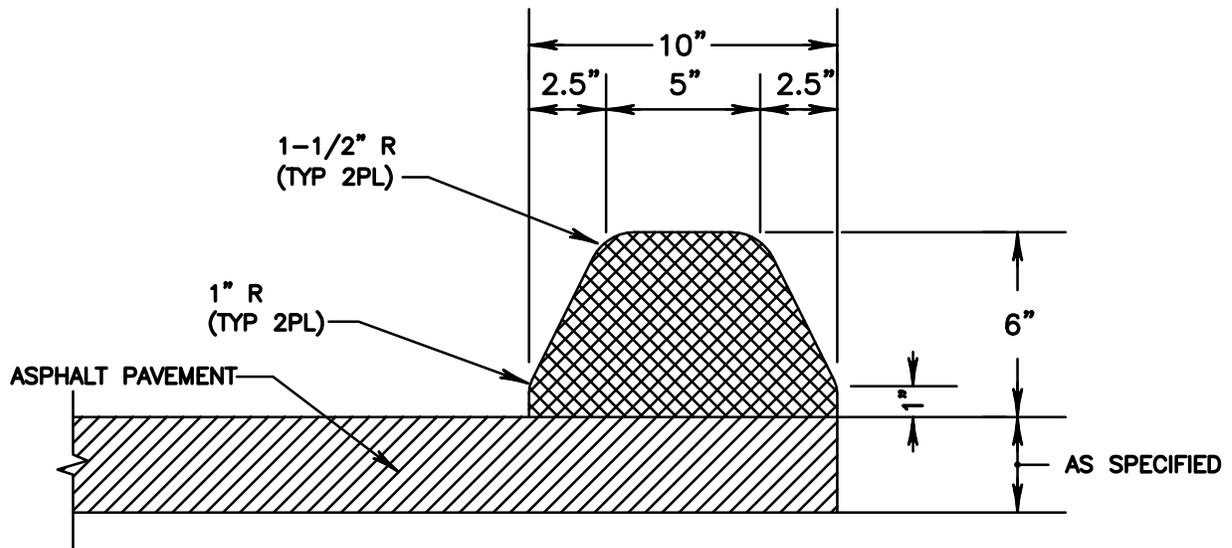
REVISION DATE:  
3/30/07

SCALE:  
NONE

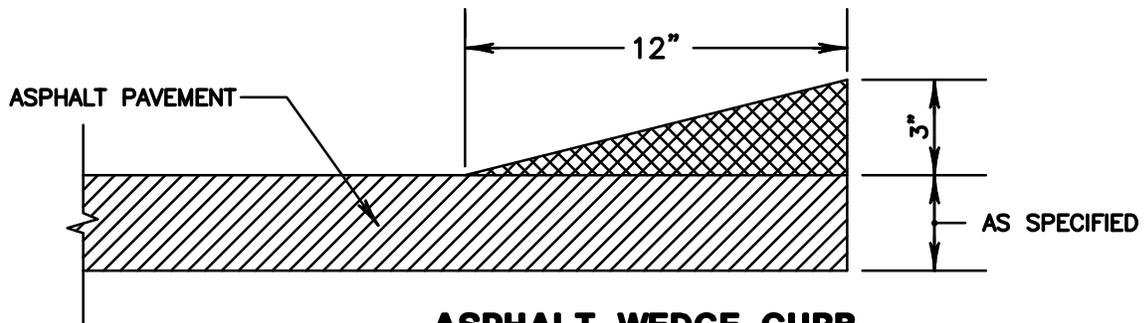
DWG. NO.  
**ST-36**



**THICKENED EDGE FOR ASPHALT PAVEMENT**



**EXTRUDED ASPHALT CONCRETE CURB**



**ASPHALT WEDGE CURB**



**CITY OF MILTON  
EXTRUDED ASPHALT  
CONCRETE SECTIONS**

REVISION DATE:

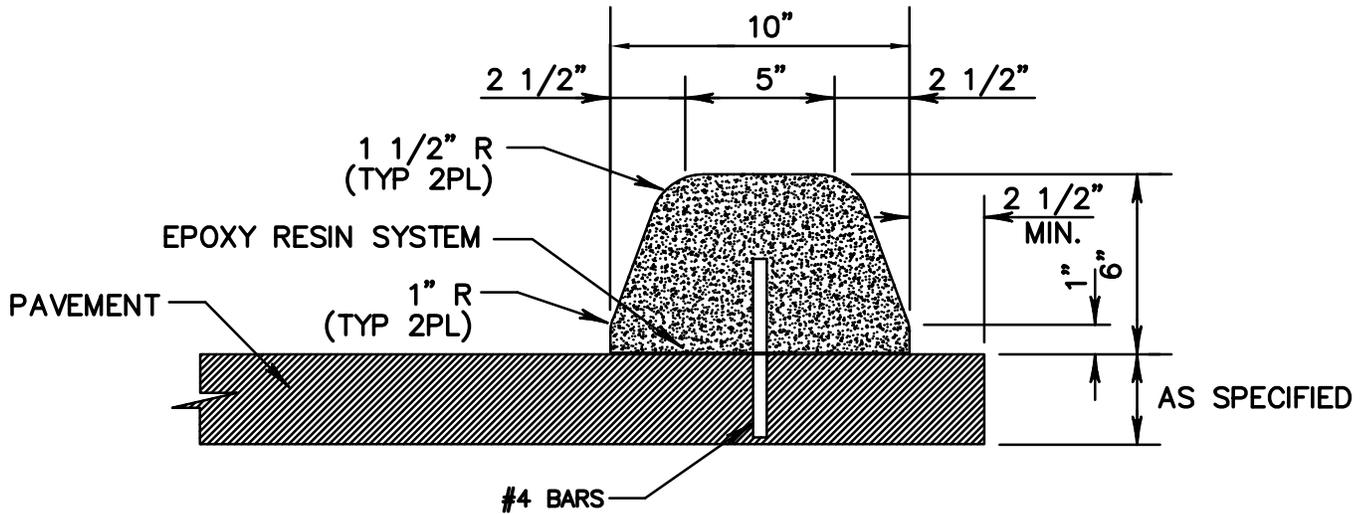
3/30/07

SCALE:

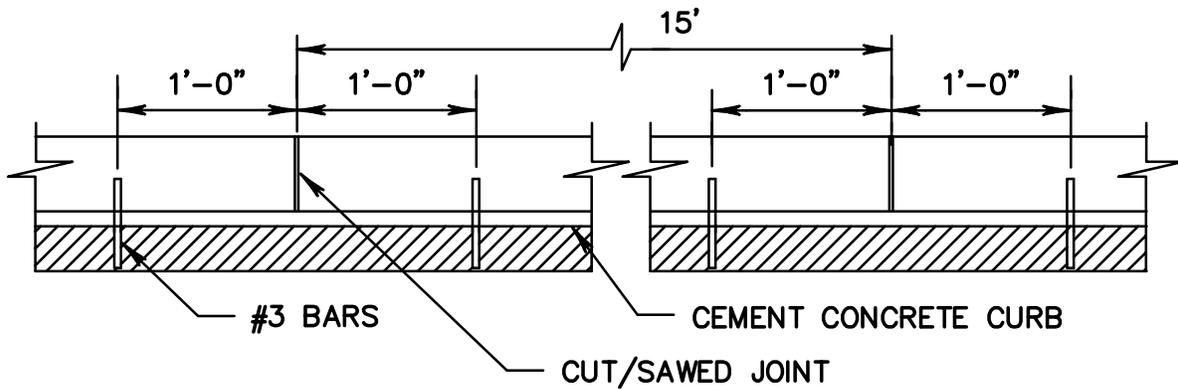
NONE

DWG. NO.

**ST-37**



**EXTRUDED CEMENT CONCRETE CURB**



**SPACING OF ANCHOR BARS**

**NOTES:**

1. CONTROL JOINTS SHALL BE PLACED NOT TO EXCEED 10' CLS. THRU JOINTS SHALL BE PLACED ONLY AT POINTS OF TANGENCY ON STREET ALLEY AND DRIVEWAY RETURNS AND WHERE EXPANSION JOINTS OCCUR IN THE PAVEMENT SLAB.
2. CONCRETE SHALL BE CLASS 3000 OR COMMERCIAL WITH AIR-ENTRAINMENT.
3. AT THE CONTRACTOR'S OPTION CONCRETE CURBS MAY BE ANCHORED TO THE EXISTING PAVEMENT EITHER BY PLACING STEEL TIE BARS 1 FOOT ON EACH SIDE OF EVERY JOINT, OR BY USING AN ADHESIVE. THE ADHESIVE SHALL MEET THE REQUIREMENTS OF SECTION 9-20 OF THE WSDOT/APWA STANDARD SPECIFICATIONS FOR TYPE II EPOXY RESIN.
4. PRIVATE PROPERTY ONLY.



**CITY OF MILTON  
EXTRUDED CEMENT  
CONCRETE CURB**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-38**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-39**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

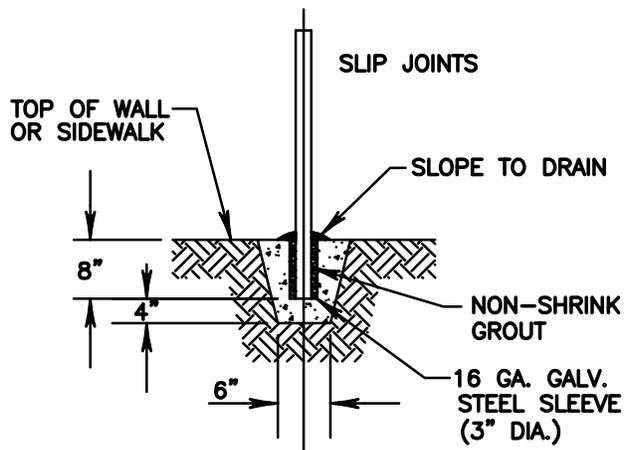
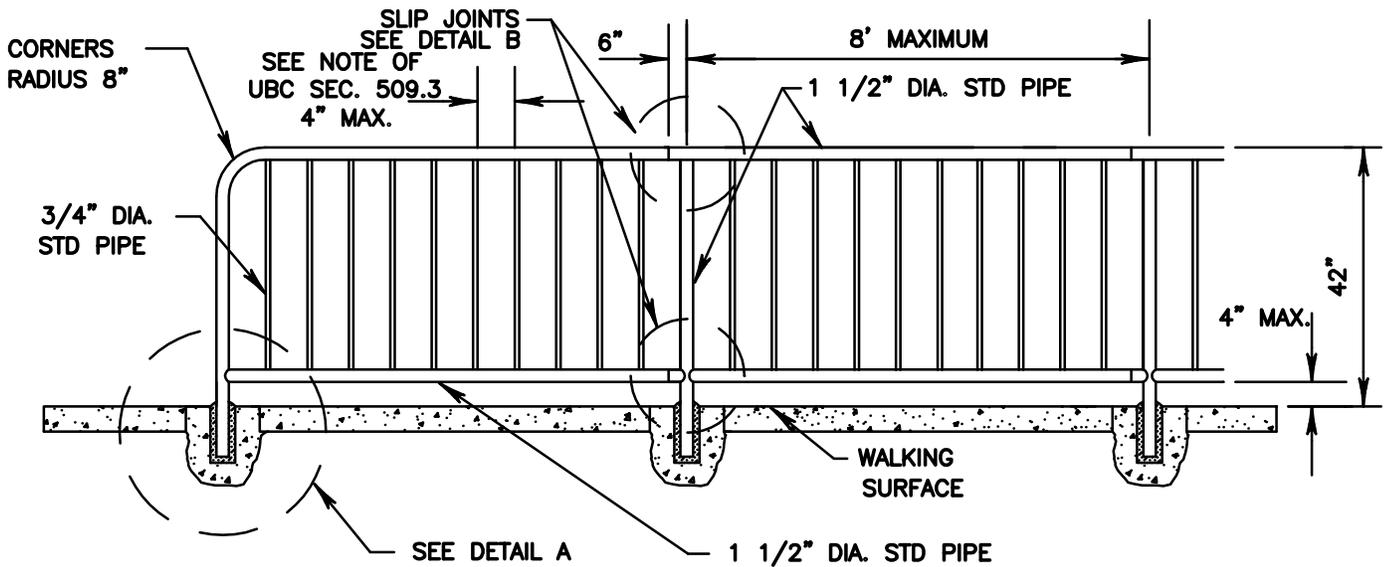
10/19/09

SCALE:

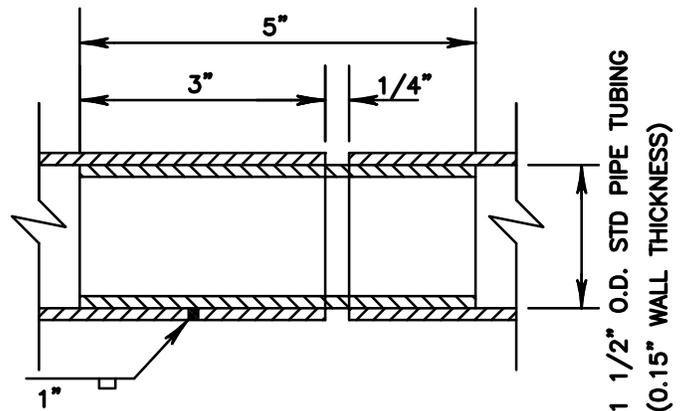
NONE

DWG. NO.

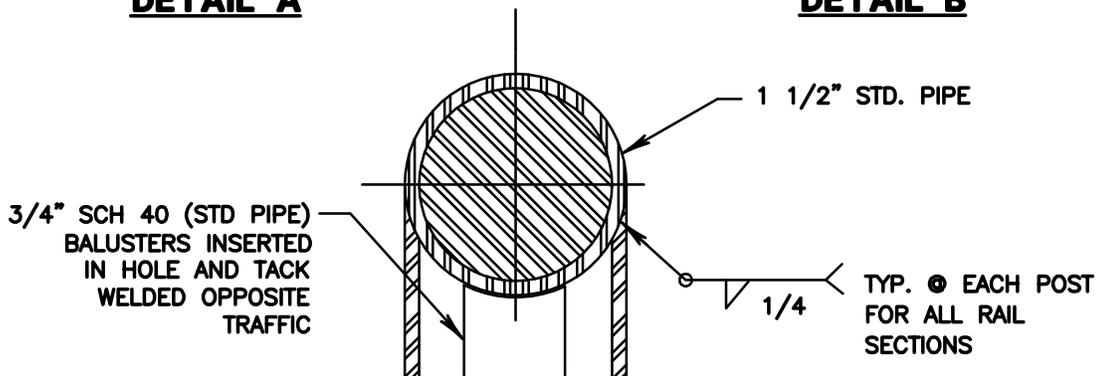
**ST-40**



**DETAIL A**



**DETAIL B**



**NOTES:**

1. MATERIAL FOR PEDESTRIAN HANDRAIL SHALL BE ALUMINUM (ASTM B-429) OR HOT DIPPED GALVANIZED STEEL (ASTM 120) AS APPROVED BY THE DIRECTOR.
2. SEE STANDARD DETAIL ST-42 FOR ADDITIONAL FABRICATION AND SPECIFICATION REQUIREMENTS.
3. PROVIDE SLIP JOINTS AT STAIRWAY EXPANSION JOINTS AND AT EVERY 24 FEET ON CENTER MAXIMUM.
4. MAXIMUM OF 4" CLEAR SPACE BETWEEN BALUSTERS.



**CITY OF MILTON  
PEDESTRIAN RAILING**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-41**

## NOTES

### PEDESTRIAN RAIL (ALUMINUM)

ALUMINUM PEDESTRIAN RAIL SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THESE SPECIAL PROVISIONS AND STANDARD DRAWING NO. ST-41. ALUMINUM PEDESTRIAN RAIL SHALL BE NATURAL ALUMINUM COLOR. COMPLETED ALUMINUM RAILING UNITS SHALL BE ANODIZED AFTER FABRICATION CONFORMING TO THE REQUIREMENTS OF THE ALUMINUM ASSOCIATION STANDARD FOR ANODIZED ARCHITECTURAL ALUMINUM, CLASS I ANODIC COATING, AA-C22-A41. THE BASE METAL FOR ALUMINUM RAILING SHALL BE ASA ALLOY DESIGNATION 6063-T6. PIPE AND TUBING SHALL BE EXTRUDED CONFORMING TO THE REQUIREMENTS OF ASTM B 429, PLATES AND SHEETS SHALL BE ROLLED CONFORMING TO ASTM B 209, AND RODS, BARS OR SHAPES SHALL BE EXTRUDED CONFORMING TO ASTM B 221. HORIZONTAL RAILS AND VERTICAL SUPPORT POSTS SHALL BE 1 1/2-INCH DIAMETER STANDARD PIPE AND BALUSTERS SHALL BE 3/4-INCH DIAMETER STANDARD ALUMINUM PIPE. RAILS, POSTS, AND BALUSTERS SHALL BE MACHINE CUT TO PROVIDE A UNIFORM LENGTH PRIOR TO ASSEMBLY. RAILING SHALL BE ERECTED AND ADJUSTED, IF NECESSARY, TO ASSURE A CONTINUOUS LINE AND GRADE.

### PEDESTRIAN RAIL (GALVANIZED STEEL)

GALVANIZED PEDESTRIAN RAIL SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THESE SPECIAL PROVISIONS AND STANDARD DRAWING NO. ST-41. STEEL RAILINGS MATERIALS SHALL BE WELDED OR SEAMLESS STEEL PIPE CONFORMING TO THE REQUIREMENTS OF ASTM A 120, STRUCTURAL STEEL CONFORMING TO ASTM A 36, OR TUBULAR SECTIONS OF HOT ROLLED, MILD STEEL, CONFORMING TO ASTM A 501. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1. AFTER FABRICATION EACH SECTION OF RAILING SHALL BE HOT-DIPPED GALVANIZED WITH A MINIMUM ZINC COATING OF 2 OUNCES PER SQUARE FOOT. ALL BURRS AND SHARP EDGES SHALL BE REMOVED PRIOR TO GALVANIZING. FIELD WELDS SHALL BE GALVANIZED WITH THREE COATS OF SUCH MATERIALS AS "GALVALLOY" OR GALVICON. PAINTING OF WELDS WILL NOT BE PERMITTED. HORIZONTAL RAILINGS AND VERTICAL SUPPORT POSTS SHALL BE 1 1/2-INCH DIAMETER AND BALUSTERS SHALL BE 3/4-INCH STANDARD WEIGHT GALVANIZED STEEL PIPE. RAILS, POSTS AND BALUSTERS SHALL BE MACHINE CUT TO PROVIDE A UNIFORM LENGTH PRIOR TO ASSEMBLY. RAILING SHALL BE ERECTED AND ADJUSTED, IF NECESSARY, TO ASSURE A CONTINUOUS LINE AND GRADE.



## CITY OF MILTON PEDESTRIAN RAILING NOTES

REVISION DATE:

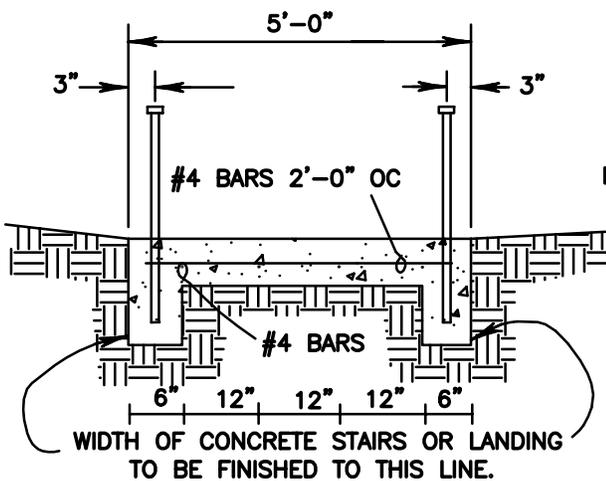
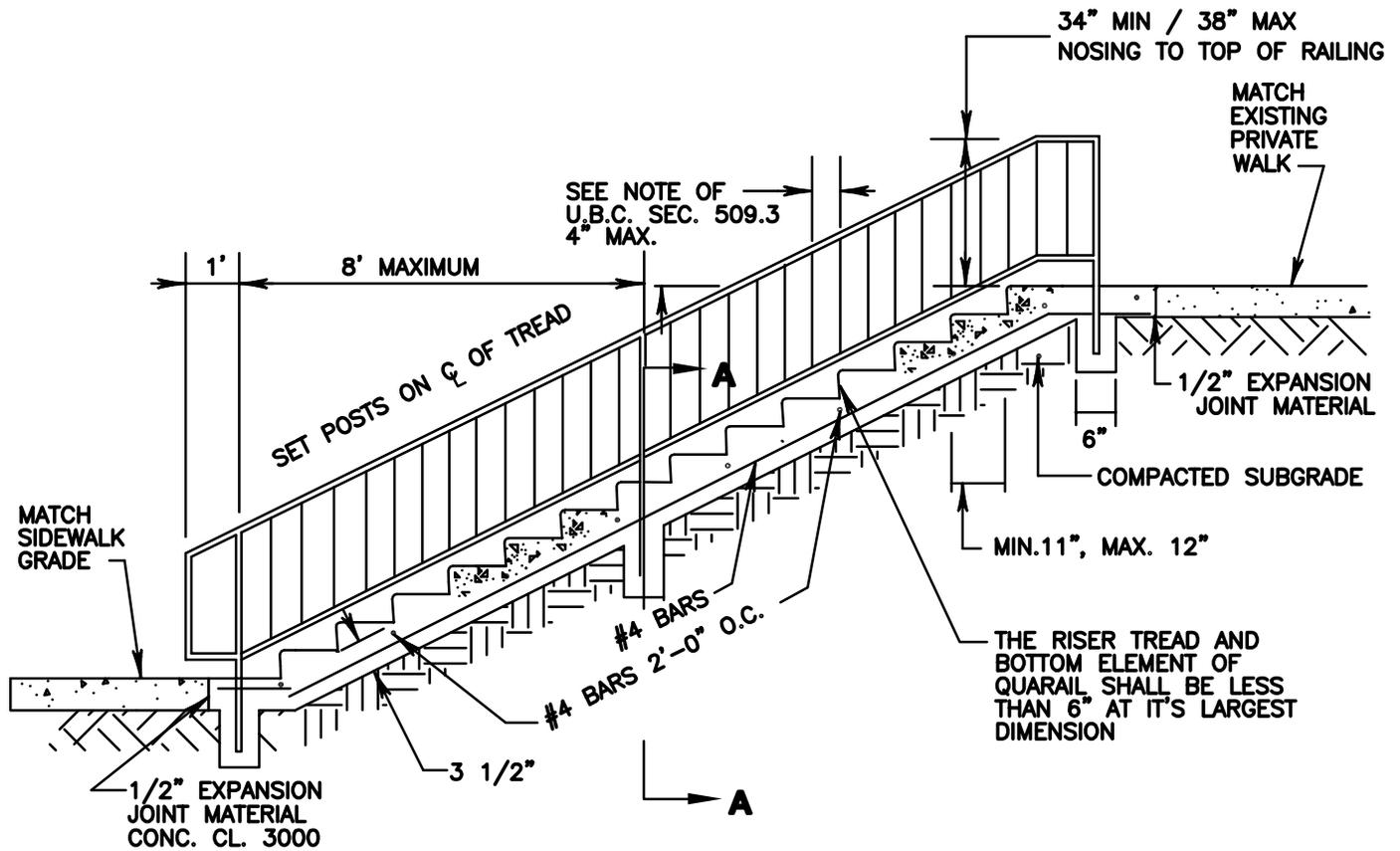
3/30/07

SCALE:

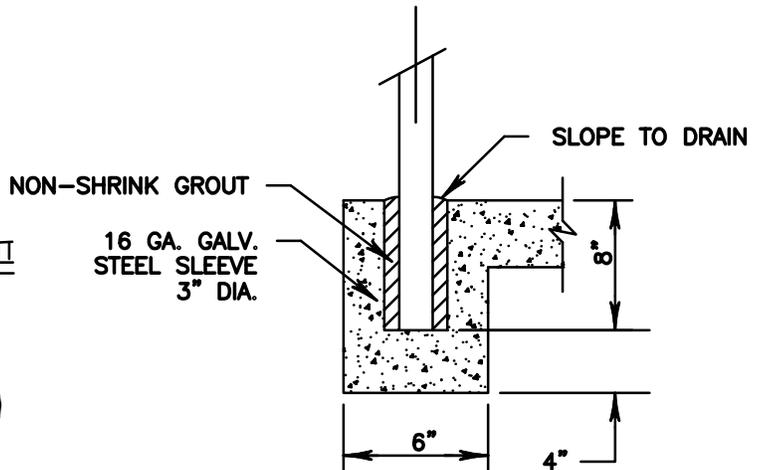
NONE

DWG. NO.

**ST-42**



**SECTION A-A**



**POST DETAIL**

**NOTES:**

1. CEMENT CONCRETE STEPS AND CURBS SHALL BE CONSTRUCTED AS SHOWN ON DETAIL ST-44.
2. HEIGHT OF RAILING SHALL BE 36" MINIMUM, 38" MAXIMUM TOP OF NOSING TO TOP OF RAILING.
3. PEDESTRIAN RAILING SHALL BE CONSTRUCTED AS AS SHOWN ON DETAIL ST-41 AND ST-42.
4. CLEAR SPACE BETWEEN BALUSTERS SHALL BE A MAXIMUM OF 4".
5. ALL STEPS SHALL HAVE HANDRAIL ON BOTH SIDES.



**CITY OF MILTON  
CEMENT CONCRETE  
STAIRWAY**

REVISION DATE:

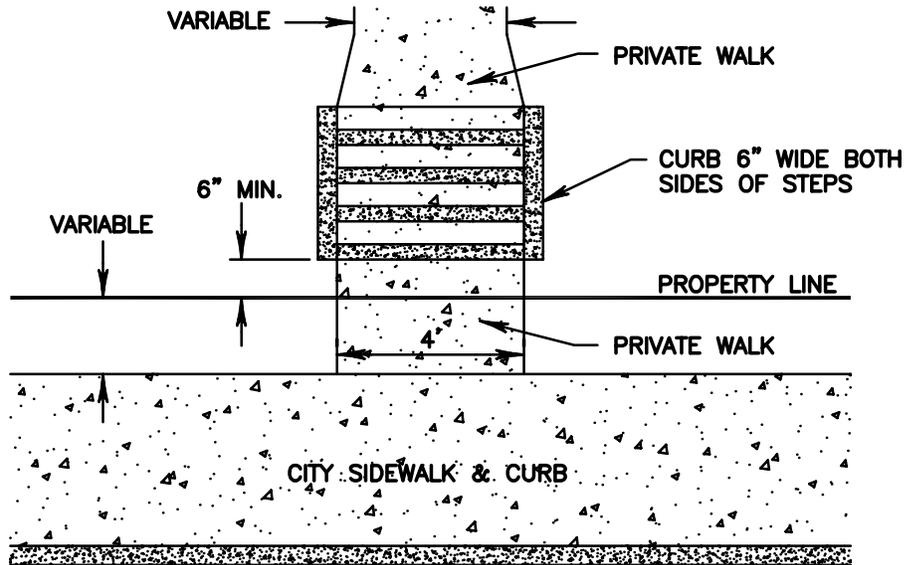
3/30/07

SCALE:

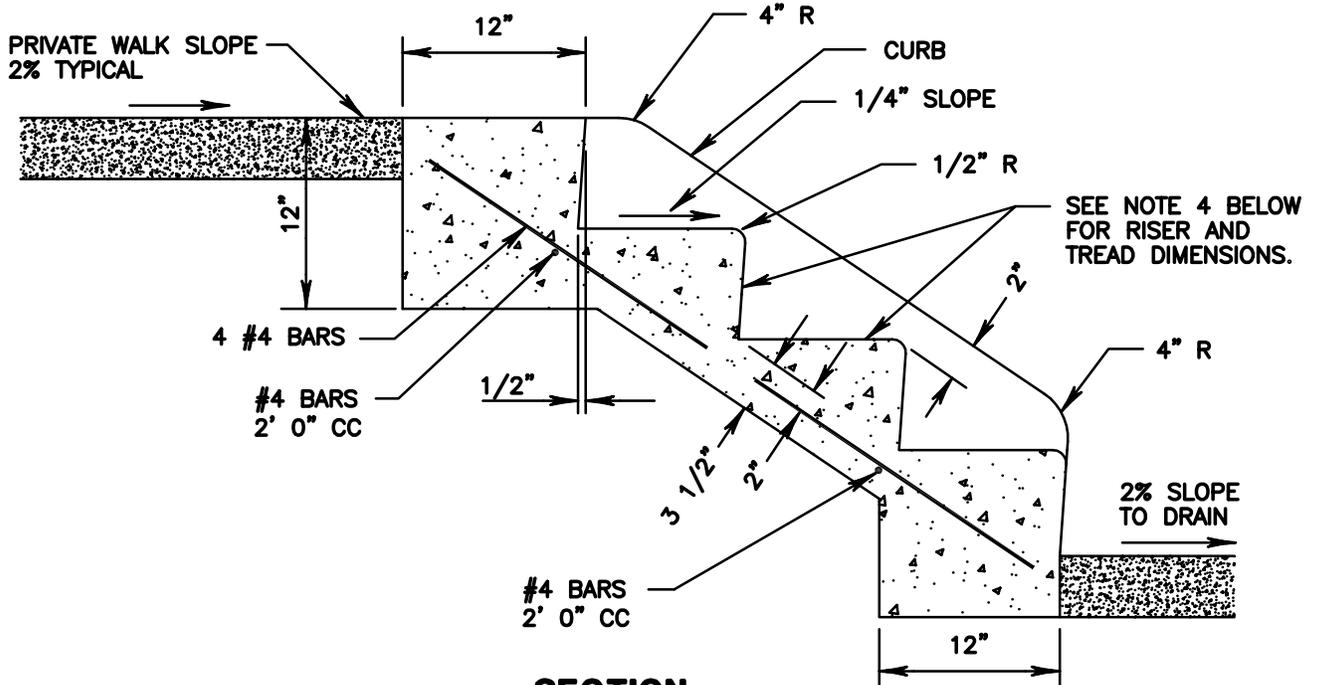
NONE

DWG. NO.

**ST-43**



**PLAN**



**SECTION**

**NOTES:**

1. STEPS SHALL BE 4'-0" WIDE, CURB TO CURB, PLUS 6" CURBS ON EACH SIDE.
2. CEMENT CONCRETE SHALL BE CLASS 3000, TROWEL FINISH.
3. NUMBER OF STEPS SHALL SUIT INDIVIDUAL CONDITIONS, WITH TREAD AND RISER DIMENSIONS TO SUIT THE GRADE.
4. RISER SHALL BE 5" MIN. 7" MAX., TREAD SHALL BE 11" MIN. 12" MAX.
5. ALL STEPS SHALL HAVE RAILINGS (BOTH SIDES) INSTALLED PER STD'S ST-41 AND ST-42.



**CITY OF MILTON  
CEMENT CONCRETE  
STEPS**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-44**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

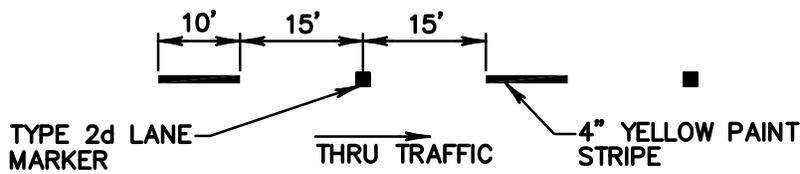
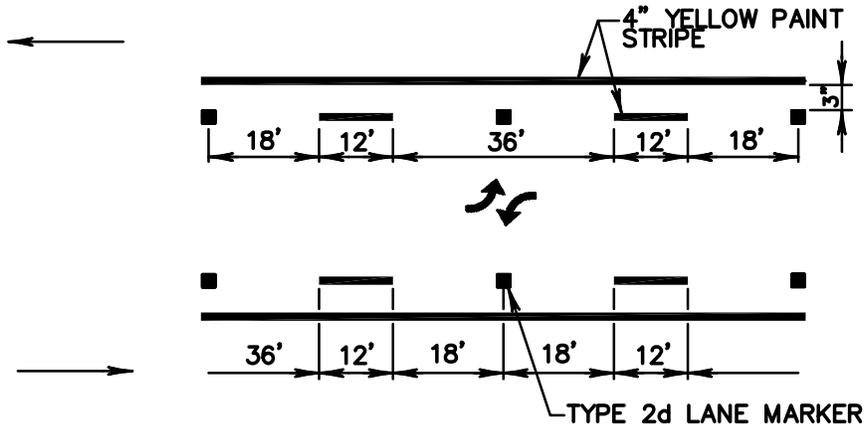
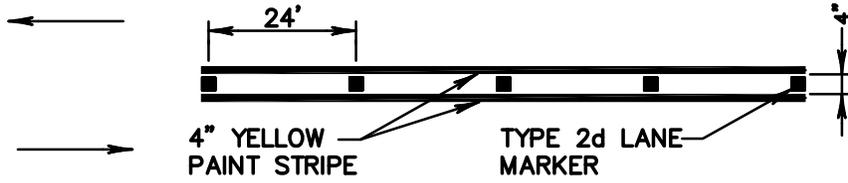
10/19/09

SCALE:

NONE

DWG. NO.

**ST-45**



**NOTE:**  
MATCH EXISTING PAVEMENT PARKING DIMENSIONS.



**CITY OF MILTON  
PAVEMENT MARKING**

REVISION DATE:

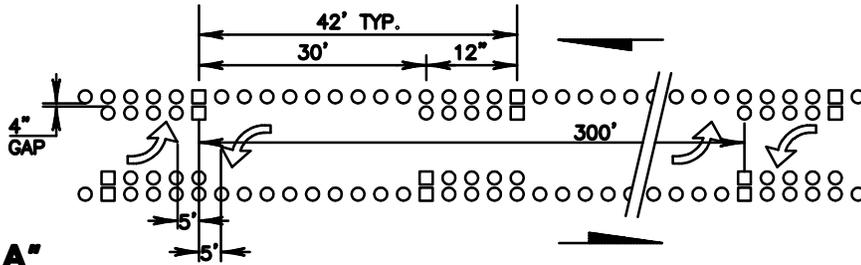
3/30/07

SCALE:

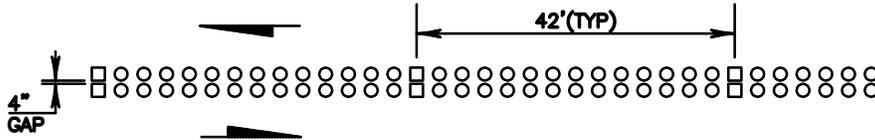
NONE

DWG. NO.

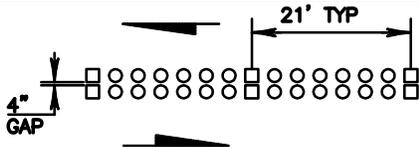
**ST-46**



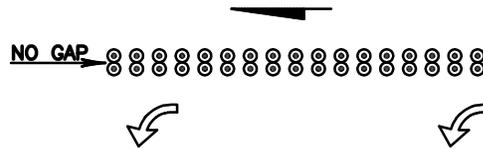
**TYPE "A"**



**TYPE "B"**



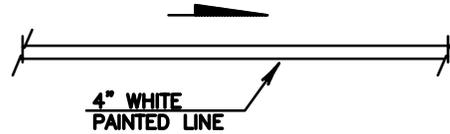
**TYPE "C"**



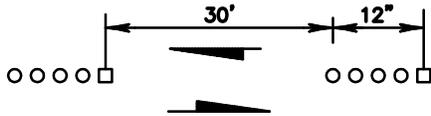
**TYPE "D"**



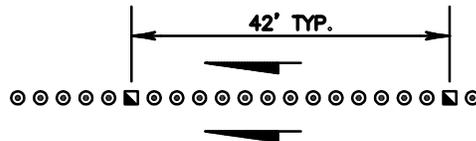
**TYPE "E"**



**TYPE "F"**



**TYPE "G"**



**TYPE "H"**



**TYPE "I"**

**LEGEND**

- . . . . . TYPE 2YY
- . . . . . TYPE 2W
- . . . . . TYPE 1 YELLOW
- . . . . . TYPE 1 WHITE
- . . . . . ALL MARKERS ARE 3' APART UNLESS OTHERWISE NOTED
- 3' (TYP) → | ○ | ←
- ▶ . . . . . DIRECTION OF TRAFFIC



**CITY OF MILTON  
RAISED PAVEMENT  
LANE MARKING**

REVISION DATE:

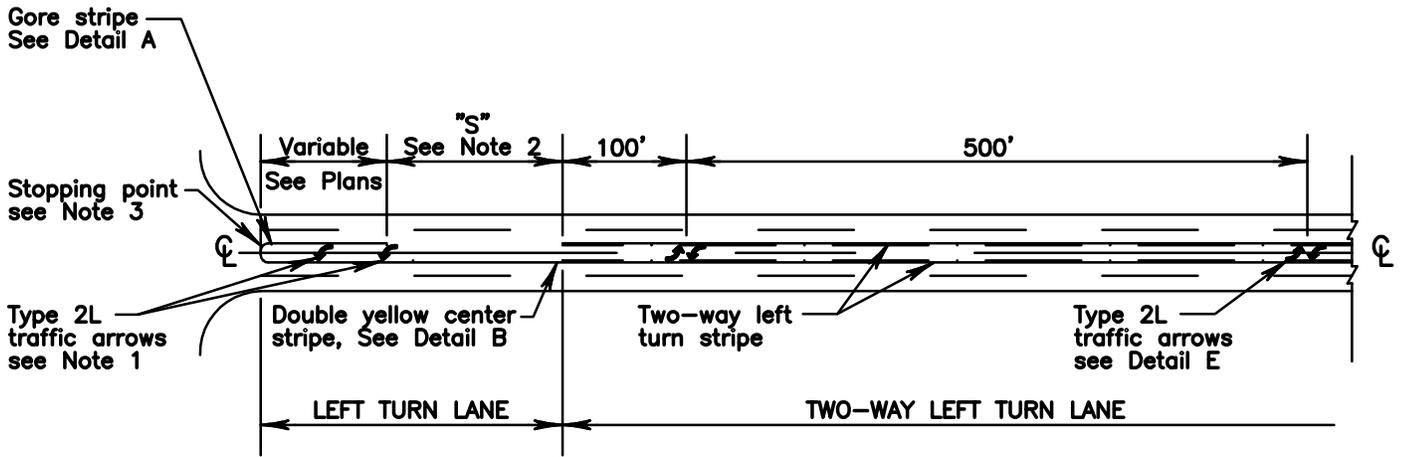
3/30/07

SCALE:

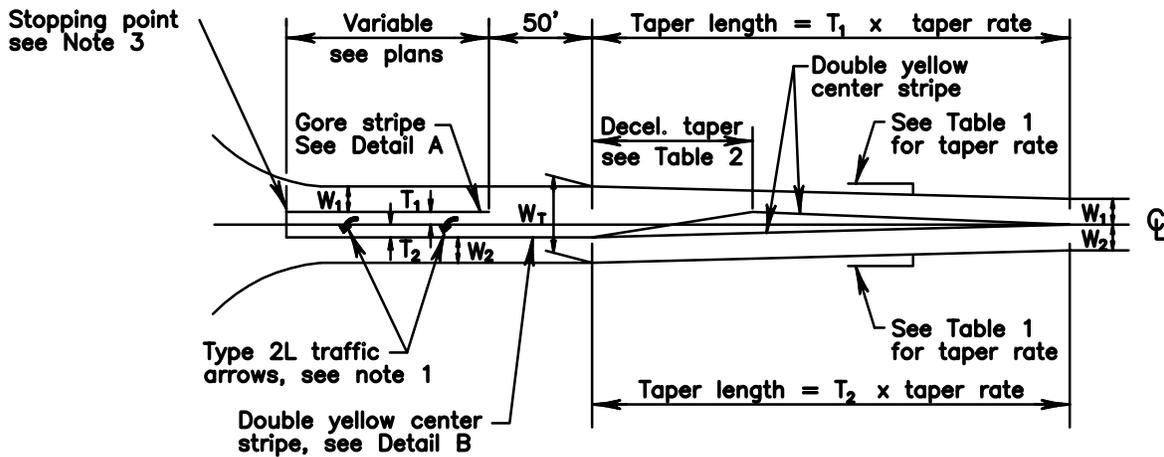
NONE

DWG. NO.

**ST-47**



## TWO-WAY LEFT TURN LANE



### LEGEND

- $W_1$  = Approaching Through Lane
- $W_2$  = Departing Lane
- $T_1$  = Width of Left Turn lane on approach side of  $\mathcal{C}$
- $T_2$  = Width of Left Turn lane on departure side of  $\mathcal{C}$
- $W_1$  = Total width of channelization ( $W_1 + W_2 + T_1 + T_2$ )

### LEFT TURN LANE

#### NOTES:

1. First Type 2L arrow is installed 50' back of stop bar or crosswalk. Second arrow is located 100' back, or at left turn pocket.
2. "S" = 140' for posted speed < 50 MPH.  
"S" = 170' for posted speed  $\geq$  50 MPH.
3. Stop bar is to be installed at the stopping point only when mainline movement is controlled by a stop sign or traffic signal.
4. Raised pavement markers shall be installed only when specified in the Contract Plans.
5. See raised pavement lane markings detail ST-28 for marker designation.

TABLE 1	
Posted Speed	Taper Rate
55 mph	55:1
50 mph	50:1
45 mph	45:1
40 mph	40:1
35 mph	35:1
30 mph	30:1
25 mph	25:1

TABLE 2	
Posted Speed	Decel. Taper Length
55 mph	165'
50 mph	150'
45 mph	135'
40 mph	120'
35 mph	105'
30 mph	90'
25 mph	70'



## CITY OF MILTON TWO-WAY LEFT TURN LANE MARKING

REVISION DATE:

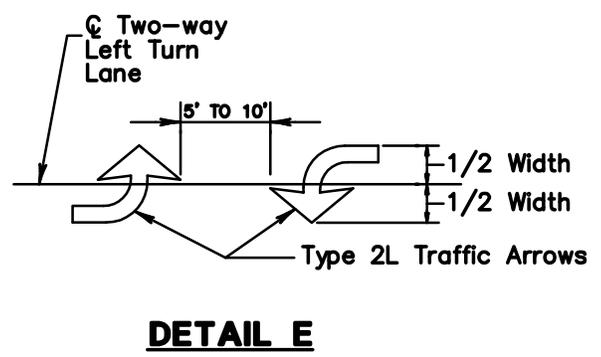
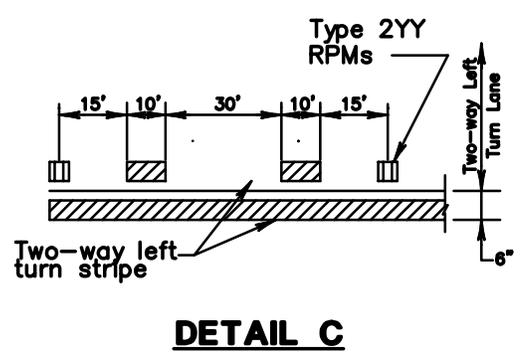
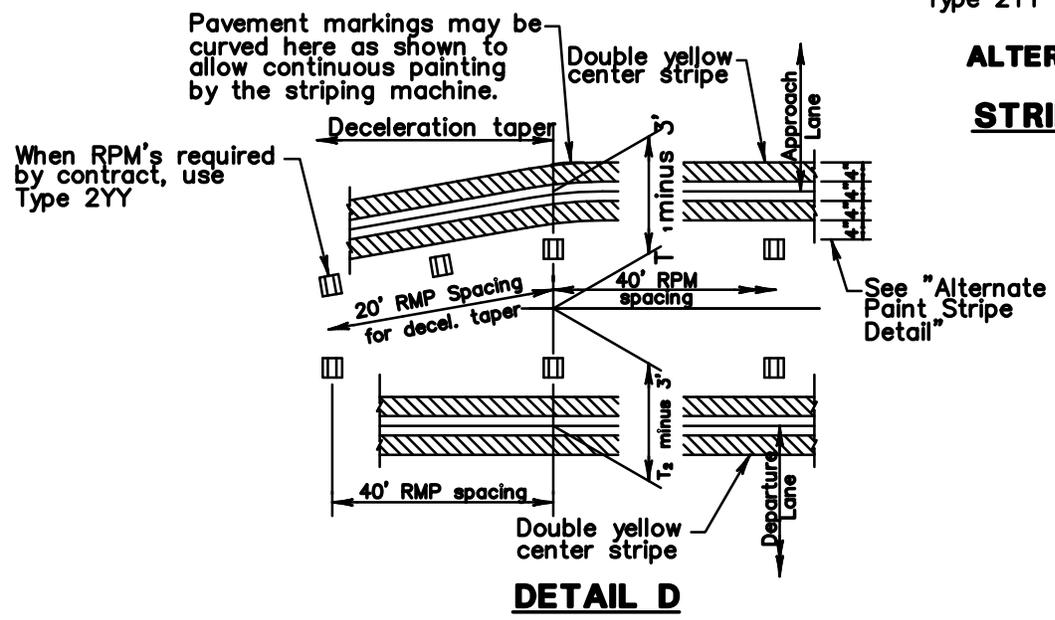
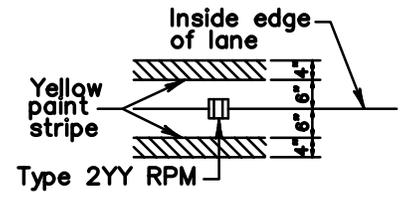
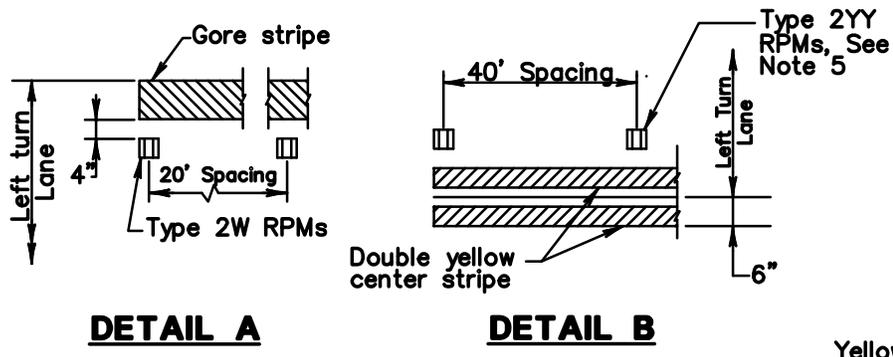
3/30/07

SCALE:

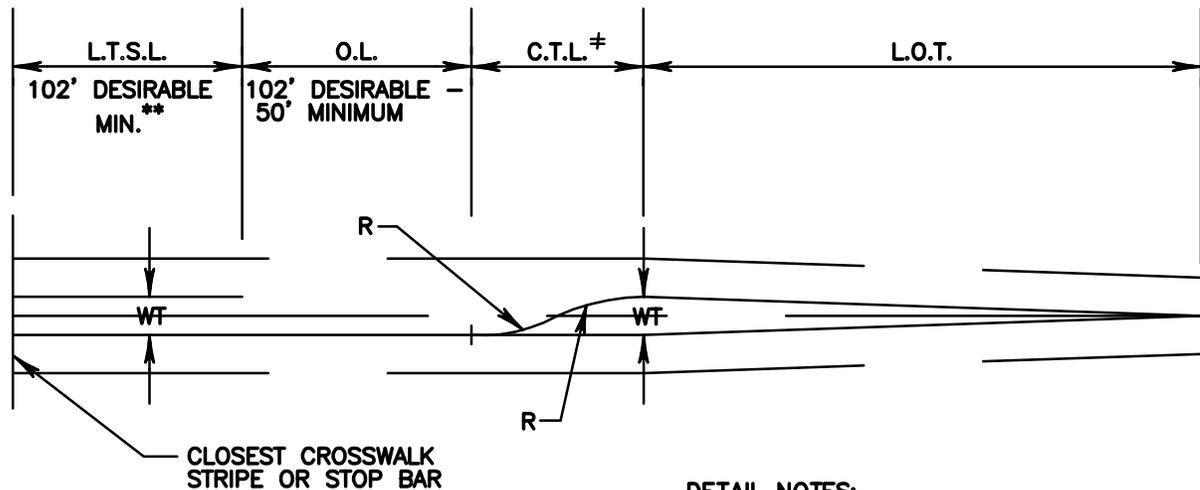
NONE

DWG. NO.

**ST-48**



		
<b>CITY OF MILTON PAVEMENT MARKING TYPICAL</b>		
REVISION DATE:  <b>3/30/07</b>	SCALE:  <b>NONE</b>	DWG. NO.  <b>ST-49</b>



**DETAIL NOTES:**

- L.T.S.L. = LEFT TURN STORAGE LENGTH (FEET)
- O.L. = OPENING LENGTH (FEET)
- C.T.L. = CURVE TRANSITION LENGTH (FEET)
- L.O.T. = LENGTH OF TAPER (FEET)
- W.T. = WIDTH OF TURNING LANE (FEET)
- R = RADIUS OF TRANSITION CURVE (FEET)
- S.L. = SPEED LIMIT (M.P.H)

ADDITIONAL LEFT TURN STORAGE FOR TRUCKS AT UNSIGNALIZED INTERSECTIONS						
LEFT TURN STORAGE LENGTH REQ'D	% TRUCKS IN LEFT TURN MOVEMENT					
	10	20	30	40	50	
102'	24'	24'	51'	51'	51'	
150	24'	51'	51'	75'	75'	
201'	24'	51'	75'	99'	99'	
STORAGE LENGTH TO BE ADDED TO LEFT TURN STORAGE LENGTHS						

L.T.S.L.	LENGTH BASED UPON EXPECTED QUEUE LENGTH	
O.L.	OPENING TO BE 102' UP TO 35 MPH, INCREASE 20' FOR EACH ADDITIONAL 5 MPH OF DESIGN SPEED	
S.L.	< 45 MPH	> 45 MPH
C.T.L. <sup>‡</sup>	84.0 FT (TYP.)	119.4 FT (TYP.)
R	150 FT	300 FT
L.O.T.	$\frac{W.T. \times (S.L.+5)^2}{120}$	$\frac{W.T. \times (S.L.+5)}{2}$
W.T.	12 FT (MIN.)	12 FT (MIN.)

<sup>‡</sup> base on W.T. = 12'

**NOTE:**

\*\* MAY BE REDUCED WITH APPROVAL OF THE CITY ENGINEER



**CITY OF MILTON  
SYMMETRICAL LEFT  
TURN POCKET**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-50**

TYPICAL CROSSWALK  
SEE DWG No. ST-63

TYPE "E"

TYPE A

TYPE "C"

2-WAY  
LEFT TURN LANE

26'

50'

TYPE "D"

TYPE "E"

MIN. 102'  
SOME CONDITIONS MAY WARRANTS  
LONGER SECTIONS.

MIN. 102'

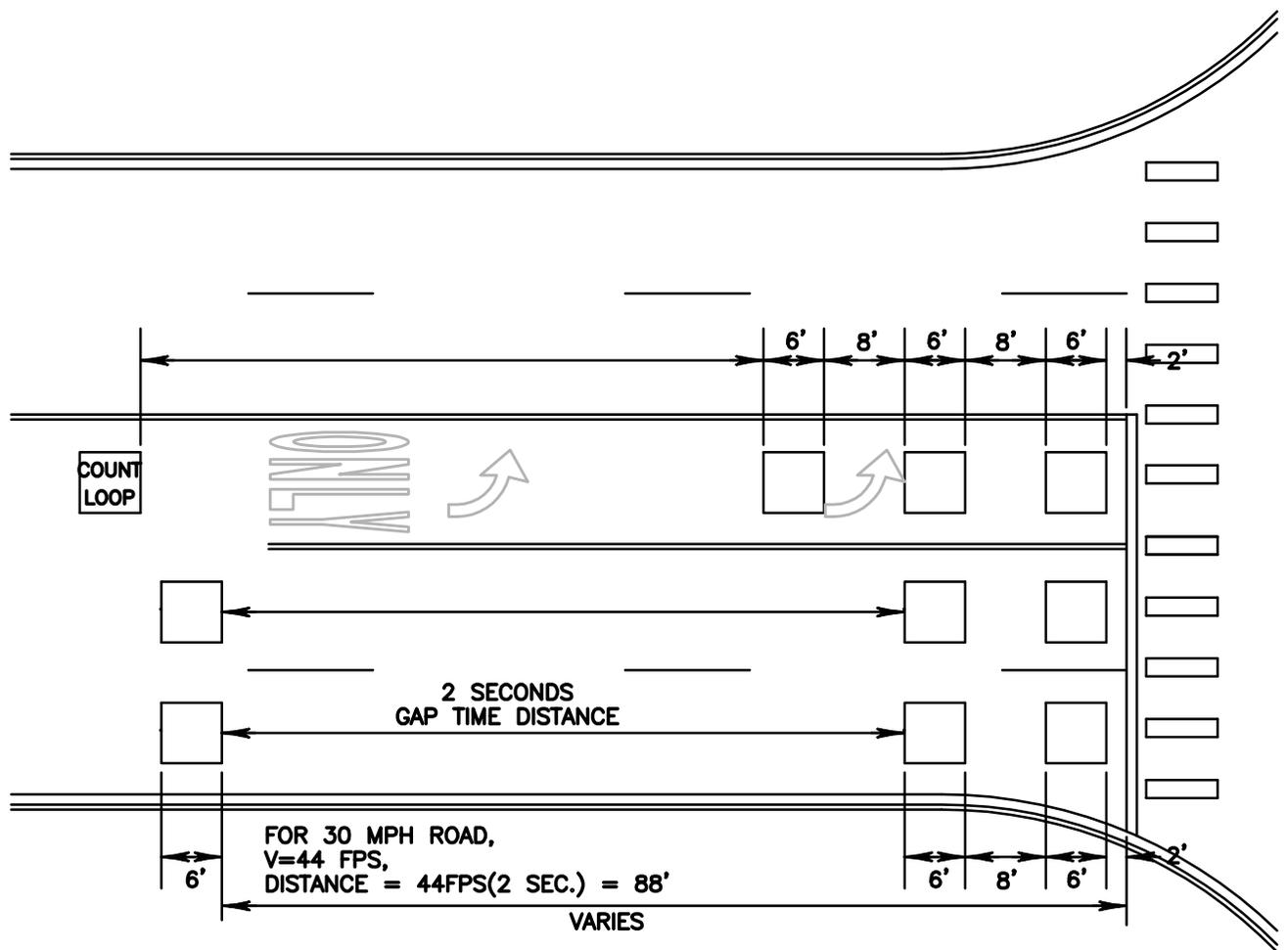


CITY OF MILTON  
TWO WAY LEFT TURN  
TO LEFT TURN LANE

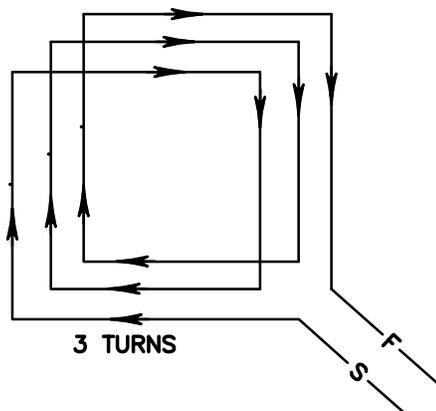
REVISION DATE:  
3/30/07

SCALE:  
NONE

DWG. NO.  
**ST-51**



**TYPICAL LOOP LAYOUT**



**LOOP WINDING DETAIL**

**NOTES:**  
 CIRCULAR LOOPS ARE ALLOWED



**CITY OF MILTON  
 TYPICAL LOOP LAYOUT  
 NEW INSTALLATION**

REVISION DATE:

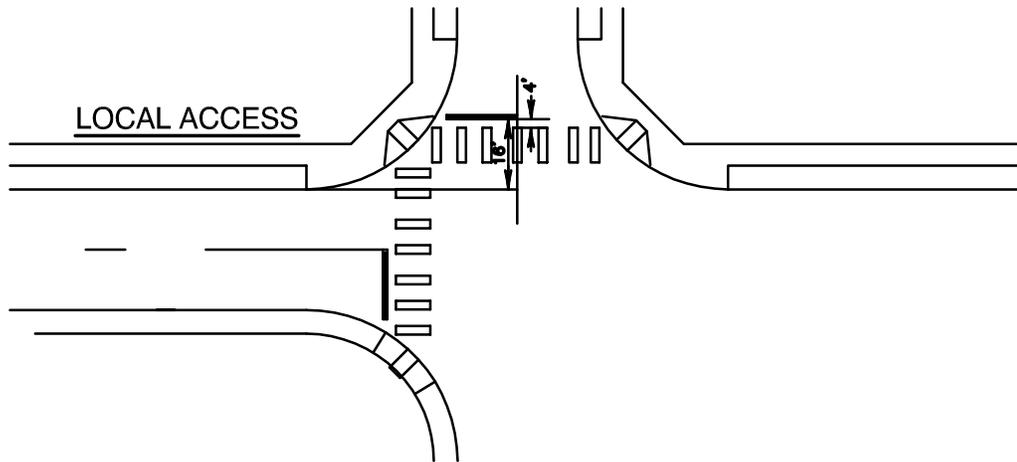
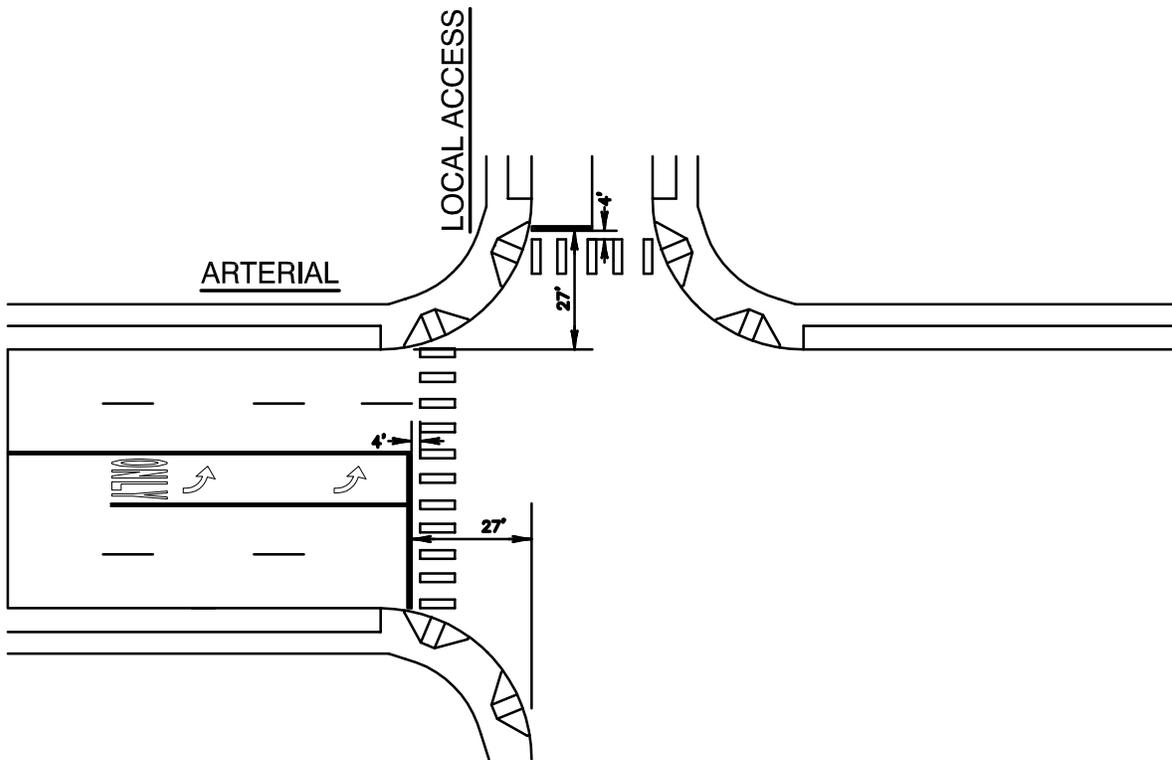
3/30/07

SCALE:

NONE

DWG. NO.

**ST-52**



CITY OF MILTON  
 TYP. CROSSWALK ALIGNMENT  
 ARTERIAL/LOCAL ACCESS

REVISION DATE:

SCALE:

DWG. NO.

3/30/07

NONE

**ST-53**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

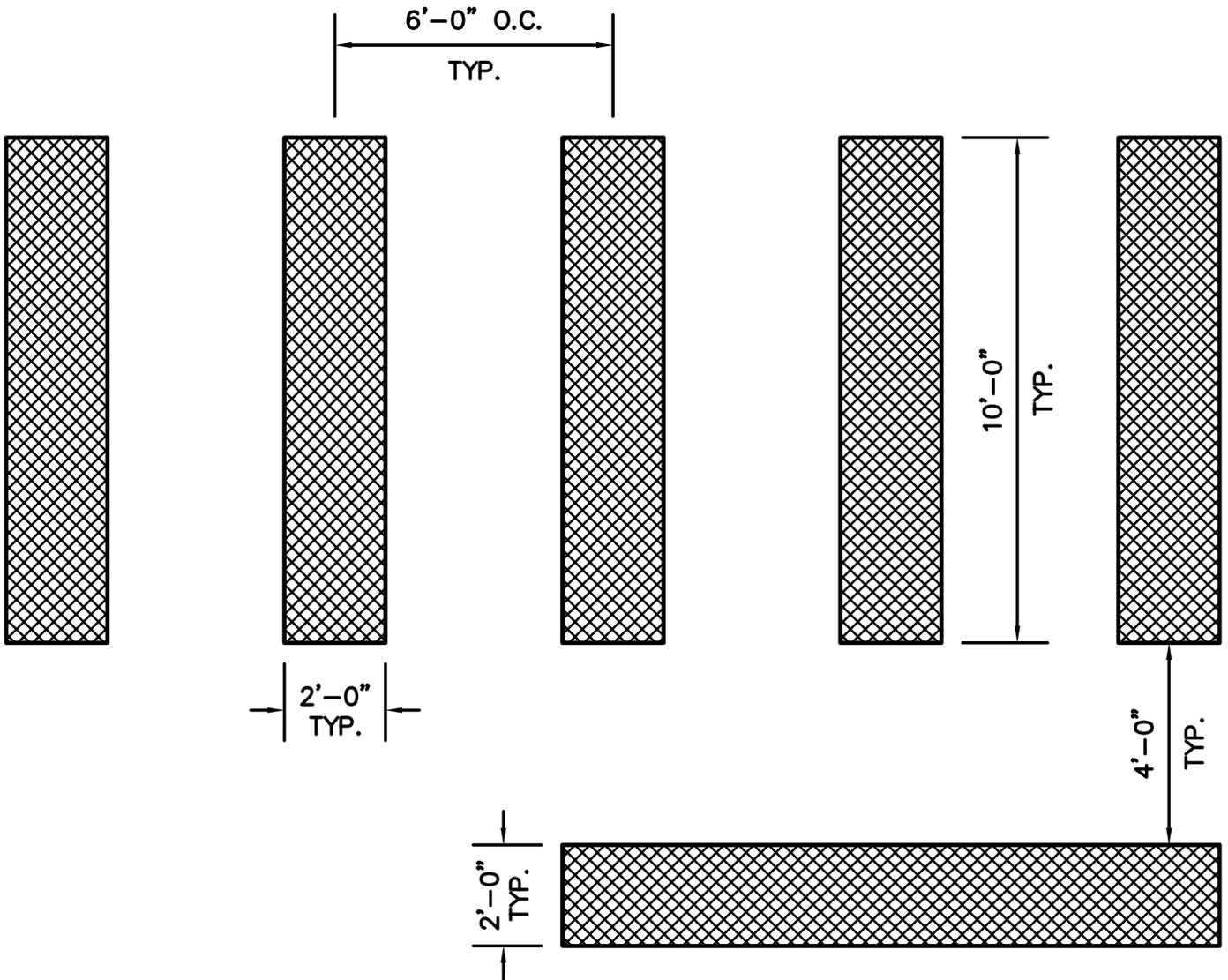
10/19/09

SCALE:

NONE

DWG. NO.

**ST-54**



CITY OF MILTON

STOP BAR / CROSSWALK

REVISION DATE:

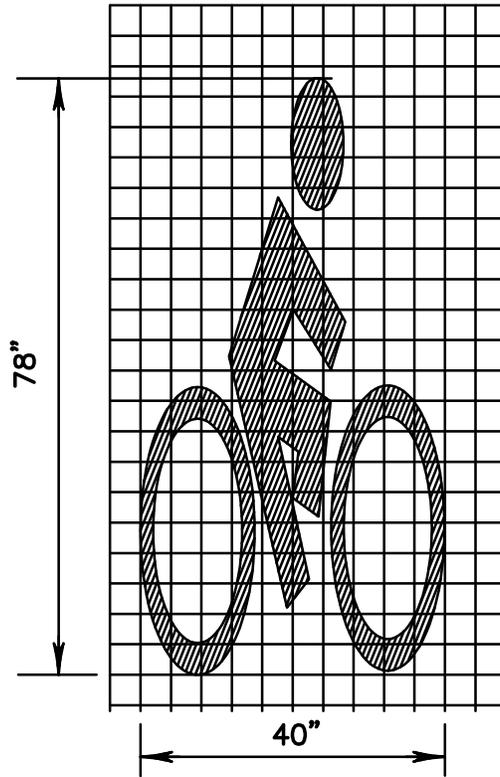
3/30/07

SCALE:

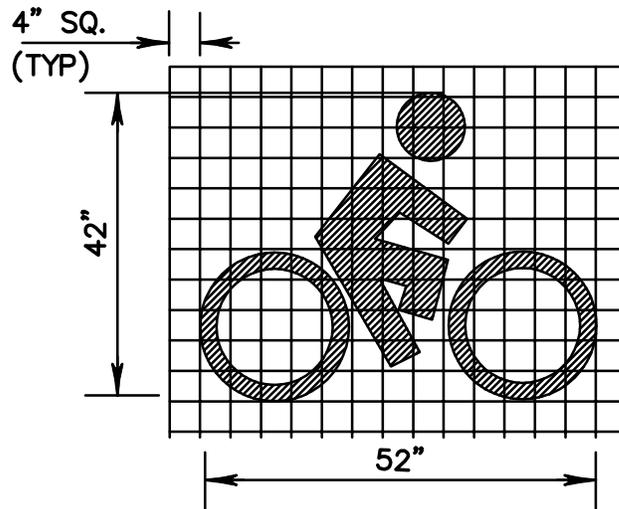
NONE

DWG. NO.

**ST-55**



**BIKE LANE SYMBOL**



**BIKE TRAIL SYMBOL**



CITY OF MILTON

BIKE LANE SYMBOL

REVISION DATE:

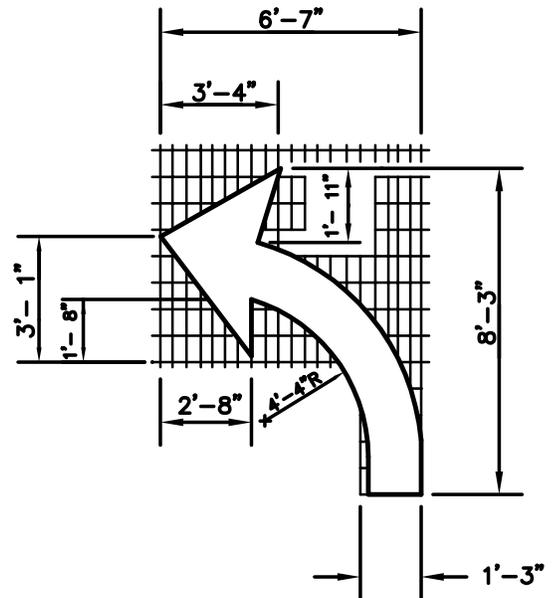
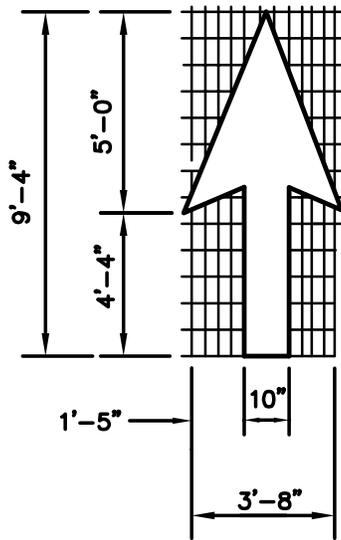
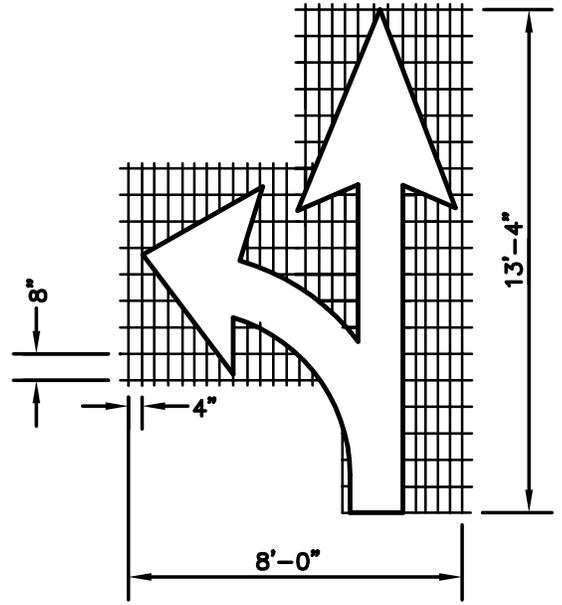
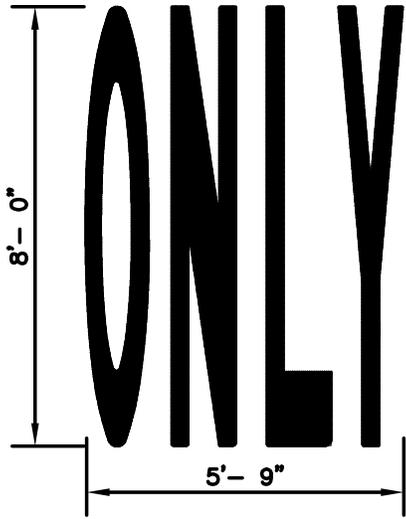
3/30/07

SCALE:

NONE

DWG. NO.

**ST-56**



**PAVEMENT MARKING ARROWS**



CITY OF MILTON  
TURN ARROW DETAILS

REVISION DATE:

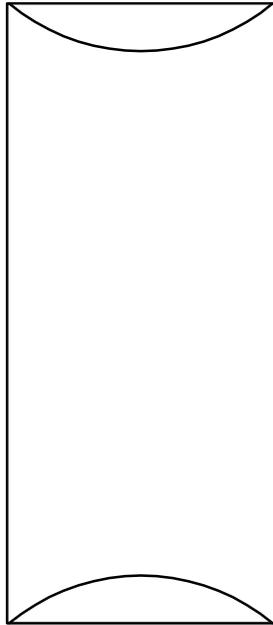
3/30/07

SCALE:

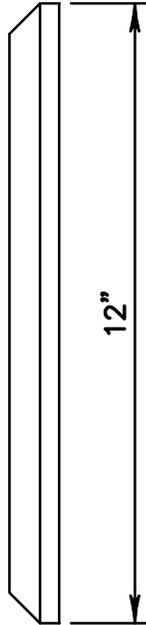
NONE

DWG. NO.

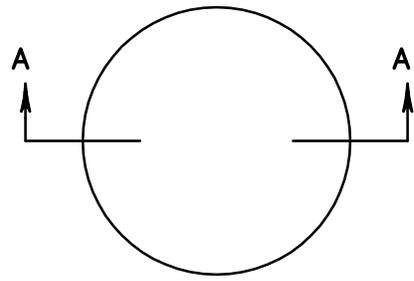
**ST-57**



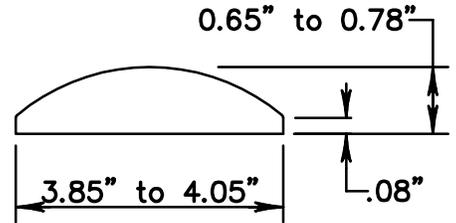
**PLAN**



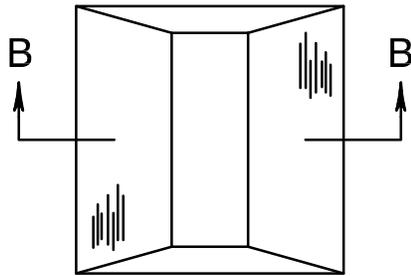
**SIDE VIEW  
TYPE 1**



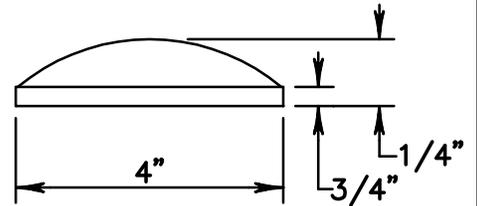
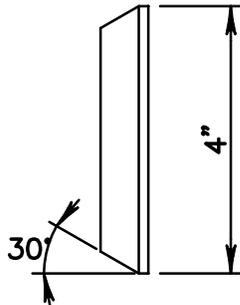
**PLAN**



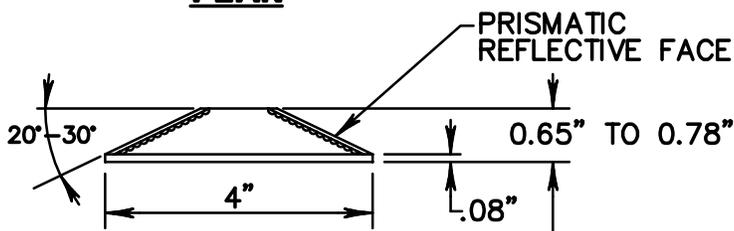
**SECTION A-A**



**PLAN**



**RUMBLE BAR**



**SECTION B-B**

**DIRECTION OF TRAFFIC - TYPE 2**



**CITY OF MILTON  
LANE MARKERS  
(DIMENSIONS)**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-58**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

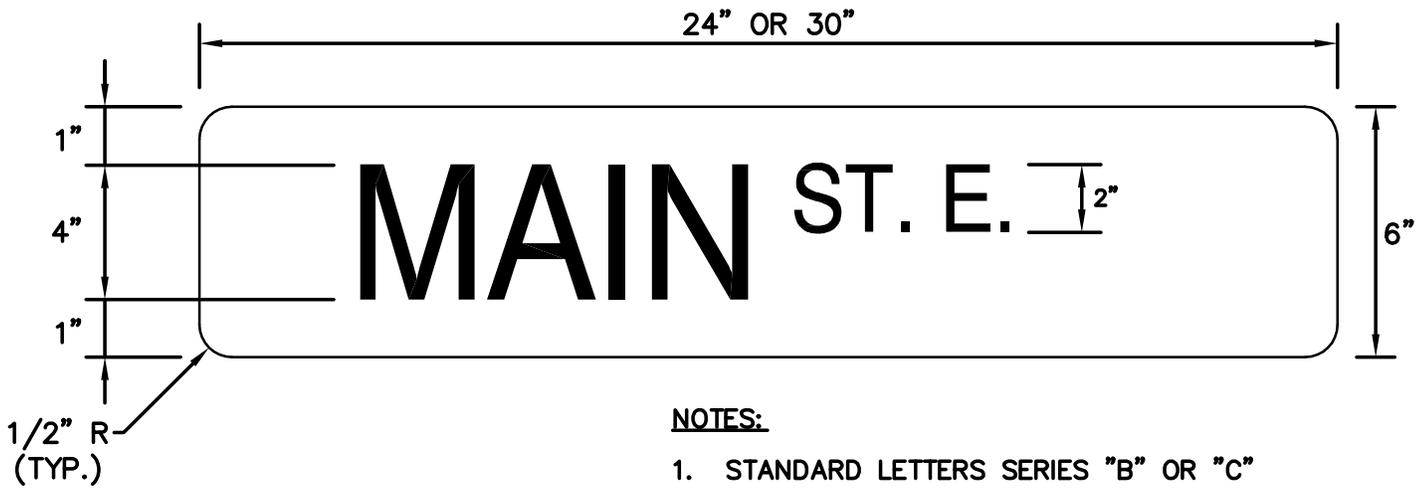
10/19/09

SCALE:

NONE

DWG. NO.

**ST-59**



**NOTES:**

1. STANDARD LETTERS SERIES "B" OR "C"
2. ALL MATERIAL AND WORKSMANSHIP SHALL CONFORM TO THE LATEST W.S.D.O.T. STANDARD PLANS AND SPECIFICATIONS.
3. DEVELOPER TO FURNISH AND INSTALL STREET NAME SIGNS AT ALL INTERSECTIONS CREATED BY THE DEVELOPER.
4. SIGN LETTERING SHALL BE IN UPPER-CASE LETTERS OF THE TYPE APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, EXCEPT THAT DESTINATION NAMES MAY BE IN LOWER-CASE LETTERING, WITH INITIAL UPPER CASE.
5. USE OF THE SERIES B ALPHABET IS RESTRICTED TO STREET-NAME SIGNS, PARKING SIGNS, AND OTHER SIMILAR SIGNS WHERE LIMITED BREADTH AND STROKE WIDTHS ARE REQUIRED FOR DESIGN PURPOSES.
6. REFLECTORIZATION REQUIRED ON ALL ILLUMINATION OF GUIDE SIGNS.
7. EXCEPT WHERE OTHERWISE SPECIFIED HEREIN FOR INDIVIDUAL SIGNS OR GROUPS OF SIGNS OR MARKERS, GUIDE SIGNS ON CONVENTIONAL ROADS AND STREETS SHALL HAVE A WHITE MESSAGE ON A GREEN BACKGROUND.
8. ALL CLEARING WITHIN CITY RIGHT-OF-WAY TO MAKE THE SIGN VISIBLE IS THE RESPONSIBILITY OF THE APPLICANT.
9. SHEET ALUMINUM SIGNS SHALL BE CONSTRUCTED OF ALLOY 6061-T6, 5052-H36 OR 5052-H38. THICKNESS SHALL BE .080 OR 14 GAGE. SIGN FACE MATERIAL SHALL BE MADE OF GREEN REFLECTIVE SHEETING WITH 2" AND 4" WHITE REFLECTIVE LETTERING, SERIES B, C, OR D.



**CITY OF MILTON  
STREET NAME SIGN  
DETAIL**

REVISION DATE:

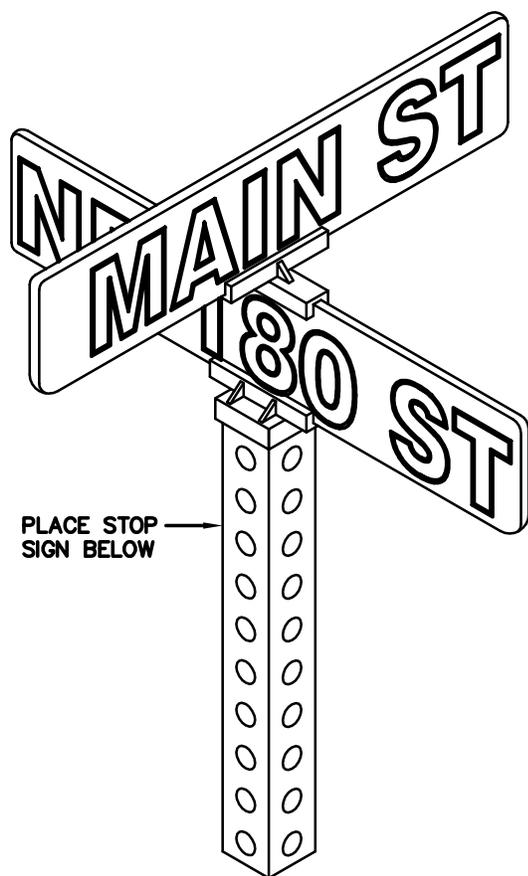
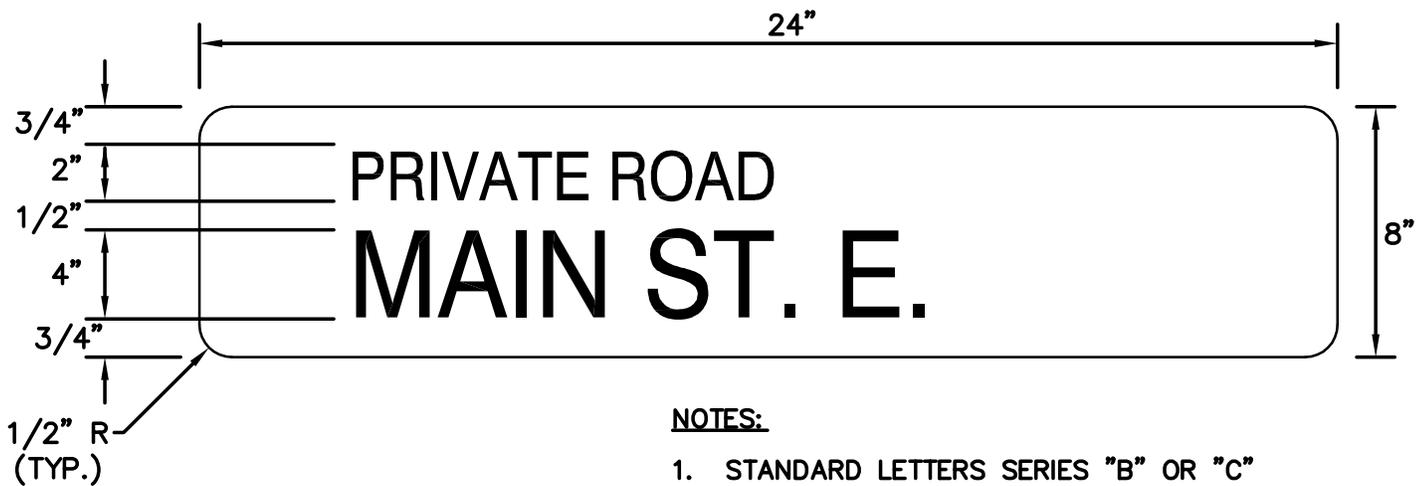
3/30/07

SCALE:

NONE

DWG. NO.

**ST-60**



**NOTES:**

1. STANDARD LETTERS SERIES "B" OR "C"
2. ALL MATERIAL AND WORKSMANSHIP SHALL CONFORM TO THE LATEST W.S.D.O.T. STANDARD PLANS AND SPECIFICATIONS.
3. DEVELOPER TO FURNISH AND INSTALL STREET NAME SIGNS AT ALL INTERSECTIONS CREATED BY THE DEVELOPER.
4. SIGN LETTERING SHALL BE IN UPPER-CASE LETTERS OF THE TYPE APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, EXCEPT THAT DESTINATION NAMES MAY BE IN LOWER-CASE LETTERING, WITH INITIAL UPPER CASE.
5. USE OF THE SERIES B ALPHABET IS RESTRICTED TO STREET-NAME SIGNS, PARKING SIGNS, AND OTHER SIMILAR SIGNS WHERE LIMITED BREADTH AND STROKE WIDTHS ARE REQUIRED FOR DESIGN PURPOSES.
6. REFLECTORIZATION REQUIRED ON ALL ILLUMINATION OF GUIDE SIGNS.
7. EXCEPT WHERE OTHERWISE SPECIFIED HEREIN FOR INDIVIDUAL SIGNS OR GROUPS OF SIGNS OR MARKERS, GUIDE SIGNS ON CONVENTIONAL ROADS AND STREETS SHALL HAVE A WHITE MESSAGE ON A GREEN BACKGROUND.
8. ALL CLEARING WITHIN CITY RIGHT-OF-WAY TO MAKE THE SIGN VISIBLE IS THE RESPONSIBILITY OF THE APPLICANT.
9. SHEET ALUMINUM SIGNS SHALL BE CONSTRUCTED OF ALLOY 6061-T6, 5052-H36 OR 5052-H38. THICKNESS SHALL BE .080 OR 14 GAGE. SIGN FACE MATERIAL SHALL BE MADE OF GREEN REFLECTIVE SHEETING WITH 2" AND 4" WHITE REFLECTIVE LETTERING, SERIES B, C, OR D.



**CITY OF MILTON  
STREET SIGN FOR  
PRIVATE STREETS**

REVISION DATE:

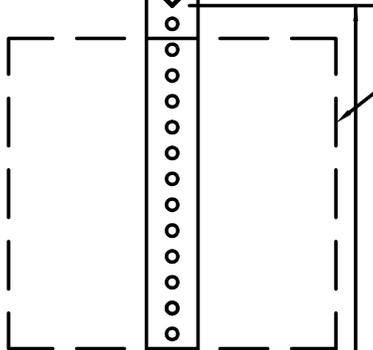
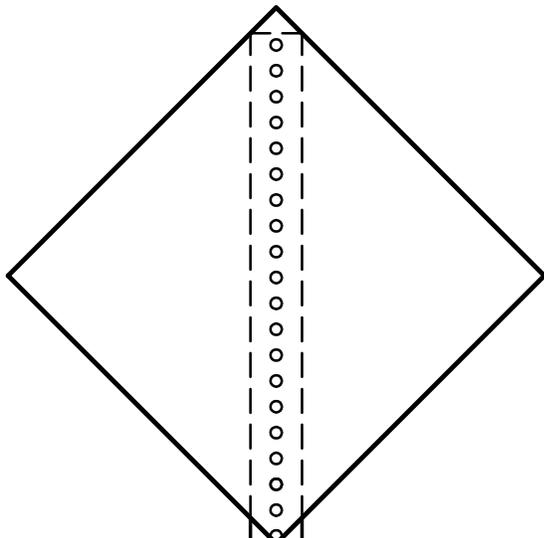
10/19/09

SCALE:

NONE

DWG. NO.

**ST-61**



ADDITIONAL SIGN TO BE MOUNTED WITH ZINC COATED FASTENERS

\* IF ADDITIONAL SIGN IS MOUNTED ON POLE, HEIGHT MUST BE GREATER TO ALLOW FOR 7' OF CLEARANCE FROM BOTTOM OF SECOND SIGN TO FINISHED GRADE.

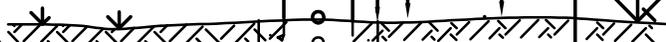
FURNISH AND INSTALL 12 FOOT CONTINUOUS 2" SQUARE POST 14 GAUGE STEEL GALVANIZED WITH 7/16" PRE-PUNCHED HOLES 1" ON CENTER

FURNISH AND INSTALL 30 INCH CONTINUOUS 2-1/4" SQUARE POST 14 GUA. STEEL GALV. WITH 7/16" PRE-PUNCHED HOLES 1" ON CENTER

\* 7' MIN

7'

4" MAX



CONCRETE

30"

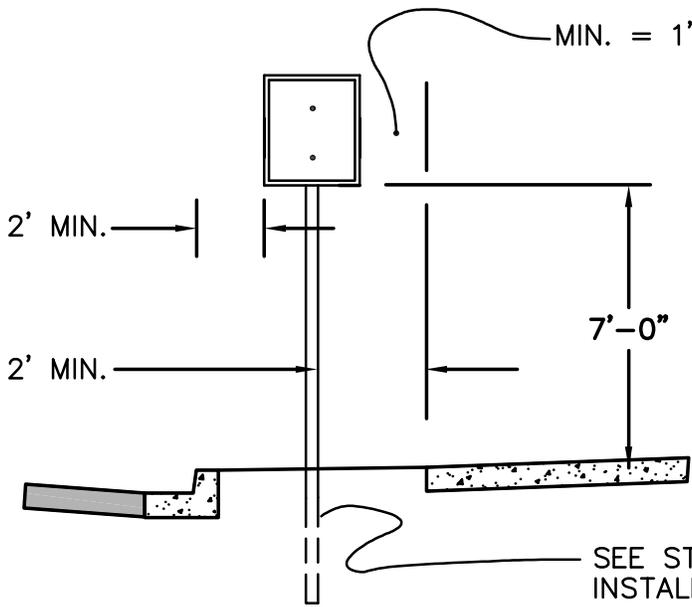


CITY OF MILTON  
STREET SIGN  
INSTALLATION

REVISION DATE:  
3/30/07

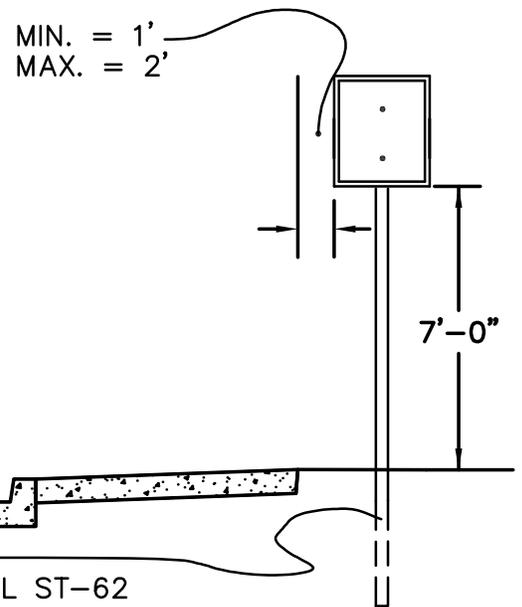
SCALE:  
NONE

DWG. NO.  
**ST-62**



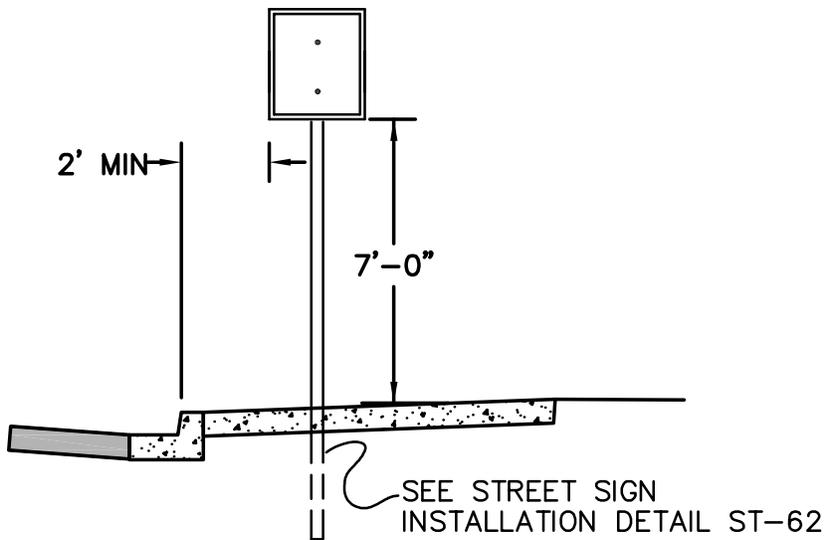
**CASE 1**

CEMENT CONCRETE  
SIDEWALK AND PLANTER



**CASE 2**

BEHIND CEMENT  
CONCRETE SIDEWALK



**CASE 3**

WITHIN CEMENT  
CONCRETE SIDEWALK



CITY OF MILTON

SIGN LOCATION

REVISION DATE:

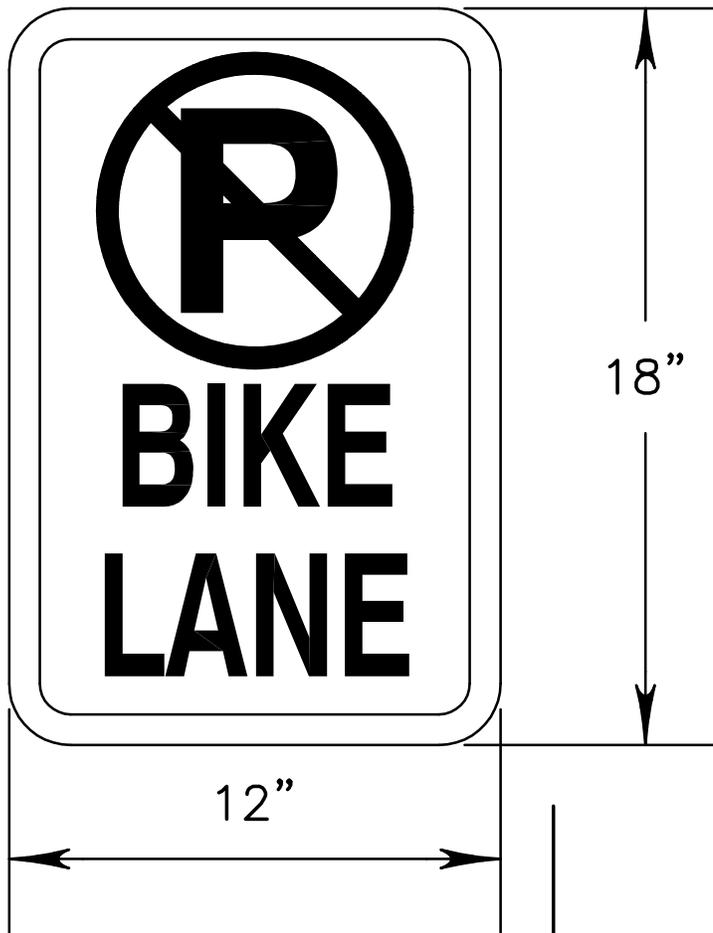
10/19/09

SCALE:

NONE

DWG. NO.

**ST-63**



4" WHITE LINE UNLESS OTHERWISE INDICATED ON CHANNELIZATION PLANS AND SPECIAL PROVISIONS

FACE OF CURB

5'

TRAFFIC FLOW



NO PARKING, BIKE SIGNS

CLASS II

BIKE SYMBOL PLACEMENT  
 THE FIRST SYMBOL SHALL BE PLACED A MINIMUM OF 50 FT FROM THE INTERSECTION THEN PLACE THEM EVERY 250 FT.



CITY OF MILTON  
 SIGNAGE AND BIKE  
 LANE MARKINGS

REVISION DATE:

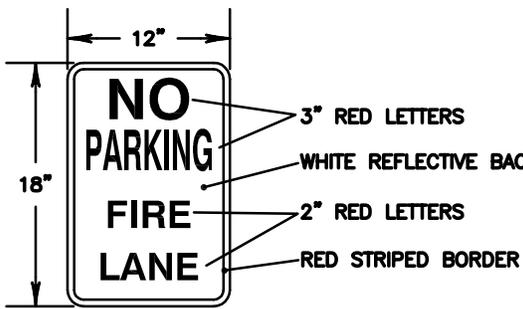
3/30/07

SCALE:

NONE

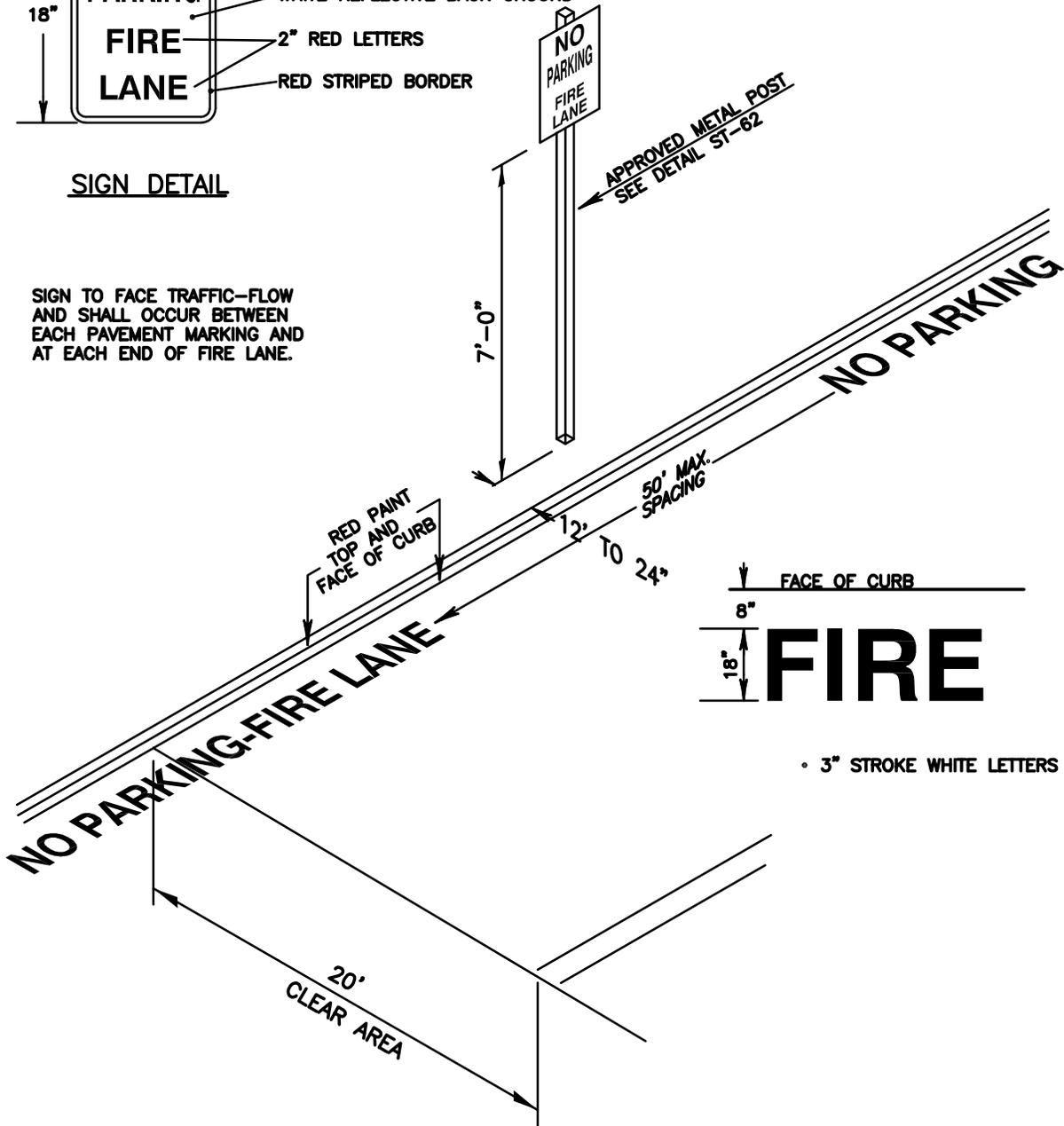
DWG. NO.

**ST-64**



SIGN DETAIL

SIGN TO FACE TRAFFIC—FLOW AND SHALL OCCUR BETWEEN EACH PAVEMENT MARKING AND AT EACH END OF FIRE LANE.



• 3" STROKE WHITE LETTERS



CITY OF MILTON  
FIRE LANE MARKING AND  
SIGNAGE PRIVATE STREETS

REVISION DATE:

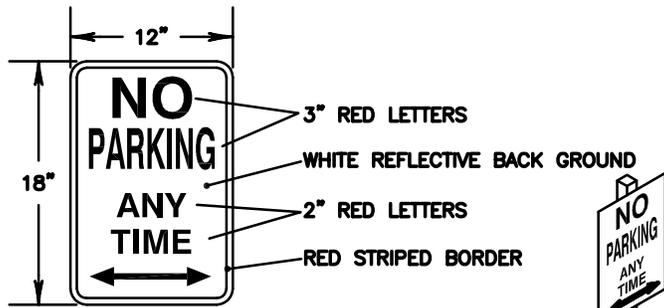
3/30/07

SCALE:

NONE

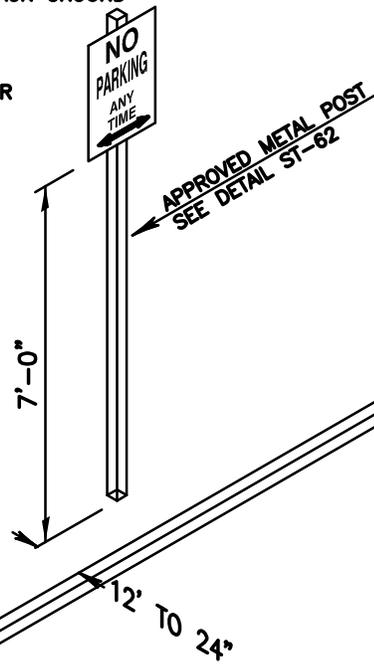
DWG. NO.

**ST- 65**



SIGN DETAIL

SIGN TO FACE TRAFFIC-FLOW  
AND SHALL OCCUR BETWEEN  
EACH PAVEMENT MARKING AND  
AT EACH END OF FIRE LANE.



CITY OF MILTON

**NO PARKING  
PUBLIC STREETS**

REVISION DATE:

3/30/07

SCALE:

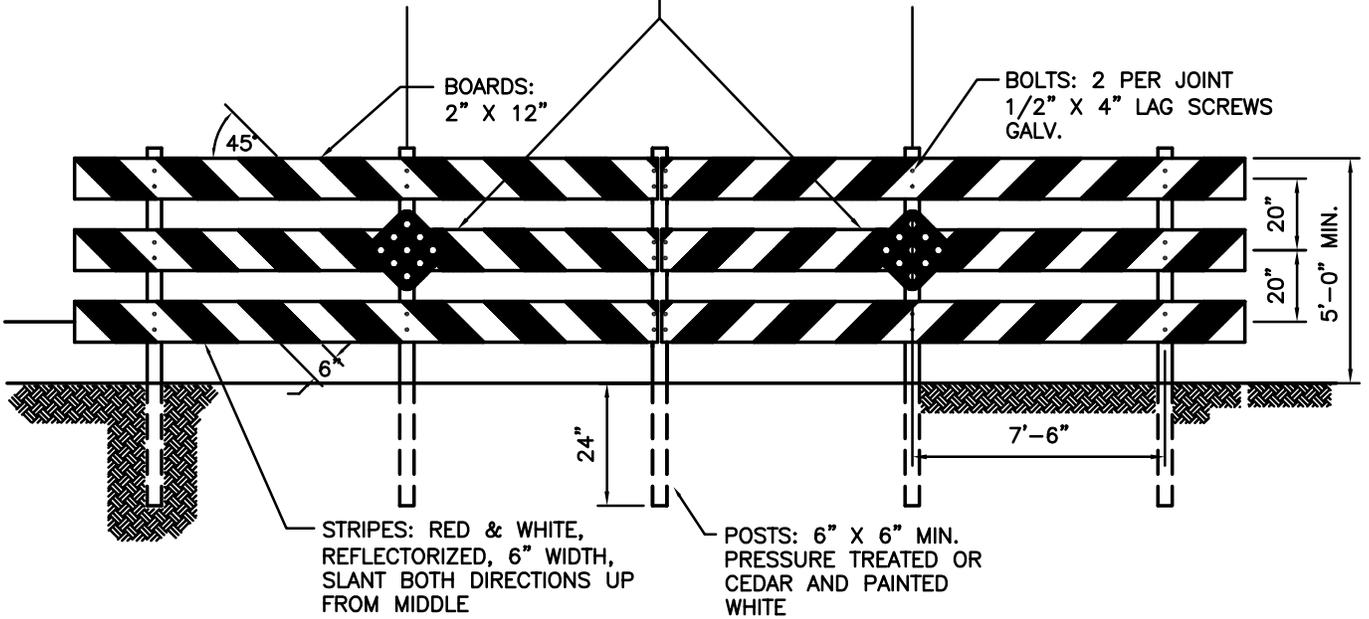
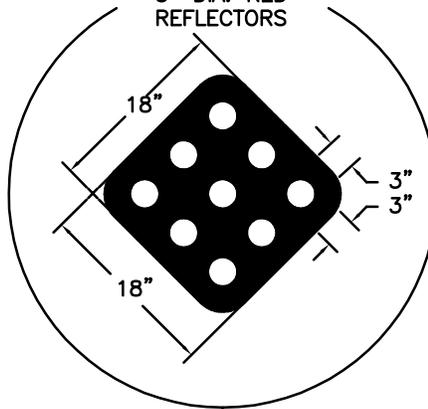
NONE

DWG. NO.

**ST-66**

W16-102 18" X  
18" RED W/9 -  
3" DIA. RED  
REFLECTORS

OR HIGH INTENSITY RED  
REFLECTORIZED FACE 18" x 18".



**NOTE:**

THIS IS NOT A CONSTRUCTION BARRICADE.



**CITY OF MILTON**  
**TYPE III BARRICADE FOR**  
**FUTURE EXTENDED ROADWAYS**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-67**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-68**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

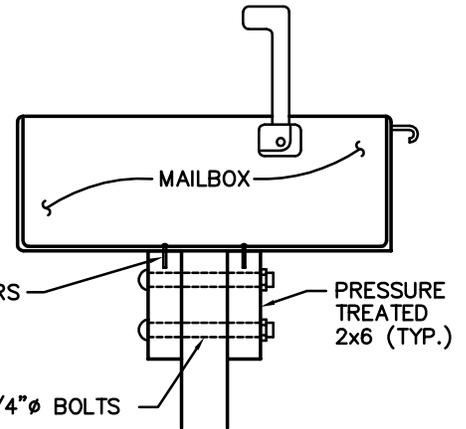
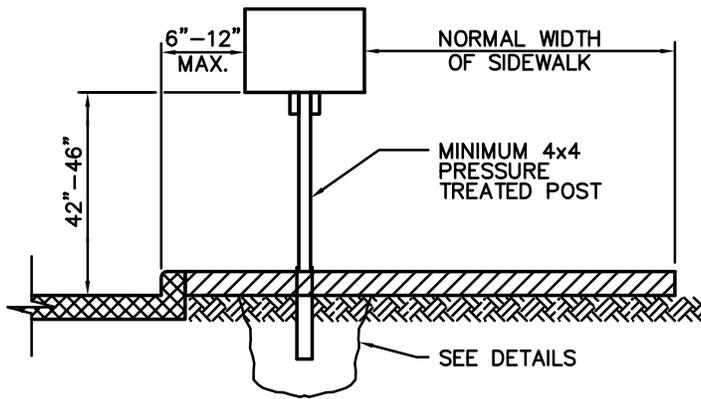
10/19/09

SCALE:

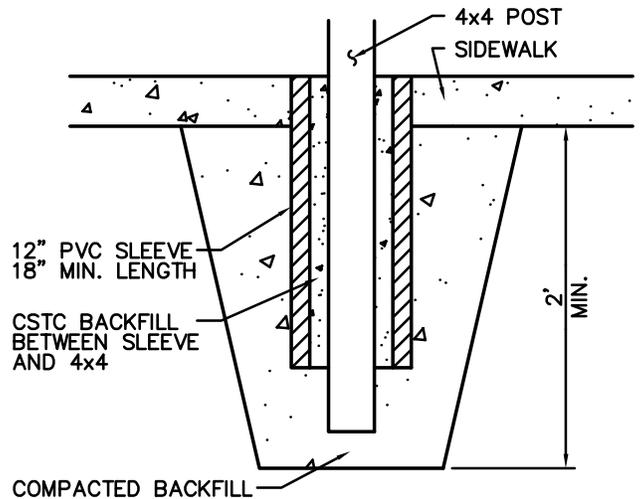
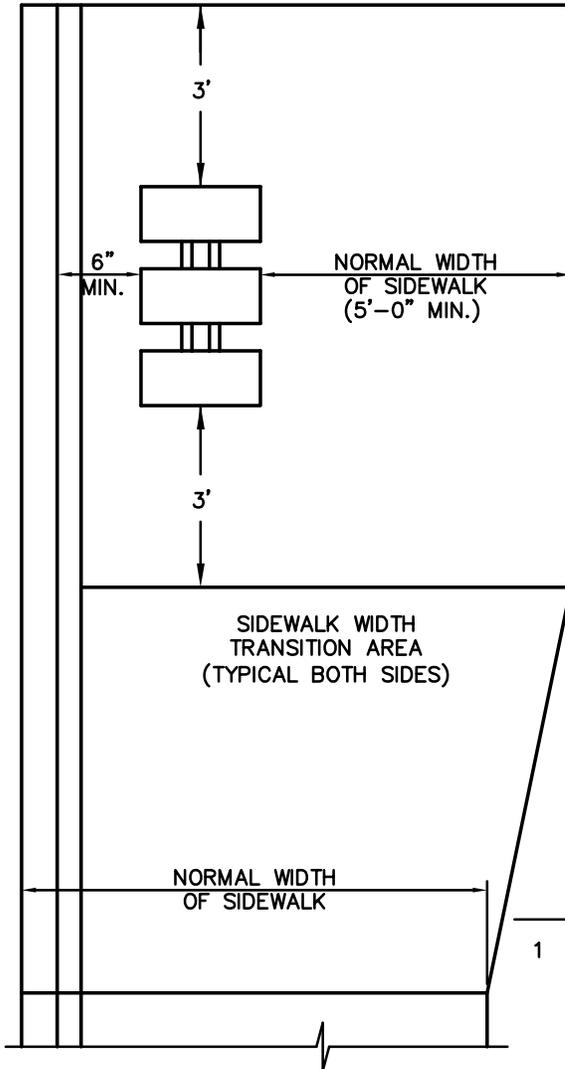
NONE

DWG. NO.

**ST-69**



**MAILBOX INSTALLATION DETAIL**



**MAILBOX INSTALLATION DETAIL**



CITY OF MILTON

MAILBOX DETAIL

REVISION DATE:

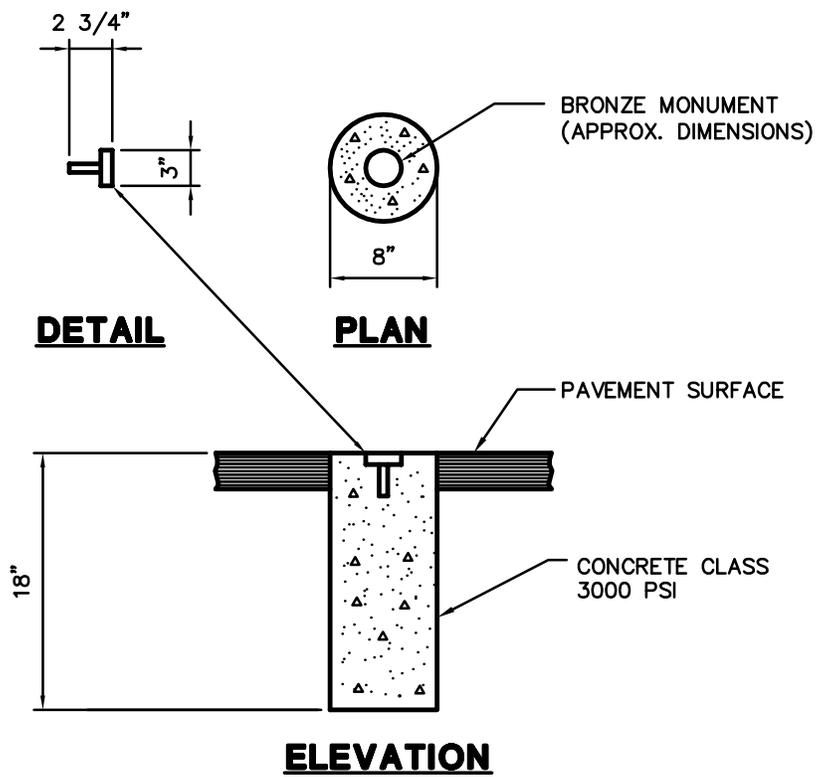
10/19/09

SCALE:

NONE

DWG. NO.

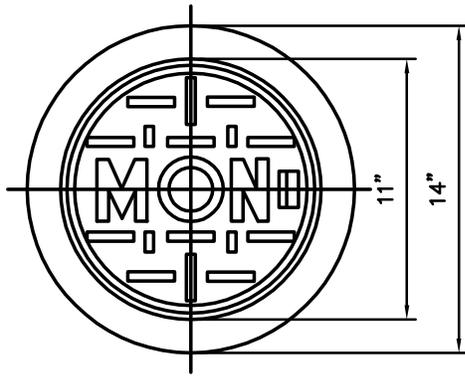
**ST-70**



**NOTE:**

1. THE HOLE FOR THE MONUMENT SHALL BE CUT AFTER THE NEW PAVEMENT HAS BEEN CONSTRUCTED. THE UPPER 3" OF THE MONUMENT ENCASEMENT SHALL BE SHAPED TO A TRUE DIAMETER OF 8-INCH. CLASS "C" CONCRETE SHALL BE USED FOR ENCASEMENT. THE BRONZE MONUMENT WILL BE SET SIMULTANEOUSLY WITH THE POURING OF CONCRETE IN THE ENCASEMENT.
2. SURFACE MONUMENT WILL GENERALLY NOT BE ACCEPTED BUT WILL BE EVALUATED, UPON REQUEST, ON A CASE BY CASE BASIS.

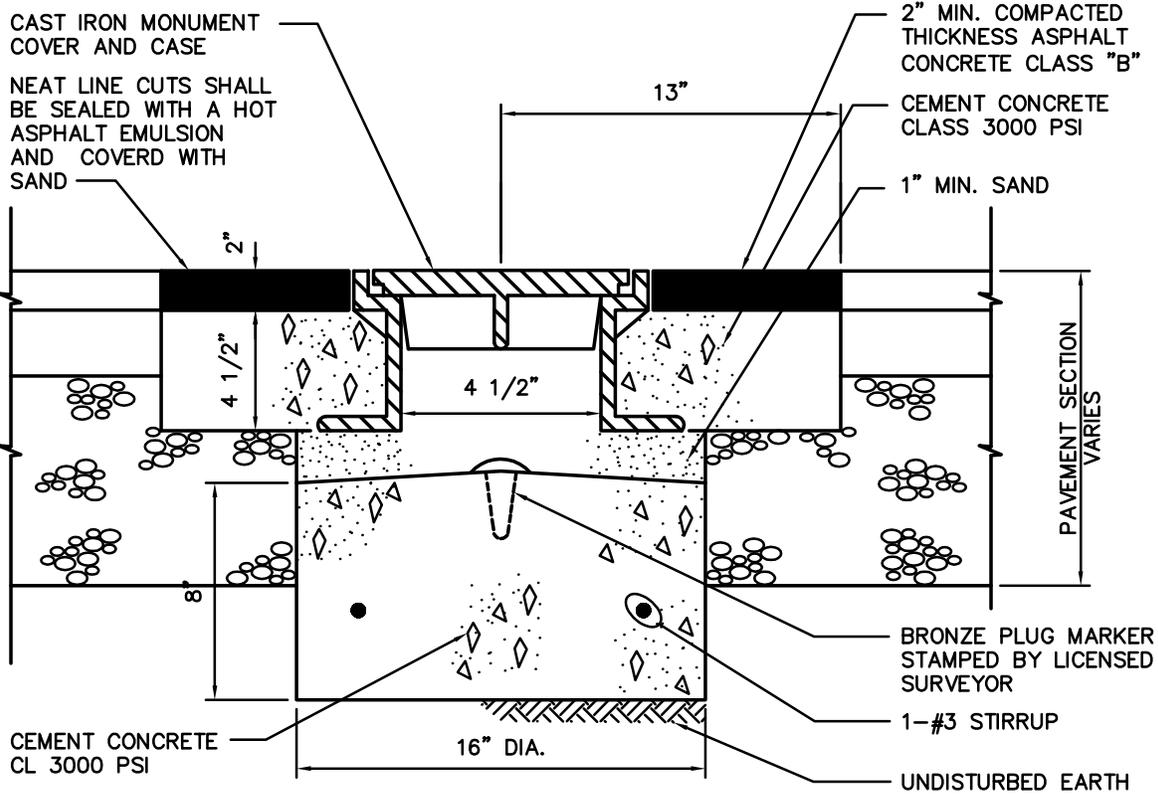
	<p><b>CITY OF MILTON</b></p> <p><b>SURFACE MONUMENT</b></p>	
<p>REVISION DATE:</p> <p><b>3/30/07</b></p>	<p>SCALE:</p> <p><b>NONE</b></p>	<p>DWG. NO.</p> <p><b>ST-71</b></p>



**NOTES:**

1. MACHINE BEARING FACES OF COVER AND CASE TO INSURE POSITIVE FIT.
2. MATERIAL SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION" (LATEST EDITION) PREPARED BY THE WASHINGTON STATE DEPT. OF TRANSPORTATION AND AMERICAN PUBLIC WORKS ASSOCIATION, WASHINGTON STATE CHAPTER.

**MONUMENT COVER**



**POURED MONUMENT IN PLACE**



**CITY OF MILTON  
POURED MONUMENT  
IN PLACE**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-72**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**ST-73**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

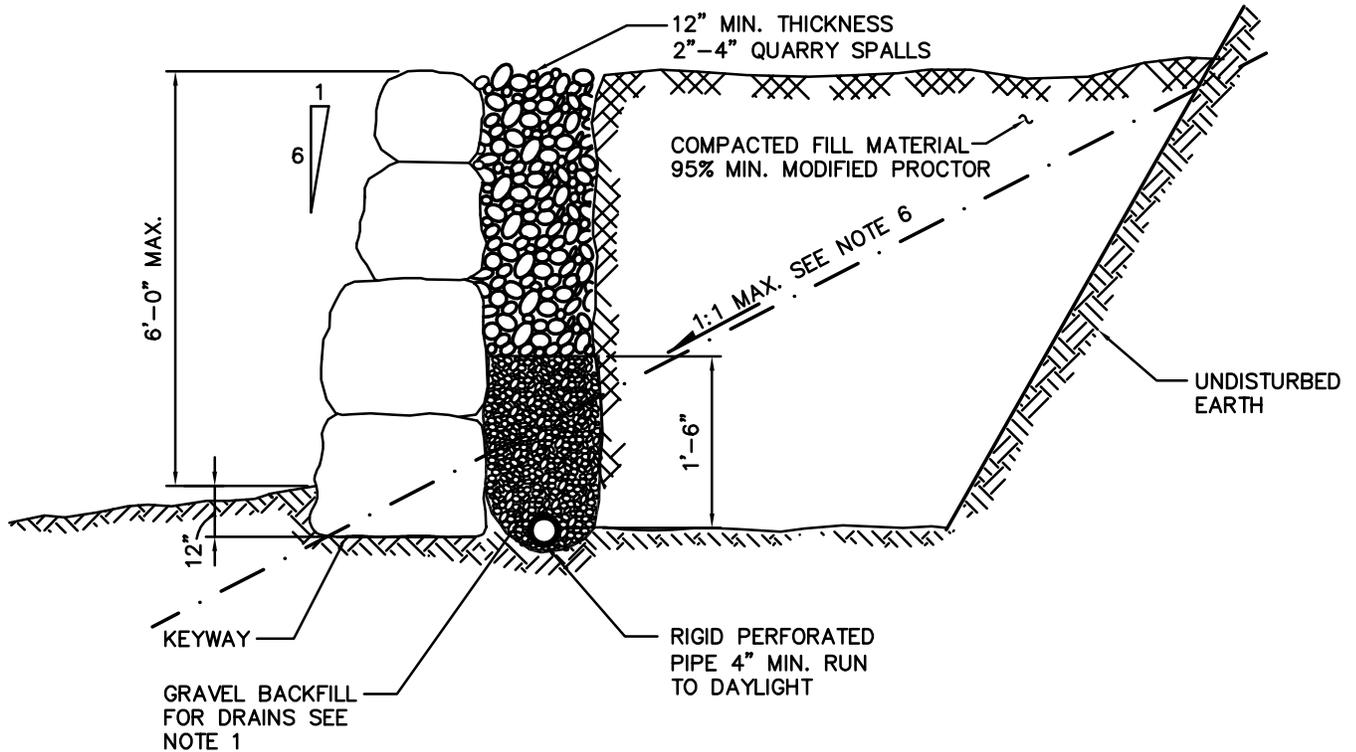
10/19/09

SCALE:

NONE

DWG. NO.

**ST-74**



**NOTES:**

1. WSDOT/APWA 9-03.12[4]
2. FENCE OR HANDRAIL WILL BE REQUIRED WHEN ROCKERY HEIGHT EXCEEDS 30 INCHES AND IS LOCATED IN A PUBLIC AREA.
3. THE WALL FOUNDATION IS TO BE CLEARED OF ORGANIC MATTER AND DEBRIS AND THE UNDERLYING MINERAL SOIL COMPACTED TO 95 PERCENT OF THE MAX. DRY DENSITY. THE EMBANKMENT MATERIAL IS TO BE GRAVEL BORROW MEETING THE REQUIREMENTS OF 9-03.14 OF THE WSDOT STANDARDS. THE BACKFILL IS TO BE PLACED IN THIN LIFTS, NOT EXCEEDING SIX INCHES IN THICKNESS AND COMPACTED TO 95 PERCENT OF THE MAX. DRY DENSITY.
4. ZONE OF INFLUENCE. FLATTER SLOPE MAY BE REQUIRED IN LESS STABLE SOILS. ALL DRIVEWAYS, PARKING AREAS, AND ROADS SHALL LIE BELOW THE ZONE OF INFLUENCE.
5. ROCK WALLS SHALL BE PLACED NO CLOSER THAN 2 FEET FROM THE EDGE OF ANY PEDESTRIAN WALKWAY, PUBLIC EASEMENT OR RIGHT OF WAY.
6. MAXIMUM HEIGHT IS SIX (6) FEET. ALL WALLS HIGHER THAN FOUR FEET OR SUPPORTING A SURCHARGE, REQUIRE A BUILDING PERMIT. ALL WALLS SUPPORTING A SURCHARGE (DRIVEWAY, ROAD, BUILDING, OR PARKING AREA) SHALL REQUIRE DESIGN BY A LICENSED ENGINEER.
7. THE TOP OF ALL ROCK WALLS SHALL BE CONFIGURED TO PREVENT SURFACE DRAINAGE OVER THE TOP OF THE WALL.



**CITY OF MILTON  
ROCK WALL - FILL  
SECTION**

REVISION DATE:

3/30/07

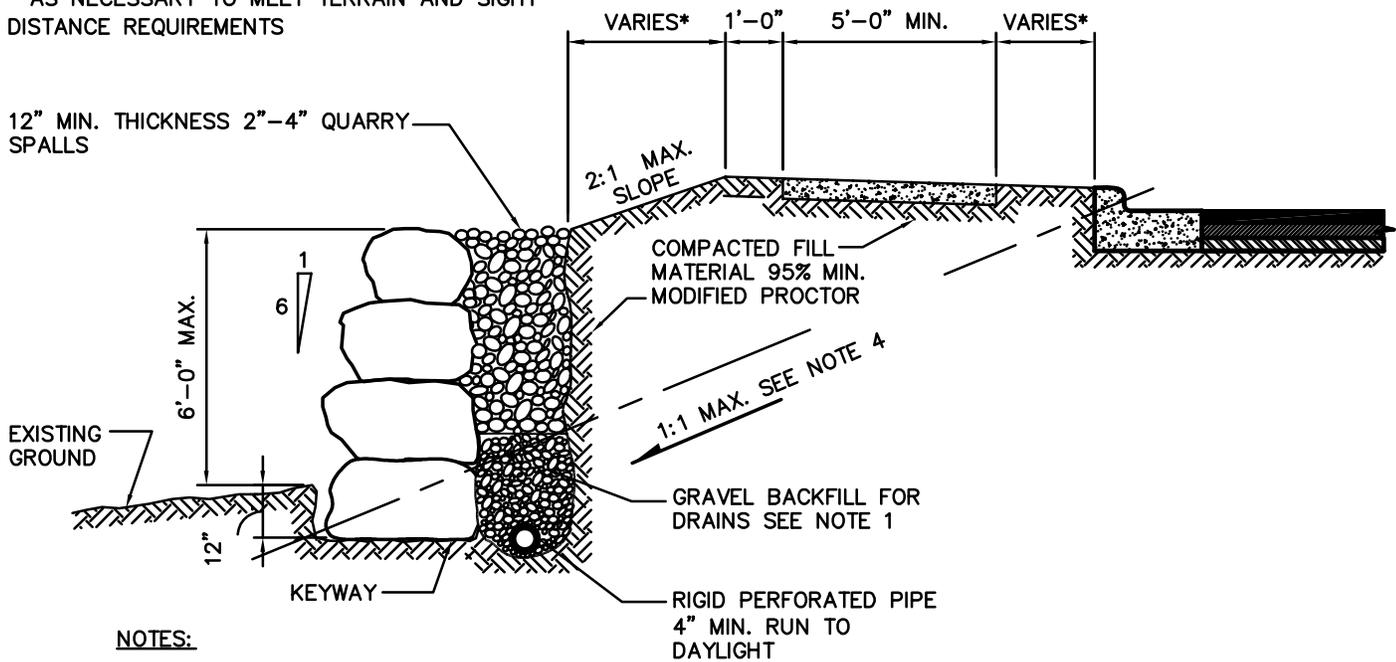
SCALE:

NONE

DWG. NO.

**ST-75**

\* AS NECESSARY TO MEET TERRAIN AND SIGHT DISTANCE REQUIREMENTS



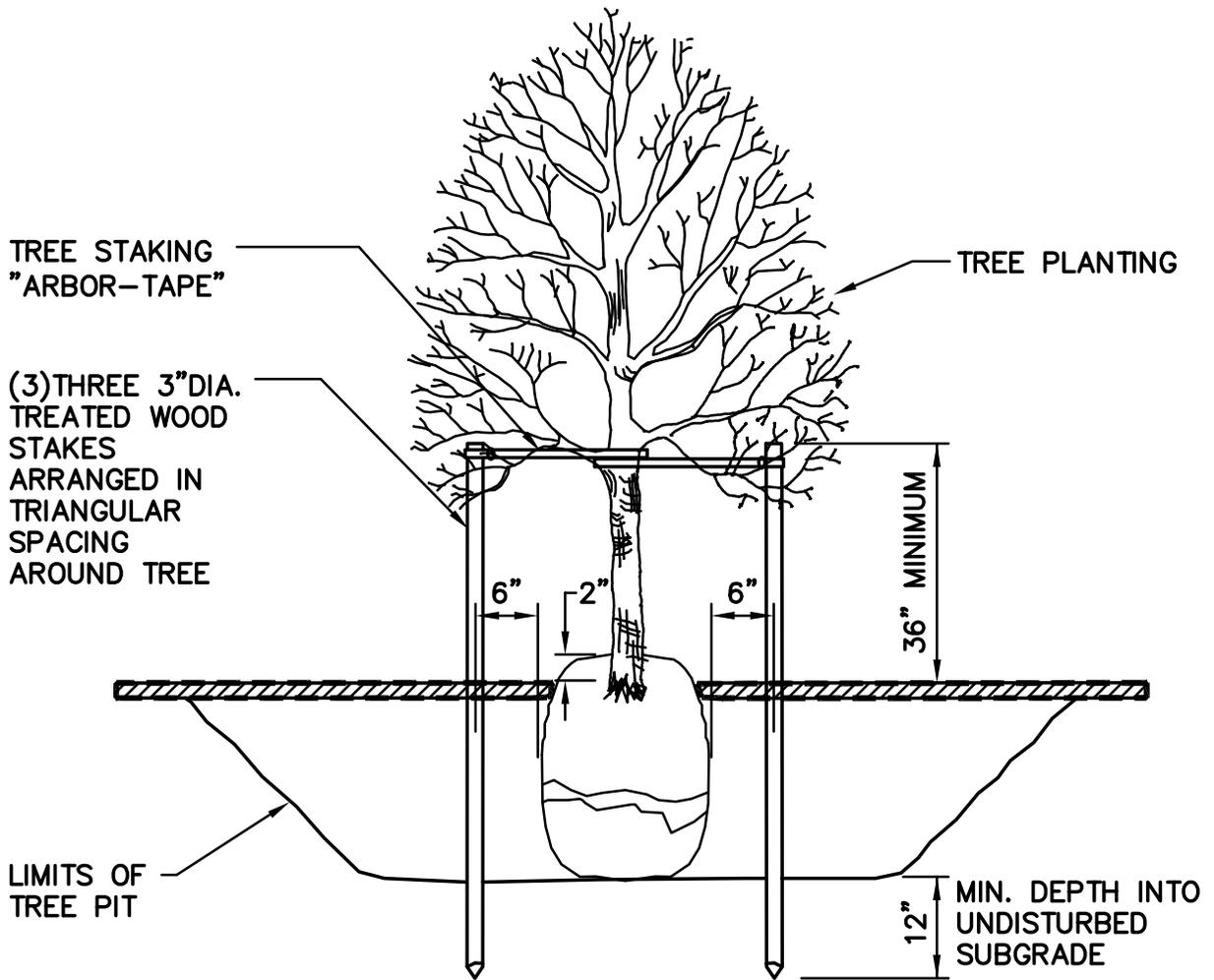
**NOTES:**

1. WSDOT/APWA 9-03.12[4]
2. FENCE OR HANDRAIL WILL BE REQUIRED WHEN ROCKERY HEIGHT EXCEEDS 30 INCHES AND IS LOCATED IN A PUBLIC AREA.
3. THE WALL FOUNDATION IS TO BE CLEARED OF ORGANIC MATTER AND DEBRIS AND THE UNDERLYING MINERAL SOIL COMPACTED TO 95 PERCENT OF THE MAX. DRY DENSITY. THE EMBANKMENT MATERIAL IS TO BE GRAVEL BORROW MEETING THE REQUIREMENTS OF 9-03.14 OF THE WSDOT STANDARDS. THE BACKFILL IS TO BE PLACED IN THIN LIFTS, NOT EXCEEDING SIX INCHES IN THICKNESS AND COMPACTED TO 95 PERCENT OF THE MAX. DRY DENSITY.
4. ZONE OF INFLUENCE. FLATTER SLOPE MAY BE REQUIRED IN LESS STABLE SOILS. ALL DRIVEWAYS, PARKING AREAS, AND ROADS SHALL LIE BELOW THE ZONE OF INFLUENCE.
5. ROCK WALLS SHALL BE PLACED NO CLOSER THAN 2 FEET FROM THE EDGE OF ANY PEDESTRIAN WALKWAY, PUBLIC EASEMENT OR RIGHT OF WAY.
6. MAXIMUM HEIGHT IS SIX (6) FEET. ALL WALLS HIGHER THAN FOUR FEET OR SUPPORTING A SURCHARGE, REQUIRE A BUILDING PERMIT. ALL WALLS SUPPORTING A SURCHARGE (DRIVEWAY, ROAD, BUILDING, OR PARKING AREA) SHALL REQUIRE DESIGN BY A LICENSED ENGINEER.
7. THE TOP OF ALL ROCK WALLS SHALL BE CONFIGURED TO PREVENT SURFACE DRAINAGE OVER THE TOP OF THE WALL.



**CITY OF MILTON  
ROCK WALL – CUT  
SECTION**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-76</b>



CITY OF MILTON  
**TREE STAKING**

REVISION DATE:

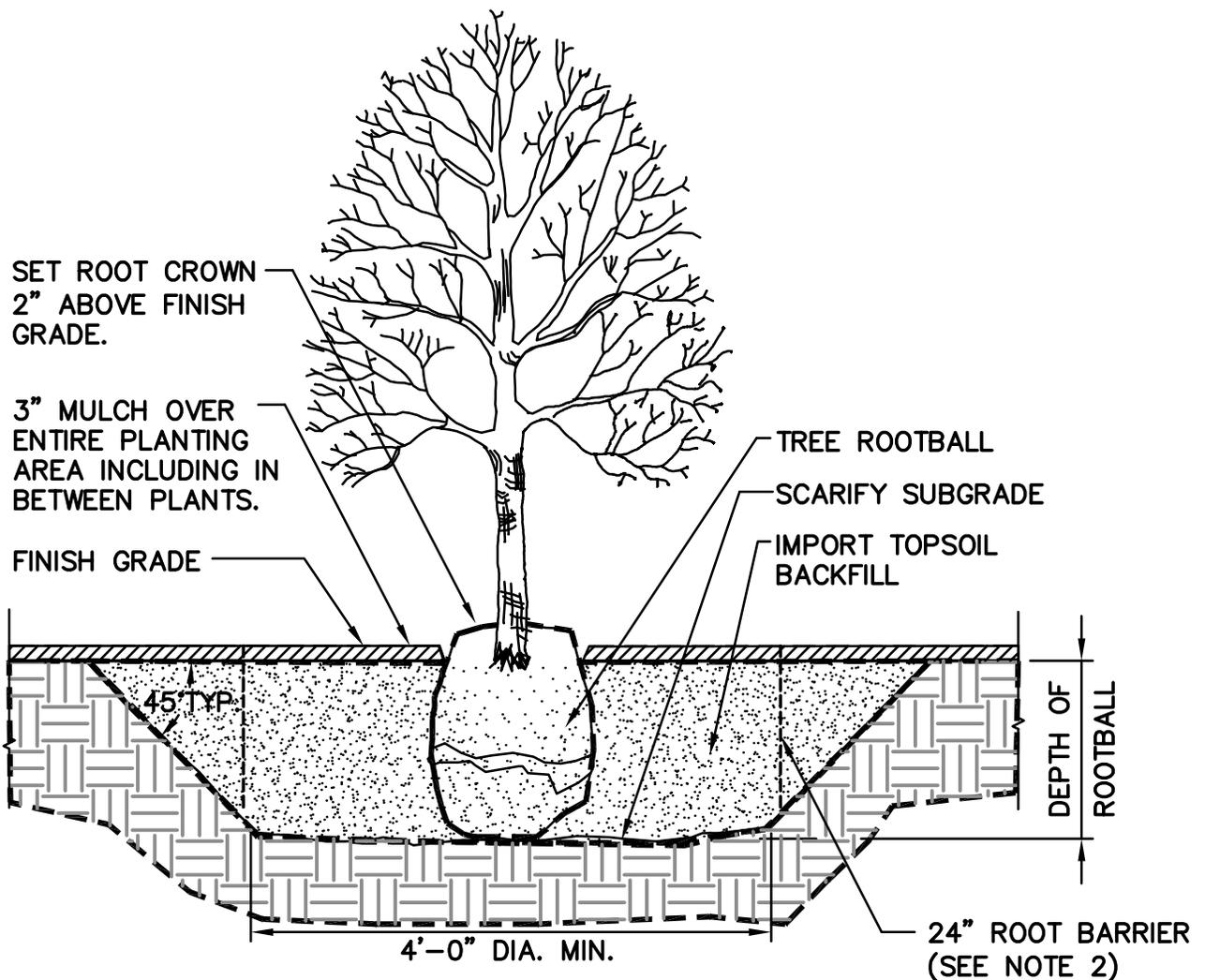
3/30/07

SCALE:

NONE

DWG. NO.

**ST-77**



**NOTES:**

1. REMOVE BURLAP AND WIRE FROM TOP 1/2 TO 3/4 OF ROOTBALL AFTER PLACEMENT IN HOLE.
2. ROOT BARRIER SHALL BE SET FLUSH W/ FINISH GRADE.
3. SEE TREE STAKING DETAIL ST-77
4. TREE DIAMETER MEASURED 2 FEET ABOVE FINISH GRADE SHALL BE A MINIMUM OF 2 INCHES.
5. PROVIDE 10-10-10 SLOW RELEASE FERTILIZER PER MANUFACTURES RECOMMENDED RATE FOR TREE SIZE.



**CITY OF MILTON  
DECIDUOUS  
TREE PLANTING**

REVISION DATE:

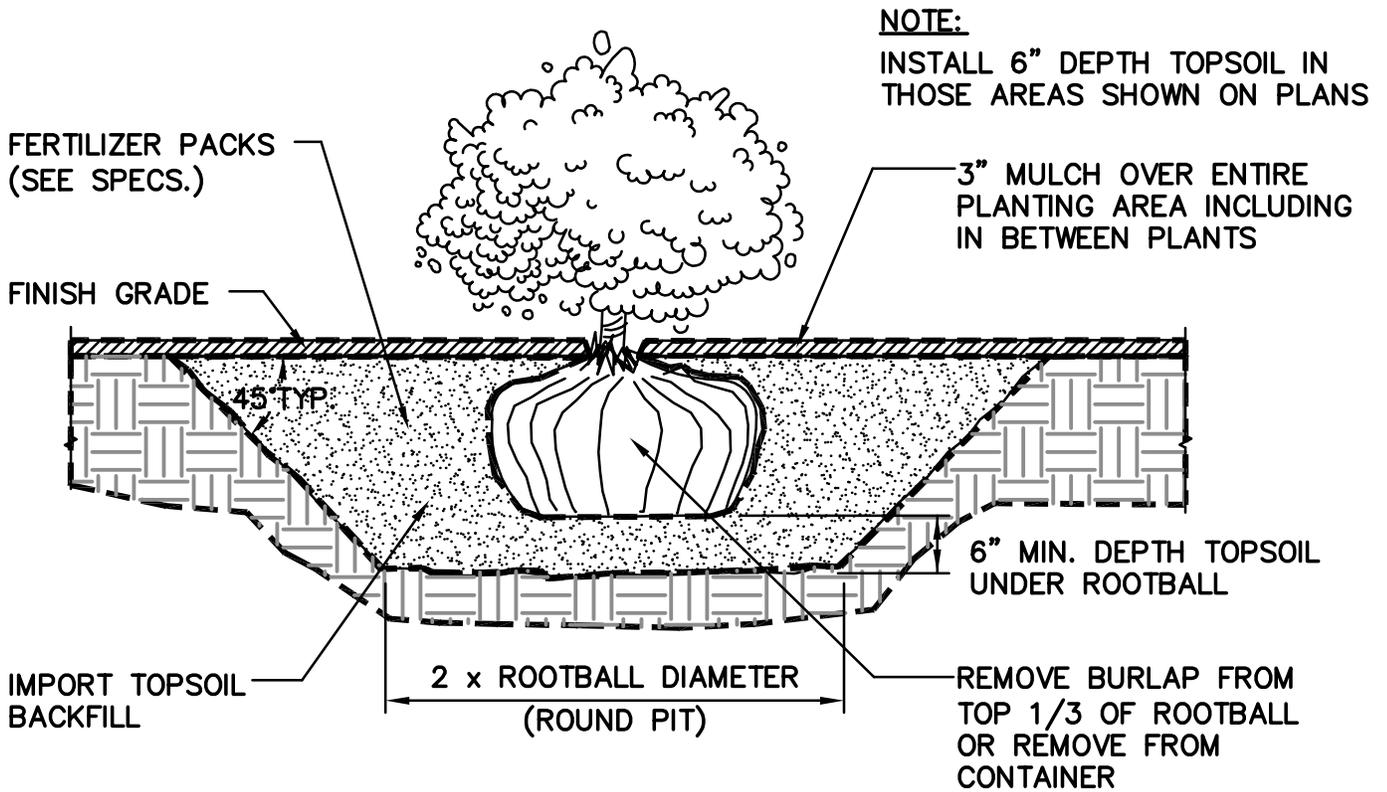
3/30/07

SCALE:

NONE

DWG. NO.

**ST-78**



**NOTES:**

1. PROVIDE 10-10-10 SLOW RELEASE FERTILIZER PER MANUFACTURES RECOMMENDED RATE FOR TREE SIZE.



**CITY OF MILTON  
SHRUB & ORNAMENTAL  
GRASS PLANTING**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ST-79**

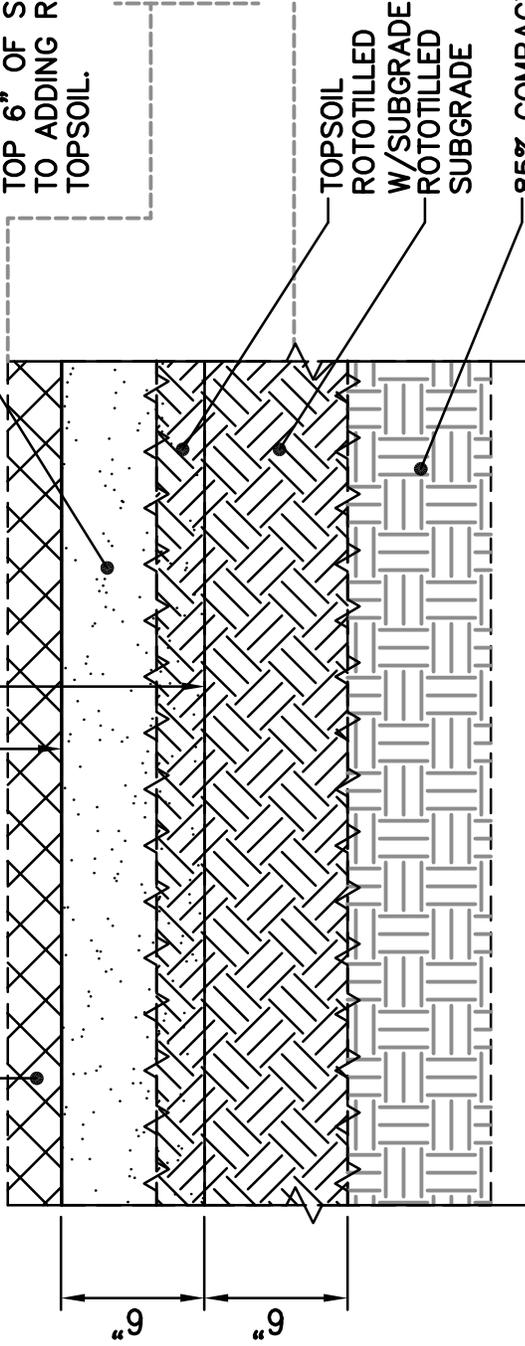
WHERE SOD IS SHOWN ON THE PLANS, FINISH GRADE OF SOD SHALL BE FLUSH WITH TOP OF WALKS OR CURBS

FINISH GRADE  
SUBGRADE

IMPORTED TOPSOIL (SEE SPECS.) ROTOTILL 2" DEPTH OF TOPSOIL INTO TOP 6" OF SUBGRADE PRIOR TO ADDING REMAINING TOPSOIL.

TOPSOIL ROTOTILLED W/SUBGRADE ROTOTILLED SUBGRADE

85% COMPACT SUBGRADE



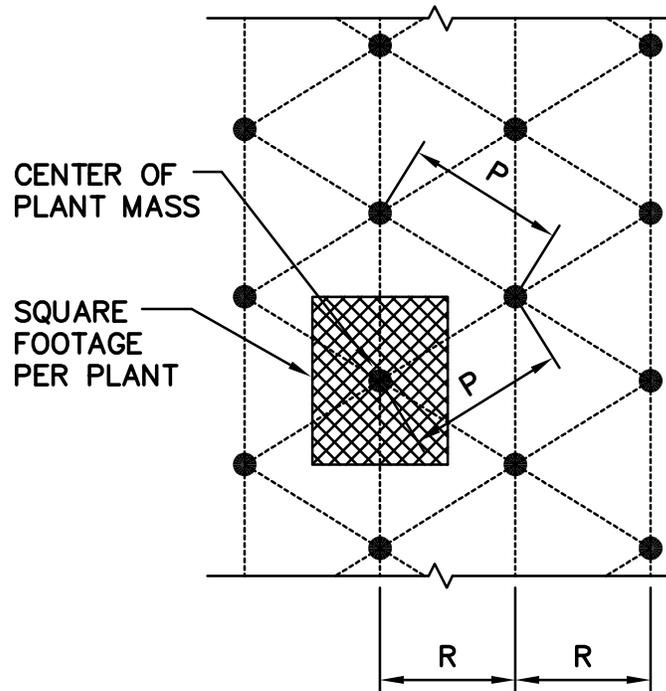
**NOTES:**

1. THIS DETAIL IS APPLICABLE AT PLANTED AREAS SHOWN ON PLAN.
2. COMPACT SUBGRADE & TOPSOIL TO 85% DENSITY IN ALL PLANTED AREAS. IF SUBGRADE DENSITY IS GREATER THAN 85% IN PLANTED AREAS CONTRACTOR SHALL PLOW OR "RIP" SUBGRADE TO A TWO FOOT DEPTH.



**CITY OF MILTON  
TOPSOIL INSTALLATION**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ST-80</b>



TRIANGULAR PLANT SPACING = P	DIST. BETWEEN PLANT ROWS = R	SQUARE FOOTAGE AREA PER PLANT
1.500 (18")	1.275	2.015
2.000 (24")	1.700	3.582
2.500 (30")	2.125	5.313
3.000 (36")	2.550	8.060
4.000 (48")	3.400	14.328
5.000 (60")	4.250	22.388
7.000 (84")	5.950	43.881
8.000 (96")	6.800	57.314



CITY OF MILTON  
SHRUBS & GROUNDCOVER  
SPACING

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

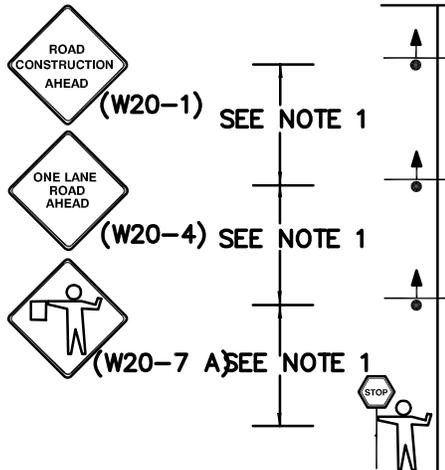
**ST-81**

TITLE OF DRAWING

DRAWING NO.

**TRAFFIC CONTROL DETAILS**

2 Lane Roadway with One Lane Closed	TC-1
2 Lane Roadway with Partial Lane Closed	TC-2
Traffic Control Plan Shoulder Work	TC-3
5 Lane Right Lane Closed	TC-4
5 Lane Left Turn Lane Closed	TC-5
Center of Intersection Work	TC-6
5 Lane Roadway Left Lane Closed	TC-7
5 Lane Roadway Right Lane Closed	TC-8
Full Street Closure	TC-9
5 Lane Roadway Multilane Closure	TC-10
Two Way Left Turn Lane Closure	TC-11
5 Lane Roadway Left Lane Closure	TC-12
Traffic Control Devices	TC-13



**TABLE A**

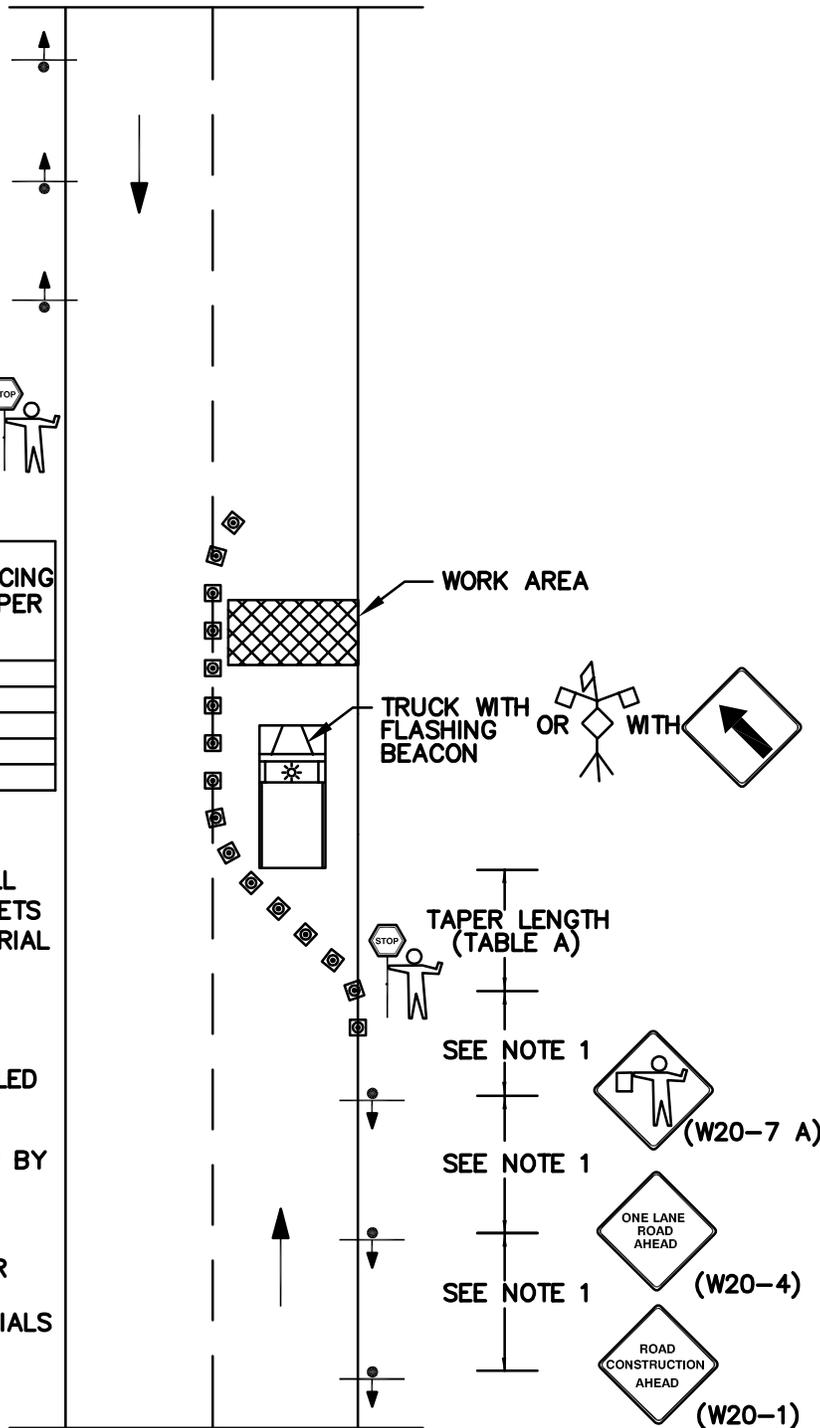
SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET	WIDTH	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45

**NOTE:**

1 DISTANCE BETWEEN SIGNS SHALL BE 100' FOR RESIDENTIAL STREETS (25 MPH), AND 200' FOR ARTERIAL ROADWAYS

**LEGEND:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.
- ⊗ CONE OR CHANNELIZING DEVICE



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
2 LANE ROADWAY WITH ONE  
LANE CLOSED**

REVISION DATE:  
**3/30/07**

SCALE:  
**NONE**

DWG. NO.  
**TC-1**

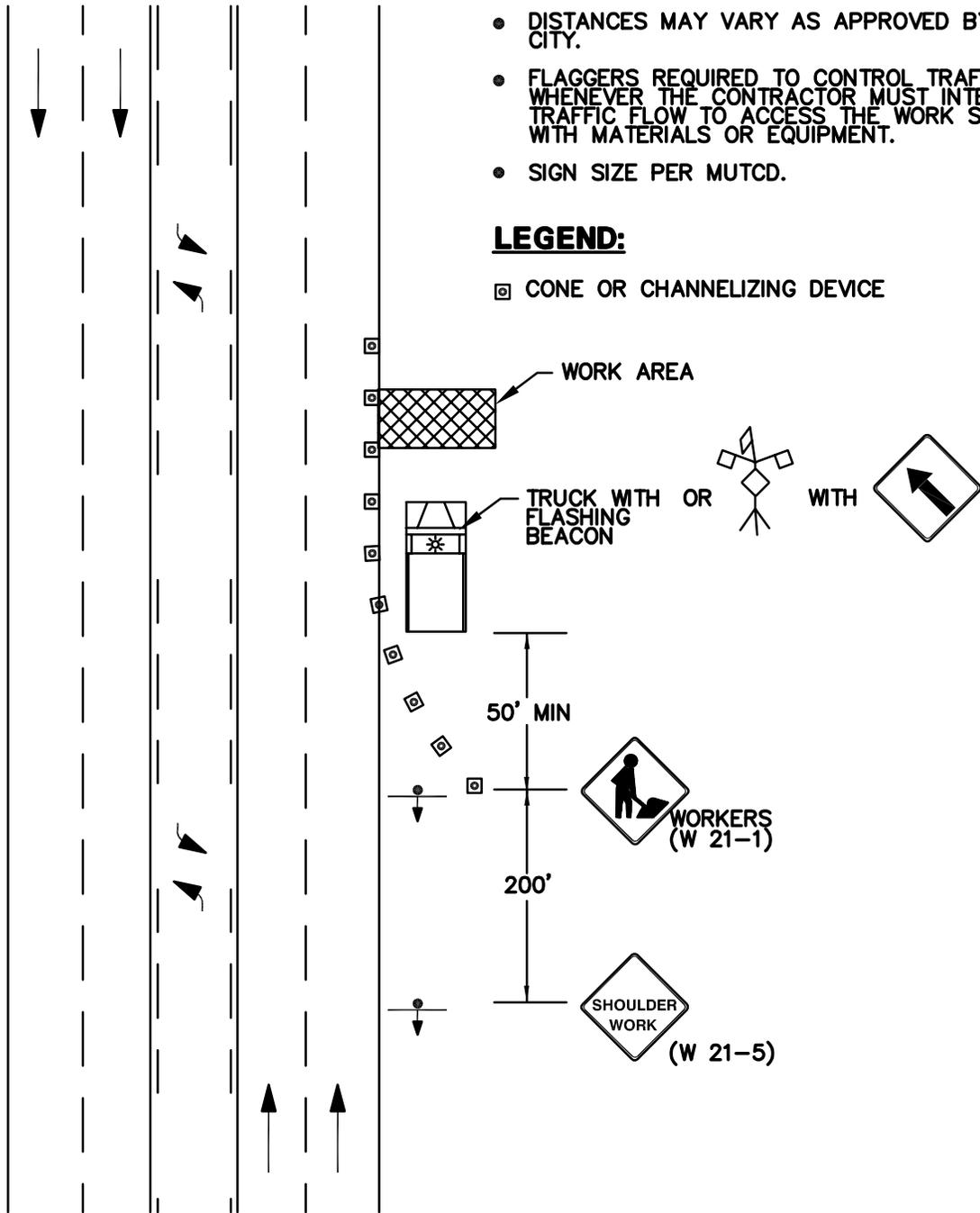


**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**LEGEND:**

- ◻ CONE OR CHANNELIZING DEVICE



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
SHOULDER WORK**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**TC-3**

**LEGEND:**

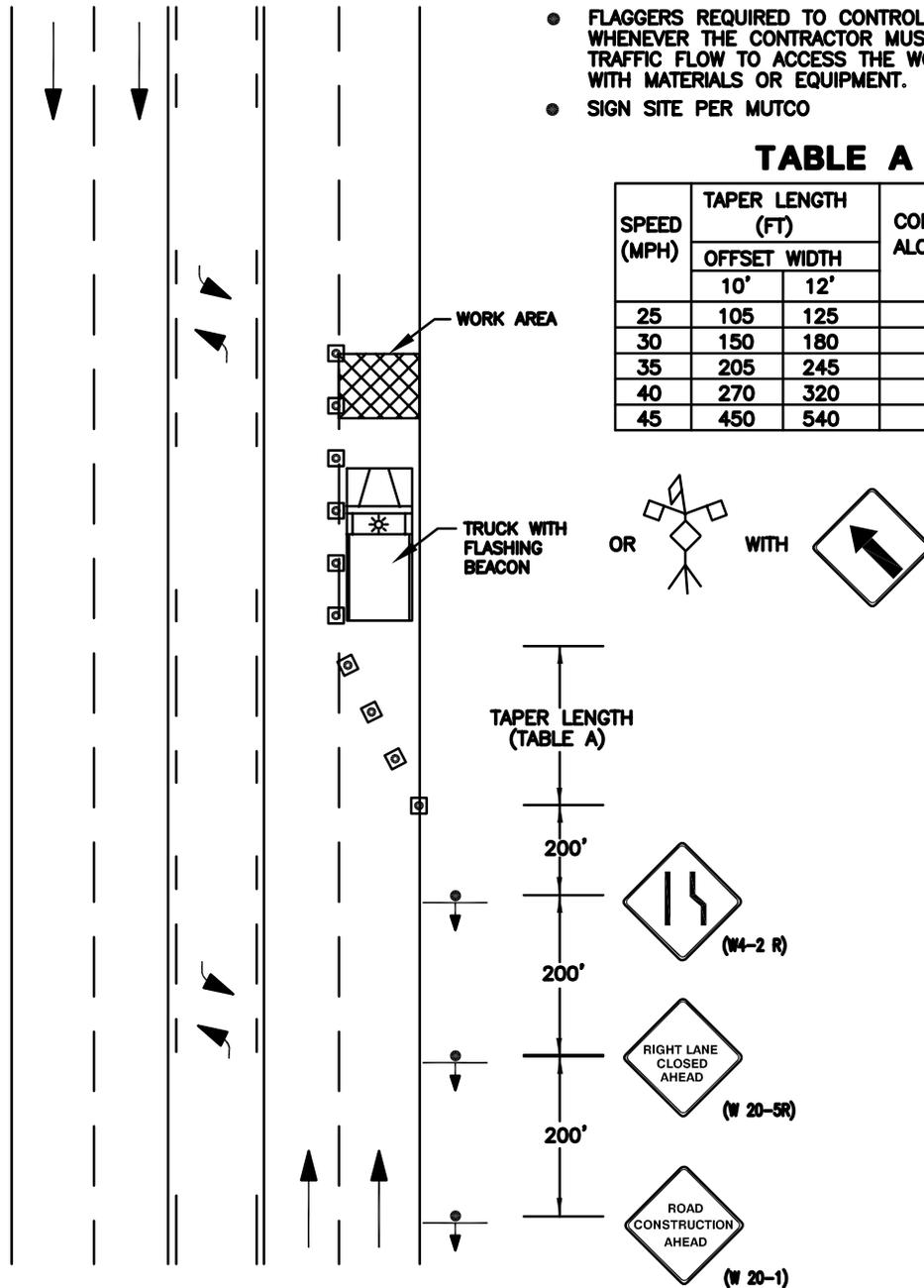
☐ CONE OR CHANNELIZING DEVICE  
(SEE STD 913)

**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SITE PER MUTCO

**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45



**CITY OF MILTON**  
TRAFFIC CONTROL PLAN  
**5 LANE**  
**RIGHT LANE CLOSED**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

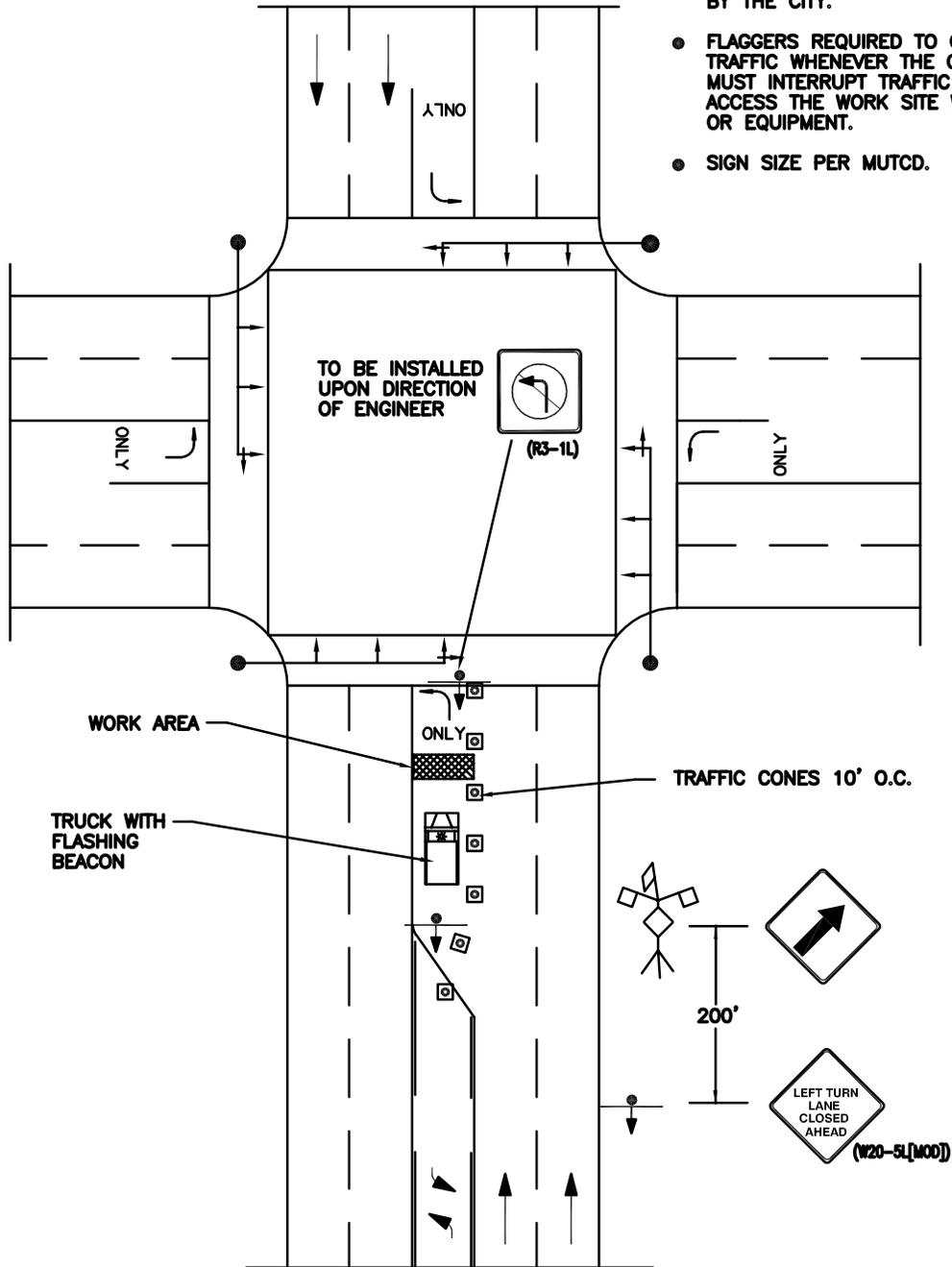
**TC-4**

**LEGEND:**

☐ CONE OR CHANNELIZING DEVICE

**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
5 LANE  
LEFT TURN LANE CLOSED**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

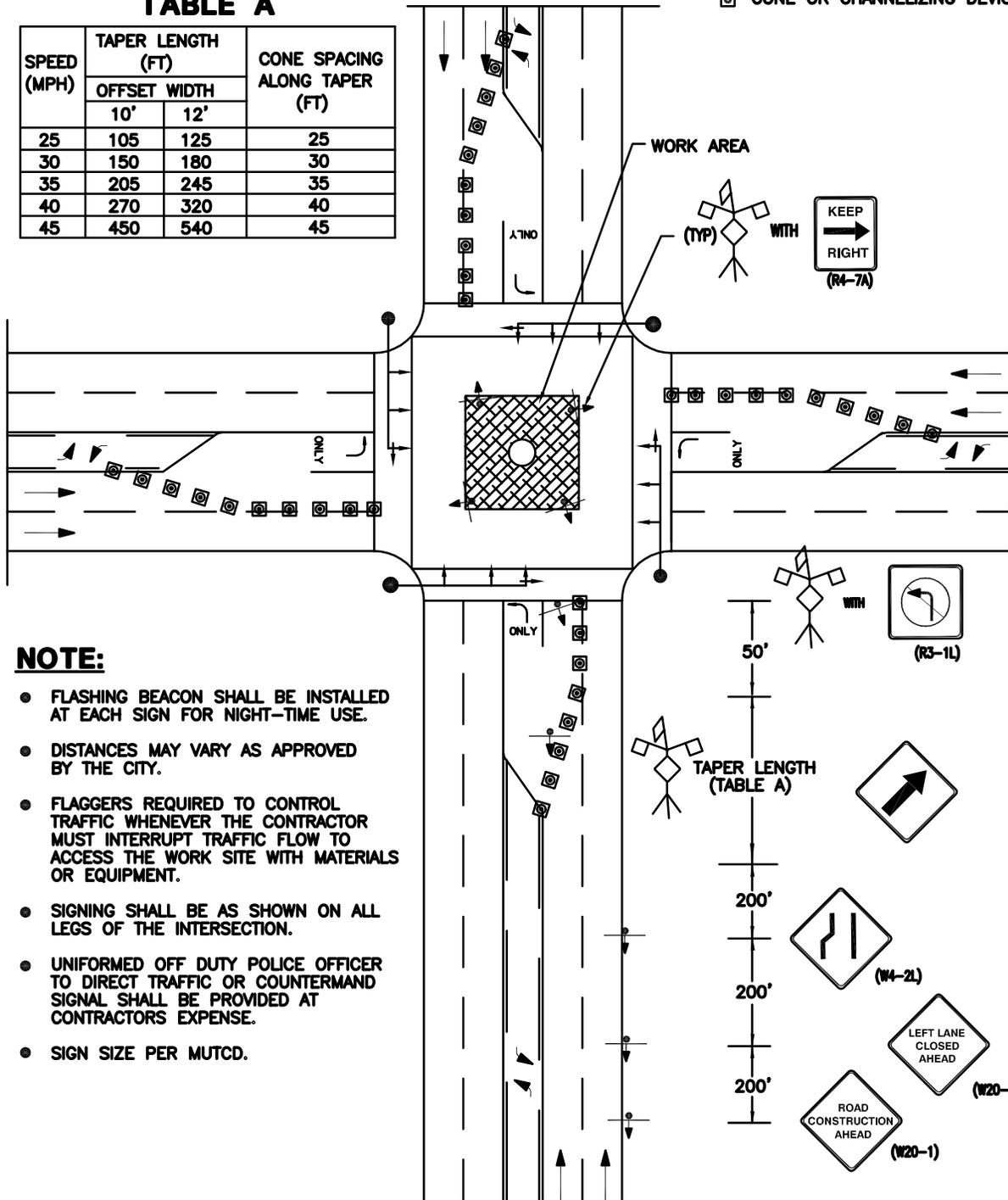
**TC-5**

**LEGEND:**

☐ CONE OR CHANNELIZING DEVICE

**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45



**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGNING SHALL BE AS SHOWN ON ALL LEGS OF THE INTERSECTION.
- UNIFORMED OFF DUTY POLICE OFFICER TO DIRECT TRAFFIC OR COUNTERMAND SIGNAL SHALL BE PROVIDED AT CONTRACTORS EXPENSE.
- SIGN SIZE PER MUTCD.



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
CENTER OF INTERSECTION  
WORK**

REVISION DATE:

3/30/07

SCALE:

NONE

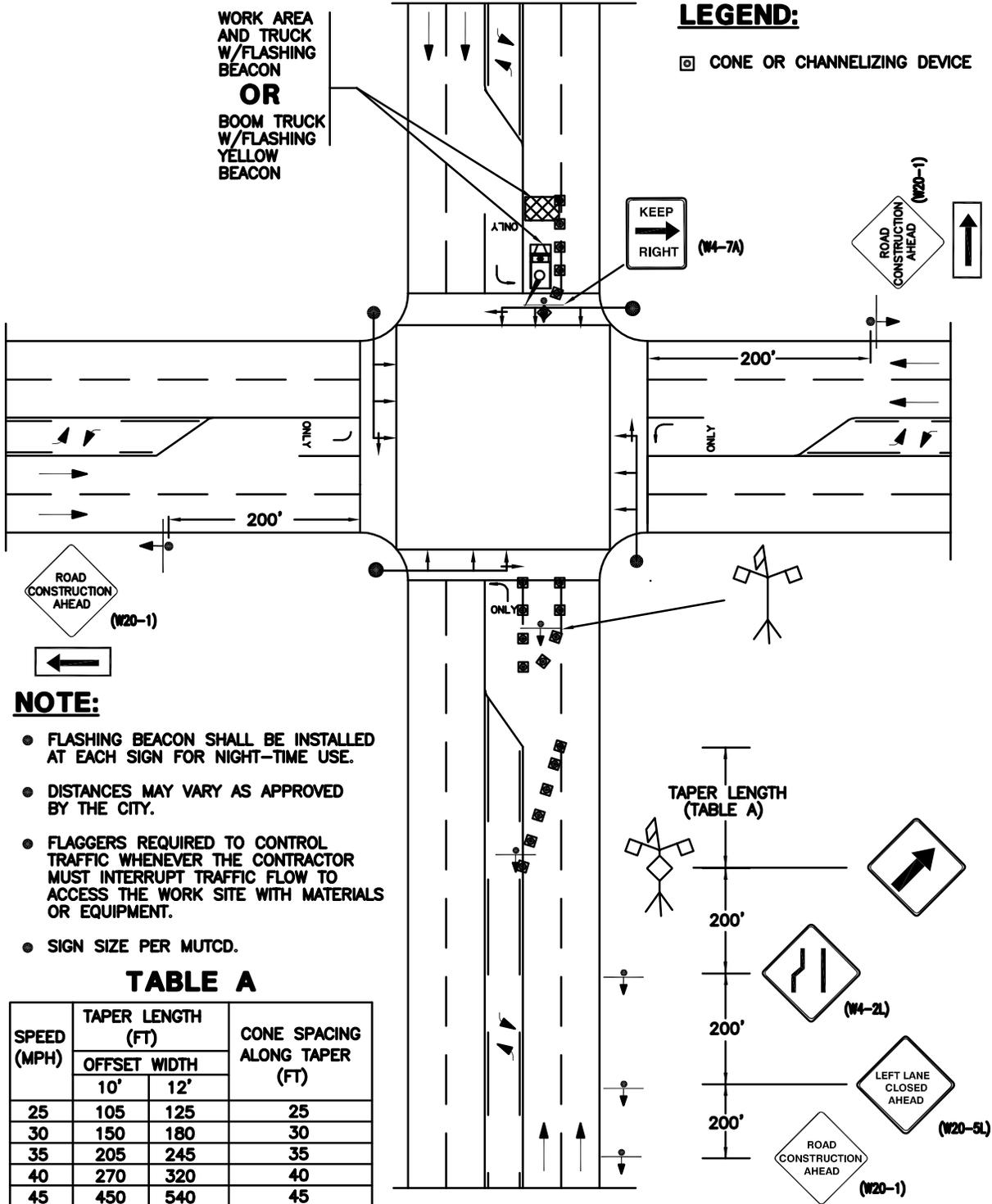
DWG. NO.

**TC-6**

WORK AREA  
AND TRUCK  
W/FLASHING  
BEACON  
**OR**  
BOOM TRUCK  
W/FLASHING  
YELLOW  
BEACON

**LEGEND:**

☐ CONE OR CHANNELIZING DEVICE



**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
5 LANE ROADWAY  
LEFT LANE CLOSED**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

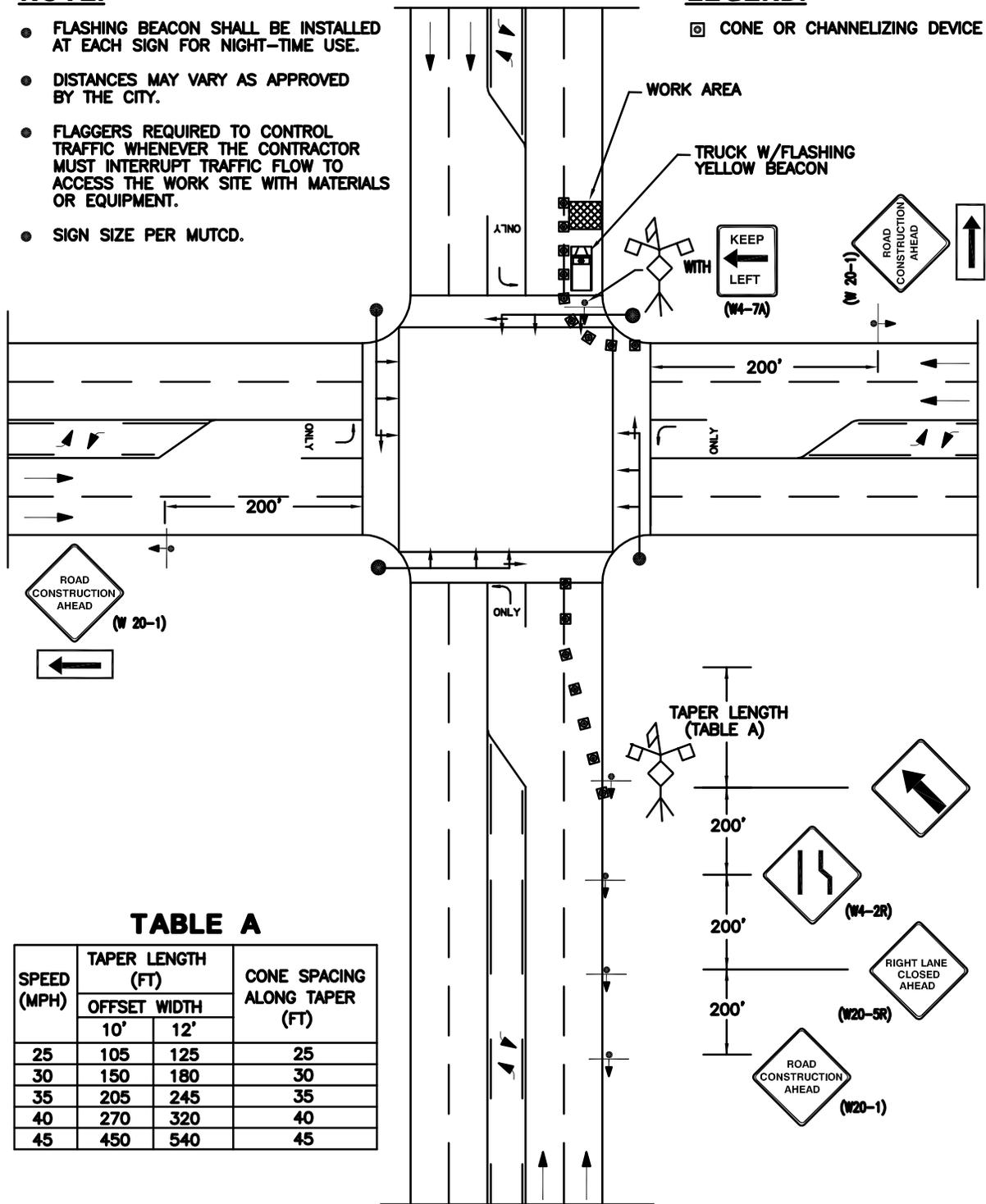
**TC-7**

**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**LEGEND:**

- ☐ CONE OR CHANNELIZING DEVICE



**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
5 LANE ROADWAY  
RIGHT LANE CLOSED**

REVISION DATE:

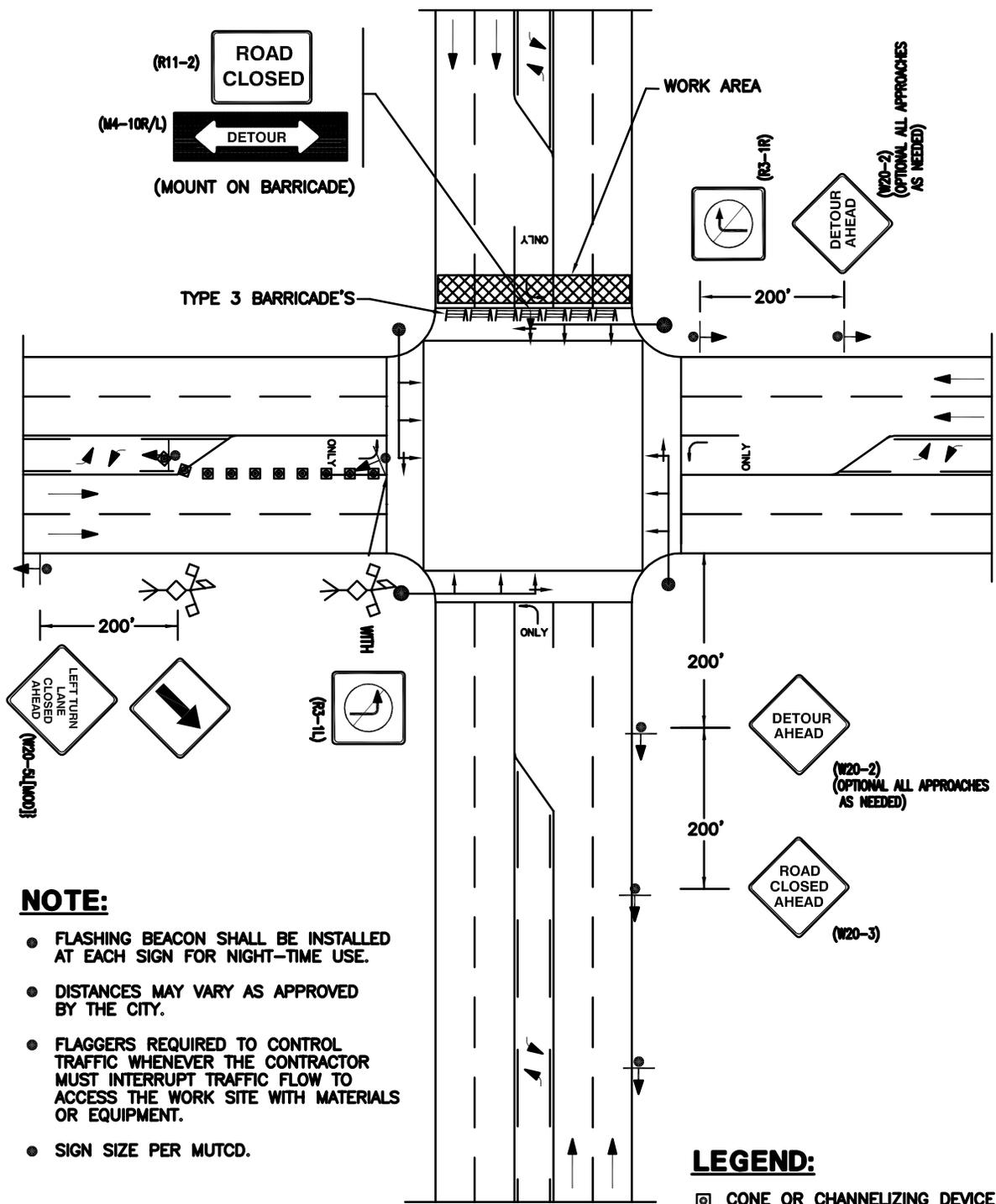
3/30/07

SCALE:

NONE

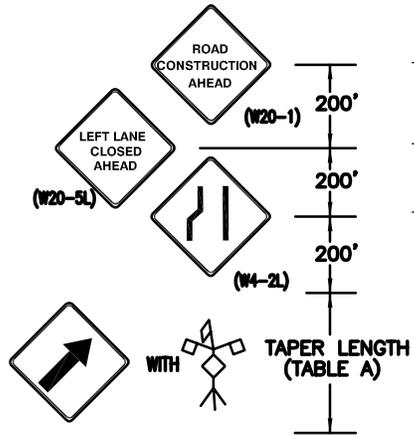
DWG. NO.

**TC-8**



CITY OF MILTON  
TRAFFIC CONTROL PLAN  
FULL STREET CLOSURE

REVISION DATE: 3/30/07	SCALE: NONE	DWG. NO. TC-9
---------------------------	----------------	------------------



**NOTE:**

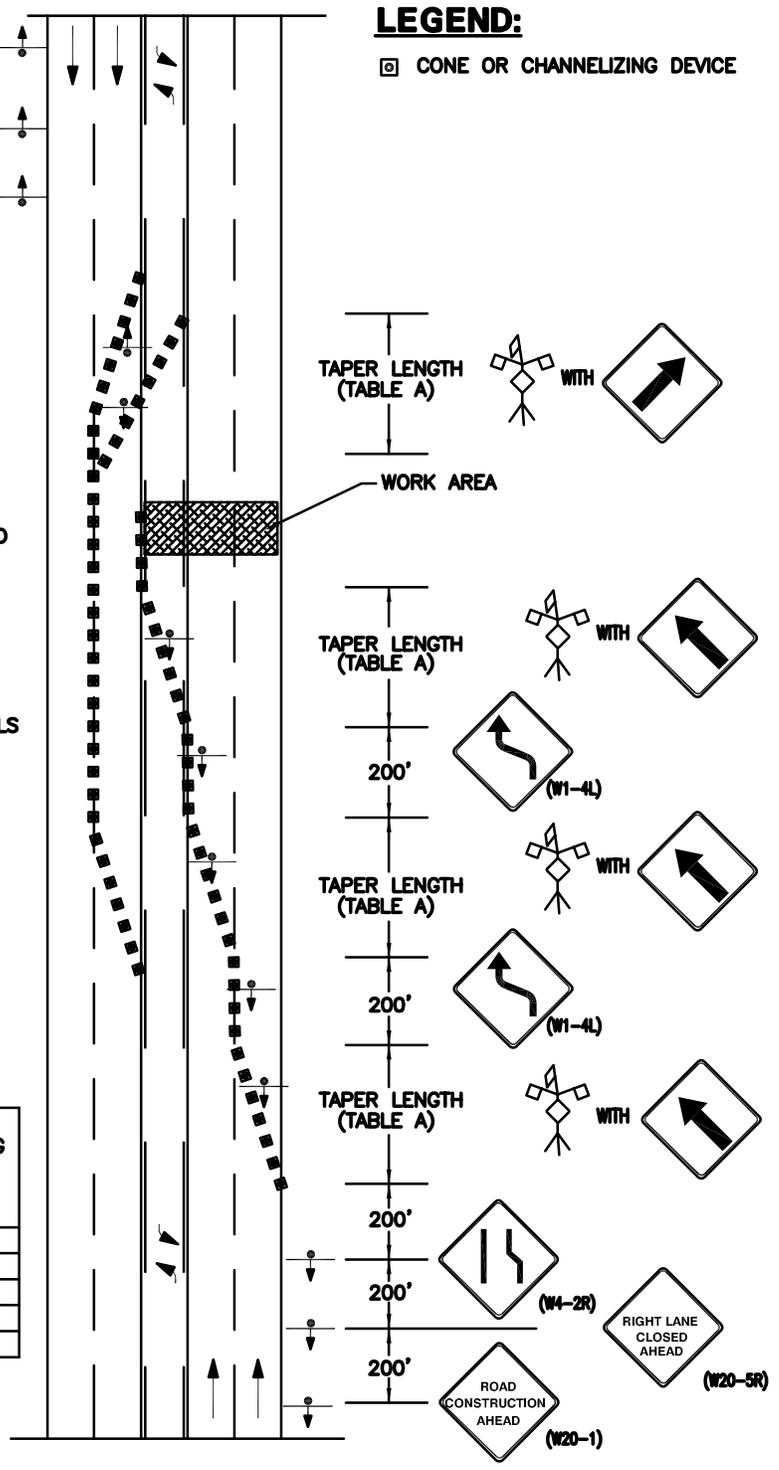
- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45

**LEGEND:**

☐ CONE OR CHANNELIZING DEVICE



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
5 LANE ROADWAY  
MULTILANE CLOSURE**

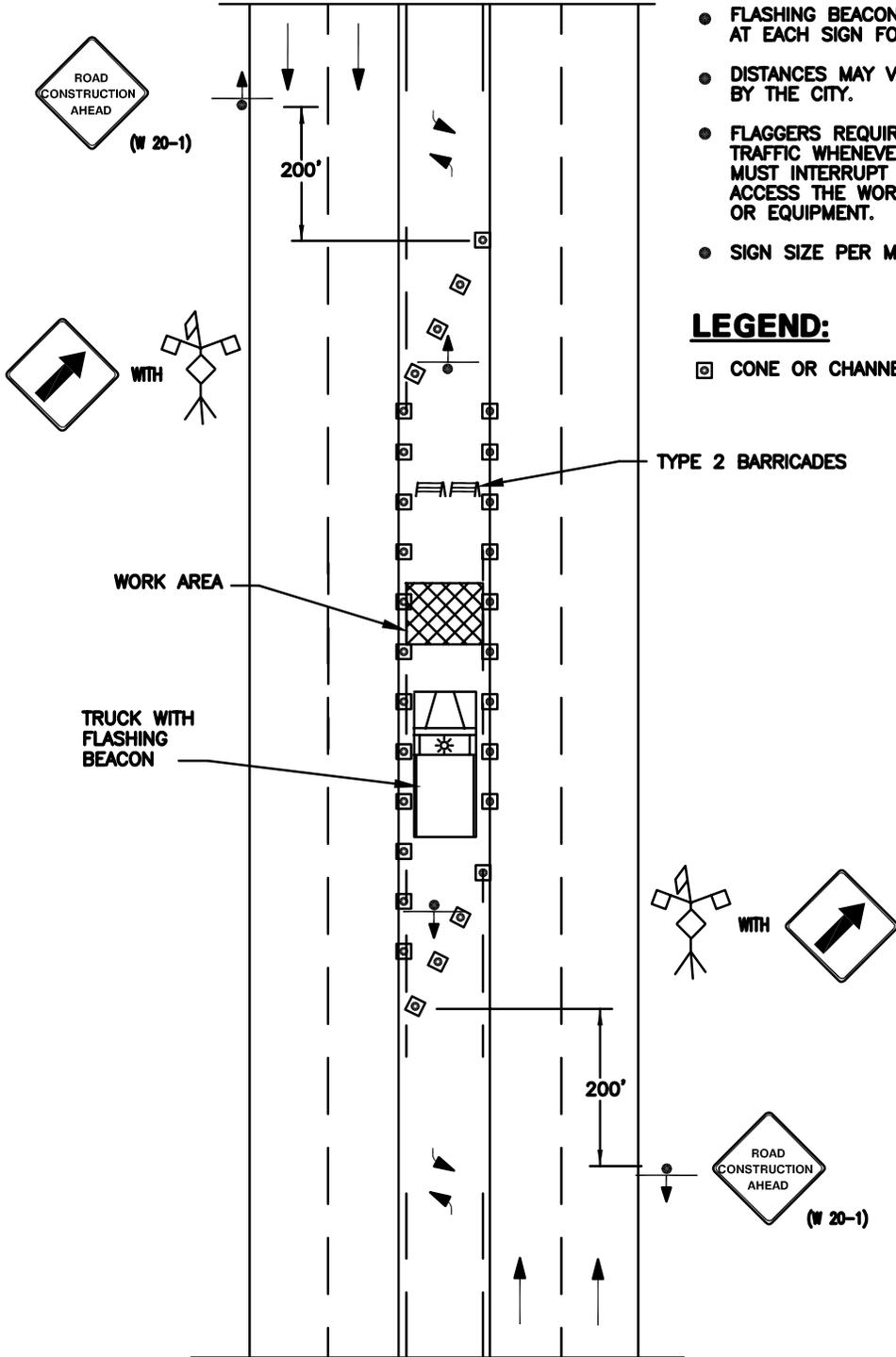
REVISION DATE: <b>3/30/07</b>	SCALE: <b>NONE</b>	DWG. NO. <b>TC-10</b>
----------------------------------	-----------------------	--------------------------

**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**LEGEND:**

- ◻ CONE OR CHANNELIZING DEVICE



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
TWO WAY LEFT TURN  
LANE CLOSURE**

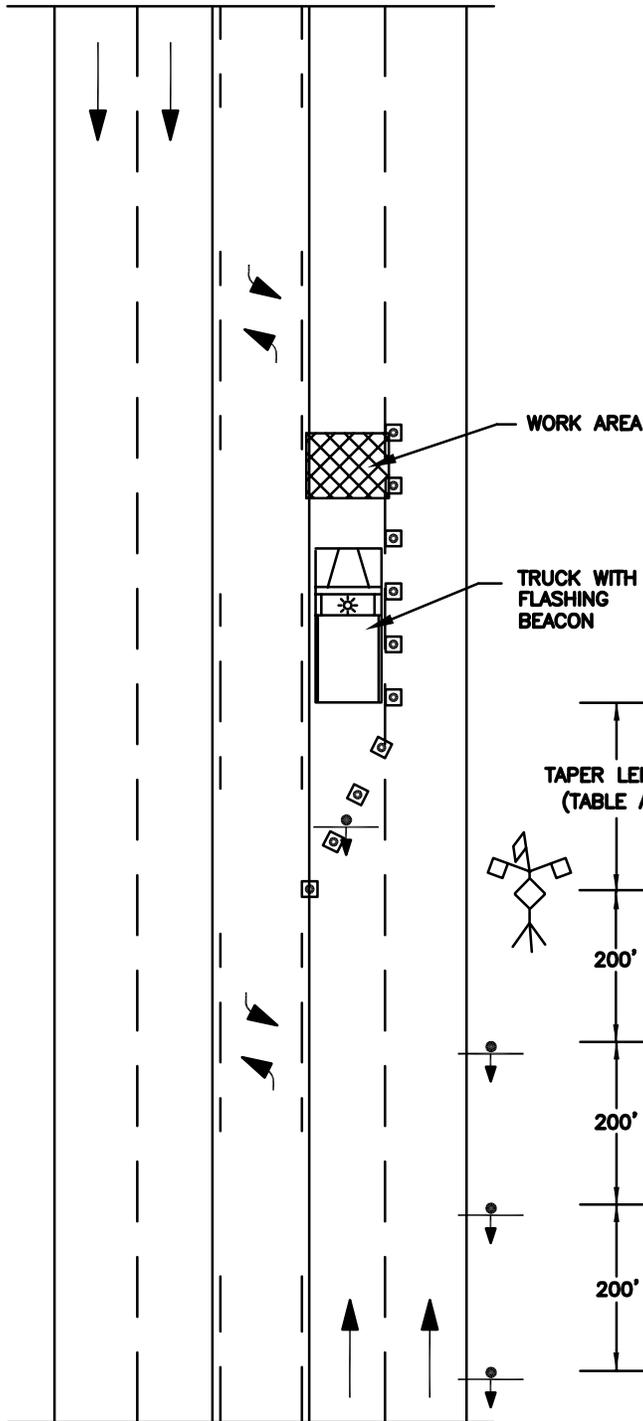
REVISION DATE: <b>3/30/07</b>	SCALE: <b>NONE</b>	DWG. NO. <b>TC-11</b>
----------------------------------	-----------------------	--------------------------

**NOTE:**

- FLASHING BEACON SHALL BE INSTALLED AT EACH SIGN FOR NIGHT-TIME USE.
- DISTANCES MAY VARY AS APPROVED BY THE CITY.
- FLAGGERS REQUIRED TO CONTROL TRAFFIC WHENEVER THE CONTRACTOR MUST INTERRUPT TRAFFIC FLOW TO ACCESS THE WORK SITE WITH MATERIALS OR EQUIPMENT.
- SIGN SIZE PER MUTCD.

**LEGEND:**

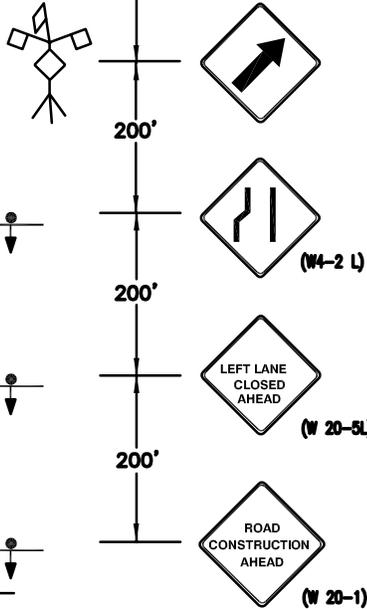
- ◻ CONE OR CHANNELIZING DEVICE



**TABLE A**

SPEED (MPH)	TAPER LENGTH (FT)		CONE SPACING ALONG TAPER (FT)
	OFFSET WIDTH		
	10'	12'	
25	105	125	25
30	150	180	30
35	205	245	35
40	270	320	40
45	450	540	45

TAPER LENGTH (TABLE A)



**CITY OF MILTON  
TRAFFIC CONTROL PLAN  
5 LANE ROADWAY  
LEFT LANE CLOSURE**

REVISION DATE:

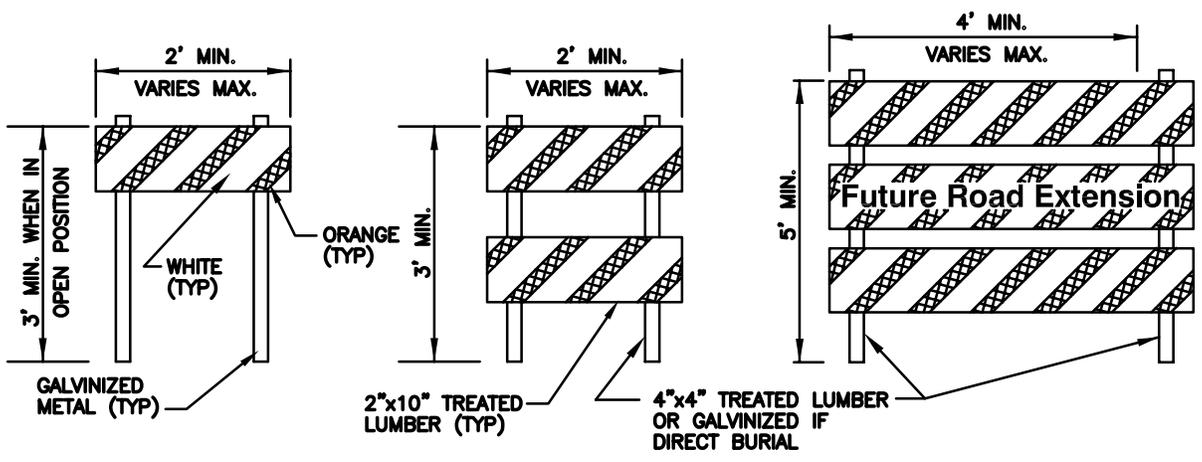
3/30/07

SCALE:

NONE

DWG. NO.

**TC-12**

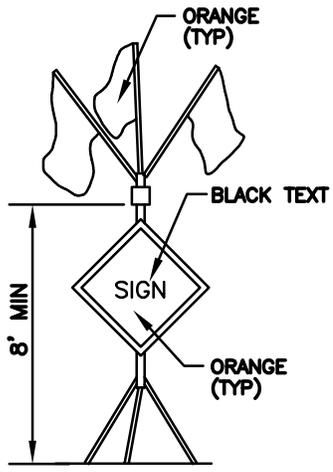


**TYPE 1**

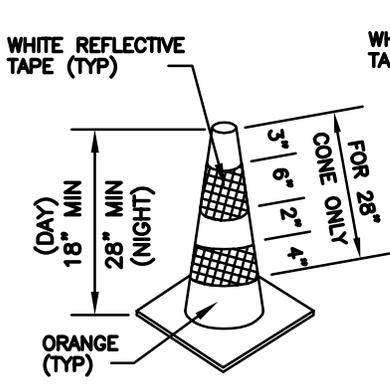
**TYPE 2**

**TYPE 3**

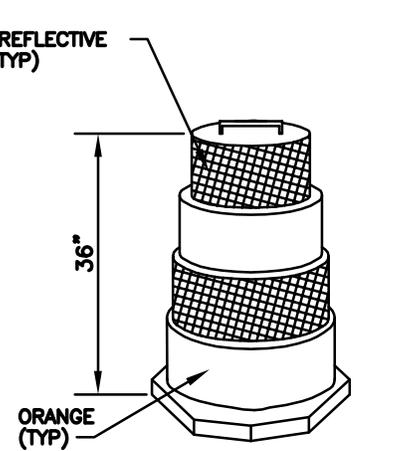
**BARRICADE**



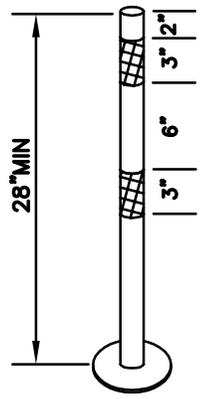
**HIGH RISE WARNING**



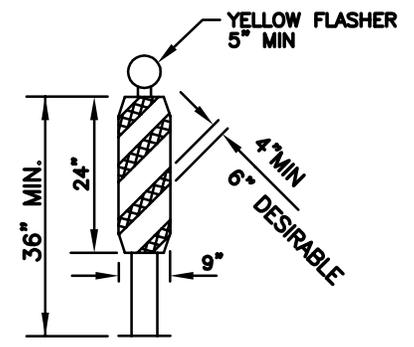
**CONE**



**CHANNELIZING DRUM**



**GUIDE POST**



**VERTICAL PANEL**



**CITY OF MILTON  
TRAFFIC CONTROL  
DEVICES**

REVISION DATE:  
**3/30/07**

SCALE:  
**NONE**

DWG. NO.  
**TC-13**

TITLE OF DRAWING

DRAWING NO.

**MISCELLANEOUS DETAILS**

Typical Site Plan

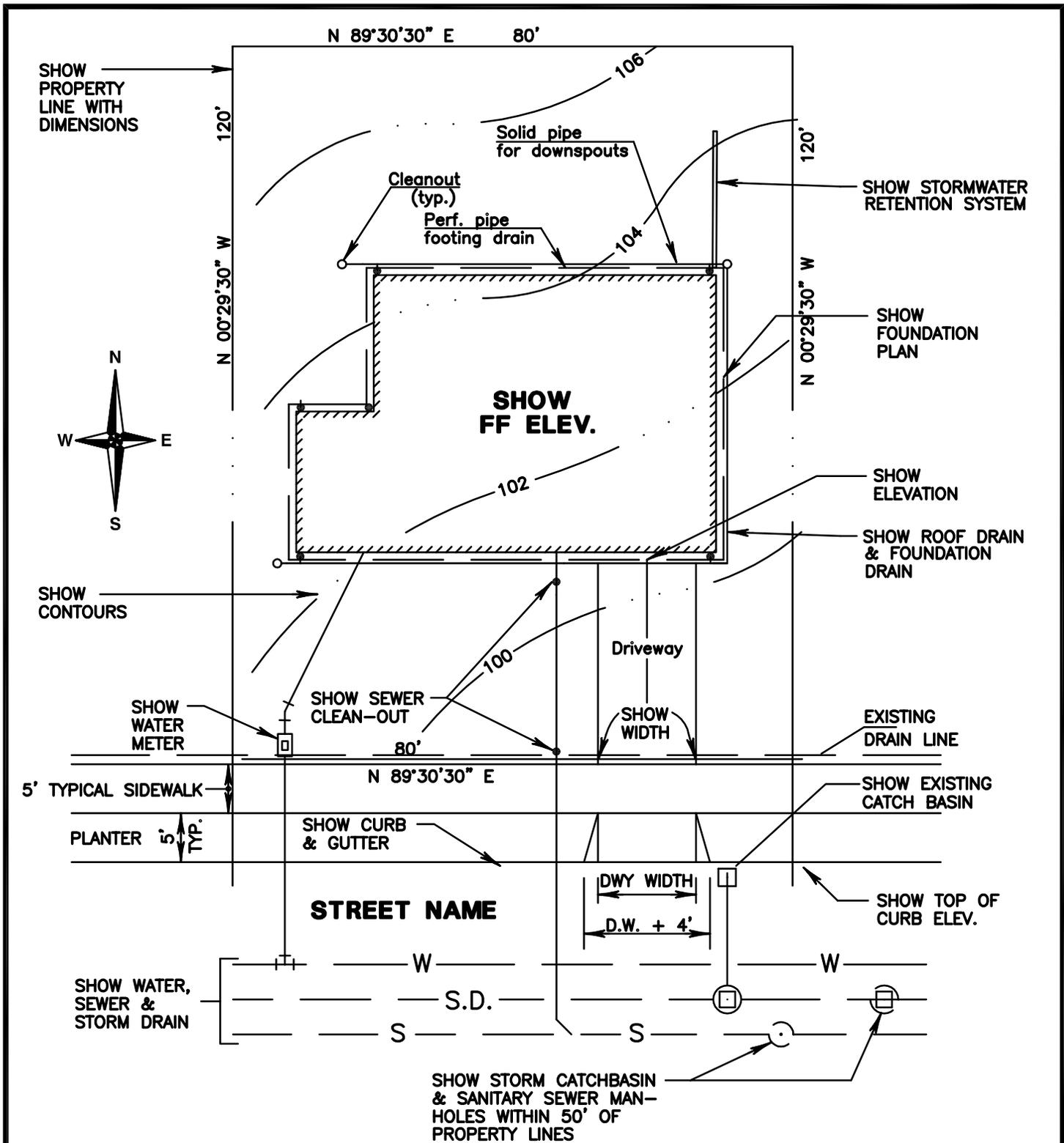
M-1

Removable Bollard

M-2

Swing Gate and Fence Details

M-3



**NOTES:**

1. SHOW ALL EASEMENTS
2. SHOW ALL BUILDING SETBACKS

LEGAL DESCRIPTION  
 LOT \_\_, TRACT \_\_  
 ASSESSORS # \_\_\_\_\_



**CITY OF MILTON  
 TYPICAL SITE PLAN**

REVISION DATE:

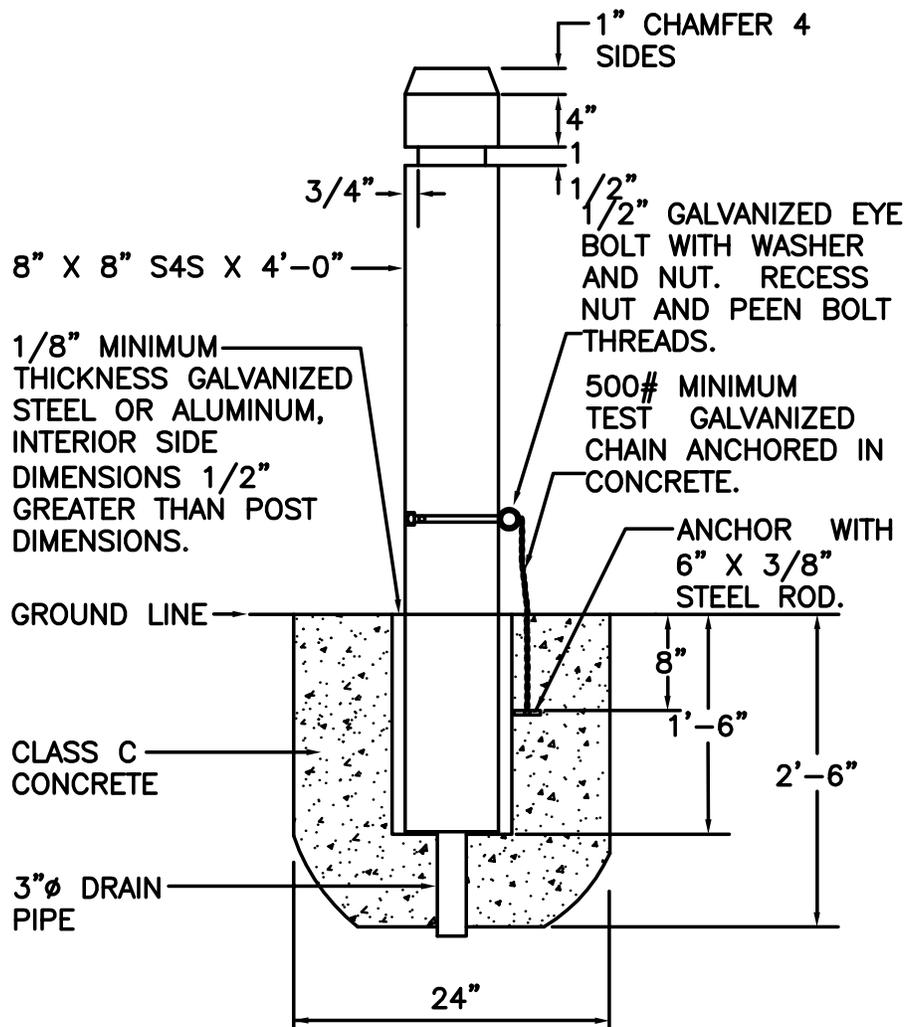
10/19/09

SCALE:

NONE

DWG. NO.

**M-1**



**NOTES:**

1. TIMBER SHALL BE DOUGLAS FIR, DENSE CONSTRUCTION GRADE, AND SHALL BE PENTACHLOROPHENOL PRESSURE TREATED BY EMPTY CELL PROCESS WITH MINIMUM NET RETENTION OF 0.05 LBS./CU. FOOT OF THE DRY SALT. (USE LIGHT PETROLEUM SOLVENT.)
2. STEEL TUBE SHALL CONFORM TO ASTM A53 OR ASTM A53 GRADE A.
3. NUTS, BOLTS, AND WASHERS SHALL CONFORM TO W.S.D.O.T. STANDARD.
4. ALL STEEL PARTS SHALL BE GALVANIZED.
5. CONCRETE SHALL BE CLASS C.
6. SPACING OF BOLLARDS WILL BE FOUR FEET ON CENTER.



**CITY OF MILTON  
REMOVABLE BOLLARD**

REVISION DATE:

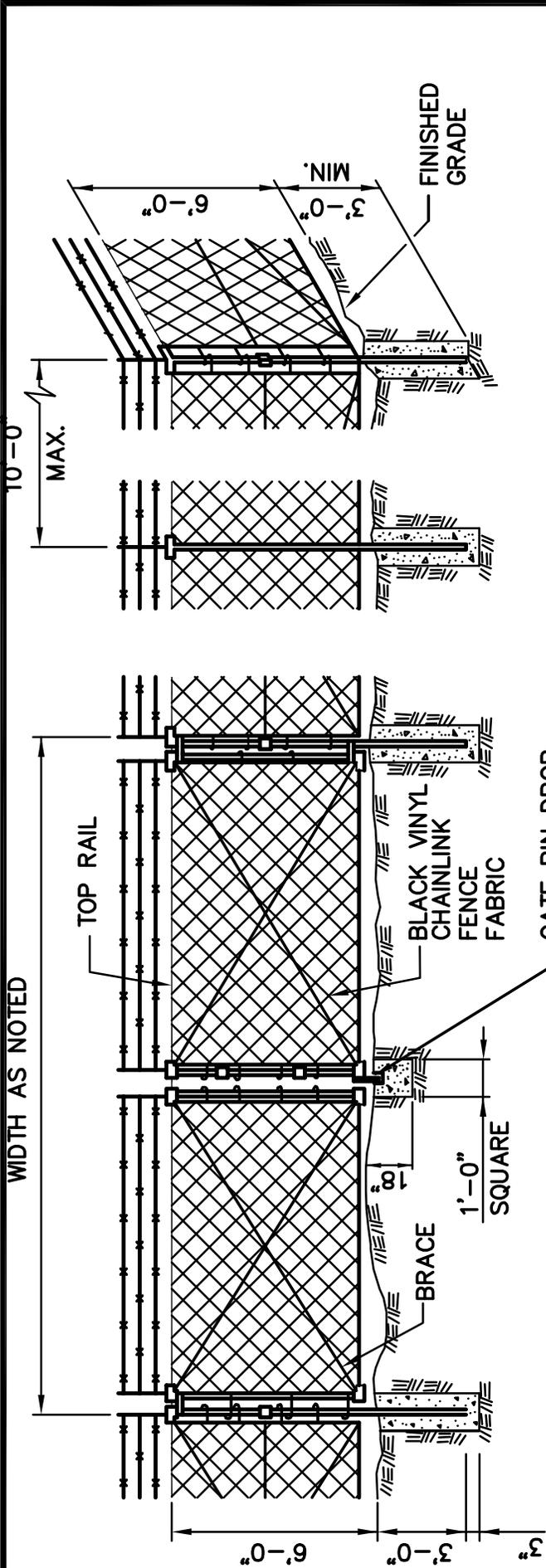
3/30/07

SCALE:

NONE

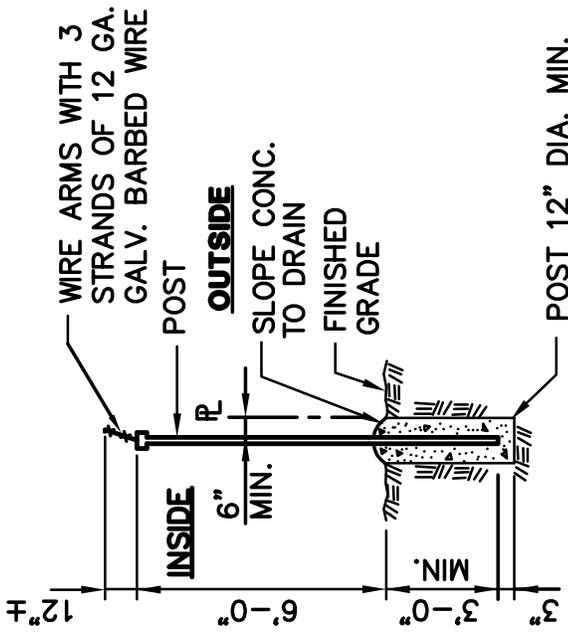
DWG. NO.

**M-2**



**GATE ELEVATION**

**CORNER POST**



**SECTION**

- NOTES:**
1. CHAINLINK FENCE AND GATE SHALL BE FURNISHED AND INSTALLED ACCORDING TO THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CHAINLINK FENCE TYPE 1 AS DETAILED ON STANDARD PLANS L-2 AND L-3.
  2. CORNER POSTS SHALL BE INSTALLED AT ALL POINTS WHERE THE ALIGNMENT CHANGES 30° OR MORE.



**CITY OF MILTON**  
**SWING GATE AND**  
**FENCE DETAILS**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>M-3</b>

**SECTION 5**  
**STORM DRAINAGE STANDARDS**

## **SECTION 5 STORM DRAINAGE STANDARDS**

### **5.01 General**

Storm drainage revisions, additions, modification, or changes shall be made in compliance with City standards, ordinances, and Best Management Practices as identified in the 2005 Washington State Department of Ecology (WSDOE) Stormwater Management Manual for the Western Washington. Adequate provisions shall be made for storm drainage, storm sewers, and associated appurtenances sufficient to transmit maximum seasonal flows and one hundred year floodwaters characterized by the area. All storm drains and facilities shall be designed by a professional engineer licensed in the State of Washington.

If warranted based on the condition and capacity of the existing storm drainage infrastructure (or lack thereof) and, impacts caused by the proposed development, off-site improvements may be required, at the Public Works Director's discretion, to mitigate impacts caused by the proposed development.

### **5.02 Amendments to the 2005 Washington State Department of Ecology (WSDOE) Stormwater Management Manual for Western Washington.**

Specific Core Requirements with respect to storm drainage are contained in Milton Municipal Code (MMC). The requirements in MMC have been slightly modified from those identified in the 2005 Washington State Department of Ecology (WSDOE) Stormwater Management Manual for the Western Washington. Refer to MMC for more information. In accordance with MMC, the following minimum Requirement modifications are noted:

- A. Any project that collects 5,000 square feet of more of effective impervious surface in a threshold discharge area shall provide flow control (detention or retention) for stormwater runoff.

In addition, the City has developed standards with respect to the applicable uses of storm drainage facilities and how they are constructed. These policies are intended to create storm drainage facilities that are safe, effective, functional, accessible, maintainable, and aesthetically pleasing. The following revisions to the standards contained in the DOE Stormwater Management Manual are:

- A. All stormwater facilities shall be landscaped as described in the 2005 WSDOE Manual and as approved by the City.
- B. Stormwater facilities shall not be located where, in the city's opinion, the facility will create an attractive nuisance or be considered as unattractive from any public street, park, or venue.
- C. When preparing the stormwater site plan and construction drawings,

the developer's engineer shall make appropriate accommodation for conveyance and bypass of upstream off-site runoff and discharge onto adjacent downstream properties. This will include provisions for easements to accommodate upstream properties and/or constructing a tight line system across downstream properties (in an appropriate easement) where a suitable natural or previously constructed tight line system does not exist.

- D. No storm drainpipe shall be buried deeper than 20 feet except that installation to a depth greater than 20 feet can be approved to avoid the need for a pump system.
- E. Unless otherwise approved by the city, pipes shall not be located underneath sidewalks, driveways, walls, or landscaped areas except for where drainpipes cross perpendicular to these areas.
- F. Unless otherwise approved by the city, pump systems will not be allowed for conveying storm runoff to a detention or treatment system.
- G. Where frontage improvements are required by the city, the developer shall include in the detention calculations, the right-of-way improvements and provide detention and treatment for those improvements.
- H. Where allowed, underground vaults or tanks shall not be located underneath public roads or recreation facilities.
- I. Underground vaults or tanks shall not protrude above the ground surface more than 4 feet in any location. All portions protruding above the ground surface shall have an architectural facing approved by the City and landscaping provided for screening.
- J. Where allowed, underground vaults shall be equipped with a hatch as described in the 2005 WSDOE Manual, rather than a standard manhole cover.
- K. Where allowed, underground vaults and tanks shall be accommodated with easements or setbacks large enough to provide for the complete replacement (without encroaching on any other structures or roads) of the structure should replacement be required in the future.
- L. Open vaults with vertical side(s) shall be prohibited.
- M. Self-contained treatment devices not included in the 2005 WSDOT Manual are prohibited due to costs and treatment performance. If selected, the developer must provide proof that the advertised level of treatment can be obtained. Evidence of performance shall be provided which includes actual field data. The City may also require that the

device be approved by the Department of Ecology or the Environmental Protection Agency.

- N. Bioswales shall only be constructed where approved by the City. Specifically, bioswales shall not be constructed in areas that are shaded during the growing season or between single family residences or commercial buildings.
- O. Bioswales shall not be constructed with vertical side(s) unless approved by the City.
- P. Bioswales shall not be designed with a longitudinal slope less than 1.5 percent.
- Q. All ponds shall be constructed with interior and exterior side slopes no steeper than 3 horizontal to 1 vertical. Ponds shall not be constructed with vertical side(s) unless approved by the City.
- R. All pond access roads shall be connected to the public street in at least one location (or connected via a public access tract). No portion of the access road shall exceed a 15 percent grade. Bollards shall be installed approximately 25 feet from the edge of traveled way (or curb) in order to provide a safe parking area for maintenance personnel when accessing the pond.
- S. Pond access roads shall not be dually used as a bicycle or equestrian trail.
- T. For privately owned and operated storm drainage systems, the developer shall execute and record a Declaration of Covenant that identifies the storm drainage system by legal description, allows access to the city to inspect and maintain, if necessary, and identifies the private owner as the party responsible for operation and maintenance. Covenant shall be recorded at the County prior to final approval of the project.
- U. All stormwater drainage systems serving more than one single parcel not located within the public right-of-way or dedicated drainage tract shall be located within a drainage easement granted to a specific party. All easements shall be of sufficient width to allow complete replacement of the identified storm system component without encroaching into the foundation support of nearby buildings, walls, roads, steep slopes, driveways, sidewalks, or other structures.
- V. All easements shall be provided in a form acceptable to the city and recorded at the County assessor's office prior to allowing the construction of a building on the property, or prior to recording of a plat. For land subdivisions, the easements may be shown on the plat

map so long as the plat map identifies the specific party to which the easement is granted, the restrictions for the grantee and grantor, and clearly identifies the dimensions of the easement(s).

- W. No public storm drainage easement shall be less than 10 feet in width. Where the easement is provided to gain access to a structure (catch basin, manhole, inlets) the easement width shall not be less than 15 feet.
- X. Pipes and swales not located in the center of the easement shall have at least 5 feet of easement width from the pipe or swale to the edge of the easement.
- Y. Easements shall be located entirely on a single property and shall not be split along property lines.
- Z. Where easements are provided between properties to convey runoff from an upstream property to a downstream conveyance system within a single project (e.g., subdivision), the conveyance system shall be installed as a requirement of final plat approval. This will ensure that landscaping and other improvements installed on the downstream properties where the easement is located will not be impacted when the upstream property develops and installs its conveyance system.
- AA. Where the ground surface slopes upwards from a sidewalk, the City may require that a subsurface drain be installed behind the sidewalk to collect groundwater and shallow surface runoff to avoid icing, moss, and staining on the sidewalk.

### **5.03 Design Standards**

The design of storm drainage and detention systems shall depend on their type and local site conditions. The design elements of storm drainage systems shall conform to the MMC and the City Standards as set forth herein. The following design considerations shall apply:

- A. The use of commercial parking lots for detention of stormwater will be reviewed by the City and approved or denied based on the design, location and general parameters of the project. The detention area shall be situated away from areas of pedestrian movement. The maximum depth of water in parking lot storage shall be limited to 6 inches. Curbs cannot be used for storage.
- B. Maximum catch basin spacing shall be 200 feet on road grades up to 3 percent, 300 feet when the road grade is 3 percent or greater and 500 feet maximum on main storm drains between access structures, whether catch basins or manholes. No surface water (unless otherwise

approved in writing by the City) shall cross any roadway.

- C. Where storm systems are located outside an existing public right-of-way, permanent easements will be required for public or private maintenance of the system. Such easement shall be a minimum of 15 feet in width or twice the bury depth of the utility whichever is greater.
- D. Storm Drain Detention Systems shall be, at a minimum, designed and constructed and maintained in compliance with Chapter 13.26 MMC. Local conditions or site specific concerns may warrant higher standards as may be determined by the City. The Developer and/or Homeowners Association shall enter into a formal, legally binding agreement, as approved by the City Attorney, regarding the landowner's duties and obligations regarding their ownership, operation and maintenance of the system.
- E. The Standard Plan Notes, as shown in the Appendices and further referenced herein shall be included or referenced on any plans submitted to the City for construction approval dealing with storm system design.
- F. When appropriate, storm drain pipelines shall be sized and installed to the far property line(s) to serve tributary areas. They shall be appropriately sized to accommodate anticipated flows as further identified herein.
- G. Catch basins and manholes shall not be placed within the sidewalk area.

#### **5.04 Conveyance**

Storm drain pipe within a public right-of-way or easement shall be sized to carry the maximum anticipated runoff (25-year design storm) from the possible contributing tributary area.

The minimum pipe size shall be 12 inches diameter. Runoff shall be computed and, if the flow requires it, a larger pipe shall be used. Nothing shall preclude the City from requiring the installation of a larger sized main if the City determines a larger size is needed to serve adjacent areas or for future service.

When appropriate, storm drainage pipelines shall be sized and installed to the far property line(s) to serve tributary areas. They shall be appropriately sized to accommodate anticipated flows as further identified herein.

Storm drain gradients shall be such as to assure minimum flow velocity of 2 feet per second when flowing full.

All pipe for storm mains shall be "preapproved" by the City's Engineer based on localized conditions and comply with the following types:

- A. Polyvinyl Chloride: PVC pipe shall conform to ASTM D3034, SDR 35 or ASTM F789 with joints and rubber gaskets conforming to ASTM D3212 and ASTM F477.
- B. Reinforced Concrete: Reinforced concrete pipe shall be Class IV per Standard Specifications as set forth in Section 7-04.
- C. Ductile Iron: Ductile iron pipe shall conform to AWWA C151 Class 50 and have a cement mortar lining conforming to AWWA C104. All pipes shall be joined using non-restrained joints, which shall be rubber gaskets, push on type or mechanical joint, conforming to AWWA C111.
- D. Polyethylene: PE smooth wall pipe per Advanced Drainage Systems (ADS) N-12 (bell and spigot), or City approved equal, constructed per Standard Specifications 7-04.
- E. High Density Polyethylene Pipe (HDPE): HDPE pipe shall be SDR 25 butt-fused welded pipe high density, black, PE 3408. Pipe shall be made from premium high density polyethylene resin, qualified as Type III, Category 5, Class C, Grade P34 in ASTM D1248-81.

Invert elevations for individual storm drainage stubs shall be shown on the final record drawings. In the field, individual storm drainage stubs shall be marked by use of a white 2" x 4" post stamped "STORM." Post shall be placed at the stub invert and shall protrude from ground at a minimum of 3 feet.

### **5.05 Connections**

Connections of storm drain pipe leading from an existing street inlet location may be made into an existing main storm drain only with a new structure, subject to case-by-case review and approval of the City Engineer or Public Works Director and subject to the following additional requirements:

- A. The inlet structure shall be a catch basin and not a simple inlet lacking a catch or drop section.
- B. Length of inlet connection shall be as approved by the City Engineer.
- C. Connection to a catch basin shall not occur at corner of the catch basin. The maximum angle of the pipe to the catch basin shall not exceed more than 30 degrees from perpendicular.

### **5.06 Survey Staking**

All surveying and staking shall be performed by an engineering or surveying firm employed by the Developer and capable of performing such work. The engineer or

surveyor directing and/or performing such work shall be currently licensed by the State of Washington to perform said tasks.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

### **5.07 Trench Excavation**

- A. Clearing and grubbing where required shall be performed within the easement or public right-of-way as permitted by the City and/or governing agencies. Debris resulting from the clearing and grubbing shall be disposed of by the owner or contractor in accordance with the terms of all applicable permits.
- B. Trenches shall be excavated to the line and depth designed by the City and per City standards. Except for unusual circumstances where approved by the City, the trench sides shall be excavated vertically and the trench width shall be excavated only to such widths as are necessary for adequate working space as allowed by the governing agency and in compliance with all safety requirements of the prevailing agencies. See Detail. The trench shall be kept free from water until joining is complete. Surface water shall be diverted so as not to enter the trench. The Contractor shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out.
- C. The Contractor shall perform all excavation of every description and whatever substance encountered and boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth 6 inches below storm line grade. Where materials are removed from below the pipeline grade, the trench shall be backfilled to grade with material satisfactory to the City and thoroughly compacted.
- D. Trenching and shoring operations shall not proceed more than 100 feet in advance of pipe laying without specific written approval of the City, and shall be in conformance with Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standard.
- E. The bedding course shall be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel. The bell holes shall be excavated with hand tools to sufficient size to facilitate the construction of pipe joints.

**5.08 Bedding**

Gravel backfill for pipe bedding shall be installed in conformance with Section 2-09 of the Standard Specifications (WSDOT).

Gravel backfill for pipe bedding shall consist of crushed, processed, or naturally occurring granular material. It shall be essentially free from various types of wood waste or other extraneous or objectionable materials. It shall have such characteristics of size and shape that it will compact readily and shall meet the following specifications for grading and quality:

<u>Sieve Size</u>	<u>Percent Passing*</u>
3/4" Square	100
3/8" Square	95-100
U.S. No. 8	0-10
U.S. No. 200	0-3
Sand Equivalent	35 MIN.

\*All percentages are by weight.

**5.09 Backfilling**

Backfilling and surface restoration shall closely follow installation of pipe so that not more than 100 feet is left exposed during construction hours without approval of the City. Selected material shall be placed and compacted around and under the storm drain by hand tools. Special precautions should be provided to protect the pipe to a point 12 inches above the crown of the pipe. The remaining backfill shall be compacted to 95 percent of the maximum density in traveled areas, 90 percent outside driveway, roadways, road prism, shoulders, parking or other traveled areas. Where governmental agencies other than the City have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of the agency having jurisdiction. Typically, trench sections crossing existing roadways, in roadway "prisms" or beneath traffic bearing areas shall be backfilled and compacted with 5/8-inch minus crushed rock. Due to localized conditions, the City may allow/permit the backfill of the trench section with suitable excavated material, as determined by the City, or if this material is not available from trenching operations, the City may order the placing and compaction of bank run gravel conforming with Section 9-03.19 of the Standard Specifications or controlled density fill (CDF) conforming with Section 2-09.3(1)E of the Standard Specifications for backfilling the trench. All excess material shall be loaded and hauled to waste.

**5.10 Cleaning and Testing**

Upon completion of work of the constructed storm drainage system shall be cleaned and tested in accordance with Section 7-04.3(1) or the Standard Specifications.

All lines shall be flushed clean of all debris prior to acceptance. The debris shall be intercepted and collected at the nearest downstream point of access. The material shall then be waste-hauled to an approved dump site.

Water for flushing shall be made available and obtained from the City. However, the City reserves the right to operate all hydrants at times and locations convenient to their schedule and available personnel.

### **5.11 Inspection**

The Contractor shall request for inspection a minimum of 48 hours prior to the Contractor's scheduled need. Inspection shall be required for the following items of work:

1. Pipe and bedding installation.
2. Backfill and compaction.
3. Grouting catch basins.

Upon completion of the project all storm sewer install shall be inspected with television inspection equipment. The Contractor shall provide the City with a copy of the inspection and shall have the City present during the television inspection.

### **5.12 Street Patching and Restoration**

See Chapter 4 for requirements regarding street patching and trench restoration.

### **5.13 Erosion Control**

The detrimental effects of erosion and sedimentation shall be minimized by conforming with the following general principles:

- A. Soil shall be exposed for the shortest possible time.
- B. Reducing the velocity and controlling the flow of runoff.
- C. Detaining runoff on the site to trap sediment.
- D. Releasing runoff safely to downstream areas.

In applying these principles, the Developer and/or Contractor shall provide for erosion control by conducting work in workable units; minimizing the disturbance to cover crop materials; providing mulch and/or temporary cover crops, sedimentation basins, and/or diversions in critical areas during construction; controlling and conveying runoff; and establishing permanent vegetation and installing erosion control structures as soon as possible. All erosion control shall conform to the MCC and 2005 WSDOE Manual.

A. Trench Mulching

Where there is danger of backfill material being washed away due to steepness of the slope along the direction of the trench, backfill material shall be compacted and held in place by covering the disturbed area with straw and held with a covering of jute matting or wire mesh anchored in place.

B. Cover-Crop Seeding

A cover crop shall be sown in all areas excavated or disturbed during construction that were not paved, landscaped and/or seeded prior to construction. Areas landscaped and/or seeded prior to construction shall be restored to their original or superior condition.

Cover-crop seeding shall follow backfilling operations.

The Developer and/or Contractor shall be responsible for protecting all areas from erosion until the cover crop affords such protection. The cover crop shall be re-seeded if required and additional measures taken to provide protection from erosion until the cover crop is capable of providing protection.

During winter months, the Contractor may postpone seeding, if conditions are such that the seed will not germinate and grow. The Developer and/or Contractor will not, however, be relieved of the responsibility of protecting all areas until the cover crop has been sown and affords protection from erosion.

The cover crop shall be sown at a rate of 10 to 15 pounds of seed per acre using a hand or power operated mechanical seeder capable of providing a uniform distribution of seed.

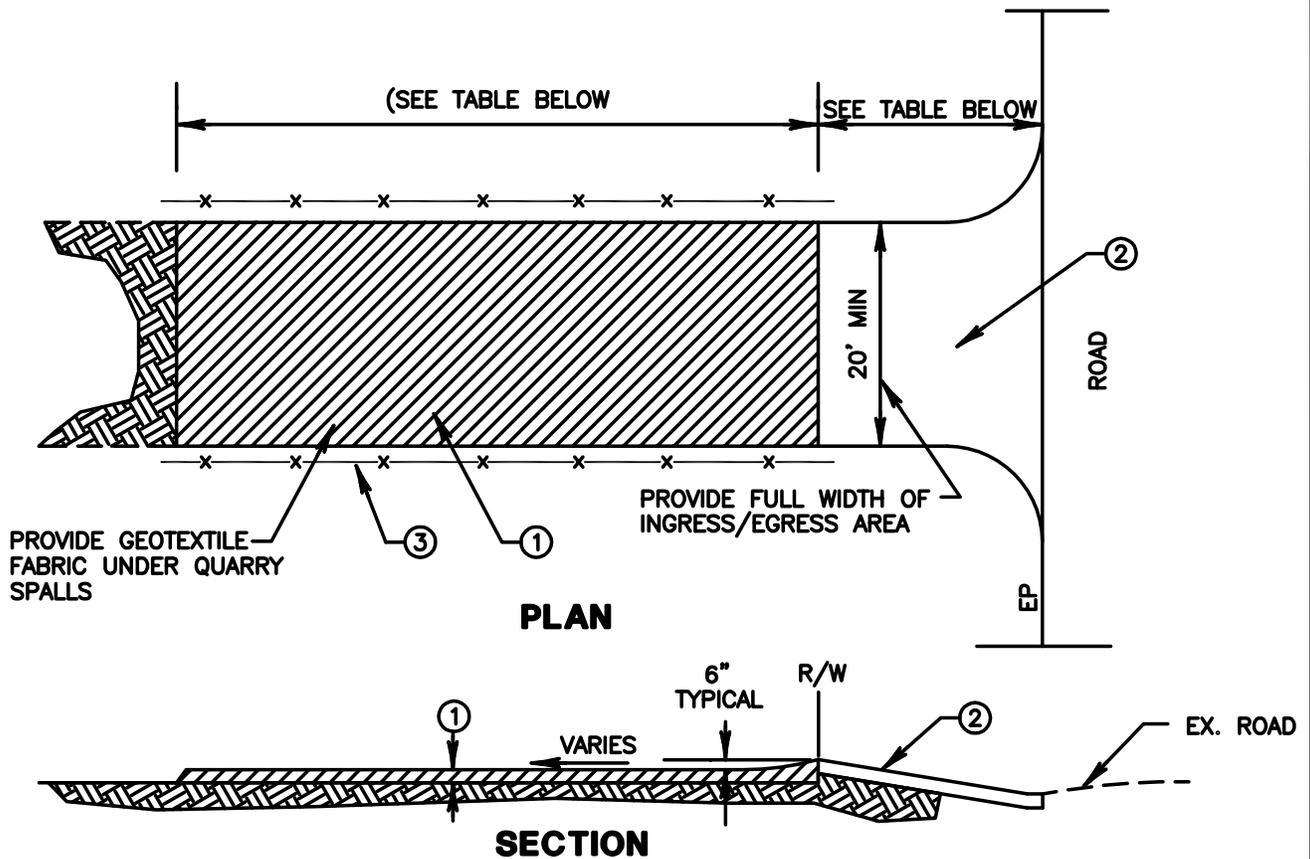
TITLE OF DRAWING

DRAWING NO.

**EROSION CONTROL DETAILS**

Model Site Plan 3 Acres and Smaller	ER-1
Stabilized Construction Entrance	ER-2
Sediment Trap Earth Berm	ER-3
Riser Piping Element	ER-4
Not Used	ER-5
Interceptor Ditch with Rock Check Dams	ER-6
Straw Bale Dam	ER-7
Silt Fence	ER-8
Storm Drain Inlet Protection	ER-9
Erosion Control Blanket	ER-10
Pipe Slope Drain	ER-11





PROJECT SIZE	LENGTH OF	
	QUARRY SPALLS	ATB
< 1/4 ACRE	30	0
< 1 ACRE	50	0
< 3 ACRE	100	0
> 3 ACRE	100	50

**LEGEND**

- ① 4" TO 8" COMMERCIAL, 4" TO 6" RESIDENTIAL QUARRY SPALLS AS SPECIFIED IN SECTION 9-13.6 OF THE WSDOT STANDARD SPECIFICATIONS. SEE ABOVE TABLE FOR REQUIRED LENGTH.
- ② ATB DRIVEWAY RAMP, 6' MINIMUM COMPACTED DEPTH. SEE TABLE ABOVE FOR REQUIRED LENGTH.
- ③ INSTALL ORANGE BARRIER FENCE TO DIRECT TRAFFIC ONTO CONSTRUCTION ENTRANCE

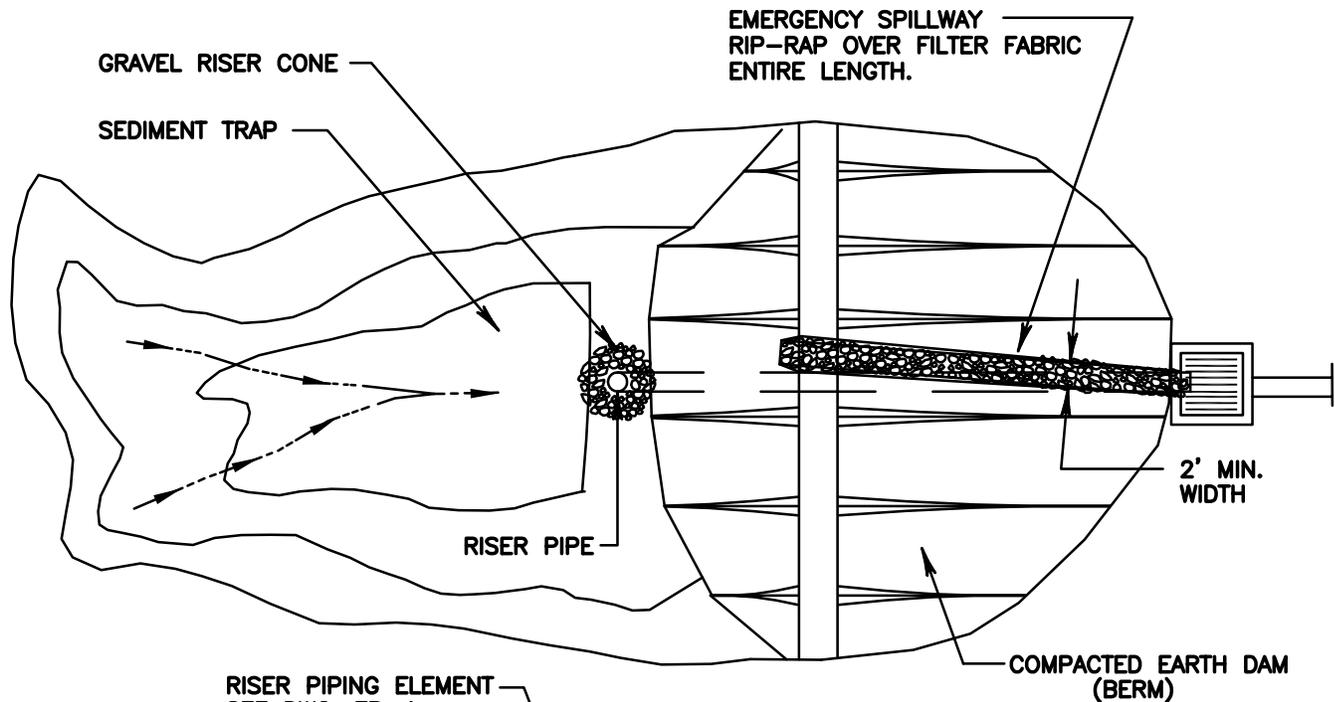
**NOTES:**

- SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
- MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS USED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

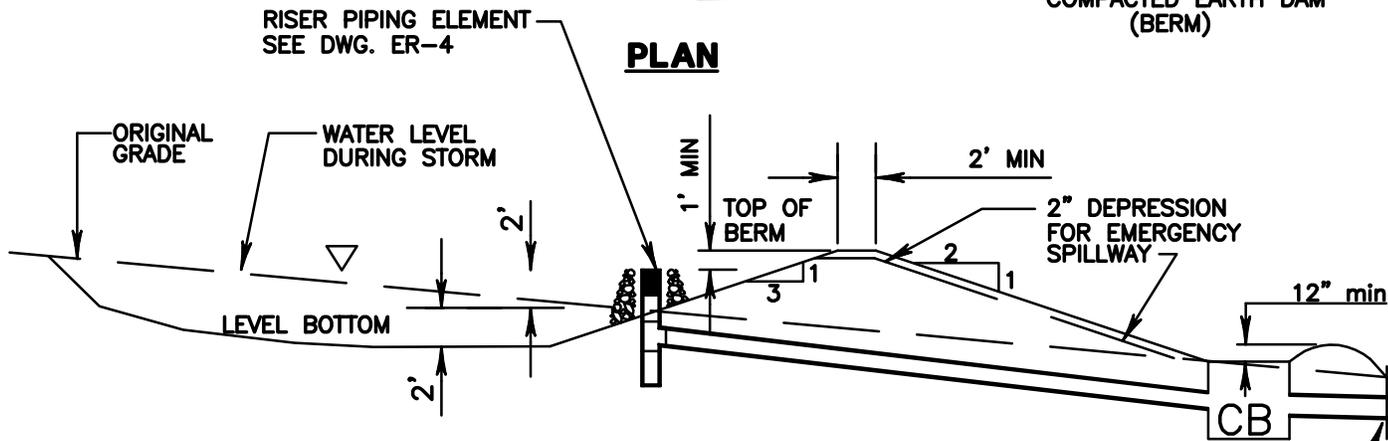


**CITY OF MILTON**  
**MILTON STABILIZED CONSTRUCTION**  
**ENTRANCE**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>ER-2</b>



**PLAN**

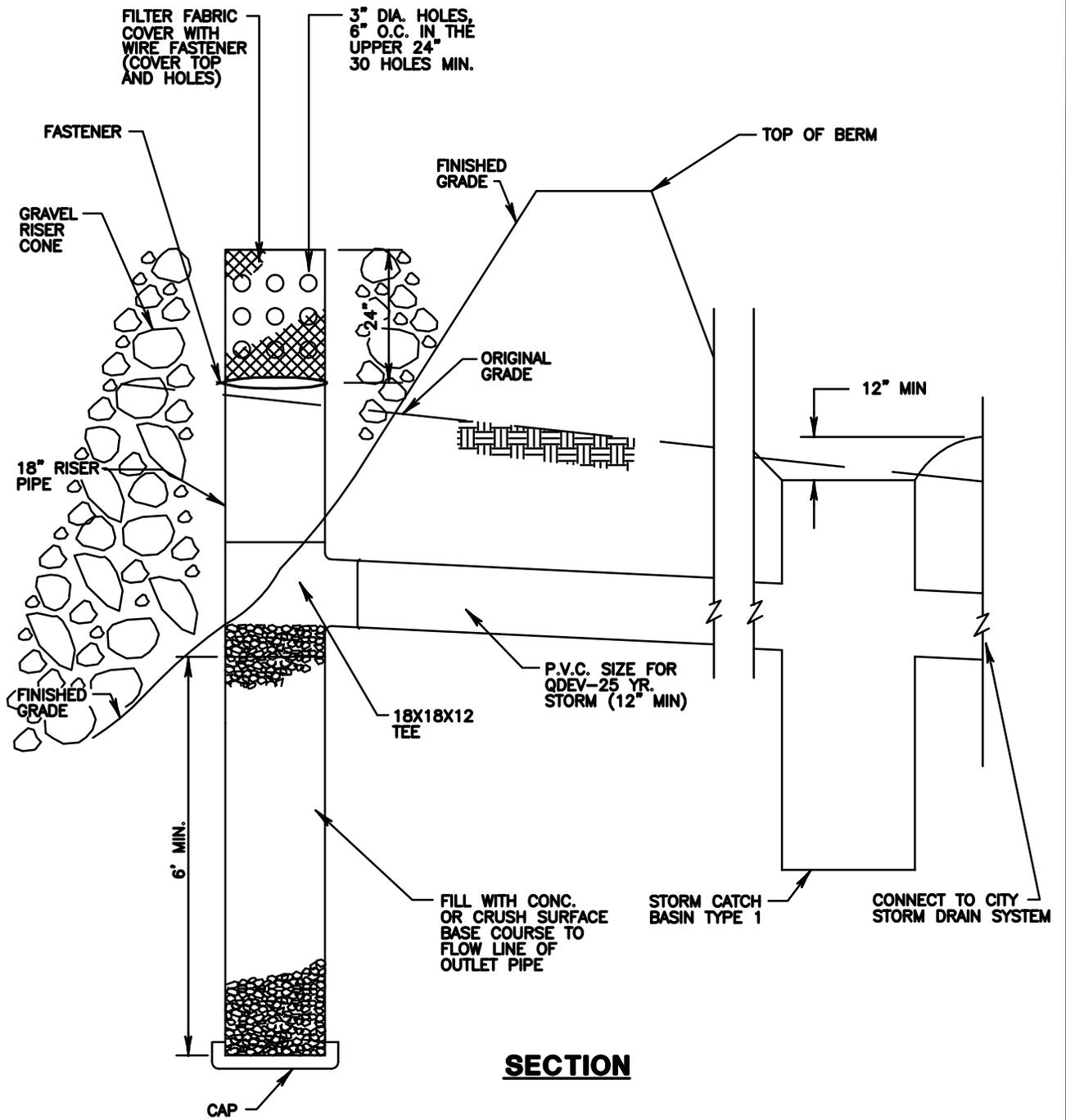


**PROFILE**

**NOTES:**

1. SHAPE OF SEDIMENTATION POND MAY VARY TO FIT DRAINAGE AREA AND TERRAIN. MODIFY AS NECESSARY TO ENSURE SATISFACTORY TRAPPING OF SEDIMENT.
2. TO AID IN DETERMINING SEDIMENT DEPTH, ALL TRAPS SHALL HAVE A STAFF GAUGE WITH A PROMINENT MARK 1 FOOT ABOVE THE BOTTOM OF THE TRAP. CONTRACTOR SHALL RESTORE THE TRAP BACK TO ORIGINAL DEPTH AND SIZE WHEN THE SEDIMENT REACHES THIS LEVEL.
3. FOR USE ON SITES LESS THAN 3 ACRES IN SIZE.

		
<p><b>CITY OF MILTON SEDIMENT TRAP EARTH BERM</b></p>		
REVISION DATE:  <p style="text-align: center;">3/30/07</p>	SCALE:  <p style="text-align: center;">NONE</p>	DWG. NO.  <p style="text-align: center;"><b>ER-3</b></p>



**SECTION**



**CITY OF MILTON  
RISER PIPING ELEMENT**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ER-4**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

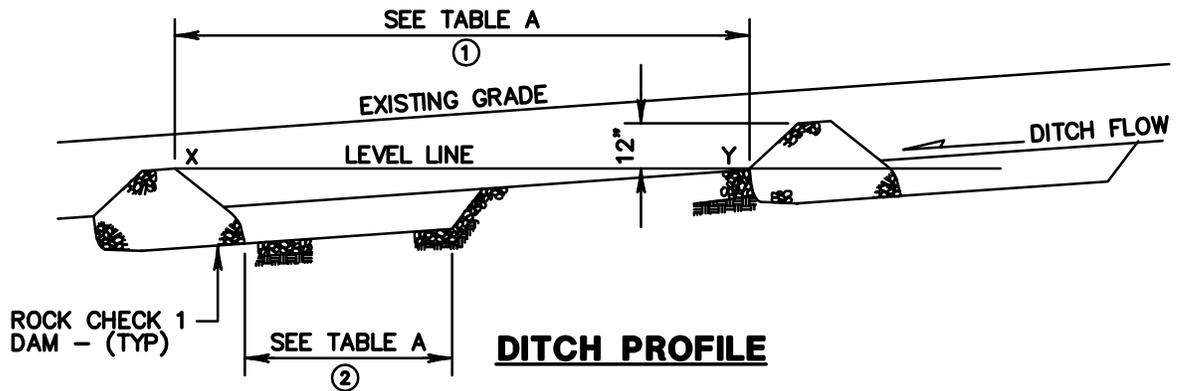
10/19/09

SCALE:

NONE

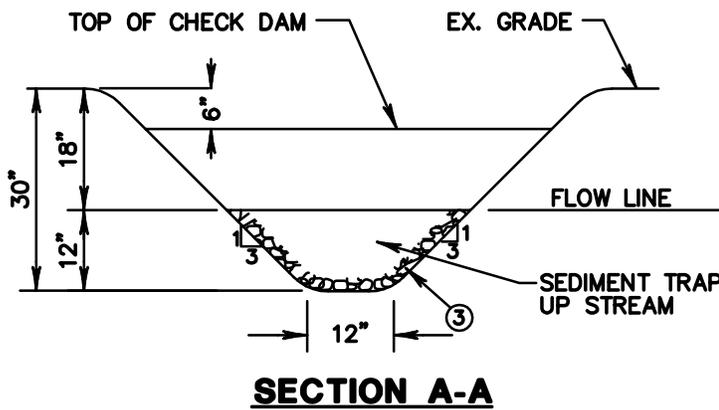
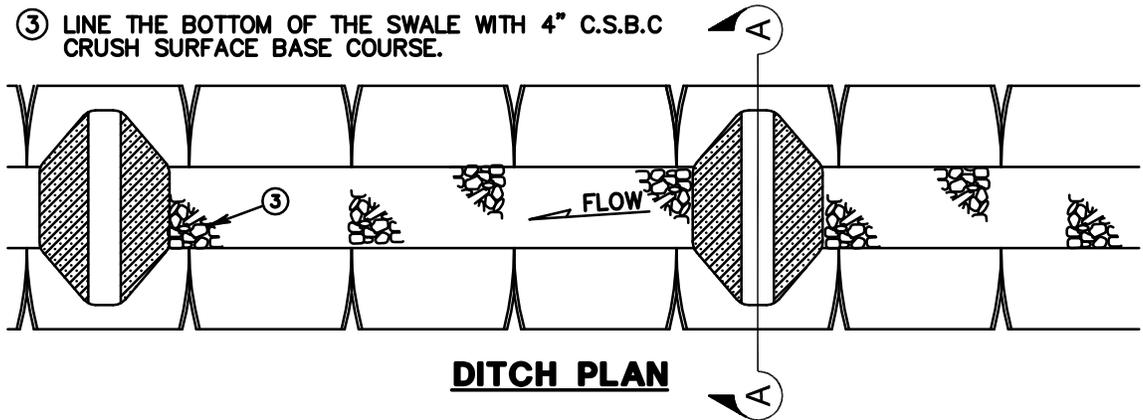
DWG. NO.

**ER-5**



**DETAIL NOTES:**

- ① DAM SPACING
- ② SEDIMENT TRAP LENGTH
- ③ LINE THE BOTTOM OF THE SWALE WITH 4" C.S.B.C CRUSH SURFACE BASE COURSE.



**TABLE A**

SLOPE FT/FT	①	②
1:100	100	10
1:50	50	10
1:25	25	5
1:20	20	4
1:15	15	3
1:10	10	2
1:5	5	0

**GENERAL NOTES:**

- 1. SUMP BEHIND ROCK CHECK DAM SHALL BE INSPECTED DAILY, AND CLEANED WHEN COLLECTED DEBRIS EXCEEDS 1/2 OF ITS DEPTH.



**CITY OF MILTON  
INTERCEPTOR DITCH  
WITH ROCK CHECK DAMS**

REVISION DATE:

3/30/07

SCALE:

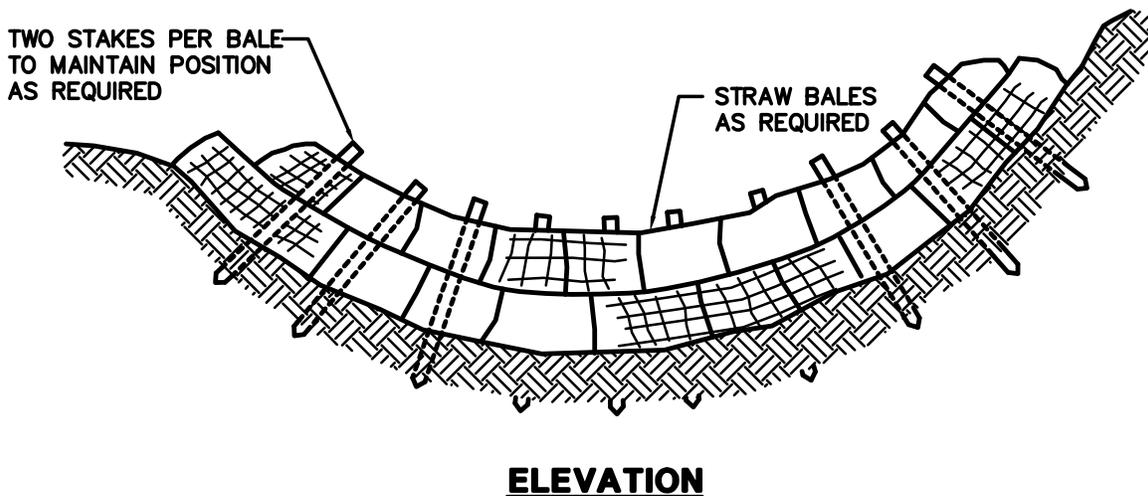
NONE

DWG. NO.

**ER-6**

**NOTES:**

1. WHERE POSSIBLE, MAINTAIN NATURAL VEGETATION FOR SILT CONTROL.
2. TEMPORARY SILTATION AND DETENTION PONDS TO BE CONSTRUCTED BY PLACING STRAW BALES OR FILTER FABRIC FENCES ACROSS SWALES. PONDS SHALL BE CONSTRUCTED TO PROVIDE 2 CUBIC FEET OF SETTLING POND PER 50 SQUARE FEET OF CLEARED AREA TRIBUTARY TO THE POND.
3. FILTER FABRIC FENCES OR STRAW BALES TO BE LOCATED AT THE BOTTOM OR TOE OF NEWLY EXCAVATED SLOPES AS INDICATED ON THE PLANS.
4. CONSTRUCT ROCK CHECK DAMS IN OPEN DITCHES AS REQUIRED
5. TO PROVIDE EROSION CONTROL ON STEEP AND NEWLY GRADED SLOPES, CONTRACTOR SHALL EMPLOY EROSION CONTROL BLANKET OR CLEAR PLASTIC IMMEDIATELY AFTER GRADING SLOPES AND THE APPLICATION OF SEEDING. THIS SHALL BE DONE AND IN PLACE BEFORE THE FALL RAINFALL BEGINS.
6. ALL TEMPORARY EROSION CONTROL STRUCTURES SHALL BE MAINTAINED IN SATISFACTORY CONDITION UNTIL CLEARING AND/OR CONSTRUCTION IS COMPLETED AND SURFACE RESTORATION HAS BEEN COMPLETED.
7. RETURN SILTATION CONTROL AREAS TO ORIGINAL GROUND CONDITIONS.



**CITY OF MILTON**  
**STRAW BALE DAM**

REVISION DATE:

3/30/07

SCALE:

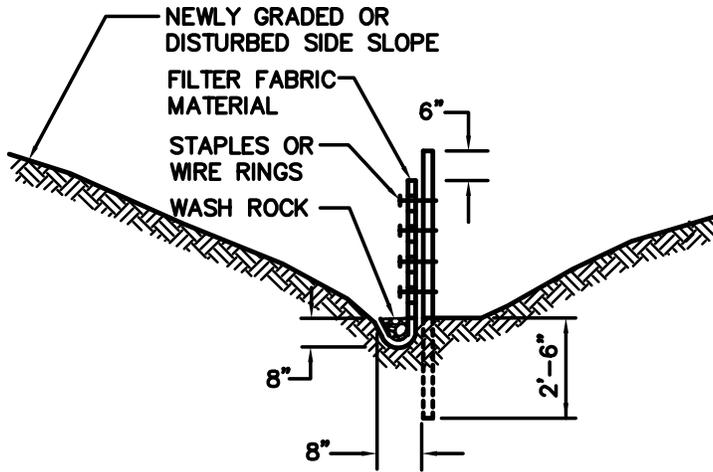
NONE

DWG. NO.

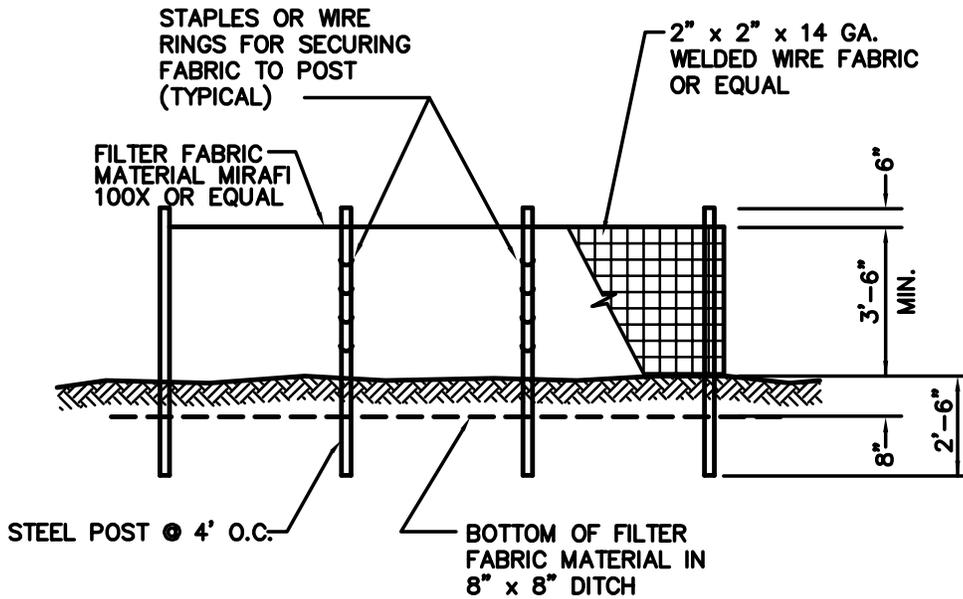
**ER-7**

**NOTES:**

1. WHERE POSSIBLE, MAINTAIN NATURAL VEGETATION FOR SILT CONTROL
2. TEMPORARY SILTATION TO BE CONSTRUCTED BY PLACING FILTER FABRIC FENCES ACROSS SWALES UTILIZING FILTER SYSTEM PRIOR TO DISCHARGE
3. ALL TEMPORARY SILTATION SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED AND SURFACE RESTORATION HAS BEEN COMPLETED
4. RETURN SILTATION CONTROL AREAS TO ORIGINAL GROUND CONDITIONS, UNLESS SPECIFICALLY DIRECTED OTHERWISE BY THE CITY



**CROSS SECTION**



**ELEVATION**

**SILT FENCE**



CITY OF MILTON

SILT FENCE

REVISION DATE:

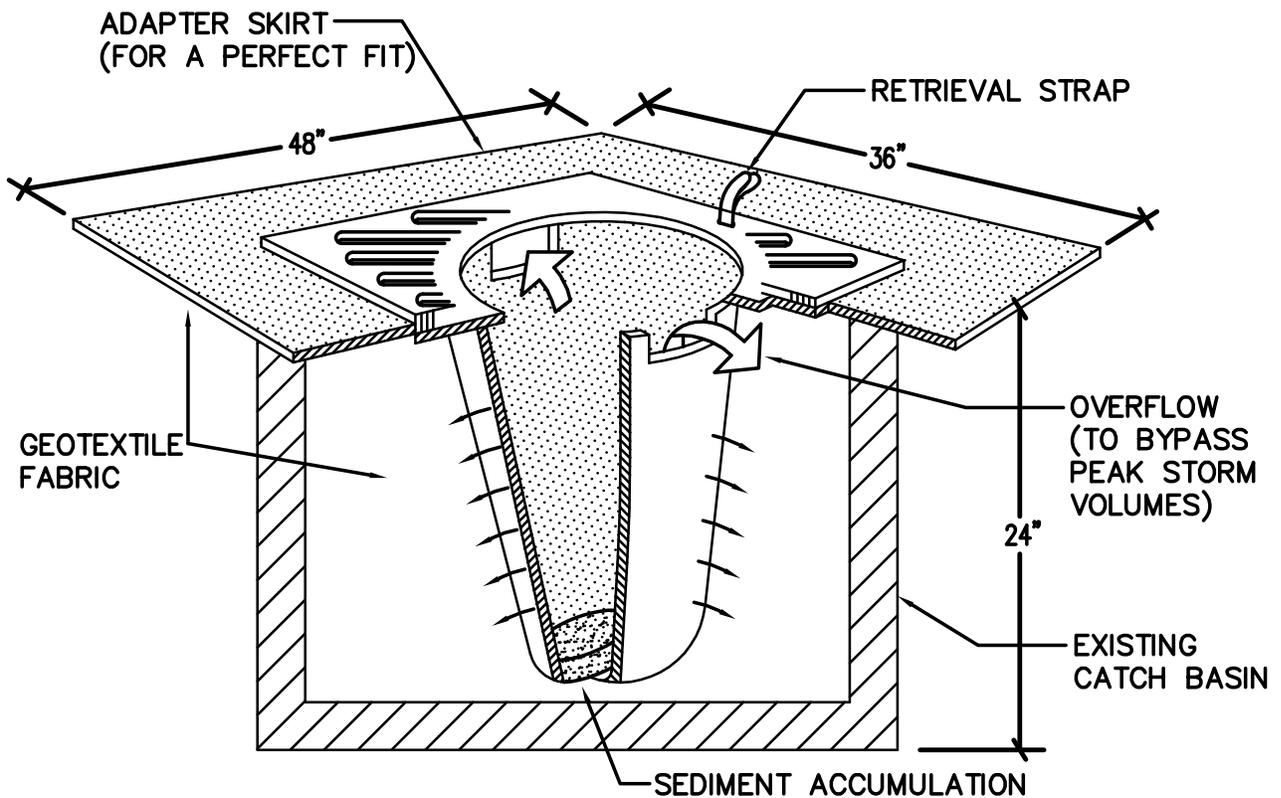
3/30/07

SCALE:

NONE

DWG. NO.

ER-8



PROVIDE CATCH BASIN SEDIMENT PROTECTION WITH  
 STREAMGUARD BASIN INSERT #3003, FROM FOSS  
 ENVIRONMENTAL OR APPROVED EQUAL  
 7440 W. MARGINAL WAY S.  
 SEATTLE, WA 98108-4141  
 PHONE: 1-800-909-3677



**CITY OF MILTON  
 STORM DRAIN INLET  
 PROTECTION**

REVISION DATE:

3/30/07

SCALE:

NONE

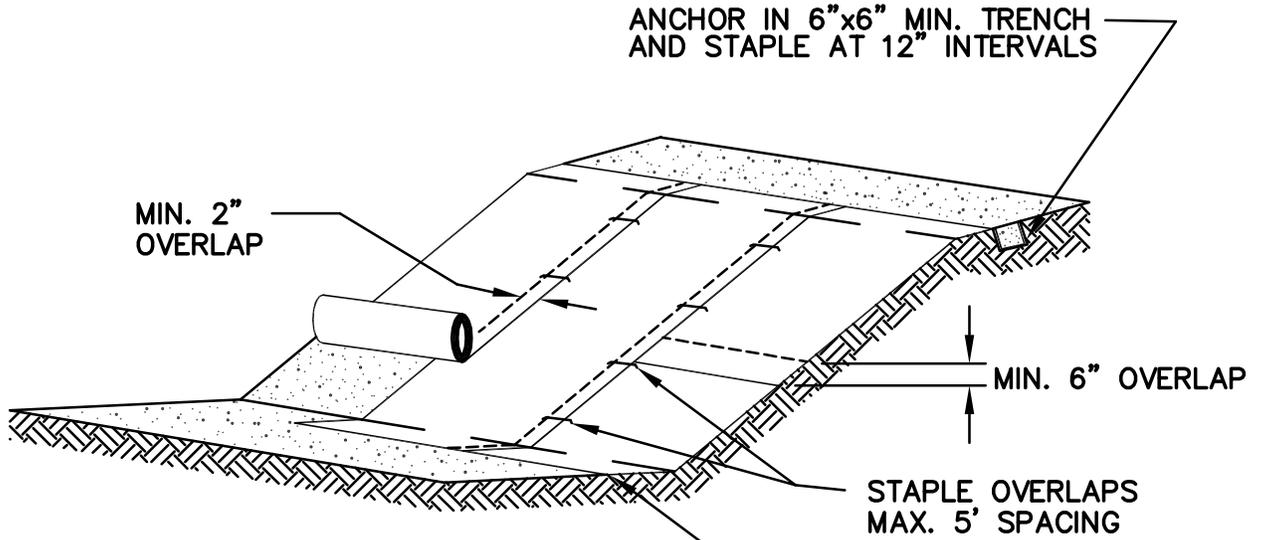
DWG. NO.

**ER-9**

SLOPE SURFACE SHALL BE SMOOTH BEFORE  
PLACEMENT FOR PROPER SOIL CONTACT

STAPLING PATTERN AS PER  
MANUFACTURER'S RECOMMENDATIONS

IF THERE IS A BERM AT THE  
TOP OF SLOPE, ANCHOR  
UPSLOPE OF THE BERM



BRING MATERIAL DOWN TO A LEVEL AREA, TURN  
THE END UNDER 4" AND STAPLE AT 12" INTERVALS

LIME, FERTILIZE AND SEED BEFORE INSTALLATION.  
PLANTING OF SHRUBS, TREES, ETC. SHOULD OCCUR  
AFTER INSTALLATION.

DO NOT STRETCH BLANKETS/MATTINGS TIGHT –  
ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES

FOR SLOPES LESS THAN 3H:1V, ROLLS  
MAY BE PLACED IN HORIZONTAL STRIPS



CITY OF MILTON  
EROSION CONTROL  
BLANKET

REVISION DATE:

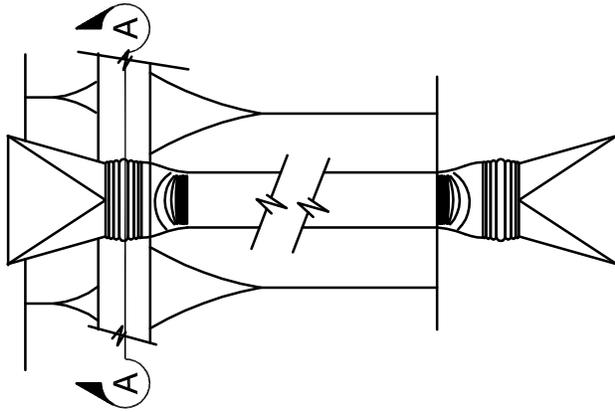
3/30/07

SCALE:

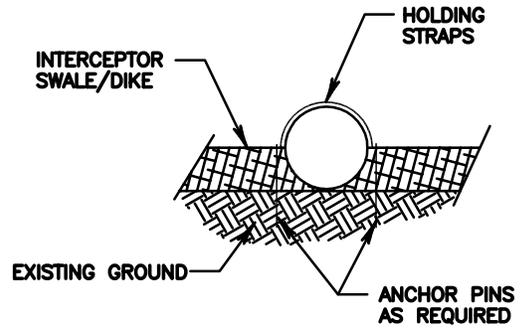
NONE

DWG. NO.

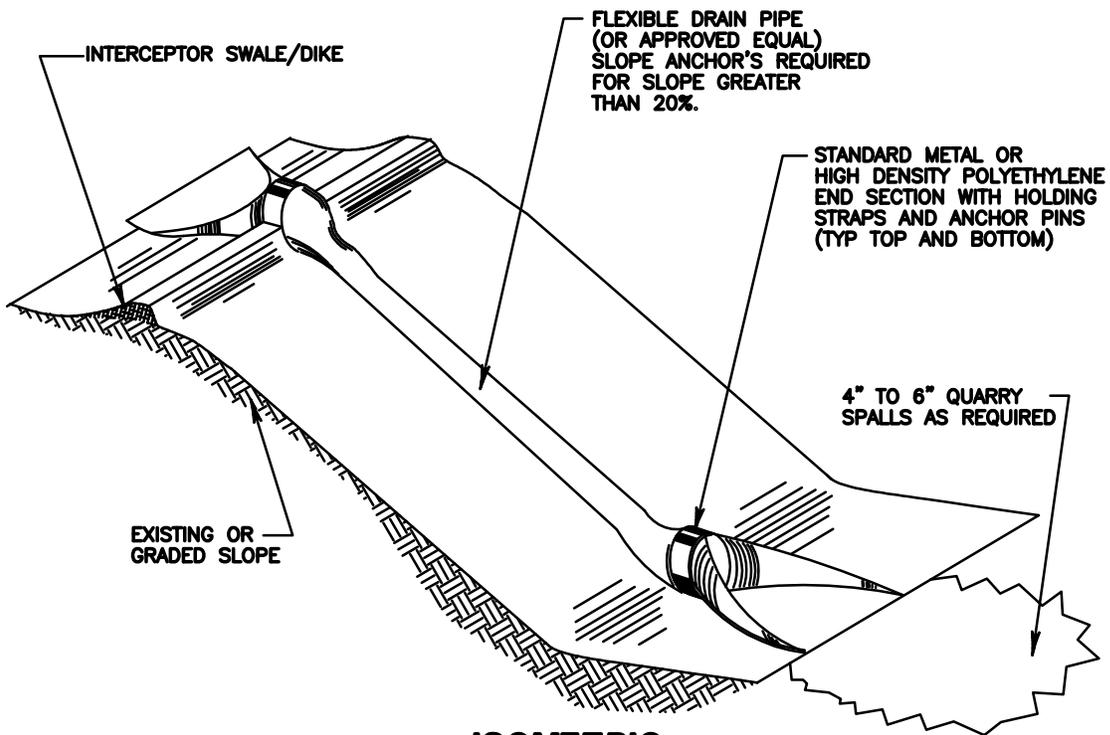
ER-10



**PLAN**



**SECTION A-A**



**ISOMETRIC**



**CITY OF MILTON  
PIPE SLOPE DRAIN**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**ER-11**

TITLE OF DRAWING

DRAWING NO.

**STORM SEWER DETAILS**

Rigid Storm Drain Pipe Trench Section	SW-1
Flexible Storm Drain Pipe Trench Section	SW-2
Not Used	SW-3
Catch Basin - Type 1	SW-4
Catch Basin - Type 1L	SW-5
Catch Basin - Type 2 48", 54", 60", 72", and 96"	SW-6
Solid Storm Drain Cover	SW-7
Parking Lot Area Grate	SW-8
Vaned Grate	SW-9
Standard Frame Installation	SW-10
Through Curb Inlet Frame	SW-11
Through Curb Inlet Frame and Grate with Vertical Curb	SW-12
24" Bolt-Locking Manhole and Ring Cover	SW-13
Not Used	SW-14
Soil/Cement Pipe Anchor	SW-15
Riprap/Ditch Detail	SW-16
Trash Rack Debris Barrier	SW-17
Beveled End Pipe Section	SW-18
Debris Cage	SW-19
Flow Restrictor Tee Type	SW-20
Restrictor Riser	SW-21
Secondary Orifice	SW-22
Shear Gate	SW-23
Detention Pipe	SW-24
Detention Pipe Access	SW-24B
Detention Pond with Biofiltration Swale	SW-25
Diffuser Pipe Detail	SW-26
Diffuser Pipe Detail	SW-27
Wetland Sign Installation	SW-28
Stream Sign Installation	SW-29
Detention Pond Sign Installation	SW-30

FINISHED GRADE OR SUBGRADE

BACKFILL MATERIAL CONSISTING OF CRUSHED ROCK, BANKRUN GRAVEL FOR TRENCH BACKFILL OR SUITABLE EXCAVATED MATERIAL AS REQUIRED, AND DIRECTED/APPROVED BY CITY

SPECIAL PRECAUTIONS TO PROTECT PIPE TO THIS LEVEL

HAND-PLACED, COMPACTED SELECT MATERIAL

RIGID STORM DRAIN PIPE AS SPECIFIED PER CITY STANDARDS

GRAVEL BACKFILL FOR PIPE BEDDING

FOUNDATION GRAVEL AS REQUIRED AND APPROVED BY THE CITY

UNDISTURBED EARTH

DEPTH VARIES

1'-0"

1/2" PIPE O.D.

SEE NOTE 2

VARIES

MAXIMUM TRENCH WIDTH

SEE NOTE 3

1. BACKFILL AND PIPE BEDDING MATERIAL SHALL CONFORM TO WSDOT STANDARDS
2. 4-INCHES FOR PIPE 18-INCH DIA. AND LESS  
6-INCHES FOR PIPE GREATER THAN 18-INCH DIA.
3. WIDTH SHALL BE 2'-6" FOR UP TO AND INCLUDING 12" PIPE. FOR PIPE LARGER THAN 12" DIAMETER TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 16".
4. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.



**CITY OF MILTON  
RIGID STORM DRAIN PIPE  
TRENCH SECTION**

REVISION DATE:

11/14/07

SCALE:

NONE

DWG. NO.

**SW-1**

FINISHED GRADE OR  
SUB-GRADE

BACKFILL MATERIAL CONSISTING  
OF CRUSHED ROCK, BANKRUN  
GRAVEL FOR TRENCH BACKFILL  
OR SUITABLE EXCAVATED  
MATERIAL AS REQUIRED, AND  
DIRECTED/APPROVED BY CITY

SPECIAL PRECAUTIONS TO  
PROTECT PIPE TO THIS LEVEL

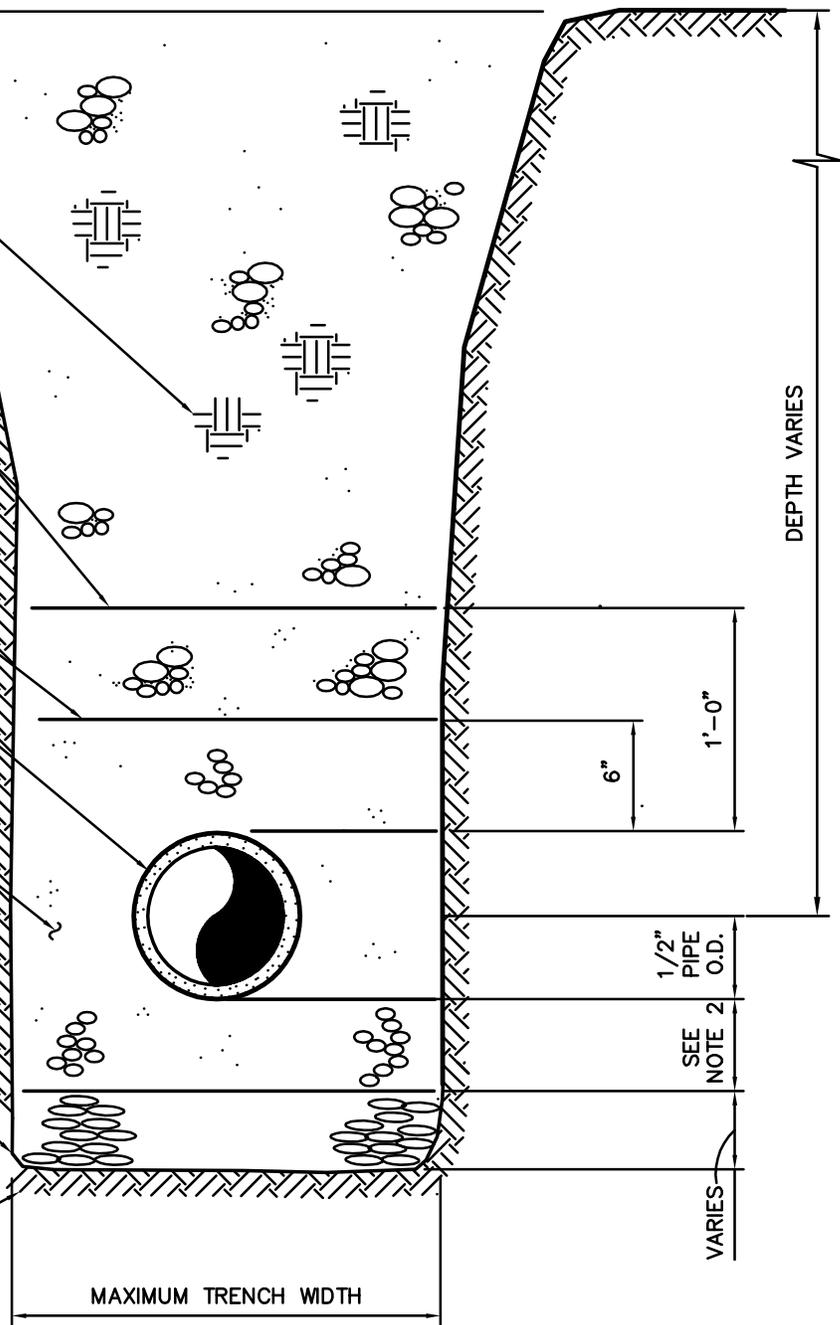
TOP OF PIPE BEDDING

FLEXIBLE STORM DRAIN PIPE AS  
SPECIFIED PER CITY STANDARDS

GRAVEL BACKFILL FOR PIPE  
BEDDING

FOUNDATION GRAVEL AS  
REQUIRED AND APPROVED BY  
THE CITY

UNDISTURBED EARTH



MAXIMUM TRENCH WIDTH

SEE NOTE 3

DEPTH VARIES

1/2" PIPE  
O.D.

SEE  
NOTE 2

VARIES

NOTES:

1. BACKFILL MATERIAL SHALL CONFORM TO WSDOT STANDARDS
2. 4-INCHES FOR PIPE 18-INCH DIA. AND LESS 6-INCHES FOR PIPE GREATER THAN 18-INCH DIA.
3. WIDTH SHALL BE 2'-6" FOR UP TO AND INCLUDING 12" PIPE. FOR PIPE LARGER THAN 12" DIAMETER TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 16".
4. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.



CITY OF MILTON  
FLEXIBLE STORM DRAIN  
PIPE TRENCH SECTION

REVISION DATE:

11/14/07

SCALE:

NONE

DWG. NO.

SW-2

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

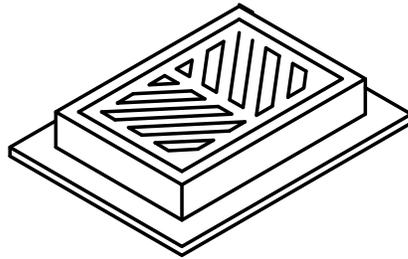
SCALE:

NONE

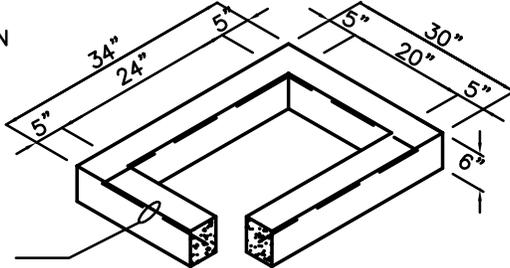
DWG. NO.

**SW-3**

FRAME AND GRATE SEE  
SEC. 7.05 AND  
APPLICABLE DWGS.

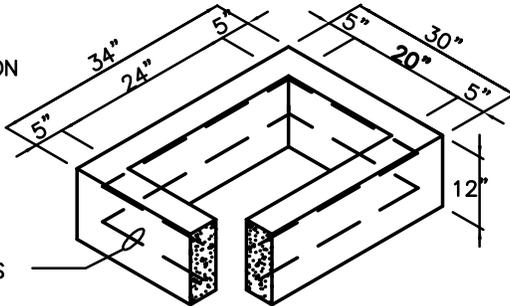


6" RISER SECTION



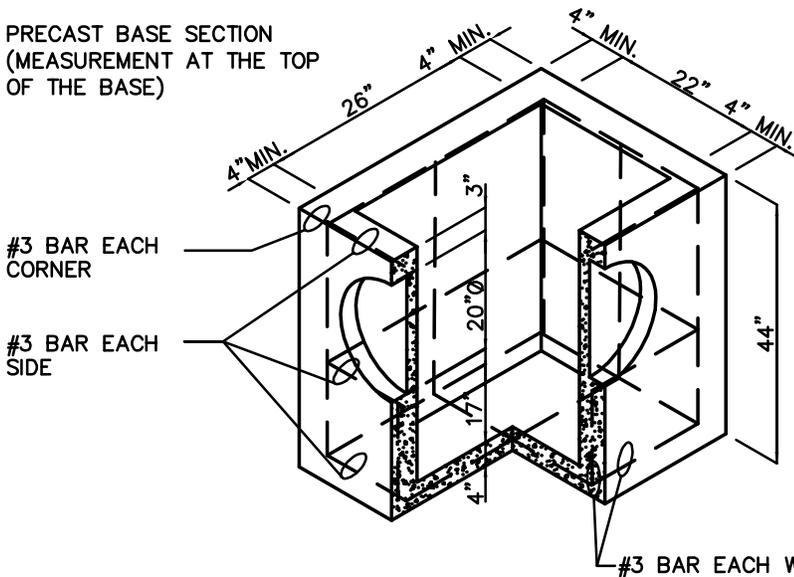
1 #3 BAR HOOP

12" RISER SECTION



2 #3 BAR HOOPS

PRECAST BASE SECTION  
(MEASUREMENT AT THE TOP  
OF THE BASE)



#3 BAR EACH  
CORNER

#3 BAR EACH  
SIDE

#3 BAR EACH WAY

**NOTES:**

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 7-05 WSDOT/APWA STANDARD SPECIFICATIONS, UNLESS OTHERWISE SHOWN ON PLANS.

2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.

3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.

4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.

5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS CATCH BASIN WALL THICKNESS.

6. ROUND KNOCKOUTS MAY BE ON ALL 4 SIDES, WITH MAX. DIAM. OF 20". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE.

7. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".

8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2"/FT.

9. CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.

10. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

11. FOR CATCH BASINS IN PARKING LOTS REFER TO WSDOT/APWA STANDARD DWG. B1-b.

12. EDGE OF RISER OR BRICK SHALL NOT BE MORE THAN 2" FROM VERTICAL EDGE OF BASIN WALL.

CATCH



**CITY OF MILTON**

**CATCH BASIN - TYPE 1**

REVISION DATE:

3/30/07

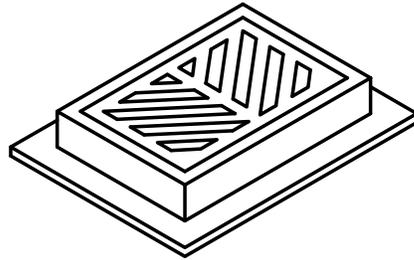
SCALE:

NONE

DWG. NO.

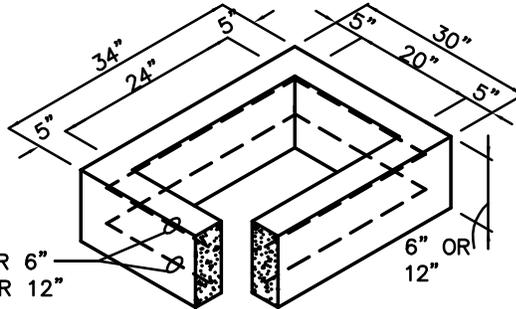
**SW-4**

FRAME AND GRATE



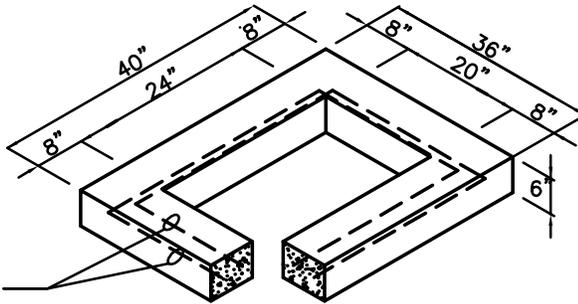
RISER SECTION

- 1 #3 BAR HOOP FOR 6"
- 2 #3 BAR HOOP FOR 12"



6" REDUCING SECTION

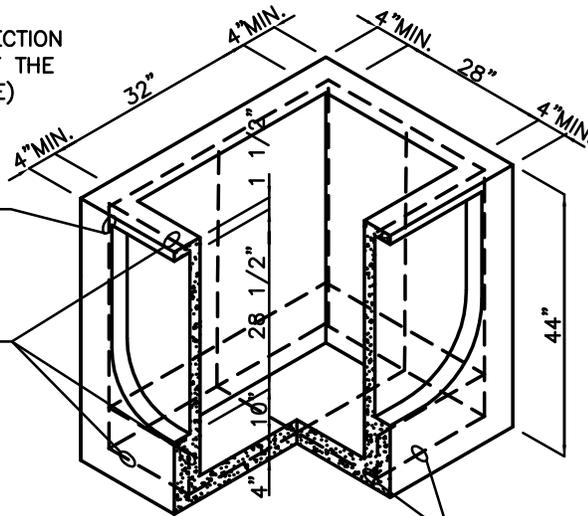
- 2 #3 BAR HOOP



PRECAST BASE SECTION  
(MEASUREMENT AT THE TOP OF THE BASE)

- #3 BAR EACH CORNER

- #3 BAR EACH SIDE



- #3 BAR EACH WAY

NOTES:

CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) & C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.

AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.

ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.

PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.

KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS CATCH BASIN WALL THICKNESS.

KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAX. DIAM. OF 28". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE.

THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2"/FT.

CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.

FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

MAX. DEPTH FROM FINISHED GRADE TO PIPE INVERT SHALL BE 5'-0".

EDGE OF REDUCING SECTION OR BRICK SHALL NOT BE MORE THAN 2" FROM VERTICAL EDGE OF CATCH BASIN WALL.



CITY OF MILTON

CATCH BASIN - TYPE 1L

REVISION DATE:

3/30/07

SCALE:

NONE

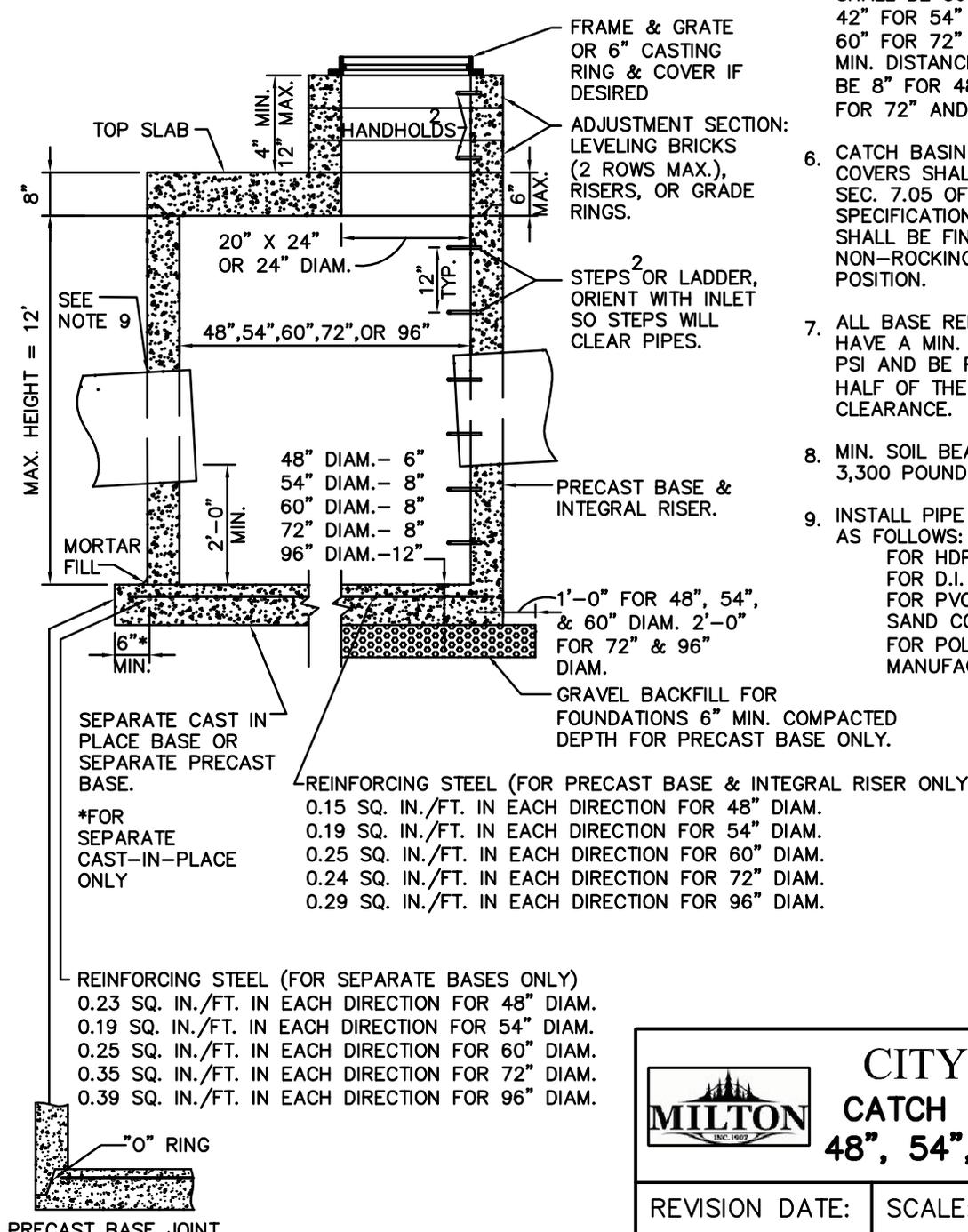
DWG. NO.

SW-5

**NOTES:**

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M199) AND ASTM C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS IN CATCH BASIN SHALL HAVE 6" MIN. CLEARANCE. CATCH BASIN DETAILS. HANDHOLDS SHALL BE PLACED IN ALTERNATING GRADE RINGS OR LEVELING BRICK COURSE WITH A MIN. OF ONE HANDHOLD BETWEEN THE LAST STEP AND TOP TO THE FINISHED GRADE. ALL STEPS AND HANDHOLDS SHALL BE MADE OF POLY PROPYLENE.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE WALL THICKNESS OF 2" MIN. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT. PIPES SHALL BE INSTALLED ONLY IN FACTORY KNOCKOUTS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. KNOCKOUT OR CUTOUT HOLE SIZE SHALL EQUAL PIPE OUTER DIAM. PLUS CATCH BASIN WALL THICKNESS. MAX. HOLE SIZE SHALL BE 36" FOR 48" CATCH BASIN, 42" FOR 54" C.B., 48" FOR 60" C.B., 60" FOR 72" C.B., 84" FOR 96" C.B. MIN. DISTANCE BETWEEN HOLES SHALL BE 8" FOR 48", 54", AND 60" C.B.; 12" FOR 72" AND 96" C.B.

6. CATCH BASIN FRAMES AND GRATES OR COVERS SHALL BE IN ACCORDANCE WITH SEC. 7.05 OF THE STANDARD SPECIFICATIONS. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MIN. CLEARANCE.
8. MIN. SOIL BEARING VALUE SHALL EQUAL 3,300 POUNDS PER SQUARE FOOT.
9. INSTALL PIPE TO MANHOLE CONNECTION AS FOLLOWS:  
 FOR HDPE USE KOR-N-SEAL  
 FOR D.I. USE KOR-N-SEAL  
 FOR PVC USE KOR-N-SEAL OR SAND COLLAR.  
 FOR POLYETHYLENE (ADS) FOLLOW MANUFACTURER RECOMMENDATIONS.



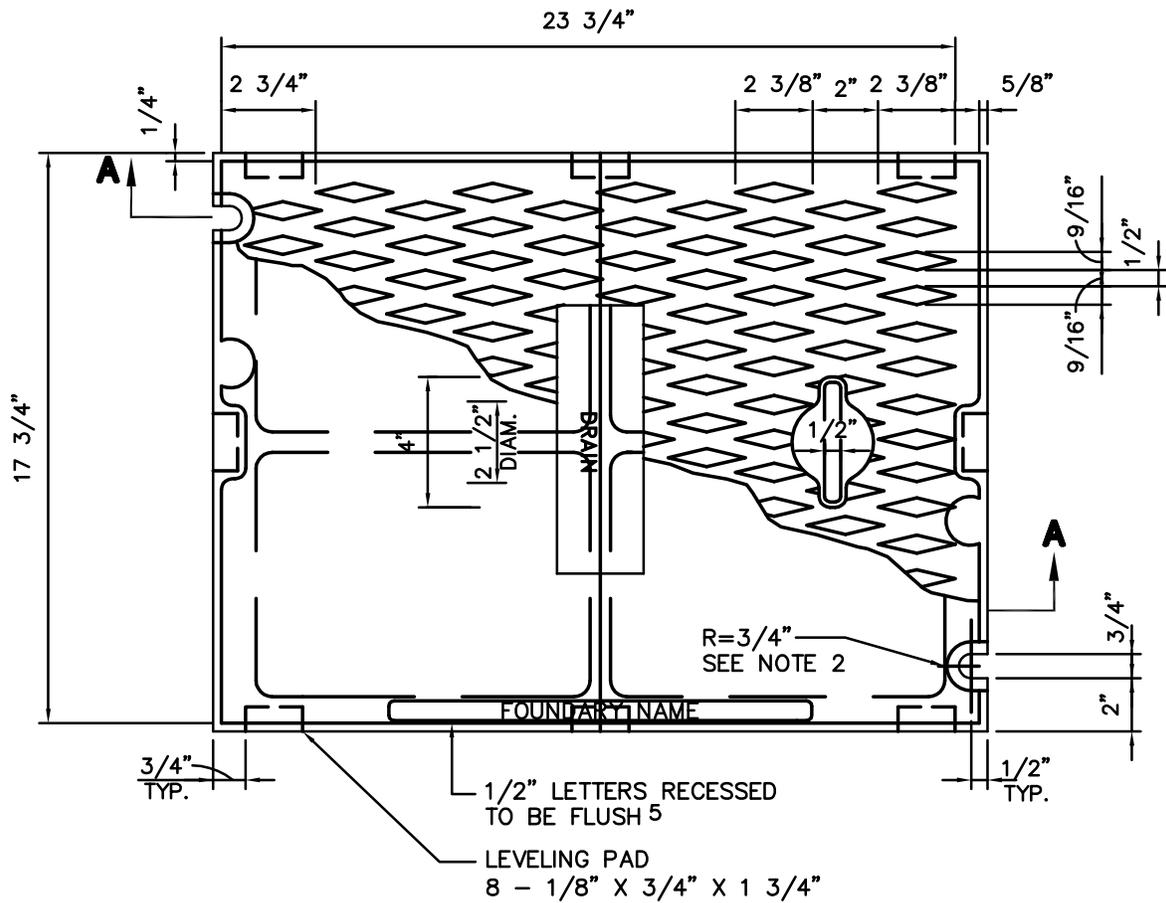


## CITY OF MILTON

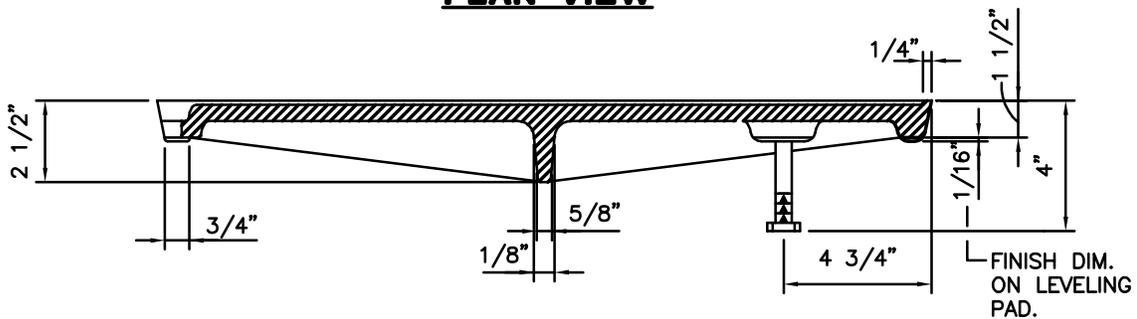
### CATCH BASIN - TYPE 2

### 48", 54", 60", 72", & 96"

REVISION DATE: 11/16/09	SCALE: NONE	DWG. NO. <b>SW-6</b>
----------------------------	----------------	-------------------------



### PLAN VIEW



### SECTION A-A

#### NOTES:

1. USE WITH FRAME DRILLED AND TAPPED FOR LOCKING BOLTS.
2. USE WITH TWO LOCKING BOLTS 5/8"-11 NC STAINLESS STEEL TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 2" LONG.
3. COVER MATERIAL IS CAST IRON PER ASTM A48 CLASS 30.
4. SHALL CONFORM TO SEC. 7.05 OF THE STANDARD SPECIFICATIONS.
5. COVER SHALL HAVE THE WORD "DRAIN" IN 2-INCH RAISED LETTERS.



## CITY OF MILTON SOLID STORM DRAIN COVER

REVISION DATE:

3/30/07

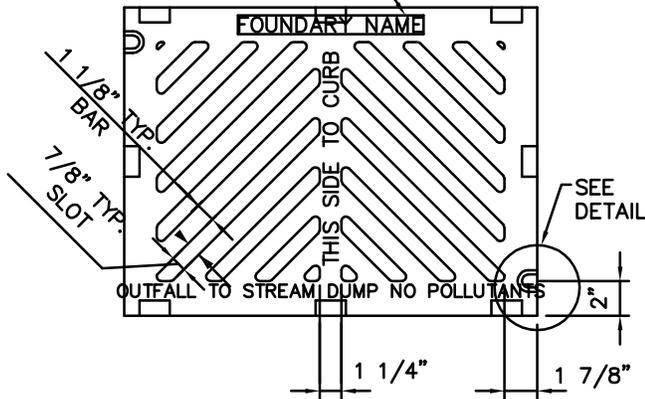
SCALE:

NONE

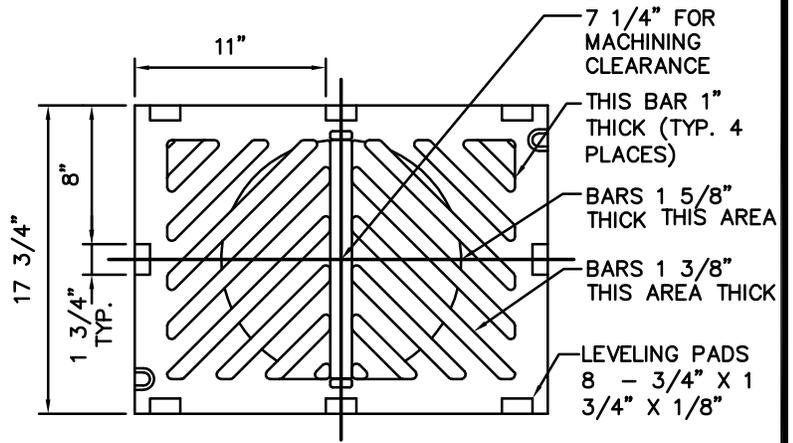
DWG. NO.

**SW-7**

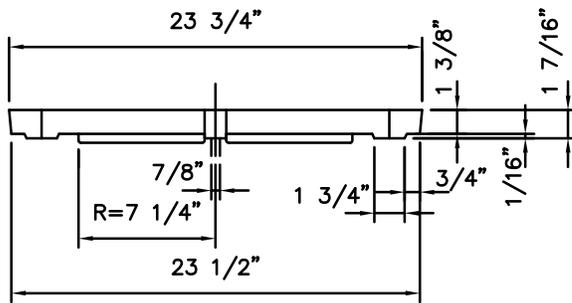
FOUNDARY NAME 1/2"  
LETTERS RECESSED TO  
BE FLUSH



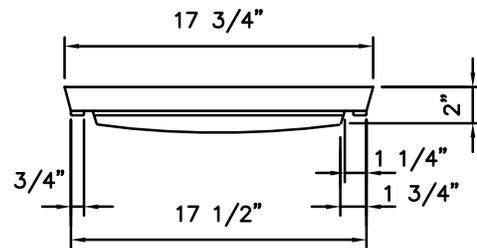
**TOP VIEW**



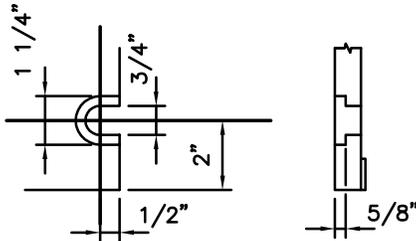
**BOTTOM VIEW**



**SIDE VIEW**

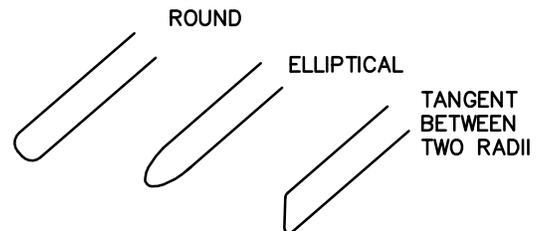


**END VIEW**



**SLOT DETAIL**

SEE NOTE 1



OPTIONAL DESIGN FOR  
GRATE OPENINGS ENDS

**NOTES:**

1. SLOT FORMED AND RECESSED FOR 5/8"-11 NC X 2" SOCKET HEAD (ALLEN HEAD) BOLT.
2. GRATE SHALL BE DUCTILE IRON.
3. SHALL CONFORM TO SEC. 9-05.15 OF THE STANDARD SPECIFICATIONS.
4. USE VANED GRATE IN CURB LINE.
5. USE FRAME SHOWN IN STANDARD DETAIL SW-10.



**CITY OF MILTON  
PARKING LOT AREA  
GRATE**

REVISION DATE:

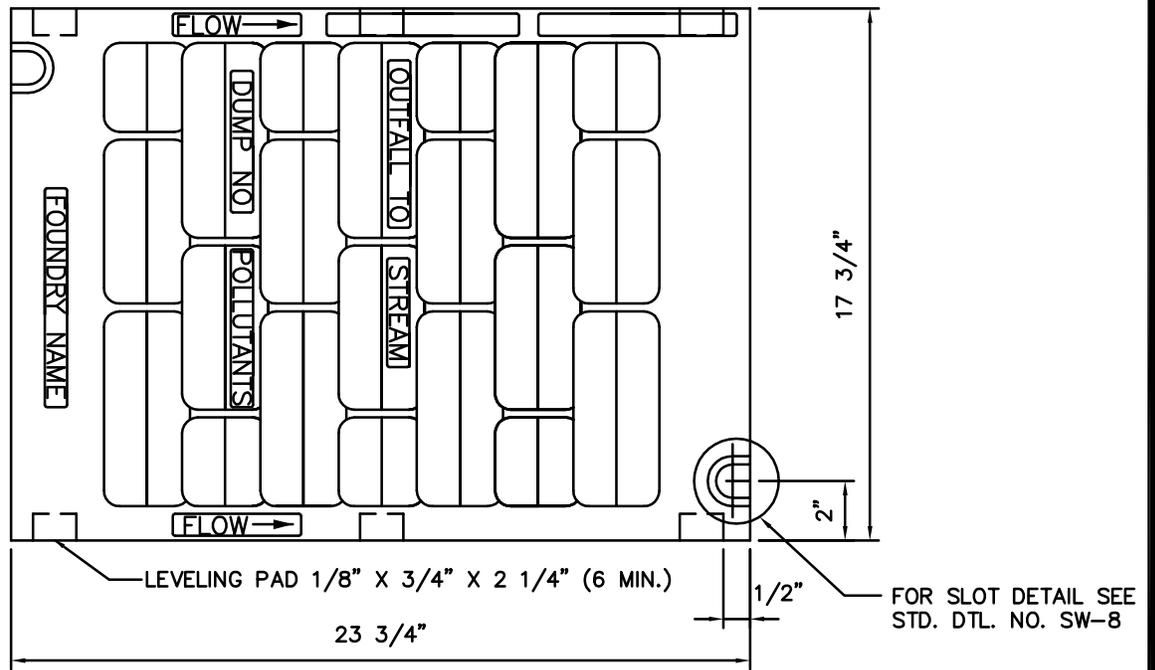
10/19/09

SCALE:

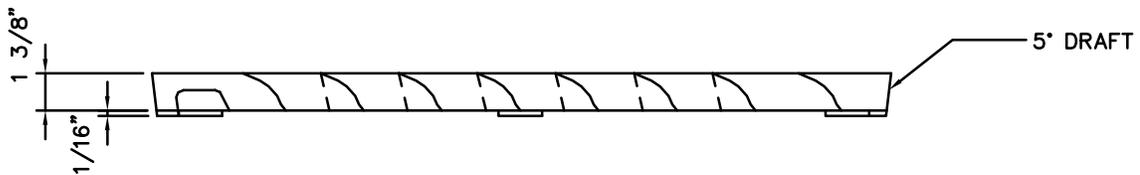
NONE

DWG. NO.

**SW-8**



**PLAN**



**ELEVATION**

**NOTES:**

1. SELF-LOCK VANED GRATE MANUFACTURER SUBJECT TO APPROVAL BY ENGINEER.
2. USE WITH TWO LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 2" LONG. NOTE SLOT DETAIL. PROVIDE WHERE REQUIRED. ALL LIDS OUTSIDE OF ROADWAY TO BE LOCKED.
3. MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06.
4. "OUTFALL TO STREAM DUMP NO POLLUTANTS" IN RAISED LETTERS SHALL BE LOCATED ON GRATE AS SHOWN, OR ON BORDER AREA.
5. SHALL CONFORM TO SEC. 7.05 OF THE STANDARD SPECIFICATIONS.
6. WELDING IS NOT PERMITTED.
7. EDGES SHALL HAVE 0.125" RADIUS, 0.125" CHAMBER OR COMPLETE DEBURRING.
8. USE A BI-DIRECTIONAL VANED GRATE IN SAG VERTICAL CURVES.



**CITY OF MILTON  
VANED GRATE**

REVISION DATE:

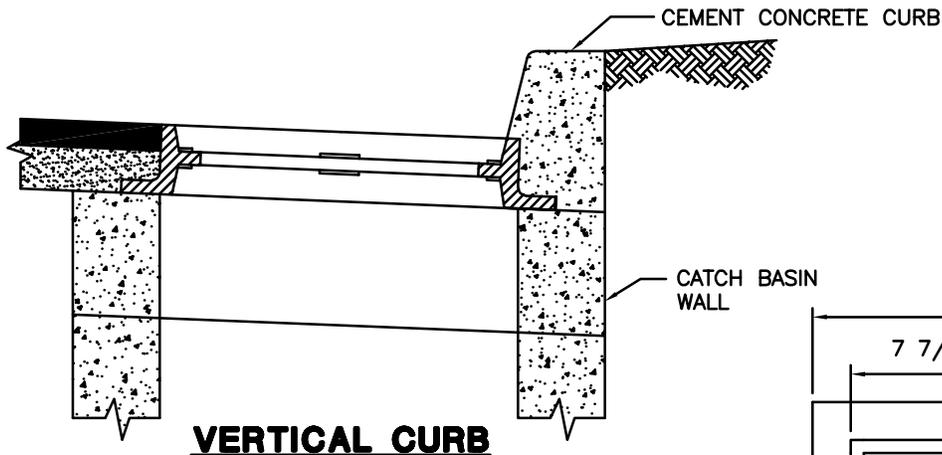
3/30/07

SCALE:

NONE

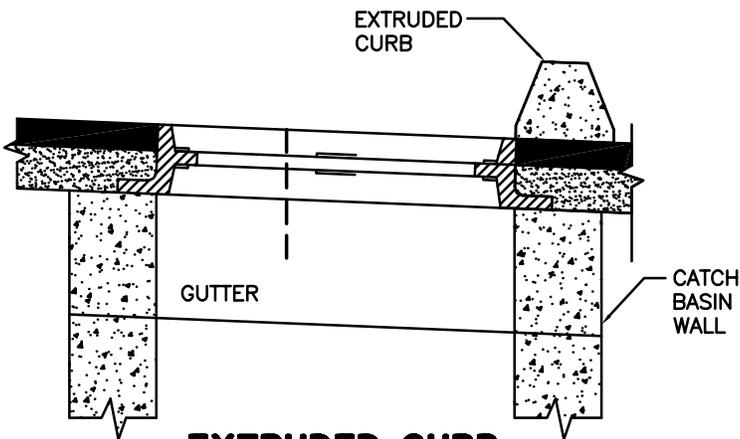
DWG. NO.

**SW-9**

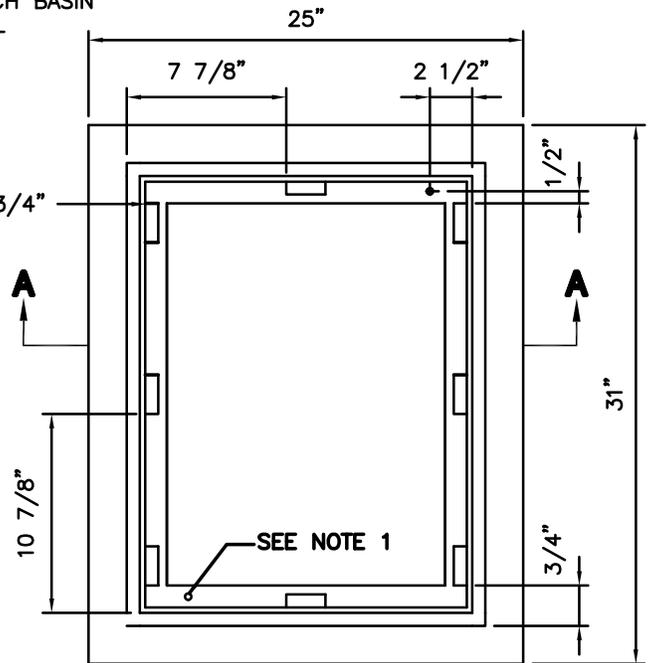


**VERTICAL CURB**

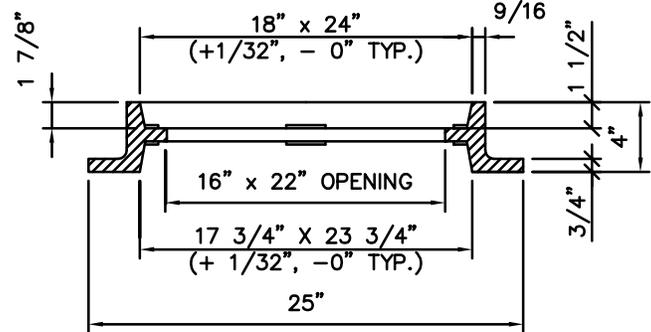
LEVEL PAD 16 - 3/4"  
X 2 1/4" X 1/8"



**EXTRUDED CURB**



**PLAN**



**SECTION A-A**

**NOTES:**

1. DRILL AND TAP FOR, AND PROVIDE, TWO LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 2" LONG, WHERE REQUIRED. ALL LIDS TO BE LOCKED OUTSIDE OF ROADWAY.
2. FRAME MATERIAL IS CAST IRON PER ASTM A48 CLASS 30 OR BETTER.
3. SET FRAME TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.



**CITY OF MILTON  
STANDARD FRAME  
INSTALLATION**

REVISION DATE:

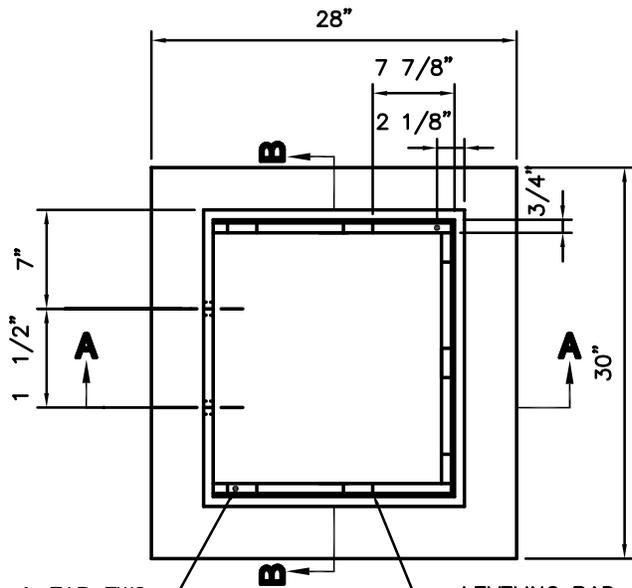
3/30/07

SCALE:

NONE

DWG. NO.

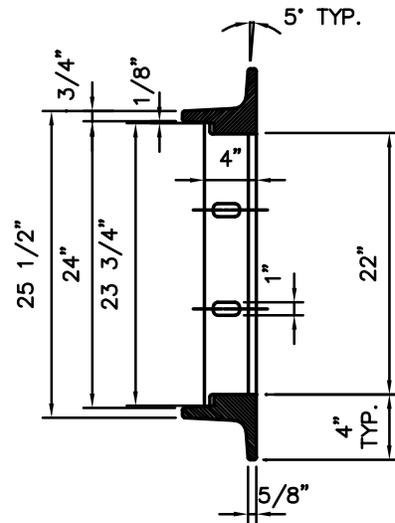
**SW-10**



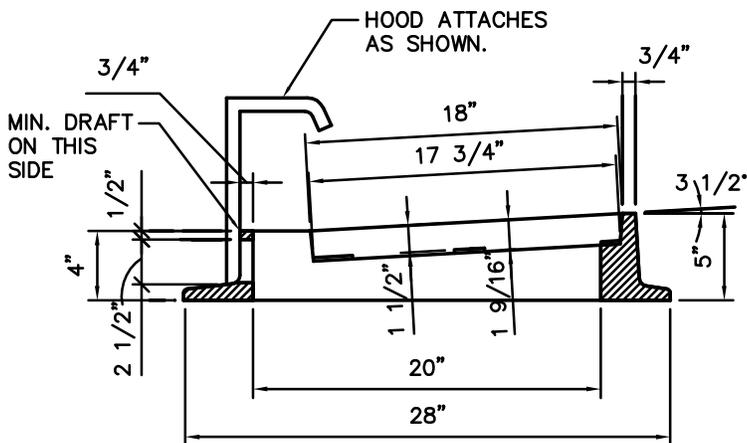
DRILL & TAP TWO  
5/8"-11NC HOLES  
THRU FRAME

LEVELING PAD  
7-1/8" X 3/4" X  
2 1/4" (TYP.)

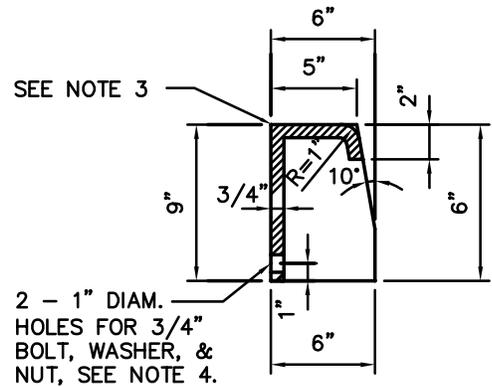
**PLAN**



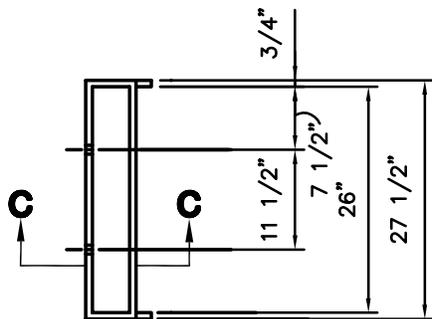
**SECTION B-B**



**SECTION A-A**



**SECTION C-C**



**HOOD DETAIL**

**NOTES:**

1. MATERIAL SHALL CONFORM TO SECTION 9-05.15(2) OF THE STANDARD SPECIFICATIONS.
2. PATTERN ON TOP SURFACE OF HOOD SHALL BE 3/16" NON-SKID DIAMOND.
3. BOLT, WASHER, AND NUT SHALL BE GALVANIZED OR CORROSION RESISTANT.



**CITY OF MILTON  
THROUGH CURB  
INLET FRAME**

REVISION DATE:

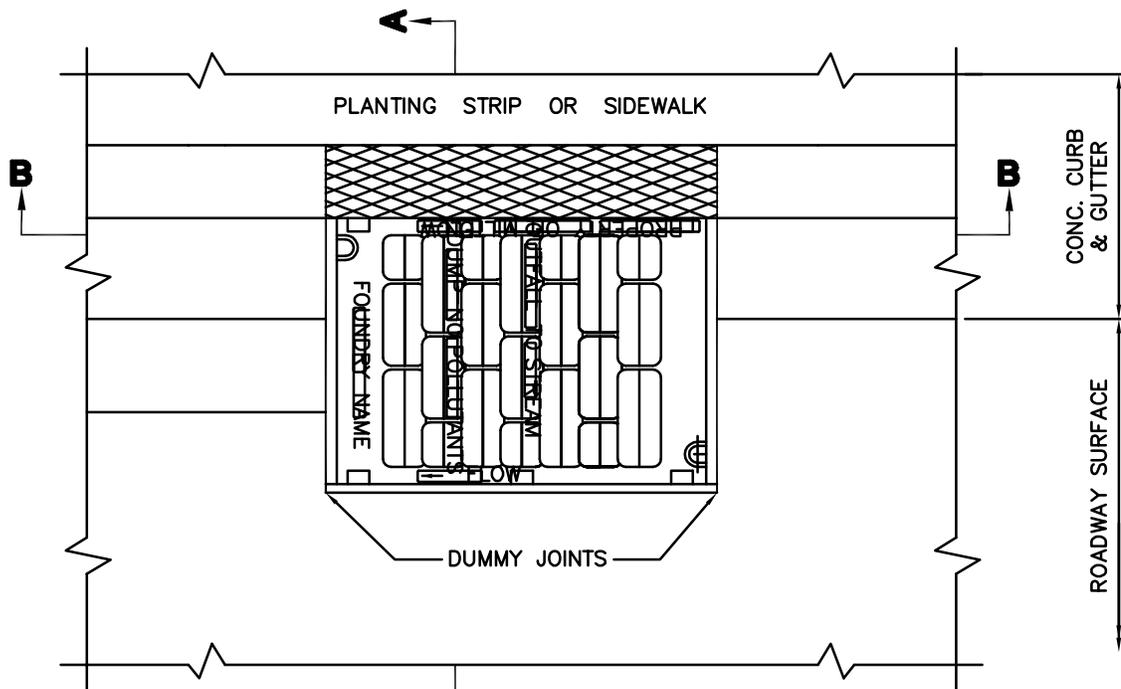
3/30/07

SCALE:

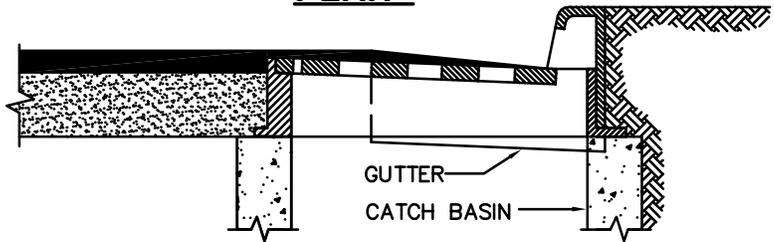
NONE

DWG. NO.

**SW-11**



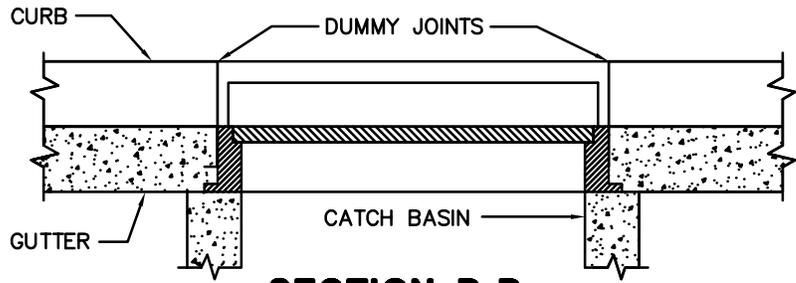
**PLAN**



**SECTION A-A**

**NOTES:**

1. SET TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.
2. THROUGH CURB INLET TO BE USED IN SAG CURVES.

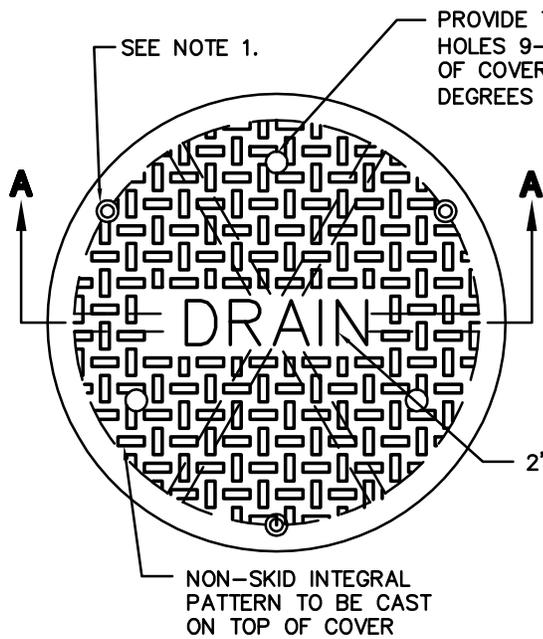


**SECTION B-B**

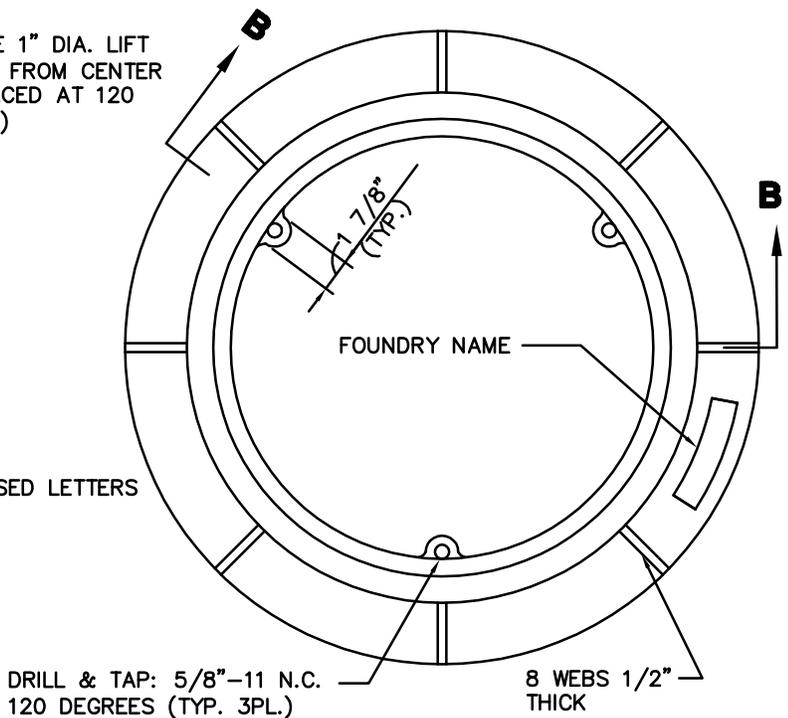


**CITY OF MILTON  
THROUGH VERTICAL CURB  
INLET FRAME & GRATE**

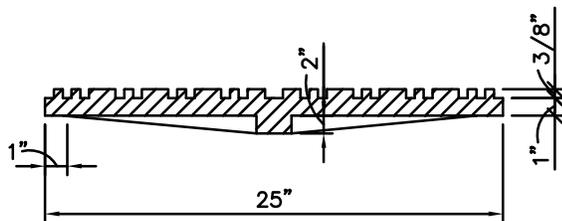
REVISION DATE: 3/30/07	SCALE: NONE	DWG. NO. <b>SW-12</b>
---------------------------	----------------	--------------------------



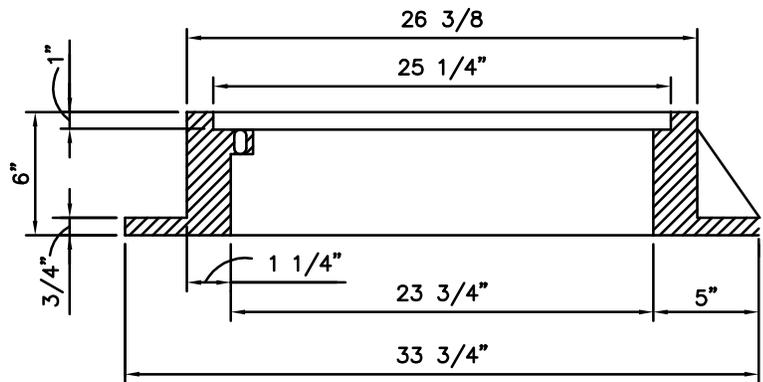
**COVER PLAN**



**RING PLAN**



**SECTION A-A**



**SECTION B-B**

**GENERAL NOTES:**

MANHOLE RING AND COVER SHALL BE OLYMPIC FOUNDRY MH30A D/T, OR EQUAL.

**COVER NOTES:**

1. USE WITH THREE LOCKING BOLTS 5/8"–11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 2" LONG. DRILL HOLES SPACED 120°, TO MATCH HOLES IN RING.
2. COVER MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80–55–06.
3. SHALL CONFORM TO SEC. 9–05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF COVER IS 150 LBS.
5. RATING – H20.

**RING NOTES:**

1. DRILL AND TAP THREE 5/8"–11 NC HOLES THROUGH RING AT 120°.
2. RING MATERIAL IS GREY IRON, ASTM A–48 CLASS 30.
3. SHALL CONFORM TO SEC. 9–05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF RING IS 215 LBS.
5. RATING – H20.



**CITY OF MILTON  
24" BOLT-LOCKING  
MANHOLE AND RING COVER**

REVISION DATE:

11/16/07

SCALE:

NONE

DWG. NO.

**SW-13**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

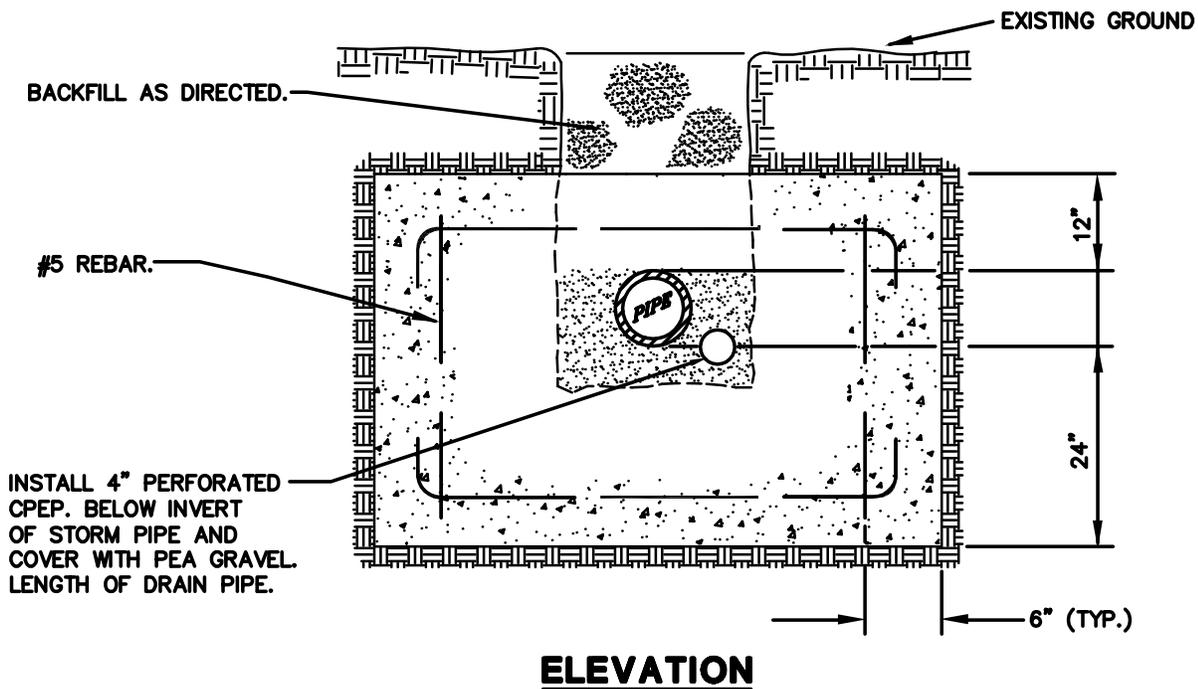
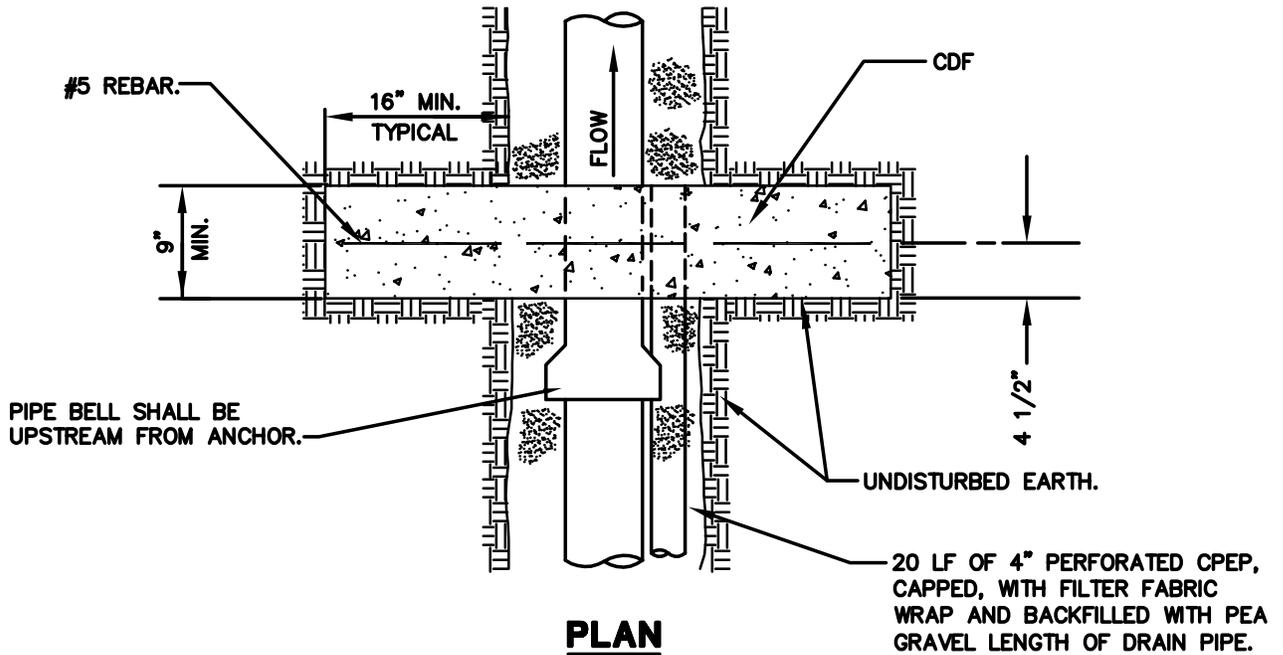
10/19/09

SCALE:

NONE

DWG. NO.

**SW-14**



**NOTES:**

1. PIPE ANCHORS SHALL BE INSTALLED ON ALL SLOPES GREATER THAN 20% WITH SPACING AS FOLLOWS:
  - A. NOT GREAT THAN 36 FT. ON GRADES FROM 20% TO 35%.
  - B. NOT GREAT THAN 24 FT. ON GRADES FROM 35% TO 50%.
  - C. NOT GREAT THAN 16 FT. ON GRADES GREATER THAN 50%.



**CITY OF MILTON  
SOIL/CEMENT PIPE  
ANCHOR**

REVISION DATE:

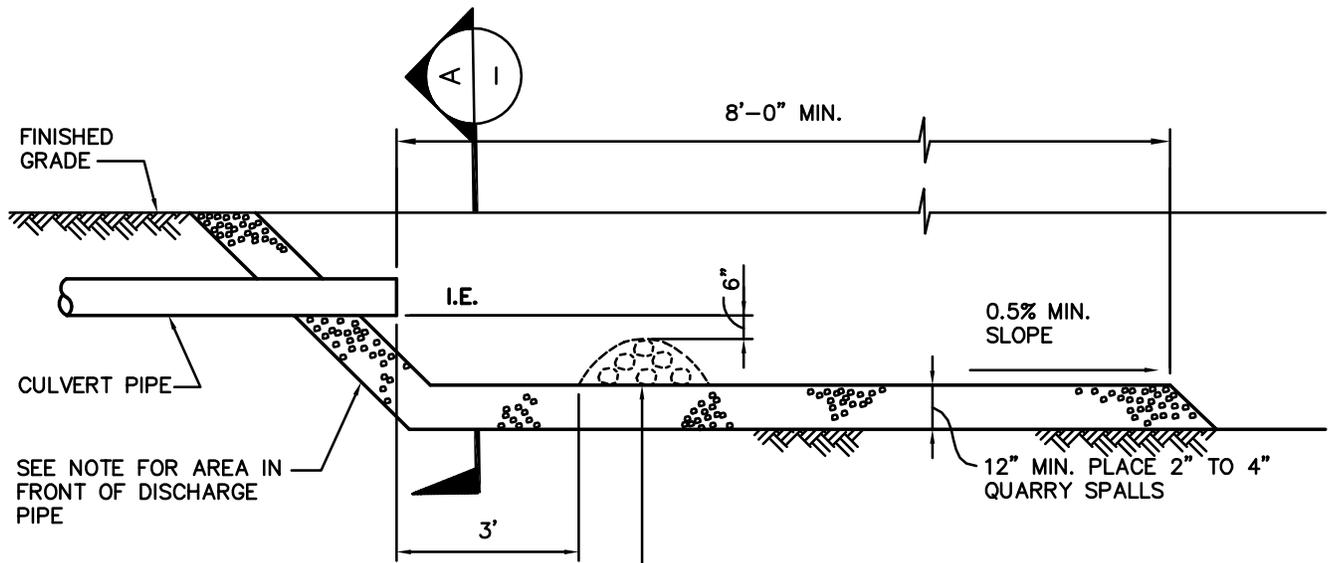
3/30/07

SCALE:

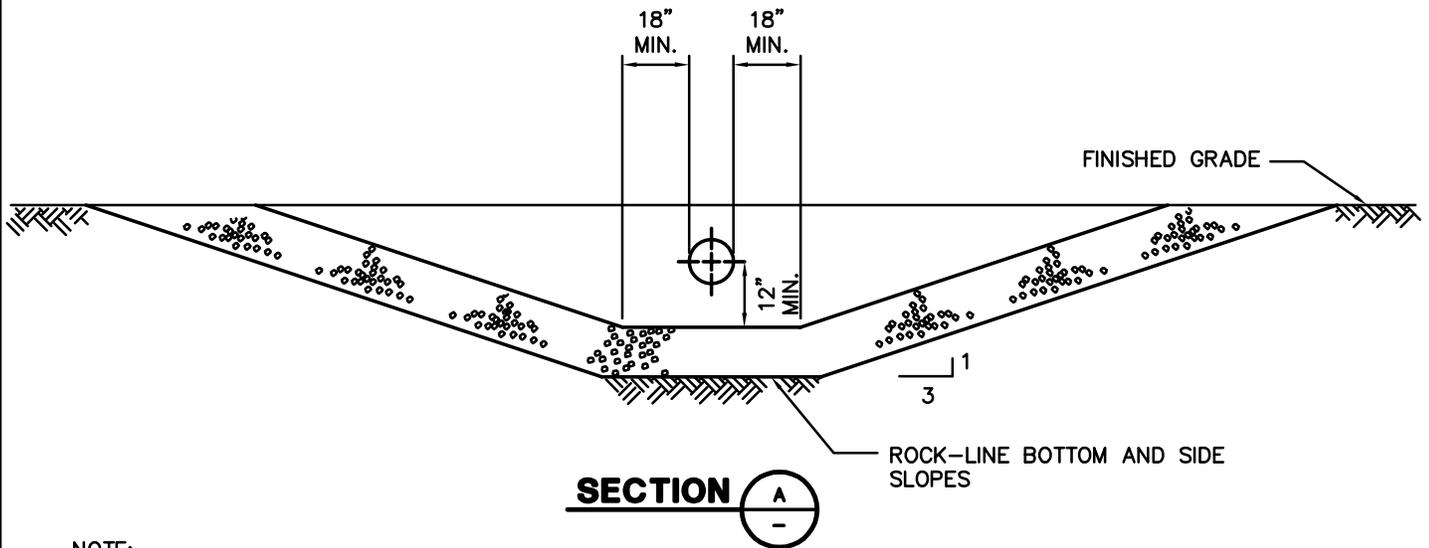
NONE

DWG. NO.

**SW-15**



PLACE QUARRY SPALLS IN A BERM ACROSS THE CHANNEL OF THE DITCH WHEN THE SLOPE OF THE DITCH IS GREATER THAN 3%, SEE NOTE 1



**NOTE:**

1. PLACE QUARRY SPALLS IN FRONT OF CULVERT DISCHARGE, ENGINEER SHALL SIZE QUARRY SPALL BERM.

**RIPRAP AND ENERGY DISSIPATION FOR DITCH**



CITY OF MILTON  
RIPRAP/DITCH DETAIL

REVISION DATE:

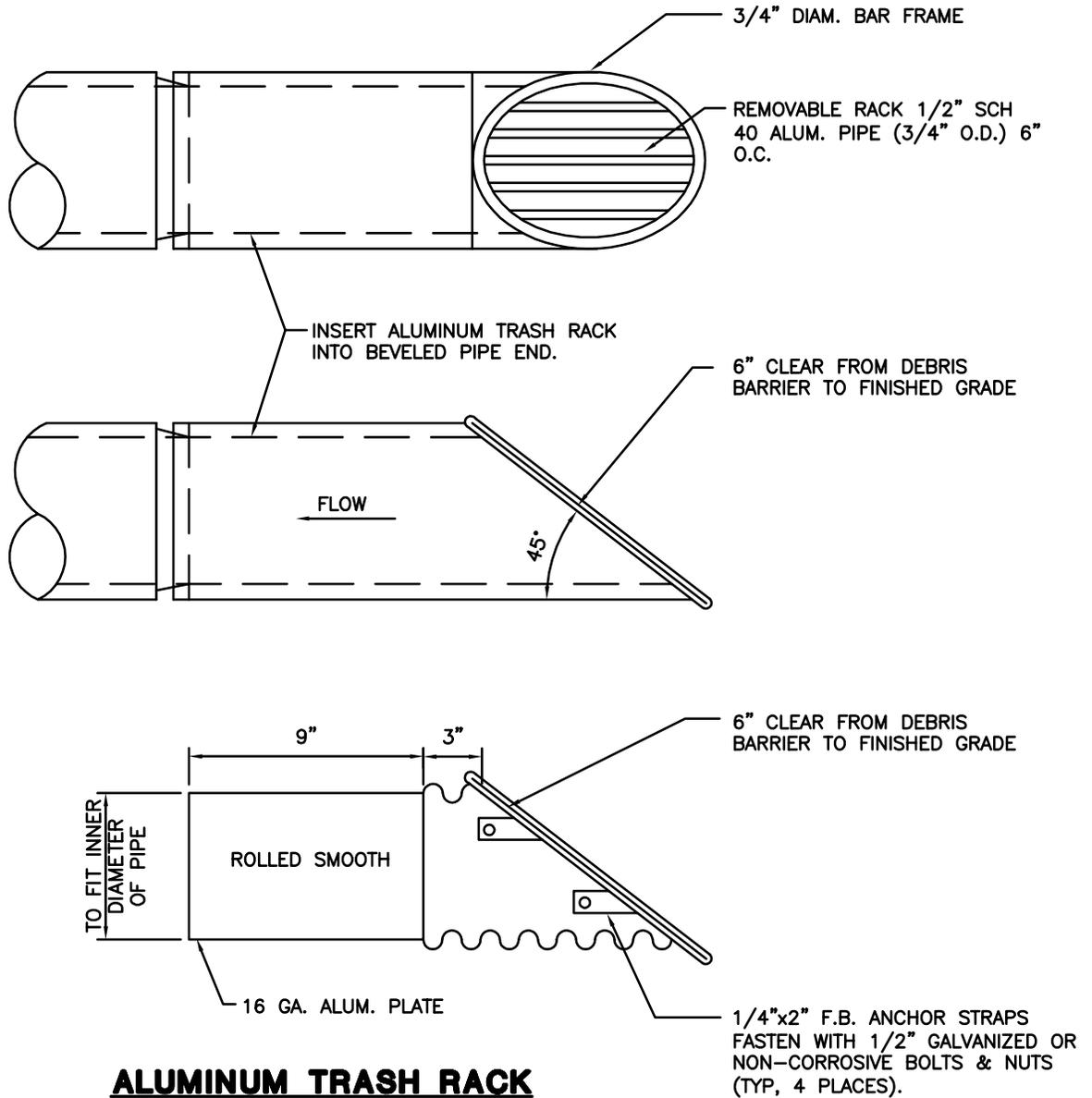
3/30/07

SCALE:

NONE

DWG. NO.

**SW-16**



## **ALUMINUM TRASH RACK**

### NOTES:

1. ALL STEEL PARTS MUST BE GALVANIZED & ASPHALT COATED (TREATMENT 1 OR BETTER).
2. CONTRACTOR TO VERIFY DIMENSIONS.



## CITY OF MILTON TRASH RACK DEBRIS BARRIER

REVISION DATE:

3/30/07

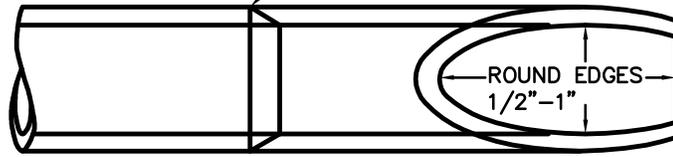
SCALE:

NONE

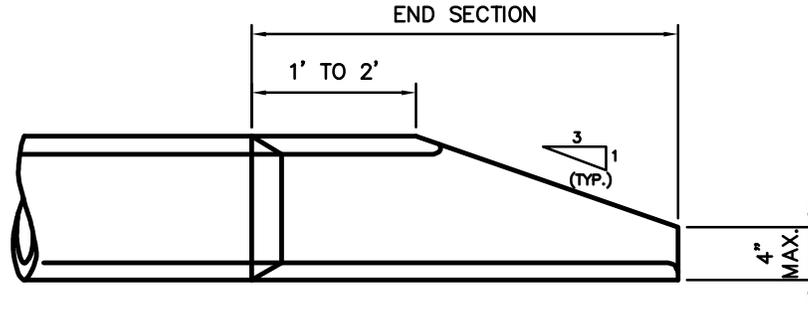
DWG. NO.

**SW-17**

TONGUE END ON INLET END GROOVE  
END ON OUTLET END ENDS TO FIT  
ADJACENT PIPE SECTIONS

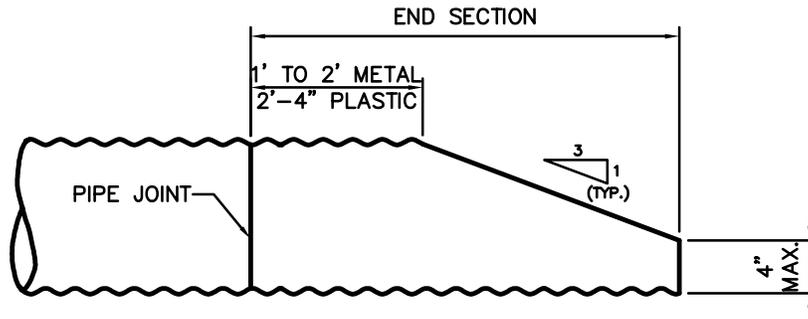


**PLAN**



**ELEVATION**

**CONCRETE PIPE**



**METAL & THERMO-PLASTIC PIPE**

**NOTE:**

SIDE SLOPE SHALL BE WARPED TO MATCH THE BEVELED PIPE END. WHEN CULVERT IS ON SKEW, BEVELED END SHALL BE ROTATED TO CONFORM TO SLOPE. IF SLOPE DIFFERS FROM 3:1, PIPE SHALL BE BEVELED TO MATCH SLOPE.



**CITY OF MILTON  
BEVELED END PIPE  
SECTION**

REVISION DATE:

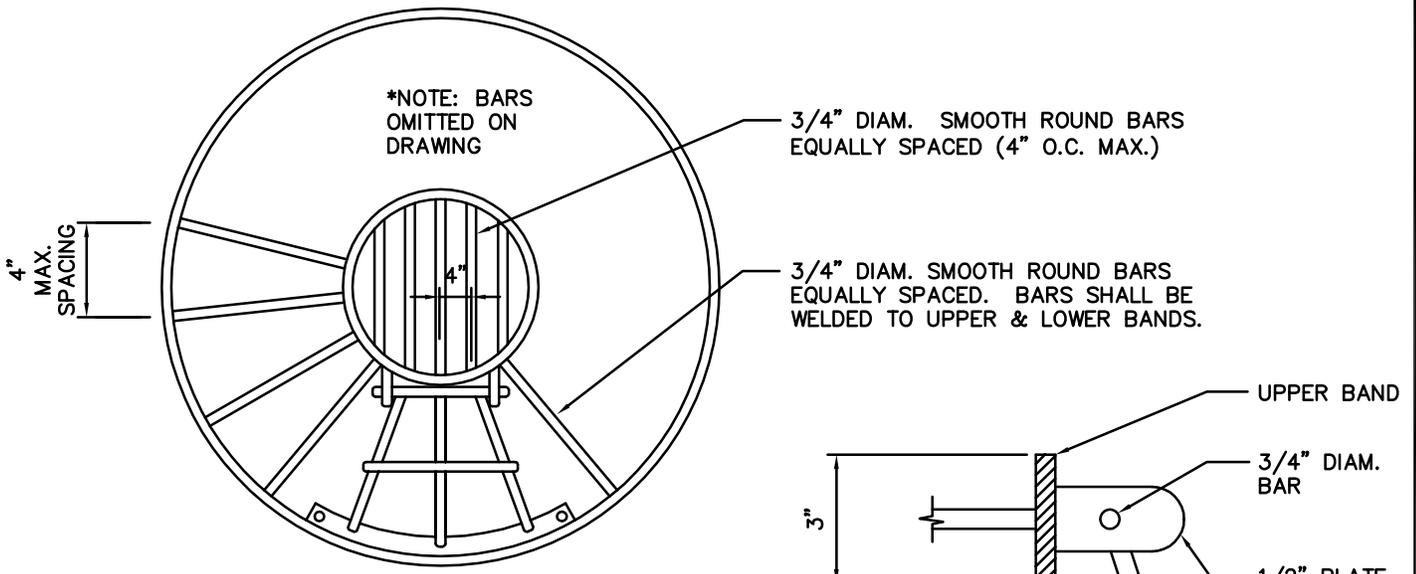
3/30/07

SCALE:

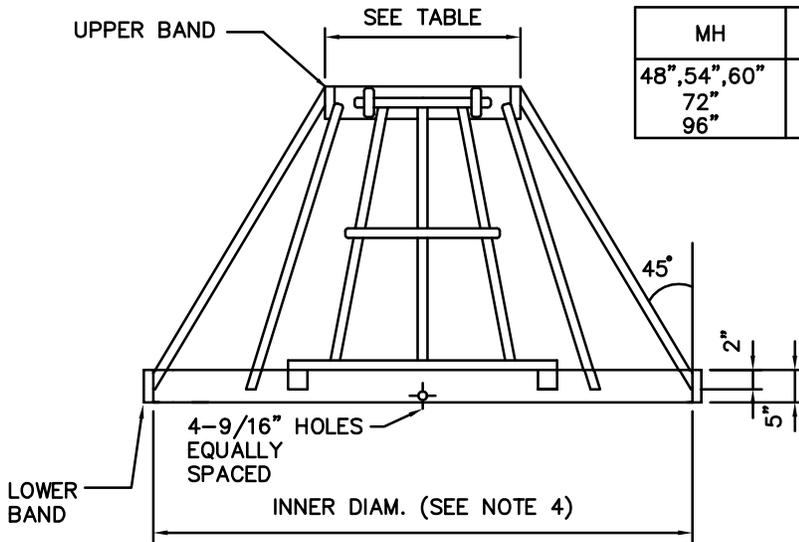
NONE

DWG. NO.

**SW-18**

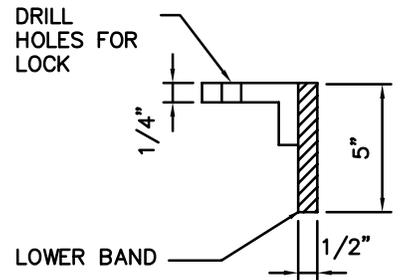
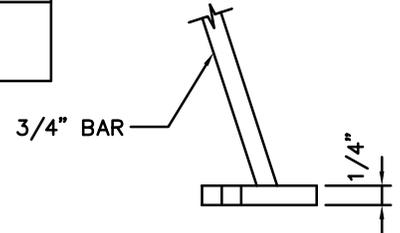
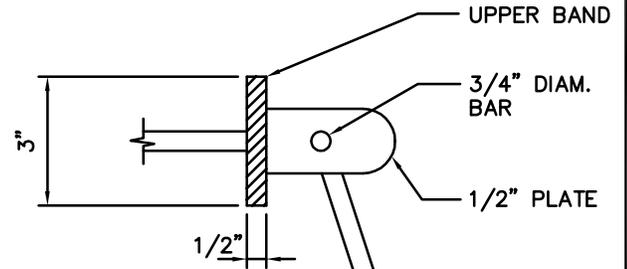


**PLAN**



**ELEVATION**

MH	UPPER BAND OUTER DIAMETER
48",54",60"	36"
72"	42"
96"	42"



**ENTRY GATE DETAIL**

**NOTES:**

1. ALL STEEL IN PLATES, BARS AND BANDS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
2. STEEL DEBRIS CAGE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 (AASHTO M111).
3. ALUMINUM IS AN OPTIONAL CAGE MATERIAL.
4. COVER BAND DIMENSIONS TO MATCH STRUCTURE.
5. ALL DEBRIS CAGES SHALL BE LOCKED WITH CITY-ISSUED PADLOCK.

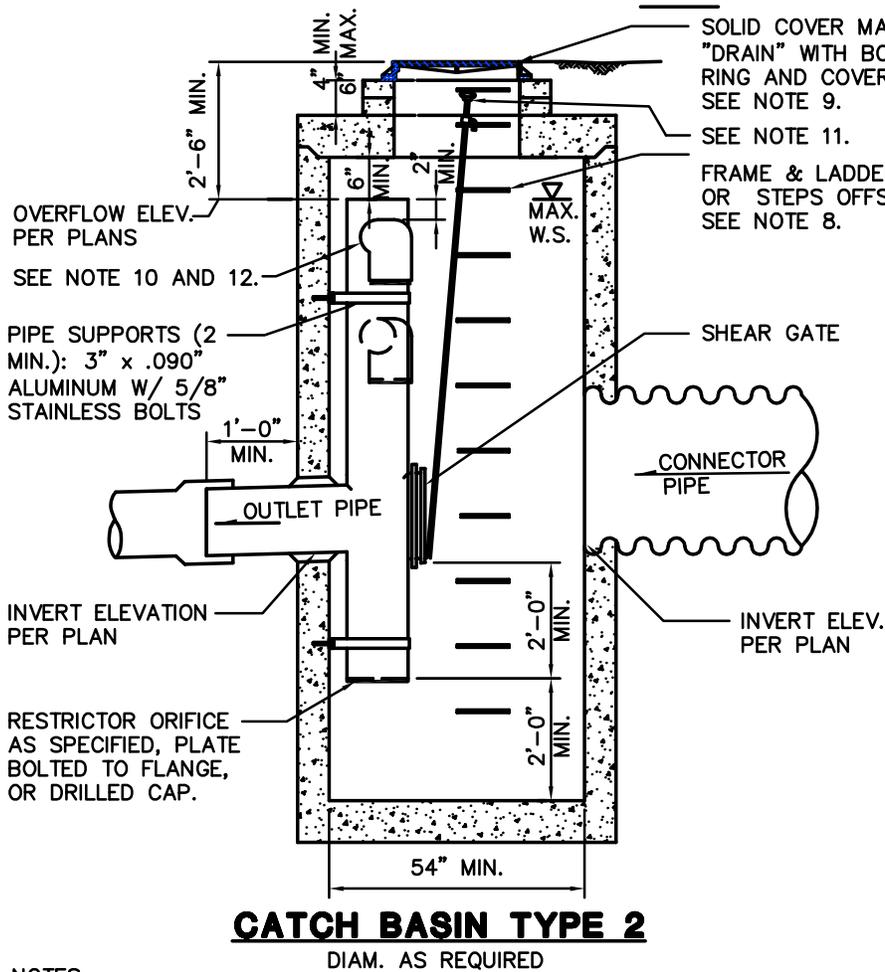


**CITY OF MILTON  
DEBRIS CAGE**

REVISION DATE:  
3/30/07

SCALE:  
NONE

DWG. NO.  
**SW-19**



**CATCH BASIN TYPE 2**

DIAM. AS REQUIRED

**NOTES:**

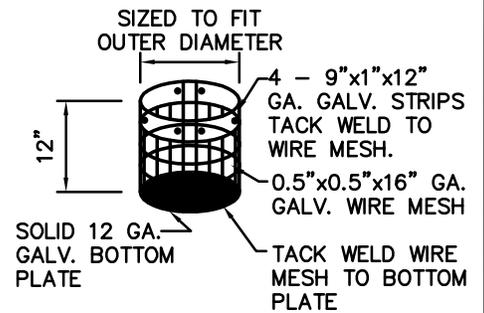
1. PIPE SIZES, INVERT ELEVATIONS, ORIFICE SIZES, OVERFLOW ELEVATIONS AND SLOPES; PER PLANS.
2. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
3. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR CATCH BASIN TYPE 2, 54" MIN. DIAM.
4. PIPE SUPPORTS AND RESTRICTOR SHALL BE OF SAME MATERIAL, AND BE ANCHORED AT 3' MAX. SPACING BY 5/8" DIAM. STAINLESS STEEL EXPANSION BOLTS OR EMBEDDED 2" IN WALL.
5. THE RESTRICTOR SHALL BE FABRICATED FROM .060" ALUMINUM, PVC, CPE, OR HDPE PIPE PER THESE ENGINEERING STANDARDS.
6. OUTLET SHALL BE CONNECTED TO CULVERT OR SEWER PIPE WITH SUITABLE COUPLER OR GROUTED INTO THE BELL OF CONCRETE PIPE.
7. THE VERTICAL RISER STEM OF THE RESTRICTOR SHALL BE THE SAME DIAM. AS THE HORIZONTAL OUTLET PIPE, WITH AN 8" MIN. DIAM.
8. FRAME AND LADDER OR STEPS OFFSET SO THAT:
  - A. SHEAR GATE IS VISIBLE FROM TOP.
  - B. CLIMB DOWN SPACE IS CLEAR OF RISER AND SHEAR GATE.
  - C. FRAME IS CLEAR OF CURB.
 ALL STEPS AND HANDHOLD SHALL BE MADE OF POLY PROPYLENE.
9. FOR POND APPLICATIONS SOLID COVER AND MANHOLE CONCRETE LID SHALL BE REPLACED WITH DEBRIS CAGE SW-16.
10. MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN OR ALL ON ONE SIDE OF RISER TO ASSURE LADDER CLEARANCE.
11. SHEAR GATE HANDLE SHALL BE ATTACHED TO LADDER/ STEP LOCATED WITHIN 24" ACCESS SECTION.
12. IF NOTCHED WIER IS USED IN LIEU OF ELBOW, BAFFLE SHALL NOT OBSTRUCT ACCESS TO THE STRUCTURE.

SOLID COVER MARKED "DRAIN" WITH BOLT LOCKING RING AND COVER. SEE NOTE 9.

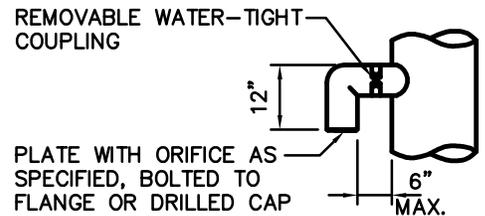
SEE NOTE 11.

FRAME & LADDER OR STEPS OFFSET. SEE NOTE 8.

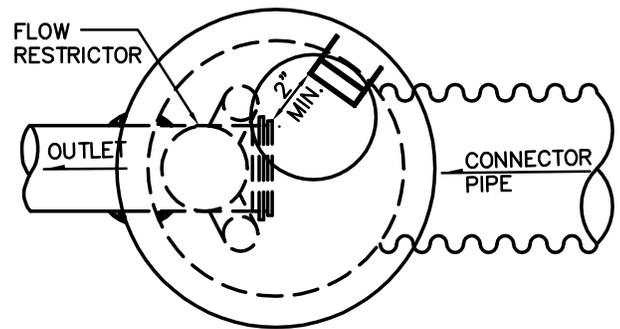
**NOTE:**  
ATTACH SCREEN TO CMP CROSS W/ 6 1" METAL SCREWS—2 PER STRAP, OR USE STAINLESS STEEL PIPE CLAMP.



**FLOW CONTROL SCREEN**



**ELBOW DETAIL**



**PLAN**



**CITY OF MILTON  
FLOW RESTRICTOR  
TEE TYPE**

REVISION DATE:

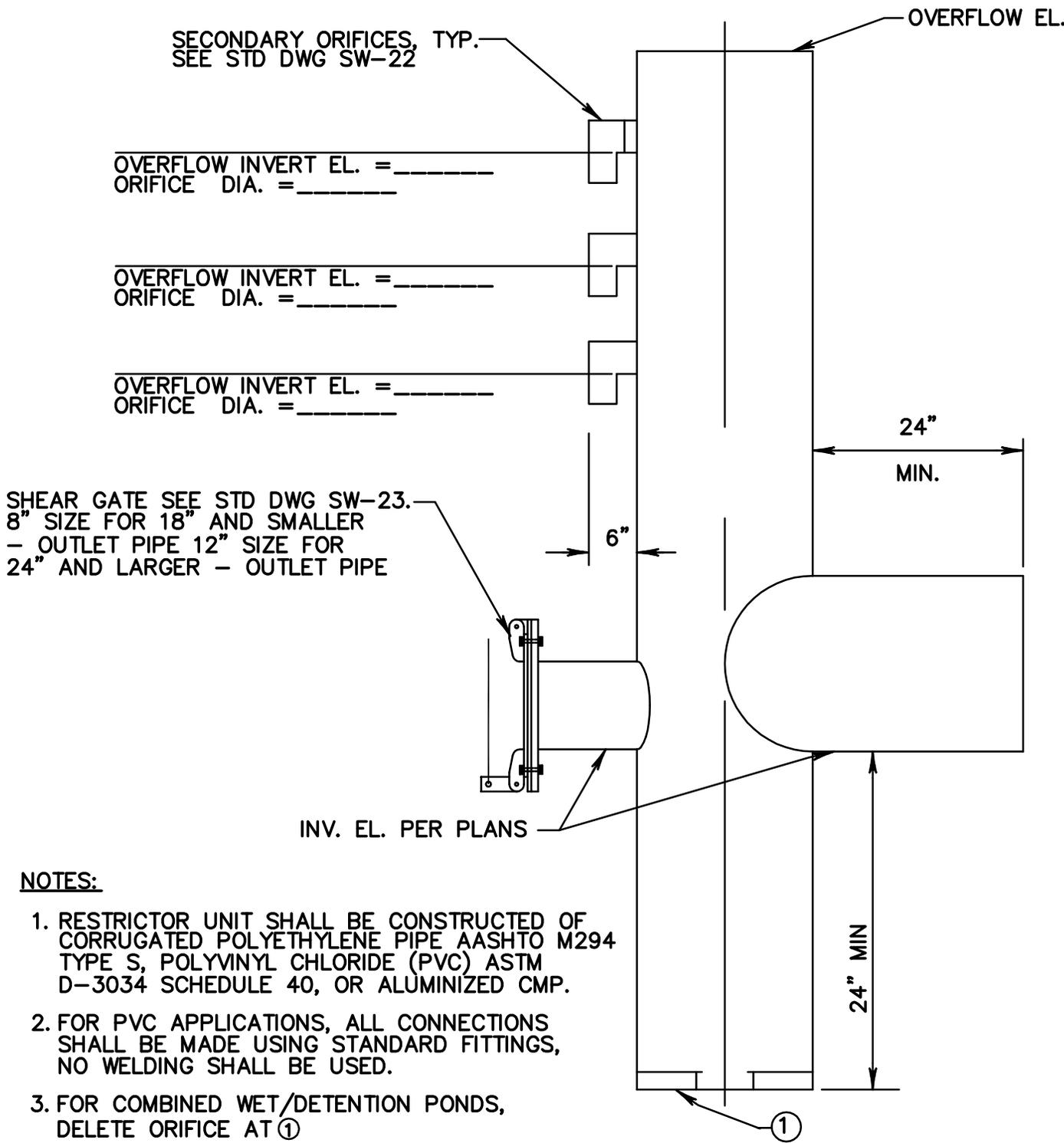
3/30/07

SCALE:

NONE

DWG. NO.

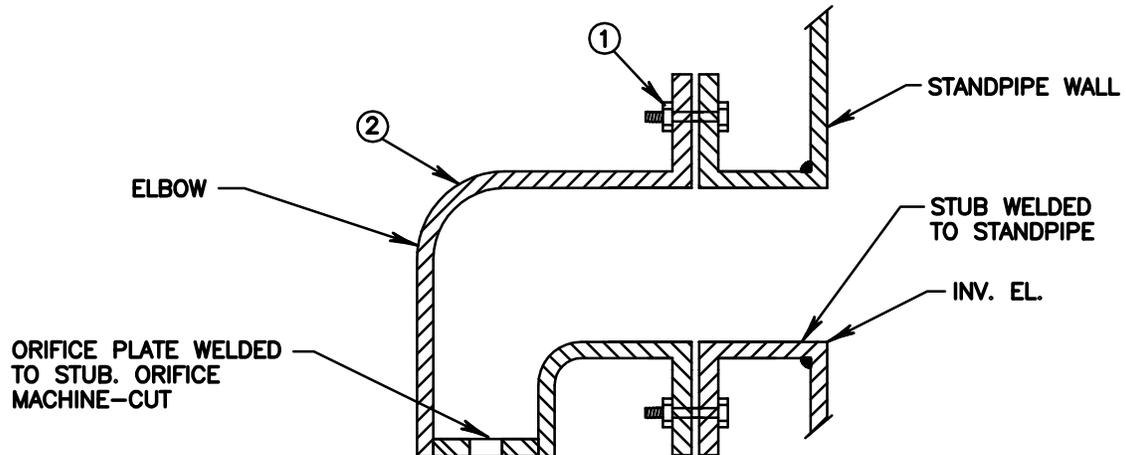
**SW-20**



**NOTES:**

- 1. RESTRICTOR UNIT SHALL BE CONSTRUCTED OF CORRUGATED POLYETHYLENE PIPE AASHTO M294 TYPE S, POLYVINYL CHLORIDE (PVC) ASTM D-3034 SCHEDULE 40, OR ALUMINIZED CMP.
- 2. FOR PVC APPLICATIONS, ALL CONNECTIONS SHALL BE MADE USING STANDARD FITTINGS, NO WELDING SHALL BE USED.
- 3. FOR COMBINED WET/DETENTION PONDS, DELETE ORIFICE AT ①

		
<p><b>CITY OF MILTON</b></p> <p><b>RESTRICTOR RISER</b></p>		
REVISION DATE: <p style="text-align: center;">3/30/07</p>	SCALE: <p style="text-align: center;">NONE</p>	DWG. NO. <p style="text-align: center;"><b>SW-21</b></p>



ALL PARTS TO BE HDPE OR PVC OR ALUMINUM EXCEPT AS NOTED

NOTES:

- ① 1/2" THICK BOLT FLANGE TAPPED FOR (3) 1/2" DIAMETER NYLON BOLTS—INCLUDE A NEOPRENE GASKET (ELEVATION PER PLANS).
- ② WELDED 90 DEG. BEND (SIZE PER PLANS) WITH 1/2" THICK BOLT FLANGE DRILLED FOR 1/2" DIAMETER NYLON BOLTS.



CITY OF MILTON  
SECONDARY ORIFICE

REVISION DATE:

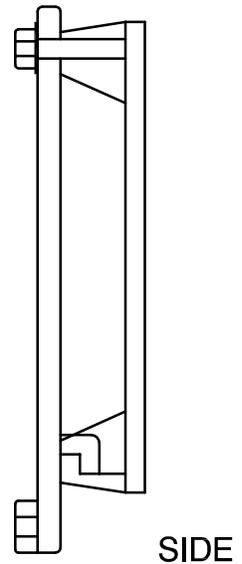
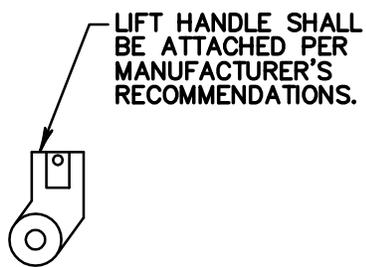
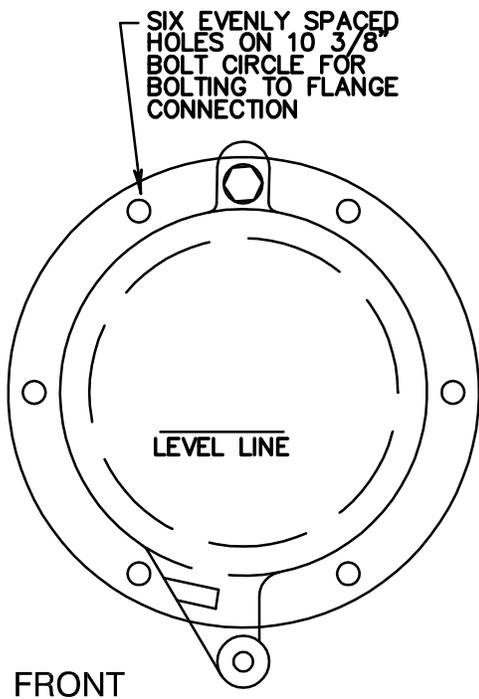
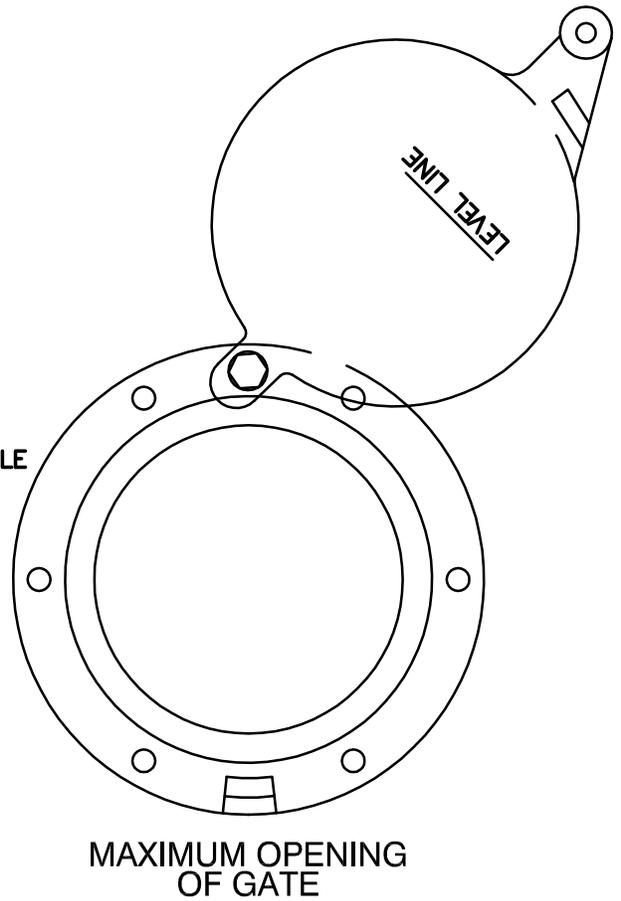
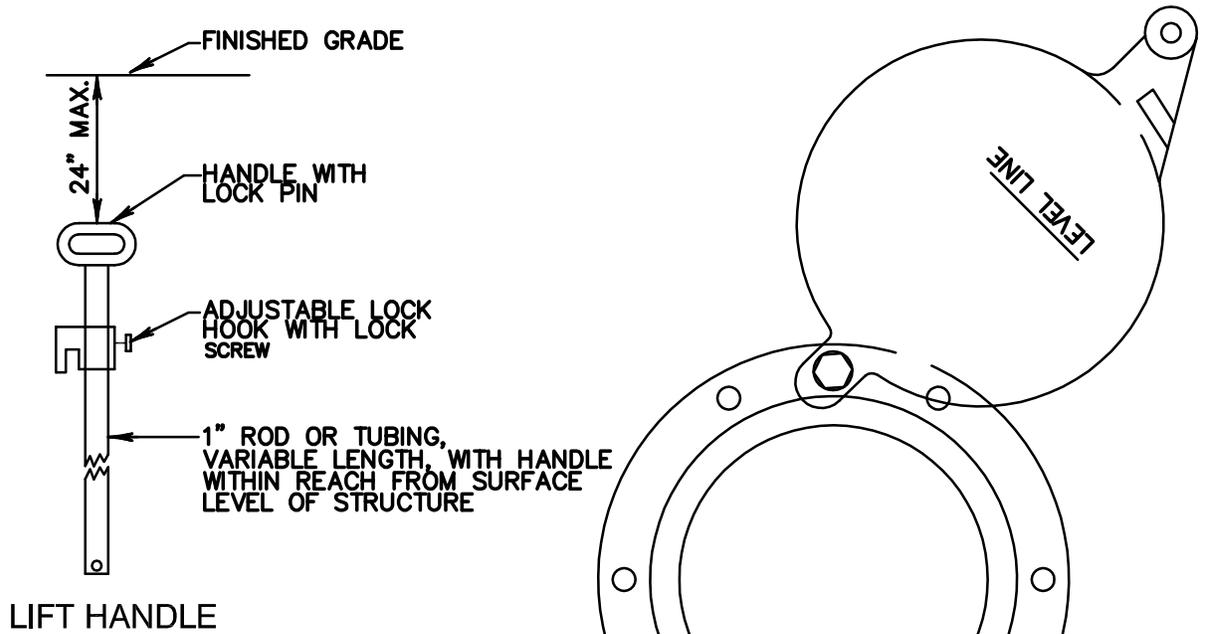
3/30/07

SCALE:

NONE

DWG. NO.

**SW-22**



CITY OF MILTON  
SHEAR GATE

REVISION DATE:

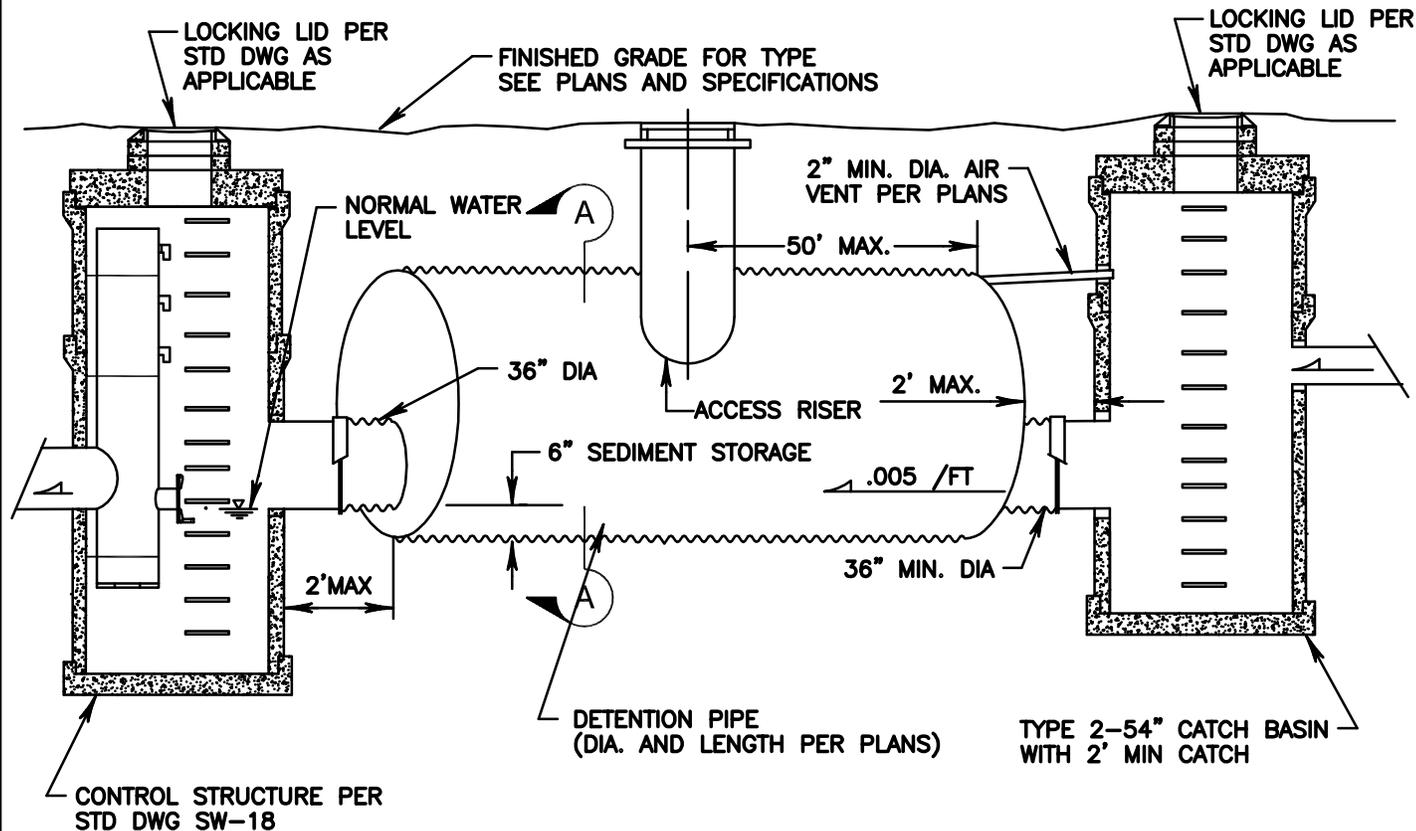
3/30/07

SCALE:

NONE

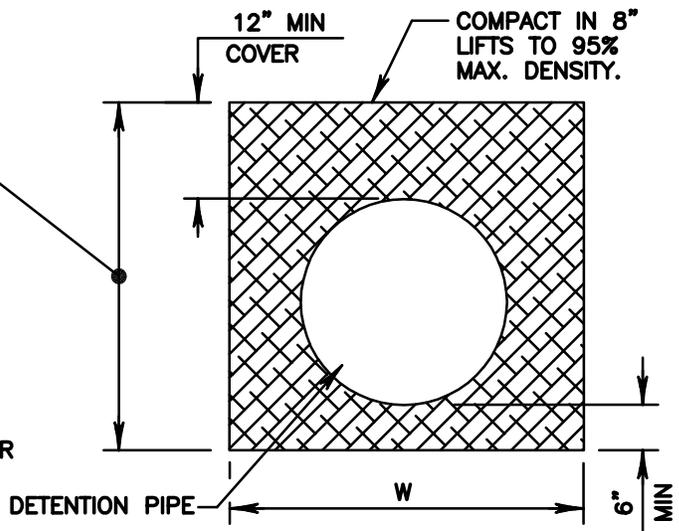
DWG. NO.

**SW-23**



**ELEVATION**

SAND - WITH SOIL ENGINEERED  
COMPACTION TEST  
OR  
5/8" MINUS CRUSHED ROCK  
OR  
PEA GRAVEL



**SECTION A-A**

**NOTES:**

1. ANNUAL INSPECTIONS AND CLEANING REQUIRED BY OWNER TO INSURE PROPER OPERATION OF DETENTION SYSTEM.
2. W = MAXIMUM WIDTH OF TRENCH FOR PIPES 15" OR LESS IN DIA. W = 40". FOR PIPES 18" OR GREATER W = 1 1/2" x I.D. + 18".
3. COMPACT IN 8" LIFTS TO 90% MAX. DENSITY.



**CITY OF MILTON  
DETENTION PIPE**

REVISION DATE:

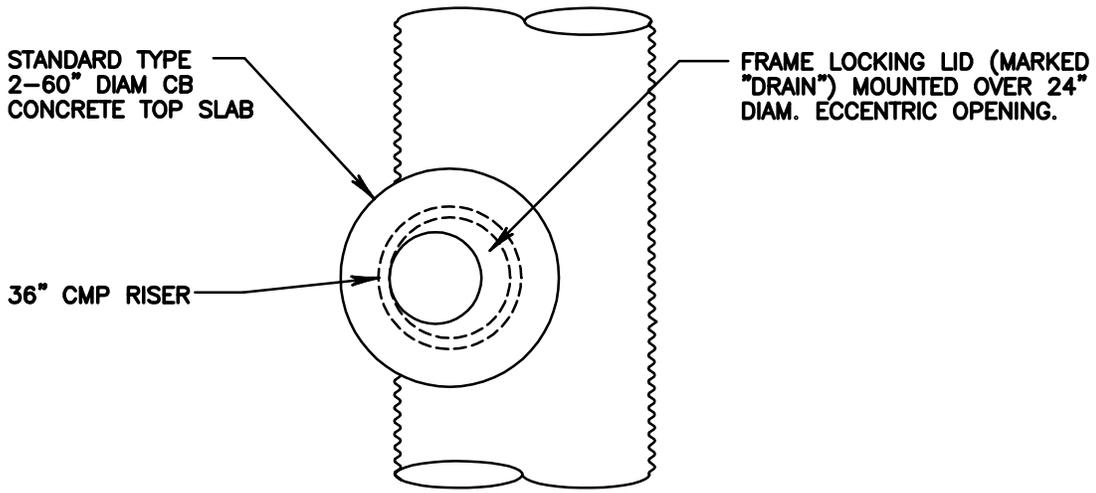
SCALE:

DWG. NO.

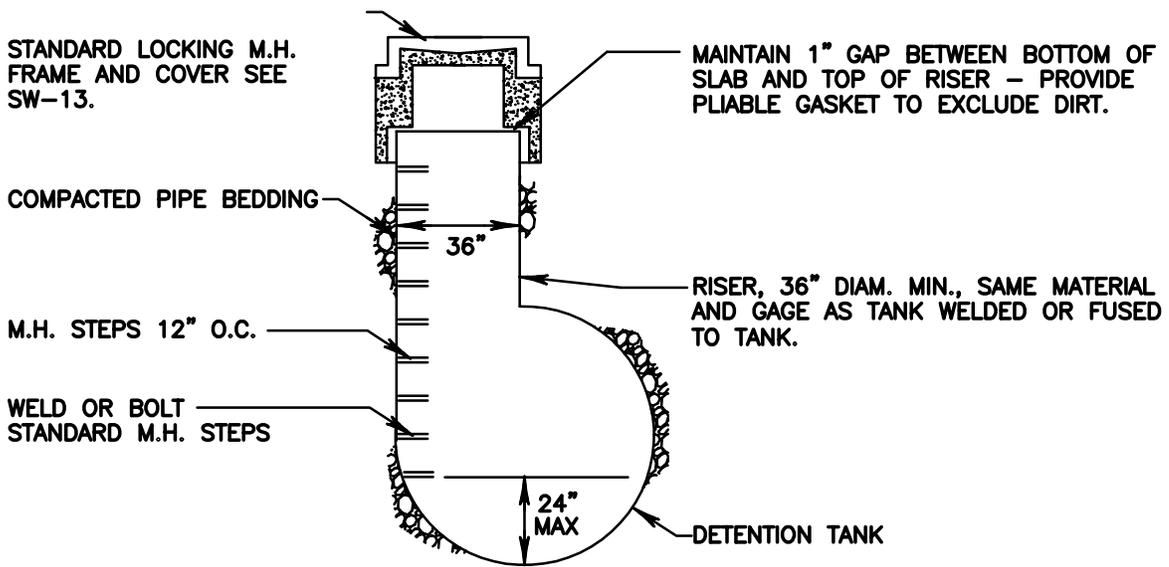
10/19/09

NONE

**SW-24**



**PLAN**

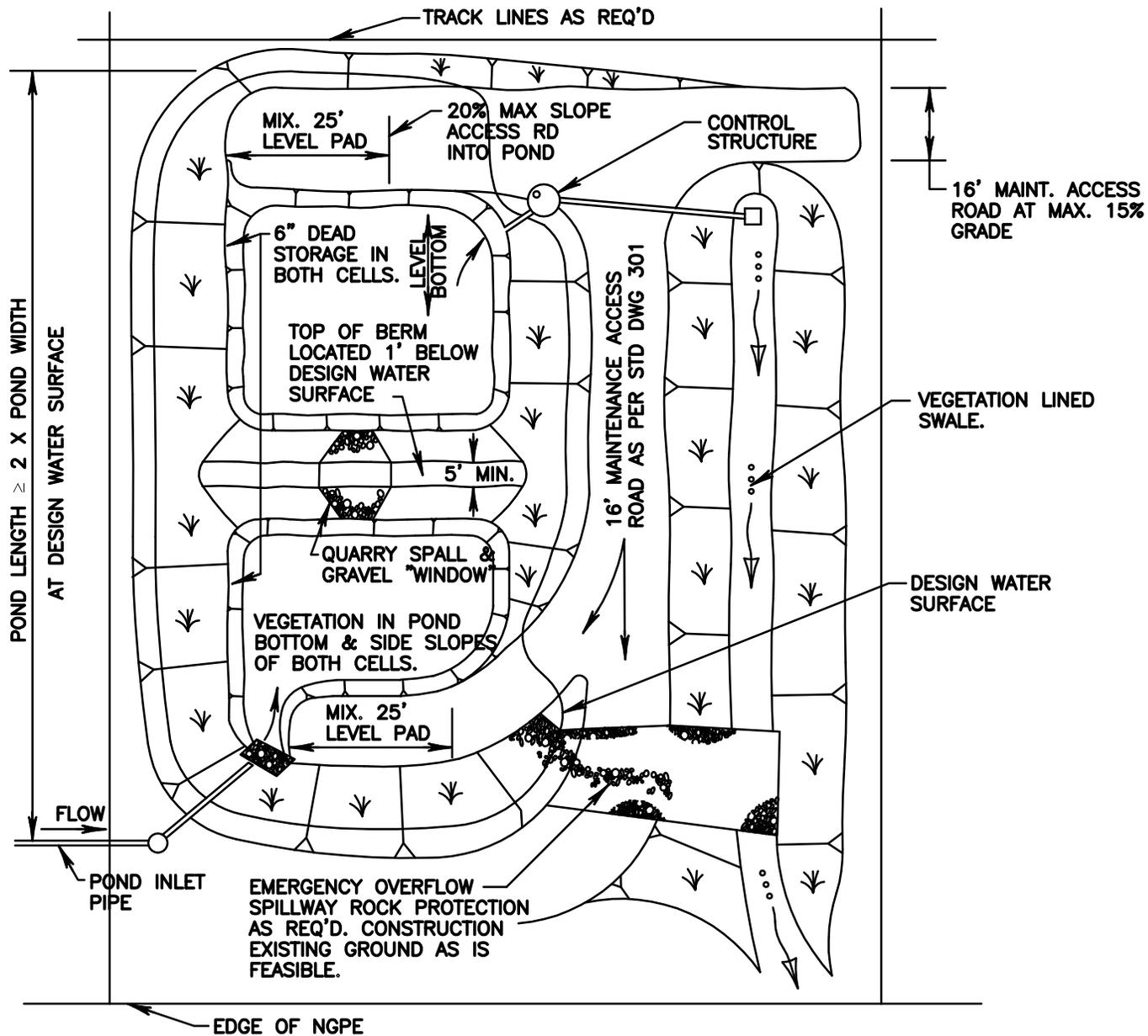


**SECTION**

**NOTES:**

1. USE ADJUSTING BLOCKS AS REQUIRED TO BRING FRAME TO GRADE.
2. ALL MATERIALS TO BE ALUMINUM OR GALVANIZED AND ASPHALT COATED (TREATMENT 1 OR BETTER)
3. MUST BE LOCATED FOR ACCESS BY MAINTENANCE VEHICLES.
4. MAY SUBSTITUTE WSDOT SPECIAL TYPE IV MANHOLE (RCP ONLY).

 <span style="font-size: 1.2em; font-weight: bold; margin-left: 10px;">CITY OF MILTON</span>		
DETENTION PIPE ACCESS		
REVISION DATE:	SCALE:	DWG. NO.
10/19/09	NONE	SW-24B



**NOTE:**

THIS DETAIL IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL CONFIGURATION WILL VARY DEPENDING ON SPECIFIC SITE CONSTRAINTS AND APPLICABLE DESIGN CRITERIA.



**CITY OF MILTON  
DETENTION POND WITH  
BIOFILTRATION SWALE**

REVISION DATE:

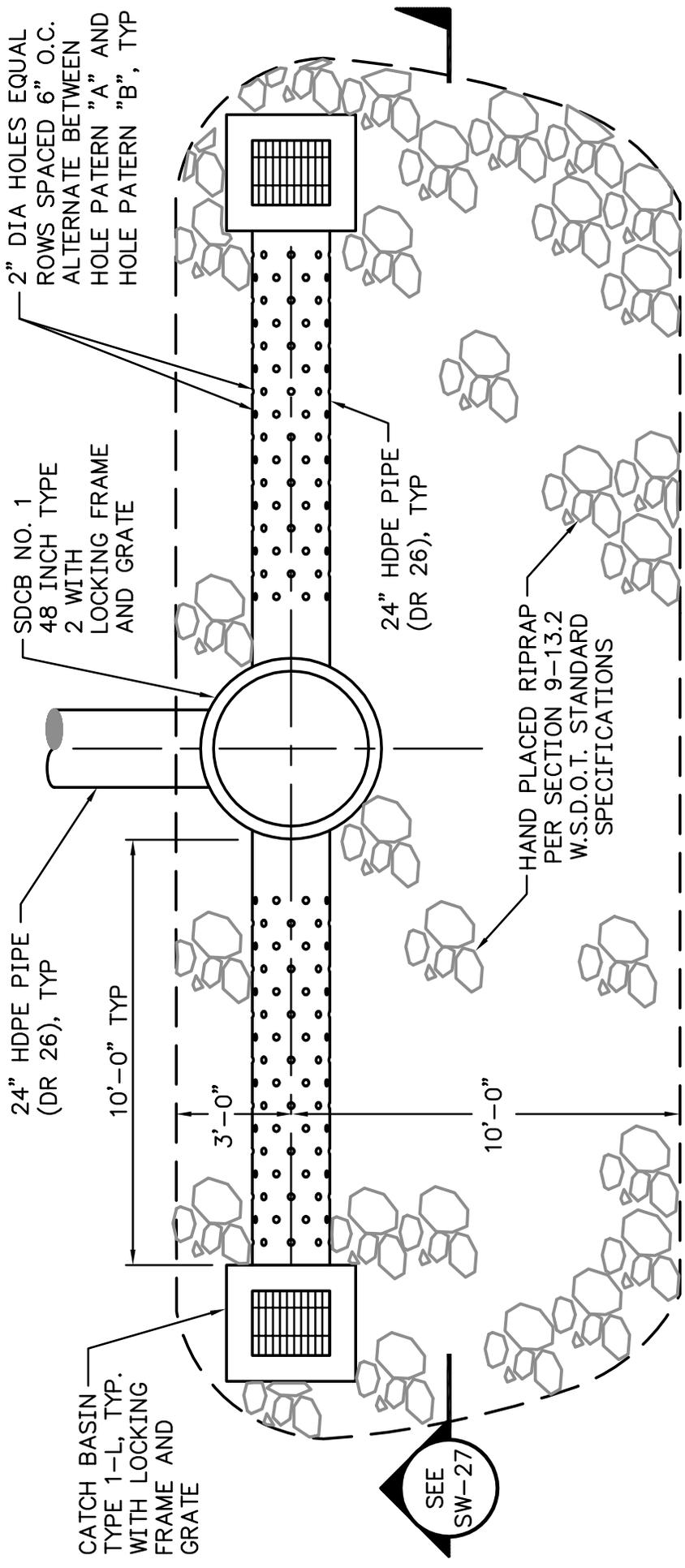
3/30/07

SCALE:

NONE

DWG. NO.

**SW-25**



2" DIA HOLES EQUAL ROWS SPACED 6" O.C. ALTERNATE BETWEEN HOLE PATTERN "A" AND HOLE PATTERN "B", TYP

SDCB NO. 1 48 INCH TYPE 2 WITH LOCKING FRAME AND GRATE

24" HDPE PIPE (DR 26), TYP 10'-0" TYP

CATCH BASIN TYPE 1-L, TYP. WITH LOCKING FRAME AND GRATE

24" HDPE PIPE (DR 26), TYP

HAND PLACED RIPRAP PER SECTION 9-13.2 W.S.D.O.T. STANDARD SPECIFICATIONS

SEE SW-27

# DIFFUSER PIPE DETAIL

SCALE: NONE



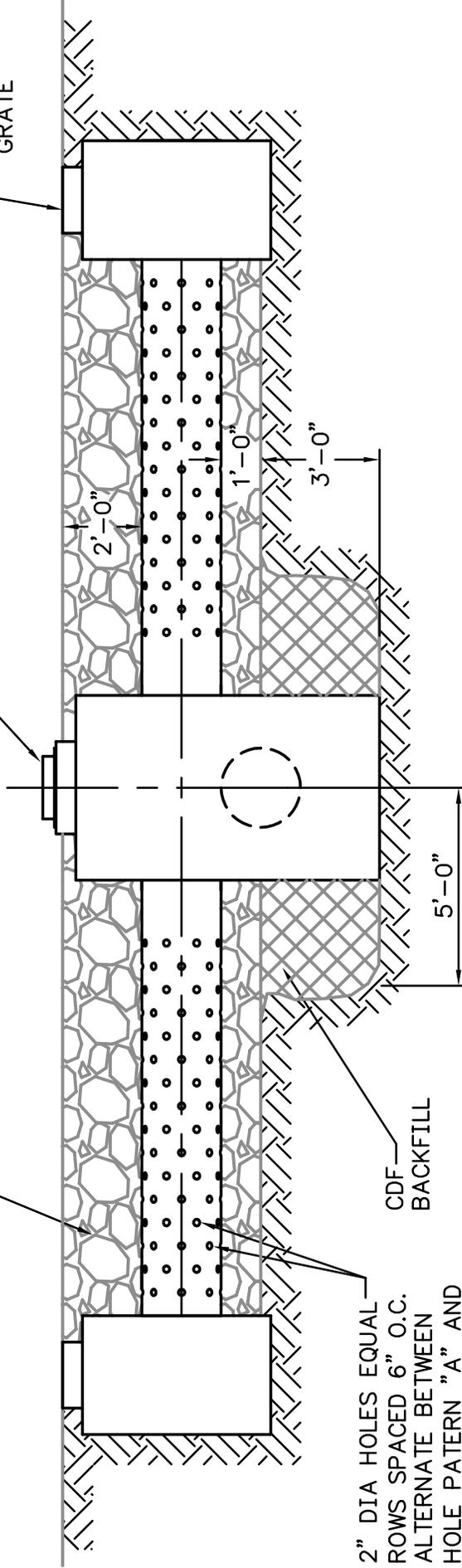
CITY OF MILTON  
DIFFUSER PIPE  
DETAIL

REVISION DATE: 3/30/07	SCALE: NONE	DWG. NO. <b>SW-26</b>
---------------------------	----------------	--------------------------

HAND PLACED RIPRAP  
PER SECTION 9-13.2  
W.S.D.O.T. STANDARD  
SPECIFICATIONS

SDCB NO. 1  
48 INCH TYPE 2 WITH  
LOCKING FRAME AND  
GRATE

CATCH BASIN  
TYPE 1-L, TYP.  
WITH LOCKING  
FRAME AND  
GRATE



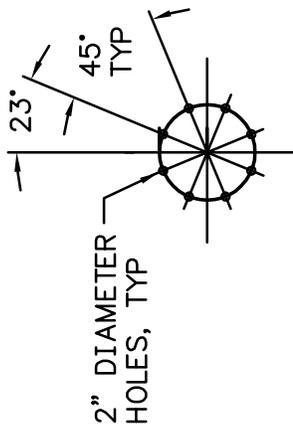
2" DIA HOLES EQUAL  
ROWS SPACED 6" O.C.  
ALTERNATE BETWEEN  
HOLE PATTERN "A" AND  
HOLE PATTERN "B", TYP

CDF  
BACKFILL

## DIFFUSER PIPE SECTION

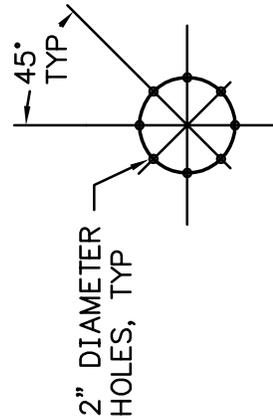
SEE SW-26 FOR PLAN VIEW

SCALE: NONE



2" DIAMETER  
HOLES, TYP

HOLE PATTERN "B"



2" DIAMETER  
HOLES, TYP

HOLE PATTERN "A"



CITY OF MILTON  
DIFFUSER PIPE  
DETAIL

REVISION DATE:  
3/30/07

SCALE:  
NONE

DWG. NO.  
**SW-27**

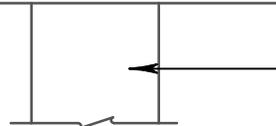


FOREGROUND  
COLOR: TEAL

BACKGROUND  
COLOR: BEIGE

SIGN SIZE: 24"X36"

ATTACH SIGN TO POST WITH  
TWO (2) 5/16 GALVANIZED  
LAG BOLTS WITH WASHERS



8'-4X4 CEDAR OR  
PRESSURE-TREATED  
POST SET 3' IN GROUND  
OR 2X2 UNISTRUT  
(SEE STREET DETAILS)

THE WETLAND SIGN SHALL BE POSTED AT THE  
BOUNDARY BETWEEN THE SENSITIVE AREA BUFFER,  
SETBACK AREA OR SETBACK TRACT AND THE  
BUILDING SETBACK AREA.

SIGN SHALL BE STATIONED IN A PROMINENT  
LOCATION, i.e.: AT THE CLOSEST POINT TO THE  
PROPOSED DEVELOPMENT. SIGN MAY ALSO BE  
ATTACHED TO FENCES.



CITY OF MILTON

WETLAND SIGN  
INSTALLATION

REVISION DATE:

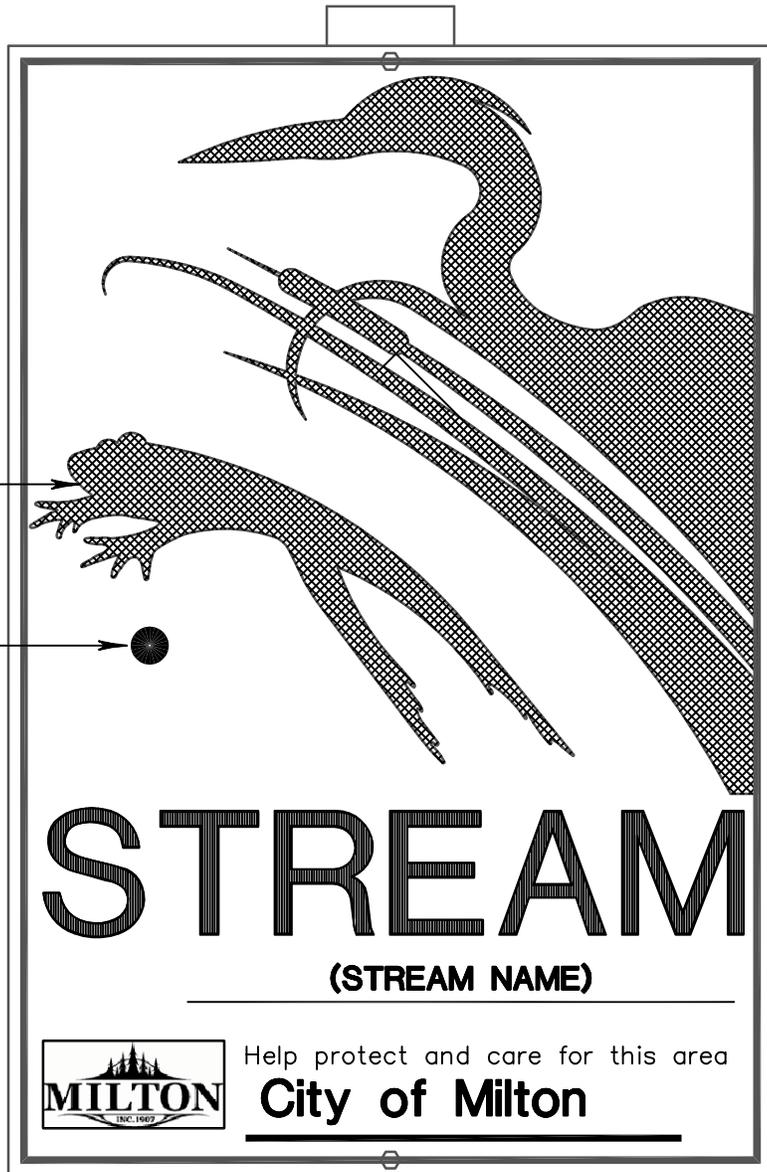
10/19/09

SCALE:

NONE

DWG. NO.

SW-28

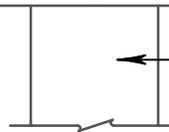


FOREGROUND  
COLOR: TEAL

BACKGROUND  
COLOR: BEIGE

SIGN SIZE: 24"X36"

ATTACH SIGN TO POST WITH  
TWO (2) 5/16 GALVANIZED  
LAG BOLTS WITH WASHERS



8'-4X4 CEDAR OR  
PRESSURE-TREATED  
POST SET 3' IN GROUND  
OR 2X2 UNISTRUT  
(SEE STREET DETAILS)

THE STREAM SIGN SHALL BE POSTED AT THE  
BOUNDARY BETWEEN THE SENSITIVE AREA BUFFER,  
SETBACK AREA OR SETBACK TRACT AND THE  
BUILDING SETBACK AREA.

SIGN SHALL BE STATIONED IN A PROMINENT  
LOCATION, i.e.: AT THE CLOSEST POINT TO THE  
PROPOSED DEVELOPMENT. SIGN MAY ALSO BE  
ATTACHED TO FENCES.



CITY OF MILTON

STREAM SIGN  
INSTALLATION

REVISION DATE:

10/19/09

SCALE:

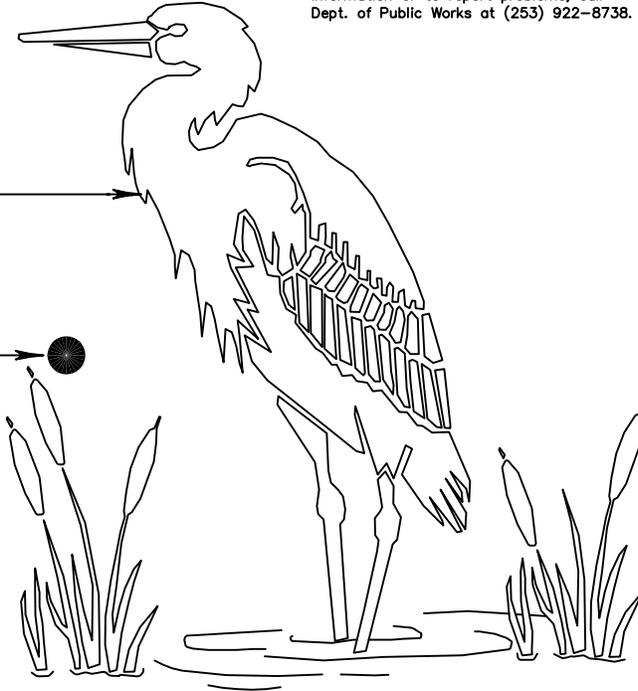
NONE

DWG. NO.

SW-29

# Your Neighborhood Detention Pond

This detention pond is a vital part of your community's storm water drainage system. Excess runoff is stored and slowly released from this pond. This helps reduce downstream flooding and preserves water quality on it's way to Puget Sound. Dump no waste. Drains to stream/ For more information or to report problems, call Dept. of Public Works at (253) 922-8738.



FOREGROUND  
COLOR: TEAL

BACKGROUND  
COLOR: BEIGE



**City of Milton**

SIGN SIZE: 24"x36"

ATTACH SIGN TO POST WITH  
TWO (2) 5/16 GALVANIZED  
LAG BOLTS WITH WASHERS

8'-4X4 CEDAR OR  
PRESSURE-TREATED  
POST SET 3' IN GROUND  
OR 2X2 UNISTRUT  
(SEE STREET DETAILS)

SIGN SHALL BE STATIONED IN A PROMINENT  
LOCATION, i.e.: AT THE CLOSEST POINT TO THE  
PROPOSED DEVELOPMENT. SIGN MAY ALSO BE  
ATTACHED TO FENCES.



## CITY OF MILTON DETENTION POND SIGN INSTALLATION

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**SW-30**

**SECTION 6**  
**WATER SYSTEM STANDARDS**

**SECTION 6 WATER SYSTEM STANDARDS****6.01 General**

Off-site improvements to the existing system by the Developer may be required by the Public Works Director based on the condition, size, age, structural integrity, ability, and capacity of the existing water system and impacts caused by the proposed development. These off-site improvements in addition to “on-site” improvements shall be completed as determined by the City to mitigate impacts caused by the development, and/or installed to facilitate hydraulic looping.

Furthermore, the City shall require that onsite water system be looped to the City system and/or be extended to the far property line to provide for future extension and looping of the main.

**6.02 Design Standards**

The design elements of water system improvements shall conform to City Standards as set forth herein and follow current design practice as set forth herein.

- A. All work shall be accomplished conformance with the WSDOT Current Standard Specifications for Road, Bridge, & Municipal Construction, AWWA Standards, the City’s Standards, and according to the recommendations of the manufacturer of the material or equipment concerned and as specified herein as applicable. City Standard shall prevail in all circumstances, where conflicts exist the City’s decision shall be final.
- B. Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WEF, WPCF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints.
- C. All piping and plumbing installed to provide water for human consumption that is connected to the City’s water system shall be lead free.
- D. The location of the water mains, valves, hydrants, and principal fittings including modifications shall be staked by the Developer. No deviation shall be made from the required line or grade. The Developer shall verify and protect all underground and surface utilities encountered during the progress of this work.

- E. All pipelines shall be tested and disinfected to City and AWWA Standards prior to acceptance.
- F. Computations and other data used for design of the water system shall be submitted to the City for approval.
- G. Before acceptance of the water system by the City, all pipes, appurtenances, vaults, meter boxes, etc., shall be cleaned of all debris and objectionable material. Mechanical systems shall be field checked for performance. Operation and maintenance manuals shall be provided after a “start-up” is satisfactorily witnessed.
- H. Fire hydrants are required to be installed a maximum of 600 feet in residential areas and/or located no more than 350 feet from the back of any proposed lot, and a maximum of 300 feet in multi-residential and business and light manufacturing areas. However, fire hydrants shall be furnished and installed at all locations as specifically mandated by the local fire marshall and/or per City Building Code. Distances referenced herein shall be measured linearly in and along street or road.
- I. Fire hydrants on dead end streets and residential roads shall be located within approximately 300 feet from the center of all lots. Distances referenced herein shall be measured linearly in and along street or road.
- J. Pipes connecting hydrants to mains shall be at least 6 inch in diameter and not longer than 50 feet.
- K. Valves shall be installed at intervals not to exceed 1,000 feet. Valve shall be installed at each end of easements.
- L. Dead end lines are not permitted except where the Developer can demonstrate to the City’s satisfaction that it would be impractical to extend the line at a future date. Water mains located in platted cul-de-sacs shall extend to the plat line beyond the cul-de-sac to neighboring property(ies) to allow for a convenient future connection, and/or extended off-site to create a hydraulic loop, and, as minimum, have a 2-inch blow off assembly installed at the termination point.
- M. Unless otherwise approved or required by the Public Works Director, the water main shall be ductile iron pipe of the class as referenced below. The minimum nominal size for water mains shall be 8 inches, unless otherwise approved/required by Public Works Director.

<u>Pipe Diameter</u>	<u>Class</u>
6" through 14"	Class 52
16" and larger	Class 50

Exception: 6-inch hydrant spools and pipelines located beneath rock walls or other types of retaining walls shall be Class 53.

- N. Residential water service pipe shall be high plastic “Poly” pipe (no joints beneath pavement areas), meeting or exceeding ASTM D2239, SDR-7 as manufactured by Driscopipe (CL 200).
- O. Minimum residential size service lines between the water main and the water meter shall be 1-inch unless otherwise specified. All service lines shall be the minimum size or larger if specified by the adopted City Plumbing Code in accordance with fixture units. Dual resident service, will not be allowed.
- P. Developer shall furnish and install **water-sampling stations** in field per City direction. One station is required for development in size of 1 to 10 lots. One additional station is required for each additional 50 lots or portions thereof.

**6.03 General Requirements**

- A. Prior to construction, the Contractor shall notify the City and schedule a pre-construction meeting.
- B. Work shall be performed only by contractors experienced and qualified in constructing public water systems.
- C. Prior to any work being performed, the Developer shall contact the City’s Public Works Director or City Inspector to set forth his proposed work schedule.
- D. Developer shall obtain approval of materials to be used from City’s Public Works Department and/or City Inspector prior to ordering or installing any materials.
- E. Water mains shall be laid only in dedicated streets or in easements, which have been granted to the City. A street is normally not considered dedicated until the plat, which created it, has been officially filed with the County Auditor. Water mains may be laid within a plat or property identified in the developer extension agreement, subject to dedication of appropriate rights-of-way and recording of appropriate easements at the time the plat and/or warranty bill of sale is filed with the County Auditor.

- F. All materials shall be new and undamaged.
- G. Provide bends in field to suit construction, and in accordance with the pipe manufacturer's recommendations so as not to exceed allowable deflection at pipe joints.
- H. Provide concrete thrust blocking and/or restrained joints at all fittings and bends in accordance with the City standards and as local conditions might dictate. Size of blocking to be designed by Developer's Engineer and approval by City. Concrete shall be commercial class 3000 psi.
- I. Provide concrete anchor blocking at all up-thrust vertical bends in accordance with City standards. Size of blocking to be designed by Developer's Engineer and approval by City. Concrete shall be commercial class 3000 psi.
- J. All valve marker posts shall be prefabricated concrete and painted yellow (two coats) and marked (in black stenciled letters) with the distance (to nearest foot) to valve being referenced.
- K. Meter services and meter boxes shall be set to final grade and all adjustments shall be made prior to final pressure testing of the system, except as approved by the City. Centerline of service inlets shall be located to match bottom elevation of meter box in such a manner that meter inlet and outlet will be the same elevation at the bottom of the meter box. Service inlet shall be centered at inlet end of box and faced toward outlet end of box parallel with long sides.
- L. All water services shall end within road right-of-way (i.e., meters located 12 inches inside property/right-of-way line). They shall be located immediately adjacent to neighboring property lines. They shall not be placed in sidewalks, irrigation strips, major landscaping, driveways, or drainage channels.
- M. All meters shall be installed by the City, and the Developer or property owner shall pay the current meter installation charge. Three feet of clear area shall be maintained around the meter. No structures, bushes, or trees shall be placed within 3 feet of the water mains.
- N. Meters shall not be placed in the sidewalk or driveway.
- O. All services other than single family residential shall be provided with state approved backflow prevention commensurate with the degree of anticipated hazard located outside the building.

- P. All new buildings and residences shall include in their water service a suitable pressure-reducing valve to protect the plumbing from excessive pressures when local water pressure is in excess of 80 psi, unless otherwise waived in writing by the City.
- Q. All new construction shall comply with the latest addition of the “Accepted Procedure and Practice in Cross Connection Control Manual” as published by the Pacific Northwest Section of the American Water Works Committee” and the City adopted code.
- R. Cut in connections and wet taps shall not be made on Fridays, the day before a holiday, City recognized holidays, or weekends (unless approved by the City). All tapping sleeves and tapping valves shall be pressure tested prior to making connection to existing mains. Only qualified contractors, as approved by city, will be allowed to make connections/interties into existing system.
- S. Contractor shall notify the City and obtain approval prior to any scheduled water shut-off or turn-on, affecting the water system or it’s customers, a minimum of 2 working days in advance. The Contractor shall install door hangers for all customers affected by scheduled shutdown. Door hangers shall be provided by the City.
- T. Road restoration shall be per City, County, or State permit of approval (as applicable). Developer and Contractor shall become familiar with all State, County, and City conditions of required permits, and shall adhere to all conditions and requirements.
- U. The Developer shall be required, upon completion of the work and prior to acceptance by the City, to furnish the City with a written guarantee covering all material and workmanship for a period of 2 years after the date of final acceptance and he shall make all necessary repairs during that period at his own expense, if such repairs are necessitated as the result of furnishing poor materials and/or workmanship. The Developer shall obtain warranties from the Contractors, subcontractors, and suppliers of material or equipment where such warranties are required and shall deliver copies to the City upon completion of the work.
- V. Water Mains and Fittings
  - 1. All water mains shall be furnished and installed as shown on the Plans as approved by the City and/or in the field as approved by the City’s inspector.

2. Water mains to be installed shall be ductile iron pipe for all sizes, unless specifically noted otherwise. All ductile iron water pipe shall be provided with factory bagging installed to cover the ends of the pipe. Factory bagging shall remain in unbroken condition throughout transport and storage, and until pipe placement in the trench.
3. The ductile iron pipe shall conform to ANSI/AWWA C151/A21.51-91 Standards, and current amendments thereto, except the ductile iron pipe shall be thickness Class 52 for 4 inch through 14 inch diameter pipe (except for 6-inch hydrant spools which shall be Cl. 53) and Class 50 for 16 inch and larger. Grade of iron shall be a minimum of 60-42-10. The pipe shall be cement lined to a minimum thickness of 1/16 of an inch, meeting NSF standards for potable water, and the exterior shall be coated with an asphaltic coating. Each length shall be plainly marked with the manufacturer's identification, year case, thickness, class of pipe and weight.
4. Type of joint shall be mechanical joint or push-on type, employing a single gasket, such as "Tyton," except where otherwise calling for flanged ends shall conform to AWWA C111. Bolts furnished for mechanical joint pipe and fittings shall be high strength ductile iron, with a minimum tensile strength of 50,000 psi.
5. Restrained joint pipe, where shown on the Plans shall be push-on joint pipe with "Field LOK®" gaskets as furnished by U.S. Pipe or equal for 24 inch diameter and smaller pipe. The restrained joint pipe shall meet all other requirements of the non-restrained pipe.
6. All pipe shall be jointed by the manufacturer's standard coupling, be all of one manufacturer, be carefully installed in complete compliance with the manufacturer's recommendations.
7. Joints shall be "made up" in accordance with the manufacturer's recommendations, Standard joint materials, including rubber ring gaskets, shall be furnished with the pipe. Material shall be suitable for the specified pipe size and pressures.
8. All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards for 350 psi

pressure rating for mechanical joint fittings and 250 psi pressure rating for flanged fittings. All fittings shall be cement lined and either mechanical joint or flanged, as indicated on the Plans.

9. Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, Star Pipe Products, or approved equal.
10. All bend fittings and tees shall be installed to include concrete blocking with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be Mega Lug (retainer glands) or City approved equal.
11. All couplings shall be ductile iron mechanical joint (long pattern) sleeves.
12. The pipe and fittings shall be inspected for defects before installation. All lumps, blisters and excess coal tar coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and dry, and free from oil and grease before the pipe is laid.
13. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with select backfill tamped under it. Precaution shall be taken to prevent dirt from entering the joint space. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. If water is in the trench when work resumes, the seal shall remain in place until the trench is pumped completely dry. No pipe shall be laid in water or when trench conditions are unsuitable or unsafe.
14. The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe or cement lining, and so as to leave a smooth end at right angles to the axis of the pipe. Pipe shall be laid with bell

ends facing in the direction of the laying, unless approved otherwise by the City. Wherever it is necessary to deflect pipe from a straight line, the amount of deflection allowed shall not exceed the pipe manufacturer's recommendations.

15. For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before jointing, and shall be jointed according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom, and sides, so pressure on gasket is even.
16. For connection of push on type joints, the jointing shall be done according to manufacturer's recommendations, with special care used in cleaning gasket seat to prevent any dirt or sand from getting between the gasket and pipe. Lubricant to be used on the gasket shall be non-toxic and free from contamination. When a pipe length is cut, the outer edge of the cut shall be beveled with a file to prevent damage to the gasket during jointing.
17. Valves, fittings, plugs, and caps shall be set and jointed to pipe in the manner as required. All dead ends on new mains shall be closed with dead end M.J. caps or plugs, or blind flange and blocking.
18. Fittings shall be "blocked" with poured-in-place concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. Thrust blocks shall be poured as soon as possible after setting the fittings in place to allow the concrete to "set" before applying the pressure test. The concrete thrust blocks shall be in place before beginning the pressure test. Anchor blocks shall be allowed to set sufficiently to develop the necessary bond strength (minimum 3 days) between the reinforcing rods and the concrete anchor before beginning the pressure test. Concrete shall be commercial Class 3000 psi. A visqueen barrier shall be provided to protect glands, bolts, and other miscellaneous materials required for this type of connection.
19. All of the new piping, valves and blocking shall have been installed, disinfected and tested up to the point of cutting into existing lines before the crossover is made. The crossover to the existing system shall be in full readiness, including the cut and sized specials. 48-hour notice shall be given the City in

advance of the planned “cut-ins.” All solid sleeves shall be “long body” pattern.

20. All backfill in roadway sections shall be placed and compacted in accordance with County, City, and/or State requirements and copies of the compaction results shall be provided to the City.
21. All backfill in easements shall be placed and compacted to 90 percent of Modified proctor dry maximum density per ASTM D1557.

#### W. Valves

All valves 14 inches and larger shall be butterfly valves. All valves 12 inches and smaller shall be resilient seat gate valves.

##### 1. Resilient-Seated Gate Valves

All gate valves shall conform to AWWA C509 or C515 Standards for resilient-seated, high strength, bronze stemmed gate valves. The valves shall be ductile iron-bodied, iron disk completely encapsulated with polyurethane rubber and bronze, non-rising stem with “O” ring seals. The polyurethane sealing rubber shall be fusion bonded to the wedge to meet ASTM D429 tests for rubber to metal bond. The valves shall open counter-clockwise and be furnished with 2-inch square-operating nuts except valves in vaults shall be furnished with handwheels. All surfaces, interior, and exterior shall be fusion-bonded epoxy coated, acceptable for potable water.

The valve shall be valve rated at 250 psi or higher.

All valves shall be set with stems rising in a true vertical. The axis of the valve box shall be common with the axis projected off the valve stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

Valves shall be Dresser, M&H, or Clow, American AVK, or approved equal.

##### 2. Butterfly Valves

Butterfly valves shall be of the tight closing rubber seat type with rubber seat either bonded to the body or mechanically retained in the body with no fasteners or retaining hardware in

the flowstream. The valves may have rubber seats mechanically affixed to the valve vane. Where threaded fasteners are used, the fasteners shall be retained with a locking wire or equivalent provision to prevent loosening. Rubber seats attached to the valve vane shall be equipped with stainless steel seat ring integral with the body, and the body internal surfaces shall be epoxy coated to prevent tuberculations buildup which might damage the disc-mounted rubber seat.

No metal-to-metal sealing surfaces shall be permitted. The valves shall be bubble-tight at rated pressures with flow in either direction, and shall be satisfactory for applications involving valve operations after long periods of inactivity. Valve discs shall rotate 90 degrees from the full open position to the tight shut position. The valves shall meet the full requirements of AWWA C504, Class 150B.

The valve shall be Henry Pratt Company “*Groundhog*,” or approved equal.

### 3. Tapping Sleeves and Tapping Valves

The tapping sleeves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two sections for ease of installation and shall be assembled around the main without interrupting service.

Stainless steel sleeve shall be used on AC pipe.

Mechanical joint style sleeves shall be ductile iron or fabricated steel style sleeves. Ductile iron mechanical joint style sleeves are required for size-on-size connections. Mechanical cast joint sleeves shall be manufactured by Clow, Dresser, Mueller, Tyler, U.S. Pipe, or owner approved equal.

Fabricated steel style sleeves shall be fusion bonded coated, acceptable for potable water. Fabricated steel sleeves shall be manufactured by JCM, Romac or approved equal.

Tapping valves shall be provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings to permit entry of the tapping machine cutters. In all other respects, the tapping valves shall conform

to the resilient seat gate valves herein specified with regards to operation and materials.

The installation of the tapping sleeves and valves shall be performed by a qualified contractor. Evidence of same shall be provided to the City.

The tapping sleeve and valve shall be tested to 100 psi (air) prior to tapping the main.

4. Pressure Reducing and Relief Valves (Residential)

When street main pressure exceeds 80 psi, an approved pressure reducing valve with an approved pressure relief device shall be installed in the water service pipe near its entrance to the building to reduce the pressure to 80 psi or lower, except where the water service pipe supplies water directly to a water-pressure boost system, an elevated water gravity tank, or to pumps provided in connection with a hydropneumatic or elevated gravity water-supply tank system. Pressure at any fixture shall be limited to no more than 80 psi under no-flow conditions.

Where local water pressure is in excess of 80 pounds per square inch (551 kPa), an approved type pressure regulator preceded by an adequate strainer shall be installed and the pressure reduced to 80 pounds per square inch (551 kPa) or less. For potable water services up to and including 1-1/2 inch (38.1 mm) regulators, provision shall be made to prevent pressure on the building side from exceeding main supply pressure. Approved regulators with integral bypasses are acceptable. Each such regulator and strainer shall be accessibly located and shall have the strainer accessible for cleaning without removing the regulatory or stainer body or disconnecting the supply piping. All pipe size determinations shall be based on 80 percent of the reduced pressure.

5. Pressure Reducing Valves (System)

If extensions require main line pressure reducing valves as determined by the City, then such entire installation, including valves, piping, vaults, and drain lines shall be installed by the Developer conforming to City Standards.

The pressure reducing installation shall be prefabricated and plumbed vault and shall include two Cla-Val globe type

pressure-reducing valves, sized for the area to be served downstream of the installation.

6. All Valves

The valves shall be set with stems vertical. The axis of the valve box shall be common with the axis projected off the valve stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

All valves with operating nuts located more than 42 inches below finished grade shall be equipped with extension stems to bring the operating nut to within 18 inches of the finished grade.

At the top of the extension stem, there shall be a 2-inch standard operating nut, complete with a centering flange that closely fits the 5-inch pipe encasement of the extension stem. The valve box shall be set in a telescoping fashion around the 5-inch pipe cut to the correct length to allow future adjustment up or down.

Each valve shall be provided with an adjustable two-piece cast iron valve box of 5-inch minimum inside diameter. Valve boxes shall have a top section with an 18-inch minimum length. The valve boxes and covers shall be Rich No. 940 or equal.

Valves located in easements or outside of paved areas shall have concrete collars with a minimum size of 2'-0" diameter by 4 inches thick.

7. Valve Markers

For each valve located outside of an asphalt or concrete surface, provide a concrete valve marker post.

The concrete marker posts shall have a 3-inch minimum square section and a minimum length of 36-inches, with beveled edges, and contain at least one (1) 3/8-inch diameter bar of reinforcing steel. Markers shall be placed at the edge of the right-of-way opposite the valve, and set so as to leave 12 inches of the post exposed above grade. The exposed portion of the marker posts shall be painted with two coats of Preservative Brand No. 43-616 yellow enamel paint. Distance

to referenced valve shall be to the nearest foot, and shall be clearly stenciled in black numerals 2 inches in height.

#### X. Fire Hydrants

All fire hydrants shall be approved by the National Board of Fire Underwriters and conform to AWWA Specification C502, breakaway type, in which the valve will remain closed if the barrel is broken. The hydrant barrel shall have a diameter of not less than 8-1/2 inches, and the valve diameter shall be not less than 5-1/4 inches. Each hydrant shall be equipped with two (2) 2-1/2 inch hose ports (National Standard Thread), and one (1) 4-1/2 inch pumper connection (National Standard Thread), with a permanent anodized short profile style Storz hydrant adaptor and anodized Storz blind flange shall be installed on the pumps port. The size of the adaptor will be 4-inches within City limits and 5-inches outside City limits.

Each hydrant shall be equipped with a suitable positive acting drain valve and 1-1/4 inch pentagonal operating nut (counter-clockwise opening). The fire hydrants shall be Mueller A423, M&H "Reliant" #929, American AVK, or City approved equal. A blue pavement marker shall be furnished and installed.

The holding spools between the gate valve and fire hydrant shall be made from 6 inch Class 53 ductile iron pipe, 0.34-inch wall thickness. The hydrant and gate valve shall be anchored in place using holding spools and mechanical joint restraint device. Holding spools with length in excess of 17 feet shall be supplied with an M.J. sleeve and mechanical joint restraint device. (Field Lock Type Gasket).

The fire hydrants shall be painted per local fire marshall requirements with two coats of Kelly Moore 615 CAT yellow paint. After installation, they shall be wire brushed and field painted with two additional coats of similar yellow enamel paint. Distance to the hydrant valve shall be clearly stenciled in black numerals 2 inches in height on the fire hydrant below the pumper port.

Between the time that the fire hydrant is installed and the completed facility is placed in operation, the fire hydrant shall at all times be wrapped in burlap, or covered in some other suitable manner to clearly indicate that the fire hydrant is not in service.

All fire hydrants shall have 3 feet of clear space around the hydrant for access. No structures, bushes, or trees shall be placed within 3 feet of the hydrant.

Y. Blow-Offs and Air Relief Assemblies:

Two inch or 4-inch blowoff assemblies (per City direction) shall be installed at the terminus of all dead end water mains. Blowoffs utilized by the Contractor for flushing the water main shall be sufficiently sized to obtain a minimum 2.5 feet per second velocity in the main. Temporary blow-offs shall be removed and replaced with a suitably sized watertight brass plug.

Two inch air and vacuum release assemblies shall be installed at principal high points in the system. See detail.

The installation of these items shall include connection piping, gate valve, valve box, and all accessories. Valve markers shall be optional with City.

Z. Water Sampling Station

One water sampling station shall be provided to the City for each development in size of 1 to 10 lots. One additional sampling station shall be provided for each additional 50 lots or portion thereof. The water sampling station shall be furnished and installed at a location as determined by the City and as further shown on the Standard Detail.

#### **6.04 Water Pipe Testing and Disinfecting**

All pipelines shall be tested and disinfected prior to acceptance of work. A water hydrant meter shall be required and procured from the City for all water utilized for flushing pipelines. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the Developer. Feed for the pump shall be from a barrel or other container within the actual amount of "makeup" water, so that it can be measured periodically during the test period.

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Contractor shall furnish and install temporary blocking.

As soon as pipe is secured against movement under pressure, it may be filled with water. Satisfactory performance of air valves shall be checked while the line is filling.

Contractor shall preflush all water mains after water has remained in the main for 24 hours and before pressure testing the main.

After the pipe is filled and all air expelled, it shall be pumped to a test pressure of 250 psi, and this pressure shall be maintained for a period of not less than 30 minutes to insure the integrity of the thrust and anchor blocks. The contractor/developer is cautioned regarding pressure limitations on butterfly valves. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrostatic tests shall be performed on every complete section of water main between two valves, and each valve shall withstand the same test pressure as the pipe with no pressure active in the section of pipe beyond the closed valve. The Developer shall provide an oil-filled pressure gauge with a range of 0 – 300 psi.

In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline. The leakage test shall be conducted at 200 psi for a period of not less than 1 hour. The quantity of water lost from the main shall not exceed the number of gallons per hour determined by the formula:

$$L = \frac{ND(P)^{0.5}}{7,400}$$

in which

- L = Allowable leakage, gallons/hour
- N = Number of joints in the length of pipeline tested
- D = Nominal diameter of the pipe in inches
- P = Average test pressure during the leakage test, psi

Pipe Size	Allowable Leakage Gal. Per Hour per 1,000 ft. @ 200 psi
6"	0.64
8"	0.85
10"	10.6
12"	1.28
16"	1.70

Defective materials or workmanship, discovered as a result of the tests, shall be replaced by the Developer at the Developer’s expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be re-run at the Contractor’s expense until a satisfactory test is obtained.

As sections of pipe are constructed and before pipelines are placed in service, they shall be disinfected in accordance with AWWA C561 and in conformance with the requirements of the State of Washington Department of Health Services.

In all instances, the Developer shall utilize a state approved double check valve type backflow prevention device to protect the potable water supply while filling, flushing, and disinfecting the particular water main.

In the process of chlorinating newly laid water pipe, all valves, fire hydrants, and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

The Developer shall be responsible for flushing all water mains prior to water samples being acquired. The water mains shall be adequately flushed at a rate to provide a minimum 2.5 feet per second velocity in the main.

In all disinfection processes, the Developer shall take particular care in flushing and wasting the chlorinated water from the mains to assure that the flushed and chlorinated water does no physical or environmental damage to property, streams, storm sewers or any waterways. The Developer shall chemically or otherwise treat the chlorinated water to prevent damage to the affected environment, particularly aquatic and fish life of receiving streams. Flushing water must be disposed of in accordance with Washington State Department of Ecology Standards. Discharge of chlorinated flush water to the sanitary sewer system is prohibited, except with City pre-approval.

Chlorine shall be applied in one of the following manners, listed in order of preference, to secure a concentration in the pipe of at least 50 ppm.

- A. Injection of chlorine-water mixture from chlorinating apparatus through corporation cock at beginning of section after pipe has been filled, and with water exhausting at end of section at a rate controlled to produce the desired chlorine concentration;
- B. Injection similarly of a hypochlorite solution;
- C. Placement of dry chlorinated lime throughout pipeline, as constructed, in proper quantities to produce the desired dosage. Filling of pipeline with this method should be at a very slow rate. Pipeline should be filled within two days of placing sterilizing agent.
- D. Other City pre-approved method(s) selected by Developer/Contractor.

After the desired chlorine concentration has been obtained throughout the section of line, the water in the line shall be left standing for a period of 24 hours. Following this, the line shall be thoroughly flushed and a water sample collected. The line shall not be placed in service until a satisfactory bacteriological report has been received.

City forces only will be allowed to operate existing and new tie-in valves. The Contractor's forces are expressly forbidden to operate any valve on any section of line, which has been accepted by the City.

**6.05 Backflow Prevention and Sprinkler Systems**

- A. All water systems connected to the public water system shall have backflow prevention as required by WAC 248-54-285.
- B. All fire sprinkler systems as mandated/proposed/or required by the local fire marshal and/or City Ordinance that have a fire department connection shall have backflow prevention as required by WAC 248-54-285.
- C. Building sprinkler systems may be required based on Building Codes/Fire Marshal requirements.

**6.06 Staking**

All surveying and staking shall be performed by an engineering or surveying firm employed by the Developer and capable of performing such work. The engineer or surveyor directing and/or performing such work shall be currently licensed by the State of Washington to perform said tasks.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of water systems shall be as follows:

- A. Provide staking sufficient to satisfy City. In new plat development roadway centerline staking must be readily identifiable.
- B. Stake locations of all proposed fire hydrants, blow-offs, air-vac assemblies, valves, fittings, meters, etc.

**6.07 Trench Excavation**

- A. Clearing and grubbing where required shall be performed within the easement or public right-of-way as permitted by the City and/or governing agencies. Debris resulting from the clearing and grubbing shall be disposed of by the Developer or Owner in accordance with the terms of all applicable permits.
- B. Trenches shall be excavated to the line and depth designated or approved by the City in order to provide a minimum of 3'-0" of cover over the pipe as measured from finished grade. Except for unusual circumstances where approved by the City, the trench sides shall be excavated vertically and the trench width shall be excavated only to such widths as are necessary for adequate working space, and to accommodate placement of material and compaction, and as mandated

by the governing agency and in compliance with all safety requirements. The trench shall be kept free from water. Surface water shall be diverted so as not to enter the trench. The owner shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out.

- C. The contractor shall perform all excavation of every description and whatever substance encountered and boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth 6 inches below the pipeline grade. Where materials are removed from below the pipeline grade, the trench shall be backfilled to grade with material satisfactory to the City and thoroughly compacted.
- D. Trenching and shoring operations shall not proceed more than 100 feet in advance of pipe laying without approval of the City, and shall be in conformance with Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standard.
- E. The bedding course shall be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel.

### **6.08 Backfilling**

Backfilling and surface restoration shall closely follow installation of pipe. The City, based on the location of construction, shall designate the amount of trenching which may be temporarily left open. In no case shall more than 100 feet be left open without approval of the City. Select material shall be placed and compacted around and under the pipe by employing hand tools and labor. Special precautions should be provided to insure protection of the piping to a point 12 inches above the crown of the pipe. The remaining backfill shall be compacted to 95 percent of the maximum density in traveled areas and road prisms, and 90 percent outside driveways, roadways, road prisms, shoulders, parking, or other traveled areas. Where governmental agencies other than the City have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of the agency having jurisdiction. Typically, all trenches located in roadway sections, roadway "prisms," and in traffic bearing areas shall be required to be backfilled and compacted with imported structural fill. Due to local conditions, as may be specifically approved by the City, suitable excavated backfill material, may be utilized as backfill, or if such material is not available from trenching operations, the City may order the placing of structural backfill conforming with Section 9-03.10 of the Standard Specifications (WSDOT). All excess and/or unsuitable excavated material shall be promptly loaded and hauled to waste.

### **6.09 Street Patching and Restoration**

See Chapter 4 and Standard Details for requirements regarding street patching and trench restoration.

### **6.10 Finishing and Cleanup**

After all other work on this project is completed and before final acceptance, the entire roadway, including the roadbed, planting, sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades and cross sections of a new roadway consistent with the original section, and as hereinafter specified.

On water system construction where all or portions of the construction is in undeveloped areas, the entire area which has been disturbed by the construction shall be cleaned and shaped such that the area will present a uniform appearance, blending into the contour of the adjacent properties. All other requirements outlined previously shall be met.

Slopes, grass, and planting areas shall be smoothed and finished to the required cross section and grade by means of hand labor and/or a grading machine insofar as it is possible to do so without damaging existing improvements, trees and shrubs. Machine dressing shall be supplemented by hand work to meet requirements outlined herein, to the satisfaction of the City Inspector.

Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. All graded areas shall be true to line and grade. Where the existing surface is below sidewalk and curb, the area shall be filled and dressed out to the walk or right-of-way line as directed by the City. Wherever fill material is required in the planting area, the finished grade shall be elevated to allow for final settlement, but nevertheless, the raised surface shall present a uniform appearance.

All rocks in excess of 4 inches in diameter shall be removed from the entire construction area and shall be disposed of the same as required for other waste material. In no instance shall the rock be thrown onto private property. Vegetation overhang on slopes which in the City's opinion appears unsightly or is a menace to the safety and welfare to its citizens shall be trimmed, cut, removed, and wastehauled and the slopes dressed neatly so as to present a uniform, natural, well-graded and stabilized surface.

All excess excavated material shall be removed and wastehauled. Trash of all kinds resulting from clearing and grubbing or grading operations shall be removed and wastehauled. Where machine operations have broken down brush and trees beyond the outer limits of the project, the Developer shall trim, remove and dispose of same and restore said disturbed areas to a like or superior condition at his own expense.

Drainage facilities such as inlets, catch basins, culverts, and open ditches shall be cleaned of all debris, which is the result of the Developer and/or Contractor's operations.

All pavements and oil mat surfaces, whether new or old, shall be thoroughly cleaned. Existing improvements such as Portland cement concrete curbs, curb and gutters, walls, sidewalks, and other facilities, which have been sprayed by the asphalt cement, shall be cleaned to the satisfaction of the City Public Works Superintendent.

Castings for monuments, water valves, vaults, and other similar installations, which have been covered with the asphalt material, shall be cleaned to the satisfaction of the City.

### **6.11 General Guarantee and Warranty**

The Developer shall be required, upon completion of the work and prior to acceptance by the City, to furnish the City a written guarantee covering all material and workmanship for a period of 2 years after the date of final acceptance and the Developer shall make all necessary repairs during that period at the Developer's own expense, if such repairs are necessitated as the result of furnishing poor materials and/or workmanship. The Developer shall obtain warranties from the contractors, subcontractors, and suppliers of material or equipment where such warranties are required, and shall deliver copies to the City upon completion of the work.

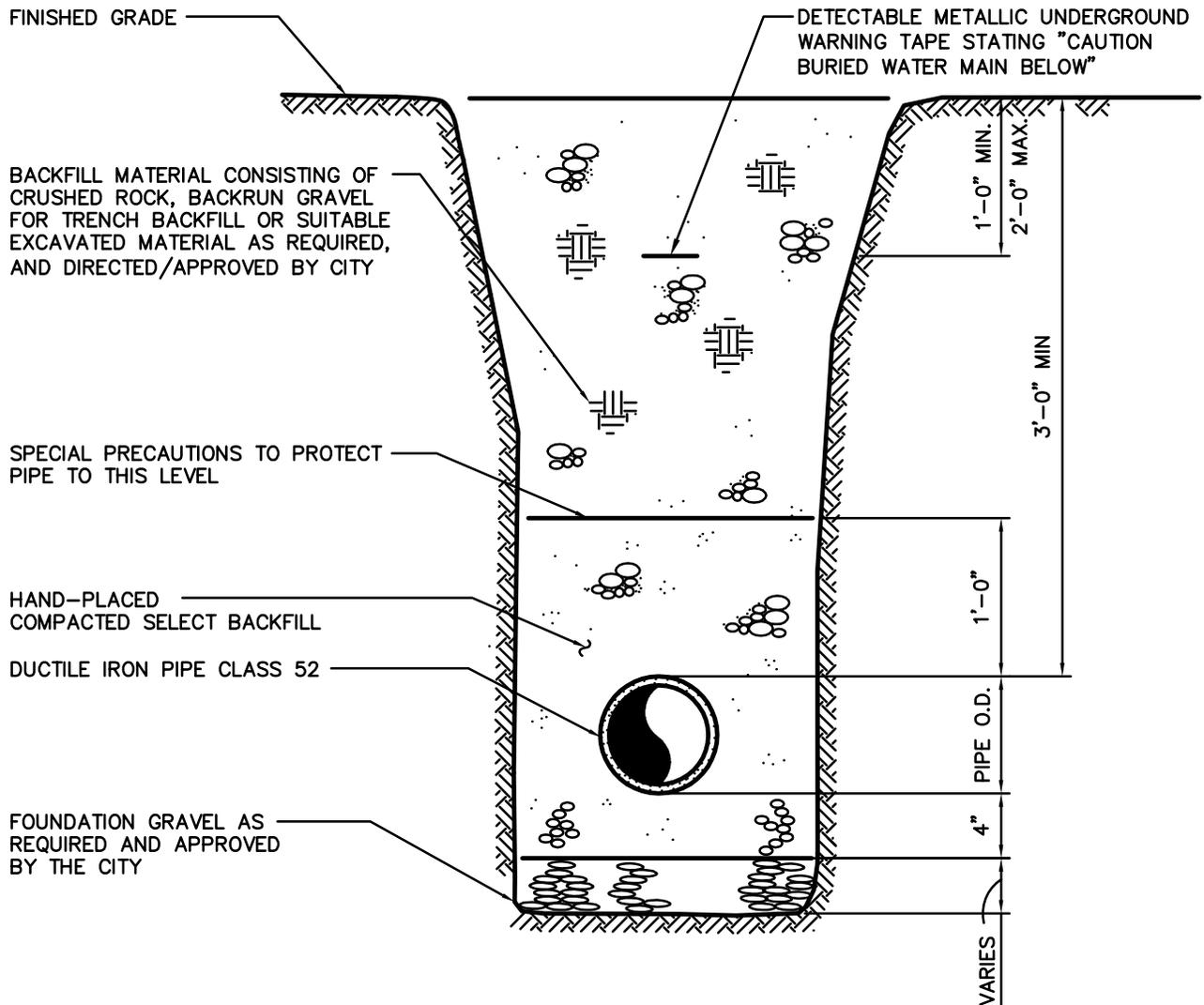
Easement documents, if applicable, shall be filed and recorded with the King/Pierce County Auditor's office and the documents reviewed by the City prior to project acceptance.

TITLE OF DRAWING

DRAWING NO.

**WATER SYSTEM DETAILS**

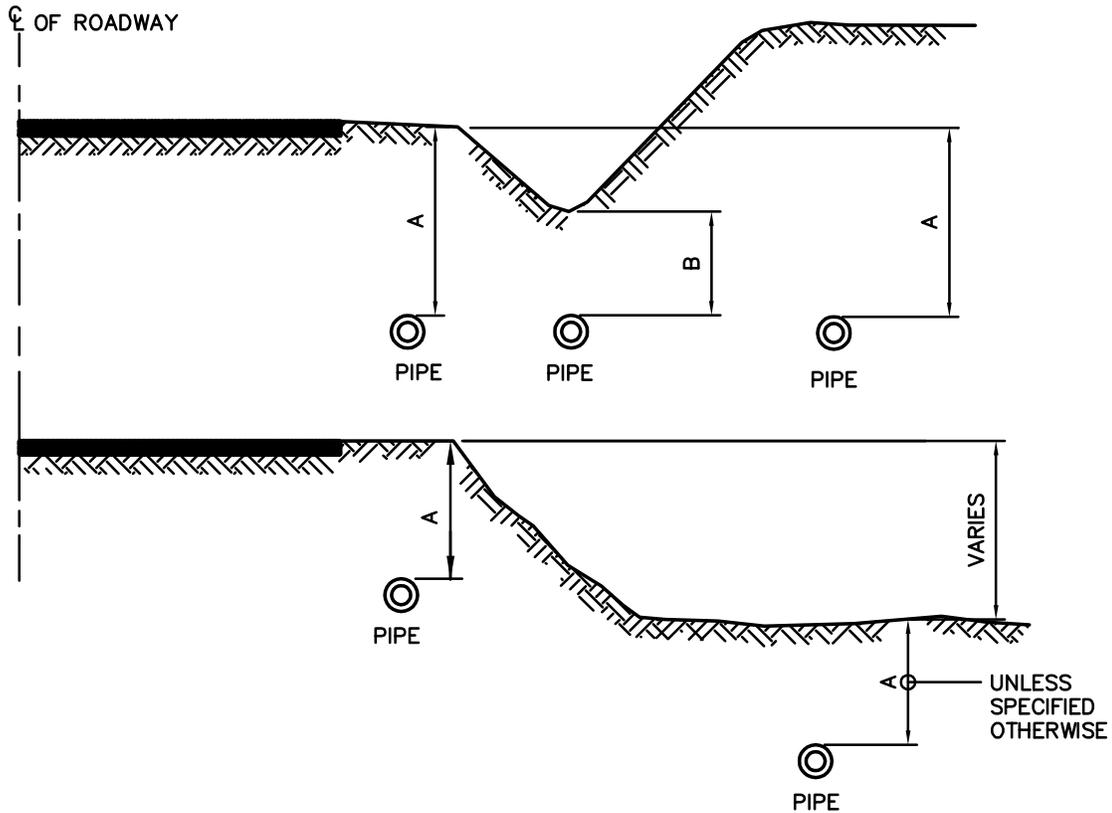
Water Main Trench Section	WT-1
Water Main Depth Requirements	WT-2
Typical Utility Crossing	WT-3
Thrust Restraint for Ductile Iron Pipe	WT-4
Thrust Blocks	WT-5
Vertical Anchor Block	WT-6
Casing Installation	WT-7
Cut In Connection	WT-8
Wet Tap Connection	WT-9
Fire Hydrant Assembly	WT-10
Relocate (Existing) Fire Hydrant Assembly	WT-11
Fire Hydrant Location In Cut or Fill Section	WT-12
1" Water Service	WT-13
1-1/2" and 2" Water Service	WT-14
Valve Box	WT-15
Valve Extension Stem	WT-16
Meter and Meter Vault Assembly 3" thru 10"	WT-17
Meter and Meter Vault Materials List	WT-18
Double-Check Valve Assembly 2" & Smaller	WT-19
Double-Check Detector Valve Assembly 4" and Larger	WT-20
Double-Check Detector Backflow Prevention Assembly	WT-21
Double Check Detector with Fire Connection	WT-22
Pressure Reducing Vault (Page 1)	WT-23
Pressure Reducing Vault (Page 2)	WT-24
Reduced Pressure Backflow Assembly 3/4" to 2"	WT-25
Reduced Pressure Backflow Assembly 3" and Larger	WT-26
Not Used	WT-27
Not Used	WT-28
Air and Vacuum Release Assembly	WT-29
Permanent In-Line Blow-Off Assembly	WT-30
Permanent End-Line Blow-Off Assembly	WT-31
Water Sampling Station	WT-32
Typical Blue Reflector	WT-33



**NOTE:**

1. BACKFILL MATERIAL AND COMPACTION SHALL CONFORM TO WSDOT STANDARDS.
2. WIDTH SHALL BE 2'-6" FOR UP TO AND INCLUDING 12" PIPE. FOR PIPE LARGER THAN 12" DIAMETER TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 16".
3. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, BLOCKS, WILL BE ALLOWED TO SUPPORT TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.

		
<h2 style="margin: 0;">CITY OF MILTON</h2> <h3 style="margin: 0;">WATER MAIN TRENCH SECTION</h3>		
REVISION DATE:	SCALE:	DWG. NO.
11/14/07	NONE	<b>WT-1</b>



PIPE SIZE	A	B
4"–10"	36"	24"
12"–18"	36"	30"
20" & OVER	42"	36"

**NOTE:**

ALL "TRANSMISSION MAINS"  
SHALL HAVE 42" COVER



**CITY OF MILTON  
WATER MAIN  
DEPTH REQUIREMENTS**

REVISION DATE:

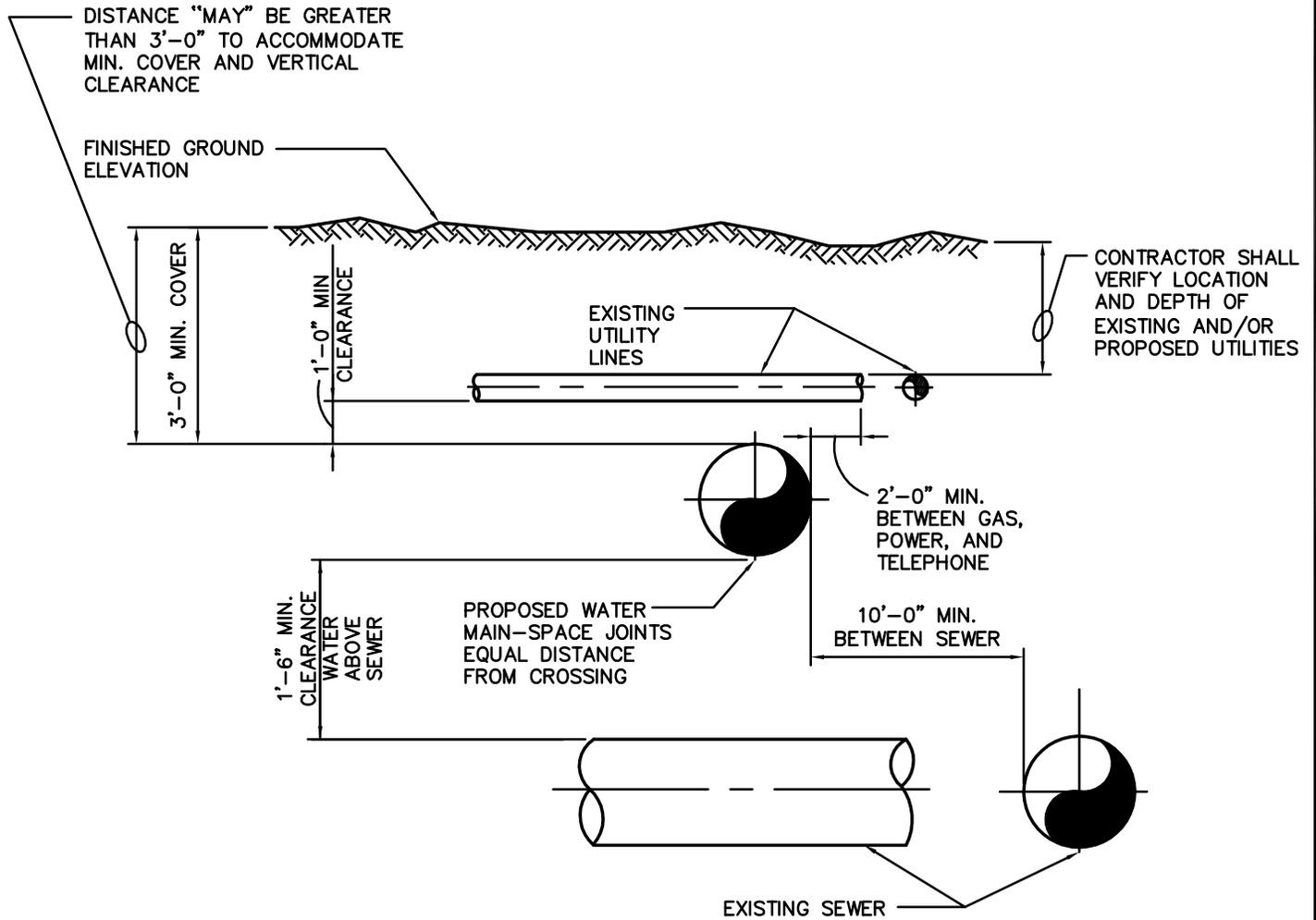
3/30/07

SCALE:

NONE

DWG. NO.

**WT-2**



**NOTES:**

1. REGULATORY AGENCY REQUIREMENTS SHALL SUPERCEDE CITY STANDARDS IF MORE STRINGENT.



**CITY OF MILTON  
TYPICAL UTILITY  
CROSSING**

REVISION DATE:

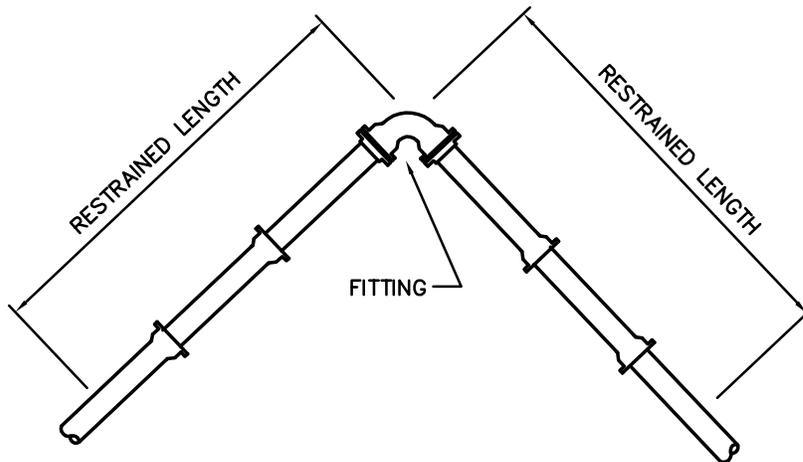
3/30/07

SCALE:

NONE

DWG. NO.

**WT-3**



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
	RESTRAINED LENGTH IN FEET				
4"	40	20	8	5	30
6"	55	25	10	6	40
8"	75	35	15	8	55
10"	90	40	20	9	70
12"	105	45	25	10	85
16"	135	55	27	15	110
18"	145	60	30	20	125

**NOTES:**

1. RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED.
2. FOOTAGES ARE BASED ON 250 PSI PRESSURE AND 36 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED.
3. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE RESTRAINED LENGTHS.



**CITY OF MILTON  
THRUST RESTRAINT FOR  
DUCTILE IRON PIPE**

REVISION DATE:

3/30/07

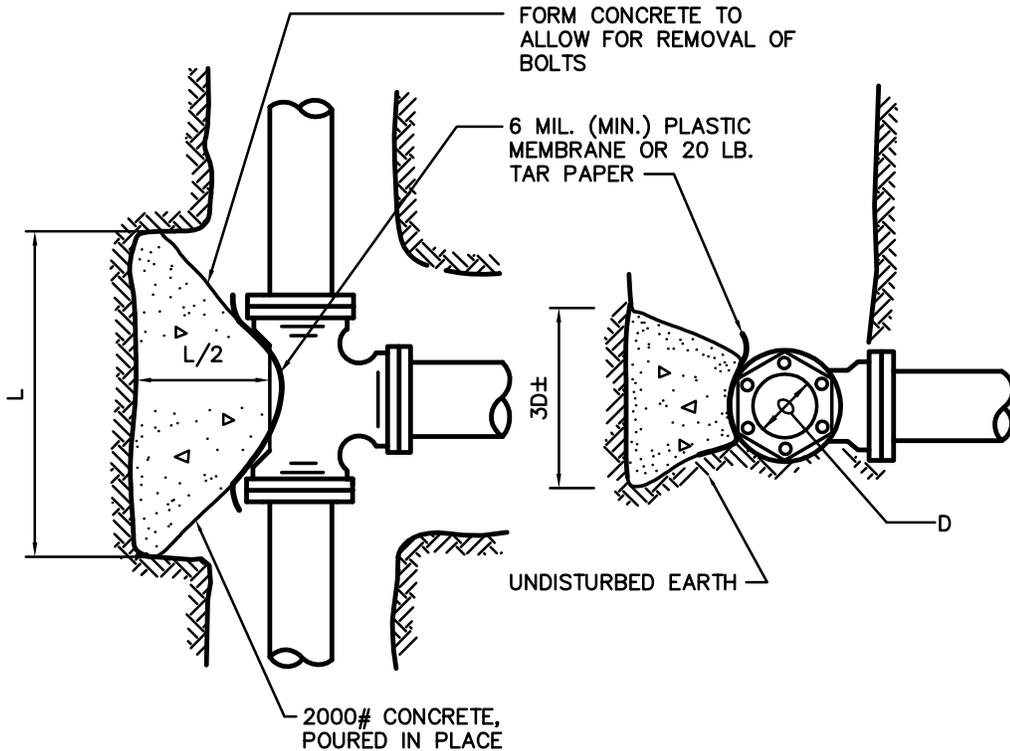
SCALE:

NONE

DWG. NO.

**WT-4**

MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.



**PLAN**

**ELEVATION**

NOTES:

1. BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 2000 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.
2. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.



**CITY OF MILTON  
THRUST BLOCKS**

REVISION DATE:

3/30/07

SCALE:

NONE

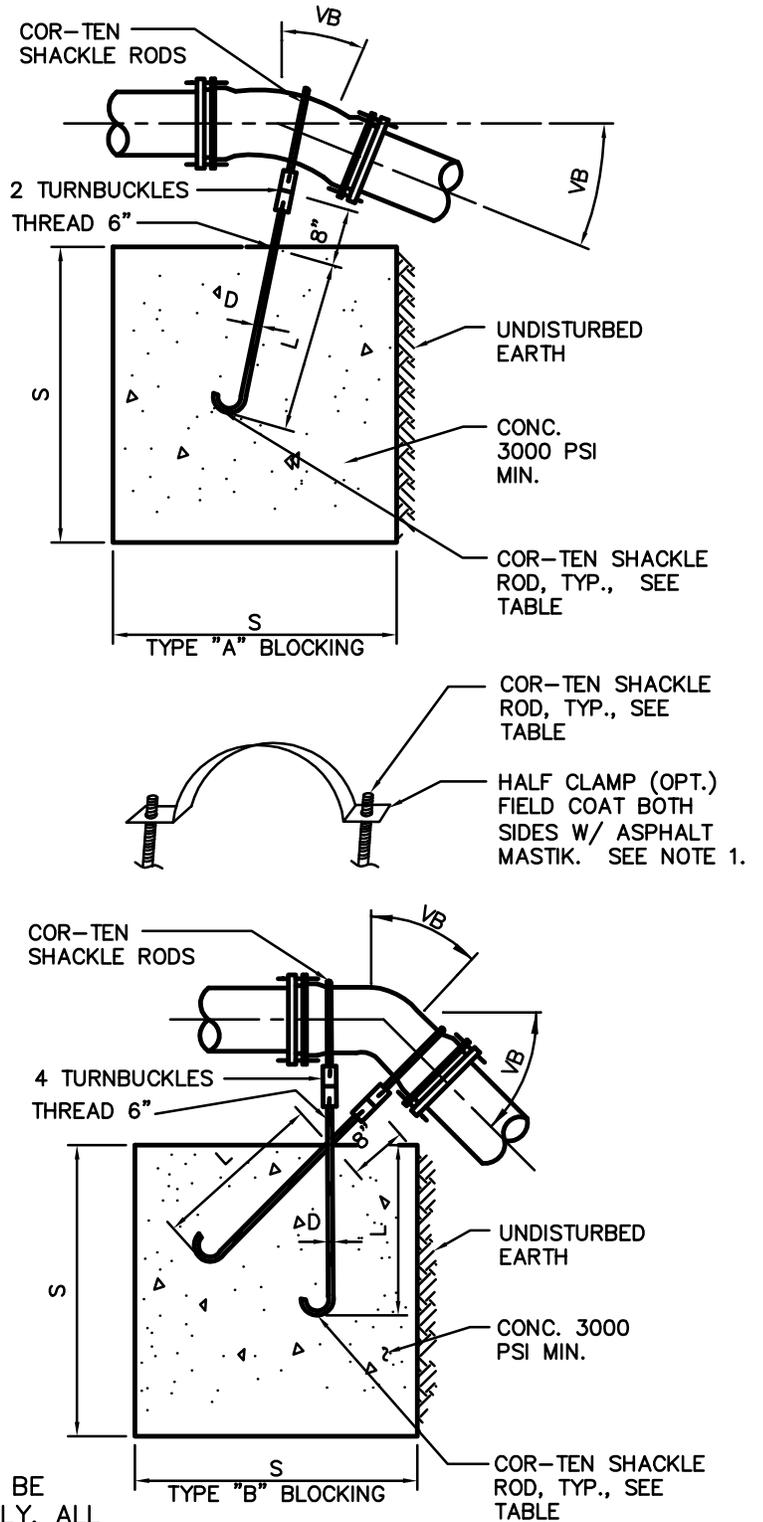
DWG. NO.

**WT-5**

TYPE "A" BLOCKING FOR 11 1/4"-22 1/2"-30" VERTICAL BENDS								
PIPE SIZE NOMINAL DIAMETER— INCHES	TEST PRESSURE PSI	VB	No. OF CU. FT. OF CONC. BLOCKING	S SIDE OF CUBE LIN. FT.	D DIAM. OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LIN. FT.		
		VERTICAL BEND DEGREES						
4"	300	11 1/4	8	2	5/8"	1.5		
		22 1/2	11	2.2		2.0		
		30	17	2.6				
6"	300	11 1/4	11	2.2	5/8"	2.0		
		22 1/2	25	2.9				
		30	41	3.5				
8"	300	11 1/4	16	2.5	5/8"	2.0		
		22 1/2	47	3.6				
		30	70	4.1			3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0		
		22 1/2	88	4.5			7/8"	3.0
		30	132	5.1				
16"	225	11 1/4	70	4.1	7/8"	3.0		
		22 1/2	184	5.7			1 1/8"	4.0
		30	275	6.5			1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0		
		22 1/2	225	6.1			1 1/4"	4.0
		30	330	6.9			1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5		
		22 1/2	320	6.8			1 3/8"	4.5
		30	480	7.9			1 7/8"	5.5

TYPE "B" BLOCKING FOR — 45° VERTICAL BENDS						
		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



**NOTES:**

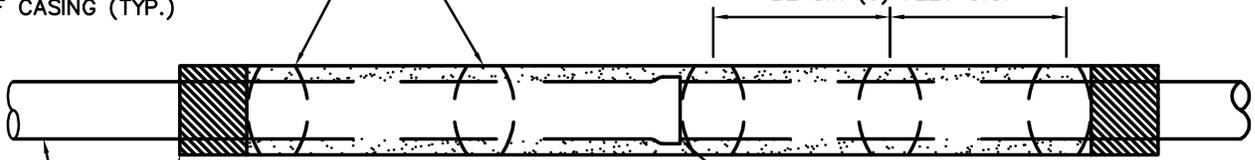
1. HALF CLAMP, WASHERS AND NUTS MAY BE SUBSTITUTED FOR TURNBUCKLE ASSEMBLY. ALL OTHER SPECIFICATIONS THE SAME.

 <b>CITY OF MILTON</b> <b>VERTICAL ANCHOR BLOCK</b>		
REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>WT-6</b>

STEEL PIPE CASING (MILL PIPE)  
OR DUCTILE IRON CLASS 50

PLACE END SPACER MAXIMUM  
OF ONE (1) FOOT FROM END  
OF CASING (TYP.)

MAXIMUM DISTANCE  
BETWEEN SPACERS SHALL  
BE SIX (6) FEET O.C.



ONE SPACER SHALL BE PLACED ON THE SPIGOT  
END OF EACH SEGMENT AT THE LINE MARKING  
THE LIMIT OF INSERTION INTO THE BELL. WHEN  
THE JOINT IS COMPLETE, THE SPACER SHALL BE  
IN CONTACT WITH THE BELL OF THE JOINT SO  
THAT THE SPACER PUSHES THE JOINT AND RE-  
LIEVES COMPRESSION WITHIN THE JOINT.

SEAL END OF CASING WITH MANUFACTURED  
RUBBER END SEAL DEVICE

CARRIER PIPE (DI)

CASING SPACERS (SEE APPROVED MATERIALS LIST)

CARRIER PIPE DIAMETER	4"	6"	8"	10"	12"
MINIMUM CASING DIAMETER	10"	14"	16"	20"	24"
STEEL CASING THICKNESS	0.25"	0.25"	0.25"	0.25"	0.25"
SPACER BAND WIDTH	8"	8"	8"	8"	8"

ANTICORROSIVE COATING THICKNESS: CASING - 8 MILLS DFT

NOTES:

1. CASING SPACERS SHALL BE "CENTER POSITIONING" TYPE.
2. MINIMUM RUNNER WIDTH SHALL BE 2 INCHES.
3. RUNNER HEIGHT SHALL BE SIZED TO PROVIDE:
  - A. MINIMUM 0.75" BETWEEN CARRIER PIPE BELL AND CASING PIPE WALL AT ALL TIMES.
  - B. MINIMUM 1" CLEARANCE BETWEEN RUNNERS AND TOP OF CASING WALL TO PREVENT JAMMING DURING INSTALLATION.
4. STEEL CASING DIAMETERS ARE "OUTSIDE DIAMETER" FOR 16" AND LARGER.
5. SPACER BAND WIDTH SHALL BE 12" FOR CARRIER PIPES THAT ARE 36" DIAMETER OR GREATER
6. WATER MAIN IN CASING SHALL BE RESTRAINED JOINT (FIELD LOCK GASKETS) WITHIN CASING.



**CITY OF MILTON  
CASING INSTALLATION**

REVISION DATE:

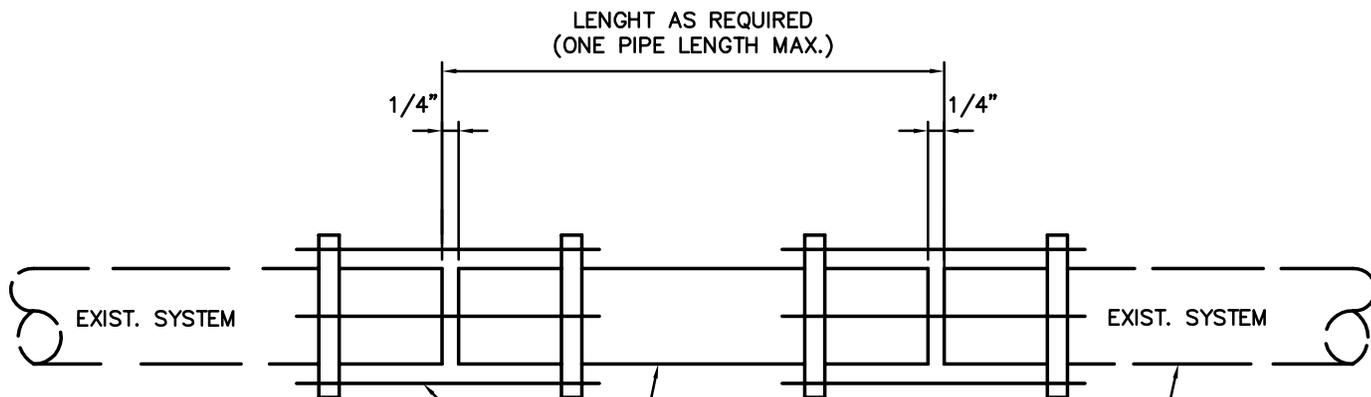
3/30/07

SCALE:

NONE

DWG. NO.

**WT-7**



**NOTE:**

1. NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING
2. ADDITIONAL "IN-LINE" VALVES(S) MAY BE REQUIRED AT THE DIRECTION OF THE CITY.

STERILIZED PIPE SPOOL ASSEMBLED WITH TEE OR CROSS AS REQUIRED SEE NOTE 2.

DUCTILE IRON SOLID SLEEVE (STERILIZED) TYP. (LONG SLEEVE PATTERN) OR TRANSITIONAL COUPLING AS REQUIRED WITH MEGA-LUG OR APPROVED EQUAL

DISCHARGE PRESSURE PRIOR TO REMOVAL OF THRUST BLOCK AND CONNECTION TO EXIST. SYSTEM.



**CITY OF MILTON  
CUT IN CONNECTION**

REVISION DATE:

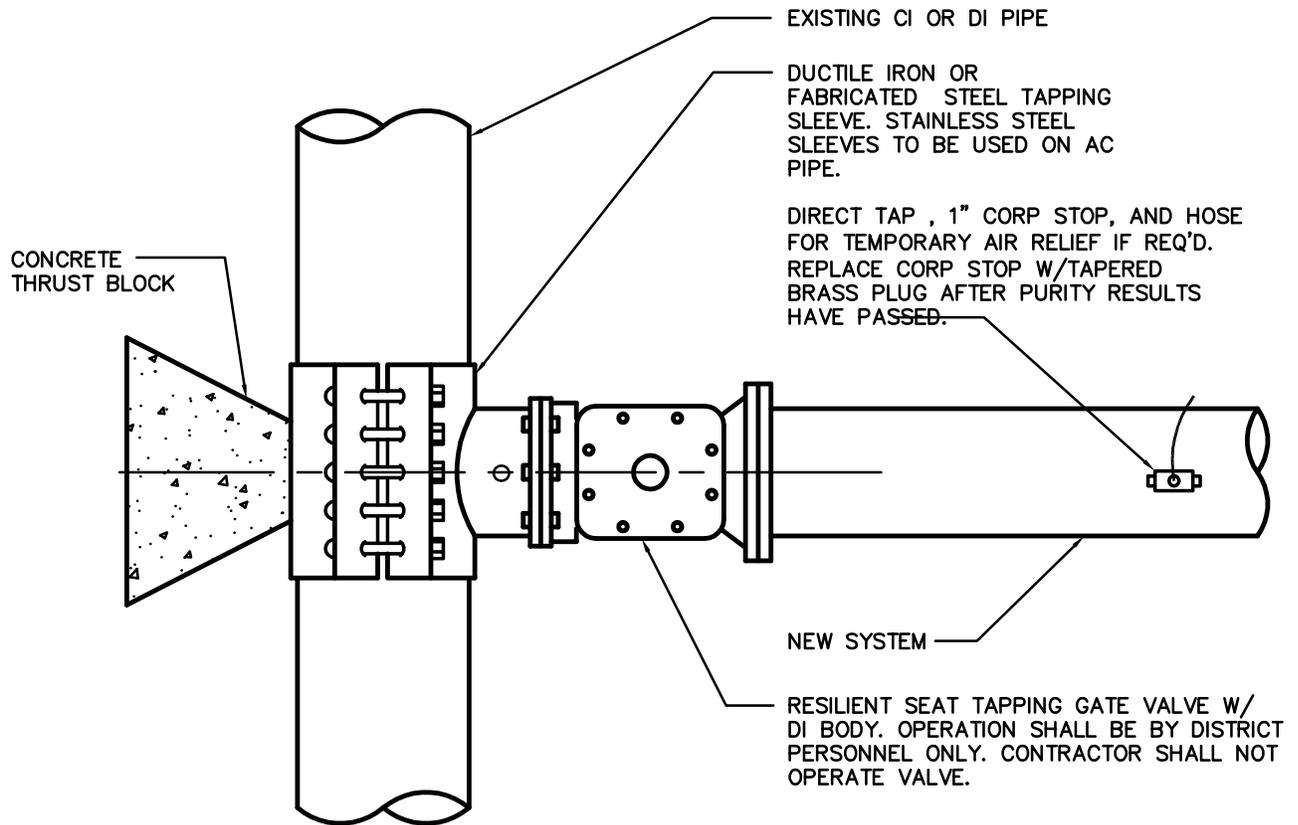
3/30/07

SCALE:

NONE

DWG. NO.

**WT-8**



**NOTES:**

1. SIZE-ON-SIZE TAPPING TEES SHALL BE DUCTILE IRON MECHANICAL SLEEVE.
2. TAPPING TEES SHALL BE PRESSURE TESTED TO 200 PSI
3. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, DAY BEFORE HOLIDAYS, OR WEEKENDS.



**CITY OF MILTON  
WET TAP CONNECTION**

REVISION DATE:

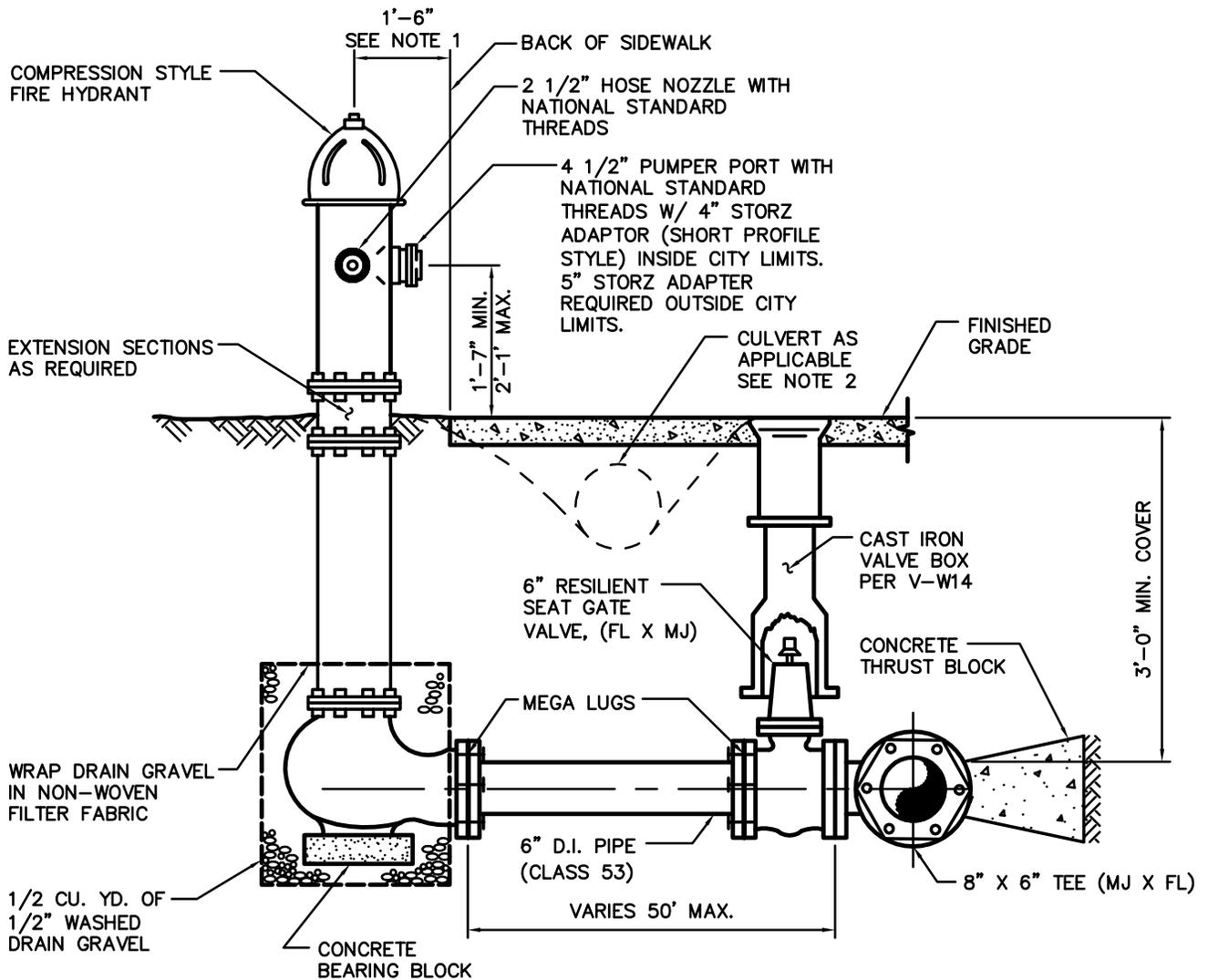
3/30/07

SCALE:

NONE

DWG. NO.

**WT-9**



**NOTES:**

1. OR 3' FROM BACK OF CURB
2. PROVIDE 8' OF CULVERT 12" MIN. DIA. OR EQUAL IN SIZE TO ADJACENT DITCH. PIPE TO COUNTY, STATE OR CITY STANDARDS AS APPLICABLE.
3. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT
4. PAINT FIRE HYDRANT WITH TWO FARWEST PAINT X-3472 CASE YELLOW
5. STENCIL FOOTAGE TO VALVE ON HYDRANT UNDER PORT FACING GV
6. REMOVE ALL CHAINS FOR FIRE HYDRANT CAPS
7. INSTALL GUARD POSTS AS REQUIRED BY CITY
8. ACCEPTABLE HYDRANTS: M&H STYLE 929, MUELLER CENTURION, AMERICAN AVK
9. INSTALL BLUE FIRE HYDRANT REFLECTOR. OFFSET 1 FOOT FROM ROAD CENTERLINE
10. 6" HYDRANT LATERAL SHALL BE A SINGLE CONTINUOUS PIPE SEGMENT. IF LENGTH REQUIRES A JOINT IN THE RUN ALL JOINTS SHALL BE MADE WITH GRIP RINGS.



**CITY OF MILTON  
FIRE HYDRANT  
ASSEMBLY**

REVISION DATE:

3/30/07

SCALE:

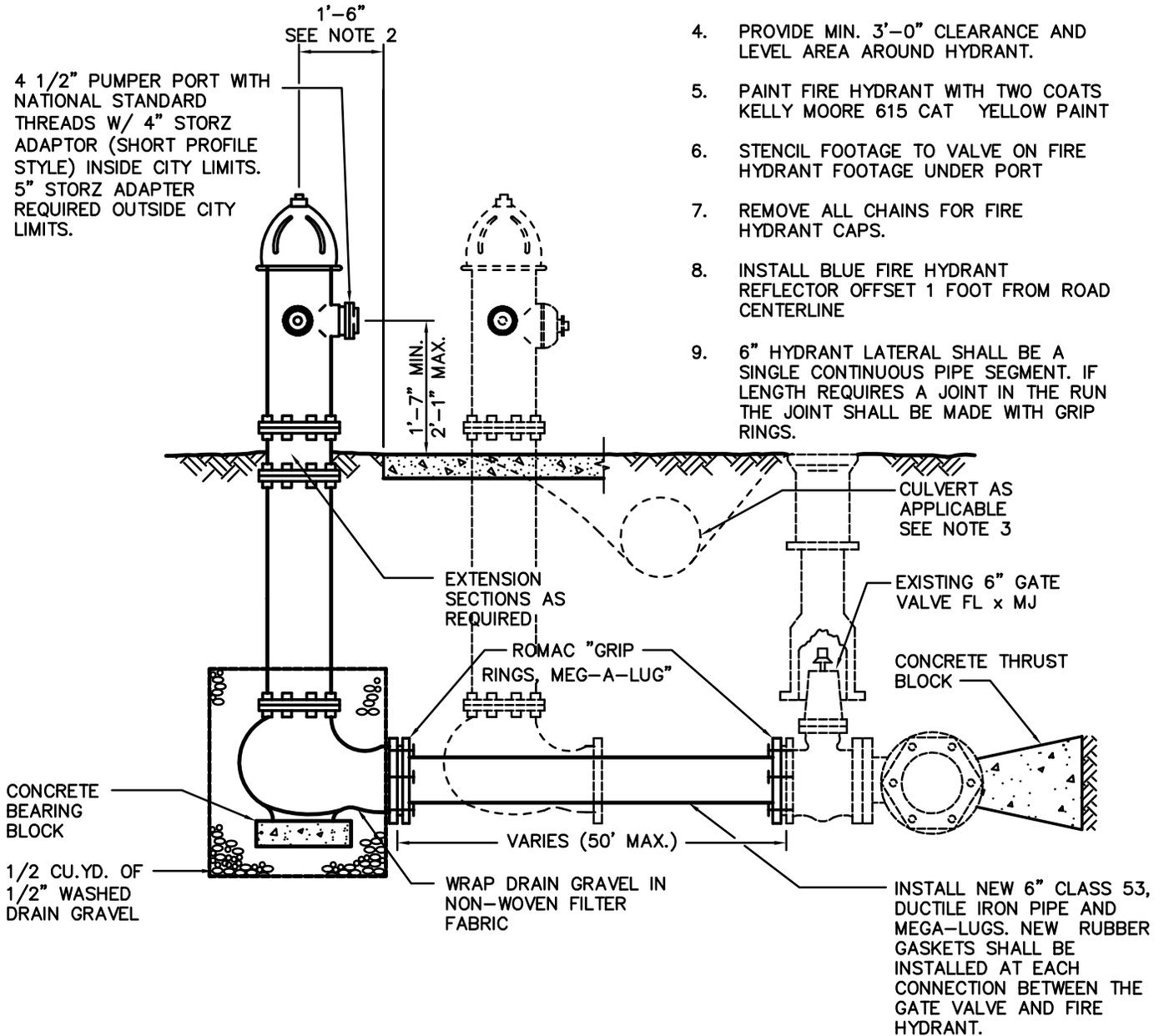
NONE

DWG. NO.

**WT-10**

**NOTES:**

1. FIRE HYDRANT MUST MEET CITY REQUIREMENTS OR REPLACE WITH NEW FIRE HYDRANTS.
2. OR 3' FROM BACK OF CURB.
3. PROVIDE 8' OF 12" MINIMUM OR EQUAL INSIZE TO ANY ADJACENT DITCH PIPE TO COUNTY, STATE OR CITY STANDARDS IF APPLICABLE.
4. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT.
5. PAINT FIRE HYDRANT WITH TWO COATS KELLY MOORE 615 CAT YELLOW PAINT
6. STENCIL FOOTAGE TO VALVE ON FIRE HYDRANT FOOTAGE UNDER PORT
7. REMOVE ALL CHAINS FOR FIRE HYDRANT CAPS.
8. INSTALL BLUE FIRE HYDRANT REFLECTOR OFFSET 1 FOOT FROM ROAD CENTERLINE
9. 6" HYDRANT LATERAL SHALL BE A SINGLE CONTINUOUS PIPE SEGMENT. IF LENGTH REQUIRES A JOINT IN THE RUN THE JOINT SHALL BE MADE WITH GRIP RINGS.



**CITY OF MILTON  
RELOCATE FIRE  
HYDRANT ASSEMBLY**

REVISION DATE:

3/30/07

SCALE:

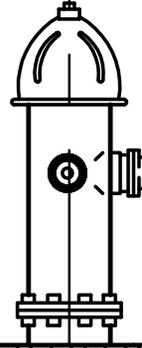
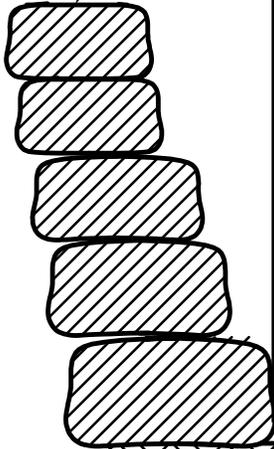
NONE

DWG. NO.

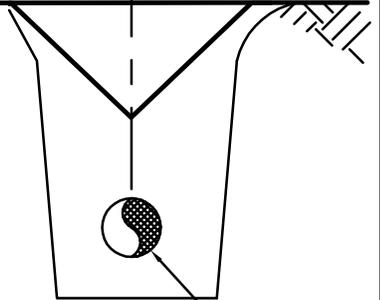
**WT-11**

ROCK RETAINING WALL

LEVEL ALL AROUND  
MIN. 3' RADIUS



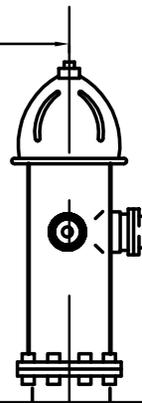
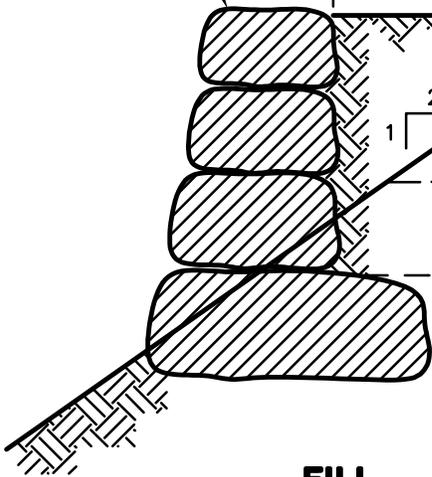
EXISTING DITCH



**CUT**

LEVEL ALL AROUND  
MIN. 3' RADIUS

ROCK RETAINING WALL



PROVIDE MINIMUM 12" CULVERT  
(8' MINIMUM LENGTH) SIZE  
MAYBE SIGNIFIGANTLY GREATER  
BASED ON LOCAL CONDITIONS  
OR AS DIRECTED BY THE CITY

**FILL**



# CITY OF MILTON FIRE HYDRANT LOCATION IN CUT OR FILL AREA

REVISION DATE:

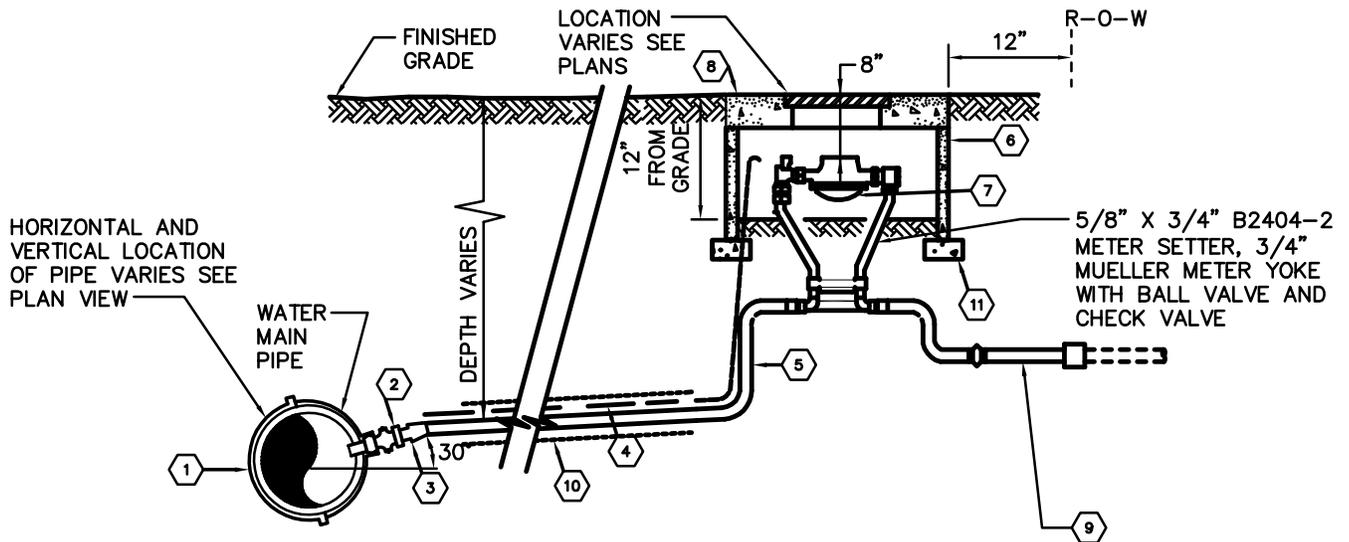
SCALE:

DWG. NO.

3/30/07

NONE

**WT-12**



**NOTES:**

1. SERVICE SADDLE  
101S - SINGLE STAINLESS STRAP ON MAIN SIZES 8" AND UNDER - IP THREADS.  
202S - DOUBLE STAINLESS STRAP ON MAIN SIZES 10" AND ABOVE - IP THREADS.
  2. CORP STOP  
1" BALL STYLE MIPxMIP.  
MUELLER B-20013.  
FORD F1101 MIPxMIP
  3. INSTA-TITE ADAPT  
1" FIPxIPS INSTA-TITE ADAPT.  
MUELLER H-15456.
- AND/OR
- COMPRESSION TYPE ADAPT  
1" FIPx110 COMPRESSION ADAPT WITH STAINLESS ACC  
MUELLER H16454 + 505142 LINER
  4. SERVICE PIPE  
1" SIDR-7/IPS, 200 PSI.  
W/ 14 GA TRACER WIRE

**NOTE:**

OFF SIDE SERVICES SHALL BE INCASED IN 2" PVC SCH'40 PIPE.  
WIRE MUST BE VISIBLE IN SERVICE METER BOX.  
USE FORD 72 INSERT STIFFINER WHERE REQUIRED.

5. INSTA-TITE ADAPT  
3/4"x1" MIPxIPS INSTA-TITE ADAPT  
MUELLER H-15426

AND/OR

COMPRESSION TYPE ADAPT  
3/4"x1" MIPxIPS/110 COMPRESSION ADAPT WITH STAINLESS LINER  
MUELLER H15429 + 505192

6. METER SETTER  
5/8"x3/4"x12" RISE B2404-2 BALL STYLE ANGLE  
STOP ON INLET - ANGLE CHECK ON OUTLET WITH FIPxYOKE UNION ENDS  
MUELLER B2404-2 (SETTER)  
MUELLER H14222 (UNION ENDS)  
FORD 74 SERIES VBH74-12W-11-44

7. METER SPACER  
1"x7-1/2" SCH 80 PVC NIPPLE  
KEEPS SPACE AND ALIGNMENT OF SETTER

8. METER BOX  
CARSON METER BOX STANDARD OR AS DIRECTED  
BY CITY  
MID STATES OR RAVEL 1118  
PLASTIC LID FOR REGULAR INSTALLATIONS  
FULL DI LID FOR TRAFFIC/SIDEWALK INSTALLATIONS

9. 1" SIDR-7/IPS, 200PSI. (6 FEET IN LENGTH)

10. ANY SERVICE CROSSING A PAVED SECTION SHALL BE INSTALLED IN 2" (MIN) SCH. 40 PVC (WHITE)
11. CONCRETE SUPPORT BLOCKING MAY BE REQUIRED BY THE CITY WHEN INSTALLED IN TRAFFIC BEARING AREAS



**CITY OF MILTON**

**1" WATER SERVICE**

REVISION DATE:

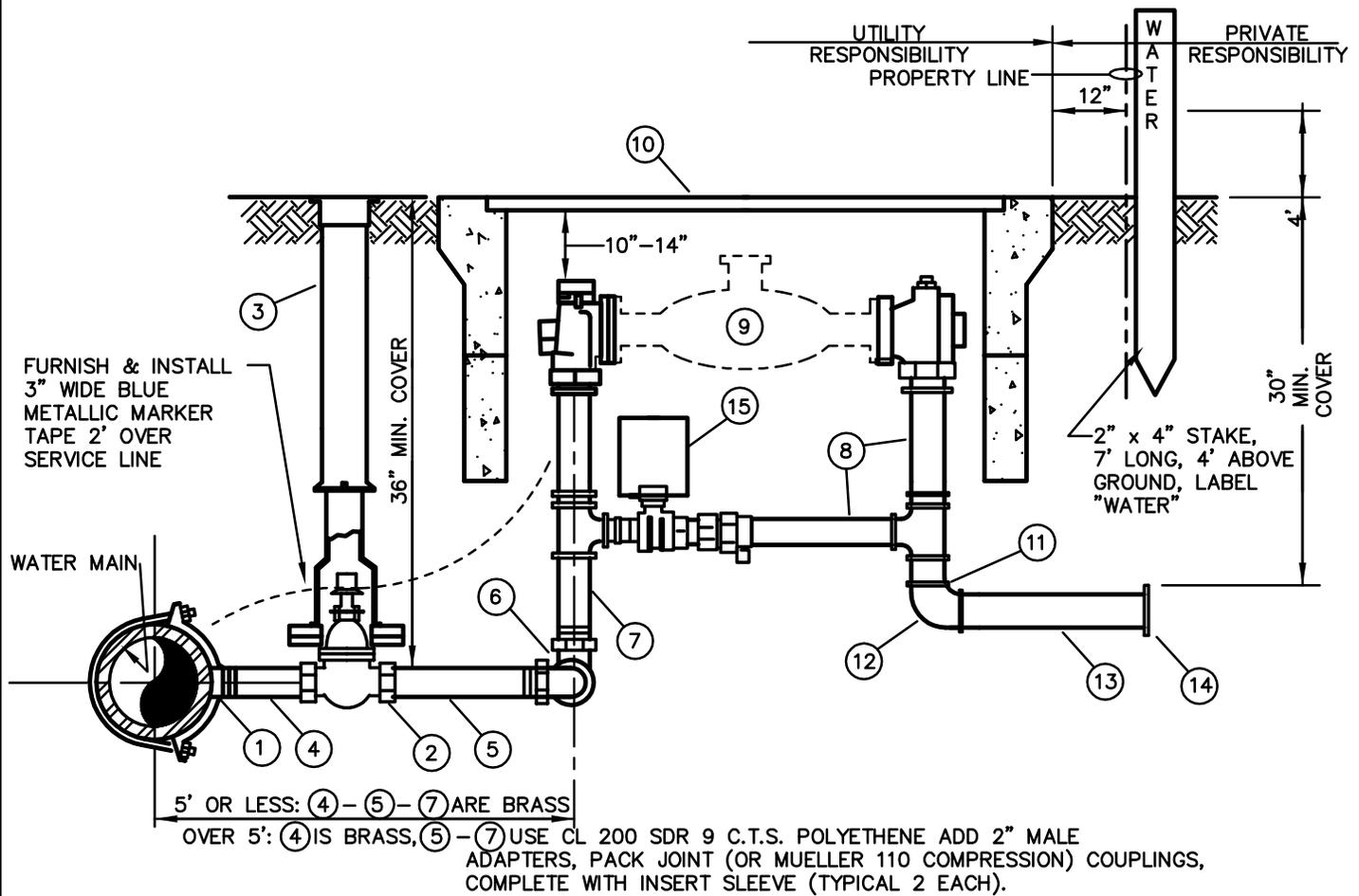
3/30/10

SCALE:

NONE

DWG. NO.

**WT-13**



NO.	ITEM
1	ROMAC STYLE 202S STAINLESS STEEL DOUBLE STRAP TYPE SADDLE
2	2" RESILIENT WEDGE GATE VALVE WITH 2" OPERATING NUT
3	STANDARD CAST-IRON VALVE BOX (RICH NO. 940)
4	BRASS NIPPLE (3" MIN., 6" MAX.)
5	NIPPLE (SEE NOTE ABOVE)
6	BRASS SWING JOINT
7	BRASS NIPPLE (SEE NOTE ABOVE)
8	METER SETTER, 2" FORD VBH66-12B OR MUELLER B2423-2.1512 WITH METER SPACER (LENGTH DETERMINED BY DISTRICT PRIOR TO INSTALLATION)
9	METER (FURNISHED BY CITY) 17 1/4" LONG
10	METER BOX, NO.2 FOG TITE OR BROOKS NO. 65, WITH STEEL TRAFFIC COVER (FURNISH 2 BOXES).
11	1-1/2" OR 2" (MATCH METER SIZE) BRASS NIPPLE
12	1-1/2" OR 2" (MATCH METER SIZE) BRASS 90° EL
13	1-1/2" OR 2" x 12" (MATCH METER SIZE) BRASS NIPPLE
14	1-1/2" OR 2" (MATCH METER SIZE) CAP
15	6" PVC PIPE OVER BY-PASS VALVE.



CITY OF MILTON

1-1/2" & 2"  
WATER SERVICE

REVISION DATE:

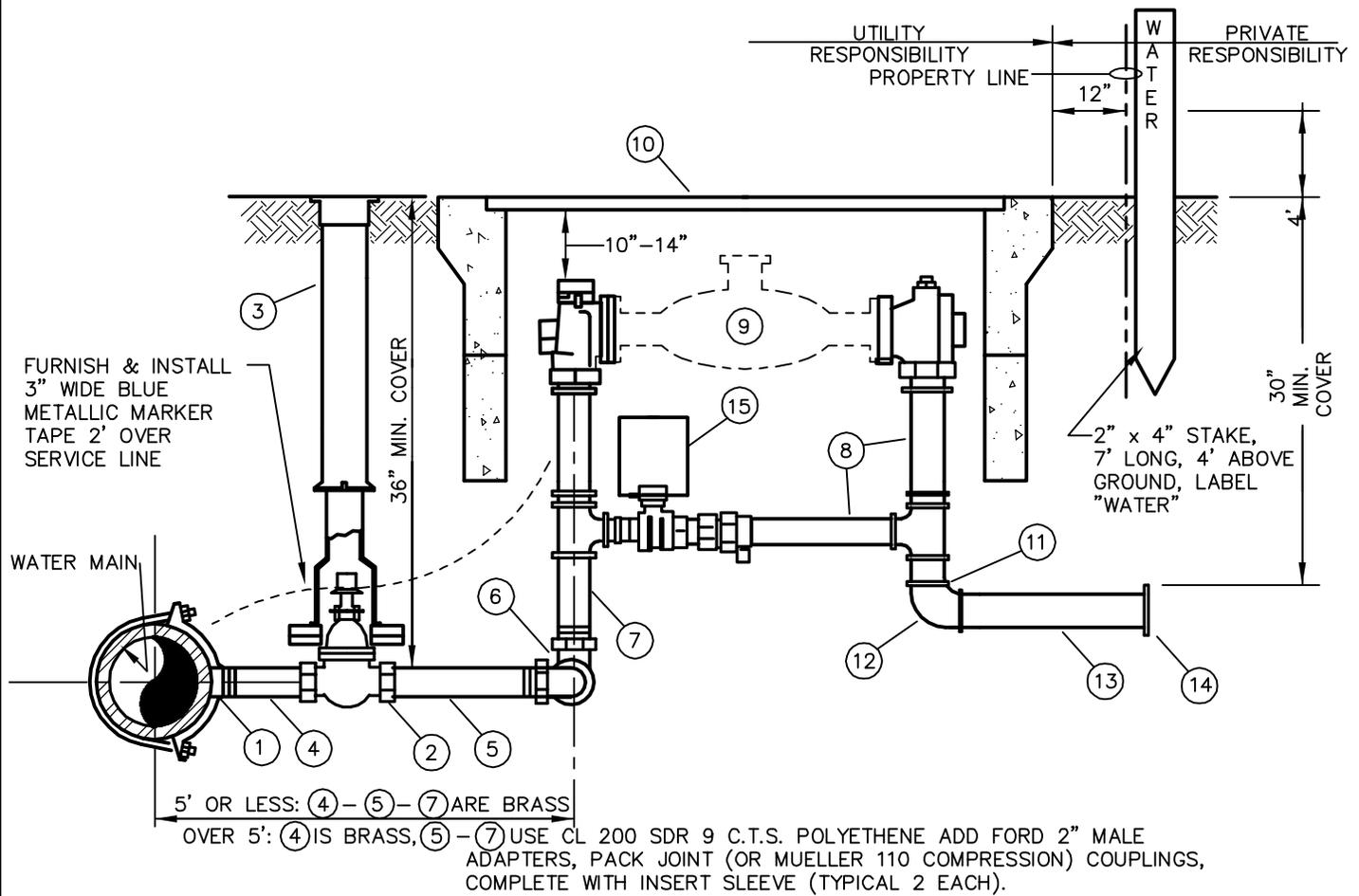
3/30/07

SCALE:

NONE

DWG. NO.

WT-14



NO.	ITEM
1	ROMAC STYLE 202S STAINLESS STEEL DOUBLE STRAP TYPE SADDLE
2	2" RESILIENT WEDGE GATE VALVE WITH 2" OPERATING NUT
3	STANDARD CAST-IRON VALVE BOX (RICH NO. 940)
4	BRASS NIPPLE (3" MIN., 6" MAX.)
5	NIPPLE (SEE NOTE ABOVE)
6	BRASS SWING JOINT
7	NIPPLE (SEE NOTE ABOVE)
8	METER SETTER, 2" FORD VBH66-12B WITH METER SPACER (LENGTH DETERMINED BY DISTRICT PRIOR TO INSTALLATION)
9	METER (FURNISHED BY DISTRICT) 17 1/4" LONG
10	METER BOX, NO.2 FOG TITE OR EQUAL, WITH STEEL TRAFFIC COVER (FURNISH 2 BOXES).
11	2" BRASS NIPPLE
12	2" BRASS 90° EL
13	2" x 12" BRASS NIPPLE
14	2" CAP
15	6" PVC PIPE OVER BY-PASS VALVE.



**CITY OF MILTON**  
**2" WATER SERVICE**

REVISION DATE:

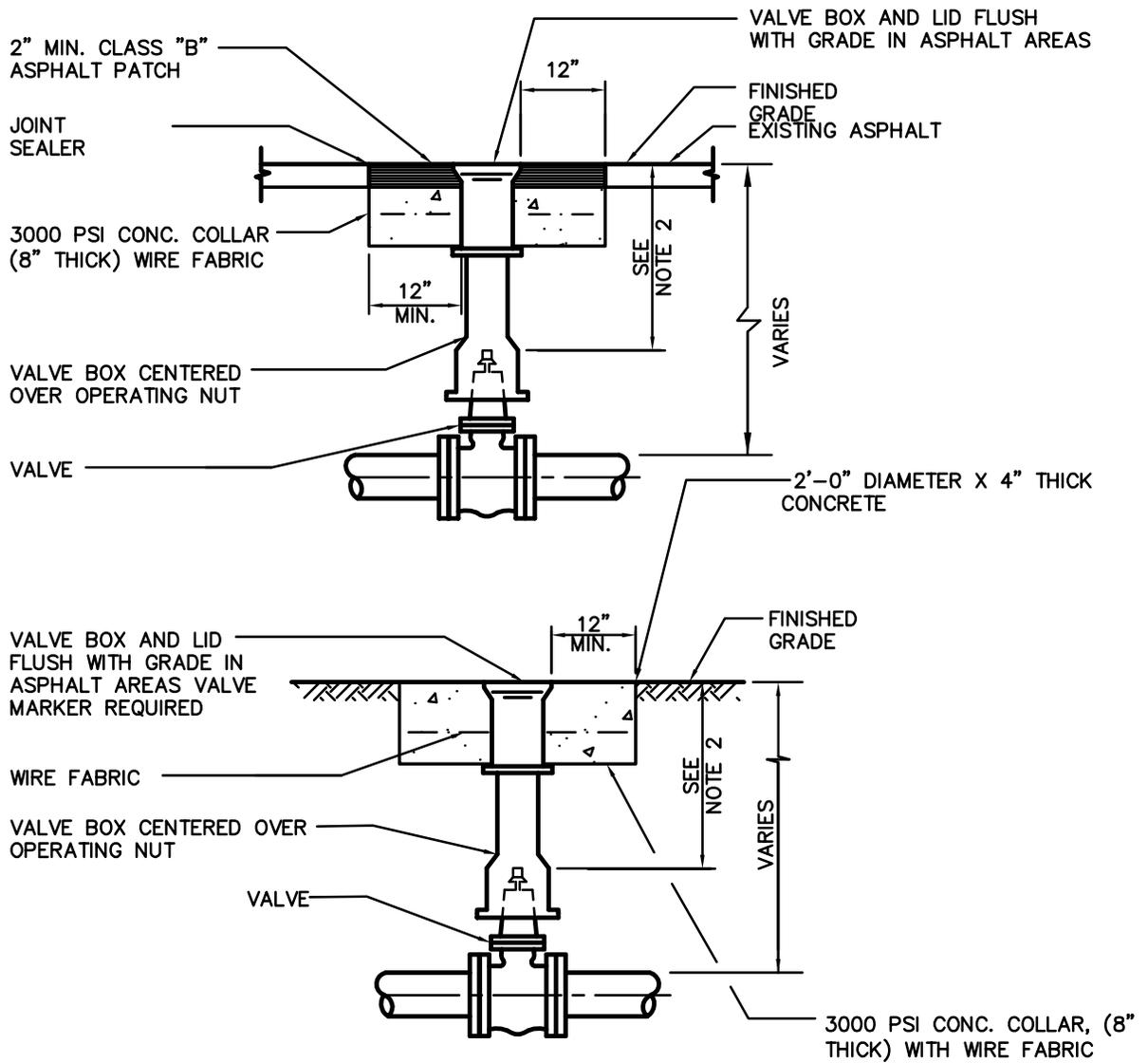
3/30/07

SCALE:

NONE

DWG. NO.

**WT-14A**



**NOTES:**

1. EACH VALVE SHALL BE PROVIDED WITH AND ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940 OR APPROVED EQUAL. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.
2. 15" MINIMUM, 36" MAXIMUM FOR OPERATOR NUT. EXTENSION MAY BE REQUIRED.



**CITY OF MILTON**  
**VALVE BOX**

REVISION DATE:

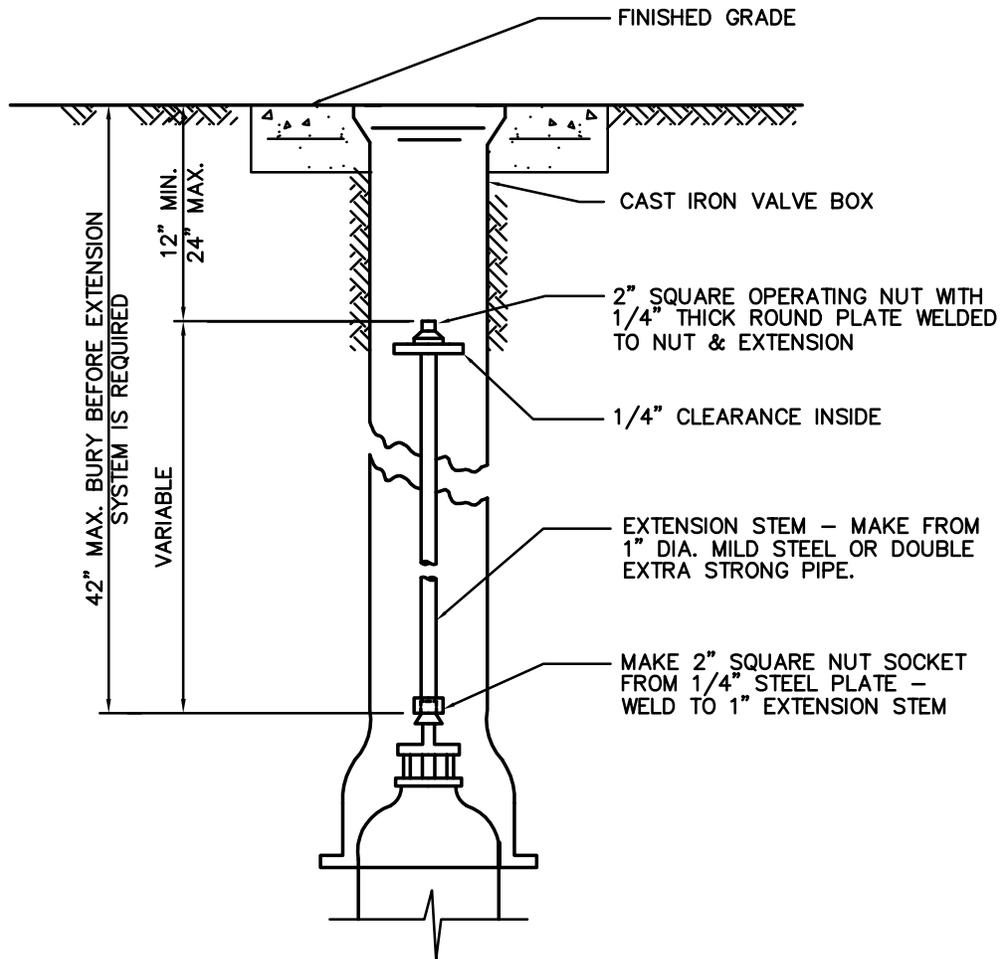
10/19/09

SCALE:

NONE

DWG. NO.

**WT-15**



CITY OF MILTON  
VALVE EXTENSION STEM

REVISION DATE:

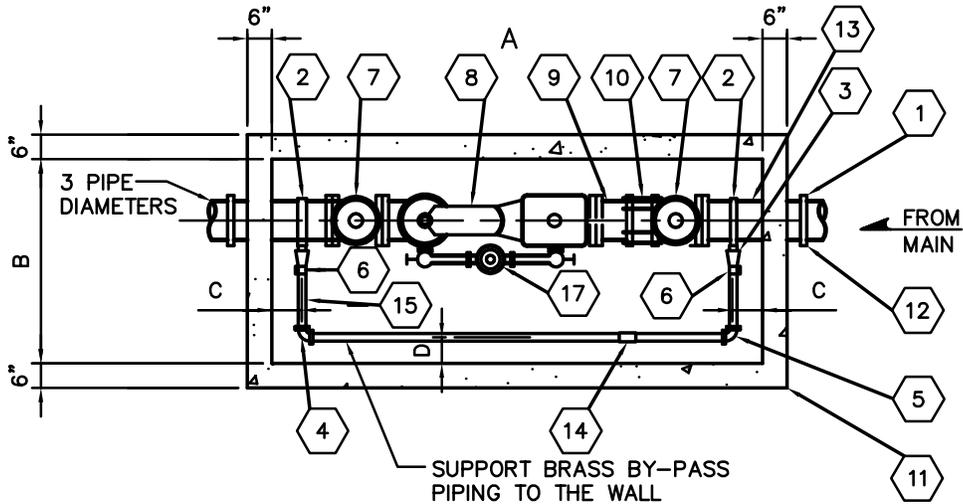
3/30/07

SCALE:

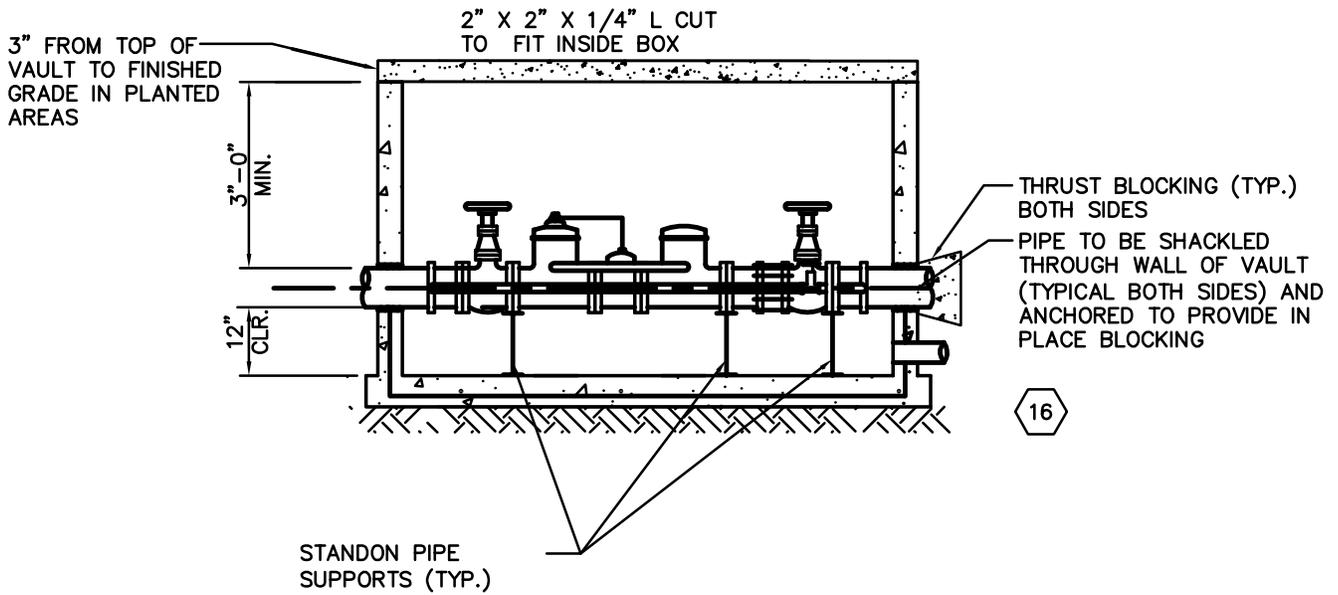
NONE

DWG. NO.

**WT-16**



**PLAN**



**ELEVATION**

**NOTES:**

1. BRASS DOES NOT REQUIRE PAINTING. ALL PIPING SHALL BE PAINTED (TWO COATS) WITH PARKER PAINT MARINE EPOXY, MARATHON 1065, TAHOE BLUE.
2. SEE WT-18 FOR CALLOUTS AND NOTES.



**CITY OF MILTON  
METER AND METER VAULT  
ASSEMBLY 3" THROUGH 10"**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**WT-17**

## MATERIAL LIST

- |   |   |
|---|---|
| <p>1 2-FLEX CPLG TO FIT ROCKWELL 441 (4" X 3") REDUCER, M.J. FOR 3" METER.</p> <p>2 2-DOUBLE STRAP SERVICE CLAMPS, ROMAC 202 WITH IPS TAP, OR EQUAL.</p> <p>3 3-STRAIGHT CPLG. BRASS TO OUTSIDE I.P. THREAD MUELLER H-15425, H-15428 110 COMP., OR EQUAL.</p> <p>4 1 1/4" BEND CPLG BRASS TO BRASS MUELLER H-15525.</p> <p>5 1 1/4" BEND CPLG, BRASS TO OUTSIDE I.P. THREAD MUELLER H-15530, OR EQUAL.</p> <p>6 1 BALL VALVE WITH PADLOCK WING OR LOCK CAP, FORD B21-444W OR B21-666 WITH LOCK CAP OR B21-777 WITH LOCK CAP.</p> <p>7 RESILIENT SEAT GATE VALVE, FL X FL, (RISING STEM).</p> <p>8 3" TO 10" COMPOUND METER WITH SENSUS RED LABEL - CU/FT AMR MXU - READ IN CUBIC FEET- SIZE TO BE AS SPECIFIED BY CITY AND FURNISHED BY CONTRACTOR/DEVELOPER.</p> | <p>9 1 C.I. ADPT. FL X PE (LENGTH TO FIT).</p> <p>10 1-CPLG. ADAPT., FL ROCKWELL 912, OR OWNER APPROVED EQUAL.</p> <p>11 PRECAST CONCRETE VAULT WITH (H2O) BILCO LOCKING ACCESS HATCH LW PRODUCTS OR EQUAL SEE TABLE FOR MINIMUM SIZE REQUIREMENTS.</p> <p>12 WELDED FL RESTRAINT OR SHAKLE TO THRUST BLOCK TO PREVENT MOVEMENT IF METER IS REMOVED.</p> <p>13 MEGA-LUG FOLLOWER INSTALLED ON INFLOW SIDE OF VAULT WITH CONCRETE THRUST BLOCK.</p> <p>14 UNION</p> <p>15 ALUMINUM LADDER SCURE TO VAULT LIP AND FLOOR.</p> <p>16 PROVIDE 4" DRAIN PIPE TO DAYLIGHT (MIN. SLOPE = 2%) OR CITY APPROVED SUMP PUMP SYSTEM AS REQUIRED.</p> <p>17 5/8" - 3/4" PRECISION PMM METER</p> |
|---|---|

METER SIZE	MAIN-LINE	BYPASS	A	B	C	D	MIN. HATCH OPENING
3"	4" DI.	1 1/2" BRASS	7'-6"	3'-8"	9"	4"	3'-6"
4"	4" DI.	1 1/2" BRASS	7'-6"	3'-8"	9"	4"	3'-6"
6"	6" DI.	2" BRASS	9'-6"	3'-8"	9"	4"	3'-8"
8"	8" DI.	4" DI.	11'-0"	4'-6"	14"	6"	3'-8"
10"	10" DI.	4" DI.	13'-0"	5'-0"	16"	6"	3'-8"



### CITY OF MILTON METER AND METER VAULT ASSEMBLY MATERIALS LIST

REVISION DATE:

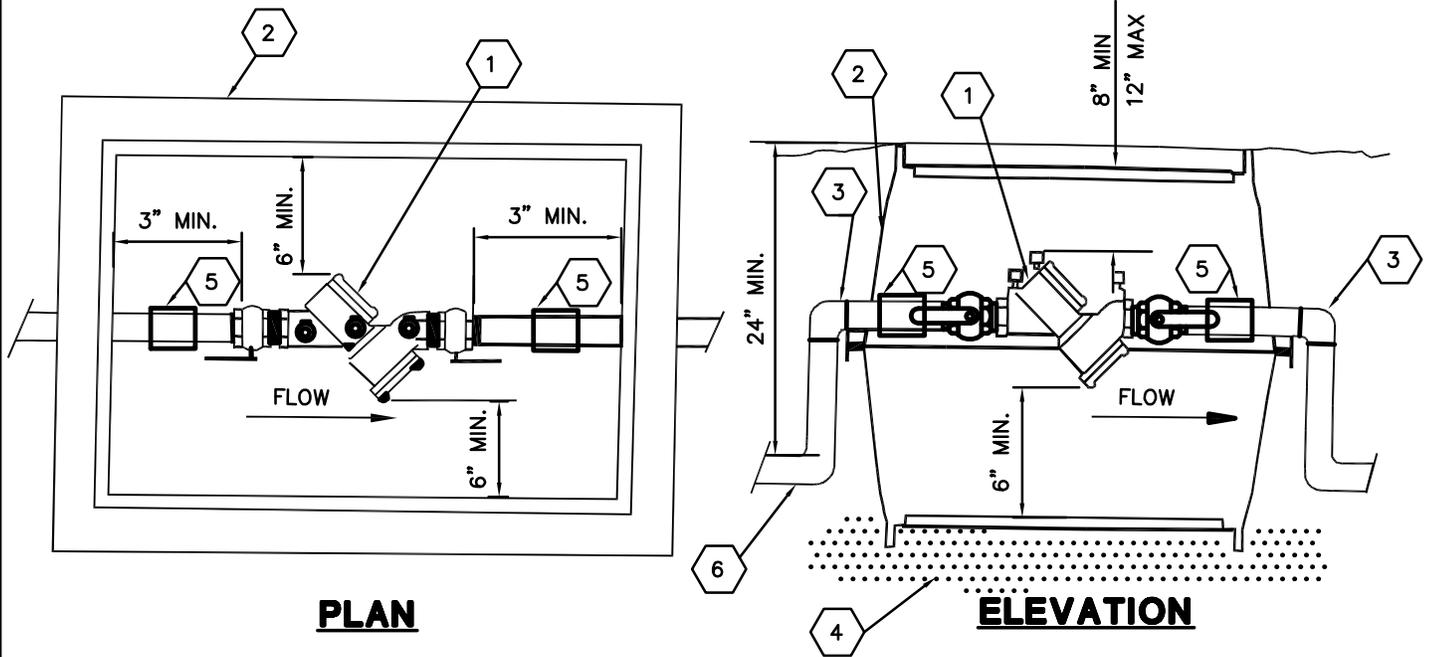
3/30/07

SCALE:

NONE

DWG. NO.

**WT-18**



**PLAN**

**ELEVATION**

- 1 STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA).
- 2 METER BOX. MID STATES, RAVEN OR CARSON.
- 3 BENDS MAY BE LOCATED INSIDE OR OUTSIDE OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATOR AND DCVA REPAIR OR MAINTENANCE.
- 4 PROVIDE FREE DRAINING BACKFILL BELOW BOX.
- 5 UNION
- 6 COPPER PIPE BETWEEN METER AND ASSEMBLY

**NOTES:**

1. ALL TEST COCKS SHALL HAVE BRASS PLUGS.
2. TEST COCKS SHALL FACE UP OR SIDEWAYS, WHICHEVER IS MORE ACCESSIBLE.
3. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
4. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCVA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
5. DCVA IS CONSIDERED PART OF A PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
6. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.



**CITY OF MILTON  
DOUBLE CHECK VALVE  
ASSEMBLY 2" & SMALLER**

REVISION DATE:

3/30/07

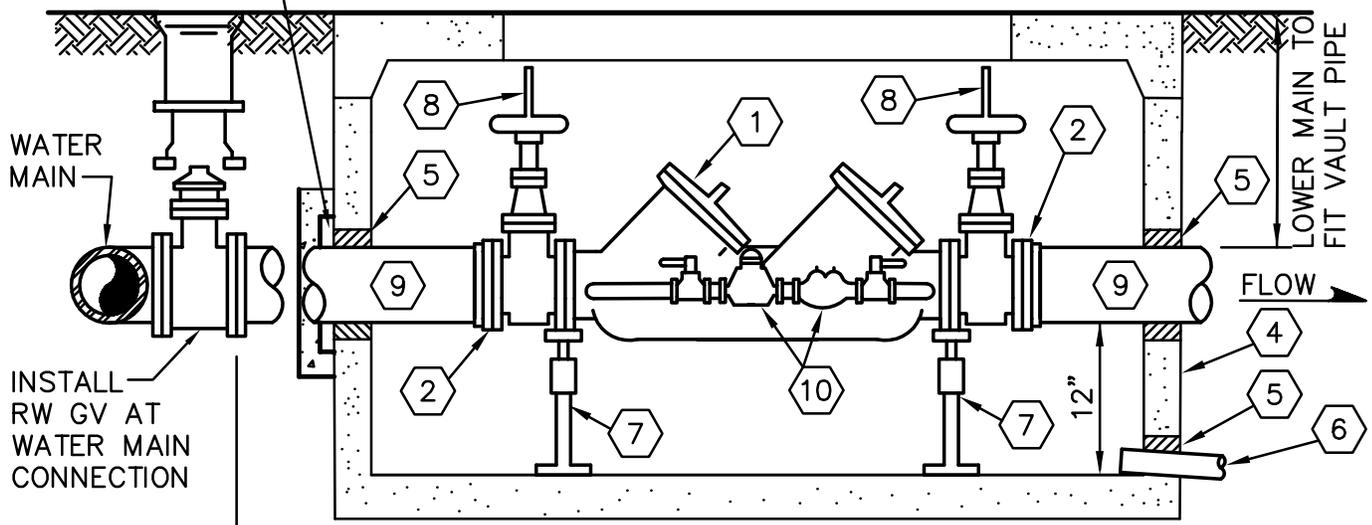
SCALE:

NONE

DWG. NO.

**WT-19**

MEGALUG FOLLOWER INSTALLED ON INFLOW SIDE OF VAULT WITH CONCRETE THRUST BLOCK



WATER MAIN

INSTALL RW GV AT WATER MAIN CONNECTION

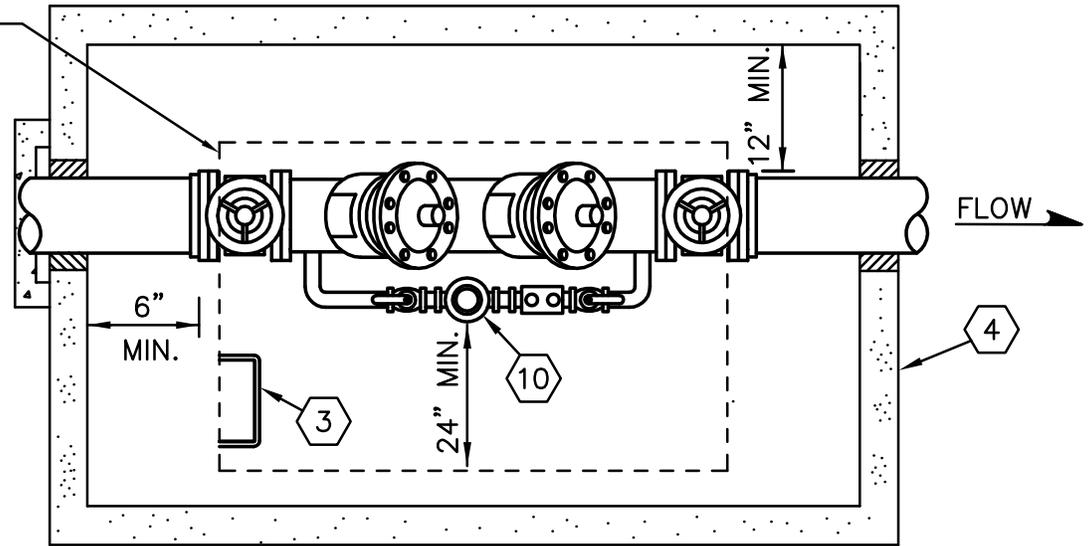
RESTRAINED

FLOW

LOWER MAIN TO FIT VAULT PIPE

**ELEVATION**

LOCATE HATCHES TO ALLOW VALVE STEMS TO PENETRATE INTO OPENING, IF REQUIRED



FLOW

SEE WT-21 FOR CALL OUTS AND NOTES

**PLAN**



CITY OF MILTON  
**DOUBLE-CHECK DETECTOR VALVE ASSY. 4" & LARGER**

REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>WT-20</b>

SEE WT-20. FOR ELEVATION AND PLAN

- ① STATE APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) FOR BACKFLOW PREVENTION, WITH OS&Y D.I. RESILIENT SEAT GATE VALVE EA. END AND LOW FLOW BYPASS METER ASS'Y.
- ② UNI-FLANGE WITH SET SCREWS.
- ③ ALUMINUM LADDER, WITH BILCO LADDER UP AND SAFETY POST SECURED TO VAULT LID AND FLOOR, SAME SIDE AS BYPASS METER.
- ④ VAULT:  
UTILITY VAULT CO, OR EQUAL  
3'x3', LW PRODUCTS OR EQUAL, H-20 LOAD RATED ACCESS HATCH. DRAIN HATCH TO VAULT FLOOR.

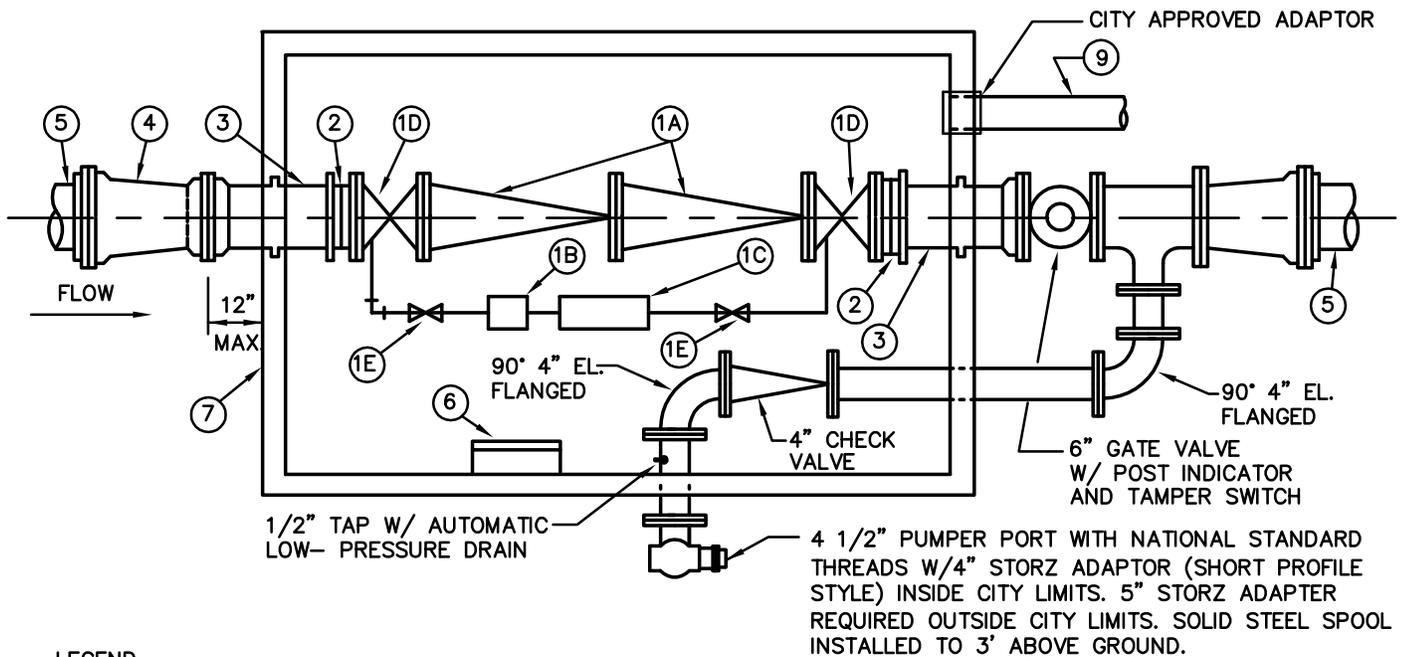
DCDA SIZE	UTILITY VAULT #	INSIDE DIMENSIONS			No. OF HATCHES
		WIDTH	LENGTH	HEIGHT	
4"	575-LA	4'-2"	6'-6"	4'-0"	2
6"	5106-LA	5'-0"	10'-6"	6'-6"	2
8"	5106-LA	5'-0"	10'-6"	6'-6"	2
10"	5106-LA	5'-0"	10'-6"	6'-6"	3

- ⑤ WATER-TIGHT GROUT (TYP.)
- ⑥ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.
- ⑦ ADJUSTABLE PIPE STANCHION, STANDON MODEL S-89 OR EQUAL, BOLT TO VALVE FLANGE.
- ⑧ VALVE ASSEMBLY TO BE CENTERED IN VAULT TO ALLOW STEMS TO EXTEND INTO ACCESS OPENING.
- ⑨ CL. 52 D.I., MJ WITH MEGALUGS.
- ⑩ LOW FLOW BYPASS METER, INCLUDING 5/8" x 3/4" PRECISION, PMM WATER METER W/ SENSUS RED LABEL AMR MXU, STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA) WITH 2 BRONZE BODY ISOLATION BALL VALVES, BRASS OR TYPE K COPPER PIPING. ALL TEST PORTS TO BE CAPPED (WATERTIGHT).

**NOTES:**

1. VAULT SHALL BE LOCATED OUTDOORS AND ACCESSIBLE TO CITY 24 HRS/DAY.
2. LINE SHALL NOT BE PUT INTO SERVICE UNTIL THE BACKFLOW PREVENTION DEVICE IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
3. DCDA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
5. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.
6. VERIFY METER FUNCTION WHEN DCDA IS TESTED.

		
<p><b>CITY OF MILTON</b> <b>DOUBLE-CHECK DETECTOR</b> <b>BACKFLOW PREVENTION ASSY.</b></p>		
REVISION DATE:	SCALE:	DWG. NO.
<b>3/30/07</b>	<b>NONE</b>	<b>WT-21</b>



**LEGEND**

- ① DOUBLE-CHECK DETECTOR VALVE ASSEMBLY CAPABLE OF METERING WATER USAGE UNDER LOW FLOW CONDITIONS. 10.0 P.S.I. HEAD LOSS AT 1600 GPM FOR 8" SIZE. ASSEMBLY TO BE STATE DOH APPROVED. SIZE AS APPROVED BY CITY. (RADIO READ)
  - 1A. 2 - CHECK VALVES, (FL)
  - 1B. 1 - BY-PASS METER 5/8" X 3/4" SENSUS (C.F. READING) METER TOUCH READ WITH MXU RED LABEL (952 MHZ) - COMPLETE WITH SPUD NUT.
  - 1C. 1 - DOUBLE CHECK VALVE ASSEMBLY, (DOH APPROVED.) 3/4" FOR - 8" D.D.C.V.
  - 1D. 2 - GATE VALVES, (FL) W/HAND WHEEL; RISING STEM, RESILIENT - SEATED AS PER CITY REQUIREMENTS.
  - 1E. 2 - GATE VALVES, (FL) W/ HAND WHEEL; RISING STEM, RESILIENT - SEATED WITH TAMPER SWITCH AS PER CITY REQUIREMENTS.
- ② 2 - FLANGED COUPLING ADAPTER, SIZE AS SPECIFIED ON PLANS. (LOCATE MINIMUM 6" FROM INNER WALL)
- ③ 2 - PIPE SPOOLS, PLAIN END.
- ④ 1- REDUCER (MJ X MJ), IF REQUIRED.
- ⑤ RESTRAINED JOINT WATER MAIN CL52.
- ⑥ ALUMINUM LADDER WITH BILCO LADDER UP AND SAFETY POST. LOCATE AS DIRECTED BY CITY. USE STAINLESS STEEL FASTNERS AT 3' MAX. SPACING SECURE TO VAULT LID AND FLOOR.
- ⑦ UTILITY VAULT CO. VAULTS SHALL BE CITY STD. OF QUALITY; SUBMIT ALTERNATIVES FOR APPROVAL. HINGED AND SPRING LOCKED STEEL DIAMOND P/L COVER 2-332P, (DOUBLE HATCH COVER.) 4" C.I. FLOOR DRAIN INTO 4" PVC DRAIN LINE. DAYLIGHT OR STORM SYSTEM. CHECK VAULT SIZE REQUIRED FOR ENCLOSING COMPLETE ASSEMBLIES.
- ⑧ PROVIDE STANCHION, STANDON MODEL S-89 OR EQUAL PIPE SUPPORTS, TO INCLUDE STEEL YOKE, BOLT TO VAULT FLOOR USING RECOMMENDED CONNECTION AND SIZES.
- ⑨ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.

DCDA SIZE	UTILITY VAULT #	INSIDE DIMENSIONS			No. OF HATCHES
		WIDTH	LENGTH	HEIGHT	
4"	575-LA	4'-2"	6'-6"	4'-0"	2
6"	5106-LA	5'-0"	10'-6"	6'-6"	2
8"	5106-LA	5'-0"	10'-6"	6'-6"	2
10"	5106-LA	5'-0"	10'-6"	6'-6"	3

**NOTE:**

- 1. PAINT ALL PIPING WITH PARKER PAINT MARINE ENAMEL, MARATHON 1065 TAHOE BLUE.
- 2. ALL PIPE SHALL BE PRIMERED BY SUPPLIER.



**CITY OF MILTON  
DOUBLE-CHECK DETECTOR  
WITH FIRE CONNECTION**

REVISION DATE:

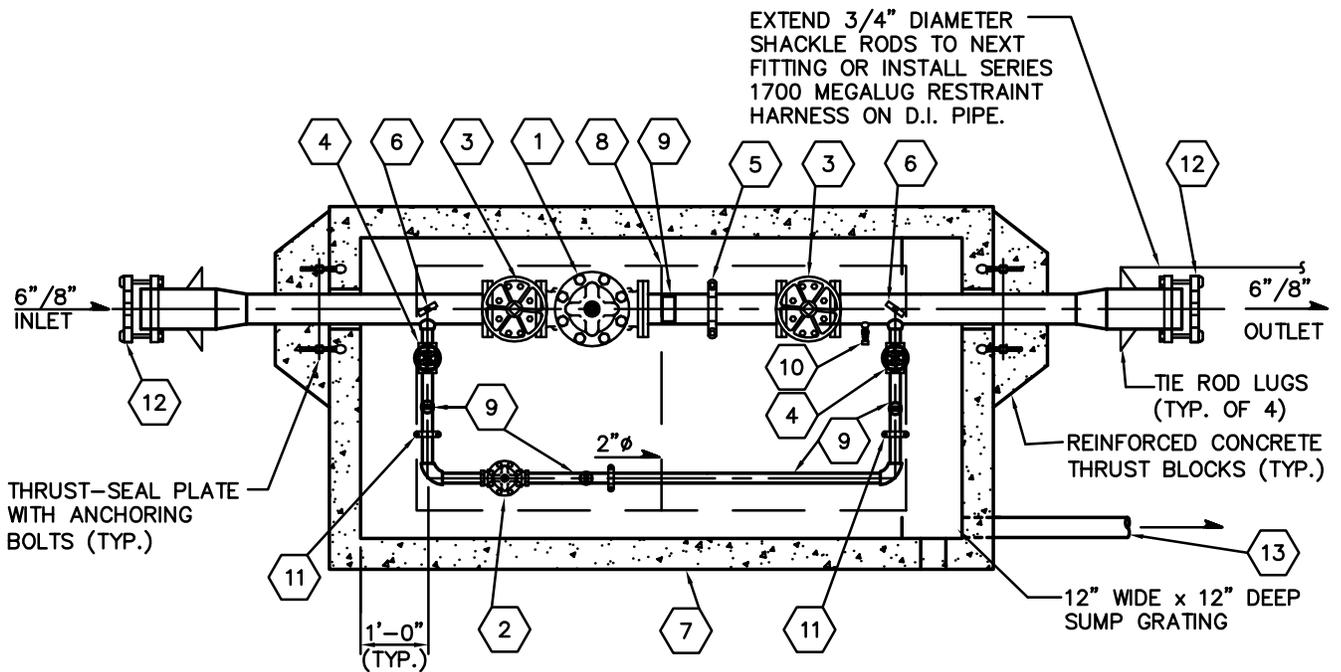
3/30/07

SCALE:

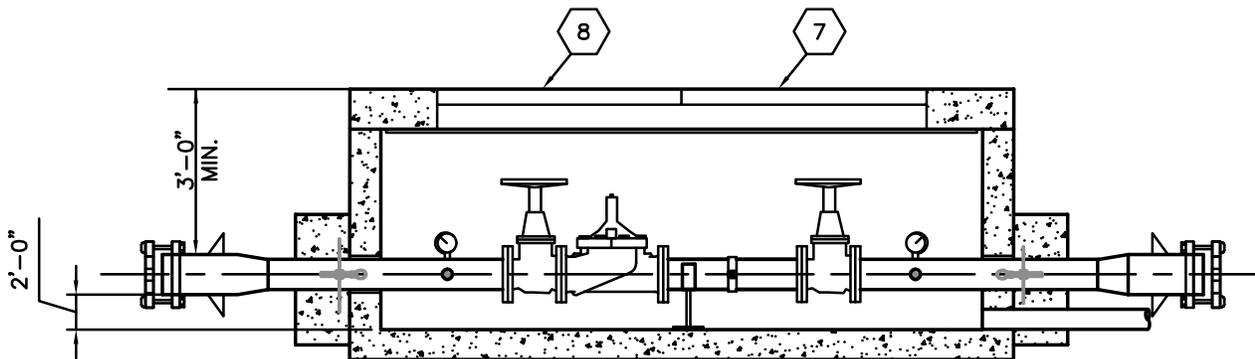
NONE

DWG. NO.

**WT-22**



**PLAN**



**SECTION**

NOTES:

1. SEE WT-24 FOR CALL OUTS AND NOTES



**CITY OF MILTON  
PRESSURE REDUCING  
VAULT**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**WT-23**

- ① 6" CLA-VAL 92G-01BCSY PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, S.S. TRIM, #150 FL
- ② 2" CLA-VAL 90G-01BC PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, BRONZE TRIM - THREADED
- ③ 6" D.I. RW NRS GATE VALVE WITH HANDWHEEL, #150 FL
- ④ 2" MUELLER A2360-6W41 W55 RW NRS GATE VALVE WITH HANDWHEEL, THD.
- ⑤ 6" VICTAULIC #07 RIGID COUPLING
- ⑥ 4" 0-300 PSI PRESSURE GAUGE WITH SNUBBER AND GAUGE COCK; TOP OF PIPE
- ⑦ PRECAST CONCRETE VAULT, UTILITY VAULT CO. 5106-LA OR EQUAL WITH 2 EACH 3' X 3' LW PRODUCTS OR EQUAL, H-20 RATED. DRAIN TO VAULT FLOOR.
- ⑧ 48" X 96" DOUBLE DOOR ALUMINUM HATCH, LW PRODUCTS OR EQUAL. H-20 LOAD RATED. DRAIN HATCH TO VAULT FLOOR
- ⑨ ADJUSTABLE PIPE SUPPORTS
- ⑩ 3/4" HOSE BIB ASSEMBLY
- ⑪ 2" VICTAULIC #77 STANDARD FLEXIBLE COUPLING
- ⑫ SMITH BLAIR ST X DI TRANSITION COUPLING
- ⑬ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.

**NOTES:**

1. 6" x 2" PRV ASSEMBLY SHOWN. SIZES TO BE DETERMINED BY THE CITY BASED ON DOWNSTREAM DEMANDS.
2. FABRICATED STEEL PIPE AND FITTINGS TO BE SCHEDULE NO. 40 STEEL PIPE.
3. ALL 3" AND LARGER PIPE, INSIDE WETTED SURFACES TO BE SANDBLASTED, EPOXY LINED AND COATED TO AWWA C210 AND NSF-61 SPECIFICATION. FINISH COATING SHALL BE BLUE EPOXY.
4. ALL PIPE 2" AND SMALLER TO BE BRASS.



**CITY OF MILTON  
PRESSURE REDUCING  
VAULT**

REVISION DATE:

3/30/07

SCALE:

NONE

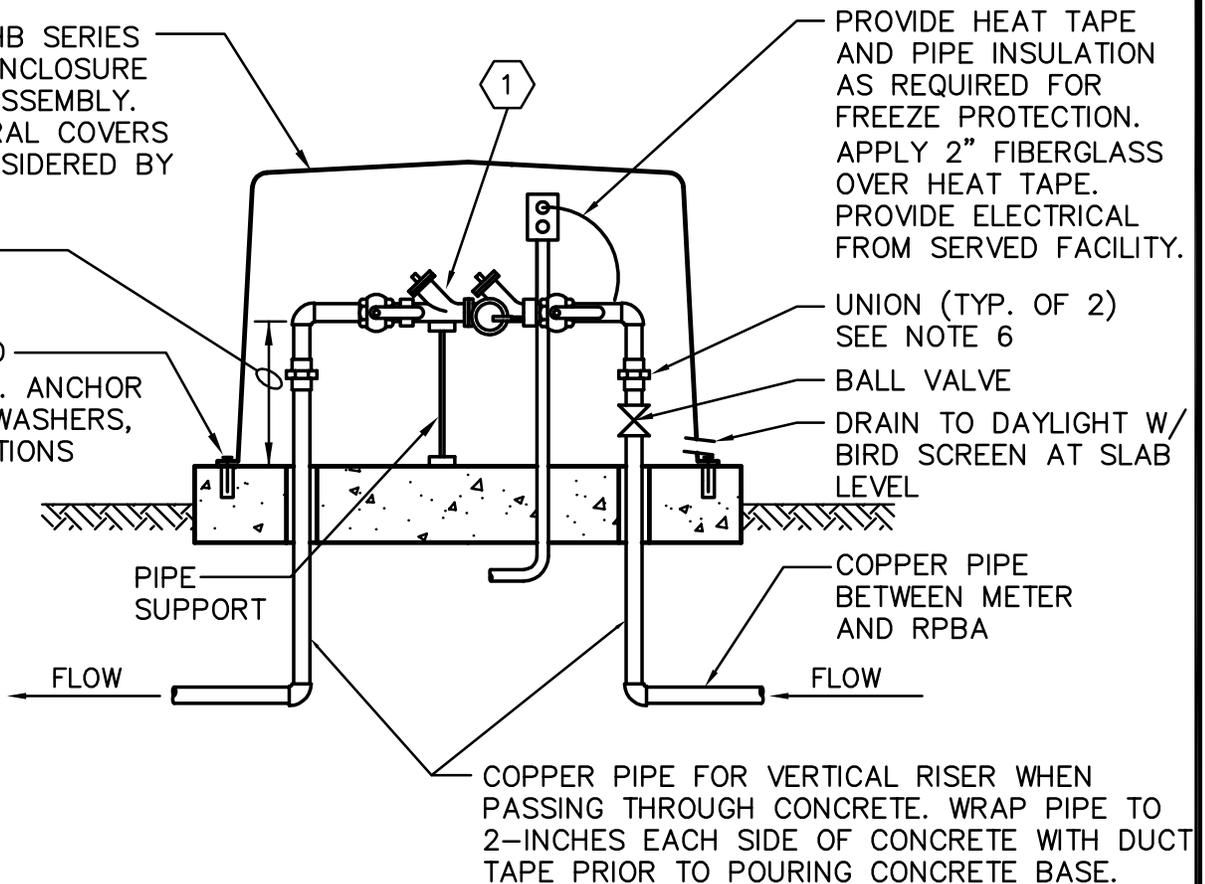
DWG. NO.

**WT-24**

"HOT BOX" HB SERIES INSULATED ENCLOSURE SIZED FOR ASSEMBLY. ARCHITECTURAL COVERS WILL BE CONSIDERED BY CITY.

12" MIN.

BOLT TO PAD W/ 3/8" S.S. ANCHOR BOLTS AND WASHERS, MIN. 4 LOCATIONS



PROVIDE HEAT TAPE AND PIPE INSULATION AS REQUIRED FOR FREEZE PROTECTION. APPLY 2" FIBERGLASS OVER HEAT TAPE. PROVIDE ELECTRICAL FROM SERVED FACILITY.

UNION (TYP. OF 2) SEE NOTE 6

BALL VALVE

DRAIN TO DAYLIGHT W/ BIRD SCREEN AT SLAB LEVEL

COPPER PIPE BETWEEN METER AND RPBA

COPPER PIPE FOR VERTICAL RISER WHEN PASSING THROUGH CONCRETE. WRAP PIPE TO 2-INCHES EACH SIDE OF CONCRETE WITH DUCT TAPE PRIOR TO POURING CONCRETE BASE.

1 WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

NOTES:

1. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
4. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
5. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
6. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.



CITY OF MILTON

REDUCED PRESSURE BACKFLOW ASSEMBLY 3/4" TO 2"

REVISION DATE:

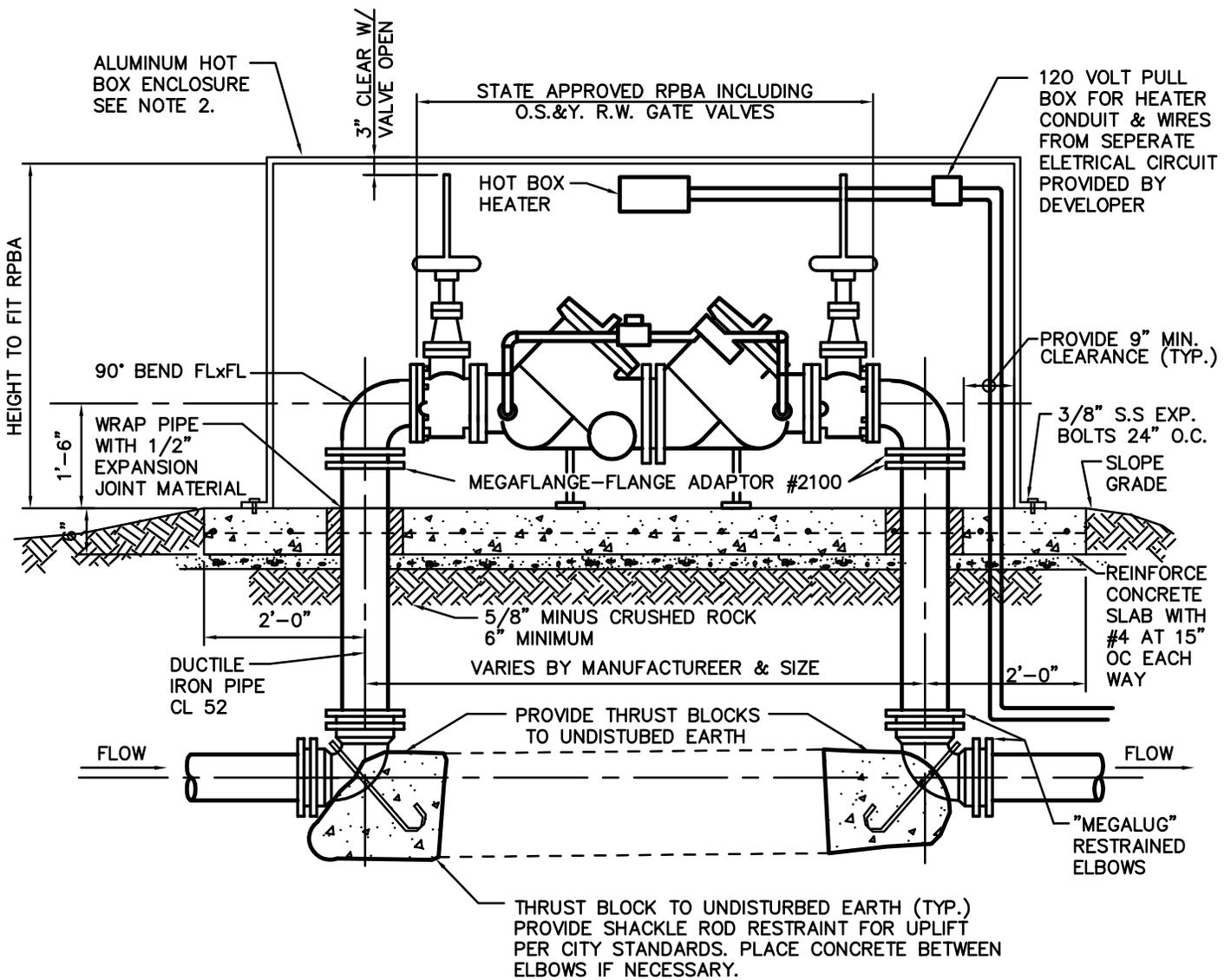
3/30/07

SCALE:

NONE

DWG. NO.

WT-25



**NOTES:**

1. BACKFLOW ASSEMBLY SHALL BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH CURRENT APPROVED LIST.
2. ALUMINUM "HOT BOX" MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT BE ALLOWED TO EXTEND OUTSIDE OF BOX.
3. HEATERS SHALL BE 2,000 WATT FOR 8" AND UNDER AND 3,000 WATT FOR 10" AND LARGER.
4. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
5. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND AND SUPPLIER STANDARDS.
6. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
7. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
8. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.

 <b>CITY OF MILTON</b> <b>REDUCED PRESSURE BACKFLOW ASSEMBLY 3" AND LARGER</b>		
REVISION DATE:	SCALE:	DWG. NO.
3/30/07	NONE	<b>WT-26</b>

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

10/19/09

SCALE:

NONE

DWG. NO.

**WT-27**

INTENTIONALLY  
LEFT  
VACANT



CITY OF MILTON

VACANT

REVISION DATE:

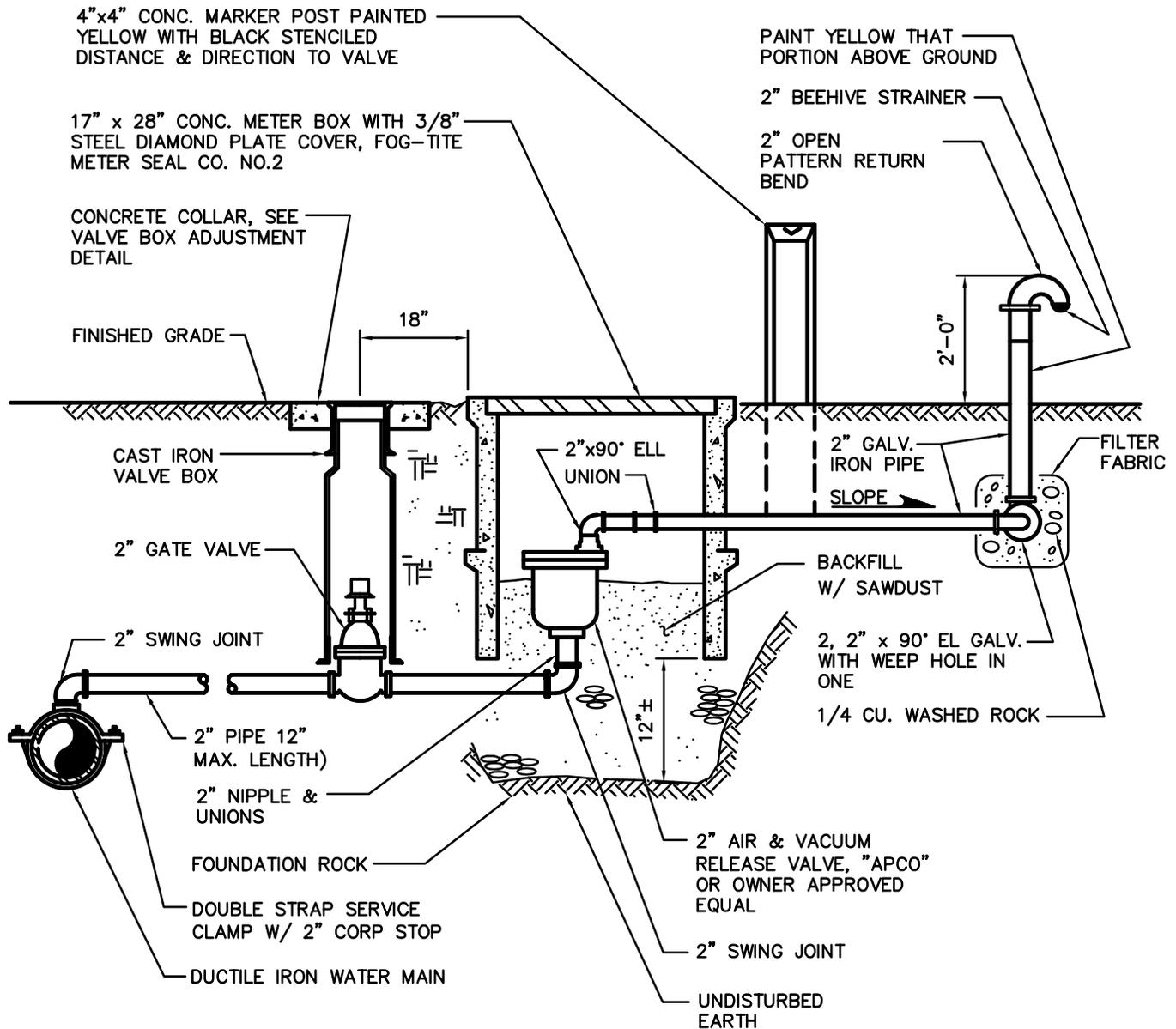
10/19/09

SCALE:

NONE

DWG. NO.

**WT-28**



**NOTES:**

1. GATE VALVE: AWWA RESILIENT SEAL, THRD x THRD WITH OPERATING NUT
2. ALL PIPING BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR & VAC ASSEMBLY SHALL BE BRASS
3. TAP MAIN AT SYSTEM HIGH POINT. LOCATION TO BE APPROVED BY THE CITY
4. PAINT PORTION ABOVE GROUND WITH TWO COATS PRESERVATIVE KELLY MOORE 615 CAT YELLOW



**CITY OF MILTON  
AIR & VACUUM RELEASE  
ASSEMBLY**

REVISION DATE:

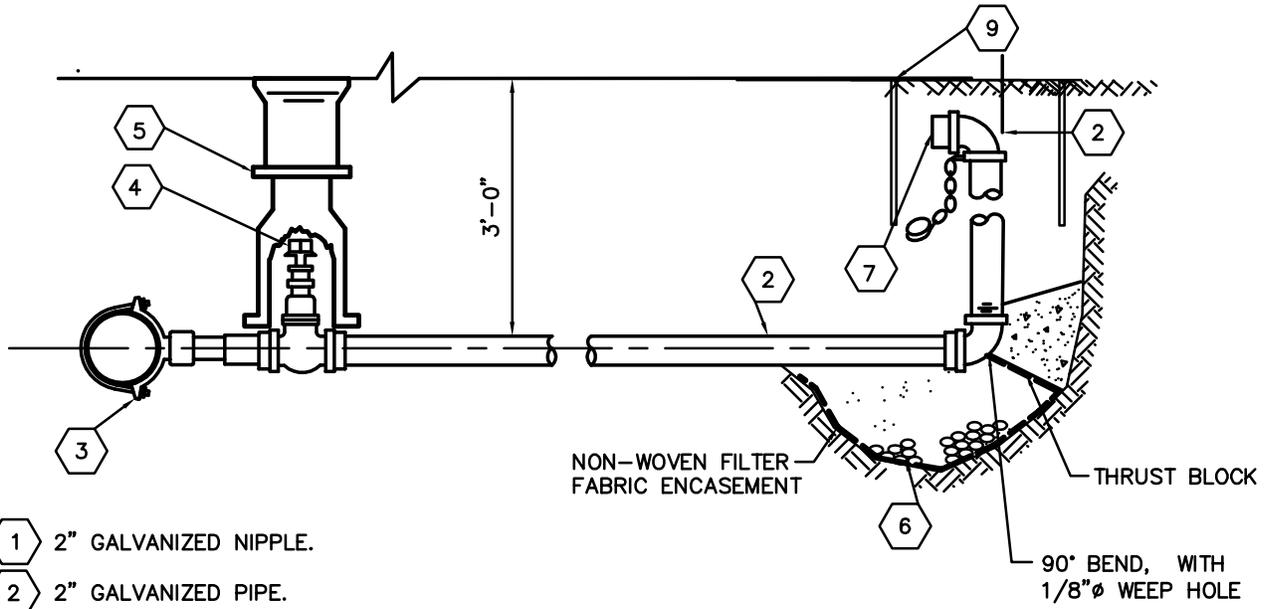
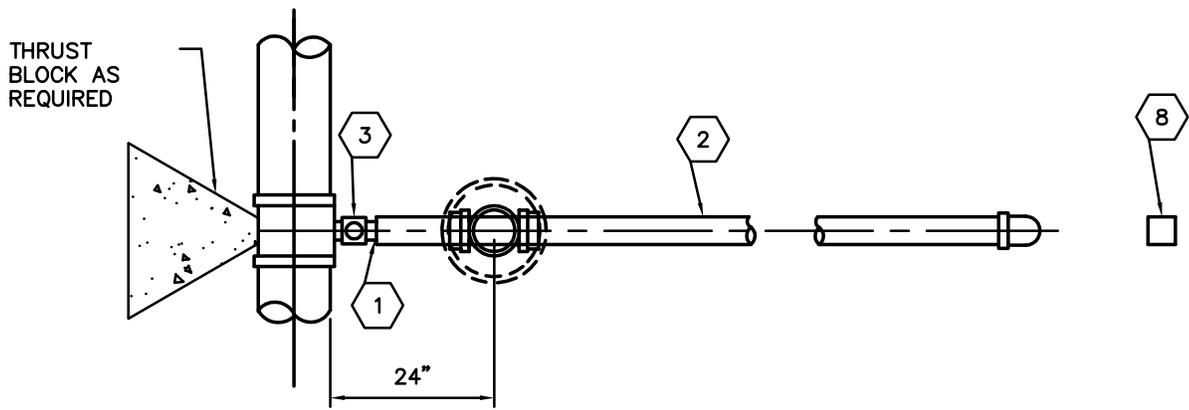
3/30/07

SCALE:

NONE

DWG. NO.

**WT-29**

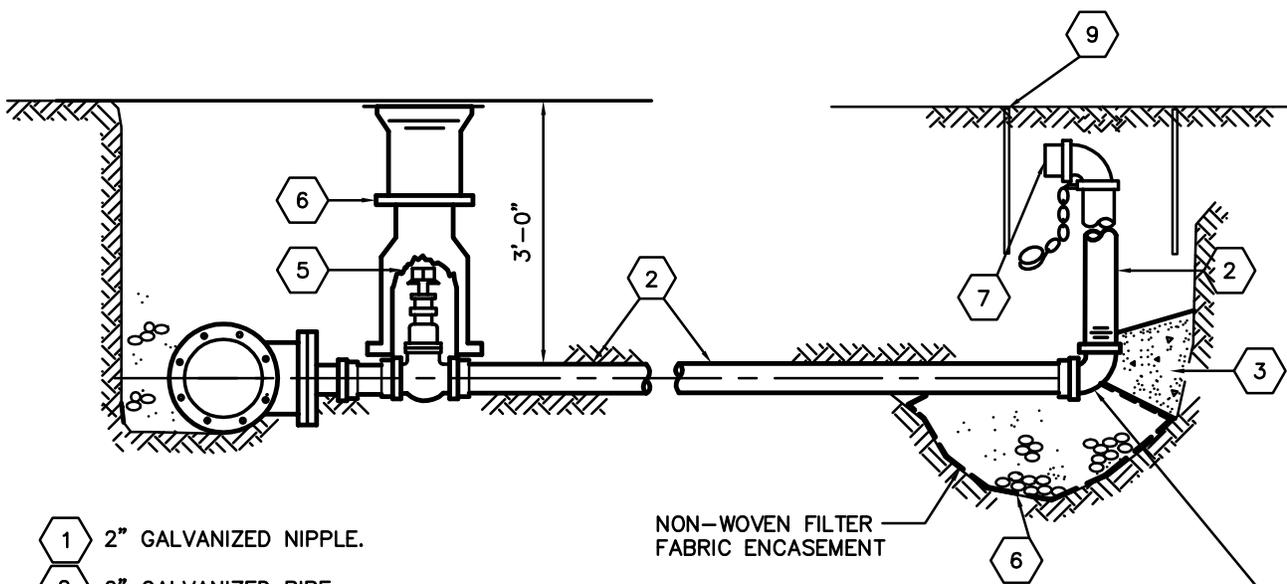
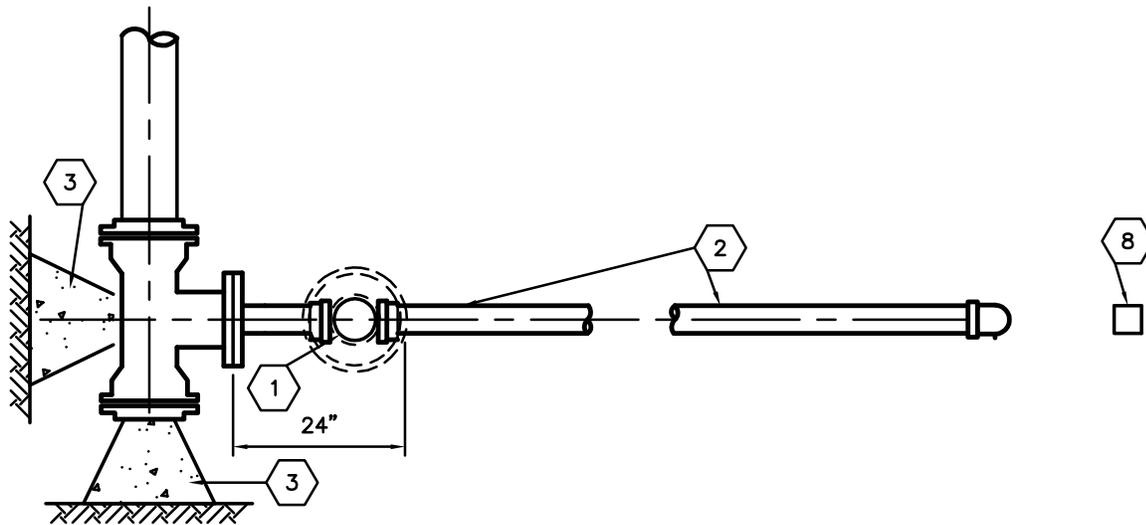


- 1 2" GALVANIZED NIPPLE.
- 2 2" GALVANIZED PIPE.
- 3 DOUBLE STRAP SADDLE TO FIT 2".
- 4 AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT.
- 5 CAST IRON VALVE BOX.
- 6 1/4 CUBIC YARD WASHED GRAVEL POCKET.
- 7 2" x 2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN.
- 8 VALVE MARKER POST.
- 9 17 X 28 CONC. METER BOX WITH 3/8" STRUC DIAMOND PLATE COVER FOG-TITE METER SEAL CO. NO.2.

**NOTES:**

- 1. TURN NOZZEL TOWARDS ROADSIDE DITCH.
- 2. TEMPORARY BLOWOFFS INSTALLED FOR FLUSHING WATERMAIN SHALL BE SIZED TO PROVIDE 2.5fps VELOCITY IN MAIN LINE.

		
<p><b>CITY OF MILTON</b> <b>PERMANENT IN-LINE</b> <b>BLOW OFF ASSEMBLY</b></p>		
<p>REVISION DATE:</p> <p style="text-align: center;"><b>3/30/07</b></p>	<p>SCALE:</p> <p style="text-align: center;">NONE</p>	<p>DWG. NO.</p> <p style="text-align: center;"><b>WT-30</b></p>



- 1 2" GALVANIZED NIPPLE.
- 2 2" GALVANIZED PIPE.
- 3 THRUST BLOCK
- 4 AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT.
- 5 CAST IRON VALVE BOX.
- 6 1/4 CUBIC YARD WASHED GRAVEL POCKET.
- 7 2" x 2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN.
- 8 VALVE MARKER POST.
- 9 17 X 28 CONC. METER BOX WITH 3/8" STRUC DIAMOND PLATE COVER FOG-TITE METER SEAL CO. NO.2.

NON-WOVEN FILTER FABRIC ENCASEMENT

90° BEND, MUELLER No. H-15533, COMPRESSION TO F.I.P. TAP BEND WITH 1/8" WEEP HOLE

**NOTES:**

1. TURN NOZZEL TOWARDS ROADSIDE DITCH.
2. TEMPORARY BLOWOFFS INSTALLED FOR FLUSHING WATERMAIN SHALL BE SIZED TO PROVIDE 2.5fps VELOCITY IN MAIN LINE.



**CITY OF MILTON  
PERMANENT END-LINE  
BLOW OFF ASSEMBLY**

REVISION DATE:

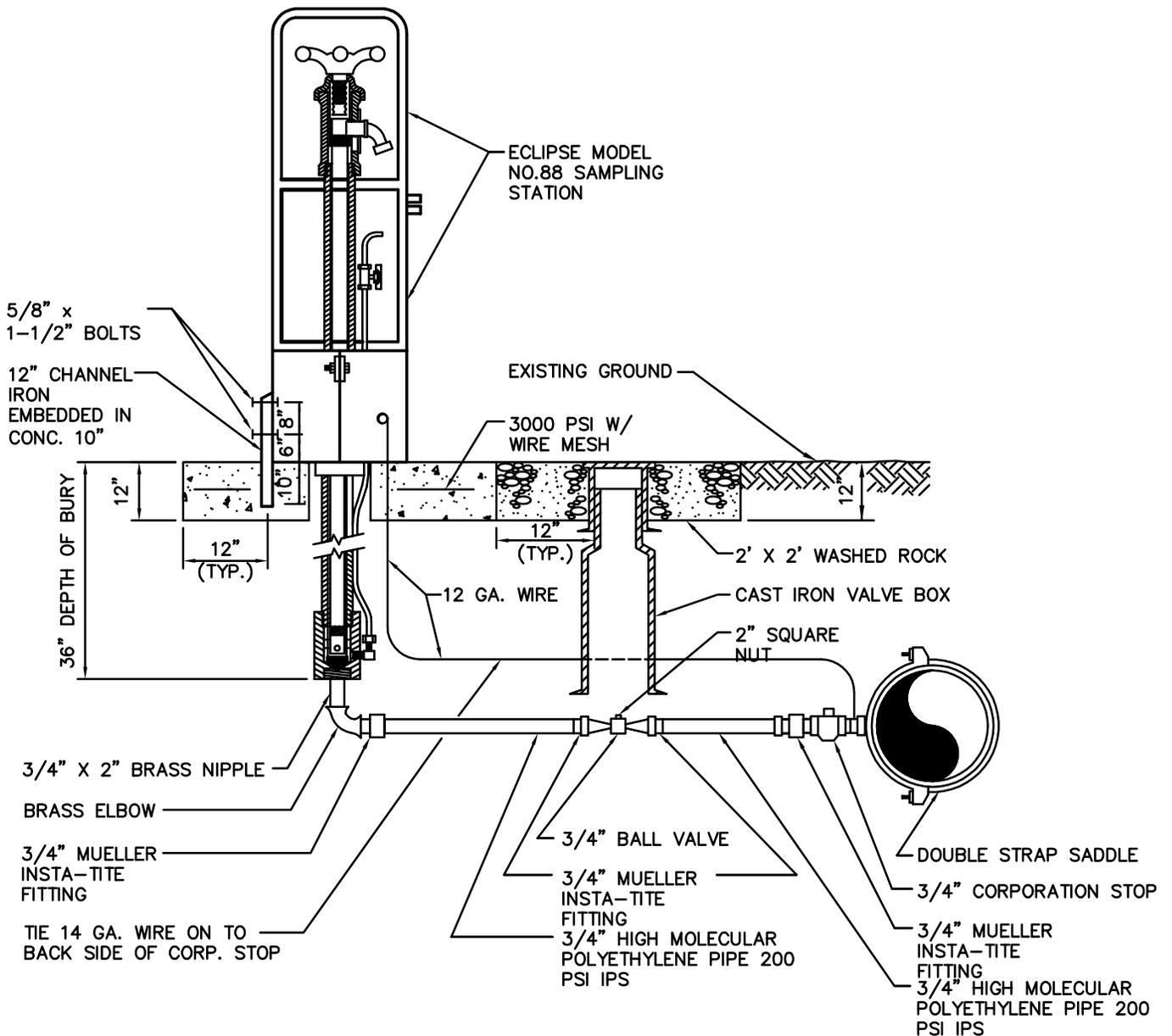
3/30/07

SCALE:

NONE

DWG. NO.

**WT-31**



CITY OF MILTON  
 WATER SAMPLING  
 STATION

REVISION DATE:

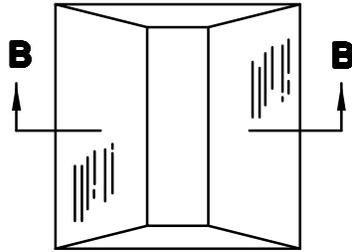
3/30/07

SCALE:

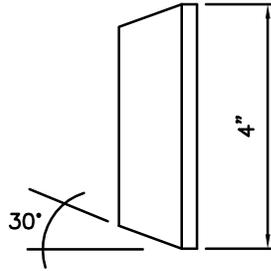
NONE

DWG. NO.

**WT-32**

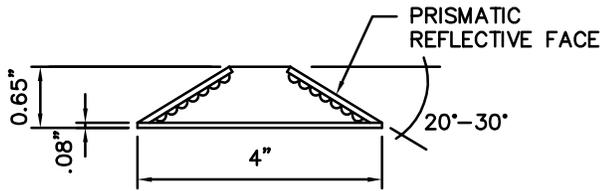


**PLAN**



**SIDE VIEW**

**DIRECTION OF TRAFFIC**



**TYPE 2  
SECTION B-B**

**NOTES:**

1. SEE HYDRANT DETAIL FOR LOCATION.



**CITY OF MILTON  
TYPICAL BLUE  
REFLECTOR**

REVISION DATE:

3/30/07

SCALE:

NONE

DWG. NO.

**WT-33**

**SECTION 7**  
**MISCELLANEOUS UTILITY SERVICES AND**  
**ADDITIONAL DEVELOPMENT REQUIREMENTS**

## **SECTION 7 MISCELLANEOUS UTILITY SERVICES AND ADDITIONAL DEVELOPMENT REQUIREMENTS**

### **7.01 General**

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of additional facilities. Greater or lesser requirements may be mandated by the City due to localized conditions. The following design and construction considerations shall apply.

### **7.02 Utility Services**

All utility lines, including electric, telephone, fire alarm and television cables shall be placed underground prior to paving. Easements for the operation and maintenance of all utilities, both on and off-site, shall be provided as applicable to the satisfaction of the City Public Works Department.

### **7.03 Street Lighting**

Street lighting shall be provided. All illumination shall be designed by a qualified agent of the developer. All costs of such, including, but not limited to, design, underground wiring, light standard base and luminaire shall be borne by the developer. The City will approve of all street lighting plans as furnished by the developer to include type of pole, size, spacing, and type of luminaire.

### **7.04 Cable Television**

Service lines (suitable empty conduits placed and capped) for cable television shall be installed underground (location as approved by City Engineer) on all subdivisions regardless of whether or not cable television service is currently available.

### **7.05 Street Name and Traffic Signs**

All street name signs and traffic signs shall be furnished and installed by the Developer. All costs of providing the signs, to include the installation, labor, materials, and other relevant City costs associated with determining the type, location, and incidental items necessary shall be paid by the developer. The City shall determine the location and need for all signs.

### **7.06 Landscaping**

Street landscaping shall be provided where required by the City. Landscaping items shall be furnished and installed as directed and approved by the City Public Works Department. Irrigation may be required, and if so, shall be designed, furnished, and installed by the developer.

**SECTION 8**  
**MISCELLANEOUS CITY DOCUMENTS**

**SECTION 8 MISCELLANEOUS CITY DOCUMENTS**

- Developer Agreement
- Affidavit of No Liens
- Bill of Sale
- Developer Extension Checklist
- Developer's Bond
- Easement for Utility Mains and Appurtenances
- Permit for Work in Street Right-of-Way
- Plan Checklist

SAMPLE COPY

CITY OF MILTON

DEVELOPER AGREEMENT

THIS AGREEMENT, by and between the City of Milton, a municipal corporation, hereinafter referred to as “City”, and \_\_\_\_\_, hereinafter referred to as “Developer”:

WITNESSETH: That whereas the City of Milton, a municipal corporation, provides water/electrical/storm or roadway service within this area, and the above-named Developer is preparing to construct an extension or modification or additions thereto, and said development requires the City’s service;

WHEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. Developer agrees to construct the water/electrical/storm or roadway system, or additions thereto, to be connected to the City’s infrastructure, and to maintain such additions until such time as the improvements are accepted by the City, with the agreements conditioned as set forth below. The improvements, extension, or additions thereto, shall be located within that area commonly referred to as **(Insert Project Name)**, which property is described in Exhibit “A” attached hereto and referred to hereinafter as “Premises”.
2. As a condition precedent to City obligations under this agreement, the Developer shall construct the proposed water/electrical/storm/or roadway system, or additions thereto, within said premises in conformance with the minimum standards as set forth in the City’s currently adopted Development Guidelines and Public Works Standards, as adopted together with any amendments thereto hereinafter made, and further to conform with the City’s comprehensive planning documents, which agreement shall include oversizing of mains necessitated by the comprehensive plan(s).
3. The developer agrees that the construction of any infrastructure items, or additions thereto, shall not commence until the following conditions have been fulfilled:
  - a. The developer shall furnish the City with four (4) sets of detailed plans for the proposed improvements, or additions thereto, at Developer’s own expense, prepared by a qualified engineer currently licensed in the State of Washington.
  - b. The above plans shall require the review and approval by the City and its Engineer, and the cost of such review shall be at the Developer’s own expense.

- c. Minimum requirements for all plans, or additions thereto, submitted to the City for review are:
- (1) Four (4) sets of all plans and documents shall be submitted, wherein two (2) sets will be retained by the City, and two (2) sets will be returned to the applicant.
  - (2) A surveyed site plan of the area in which said improvement, or additions thereto, are to be constructed, which plat has been approved by the City.
  - (3) A map showing the location of the plat in relation to the surrounding area.
  - (4) A contour map of the plat with contour intervals of five feet or less extending fifty (50') feet beyond the plat/property lines.
  - (5) A map showing the location and depth of all proposed utilities and any connections and/or interconnections to existing facilities or future extensions and connections.
  - (6) A 1" = 50' plan and profile view of the proposed improvements showing streets, lot lines, dimensions, and location of bench marks (City datum) and monuments for the proposed plat, together with an indication of the development of the adjacent property, as may be applicable.
  - (7) A profile 1" = 50' horizontal and 1" = 5' vertical of the finished road grades with any proposed utility system improvements and other pertinent underground utilities located, with elevations noted thereon. The elevation datum shall be the same as used by the City. It shall be the responsibility of the Developer to confirm such datum with the City.
  - (8) Full-sized detail sheets shall be included as part of the construction drawings, as required to clearly indicate the details for all of the infrastructure improvements not otherwise provided for in this text, or additions thereto, to be constructed, consistent with City standards.
  - (9) Specifications sufficient to fully describe the work, consistent with the City's minimum and currently adopted Development Guidelines and Public Works Standards.
  - (10) Approvals from all appropriate regulatory agencies.
- d. Construction requirements in addition to the City standards and details for developer extensions, as adopted, are as follows:
- (1) All streets and/or roadways shall be graded to within six inches of final grade before installation of utility improvements, unless otherwise approved by the City Engineer.

- (2) All lots shall be fully staked to assist all parties involved in the proper location of utility services.
  - (3) All contractors and subcontractors shall have a current Washington State Contractors License on file with the City.
  - (4) The Developer's proposed improvements, or additions thereto, on Premises shall not be connected to the City system until authorized by the City, and such connection shall be performed only under the supervision and approval of the City.
- e. For the purpose of applying RCW 4.24.115 to this Contract, the Developer and the City agree that the term "damages" applies only to the finding in a judicial proceeding and is exclusive of third party claims for damages preliminary thereto.

The Developer agrees to indemnify and hold harmless the City from all claims for damages by third parties, including costs and reasonable attorney's fees in the defense of claims for damages, arising from performance of the Developer's express or implied obligations under this Agreement. The Developer waives any right of contribution against the City.

It is agreed and mutually negotiated that in any and all claims against the City or any of its agents or employees by any employee of the Developer, any contractor or subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation hereunder shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Developer or any contractor or subcontractor under Workman's Compensation Acts, disability benefits acts or other employees' benefit acts. The City and the Developer agree that all third party claims for damages against the City for which the Developer's insurance carrier does not accept defense of the City may be tendered by the City by the Developer who shall, if so tendered by the City, accept and undertake to defend or settle with the Claimant. The City retains the right to approve claim investigation and counsel assigned to said claim and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to the City. In the event that the City agrees or a court finds that the claim arises from the sole negligence of the City, this indemnification shall be void and the City shall be responsible for all damages payable to the third party claimant. In the event that the City and the Developer agree or a court finds that the claim arises from or includes negligence of both the Developer and the City, the Developer shall be responsible for all damages payable by the Developer to the third party claimant under the court findings, and, in addition thereto, the Developer shall hereunder indemnify the City for all damages paid or payable to the City under the court findings in an amount not to exceed the percentage of total fault attributable to the Developer. For example, where the Developer is 25% negligent, the Developer shall not be required to indemnify the City for any amount in excess of 25% of the claimant's total damages.

- f. In the event the Developer in his operation damages or disrupts existing improvements, the repairs shall be made at the Developer's expense. In the event they are so damaged or the service disrupted and the Developer fails or is unable to immediately restore the service, then the Owners of the improvements may cause the repairs to be made by others and all costs for the same shall be at the Developer's own expense.

Where the construction crosses or is adjacent to existing utilities, the Developer shall exercise extreme care to protect such utilities from damage.

If any damage is done to an existing utility, the Developer shall notify the utility company involved, who will dispatch a crew to repair the damage at the Developer's expense. All costs for the same shall be at the Developer's own expense.

The Developer shall be aware that some existing City owned facilities are known to contain asbestos cement pipe. The Developer shall conduct all work related to existing asbestos cement pipe in strict accordance with current WISHA safety regulations and provisions contained within WAC 296-62-077. All costs related to work in compliance with established rules and regulations shall be the responsibility of the Developer. Demolition of existing asbestos cement pipe, if required, will be permitted only after the proper permits are obtained from the Puget Sound Air Pollution Control Agency. The Developer shall be responsible for all associated fees and permits required for asbestos removal and disposal. Work crews shall be provided with proper protective clothing and equipment. Hand tools shall be used, and the asbestos cement pipe shall be scored and broken in lieu of the sawing or other methods which release fibers into the atmosphere. Waste asbestos pipe shall be buried in the trench. Asbestos pipe to be abandoned in place shall not be disturbed, except as noted herein, and shall remain in its original position.

The Developer is cautioned that all existing drainage systems, whether open ditch, buried pipe, or drainage structures, are not on record. It shall be the responsibility of the Developer to repair or replace all such systems found during construction, which are damaged by the Developer's construction in a manner which is satisfactory to the City.

Where the Developer is allowed to use private property adjacent to the work, the property so used shall be returned to its original or superior condition. The Developer shall make all arrangements in advance with such property owners, to insure that no conflicts will ensue after the property is restored as described above. The Developer will be required to furnish the City with a written release from said private property owners, if the City deems it to be necessary to obtain such document.

4. The construction of the Developer's proposed improvements, or additions thereto, on the Premises shall be supervised by the City in such a manner and at such times as the City deems reasonably necessary to assure that construction of the system will conform with the above-mentioned plans and specifications and minimum City

Standards. The Developer herewith agrees to allow such inspections and agrees to cooperate providing reasonable advance notice on his construction schedule during the various construction phases as requested by the City. The Developer further agrees to reimburse the City for all engineering fees and expenses incurred by the City for such supervision.

5. The Developer's proposed improvements, or additions thereto, on Premises shall not be accepted for service and use until the same have been fully inspected and approved, and the following requirements have been performed:
  - a. Submit to the City in Auto-CADD format, latest version, the computer file supplied on a three and one half (3-1/2) inch disc accompanied by the original "fixed line" mylars, with all changes from the original design clearly marked to reflect the as-built conditions. The Developer's Engineer shall certify the accuracy of the record drawings and shall affix his seal and signature.
  - b. Payment of all permit fees and equivalent assessment charges and any other applicable City charges required for Premises.
  - c. Payment of all plan check and inspection fees and related fees.
  - d. Prepare and furnish the required easements in accordance with City's standard form, and furnish same to the City for approval by the City Attorney, along with the necessary recording fees.
  - e. Furnish the City with an affidavit warranting there are no liens against the improvements constructed on Premises by the Developers, this affidavit shall be in the form prescribed by the City.
  - f. Furnish the City with a Bill of Sale conveying the water/electrical/storm or roadway system to the City, which shall include a two-year guarantee that the conveyed systems or improvements or additions thereto shall be free of defects in labor and materials. Form shall be as prescribed by the City.
  - g. Payment of all applicable bills, invoices, fees, etc., have been paid in full.
6. In the event any warranty repairs are required, the City agrees, whenever feasible, to provide the Developer with reasonable notice before directly undertaking such repairs. The City reserves the right, however, to effect emergency repairs as deemed necessary by the City. The City shall be reimbursed by the Developer for all costs thereof.



**CITY OF MILTON**  
**DEVELOPER AGREEMENT**  
**EXHIBIT "A"**

PLAT NAME: \_\_\_\_\_

DEVELOPER: \_\_\_\_\_

LEGAL DESCRIPTION: \_\_\_\_\_

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





**CITY OF MILTON**

**DEVELOPER EXTENSION CHECKLIST**

NAME OF PROJECT/PLAT \_\_\_\_\_

DEVELOPER/OWNER \_\_\_\_\_

CONTACT PERSON \_\_\_\_\_ PHONE \_\_\_\_\_

DEVELOPER'S ENGINEER \_\_\_\_\_ PHONE \_\_\_\_\_

CONTRACTOR \_\_\_\_\_ PHONE \_\_\_\_\_

JURISDICTION \_\_\_\_\_ COUNTY \_\_\_\_\_

RESIDENTIAL \_\_\_\_\_ MULTI-FAMILY \_\_\_\_\_ COMMERCIAL \_\_\_\_\_

INDUSTRIAL \_\_\_\_\_ MIXED \_\_\_\_\_

	Applies to Project <u>Yes(Y)/No(N)</u>	City Dept.*	Dept. <u>Initial</u>	<u>Date</u>
1. Plot Plan Received and Distributed to Staff (as applicable)	_____	P.W.	_____	_____
2. Master Plan Received (as applicable)	_____	P.W.	_____	_____
3. SEPA Checklist Received	_____	P.W.	_____	_____
4. D.N.S., M.D.N.S., or D.S. made	_____	P.W.	_____	_____
5. E.I.S. Required/Approved	_____	P.W.	_____	_____
6. Staff's Preliminary Approval	_____	C.E.	_____	_____
7. Public Meeting	_____	P.W.	_____	_____
8. Planning Commission Meeting	_____	P.D.	_____	_____
9. City Council Action Req'd on Preliminary Project	_____	P.D./P.W.	_____	_____
10. Civil Plans Completed & Transmitted to City and Approved by City Engineer	_____	P.D./P.W.	_____	_____

	Applies to Project <u>Yes(Y)/No(N)</u>	City <u>Dept.*</u>	Dept. <u>Initial</u>	<u>Date</u>
11. Performance Bond Received, Reviewed and Approved by City Engineer	_____	P.W.	_____	_____
12. Contractor Insurance Certificate Approved by City Attorney	_____	P.W.	_____	_____
13. Preconstruction Conference	_____	P.W.	_____	_____
14. City, County, State Permits Acq'd.	_____	P.W.	_____	_____
15. Fire Department Review	_____	F.D.	_____	_____
16. City Building Permits Issued	_____	B.O.	_____	_____
17. Construction				
(a) Project officially begins	_____	C.E.	_____	_____
(b) Punchlist Items Completed	_____	C.E.	_____	_____
(c) Final Inspection	_____	C.E.	_____	_____
(d) Resident Inspector accepts construction as complete	_____	C.E.	_____	_____
18. City Staff Approval of Construction	_____	P.W.	_____	_____
19. Bill of Sale Received, Reviewed and Approved by City Engineer	_____	C.E.	_____	_____
20. Easements Received, Reviewed, Recorded and Approved by City Engineer	_____	C.E.	_____	_____
21. Maintenance/Guarantee Bond Received, Reviewed and Approved by City Attorney	_____	P.W.	_____	_____
22. Attorney's Review Memo	_____	P.W.	_____	_____
23. City Council Final Approval & Acceptance of Project	_____	P.W.	_____	_____
24. Council Minutes of City Approval Filed in Project File	_____	P.W.	_____	_____
25. Service Agreements/Interlocal Agreements Completed & Executed	_____	P.W.	_____	_____
26. "As-Builts" (Mylars) Completed, Submitted, Approved and in City's Possession	_____	C.E.	_____	_____
27. Capital Facility Charge/Hookup/ Outstanding Bills Paid in Full	_____	P.W.	_____	_____

	Applies to Project <u>Yes(Y)/No(N)</u>	City <u>Dept.*</u>	Dept. <u>Initial</u>	<u>Date</u>
28. Final Occupancy Approval	_____	B.O.	_____	_____
29. Two Year Warranty Period Expires	_____	P.W.	_____	_____
30. Other	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

PROJECT CLOSE OUT

\_\_\_\_\_  
Public Works Director

- \* City Dept. Abbreviations:
- P.D. - Planning Department
  - P.W. - Public Works Director
  - B.O. - Building Official
  - F.D. - Fire Department
  - C.E. - City Engineer

**SAMPLE COPY**

**DEVELOPER'S BOND**

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

Surety: \_\_\_\_\_

City: \_\_\_\_\_

Amount: \_\_\_\_\_

Development: \_\_\_\_\_

KNOW ALL BY THESE PRESENT: Whereas the City of Milton, King/Pierce County, Washington, has accepted an agreement by the Developer for the construction of an extension to the City's roadways and/or utility system(s) to serve the development, in accordance with the City's regulations governing developer extensions, which regulations are incorporated into this agreement by reference, and which require the Developer to furnish a bond for the faithful performance of the work, and completion of the project within 365 days (within twelve months) from the date of preliminary approval of the Developer's application.

NOW, THEREFORE, we, the Developer and surety, are held and firmly bound to the City of Milton in the amount named above for the payment of which we do jointly and severally bind ourselves, our heirs, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the Developer, or the Developer's heirs, personal representatives, successors, and assigns shall well and truly keep all the provisions of the regulations of the City applicable to the work described in the Developer's Agreement, and pay all laborers, mechanics, subcontractors, and materialman, and all persons who shall supply such person or subcontractors with provisions and supplies for carrying on such work and shall indemnify and save harmless the City, its officers and agents, from any pecuniary loss resulting from the breach of said regulations, including the obligation of the Developer to replace or correct any defective work or materials discovered by the City within two years from the date of acceptance of the work, then this obligation shall become void; otherwise, it shall remain in full force and effect.

No change, extension of time, alteration or addition to the work to be performed by the Developer shall affect the obligation of the principal or surety on this bond, and the surety waives notice of any such change, extension, alteration, or addition thereunder.

This bond is furnished pursuant to the requirements of Chapter 39.08 of the Revised Code of Washington, and the regulations of the City, and in addition to the foregoing, is made for the benefit of the City, together with all laborers, mechanics, subcontractors, materialmen, and all persons who supply such person or subcontractors with supplies and equipment for the carrying on of the work covered by this agreement, whether or not such work is deemed to be "public work" under the laws of the State of Washington.

In witness whereof, the principal and surety have caused this bond to be signed and sealed by their duly authorized officers or representatives this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
Principal

By \_\_\_\_\_

\_\_\_\_\_  
Surety

By \_\_\_\_\_

**SAMPLE DOCUMENT**

**EASEMENT FOR UTILITY MAINS & APPURTENANCES**

\_\_\_\_\_ (herein called the "grantor") hereby dedicates, conveys, and grants to City of Milton (herein called the "grantee") and its successors and assigns an easement for City utility mains and appurtenances thereto under and upon the following described property situated in King/Pierce County, Washington, more particularly described as follows: (Described here or attach legal description to form):

That said grantee shall have the right without prior institution of any suit or proceeding at law, at times as may be necessary, to enter upon said property and adjoining property owned by the grantor and his assigns and successors to install, lay, construct, renew, operate and maintain mains and necessary facilities and other equipment, for the purposes of serving the property or other properties with water and other utility service.

The grantor covenants that no permanent structure shall be erected, and no large trees or large shrubs shall be planted in the area of ground for which the easement in favor of City of Milton has been provided herein.

This easement and the covenants herein shall be covenants running with the land and shall be binding on the successors, heirs, and assigns of both parties hereto.

The grantor warrants that the grantor has good title to the above property and warrants the grantee title to and quiet enjoyment of the easement conveyed herein.

No other easements for utilities shall be granted within the afore described easement area except for necessary crossings as may be mutually approved by the grantor and grantee and the grantee shall have exclusive right to construct and/or maintain City owned utilities within the easement area except for necessary crossings.

By \_\_\_\_\_ By \_\_\_\_\_  
Grantor Grantor

State of Washington )  
 ) ss.  
County of King/Pierce)

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, before, me the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared \_\_\_\_\_, to me known to be the person who executed the foregoing instrument, and acknowledged the said instrument to be his free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal affixed the day and year first above written.

(INDIVIDUAL) \_\_\_\_\_  
Notary Public in and for the State  
of Washington, residing at \_\_\_\_\_

Note: Different form is required for Corporate Ownership.

**MUST CALL THE CITY'S PUBLIC WORKS DEPARTMENT 253-922-8738: ATTN.: PUBLIC WORKS DIRECTOR**

**24 HOURS PRIOR TO STARTING WORK  
CITY OF MILTON PUBLIC WORKS DEPARTMENT  
100 Third S.E.  
Milton, Washington 98047**

**PERMIT FOR WORK IN STREET RIGHTS-OF-WAY**

Subject to all terms, conditions and provisions written or printed below or on any part of this form, PERMISSION IS HEREBY GRANTED TO: **(Name of Utility Owner)** (the "Grantee"), Telephone number \_\_\_\_\_ Address \_\_\_\_\_  
City/Town \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

to construct:

**(Project Description)**

Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

1. Utility to be placed/installed per City approved drawing (attached hereto).
2. All trenches to have a backfill of not less than 36 inches (depth - to top of the pipe) and the finished surface will conform with the original surface, unless otherwise approved in writing by the City Public Works Director.
3. All trenches located beneath paved (asphalt or concrete) surfaces or driveways, or located beneath roadway shoulders (within 3' of edge of road) shall be backfilled with crushed surfacing top course (5/8" minus), controlled density fill (CDF), or imported gravel base, Class B. Backfill shall be placed and compacted in maximum 6-inch lifts to 95% of standard density. Native excavated materials cannot be utilized for backfill in these areas.
4. All trenches located outside of paved (asphalt or concrete) surfaces or driveways, or outside roadway shoulders shall be backfilled in 6-inch lifts with suitable excavated material compacted to 95% of standard density. When unsuitable on-site native backfill material exists (material cannot achieve minimum compaction requirements), then trenches shall be backfilled with import gravel base, Class B, material as furnished and supplied by the Grantee. This permit does not warrant the availability or presence of suitable native materials for trench backfill.
5. All compaction shall be mechanically tamped to achieve the desired level of compaction. Water settling will not be allowed.
6. All asphalt pavement restoration shall be made with a minimum 12-inch lift of compacted (95% standard density) crushed rock top course (5/8" minus) and 2-inch minimum (compacted thickness) of asphalt concrete class "B". The pavement restoration shall extend a minimum of 12-inch (each side) beyond the constructed trench widths. When existing asphalt thickness is found to be greater than 2-inches, asphalt concrete Class "B" shall be placed, in maximum 2-inch lifts, to a depth equal to or exceeding existing pavement thickness. Seal edges with sealer CSS1 and seal surface joint with hot asphalt (AR4000W) and sand blanket.
7. Special trench and pavement restoration will be required for trenching through concrete or "asphalt over concrete" pavement roadways. The grantee shall procure those additional requirements from the City prior to commencing work under this permit.
8. Before repair of oil mat and/or asphalt concrete cuts, the City shall be notified (24 hour notice) of the pending work and all such work shall be made by experienced personnel with adequate equipment. All paving material shall be hot asphalt concrete Class "B".
9. No pavement cuts across streets, roads or driveways constructed of asphalt concrete or Portland cement concrete shall be made unless approval has been granted by the City Engineer, or his authorized representative in writing for such crossing and all pavement cuts shall be made only by mechanical saws specifically made for this purpose.
10. Property owners and/or residents along this project shall have the right of safe ingress and egress at all times.
11. At no time during construction will any roadway be entirely closed. One-way traffic shall be maintained at all times. All traffic control and construction signs shall be provided, installed, and maintained in accordance with the latest issue of the Manual on Uniform Traffic Control Devices (MUTCD). All flaggers shall be State certified.
12. A 4-foot wide crushed rock (minimum 2-inch compacted thickness) surface shall be placed for gravel shoulder restoration. Where grass sod currently exists, a 4-inch lift of compacted topsoil and grass sod shall be reinstalled. Where construction occurs on a graveled surface, a 2-inch compacted lift of crushed rock surfacing (5/8" minus) shall be provided to all disturbed graveled surfaces.
13. Once work commences, it shall be diligently pursued until completed to the satisfaction of the City Engineer.
14. A temporary patch of cold mix asphalt (4-inch minimum compacted thickness) will be placed and maintained on road crossings and driveways after backfilling until a permanent patch can be placed. Permanent patching will be done by the permittee.
15. A COPY OF THIS PERMIT MUST BE PRESENT AT THE WORK SITE AT ALL TIMES. WORK MUST CONFORM 100% TO PERMIT.
16. No work shall be done under this permit until the party or parties to whom it is granted shall have communicated with and received instructions, if required from the local school district, police, private utility companies, and local Fire Marshall. The Fire Marshall and Police Department must be notified prior to and after completion of the work or project.
17. This permit covered by Bond Number \_\_\_\_\_ in the amount of \$ \_\_\_\_\_, with \_\_\_\_\_

18. This permit subject to existing Franchise dated: \_\_\_\_\_
19. Any underground work shall require notification by the applicant to prevent damage to other underground installations, Gas, Power, Telephone, Cable T.V., Water, Sewer.
20. This Permit shall be void unless the work herein contemplated shall have been completed before: \_\_\_\_\_
21. Payment of all permit fees shall be calculated by the City of Milton and paid by the Permittee before issuance of this permit.
22. A record "as built" must be provided to the City in an "approved" format upon completion of the project.

SPECIAL CONDITIONS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### **GENERAL PROVISIONS APPLICABLE TO ALL PERMITS**

- a. A bond is required for the protection of the City. Minimum Street Restoration Bond shall be \$10,000. Higher bonding may be required at the discretion of the City.
- b. During the progress of the work, such barriers and warning signs (per MUTCD manual) shall be erected and maintained by the grantee as may be necessary or as may otherwise be directed by the City for the protection of the traveling public; the barriers shall be properly lighted when necessary and promptly removed when the project is completed.
- c. In accepting this Permit, the Petitioner, his successors or assigns, agrees to protect the city and save it harmless from all claims, actions or damages of every kind and description which may accrue to or be suffered by any person or persons, corporation or property by reason of the performance of any such work, character of materials used or manner of installation, maintenance and operation or by the improper occupancy of rights of way of public place or public structure, and in case any suit or action is brought against said City for damages arising out of or by reason of any of the above causes, the petitioner, his successor or assigns will upon notice to him or them of commencement of such action, defend the same at his or their own sole cost and expense and will satisfy judgment after the said suit or action shall have finally been determined if adverse to the City.
- d. Except as herein authorized, no excavation shall be made or obstacle placed within the limits of a city street or easement in such a manner as to interfere with the travel over said road, or create a safety hazard.
- e. If the work done under the Permit interferes in any way with the drainage of the city streets, or causes damage, the grantee shall wholly and at his own expense make such provisions as the City Engineer may direct to take care of said drainage and/or damage. Installation of any utilities in any City storm conveyance system is strictly prohibited (except right angle crossings). When ditch sections or open conveyance systems are disturbed, the ditch section or conveyance system shall be restored and armour plated with quarry spalls to the City's satisfaction. The grantee is responsible for protecting the storm system from erosion. Existing systems shall be protected and cleaned as required. The grantee shall utilize Best Management Practices outlined by the Department of Ecology.
- f. On completion of said work herein contemplated, all rubbish and debris shall be immediately removed and the roadway and roadside shall be left neat and presentable and satisfactory to the City Engineer.
- g. Grantee shall comply with the Washington State Electrical Code, Washington State Department of Highways Standards and Standard Specification of Road and Bridge Construction, current edition. Where any conflicts exists, the City shall be the sole judge as to the prevailing requirement(s).
- h. No work shall be permitted on Saturday, Sunday or City Holiday, or between the hours of 6:00 p.m. and 6:00 a.m. of any working day, except in case of emergency and then only upon notification and approval of the City.
- i. Notify local Fire District, Police Department, and City Public Works Department before opening any trench across any roadway and again when project is completed.
- j. All of the work herein contemplated shall be done under the supervision and to the satisfaction of the City's Engineer. The entire expense of said supervision to include the procurement of any "outside" consultants, as may be required by the City, shall be borne by the party or parties to whom this Permit is issued. Outside consultants may include, but are not limited to, engineers, materials testing laboratories, geotechnical, etc.
- k. The City hereby reserves the right to order the change of location or the removal of any structure or structures authorized by the Permit, at any time, said change or removal to be made at the sole expense of the party or parties to whom this Permit is issued, or their successors and assigns.

l. All such changes, reconstruction or relocation by the grantees shall be done in such manner as will cause the least interference with any of the City's work and the City shall in no way be held liable for any damage to the grantee by reason of any such work by the City, its agents or representatives or by the exercise of any rights by the City upon the roads, streets, public places or structures in question.

m. The Grantee recognizes and agrees that it is responsible for and will make at its own expense any changes that may be required and approved by the City in the location of work described herein.

n. The Permit or privilege shall not be deemed or held to be an exclusive one and shall not prohibit the City from granting other permits or franchise rights of like or other nature to other public or private utilities, nor shall it prevent the City from using any of its roads, streets, or public places, or affect its right to full supervision and control over all or any part of them, none of which is hereby surrendered.

o. The City may revoke, annul, change, amend, amplify, or terminate the Permit or any of the conditions herein enumerated if grantee fails to comply with any or all of its provisions, requirements or regulations as herein set forth or through willful or unreasonable neglect, fails to heed or comply with notices given or if the utility herein granted is not installed or operated and maintained in conformity herewith or at all or for any cause or reason whatsoever.

p. The party or parties to whom the Permit is issued shall maintain at his or their sole expense the structure or object for which this permit is granted in condition satisfactory to the City Engineer or his authorized representative.

q. In accepting this Permit, the grantee, his successors and assigns, agree that any damage or injury done to the property of the grantee or any expense incurred by him through the operation of a contractor, working for the City or of any City employee shall be at the sole expense of the grantee, his successors or assigns.

r. Clean-up of excavation and debris material shall be accomplished concurrently with the burying operation. At no time shall there be debris and/or excavated material extending along the area of construction for more than 500 feet without specific additional written approval of the City.

I have read and understand all terms and conditions contained on both pages of this document. The undersigned, hereby accepts this Permit subject to the terms and conditions as herein set forth.

Issued By: \_\_\_\_\_  
                  Tim Osborne, P.E.  
Title:        \_\_\_\_\_  
                  City Engineer  
Date:         \_\_\_\_\_

Signed: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Title:         \_\_\_\_\_  
Telephone No. \_\_\_\_\_ Fax No. \_\_\_\_\_  
Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_

Franchises and Right-of-Way Permits

WITNESS:  
\_\_\_\_\_

# CITY OF MILTON PLAN CHECKLIST

Project: \_\_\_\_\_  
City Project No.: \_\_\_\_\_  
Date Submitted: \_\_\_\_\_  
Applicant: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Engineer: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

## **GENERAL**

- City Standard Plan Notes
- All City Standard Details Required for Project Construction
- All Plan on 24" x 36" sheets
- Legend (APWA Standard Symbols)
- North Arrow (all sheets)
- Scale Bar (all sheets)
- Datum-Bench Mark Elevation and Location (on all sheets where elevations are referenced)
- Title Block:
  - Project Title:
  - Design By:
  - Drawn By:
  - Date:
  - Checked By:
  - Signature Approval Block:
  - Sheet Number of Total Sheets:
- Section, Township, and Range (every plan/profile sheet)
- Engineers Stamp (signed and dated)
- Revision Block
- Horizontal Scale: 1"=40' (or as other wise approved by the City)
- City Approval Block
- Topographic plans shall extend 50 feet beyond the exterior property lines and detail all natural and manmade features.
- Label all street names.
- All existing utilities, features, and pertinent above and underground facilities faded back on all Plan Sets.

## **COVER SHEET**

- Project Title.
- Legal owner's address.
- Name, address, and phone number of all agencies working on development, i.e. engineer, architect, etc.
- Small scale vicinity map.
- Legal description.
- Gross site area in square feet and acres.
- Total square footage of impervious and pervious surface called out by type.
- Total number of proposed compact, standard, and barrier free/van parking stalls.
- Any manufacturing process/hazardous materials to be used on site.
- Material Safety Data Sheets (MSDS) for hazardous materials to be used or stored.
- Listing of all permits, required, including those outside the City of Milton.

## **EXISTING SITE SURVEY**

- Survey stamped by a licensed surveyor.
- Property lines, including distances, bearings, and corner markings.
- All existing adjacent right-of-way improvements including centerline, curb, sidewalk, and all surface hardware. Distances from property line to right-of-way centerline and width of right-of-way are required.
- Location of all existing utility, open space, drainage, native growth protection, and access easements. Include recording number with all easements.
- All trees 6-inches or larger as measured at 4-1/2 feet above the ground, stands of trees and other vegetation such as wetlands and brush.
- Surface elevations at each corner of the site and existing contours at 2-foot intervals.
- All streams, ditches, channels, bridges, culverts, catch basins, and show direction of flow.

## **EROSION CONTROL PLAN**

- Stabilization and Sediment Trapping.
- Delineate Clearing and Easement Limits.
- Protection of Adjacent Properties.
- Timing and Stabilization of Sediment Trapping Measures.
- Cut and Fill Slopes.
- Controlling Offsite Erosion.
- Stabilization of Temporary Conveyance Channels and Outlets.
- Storm Drain Inlet Protection.
- Existing Underground and Aboveground Features to Remain.
- Temporary BMPs.
- Construction Entrance Detail.

- Silt Fences and Traps.
- Mulching and Vegetation Plan.
- Location and Details of Temporary Sediment Ponds.

### **PROPOSED SITE/GRADING PLAN**

- Contours at 2-foot intervals.
- Property lines including bearings, distances, and corner markings.
- All on-site easements, dedicated areas and open space areas.
- Location and overall dimensions of all existing and proposed on-site buildings and distances from building walls to property lines.
- Number and dimensions of all standard, compact, and handicapped parking stalls, and loading areas.
- Roads and driveway slopes in percent of grade.
- Width, materials, and location of all internal walkways and connection to public sidewalks or right-of-way.
- All existing as well as proposed rockeries and retaining walls and indicate their length, height, color treatment, and materials.
- All improvements to be placed within public right-of-way.
- All exterior light fixtures noting location, type, and wattage.
- All existing driveways adjacent to the site and on properties on the opposite side of roadway.

### **CROSS SECTION DETAILS**

- All roadway, sidewalks, and pedestrian trails shall be detailed in a cross sectional scaled drawing.
- All rockeries and retaining walls taller than 4 feet shall be detailed in a cross sectional scaled drawing.
- All right-of-way improvements shall be detailed in cross sectional scaled drawing, including distance to centerline or right-of-way, grades, materials, sidewalk width, landscaping area, curb, and gutter and other required improvements.
- All detention ponds shall be detailed in a cross sectional scaled drawing that includes construction materials and pond depth.

### **LANDSCAPE PLAN**

- Locate and label all existing and proposed vegetation and indicate vegetation to be saved.
- List of all proposed plants and existing plants that are to remain, including symbol, quantity, size, common, and botanical names, and spacing.
- All trees 6-inches and larger as measured at 4-1/2 feet aboveground scheduled to be saved.

- Planting details (root barrier, support systems, soil, mix, planting, depth, spacing, and width, bark mulch depth, etc.).
- All proposed berm locations and size.
- Location of existing and proposed rockeries and retaining walls.
- Underground irrigation system plan if required.

### **STORM DRAINAGE PLAN**

- Proposed finished contours at intervals of no greater than 2-feet.
- Surface water features, floodplains, and/or wetlands.
- All contributing off-site drainage.
- Profile view.
- Existing and proposed detention/retention ponds.
- Existing and proposed biofiltration areas.
- Existing and proposed rockeries and retaining walls.
- Trees 6-inches and larger as measured at 4-1/2 feet aboveground scheduled to be saved.
- Utility, open space, drainage, native growth protection, and easements.
- Streams, ditches, and show direction of flow.
- Existing (faded back) and all proposed storm drainage system improvements, note pipe size, length, slope, type, class, and include catch basins and manholes to include rim elevations, size, and invert elevation of all associated storm pipes.
- Storm drainage calculations in accordance with City Standards.

### **ROADWAY PLAN**

- Plan and profile;
- Street name;
- Right-of-way width;
- Existing and proposed survey monumentation locations;
- Existing utilities (fade back);
- Centerline bearings;
- Centerline/baseline stationing;
- Centerline elevations every 50 feet;
- Gutter line elevations every 50 feet;
- Gutter line elevations around curb radii, 5 points;
- Slope in percent;
- Transverse slope: 2 percent standard crown (to be used unless otherwise approved by City);
- Horizontal and vertical curves shall be required when a change of centerline grade occurs greater than one percent:
  - Delta, radius, length, and tangent;
  - 50 feet minimum length;

- Elevations required at 25-foot stations and at the P.C., P.I., P.T. and low point or high point;
- Vertical information VPI, BVC, EVC, low point, high point, and grades.
- Longitudinal gutter line slope;
- Pavement cross sections per City standard detail;
- Accurate locations of existing and proposed monuments at all centerline intersections, cul-de-sacs, P.C.s, P.T.s, and P.R.Cs;
- Width of sidewalks and driveways;
- Curb and gutter;
- ADA ramps;
- Illumination. All illumination plans shall conform to IES standards for the classification of roadway being illuminated. Plans shall include the following:
  - Luminaries - location, material, height, and wattage.
  - Service cabinet - location and material.
  - Conduits and wire - location, material size, and depth.
  - Junction boxes - location and material;
- Channelization and Signing:
  - Lane markers - location and type.
  - Pavement markings - location and type.
  - Signs - location and type.

### **WATER PLAN**

- Existing pertinent underground utilities and aboveground features (fade back).
- Existing and proposed water system improvements, note pipe size, length, type, class, fittings, valves, hydrants, blow-offs, air relief assemblies, water sampling stations, water services, back flow assemblies, etc.
- Indicate all existing fire hydrants within 300 feet of the project boundaries.
- Profile view may be required to resolve possible utility conflicts.
- Minimum 36-inch cover.

### **SANITARY SEWER**

- Pierce County Utilities owns, maintains, and operates the sanitary sewer system within Northwest Landing. Pierce County must approve the sewer plans prior to grading permit issuance. Letter from Pierce County approving sewer plans must be submitted for plan approval.