

This guideline will apply to all new developments involving single-detached, semi-detached or duplex houses in the City of Edmonton effective January 1, 2006.

Preamble:

This guideline is intended to consolidate the information relating to the design and construction of foundation drain discharge collection systems, as contained in the following clauses in Volume 1 (Chapter 3) of the current City of Edmonton Design and Construction Standards:

- 7.3 Separation of Storm and Sanitary Sewers
- 8.7.3 Foundation Drain (Weeping Tile) Allowances
- 14.3 Minimum Size and Slope
- 14.4 Depth Requirements
- 14.9 Storm Sewer Service Connections
- 17.5.9 Foundation Drainage Details
- 18.2 Rights-of-Way for Sewer and Drainage Facilities
- 18.4.2 Sizes and Number of Service Connections Required
- 18.5.3 Sewer Service Connection Depth
- 18.6.2 Maximum spacing of manholes for access
- 18.6.3 Location of manholes

It also includes information that is not included in the current Design and Construction Standards in order to clarify intent or requirements and to facilitate a complete design. Some of this information will also be useful to the home-builders, plumbers as well as homeowners.

This guideline increases the depth requirement for the foundation drain discharge collection system component from that specified in the current City of Edmonton Design and Construction Standards (i.e. 2.2 m depth to invert for pipe diameters < 610 mm) to 2.4 m cover, measured from finished grade to the obvert of the sewer. This increased depth is required to provide frost protection for the foundation drain discharge collection system, which is provided to collect foundation drainage flows that can continue throughout the year.

Definitions:

Weeping Tile

A perforated pipe that surrounds the foundation of a building and collects excess groundwater.

Foundation Drain Service Connection Pipe

A sewer pipe within a titled lot connecting the weeping tile or the sump pump discharge downpipe to the foundation drain service at the property line.

Foundation Drain Service

A sewer pipe within the road right-of-way or public utility lot connecting the foundation drain service connection pipe from a building to the foundation drain sewer or storm sewer.

Foundation Drain Sewer

A sewer pipe within the road right-of-way or public utility lot connecting the foundation drain service(s) from one or more buildings to the storm sewer.

1. Scope of Guideline

- 1.1 This guideline outlines the components and design criteria for a foundation drain discharge collection system. The system shall be dedicated to the collection and disposal of foundation drain flows only.

It is important to note that eavestroughs and downspouts used to collect rainwater from roofs should not be connected to the foundation drain service. They should only be connected to a storm sewer service if one is available for the lot. For more information, please refer to 'The Homeowner's Guide to Flood Prevention' and other Drainage Services' pamphlets dealing with lot drainage.

2. System Components for Individual House

- 2.1 Sump pump in basement, with connection to a downpipe adjacent to the building foundation wall, and a foundation drain service connection pipe from the building to the property line are required for Option 1. The

- downpipe connected to the foundation drain service connection pipe shall be provided with a cleanout and an overflow discharge to a concrete splash pad.
- 2.2 Alternatively, for Option 2 which involves discharge by gravity when grade allows, the weeping tile can be connected to the foundation drain service using the foundation drain service connection pipe provided that a backwater valve and a clean out are also installed downstream of the weeping tile.
- 2.3 The remainder of the system components, which are common to both options, are located within the road right-of-way or a public utility lot and consist of:
- i. Foundation drain service from the private property line to the storm sewer, and
 - ii. Where there is no storm sewer fronting the building, a foundation drain sewer which connects the foundation drain service to the storm sewer.

3. Design Standards

3.1 Depth of Foundation Drain Service and Sewer

- 3.1.1 The depth of the foundation drain service should match that of the sanitary sewer service at the property line (i.e. 2.75 m from invert to proposed finished grade). However, when this is not practicable, provide a minimum depth of 2.4 m from the finished grade to the obvert of the service at the property line. In areas where it is not practicable to provide a minimum depth of 2.4m cover, contact Drainage services to evaluate alternative solutions.
- 3.1.2 The depth of the foundation drain sewer shall be adequate to receive the drainage from the foundation drain service such that the service can be connected to the sewer above its mid diameter, within 45 deg of the pipe crown. A minimum of 2.4 m of cover, measured from the finished grade to the obvert of the sewer, must be provided. In areas where it is not practicable to provide a minimum depth of 2.4m cover, contact Drainage services to evaluate alternative solutions.

3.1.3 In areas where the nearest storm sewer has insufficient depth to permit the connection of the foundation drain service as described above, extend the foundation drain sewer to a point where it can be connected to the existing storm sewer at the minimum depth of cover (2.4 m), measured from the finished grade to the obvert of the storm sewer. In areas where it is not practicable to provide a minimum depth of 2.4m cover, contact Drainage services to evaluate alternative solutions.

3.2 Size and Slope of Foundation Drain Service and Sewer

3.2.1 The minimum size and grade of the foundation drain sewer shall be 200 mm and 0.40% respectively.

3.2.2 The minimum size and grade of the foundation drain service shall be 100 mm and 1.0% respectively.

3.3 Provision of Manholes

3.3.1 Manholes shall be provided for the foundation drain sewer at a maximum spacing of 150 m.

4. Risk Considerations for Home-builders and Homeowners

4.1 For Option 1, failure of sump pump due to mechanical problems or power outages may result in sub-surface water entering basement through the sump. Homeowners should be made aware of this risk and be provided with information on how to minimize the risk (e.g. regular maintenance procedures, high level alarm, backup power, spare pump, etc.)

4.2 For Option 2, there is a risk of sub-surface water collected by the weeping tile accumulating around the basement wall in situations when the backwater valve is closed due to surcharging of the downstream storm sewer or due to lack of proper maintenance. This may lead to leakage of water into the basement through cracks in the basement slab or the joint between the basement walls and the footings. Statistically, the surcharging of the storm sewers may occur once every five years since the minor storm drainage system in the City is only designed to handle storms with less than 1 in 5 year intensity.

5. Material Specifications

- 5.1 Pipe materials for foundation drain service and foundation drain sewer shall be restricted to:
- (i) PSM type PVC to CSA Standard B182.2 PVC Sewer Pipe and Fittings (PSM Type) with locked-in elastomeric ring gasket and integral bell system joint type with a minimum wall thickness as required for Standard Dimensional Ratio 35, or
 - (ii) Open Profile PVC to CAN/CSA B182.4 with elastomeric ring gasket joint type, with minimum waterway wall thickness conforming to CAN/CSA B182.4 for pipe stiffness of 320 Kpa.
- 5.2 Sump pump should be of the submersible pipe with a minimum pumping capacity of 100 litres per minute at 3 metres of head.

6. Construction Requirements

- 6.1 The requirements for installing foundation drain service and foundation drain sewer shall conform to relevant sections in the current City of Edmonton Design and Construction Standards.

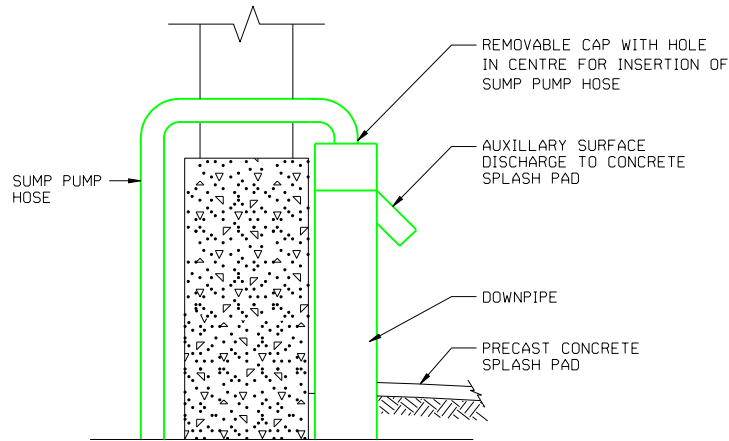
7. Responsibilities

- 7.1 Installation and maintenance of foundation drain discharge collection system components within private property are the responsibility of the homeowner.

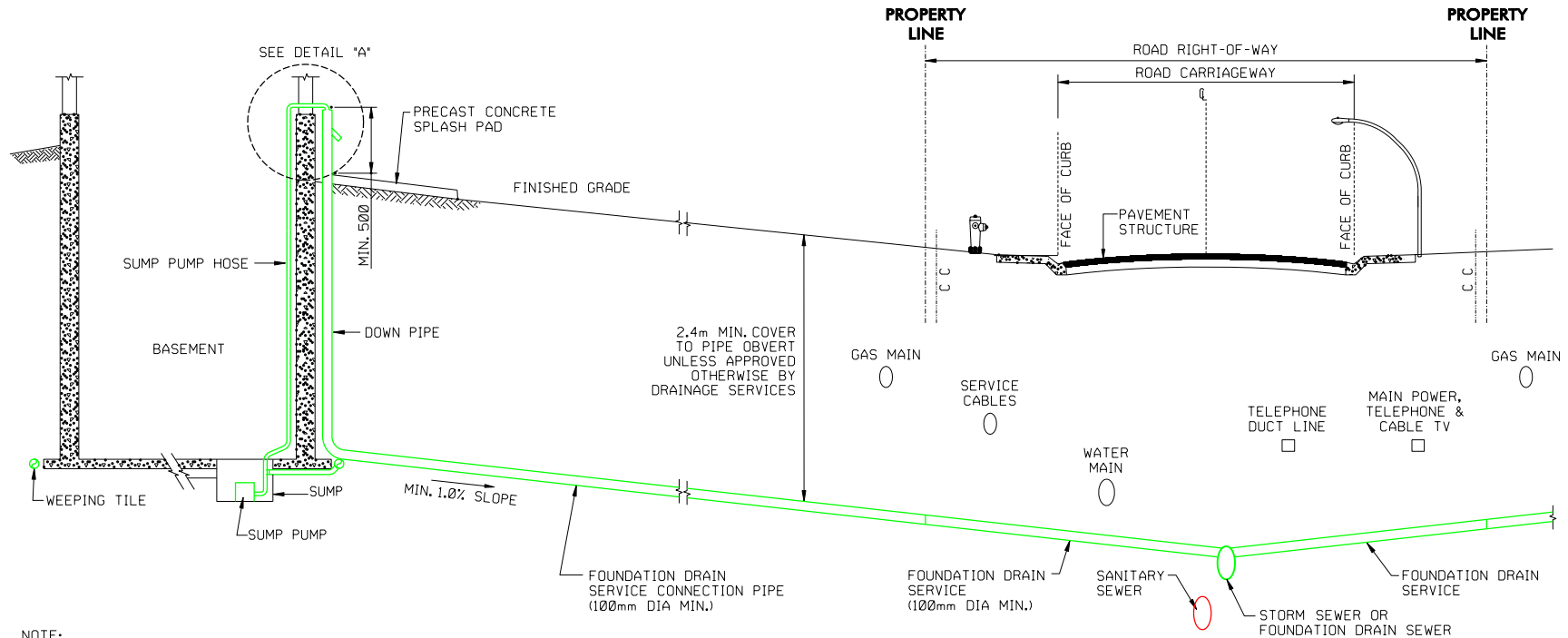
8. Drawings

- Figure 1: Foundation Drain Discharge Collection System for Single-Detached, Semi-Detached or Duplex Houses: (Option 1 - Sump Pump to Storm Sewer)
- Figure 2: Foundation Drain Discharge Collection System for Single-Detached, Semi-Detached or Duplex Houses: (Option 2 - Gravity Discharge to Storm Sewer)

FIGURE 1: Foundation Drain Discharge Collection System for Single-Detached, Semi-Detached or Duplex Houses (Option 1 – Sump Pump to Storm Sewer)

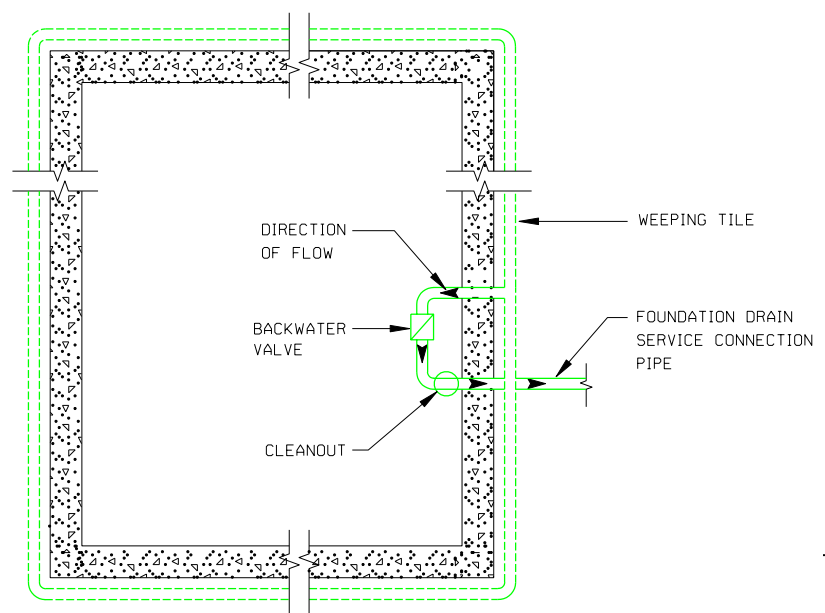


TYPICAL DETAIL "A"

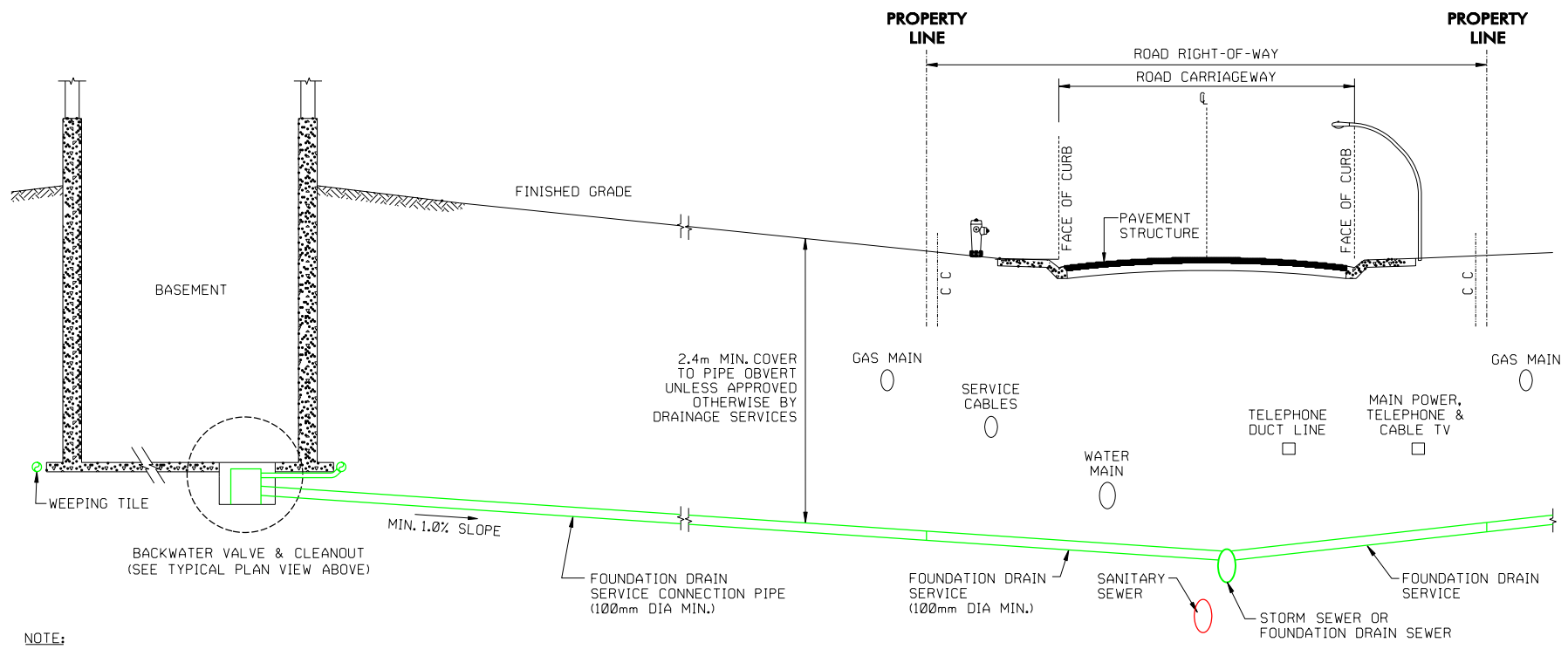


NOTE:
ROOF LEADERS (DOWNSPOUTS) OR ANY OTHER STORM WATER SOURCE MUST NOT BE CONNECTED TO THE FOUNDATION DRAIN DISCHARGE COLLECTION SYSTEM.

FIGURE 2: Foundation Drain Discharge Collection System for Single-Detached, Semi-Detached or Duplex Houses (Option 2 – Gravity Discharge to Storm Sewer)



TYPICAL PLAN VIEW



NOTE:
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