



THE CITY OF
CALGARY
WATER RESOURCES

**Guidelines for Safe Construction
in Proximity of
Feeder mains ...
Critical Distribution Mains ...
Sanitary / Storm Forcemains ...
and Critical Collection Mains**

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1.0 Introduction

Water Resources has an extensive network of potable water feeder mains, critical distribution mains, sewer forcemains and critical collection mains throughout the City of Calgary. To ensure the safety of the public and to protect this infrastructure any construction in proximity of these mains must be reviewed and approved by Water Resources, Project Engineering - Underground.

Damage to water or collection mains can affect a large number of citizens and more importantly can reduce the ability to fight fires and provide potable water to critical institutions such as hospitals. In addition to costly repairs, damage to mains under pressure can jeopardize the safety of your workers.

- *Feeder mains (FM)* defined as mains that are usually 500mm (20") or larger, and normally there is no direct residential service connections. Feeder mains supply pump stations and reservoirs, and supply the distribution system through cross tie-in lines.
- *Critical Distribution Mains (CDM)* defined as main that are usually smaller than 500mm (20") and is normally connected to residential services. These mains have been identified to support feeder mains and the distribution network.
- *Sanitary/Storm Forcemains (SFM)* defined as pressurized mains of any size used to convey wastewater from a pumping station to a gravity discharge point. No service connections are permitted except under special circumstances.
- *Critical Collection Mains (CCM)* defined as wastewater collection system infrastructure 900mm (36") or greater that is considered to be part of the trunk system used to convey large volumes of wastewater to the wastewater treatment plants or wastewater collection mains or siphons of any size located in close proximity to a body of water or river and that a break or discharge could cause a significant environmental impact.

If you are planning construction such as excavating, digging, trenching, plowing, drilling, tunneling, directional drilling, augering, backfilling, blasting, stripping topsoil, leveling, removing peat, quarrying, clearing, grading or pounding posts, **read these guidelines carefully and submit the appropriate information.**

2.0 General Guidelines

The following are guidelines for construction in proximity of FM, CDM, SFM & CCM. As the scope of work or distribution/collection main significance may vary the guidelines below may be amended or revised.

2.1 Proximity Guidelines

- No structure or utility should be within 3.0 meters (edge to edge).
- If the 3.0 meter horizontal clearance is maintained, then conventional utility locates are all that are necessary. The feedermain does not require hydrovacating. However, survey will be required to confirm clearance.
- Refer to Sheet 1.
- If a structure or utility must encroach into the 3.0 meter zone and Water Resources permits this because relocation of the FM, CDM, SFM, or CCM is not practical, then the following criteria must be observed:
 - Hydrovac FM, CDM, SFM, or CCM to determine depth, width and alignment at appropriate intervals depending on the extent of the encroaching structure(s) or utility at the contractors expense;
 - Encroachment shall not be within 1.0 meter (edge to edge) because the loss of Class B bedding material will impair the integrity of the pipeline if the encroachment is inside 1.0 meter clearance;
 - Structural foundations or sign supports shall be required to penetrate to minimum depth of 1.5 meters below invert of the feedermain if the encroachment is within the 1.0 to 3.0 meter range;
 - Sign support piles shall be augered or hydrovaced with casings;
 - No vibratory or impact equipment should be used in the 1.0 to 3.0 meter zone.
- Refer to Sheet 2.

2.2 Cover Guidelines

- All FM, CDM, SFM, or CCM shall be hydrovaced/hand exposed to determine pipe elevation and alignment.
- Refer to Sheet 3.

2.3 Crossing Guidelines

- All FM, CDM, SFM, or CCM shall be hydrovaced/hand exposed to determine pipe elevation and alignment.
- Method of Construction and scheduling for crossing over or under these mains shall be determined with Water Resources.
- Refer to Sheet 4.

3.0 Required Information for Approval

3.1 Prior to Construction

For permission to construct in proximity of a FM, CDM, SFM or CCM a letter of intent must be provided to Water Resources that includes:

- Complete name(s) of the landowner/company and agent (if applicable)
- Legal land description of worksite
- Description of the activity/scope of work
- Equipment to be used
- Access requirements

In addition to the letter of intent, construction drawings are required; see section 3.1.1 below for details.

3.1.1 Construction Drawings

All construction work in proximity of a FM, CDM, SFM or CCM must be approved by Water Resources. Submit three (3) sets of plan and profile drawings (stamped, signed and dated by a Professional Member of APEGGA), to City standards, showing:

- Location of FM, CDM, SFM or CCM
- Location of proposed utility or structure
- Distance maintained from the FM, CDM, SFM or CCM
- Depth of proposed work
- Grade changes (existing and ultimate)
- Construction schedule
- Relevant cross-sections
- Additional static or live loading
- Scale and north arrow

Water Resources will respond to a request within 14 business days of receipt and will be available upon request to meet and discuss project requirements. One set of plans will be returned to the applicant (either approved or not approved), one set is filed and the final set goes to the Inspection Group.

3.1.2 Utility Locates

The applicant must contact Alberta One-Call, Shaw and all other utility owners that are not a part of Alberta One-Call for locates. Alberta One-Call will notify Water Services, Field Services to complete locates for FM, CDM, SFM or CCM. Please note that locate slips issued by the locator are only valid for 14 calendar days, then new locates are required.

3.1.3 Inspection

The applicant will also have to make arrangements with the Capital Inspections Group (268-5752 or 311) a minimum of two (2) working days prior to hydrovac locating and prior to start of construction. An inspector will be onsite during construction to assist/direct activities that may affect the FM, CDM, SFM or CCM.

3.2 During Construction

The inspector shall have free and uninterrupted access to work areas for the purpose of carrying out inspections.

If a FM, CDM, SFM or CCM is to be exposed, the inspector must be present during hydrovacating, excavation and backfilling operations. As well, compaction testing that meet the Standard Specification Waterworks Construction must be adhered to.

Copies of the following permits and agreements shall be provided to the Inspector:

- Excavation Permit (ROADS at 268-4936 or 311)
- Utility Line Assignment (Land Info & Mapping at 268-5794 or 311)
- Indemnification Agreement Number (Water Services at 268-5006 or 311)

The cost of inspection will be at the City's expense.

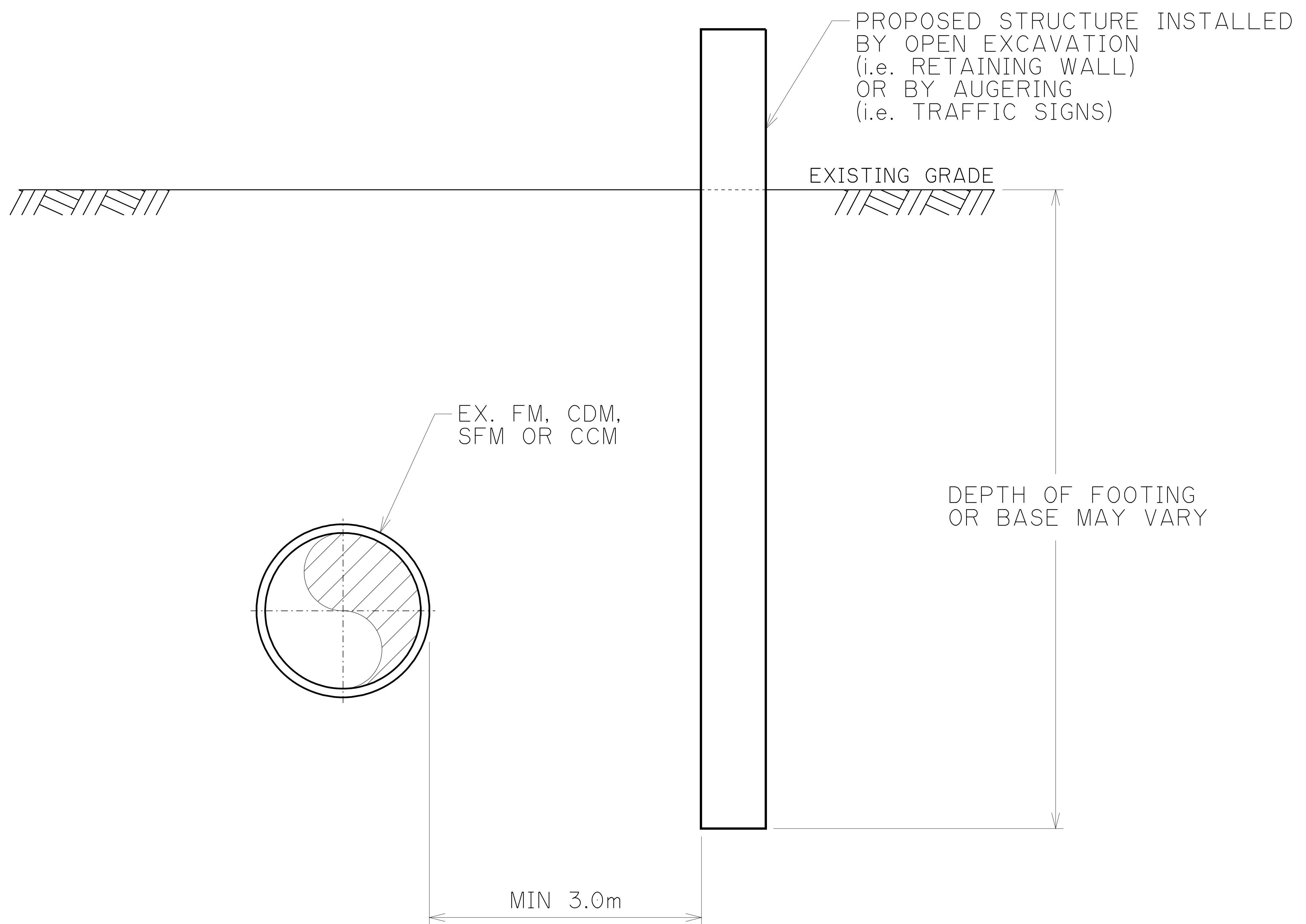
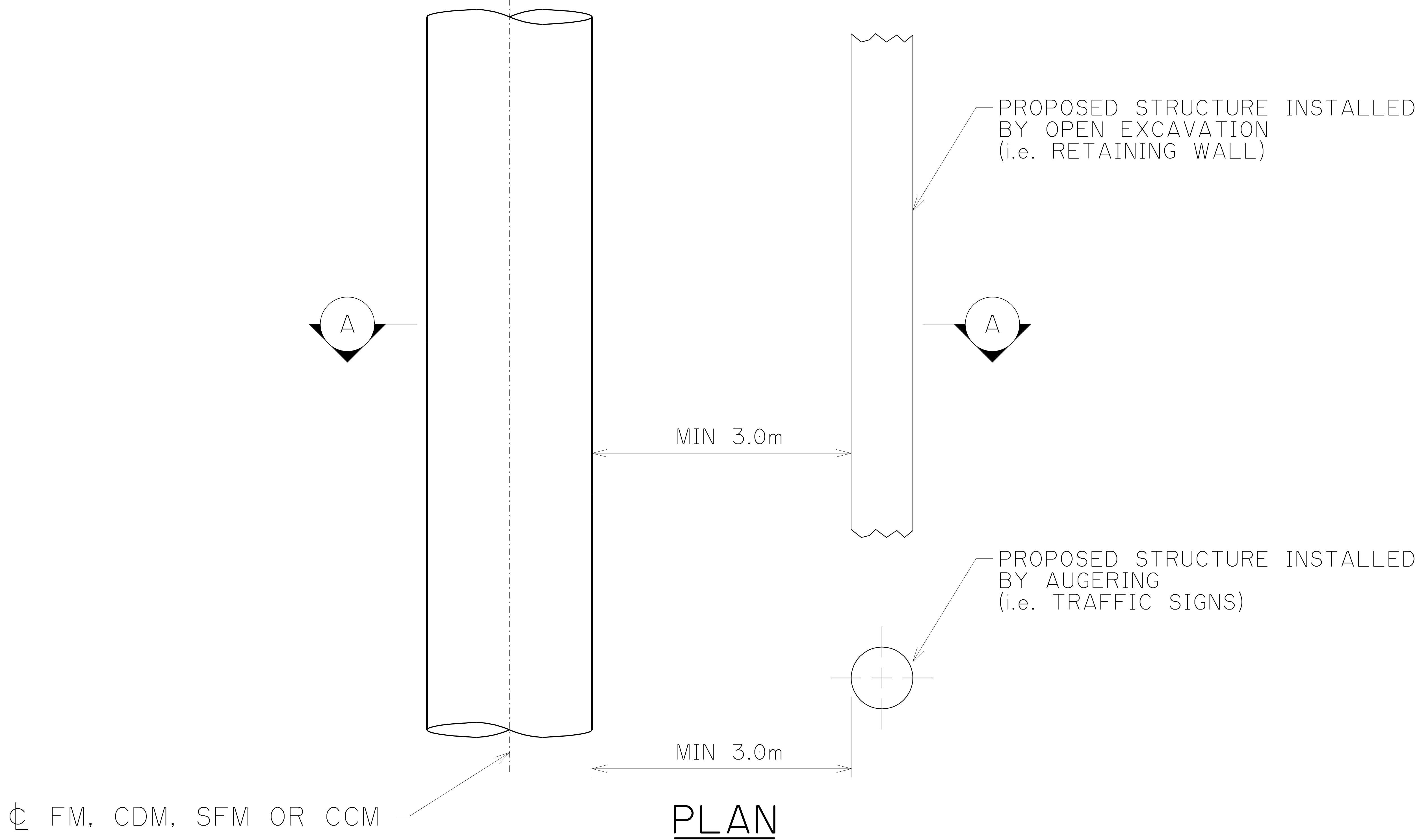
3.3 Post Construction

Once construction is completed, 'drawings of record' are required to update City files.

4.0 Emergency Response Procedure

If you hit a FM, CDM, SFM or CCM:

- STOP WORK and clear all people from the vicinity
- Contact Water Services for help at 311
- Remain at a safe distance while you wait for assistance




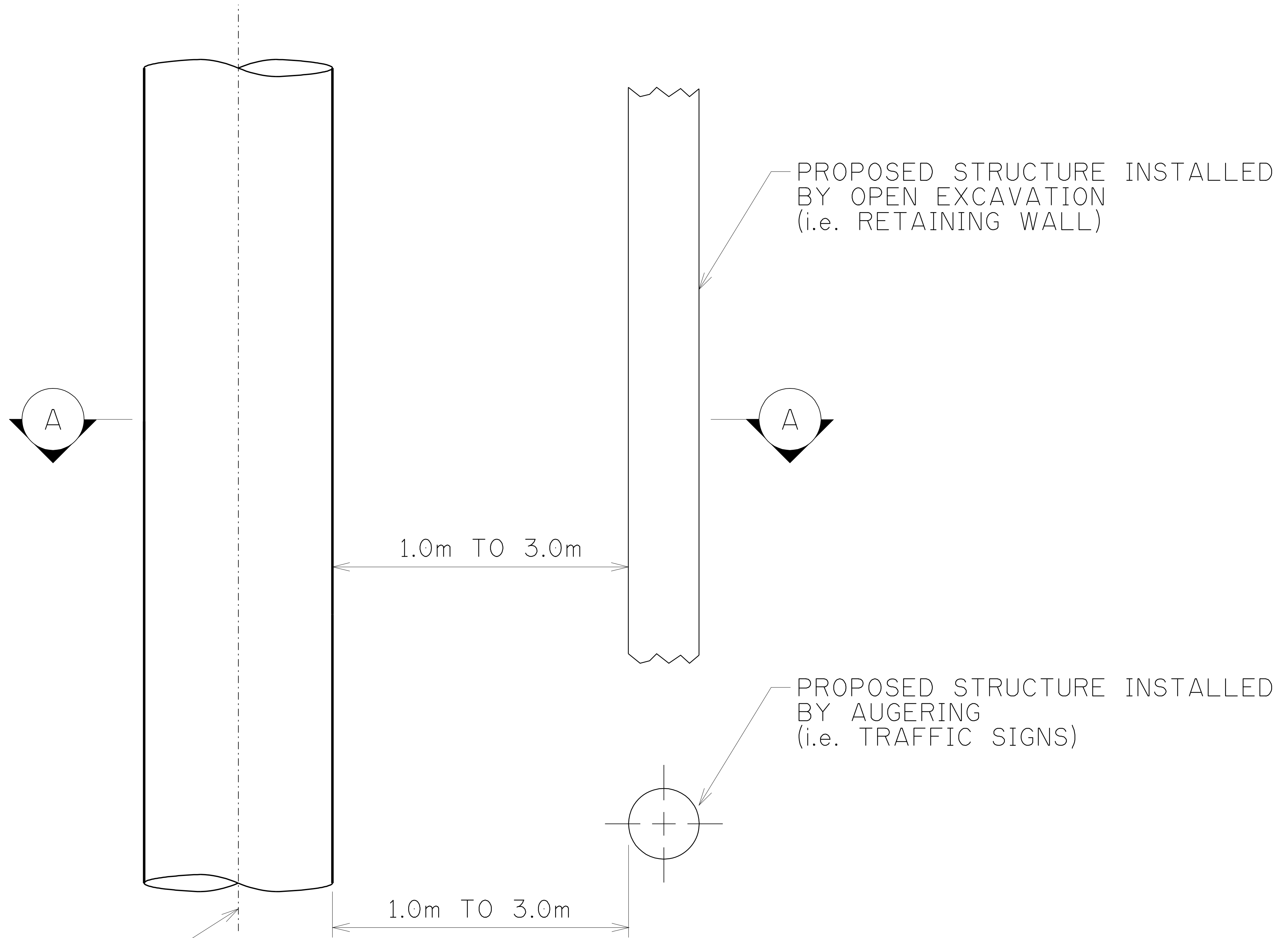
PROFILE

NOTE:

CONVENTIONAL LOCATING AND EXPOSING

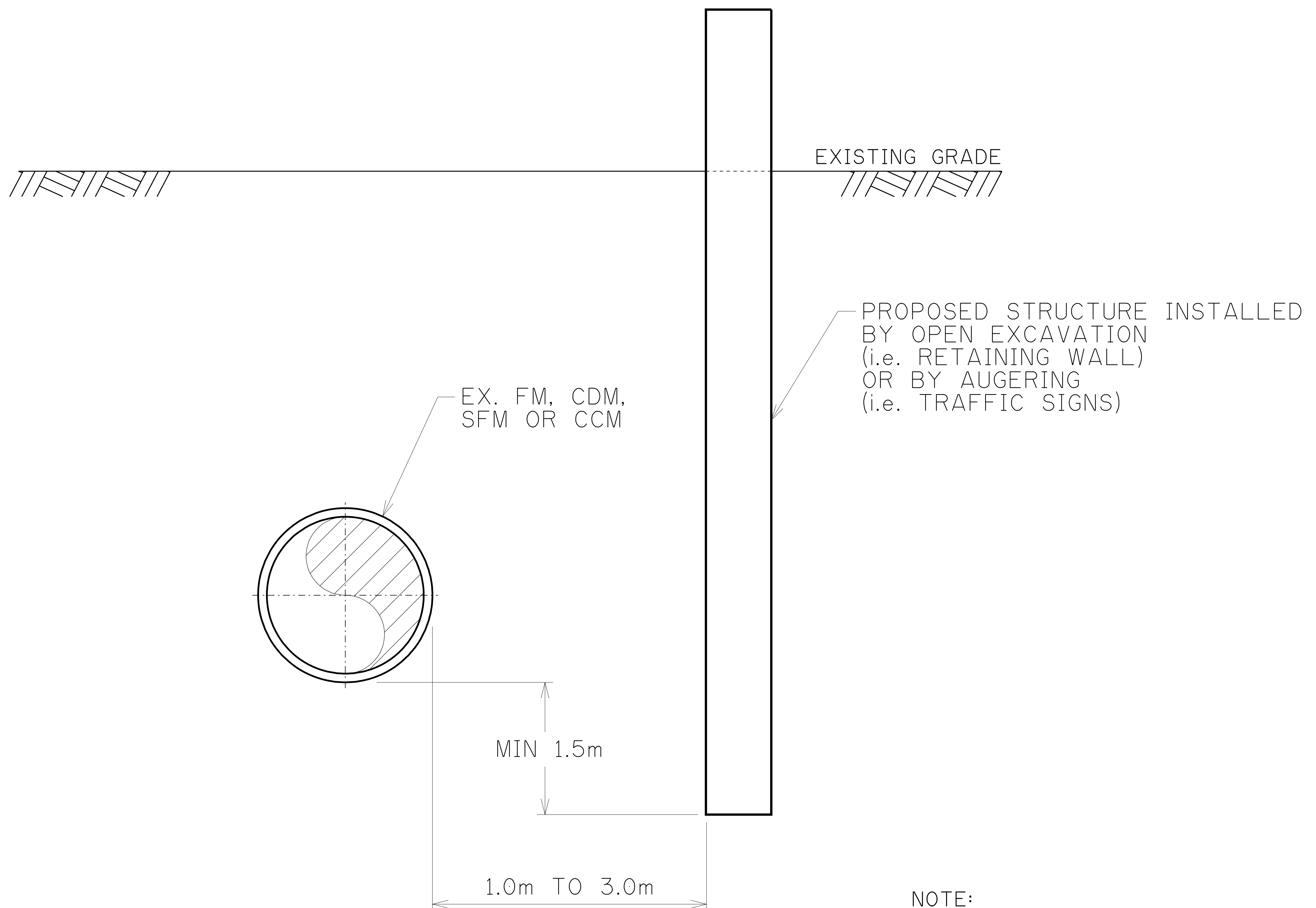
DIMENSIONS ARE MILLIMETRES UNLESS OTHERWISE NOTED **METRIC**

				Drawn CB	Date DEC '07	Checked TM	 <p>THE CITY OF CALGARY WATER RESOURCES</p>	Sheet 1
				Scale = N.T.S.		<p>REQUIREMENTS FOR PROPOSED STRUCTURES OUTSIDE OF 3.0m CLEARANCE OF EXISTING FM, CDM, SFM OR CCM</p>		File Number
No.	Date	Revision	App'd	Approved by				



☉ FM, CDM, SFM OR CCM

PLAN



PROFILE

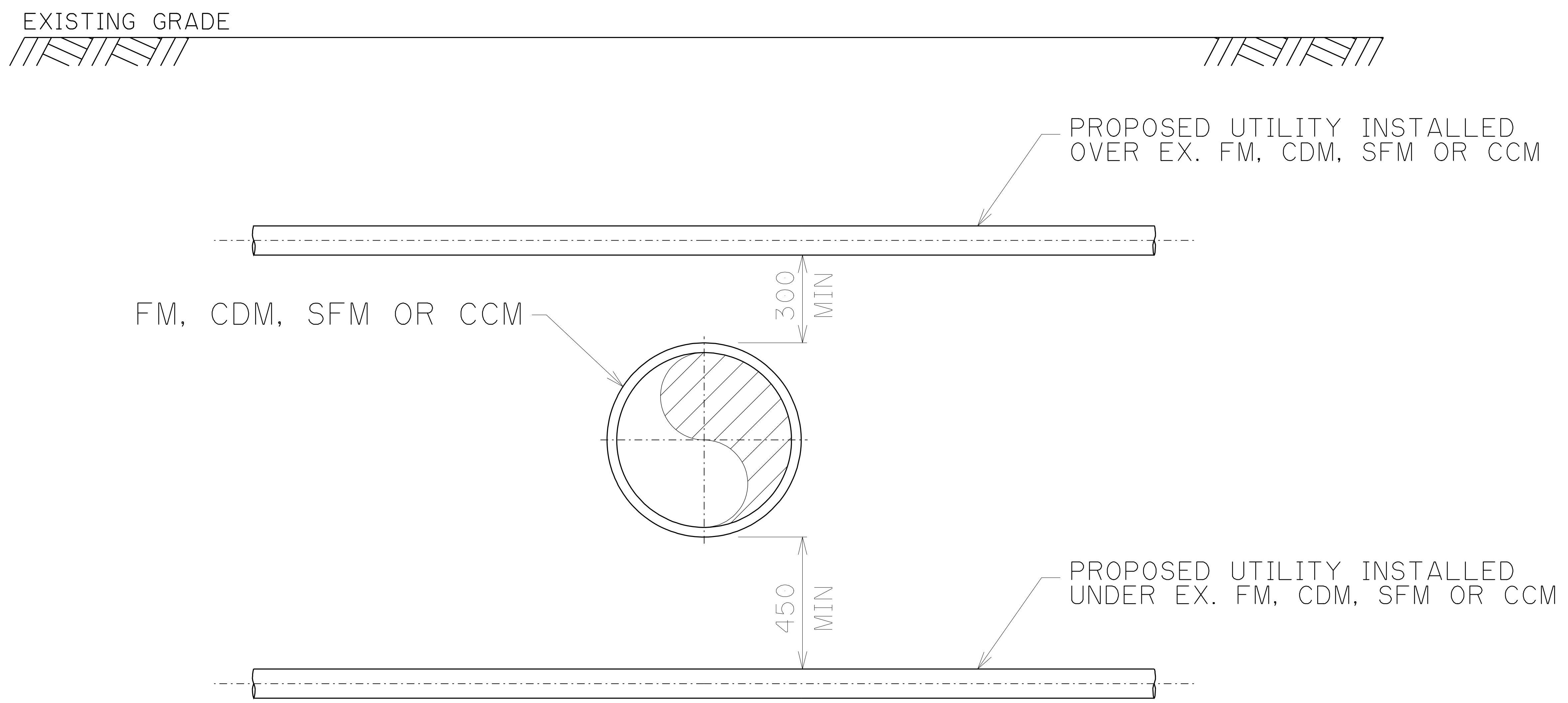
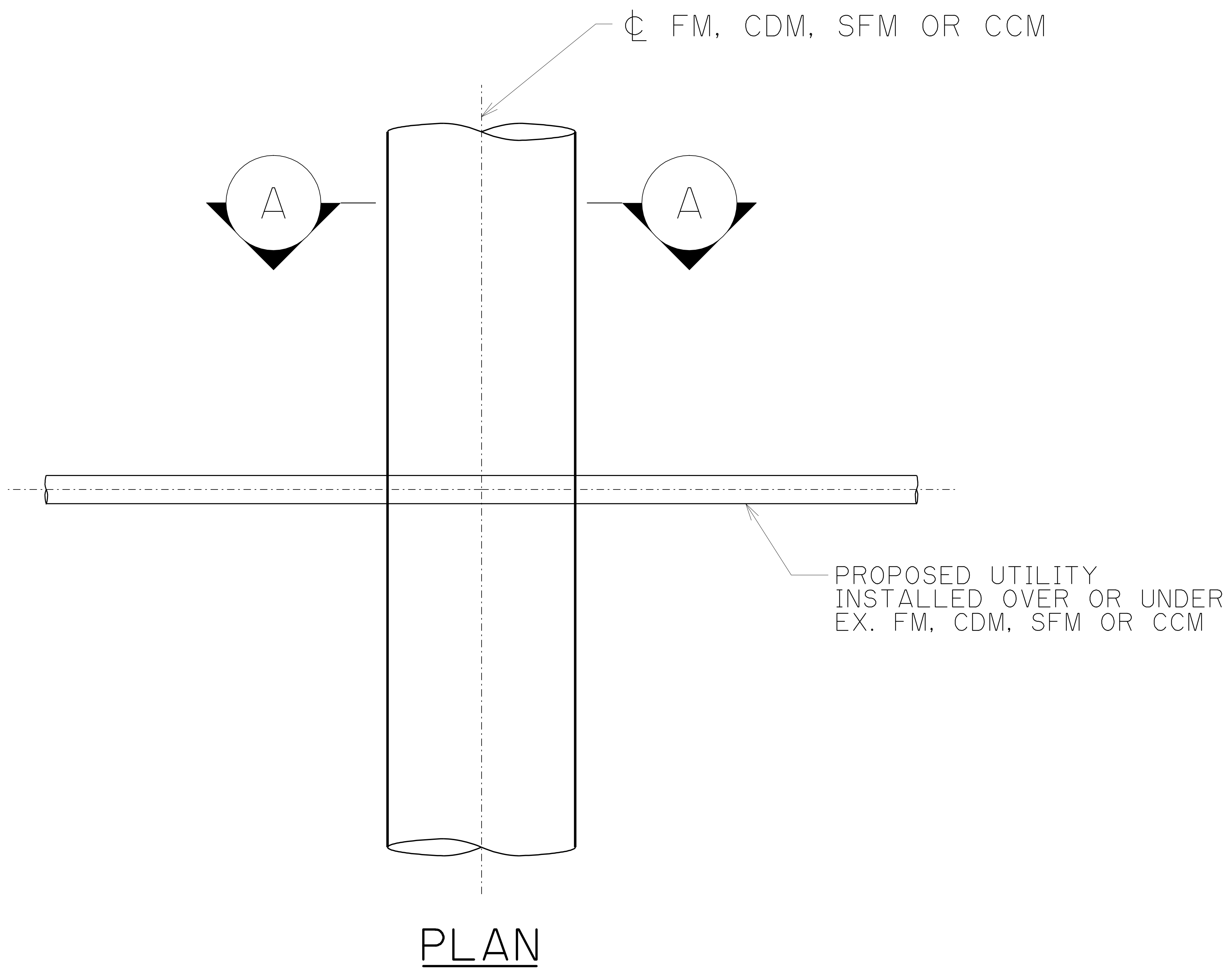
NOTE:

CROWN OF PIPE TO BE EXPOSED BY HYDROVAC/HAND EXPOSING IN PRESENCE OF ENGINEER

DIMENSIONS ARE MILLIMETRES UNLESS OTHERWISE NOTED **METRIC**



				Drawn CB	Date DEC '07	Checked TM	THE CITY OF CALGARY WATER RESOURCES	Sheet 2
				Scale = N.T.S.		REQUIREMENTS FOR PROPOSED STRUCTURES INSIDE OF 3.0m CLEARANCE OF EXISTING FM, CDM, SFM OR CCM		File Number
				Approved by				
No.	Date	Revision	App'd					



NOTES:

ALL FM, CDM, SFM OR CCM MUST BE HYDROVACED/HAND EXPOSED TO DETERMINE PIPE ELEV. AND ALIGNMENT

METHOD OF CONSTRUCTION AND SCHEDULING FOR CROSSING OVER OR UNDER TO BE DETERMINED WITH WATER RESOURCES

DIMENSIONS ARE MILLIMETRES UNLESS OTHERWISE NOTED **METRIC**



			Drawn CB	Date DEC '07	Checked TM	THE CITY OF CALGARY WATER RESOURCES				Sheet 4
			Scale = N.T.S.			UTILITY CROSSING EX. FM, CDM, SFM OR CCM				File Number
			Approved by							
No.	Date	Revision	App'd							