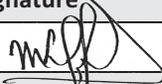


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Residential Joint Provisioning Guidelines in the City of Calgary

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1.0 INTRODUCTION

1.1. Purpose

This guide documents the Joint Provisioning Guidelines for Standard Shallow Utility Servicing in Residential Areas in the City of Calgary.

ENMAX Power Corporation, ATCO Natural Gas Distribution, Shaw Communications and TELUS Communications operate in a Consortium relationship to install their shallow utility infrastructure in a common trench. This relationship is referred to as the Calgary Shallow Utilities Consortium. The common trench process is used to provide shallow utility services to single family and semi-detached dwellings and single-phase electrical (2 stories or less) multi-family in almost all new subdivisions. This shallow utility infrastructure is referred to as Underground Residential Distribution (URD) infrastructure.

This document provides guidelines for developers and home builders regarding the provisioning of the shallow utility infrastructure. It provides information regarding:

- Developer/Consultant responsibilities
- Shallow utility responsibilities
- The process for development servicing
- Typical 2.4 m Utility Right of Way for main trench configuration (most common URD configuration)
- Service trench configuration
- Utility wall configurations
- Minimum clearances of the gas meter and pressure regulator from windows, vents, air intakes and other building openings

1.2. Contact

For general/technical enquiries, please contact: EPSCProcessURD@enmax.com

For more information, contact:

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1.3. Project Management

The four shallow utilities have entered into an agreement with ENMAX Power Services Corporation (EPSC) to provide project management services to the Shallow Utilities Consortium. EPSC is designated as the joint trench project manager responsible for coordinating the design and information with the developer, home builder, and utilities, as well as carrying out the URD joint trench construction work on behalf of the shallow utilities.

EPSC currently contracts the survey and construction to subcontractors. EPSC subcontracts the civil inspection activities to ATCO Natural Gas Distribution.

1.4. Benefits of Joint Provisioning

For the Utilities:

- Improved safety
- Reduced installation cost
- Reduction in facility damages during initial construction and installation
- More accurate facility locates
- Consistent design standards and physical placement in developments

For Developers and Home Builders:

- Faster service
- Greater flexibility
- Single point of contact to arrange for shallow utility project management, construction and servicing

For the City of Calgary:

- Reduced space requirements for shallow utilities infrastructure
- Single point of contact for shallow utilities issues

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2.0 DEVELOPER INFORMATION

2.1. Initiating a Project

To start the URD provisioning process, the Developer or Developer’s Consultant provides a design request for shallow utilities service to each of the shallow utilities, as well as to EPSC. The following information is to be included in the design request:

- Tentative legal plans;
- Road cross-sections and/or reference to which road cross sections in the *City of Calgary Design Guideline for Subdivision Servicing*;
- A digital copy of the project base plan in AutoCAD (.DWG) format (Version 2013-2020) with the combined scale factor;
- Design border limit; property lines, zero lot lines, lot/block, street names, easements/URWs and mailboxes;
- Sanitary sewer, storm sewer, catch basins and water plans (fire hydrants);
- Sidewalk cover sheet (surface improvements), wheelchair ramps, curb and gutter locations and test, bus ports/bays, walkway locations and text;
- Overland drainage plan;
- Driveway plan and locations (consultant to indicate if transformers and pedestals to be installed between driveways or away from driveways as well as the service coil location);
- Grade plan, indicating the water service valve locations;
- Indication of the size of the electrical services (i.e. 100A or 200A) and Indication of extra electrical coil length where required (if more than 25m);
- Proposed in-service date (ISD) for energization and/or proposed shallow utility construction start date (CSD);
- Proposed show home locations (if applicable)

A SharePoint site has been established to manage all URD projects in the City of Calgary. The site contains a URD Shallows Workflow (USW) process, and is used by all Developers, Consultants and Shallow Utility representatives. Once the initial design request has been provided to the Shallow Utilities and EPSC, all future plans and project information are shared via the site and are no longer shared via email.

After receiving the initial design request, EPSC will set up a project and associated access permissions on the SharePoint site. EPSC and the shallow utilities will have access to all projects, while Developers and Consultants will have access to their unique projects. Once a project has been established, there are 4 Stages (Initiation, Preliminary Design, Final Design and Construction) comprised of a total of 20 Steps, with responsibilities assigned to multiple stakeholders including shallow utilities (ATCO, EPC, Shaw, Street Lighting and TELUS), various City of Calgary departments, developers, other stakeholders (i.e. Calgary Board of Education, Calgary Catholic School District, etc.) and EPSC. Timelines will be established for each milestone based on developer information available, project complexity and unique parameters, design, and construction durations, with the intent that a project will

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be ready for construction within the agreed timelines provided each party completes each milestone on or before the due date.

The SharePoint site is located at <https://projects.4partyurd.org/>. Developers and Consultants can obtain a SharePoint user ID by contacting EPSC at (403) 514-3162.

2.2. Project and Site Readiness

The project is ready for construction of the shallow utility infrastructure when the following criteria are met:

- Developer’s Consultant has approved all shallow utility final designs, and the plans from all utilities have been received by the joint trench Project Manager
- City Utility Line Assignment has provided their approval
- Deep services are completed
- Site is within 150mm of final grade, and the shallow utility line assignments are clear of obstructions
- Developer’s Consultant requests start (option of shallow utility construction before or after surface improvements)
- Developer has met all required shallow utility financial obligations

Any significant Developer-initiated revisions at the Step 7 meeting will result in the project going back to previous steps within the USW process and project milestones being adjusted.

In the event that frozen ground conditions are encountered, the Developer is required to provide the equivalent of frost-free conditions for the installation of the shallow utility infrastructure or pay a frost surcharge.

2.3. Construction Objectives

It is expected that the construction of the shallow utility (mains) infrastructure will be completed within the pre-determined project timeframe after the project site ready date. Timing is dependent upon several factors such as the size and complexity of the project, number of concurrent projects, site conditions and congestion, and weather, among other factors.

Shallow utility construction occurs most expediently when housing starts do not take place until after shallow utility construction. Housing starts can result in a reduction in construction productivity and the potential for increased safety risks. To minimize the productivity and safety impact on shallow utility construction, the Developer and Home Builders are to attend mandatory joint coordination meetings that will be scheduled and led by EPSC, when housing starts are expected to occur prior to the completion of shallow utilities construction. (See UDI Information Bulletin 100) In addition, the Developer is responsible for any incremental costs caused by building starts, obstructions in the utility rights-of-way, etc.

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3.0 URD SERVICE TRENCH STANDARDS & RESPONSIBILITIES

3.1. Service Trench Standards

- Minimum depth of 1 meter below grade level from the service stub out to the foundation excavation, then angled down to the foundation footing level. This reduces the risk of service line breaks due to ground settlement.
- The EPC electric cables are to be placed in rigid conduit with a minimum diameter as per Part 1 of the Canadian Electrical Code. The Shaw/TELUS communications/data cables are to be placed in rigid conduit with a minimum diameter of ¾ inches. The gas line will be placed in a ¾ inch sleeve (26.7 mm outside diameter). All conduits and sleeve are to rest on the foundation footings at the point where the vertical risers extend to the meter or service connection locations
- Conduits are to be sealed at the easement end, and vented at the house
- A minimum 30 cm separation is maintained between the gas line and the cables from the stub out location at the edge of the easement up to the base of the foundation; the conduits may be bundled together along the foundation for added strength and protection
- Service trench is to be backfilled with clean fill to grade level. The backfilled trench must be kept free of debris.

3.2. Service Trench Responsibilities

- Builder's contractor excavates the service trench from the house to the service stub-out at the easement
- Builder's electrical contractor installs the electric and TELUS conduits, and installs the electric cable in the electric conduit
- TELUS installs the TELUS cables inside the TELUS duct
- Shaw's contractor installs the Shaw conduit and cables
- ATCO Natural Gas Distribution's contractor installs the sleeved gas line facility
- Builder's contractor backfills the service trench

3.3. Service Connection Responsibilities

- Developer installs the meter base and existing cable loop from the lot entry point to the meter base and beyond.
- ENMAX crew installs the electrical meter and energizes the service
- ATCO Natural Gas Distribution's contractor installs the gas meter
- TELUS crew installs the TELUS service connection
- SHAW crew installs the Shaw service connection

4.0 Figures and Diagrams

Below are several figures and diagrams that the Developer and/or the Developer’s consultant may find helpful for the purposes of provisioning their subdivision.

4.1. URD Shallows Workflow – Project Flow

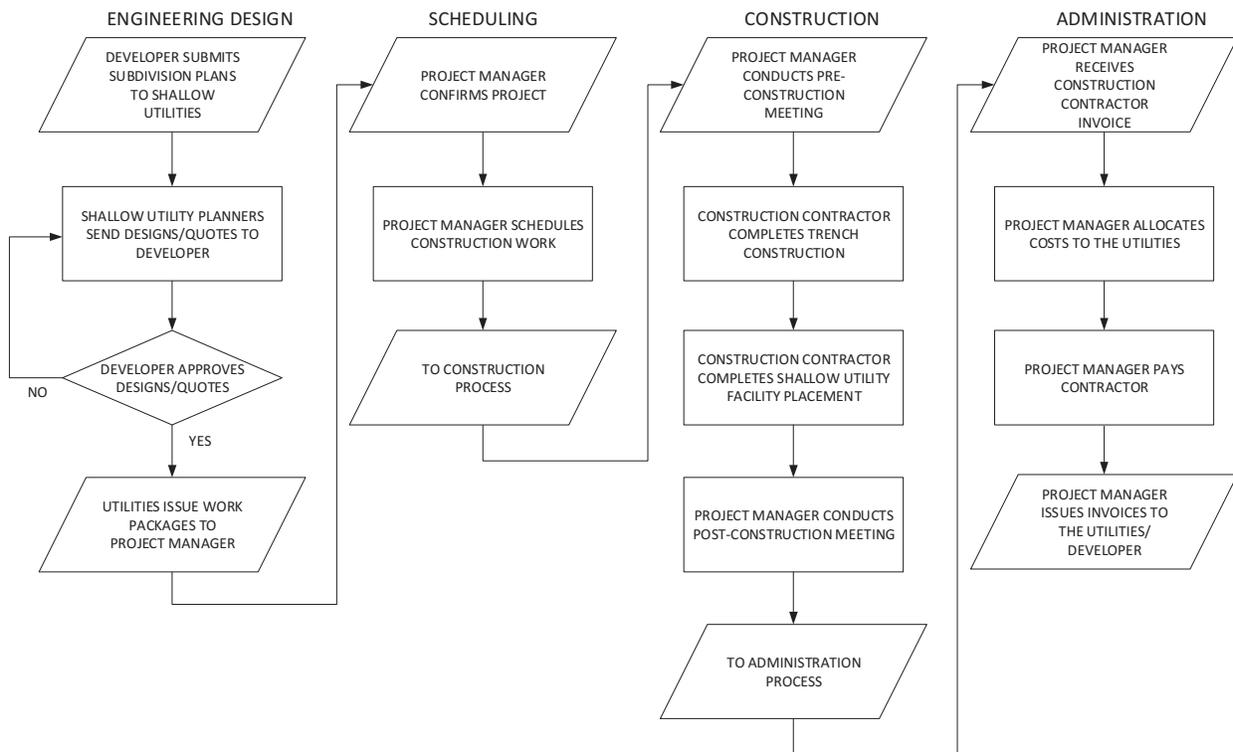


Figure 1URD Shallows Workflow - Project Flow

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4.2. Front Trench Configuration

SHALLOW UTILITIES MAIN TRENCH FOR FRONT DISTRIBUTION

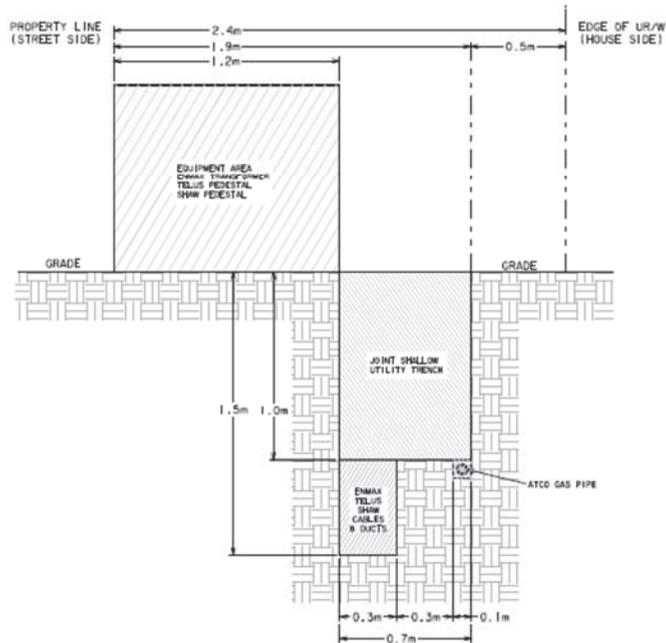


Figure 2 Front Trench Configuration

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4.3. Front Service Configuration

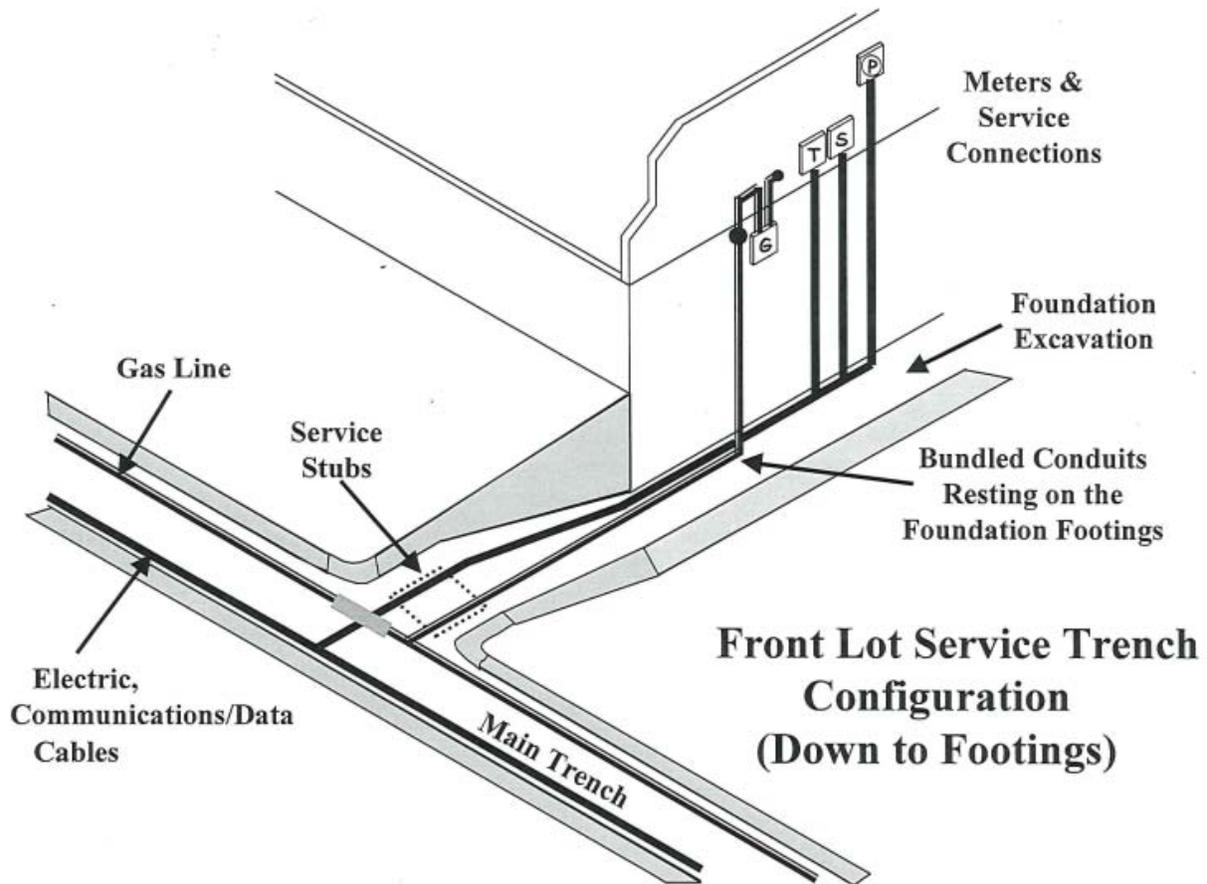
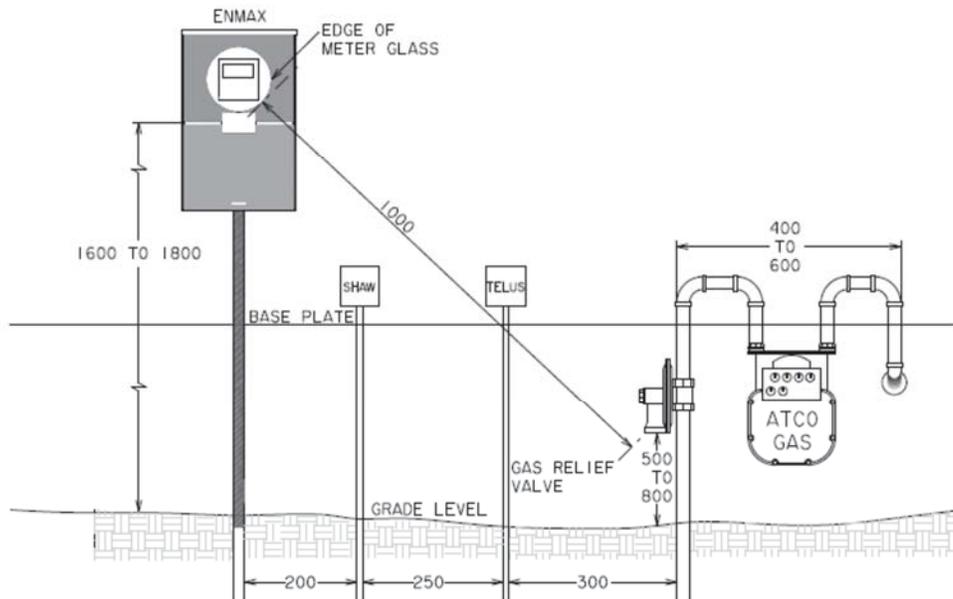


Figure 3 Front Service Configuration

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4.4. Utility Wall Installation Configuration

UTILITY INSTALLATIONS ON THE WALL OF A HOUSE (MINIMUM DISTANCES)



NOTE: THIS DRAWING IS INTENDED TO PROVIDE GENERAL GUIDANCE. THE INDIVIDUAL UTILITIES MAY HAVE ADDITIONAL REQUIREMENTS.

Figure 4 Utility Wall Installation Configuration



4.5. Regulator Relief Vent Clearance

Clearance from Regulator Relief Vent

Minimum distance in any direction from Regulator Relief Vent to:

- ①. Appliance vent outlet
1 metre (3 feet)
- ②. Building openings such as doors and windows
1 metre (3 feet)
- ③. Appliance air intake
1 metre (3 feet)
- ④. Source of ignition
1 metre (3 feet)
- ⑤. Mechanical air intake*
3 metres (10 feet)
** Does not apply to direct vent appliances*
- ⑥. Bottom opening window
1 metre (3 feet) horizontal or
3 metre (10 feet) vertical

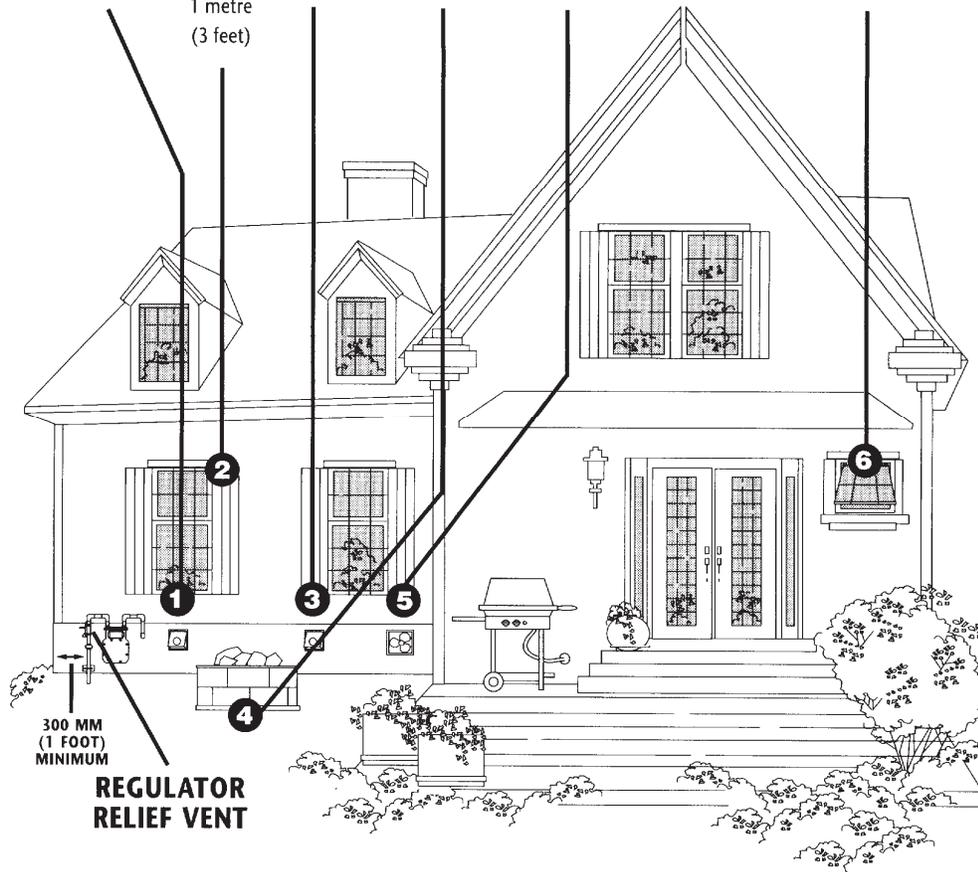


Figure 5 Regulator Relief Vent Clearance