

## **Technical Description**

## METER STATION DESCRIPTION

Pipeline Design Specifications	CSA Z662-15
Description of Analysis System	A Gas Chromatograph (GC) will be installed. A sample of the gas in the pipe is analyzed at regular intervals by the GC to provide real time gas composition information.
Minimum and maximum station flows and associated inlet and outlet pressures used for meter station design	<p>The minimum station design flow will be approximately 510 10<sup>3</sup>m<sup>3</sup>/d and the maximum station design flow will be approximately 10213 10<sup>3</sup>m<sup>3</sup>/d.</p> <p>The station operating pressure will range between approximately 4000 kPa to a maximum operating pressure of 6895 kPa.</p> <p>The outlet pressure will be equal to the inlet pressure, less a small piping loss.</p>
Meter type and number	2-2012U ultrasonic meter station, which contains two NPS 12 meter runs.
Meter run wall thickness and grade	Meter Run: two NPS 12, wall thickness 12.7 mm, CAT II, CSA Z245.1, Grade359, TES-PIPE-P8, -45°C, approximately 9.9 m long.
Method used for regulating/metering	<p>In addition to the ultrasonic meters, TransCanada will measure temperature and pressure at the meter location. The data from the temperature and pressure transmitters will be sent to a local flow computer that will calculate the gas volume and energy content using industry standard calculations (AGA Reports). All gas metering equipment will be Measurement Canada approved and will meet the Measurement Canada acceptance criterion of +/- 2%. TransCanada will also calibrate the meter at a federally-accredited flow laboratory. Pressure control (PC) and overpressure protection (OPP) are not included in the design of this meter station as the pipeline system as a whole is designed in compliance with CSA Z662-15, Clause 4.18: Pressure Control and Overpressure Protection of Piping, to protect the TransCanada System against overpressure incidents.</p> <p>The Project does not introduce a new source of pressure capable of creating overpressure conditions. There are three existing sources of upstream pressure for this Project: compressor stations, pipeline specification breaks (i.e., a point at which a single pipeline's MOP changes or a point at which intersecting pipelines have an unequal MOP) and receipt meter stations elsewhere on the system. For compressor stations, PC and OPP include maintaining speed control of compression units, compressor suction and discharge valves. For pipeline specification breaks, PC and OPP include control valves, relief valves and high-pressure slam shut valves.</p>
Schematic showing tanks, buildings, major piping and valves with connections to existing pipelines	See Attachment 03: Preliminary Plot Plan and Attachment 04: Preliminary Piping and Instrumentation Diagram.
<p>Note:</p> <p>Material grade meets or exceeds minimum requirements. Other CSA Z662-15 compliant or higher grades of steel might be used depending on material availability and in accordance with specification TES-MATL-MD1. All values, including but not limited to pressure, length, grade, coating and wall thickness, are based on preliminary design and could be subject to change.</p>	

### CONNECTION/YARD PIPING DESCRIPTION

Outside Diameter	NPS 20 Yard Piping and ILI Piping	NPS 8 Temporary Kicker Line	NPS 16 Customer Tie-in	NPS 12 Yard Piping	NPS 20 Lateral Piping
Wall Thickness	8.2 mm*	8.2 mm	14.3 mm	12.7 mm	8.2 mm
Pipe Grade	Grade 448 CAT II, -45C TES-PIPE- EW*	ASTM A333 Grade 6 Seamless, -45C	Grade 414 CAT II, -45C TES-PIPE- SAW	CSA Z245.1 Grade 359 CAT II, -45C Seamless, EW, or SAW	Grade 448, CAT II, -45C TES-PIPE-EW
Material Grades used in Valves, Fittings and Assembly piping	The selection of material for valves, fittings and assembly piping will be in accordance with specification TES-MATL-MD1.				
Maximum Operating Pressure	6895 kPa				
Length	Approx. 280 m	Approx. 1 m	Approx. 0.5 m	Approx. 25 m	Approx. 500 m
Location	45.212985, -75.915739				
Burial Depth	Minimum depth of cover will be 1.1 m. The minimum depth of cover will also comply with all applicable federal, provincial, municipal and county regulations.				
Coating	Internal coating: None  External Coating: <ul style="list-style-type: none"><li>• fusion bond epoxy for straight pipe supplied as full joints</li><li>• 100% solid epoxy for below-ground assemblies</li><li>• epoxy primer with polyurethane top coat or zinc-rich epoxy primer and a polysiloxane top coat for above-ground assemblies</li></ul>				
Product Carried	The proposed facilities will transport sweet natural gas that meets TransCanada's Gas Quality Specifications outlined in its Tariff, General Terms and Conditions, Section V, Quality.				
Corrosion Control Element	Meter station piping will be cathodically protected using existing facilities in the area. No additional cathodic protection facilities are necessary.				
Crossings	None				
Note: Material grade meets or exceeds minimum requirements. Other CSA Z662-15 compliant or higher grades of steel might be used depending on material availability and in accordance with specification TES-MATL-MD1. All values, including but not limited to pressure, length, grade, coating and wall thickness, are based on preliminary design and could be subject to change. *NPS 20 yard piping and ILI piping may be partially substituted with 15.9 mm WT CSA Z245.1 Grade 414, CAT II, -45C, TES-PIPE-SAW pipe based on material availability.					