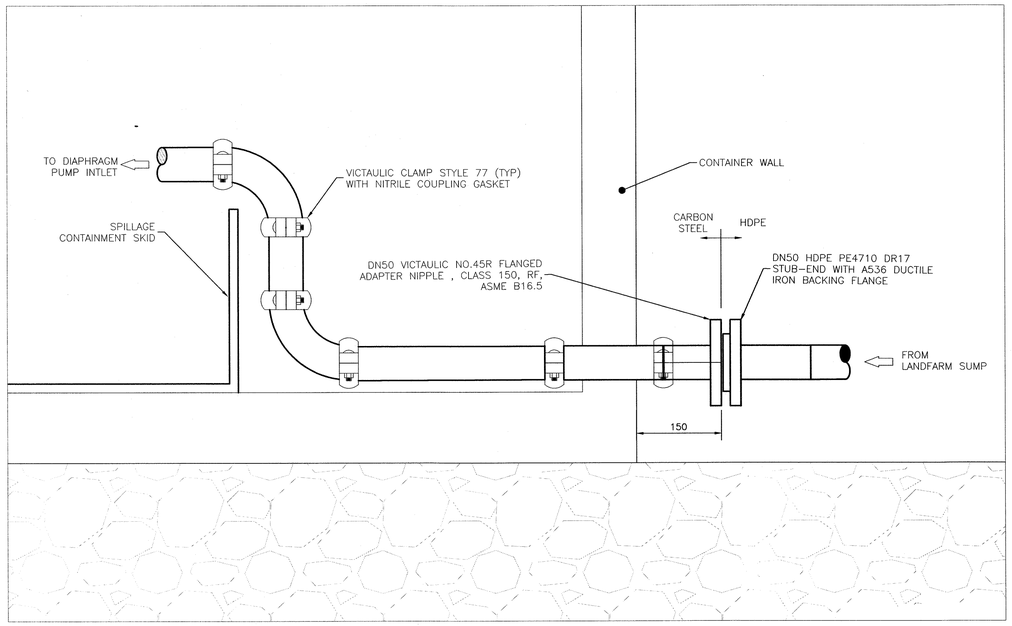
NO. DESSIN
DRAWING NO. 65-695-265-224-R2

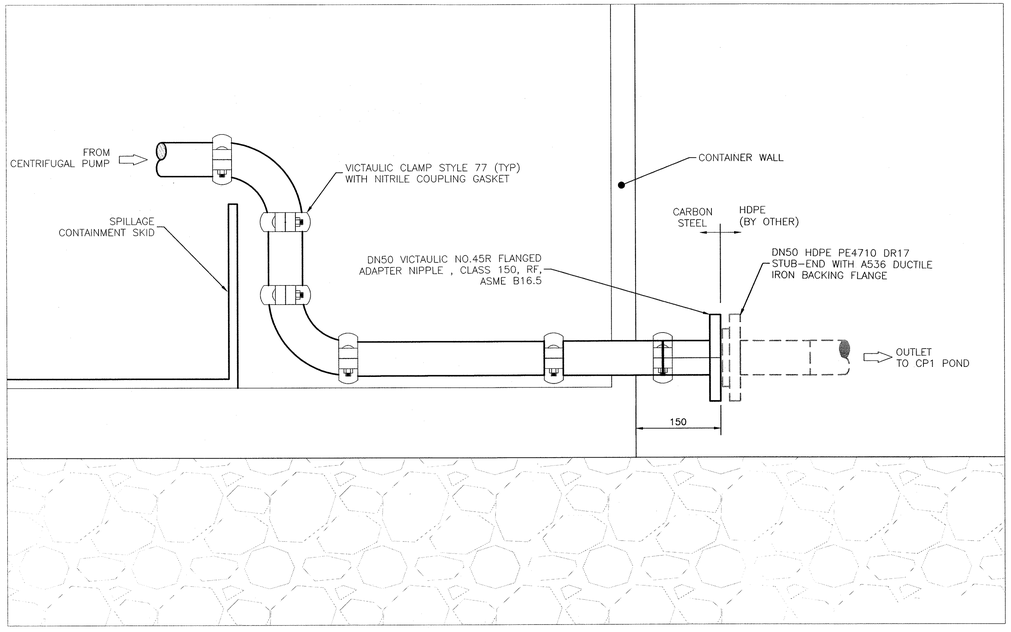
FORMAT ARCHD



FROM LANDFARM SUMP TO DIAPHRAGM PUMP

DETAIL 1 – WALL MOUNTED RIGID CONNECTION SPOOL FOR HDPE PIPE TRANSITION

SCALE: 1:5

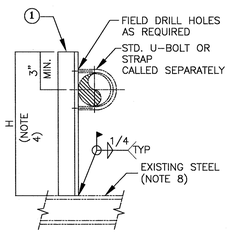


FROM CENTRIFUGAL PUMP TO CP1 POND

DETAIL 2 – WALL MOUNTED RIGID CONNECTION SPOOL FOR HDPE PIPE TRANSITION

SCALE: 1:5

WELDED MISCELLANEOUS POST FOR BARE LINE PIPE SIZES 2" AND BELOW



ELEVATION

ITEM No	MATERIAL DESCRIPTION	QTY.
1	L76 x 76 x 7.9 x "H" LONG.	1

NOTES:

1. THE IDENTIFICATION OF STRUCTURAL MEMBERS IS IN METRIC. ALL DIMENSIONS ARE IN IMPERIAL (FEET AND INCHES).
2. ALL COMPONENTS SHALL HAVE PROTECTIVE COATINGS IN ACCORDANCE WITH THE CLIENT OR PROJECT SPECIFICATIONS.
3. STRUCTURAL MATERIAL; CSA G40.21 Gr. 300W (C.L.S. PLATE), 350W (W.W.), OR ASTM A572.
4. FIELD TO CUT ITEM 1 LENGTH AS REQUIRED.
5. PIPE MUST BE FREE TO SLIDE THROUGH U-BOLT OR STRAP.
6. ALLOWABLE LOADS ARE FOR SUPPORT MEMBER ONLY, CHECK ALLOWABLE LOADS FOR U-BOLT OR STRAP.
7. FOR PIPE SUBJECT TO VIBRATION, CONFIRM WITH THE STRESS ANALYSIS ENGINEER PRIOR TO USING THIS STANDARD.ZZ
8. CONFIRM THE CAPACITY OF EXISTING STRUCTURES WITH THE STRUCTURAL ENGINEER.

SUFFIX No	DIM. "H" MAX.	MAX. VERT. LOAD (LBS)	MAX. HORZ. LOAD (LBS)
1	12"	2500	1000
2	24"	1000	400
3	36"	500	200

TYPICAL SUPPORT

SCALE: NONE

POUR ACHAT
FOR PURCHASE
AGNICO EAGLE DATE : 2017/06/22

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

NOTES

1. ALL UNITS IN MILLIMETRES UNLESS OTHERWISE MENTIONED.

PERMIT TO PRACTICE
TETRA TECH INDUSTRIES, INC.
O/A TETRA TECH
Signature
Date 06-22-2017
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER O.BEAUCHEMIN-THERIAULT LICENSEE 15 NT/NU 22/06/2017

LICENSED Orjan Beauchemin-Theriault 14438 GEOLOGIST NT/NU 22/06/2017

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
OIL SEPARATOR STATION-GENERAL ARRANGEMENT	65-695-265-223
–	–
–	–
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2017/05/29	FOR PURCHASE	S.G.	O.B.	N.M/B.A
1	2017/04/27	FOR TENDER	S.G.	O.B.	N.M/B.A
0	2017/02/09	FOR TENDER	S.G.	O.B.	N.M/B.A
A	2017/01/24	FOR COMMENTS	S.G.	O.B.	N.M/B.A

REVISIONS

TETRA TECH

PROJET No.: E14103230 | FICHIER No.: 65-695-265-224

TITRE / TITLE

AGNICO EAGLE – MELIADINE
WATER MANAGEMENT
LANDFORM TO CP1
OIL SEPARATOR STATION
DETAILS

DESSINÉ PAR DRAWN BY	S.G.	DATE 2017/01/24
VERIFIÉ PAR CHECKED BY	O.B.	2017/06/12
APPROUVÉ PAR APPROVED BY	B.T.	2017/06/12
ÉCHELLE SCALE	1:10	DATE

NO. DESSIN DRAWING NO. 65-695-265-224

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6515-C-265-016	2	1 / 1

AE-CART-ARCH D

FILE NO. 65-695-265-224-R2.dwg

APPENDIX B

SCLAIRPIPE TECHNICAL SPECIFICATION

MODEL SPECIFICATION
FOR
SCLAIRPIPE® HIGH DENSITY POLYETHYLENE PIPE

1. PIPE & FITTINGS SPECIFICATIONS

1.1 Reference Specifications

ASTM	*D638*	*Standard Test for Tensile Properties of Plastics*
	D792	*Standard Test Methods for Density and Specific Gravity of Plastics by Displacement*
	D1238	*Flow Rates of Thermoplastics by Extrusion Plastomer*
	D1598	*Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure*
	D1599	*Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings.*
	D1693	*Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics*
	D2290	*Standard Test Method for Apparent Hoop Tensile Strength of Plastic or Reinforced Plastic Pipe by Split Disk Method*
	D2837	*Standard Test Method for Obtaining Hydrostatic Design Basis for thermoplastic Pipe Materials*
	D3350	*Standard Specification for Polyethylene Plastic Pipe and Fittings Materials*
	F714	*Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter*
	F2164	*Standard Practice for Field Leak Testing of Polyethylene(PE) Pressure Piping Systems Using Hydrostatic Pressure*
	F2620	*Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings*
AWWA	*C906*	*Polyethylene Pressure Pipe and Fittings, 4" Through 63" for Water Distribution*
ISO	*9001-2008*	*Quality Systems, Model for Quality Assurance in Production and Installation*

1.2 Material

1.2.1 The resin compound shall be qualified to meet the following:

The pipe shall be made from materials meeting the designations of PE3608 or PE4710 as assigned by the Plastics Pipe Institute.

The pipe shall be made from a polyethylene resin compound with a minimum cell classification of 344464C for PE3608 and 445474C for PE4710 as defined in ASTM D3350.

The Hydrostatic Design Stress (HDS) at 23℃ (73.4℉) shall be 800 psi for resin designated by PE3608 and 1,000 psi for resin designated by PE4710 (PPI TR-4 , Table 1.A.8 for PE3608, Table 1.A.13 for PE4710).

1.2.2 The pipe material shall contain 2% - 2 ½% well dispersed carbon black. Additives which can be conclusively proven not to be detrimental to the pipe may also be used, provided the pipe produced meets the requirements of this specification.

1.2.3 The pipe shall contain no recycled compound except that which is generated in the manufacturer's own plant, from resin of the same specification and from the same raw material supplier.

1.2.4 The pipe supplier shall certify compliance with the requirements of this section in writing.

1.3 Pipe Design

1.3.1 The pipe shall be designed in accordance with the relationships of the ISO modified formula as stated in ASTM F714.

1.3.2 The design pressure rating shall be derived using an HDS of 800 psi at 23℃ (73.4℉) for a PE3608 designation and an HDS of 1,000 psi at 23℃ (73.4℉) for a PE 4710 designation, resulting in the following maximum continuous Working Pressure Rating (WPR, psi) for the respective pipe classes:

	DR32.5	DR26	DR21	DR17	DR15.5	DR13.5	DR11	DR9	DR7.3	DR6.3
PE3608	50	64	80	100	110	128	160	200	254	300
PE4710	63	80	100	125	138	160	200	250	317	379

1.3.3 Overpressure limits for pipe shall be allowed a specific magnitude greater than the maximum continuous working pressure of the pipe. Simple guidelines for frequent and infrequent surge conditions are as follows:

i) Frequent surge pressures shall be permitted where the magnitude of the total pressure is not greater than 150% of the maximum allowable continuous working pressure of the pipe. Frequent surge pressures are typically generated by normal pump flow changes and valve operations.

ii) Infrequent surge pressures shall be permitted where the magnitude of the total pressure is not greater than 200% of the maximum allowable continuous working pressure of the pipe. Infrequent surge pressures are described as pump power-out shut down or quick emergency valve closures.

1.4 Fittings

1.4.1 HDPE pipe flange assemblies shall meet the following requirements unless otherwise specified by the engineer:

i) Solid HDPE stub ends or flange adapters shall be made from the same resin grade (PE3608 or PE4710) and shall be formed using extrusion or molding methods.

ii) Flange rings shall be ductile iron (ASTM A536-84) made to Class 150, ANSI B16.1/B16.5 dimensional standards with exceptions.

iii) Methods for flange assembly, gasket selection and bolt torque application shall be as outlined in PPI Technical Note TN-38.

2. QUALITY ASSURANCE

2.1 General Requirements

2.1.1 The general quality assurance practices and methods shall be in accordance with ISO 9001-2008 or equivalent quality management program.

2.1.2 The customer or engineer shall be allowed free access to the manufacturer's plant facilities to audit, witness and inspect the methods, practices, tests and procedures of the quality assurance program.

2.2 Incoming Material Inspection

2.2.1 All incoming materials shall be inspected and tested by the pipe manufacturer for verification of the resin supplier's adherence to the material specification. The test shall include:

i) Density ASTM D792
ii) Melt Flow Rate ASTM D1238
iii) Thermal Stability (DSC) ASTM D3350

2.2.2 In Addition, the resin supplier shall provide certification of the following physical properties with each lot shipment of material:

i) Density ASTM D792
ii) Melt Flow Rate ASTM D1238
iii) Tensile Strength ASTM D638
iv) Elongation ASTM D638
v) E.S.C.R. ASTM D1693 Condition C
vi) Thermal Stability, DSC ASTM D3350

2.3 Finished Goods Evaluation

2.3.1 The following shall be checked or verified on a daily and controlled basis:

i) Pipe dimensions and tolerances as per ASTM F714
ii) Pipe workmanship as per ASTM F714
iii) Pipe attributes of density and melt flow rate
iv) Reverse bend and DSC testing
v) Carbon black content

2.3.2 In addition to the above, pipe physical test requirements shall be verified on a periodic basis with the emphasis of accumulating data to demonstrate conformance for each respective pipe size range to ASTM F714. Test reports shall be submitted for review to the engineer to qualify a manufacturer for conformance purposes. This report shall include as a minimum the following:

Test data dating over one year covering the following production per plant location:

i) Two pipe sizes manufactured in each of the three size ranges: 4" to 12" (100 to 300mm), greater than 12" to 24" (300 to 600mm), and greater than 24" (600mm) shall be tested by elevated temperature sustained pressure test as per Table 3 in ASTM F714, for each polyethylene resin used.

ii) Two pipe sizes manufactured in each of the three size ranges: 4" to 12" (100 to 300mm), greater than 12" to 24" (300 to 600mm), and greater than 24" (600mm) shall be tested for tensile properties. One of the following tests may be used to verify pipe tensile properties:

- Tensile Test as per ASTM D638
- Apparent Tensile Test as per ASTM D2290

2.3.3 Additional tests to be performed to meet the requirements of AWWA C906 shall be as follows (minimum once per year):

i) Apparent ring tensile test as per ASTM D2290
or
Quick burst hydrostatic pressure test as per ASTM D1599

ii) Elevated temperature sustained pressure test as per ASTM D1598 at 80℃
or
Short term 5 second hydrostatic pressure test at four times the working pressure rating

3. MARKING AND SHIPPING

3.1 Marking

3.1.1 The pipe shall be clearly marked using an inkjet printing method such that the marking is visible, legible and permanent.

3.1.2 The marking shall include the following and shall be applied so as to repeat this information at least once in every 5 feet:

i) Name or trademark of manufacturer (i.e. KWH SCLAIRPIPE)

ii) Nominal pipe size (i.e. 14" IPS or 400mm)

iii) Pipe rating (DR 17)

iv) Standard material code designation (i.e. PE3608 or PE4710)

v) Appropriate Manufacturing Standard (i.e. ASTM F714 or AWWA C906)

vi) Production code which describes the resin compound, manufacturing location, year, month and day

Additional markings may be required by the purchaser and shall be added to the markings on the pipe.

3.2 Shipping

Unless otherwise specified by the purchaser, all pipe and fittings shall be prepared for standard commercial shipment. Care shall be taken to prevent cuts, scratches and other damage.

Unless specifically requested by the customer in writing, pipe shipments shall not be nested.

4. CONSTRUCTION PRACTICES

4.1 Inspection of Materials

4.1.1 The customer shall inspect all pipe and accessories for shortages, loss or damage upon receipt of the shipped material at the time of unloading, recording this information directly on the waybill received from the carrier.

4.1.2 Acceptable limits for cuts, gouges or scratches are as follows:

i) Pipe outer surface shall not be cut, scratched or gouged to a depth greater than 10% of the pipe minimum wall thickness.

ii) Pipe internal surface shall be free of all cuts, gouges or scratches.

4.2 Handling and Storage

4.2.1 Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe.

4.2.2 Stacked pipe shall be stored in accordance with manufacturer's recommendations to minimize pipe ovalization.

4.2.3 Pipe shall be handled using suitable slings or lifting equipment. Also, pipe shall not be dragged over sharp objects or surfaces.

4.3 Thermal Butt Fusion

4.3.1 Butt fusion joining of pipe and fittings shall be performed in accordance with the procedures outlined in the manufacturer's 'butt fusion procedures' requirements which are based upon PPI's 'Generic Butt Fusion Procedures' as set out in PPI's TR-33 and as described in ASTM F2620.

4.3.2 Fusion technicians that have been trained in the use of the appropriate procedures (see 4.1.6) and evaluated by fusion equipment manufacturers, must conduct the butt fusion joining.

4.3.3 Butt fusion shall be performed using suitable machinery.

6. TESTING

The intent of leak testing is to find unacceptable faults in a piping system. Leakage tests may be performed if required by the Contract Specifications.

5.1 Pressure Testing Precautions

5.1.1 The pipe system under test and any closures in the test section should be restrained against any unanticipated separation during pressurization. Refer to ASTM F2164. .

5.1.2 Test equipment should be examined before pressure is applied to ensure that it is tightly connected. All low pressure filling lines and other items not subject to the test pressure should be disconnected or isolated.

5.1.3 Testing may be conducted on the system, or in sections. The limiting test section size is determined by test equipment capability. If the pressurization equipment is too small, it may not be possible to complete the test within allowable testing time limits. If so, higher capacity test equipment or a smaller test section may be necessary.

5.1.4 If possible, test medium and test section water temperatures should not exceed 80° F (27° C). At temperatures above this level, reduced test pressure is required. Before applying test pressure, time may be required for the test medium and test pipe section to temperature equalize.

5.2 Test Procedure

5.2.1 For a test pressure that is 1.5 times the system design pressure, the total test time including initial pressurization, initial expansion, and the time at the test pressure, must not exceed eight (8) hours[1].

5.2.2 Hydrostatic pressure testing should be done in accordance with ASTM F2164. Clean water is strongly recommended as the test medium. The test section should be completely filled with water, taking care to bleed off any trapped air. Venting at high points may be required to purge air pockets while the test

[1] For test durations longer than 8 hours, the test pressure should be reduced. Refer to PPI Engineering Handbook, Chapter 2 for test methods.

sections are filling. Venting may be provided by loosening flanges or by using equipment vents. Retighten loosened flanges before applying test pressures.

5.2.3 Pressurize the pipe up to the desired test pressure. The test procedure consists of initial expansion, and test phases. For the initial expansion phase, the test section is pressurized to test pressure and make-up test liquid is added as required to maintain maximum test pressure for four (4) hours. For the test phase, the test pressure is reduced by 10 psi. This is the target test pressure. If the pressure remains steady (within 5% of the target test pressure) for an hour, leakage is not indicated.

5.2.4 If leaks are discovered, depressurize the test section before repairing leaks. Correctly made fusion joints do not leak. Leakage at a butt fusion joint may indicate imminent pressurized rupture. Depressurize the test section immediately if butt fusion leakage is discovered. Leaks at fusion joints require the fusion joint to be cut out and redone.

5.2.5 If the pressure leak test is not completed due to leakage, equipment failure, etc., the test section should be de-pressurized and repairs made. Allow the test section to remain depressurized for at least eight (8) hours before retesting.

APPENDIX C

PIPELINE PRE-INSULATED PIPE SPECIFICATION

Submittal Data Sheets

Project: Agnico-Eagle - Meliadine

CP5 Pumping Station to CP1 Pond:

1160 ft (353,6 m) - Nominal 2” thick standard UIP® polyurethane insulation c/w black seamless polyethylene outer jacket (24.92’’ø x 0.225’’ thick) on 20”ø HDPE DR17 pipe, 40ft lengths;

5 ea. - Nominal 2” thick heavy polymer coated insulation kit supplied with accessories to be field installed by others on 20’’ø flanged joint;

24 ea. - Nominal 2” thick Slip joint® insulation kit supplied with a rigid polyethylene cover & accessories to be field installed by others on 20’’ø butt fused joint.

EWTP to Meliadine Lake:

7526 ft (2293,8 m) - Nominal 2” thick standard UIP® polyurethane insulation c/w black seamless polyethylene outer jacket (20.9’’ø x 0.2’’ thick) on 16”ø HDPE DR17 pipe, 53ft lengths;

30 ea. - Nominal 2” thick heavy polymer coated insulation kit supplied with accessories to be field installed by others on 16’’ø flanged joint;

112 ea. - Nominal 2” thick Slip joint® insulation kit supplied with a rigid polyethylene cover & accessories to be field installed by others on 16’’ø butt fused joint;

Water Intake section:
40 ft (12,2 m) - Nominal 3” thick standard UIP® polyurethane insulation c/w black seamless polyethylene outer jacket (22.17’’ø x 0.2’’ thick), four(4) integral 3/4"ø copper channels with soldered en cap and tapered insulation at one end for water tightness on 16”ø HDPE DR17 pipe, 40ft lengths;

160 ft (48,8 m) - Nominal 3” thick standard UIP® polyurethane insulation c/w black seamless polyethylene outer jacket (22.17’’ø x 0.2’’ thick) & four(4) integral 3/4"ø copper channels on 16”ø HDPE DR17 pipe, 40ft lengths;

6 ea. - Nominal 3” thick lite polymer coated insulation kit supplied with Mec-Seal® for water tightness & accessories to be field installed by others on 16’’ø butt fused joint;

935 ft (285 m) of Thermocable® model C13-240-COJ (13 watts/m at 240 volts) - three(3) runs of heat trace cables;

1 ea. – Thermostat model UTC-2030-11;

2 ea. – Temperature sensor URTD-30-G;

1 ea. – Temperature sensor URTD-30-R;

2 ea. – PFK-1 Power feed kit for Thermocable.

Air Valves:
3 ea. - Nominal 2” thick heavy polymer coated insulation kit supplied with accessories to be field installed by others on air valves;

3 x 33 ft (3 x 10 m) of Thermocable® model C13-120-COJ (13 watts/m at 120 volts);

3 ea. – Mechanical Thermostat model URTH-3616;

3 ea. – A-1333-COJ Terminations kit for Thermocable.

Landfarm to CP1 Pond:

560 ft (170,7 m) - Nominal 2.5” thick standard UIP® polyurethane insulation c/w black seamless polyethylene outer jacket (8’’ø x 0.175’’ thick), one(1) integral heat trace channel on 2”ø HDPE DR17 pipe, 40ft lengths;

2 ea. - Nominal 2” thick heavy polymer coated insulation kit supplied with accessories to be field installed by others on 2’’ø flanged joint;

12 ea. - Nominal 2” thick Slip joint® insulation kit supplied with a rigid polyethylene cover & accessories to be field installed by others on 2’’ø butt fused joint;

1 ea. – Thermostat model UTC-2030-01;

656 ft (200 m) of Thermocable® model C13-240-COJ (13 watts/m at 240 volts);

1 ea. – Temperature sensor URTD-30-G;

1 ea. – Temperature sensor URTD-30-R;

1 ea. – PFK-1 Power feed kit for Thermocable.

February 27th , 2017

Total 25 pages (including cover pages)

URECON

DETAILED SPECIFICATION

PE casing jacket

with standard U.I.P.® system for above grade piping

1. GENERAL

The pipe shall be insulated using the unique two fill U.I.P.® factory insulation process, as supplied by Urecon Ltd., complete with integral conduit(s) for electric heat trace cable (if required). The insulation of associated joints, fittings and accessories shall be as per Urecon's recommendations. The product shall be manufactured in accordance to ISO 9001 Standards, or approved equal.

2. PIPE PREPARATION

Pipe and casing jacket shall be cleaned of surface dust or dirt to ensure adhesion of the foam to the pipe and inner jacket surface.

3. HEAT TRACING CONDUIT(S)

Heat tracing conduit(s) shall be applied to the pipe prior to application of the insulation. The conduit(s) will be securely fastened to the pipe to prevent the ingress of foam therein during the insulation process. All conduit(s) shall be checked after insulating to ensure they are not blocked. The ends shall be sealed prior to shipping to prevent any foreign material from entering the conduit while in transit or during installation.

a) For Landfarm to CP1 pond piping
Heat tracing conduit shall consist of an extruded molding.

b) For Water intake in Meliadine Lake
Heat tracing conduits shall consist of 19mmø (3/4"ø) copper pipe.

4. INSULATION

a) Material: Rigid polyurethane foam, factory applied.
b) Thickness: Nominal 50.8 mm *(2 in)* or as required.
c) Density: (ASTM D1622) 35 to 48 kg/m³ *(2.2 to 3.0 lbs/ft³).*
d) Closed cell content: (ASTM D6226) 90%, minimum.
e) Water absorption: (ASTM D2842) 4.0% by volume.
f) Thermal conductivity: (ASTM C518) 0.020 to 0.025 W/m℃ *(0.14 to 0.17 Btu • in/ft² • hr • ℉).*
g) Temperature range: Cryogenic to 93.3 ℃ *(200 ℉).*

5. SYSTEM PROPERTIES

a) System compressive strength: (modified ASTM D1621 with casing jacket) approximately 690 to 1379 kPa *(100-200 lbs/in²),* varies with pipe diameter;
b) Service temperature range: the overall factory insulated system limitations are dependent on the core pipe type, insulation and application.
c) Temperature limitations: minimum ambient installation temperature *-34 ℃ (-29 ℉).*

6. PE CASING OUTER JACKET

The outer protective jacket shall consist of black PE, UV inhibited, factory applied with the following specifications:

a) Casing shall be extruded from polyethylene resin with cell class requirements 334360C as defined in ASTM D3350-12;
b) Polyethylene compound shall be of color and UV stabilizer Code C (black) as specified in ASTM D3350, with a target range of 2 to 2.5% well dispersed carbon black (max. 2.8%);
c) Jacket thickness shall be 3.81 mm *(150 mils)* to 7.62 mm *(300 mils)* depending on pipe diameter and PE casing availability from supplier.

URECON PRE-INSULATED PIPE
Coteau-du-Lac, Quebec (450) 455-0961
Calmar, Alberta (780) 985-3636
Florida (321) 638-2364
www.urecon.com

7. INSULATED PIPE JOINTS

a) Butt-fused joints

Insulated pipe joints shall be completed with Slipjoint® kits consisting of preformed polyisocyanurate foam half shells supplied with PE cover sheet, stainless steel bands, gear clamps and self tapping screws. All PE overlaps at the joints and fittings shall be 50.8 mm *(2 in)* minimum and shall be field positioned in such a way as to shed water. The insulation shall be pre-grooved on the inside or slightly oversized to accommodate heat trace cable(s) if applicable.

Waterproofing for water intake into Meliadine lake: For more demanding waterproof application, Urecon Mec-Seal® joint kits should be considered in place of Slipjoint® kits.

8. INSULATION KITS FOR FITTINGS, VALVES & FLANGED JOINTS

Insulation kits shall consist of rigid polyisocyanurate foam half shells complete with a heavy polymer protective coating on the outside surfaces. All insulation kits shall be supplied complete with silicone caulking, stainless steel bands and gear clamps. If the insulation shells are form hugging to the fitting, 152.4 mm *(6 in)* wide PE cover sheets with stainless steel bands and gear clamps shall be supplied for each end of the kit.

a) Rigid polyisocyanurate or polyurethane foam

1. Density: (ASTM D1622) 32 kg/m³ *(2.0 lbs/ft³)*.
2. Compressive strength: (ASTM D1621) 124 to 186 kPa (18 to 27 lbs/in²).
3. Closed cell content: (ASTM D2856) 90%, minimum.
4. Water absorption: (ASTM C272) 2.0% by volume.
5. K factor: (ASTM C518) 0.027 W/m℃ (0.19 Btu • in/ft² • hr • ℉).
6. Thickness: typically 50.8 mm (2 in), shall match pipe insulation thickness.

b) Polymer coating, Urecon BL-100-20EP

1. Two component high density polyurethane coating, black in color.
2. Density: 1170 kg/m³ *(73 lbs/ft³).*
3. Durometer D scale 60.
4. Tensile strength: 11.10 MPa *(1610 lbs/in²).*
5. Tear strength: 26.5 N/mm *(151 lbs/in).*
6. Thickness: 2.54 mm *(100 mils)* outside surfaces, 0.51 mm *(20 mils)* inside surfaces.

9. ELECTRIC TRACING SYSTEM

The electric tracing system and associated controls shall be as per the manufacturer's recommendations with particular attention being paid to the watt densities applied through conduits on plastic pipes. All tracing cables and related accessories to be CSA approved and comply with CSA heat tracing standard C22.2 No. 130-03. Standard of acceptance is Urecon's Thermocable®.

Note: *Physical characteristics are nominal and may vary depending on pipe type and diameter.*

CANADA

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I S O 9 0 0 1 Registered Company

UNITED STATES

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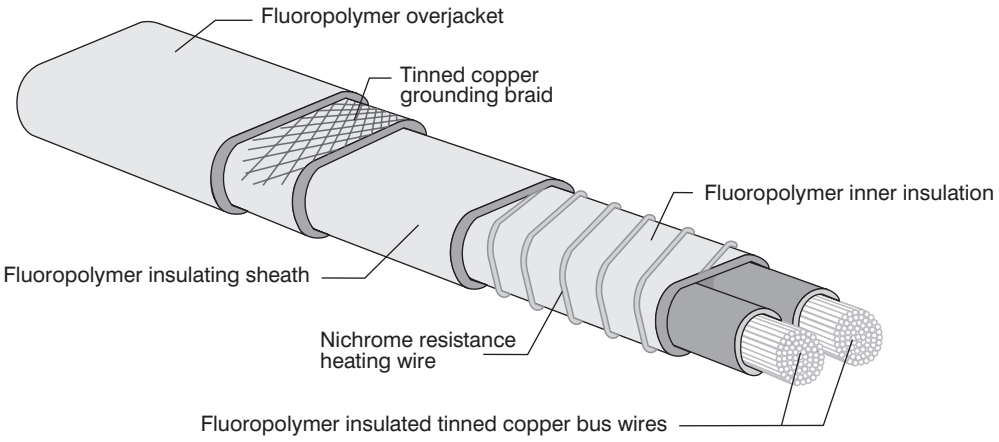
WEB SITE: www.urecon.com

URECON
PRE-INSULATED PIPE

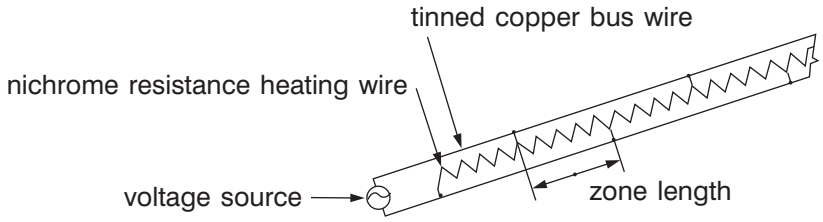
ELECTRIC TRACING FOR FREEZE PROTECTION

Urecon offers a complete range of Thermocable® electric heat tracing cable and controls for freeze protection, on both metal and plastic pipe systems.

URECON THERMOCABLES® FOR PRE-INSULATED PIPES



THERMOCABLE® fluoropolymer constant watt cut - to - length heat tracing cable is a parallel resistance type heating strip which uses a thermally stable nichrome heating wire, with a series of heating zones. These heating zones produce constant, predictable wattage per meter output. THERMOCABLE® is ideally suited for pulling into trace conduits on Urecon pre-insulated pipe systems.



This tracer can be used on any type of pipe, either metal or plastic. It is available in several watt densities and voltages as indicated in table 3.

Its features are:

- smooth fluoropolymer overjacket permits easy conduit pulling
- metallic ground braid
- can be cut to length in the field
- easily spliced and terminated
- moisture resistant
- long circuit lengths because of #12 AWG copper bus wires (except C8-120-COJ)
- over 20 years proven experience
- CSA approved for wet locations.

TABLE 3

URECON THERMOCABLE® CONSTANT WATT TRACE CABLE FOR PRE-INSULATED PIPES

Part Number	Color	Watts		Volts	Bus Wire AWG	Maximum Circuit Length	
		per meter	per foot			meters	feet
120 VOLT THERMOCABLE®							
C7-120-COJ	Blue	7	2	120	12	140	450
C8-120-COJ	Red	8	2.4	120	16	80	275
C13-120-COJ	Yellow	13	4	120	12	125	400
240 VOLT THERMOCABLE®							
C10-240-COJ	Green	10	3	240	12	245	800
C13-240-COJ	Red	13	4	240	12	245	800
C20-240-COJ	Orange	20	6	240	12	200	650
C26-240-COJ	White	26	8	240	12	175	570
575 VOLT THERMOCABLE®							
C13-575-COJ	Clear	13	4	575	12	425	1400
C20-575-COJ	Violet	20	6	575	12	365	1200

For air valves

For HDPE pipes

NOTES:

1) Weight of cable is approximately .22 kg/m *(15 lbs/100 ft)*.

2) C8-120-COJ is a #16 AWG bus cable, suitable for short length pipe tracing.

3) C13-575-COJ and C20-575-COJ are 575 volt, single phase THERMOCABLE® and are especially suited for long circuit lengths.

4) Alternate voltages: should THERMOCABLE® be connected to less than its rated voltage, the actual thermal output will be reduced. Calculate the actual thermal output as follows:

$$\text{ACTUAL THERMAL OUTPUT} = \frac{\text{CONNECTED VOLTS}^2}{\text{RATED VOLTS}^2} \times \left(\begin{array}{c}\text{THERMOCABLE® RATED} \\ \text{THERMAL OUTPUT}\end{array}\right)$$

5) This cable is not recommended for internal tracing.

6) Teflon® is a registered trademark of Dupont.

7) THERMOCABLE® is a registered trademark of Urecon.

TABLE 4

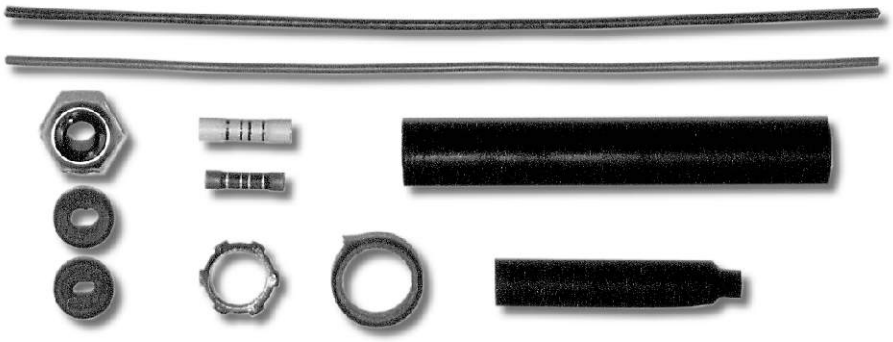
ACCESSORIES FOR THERMOCABLE®:

A1333-COJ	Power and end termination kit for THERMOCABLE®. For air valves
S1334-COJ	In-Line splice kit for THERMOCABLE®.
E1336-COJ	Three-pack end termination kit for THERMOCABLE®.
PFK-1	Power feed kit: to connect one or two THERMOCABLE® and temperature sensor(s) on a pipe to an electronic thermostat. For HDPE pipes
PFK-4	Power feed kit: to connect one THERMOCABLE® and temperature sensor(s) on a service pipe to an electronic thermostat.
PFK-custom	Custom power feed kit: on request, to suit the application, to connect one or two THERMOCABLE® and temperature sensor(s) from one or two locations to an electronic thermostat.
A-300	Aluminum foil tape roll 50 mm *(2 in)* wide x 45 m *(150 ft)* long.
URTD-06-R or G	100 ohms temperature sensor with 6 m *(20 ft)* PVC lead wire (in red or grey).
URTD-15-R or G	100 ohms temperature sensor with 15 m *(50 ft)* PVC lead wire (in red or grey).
URTD-30-R or G	100 ohms temperature sensor with 30 m *(100 ft)* PVC lead wire (in red or grey). For HDPE pipes

Note: Only Urecon electrical accessories such as power termination, end termination and splice are certified for use with THERMOCABLE®.

A1333-COJ Power end / termination kit: For air valves

Contains one power end connector with two bushings, one heat shrinkable end cap, one heat shrink tube, one roll of Teflon® tape, butt splice connectors and ground wires. Used for the connection of one THERMOCABLE® to a thermostat or junction box.



PFK-1 Power feed kit: For HDPE pipes

Contains all the necessary material to bring power from an electronic thermostat to two # 12 AWG bus wire THERMOCABLE® on a pre-insulated pipe; power leads, splices, end caps and 2 x 6 m *(20 ft)* of flexible metallic conduit to protect the power leads and temperature sensor wiring (not included).

URTD Temperature sensor: For HDPE pipes

100 ohms RTD temperature sensor for use with the UTC line of electronic thermostats. Available with 6 m *(20 ft)*, 15 m *(50 ft)* or 30 m *(100 ft)* of grey or red PVC extension lead wire for ease of identification.

A-300 Aluminum foil tape:

50 mm *(2 in)* wide x 45 m *(150 ft)* long roll of aluminum foil adhesive tape. Used to tape the temperature sensor(s) in place to enhance temperature transfer and to secure THERMOCABLE® at connection points, valves, etc.

MECHANICAL THERMOSTAT
Model No. URTH-3608

For air valves

Urecon's mechanical thermostat model No. URTH-3608 is an inexpensive CSA approved capillary type thermostat used to control short lengths of THERMOCABLE®. Remote bulb type with adjustable temperature range 0 °C to 50 °C *(32°F to 122 °F)*, ambient compensated with a differential of ±2,2 °C *(3 3/4 °F)*. Rated at 30A, 120/240 Vac, 3 m *(10 ft)* capillary. Capillary is permanently attached to the control and may not be lengthened, SPST contacts open on temperature rise.

URTH-3608 Specifications:

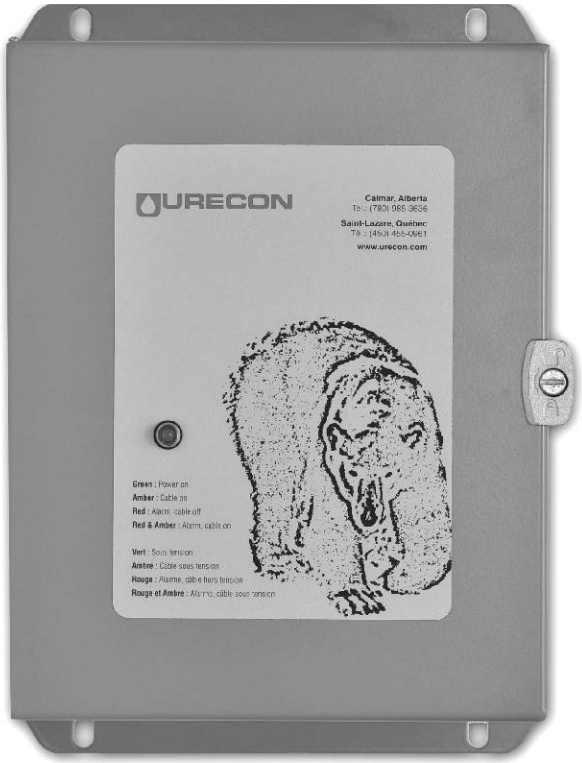
Application:	Inexpensive control of short lengths of THERMOCABLE® on metal pipe.
Approval:	CSA LR 18321
Power output:	Single pole, 30 A, 120/240 Vac
Setpoint:	Internally adjustable 0 °C to 50 °C *(32 °F to 122 °F)*.
Capillary:	3 m *(10 ft)* fixed to control.
Deadband differential:	±2,2 °C *(3 3/4 °F)*
Indicator light:	None.
Enclosure:	Nema 3, cast aluminum box.
Terminal blocks:	None.
Entry holes for wiring hook up:	Two, ½" threads at the bottom.

URTH-3616 Specifications:

Similar to URTH-3608, except 7,6 m *(25 ft)* capillary.

ELECTRONIC THERMOSTAT For HDPE pipes

Model No. UTC-2030-(program code #)



This state-of-the-art electronic thermostat is designed to control one or more heating cables operating between 120 and 240 Vac having a total current draw that does not exceed 30 A. It can be fitted with up to three temperature sensors as required by the application. Because separate temperature sensors are used, they may be installed on the pipe during the initial installation phase while the controller itself may only be installed at a later date.

Features include:

- Universal power supply allowing operation at 120 to 240 Vac without wiring modifications (no neutral required).
- 2-pole, 30 A, 240 Vac circuit breaker that allows operation from 120 to 240 Vac and provides a local means of disconnect (on model 2230 only).
- Internal ground fault detection circuitry eliminating the need for an external ground fault device. "Alarm only" or "alarm and trip" is activated when ground fault condition is present.

- Three temperature sensor inputs: TS1 for pipe temperature control, TS2 (when enabled) for pipe temperature control at second location on the piping system and TS3 (when enabled) to serve as a high temperature limit for plastic piping protection. An alarm is activated when an enabled "open" or "shorted" sensor is detected.
- Low temperature alarm on both controlling sensors TS1 and TS2. Alarm level is factory set at dedicated level for each sensor. Feature is enabled at customer request.
- On-off control with a 1 °C *(1.8 °F)* temperature deadband for accurate control of piping systems. This close tolerance control can save thousands of kilowatt-hours of power consumption and is ideal to control electric tracing systems in locations where power is costly.
- Override input (factory programmable): timed between 1-48 hours or non-timed. This feature forces the output "on" or "off" to suit the application.
- Auto-cycle function (when enabled) momentarily turns heating cable "on" at 24 hour interval to monitor ground fault condition of the load.
- One three-color LED indicator lamp mounted on the door of the controller operates as follows:
  - **Green:** When illuminated, the power supply to the controller is "on" and the pipe temperature at the sensor is above the setpoint. When extinguished, the power supply is "off".
  - **Amber:** When illuminated, the temperature controller is calling for heat.
  - **Red:** When illuminated, this indicates that one of the alarms has been triggered. Controller is not calling for heat.
  - **Amber and Red** (alternating): This indicates that one of the alarms has been triggered. Controller is calling for heat.
- Non-volatile memory retains all programmed parameters in the event of a power outage.

Sensor type:

This temperature controller can be factory programmed to operate with one of two different types of temperature sensor. By default the controller is programmed for 100 ohms Platinum RTD sensor(s). It can also be programmed for 2 252 ohms thermistor(s) on special request. The last two digits of the controller's catalog number indicate the programming code. Control program codes from 01 to 49 are for use with RTDs and codes from 51 to 99 are for thermistors. Ensure that the proper type of temperature sensor is used with the controller. Program codes are listed in tables 5 and 6 (pages 30 - 31).

UTC-2030 specifications:

Alarm output : 1 A max, 240 Vac max., 50/60 Hz, SPDT (form C) relay output configured for "fail-safe" operation.

Approvals : CSA "C" - "US" for ordinary locations.

Enclosure: Nema 4, grey painted steel with ¼ turn latch.

Indicator light: Nema 4 multi-function three color LED.

Input voltage range : 120-240 Vac, 50/60 Hz.

Monitoring and alarming : The electronics monitor low temperature, ground fault current, open / shorted temperature sensor(s) and high cable temperature.

Operating ambient : -40 to +40 °C *(-40 to +104 °F)*.

Power output : 2-pole relay output rated 30 A - 240 Vac.

Terminal blocks:

Power terminals for #22 to #8 AWG

Power in: L1, N or L2.
Heater out: H1, N or H2.

Spring loaded signal terminals for #28 to #12 AWG

Sensors: TS1:	#1-2-3-4.
TS2:	#5-6-7-8.
TS3:	#12-13-14-15.
Alarm relay:	#9-10-11.
Alarm reset:	#16-17.
Override input:	#18-19.

Factory programmable:

Note: You can use the default settings of the following features by selecting the appropriate program code as shown in tables 5-6 on pages 30-31.

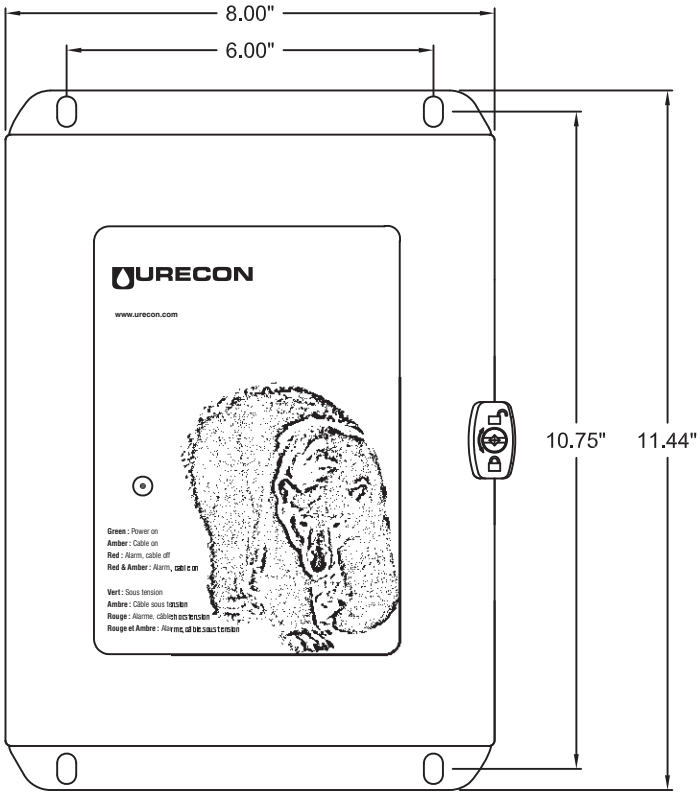
Auto-cycle : When the temperature controller is energised, and then at 24 hours intervals, the controller performs an auto-cycle test by turning on the load to measure the ground fault leakage current. If the measured ground fault current is above the set level, the ground fault current alarm is activated. Can be disabled at the factory upon special request.

Ground fault detection : Factory adjustable to trip and alarm or alarm only. Setting @ 30 or 100 ma.

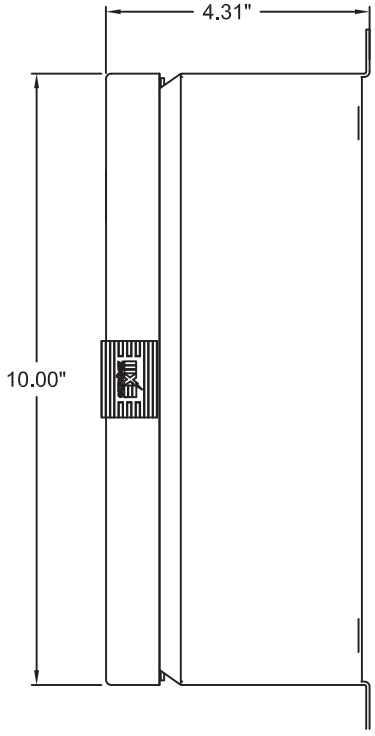
Remote override : The user may force the unit on/off via a remote dry contact. Factory adjustable to operate in timed (1-48 hours) or continuous mode.

Temperature control :	three 3-wire 100 Ω @ 0 °C Platinum RTD (alpha=0,00385 Ω/Ω/°C), lead compensated to 20 Ω per lead. or three 2-wire 2 252 Ω @ 25 °C NTC Thermistor.
Deadband :	1 to 5 °C *(1.8 to 9 °F).*
Control temperature setpoint range :	-5 to 75 °C *(23 to 167 °F).*
Low temperature alarm :	Feature can be enabled to provide low temperature alarm on TS1 and TS2.
Low temperature setpoint range :	-10 to 75 °C *(14 to 167 °F).*
High cable temperature :	The third temperature sensor (referred to as TS3) is used as a high cable temperature limit for plastic piping system protection. When Ts3 is enabled, the high limit feature will override demand for heat and shut off the load when a high cable temperature condition is reached.
High temperature setpoint range :	25 to +100 °C *(77 to +212 °F).*

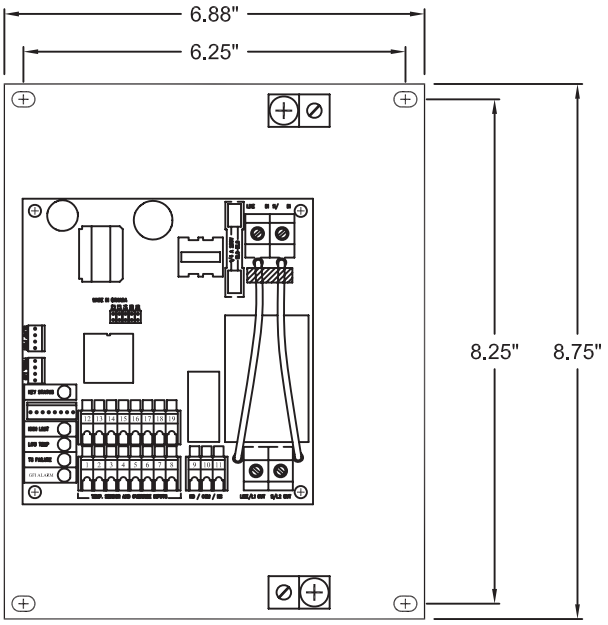
Electronic thermostat
UTC-2030-xx



FRONT VIEW



LEFT SIDE VIEW



BACKPLATE

- Use only 90 °C rated power cable.
- Use shielded, twisted, three-conductor wire for the extension of the RTD leads.
- Use shielded, twisted, two-conductor wire for the extension of the thermistor leads.
- Grounding terminals are provided for connection of system ground leads. Proper system grounding is required for safe and correct operation of the controller's protection feature.
- Shields on the temperature sensor wiring should be grounded only at the controller end using the appropriate terminals provided (# 4, 8 and 15).
- To minimize the risk of damages to the controller due to a cable fault, the integrity of the heating cable should be verified by:
  - Performing a high voltage insulation test.
  - Measuring the load resistance with an ohmmeter.
  - In both cases, the results should be recorded for future reference. (refer to Urecon's commissioning log).

Temperature sensor location:

- Install the temperature sensor(s) on the pipe wall and cover with aluminum foil tape to enhance heat transfer.
- The controlling sensor(s) is (are) to be taped directly to the pipe wall, 180° away from the heating cable.
- The controlling sensor(s) TS1 and TS2 (when enabled) should be located at the expected coldest point(s) of the piping system.
- If controlling a pipe which enters a heated building, the sensor(s) must be located at least 3 m *(10 ft)* away from the outside wall to avoid inaccurate temperature sensing.
- The high cable temperature sensor (TS3) is to be taped to an active heating zone of the heating cable (not to the cold lead) within the heat trace channel.
- Loop resistance should not exceed 40 ohms.
- Verify that the temperature sensor(s) is(are) wired correctly. Refer to the wiring diagram on page 32.

For HDPE pipes from Landfarm to CP1

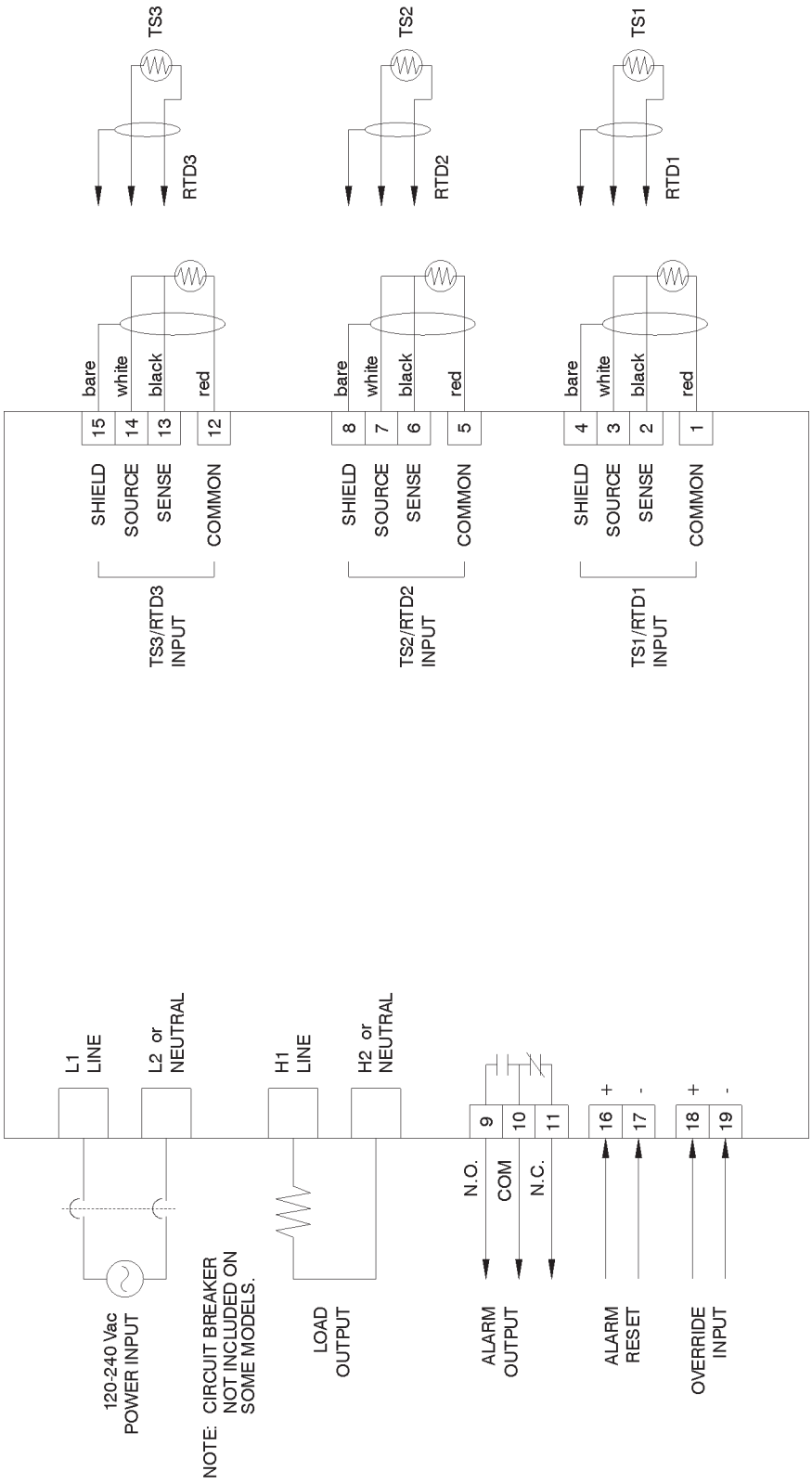
For HDPE pipes- water intake into Meliadine lake

TABLE 5 PROGRAM CODES FOR USE WITH STANDARD TEMPERATURE SENSOR (URTD-xx-y)

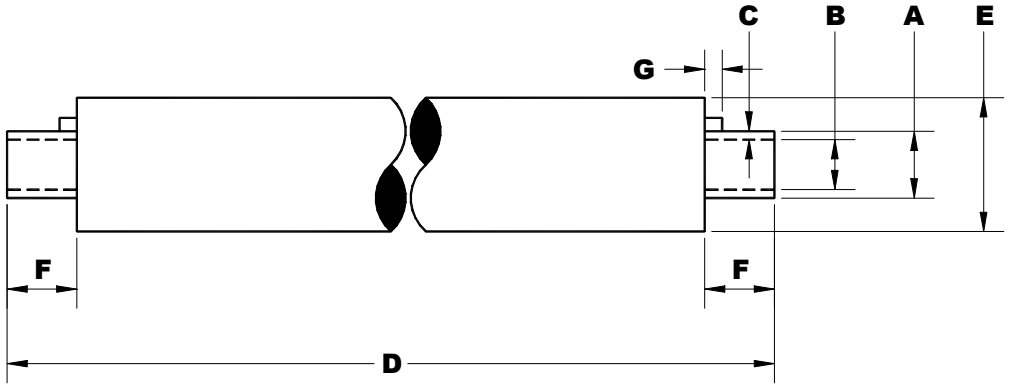
Program code # for use with 100 ohms RTD on plastic pipe		01	02	03	04	05	06	07	08	11	12	13	14	15	16	17	18
Function	**Range**																
TS 1 control setpoint	-5 to +75 degree C	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C
Low TS 1 alarm enabled	No or Yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Low TS 1 alarm setpoint	-10 to +75 degree C	-	1 °C	-	3 °C	-	5 °C	-	10 °C	-	1 °C	-	3 °C	-	5 °C	-	10 °C
TS 2 enabled	No or Yes	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
TS 2 control setpoint	-5 to +75 degree C	-	-	-	-	-	-	-	-	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C
Low TS 2 alarm enabled	No or Yes	-	-	-	-	-	-	-	-	no	yes	no	yes	no	yes	no	yes
Low TS 2 alarm setpoint	-10 to +75 degree C	-	-	-	-	-	-	-	-	-	1 °C	-	3 °C	-	5 °C	-	10 °C
TS 3 enabled	No or Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TS 3 high limit cutout	25 to 100 degree C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C
TS1 and TS 2 deadband	1 to 5 degree C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C
TS type	100 ohms RTD or 2252 ohms Thermistor	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD
Latch TS failure alarms	No or Yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
TS failure mode	Off or On	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on
Override input mode	Manual = 0 or Timed = 1 to 48 hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Override output state	Off or On	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on
Active override input state	Open or Closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed
Ground fault trip enabled	No or Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Ground fault alarm current level	30 or 100mA	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Auto-cycle	No or Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Program code # for use with 100 ohms RTD on metal pipe		21	22	23	24	25	26	27	28	31	32	33	34	35	36	37	38
Function	**Range**																
TS 1 control setpoint	-5 to +75 degree C	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C
Low TS 1 alarm enabled	No or Yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Low TS 1 alarm setpoint	-10 to +75 degree C	-	1 °C	-	3 °C	-	5 °C	-	10 °C	-	1 °C	-	3 °C	-	5 °C	-	10 °C
TS 2 enabled	No or Yes	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
TS 2 control setpoint	-5 to +75 degree C	-	-	-	-	-	-	-	-	3 °C	3 °C	5 °C	5 °C	10 °C	10 °C	15 °C	15 °C
Low TS 2 alarm enabled	No or Yes	-	-	-	-	-	-	-	-	no	yes	no	yes	no	yes	no	yes
Low TS 2 alarm setpoint	-10 to +75 degree C	-	-	-	-	-	-	-	-	-	1 °C	-	3 °C	-	5 °C	-	10 °C
TS 3 enabled	No or Yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
TS 3 high limit cutout	25 to 100 degree C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TS1 and TS 2 deadband	1 to 5 degree C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C	1 °C
TS type	100 ohms RTD or 2252 ohms Thermistor	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD	RTD
Latch TS failure alarms	No or Yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
TS failure mode	Off or On	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on
Override input mode	Manual = 0 or Timed = 1 to 48 hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Override output state	Off or On	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on	on
Active override input state	Open or Closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed
Ground fault trip enabled	No or Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Ground fault alarm current level	30 or 100mA	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Auto-cycle	No or Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Wiring Diagram



URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH HIGH DENSITY POLYETHYLENE CASING JACKET SHOP DRAWING



PIPE

Material :	HDPE
Nominal Diameter :	2”
Series/Class/Sch. :	DR-17
Joint type :	Butt Fused
Outside diameter “A” :	2.375”
Inside diameter “B” :	2.079”
Wall thickness “C” :	0.140”
Overall length “D” :	40ft

INSULATION

Thickness :	Nominal 2.5”
Outside diameter “E” :	8.00”
Cutback “F” :	9”
Mastic on ends :	No

TRACING

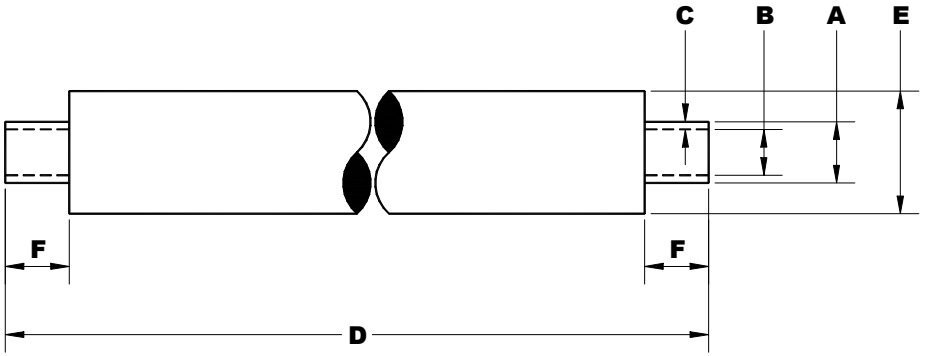
Number of trace conduit(s) :	1
Size of trace conduit(s) :	M (3/4”H x 7/8”W)
Location :	12 O’clock
Length “G” :	Standard 2”
Cable type :	C13-240
Watts/m :	13w/m
Voltage :	240V

JACKET

Type :	Seamless Casing
Material :	HDPE
Gauge or thickness :	0.175”
Color :	Black
UV inhibited :	Yes

URECON U.I.P.® PRE-INSULATED PIPE	
PROJECT	Agnico Meliadine
DATE	Feb. 20th, 2017.
CONTRACT NUMBER	20982

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH HIGH DENSITY POLYETHYLENE CASING JACKET SHOP DRAWING



PIPE

Material :	HDPE
Nominal Diameter :	20”
Series/Class/Sch. :	DR-17
Joint type :	Butt Fused
Outside diameter “A” :	20.00”
Inside diameter “B” :	17.056”
Wall thickness “C” :	1.176”
Overall length “D” :	40ft

INSULATION

Thickness :	Nominal 2”
Outside diameter “E” :	24.92”
Cutback “F” :	9”
Mastic on ends :	No

TRACING

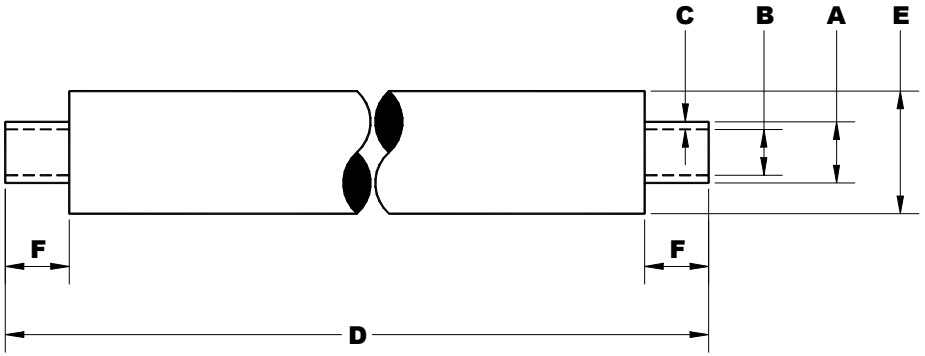
Number of trace conduit(s) :	n/a

JACKET

Type :	Seamless Casing
Material :	HDPE
Gauge or thickness :	0.225”
Color :	Black
UV inhibited :	Yes

URECON U.I.P.® PRE-INSULATED PIPE	
PROJECT	Agnico Meliadine
DATE	Feb. 20th, 2017.
QUOTE NUMBER	20982

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH HIGH DENSITY POLYETHYLENE CASING JACKET SHOP DRAWING



PIPE

Material :	HDPE
Nominal Diameter :	16”
Series/Class/Sch. :	DR-17
Joint type :	Butt Fused
Outside diameter “A” :	16.00”
Inside diameter “B” :	14.005”
Wall thickness “C” :	0.941”
Overall length “D” :	53ft

INSULATION

Thickness :	Nominal 2”
Outside diameter “E” :	20.90”
Cutback “F” :	9”
Mastic on ends :	No

TRACING

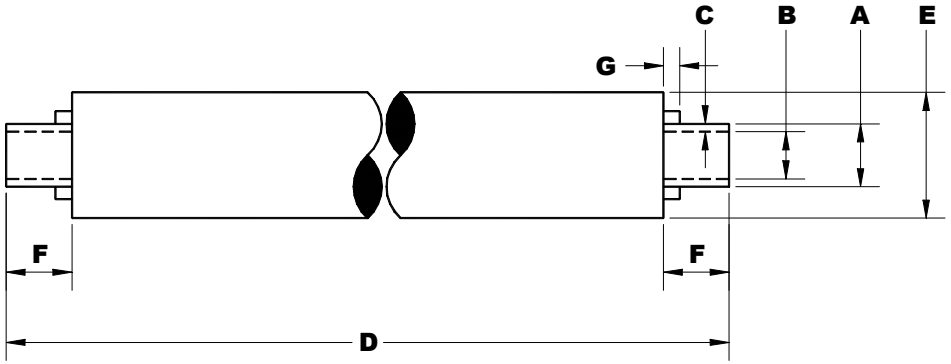
Number of trace conduit(s) :	n/a

JACKET

Type :	Seamless Casing
Material :	HDPE
Gauge or thickness :	0.200”
Color :	Black
UV inhibited :	Yes

URECON U.I.P.® PRE-INSULATED PIPE	
PROJECT	Agnico Meliadine
DATE	Feb. 20th, 2017.
CONTRACT NUMBER	20982

URECON PRE-INSULATED HIGH DENSITY POLYETHYLENE PIPE WITH HIGH DENSITY POLYETHYLENE CASING JACKET SHOP DRAWING



PIPE

Material :	HDPE
Nominal Diameter :	16”
Series/Class/Sch. :	DR-17
Joint type :	Butt Fused
Outside diameter “A” :	16.00”
Inside diameter “B” :	14.005”
Wall thickness “C” :	0.941”
Overall length “D” :	40ft

INSULATION

Thickness :	Nominal 3”
Outside diameter “E” :	22.17”
Cutback “F” :	9”
Mastic on ends :	No

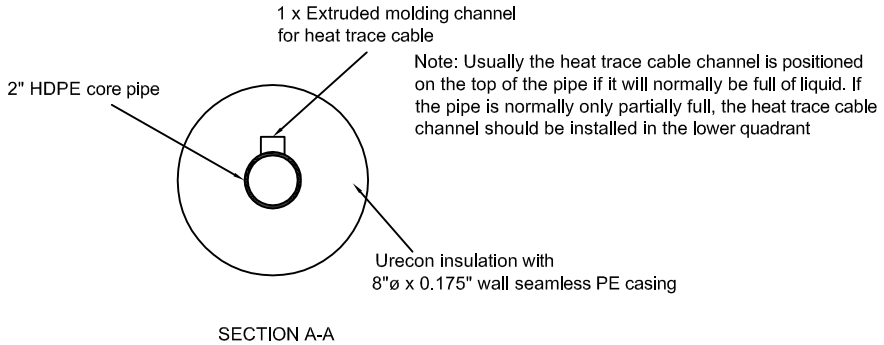
TRACING

Number of trace conduit(s) :	4 (3HTC, 1 Sensor)
Size of trace conduit(s) :	¾” Copper
Location :	12, 8,6,4 O’clock
Length “G” :	Standard 2”
Cable type :	C13-240
Watts/m-Voltage :	13w/m-240V

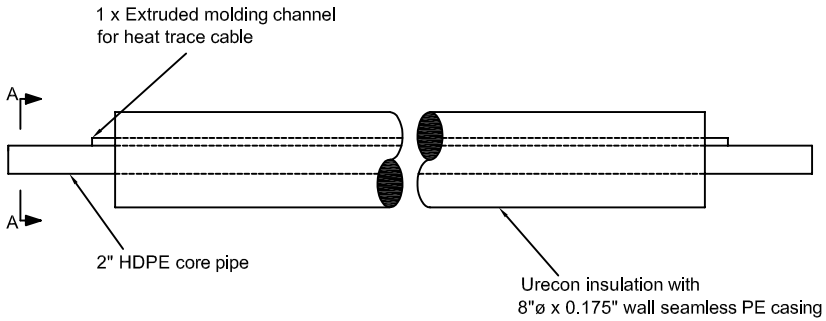
JACKET

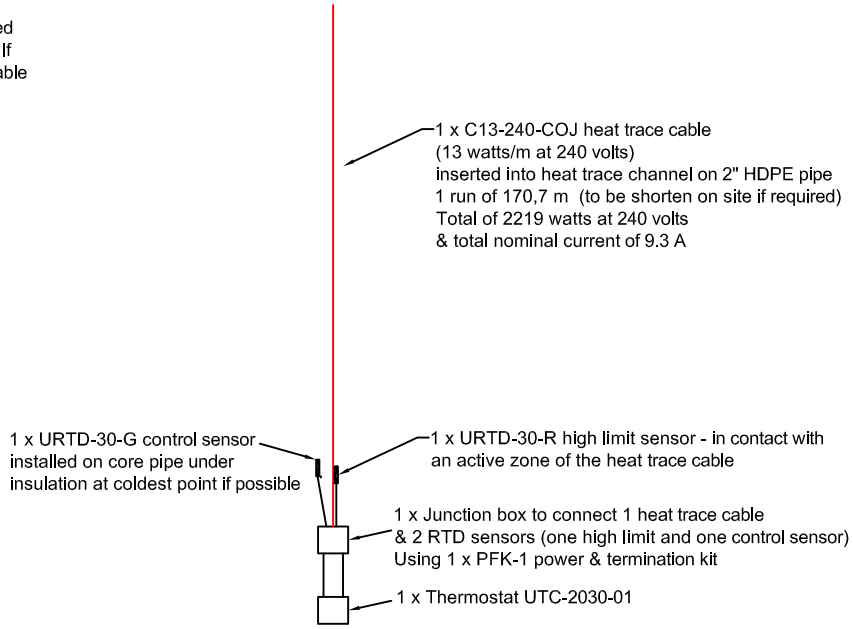
Type :	Seamless Casing
Material :	HDPE
Gauge or thickness :	0.200”
Color :	Black
UV inhibited :	Yes

URECON U.I.P.® PRE-INSULATED PIPE	
PROJECT	Agnico Meliadine
DATE	Feb. 20th, 2017.
CONTRACT NUMBER	20982



SECTION A-A





Heat trace schematic

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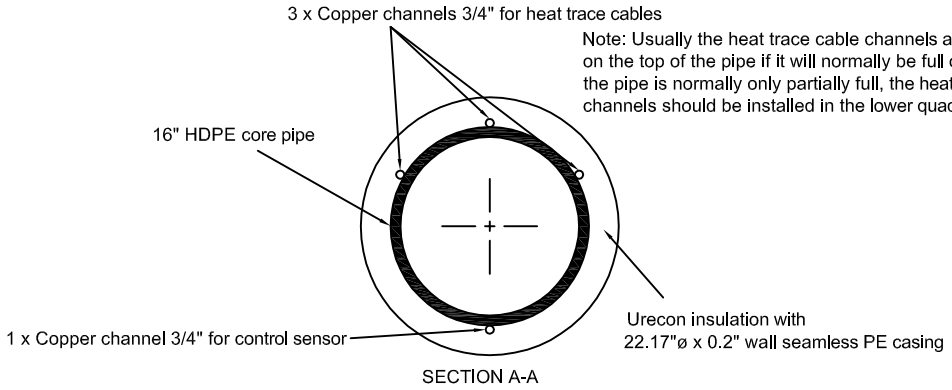
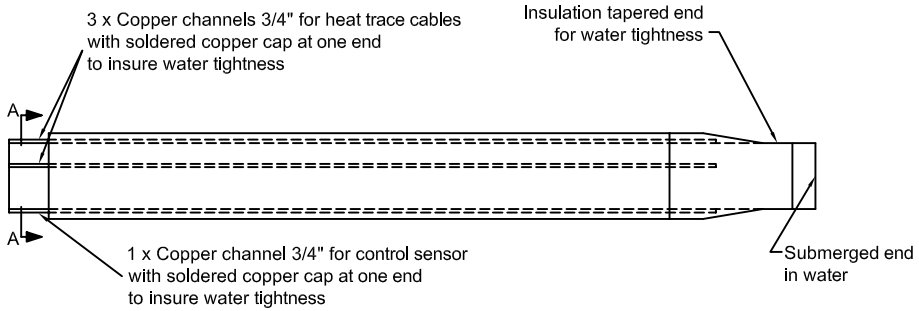
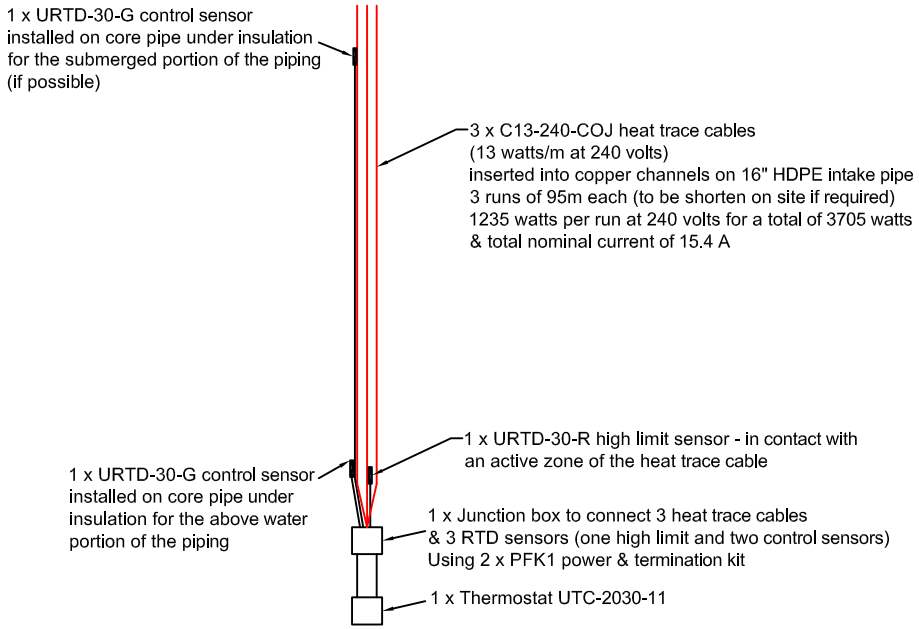
Calmar, Alberta Tel. : (780) 985-3636
urecon@urecon.com • www.urecon.com

PROJECT:	MELIADINE Agnico-Eagle
DESCRIPTION:	2"ø HDPE pipe - Landfarm to CP1 Pond
Format:	Contrat :
REV	
Scale: NTS	Feb 27, 2017
Dwg #	M-02-01

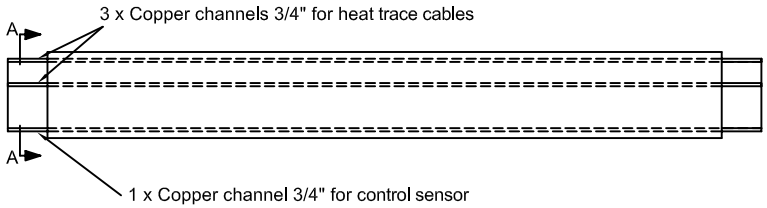




16"ø intake line - termination length



Heat trace schematic



Intake line - intermediate sections (4 lengths required)

Note: Insulated pipe joints for submerged portion of piping should consist of preformed polyisocyanurate foam and Urecon Mec-Seal® for more demanding waterproof application. The insulation shall be pre-grooved on the inside to accommodate heat trace cables.

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PROJECT:	MELIADINE Agnico-Eagle
DESCRIPTION:	16"ø HDPE Intake line
Format:	Contrat :
REV	
Scale: NTS	Feb 27, 2017
Dwg #	M-16-01

APPENDIX D

TETRA TECH GENERAL CONDITIONS

GENERAL CONDITIONS

DESIGN REPORT

This report incorporates and is subject to these “General Conditions”.

1.1 USE OF REPORT AND OWNERSHIP

This Design Report pertains to a specific site, a specific development, and a specific scope of work. The Design Report may include plans, drawings, profiles and other support documents that collectively constitute the Design Report. The Report and all supporting documents are intended for the sole use of TETRA TECH’s Client. TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses or other contents of the Design Report when it is used or relied upon by any party other than TETRA TECH’s Client, unless authorized in writing by TETRA TECH. Any unauthorized use of the Design Report is at the sole risk of the user.

All reports, plans, and data generated by TETRA TECH during the performance of the work and other documents prepared by TETRA TECH are considered its professional work product and shall remain the copyright property of TETRA TECH.

1.2 ALTERNATIVE REPORT FORMAT

Where TETRA TECH submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed TETRA TECH’s instruments of professional service); only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by TETRA TECH shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of TETRA TECH’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except TETRA TECH. TETRA TECH’s instruments of professional service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

1.3 ENVIRONMENTAL AND REGULATORY ISSUES

Unless so stipulated in the Design Report, TETRA TECH was not retained to investigate, address or consider, and has not investigated, addressed or considered any environmental or regulatory issues associated with the project specific design.

1.4 CALCULATIONS AND DESIGNS

TETRA TECH has undertaken design calculations and has prepared project specific designs in accordance with terms of reference that were previously set out in consultation with, and agreement of, TETRA TECH’s client. These designs have been prepared to a standard that is consistent with industry practice. Notwithstanding, if any error or omission is detected by TETRA TECH’s Client or any party that is authorized to use the Design Report, the error or omission should be immediately drawn to the attention of TETRA TECH.

1.5 GEOTECHNICAL CONDITIONS

A Geotechnical Report is commonly the basis upon which the specific project design has been completed. It is incumbent upon TETRA TECH’s Client, and any other authorized party, to be knowledgeable of the level of risk that has been incorporated into the project design, in consideration of the level of the geotechnical information that was reasonably acquired to facilitate completion of the design.

If a Geotechnical Report was prepared for the project by TETRA TECH, it will be included in the Design Report. The Geotechnical Report contains General Conditions that should be read in conjunction with these General Conditions for the Design Report.

1.6 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of the report, TETRA TECH may rely on information provided by persons other than the Client. While TETRA TECH endeavours to verify the accuracy of such information when instructed to do so by the Client, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information which may affect the report.