

Document Title: Electrical Zone Drawing for 285503HD Tank

Document Number: 25472-101-V2A-MTNF-Z0018

Revision Number: 2

PO Number: 4500337398

Material Requisition Number: 25472-101-MRA-MTNF-Z0001

TAG #	122-LKSDE-B0-OST-01
	123-MTRSP-B0-OST-01
	124-OYENS-B0-OST-01
	127-PIAPT-B0-OST-01
	128-GRSSY-B0-OST-01



Westeel a division of Ag Growth International Inc.
 450 Desautels Street
 Winnipeg, Manitoba
 Canada, R2H 3E6
 1-800-665-2099

Rev No.	Rev Date yyyy-mm-dd	Reason for Issue	Contractor Originator	Contractor Reviewer	Contractor Approver
2	Nov 10, 2020	For Approval	Westeel	Scott K	Scott K
1	Oct 6, 2020	For Approval	Westeel	Scott K	Scott K

CODE 1: Work may proceed.



Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods or materials developed or selected by the supplier and does not relieve the supplier from full compliance with contractual obligations.

Name: Halyna Hutsulyak

Date: 11/18/2020

Electrical Zone Drawing

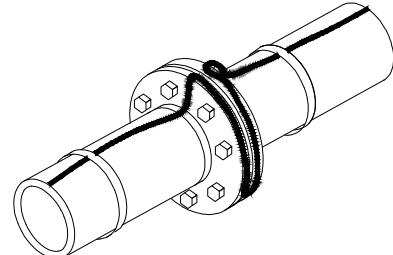
Tag # 122-LKSDE-B0-OST-01

DRAWING NO. EHT-KOA004-122-LKSDE-01

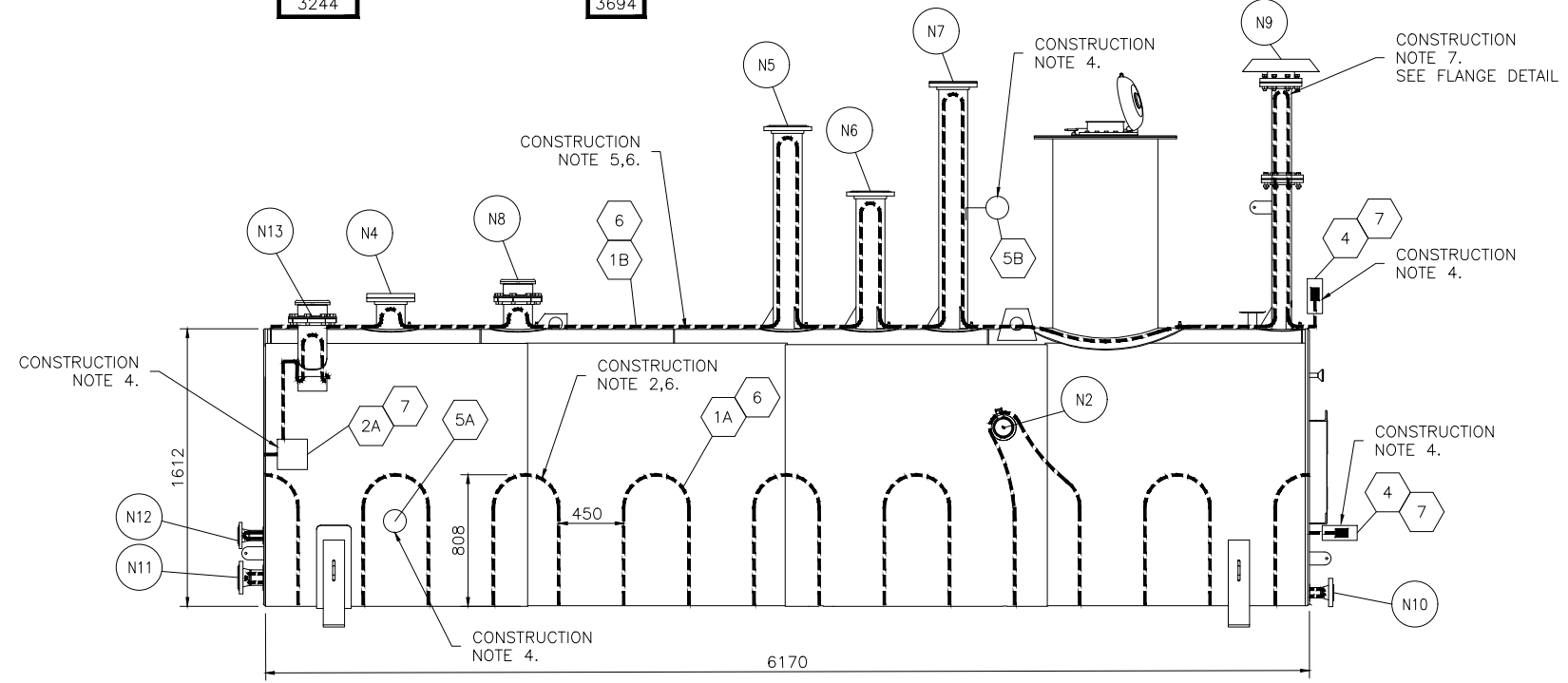
REV. 00
SHT. 01
CAD FILE: EHT-KOA004-122-LKSDE-01_R00.DWG

EHT CABLE BILL OF MATERIAL					ELECTRIC HEAT TRACE DATA								PIPE DATA			INSULATION			EHT COMPONENT BILL OF MATERIAL					ALLOWANCE TABLE									
ITEM	LENGTH (m)	HEATER TAG NO.	PART NO.	PUMP STN. NO.	TRACE RATIO	HEATLOSS (W)	OUTPUT (W/m)	CABLE VOLTAGE	OPER. AMPS	INRUSH AMPS	POWER (W)	ACTUAL S.F.(%)	SHEATH TEMP.(°C)	SIZE (in)	LINE NO.	CLASS	LENGTH (m)	TYPE	SIZE (in)	THK (mm)	K FACTOR (W/m °C)	ITEM	QTY.	UNITS	TAG NO.	PART NO.	DESCRIPTION	PUMP STN. NO.	SIZE (in)	QTY.	DESCRIPTION	LENGTH PER (m)	
1A	61	EHT-122-LKSDE-01-1A	BSX-10-2	PS02	-	2084	34.3	208	11.4	23.8	2375	42	N/A	-					MW	-	38	0.0318	2A	1	EACH	JB-122-LKSDE-01-1	ZP-TERMINATOR KIT	POWER CONNECTION KIT	PS02	2	3	FLANGE PAIR - N3, N10, N12	0.70
1B	34	EHT-122-LKSDE-02-1A	BSX-10-2	PS02	2	1160	34.3	208	6.4	13.3	1319	44	N/A	-					MW	-	38	0.0318	4	2	EACH	-	ZE-TERMINATOR KIT	END TERMINATION KIT	PS02	3	2	FLANGE PAIR - N2, N11	0.70
																							5A	1	EACH	RTD-122-LKSDE-01-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS02	4	2	FLANGE PAIR - N1, N9	0.85
																							5B	1	EACH	RTD-122-LKSDE-02-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS02	6	6	FLANGE PAIR N4, N5, N6, N7, N8, N13	1.00
																							6	3	ROLLS		AL-30L	ALUMINUM TAPE	PS02				
																							7	3	EACH		PETK-1D KIT	POWER/END TERM. KIT	PS02				
																							8	1	PKG		CL	CAUTION LABELS 25 / PKG	PS02				

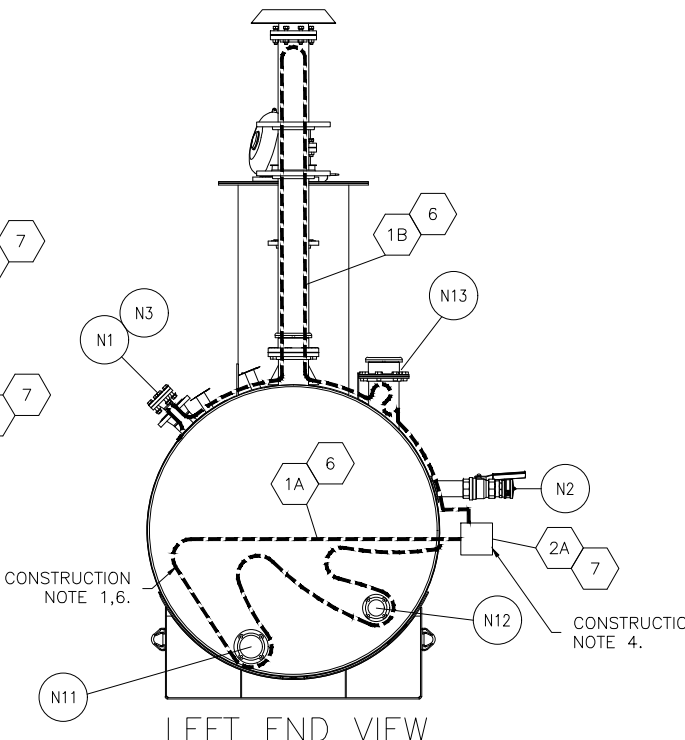
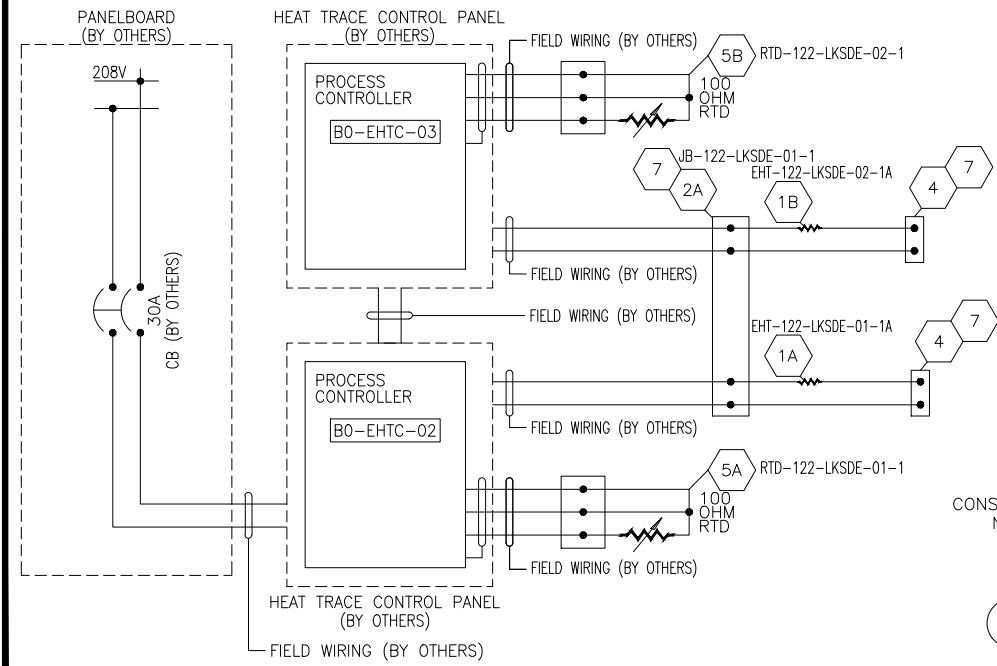
- CONSTRUCTION NOTES:**
- APPROXIMATELY 7.8m OF HEATER CABLE TO BE INSTALLED ON THE LEFT END OF THE SUMP TANK INCLUDING NOZZLES N11 AND N12.
 - ALLOW 16 PASSES OF HEATER CABLE MIDPOINT TO MIDPOINT AT APPROXIMATELY 450mm SPACING ON THE BODY OF THE TANK.
 - APPROXIMATELY 5.7m OF HEATER CABLE TO BE INSTALLED ON THE RIGHT END OF THE SUMP TANK INCLUDING NOZZLE N10.
 - POWER/END CONNECTION KITS AND RTD TO BE SECURED TO THE SUMP TANK WITH STAINLESS STEEL BANDING.
 - APPROXIMATELY 34m OF HEATER CABLE TO BE INSTALLED ON NOZZLES.
 - APPLY ALUMINUM TAPE AL-30L ALONG THE ENTIRE LENGTH OF THE HEATER CABLE TO SECURE HEATING CABLE TO THE SUMP TANK.
 - COIL 4.0m OF HEATER CABLE TO BE INSTALLED ON NOZZLE N9 FOR ADDITIONAL PIPING. (SEE ISOMETRIC FLANGE DETAIL)



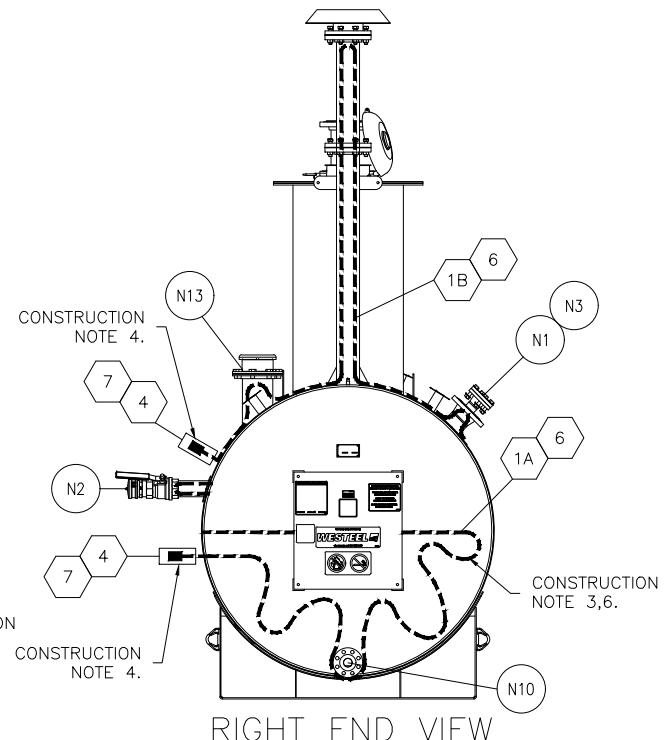
ISOMETRIC FLANGE DETAIL



ELEVATION VIEW



LEFT END VIEW



RIGHT END VIEW

NOTES

- ALL UNITS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
- THE HEATLOSS REQUIRED OF THE TANK IS CALCULATED AS FOR THE WHOLE TANK BODY IN WATTS. A MINIMUM SAFETY FACTOR OF 25% HAS BEEN INCLUDED IN THIS DESIGN.
- EHT CABLE EHT-122-LKSDE-02-1A IS TO BE MAINTAINED AT 8°C WITH A 30 MINUTE START-UP DELAY.

TEMPERATURE DATA		CIRCUIT DATA	
MAINTAIN TEMP.:	NOTE 3 10°C	CONTROL PANEL:	BY OTHERS
OPERATING TEMP.:	NOTE 3 10°C	CONTROL POINT:	CKT 1 / CKT 2
MAX. EXPOSURE TEMP.:	50°C	CONTROL MODE:	ON/OFF SSR
MIN. START-UP TEMP.:	-29°C	PANELBOARD:	BY OTHERS
MIN. AMBIENT TEMP.:	-40°C	CIRCUIT BREAKER:	BY OTHERS
AREA CLASSIFICATION:	CL1 ZONE1 GRP IIA	CIRCUIT BREAKER SIZE:	30A
A.I.T./T-CLASS:	200°C / T3		

LINE NUMBERS

S.N. 672005652

REFERENCE DRAWINGS

DRAWING TITLE	DRAWING NUMBER
VENDOR DRAWINGS	285503HD 25011558
CONTROLLER SETPOINT	BY OTHERS
PANEL SCHEDULE	BY OTHERS
P&ID	LDT

PIPING ISOMETRICS

NO.	DATE	ISSUED FOR	BY	CHK	ENG	APP
00	06 NOV 20	ISSUED FOR CONSTRUCTION	KP	DF	RA	RA
REV.	dd mmm yy	DESCRIPTION	BY	CHK	ENG	APP

MSGP
HEAT MANAGEMENT SOLUTIONS

TRANSCANADA PIPELINES LTD.

THIS DRAWING IS PREPARED SOLELY FOR THE USE OF THE CONTRACTUAL CUSTOMER. IT MAY NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART IN ANY WAY WITHOUT THE WRITTEN PERMISSION OF TRANSCANADA. USE OF THIS DRAWING IS PERMITTED ONLY FOR THE PURPOSE FOR WHICH IT IS ISSUED BY TRANSCANADA AND IT MUST BE RETURNED IMMEDIATELY UPON REQUEST.

PUMP STATION PS02
ELECTRIC HEAT TRACE
SUMP TANK 122-LKSDE-B0-OST-01

SCALE:	DRAWING NO.:	SHT.:	REV.:
NTS	EHT-KOA004-122-LKSDE-01	01	00

Electrical Zone Drawing

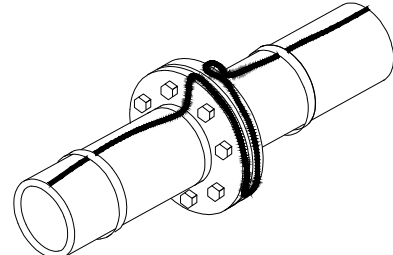
Tag # 123-MTRSP-B0-OST-01

EHT CABLE BILL OF MATERIAL					ELECTRIC HEAT TRACE DATA									PIPE DATA			INSULATION			EHT COMPONENT BILL OF MATERIAL					ALLOWANCE TABLE							
ITEM	LENGTH (m)	HEATER TAG NO.	PART NO.	PUMP STN. NO.	TRACE RATIO	HEATLOSS (W)	OUTPUT (W/m)	CABLE VOLTAGE	OPER. AMPS	INRUSH AMPS	POWER (W)	ACTUAL S.F.(%)	SHEATH TEMP.(°C)	SIZE (in)	LINE NO.	CLASS	LENGTH (m)	TYPE	SIZE (in)	THK (mm)	K FACTOR (W/m °C)	ITEM	QTY.	UNITS	TAG NO.	PART NO.	DESCRIPTION	PUMP STN. NO.	SIZE (in)	QTY.	DESCRIPTION	LENGTH PER (m)
1A	61	EHT-123-MTRSP-01-1A	BSX-10-2	PS03	-	2084	34.3	208	11.4	23.8	2375	42	N/A	-				MW	-	38	0.0318	2A	1	EACH	JB-123-MTRSP-01-1	ZP-TERMINATOR KIT	POWER CONNECTION KIT	PS03	2	3	FLANGE PAIR - N3, N10, N12	0.70
1B	34	EHT-123-MTRSP-02-1A	BSX-10-2	PS03	2	1160	34.3	208	6.4	13.3	1319	44	N/A	-				MW	-	38	0.0318	4	2	EACH	-	ZE-TERMINATOR KIT	END TERMINATION KIT	PS03	3	2	FLANGE PAIR - N2, N11	0.70
																						5A	1	EACH	RTD-123-MTRSP-01-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS03	4	2	FLANGE PAIR - N1, N9	0.85
																						5B	1	EACH	RTD-123-MTRSP-02-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS03	6	6	FLANGE PAIR N4, N5, N6, N7, N8, N13	1.00
																						6	3	ROLLS		AL-30L	ALUMINUM TAPE	PS03				
																						7	3	EACH		PETK-1D KIT	POWER/END TERM. KIT	PS03				
																						8	1	PKG		CL	CAUTION LABELS 25 / PKG	PS03				

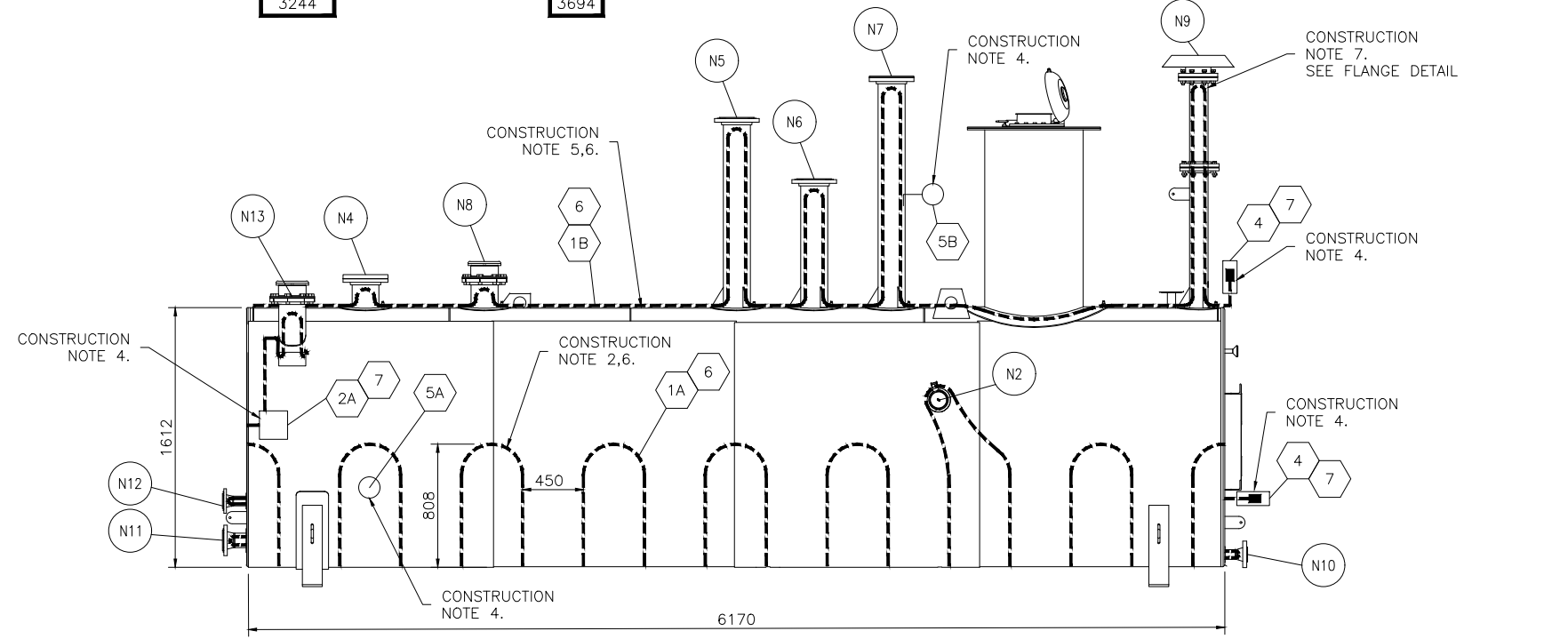
3244 3694

CONSTRUCTION NOTES:

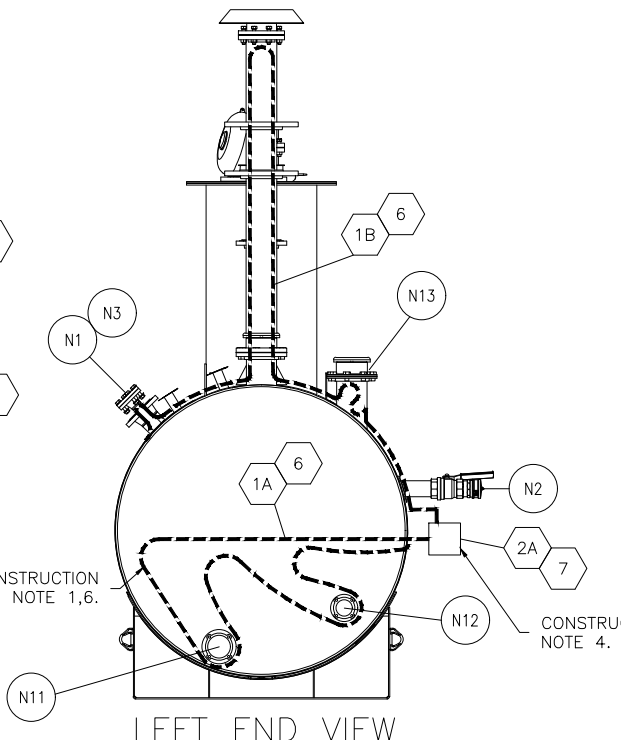
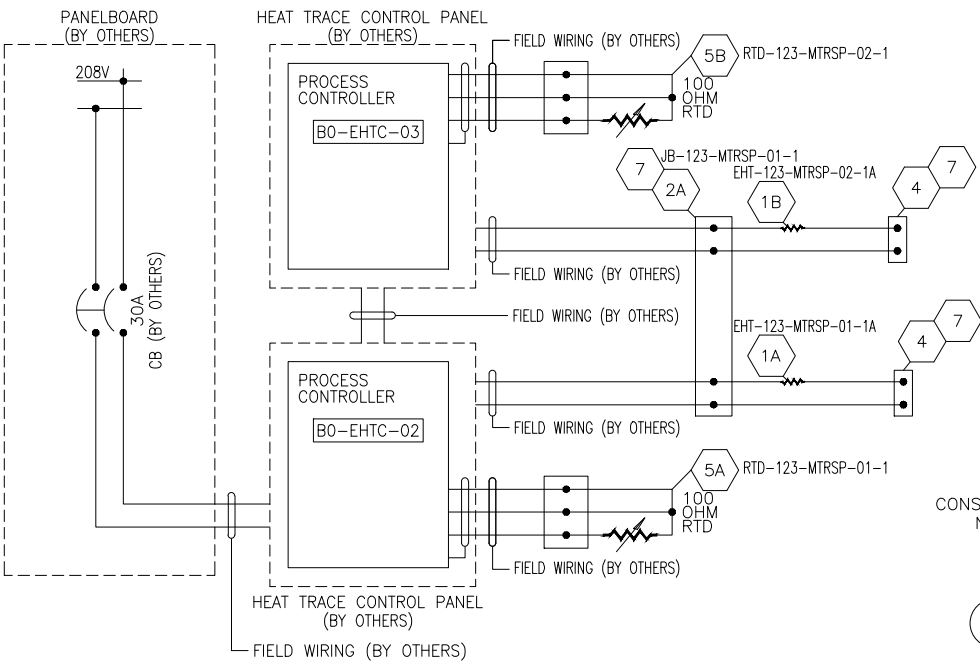
- APPROXIMATELY 7.8m OF HEATER CABLE TO BE INSTALLED ON THE LEFT END OF THE SUMP TANK INCLUDING NOZZLES N11 AND N12.
- ALLOW 16 PASSES OF HEATER CABLE MIDPOINT TO MIDPOINT AT APPROXIMATELY 450mm SPACING ON THE BODY OF THE TANK.
- APPROXIMATELY 5.7m OF HEATER CABLE TO BE INSTALLED ON THE RIGHT END OF THE SUMP TANK INCLUDING NOZZLE N10.
- POWER/END CONNECTION KITS AND RTD TO BE SECURED TO THE SUMP TANK WITH STAINLESS STEEL BANDING.
- APPROXIMATELY 34m OF HEATER CABLE TO BE INSTALLED ON NOZZLES.
- APPLY ALUMINUM TAPE AL-30L ALONG THE ENTIRE LENGTH OF THE HEATER CABLE TO SECURE HEATING CABLE TO THE SUMP TANK.
- COIL 4.0m OF HEATER CABLE TO BE INSTALLED ON NOZZLE N9 FOR ADDITIONAL PIPING. (SEE ISOMETRIC FLANGE DETAIL)



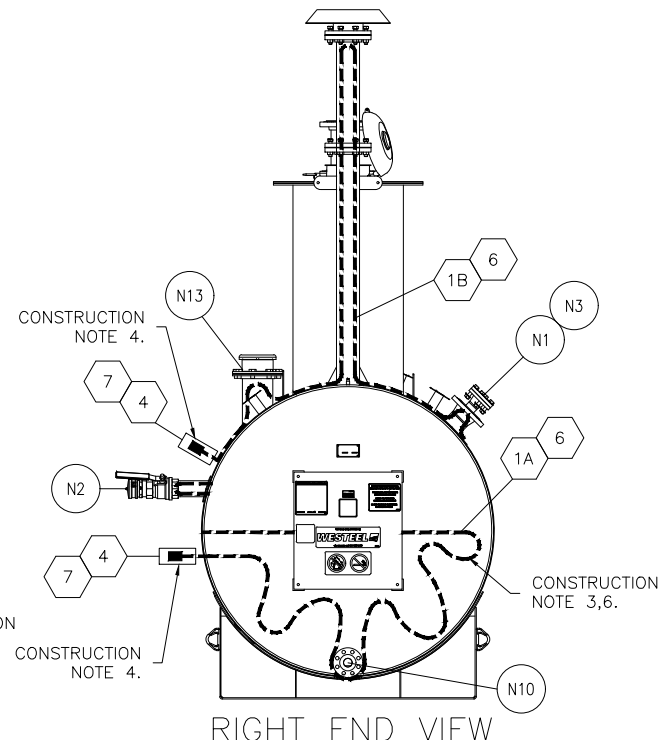
ISOMETRIC FLANGE DETAIL



ELEVATION VIEW



LEFT END VIEW



RIGHT END VIEW

NOTES

- ALL UNITS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
- THE HEATLOSS REQUIRED OF THE TANK IS CALCULATED AS FOR THE WHOLE TANK BODY IN WATTS. A MINIMUM SAFETY FACTOR OF 25% HAS BEEN INCLUDED IN THIS DESIGN.
- EHT CABLE EHT-123-MTRSP-02-1A IS TO BE MAINTAINED AT 8°C WITH A 30 MINUTE START-UP DELAY.

TEMPERATURE DATA		CIRCUIT DATA	
MAINTAIN TEMP.:	NOTE 3 10°C	CONTROL PANEL:	BY OTHERS
OPERATING TEMP.:	NOTE 3 10°C	CONTROL POINT:	CKT 1 / CKT 2
MAX. EXPOSURE TEMP.:	50°C	CONTROL MODE:	ON/OFF SSR
MIN. START-UP TEMP.:	-29°C	PANELBOARD:	BY OTHERS
MIN. AMBIENT TEMP.:	-40°C	CIRCUIT BREAKER:	BY OTHERS
AREA CLASSIFICATION:	CL1 ZONE1 GRP IIA	CIRCUIT BREAKER SIZE:	30A
A.I.T./T-CLASS:	200°C / T3		

LINE NUMBERS
S.N. 672005653

REFERENCE DRAWINGS	
DRAWING TITLE	DRAWING NUMBER
VENDOR DRAWINGS	285503HD 25011558
CONTROLLER SETPOINT	BY OTHERS
PANEL SCHEDULE	BY OTHERS
P&ID	LDT

PIPING ISOMETRICS									
00	06	NOV	20	ISSUED FOR CONSTRUCTION					
REV.	dd	mm	yy	DATE	DESCRIPTION	BY	CHK	ENG	APP

MSGP
HEAT MANAGEMENT SOLUTIONS

TRANSCANADA PIPELINES LTD.

THIS DRAWING IS PREPARED SOLELY FOR THE USE OF THE CONTRACTUAL CUSTOMER. IT MAY NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART IN ANY WAY WITHOUT THE WRITTEN PERMISSION OF TRANSCANADA. USE OF THIS DRAWING IS PERMITTED ONLY FOR THE PURPOSE FOR WHICH IT IS ISSUED BY TRANSCANADA AND IT MUST BE RETURNED IMMEDIATELY UPON REQUEST.

PUMP STATION PS03
ELECTRIC HEAT TRACE
SUMP TANK 123-MTRSP-B0-OST-01

SCALE: NTS DRAWING NO.: EHT-KOA004-123-MTRSP-01 SHT.: 01 REV.: 00

Electrical Zone Drawing

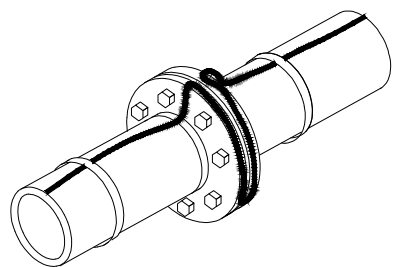
Tag # 124-OYENS-B0-OST-01

EHT CABLE BILL OF MATERIAL					ELECTRIC HEAT TRACE DATA								PIPE DATA			INSULATION			EHT COMPONENT BILL OF MATERIAL					ALLOWANCE TABLE									
ITEM	LENGTH (m)	HEATER TAG NO.	PART NO.	PUMP STN. NO.	TRACE RATIO	HEATLOSS (W)	OUTPUT (W/m)	CABLE VOLTAGE	OPER. AMPS	INRUSH AMPS	POWER (W)	ACTUAL S.F.(%)	SHEATH TEMP.(°C)	SIZE (in)	LINE NO.	CLASS	LENGTH (m)	TYPE	SIZE (in)	THK (mm)	K FACTOR (W/m °C)	ITEM	QTY.	UNITS	TAG NO.	PART NO.	DESCRIPTION	PUMP STN. NO.	SIZE (in)	QTY.	DESCRIPTION	LENGTH PER (m)	
1A	61	EHT-124-OYENS-01-1A	BSX-10-2	PS04	-	2084	34.3	208	11.4	23.8	2375	42	N/A	-					MW	-	38	0.0318	2A	1	EACH	JB-124-OYENS-01-1	ZP-TERMINATOR KIT	POWER CONNECTION KIT	PS04	2	3	FLANGE PAIR - N3, N10, N12	0.70
1B	34	EHT-124-OYENS-02-1A	BSX-10-2	PS04	2	1160	34.3	208	6.4	13.3	1319	44	N/A	-					MW	-	38	0.0318	4	2	EACH	-	ZE-TERMINATOR KIT	END TERMINATION KIT	PS04	3	2	FLANGE PAIR - N2, N11	0.70
											NOTE 2.																						
																							5A	1	EACH	RTD-124-OYENS-01-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS04	4	2	FLANGE PAIR - N1, N9	0.85
																							5B	1	EACH	RTD-124-OYENS-02-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS04	6	6	FLANGE PAIR N4, N5, N6, N7, N8, N13	1.00
																							6	3	ROLLS		AL-30L	ALUMINUM TAPE	PS04				
																							7	3	EACH		PETK-1D KIT	POWER/END TERM. KIT	PS04				
																							8	1	PKG		CL	CAUTION LABELS 25 / PKG	PS04				

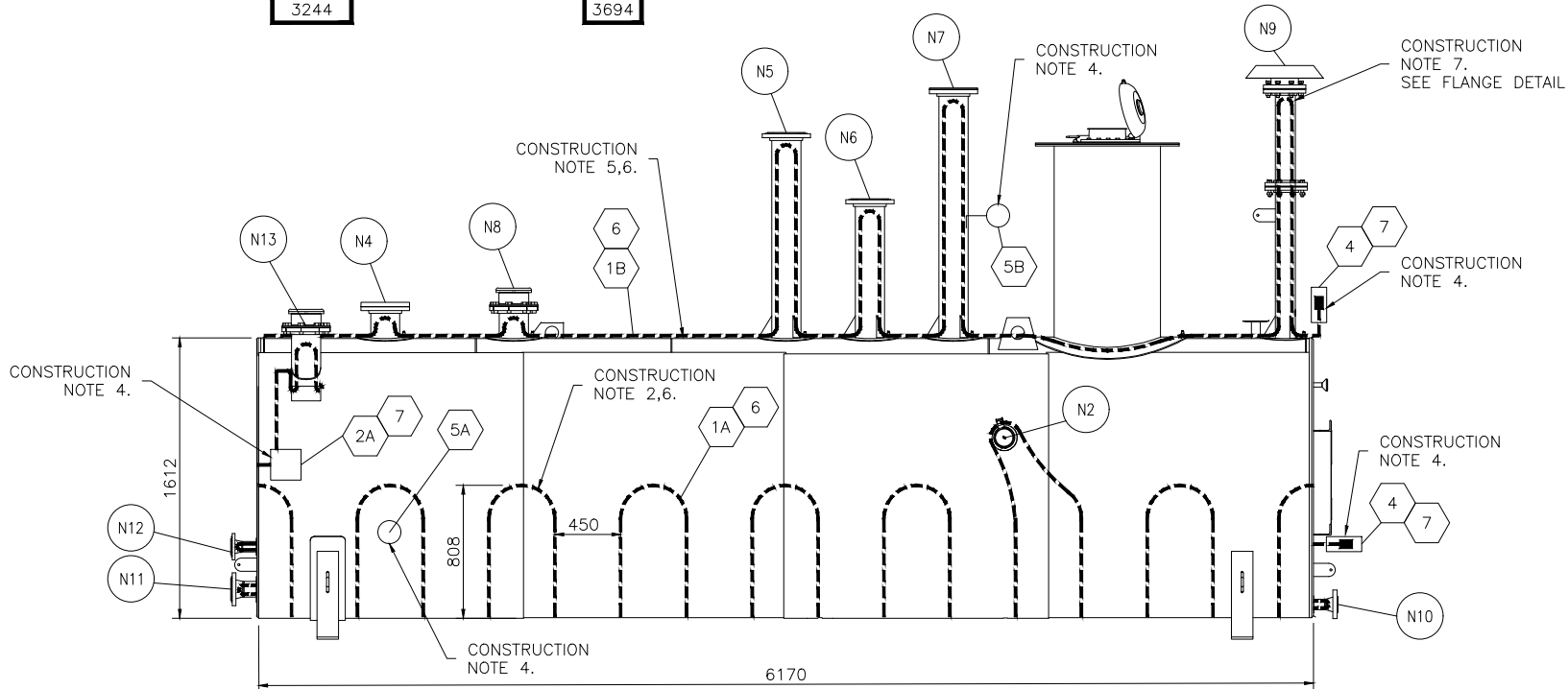
3244 3694

CONSTRUCTION NOTES:

- APPROXIMATELY 7.8m OF HEATER CABLE TO BE INSTALLED ON THE LEFT END OF THE SUMP TANK INCLUDING NOZZLES N11 AND N12.
- ALLOW 16 PASSES OF HEATER CABLE MIDPOINT TO MIDPOINT AT APPROXIMATELY 450mm SPACING ON THE BODY OF THE TANK.
- APPROXIMATELY 5.7m OF HEATER CABLE TO BE INSTALLED ON THE RIGHT END OF THE SUMP TANK INCLUDING NOZZLE N10.
- POWER/END CONNECTION KITS AND RTD TO BE SECURED TO THE SUMP TANK WITH STAINLESS STEEL BANDING.
- APPROXIMATELY 34m OF HEATER CABLE TO BE INSTALLED ON NOZZLES.
- APPLY ALUMINUM TAPE AL-30L ALONG THE ENTIRE LENGTH OF THE HEATER CABLE TO SECURE HEATING CABLE TO THE SUMP TANK.
- COIL 4.0m OF HEATER CABLE TO BE INSTALLED ON NOZZLE N9 FOR ADDITIONAL PIPING. (SEE ISOMETRIC FLANGE DETAIL)



ISOMETRIC FLANGE DETAIL



ELEVATION VIEW

NOTES

- ALL UNITS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
- THE HEATLOSS REQUIRED OF THE TANK IS CALCULATED AS FOR THE WHOLE TANK BODY IN WATTS. A MINIMUM SAFETY FACTOR OF 25% HAS BEEN INCLUDED IN THIS DESIGN.
- EHT CABLE EHT-124-OYENS-02-1A IS TO BE MAINTAINED AT 8°C WITH A 30 MINUTE START-UP DELAY.

TEMPERATURE DATA		CIRCUIT DATA	
MAINTAIN TEMP.:	NOTE 3 10°C	CONTROL PANEL:	BY OTHERS
OPERATING TEMP.:	NOTE 3 10°C	CONTROL POINT:	CKT 1 / CKT 2
MAX. EXPOSURE TEMP.:	50°C	CONTROL MODE:	ON/OFF SSR
MIN. START-UP TEMP.:	-29°C	PANELBOARD:	BY OTHERS
MIN. AMBIENT TEMP.:	-40°C	CIRCUIT BREAKER:	BY OTHERS
AREA CLASSIFICATION:	CL1 ZONE.1 GRP IIA	CIRCUIT BREAKER SIZE:	30A
A.I.T./T-CLASS:	200°C / T3		

LINE NUMBERS

S.N. 672005950

REFERENCE DRAWINGS

DRAWING TITLE	DRAWING NUMBER
VENDOR DRAWINGS	285503HD 25011558
CONTROLLER SETPOINT	BY OTHERS
PANEL SCHEDULE	BY OTHERS
P&ID	LDT

PIPING ISOMETRICS

REV.	DATE	DESCRIPTION	BY	CHK	ENG	APP
00	06 NOV 20	ISSUED FOR CONSTRUCTION	KP	DF	RA	RA

TRANSCANADA PIPELINES LTD.
 HEAT MANAGEMENT SOLUTIONS

THIS DRAWING IS PREPARED SOLELY FOR THE USE OF THE CONTRACTUAL CUSTOMER. IT MAY NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART IN ANY WAY WITHOUT THE WRITTEN PERMISSION OF TRANSCANADA. USE OF THIS DRAWING IS PERMITTED ONLY FOR THE PURPOSE FOR WHICH IT IS ISSUED BY TRANSCANADA AND IT MUST BE RETURNED IMMEDIATELY UPON REQUEST.

PUMP STATION PS04
 ELECTRIC HEAT TRACE
 SUMP TANK 124-OYENS-B0-OST-01

SCALE: NTS	DRAWING NO.: EHT-KOA004-124-OYENS-01	SHT.: 01	REV.: 00
------------	--------------------------------------	----------	----------

Electrical Zone Drawing

Tag # 127-PIAPT-B0-OST-01

DRAWING NO. EHT-KOA004-127-PIAPT-01

REV. 01

REV. 00

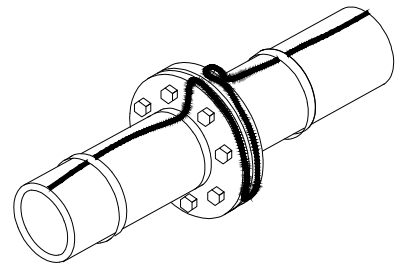
EHT CABLE BILL OF MATERIAL					ELECTRIC HEAT TRACE DATA								PIPE DATA			INSULATION			EHT COMPONENT BILL OF MATERIAL					ALLOWANCE TABLE									
ITEM	LENGTH (m)	HEATER TAG NO.	PART NO.	PUMP STN. NO.	TRACE RATIO	HEATLOSS (W)	OUTPUT (W/m)	CABLE VOLTAGE	OPER. AMPS	INRUSH AMPS	POWER (W)	ACTUAL S.F.(%)	SHEATH TEMP.(°C)	SIZE (in)	LINE NO.	CLASS	LENGTH (m)	TYPE	SIZE (in)	THK (mm)	K FACTOR (W/m °C)	ITEM	QTY.	UNITS	TAG NO.	PART NO.	DESCRIPTION	PUMP STN. NO.	SIZE (in)	QTY.	DESCRIPTION	LENGTH PER (m)	
1A	61	EHT-127-PIAPT-01-1A	BSX-10-2	PS07	-	2084	34.3	208	11.4	23.8	2375	42	N/A	-					MW	-	38	0.0318	2A	1	EACH	JB-127-PIAPT-01-1	ZP-TERMINATOR KIT	POWER CONNECTION KIT	PS07	2	3	FLANGE PAIR - N3, N10, N12	0.70
1B	34	EHT-127-PIAPT-02-1A	BSX-10-2	PS07	2	1160	34.3	208	6.4	13.3	1319	44	N/A	-					MW	-	38	0.0318	4	2	EACH	-	ZE-TERMINATOR KIT	END TERMINATION KIT	PS07	3	2	FLANGE PAIR - N2, N11	0.70
																							5A	1	EACH	RTD-127-PIAPT-01-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS07	4	2	FLANGE PAIR - N1, N9	0.85
																							5B	1	EACH	RTD-127-PIAPT-02-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS07	6	6	FLANGE PAIR N4, N5, N6, N7, N8, N13	1.00
																							6	3	ROLLS		AL-30L	ALUMINUM TAPE	PS07				
																							7	3	EACH		PETK-1D KIT	POWER/END TERM. KIT	PS07				
																							8	1	PKG		CL	CAUTION LABELS 25 / PKG	PS07				

3244

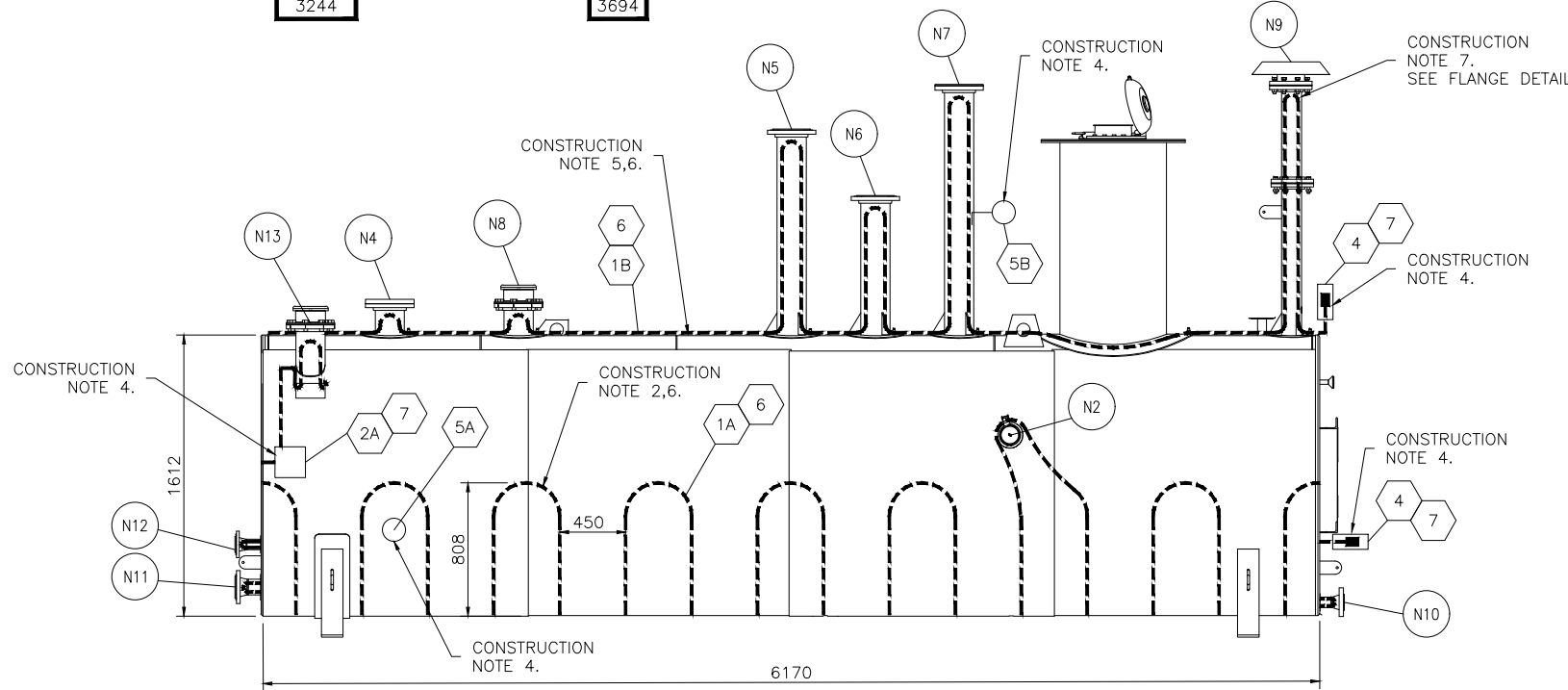
3694

CONSTRUCTION NOTES:

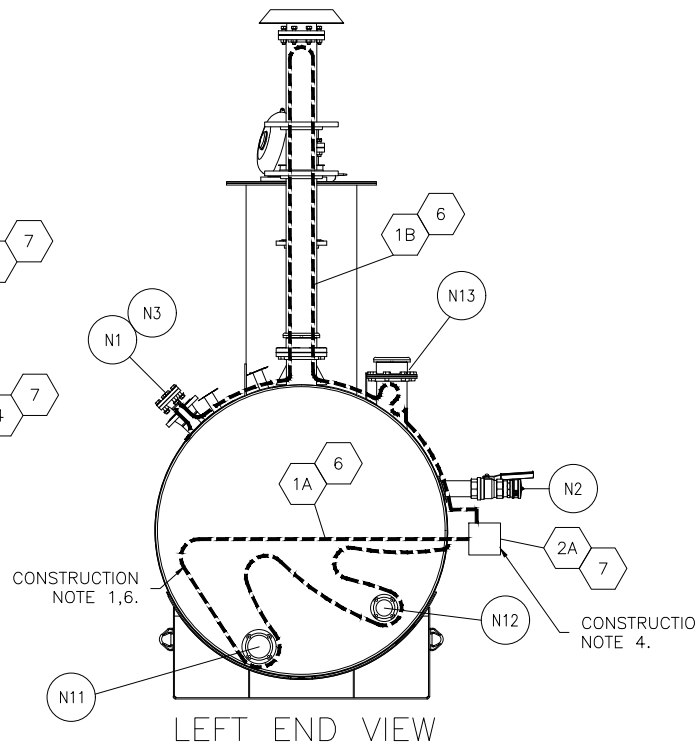
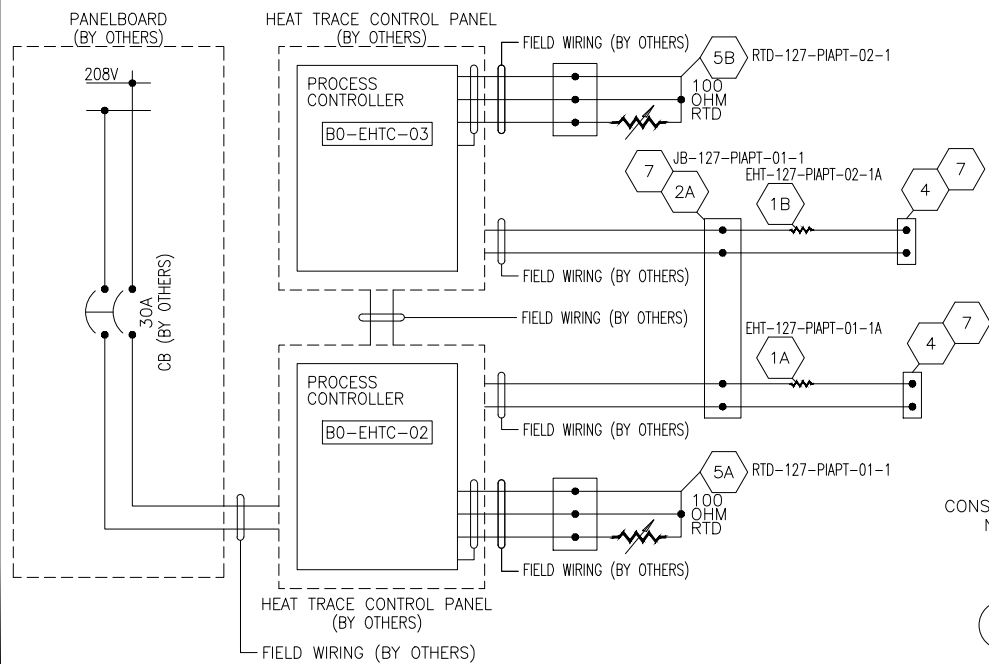
- APPROXIMATELY 7.8m OF HEATER CABLE TO BE INSTALLED ON THE LEFT END OF THE SUMP TANK INCLUDING NOZZLES N11 AND N12.
- ALLOW 16 PASSES OF HEATER CABLE MIDPOINT TO MIDPOINT AT APPROXIMATELY 450mm SPACING ON THE BODY OF THE TANK.
- APPROXIMATELY 5.7m OF HEATER CABLE TO BE INSTALLED ON THE RIGHT END OF THE SUMP TANK INCLUDING NOZZLE N10.
- POWER/END CONNECTION KITS AND RTD TO BE SECURED TO THE SUMP TANK WITH STAINLESS STEEL BANDING.
- APPROXIMATELY 34m OF HEATER CABLE TO BE INSTALLED ON NOZZLES.
- APPLY ALUMINUM TAPE AL-30L ALONG THE ENTIRE LENGTH OF THE HEATER CABLE TO SECURE HEATING CABLE TO THE SUMP TANK.
- COIL 4.0m OF HEATER CABLE TO BE INSTALLED ON NOZZLE N9 FOR ADDITIONAL PIPING. (SEE ISOMETRIC FLANGE DETAIL)



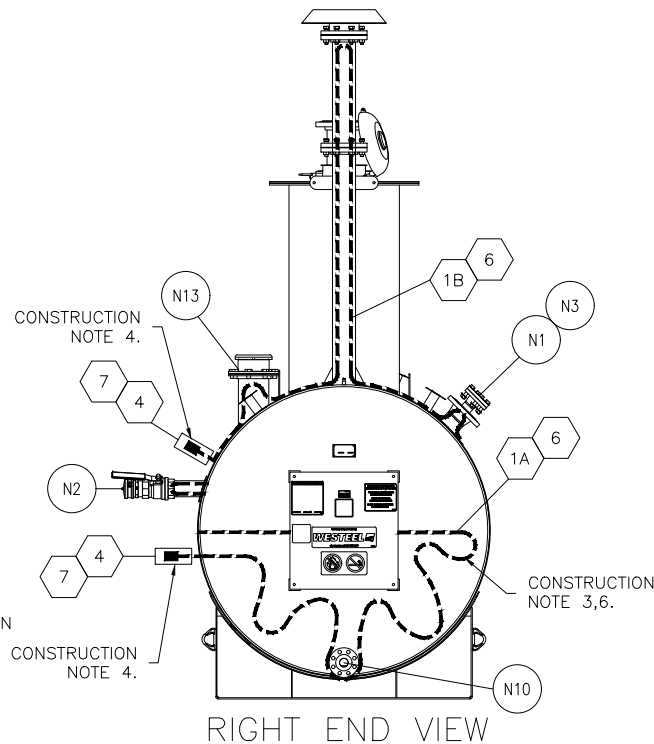
ISOMETRIC FLANGE DETAIL



ELEVATION VIEW



LEFT END VIEW



RIGHT END VIEW

NOTES

- ALL UNITS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
- THE HEATLOSS REQUIRED OF THE TANK IS CALCULATED AS FOR THE WHOLE TANK BODY IN WATTS. A MINIMUM SAFETY FACTOR OF 25% HAS BEEN INCLUDED IN THIS DESIGN.
- EHT CABLE EHT-127-PIAPT-02-1A IS TO BE MAINTAINED AT 8°C WITH A 30 MINUTE START-UP DELAY.

TEMPERATURE DATA

MAINTAIN TEMP.: NOTE 3 10°C	CONTROL PANEL: BY OTHERS
OPERATING TEMP.: NOTE 3 10°C	CONTROL POINT: CKT 1 / CKT 2
MAX. EXPOSURE TEMP.: 50°C	CONTROL MODE: ON/OFF SSR
MIN. START-UP TEMP.: -29°C	PANELBOARD: BY OTHERS
MIN. AMBIENT TEMP.: -40°C	CIRCUIT BREAKER: BY OTHERS
AREA CLASSIFICATION: CL1 ZONE1 GRP IIA	CIRCUIT BREAKER SIZE: 30A
A.I.T./T-CLASS: 200°C / T3	

LINE NUMBERS

S.N. 672005951

REFERENCE DRAWINGS

DRAWING TITLE	DRAWING NUMBER
VENDOR DRAWINGS	285503HD 25011558
CONTROLLER SETPOINT	BY OTHERS
PANEL SCHEDULE	BY OTHERS
P&ID	LDT

PIPING ISOMETRICS

00	06	NOV	20	ISSUED FOR CONSTRUCTION	KP	DF	RA	RA	
REV.	dd	mm	yy	DATE	DESCRIPTION	BY	CHK	ENG	APP

MSGP HEAT MANAGEMENT SOLUTIONS
TRANSCANADA PIPELINES LTD.

THIS DRAWING IS PREPARED SOLELY FOR THE USE OF THE CONTRACTUAL CUSTOMER. IT MAY NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART IN ANY WAY WITHOUT THE WRITTEN PERMISSION OF TRANSCANADA. USE OF THIS DRAWING IS PERMITTED ONLY FOR THE PURPOSE FOR WHICH IT IS ISSUED BY TRANSCANADA AND IT MUST BE RETURNED IMMEDIATELY UPON REQUEST.

PUMP STATION PS07
 ELECTRIC HEAT TRACE
 SUMP TANK 127-PIAPT-B0-OST-01

SCALE: NTS	DRAWING NO.: EHT-KOA004-127-PIAPT-01	SHT.: 01	REV.: 00
------------	--------------------------------------	----------	----------

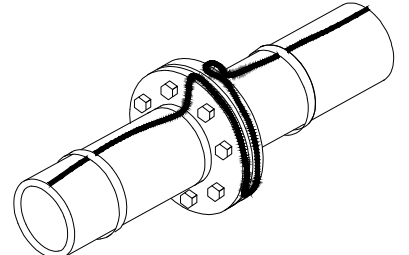
Electrical Zone Drawing

Tag # 128-GRSSY-B0-OST-01

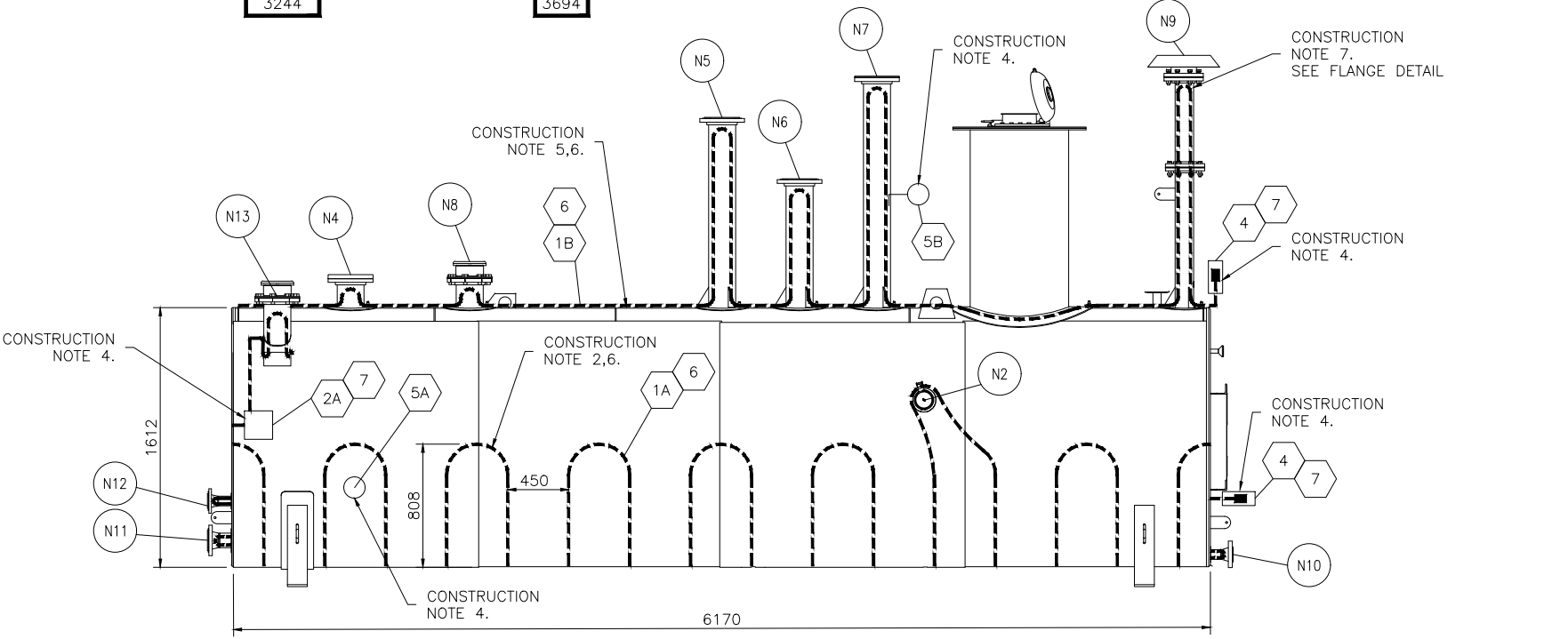
EHT CABLE BILL OF MATERIAL					ELECTRIC HEAT TRACE DATA							PIPE DATA			INSULATION			EHT COMPONENT BILL OF MATERIAL					ALLOWANCE TABLE										
ITEM	LENGTH (m)	HEATER TAG NO.	PART NO.	PUMP STN. NO.	TRACE RATIO	HEATLOSS (W)	OUTPUT (W/m)	CABLE VOLTAGE	OPER. AMPS	INRUSH AMPS	POWER (W)	ACTUAL S.F.(%)	SHEATH TEMP.(°C)	SIZE (in)	LINE NO.	CLASS	LENGTH (m)	TYPE	SIZE (in)	THK (mm)	K FACTOR (W/m °C)	ITEM	QTY.	UNITS	TAG NO.	PART NO.	DESCRIPTION	PUMP STN. NO.	SIZE (in)	QTY.	DESCRIPTION	LENGTH PER (m)	
1A	61	EHT-128-GRSSY-01-1A	BSX-10-2	PS08	-	2084	34.3	208	11.4	23.8	2375	42	N/A	-				MW	-	38	0.0318	2A	1	EACH	JB-128-GRSSY-01-1	ZP-TERMINATOR KIT	POWER CONNECTION KIT	PS08	2	3	FLANGE PAIR - N3, N10, N12	0.70	
1B	34	EHT-128-GRSSY-02-1A	BSX-10-2	PS08	2	1160	34.3	208	6.4	13.3	1319	44	N/A	-				MW	-	38	0.0318	4	2	EACH	-	ZE-TERMINATOR KIT	END TERMINATION KIT	PS08	3	2	FLANGE PAIR - N2, N11	0.70	
																						5A	1	EACH	RTD-128-GRSSY-01-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS08	4	2	FLANGE PAIR - N1, N9	0.85	
																							5B	1	EACH	RTD-128-GRSSY-02-1	RTD-100-D1	RTD 100 OHM PLATINUM	PS08	6	6	FLANGE PAIR N4, N5, N6, N7, N8, N13	1.00
																							6	3	ROLLS	AL-30L	ALUMINUM TAPE	PS08					
																							7	3	EACH	PETK-1D KIT	POWER/END TERM. KIT	PS08					
																							8	1	PKG	CL	CAUTION LABELS 25 / PKG	PS08					

CONSTRUCTION NOTES:

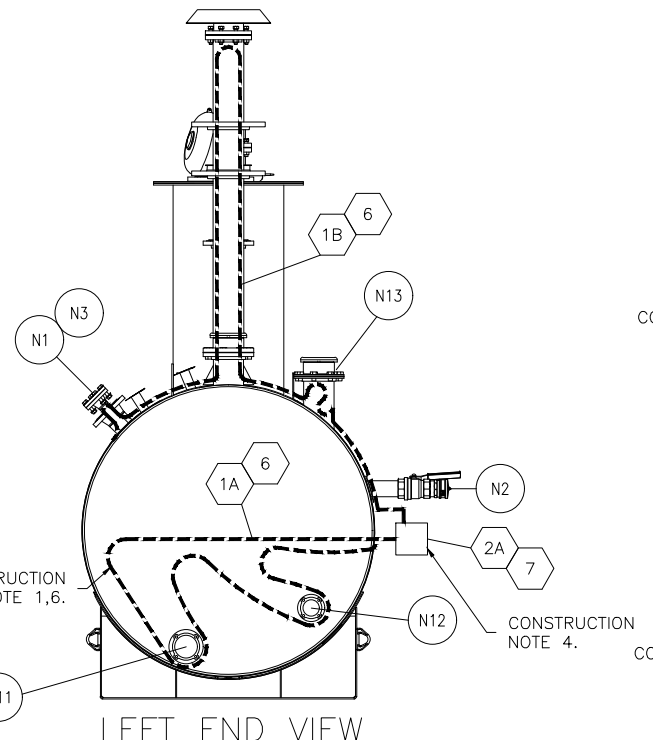
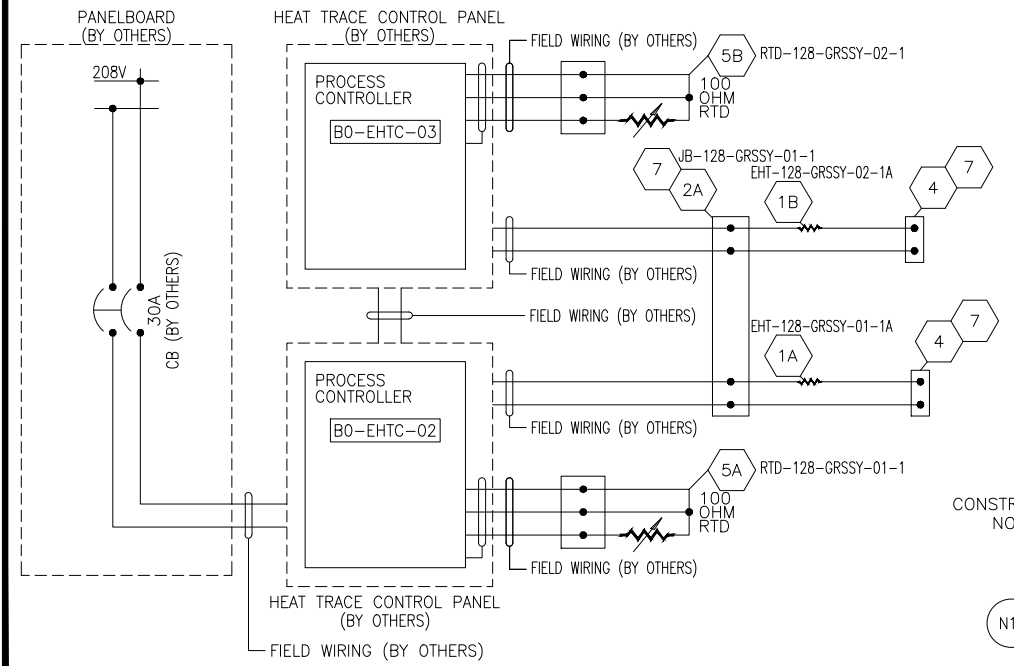
- APPROXIMATELY 7.8m OF HEATER CABLE TO BE INSTALLED ON THE LEFT END OF THE SUMP TANK INCLUDING NOZZLES N11 AND N12.
- ALLOW 16 PASSES OF HEATER CABLE MIDPOINT TO MIDPOINT AT APPROXIMATELY 450mm SPACING ON THE BODY OF THE TANK.
- APPROXIMATELY 5.7m OF HEATER CABLE TO BE INSTALLED ON THE RIGHT END OF THE SUMP TANK INCLUDING NOZZLE N10.
- POWER/END CONNECTION KITS AND RTD TO BE SECURED TO THE SUMP TANK WITH STAINLESS STEEL BANDING.
- APPROXIMATELY 34m OF HEATER CABLE TO BE INSTALLED ON NOZZLES.
- APPLY ALUMINUM TAPE AL-30L ALONG THE ENTIRE LENGTH OF THE HEATER CABLE TO SECURE HEATING CABLE TO THE SUMP TANK.
- COIL 4.0m OF HEATER CABLE TO BE INSTALLED ON NOZZLE N9 FOR ADDITIONAL PIPING. (SEE ISOMETRIC FLANGE DETAIL)



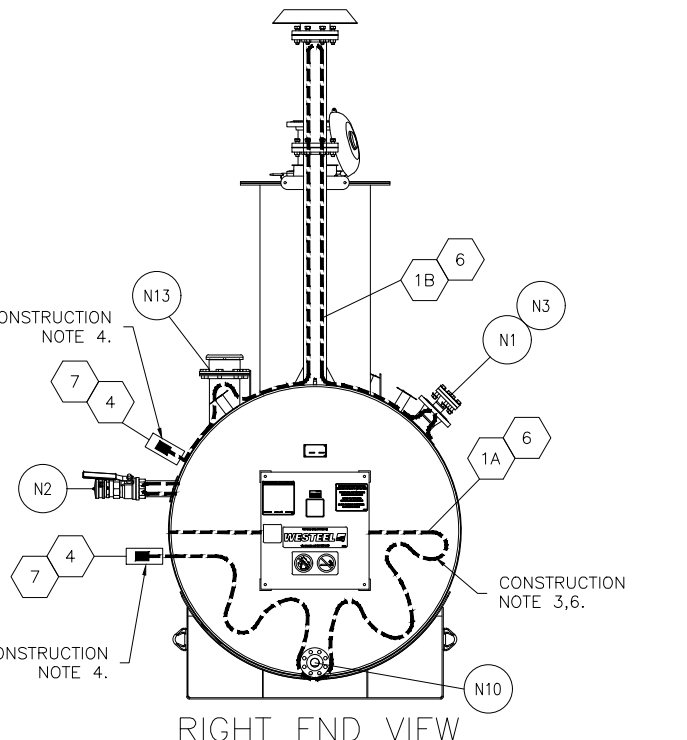
ISOMETRIC FLANGE DETAIL



ELEVATION VIEW



LEFT END VIEW



RIGHT END VIEW

NOTES

- ALL UNITS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
- THE HEATLOSS REQUIRED OF THE TANK IS CALCULATED AS FOR THE WHOLE TANK BODY IN WATTS. A MINIMUM SAFETY FACTOR OF 25% HAS BEEN INCLUDED IN THIS DESIGN.
- EHT CABLE EHT-128-GRSSY-02-1A IS TO BE MAINTAINED AT 8°C WITH A 30 MINUTE START-UP DELAY.

TEMPERATURE DATA		CIRCUIT DATA	
MAINTAIN TEMP.:	NOTE 3 10°C	CONTROL PANEL:	BY OTHERS
OPERATING TEMP.:	NOTE 3 10°C	CONTROL POINT:	CKT 1 / CKT 2
MAX. EXPOSURE TEMP.:	50°C	CONTROL MODE:	ON/OFF SSR
MIN. START-UP TEMP.:	-29°C	PANELBOARD:	BY OTHERS
MIN. AMBIENT TEMP.:	-40°C	CIRCUIT BREAKER:	BY OTHERS
AREA CLASSIFICATION:	CL1 ZONE1 GRP IIA	CIRCUIT BREAKER SIZE:	30A
A.I.T./T-CLASS:	200°C / T3		

LINE NUMBERS

S.N. 672005952

REFERENCE DRAWINGS

DRAWING TITLE	DRAWING NUMBER
VENDOR DRAWINGS	285503HD 25011558
CONTROLLER SETPOINT	BY OTHERS
PANEL SCHEDULE	BY OTHERS
P&ID	LDT

PIPING ISOMETRICS

NO.	REV.	DATE	ISSUED FOR CONSTRUCTION	DESCRIPTION	BY	CHK	ENG	APP
00	06	NOV 20						
			ISSUED FOR CONSTRUCTION		KP	DF	RA	RA

TRANSCANADA PIPELINES LTD.

THIS DRAWING IS PREPARED SOLELY FOR THE USE OF THE CONTRACTUAL CUSTOMER. IT MAY NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART IN ANY WAY WITHOUT THE WRITTEN PERMISSION OF TRANSCANADA. USE OF THIS DRAWING IS PERMITTED ONLY FOR THE PURPOSE FOR WHICH IT IS ISSUED BY TRANSCANADA AND IT MUST BE RETURNED IMMEDIATELY UPON REQUEST.

**PUMP STATION PS08
ELECTRIC HEAT TRACE
SUMP TANK 128-GRSSY-B0-OST-01**

SCALE:	DRAWING NO.:	SHT.:	REV.:
NTS	EHT-KOA004-128-GRSSY-01	01	00