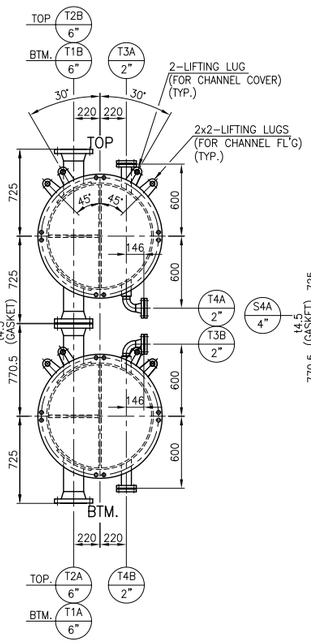
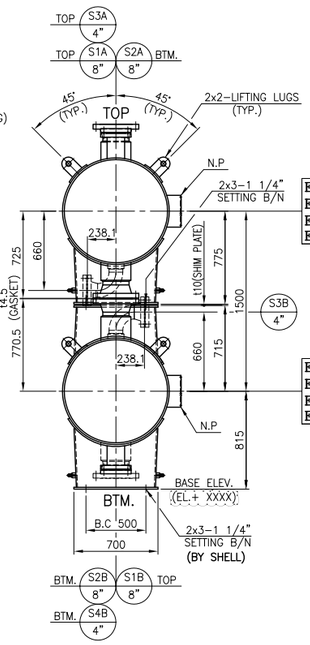
3TH ANGLE PROJECTION



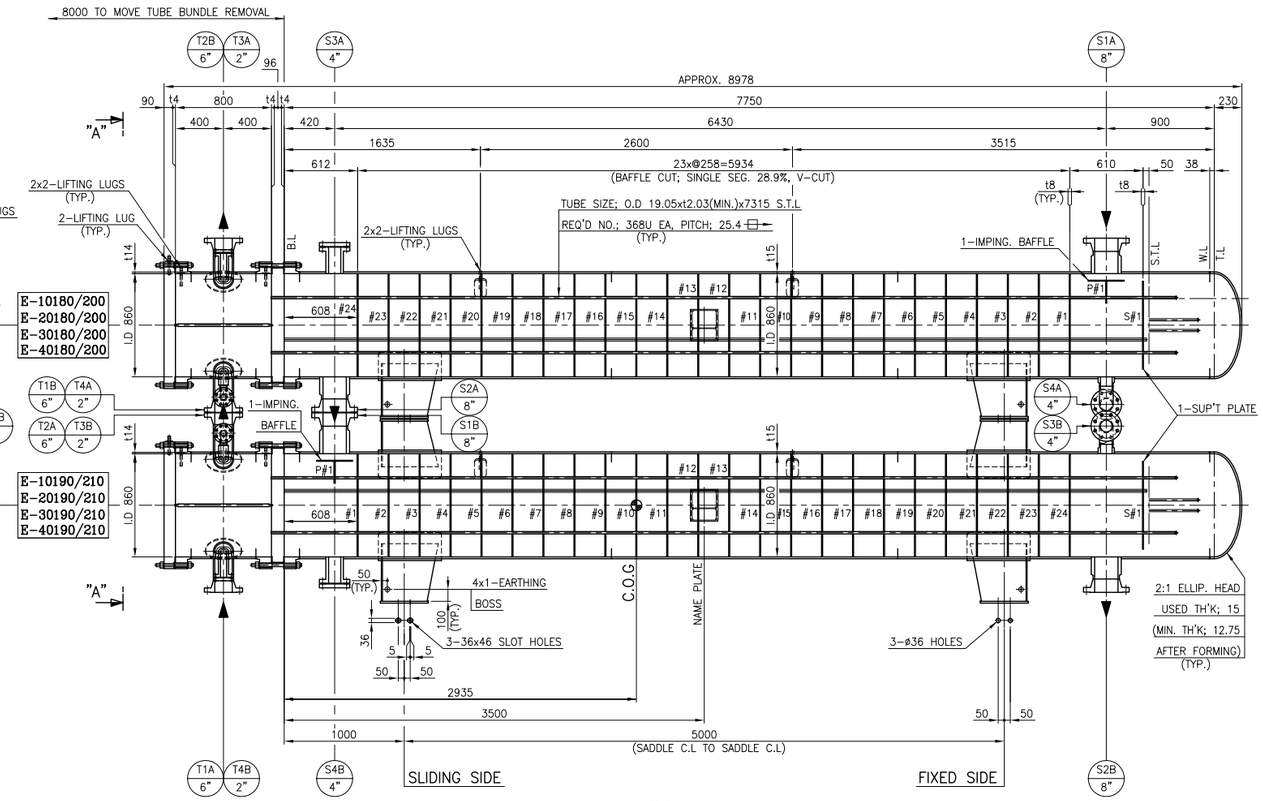
VIEW "A"–"A"
(TUBE SIDE)



VIEW "A"–"A"
(SHELL SIDE)

E-10180/200
E-20180/200
E-30180/200
E-40180/200

E-10190/210
E-20190/210
E-30190/210
E-40190/210



SIDE ELEVATION

DESIGN DATA

CODE	ASME SEC. VIII DIV. 1 2010 ED.+ 2011 ADD. + API 660 (8th ED. 2007) + NACE MR0175 / ISO 15156			TEMA CLASS	"R" (9TH ED.–'07)
				TYPE	H–AEU
SURFACE AREA PER UNIT/SHELL(EFF.)	316.9/316.9	m^2		CODE STAMP/NLB REQ'D	ASME (U)/YES
NO. OF REQ'D	16 (SIXTEEN)			LOCAL REGULATION	ABSA
	SHELL SIDE			TUBE SIDE	
KIND OF FLUID	TREATED BITUMEN			MEG	
SPECIAL SERVICE	SOUR			SWEET	
PROCESS DESIGN PRESS.(INT./EXT.)	2450/F.V	kPa(g)		2450/F.V	kPa(g)
DESIGN TEMP. (INT./EXT.)	200	°C		160	°C
OPER. PRESS.	1225	kPa(abs)		1794	kPa(abs)
OPER. TEMP. (IN/OUT)	102/45	°C		38.4/72.5	°C
HYDRO. TEST PRESS. SHOP	3514	kPa(g)		3548	kPa(g)
HYDRO. TEST PRESS. FIELD	3316	kPa(g)		3270	kPa(g)
PNEUM. TEST PRESS.	–	kPa(g)		–	kPa(g)
M.A.W.P / M.A.P	2551/2714	kPa(g)		2515/2740	kPa(g)
GOVERNED COMPONENT(M.A.W.P/M.A.P)	SHELL FLANGE/SHELL FLANGE			CHANNEL COVER/CHANNEL FLANGE	
M.D.M.T. AT M.A.W.P/M.A.E.P	–45 °C AT 2551/F.V kPa(g)			–45 °C AT 2515/F.V kPa(g)	
P.W.H.T.	YES			YES	
S.R.OF HEAD AFTER COLD FORMING	YES (NORMALIZING)			–	
IMPACT TEST	NO (SEE NOTE 3)			NO (SEE NOTE 3)	
RADIOGRAPH (S/H)	100%/100%			100%/–	
JOINT EFFICIENCY (S/H)	1.0/1.0			1.0/–	
CORR. ALLOW. (mm)	1.5(SHELL) / 3(NOZLES)			0.8(TUBES)/1.5(CHANNEL)/3(NOZLES)	
NO. OF PASS	1 (ONE)			4 (FOUR)	
INSULATION (BY OTHERS)	75	mm		75	mm
FIREPROOFING	–				mm
WIND VELOCITY	NBC CANDA 2005				
SEISMIC ZONE	NBC CANDA 2005				
PAINTING	AS PER DEP 30.48.00.31–GEN.				
WEIGHT (UPPER/LOWER) [TOTAL] ERECTION	11135/11455 [22590] kg		BUNDLE	6130	kg
EMPTY	12095/12415 [24510] kg		FULL OF WATER	16545/16865 [33410] kg	
OPERATING	16545/16865 [33410] kg				
TUBE & TUBESHEET JOINT	HEAVY EXPANDING WITH TWO GROOVES – 4–6% WALL REDUCTION				

NOZZLE SCHDULE

MARK NO.	NO. REQ'D	PIPE SIZE	PIPE SCH.	FLANGE RATING	FLANGE TYPE	FLANGE FACING	FROM C.L TO FACE	DESCRIPTION	REMARK
S1A	1	8"	80	ASME 300#	W.N	R.F	725	SHELL SIDE INLET	
S1B	1	8"	80	ASME 300#	W.N	R.F	770.5	SHELL SIDE INLET	
S2A/B	2	8"	80	ASME 300#	W.N	R.F	725	SHELL SIDE OUTLET	
S3A	1	4"	–	ASME 300#	L.W.N	R.F	650	SHELL SIDE VENT	W/B.F
S3B	1	4"	80	ASME 300#	W.N	R.F	SEE DWG.	SHELL SIDE VENT	W/B.F
S4A	1	4"	80	ASME 300#	W.N	R.F	SEE DWG.	SHELL SIDE DRAIN	W/B.F
S4B	1	4"	–	ASME 300#	L.W.N	R.F	650	SHELL SIDE DRAIN	W/B.F
T1A/B	2	6"	80	ASME 300#	W.N	R.F	SEE DWG.	TUBE SIDE INLET	
T2A/B	2	6"	80	ASME 300#	W.N	R.F	SEE DWG.	TUBE SIDE OUTLET	
T3A	1	2"	–	ASME 300#	L.W.N	R.F	SEE DWG.	TUBE SIDE VENT	W/B.F
T3B	1	2"	160	ASME 300#	W.N	R.F	SEE DWG.	TUBE SIDE VENT	W/B.F
T4A	1	2"	160	ASME 300#	W.N	R.F	SEE DWG.	TUBE SIDE DRAIN	W/B.F
T4B	1	2"	–	ASME 300#	L.W.N	R.F	SEE DWG.	TUBE SIDE DRAIN	W/B.F

A S M E - U

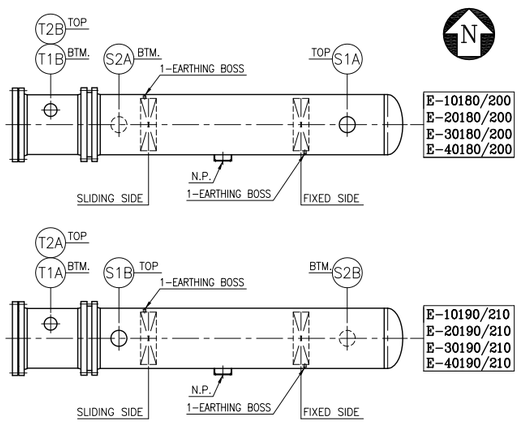
SOUR SERVICE (SHELL SIDE)

SWEET SERVICE (TUBE SIDE)

ITEM NO.							
1	E–10180	5	E–20180	9	E–30180	13	E–40180
2	E–10190	6	E–20190	10	E–30190	14	E–40190
3	E–10200	7	E–20200	11	E–30200	15	E–40200
4	E–10210	8	E–20210	12	E–30210	16	E–40210

REV.	DATE	DESCRIPTION	DRWN	CHKD	REVD	APPD
10	2015.02.04	ISSUED FOR APPROVAL	TY–ENG	S.H.JEON	K.B.KIM	Y.G.PARK
9	2014.12.23	ISSUED FOR APPROVAL	TY–ENG	S.H.JEON	K.B.KIM	Y.G.PARK
8	2014.11.17	ISSUED FOR APPROVAL	TY–ENG	S.H.JEON	K.B.KIM	Y.G.PARK
7	2014.08.13	ISSUED FOR APPROVAL	TY–ENG	W.I.LEE	K.B.KIM	Y.G.PARK
6	2014.07.10	ISSUED FOR APPROVAL	TY–ENG	W.I.LEE	K.B.KIM	Y.G.PARK
5	2014.07.02	ISSUED FOR APPROVAL	TY–ENG	W.I.LEE	K.B.KIM	Y.G.PARK
4	2014.05.15	ISSUED FOR APPROVAL	TY–ENG	W.I.LEE	K.B.KIM	Y.G.PARK
3	2014.01.20	ISSUED FOR APPROVAL	TY–ENG	W.I.LEE	K.B.KIM	Y.G.PARK

KEY PLAN



Document Number: CCK-4511951391-0111-B01-00005-001	Rev: 08

Approval Status:

- ■ 1 – Approved, No Comment - Proceed with Fabrication/Construction
- ☐ 2 – Approved, Note Comments - Revise and Resubmit. Proceed with Fabrication/Construction
- ☐ 3 – Not Approved, Revise and Resubmit - do not proceed with Fabrication/Construction
- ☐ 4 – Information Only

VENDORS PLEASE NOTE: 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 supplier from full compliance with contractual obligation.

Responsible Engineer Signature: Wayne Gossett (Wayne.Gossett@shell.com)	Date: 02/09/2015

DOCUMENT NUMBER:	SHELL REV:
TAGS:	

APPROVAL STATUS:

- ☐ 1 – APPROVED, NO COMMENT – PROCEED WITH FABRICATION
- ☐ 2 – APPROVED WITH COMMENTS – REVISE AND RESUBMIT. PROCEED WITH FABRICATION
- ☐ 3 – NOT APPROVED, REVISE AND RESUBMIT
- ☐ 4 – INFORMATION ONLY

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RESPONSIBLE ENGINEER SIGNATURE:	DATE:

DRAWING LIST

NO	DRAWING NAME	CLIENT DOC. NO. (ILSUNG DOC. NO.)
9	GENERAL NOTE	CCK–4511951391–0111–B01–00005–002 (VP–SG07–E10180–009)
8	DETAIL OF SHIPPING SADDLE	CCK–4511951391–0111–B04–00010–001 (VP–SG07–E10180–008)
7	DETAIL OF NAME PLATE	CCK–4511951391–0111–004–00010–001 (VP–SG07–E10180–007)
6	DETAIL OF NOZZLE	CCK–4511951391–0111–007–00021–001 (VP–SG07–E10180–006)
5	DETAIL OF SUPPORT SADDLE	CCK–4511951391–0111–007–00020–001 (VP–SG07–E10180–005)
4	DETAIL OF TUBE BUNDLE (2/2)	CCK–4511951391–0111–007–00019–002 (VP–SG07–E10180–004)
3	DETAIL OF TUBE BUNDLE (1/2)	CCK–4511951391–0111–007–00019–001 (VP–SG07–E10180–003)
2	DETAIL OF BODY	CCK–4511951391–0111–007–00018–001 (VP–SG07–E10180–002)
1	GENERAL ASSEMBLY	CCK–4511951391–0111–B01–00005–001 (VP–SG07–E10180–001)

CLIENT	SHELL CANADA ENERGY
PROJECT	CARMON CREEK PROJECT
P/O NO. 4511951391	TITLE: E–10180 (SEE ITEM NO. TABLE) TREATED BITUMEN COOLERS (GENERAL ASSEMBLY 1/2)
W/O NO. P–13SG–007	
SCALE 1/25	CLIENT DOC. NO. CCK–4511951391–0111–B01–00005–001
REV NO. 08	
ILSUNG CORPORATION ONSAN , KOREA	ILSUNG DOC. NO. VP–SG07–E10180–001

A1(594x841mm)