

F-433  
SAMPLE COOLER

P-588  
SKID TROUGH & SAMPLES  
WARREN RUPP SAND PUMP  
2 DBL DIAPHRAGM PUMP

TR-805  
RECYCLE TREATER  
2438 O.D. x 10868 S/S  
DESIGN: 345 MPa @ 200°C

P-506  
RECYCLE TREATER RECIRC. PUMP  
UNION 4x6x8 V/LK  
API-810 VERTICAL IN-LINE PUMP  
C/W 40 HP XP, 480/3/60 MOTOR

REVISIONS				REVISIONS				REVISIONS			
NO	DATE	REVISIONS	BY	APPD	NO	DATE	REVISIONS	BY	APPD	NO	DATE
1	28/08/06	ADDED MISSING TAGS, RE-DRAWN PSV LINE	EEW	JK	1	18/02/06	ISSUED FOR CONSTRUCTION	EEW	LU	1	31/01/08
2	13/09/06	ADDED DRAIN TO EMULSION INLET LINE	EEW	JK	2	22/02/06	UPDATED AS PER SPOOL DRAWINGS	EEW	LU	2	
3	04/10/06	CHANGED PSV ORIFICE SIZE (25KB12L); AS-BUILT	EEW	JK	3	24/03/06	CHANGED SIZE OF FLOW METERS	EEW	LU	3	
4	17/10/06	UPDATED FUEL GAS LINE AS PER MAXON DRAWINGS	EEW		4	24/03/06	ADDED GPI TO BASKET STRAINER, SECOND SET OF VALVES FOR SAMPLE	EEW	LU	4	
					5	23/08/06	ADDED SAMPLE LINE FROM PUMP DISCHARGE & 2 FUTURE SAMPLE CONN.	EEW	JK		



THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

CLIENT				DRAWING NO.			
CONNACHER OIL & GAS LTD. GREAT DIVIDE SAGD FACILITY				V-005690-D113			
DWG TITLE				SCALE			
RECYCLE TREATER TR-805 2438mm(8'-0") O.D. x 10668(35'-0") S/S PROCESS & INSTRUMENTATION DIAGRAM				SHEET NO.			
				1 of 2			
				REV. NO.			
				B			

DWG\VO-005690\113005690

PROCESS INSTRUMENTATION						
MK	QTY	SIZE	RATING	DESCRIPTION	MATERIAL	TAG
LIQUID CONTROL VALVE						
1	1	4"	CL 150	FISHER 1051-V500 CONTROL VALVE C/W SIZE 40 ACTUATOR, NACE		LCV-80511
2	1			FISHER DCV-6020AC C/W AUTO CALIBRATE, 4-20 mA OUTPUT+ HART-NO DIAGNOSTIC		LY-80511
3	1	4"	CL 150	FISHER 1051-V200 CONTROL VALVE C/W SIZE 40 ACTUATOR, NACE		PCV-80540
4	1			FISHER DCV-6020AC C/W AUTO CALIBRATE, 4-20 mA OUTPUT+ HART-NO DIAGNOSTIC		LY-80540
GAUGES						
5	1	1/2"	-	WKA 4" DIA. WET C/W 316 S.S., BOURDON TUBE & SILICON FILLED DIAPHRAGM SEAL, 0-60 PSIG		PI-50502
6	1	1/2"	-	WKA 4" DIA. WET C/W 316 S.S., BOURDON TUBE & SILICON FILLED DIAPHRAGM SEAL, 0-60 PSIG		PI-58802
7	1	1/2"	-	WKA 4" DIA. WET C/W 316 S.S., BOURDON TUBE & SILICON FILLED DIAPHRAGM SEAL, 0-60 PSIG		PI-80503
8	1	1/2"	-	WKA 4" DIA. WET C/W 316 S.S., BOURDON TUBE & SILICON FILLED DIAPHRAGM SEAL, 0-60 PSIG		PI-80515
9	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 3" STEM & 3/4" S.S. T-WELL		TI/TW-50503
10	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 5" STEM & 3/4" S.S. T-WELL		TI/TW-80501
11	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80505
12	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 3" STEM & 3/4" S.S. T-WELL		TI/TW-80510
13	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 3" STEM & 3/4" S.S. T-WELL		TI/TW-80514
14	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80529
15	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80530
16	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80531
17	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80532
18	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80533
19	1	-	-	TREND 0-200°C C/W 5" FACE, 1/2" x 12" STEM & 3/4" S.S. T-WELL		TI/TW-80534
METERS						
20	1	3"	-	ENDRESS & HAUSER PROWIRL 72F DN 80 3" VORTEX FLOW METER 72F80-SK0FA1PAB4AW		FE-80512
21	1	1 1/2"	-	ENDRESS & HAUSER PROWIRL 72F DN 40 1 1/2" VORTEX FLOW METER 72F40-SK0FA1PAB4AW		FE-80528
22	1	1"	-	ENDRESS & HAUSER PROMASS 1" CORDUS FLOW METER		FE-80535
REGULATORS						
23	1	-	-	FISHER 67 CFR REGULATOR C/W STD. TRIM AND PRESSURE INDICATOR		PCV-80511
24	1	-	-	FISHER 67 CFR REGULATOR C/W STD. TRIM AND PRESSURE INDICATOR		PCV-80540b
25	1	-	-	MASTER PNEUMATIC FILTER/REGULATOR CDR1004G C/W 1/2" GAUGE		PCV-58802
TRANSMITTERS						
26	1	-	-	ENDRESS & HAUSER DELTABAR S FMD7B-VBC7L21ASACU DIFFERENTIAL PRESSURE TRANSMITTER		dPT-80508
27	1	-	-	ENDRESS & HAUSER DELTABAR S FMD7B-VBC7L21ASACU DIFFERENTIAL PRESSURE TRANSMITTER		dPT-80511
28	1	-	-	ENDRESS & HAUSER PROWIRL F TOTALIZER/TRANSMITTER (INCLUDED WITH FE-80512)		FT-80512
29	1	-	-	ENDRESS & HAUSER PROWIRL F TOTALIZER/TRANSMITTER (INCLUDED WITH FE-80528)		FT-80528
30	1	-	-	ENDRESS & HAUSER CERABAR S PMP75-VBC1M21AS2CA PRESSURE TRANSMITTER		PI-80540
31	1	-	-	ENDRESS & HAUSER ITEM TMT142-G21323DAA1 TEMPERATURE TRANSMITTER		TT-80502
32	1	-	-	ENDRESS & HAUSER T13-F3A22E3CHIKC1 RTD ASSEMBLY		TE/TW-80502
33	1	-	-	ENDRESS & HAUSER ITEM TMT142-G21323DAA1 TEMPERATURE TRANSMITTER		TT-80506
34	1	-	-	ENDRESS & HAUSER T13-F3A22E3CHIKC1 RTD ASSEMBLY		TE-80506
RELIEF VALVE						
35	1	3"x4"	CL 150	RELIEF VALVE, FARRIS 3"-CL 300x4"-CL 150 MODEL 25KB12L-120/00 NACE 1 TRIM, SET AT 345 kPag		PSV-80504
PUMPS						
36	1	1"x1"	-	WARREN RUPP SANDPIPER 2 DBL DIAPHRAGM PUMP S1EB1ACTANS000		P-588
37	1	4"x6"	-	UNION 4x6x8 VLK API-610 VERTICAL INLINE CENTRIFUGAL PUMP, HP/KW: 40/29.8, RPM: 3600		P-508
BURNER INSTRUMENTATION						
38	1	2"	-	NORRISEAL 1005E 2" NPT ELECTRIC LEVEL SWITCH, NACE		LSL-80507
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54	1	2"	CL 2000	BALL VALVE RP SCR'D, NACE	C.S.	NUTRON
55	8	1/2"	CL 6000	NEEDLE VALVE SCR'D	-	-
56	1					
57	1	1/2"	-	PRESSURE INDICATOR		PI-80516
58						
59						
60						

MK	QTY	SIZE	RATING	DESCRIPTION	MATERIAL	BRAND
70	4	6"	CL 150	BALL VALVE RP RF HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
71	8	4"	CL 150	BALL VALVE RP RF HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
72	1	4"	CL 150	BALL VALVE RF C.S.D., HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
73	11	3"	CL 300	BALL VALVE RP RF HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
74	1	3"	CL 300	BALL VALVE RF C.S.D., HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
75	1	2"	CL 300	BALL VALVE RP RF HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
76	1	2"	CL 2000	BALL VALVE RP SCR'D, NACE	C.S.	NUTRON
77	1	2"	CL 2000	BALL VALVE RP SCR'D, SPRING LOADED, NACE	C.S.	JAG
78	15	1"	CL 2000	BALL VALVE RP SW x SCR'D, NACE	C.S.	NUTRON
79	19	1"	CL 2000	BALL VALVE RP SCR'D, NACE	C.S.	NUTRON
80	1	3/4"	CL 2000	BALL VALVE RP SCR'D, NACE	C.S.	NUTRON
81	1	1/2"	CL 2000	BALL VALVE RP SCR'D, NACE	C.S.	NUTRON
82	1	6"	CL 150	GLOBE VALVE RF, BOLTED BONNET, SWEL PLUG	-	NAVCO
83	2	3"	CL 300	GLOBE VALVE RF, BOLTED BONNET, SWEL PLUG	-	NAVCO
84	1	4"	CL 150	GLOBE VALVE RF, BOLTED BONNET, SWEL PLUG	-	NAVCO
85	1	1"	CL 800	GLOBE VALVE SW, OS & Y, BOLTED BONNET	-	NAVCO
86	1	1"	CL 800	GLOBE VALVE SCR'D, OS & Y, BOLTED BONNET	-	NAVCO
87	1	1"	CL 800	GATE VALVE SW, OS & Y, BOLTED BONNET	-	NAVCO
88	1	3"	CL 150	BALL VALVE RP RF HT4/PEEK SEATS, 316 S.S. BALL & STEM, NACE	-	KUKA
89						
90	2	6"	CL 150	SWING CHECK VALVE RF, BOLTED TRIM, RENEWABLE SEAT, NACE	-	NAVCO/ WHEATLEY
91	4	4"	CL 150	SWING CHECK VALVE RF, BOLTED TRIM, RENEWABLE SEAT, NACE	-	NAVCO/ WHEATLEY
92	1	3"	CL 300	SWING CHECK VALVE RF, BOLTED TRIM, RENEWABLE SEAT, NACE	-	NAVCO/ WHEATLEY
93	5	1"	CL 800	SWING CHECK VALVE SCR'D, LIFTING CHECK, NACE	-	NAVCO/ WHEATLEY
94						
95	2	1/2"	CL 800	NEEDLE VALVE SCR'D	-	-
96						
97						
98	1	6"	CL 150	FLANGED BASKET TYPE STRAINER MODEL: SERIES B150F STYLE 1	C.S.	IFC
99						
100	1	3"	CL 300	BLEED RING RF 1 1/2" THK. C/W 2 HOLES 1" NPT (INSTALL ON N7b) *	S.S.	-
101						
102						
103						

\* STUDS 8-3/4" DIA. x 6" LG.

△				
△				
△	04/10/06	CHANGED AS PER CUSTOMER COMMENTS; AS BUILT.	EEW	
△	29/08/06	ADDED MISSING VALVE TAGS	EEW	JK
△	24/03/06	UPDATED INSTRUMENT LIST	EEW	JK
△	23/03/06	ISSUED FOR CONSTRUCTION	EEW	LU
NO	DATE (d/m/y)	REVISIONS	BY	APPD
REVISIONS				

THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP.. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.



CLIENT				
CONNACHER OIL & GAS LTD. GREAT DIVIDE FACILITY, LSD 13-16-82-12 W4M				
DWG TITLE				
RECYCLE TREATER TR-805 PROCESS AND INSTRUMENTATION DIAGRAM PROCESS INSTRUMENTATION LIST				
SCALE	N.T.S.	DWN BY	E. WILSON	DWG NO.
DATE (d/m/y)	22/02/06	CHKD	APPD	V-005690-C113
				SHEET NO. 2 OF 2
				REV. NO. 3



SURFACE PREPARATION & PAINTING REQUIREMENTS					
ITEM	BLAST	PRIMER	D.F.T.	FINISH	D.F.T.
INSULATED VESSEL EXTERIOR	SSPC-SP10	SCAWCOVER WOOD II (7427)	4-8 MILS PER COAT	-	-
UNINSULATED VESSEL EXTERIOR	-	-	-	-	-
VESSEL INTERIOR	N/A	N/A	N/A	N/A	N/A
APPURTENANCES	SSPC-SP10	-	-	1 COAT OF SCAW 545	1.5-2 MILS PER COAT
PROTRUSIONS	SSPC-SP10	-	-	-	-
SADDLE	SSPC-SP6	SCAWCOVER WOOD II (7427)	4-8 MILS PER COAT	-	-
LADDERS	SSPC-SP6	1 COAT ALKYD	1.5-2 MILS	2 COATS OF EMBEL BLACK (AS HOT DIP GALVANIZED)	1.5-3 MILS PER COAT
PLATFORMS GRATING	-	-	-	-	-
INTERNAL PIPING	-	-	-	-	-
EXTERNAL PIPING	SSPC-SP10	SCAWCOVER WOOD II (7427)	4-8 MILS PER COAT	-	-
UNINSULATED PIPING	SSPC-SP6	SCAWCOVER WOOD II (7427)	4-8 MILS PER COAT	-	-
STACK	SSPC-SP10 NEAR WHITE	-	-	1 COAT OF B322 SERIES GREY	-
SKID	SSPC-SP6	-	-	SCAW MULTICOAT 745 BLACK	4-8 MILS PER COAT

DESCRIPTIONS: SSPC-SP10 NEAR WHITE BLAST  
SSPC-SP6 COMMERCIAL BLAST  
SSPC-SP7 BRUSH OFF BLAST  
1. MAXIMUM PAINT DESIGN TEMP.: 204°C(399°F)

INSULATION REQUIREMENTS				
ITEM	INSULATION TYPE	THK.	CLAD TYP.	THK.
SHELL	MINERAL WOOL	51mm(2")	STUCCO EMBOSSED	0.51mm(0.02")
HOT HEAD	MINERAL WOOL	51mm(2")	STUCCO EMBOSSED	0.51mm(0.02")
COLD HEAD	MINERAL WOOL	51mm(2")	STUCCO EMBOSSED	0.51mm(0.02")
PIPING			△	
VALVES				
SKID	SPRAY-ON URETHANE	51mm(2")		

NOTES:  
- INSULATION TO BE DONE IN UIC SHOP PRIOR TO SHIPMENT.

FIREPROOFING REQUIREMENTS		
ITEM	FIREPROOFING	THK.

NOTES:  
NONE

OTHER NOTES

HEAT TREATMENT	
GOVERNING COMPONENT: HEADS GOVERNING WELD THICKNESS: 1 1/4" 1. TEMP. TO BE RAISED FROM 800°F TO 1150 ±50°F AT A MAXIMUM RATE OF 320°F PER HOUR. 2. TEMP. TO BE HELD AT 1150°F ±50°F FOR 80 ±5 MINUTES. 3. TEMP. TO BE LOWERED FROM 1150°F ±50°F TO 800°F AT A MAXIMUM RATE OF 400°F PER HOUR. NOTES: - THERMOCOUPLES TO BE PLACED AS PER ASME VIII, DIV 1 UW-40(c) - PROCEDURE TO MEET ASME VIII, DIV 1 UCS-56(d)	

HYDROTEST REQUIREMENTS	
1. VESSEL SHALL BE HYDROTESTED IN THE HORIZONTAL POSITION AND SHALL BE ADEQUATELY SUPPORTED TO PREVENT WEIGHT DEFORMATION. 2. HYDROTEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF FOUR (4) HOURS. △ 3. UPON COMPLETION OF HYDROTEST, VESSEL SHALL BE COMPLETELY DRAINED OF ALL METHANOL/WATER MIX. △	

MARKING AND PREPARATION FOR SHIPMENT	
1. ALL FLANGED OPENINGS SHALL BE PROTECTED WITH WOODEN OR STEEL BLINDS TO PREVENT THE ACCUMULATION OF DIRT AND OTHER DEBRIS DURING SHIPPING. 2. PLASTIC SHIPPING PLUGS TO BE INSTALLED ON ALL COUPLINGS FOR THREAD PROTECTION. 3. ALL REMOVABLE PIECES TO BE MARKED WITH EQUIPMENT TAG NUMBER. 4. VESSEL MUST BE COMPLETELY CLEAN AND DRY BEFORE BEING SEALED FOR SHIPMENT. (NO HYDROCARBON FILM, MILL SCALE, HEAVY RUST, SLAG, DIRT & SPLATTER.) 5. VESSEL SHALL HAVE THE WORDS "DO NOT WELD ON VESSEL - PWHT" STENCIL PAINTED ON IT IN LARGE (6") WHITE LETTERS IN 2 PLACES PRIOR TO SHIPPING.	

PROCESS DATA	
CASE 1 OIL DENSITY: 13.6 API WATER S.G.: 1.0 R.D. GAS: TRACE OIL VISCOSITY: 9.3 cST @ 158°C OUTLET QUALITY - OIL: < 0.1% BS&W INLET TEMP: 158°C(316°F) OPERATING TEMP: 135°C(275°F) OPERATING PRESSURE: 35 kPag (5 psig) CASE 2 OIL DENSITY: 17.6 API WATER S.G.: 1.0 R.D. GAS: TRACE OIL VISCOSITY: 23.5 cST @ 90°C OUTLET QUALITY - OIL: < 0.1% BS&W INLET TEMP: 90°C(194°F) OPERATING TEMP: 135°C(275°F) OPERATING PRESSURE: 35 kPag (5 psig) CASE 3 OIL DENSITY: 17.6 API WATER S.G.: 1.0 R.D. GAS: TRACE OIL VISCOSITY: 5.9 cST @ 142°C OUTLET QUALITY - OIL: < 0.1% BS&W INLET TEMP: 142°C(288°F) OPERATING TEMP: 135°C(275°F) OPERATING PRESSURE: 35 kPag (5 psig)	

MATERIAL REQUIREMENTS	
SHELL MATERIAL SA-516-70N HEADS 1. MATERIAL SA-516-70N TYPE 2:1 S.E. 2. MATERIAL SA-516-70N TYPE 2:1 S.E. 3. MATERIAL TYPE FLANGE SA-105N PIPE SA-106-B 5MIS WELD FITTINGS SA-234-WPB FIRETUBE SA-106-B PIPE SCH STD NONPRESSURE SA-36 COUPLING A-182-F316L S.S. WELDOLET N/A THREDOLET N/A STUD BOLTS SA-193-B7M HEX NUTS SA-194-2HM GASKETS 316 S.S. GRAPHOL FIRETUBE THROAT GASKET= CARLOG	

INSPECTION AND TESTING	
A. QUALIFICATIONS 1. ALL NON-DESTRUCTIVE EXAMINATIONS SHALL BE CONDUCTED AND/OR INTERPRETED BY PERSONNEL CERTIFIED IN ACCORDANCE WITH CQSB & SNT-TC-1A LEVEL II. B. VISUAL EXAMINATION 1. EXAMINATION AND ACCEPTANCE CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 9) AND ASME VIII DIV.1 RESPECTIVELY. 2. 100% VISUAL EXAMINATION IS REQUIRED FOR ALL WELDING. C. RT INSPECTION 1. RADIOGRAPHIC EXAMINATION AND ACCEPTANCE CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 2) AND ASME SECTION VIII, DIV.1 PARA UW-11(c) (FULL) D. MT INSPECTION 1. MAGNETIC PARTICLE INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH ASME SECTION V, ARTICLE 7, AND ACCEPTANCE CRITERIA PER ASME SECTION VIII, DIV. 1, APPENDIX 6. 2. FINISHED PRESSURE WELDS SHALL BE EXAMINED BY MAGNETIC PARTICLE OR LIQUID PENETRANT AFTER PWHT AT UIC DISCRETION. E. HARDNESS REQUIREMENTS 1. HARDNESS TESTING REQUIRED AFTER PWHT AS PER UIC STANDARDS.	


NAMEPLATE DETAIL	
<div>CERTIFIED BY UNIVERSAL INDUSTRIES CORP. LLOYDMINSTER, ALBERTA MAWP 50 PSIG 392 °F 345 KPag 200 °C MDMT -20 °F 50 PSIG -29 °C 345 KPag SERIAL# 06-02-125 YEAR BUILT 2006 CRN T5915.2 COMPANY CODE TR-805 JOB # 005690</div>	

DESIGN DATA	
DESIGN CODE - ASME SECTION VIII, DIVISION I 20 04 DESIGN PRESSURE OR MAWP (HOT & CORRODED) 345 kPag (50 psig) DESIGN TEMPERATURE 200°C (392°F) MAWP (HOT & CORRODED) LIMITED BY HEADS OPERATING TEMPERATURE 135°C (275°F) RADIOGRAPHY FULL RT1 UW11(a) JOINT EFFICIENCY 1.00 POST WELD HEAT TREATMENT YES ADDITIONAL CODES N/A CORROSION ALLOWANCE 3.2mm(0.125") HYDRO-TEST PRESSURE 448 kPag (65 psig) SERVICE OIL, WATER, GAS (SOUR) CAPACITY 44.0 m³(1554 ft³) (TOTAL VOLUME EXCLUDING FIRETUBE) OVERALL LENGTH 12141 (39'-10") OVERALL HEIGHT 3787(16'-5 1/2") MINIMUM DESIGN METAL TEMPERATURE -28°C (-20°F) @ MAWP IMPACT TESTING NOT REQUIRED AS PER UG-20(f) (1-5) WEIGHT: vessel fab. (empty,bare) 10,849 kg (23,919 lbs.) WEIGHT: vessel shop test (flooded,bare) 54,834 kg (120,889 lbs.) WEIGHT: vessel shipping 32,659 kg (72,000 lbs.) WEIGHT: vessel operating (insulated,heat traced,others) 50,436 kg (111,192 lbs.)	

FABRICATION NOTES	
1. ALL FLANGE RATINGS TO BE ASME B16.5a - 1998. 2. DRILL AND TAP 5(1/4") NPT TELLTALE HOLE IN REINFORCING PADS. TEST PRESSURE AT 103 kPa (15 psi). INSTALL NIPPLE IN HOLE TO EXTEND BEYOND ANY INSULATION/CLADDING. TELLTALE HOLES IN REPADS SHALL BE PLUGGED WITH CORROSION INHIBITING GREASE AFTER HYDROTEST. 3. FLANGE AND BOLT HOLES TO STRADDLE PRINCIPAL CENTERLINES OF VESSEL. 4. ALL DIMENSIONS ARE IN SI. & IMPERIAL UNITS. DIMENSIONS IN BRACKETS ARE IMPERIAL HARD CONVERSIONS FOR SHOP REFERENCE ONLY. 5. DELETED 6. TACK WELDS TO BE REMOVED DURING ROOT PASS. 7. L.S. = LONGITUDINAL SEAM F.S. = FAR SIDE 8. ELEVATIONS ARE REFERENCED FROM CENTERLINE OF VESSEL. 9. HEAD TO SHELL JOINT TO BE TRANSITIONED AS PER UW-9(c). 10. RADIUS EXPOSED INSIDE EDGES AS PER UG-78(c) TO MINIMUM 1/16" CHAMFER OR 1/8" RADIUS. 11. ITEMS IDENTIFIED WITH A (*) ARE ATTACHED TO THE PRESSURE ENVELOPE & REQUIRE A HEAT NUMBER TO BE HARD STAMPED & RECORDED BY O.C.. 12. DELETED 13. ALL MATERIAL AND WELDER IDENTIFICATION SHALL BE WITH LOW STRESS STAMPS. 14. FABRICATION TOLERANCES SHALL BE IN ACCORDANCE WITH UIC TOLERANCE DRAWINGS (EDS-6070 & EDS-6071). 15. PERMANENT BACKUP RINGS ARE NOT PERMITTED.	

△				
△				
△				
△				
△				
△	05/10/08	AS-BUILT	EEW	
△	14/08/08	CHANGED INSULATION CLAD TYP. STUCCO EMBOSSED	EEW	JK
△	03/03/08	CHANGED AS PER CUSTOMER COMMENTS	EEW	JK
△	09/02/08	ISSUED FOR CONSTRUCTION	RTK	JK
NO	DATE	REVISIONS	BY	APPD
REVISIONS				

THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONNECTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP.. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

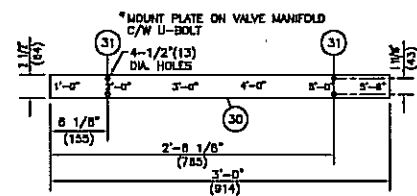
**UNIVERSAL INDUSTRIES**  
Ph: (780) 875-8181 Fax: (780) 875-8188

**CLIENT**  
CONNACHER OIL & GAS LTD.  
C/O BOWER DAMBERGER ROLSETH ENGINEERING LTD.  
GREAT DIVIDE SAGD FACILITY, LSD 13-16-82-12 W4M  
R.P.O. # 64200-4 REV. 0

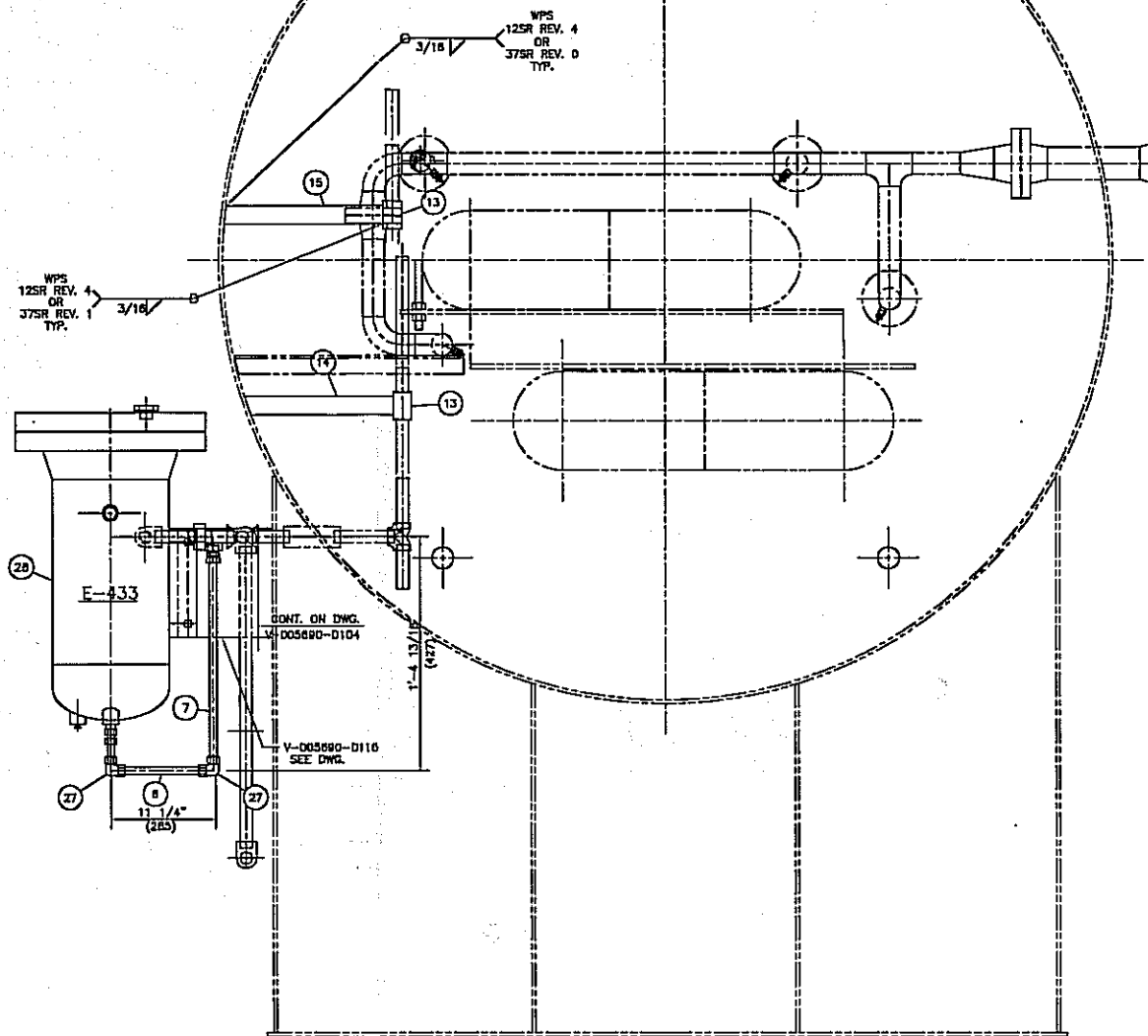
**DWG TITLE**  
RECYCLE TREATER TR-  
2438mm(8'-0") O.D. x 10668mm(35'-0") S/S  
DESIGN DATA & FABRICATION NOTES

SCALE N.T.S.	DRAWN BY E. WILSON	DWG NO. V-005690-D101	SHEET NO. 2 of 2	REV. NO. 3
DATE 02/02/08	CHKD APPD			

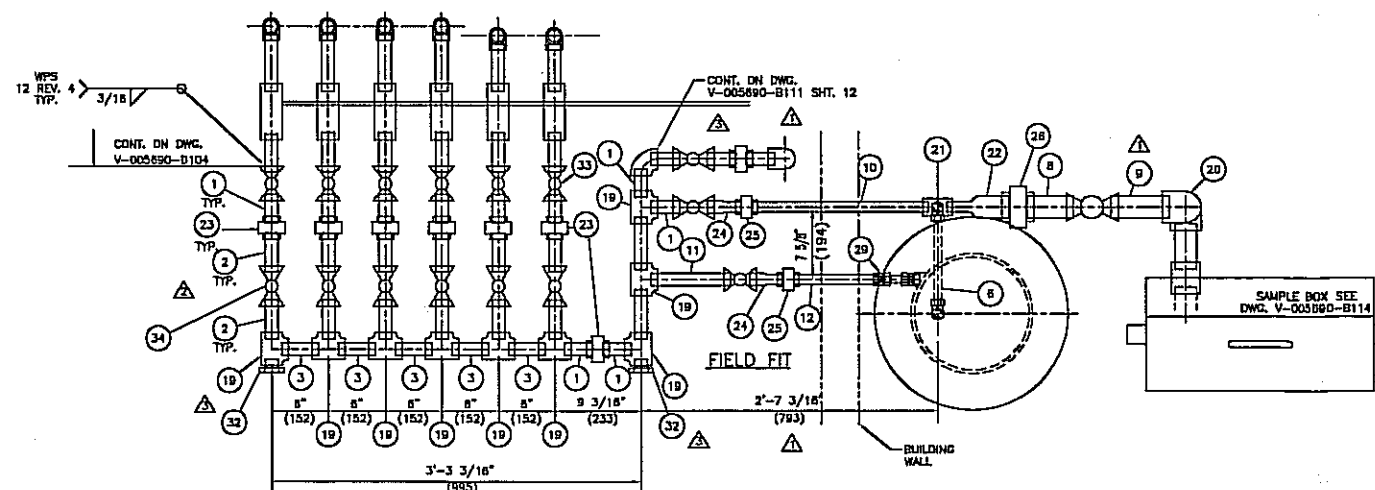
ELEVATION VIEW



MK. # 30 DETAIL  
ELEVATION PLATE









SECTION "B-B"  
SCALE: 1:10



SECTION "A-A"  
SCALE: 1:10

MATERIAL LIST				
MK	QTY	DESCRIPTION	MATERIAL	WT
A 1	10	NIPPLE 1" SCH XS x 3' LG. SMLS TBE	SA-108-B	8
A 2	12	PIPE 1" SCH XS x 4 3/16" LG. SMLS TBE	SA-108-B	8
3	5	PIPE 1" SCH XS x 3 7/8" LG. SMLS TBE	SA-108-B	4
4	1	PIPE 1" SCH XS x 5 1/2" LG. SMLS TBE	SA-108-B	1
5	1	PIPE 2" SCH XS x 8 7/16" LG. SMLS TBE	SA-108-B	3
6	1	TUBING 3/4" x 0.049" WALL x 10 1/16" LG.	316 S.S.	1
A 7	1	TUBING 3/4" x 0.049" WALL x 1'-10 3/4" LG.	316 S.S.	1
A 8	1	PIPE 2" SCH XS x 5' LG. SMLS TBE	SA-108-B	2
A 9	1	NIPPLE 2" SCH XS x 6" LG. SMLS TBE	SA-108-B	3
A 10	1	PIPE 3/4" SCH XS x 1'-7 1/2" LG. SMLS TBE	SA-108-B	2
A 11	1	PIPE 1" SCH XS x 1'-4 1/2" LG. SMLS TBE	SA-108-B	3
A 12	1	PIPE 3/4" SCH XS x 8" LG. SMLS TBE	SA-108-B	1
13	4	PIPE 1 1/2" SCH XS x 3' LG. SMLS PBE	SA-108-B	4
14	2	FLATBAR 1/4" THK. x 2" x 1'-3 7/8" LG. (A)	SA-38	5
15	2	FLATBAR 1/4" THK. x 2" x 1'-5 1/16" LG. (A)	SA-38	5
16				
17				
A 18	1	ELBOW 1" CLASS 3000 x 90° F.S. SCR'D	SA-105	5
A 19	8	TEE 1" CLASS 3000 F.S. SCR'D	SA-105	27
20	2	ELBOW 2" CLASS 3000 x 90° F.S. SCR'D	SA-105	11
21	1	TEE 3/4" CLASS 3000 F.S. SCR'D	SA-105	2
22	1	SWAGE 2" x 3/4" SCH XS TBE	SA-234-WPB	2
23	7	UNION 1" CLASS 3000 F.S. SCR'D	SA-105	12
24	2	SWAGE 1" x 3/4" SCH XS TBE	SA-234-WPB	2
25	2	UNION 3/4" CLASS 3000 F.S. SCR'D	SA-105	2
26	1	UNION 2" CLASS 3000 F.S. SCR'D	SA-105	5
27	2	UNION ELBOW 3/4" x 90° TURNING (PARKER 12EE12)	S.S.	1
28	1	SAMPLE COOLER	REF. DWG. EDS-6036(005890)	488
29	1	MALE CONNECTOR 3/4" NPT x 3/4" TUBING (PARKER 12WSC12N)	S.S.	1
30	1	PLATE 3/16" THK. x 2 1/2" x 3'-0" LG.	S.S.	5
31	2	U-BOLT 3/8" DIA. x 1" NPS C/W 2 NUTS	C.S.	2
A 32	1	HEX PLUG 1" CLASS 3000 F.S. THRD	SA-105	1
A 33	8	BALL VALVE 1" CL. 800 R.P. SW x NPT, HAZE	FUSION B3 800	24
A 34	8	BALL VALVE 1" CL. 2000 R.P. FEMALE NPT, HAZE	NUTRON T3	27
35				
36				
37				
38				
39				
40				

<b>NOTES:</b>		SUBTOTAL	599
1. ALL DIMENSIONS ARE IN IMPERIAL & S.I. UNITS. DIMENSIONS IN BRACKETS ARE S.I. HARD CONVERSIONS FOR SHOP REFERENCE ONLY.		x 1.08	
2. ITEMS IDENTIFIED WITH A (a) ARE ATTACHED TO THE PRESSURE ENVELOPE & REQUIRE A HEAT NUMBER TO BE HARD STAMPED & RECORDED BY Q.C.		TOTAL (Est.)	635

			
	05/10/08	AS-BUILT	EEW
	23/06/08	ADDED SAMPLE LINE FROM PUMP DISCHARGE, & 2 FUTURE SAMPLE	EEW JK
	13/06/08	ADDED SECOND SET OF VALVES	EEW JK
	24/03/08	SAMPLE COOLER MOVED INSIDE BUILDING	EEW JK
	16/02/08	ISSUED FOR CONSTRUCTION	EEW JK
NO	DATE (d/m/y)	REVISIONS	BY APPD

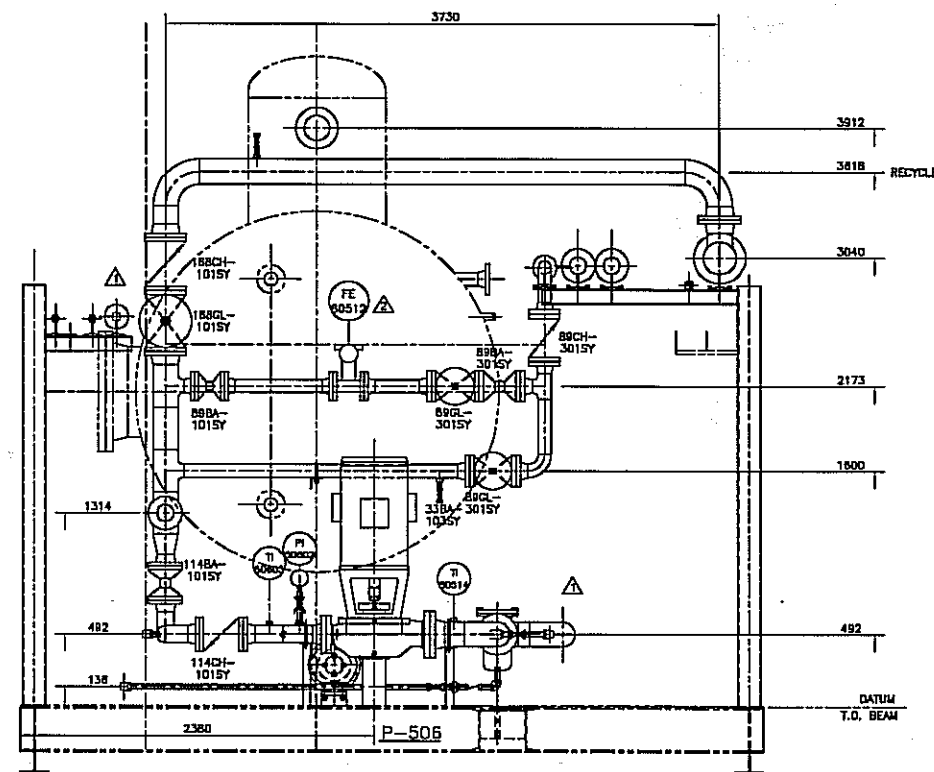
THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP.. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.



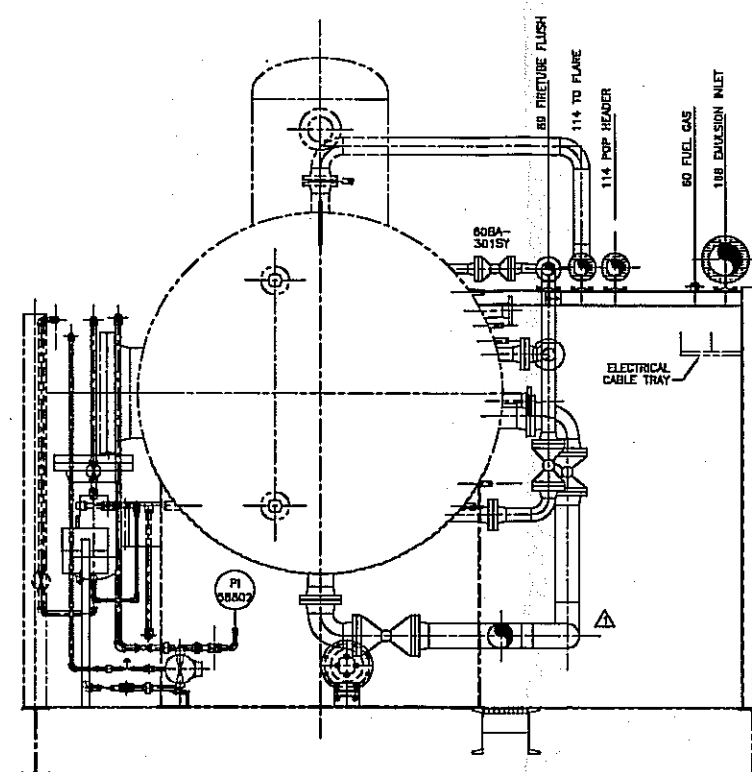
CONNACHER OIL & GAS LTD.  
C/O BOWER DAMBERGER ROLSETH ENGINEERING LTD.  
GREAT DIVIDE FACILITY, LSD 13-16-82-12 W4M

2438mm(8'-0") O.D. x 10668mm(35'-0") S/S  
SAMPLE SYSTEM

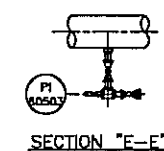
SCALE 1:20	DRAW BY E. WILSON	DWG NO. V-005690-D122	SHEET NO. 1 of 1	REV. NO. 4
DATE (d/m/y) 07/02/06	CHECKED APPROVED			



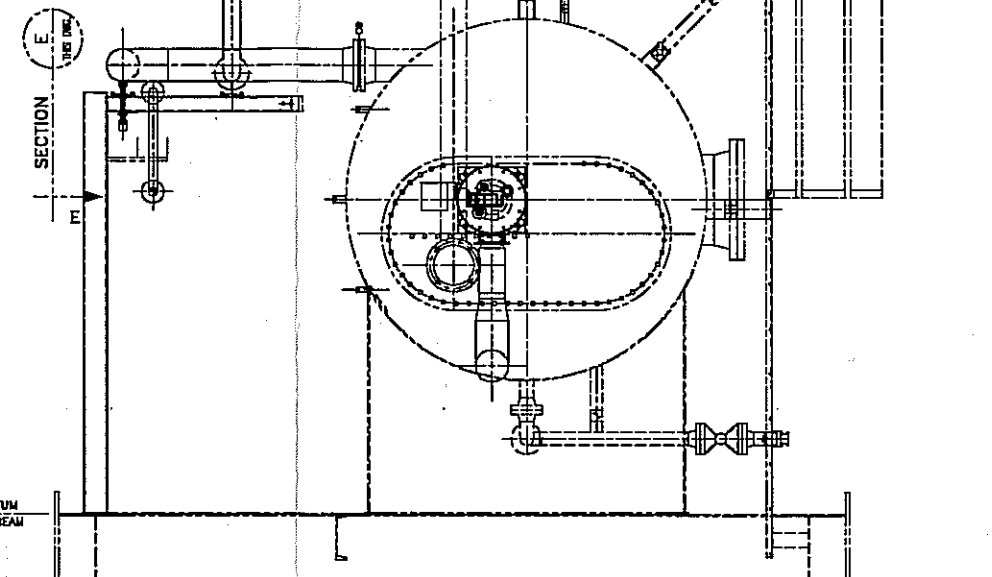
SECTION "A-A"



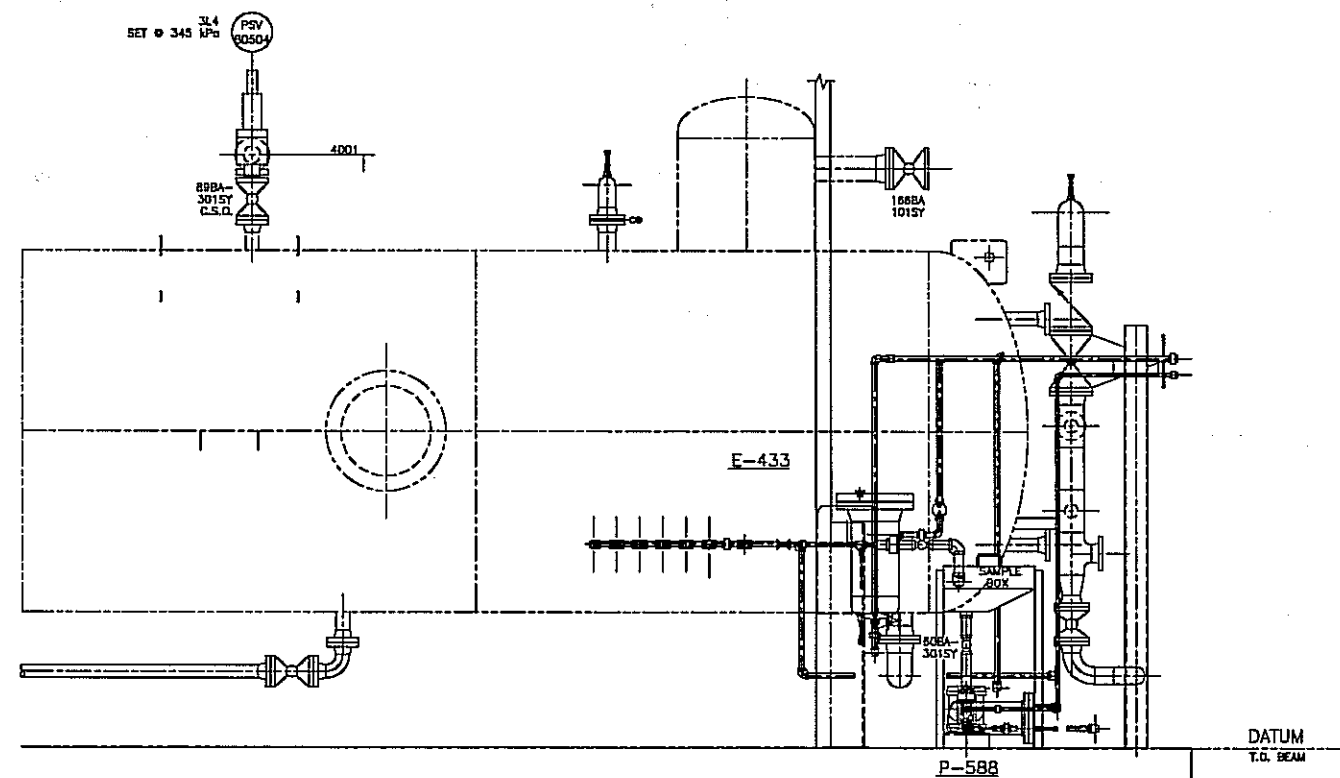
SECTION "D-D"



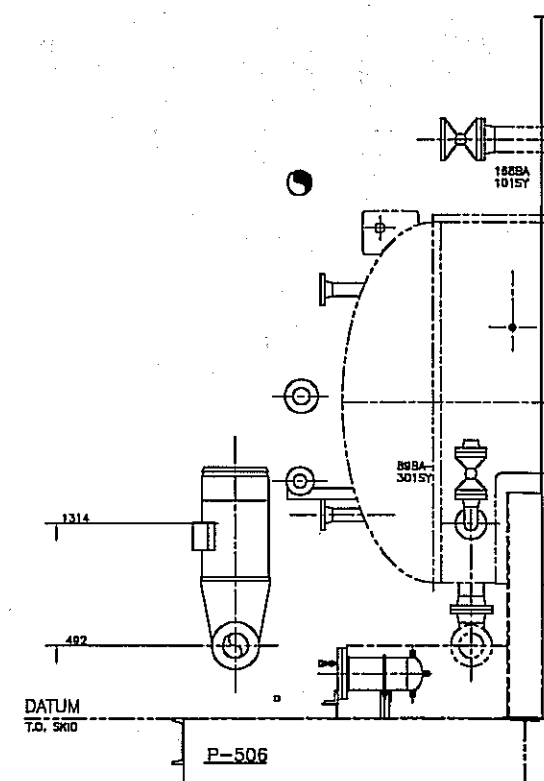
SECTION "E-E"



SECTION "C-C"



VIEW "B-B"



NO	DATE (d/m/y)	REVISIONS	BY	APPD
1	04/10/08	AS-BUILT	EEW	
2	24/03/08	CHANGED SIZE OF FLOW METER FE-80512; MOVED SAMPLE COOLER	EEW	LU
3	16/03/08	RE-ROUTE P-388 DISCHARGE PIPE; MOVED NOZZLE N10	EEW	LU
4	16/02/08	ISSUED FOR CONSTRUCTION	EEW	LU

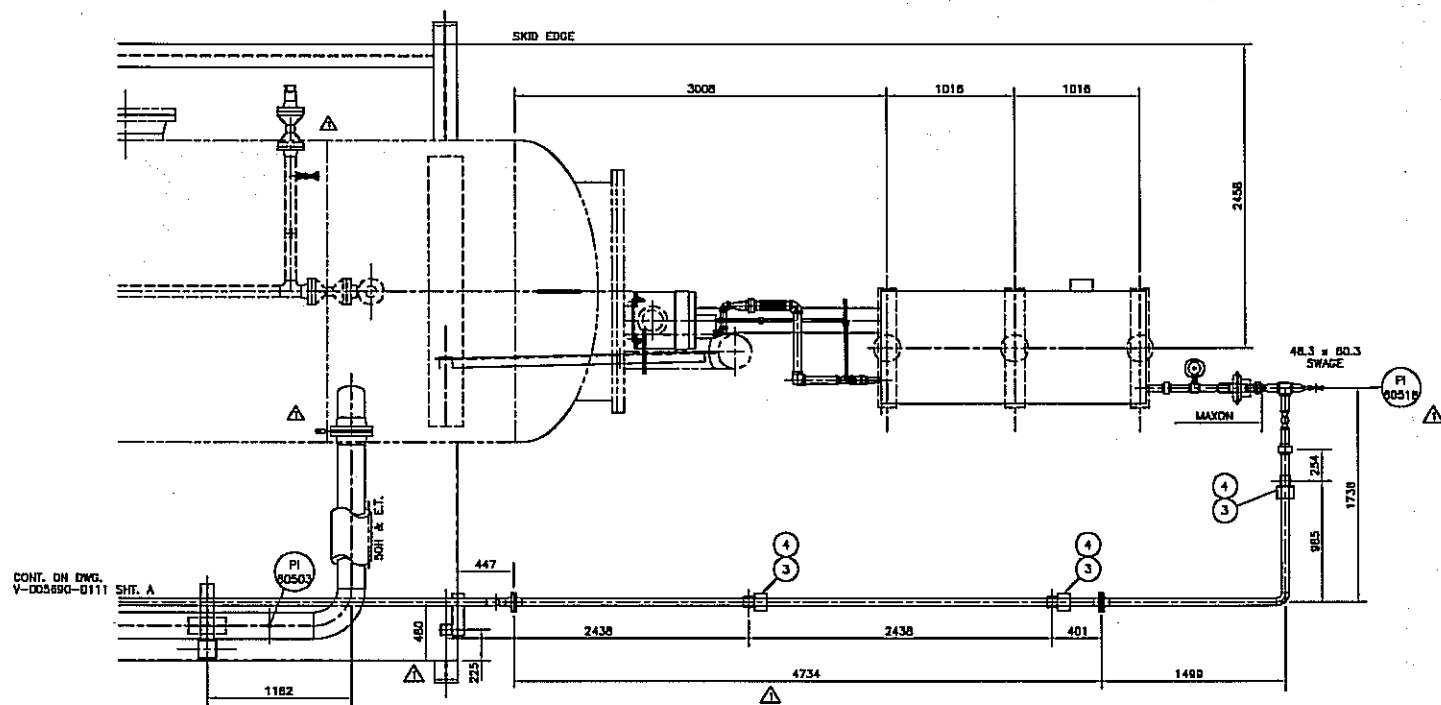
THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.



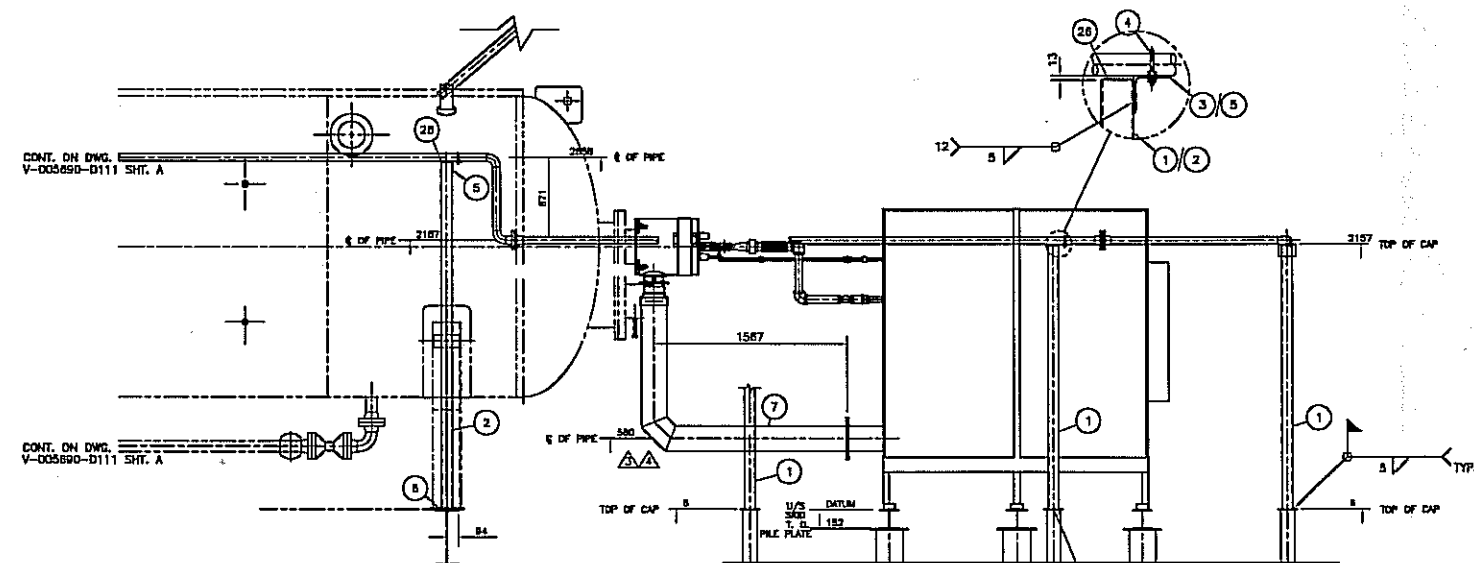
CLIENT: CONNACHER OIL & GAS LTD.  
C/O BOWER DAMBERGER ROLSETH ENGINEERING LTD.  
GREAT DIVIDE FACILITY, LSD 13-16-82-12 W4M

DWG TITLE: RECYCLE TREATER TR-805  
2438mm(8'-0") O.D. x 10668mm(35'-0") S/S  
PIPING LAYOUT - SECTIONS

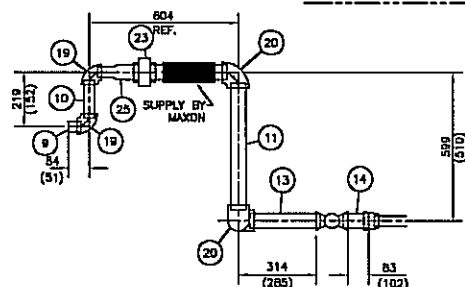
SCALE	DWN BY	DWG NO.	SHEET NO.	REV. NO.
1:25	E. WILSON	V-005690-D111	B of -	3
DATE (d/m/y)	CHKD	APPD		
10/03/08				



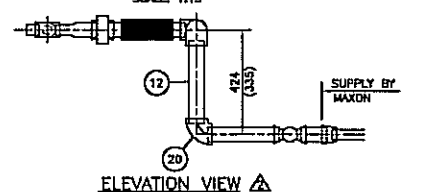
PLAN VIEW



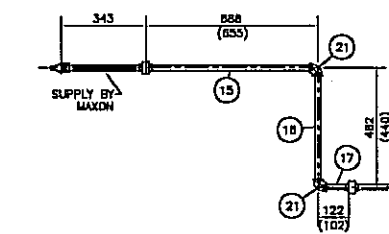
ELEVATION VIEW



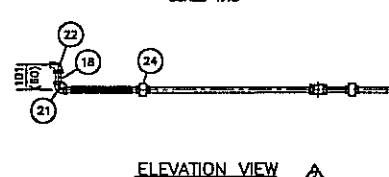
PLAN VIEW  
FUEL GAS LINE  
SCALE: 1:15



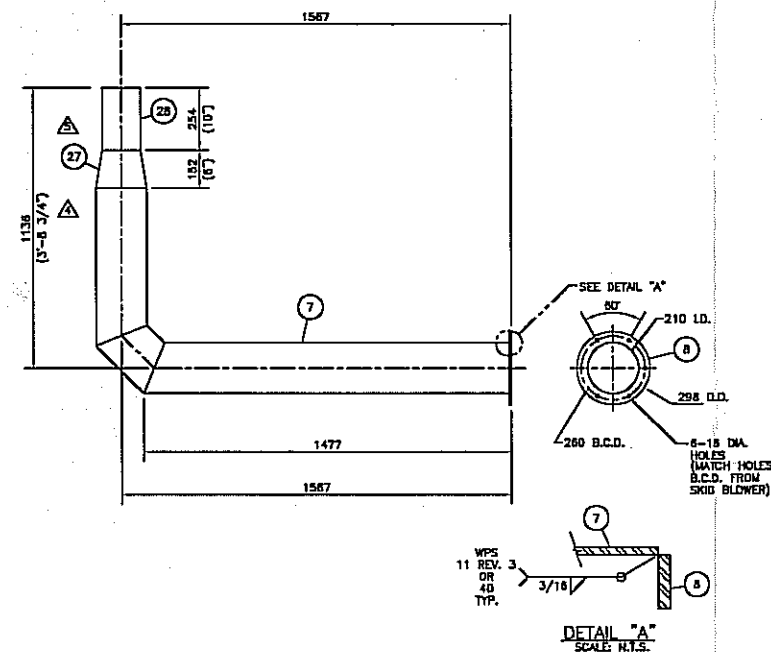
ELEVATION VIEW



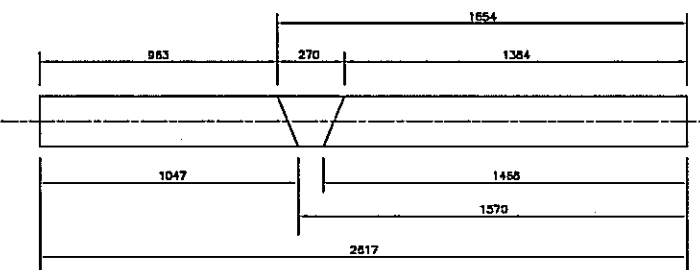
PLAN VIEW  
PILOT LINE  
SCALE: 1:15



ELEVATION VIEW



DETAIL "A"  
SCALE: N.T.S.



MK #7 PIPE CUTTING  
SCALE: 1:15

# MATERIAL LIST

MK	QTY	DESCRIPTION	MATERIAL	WT
1	3	HSS 3 1/2" x 3 1/2" x 3/16" x 2100 LG.	G40.21-44W	189
2	1	HSS 3 1/2" x 3 1/2" x 3/16" x 2784 LG.	G40.21-44W	74
3	3	ANGLE 4" x 4" x 1/4" x 140 LG.	G40.21-44W	8
4	4	U-BOLT 3/8" DIA. x 2" NPS C/W 2 NUTS	C.S.	1
5	1	ANGLE 4" x 4" x 1/4" x 340 LG.	G40.21-44W	7
6	1	PLATE 1/4" THK x 127 x 127 LG.	G40.21-44W	2
7	1	TUBE PIPE 8" SCH LIGHT WALL x 2817 LG. PBE	-	1
8	1	PLATE 3/8" THK x 210 LG. x 288 O.D.	G40.21-44W	8
9	1	NIPPLE 1 1/4" SCH XS x 51 LG. TBE	SA-108-B	1
10	1	NIPPLE 1 1/4" SCH XS x 152 LG. TBE	SA-108-B	2
11	1	PIPE 2" SCH XS x 510 LG. TBE	SA-108-B	8
12	1	PIPE 2" SCH XS x 335 LG. TBE	SA-108-B	5
13	1	PIPE 2" SCH XS x 285 LG. TBE	SA-108-B	5
14	1	NIPPLE 2" SCH XS x 102 LG. TBE	SA-108-B	2
15	1	PIPE 1/2" SCH XS x 855 LG. TBE	SA-108-B	2
16	1	PIPE 1/2" SCH XS x 440 LG. TBE	SA-108-B	2
17	1	NIPPLE 1/2" SCH XS x 102 LG. TBE	SA-108-B	1
18	1	PIPE 1/2" SCH XS x 80 LG. TBE	SA-108-B	2
19	2	ELBOW 1 1/4" CLASS 3000 F.S. x 90° FNPT	SA-105	8
20	3	ELBOW 2" CLASS 3000 F.S. x 90° FNPT	SA-105	16
21	3	ELBOW 1/2" CLASS 3000 F.S. x 90° FNPT	SA-105	3
22	1	STREET ELBOW 1/2" CLASS 3000 F.S. x 90° MNPTxFNPT	SA-105	1
23	1	UNION 2" CLASS 3000 F.S. x FNPT	SA-105	5
24	1	UNION 1/2" CLASS 3000 F.S. x FNPT	SA-105	1
25	1	CONC. SWAGE 2" x 1 1/4" SCH XS TBE	SA-108-B	2
26	4	CAP: PLATE 3/16" THK x 79 x 79 LG.	G40.21-44W	2
27	1	CONCENTRIC REDUCER	V-005690-B132	15
28	1	TUBE PIPE 8" SCH LIGHT WALL x 254 LG. PBE	-	1
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
SUBTOTAL				337
TOTAL (10)				357
TOTAL (kg)				182

NOTES:  
1. ALL DIMENSIONS ARE IN S.I. & IMPERIAL UNITS. DIMENSIONS IN BRACKETS ARE IMPERIAL HARD CONVERSIONS FOR SHOP REFERENCE ONLY.

NO	DATE (d/m/y)	REVISIONS	BY	APPD
09/03/07		AS-BUILT, NO CHANGE	SH	
22/01/07		ADDED CONC. REDUCER TO AIR TUBE	EEW	JK
05/01/07		CHANGED LENGTH MK. 7, MK. 1,2,3 & 5 SIZE; MISSING ELEVATION	EEW	JK
05/01/07		WRONG ELEVATION DIMENSION	EEW	JK
08/11/06		ADDED PIPING SPOOLS FOR FUEL GAS & FORCED AIR	EEW	JK
17/10/06		MISSING PL. & ISOLATION VALVE	EEW	JK
13/09/06		ISSUED FOR CONSTRUCTION	EEW	JK

THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP.. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

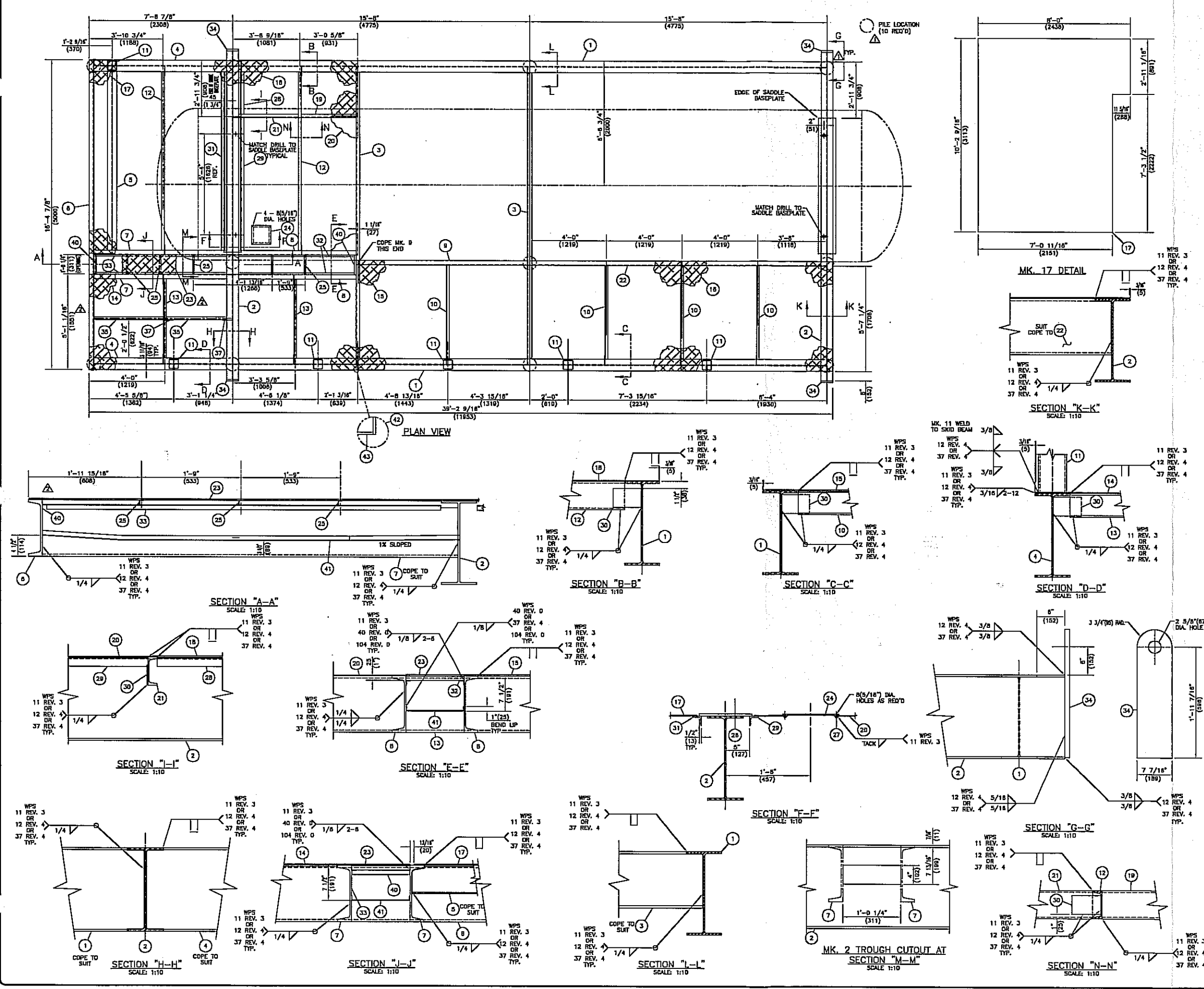
**UNIVERSAL INDUSTRIES**  
P.O. (780) 875-8181 F.O. (780) 875-8188

CLIENT: CONNACHER OIL & GAS LTD.  
C/O BOWER DAMBERGER ROLSETH ENGINEERING LTD.  
GREAT DIVIDE SAGD FACILITY, LSD 13-16-82-12 W4M  
R.P.O. # 64200-4 REV. 0

DWG TITLE: RECYCLE TREATER TR-805  
2438mm(8'-0") O.D. x 10668mm(35'-0") S/S  
BURNER SKID LOCATION & PIPING CONNECTION

SCALE	DWG BY	DWG NO.	SHEET NO.	REV. NO.
1:30	E. WILSON		V-005690-D111	6
DATE (d/m/y)	DWG	APPD		
29/08/06				





MATERIAL LIST				
MK	QTY	DESCRIPTION	MATERIAL	WT
1	2	BEAM W18 x 41# x 31'-3 11/16" LG.	G40.21-44W	2567
2	2	BEAM W18 x 41# x 17'-4 7/8" LG.	G40.21-44W	1427
3	2	CHANNEL C12 x 20.7# x 15'-9 1/16" LG.	G40.21-44W	852
4	2	BEAM W18 x 41# x 7'-3 3/4" LG.	G40.21-44W	800
5	1	BEAM W8 x 15# x 9'-11 3/8" LG.	G40.21-44W	149
6	1	CHANNEL C12 x 20.7# x 18'-4 7/8" LG.	G40.21-44W	340
7	2	CHANNEL C12 x 20.7# x 7'-3 3/4" LG.	G40.21-44W	303
8	2	CHANNEL C12 x 20.7# x 6'-0" LG.	G40.21-44W	269
9	1	CHANNEL C12 x 20.7# x 9'-0 1/8" LG.	G40.21-44W	186
10	4	CHANNEL C5 x 8.7# x 4'-11 13/16" LG. (CLIP ON ONE END)	G40.21-44W	134
11	8	HSS 8" x 8" x 3/8" x 9'-4 5/16" LG.	G40.21-44W	1543
12	2	CHANNEL C8 x 8.2# x 9'-5 3/16" LG. (CLIP ON BOTH ENDS)	G40.21-44W	155
13	2	CHANNEL C5 x 8.7# x 4'-2 11/16" LG. (CLIP ON BOTH ENDS)	G40.21-44W	57
14	1	CHECKER PLATE 1/4" x 5'-0 11/16" x 14'-2" LG.	G40.21-44W	731
15	1	CHECKER PLATE 1/4" x 5'-9 13/16" x 17'-0" LG.	G40.21-44W	1010
16	1	CHECKER PLATE 1/4" x 8'-0" x 5'-9 13/16" LG.	G40.21-44W	475
17	1	CHECKER PLATE 1/4" x 8'-0" x 10'-2 8/16" LG.	G40.21-44W	834
18	1	CHECKER PLATE 1/4" x 2'-11 1/16" x 6'-1 3/4" LG.	G40.21-44W	163
19	1	CHANNEL C8 x 8.2# x 2'-10 5/8" LG.	G40.21-44W	24
20	1	PLATE 3/16" x 6'-1 1/4" x 7'-3 15/16" LG.	G40.21-44W	343
21	1	CHANNEL C8 x 8.2# x 3'-3 5/8" LG. (CLIP ON BOTH ENDS)	G40.21-44W	25
22	1	CHANNEL C12 x 20.7# x 15'-9" LG.	G40.21-44W	326
23	1	CHECKER PLATE 1/4" x 1'-0 1/4" x 14'-2" LG.	G40.21-44W	146
24	1	PLATE 11 ga. x 1'-0" x 1'-0" LG.	A-569	5
25	5	ANGLE 1" x 1" x 3/16" x 1'-0 1/4" LG.	G40.21-44W	4
26	4	BOLT 1" DIA. x 2 1/2" LG. C/W HEX NUT & WASHER	A-325	5
27	4	BOLT 1/4" DIA. x 1" LG. C/W NUT	Gr.5	2
28	1	ANGLE 2" x 2" x 1/4" x 2'-2 7/8" LG.	G40.21-44W	7
29	1	ANGLE 2" x 2" x 1/4" x 7'-0 3/8" LG.	G40.21-44W	22
30	14	CLIP: FLATBAR 1/4" x 4" x 6" LG.	G40.21-44W	24
31	1	ANGLE 2" x 2" x 1/4" x 9'-5 3/16" LG.	G40.21-44W	30
32	2	ANGLE 1" x 1" x 1/8" x 6'-1 7/16" LG.	G40.21-44W	10
33	2	ANGLE 1" x 1" x 3/16" x 6'-11 3/16" LG.	G40.21-44W	11
34	4	PLATE 1" THK. x 7 7/16" x 2'-3 3/16" LG.	SA-516-70	233
35	1	CHANNEL C5 x 8.7# x 3'-8 3/16" LG.	G40.21-44W	24
36	1	CHANNEL C5 x 8.7# x 3'-2 1/4" LG.	G40.21-44W	21
37	2	CLIP: FLATBAR 1/4" x 4" x 8" LG.	G40.21-44W	3
38				
39				
40	2	ANGLE 1" x 1" x 3/16" x 1'-0 1/4" LG.	G40.21-44W	2
41	1	PLATE 10 ga. x 1'-2" x 13'-10" LG.	A-569	90
42				
43				
			SUBTOTAL	12934
			TOTAL (b.e.)	13710

NOTES:  
 1. ALL DIMENSIONS ARE IN IMPERIAL & S.I. UNITS. DIMENSIONS IN BRACKETS ARE S.I. HARD CONVERSIONS FOR SHOP REFERENCE ONLY.  
 2. SANDBLAST TO SSPC-SP6 AND 1 FINISH COAT CLOVERDALE EPOXY MASTIC 8310, WARM GRAY COLOR.  
 3. DELETE.  
 4. STITCH WELD UNDERSIDE OF CHECKER PLATE TO SKID MEMBERS.

NO	DATE (d/m/y)	REVISIONS	BY	APPD
1	05/10/08	AS-BUILT, NO CHANGE	EEW	
2	14/06/08	REMOVED GRATING AND SPILL UP AND ADDED STIFFENER MK. 35,38	EEW	JK
3	09/03/08	ADDED FILE LOCATION, SPILL UP	EEW	JK
4	16/02/08	ISSUED FOR CONSTRUCTION	EEW	JK

THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

**UNIVERSAL INDUSTRIES**  
 POC (780) 875-8181 FOC (780) 875-8188

CLIENT: CONNACHER OIL & GAS LTD.  
 C/O BOWER DAMBERGER ROLSETH ENGINEERING LTD.  
 GREAT DIVIDE FACILITY, LSD 13-16-82-12 W4M

DWG TITLE: RECYCLE TREATER TR-805  
 2438mm(8'-0") O.D. x 10668mm(35'-0") S/S  
 SKID PLAN VIEW AND DETAILS

SCALE: 1:30	DWN BY: E. WILSON	DWG NO.: V-005690-D108	SHEET NO.: 1 of 1
DATE (d/m/y): 05/02/08	CHKD: APPD:		



## GENERAL NOTES

## DESIGN

DESIGN CODE - ASME SECTION VIII, DIVISION 1 20\_04 ADDENDA JULY 1st, 2005

DESIGN PRESSURE OR MAWP (HOT & CORRODED) 363 psig(2500 kPag) DESIGN TEMPERATURE 365°F(185°C)

MAWP (HOT & CORRODED) LIMITED BY -

RADIOGRAPHY (TOP HEAD TO SHELL) UW-12(d) NONE JOINT EFFICIENCY 0.85

RADIOGRAPHY (BOTTOM HEAD TO SHELL) UW-12(d) NONE JOINT EFFICIENCY 0.85

POST WELD HEAT TREATMENT NONE ADDITIONAL CODES NONE

CORROSION ALLOWANCE 1/16"(1.6 mm)

HYDRO-TEST PRESSURE 545 psig(3759 kPag)

SERVICE WATER CAPACITY 1.81 ft<sup>3</sup>(0.051m<sup>3</sup>)

WEIGHT: dry 525 lbs(238 kg) operating design

OVERALL LENGTH N/A OVERALL HEIGHT 3'-0 3/4"(933mm)

MINIMUM DESIGN METAL TEMPERATURE -20°F (-29°C) @ MAWP

IMPACT TESTING NOT REQUIRED AS PER UG-20(f)(1-5)

## REGISTRATION

REGISTERED IN  
THE PROVINCE(S) SASKATCHEWAN/ALBERTA  
CRN NUMBER P1005.23  
MFR SERIAL NUMBER 08-04-210  
REFERENCE CRN NO.  
FOR REGISTERING \_\_\_\_\_

## PAINTING AND INSULATION

INTERNAL FINISH NONE

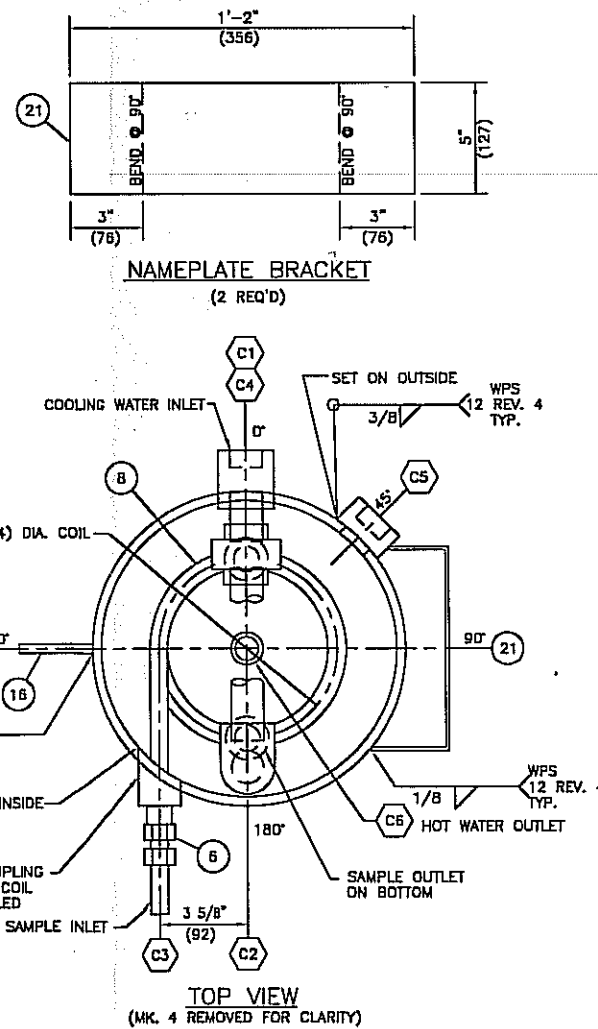
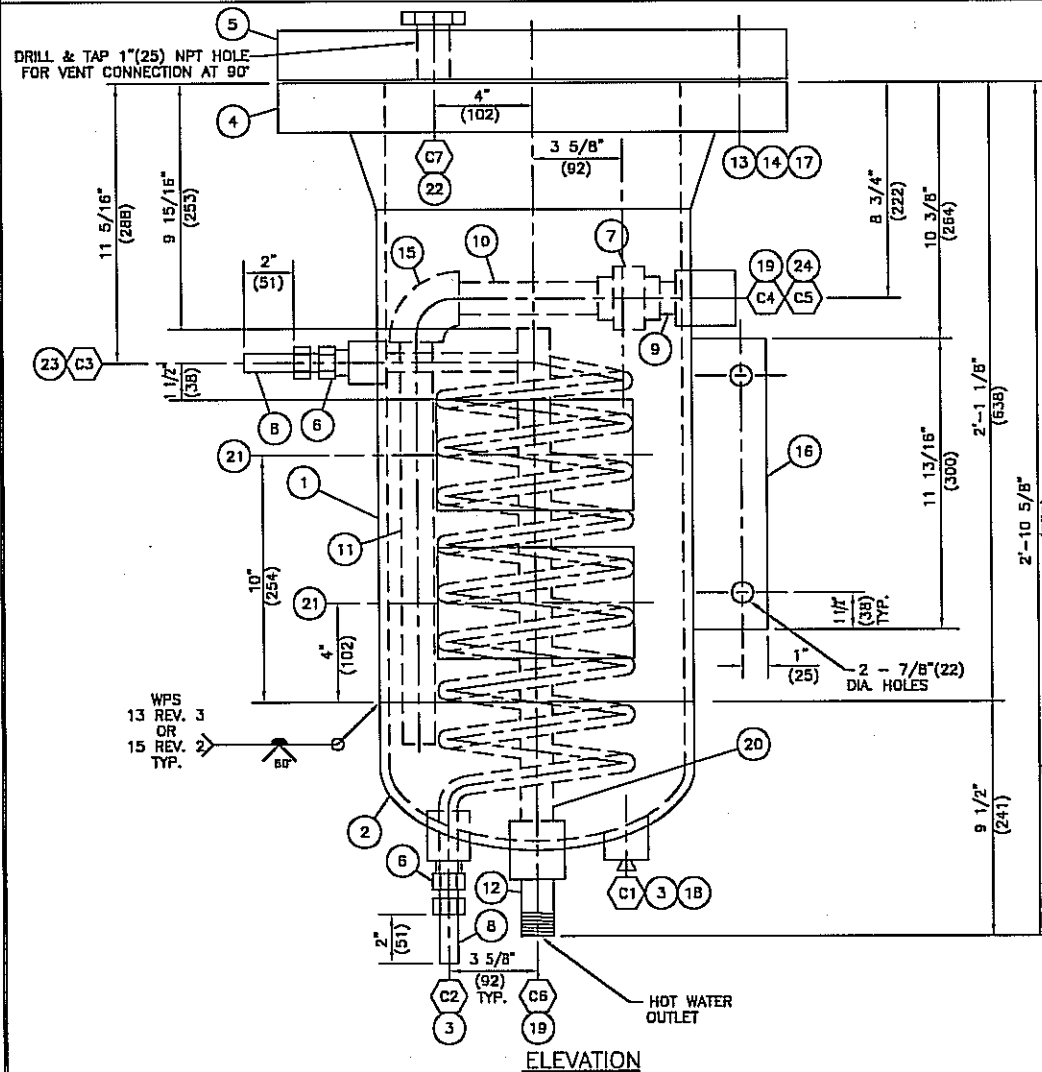
EXTERNAL FINISH SANDBLAST TO SSPC-SP6 AND APPLY 1 COAT PRIMER  
AND ONE FINISH COAT WARM GREY.

INSULATION NONE

## MATERIAL SPECIFICATIONS

SHELL			
MATERIAL	SA-106-B SMLS		
HEADS			
1. MATERIAL	SA-105	TYPE	RFWN CLASS 300
2. MATERIAL	SA-234-WPB	TYPE	PIPE CAP
3. MATERIAL		TYPE	
FLANGE	N/A	PIPE	SA-106-B
WELD FITTINGS	SA-234-WPB	TUBES	316 S.S.
NONPRESSURE	SA-36 OR EQUIV.	COUPLING	SA-105
WELDLET	N/A	THREADOLET	N/A
STUD BOLTS	SA-193-B7	HEX NUTS	SA-194-2H
GASKETS	316 S.S. GRAPHOIL		

## NOZZLE SCHEDULE

[illegible]

## MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL	WT
1	1	PIPE 12" SCH STD x 1'-8" LG. SMLS BBE	SA-106-B	83
2	1	PIPE CAP 12" SCH STD	SA-234-WPB	30
3	2	FULL COUPLING 3/4" CLASS 6000 F.S. SCR'D	SA-105	1
4	1	FLANGE 12" CLASS 300 RFWN x SCH STD BORE	SA-105	142
5	1	BLIND FLANGE 12" CLASS 300 RF	SA-105	184
6	2	TUBE X MALE PIPE, MALE CONNECTOR(SWAGelok SS-1210-1-12)	316 S.S.	1
7	1	UNION 1" CLASS 3000 F.S. SCR'D	SA-105	3
8	1	TUBING 3/4" x 0.065" WALL THICKNESS x 20'-0" LG.	316 S.S.	5
9	1	NIPPLE 1" SCH 80 x 2" LG. SMLS TBE	SA-106-B	1
10	1	PIPE 1" SCH 80 x 7" LG. SMLS TBE	SA-106-B	1
11	1	PIPE 1" SCH 80 x 1'-5" LG. SMLS TOE	SA-106-B	3
12	1	NIPPLE 1" SCH 80 x 3" LG. SMLS TBE	SA-106-B	1
13	1	GASKET 12" CLASS 300 RF x 1/8" THK.	316 S.S. GRAPHOIL	1
14	16	STUDS 1 1/8" DIA. x 6 3/4" LG.	SA-193-B7M	12
15	1	ELBOW 1" CLASS 3000 F.S. SCR'D	SA-105	2
16	1	PLATE 3/8" THK. x 3" x 11 13/16" LG. (*)	SA-36	4
17	32	HEX NUTS 1 1/8" NOM.	SA-194-2HM	10
18	1	HEX PLUG 3/4" CLASS 3000 F.S. THR'D	SA-105	1
19	2	FULL COUPLING 1" CLASS 6000 F.S. SCR'D	SA-105	1
20	1	PIPE 1" SCH 80 x 1'-8 1/2" LG. SMLS TOE	SA-106-B	3
21	2	FLATBAR 1/8" THK. x 5" x 1'-2" LG. (*)	SA-36	4
22	1	HEX PLUG 1" CLASS 3000 F.S. THR'D	SA-105	1
23	1	LONG COUPLING 3/4" CLASS 6000 F.S. SCR'D x 3" LG.	SA-105	1
24	1	HALF COUPLING 1" CLASS 6000 F.S. SCR'D	SA-105	1

NOTE:	SUBTOTAL
1. ALL DIMENSIONS ARE IN IMPERIAL & S.I. UNITS. DIMENSIONS IN BRACKETS ARE S.I. HARD CONVERSIONS FOR SHOP REFERENCE ONLY.	x 1.06
2. THIS IS A "UM" VESSEL	TOTAL
3. ITEMS IDENTIFIED WITH A (*) ARE ATTACHED TO THE PRESSURE ENVELOPE & REQUIRE A HEAT NUMBER TO BE HARD STAMPED & RECORDED BY Q.C..	
4. SEE EDS-6036 REVISION "5" FOR REGISTERED DESIGN.	

### COIL DATA

DESIGN CODE: ASME B31.3  
DESIGN PRESSURE: 16665 kPa (2417 psi)  
DESIGN TEMPERATURE: 185°C (365°F)  
HYDROTEST PRESSURE: 25000 kPa (3626 psi)  
SERVICE: HEAVY HYDROCARBON  
CAPACITY: 0.002 m<sup>3</sup> (0.057 ft<sup>3</sup>)  
SERIAL NO.: 06-04-210  
CRN NO. OH0260.23

△					
△					
△					
△					
△					
△					
△	05/10/06	AS-BUILT		EEW	
△	19/04/06	VESSEL DESIGN REVIEWED & FOUND TO MEET JULY 1st, 2005 ADDENDA		EEW	JK
NO	DATE (d/m/y)	REVISIONS		BY	APPD
REVISIONS					


THIS DRAWING IS THE PROPERTY OF UNIVERSAL INDUSTRIES CORP. AND IS TO BE USED ONLY IN CONJUNCTION WITH PERFORMANCE OF WORK BY UNIVERSAL INDUSTRIES CORP.. REPRODUCTION OR USE OF IN WHOLE OR IN PART FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.



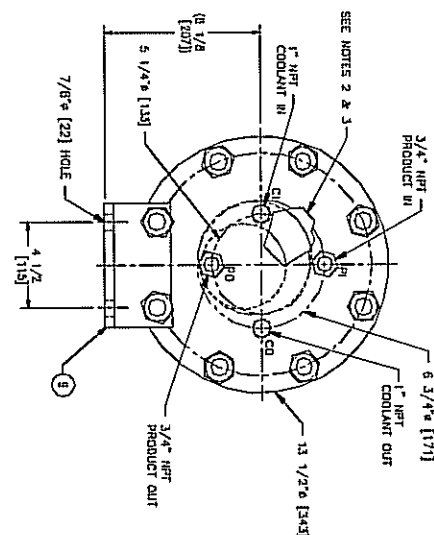
# UNIVERSAL INDUSTRIES

4 CLIENT CONNACHER OIL & GAS LTD.  
C/O BOWER DAMBERGER ROLSETH ENGINEERING  
GREAT DIVIDE FACILITY, LSD 13-16-82-12 W4M

DWG TITLE	SAMPLE COOLER E-433 1'-0"(305mm) NOM. x 2'-1 1/8"(638mm) S/F.O.F. GENERAL ARRANGEMENT
-----------	---

SCALE	DWN BY	DWG NO.	SHEET NO.	REV. NO.
1:5	E. WILSON	V-005690-C118	1 OF 1	
DATE (d/m/y) 19/04/06	CHKD APPD			

\\DWG\WO-005690\118005690



BILL OF MATERIALS			
ITEM QTY	DESCRIPTION	PART NO.	MATERIAL
1	SHELL 8" SCH 40 X 17 1/2" LB SMLS	WH-4K51	SA-106 B
1	FLANGE 8" RTBL CLASS 150	130-6H11-4B3	SA-105
2	BOTTOM HEADS 8" SCH 40 WELD CAP	130-6H10-3H1	SA-203 WTB
3	TAIL COIL, WELD 3/4" X .055 X .36 LB ERW	131-05B1-360	SA-249 316/L
5	1/4" COIL COUPLER, 1/2" NPT CLASS 3000	110-43H11-NP1	SA-105
8	TUBE MITING, 3/4" TUBE X 3/4" WMT	117-6B18-601	SA-105
7	FLANGE 8" RTBL CLASS 150	130-6H11-4B3	SA-105
8	TUBE MITING, 3/4" TUBE X 3/4" NPT	117-6B18-601	SA-105
1	PACKER, LUDWIG	131-05B1-360	SA-105
1	1/4" NUT	117-6B18-601	SA-105
11	PLUG 1/2" NPT HEX HEAD	110-40P7-NP1	PLATED

# BILL OF MATERIALS

**John Crane/Tomco**  
 11000 S. CENTRAL PARK BLVD.  
 DALLAS, TEXAS 75243

**Model:** \_\_\_\_\_

**Capacity:** \_\_\_\_\_

**Pressure:** \_\_\_\_\_

**Temperature:** \_\_\_\_\_

**Material:** \_\_\_\_\_

**Notes:** \_\_\_\_\_

**Part Number:** \_\_\_\_\_

**Quantity:** \_\_\_\_\_

**Customer:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_

**State:** \_\_\_\_\_

**Zip:** \_\_\_\_\_

**Phone:** \_\_\_\_\_


**Fax:** \_\_\_\_\_

**E-mail:** \_\_\_\_\_

**Web:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

1. DUMP FOR VESSEL IS 234 PSI @ 210° F. (COOLANT SIDE). 
2. COKE INSTALLATION IS ADDED AFTER THE COIL IS INSTALLED IN THE HEAD. IT ALSO HAS TO BE TACK WELDED IN POSITION AS A SECONDARY OPERATIONAL
3. THE MAXIMUM ALLOWED GAP BETWEEN THE COKE SHAPE AND THE INNER SURFACE OF THE FLANGE IS 1/8".
4. STAIN INLETS AND OUTLETS WITH PO FOR PRODUCT III, PO FOR PRODUCT II, PO FOR COOLANT IN AND CO FOR COOLANT OUT ON THE TOP HEAD.
5. HEAT EXCHANGER CAN BE MOUNTED IN VERTICAL OR HORIZONTAL POSITION.

**SHOP NOTES**

- A. REFERENCE LINE IS 1.00" FROM END OF SHELL.
- B. ALL DIMENSIONS IN ( ) ARE REFERENCE DIMENSIONS.
- C. ALL DIMENSIONS ARE IN INCHES.
- D. ALL DIMENSIONS IN [ ] ARE IN MILLIMETERS.
- E. PLANK FINISH PER ISL 011.5-1996 PARA. E.4.4.  
(125 TO 250 METER-SMACH AVERAGE ROUGHNESS)
- F. PLANT BOLT PATTERN TO STANDARD NUTRAL CENTER LINE.  
STUDS, NUTS & CONEETS PER LES-2013-150.
- G. PAINT LEAD COAT BLUE.
- H. LEAK TEST SHELL & COIL @ 90 PSI.

ASSEMBLY TOLERANCES  
(UNLESS OTHERWISE NOTED)

GENERAL VESSEL	± 1/4"
WATER SUBG	± 1/2"
NET. Dwg.	± 1/2"
ANGULAR	± 2 DEG

13	Δ	REVISED VESSEL 1	REV	18 SEPT 2002
12	Δ	CHANGED VESSEL, PRESUMED ON MORE 1	REV	30 AUG. 2002
11	Δ	REV PLANT NUMBER, DOI MOD 3	JEFF	7 JUL 2002
10	Δ	INCORPORATED REV'S A-U & UPDATED TO CORRECT STUD.	LIEB	07 JUNE 2002

**Webb**  
Seed Support Systems

John Crane Lemco

2931 East Apache Street  
Tulsa, Oklahoma 74116  
Telephone: 918 835 7329  
Facsimile: 918 835 5827

1. SEXUAL
DATE
2 AUG 1993
DD BY
DATE
DD BY
DD BY

HEAT EXCHANGER W/DOUBLE WRAP COIL

CUST F.O. NO. 47-108 HN-

LHXF-0750-SCS

