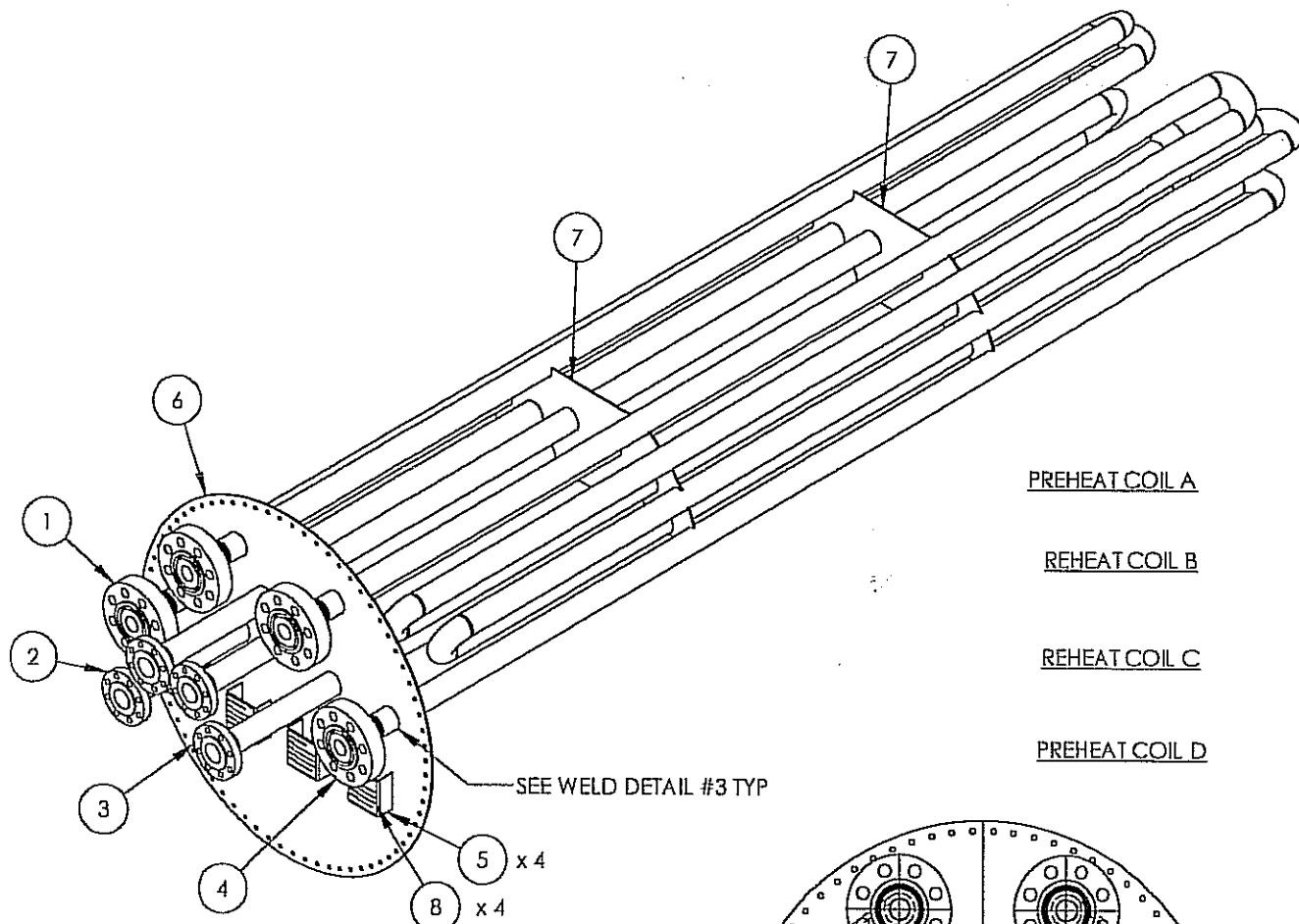
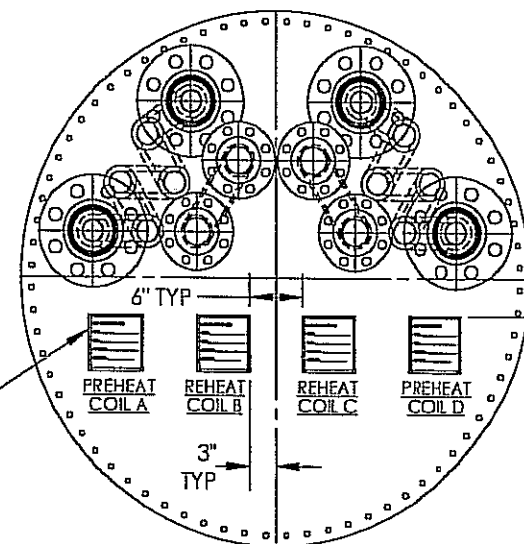


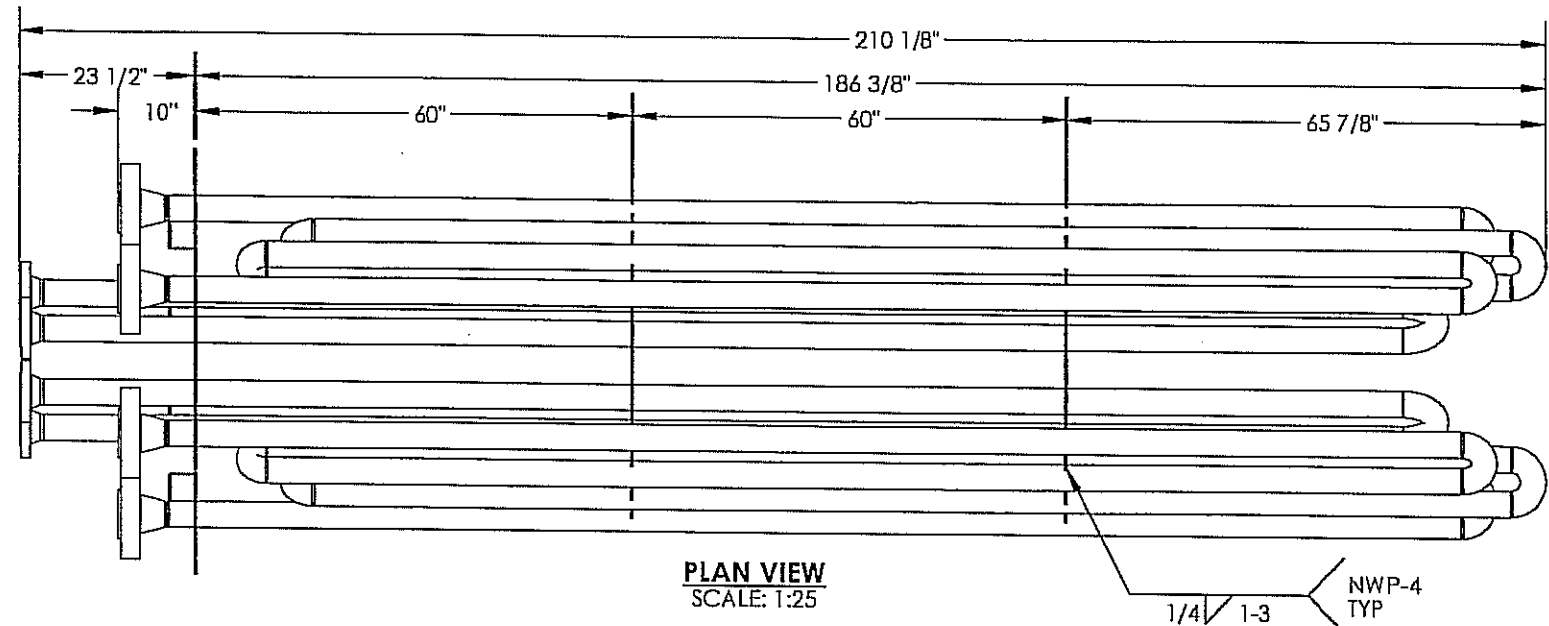
ITEM	PART #	DESCRIPTION	MTR #	LENGTH	QTY.
1	-	PREHEAT COIL A - SEE SHEET 2			1
2	-	REHEAT COIL B - SEE SHEET 3			1
3	-	REHEAT COIL C - SEE SHEET 4			1
4	-	PREHEAT COIL D - SEE SHEET 5			1
5	BRACKET-NAME-1	TANK/VESSEL NAME PLATE BRACKET			4
6	PLAB60120A	STEEL PLATE - 1/4" x 60" x 120" SA36/44W		.5	1
7	PLAB60120A	STEEL PLATE - 1/4" x 60" x 120" SA-36/44W		.2	2
8	VES-NAMEPLATE-1	VESSEL NAME PLATE BLACK/SILVER DEEP ETCHED			4



ISOMETRIC VIEW
SCALE: 1:25



SIDE VIEW
SCALE: 1:20



PLAN VIEW
SCALE: 1:25

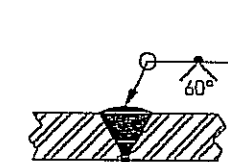
ORIGINAL

S/N NWP - 08118-002

NOTES

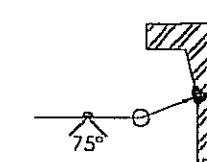
1. ALL DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm 1/8$ " UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS INCLUDE $1/8$ " ROOT GAP.
3. ALL BOLT HOLES STRADDLE COMMON CENTER LINE.
4. CUT LENGTHS FOR PIPE ARE FOR REFERENCE ONLY.
5. COIL TO BE CLEANED WITH ALL OPENINGS PLUGGED BEFORE SHIPMENT.
6. USE WELD PROCEDURE NWP-4 OR NWP-6 FOR ALL TACK WELDS.
7. APPROXIMATE WEIGHT: 4800LBS.

WELD DETAIL #1



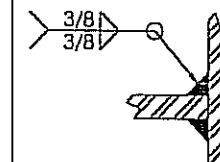
WPS NWP-4

WELD DETAIL #2



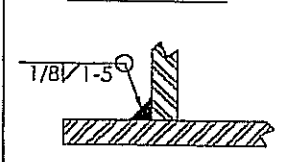
WPS NWP-4

WELD DETAIL #3



WPS NWP-6

WELD DETAIL #5



WPS NWP-4

ISSUED FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION

SIGNED: *[Signature]*

DATE: JUL 19 2011

w.o.: 08118-002

S.O.:

ALL DIMENSIONS IN INCHES



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PH: (403) 227-4100 FAX: (403) 227-4102

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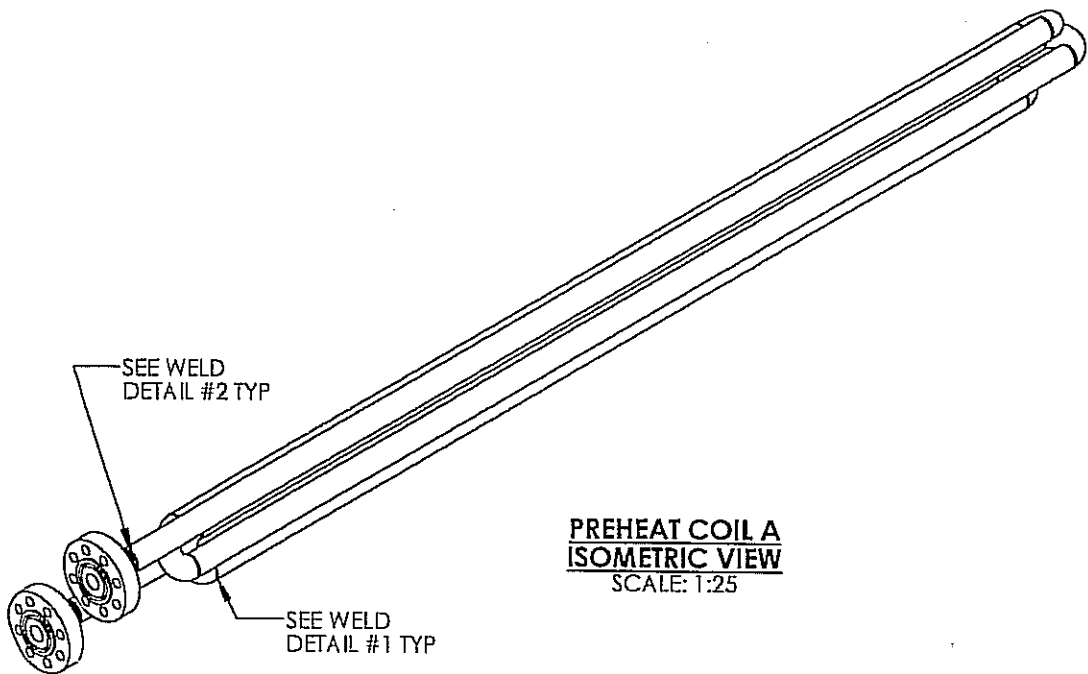
MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

REPLACEMENT COIL ASSEMBLY

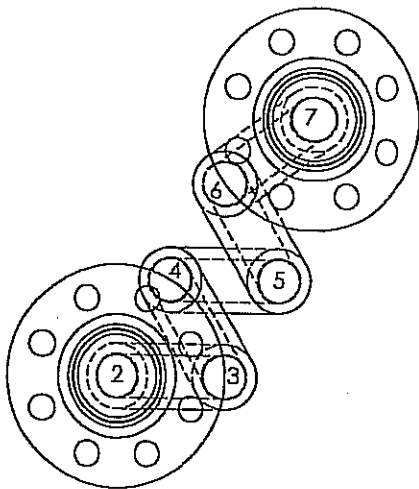
DWN: DJ	CHK: <i>[Signature]</i>	APP: <i>[Signature]</i>
DATE: 2011.06.17	DATE: JUL 19 2011	DATE: JUL 19 2011
SCALE: 1:25	DWG: 08118	REV: 0
SHEET: 1 OF 6		

DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP	
		0	2011.07.08	DJ	<i>[Signature]</i>	<i>[Signature]</i>	ISSUED FOR CONSTRUCTION
		A	2011.06.20	DJ	-	-	ISSUED FOR APPROVAL
REFERENCE DRAWINGS		DRAWING REVISIONS					

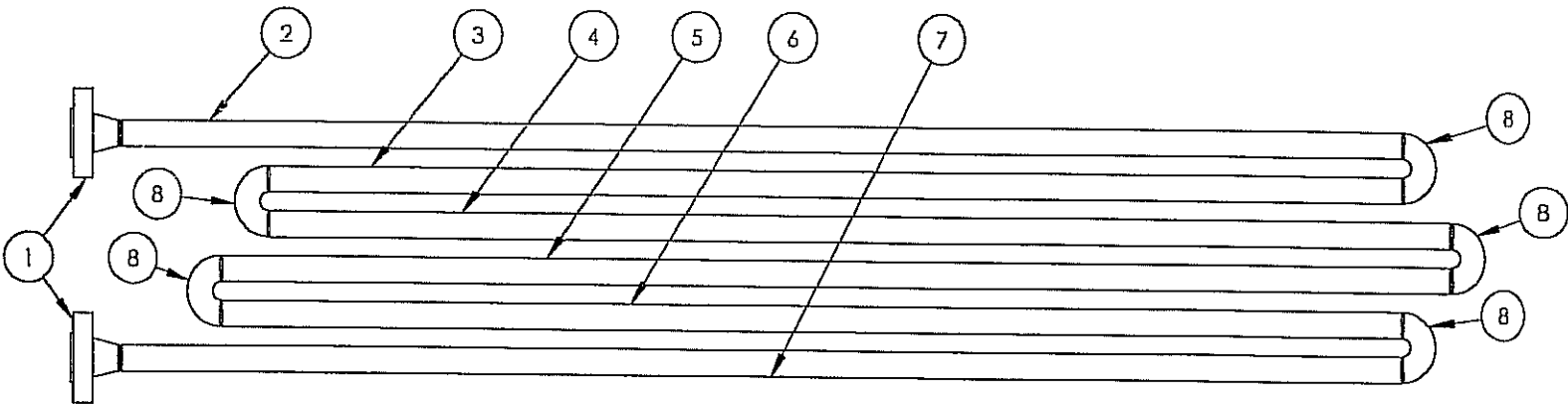
ITEM	PART #	DESCRIPTION	MTR #	LENGTH	QTY.
1	FLA3FXHBF	FLANGE 3" 2500 ANSI SCH XXH RTJ SA350-LF2-CL1			2
2	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		178 3/8"	1
3	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		157 7/8"	1
4	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		164 3/8"	1
5	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		170 7/8"	1
6	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		164 3/8"	1
7	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		178 3/8"	1
8	RET3RXXHGD	RETURN 180 DEG 3" SCH XXH SR BW SA420-WPL6			5



PREHEAT COIL A
ISOMETRIC VIEW
SCALE: 1:25



PREHEAT COIL A
ORIENTATION VIEW
SCALE: 1:10



PREHEAT COIL A
PLAN VIEW
SCALE: 1:25

ORIGINAL

PREHEAT COIL A DESIGN DATA	
DESIGN AND FABRICATE TO:	ANSI/ASME B31.3 NFS 2008 EDITION
CLIENT SPECIFICATION:	-
DESIGN PRESSURE:	5031 PSIG
MAX. DESIGN METAL TEMPERATURE:	200 °F
MIN. DESIGN METAL TEMPERATURE:	-20 °F
IMPACT TEST:	EXEMPT PER TABLE 323.2.2 COLUMN A
RADIOGRAPHY:	100%
OTHER NDE:	-
POST WELD HEAT TREATMENT:	1150 °F ± 50 °F FOR 1 HOUR MIN
HYDROSTATIC TEST PRESSURE:	7547 PSIG
CORROSION ALLOWANCE:	1/8"
PRE-HEAT:	50 °F
WEIGHT EMPTY:	1835 LBS
WEIGHT FULL:	2000 LBS
CAPACITY:	2.64 CU FT
SURFACE AREA:	83.8 SQ FT
QUALITY CONTROL PROGRAM:	AQP-1253
WELDING PROCEDURE REGISTRATION NO.:	1604.2
WELD PROCEDURES:	NWP-4, NWP-6
SERVICE:	HYDROCARBONS
CRN NO.:	P-9403.213
DESIGN REGISTRATION DRAWINGS:	BDD-300A REV2
REFERENCE CALCULATIONS:	BDD-300A REV5

ISSUED FOR CONSTRUCTION

DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP	DRAWING REVISIONS
		0	2011.07.08	DJ	133	Q	ISSUED FOR CONSTRUCTION
		A	2011.06.20	DJ	-	-	ISSUED FOR APPROVAL

ISSUED FOR
CONSTRUCTION

SIGNED: 
DATE: JUL 13 2011
W.O.: 08118-002
S.O.: -
ALL DIMENSIONS IN INCHES



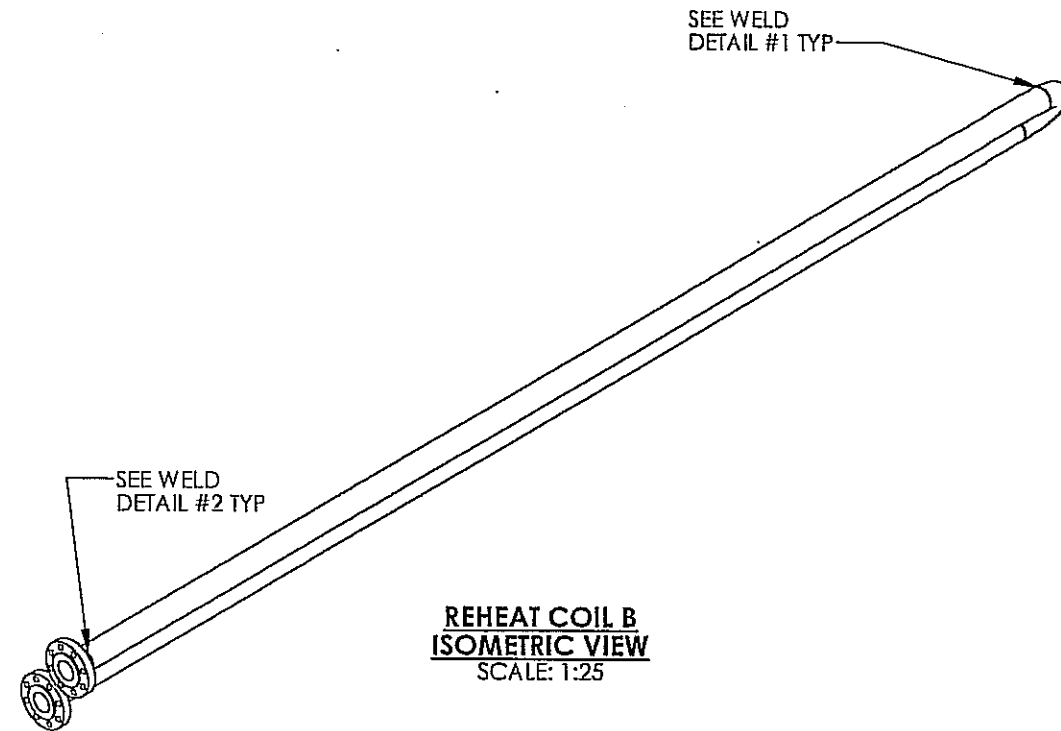
P.O. BOX 6280, INNISFAIL, AB T4G 1S9
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MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

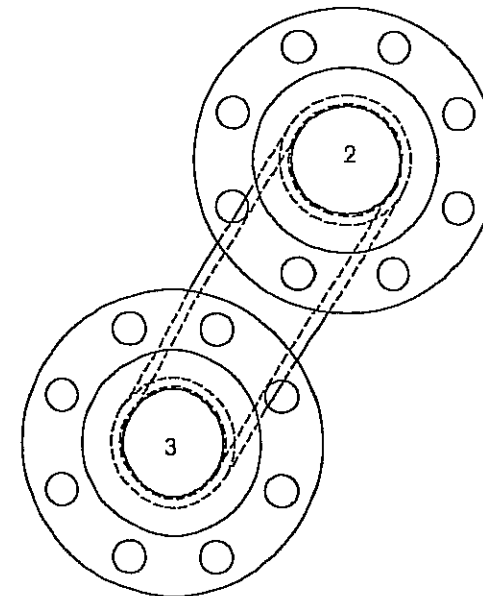
REPLACEMENT COIL ASSEMBLY

DWN: DJ	CHK: 133	APP: Q
DATE: 2011.06.17	DATE: JUL 13 2011	DATE: JUL 08 2011
SCALE: 1:25	DWG: 08118	REV: 0
SHEET: 2 OF 6		

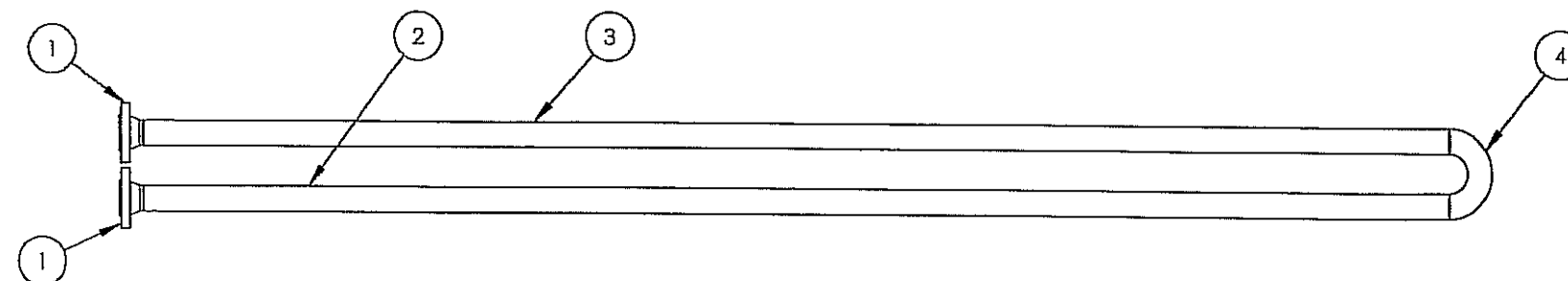
ITEM	PART #	DESCRIPTION	MTR #	LENGTH	QTY.
1	FLA3C80AF	FLANGE 3" 600 ANSI SCH XH/80 RFWN SA350-LF2-CL1			2
2	PIP380B	PIPE 3" SCH.80 SA333-GR6		187 3/8"	1
3	PIP380B	PIPE 3" SCH. 80 SA333-GR6		187 3/8"	1
4	RET3L80GD	RETURN 180 DEG 3" SCH XH/80 LR BW SA420-WPL6			1



REHEAT COIL B
ISOMETRIC VIEW
SCALE: 1:25



REHEAT COIL B
ORIENTATION VIEW
SCALE: 1:5



REHEAT COIL B
FLAT VIEW
SCALE: 1:25

ISSUED FOR CONSTRUCTION

ORIGINAL

REHEAT COIL B DESIGN DATA	
DESIGN AND FABRICATE TO:	ANSI/ASME B31.3 NFS 2008 EDITION
CLIENT SPECIFICATION:	-
DESIGN PRESSURE:	1350 PSIG
MAX. DESIGN METAL TEMPERATURE:	200 °F
MIN. DESIGN METAL TEMPERATURE:	-20 °F
IMPACT TEST:	EXEMPT PER TABLE 323.2.2 COLUMN A
RADIOGRAPHY:	100%
OTHER NDE:	-
POST WELD HEAT TREATMENT:	1150 °F ± 50 °F FOR 1 HOUR MIN
HYDROSTATIC TEST PRESSURE:	2025 PSIG
CORROSION ALLOWANCE:	1/8"
PRE-HEAT:	50 °F
WEIGHT EMPTY:	385 LBS
WEIGHT FULL:	485 LBS
CAPACITY:	1.59 CU FT
SURFACE AREA:	31.9 SQ FT
QUALITY CONTROL PROGRAM:	AQP-1253
WELDING PROCEDURE REGISTRATION NO.:	1604.2
WELD PROCEDURES:	NWP-4, NWP-6
SERVICE:	HYDROCARBONS
CRN NO.:	P-9407.213
DESIGN REGISTRATION DRAWINGS:	BDD-300 REV10
REFERENCE CALCULATIONS:	BDD-300 REV13

DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP	
		0	2011.07.08	DJ	163	D	ISSUED FOR CONSTRUCTION
		A	2011.06.20	DJ	-	-	ISSUED FOR APPROVAL
REFERENCE DRAWINGS		DRAWING REVISIONS					

ISSUED FOR CONSTRUCTION

SIGNED: *[Signature]*
DATE: JUL 19 2011

W.O.: 08118-002

S.O.: *[Signature]*

ALL DIMENSIONS IN INCHES



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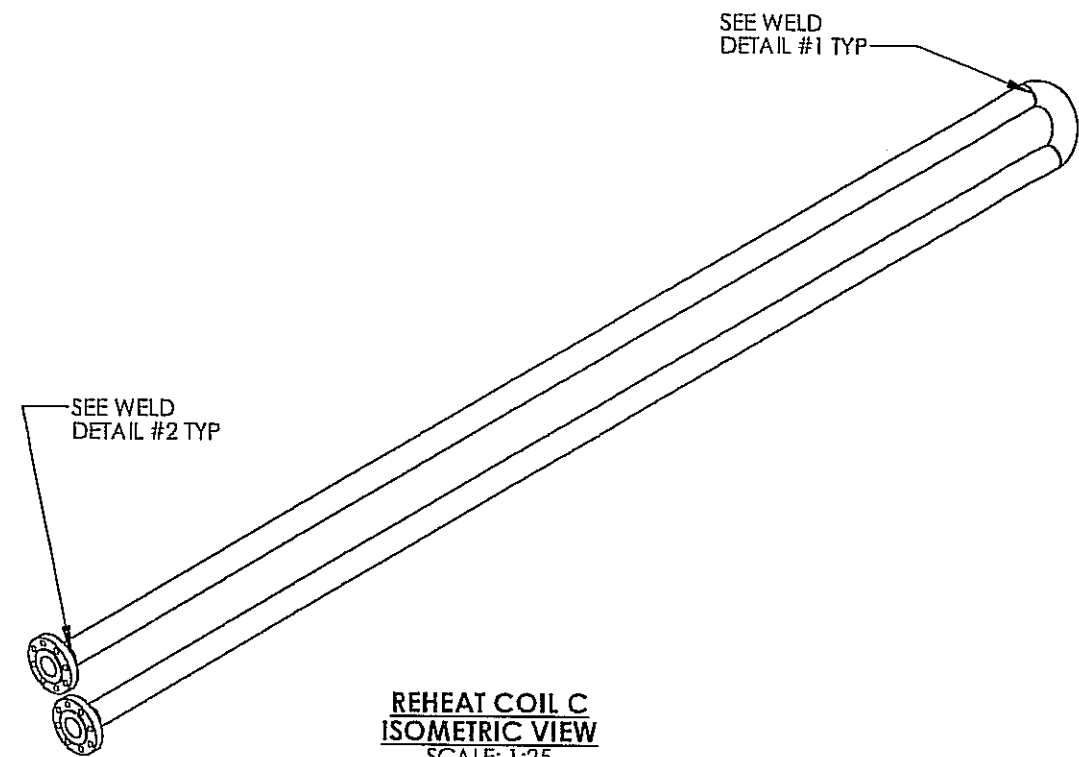
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MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

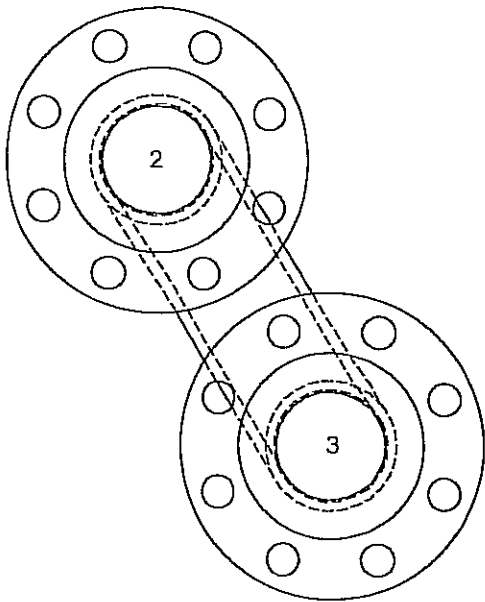
REPLACEMENT COIL ASSEMBLY

DWN: DJ	CHK: <i>[Signature]</i>	APP: <i>[Signature]</i>
DATE: 2011.06.17	DATE: JUL 8/2011	DATE: JUL 08/2011
SCALE: 1:25	DWG: 08118	REV: 0
SHEET: 3 OF 6		

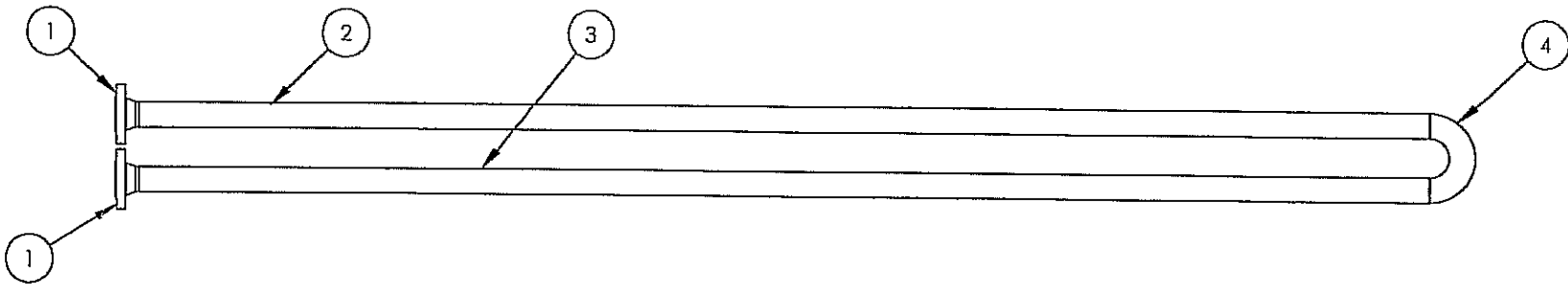
ITEM	PART #	DESCRIPTION	MTR #	LENGTH	QTY.
1	FLA3C80AF	FLANGE 3" 600 ANSI SCH XH/80 RFWN SA350-LF2-CL1			2
2	PIP380B	PIPE 3" SCH.80 SA333-GR6		187 3/8"	1
3	PIP380B	PIPE 3" SCH. 80 SA333-GR6		187 3/8"	1
4	RET3L80GD	RETURN 180 DEG 3" SCH XH/80 LR BW SA420-WPL6			1



REHEAT COIL C
ISOMETRIC VIEW
SCALE: 1:25



REHEAT COIL C
ORIENTAION VIEW
SCALE: 1:5



REHEAT COIL C
FLAT VIEW
SCALE: 1:25

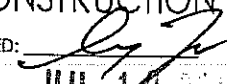
ISSUED FOR CONSTRUCTION

ORIGINAL

REHEAT COIL C DESIGN DATA	
DESIGN AND FABRICATE TO:	ANSI/ASME B31.3 NPS 2008 EDITION
CLIENT SPECIFICATION:	-
DESIGN PRESSURE:	1350 PSIG
MAX. DESIGN METAL TEMPERATURE:	200°F
MIN. DESIGN METAL TEMPERATURE:	-20°F
IMPACT TEST:	EXEMPT PER TABLE 323.2.2 COLUMN A
RADIOGRAPHY:	100%
OTHER NDE:	-
POST WELD HEAT TREATMENT:	1150°F±50°F FOR 1 HOUR MIN
HYDROSTATIC TEST PRESSURE:	2025 PSIG
CORROSION ALLOWANCE:	1/8"
PRE-HEAT:	50°F
WEIGHT EMPTY:	385 LBS
WEIGHT FULL:	485 LBS
CAPACITY:	1.59 CU FT
SURFACE AREA:	31.9 SQ FT
QUALITY CONTROL PROGRAM:	AQP-1253
WELDING PROCEDURE REGISTRATION NO.:	1604.2
WELD PROCEDURES:	NWP-4, NWP-6
SERVICE:	HYDROCARBONS
CRN NO.:	P-9407.213
DESIGN REGISTRATION DRAWINGS:	BDD-300 REV10
REFERENCE CALCULATIONS:	BDD-300 REV13

DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP	
		0	2011.07.08	DJ	KS	Q	ISSUED FOR CONSTRUCTION
		A	2011.06.20	DJ	-	-	ISSUED FOR APPROVAL
REFERENCE DRAWINGS		DRAWING REVISIONS					

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SIGNED: 
DATE: JUL 19 2011

W.O.: 08118-002

S.O.: _____

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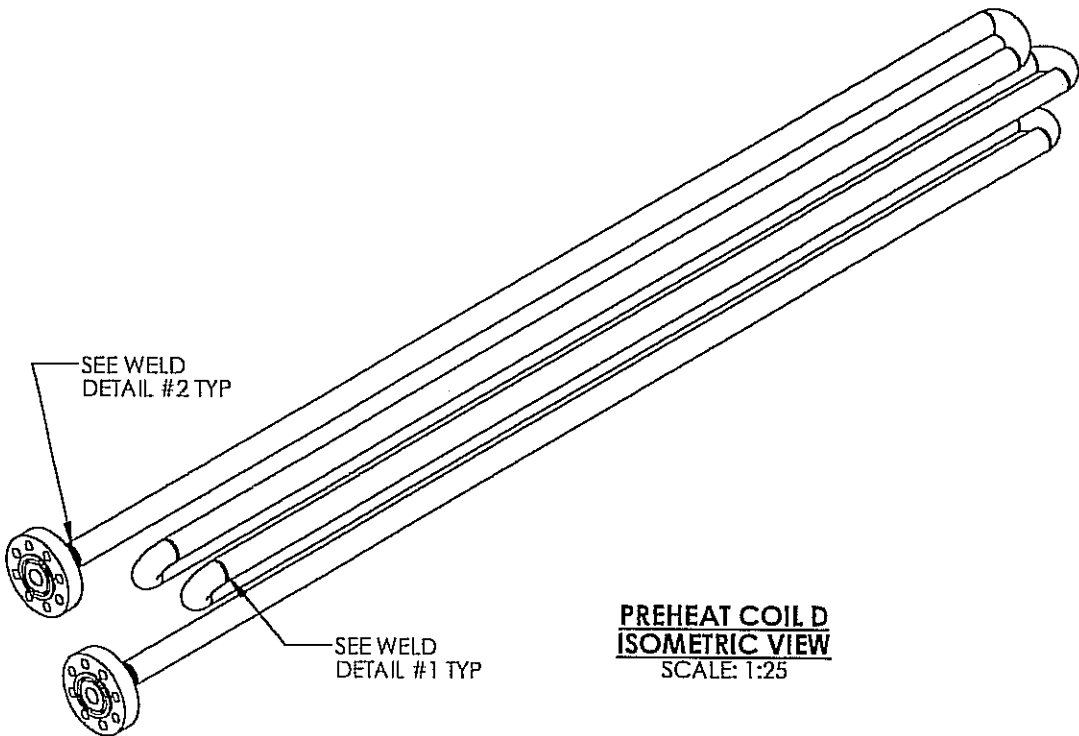
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MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

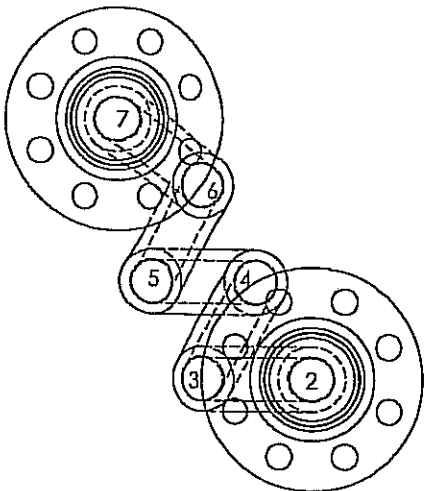
REPLACEMENT COIL ASSEMBLY

DWN: DJ	CHK: KS	APP: Q
DATE: 2011.06.17	DATE: JUL 19 2011	DATE: JUL 19 2011
SCALE: 1:25	DWG: 08118	REV: 0
SHEET: 4 OF 6		

ITEM	PART #	DESCRIPTION	MTR #	LENGTH	QTY.
1	FLA3FXHBF	FLANGE 3" 2500 ANSI SCH XXH RTJ SA350-LF2-CL1			2
2	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		178 3/8"	1
3	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		157 7/8"	1
4	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		164 3/8"	1
5	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		170 7/8"	1
6	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		164 3/8"	1
7	PIP3XXHB	PIPE 3" SCH. XXH SA333-GR6		178 3/8"	1
8	RET3RXXHGD	RETURN 180 DEG 3" SCH XXH SR BW SA420-WPL6			5

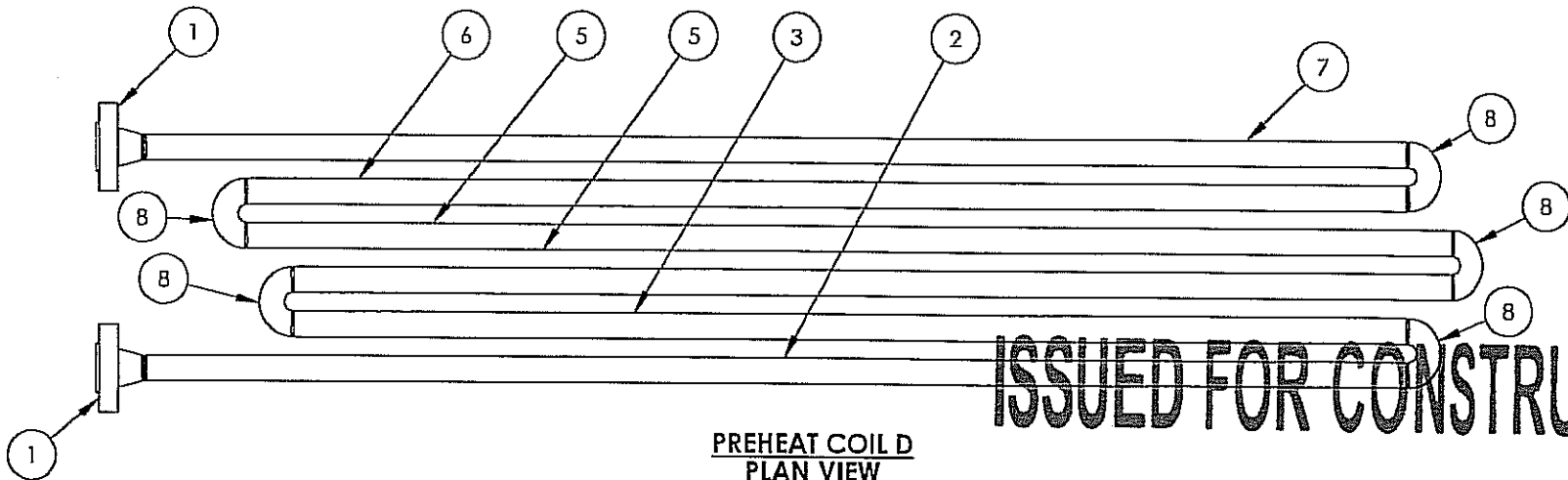


PREHEAT COIL D
ISOMETRIC VIEW
SCALE: 1:25



PREHEAT COIL D
ORIENTATION VIEW
SCALE: 1:10

ORIGINAL



PREHEAT COIL D
PLAN VIEW
SCALE: 1:25

PREHEAT COIL A DESIGN DATA	
DESIGN AND FABRICATE TO:	ANSI/ASME B31.3 NFS 2008 EDITION
CLIENT SPECIFICATION:	-
DESIGN PRESSURE:	5031 PSIG
MAX. DESIGN METAL TEMPERATURE:	200 °F
MIN. DESIGN METAL TEMPERATURE:	-20 °F
IMPACT TEST:	EXEMPT PER TABLE 323.2.2 COLUMN A
RADIOGRAPHY:	100%
OTHER NDE:	-
POST WELD HEAT TREATMENT:	1150 °F ± 50 °F FOR 1 HOUR MIN
HYDROSTATIC TEST PRESSURE:	7547 PSIG
CORROSION ALLOWANCE:	1/8"
PRE-HEAT:	50 °F
WEIGHT EMPTY:	1835 LBS
WEIGHT FULL:	2000 LBS
CAPACITY:	2.64 CU FT
SURFACE AREA:	83.8 SQ FT
QUALITY CONTROL PROGRAM:	AQP-1253
WELDING PROCEDURE REGISTRATION NO.:	1604.2
WELD PROCEDURES:	NWP-4, NWP-6
SERVICE:	HYDROCARBONS
CRN NO.:	P-9403.213
DESIGN REGISTRATION DRAWINGS:	BDD-300A REV2
REFERENCE CALCULATIONS:	BDD-300A REV5

ISSUED FOR CONSTRUCTION

DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP	
		0	2011.07.08	DJ	143	D	ISSUED FOR CONSTRUCTION
		A	2011.06.20	DJ	-	-	ISSUED FOR APPROVAL
REFERENCE DRAWINGS		DRAWING REVISIONS					

ISSUED FOR CONSTRUCTION

SIGNED: *[Signature]*
DATE: JUL 19 2011
W.O.: 08118-002
S.O.: -
ALL DIMENSIONS IN INCHES



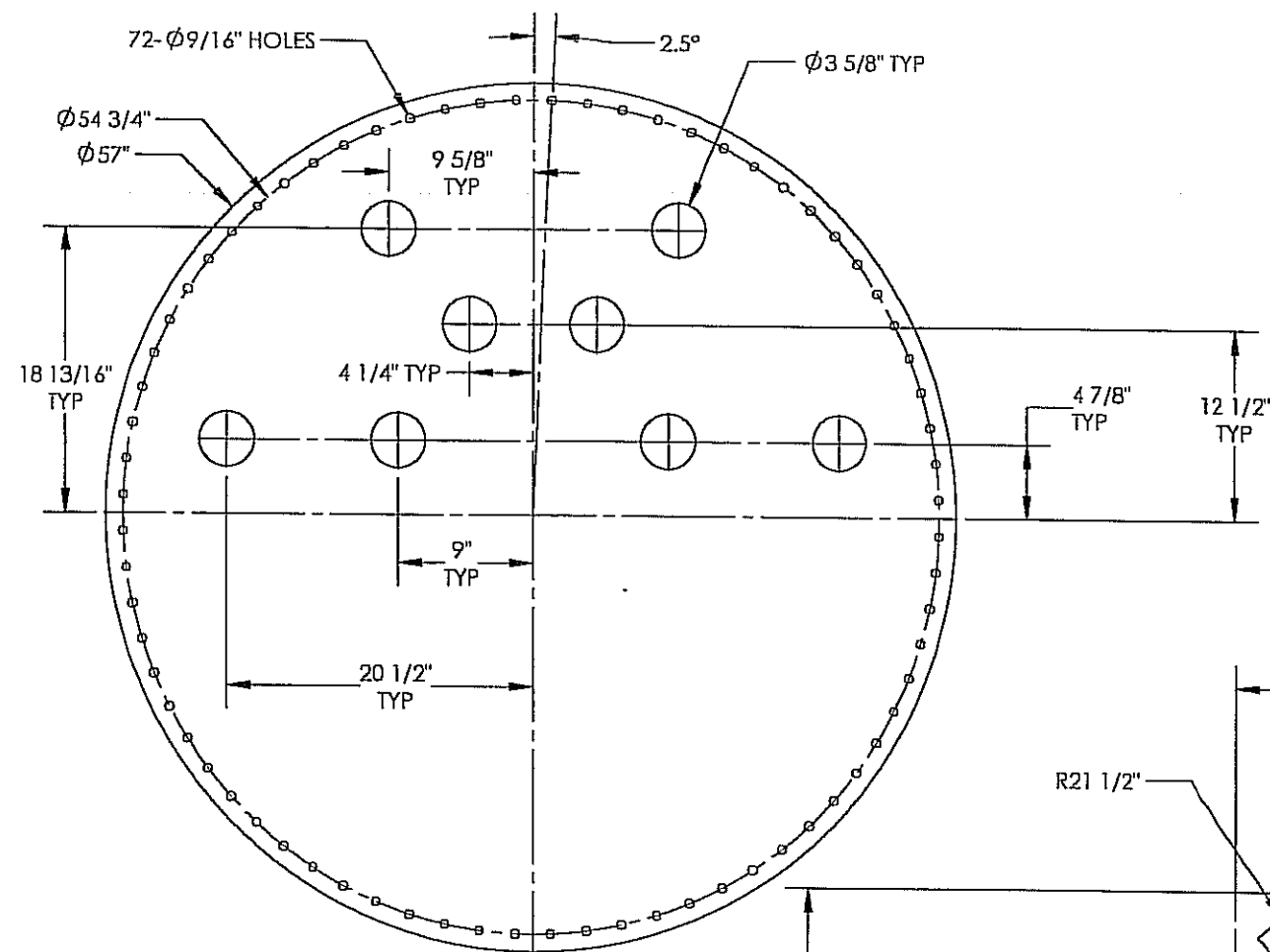
P.O. BOX 6280, INNISFAIL, AB T4G 1S9
PH: (403) 227-4100 FAX: (403) 227-4102

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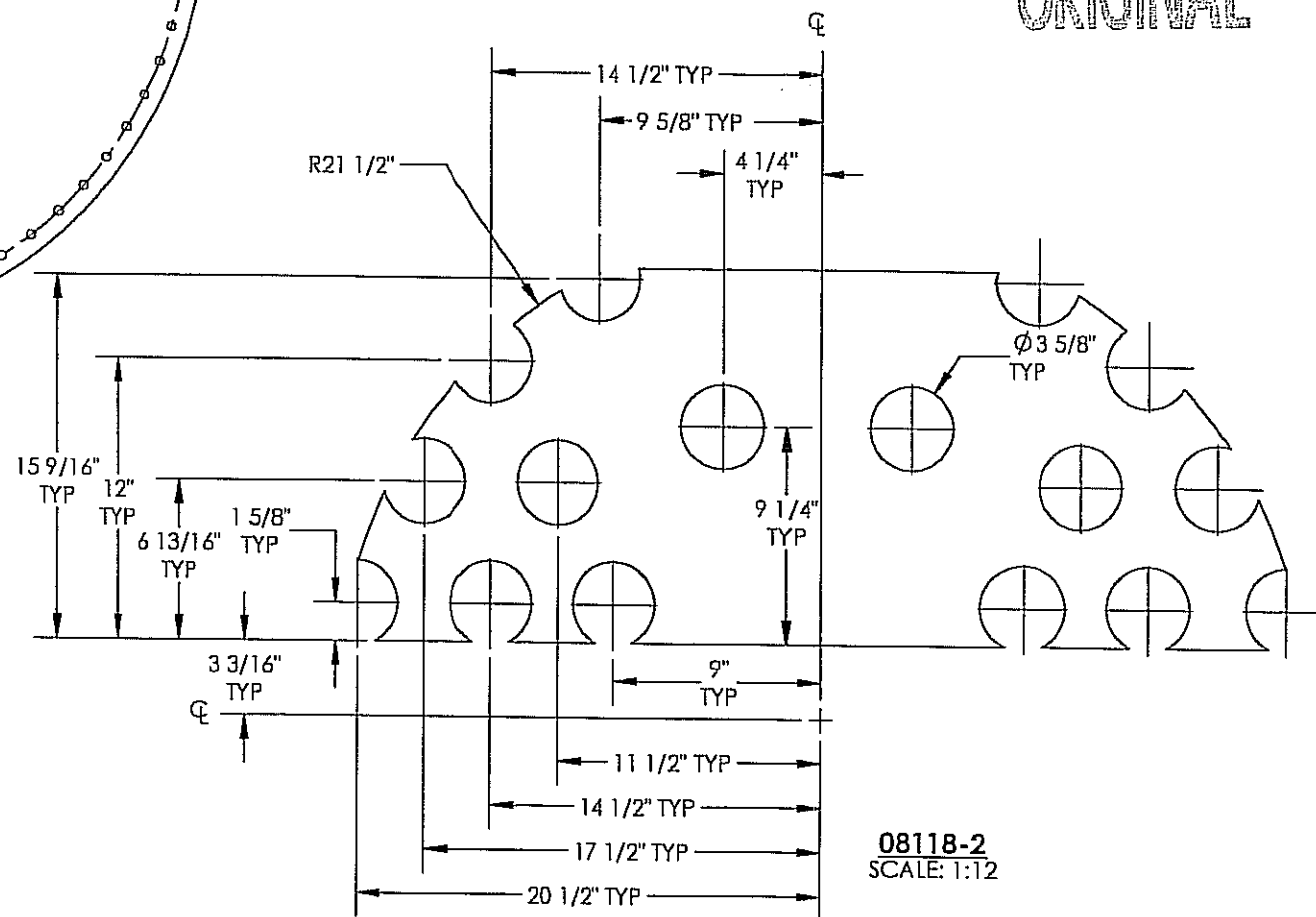
MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

REPLACEMENT COIL ASSEMBLY

DWN: DJ	CHK: <i>[Signature]</i>	APP: <i>[Signature]</i>
DATE: 2011.06.17	DATE: JUL 19 2011	DATE: JUL 19 2011
SCALE: 1:25	DWG: 08118	REV: 0
SHEET: 5 OF 6		

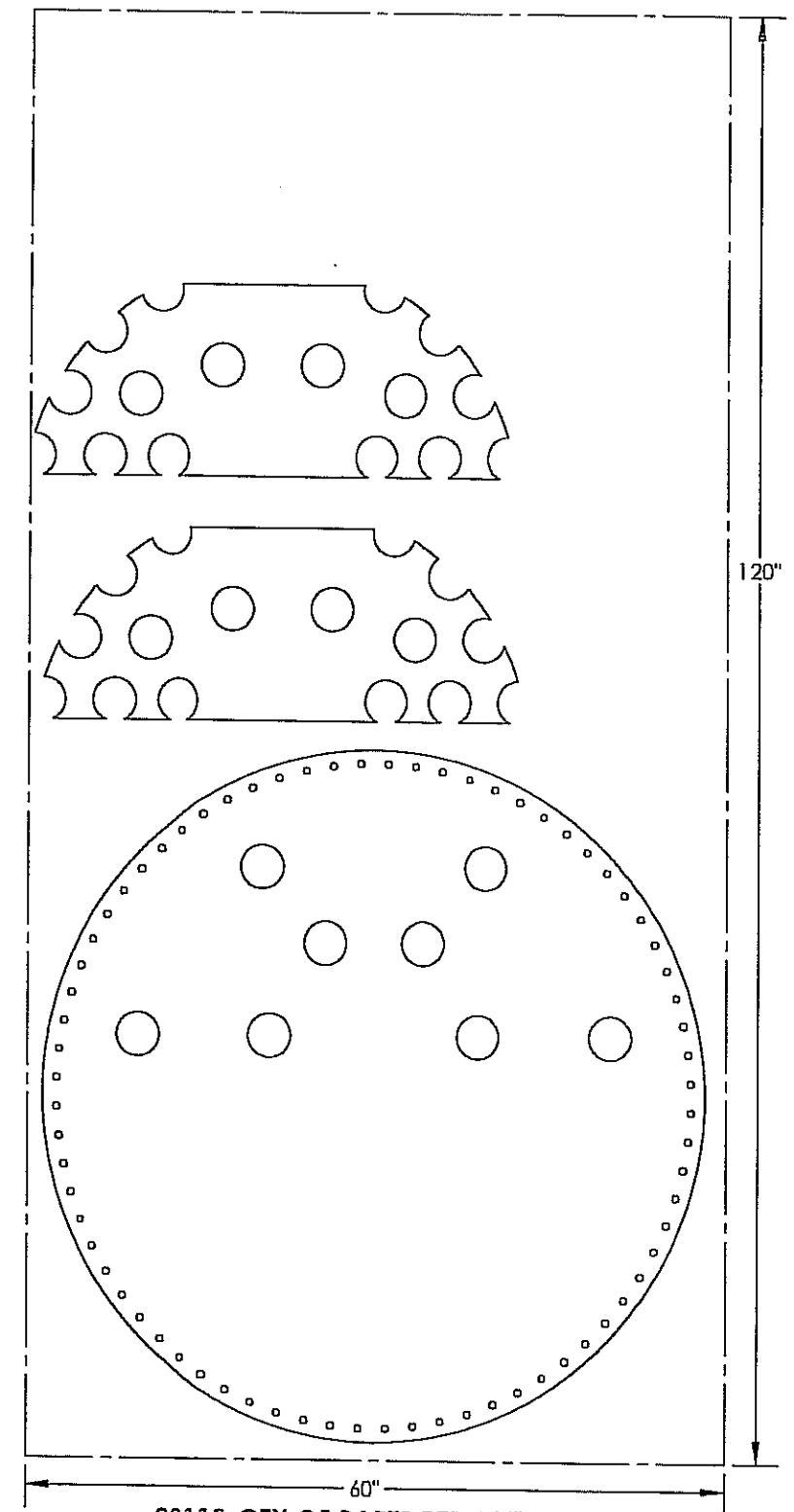


08118-1
SCALE: 1:12



08118-2
SCALE: 1:12

ORIGINAL



08118-QTY OF PARTS PER 1/4" SHEET
SCALE: 1:12

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DOCUMENT NO.	DESCRIPTION	REV	DATE	BY	CHK	APP
		0	2011.07.08	DJ	145	12
		A	2011.06.20	DJ	-	-
REFERENCE DRAWINGS		DRAWING REVISIONS				

ISSUED FOR
CONSTRUCTION

SIGNED: *[Signature]*

DATE: *Jul 15 2011*

W.O.: 08118-002

S.O.: -

ALL DIMENSIONS IN INCHES



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MURPHY OIL COMPANY LTD.
48"OD x 16'LG LINEHEATER

REPLACEMENT COIL ASSEMBLY

DWN: DJ	CHK: <i>1/5</i>	APP: <i>D</i>
DATE: 2011.06.17	DATE: <i>July 8/2011</i>	DATE: <i>July 15/2011</i>
SCALE: 1:12	DWG: 08118	REV: 0
SHEET: 6 OF 6		