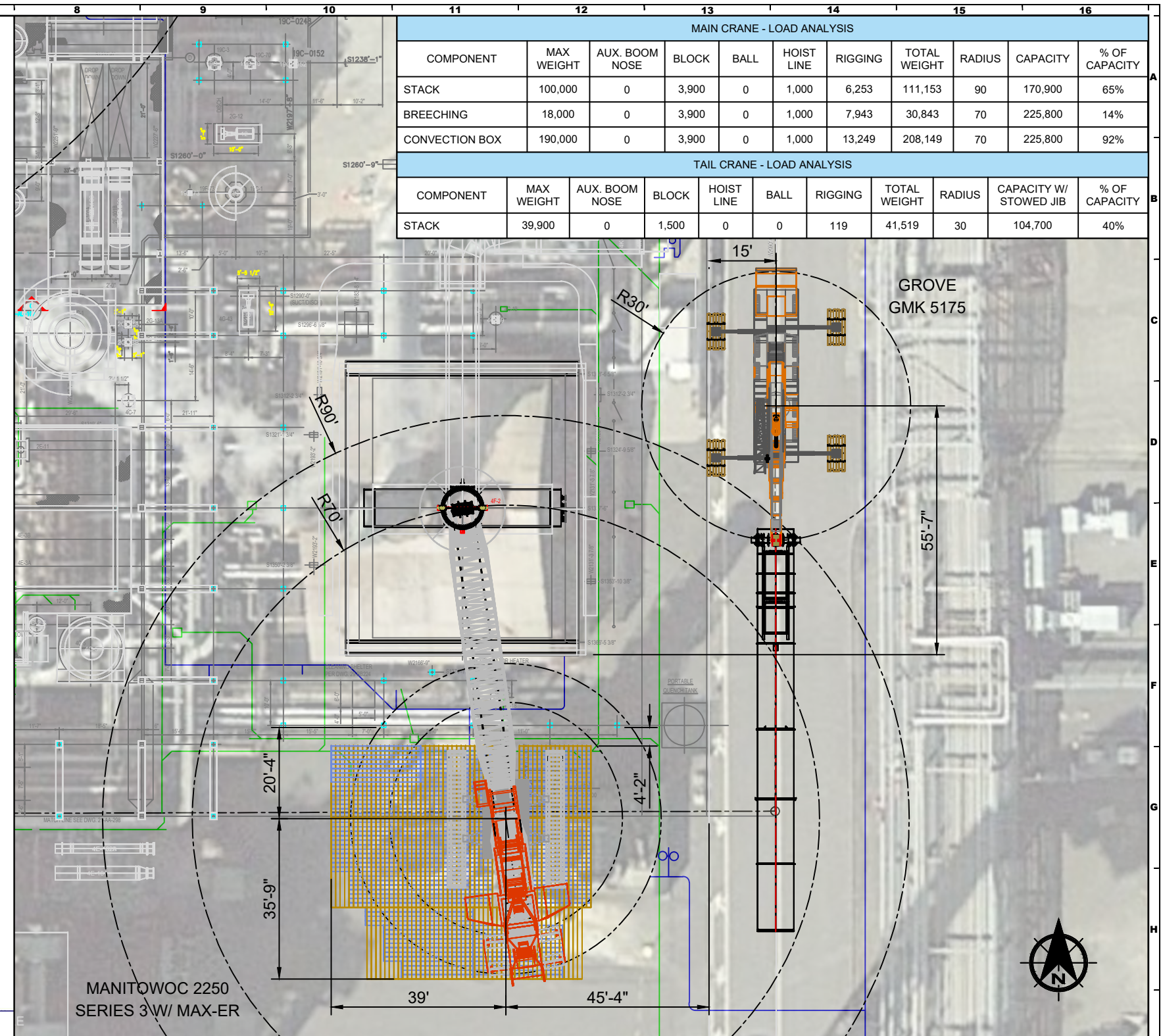


ELEVATION VIEW
LOOKING WEST, TAIL CRANE NOT SHOWN FOR CLARITY



PLAN VIEW

MAIN CRANE - MANITOWOC 2250 SERIES 3 W/ 225 MAX-ER	
BOOM LENGTH	180 FT (NO. 49A-44 W/ HEAVY LIFT TOP)
JIB LENGTH	N/A
BASE	100% OUTRIGGERS
CRANE COUNTERWEIGHT	169,200 LBS
CARBODY COUNTERWEIGHT	60,000 LBS
WHEELED COUNTERWEIGHT	225,000 LBS

TAIL CRANE - GROVE GMK 5175	
BOOM LENGTH	72.2 FT
JIB LENGTH	N/A
BASE	100% OUTRIGGERS
COUNTERWEIGHT	44,100 LBS

MAIN CRANE - LOAD ANALYSIS										
COMPONENT	MAX WEIGHT	AUX. BOOM NOSE	BLOCK	BALL	HOIST LINE	RIGGING	TOTAL WEIGHT	RADIUS	CAPACITY	% OF CAPACITY
STACK	100,000	0	3,900	0	1,000	6,253	111,153	90	170,900	65%
BREECHING	18,000	0	3,900	0	1,000	7,943	30,843	70	225,800	14%
CONVECTION BOX	190,000	0	3,900	0	1,000	13,249	208,149	70	225,800	92%

TAIL CRANE - LOAD ANALYSIS										
COMPONENT	MAX WEIGHT	AUX. BOOM NOSE	BLOCK	HOIST LINE	BALL	RIGGING	TOTAL WEIGHT	RADIUS	CAPACITY W/ STOWED JIB	% OF CAPACITY
STACK	39,900	0	1,500	0	0	119	41,519	30	104,700	40%

GENERAL NOTES:	REV #	REVISIONS	DATE	REV BY	CHK BY
1. LOAD DIMENSIONS PER TULSA HEATERS INC DRAWINGS PROVIDED BY CUSTOMER.					
2. LOAD CENTER LOCATION ASSUMED TO BE LOCATED CENTRALLY.					
3. EXISTING SUPPORT SURFACE TO BE VERIFIED BY OTHERS. MAXIMUM TRACK PRESSURE AND OUTRIGGER LOADS PROVIDED IN THE FOLLOWING SHEETS.					

NESS CAMPBELL
CRANE + RIGGING

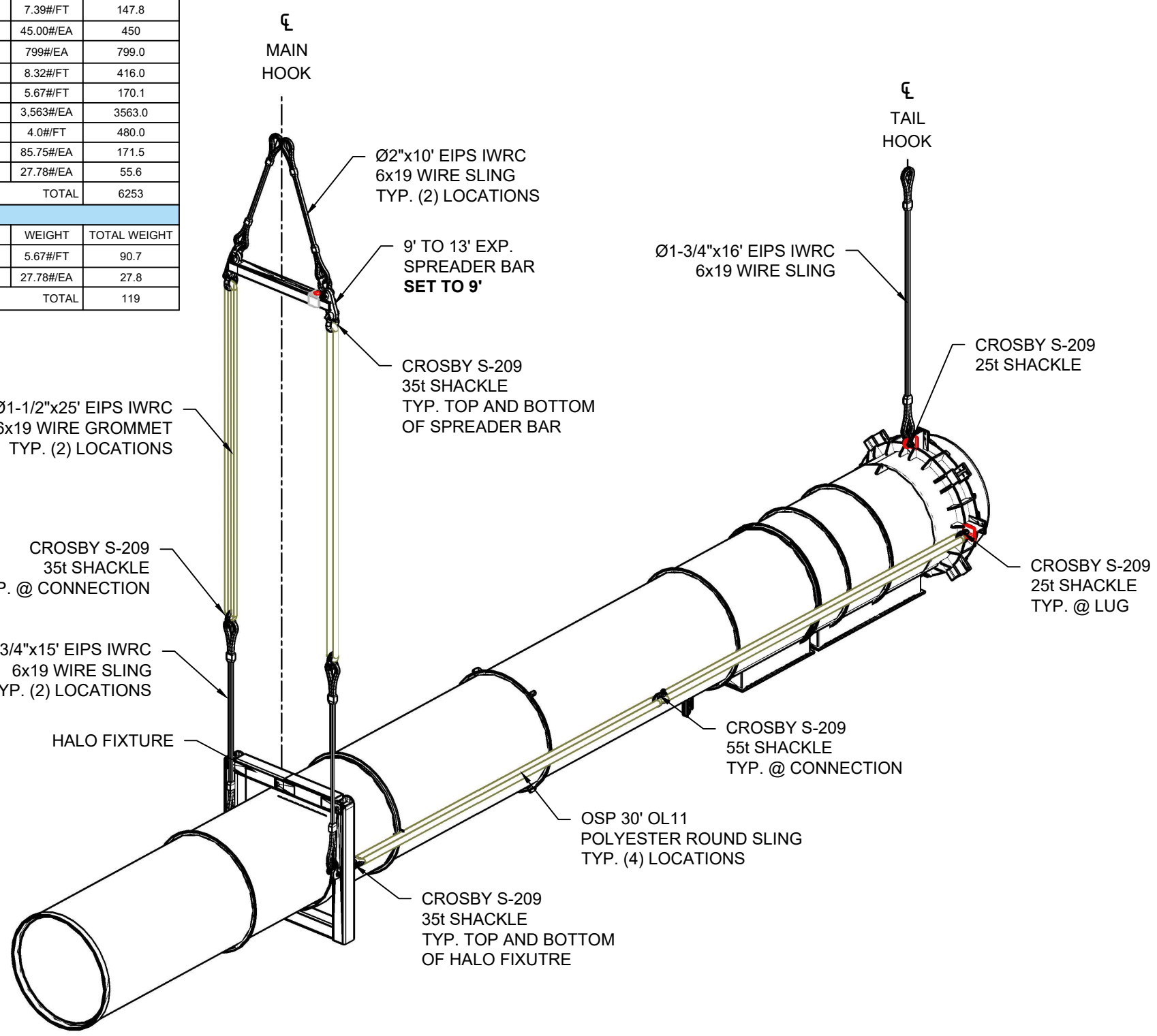
OFFICES:
SEATTLE DIVISION - 1821 180TH ST S.E. BOTHELL, WA 98031 (206) 784-1054
PORTLAND DIVISION - 5730 NE 138TH AVE PORTLAND, OR 97320 (503) 283-3111

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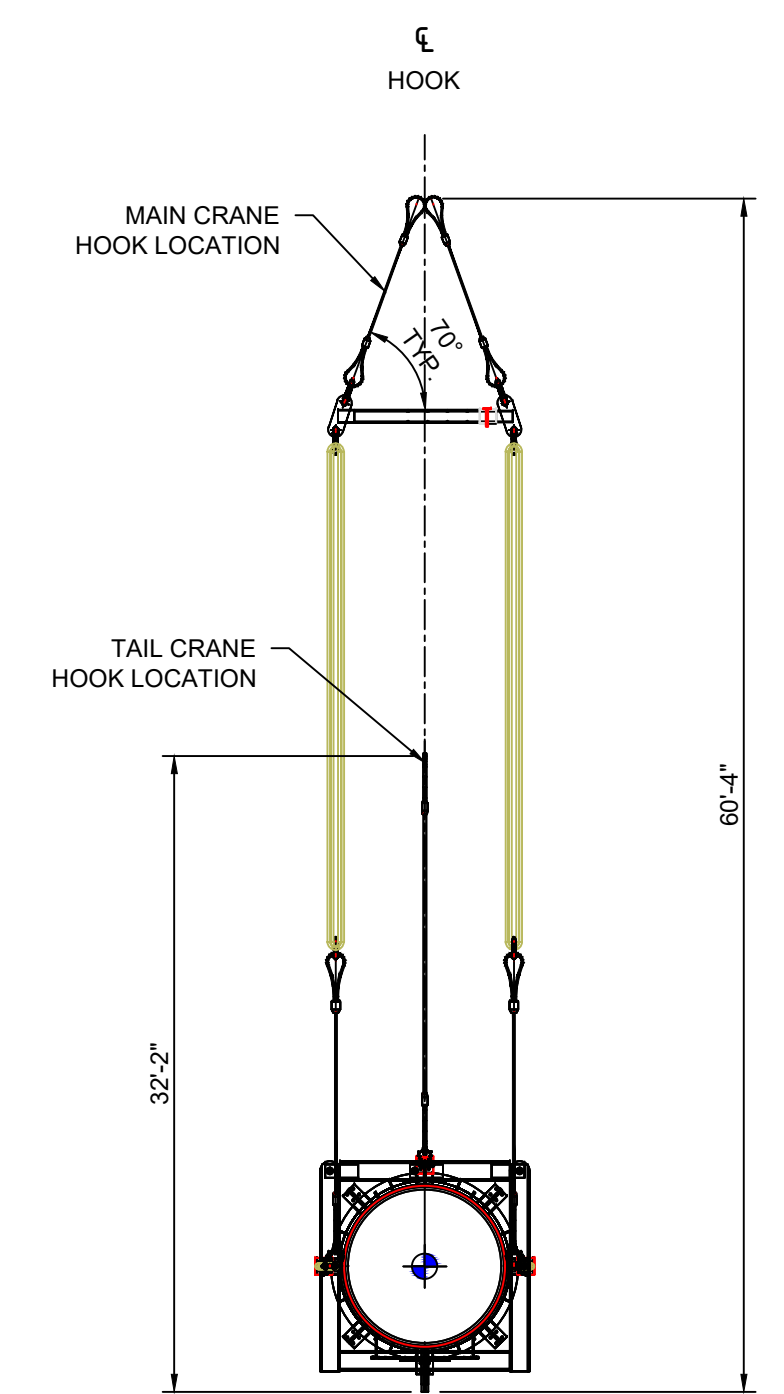
TITLE: 4F-2 VACCUM PRE-FLASH HEATER REPLACEMENT	DATE: 12/6/2016
PROJECT: PHILLIPS 66 2017 TA, FERNDALE, WA.	DRAWN BY: M.A.
CUSTOMER: PHILLIPS 66 REFINERY	APPROVED BY: M.A.
DESCRIPTION: SITE LAYOUT	SCALE: AS SHOWN
	SHEET: X OF X

RIGGING WEIGHTS - MAIN CRANE			
COMPONENT	QTY	WEIGHT	TOTAL WEIGHT
Ø2"x10' WIRE SLING	2	7.39#/FT	147.8
CROSBY S-209 35T SHACKLE	10	45.00#/EA	450
9' TO 13' EXP SPREADER BAR	1	799#/EA	799.0
Ø1-1/2"x25' WIRE GROMMET	2	8.32#/FT	416.0
Ø1-3/4"x15' WIRE SLING	2	5.67#/FT	170.1
HALO FIXTURE	1	3,563#/EA	3563.0
OSP 30' OL11	4	4.0#/FT	480.0
CROSBY S-209 55T SHACKLE	2	85.75#/EA	171.5
CROSBY S-209 25T SHACKLE	2	27.78#/EA	55.6
TOTAL			6253

RIGGING WEIGHTS - TAIL CRANE			
COMPONENT	QTY	WEIGHT	TOTAL WEIGHT
Ø1-3/4"x16' WIRE SLING	1	5.67#/FT	90.7
CROSBY S-209 25T SHACKLE	1	27.78#/EA	27.8
TOTAL			119



ISOMETRIC VIEW



FRONT VIEW

GENERAL NOTES:
 1. LIFTING LUG LOCATIONS AND LOAD CENTER LOCATION PROVIDED BY CUSTOMER, PER THI INC. DRAWING NO. SJ1138-SC1 REV. 1.
 2. MINIMUM RIGGING COMPONENTS DETAILED. ALTERNATIVE RIGGING COMPONENTS MAY BE USED GIVEN THEY MEET OR EXCEED THE COMPONENTS DETAILED.
 3. SLING LENGTHS DETAILED SHALL BE USED.

REV #	REVISIONS	DATE	REV BY	CHK BY



OFFICES:
 SEATTLE DIVISION - 1821 180TH ST S.E. BOTHELL, WA 98031 (206) 784-1054
 PORTLAND DIVISION - 5730 NE 138TH AVE PORTLAND, OR 97320 (503) 283-3111

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TITLE: 4F-2 VACUUM PRE-FLASH HEATER REPLACEMENT
 PROJECT: PHILLIPS 66 2017 TA, FERNDALE, WA.
 CUSTOMER: PHILLIPS 66 REFINERY
 DESCRIPTION: RIGGING DETAILS - EXISTING STACK

DATE: 12/6/2016
 DRAWN BY: M.A.
 APPROVED BY: M.A.
 SCALE: AS SHOWN
 SHEET: X OF X