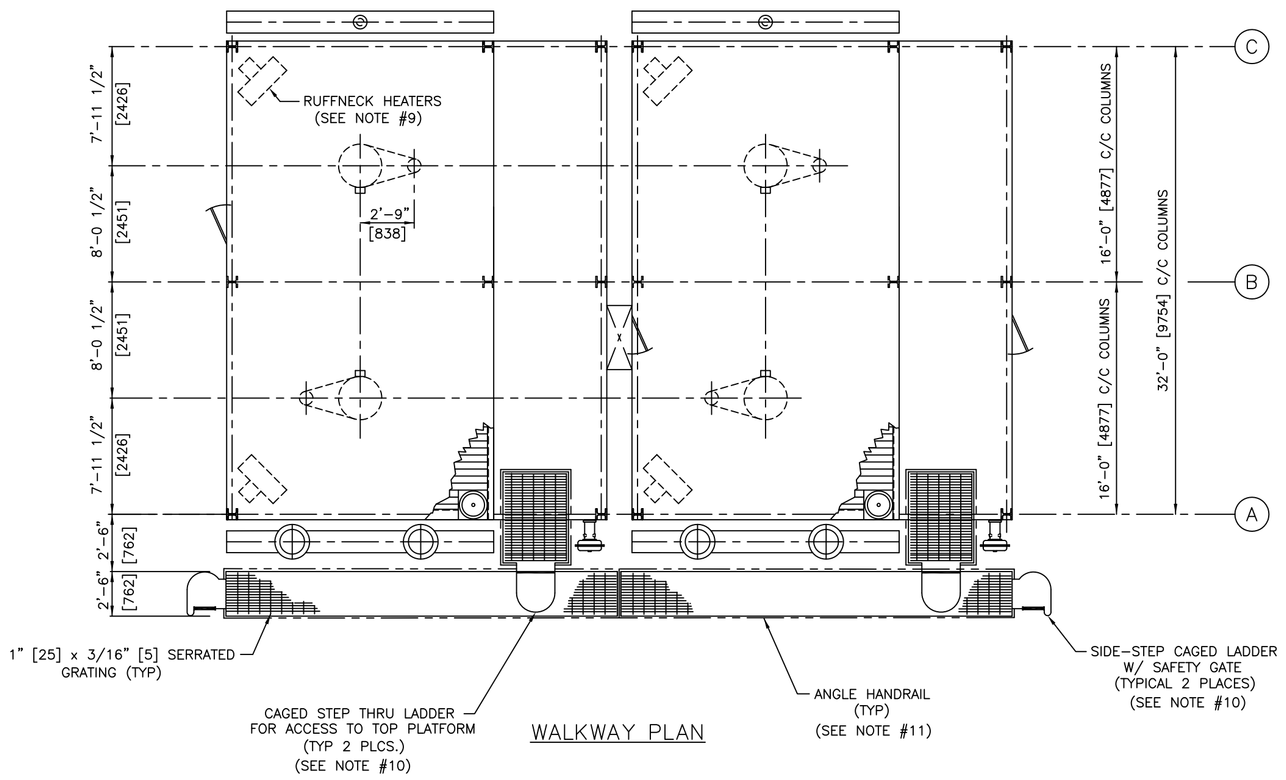
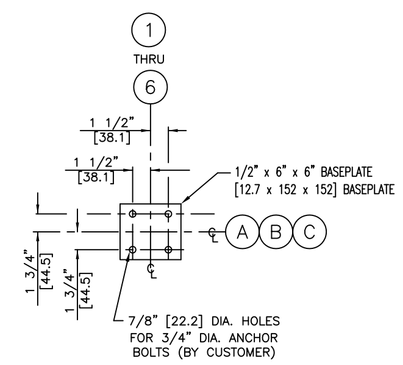
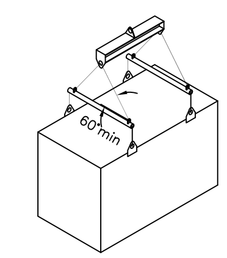


WALKWAY PLAN

LOAD REACTIONS LBS [kgs]								
LOAD POINT		1	2	3	4	5	6	
A	DEAD LOAD	17450 [7915]	15675 [7110]	4300 [1950]	17125 [7768]	15675 [7110]	4625 [2098]	3
	LIVE LOAD	1225 [556]	250 [113]	1075 [488]	725 [329]	250 [113]	1575 [714]	3
	OPERATING LOAD	8125 [3685]	7925 [3595]	0	8125 [3685]	7925 [3595]	0	3
	TRANSVERSE WIND SHEAR	4275 [1939]	3500 [1588]	525 [238]	4275 [1939]	3500 [1588]	525 [238]	3
	LONGITUDINAL WIND SHEAR	2075 [941]	2200 [998]	175 [79]	2075 [941]	2200 [998]	175 [79]	3
	TRANSVERSE WIND VERTICAL	±10075 [4570]	± 8925 [4048]	± 600 [272]	±10075 [4570]	± 8925 [4048]	± 600 [272]	3
	LONGITUDINAL WIND VERTICAL	± 2250 [1021]	± 1225 [556]	± 100 [45]	± 2250 [1021]	± 1225 [556]	± 100 [45]	3
	EARTHQUAKE SHEAR	1475 [669]	1450 [658]	50 [23]	1450 [658]	1450 [658]	75 [34]	3
	EARTHQUAKE VERTICAL	± 3675 [1667]	± 3425 [1554]	± 150 [68]	± 3675 [1667]	± 3425 [1554]	± 150 [68]	3
	SNOW LOAD	3675 [1667]	4875 [2211]	725 [329]	3675 [1667]	4875 [2211]	725 [329]	3
LOAD POINT		1	2	3	4	5	6	
B	DEAD LOAD	5850 [2654]	5200 [2359]	5400 [2449]	5850 [2654]	5200 [2359]	5400 [2449]	3
	LIVE LOAD	0	0	0	0	0	0	3
	OPERATING LOAD	350 [159]	325 [147]	0	350 [159]	325 [147]	0	3
	TRANSVERSE WIND SHEAR	1450 [658]	75 [34]	1000 [454]	1450 [658]	75 [34]	1000 [454]	3
	LONGITUDINAL WIND SHEAR	0	0	0	0	0	0	3
	TRANSVERSE WIND VERTICAL	± 650 [295]	± 75 [34]	± 1675 [760]	± 650 [295]	± 75 [34]	± 1675 [760]	3
	LONGITUDINAL WIND VERTICAL	± 25 [11]	± 75 [34]	± 25 [11]	± 25 [11]	± 75 [34]	± 25 [11]	3
	EARTHQUAKE SHEAR	75 [34]	50 [23]	75 [34]	75 [34]	50 [23]	75 [34]	3
	EARTHQUAKE VERTICAL	± 275 [125]	± 150 [68]	± 350 [159]	± 275 [125]	± 150 [68]	± 350 [159]	3
	SNOW LOAD	1275 [578]	1675 [760]	2275 [1032]	1275 [578]	1675 [760]	2275 [1032]	3
LOAD POINT		1	2	3	4	5	6	
C	DEAD LOAD	14875 [6747]	15650 [7099]	2675 [1213]	14875 [6747]	15650 [7099]	2675 [1213]	3
	LIVE LOAD	0	0	0	0	0	0	3
	OPERATING LOAD	800 [363]	800 [363]	0	800 [363]	800 [363]	0	3
	TRANSVERSE WIND SHEAR	4150 [1882]	3375 [1531]	525 [238]	4150 [1882]	3375 [1531]	525 [238]	3
	LONGITUDINAL WIND SHEAR	2300 [1043]	2525 [1145]	250 [113]	2300 [1043]	2525 [1145]	250 [113]	3
	TRANSVERSE WIND VERTICAL	± 9775 [4434]	± 8650 [3924]	± 575 [261]	± 9775 [4434]	± 8650 [3924]	± 575 [261]	3
	LONGITUDINAL WIND VERTICAL	± 2275 [1032]	± 1275 [578]	± 100 [45]	± 2275 [1032]	± 1275 [578]	± 100 [45]	3
	EARTHQUAKE SHEAR	1350 [612]	1325 [601]	50 [23]	1350 [612]	1325 [601]	50 [23]	3
	EARTHQUAKE VERTICAL	± 3350 [1520]	± 3125 [1417]	± 125 [57]	± 3350 [1520]	± 3125 [1417]	± 125 [57]	3
	SNOW LOAD	3675 [1667]	4875 [2211]	725 [329]	3675 [1667]	4875 [2211]	725 [329]	3



ANCHOR BOLT LAYOUT



UNIT LIFTING DIAGRAM
(STRAIGHT LIFT REQUIRED)

NOTES FOR LOADING CHART :

1) ALL LOADS ARE IN POUNDS [kgs].
2) LIVE LOADS INCLUDE WALKWAY LOADS BASED ON API–661, 6th EDITION, PARAGRAPH 7.3.3.3.
3) OPERATING LOADS INCLUDE LOAD OF HEADERS & TUBES FULL OF WATER & DOWNWARD NOZZLE LOADS PER API–661, 6th ED., 2006, FIGURE 6 & TABLE 4.
4) WIND LOADS ARE PER NATIONAL BUILDING CODE OF CANADA 2005, DIVISION B, PART 4, SECTION 4.1.7 USING:

p = (Iw)(q)(Ce)(Cp)(Cg)
p = 23.5 PSF [1.13 kPa]
F = (p)(Af)
(VERTICAL WIND LOADS RESULTS FROM OVERTURNING MOMENT)

Af= AREA PROJECTED TO WIND
F = DESIGN WIND FORCE

Iw = 1.15

q = 8.35 PSF [0.4 kPa] 3
Ce = 0.94
Cp = 1.3
Cg = 2.0

5) SEISMIC LOADS ARE PER NATIONAL BUILDING CODE OF CANADA 2005, DIVISION B, PART 4, SECTION 4.1.8 USING:

V = MINIMUM LATERAL SEISMIC FORCE

$$V = \frac{[(S)(Ta)](Mv)(Ie)(W)}{(Rd)(Ro)}$$

V SHALL NOT BE LESS THAN

$$\frac{[(S)(2.0)](Mv)(Ie)(W)}{(Rd)(Ro)}$$

IF Rd >= 1.5, V NEED NOT BE GREATER THAN

$$\frac{[(2/3)[(S)(0.2)]](Mv)(Ie)(W)}{(Rd)(Ro)}$$

SITE CLASS = D
Mv = 1.0
Ie = 1.3
W = DEAD WEIGHT
Rd = 1.5
Ro = 1.3

EARTHQUAKE VERTICAL LOADS ARE COMING FROM OVERTURNING MOMENT ASSUMING THE SHEAR LOAD @ CENTER OF GRAVITY

6) SNOW LOADS ARE PER NATIONAL BUILDING CODE OF CANADA 2005, DIVISION B, PART 4, SECTION 4.1.6 AND USING:

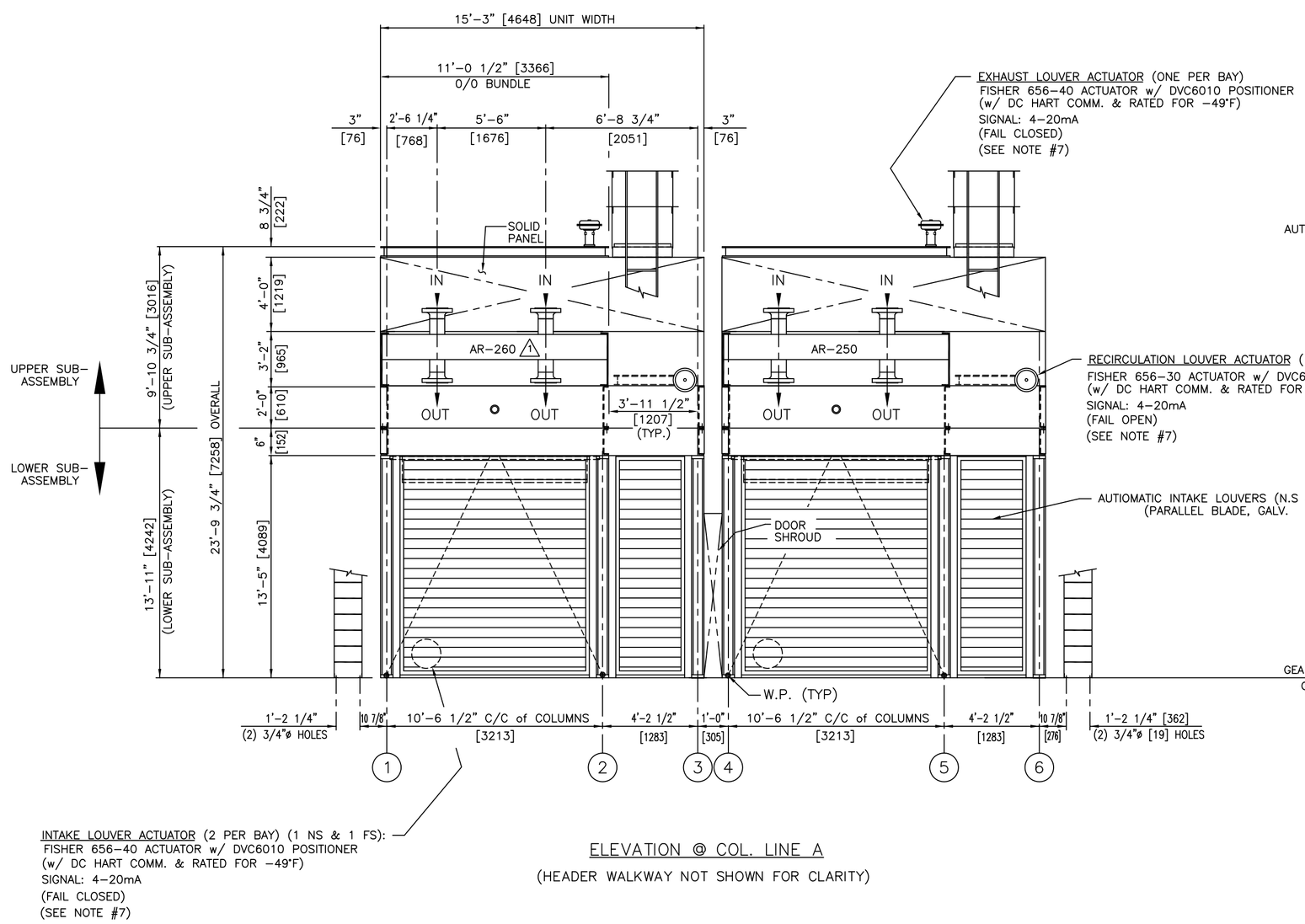
S = (Is)[(Ss)(Cb)(Cw)(Cs)(Ca) + Sr]
S = 48.5 PSF [2.32 kPa]

Is = 1.15
Ss = 50.125 PSF [2.4 kPa]
Sr = 2.1 PSF [0.1 kPa]

Cb = 0.8
Cw = 1.0
Cs = 1.0
Ca = 1.0

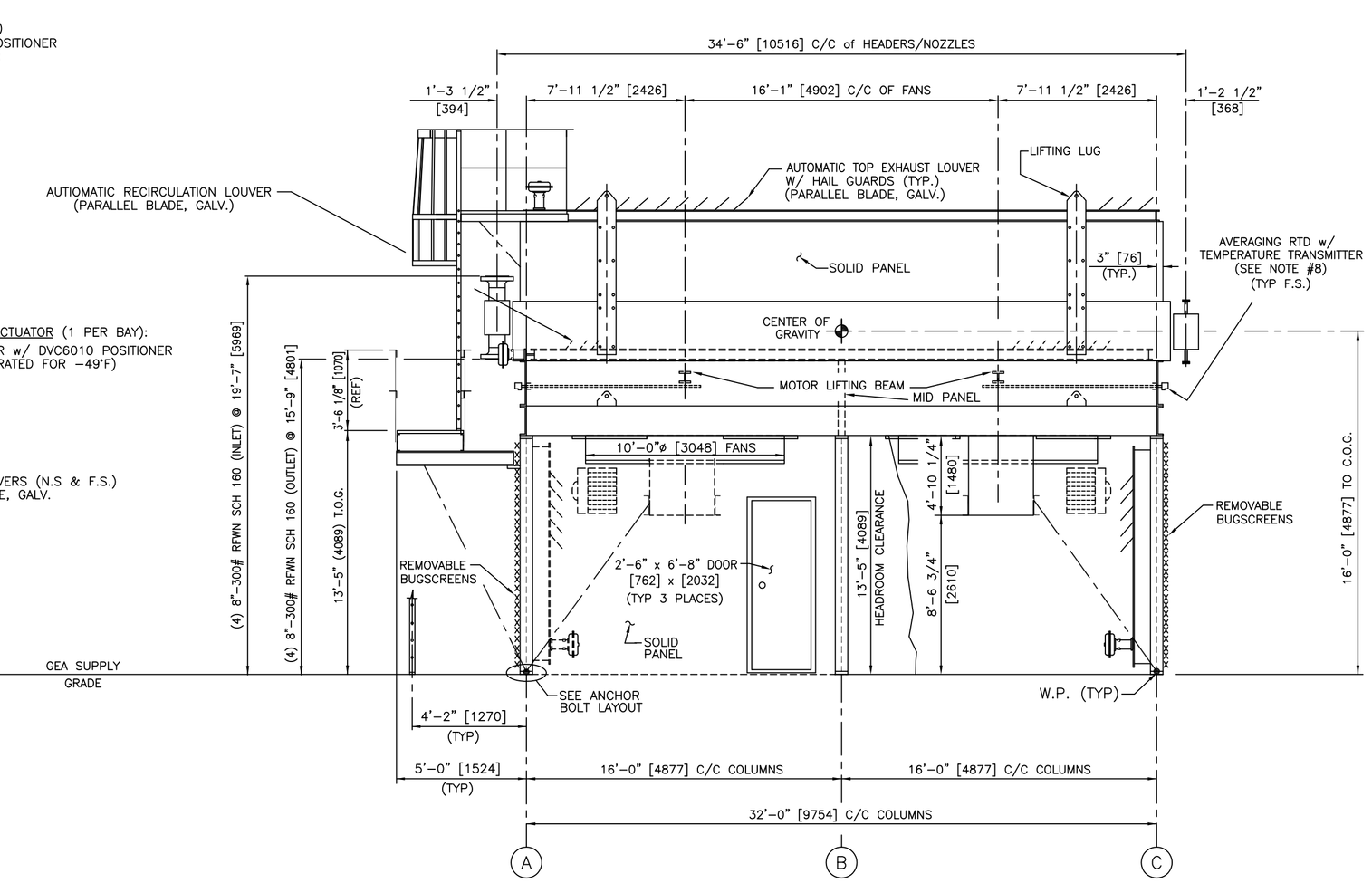
GENERAL NOTES :

1) DESIGNED PER API–661, 6th ED., 2006, OVERALL TOLERANCES PER API–661, FIG. 10 AND APPLICABLE SPECIFICATIONS.
2) MAXIMUM PIPING NOZZLE LOAD 3 TIMES NOZZLE LOADING SPECIFIED IN API–661, 6th ED., 2006, TABLE 4.
3) PROVISION FOR MINIMUM LATERAL MOVEMENT FOR TUBE BUNDLES ARE 1/4" [6] IN BOTH DIRECTIONS OR 1/2" [13] IN ONE DIRECTION.
4) STRUCTURAL STEEL SHALL BE DESIGNED PER CISC (CANADIAN INSTITUTE OF STEEL CONSTRUCTION) 9TH ED., CSA S16–01 AND APPLICABLE SPECIFICATIONS. STRUCTURAL WELDING SHALL BE PER CSA W47.1.
5) REFERENCE DWGS:
   8161010HDR ~ HEADER DETAIL
   8161010BO ~ BUNDLE OUTLINE
   8161010FT ~ FINNED TUBE DETAIL
   8161010MFD ~ FAN DRIVE ASSEMBLY
   8161000ATS ~ ASSEMBLY, TESTING & SHIPPING
   8161–1–FE ~ FIELD ERECTION
6) TEMPORARY HEADER SHIPPING BRACES (PAINTED ORANGE) SHALL BE REMOVED PRIOR TO UNIT START–UP.
7) AIR TUBING FOR THE ACTUATORS SHALL BE 3/8" OD WITH 0.035" WT. TUBING SHALL BE 316 SS C/W SWAGELOK 316 SS FITTINGS AND FERRULES.
8) 1 (4) AVERAGING RTD'S & ROSEMOUNT TEMPERATURE TRANSMITTERS (1 EACH PER FAN) ARE REQUIRED. AVERAGING RTD'S SHALL BE BY ATS ALLTEMP WIKA (MODEL NO.: ATS–6309 SHEET 2 L = 9'–0"). TEMPERATURE TRANSMITTERS ARE ROSEMOUNT (MODEL NO.: 3144PD2F1K6Q4K1005BST1). FOR REQUISITION OF THESE COMPONENTS SEE DOCUMENT: 8161010REQ.
9) A 1 FOUR ELECTRIC HEATERS, RUFFNECK HEATER MODEL NUMBER FX5–480360–350 w/ WMK MOUNTING KITS SHALL BE PROVIDED AND MOUNTED AS SHOWN.
   NOTES:
   –HEATER EXPECTED OUTPUT IS 35 kW.
   –API WINTERIZATION CALCULATION IS 250 kW (MINIMUM).
10) LADDERS SHALL BE AS FOLLOWS:
   * LADDER RUNGS SHALL BE EVENLY SPACED BETWEEN 9 7/8" [250] AND 13 3/4" [350].
   * LADDER BOLTS SHALL BE 5/8"ø, A307 UNLESS OTHERWISE NOTED.
   * LADDER CAGES SHALL NOT BE LESS THAN 2'–2 13/16" [760] WIDE AND SHALL PROVIDE BETWEEN 2'–2 13/16" [680] AND 2'–5 7/8" [760] FROM THE CENTERLINE OF THE RUNG TO THE BACK OF THE CAGE.
   1 * THE BOTTOM OF THE CAGE SHALL BE BETWEEN 6'–10 11/16" [2.1METERS] AND 7'–6 9/16" [2.3 METERS] ABOVE THE POINT OF ACCESS TO THE BOTTOM OF THE LADDER. THE CAGE SHALL BE FLARED A MINIMUM OF 3 15/16" [100] BETWEEN THE BOTTOM HORIZONTAL BAND AND THE NEXT HIGHER BAND.
   1 * REFERENCE GEA LADDER DETAILS 8161000SSL & 8161000STL.
11) TOE PLATES SHALL BE 5 1/2" [140] TALL.
12) STRUCTURAL BOLTING SHALL BE A325 WITH A MINIMUM DIAMETER 3/4".
13) GALVANIZED STRUCTURAL BOLTS, NUTS AND WASHERS CONFORMING TO ASTM A325 SHALL BE MECHANICALLY GALVANIZED IN ACCORDANCE WITH ASTM F2329. GALVANIZING SHALL BE DONE AFTER ALL THREADS HAVE BEEN ROLLED OR CUT AND ALL NUTS SHALL BE RE–TAPPED AFTER THE COATING PROCESS IS COMPLETE.
14) STRUCTURAL ANALYSIS AND PROFESSIONAL ENGINEER'S STAMP (REGISTERED IN BRITISH COLUMBIA) IS FOR PLAN AND ELEVATION DRAWING AND STRUCTURAL CALCULATIONS.
15) UNIT WEIGHT: FULLY ERECT: 76,750 LBS [34814 kgs] ±10% (EMPTY)
   OPERATING WEIGHT (FULL OF WATER): 81,750 LBS [37082 kgs] ±10%.
16) ALL NOTATIONS IN [] BRACKETS IS IN SI UNITS.



INTAKE LOUVER ACTUATOR (2 PER BAY) (1 NS & 1 FS):
FISHER 656–40 ACTUATOR w/ DVC6010 POSITIONER (w/ DC HART COMM. & RATED FOR –49°F)
SIGNAL: 4–20mA
(FAIL CLOSED)
(SEE NOTE #7)

ELEVATION @ COL. LINE A
(HEADER WALKWAY NOT SHOWN FOR CLARITY)



ELEVATION @ COL. LINE 6

NO.	DESCRIPTION	DATE	DWN.	APPROVED
3	LOADS	1/03/11	JRA	
2	HEATER MODEL NUMBER	12/09/11	JRA	CRF
1	HEATERS, RTD'S, TT'S & LADDERS	10/06/11	JRA	CRF
0	ORIGINAL ISSUE	6/29/11	JRA	CRF

REVISIONS

GEA Rainey Corporation
Tulsa Port of Catoosa
Catoosa, Oklahoma

CUSTOMER: NEXEN INC.

TITLE: PLAN & ELEVATION

PROJECT NAME: TSEA COMPRESSOR STATION
VDR CODE(S): B02
GRC JOB NO: R–8161–1
CUST. P.O. NO: 4500146159
CUST. ITEM NO: AR–250 / 260 1
SERVICE: INLET COOLER
LOCATION: 1 d–7–I / 94–0–8
SCALE: NONE
DWG. NO.: 8161010PE
REV.: 3