


Foundation Loads

CO₂ Capture Facility

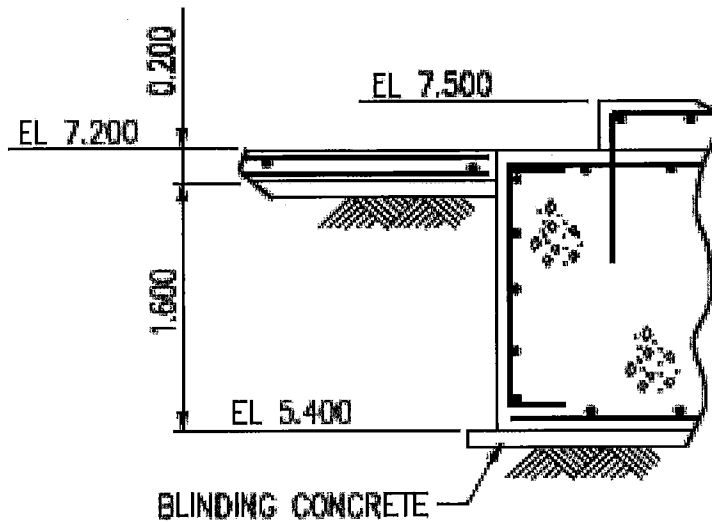
Kårstø, Norway

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1.0 Absorber Tower and Stripper Tower Foundation Loads



See Drawings 25474-000-DB-0200-00001, -00002 for foundation layout

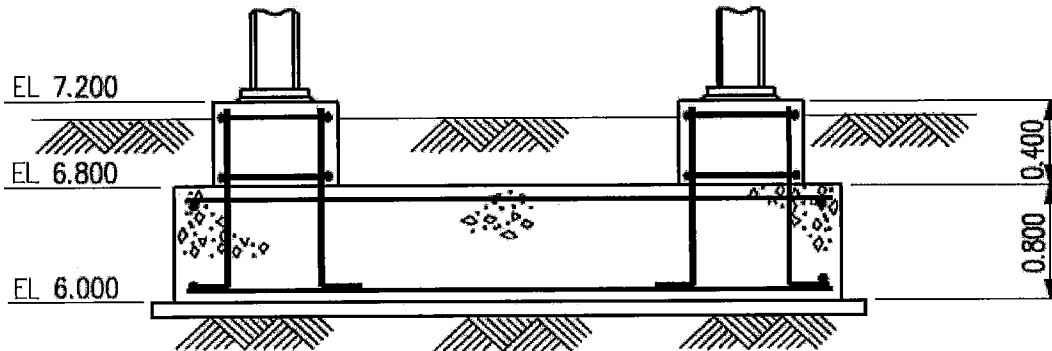
ABSORBER TOWER	Vertical	Base Shear	Moment
Load Case	F _y (kN)	F _{x,z} (kN)	M _{x,z} (kN-m)
DEAD AND LIVE LOADS	7355		
ACCIDENTAL LOAD		235	164000

STRIPPER TOWER	Vertical	Base Shear	Moment
Load Case	F _y (kN)	F _{x,z} (kN)	M _{x,z} (kN-m)
DEAD AND LIVE LOADS	7355		
ACCIDENTAL LOAD		235	88000

Notes:

Same dead and live loads used for both towers.

2.0 Ductwork Support Structure Column Reactions



See Drawing 25474-000-DB-0100-00001 for foundation layout

Load Case	Horizontal	Vertical*	Vertical*	Horizontal	Moment	
	F _x (kN)	+F _y (kN)	-F _y (kN)	F _z (kN)	M _x (kN-m)	M _z (kN-m)
1 DEAD LOAD	-65	995	290	95	-80	-40
2 LIVE LOAD	-5	0	10	5	0	0
3 SNOW LOAD	-20	255	35	25	-20	-10
4 WIND LOAD TO NORTH	-265	95	585	10	-25	140
5 WIND LOAD TO EAST	95	-690	805	-190	-65	-5
6 THERMAL MOVEMENT LOAD	1	0	-10	0	0	0
7 POSITIVE OPERATING PRESSURE	-1	-10	30	-5	-5	5
8 NEGATIVE OPERATING PRESSURE	10	55	-165	15	10	-15

Notes:

(+F_y) reactions = compression.

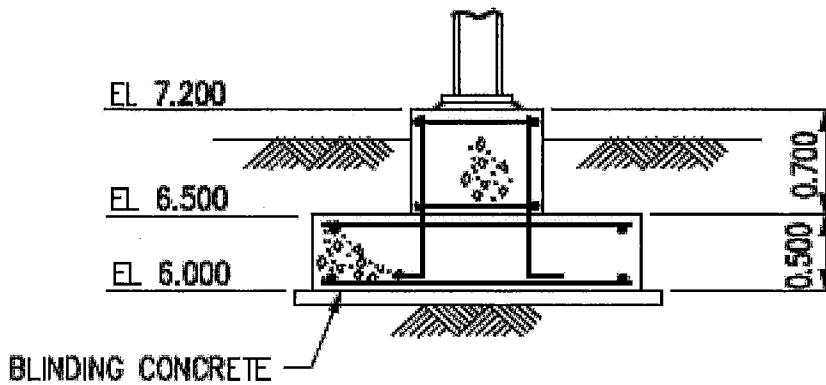
(-F_y) reactions = uplift.

Wind load cases are reversible.

Thermal movement loads are in direction of expansion (+ΔT).

* Compression and uplift scenarios for separate columns are tabulated.

3.0 Pipe Rack Representative Column Reactions



See Drawings 25474-000-DB-0200-00001, -00002 for foundation layout

Load Case	Horizontal	Vertical	Horizontal	Moment	
	F _x (kN)	F _y (kN)	F _z (kN)	M _x (kN-m)	M _z (kN-m)
1 DEAD LOAD + PIPING	5	100	5	-2	2
2 LIVE + CONTINGENCY LOAD	5	115	5	-2	5
3 NORTH WIND LOAD	-45	-90	-25	0	85
4 EAST WIND LOAD	5	-125	-50	-85	-2
5 PIPING THERMAL LOAD	-100	-325	-130	-70	95
6 SNOW LOAD	5	125	5	-5	5

Notes:

pipng DL = 1.0 kN/m²

pipng LL = 1.5 kN/m² plus 20kN contingency loads

X = north

Y = vertical

Z = east

(+F_y) reactions = compression.

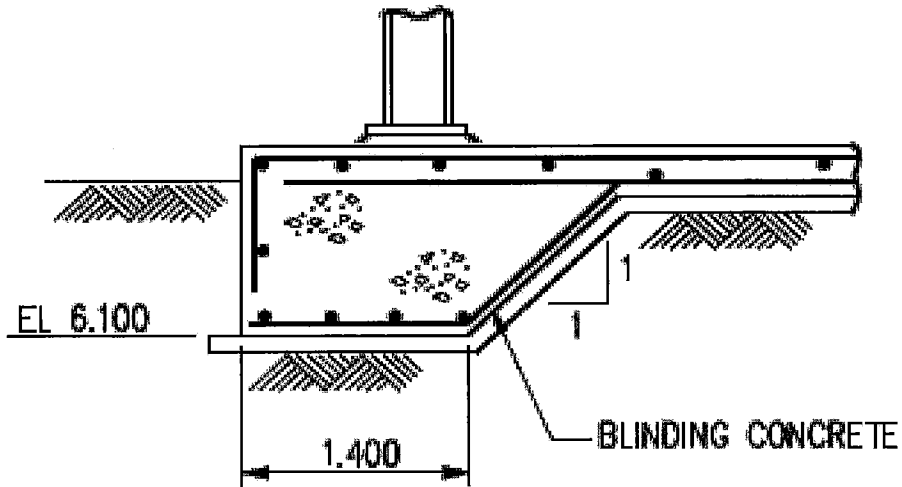
(-F_y) reactions = uplift.

Wind load cases are reversible.

Thermal load case is reversible.

* Compression and uplift scenarios (+F_y and -F_y) for separate columns are tabulated.

4.0 Control/Storage/Shop Building Column Reactions



See Drawing 25474-000-DB-0200-00003 for foundation layout

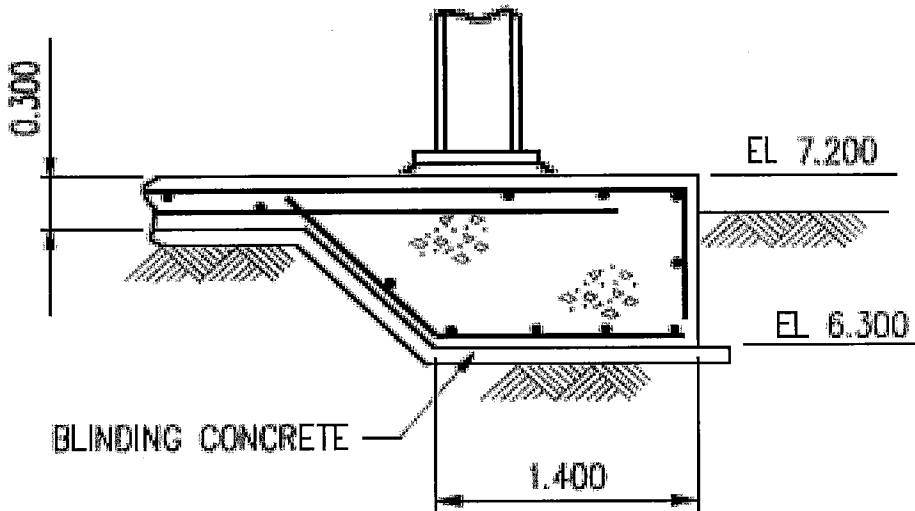
Load Case	Horizontal	Vertical	Horizontal
	F _x (kN)	F _y (kN)	F _z (kN)
1 DEAD LOAD	5	180	15
2 LIVE LOAD	10	320	30
3 SNOW LOAD	5	215	20
4 WIND LOAD TO NORTH	40	40	0
5 WIND LOAD TO EAST	10	95	85

Notes:

Dead Load (Roof)	1.2 kN/m ²
Live Load (Roof)	3.0 kN/m ²
Snow Load	2.0 kN/m ²

5.0 Compressor Building

5.1 Column Reactions for Building



See Drawing 25474-000-DB-0200-00003 for foundation layout

Load Case	Horizontal	Vertical	Horizontal
	F _x (kN)	F _y (kN)	F _z (kN)
1 DEAD LOAD	5	120	5
2 LIVE LOAD	5	175	0
3 SNOW LOAD	5	140	0
4 WIND LOAD TO NORTH	60	152	5
5 WIND LOAD TO EAST	5	32	25

Notes:

Dead Load (Roof)	1.2 kN/m ²
Live Load (Roof)	2.5 kN/m ²
Snow Load	2.0 kN/m ²

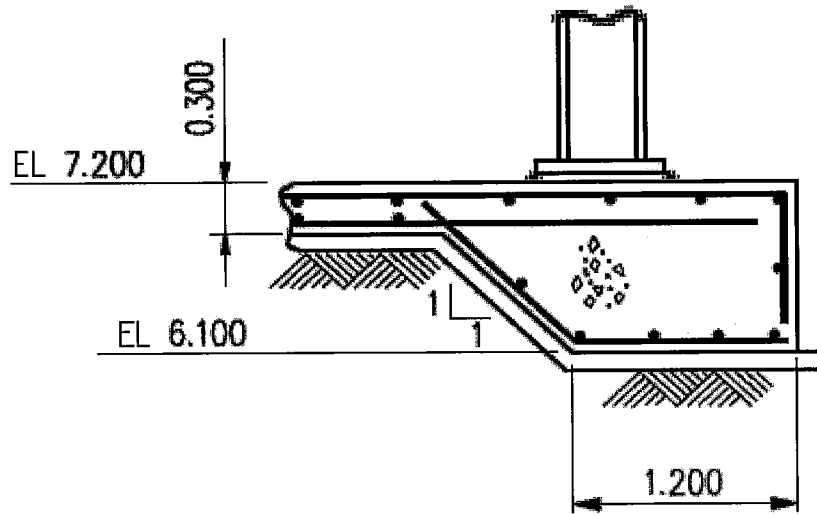
5.2 Loading for Compressor Pedestal

Compressor Base Weight (Max Section) (kg)	Base Dimensions		Grade Slab Pressure (kPa)
	Length (mm)	Width (mm)	
75000	8800	4000	21

Note:

Operating loads not included.

6.0 Electrical Building Column Reactions



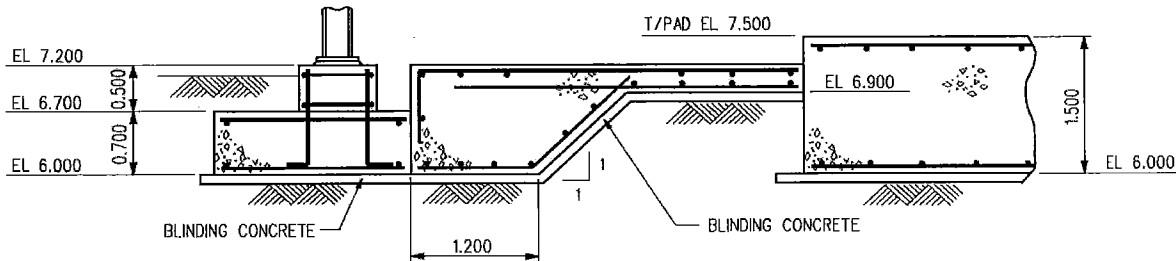
See Drawings 25474-000-DB-0200-00001, -00002 for foundation layout

Load Case	Horizontal	Vertical	Horizontal
	F _x (kN)	F _y (kN)	F _z (kN)
1 DEAD LOAD	5	110	10
2 LIVE LOAD	0	180	20
3 SNOW LOAD	0	120	15
4 WIND LOAD TO NORTH	0	50	0
5 WIND LOAD TO EAST	0	50	40

Notes:

Dead Load (Roof)	1.2 kN/m ²
Live Load (Roof)	3.0 kN/m ²
Snow Load	2.0 kN/m ²

7.0 Foundation Loads for Blower Enclosure



See Drawing 25474-000-DB-0100-00002 for foundation layout

7.1 Column Reactions for Building

Load Case	Horizontal	Vertical	Horizontal	Moment	
	F _x (kN)	F _y (kN)	F _z (kN)	M _x (kN-m)	M _z (kN-m)
1 DEAD LOAD	45	165	15	0	130
2 LIVE LOAD	70	235	20	0	205
3 SNOW LOAD	55	185	15	0	165
4 WIND LOAD TO NORTH	50	5	0	0	145
5 WIND LOAD TO EAST	0	35	55	60	0

Notes:

Dead Load (Roof)	1.2 kN/m ²
Live Load (Roof)	2.5 kN/m ²
Snow Load	2.0 kN/m ²

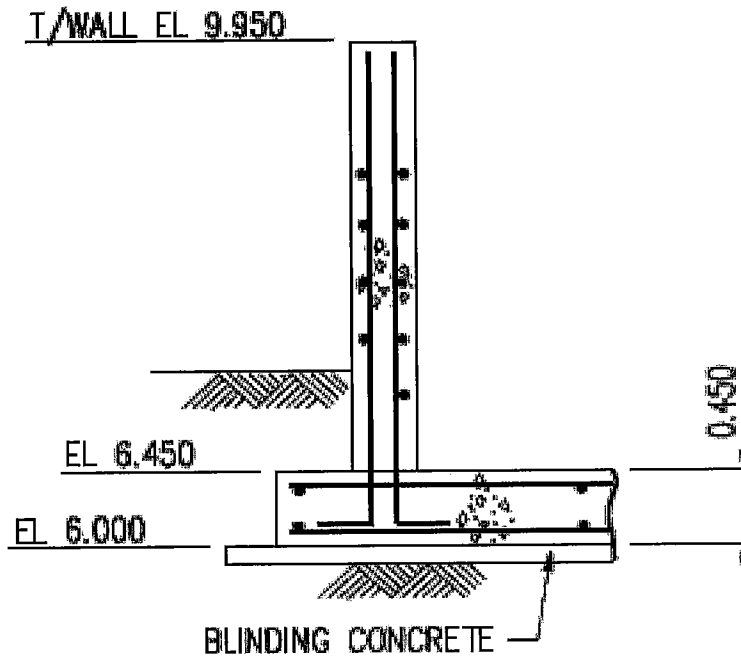
7.2 Loading for Blower Foundation

Blower Weight (kg)	Twin Support Pedestal Dimensions (min. each)		Grade Slab Pressure (kPa)
	Length (mm)	Width (mm)	
71000	2500	1750	80

Note:

Operating loads not included.

8.0 Bunded Area Foundation Loads (Shear and Moment for Containment Wall)



See Drawing 25474-000-DB-0100-00006 for foundation layout

Load Case	Horizontal*	Moment*
	F _x (kN/m)	M _z (kN-m/m)
1 DEAD LOAD	0	0
2 LIVE LOAD (FLUID PRESSURE)	55	90

* Shear and moment per 1m strip of wall width