STYRENE PARK OFFSITE

Document Title:

Site and Design Condition for Offsite Area

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R2	10-04-2019	Final Issue (FI)	R.Seyed	S. Behniyafar	R. Memar
R1	18-03-2019	Issued for Approval (IFA)	R.Seyed	S. Behniyafar	R. Memar
R0	11-08-2018	Issued for Comment (IFC)	M. Hashemi	S. Behniyafar	R. Memar

REVISION RECORD SHEET

Page	Revisions								Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6			R0	R1	R2	R3	R4	R5	R6
1	x								41							
2	x								42							
3	x								43							
4	x								44							
5	x								45							
6	x								46							
7	x								47							
8	x								48							
9	x								49							
10	x								50							
11									51							
12									52							
13									53							
14									54							
15									55							
16									56							
17									57							
18									58							
19									59							
20									60							
21									61							
22									62							
23									63							
24									64							
25									65							
26									66							
27									67							
28									68							
29									69							
30									70							
31									71							
32									72							
33									73							
34									74							
35									75							
36									76							
37									77							
38									78							
39									79							
40									80							

TABLE OF CONTENTS

1. Introduction

1.1. Introduction

Creation and development of chain units of Styrene Monomer is the mission of Gohar Ofogh Industrial Park. This Company joint investment of 4 companies including JPC, Assaluyeh Sadaf Chemical, Kimia Sanaye Dalahoo and Entekhab Group and is located in Assaluyeh.

Feed and utility lines and network construction, Styrene Monomer tank construction, Peroxide and its sidelong equipment warehouse are among this company's missions.

Some of the ongoing Projects of this company are:

- ABS-Rubber project
- ESBR project
- EPS project
- Poly Styrene

1.2. Scope of the Document

This document is intended to define Site and Design Condition for Styrene Park Offsite Area to be used in all designs and to specify all equipment of project.

1.3. Reference Documents

- Islamic Republic of Iran Meteorological Organization (IRIMO): Meteorological Year Books
- Islamic Republic of Iran Meteorological Organization (IRIMO): standard 2800 UBC1997
- National Cartography Center
- IPS PR-360
- API 650

- Islamic Republic of Iran Meteorological Organization (IRIMO), Data Processing Center, Assaluyeh Station, Hourly Dry Bulb and Wet Bulb Temperature, 2001-2002

2. Site data

2.1. Location

Styrene Park Offsite will be located on Phase-2, which is located in Assaluyeh port in Bushehr province southern of Iran.

2.2. Tidal Level

The nearest tidal station to the project area is Nakhl-e-Taghi that has diurnal tide. The data obtained from this station is presented in table 1.

Table 1. Nakhl- e-Taghi tidal levels

Mean Highest High Water	MHHW	+1.89 mCD
Mean Lowest High Water	MLHW	+1.47 mCD
Mean Sea Level	MSL	+1.16 mCD
Mean Highest Low Water	MHLW	+0.84 mCD
Mean Lowest Low Water	MLLW	+0.43 mCD

2.3. Environmental Data

All environmental data are driven from Islamic Republic of Iran Meteorological Organization (IRIMO) recorded data during last 10 years.

2.4. Temperature Condition

2.4.1 Ambient Air Temperature

Item	Value	Units	Remark
Max. recorded temperature	52	°C	
Min. dry bulb temperature (winter)	5	°C	
Winterizing temperature	Not to be considered		
Max. Wet bulb temperature (summer)	34*	°C	
Max. Dry bulb temperature (summer)	48	°C	

* Islamic Republic of Iran Meteorological Organization (IRIMO), Data Processing Center, Assaluyeh Station, Hourly Dry Bulb and Wet Bulb Temperature, 2001-2002

2.4.2 Design Air Temperature for Equipment

Item		Value	Units	Remark
Max. temperature for equipment exposed to sunlight (Design)		85	°C	
Dry bulb temperature for design of air coolers		50	°C	
Air Temperature to be used for process air coolers	Summer	48	°C	
	Winter	37		
	Min temp. for fan power design	5		
Design air condition for: • Gas Turbine • Diesel Engine • Air Compressor	Summer	48	°C	
	Winter	14		
Max. temperature for mechanical, civil and structural design		55	°C	

2.4.3 Design Air Temperature for Air Conditioning

Item			Value	Units	Remark
Design Temperature for Air Conditioning	Indoor	Max (Summer)	25±2	°C	
		Min (Winter)	22±1		
	Outdoor	Max (Summer)	44		
		Min (Winter)	5		
	Day/Night	Max (Summer)	15		
		Min (Winter)	8		

2.4.4 Design Air Temperature for Electrical Equipment

Item		Value	Units	Remark
Design temperature for electrical equipment	Max. Outdoor	48	°C	
	Min. Outdoor	5		
	Max. Indoor	45		
	Min. Indoor	10		
Soil design temperature for cable selection		30	°C	
Design Thermal Variation (ΔT) for Structural Calculation		±22	°C	

2.5. Design Pressure

Item		Value	Units	Remark
Minimum barometric pressure		990	mbar	At Sea Level
Maximum Barometric pressure		1020	mbar	At Sea Level
Reference Barometric Pressure		1010	mbar	At Sea Level
Annual average (process design)		1020	mbar	At Sea Level
Design air condition for: • Gas Turbine	Summer	990	mbar	At Sea Level

• Diesel Engine • Air Compressor	Winter	1020	mbar	At Sea Level

2.6. Relative Humidity

Item		Value	Units	Remark
Ambient Air Relative Humidity	Maximum in summer	76	%	
	Minimum in winter	74	%	
Design relative humidity (Air conditioned space) (Outdoor)	At Max. Temp. (summer)	65	%	
	At Min. Temp. (winter)	100	%	
Design relative humidity for Electrical Equipment		80	%	
Design air condition for: • Gas Turbine • Diesel Engine • Air Compressor	Summer	65	%	
	Winter	80	%	

2.7. Rainfall Data

Item	Value	Units	Remark
Design rainfall recorded in 3 minutes	17	mm	
Design rainfall recorded in 10 minutes	24	mm	
Design rainfall recorded in 1 hour	40	mm	
Design rainfall recorded in 24 hours	70	mm	
Average yearly rainfall	300	mm	
Max monthly rainfall	250	mm	
Rainfall value for sewer design	40	mm/hr	

2.8. Snow Data

Item	Value	Units	Remark
Design snow load (minimum roof load)	25	Kg/m^2	

2.9. Solar Radiation

Item	Value	Units	Remark
Maximum solar radiation	0.98	KW/m^2	

2.10. Wind Condition

Item	Value	Units	Remark
Prevailing Wind Direction	NW to SE	Degree	For mechanical and civil design purpose shall be considered from all directions
Velocity @ 10 m above ground for flare thermal radiation	16	m/s	
Velocity @ 10 m above ground for structure calculations	125	km/hr	wind design criteria to be based on the latest edition of UBC
Design Wind Velocity for Thermal Calculation	5	m/s	
Basic wind pressure (based on above)	76.8	dan/m^2	

2.11. Soil Condition

Item	Value	Units	Remark
Reference Soil Temperature	20	°C	for Cable Selection
Summer Soil Temperature	38	°C	for Cable Selection

2.12. Soil Frost Line

Not applicable.

2.13. Earthquake Condition

Item	Value	Units	Remark
Seismic Region (as per UBC 97)	Zone 4		Ref.: UBC1997
Maximum ground acceleration (Level 2)	0.42 g		
Response modification factor	Rwc=1.0 Rwi=4.0		
Soil coefficient (as per UBC 97)	S=1.0		
Importance factor: (for critical equipment) -	1.25		

2.14. Noise Limitation

Noise nuisance from machinery and burners is normally specified as “sound pressure level”, which for standard design shall not exceed, in work areas, 85 dB (a) at 1m distance from each source.

Maximum allowable noise limit shall not exceed 120 dB (a) for emergency conditions, such as safety/relief valve blow-off.

2.15. Other Data

- Sea Breeze: to be considered
- Sandstorm: to be considered
- Thunder and Lightning: to be considered
- Maximum presence of H_2S: 10 ppm
- Maximum presence of SO_2: 2 ppm