

DATA SHEET FOR STORAGE TANKS				Document No.: 120201-N1648-4DS4-00-001						
1	Service	CRUDE OIL / FUEL OIL TANKS			No. Req'd	SIX		Item:	T-101 TO T-106	
2	Roof Type	EXTERNAL FLOATING ROOF			Diameter:	72,000 mm	Height:	22,300 mm		
3	PROCESS DATA									
4	Fluid				CRUDE OIL / FUEL OIL (CLASS I/III)		CONDITIONS		Temperature	Pressure
5	Density	Heavy Crude Oil		980 kg/m ³	Operating	Shell		°C	mbar(g)	
6		Light Crude Oil		870/880 kg/m ³		Heating Device		AMB	ATM	
7		Fuel Oil		980 kg/m ³		Heating Device		N.A.	N.A.	
8	Flash Point	Heavy Crude Oil		<37 °C	Design	Shell		0(MDMT)/90	int. ATM	
9		Light Crude Oil		<0 °C		Heating Device		N.A.	ext. N.A.	
10		Fuel Oil		>60 °C		Heating Device		N.A.	N.A.	
11	Design Specific Gravity				1					
12	Design Live Load				1.2 kpa					
13	Design Rainfall (Design Maximum Intensity)				7 mm/hr & 70 mm/day					
14	Snow Load				N.A. km/hr					
15	Design Wind Basic Design Gust 162 km/hr over 3 secs. Wind design pressure as per BS 6399.									
16	Earthquake Horizontal Acceleration = 0.15g Vertical Acceleration = 0.075 where g = 9.81 m/s ² ; Zone 2A per UBC.									
17	GEOMETRICAL DATA									
18	Geometric Capacity:			91,283 m ³	Max. Filling Height @ 100%			20.800 m		
19	Named Capacity:			90,000 m ³	Independent LSHH Height			20.677 m		
20	Net Working Capacity:			83,600 m ³	Level Gauge Alarm HH (second Alarm)			20.554 m		
21	Filling Rate			4,000 m ³ /hr	Level Gauge Alarm H (first Alarm)			20.473 m		
22	Emptying Rate			4,000 m ³ /hr	Low Level, LL			1.870 m		
23	Filling Rate (For venting)			5,000 m ³ /hr	Design Liquid Level			21.300 m		
24	Emptying Rate (For venting)			5,000 m ³ /hr	Hydrotesting Level			20.800 m		
25										
26	NOZZLES									
27	Item	No.	Size in	Rat. & Fac. #	Service	Item	No.	Size in	Rat. & Fac. #	Service
28										
29	S1A/B	2	24	API 650	Shell Manhole (With hinge & davit)	R1A/B/C	3	30	API 650	Deck Manhole (With cover)
30	S2	1	36	150 WNRF	Filling / Suction Nozzle (With vortex breaker & inlet opening)	R2	51	20	API 650	Compartment Manhole (With cover)
31	S3	1	16	150 WNRF	Low Suction Nozzle (With internal pipe)	R3	1	10	150 WNRF	Level Transmitter (With galv. Stilling well)
32	S4	1	4	150 WNRF	Roof Drain Nozzle (With internal pipe & swing joint)	R4	1	2	150 WNRF	Temperature Element (With stilling well)
33	S5	1	2	150 WNRF	Water Draw Off Nozzle (With internal pipe)	R5	1	8	150 WNRF	Gauge Hatch (With Stilling Well & Cover)
34	S6	1	2	150 WNRF	Thermal Relief Nozzle	R6A-F	6	12	150 WNRF	Rimroom PV Vent (With PV valve)
35	S7	10	3	150 WNRF	Foam Inlet Nozzle	R7A-J	10	8	N.A.	Automatic Bleeder Vent
36	S8A/B/C	3	30	150 WNRF	Mixer Nozzle	R8	1	4	150 WNRF	Level Alarm Switch Nozzle
37	S9A-F	6	1	3000 NPT	Sampling Nozzle	R9	1	4	150 WNRF	Deck Drain Nozzle (With 50" deck sump)
38	S10A-C	3	2	150 WNRF	Temperature Sensor Nozzle (with valve & blind flange)					
39	S11A-C	3	4	150 WNRF	Heating Coil Inlet Nozzle (with valve & blind flange)					
40	S12A-C	3	4	150 WNRF	Heating Coil Outlet Nozzle (with valve & blind flange)					
41	S13	1	914 x 1219mm	API 650	Cleanout Fitting					
42										
43										
44	NOTES: 1) Tank design shall be according to API 650 11th edition, June 2007 Addendum 3 August 2011									
45	2) Shell design method - "Variable-Design-Point Method"									
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STORAGE TANKS

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1	Service	CRUDE OIL / FUEL OIL TANKS	No. Req'd	SIX	Item:	T-101 TO T-106
2	Roof Type	EXTERNAL FLOATING ROOF	Diameter:	72,000 mm	Height:	22,300 mm

CONSTRUCTION DATA

		MATERIALS	C.A. mm	PAINTING / COATING		
5	Shell	ASTM A573 Gr.70/ASTM A283 Gr. C	0	External (Shell / Roof / Bottom)		Paint / N.A./ No
6	Roof	N.A.	N.A.	Internal (Shell / Roof / Bottom)		No / No / No
7	Floating Roof	ASTM A283 Gr.C	0	Floater (Top / Bottom)		Paint / No
8	Bottom	ASTM A573 Gr.70/ASTM A283 Gr. C	0	Insulation	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	
9	Deck Plate	ASTM A283 Gr.C		Heat Conservation Type	cold <input type="checkbox"/> hot <input type="checkbox"/>	
10	Nozzle Pipe	Internal	ASTM A106 Gr.B	Steam Tracing	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	
11		External	ASTM A106 Gr.B			
12	Bolt & Nuts	Internal	ASTM A193 Gr.B7 / A194 Gr.2H			
13		External	ASTM A193 Gr.B7 / A194 Gr.2H			
14	Gasket	Non-asbestos				
15	Flanges	ASTM A105				
16	Platform/Stairs/Ladder	ASTM A36				
17	Handrail	ASTM A36/Eqv.				
18	Structures	ASTM A36				
19	Fittings	ASTM A234 Gr.WPB / ASTM A105				

21	Postweld Heat Treatment (for process)	AS PER CODE				
22	Fire Protection Type	<input type="checkbox"/>				
23	Personnel Protect. Type	<input type="checkbox"/>				

ACCESSORIES

25	Foam Chamber	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Mixer	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
26	Water Draw Off Sump	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Heating Coil	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
27	Water Spray Ring	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Anchor Bolt Chair	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
28	Spiral Stairway	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Name Plate	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
29	Top Platform	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Center Platform	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
30	Maintenance Platform	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	Rolling Ladder	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
31	Wind Girder	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Earthing Lug	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
32	Intermediate Stiffener	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Settling Level Mark	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
33	Internals (Vortex breaker, Stilling wells, etc)	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Cable Conduit Support	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>

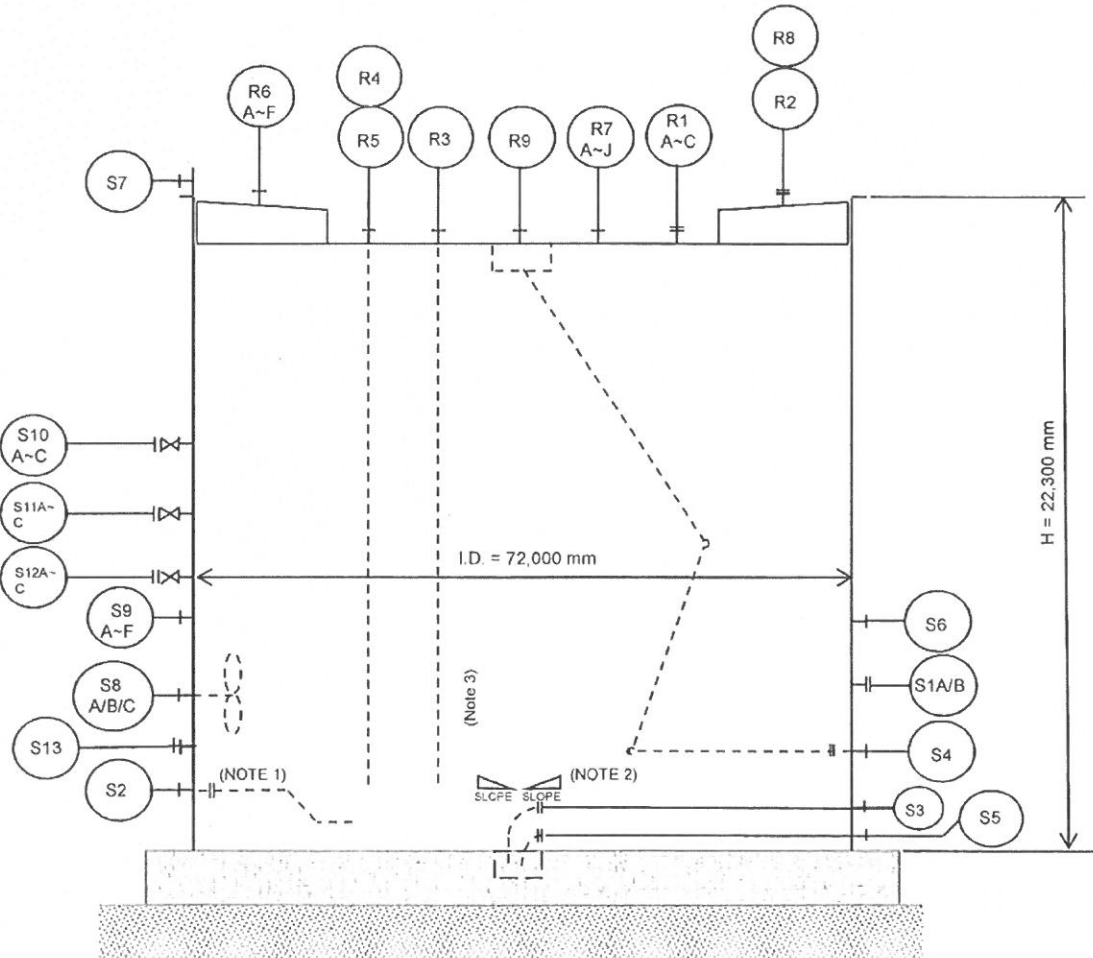
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1	Service	CRUDE OIL / FUEL OIL TANKS	No. Req'd	SIX	Item:	T-101 TO T-106
2	Roof Type	EXTERNAL FLOATING ROOF	Diameter:	72,000 mm	Height:	22,300 mm

CRUDE OIL / FUEL OIL TANKS
Tank Nozzles



- NOTES:
- 1) Vortex breaker and inlet opening.
 - 2) Tank bottom slope is 1:100.
 - 3) Galvanized stilling well.

DATA SHEET FOR STORAGE TANKS				Document No.: 120201-N1648-4DS4-00-002							
1	Service	CRUDE OIL / FUEL OIL TANKS		No. Req'd	FOUR		Item: T-107 TO T-110				
2	Roof Type	EXTERNAL FLOATING ROOF		Diameter:	26,000 mm	Height:	20,000 mm				
3	PROCESS DATA										
4	Fluid	CRUDE OIL / FUEL OIL (CLASS VIII)		CONDITIONS		Temperature	Pressure				
5	Density	Heavy Crude Oil	980 kg/m ³	Operating	Shell	°C	mbar(g)				
6		Light Crude Oil	870/880 kg/m ³		Heating Device	AMB	ATM				
7		Fuel Oil	980 kg/m ³			N.A.	N.A.				
8	Flash Point	Heavy Crude Oil	<37 °C	Design	Shell	0(MDMT)/90	int. ATM				
9		Light Crude Oil	<0 °C		Heating Device		N.A.	ext. N.A.			
10		Fuel Oil	>60 °C				N.A.	N.A.			
11	Design Specific Gravity	1									
12	Design Live Load	1.2 kpa									
13	Design Rainfall (Design Maximum Intensity)	7 mm/hr & 70 mm/day									
14	Snow Load	N.A. km/hr									
15	Design Wind Basic	Design Gust 162 km/hr over 3 secs. Wind design pressure as per BS 6399.									
16	Earthquake	Horizontal Acceleration = 0.15g Vertical Acceleration = 0.075 where g = 9.81 m/s ² ; Zone 2A per UBC.									
17	GEOMETRICAL DATA										
18	Geometric Capacity:	10,642 m ³		Max. Filling Height @ 100%	18.500 m						
19	Named Capacity:	10,000 m ³		Independent LSHH Height	18.029 m						
20	Net Working Capacity:	9,100 m ³		Level Gauge Alarm HH (second Alarm)	17.558 m						
21	Filling Rate	2,000 m ³ /hr		Level Gauge Alarm H (first Alarm)	17.244 m						
22	Emptying Rate	2,000 m ³ /hr		Low Level, LL	1.971 m						
23	Filling Rate (For venting)	3,000 m ³ /hr		Design Liquid Level	19.000 m						
24	Emptying Rate (For venting)	3,000 m ³ /hr		Hydrotesting Level	18.500 m						
25	NOZZLES										
27	Item	No.	Size In	Rat. & Fac. #	Service	Item	No.	Size in	Rat. & Fac. #	Service	
28	S1A/B	2	24	API 650	Shell Manhole (With hinge & davit)	R1A/B	2	30	API 650	Deck Manhole (With cover)	
29	S2	1	24	150 WNRF	Filling / Suction Nozzle (With vortex breaker & inlet opening)	R2	20	20	API 650	Compartment Manhole (With cover)	
30	S3	1	12	150 WNRF	Low Suction Nozzle (With internal pipe)	R3	1	10	150 WNRF	Level Transmitter (With galv. Stilling well)	
31	S4	1	3	150 WNRF	Roof Drain Nozzle (With internal pipe & swing joint)	R4	1	2	150 WNRF	Temperature Element (With stilling well)	
32	S5	1	2	150 WNRF	Water Draw Off Nozzle (With internal pipe)	R5	1	8	150 WNRF	Gauge Hatch (With stilling well & Cover)	
33	S6	1	2	150 WNRF	Thermal Relief Nozzle	R6A-C	3	12	150 WNRF	Rimroom PV Vent (With PV valve)	
34	S7	4	2	150 WNRF	Foam Inlet Nozzle	R7A-D	4	8	N.A.	Automatic Bleeder Vent	
35	S8	1	30	150 WNRF	Mixer Nozzle	R8	1	4	150 WNRF	Level Alarm Switch Nozzle	
36	S9A-F	6	1	3000 NPT	Sampling Nozzle	R9	1	3	150 WNRF	Deck Drain Nozzle (With 28" deck sump)	
37	S10A-C	3	2	150 WNRF	Temperature Sensor Nozzle (with valve & blind flange)						
38	S11	1	3	150 WNRF	Heating Coil Inlet Nozzle (with valve & blind flange)						
39	S12	1	3	150 WNRF	Heating Coil Outlet Nozzle (with valve & blind flange)						
40	S13	1	914 x 1219mm	API 650	Cleanout Fitting						
41	NOTES: 1) Tank design shall be according to API 650 11th edition, June 2007 Addendum 3 August 2011										
42	2) Shell design method - "One-foot Method"										
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STORAGE TANKS

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1	Service CRUDE OIL / FUEL OIL TANKS		No. Req'd FOUR		Item: T-107 TO T-110	
2	Roof Type EXTERNAL FLOATING ROOF		Diameter: 26,000 mm	Height: 20,000 mm		
3	CONSTRUCTION DATA					
4	MATERIALS		C.A. mm	PAINTING / COATING		
5	Shell	ASTM A573 Gr.70/ASTM A283 Gr. C	0	External (Shell / Roof / Bottom)		Paint / N.A. / No
6	Roof	N.A.	N.A.	Internal (Shell / Roof / Bottom)		No / No / No
7	Floating Roof	ASTM A283 Gr.C	0	Floater (Top / Bottom)		Paint / No
8	Bottom	ASTM A573 Gr.70/ASTM A283 Gr. C	0			
9	Deck Plate	ASTM A283 Gr.C		Insulation	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
10	Nozzle Pipe	Internal	ASTM A106 Gr.B	Heat Conservation Type	cold <input type="checkbox"/>	hot <input type="checkbox"/>
11		External	ASTM A106 Gr.B	Steam Tracing	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
12	Bolt & Nuts	Internal	ASTM A193 Gr.B7 / A194 Gr.2H			
13		External	ASTM A193 Gr.B7 / A194 Gr.2H			
14	Gasket	Non-asbestos				
15	Flanges	ASTM A105				
16	Platform/Stairs/Ladder	ASTM A36				
17	Handrail	ASTM A36/Eqv.				
18	Structures	ASTM A36				
19	Fittings	ASTM A234 Gr.WPB / ASTM A105				
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21	Postweld Heat Treatment (for process)		AS PER CODE			
22	Fire Protection Type	<input type="checkbox"/>				
23	Personnel Protect. Type	<input type="checkbox"/>				
24	ACCESSORIES					
25	Foam Chamber	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Mixer	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
26	Water Draw Off Sump	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Heating Coil	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
27	Water Spray Ring	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Anchor Bolt Chair	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
28	Spiral Stairway	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Name Plate	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
29	Top Platform	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Center Platform	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
30	Maintenance Platform	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	Rolling Ladder	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
31	Wind Girder	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Earthing Lug	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
32	Intermediate Stiffener	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Settling Level Mark	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
33	Internals (Vortex breaker, Stilling wells, etc	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	Cable Conduit Support	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>
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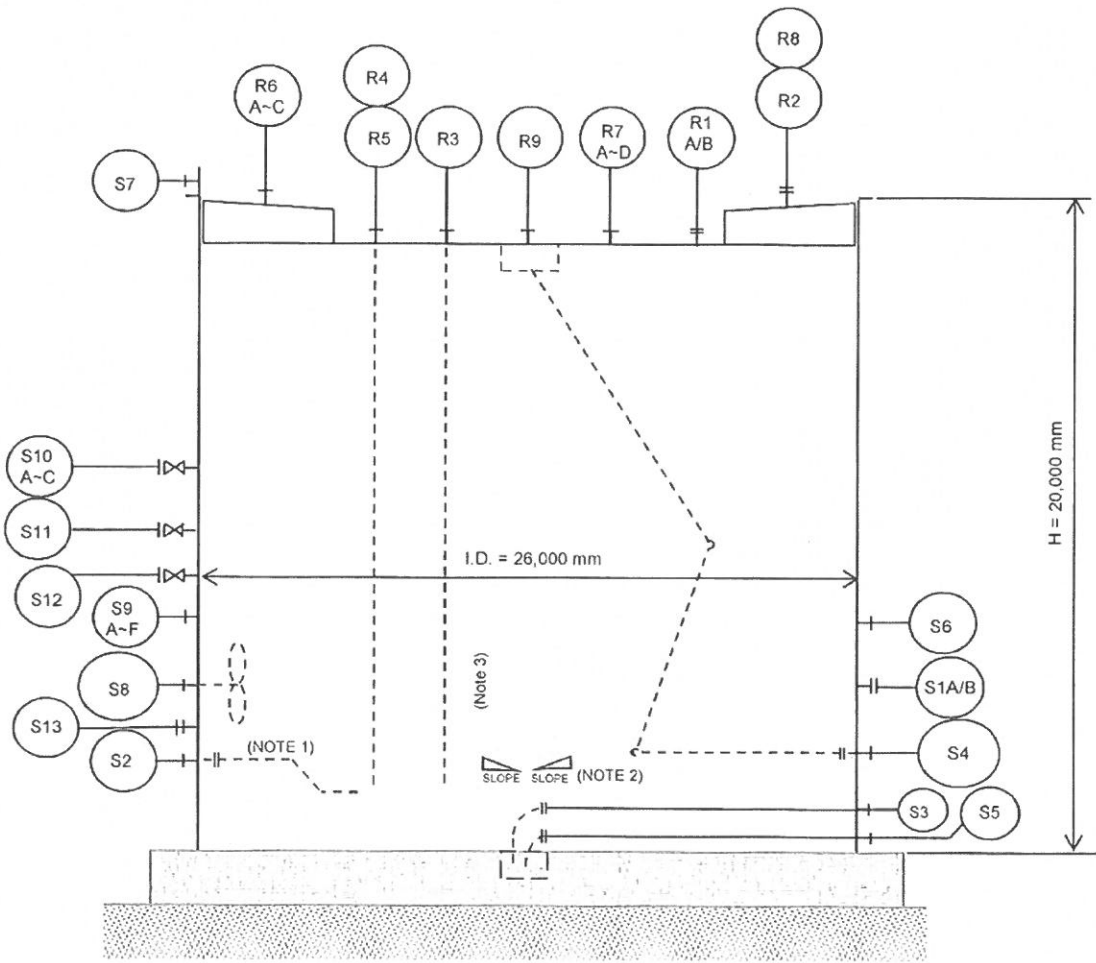
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STORAGE TANKS

Document No.:
120201-N1648-4DS4-00-002

Appd By EM : N.M

1	Service	CRUDE OIL / FUEL OIL TANKS	No. Req'd	FOUR	Item:	T-107 TO T-110
2	Roof Type	EXTERNAL FLOATING ROOF	Diameter:	26,000 mm	Height:	20,000 mm

CRUDE OIL / FUEL OIL TANKS
Tank Nozzles



- NOTES:
- 1) Vortex breaker and inlet opening.
 - 2) Tank bottom slope is 1:100.
 - 3) Galvanized stilling well.