



STEEL PENSTOCK (Installation stand) (2/6)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	Acid
	③ Installation stand								
	Support beam	SS400	L	75X75X6X1400	150	9.6	1439	I.S.	63.0
	Gusser Plate	SS400	PL	9X250X300	300	5.3	1590	O.S.	45.0
	Installation stand(Post)	SS400		100X50X5/7.5X1000	100	9.4	936		60.0
	Installation stand(Main)	SS400		100X50X5/7.5X2000	50	18.7	936		60.0
	Installation stand(Main)	SS400		100X50X5/7.5X1000	100	9.4	936		60.0
	Installation stand(Sub)	SS400		75X75X6X1500	100	10.3	1028		45.0
	Installation stand	SS400		75X75X6X500	200	3.4	685		30.0
	Base Plate	SS400	PL	9X240X250	100	4.2	424		12.0
	Gusser Plate	SS400	PL	9X200X200	100	2.8	283		8.0
	Rail girder	SS400		150X75X6.5/10X70686	2	1314.8	2630		107.4
	Base	SS400	PL	16X300X400	282	15.1	4250		67.7
	Liner	SS400	t	10X300X400	282	9.4	2656		67.7
	④ Installation stand								
	Support beam	SS400	L	75X75X6X1400	228	9.6	2187		95.8
	Gusser Plate	SS400	PL	9X250X300	456	5.3	2416		68.4
	Installation stand(Post)	SS400		100X50X5/7.5X1000	152	9.4	1423		91.2
	Installation stand(Main)	SS400		100X50X5/7.5X2000	76	18.7	1423		91.2
	Installation stand(Main)	SS400		100X50X5/7.5X1000	152	9.4	1423		91.2
	Installation stand(Sub)	SS400		75X75X6X1500	152	10.3	1552		68.4
	Installation stand	SS400		75X75X6X500	304	3.4	1041		45.6
	Base Plate	SS400	PL	9X240X250	152	4.2	644		18.2
	Gusser Plate	SS400	PL	9X200X200	152	2.8	430		12.2
	Rail girder	SS400		150X75X6.5/10X115000	2	2139.0	4278		174.8
	Base	SS400	PL	16X300X400	460	15.1	6933		110.4
	Liner	SS400	t	10X300X400	460	9.4	4333		110.4

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I. S.	O. S.
	(5) Installation stand								
	Support beam	SS400	L	75 X 75 X 6 X 1400	144	9.6	1381	60.5	
	Gusser Plate	SS400	PL	9 X 250 X 300	288	5.3	1526	32.4	
	Installation stand (Post)	SS400	[	100 X 50 X 5 / 7.5 X 1000	92	9.4	861	55.2	
	Installation stand (Main)	SS400	[	100 X 50 X 5 / 7.5 X 2000	46	18.7	861	55.2	
	Installation stand (Main)	SS400	[	100 X 50 X 5 / 7.5 X 1000	92	9.4	861	55.2	
	Installation stand (Sub)	SS400	L	75 X 75 X 6 X 1500	92	10.3	945	41.4	
	Installation stand	SS400	L	75 X 75 X 6 X 500	184	3.4	630	27.6	
	Base Plate	SS400	PL	9 X 240 X 250	92	4.2	390	11.0	
	Gusser Plate	SS400	PL	9 X 200 X 200	92	2.8	260	7.4	
	Rail girder	SS400	[	150 X 75 X 6.5 / 10 X 71605	2	1331.9	2664	108.8	
	Base	SS400	PL	16 X 300 X 400	286	15.1	4311	68.6	
	Liner	SS400	t	10 X 300 X 400	286	9.4	2694	68.6	
	(6) Installation stand								
	Support beam	SS400	L	75 X 75 X 6 X 1400	72	9.6	690	30.2	
	Gusser Plate	SS400	PL	9 X 250 X 300	144	5.3	763	21.6	
	Installation stand (Post)	SS400	[	100 X 50 X 5 / 7.5 X 1000	48	9.4	449	28.8	
	Installation stand (Main)	SS400	[	100 X 50 X 5 / 7.5 X 2000	24	18.7	449	28.8	
	Installation stand (Main)	SS400	[	100 X 50 X 5 / 7.5 X 1000	48	9.4	449	28.8	
	Installation stand (Sub)	SS400	L	75 X 75 X 6 X 1500	48	10.3	493	21.6	
	Installation stand	SS400	L	75 X 75 X 6 X 500	96	3.4	329	14.4	
	Base Plate	SS400	PL	9 X 240 X 250	48	4.2	203	5.8	
	Gusser Plate	SS400	PL	9 X 200 X 200	48	2.8	136	3.8	
	Rail girder	SS400	[	150 X 75 X 6.5 / 10 X 71605	2	1331.9	2664	53.7	
	Base	SS400	PL	16 X 300 X 400	142	15.1	2140	34.1	
	Liner	SS400	t	10 X 300 X 400	142	9.4	1338	34.1	

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STEEL PENSTOCK (Installation stand) (4/6)

No,	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I. S.	O. S.
	(7) Installation stand								
	Support beam	SS400	L	75X75X6X1400	174	9.6	1669	73.1	
	Gusser Plate	SS400	PL	9X250X300	348	5.3	1844	52.2	
	Installation stand (Post)	SS400	L	100X50X5/7.5X1000	116	9.4	1086	69.6	
	Installation stand (Main)	SS400	L	100X50X5/7.5X2000	58	18.7	1086	69.6	
	Installation stand (Main)	SS400	L	100X50X5/7.5X1000	116	9.4	1086	69.6	
	Installation stand (Sub)	SS400	L	75X75X6X1500	116	10.3	1192	52.2	
	Installation stand	SS400	L	75X75X6X500	232	3.4	795	34.8	
	Base Plate	SS400	PL	9X240X250	116	4.2	492	13.9	
	Gusser Plate	SS400	PL	9X200X200	116	2.8	328	9.3	
	Rail girder	SS400	L	150X75X6.5/10X71605	2	1331.9	2664	132.2	
	Base	SS400	PL	16X300X400	348	15.1	5245	83.5	
	Liner	SS400	t	10X300X400	348	9.4	3278	83.5	
	(8) Installation stand								
	Support beam	SS400	L	75X75X6X1400	24	9.6	230	10.1	
	Gusser Plate	SS400	PL	9X250X300	48	5.3	254	7.2	
	Installation stand (Post)	SS400	L	100X50X5/7.5X1000	16	9.4	150	9.6	
	Installation stand (Main)	SS400	L	100X50X5/7.5X2000	8	18.7	150	9.6	
	Installation stand (Main)	SS400	L	100X50X5/7.5X1000	16	9.4	150	9.6	
	Installation stand (Sub)	SS400	L	75X75X6X1500	16	10.3	164	7.2	
	Installation stand	SS400	L	75X75X6X500	32	3.4	110	4.8	
	Base Plate	SS400	PL	9X240X250	16	4.2	68	1.9	
	Gusser Plate	SS400	PL	9X200X200	16	2.8	45	1.3	
	Rail girder	SS400	L	150X75X6.5/10X7891	2	146.8	291	12.0	
	Base	SS400	PL	16X300X400	32	15.1	482	7.7	
	Liner	SS400	t	10X300X400	32	9.4	301	7.7	



No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	(3) Installation stand								
	Anchor bolt	SS400	M20 X 250		1128	0.779	879		
	Anchor setter	glass type	AP25		1128	0.101	114		
	(4) Installation stand								
	Anchor bolt	SS400	M20 X 250		1840	0.779	1433		
	Anchor setter	glass type	AP25		1840	0.101	186		
	(5) Installation stand								
	Anchor bolt	SS400	M20 X 250		1144	0.779	891		
	Anchor setter	glass type	AP25		1144	0.101	116		
	(6) Installation stand								
	Anchor bolt	SS400	M20 X 250		568	0.779	442		
	Anchor setter	glass type	AP25		568	0.101	57		
	(7) Installation stand								
	Anchor bolt	SS400	M20 X 250		1392	0.779	1084		
	Anchor setter	glass type	AP25		1392	0.101	141		
	(8) Installation stand								
	Anchor bolt	SS400	M20 X 250		128	0.779	100		
	Anchor setter	glass type	AP25		128	0.101	13		
	(9) Installation stand								
	Anchor bolt	SS400	M16 X 170		112	0.362	41		
	Anchor setter	glass type	AP16		112	0.046	5		
	Roller		N04-Type 1-4S						
			Sub Total				5756		
			Installation stand Total				108173	3574.8	

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OUT LET STRUCTURES (φ 650 Main Control Gate) (1/5)									
No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	Acid
	<Gate Leaf>								
	Gate Leaf	SUS304+SM490	t	125X1130X846	1	872.4	872	I.S.	0.9
	Beading Plate	CAC403	t	20X80X650	2	9.3	19		-
	Beading Plate	CAC403	t	25X80X650	2	11.6	23		-
				Sub Total			914		0.9
	Bolt	SUS304		M12X25	28	0.059	2		
	Eye Bolt	SUS304		M24	2	0.9	2		
				Sub Total			4		
				<Gate Leaf> Total			918		0.9
	<Bonnet>								
	Bonnet								
	Pipe	SS400	PL	19X2322X659	1	228.2	228		3.1
	Pipe Flange	SM400C	t	41X(φ855-φ650)	1	78.0	78		0.5
	Pipe Stiffener	SS400	PL	9X(φ900-φ650)	1	21.5	22		0.6
	Plate	SS400	PL	12X1194X2070	1	172.3	172		3.7
	Side plate	SS400	PL	12X127X2070	2	25.0	50		1.1
	Lower plate	SS400	PL	12X127X1220	1	14.7	15		0.3
	Side Flange	SM400C	t	45X185X2070	2	136.7	273		1.5
	Lower Flange	SM400C	t	45X185X1220	1	80.5	81		0.5
	Stiffener	SS400	PL	16X127X160	2	2.6	5		0.1
	Upper flange	SM400C	t	45X384X1540	1	137.9	138		0.8
	Stiffener	SS400	PL	9X50X2156	2	7.6	15		0.4
	Stiffener	SS400	PL	9X229X1540	2	13.2	26		0.7
	Stiffener	SS400	PL	9X489X500	4	14.3	57		1.6
	Stiffener	SS400	PL	9X489X350	2	10.0	20		0.5
	Vertical stiffener	SS400	PL	9X90X361	1	2.3	2		0.1
	Vertical stiffener	SS400	PL	9X350X300	1	5.9	6		0.2
	Vertical stiffener	SS400	PL	16X320X321	2	10.3	21		0.4

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I.S.	Acid
	Seat plate	SM400C	PL	45 X 160 X 400	2	22.6	45	0.3	
	Stiffener	SS400	PL	9 X 300 X 350	2	5.2	10	0.2	
	Stiffener	SS400	PL	9 X 250 X 361	2	6.4	13	0.1	
	Bearing Plate	SUS304	t	9 X 85 X 1720	2	10.4	21		
	Conical ring	SM400C	t	65 X (φ 880 - φ 746)	1	78.6	79	0.3	
	Seal ring	CAC703	t	53 X (φ 759 - φ 650)	1	40.0	40		
	Seal ring clamp bar	SUS304	PL	25 X (φ 850 - φ 736)	1	25.3	25		
	Bonnet								
	Pipe	SS400	PL	19 X 2387 X 261	1	112.4	112	1.5	
	Ring beam	SM400C	t	39 X (φ 1100 - φ 900)	1	96.2	96	0.6	
	Skinplate	SM400C	PL	50 X 1540 X 2070	1	988.5	989	5.0	
	Upper Flange	SM400C	t	45 X 196 X 1540	1	106.6	107	0.6	
	Stiffener	SS400	PL	9 X 50 X 1888	2	6.7	13	0.4	
	Stiffener	SS400	PL	9 X 95 X 1540	2	10.3	21	0.6	
	Stiffener	SS400	PL	9 X 160 X 450	4	5.1	20	0.7	
	Stiffener	SS400	PL	9 X 160 X 320	2	3.6	7	0.2	
	Vertical stiffener	SS400	PL	9 X 95 X 361	1	2.4	2	0.1	
	Vertical stiffener	SS400	PL	9 X 192 X 261	1	3.5	4	0.1	
	Vertical stiffener	SS400	PL	9 X 95 X 321	2	2.2	4	0.1	
	Vertical stiffener	SS400	PL	9 X 95 X 361	4	2.4	10	0.3	
	Vertical stiffener	SS400	PL	9 X 95 X 311	4	2.1	8	0.2	
	Vertical stiffener	SS400	PL	9 X 95 X 361	2	2.4	5	0.1	
	Vertical stiffener	SS400	PL	16 X 320 X 321	2	10.3	21	0.4	
	Seat plate	SM400C	PL	45 X 160 X 400	2	22.6	45	0.3	
	stiffener	SS400	PL	9 X 250 X 261	2	4.1	8	0.2	
	stiffener	SS400	PL	9 X 95 X 361	2	2.4	5	0.1	
	Bearing Plate	SUS304	t	20 X 95 X 1720	2	24.6	49		

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OUT LET STRUCTURES (φ 650 Main Control Gate)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	
								I. S.	O. S.
	Bonnet cover								
	Upper Flange	SM400C	t	45 X 580 X 800	1	147.5	148		0.8
	Lower Flange	SM400C	t	45 X 580 X 1540	1	302.9	303		1.7
	Cover	SS400	PL	22 X 610 X 1520	2	128.1	256		3.0
	Stiffener	SS400	PL	22 X 610 X 240	2	25.3	51		0.6
	Stiffener	SS400	PL	22 X 610 X 140	4	14.7	59		0.7
	Stiffener	SS400	PL	22 X 140 X 250	4	4.5	18		0.2
	Packing case	SUS304	RB	( $\phi$ 205 - $\phi$ 125) X 105	1	17.6	18		-
	Packing clamp bar	CAC403	t	35 X ( $\phi$ 190 - $\phi$ 105)	1	3.3	3		-
	Packing clamp bar	CAC403	t	42 X ( $\phi$ 125 - $\phi$ 105)	1	1.3	1		-
				Sub Total			3,825		35.5
	Reamer pin-Nut	SUS304		36 X 100	4	0.8	3		
	Bolt, Nut	SUS304		M36 X 150 N, SW	30	2.08	62		
	Bolt	SUS304		M12 X 30	32	0.063	2		
	"O" ring	NBR		$\phi$ 8.4 X 2523	1	0.22	-		
	"O" ring	NBR		$\phi$ 8.4 X 2372	1	0.21	-		
	"O" ring	NBR		$\phi$ 8.4 X 3173	1	0.28	-		
	Bolt, Nut	SUS304		M30 X 120 N, SW	24	1.168	28		
	Bolt, Nut	SUS304		M30 X 120 N, SW	28	1.168	33		
	Bolt, Nut	SUS304		M36 X 150 N, SW	20	2.08	42		
	Bolt	SUS304		M16 X 50	8	0.12	1		
	"V" packing	Cloth inserted rubber		F105	4	0.03	-		
				Sub Total			171		
				< Bonnet > Total			3,996		35.5

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OUT LET STRUCTURES ( $\phi$  650 Main Control Gate)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I.S.	O.S.
	<Hoist>								
	Stand Base	SM400C	t	45 X 580 X 800 - φ 240	1	147.9	148	0.1	0.8
	Stand	SS400	PL	19 X 813.7 X 760	1	92.2	92		1.2
	Hoist Base	SM400C	t	45 X (φ 560 - φ 245)	1	71.0	71		0.4
	Rib	SS400	Pl.	19 X 141 X 760	4	16.0	64		0.9
	Spindle	SUS304N2	RB	100 X 2970	1	185.0	185		-
	Coupling	SUS304	RB	(φ 210 - φ 105) X 250	1	53.1	53		-
				Sub Total			613	0.1	3.3
	Spindle motor			Spindle motor	1	650.0	650		
				Raising Height 0.870m					
				Motor 5.5kw					
				A/D converter electrical position transmitter					
				Spindle rod Tr100 X 12					
				JMB-2 B-3					
				Sub Total			650		
	Studbolt-Nut	SUS304		M36 X 148 N, SW	12	2.079	25		
	Bolt	SUS304		M20 X 70 SW	6	0.316	2		
	Bolt-Nut	SUS304		M36 X 215 N, SW	10	2.593	26		
	Reamerbolt, Nut	SUS304		φ 36 X 215 N, SW	2	2.593	5		
				Sub Total			58		
				<Hoist> Total			1,321	0.1	3.3
									0.0

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OUT LET STRUCTURES(φ 650 Main Control Gate)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Gate stand	SS400	H	150X150X7/10X550	2	17.3	35	0.7	
	Main beam	SS400	H	150X150X7/10X1100	2	34.7	69	1.4	
	Main beam	SS400	H	150X150X7/10X300	4	9.5	38	0.8	
	Post	SS400	L	75X75X6X450	2	3.1	6	0.3	
	Sub-beam	SS400	L	75X75X6X450	4	3.1	12	0.5	
	Sub-beam	SS400	PL	9X65X130	20	0.6	12	0.4	
	Stiffener	SS400	PL	22X200X400	4	13.8	55	0.6	
	Seat plate	SS400	PL	22X150X150	4	3.9	16	0.2	
	Hoist stand	SS400	PL	22X150X150	4	2.3	9	0.1	
	Hoist stand	SS400	PL	6X200X400	4	3.8	15	0.6	
	Liner	SS400	PL	4.5X200X400	4	2.8	11	0.6	
	Liner	SS400	PL	3.2X200X400	8	2.0	16	1.3	
	Anchor Base	SS400	PL	22X250X250	4	10.8	43	0.5	
	Stopper	SS400	L	75X75X6X150	8	1.0	8	0.3	
				Sub Total			345	8.3	
	Anchor bolt	SS400		M20X250	16	0.779	12		
	Anchor setter	glass type		AP25	16	0.101	2		
				Sub Total			14		
				Installation stand Total			359	8.3	
				Steel Material			5.697	8.4	39.7
				Material purchased			247		
				Material single unit			650		

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No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	Acid
	<Gate Leaf>								
	Gate Leaf	SM400C	t	105 X 880 X 885	1	564.9	565	I.S.	1.5
	Seal clamp bar	SUS304	t	15 X 79 X 718	1	6.7	7		
	Reading Plate	CAC403	t	30 X 75 X 775	2	15.5	31		
	Seal Plate	CAC403	t	30 X 75 X 720	1	14.5	15		
	Guide Plate	CAC403	t	20.5 X 50 X 670	2	6.1	12		
				Sub Total			630		1.5
	Rubber seal	N, R	t	10 X 29 Flat seal   =830	1				
	Bolt	SUS304		M16 X 30	9	0.080	1		
	Bolt	SUS304		M16 X 35	28	0.089	2		
	Bolt	SUS304		M12 X 25	18	0.036	1		
	Eybolt	SUS304		M24	2	0.768	2		
				Sub Total			6		
				<Gate Leaf> Total			636		1.5
	<Bonnet>								
	Bonnet								
	Intake pipe	SS400	PL	19 X 669 X 287	1	87.1	87		1.2
	Intake pipe Flange	SM400C	t	41 X (φ 855 - φ 650)	1	78.0	78		0.5
	Skin plate	SM400A	PL	25 X 980 X 1870	1	291.3	291		3.0
	Side plate	SM400A	PL	25 X 105 X 1870	2	38.9	78		0.8
	Side Flange	SM400C	t	50 X 160 X 1870	2	118.6	237		0.4
	Upper Flange	SM400C	t	50 X 358 X 1250	1	119.4	119		0.6
	Guide shoe	SUS304	t	9 X 60 X 1570	2	6.7	13		
	Silly guide	SUS304	t	155 X 165 X 930	1	188.6	189		0.4
	Horizontal girder	SS400	PL	16 X 280 X 1250	3	28.6	86		1.4
	Horizontal girder	SS400	FB	75 X 19 X 1825	3	20.4	61		0.8
	Horizontal stiffener	SS400	PL	16 X 271 X 417	2	9.2	18		0.3
	Horizontal stiffener	SS400	PL	19 X 342 X 417	4	12.5	50		0.8
	Horizontal stiffener	SS400	PL	16 X 171 X 287	1	4.9	5		0.1

OUT LET STRUCTURES (φ 650 Guard Gate) (1/5)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Horizontal stiffener	SS400	PL	16X163X287	2	4.7	9	0.1	
	Horizontal stiffener	SS400	PL	16X100X294	2	3.7	7	0.1	
	Vertical stiffener	SS400	PL	19X242X283	2	8.1	16	0.2	
	Seat plate	SS400	PL	22X125X1050	1	22.7	23	0.2	
	Bonnet								
	Outlet pipe	SS400	PL	19X699X762	1	242.1	242	3.2	
	Outlet pipe Flange	SM400C	t	41X(φ855 - φ650)	1	78.0	78	0.5	
	Skin plate	SM400C	PL	50X1250X1870	1	779.8	780	3.5	
	Upper Flange	SM400C	t	50X198X1250	1	97.1	97	0.5	
	Bearing Plate	SUS304	PL	25X95X1610	2	20.0	40		0.1
	Bearing Plate	SUS304	t	15X105X760	1	9.4	9		
	Air Pipe	SEP	Pipe	350A X 450	1	30.4	30	1.0	
	Reinforcement plate	SS400	PL	19X(φ540 - φ270)	1	25.6	26	0.2	
	Horizontal girder	SS400	PL	16X200X1230	1	30.9	31	0.5	
	Horizontal girder	SS400	FB	75X19X1140	1	12.8	13	0.2	
	Horizontal girder	SS400	PL	16X115X1230	2	17.8	36	0.6	
	Horizontal girder	SS400	FB	75X19X1140	2	12.8	26	0.4	
	Horizontal stiffener	SS400	PL	16X271X762	2	18.2	36	0.6	
	Horizontal stiffener	SS400	PL	16X342X762	4	22.9	92	1.5	
	Vertical stiffener	SS400	PL	16X171X762	1	11.4	11	0.2	
	Vertical stiffener	SS400	PL	16X163X355	2	5.1	10	0.2	
	Vertical stiffener	SS400	PL	16X166X242	1	3.1	3	0.1	
	Vertical stiffener	SS400	PL	16X100X294	2	3.7	7	0.1	
	Vertical stiffener	SS400	PL	19X242X253	2	7.3	15	0.2	
	Air Pipe Flange	SM400A	t	26X(φ498 - φ358.1)	1	18.2	18	0.1	
	Seat plate	SS400	PL	22X150X1200	1	31.0	31	0.4	
	Side stiffener	SS400	PL	16X100X291	2	3.7	7	0.1	
	Side stiffener	SS400	PL	16X100X225	4	2.8	11	0.2	
	Side stiffener	SS400	PL	16X100X203	2	2.5	5	0.1	
	Side stiffener	SS400	PL	16X100X294	4	3.7	15	0.2	
	Side stiffener	SS400	PL	16X100X242	2	3.0	6	0.1	

OUT LET STRUCTURES (φ 650 Guard Gate)

(2/5)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Bonnet cover								
	Vaner plate	SM400C	t	41 X 550 X 1250	1	221.3	221		
	Upper plate	SM400C	t	45 X 550 X 630	1	108.9	109		1.4
	Web	SS400	PL	16 X 574 X 1230	2	83.0	166		0.3
	Stiffener	SS400	PL	16 X 125 X 574	4	9.0	36		2.0
	Stiffener	SS400	PL	16 X 248 X 574	2	17.9	36		0.6
	Stiffener	SS400	PL	16 X 125 X 250	4	4.2	17		0.6
	Air pipe	SUS304TP	Pipe	10A X Sch40 X 150	1				0.2
	Bush	CAC403	t	( $\phi$ 115 - $\phi$ 95) X 40	1	1.16	1		-
	Boss	SS400	t	( $\phi$ 195 - $\phi$ 96) X 103	1	16.2	16		0.2
	Packing clamp bar	CAC403	t	( $\phi$ 180 - $\phi$ 95) X 34	1	2.7	3		-
				Sub Total			3.647		30.5
	"O" ring	NBR		$\phi$ 8.4 X 2390	2	0.212			
	"O" ring	NBR		$\phi$ 8.4 X 7260	1				
	Bolt	SUS304		M16 X 50	6	0.109			
	Bolt	SUS304		M12 X 40	3	0.051			
	Bolt, Nut	SUS304		M30 X 120 N, SW	48	1.19	57		
	Bolt, Nut	SUS304		M36 X 150 N, SW	28	2.102	59		
	Bolt, Nut	SUS304		M36 X 280 N, SW	8	3.113	25		
	Reamer pin	S45C		16 X 140	4	0.266	1		
	Bolt, Nut	SUS304		M36 X 140 N, SW	22	2.021	44		
	Reamerbolt, Nut	SUS304		$\phi$ 32 X 140	2	1.357	3		
	"V" packing	Cloth inserted rubber		F95	4	0.034			
	Air valve	SUS304		Pall Valve	1				
				Sub Total			191		
				< Bonnet > Total			3.838		30.5
									0.5

OUT LET STRUCTURES ( $\phi$ 650 Guard Gate)

(3/5)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	I.S.	Acid
	<Hoist>								
	Stand Base	SM400C	t	45 X 550 X 630 - φ250	1	105.0	105	0.1	0.6
	Stand	SS400	PL	19 X 845.1 X 660	1	83.2	83		1.1
	Hoist Base	SM400C	t	45 X (φ560 - φ250)	1	69.7	70		0.4
	Rib	SS400	PL	19 X 136 X 660	4	13.4	54		0.7
	Spindle	SUS304N2	RB	100 X 2690	1	167.5	168		-
	Coupling	SUS304	RB	(φ190 - φ95) X 230	1	40.1	40		-
				Sub Total			520	0.1	2.8
	Spindle motor			Spindle motor	1	650.0	650		
				Raising height 0.750m					
				Motor power 5.5kw					
				A/D converter electrical position transmitter					
				Spindle Tr100 X 12					
				JMB-2 B-3					
				Sub Total			650		
	Studbolt-Nut	SUS304		M36 X 148 N, SW	12	2.079	25		
	Bolt	SUS304		M16 X 55 SW	6	0.160	1		
	Bolt, Nut	SUS304		M36 X 193 N, SW	10	2.423	24		
	Reamerbolt, Nut	SUS304		M36 X 193 N, SW	2	2.423	5		
				Sub Total			55		
				<Hoist> Total			1,225	0.1	2.8
									0.0

(4/5)

OUT LET STRUCTURES (φ 650 Guard Gate)

OUT LET STRUCTURES (Ø 650 Guard Gate) (5/5)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	I.S.	O.S.
	Installation stand								
	Main girder	SS400	H	150 X 150 X 7 / 10 X 630	2	19.8	40	1.1	
	Main girder	SS400	H	150 X 150 X 7 / 10 X 750	2	23.6	47	1.3	
	Post	SS400	H	150 X 150 X 7 / 10 X 480	4	15.1	60	1.7	
	Sub beam	SS400	L	75 X 75 X 6 X 500	2	3.4	7	0.3	
	Sub beam	SS400	L	75 X 75 X 6 X 550	4	3.7	15	0.6	
	Stiffener	SS400	Pl.	9 X 65 X 130	20	0.6	12	0.3	
	Stand plate	SS400	Pl.	22 X 200 X 200	4	6.9	28	0.3	
	Liner	SS400	Pl.	6 X 200 X 200	4	1.9	8	0.3	
	Liner	SS400	Pl.	4.5 X 200 X 200	4	1.4	6	0.3	
	Liner	SS400	Pl.	3.2 X 200 X 200	8	1.000	8	0.6	
	Anchor Base	SS400	Pl.	22 X 250 X 350	4	15.100	60	0.7	
	Post stopper	SS400	L	75 X 75 X 6 X 150	8	1.0	8	0.3	
	Hoist stand	SS400	Pl.	22 X 150 X 150	4	3.9	16	0.2	
	Hoist stand	SS400	Pl.	22 X 150 X 150	4	2.3	9	0.1	
				Sub Total			324	8.1	
	Anchor bolt	SS400		M20 X 250	16	0.779	12		
	Anchor setter	glass type		AP25	16	0.101	2		
				Sub Total			14		
				Installation stand Total			338	8.1	
				Steel Material			5,121	8.2	34.8
				Material purchased			266		
				Material single unit			650		

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	Acid
	Auxiliary facilities								
	Connecting pipe	SS400	PL	19 X 669 π X 1000	1	313.5	314	4.2	
	Flange	SM400C	t	41 X (φ 855 - φ 650)	2	78.0	156	1.0	
	Outlet pipe	STPY400	Pipe	900A (t 8.7) X 1000	1	195.0	195	5.7	
	Flange	SM400C	t	39 X (φ 1100 - φ 900)	1	96.2	96	0.6	
	Stiffener	SS400	PL	9 X (φ 1114.4 - φ 914.4)	4	22.5	90	2.5	
	Main Air pipe	SGP	Pipe	350A X 4000	1	270.8	271	8.9	
	Flange	SM400A	t	26 X (φ 498 - φ 358.1)	1	18.2	18	0.1	
	Stiffener	SS400	PL	9 X (φ 508 - φ 358)	4	7.2	29	0.8	
	Sub-Air pipe	SGP	Pipe	250A X 2000	1	84.8	85	3.4	
	Flange	SM400A	t	24 X (φ 400 - φ 269.5)	3	12.9	39	0.4	
	Reinforcement	SS400	PL	12 X (φ 450 - φ 269.5)	1	9.6	10	0.2	
	Water filling device	SGP	Pipe	150A X 4000	1	79.2	79	4.2	
	Flange	SM400A	t	22 X (φ 280 - φ 166.6)	8	6.9	55	0.6	
	Reinforcement	SS400	PL	9 X (φ 300 - φ 166.6)	2	3.5	7	0.2	
				Sub Total			1,444	32.8	
	Spring-type air valve	SC450		250A	1		330		
	Hand gate valve	SC450		250A	1		210		
	Hand gate valve	SC450		150A	1		95		
	Electric gate valve	SC450		150A	1		210		
				Sub Total			845		
	Elbow	SGP		250A 45° E(L)	1	12.7	13		
	Elbow	SGP		150A 90° E(L)	2	7.1	14		
	Bolt	SUS304		M22 X 85 N.W	48	0.438	21		
	Bolt	SUS304		M20 X 65 N.W	72	0.308	22		
				Sub Total			70		
				Auxiliary facilities Total			2,359	32.8	

OUT LET STRUCTURES (φ 650 Auxiliary facilities)

(1/1)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	I.S.	O.S.
	Installation stand								
	For outlet pipe								
	Installation stand (Post)	SS400	L	75 X 75 X 6 X 1300	8	8.9	71	3.1	
	Installation stand (Main)	SS400	L	75 X 75 X 6 X 850	4	5.8	23	1.0	
	Installation stand (Main)	SS400	L	75 X 75 X 6 X 1000	8	6.9	55	2.4	
	Installation stand (Sub)	SS400	L	75 X 75 X 6 X 1000	8	6.9	55	2.4	
	Installation stand	SS400	L	50 X 50 X 6 X 500	16	2.2	35	1.6	
	Base	SS400	PL	12 X 200 X 200	8	3.8	30	0.6	
	Liner	SS400	PL	9 X 75 X 150	16	0.8	13	0.4	
	For main air pipe								
	Installation stand	SS400	L	50 X 50 X 6 X 500	6	2.2	13	0.6	
	For sub air pipe								
	Installation stand	SS400	L	50 X 50 X 6 X 1000	2	4.4	9	0.4	
	For water filling device								
	Installation stand	SS400	L	50 X 50 X 6 X 1000	4	4.4	18	0.8	
	Installation stand	SS400	L	50 X 50 X 6 X 250	4	1.1	4	0.2	
	Installation stand	SS400	PL	9 X 180 X 180	4	2.3	9	0.3	
				Sub Total			335	13.8	
	Anchor bolt	SS400		M16 X 170	48	0.362	17		
	Anchor setter	glass type		API6	48	0.046	2		
				Sub Total			19		
				Installation stand Total			354	13.8	

OUT LET STRUCTURES (φ 250 Main Control Gate) (1/5)									
No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting I.S.	Painting Acid
	<Gate Leaf>								
	Gate Leaf	SUS304+SM490	t	58 X 490 X 368	1	74.7	75	0.9	0.9
	Beading Plate	CAC403	t	15 X 30 X 250	2	1	2	-	-
	Beading Plate	CAC403	t	15 X 30 X 250	2	1	2	-	-
				Sub Total			79	0.9	0.9
	Bolt	SUS304	t	M10 X 20	16	0.02	-		
	Eye Bolt	SUS304	t	M10	2	0.1	-		
				Sub Total			0		
				<Gate Leaf> Total			79	0.9	0.9
	<Bonnet>								
	Bonnet								
	Intake pipe	SS400	PL	12 X 902 X 222	1	19.1	19	0.4	
	Intake pipe Flange	SM400A	t	28 X (φ 400 - φ 250)	1	17.0	17	0.2	
	Intake pipe Stiffener	SS400	PL	9 X (φ 400 - φ 250)	1	5.4	5	0.2	
	Skin plate	SS400	PL	12 X 479 X 980	1	34.9	35	0.7	
	Side plate	SS400	PL	12 X 77 X 980	2	7.2	14	0.3	
	Lower plate	SS400	PL	12 X 77 X 520	1	3.8	4	0.1	
	Side Flange	SM400A	t	25 X 105 X 980	2	20.4	41	0.4	
	Lower flange	SM400A	t	25 X 105 X 520	1	10.8	11	0.1	
	Stiffener	SS400	PL	12 X 77 X 80	2	0.6	1	-	
	Upper Flange	SM400A	t	25 X 201 X 721	1	19.2	19	0.2	
	Stiffener	SS400	PL	9 X 159 X 721	1	5.3	5	0.1	
	Stiffener	SS400	PL	9 X 214 X 270	2	3.1	6	0.2	
	Vertical Rib	SS400	PL	9 X 180 X 256	2	2.6	5	0.2	
	Seat plate	SM400A	PL	25 X 75 X 200	2	2.9	6	0.1	
	Stiffener	SS400	PL	9 X 125 X 195	2	1.6	3	0.1	
	Stiffener	SS400	PL	9 X 70 X 156	2	0.8	2	-	
	Bearing Plate	SUS304	t	9 X 40 X 830	2	2.4	5		
	Vertical stiffener	SS400	PL	9 X 125 X 330	2	2.9	6	0.1	

OUT LET STRUCTURES (φ 250 Main Control Gate) (2/5)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Conical ring	SM400C	t	35X (φ 360 - φ 292)	1	8.7	9	I.S.	0.2
	Seal ring	CAC703	t	25X (φ 299 - φ 250)	1	3.3	3		-
	Seal ring clamp bar	SUS304	PL	12X (φ 350 - φ 288)	1	2.7	3		-
	Bonnet								
	Outlet pipe	STPG370	Pipe	400A (Sch20S) X175	1	13.6	14		0.4
	Outlet pipe Flange	SM400A	t	28X (φ 540 - φ 400)	1	22.9	23		0.2
	Skin plate	SM400A	PL	32X721X980	1	145.5	146		1.2
	Upper Flange	SM400A	t	25X99X721	1	14.2	14		0.1
	Air duct	SS400	PL	9X70X241	1	1.2	1		-
	Air duct	SS400	PL	9X241X525	1	6.8	7		0.2
	Air Pipe	SGP	Pipe	200A X174	1	5.2	5		0.2
	Air Pipe Flange	SM400A	t	20X (φ 320 - φ 203)	1	7.6	8		0.1
	Vertical stiffener	SS400	PL	9X60X256	2	1.1	2		0.1
	Vertical stiffener	SS400	PL	9X60X271	2	1.1	2		0.1
	Vertical stiffener	SS400	PL	9X60X156	2	0.7	1		-
	Vertical stiffener	SS400	PL	9X185X490	2	5.1	10		0.3
	Seat plate	SM400A	PL	25X75X200	2	2.9	6		0.1
	Stiffener	SS400	PL	9X175X195	2	2.2	4		0.1
	Stiffener	SS400	PL	9X156X70	2	0.8	2		-
	Stiffener	SS400	PL	9X70X236	2	1.2	2		0.1
	Stiffener	SS400	PL	9X175X270	4	3.3	13		0.4
	Bearing Plate	SUS304	t	15X45X830	2	4	8		-

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Bonnet cover								
	Upper Flange	SM400C	t	25X300X360	1	19.1	19	0.2	
	Lower Flange	SM400C	t	25X300X721	1	40.8	41	0.4	
	Cover	SS400	PL	12X310X721	2	17.5	35	0.8	
	Stiffener	SS400	PL	12X310X140	2	4.1	8	0.2	
	Stiffener	SS400	PL	12X310X58	4	1.7	7	0.2	
	Stiffener	SS400	PL	12X75X58	4	0.3	1	0.2	
	Packing case	SUS304	RB	( $\phi$ 120 - $\phi$ 61) X 65	1	6.9	7	-	
	Packing clamp bar	CAC403	t	26X( $\phi$ 110 - $\phi$ 45)	1	1.2	1	-	
	Packing clamp bar	CAC403	t	20X( $\phi$ 61 - $\phi$ 45)	1	0.5	1	-	
				Sub Total			607	9.2	0.0
	Reamer pin-Nut	SUS304		18X50	4	0.15	1		
	Bolt, Nut	SUS304		M18X65 N, SW	19	0.24	5		
	Bolt	SUS304		M8X16	14	0.01	-		
	O ring	NBR		$\phi$ 5.7X935	1	0.03	-		
	O ring	NBR		$\phi$ 5.7X942	1	0.03	-		
	O ring	NBR		$\phi$ 5.7X1382	1	0.04	-		
	Bolt, Nut	SUS304		M22X85 N, SW	12	0.46	6		
	Bolt, Nut	SUS304		M24X100 N, SW	16	0.64	10		
	Bolt, Nut	SUS304		M18X65 N, SW	14	0.24	3		
	Bolt	SUS304		M10X35	4	0.04	-		
	V packing	Cloth inserted rubber		F45	4	0.01	-		
				Sub Total			25		
				< Bonnet > Total			632	9.2	

(3/5)

OUT LET STRUCTURES (  $\phi$ 250 Main Control Gate)



OUT LET STRUCTURES (φ 250 Main Control Gate)										(5/5)	
No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )			
			Shape	Length		Unit	W	Painting	Acid		
	Valve stand										
	Flange	SS400	PL	9X600X300	2	12.7	25		0.7		
	Web	SS400	PL	9X600X112	2	4.7	9		0.3		
	Stiffener	SS400	PL	9X300X112	2	2.4	5		0.1		
	Liner plate	SS400	t	46X150X100	4	5.4	22		0.2		
	Anchor Base	SS400	PL	9X600X300	1	12.7	13		0.4		
				Sub Total			74		0.6		1.1
	Anchor bolt	SS400		M16X170	4	0.362	1				
	Anchor setter	glass type		API6	4	0.046	-				
				Sub Total			1				
				Valve stand Total			75		0.6		1.1
				Steel Material			829		0.6		11.9
				Material purchased			30				
				Material single unit			217				

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	<Gate leaf>								
	Gate leaf	SM400C	t	50 X 380 X 388	1	46.3	46		0.3
	Seal clamp bar	SUS304	t	10 X 74 X 298	1	1.7	2		
	Reading Plate	CAC403	t	20 X 35 X 320	2	2	4		
	Seal Plate	CAC403	t	20 X 35 X 300	1	1.8	2		
	Guide Plate	CAC403	t	15.7 X 25 X 275	2	0.9	2		
				Sub Total			56		0.3 0.0
	Rubber seal	N, R	t	10 X 29 Flat seal   =360	1				
	Bolt	SUS304		M12 X 20	5	0.034			
	Bolt	SUS304		M10 X 20	19	0.023			
	Bolt	SUS304		M8 X 16	6	0.012			
	Eyebolt	SUS304		M8	2	0.028			
				Sub Total			0		
				<Gate Leaf> Total			56		0.3 0.0
	<Bonnet>								
	Bonnet								
	Intake pipe	SS400	RB	( $\phi$ 280 - $\phi$ 250) X 156	1	15.3	15		0.3
	Intake pipe Flange	SM400A	t	28 X ( $\phi$ 400 - $\phi$ 250)	1	16.8	17		0.1
	Skin plate	SS400	PL	16 X 442 X 810	1	39.1	39		0.6
	Side plate	SS400	PL	16 X 55 X 810	2	5.7	11		0.2
	Side Flange	SM400A	t	30 X 115 X 810	2	22.2	44		0.2
	Upper Flange	SM400A	t	30 X 225 X 640	1	25.8	26		0.1
	Guide shoe	SUS304	t	9 X 35 X 630	2	1.6	3		
	Sill guide	SM400C	t	115 X 85 X 410	1	31.5	32		0.2
	Horizontal girder	SS400	PL	9 X 151 X 640	2	4.6	9		0.3
	Horizontal girder	SS400	FB	44 X 12 X 938	2	3.9	8		0.2
	Horizontal stiffener	SS400	PL	9 X 170 X 227	2	2.3	5		0.1
	Horizontal stiffener	SS400	PL	9 X 120 X 156	1	1.3	1		
	Horizontal stiffener	SS400	PL	9 X 86 X 156	2	0.7	1		

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I. S.	O. S.
	Horizontal stiffener	SS400	PL	9X50X181	2	0.6	1	-	-
	Vertical stiffener	SS400	PL	9X156X199	2	1.5	3	0.1	0.1
	Seat plate	SS400	PL	12X100X460	1	4.3	4	0.1	0.1
	Bonnet								
	Outlet pipe	SS400	RB	( $\phi$ 300 - $\phi$ 250) X 392	1	52.5	53	0.5	0.5
	Outlet pipe Flange	SM400A	t	28X ( $\phi$ 400 - $\phi$ 250)	1	16.8	17	0.1	0.1
	Skin plate	SM400A	PL	32X640X810	1	115.9	116	0.1	0.1
	Upper Flange	SM400A	t	30X140X640	1	21.1	21	0.1	0.1
	Bearing Plate	SUS304	PL	15X50X640	2	2.8	6	-	-
	Bearing Plate	SUS304	t	10X60X290	1	1.4	1	-	-
	Air Pipe	SGP	Pipe	150A X 289	1	5.7	6	0.2	0.2
	Horizontal girder	SS400	PL	9X75X620	1	3.3	3	0.1	0.1
	Horizontal girder	SS400	FB	50X12X570	1	2.7	3	0.1	0.1
	Horizontal girder	SS400	PL	9X65X620	1	2.8	3	0.1	0.1
	Horizontal girder	SS400	PL	9X38X570	1	1.5	2	-	-
	Horizontal stiffener	SS400	PL	9X150X392	2	3.2	6	0.2	0.2
	Vertical stiffener	SS400	PL	9X110X392	1	2.3	2	0.1	0.1
	Vertical stiffener	SS400	PL	9X127X155	2	1	2	0.1	0.1
	Vertical stiffener	SS400	PL	9X94X147	1	0.6	1	-	-
	Seat plate	SS400	PL	12X110X570	1	5.9	6	0.1	0.1
	Side stiffener	SS400	PL	9X50X256	2	0.9	2	0.1	0.1
	Side stiffener	SS400	PL	9X50X191	2	0.7	1	-	-
	Side stiffener	SS400	PL	9X50X181	2	0.6	1	0.1	0.1
	Side stiffener	SS400	PL	9X156X185	2	1.4	3	-	-

OUT LET STRUCTURES ( $\phi$  250 Guard Gate)

(2/5)

OUT LET STRUCTURES (φ 250 Guard Gate)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	I.S.	O.S.
	Bonnet cover								
	Lower plate	SM400A	t	30 X 360 X 640	1	51.5	52		0.2
	Upper plate	SM400A	t	23 X 360 X 400	1	23.7	24		0.1
	Web	SS400	PL	9 X 347 X 620	2	11.2	22		0.6
	Stiffener	SS400	PL	9 X 85 X 347	4	2.1	8		0.2
	Stiffener	SS400	PL	9 X 152 X 347	2	3.7	7		0.2
	Bush	CAC403	t	(φ 61 - φ 45) X 20	1	0.2	0		-
	Boss	S400	t	(φ 120 - φ 47) X 65	1	4.9	5		-
	Packing clamp bar	CAC403	t	(φ 110 - φ 45) X 26	1	1.0	1		-
				Sub Total			593		5.8
	"O" ring	NBR		φ 5.7 X 940	2	0.038	-		
	"O" ring	NBR		φ 5.7 X 3210	1	-	-		
	Bolt	SUS304		M10 X 35	4	0.032	-		
	Bolt	SUS304		M8 X 30	2	0.016	-		
	Bolt, Nut	SUS304		M22 X 85 N, SW	24	0.491	12		
	Bolt, Nut	SUS304		M24 X 90 N, SW	14	0.571	8		
	Bolt, Nut	SUS304		M24 X 160 N, SW	6	0.822	5		
	Reamerbolt, Nut	SUS304		φ 30 X 90	4	0.718	3		
	Bolt, Nut	SUS304		M24 X 90 N, SW	12	0.571	7		
	Reamerbolt, Nut	SUS304		φ 25 X 90	2	0.571	1		
	"V" packing	Cloth inserted rubber		F45	4	0.012	-		
	Flange	SUS304		10K-150A	1		6		
				Sub Total			42		
				< Bonnet > Total			635		5.8



OUT LET STRUCTURES (φ 250 Guard Gate)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	I.S.	Acid
	Valve stand								
	Main girder	SS400	PL	9 X 125 X 480	4	4.2	17	0.1	0.4
	Main girder	SS400	PL	9 X 160 X 480	2	5.4	11		0.3
	Main girder	SS400	PL	9 X 80 X 125	4	0.7	3		0.1
	Main girder	SS400	PL	9 X 100 X 160	2	1.1	2		0.1
	Stiffener	SS400	PL	9 X 95 X 160	4	1.1	4		0.1
	Anchor Base	SS400	PL	9 X 330 X 530	1	12.3	12	0.3	
	Liner	SS400	t	66~25 X 100 X 180	4	6.4	26	0.1	
				Sub Total			75	0.5	1.0
	Anchor bolt	SS400		M16 X 170	4	0.362	1		
	Anchor setter	Glass type		API6	4	0.046	-		
				Sub Total			1		
				Valve stand Total			76	0.5	1.0
				Steel Material			802	0.5	7.8
				Material purchased			642		0.0
				Material single unit			217		

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I.S.	O.S.
	Auxiliary Facilities								
	Connecting pipe	SS400	PL	9X259π X 1000	1	57.5	58	4.2	
	Flange	SM400A	t	28X (φ400 - φ250)	2	17.0	34	1.0	
	Outlet pipe	SGP	Pipe	400A X 4800	1	372.5	373	5.7	
	Flange	SM400A	t	28X (φ560 - φ409)	1	25.2	25	0.6	
	Stiffener	SS400	PL	9X (φ559 - φ409)	4	8.1	32	2.5	
	Main Air pipe	SGP	Pipe	200A X 4800	1	144.5	145	8.9	
	Flange	SM400A	t	22X (φ330 - φ218)	1	8.3	8	0.1	
	Stiffener	SS400	PL	9X (φ350 - φ218)	4	4.2	17	0.8	
	Sub air pipe	SGP	Pipe	150A X 2000	1	39.6	40	3.4	
	Flange	SM400A	t	22X (φ280 - φ166.6)	3	6.9	21	0.4	
	Reinforcement	SS400	PL	9X (φ300 - φ166.6)	1	3.4	3	0.2	
				Sub Total			756	27.8	
	Spring type air valve	SC450		150A	1		190		
	Hand gate valve	SC450		150A	1		95		
				Sub Total			285		
	Elbow	SGP		150A 45° E(L)	1	3.55	4		
	Bolt	SUS304		M20 X 65 N,W	28	0.308	9		
				Sub Total			13		
				Auxiliary facilities Total			1,054	27.8	

OUT LET STRUCTURES (φ 250 Auxiliary facilities)

(1/1)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Installation stand								
	For outlet pipe								
	Installation stand (Post)	SS400	L	75 X 75 X 6 X 700	8	4.8	38	1.7	
	Installation stand (Main)	SS400	L	75 X 75 X 6 X 600	4	4.1	16	0.7	
	Installation stand (Main)	SS400	L	75 X 75 X 6 X 800	8	5.5	44	1.9	
	Installation stand (Sub)	SS400	L	75 X 75 X 6 X 800	8	5.5	44	1.9	
	Installation stand	SS400	L	50 X 50 X 6 X 500	16	2.2	35	1.6	
	Base	SS400	PL	12 X 200 X 200	8	3.8	30	0.6	
	Liner	SS400	PL	9 X 75 X 150	16	0.8	13	0.4	
	For main air pipe								
	Installation stand	SS400	L	50 X 50 X 6 X 300	6	1.3	8	0.4	
	For sub air pipe								
		SS400	L	50 X 50 X 6 X 800	2	3.5	7	0.3	
				Sub Total			235	9.5	
	Anchor Bolt	SS400		M16 X 170	32	0.362	12		
	Anchor setter	glass type		AP16	32	0.046	1		
				Sub Total			13		
				Installation stand Total			248	9.5	

(1/1)

OUT LET STRUCTURES (φ 250 Installation stand)

Operation stand		Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
No.	Item		Shape	Length		Unit	W	Painting	
								I.S.	O.S.
	Operation stand								
	Floor slab	SS400	chPL 4.5 X 900 X 4700		1	156.5	157		8.5
	Floor slab	SS400	chPL 4.5 X 900 X 3100		1	103.2	103		5.6
	Floor slab	SS400	chPL 4.5 X 500 X 900		1	16.6	17		0.9
	Main girder	SS400	H 150 X 150 X 7 / 10 X 5500		2	173.3	347		9.9
	Main girder	SS400	H 150 X 150 X 7 / 10 X 2200		2	69.3	139		4.0
	Main girder	SS400	H 150 X 150 X 7 / 10 X 900		9	28.4	256		7.3
	Main girder	SS400	H 150 X 150 X 7 / 10 X 500		2	15.8	32		0.9
	Post	SS400	H 150 X 150 X 7 / 10 X 2850		14	89.8	1257		35.9
	Post	SS400	H 150 X 150 X 7 / 10 X 650		2	20.5	41		1.2
	Horizontal beam	SS400	H 150 X 150 X 7 / 10 X 750		10	23.6	236		6.8
	Horizontal beam	SS400	H 150 X 150 X 7 / 10 X 1350		4	42.5	170		4.9
	Horizontal beam	SS400	H 150 X 150 X 7 / 10 X 1450		8	45.7	366		10.4
	Horizontal beam	SS400	H 150 X 150 X 7 / 10 X 600		8	18.9	151		4.3
	Horizontal beam	SS400	H 150 X 150 X 7 / 10 X 550		4	17.3	69		2.0
	Base	SS400	PL 12 X 300 X 300		16	8.5	136		2.9
	Liner	SS400	t 10 X 300 X 300		16	7.1	114		2.9
	Stiffener	SS400	PL 9 X 70 X 130		176	0.6	106		3.2
	Sub beam	SS400	L 75 X 75 X 6 X 750		9	5.1	46		2.0
	Hand Rail	SGP	Piø 32A X 5400		1	18.3	18		0.7
	Hand Rail	SGP	Piø 32A X 4600		1	15.5	16		0.6
	Hand Rail	SGP	Piø 32A X 2400		1	8.1	8		0.3
	Hand Rail	SGP	Piø 32A X 1600		1	5.4	5		0.2
	Hand Rail	SGP	Piø 32A X 1250		1	4.2	4		0.2
	Hand Rail	SGP	Piø 32A X 1100		28	3.7	104		4.1
	Hand Rail	SGP	Piø 25A X 5400		2	13.1	26		1.1
	Hand Rail	SGP	Piø 25A X 4600		2	11.2	22		0.9
	Hand Rail	SGP	Piø 25A X 2400		2	5.8	12		0.5
	Hand Rail	SGP	Piø 25A X 1600		2	3.9	8		0.3
	Hand Rail	SGP	Piø 25A X 1250		2	3.0	6		0.3
	Hand Rail	SS400	FB 50 X 6 X 15250		1	35.9	36		1.5

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	
								I. S.	Acid
	Ladder	SS400	FB	75 X 9 X 2800	6	14.8	89	0.5	2.5
	Ladder	SS400	RB	φ 19 X 400	30	0.89	27		0.7
	Ladder	SS400	FB	75 X 9 X 600	2	3.2	6		0.2
	Ladder	SS400	RB	φ 19 X 400	3	0.89	3		0.1
	Ladder	SS400	L	75 X 75 X 6 X 300	22	2.1	46		2
	Ladder	SS400	L	75 X 75 X 6 X 300	6	2.1	13		0.5
				Sub Total			4,192		130.3
	Anchor bolt	SS400		M16 X 170	64	0.362	23		
	Anchor setter	glass type		API6	64	0.046	3		
	Bolt	SS400		M20 X 60 N	16	0.273	4		
				Sub Total			30		
				Operation stand Total			4,222		130.3

LOCAL CONTROL CABINET FOR BULK HEAD GATE (1/2) (1/8)										
No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)			Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	H	Painting	Acid
	Local Control Cabinet		W1000 X H2000 X D600		1	400	400			
	Cables		600V CV3.5sq-3c		19m	0.215	4.1			
			600V IV3.5sq		9m	0.045	0.4			
			CVV2sq-7c		13m	0.300	3.9			
			cvv2sq-5c		13m	0.240	3.1			
			cvv2sq-2c		13m	0.135	1.8			
	Fittings for Cables		Compression terminals, tapes				1.3			
	Rigid Steel Conduits		Rigid Steel Conduits (G28)		6	6.95	41.7			
			Rigid Steel Conduits (G22)		4	5.01	20.0			
			Rigid Steel Conduits (G16)		4	3.88	15.5			
			Normal Bends (G28)		6	0.70	4.2			
			Normal Bends (G22)		6	0.43	2.6			
			Normal Bends (G16)		3	0.2	0.6			
			Couplings (G28)		16	0.18	2.9			
			Couplings (G22)		14	0.09	1.3			
			Couplings (G16)		9	0.05	0.5			
			Flexible Metal Conduits (#30)		1.0m	0.98	1.0			
			Flexible Metal Conduits (#24)		1.0m	0.80	0.8			
			Flexible Metal Conduits (#17)		0.5m	0.60	0.3			
			Union Couplings (#30)		2	0.30	0.6			
			Union Couplings (#24)		2	0.18	0.4			
			Union Couplings (#17)		1	0.10	0.1			



No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Local Control Cabinet		W1000 X H2000 X D600		1	400	400		
	Cables		600V CV3.5sq-3c		12m	0.215	2.6		
			600V IV3.5sq		6m	0.045	0.3		
			CVV2sq-7c		7m	0.300	2.1		
			cvv2sq-5c		9m	0.240	2.2		
			cvv2sq-2c		9m	0.135	1.2		
	fittings for cables		Compression terminals, tapes				0.8		
	Rigid Steel Conduits		Rigid Steel Conduits (G28)		4	6.95	27.8		
			Rigid Steel Conduits (G22)		2	5.01	10.0		
			Rigid Steel Conduits (G16)		2	3.88	7.8		
			Normal Bends (G28)		4	0.70	2.8		
			Normal Bends (G22)		4	0.43	1.7		
			Normal Bends (G16)		2	0.2	0.4		
			Coupling (G28)		10	0.18	1.8		
			Coupling (G22)		8	0.09	0.7		
			Coupling (G16)		5	0.05	0.3		
			Flexible Metal Conduits (#30)		1.0m	0.98	1.0		
			Flexible Metal Conduits (#24)		1.0m	0.80	0.8		
			Flexible Metal Conduits (#17)		0.5m	0.60	0.3		
			Union Couplings (#30)		2	0.30	0.6		
			Union couplings (#24)		2	0.18	0.4		
			Union couplings (#17)		1	0.1	0.1		

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LOCAL CONTROL CABINET FOR EMERGENCY GATE (1/2)



No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Local Control Cabinet		W800 X H2000 X D600		1	400	400		
	Cables		600V CV3.5sq-3c		13m	0.215	2.8		
			600V IV3.5sq		13m	0.045	0.6		
			CVV2sq-15c		13m	0.560	7.3		
			CVV2sq-2c		6m	0.200	1.2		
	fittings for cables		Compression terminals, tapes				1.2		
	Rigid Steel Conduits		Rigid Steel Conduits (G36)		3	8.89	26.7		
			Rigid Steel Conduits (G22)		3	5.01	15.0		
			Rigid Steel Conduits (G16)		1	3.88	3.9		
			Normal Bends (G36)		6	1.04	6.2		
			Normal Bends (G22)		6	0.43	2.6		
			Coupling (G36)		13	0.22	2.9		
			Coupling (G22)		13	0.09	1.2		
			Flexible Metal Conduits (#38)		1.0m	1.26	1.3		
			Flexible Metal Conduits (#24)		1.0m	0.80	0.8		
			Flexible Metal Conduits (#17)		0.5m	0.60	0.3		
			Union Couplings (#38)		2	0.41	0.8		
			Union Couplings (#24)		2	0.18	0.4		
			Union Couplings (#17)		1	0.10	0.1		
			Box Connectors (#38)		2	0.33	0.7		
			Box Connectors (#24)		2	0.15	0.3		
			Box Connectors (#17)		1	0.10	0.1		

LOCAL CONTROL CABINET FOR OUT LET STRUCTURES φ 650 (1/2)

(5/8)







DIVERSION GATE (Gate Leaf) (1/1)									
No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	Length		Unit	W	Painting	Acid
	Gate Leaf								
	Skin Plate	SS400	PL	19X5800X6400	1	5536.4	5536	I.S.	O.S.
	Main girder	SS400	H	700X300X13/24X6200	7	941.5	6591		74.2
	Main girder	SM400A	PL	25X300X1500	14	88.3	1236		95.3
	Side girder Flange	SM400A	PL	25X150X5800	4	170.7	683		12.6
	Side girder web	SS400	PL	12X450X5800	2	245.9	492		10.4
	Sub vertical beam	SS400	PL	12X150X620	30	8.8	263		5.6
	Sub vertical beam	SS400	PL	12X150X600	6	8.5	51		1.1
	Sub vertical beam	SS400	PL	9X676X920	20	43.9	879		24.9
	Sub vertical beam	SS400	PL	9X676X900	4	43.0	172		4.9
	Sub vertical beam	SS400	PL	9X475X920	10	30.9	309		8.7
	Sub vertical beam	SS400	PL	9X475X900	2	30.2	60		1.7
	Bearing Plate	SUS304	t	45X70X5800	2	144.9	290		1.9
	Guide shoe	SUS304	t	30X70X200	8	3.3	27		0.2
	Guide shoe	SUS304	t	30X70X200	8	3.3	27		0.2
	Guide shoe	SS400	L	150X90X9X300	8	4.9	39		1.2
	Guide shoe	SS400	PL	12X(141X200)	16	2.0	32		0.7
	Seal base	SUS304	t	10X70X5700	1	31.6	32		0.4
	Seal base	SUS304	t	10X70X5650	2	31.4	63		0.8
	Rubber stopper	SUS304	t	20X30X5700	1	27.1	27		0.4
	Seal clamp bar	SUS304	PL	12X50X5700	1	27.1	27		0.6
	Seal clamp bar	SUS304	PL	12X50X5650	2	26.9	54		1.1
	Seal clamp bar	SUS304	PL	12X95X5700	1	51.5	52		1.1
	Hanger	SM400A	PL	25X300X600	2	35.3	71		0.7
	Hanger	SS400	PL	19X500X652	4	48.6	194		2.6
				Sub Total			17,207		251.6
	Seal Rubber	Synthetic rubber		φ40-P typeX17000	1	66.8	67		
	Seal Rubber	Synthetic rubber		t15X100 flat typeX5700	1	13.0	13		
	Seal Washer	SUS304+Synthetic rubber		For M16	230	0.012	3		
	Bolt	SUS304		M16X70 N.W	230	0.187	43		
				Sub Total			126		
				Gate Leaf Total			17,333		251.6
									6.7

DIVERSION GATE(Gate guide)

(1/2)

No.	Item	Material	Dimensions (mm)		Quantity	Weight (kg)		Painting Area (m <sup>2</sup> )	
			Shape	X Length		Unit	W	Painting	Acid
	Sill beam								
	Rail	SS400	H	200 X 200 X 8/12 X 6200	1	185.4	185	I.S.	O.S.
	Rail	SS400	H	200 X 200 X 8/12 X 1100	2	32.9	66	6.2	2.2
	Seal Plate	SUS304	PL	10 X 200 X 5400	1	85.6	86		
	Seal Plate	SUS304	PL	10 X 500 X 1100	2	43.6	87		1.1
	Stiffener	SS400	PL	9 X (191 X 400)	4	3.78	15	0.4	1.1
	Stiffener	SS400	PL	9 X (100 X 191)	6	1.21	7	0.2	
	Sub beam	SS400	L	75 X 75 X 9 X 350	11	3.49	38	1.2	
	Sub beam	SS400	RB	16 X 250 M16	33	0.39	13	0.4	
	Anchor bar	SD295A	D	16 X 400	33	0.62	21	0.7	
	Lintel beam								
	Rail	SS400	L	75 X 75 X 9 X 6200	1	61.8	62	1.9	
	Seal Plate	SUS304	t	10 X 100 X 5600	1	44.4	44		0.6
	Cover Plate	SS400	PL	9 X 350 X 5600	1	138.5	139	2.0	2.0
	Stiffener	SS400	PL	9 X 75 X 250	6	1.32	8	0.2	
	Sub beam	SS400	L	75 X 75 X 9 X 250	6	2.49	15	0.5	
	Sub beam	SS400	RB	16 X 250 M16	18	0.39	7	0.2	
	Anchor bar	SD295A	D	16 X 400	18	0.02	11	0.4	
	Main side guide								
	Bearing Plate	SUS304	t	10 X 150 X 5700	2	67.8	136		1.7
	Seal Plate	SUS304	t	10 X 80 X 5700	2	36.2	72		0.9
	Cover Plate	SS400	PL	9 X 400 X 5700	2	161.1	322	4.6	4.6
	Rail Flange	SS400	PL	9 X 100 X 5700	4	85.0	340	4.6	
	Rail Web	SS400	PL	12 X 212 X 5700	2	113.8	228	4.8	
	End girder	SS400	L	75 X 75 X 9 X 5700	2	56.7	114	3.4	
	Joint	SS400	FB	75 X 9 X 300	24	1.59	38	1.1	
	Joint	SS400	PL	9 X 100 X 212	2	1.50	3	0.1	
	Joint	SS400	PL	9 X 212 X 300	2	4.49	9	0.3	
	Sub beam	SS400	L	75 X 75 X 9 X 300	14	2.99	42	1.3	
	Sub beam	SS400	RB	16 X 250 M16	42	0.39	17	0.5	
	Anchor bar	SD295A	D	16 X 400	42	0.62	26	0.8	

