

**BILL OF QUANTITIES****CEYLON PETROLEUM STORAGE TERMINALS LIMITED - ENGINEERING FUNCTION****JOB : CONSTRUCTION OF PIPE SUPPORT AND RELATED STRUCTURES OF PIPING SYSTEM IN ZONE 06 AT KOLONNAWA INSTALLATION.****BOQ No: E/12/2019**

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
	<p><b>Note:</b> Contractors are strictly advised to visit the site &amp; follow the given details, sketch drawings, specifications before bidding &amp; before commence the works. If any discrepancies should be forwarded to the Engineering Manager of CPSTL Kolonnawa before commencement of such works. Construction work to be carried out without damaging existing drains, pipes and other CPSTL property. if some damage occur, contractor should repair by own cost according to the Engineer's or his representative's instructions.</p>				
<b>A</b>	<b>PRELIMINARIES</b>				
A1	Allow lump sum for mobilization & de mobilization.	Item	Allow		
A2	Allow lump sum for cleaning the site before commencement of work, after completion of work and keep site in clean and tidy during construction.	Item	Allow		
A3	Allow for construction of temporary site office and stores (approx. 20 m <sup>2</sup> ) for the contractor's personnel acceptable to engineer's satisfaction with sanitary facilities.	Item	Allow		
A4	Allow for construction of 6 m height temporary fire barrier by using 2" G.I pipes and G.I corrugated sheets, where the hot work carried out . Rate shell include for necessary excavation, fixing , roofing bolts etc. and removing after completion of the job.	m	50.00		
	<b>Total amount carried to summary</b>				

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
<b>B</b>	<b>METAL WORK</b>  <b>Note :</b> a) Unless otherwise specified all welding should be with 6mm of leg length having strength of 0.90kN/mm b) All the members to be welded along the full length of the perimeter of the pipes or connecting plate c) Minimum welded length should be 200mm unless otherwise stated d) All steel members and accessories shall be supplied by the contractor. e) All nuts and bolts and washers should be in G.I grade 8.8 - galvanized. f) All steel surface excluding GI members shall be painted with applying one coat of Sigma primer and two coats of sigma finish paint. g) All the surfaces which are to be painted to be cleaned to confirm to Swedish Standard SA 2 ½ by sand blasting. h) Power tool cleaning confirm to ISO ST3  <b><u>PIPE SUPPORTS</u></b>				
B1	Supplying, fabricating & fixing of pipe support unit type - 01. Rate to include for 12mm thick base plates fixed to RCC base with non shrinking grout. Refer drawing no. 1658- 02.	nr	8		
B2	Supplying, fabricating & fixing of pipe support unit type - 02 . Rate to include for 12mm thick base plates fixed to RCC base with non shrinking grout. Refer drawing no. 1658- 02.	nr	14		
B3	Supplying, fabricating & fixing of pipe support type - 03 in pump house. Refer drawing no. 1658- 06.	nr	28		
B4	Supplying, fabricating & fixing of pipe support type - 04 in pump house. Refer drawing no. 1658- 06.	nr	28		
B5	Supplying, fabricating & fixing of pipe support type - 05 in pump house. Refer drawing no. 1658- 06.	nr	14		
B6	Supplying, fabricating & fixing of pipe support type - 06 in pump house. Refer drawing no. 1658- 06.	nr	14		
B7	Supplying, fabricating & fixing of pipe support type - 07 in pump house. Refer drawing no. 1658- 06.	nr	60		

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
B8	Supplying, fabricating & fixing of pipe support type - 08 in pump house. Refer drawing no. 1658- 06.	nr	8		
	<b><u>TIE BEAMS</u></b>				
B9	Supplying, fabricating & fixing of tie beams . Refer drawing no. 1658- 02.	m	262		
	<b>HOT DIPPED GALVANIZED U-BOLTS</b>				
B10	Supplying, & fixing of hot dipped galvanized 6" dia. U-bolt with protective cover for U-bolt	nr	115		
B11	Supplying, & fixing of hot dipped galvanized 8" dia. U-bolt with thermoplastic half round strip and protective cover for U-bolt	nr	34		
B12	Supplying, & fixing of hot dipped galvanized 10" dia. U-bolt with protective cover for U-bolt	nr	42		
B13	Supplying, & fixing of hot dipped galvanized 12" dia. U-bolt with thermoplastic half round strip and protective cover for U-bolt	nr	230		
B14	Supplying, & fixing of hot dipped galvanized 18" dia. U-bolt with thermoplastic half round strip and protective cover for U-bolt	nr	70		
	<b><u>PIPE TRENCH CROSSING PLATFORM</u></b>				
B15	Supplying, fabricating & fixing of crossing platforms. Refer Drawing No.1658-3 ( <b>Gratings measured separately</b> )	nr	4		
	<b><u>VALVE PIT ENTRANCE PLATFORM</u></b>				
B16	Supplying, fabricating & fixing of valve pit entrance platform. Refer Drawing No.1658-3. ( <b>Gratings measured separately</b> )	nr	6		
	<b><u>PIPE TRENCH WALK WAY HANDRAIL</u></b>				
B17	Supplying, fabricating & fixing of pipe trench walkway handrails . Refer Drawing No.1658-1	m	425		
	<b><u>UPPER WALKWAY PLATFORM WITH CABLE TRAY</u></b>				

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
B18	Supplying, fabricating & fixing of pipe trench upper walkway handrails and cable tray . Refer Drawing No.1658-2 ( <b>Gratings measured separately</b> )	m	37		
	<b><u>OPERATION PLATFORMS AT PUMP HOUSE</u></b>				
B19	Supplying, fabricating & fixing of operation platforms in pump house . Refer Drawing No. 1658-5. ( <b>Gratings measured separately</b> )	nr	14		
	<b><u>TANK YARD ACCESS STAIRS</u></b>				
B20	Supplying, fabricating & fixing of tank farm access stairs . Refer Drawing No. 1658-5. ( <b>Gratings measured separately</b> )	nr	4		
	<b><u>HOT DIP GALVANIZED GRATING</u></b>				
B21	Supplying, fabricating & fixing of hot dip galvanized gratings by using 25x6 mm flat bar frame and 25x4 mm flat bar for grating of valve pit entrance, crossing platform, upper walk way and operational platform, tank yard access stairs with stair threads. Refer Drawing No.1658-6	m <sup>2</sup>	110		
	<b>Total amount carried to summary</b>				
C	<b><u>ELECTRICLE CABLE LADDER</u></b>  <b><u>Refer drawing number 1658-4</u></b>  <b><u>DEMOLISHING WORK</u></b>				
C1	Cut and demolishing of 2200 mm x 1000 mm and 200 mm approximate thick RCC yard concrete for foundation bases by using concrete cutter and concrete backer. Debris to be remove from site and dump in with in the Kolonnawa installation premises as directed by the engineer.	m <sup>3</sup>	8		
	<b><u>EXCAVATION AND EARTH WORK</u></b>				

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
	<p>Note: Rate shall include for</p> <p>(a). Trimming and levelling of edges and bottom face of excavation.</p> <p>(b). Compaction and testing of excavation area.</p> <p>(c). Keeping all excavation free from storm and/or percolating water as required or directed by Engineer to keep excavation dry.</p> <p>(d). Debris and excavated material shall be transport to a location which is away from CPSTL premises. Location should be selected by the contractor and approval shall be obtained from the Engineer.</p> <p>(e). Dewatering and shoring for required area or as directed by Engineer</p> <p>(f). Working space where necessary.</p>				
C2	Excavation for foundation base to a depth not exceeding 1.5m commencing from ground level in any material except rock requiring blasting part return fill in and ram and disposal of surplus soil.	m <sup>3</sup>	40		
C3	Supplying ,Furnishing, placing & compacting graded aggregate base (ABC) material in 150mm layers as specified. (Compacted volume)	m <sup>3</sup>	18		
C4	Allow Sum for necessary dewatering and dealing with water during construction. (If required)	Item	Allow		
	<p><b><u>Concrete work</u></b></p> <p><u>Note:</u></p> <p>(a). Mixing, handling, hosting, depositing, compaction and curing as specified in relevant BS standards.</p>				
	<p>(b). Cement, sand, aggregates and admixture shall comply to relevant BS standards.</p> <p>(c). Compressive strength of concrete and consistency of fresh concrete shall be tested according to method of testing defined as relevant BS standards.</p> <p>(d). Maximum aggregate size shall be 19 mm or as shown in drawings.</p> <p>(e). Minimum clear cover shall be provided for reinforcement.</p> <p>If underground, 50 mm</p> <p>If above ground, 40 mm or directed by Engineer.</p> <p>(e). Cover block shall be casted as directed by Engineer.</p> <p>(f). Fresh concrete shall be protected from adverse weather conditions such as rain, hot weather etc..</p> <p>(g). Water cement ratio shall be kept specified standard value.</p> <p><b><u>C15 (40) Concrete</u></b></p>				

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
C5	75 mm thick screed concrete under foundation base laying on gauge 1000 polythene.	m <sup>2</sup>	38		
C6	Filling void between top of the yard level and top of the concrete base foundation by using lean concrete .	m <sup>3</sup>	16		
	<u>C25 (20) Concrete</u>				
C7	2200 mm x 1000 x 225 mm size foundation base	m <sup>3</sup>	8		
C8	350x350mm size column shafts	m <sup>3</sup>	4		
	<b><u>Formwork</u></b> (a). All necessary boarding's, supporting, application of mould oil as necessary, erecting, framing, cutting angles cleaning, and treatment before placing concrete. (b). Lines and levels of formwork shall be maintained. (c). All formwork shall be in plywood sheet or smoothed timber plank (smooth surface without irregularities) with adequate thickness. (d). Grout leak shall be prevented. (e). Formwork has been measured the net contact surface between concrete and formwork.				
C9	In foundation base	m <sup>2</sup>	33		
C10	In column shaft	m <sup>2</sup>	36		
	<b><u>Reinforcement</u></b> (a).Rate shall include for supply, cutting, bending, fabrications & placing in position, holding and supporting including temporary fixing support hangers & 16/20 binding wire. (b). Wire brushing & cleaning if necessary or as directed by the Engineer. (c). High yield reinforcement and hot rolled mild steel bar reinforcement shall be complied with relevant specifications. (BS 5950 characteristic strength 460 N/mm <sup>2</sup> ). (d). All reinforcement shall be free of dirt, oil, paint or loos rust before fixing in position and shall be brushed with a stiff wire brush if so directed by the Engineer. (e). The size of reinforcement bars describe in the drawing or elsewhere shall be minimum size and the rolling margin and any other tolerance shall be wholly above this size. Hooks, anchorage and laps have been measured with the quantities.				

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
	(f). Minimum covering, lap length and anchorage length shall be provide to all reinforcement as standard specification or as shown in drawing.				
	<u>High Yield Steel</u>				
C11	In foundation base	kg	540		
C12	In column Shafts	kg	250		
	<u>Mild Steel</u>				
C13	In column Shafts	kg	150		
	<b>METAL WORK -</b>				
C14	Supplying, fabricating & fixing of support assembly frame . Rate to include for 12 mm thick base plates fixed to RCC base with non shrinking grout with 10 mm tk. webs and MS anchor bolts & nuts. All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	17		
C15	Supplying, fabricating & fixing of cable ladder unit frame (5.85m long). All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	11		
C16	Supplying, fabricating & fixing of cable ladder unit frame (3.85m long). All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	2		
C17	Supplying, fabricating & fixing of cable ladder unit frame (7.85m long). All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	1		
C18	Supplying, fabricating & fixing of corner cable ladder unit frame . All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	1		
C19	Supplying, fabricating & fixing of top cable tray support frame. All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	86		
C20	Supplying, fabricating & fixing of access ladder for cable tray. All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	nr	3		
C21	Supplying, fabricating & fixing of brassing with webs for cable tray. All steel sections to be <b>hot dipped galvanized</b> Refer Drawing No. 1658-4.	m	115		

Item	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
C22	Supplying, fabricating & install 750mm x 60mm x 2 mm (width x height x thickness) Electro Zinc coated sheet steel powder coated perforated cable ladder system ( match the existing ladder near Zone 8 godown) near pump house and MCC room. All steel sections to be hot dipped galvanized. Rate to include for pole mounted brackets including supply supply and installation of GI steel poles, base foundation. (excavation, RCC concrete work, form work etc.) Refer Drawing No. 1658-4.	m	25		
C23	Supplying, fabricating & install 600mm x 60mm x 2 mm (width x height x thickness) Electro Zinc coated sheet steel powder coated perforated cable ladder system fixed to top cable tray support. Refer Drawing No. 1658-4.	m	100		
	<b>Total amount carried to summary</b>				
<b>D</b>	<b><u>MISCELLANIOUSE WORK</u></b>				
D1	Supplying, fabricating & fixing of pipe opening cover units for pump house. Rate to include for <b>hot dipped galvanized</b> after fabrication. Refer Drawing No. 1658-5.	nr	28		
D2	Supplying, fabricating & fixing of pipe trench access ladder. Rate to include for <b>hot dip galvernized</b> . Refer Drawing No. 1658-5.	nr	8		
	<b>Total carried to summary</b>				