RETROFITTING OF EXISTING CARGO BERTH NO. 10 (PANEL 77 to 85) & REMAINING PORTION OF CARGO BERTH NO. 7 (PANEL 51 to 55)

Schedule B

Item No	Description	Qty.	Unit	Rate in INR	Amt INR	Remark
1	Removal, Providing & Fixing three cell fender : Removal of existing fender carried by mechanically making the hoisting arrangement, lifting with suitable mechanical equipment and stacking at a distance of 5Km away from site & stacking in position, removal shall be carried out along with all attachments from its position by opening or cutting all the chains and separating frontal frame and detaching all the three cell fenders from its position by opening or cutting S.S. nuts bolts and cutting of all stud links chains complete.-Providing and fixing new Fender system consisting of Triple cell type fendering system (1450H) rubber fenders manufactured by ABC Rubber, Trelloborg, IRM, HI-Tech, Brahmans or equivalent with absorption equal to or more than berthing energy of 1184KNM reaction force equal to or more than 1861KNM, and 1 No. of fabricated steel frontal frame of size 2.0mx0.20mx7.5m with rubbing surface (Low friction UHMW synthetic resin rubbing pad) 40 mm thick including necessary high tensile galvanized wrought irons chains, shackles, anchor bolts, U hook and other fixtures fixing with resin fastener RE500V4 or equivalent and painting etc, with all labour and material complete.	14.00	Nos			
2	Removal, Providing & Fixing of twin bollards :Removal of existing bollard by mechanically making the hoisting arrangement, lifting with suitable mechanical equipment and stacking at a distance of 5Km away from site & stacking in position and after dismantling the surrounding concrete, opening/cutting of Hex horizontal nut bolts and detaching the top headed nuts and other portion from base plate, disposal of dismantled concrete.-Providing and fixing new two numbers of cast steel Twin lobe bollards of 100 tonne each capacity top portion over existing base plate with high tensile hex headed nuts to existing bolts fixing with resin fastener RE500V4 or equivalent in front and back portion of base plate complete with all fixtures as per drawing, including grouting with cement concrete mix of proportion 1:1.5:3 of concrete surrounding base plate up to top surface, filling the cavity & painting as per manufactures Specification & drawing etc.complete as directed by EIC. (Note : 1 Set = 2 Nos Twin Lobe Bollards)	6.00	Set			
3	Removal, Providing & Fixing Galvanised M.S. ladder : Removal of existing Ladder by mechanically making the hoisting arrangement, lifting with suitable mechanical equipment and stacking at a distance of 5Km away from site & stacking in position and after dismantling the surrounding concrete, opening/cutting of Hex horizontal nut bolts and detaching the headed nuts and other portion from plate, disposal of dismantled concrete. Providing & Fixing of New Galvanised M.S. ladder with G.I. Coating of 150 micron comprising stringers rung and fixing with angles, Anchor Rods HAS-U 8.8, M27 x 340 mm Long Stainless Steel (SS 316 Grade) nuts, Bolts, and washers , firm holds at top etc. including making holes, fixing & grouting with epoxy bonding resin fastener RE500V4 or equivalent. Complete as per drawing and as directed by Engineer-in Charge.	5,355.00	Kg			
4	**Removal of existing wearing coat** chipping and removing of existing wearing course of slab by suitable mechanical equipment & taking away to a distance of 5Km away from site & stacking in position as directed by EIC.	7,650.00	m^2			
5	**Removal of existing slab** of depth 200 mm to 650 mm (Variable Depth including wearing coat) using Controlled Demolitions with vibration & dust free Diamond wall saw/Wire saw system or Equivalent and making the hoisting arrangement, lifting with suitable mechanical equipment including reinforcement (Dismantled concrete shall not be allowed to fall on seabed), transportation and stacking at a distance of 5 Km away from site as directed. by EIC.	11,555.00	m^2			

Item No	Description	Qty.	Unit	Rate in INR	Amt INR	Remark
6	**Surface preparation :** Chipping and removal of dilapidated concrete from RCC structural members carefully by suitable means up to sound concrete using electrically operated low impact concrete chipper (where use of electrical chipper is not feasible chisel & hammer may be permitted with great care and under supervision). including cutting/Removal of liner, cutting the excessively corroded reinforcement wherever directed, cleaning the chipped surface with wire brush, providing and applying rust covering primer. complete as specified & as directed including necessary scaffolding. Removing/disposing or stacking the salvages etc. Complete as specified & as directed by EIC.	28,347.00	m^2			
7	**Providing and fixing shear connectors** supplying, fabricating and fixing Thermo-Mechanically Treated bars of grade Fe 500D or more with Anticorrosive Zinc primer rods of 12 mm dia of min 250mm long to be placed in position in 14 mm dia in 150 mm depth hole, as shear connectors / anchor rods, including supplying, mixing, drilling and filling the gap around the rods with adhesive anchor HY 200 or equivalent. Complete as specified & as directed by EIC.	94,492.00	Nos			
8	Providing and fixing **Galvanised mesh size 100 X 100 mm minimum 3mm** of thick/or as directed for Micro concreting work, including cutting, tying with binding wires and nailing 5 nos sq.m with GX fastening machine in position, labour, tools, plants, machinery, scaffolding etc. Complete as directed by the Engineer-In-Charge.	28,347.00	m^2			
9	**Supplying reinforcement of Thermo-Mechanically Treated bars of grade Fe 500D** or more**,** cutting, bending, fabrication of steel reinforcement as per requirement at site and fixing the reinforcement, the rate shall include cost of cutting, bending, shifting and fixing the steel bars including equipments, plants, cost of materials, instrumentation, hiring of boat, catamaran, Pontoon, labour and transport, fuel, etc. complete. Supply, fabrication of new steel reinforcement all and requirement at site and fixing the reinforcement steel as per drawing. Complete as directed by EIC.	26,83,721.00	Kg			
10	**Anti corrosive coat :** Supply and apply of Anticorrosive Zinc primer coating Nitozinc Primer STD to the new and existing reinforcement after removing the rust and scales by mechanically to prevent the rebars from corrosion activity as specified and completion as directed by EIC.	26,83,721.00	Kg			
11	Providing & placing in position of Galvashield XPI or equivalent **Sacrificial Anode** with connection to rebar and fixing of self regulating at the required locations during the time of execution and completion as directed by EIC.	13,229.00	Nos			
12	Providing and applying **Epoxy Bonding Agent** before pouring the Micro concrete, the base and the hardener of the epoxy jointing compound Nitobond EP or equivalent shall be mixed mechanically using a slow speed heavy duty drilling machine. The same shall be applied over the prepared surface using good quality brush. Cost of materials, tools and other hire charges all machineries and all labour charges etc are included., as specified and completion as directed by EIC.	28,347.00	m^2			
13	Providing and laying cement based pre packed non shrink free flowing **Micro concrete** Renderoc RGS with ratio of 1:1 (Cement and 12mm chip) including water tight shuttering etc, complete. As specified and as directed by EIC (Manufactured by M/S FOSROC, M/S BASF, M/S PIDILITE or any equivalent supplier).	8,147.00	m^3			
14	Polymer Modified Mortar: Supply and apply of Polymer modified fibre reinforced cementitious mortar (such as Renderoc SP 40 or equivalent) of required thickness including raking out joints, scrubbing and cleaning, finishing smooth, curing etc complete. As specified and as directed by Engineer-In-Charge.	4,124.00	m^2			

Item No	Description	Qty.	Unit	Rate in INR	Amt INR	Remark
15	The Acrylic emulsion cement modified and water based concrete **Curing Membrane** (such as Concure AB or equivalent) and Appling immediately after the concrete gets finished, the membrane shall be sprayed over the concrete finished area without any gap or pinhole. The cost of all materials, tools and all labour charges etc are included., completion as specified and as directed by the Engineer-In-Charge.	58,885.00	m^2			
16	**M40 grade concrete** - Providing & laying in position machine batched & machine mixed design mix M-40 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site, cost of centering, shuttering, suspended platform, finishing, including admixtures in recommended proportion as per IS: 9103 to retarding super plasticizer admixture (such as Auramix 300 or equivalent) for water reducing, improve workability as per directed by EIC.	6,872.00	m^3			
17	**Structural Strengthening with Carbodur Laminates or equivalent & Epoxy Adhesive :** Supply and apply a pultruded CFRP plate for structural strengthening (Such as Nitoplate CP or Equivalent) with having dimensions of 100mm wide and 1.4 mm thickness and properties of E-modulus: 1.65x105 N/mm2; tensile strength ≥ 2800 N/mm2. Product requirements: approved by Fib, technical report, bulletin 14; E· break ≥ 1.7%; temperature resistant > 150deg C. Along with supply and apply a solvent-free, epoxy based, thixotropic, structural two part adhesive for plate bonding with appropriate product having properties of Compressive Strength > 90 N/mm2 (7 days) according to ASTM C579 or equivalent standards; Shear Strength >10 N/mm2 (7 days at 25° C) according to FIP 5.15; Bond Strength ≥ 2.5 N/mm2 according to EN1542 or equivalent standards. Including Surface Preparation by grinding of concrete surface by electrically operated diamond cup wheel grinder, rounding off sharp edges to 25 mm radius and cleaning it properly as per direction of EIC.	8,071.00	RM			
18	**Structural connection and anchoring & Epoxy Adhesive:** Supply and Apply of unidirectional carbon fiber anchor / string for structural connection and anchoring with compatible epoxy adhesive after necessary surface preparation and with drill of 150mm depth or as per direction of Engineer-in-Charge. Product should have minimum requirements: Weight ≥ 50 g/m (Carbon Fiber Content), Fiber Cross Section ≥ 28 mm2 (based on carbon fiber content), Fiber Density 1.82 g/cm3. Dry Fiber Properties should have Tensile Modulus of 240 kN/mm2, Tensile Strength > 4000 N/mm2 & Elongation at break ≥ 1.6 % (nominal) according to ASTM D 4018 or equivalent standards etc., complete as per direction of EIC.	1,330.00	Nos			
19	**Providing and applying protective coating** Deckguard S- Aliphatic Acrylic protective and waterproof coating after proper surface preparation, cleaning of dust, dirt etc. System should be application of Deckguard Primer- Water based acrylic primer on prepared surface and application of 2 coats of Deckguard S or equivalent at suitable brush or roller, completion as specified and as directed by the Engineer-In-Charge.	44,277.00	m^2			
20	Supply and place in position to lines and levels cast-in-situ design mix cement concrete of grade M-40 using cement, 20mm MSA for wearing coat of average thickness of 100 mm including providing of preparation of surface, form work, applying chemical adhesive layer, weigh batching machine mixing, placing in panels, forming slopes, placing of Nitoflor Hardtop STD non metallic floor hardener (7 kg/m²) & finishing with floater machine compacting curing etc. complete with all labour and materials. (a) **C C Wearing coat 100 mm thick.**	19,663.00	m^2			
21	**Providing & fixing Sign Boards made** out of 14 gauge aluminum sheet of req. size, bonded with coloured Retro-reflective sheeting having pressure sensitive adhesive, screen printed with desire letters of approved size & colour on approved background & fixing etc. as provided including designing the board from approved manufacturer as directed by the EIC.	63.00	m^2			

Item No	Description	Qty.	Unit	Rate in INR	Amt INR	Remark
22	**Supplying & applying of Polyurethane Night Glow Paint** which will White in Daylight & Radium Green in dark as per specifications & methodology specified and as directed by EIC.	514.00	m^2			
23	**Drilling Hole** and fixing Thermo-Mechanically Treated bars of grade Fe 500D or more rods of 25 mm dia to be placed in position of 32 mm dia @ 250 mm depth hole, as anchor rods/rebaring, including drilling and filling the gap around the rods with adhesive anchor HY 200 or equivalent. Complete as specified & as directed by EIC.	38,838.00	Nos			
24	Cutting of Slab (**Drain Hole**) for 150 mm diameter at 6 m c/c in deck slab by using core cutting machine including transportation, cost of materials/ cost of machineries, labour & equipment's with fuel and accessory etc. for drill hole etc. as directed by Engineer-in Charge.	72.00	Nos			
25	**Removing of existing crane track / railway track** including opening joints of rails, removal of nuts, bolts, tinplate, removal of existing base plate and dismantling existing concrete surrounding crane rail in 350 mm width and depth to expose the top of existing M.S. bearing plate, cutting of welding joints etc. complete removal of track and stacking complete as directed by Engineer-in-charge including disposal of unserviceable materials within a lead up to 2.00 km beyond 1.5 km away from site as directed by EIC.	1,583.00	RM			
26	**Providing, Laying & fixing in position new crane rail (ISCR-100)** to line & level over base plate (500 mm x 250 mm x 25 mm thick.) with clip plate, packing plate, anchored plate (75 mm x 75 mm x 16 mm thick.), anchor bolts (Z R 100 - 20 mm dia@ 250 mm Long) as per drawing, providing tapper washer, chamfering clip plates in required profile, fixing fish plates with Adhesive Anchor HY 200 or equivalent. suitable for ISCR-100 rail with nuts & bolts complete with all tools, plants, labours & materials as directed by Engineer-in Charge.	410.00	RM			
27	**Conducting Bollard Pull-Out Test** with including Staging or scaffolding, equipment's, plants, cost of materials/Machinery, cost of boat hiring, catamaran, Pontoon, labour, fuel, and transport etc. complete as directed by Engineer-in Charge.	8.00	Nos			
28	Provision of Cable Duct in underneath of slab					
A)	Conducting of Horizontal boring diameter minimum 6" with HDD machine or equivalent including cost of materials, labour, tools, equipment, plants, etc. complete…to the satisfaction of EIC.	192.00	RM			
B)	Providing and placing in position the G.I. pipe (150 mm) dia in under cable trench (Deck Slab) including cost of materials, labour, tools, equipment, plants, etc. complete…to the satisfaction of EIC.	204.00	RM			
C)	Providing and placing in position the HDPE Pipe (110 mm Dia) in under cable trench (Deck Slab) & road including cost of materials, labour, tools, equipment, plants, etc. complete to the satisfaction of EIC.	192.00	RM			
29	Shifting & Re-position of Existing Crane to another berth including cost of materials, labour, tools, equipment, plants, etc. complete…to the satisfaction of EIC.	3.00	Nos			