RETROFITTING OF THE BUNDER BASIN STRUCUTRE

Schedule B

Section - I

Item No	Description	Qty.	Unit	Rate	Amount
1	**Removal, Providing and fixing of fender:** Removing the existing fender along with all attachments from its position by opening or cutting all the existing fixture arrangements and separating frontal frame and detaching all fenders from its position by opening or cutting S.S. nuts bolts etc. to preparing good for fixing. including **Proving and Fixing** of 10 Nos. of new Super Arch fender **'L' Corner fender** 300H x 750 x 750 for each fender Column with necessarily nuts & bolts fixing with resin fastener RE500V3 or equivalent of required size and specification as specified by manufacturers specification & drawing etc. complete as directed by EIC. (Each One Set Consist 10 Nos. of Super Arch fender 'L' Corner fender)	12	Each Set		
2	**Removal, Providing and fixing of fender:** Removing the existing fender along with all attachments from its position by opening or cutting all the existing fixture arrangements and separating frontal frame and detaching all fenders from its position by opening or cutting S.S. nuts bolts etc. to preparing good for fixing. including Providing and Fixing of New Square Fender of size DSQ-C 300x300x7500 L with UHMW PE Facia Pad, with necessarily nuts & bolts fixing with resin fastener RE500V3 or equivalent of required size and specification as specified by manufacturers specification & drawing etc. complete as directed by EIC.	6	Nos.		
3	**Providing & Fixing** of new cast steel **T-head bollards** of 30 tonne capacity top portion over existing base plate with high tensile hex headed nuts to existing bolts fixing with resin fastener RE500V3 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.	7	Nos.		
4	R**emoval & Re-fixing** Removal of existing bollard by making the hoisting arrangement, lifting with suitable mechanical equipment and stacking at a distance of 5 Km away from site dismantling the surrounding concrete, opening/cutting of Hex horizontal nut bolts and detaching the top headed nuts and other portion from baseplate, disposal of dismantled concrete. **Re-Fixing of same bollards** at same location of bunder basin wharf over existing base plate with high tensile hex headed nuts to existing bolts fixing with resin fastener RE500V3 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 upto top surface, filling the cavity & painting etc. complete as per drawing and as directed by Engineer-in Charge.	6	Nos.		
5	**Surface preparation** : Chipping and removal of dilapidated concrete from RCC structural members carefully by suitable means upto 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 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.	995	m^2		
6	Providing and applying **Epoxy Bonding Agent** before pouring the concrete, the base and the hardener of the epoxy jointing compound MasterBrace 1414 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.	995	m^2		
7	**Providing and fixing Galvanised mesh size 50 X 50 mm minimum 3mm of thick**/or as directed for concreting work, including cutting, tying with binding wires and nailing 5 nos per Sq.m in position, labour, tools, plants, machinery, scaffolding etc. Complete as directed by the Engineer-In-Charge.	995	m^2		
8	**Fixing Shear Connectors :** Shear Connector fixing HYSD TMT minimum Fe500D grade rods of 25mm dia of min 600 mm long to be placed in position in 32 mm dia in 300mm depth hole, as shear connectors / anchor rods, including supplying, Fabricating, fixing, drilling and filling the gap around the rods with epoxy bonding anchor resin RE10 or equivalent. Complete as specified & as directed by Engineer-In-Charge.	3318	Nos.		
9	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, complete as directed by Engineer-In-Charge.	331	Nos.		

Item No	Description	Qty.	Unit	Rate	Amount
10	**Polymer Modified Mortar** for secondary beams exposed on berthing face : Supply and apply of Polymer modified fibre reinforced cementitious repair mortar (such as MasterEmaco S 348 or equivalent) to the spalled and eroded concrete surface upto 12 mm thick. As specified and as directed by Engineer-In-Charge.	325	m^2		
11	Providing and applying of The Acrylic emulsion cement modified and water based concrete **Curing Membrane** (such as MasterKure 185 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.	1586	m^2		

Item No	Description	Qty.	Unit	Rate	Amount
12	**Providing and applying protective coating** MasterProtect 300- Aliphatic Acrylic protective and waterproof coating after proper surface preparation, cleaning of dust, dirt etc. System should be application of MasterSeal 399 Primer- Water based acrylic primer on prepared surface and application of 2 coats of MasterProtect 300 or equivalent at suitable brush or roller, completion as specified and as directed by the Engineer-In-Charge.	1261	m^2		
13	**Concreting** for rehabilitation works: **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 cantering, shuttering, finishing, including admixtures in recommended proportion as per IS: 9103 to retarding superplasticizer admixture (such as MasterRheobuild 1126 or equivalent) for water reducing, improve workability as per directed by EIC.				
	A) Level up to the + 4.0 m	440	m^3		
	B) Level below the + 4.0 m	177	m^3		
14	Supplying reinforcement of **Grade Fe500D , 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 equipment's, plants, cost of materials, instrumentation, hiring of boat, catamaran, Pontoon, labour and transport, fuel, etc. as per drawing. Complete as directed by Engineer-In-Charge.	58229	Kgs		
15	Providing and applying **Anti corrosive zinc primer** (such as MasterEmaco P 130 or equivalent) coating to the new and existing reinforcement after removing the rust and scales by mechanically or manually to prevent the rebars from corrosion activity as specified and completion as directed by Engineer-In-Charge.	1065	m^2		
16	**Steel work** in galvanized M S steel sections having 150 microns for including cutting, hoisting, fixing in position by welds or bolts & to the entire galvanized steel work complete as directed for Nosing Angle, Connecting strip and Connecting Flat provided on the berthing face of fender columns & Deck Slab as per the drawings and as instructed by the Engineer-In-Charge.	30882	Kgs		
17	**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 of 150 micron comprising stringers rung fixing angles, nuts, washers , firm holds at top etc. including making holes, fixing & grouting with epoxy bonding resin fastener RE500V3 or equivalent. Complete as per drawing and as directed by Engineer-in Charge.	7425	Kgs		
18	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 non metallic mastertop 100 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.**	8098	m^2		
19	**Providing and Fixing of New UHMW PE Pad** of size 1000mm x 1000mm x 30mm thickness, with fixtures of SS316 minimum 9 nos of M20 x 250 mm L, stud, nuts, washer & bolts per sq.m and fixing with resin fastener RE500V3 or equivalent of specification as specified by manufacturers specification & drawing etc. complete as directed by EIC.	360	m^2		

Section - II

Item No	Description	Qty.	Unit	in Word
1	**Earth work excavation/surface dressing** by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sq.m on plan) including getting out and disposal of excavated earth lead upto 5 km and lift upto 1.5 m, as directed by Engineer-in-charge.	5191	m^3	
2	**Preparation and consolidation of sub grade** with power roller 8 to 12 ton capacity dressing to the camber and consolidating, watering and consolidating by Road Roller including making good the undulations etc. re-rolling the sub grade and disposal of surplus earth with in lead upto 50m.	7015	m^2	

Item No	Description	Qty.	Unit	Rate	Amount
3	**Providing quarry spall / granular material** including cost of excavation, royalty, loading, unloading, transportation, spreading in layers, compaction with truck in layer of 500mm from existing ground to required level, levelling, dressing side slopes, watering over the layers as desired by EIC etc., along with spreading of dust over the surface complete with all labour and materials complete including settlement etc., as directed by the engineer in charge.	3508	m^3		
4	**Providing and stacking sand filling**, specification in uniform thickness hand picking, rolling with 3 wheeled vibratory roller of 8 to 10 tonne capacity in stages in proper grade and camber Appling and bromming, requisite type of screening/ binding material to fill up the interstices of coarse aggregate. (Two Layer each Layer 100 mm thick)	1403	m^3		
5	**Supplying and fixing Bi-Axial Geogrid** (100KN/mx100KN/m) over a sand layer complete all labour and material as directed by EIC. The laying and construction of the Geogrid basal reinforcement layer should be carried out as per IRC- 113 (No additional payment for overlapping in joints will be made).	7015	m^2		
6	**Providing, laying, spreading and compacting with material conforming to Grade-I** (size range 75 mm to 0.075 mm) having CBR Value-30, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	1403	m^3		
7	**Providing and applying tack coat** using bitumen emulsion conforming to IS: 8887, using emulsion pressure distributer including preparing the surface & cleaning with mechanical broom. On W.B.M / W.M.M. @ 0.75 kg/sqm.	7015	m^2		
8	**Providing and applying tack coat** using bitumen emulsion conforming to IS: 8887, using emulsion pressure distributer including preparing the surface & cleaning with mechanical broom. On D.B.M. @ 0.4 kg/sqm.	7015	m^2		
9	Providing, laying, spreading and compacting **graded stone aggregate (size range 53 mm to 0.075 mm) to wet mix macadam (WMM)** specification including premixing the material with water at OMC in for all leads & lifts, laying in uniform layers with mechanical paver finisher in sub- base / base course on well prepared surface and compacting with vibratory roller of 8 to 10 tonne capacity to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	1403	m^3		
10	**Providing and laying Dense Graded Bituminous Macadam** using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equipped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers as per specifications to achieve the desired compaction and density, complete as per specifications and directions of Engineer-in- Charge. 50 to 100 mm average compacted thickness with bitumen of grade VG-30 @ 5% (percentage by weight of total mix) and lime filler @ 2% (percentage by weight of Aggregate) prepared in Drum Type Hot Mix Plant of 60-90 TPH capacity.	702	m^3		
11	**Providing and laying Bituminous concrete** using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equipped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction and density as per specification, complete and as per directions of Engineer-in-Charge. 40/50 mm compacted thickness with bitumen of grade VG-30 @ 5.5% (percentage by weight of total mix) and lime filler @ 3% (percentage by weight of Aggregate) prepared in drum Type Hot Mix Plant of 60-90 TPH capacity.	281	m^3		

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