BHEL: PSSR: SCT:2264 Date 09.06.2026

Corrigendum 1 to Tender Specification BHEL PSSR SCT 2264 – TCC CHAPTER REVISION

Sub: Cooling Water (CW) piping and associated works including cement mortar lining / painting at 2x700 MWe Kaiga Atomic Power Project Unit#5&6, Uttara Kannada District, Karnataka.

The following TCC CHAPTERS ARE REVISED and attached as annexures.

1. TCC CHAPTER -9 – BILL OF QUANITY (BOQ)

2. TCC CHAPTER -19 - PAINTING & CEMENT MORTAR COATING

All other conditions of the tender specification remain unchanged.
Bidder is requested to consider this corrigendum as part of tender specification and quote accordingly.

ENCLOSURES: REVISED TCC CHAPTERS 9 & 19

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VOLUME-IA PART – I CHAPTER – IX

BILL OF QUANITY (BOQ)

1.9.0 BOQ for the scope of work mentioned in the tender: -

Scope of CW Piping works covers Pre-assembly, erection, welding, NDT, Hydro testing, and commissioning of Cooling Water (CW) piping and all associated system piping. The scope also includes supply and application of cement mortar lining, painting as applicable, handling of materials at BHEL/Client's stores/storage yard and transportation to the site of work at 2 × 700 MWe Kaiga Atomic Power Project – Units 5 & 6, Uttara Kannada District, Karnataka as per tender specifications & conditions.

Item no	Description	UOM	Quantity (Approx) Unit 5&6	No of Field Joints (Approx) Unit 5&6	Underground / Overground	Rate Schedule
A	**CW Piping works - Pre-assembly, erection, welding, NDT, Hydro testing, and commissioning of Cooling Water (CW) piping and all associated system piping.**					
A1	**Pipe OD5100 x 25** - IS3589 Fe410 from IS2002 GR.2 PLATES PIPE LENGTH – 2.5 MTR (Approx)	MT	1000	172	UG	1A
A2	**Fittings of NB5100-IS2002** GR.2 / SA515GR70 (UEQT NB5100/NB1800- 24 Nos, UEQT NB5100/1200- 02 No, MANHOLE ASSY NB5100/NB2300/NB1000-04 Nos, MANHOLE ASSY NB5100/NB1000- 04 Nos, MAN HOLE ACCESS SHAFT ASSY NB5100/NB2350-04Nos, Dished End NB5100-04Nos, etc.	MT	650		UG	1B

Item no	Description	UOM	Quantity (Approx) Unit 5&6	No of Field Joints (Approx) Unit 5&6	Underground / Overground	Rate Schedule
A3	**Pipes OD1829x14**-IS3589 Fe410 from IS2002 GR.2 PLATES	MT	610	320 (Weld Joint/Flange joint/ Fittings)	UG & OG	1C
A4	**1800 NB Pipe Fittings**, MITRE BENDS, UEQTS, MAN HOLE ASSY, SADDLE SUPPORTS, PUDDLE FLANGES, SLEEVE PIPE, BUTTERFLY VALVES, EXPANSION JOINTS, NOZZLE, SUPPORTS, AIR RELIEF VALVES, DRAIN PIPES & VALVES ETC	MT	380		UG & OG	1D
B	**Supply and application of cement mortar lining**					
B1	Cement Mortar Lining of 25 mm thickness on Inner Surface of NB 5100 Pipe & Fittings	Sq.Mtr	7500		UG	1E
B2	Cement Mortar Lining of 50 mm thickness on outer Surface of NB 5100 Pipe & Fittings	Sq.Mtr	7600		UG	1F
B3	Cement Mortar Lining of 50 mm thickness on outer Surface of NB 1800 Pipe & Fittings	Sq.Mtr	3000		UG	1G

Note to weight schedule:	
1	The weights/Quantities/dimensions mentioned above are approximate and liable to vary as per design consideration. There will be change in weight, description etc. However, payments will be made for the tonnage actually erected at the quoted rate. Quantity Variation will be dealt as per General Conditions of Contract.
2	A material breakup under category indicated under each SL No of above table are indicated in the relevant chapter of this tender specification, but the contractor is required to erect actual tonnage which may be necessary to complete the work in all respects as detailed in the tender specifications, for which payments shall be released based on agreed rates. The weights and dimensions of material shown are approximate and are liable to vary.
3	Besides the weight schedule, there is likely hood of addition product groups integral to Piping etc. and its aux. The quoted rate shall be applicable for such product groups also. There may be variation or addition of PGMAs, description, weights etc., and any additional scope of work supplied under the above package shall be erected by the contractor and payment will be made as per the quoted / accepted rate in the respective category at the discretion of BHEL. Decision of BHEL Engineer shall be final and binding to the contractor in this regard.
4	Rate Schedule Identified are based on envisaged material specification. Payment shall be made on the basis of material specification of actual material received and erected at site. BHEL's decision in this regard shall be final.
5	Payment for control valves / flow nozzles / orifices & other valves and fittings will be made as per the quoted / accepted tonnage rate of respective piping category in which these materials is installed.

Weight of BOQ for CW Piping System

System	MARK NO./DESCRIPTION	UOM	QTY	Total Weight in MT
CWP	PF PIPE OD5100X25-IS2002GR2; L=2.5M	Nos	122	1000
CWP	Fittings of NB5100, L= 3MTR TO 5MTR (Approx)	Nos	42	650
CWP	Pipes OD1829x14 & Fittings L=1.7MTR TO 10MTR (Approx)	Nos	216	610
CWP	1800 NB - Expansion Joints, Butterfly valves, Nozzles, Air relief Valves, Drain pipes & valves etc (Approx)	Nos	74	380
TOTAL Weight in MT				**2640**

Note: Detailed PGMA wise weight of BOQ shall be shared during commencement/execution of work.

VOLUME-IA PART – I CHAPTER - XIX

PAINTING & CEMENT MORTAR COATING

1.19.1 PAINTING

i. The scope of work shall also include supply and application of primer & final painting of CW Piping (Over Ground Piping) as required and specified in the BHEL / Customer / Customer Consultant's painting specification.

ii. In the case of steel fabricated items, raw steel after fabrication has to be cleaned by Sand / Grit / shot blasting and subsequent painting to be carried out. Sand / Grit / shot blasting equipment with all accessories and consumables as required has to be arranged by the contractor within the Quoted rates.

iii. All the exposed metal parts of the piping, structures, hangers etc., wherever applicable after installation unless otherwise specified the surface protected, are to be first painted with at least one coat of suitable primer and required number of finish coats as indicated in the Painting Specification in TCC which matches the shop primer paint used, after thoroughly cleaning the dust, rust, scales, grease oil, and other foreign materials by wire brushing scrapping and chemical cleaning and the same being inspected and approved by BHEL engineers for painting. Afterwards the above parts shall be finished with as per the instructions of BHEL/Customer official.

iv. Normally Paint shall be applied by brushing as per the instruction of BHEL Engineer. It shall be ensured that brush marks are minimum. If needed and insisted either by BHEL / Customer in certain cases, spray painting has to be carried out within the quoted rates. Spray painting gun and compressed air arrangement has to be made by the contractor himself within the quoted rates.

v. Paint used shall be stirred frequently to keep the pigment in suspension. Paint shall be of the ready-mix type in original sealed containers as packed by the paint manufacturer. No thinners shall be permitted. Paint manufacturer's instructions shall be followed in method of application, handling, drying time etc.

vi. The scope of painting includes application of colour bands, lettering the names of the systems, equipment's, tag nos. of valves, marking the directions of flow and other data required by BHEL within the quoted rate.

vii. All surfaces shall be thoroughly cleaned, free from scales, dirt and other foreign matter. Each coat shall be applied in an even & uniform film free from lumps, streaks, runs, sags and

uncoated spots. Each coat (Primer, intermediate, finish) shall have a minimum thickness of dry film thickness (DFT) in microns and the DFT of finish paint shall not be less than the specified. Necessary instrument for measuring the thickness of paint applied is to be arranged by the contractor.

viii. Primer & finish coat paint, no. of coat and DFT shall be as indicated in the painting specification enclosed in this tender / relevant BHEL document/ customer's specifications. The painting specification which is forming part of this tender as in TCC shall be used as guidelines to be followed.

ix. The actual colour to be applied shall be approved by the customer before starting of actual painting work or as per the specifications/colour coding being followed by customer for the Plant.

x. Primer & finish paint shall be of reputed paint supplier approved by BHEL / Customer. Contractor has to procure paints from the BHEL / Customer approved agencies only, and the paints should be as per the customer painting specification. The quality of the finish paint shall be as per the standards of IS or equivalent as approved by BHEL / Customer. Before procurement of paint the contractor has to obtain the clearance from BHEL authorities. The batch certificates of paints to be submitted to BHEL Engineer before using the same.

xi. No paint shall be applied when the surface temp is above 55 deg. Centigrade or below 10 deg. Centigrade, and when the humidity is greater than 90% to cause condensation on the surface or frost /foggy weather.

xii. Contractor has to prepare the painting procedure and obtain approval from BHEL/Customer.

xiii. Before commencement of final painting, contractor has to obtain written clearance from BHEL / Customer for effective completion of surface preparation.

xiv. Before applying the subsequent coats, the thickness of each coat shall be measured and recorded with BHEL / Customer.

xv. Required paints, thinner other consumable such as wire brush, brush etc. shall have to be arranged by the contractor at their own cost. The required manpower, other required consumables, T & P etc. shall be provided by the contractor within the quoted rate. The arrangement of primer/paint will be in contractor's scope.

xvi. The contractor shall effectively protect the finished work from action of weather and from damage of defacement and shall cover the finished parts, then and there, for their protection.

xvii. Necessary scaffolding, required for painting of surfaces at various locations/ elevations shall be arranged by the contractor at their own cost. All the materials, required for scaffoldings shall be arranged by the contractor at their own cost.

xviii. Coating thickness shall be measured by elcometer or other standard measuring device for measuring of finished film thickness of finished paint. If the thickness is found to be less than specified, the pipes shall be re-surfaced to bring the same to specified thickness.

1.19.2 PRESERVATION / TOUCH UP PAINTING

i. Contractor shall carryout cleaning and preservation / touch up painting for the materials / equipments under this tender specification right from pre- assembly stage to till the equipment is cleared for final painting. The primer paint shall be matching shop primer.

ii. The contractor shall clean, wherever necessary and paint inside surfaces of the equipments as per instruction of BHEL Engineer during erection at the quoted rate. The Contractor has to arrange necessary paints within the quoted price.

iii. Any equipment which has been given the shop coat of primer shall be carefully examined after its erection in the field and shall be treated with touch up coat of same primer wherever the shop coat has been abraded, removed or damaged during transit / erection, or defaced during welding.

iv. Mostly the equipment / items / components will be supplied with one coat of primer paint and one coat of finish paint. However, during storage and handling, the same may get peeled off / deteriorate. All such surfaces are to be thoroughly cleaned and to be touch up painted with suitable approved primer and finish paint matching with shop paint / approved final colour.

v. All welded joints should be painted with anti-corrosive paint, once radiography and stress relieving works are over.

vi. Due to atmospheric conditions erected materials are likely to get rusted more frequently. It is the responsibility of the contractor to preserve the erection materials drawn from stores for erection till these are commissioned and handed over to customer. The required consumables for this purpose like paint, thinner, rust converter compound (Ruskill or Ferropro) or any other equivalent shall be arranged by bidder. However, the contractor should also arrange other consumables like wire brushes, emery paper, cotton waste, cloth etc. at their cost. The contractor should ensure that the materials are not rusted on any account till they are handed over to customer. The decision of the BHEL Engineer is final with regard to frequency of application of paint and rust converter compound.

vii. Painting of portions of Employer's structures wherever connection/welding is carried out by contractor for supporting structures.

viii. All rectification including painting of Employer's structure which are damaged by contractor during his work.

1.19.3 Cement Mortar Coating requirement for OD5100 pipes

i. For CMLC (Cement Mortar Lined and Coated) pipe thicknesses indicated are minimum metal thickness. Pipes are to be lined internally and coated externally as given below:
   a) Internal minimum 25 mm thick cement mortar lining with 4 mm wire diameter at 40 mm C/C wire mesh reinforcement.
   b) External minimum 50 mm thick cement mortar coating with cage reinforcement of 4 mm wire diameter at 50 mm C/C.
   c) Cement mortar lined pipes inner dia – 5000 mm, outer dia – 5200mm
   d) Cement mortar pipe lining thickness – inner 25 mm, outer 50mm.

ii. Pipe inner & outer surface to be cleaned by Sand / Grit / shot blasting and subsequent coating painting to be carried out. Sand / Grit / shot blasting equipment with all accessories and consumables as required has to be arranged by the contractor within the Quoted rates.

iii. Cement Mortar coating/lining procedure to be submitted and approval to be obtained from BHEL/Customer.

1.19.4 External Joint Painting requirement for NB1800 pipe

External Joint Painting for Piping:

1. Painting for Above Ground piping:
   a. Primer: Two coats of High build chlorinated rubber zinc phosphate primer. DFT 50 microns (min.) per coat.
   b. Finish Coat: Two coats of Chlorinated rubber paint. DFT 30 microns (min.) per coat.
   c. Minimum Total DFT = 160 microns.
2. Painting for Buried 1800NB Piping: 50 mm external cement coating shall be provided for buried portion of 1800 NB piping.

1.19.5 Internal Joint Painting requirement for NB1800 pipes

Condenser inlet and outlet pipes (Joint Portion) shall be internally lined with minimum 500 microns DFT of glass flake acrylic polymer- based epoxy paint.

NOTE:

1. NB 1800 dia pipes shall be supplied by BHEL with internal painted condition.
2. NB1800 dia pipes shall be supplied by BHEL with external painted condition (except for buried portion).
3. 50 mm external cement coating shall be carried out by the bidder for buried portion of 1800 NB piping.
4. Surface to be cleaned by Sand / Grit / shot blasting and subsequent coating/painting to be carried out

5. Internal & external Joint Painting for NB1800 pipes & fittings above ground are to be carried out by the bidder.

    - External Joint Painting requirement for NB1800 pipe:

        a) Primer: Two coats of High build chlorinated rubber zinc phosphate primer. DFT 50 microns (min.) per coat.

        b) Finish Coat: Two coats of Chlorinated rubber paint. DFT 30 microns (min.) per coat.

        c) Minimum Total DFT = 160 microns.

    - Internal Joint Painting requirement for NB1800 pipes: Condenser inlet and outlet pipes shall be internally lined with minimum 500 microns DFT of glass flake acrylic polymer- based epoxy paint.