

TENDER SPECIFICATION

NO: BHE/PW/PUR/DHJOI-BAL CVL PKG-II/1273

For

**Fire proofing work for Pipe & cable racks, Utility Boilers, HRSG's and other plant
misc. building & structures complete**

AT

**2X30MW STG + 4GTG WITH HRSG + 2 UB AT OPAL, DAHEJ- BHARUCH,
GUJARAT**

TECHNICAL BID - VOLUME- I

TENDER SPECIFICATIONS CONSISTS OF:

- **Notice Inviting Tender**
- **Volume 1 A - Technical Conditions of Contract,**
- **Volume 1 B - Special conditions of Contract,**
- **Volume 1 C - General conditions of Contract**
- **Volume 1 D - Forms & Procedures**



Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector - Western Region
345-Kingsway, Nagpur-440001

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LEGEND:

This document (i.e. NIT & Vol-I A) is hosted in BHEL web page (www.bhel.com) as a (Vol- I) of Technical Bid

§: “**Vol I -B, I-C, I-D**” of **Part-I (Vol- I)** Hosted in BHEL web page (www.bhel.com) separately as a part of Technical Bid.

@: **Price bid is** issued as a separate hard copy booklet ‘Tender Specifications – Volume-II (Price Bid-1273)’. Hosted in BHEL web page (www.bhel.com) separately.

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For

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EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR Refer Notice Inviting Tender
TENDER SUBMISSION .

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s.

.....

PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

DY. GENERAL MANAGER (Purchase)

Place: Nagpur

Date :

1273

NOTICE INVITING TENDER

Bharat Heavy Electricals Limited



NOTICE INVITING TENDER (NIT)
**NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES
OR
PURCHASE TENDERS FROM THIS OFFICE ALSO**

To

Dear Sir/Madam

Sub : NOTICE INVITING TENDER

Sealed offers in two part bid system are invited from reputed & experienced bidders (meeting [PRE QUALIFICATION CRITERIA](#) as mentioned in Annexure-I) for the subject job by the undersigned on the behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender document. Following points relevant to the tender may please be noted and complied with.

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION
i	TENDER NUMBER	BHE/PW/PUR/DHJOI-BAL CVL PKG-II/1273
ii	Broad Scope of job	Fire proofing work for Pipe & cable racks, Utility Boilers, HRSG's and other plant misc. building & structures complete AT 2X30MW STG + 4GTG WITH HRSG + 2 UB AT OPAL, DAHEJ- BHARUCH, GUJARAT.
iii	DETAILS OF TENDER DOCUMENT	
a	Volume-IA	<i>Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc</i> Applicable
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i> Applicable
c	Volume-IC	<i>General Conditions of Contract (GCC)</i> Applicable
d	Volume-ID	<i>Forms and Procedures</i>
e	Volume-II	<i>Price Schedule (Absolute value).</i> Applicable
iv	Issue of Tender Documents	<ol style="list-style-type: none"> <u>Sale from BHEL PS Regional office at :</u> Start : 23/05/2014 , Closes: 30/05/2014 , Time : 16.00 Hrs From BHEL website (www.bhel.com) Tender documents will be available for downloading from website till due date of submission Applicable/ Not applicable
v	DUE DATE & TIME OF OFFER SUBMISSION	Date : 02/06/2014, Time 15.00 Hrs Place : <u>BHEL PS Regional office at :Nagpur</u> Tenders being submitted through representative shall be submitted at dispatch section of of PSWR HQ Office after making entry/registration at the reception. For any assistance on the matter kindly contact following officials: <ul style="list-style-type: none"> • Pratih Gee Varghese/Sr Engineer(Purchase) • Shivkesh Meena / Engineer (Purchase) Applicable

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vi	OPENING OF TENDER	1 hours after the latest due date and time of Offer submission Notes: (1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day. (2) Bidder may depute representative to witness the opening of tender	Applicable
vii	EMD AMOUNT	Rs 2.00 Lakhs (Rupees Two Lakhs Only)	Applicable
viii	COST OF TENDER	Rs 2000/-. (Rupees Two Thousand Only)	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	Five days before the due date of offer submission. Along with soft version also, addressing to undersigned & to others as per contact address given below	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)	Date :	Not applicable.
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)		Not Applicable
xii	Latest updates	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com -->Tender Notifications →View Corrigendums) and not in the newspapers . Bidders to keep themselves updated with all such information	

- 2.0 The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, duly signed & stamped on each page, as part of offer. **Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.**
- 3.0 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Nagpur issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at Nagpur, Sundays and second/ last Saturdays
- 4.0 Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Nagpur. For other details and for 'One Time EMD' please refer General Conditions of Contract.
- 5.0 **Procedure for Submission of Tenders:** The Tenderers must submit their Tenders to Officer inviting Tender, as detailed below:
- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
 - PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)
 - One set of tender documents shall be retained by the bidder for their reference

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6.0 The contents for ENVELOPES and the superscription for each sealed cover/Envelope are as given below. **(All pages to be signed and stamped)**

Sl no	Description	Remarks
Part-I A		
	<p>ENVELOPE – I superscribed as : PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:</p> <p>CONTAINING THE FOLLOWING:-</p>	
i.	Covering letter/Offer forwarding letter of Tenderer.	
ii.	<p>Duly filled-in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above.</p> <p>Note:</p> <p>a. In case of any deviation, the same should be submitted separately for technical & commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be placed after document under sl no (i) above. It shall be specifically noted that deviation recorded elsewhere shall not be entertained.</p> <p>b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding.</p> <p style="margin-left: 20px;">i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL</p> <p style="margin-left: 20px;">ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender</p>	
iii.	<p>Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria.</p> <p>It shall be specifically noted that all documents as per above shall be indexed properly and credential certificates issued by clients shall distinctly bear the name of organization, contact ph no, FAX no, etc.</p>	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/ Errata etc pertinent to this NIT.	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.	Duly filled-in annexures, formats etc as required under this Tender Specification/NIT	
vii.	Notice inviting Tender (NIT)	
viii.	Volume – I A : <u>Technical</u> Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.	Any other details preferred by bidder with proper indexing.	

PART-I B		
	<p>ENVELOPE – II superscribed as: PART-I (EMD/COST of TENDER) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:</p>	

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	CONTAINING THE FOLLOWING:-	
i.	<p>1. Earnest Money Deposit (EMD) in the form as indicated in this Tender OR Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender</p> <p>2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)</p>	

	PART-II	
	PRICE BID consisting of the following shall be enclosed	
	<p>ENVELOPE-III superscribed as: PART-II (PRICE BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:</p> <p>CONTAINING THE FOLLOWING</p>	
i	Covering letter/Offer forwarding letter of Tenderer enclosed in Part-I	
ii	Volume II – PRICE BID (Duly Filled in Schedule of Rates – rate/price to be entered in words as well as figures)	

	OUTER COVER	
	<p>ENVELOPE-IV (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION:</p> <p>CONTAINING THE FOLLOWING:</p>	
i	<ul style="list-style-type: none"> o Envelopes I o Envelopes II o Envelopes III 	

SPECIAL NOTE : All documents/ annexures submitted with the offer shall be properly annexed and placed in respective places of the offer as per enclosure list mentioned in the covering letter. BHEL shall not be responsible for any missing documents.

- 7.0 Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.
- 8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).

9.0 Assessment of Capacity of Bidders:

Bidders capacity for executing the job under tender shall be assessed 'LOAD' wise and 'PERFORMANCE' wise as per the following:

- I. **LOAD:** Load takes into consideration **ALL** the contracts of the Bidder under execution with BHEL Regions, irrespective of whether they are similar to the tendered scope or not. The 'Load' is the sum of the unit wise identified packages (refer Table-1) for contracts with BHEL Regions. The cut off month for reckoning 'Load' shall be the month, two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if latest bid submission is in Aug 2011, then the 'load' shall be calculated upto and inclusive of June 2011)

- i).
$$\frac{\text{Total number of Packages}}{\text{Total number of Packages in hand}} = P$$
Where

- 'P' is the sum of all unit wise identified packages under execution with BHEL Regions as of the cut off month defined above, including packages yet to be commenced, excepting packages which are on HOLD due to reasons not attributable to Bidder..

- II. **PERFORMANCE:** Here 'Monthly Performance' of the bidder for all the packages (**under execution/** executed during the 'Period of Assessment' in all the Power Sector Regions of BHEL) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced shall be taken into consideration. The 'Period of Assessment' shall be 6 months preceding the cut off month. The cut off month for reckoning 'Period of Assessment' shall be the month two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if 'latest date of bid submission' is in Aug 2011, then the 'performance' shall be assessed for a 6 month period upto and inclusive of June 2011, for all the unit wise identified packages (refer Table I)

- i). Calculation of Overall 'Performance Rating' for 'similar Package/Packages' for the tendered scope under execution at Power Sector Regions for the 'Period of Assessment':
This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for all the similar Package/packages', divided by the total number of Package months for which evaluation should have been done, as per procedure below:

- a) $P_1, P_2, P_3, P_4, P_5, \dots, P_N$ etc be the packages (**under execution/** executed during the 'Period of Assessment' in all Regions) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced. Total number of similar packages for all Regions = P_T (i.e $P_T = P_1 + P_2 + P_3 + P_4 + \dots + P_N$)
- b) Number of Months 'T₁' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package P₁. Similarly T₂ for package P₂, T₃ for package P₃, etc for the tendered scope. Now calculate cumulative total months 'T_T' for total similar Packages 'P_T' for all Regions (i.e $T_T = T_1 + T_2 + T_3 + T_4 + \dots + T_N$)
- c) Sum 'S₁' of 'Monthly Performance Evaluation' Scores (S₁₋₁, S₁₋₂, S₁₋₃, S₁₋₄, S₁₋₅,... S_{1-N}) for similar package P₁, for the 'period of assessment' 'T₁' (i.e $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots + S_{1-N}$). Similarly S₂ for package P₂ for period T₂, S₃ for package P₃ for period T₃, etc for the tendered scope for all Regions. Now calculate cumulative sum 'S_T' of 'Monthly Performance Evaluation' Scores for total similar Packages 'P_T' for all Regions (i.e 'S_T' = S₁+ S₂+ S₃+ S₄+ S₅+... S_N)

d) Overall Performance Rating 'R_{BHEL}' for the similar Package/Packages (under execution/ executed during the 'Period of Assessment') in all the Power Sector Regions of BHEL):

$$= \frac{\text{Aggregate of Performance scores for all similar packages in all the Regions}}{\text{Aggregate of months for each of the similar package for which performance should have been evaluated in all the Regions}}$$

$$= \frac{S_T}{T_T}$$

e) Bidders to note that the risk of non evaluation or non availability of the 'Monthly Performance Evaluation' reports as per relevant formats is to be borne by the Bidder

f) Table showing methodology for calculating 'a', 'b' and 'c' above

Sl no	Item Description	Details for all Regions							Total
		(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	
1	Similar Packages for all Regions → (under execution/ executed during period of assessment)	P ₁	P ₂	P ₃	P ₄	P ₅	...	P _N	Total No of similar packages for all Regions = P _T ie Sum (Σ) of columns (iii) to (ix)
2	Number of Months for which 'Monthly Performance Evaluation' as per relevant formats should have been done in the 'period of assessment' for corresponding similar Package (as in row 1)	T ₁	T ₂	T ₃	T ₄	T ₅	...	T _N	Sum (Σ) of columns (iii) to (ix) = T _T
3	Monthly performance scores for the corresponding period (as in Row 2)	S _{1-1,} S _{1-2,} S _{1-3,} S _{1-4,} ... S _{1-T1}	S _{2-1,} S _{2-2,} S _{2-3,} S _{2-4,} ... S _{2-T2}	S _{3-1,} S _{3-2,} S _{3-3,} S _{3-4,} ... S _{3-T3}	S _{4-1,} S _{4-2,} S _{4-3,} S _{4-4,} ... S _{4-T4}	S _{5-1,} S _{5-2,} S _{5-3,} S _{5-4,} ... S _{5-T5}	S _{N-1,} S _{N-2,} S _{N-3,} S _{N-4,} ... S _{N-TN}	-----
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S ₁	S ₂	S ₃	S ₄	S ₅	...	S _N	Sum (Σ) of columns (iii) to (ix) = S _T

ii) Calculation of Overall 'Performance Rating' (R_{BHEL}) in case 'similar Package/Packages' for the tendered scope ARE NOT AVAILABLE, during the 'Period of Assessment':

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This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for ALL the packages, divided by the total number of Package months for which evaluation should have been done. ' R_{BHEL} ' shall be calculated subject to availability of 'performance scores' for at least 6 'package months' in the order of precedence below:

- a) 'Period of Assessment.
- b) 12 months preceding the cut-off month
- c) 24 months preceding the cut-off month
- d) 36 months preceding the cut-off month

In case, R_{BHEL} cannot be calculated as above, then Bidder shall be treated as 'NEW VENDOR'. Further eligibility and qualification of this bidder shall be as per definition of 'NEW VENDOR' described in 'Explanatory Notes'

iii) Factor "L" assigned based on Overall Performance Rating (R_{BHEL}) at Power Sector Regions.:

Sl no	Overall Performance Rating (R_{BHEL})	Corresponding value of 'L'
1	$=60$	NA
2	> 60 and ≤ 65	0.4
3	> 65 and ≤ 70	0.35
4	> 70 and ≤ 75	0.25
5	> 75 and < 80	0.2
6	≥ 80	NA

III. 'Assessment of Capacity of Bidder':

'Assessment of Capacity of Bidder' is based on the Maximum number of packages for which a vendor is eligible, considering the performance scores of similar packages, as below:

Max number of packages $P_{Max} = (R_{BHEL} - 60)$ divided by corresponding value of 'L'
i.e. $(R_{BHEL} - 60)/L$

Note:

- i. In case the value of P_{Max} results in a fraction, the value of P_{Max} is to be rounded off to next whole number
- ii. For $R_{BHEL} = 60$, $P_{Max} = '1'$
- iii. For $R_{BHEL} \geq 80$, there will be no upper limit on P_{Max}

The Bidder shall be considered 'Qualified' as per 'Assessment of Capacity of Bidder' for the subject

Tender if $P \leq P_{Max}$

(where P is calculated as per clause 9.1)

IV. Explanatory note:

- a) Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or CI, etc at the individual level irrespective of rating of Plant, and irrespective of whether the subject tender is a single package or as part of combined/composite packages. Normally Boiler, ESP, Piping, Turbine, Electrical, CI, Civil, Structure, etc is considered individual level of package. For example in case the tendered scope is a Boiler Vertical Package comprising of Boiler, ESP and Power Cycle Piping (i.e the 'identified packages as per Table-1 below), the 'PERFORMANCE' part against sl no II above, needs to be evaluated considering all the identified packages (ie Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above

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b) Identified Packages (Unit wise)

Table-1

	Civil	Electrical & CI	Mechanical
	i). Enabling works ii). Pile and Pile Caps iii). Civil Works including foundations iv). Structural Steel Fabrication & Erection v). Chimney vi). Cooling Tower vii). Others (Civil)	i). Electrical ii). CI iii). Others (Elec & CI)	i). Boiler & Aux (All types including CW Piping if applicable) ii). Power Cycle Piping/Critical Piping iii). LP Piping iv). ESP v). Steam Turbine Generator set & Aux vi). Gas Turbine Generator set & Aux vii). Hydro Turbine Generator set & Aux viii). Turbo Blower (including Steam Turbine) ix). Material Handling x). Material Management xi). Material Handling & Material Management xii). Others (Mechanical)

- c) Bidders who have not been evaluated for at least six package months in the last 36 months in the online BHEL system for contractor performance evaluation in BHEL PS Regions, wef July 2010 shall be considered "NEW VENDOR".

A 'NEW VENDOR' shall be considered qualified subject to satisfying all other tender conditions

A 'NEW VENDOR' if awarded a job (of package/packages identified under this clause) shall be tagged as "FIRST TIMER" on the date of first LOI from BHEL.

The "FIRST TIMER" tag shall remain till execution of work for a period of not less than 09 months, from the commencement of work of first package

A Bidder shall not be eligible for the next job as long as the Bidder is tagged as "FIRST TIMER" excepting for the Tenders which have been opened on or before the date of the bidder being tagged as 'FIRST TIMER'.

After removal of 'FIRST TIMER' tag, the Bidder shall be considered 'QUALIFIED' for the future tenders subject to satisfying all other tender conditions including 'Capacity Evaluation of Bidders'.

- d) In the unlikely event of all bidders shortlisted against Technical and Financial Qualification criteria not meeting the criteria on 'Assessment of Capacity of Bidders' detailed above, OR leads to a single tender response on applying the criteria of 'Assessment of Capacity of Bidders' or due to non-approval by Customer, then BHEL at its discretion reserves the right to consider the further processing of the Tender based on the **Overall Performance Rating 'R_{BHEL}'** only, starting from the upper band.

- e) 'Under execution' shall mean works in progress as per the following:

- i. up to Boiler Steam Blowing in case of Steam Generator and Auxiliaries
- ii. upto Synchronisation in case of all other works excepting sl no (i) and (iii)

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- iii. Upto execution of at least 90% of anticipated contract value in case of Civil & Structures (unit wise), Enabling works and upto 90% of material unloading (in tonnage) as per the original contract in case of MM Package.

Note : BHEL at its discretion can extend (or reduce in exceptional cases in line with Contract conditions) the period defined against (i), (ii) and (iii) above, depending upon the balance scope of work to be completed.

- f) Performance evaluation in CL 9 above is applicable to Prime bidder and consortium partner (or Technical tie up partner) for their respective scope of work

- 10.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.
- 11.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail, as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.
- 12.0 BHEL may decide holding of pre-bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre-bid discussion (PBD) shall also form part of tender.
- 13.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.
- 14.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 15.0 Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (1) above.**
- 16.0 The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.
- 17.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorised representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.
- 18.0 Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.
- 19.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .

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- However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDS' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.
- 20.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 21.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.
- 22.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
- 23.0 Consortium Bidding (or Technical Tie up) shall be allowed only if specified in Pre Qualifying Requirement (PQR) criteria, and in such a case the following shall be complied with:
- 23.1 Prime Bidder and Consortium Partner or partners are required to enter into a consortium agreement with a validity period of six months initially. In case the consortium is awarded the contract, then the Consortium Agreement between the Prime Bidder and Consortium Partner or partners shall be extended till contractual completion period including extension periods if any applicable.
- 23.2 'Stand alone' bidder cannot become a **'Prime Bidder' or a 'Consortium bidder' or 'Technical Tie up bidder' in a consortium (or Technical Tie up) bidding**. Prime bidder shall neither be a consortium partner to other prime bidder nor take any other consortium partners. However, consortium partner may enter into consortium agreement with other prime bidders. In case of non compliance, consortium bids of such Prime bidders will be rejected.
- 23.3 Number of partners for a consortium Bidding (or Technical Tie up) shall be as specified in the PQR
- 23.4 Prime Bidder shall be as specified in the Pre Qualification Requirement, else the bidder who has the major share of work
- 23.5 In order to be qualified for the tender, Prime Bidder and Consortium partner or partners shall satisfy (i) the Technical 'Pre Qualifying Requirements' specified for the respective package, (ii) "Assessment of Capacity of Bidder" as specified in clause 9.0
- 23.6 Prime Bidder shall comply with additional 'Technical' criteria of PQR as defined in 'Explanatory Notes for the PQR'
- 23.7 Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified
- 23.8 In case customer approval is required, then Prime Bidder and Consortium Partner or partners shall have to be individually approved by Customer for being considered for the tender.
- 23.9 Prime Bidder shall be responsible for the overall execution of the contract
- 23.10 In case of award of job, Performance shall be evaluated for Prime Bidder and Consortium Partner or partners for their respective scope of work(s) as per prescribed formats
- 23.11 In case the Consortium partner or partners back out, their SDs shall be encashed by BHEL. In such a case, other consortium partner or partners meeting the PQR have to be engaged by the Prime Bidder, and if not, the respective work will be withdrawn and executed on risk and cost basis of the Prime Bidder. The new consortium partner or partners shall submit fresh SDs as applicable.
- 23.12 In case the prime Bidder withdraws, the whole contract shall be considered cancelled and short closed.

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- 23.13 After execution of work, the work experience shall be assigned to the Prime Bidder and the consortium partner or partners for their respective scope of work. After successful execution of two similar works with the same consortium partner or partners under direct orders of BHEL, the Prime Bidder shall be eligible for becoming a 'stand alone' bidder for similar works, subject to certification from BHEL about the active involvement of the Prime Bidder for satisfactory execution of the works.
- 23.14 The consortium partner shall submit SD equivalent to 2% of the total contract value in addition to the SD to be submitted by the prime Bidder for the total contract value. In case there are two consortium partners, then each partner shall submit SD equivalent to 1% of the total contract value in addition to the SD to be submitted by the prime Bidder for the total contract value.
- 23.15 In case of a Technical Tie up, all the clauses applicable for the Consortium partner shall be applicable for the Technical Tie up partner also
- 24.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements' duly self certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.
- 25.0 The bidder may have to produce original document for verification if so decided by BHEL.
- 26.0 Order of Precedence
In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:
- a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
 - b. Notice Inviting Tender (NIT)
 - c. Price Bid
 - d. Technical Conditions of Contract (TCC)—Volume-1A
 - e. Special Conditions of Contract (SCC) —Volume-1B
 - f. General Conditions of Contract (GCC) —Volume-1C
 - g. Forms and Procedures —Volume-1D

It may please be noted that guidelines/rules in respect of suspension of business dealings', 'Vendor evaluation format', 'Quality, Safety & HSE guidelines', etc may undergo change from time to time and the latest one shall be followed

for BHARAT HEAVY ELECTRICALS LTD

AGM Pur

Enclosure

1. Annexure-1: Pre Qualifying criteria.
2. Annexure-2: Check List .
3. Annexure-3: Important Information .
4. Other Tender documents as per this NIT.

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ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB	Fire proofing work for Pipe & cable racks, Utility Boilers, HRSG's and other plant misc. building & structures complete AT 2X30MW STG + 4GTG WITH HRSG + 2 UB AT OPAL, DAHEJ-BHARUCH, GUJARAT.
TENDER NO	BHE/PW/PUR/DHJOI-BAL CVL PKG-II/1273

SL NO	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Name and Description of qualifying criteria	Page no of supporting document. Bidder must fill up this column as per applicability
A	Submission of Integrity Pact duly signed (if applicable) (Note: To be submitted by Prime Bidder & Consortium/Technical Tie up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)	Not APPLICABLE	
B	<u>Technical</u> Bidder must have successfully executed Civil works including fire proofing works on structure in the last seven (7) years as on latest date of bid submission as below: i. One similar work of value not less than Rs 160 Lakhs. OR ii. Two similar works each of value not less than Rs 100 Lakhs. OR iii. Three similar works each of value not less than 80 Lakhs.	APPLICABLE	
C-1	<u>Financial TURNOVER</u> Bidders must have achieved an average annual financial turnover (Audited) of Rs 60 Lakhs or more over last three Financial Years (FY) i.e. 2011-2012, 2012-2013, 2013-14 OR 2010-2011, 2011-12 and 2012-13 if Annual Accounts for FY 2013-14 are not audited.	APPLICABLE	
C-2	<u>NETWORTH</u> (only in case of Companies) Net worth of the Bidder based on the latest Audited Accounts as furnished for 'C-1' above should be positive	APPLICABLE	

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C-3	PROFIT Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three Financial Years defined in 'C-1 above based on latest Audited Accounts.	APPLICABLE	
D	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT (if applicable)	APPLICABLE	By BHEL
E	Approval of Customer (if applicable) Note: Names of bidders (including consortium/Technical Tie up partners in case consortium bidding is permitted) who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval.	APPLICABLE	BY BHEL
F	Price Bid Opening Note: Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E	APPLICABLE	BY BHEL
F	Technical Tie up criteria (if applicable)	NOT APPLICABLE	
<p><u>Explanatory Notes for the PQR (unless otherwise specified in the PQR):</u></p> <ol style="list-style-type: none"> Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above along with all annexures In case audited Financial statements have not been submitted for all the three years as indicated against C-1 above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e total divided by three. C-2:-NETWORTH : Shall be calculated based on the latest Audited Accounts as furnished for C-1 above. Net worth = Paid up share capital + Reserves. (Net worth is required to be evaluated in case of companies) C-3:- PROFIT : shall be NET profit (PAT + Non cash expenditure viz depreciation) earned during any one of the three financial years as in C-1 above 'Additional' Criteria in respect of 'Technical' criteria of PQR (as in 'B' above) for Civil, Electrical, CI, unless otherwise specified: <ol style="list-style-type: none"> 1. Bidder should have executed similar work of any one of the following: <ol style="list-style-type: none"> One (1) work of value not less than Rs XXX OR Two (2) works of not less than Rs YYY OR Three (3) works of not less than Rs ZZZ (Value XXX, YYY, ZZZ shall be as indicated by BHEL 'Similar' work for criteria 5 above means <ol style="list-style-type: none"> Civil or Structures or Civil & Structures or Chimney respectively as applicable to the tendered scope in respect of 'CIVIL' Works Electrical works in respect of 'ELECTRICAL' CI works in respect of 'CI' Works Material Handling and/or Management works in respect of 'MM' works Time period for achievement of the 'Technical' criteria of PQR (as in 'B' above) will be the last 7 years ending on the 'latest date' of Bid submission 'EXECUTED' means the Vendor should have achieved the criteria specified in the Technical criteria of PQR (as in 'B' above) even if the Contract has not been completed or closed Unless otherwise specified, for the purpose of 'Technical' criteria of PQR (as in 'B' above), the word 'EXECUTED' means: <ol style="list-style-type: none"> "BOILER LIGHT UP" in respect of Boiler & Aux and ESP 			

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	<p>2. "SYNCHRONISATION" in respect of STG/GTG and 'SPINNING' in case of HTG</p> <p>3. "STEAM BLOWING COMPLETION" in respect of at least Main Steam Line of Power Cycle Piping</p> <p>4. "HYDRAULIC TEST" of the system in respect of Structures, Pressure parts/IBR Piping</p> <p>5. "CHARGING" in respect of power Transformers, Bus ducts, HT/LT switchgears</p> <p>6. "Completion of RCC Shell and liner (steel or brick as per tendered scope) up to the HEIGHT specified using slip form" in case of RCC Chimney.</p> <p>7. Achievement of physical Quantities as per respective PQRs in respect of Civil & Structures and Piling Works</p> <p>8. 'Readiness for coal Filling" in respect of Bunker Structure Work.</p> <p>9. Boiler means HRSG or WHRB or any other types of Steam Generator</p> <p>10. Critical/Power Cycle piping means Main Steam, Hot Reheat, Cold Reheat, HP Bypass, LP Bypass lines</p> <p>11. For the purpose of evaluation of the PQR, one MW shall be considered equivalent to 3.5TPH where ever rating of HRSG/BOILER is mentioned in MW. Similarly, where ever rating of Gas Turbine is mentioned in terms of Frame size, ISO rating in terms of MW shall be considered for evaluation.</p> <p>12. In case the experience/POAWO certificate enclosed by bidders do not have separate break up prices for the E&C portion of Electrical and CI Works, (i.e. the certificates enclosed are for composite order for supply and erection of Electrical & CI and other works if any), then value of Erection and Commissioning for the Electrical & CI portion shall be considered as 15% of the supply & erection of Electrical & CI, unless otherwise specifically indicated in the PQR.</p> <p>13. Scope for capital overhaul of STG shall cover Bearing Inspection work and overhauling of all cylinders of the Turbine unless otherwise specifically indicated in the PQR.</p> <p>14. In case the tendered scope is not a Pulverised Fuel Boiler, experience of Oil/Gas Fired Boilers also can be considered unless otherwise specifically indicated in the PQR</p> <p>15. The value of work (Experience submitted against PQR B) shall be updated as per the PVC indices for "All India Avg. Consumer Price Index for Industrial Workers" with base month as date of execution (completion of contract/work) and indexed upto two months prior to bid opening month.</p>
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BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

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ANNEXURE - 2

CHECK LIST

NOTE:- Tenderers are required to fill in the following details and no column should be left blank

1	Name and Address of the Tenderer		
2	Details about type of the Firm/Company		
3.a	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
3.b	Details of alternate Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4	EMD DETAILS	DD No: Date : Bank : Amount: <u>Please tick (✓) whichever applicable:-</u> ONE TIME EMD / ONLY FOR THIS TENDER	
5	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
		APPLICABILITY(BY BHEL)	ENCLOSED BY BIDDER
6	Whether the format for compliance with PRE QUALIFICATION CRITERIA (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable/ Not Applicable	YES/NO
8	Copy of PAN Card	Applicable/ Not Applicable	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc are read understood and signed	Applicable/ Not Applicable	YES/NO
10	Integrity Pact	Not Applicable	YES/NO
11	Declaration by Authorised Signatory	Applicable/ Not Applicable	YES/NO
12	No Deviation Certificate	Applicable/ Not Applicable	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/ Not Applicable	YES/NO
14	Declaration for relation in BHEL	Applicable/ Not Applicable	YES/NO

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Notice Inviting Tender**

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15	Non Disclosure Certificate	Applicable/ Not Applicable	YES/NO
16	Bank Account Details for E-Payment	Applicable/ Not Applicable	YES/NO
17	Capacity Evaluation of Bidder for current Tender	Applicable/ Not Applicable	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	Applicable/ Not Applicable	YES/NO
19	Power of Attorney for Submission of Tender/Signing Contract Agreement	Applicable/ Not Applicable	YES/NO
20	Analysis of Unit rates	Applicable/ Not Applicable	YES/NO

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE. TENDER NOT ACCOMPANIED BY THE PRESCRIBED **ABOVE APPLICABLE DOCUMENTS** ARE LIABLE TO BE SUMMARILY REJECTED.

DATE :

**AUTHORISED SIGNATORY
(With Name, Designation and Company seal)**

IMPORTANT INFORMATION

1. The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site (www.bhel.com ---> Tender Notification -> List of Banned Firms)
2. All Statutory Requirements as applicable for this project shall be complied with.
3. Please take note of following Revised Tender Clauses:
 - i. Notice Inviting Tender: SI No 9
 - ii. General conditions of Contract: Clause No 1.15.13 (New), Clause No 2.8.3, 2.8.4 and 2.8.5
4. Following Notes are added to Form F- 15 of Volume I D 'Forms & procedures'
 - i. It is only indicative and shall be as per the online format issued by BHEL time to time.
 - ii. No request will be entertained after specified date of the current month w.r.t the changes requested in the scores of immediate previous month.

5. PRICE VARIATION CLAUSE

Price Variation Compensation Clause no. 2.17 of Vol I C GCC shall not be Applicable:

6. OVER RUN COMPENSATION

Over Run Compensation Clause no. 2.12 of Vol I C GCC shall not be Applicable

7. Broad Terms & Conditions of Reverse Auction

In continuation to Clause 19.0 of NIT (Notice Inviting Tender) following are the broad terms and conditions of Reverse Auction is given in Annexure V of NIT:

- 7.1. Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).
- 7.2. BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation

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- in RA. Non-acceptance to participate in RA may result in non-consideration of their bids. In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit „online sealed bid“ in the Reverse Auction. Non-submission of „online sealed bid“ by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
- 7.3. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
 - 7.4. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit ‘online sealed bid’ in the Reverse Auction. Non-submission of ‘online sealed bid’ by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
 - 7.5. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
 - 7.6. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
 - 7.7. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
 - 7.8. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
 - 7.9. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for noncompliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
 - 7.10. Reverse auction will be conducted on scheduled date & time.
 - 7.11. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
 - 7.12. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
 - 7.13. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.
 - 7.14. Bidders shall be required to read the “Terms and Conditions” section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the “Business Rules of Reverse Auction”, which will be communicated before the Reverse Auction.

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- 7.15. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
- 7.16. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
- 7.17. In case BHEL decides to go for reverse auction, the H1 bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

Rev 00
6th
JULY

TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT (TCC) CONTENTS

SI No	DESCRIPTION	Chapter	
Volume-IA	Part-I: Contract specific details		
1	Project Information	Chapter-I	
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4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV	
5	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V	
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TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter - I : Project Information

PROJECT INFORMATION					
Project	STEAM AND POWER GENERATION SYSTEM PACKAGE FOR DAHEJ PETOCEMICAL COMPLEX				
Customer	ONGC PETRO ADDITIONS LIMITED (OPAL)				
Plant Location	Dahej SEZ in the Gulf of Khambhat				
State	Gujarat				
Nearest Important Town	Vadodara at a distance of 140 Km				
Nearest Railway Station	Dahej				
Nearest Port	Dahej				
Nearest Airport	Vadodara at a distance of 140 km				
Nearest National Highway	New Delhi-Mumbai Trunk route passing through Bharuch-45 km.				
Rainy season	The main rainy season is during southwest monsoon from mid June to Sept. This contributes 92% of average rainfall. Wettest month is July.				
Seismic Zone	Zone - III, Coordinates of the proposed project site are Latitude 21°41' 54" and 72° 36' 30".				
Sl	Parameter	Minimum	Normal / Average	Max/ Design	
1	Elevation above mean sea level,		7.1		
2	Barometric pressure, mbar	1008	1010	1011	
3	Ambient temperature, °C	5.6	13-40	47	
4	Relative humidity, %			90% @ 42 °C	
5	Rainfall data: (a) for 1-hour period (b) for 24-hour period (c) average rainfall per year			(a)100mm (b)305mm (c) 1000 mm	
6	Wind data (a) wind velocity/ prevailing wind direction March- October (b) Wind velocity/ prevailing wind direction: November- February (c) 100 years maximum wind speed (d) Standard for wind load calculation (e) Wind velocity for Flare design		a. 44 km/h/ South west b. 15KM/Hr/ North west/North/ North East c. 212 km/hr d. ANSI/ASCE 7-88 IS875-1987 e. 93.6 km/hr (26 m/s)		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II : Scope of Works and Technical Specifications

2.0 SCOPE OF WORK

Scope Areas: of Vermiculite base cementitious fire proof coating

- A. **All drain tanks/unloading tanks:** All columns and beams up to height 102.7 mtr.
- B. **Utility Boiler-1 and Utility Boiler 2:** All columns and beams between column S1R to S1L, S2R to S2L, S3R to S3L and FH7 to FH1 from 108 mtr to 122 mtr. All columns and beams between grids FH1 to FH2 from 99.7 mtr to 108 mtr.
- C. **HRSR 1 to 4:** All columns and beams between grids D1R to D5R and D1L to D5L up to 122.5 mtr
- D. **Pipe Rack area 3:** Columns and beams at east side only up to 110.7 mtr between PR-29 to PR-32.
- E. **Pipe Rack area 14 to 17:** All columns and beams between grids D1 to D4 up to 110 mtr and all other area except east side columns at 11-14, 16-19, 21-24, 26-28 up to 108 mtr.
- F. **Pipe rack area 10:** columns and beams up to 108 mtr grids 02A & 03A.
- G. **Pipe rack area 11:** columns and beams up to 108 mtr grids 02B & 03B.
- H. **Pipe rack area 12:** columns and beams up to 108 mtr grids 02C & 03C.
- I. **Pipe rack area 13:** columns and beams up to 108 mtr grids 02D & 03D.
- J. **Pipe rack area 7:** All columns and beams from 108 mtr to 109 mtr between grids UR-09 to UR-12; from 108 mtr to 113 mtr between grids UR-14 to UR-17.
- K. **Pipe rack area 5&6:** West side columns & beams up to 108 mtr between grids PR-09 to PR-11.
- L. **Pipe rack area 9:** South side columns & beams up to 108 mtr between grids HR-20 to HR-30.

Note:

1. The beams which are supporting transfer lines and two phase flow lines above 6 inches need to be fire proofed as per OISD-164 and shall be done for 2 hour fire rating as per applicable EIL specification 6-68-0033.

2.0.07 GENERAL

- 1) The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II : Scope of Works and Technical Specifications

but reasonably imply and necessary for completion of the job as a whole all as desired and as directed by the engineer.

- 2) The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.
- 3) All Construction and building related materials shall be purchased from the Customer / EIL approved manufactures only.

2.0.08 ALSO INCLUDED IN THE SCOPE

Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the "Schedule of items" shall include but not be limited to the following.

- 1) Furnishing all labour, materials, supervision, construction plans, equipment, supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.
- 2) Furnishing samples of all materials required by the engineers for testing/inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.
- 3) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- 4) Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that is required for all works including temporary works.
- 5) Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
- 6) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

2.0.09 WORKS BY OTHERS

No work under the specification will be provided by any agency other than the contractor unless specifically mentioned elsewhere in the contract.

TECHNICAL SPECIFICATION & DRAWINGS FOR INFORMATION.

SECTION DESCRIPTION

1) SECTION – A LIST OF TECHNICAL SPECIFICATIONS

NOTE:

Contractor has to make himself well conversant with the Customer specification. In case of ambiguity between BHEL and customer specification, customer specification shall prevail.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II : Scope of Works and Technical Specifications

2.0.010 PREAMBLE FOR THE SCHEDULE OF QUANTITIES/BOQ.

- 1) Details of the items in this Schedule shall be read in conjunction with the Corresponding EIL / OPaL specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
- 2) The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions, Drawings enclosed with these documents are only indicative giving some idea of the type of work involved. The layout, sizes and details of the building, structures and foundations shown in tender drawings may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and levelling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, from existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The overall variation in contract value on execution shall be dealt as per GCC. Contractor has to obtain prior approval of BHEL/EIL before procurement of bought out items/ building materials including Cement.
- 8) Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.
- 9) Engineer's decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 10) In case of any discrepancy between item description, relevant drawing and/or specification Clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II : Scope of Works and Technical Specifications

2.0.011 HIERARCHY

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- 1) Statutory Regulations
- 2) EIL / OPaL specification
- 3) Items in Schedule of quantities
- 4) IS/BS standards
- 5) BHEL's standard specification (with prior approval of Engineer-in-charge).

2.0.2 Other Related Activities:

- 1. Construction power of adequate capacity shall be provided by Contractor.**
- 2. Construction water of adequate capacity shall be provided by Contractor.**

2.0.3 Field Quality Assurance:

The contractor shall be responsible for day-to-day quality checks of cement, sand, clamps, pins and sand stone and other building materials during the progress of work. All quality records and log sheets shall be maintained as per the requirement of BHEL/BHEL'S customer and as per field quality plan approved by **BHEL/OPAL**. For this, contractor shall either establish his own field quality lab or have tie-up with approved lab by BHEL in/outside of the plant.

2.0.10 PROCUREMENT OF MATERIALS BY SUCCESSFUL CONTRACTORS AND TESTING:

Material required for the entire job (other than issued by BHEL as explained above) like VERMICULITE reinforcement mesh (3mm thick wire, 50x50 size mesh) , nuts, tie wires,etc to be arranged by the contractor, except those specifically indicated as BHEL scope of supply. BHEL reserves the right to reject any material not found satisfactory.

Contractor shall produce manufacturer's test certificate (*MTC*) for VERMICULITE for every batch of manufacturing along with each consignment brought to the site. VERMICULITE shall be procured from fresh stock only. Apart from the above, it shall be the responsibility of contractor to get the testing of cement, or any other materials procured from outside laboratory approved by **BHEL/OPAL** to ascertain the quality if insisted by **BHEL/BHEL's customer**.

Rate quoted shall be inclusive of all such contingencies and no additional payment shall be made on this account. For this purpose, sample shall be collected at site in presence of **BHEL/BHEL customer's** representative. **The variation in price of all the plant materials supplied by the contractor shall be not subjected to the relevant price variation clause (PVC).**

Bidders are requested to specifically note the following:

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - II : Scope of Works and Technical Specifications

*Bidders are requested to have **pre-bid visit/ inspection of site** to make them fully acquainted with the site situation & nature of job. No claim shall be entertained at later date on account of non-familiarization of site condition. Bidders may fix up their site visit in consultation with construction manager BHEL site office OPAL, DAHEJ. Name, address & contact point of site is as below:*

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1	PART I ESTABLISHMENT			
3.1.1	FOR CONSTRUCTION PURPOSE:			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with owner
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with owner
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Fire fighting equipments like buckets, extinguishers etc		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
a	Open space for labour colony (as per availability)		Yes	Contractor has to make his own arrangements for space, shelter and transportation of labours as per their requirement.
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2.0	ELECTRICITY			
3.2.1	Electricity for construction purposes 3 Phase 415/440 V (To be specified whether chargeable or free)			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
a	Single point source	Yes		Chargeable .Contractor has to make his own arrangements for Power / Electricity as per the requirement to complete the job within the scheduled time as given in the contract.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.2	<i>Electricity for the office, stores, canteen etc of the bidder.</i>			Contractor has to make his own arrangement.
a	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	<i>Electricity for living accommodation of the bidder's staff, engineers, supervisors etc</i>		Yes	Contractor has to make his own arrangement.
a	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.3.0	<i>WATER SUPPLY</i>			
3.3.1	<i>For construction purposes: (to be specified whether chargeable or free)</i>			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

SI.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
	PART I			
a	Making the water available at single point		yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	Contractor has to make his own arrangement.
3.3.2	<i>Water supply for bidder's office, stores, canteen etc</i>			
a	Making the water available at single point		Yes	Contractor has to make his own arrangement.
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	<i>Water supply for Living Purpose</i>			Contractor has to make his own arrangement.
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4.0	<i>LIGHTING</i>			
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	
c	Providing the necessary consumables like bulbs, switches, etc during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
a	Téléphone, fax, internet, intranet, e-mail etc		Yes	
3.6.0	COMPRESSED AIR wherever required for the work		Yes	
3.7.0	Demobilization of all the above facilities		YES	
3.8.0	TRANSPORTATION			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

SI.No	Description PART II	Scope / to be taken care by		Remarks
		BHEL	Bidder	
	3.9.0 ERECTION FACILITIES			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

SI.No	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.9.1	Engineering works for construction:			NOT APPLICABLE
a	Providing the erection/constructions drawings for all the equipments covered under this scope	Yes		For Details Pl refer Chapter-IX-
b	Drawings for construction methods	Yes	Yes	In consultation with BHEL
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	Changes are to be marked in drawing & handover to BHEL on completion of work.
d	Shipping lists etc for reference and planning the activities			NOT APPLICABLE
e	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on SI No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on SI No. g		Yes	In consultation with BHEL

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III : Facilities in the scope of Contractor/BHEL

SI.No	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
i	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done every month		Yes	
j	Preparation of preassembly bay			NOT APPLICABLE
k	Laying of racks for gantry crane if provided by BHEL or brought by the contractor/bidder himself			NOT APPLICABLE
L	Arranging the materials required for preassembly			NOT APPLICABLE

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IV : T&Ps AND MME TO BE DEPLOYED BY CONTRACTOR

A: TOOL & PLANTS

SN	DESCRIPTION																								
1	<p>(a) T &Ps FOR STRUCTURAL WORKS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">SL</th> <th style="text-align: center;">Major T&P items</th> <th style="text-align: center;">Qty</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Spray concrete machine</td> <td style="text-align: center;">2 nos</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Compressor hopper mounted</td> <td style="text-align: center;">01Nos.</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>drill machine</td> <td style="text-align: center;">01 Nos</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>Welding m/c</td> <td style="text-align: center;">1Nos.</td> </tr> <tr> <td style="text-align: center;">5.</td> <td>Grinding machine</td> <td style="text-align: center;">2 Nos.</td> </tr> <tr> <td style="text-align: center;">6.</td> <td>Leveling Plate</td> <td style="text-align: center;">2Nos.</td> </tr> <tr> <td style="text-align: center;">7.</td> <td>Scaffolding/Staging with access ladders</td> <td style="text-align: center;">As per Site requirement</td> </tr> </tbody> </table> <p>Bidder must submit T&P deployment plan inclusive of above T&Ps as per format Annex – VII</p>	SL	Major T&P items	Qty	1.	Spray concrete machine	2 nos	2.	Compressor hopper mounted	01Nos.	3.	drill machine	01 Nos	4.	Welding m/c	1Nos.	5.	Grinding machine	2 Nos.	6.	Leveling Plate	2Nos.	7.	Scaffolding/Staging with access ladders	As per Site requirement
SL	Major T&P items	Qty																							
1.	Spray concrete machine	2 nos																							
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5.	Grinding machine	2 Nos.																							
6.	Leveling Plate	2Nos.																							
7.	Scaffolding/Staging with access ladders	As per Site requirement																							

B: MEASURING AND MONITORING DEVICES (MMD):

AS PER REQUIREMENT TO BE FINALIZED AT SITE.

NOTE:

This above list is only indicative and neither exhaustive nor limiting. Quantities indicated above are only the minimum required. Contractor shall deploy all necessary T&P to meet the schedules & as prescribed by **BHEL engineer** and required for completion of work.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – V: T&Ps and MMEs to be deployed by BHEL on sharing
basis

BHEL WILL NOT PROVIDE ANY T & P's FOR THIS WORK

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: Time Schedule

6.1 TIME SCHEDULE & MOBILIZATION

6.1.1 INITIAL MOBILIZATION AND TENTATIVE SCHEDULE

Contractor shall reach site, make his site establishment and be ready to commence the work **within one weeks from the date of fax Letter of Intent** or as per directions of Construction Manager/ Project Manager of BHEL.

The contractor has to subsequently augment his resources in such a manner that the entire works are completed within the contract period of 3 (Three) months in a manner required by BHEL to match with the project schedule. This Period shall also include time required for finishing works such as polishing and rectification of pending damaged stones as may be observed.

THE OVERALL CONTRACT PERIOD SHALL BE 3 (Three) MONTHS.

6.1.2

In order to meet above schedule and other intermediate targets/activities as set by **BHEL engineer in charge** at site, to meet customer requirements/project schedule, contractor shall arrange all necessary resources and work force in consultation with bhel engineer at site to undertake works concurrently in all possible fronts as made available to contractor.

Contractor shall note that individual milestones as above shall be achieved as per schedule furnished above. The date of start of will be two week from LOI be reckoned as the start of contract period for this purpose.

The contractor shall reach site and establish his site office and mobilize necessary resources well in advance of actual commencement of the contract time schedule as per directions of bhel engineer.

The contractor shall complete all the work in the scope of this contract within the contract period.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

7.00 TERMS OF PAYMENT

7.0.1

THE CONTRACTOR SHALL SUBMIT HIS MONTHLY ON ACCOUNT BILLS WITH ALL THE DETAILS REQUIRED BY BHEL ON SPECIFIED DATE EVERY MONTH COVERING PROGRESS OF WORK IN ALL RESPECTS AND AREAS FROM THE 25TH OF PREVIOUS CALENDAR MONTH TO 24TH OF THE CURRENT MONTH.

7.0.2

GENERAL CONDITIONS OF CONTRACT SHALL BE REFERRED TO AS REGARDS MODE OF PAYMENT, AND MEASUREMENT OF THE WORK COMPLETED.

7.0.3

RELEASE OF PAYMENT IN EACH RUNNING BILL WILL BE RESTRICTED TO **95% OF THE VALUE OF WORK ADMITTED**, AS PER THE PERCENTAGE BREAK-UP FOR THE STAGE OF WORK COMPLETION STIPULATED VIDE CLAUSES HEREINAFTER.

THE 5% RETENTION AMOUNT SHALL BE RELEASED AS PER GCC CLAUSE NO. 2.22. THE WORKMANSHIP GUARANTEE PERIOD FOR THIS CONTRACT SHALL BE 12 MONTHS FROM THE DATE OF COMPLETION OF ENTIRE WORK AS CERTIFIED BY BHEL

7.0.4

THE PAYMENT FOR RUNNING BILLS WILL NORMALLY BE RELEASED WITHIN AROUND 30 DAYS OF SUBMISSION OF RUNNING BILL WITH MEASUREMENT SHEETS. CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENT FOR MAKING PAYMENT OF IMPENDING LABOUR WAGES AND OTHER DUES IN THE MEANWHILE.

7.0.5

BHEL WILL RELEASE PAYMENT THROUGH **ELECTRONIC FUND TRANSFER (EFT)/RTGS**. IN ORDER TO IMPLEMENT THIS SYSTEM, THE FOLLOWING DETAILS ARE TO BE FURNISHED BY THE CONTRACTOR PERTAINING TO HIS BANK ACCOUNTS WHERE PROCEEDS WILL BE TRANSFERRED THROUGH **BHEL'S BANKER**:

Name of the Company

Name of Bank

Name of Bank Branch

City/Place

Account Number

Account type

IFSC code of the Bank Branch

MICR Code of the Bank Branch

BHEL MAY ALSO CHOOSE TO RELEASE PAYMENT BY OTHER ALTERNATIVE MODES AS SUITABLE.

7.0.6 PROGRESSIVE PAYMENT FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORK.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

THE PERCENTAGE OF PAYMENT FOR PROGRESSIVE COMPLETION OF WORK IN VARIOUS CATEGORIES OF WORK SHALL BE AS UNDER:

7.0.7 CIVIL AND ARCHITECTURAL WORK

100% OF ITEM RATE ON PRO-RATA BASIS AGAINST MONTHLY RA BILLS.

7.0.8 EXTRA/ADDITIONAL ITEMS OF WORK:-

As Per GCC.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

8.0 TAXES, DUTIES, LEVIES (Consolidated Rev 03 dated 09/04/2013)

8.1. For All types of works excepting works covered under sl no 8.2

8.1.1

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

However, provisions regarding Service Tax and Value Added Tax (VAT) on output services and goods shall be as per following clauses.

8.1.2 Service Tax & Cess on Service Tax

Contractor's price/rates shall be exclusive of Service Tax and Cess on Services. In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service Tax & Cess from BHEL and pay the same to the concerned tax authorities, such applicable amount will be paid by BHEL at the prevailing Service Tax Rate (presently 12.36 %) on the admitted bill value.

Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract. Contractor shall submit serially numbered Service Tax and Cess Invoice, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely,

- 1. The name, address and the registration number of the contractor,**
- 2. The name and address of the party receiving taxable service,**
- 3. Description, classification and value of taxable service provided and,**
- 4. The service tax payable thereon.**

All the Four conditions shall be fulfilled in the invoice before release of service tax payment.

Wherever, more than one route/option are available for discharge of service tax liability under a particular service, (e.g. "works contract Service"), contractor shall obtain prior written consent from BHEL site before billing the amount towards Service Tax.

8.1.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT)/CST on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be inclusive of the same and in no case input or output VAT/CST will be reimbursed extra.

In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. Contractor will submit all the details of VAT/CST paid for the contract in the prescribed format of the respective state VAT laws. Also, the

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

contractor will issue the tax Invoices to BHEL as per the Tax laws of respective state on monthly basis. Contractor shall also be required to furnish to BHEL necessary proof of VAT remittance on monthly basis.

Deduction of tax at source shall be made as per the provisions of law and is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made.

Further, if BHEL, at the instance of customer or otherwise adopts the specific route for discharging output VAT liability itself, benefit of the reduction in liability of the contractor will be passed on to BHEL.

In case, BHEL is forced to pay any VAT liability on behalf of contractor, the same will be recovered from contractor's bill or otherwise as deemed fit

8.2 'Enabling Works'

~~The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit. (i.e. rates quoted by bidder shall be inclusive of Service Tax, VAT/WCT and all other taxes and duties)~~

~~However, Since the proposed work is in the nature of 'Works Contract service' as per Service tax law, Hence, For non-corporate contractors being Individual, HUF, Proprietary Firm, Partnership Firm or Association of Persons (AOP), BHEL shall recover the applicable Service Tax under reverse charge mechanism from the contractor and remit the same with the Government as per the provisions of Law. Necessary advice/confirmation of remittance shall be issued to the contractor. The contractor shall not be eligible for any refund/reimbursement of such service tax from BHEL. It shall be the responsibility of the contractor to submit proper invoice giving all the requisite details as per Service Tax Law for the determination of the service tax liability of BHEL under reverse charge mechanism. BHEL reserves the right to determine such liability based on the invoice submitted by the contractor or otherwise independently and remittance of the same with the Government.~~

8.3 New Taxes/Levies

In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual.

In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same **before opening of Price Bid**. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid.

SPECIAL CONDITIONS OF CONTRACT (SCC)
CHAPTER IX –DRAWINGS

Drawings are attached.

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तकनीकी विनिर्देशन
सिविल एवं संरचनात्मक कार्य

**TECHNICAL SPECIFICATION
CIVIL & STRUCTURAL WORKS**

इस्पात के आलंबों का अग्निरोधन

**FIRE PROOFING
OF STEEL STRUCTURES**

REV.	DATE	REVISIONS	BY	CHECKED	CONVENOR	CHAIRMAN(S.B.)
5	02.05.01	UPDATED AND REISSUED AS SPECIFICATION	RPM	SKP	SCJ	A SONI
4	14.10.98	UPDATED AND ISSUED AS SPECIFICATION	RKB	SKPURI	SCJAIN	A SONI
3	19.11.91	ISSUED AS SPECIFICATION	-	GPL	-	-
2	16.7.86	ISSUED AS SPECIFICATION	-	KCK	-	-
1	30.01.86	ISSUED AS SPECIFICATION	-	KCK	-	-



ENGINEERS INDIA LIMITED
NEW DELHI

**FIRE PROOFING OF STEEL
STRUCTURES**

SPECIFICATION

REV.

6-68-0033

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- 1.0 SCOPE
- 2.0 MATERIALS
- 3.0 SURFACE PREPARATION
- 4.0 APPLICATION
- 5.0 APPROACH, WORKING PLATFORMS, SCAFFOLDING & FORMWORK
- 6.0 SPECIFIC REQUIREMENT
- 7.0 FINISHING AND JOINT SEALING
- 8.0 TESTS
- 9.0 PAYMENT
- 10.0 REFERENCES



ENGINEERS INDIA LIMITED
NEW DELHI

**FIRE PROOFING OF STEEL
STRUCTURES**

SPECIFICATION

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REV.

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1.0 SCOPE

This specification covers the general requirements of materials and the method of application for external protection of structural steel members, vessel/column skirts, saddles and supports against fire by shotcreting, in-situ concrete or vermiculite cementitious coating.

2.0 MATERIALS

All materials to be used shall conform to the requirements of respective BIS codes. Samples and test results for all materials shall be submitted to the Engineer-in-Charge and got approved by him in writing before execution of work. Acceptance criteria of commonly used materials is given below:

2.1 Cement

The cement used shall conform to either of the following BIS codes:

33 Grade ordinary Portland cement conforming to IS:269.

Portland slag cement conforming to IS:455.

Portland pozzolana cement (fly ash based) conforming to IS:1489 (Part-I).

43 Grade ordinary Portland cement conforming to IS:8112.

Fireproofing for all structures in and around Sulphur handling units shall necessarily be using sulphate resisting Portland cement conforming to IS:12330.

2.2 Aggregate

2.2.1 Sand

Sand shall comply with the requirements of IS:383 and graded evenly from fine to coarse as per Zone II and Zone III. Sand of Zone IV shall not be used.

2.2.2 Coarse Aggregate

Coarse aggregate shall comply with the requirements of IS:383. Maximum size of aggregate shall be 10mm. The grading of aggregates shall be as per IS:383.

2.3 Water

Water used shall conform to the requirements of IS:456.

2.4 Admixture

Admixture shall conform to IS:9103. This shall be mixed with concrete strictly as per manufacturer's recommendation and shall also meet the requirements of IS:456.

2.5 Vermiculite Cementitious Coating

Branded product with base as Vermiculite and mixed with ordinary Portland cement shall have a maximum loose dry density of 400kg/m^3 ; while in moulded condition, density shall not exceed 800kg/m^3 . Sulphate content in the branded product shall not exceed 1% when the sulphate content is expressed as sulphur trioxide.



ENGINEERS INDIA LIMITED
NEW DELHI

FIRE PROOFING OF STEEL
STRUCTURES

SPECIFICATION

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2.6 Expanded Metal Steel Sheet

Expanded metal steel sheets shall conform to IS:412 and shall be of an approved type. Size of the mesh shall be 10mmx40mm with strands of 2.5mm width and 1.0mm thickness.

2.7 Reinforcement

Welded wire fabric to be used as reinforcement, shall conform to IS:1566 and shall be of approved type. Mesh size shall be 50mmx50mm and thickness of wire shall be 3mm.

2.8 Attachments

- (a) Tie Wire:
Tie wires shall be of mild steel, not thinner than 16 SWG .
- (b) Nuts:
Nuts shall be made of mild steel and shall conform to IS:1367 and IS:2585.
- (c) Cover plates:
Cover plates shall conform to IS:2062 Grade-A.
- (d) Bitumen mastic flashing
Bitumen mastic flashing shall conform to IS:3037.

3.0 SURFACE PREPARATION

3.1 Surface cleaning

All steel surfaces to be in contact with the fire proofing coating material, shall be cleaned of all oil, grease, loose rust, scales and dust by using wire brushing and washing using detergents.

3.2 Welding of nuts and application of primer

Nuts of M16 bolts shall be welded with all the steel members to be fire proofed. Maximum spacing of nuts shall be 400mm centre to centre in both directions. Nuts shall not be welded to the vessel supports/skirts (to be welded by vessel fabricator); unless directed by Engineer-in-Charge. Primer paint shall be applied to the MS nuts and affected surfaces of the members due to welding after proper cleaning. Primer paint shall be compatible with the primer already applied to the steel members.

3.3 Fixing of expanded metal steel sheet

Expanded metal steel sheet shall only be used for built up sections, consisting of two members spaced apart. This shall be kept in position true to line and face, and shall be attached firmly to structural steel member by tack welding or with the help of clips and 16 SWG tying wire at 300mm centre to centre. Minimum lap of 75mm shall be provided wherever required, however laps shall be avoided at bends. Strands of the expanded metal steel sheet shall slope inwards & downwards.

3.4 Placement of reinforcement

Reinforcement shall be placed in the middle of coated material thickness. It shall be bent confirming with outlines of finished encasement and rigidly secured in place by tie wire with all the nuts. Minimum lap at ends and sides shall be 100mm and lapped wire fabric shall be tied firmly.



3.5 Cover plate

Cover plates shall be welded to the top flange of the beams if top edges of fire proofing are not protected with bitumen mastic flashing .

4.0 APPLICATION

- 4.1 Application of fire proofing material coating shall be carried out by skilled and experienced operators.
- 4.2 Before start of application, pipes and equipments in the vicinity shall be covered with polythene/tarpaulin to protect them against damage. Open end of pipes shall be covered with wooden plugs or with other suitable shielding materials.
- 4.3 Steel sections upto and including 300mm depth, shall be coated by solid fill while sections more than 300mm shall be coated in the shape of profile of sections as shown in sketches. For vessel skirts , columns and saddles of horizontal vessels, the coating material shall be applied in horizontal bands working upwards from the bottom of the skirt or column / saddle base plate. All outside edges of the fire proofing shall be chamfered by 20mm except for shotcreting, corners shall be rounded.
- 4.4 Thickness of fire proof coating shall be established by providing ground wires both in vertical and horizontal directions. Ground wires shall be tight and true to line, and placed in such a manner that they can be further tightened if required.
- 4.5 The fire proofing material , after application, shall be cured by keeping it in moist condition for a period of at least 14 days or else the surface shall be coated with a membrane of approved curing compound. Brand name, name of manufacturer, test results and method of application shall be submitted to and got approved from the Engineer-in-Charge prior to procurement of curing compound.

5.0 APPROACH, WORKING PLATFORM, SCAFFOLDING & FORM WORK

- 5.1 The Contractor shall arrange all approaches, scaffolding, stair ways, ladder, working platform etc, for carrying out the entire works safely. The working area shall be neatly maintained and all the facilities required by Engineer-in-Charge for proper supervision of the work shall be provided. In case, any special precaution is needed for the safety of the structure till the completion of application, the Contractor shall make and provide all such arrangement to the complete satisfaction of the Engineer-in-Charge and shall remove the same after completion of works.
- 5.2 Form work wherever required shall be of Plywood Sheeting. It shall be adequately supported and braced to protect against deformation on account of vibration during the application. Forms shall be oiled, dampened and cleaned before use. All other specifications pertaining to the form work shall be as per specification 6-68-04.

6.0 SPECIFIC REQUIREMENT

6.1 Fireproofing by shotcreting

- 6.1.1 Material, equipment and method of application shall be in accordance with EIL specification no 6-68-0055 as well as with the foregoing clauses 2.0 to 5.0.
- 6.1.2 Thickness of concrete coating over the steel shall be 50mm.

6.2 Fireproofing by in-situ concrete



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6.2.1 Concrete for fireproofing shall be of M20 grade (nominal mix). Mixing and placing shall be done as per EIL specification no. 6-68-0004.

6.2.2 Thickness of concrete coating over the steel shall be minimum 50mm.

6.2.3 Concrete shall be poured into well made forms properly oiled and made to correct dimensions. Concrete shall be vibrated as necessary to ensure smooth surface, free from voids and irregularities. Any defects, honeycomb etc shall be made good by contractor at his own cost.

6.3 Vermiculite cementitious coating

6.3.1 Design requirement

- a) Vermiculite cementitious coating shall restrict the temperature of a vessel/structure, below the maximum permissible temperature of 427°C for vessel supports & skirts and 550°C for structural steel members respectively, for a minimum time period of 2 hours. The material shall not fail till the end of the specified period.
- b) The coating shall be non corrosive to the steel members & shall not be affected by environmental conditions, whether natural or from local leaks, spillage or pollution. It shall also be asbestos free.
- c) The coating shall be able to withstand both thermal shock and impingement of water from fire hoses and/or monitors.
- d) The coating material shall be durable and easily repairable.
- e) Application procedure of the coating shall be easy, non hazardous and also shall not interfere with the working of the adjoining areas.
- f) The contractor shall submit calculations of coating thickness for all structural steel sections to be fire proofed; for review/approval of the Engineer-in-Charge for the branded product but in no case thickness of coating shall be less than 40mm.

6.3.2 Application

- a) Vermiculite cementitious coating shall be mixed with water on a clean platform or in a clean mixing box or in a suitable mixer as per manufacturer's specifications. Water cement ratio shall be adjusted so that vermiculite cementitious coating adheres properly to steel surface and does not sag or slide upon application.
- b) Primer compatible with the vermiculite cement coating as recommended by the manufacturer's shall be applied over the steel surface after cleaning the shop primer if required as per the manufacturer's specifications.
- c) Mixed vermiculite cementitious coating shall generally be applied, over the steel surface, with the help of spray gun except for small areas and inaccessible location, where application with conventional hand tools shall be permitted. Mixed vermiculite shall be used within the pot life specified by the manufacturer. Under no circumstances rebound material shall be used.
- d) The full specified thickness shall be developed in three successive coats.
 - Rendering coat thickness between 8mm to 12mm

- Floating coat thickness between 18mm to 22mm to give a total thickness of 30 mm upto the floating coat.
- Finishing coat not less than 8mm thick

Each successive layer shall only be applied after the preceding layer has developed its initial set and is also properly scratched with steel brush to develop proper bond. If the application is interrupted and does not satisfy successive layers criteria, the coating shall be cut back to the steel surface/proceeding layer with a trowel at an inclined angle. Exposed surface of this coating shall be thoroughly wetted before resuming the work.

- e) Application of mixed vermiculite shall not be carried out if the air temperature or the temperature of the surface to be fire proofed is 4°C or less. Provision shall be made for adequate ventilation during and after application, until the coating is dry.

7.0 FINISHING AND JOINT SEALING

- 7.1 Fire proof coating shall be finished with 2 coats of micro-porous exterior top coat, compatible to cement surfaces, of approved make & colour conforming to IS specifications.
- 7.2 All exposed joints between fire proofing material coating & steel shall be sealed with min. 10mm thick bitumen mastic flashing, when not otherwise shielded.

8.0 TEST

- 8.1 Tests for shotcrete shall be carried out as specified in 6-68-0055.
- 8.2 Tests for cast in situ concrete M20 shall be as specified in 6-68-0004.
- 8.3 The Contractor shall submit the certificate of test results for the vermiculite cementitious coating over structural members from a laboratory, approved by the Engineer-in-Charge, along with the bids. Test shall be performed as per the requirements laid down in UL-1709.

9.0 PAYMENT

- 9.1 Payment shall be made on cubic metre(m³) basis of actually finished work or as calculated from the construction drawings, whichever is less.
- 9.2 The rate quoted shall be inclusive of all labour, material, form work, plant & tools etc. required for the successful and satisfactory completion of work including curing, curing compound, all cleaning operations before and after the work, preparation of the surface as specified, applying the primer coat compatible with the primer already applied over nuts and effected surface of steel surfaces due to welding, finishing the surface smooth, painting the surface with 2 coats of micro-porous exterior top coats & sealing the joints with sealing compounds, providing required access, working platforms, props, scaffolding and other safety measures including their removal after completion.
- 9.3 The rate shall also be inclusive of supplying and fixing of reinforcement with nuts by using tying wire (excluding the cost of expanded metal steel sheets, cover plates, which shall be paid extra) and other required accessories for satisfactory completion of the work as specified and directed.
- 9.4 The rates quoted shall be inclusive of the tests specified and directed to establish the quality and strength of materials.



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10.0 REFERENCES

- 6-68-0004 (Specification for Plain and Reinforced Cement Concrete)
- 6-68-0055 (Specification for Guniting and Shotcreting)



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**FIRE PROOFING OF STEEL
STRUCTURES**

SPECIFICATION

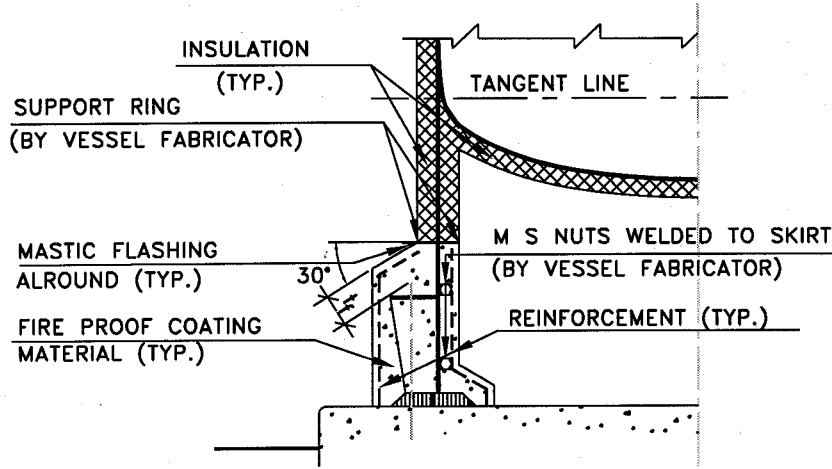
REV.

6-68-0033

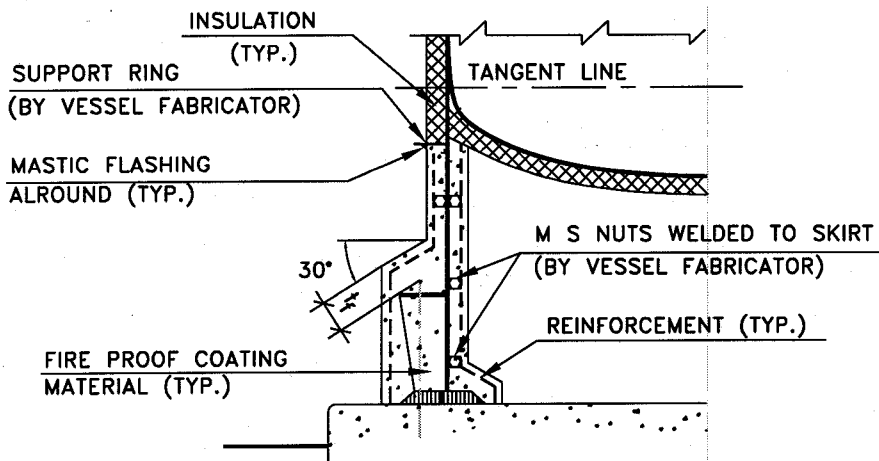
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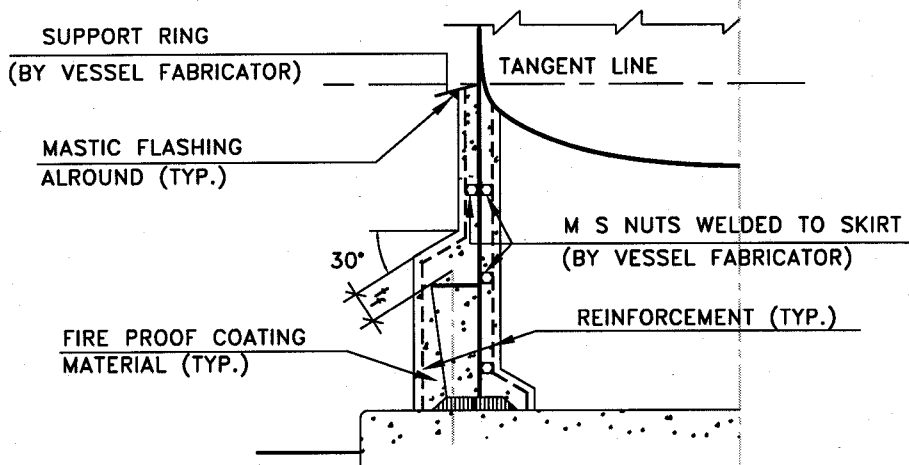
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TYPE-A (INSULATED VESSEL)



TYPE-B (INSULATED VESSEL)



TYPE-C (UNINSULATED VESSEL)

DETAIL OF FIRE PROOFING FOR SKIRTS OF VESSELS

NOTES:-

1. OPENING FOR MANHOLE, VENT PIPES ETC. ARE NOT SHOWN IN THIS DRAWING.
2. t_f = INDICATE THE FIRE PROOFING COATING THICKNESS.



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FIRE PROOFING OF STEEL STRUCTURES

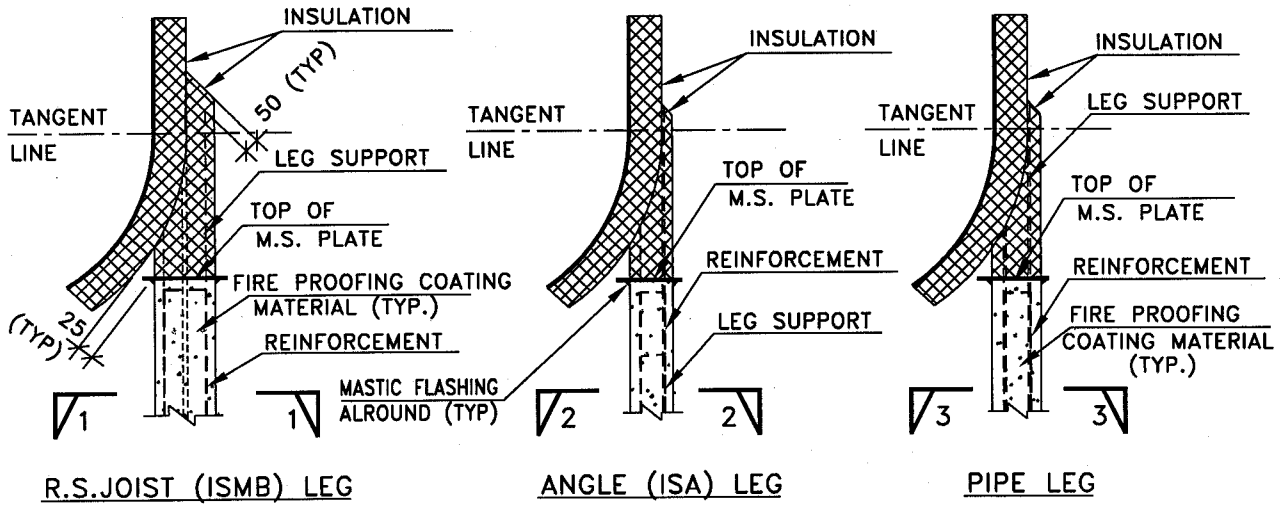
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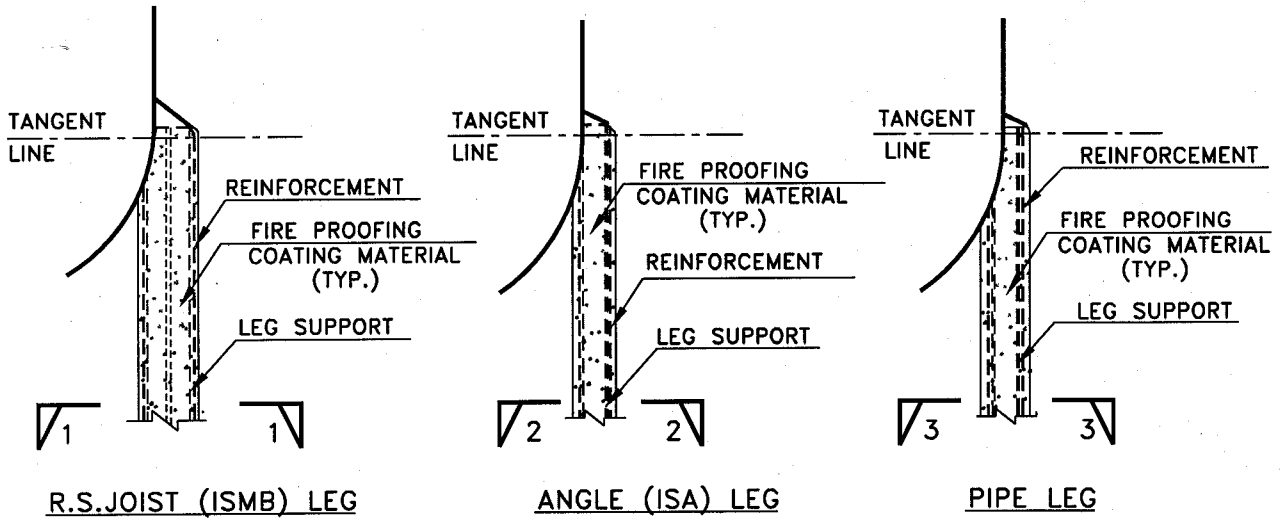
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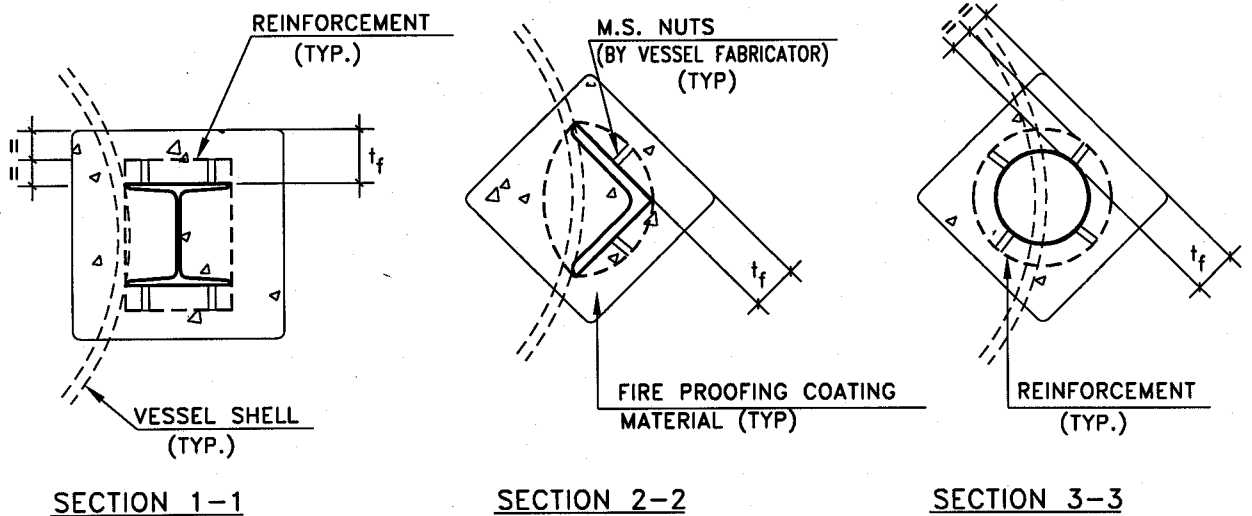
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INSULATED VESSEL WITH LEG SUPPORT



UNINSULATED VESSEL WITH LEG SUPPORT



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FIRE PROOFING OF STEEL
STRUCTURES

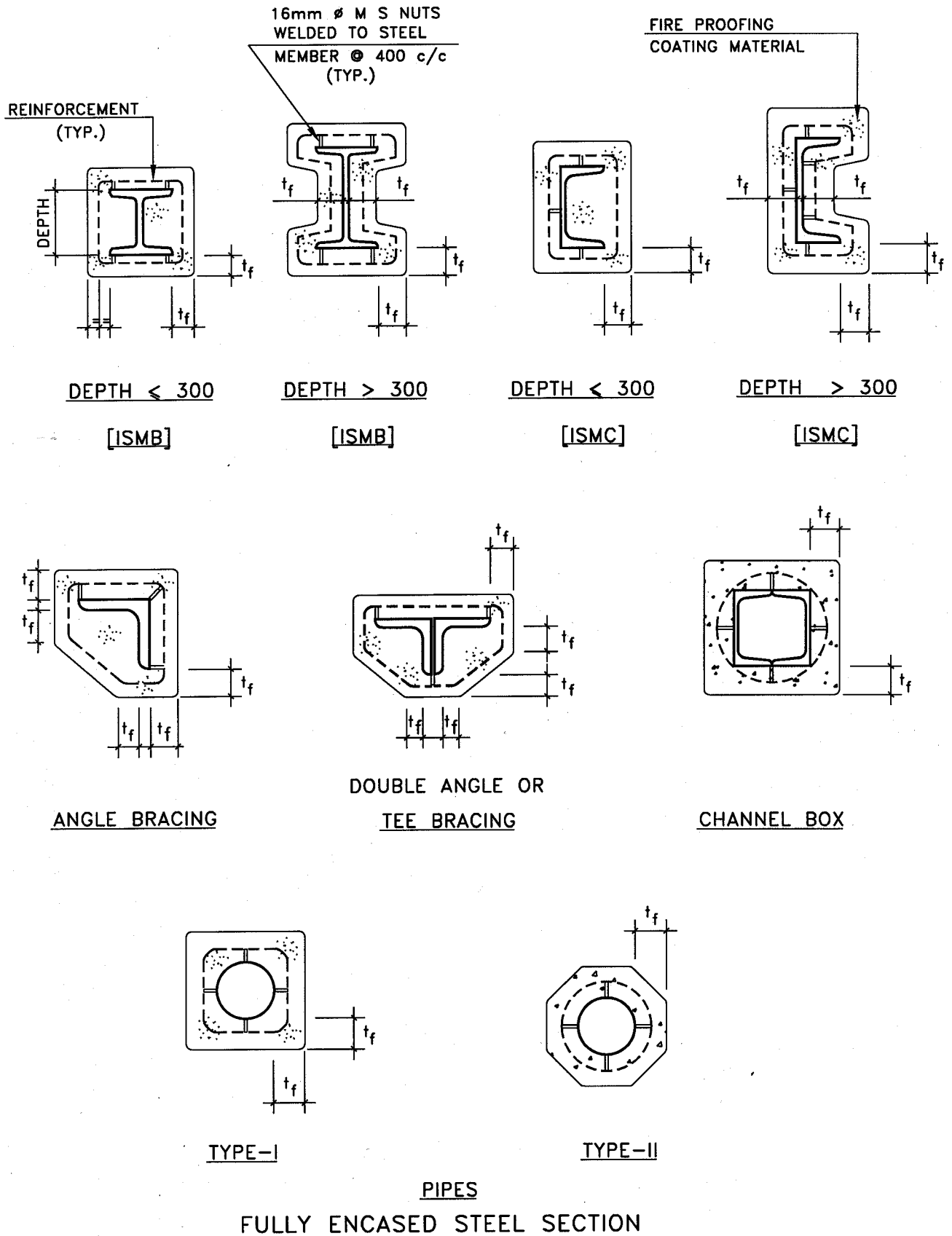
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FIRE PROOFING OF STEEL
STRUCTURES

SPECIFICATION

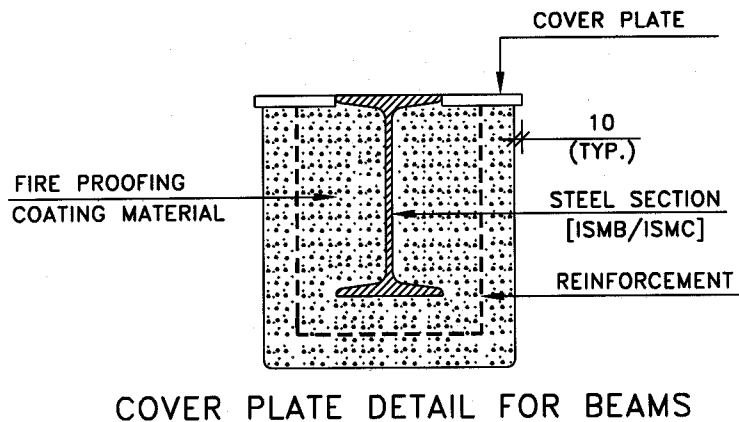
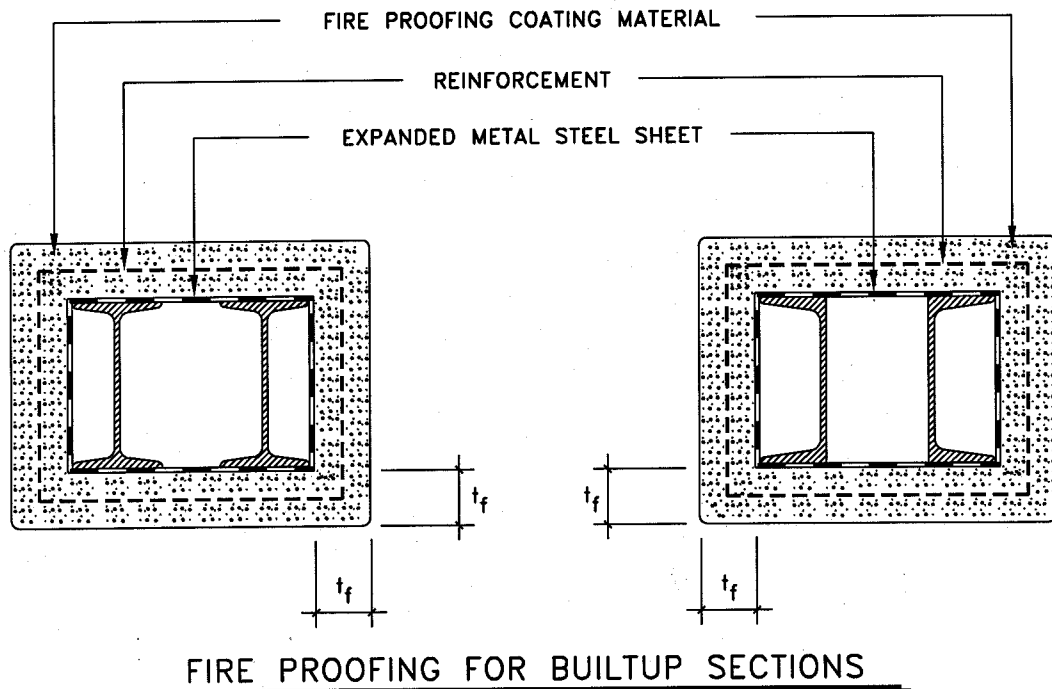
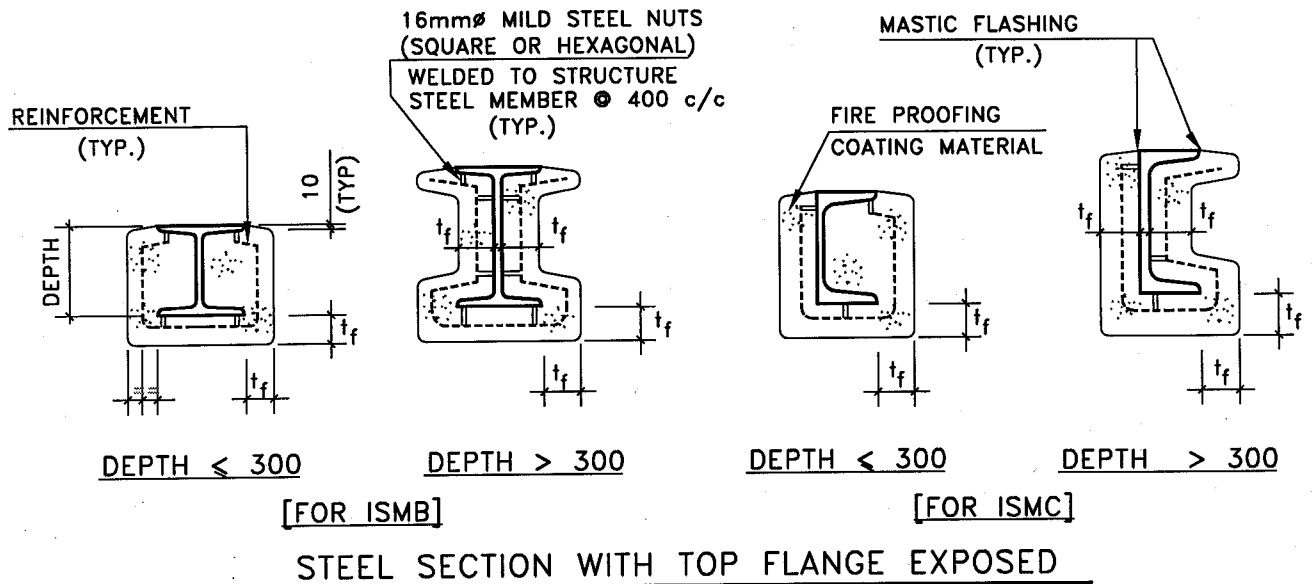
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