

# **TENDER SPECIFICATION**

**NO: BHE/PW/PUR/DHJOI-BAL CVL PKG-I/1272**

## **FOR**

**Providing and laying sand stone cladding on outer Side of Switch  
Gear cum Control Room Building / other structure at all heights**

**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](http://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](http://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-1272 )’. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) separately.

# TENDER SPECIFICATION

**NO: BHE/PW/PUR/DHJOI-BAL CVL PKG-I/1272**

**Providing and laying sand stone cladding on outer Side of Switch Gear cum Control Room Building / other structure at all heights**

**AT**

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

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR TENDER SUBMISSION      Refer Notice Inviting Tender

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 :

1272

# 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	<b>TENDER NUMBER</b>	BHE/PW/PUR/DHJOI-BAL CVL PKG-I/1272
ii	<b>Broad Scope of job</b>	<b>Balance civil works of</b> Providing and laying sand stone cladding on outer Side of Switch Gear cum Control Room Building / other structure at all heights AT 2X30MW STG + 4GTG WITH HRSG + 2 UB AT OPAL, DAHEJ- BHARUCH, GUJARAT.
iii	<b>DETAILS OF TENDER DOCUMENT</b>	
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> <span style="float: right;">Applicable</span>
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i> <span style="float: right;">Applicable</span>
c	Volume-IC	<i>General Conditions of Contract (GCC)</i> <span style="float: right;">Applicable</span>
d	Volume-ID	<i>Forms and Procedures</i>
e	Volume-II	<i>Price Schedule (Absolute value).</i> <span style="float: right;">Applicable</span>
iv	<b>Issue of Tender Documents</b>	<p><b>1. <u>Sale from BHEL PS Regional office at :</u></b> <b>Start : 23/05/2014 ,</b> <b>Closes: 30/05/2014 , Time : 16.00 Hrs</b></p> <p><b>2. From BHEL website (<a href="http://www.bhel.com">www.bhel.com</a>)</b> Tender documents will be available for downloading from website till due date of submission</p> <span style="float: right;">Applicable/ Not applicable</span>
v	<b>DUE DATE &amp; TIME OF OFFER SUBMISSION</b>	<p><b>Date : 02/06/2014, Time 15.00 Hrs</b> <b>Place : <u>BHEL PS Regional office at :Nagpur</u></b></p> <p>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: Pratish Gee Varghese/Sr Engineer(Purchase Shivkesh Meena / Engineer (Purchase)</p> <span style="float: right;">Applicable</span>

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vi	<b>OPENING OF TENDER</b>	<b>1 hours after the latest due date and time of Offer submission</b> 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	<b>EMD AMOUNT</b>	Rs 2.00 Lakhs (Rupees Two Lakhs Only)	Applicable
viii	<b>COST OF TENDER</b>	Rs 2000/-.	Applicable
ix	<b>LAST DATE FOR SEEKING CLARIFICATION</b>	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	<b>SCHEDULE OF Pre Bid Discussion (PBD)</b>	Date :	Not applicable.
xi	<b>INTEGRITY PACT &amp; DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)</b>		Not Applicable
xii	<b>Latest updates</b>	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage ( <a href="http://www.bhel.com">www.bhel.com</a> -->Tender Notifications →View Corrigendums) <b>and not in the newspapers</b> . 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
<b>Part-I A</b>		
	<b>ENVELOPE – I superscribed as :</b> PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:  <b>CONTAINING THE FOLLOWING:-</b>	
i.	Covering letter/Offer forwarding letter of Tenderer.	
ii.	Duly filled-in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above.  <b>Note:</b> <ol style="list-style-type: none"> <li>a. In case of any deviation, the same should be submitted separately for technical &amp; 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.</li> <li>b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding.               <ol style="list-style-type: none"> <li>i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL</li> <li>ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender</li> </ol> </li> </ol>	
iii.	Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria.  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.	
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.	

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

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<b>CONTAINING THE FOLLOWING:-</b>	
i.	<p>1. Earnest Money Deposit (EMD) in the form as indicated in this Tender <b>OR</b> 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>

<b>PART-II</b>	
<b>PRICE BID</b> consisting of the following shall be enclosed	
<p><b>ENVELOPE-III</b> superscribed as: PART-II (PRICE BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:</p> <p><b>CONTAINING THE FOLLOWING</b></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)

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

**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 ' $T_1$ ' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package  $P_1$ . Similarly  $T_2$  for package  $P_2$ ,  $T_3$  for package  $P_3$ , 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 ' $S_1$ ' of 'Monthly Performance Evaluation' Scores ( $S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, S_{1-5}, \dots, S_{1-N}$  ) for similar package  $P_1$ , for the 'period of assessment' ' $T_1$ ' (i.e  $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots + S_{1-N}$ ). Similarly  $S_2$  for package  $P_2$  for period  $T_2$ ,  $S_3$  for package  $P_3$  for period  $T_3$ , 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 ' $S_T$ ' =  $S_1 + S_2 + S_3 + S_4 + S_5 + \dots + S_N$ .)

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 ( $\Sigma$ ) 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 ( $\Sigma$ ) 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 ( $\Sigma$ ) 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':

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<sub>BHEL</sub>' 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<sub>BHEL</sub> 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<sub>BHEL</sub>) at Power Sector Regions.:

Sl no	Overall Performance Rating (R <sub>BHEL</sub> )	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

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<sub>BHEL</sub>'** 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.

**ANNEXURE - 1**

**PRE QUALIFYING CRITERIA**

JOB	<b>Balance civil works of</b> Providing and laying sand stone cladding on outer Side of Switch Gear cum Control Room Building / other structure at all heights AT 2X30MW STG + 4GTG WITH HRSG + 2 UB AT OPAL, DAHEJ- BHARUCH, GUJARAT.
TENDER NO	BHE/PW/PUR/DHJOI-BAL CVL PKG-I/1272

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	<b><u>Technical</u></b>  Bidder must have successfully executed <b>Civil works including stone works etc.</b> 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 136 Lakhs. <b>OR</b>  ii. Two similar works each of value not less than Rs 85 Lakhs.  <b>OR</b>  iii. Three similar works each of value not less than 68 Lakhs.	APPLICABLE	
C-1	<b><u>Financial TURNOVER</u></b> Bidders must have achieved an average annual financial turnover (Audited) of <b>Rs 51 Lakhs or more</b> 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	<b><u>NETWORTH</u></b> (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	<b>PROFIT</b> 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.	<b>APPLICABLE</b>	
D	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT (if applicable)	<b>APPLICABLE</b>	By BHEL
E	Approval of Customer (if applicable)  <b>Note:</b> 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.	<b>APPLICABLE</b>	BY BHEL
F	Price Bid Opening <b>Note:</b> Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E	<b>APPLICABLE</b>	BY BHEL
F	Technical Tie up criteria (if applicable)	<b>NOT APPLICABLE</b>	
<p><b><u>Explanatory Notes for the PQR (unless otherwise specified in the PQR):</u></b></p> <ol style="list-style-type: none"> <li>1. 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</li> <li>2. 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.</li> <li>3. 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)</li> <li>4. 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</li> <li>5. '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"> <li>1. Bidder should have executed similar work of any one of the following:-                 <ol style="list-style-type: none"> <li>a. One (1) work of value not less than Rs XXX OR</li> <li>b. Two (2) works of not less than Rs YYY OR</li> <li>c. Three (3) works of not less than Rs ZZZ (Value XXX, YYY, ZZZ shall be as indicated by BHEL</li> </ol> </li> <li>2. 'Similar' work for criteria 5 above means                 <ol style="list-style-type: none"> <li>a. Civil or Structures or Civil &amp; Structures or Chimney respectively as applicable to the tendered scope in respect of 'CIVIL' Works</li> <li>b. Electrical works in respect of 'ELECTRICAL'</li> <li>c. CI works in respect of 'CI' Works</li> <li>d. Material Handling and/or Management works in respect of 'MM' works</li> </ol> </li> </ol> </li> <li>6. 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</li> <li>7. '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</li> <li>8. Unless otherwise specified, for the purpose of 'Technical' criteria of PQR ( as in 'B' above), the word 'EXECUTED' means:</li> </ol>			

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	<ol style="list-style-type: none"><li>1. "BOILER LIGHT UP" in respect of Boiler &amp; Aux and ESP</li><li>2. "SYNCHRONISATION" in respect of STG/GTG and 'SPINNING' in case of HTG</li><li>3. "STEAM BLOWING COMPLETION" in respect of at least Main Steam Line of Power Cycle Piping</li><li>4. "HYDRAULIC TEST" of the system in respect of Structures, Pressure parts/IBR Piping</li><li>5. "CHARGING" in respect of power Transformers, Bus ducts, HT/LT switchgears</li><li>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.</li><li>7. Achievement of physical Quantities as per respective PQRs in respect of Civil &amp; Structures and Piling Works</li><li>8. "Readiness for coal Filling" in respect of Bunker Structure Work.</li></ol> <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/PO/WO certificate enclosed by bidders do not have separate break up prices for the E&amp;C portion of Electrical and CI Works, (i.e. the certificates enclosed are for composite order for supply and erection of Electrical &amp; CI and other works if any), then value of Erection and Commissioning for the Electrical &amp; CI portion shall be considered as 15% of the supply &amp; erection of Electrical &amp; 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 <b>PRE QUALIFICATION CRITERIA</b> (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/ <del>Not Applicable</del>	YES/NO
8	Copy of PAN Card	Applicable/ <del>Not Applicable</del>	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc are read understood and signed	Applicable/ <del>Not Applicable</del>	YES/NO
10	Integrity Pact	Not Applicable	YES/NO
11	Declaration by Authorised Signatory	Applicable/ <del>Not Applicable</del>	YES/NO
12	No Deviation Certificate	Applicable/ <del>Not Applicable</del>	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/ <del>Not Applicable</del>	YES/NO
14	Declaration for relation in BHEL	Applicable/ <del>Not Applicable</del>	YES/NO

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

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- 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  
6<sup>th</sup>  
JULY

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



# TECHNICAL CONDITIONS OF CONTRACT (TCC) CONTENTS

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<b>SI No</b>	<b>DESCRIPTION</b>	<b>Chapter</b>	<b>No. OF PAGES</b>
<b>Volume-IA</b>	<b>Part-I: Contract specific details</b>		
1	Project Information	Chapter-I	
2	Scope of Works and Technical Specifications	Chapter-II	
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III	
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	
6	Time Schedule	Chapter-VI	
7	Terms of Payment	Chapter-VII	
8	Taxes and other Duties	Chapter-VIII	
9	Tender Drawings	Chapter-IX	

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - I : Project Information

<b>PROJECT INFORMATION</b>				
<b>Project</b>	<b>STEAM AND POWER GENERATION SYSTEM PACKAGE FOR DAHEJ PETOCHEMICAL COMPLEX</b>			
<b>Customer</b>	<b>ONGC PETRO ADDITIONS LIMITED (OPAL)</b>			
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

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### 2.0 SCOPE OF WORK

#### SAND STONE CLADDING

##### 1.0 SCOPE:

- Providing and laying sand stone cladding on Exterior side of Switch Gear cum Control Room Building / other structure at all heights including at projection like chazza, window sill , Rain water encasing columns etc, as per Customer specifications : Clause no.2.7.2 of Document no. 6987-00-16-48-DB01 of Section C 3.6 and CPWD Specifications.
- Providing and installing the suitable scaffolding system consisting of cup lock system/H frame or as suitable with sufficient access ladders as may be required.
- Sand stone of uniform size 450 mm x 600 mm/600 mm x 600 mm shall be machine cut, chisel dressed, rough finished of minimum 25 mm thickness Dholpur stone. Every stone shall be cut to the required size and shape, so as to give truly vertical & horizontal joints.
- Stone panel shall be fixed over plastered surface in true plane and as per desired pattern with 18 mm thick cement mortar 1:5 (1 cement: 5 course sand).
- The desired pattern shall be finalized in consultation with Engineer in charge
- Adjoining stones shall be secured to each other by means of 75 mm long, 6 mm dia copper pins. The stone shall be further secured to backing by means of stainless steel clamp (25 x 6 mm, required length) along with Anchor fastener to take load of tile sufficiently. Number of clamps shall be one to each stone so that it can sufficiently carry the loads. The pins and clamps shall be laid in cement mortar ( 1 cement : 2 fine sand)
- The stone panel shall be provided with continuous MS angle 50 x 50 x6 fixed to the wall/beam/slab etc at the starting level. This support shall preferably be at ground level and other places where there are no provision of supporting the panels, and over all openings.(MS Angle shall be provided by BHEL Free of cost as per requirement)

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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- The joints shall be done with cement mortar 1:5 (1 Cement: 5 Course sand). Thickness of joints shall not exceed 1.5 mm. The joints shall be in straight lines. The joints shall be raked out to a depth of at least 25 mm after cement mortar 1:2(1 cement: 2 sand) mixed with admixture of pigment matching with colour of the stone. The sand stone cladding so completed shall be suitably polished to give a homogenous/finished appearance.

### **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 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.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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- 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.**

### **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,

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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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) Engineers 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.

### **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.

### **2.0.4 Reconciliation of steel issued by BHEL (free of cost):**

#### **2.0.4.1 MATERIAL**

- 1) Steel like as specified in relevant BOQ shall be issued at free of cost by BHEL for use in the work covered in this contract from BHEL stores/store yard. The contractor shall

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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collect these materials from BHEL stores/store yard at specified places at his own cost and store the same at the work site or in his stores as per standard norms. Materials issued will be used only for construction of permanent works.

- 2) BHEL reserves the right to recover from the contractor any loss arising out of damage/theft or any other causes or during verification/stacking or at any time under the custody of the contractor.
- 3) The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However in case of non-availability of any specific section(s) which delays the completion of work, such cases shall be recorded separately during the joint review meeting at site and the shall be considered for time extension of contract.
- 4) No material shall be issued to the contractor except as those indicated and mentioned above i.e structural steel, and MS round earthing rod/GI flats as specified in relevant BOQ. Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
- 5) The contractor shall maintain proper store account for all the BHEL issued materials and shall give **Three (03) copies of monthly-computerized reconciliation statement** of such account showing total receipt, consumption and balance at site to the BHEL. BHEL Engineer's certification for the reconciliation of steel shall be final. The detailed reconciliation (dia. Wise or as required) shall be done **at least once in six months (06) or before submission of final bill which comes earlier.**
- 6) Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.
- 7) The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
- 8) BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.

### **2.0.5 ISSUE OF BHEL MATERIALS**

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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Issue of steel: -The steel shall be issued to the contractor on the following basis:

(A)	Structural Steel, MS Angle , etc	Weighment Basis (unit – MT) / Linear Measurement (section wt. As per relevant IS code)
-----	----------------------------------	--

All the steel (structural,) issued by the BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved, fabrication drawings, approved laps, chairs and lugs. The measurement for payment as well as for accounting shall be based on linear measurements and the sectional weight as indicated in the following IS specifications.

Sl.no	IS code (s)	Description
1	IS: 808-1964	Beams, Channels And Angles

In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding. The steel issued to the contractor shall be mainly in standard length and sections as received from the supplier.

However, the contractor shall be bound to accept the steel in length as available in the project stores no claims for extra payment because of issue of non-standard length will be entertained. In case MS flats as required in the fabrication of structures are not available, the contractor shall cut such width out of the available MS plates to make flats at no extra cost till such material is available and procured by BHEL.

The contractor shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL stores/storage yard. No claims whatsoever will be entertained by BHEL because of quality or quantity after the contractor takes the materials from BHEL stores/storage yard.

The contractor shall submit to the engineer, a statement indicating estimated quantity of steel required during a quarter at least two months in advance of the quarter. In addition, the contractor shall also furnish the **estimated requirement of steel during a month by the third week of the previous month indicating his requirement.** Following shall be limit for the maximum quantity of BHEL issue materials that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).

Sl. No.	Issue of materials	Max. Qty in contractor's store.
1	Structural steel	Requirement of one month

**Bidders to ensure that no lamination materials are taken over by them from BHEL stores. Fabrication wastage, if any due to above, shall not be compensated by BHEL.**

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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Bidder to note that all fasteners like MS/HT/HSFG bolts/Nuts, Lock Nuts, Washers etc shall be supplied by the bidder as per relevant items of BOQ.

Bidder to note that cement and steel required for their enabling job like store/site office etc shall be arranged at his own cost.

### 2.0.6 RETURN OF MATERIALS:

#### Return of steel:-

All surplus steel and all wastage materials will be taken back on weighment basis. However linear measurements shall also be acceptable for unused / full size materials.

Surplus, unused and un-tampered steel shall be sorted in section-wise and returned separately for a place directed by BHEL/engineer within the project area, return of such materials will not be entitled to any handling and incidental charges.

All wastage / scrap (including melting scrap, wastage, and unusable scrap) shall be returned item wise to the stores and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any additional cost due handling and transportation and incidental charge.

All scrap for (cut pieces) shall be returned separately.

All scrap for structural steel including melting scrap shall be returned separately.

### 2.0.7 STEEL CONSUMPTION AND WASTAGE:-

#### Structural steel, and earthing rod 40 mm MS round steel, GI flats consumption and wastage.

1) The theoretical consumption of various sections and/or diameter of and earthing MS round/GI flats, rails shall be based on approved construction drawing and bar bending schedule. Weight shall be calculated considering/based on linear measurements and the sectional weights as per Indian standards. No extra cost shall be payable to the contractor for any deviation in weights for the different procedures adopted for issue and calculation of the **theoretical consumption including rolling tolerances**. However if rolling margins exceeds the limit stipulated in IS codes, the same shall be considered for reconciliation purpose.

(A) Actual consumption = Issue – Surplus (unused).

(B) Surplus = Un-tampered and unused qty. of steel returned by the contractor to BHEL store along-with relevant documents.

(C) Wastage = Actual consumption – Theoretical consumption.

#### ❖ Wastage of structural steel:

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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Allowable wastage: - plus five percentage (+5%) of the theoretical consumption shall be considered as allowable wastage for both structural steel as well as MS plates. Wastage as further classified as cut pieces/serviceable scrap (pieces of rolled section lengths 3 m and above, MS plate 1.0 m<sup>2</sup> and above with minimum width 200 mm) and scrap/unserviceable (less than above) measured as per actual weighment basis. Invisible wastage (loss of materials due to gas cutting, straightening of edges etc) shall be limited to 0.5% (zero point five percent) of theoretical consumption and shall be considered for reconciliation purposes only. But this invisible wastage shall be considered to be included in allowable wastage (i.e. Five percent).

Sl. No.	Structural Steel & MS plats , Rolled section, plates & SS liner etc	Basis of issue & Penal recovery
S-1	Theoretical consumption (without considering wastage and scrap or loss)	Free
S-2	Wastage limited to plus five percent (+5%) of aforesaid theoretical Consumption (S-1) towards allowable Wastage (cut pieces plus scrap to be Returned to BHEL).	Free
S-3	Wastage beyond five percent (+5%) of the theoretical consumption above (S-1). (Cut pieces plus scrap to be returned to BHEL).	Penal Rate

### **2.0.8 RECONCILIATION OF BHEL ISSUED MATERIALS: -**

- 1) The contractor shall submit a reconciliation statement of steel issued to them with each RA bill. BHEL engineer's certification will be final on this matter.
- 2) At the time of submission of bill(s), the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance materials are available with contractor's custody at site.
- 3) At the time of submission of bills by the contractor, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.
- 4) The approved drawings/bar bending schedules are to be considered for the purpose of reconciliation of materials.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter - II : Scope of Works and Technical Specifications

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### 2.0.9 RECOVERY OF MATERIAL:-

- If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly r/a bill at the penal rate.

#### Penal Rate of Materials

Sl.No	Description	UOM	Penal Rate (in Rs)
B	Structural steel		
1	Flats/ Beams/ Channel/ Angles etc. (rolled sections).	MT	60, 000/-

### 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, Sand Stone cement, sand, aggregates, SS Cramps, Pin, Anchor Fastener 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 cement for every batch of manufacturing along with each consignment brought to the site. Cement 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:**

*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	<b>ESTABLISHMENT</b>			
3.1.1	<b>FOR CONSTRUCTION PURPOSE:</b>			
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	<b>FOR LIVING PURPOSES OF THE BIDDER</b>			
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	<b>ELECTRICITY</b>			
3.2.1	<b>Electricity for construction purposes 3 Phase 415/440 V (To be specified whether chargeable or free)</b>			

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

Sl.No	Description <b>PART I</b>	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	<b><i>Electricity for the office, stores, canteen etc of the bidder.</i></b>			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	<b><i>Electricity for living accommodation of the bidder's staff, engineers, supervisors etc</i></b>		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	<b><i>WATER SUPPLY</i></b>			
3.3.1	<b><i>For construction purposes: (to be specified whether chargeable or free)</i></b>			

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

Sl.No	Description <b>PART I</b>	Scope / to be taken care by		Remarks
		BHEL	Bidder	
a	Making the water available at single point		<b>yes</b>	Contractor has to make his own arrangement.
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	<b><i>Water supply for bidder's office, stores, canteen etc</i></b>			
a	Making the water available at single point		<b>Yes</b>	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	<b><i>Water supply for Living Purpose</i></b>			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	<b><i>LIGHTING</i></b>			
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 <b>PART I</b>	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	<b>COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER</b>			
a	Téléphone, fax, internet, intranet, e-mail etc		Yes	
3.6.0	<b>COMPRESSED AIR wherever required for the work</b>		Yes	
3.7.0	<b>Demobilization of all the above facilities</b>		<b>YES</b>	
3.8.0	<b>TRANSPORTATION</b>			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

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

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

Sl.No	Description <b>PART II</b> <b>3.9.0 ERECTION FACILITIES</b>	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		<b>For Details PI refer Chapter-IX-</b>
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 Sl No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on Sl No. g		Yes	In consultation with BHEL

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

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<b>Sl.No</b>	<b>Description</b>	<b>Scope / to be taken care by</b>		<i>Remarks</i>
		<b>BHEL</b>	<b>Bidder</b>	
	<b>PART II</b> <b>3.9.0 ERECTION FACILITIES</b>			
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**

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**A: TOOL & PLANTS**

SN	DESCRIPTION																																	
1	<p><b>(a) T &amp;Ps FOR STRUCTURAL WORKS</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px auto;"> <thead> <tr> <th style="width: 5%;">SL</th> <th style="width: 75%;">Major T&amp;P items</th> <th style="width: 20%;">Qty</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Sand stone cutting machine</td> <td style="text-align: center;">2 nos</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Hydra (8 / 10 T Cap.)</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;">05 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>Hand cutting set</td> <td style="text-align: center;">2Nos</td> </tr> <tr> <td style="text-align: center;">7.</td> <td>Chain pulley of different capacity</td> <td style="text-align: center;">3Nos.</td> </tr> <tr> <td style="text-align: center;">8.</td> <td>Hand winch 1t CAP.</td> <td style="text-align: center;">1Nos.</td> </tr> <tr> <td style="text-align: center;">9.</td> <td>15t/20t tractor &amp; trailer</td> <td style="text-align: center;">01Nos.</td> </tr> <tr> <td style="text-align: center;">10.</td> <td>Scaffolding/Staging with access ladders</td> <td style="text-align: center;">As per Site requirement</td> </tr> </tbody> </table> <p style="margin-top: 20px;"><b>Bidder must submit T&amp;P deployment plan inclusive of above T&amp;Ps as per format Annex – VII</b></p>	SL	Major T&P items	Qty	1.	Sand stone cutting machine	2 nos	2.	Hydra (8 / 10 T Cap.)	01Nos.	3.	drill machine	05 Nos	4.	Welding m/c	1Nos.	5.	Grinding machine	2 Nos.	6.	Hand cutting set	2Nos	7.	Chain pulley of different capacity	3Nos.	8.	Hand winch 1t CAP.	1Nos.	9.	15t/20t tractor & trailer	01Nos.	10.	Scaffolding/Staging with access ladders	As per Site requirement
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10.	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**

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter – VI: Time Schedule

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### 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 7 (Seven) 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 7 (Seven) 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 receipt of first lot of sand stone shall 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.**

### **7.10.2 Dressing and Fixing**

The stone shall be cut into slabs of required thickness so as to make jali of the specified thickness. The jali shall be cut as per pattern shown on the drawings. All exposed faces shall be fine tooled to a uniform and smooth finish. Fixing shall be done with the adjoining work in grooves, rebates etc., as shown in the drawing or as directed by the Engineer-in-Charge. A tolerance of  $\pm 2$  mm shall be allowed in the specified thickness of the jali.

**7.10.3** Stone jalis shall be fixed in grooves/rebates etc. to adjoining Stone work/Brick work/RCC as shown in the drawing or as directed by Engineer-in-Charge. Necessary sample for the same shall be got approved from the Engineer-in-charge before execution. The breakage of stone jali during fixing shall be the responsibilities of the contractor and replacement shall be provided at his risk and cost.

### **7.10.4 Measurements**

The length and breadth of the stone forming the jali including its borders shall be measured correct to a cm and the area shall be calculated in square metres nearest to two places of decimal.

### **7.10.5 Rate**

It includes the cost of labour and materials required for all the operations described above. It also includes the cost of making grooves or rebates in the adjoining work for fixing jali.

## **7.11 DRY STONE CLADDING**

### **7.11.1 Material**

Stone shall be of the type as specified in the item. It shall be hard, sound durable and tough free from cracks, decay and weathering and defects like cavities cracks, flaws, holes, veins, patches of soft or loose materials etc. Thickness of stone shall be as specified

Stone shall be cut with the gang saw to the required size and shape on all beds and joints so as to free from any waviness and to give truly vertical horizontal surface as required. The exposed face and sides of stones forming joints shall be such that the straight edge laid along the face of the stone is in contact with every point on it. All the visible angle and edges shall be square and free from chipping. The dressed stone shall be of the thickness specified with permissible tolerance of  $\pm 2$  mm.

Before starting the work, the contractor shall get the samples of stone approved by Engineer-In-charge. Approved sample shall be kept in custody of Engineer-in-Charge and stones supplied and used on the work shall conform to sample with regard to soundness, colour, veining and general texture. The stone shall be cut by gang saw into slabs of required thickness along the places parallel to the natural bed. When necessary double scaffolding for fixing the stone at greater heights, jib crane or other mechanical appliances shall be used to hoist the heavy pieces of stone and placed them into correct positions. Care shall have to be taken that corners of the stone are not damaged. Stone shall be covered with gunny bags before tying chain or rope is passed over and it shall be handled carefully. No pieces which has been damaged shall be used that work

### **7.11.2 Stacking and Storing**

Stone slabs are thin and brittle and should never be stacked flat across timber supports. They should therefore, be stacked on edge on timber or like runners. Packing pieces inserted between the slabs may be rope or timber. Slabs shall be well covered with plastic sheeting to protect them from any possible staining.

### **7.11.3 Scaffolding**

As specified in 7.4.11.

#### **7.11.4 Fixing**

The size & shape of the cramps shall be as per drawing and as per directions of Engineer-in-charge. The samples of steel cramps should be approved in advance before starting the stone cladding work. The cramp shall be attached to top and bottom of the stone. The cramps shall have inbuilt adjustment for vertical and horizontal alignment. The cramps used to hold support and transfer the load of stone unit to the supporting structured steel shall be designed by the manufacturer and approval of the same shall be obtained from the Engineer-in-Charge.

The minimum number of clamps required shall be as per requirement of design to carry the load of individual stone slabs. The cramps shall be spaced not more than 60 cm horizontally and vertically along the stone side for insertion of pins / bolt attached with the steel cramps. Adequate cutting in stone shall be made with precision instrument to hold the cramps pins at the joints.

Stone shall be secured with cramps with high quality workmanship. The walls shall be carried up truly plumb. All the courses shall be laid truly horizontal and all the vertical joints truly vertical. The sequence of execution for cladding work shall be approved by the Engineer-in-Charge.

**Jointing:** Joints horizontal and vertical shall be filled with weather sealant of make as approved by Engineer-in-charge with the help of pouring gun for filling the sealant. Before filling the joint with sealant, masking tape are required to be fixed on stones surface on both edges of joints of the stones, so that sealant may not spoil the surface of the stone. When all the joints are filled and sealant has dried, the masking tape may be removed.

**Protection:** Work shall be protected from rain by suitable covering. The work shall also be suitably protected from damage and rain during construction.

**Measurement:** The length and breadth shall be measured correct to a cm. The area shall be calculated in square metre correct to two places of decimal. Any opening of area 0.01 sqm. or less shall not be deducted.

**Rate:** The rate includes the cost of materials and labour involved in all operations described above including cost of support scaffolding staging, sealant, pouring guns but excluding the cost of steel cramps drilling holes / making recesses in stones which shall be paid for separately.

### **7.12 STRUCTURAL STEEL FRAME WORK FOR DRY STONE CLADDING**

Specification for structural frame work for dry stone cladding are same specifications as for steel work in built up sections (welded or bolted).

#### **7.12.1 Fixing of Frame**

The properly designed structural frame for withstanding the weight of stone slab are fixed/supported on wall surface with the help of M.S. brackets/lugs of angle iron/flat etc. which is welded at each junctions of member of frame and also embedded in cement concrete block 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) of size 300 x 230 x 300 mm. The concrete block can be made by cutting the hole of size as mentioned in brick wall and filling the hole with cement concrete including provision of necessary centring/shuttering for holding of concrete. The frame can also be supported on RCC surface with the help of approved expansion hold fastener by drilling the holes in RCC surface.

Steel cramps are either welded or bolted to the frame (by making necessary holes in frame work) for holding of stone.

#### **7.12.2 Measurement**

The mode of measurement shall be the same, as specified for steel work in built up section except that the weight of welding material shall not be added in weight of members for payment and nothing

extra shall be paid for making holes for temporary fastening of members during erection before welding, which also includes cost of cement concrete block, centring and shuttering and making holes in walls, but excluding the cost of expansion fastener, steel clamps which shall be paid for separately.

**7.12.3 Rate**

The rate shall include the cost of all labour and material involved in all the operation described above.

**7.13 ADJUSTABLE STAINLESS STEEL CRAMPS**

The cramps shall be stainless steel of make approved by the Engineer-in-charge.

**7.13.1** The weight of the stainless steel clamp (including weight of nut and washer) shall not be less than 260 gms.

**7.13.2** Necessary holes at suitable locations are to be done on steel frame work for dry stone cladding to be fixed.

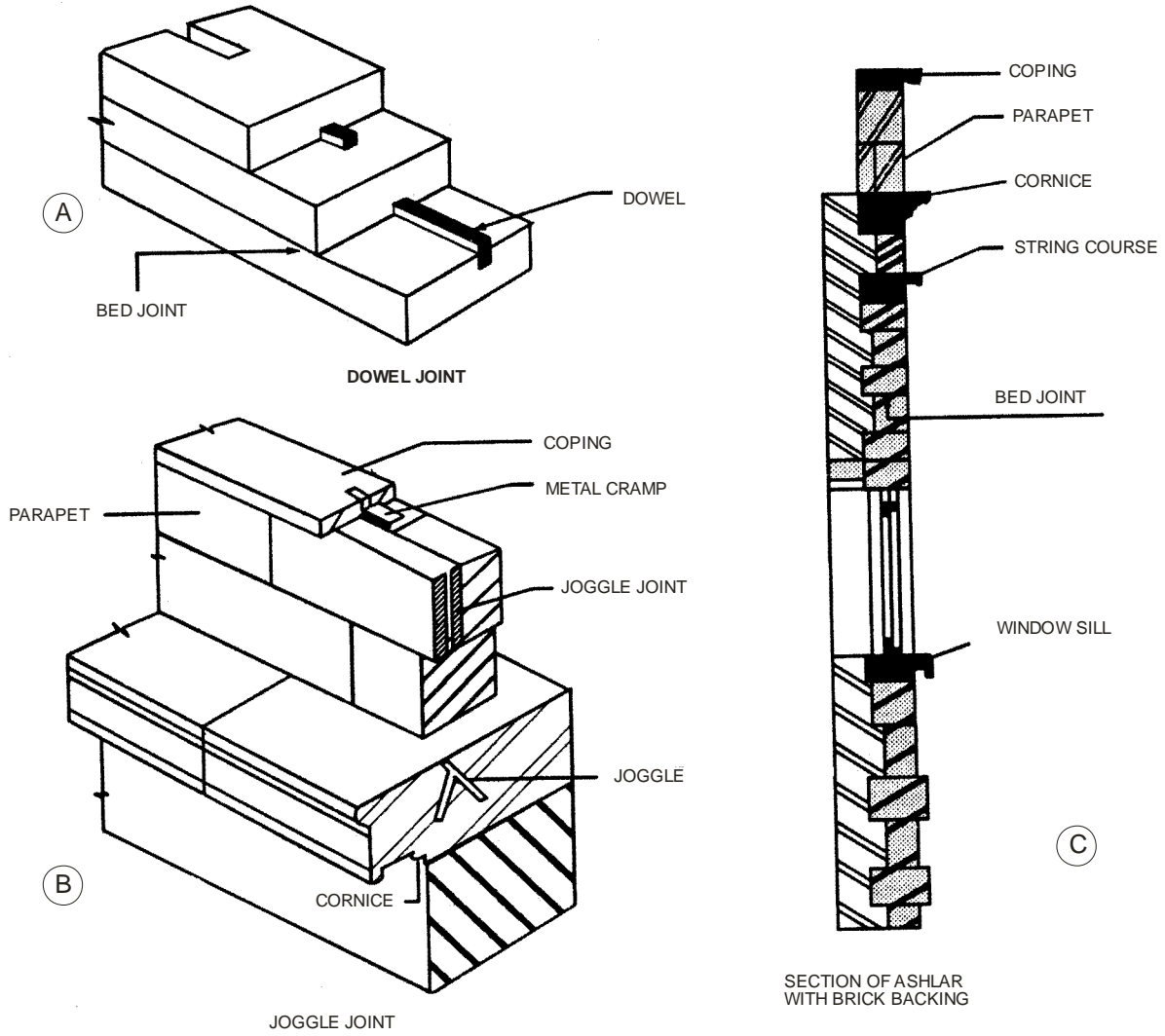
**7.13.3** Necessary recessed are required to be done in stone slab which is required to be supported by clamps.

**7.13.4** The one end of steel clamp is fixed on frame with nut and bolt and other end is inserted into recesses/hole for fixing the dry cladding stone on frame.

**7.13.5** The rate includes cost of materials and other operations mentioned as above.

# STONE WORK

Sub Head : Stone Work  
Clause : 7.0



Drawing not to scale

Fig. 7.1 : Stone Work

# STONE WORK (Terminology)

Sub Head : Stone Work  
Clause : 7.0

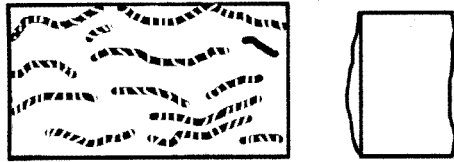


Fig. 7.2 : Hammer Dressed Stone Surface

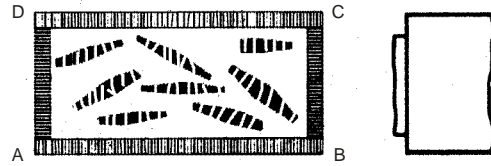


Fig. 7.3 : Rock Faced Stone Surface

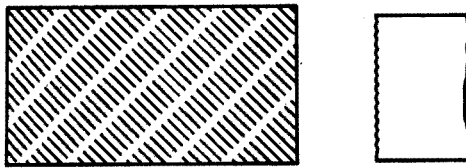
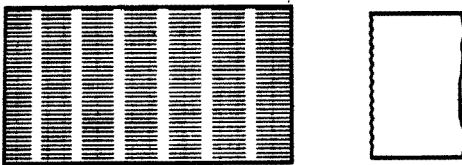
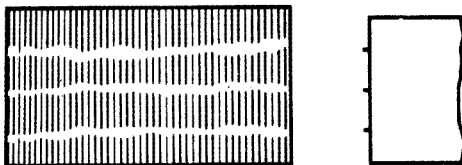


Fig. 7.4 : Rough Tooled Stone Surface

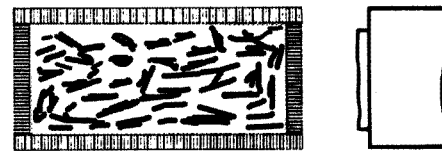
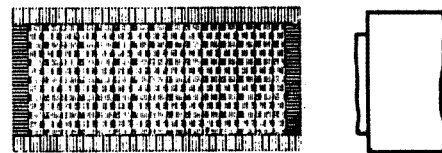


Fig. 7.5 : Punched Stone Face Surface  
(Chisel drafted)

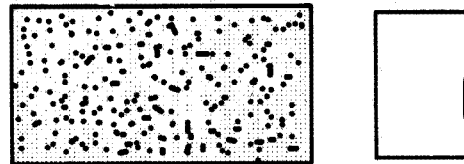


Fig. 7.6 : Closed Picked Stone Surface

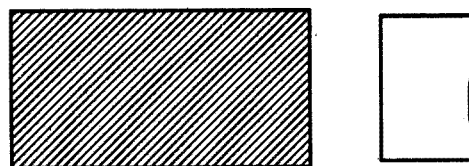
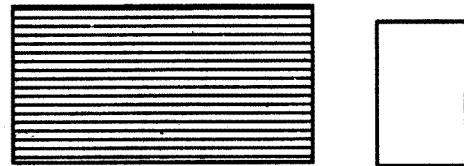
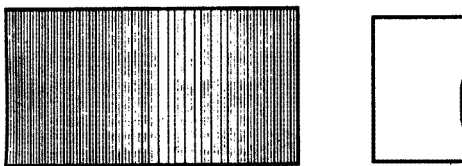
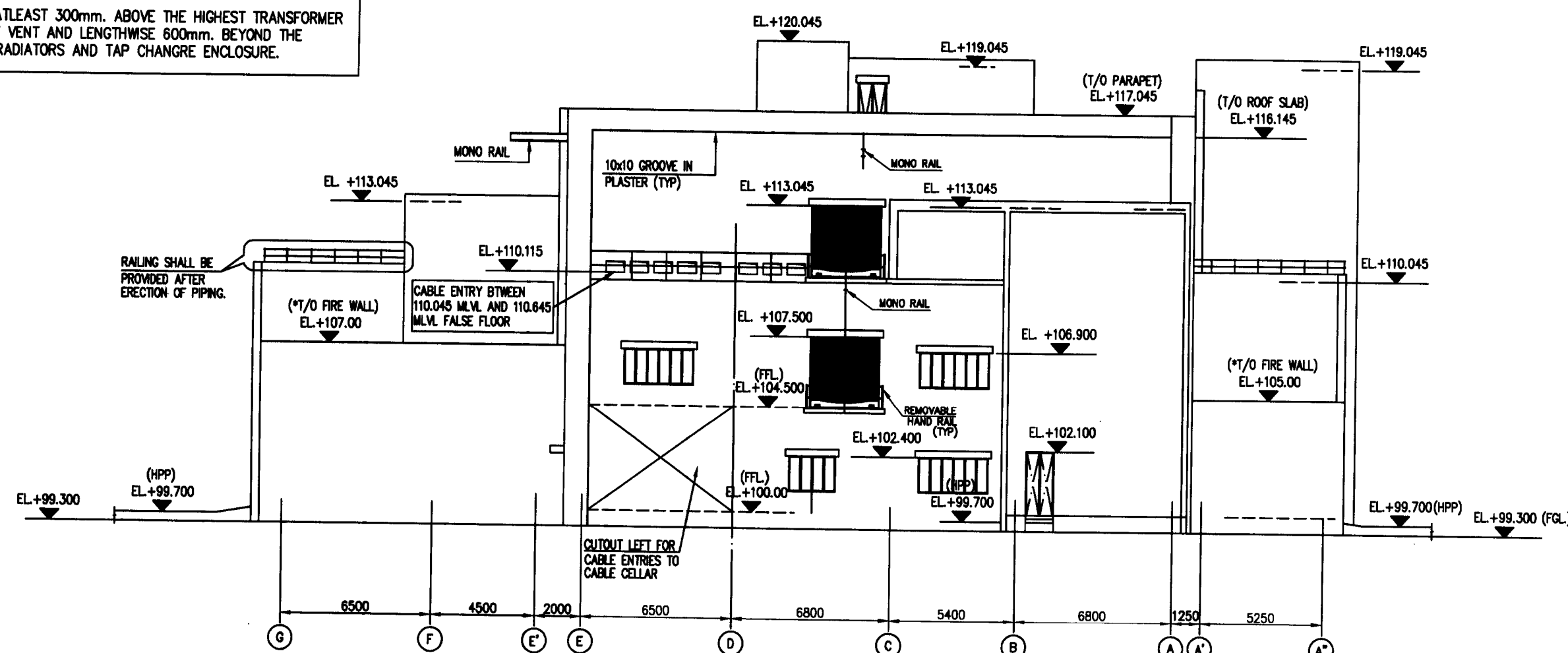


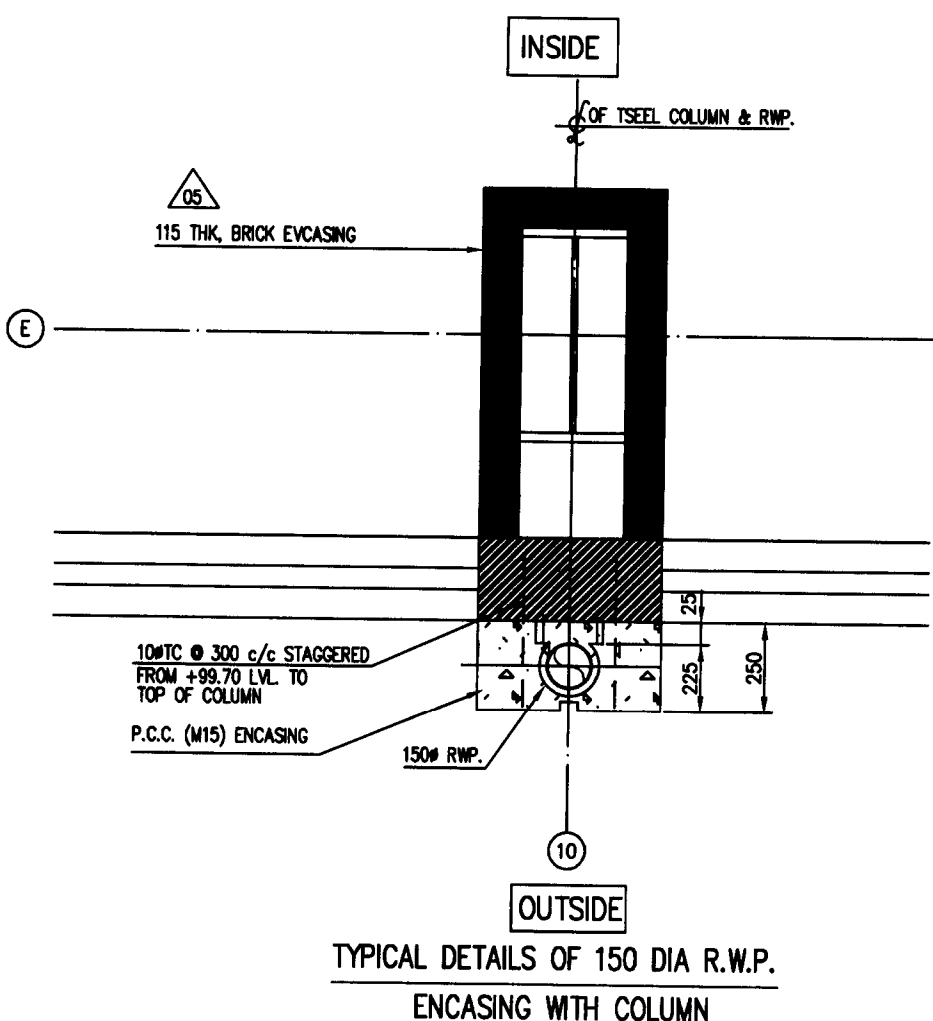
Fig. 7.7 : Fine Tooled Stone Surface

Drawing not to scale

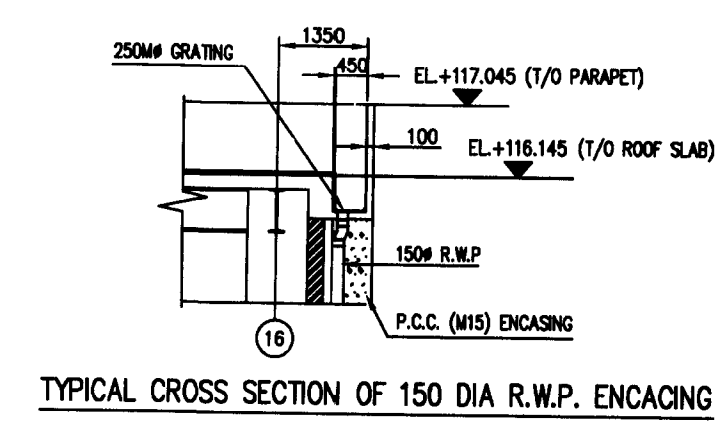
\* FOR FIRE WALL REFER CBIP - MANUAL SECTION O CLAUSE 3.1 (b) THE BARRIERS SHALL EXTEND ATLEAST 300mm. ABOVE THE HIGHEST TRANSFORMER BUSHING AND PRESSURE RELIEF VENT AND LENGTHWISE 600mm. BEYOND THE TRANSFORMER INCLUDING ANY RADIATORS AND TAP CHANGE ENCLOSURE.



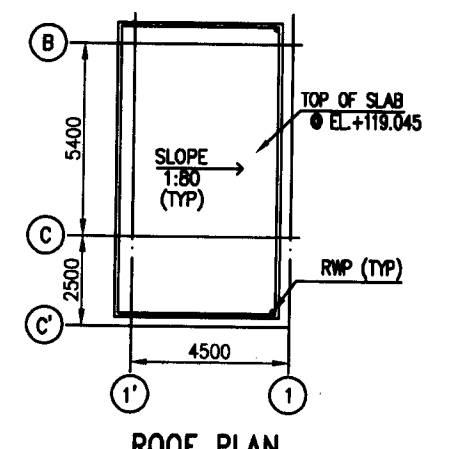
ELEVATION AT SOUTH



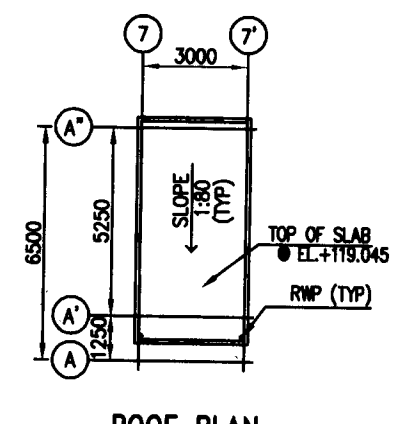
TYPICAL DETAILS OF 150 DIA R.W.P. ENCASING WITH COLUMN



TYPICAL CROSS SECTION OF 150 DIA R.W.P. ENCASING

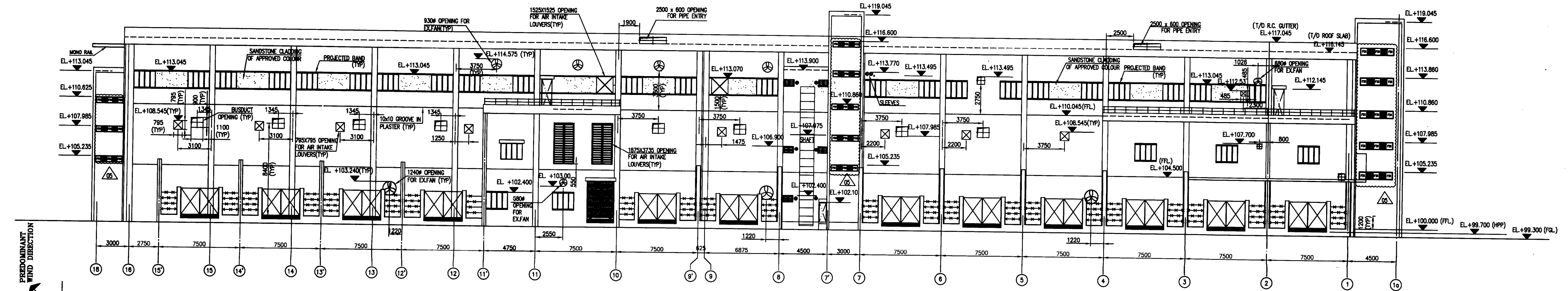


ROOF PLAN

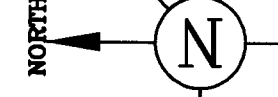


ROOF PLAN

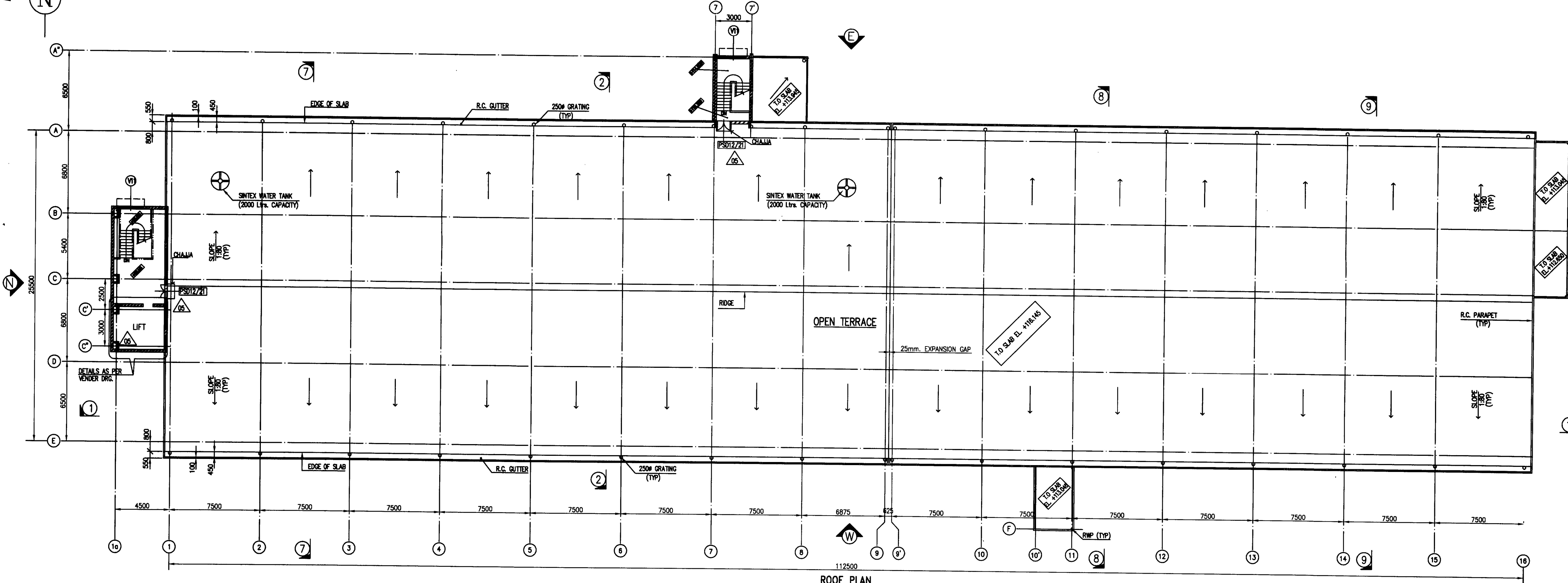
LEGEND table with symbols for brick wall, aluminum glazed partition, and other architectural elements.



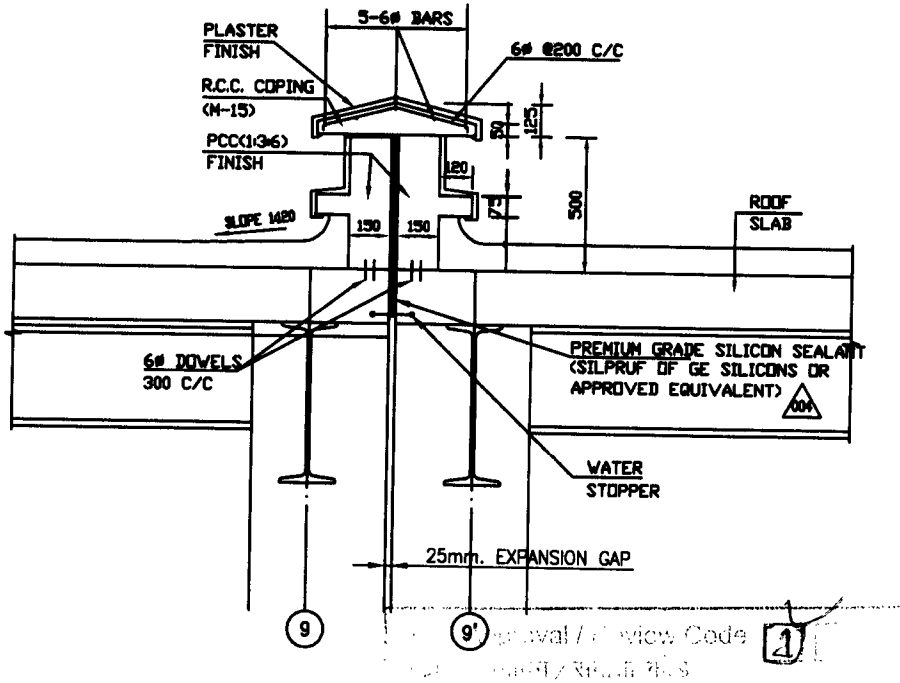
ELEVATION AT EAST



PREDOMINANT WIND DIRECTION



ROOF PLAN



DETAILS OF EXPANSION GAP IN ROOF

- NOTES: 1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE STATED. 2. (100) CORRESPONDS TO FINISHED FLOOR LEVEL (F.L. +7.80M). (89.30) CORRESPONDS TO FINISHED GROUND LEVEL (F.L. +7.10M).

REFERENCE DRAWINGS table listing other sheets and sections related to the project.

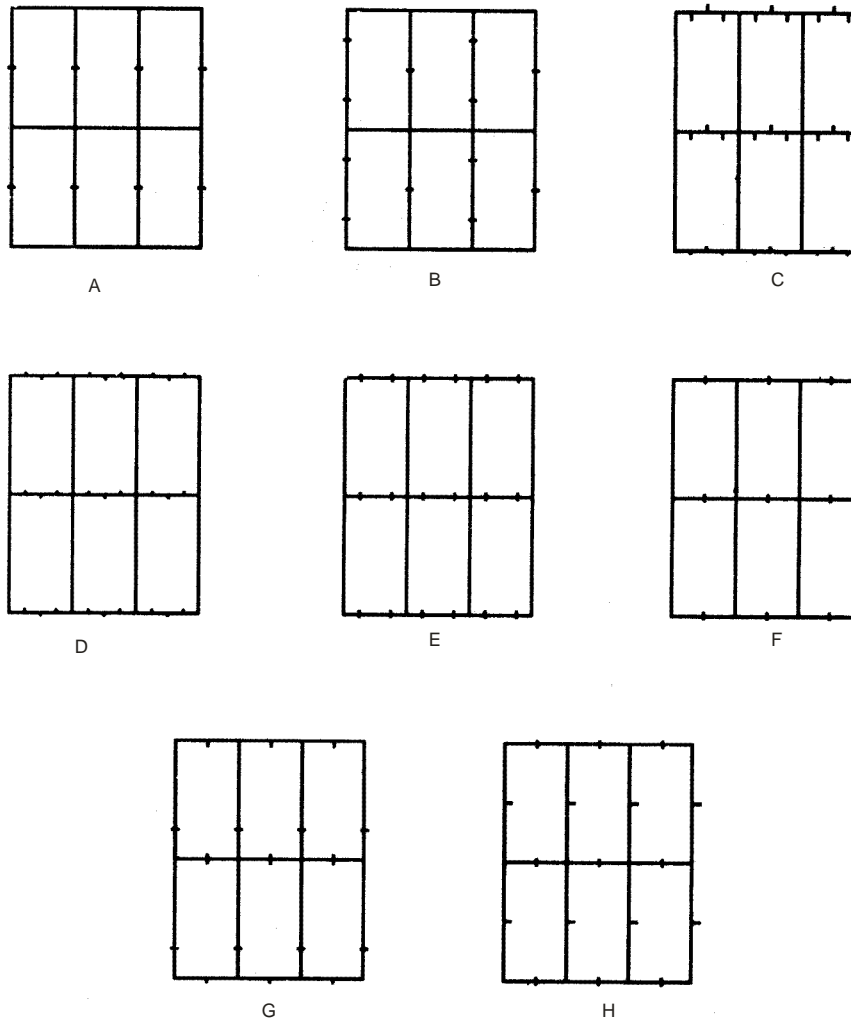
Project information block including owner (DAHEJ PETROCHEMICAL COMPLEX), contractor (BHARAT HEAVY ELECTRICALS LTD), and drawing details.

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

REVISIONS table with columns for date, description, and initials.

# GENERAL ARRANGEMENT OF CRAMPS

Sub Head : Stone Work  
Clause : 7.7.4.3



**Note :** Cramps arrangement is shown above for veneerings with longer sides vertical. For veneerings having the longer sides horizontal, cramps would be arranged to suit the altered positions.

Drawing not to scale

**Fig. 7.16 : General Arrangement of Cramps**

Cramps shall be of 25 mm x 6 mm and 30 cm long in case of backing of stone masonry walls and brick masonry walls thicker than 230 mm. In case of backing with brick masonry walls 230 mm or less thick or RCC members, cramps shall be of 25 x 6 mm and length as per requirement made out of stainless steel or any other metal specified in para 7.7.4.6. Generally the outer length of cramp in half brick work backing shall be 115 mm and in one brick work backing it shall be 150 mm. Typical shape and details of cramps for such backing are indicated in Fig. 7.15 for general guidance. This can be modified as directed by the Engineer-in-Charge, if so required at site. Cramps shall be spaced not more than 60 cm apart horizontally.

Alternatively the stone may be secured to the backing by means of stone dowels 10 x 5 x 2.5 cm as per shape indicated in Fig. 7.14 and the adjoining stone secured to each other by means of stainless steel cramps or copper pins of the specified size. Minimum one cramp/stone dowel shall be used to secure one slab to the backing.

**7.7.4.3** Cramps may be attached to its sides (see Fig. 7.16A, 7.16B) or top and bottom (see Fig. 7.16C to F) or sides, top and bottom (see Fig. 7.16G & H). The minimum number of cramps required for fixing facing unit to the wall are illustrated in Fig. 7.16. The actual number of cramps and their sections, however, shall be as per requirements of design to carry the loads.

**7.7.4.4** Where cramps are used to hold the unit in position only, the facings shall be provided with a continuous support on which the stones rest at the ground level and other storey levels, the support being in the form of projection from or recess into the concrete floor slab, or a beam between the columns or a metal angle attached to the floor slab or beams. These supports shall preferably be at vertical intervals not more than 3.5 m apart and also over the heads of all openings. Such supports shall also be provided where there is transition from thin facings below to thick facings above.

**7.7.4.5** Alternatively cramps may be used to hold the units in position and in addition to support the units thus transferring the weight of the units to the backing. Such cramp should be properly designed as per IS 4101 (Part 1).

**7.7.4.6** The cramps shall be of copper alloyed with zinc or nickel or of stainless steel of grade 304.

**7.7.4.7** The pins, cramps and dowels shall be laid in cement mortar 1:2 (1 cement : 2 fine sand) and their samples got approved by the Engineer-in-Charge and kept at site.

**7.7.4.8** The walls shall be carried up truly plumb. All courses shall be laid truly horizontal and all vertical joints truly vertical. The stone shall break joints on the face for at least half the height of the course, unless otherwise shown in the drawings. The stone shall be laid in regular courses not less than 20 cm height and all the stones shall be of the same height unless otherwise specified. No stone shall be less in length than one and a half times its height unless otherwise specified.

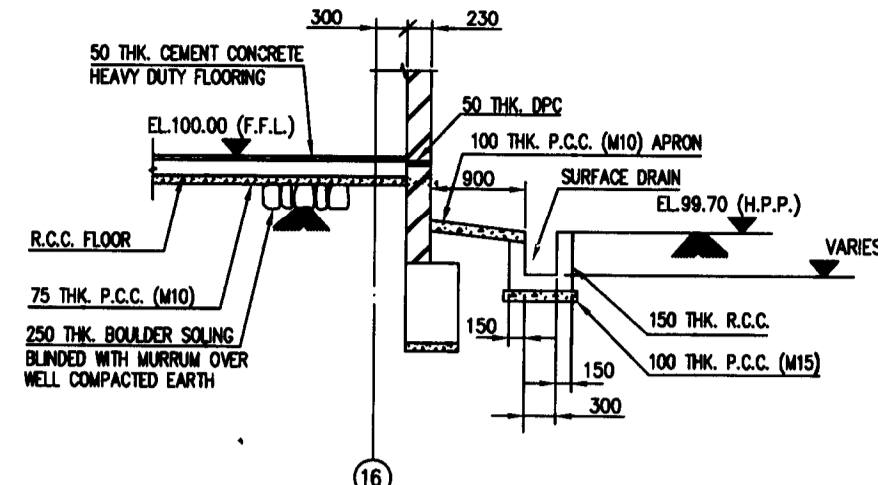
**7.7.4.9** As far as possible the backing shall be carried up simultaneously with the face work. In case of reinforced cement concrete backing, the lining shall be secured to the backing after it has set and got cured. The cramps shall be fixed in concrete at the required positions, while laying.

### **7.7.5 Joints**

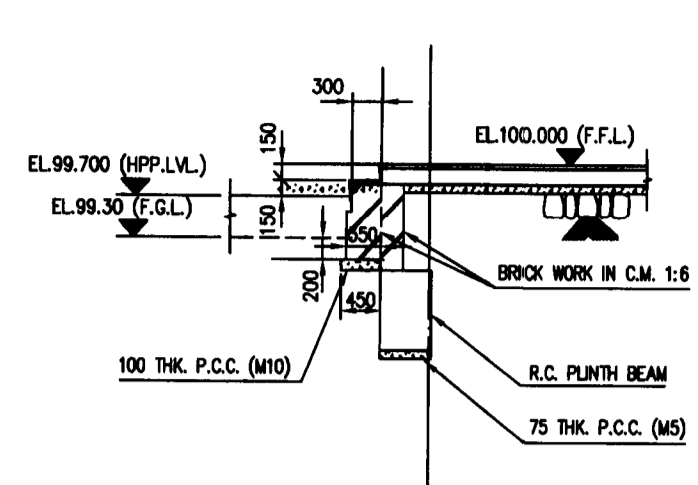
The joints shall be done with cement mortar 1: 3 (1 cement : 3 coarse sand). All joints shall be full of mortar. Special care shall be taken to see that the groundings for veneer work are full of mortar. If any hollow groundings are detected by taping the face stones, these shall be taken out and relaid. The thickness of joints shall be as small as possible, not exceeding 5 mm. For a close butt jointed facing the thickness shall not exceed 1.5 mm. The face joints shall be uniform throughout.

Where joint filler or compound is to be used, the joints shall be raked out to a depth of at least 25 mm after the mortar in the joints has set sufficiently and the filler or compound applied. The joints may be

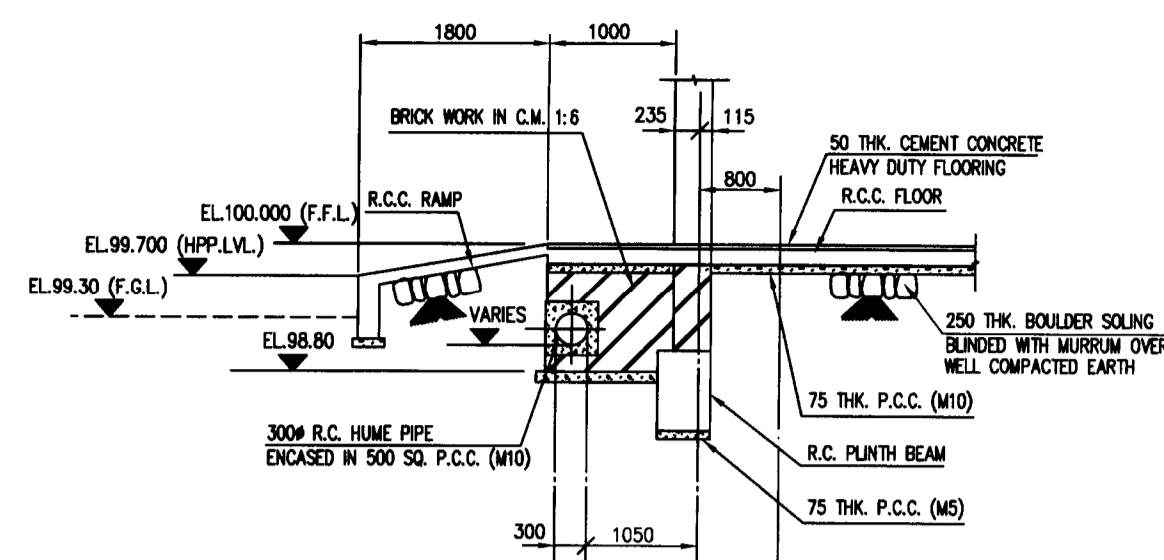
DRG. NO. 0-38142-02437



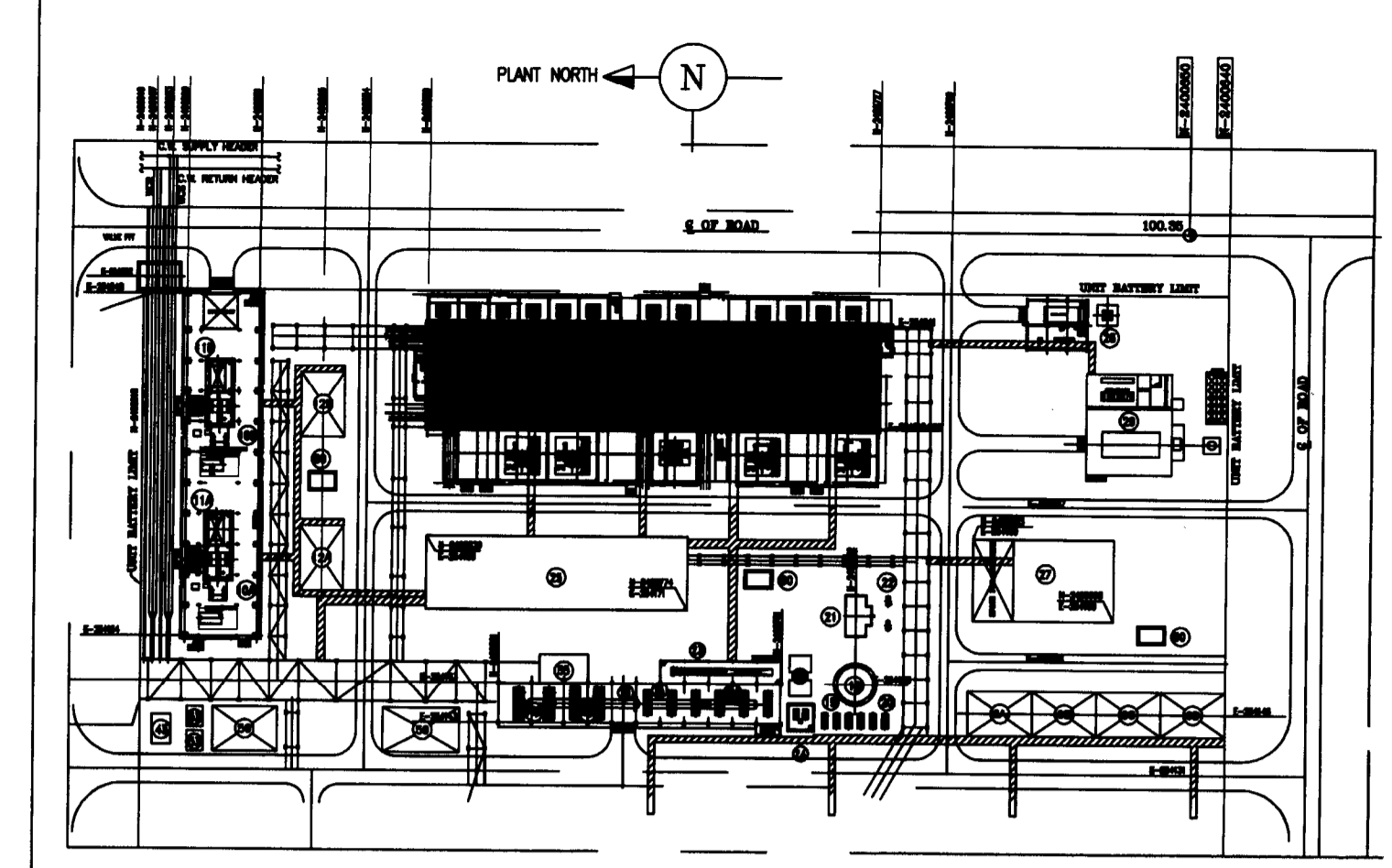
TYPICAL DETAIL OF PLINTH PROTECTION & R.C. SURFACE DRAIN



TYPICAL DETAIL OF STEPS

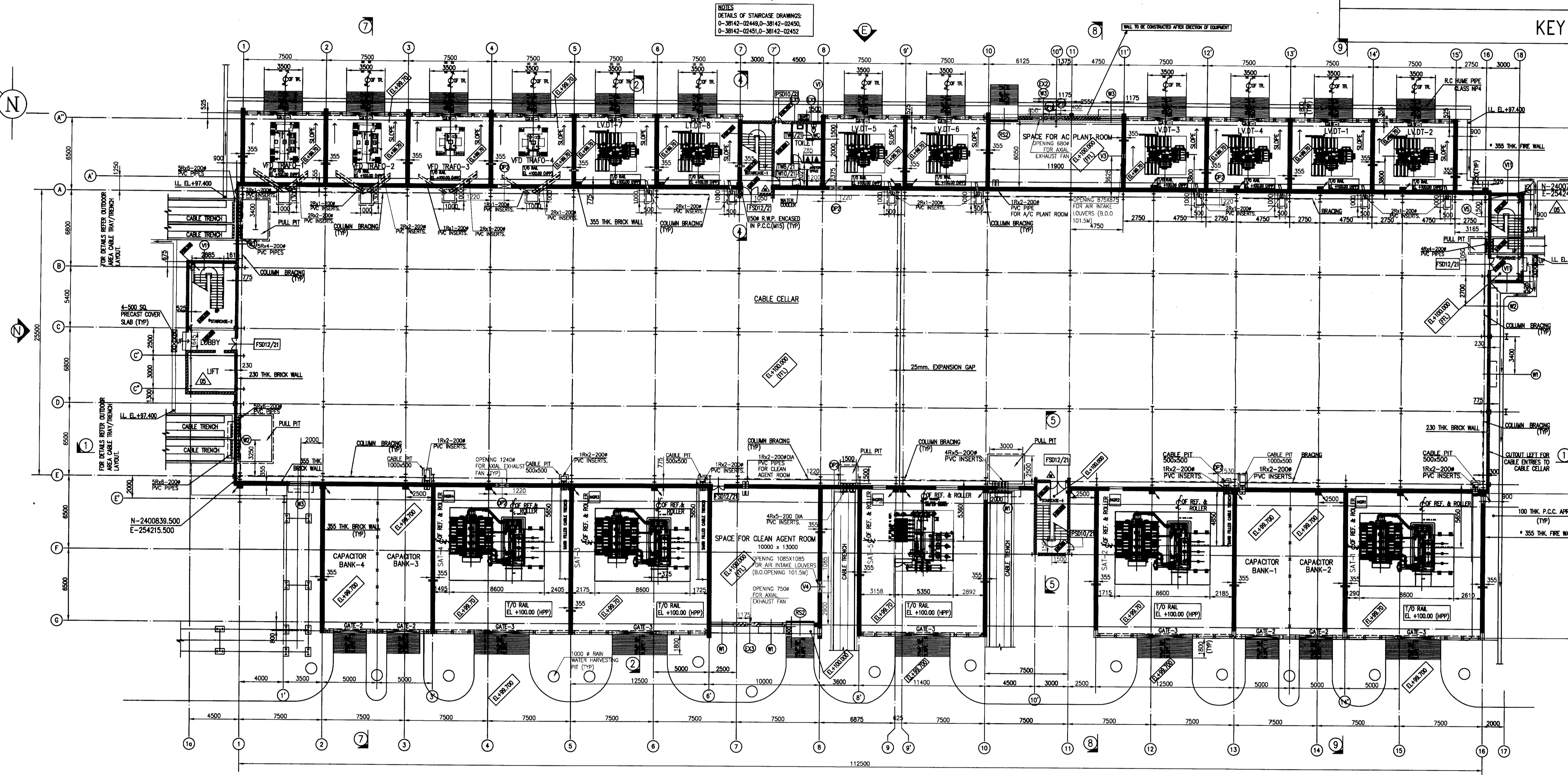


TYPICAL DETAIL OF R.C.C. RAMP

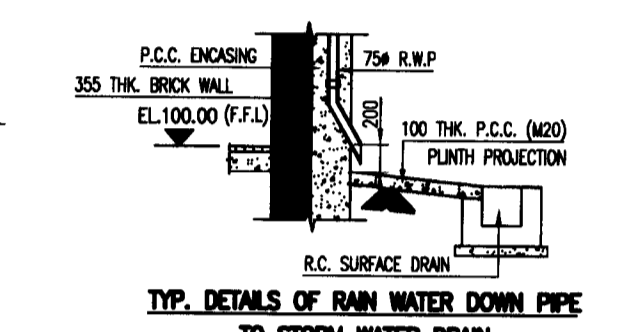


KEY PLAN

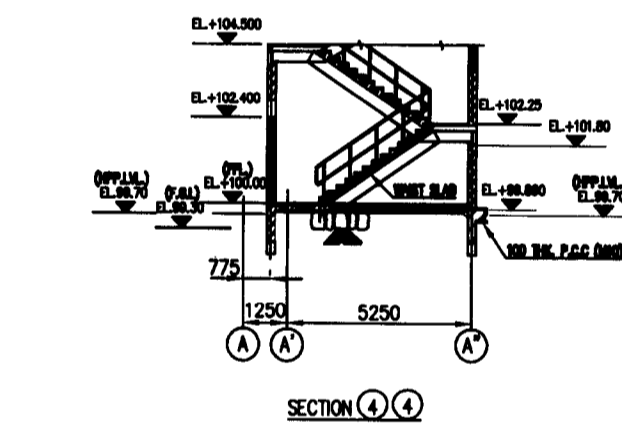
PREDOMINANT WIND DIRECTION



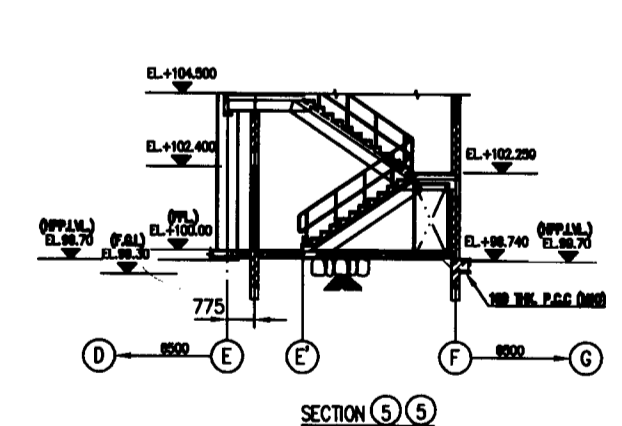
SWITCHGEAR BUILDING FLOOR PLAN AT EL. +100.00M LVL (F.F.L.)



TYP. DETAILS OF RAIN WATER DOWN PIPE TO STORM WATER DRAIN



SECTION A-A



SECTION B-B

NOTES :- 1. ALL DIMENSIONS ARE IN MILLIMETRES & AND LEVELS ARE IN METRES UNLESS OTHERWISE STATED.

REFERENCE DRAWINGS 0-38142-02437 - G.A. PLAN AT EL.104.500m LVL. (SHEET 2 OF 5)

LEGEND BRICK WALL 355 THK BRICK WALL 230 THK BRICK WALL 115 THK

FOR FIRE WALL REFER CBP - MANUAL SECTION O CLAUSE 3.1 (b) THE BARRIERS SHALL EXTEND ATLEAST 300mm. ABOVE THE HIGHEST TRANSFORMER

FOR DETAILS OF TRANSFORMERS GATES REFER: A) 0-38142-02456-R00 LAYOUT AND DETAILS OF TRANSFORMER YARD GATES AND FENCE

OWNER DAHEJ PETROCHEMICAL COMPLEX STEAM & POWER GENERATION SYSTEM ONGC Petro-additions LIMITED, SEZ, Dahej, Gujarat, India

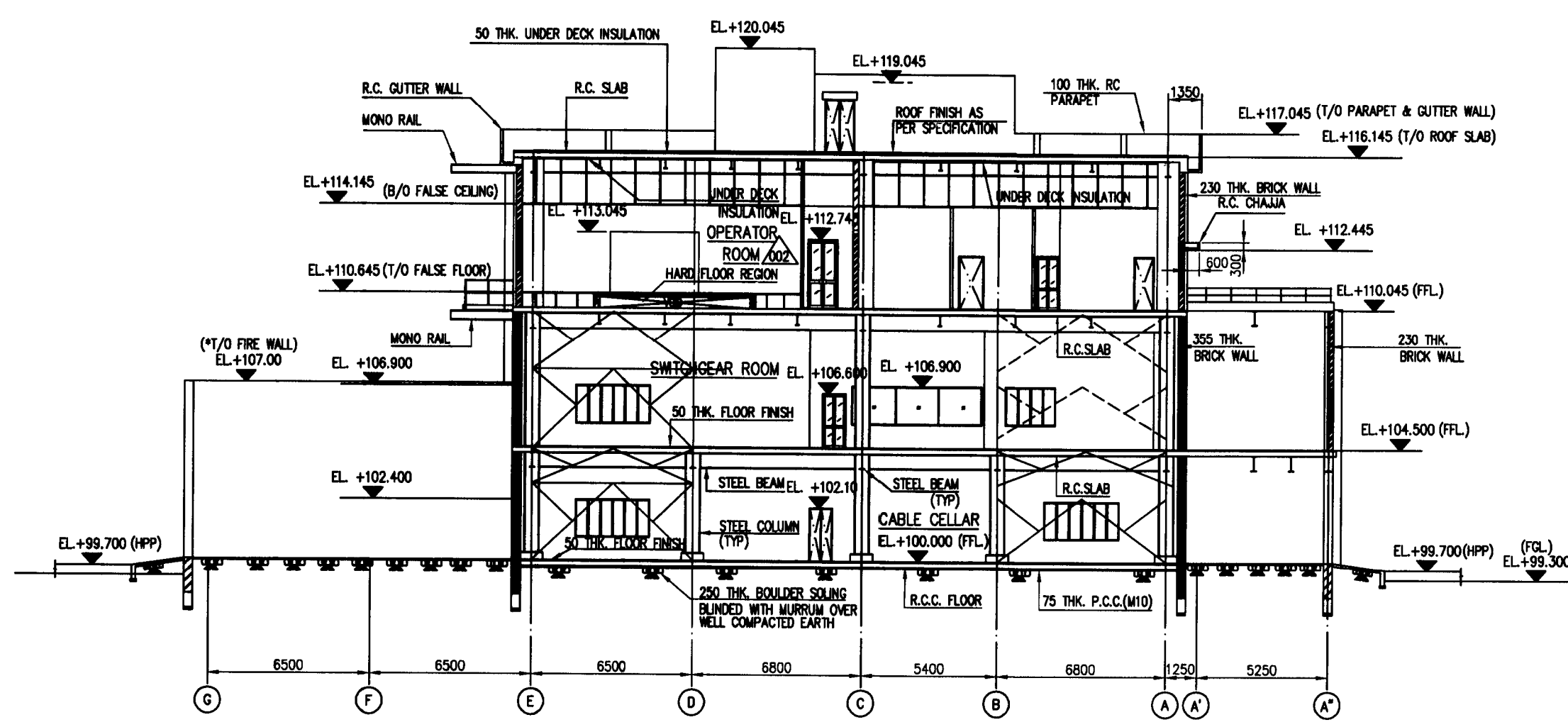
Tender No.-MB/OW/MD/STG-NOM/19/2000 EIL JOB No. 6987 / EPCC-10 Pkg.

DATE 14.12.2011 BY MND

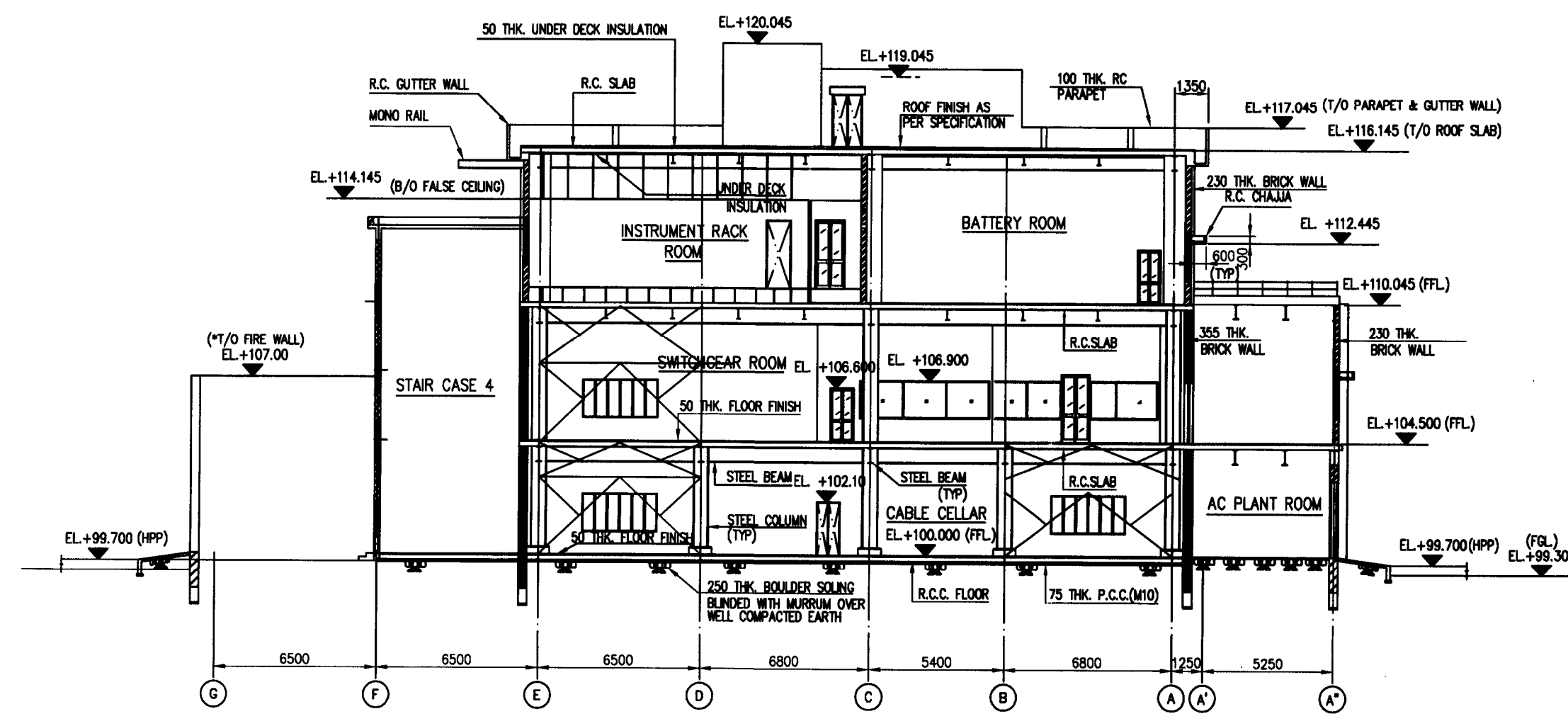
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

Table with columns for REV. DATE, ALTERED, SRK, and MND, detailing revision history.



SECTION 7-7

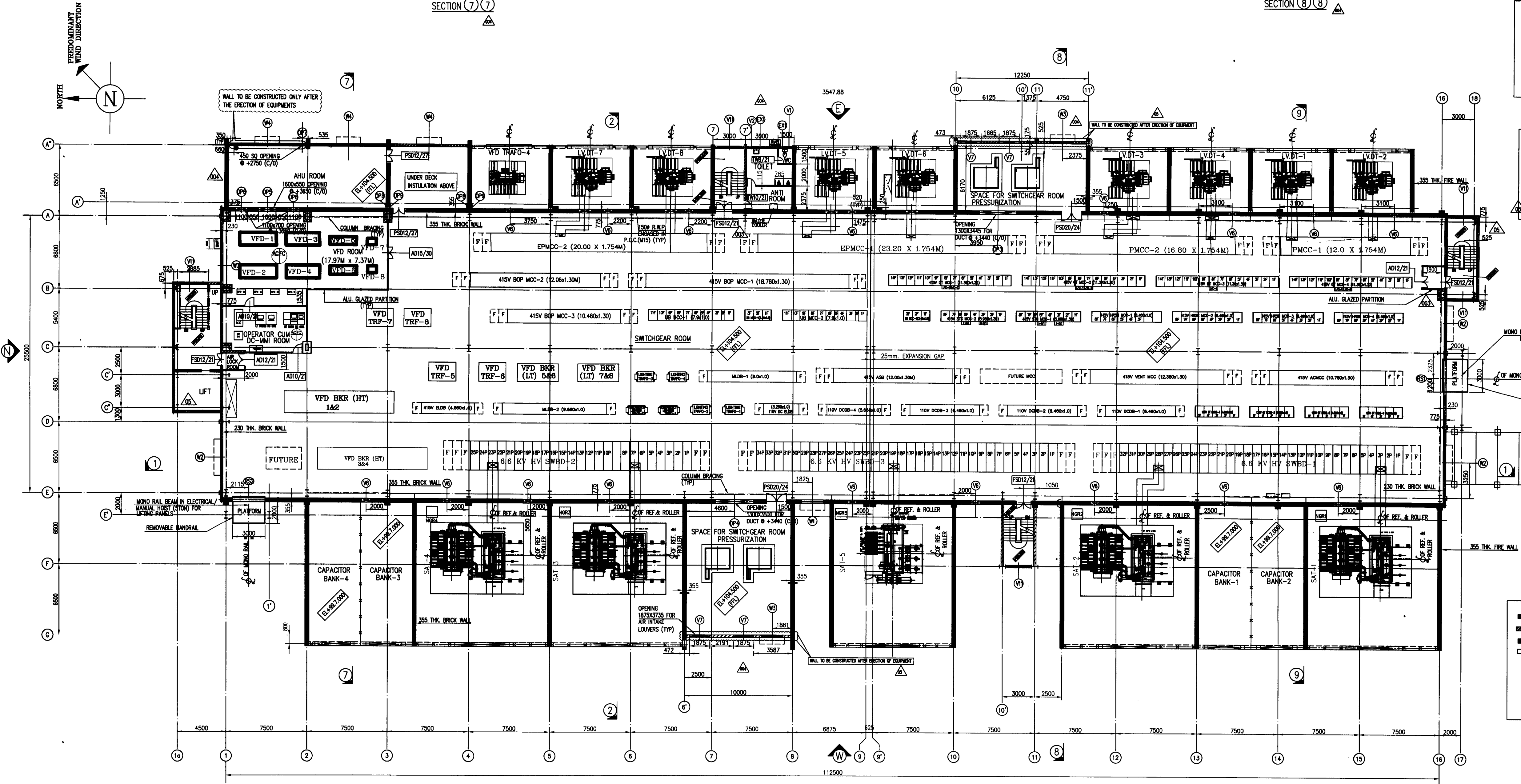


SECTION 8-8

- REFERENCE DRAWINGS**
- 0-38142-02437 - G.A. PLAN AT EL.100.000m. LVL. (SHEET 1 OF 5)
  - 0-38142-02437 - G.A. PLAN AT EL.110.000m. LVL. & SECTION (SHEET 3 OF 5)
  - 0-38142-02437 - ELEVATION AT WEST, NORTH & SECTION - (SHEET 4 OF 5)
  - 0-38142-02437 - ELEVATION AT EAST, SOUTH & ROOF PLAN (SHEET 5 OF 5)
  - 0-381-21-02108 - SWITCHGEAR ROOM EQUIPMENT LAYOUT.
  - DRP/ASD/5400-A - PRESSURIZATION LAYOUT FOR SWITCH BUILDING @104.500 M LVL. "A" & "C" ROW SIDE.
  - DRP/ASD/5399 - PRESS. ROOM LAYOUT FOR SWITCH BUILDING @104.500 M LVL.
  - AVK13-046-MCL-0043 - FOUNDATION DRAWING - EQUIPMENT IN AHU ROOM @104.5 M

- NOTES**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE STATED.
  - (100) CORRESPONDS TO FINISHED FLOOR LEVEL (R.L. +7.80M) & (99.30) CORRESPONDS TO FINISHED GROUND LEVEL (R.L. +7.10M).
  - ALL OTHER NOTES REFER DRG. NO. 1-38142-11371.
  - UNDER DECK INSTALLATION TO BE PROVIDED FOR ALL AC ROOMS & AHU ROOMS.
  - AHU ROOM SHOULD BE AIR TIGHT AND WATER PROOF.
  - FOR DETAILS OF BRICK WALL REFER 0-38142-02437 GA & DETAILS OF WALL BEAMS.
  - ALL BRICK WALLS ENCLOSING VARIOUS RISK ZONES SHALL BE UP TO ROOF.

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 GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230281



SWITCHGEAR BUILDING FLOOR PLAN AT EL. +104.500M LVL.(FFL)

**LEGEND**

- BRICK WALL 355 THK
- BRICK WALL 230 THK
- BRICK WALL 115 THK
- ALUMINIUM GLAZED PARTITION
- OUT-OUT FOR CABLE ENTRY
- FF - FALSE FLOORING
- FC - FALSE CEILING
- AC - AIR CONDITIONING
- VT - VENTILATION

**OWNER**  
**DAHEJ PETROCHEMICAL COMPLEX**  
**STEAM & POWER GENERATION SYSTEM**  
**ONGC Petro-additions LIMITED,**  
**SEZ, Dahej, Gujarat, India**

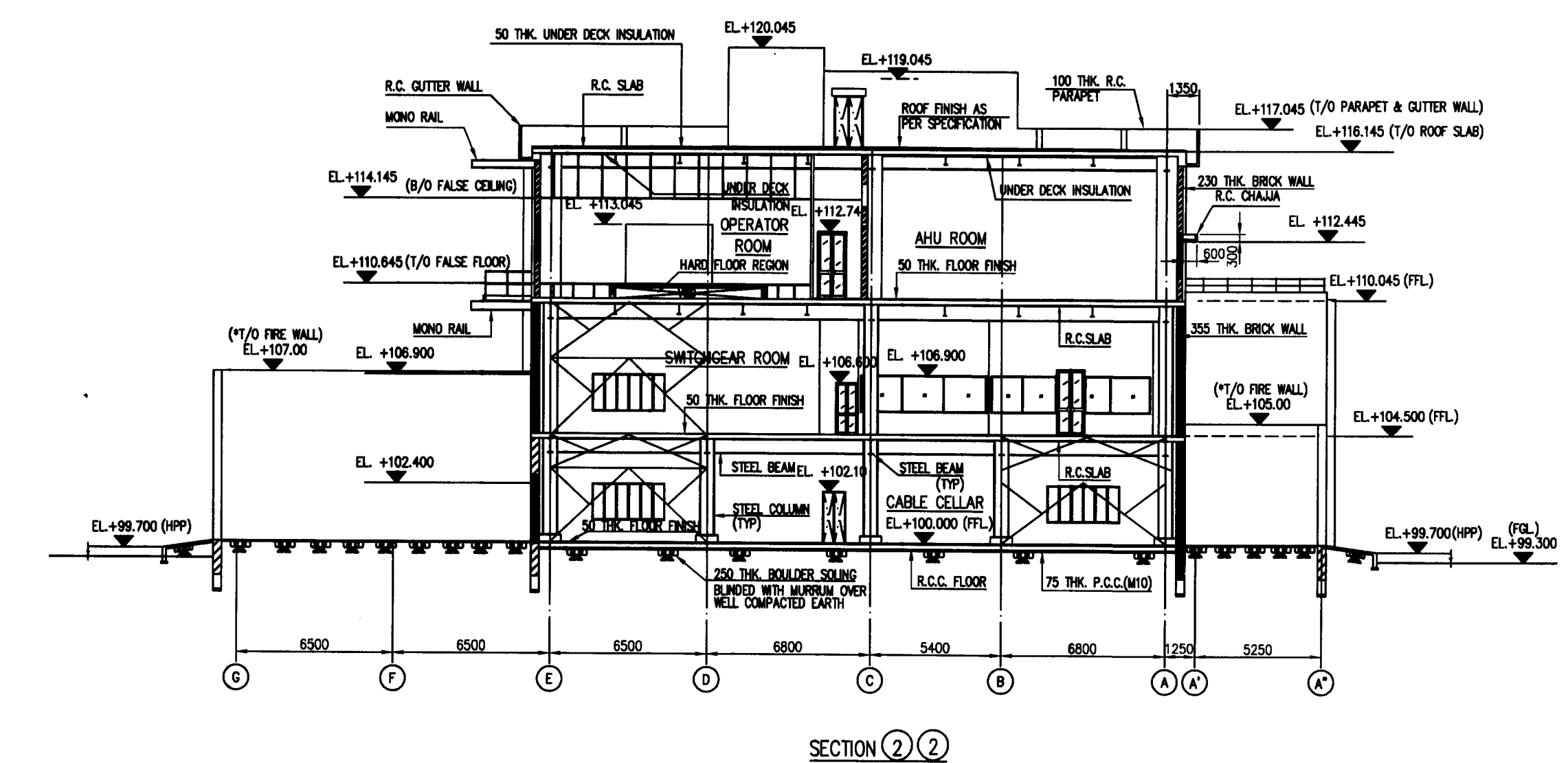
Sender No. - MB/OW/DM/STG-NOM/19/2009	REL JOB No. 6997 / EPCC-10 Pkg.
DRN. NAME: BHARAT HEAVY ELECTRICALS LTD HYDERABAD	DATE: 14.12.2011
CHD. CHD. Syedul Hossain	MND. MND. 14.12.2011
APPD. APPD. Prasad Prasad	REV. REV. 14.12.2011

DRN. NAME: BHARAT HEAVY ELECTRICALS LTD HYDERABAD	DATE: 14.12.2011
CHD. CHD. Syedul Hossain	MND. MND. 14.12.2011
APPD. APPD. Prasad Prasad	REV. REV. 14.12.2011

DRN. NAME: BHARAT HEAVY ELECTRICALS LTD HYDERABAD	DATE: 14.12.2011
CHD. CHD. Syedul Hossain	MND. MND. 14.12.2011
APPD. APPD. Prasad Prasad	REV. REV. 14.12.2011

OWNER: DAHEJ PETROCHEMICAL COMPLEX  
 STEAM & POWER GENERATION SYSTEM  
 ONGC Petro-additions LIMITED,  
 SEZ, Dahej, Gujarat, India  
 0-38142-02437 05





SECTION (2) (2)

\* FOR FIRE WALL REFER CBIP - MANUAL SECTION O CLAUSE 3.1 (b) THE BARRIERS SHALL EXTEND ATLEAST 300mm. ABOVE THE HIGHEST TRANSFORMER BUSHING AND PRESSURE RELIEF VENT AND LENGTHWISE 600mm. BEYOND THE TRANSFORMER INCLUDING ANY RADIATORS AND TAP CHANGE ENCLOSURE.

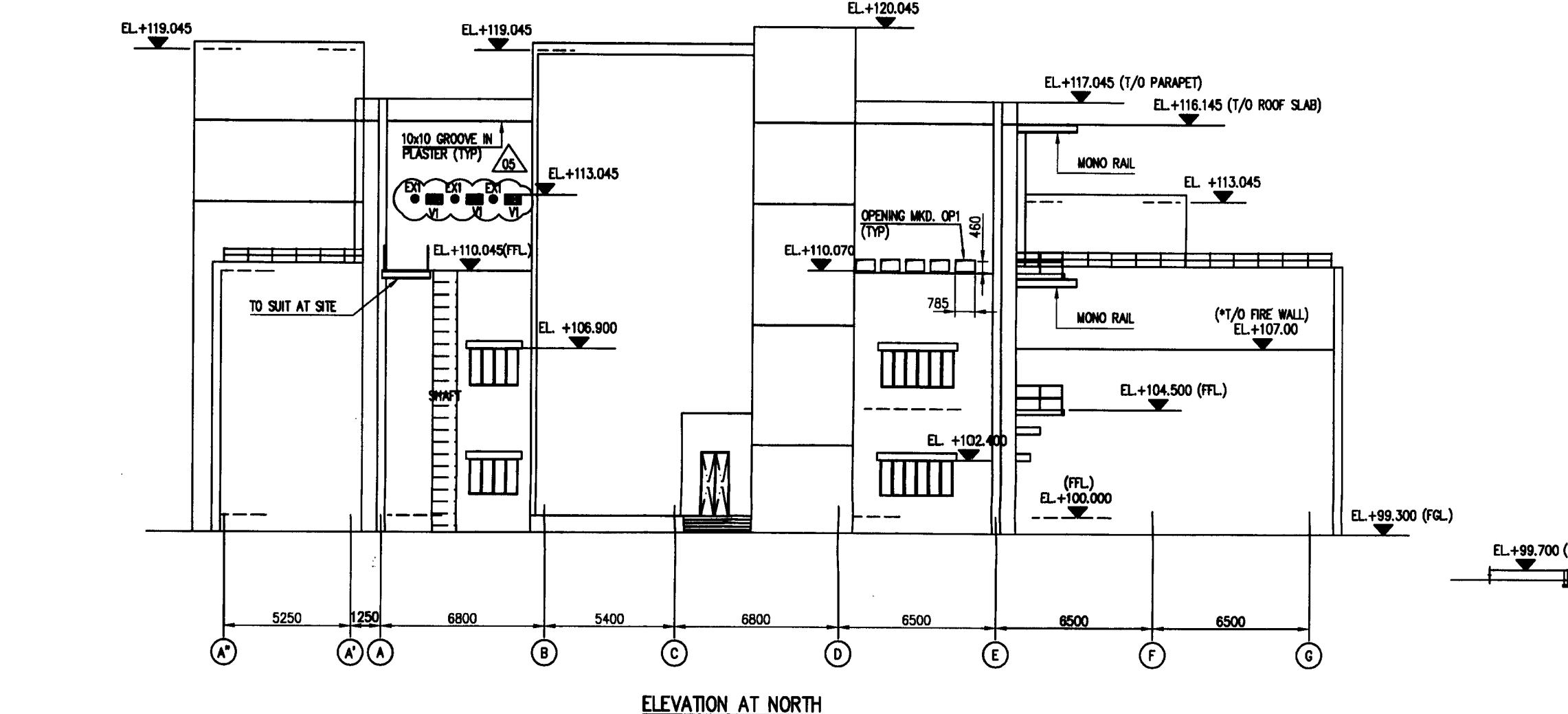
NOTES :- TRANSFORMER AND CAPACITOR BANK GATES SHALL BE INSTALLED AFTER ERECTION OF THE SAME.

NOTE :- TOP OF FIRE WALL WILL 600mm. ABOVE FROM TOP OF TRANSFORMER LVL.

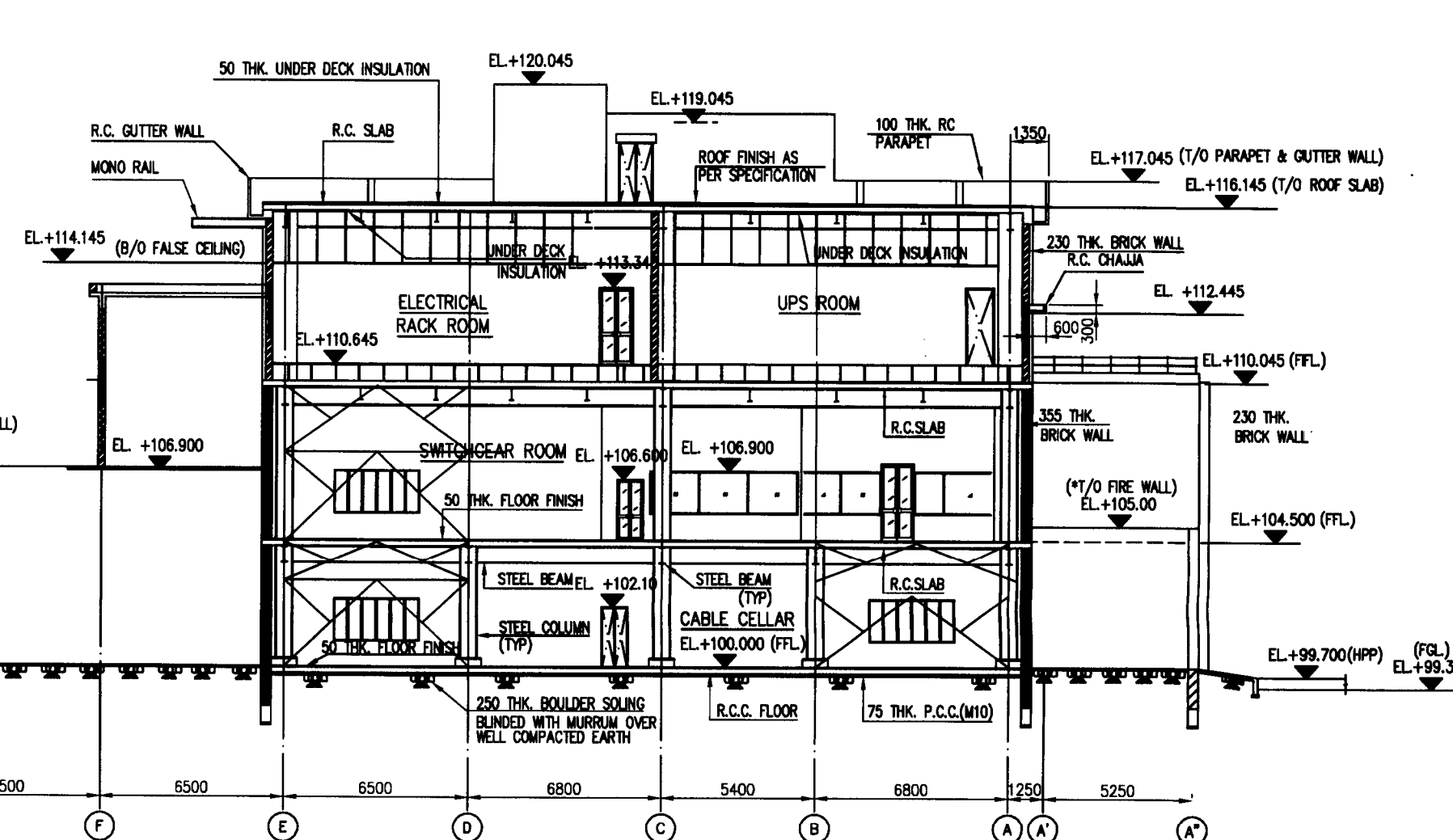
SCHEDULE OF TRANSFORMER GATES table with columns: TYPE, SIZE OF GATE, No. of GATE, REMARKS

FINISHING SCHEDULE

Table with columns: PLACE OF APPLICATION, FLOORING, WALL (INTERIOR, EXTERIOR), CEILING



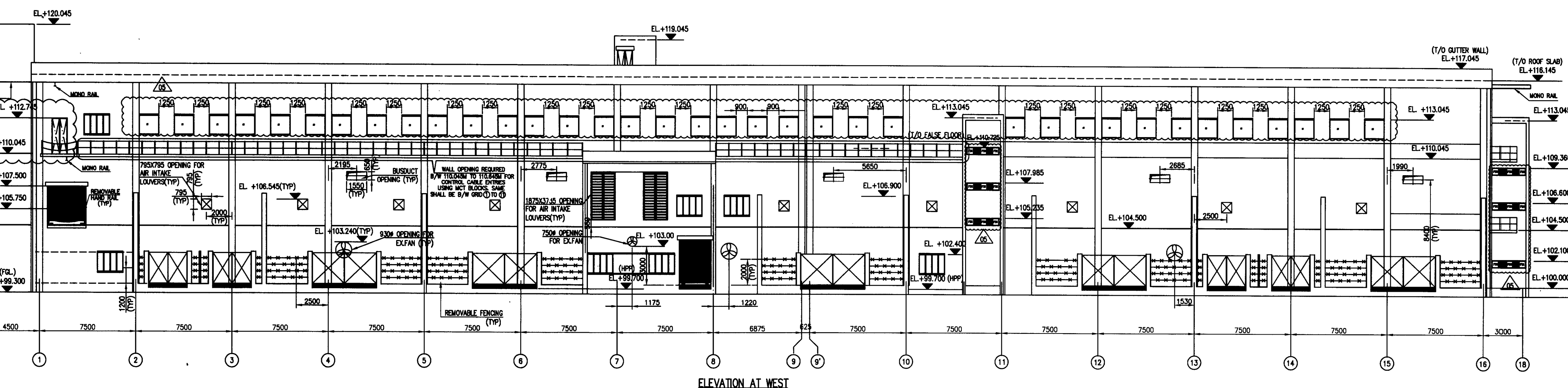
ELEVATION AT NORTH



SECTION (9) (9)

SCHEDULE OF DOORS, VENTILATORS AND OPENINGS

Table with columns: TYPE, WIDTH, HEIGHT, DESCRIPTION, etc.



ELEVATION AT WEST

SCHEDULE OF WINDOWS table with columns: TYPE, WIDTH, HEIGHT, DESCRIPTION, etc.

NOTES :- 1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE STATED.

REFERENCE DRAWINGS 0-38142-02437 - G.A. PLAN AT EL.100.000m. LVL. (SHEET 1 OF 5)

LEGEND table with columns: SYMBOL, DESCRIPTION

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY023020261

Project information block including owner details (ONGC Petro-additions Limited), project name (Switchgear CUB Control Room Building), and drawing number (0-38142-02437).

REVISIONS table with columns: REV, DATE, ALTERED, CHK/APPD, SRV/SPP