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NOTICE INVITING TENDER

(Document No PS:MSX:NIT)

TENDER NO.: BHEL/NR/SCT/DADRI FGD/DUCTING/1175

**NAME OF WORK: ERECTION, TESTING, COMMISSIONING OF
DUCTING AND INSULATION OF FGD SYSTEM AT 2 X 490 MW,
NTPC DADRI, STAGE-II.**

Bharat Heavy Electricals Limited



NOTICE INVITING E-TENDER (NIT)
BIDDER TO SUBMIT OFFERS ON PORTAL
<https://bhel.abcprocure.com>

To

Dear Sir/Madam

Sub : NOTICE INVITING E-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. Salient Features of NIT

SL NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	BHEL/NR/SCT/DADRI FGD/DUCTING/1175	
ii	BROAD SCOPE OF JOB	ERCTION, TESTING, COMMISSIONING OF DUCTING AND INSULATION OF FGD SYSTEM AT 2 X 490 MW, NTPC DADRI, STAGE-II.	
iii	DETAILS OF TENDER DOCUMENT		
a	Volume-IA	<u>Technical Conditions of Contract (TCC)</u> consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	Applicable
b	Volume-IB	<u>Special Conditions of Contract (SCC)</u>	Applicable
c	Volume-IC	<u>General Conditions of Contract (GCC)</u>	Applicable
d	Volume-ID	<u>Forms and Procedures</u>	Applicable
e	Volume-II	<u>Price Schedule (Absolute value)</u> .	Applicable
iv	ISSUE OF TENDER DOCUMENTS	From BHEL website (www.bhel.com) and https://bhel.abcprocure.com Tender documents will be available at website till due date of submission	Applicable
v	DUE DATE & TIME OF OFFER SUBMISSION	Date : 05/11/2019 , Time : 1500 HRS Place : on https://bhel.abcprocure.com	Applicable
vi	OPENING OF TENDER	At due date / time Date : 05/11/2019 , Time : 1530 HRS 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. However it being an e-tender it shall be opened online	Applicable

vii	EMD AMOUNT		Not Applicable
viii	COST OF TENDER	Rs. 2,000/-	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	<p>Three days before bid submission due date. <i>Along with soft version also, addressing to contact address given below</i></p> <p>1) Name: G.V. RAJA SEKHAR <i>Designation: MANAGER</i> <i>Dept: SCT</i> <i>Address: BHEL-PSNR, PLOT NO. 25,</i> <i>SECTOR – 16A, NOIDA - 201301</i> <i>Phone: (Landline) 0120-2416232</i> <i>Email : gvr@bhel.in</i></p> <p>2) Name: R M CHANDRA <i>Designation: DY, MANAGER</i> <i>Dept: SCT</i> <i>Address: BHEL-PSNR, PLOT NO. 25,</i> <i>SECTOR – 16A, NOIDA - 201301</i> <i>Phone: (Landline) 0120 - 2416440</i> <i>Email : rmchandra@bhel.in</i></p>	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)		Not applicable.
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)		Not Applicable
xii	LATEST UPDATES	<p>Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com -->Tender Notifications → View Corrigendums) & portal https://bhel.abcprocure.com and not in the newspapers. Bidders to keep themselves updated with all such information</p>	
xiii	TENDER SUBMISSION	on portal https://bhel.abcprocure.com	

2. 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, **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. 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 Noida 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 Noida, Sundays and second/ last Saturdays.

As this tender is an E-Tender and no paper bids will be accepted therefore the scanned copy of the Demand Draft or the Cash Receipt issued by BHEL PSNR should be uploaded in the E procurement portal. Hard Copy of the demand draft should reach BHEL PSNR HQ Noida before the due date and time of bid submission. BHEL shall not be responsible for postal or any other delays in this regard.

4. ~~Unless specifically stated otherwise, tender must be accompanied by the prescribed amount of Earnest Money Deposit (EMD) in the manner described in Clause no. 1.9 of General Conditions of Contract.~~

~~'One Time EMD' will not be considered for this tender. All the bidders who have 'One Time EMD' with BHEL and want to participate in this tender, would also submit the requisite amount of EMD as mentioned in Clause No. 1, Salient Features of NIT, Sl. No. (vii) above.~~

~~However, the One Time EMD can be adjusted against the EMD applicable against this tender on specific request of bidder.~~

For Electronic Fund Transfer the details are as below:-

a) **Name of the Beneficiary** :- Bharat Heavy Electricals Limited

b) **Bank Particulars**

i).	Bank Name :-	STATE BANK OF INDIA
ii).	Bank Telephone No.(with STD code)-:	011-23475566
iii).	Branch Address:-	CAG II BRANCH, NEW DELHI 4 th & 5 th FLOOR, REDFORT CAPITAL, PARASNATH TOWERS, BHAI VEER SINGH MARG, GOLE MARKET, NEW DELHI-110001
iv).	Bank Fax No. (with STD code) :-	011-23475566
v).	Branch Code :-	17313
vi).	9 Digit MICR Code of the Bank Branch :-	110002562
vii).	Bank Account Number :-	10813608647
viii).	Bank Account Type :-	CASH CREDIT
ix).	11 Digit IFSC Code of Beneficiary Branch:-	SBIN0017313

5. **Procedure for Submission of Tenders:** This is an E-tender floated online through our E-Procurement Site <https://bhel.abcprocure.com>. The bidder should respond by submitting their offer online only in our e-Procurement platform at <https://bhel.abcprocure.com>. Offers are invited in two-parts only.

Documents Comprising the e-Tender

The tender shall be submitted online ONLY EXCEPT TENDER FEE & EMD (in physical form) as mentioned below:

a. Technical Tender (UN priced Tender)

All Technical details (eg. Eligibility Criteria requested (as mentioned below)) should be attached in e-tendering module, failing which the tender stands invalid & may be REJECTED. Bidders shall furnish the following information along with technical tender (preferably in pdf format):

- i. Tender Cost furnished in accordance with NIT Clause 3.0.
- ii. Technical Bid (without indicating any prices).

b. Price Bid:

- i. Prices are to be quoted in the attached Price Bid format online on e-tender portal.
- ii. The price should be quoted for the accounting unit indicated in the e-tender document.
- iii. Note: It is the responsibility of tenderer to go through the Tender document to ensure furnishing all required documents in addition to above, if any. Any deviation would result in REJECTION of tender and would not be considered at a later stage at any cost by BHEL.
- iv. A person signing (manually or digitally) the tender form or any documents forming part of the contract on behalf of another shall be deemed to warrantee that he has authority to bind such other persons

and if, on enquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies, cancel the contract and hold the signatory liable for all cost and damages.

- v. A tender, which does not fulfil any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.
- vi. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, same shall not be considered.

DO NOT"S

Bidders are requested NOT to submit the hard copy of the Bid. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, the same shall not be considered. **Also, uploading of the price bid in prequalification bid or technical bid may RESULT IN REJECTION of the tender.**

Digital Signing of e-Tender

Tenders shall be uploaded with all relevant PDF/zip format. The relevant tender documents should be uploaded by an authorized person having Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION digital signature certificate (DSC).

The Requirement:

- 1. A PC with Internet connectivity &
- 2. DSC (Digital Signature Certificate)(**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**)

BHEL has finalized the e-procurement service Provider:-

M/s AbcProcure, Ahmedabad

A-202/208, Wall Street-II, Opp. Orient Club, Nr. Gujarat College,
Ellis Bridge, Ahmedabad-380006

The contact details of the service provider are given below:

Name	Contact Nos.	e-mail ID	Role	Location
Swapnil Hamilton	+91 79 40270549	swapnil.h@eptl.in	Support Executive	HO – Ahmedabad
Hardik Oza	+91 79 40270560	Hardik.oza@eptl.in	Support Executive	HO – Ahmedabad
Ankur Bhatt	+91 79 40270590	ankur.bhatt@eptl.in	Support Executive	HO – Ahmedabad
Prashant Rajyaguru	+91 79 40270545 / 9016859416	prashant@eptl.in	Ast. Manager – Implementation & Support	HO – Ahmedabad
Dharam Rathod	+91 79 40270596 / 9374519754	dharam@eptl.in	Manager – Implementation & Support	HO – Ahmedabad
Pradip Parmar	+91 79 40270532 / 9328657215	pradip@eptl.in	Sr Manager – Implementation & Support	HO – Ahmedabad
Devang Patel	+91 79 40270576 / 99983 05442	devang@eptl.in	Sr Manager – Implementation & Support	HO – Ahmedabad

The process of utilizing e-procurement necessitates usage of **DSC (Digital Signature Certificate) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION)** and you are requested to procure the same immediately, if not presently available with you. Please note that only with DSC, you will be able to login the e-procurement secured site and take part in the tendering process.

1. The contact details of the DSC Certifying Authority as given below

1	GNFC	www.ncodesolutions.com
2	e-Mudhra	http://www.e-Mudhra.com
3	Safescrypt	www.safescrypt.com

Vendors are also requested to go through seller manual available on <https://bhel.abcprocure.com>.

6. **Not Used**
7. 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. 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. **Assessment of Capacity of Bidders:**

Bidder's 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 cut off month for reckoning 'Load' shall be the 3rd Month preceding the month corresponding to the 'latest date of bid submission', in the following manner -

(Note: For example, if latest bid submission is in Jan 2017, then the 'load' shall be calculated up to and inclusive of Oct 2016)

Total number of Packages in hand = Load (P)

Where 'P' is the sum of all unit wise identified packages (refer table-1) under execution with BHEL Regions as on the cut off month defined above, including packages yet to be commenced, excepting packages which are on Long Hold.

- II. **PERFORMANCE:** Here 'Monthly Performance' of the bidder for all the packages (under execution/ executed during the 'Period of Assessment' in all 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 and including the cut off month. The cut off month for reckoning 'Period of Assessment' shall be the 3rd Month preceding the month corresponding to 'latest date of bid submission', in the following manner:

(Note: For example, if 'latest date of bid submission' is in Jan 2017, then the 'performance' shall be assessed for a 6 months' period up to and inclusive of Oct 2016 (i.e. from May 2016 to Oct 2016), for all the unit wise identified packages (refer Table -1))

- 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 of BHEL) **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 ($S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, S_{1-5}, \dots, S_{1-T_1}$) for similar package P_1 , for the 'period of assessment' ' T_1 ' (i.e. $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots + S_{1-T_1}$).

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

$$\begin{aligned}
 & \text{Aggregate of Performance scores for all similar packages in all the Regions} \\
 & = \dots \\
 & \text{Aggregate of months for each of the similar packages for which performance} \\
 & \text{should have been evaluated in all the Regions} \\
 & S_T \\
 & = \dots \\
 & T_T
 \end{aligned}$$

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
		(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	
(i)	(ii)								(x)
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 i.e. Sum (Σ) of columns (iii) to (ix)
2	Number of Months for which 'Monthly Performance Evaluation' as per relevant formats should have been done in the 'period of assessment' for corresponding Similar Packages (as in row 1)	T_1	T_2	T_3	T_4	T_5	...	T_N	Sum (Σ) of columns (iii) to (ix) = T_T
3	Monthly performance scores for the corresponding period (as in Row 2)	S_{1-1} , S_{1-2} , S_{1-3} , S_{1-4} , ... S_{1-T_1}	S_{2-1} , S_{2-2} , S_{2-3} , S_{2-4} , ... S_{2-T_2}	S_{3-1} , S_{3-2} , S_{3-3} , S_{3-4} , ... S_{3-T_3}	S_{4-1} , S_{4-2} , S_{4-3} , S_{4-4} , ... S_{4-T_4}	S_{5-1} , S_{5-2} , S_{5-3} , S_{5-4} , ... S_{5-T_5}	...	S_{N-1} , S_{N-2} , S_{N-3} , S_{N-4} , ... S_{N-T_N}	-----
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S_1	S_2	S_3	S_4	S_5	...	S_N	Sum (Σ) of columns (iii) to (ix) = S_T

ii). Calculation of Overall 'Performance Rating' (R_{BHEL}) in case at least 6 evaluation scores for '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_{BHEL}' shall be calculated subject to availability of 'performance scores' for at least 6 'package months' in the order of precedence below:

- 'Period of Assessment' i.e. 6 months preceding and including the cut-off month
- 12 months preceding and including the cut-off month
- 24 months preceding and including the cut-off month

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

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

Sl. no.	Overall Performance Rating (R _{BHEL})	Corresponding value of 'L'
1	=60	NA
2	> 60 and \leq 65	0.4
3	> 65 and \leq 70	0.35
4	> 70 and \leq 75	0.25
5	> 75 and $<$ 80	0.2
6	\geq 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:

- 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
- For R_{BHEL} = 60, P_{Max} = '1'
- 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 'I' above)

Note: For the transition period of 1 year (i.e. for all the NITs floated between 11th May 2019 to 10th May 2020), in addition to above, 'Assessment of Capacity of Bidder' shall also be calculated considering 'performance scores' till 36 months as per Sl. no II ii).

Higher of the results obtained out of both shall be considered for 'Assessment of Capacity of Bidder'.

IV. Explanatory note:

- Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or C&I 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, C&I, 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 (i.e. Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above.
- Identified Packages (Unit wise)

Table-1

Civil	Electrical and C&I	Mechanical
i). Enabling works	i). Electrical	i). Boiler & Aux (All types including CW Piping if applicable)
ii). Pile and Pile Caps	ii). C&I	ii). Power Cycle Piping/Critical Piping
iii). Civil Works including	iii). Others (Elect. and C&I)	

foundations iv). Structural Steel Fabrication & Erection v). Chimney vi). Cooling Tower vii). Others (Civil)	iii). ESP iv). LP Piping 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 Management x). Others (Mechanical)
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iii). Bidders who have not been evaluated for at least six package months in the last 24 months preceding and including the Cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions, 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/LOA from BHEL.

The "FIRST TIMER" tag shall remain till completion of all the contracts against which vendors has been tagged as First Timer or availability of 6 evaluation scores within last 24 months preceding and including the cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions.

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 'Assessment of Capacity of Bidders'.

iv). Consequent upon applying the criteria of 'Assessment of Capacity of Bidders' detailed above on all the bidders qualified against Technical and Financial Qualification criteria, if the number of qualified bidders reduces to less than four, then for further processing of the Tender, BHEL at its discretion reserves the right to also consider the bidders who are "not qualified" as per criteria of 'Assessment of Capacity of Bidders' and for this, procedure described in following three options shall be followed:

- All the bidders having Overall Performance Rating ('R_{BHEL}') ≥ 60 shall be considered qualified against criteria of 'Assessment of Capacity of Bidders'.
- If even after using option "a", the number of qualified bidders remains less than four, then in addition to bidders considered as per option "a", "First timer" bidders having average of available performance scores ≥ 60 upto and including the Cut Off month shall also be considered qualified against criteria of 'Assessment of Capacity of Bidders'.
- If even after using option "a" and "b", the number of qualified bidders remains less than four, then in addition to bidders considered as per option "a" and "b", "First timer" bidders for whom no performance score is available in the system upto and including the Cut Off month, shall also be considered qualified against criteria of 'Assessment of Capacity of Bidders'.

Note:- In case, the number of bidders qualified against Technical and Financial Qualification criteria itself is less than four, then all bidders (a)- having Overall Performance Rating ('R_{BHEL}') ≥ 60 , (b)- First timer" bidders having average of available performance scores ≥ 60 upto and including the Cut Off month, (c)- "First timer" bidders for whom no performance score is available in the system upto and including the Cut Off month, shall be considered qualified against criteria of 'Assessment of Capacity of Bidders' for further processing of tender.

v). 'Under execution' shall mean works in progress as per the following:

- Up to execution of 90% of anticipated Contract Value in case of Civil, MM, Structural and Turbo Blower Packages
- Up to Steam Blowing in case of Boiler/ESP/Piping Packages

c. Up to Synchronization in all Balance Packages

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

- vi). Contractor shall provide the latest contact details i.e. mail-ID and Correspondence Address to SCT Department, so that same can be entered in the Contractor Performance Evaluation System, and in case of any change/discrepancy same shall be informed immediately. Login Details for viewing scores in Contractor Performance Evaluation System shall be provided to the Contractor by SCT Department.
- vii). Performance Evaluation for Activity Month shall be completed in Evaluation Month (i.e. month next to Activity Month) or in rare cases in Post Evaluation Month (i.e. month next to Evaluation Month) after approval from Competent Authority. In case scores are not acceptable, Contractor can submit Review Request to GM Site/ GM Project latest by 25th of Evaluation Month or 3 days after approval of score, whichever is later. However, acceptance/rejection of 'Review Request' solely depends on the discretion of GM Site/GM Project. After acceptance of Review Request, evaluation score shall be reviewed at site and the score after completion of review process shall be acceptable and binding on the contractor.
- viii). Project on Hold due to reasons not attributable to bidder -
 - a. **Short hold:** Evaluation shall not be applicable for this period, however Loading will be considered.
 - b. **Long hold:** Short hold for continuous six months and beyond or hold on account of Force Majeure shall be considered as Long Hold. Evaluation as well as Loading shall not be considered for this period.
- ix). 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. 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. For any clarification on the tender document, the bidder may seek the same over e-procurement portal 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. 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. 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. Unless specifically mentioned otherwise, bidder's quoted price shall be deemed to be in compliance with tender including PBD.
15. **Not Applicable**
- 15a **Not Applicable**

16. 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. In case BHEL decides on a 'Public Opening', the date & time of opening of the 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. 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.
 - (a) BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer 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 RA.
 - (b) Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).
 - (c) The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. **The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.**
 - (d) If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).
 - (e) If reverse auction process is unsuccessful, sealed envelope price bids of all the techno-commercially qualified bidders shall be opened and the tender shall be processed accordingly. However, the envelope sealed bid(s) of techno-commercially acceptable bidder(s) who had agreed to participate in the RA and had failed to submit the online sealed bid shall not be opened.
20. On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
21. 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. The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
23. **Consortium Bidding (or Technical Tie up): Not Applicable**

24. The bidder shall upload 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. The bidder may have to produce original document for verification if so decided by BHEL.

26. It may please be noted that guidelines/rules in respect of Suspension of Business dealings', 'Vendor evaluation format', 'Quality, Safety & HSE guidelines', milestone/ completion certificate, etc may undergo change from time to time and the latest one shall be followed. The abridge version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' is available on www.bhel.com on "supplier registration page".

27.0 The offers of the bidders who are on the banned/ hold list as also the offer of the bidders, who engage the services of the banned/ hold firms, shall be rejected. The list of **banned/ hold firms** is available on BHEL web site www.bhel.com

27.1 Integrity commitment, performance of the contract and punitive action thereof:

27.1.1 **Commitment by BHEL:**
BHEL commits to take all measures necessary to prevent corruption in connection with the tender Process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

27.1.2 **Commitment by Bidder/ Supplier/ Contractor:**

- (i) The bidder/ supplier/ contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.
- (ii) The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.
- (iii) The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the prices or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extent guidelines of the company available on www.bhel.com and / or under applicable legal provisions.

28.0 **Not Applicable**

29.0 The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

30.0 **PREFERENCE TO MAKE IN INDIA:**
For this procurement, Public Procurement (*Preference to Make in India*), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/ PO/ WO against this NIT.
In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable.

31.0 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

for BHARAT HEAVY ELECTRICALS LTD

(SCT)

Enclosure:-

- (i) Annexure-1: Pre Qualifying criteria.
- (ii) Annexure-2: Check List.
- (iii) Annexure-3: Authorization of representative who will participate in the online Reverse Auction Process
- (iv) Other Tender documents as per this NIT.

ANNEXURE - 1**PRE QUALIFYING REQUIREMENTS**

JOB	ERCTION, TESTING, COMMISSIONING OF DUCTING AND INSULATION OF FGD SYSTEM AT 2 X 490 MW, NTPC DADRI, STAGE-II.
TENDER NO	BHEL/NR/SCT/DADRI FGD/DUCTING/1175

SL. NO.	NAME AND DESCRIPTION OF PRE-QUALIFICATION CRITERIA	BIDDER'S CLAIM IN RESPECT OF FULFILLING THE PQR CRITERIA
A	Submission of Integrity Pact duly signed	Not Applicable
B	Assessment of Capacity of bidder to execute the work as per clause 9.0 of NIT	Applicable – by BHEL
C	<p><u>TECHNICAL:</u></p> <p>Bidder who wish to participate should have 'Executed' works for any one of the following during the last seven (7) years, ending on the 'latest date of bid submission' of tender:</p> <p>C-1 One Boiler (consisting of "Pressure Parts", "Structure") of the same unit of \geq 190 MW.</p> <p style="text-align: center;">OR</p> <p>C-2 One ESP of a unit of \geq 190 MW.</p> <p style="text-align: center;">OR</p> <p>C-3 R&M/ Retrofitting of one Boiler (190 MW or higher) involving Erection of minimum 1600 MT in single unit.</p> <p style="text-align: center;">OR</p> <p>C-4 R&M/ Retrofitting of one ESP of 190MW or higher involving Erection of minimum 1600 MT in single unit.</p>	Applicable
D	<p><u>FINANCIAL:</u></p> <p><u>TURNOVER:</u> Bidders must have achieved an average annual financial turnover (Audited) of Rs. 120 Lakhs or more over last three Financial Years (FY) i.e. (2016-2017, 2017-2018, 2018-2019). Bidder shall submit the Audited Balance Sheet and Profit & Loss Account in support of this.</p> <p>In case audited financial statements have not been submitted for all the three years as indicated above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years.</p> <p>If financial statements are not required to be audited statutorily, then instead of audited financial statements, financial statements are required to be certified by Chartered Accountant.</p>	Applicable

D-2	<p><u>NET WORTH:</u> Net worth (only in case of companies) of the bidder should be positive. Note: Net worth shall be calculated based on the latest Audited Accounts, as furnished for 'D-1' above. Net worth = Paid up share capital* + Reserves. (* : Share Capital or Partnership Capital or Proprietor Capital as the case may be).</p>	Applicable
D-3	<p><u>PROFIT:</u> Bidder must have earned profit in any one of the three financial years as applicable in the last three financial years as furnished for 'D-1' above. Note: PROFIT shall be PBT earned during any one year of last three financial years as in 'D-1' above.</p>	Applicable
D-4	Bidder must not be under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation/ BIFR, which will render him ineligible for participation in this tender and shall submit undertaking to this effect.	Applicable
E	Approval of Customer	Not Applicable
F	Consortium Criteria	Not Applicable

Explanatory Notes for QR 'C':

1. For evaluation of PQR, the credentials of the bidder alone, and not that of the Group Company shall be considered.
2. Completion date for achievement of the technical criteria should be in the last 7 years ending on the 'latest date of Bid Submission' of Tender irrespective of date of the start of work.
3. "Executed" means "BOILER LIGHT UP" in respect of Boiler/ ESP and "GAS IN" in respect of HRSG. The bidder should have achieved the above criteria, even if the contract has not been completed or closed.
4. For the purpose of evaluation of the PQR, one MW shall be considered equivalent to 3.5 TPH where ever rating of HRSG/BOILER is mentioned in MW.
5. Boiler means HRSG or WHRB or any other types of Steam Generator. Experience of Oil/Gas Fired Boilers shall also be considered.

BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT INCLUSIVE OF WORK ORDER AND WORK COMPLETION CERTIFICATE ETC IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

ANNEXURE - 2**CHECK LIST**

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

1	Name of the Tenderer		
2	Address of the Tenderer		
3	Type of the Firm/ Company		
(i)	In case of Individual Tenderer	His / her full name, address and place & nature of business shall be furnished along with the offer.	
(ii)	In case of Partnership Firm	The names of all the partners and their addresses, A copy of the partnership deed/instrument of partnership dully certified by the Notary Public shall be furnished along with the offer..	
(iii)	In case of Companies	a) Date and place of registration including date of commencement certificate in case of Public Companies (certified copies of Memorandum and articles of Association are also to be furnished). b) Nature of business carried on by the Company and the provisions of the Memorandum relating thereof.	
4.a	Details of Contact person for this Tender	Name : Mr/ Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4.b	Details of alternate Contact person for this Tender	Name : Mr/ Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
5	EMD DETAILS	Not Applicable	
6	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
	DESCRIPTION	APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
7	Whether all pages of the Tender documents including annexures, appendices etc are read and understood	Applicable	YES / NO
8	Whether the format for compliance with PRE QUALIFICATION CRITERIA (ANNEXURE – 1) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
9	Audited Balance Sheet and profit & Loss Account for the last three years	Applicable	YES / NO
10	Copy of PAN Card	Applicable	YES / NO
11	Copy of GST registration	Applicable	YES / NO

SL. NO.	DESCRIPTION	APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
12	Organization Chart of the tenderer's organization, including the names, addresses and contact information of the Directors/Partners shall be furnished along with the offer.	Applicable	YES / NO
13	Integrity Pact	Not Applicable	YES / NO
14	Offer forwarding letter / tender submission letter [Form No. F-01 (Rev 00)]	Applicable	YES / NO
15	Declaration by Authorised Signatory [Form No: F-02 (Rev 00)]	Applicable	YES / NO
16	Declaration by Authorised Signatory regarding Authenticity of submitted documents [Form No: F-02A (Rev 00)]	Applicable	YES / NO
17	No Deviation Certificate [Form No: F-03 (Rev 00)]	Applicable	YES / NO
18	Declaration confirming knowledge about Site Conditions [Form No: F-04 (Rev 00)]	Applicable	YES / NO
19	Declaration for relation in BHEL [Form No: F-05 (Rev 00)]	Applicable	YES / NO
20	Non-Disclosure Certificate [Form No: F-06 (Rev 00)]	Applicable	YES / NO
21	Bank Account Details for E-Payment [Form No: F-07 (Rev 00)]	Applicable	YES / NO
22	Format for seeking clarification [Form No: F-08 (Rev 00)]	Applicable	YES / NO
23	Capacity Evaluation of Bidder for current Tender [Form No: F-09 (Rev 00)]	Applicable	YES / NO
24	Power of Attorney for Submission of Tender/Signing Contract Agreement [Form No: F-25 (Rev 00)]	Applicable	YES / NO
25	Analysis of Unit rates [Form No: F-26 (Rev 00)]	Applicable	YES / NO
26	Tie Ups/Consortium Agreement are submitted as per format [Form No: F-22 (Rev 00)]	Not Applicable	YES / NO

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

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE - 3**Authorization of representative who will participate in the on line Reverse Auction Process;**

1	NAME & DESIGNATION OF OFFICIAL	
2	POSTAL ADDRESS (COMPLETE)	
3	TELEPHONE NOS. (LAND LINE & MOBILE BOTH)	
4	FAX NO.	
5	E-MAIL ADDRESS	
6	NAME OF PLACE/ STATE/ COUNTRY, WHEREFROM S/HE WILL PARTICIPATE IN THE REVERSE AUCTION	

Rev 01
1st June
2012

TECHNICAL CONDITIONS OF CONTRACT (TCC)

(Document No PS:MSX:TCC)

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT

of

**ERECTION, TESTING, COMMISSIONING AND HANDING
OVER OF DUCTING SYSTEM (FGD)
AT 2X490 MW, NTPC DADRI, STAGE-II**

Part-I OF TCC



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301 (INDIA)

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SI No	DESCRIPTION	Chapter	PAGE NO.
	Contract specific details		
1	Project Information	Chapter-I	4
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9	Other Conditions	Chapter-IX	22
10	Annexures	Chapter-X	23
11	Rate Schedule	Chapter-XI	24-25

TECHNICAL CONDITIONS OF CONTRACT (TCC) PART I**Chapter I: Project Information**

S.No.	Title	Description
1	Name of the Project	NATIONAL CAPITAL THERMAL POWER PROJECT(NCTPP) STAGE-II
2	Owner	M/s NTPC
3.	Address	Dadri, District– Gautam Buddh Nagar,Uttar Pradesh
4.	Installed Capacity	2 x 490 MW
5.	Nearest Railway station	Dadri (Approx. 8.5 KM)
6.	Nearest Road	National Highway- 3 & 24
7.	Nearest City	Dadri (Approx. 7 KM)
8.	Nearest Airport	Delhi (Approx. 70 KM)

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter II: Scope of Work

2.0	SCOPE OF WORK
2.1	BHEL has been awarded the work of Design, Engineering, Supply, Erection, Testing, Commissioning, Trial run and Handing over of complete mechanical, electrical, C&I and associated civil and structural works for the Flue Gas Desulphurization(FGD) system and its auxiliaries for NCTPP Dadri Stage II(2x490 MW) of M/s NTPC Ltd.
2.2	The scope of work under this tender specification broadly consists of following:
2.2.1	Taking delivery of the materials from the project storage yard /stores /sheds to erection site.
2.2.2	Their preservation, safe keeping, watch and ward.
2.2.3	Pre-assembly of duct pieces, Erection, Alignment, Welding of Duct modules, inlet and out let gate ,Expansion Pieces, Seal Air piping , Blower ,Actuator ,insulation and cladding etc.
2.2.4	Ducting module size after assembling shall be within range of 3.5 - 7.6 mtr (width) and Height will be 4 mtr to 12 mtr or size can vary as per the site conditions.
2.2.5	Duct Lay out drawings are enclosed with tender documents to understand the quantum of work involved in the subject tender.
2.2.6	Welding other non-destructive tests wherever required as per approved quality plan/drawings/ documents.
2.2.7	ATT (Air tightness test)/ other pre commissioning tests as per approved quality plan/drawings/ documents
2.2.8	Erection and dismantling of all temporary system etc. required for above operations and other commissioning activities
2.2.9	Resolving any deficiencies observed in ducting system during trial run of FGD system and handing over the Ducting system to customer M/s NTPC.
2.2.10	Welders with requisite qualification tested and qualified at site by BHEL & NTPC FQA will be employed by the contractor.
2.2.11	All necessary T&Ps (like Trailer ,Hydra crane Welding Machine, Gas Cutting Set, jigs & fixtures, All PPE's etc.) to be mobilized by the contractor.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter II: Scope of Work

2.6	Tentative weight to be erected for the Ducting System shall be 2727 MT and detailed break up indicated in Annexure-I.
2.6.1	Contractor is required to erect actual tonnage (irrespective of any variation plus or minus) which may be necessary to complete their work and commission piping system and complete the work in all respects as detailed in tender specifications, for which payments shall be released on finally accepted tonnage rates. Contractor undertakes to erect / commission actual quantities as per instruction of the BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually erected at site and payments shall also be regulated for the same.
2.6.2	Customer M/s. NTPC and / or their Consultant may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works, without any cost implications to the BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.
2.7	SITE VISIT
2.7.1	Contractor should visit site and acquire full knowledge and information about site conditions. The bidder must visit site, to acquaint themselves with the conditions prevailing at site and in and around the plant premises, together with all statutory, obligatory, mandatory requirements of various authorities before submission of bid.
2.8	DEWATERING
2.8.1	Contractor shall ensure at all times that the work area & approach/ access roads are free from accumulation of water, so that the materials are safe and the erection/ progress schedule are not affected. No separate claim in this regard shall be admitted by BHEL.
2.9	Contractor shall ensure the following:
2.9.1	Contractor has to maintain contact with local hospital having ambulance facility, scanning and other ultramodern medical facilities required during emergency.
2.9.2	Contractor has to ensure pre-employment medical check for all staff & workers
2.9.3	Contractor has to ensure that adequate First Aid facilities are available at work site for emergency purpose.
2.9.4	BHEL (through its other contractor) has arranged ambulance at work site for emergency purpose, which can be utilized by the contractor in case of emergency. The charges for the same will be decided mutually at site. In case, under unavoidable circumstances, if the ambulance is not available / being used elsewhere, the contractor will have to arrange for the same as under clause 2.9.1.
2.10	The contractor shall comply with following towards Social Accountability;
2.10.1	The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.
2.10.2	The contractor shall not engage Forced/ Bonded Labour and shall abide by abolition of Bonded Labour System (Abolition) Act, 1976.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter II: Scope of Work

2.10.3	The contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act, 1970.
2.10.4	The Contractor shall abide by UN convention w.r.t. Human Rights and shall be liable for Discrimination / Corporal punishment for failure in meeting with relevant requirements.
2.10.5	The Contractor shall abide the requirement of Contract Labour (Regulation & Abolition) Act, 1970/ESI for working hours.
2.10.6	The Contractor shall abide by the Statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
2.10.7	The Contractor shall arrange potable drinking water to its employees & workers.
2.11	SITE ORGANISATION
2.11.1	The contractor shall provide adequate staffing in the following areas in addition to the staffing requirements of execution as instructed/informed by BHEL: 1. Overall planning, monitoring & control. 2. Quality control and quality assurance. 3. Materials management. 4. Safety, fire & security. 5. Industrial relations and fulfilment of labour laws and other statutory obligations.
2.11.2	The contractor shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all times for smooth execution of the contract. This organization shall be reinforced from time to time, as required to make up for slippage from the schedule without any commercial implication to BHEL. The site organization shall be headed by a competent construction manager having sufficient authority to take decisions at site.
2.11.3	On award of contract, the contractor shall submit to BHEL site organization chart indicating the various levels of experts to be deployed on the job. BHEL reserves the right to reject or approve the list of personnel proposed by the Contractor. The persons, whose bio-data have been approved by BHEL, will have to be posted at site and deviations in this regard will not generally be permitted.
2.11.4	The contractor should also submit to BHEL for approval a list of construction equipment, erection tools, tackle etc prior to commencement of site activities. These tools & tackles shall not be removed from site without written permission of BHEL
2.11.5	The organization chart for site should indicate the various levels of experts to be posted for supervision in the various fields in erection, commissioning etc as applicable. For proper supervision of the work, the contractor shall ensure providing one qualified supervisor against deployment of 15 workmen.
2.12	ERECTION SCHEDULE
2.12.1	Contractor shall submit within 07 days of LOI date, detailed program (L2 schedule) of construction / erection / commissioning along with matching resources T&P Deployment and manpower deployment schedule for approval to Site In-Charge/Project Manager-Noida. L2 schedule shall be the working level document demonstrating contractor's ability and methods of completing the work within the key milestones identified in the tender specification. These program would be amplified showing start of erection and subsequent activities and shall form the basis for site execution and detailed monitoring, The three monthly rolling program with the first month's program being tentative based on the site conditions would be prepared based

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter II: Scope of Work

	on these program. The Contractor shall also be involved along with the Customer/BHEL to tie up detailed resource mobilisation plan over the period of time of the contract matching with the performance targets.
2.12.2	The program would be jointly finalised by the site in-charge of the contractor with BHEL/Customer's project coordinator as well as the site planning representative. The erection program will also identify the sequential erectable tonnages
2.12.3	Contractor shall submit daily work program based on above schedule. Deferment of above schedule is not acceptable. Contractor will adhere to schedule & augment resources to ensure completion as per schedule.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter II: Scope of Work

2.13	Brief description of Ducting System to be Installed, Tested and Commissioned under this specification for both units is given below:
2.13	Duct Unit 5&6:
2.13.1	Duct from existing chimney to Booster fan
2.13.2	Booster Fan to Absorber inlet
2.13.3	Absorber outlet to Chimney
2.14	Expansion Pieces
2.15	Seal air Piping and Blower
2.16	Inlet gate, actuator for booster fan and accessories
2.17	Insulation ,cladding sheet

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter III: FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR

3.0 FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR				
S.No.	Description	Scope /to be taken care by		Remarks
		BHEL	Contractor	
1.1.0	ESTABLISHMENT			
1.1.1	FOR CONSTRUCTION PURPOSE			
A.	Open space for office	YES		Limited space (free of charge). As and where made available by customer M/s NTPC
B.	Open space for storage	YES		Limited space (free of charge). As and where made available by customer M/s NTPC
1.1.2	FOR LABOUR COLONY			
A	Open space		YES	Contractor have to make their own arrangement
1.2.0	ELECTRICITY			
1.2.1.	Electricity for construction purposes (chargeable/free)			
1.2.1.1	Single point source	YES		Chargeable basis as per the prevailing rate of DISCOM.
1.2.1.2	Further distribution for the work to be done which include supply of materials & execution		YES	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:			
1.2.2.1	Distribution from single point including supply of materials & service		YES	
1.2.2.2	Supply, Installation & connection of material of		YES	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter III: FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR

	energy meter including operation maintenance			
1.2.2.3	Duties & deposits including statutory clearances for above		YES	
1.2.2.4	Demobilization of the facilities after completion of works		YES	
1.2.2.5	Electricity for living accommodation of the bidder's Staff, engineers, supervisors etc. on the above Lines		YES	Chargeable As per prevailing rates Contractor shall install calibrated energy meter for metering electricity consumption.
1.3.0	WATER SUPPLY			
1.3.1	FOR CONSTRUCTION			
1.3.1.1	Making the water available at single point		YES	Contractor have to make bore wells it self. Wherever approved by M/s NTPC / BHEL
1.3.1.2	Further distribution as per the requirement of work including supply of materials & execution		YES	
	FOR LABOUR COLONY			
	Making the water available at single point		YES	Contractor has to arrange on his own.
	Further distribution as per the requirement of work including supply of materials & execution		YES	
1.4.0	LIGHTING			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter III: FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR

1.4.1	For Material Handling work (supply of all materials) 1. At office storage area 2. At Yard or any other places where material is unloaded/stored		YES	
1.4.2	For material handling work (execution of lighting work/arrangements) 1. At office storage area 2. At Yard or any other places where material is unloaded/stored		YES	
1.4.3	Providing the necessary consumables like bulbs, tube lights, Switches, etc. for maintaining the lighting system		YES	
1.5.0	Communications facilities for site operations of the bidder			
	Telephone/mobile, fax, internet, email etc.		YES	
3.1	BHEL will not be responsible for any loss or damage to the contractor's equipment as a result of variation in voltage or frequency or interruptions in power supply.			
3.2	The Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.			
3.3	Provision of distribution lines of both electrical power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS/ Copper / Brass clamps, copper conductor, change over switches pipes etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shifts / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter III: FACILITIES IN THE SCOPE OF BHEL/CONTRACTOR

	The energy meter to be installed by the contractor & shall be tested and certified by State Electricity Board or any other agency approved by the NTPC at his cost.
3.4	The contractor while drawing construction power supply from Distribution Board should strictly adhere to following points.
3.4.1	All electrical installations should be as per Indian Electricity rules.
3.4.2	All distribution Boards installed by the contractor should be constructed with fireproof materials viz. Steel frames, Bakelite sheets etc.
3.4.3	Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.
3.4.4	All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.
3.4.5	Contractor has to make their own earthing arrangement for their equipment / DB earthing.
3.4.6	All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.
3.4.7	Contractor should use "MCCB" and "ELCB" either on incoming or outgoing connections to the DBs.
3.4.8	Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.
3.4.9	For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.
3.4.10	ELCB will be tested once in a week or as directed by BHEL by actually simulating the earth leakage for all installations and the same shall be recorded in the logbook to be maintained by the contractor.
3.5	In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.
3.6	On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed, as per instructions of BHEL, by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expenses incurred shall be recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter IV: T&P PROVIDED BY CONTRACTOR

4.0 T&P DEPLOYED BY CONTRACTOR			
S.No.	EQUIPMENT	Capacity	Qty.
1.	Crawler/Tyre mounted Crane	40 T	1 No.
2.	Trailer along with pulling unit	20/40 T	1 No.
3.	Hydra Crane	12/14/18 T	3 No.
4.	Welding sets with accessories and ovens for welding electrodes backing and holding	APR	APR
5.	Workshop equipment's and Drilling machine	APR	APR
6.	Chain pulley blocks of various & suitable capacities	APR	APR
7.	Three phase distribution board with complete setup for drawl & distribution of construction power	APR	APR
8.	Electric cables for drawl & distribution of construction power, heating machines	APR	APR
9.	Sleepers of suitable sizes	APR	APR
10.	Various sizes of clamps/ fixtures for assembling	APR	APR
11.	Dewatering pumps	APR	APR
12.	Scaffolding pipes along with clamps	APR	APR
13.	Magnetic particle testing equipment-DRY & WET Type and NDT kit	APR	APR
14.	Elco meter	APR	APR
15.	Tong Tester 10, 20 Or 50 Amp + / - 3 % Accuracy	APR	APR
16.	Digital and Analogue Millimeters	APR	APR
17.	U Tube Manometer 0-2000 mm Water Column	APR	APR
18.	Inclined Manometer 0-50 mm Water Column	APR	APR
19.	Calibrated Pneumatic Torque wrench	APR	APR
20.	Bolt Tension Calibrator	APR	APR
21.	Air compressor	APR	APR
NOTES:			
4.1	<p>The above list is only indicative and these T&Ps may not be required for entire contract period but contractor shall ensure the availability of the T&Ps as per work requirement and T&P Deployment schedule.</p> <p>T&P Deployment schedule shall be finalized at site in consultation with BHEL Engineer based on the work fronts/work requirement. BHEL decision shall be final</p>		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter IV: T&P PROVIDED BY CONTRACTOR

	and binding regarding the T&P deployment schedule. Contractor shall mobilize / maintain the T&P's as per the deployment schedule notified time to time by BHEL Engineer.
4.2	APR- Contractor has to deploy T&P, MMD, IMTE as per requirement of site and as decided by BHEL Engineer.
4.3	If any one of T&P mentioned above is not needed for proper execution of scope of work, provided contractor has not utilized BHEL free issued T&P for completing such work, no recovery from contractor shall be applicable.
4.4	Any additional item required in addition to above mentioned T&P for proper execution of scope of work, contractor has to arrange such T&P within quoted rate on the instruction of BHEL in writing in a reasonable period within two weeks from the written instruction from BHEL.
4.5	i.) In case deployment of T&P w.r.t requirement/schedule, is delayed or deployed for a shorter period or abnormal down time of T&P or ii) in case T&P w.r.t requirement was not deployed by the contractor as per instruction of BHEL and BHEL had to deploy either its own T&P or iii.) BHEL had to deploy the T&P from outside agency, then recovery shall be done from the contractor as under:
4.5.1	In case the contractor does not deploy or delays deployment or major T&P with reference to schedule specified or T&P deployed is out of service continuously for more than 5 days, BHEL will recover non-refundable penalty per day in the following manner- In respect of 40 T crane-Rs.5,000/- per day In respect of each hydra 12T/14T/18MT- @ Rs 3000/- per day In respect of each trailer 20MT- @ Rs 2000/- per day For the daily recovery rate for other T&P/IMTEs BHEL Engineer decision shall be final and binding on the contractor
4.5.2	In case BHEL had to deploy its own T&P, hire charges of T&P applicable for outside agencies as per extant guidelines for "Hire Charges on issue of Capital Tools & Plants" shall be recovered.
4.5.3	In case BHEL had to deploy the T&P from outside agency, actual hiring cost plus applicable overheads shall be recovered
4.6	All the tools and tackles/measuring instruments shall be duly tested/calibrated and valid certificate to that effect should be submitted to BHEL site in-charge before the start of work.
4.7	NA
4.8	If the work related to T & Ps mentioned above is completed then, BHEL can release that T & P during contract period / extended period if any. However, written permission shall be taken by contractor from BHEL construction Manager for releasing the T&P.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter V: T&P DEPLOYED BY BHEL

5.0 LIST OF T&P BEING PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS			
Sl. No.	Equipment	Capacity	Qty.
1	CRAWLER CRANE	100/135MT	1 No
2	Industrial Air Blower	20,000 cum./hr	1 No.
NOTES:			
5.1	Day-to-day upkeep and running maintenance like filling topping up of lubricants, changing filters, etc. including repair of self-starter, batteries and dynamo of these cranes shall be excluded from the scope of the contractor. In case of breakdown of crane, contractor shall provide the necessary manpower for maintenance of the crane to maintenance agency, failing to do so BHEL will get the job done at the risk and cost of contractor. BHEL may also provide cranes through crane hiring agencies in which case the day-to-day upkeep and running maintenance shall be excluded from scope of contractor.		
5.2	The operator, helper & maintenance personal for BHEL's cranes 100 MT & above capacity being provided by BHEL free of cost. Further fuel for operation of all BHEL cranes shall be provided by contractor without any extra cost.		
5.3	The Cranes at Sl No. 1&2 will be provided as per requirement and availability at the sole discretion of the BHEL Engineer		
5.4	The contractor shall make necessary arrangement like laying of special sleeper beds, assembly & dismantling of heavy lift attachment, boom, jib etc. for movement and operation of crane.		
5.5	Other T&P mention above contractor shall transport from BHEL stores, install, operate, carry out maintenance, dismantle after use and return to BHEL stores.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VI: TIME SCHEDULE

6.0	TIME SCHEDULE
6.1	The contractor is required to commence the work within 07 days from the date of issue of letter of intent (LOI) unless BHEL decides to fix any other later date. However, the actual date of start of work, to fix up the zero date of the contract, will be certified by BHEL Engineer after adequate mobilization of manpower and T&Ps by the contractor.
6.2	Entire work as detailed in the tender specifications shall be completed within 04 months from the Zero date as per programme / milestones indicated by BHEL Engineer. Contractor has to mobilise adequate resources to meet BHEL's commitments to their customer as indicated from time to time.
6.3	Entire work shall be carried out in accordance with the detailed schedule for ducting system which finalized at site.
6.4	Contractor shall plan their work in such a manner so as to meet the project schedule, in consultation with BHEL/ customer. To achieve the schedule contractor shall work in the all the available fronts concurrently and be prepare for working in the shift operation as per the instruction of BHEL Engineer.
6.5	The work under the scope of this contract shall be deemed to have been completed in all respects only when so certified by BHEL. The decision of BHEL shall be final and binding on the contractor.
6.6	If the completion of work as detailed in the scope of work gets delayed beyond the contract/ completion period, the contractor shall request for an extension of the contract and BHEL at its discretion may extend the contract.
6.7	GUARANTEE PERIOD
	Duration of Guarantee Period shall be One Year. Commencement of guarantee period for the quality of the workmanship shall start from the date of trial operational acceptance of facilities/handing over to the customer for the respective unit.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VII: Terms of Payment

7.0	TERMS OF PAYMENT	
7.1	The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.	
7.2	Contractor shall submit bills for the work completed under the specification, once in a month detailing work done during the month. The format for billing shall be approved by BHEL before raising invoices and payment shall be released within 30 days of receipt of Bill complete in all respect.	
7.3	Shortage / damage reports on BHEL's standard materials management forms and no payment shall be released till the contractor submits these reports and are verified by the Engineer.	
7.4	Subject to any deduction which BHEL may be authorized to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder	
7.5	PROGRESSIVE PAYMENT ON PRORATA BASIS For Ducting Works:	
7.6	Ducting Works	
7.6.1	90 % of Unit Rate (Applicable for ITEM. No. 1,2 of Rate Schedule Annexure-B)	
S.No.	Description	
1.	Completion of pre-assembly, (if not applicable this portion shall be clubbed with Placement in position)	25%
2.	Placement in position	20 %
3.	Alignment	15 %
4.	Welding /bolting/fixing as required	15%
5.	Completion of non destructive examination (if not applicable, then this portion to be paid along with welding)	10%
6.	H&S wherever applicable as per drawing	5%
7.	TOTAL FOR PRO RATA PAYMENTS	90%

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VII: Terms of Payment

7.7 STAGE/MILESTONE PAYMENTS (10%)			
1.	ATT of Ducting system		
1.1	Existing chimney to Absorber inlet	2x1%	2%
1.2	Absorber outlet to new chimney	2x1%	2%
2.	Trial run of FGD System	2x1.5%	3%
3.	Area cleaning, temporary structures cutting/removal and return of scrap		1%
4.	Liquidation of pending points		1%
5.	Completion of all contractual obligation and de mobilization of site office.		1%
6.	Total		10%
7.8	Notes:		
7.8.1	If the commissioning activities could not be carried out due to no fault of contractor, BHEL Site in-charge at his discretion after recording reasons for exercising such option, can split and release payment up to 50% of milestone payment on completion of work, to the extent possible, required for carrying out that particular milestone/ commissioning activity.		
7.8.2	In line with GCC clause 2.23.1.(v) to facilitate part payment, BHEL Site Engineer at his discretion may further split the contracted rates/percentages to suit site conditions, cash flow requirements according to the progress of work.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VIII: TAXES AND DUTIES

8.0 TAXES & DUTIES	
8.1.1	Price quoted should be inclusive of all applicable Taxes/charges but Excluding GST . The Contractor shall pay all other taxes, fees, royalty, commission etc. which may be levied on the contractor in executing the contract. In case BHEL is forced to pay any of such taxes, it shall be recovered from Contactor's bills or otherwise as deemed fit.
GST Shall be payable extra as per following:	
8.1.2	Contractor/Vendor has to issue invoice indicating HSN/SAC code, Description, Value, Rate, applicable tax and other particulars in compliance with the provisions of relevant GST Act and Rules made thereunder. With the implementation of e way bill provisions, contractor shall comply with same as applicable.
8.1.3	Vendor has to submit GST compliant invoice within seven days from the due date of invoice as per GST Law. In case of delay, BHEL reserves the right of denial of GST payment if there occurs any hardship to BHEL in claiming the input thereof. In case of goods, vendor has to provide scan copy of invoice & GR/LR/RR to BHEL before movement of goods starts. Special care should be taken in case of month end transactions.
8.1.4	GST amount claimed in the invoice shall be released on fulfilment of all the following conditions by the Contractor : - <ul style="list-style-type: none">a. Supply of goods and/or services have been received by BHEL.b. Original Tax Invoice has been submitted to BHEL.c. Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the contractor.
8.1.5	TDS under GST law as applicable shall be deducted.
8.1.6	Contractor shall be solely responsible for discharging his GST liability according to the provisions of GST Law and BHEL will not entertain any claim of GST/interest/penalty or any other liability on account of failure of contractor in complying the provisions of GST Law or discharging the GST liability in a manner laid down thereunder
8.1.7	In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/altered/deleted on GSTN portal which results in any adverse financial implication on BHEL, the financial impact thereof including interest/penalty shall be recovered from the Contactor's due payment.
8.1.8	Any denial of input credit to BHEL or arising of any tax liability on BHEL due to non-compliance of GST Law by the Contractor in any manner, will be recovered along with liability on account of interest and penalty (if any) from the payments due to the Contactor.
8.1.9	The admissibility of GST, taxes and duties referred in this chapter or elsewhere in the contract is limited to direct transactions between BHEL & its Contractor. BHEL is not responsible for any liability that may arise due to any transaction beyond the direct transaction between BHEL & its Contractor.
8.1.10	<u>Variation in Taxes & Duties:</u>
	Any upward variation in GST shall be considered for reimbursement provided supply of goods and services are made within schedule date stipulated in the contract or approved extended schedule for the reason solely attributable to BHEL. However downward variation shall be subject to adjustment as per actual GST applicability.
	In case the Government imposes any new levy/tax on the output service/goods after price bid opening, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its contractor only and within the contractual delivery period only.
	In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer but before opening of the price Bid, the Bidder/Contractor must convey its impact on his price duly substantiated by

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VIII: TAXES AND DUTIES

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.

8.1.11 **Modalities of Tax Incidence on BHEL:**

Where GST law permits more than one option or methodology for discharging liability of tax/ levy/ duty; the contractor shall approach BHEL before choosing any option to discharge his tax liability. BHEL shall have the right to direct the contractor to adopt the appropriate option considering the amount of tax liability on BHEL as well as procedural simplicity with regard to assessment of the liability.

The option chosen by BHEL shall be binding on the contractor for discharging the obligation of BHEL in respect of the tax liability to the contractor.

8.2 BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998.

In case any portion of work involves execution through building or construction workers, then compliance to the above titled Acts shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances it may be ensured as under:-

- 8.2.1 It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a license to the Competent Authority under the BOCW Act and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of license / permission to BHEL within a period of one month from the date of award of contract.
- 8.2.2 It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these act and rules including that of payment / deposit of 1% cess on gross payment made for value of work involving building or construction workers engaged by the contractor within a period of one month from the receipt of payment.
- 8.2.3 It shall be the responsibility of the sub-contractor to furnish the receipts /challans towards deposit of the cess together with the number, name and other details of beneficiaries (building workers) engaged by the sub-contractor during the preceding month.
- 8.2.4 It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen's Compensation Act, 1923.
- 8.2.5 The contractor shall, however ensure before deposit of any BOCW Cess, that customer is not depositing the same in order to avoid excess deposit of cess.
- 8.2.6 The contractor shall bear cost of BOCW cess either by way of deposit or through recovery by BHEL in case the same is deposited by the customer.
- 8.2.7 In case of failure in above mentioned compliances, BOCW Cess @ 1% as well as applicable penalty as specified in BOCW Act/Rules shall be deducted from the contractor.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter IX: Other Conditions

9.1	The Work envisaged in this tender is presently being executed by another agency at Dadri site. The party executing the work presently at Dadri site shall not be eligible to quote for this tender.
9.2	PVC and ORC shall not be applicable for subject tender.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter X: Annexure

Annexure –I

Tentative Weight to be Erected for the Ducting System

S.No.	Description		PGMA	Wt in MT	Remarks
1	ID discharge to Booster fan	Duct	FW-255	1006	Item no. 1 of Rate sch.
2	Booster fan to Absorber		FW-256	552	
3	Absorber to chimney		FW-257	513	
4	Expansion pieces BF to Absorber		FW-251	55	
5	Expansion pieces BF to Absorber		FW-253	8	
6	Gate BUF Inlet		57-540	115	
7	Gate BUF Inlet		57-550	118	
8	Actuators		57577	5	
9	Duct tappings points			2	
10	Seal Air Piping		57141	15	
11	Seal Air Blower		57491	5	
12	Knife Edge Gate Valve		57497	4	
13	Mating Flange		57209	4	
14	Fasteners			9	
'15	Insulation		FW-267	192	Item no. 2 of Rate Sch.
16	Cladding sheet + Mechanical parts		FW-268	124	
Total Weight of Ducting System				2727 MT	
1.	Weight indicated in above table is tentative only and liable for variation. Contractor is required to erect/commission actual weight (irrespective of any variation plus or minus) which may be necessary to complete their work in all respects as detailed in tender specifications. Payments shall be released on finally executed quantities as per site requirement. Quoted rate shall remain firm throughout the contract period.				
2.	Besides PGs indicated above, there is likelihood of addition of new PGs for release of some items integral to Ducting System. Contractor is required to carryout such PGs also within their applicable tonnage rate. The decision of BHEL regarding inclusion of new / additional PG in Ducting System will be final & binding on the contractor.				

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter XI: Rate Schedule

UNPRICED RATE SCHEDULE

ITEM NO.	DESCRIPTION OF WORK	TOTAL VALUE "A" IN INR (IN FIGURES AND WORDS) Exclusive of GST
1.0	TOTAL LUMSUMP PRICE OF "Erection, Testing, Commissioning & Handing over of Ducting System as per tender specifications at 2x490 MW NTPC Dadri. (inclusive of all consumables, input materials and supervision)- exclusive of GST	
Notes:		
1.	The rates of individual item for the entire scope of work as define in BOQ Chapter X shall be arrived as per Calculation defined in Annexure-B.	
2.	The derived item rate will remain firm throughout the contract period	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter XI: Rate Schedule

Annexure-B

Rate in Rupees per MT for erection, testing, commissioning, and handing over of Ducting systems as per tender specifications (as per Annexure –I) shall be calculated as follows:

Where A= Total Price quoted for as above

Sl. No	DESCRIPTION OF WORK	UOM	Qty.	Rate per MT in Rupees (In figures and words)
1.	Ducting , Expansion Pieces, Gate and accessories etc.	MT	2411	<u>3.6895337xA</u> 10000
2.	Insulation and Cladding sheet	MT	316	<u>3.4953617xA</u> 10000
Notes:				
1. The quantities indicated above are tentative and are liable to vary depending upon the site requirement. The contractor has to handle / erect / commission all the items indicated by BHEL for achieving the milestones and completion of work.				
2. Evaluation of bids shall be done on total price against this Rate Schedule / BOQ.				

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Part-II

TECHNICAL CONDITIONS OF CONTRACT (TCC)

FOR

**ERECTION, TESTING, COMMISSIONING AND HANDING OVER OF
DUCTING SYSTEM of FGD AT 2X490 MW, NCTPP DADRI, STAGE-II**

PART- II OF TCC



**Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,**

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Part-II

Distt. Gautam Budh Nagar, NOIDA – 201 301 (INDIA)

S.NO.	DESCRIPTION	Chapter No.	PAGES
	Part-II: Technical Specifications		
1.	GENERAL	Chapter-I	28-29
2.	CIVIL WORKS, FOUNDATION, GROUTING	Chapter-II	30
3.	ERECITION	Chapter-III	31-33
4.	WELDING, HEAT-TREATMENT, RADIOGRAPHY AND NDT	Chapter-IV	34-35
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6.	PAINTING INCLUDING FINISH PAINTING	Chapter-VI	37
7.	TESTING, PRE-COMMISSIONING, COMMISSIONING, AND POST-COMMISSIONING	Chapter-VII	38-39

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I : General

1.0	GENERAL
1.1	The intent of this specification is to provide services for execution of project according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / lump sum price shall deem to be inclusive of all such contingencies.
1.2	The contractor shall carry out the work in accordance with standard practices / codes / instructions / drawings / documents /specification/manuals supplied by BHEL from time to time.
1.3	The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during execution. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.
1.4	Following shall be the responsibility of contractor and have to be provided within finally accepted rates / prices.
1.4.1	Provision as required of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated inspection, measuring and test equipments as specified and otherwise required for the work, consumables for erection, testing and commissioning including material handling.
1.4.2	Proper out-turn as per BHEL's plan and commitment
1.4.3	Completion of work as per BHEL Schedule.
1.4.4	Good quality and accurate workmanship for proper performances of equipment.
1.4.5	Repair and rectification
1.4.6	Preservation / Re-conservation of all components during storage / erection till handing over.
1.5	Contractor shall carry out the work in accordance with standard practices / codes / instructions / drawings / documents / specification/manuals supplied by BHEL from time to time.
1.6	Contractor shall execute the work as per sequence and procedure prescribed by BHEL at site. BHEL engineer, depending upon the availability of materials, fronts etc, will decide the sequence of erection and methodology. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the method of erection adopted in erection of similar jobs or for any reason whatsoever.
1.7	All necessary certificates and licenses, permits & clearances required to carry out this work from the respective statutory/ local authorities are to be arranged by the contractor at his cost in time to ensure smooth progress of work.
1.8	The quantities indicated in the tender specification are approximate and are liable for variation and alteration at the discretion of BHEL. The quoted unit rate shall be applicable for any additional product group also, if included at a later date integral to the main scope of work /package envisaged. The work executed shall be measured and priced as per the unit rate arrived at for each work area as mentioned in the relevant clauses

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I : General

1.9	The terminal points as decided by BHEL shall be final and binding on the contractor
1.10	The work covered under this specification is of highly sophisticated nature requiring the best quality of workmanship, engineering and construction management. The contractor should ensure timely completion of the work. The contractor must have the adequate quantity of tools, construction aids, equipment, etc. in this possession. He must also on his rolls adequate trained, qualified and experienced supervisory staff and skilled personnel.
1.11	Contractor has to work in close co-ordination with other erection agency at site. BHEL engineer will co-ordinate area clearance. In a project of such magnitude, it is possible that the area clearance may be less/more at a particular given time. Activities and erection program have to be planned in such a way that the milestone are achieved as per schedule/ plans. Contractor shall arrange & augment the resources accordingly.
1.12	HOUSE KEEPING -The contractor is supposed to carryout housekeeping of the work area on regular basis to keep the work place neat and tidy and available for the SAFE Working. The scrap, generated daily during the Execution activities, is to be dumped at designated area as decided by BHEL/ NTPC on daily basis. The erection materials issued to the contractor and kept near the work area should also be staged properly at site. Compliance report on above shall be submitted by the contractor to BHEL on Daily basis. In case the contractor fails to do so, BHEL have rights to carryout the same from the other party at the Risk and cost of the contractor. The cost applicable with BHEL overheads shall also be recovered from the monthly running bills of contractor

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II: Civil Works, Foundation, Grouting

2.0	CIVIL WORKS, FOUNDATION, GROUTING
2.1	NA

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-III: ERECTION

3.0	ERECTION
3.1	All normal erection and assembly techniques necessary for completion of works under this specification and magnitude have to be carried out. The omission of specific technique /method/process does not absolve the contractor of his responsibility for the particular operation. These would include,
3.1.1	Scaffolding and rigging operations,
3.1.2	Machine / flame / electric cutting, grinding, welding
3.1.3	Fitting, fettling, filing, straightening, chamfering chipping, scrapping, reaming, as cleaning, checking, levelling, aligning and assembly.
3.1.4	Machining, surface grinding, drilling, doweling, shaping
3.1.5	Temporary erections for alignment, dismantling of certain equipment for checking, cleaning, servicing and site fabrication.
3.1.6	Painting
3.2	Any fixtures, scaffolding materials, approach ladder, concrete block supports, steel structures required for temporary supporting, pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor at his cost.
3.3	No members of any ladder / structure / platform should be cut without specific approval of BHEL. In case it is necessary to cut, the contractor shall rectify / repair in a manner acceptable to BHEL / customer without any additional cost.
3.4	Certain adjustment in length may be necessary while erecting ducts etc. contractor should remove the extra lengths / add extra lengths to suit the final layout after preparing edges afresh by adopting specified heat treatment procedures
3.5	Whenever required the contractor shall arrange for pre-qualification of process task performers.
3.6	Non specified jobs at the interface / terminal points like bolting welding etc. have to be done by the contractor within the quoted price.
3.7	The terminal points decided by BHEL should be final and binding on the contractor for deciding the scope of work and effecting payment for the work done.
3.8	Suspensions for ducting will be supplied in running lengths, which shall be cut to size and adjusted as required. Ducts / expansion bellows are dispatched to site in loose walls plates / pieces and these are to be assembled and welded at site along with stiffeners etc., before erection within the finally accepted rates. All joints connecting duct expansion piece and dampers shall be seal welded on inside as well as on outside
3.9	Ducts/ expansion bellows (metallic & non-metallic) are normally supplied in loose wall plates/ segments and these are to be assembled and welded at site before erection. Correction of ovalities/ distortion of ducts, expansion bellows etc occurred during transportation/ handling are to be carried before erection as part of work. Erection of mechanical components of non-metallic joints is included in the scope of work. All joints connecting ducts, expansion pieces and dampers shall be seal

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-III: ERECTION

	welded. These welds have to be made leak proof and tested as per technical instruction / requirement.
3.10	Erection and welding of necessary instrumentation tapping points, thermocouple pads, thermo-wells, valves, battery of first root valves, condensing vessels, flow nozzles and control valves to be provided on ducts are covered within the scope of this specification. This will be the responsibility of the contractor and will be done as per the instructions of BHEL Engineer. The welding of all the above items will be contractor's responsibility even if the: a. Product groups, under which these items are released, are not covered in the scope of this tender. b. Items are supplied by any agency other than BHEL.
3.11	Contractor shall carry out tightening of field bolts on the equipment covered under this specification by using either the calibrated torque wrench method or the turn of part method. The methods used the tools and the equipment deployed shall be subject to the approval of Engineer. The competent technicians shall carry out the bolting work.
3.12	Contractor shall prepare as built drawing & submit to BHEL Engineer for approval & verification of material used.
3.13	All lifting tackles including wire-ropes slings, shackles, used by the contractor, shall be got approved by BHEL Engineer. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damages to equipment and personnel. Calibration/fitness testing certificates from recognized agency are to be submitted to BHEL site office for equipment/instrument/appliances to be used, as per requirement of BHEL/ISO system. Expenditure on such works forms a part of the scope of work.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV: WELDING, HEAT-TREATMENT, RADIOGRAPHY AND NDT

4.0 WELDING, HEAT-TREATMENT, RADIOGRAPHY AND NDT	
4.1	Duct shall be erected in conformity with the provisions of applicable regulation and as may be directed by BHEL as per any standard / specification in practice in BHEL. The method of welding (arc, gas, TIG or other method) may be indicated in the detailed drawings / schedules. BHEL Engineer will have the option of changing the method of welding as per site requirements.
4.2	Engineer may stop any welder from the work if his performance is unsatisfactory for any reason or if there is a high percentage of rejection in the joints welded by him. The welder having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.
4.3	Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor's expense. The Engineer, prior to any repair being made, shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the engineer.
4.4	NA
4.5	All expenses for testing of contractor's welders including destructive and nondestructive tests conducted by BHEL at site or at laboratory shall have to be borne by the contractor only. Limited quantity of raw material required for making test pieces will be supplied by BHEL free of cost.
4.6	The regulators used on welding machines shall be calibrated before putting these into use for work. The Contractor at his cost shall also arrange periodic calibration for the same.
4.7	Only BHEL/ CUSTOMER approved electrodes and filler wire are to be arranged and used by the contractor, within the finally quoted price. BHEL/ NTPC reserve the right to test from the certified lab of approved electrode being used by the contractor. Testing charges for the same shall be borne by the contractor. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test certificate should have a co-relation with the lot number/ batch number given on electrode packets. No electrodes will be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved/ accredited test house traceable to National/ International standards will be submitted to BHEL before putting the oven in use. The contractor shall also arrange periodical calibration for the same.
4.8	All butt / fillet welds shall be subject to dye penetration test as per the instructions of the engineer at no additional cost.
4.9	The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld. He has to maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or other wise of the welds shall be final.
4.10	Contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV: WELDING, HEAT-TREATMENT, RADIOGRAPHY AND NDT

	preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer.
4.11	All welds shall be painted with anticorrosive red oxide paint. Necessary consumables and scaffolding etc including paints shall be provided by contractor at his own cost.
4.12	NDT tests after welding wherever necessary, are part of erection work and shall be carried out by the contractor in accordance with the instructions of the Engineer. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.
4.13	Contractor shall also be equipped for carrying out other NDT like LPI / MPI etc. as required as per welding schedules / drawings within the finally accepted price / rates.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-V: Application of Insulation

5.0	APPLICATION OF INSULATION
5.1	All attachment welding, including welding of hooks / supports as per pitch both on equipment shall be done as directed by Engineer. Attachment welding shall have to be done by certified welders. If necessary contractor may have to cut the hooks to correct length. Application of red oxide paint including supply of paint on welded portions as directed by BHEL is also included in scope of work.
5.2	The mineral wool mattresses (bonded / un-bonded) / LRB mattresses are received at site in standard sizes. These are to be dressed / cut to suit site requirements by the contractor.
5.3	The number of layers / thickness of mineral wool / LRB mattresses shall be as per various drawings and as directed by Engineer. For applying the mineral wool mattress, the required holding materials, if necessary by fabrication of rings/ hooks shall be fixed as directed and as per drawings and spec.
5.4	The contractor should ensure, proper finishing of surface of the insulation, sheeting and cementing.
5.5	The contractor should ensure that the finished surface of the insulation works conforms to the dimensions and tolerances given in the drawings. Aesthetic finish and accuracy of work are most important.
5.6	It is the responsibility of the contractor to ensure that the insulation materials and sheet metal covering issued to him for application are well protected against loss or damage from weather conditions. Closed / semi closed sheds or any other arrangements required for this will be by him at his cost. If any damage occurs to the material due to improper storage or due to any causes attributable to the contractor except for normal breakage or damages allowed in such cases, the cost of such damaged material shall be to the account of the contractor.
5.7	Aluminum sheet cladding will be fabricated to the sizes and shapes specified in drawings. Beading, swaging, beveling of sheets, crowning the sheets if necessary will be carried out by him. Two coats of anti-corrosive black bituminous paint are to be applied on inner surfaces of the cladding. Bitumen sealing compound on the joints if necessary is included in the scope of this work. Contractor may note that he will also supply anti-corrosive black bituminous paint & bituminous sealing compound required for above works at his cost.
5.8	Aluminum sheet metal cladding over insulation will consist of plain / ribbed / corrugated sheets. The sheets will be supplied in standard sizes. Cutting them to required size, grooving, fabricating bends, boxes etc., for proper covering is contractors responsibility. Any cutting / bending / welding of fabricated skin casing sheets if required will also be covered within the scope of this contract.
5.9	A logbook shall be maintained by the contractor to obtain clearance for application of insulation. If the contractor does the work on his own accord without prior permission the area may have to be redone at his cost.
5.10	Contractor is liable for the exact accounting of the material issued to him and he shall make any unaccountable losses good. Wastage allowance for the material issued are as below:
5.10.1	Wool / LRB mattresses and cladding sheets 2%

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-V: Application of Insulation

5.11	The entire surplus, unused materials etc., supplied by BHEL shall be returned to BHEL after the work is over. Materials like gunny bags and packing materials, empty containers may be returned at periodical intervals.
5.12	The contractor shall leave certain gaps and opening while doing the work as per instructions of BHEL engineer to facilitate inspection during commissioning and to fix gauges, fittings and instruments. The gaps will have to be finished as per drawings at a later date by the contractor at his cost.
5.13	If during erection and commissioning any of the parts are to be insulated temporarily fixed and then replaced by permanent ones at a later date or if any of the parts are to be removed for modification, rectification, adjustment and then refitted or if some parts are to be opened for inspection and checking and for measurement of metal surface temperature the same may necessitate removal and re-application of insulation and sheet metal cladding, which shall be done by the contractor and the erection rate quoted shall be inclusive of such contingencies.
5.14	Removable type of insulation shall be provided for expansion joints etc as per the drawings or as directed by BHEL Engineer.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

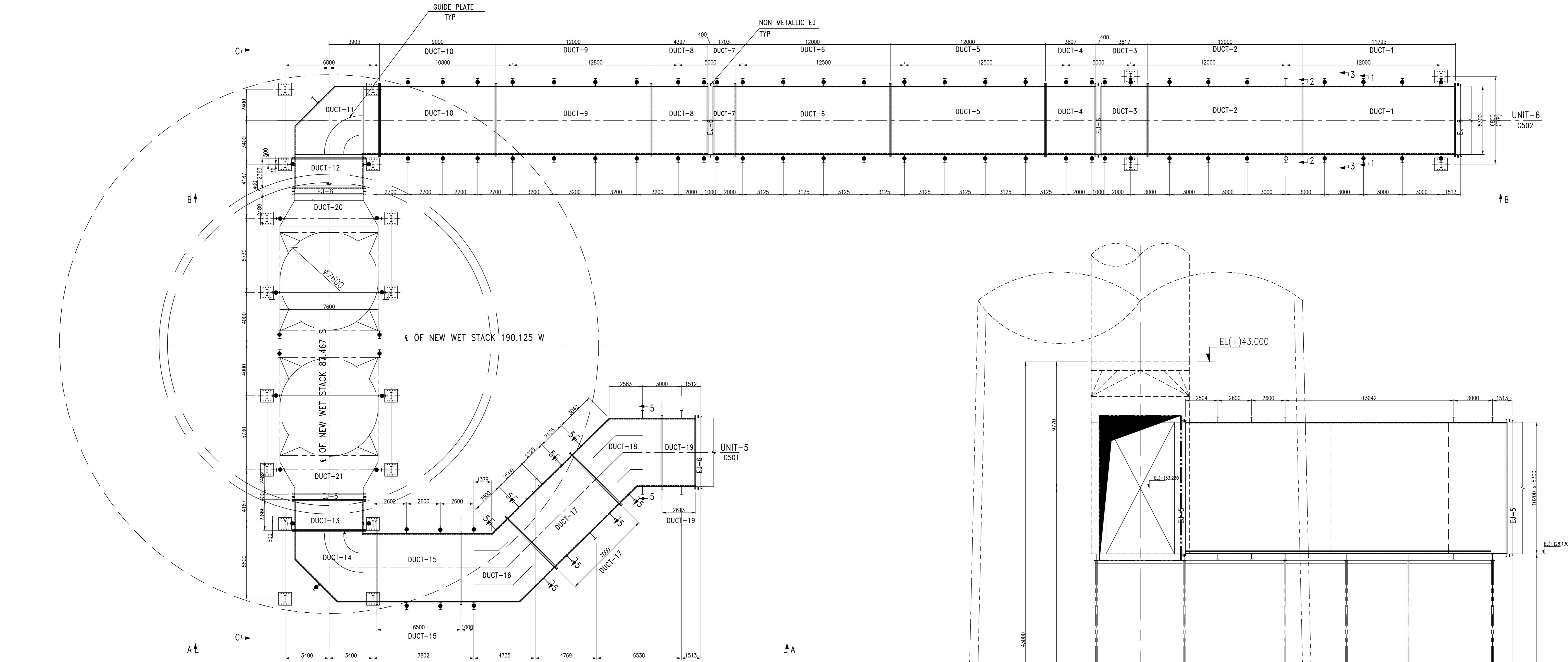
Chapter-VI: Painting including Finish Painting

6.0	PAINTING INCLUDING FINISH PAINTING
6.1	NA

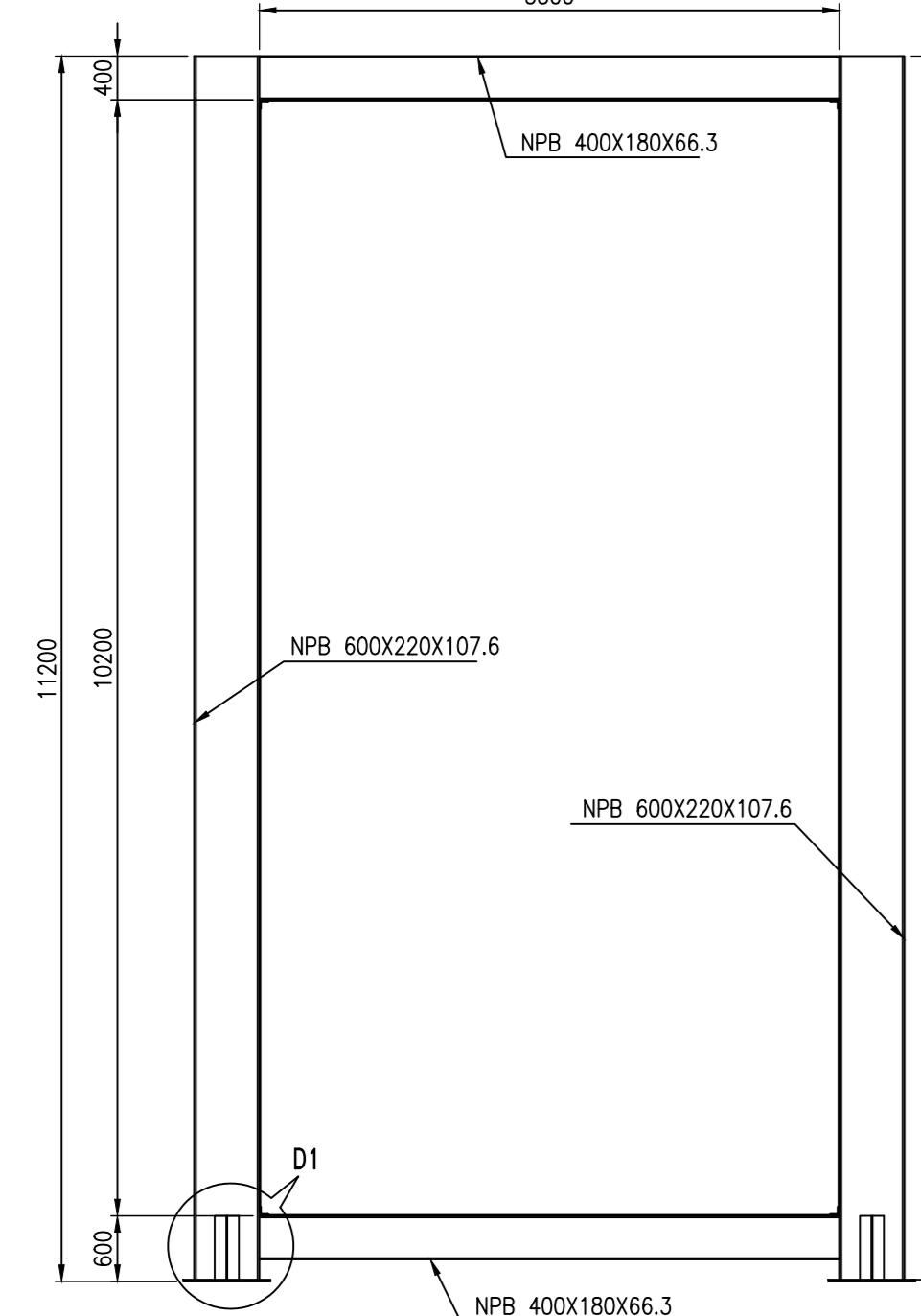
TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter VII: Testing, Pre- commissioning and Post Commissioning

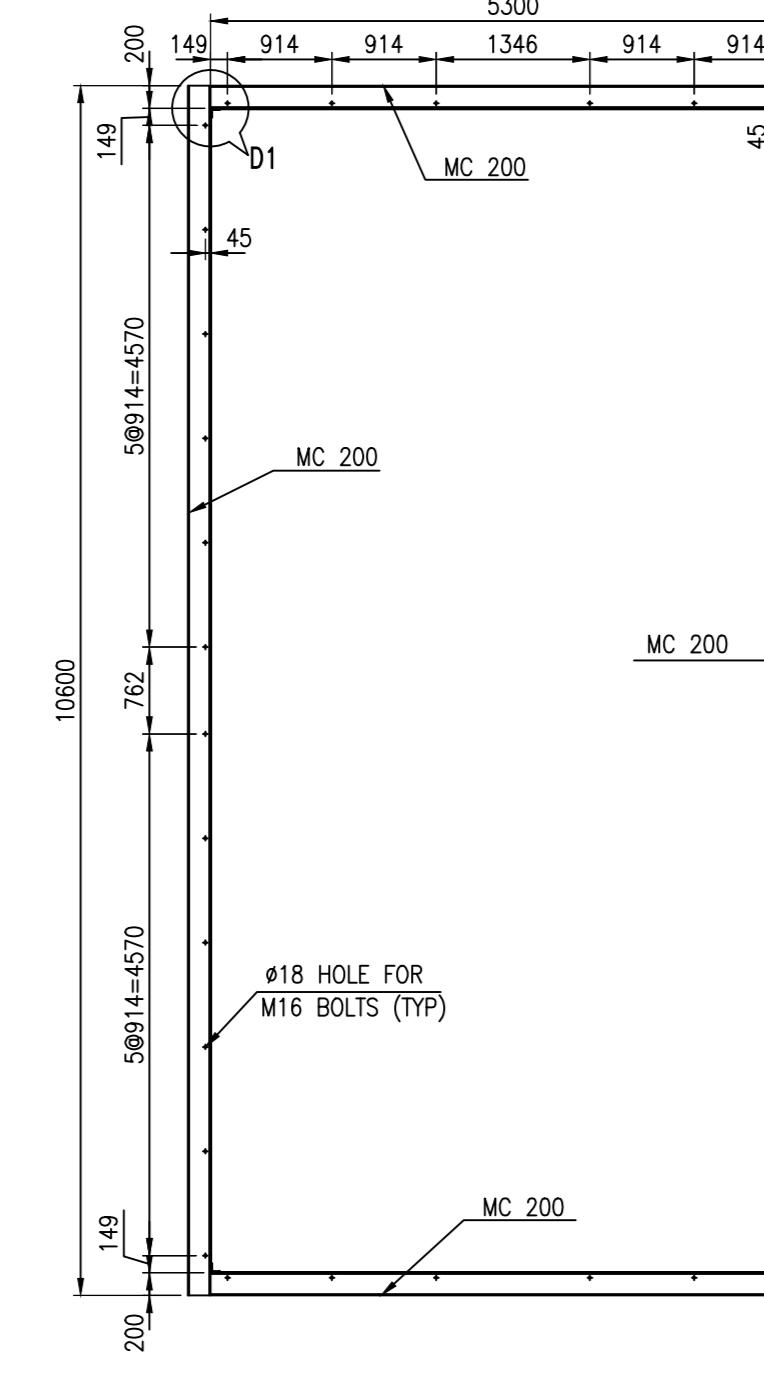
7.0	TESTING, PRE-COMMISSIONING, COMMISSIONING, AND POST-COMMISSIONING
7.1	The contractor shall carry out all the required tests, pre-commissioning and commissioning activities required for the successful and reliable operation of ducting system as per the approved commissioning procedure / quality plans of BHEL/NTPC.
7.2	All required test for ducting system indicated by BHEL and their clients for successful commissioning are included in the scope of these specifications. These tests / activities may not have been listed in these specifications but contractor shall conduct the tests as per the approved commissioning procedure.
7.3	Specialized test equipment, if any, shall be provided by BHEL / its client free of hire charges. However contractor has to take proper care of the equipment issued to him.
7.4	All the tests may have to be repeated till all the equipment satisfy the requirement /obligation of BHEL at various stages. The contractor shall do all the repairs for site welded joints arising out of the failure during testing.
7.5	After completion of erection of ducts, the contractor shall conduct the air/gas tightness test from existing duct tap-off (bypass duct) to booster fan to absorber inlet and outlet duct from absorber outlet up to wet stack chimney. Erection etc. of blowers and blanks and putty required for conducting air tightness test shall be carried out as part of work (Putty to be procured by the contractor without any extra cost to BHEL).
7.6	It shall be the responsibility of the contractor to provide various category of workers in sufficient numbers along with Supervisors during Pre-commissioning, commissioning and post commissioning of equipment and attending any problem in the equipment erected by the contractor till handing over. The contractor will provide necessary consumables, T&P's, IMTE's, instruments (Pressure gauges)etc., and any other assistance required during this period. Association of BHEL's / Client's staff during above period will not absolve contractor from above responsibilities.
7.7	It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL Engineers and hence overtime payment by the contractor to his employees may be involved. The contractors finally accepted rates should be inclusive of all these factors also.
7.8	In case, any rework is required because of contractor's faulty erection, which is noticed during pre-commissioning and commissioning, the same has to be rectified by the contractor at his cost. If any equipment / part is required to be inspected during pre-commissioning and commissioning, the contractor will dismantle / open up the equipment / part and reassemble / redo the work without any extra claim.
7.9	During commissioning, attending to leakage and adjustments of erected equipment may arise. The finally accepted price / rates shall also include all such work.
7.10	Contractor shall make all necessary arrangements including making of temporary closures on equipment for carrying out the ATT at no extra cost.
7.11	During this period though the BHEL's/ client's staff will also be associated in the work, the contractor's responsibility will be to arrange for the complete requirement of supervision, consumables, labour, T&P and IMTEs required till such time the commissioned units are taken over by the BHEL's customer.
7.12	Attending the punch points post commissioning and resolve the deficiency for handing over the unit to customer M/s NTPC.



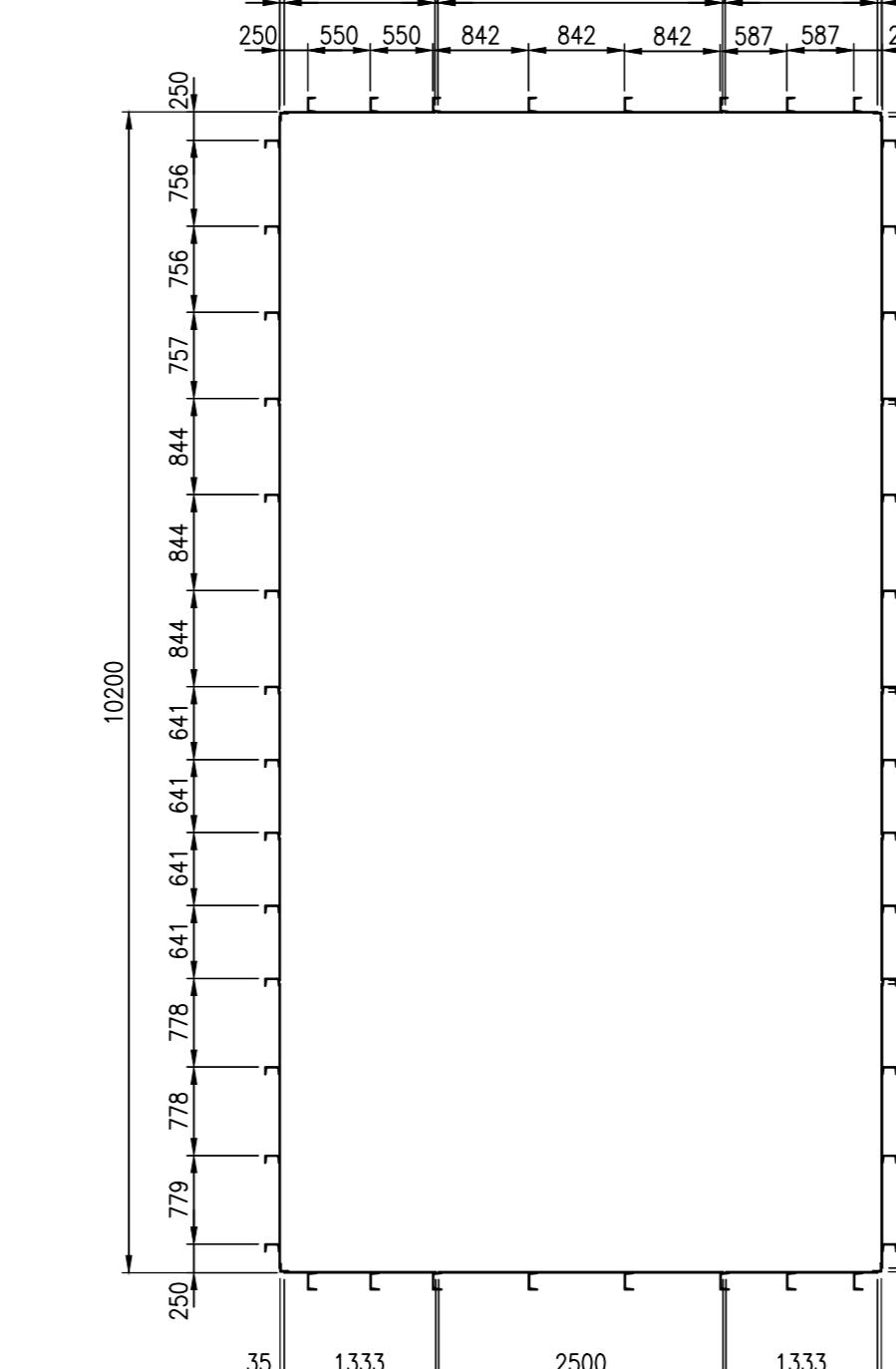
DUCT LAYOUT FOR ABSORBER TO CHIMNEY UNIT 1 &



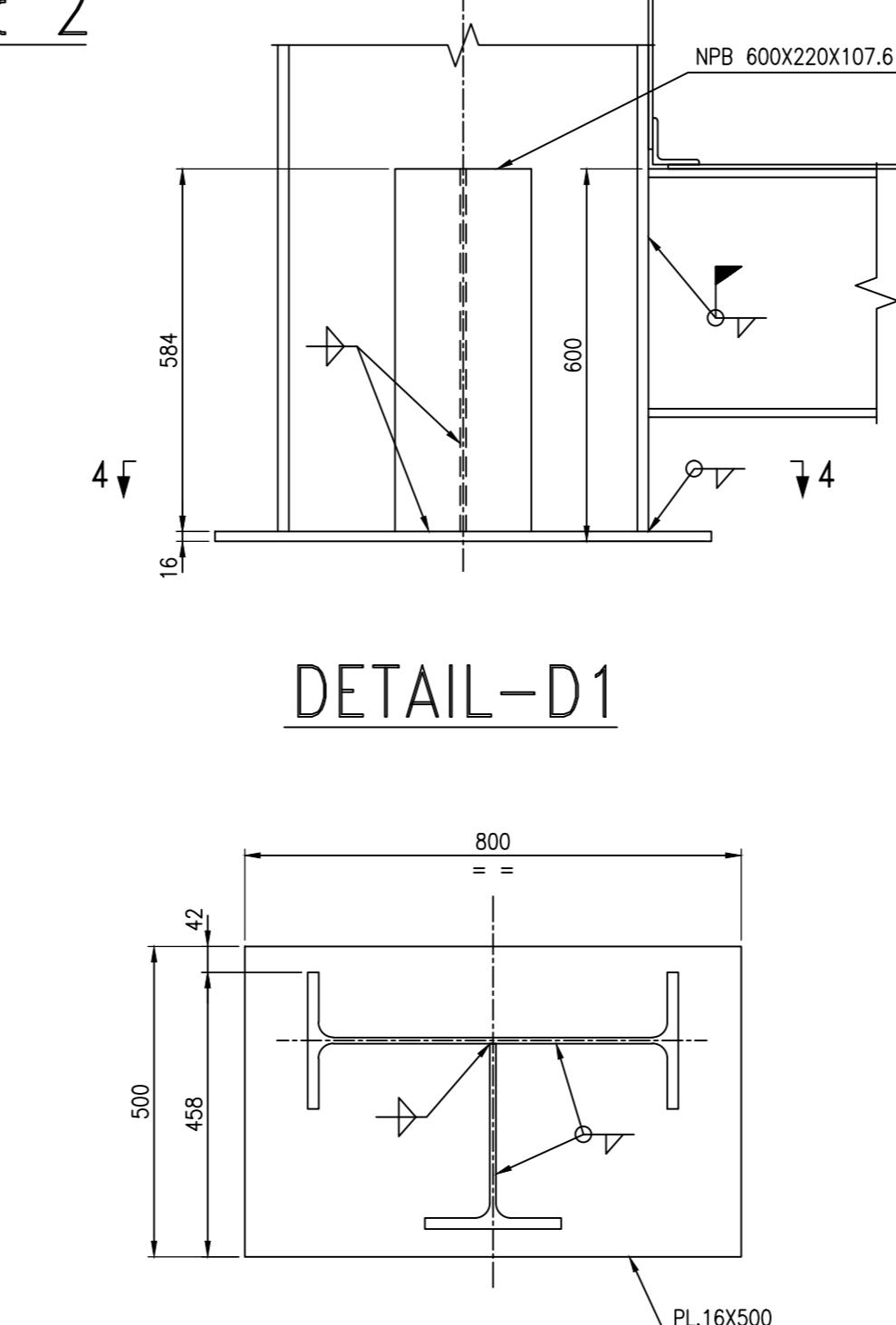
SECTION 1-1



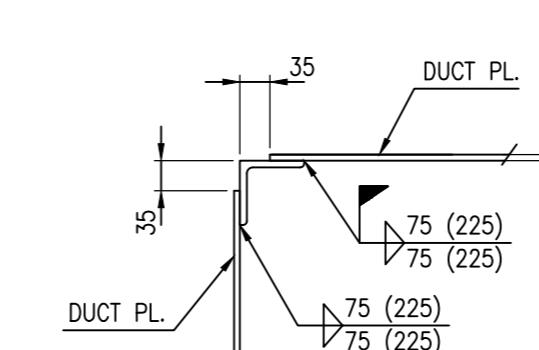
SECTION 2-



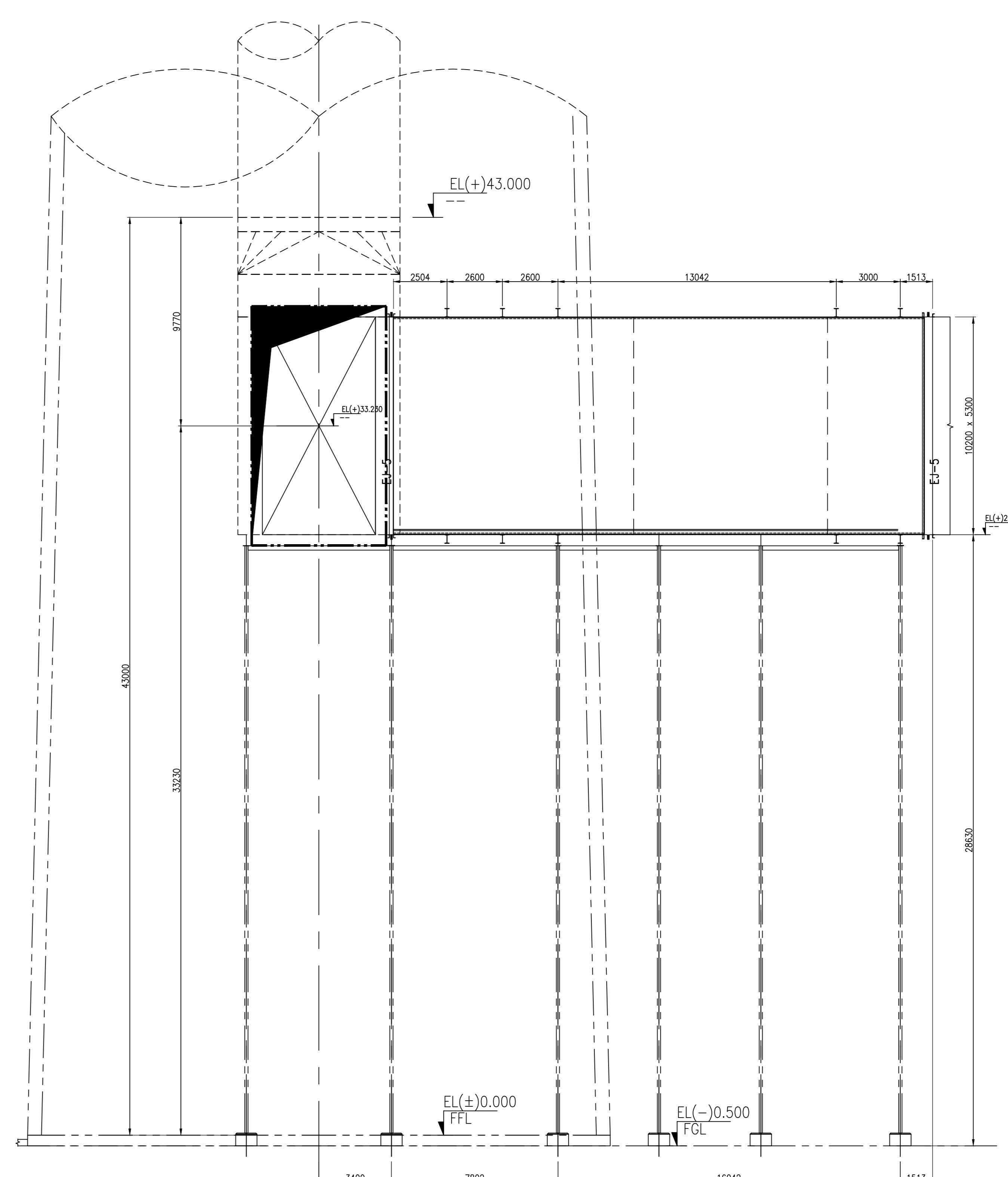
SECTION 3-3



SECTION 4-



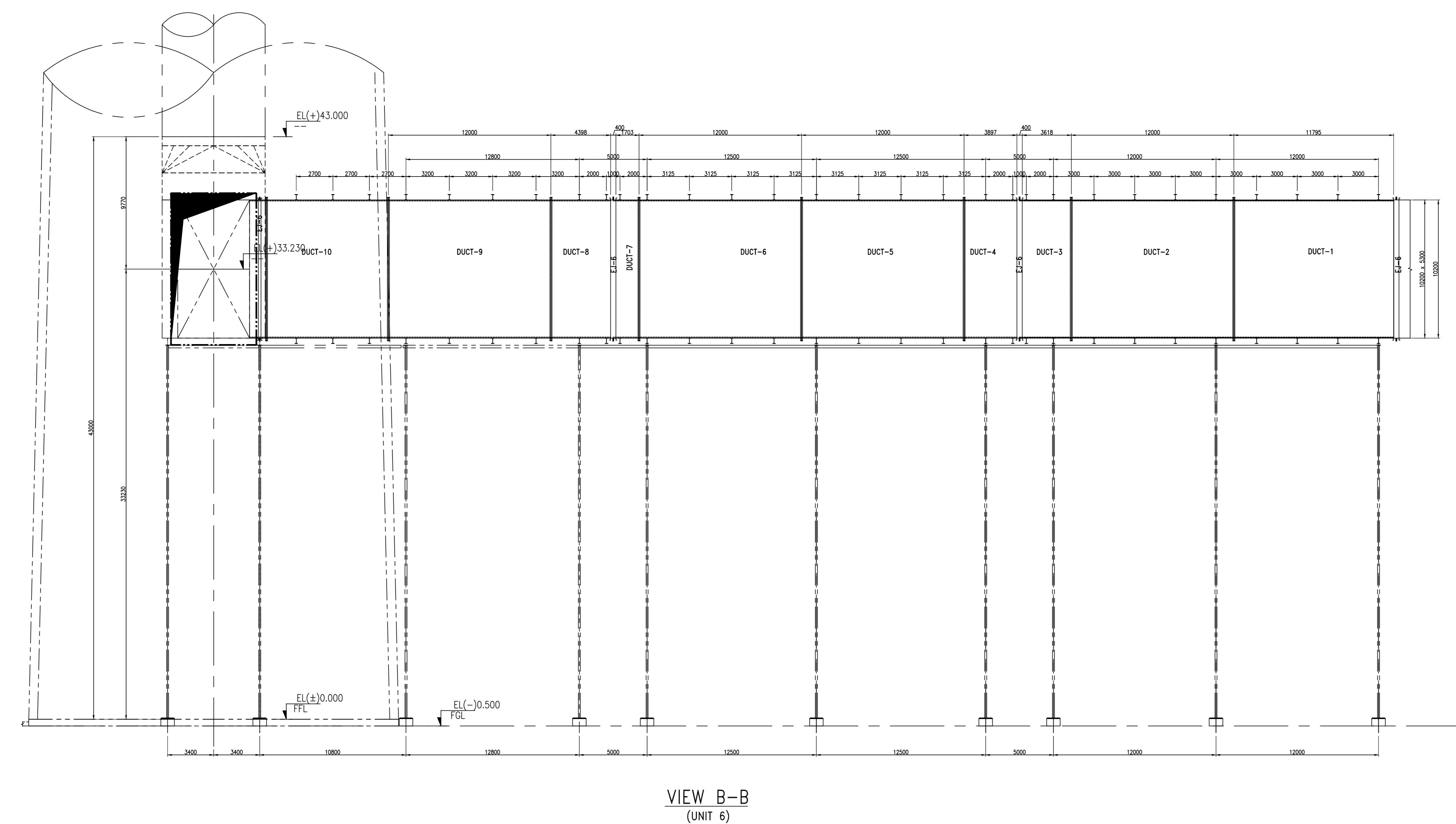
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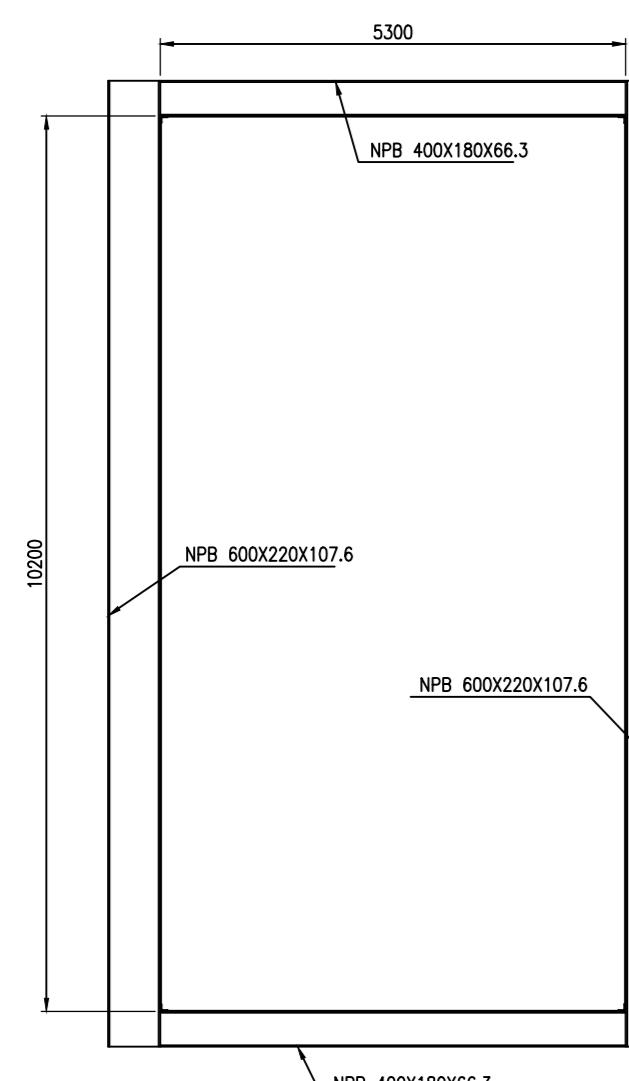
VIEW A-A (UNIT 5)

THIS DRAWING SHALL BE READ ALONG WITH
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dimensions are in millimetres

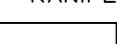


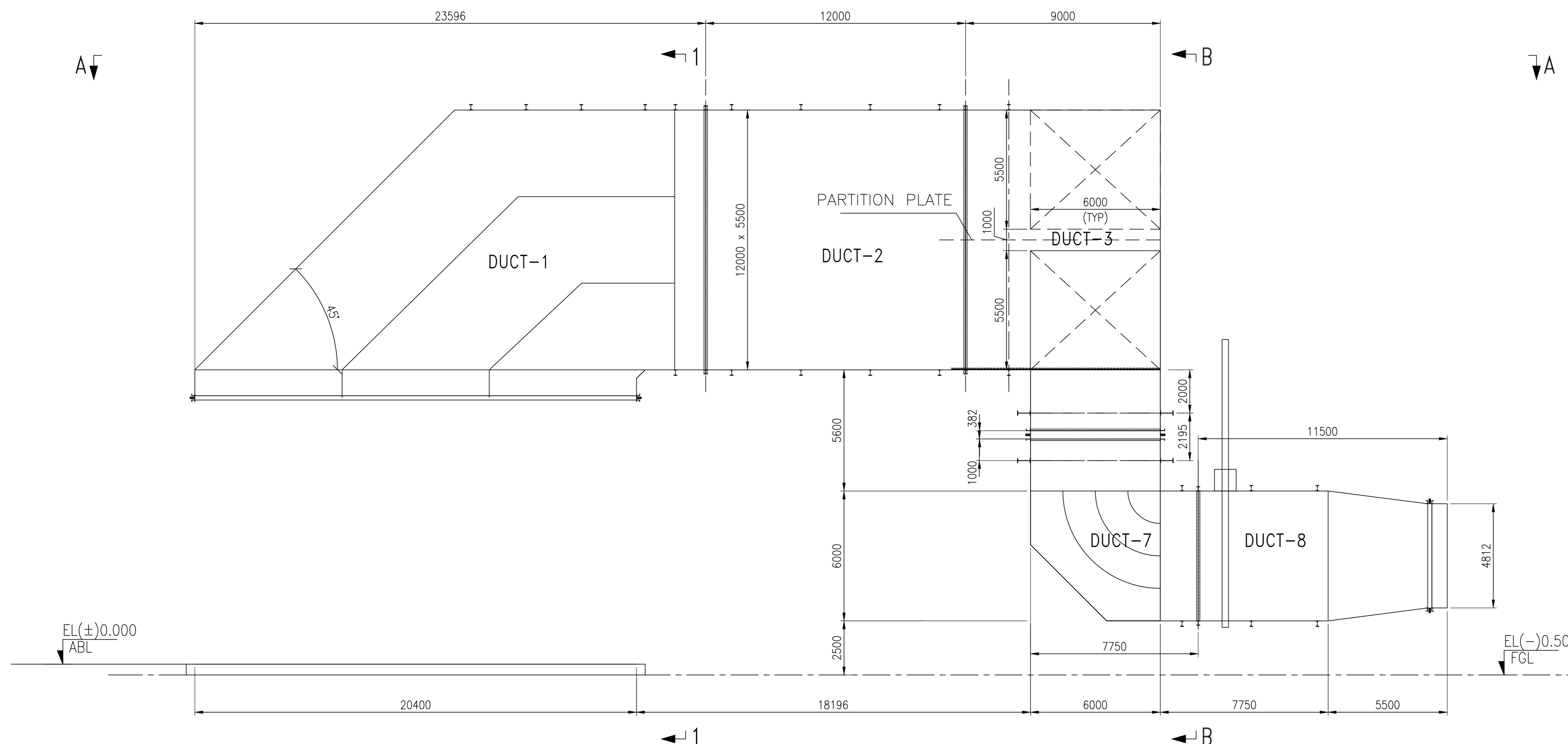
VIEW B-E (UNIT 6)



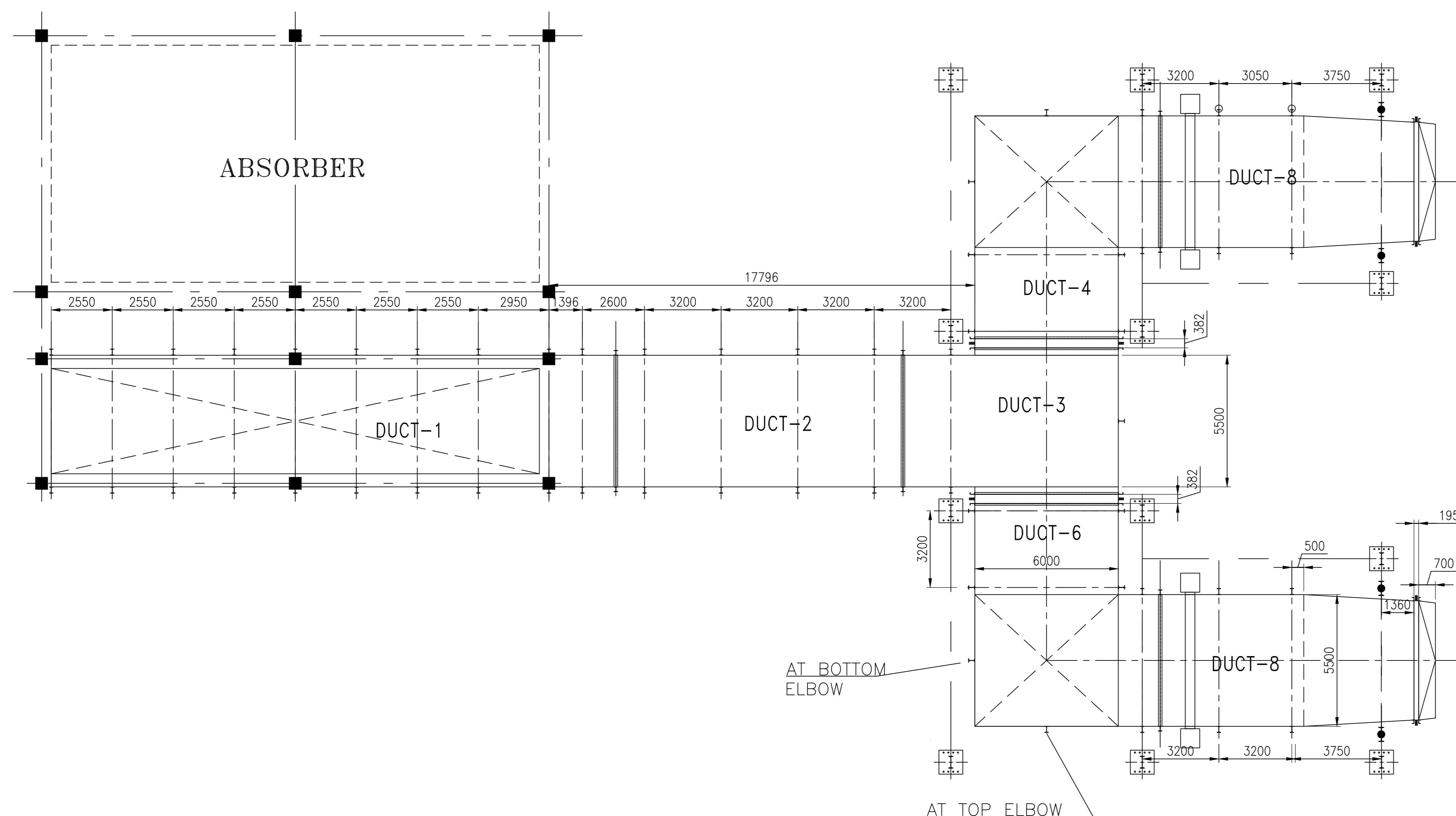
SECTION 5-5

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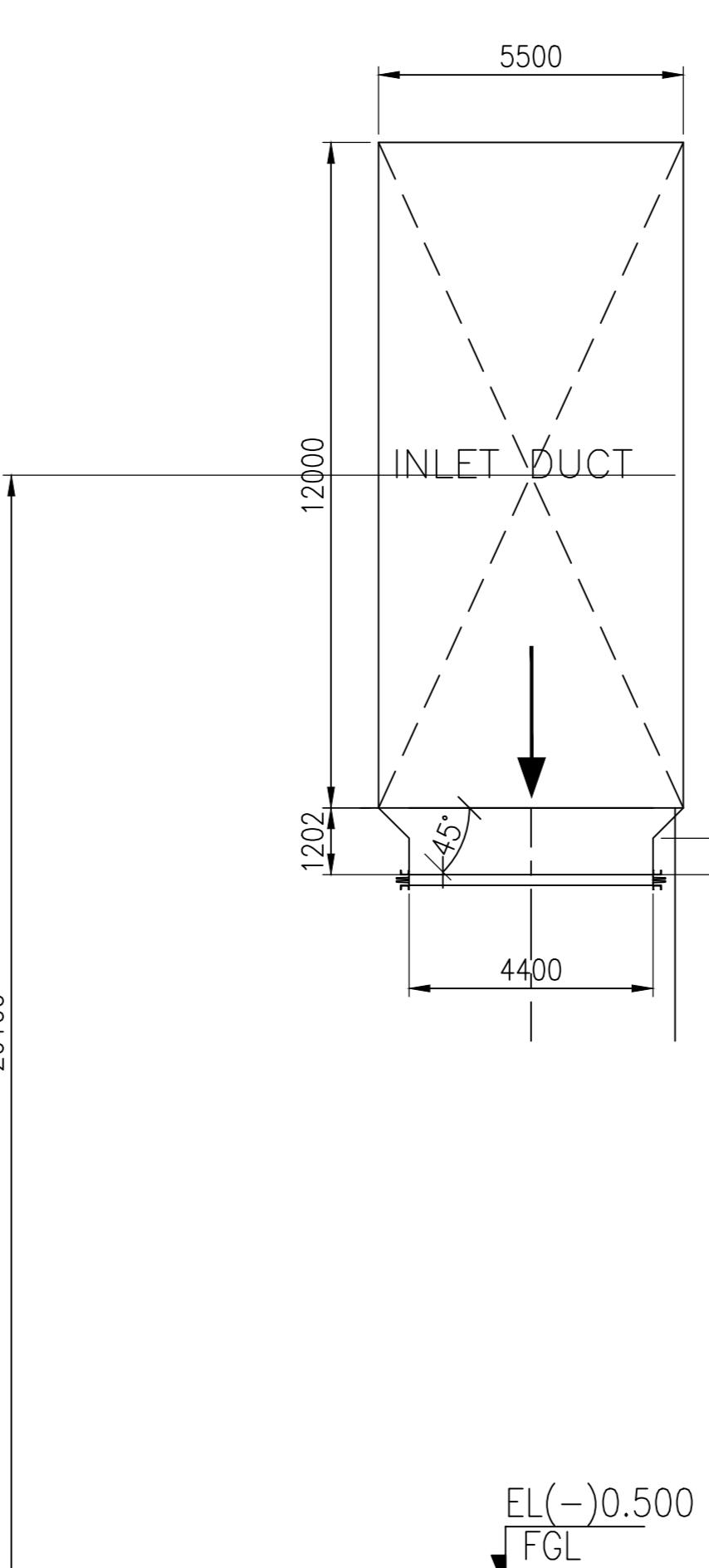
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	DEPT AQCS	GRADE OF UNTOL.DIM		SCALE	WEIGHT (KG).	NAME B.V.R	SIGN	DATE 09.10.18	NO.OF VAR. —
	CODE 862	PR: AQ: 500		1:120	—	CHD C.GANESH		09.10.18	
	<p>TITLE <u>DUCT FROM ABSORBER OUTLET TO CHIMNEY</u> <u>GENERAL ARRANGEMENT OF DUCT LAYOUT-I</u></p>					APPD C.GANESH		09.10.18	
						REF. TO ASSY/OLD DRG.	ITEM NO.	NO. OF ITEMS	
						—	—	—	
						DRAWING NO.	REV		
						0-FW-257-00269	00		
						(SHEET 2 OF 2)			



DUCT LAYOUT FOR BF TO ABSORBER FOR UNIT-1



VIEW A-A



SECTION 1-1

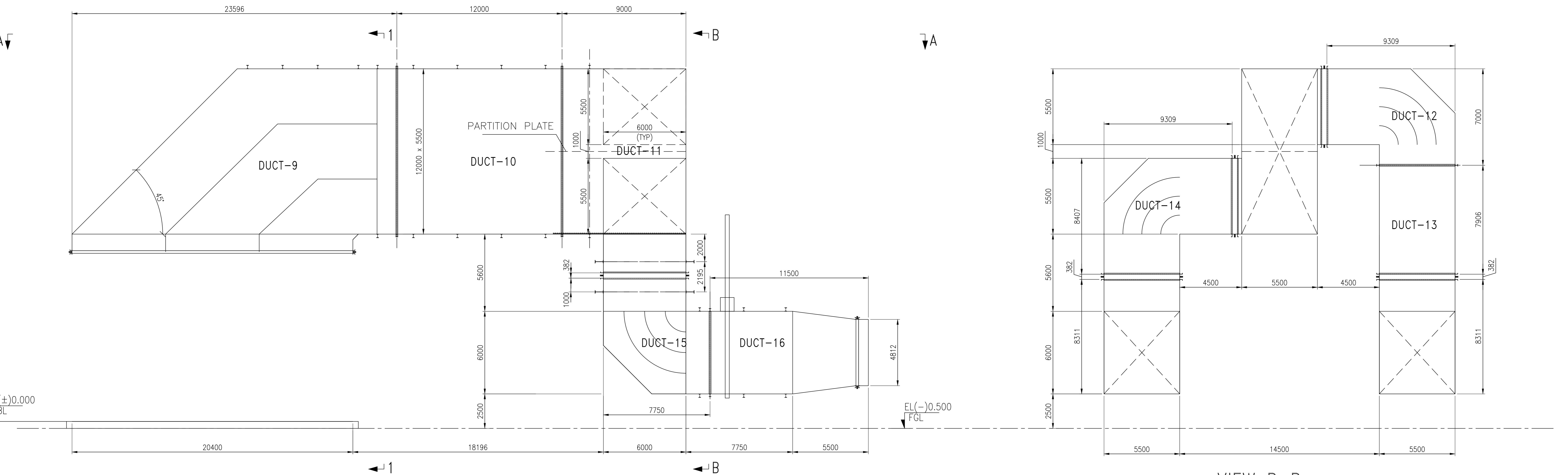
THIS DRAWING SHALL BE READ ALONG WITH
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NOTES:

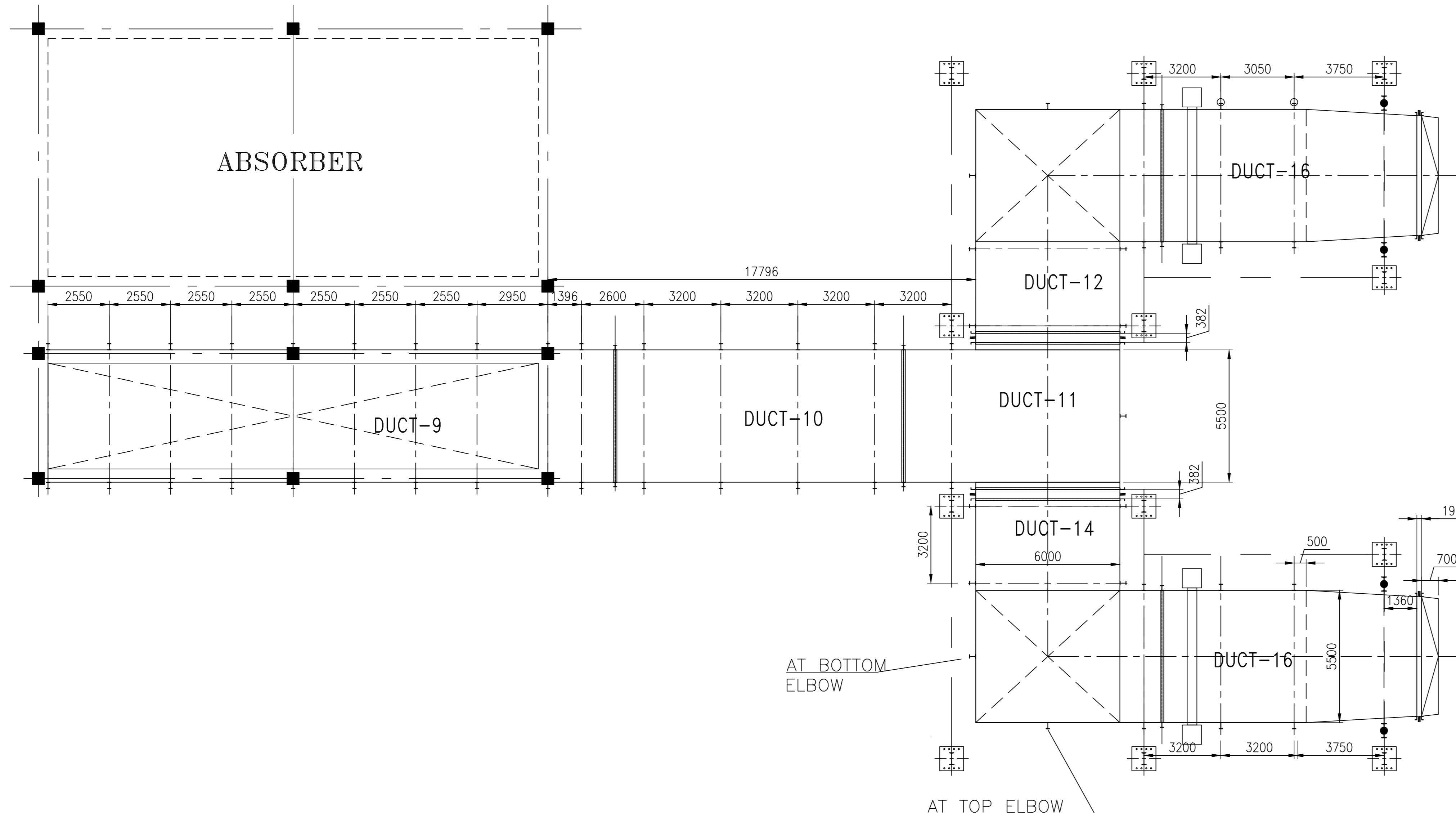
NOTES:

1. ONE COMPLETE DUCT ARRANGEMENT REQUIRED PER UNIT.
2. QUANTITIES INDICATED ARE FOR ONE UNIT ONLY.
3. ALL MATERIALS ARE CARBON STEEL UNLESS NOTED-(IS 2062).
4. ALL DIMENSIONS ARE INSIDE OF PLATES UNLESS NOTED.
5. DAMPER, EXPANSION JOINTS ARE TO BE LOCATED AS PER THE DIMENSIONS INDICATED IN THE DUCT ARRANGEMENT DRAWING.
6. THIS DUCT SYSTEM IS DESIGNED WITHOUT REGARD TO LOCATION OF BLANKING PLATES WHICH MAY BE REQUIRED FOR TESTING REACTIONS WHICH MAY BE INTRODUCED BY THESE PLATES MUST BE TAKEN CARE OF BY THE ERECTOR PROVIDING ADEQUATE SHOPS AND BRACINGS.
7. DUCTS ARE OF WELDED CONSTRUCTION AS PER REFERENCE DRAWINGS. 0-70-152-00039 TO 0-70-152-0041.
8. EXTERNALLY SEAL WELD AROUND ALL EXPOSED BOLT HEADS OR NUTS WITH SPACING GREATER THAN 100MM
9. PATCH ALL HOLES IN STIFFERNERS FOR LIFTING PURPOSE AFTER DUCT IS PLACED
10. CUT STIFFENERS CHANNEL WHEREVER NECESSARY TO CLEAR SUPPORT BEAM
11. ALL GAPS WHICH IS REALIZED DURING ERECTION ARE FILLED BY WELDING WITH FILLER ROD.

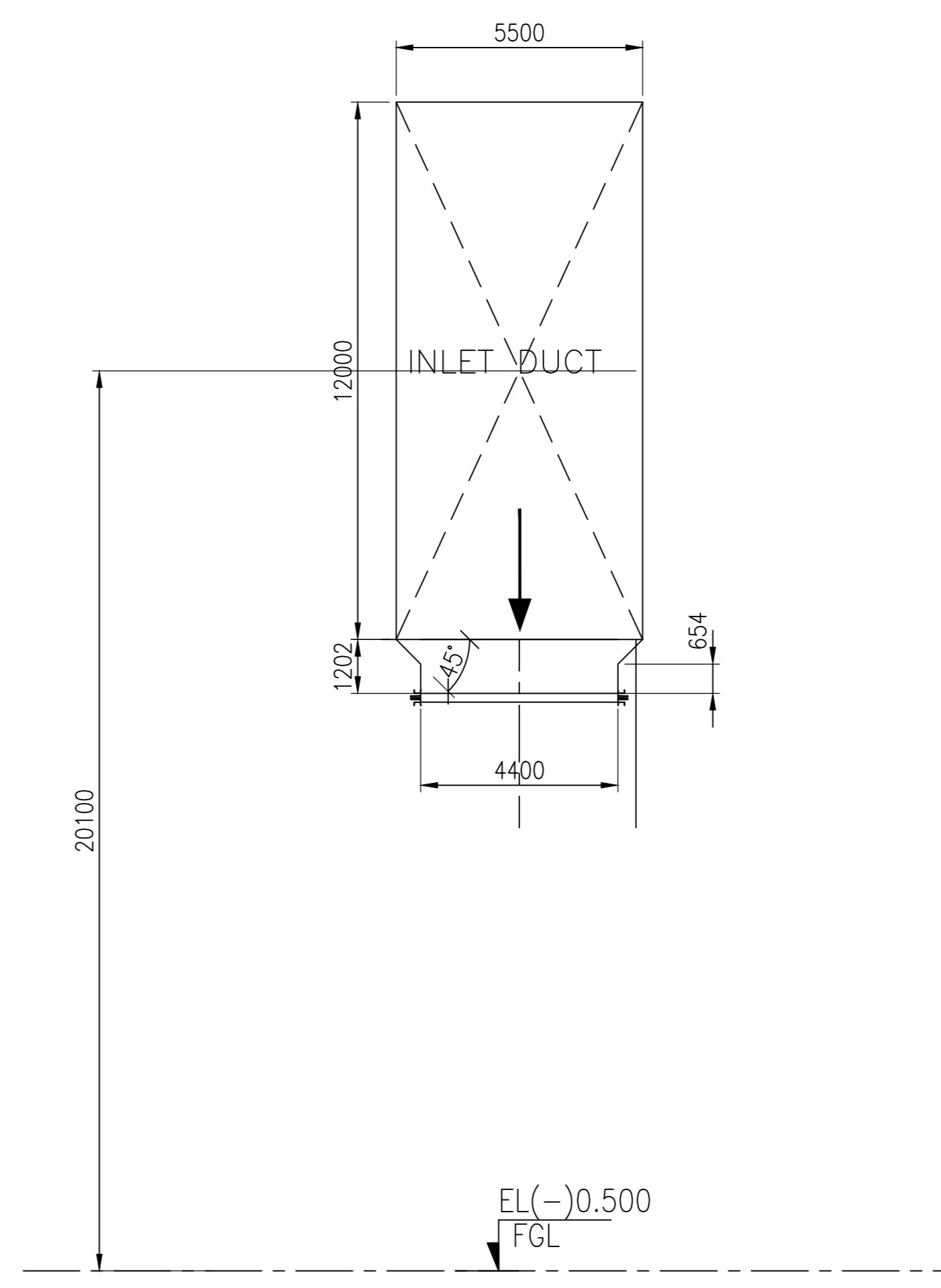
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	 BHARAT HEAVY ELECTRICALS LTD., UNIT: BOILER AUXILIARIES PLANT. RANIPET - 632 406.					DRN	B.V.R	SIGN	DATE 09.10.18	NO.OF VAR. -
						CHD	C.GANESH		09.10.18	
						APPD	C.GANESH		09.10.18	
	DEPT AQCS	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	REF. TO ASSY/OLD DRG.			ITEM NO.	NO. OF ITEMS	
	CODE 862	PR: AQ: 500		1:150	-			-	-	
	TITLE <u>DUCT FROM BF TO ABSORBER FOR UNIT-1</u> <u>GENERAL ARRANGEMENT OF DUCT LAYOUT-III</u>				CARD CODE U 01	DRAWING NO. 0-FW-256-00270 (SHEET 1 OF 2)			REV 00	



DUCT LAYOUT FOR BF TO ABSORBER FOR UNIT-2



VIEW A-A



SECTION 1-1

NOTES:

1. ONE COMPLETE DUCT ARRANGEMENT REQUIRED PER UNIT.
2. QUANTITIES INDICATED ARE FOR ONE UNIT ONLY.
3. ALL MATERIALS ARE CARBON STEEL UNLESS NOTED-(IS 2062).
4. ALL DIMENSIONS ARE INSIDE OF PLATES UNLESS NOTED.
5. DAMPER, EXPANSION JOINTS ARE TO BE LOCATED AS PER THE DIMENSIONS
INDICATED IN THE DUCT ARRANGEMENT DRAWING.
6. THIS DUCT SYSTEM IS DESIGNED WITHOUT REGARD TO LOCATION OF BLANKING
PLATES WHICH MAY BE REQUIRED FOR TESTING REACTIONS WHICH MAY BE INTRODUCED
BY THESE PLATES MUST BE TAKEN CARE OF BY THE ERECTOR PROVIDING ADEQUATE SHOPS AND BRACINGS.
7. DUCTS ARE OF WELDED CONSTRUCTION AS PER REFERENCE DRAWINGS. 0-70-152-00039 TO 0-70-152-0041.
8. EXTERNALLY SEAL WELD AROUND ALL EXPOSED BOLT HEADS OR NUTS WITH SPACING GREATER THAN 100MM
9. PATCH ALL HOLES IN STIFFNERS FOR LIFTING PURPOSE AFTER DUCT IS PLACED
10. CUT STIFFNERS CHANNEL WHEREVER NECESSARY TO CLEAR SUPPORT BEAM
11. ALL GAPS WHICH ARE REALIZED DURING ERECTION ARE FILLED BY WELDING WITH FILLER ROD.

THIS DRAWING SHALL BE READ ALONG WITH
0-FW-256-00270

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	 BHARAT HEAVY ELECTRICALS LTD., UNIT: BOILER AUXILIARIES PLANT. RANIPET - 632 406.					DRN	NAME B.V.R	SIGN	DATE 09.10.18	NO. VA —
						CHD	C.GANESH		09.10.18	
						APPD	C.GANESH		09.10.18	
	DEPT AQCS	GRADE OF UNTOL.DIM		SCALE 1:150	WEIGHT (KG). —	REF. TO ASSY/OLD DRG.			ITEM NO. —	NO. ITE —
	CODE 862	PR: AQ: 500				—			—	
	TITLE <u>DUCT FROM BF TO ABSORBER FOR UNIT-2</u> <u>GENERAL ARRANGEMENT OF DUCT LAYOUT-III</u>					CARD CODE U 01	DRAWING NO. 0-FW-256-00271 (SHEET 2 OF 2)			REV 0

