



ISO 9001 Company

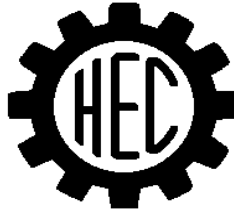
**Heavy Engineering Corporation Limited**  
(A Govt. of India Enterprise)  
**Heavy Machine Building Plant**

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**OPEN TENDER ENQUIRY**

**TENDER DOCUMENTS**

**Outsourcing for Design and preparation of detailed Fabrication  
Drawings**



**HEAVY MACHINE BUILDING PLANT  
HEAVY ENGINEERING CORPORATION LIMITED  
PO – DHURWA, RANCHI**



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**Heavy Engineering Corporation Limited**  
(A Govt. of India Enterprise)  
**Heavy Machine Building Plant**

No. ACD/HMB/19/WC/2104/OTE-5927

Dt 13.12.2019

**Open Tender Enquiry**

We request you to submit your most competitive offer for the Outsourcing for Design and preparation of detailed Fabrication Drgs as per the details.

Sl No	Work Description	Unit	Estimated Weight (in MT)	Remarks
1	<p>Preparation of detailed fabrication drawings as per format given by BHEL, bolted joint design calculation and all other general and special requirements bill of materials as per HEC Shop requirement.</p> <p>Design &amp; Fabrication drawings for supply of Pre-Fabricated structural steel of FGD,LSS &amp; GSS system North Karanpura STPP, Jharkhand shall include but not limited to the following :</p> <p>Truck Hopper Super structure framing and roofing, FGD Control Room Building, MCC Building. Ball Mill Building &amp; Lime Stone Storage Building, Transfer Points(TP`s),Conveyor and trestle. Gypsum Dewatering Building, Crusher House (CR Building), Gypsum Storage Shed.</p> <p>Pent House. Misc. Pump &amp; Equipment Shed. Flue Duct and Pipe Line Duct Support.</p> <p>Pipe &amp; cable Trestles, Air &amp; Water pipe line support structure. Lime Storage Silo. Misc. Structures etc.</p> <p><b>Note-</b></p> <p><b>1. Approx GA Drgs will be provided by HEC = 41 Nos</b></p> <p><b>2. For submitting Quotation (on Weight basis), 3 Assignment Drgs. are enclosed for reference.</b></p>	MT	6740.00	

**Note - The weight can be varied by  $\pm 20\%$ .**

**Schedule of Tender receipt** : **by 27/12/2019, upto 1:00 PM**  
**Opening of tender** : **on 27/12/2019 at 3:00 PM**  
**Tender Fee (Non-refundable)** : **Rs 1000/- in the form of DD in favor of Heavy Engineering Corporation Ltd, payable at SBI, Hatia, Ranchi**



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**Submission of offer**

The complete tender is to be submitted in a separate sealed envelope super scribing the tender no., before the scheduled date of submission of tender in the tender box at the office of ACD/ HMBP, Room no. 28, HMBP ADM Building, HEC Ltd, Ranchi 4. If the tender is bulky & voluminous the tenders are to be submitted at office of MM/HMBP

The offer has to be given in two part bids. Part-1 of the offer will contain the technical and commercial aspects as asked in part-I of the enquiry. This completed schedule along with EMD will form Part-I of the offer. This Part-I should be kept in one envelope and superscribed name of enquiry and "Techno-Commercial Bid & EMD (Part-I)" over the envelope. Part-II of the offer will contain Price Bid which is to be given in the format as given as Part-II of the enquiry. This price bid should be kept in a separate envelope and superscribe name of the enquiry and Price Bid Part-II over the envelope. Both the sealed envelopes should be kept in one single envelope and super scribe name of the enquiry and opening date over this envelope also mention part I & II over this envelope. The completed offer must reach us on or before **27/12/2019 upto 1 PM.**

**Part (I) and Part (II) should be submitted strictly in the format given in this enquiry.**

**1. Scope of Work**

- a) Preparation of detailed fabrication drawings as per the format given by BHEL, bolted joint design calculation and all other general and special requirements bill of materials as per HEC shop requirement. Approximate tonnage of project is 6740 MT with a variance of  $\pm 20\%$ .
- b) Approval of Fabrication drawings from BHEL/NTPC. Approval of fabrication drawing does not relieve the bidder from the responsibility of its correctness and accuracy.
- c) Providing a detailed bill of materials (BOM) in the drawings. A ledger of BOM is also to be maintained and submitted for approval.
- d) Cut to shape and edge preparation of the drawings. items shall be provided in the detailed fabrication drawings wherever required.
- e) All drawings and connection design calculations shall be supplied in two (02) copies and one soft copy of the same on CD containing design calculation and drawings in Auto-CAD.
- f) All the detailed drawings shall be carried out in accordance with detail Technical Specification including design criteria and relevant latest Indian Standard code. The design/ drawing works is to be carried out in desired sequence and as per the availability



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of structural GA drawings and as decided by HEC for smooth progress of the job.

- g) Detailed Fabrication drawing shall be submitted to HEC within 10 days from the date of furnishing of structural assignment drawings by HEC.

The bidder shall submit detailed time schedule for complete design and drawing works including approval of the design/drawings by BHEL.

- h) All modifications/deletions/additions/alteration in design/drawings as may be required by client/ BHEL/ client's consultant/ HEC for proper execution of works at site till completion and submission of "As Built" drawings.
- i) Submission of As Built drawing and Auto-cad drawings after approval from BHEL/NTPC.
- j) The scope of work is not limited to the scope mentioned above. Any other related drawing job, not specifically mentioned herein but necessary for the completion of the work shall also be under the scope of the works of the successful bidder.

**2. QUALIFICATION CRITERIA.**

- a) Bidder must have experience of having successfully completed three similar works of Rs. 10.0 Lakhs each or two similar works of Rs. 15.0 Lakhs each or one similar works of Rs. 30.0 Lakhs in last five years ending 31st March 2019.
- b) Bidder must have annual average financial turn over (gross) of Rs. 5 Lakhs during last three years ending on 31st March 2019 and should be either audited by a chartered accountant or as submitted by the tenderer to the Income Tax Department.
- c) A suitable office with desired manpower and related facilities must be available at Ranchi for proper co- ordinations, day to day development, timely completion of the complete job and technical assistance related to the design/drawings for fabrication of the structures. Hence bidder have to submit the details of office in Ranchi (such as address, E-mail, telephone no., list of manpower etc).
- d) Bidder have to submit Name and Postal Address of firm with E-mail, telephone no., copies of legal status/ registration of firms, Copy PAN, GST Registration certificate, name of officers and supervisors concerned with work with authorization to act for the firm.
- e) Bidder must have technical capability to complete the work within 10 days from handing over of Layout drawings. A list of equipments, softwares, Degree Engineer (minimum 02 nos ) and draftsmen (minimum 10 nos) etc. to be enclosed for scrutiny.



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**3. RESPONSIBILITIES OF SUCCESSFUL BIDDER**

- a) The Successful Bidder undertakes to prepare connection design, drawings, details, etc. till they are finally approved by client's consultant and as required for completion of job.
- b) The Successful Bidder shall ensure that connection designs considered in the drawings are as per specified Technical specifications, relevant IS codes, design criteria, BIS codes and other specification as given by the manufacturer, clients requirement for the Project. The client BHEL/HEC shall be at liberty to specify the quality and standard of materials to be used in the construction work and such directions will be binding on the Successful Bidder. The Successful Bidder shall execute & complete all such design/drawing works in all respect certified as such by the client's consultant / HEC.
- c) The Successful Bidder shall take responsibility of soundness of all connection design. In case, any defects/short comings in the design from the approved design are observed/noticed by HEC /client at any point of time, the Successful Bidder shall have to get the defects rectified to the satisfaction of "client / HEC".
- d) Successful Bidder shall execute the design and drawing works in a time bound manner. The successful bidder shall submit the detailed fabrication drawings within 10 days after providing the Structural Assignment Drawings by HEC. On award, successful bidder shall submit to HEC the completion schedule of the job with all the activities pertaining to the design/drawing works. The decision of HEC regarding the time period to be taken for completion of design/drawing works of different units and over all time period shall be final and binding on the successful bidder.
- e) The successful bidder shall be exclusively responsible for all such personnel engaged on the works for such matters as payment of salary, wages, bonus and compensation in event of death and accident. No claim on this account shall be claimable by successful bidder from HEC nor it shall be payable to them.
- f) The successful bidder shall supply free of charge to the HEC, the following documents:
  - i) Two (02) sets of the drawings/design in the desired format to be submitted to the client.
  - ii) Soft copies of the drawings/documents/design calculations shall also be submitted to HEC including AUTOCAD files or the files of any other software used for the work.
- g) The successful bidder shall be fully responsible for evolving safe, economical, technically sound and correct connection design and shall ensure that the planning and designing of the work is carried out based on the tender documents and



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specifications of clients, latest BIS codes of practices and good engineering practices. The successful bidder shall undertake that all drawings, connection design, specifications, plans, estimates and other documents will be prepared and furnished to suit the particular local conditions of the site in the most economical manner so as to ensure that the estimates submitted in the prescribed form by the bidder with their tender document are not exceeded on completion of work. At any stage during the progress of execution of the work, if any defect/deficiency is noticed in the drawings, designs, specifications, plans, estimates or other documents, the successful bidder shall provide free of cost to HEC fresh designs/drawings/specifications/estimates and other documents within a period of the seven days from the date of notice issued by HEC in this regard.

- h) The Successful bidder shall be responsible for the accuracy of the data collected the drawings, and quantities prepared by him as part of the work. Successful bidder shall be responsible for any inaccuracy in the work, which might surface out at the time of ground implementation of the project. In such an eventuality, the successful bidder will be responsible to correct the drawings including re-investigations etc. as required without any extra cost implication on HEC.
- i) The Successful bidder shall appoint/depute and notify a team of well qualified Technical personnel from his organization having good knowledge of the subject to carry out the work and to represent the successful bidder in all the meetings/ presentations with HEC and the client BHEL as and when required. The successful bidder shall also appoint/depute one engineer having good knowledge of the subject and all activity related to design/drawing as nodal officer for the Project, who will be responsible for proper and timely implementation of the connection design / drawing works for the Project.
- j) A suitable office with desired manpower and related facilities must be available at Ranchi for proper co- ordinations, day to day development, timely completion of the complete job and technical assistance related to the design/drawings for fabrication of the structures.
- k) **As made drawings:** After the completion of the project, the bidder will have to submit the "AS MADE" detail drawings for final acceptance.



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4. **INFORMATION AND INSTRUCTION FOR TENDER**

- a) **Technical Clarification:** For further technical clarification, bidder may contact the office of HMBP/Purchase on any working day from 9 AM to 5 PM.
- b) **The bidder should sign each page of the tender paper** on due examination of the same, as acceptance of NIT terms and conditions.
- c) The related approved GA structural drawings shall be supplied after award of the work in phase wise manner as per availability of the same from the client BHEL.
- d) The tender should be typed written or filled in neatly. Overwriting should be avoided, correction to be made by neatly crossing, initialing, dating and rewriting.
- e) All expenses on account of visits performed by the bidder or their representatives in connection with planning, designing, detailing, obtaining approval from HEC/BHEL and during construction till completion stage of work. are included in the awarded value of the contract. No extra charge shall be payable on this account.
- f) The department, however reserves the right to restrict the list of qualified bidders to any number deemed suitably by it ; and also reserves the right to accept or reject any application to annual the qualification process and reject all application at any time, without assigning any reason or incurring any liabilities to the tenderers.
- g) Even though a bidder may satisfy the above requirements, he would be liable to disqualification if he has;
  - a. Made misleading or false representation or deliberately suppressed the information in the form of statements and enclosures required for qualifying document.
  - b. Record of poor performance such as abandoning work, not properly completing the contract or financial failures/ weakness etc.
- h) If at any time after award/start of work, the client decides to abandon or reduce the scope of work for any reason whatsoever and hence not require the whole or any part of the works to be carried out, HEC shall give notice in writing to this effect to the bidder and the bidder shall have no claim for any payment of compensation.
- i) **LABOUR LAWS TO BE COMPLIED WITH BY THE CONTRACTOR – “as applicable under laws”**
- j) **AGREEMENT**  
The successful bidder will be required to sign an agreement with HEC on non- judicial stamp of value not less than Rs. 100 only as per HEC's format of Agreement within fifteen (15) days from the issuance of LOI. The cost of the same shall be borne by the successful bidder.





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**TERMS AND CONDITIONS OF THE CONTRACT**

- 1.1 **Price** The quoted rates should be for total works excluding the taxes and duties with contractor overhead and profit etc. complete. Most competitive and realistic price bid to be furnished in prescribed Bill of Quantities based on prevailing market rates. The bidder may be asked to substantiate the same with cost break-up as per prevailing market rates, failing which or in case of discrepancy the offer will be either rejected and/or loaded as derived by the department with respect to offered price of other bidders. The decision of the department will be final and binding. The rates should be quoted both in figure and words. In case of difference between the two, later will prevail. **The price / rate shall remain firm during entire period of contract.**
- 1.2 **Validity of Offer-** The rates quoted must be firm and the offer made must remain valid for acceptance up to **three months** from the date of opening of the tender. The rate quoted must be in word and figure as well. In case any discrepancy in rate given in figures and word, the rate given in words will prevail.
- 1.3 **Acceptance of Tender**  
Tender may be accepted in full or part. Any incomplete tender in any respect is liable to be rejected. The company is having right to reject any tender without assigning any reason for which no question can be asked anywhere.
- 1.4 **Tender Fee**  
Rs. 1000/- (Rs. One Thousand) in the form of D.D. in favour of Heavy Engineering Corporation Ltd. Payable at Hatia must accompany the tender. **Exemption of SD shall be applicable on submission of valid SSI/NSIC/MSME certificate and as per Govt rules.**
- 1.5 **Earnest Money**  
Rs. 70000/- (Rs. Seventy Thousand) in the form of D.D./BG in favour of Heavy Engineering Corporation Ltd. Payable at Hatia must accompany the tender. **Exemption of EMD shall be applicable on submission of valid SSI/NSIC/MSME certificate and as per Govt rules.**  
The E.M.D will be refunded to the unsuccessful tenderer within a reasonable time.
- 1.6 **Security Deposit / Retention Money** – A retention amount of 10% shall be deducted from each RA Bill subject to maximum of 10% of the total contract value. The security deposit will be refunded within reasonable time of issue of completion / erection certificate against the request of the contractor and no claim certificate from the respective engineer/ executing department. In the event of non execution of the contract or withdrawal before expiry of the validity period the security deposit will be forfeited.
- 1.7 **Executing Authority**  
I/c RPD/HMBP or his representative will be the executing Authority of this contract and Service Provider after award of work has to take all necessary instruction from him.
- 1.8 **Measurement of Work-** On the basis of Weight duly certified by executing authority.





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**1.9 Paying Authority**

DGM I/c (Finance)/HMBP is the paying authority.

**1.10 Submission of the Bills**

Service Provider has to submit his bills in triplicate along with Drg approval certificate against the order to DGM /ACD/ HMBP duly certified by Executing Authority.

- a) GST Invoice in triplicate
- b) Drawing Approval with weight Certificate by Executing Authority

**1.11 Payments Terms**

RA bill shall be paid based on progress of work after deducting applicable statutory and contractual deduction.

The payment will be made on weight basis (Prorata basis) as per following schedule:

- a. 90% payment with 100% GST on approval of drawings ready for shop Fabrication upon due deduction of SD amount of 10% from each RA bill comprising of GST invoice and certificate of drawing approval from HEC.
- b. 10% payment on completion of erection of fabricated structures at site and submission of as built drawings duly certified by HEC/BHEL.

**1.12 Completion Period / Delivery Schedule**

The completion period of the entire work shall be 30 days from the issuance of the last assignment drawing under this contract by HEC including submission/rectification and approval of drawings from the client of the same.

As of now, estimated approx. 41 structural assignment drawings shall be supplied upon award of the work in phase wise manner as per availability of the same from the client.

**1.13 Split Clause**

Based on HEC's requirement and urgency of the work, the total Tendered Quantity/Wt. may be split amongst more than One Successful bidder at L-1 Landed Price.

**1.14 Termination of Contract.**

1. The contract can be terminated if the service Provider fails to complete the work in time and even after giving in writing to him, he does not improve his performance then contract can be terminated.
2. If the Service Provider does not follow statutory rules, safety rules and in spite of giving notice he does not improve.
3. Any other reason due to which company thinks it fit to terminate the contract.
4. In the event of the termination of the contract in part/ full the company can get the work completed from any other agency/ departmentally at the risk and cost of the contractor.



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**1.15 Liquidated Damage**

In case of delay in completion of work LD to be levied @ 0.5% of the unfinished part per week of delay subject to maximum deduction of 10% of the contract price.

**1.16 WORK DONE AT RISK AND COST**


At any time, if the progress or quality of work is not found satisfactory, H.E.C. shall have the right either to withdraw the balance work or part thereof and shall get the same done at Contractor's risk and cost after giving an advance notice of 07 days to the contractor. In such a situation no compensation whatever shall be payable to the contractor. The security deposit whatsoever deducted would be adjusted against the excess cost incurred over the balance contract value.

**1.17 Arbitration**

In case of any dispute in executing of this contract the same to be settled by arbitrator appointed/nominated by chairman-cum Managing Director of HEC Ltd. The decision given by such arbitrator shall be final and binding on both parties i.e. HEC Ltd., and the contractor. The dispute shall be strictly subject to Ranchi Jurisdiction only.

**1.18 General Conditions of contract for works contract of HEC Ltd.**

The contract will be governed by General conditions of contract for work contract of HEC Ltd., which is available in the website of the company for downloading by the interested tenderer.

  
(S.K. Singh) 13/12/18  
DGM/ACD/HMBP



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No. ACD/HMB/19/WC/2104/OTE-5927

Dt 13.12.2019

**Techno Commercial Bid**  
**Part –1**  
**(Schedule-1)**

Dear Sir,

I have gone through the tender Document and I submit my offer for doing the work as specified in the tender. I give following technical details to carry out the work:-

	Requisite	✓ your option		Remark
		Yes	No	
1	Whether the scope of work(1) & Responsibilities of successful bidders(3) mentioned in the tender enquiry schedule is acceptable.			
2	Documents submitted as per Qualification Criteria (2)	Yes	No	(enclose the relevant documents)
3	Whether EMD and Tender fees Deposited (As per Terms & condition)	Yes	No	(In case yes, then enclose Copy of DD/BG)
4	Whether SSI/NSIC/MSME	Yes	No	(In case yes, then enclose certificate)
5	UAM no to avail Facilities of MSME	Yes	No	(In case yes, mention UAM no .....)
6	Payment Term (As per Terms & condition)	Yes	No	(In case your answer is No, then please mention your term)
7	Delivery Schedule & Completion Period (As per Terms & condition)	Yes	No	(In case your answer is No, then please mention your term)
8	Validity (As per Terms & condition)	Yes	No	
9	L.D. Clause & Risk purchase clause (As per Terms & condition)	Yes	No	
10	Guarantee Clause (As per Terms & condition)	Yes	No	
11	Security Deposit (As per Terms & condition)	Yes	No	
12	Split Clause (As per Terms & condition)	Yes	No	
13	GST Extra	Yes	No	Applicable GST (%) .....
14	Firm is owned by SC/ST Entrepreneurs	Yes	No	
15	Whether other Terms & Condition/Note etc. mentioned in the tender enquiry is acceptable to the tenderer	Yes	No	
16	Contact Person Name:- Email:- Contact Number:-			

(Signature of Tenderer)  
With official Seal



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No. ACD/HMB/19/WC/2104/OTE-5927

Dt 13.12.2019

**Part –1**  
**(Schedule-2)**

To,

The DGM/ ACD/HMBP  
Heavy Machine Building Plant  
Heavy Engineering Corporation Ltd.  
Ranchi – 834 004(Jharkhand)

Dear Sir,

I have gone through the contents of the Tender Document and the following clause of the document are not acceptable to me and needs to be amended as below:-

Sl.No.	Clause No.	Amendment proposed
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(Signature of Tenderer)

**With official Seal**

Note :

If any new clause is to be incorporated then that may be mentioned in this schedule. If no amendment is proposed or new clause be incorporated then the tenderer should write NIL



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No. ACD/HMB/19/WC/2104/OTE-5927

Dt 13.12.2019

**Price Bid**  
**Part -2**  
**(Schedule-1)**

Sl. No.	Work Description	Unit	Estimated Weight (in MT)	Rate/MT (Rs.)	
				Figure	Word
1.	Preparation of detailed fabrication drawings as per format given by BHEL ,bolted joint design calculation and all other general and special requirements, bill of materials as per HEC Shop requirement and Scope of Work.	MT	6740.00		
Total Price (Rs.)					

GST Rate (%) : ..... EXTRA

**Important Note: -**

1. The weight of material can be varied by  $\pm 20\%$ .
2. The offer shall be based on per ton basis inclusive of all expenses find & firm.
3. Rate must be given in figures as well as in words.
4. Hand written tender will not be accepted.

**(Signature of Tenderer)**  
**With official Seal**



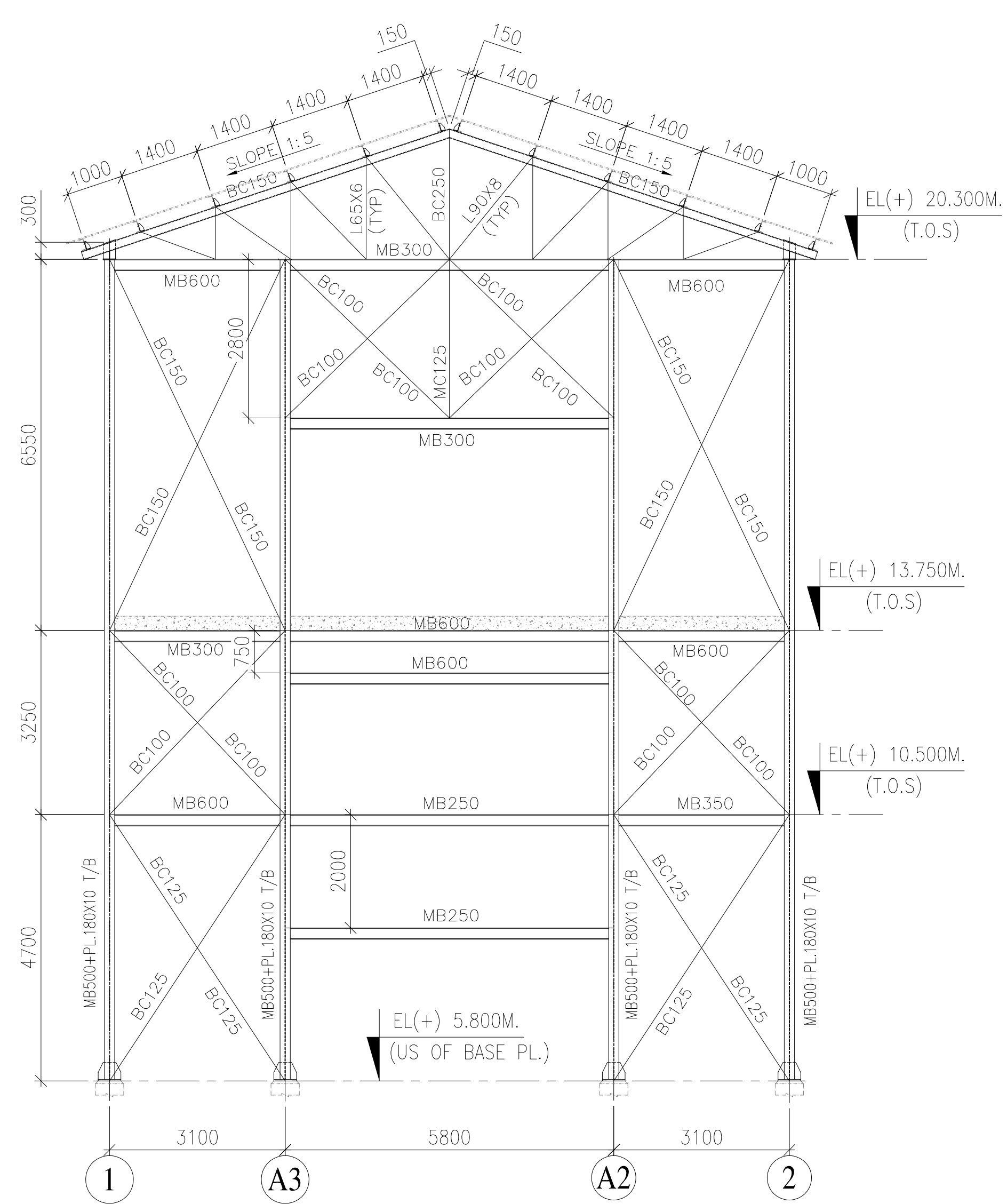
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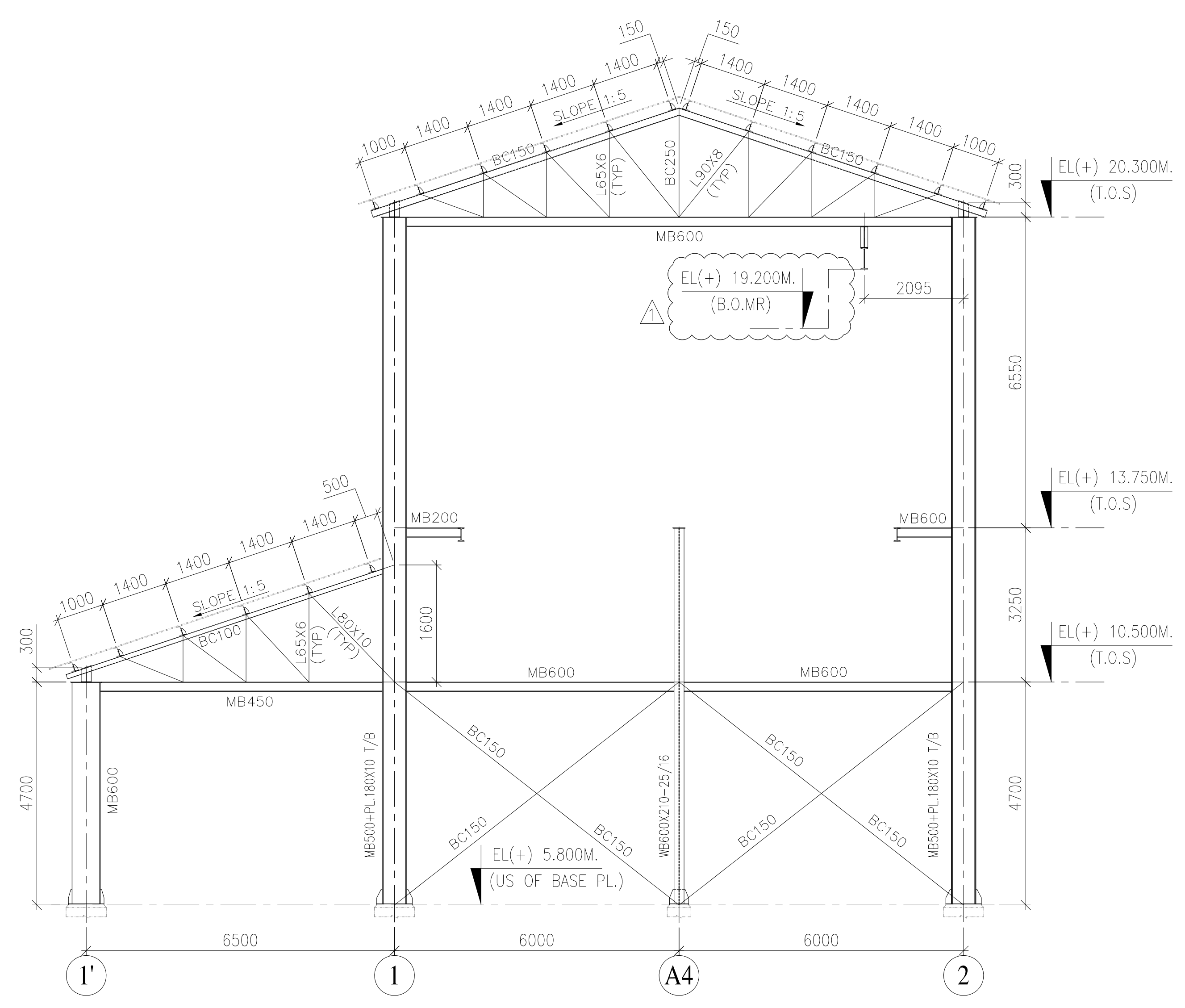
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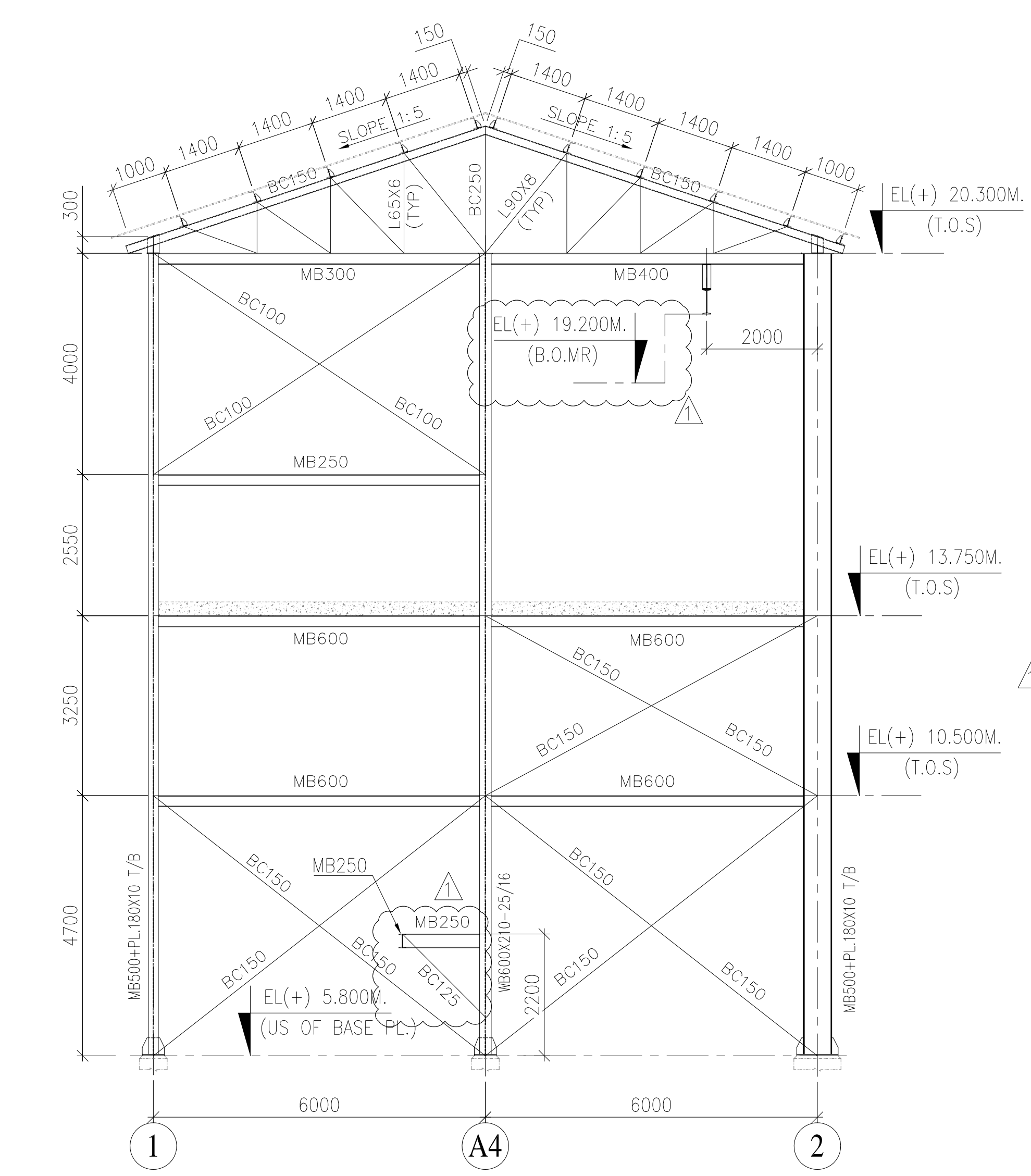
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It must not be used in any way detrimental to the interest of the Company.



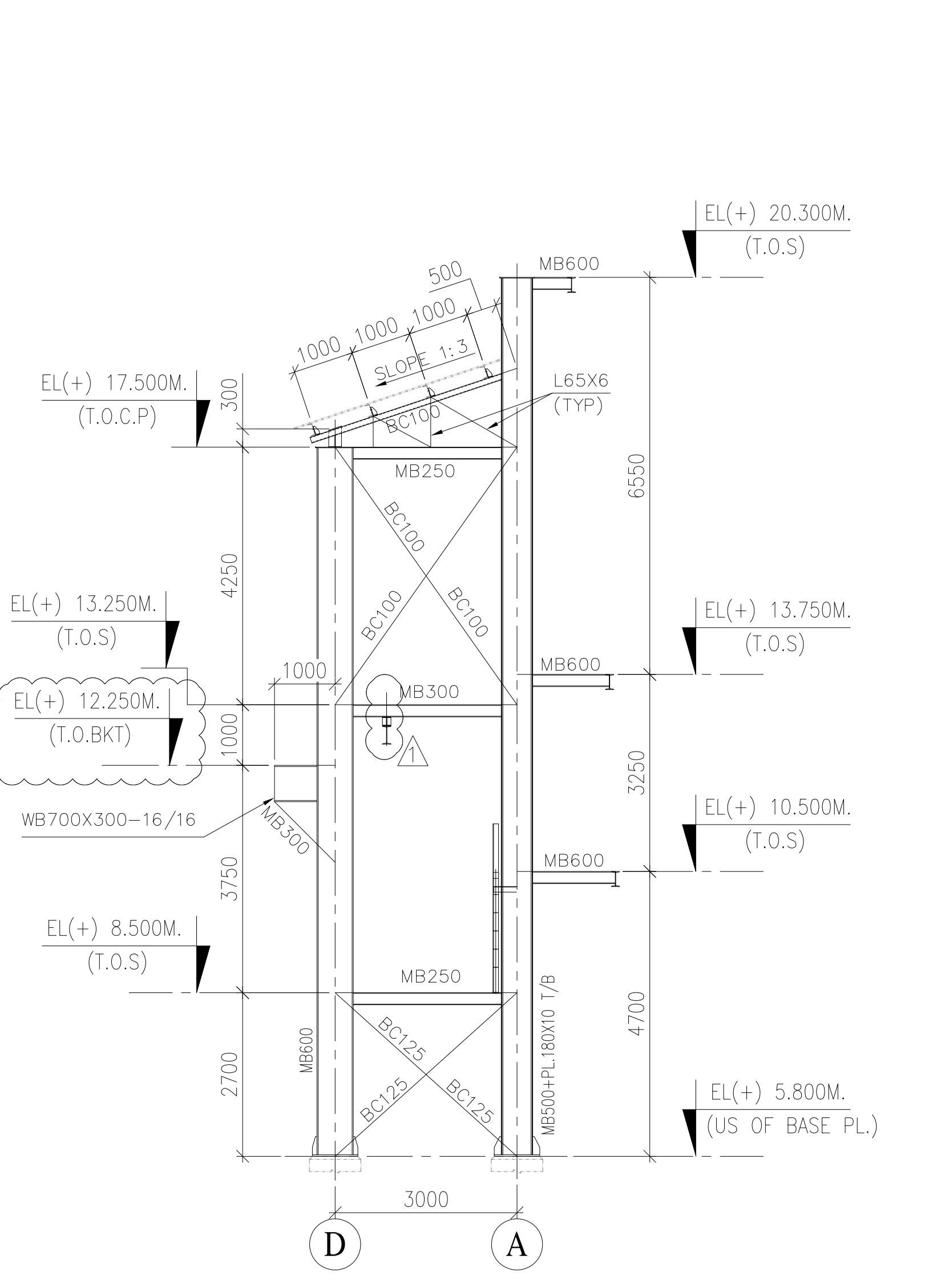
ELEVATION ALONG GRID-A



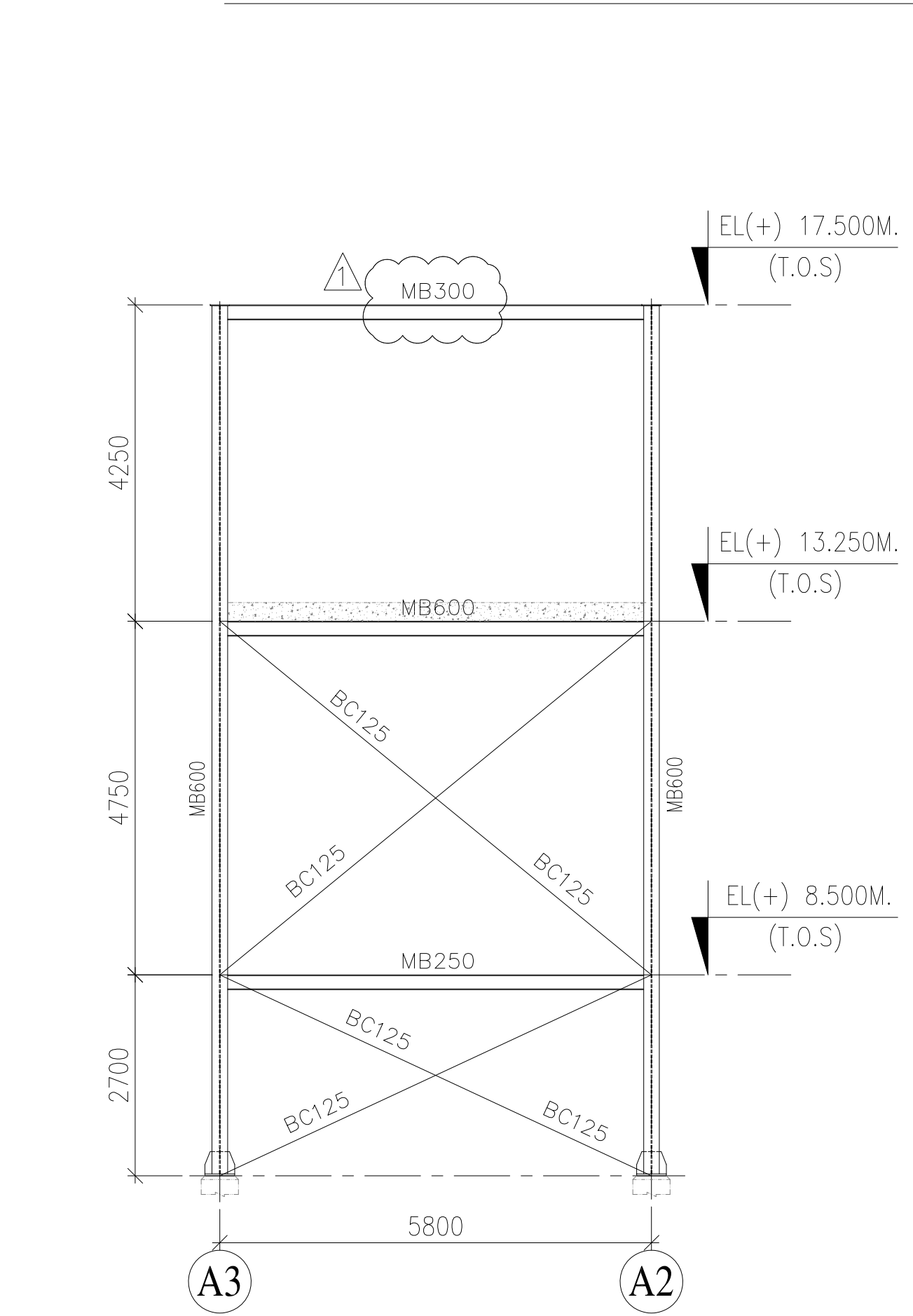
ELEVATION ALONG GRID-A1



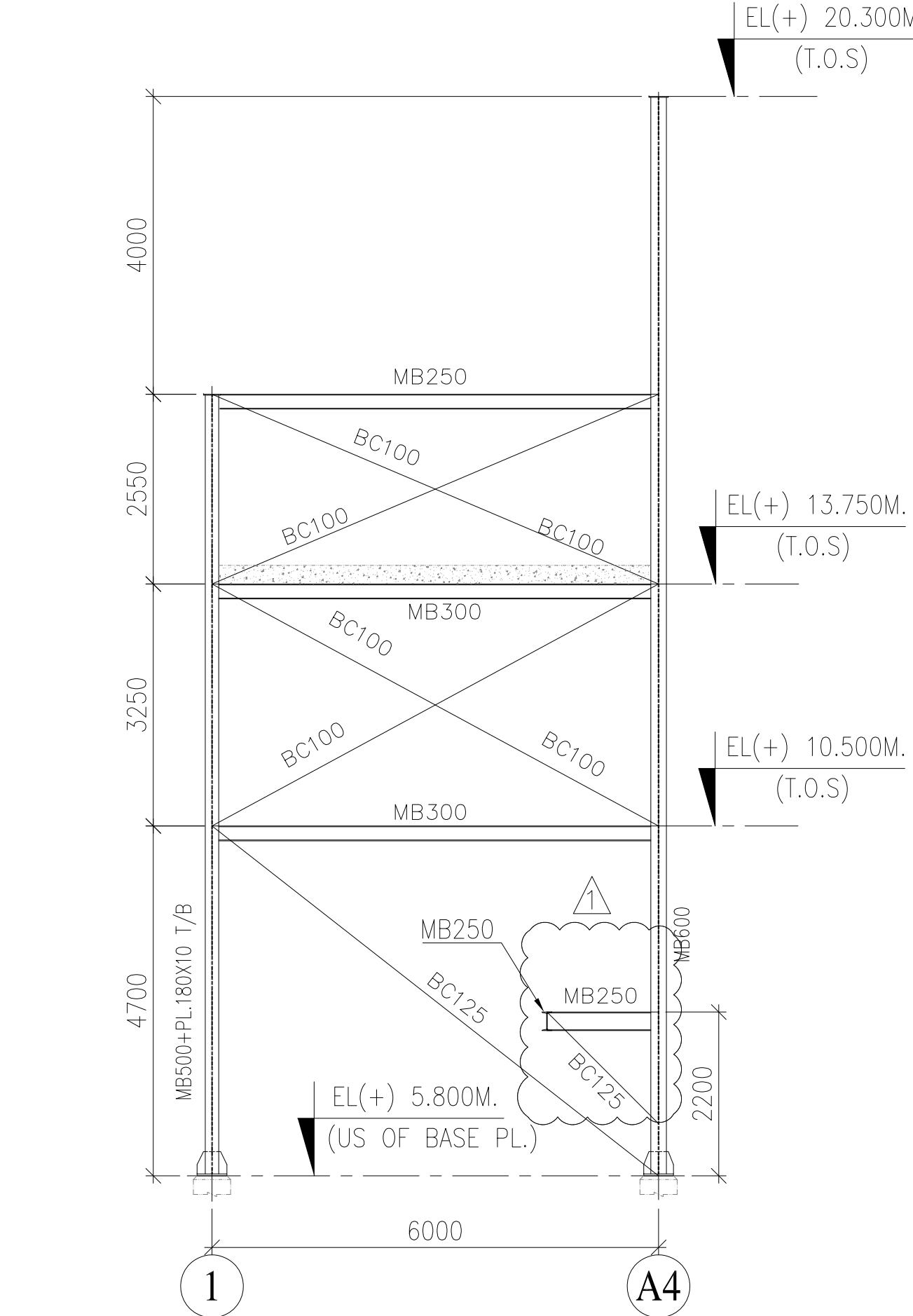
ELEVATION ALONG GRID-B



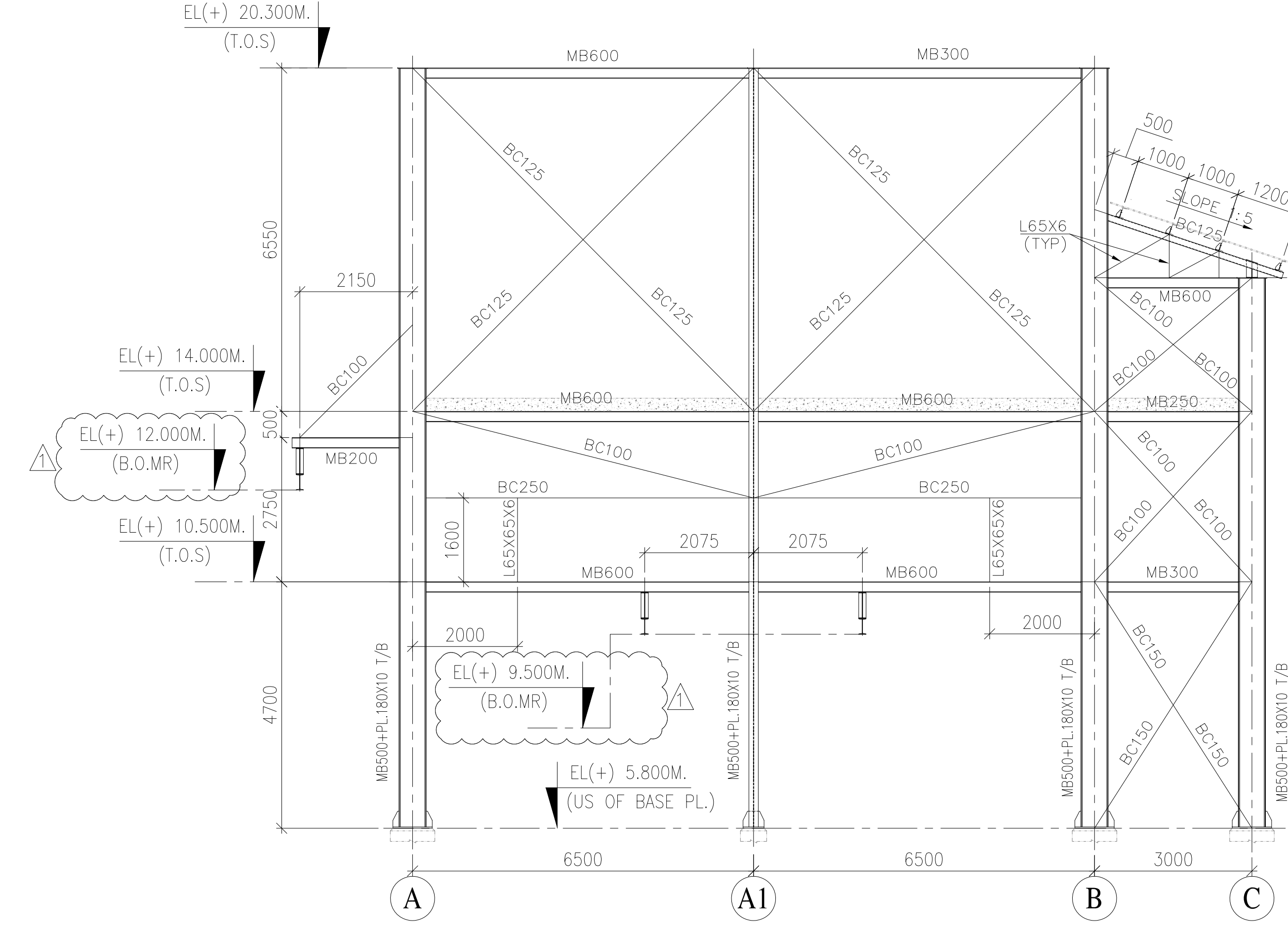
ELEVATION ALONG GRID-A3



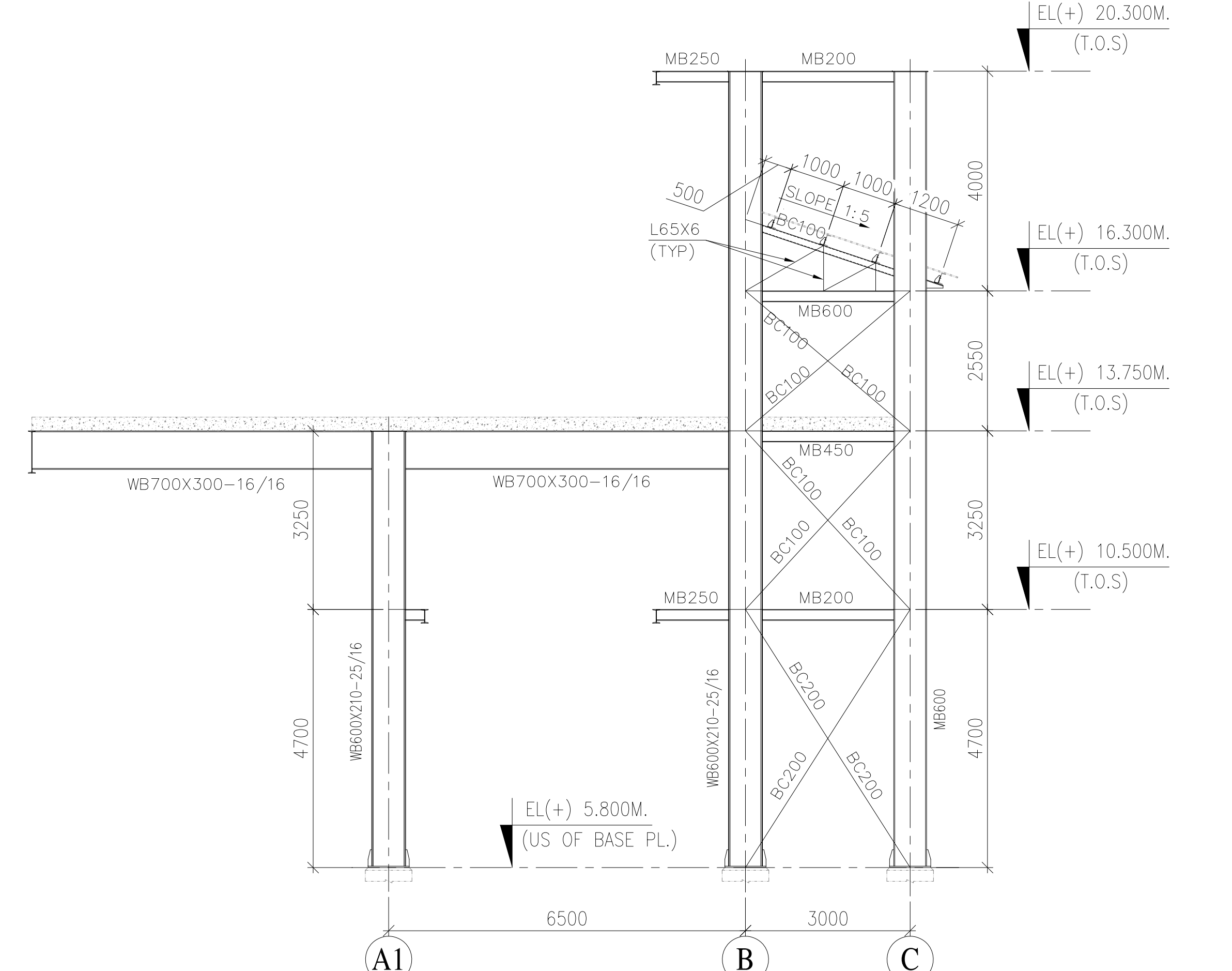
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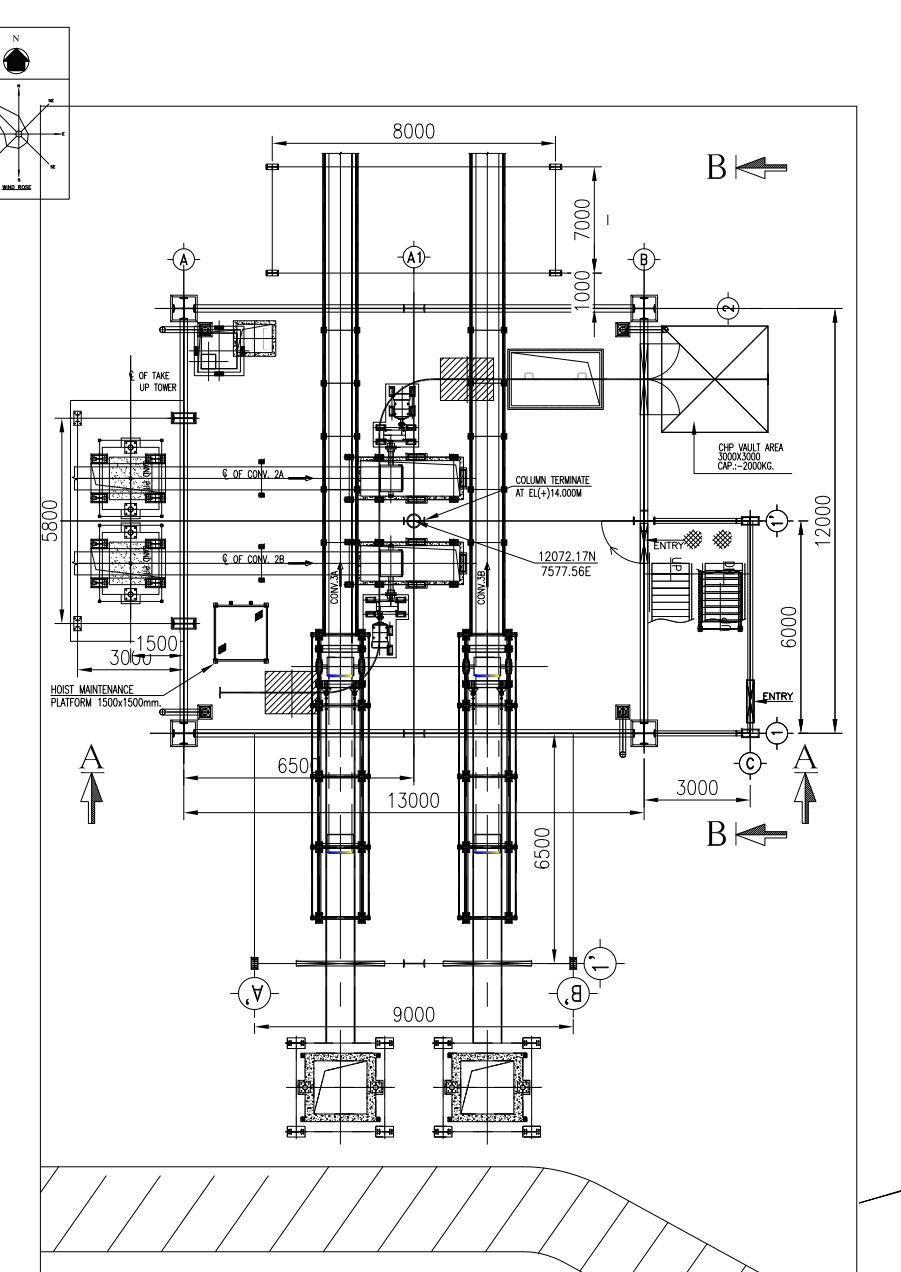
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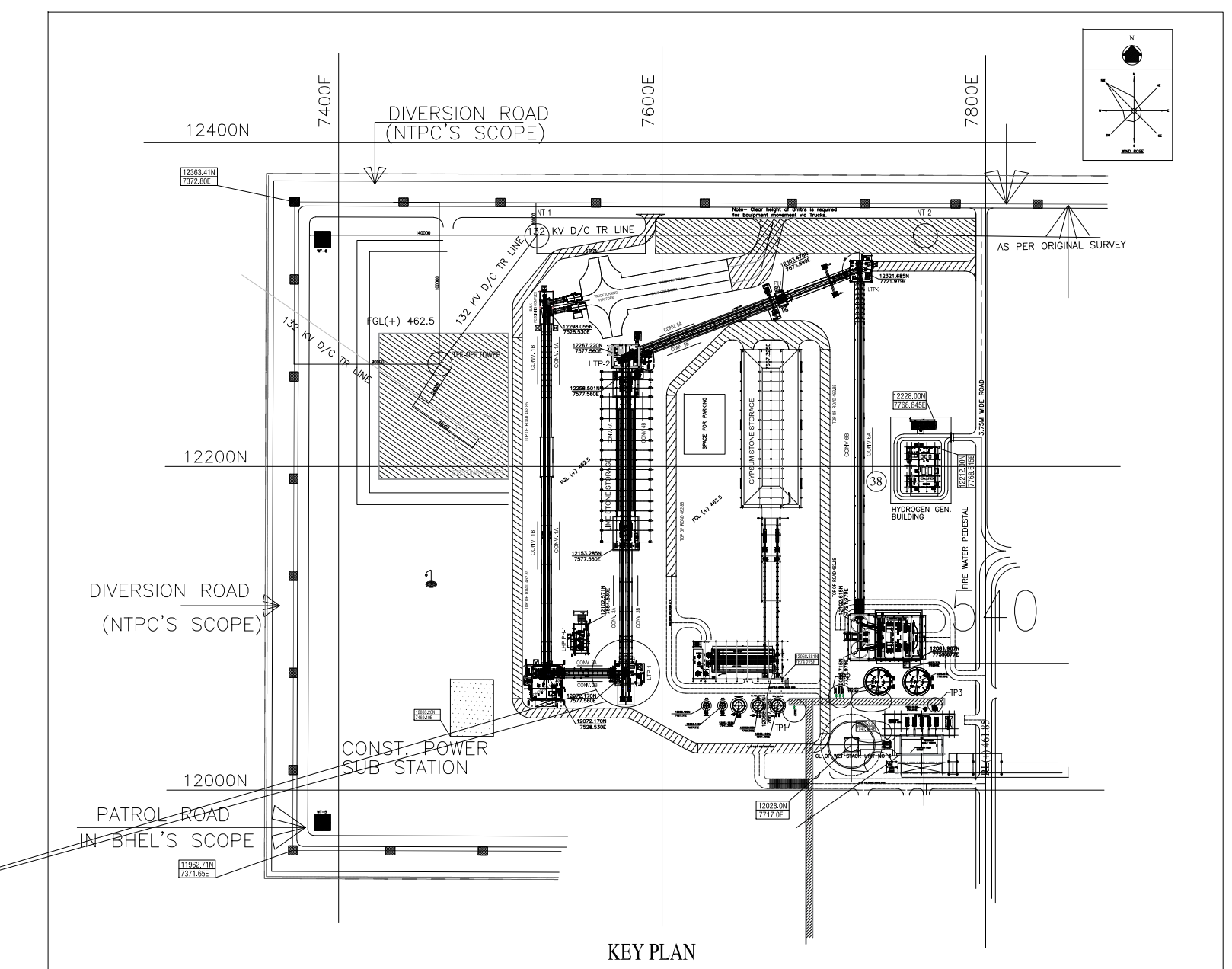
ELEVATION ALONG GRID-1



ELEVATION ALONG GRID-A4



KEY PLAN



OVER ALL KEY PLAN

OWNER /CONSULTANT  
**NTPC Limited**  
 ENGINEERING DIVISION  
 (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT  
**FGD PACKAGE (LHP AND GHP) FOR NORTH KARANPURA STPP**

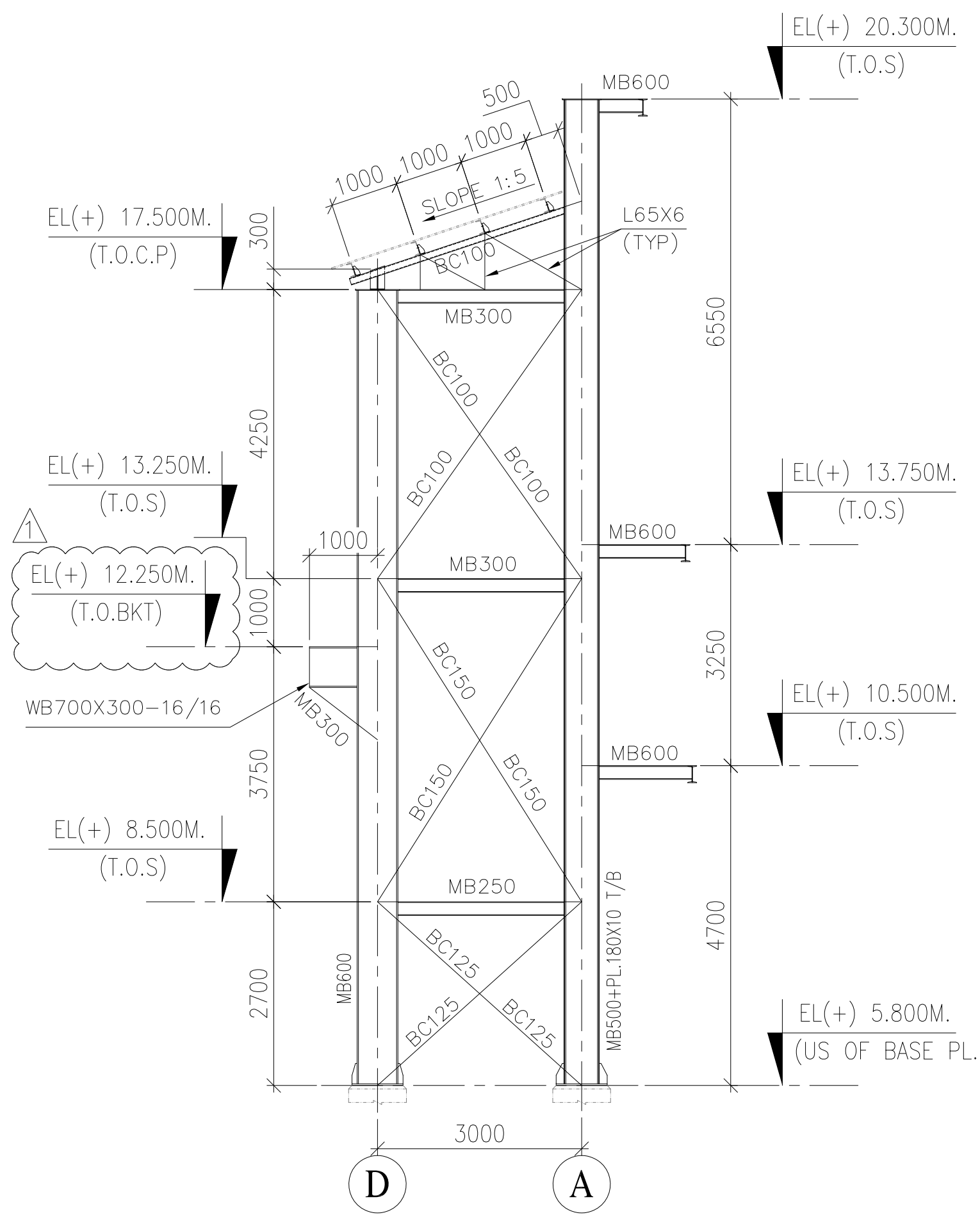
JOB No.	IS-18-2000		
STATUS OF DRAWING			
DISTRIBUTION OF PRINTS	QTY.		
REV.	NAME	SIGN	DATE
1	ALTERED PANCHU	-SD-	30.09.2019
	CHECKED VENKAT	-SD-	30.09.2019
	APPROVED VRM	-SD-	30.09.2019

BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN	DATE	NO. OF VAR
INDUSTRIAL SYSTEMS GROUP, BANGALORE		DRN.	PANCHU		05.09.2019
		CHKD.	VENKAT		05.09.2019
		APPD.	VRM		05.09.2019
SCALE	1:100	WEIGHT(Kgs.)		NTPC DRAWING NO.	ITEM NO.
				<b>4410-109-ISG-PVC-C-494</b>	
TITLE		DRAWING NO.		REV.	
BASED ON LATEST MECH. DRAWING		<b>GA &amp; DETAILS OF ELEVATION LTP-1</b>		<b>IS-1GA-718-104-C-494</b>	
SHEET NO.		NO. OF SHTS.		2	
1		2		1	

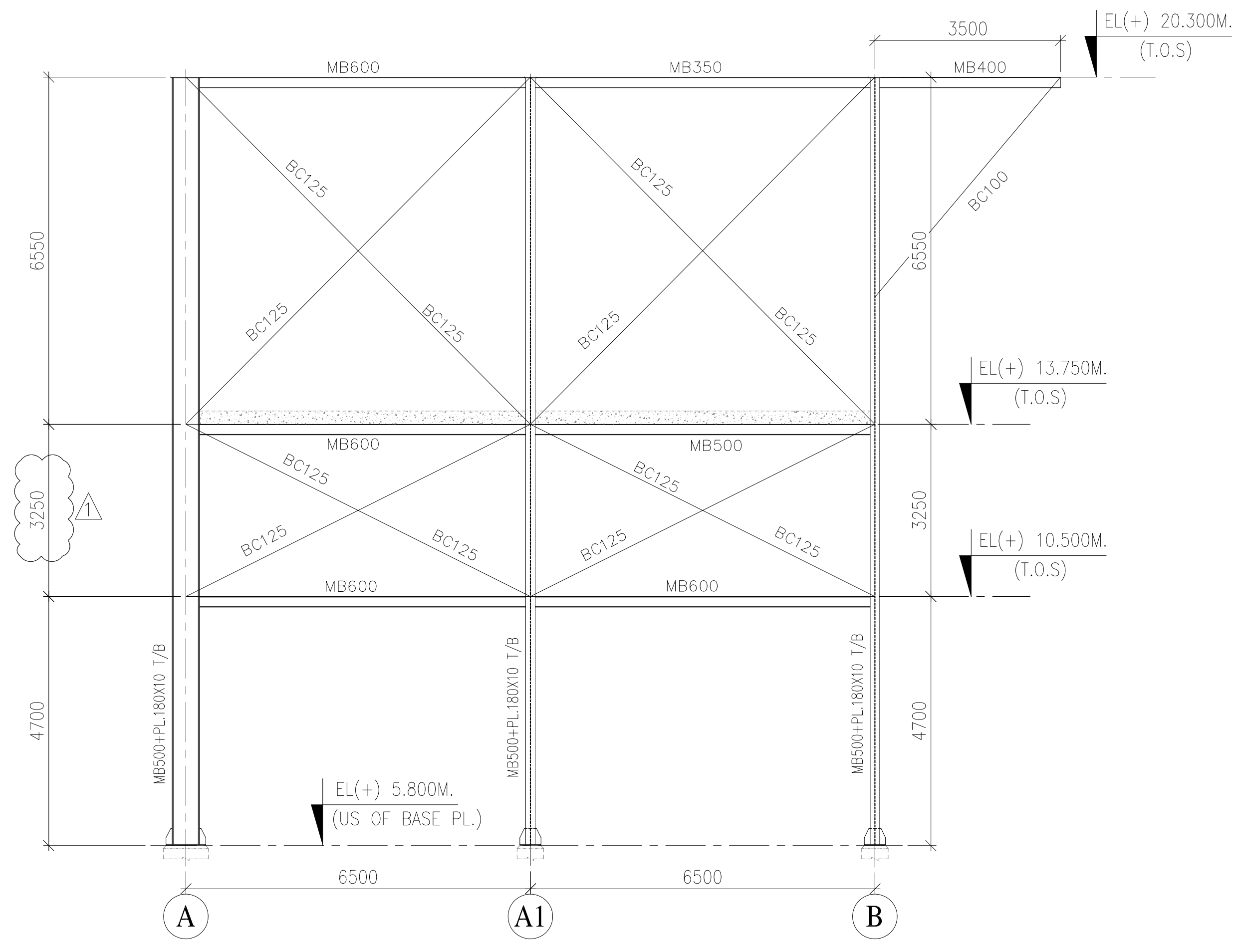


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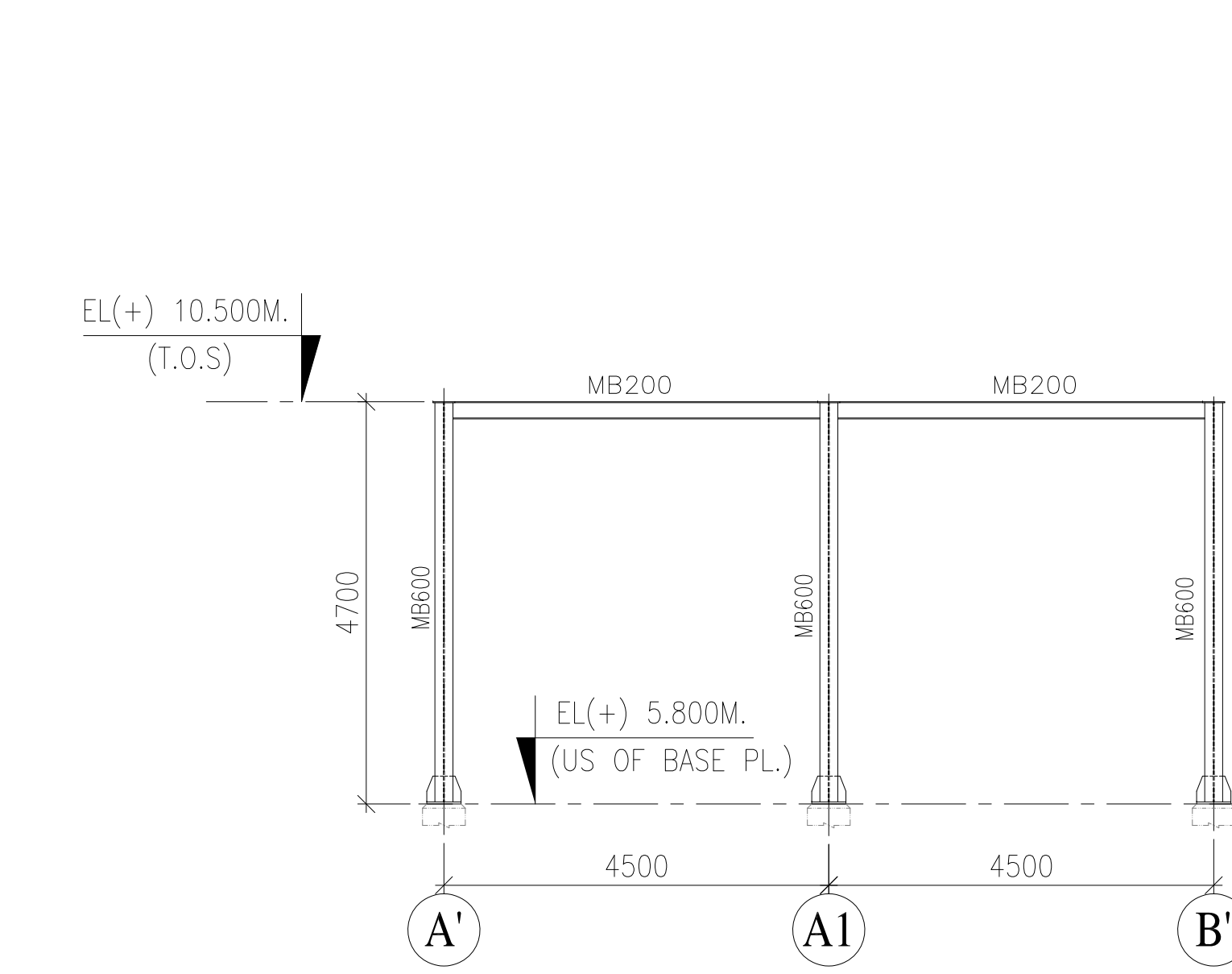
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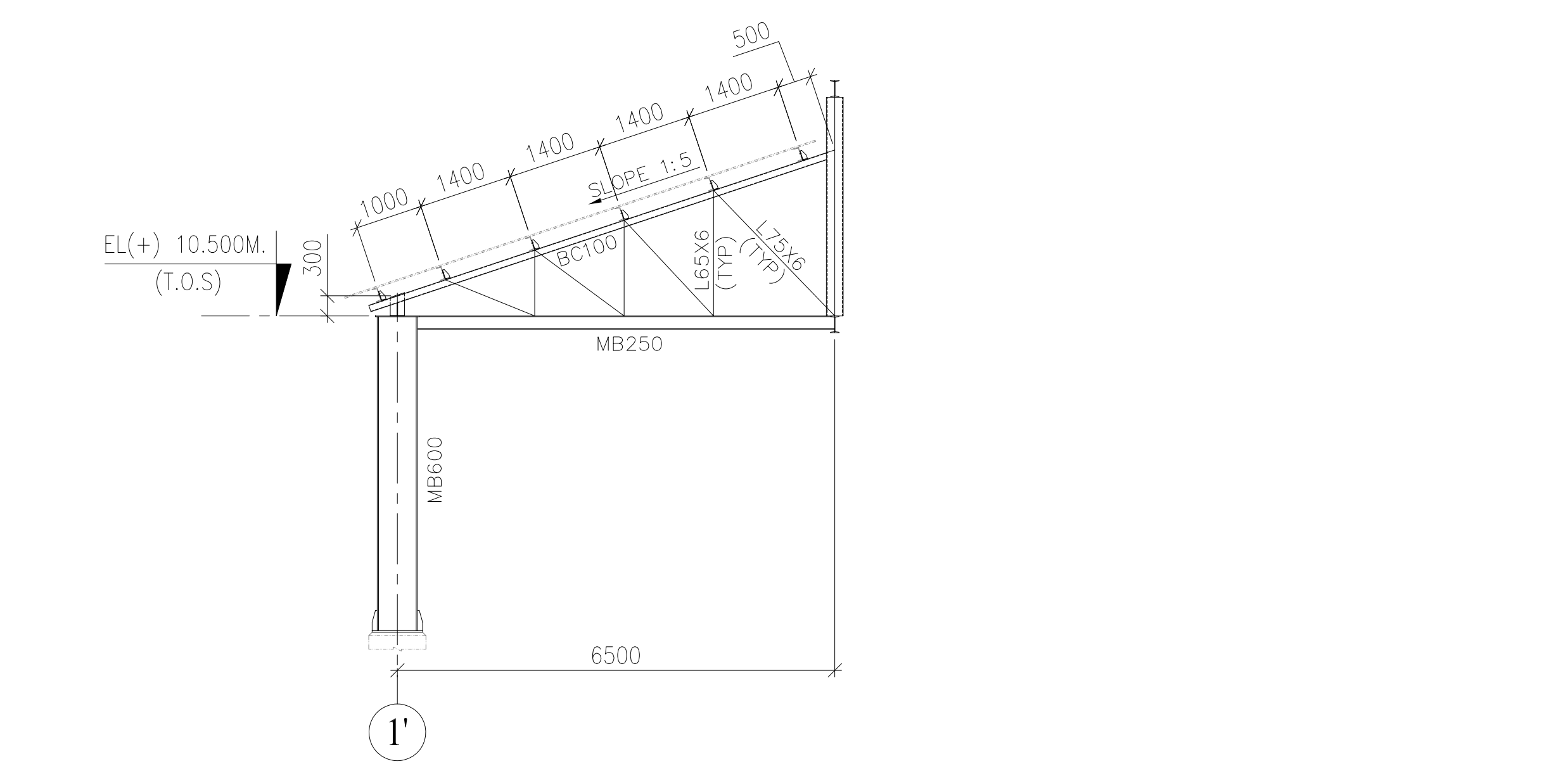
ELEVATION ALONG GRID-A2



ELEVATION ALONG GRID-2



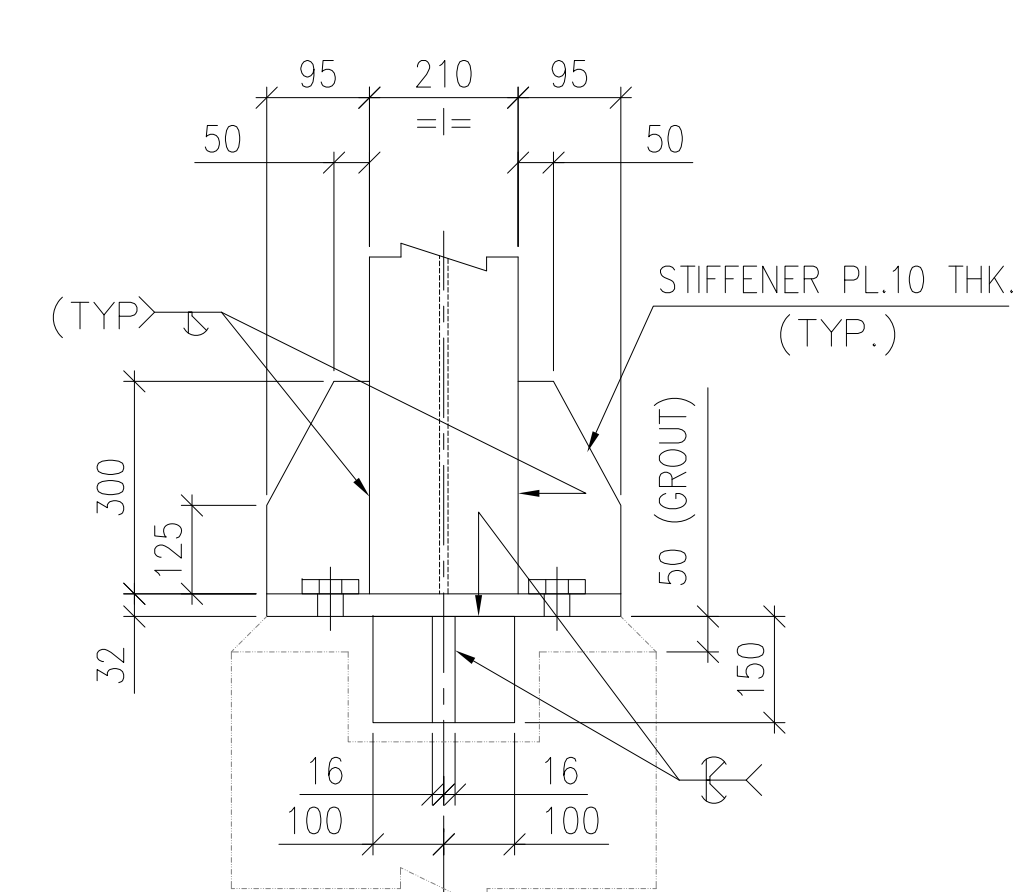
ELEVATION ALONG GRID-1



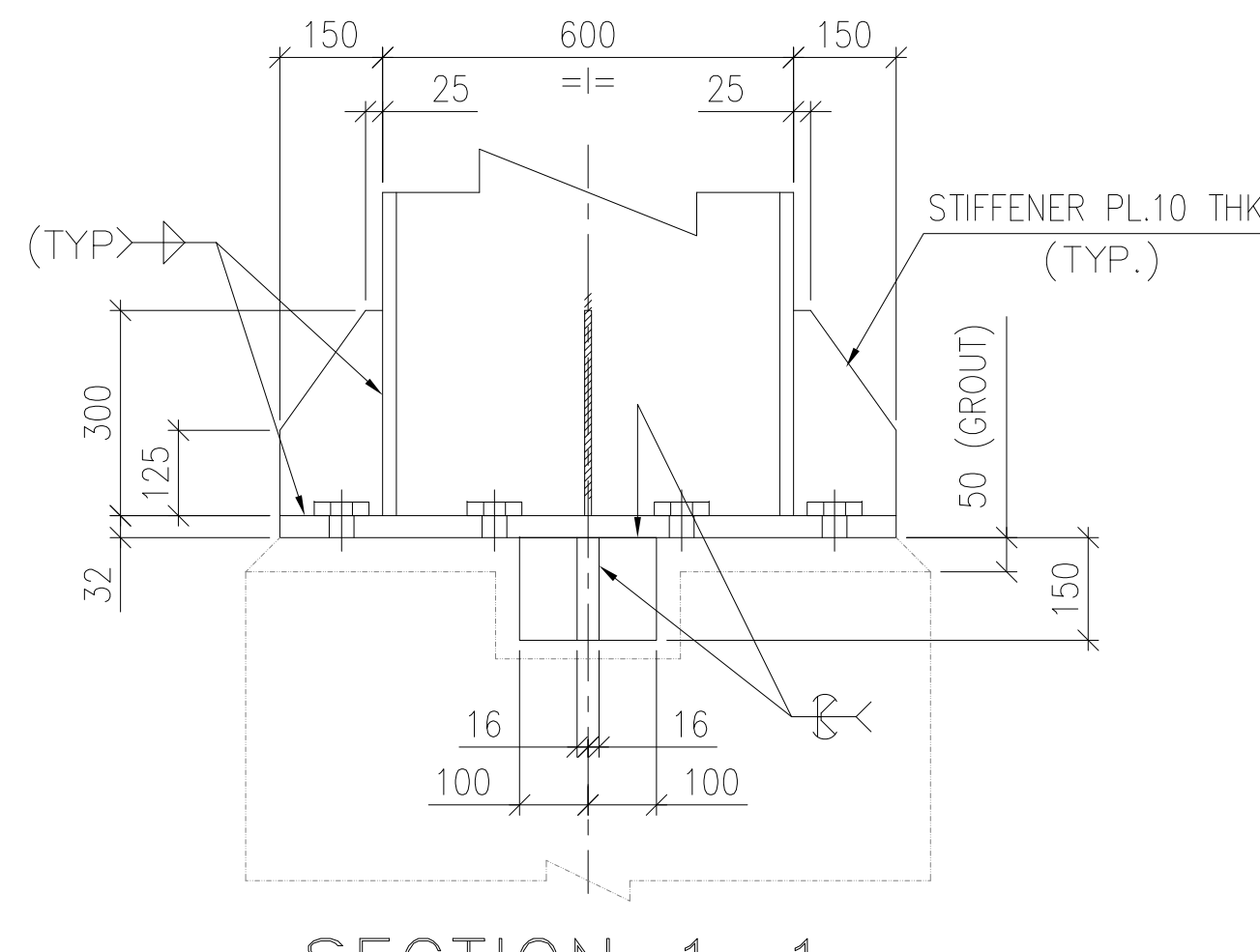
ELEVATION ALONG GRID-A' & B'

- NOTES**
- A. GENERAL**
- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT FLOOR ELEVATIONS AND PLANT GRID WHICH ARE IN METRE UNLESS STATED OTHERWISE.
  - ALL ELEVATIONS ARE WITH RESPECT TO MAIN POWER HOUSE BUILDING GROUND FLOOR LEVEL AS EL.(±)0.000 M WHICH CORRESPONDS TO RL(±)457.50M ABOVE M.S.L.
  - THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH IS:800 - CODE OF PRACTICE FOR GENERAL CONSTRUCTION IN STEEL AND AS SPECIFIED IN THE CONTRACT TECHNICAL SPECIFICATIONS.
- B. MATERIAL**
- ALL MILD STEEL BOLTS SHALL BE OF PROPERTY CLASS 4.6 GRADE-C CONFORMING TO IS:1363.
  - ALL HIGH STRENGTH STRUCTURAL BOLTS SHALL BE OF PROPERTY CLASS 8.8 GRADE-A CONFORMING TO IS:1367 & SHALL BE SUPPLIED CONFORMING TO IS:3757
  - ALL ANCHOR BOLTS SHALL BE MILD STEEL OF GRADE 4.6 CONFORMING TO IS:5624
  - ALL STRUCTURAL AND MISCELLANEOUS STEEL WORK SHALL BE OF MILD STEEL CONFORMING TO FOLLOWING INDIAN STANDARDS:-
    - ROLLED SECTIONS(FULLY/SEMI KILLED) IS:2062 (GRADE E250 QUALITY-A/BR)
    - PLATE UP TO 12 MM THICKNESS (SEMI KILLED) IS:2062 (GRADE E250 QUALITY-BR)
    - PLATE ABOVE 12 MM AND UP TO 40MM THICKNESS (FULLY KILLED, NORMALIZED ROLLED AND SHALL PASS THE IMPACT TEST VALUE AT ROOM TEMP.) IS:2062 (GRADE E250 QUALITY-BR)
    - PLATE BEYOND 40 MM THICKNESS (FULLY KILLED VACUUM DEGASSED FURNACE NORMALIZED AND 100% ULTRASONICALLY TESTED) IS:2062 (GRADE E250 QUALITY-BR)
    - UST TESTED AS PER ASTM-A578 LEVEL B-S2
    - STRUCTURAL HOLLOW SECTIONS (SQUARE AND RECTANGULAR) IS:4923 (YST 240)
    - CHEQUERED PLATE (6MM. THK) (SEMI KILLED) IS:3502, IS:2062
    - M.S. PIPES HANDRAIL IS:1161(MEDIUM CLASS)
- REFERENCE DRAWINGS**
- 4410-109-ISG-PVM-B-015 : GA OF LTP-1 WITH LOAD DATA
  - 4410-109-ISG-PVC-C-498 : GA & RC DETAILS OF FOUNDATION FOR LTP-1

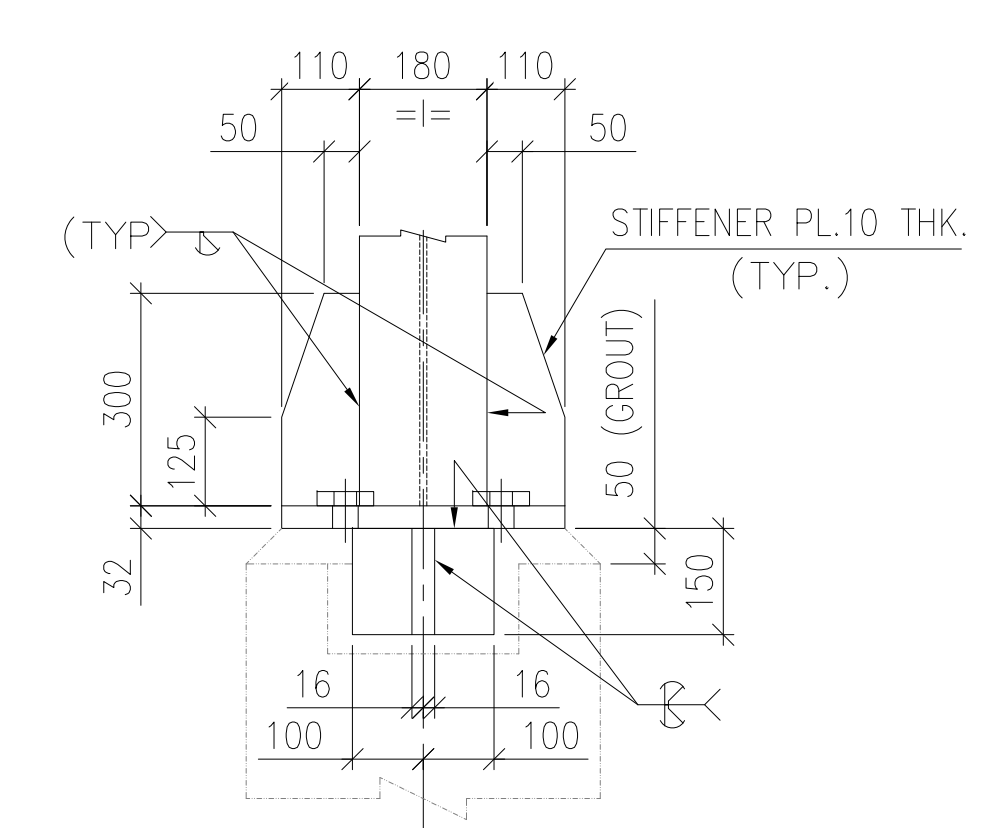
- C CONNECTIONS**
- UNLESS STATED OTHERWISE, ALL SHOP CONNECTIONS SHALL BE BY WELDING AND FIELD CONNECTION GENERALLY SHALL BE BY BOLTING USING HIGH STRENGTH FRICTION GRIP (HSFG) BOLTS OF 8.8 GRADE.
  - THE SIZE OF FILLET WELD SHALL BE 6 MM MINIMUM UNLESS NOTED OTHERWISE.
  - SHOP SPlicing FOR ALL SECTIONS OTHER THAN ROLLED SECTIONS SHALL BE WITH FULL PENETRATION BUTT WELD WITH NO COVER PLATES. SPlicing FOR ROLLED SECTIONS SHALL BE WITH WEB & FLANGE COVER PLATES. FIELD SPlicing SHALL BE USING HSFG BOLTS WITH COVER PLATES FOR FULL STRENGTH. FIELD COLUMN SPlice TO BE DESIGNED FOR FULL CAPACITY PLUS 5% ADDITIONAL CAPACITY OF LOWER SECTIONS.
  - THE DIAMETER OF BOLT SHALL BE 20MM (MINIMUM) FOR HIGH STRENGTH FRICTION GRIP AND 16MM (MINIMUM) FOR MS BOLTS.
  - ALL BOLT CONNECTIONS SHALL HAVE MINIMUM TWO BOLTS.
  - LENGTH OF FILLET WELDS SHALL NOT BE LESS THAN FOUR TIMES OF THE NOMINAL SIZE OF THE WELD OR 40 MM. WHICHEVER IS MORE.
  - FILLET WELD TERMINATING AT ENDS MUST HAVE RETURN AROUND CORNERS NOT LESS THAN TWICE THE NOMINAL SIZE OF THE WELD.
  - ALL SPlicing WORK SHALL BE MINIMUM FULL STRENGTH.
  - THE DIAMETER OF BOLT HOLES SHALL NOT BE MORE THAN 2MM OF THE DIAMETER OF BOLT UNLESS STATED OTHERWISE.
  - GUSSET/END PLATES SHALL BE OF FOLLOWING MINIMUM THICKNESS SUBJECT TO DESIGN REQUIREMENTS, UNLESS SPECIFIED OTHERWISE.
    - FOR BEAMS OF DEPTH LESS THAN 450 :- 10 MM.
    - FOR BEAMS OF DEPTH 450 TO 600 :- 10 MM.
    - TRUSS/BRAICINGS, WITH MEMBER THICKNESS 8 MM & LESS :- 8MM.
    - TRUSS/BRAICINGS, WITH MEMBER THICKNESS 10MM & MORE :- 12MM.
  - UNLESS OTHERWISE STATED IN THE DESIGN DRAWINGS, THE CONNECTION SHALL BE DESIGNED FOR THE FOLLOWING LOADS :-
    - MOMENT CONNECTIONS DESIGNATED AS 'MC' TO BE DESIGNED FOR THE FULL CAPACITY OF THE MEMBER.
    - SHEAR CONNECTIONS SHALL BE DESIGNED FOR 60% OF SECTION STRENGTH FOR ROLLED SECTIONS AND 80% OF SECTION STRENGTH FOR BUILT UP SECTION OR ROLLED SECTIONS WITH COVER PLATES. IN ANY CASE, THE DESIGNED VALUE SHALL NOT BE LESS THAN THE ACTUAL SHEAR.
    - CONNECTIONS FOR BEAMS IN MAIN AXIS/GRID TO BE DESIGNED FOR THE MINIMUM AXIAL LOAD OF 7.5 MT.(TENSION/COMPRESSION) UNLESS HIGHER LOAD IS REQUIRED FROM ANALYSIS IN ADDITION TO REQUIRED SHEAR/ MOMENT LOAD. IN ANY CASE, THE DESIGNED AXIAL LOAD SHALL NOT BE LESS THAN THE ACTUAL TENSION/ COMPRESSION.
    - COLUMN SPlice TO BE DESIGNED FOR FULL CAPACITY PLUS 5% ADDITIONAL CAPACITY OF LOWER SECTIONS.
    - CONNECTION FOR ALL TRUSS MEMBERS TO BE DESIGNED FOR FULL TENSILE STRENGTH OF THE MEMBER.
    - CONNECTION OF BRACING MEMBERS TO BE DESIGNED FOR FULL TENSILE STRENGTH OF THE MEMBER.
    - SIZE OF FILLET WELD FOR FLANGE TO WEB CONNECTION FOR BUILT UP SECTION SHALL BE AS FOLLOWS :
      - FULL SHEAR CAPACITY FOR BOX SECTION.
      - BOX OF FULL SHEAR CAPACITY OR ACTUAL SHEAR OR NOT LESS THEN 0.5 OF WEB THICKNESS, WHICHEVER IS MORE. FOR BUILT UP SECTION, WELD SHALL BE DOUBLE FILLET.
    - THE CONNECTION BETWEEN TOP FLANGE AND WEB OF CRANE GIRDER SHALL BE FULL PENETRATION BUTT WELD AND FOR BOTTOM FLANGE CONNECTION, FILLET WELD MAY BE PROVIDED.
    - CONNECTION OF BASE PLATE AND GUSSET MEMBERS WITH THE COLUMNS SHALL BE DONE CONSIDERING THAT TOTAL LOAD GETS TRANSFERRED THROUGH WELD. HOWEVER MINIMUM WELD SIZE(DOUBLE FILLET) SHALL NOT BE LESS THAN 0.6 TIMES THE THICKNESS OF STIFFENERS.



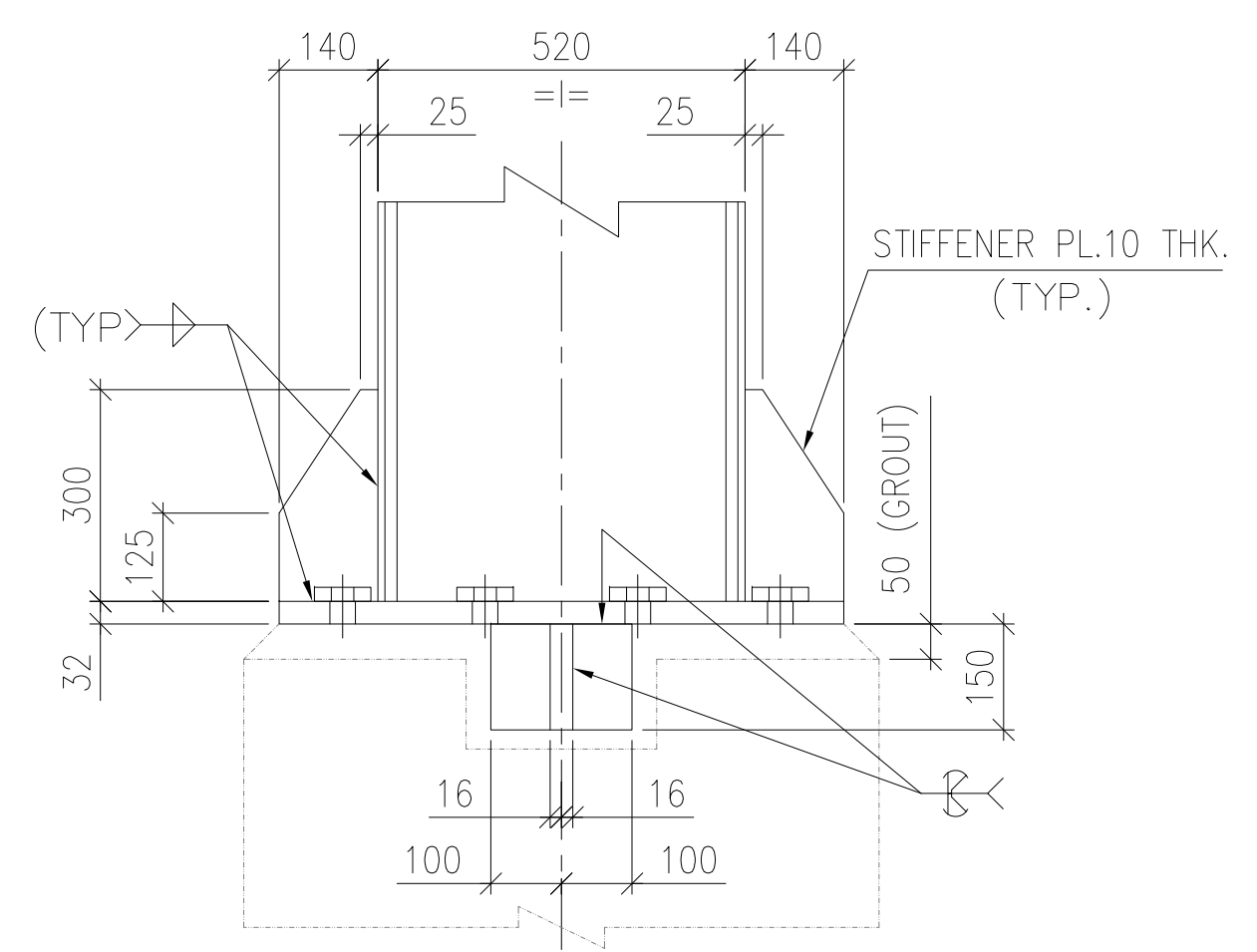
SECTION 2-2



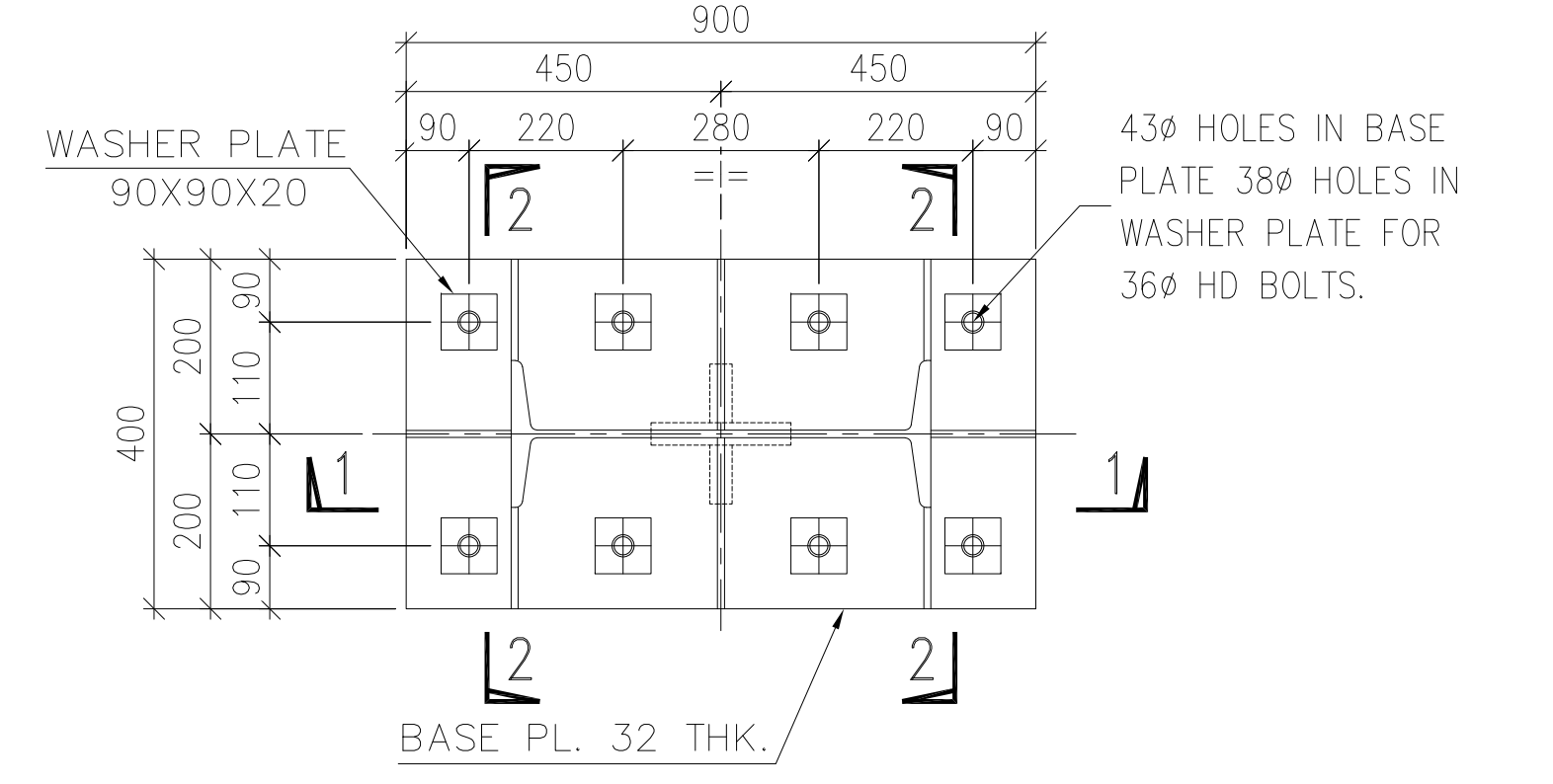
SECTION 1-1



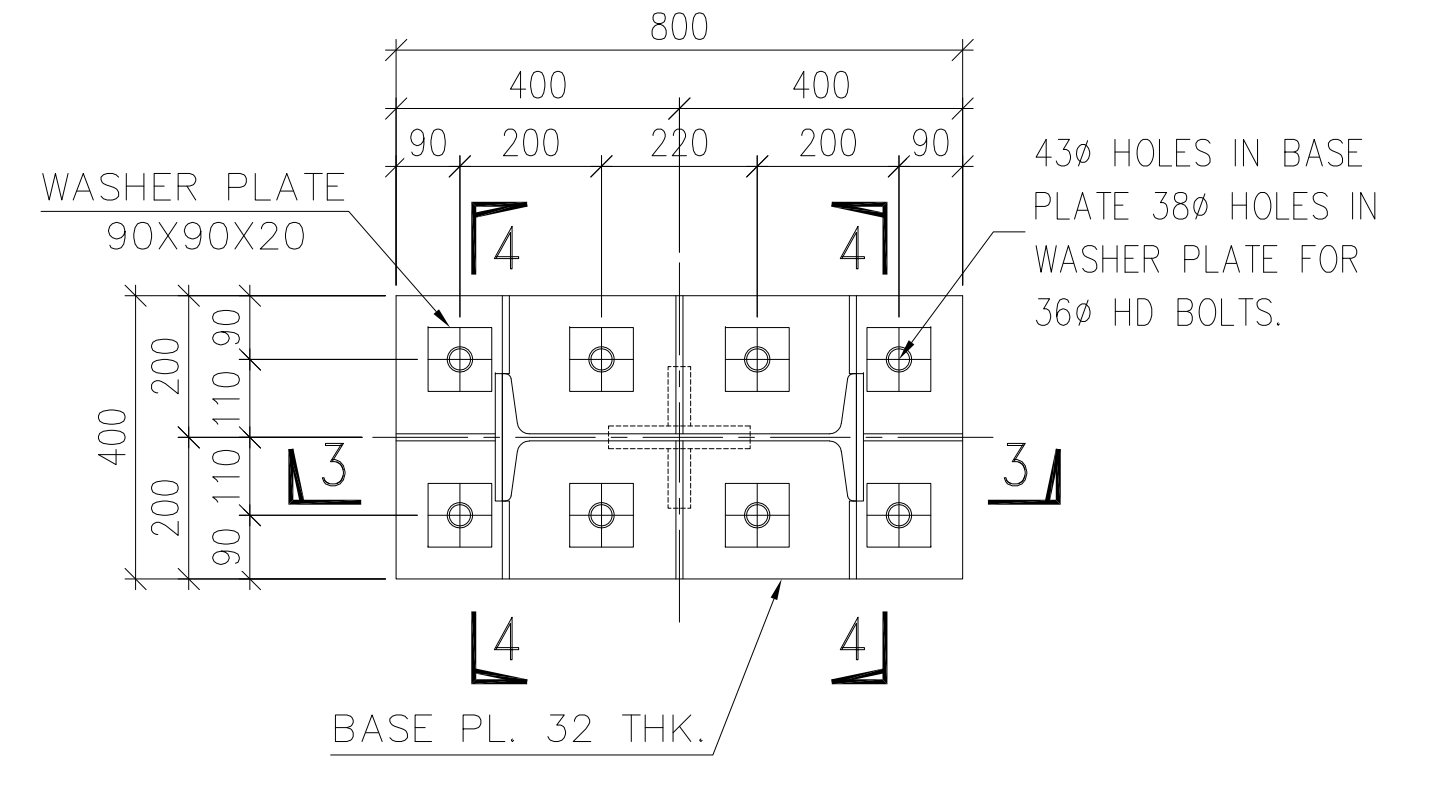
SECTION 4-4



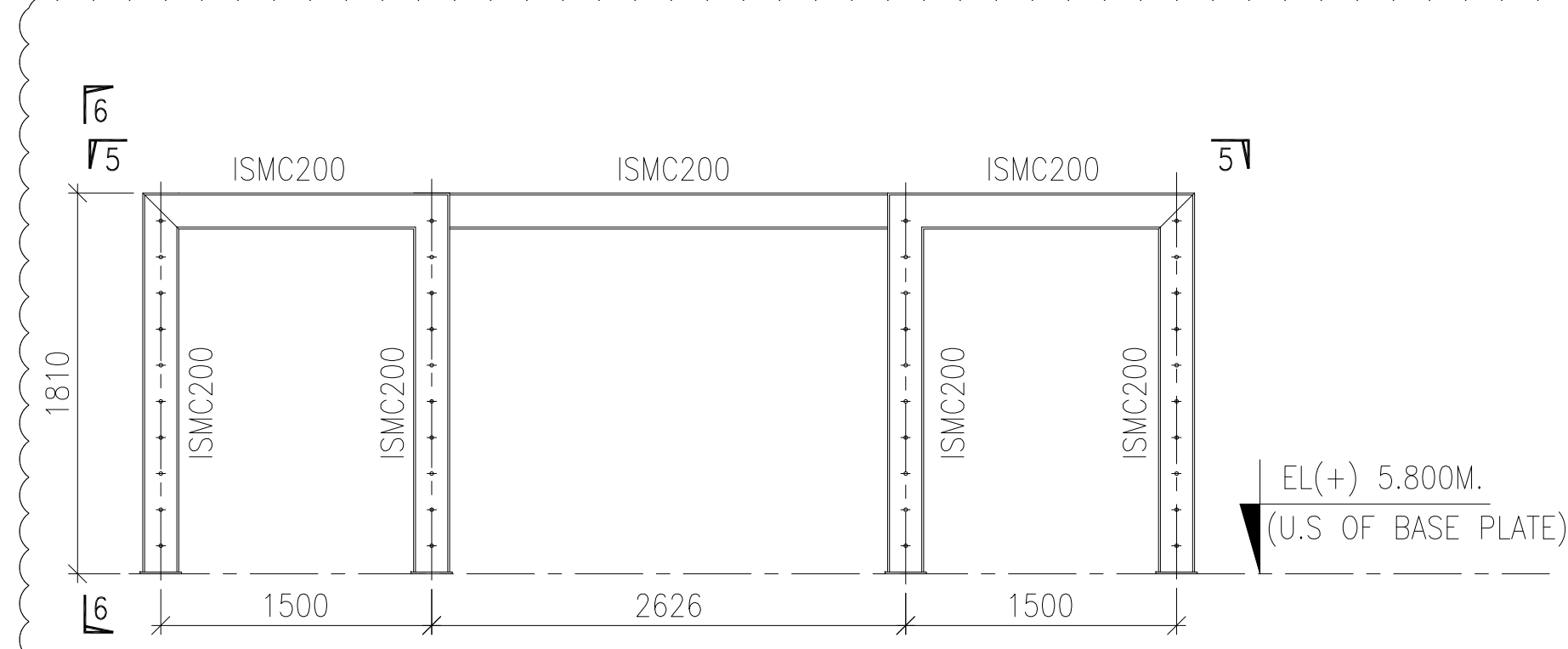
SECTION 3-3



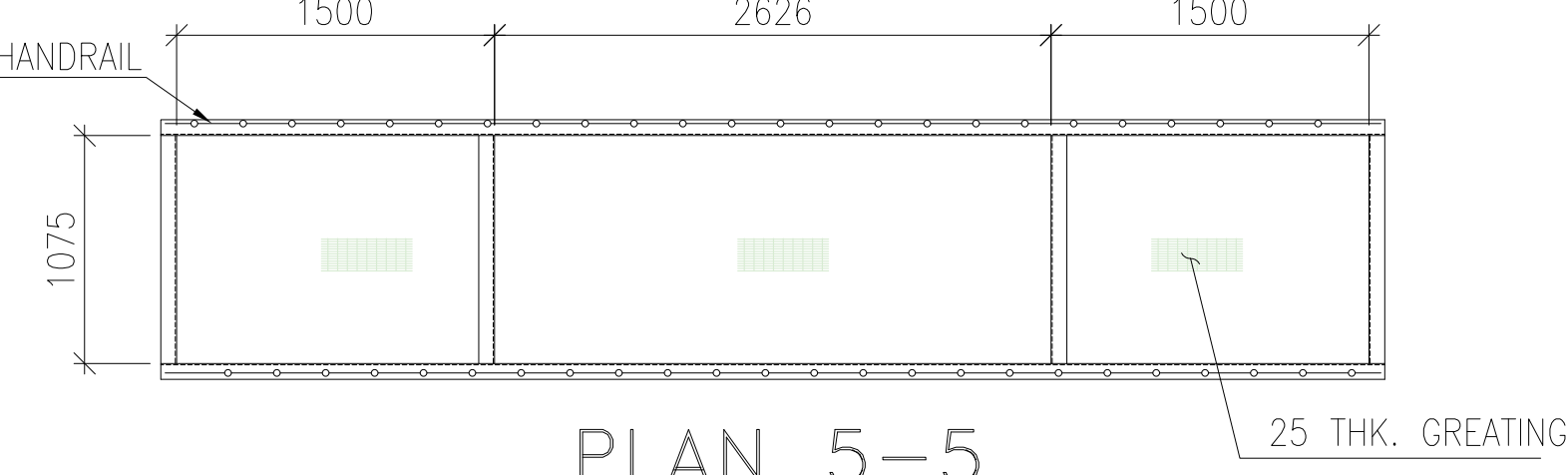
DETAIL OF BASE PLATE MKD. BP-1



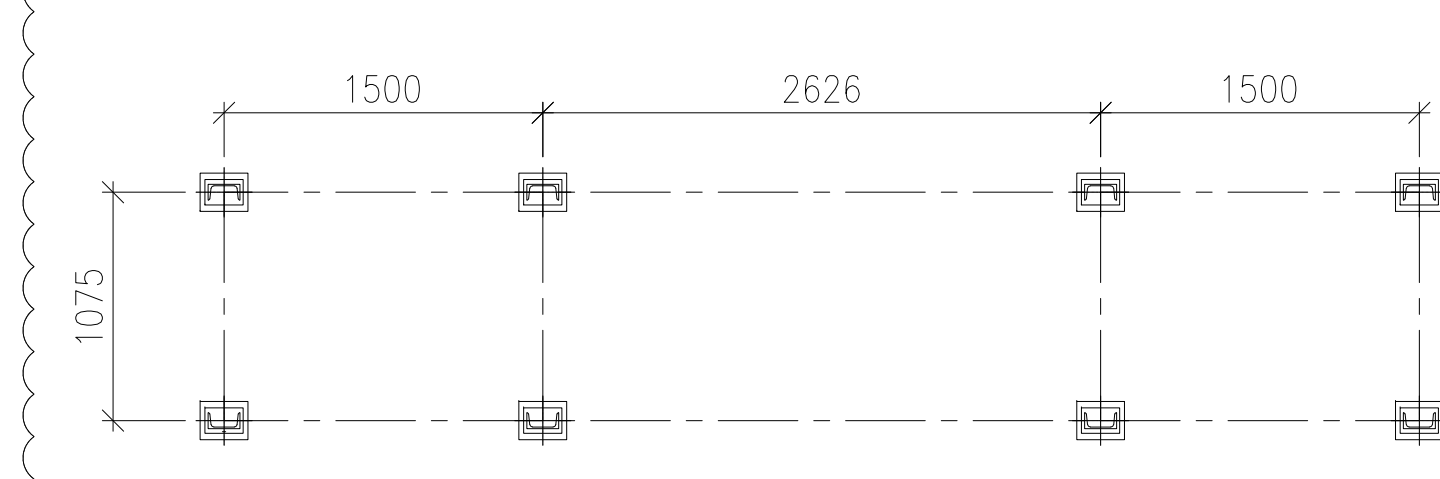
DETAIL OF BASE PLATE MKD. BP-2



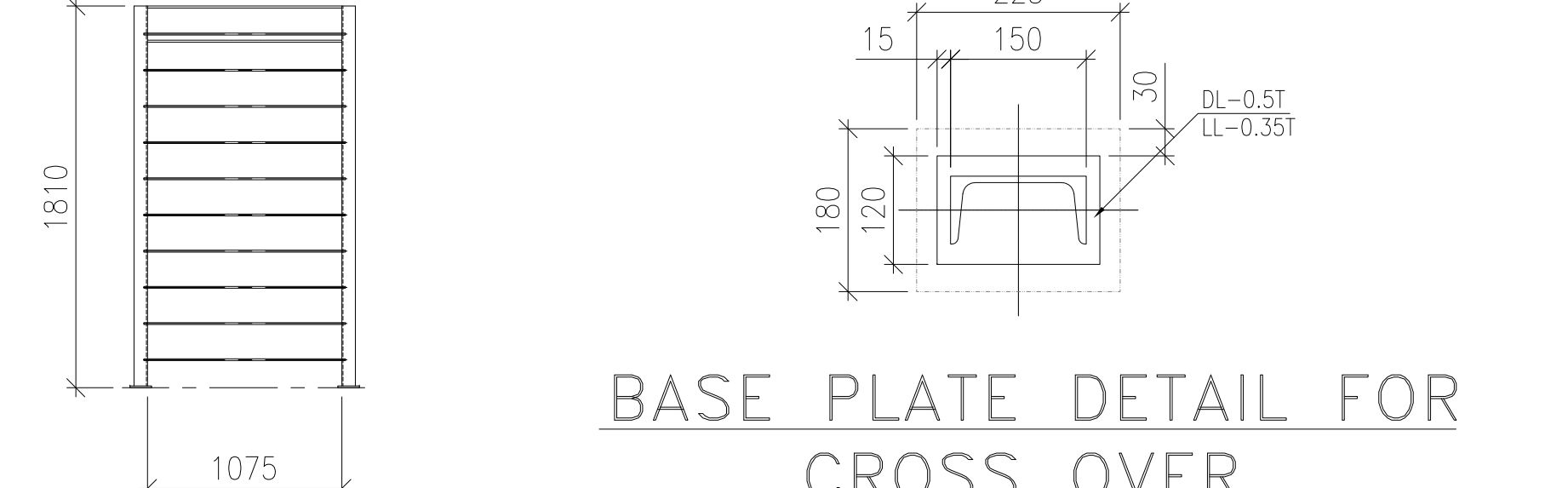
DETAIL OF CROSS OVER



PLAN 5-5



BASE PLATE PLAN FOR CROSS OVER



BASE PLATE DETAIL FOR CROSS OVER

SECTION 6-6

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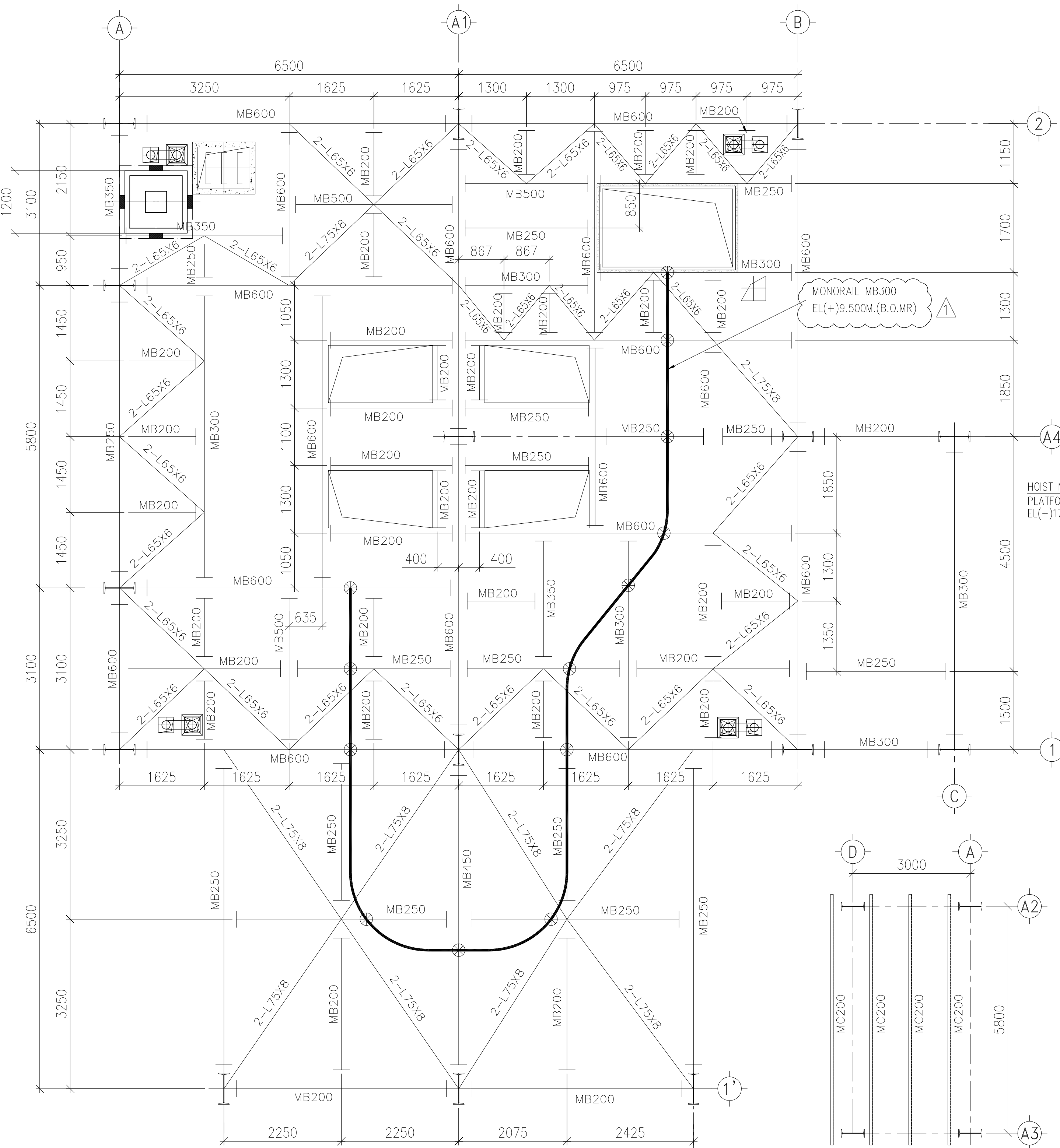
PROJECT  
**FGD PACKAGE (LHP AND GHP) FOR NORTH KARANPURA STPP**

JOB No.	IS-1-18-2000	OWNER /CONSULTANT	<b>NTPC Limited</b> (A GOVERNMENT OF INDIA ENTERPRISE)			
STATUS OF DRAWING		PROJECT	<b>FGD PACKAGE (LHP AND GHP) FOR NORTH KARANPURA STPP</b>			
DISTRIBUTION OF PRINTS	QTY.	DIRECTORY :	NAME	SIGN	DATE	NO.OF VAR
		FILE NO. :	DRN.	PANCHU	05.09.2019	
			CHD.	VENKAT	05.09.2019	
			APPD.	VRM	05.09.2019	
REV.	1	SCALE	WEIGHT(Kgs.)		NTPC DRAWING NO.	ITEM NO.
	ALTERED	1:100			<b>4410-109-ISG-PVC-C-494</b>	
	CHECKED				DRAWING NO.	REV.
	APPROVED				<b>IS-1GA-718-104-C-494</b>	<b>1</b>
ZONE	BASED ON LATEST MECH. DRAWING		TITLE :	<b>GA &amp; DETAILS OF ELEVATION LTP-1</b>		
				SHEET NO.	2	NO.OF SHTS.
						2

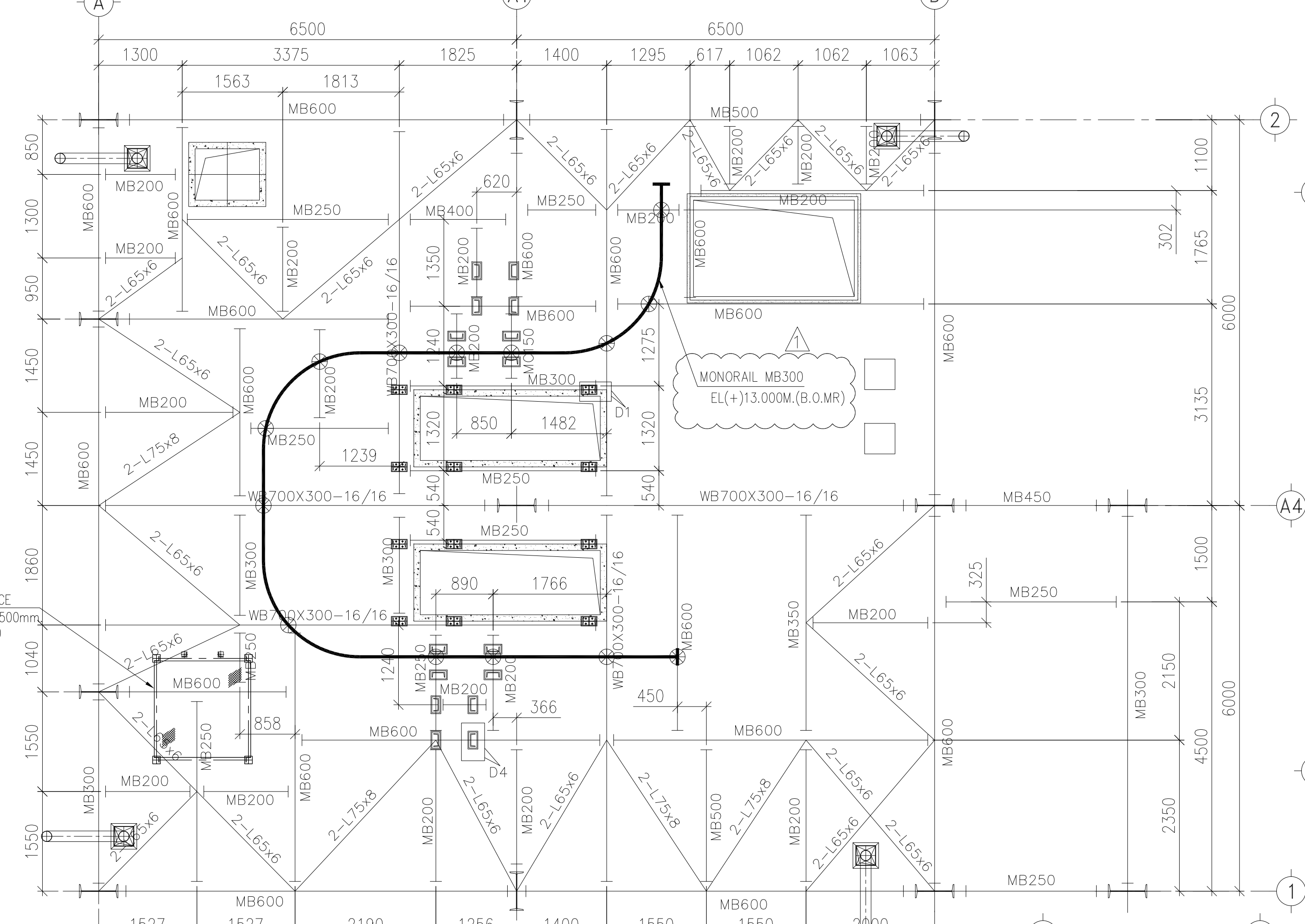


4410-109-1SG-PVC-C-495

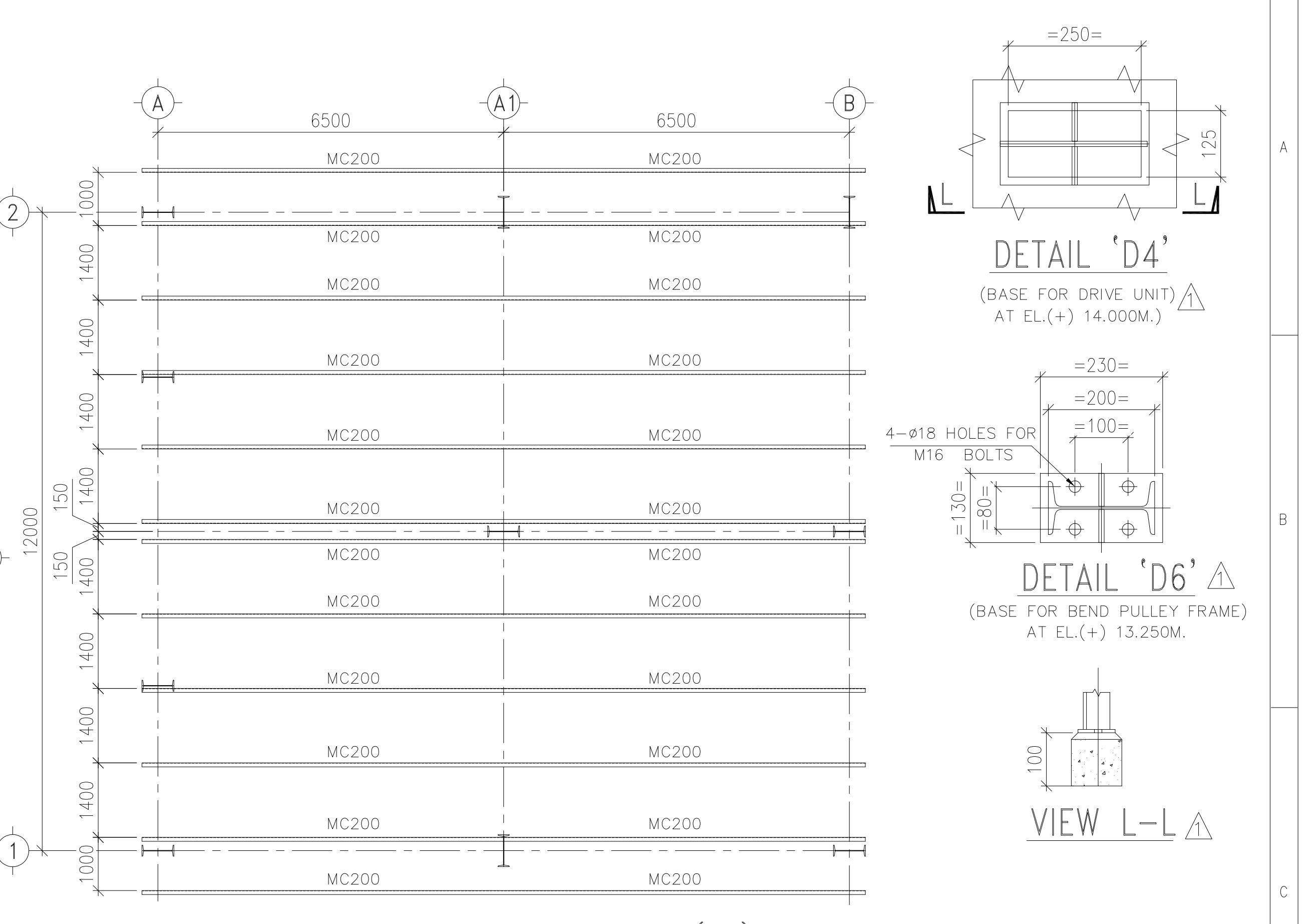
DO NOT SCALE. IF IN DOUBT, ASK.



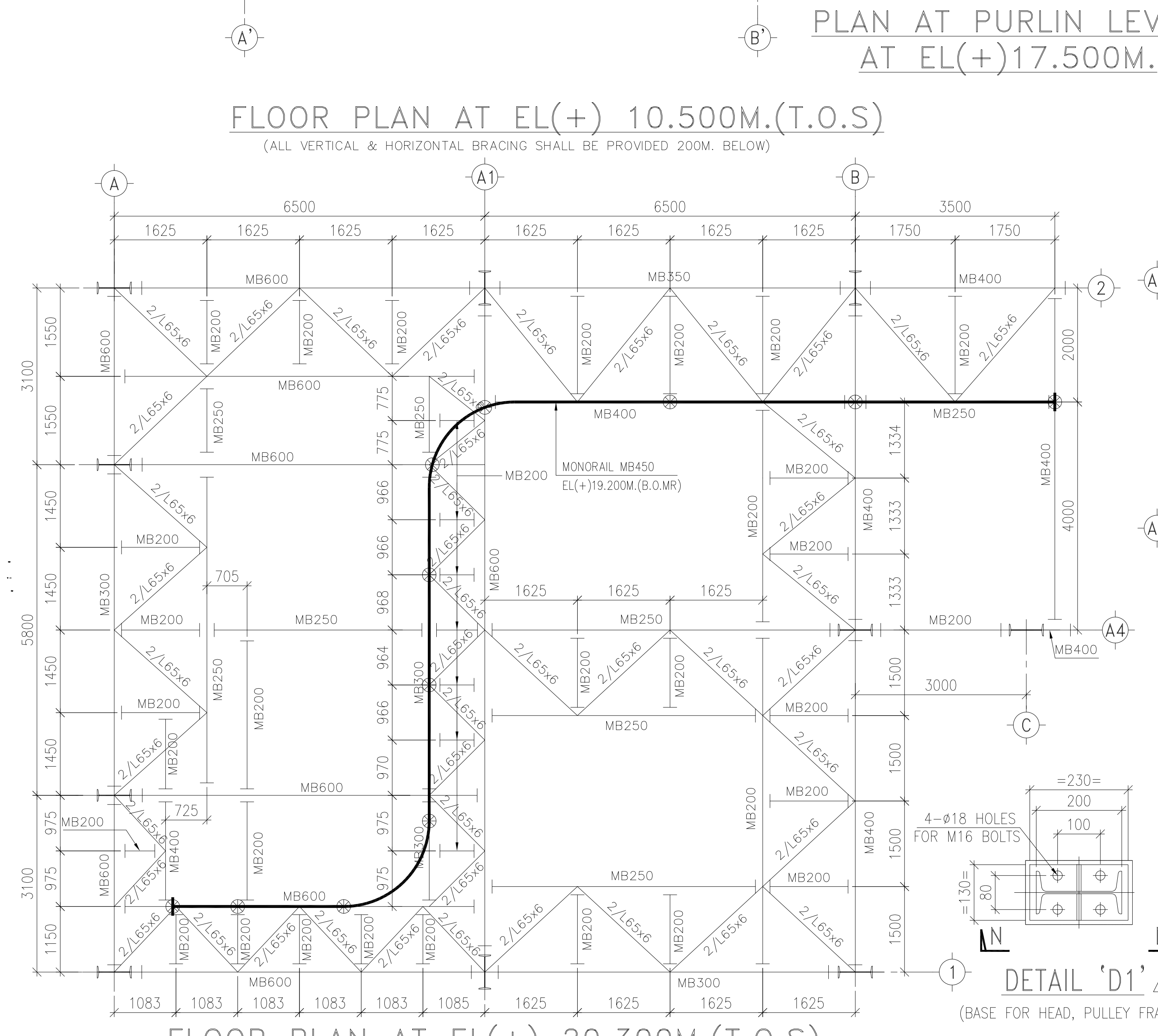
PLAN AT PURLIN LEVEL AT EL(+17.500M.



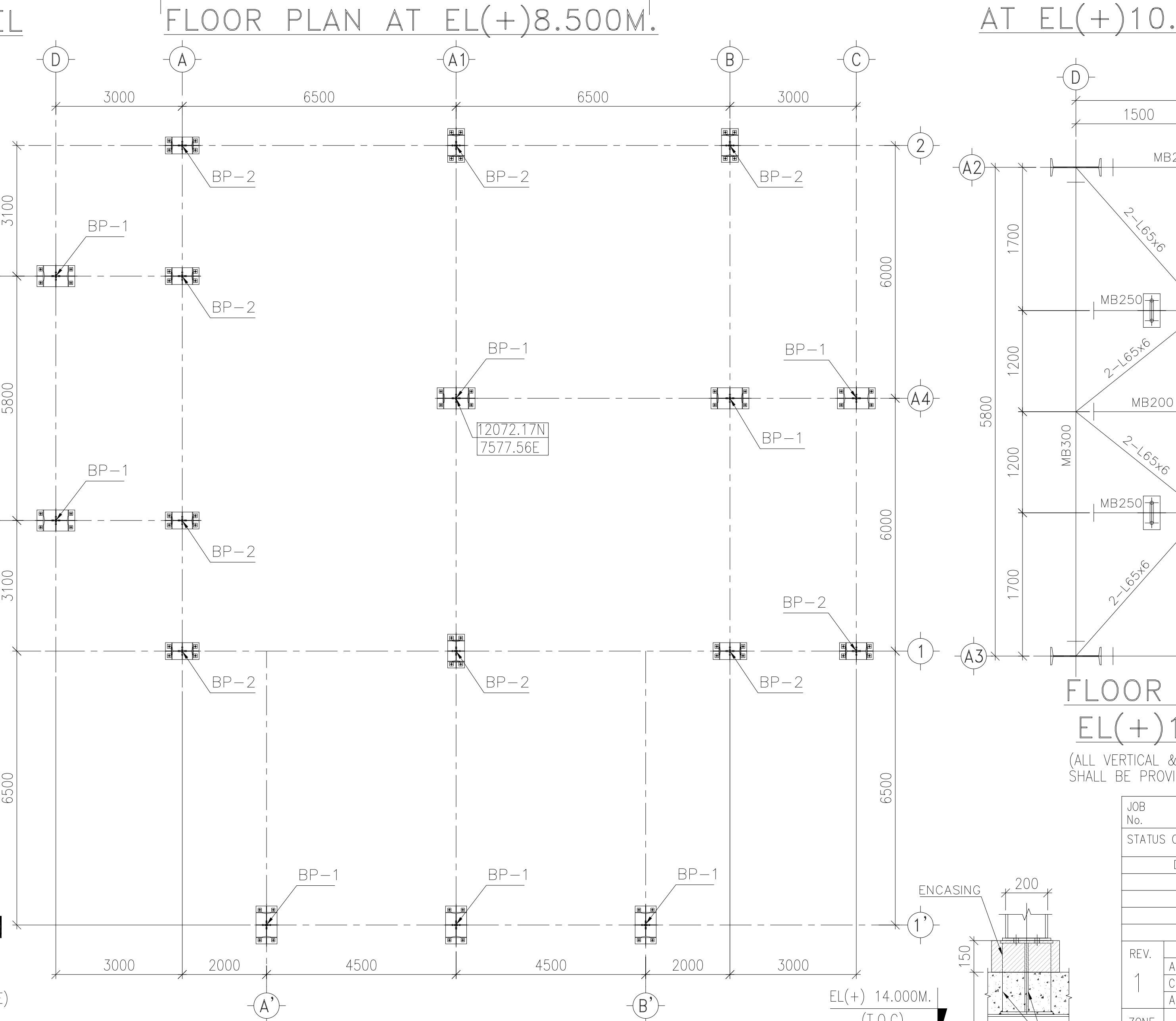
FLOOR PLAN AT EL(+13.750M.(T.O.S.)



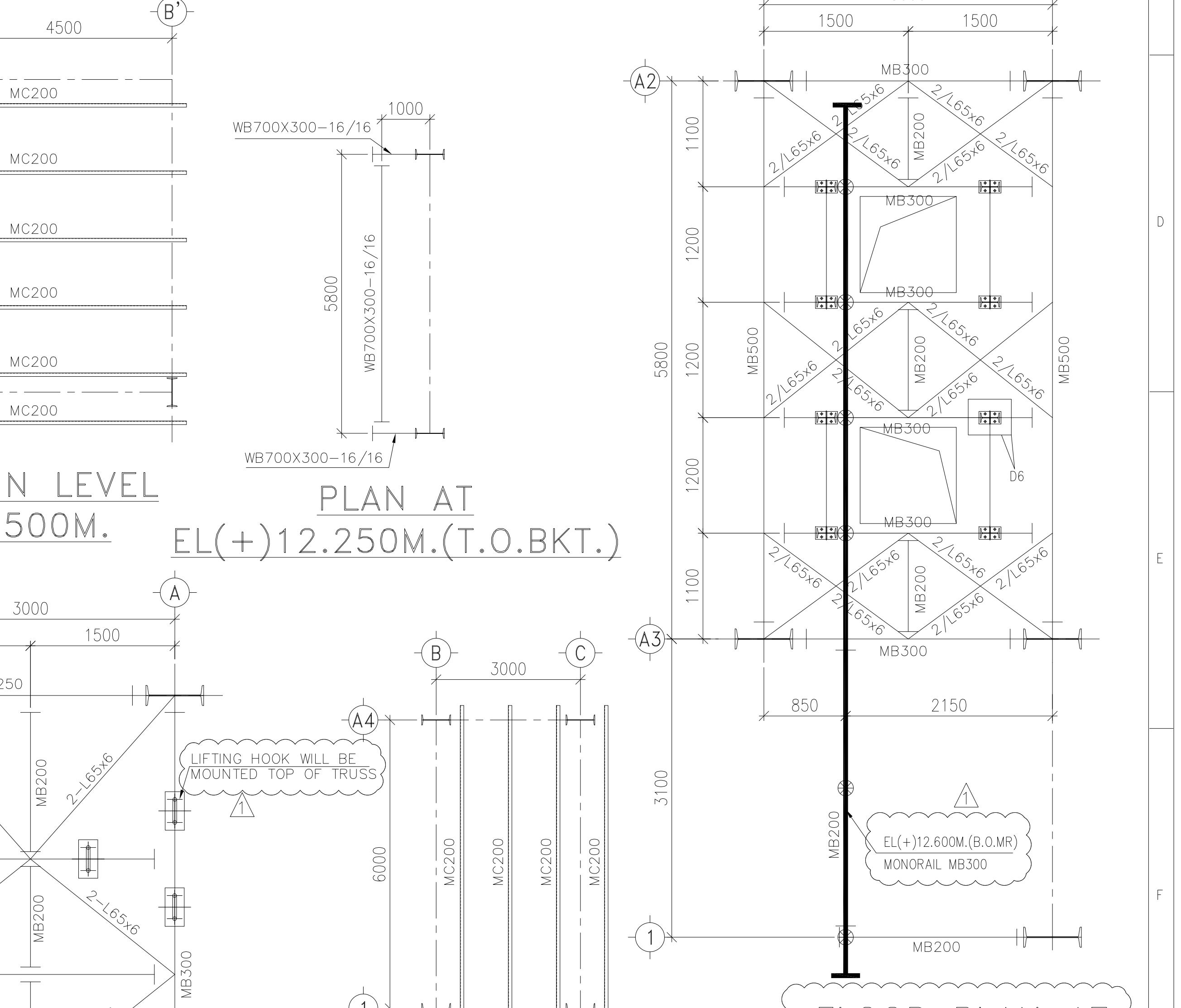
PLAN AT PURLIN LEVEL AT EL(+19.650M.



FLOOR PLAN AT EL(+20.300M.(T.O.S.)



PLAN AT BASE PLATE LEVEL AT EL(+5.800M.



PLAN AT PURLIN LEVEL AT EL(+16.300M.

FLOOR PLAN AT EL(+13.250M.

REFERENCE DRAWINGS  
1) FOR NOTES REF. DRAWING NO. 4410-109-1SG-PVC-C-495 R1

OWNER /CONSULTANT  
**NTPC Limited**  
 ENGINEERING DIVISION  
 (A GOVERNMENT OF INDIA ENTERPRISE)

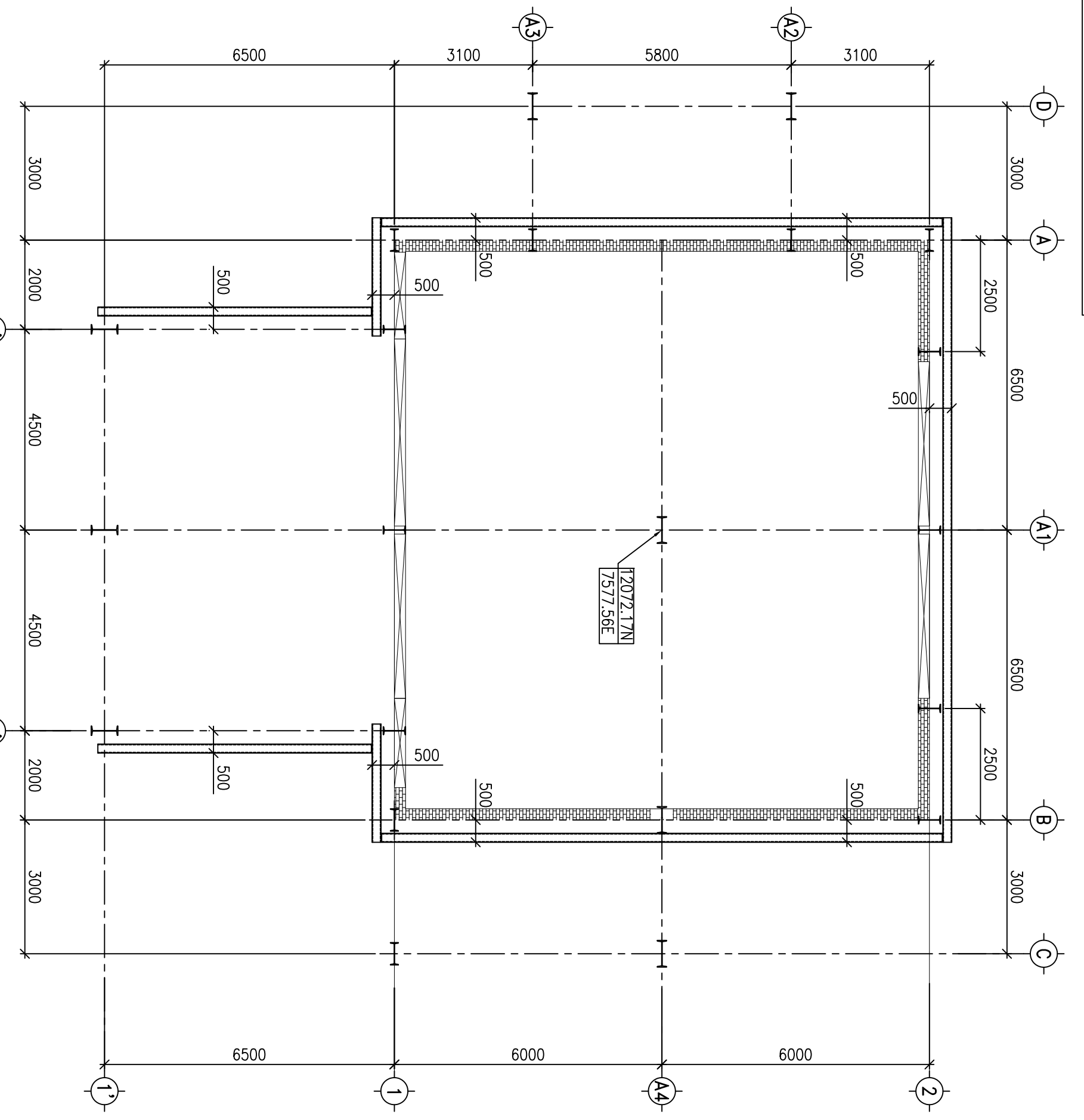
PROJECT <b>FGD PACKAGE (LHP AND GHP) FOR NORTH KARANPURA STPP</b>		BHARAT HEAVY ELECTRICALS LTD. INDUSTRIAL SYSTEMS GROUP, BANGALORE			
JOB No. IS-1-18-2000	STATUS OF DRAWING	NAME	SIGN	DATE	NO.OF VAR
DISTRIBUTION OF PRINTS	QTY.	DRN.	PANCHU	05.09.2019	
		CHD.	VENKAT	05.09.2019	
		APPD.	VRM	05.09.2019	
REV. 1	ALtered PANCHU -SD- 30.09.2019 Checked VENKAT -SD- 30.09.2019 Approved VRM -SD- 30.09.2019	DIRECTORY :	SCALE	WEIGHT(Kgs.)	NTPC DRAWING NO. <b>4410-109-1SG-PVC-C-495</b>
ZONE	TITLE : <b>GA &amp; DETAILS OF ELEVATION LTP-1</b>		1:100		ITEM NO. <b>IS-1GA-718-104-C-495</b>
					DRAWING NO. <b>IS-1GA-718-104-C-495</b>
					SHEET NO. 1 NO.OF SHTS. 1

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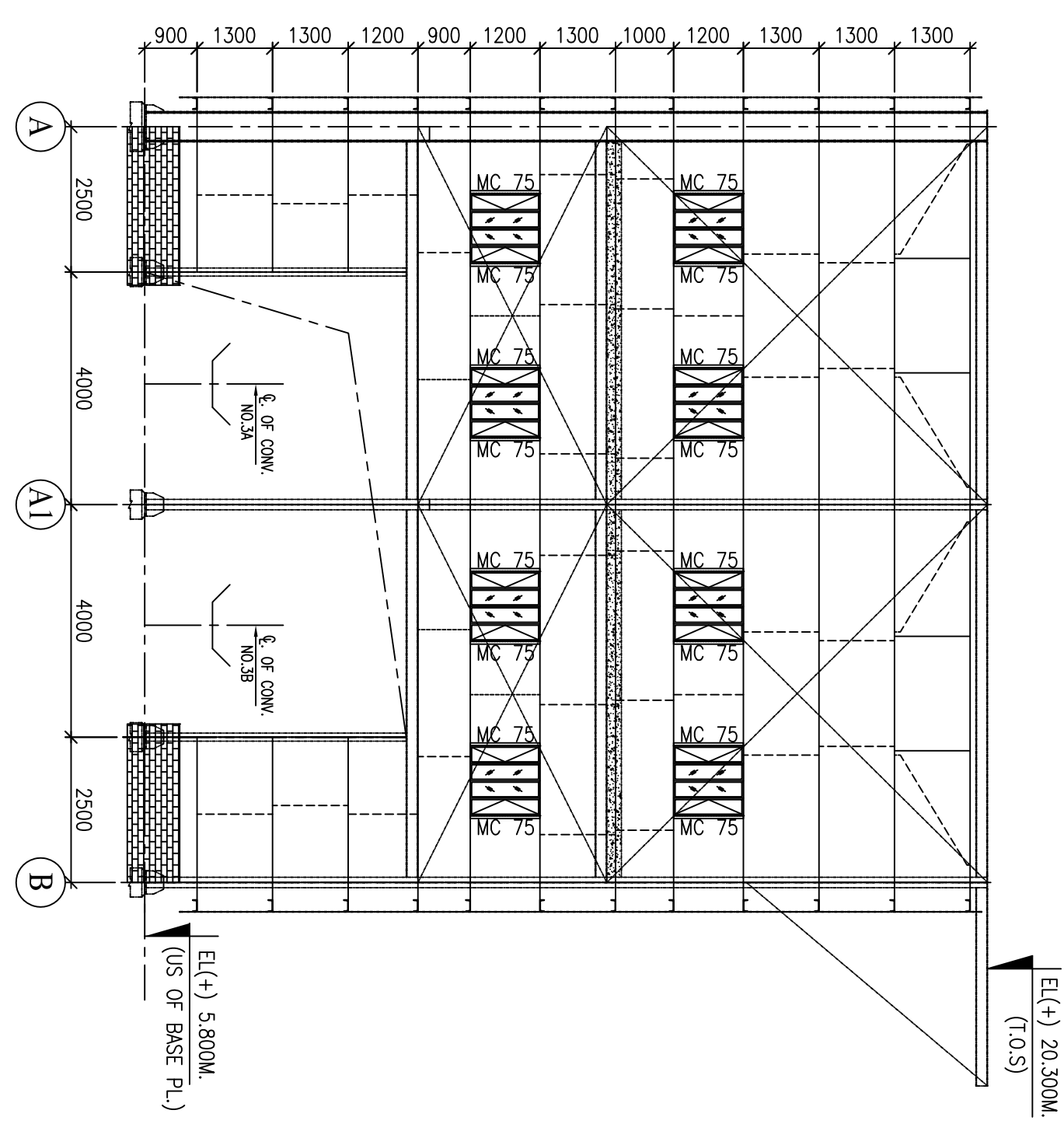
SIGN & DATE

INVENTORY NO.

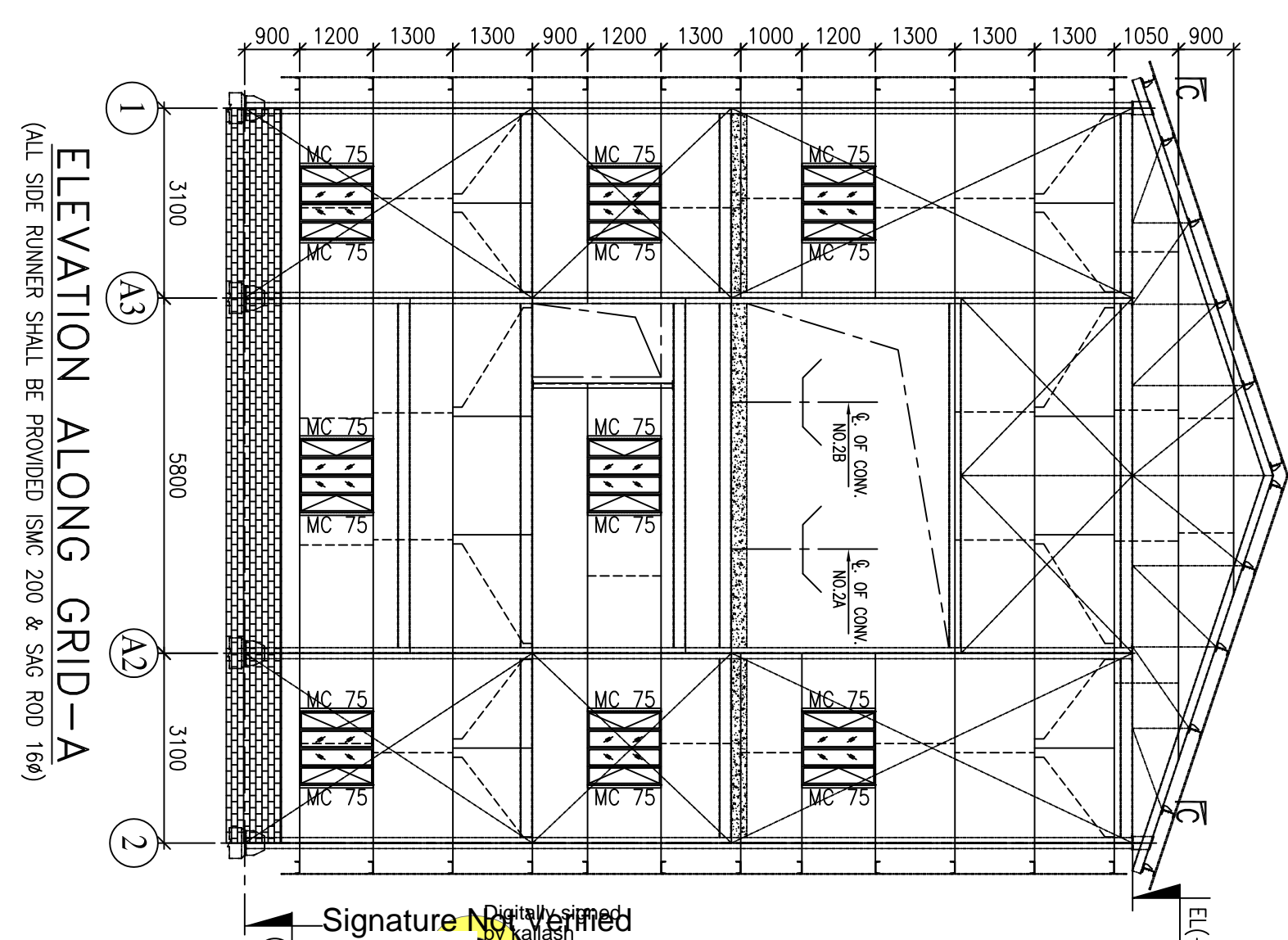




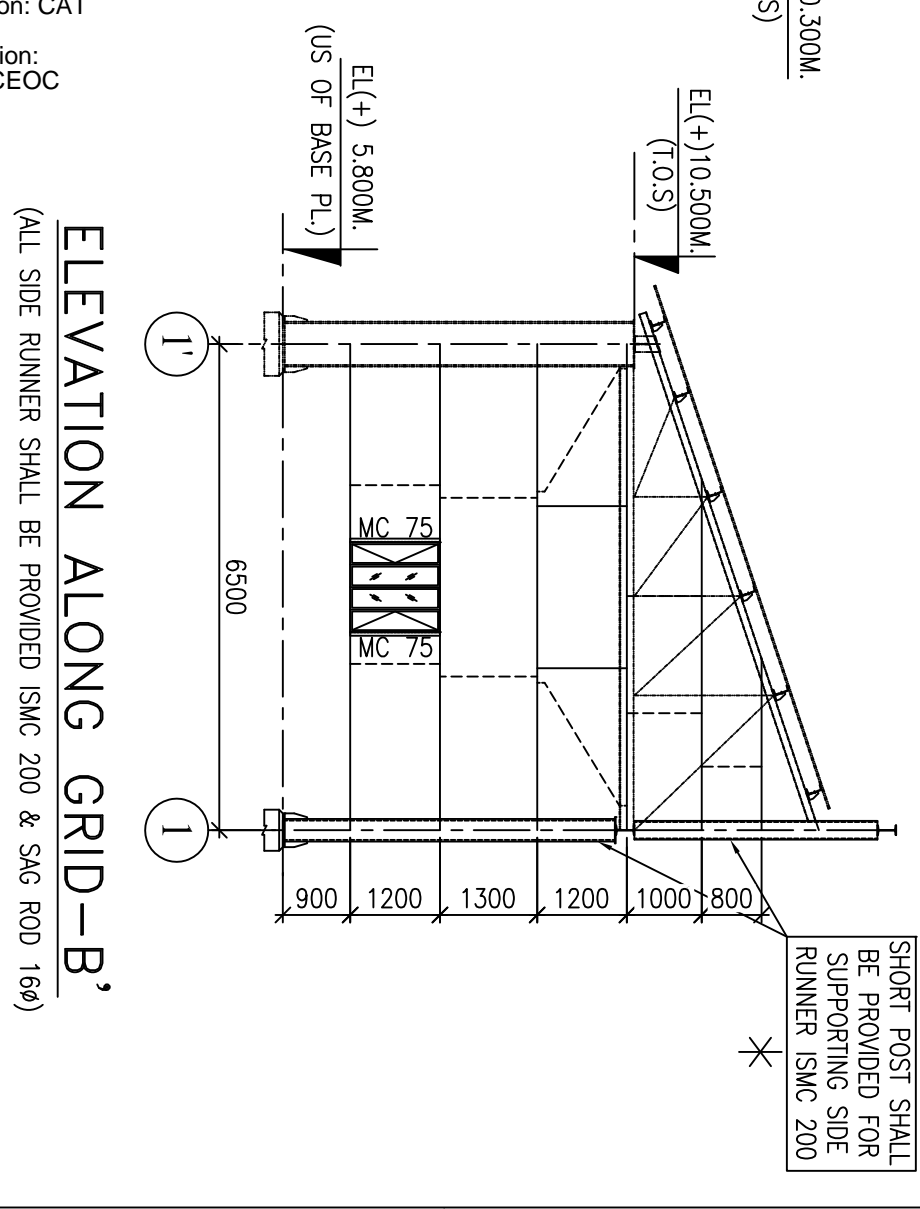
PLAN AT BASE PLATE LEVEL AT EL(+).5.800M.



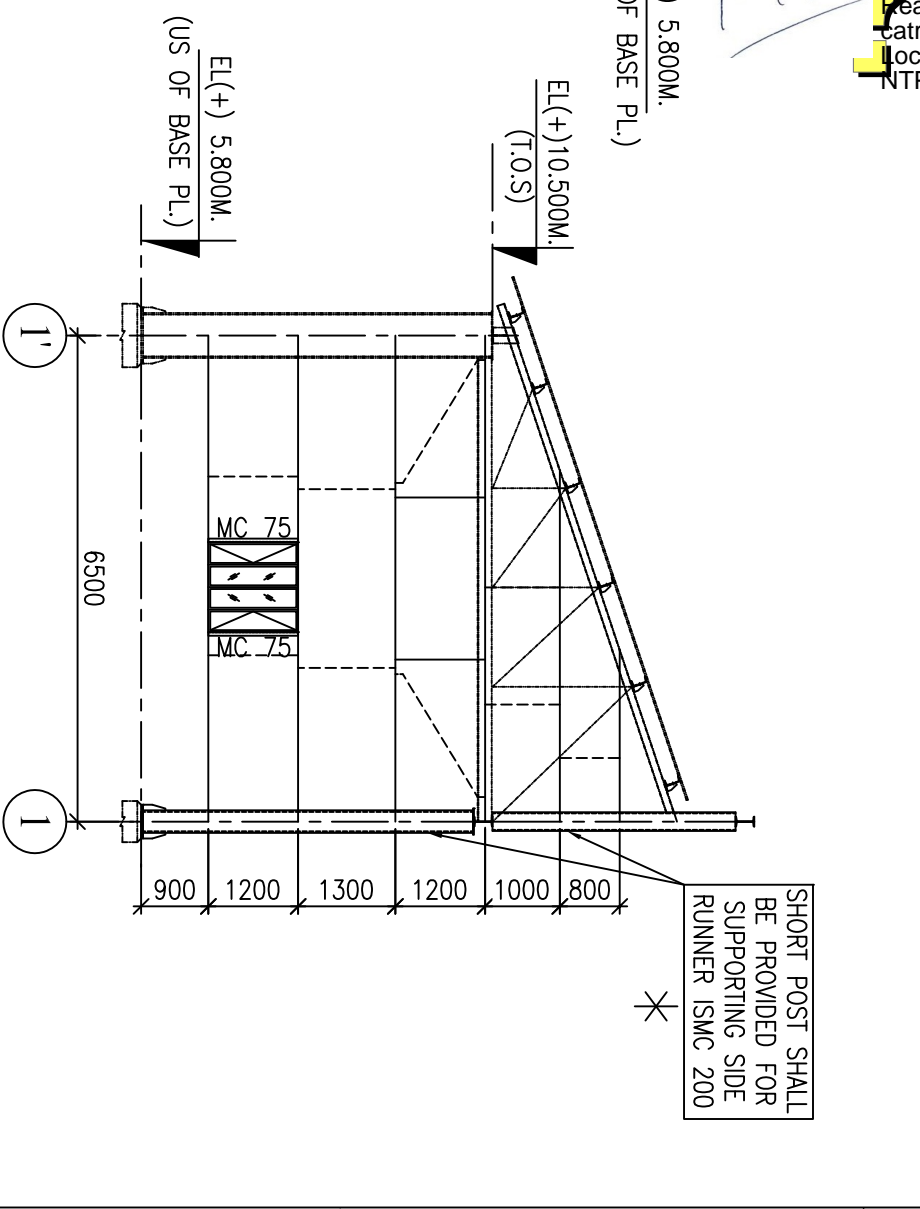
ELEVATION ALONG GRID-2  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



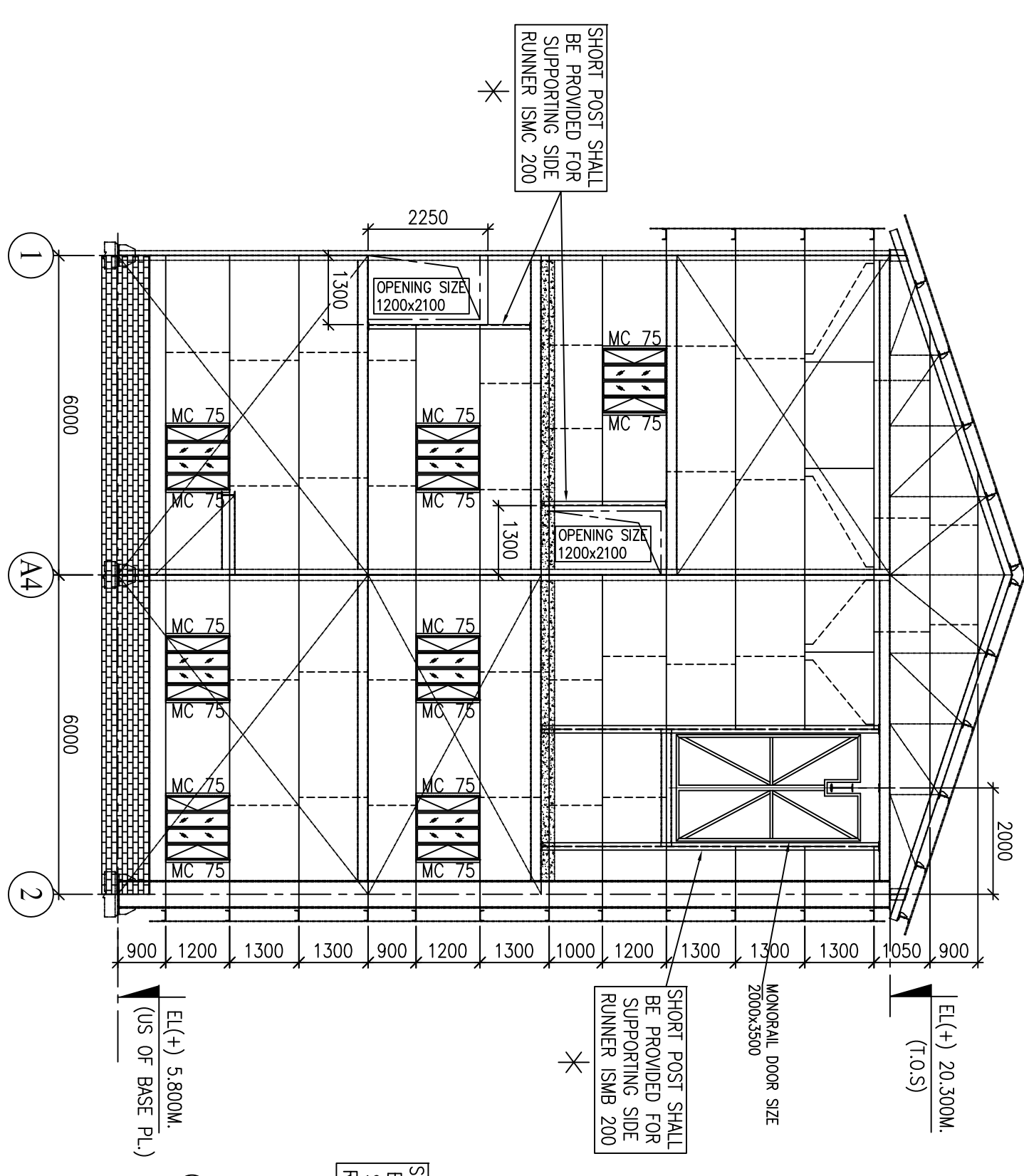
ELEVATION ALONG GRID-A  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



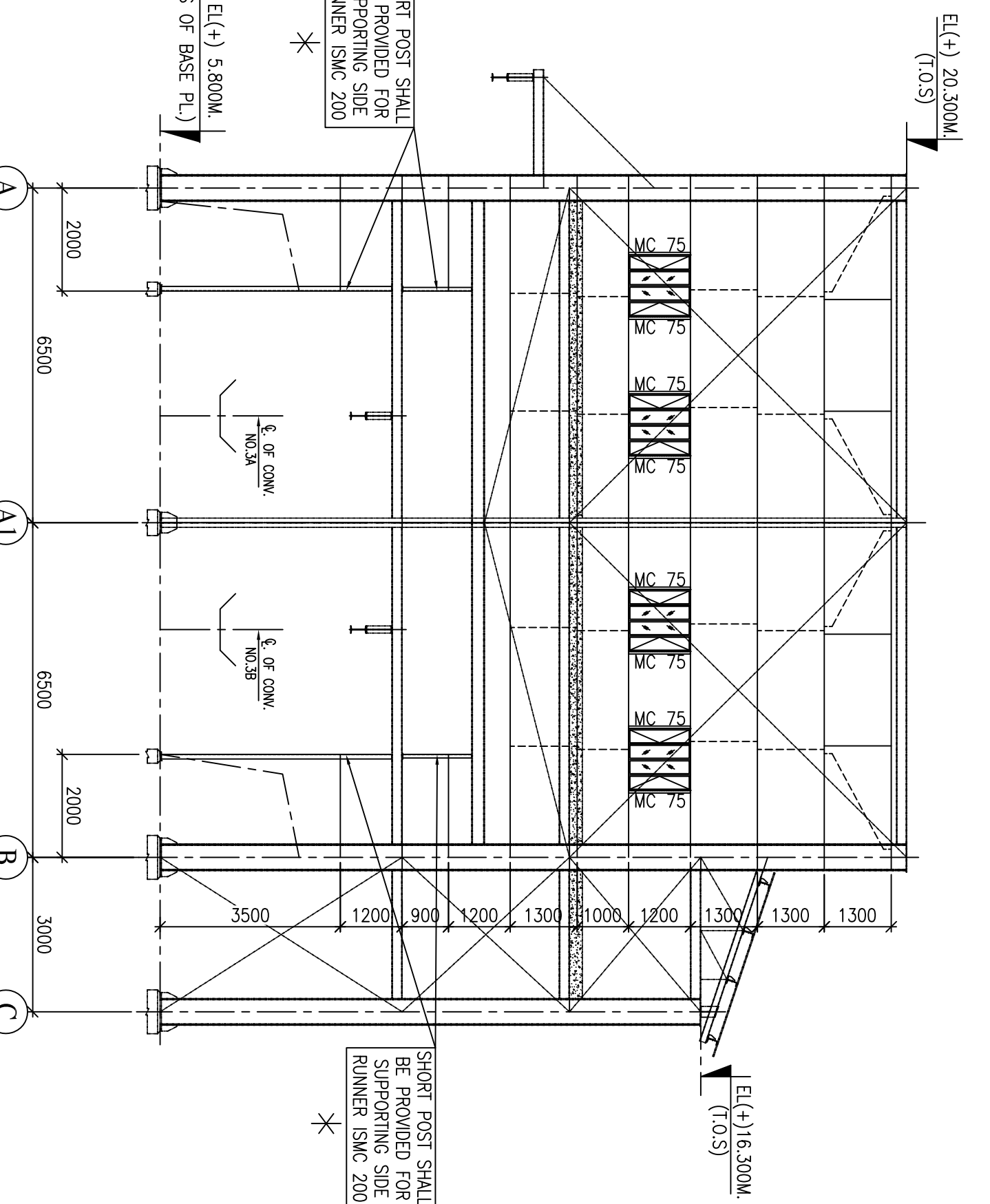
ELEVATION ALONG GRID-B'  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



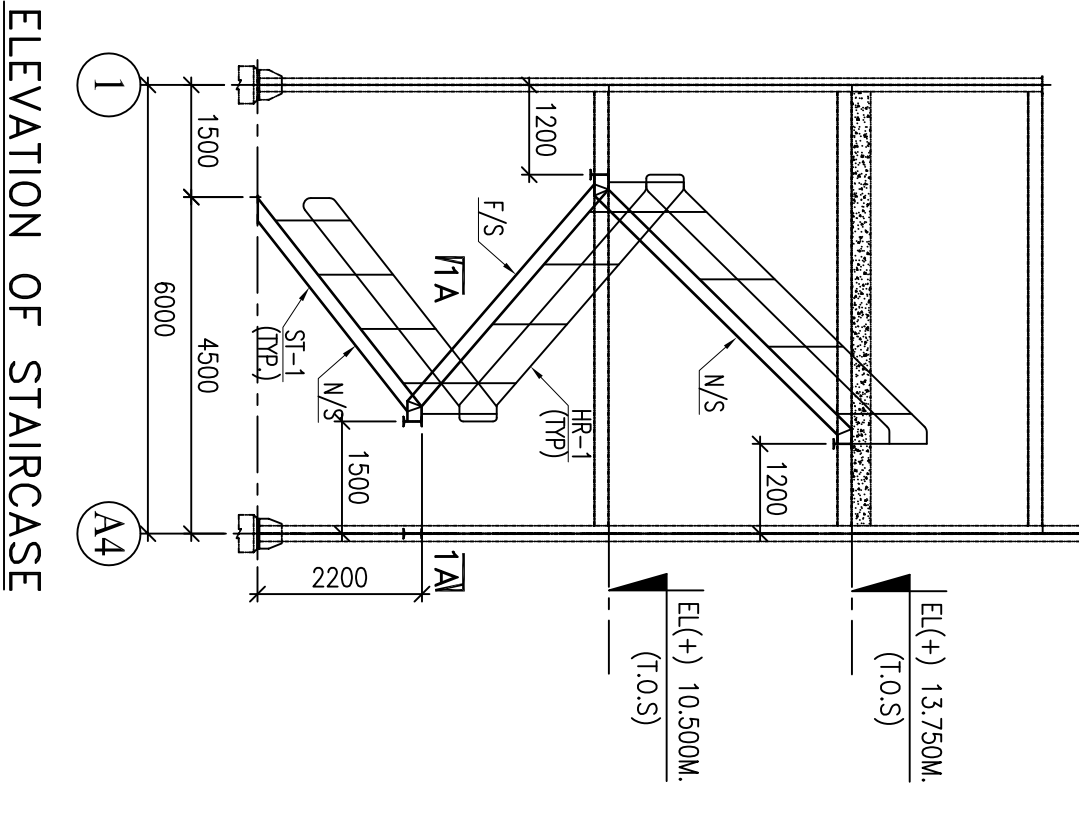
ELEVATION ALONG GRID-A'  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



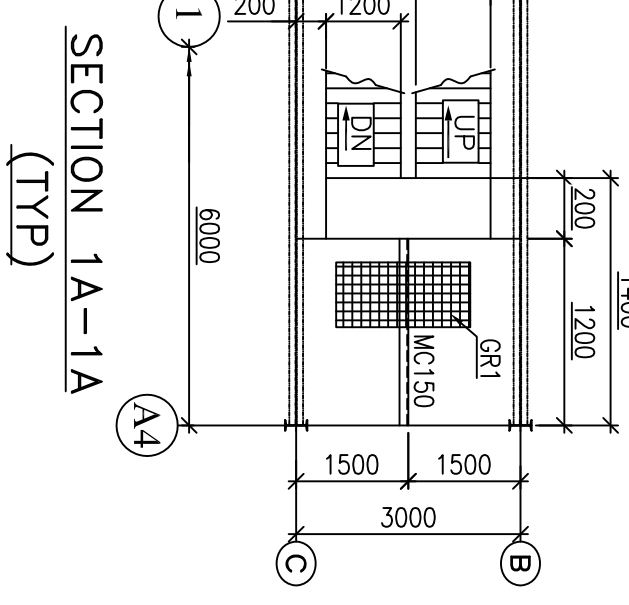
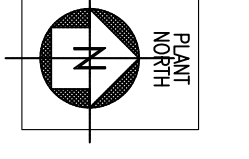
ELEVATION ALONG GRID-B  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



ELEVATION ALONG GRID-1  
(ALL SIDE RUNNER SHALL BE PROVIDED ISMC 200 & SAG ROD 16#)



ELEVATION OF STAIRCASE



SECTION 1A-1A  
(TYP)

S.No.	MARK	PROFILE	SECTION
1	GR1	40 THK. GRATING 40x6THK. @ 100 C/C.	① 40 THK. GRATING ② 40x6THK. @ 100 C/C.
2	ST1	ISMC 250 40 THK. GRATING ISA50x50x6	① ISMC 250 ② 40 THK. GRATING ③ ISA50x50x6
3	HR1	PIPE NB32(N) PIPE NB32(N) PIPE NB32(N)	① PIPE NB32(N) ② PIPE NB32(N) ③ PIPE NB32(N)

NOTES:-  
1. (\*) INDICATED SHORT POST SHALL BE SUIT AT SITE

OWNER/CONSULTANT  
**NTPC Limited**  
INDIAN ELECTRICITY CORPORATION  
(A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT  
FGD PACKAGE (LHP AND GHP) FOR NORTH KARANPURA STPP

REV.	DATE	BY	CHKD.	APPD.	DATE	REASON
1	11.12.19	VENKAT	VENKAT	VENKAT	11.12.19	TABLE ADDED

NO. OF	DATE	NO. OF
1	07/09/2019	1

DRAWING NO. 4410-109-1SG-PVC-C-496  
SHEET NO. 1