BHEL – ISG BENGALURU	Coal Handling Plant for 4 x 270 MW Bhadradri TPS Technical Enquiry Specification for Conveyor Belting	DOCUMENT NUMBER
	Customer : TSGENCO	BTPS/CHP/BELT

Technical Enquiry Specification for Balance Supply of Conveyor Belting for 4 x 270 MW Bhadradri TPS

Dept.	Prepared By	Checked by	Approved by
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Issued by: Engineering Date: 28-04-2023

1434842/2023/ISG-MECHANICAL

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1434842/2023/ISG-MECHANICAL

1.0 PROJECT INFORMATION:

Present proposal is for setting up 4 x 270 MW Bhadradri Thermal Power Station, for Telangana State Power Generation Corporation Ltd. with all the facilities as specified in the CHP DBR.

Site is located near Ramanujavaram village, Manuguru Mandal, Khammam District. Basic wind speed as 44m/sec & Seismic zone-3.

All equipment (including electrical & C&I) shall be suitable for operating satisfactorily in humid and dusty (coal & ash) atmosphere found in Thermal Power plants.

2.0 BROAD SCOPE OF CHP BELTING PACKAGE BIDDERS:

The scope for CHP Belting package bidder shall include design, detailed engineering, submission of engineering docs./calculations/ datasheets/ QAPs/ FQPs, and obtaining the approval from TSGENCO/ Consultant / BHEL, Manufacturing / fabrication, inspection / shop floor testing, supply of belting including splicing kits, adhesive solution and splice length for each roll, packing & transportation to site including transit insurance, customs clearance / port clearance, if any.

Bidder to quote for this package considering documents / drawings enclosed in Annexure-001 – Belting schedule, Annexure-2 includes standard quality plan & drgs of Plot plan, coal flow diagram & GA of profile drg.

Belt will be of Nylon-Nylon with **moulded edge** construction. The cover will be skim coated and fire resistant grade type (BS 490 Part-I grade N17 rubber). Fire resistant cover grade shall be as per Canadian Bureau of Mines standard CAN/CSA-M422-M87. The design, construction, testing and performance of conveyor belt should comply with latest revision of IS: 1891 and/or equivalent international standards.

Belt shall have sufficient lateral flexibility so that it will trough adequately even when the belt is empty and shall have sufficient lateral stiffness to support the load. Belts shall have sufficient impact resistance to withstand impact at loading. Suitable breaker ply should be provided as required. Also carcass should be integrated skim coated. It shall have adequate

longitudinal flexibility so that it can easily flex around pulleys. It should have superior adhesion level.

Belts shall be dispatched coiled on reels. While using a hoist, a bar should be passed through the crate and attached to slings. While on dispatch belts shall be kept in a vertical position and shall not be allowed to rest on their side.

For belt schedule kindly refer Annexure-1 which indicates only endless length and bidder to offer belt length / drums for each conveyor stream / rating based on following consideration:

1. Minimum no. of splicing joint for each conveyor as per the rating.
2. Splicing length to be included in addition to indicated endless length in **Annexure-1** for each conveyor separately based on bidder's best practices and meeting all these conditions.
3. Also, Length for inspection of test piece and sample collection for all tests to be kept in addition to indicated endless length in **Annexure-1** in each belt drum.
4. Ease of transportation, handling & storage of belt drums also to be considered.

3.0 DOCUMENTS / INFORMATION TO BE FURNISHED ALONGWITH OFFER:

a. Enquiry specification which includes submission of offer with detailed data sheets (as per annexure-3), catalogues and QAP along with offer. The price should be quoted in the BHEL price bid format only for which a separate "Price Bid" format is enclosed. Price shall not be indicated in the technical bid.
b. Performance guarantee for the belt with the specification furnished by the bidder is to be demonstrated by the bidder at Site.
c. All drawings, QAP, data / documents furnished by bidder along with the offer shall be subjected to final approval of customer / consultant during detailed engineering. If any changes are required during detailed engineering same shall be done by bidder without any cost implication.
d. Bidder shall submit a signed copy of BHEL's this tender enquiry specification along with all enclosures along with the technical bid without any deviations.
e. Bidder shall submit following documents along with the offer:
    a. Signed copy of BHEL's this tender enquiry specification along with all annexure – one set

b. Filled Datasheet, catalogue including selection of pulley etc – 1 set

c. Belt jointing / Splicing specification including consumables details.

f. Bidder shall furnish, along with their offer, their QAP and all the details given in the "DATA SHEET TO BE FILLED BY THE BIDDER" (as enclosed in Annexure-3), without which bidder's offer shall not be considered. However, QAP furnished along with the bid shall be finalized during detail engineering and subject to approval from TSGENCO/CONSULTANT without any price implication to BHEL.

g. Bidder shall manufacture and supply belts from their factory in India and furnish the location along with offer.

Note:

1. Bidder to note no deviation shall be acceptable to BHEL (pre-bid, bid and post bid) from TSGENCO NIT specification & BHEL enquiry specification unless and until written approval from BHEL has been accorded except for points mutually agreed upon in pre-bid MOM. Wherever specification of particular item/equipment, Material of construction etc is not explicitly mentioned in the enquiry it shall be subject to BHEL/TSGENCO approval during detail engineering and if same is found to be changing from the bidder's offer it has to be absorbed & offered by bidder without any cost implication to BHEL.
2. **In case of any ambiguity, conflict in the standard& specification &/or interpretation of clauses in this enquiry spec. and its enclosures the decision of BHEL shall be final and binding and any change due to this shall have no price implication on BHEL and shall have to be absorbed by successful bidder.**
3. Bidders to furnish signed and stamped copy of complete Technical Enquiry Specification along with all the enclosures of the Package, final un-priced price format, addendums if any etc, without which bidders offer is liable for rejection.
4. Bidders to furnish a separate "Deviation List", if any, indicating all the deviations from the Technical Enquiry Specification, if any, for BHEL scrutiny. Bidder to note that, deviations indicated / listed other than above mentioned format are not acceptable & shall stand null & void.
5. Bidder to note that list above is not exhaustive and any work required for completing the supply and ensuring its satisfactory working at site shall also be in the scope of this package bidder.
6. Bidder shall submit the signed and stamped copy of all the pages which constitutes this technical enquiry specification signed by authorized signatory and clearly

mentioning each clause under following two categories to avoid any ambiguity in scope understanding & the scope division as a technical offer during bidding:

a. **"accepted without deviation and considered in scope of work"**

b. **"Not considered in scope of work".**

4.0 CODES AND STANDARDS:

The design, manufacture, inspection and testing of Belts shall comply with all the currently applicable statues, regulations and safety codes. Belting shall conform to the latest edition of the following standards and codes. Other internationally acceptable standards/codes, which ensure equal or higher performance than those specified, shall also be subject to the approval of customer/consultant. Nothing in this specification shall be construed to relieve the contractor of the required statutory responsibility. In case of any conflict in the standards and this specification, the decision of the BHEL / TSGENCO shall be final and binding.

- IS: 1891 (Part-I) & IS: 4776: General Purpose Belting
- IS: 11592: Code of practice for selection and design of Belt Conveyors
- CEMA USA
- Fire Resistant (Canadian standard CAN/CSA M-422-M87)
- Latest DIN standards.

5.0 DATA SHEET FOR BELTING:

SL.NO.	DESCRIPTION	REQUIREMENT
	CONVEYOR BELTS	
A	Type	Belt will be of Nylon-Nylon moulded edge.
B	Cover Grade	The cover will be skim coated and fire resistant grade type (BS 490 Part-I grade N17 rubber). Fire resistant cover grade shall be as per Canadian standard specification CAN/CSA-M422-M87.
C	Cover thickness	no negative tolerance
i.	Top	As per annexure-1
ii.	Bottom	As per annexure-1
D	Number of plies	As per annexure-1
E	Troughing angle	Upto 35°
F	Ratio of working tension to allowable tension	80% (maximum)
G	Belt Speed, m/sec	2.7 m/sec for conveyors & 1.5 m/sec for belt feeders
	Max. Moisture content in the material	20%
	Ambient temperature :	50 deg
H	Type of vulcanizing	All Belt Splicing will be Hot Vulcanised
Patch Repair Norms		
Max. size of patch repair		1/5 x 1/5 of Belt width
Max. No of repair		5 No's per 100 Mtrs of Belt Length
Max No of patch repair and dough filling		10 no's per 100 Mtrs of Belt Length

6.0 ADDITIONAL NOTES FOR BELTING:

6.1 Belt shall have superior adhesive level and interplay and cover to ply adhesion levels with improved edge wear characteristics.

6.2 Recommended take-up length shall be furnished for each conveyor. Belt shall be pre-stretched. Belt elongation shall not be more than 2.5 % of conveyor length as per standard.

6.3 The cover thickness indicated in data sheets are minimum requirement. Suppliers should consider impact and loading cycle also for offering the recommended cover thickness.

6.4 Belt shall have sufficient impact resistance to withstand impact at loading.

6.5 Bidder shall submit the joining and splicing procedure showing all the details along with the Instruction Manual.

6.6 Belt should be designed for continuous operation. All conveyor belts should be of same quality.

6.7 Belt shall have sufficient lateral flexibility so that it will trough adequately even when the belt is empty and shall have sufficient lateral stiffness to support the load.

6.8 Belts shall be of **moulded edge construction** and shall have only hot vulcanized joints on erection. It shall have adequate longitudinal flexibility so that it can easily flex around pulleys. It should have superior adhesion level.

6.9 Maximum belt tension developed in the belt corresponding to design capacity during running condition should not exceed 80% of the maximum allowable belt tension and during starting condition it should not exceed 150% of maximum allowable belt tension.

6.10 Bidder to note that, no longitudinal joints are acceptable in the belt.

6.11 Bidder to note that, abrasion loss shall be **as per IS-1891, for N-17 Grade.**

6.12 Tensile strength of the belt under weft condition shall be limited to maximum of 20% of wrap.

6.13 Belt sag shall be limited to 2% of idler spacing.

6.14 Oil or grease shall not come into contact with the rubber belt.

6.15 If short lengths of belt are required to be cut from belt in store, proper coating shall be applied on the exposed ends.

6.16 Supply of belt should be such that there are minimum no. of joints during installation.

6.17 Endless length is given excluding splice lengths. Vendor shall consider additional length required for splicing of belt based on number of rolls being offered.

6.18 Endless belt length has been indicated considering take up pulley in mid position of its travel.

6.19 Deleted

6.20 Splice length and design required per joint to be specified.

6.21 Latest detail catalogue for selection of pulley size to be enclosed along with the offer.

6.22 Vendor shall consider maximum no. of patch allowable for acceptance with maximum size of patch and submit the same with the offer. Also vendor shall furnish patch repair norms with the offer.

6.23 Vulcanise joint strength shall be equal to or more than parent material strength.

6.24 Consumables required for splicing to be specified with the offer.

6.25 Roll length shall be in line with the Belt schedule as per annexure-1.

6.26 Quantity of adhesive solution shall be calculated by bidder and accordingly same has to be supplied by bidder.

7.0 PACKING AND TRANSPORTATION:

The equipment / material ready for dispatch shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit and shall be suitable for long time open storage. The customer / inspector shall have the right to insist for completion of works at shop before dispatch of materials for transportation.

i) Belt rolls shall be dispatched in such a way that the belt is not in contact with the floor directly.

ii) While on dispatch, belts shall be kept in a vertical position and shall not be allowed to rest on their side.

   a. Conveyor belt shall be dispatched fully enclosed coiled on reels with top cover. While using a hoist, a bar should be passed through the crate and attached to slings. Bidder to furnish the no. of drums considered to each rating.

iii) Bidder shall ensure Proper packing & loading and transportation to site of belt drums.

8.0 INSPECTION AND TESTING:

1. Bidder shall give 15 day's advance written notice of equipment being ready for testing. The customer / Inspector, unless witnessing of the tests is waived, will attend such tests within 15 days of the date on which the equipment is notified as being ready.
2. Type & routine test report / certificates shall include details of standard to which the tests are performed, test parameters, acceptance criteria, test set up etc. used during the testing along with the test piece details / rating and the detailed test record and final test result. Also bidder to note that the test piece can be selected by the inspector (from TSGENCO/BHEL/CONSULTANT) from any part of the belt.
3. All inspection, measuring and test equipment used by the contractor shall be calibrated periodically. The supplier shall maintain all relevant records of periodic calibration, instrument identification, and shall provide for inspection by supplier wherever asked specifically; the supplier shall calibrate measuring / testing equipment in the presence of employer.
4. The details of the checks / inspection / testing to be carried out for various components as per BHEL / TSGENCO format are to be submitted within 10 days from the date of purchase order by the supplier for BHEL / TSGENCO approval. However, some indicative checks on different items are given below which should necessarily form part of the Quality Assurance Plan to be agreed with BHEL / TSGENCO.
    a. Rubber cover shall be checked for tensile strength and elongation at break before and after ageing
    b. For finished belts, checks for elongation as % of nominal tensile strength, tensile and elongation at break in longitudinal (Wrap) direction, tensile and elongation at break in traverse (Weft) direction shall be carried out.
    c. Adhesion test between individual plies and cover and plies shall be carried out
    d. Troughability test shall be carried out.
    e. Test for fire resistance of the belt shall be conducted.
    f. Test for procedure qualification for belt vulcanizing joint shall be done at shop. Procedure for belt vulcanizing joint shall be discussed and finalized during quality procedure finalization.
5. In no case shall the cover thickness or the width of the belt be less than that given in specification. No negative tolerances will be allowed on the same.

6. Rubber cover shall also be checked for abrasion, tear strength and hardness.
7. **Bidder to note that, test certificate shall be provided by successful bidder during inspection for Nylon-Nylon fabric & rubber for review. Also, bidder to ensure high quality for Nylon – Nylon fabric & rubber with reputed make.**
8. Bidder to note that, belt testing shall be witnessed & tested by BHEL, TSGENCO / TSGENCO's third party inspection agency during inspection before dispatch to site.
9. **Bidder to note that all the belts, to be supplied in this project, have to be manufactured at bidder's approved works only.**

9.0 QUALITY ASSURANCE PLAN:

Quality assurance plans of belting shall be frozen with the successful bidder during detail engg. as per TSGENCO/ BHEL QC requirement.

1. Standard quality plan is enclosed in annexure-2, in which minimum requirements are indicated & bidders to follow the same. However, during detail engineering the detailed quality plans for manufacturing and field activities to be drawn up by the supplier, separately in the format and should be submitted to BHEL / Customer for approval.
2. Manufacturing quality plan will detail out the item, various tests/inspection, to be carried out as per the requirement of the specification and standards mentioned and quality practices & procedures followed by supplier quality control organization, the relevant reference documents and standards, acceptance norms, inspection documents raised etc. during all stages of materials procurement, manufacture, assembly and final testing / performance testing.
3. Field quality plan will detail out the item, the quality practices and procedures etc. to be followed by the contractor during various stages of site activities from receipt of materials at site.
4. The supplier shall also furnish copies of reference documents / plant standards / acceptance norms test and inspection, procedure, etc. as referred in quality plans. These quality plans and reference documents / standards etc., will be subject to customer approval without which manufacture shall not proceed.
5. No material shall be dispatched from the manufacturers work before the same is accepted subsequent to pre dispatch final inspection including verification of records of all previous tests / inspection by employers engineer/Authorized representative and duly authorized for dispatch, issuance of MDCC by BHEL.

6. Test results of qualification tests and specimen testing shall be furnished for approval.
7. Quality plan submitted by the supplier shall detail out, various stages of manufacture and installation, the quality practices and procedures, the relevant reference documents / standards used, acceptance level, inspection of documentation raised etc.
8. Quality audit / Surveillance / approval of the results of tests and inspection will not however, prejudice the right of the customer to reject the item if it does not comply with the specification when erected or does not give complete satisfaction in service and the above shall in no way limit the liabilities and responsibilities of the supplier in ensuring complete conformance of the materials supplied to relevant specification, standard, data sheets, drawings, etc.
9. Repair / rectification procedures to be adopted to make the job acceptable shall be subject to the BHEL / TSGENCO approval.

10.0 LIST OF ENCLOSURES:

Following enclosures is an integral part of this technical enquiry specifications and must be signed and stamped and submitted along with the offer:

ANNEXURE-1 – Belt Schedule (1 sheet).

ANNEXURE-2 – i) CHP Plot Plan ii) Coal Flow Diagram iii) GA of conveyor profiles & iv) Standard Quality Plan

ANNEXURE-3 – Data Sheet to be filled by the bidder (2 sheets)

BELT SCHEDULE, R1 -CHP -BHADRADRI-4x270MW

ANNEXURE-1

Indent No.: IS-1-14-2007/093

SL NO	BELT SPECIFICATION							
	RATING	STRENGTH OF BELT (in KN/M)	TYPE	GRADE	TOP / BOTTOM COVER (MM)	BELT WIDTH (MM)	BELT LENGTH (Mtr)	Roll Break up (in Mtr) considering length for Splice joint
Main Supply								
1	500/4	50	N-N	FR	8/3	1400	792	198 x 4 ROLLS
2	500/4	50	N-N	FR	8/3	1400	262	262 x 1 ROLL
3	1600/4	180	N-N	FR	8/3	1400	1434	239 x 6 ROLLS
4	800/4	90	N-N	FR	5/3	1400	368	184 x 2 ROLLS
5	800/4	90	N-N	FR	5/3	1400	344	172 x 2 ROLLS
6	1600/4	180	N-N	FR	5/3	1400	648	216 x 3 ROLLS
7	800/4	90	N-N	FR	5/3	1400	896	224 x 4 ROLLS
8	800/4	90	N-N	FR	5/3	1800	27	27 x 1 ROLL
9	800/4	90	N-N	FR	5/3	1800	27	27 x 1 ROLL

NOTES:

1. Type: Synthetic Fabric of Nylon / Nylon
2. Cover Grade: (a) Flame Test: Confirming to ISO:340
(b) Drum Friction and Electrical Surface Resistance Test: Confirming to Canadian Standard Association CAN/CSA M-422-M87 Grade-C.
3. Factor of safety: For Synthetic Belting 10(Minimum)
4. All belting shall be pre-stretched.
5. The belt covers shall be made of synthetic rubber properly vulcanized & shall be resistant to moisture.
6. The Belt shall be supplied with proper marking.
7. Sample length for inspection shall be extra as per approved QAP.

ANNEXURE-2

BHEL Maharatna Company	Manufacturer's name and address:	**REFERENCE QUALITY PLAN**												
		ITEM/ EQUIPMENT -							BHEL QAP NO:					
		CONVEYOR BELT - FR GRADE							REV. NO:					
									DATE:					
									PAGE:				01 OF 06	
		SUB SYSTEM - Coal Handling System							MANUFACTURER QAP NO:					

SL. NO.	Component & Operation	Characteristic Check	Class	Type of Check	Quantum Check		Reference Document	Acceptance Norms	Format Of Record		Agency			Remarks
					M	C\N					M	C	N	
1	2	3	4	5	6		7	8	9		10			11
A	RAW MATERIALS													
1	Rubber:													
	Natural Rubber	Plasticity retention Index	Critical	Chemical	100%		IS 3660-1989	IS 4588-1996	Raw Material Analysis Sheet		V			
	Synthetic Rubber	Mooney Viscosity	Do	Do	Do		IS 4518-1967	IS 5189-1985	Do		V			
2	Carbon Black	Iodine No & DBP absorption	Do	Do	Do		IS7498-1985	IS 74871985	Do		V			
3	White Filler	Acid Insolubility . Loss Of Ignition pH. Moisture	Do	Do	Do		IS 12076-1986	IS 12076-1986	Do		V			
4	Plasticizers	Viscosity, Volatile loss. Aniline point, Sp. Gravity	Do	Do	Do		As Per Manufacturers Doc	As Per Manufacturers Doc	Do		V			
5	Rubber Vulcanising agent										V			
	A) Accelerator	Melting Point	Do	Do	DO		IS6655-1972	IS8851-1994	Do		V			
	B) Sulphur	Solubility In CS2. Sulpher Content												
6	Protective Materials	Melting Point , Solubility	Do	Do	Do		As Per Manufacturers Doc	As Per Manufacturers Doc	Do		V			
7	Raw Textile Fabric (Dipped Conditions)	a Foldings & Tex. Wrap & Weft	Do	Visual & Physical	10%		As Per Manufacturers Doc	As Per Manufacturers Doc			V			
		b.Threads/DM WrapS Weft	DO	Do	Do		Do	Do	Do		V			
		c Tensile Strength (Kg/Mmm) Warp £ Weft	Do	DO	DO		Do	Do	DO		V			
		d. % of Elongation at reference load Warp » Weft	Do	Do	Do		Do	Do	Do		V			

LEGEND : RECORDS IDENTIFIED WITH TICK() SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION - M - MANUFACTURER/SUB-SUPPLIER . C - SUPPLIER . N - Client . P - PERFORM, W - WITNESS. V - VERIFICATION AS APPROPRIATE CHP : CLIENT SHALL IDENTIFY IN COLUMN "N" AS W.

Note: Only minimum requirements are indicated here and same is subject to approval from customer during detail engineering.

		Manufacturer's name and address:	**REFERENCE QUALITY PLAN**												
			ITEM/ EQUIPMENT -						BHEL QAP NO:						
			CONVEYOR BELT - FR GRADE						REV. NO:						
									DATE:						
									PAGE:				02 OF 06		
			SUB SYSTEM - Coal Handling System						MANUFACTURER QAP NO:						
SL. NO.	Component & Operation	Characteristic Check	Class	Type of Check	Quantum Check		Reference Document	Acceptance Norms	Format Of Record		Agency			Remarks
					M	C\N					M	C	N	
1	2	3	4	5	6		7	8	9		10			11
	Contd. Raw textile fabric (dipped condition)	e.% of Elongation at break warp& welt	Major	Visual&Physical	10%		As Per Manufacturers Doc	As Per Manufacturers Doc			V			
		f. Conditioned Wt/Sq Mtr(grms)	Do	Do	Do		Do	Do	Do		V			
		g. Thickness/ply	Do	Do	Do		Do	Do	Do		V			
		h. Roll Width	Critical	Do	Do		Do	Do	Do		V			
		i. Weaving quality	Major	Physical	Do		Do	Do	Do		V			
		j. Twist/ meter folded & singles	Do	Do	01/10 Consignment		Do	Do	Do		V			
		k.% of crimp warp & welt	Do	Do	Do		Do	Do	Do		V			
		l. Moisture Regain(%)	Critical	Do	Do		Do	Do	Do		V			
		m. Adhesion	Do	Do	Do		Do	Do	Do		V			

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		ITEM/ EQUIPMENT -							BHEL QAP NO:						
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									DATE:						
									PAGE:					03 OF 06	
		SUB SYSTEM - Coal Handling System							MANUFACTURER QAP NO:						

SL. NO.	Component & Operation	Characteristic Check	Class	Type of Check	Quantum Check		Reference Document	Acceptance Norms	Format Of Record		Agency			Remarks
					M	C\N					M	C	N	
1	2	3	4	5	6		7	8	9		10			11
	IN PROCESS													
1	Skim Coating	Width / Thickness	Minor	Measurement	5%		As Per Manufacturers Doc	As Per Manufacturers Doc			V			
2	Rubber Compound	Rhelogy	Critical	Physical	100%		As Per Manufacturers Doc	As Per Manufacturers Doc			V			
		Tensile Strength	Minor	Measurement	1 per run		As Per Manufacturers Doc	As Per Manufacturers Doc			v			
		Elongation At Break	Do	Physical	1 per run		As Per Manufacturers Doc	As Per Manufacturers Doc	Do		V			
		Shore Hardness	Major	Measurement	100%		As Per Manufacturers Doc	As Per Manufacturers Doc	Do		v			
3	Solution	Solid Content	Critical	Do	10%		As Per Manufacturers Doc	As Per Manufacturers Doc			V			
4	Rubber Sheeting/ Calendering	Width / Thickness	Minor	ysical Measurem	5%		As Per Manufacturers Doc	As Per Manufacturers Doc			P	V		
5	Building	Width / Thickness, Fabric joint & competeness of assembly	Critical	Do	100%		Do	Do			P	V		
	In case of belts width exceeding 2000 mm	Spacing B/W joints in different plies	Critical	Measurement	100%		IS 1891 part-I 1994	IS 1891 part-I 1995	Do		P	V	V	
		No of joint.	Critical	Measurement	100%		one number	one number	Do		p	V	V	
		Gap B/W the edges of plies for longitudinal joints	Critical	DO	100%		As Per Manufacturers Doc		Do		p	V		
6	Moulding(curing)	Width / Thickness,/time/temp.control in heat curing/hydraulic pr/stretch& compression	Minor	DO	100%		Do	Do			P	V		
7	Dressing &Sizing	Finish & Edge(Mould/cut)	Minor	Visual	100%		Do	Do			P	V		
8	Inspection of Cured belt													
	Dimensional Conformity	Width / Thickness & Length	Critical	Measurement	100% of each belt	100% of each belt	IS1891 Part-1 1994/Approved data sheet	IS1891 Part-1 1994/Approved data sheet			P	V	V	
	Maping of surface defect	Surface defect,their type and repairs	Major	physical	Do	Do	IS 1891 part-I 1994	Ref Note	DO		P	V	V	Defect type and for repair norms refer note
		Gap b/w plies	Major	Do	Do	Do	As Per Manufacturers Doc	Max. 10 mm	DO		P	V	V	

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			CONVEYOR BELT - FR GRADE						REV. NO:					
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			SUB SYSTEM - Coal Handling System						MANUFACTURER QAP NO:					
SL. NO.	Component & Operation	Characteristic Check	Class	Type of Check	Quantum Check		Reference Document	Acceptance Norms	Format Of Record		Agency			Remarks
					M	C\N					M	C	N	
1	2	3	4	5	6		7	8	9		10			11
	FINAL INSPECTION OF FINISHED BELT	SAMPLE SHALL BE TAKEN FROM ANY WHERE OF BELT ROLL LENGTH OFFERED FOR TESTING												
1	Cover Rubber Properties	Tensile Strength	Critical	Physical	100%	Sample as per IS-1891-part-1-1994	IS 1891-Part-1-1994	IS1891-Part-I-1994/Approved Data Sheet	Product analysis sheet/Test certificate		P	W	W	
		% of Elongation at Break	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Abrasion Loss	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Resistance of Ageing									P	W	W	
		a. Tensile strength	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		b. Elongation at Break	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Shore Hardness	Do	Do	100%	Do	IS 3400-1987	Do	Do		P	W	W	
		Tear Strength	Do	Do	100%	Do	ASTM D624-1991	Approved Data Sheet	Do		P	W	W	
2	Full Thickness Belt Properties	Breaking strength (Wrap & Well)	Do	Do	100%	Do	IS 1891-Part-I-1994/Approved Data Sheet	Do	Do		P	W	W	
		% of Elongation at ref. & break	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Adhesion (ply to ply, ply to cover, top & botom)	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Troughability	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Number of Plies	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Thickness of full belt & cover r	Do	Do	100%	Do	Do	Do	Do		P	W	W	
		Edge (Mould/ Cut)	Do	Do	100%	Do	Do	Do	Do		P	W	W	

LEGEND : RECORDS IDENTIFIED WITH TICK() SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION - M - MANUFACTURER/SUB-SUPPLIER . C - SUPPLIER . N - Client . P - PERFORM, W - WITNESS. V - VERIFICATION AS APPROPRIATE CHP : CLIENT SHALL IDENTIFY IN COLUMN "N" AS W.

BHEL Maharatna Company		Manufacturer's name and address:	**REFERENCE QUALITY PLAN**											
			ITEM/ EQUIPMENT -						BHEL QAP NO:					
			CONVEYOR BELT - FR GRADE						REV. NO:					
									DATE:					
									PAGE:			05 OF 06		
			SUB SYSTEM - Coal Handling System						MANUFACTURER QAP NO:					
SL. NO.	Component & Operation	Characteristic Check	Class	Type of Check	Quantum Check		Reference Document	Acceptance Norms	Format Of Record		Agency			Remarks
					M	C\N					M	C	N	
1	2	3	4	5	6		7	8	9		10			11
3	Fire Resistivity	Flame test	Do	Do	100%	Do	ISO 340 (clause no. 4.2.2.2)	ISO 340\Appd. Data sheet	Do		P	W	w	
		Drum Friction test	Do	Do	100%	Do	CAN/CSA/M422-M87 TYPE C	CAN/CSA/M422-M87 TYPE C	Do		P	w	w	
		Electrical Resistivity	Do	Do	100%	Do	Do	Do	Do		P	w	w	
4	Inspectlon of Cured belt													
	Dimensional Conformity	a. Width & Thickness	Critical	Measurement	100% of Each Belt	IS 1891-Part-1-1994 Sampling plan	IS 1891-Part-l-1994/Approved Data Sheet	IS 1891-Part-l-1994/Approved Data Sheet & belt Schedule	Do		P	w	w	
		b. Length	Critical	Do	Do	Do	Do	Do	Do		P	w	w	
	Surface defect . Type & Repairs in Belt	Verification	Major	Physical	100% of each belt	IS 1891-Part-1-1994 Sampling plan	IS 1891-Part-1-1994	Refer Note	Do		P	w	w	
	In case of Belt width exceeding 2000mm : Longitudinal Joints In width	Gap between Plies for Longitudional Joints	Major	Do	Do	One Sample Per Lot For Each Width Rating Combination	As Per Manufacterers Std	MAX 10mm	Do		P	w	W	The gap between plies at Longitudional ply joint area may be checked at any one point over a belt length during inspection by removing 100mm*25mm cover rubber from the finished belt. This will be repaired by vulcanizatian and shall not be counted as Repair
	PREDISPATCH	PACKIKG	Major	Visual	Each Roll	Each Roll	B VII/08/050 Rev-D	B VII/08/050 Rev-D	PROD 15		P	w	V	

NOTE : Following Repair norms shall be followed during manufacturing / internal Inspection .

1. Patch Repair : Localized rectification of surface blemishes / defects in cured belt by using rubber compound similar to the mother compound up to top carcass may be done followed by vulcanization.
2. Buffing / Dough filling : Entrapment of foreign matters may be buffed suitably. Depth of buffing should not exceed the difference in tickness of the cover rubber (as measured in test sample for the purpose of acceptance of cover rubber thickness) and the specified minimum cover thickness. Where the indentation depth is more, the same may be filled with rubber compound followed by vulcanization locally.
3. The repairs of size up to 25 mm x 25 mm(625 mm sq.) shall not be considered as repair.However, in case of cluster of repairs, same shall be counted as a patch repair.
4. Maximum number ol repairs as per 1, above shall be limited to 5 per 100m of belt length (rounded up to higher unit).

Example : For a 250m length inspected, maximum number of repairs permissible shall be 5x(250/100) = 12.5 i e 13.

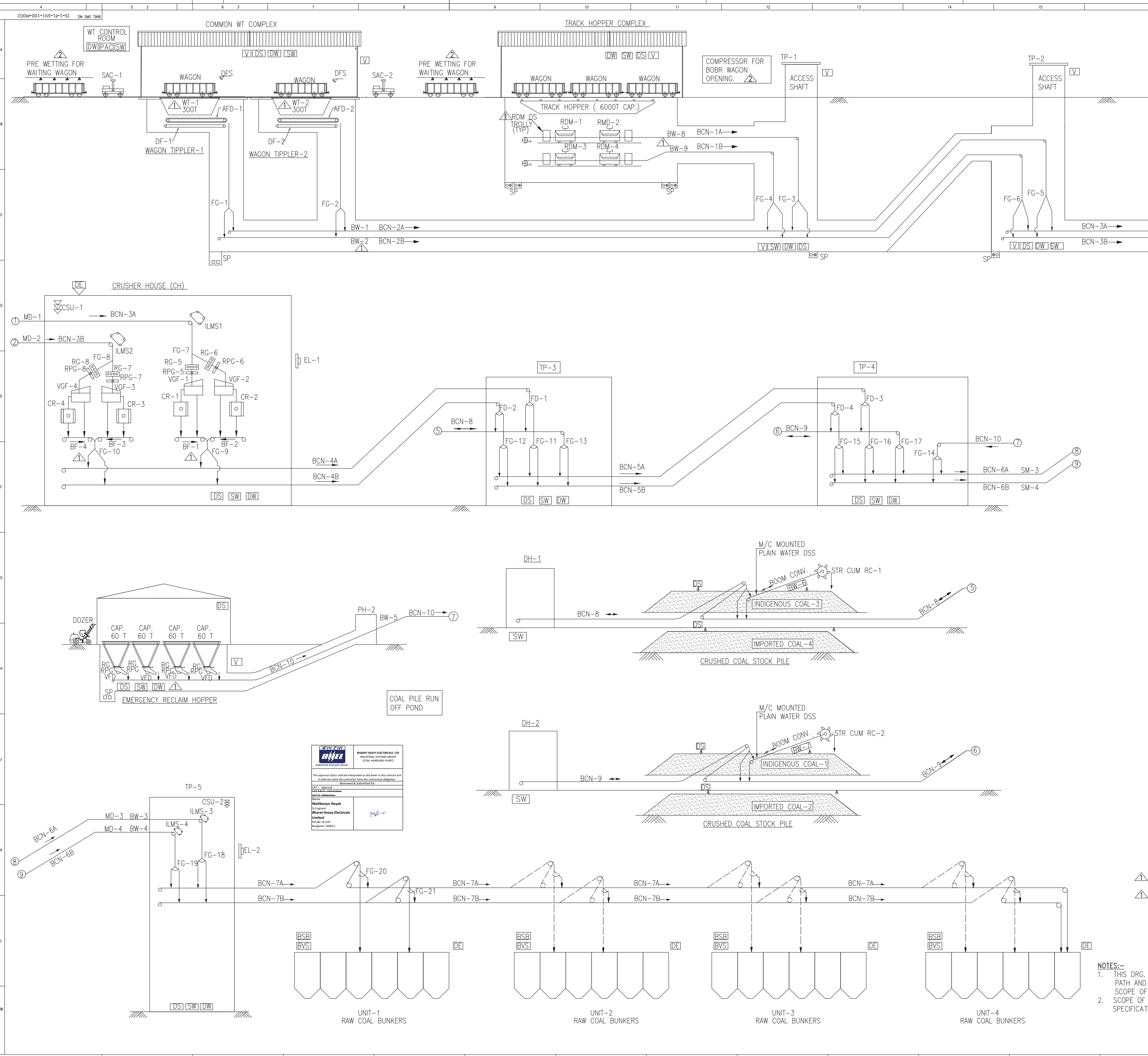
5. Total number of repair as per 1 & 2 above shall not exceed more than 10 per 100 m of belt length (rounded up to higher unit).

Example : For a 250 m length Inspected, maximum number of repairs permissble shall be 10 x (250/100) = 25.

6. In case of patch repair as indicated in 1 above, the maximum size / area of each repair shall be limited to 1/5 W x 1/5 W , with one dimension Max 1/5W, where W is width of the belt

LEGEND : RECORDS IDENTIFIED WITH TICK() SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION - M - MANUFACTURER/SUB-SUPPLIER . C - SUPPLIER . N - Client . P - PERFORM, W - WITNESS. V - VERIFICATION AS APPROPRIATE CHP : CLIENT SHALL IDENTIFY IN COLUMN "N" AS W.

ACCEPTANCE NORMS FOR CONVEYOR BELT (FR GRADE UPTO 2400 mm WIDTH)			
SL. NO.	**DESCRIPTION**	**FOR NN / EP BELT**	**REFERENCE**
1	BELT DESIGNATION , TYPE , RATING	AS PER ORDER	
2	TOP COVER THICKNESS	AS PER ORDER	
3	BOTTOM COVER THICKNESS	AS PER ORDER	
4	FULL BELT WIDTH	AS PER ORDER	
5	LENGTH	AS PER ORDER	
6	DIMENSIONAL VARIATION OF BELT		
	a. COVER THICKNESS	ORDER +OPEN.-0	IS 1891 -1994 Pt-1
	b. WIDTH	ORDER +1%,-0	IS 1891 -1994 Pt-1
	c. LENGTH	ORDER +2% . -0	IS 1891 -1994 Pt-1
7	TENSILE STRENGTH OF FULL BELT IN WARP DIRETION (KN/m)	AS PER DATA SHEET	
8	TENSILE STRENGTH OF FULL BELT IN WRFT DIRETION (KN/m)	AS PER DATA SHEET	20% OF WARP (SPECIFIED) STRENGTH, IF NOT SPECIFIED IN DATA SHEET
9	ELONGATION OF FULL BELT		
	a. AT REFERENCE LOAD	2.5% MAX	-
	b. AT BREAK	10% MIN.	IS 1891 -1994PM
10	COVER RUBBER PROPERTIES		
	a. GRADE	FIRE RESISTANT	
	b. TENSILE STRENGTH (Mpa)		
	i. BEFORE AGEING	17 MIN.	IS 1891- 1993 Pt-V
	ii. AFTER AGEING	+10% OF ORIGINAL VALUE , -20% OF ORIGINAL VALUE	IS 1891 -1994 Pt-1
	c. ELONGATION AT BREAK		
	i. BEFORE AGEING	400% MIN.	IS 1891 -1993 Pt-1
	ii. AFTER AGEING	+10% OF ORIGINAL VALUE , -25% OF ORIGINAL VALUE	IS 1891 -1993 Pt-1
	d. ANGULAR TEAR STRENGTH (AS PER ASTM D624)	30 N/mm (MIN.)	ASTM D624
	e. ELECTRICAL AND FIRE RESISTANCE PROPERTIES		
	i. FLAME TEST : DURATION OF FLAME WITH COVER	45 SEC. MAX. FOR 6 SAMPLES, 15 SEC. MAX. FOR INDIVIDUAL. NO FLAME REAPPEARENCE IN AIR CURRENT	ISO-340 (CL 4.2.2.2)
	ii. DRUM FRICTION TEST	400°C	CAN CSA-M422-M87 (Type-C]
	iii. ELECTRICAL RESISTIVITY	300 M. Ohm. MAX.	CAN CSA-M422-M87 (Type-C)
	f. ABRASION RESISTANCE MAX VOLUME LOSS	175 mm^3 MAX	
	q. HARDNESS OF BELT	AS PER DATA SHEET	
11	ADHESION VALUES (KN/m)		
	PLY TO PLY	5.25 MIN.	IS 1891 - 1994 Pt-1
	PLY TO COVER	4.50 MIN.	IS 1891 -1994 Pt-1
12	TYPE OF EDGE	AS PER ORDER	
13	TROUGHABILITY (MIN.) (35)	0.11 MIN.	IS 1891 -1994 Pt-1
14	APPLICABLE STANDARDS	IS 1891 PART I , CAN CSA-M422-M87 (TYPE C) & ISO 340(CL. 4.2.2.2)	
	NOTE : IN CASE OF ANY OF THE PARAMETERS SPECIFIED IN CLIENT ENGG. APPROVED DATA SHEET/ CLIENT SPECIFICATION IS DIFFERENT FROM ABOVE, VALUES AS PER CLIENT ENGG APPROVED DATA SHEET/CLIENT SPECIFICATION SHALL BE FINAL.		



LEGEND EQPT.	EQUIPMENT	QTY.	REMARKS
WT	WAGON TIPPLER	2 NOS.	20 TIPS/HR (RATED) 24 TIPS/HR (DESIGN)
SAC	SIDE ARM CHARGER	2 NOS	31 LOADED WAGONS
AF	APRON FEEDER	2 NOS	1400 MTPH RATED 1400 MTPH DESIGN
DF	DRIBBLE FEEDER	2 NOS	200 MTPH DESIGN
RDM	ROTARY DISCHARGE MACHINE	4 NOS	1050 MTPH RATED 1050 MTPH DESIGN
SCR	REVERSIBLE STACKER CUM RECLAIMER	2 NOS	1400 MTPH RATED 1400 MTPH DESIGN
CR	CRUSHER - RING GRANULATOR	4 NOS	1400 MTPH RATED 1400 MTPH DESIGN
VGF	VIGRATING GRIZZLY FEEDER	4 NOS	1400 MTPH RATED 1400 MTPH DESIGN
ILMS	IN LINE MAGNETIC SEPARATOR	4 NOS.	
SM	SUSPENDED MAGNET	4 NOS	
BW	BELT WEIGHER	9 NOS ⚠1	
MD	METAL DETECTOR	4 NOS	
CSU	COAL SAMPLING UNIT	2 NOS	3 STAGE IN CH 2 STAGE IN TP-5
EL	ELEVATOR	2 NO	2T CAPACITY IN CH&TP-5
VF	VIBRATING FEEDER	4 NOS	450 MTPH RATED&DESIGN
TTR	TRAVELLING TRIPPER	2 NOS	1400 MTPH RATED 1400 MTPH DESIGN
FTR	FIXED TRIPPER	NA	
FD	FLOW DIVIDER	4 NOS.	
FG	FLAP GATE	1 LOT	
RG	ROD GATE	8 NOS.	
RPG	RACK & PINION GATE	8 NOS.	
BVM	BELT VULCANIZING MACHINE	2 NOS.	HYDRAULIC PRESS TYPE
IWB	INTEGRATED WEIGH BRIDGE	2 NOS.	
SP	SUMP PUMP	16 NOS.	
BSB	BUNKER SEALING BELT	1 LOT	
DE	DUST EXTRACTION SYSTEM	1 LOT	FOR CH AND BUNKERS
DS	DUST SUPPRESSION	1 LOT	
SW	SERVICE WATER	1 LOT	
DW	DRINKING WATER	1 LOT	
V	VENTILATION	1 LOT	
BC	BELT CONVEYOR	1 LOT	1400 MTPH RATED 1400 MTPH DESIGN
TP	TRANSFER POINT	1 LOT	
BVS	BUNKER VENTILATION SYSTEM	1 LOT	
BF	BELT FEEDER	4 NOS. ⚠1	1400 MTPH RATED 1400 MTPH DESIGN
BD	BULL DOZER	4 NOS.	MODEL BD355, BEML MAKE
PH	PENT HOUSE	2 NOS.	
⚠1 -	CHUTES & LINERS	1 LOT	
⚠1 -	BELT VULCANIZING MACHINE	2 NOS.	

NOTES:-

1. THIS DRG. IS MEANT TO SHOW ONLY COAL FLOW PATH AND DOES NOT INDICATE COMPREHENSIVE SCOPE OF WORK.
2. SCOPE OF WORK SHALL BE AS PER NIT SPECIFICATION.

R.No:	DATE	BRIEF RECORD	BY	APPD
⚠3	22.06.15	REVISED AS PER TSGENCO/DESEIN COMMETNS	DUT	MNK
⚠2	22.06.15	REVISED AS PER TSGENCO/DESEIN COMMETNS	DUT	MNK
⚠1	14.05.15	REVISED AS PER TSGENCO/DESEIN COMMETNS	DUT	MNK
00	22.04.15	FOR APPROVAL AS PER DISCUSSION HAD AT TSGENCO OFFICE DTD: 20.04.15	DUT	MNK

REVISIONS

OWNER: TELANGANA STATE POWER GENERATION CORPORATION LTD.
HYDERABAD – TELANGANA, INDIA

CUSTOMER'S CONSULTANT: DESEIN PRIVATE LIMITED.

PROJECT : BHADRADRI THERMAL POWER STATION
4 X 270 MW, UNITS-1 TO 4, MANUGURU, TELANGANA, INDIA

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LIMITED
INDUSTRIAL SYSTEMS GROUP
ISG-BANGALORE

	NAME	SIGN	DATE
DRN.	DUT		24.03.15
CHD.	MNK		24.03.15
APP.	RSP		24.03.15

REV. B — NO. OF VAR

TITLE : FLOW DIAGRAM FOR COAL HANDLING SYSTEM

TOTAL SHEETS 01 — SHEET NO. 01

SCALE — BHEL JOB NO. IS-1-14-2007 — BHEL-ISG DRG.NO.: IS-1-FL-691-100-M002 — REV. 03

SIZE-A1

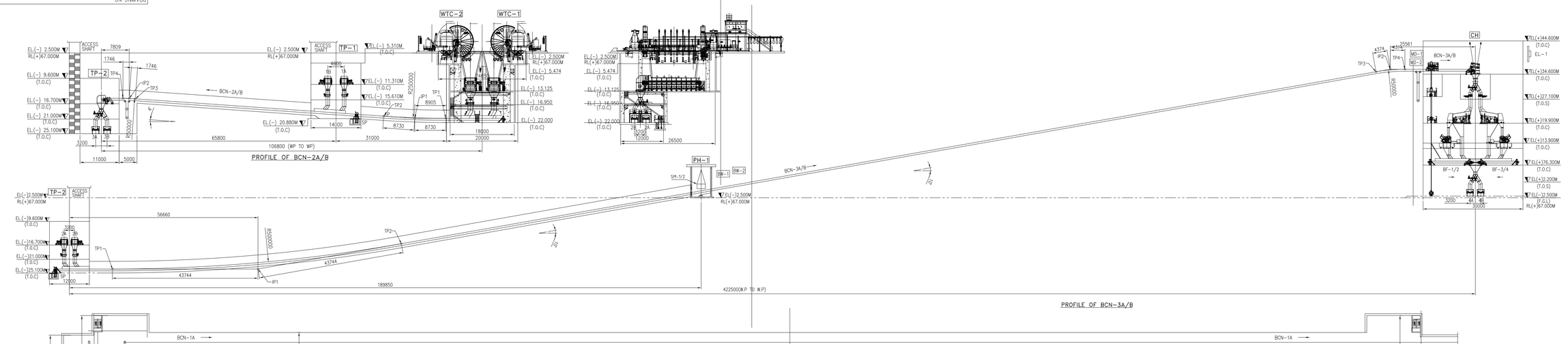
FORM-66.101

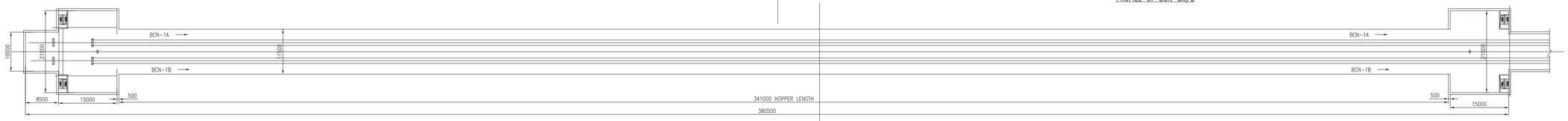
FIRST ANGLE PROJECTION

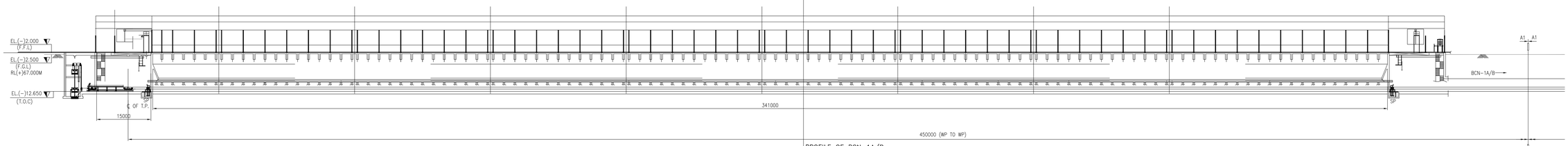
ALL DIMENSIONS ARE IN MM

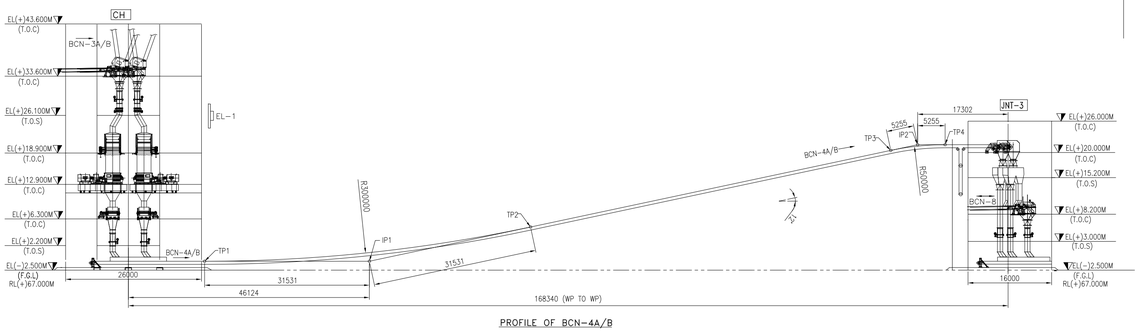
DRAWING NO. IS-1-GA-691-101-M004

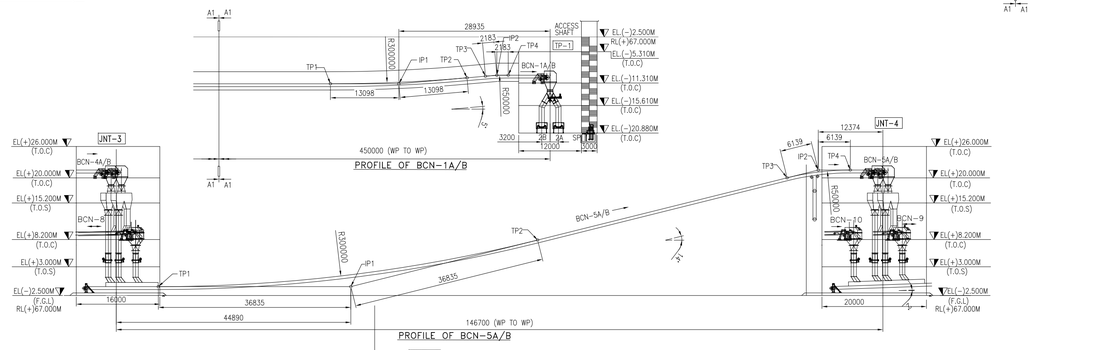
DO NOT SCALE. IF IN DOUBT, ASK.











LEGENDS:–

W.P :– WORKING POINT
IP :– INTERSECTION POINT
TP :– TANGENT POINT
TOC :– TOP OF CONCRETE
TOS :– TOP OF STEEL
FFL :– FINISHED FLOOR LEVEL
FGL :– FINISHED GROUND LEVEL
BCN :– BELT CONVEYORE
JNT :– JUNCTION TOWER
TH :– TRANSFER HOUSE

NOTES:–

1. ALL DIMENSIONS ARE IN MM
2. ALL LEVELS ARE IN M
3. ALL DRAWING IS PREPARED BASED ON PLOTPLAN (DRG NO. PE-DG-K27-100-M001) AND COAL FLOW DIAGRAM (DRG. NO. IS-1-FL-691-100-M002)
4. FOR CONVEYOR, JUNCTION TOWER AND CRUSHER HOUSE INDICATED ARE TENTATIVE REFER RESPECTIVE GA DRGS.
5. FOR CONVEYOR CROSS SECTION REFER DRG. NO. IS-1-GA-691-100-M003.
6. THE FINISHED FLOOR LEVEL (FFL) OF POWER HOUSE BUILDING GROUND FLOOR IS EL. 0.00M WHICH CORRESPONDS TO RL 69.5M i.e. 0.5M ABOVE FGL.
7. BOILER AREA FINISHED GRADED LEVEL IS 200MM BELOW 0.0M i.e. RL 69.3M.
8. TRANSFORMER YARD FINISHED GRADED LEVEL IS 100MM BELOW 0.0M i.e. RL 69.4M.
9. JNT, CH FLOOR ELEVATIONS AND BUILDING SIZES SHALL BE SUBJECTED TO CHANGE DURING DETAIL ENGINEERING
10. CONVEYOR LENGTH AND LIFT, RADIOS OF CURVATURE INDICATED ARE TENTATIVE

R.No:	DATE	BRIEF RECORD	BY	APPD
		REVISIONS		

OWNER:	TELANGANA STATE POWER GENERATION CORPORATION LTD. HYDERABAD – TELANGANA, INDIA				
CONSULTANT	DESEIN PRIVATE LIMITED				
PROJECT :	BHADRADRI THERMAL POWER STATION 4 X 270 MW, MANUGURU, TELANGANA, INDIA COAL HANDLING SYSTEM PACKAGE				
EPC CONTRACTOR:	BHARAT HEAVY ELECTRICALS LIMITED INDUSTRIAL SYSTEMS GROUP ISG–BANGALORE		NAME	SIGN	DATE
		DRN.	DUT		10.04.15
		CHD.	MNK		10.04.15
		APP.	RSP/VSD		10.04.15
	TITLE : GA OF ALL CONVEYOR PROFILES				
SCALE	BHEL JOB NO. IS-1-14-2007	BHEL-ISG DRG. NO.: IS-1-GA-691-101-M004			

REV. 00 | NO. OF VAR | NO. OF SHEETS 02 | SHEET. NO. 01 | REV. 00

SIZE–A1

REF.DRG NO. | SIGN & DATE | INVENTORY NO.

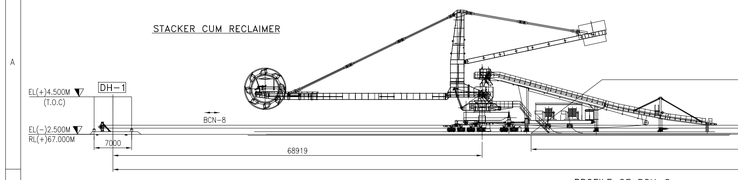
FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

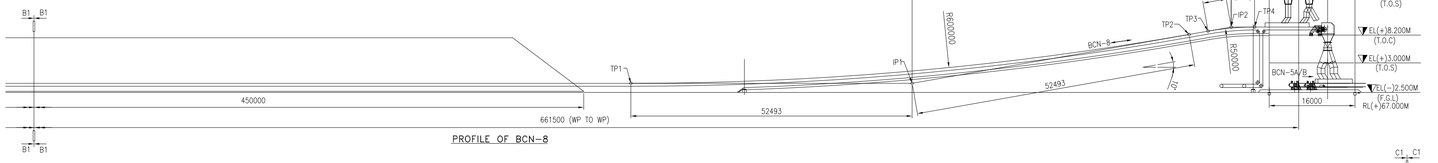
DRAWING NO. IS-1-GA-691-101-M004

DO NOT SCALE. IF IN DOUBT, ASK.

STACKER CUM RECLAIMER

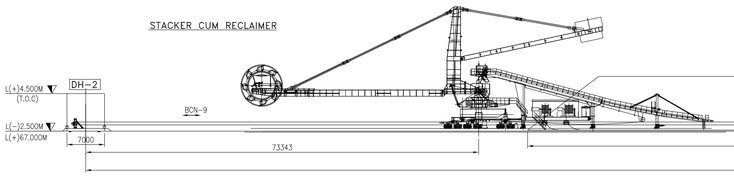


PROFILE OF BCN-8



PROFILE OF BCN-8

STACKER CUM RECLAIMER



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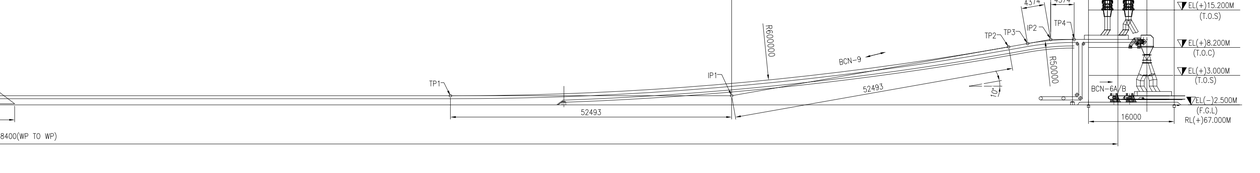

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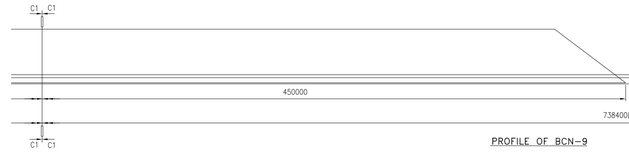

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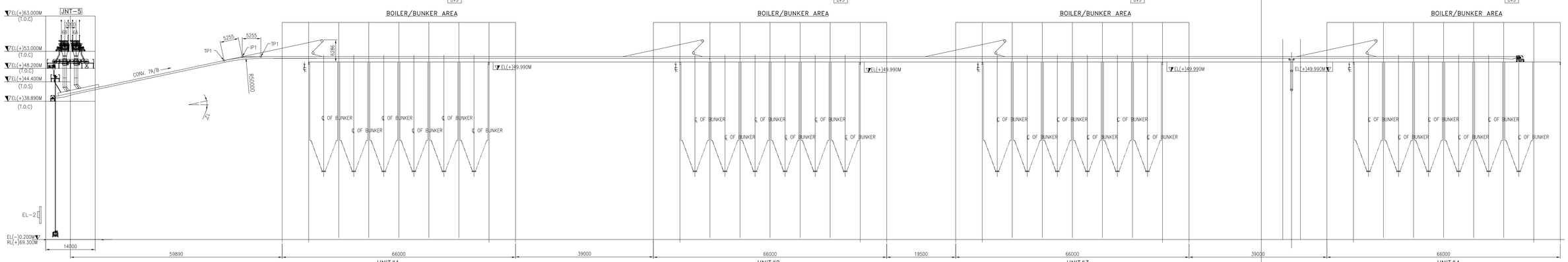
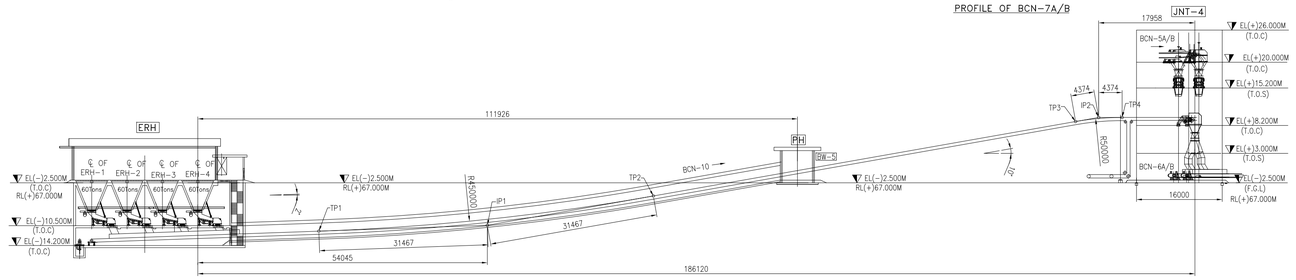


PROFILE OF BCN-7A/B



PROFILE OF BCN-10

R.No:	DATE	BRIEF RECORD	BY	APPD
		REVISIONS		

OWNER:	TELANGANA STATE POWER GENERATION CORPORATION LTD. HYDERABAD – TELANGANA, INDIA
CONSULTANT	DESEIN PRIVATE LIMITED
PROJECT :	BHADRADRI THERMAL POWER STATION 4 X 270 MW, MANUGURU, TELANGANA, INDIA COAL HANDLING SYSTEM PACKAGE
EPC CONTRACTOR:	BHARAT HEAVY ELECTRICALS LIMITED INDUSTRIAL SYSTEMS GROUP ISG-BANGALORE

	NAME	SIGN	DATE	REV. NO.
DRN.	DUT.		10.04.15	00
CHD.	MNK		10.04.15	OF
APP.	KT/VSD		10.04.15	VAR.

TITLE :	GA OF ALL CONVEYOR PROFILES
NO. OF SHEETS	02
SHEET. NO.	02
SCALE	
BHEL JOB NO.	IS-1-14-2007
BHEL-ISG DRG. NO.:	IS-1-GA-691-101-M004
REV. NO.	00

SIZE-A1

REF.DRG.NO. | SIGN & DATE | INVENTORY NO.

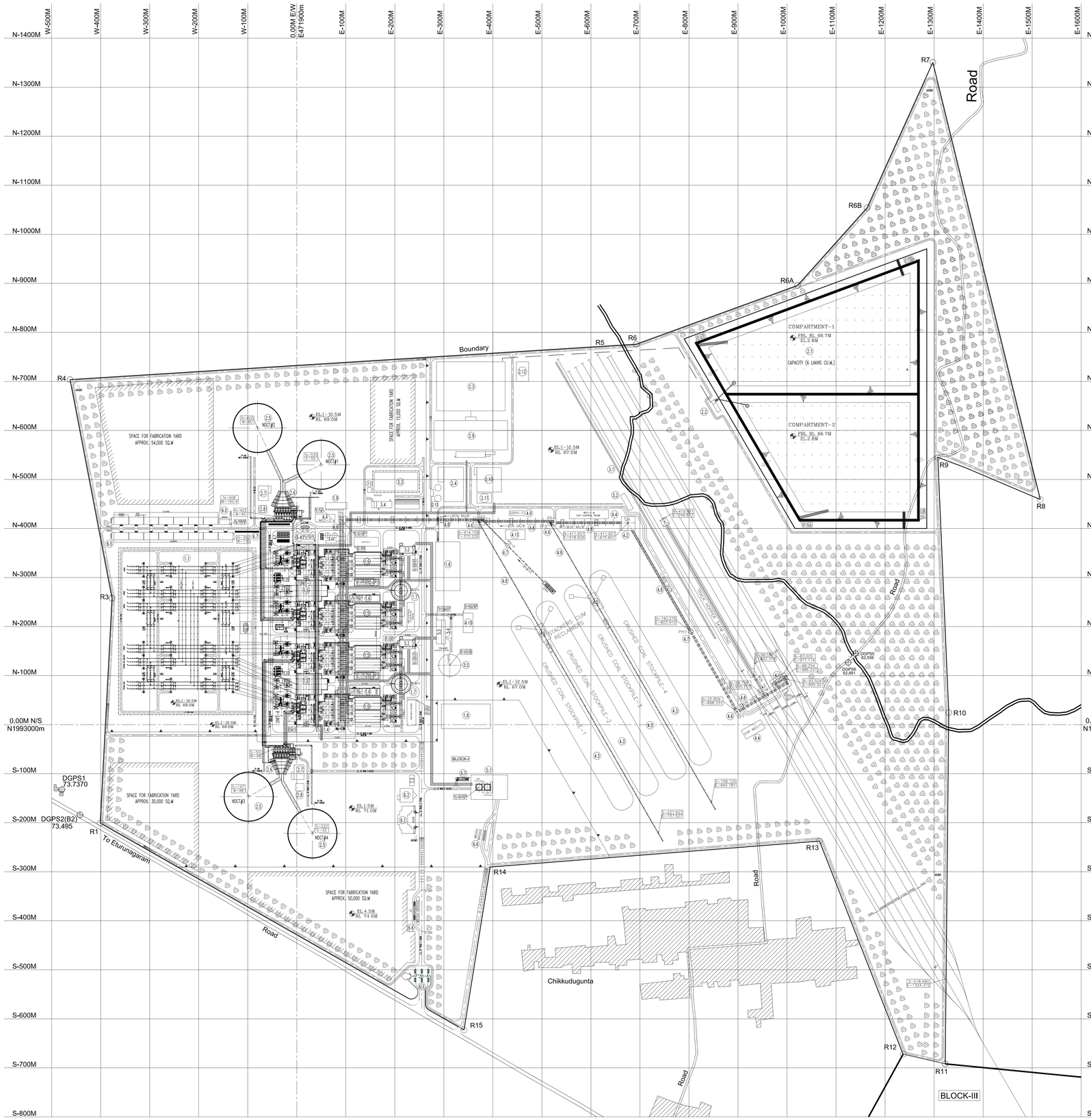
FIRST ANGLE PROJECTION

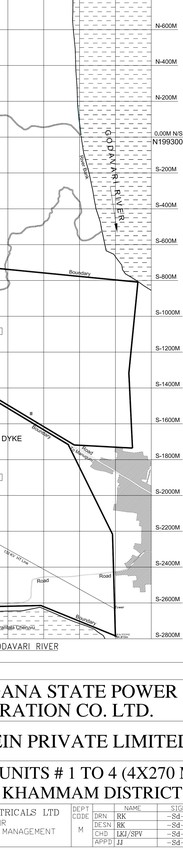
ALL DIMENSIONS ARE IN MM

DRAWING No. PE-DG-411-100-M001

CUSTOMER'S DRAWING No.

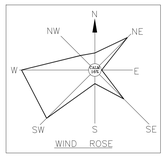
COMPUTER FILE NAME: 411-100-M001_01A.DWG





PLAN FOR ASH DYKE & GODAVARI RIVER
(SCALE 1:6000)

NORTH



WIND ROSE

TABLE	
FACILITY	DESCRIPTION OF FACILITIES
1.0	MAIN PLANT AREA
1.1	SWITCH YARD
1.2	TRANSFORMER YARD
1.3	TURBINE BUILDING
1.4	BOILER
1.5	ESP
1.6	ESP CONTROL ROOM
1.7	CHIMNEY
1.8	SPACE FOR FGD
1.9	IA & SA COMPRESSOR HOUSE
1.10	DG SET
2.0	WATER SYSTEM
2.1	RAW WATER RESERVOIR
2.2	RAW WATER PUMP HOUSE
2.3	PT PLANT
2.4	DM PLANT
2.5	NDCT
2.6	CW PUMP HOUSE
2.7	CW CHLORINATION PLANT FOR CW SYSTEM
2.8	CW TREATMENT PLANT FOR CW SYSTEM
2.9	CLARIFIED WATER STORAGE TANK & PUMP HOUSE
2.10	EFFLUENT TREATMENT PLANT
2.11	CHEMICAL LAB
2.12	SEWAGE TREATMENT PLANT
2.13	DM TANKS & DM TRANSFER PUMPS
2.14	CONDENSATE STORAGE TANKS AND CONDENSER MAKE UP & BOILER FILL PUMPS
3.0	FUEL OIL SYSTEM
3.1	FUEL OIL UNLOADING TRENCH
3.2	FUEL OIL UNLOADING AND PRESSURISING PUMP HOUSE
3.3	FUEL OIL STORAGE TANK AREA
3.4	FUEL OIL FORWARDING PUMP HOUSE
4.0	COAL HANDLING PLANT
4.1	WAGON TIPPLER
4.2	CRUSHER HOUSE
4.3	CRUSHED COAL STOCKPILE
4.4	CHP CONTROL ROOM
4.5	STACKER RECLAIMER
4.6	TRANSFER POINT (TP)
4.7	PENT HOUSE (PH)
4.8	COAL BELT CONVEYOR
4.9	DUST SUPPRESSION PUMP HOUSE
4.10	COAL PILE RUN OFF POND
4.11	BULL DOZER SHED
5.0	ASH HANDLING PLANT
5.1	FLY ASH SILOS
5.2	ASH SLURRY PUMP HOUSE
5.3	ASH WATER TANK
5.4	ASH WATER PUMP HOUSE
5.5	AHP CLARIFIER
5.6	AHP VACUUM CUM COMPRESSOR HOUSE
5.7	SILO UTILITY BUILDING
6.0	NON – PLANT BUILDING
6.1	ADMN. BUILDING
6.2	CANTEEN
6.3	MAIN GATE
6.4	SERVICE BUILDING
6.5	STORAGE SHEDS
6.6	WEIGH BRIDGE
6.7	PARKING SHEDS
7.0	FIRE FIGHTING SYSTEM
7.1	FOAM PUMP HOUSE
7.2	BOOSTER PUMP HOUSE
7.3	FIRE STATION

NOTES:–

1. ALL DIMENSIONS AND CO-ORDINATES ARE IN METER UNLESS NOTED OTHERWISE.
2. THE FINISHED FLOOR LEVEL (FFL) OF POWER HOUSE BUILDING GROUND FLOOR IS EL. 0.00M WHICH CORRESPONDS TO RL 69.5M i.e. 0.5M ABOVE FGL.
3. BOILER AREA FINISHED FLOOR LEVEL IS 200MM BELOW 0.0M i.e. RL 69.3M.
4. TRANSFORMER YARD FINISHED FLOOR LEVEL IS 100MM BELOW 0.0M i.e. RL 69.4M.
5. THE PIPE RACK SHOWN IS INDICATIVE ONLY.
6. ASH DYKE LOCATION IN BLOCK–II & RAILWAY MARSHALLING YARD (CUSTOMER SCOPE) ARE CONSIDERED AS PER DESEIN PLOT PLAN 111–29–0200 R1 DT. 31.12.14 RECD. VIDE MAIL DTD. 09.01.15. RAILWAY MARSHALLING YARD WILL BE UPDATED AS PER THE DRGS. FURNISHED BY CUSTOMER.
7. BOUNDARY WALL AND DIVERSION OF EXISTING ROADS, NALLAHS, WATER STREAMS & CANALS ARE IN CUSTOMER SCOPE.
8. RIVER WATER INTAKE UPTO IN–PLANT WATER RESERVOIR IS IN CUSTOMER SCOPE.
9. GREEN BELT (CUSTOMER SCOPE) IS SHOWN INDICATIVELY.

LEGENDS:

AREA BOUNDARY
ROAD
RIVER, STREAM
DGPS POINT WITH MSL LEVEL — DGPS-5 62.556
VILLAGE
PIPE/CABLE RACK
GREEN BELT

PROGRESSIVE DTD. 18.11.15

REV	DATE	ALTD	CHD	APPD
01A		RK		

1. FACILITIES 2.6, 4.4(MCC–3), 6.1, 6.2, 6.3, 6.4 & 6.5 UPDATED.
2. FACILITY 6.5 NEAR UNIT#4 SHIFTED NEAR UNIT#1.
3. EXTENT OF GRADING B/W N–100M TO S–100M & E–200M TO E–300M MODIFIED.
4. FACILITIES 1.8(U#3&4), 4.10 & 7.2 RELOCATED.
5. ALIGNMENT OF VARIOUS BUILDINGS & ROADS INCORPORATED.
6. FACILITIES 6.6 & 6.7 ADDED.
7. FACILITIES 3.3, 3.4 & 7.1 RELOCATED.

REV	DATE	ALTD	CHD	APPD
01	21.05.2015	RK	UKJ/SPV	JJ

1. DRG. REVISED CONSIDERING DESEIN COMMENTS VIDE LETTER NO. HYD/017 DT. 30.04.15.
2. FACILITIES No. 2.10, 2.11, 5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 6.1, 6.2 & 6.3 RELOCATED.
3. C.L. OF MAIN PLANT ROADS INCORPORATED.
4. STORAGE SHEDS SHOWN AS FACILITY No. 6.5.
5. FACILITIES 5.3, 5.4 & 5.5 SHOWN AS 1No. FOR ALL UNITS.
6. AOW PUMPS ACCOMMODATED IN CWPH.

CUSTOMER	
CUSTOMER'S CONSULTANT	
JOB No.	411
STATUS	CONTRACT
DISTRIBUTION	
TO	
No.OF??	

TELANGANA STATE POWER GENERATION CO. LTD.

DESEIN PRIVATE LIMITED

BHADRADRI TPS, UNITS # 1 TO 4 (4X270 MW), MANUGURU, KHAMMAM DISTRICT

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

DEPT		NAME	SIGN	DATE
CDDC	DRN	RK	-Sd-	24.04.15
M	DESN	RK	-Sd-	24.04.15
	CHD	UKJ/SPV	-Sd-	24.04.15
	APPD	JJ	-Sd-	24.04.15

TITLE

PLOT PLAN

MPL	C	MSE	I	MAX	E

DEPT. SCALE 1:3000 DRAWING No. PE–DG–411–100–M001

SIGN

DATE

SHEET 1 OF 1 REV. 01A

SIZE–A0

ANNEXURE-3

PROJECT: COAL HANDLING SYSTEM FOR BHADRADRI THERMAL POWER STATION - 4 X 270 MW

ANNEXURE-3: DATA SHEET FOR CONVEYOR BELTS TO BE FILLED BY THE BIDDER

Indent No.: IS-14-2007/093

Manufacturer Name & Address :

TABLE-1

	BELT TYPE	500/4 NN, thk. 8/3 mm	1600/4 NN, thk. 8/3 mm	800/4 NN, thk. 5/3 mm	1600/4 NN, thk. 5/3 mm
1	Belt width (mm)				
2	Relevant Standard				
3	Calculated Weight of Belt per Meter Length including cover (Kg)				
4	Calculated Weight of Belt per Meter Length with out Cover (Kg)				
5	Thickness of top cover in mm				
6	Thickness of bottom cover in mm				
7	Cover Grade				
8	Nominal Thickness of Carcass (mm)				
9	Leaflet/Catalogue enclosed (Yes/No)				
10	Belt Duty				
11	Factor of safety				
12	Belt Sag limited to 2%. Confirm Yes/ No				
13	Length of each splice Joint (m)				
14	Spacing of belt joint recommended (m)				
15	Elongation				
16	Belt Modulus (kN/m)				
17	Recommended Min Pulley dia for different Pulleys(.60%-100% of RMBT) A-Driving Pulleys and Pulleys exposed to high belt tension. B-Tail/Take-Up Pulleys in the return run under lower belt tension. C-Snub/Bend Pulleys for a change of direction of the belt of less than 30 degree.				
18	Breaking strength,				
19	Ref load (max),				
20	TS before ageing.				
21	Elongation at Break,				
22	Electrical & fire resistant properties				
	i) Flame test				
	ii)Drum friction Test				
	iii)Electrical Resistivity,				
23	Abrasion resistance				
24	Volume loss				
25	Shore hardness				
26	Adhesion value cover to ply				
27	Adhesion value ply to ply				
28	Troughability (min.) Applicable standard.				
29	Belt Joining requirment				

NOTE: TESTING AND INSPECTION SHALL BE AS PER TSGENCO/BHEL/DESEIN APPROVED QAP.