REF.: CE/416/CBLMS-3D/OT-V/PS	
REV.: 00	
PAGE: 1 of 10	

PURCHASE SPECIFICATION

FOR

3D TYPE ACOUSTIC WAVE LEVEL TRANSMITTER / SCANNER –

COAL BUNKER LEVEL MONITORING SYSTEM

REVISIONS: 00	APPROVED BY		
	S. K. TOPPO		
	PREPARED BY	ISSUED	DATE
	D. Ghosh	416	29/12/2020

CONTENTS

SECTION- A

GENERAL INSTRUCTIONS TO BIDDERS:

All required documents against this Tender/Specification shall be submitted in English only.

Introduction: Bidders are required to offer Coal Bunker Level Monitoring System – 3D Acoustic Wave Level Scanner in Power Plant applications.

In order to accept the Technical offers / proposals from Bidders for the project mentioned in this Specification (refer Sections C), certain Pre-qualification criteria are required to be met by Bidder.

Pre-qualification requirements are clearly mentioned in Section-B AA of this Specification. Bidder to read the same carefully and submit the details required for BHEL's acceptance.

In case Bidder does not submit the compliance to Pre-qualification requirements, their offer will be summarily rejected and Bidder's Technical offers will not be evaluated.

Evaluation methodology: BHEL shall initially open Bidder's PQR documents only as per Section-B of this specification for review & acceptance. Only after acceptance of PQR documents, BHEL shall open Bidder's technical offers for evaluation.

Bidders are required to submit offers as detailed below:

aa. Documents pertaining to Pre-Qualification requirement (Clause AA of Section B of this Specification) shall be in a separate cover / soft-folder with reference no. "Clause AA of Section B" marked on it.

bb. Documents pertaining to Pre-Qualification requirement (Clause BB of Section B of this Specification) shall be in a separate cover / soft-folder with reference no "Clause BB of Section B" marked on it.

cc. Technical offer/ proposal as per Sections C will be submitted in a separate cover / soft-folder with reference no. "Section-C" marked on it.

Note 1:-Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the vendor documents by End users/Customers, vendor shall accompany BHEL representative for discussions.

Note 2:- Deviations (if any) shall be discussed with only those bidders who quote for this tender.

SECTION- B

AA. Pre-Qualification Requirements (PQR) of Bidders for Coal Bunker level System – 3D type:

1. The bidder should have executed/ completed work of "Design, supply, supervision of erection & commissioning of Coal Bunker level System – 3D Acoustic Wave Level Scanner type in Power Plant of 200 MW or above capacity / similar solid medium silo application in Industries for at least 1 units within preceding Five (5) years as on the date of PQ bid opening.
2. Bidder shall offer suitable make and model whose guaranteed and trouble-free performance has been proven at least for two (2) years in not less than two (2) different reheat type pulverized coal fired units of unit size not less than 500 MW. Bidder shall submit End-user's performance certificate, in support of the same.
3. Original Equipment Manufacturers based outside India, who are making offer for this tender shall have authorized representatives in India for support related to Documentation, Erection, Commissioning & any other co-ordination work.
4. Submit Reference List of Projects wherein offered system is supplied & commissioned.
5. For Bidders offering upgraded / latest models, PQR of equivalent previous models is acceptable. OEM shall certify that offered model is upgraded version of previous existing model.
6. OEM shall furnish an undertaking that in case of change in Indian representative / agent, OEM shall continue to support supplies w.r.t to field service and supply of spare parts.
7. Bidder should be authorized and should have capacity to commission the system in India. The bidder should have the team of experienced service engineers (with documentary evidence).
8. Bidder shall have optimum inventory of critical components like sensors/ electronic modules.
9. BHEL shall issue call for service / commissioning with 15 days' notice. Bidder shall agree to visit BHEL project sites within above notice period.

Important note: In case Bidder does not submit details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily rejected and Bidder's Technical offers/proposals will not be evaluated.

BB. Along with the details related to PQR above, following additional documents shall also be included in the Offer for reference:

1. Technical literature / Manuals of offered Sensors/ System/ Accessories.
2. In the event of technical specification not indicated in Technical literature, confirmation from OEM is acceptable. Such confirmations shall be suitably supported by certificates like Type test / Routine test certificates.
3. Submit Unpriced Purchase Order copies for executed projects in the past five (5) years.
4. Submit List of Projects for which Erection & Commissioning has been carried out in the past five years & minimum one system. Also, submit reports of successful erection & commissioning Protocols & Minutes of the meetings for handing over of Coal Bunker level System – 3D Acoustic Wave Level Scanner type system for these projects.
5. Name & registered address of the Indian branch office or Indian representative for support of E&C and after sales service with Organization chart.
6. Bidder shall have facility in India for Engineering activities, preparation of Documents, trouble shooting and calibration of the system. Submit these details.
7. If Bidder is not Original Equipment Manufacturer (OEM), then Bidder to include Authorization letter from OEM for Design, Engineering, Manufacture, Testing, supply, Erection, Commissioning and Servicing of the offered System. This Authorization letter provided by OEM to Bidder shall indicate the Type and Duration of Validity of the agreement.
8. Bidders shall confirm to submit unit price of each components for each project as quoted; which shall be used for addition / deletion of items and mandatory spares supply, valid for the tenure of purchase order from the date of bid opening, for the commercially successful offer.

Bidder has to submit PQR checklist / tabulation sheet mentioning the page numbers / references from their submitted offer against Section-B (sub-section AA & BB).

SECTION- C

AA Project Synopsis:

MAHARASHTRA STATE POWER GENERATION CO. LTD. (MAHAGENCO) – BHUSAWAL THERMAL POWER STATION 1X660 MW UNIT – 6 PROJECT

Bhusawal Thermal Power Station is situated in the vicinity of village Fekori beside Mumbai – Nagpur National Highway No. 6 at a distance of about 8Km towards Nagpur from the Bhusawal town in Jalgaon district in Maharashtra.
Bhusawal TPS is connected by all-weather approach road tapped from NH 6.
Bhusawal is one of the important junctions on Mumbai–Nagpur–Howrah Central Railway and is about 450Km away from Mumbai.

BB Product Description:

3D type acoustic wave level transmitter with all required accessories for – Total **1 (one) unit** of the Coal fired Thermal Power Plant **with 4 (four) bunkers in each bay, i.e. total of 8 (eight) bunkers**.

CC Scope of Supply & Services:

Complete Level Monitoring System comprising of Acoustic Frequency Based 3D Level Scanners, PC, electronic modules, splitters, modems, junction boxes, mounting kit, enclosures, interconnecting cables, software and all other accessories required to make the system complete and fully functional, shall be provided for continuous level measurement and monitoring of level of each coal bunker as per technical requirement specified further.

Instrumentation cable required for transmitting the 4-20mA hardwired signals from Local Indicator Enclosure/s to DDCMIS will be supplied by BHEL.

Scope of Supply shall include Engineering, Manufacturing & Testing, and Services for sensor installation, Supervision of balance Erection activity, Commissioning & Training activities as per this specification.

DD Technical Requirement:

1.0 3 D TYPE ACOUSTIC WAVE LEVEL SCANNER

Type	:	One Set of Non-Contact Acoustic Frequency Waves Based 3D Level Scanner for each Coal Bunker
Protection Class	:	IP-65 or Better
Housing and Antenna	:	Die-Cast Aluminium
Accuracy	:	1% or Better
Measurement Range	:	Empty to Full (Coal Bunker)
Power Supply	:	24V DC for 3D Level Scanner, 230V AC for LMS PC
Local Indicator (Applicable for Coal Bunker)	:	For Each Bunker Bay, One Set of Local Indicators mounted at Tripper Floor for respective coal bunkers in that Bay. Above Local Indicators shall display Average Level of each Coal Bunker. Local Indicator shall be mounted inside an Enclosure with Transparent Window for Viewing. Degree of Protection of Enclosure – IP55 or Better

LMS PC	:	1 No. PC (in Programmer Room in Main Plant CCR/CR) for Coal Bunkers. Above PC shall display Average Level, Maximum Level, Minimum Level, Volume, Mass and Real Time Complete 3D Profile of each Coal Bunker.
4-20 mA isolated signal shall be hardwired to DDCMIS for displaying Average Level of each Coal Bunker. In addition to the information available in LMS PC, the vendor shall provide all required hardware and software to display the respective information on OWS located at Main Plant CCR/CR and separate OWS located in CHP DDCMIS. The vendor has to include all other required hardware, modems, connectors etc.		

2.0 Specification of Enclosure for mounting Local Indicators

a. Panel shall be made up of 2 mm thick CRCA steel sheet.
b. Anti-vibration pad of about 15 mm shall be provided.
c. Panel protection class shall be IP – 55 or better
d. Door shall be provided of 2 mm thick CRCA steel sheet.
e. Front door shall have a toughened glass for viewing local indicator/s.
f. 3 point locking system
g. Paint shade/s shall be :
   Exterior = Pebble Grey RAL 7032 (Semi Glossy)
   Interior = Brilliant White (Glossy)
   Internal colour shall be same as external colour

h. Panel painting shall be powder coated 100 microns thick or more.
i. Cutout with cable-gland plates shall be provided on the bottom of the Panel, for Cabling.
j. Suitable Lifting Hooks shall be provided on the Panel.
k. Provision shall be made in the Panel to accept one 24V DC power supply feeder, one 240 V AC UPS feeder and one 240 V AC Non-UPS feeder with required MCB's.
l. Terminals shall be Clip-on type for cable termination. 20 % spare terminals shall be offered.
m. Illumination shall be provided in the panel.

3.0 Specifications for LMS PC

a. CPU: 2nd Generation of i5 or better
b. Type: Tower
c. Graphic resolution: 800 x 600
d. Monitor: 24" Colour TFT monitor
e. Memory: 4 GB RAM or better
f. Hard Disk: 500 GB HDD or higher
g. DVD ROM
h. Operating System: Windows 8 or Windows 10 as compatible with the system
i. Software: Adobe Acrobat, Latest MS-Office (Word, Excel, PowerPoint, Outlook)
j. Antivirus software with IPS (Mcafee or equivalent)
k. Communication Port: 2 Ethernet ports, 2 USB ports
l. Expansion Slot: 5
m. Connectivity: Ethernet LAN
n. Accessories: 101 keys Keyboard and optical mouse with mouse-pad
o. Any other communication ports / Hardware as per 3 D level scanner requirement.
p. Preferred Makes: IBM, DELL & HP / COMPAQ.

4.0 Interconnecting cable

a. All interconnecting cables supplied by vendor shall be immune to environment, RFI and magnetic interference normally prevalent in the plant area. The interconnecting cables shall not be an integral part of the transmitter. The interconnecting cable shall have minimum 1 no. spare pair.

b. Vendor shall include 35 meters of interconnecting cable (armoured type) for each 3D transmitter up to Local Indicator Enclosure/s.

c. Vendor shall include interconnecting cable (armoured type) between CBLMS Panels and LMS PC; considering route length between each Panel (located in Bunker bay) to the LMS PC (located in Central Computer Room) as 500 meters and the route length between each Panel located in two separate bunker bays as 250 meters.

5.0 Mandatory Spares

	Coal Bunker Level Indicating System	
(a)	Sensors	20% or 2 nos. of each type whichever is more.
(b)	Electronic cards	10% or 2 nos. of each type and model whichever is more.
(c)	Panel indicators/ displays for bunker level	10% or 2 nos. of each type whichever is more.

Note: Vendor to offer above listed mandatory spares with unit prices.

EE Documentation Requirements:

1. Documents to be furnished, with the offer:-

1.1. Datasheets / Drawings of offered items / system
1.2 Technical Literature / Catalogs

2. Documents to be furnished, for Approval, in the event of order:-

2.1. System Architecture & Write-up
2.2. GA drawing of Enclosure showing overall dimension & layout of items housed inside.
2.3. Scanner location and installation drawing.
2.4. Datasheets, Component Drawings and BOM of offered items.
2.5. Electrical Schemes with Termination details for Power & Signal Wiring.
2.6. Technical Literature
2.7. Manufacturers Quality Assurance Plan.

The datasheet shall include the filled-up format, as below:

A.	Bunker Level Indicators		
A.1	Type & Make of main bunker level indicator	:	
A.2	Total number of 3D type acoustic wave level transmitter provided	:	(Nos.)
A.3	Accuracy (guaranteed)	:	
A.4	Type & Make of level indicator as back-up [for main bunker level indicator] for high/high level	:	
A.5	Accuracy of back-up level indicator (guaranteed)	:	
A.6	Total number of back-up level indicator provided	:	(Nos.)
A.7	Location of annunciation & indication provided (for above level indicators)	:	(Yes/No)

Note: All above documents shall be submitted in 2 sets of hardcopies. Also a Soft copy in “pdf” format of all the above documents shall be furnished.

3. Quality Documents to be submitted for approval, in the event of order:-
Test Certificates and Calibration Reports, for approval, before dispatch of items. The calibration reports shall correspond to range of the Transmitter.

4. Operation and Maintenance (O & M) Manual:-
2 sets hardcopies along with consignment to site. Also, a soft copy of O&M manual to be provided to BHEL-EDN.

FF Erection & Commissioning Requirements:

1. Erection and Commissioning Training requirement for offered System

1.1 A representative of bidder shall visit site with approved BOM for validation of supplies made

1.2 Supervision of Erection of Transducer on Top of each Bunker.

1.3 Supervision of Erection of balance items

1.4 Total Commissioning and handing over of the offered systems offered to Owner / End user.

1.5 Bidder to include one site visit of min. 5 man-days during Performance Availability Test.

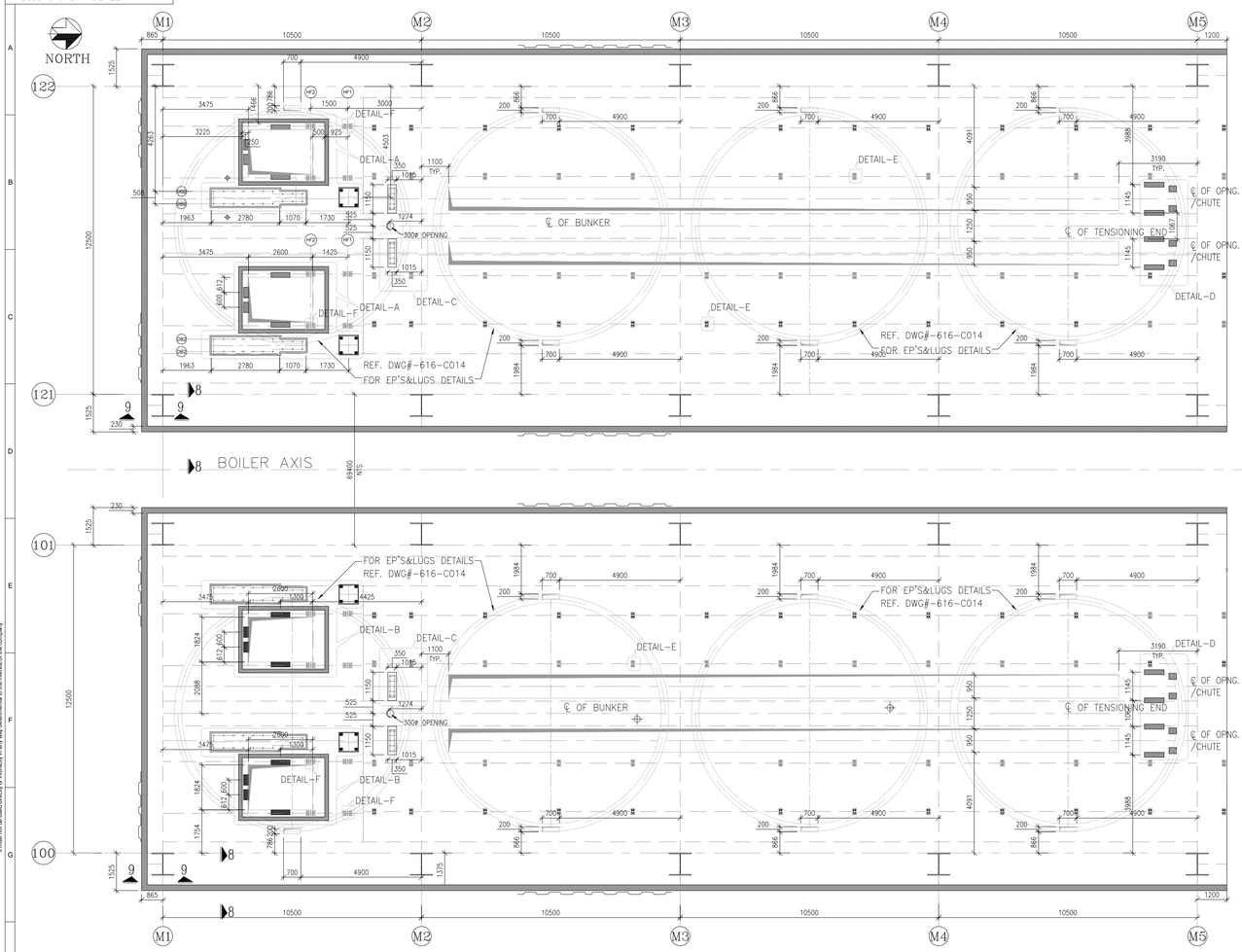
1.6 Three days of Training to Site Engineer/s at Site.

GG – BUNKER DRAWINGS

DRAWING No. PE-DG-415-616-C005

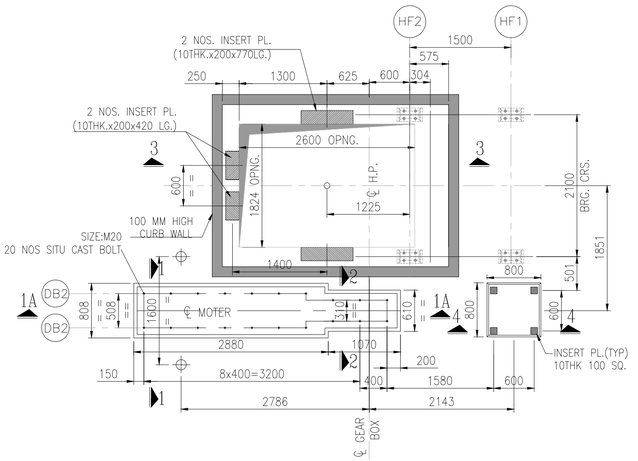
FIRST ANGLE PROJECTION | ALL DIMENSIONS ARE IN MM

CUSTOMER'S DRAWING No. PE-DG-415-616-C005

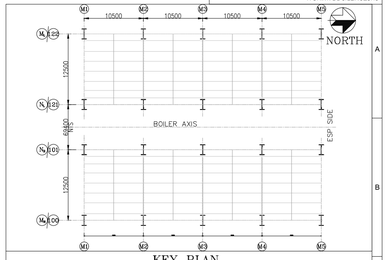


PLAN AT EL(+)63.883M(FFL)

(SCALE 1:100)



AS SHOWN FOR DETAIL-A AS PER PLAN & MIRROR FOR DETAIL-B



KEY PLAN

NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO POWER HOUSE FINISHED FLOOR FLOOR ELEVATION EL.(±)0.00M WHICH CORRESPONDS TO RL.209.00M
3. UNLESS NOTED OTHERWISE WINDOW / DOOR/ ROLLING SHUTTER LOCATION SHALL BE AT CENTER BETWEEN GRIDS.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, SPECIFICATION AND SCHEDULE OF ITEMS.
5. CONCRETE GRADE USED SHALL BE M25.
6. BAR MARKED Y DENOTES TOR STEEL OF GRADE Fe–500 CONFORMING TO IS:1786.
7. BEFORE CONSTRUCTION OF INSERT PLATES & OPENINGS IN RCC. SLAB, REFER LATEST APPROVED ELECTRICAL DRAWINGS OF MV SWGR .
8. FOR OTHER GENERAL NOTES & STD. DET. REF. DRG. NO PE–DG–415–612–C002

REFERENCE DRGS.:–

1. PE–DG–415–100–M001 – PLOT PLAN
2. IS–1–GA–715–101–M012A–R2 – GA & LOAD DATA FOR CHP BUNKER FLOOR
3. 0–47–260–02735–R0– FUEL PIPING LOADING PLAN
4. 0–34–400–01928–R0– MILL & BUNKER BAY(RHS) TRANS BEAMS DETAILS–1
5. 0–34–400–01929–R0– MILL & BUNKER BAY(RHS) TRANS BEAMS DETAILS–2

ARCHITECTURAL DRGS.:–

1. PE–DG–415–600–C005 – ARCHITECTURAL STANDARD DETAILS
2. PE–DG–415–600–C006 – ARCHITECTURAL STANDARD DETAILS OF WINDOWS, VENTILATORS & PARTITION
3. PE–DG–415–600–C007 – ARCHITECTURAL STANDARD DETAILS OF DOORS & ROLLING SHUTTERS
4. PE–DG–415–616–C016 – MILL & BUNKER–ARCHITECTURAL ELEVATION
5. PE–DG–415–616–C017 – MILL & BUNKER–ARCHITECTURAL PLAN AND GABLE END ELEVATION

STRUCTURAL DRGS.:–

1. PE–DG–415–616–C007(SH1)–MILL & BUNKER(RHS)–LONGITUDINAL FRAMING
2. PE–DG–415–616–C007(SH2)–MILL & BUNKER(LHS)–LONGITUDINAL FRAMING
3. PE–DG–415–616–C007(SH1)–MILL & BUNKER(RHS)–TRANSEVERSE FRAMING
4. PE–DG–415–616–C007(SH2)–MILL & BUNKER(LHS)–TRANSEVERSE FRAMING
5. PE–DG–415–616–C013 –MILL & BUNKER–DETAILS OF CLADDING RUNNERS
6. IS–1–GA–715–C022–R1 – BOM 6A/B –GA & DETAILS OF GALLERY & TRESTLES
7. PE–DG–415–616–C011 – MILL & BUNKER–FRAMING PLAN OF TRIPPER FLOOR AT 63.649(TOS)
5. PE–DG–415–616–C014&15 –MILL & BUNKER–G.A OF BUNKER & SUPPORTING DETAIL

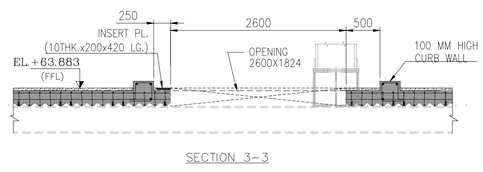
LEGENDS:–

CONCRETE HATCH
–BRICK WALL
EF – EXHAUST FAN
EL – ELEVATION
FFL – FINISHED FLOOR LEVEL
TYP – TYPICAL
TOG – TOP OF GRATING
B/F – BOTH FACE
– GRATING FLOOR
– FLOOR OPENING

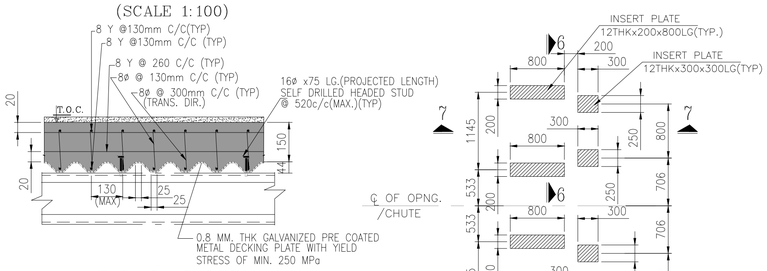
EL(+)X.XXX – LEVEL TAG
TOC – TOP OF CONCRETE
TOP – TOP OF PARAPET
UNO – UNLESS NOTED OTHERWISE
AGP – ALUMINIUM GLAZED PARTITION
–HAND RAIL
–RWDP
– REMOVABLE GRATING FLOOR
– REMOVABLE CHEQUERED PLATE

BILL OF MATERIAL

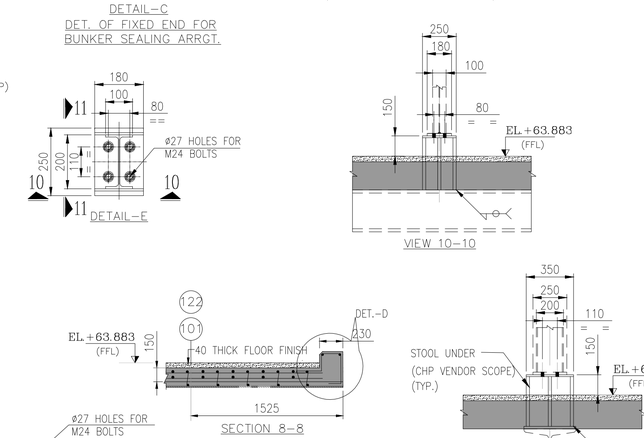
RCC	222 Cum.



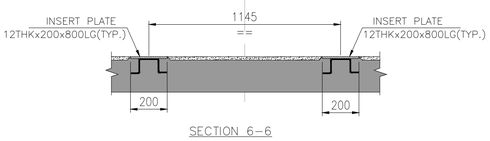
SECTION 3–3



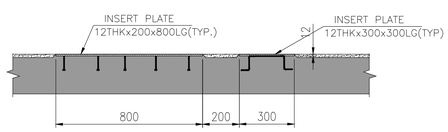
TYP. SLAB DETAIL



DETAIL–D
DET. OF TENSIONING END FOR BUNKER SEALING ARRGT.



SECTION 6–6



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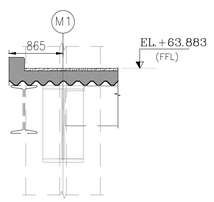

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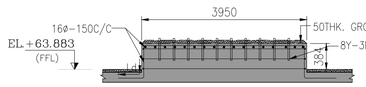
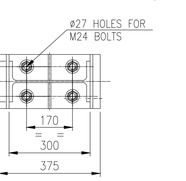


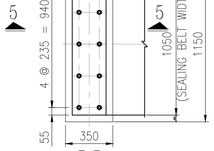
SECTION 1A–1A



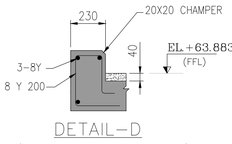
DETAIL–F

DETAIL–E

SECTION 8–8



DETAIL–C
DET. OF FIXED END FOR BUNKER SEALING ARRGT.



DETAIL–D
(SLAB REINF. NOT SHOWN)

VIEW 10–10

VIEW 11–11

BHEL–PROJECT ENGINEERING MANAGEMENT(CIVIL)	
THIS DRAWING MARKED(✓) IS RELEASED FOR	
☑ COMMENTS/APPROVAL	
☐ PLANNING/INFORMATION	
☐ CONSTRUCTION	
STAMP ALL PREVIOUS REVISION AS SUPERSEDED	
ISSUED BY	
NAME	JAY KR JALAJ
SIGNATURE	–SD–
DATE	20.04.2020

MAHAGENCO

MAHARASHTRA STATE POWER GENERATION CO.LTD.
BHUSAWAL T.P.S. UNIT–6 : 1 X 660 MW PROJECT

DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
VASHI, NAVI MUMBAI

1 X 660 MW BHUSAWAL T.P.S. UNIT–6 TPP

JOB NO.	415
STATUS	CONTRACT
DISTRIBUTION	

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

REV.	DATE	ALTD	CHD	APPD.	REV.	DATE	ALTD	CHD	APPD

DEPT CODE		NAME	SIGN	DATE
C	DRN	ASHISH	–Sd–	20.04.2020
	DESN	JKJ	–Sd–	20.04.2020
	CHD	AB	–Sd–	20.04.2020
	APPD	AKS	–Sd–	20.04.2020

TITLE: BUNKER BAY
RC DETAILS OF TRIPPER FLOOR AT 63.883(FFL)

CUSTOMER PACKAGE CODE			CVL					SCALE 1:100	DRAWING NO. PE–DG–415–616–C005			
DISCIPLINE	M	C	E	I	L				SHEET 1 OF 1	REV. 00		

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Apr 25, 2020 – 4:05pm ROs SIZE-A0

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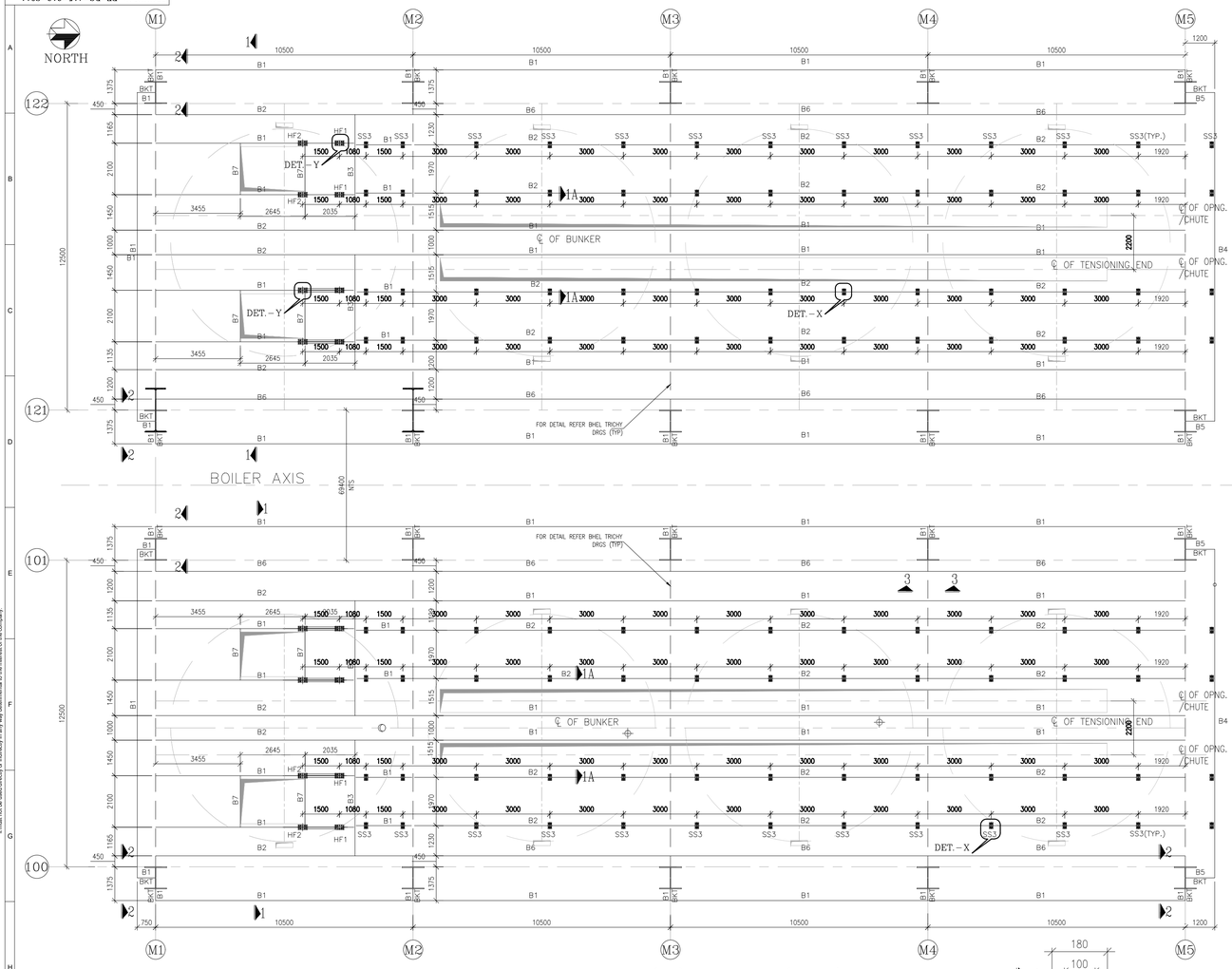
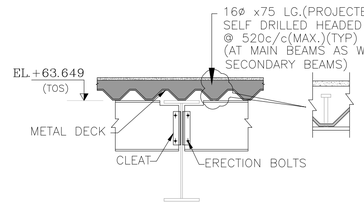
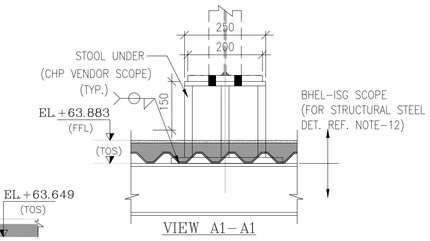


SCHEDULE OF MEMBERS

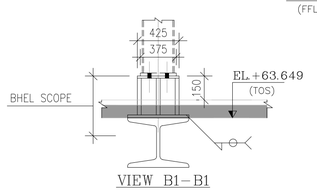
DESIGNATION	SECTION: BUILT UP SECTION D	B	TF	TW	ROLLED SECTIONS	SHAPE	TOS	REMARK
B1	–	–	–	–	ISMB 600	I	EL 63.649	–
B2	750	350	28	20		I	EL 63.649	REF DET – C
B3	650	250	25	20		I	EL 63.649	REF DET – C
B4	1100	600	25	25		I	EL 63.649	REF DET – C
B5	1100	600	40	28	–	I	EL 62.992	–
B6	–	–	–	–	ISMB 600+ 250X12TH. PLT	I	EL 63.649	–
B7	–	–	–	–	ISMB 250	I	EL 63.649	–
B8	1400	800	45	32		I	EL 63.649	REF DET – C



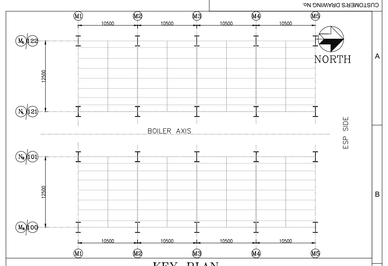
SECT 3-3



VIEW A1-A1



VIEW B1-B1



KEY PLAN

NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO POWER HOUSE FINISHED FLOOR FLOOR ELEVATION EL.(±)0.00M WHICH CORRESPONDS TO RL.209.00M
3. UNLESS NOTED OTHERWISE WINDOW / DOOR/ ROLLING SHUTTER LOCATION SHALL BE AT CENTER BETWEEN GRIDS.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, SPECIFICATION AND SCHEDULE OF ITEMS.
5. ALL CONNECTION DETAILS WILL BE PROVIDED IN THE FABRICATION DRAWINGS.
6. ALL CONNECTION ARE SHEAR CONNECTION UNLESS NOTED OTHERWISE.
7. FOR OTHER GENERAL NOTES & STD. DET. REF. DRG. NO PE-DG-392-612-C002
8. ALL SHOP SPLICING SHALL BE FULL STRENGTH BUTT WELD.
9. ALL STRUCTURAL STEEL AND PLATES SHALL CONFIRM TO IS:2062-2006.
10. MINIMUM THICKNESS OF WELD SHALL BE 6 MM.
11. SUPPLY OF STOOLS & BOLTS BY BHEL-ISG MECHANICAL VENDOR & INSERTS BY BHEL-ISG.
12. ALL STOOLS ARE TO BE WELDED TO THE FLOOR BEAMS PRIOR TO CONCRETING BY SITE.
13. ALL COLUMNS IN BHEL TRICHY SCOPE.

REFERENCE DRGS.:–

1. PE-DG-415-100-M001 – PLOT PLAN
2. IS-1-GA-715-101-M012A-R2 – GA & LOAD DATA FOR CHP BUNKER FLOOR
3. 0-47-260-02735-R0– FUEL PIPING LOADING PLAN
4. 0-34-400-01928-R0– MILL & BUNKER BAY(RHS) TRANS BEAMS DETAILS-1
5. 0-34-400-01929-R0– MILL & BUNKER BAY(RHS) TRANS BEAMS DETAILS-2

ARCHITECTURAL DRGS.:–

1. PE-DG-415-600-C005 – ARCHITECTURAL STANDARD DETAILS
2. PE-DG-415-600-C006 – ARCHITECTURAL STANDARD DETAILS OF WINDOWS, VENTILATORS & PARTITION
3. PE-DG-415-600-C007 – ARCHITECTURAL STANDARD DETAILS OF DOORS & ROLLING SHUTTERS

STRUCTURAL DRGS.:–

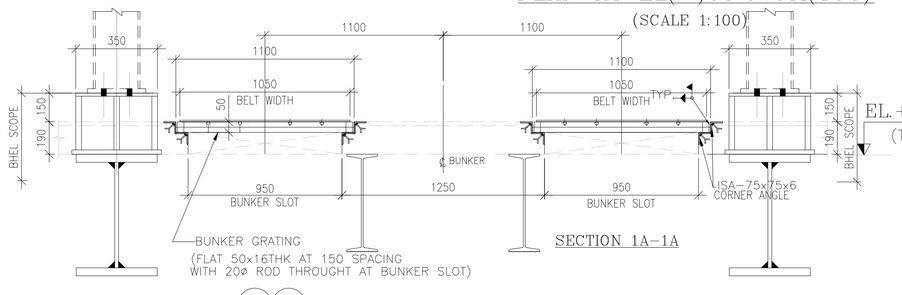
1. PE-DG-415-616-C007(SH1)–MILL & BUNKER(RHS)–LONGITUDINAL FRAMING
2. PE-DG-415-616-C007(SH2)–MILL & BUNKER(LHS)–LONGITUDINAL FRAMING
3. PE-DG-415-616-C007(SH1)–MILL & BUNKER(RHS)–TRANSEVERSE FRAMING
4. PE-DG-415-616-C007(SH2)–MILL & BUNKER(LHS)–TRANSEVERSE FRAMING
5. PE-DG-415-616-C013 –MILL & BUNKER–DETAILS OF CLADDING RUNNERS
6. IS-1-GA-715-C022-R1 – BCN 6A/B –GA & DETAILS OF GALLERY & TRESTLES

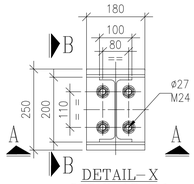
LEGENDS.:–

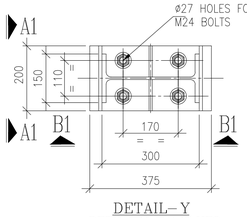
CONCRETE HATCH
–BRICK WALL
EF – EXHAUST FAN
EL – ELEVATION
FFL – FINISHED FLOOR LEVEL
TYP – TYPICAL
TOG – TOP OF GRATING
B/F – BOTH FACE
– GRATING FLOOR
– FLOOR OPENING

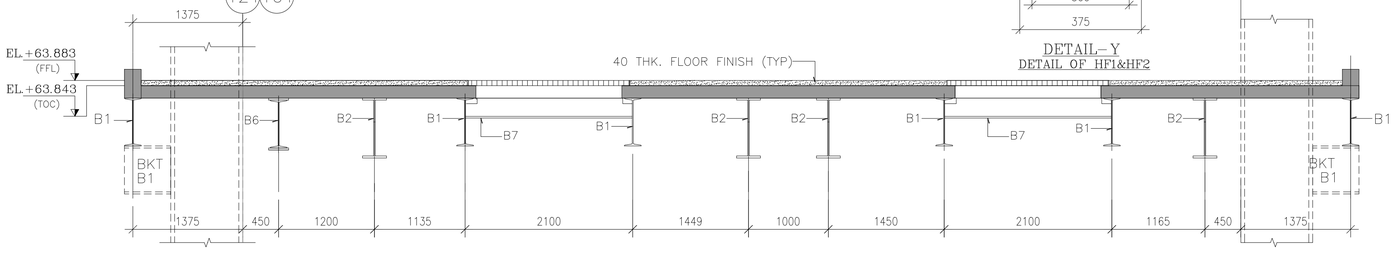
EL(+)X.XXX – LEVEL TAG
TOC – TOP OF CONCRETE
TOP – TOP OF PARAPET
UNO – UNLESS NOTED OTHERWISE
AGP – ALUMINIUM GLAZED PARTITION
–HAND RAIL
–RWDP
– REMOVABLE GRATING FLOOR
– REMOVABLE CHEQUERED PLATE

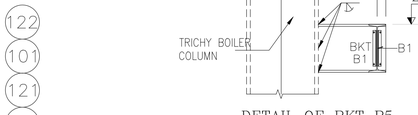
QANTITY OF STRUCTURAL STEEL=190MT

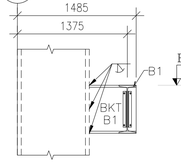


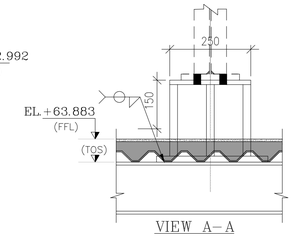


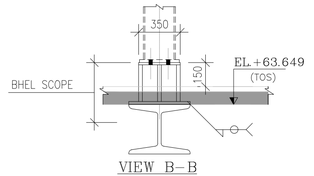












BHEL–PROJECT ENGINEERING MANAGEMENT(CIVIL)	
THIS DRAWING MARKED(☑) IS RELEASED FOR	
☑ COMMENTS/APPROVAL	
☐ PLANNING/INFORMATION	
☐ CONSTRUCTION	
STAMP ALL PREVIOUS REVISION AS SUPERSEDED	
ISSUED BY	
NAME	JAY KR JALAJ
SIGNATURE	–SD–
DATE	20.04.2020

MAHAGENCO

MAHARASHTRA STATE POWER GENERATION CO.LTD.
BHUSAWAL T.P.S. UNIT–6 : 1 X 660 MW PROJECT

DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
VASHI, NAVI MUMBAI

1 X 660 MW BHUSAWAL T.P.S. UNIT–6 TPP

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

JOB NO. 415
STATUS CONTRACT
DISTRIBUTION

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

DEPT CODE		NAME	SIGN	DATE
C	DRN	ANOOP	–Sd–	20.04.2020
	DESN	JKJ	–Sd–	20.04.2020
	CHD	AB	–Sd–	20.04.2020
	APPD	AKS	–Sd–	20.04.2020

TITLE
BUNKER BAY
FRAMING PLAN OF TRIPPER FLOOR AT 63.649(TOS)

CUSTOMER PACKAGE CODE		CVL				SCALE 1:100	DRAWING NO. PE-DG-415-616-C011
DISCIPLINE	M	C	E	I	L		SHEET 1 OF 1 REV. 00

Apr 25, 2020 – 4:03pm R0a SIZE-A0