



SECL

**SOUTH EASTERN COALFIELDS
LIMITED (SECL)**

TENDER DOCUMENT

FOR

**COAL GASIFICATION BASED AMMONIA PLANT
ON
BUILD-OWN-OPERATE (BOO) BASIS**

(PNMM/PC-277/E-4001, DATED 29.01.2022)
(INTERNATIONAL COMPETITIVE BIDDING)

AT

**MAHAMAYA SCG PLANT, BHATGAON AREA,
SURAJPUR DISTRICT, CHHATTISHGARH, INDIA**

PREPARED & ISSUED BY



**PROJECTS & DEVELOPMENT INDIA LTD.
(A Govt. of India Undertaking)
PDIL BHAWAN, A-14, SECTOR-1,
NOIDA, U.P., (INDIA)**

January, 2022



**COAL GASIFICATION BASED AMMONIA PLANT ON
BUILD-OWN-OPERATE (BOO) BASIS
FOR SOUTH EASTERN COALFIELDS LIMITED**
MASTER INDEX

PC-277/E/4001/MI

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INVITATION FOR BID (IFB)

INVITATION FOR BID (IFB)

Ref.: PNMM/PC-277/E-4001

Date: 29.01.2022

To,

PROSPECTIVE BIDDERS

SUBJECT : COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED

TENDER NO. : PNMM/PC-277/E-4001

Dear Sir/Madam,

1.0 INTRODUCTION

South Eastern Coalfields Limited (SECL) is the largest coal producing company of India. It is a "Mini Ratna" Company, and one of eight fully owned subsidiaries of Coal India Limited. For effective administrative control and operation, the mines have been grouped in three Coalfields, namely, Central India Coalfields (CIC), Korba Coalfields and Mand-Raigarh Coalfields with 13 operating Areas. The company has its headquarter at Bilaspur, Chhattisgarh, India and 92 mines spread over Chhattisgarh & Madhya Pradesh; 70 underground, 21 opencast, and 1 mixed. It is a schedule 'B' Mini Ratna CPSE in coal & lignite under the administrative control of Ministry of Coal.

Coal India Limited (CIL) was incorporated on 01st November 1975 with nationalization of private coal mines by Govt. of India. With a modest production of 79 MT at the year of its inception, CIL today is the single largest coal producer in the world having produced nearly 607 MT.

CIL is a Schedule 'A' Maharatna CPSE under the administrative jurisdiction of Ministry of Coal, Government of India, with its registered and corporate office located at Kolkata (India). It operates through its subsidiaries spread over eight states (provinces) in India namely Jharkhand, West Bengal, Orissa, Chhattisgarh, Madhya Pradesh, Uttar Pradesh, Maharashtra and Assam.

CIL has a foreign subsidiary in Mozambique namely, Coal India Africana Limited (CIAL). Mahanadi Coalfields Limited has four subsidiary companies and one JV company. South Eastern Coalfields Limited has two subsidiary companies, and Central Coalfields Limited has one subsidiary company.

During 2019-20, CIL and its subsidiaries produced 602.15 MT of coal. During the FY 2019-20, the gross sales about 17.8 bn, PBT and PAT of CIL were approx. INR 240.713 bn and 167.003 bn respectively.

Our Hon'ble Prime Minister, Shri Narendra Modi's vision is to use 100 MT of coal for coal gasification by 2030.

In view of above further GOI's directive, for 100 Million MT Gasification of coal per annum for end use products like Methanol, Ammonia, SNG and Petrochemicals. Eastern Coalfields

In view of above, M/s south Eastern Coalfields Limited has decided to build a world class Coal based Ammonia Complex. The Coal to Ammonia complex is to be built at Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattishgarh (India) and will consist of Coal Gasification Plant, Ammonia Plant, along with Offsite and Utility Plants. South Eastern Coalfield Limited, intend to invite quotations from eligible contractors on BOO basis for building of Whole Complex for production of Ammonia.

2.0 Coal in India

Coal is the most important and abundant fossil fuel in India. It accounts for 55% of the country's energy need. The country's industrial heritage was built upon indigenous coal. Indian coal offers a unique eco-friendly fuel source to domestic energy market for the next century and beyond. Hard coal deposits, spread over 27 major coalfields, are mainly confined to eastern and south central parts of the country. The lignite reserves stand at a level around 36 billion tonnes, of which 90 % occur in the southern state of Tamil Nadu.

The Ministry of Coal has the overall responsibility of determining policies and strategies in respect of exploration and development of coal and lignite reserves, sanctioning of important projects of high value and for deciding all related issues.

Under the administrative control of the Ministry, these key functions are exercised through the Public Sector Undertakings, namely, Coal India Ltd. and its subsidiaries and Neyveli Lignite Corporation Limited. Other than Coal India Ltd. and Neyveli Lignite Corporation Ltd., the Ministry of Coal has also a joint venture with Government of Andhra Pradesh called Singareni Collieries Company Limited. Government of Andhra Pradesh holds 51% equity and Government of India holds 49 % equity.

Coal Resources In India

Coal deposits in India are mainly distributed along the present day river valleys. Major coal deposits are confined to south and south-eastern quadrant of the country. Coal deposits are of drift origin and high in extraneous ash content.

There are 44 known coalfields located in the peninsular India containing 95% of total resources. Total estimated geological resource of coal, as on April 01' 14 is 302 billion tonnes, out of which about 114 billion tonnes is of 'proven' category.

3.0 BRIEF SCOPE OF WORK:

- 3.1 South Eastern Coalfields Limited (SECL) intends to setup a Coal to Ammonia (C2A) Project through Coal Gasification route on Build-Own-Operate (BOO) basis at South Eastern Coalfields Limited, Chhattisgarh, India for life of the plant (expected period 25 years). The scope shall be as defined in the Tender documents and shall broadly cover the following - Design, Build, Own, Operate & Maintain Production Plant(s), transfer required product(s) to storage in the proposed plant during its contracted period will be the responsibility of the BOO Processor.

The project shall broadly comprise the following plants and facilities:

- (a) Coal Handling System including Crushing-Milling-Drying Unit
- (b) Air Separation Unit
- (c) Coal Gasification Including Purification unit
- (d) Ash Handling
- (e) Ammonia Synthesis Plant(2200 MTPD) along with storage & loading facilities
- (f) Associated Offsite and Utilities Facilities

Projects & Development India Ltd. (PDIL) has been retained as Consultant for selection of (Build Own Operate (BOO) Processor for the project.

4.0 LOCATION OF THE PROJECT SITE

The proposed project site is adjacent to Mahamaya SCG Plant and located in Surajpur district of Chhattisgarh. The proposed site is at a distance of 40 Kms from the nearest Town Ambikapur, which is well-connected with State highway no. 14, Ambikapur– Varanasi Road & with South East Central Railway zone Lines of Indian Railways, as well as by the Nearest railway siding is Bhatgaon siding about 3 Km away. Nearest Railway Station is Karonji at a distance of 25 km.

Raipur (Chhattisgarh), Ranchi (Jharkhand) and Varanasi (U.P.) Airports are around 330-340 Kms away from the proposed Site.

5.0 Bidding Process

5.1 The "INVITATION FOR BID" and "Instruction to Bidders" is placed on the website of PDIL (www.pdilin.com), SECL (<http://www.secl-cil.in>), and CPP portal (<https://eprocure.gov.in/eprocure/app>).

5.2 This Invitation for bid briefly provides the Bidders with guidance, requirements and instructions for submitting a fully compliant and responsive bid. The Invitation for bid is an integral and inseparable part of the bidding document.

5.3 Salient features of bidding document:

A.	NAME OF WORK / BRIEF SCOPE OF SERVICE/JOB	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED					
B.	TENDER NO. & DATE	PNMM/PC-277/E-4001, Date 28.01.2022					
C.	TYPE OF BIDDING SYSTEM	<table border="1"> <tr> <td>SINGLE BID SYSTEM</td> <td><input type="checkbox"/></td> </tr> <tr> <td>TWO BID SYSTEM</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	SINGLE BID SYSTEM	<input type="checkbox"/>	TWO BID SYSTEM	<input checked="" type="checkbox"/>	
SINGLE BID SYSTEM	<input type="checkbox"/>						
TWO BID SYSTEM	<input checked="" type="checkbox"/>						
D.	TYPE OF TENDER	OPEN INTERNATIONAL COMPETITIVE BIDDING (ICB)					
	MODE OF SUBMISSION	E-TENDER, THROUGH CPP PORTAL					
E.	COMPLETION PERIOD/CONSTRUCTION PERIOD	48 Months					
F.	BID SECURITY / EARNEST MONEY DEPOSIT (EMD)	INR 20 (Twenty) million					
G.	AVAILABILITY OF TENDER DOCUMENT ON WEBSITE(S)	PDIL (https://pdilin.com) SECL (http://www.secl-cil.in) CPP Portal (https://eprocure.gov.in/eprocure/app)					
H.	LAST DATE OF RECEIPT OF BIDDER'S QUERIES	18.02.2022					

I.	DATE, TIME & VENUE OF PRE-BID MEETING	24.02.2022, 11:00 Hrs. (IST) at PDIL, Noida / or Video Conference
J.	BID SUBMISSION START DATE & TIME	13.04.2022, 10:00Hrs (IST)
	DUE DATE & TIME FOR BID SUBMISSION	28.04.2022, 15:00 Hrs. (IST)
K.	DATE, TIME & VENUE FOR UN-PRICED BID OPENING	29.04.2022at 15:00 Hrs. (IST) Venue: M/s Projects & Development India Limited, P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. GautamBudh Nagar (UP). (India)
L.	ADDRESS FOR COMMUNICATION	
i)	PDIL	Projects & Development India Limited, (Materials Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. GautamBudh Nagar (UP). (India) Kind Attention: Mr.P.R.Sahu, Addl. General Manager (M.M) Fax no.: +91-120-2529801 Tel no.: +91-120-2544063 E-mail: prsahu@pdilin.com ; anjali@pdilin.com ; dkchaturvedi@pdilin.com
ii)	SECL	South Eastern Coalfields Limited (SECL) Office of GM,CED SECL HQ, Seepat Road Distt.-Bilaspur-495006, Chattisgarh(India) Kind Attention: MrArup Dutta Choudhury General Manager(Clean Energy Department) SECL(HQ),Bilaspur Ph: 9425531776 E-mail : hod-ced.secl@coalindia.in
iii)	CMPDI	Central Mine Planning & Design Institute (CMPDI) Gondwana Place, Kanke Road Ranchi-834031 (Jharkhand) India MrChiranjibPatra General Manager Clean Energy Department (CED) Tel: +91-651-2230011 / 2792307 Fax: +91-651-2233314 / 2231447

		M:+91-8987788877/ 7004123217 E-mail: hodcbm.cmpdi@coalindia.in asheeshkumar.cil@coalindia.in
M.	ORIGINAL DOCUMENTS TO BE SUBMITTED AT	M/s Projects & Development India Limited, P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. Gautam Budh Nagar (UP). (India) Kind Attention: Mr. P.R.Sahu, Addl. General Manager (M.M) Fax no. : +91-120-2529801 Tel no. : +91-120-2544063 E-mail : prsahu@pdilin.com anjali@pdilin.com dkchaturvedi@pdilin.com
N.	CONTACT PERSON FOR SITE VISIT	South Eastern Coalfields Limited (SECL) Office of GM,CED SECL HQ, SEEPAT ROAD BILASPUR-495006, CHATTISGARH (INDIA) Kind Attention: Mr. Arup Dutta Choudhury General Manager(Clean Energy Department) SECL(HQ), Bilaspur Ph: 9425531776 E-mail : hod-ced.secl@coalindia.in

In case the days specified above happens to be a holiday in SECL/PDIL, the next working day shall be implied.

- 6.0 Bids must be submitted strictly in accordance with Clause No. 13 of Instruction to Bidder (ITB) depending upon Type of Tender as mentioned at Clause no. 5.0 (D) of IFB. The IFB is an integral and inseparable part of the bidding document.
- 7.0 The following documents in addition to uploading the bid on CPP Portal (<https://eprocure.gov.in/eprocure/app>) shall also be submitted in Original (in physical form) within 7 (seven) days from the bid due date provided the scanned copies of the same have been uploaded on CPP Portal (<https://eprocure.gov.in/eprocure/app>) by the bidder along with e-bid within the due date and time to the address mentioned in Clause no. 5.0 (M) of IFB:-
- i) Earnest Money Deposit (EMD)
 - ii) Power of Attorney
 - iii) Pre-Signed Integrity Pact
 - iv) Original Letter of TPI as per Annexure-1.15
 - v) Letter of No Deviation as per Annexure-1.6
- 8.0 Bidder(s) are advised to quote strictly as per terms and conditions of the tender documents and not to stipulate any deviations/exceptions.
- 9.0 Any bidder, who meets the Pre-Qualification Criteria(PQC) enclosed at Section-2, Volume-1, Commercial and wishes to quote against this Tender Document, may download the complete

Tender Document along with its amendment(s) if any, from websites as mentioned at 5.0 (G) of IFB and submit their Bid complete in all respect as per terms & conditions of Tender Document on or before the Due Date & Time of Bid Submission.

10.0 Bid(s) received from bidders to whom tender/information regarding this Tender Document has been issued as well as offers received from the bidder(s) by downloading Tender Document from above mentioned website(s) shall be taken into consideration for evaluation & award provided that the Bidder is found responsive subject to provisions contained in PQC and ITB.

The Tender Document calls for offers on single point responsibility basis and in total compliance of Scope of Works as specified in Tender Document.

11.0 Any revision, clarification, corrigendum, time extension, etc. to this Tender Document will be hosted on the above mentioned website(s) only as per Clause No. 5.0 (G) of IFB. Bidders are requested to visit the website regularly to keep themselves updated.

12.0 The bidder shall submit the bid online through Central Public Procurement (CPP) Portal. Bids complete in all respects should be uploaded in the CPP portal on or before the Bid Due Date and time mentioned in at Sl. No. 5.0 (J) above. Bids through Post/ Fax / E-mail /CD/ any other mode other than that specified in ITB will not be accepted.

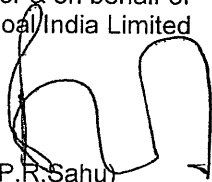
13.0 In the terms of the agreement the land will be provided on lease basis to the prospective bidder for the purpose of setting up the plant .The successful bidder will not have any perpetual right, title interest in the said land either as tenant or otherwise.

14.0 OWNER/PDIL reserves the right to reject any or all the bids received at its discretion without assigning any reason whatsoever.

This is not an Order.



Thanking You,

For & on behalf of
Coal/India Limited



(P.R.Sahu)
Addl. General Manager (M.M)



Projects & Development India Limited

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PRE-QUALIFICATION CRITERIA (PQC)	PNMM/PC- 277/E-4001/2.0	0	 SECL
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VOLUME-I, COMMERCIAL

SECTION 2.0

PRE-QUALIFICATION CRITERIA (PQC)

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PRE-QUALIFICATION CRITERIA (PQC)	PNMM/PC- 277/E-4001/2.0	0	 SECL
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1.0 ELIGIBLE BIDDERS

1.1 SOLE BIDDER OR A JOINT VENTURE OR A CONSORTIUM

1.1.1 Bids may be submitted by a Bidder who is a sole Bidder or a joint venture company (JV) or a consortium of members along with a lead member ("Consortium"). However, [except in case of a sole Bidder], the successful Bidder emerged through tendering process should be a company incorporated in India prior to award of tender (LOA).

1.1.2 The Bidder which has completed 3 (three) financial years from the date of commencement of business shall fulfill each eligibility criteria as defined in Clause 2.0 below.

1.1.3 In case the Bidder is a newly formed JV which has not completed 3 (three) financial years from the date of commencement of business, then either the said JV shall fulfill each eligibility criteria or any one constituent member of such a JV shall fulfill each eligibility criteria. If the bid is received with the proposal that one constituent member fulfills each eligibility criteria then this member shall be clearly identified and it shall assume all obligations under the contract and provide such comfort letter/ guarantees as may be required by Owner. The guarantee shall cover inter alia the commitment of the member to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the JV to ensure completion of the contract when awarded, an undertaking not to withdraw from the JV till completion of the work, etc.

The provisions of Cl. No. 1.1.3 above shall also apply for a Consortium bid. The leader of the Consortium shall fulfill each eligibility criteria and assume all obligations and guarantee as mentioned above.

1.1.4 A JV/Consortium once established at the time of submitting the Bid shall not be allowed to be altered with respect to constituting members of the JV/Consortium till the successful Commissioning & PGTR. If during the evaluation of bids, a JV/ Consortium proposes any alteration/ changes in the orientation of JV/ Consortium or replacements or inclusions or exclusions of any partner(s)/ member(s) which had originally submitted the bid, bid from such a JV/ Consortium Company shall be liable for rejection.



1.1.5 The total number of Consortium members including their leader shall not exceed 3 (three). In case of consortium, for qualifying as the member of consortium, each member in the consortium shall contribute at least 26% of the total equity in the project totaling to 100%. The equity participation of each member of the Consortium shall be specified in the Consortium Agreement.

All the members/shareholders of the JV and the members/shareholders of the newly incorporated company (in case of a Consortium) shall sign the contract and shall be jointly and severally liable for the entire assignment.

2.0 PRE-QUALIFICATION CRITERIA

2.1 TECHNOLOGY CRITERIA

2.1.1 Coal Gasification Technology:

	<p align="center">COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED</p> <p align="center">PRE-QUALIFICATION CRITERIA (PQC)</p>	PNMM/PC- 277/E-4001/2.0	0	 SECL
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The Bidder either on his own or with the support from a reputed Gasification Process Licensor should be capable of providing/ arranging Process License and Basic Design Package of proven performance for Coal Gasifiers for gasifying Coal feedstock on commercial basis, for supply of Ammonia Synthesis Gas.

The Coal Gasification technology (Gasifier including all upstream & downstream processing Units to generate final raw syn gas) proposed by Bidder shall have same reference of at least one plant having at least one Coal Gasifiers with coal processing capacity of 900 Metric Tonnes Per Day (MTPD) operating successfully on commercial basis with coal feedstock, for at least one continuous year in the last 15 years reckoned from the last day of the preceding month in which the bids are opened. However, it will be sole responsibility of the Bidder that the Coal Gasifier / Gasification technology proposed by him based on above criteria, is suitable for the quality of Coal to be specified in the NIT.

Bidder has to submit letter of support / MOU from the Process Licensor for technology tie up for the proposed Coal Gasification technology. In case of his own technology, the Bidder shall submit a self- declaration.

The reference unit shall be non-captive (not wholly owned by Licensor) and the technology shall be patented & internationally accepted.

The Licensors shall be capable of furnishing the basic engineering design as per internationally accepted code of practice and not as per code accepted in the Licensor's home country i.e. the country of the Licensors registered office.



Bidders have to submit successful operation certificate for at least one continuous year of operation of Gasification Technology from the owner of the Plant.

Technology once selected and offered by the Bidder cannot be changed during the Construction Period including commissioning & PGTR. However, innovations / modification / alteration in technology can be allowed during Operation Period, subject to acceptance of its provenness by SECL on the basis of availability of reference plants fulfilling aforesaid criteria.

2.1.2 Gas Cleaning, Purification, Ammonia Synthesis Gas Generation and Ammonia Production :

The Bidder either on his own or with the support from a reputed Process Licensor should be capable of providing/ arranging Process License and Basic Design Package for the proposed Gas cleaning, Purification, Ammonia Synthesis Gas Generation and Ammonia production. The Gas Cleaning, Purification, Ammonia Synthesis Gas and Liquid Ammonia (Min. 99.9% by wt.). Generation technology proposed by Bidder shall have reference of at least one plant processing Ammonia Synthesis gas from the coal Gasifier or Natural Gas based Plant and generating minimum 1350 MTPD of Ammonia (Min. 99.9% by wt.) operated successfully for one continuous year in the last 15 years reckoned from the last day of the preceding month in which the bids are opened.

Bidder has to submit letter of support / MOU from the Process Licensor for technology tie up for the proposed Syn-Gas cleaning, Purification, Ammonia Synthesis Gas Generation and Ammonia Plant. In case of his own technology, the Bidder shall submit a self-declaration.

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The reference unit shall be non-captive (not wholly owned by Licensor) and the technology shall be patented & internationally accepted.

The Licensors shall be capable of furnishing the basic engineering design as per internationally accepted code of practice and not as per code accepted in the Licensor's home country i.e. the country of the Licensors registered office.

Bidders have to submit successful operation certificate for at least one continuous year of operation for the proposed technology from the owner of the Plant

Technology once selected and offered by the Bidder cannot be changed during the Construction Period including commissioning & PGTR. However, innovations / modification / alteration in technology can be allowed during Operation Period, subject to acceptance of its provenness by SECL on the basis of availability of reference plants fulfilling aforesaid criteria.

2.1.3 For establishing that the Technology to be adopted by the Bidder as per Clause Nos. 2.1.1 and 2.1.2 above is a proven one, the Bidder shall provide details of at least one latest commercial plant which has operated successfully for at least one continuous year in the last 15 years period reckoned from the last day of the preceding month in which the bids are opened. Bidder shall submit documentary proof for the Licensor's Plant issued by plant owner.

2.2 EXPERIENCECRITERIA



2.2.1 The Bidder should possess experience of having successfully built Plants on BOO (Build, Own and Operate) basis or EPC basis in any one or more in the field of Coal gasification, Coal to Liquid, Coal to Chemical, Oil & Gas, Refinery, Hydrocarbon, Petrochemicals, Ammonia, Fertilizer and Methanol. Such plant should have been in satisfactory commercial operation for a continuous minimum period of one year in the last 15 years period reckoned from the last day of the preceding month in which the bids are opened.

2.2.2 The aforesaid plant should be in operation with a minimum capacity to produce either of the following:-

(Product Capacity/Input Feed)

Ammonia / Ammonia Syn. gas	1350 MTPD/100000 Nm ³ /Hr
Methanol/ Methanol Syn. Gas	1200 MTPD/100000 Nm ³ /Hr
SNG/ SNG Syn. Gas	25000 Nm ³ /Hr /100000 Nm ³ /Hr
Pure H ₂	100000 Nm ³ /Hr

2.2.3 The Bidder must have completed on BOO basis or on EPC basis atleast one Chemical Plant in any one of the field of Coal Gasification, Coal Based thermal plants ,Metallurgical plants Coal to Liquid, Coal to Chemical, Oil & Gas, Refinery, Hydrocarbon, Petrochemicals, Ammonia, Fertilizer and Methanol in last 15 (fifteen) years reckoned from the last day of the preceding month in which the bids are opened in the following manner:

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Completed one work costing not less than INR 56 billion or equivalent foreign currency

Or

Completed two works each costing not less than INR 35 billion or equivalent foreign currency

Or

Completed three works each costing not less than INR 28 billion or equivalent foreign currency

Note:

Wherever mentioned in the entire NIT, the “equivalent foreign currency” shall be arrived by using the conversion rate as per RBI reference rate or the rates published RBI authorized website, as on the date of opening of bids.

2.2.4 To meet the criteria at Cl. no. 2.2.3 above, Bidder shall submit documentary proof such as Copy of Work Order/ relevant Extract of Work Order/Contract Agreement/relevant Extract of Contract Agreement and Completion / Acceptance Certificate.



- (i) Copy of Work Order/ relevant Extract of Work Order/Contract Agreement/relevant Extract of Contract Agreement shall clearly indicate the LOA/Work Order/Contract/Agreement number, Name of Project, Scope of Work, Contract/Investment Value, Contract Period etc.
- (ii) The Completion / Acceptance Certificate shall clearly indicate the LOA/Work Order/Contract/Agreement No., Name of Project, Scope of Work , Contract Value, Contract Period , Executed/Investment Value , Actual date of completion.
- (iii) In addition to above , in case bidder is qualifying the Cl. no. 2.2.3 on the basis of BOO experience, than Bidder to submit Investment Certificate in the letter head of Statutory Auditor of the Company (on the basis of which bidder is qualifying the experience criteria) to establish total investment in that particular project.

2.3 FINANCIAL CRITERIA

2.3.1 Average Annual Financial Turnover

2.3.1.1 The Average Annual Financial Turnover of the Bidder during any 3 (three) of the last 4 (four) preceding financial years i.e. 2020-21 2019-20, 2018-2019 and 2017-2018 calendar years 2020, 2019, 2018 and 2017 (or the financial year as applicable in the country of origin of Bidders' Parent Company,) should be at least INR 21 billion or equivalent foreign currency.



2.3.1.2 The Average Annual Financial Turnover of the each member of the Consortium/JV for any 3 (three) of the last 4 (four) preceding financial years i.e. 2020-21 2019-20, 2018-2019 and 2017-2018 or calendar years 2020, 2019, 2018 and 2017 (or the financial year as applicable in the country of origin of Bidders' Parent Company) should be at least INR 10.5 billion or equivalent foreign currency.

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- 2.3.2 Net Worth of the Bidder/each member of the Consortium or JV should be positive as on 31 March 2021 or calendar year 31 December, 2020 as applicable or the financial year as applicable in the country of origin of Bidders' Parent Company..
- 2.3.2 The Bidder will submit Solvency certificate not more than 6 (six) months old from the last date of submission of tender from their Banker for a value not less than INR 25 billion or equivalent foreign currency OR financing/credit limits from bank of value not less than INR 25 billion or equivalent foreign currency valid as on date of issue of Tender OR minimum Credit ratings of "A" or equivalent from Rating Agencies registered with SEBI viz; ICRA/CRISIL/CARE/India Ratings(Fitch)/Brickwork Ratings/SMERA or Foreign reputed institutions like Moody, S&P, Fitch.
- 2.3.3 To meet the criteria (2.3.1 & 2.3.2) above, Bidder shall submit audited financial statements of the company for any 3 (three) of the last 4 (four) preceding financial years i.e. 2020-21, 2019-20, 2018-2019 and 2017-2018 or calendar years 2020, 2019, 2018 and 2017 as applicable, along with the duly filled up form for 'Pre- Qualification Criteria (PQC) in favour of Financial Criteria' as set out in Exhibit 3.

Note:

- i. For PQ criteria in respect of Order value/Turn Over/ Net worth, in case PQ Criteria indicated by the BIDDERS is in foreign currency, RBI reference rate on the date of opening of technical bid shall be considered for conversion of the foreign currency into INR
- ii. In case a Bidder does not satisfy the financial criteria w.r.t. Annual Turnover & Net worth as above, on its own, then the holding company would be required to meet the stipulated turnover requirements, provided that the net worth of such holding company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the holding company. In such an event, the Bidder would be required to furnish along with its bid, a letter of undertaking from the holding company, supported by board resolution, as per the prescribed format (Annexure1.22), pledging unconditional and irrevocable financial support for the execution of the Contract Agreement by the Bidder in case of award.
- iii. In case a Consortium member does not satisfy the financial criteria w.r.t. Annual Turnover & Net worth as above, on its own, then the holding company of such member would be required to meet the stipulated turnover requirements, provided that the net worth of such holding company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the holding company. In such an event, the member would be required to furnish along with its bid, a letter of undertaking from the holding company, supported by board resolution, as per the prescribed format (Annexure-1.22), pledging unconditional and irrevocable financial support for the execution of the Contract Agreement by the member in case of award to the Consortium.
- iv. In case a Bidder does not satisfy the Experience criteria as above on it's own, the credentials of the Holding Company and/or a Group Company (whether domestic or overseas) may be considered for fulfillment of Experience Criteria of a bidder, subject to submission of Letter of Undertaking/Support from the Holding Company and Group

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Company (in case reliance is placed upon the technical experience of the Group Company) supported by board resolution of the holding company, as per the prescribed format (Annexure1.3) pledging unconditional and irrevocable technical support for the execution of the Contract Agreement by the Bidder in case of award.

For this purpose:

“Holding Company” means, in relation to a company (“Subject”), any other company which (a) Controls the Subject; or (b) exercises or controls, directly or indirectly, more than one-half of the total share capital of the Subject;

“Group Company” in relation to the Subject, means any other company (a) which is Controlled, directly or indirectly, by the Holding Company of the Subject; or (b) more than one-half of whose total share capital is, directly or indirectly, exercised or controlled, by the Holding Company of the Subject;

“Control” means, in relation to an entity, the power, ability or right, directly or indirectly, to direct the management and policy decisions and day to day operations of that entity, beneficial ownership of at least 51% (fifty one percent) of the voting shares or securities of that entity and/or to appoint the majority of directors on the board of that entity, whether through the ownership of voting share capital, by contract or management rights or any other means whatsoever.



- v. Further, the Bidder/any of the promoter of JV/ any consortium Member should not be on ‘Holiday’/‘Negative list’ by CIL/SECL or any of the JV partner/any other subsidiary of Coal India Limited or Public Sector Project Management Consultant (like EIL, MECON, PDIL due to “poor performance” or “corrupt and fraudulent practices”) or banned/blacklisted by Government department/ Public Sector on due date of submission of bid. Further Bidder has to submit declaration as per Annexure-1.13 Offer submitted by such Bidder shall not be considered for opening/evaluation/Award.

2.4 AUTHENTICATION OF ALL DOCUMENTS SUBMITTED AGAINST PQC

2.4.1 Technical Criteria of PQC:

All documents in support of Technical PQC furnished by the BIDDERS shall be verified and certified by any one of the following independent third party inspection agency:

- Société Générale de Surveillance(SGS)
- Gulf Lloyds Industrial Services (India) Pvt. Ltd.(GLISPL)
- International Certification Services(ICS)
- Bureau Veritas (Ind.) Pvt. Ltd(BVIS)
- DNVGL
- UV Rheinland (India) Pvt. Ltd.
- TUV SUD South Asia Pvt. Ltd.
- TUV India Pvt. Ltd. (TUV Nord Goup)
- Intertek India Pvt. Ltd.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PRE-QUALIFICATION CRITERIA (PQC)	PNMM/PC- 277/E-4001/2.0	0	 SECL
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- j) Moody International (India) Pvt. Ltd.
- k) RINA India Pvt. Ltd.
- l) Competent Inspectorate and Consultants LLP
- m) ABS Industrial Verification (India) Pvt. Ltd.

All charges of the Third party for verification and certification shall be borne by the Bidder. TPIA will provide in addition a certificate towards verification and certification of documents pertaining to Technical PQC as per proforma attached as Annexure-1.15.

If any above mentioned agency themselves are participating in bidding, then they shall authenticate the document by a different agency from the list given above.

2.4.2 FINANCIAL CRITERIA OF PQC:

Bidder shall submit "Details of financial capability of Bidder" in prescribed format in prescribed format (Exhibit-3) of tender document, duly signed and stamped by a Chartered Accountant / Certified Public Accountant (CPA). Further:

- (a) For Indian Bidders, copy of audited annual financial statements submitted in bid shall be duly certified / attested by Notary Public with legible stamp.
- (b) For Foreign Bidders, copy of audited annual financial statements submitted in bid shall be certified true copies, duly signed, dated and stamped by an official, authorized for this purpose in Indian Embassy / High Commission in Bidder's country. However, member countries of Hague Convention 1961, supporting document pertaining to financial PQC Apostille affixed by competent authorities designated by the government of Bidder's country shall also be acceptable.

2.5 Bidder may be required to submit all the originals of the Authenticated documents pertaining to Pre-Qualification Criteria during the Bid evaluation process.

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EXHIBITS

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LIST OF EXHIBITS

<u>EXHIBITS:</u>	
EXHIBIT – 1	In favour of Technology Criteria.
EXHIBIT – 2	In favour of Experience Criteria.
EXHIBIT – 3	In favour of Financial Criteria



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EXHIBIT-1A

PRE- QUALIFICATION CRITERIA (PQC) IN FAVOUR OF TECHNOLOGY CRITERIA

Bidder shall furnish details with reference to the work, which pre-qualify them in line with Technology Criteria mentioned under Clause 2.1.1 of Volume-1, Commercial, Section 2.0 'Pre-Qualification Criteria'.

1.0 REFERENCES OF PLANT WITH PROPOSED TECHNOLOGY

SL. NO.	DESCRIPTION	PROJECT – 1, 2 etc. (Separate sheets for each Project)	Documents to be submitted
1.	Project name and description (Please Specify the name of Process licensor also)		
2.	The Bidder either on his own or with the support from a reputed Gasification Process Licensor should be capable of providing/ arranging Process License and Basic Design Package of proven performance for Coal Gasifiers for gasifying Coal / feedstock on commercial basis, for supply of Ammonia Synthesis Gas.		<ul style="list-style-type: none"> ➤ Letter of support / MOU from the Process Licensor for technology tie up for the proposed Coal Gasification technology ➤ In case of his own technology, the Bidder shall submit a self-declaration.
2..1	The Coal Gasification technology (Gasifier including all upstream & downstream processing Units to generate final raw syn gas) proposed by Bidder shall have same reference of at least one plant having at least one Coal Gasifiers with coal processing capacity of 900 Metric Tonnes Per Day (MTPD) operating successfully on commercial basis with coal feedstock, for at least one continuous year in the last 15 years reckoned from the last day of the preceding month in which the bids are opened. However, it will be sole responsibility of the Bidder that the Coal Gasifier / Gasification technology proposed by him based on above criteria, is suitable for the quality of Coal to be specified in the NIT.		<ul style="list-style-type: none"> ➤ Copy of Work Order/Contract Agreement (Relevant Pages to Establish PQC Requirement) ➤ Completion Certificate ➤ Successful Operation Certificate from Plant Owner ➤ Any Other Relevant Documents
2.2	<p>(i) Coal Gasification Design Capacity (Raw Ammonia Syn. gas)</p> <p>(ii) Coal Gasification Operating capacity (Raw Ammonia Syn. gas)</p>	<p>(i) _____ Nm³/hr of (CO+H₂)</p> <p>(ii) _____ Nm³/hr of (CO+H₂)</p>	
3.	a) Date / month / year of award / commencement of Project		

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	b) Date / month / year of commissioning of Project		
4.	Name of Owner		
	(a) Name and address of Owner's contact person		
	(b) Telephone and Fax No.		

Note:

1. Bidder shall furnish the details as above of Projects which they consider suitable for their pre-qualification. SECL / PDIL reserve the right not to evaluate any other Project details.
2. Bidder to note that PQC form shall be filled as per the Proformas as stated, along with wherever applicable, copies of work order, completion certificates.
3. Bidder to note that non-submission of relevant supporting documents may lead to rejection of their PQ bid. It is to be ensured that all relevant supporting documents shall be submitted along with the PQ bid in the first instance itself. Pre-qualification may be completed based on the details so furnished without seeking any subsequent additional information.

STAMP & SIGNATURE OF BIDDER :

NAME OF BIDDER :

DATE :



	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	DOC. NO.	REV	
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EXHIBIT-1B

PRE- QUALIFICATION CRITERIA (PQC) IN FAVOUR OF TECHNOLOGY CRITERIA (GAS CLEANING, PURIFICATION, AMMONIA SYNTHESIS GAS GENERATION and AMMONIA PRODUCTION :

Bidder shall furnish details with reference to the work, which pre-qualify them in line with Technology Criteria mentioned under Clause under Clause 2.1.2 of Volume-1, Commercial, Section 2.0 'Pre- Qualification Criteria'.

2.0 REFERENCES OF PLANT WITH PROPOSED TECHNOLOGY

SL. NO.	DESCRIPTION	PROJECT – 1, 2 etc. (Separate sheets for each Project)	Documents to be submitted
1.	Project name and description (Please Specify the name of Process licensor also)		
2.	The Bidder either on his own or with the support from a reputed Process Licensor should be capable of providing/ arranging Process License and Basic Design Package for the proposed Gas cleaning, Purification, Ammonia Synthesis Gas Generation and Ammonia production. The Gas Cleaning, Purification, Ammonia Synthesis Gas and Ammonia (Min. 99.9% by wt.). Generation technology proposed by Bidder shall have reference of at least one plant processing Ammonia Synthesis gas from the coal Gasifier or Natural Gas based Plant and generating minimum 1350 MTPD of Ammonia (Min. 99.99% by wt.) operated successfully for one continuous year in the last 15 years reckoned from the last day of the preceding month in which the bids are opened.		<ul style="list-style-type: none"> ➤ Letter of support / MOU from the Process Licensor for technology tie up for the proposed Coal Gasification technology ➤ In case of his own technology, the Bidder shall submit a self-declaration ➤ Copy of Work Order/Contract Agreement (Relevant Pages to Establish PQC Requirement) ➤ Completion Certificate ➤ Successful Operation Certificate from Plant Owner ➤ Any Other Relevant Documents
2.1	<p>(i) Gas Cleaning Section Design Capacity (Ammonia Syn. gas)</p> <p>(ii) Gas Cleaning Section Operating capacity (Ammonia Syn. gas)</p>	<p>(i) $\bar{\text{Nm}}^3/\text{hr}$ of (H_2)</p> <p>(ii) Nm^3/hr of (H_2)</p>	

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2.2	(i) Ammonia Plant Design Capacity (ii) Ammonia Plant Operating capacity	_ _ _ _ of Ammonia (ii) _ _ _ _ Mt/hr of Ammonia	(ii)
3.	c) Date / month / year of award / commencement of Project		
	d) Date / month / year of commissioning of Project		
4.	Name of Owner		
	(a) Name and address of Owner's contact person		
	(b) Telephone and Fax No.		

Note:

1. Bidder shall furnish the details as above of Projects which they consider suitable for their pre-qualification. SECL/PDIL reserves the right not to evaluate any other Project details.
2. Bidder to note that PQC form shall be filled as per the Proforma as stated, along with wherever applicable, copies of work order, completion certificates.
3. **Bidder to note that non-submission of relevant supporting documents may lead to rejection of their PQ bid.** It is to be ensured that all relevant supporting documents shall be submitted along with the PQ bid in the first instance itself. Pre-qualification may be completed based on the details so furnished without seeking any subsequent additional information.

STAMP & SIGNATURE OF BIDDER :
NAME OF BIDDER :
DATE :



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EXHIBIT-2



PRE- QUALIFICATION CRITERIA (PQC) IN FAVOUR OF EXPERIENCE CRITERIA:

Bidder shall furnish details with reference to the work, which pre-qualify them in line with experience criteria mentioned under Clause under Clause 2.2 of Volume-1, Commercial, Section 2.0 'Pre- Qualification Criteria'.

(MARK FOR APPLICABILITY IN BOX)



1.0 EXPERIENCE AS BOO Operator

SL. No.	Description	Details								
1.	Name of Project, Location									
2.	Description of work									
3	<p>The Bidder should possess experience of having successfully built Plants on BOO (Build, Own and Operate) basis or EPC basis in any one or more in the field of Coal gasification, Coal to Liquid, Coal to Chemical, Oil & Gas, Refinery, Hydrocarbon, Petrochemicals, Ammonia, Fertilizer and Methanol. Such plant should have been in satisfactory commercial operation for a continuous minimum period of one year in the last 15 years period reckoned from the last day of the preceding month in which the bids are opened.</p> <p>Bidder should have owned and operated at least for one year, a process unit with a minimum capacity to produce either of the following:- (Product Capacity/Input Feed)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Ammonia / Ammonia Syn. gas</td> <td style="width: 50%;">1350 MTPD/100000 Nm³/Hr</td> </tr> <tr> <td>Methanol/ Methanol Syn. Gas</td> <td>1200 MTPD/100000 Nm³/Hr</td> </tr> <tr> <td>SNG/ SNG Syn. Gas</td> <td>25000 Nm³/Hr /100000 Nm³/Hr</td> </tr> <tr> <td>Pure H₂</td> <td>100000 Nm³/Hr</td> </tr> </table>	Ammonia / Ammonia Syn. gas	1350 MTPD/100000 Nm ³ /Hr	Methanol/ Methanol Syn. Gas	1200 MTPD/100000 Nm ³ /Hr	SNG/ SNG Syn. Gas	25000 Nm ³ /Hr /100000 Nm ³ /Hr	Pure H ₂	100000 Nm ³ /Hr	<ul style="list-style-type: none"> ➤ Copy of Work Order/Contract Agreement (Relevant Pages to Establish PQC Requirement) ➤ Completion Certificate ➤ Successful Operation Certificate from Plant Owner ➤ Any Other Relevant Documents
Ammonia / Ammonia Syn. gas	1350 MTPD/100000 Nm ³ /Hr									
Methanol/ Methanol Syn. Gas	1200 MTPD/100000 Nm ³ /Hr									
SNG/ SNG Syn. Gas	25000 Nm ³ /Hr /100000 Nm ³ /Hr									
Pure H ₂	100000 Nm ³ /Hr									
4.	Name of Owner, Postal Address, Phone / Fax No. / E-mail									
5.	Name of Consultant / Postal Address, Phone / Fax No. / E-mail.									
6	Date of Commercial Operation of the Plant by BOO operator:									
7.0	Document Furnished									
8.1	Copy of work order / Contract Agreement enclosed	YES / NO								
8.2	A certificate from the Owner that the Plant is put into commercial operation by the BOO Operator.	YES / NO								

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2.0 DETAILS OF PROJECT REFERENCES

Sl. No.	DESCRIPTION	PROJECT – 1, 2 etc. (Separate sheets for each Project)	Documents to be submitted
1.0	Project name and description		Copy of Work Order/ relevant Extract of Work Order/Contract Agreement/relevant Extract of Contract Agreement
2.0	BOO basis or EPC basis		
3.0	At least one Chemical Plant in any one of the field of Coal Gasification, Coal Based thermal plants, Metallurgical plants Coal to Liquid, Coal to Chemical, Oil & Gas, Refinery, Hydrocarbon, Petrochemicals, Ammonia, Fertilizer and Methanol in last 15 (fifteen) years reckoned from the last day of the preceding month in which the bids are opened in the following manner:		
4.0	Awarded value/Investment value		
5.0	Final executed contract value (INR / equivalent foreign currency : Completed one work costing not less than INR 56 billion or equivalent foreign currency Or Completed two works each costing not less than INR 35 billion or equivalent foreign currency Or Completed three works each costing not less than INR 28 billion or equivalent foreign currency		Completion / Acceptance Certificate and Investment Certificate also (in case of BOO contract)
6.0	Name of Owner		

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	Name and address of Owner's contact Person				
	Telephone & Fax No.				
	Mobile No.				
	Email				
7.0	(a) Date / month / year of award / commencement of Project				Copy of Work Order/ relevant Extract of Work Order/Contract Agreement/relevant Extract of Contract Agreement and Completion / Acceptance Certificate
	(b) Date / month / year of scheduled commissioning of Project.				
	(c) Date / month / year of actual commissioning of Project.				
8.0	Basis of work	As a Single Bidder/JV/ Consortium			Copy of Work Order/ relevant Extract of Work Order/Contract Agreement/relevant Extract of Contract Agreement
9.0	Any other Document in support of the above criteria				

Note:

- Bidder shall furnish the experience details as above of Projects which they consider suitable for their pre-qualification. ECL/PDIL reserves the right not to evaluate any other Project details.
- Bidder to note that PQC form shall be filled as per the Proformas as stated, along with wherever applicable, copies of work order and completion certificates.
- Bidder to note that non-submission of relevant supporting documents may lead to rejection of their PQ bid.** It is to be ensured that all relevant supporting documents shall be submitted along with the PQ bid in the first instance itself. Pre-qualification may be completed based on the details so furnished without seeking any subsequent additional information.
- For PQ criteria in respect of Order value, in case PQ Criteria indicated by the bidders is in foreign currency, RBI reference rate on the date of opening of technical bid shall be considered for conversion of the foreign currency into INR.

STAMP & SIGNATURE OF BIDDER :
NAME OF BIDDER :
DATE :

EXHIBIT-3

PRE- QUALIFICATION CRITERIA (PQC) IN FAVOUR OF FINANCIAL CRITERIA

FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE

We have verified the Annual Accounts and other relevant records of M/s.....(Name of the Bidder) and certify the following:

A. ANNUAL TURNOVER OF LAST 3YEARS:

Year	Amount (Currency)
Year 1:	
Year 2:	
Year 3:	

B. FINANCIAL DATA FOR LAST AUDITED FINANCIAL YEAR:



Description	Year_____
Amount (Currency)	
1. Current Assets	
2. Current Liabilities	
3. Working Capital (Current Assets-Current liabilities)	
4.NetWorth(Paid up share Capital and Free Reserves & Surplus)	

Name of Audit Firm:
Chartered Accountant
Date:

[Signature of Authorized Signatory]
Name:
Designation:
Seal:
Membership No.:

Instructions:



- The financial year would be the same as one normally followed by the Bidder for its Annual Report.
- The Bidder shall provide the audited annual financial statements as required for this PQ document. Failure to do so would result in the Proposal being considered as non-responsive.
- This certificate is to be submitted on the letter head of Chartered Accountant.
- For PQ criteria in respect of Turn Over / Net worth, in case PQ Criteria indicated by the bidders is in foreign currency, RBI reference rate on the date of opening of technical bid shall be considered for conversion of the foreign currency into INR.

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SUBMISSION OF BID

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SUBMISSION OF BID				



From:

M/s.....

To:

M/s South Eastern Coalfields Limited (SECL),
(A subsidiary of CIL)
South Eastern Coalfields Limited (SECL)
Office of GM,CED
SECL HQ, Seepat Road
Distt.-Bilaspur-495006, Chattisgarh (India)

1. I/We hereby tender for design, build, own, operate and maintain a 2200 MTPD capacity Coal to Ammonia (C2A) plant on BOO basis, storage and transfer of the entire quantity of Ammonia produced in the plant during the contracted period for SECL at Mahamaya SCG Plant, Bhatgaon Area, Surajpur District, Chhattishgarh, India as per Terms and Conditions specified in **Tender No : PNMM/PC-277/E-4001**. Price Format quoted by me/us are in accordance with Invitation for Bid, Instructions to Bidders, Schedule of Prices and other documents and papers, all as detailed in the Bidding documents.
2. It has been explained to me/us that the date of commencement of first delivery of Ammonia is the essence of the Contract Agreement. I/We agree that in the case of failure on my/our part to strictly observe the Time Schedule, I/We shall pay compensation to SECL as per provisions and stipulations contained in the Contract Documents and I/We agree to recovery being made as specified therein.
3. I/ We acknowledge that Owner will be relying on the information provided in the Bid and the documents accompanying such Bid for the Project, and I/we certify that all information provided in the Bid is true, complete and correct; nothing has been omitted which renders such information misleading; and all documents accompanying such Bid are true copies of their respective originals.
4. I/ We shall make available to the Owner any additional information it may find necessary or require to supplement or authenticate my/ our Bid.
5. I/ We acknowledge the right of the Owner to reject my/our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, my/our right to challenge the same on any account whatsoever.
6. I/ We declare that:
 - a. I/ we have examined and have no reservations to the Tender Documents, including any addendum issued by the Owner;
 - b. I/ we are eligible to submit a bid and in particular, do not have any Conflict of Interest;
 - c. I/we have not directly or indirectly or through an agent engaged or indulged in any corrupt, fraudulent, coercive practice or restrictive practice, in respect of any tender or request for bid issued by or any agreement entered into with the Owner or any other public sector enterprise or any GOI/SG entity;



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- d. My/ our Bid shall be valid for a minimum period of 9 (Nine) Months from the date of opening of Technical and Unpriced Commercial Bids,; and
- e. If my/ our Bid is accepted, we undertake to complete the Project in accordance with the Contract Agreement and other Tender Documents.
7. I/ We certify that in regard to matters other than security and integrity of the country, we/ any member or any of our/ their associates have not been convicted by a court of law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.
8. I/ We further certify that in regard to matters relating to security and integrity of the country, we/ any member or any of our/ their associates have not been charge-sheeted by any agency of the Government or convicted by a court of law.
9. I/ We further certify that no investigation by a regulatory authority is pending either against us/ any member or against our/ their associates or against our chief executive officer or any of our directors/ managers/ employees.
10. I/ We undertake that in case due to any change in facts or circumstances during the Bidding process, we are attracted by the provisions of disqualification in terms of the provisions of the Tender Document, I/ we shall intimate the Owner of the same immediately.
11. I/We agree to pay the Earnest Money Deposit and Security Deposit (if awarded the job) and accept the terms and conditions laid down in the memorandum below in this respect.

MEMORANDUM

- (a) General Description of Work: Installation of Coal Gasification based Ammonia Plant on Build, Own & Operate (BOO) Basis for SECL at Mahamaya, Chhatishgarh, India, and Supply of Ammonia.
- (b) Earnest Money Deposit (EMD): INR 20 (twenty) million or equivalent USD. The Earnest Money is payable in the manner set out in para 13 below.
- (c) Security Deposit (SD) : As per Clause 23.0 of Sec 5.0, Instruction To Bidder.
12. Should this tender be accepted, I/We hereby agree to sign the Agreement(s) with SECL and abide by and fulfill all terms and conditions referred to above and in the Agreement and in default thereof, to forfeit and pay to SECL or its successors or its authorized nominees such sums of money as are stipulated in conditions contained in Bidding Documents.
13. I/We hereby pay the Earnest Money Deposit (EMD) of Rs. _____ (Rupees _____) in Bank Guarantee No. _____ issued by _____ (name and office of the State Bank of India or any Nationalised Bank) in favour of South Eastern Coalfields Ltd Bilaspur.

OR

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I/We hereby pay the Earnest Money Deposit(EMD) of Rs. _____
 _____(Rupees _____) Crossed Demand Draft No.,
 _____ issued by _____(name and address Bank) in favour of South
 Eastern Coalfields Ltd , Bilaspur .

14. If I/We fail to commence the work specified in the Memorandum in Para (3) above, or I/We fail to deposit the amount of Security Deposit (SD) specified in the Memorandum in (3) above, I/We agree SECL or its successors without prejudice to any other right or remedy be at liberty to forfeit the said Earnest Money Deposit (EMD) in full. SECL shall also be at liberty to cancel the Notification of Award if I/We fail to deposit the Security Deposit (SD) as aforesaid or to execute an Agreement or to start WORK as stipulated in the Bidding Documents.
15. I/ We hereby authorise the Owner to seek reference/clarifications from my/our bankers.
16. I/ We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Owner in connection with the selection of Bidders, or in connection with the selection/ bidding process itself, in respect of the Project and the terms and implementation thereof.
17. I/ We agree and undertake to abide by all the terms and conditions of the Tender Documents.
18. I/ We undertake to execute the Contract Agreement within 60 (sixty) days from the date of issue of the LOA, if the Project is awarded to me/ us.
19. **I/We enclose herewith complete technical and commercial details as per the requirement of this Bidding Document as well as other supporting documents to facilitate evaluation of the bid.**

Dated the _____ day of _____ 2022



Witness:

Name in Block Letters:

Address:

Yours faithfully,
Signature of Bidder(s) with the
Seal of the Firm.



Name and Designation of authorised person
signing the tender on behalf of the Bidder(s).

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SECTION 5.0

INSTRUCTIONS TO BIDDERS

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PREAMBLE

South Eastern Coalfields Limited (SECL) is the largest coal producing company of India. It is a "Mini Ratna" Company, and one of eight fully owned subsidiaries of Coal India Limited. For effective administrative control and operation, the mines have been grouped in three Coalfields, namely, Central India Coalfields (CIC), Korba Coalfields and Mand-Raigarh Coalfields with 13 operating Areas. The company has its headquarter at Bilaspur, Chhattisgarh, India and 92 mines spread over Chhattisgarh & Madhya Pradesh; 70 underground, 21 opencast, and 1 mixed. It is a schedule 'B' Mini Ratna CPSE in coal & lignite under the administrative control of Ministry of Coal.

Coal India Limited (CIL) as an organized state owned coal mining corporate came into being in November 1975 with the government taking over private coal mines. With a modest production of 79 Million Tonnes (Mt) at the year of its inception CIL today is the single largest coal producer in the world. Operating through 82 mining areas CIL is an apex body with seven wholly owned coal producing subsidiaries and one mine planning and Consultancy Company spread over eight provincial states of India. CIL also fully owns a mining company in Mozambique christened as 'Coal India Africana Limitada'. It has core competence across the entire gamut of the coal business value chain. The business domain includes exploration, planning and design of mines, coal mining operations, coal beneficiation and marketing. CIL meets 42% of the nation's primary energy demand and caters 84% of the nation's coal requirement.

CIL having fulfilled the financial and other prerequisites was granted the Maharatna recognition in April 2011. It is a privileged status conferred by Government of India to select state owned enterprises in order to empower them to expand their operations and emerge as global giants. So far, the select club has only seven members out of around 300 Central Public Sector Enterprises in the country.

CIL encompasses the whole gamut of identification of coal reserves, detailed exploration followed by design and implementation and optimizing operations for coal extraction in its mines.



Under this project model, a private organization will develop a large project under the contract of a public partner. It is a way to create large infrastructure projects for the public, while being able to use private funding for it. To summarize, the entrepreneur shall install the facilities, own, operate and maintain the same under the terminology and condition commonly known as BUILD OWN AND OPERATE (BOO) basis.

1.0 INTRODUCTION

- 1.1 South Eastern Coalfields Limited (SECL) is the largest coal producing company of India. It is a "Mini Ratna" Company, and one of eight fully owned subsidiaries of Coal India Limited. The Company came into existence in 1985, when the Government of India, decided to bifurcate a part of coal mines held by Western Coalfields Limited into new company called South Eastern Coalfields Limited, along with Central Coalfields Limited, which was bifurcated into Northern Coalfields Limited, for administrative purpose.

Coal India Limited (CIL) was incorporated on 01st November 1975 with nationalization of private coal mines by Govt. of India. With a modest production of 79 MT at the year of its inception, CIL today is the single largest coal producer in the world having produced nearly 607 MT.

CIL is a Schedule 'A' Maharatna CPSE under the administrative jurisdiction of Ministry of Coal, Government of India, with its registered and corporate office located at Bilaspur (India). It

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operates through its subsidiaries spread over eight states (provinces) in India namely Jharkhand, West Bengal, Orissa, Chhattisgarh, Madhya Pradesh, Uttar Pradesh, Maharashtra and Assam.

1.2 M/s south Eastern Coalfields Limited has decided to build a world class Coal based Ammonia Complex. The Coal to Ammonia complex is to be built at Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattisgarh (India) and will consist of Coal Gasification Plant, Ammonia Plant, along with Offsite and Utility Plants. South Eastern Coalfield Limited, intend to invite quotations from eligible contractors on BOO basis for building of Whole Complex for production of Ammonia.

1.3 COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

The proposed project site is adjacent to Mahamaya SCG Plant and located in Surajpur district of Chhattisgarh. The proposed site is at a distance of 40 Kms from the nearest Town Ambikapur, which is well-connected with State highway no. 14, Ambikapur - Varanasi Road & with South East Central Railway zone Lines of Indian Railways, as well as by the Nearest railway siding is Bhatgaon siding about 3 Km away. Nearest Railway Station is Karonji at a distance of 25 km.

Raipur (Chhattisgarh), Ranchi (Jharkhand) and Varanasi (U.P.) Airports are around 330-340 Kms away from the proposed Site.

1.4 **Owner has engaged Projects & Development India Ltd. (PDIL) as Consultant for selection of Build Own Operate (BOO) Processor for the project. PDIL is the Tender Inviting Authority (TIA) for the project.**



1.5 Project execution Philosophy: Coal to Ammonia (C2A) Project through Coal Gasification Route shall be set up on Build Own Operate (BOO) basis with storage of the entire quantity of Ammonia produced in the proposed plant during its contracted period. The Bidders shall be responsible for selecting / sourcing of coal gasification technology, basic and detail engineering, procurement, installation, commissioning and operating the Coal to Ammonia project Complex for the entire life of the project.

1.6 **SOLE BIDDER OR A JOINT VENTURE OR A CONSORTIUM**

1.6.1 Bids may be submitted by a Bidder who is a sole Bidder or a joint venture company (JV) or a consortium of members along with a Lead member ("**Consortium**"). However, [except in case of a sole Bidder], the successful Bidder emerged through tendering process should be a company incorporated in India prior to award of tender (LOA).

1.6.2 The Bidder which has completed 3 (three) financial years from the date of commencement of business shall fulfill each eligibility criteria of PQC.

1.6.3 In case the Bidder is a newly formed JV which has not completed 3 (three) financial years from the date of commencement of business, then either the said JV shall fulfill each eligibility criteria or any one constituent member of such a JV shall fulfill each eligibility criteria. If the bid is received with the proposal that one constituent member fulfills each eligibility criteria then this member shall be clearly identified and it shall assume all obligations under the contract and provide such comfort Letter/ Guarantees as may be required by Owner. The Guarantee shall cover inter alia the commitment of the member to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the JV to ensure completion of the contract when awarded, an undertaking not to withdraw from the JV till completion of the work, etc.

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The Provisions of Cl. No. 1.5.3 above shall also apply for a Consortium bid. The leader of the Consortium may fulfill each eligibility criteria and assume all obligations and guarantee as mentioned above.

1.6.4 A JV/Consortium Company once established at the time of submitting the Bid shall not be allowed to be altered with respect to constituting members of the JV/Consortium till the successful PGTR . If during the evaluation of bids, a JV/ Consortium proposes any alteration/ changes in the orientation of JVC/ Consortium or replacements or inclusions or exclusions of any partner(s)/ member(s) which had originally submitted the bid, bid from such a JV/ Consortium Company shall be liable for rejection.

1.6.5 The total number of Consortium members including their leader shall not exceed 3 (three).

1.6.6 All the members of the JV shall sign the contract and shall be jointly and severally liable for the entire assignment.

1.7 ONE BID PER BIDDER

1.7.1 A Bidder shall on no account submit more than one bid either directly or indirectly.

1.7.2 A Bidder shall be deemed to have submitted an indirect bid if (i) the Bidder is a JV/Consortium member in an another independent bid or (ii) a group/subsidiary (partly or wholly owned) of the Bidder is participating as a direct or JV / Consortium member in an another independent bid.

Also, in case of several subsidiary companies of a single holding/parent company, then the participation may be allowed in the following cases:

1.7.2.1 Only one of the holding/subsidiary / group companies shall be allowed to bid whether as a Sole Bidder or as member of a JV /Consortium,

1.7.2.2 Two or more group companies may be allowed to participate if they are Partners in the same and single JV/Consortium.



1.7.3 If a Bidder makes more than one bid and/or directly or indirectly participates in another bid (in the manner set out in Clause 1.6.1 and 1.6.2), all the bids of the Bidder, including the bid of the Bidder in whose bid the first named Bidder has directly or indirectly participated, may be considered as cartel bids and may be rejected. If the factum of such bid(s) is discovered after the notification of award, the resultant contract shall be liable to be terminated.

1.8 GENERAL INSTRUCTIONS

1.8.1 Bidders must review the Bidding Documents as a whole, and ensure that their Bids are as per the terms of the Bidding Documents. SECL retains the right to modify the terms of the Bidding Documents and/ or any of the sections/ attachments/ formats thereto at any time prior to the Bid Due Date.

1.8.2 Once a Bid is submitted no changes will be permitted to be made by the Bidder except as permitted under the Bidding Documents.

1.8.3 Words and expressions beginning with capital letters used in this NIT without being defined shall have the same meaning as assigned to them in the Contract Agreement or the other Bidding Documents.

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2.0 SCOPE OF WORK:

2.1 SECL intends to setup a Coal-to-Ammonia Plant on Build Own Operate (BOO) Basis for life of the plant (expected period 25 years). The scope shall be as defined in the Tender documents and shall broadly cover the following - Design, Build, Own, Operate & Maintain Production Plant(s), transfer required product(s) , storage of the entire quantity of Ammonia produced in the proposed plant during its contracted period will also be the responsibility of the BOO Processor.

2.2 Location of the Project Site

The proposed project site is adjacent to Mahamaya SCG Plant and located in Surajpur district of Chhattisgarh. The proposed site is at a distance of 40 Kms from the nearest Town Ambikapur, which is well-connected with State highway no. 14, Ambikapur - Varanasi Road & with South East Central Railway zone Lines of Indian Railways, as well as by the Nearest railway siding is Bhatgaon siding about 3 Km away. Nearest Railway Station is Karonji at a distance of 25 km.

Raipur (Chhattisgarh), Ranchi (Jharkhand) and Varanasi (U.P.) Airports are around 330-340 Kms away from the proposed Site.

2.3 Site Visit

2.3.1 The Bidder is advised to visit and examine the site of works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into the Contract Agreement. Claims of any kind due to variation or ignorance of site conditions and environmental conditions will not be eligible in any circumstances.

2.3.2 The Bidder and any of its personnel or authorized representatives will be granted permission by Owner to enter upon its premises and lands for the purpose of such inspection. It is understood that as an implicit condition of such permission, the Bidder, its personnel and/or authorized representative(s) shall be understood to have released and indemnified Owner and its personnel from and against all liability in respect thereof and to have assumed all responsibility for personal injury (whether fatal or otherwise), loss of or damage to person or property and any other loss, damage, cost and expenses incurred as a result of such visit, including those sustained by any negligence or other act of tort on the part of Owner and/or its personnel and consultants. During such visits the Bidder shall abide by all the rules and regulations, as applicable.

2.3.3 The date of the site visit is to be confirmed by respective Bidder in consultation with the concerned officer indicated in the Invitation For Bid.



3.0 TIME SCHEDULE/COMPLETION PERIOD

3.1 Bidder shall be required to complete the Work under the Contract Agreement so as to achieve the Guaranteed Completion within a period of 48 (forty eight) months from the Effective Date of Contract (EDC).

3.2 The “**Effective Date of Contract Agreement (EDC)**” shall be the date when Land free from all encumbrances shall be provided to the BOO Processor.

4.0 ELIGIBLE BIDDERS

4.1 The Bidder is not put on ‘Holiday’ by CIL/SECL or any of the JV partner/any other subsidiary of Coal India Limited or Public Sector Project Management Consultant (like EIL, MECON, PDIL due to

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“poor performance” or “corrupt and fraudulent practices”) or banned/blacklisted by GOI/SG department/ Public Sector on due date of submission of bid or during the process of evaluation of bids. Further, neither Bidder nor their allied agency/(ies) (as defined in the Procedure for Action in case of Corrupt/Fraudulent/Collusive/ Coercive Practices) are on banning list of CIL/SECL or any of the JV partner/ any other subsidiary of Coal India Limited.

In case there is any change in status of the declaration prior to award of contract, the same has to be promptly informed to SECL/PDIL by the Bidder.

It shall be the sole responsibility of the Bidder to inform about their status regarding above on due date of submission of bid and during the course of finalization of the tender. Concealment of the facts shall tantamount to misrepresentation of facts and shall lead to rejection of the bid.

- 4.2 The Bidder should not be under any liquidation court receivership or similar proceedings on due date of submission of bid. In case there is any change in status of the declaration prior to award of contract, the same has to be promptly informed to SECL/PDIL/Owner by the Bidder.

It shall be the sole responsibility of the Bidder to inform SECL their status on above on due date of submission of bid and during the course of finalization of the tender. Concealment of the facts shall tantamount to misrepresentation of facts and shall lead to rejection of the Bid.



- 4.3 Bidder shall not be affiliated with a firm or entity:

- i. that has provided consulting services related to the Work to the Owner during the preparatory stages of the work or of the project of which the works/services forms a part of, or
- ii. that has been hired (proposed to be hired) by the Owner as an engineer/ consultant for the Project.

- 4.4 Pursuant to qualification criteria set forth in the Tender Document, the Bidder shall furnish all necessary supporting documentary evidence to establish Bidder's claim of meeting qualification criteria.

5.0 SIGNATURE ON BIDS

- 5.1 The Bid must contain the name, designation and place of business of the person or persons making the Bid and must be signed and sealed, on each page, by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature. The Bidder shall submit authority letter / power of attorney/ board resolution in favour of the authorized signatory(s) of the Bid. The Bidder's name stated on the proposal shall be the exact legal name of the Bidder
- 5.2 Bids by bodies corporate/ limited companies must be signed with the legal name of the corporation/limited company by the president, managing director or by the company secretary or any other person or persons holding power of attorney for signing their Bid.
- 5.3 In case of a Single Bidder, power of attorney issued by the board of directors/ CEO / MD / Company Secretary of the Bidder/ all partners in case of Partnership firm/Proprietor in favour of the authorised employee(s) of the Bidder, in respect of the particular tender for signing the Bid and all subsequent communications, agreements, documents etc. pertaining to the tender and to act and take any and all decision on behalf of the Bidder, is to be submitted.

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- 5.4 The authorized employee(s) of the Bidder shall be signing the bid and any consequence resulting due to such signing shall be binding on the Bidder.
- 5.5 Bid by a Consortium/JV must be signed by all members of the Consortium/JV. In case of Consortium, the exact legal names of all the members of the Consortium shall be stated and leader of Consortium shall be clearly indicated.

In case of a Consortium/JV, power of attorney (POA) issued by board of directors/ CEO / MD / C&MD/ company secretary of the Consortium leader as well as Consortium member(s) of the Consortium, in favour of the authorised employee(s), for signing the documents on behalf of each of the members, in respect of this particular tender, to sign the Bid and all subsequent communications, agreements, documents etc. Pertaining to the tender and act and take any and all decision on behalf of the Consortium, are to be submitted.

Power of Attorney shall be as per law of land; Format of POA as per Annexure 1.11.



- 5.6 Bid shall contain no cuttings, erasures or overwriting except as necessary to correct errors made by the Bidder in which case each such corrections or other changes in the Bid documents shall carry the initials of the person(s) signing the Bid.

6.0 PRE-BID MEETING

- 6.1 The Bidder may submit any queries/clarification/information pertaining to bidding documents in writing delivered by hand or by Fax or by E-mail as per Annexure-1.5 enclosed in the bidding documents so as to reach PDIL not later than the date specified in the Invitation For Bid. Queries/ Clarifications/ Information sought in any other manner shall not be responded to.
- 6.2 The Bidder or his authorised representative(s), is advised to attend a pre-bid meeting as indicated in the Invitation For Bid. A maximum of 2 (two) representatives of each Bidder shall be allowed to participate on production of an authority letter from the Bidder. The purpose of the meeting will be to clarify issues and to answer questions on any matter pertaining to the Tender conditions that may be raised at that stage by Bidders. SECL shall endeavour to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive bidding process. Any clarifications provided in the pre-bid conference are only indicative and Bidders will only be entitled to rely on the clarifications subsequently provided in writing by the Owner.
- 6.3 The Owner's responses to Bidder's queries/clarifications raised will be furnished as expeditiously as possible. Any modification of the Tender Documents which may become necessary as a result of the pre-bid meeting/conference shall be issued as Addendum/Amendment/Corrigendum.
- 6.4 Non-attendance of Bidders at the pre-bid conference will not be a cause for disqualification of the Bidder and it shall be presumed that the Bidder does not require any clarification.

7.0 BIDDING DOCUMENTS/TENDER DOCUMENTS

- 7.1 The Bidder is expected to examine the Bidding Documents/Tender Documents, including all instructions, Forms, terms and conditions of Contract, specifications, drawings and other documents and to fully familiarize itself with the requirements of the Bidding Documents. Failure to furnish all the information required by the Bidding Documents or the submission of a bid not substantially responsive to the Bidding Documents in every respect may result in the rejection of the Bid.

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In case of any inconsistency, in the interpretation of meaning of any part of this Tender Documents, the Bidder shall give his best endeavor to resolve the inconsistency by expressing his assumption through his proposal to Owner.

8.0 AMENDMENT OF BIDDING DOCUMENTS

8.1 Bidders shall examine the Bidding documents thoroughly and inform the Owner of any apparent conflict, discrepancy or error.

At any time prior to the deadline for submission of bids as well as upto priced bid opening, the Owner may, for any reason whether at its own initiative or in response to a clarification or modification requested by any prospective Bidder(s), modify the Bidding Documents, if required.

8.2 Notice of issuance of any amendment to the Bidding Document (corrigenda/addenda/amendment) if any, shall be hosted on PDIL website/SECL website/ CPP Portal and shall not be advertised in press. Bidders are therefore advised to visit the website regularly for downloading the details of amendment to bidding document. The Bidders will be required to acknowledge notification of any such amendment to the Bidding documents. Bidders shall confirm the inclusion of addendum/corrigendum in their bid and shall follow the instructions issued along with addendum/corrigendum.

8.3 In order to afford Bidders reasonable time to take the amendment, issued prior to submission of BOO Bids, into account in preparing their bids, Owner may, at its discretion, extend the deadline for the submission of Bids.

9.0 MODIFICATION AND WITHDRAWAL OF BIDS



9.1 The Bidder may modify or withdraw its Bid after the Bid's submission, but before the last date and time of Bid submission as specified in this Tender provided that written notice of the modification or withdrawal is received by Owner prior to the deadline prescribed for submission of Bids.

9.2 A withdrawal notice may also be sent by FAX/E-mail but followed by a signed confirmation copy, post marked not later than the deadline for submission of Bids.

9.3 In case any clarifications are sought by the Owner after opening of tenders, then the replies of the Bidder should be restricted to the clarification sought. Any Bidder who modifies his bid (including a modification which has the effect of altering the value of his offer) after opening of Techno-contractual bids without specific reference by the Owner shall render the bid liable to be rejected without notice and without further reference to the Bidder.

9.4 Except as indicated above, a bid may not be withdrawn or modified after the deadline for submission of bids during the period of bid validity without forfeiting the Earnest Money Deposit (EMD) unless the modification shall be made upon an invitation by Owner permitting the Bidder to modify the bid.

9.5 The Owner reserves the right, at its discretion, to postpone the Bid Due Date and the date of opening of the Bids, or reject any or all Bids without giving any reason or to accept any Bid which, in the Owner's sole judgment and discretion, is the most beneficial to the Owner and/or to cancel the bidding process and reject all the Bids, at any time prior to the award of the Project, without thereby incurring any liability to the affected Bidder or Bidders and without any obligation to inform the affected Bidder or Bidders of the grounds or reasons for the Owner's actions. The Owner further reserves the right to negotiate with any or all the Bidders in relation to their Bids. Any such action shall not be called into question and the Bidders shall have no claim or cause of Action in that regard against the Owner or its officers, employees, consultants, agents, successors or assignees for rejection of its bids. Neither the Owner nor its employees or advisers shall entertain

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any claim of any nature, whatsoever, including without limitation, any claim seeking costs, expenses or damages in relation to the preparation or submission of Bids.

- 9.6 The Owner does not bind itself to accept the lowest Bid and reserves the right to reject any or all the Bids without assigning any reasons whatsoever and also to split up the work between two or more Bidders or accept the Bid in part and not in its entirety, at its sole discretion.

10.0 COST OF BIDS

The Bidder shall bear all costs associated with the preparation and submission of the Bid, and Owner will, in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.



11.0 LANGUAGE OF THE BID

The bid prepared by the BIDDERS and all correspondence and documents relating to the Bid exchanged by the Bidder and the Company shall be written in the English language and all units shall be in Metric system. In case a supporting document, certificate, documentary evidence etc. accompanying the Bid such as copies of purchase orders, experience certificates, printed literature, etc. furnished by the Bidder is in a language other than English, the same should be accompanied by an English Translation, duly authorized by the Chamber of Commerce of the Bidders' country, in which case, for the purpose of interpretation of the bid, the English translation shall govern. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Bid, the English language translation shall prevail.

12.0 BID SUBMISSION

- 12.1 Bidders are requested for the captioned item in complete accordance with bidding documents/attachments.
- 12.2 Bidder can download the Tender document from PDIL Website <http://pdilin.com>, SECL website <http://www.secl-cil.in/> or from Govt. Website <https://eprocure.gov.in/eprocure/app> .
- 12.3 Bidders are requested to submit e-bids electronically on the CPP Portal (URL: <https://eprocure.gov.in/eprocure/app>) only in accordance with Tender document.
- 12.4 The following documents in addition to uploading the bid on CPP Portal (<https://eprocure.gov.in/eprocure/app>) shall also be submitted in Original (in physical form) within 7 (seven) days from the bid due date provided the scanned copies of the same have been uploaded on CPP Portal (<https://eprocure.gov.in/eprocure/app>) by the Bidder along with e-bid within the due date and time to the address mentioned in Clause no. 5.3 (M) of IFB:-
- i) EMD
 - ii) Power of Attorney
 - iii) Pre-Signed Integrity Pact
 - iv) Original Letter of TPI as per Annexure-1.15
 - v) Letter of No Deviation as per Annexure-1.6.
- 12.5 The **Originals of the Documents as desired under Cover -1** shall be submitted as per the following:

The ENVELOPE shall be superscribed with the words-

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Due date and time for Bid Submission:, Hrs (IST)”.

The complete name of bidder with address shall be mentioned at the bottom left portion of envelope.

ENVELOPE shall be submitted at:

Projects & Development India Limited,

(Materials Management Department)
P.D.I.L Bhawan, A-14, Sector-1,
Noida-201301(UP) ,India
Fax no.:0120-2529801

Kind Attention:

Mr. P.R.Sahu
Addl. General Manager (MM)
Tel no. : 0120-2544063
E-mail: prsahu@pdilin.com / anjali@pdilin.com / dkchaturvedi@pdilin.com



The envelopes without above details on the covers shall be opened at Bidder's risk.

13.0 PREPARATION/ SUBMISSION OF BIDS



13.1 The Bidder is expected to examine all instructions, forms, terms and conditions in the Tender Document. The Tender Document together with all its attachments thereto, shall be considered to be read, understood and accepted by the Bidders. Failure to furnish all information required or submission of a Bid not responsive to the Tender Document in every respect will be at the Bidder's risk and may result in the rejection of the Bid.

13.2 **Submission of Bids:** Bids shall be submitted as detailed below:



1. Bidders to submit the bids online through the Central Public Procurement Portal for e-Procurement at <https://eprocure.gov.in/eprocure/app>. **No other mode of Bidding shall be allowed.**
2. Possession of valid Digital Signature Certificate (DSC) and enrollment/registration of the contractors/bidders on the e-procurement / e-tender portal is a prerequisite for **e-tendering**.
3. Bidder should do the enrollment in the e-procurement site using the “Click here to Enroll” option available on the home page. Portal enrollment is generally free of charge. During enrollment/registration, the bidders should provide the correct/true information including valid email_id. All the correspondence shall be made directly with the contractors/bidders through email_id provided.
4. Bidder need to login to the site thro' their user ID/ password chosen during enrollment/registration.
5. Then the Digital Signature Certificate (Class II or class III Certificates with signing key usage) issued by SIFY / TCS / nCode / eMudra or any certifying authority recognized by CCA India on eToken / Smart Card, should be registered.

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6. The DSC that is registered only should be used by the bidder and should ensure safety of the same.
7. Contractor/Bidder may go through the ITB / tenders published on the site and download he required ITB documents/schedules for the tenders he/she is interested.
8. After downloading /getting the ITB / Tender document / schedules, the Bidder should go through them carefully and then submit the documents as asked, otherwise bid will be rejected.
9. If there are any clarifications, this may be obtained online through' the tender site, or thro' the contact details. Bidder should take into account the corrigendum published before submitting the bids online.
10. Bidder then logs in to the site through the secured log in by giving the user id/ password chosen during enrolment/registration and then by giving the password of the eToken / Smart Card to access DSC.
11. Bidder selects the tender which he / she is interested in by using the search option & then moves it to the 'my tenders' folder.
12. From my tender folder, he / she selects the tender to view all the details indicated.
13. It is construed that the Bidder has read all the terms and conditions before submitting their offer. Bidder should go through the tender schedules carefully and upload the documents as asked; otherwise, the bid will be rejected.
14. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and generally, they can be in PDF/xls/rar/zip/dwf formats. If there is more than one document, they can be clubbed together and can be provided in the requested format. Each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 2MB, it can be reduced through zip/rar and the same can be uploaded, permitted. Bidder Bid documents may be scanned with 100 dpi with black and white option. However of the file size is less than 1 MB the transaction uploading time will be very fast.
15. If there are any clarifications, this may be obtained through the sites, or during the pre-bid meeting if any. Bidder should take into account the corrigendum published from time to time before submitting the online bids.
16. The Bidders can update well in advance, the documents such as certificates, annual report details etc., under My Space option and these can be selected as per tender requirements and then send along with bid documents during bid submission, this will facilitate the bid submission process faster by reducing upload time of bids.
17. Bidder should submit the EMD as specified in the tender. The original should be posted/couriered/given in person to the TIA, within the bid submission due date & time for the tender. Scanned copy of the instrument should be uploaded as part of the offer.
18. While submitting the bids online, the bidder reads the terms & conditions and accepts the same to proceed further to submit the bid packets/Covers.
19. The bidder has to select the payment option as offline to pay the EMD as applicable and enter details of the instruments.

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20. The details of the DD / any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise submitted bid will not be acceptable.
 21. The Bidder has to digitally sign and upload the required bid documents one by one as indicated. Bidders to note that the very act of using DSC for downloading the bids and uploading their offers shall be deemed to be a confirmation that they have read all sections and pages of the bid document including General conditions of contract without any exception and have understood the entire document and are clear about the requirements of the tender requirements.
 22. The Bidder has to upload the relevant files required as indicated in the cover content. In case of any irrelevant files, the bid will be rejected.
 23. If the price bid format is provided in a spread sheet file like BoQ_xxxx.xls, the rates offered should be entered in the allotted space only and uploaded after filling the relevant columns. The Price Bid / BOQ template must not be modified / replaced by the bidder; else the bid submitted is liable to be rejected for the tender.
 24. The Bidders are requested to submit the bids through online e-tendering system to the TIA well before the bid submission end date & time (as per Server System Clock). the TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders at the eleventh hour.
 25. After the bid submission (i.e. after Clicking "Freeze Bid Submission" in the portal), the acknowledgement number, given by the system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender and will also act as an entry pass to participate in the bid opening date.
 26. The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
 27. All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening.
 28. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
 29. The confidentiality of the bids is maintained since the secured Socket Layer 128 confidentiality technology is used. Data storage encryption of sensitive fields is done.
 30. The Bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) exit option in the browser.
 31. For any queries regarding e-tendering process, the bidders are requested to contact as provided in the tender document. Parallel for any further queries, the bidders are asked to contact over phone: 1-800-233-7315 or send a mail over to cppp-nic@nic.in.
- 13.3 Tender for the present work shall be submitted online through CPP e-tender portal. The required documents are to be uploaded in respective Cover-1 & Cover-2 as listed in subsequent paras. However, **original hard copy of Cover-1 Documents to be submitted as per Cl. No. 12.5 above .**

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For price bid, tenderer shall use Cover-3 (Price Bid). All rates shall be quoted in the Excel format -BoQ (password protected) provided and no other format is acceptable. Bidders are required to download the BOQ file, open it and complete the unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename, tampering/modification in BOQ file. The Price Bids of the tenderers will have no condition. The Price Bid which is incomplete and not submitted as per instruction given in Annexure-1.2 (Preamble to Price Bid/BOQ) will be rejected.

- 13.4 Once the contractor has uploaded the digitally signed file of tender documents along with unconditional acceptance Letter as an attachment, he is not permitted to upload any additional files / or put any remark(s) / condition(s) along with the Tender Documents.
- 13.5 In case the condition 13.3 & 13.4 above is found violated, the tender shall be rejected and Owner shall without prejudice to any other right or remedy be at liberty to forfeit the earnest money. The tenderer shall submit tender documents in the CPP e-tender portal only on or before the due date and time for submission of tender specified in Tender Document. The details of the data / documents to be submitted in respective Bid are as below:
- 13.6 Following 3 Covers shall be submitted through online at CPP e-tender portal by the bidder:

Cover-1:- It shall contain duly filled & signed scanned copy of the following.



- Earnest Money Deposit (EMD)
- Power of Attorney
- Pre-Signed Integrity Pact
- Original Letter of TPI as per Annexure-1.15
- Letter of No Deviation as per Annexure-1.6.

Cover-2:- To be submitted in Two parts and shall contain duly filled & signed scanned copy of the following:

PART-I:

Pre-Qualification Bid: (Refer. Section 2.0, VOLUME-I, COMMERCIAL)

i)	Letter of submission and synopsis of the proposal
ii)	Organization Profile covering (a) Name & address of the organization with telephone, fax, e.mail nos. with contact persons (b) history & structure of the organizations with names of directors & chief executives of bidder (in case of single bidder/JV) / all members of Consortium (in case of Consortium bid).
iii)	Copy of Article of Association of the Company or Board Resolution mentioning Chairman/ Chief Executive Officer / Managing Director of the Company of bidder (in case of single bidder/JV) / all members of Consortium (in case of consortium bid).
iv)	Power of Attorney of Bid Signatory from the competent authority as per Annexure-1.11
v)	Consortium Agreement as per Annexure-1.12 (if applicable).
vi)	Bidder has to submit letter of support I MOU from the Process Licensor for technology tie up for the proposed Coal Gasification technology. In case of his own technology, the bidder shall submit a self-declaration.
vii)	Bidder has to submit letter of support / MOU from the Process Licensor for technology tie up for the proposed Syn-Gas cleaning, Purification, Ammonia Synthesis Gas Generation and Ammonia Plant. In case of his own technology, the bidder shall submit a self-declaration.
viii)	Bidder Pre-qualification Criteria in favour of Technology Criteria as per Exhibit-1A and Exhibit 1B along with Copies of documentary proof in support of prequalification requirement.
ix)	Bidder Pre-qualification Criteria in favour of Experience Criteria as per Exhibit-2 along with Copies of documentary proof in support of prequalification requirement.

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INSTRUCTIONS TO BIDDERS				

x)	Bidder Pre-qualification Criteria in favour of Financial criteria as per Exhibit-3 along with documentary proof in support of prequalification requirement.
xi)	Solvency Certificate from Bidders' bankers as per Annexure- 1.14 Date of issue of this certificate should not be more than 6 (six) months old from the date of issue of Tender.
xii)	A declaration shall be submitted to the effect that Bidder/JV/Consortium members shall not be under liquidation, court receivership or similar proceedings as per Annexure-1.13.
xiii)	Undertaking from TPIA as per Annexure-1.15.
xiv)	Format for Financial Details of Holding Company as per Annexure-1.22

PART-II:



Technical and Unpriced Commercial Bid shall contain following Sections:

SECTION-I	i.	Bid Form as per Annexure-1.1
	ii.	Preamble to SOR (BOQ / Price Bid/Price Schedule) as per annexure 1.2
	iii.	Commercial Questionnaire as per Annexure-1.3
	iv.	Contents of Bid and Check List as per Annexure-1.4.
	v.	Format for bidder's queries for Pre Bid Discussion as per Annexure-1.5.
	vi.	Letter of Waiver of Conditions/Deviations as per Annexure-1.6
	vii.	Bidder's Proposed Schedule as per Annexure-1.7
	viii.	Authorisation to DSC holder as per Annexure-1.8
	ix.	A copy of BOQ, uploaded by Bidder in the Portal keeping price blank (hiding the price) and in place indicating "Quoted" or "√", as a confirmation of price quoted against each head, shall be submitted.
	x.	Certificate of Non-Involvement of Indian Agent as per Annexure-1.9
	xi.	Public Procurement (Preference To Make In India) Policy Undertaking as per Annexure 1.10.
	xii.	Provision for Procurement from a bidder which shares a land border with India as per Annexure1.23
	xiii.	Complete Bidding Document and all technical and commercial amendments/addendums if any issued, digitally signed as a token of having received and read all parts of the bidding document and having accepted and considered the same in preparing their bid
SECTION-II	i.	Technical Details/ documents specified under "Technical Information Required along with Bid"
	ii.	Any other information required in the Bidding Documents or considered relevant by the Bidder.

For convenience, the Bid shall be compiled in the form of Specific Sections conforming to the above. In case of non-submission of above documents or submission of incomplete documents, the Owner reserves the right not to evaluate such offers further and not to enter into correspondence in this regard after opening the Techno-commercial Unpriced Bid.

Cover-3: (PRICE BID)

- 13.7 The Prices are to be submitted strictly as per the Excel format as indicated in the Bid document (BOQ / Schedule of Rate /Price Bid) of the Tender documents. SECL/PDIL shall not be responsible for any failure on the part of the bidder to follow the instructions.

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- 13.8 Bidders are advised NOT to mention Rebate/Discount separately, either in the BOQ / Price Bid format or anywhere else in the offer. In case Bidder(s) intend to offer any Rebate/Discount, they should include the same in the item rate(s) itself under the “BOQ / Price Bid” and indicate the discounted unit rate(s) only.
- 13.9 If any unconditional rebate has been offered in the quoted rate the same shall be considered in arriving at evaluated price. However no cognizance shall be taken for any conditional discount for the purpose of evaluation of the bids.
- 13.10 In case, it is observed that any of the Bidder(s) has/have offered suo-moto Discount/Rebate after opening of unpriced bid but before opening of price bids such discount /rebate(s) shall not be considered for evaluation. However, in the event of the bidder emerging as the lowest evaluated bidder without considering the discount/rebate(s), then such discount/rebate(s) offered by the bidder shall be considered for Award of Work and the same will be conclusive and binding on the bidder.
- 13.11 In the event as a result of techno-commercial discussions or pursuant to seeking clarifications / confirmations from bidders, while evaluating the un-priced part of the bid, any of the bidders submits a sealed envelope stating that it contains revised prices; such bidder(s) will be requested to withdraw the revised prices failing which the bid will not be considered for further evaluation.

14.0 DEADLINE FOR SUBMISSION OF BIDS



- 14.1 Bids must be submitted through e-tender mode on CPP portal not later than the date and time specified in the IFB (Invitation For Bid).
- 14.2 The Owner may extend this deadline for the submission of Bids by amending the Tender Documents in accordance with provisions of Tender. In such case all rights and obligations of the Owner and Bidders under this Tender shall be subject to the extended deadline.
- 14.3 Documents received to address other than one specifically stipulated in the tender document will not be considered for evaluation/opening/award if not received to the specified destination within stipulated date & time.

15.0 OPENING OF BIDS

- 15.1 Owner will open Bids (online) in the presence of Bidder’s representatives who choose to attend at Date and time specified on cover page of Tender or as informed by Owner. The Bidder’s representative(s) present during the Bids opening shall sign a “Bids opening Status” sheet evidencing their attendance.
- 15.2 The Bidder’s name, presence or absence of the requisite EMD and such other details, as the Owner at its discretion may consider appropriate, will be announced during Bids opening.
- 15.3 The Bids shall be opened and evaluated in two stages:

15.3.1 Stage-I: Opening & Review of EMD, Pre-Qualification Bid, Technical and Un-priced Commercial Bids

On the date of Public Bid opening as indicated on the Invitation for Bid of this Tender, cover containing EMD, Power of Attorney, Integrity Pact, TPI letter and Letter of No Deviation shall be opened and reviewed.

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The Owner will review the bank guarantee (BG)/DD/banker's cheque submitted by Bidder against EMD, with respect to:

- its value
- validity
- issuing Bank.
- The format attached with the tender document.
- Whether the BG has been issued in favour of the bidding company

In case, the Bidder has not submitted the EMD or the BG submitted by the Bidder is not as per the requirement of Tender Document with respect to the above mentioned parameters, the Bids submitted by them may be rejected.

If the EMD submitted by the Bidder is found to be in order with respect to above mentioned parameters but if there is a minor deviation with respect to the format enclosed with the Tender, the Owner may at its discretion inform the Bidder who shall have to rectify the same before the date of opening of the Price Bid. In case the Bidder fails to rectify the EMD, it's Bids will be rejected.

Thereafter, Owner will open Pre-Qualification Bid, technical and un-priced commercial Bids of those Bidders, whose EMD, is found to be in order as described here above.

Owner/Consultant will first review Pre-qualification bid. Technical and Un-priced Commercial Bids shall be evaluated only for those bidders whose bid is found to be Pre-qualified based on Pre-qualification Criteria.

15.3.2 Bidders must submit the original "EMD, Power of Attorney, Integrity Pact, TPI letter and Letter of No Deviation as specified in the Tender Document to the address mentioned in IFB, in a sealed envelope, superscribing the details of Tender Document (i.e. tender number & tender for) within 7 (Seven) days from the date of un-priced bid opening.

15.3.3 Stage – II: Opening of Price Bid

The date of the opening of the Price Bid shall be intimated only to technically and commercially acceptable Bidders. The price bids of such shortlisted Bidders will be opened in the presence of Bidder's representative who chooses to attend the opening of price bid event on the date and time to be intimated. The bidder's name, bid price and such other details as the Owner at its discretion may consider appropriate, will be announced at the opening of price bids.

15.3.4 If the Bids as judged by the Owner are unresponsive, the Tender may be declared void and a new procedure for selection of CONTRACTOR as deemed appropriate by Owner may be adopted.



16.0 BID CURRENCIES

Bidders must submit bid in Indian Rupees only.

17.0 EARNEST MONEY DEPOSIT (EMD)

17.1 **Bids must be accompanied with 'Earnest Money Deposit (EMD) / Bid Security'** in the form of 'demand draft' or 'banker's cheque' or 'bank guarantee' (BG). The amount of EMD shall be as indicated in the Invitation For Bid. Currency of EMD shall be in INR.

17.1.1 In case EMD is submitted in form of BG (BG should be Structured Financial Messaging System (SFMS) enabled BG), then the EMD offered shall be an irrevocable BG, issued by any bank

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appearing in the list of Owner approved banks,(Annexure-1.19), on a stamp paper of appropriate value. Proforma of the BG for EMD is enclosed as Annexure-1.17.

17.1.2 The BG shall be valid for a period of Bid Validity plus 9 (nine) months. The BG shall be extended suitably if there is a delay in awarding the contract. The relevant extension shall be on Bidders' account.

Or

In case EMD is submitted in form of DD/Bankers Cheque, then the EMD should be in favour of M/s South Eastern Coalfields Limited payable at Bilaspur or value as outlined in the Invitation For Bid for this Tender.

EMD will not carry any interest.

17.2 Any Bid not accompanied with EMD shall be rejected by the Owner/Consultant as being non-responsive.

17.3 The EMD of unsuccessful Bidders will be returned by Owner without any interest to the unsuccessful Bidders as promptly as possible on acceptance of Bid of the successful Bidder or when the bidding process is cancelled by Owner, whichever is earlier. Where EMD has been paid by demand draft, the refund thereof shall be in the form of demand draft or NEFT in favor of the unsuccessful Bidder(s). Bidders may indicate the name and address in whose favour the said demand draft shall be drawn by the Owner for refund failing which it shall be drawn in the name of the Bidder and shall be mailed to the address given on the Transmittal Letter.

17.4 The successful Bidder's EMD will be discharged upon the Bidder accepting and signing the Contract Agreement and furnishing the Security Deposit cum Performance Bank Guarantee.



17.5 The EMD shall be forfeited and appropriated by Owner as mutually agreed loss and damage payable to Owner for, inter alia, time, cost and effort of Owner in regard to the Tender without prejudice to any other right or remedy to Owner under the following conditions:

- a) If a Bidder withdraws his Bid during the validity or agreed extension validity period duly agreed by the bidder
- b) In case of Cartel of bids as per Clause 1.6 of Instruction to Bidders, EMD should be forfeited.
- c) If the bid is varied or modified in a manner not acceptable to the Owner during the validity or agreed extension validity period duly agreed by the bidder
- d) Any effort by the bidder to influence the Owner on bid evaluation, bid comparison or contract award decision.
- e) Violates any other condition, mentioned elsewhere in the Tender Document, which may lead to forfeiture of EMD.
- f) If a Bidder has indulged in corrupt/fraudulent /collusive/ coercive practice.
- g) In the case of a successful Bidder, if the Bidder fails to sign the Contract Agreement in accordance with Signing of Contract

OR

If the successful bidder is seeking modifications to the agreed terms and conditions after issue of Letter of Award (LOA) /Notification of Award and prior to signing of the Contract.

OR

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If the successful bidder fails to furnish Security cum Performance Bank Guarantee as per provisions stipulated in bidding document.

The Bidder, by submitting its bid pursuant to this Tender Document, shall be deemed to have acknowledged and confirmed that the Owner will suffer loss and damage on account of withdrawal of its bid or for any other default by the Bidder during the period of validity of Bid as specified in the Tender Document. No relaxation of any kind on Bid Security shall be given to any Bidder.

- 17.6 In addition, upon the occurrence of any of the above set out conditions, the defaulting Bidder shall be debarred and black-listed from participating in any bids/tenders floated by SECL/TIA and/or its subsidiaries for a minimum period of [1 (one) year] from the date of getting declared as debarred/black-listed. It is further clarified that the decision of the Owner in relation to occurrence of the any of the above set out conditions shall be final and binding.
- 17.7 Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) will be exempt from the payment of earnest money. Such bidders will have to upload the scanned copy of the documents in support of their claim for exemption of EMD during submission of bid online.

18.0 VALIDITY OF BID



- 18.1 The submission of any bid connected with these documents and specifications shall constitute an agreement that the Bidder shall have no cause of action or claim against the Owner for rejection of his bid. The Owner shall always be at liberty to reject or accept any bid or bids at his sole discretion and any such action will not be called into question and the Bidder shall have no claim in that regard against the Owner.
- 18.2 The bids should be kept valid for acceptance for a period of 9 (Nine) Months from the date of opening of Technical and Unpriced Commercial Bids. A Bid valid for shorter period may be rejected by the Owner as being non-responsive.

Under the exceptional circumstances, prior to expiry of the original Bid validity period, the Owner may request the Bidder for a specified extension in the period of validity. The request and the responses thereto shall be made in writing or by telefax or by E-mail.

- 18.3 In the event of Owner seeking extension of period of validity of the Bids, the validity of EMD shall also be suitably extended.
- 18.4 A Bidder agreeing to the request of Owner seeking extension will not be required nor permitted to modify his bid, and will be required to extend the validity of his EMD correspondingly. However, Bidders request for revision/adjustment of Priced Bid under such circumstances will not be considered by the OWNER. The provisions of Clause-17.0 regarding discharge and forfeiture of EMD shall continue to apply during the extended period of Bid Validity.

19.0 POLICY FOR BID UNDER CONSIDERATION

Bids shall be deemed to be "Under Consideration" immediately after they are opened and until such time that the official intimation of award / rejection is made by the Owner to the Bidders. While the bids are under consideration, bidders and/or their representatives or other interested parties are advised to refrain from contacting by any means, the Owner and/or his employees / representatives on matters related to the bids under consideration.

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The Owner, if necessary will obtain clarifications on the bids by requesting for such information from any or all the Bidders, either in writing or through personnel contact as may be necessary. The Bidder will not be permitted to change the substance of the bid after the bid had been opened.

20.0 DEPUTATION OF REPRESENTATIVE FOR TECHNICAL & COMMERCIAL DISCUSSIONS

20.1 After opening of the Bids, to assist in the examination, evaluation and comparison of Bids, Owner may, at its discretion, ask the Bidder for clarification on its Bid. The request for such clarification and the response shall be in writing either through fax or email.

Further Owner may ask Bidder to visit Owner's/PDIL's office for technical, commercial or financial clarifications.

Bidder is expected to undertake such visits and participate in such meetings as and when called by the Owner. All costs related to such visits shall be borne by Bidder.

20.2 While evaluating the techno-commercial bids, if in the opinion of Owner and/or consultant appointed by the Owner certain additions / deletions / modifications in the tender conditions become inevitable, then the Owner/consultant shall discuss with all the participating bidders and finalize a common addition/deletion/modifications list. The Bidders shall also be asked to submit the 'Letter of Waiver' as per Annexure 1.6 of bid document taking cognizance of the common addition / deletion / modification list.

21.0 EVALUATION AND COMPARISON OF BIDS

21.1 Price evaluation of commercially and technically acceptable offers will be carried to arrive at the lowest evaluated price for selection of successful bidder and who shall be considered for Notification of Award.

21.2 For evaluation and comparison of Prices, BOO operation shall be considered under Tolling Model. RoM Coal, Power & Raw water shall be provided free of cost during the operation phase. Bidders to quote the Conversion cost of Ammonia considering the credit (if any) for Sulphur and any other By-Product(s).

21.2.1 Accordingly, Net Present Value (NPV) for supply of Ammonia will be carried out for 25 (twenty five) years of operation subsequent to First Delivery Date, considering 7920 hrs (330 days) operation per year and at discount rate* based on the following formula:

* Discount Rate shall be considered as the YTM% p.a. (Annualized) of G-Sec Rate for a tenure of 28-29 years plus 150 bps (risk premium) as on the day of opening of tender.

$$\text{Total Cash flow (Discounted @ YTM \% for 25 years)} = CC_{Ammonia} \times Q_{Ammonia} + P_{ROM\ Coal} \times Q_{ROM\ Coal} + \sum (P_{Utilities} \times Q_{Utilities})$$

Where :

$CC_{Ammonia}$ = Conversion Charge of Ammonia in Rupees per MT



$Q_{Ammonia}$ = Quantity of Ammonia in MT per year

$P_{ROM\ Coal}$ = Price of **Raw Coal** in Rupees per MT

$Q_{ROM\ Coal}$ = Quantity of **Raw Coal** in MT per year

$P_{Utilities}$ = Price of Utilities (Power & Raw water)

$Q_{Utilities}$ = Quantity of utilities (Power & Raw water)

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$Q_{Ammonia}$, $P_{ROM\ Coal}$ and $P_{Utilities}$ provided by Owner shall be as indicated in Section 6.0 Conditions of Contract.

$CC_{Ammonia}$, $Q_{Raw\ Coal}$ and $Q_{Utilities}$ to be indicated by bidder as per Schedule of Prices/BOQ in the Price Bid. $CC_{Ammonia}$ shall be the sum of fixed and Variable Price as per cl. No. 21.4 item no. A, i) & ii).

21.2.2 Also, Yearly Cash out flows on account of the Ammonia received will be worked out for the following:



- For 1st year of operation - 90% of the installed capacity
- For 2nd year of operation - 95% of the installed capacity
- For 3rd year of operation - 100% of the installed capacity

The quantity of Ammonia mentioned above is exclusively for the purpose of NPV evaluation. However, during the actual operation of plant, Owner, reserves the right to receive any amount of Ammonia subject to above respective yearly capacity utilization of plants depending upon requirement .

21.3 Net Present Value (NPV) analysis shall be carried out for 25 (twenty five) years of operation subsequent to First Delivery Date, considering respective capacity utilization per year (assuming 330 (three hundred and thirty) days) and at discount rate* as mentioned above. The NPV of Prices so obtained on the first delivery date (i.e. 48 (forty eight) Months from EDC) shall be further discounted to arrive at the present value on the date of EDC. The total least cash outflow so obtained shall be the selecting criteria for Bidder for the award of Work.

21.4 Yearly Cash flows for the Product / Utilities delivered by BOO Processor and Feed & utilities provided by Owner, as identified in the above formula, will be worked out for NPV evaluation purpose as per the following guidelines.

A	PRODUCT
	Supply of Ammonia of specified quality and quantity, as per Guaranteed ratio/quantities as quoted in the Price Bid, shall be on chargeable basis and Owner shall pay for this to the Bidder. Pricing formula for Supply of Ammonia shall comprise of following components:
i)	<p>Fixed Monthly Charge for the Ammonia</p> <p>The Fixed Monthly charge (in Rupees) shall have three components ;</p> <ol style="list-style-type: none"> 1) Constant amount (towards ROI of the BOO Processor); 2) Component related to WPI for manufactured Products (towards maintenance cost & other overheads). 3) Component related to CPI for industrial workers (towards manpower cost). <p>Fixed Monthly Charge shall be calculated on the basis of the following formula: $FMC_M = FMC_{BM} \times [X_{M_{ROI}} + X_{M_{WPI}} \times (WPI_N / WPI_O) + (X_{M_{CPI}} \times (CPI_{IN} / CPI_O))]$</p> <p>Where,</p> <p>$FMC_M$ = Fixed Monthly Charge computed on account of Ammonia delivered to Owner and will remain valid for that month, it will be released on pro- rata basis from first delivery date upto the end of the month and thereafter on</p>

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monthly basis every month (e.g. If the first delivery date is 15th January, then FMCM will be computed on pro-rata basis from 15th January to 31.01.2020. and from February onwards it will be computed in Calendar monthly basis)

FMC_{BM} = Base monthly charge as per the Letter of Award

XM_{ROI} = Constant Component on account of Return On Investment (which will not be adjusted due to inflation)

XM_{WPI} = Constant Component related to
“Wholesale Price Index for Manufactured Products”

XM_{CPI} = Constant Component related to “Consumer Price Index for Industrial Labour”

WPIN = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to Billing month or latest available as on that date.

WPI_O = Average Wholesale Price Index as per RBI for Manufactured Products for the month of submission of Bid or latest available as on that date.

CPI_N = Average Consumer Price Index for Industrial workers as last declared by Reserve Bank of India for the month prior to billing month.

CPI_O = Consumer Price Index for Industrial workers for the month of FOA (Fax of Acceptance) / LOI (Letter of Intent) or last published month before LOA.

The Constant Component - XM_{ROI}, XM_{WPI} & XM_{CPI} to be quoted by the Bidder in the Schedule of Rate / BOQ .

Note-1: **[XM_{ROI} + XM_{WPI} + XM_{CPI} = 100%]**

ii) **Variable charge per MT of Ammonia**

Variable Charge per MT of Ammonia = **A_M x (WPI_N / WPI_O)**



Where,

A_M = is the variable component to be submitted in the Price Bid, as per Schedule of Prices/BOQ

WPI_N = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to Billing month or latest available as on that date.

WPI_O = Average Whole sale Price Index as per RBI for Manufactured Products for the month of submission of Bid or latest available as on that date.



Note:

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	<p>Percent change in WPI/CPI for future years is to be considered based on percent change in WPI/CPI for manufactured products in last five years from the date of opening of commercial offer. Cash flows for the components related to WPI/CPI will be increased for the 25 years period at the rate of derived percent change of WPI/CPI per year in the NPV working.</p>												
B	FEED & UTILITIES PROVIDED BY Owner												
	<p>Feed & Utilities as per the Guaranteed Quantity, as quoted by the Bidder shall be considered for evaluation. Yearly cash flow on account of feed & utilities provided by Owner at their battery limit will be worked out on the basis of Unit rate of feed & Utilities mentioned below:</p> <table border="1"> <thead> <tr> <th></th> <th>Feed & Utilities</th> <th>Price /Unit</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>ROM Coal</td> <td>@ Rs 3010 /MT</td> </tr> <tr> <td>2.</td> <td>Power</td> <td>@ Rs 11.07 per KWH</td> </tr> <tr> <td>3.</td> <td>Raw Water</td> <td>@ Rs. 5.0 /M³</td> </tr> </tbody> </table> <p>Note:</p> <ol style="list-style-type: none"> For evaluation, Percent change in WPI for Coal for future years will be applied based on average percentage change per annum in WPI for minerals during last five years from the date of bid closing date. Cash flow for the Coal will be increased for 25 years period at the rate of derived percent change of WPI per year in the NPV working. For evaluation, Percent change in WPI for Raw water, Power for future years will be applied based on average percentage change per annum in WPI for manufactured Products during last five years from the date of bid closing date. Cash flow for the raw water, power will be increased for 25 years period at the rate of derived percent change of WPI per year in the NPV working. The price of ROM coal mentioned above is only indicative and is solely included in the NIT for the purpose of evaluation of the bids. Based on the coal price notification guidelines issued by competent authority from time-to-time, the price of ROM coal supplied by SECL and/or the built-up components of landed price at the proposed Coal-to-Ammonia plant, may be revised by SECL at its sole discretion. 		Feed & Utilities	Price /Unit	1.	ROM Coal	@ Rs 3010 /MT	2.	Power	@ Rs 11.07 per KWH	3.	Raw Water	@ Rs. 5.0 /M ³
	Feed & Utilities	Price /Unit											
1.	ROM Coal	@ Rs 3010 /MT											
2.	Power	@ Rs 11.07 per KWH											
3.	Raw Water	@ Rs. 5.0 /M ³											

22.0 TAXES & DUTIES

- 22.1 The Monthly Charges are currently subject to **Goods and Service Tax (GST)**. Bidders should quote the charges exclusive of GST.
- 22.2 For the purpose of evaluation, GST on all the charges will be calculated considering the Present prevalent rate of 12% (Twelve percent) against applicable SAC code 9988.
- 22.3 In actual operation, Owner shall reimburse the GST paid by the BOO processor on the services performed by the BOO processor under the Contract, subject to the BOO processor providing to Owner, appropriate documents/Tax Invoice.



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23.0 SECURITY DEPOSIT/PERFORMANCE BANK GUARANTEE (SD/PBG)

- 23.1 Within 30 (thirty) days from the date of Letter of Award by Owner, for faithful performance of its Contractual obligation, the successful Bidder shall provide to Owner a bank guarantee for an amount equal to 5% (five percent) of the aggregate cost of Ammonia Conversion Charge (without escalation) for the Contract Period as security deposit / performance bank guarantee ("Security Deposit (SD)/ Performance Bank Guarantee (PBG)"). This SD/PBG will be valid for the Contract Period plus 6 (six) months. Contractor may also submit SD/PBG valid for initial 5 years which shall be renewed after every 5 years till the completion of contract period. However, In case, the Contract Agreement is renewed the SD / PBG shall be valid for the renewed period plus 6 (six) months.
- 23.2 The BG shall be issued by Nationalized/Scheduled Indian Bank or an Indian Branch of a Foreign Bank acceptable to Owner. The BG shall be strictly in the prescribed format enclosed in the Bidding Documents. Each page of the BG must be stamped & signed by the authorized signatory (ies) of the Bank. Corrections, if any, must also be initialed by the authorized signatory(ies) of the Bank. The Bank is required to send a copy of the BG(s) in confirmation directly at the address of Owner.
- 23.3 BOO Processor shall for due and faithful performance of its obligation during Contract Period provides to Owner a BG towards Security as above. Till such time the BOO Processor provides to Owner the Security Deposit as above, the Earnest Money Deposit (EMD) shall remain in full force and effect. Failure of the BOO Processor to provide the Security Deposit in accordance with this clause, shall entitle Owner to terminate this Agreement without being liable in any manner whatsoever to the BOO Processor and to appropriate the Earnest Money Deposit (EMD) as the pre estimated compensation for the cost, time and effort by Owner involved in the bidding.
- 23.4 Owner shall not be liable to pay any bank charges, commission or interest on the amount of Security Deposit.

24.0 CONTRACT AGREEMENT

- 24.1 The Contract Documents shall comprise of the following:
- Contract Agreement
 - Land Lease Agreement
 - The Detailed Letter of Acceptance (DLOA) and accepted Price-Schedule.
 - The Notification of Award/Letter of Award.
 - Amendments, if any, issued to the Tender Documents.
 - Original Tender Documents (including the Conditions to Contract) issued with its enclosures.
 - Letter of Waiver of Conditions / Deviations submitted by Contractor
 - All Post-bid amendments to tender documents issued by Owner
 - Post Bid Clarifications and replies exchanged between Owner and the Contractor
 - Minutes of meeting of Vendor Clarification Meetings (VCM) between Owner and Contractor
 - All Pre-bid amendments to tender documents issued by Owner
 - Reply to Pre-bid queries issued by Owner
 - Integrity Pact (IP) signed between the Owner and the Bidder/Contractor.

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24.2 Any deviations or stipulations made and accepted by Owner after LOA shall be treated as amendment(s) to the Contract Documents and shall be governed by the conditions relating to amendment of Contract

25.0 NOTIFICATION OF AWARD/LETTER OF AWARD

25.1 Prior to the expiry of 'Period of Bid Validity', Notification of Award for acceptance of the Bid will be intimated to the successful Bidder by Owner either by E-mail /Letter or like means defined as the "Letter of Award (LOA) / Notification of Award". The Contract Agreement shall enter into force on the date of LOA and the same shall be binding on Owner and successful Bidder/BOO Processor /Contractor. The Notification of Award/LOA will constitute the formation of a Contract. The Detailed Letter of Acceptance shall be issued thereafter incorporating terms & conditions of Tender Document, Corrigendum, Clarification(s), Bid and agreed variation(s)/acceptable deviation(s), if any. Owner may choose to issue Notification of Award in form of Detailed Letter of Acceptance without issuing LOA and in such case the Contract Agreement shall become valid, binding and enforceable on the date of Detailed Letter of Acceptance only.

25.2 Contract Period shall commence from the date of "Notification of Award" or as mentioned in the Notification of Award. The "Notification of Award" will constitute the formation of a contract, until the contract has been affected pursuant to signing of Contract Agreement as per ITB:Clause-26.

25.3 The successful Bidder on receipt of Notification of Award shall within 'fifteen [15 (fifteen)] days' of issuance of the same, shall sign and return the acknowledged copy to Owner.

25.4 Upon the successful Bidder's / Contractor's furnishing of 'SECURITY DEPOSIT/PERFORMANCE BANK GUARANTEE', pursuant to "ITB: Clause-23.0", SECL will promptly discharge his 'Earnest Money ', pursuant to "ITB:Clause-17.0"



26.0 SIGNING OF CONTRACT

The successful bidder shall be required to execute a formal Contract Agreement and Lease Agreement with Owner as per the proforma enclosed with the Bidding Documents (subject to any applicable amendments as set out in the Statement of Agreed Variations) within 60 (sixty) days from the date of Notification of Award on a non-judicial stamp paper of Bilaspur State Chhattisgarh (India) and of appropriate value. The cost of non-judicial stamp paper shall be borne by the Bidder. In the event of failure on part of the successful bidder to sign the Contract Agreement and Lease Agreement within the above stipulated period, the EMD shall be forfeited and the acceptance of the Tender shall be considered as cancelled.

27.0 GENERAL INSTRUCTIONS

27.1 Suitability of Plant

Before submitting his bid the Bidder shall ensure that compliance with any requirements of the specification would not render the plant unsuitable in any respect for the purposes mentioned or inherent in the Specification. Should the Bidder consider that compliance with any requirements of the Specification would render the plant unsuitable, he shall submit a proposal or proposals for modifying the requirements and shall include these in the "Schedule of Deviations" from the specification.

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27.2 TRANSFER OF TENDER DOCUMENTS/PROPOSAL

Transfer of Bid submitted by one BIDDER to another is not permitted. No alteration in the essence of a Bid, once submitted, shall be permitted.

27.3 Owner reserves the right to verify all statements/information submitted to confirm the Bidder's claim on experience on the performance of equipment offered and capabilities of the Bidder to perform the Scope of Work. Owner may inspect similar facilities built by the Bidder. Bidder shall co-ordinate and arrange for visit. However all expenses of such visit of Owner's officials / Owner's representative will be borne by Owner.

27.4 Owner shall not entertain any correspondence with any Bidder on acceptance or rejection of any Bid.

27.5 Oral statements made by the Bidder at any time regarding any matter including quality, or arrangement of the equipment or any other matter will not be considered and will not be binding on the Owner.

27.6 Standard catalogue pages and other documents of the Bidder may be used in the Bid to provide additional information and data as deemed necessary by the Bidder.

27.7 Bidder will furnish the Bid with all relevant information's as called for. Bids with incomplete information are liable for rejection.

27.8 The Bid shall be submitted in line with clause wise compliance of this Tender.

27.9 Pre Bid Queries/clarifications shall be submitted as per Annexure1.5.

27.10 If at any later date, it is found that documents, information and data submitted by the Bidder in the Bid, and based on which the Bidder has been considered eligible or successful or has been awarded the contract is incorrect or false to the extent that had the correct or true information been made available to the Owner at the time of Bid evaluation, the bid would have been declared ineligible or unsuccessful, the Bidder shall be forthwith disqualified or, as the case may be, the contract awarded based on such incorrect or false information shall be cancelled and the EMD/PBG shall be liable to be forfeited.



28.0 CONTACTING OWNER

A Bidder shall not contact the Owner on any matter relating to his bid from the time of priced bid opening to the time that the contract is awarded, unless requested to do in writing. Any effort by a bidder to influence the Owner in the Owner's decisions in respect of bid evaluation or contract award will result in the rejection of that bidder's bid.

29.0 OWNER'S RIGHT TO ACCEPT/REJECT BIDS

29.1 The Owner reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of contract without thereby incurring any liability to the affected bidder(s) or any obligation to inform the affected bidder(s) of the ground of Owner's action.

29.2 It is observed that many bidders indulge in trading in contracts by entering into undisclosed back-to-back arrangements for the whole or a substantial portion of a Contractor's obligations under the contract. Consequently, if a Bidder proposes to enter into any such arrangements upon a successful award of work or has in place any such arrangement which will become operative upon the award of work, the bidder must make a complete disclosure of such arrangement or proposed

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arrangement in its proposal, and all provisions applicable to sub-contractor(s) in terms of bidding documents shall apply to such arrangements.

- 29.3 If the existence of such an undisclosed arrangement is reasonably apprehended by the Owner in the case of a bidder, the Owner may reject such bidder's bid as not responsive.
- 29.4 If such an undisclosed arrangement is discovered after the award of work, such arrangement(s) shall be deemed to constitute an assignment of contract and a ground of termination pursuant to the provisions of termination under the Conditions of Contract.

30.0 INTEGRITY PACT

Bidders are required to unconditionally accept the "Integrity Pact (IP)", as per Annexure 1.16, (executed on plain paper) and submit the same duly signed on all pages by the bidder's authorized signatory along with the bid. **Bidder's failure to comply with the aforesaid requirement regarding submission of 'Integrity Pact (IP)' shall lead to outright rejection of the Bid and in such case the Bids shall not be opened.**

31.0 PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA) POLICY

Purchase preference to Central government public sector Undertaking, Local Content (PP-LC) bidders and Micro and Small Enterprises (MSEs) shall be allowed as per Government instructions in vogue.



The "PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA) POLICY" is enclosed as Annexure 1.10.

32.0 PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA

Inline with Department of Expenditure's O.M. No. F.6/18/2019-PPD dated 23.07.2020 and Order (Public Procurement No. 1) dated 23.07.2020 and subsequent orders, bidder to submit Certificate as per Form I & II enclosed as Annexure 1.23.

33.0 APPLICABILITY OF POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS



The applicability of policy for providing preference to domestically manufactured iron & steel products is enclosed as Annexure-1.24 to Tender herewith. Bidder to submit SELF-CERTIFICATE on BIDDER'S LETTERHEAD as per Format enclosed as Annexure-1.24 A.

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SECTION 6.0

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ARTICLE- 1.0: DEFINITIONS

The following words and expressions as used in the Agreement (as hereinafter defined) shall have the meanings hereof assigned to them except where the context otherwise requires:



“Applicable Law”	means any statute, law, regulation, ordinance, rule, judgment, rule of law, order, decree, clearance, approval, directive, guideline, policy, requirement, or other governmental restriction or any similar form of decision, or determination by, or any interpretation or administration of any of the foregoing by, any statutory or regulatory authority whether in effect as of the Bid Date or thereafter and in each case as amended, in any relevant jurisdiction.
“Basic Design Package”	means the diagrams, drawings, design data, equipment lists, major equipment specifications, engineering standards, and other documents, information, and materials prepared by Process Licensor.
“Bid”	mean the documents in their entirety comprised in the bid submitted by the selected Bidder in response to the Tender Documents in accordance with the provisions thereof and "Bids" shall mean the bids submitted by any and all pre-qualified Bidders.
“Bidder”	mean a proprietary concern/ partnership firm/ body corporate/ Company registered under the Companies Act 2013 or any previous Company Law/Act as applicable in India/ Joint Venture/Consortium who submits a Bid pursuant to the Tender Documents.
“Bidding Document / Tender Document”	means this document (including the Conditions to Contract) along with any subsequent amendments made from time to time.
“Build-Own-Operate (BOO)”	refers to the concept in which the ownership (financing) of plant, setting up as well as operation & maintenance of plant during the entire contract period shall lie with the BOO Processor . SECL shall pay the agreed processing charges to the BOO Processor. Ownership of the land (provided on lease rent basis by SECL) will remain with SECL.
“BOO Processor/Contractor”	means the Successful Bidder. The Successful Bidder shall install “Production Plant” based on coal gasification on a site licensed by the Owner at Mahamaya SCG Plant, Bhatgaon Area, Surajpur District, Chhattishgarh, India as per the requirements and specifications mentioned on mutually agreed terms. The Successful Bidder shall install the facilities, own, operate and maintain the same under the terminology and conditions commonly known as Build-Own- Operate (BOO),and supply the Product as per terms and conditions set out in this bidding document.

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“Best Operating Practices”	means those procedures, practices, methods, techniques and standards as changed from time to time, that are generally accepted for generation of Ammonia operation internationally taking into account conditions in India and commonly used in best utility engineering and operations to design, construct, test, operate and maintain equipment lawfully, safely, efficiently and economically as applicable to Ammonia Plant of the size, services and type similar to such plants operating worldwide and generally conform to the statutory requirement, manufacturers' specifications and maintenance guidelines followed for these Plants.
“Construction Period/ Completion Period”	“Construction Period/ Completion Period” means a period of 48 (forty eight) months from the Effective Date which includes 42 months for Mechanical Completion and 6 months for Commissioning.
“Contract Period”	means the tenure of the Project, comprising of the Construction Period of 48 months from the effective date of contract plus the period of Twenty five (25) years from the First Delivery Date by the BOO Processor or thereafter extended period on mutually agreed terms and conditions.
“Dimensions”	means the dimension as per metric system.
“Effective Date/ Effective Date of Contract (EDC)”	shall be the date when Land free from all encumbrances shall be provided by Owner to the BOO Processor.
“Feed and Utilities Delivery Point”	means the Railway Wagon/ Truck Lorry receipt point for Feed (Coal) where weight of the coal will be checked and received by BOO Processor. Delivery point for Utilities shall be flange(s)/ points (for power) where BOO Processor shall connect for receiving the feed and Utilities. Feed and Utilities Delivery Point shall be the point outside the battery limit of BOO Processor. BOO Processor also accepts title to and risk of loss of Feed and Utilities after the Delivery Point.
“Feed Stock”	means Coal of specification specified in Volume II, Section 1.4, Design Basis at Annexure-1 supplied by Owner at the Battery Limit of BOO Processor.
“First Delivery Date”	means the date on which the delivery of Product commences, subject to delivering at least Ammonia (2200 MTPD), (corresponding to availability of Coal) to Owner, at delivery point, for an uninterrupted period of 72 (seventy two) hours.
“Fixed Monthly Charge”	means the fixed monthly charge specified in Preamble to Schedule of Price for Ammonia, as escalated from time to time in accordance with the provisions of Article 15.0 hereof.
“Gasification Process Licensor”	Means who makes a proposal for the technology which not only includes the description of the process and its performances, the cost of the license, process design package

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	as well as proprietary equipment.
"GOI"	means the Government of India including any and / or all ministries thereof and /or departments thereof having duly constituted authorities to grant approvals under any applicable statutes, rules and regulations enforced from time to time.
"Guaranteed Quantity"	means Guaranteed Production of Ammonia (corresponding to availability of Coal) as set out under Volume II, Section 1.4, Design Basis.
"Installed Capacity"	means the output of the Production Plant under conditions of continuous maximum loading.
"Instantaneous"	means the average of all readings of any single flow meter over 3 (three) minutes period.
"Interface Diagram"	means a block-and-line diagram representing the logical interfaces that connect components within a system or system segment.
"Letter Of Award(LOA)/ Notification Of Award"	means based on the offer of BOO Processor, Owner issues its acceptance to the said offer requesting BOO Processor to start executing the jobs in terms of the Agreement(s) to be signed within 60 (sixty) days from the date of LOA.
"License"	means shall mean any consent, license, approval, registration, notarization, endorsement, waiver, filing, relaxation, no-objection, exemption, permit, corporate resolution or other authorization of any nature which is required to be granted by any statutory or regulatory authority or other government authority in accordance with Applicable Law for: (a) the execution of the Contract; (b) fulfilling the Works; and(e) completing all other obligations under the Tender Documents, as may be necessary for the BOO Processor.
"Material Adverse Effect"	Means any act or event that materially and adversely affects the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement.
"Ammonia"	means the Product of specified parameters (quantity, quality and pressure and temperature at Delivery point) as mentioned in Volume II, Section 1.4, Design Basis and produced in the Production Plant installed by BOO Processor and delivered to Owner at Delivery point.
"MIS"	means Management Information System.
"Monthly"	with respect to a billing cycle means after every 30 (thirty) days in a month of 30(thirty) days, after 31 (thirty-one) days in a month of 31 (thirty-one) days, after 28 (twenty eight) days in a month of 28 (twenty eight) days, and after 29 (twenty nine) days in a month of 29 (twenty nine) days.

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“Notification date for Production Plant readiness”	means when BOO Processor’s Supply System is capable of delivering at least Ammonia (2200 MTPD), for an uninterrupted period of 72 (seventy two)hours, BOO Processor will so notify Owner in writing, and the date of such notice will be the notification date for Production Plant readiness.
“Operations Period”	means a period of 25 (twenty five) years commencing from the First Delivery Date.
“Owner”	means: South Eastern Coalfields Limited (A subsidiary of CIL) /s South Eastern Coalfields Limited , (A subsidiary of CIL) SECL HQ, Seepat Road, District- Bilaspur, Chhattishgarh-495006 (India).
“Party”	mean a party (BOO Processor or Owner) to the Agreement.
“Plant availability factor or On-stream Factor (OSF)”	means percentage of supplied quantity to the requested quantity in a year excluding the period of planned shutdown and periods on account of Force Majeure conditions in that year.
“Pressure”	means the pressure (gauge pressure) of the Product, Feed and Utilities.
“Process License”	means a license which is an official permission or permit to do, use, or own something.
“Product”	means Ammonia.
“Product Delivery Point”	means the Truck/Railway Wagon Rail Receipt point, where the measurement of the Product so produced shall be taken. Owner also accepts title to and risk of loss of product after the Delivery Point.
“Production Plant”	<p>means the following plant, at Owner’s designated land set up by the BOO Processor:</p> <p>A brand new Ammonia Production Plant based on Coal gasification technology with its necessary ancillary facilities consisting of but not limited to Coal gasification section, By-products recovery section (if any), Downstream gas processing units from Coal Gasification, Ammonia Plant, Heat recovery & steam generation, Ash handling system, Cooling Tower, DMW Plant, Instrument Air Plant, Inert Gas (N2) Generation Plant (if required), Effluent Treatment Plant etc. and to be designed, engineered, financed and installed by BOO Processor on site allocated to BOO Processor under license for use from Owner. The BOO Processor shall operate, monitor and maintain the Production Plant for the production and supply of Ammonia , of Quantity and Specifications, specified in Volume II, Section 1.4, Design Basis to Owner, at Delivery Point. The Production Plant shall also include all Ancillary Equipment, Utilities System and Interconnecting Pipelines up-to Delivery Point. The Production Plant shall have a minimum design life of 25 years and shall have design characteristics as set forth in Volume II, Section</p>

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	1.4, Design Basis.
"Production Plant Site"	means the plot of land located at the site of Owner's Plant, which will be allocated to BOO Processor by Owner under lease for use as per Lease Agreement attached as Draft for Lease Agreement of Volume I, Sec. 1.21, for the BOO Processor's Production Plant as provided in Article 23. The Production Plant Site, location and boundaries are described in Volume II, Section 1.1, Project Description.
"Purity"	means the purity of the Ammonia as per the parameters specified in Volume II, Section 1.4, Design Basis.
"Requested Quantity"	means Owner's Normal demand for Ammonia as set out under Article-7 and under Volume II, Section 1.4, Design Basis.
"Scheduled Outage"	means a planned interruption of Production Plant that (i) is not a unscheduled Outage, (ii) has been scheduled and allowed by Owner in accordance with Article-18 hereof, and is for inspection, testing, corrective maintenance, repairs, replacement or improvement as the case may be, together with any other maintenance measures that the BOO Processor, plans to carry out during the scheduled period of the relevant year on the basis of Best Operating Practices.
"SG"	means the Chattisgarh State Government including any and / or all ministries thereof and /or departments thereof having duly constituted authorities to grant approvals under any applicable statutes, rules and regulations enforced from time to time.
"Shortfall"	means the difference between the Requested Quantity and quantity supplied by BOO Processor to Owner during any relevant period, incase the Requested Quantity is higher than the Guaranteed Quantity, then the Shortfall will be computed as the "Guaranteed Quantity minus the Quantity supplied by BOO Processor to Owner during any relevant period".
"Shut Down"	means the total duration between stoppage of Ammonia upto resumption of supply of Ammonia.
"Specifications"	means, the Technical Specifications, Schedules, statements of technical data, Performance Characteristics, Values and all such particulars.
"Successful Commissioning for Production Plant"	mean when the Production Plant shall give a level of output not less than Contracted Quantity of Ammonia at specified parameters as specified in Article-7, 8 &12 respectively.
"Unscheduled Outage"	mean an unplanned interruption of Production Plant that has not been scheduled in advance and notified by the BOO Processor to Owner that (i) this is not a Scheduled Outage and (ii) is for the purpose of performing work on specific components, which should not, in the opinion of the BOO Processor, be postponed until the next Scheduled Outage.

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“Variable Charges”	means the applicable Variable Charges of Ammonia as specified in Preamble to Schedule of Price, as escalated from time to time in accordance with the provisions of Article 15.0 hereof.
Tender Document	Tender Document/ Notice Inviting Tender (NIT)/ Bidding Document’ means Complete Bidding Document as originally issued and any Addendum /Corrigendum/Amendment(s) issued thereafter
TIA	Means Tender Inviting Authority. PDIL is the TIA on behalf of Owner/SECL for this tender.

1.1 Units for measurements



- a) **Normal Cubic Meter" or "Nm³"** used as a measure, which are in gaseous form would occupy a volume of one cubic meter at 0 degrees Celsius temperature and 1 atmospheric pressure (equal to 1.0133 bar and 273.15 K). Such quantity is herein referred to as "Normal Cubic Meter" or "Nm³".
- b) **"Nm³/h"** used as a measure of Gaseous fluid shall mean an instantaneous rate of flow which would be equivalent to 1 (one) Nm³ if continued for a one (1) hour period at required pressure.
- c) **"Tonne"** used as a measure of Steam means 1000 Kg of Steam.
- d) **Tonne/hr (T/h)"** used as a measure of Steam shall mean an instantaneous rate of flow which would be equivalent to 1 (one) Tonne of Steam if continued for 1 (one) hour period at required pressure and temperature.

ARTICLE- 2: INTERPRETATION AND DISCLAIMERS

2.1 Interpretation



In the Agreement:

- a) the paragraph headings and numbering are for convenience only and shall be ignored in the interpretation of the Agreement.
- b) the singular includes the plural and vice- versa
- c) reference to any Agreement, enactment, ordinance or regulations includes any amendment or replacement thereof in whole or in part
- d) reference to Articles, paragraphs and Annexures are, unless the context otherwise requires, references to Articles, paragraphs and Annexures respectively, of the Agreement
- e) the words "include" and "including" shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases or words of like import and export.
- f) terms defined in Article-1 shall have the meanings ascribed thereto in that Article



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when used elsewhere in the Agreement.

- g) references to Applicable Laws or any provision thereof shall include amendment or re-enactment or consolidation of such Applicable Laws or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder.
- h) references to laws of the State, laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted.
- i) references to a "person" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns.
- j) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement.
- k) the words "include" and "including" are to be construed without limitation and shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases.
- l) references to "construction" or "building" include, unless the context otherwise requires, investigation, design, developing, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "construct" or "build" shall be construed accordingly.
- m) references to "development" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "develop" shall be construed accordingly.
- n) references to "excavation" include, unless the context otherwise requires, cutting, scooping or digging out a part of solid mass comprising earth, rocks, coal and other materials with the objective of segregating coal from earth, rocks and other materials for lifting and transportation thereof to the Coal Depot or Delivery Point, and "excavate" shall be construed accordingly.
- o) any reference to any period of time shall mean a reference to that according to Indian Standard Time.
- p) any reference to "hour" shall mean a period of 60 (sixty) minutes.
- q) any reference to "day" shall mean a reference to a calendar day.
- r) references to a "business day" shall be construed as a reference to a day (other than a Sunday or a public holiday) on which Owner is open for general business in the State in which the Project is situated.
- s) any reference to "month" shall mean a reference to a calendar month as per the Gregorian calendar.

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- t) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement.
- u) any reference to any period commencing "from" a specified day or date and "till" or "until" a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day.
- v) references to the "winding-up", "dissolution", "insolvency", or "reorganisation" of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, re-organisation, dissolution, arrangement, protection or relief of debtors.
- w) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, licence or document of any description shall be construed as reference to that agreement, deed, instrument, licence or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this sub-clause (w) shall not operate so as to increase liabilities or obligations of the Owner hereunder or pursuant hereto in any manner whatsoever.
- x) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party in this behalf and not otherwise.
- y) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement.
- z) references to Recitals, Articles, Clauses, Sub-clauses, Provisos or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses, Provisos and Schedules of, or to, this Agreement, references to an Annex shall, subject to anything to the contrary specified therein, be construed as a reference to an Annex to the Schedule in which such reference occurs, and references to a Paragraph shall, subject to anything to the contrary specified therein, be construed as a reference to a Paragraph of the Schedule or Annex, as the case may be, in which such reference appears.
- aa) the damages payable by either Party to the other, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "Damages").
- bb) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence.
- cc) in the event of any disagreement or dispute between the BOO Processor and the Owner regarding the materiality or reasonableness of any matter including any event, occurrence, circumstance, change, fact, information, document,



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authorisation, proceeding, act, omission, claims, breach, default or otherwise, the opinion of the Owner as to the materiality or reasonableness of any of the foregoing shall be final and binding on the BOO Processor.

- dd) where any statement in this Agreement is qualified by the expression “to the knowledge” or “to the best of the knowledge or information or belief” or any similar expression, that statement shall, save as expressly provided to the contrary herein, be deemed to mean that it has been made after due and careful inquiry by the person making such statement.
- ee) If there is any conflict between any provision of the main body of the Agreement and any provision in the schedules or attachments then the former shall prevail.
- ff) No provisions of the Tender Documents shall be interpreted in favour of, or against, any Party by reason of the extent to which such Party or its counsel participated in the drafting hereof or by reason of the extent to which any such provision is inconsistent with any prior draft hereof.



2.2 Disclaimers

- (a) The BOO Processor acknowledges that prior to the execution of the Contract Agreement, the BOO Processor has, after a complete and careful examination, made an independent evaluation of the Contract Documents, Project site, existing structures, local conditions, physical qualities of ground, subsoil and geology and all information provided by the SECL or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. SECL makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/ or completeness of any assessment, assumption, statement or information provided by it and the BOO Processor confirms that it shall have no claim whatsoever against the Authority in this regard.
- (b) The BOO Processor acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Article 2.2(a) above and hereby acknowledges and agrees that SECL shall not be liable for the same in any manner whatsoever to the BOO Processor or any person claiming through or under any of them.
- (c) The Parties agree that any mistake or error in or relating to any of the matters set forth in Article 2.2(a) above shall not vitiate this Agreement or render it voidable.
- (d) In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Article 2.2(a), that Party shall immediately notify the other Party, specifying the mistake or error; provided however, that a failure on part of SECL to give any notice pursuant to this Article shall not prejudice the disclaimer of SECL contained in this Article and shall not in any manner shift to SECL any risks assumed by the BOO Processor pursuant to the Contract Agreement.
- (e) Except as otherwise provided in these Contract Documents, all risks relating to the Project shall be borne by the BOO Processor and SECL shall not be liable in any manner for such risks or the consequences thereof.

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ARTICLE-3 : BUILD

- 3.1 The BOO Processor shall Build, Own, Operate and Maintain the Production Plant with all brand new equipment, items, accessories and auxiliaries, designed and capable of steadily operating, by making its own investment, for the production of Ammonia as Product to meet Owner's requirements to be set up on the land allocated to by Owner under lease for use from which BOO Processor will supply Ammonia to Owner.
- 3.2 BOO Processor shall install the Production Plant for supply of Ammonia to Owner as per the terms of the Agreement within the stipulated period from the date of issue of LOA under the Agreement and subject to the schedule mentioned in Article 12.2 herein below.
- 3.3 The BOO Processor shall submit, Specifications of flow meters for Product, feed and utilities and energy meter for power, to be installed at the Delivery Point of Production Plant, to Owner for their review prior to their procurement. Any disagreement on these specifications will be settled mutually between Owner and BOO Processor.
- 3.4 The BOO Processor shall obtain all Licenses, for construction, installation & commissioning of the Production Plant as required before start of construction as well as from time to time from the appropriate authorities at local, state and national level for operations of the Plant.
- 3.5 The BOO Processor shall ensure implementation of efficient 'Project Management and Quality Assurance Systems during Construction Period.
- 3.6 The construction and commissioning of the Production Plant shall be under periodical inspection of representatives of Owner.
- 3.7 The BOO Processor shall adhere to the schedule of commissioning of the Production Plant and in no case the BOO Processor shall delay in commissioning the Plant due to any reason whatsoever other than Force Majeure and subject to Owner fulfilling its obligations under the Agreement.
- 3.8 In the event of any delay in commissioning of the Production Plant, the BOO Processor shall compensate Owner for the loss suffered by Owner in the form of liquidated damages in accordance with Art. 26 of the Conditions of Contract.
- 3.9 The BOO Processor shall follow all the norms and regulation under Central Pollution Control Board / State Pollution Control Board. BOO Processor shall take all necessary permissions/certificates in this regard as applicable from the appropriate authority.
- 3.10 The BOO Processor shall follow all statutory provisions including labour laws and Industrial Laws for installation of the Production Plant and in no case the employees / workers engaged by the BOO Processor directly or indirectly shall be the employee of Owner and claim for the same. For violation of any of the provisions by the BOO Processor and / or its representatives, Owner shall be indemnified against any claim / demand made by any authority.
- 3.11 The BOO Processor shall ensure that all the personnel / employees, contractors, contract labours/ workers engaged by them in operating the Production Plant for continuous supply of Ammonia shall follow all the safety rules as applicable.
- 3.12 Ammonia, shall be provided by the BOO Processor at Delivery Point of Production Plant. Pipelines from BOO Processor's Production Plant to the Delivery Point located at the

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boundary limit of the Production Plant site shall be installed and maintained by the BOO Processor at its own expense.

- 3.13 BOO Processor shall at its own expense provide meters for measuring Ammonia and maintain, repair and replace the meter as stipulated in Article – 9. The meter shall at all times remain the property of BOO Processor. The total volume of supply of Ammonia shall be measured by these meters. The meters shall be integrating type online Coriolis Mass Flowmeter with accuracy of $\pm 0.05\%$ and measurement of Ammonia will be in mass and volume, the unit of which shall be the cubic metre and MT.
- 3.14 BOO Processor shall also at its own expense provide meters for measuring Coal, Raw water and Energy Meter for Power and maintain, repair and replace the meters as stipulated in Article – 9. The Meters shall at all times remain the property of BOO Processor.
- 3.15 The BOO Processor shall comply with all Applicable Laws and applicable Licenses (including renewals as required) in the performance of its obligations under this Agreement.
- 3.16 The BOO Processor shall discharge its obligations in accordance with standard industry practice and as a reasonable and prudent person.



ARTICLE – 4: OWN

- 4.1 Production Plant along with all other systems, pipelines, metering system, etc. installed by the BOO Processor to meet its obligations under the Agreement, shall be the property of the BOO Processor at all times during the entire Contract Period and after the termination of this Agreement unless transferred or removed in accordance with the terms herein, and the Owner will not create liens, mortgages or charges over property of BOO Processor.
- 4.2 The BOO Processor shall take all necessary steps for registration, obtaining License from the appropriate authority for owning the Production Plant under its own management.
- 4.3 The BOO Processor shall notify Owner regarding readiness of Production Plant. Owner will thereafter decide upon the date for carrying out a test run for capacity and product quality demonstration as defined in the tender elsewhere and notify the same to the BOO Processor. Duration of this test and modalities of this test run shall be mutually agreed upon in writing with the BOO Processor. If BOO Processor fails to demonstrate the performance with respect to capacity and product quality (ies), the BOO Processor will be given an opportunity for corrective engineering till the performance is demonstrated through subsequent test runs.

Owner will provide all the feed / Utilities under Owner's scope at cost including taxes and duties to the BOO Processor for the Commissioning /First test run and all subsequent test runs.

ARTICLE– 5: OPERATE

- 5.1 The BOO Processor shall ensure that the Production Plant is completed and fully operational within the aforesaid time schedule and capable of delivering Ammonia to Owner at required parameters.

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- 5.2 The BOO Processor shall engage its personnel / employees and workers directly or / and indirectly through contractors for operating and maintaining the Production Plant. BOO Processor should ensure that only qualified and trained manpower is given the responsibility of operation of the Production Plant.
- 5.3 The personnel / employees or workers engaged in the Production Plant by the BOO Processor for operating the same shall in no way be the employee of Owner.
- 5.4 BOO Processor shall arrange to procure all necessary Licenses on wherever required, and Owner shall render all necessary assistance to BOO Processor, including providing relevant documents, and certificates, to enable BOO Processor to obtain such Licenses.
- 5.5 The authorized representatives of Owner shall have free access to BOO Processor's Plant during erection, commissioning of Production Plant and during the operation phase also till the completion of contractual period, subject to compliance with safety rules of BOO Processor.
- 5.6 Representatives of BOO Processor and Owner shall meet to co-ordinate, as far as reasonably possible for chalking out Scheduled Maintenance of the Production Plant.

ARTICLE- 6: SUPPLY

- 6.1 From the First Delivery Date as defined in Article 10.5 and thereafter, continuously during the Operations Period and in accordance with the stipulations of the Agreement, the BOO Processor shall operate the Production Plant to supply Ammonia as per conditions given in Volume II, Section 1.4, Design Basis.
- 6.2 Representatives of BOO Processor and the Owner shall meet to co-ordinate, as far as reasonably possible for chalking out Scheduled requirement Ammonia.
- 6.3 Owner shall notify BOO Processor to rectify the quality of Ammonia, in case, it falls below the contracted quality as given in Volume II, Section 1.4, Design Basis of the Agreement which needs to be complied by the BOO Processor.
- 6.4 BOO Processor and Owner shall adopt and comply with operational and communication guidelines as mutually agreed from time to time.



ARTICLE- 7 : QUANTITY

- 7.1 BOO Processor will deliver requested/ targeted Quantity of Ammonia (corresponding to availability of Coal) as per the specified quality specification given in Vol II, Section 1.4 at delivery point(s) as set forth below:

Ammonia Plant

Continuous Normal Requirement : 2200MTPD

- 7.2 Delivery point of the Product shall be considered at the Railway Wagon/ Truck Lorry Receipt point and the measurement of the product delivered to the Owner shall be measured at this point.
- 7.3 BOO Processor shall use all efforts to deliver Product at the requested quantity. BOO Processor will record in its operating records requested quantity and changes

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thereto requested by Owner's representative, the quantity of Product delivered to Owner and any curtailed hours. Access to such records shall be made available to Owner on an ongoing basis. BOO Processor shall adjust the approximate rate of delivery of Product as requested by an authorized representative of Owner in a timely manner.

- 7.4 Owner will provide to BOO Processor the following information regarding the estimated Product requirements of Owner's Plant:
- (a) By March 15th of each year, Owner will provide BOO Processor with an estimate of the requirements of Ammonia for the following financial year (1st April to 31st March of next year);
 - (b) By the 26th day of each Month, Owner will provide BOO Processor with an estimate of the daily quantity of Ammonia from BOO Processor during the next month.
 - (c) By 8.00(hrs) IST each day, Owner will update with its requirement of Ammonia for the next 24 (twenty-four) hours to BOO Processor. These updated requirements will be considered as Requested Quantity for that day.

At its option, Owner will provide such estimates to BOO Processor electronically or in writing.

- 7.5 In case of "Shortfall" in supply of Ammonia during the period of Agreement, the penalty on account of such "Shortfall" in quantity shall be made as set forth in Article-27 and subsequent amendments hereof.
- 7.6 BOO Processor's Production Plant will include facilities to store Coal, Sulphur and Fly as/Slag as mentioned in Volume II, Section 1.4, Design Basis.



ARTICLE- 8 : SPECIFICATIONS

- 8.1 Owner shall supply Feed & utilities in accordance with Article 25 and BOO PROCESSOR agrees to convert Coal to be supplied by Owner, into Ammonia subject to the Specifications and other terms and conditions set forth in this Article-8.

Owner's responsibility of supplying Coal as per the specifications indicated in Volume II, Section 1.4, Design Basis will end at the Delivery Point.

- 8.2 Coal Specification: Owner will deliver or cause to be delivered Coal to BOO Processor at Delivery Point (i.e. the transfer of Title / custody of Raw Coal from Owner to BOO Processor shall be at the point where the Truck is emptied / unloaded in to the unloading Hopper of Production Plant meeting the specifications as indicated in Volume II, Section 1.4, Design Basis.
- 8.3 Ammonia Specification: BOO Processor represents and warrants that maximum requirement of Ammonia will be delivered provided that Owner has delivered or caused to be delivered required Coal meeting the applicable Specifications as indicated in Volume II, Section 1.4, Design Basis.

BOO Processor's responsibility of supplying Ammonia, as per the specifications

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indicated in Volume II, Section 1.4, Design Basis will end at the Delivery Point to Owner. If Owner has delivered Coal which does not conform to its respective Specifications, the impact of such variation in Coal quality on Ammonia specification and other impacts on Production Plant will be mutually agreed between the Owner and BOO Processor.



- 8.4 In case Ammonia do not conform to the foregoing specifications the same may be rejected by Owner by providing BOO Processor with verbal notice and subsequent written confirmation by e-mail within 24 (twenty four) hours of delivery thereof and no payment will be made for the Product so rejected. Any rejected Product shall be deemed to be Product not delivered for the purposes of Article 27 hereof. Any quantity received after verbal notice for rejection will be considered as non-receipt till such time the quality of Product is not conforming to specifications. The price for any off-spec product used before rejection will be mutually agreed. Both Parties shall have the right to verify and confirm on line data. In case of any difference, result from a mutually agreed third party laboratory will be final and binding in such cases. Forthwith upon becoming aware of the fact that the Product does not conform to the specifications, BOO Processor shall at its cost, take such steps as may be necessary to remedy the situation.
- 8.5 Title to Utilities and Product shall vest with Owner at all times. Risk of loss of Product shall pass to Owner from BOO Processor at the relevant Delivery Points. Risk of loss of Utilities shall pass to BOO Processor from Owner at the relevant Delivery Points.

ARTICLE-9: OPERATING / SYSTEM PARAMETERS

- 9.1 Installed & turn down capacity, specification of Ammonia Start-up periods shall be as per Volume II, Section 1.4, Design Basis.
- 9.2 **METERING EQUIPMENT**
- BOO Processor shall at its own expense install all flow meters shown in Interface Diagram in Technical part, Volume-II for measuring Ammonia & Raw water, and energy meter for Power. All meters shall be installed close to Delivery Point in BOO Processor's Production Plant.
- 9.2.1 The metering equipment for the purpose of billing/ recording for Ammonia, Raw Water, Construction Water & Energy Meter for Power will be under the custody of BOO Processor. Meters shall be designed, installed and operated in accordance with recognized international standards viz. API MPMS, AGA etc. The locking arrangement for the metering equipment shall be mutually agreed between the parties. The payment shall be made based on joint reading of BOO Processor's metering equipments on monthly basis or at a frequency mutually agreed between BOO Processor and Owner and monthly invoice based on such reading shall be raised by BOO Processor at an agreed cut off date of the month.

Accuracy Table for BOO Processor

The type and minimum accuracy of the meters to be installed by the BOO Processor shall conform to the Table-1.0 given below: **Table 1.0**

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Description	Recommended Measurement method / Flow Meter	Applicable Standards	Unit	Limits of Accuracy (of Flow Rate) (Instrument Accuracy)	Repeat ability
Coal (Raw)	Complete Automatic Microprocessor Based Smart Belt Weigher System	Refer Note C	Tonnes /hr	+/- 0.25 % of range	+/- 0.2%
Construction water / Raw Water	Magnetic Flow Meter	API	m ³ /hr	+/- 0.5 %	+/- 0.5%
Treated Effluent	Orifice Plate	ISO 5167	m ³ /hr	+/- 0.5 %	+/- 0.5%
Ammonia	Coriolis Mass Flowmeter	AGA/API	Kg/hr and m ³ /hr	+/- 0.1 % (Liquid) and +/- 0.5 % (Gas)	+/- 0.5%

Meter which are being used for billing purpose or custody transfer shall be certified with custody transfer certificate NABL / OIML /W & M etc. dept . Also ensure yearly calibration of all these meters and duly vetted / certified by statutory / competent authority .On field calibration facilities shall be available.



Power supply (UPS & Non-UPS) for all these instrument (if outside BL)

The above measurements shall be utilized for custody transfer. All the measurement data shall be accumulated including any verification or proving (as applicable) computed in the respective stream flow computers with totalizer using Pulse Signal in the control room in an audit trail environment as per the requirements of API MPMS 21. Custody HMI system shall be only for acquiring data, reporting, trending, alarming, net fiscal accounting etc. No data computation shall be performed in the Custody HMI system for the purpose of billing. The complete system shall have redundant Ethernet architecture including stream flow computer and Windows HMI. A Custody HMI system shall also to be provided in Owner Control Room (Location of Control room to be decided during Kick-Off Meeting) for acquiring data, reporting, trending, alarming, net fiscal accounting etc.

For all liquid measurement, applicable certificate of approval from concerned Government body viz. Weight and Measures etc. shall be obtained by BOO Processor for the flow meter, provers and the stream flow computers etc. If any such statutory approval is also required for gas flow measurement, then the same shall be obtained by BOO Processor.

Preferably common, in-situ field proving shall be provided for the CO+2H₂ measurement lines as per listed standards with the criteria of field repeatability verification for 5 successive runs as per relevant API MPMS standards with necessary applicable corrections tables. Density measurement shall be as per relevant chapters of API MPMS standard. One set of calibration facility as per relevant API MPMS standard shall also to be provided by BOO Processor for in-situ provers.

All gas flow measurement points shall be in full compliance to the respective standards including design, selection, installation, field verification guidelines. In-situ field performance testing shall be performed at field operating conditions for Ammonia as listed in respective AGA standard (Section 9.2) with a reference module in-built. The complete as system shall be built such that common influences as listed do not affect the field performance of the meter.

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During the Contract Period for BOO operation, custody transfer system shall be updated from time to time by BOO Processor w.r.t. requirements of latest revision of API MPMS/AGA or any other relevant standards. Any cost arising out of the above updation of custody transfer system will be mutually agreed at that point of time.



- 9.2.2 Owner may also install additional metering equipment for the Product at its battery limit. Owner will maintain and operate such metering equipment to measure and calculate the quantities of Product delivered to Owner. The metering equipment will remain the property of Owner at all times.
- 9.2.3 BOO Processor, at its expense, will test and calibrate BOO Processor's metering equipment at an interval of 6(six) months or within interval as per manufacturer's recommendation in presence of Owner's representative. Periodic joint calibration shall be carried out at, mutually agreed upon date. BOO Processor shall provide all the testing / calibrating equipment / standard gas during the joint calibration of the meters. The BOO Processor shall also provide the calibration certificates of each of the calibrating equipment duly certified from reputed organization with traceability of the calibration Certificate to National Physical Laboratory (NPL)/ National Test House/ National Institute of Standards and Technology (NIST), USA.

In addition, at the request of Owner, with reasonable advance notice, BOO Processor will test the metering equipment in the presence of Owner's representatives, and if the metering equipment is found on such test to be accurate, OWNER will pay BOO Processor the cost and expense of such test, but on such test if found to be inaccurate, then the cost and expense of such test and of correcting the inaccuracy in the metering equipment will be borne by BOO Processor. If on any test, the metering equipment is found to be inaccurate, a correcting invoice will be rendered to cover the actual amount of Product, Feed and Utilities exchanged between BOO Processor and Owner. If on any test of the metering equipment, the measurement of accuracy and repeatability is within limits as specified in the above Table-1.0, the meter will be considered accurate.

- 9.2.4 During any period when a meter is not operating within limits of accuracy and repeatability as specified in the above Table-1.0 of the measured data, rate of Product/ Feed/ Utilities deemed to be supplied shall be agreed by the parties based either on the readings obtained from the calibration meter and/ or the average of flows before the meter ceased to operate.
- 9.2.5 BOO Processor shall install, own, operate, and maintain, at its own expense, analysers that are capable of accurately measuring Specification conformance or other molecular content analysis. List of these items is detailed in Technical scope of Tender. BOO Processor shall provide Owner with access to the readouts of its analysers.

ARTICLE-10: INSTALLATION AND FIRST DELIVERY

- 10.1 BOO Processor, at its expense, will construct, operate and maintain the Production Plant on the Production Plant site, which Owner shall allocate to BOO Processor under a lease for use for the purpose of setting up the Production Plant for the period required for the construction of the Production Plant plus 25 years from the date of First Delivery of Ammonia (unless terminated earlier as per the provisions of the Agreement) and during extension period of the Agreement as may be agreed between the BOO Processor and Owner. The Production Plant will remain the property of BOO Processor at all times and may be removed by BOO Processor within 12 (twelve) months of the expiry or termination of the Agreement. Should the BOO Processor fail to remove the Production Plant or any part thereof from the Leased site or to vacate the site within the said 12 (twelve) month period, the BOO Processors Production



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Plant (or such part thereof as remains un- removed) and the BOO Processor's property whatsoever remaining on the Production Plant Site shall vest in Owner free from any mortgage, charge, pledge, hypothecation or other encumbrance or third party rights whatsoever and/or liabilities whatsoever, and Owner shall be entitled to take such measures as it considers necessary (including but not limited to measures under the Public Premises (Eviction of Unauthorized Occupants) Act,1971) for the eviction of all BOO Processor's or third party personnel or their agents or representatives from the site.

- 10.2 BOO Processor shall use the leased land for setting up the Production Plant only pursuant to the Agreement and not for any other purpose, including any other commercial activity, or residential purpose.
- 10.3 Owner and BOO Processor shall execute, in addition to any other agreement that may be required, the following agreements:
- i) Land Lease Agreement (for Production Plant Site);
 - ii) Contract Agreement

on the lines of the Draft Formats as prescribed by Owner and annexed hereto as in Volume I, Commercial, Draft Lease Agreements.

- 10.4 As part of the Production Plant, BOO Processor shall also install, own and maintain the facilities for Ammonia Plant as follows:
- a. Coal Handling System including Crushing-Milling-Drying unit
 - b. Air Separation unit
 - c. Coal Gasification Including Purification unit
 - d. Ash Handling
 - e. Ammonia Plant (2200 MTPD) along with storage & loading facilities
 - f. Associated Offsite and Utilities facilities
- 10.5 When BOO Processor's Supply System is capable of delivering at least 2200 MTPD of Ammonia of (corresponding to availability of Coal) to Owner for an uninterrupted period of 72 (seventy-two) hours, BOO Processor will so notify Owner in writing, and the date of such notice will be the Notification date for Production Plant readiness. If this notification date for Production Plant readiness is before agreed Time Schedule, BOO Processor shall not be eligible for any Prices set forth in Article-15.0.
- 10.6 BOO Processor assures Owner that subject to Owner meeting its obligations contained in Articles 23 and 25, the Production Plant shall be installed and commissioned by BOO Processor so as to ensure that the First Delivery of Product takes place as per Time Schedule indicated in Article 12.2 of the Agreement. The date on which the delivery of Product commences, subject to delivering at least 2200 MTPD of Ammonia (corresponding to availability of Coal) to Owner for an uninterrupted period of 72 (seventy-two) hours, is referred to herein as "First Delivery Date" for purpose of the Agreement.
- 10.7 Should Owner fail to supply feedstock/utilities by the date set forth in the schedules, contained in Articles 12.2, 23 & 25 or should Owner be unable to receive the Product through no fault of BOO Processor, First Delivery shall be deemed to take place after 3 (three) months from the Time Schedule indicated elsewhere in the Agreement or actual delivery whichever occurs first as per requirement of Owner. BOO Processor will invoice Owner, and Owner will pay the Fixed Monthly Charges as set forth and adjusted under Article 15, plus the amount of any taxes as set forth in Article 17, effective such

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date of First Delivery.

- 10.8 BOO Processor recognises and acknowledges the fact that a delay by it in making the First Delivery of Product within the time stipulated in Article 12.2, would result in damages that are difficult or impossible to determine with certainty and have, therefore, in good faith, estimated as fair compensation in the form of Liquidated Damages as set forth in Article-26.
- 10.9 Owner reserves the right to reschedule (i.e. postponement) the first delivery date within 12 (twelve) months from date of issue of Letter of Award, and such rescheduling can be for a maximum period of 6 (six) months. On such re-scheduling, the re-scheduled date shall be the date of First Delivery of Product under the Agreement and Owner will not pay any charges (including Monthly Fixed Charges) during this period site.

ARTICLE-11: IMPLEMENTATION PLAN



- 11.1 BOO Processor shall complete the installation, testing and commissioning of the Production Plant so as to start delivering Ammonia, to Owner at required parameters by agreed Time Schedule.
- 11.2 It is clearly understood between the parties that the BOO Processor shall be solely responsible for the completion of the Production Plant in time for its successful, sustained integrated operation and maintenance, subject to the terms and conditions of the Agreement.
- 11.3 Within one month of Effective Date of the Agreement the BOO Processor shall submit an Implementation schedule giving milestones of scheduled progress on monthly basis.

ARTICLE-12 : TIME SCHEDULE & DURATION OF AGREEMENT

- 12.1 The Agreement shall come into effect from the date of the Letter of Award subject to the provisions of Article 12.3 hereof. Unless priorly terminated in accordance with the terms of the Agreement, the Agreement shall remain in force for a period of 25 (twenty five) years from the First Delivery Date of Ammonia (corresponding to availability of Coal) with the right of Owner to review the technical capability and soundness of the Production Plant and upon its satisfaction to extend the Contract Period by another 5 (five) years or more on mutually agreed terms and conditions. Terms & conditions regarding extension of the Contract Period shall be discussed 3 years before the end of the Operating Period.
- 12.2 The first delivery Ammonia (corresponding to availability of Coal) shall be made within a period of 48 (forty eight) months from EDC unless rescheduled under Article 10.7 hereof. Owner shall provide the physical possession of the land for Production Plant tentatively within 3 (three) months from the date of LOA. Land lease agreement will be signed only after physical possession of entire land is provided to BOO Processor

The schedule of providing Raw water and Power for commissioning shall be decided based on mutual agreement between Owner and successful Bidder.



- 12.3 In the event that production in BOO Processor's Production Plant is suspended on

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account of Force Majeure, the duration of the Agreement shall be extended by such period as mutually agreed between BOO Processor and Owner, provided that the Agreement is not terminated as a result of such Force Majeure in accordance with the provisions of the Agreement.

ARTICLE-13 : BOO PROCESSOR'S SCOPE OF WORK AND RELATED OBLIGATIONS

- 13.1 The scope of work of the BOO Processor shall be to Build, Own, Operate and Maintain Production Plant and supply Ammonia (corresponding to availability of Coal) to Owner as per provisions of various clauses of the Agreement.
- 13.2 The BOO Processor shall set up the Production Plant to meet the demand of Ammonia as specified in the Agreement. The facilities to be provided by the BOO Processor shall be so designed as to ensure continuous and reliable supply of Ammonia at all times at the parameter(s) of flow, purity and pressure/temperature specified in Volume II Technical Part of Tender.
- 13.3 The BOO Processor shall notify Owner regarding the readiness of Production Plant for commissioning. All inputs required for commissioning and operating the Production Plant (excluding feed stock, Raw water and power) as detailed in Volume II, Section 1.5, Delivery Point Interface including consumables, spare parts, catalyst, chemicals and supplies & services etc. shall be arranged by the BOO Processor at his own cost and without dependence on Owner. For First Commissioning and till the completion of first test run for capacity and product quality demonstration of Production Plant, Owner shall supply feedstock, raw water and Power. Within 4 (four) days of continuous availability of defined coal feed, BOO Processor shall commence the first test run to demonstrate capacity and product quality. Modalities and format for this test run shall be mutually agreed upon in writing with the BOO Processor at least 3 (three) months before First Delivery Date. Product supplied till the first test run shall be free of cost to Owner. If BOO Processor fails to demonstrate the performance w.r.t. capacity and product quality (ies), the BOO Processor will be given an opportunity for remedial action till the performance is demonstrated through subsequent test runs. Only after the demonstration of the plant with respect to capacity and product quality, it will be considered that the First Delivery by the BOO Processor is achieved.
- 13.4 The BOO Processor shall ensure that Best Operating Practice is followed in the Production Plant by well experienced and competent management team. Quality Assurance System; Health, Environment & Safety policies etc. with performance reporting system as elaborated elsewhere in the Agreement shall be followed.
- 13.5 **Safety, Health & Environment (SHE)**
- The BOO Processor shall have a formal and effective SHE management system. SHE performance shall be reported to Owner on regular basis.
- 13.6 **Quality Management System**
- The BOO Processor's Production Plant shall have formal Quality Management System. Quality assurance Records and Documentation shall be shared with Owner.
- 13.7 **Other Services**

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- 13.7.1 Daily log-sheets and trend chart of monitoring of quality as well as quantity of Ammonia monitored by the BOO Processor by suitable measuring equipment shall be made available to Owner. Online information on major parameters of Production Plant shall be made available by the BOO Processor through DCS in main control rooms as per Owner's requirement.
- 13.7.2 In case the BOO PROCESSOR wishes to make an improvement in the Production Plant involving additional investment or otherwise during the tenure of Contract, BOO PROCESSOR will present the implications of the proposal to OWNER and implement such improvement after mutual consent.



ARTICLE-14 : OWNER'S OBLIGATION

- 14.1 Owner shall permit BOO Processor & their authorized personnel with access to Metering Unit (if any) installed within Owner's property at all times, including the right to cross Owner's property by designated routes as necessary, on need basis.
- 14.2 Owner shall keep the BOO Processor informed about any changes in the Product requirement, turndown schedules, shutdown schedules and other matters which may affect the operation of the Production Plant of the BOO Processor.
- 14.3 Owner shall make regular payments to the BOO Processor as per the provisions of the Agreement.
- 14.4 Owner shall supply free of cost Raw Coal, Raw Water, Power as required by the BOO Processor for production of Ammonia.
- 14.5 BOO Processor shall treat liquid effluent generated within its Plant Battery Limit during normal/ worst / start-up/ shutdown operation, BOO Processor shall make all endeavour to limit the discharges within the design values as will be confirmed by the BOO Processor during detail design. BOO Processor shall indicate in their Technical Bid the type of effluents, quality, quantity and the treatment required before disposal as per the Environmental Regulation.
- 14.6 Owner shall fulfill its obligations as mentioned in Article 23.
- 14.7 Failure by Owner to comply with its obligations in Article 14 in accordance with the agreed time schedule shall result in extension of the schedule for First Delivery of Ammonia set forth in Article 12.2 by an equivalent period of the delay by Owner in complying with any such obligation.

ARTICLE-15: PRICES AND ADJUSTMENT/REGULATION OF PRICES

15.1 Prices and Adjustment/Regulation of Prices of Product

Upon First Delivery of Product and thereafter as promptly as possible after the end of each monthly billing period, BOO Processor will read the metering equipment installed pursuant to Article 9.0 to determine the quantity of Product delivered to Owner during such billing period. BOO Processor will inform Owner of the time of such readings and Owner may have a representative present during such readings. Based upon such

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readings, BOO Processor will invoice Owner and Owner will pay BOO Processor those charges as per the relevant formula of this Article 15.

Owner will have the option to receive any amount, subject to guaranteed figures, of Ammonia throughout the agreement. The claim by BOO Processor for Fixed monthly charge and Variable charge is admissible only after submission of following documents in triplicate:

- a. Payment records of the operation / maintenance crews with PF/ ESI and other challans etc.
- b. Submission of payment documents related to taxes, duties and levies etc.
- c. Proof of payment of Income Tax by BOO Processor for their operation/ maintenance crew as per applicable Income Tax Laws.
- d. Proof of obtaining all required statutory clearances.
- e. Annual Medical Fitness record of operation / maintenance crew.

BOO Processor will submit all the documents mentioned above along with the first invoice and thereafter on annual basis or at every renewal.

15.2 Adjustment/ Regulation of Prices (Conversion charge) for Ammonia: The conversion charge of Ammonia shall comprise of two components:

- Fixed Monthly charge
- Variable Charge

15.2.1 Fixed Monthly charge for Ammonia

The Fixed Monthly charge shall have three components:

- 1) Constant amount (towards ROI of the BOO Processor);
- 2) Component related to WPI for manufactured Products (towards maintenance cost & other overheads).
- 3) Component related to CPI for industrial workers (towards manpower cost).

Fixed Monthly Charge shall be calculated on the basis of the following formula:

$$FMC_M = FMC_{BM} \times [XM_{ROI} + XM_{WPI} \times (WPI_N / WPI_O) + XM_{CPI} \times (CPI_N / CPI_O)]$$



Where,

FMC_M = Fixed Monthly Charge computed on account of Ammonia delivered to Owner and will remain valid for that month, it will be released on pro-rata basis from first delivery date upto the end of the month and thereafter on monthly basis every month (e.g. If the first delivery date is 15th January, then FMC_M will be computed on pro-rata basis from 15th January to 31.01.2021.and from February onwards it will be computed in Calendar monthly basis)

FMC_{BM} = Base monthly charge as per the Letter of Award

XM_{ROI} = Constant Component on account of Return On Investment (which will not be adjusted due to inflation)

XM_{WPI} = Constant Component related to "Wholesale Price Index for Manufactured Products"

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XM_{CPI} = Constant Component related to “Consumer Price Index for Industrial Labour”

WPI_N = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to Billing month or latest available as on that date.

WPI_O = Average Whole sale Price Index as per RBI for Manufactured Products for the month of submission of Bid or latest available as on that date.

CPI_N = Average Consumer Price Index for Industrial workers as last declared by Reserve Bank of India for the month prior to billing month.

CPI_O = Consumer Price Index for Industrial workers for the month of Letter of Award or last published month before LOA.

The Constant Component XM_{ROI} , XM_{WPI} & XM_{CPI} to be quoted by the Bidder in the Schedule of Rate / BOQ .

The Bidder will quote FMC_{BM} , XM_{ROI} , XM_{WPI} and XM_{CPI} for Ammonia in the Price Bid,

Table-1: Table for values for Fixed Monthly charge for Ammonia
(To be indicated in the Price Bid)

S.No	Price Factors	Values to be quoted by the Bidder
1.0	FMCBM (Rs./ Month)	
S.No	Price Factors	Values to be quoted by the Bidder
2.0	XM_{ROI} (Note-1)	To be indicated in the Schedule of Price/BOQ
3.0	XM_{WPI} (Note-1)	
4.0	XM_{CPI} (Note-1)	

Note:

1) $XM_{ROI} + XM_{WPI} + XM_{CPI} = 100\%$

2) The price adjustment /regulation under the formula referred in Article- 15.2.1, will be made on monthly basis commencing from the First Delivery of the Product.

15.2.2 Variable charge per MT of Ammonia

$$\text{Variable Charge per MT of Ammonia} = A_{BM} \times (WPI_N / WPI_O)$$

Where,

A_{BM} = is to be submitted in the Price Bid, as per Schedule of Prices/BOQ

WPI_N = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to Billing month or latest available as on that date.

WPI_O = Average Whole sale Price Index as per RBI for Manufactured Products for the month of submission of Bid or latest available as on that date.



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Table-1: Table for values for Variable charge per MT of Ammonia

S.No	Price Factors	Values to be quoted by the Bidder
1.0	A _{BM} (Rs. / MT of Ammonia)	To be indicated in the Schedule of Price/BOQ

Note: The price adjustment /regulation under the formula referred in Article- 15.2.2, will be made on monthly basis commencing from the First Delivery of the Product.

15.3 Subject to the provisions of Article 15.1 hereof, BOO Processor will Invoice Owner the Fixed monthly charge and Variable Charge for the Product supplied and as adjusted as per Article 15.2.1 and Article 15.2.2. Such invoice will be payable within the 30 (thirty) days of its submission.

15.4 The Fixed monthly base charge and Variable Monthly base charge for Ammonia shall remain fixed for the entire Agreement except for variation/adjustment in the Product Prices as per the Article 15.2.1 and Article 15.2.2. Price for Ammonia shall be paid based on the actual quantity of Ammonia supplied by BOO Processor to owner.

15.5 However, if no Ammonia is lifted by Owner, no Variable Charges shall be payable for Ammonia. Only the Fixed monthly charges shall be payable subject to the provisions of Article 15.2.1 hereof.

15.6 Regulation/Adjustment of Prices of Feed/ Utilities

15.6.1 Upon First Delivery of Product and thereafter as promptly as possible after the end of each monthly billing period, BOO Processor will read the metering equipment installed pursuant to Article 9.0 to determine the quantity of Feed / Utilities delivered to BOO Processor during such billing period. BOO Processor will inform Owner of the time of such readings and Owner may have a representative present during such readings. Based upon such readings, the adjustment amount based on the unit rates as set forth below in Table-3 will be worked in case of deviations beyond the allowable limit of guaranteed ratio.



Table-3

Sl. No.	Feed / Utility	Unit	Unit Rate
1.	ROM Coal	MT	@ Rs 3010.00/MT
2.	Power	Kwh	@ Rs 11.07 per KWH
3.	Raw Water	M ³	@ Rs. 5.00 /M ³

15.6.2 Regulation/Adjustment of Prices for Coal

The price of ROM coal mentioned above is only indicative and is solely included in the NIT for the purpose of evaluation of the bids.

During the period of Agreement, Based on the coal price notification guidelines issued by competent authority from time-to-time, the price of ROM coal supplied by SECL and/or the

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built-up components of landed price at the proposed Coal-to-Ammonia plant, may be revised by SECL at its sole discretion and the same shall be considered for the billing cycle period for working out the adjustment amount in case of deviations beyond the allowable limit of guaranteed ratio.

15.6.3 Regulation/Adjustment of Prices for Power

During the period of Agreement, the Power charge will be considered as per actual Power tariff applicable for the billing cycle period for working out the adjustment amount in case of deviations beyond the allowable limit of guaranteed ratio.

15.6.4 Regulation/Adjustment of Prices for Raw Water

During the period of Agreement, the Prices for Raw Water will be considered as per actual water tariff applicable for the billing cycle period for working out the adjustment amount in case of deviations beyond the allowable limit of guaranteed ratio

15.7 Subject to the provisions of Article 15.6 hereof, OWNER will work out the adjustment amount in case of deviations beyond the allowable limit of guaranteed ratio and the same shall be adjusted against the payment towards Conversion charges.

For arriving at on any commercial impact with respect to deviations in Feed and utilities consumption ratios with respect to Ammonia the following will be considered:

Computation of feed utilities and product transfer between OWNER and BOO PROCESSOR will be carried out on daily basis (08-00 hrs of the day to 08-00 hrs of the next day) based on the meter reading as agreed. The daily consumption will cumulated for each calendar month (08-00 hrs. of the 1st day of the calendar month to 08-00 hrs of the first day of the succeeding calendar month) the calculated monthly quantities will be equated for unit supply of Ammonia. The deviation with respect to guarantee will be the difference between the actual consumptions and the guaranteed value.



15.8 The unit rate of Feed/Utility supplied by OWNER as specified in Article 15.6 shall be for the entire Agreement Feed.

15.9 In the event of any of the indices referred to in this Article 15 cease to be published as presently constituted or is rebased, as the case maybe, the Parties agree to substitute an officially published index or indices reasonably comparable to the indices as presently constituted or such rebased index, as applicable

ARTICLE-16 : GUARANTEES

16.1 BIDDER shall furnish guarantee for Production Plant as specified under the following heads.

- Agreed date of supply of Ammonia
- Capacity
- Quality
- Liquid Effluent
- Gaseous Effluent
- Noise Level
- Ratios for Consumption of Feed and Utilities
- Plant Availability Factor

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16.2 Agreed date of supply of Ammonia:

BIDDER shall guarantee supply of Ammonia as per guaranteed capacity and quality, by agreed date of supply of Ammonia as defined in Article 12.0.

16.3 **Capacity:**

BIDDER shall guarantee supply of Ammonia as per following:

Ammonia – 2200 MTPD (minimum)

16.4 **Consumption:**

As per Schedule of Prices.

If the actual consumption is within the following specified limits, there will be no financial adjustment. Financial value of any performance inferior to the guaranteed ratios will be debited to the BOO Processor, subject to the following:

Coal (Feed/ fuel) consumption : Within \pm 2.0% of Guaranteed ratio
Raw water : Within \pm 2 % of Guaranteed ratio
Power : Within \pm 2 % of Guaranteed ratio

16.5 **Quality of the Product:**

BIDDER to guarantee supply of Ammonia as per the following quality:

Ammonia : 99.99 % (minimum)

16.6 **Plant Availability:**



BIDDER shall guarantee minimum Plant Availability Factor for Production Plant as 100%.

BIDDER shall guarantee the annual Ammonia Production for 330 days.



ARTICLE-17: TAXES AND DUTIES

17.1 Bidder to quote the Fixed Monthly Charge and Variable charge as per Article 15 exclusive of taxes and duties. Bidder have to discharge statutory obligations like GST and other taxes and duties applicable on the assessable value. It shall be the obligation of the Bidders to satisfy the tax authorities on valuation aspects.

17.2 The Conversion charge (fixed monthly charge and the variable charge) shall be subject to GST. The Bidders should quote the above charges exclusive of GST. For the purpose of evaluation, the quotes of GST on the Conversion charges will be considered at the present prevalent rate of 12% (Twelve percent) against applicable HSN code 9988. There will not be any other taxes and duty leviable on feed and utilities as the same shall be supplied free of cost during execution of the Contract. In actual operation Owner shall reimburse the GST paid by the BOO Processor on the services performed by the BOO Processor under the Contract Documents, subject to the BOO Processor providing to Owner, appropriate documents/Tax Invoice.

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- 17.3 If at any time during the Contract Period any tax or any other duty, cess, levy, etc. is newly imposed by amendment or revision in the existing laws on BOO Processor by any governmental authority chargeable on the Conversion charges or on the production or delivery of Ammonia to Owner hereunder, then Owner will reimburse BOO Processor therefore, to the extent applicable to deliveries to Owner hereunder, on submission of the relevant invoices & proper documentary evidence.
- 17.4 Further, Section 171 of CGST Act, 2017 provides that “any reduction in rate of tax on any supply of goods or services or the benefit of input tax credit shall be passed on to the recipient by way of commensurate reduction in prices”. Accordingly, Bidders are required to ensure compliance to the anti-profiteering clause under GST law.
- Similarly, if there is any decrease in such applicable taxes, duties, levies, etc on the rate existing on the last date of submission of Bid the same shall become recoverable from the BOO.
- 17.5 In the event of any additional tax liability accruing on the BOO Processor due to classification issue or for any other reason, the liability of SECL shall be restricted to the amount of GST charged on the original tax invoice issued by the BOO processor.
- 17.6 BOO Processor should have Permanent Account Number (PAN) as per provisions of Indian Income Tax Act. TDS / withhold tax, as applicable, under the Income Tax Act will be deducted. Deduction at lower rate on nil rate has to be substantiated by submitting certificate under section 197 from the income tax authority by the BOO Processor. Income tax deducted at source will be deposited with Tax Authorities by Owner as per regulations and a Certificate shall be made available to BOO Processor for it to avail the tax credit.
- 17.7 BOO Processor shall bear and pay all corporate income taxes and/or turnover taxes, if any, based upon or measured by its net income, and all taxes imposed on corporations on account of their existence or their right to transact business. BOO Processor shall pay all duties, taxes and levies associated with the procurement of BOO Processor’s equipments, catalysts, chemicals, consumables, their transportation to the site and erection & commissioning on the site.
- 17.8 Please note that the responsibility of payment of GST (CGST & SGST or IGST or UTGST) lies with the BOO Processor only. BOO Processor providing taxable service shall issue tax Invoice/ Bill, as the case may be as per rules/ regulation of GST. Further, returns and details required to be filled under GST laws & rules should be timely filed by Service Provider with requisite details.
- 17.9 In case the GST rating of vendor on the GST portal / Govt. official website is negative / black listed, then the bids may be rejected by SECL. Further, in case rating of bidder is negative / black listed after award of work, then Owner shall not be obligated or liable to pay or reimburse GST to such Bidder/Vendor and shall also be entitled to deduct /recover such GST along with all penalties / interest, if any, incurred by SECL.
- 17.10 BOO Processor shall issue tax invoices, file appropriate returns, and deposit the applicable GST to the account of appropriate Government within the time limit prescribed under the GST Law. In the event of any default, BOO Processor shall be liable to pay the amount, if so imposed on Owner due to such default.
- 17.11 Owner will deduct GST at source at the applicable rates in case transactions under the CONTRACT are liable to GST deduction at source as per the prevailing provisions of GST

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Law. Tax deducted at source under GST will be deposited with Tax Authorities by Owner as per regulations and the required returns will be filed and Certificate, if any, shall be made available to BOO Processor for it to avail the tax credit.

- 17.12 There will be no materials under the scope of the Contract Agreement which will be consigned to Owner, unless otherwise specifically mentioned elsewhere in the tender. The Owner will not issue / provide Road permits/e-way bill to the Contactor except in respect of material directly purchased by the Owner.

ARTICLE-18 : PLANT START-UP AND PLANNED SHUT DOWN

18.1 Plant Start-Up

SECL will supply the Coal, Raw water & Power under SECL's scope of supply on a chargeable basis for all start-ups including the first start-up till the delivery of Ammonia.

Hot Start-up

In case, a shutdown is attributable to SECL, entire start-up requirement of Coal, Power & Water will be supplied free of cost by SECL, to the extent of 24 hours as feed @ 50% capacity of Gasifier and 2 hours for fuel purpose for hot start-up or until the Ammonia product meets specification, whichever is earlier.

Cold Start-up

In case, a shutdown is attributable to SECL, entire start-up requirement of Coal, Power & Water will be supplied free of cost by SECL, to the extent of 96 hours as feed @ 50% capacity of Gasifier and 8 hours for fuel purpose for cold start-up or until the Ammonia product meets specification, whichever is earlier.

18.2 Plant Shut Down



BOO Processor may require from time to time to shut down the production facilities of the Production Plant for such period of time as may be necessary for BOO Processor to make ordinary repairs and for maintenance consistent with proper operation. However, such planned shutdown (turn-around) shall be limited to about 35 (thirty-five) days throughout the year. BOO Processor shall intimate 15 day in advance for such planned shut-down. BOO Processor will design all the equipment/ steam generators etc. those requires mandatory statutory inspection for a minimum run length of 2 years. BOO Processor is required to manage all the statutory inspection within this period.

ARTICLE- 19: CONTINGENCIES

The following contingencies shall be applicable for the Agreement.

In situations other than force-majeure

If Owner fails to provide the Utilities and/or feed under the scope of supply of Owner which results in reduction in production of Ammonia below the guaranteed quantities as defined in the Agreement or no production of Ammonia in the BOO Processor's Plant; or Owner fails to lift requested quantities of Ammonia, then only the Monthly Fixed Charge will be payable in all situations.

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ARTICLE-20: INSURANCE

BOO Processor shall effect and maintain at its own cost, during the Contract Period, procure insurances, for such maximum sums as may be required under the applicable Laws, and such insurances as may be necessary or prudent in accordance with standard industry practice, for the production Plant and facilities and operating personnel in BOO Processor's battery limit.

The BOO Processor, at its sole cost and expense, shall continue to obtain and maintain all the construction period insurance policies and operational period insurance policies required to be taken in respect of the Production Plants as required by the Financers, or by the laws of India; or as may be necessary in accordance with the best operating practices. The BOO Processor shall ensure that Owner is named as an additional insurer on all insurance policies with respect to third party liability insurance. Third party Insurance policy taken by BOO Processor shall have provision for Waiver of Subrogation in favour of Owner.

No later than 45 (forty five) days prior to commencement of the Construction Period the BOO Processor shall by notice furnish to the Owner, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 20. Within 30 (thirty) days of receipt of such notice, the Owner may require the BOO Processor to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the dispute resolution procedure shall apply.



All insurances obtained by the BOO Processor in accordance with this Article 20 shall be maintained with insurers on terms consistent with standard industry practice. Within 15 (fifteen) days of obtaining any insurance cover, the BOO Processor shall furnish to the Owner, copies of the certificate (s) of insurance evidencing coverage, copies of insurance policies and premium payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the BOO Processor to the Owner.

Any failure by the BOO Processor to obtain the insurance coverage or certificates of insurance as required, shall neither relieve the BOO Processor of the insurance requirements set forth herein nor relieve or limit in any way the BOO Processor's obligations and liabilities under any other provision of the Agreement. If the BOO Processor shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Owner shall have the option to either keep in force any such insurances, and pay such premium and recover the costs thereof from the BOO Processor.

The under mentioned minimum coverage or such additional coverage as may reasonably be required, shall be maintained or cause to be maintained by the BOO Processor throughout the Agreement period:

Construction Period:

- Workers Compensation and Employers Liability
- Contractors/Erection All Risk Insurance with all relevant clauses/add ons as per industry best practice
- Marine Cargo Insurance
- Contractors Plant & Machinery

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Operational Period:

- Workers Compensation and Employers Liability
- Industrial All Risk/Large Risk/Mega All Risk Insurance (including machinery breakdown) with all relevant clauses/add-ons as per industry best practice
- Third Party Liability Insurance Comprehensive General Liability (CGL) Insurance
- Public Liability Insurance as per PLI Act 1991

The insurance policies have to be compulsorily taken through Indian insurance companies, as per law of the land.



Notwithstanding any liability that may arise under the Agreement, any loss for which compensation is due to the BOO Processor under this Article, shall not be charged to Owner. All insurance policies in respect of the insurance obtained by the BOO Processor pursuant to this Article 20 shall include a waiver of any and all rights of subrogation or recovery of the insurers there under against, inter alia, the Owner/SECL, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

The BOO Processor shall cause its insurers or agents to provide Owner with certificates of insurance for required replacement policies or renewals as evident from the endorsements of policies, at least 30 (thirty) days prior to i.e. termination or expiration of any policy hereunder.

Similarly, Owner agrees to cover Owner's plant, facilities and operating personnel under insurance along with coverage of third party liability.

Material variations in cover

- (a) If any Adverse Variation (as defined in paragraph (c) below) is proposed to be made to the terms of any Insurance, the BOO Processor shall, promptly after becoming aware of such proposed Adverse Variation, give prior written notice thereof to the Owner.
- (b) No Adverse Variation to any Insurance shall be effected or agreed by the BOO Processor unless the Owner notifies the Borrower in writing, that the Adverse Variation is acceptable to the BOO Processor. The Owner's approval for such Adverse Variation shall not be unreasonably withheld.
- (c) For the purpose of this clause, "**Adverse Variation**" means any variation which could result in a reduction of the cover benefiting an insured party under an Insurance including (without limitation) where such variation involves:
 - (i) material changes to limits of cover and deductible or excess or waiting period or other self-insurance arrangements;
 - (ii) material changes to risks insured, to coverage terms, and the inclusion of new exclusions, exceptions or conditions;
 - (iii) the purchase of any additional Insurance thereof other than as required by this agreement or as previously approved by the Owner;
 - (iv) any material reduction in or cancellation, discontinuance, non-renewal or avoidance of any cover provided under any Insurance;
 - (v) material adverse changes to the credit rating of insurers; and

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- (vi) any material change which would have the effect of causing a breach by the BOO Processor of its obligations under the Transaction Documents or of any other agreement to which it is a party.

ARTICLE-21: SAFETY, HEALTH AND LIABILITY APPORTIONMENT



- 21.1 Owner acknowledges that there are hazards associated with the use of Ammonia. Owner agrees that its personnel involved in activities related to Ammonia are aware of the hazards and assumes all responsibility for warning and protecting its employees and independent contractors of all hazards to persons and property in any way connected with the handling of Ammonia.

The BOO Processor shall ensure that all the personnel / employees, contractors, contract labours/ workers engaged by them in operation and Maintenance of the Production Plant for continuous supply Ammonia to Owner shall follow all the safety rules as applicable.

Owner will receive documents from BOO Processor, including "BOO Processor's Material/Product Safety Data Sheet(s) containing BOO Processor's safety and health information pertaining to Ammonia delivered for appropriate use into Owner's safety program.

Each party hereby agrees to indemnify the other and hold the other harmless from any actions, lawsuits, demands, claims, losses, expenses, costs, including but not limited to legal fees, and damages, arising from the injury, illness or death of their respective employees while engaged in activities connected with the Agreement, whether or not such injury, illness or death is claimed to have been caused by, resulted from, or was in any way connected with the negligence of the party to be indemnified.

- 21.2 BOO Processor will design the Production Plant so that noise levels will not exceed during daytime and night- time, the maximum limits provided in statutory guidelines at the Production Plant Site boundary for a continuous noise source during normal plant operation. BOO Processor shall provide to his employees all Personal Protection Equipment and shall also comply with government regulations in this regard.
- 21.3 BOO Processor will be solely responsible for fulfilment of all requisite statutory obligations in vogue from time to time as per requirement of State Government, Central Government pertaining to this Production Plant during entire period of Agreement.
- 21.4 BOO Processor will make all endeavour to use Best Operating Practices.
- 21.5 BOO PROCESSOR will design the Production Plant so that noise levels will not exceed during daytime and night- time, the maximum limits provided in statutory guidelines at the Production Plant Site boundary for a continuous noise source during normal plant operation. BOO PROCESSOR shall provide to his employees all Personal Protection Equipment and shall also comply with government regulations in this regard.
- 21.6 BOO PROCESSOR will be solely responsible for fulfilment of all requisite statutory obligations in vogue from time to time as per requirement of State Government, Central Government pertaining to this Production Plant during entire period of Agreement.



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ARTICLE-22: CONFIDENTIALITY

- 22.1 The Agreement and all drawings, diagrams, specifications, operating data, pricing and costs and other information furnished by BOO Processor relating to the use and/or delivery of Ammonia furnished hereunder and the information therein are proprietary to BOO Processor. Owner may not reproduce or distribute such materials except: (a) to government agencies for the purpose of obtaining permits; and (b) to Owner's employees for the purpose of carrying out their duties relating to the use of Ammonia. In the case of any of the aforementioned disclosures; Owner "agrees to inform its employees or governmental agencies that such information is the confidential information of BOO Processor and is to be treated accordingly. All such information relating to Product supplied directly by BOO Processor (except information as may be established to be in the public domain) shall be received in confidence and Owner shall exercise the same degree of care to hold such information in confidence as it uses with respect to its own trade secrets and/or confidential and proprietary material. Unless otherwise agreed to by the parties, Owner agrees that it shall keep all such material confidential for a period, which shall expire 5 (five) years after the expiry or termination date of the Agreement.
- 22.2 Any information relating to Owner's plant, supplied directly by Owner shall be received in, confidence and BOO Processor shall exercise the same degree of care to hold such information in confidence as it uses with respect to its own trade secrets and/or confidential and proprietary material.
- 22.3 It is understood that the foregoing obligation of confidentiality does not apply to materials and information that: (i) was already known to the receiving party prior to the disclosure of same hereunder, as evidenced by the receiving party's written records prepared prior to such disclosure; (ii) was in or hereafter comes within the public domain, other than by the receiving party's failure to fulfill its obligations hereunder; (iii) is made available to the receiving party by a third party who does not have any direct or indirect obligation of secrecy to the disclosing party; or (iv) is developed by the receiving party independent of any disclosure under the Agreement as evidenced by its written records.

ARTICLE-23 : PRODUCTION PLANT SITE (S)

- 23.1 Owner will allocate the land to BOO Processor under lease, as per Draft Lease Agreement annexed hereto in Volume I, Sec. 1.10, Draft Project Agreements, for locating the Production Plant approximately as per Plot Plan/Scope drawing enclosed on signing of Agreement. Production Plant site provided shall be free from any encumbrances. Land shall be developed by the BOO Processor. –BOO Processor shall carryout Hazop study through an agency nominated by BOO Processor and submit the report to Owner for review and comments. – Owner shall have the right to verify the incorporation of all Hazop recommendations. BOO Processor shall submit the final Hazop study report, and a plot plan for Owner's record. In addition, Owner and/or its authorized representative will have the right to monitor and review BOO Processor's implementation plan and progress thereof.
- 23.2 BOO Processor, at its sole cost and expenses shall obtain and maintain all requisite statutory clearances including all central, state or local permits. BOO Processor shall also obtain Licenses for construction and operation of the Production Plant. Owner shall provide assistance to BOO Processor whenever necessary, if requested.
- 23.3 Owner, at its expense, will provide a clear approach suitable for access to the Production Plant Site for movement of tractor, tanker, trucks, cranes, construction plant and equipment etc. along with handing over of the site.

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- 23.4 Owner grants 24 (twenty-four) hours a day access to the authorized personnel of BOO Processor to the Production Plant Site for the term of the Agreement. Owner's authorized personnel should follow BOO Processor's site safety rules at all times when on BOO Processor's Plant Site.
- 23.5 BOO Processor will take adequate safety precautions, as required, for any hazards associated Ammonia production, pressurization and transportation up to Delivery point.
- 23.6 BOO Processor shall ensure that during the Construction Period the Production Plant area shall not be used for Truck Parking purpose. However, trucks/tankers with prior permission of Owner shall be allowed to enter the Production Plant Site only for unloading of necessary inventories required for O&M purpose. No maintenance of the trucks/tankers shall be allowed inside the Plant Site. BOO Processor shall be responsible for the security and safety of trucks/tankers.



ARTICLE -24 : ENVIRONMENTAL CONDITIONS

- 24.1 The Production Plant design shall be based on technical specifications as per Volume II, Section 1.4, Design Basis throughout the Agreement period and the present plot plan of Owner's Plant as enclosed in Technical Part, Volume-II.
- 24.2 The BOO Processor shall follow all the norms and regulation including conditions of Environmental Clearance (EC) & No Objection Certificate (NOC) from Central Pollution Control Board / State Pollution Control Board.
- 24.3 Owner will make TOR application to MOE&F and carry out EIA/EMP studies. BOO Processor shall provide necessary technical assistance to Owner / its Consultant to obtain initial Environment Clearance. EC shall be transferred to BOO Processor after the first date of delivery and all subsequent modification to the process including fresh EC application shall be in the scope of the BOO Processor. Additionally, BOO Processor, at its sole cost and expenses shall obtain and maintain all requisite statutory clearances including all central, state or local permits. BOO Processor shall also obtain Licenses and authorizations for construction and operation of the Production Plant. Owner shall provide assistance to BOO Processor whenever necessary to obtain statutory clearances. BOO Processor will also renew all clearances, license, wherever applicable from time to time as required by statutory bodies of State Government & Government of India.
- 24.4 Owner warrants that there are no toxic or hazardous materials or substances on, in or under the Production Plant Site(s). Owner shall indemnify and hold BOO Processor harmless from and against any and all claims, liabilities, costs (including attorney's fees), expenses, damages, penalties and fines resulting from any breach of the foregoing warranty or from any toxic or hazardous materials now or hereafter in, on or under the Production Plant Site(s) which did not occur or result directly from BOO Processor's performance pursuant to the Agreement.

ARTICLE-25 : UTILITIES

Owner shall provide utilities as detailed below to BOO Processor, up to delivery point, for use in Production Plant. Owner's responsibility of supplying Utilities as detailed below will end at the Delivery Point.

- 25.1 Construction Power:

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Owner, at its expense will provide temporary 11kV/33kV construction power line up to a total maximum load of 10 MVA at B.L. of plant, as per prevailing rate of power. Further, Distribution at different voltage level shall be in the scope of BOO Processor maintaining all safety regulations as per IE Act. However, BOO Processor, at its own cost, shall arrange alternative source of power to meet interruptions, if any in construction power supply provided by Owner. However, in case of non-availability of construction Power due to any reason BOO Processor at it's own expenses shall arrange for power to keep the progress of construction and no compensation on account of time & cost shall be admissible in such eventuality.

25.2 Construction water.

BOO Processor at it's own expenses shall arrange the construction water for construction of plant. However, source of water shall be intimated to BOO Processor.

25.3 Electrical Power

Electrical Power at 220 kV shall be arranged by owner from the state Grid and further distribution at different voltage level shall be in the scope of BOO Processor maintaining all safety regulations as per IE Act. Power supply arrangement (33kV Transmission line, substation, distribution) for raw water supply system from river shall be constructed and erected by Owner. Operation & maintenance of 132kV switchyard, Power supply system for Pump House shall be in the scope of BOO Processor.

25.4 Raw Water



It is envisaged that entire Raw Water at BOO Processor battery limit will be supplied by Owner.

Further treatment of raw water as per requirement in treatment plant shall be in the scope of BOO Processor.

25.5 The above mentioned utilities shall be provided by Owner free of cost after First Delivery Date. However, in case of deviation beyond allowable limit of guaranteed ratio, the rates, as set in article-15, will be applied for working out the adjustment amount.

25.6 All the utilities (other than construction power and water) required for First Commissioning (i.e., commissioning upon mechanical completion of Production Plant) and till the completion of first test run and further up to Agreement period shall be supplied by BOO Processor. For First Commissioning and till the completion of first test run for capacity and product quality demonstration, if BOO Processor fails to demonstrate the performance w.r.t. capacity and product quality the BOO Processor will be given an opportunity for corrective engineering till the performance is demonstrated through subsequent test runs within the date of first delivery as mentioned elsewhere in the Agreement.

25.6 BOO Processor shall ensure that the utilities provided by Owner are used for intended purpose only.

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- 25.7 Owner shall ensure availability of utilities (Power and Raw water) falling in Owner's scope of supply in terms hereof, as are required for commissioning, as per mutually agreed schedule required for normal commissioning of the Production Plant. Ammonia as produced during the commissioning and up to First Delivery date shall be supplied by BOO Processor to Owner on demand, free of cost.
- 25.8 Owner shall provide Feed (ROM Coal) at one point at BOO Processor's Feed Delivery Point on chargeable basis till first delivery date, subject to availability. However, in case of non availability of Feed due to any reason BOO Processor at it's own expenses shall arrange for Feed to keep the progress of construction and no compensation on account of time & cost shall be admissible in such eventuality

ARTICLE-26 -LIQUIDATED DAMAGES

26.1. For Late Start-Up for Production Plant

If the BOO Processor fails to ensure the timely First delivery of Ammonia as defined in Article 10.4, Owner will suffer very substantial damages on this account far in excess of the Liquidated Damages as set forth below. However, with a view to limit the BOO Processor's liability, the Parties have in good faith, fixed the ceiling for the liquidated damages, on account of delay in First delivery of Ammonia, as set forth below on the clear acknowledgement that the actual damages incurred by Owner will be very much greater.

- 26.2 For any delay in commissioning the Production Plant beyond the contractual date for commencement of supply of Ammonia, BOO Processor shall pay to Owner liquidated damages at the rate of Rs 2 Crore on pro rata basis for delay of every week or part thereof subject to a ceiling of Rs 48 Crore.
- 26.3 Liquidated damages shall not apply in case Owner is not ready to take Ammonia from the contractual date of commencement or if OWNER fails to provide Utilities and Feed in accordance with the Time Schedule. In such case Liquidated damages shall be applicable from the date Owner is ready to take Ammonia.
- 26.4 In case delay in readiness of Owner to start usage of Ammonia beyond contractual date of commencement is intimated to the BOO Processor and if BOO Processor is ready to supply Ammonia, Owner shall pay the Fixed Monthly charge as specified in Article 15 – However, Variable Charges will be paid from the date of Ammonia supply subject to production of Guaranteed Quantity of Ammonia.
- 26.5 In case the BOO Processor abandons the project before the schedule date of commissioning of Production Plant, Owner will have the right to encash Security Deposit and the conditions mentioned under Termination clause shall become applicable.
- 26.6 Owner may deduct the sum of liquidated damages from any money due or that may become due to BOO Processor or by encashing Security Deposit.
- 26.7 Payment of the liquidated damages described in this Article 26 shall be BOO Processor's sole liability and Owner's sole remedy for any delay in Plant startup.

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26.8 The BOO Processor agrees and acknowledges that the damages payable under this Article 26, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by SECL and that SECL, is entitled to receive the same and are not by way of penalty.

ARTICLE-27 : PENALTY AND RISK PURCHASE

27.0 PENALTY AND RISK PURCHASE

27.1 PENALTY FOR NON-COMPLIANCE OF GUARANTEED PARAMETERS.

a) ON ACCOUNT OF SHORT FALL IN AMMONIA

If the BOO Processor at any time fails to deliver the Ammonia as per specified up to the Maximum requirement or Requested Quantities as stipulated in Article 7.0, Owner will suffer anticipated revenue loss and bear penalties on account of envisaged long term agreements with off take suppliers of Ammonia. The BOO Processor also acknowledges the fact that such damages are difficult to ascertain. However, with a view to limit the BOO Processor's liability, the Parties have in good faith, fixed the ceiling for the penalty, on account of Shortfall in Ammonia Supply, as set forth below on the clear acknowledgement that the actual damages incurred by Owner may be higher. The penalty for such Shortfall will be equivalent to:

Penalty= (1 x N x Total Requested Quantity – Total Supplied Quantity) x (Fixed Charge per MT of Ammonia + Variable Charge per MT of Ammonia)

Where N:

=90% for first year of operation

=95% for Second Year of operation

=100% from third year onwards till 25th year of operation

Fixed Charges per MT of Ammonia = (Monthly Fixed Charge x 12) / (2200 x 330)

Wherever applicable, yearly average WPI/CPI will be considered for computing the Fixed Charge and Variable Charge



Such penalties due to shortfall in production of Ammonia in billing period will be adjusted at the end of financial year if the BOO processor achieve the annual target of 0.726 MMT in that particular financial year.

b) ON ACCOUNT OF NOT MEETING SPECIFIED LIMITS OF PURITY

In case Ammonia cannot be purchased by Owner due to lower purity as compared to Guaranteed purity at Delivery Point, then this shall be treated as supply shortfall and penalties shall be levied as per serial no. 27.1 a) plus Cost of Feed and Utility used for production of Ammonia of lower purity.

c) ON ACCOUNT OF NOT MEETING PLANT AVAILABILITY:

BOO Processor shall guarantee minimum plant availability of Ammonia as 100%. In case minimum Plant availability of Ammonia falls below 100% for reasons other than Force

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Majure or reasons attributable to Owner, then this shall be treated as no supply and penalties shall be levied as per serial no 27.1 a) .

d) **ON ACCOUNT OF DEVIATION FROM ALLOWABLE SPECIFIC CONSUMPTION COAL AND UTILITIES :**

The excess quantity of coal and utilities consumed by the BOO processor, a penalty equivalent to cost of such amount of excess coal and utilities will have to bear by the BOO processor as per the unit rate given in Article 15.5.1

27.2 The penalties under Article 27.1 hereof payable by the BOO Processor to Owner shall, without prejudice to any other mode of recovery available to Owner, be recoverable by deduction from the Monthly invoice of BOO Processor. The actual supply of Ammonia will be totalised, for each, for every 15 minutes and recorded through Distributed Control system (DCS). The average delivery rate for each 15 minute supply will determine the corresponding pricing window. The sum total of every 15 minute record will determine the delivery for the day / month / year and will also be the basis for calculating the short supply with respect to requested quantity.

27.3 Penalty will not be applicable under the following conditions/circumstances:

- a) During Scheduled Outages of Production Plant
- b) During Force Majeure
- c) During the non-performance by Owner of its obligation under the Agreement which in turn affects the production facilities of BOO Processor.
- d) For the 4 (four) unplanned shutdown in 1st year and 2 (two) in unplanned shutdown subsequent years,

27.4 Payment of the penalties described in this Article 27 shall be applicable from the First Delivery Date and shall be BOO Processor's sole liability and Owner's sole remedy for any shortfall in the supply of Ammonia.

27.5 The overall cap on liabilities payable by BOO Processor under Article 27 of this Agreement will be limited to Rs.48 Crores per Year.

ARTICLE-28: LIABILITY



28.1 BOO Processor will be fully responsible for any and all liabilities and obligations accruing to it by virtue of its carrying on industrial operations in the premises of the BOO Processor, including but not restricted to liabilities and obligations arising under various laws including labour, environmental and safety and taxation laws.

28.2 BOO Processor shall insure its installation at its own cost to cover all risks/losses.

28.3 The workforce / labour employed by the BOO Processor for carrying out any activity in connection with its Production Plant for supplying Ammonia to Owner shall remain BOO Processor's liability during and after the contractual period and also in case the contract is terminated at an early date.

28.4 The Production Plant, built on the land Leased by Owner, shall at all times remain the property of BOO Processor.

28.5 Owner & BOO Processor warrant each other that its activities in relation to the Agreement will not infringe upon or violate any property or other rights of any third party.

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28.6 Subject to the provisions of Article 21, each of BOO Processor and Owner accept liability for death of or injury to individual persons, to the extent caused by its negligence or breach of this Agreement.

For the purpose of this condition, BOO Processor's liability includes all such liabilities of BOO Processor and / or of all its associates, contracts, subsidiaries and / or any other agency lined up by the BOO Processor.



28.7 Neither Owner & BOO Processor shall be liable to one another for any indirect, incidental or consequential losses including (without limitation) loss of revenue, loss of profits, loss of use, and loss of contracts.

28.8 BOO Processor fully understands that one of the reason for it being a Successful Bidder is that it is an expert (and fully conversant with) in construction, operation, monitoring and maintenance of the Production Plant including safety and environment aspects. BOO Processor fully understands that it will be fully responsible for any and all liabilities and obligations accruing to Owner by virtue of BOO Processor carrying on industrial operations in the Production Plant/Project Site and/or operation and /or maintenance of the Production Plant, including but not restricted to liabilities and obligations with respect to safety and environment aspects and also arising under various laws including labour, environmental and safety and taxation laws. BOO Processor undertakes to fully indemnify Owner for any penalties, liabilities, demands, orders, assessment, fine, cess, interest and/or any damages or other costs levied/demanded from Owner owing to any acts, omission or commission on the part of BOO Processor in construction, operation, monitoring and maintenance of the Production Plant.

Similarly, Owner fully understands that it will be fully responsible for any and all liabilities and obligations accruing to BOO Processor by virtue of Owner carrying on industrial operations in Owner's Plant and/or operation and /or maintenance of Owner's Plant, including but not restricted to liabilities and obligations with respect to safety and environment aspects and also arising under various labour, environmental and safety and taxation laws. Owner undertakes to fully indemnify BOO Processor for any penalties, liabilities, demands, orders, assessment, fine, cess, interest and/or any damages or other costs levied/demanded from BOO Processor owing to any acts, omission or commission on the part of Owner in construction, operation, monitoring and maintenance of Owner's Plant.

ARTICLE-29: TEMPORARY TAKEOVER OF THE PLANT BY OWNER

BOO PROCESSOR Processor recognises the fact that it is absolutely critical to Owner's interests that a consistent and uninterrupted supply of Product as per the specification and upto the quantities stipulated in Article 8 and Article 7 respectively should always be maintained. Accordingly, BOO Processor agrees, without prejudice to the provisions of Liquidated Damages, Penalty and Risk Purchase as set forth hereinabove, that if for any reason whatsoever (not being attributable to a fault of Owner) BOO Processor defaults or delays in the strict performance of its obligations under the Agreement for a continuous period of 30 (thirty) days and has not reasonably demonstrated its willingness to set right the Production Plant as per Owner's opinion, then Owner shall have the right to take over the operation of the Production Plant for such duration and take such remedial steps and incur such costs and expenses at the risk and account of the BOO Processor as may be necessary for Owner to operate the Production Plant so that BOO Processor's obligations under the Agreement are satisfied. BOO Processor shall reimburse such cost and expenses incurred by Owner promptly upon demand and assure Owner of its full co- operation in the matter. In case of such eventualities the BOO Processor shall agree to share all Production Plant related documents including documents from the Production Plant licensor.

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ARTICLE-30: TERMINATION AND TAKEOVER

30.1 Owner may terminate the Agreement prior to completion of the Production Plant if:

- (a) The BOO Processor has abandoned the Project or has suspended work on the Project for consecutive 6 (six) weeks or more; or
- (b) The rate of progress of construction of the BOO Processor Processor's Production Plant lags with respect to the agreed schedule for the Project even after taking remedial measures which shall result in overall delay of more than 6 (six) months in completion of the Production Plant taking into account the scheduled or re-scheduled date(s) of First Delivery.

30.2 Owner may also terminate the Agreement during the period of Agreement in case of the following:

- (a) The BOO Processor becomes insolvent, bankrupt, is the subject of proceedings for liquidation or dissolution, ceases to carry on business, or becomes unable to pay its debts as they become due;
- (b) Failure of BOO Processor to diligently implement the remediation plan agreeable to Owner, to be submitted by the BOO Processor within 14 (fourteen) days of continuous non-supply of Ammonia

Or



Ammonia do not meet 90% of requested quantities on a monthly basis in respect thereof under Article 7 for a continuous period of 6 (six) months for reasons other than reasons attributable to Owner or Force Majeure.

Or



- (c) Apart from the failure of BOO Processor's obligation as indicated at Article-30.2(b), the BOO Processor has committed a material breach of any other provision of the Agreement and the BOO Processor (i) fails to remedy such breach within 15 (fifteen) days of receiving a notice of breach from the aggrieved party, or (ii) fails promptly to submit remediation plan to Owner and diligently implement the same, where the breach is of a nature that cannot be rectified within 15 (fifteen) days.

30.3 Upon occurrence of any of the events described in 30.1 or 30.2 above, Owner may give written notice to the BOO Processor, if applicable, regarding occurrence of the relevant event and instruct the BOO Processor to rectify/cure the default within agreed time schedule, and should the BOO Processor fail to rectify/cure the default to the satisfaction of Owner within that period, Owner shall have the right, after the expiration of such time schedule to terminate this Agreement by giving notice in writing to the BOO Processor and take over the Production Plant permanently including the right to the technology licenses at fair value mutually discussed and agreed.

30.3.1 Either Party may terminate this Agreement in case any payment due to such party is unreasonably delayed beyond six months from the due date of payment and is not being disputed in good faith.

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- 30.4 On completion of 25 (Twenty five) years from the date of First Delivery of Ammonia, the Agreement shall automatically terminate without any compensation to either Party, unless extension of the Term of the Agreement is agreed in writing between Owner and BOO Processor .
- 30.5 In case of termination of the Agreement, the land lease shall automatically stand cancelled and the BOO Processor shall lose all rights to use and/or occupy the leased land only to dismantle and remove the Production Plant(including all BOO Processor's fixtures, fittings, equipment and structures and constructions thereon) if Owner does not exercise the option to take-over provided in Article 30.3 hereof and handover the vacant land to Owner clear from all equipment, fixtures and construction whatsoever within 12 (twelve) months from the date of such termination. Should the BOO Processor fail to clear the leased land of all BOO Processor's plant, equipment, machinery, fixtures, fittings and constructions (excluding all foundations, concrete pads and footings, and all underground pipelines installed by the BOO Processor) within 12 (twelve) months from the date of termination of the Agreement, the same or such part thereof as has not been dismantled, removed or have not been taken away from the said land shall vest in Owner, free from any mortgage, charge, hypothecation, pledge, lien or other third party right or liability (including liability to or in respect of any workmen, staff or personnel, technology licensors) and free of any cost or liability to compensate the BOO Processor in respect thereof.
- 30.6 Further, In the event of termination on account of BOO Processor's default as specified in Article 30.2 hereof or for Force Majeure conditions under Article 31 hereof, during the period of Agreement, Owner shall have the option of taking over the Production Plant free from any mortgage, charge, hypothecation, pledge, lien or other third party right or liability (Including liability to or in respect of any workmen. staff or personnel) and free of any cost of any technology licenses or liability to compensate the BOO Processor in respect thereof at fair value by giving the BOO Processor at the time of issue of the notice of termination written notice of such takeover. Should the Parties be not able to agree on such value within 2 (two) months, such issue shall be resolved through arbitration. However, such Agreement/arbitration shall not affect the takeover of the Production Plant by Owner.
- 30.6.1 Also, on exercise by Owner of the right of takeover, the BOO Processor shall continue providing assistance to Owner in operation and maintenance of the Production Plant for a period of 6 (six) months after the takeover, the cost of which shall be reimbursed by Owner to BOO Processor during the above period. In case BOO Processor, on account of takeover of the Production Plant by Owner opts for arbitration, Owner shall pay BOO Processor 50% (one half) of the monthly Fixed Monthly Charges which would have been payable but for the takeover as interim payment for the balance of the contract duration or settlement of arbitration, whichever occurs earlier. The interim payment(s) made by Owner to the BOO Processor shall be adjusted from the fair value awarded by the Arbitrator(s).
- 30.6.2 The BOO Processor shall co-operate with Owner to ensure a smooth and complete takeover of the Production Plant by Owner as here in contemplated.
- 30.7 In the event of termination on account of BOO Processor's default under Article 30.1 & 30.2 above, Owner will have the option to forfeit the security deposit/performance bank guarantee of the BOO Processor, if applicable. In such event, Owner will take over the Production Plant on an "as is where is" basis free from any mortgage, charge, hypothecation, pledge, lien or other third party right or liability (including liability to or in respect of any workmen, staff or personnel, technology licensors) and free of any cost or liability to compensate the BOO Processor in respect thereof and complete the Production Plant to meet its requirement of

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Ammonia. The fair value of the plant in the event of termination would be as per methodology set forth in Article 30.6 above. Should the Parties not be able to agree on such compensation, the issue shall be resolved through arbitration.

- 30.8 Except as stated in Article 30.4, neither party shall terminate this agreement in case a) the reason for the other parties breach is of a nature that can't be remedied within 15 (fifteen) days of intimation of breach b) the breaching party has submitted a detailed mutually agreed remediation plan including a reasonable time table for completion and; c) the party in breach is diligently carrying out the remediation plan and is providing progress reports to the other party on a weekly basis.



ARTICLE- 31: FORCE MAJEURE

- 31.1 As used in this Agreement, the expression "Force Majeure" or "Force Majeure Event" shall, save and except as expressly provided otherwise, mean occurrence of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined below, if it affects the performance by the Party claiming the benefit of Force Majeure (the "Affected Party") of its obligations under this Agreement and which act or event (a) is beyond the reasonable control of the Affected Party, and (b) the Affected Party could not have prevented or overcome by exercise of due diligence and following standard industry practice, and (c) has Material Adverse Effect on the Affected Party:

- (i) Non-Political Event

A Non-Political Event shall mean one or more of the following acts or events:

- (A) act of God, epidemics, pandemics, outbreak of diseases (including the COVID-19 virus), quarantines, national or regional emergencies, government acts or orders (which a Party is not responsible for), extremely adverse weather conditions, natural disaster, floods, war, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosions (to the extent of contamination or radiation or fire or explosion originating from a source external to the Project site);
- (B) strikes or boycotts or stoppage of work or 'bandh' (other than those involving the BOO Processor or their employees/ representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Project for a continuous period of 24 (twenty four) hours and an aggregate period exceeding 7 (seven) days in a financial year, and not being an Indirect Political Event;
- (C) any judgment or order of any court of competent jurisdiction or statutory authority made against the BOO Processor in any proceeding for reasons other than (i) on account of breach of any Applicable Law or Applicable License or any contract, or (ii) enforcement of this Agreement, or (iii) exercise of any of its rights under this Agreement by the Owner;
- (D) the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through inspection of the Site; or

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(E) any event or circumstances of a nature analogous to any of the foregoing.

(ii) Indirect Political Event

An Indirect Political Event shall mean one or more of the following acts or events:

- (A) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;
- (B) industry-wide or State-wide strikes or industrial action for a continuous period of 24 (twenty four) hours and exceeding an aggregate period of 7 (seven) days in a financial year;
- (C) any civil commotion, boycott or political agitation which prevents Works by the BOO Processor for an aggregate period exceeding 7 (seven) days in a financial year;
- (D) any Indirect Political Event that causes a Non-Political Event; or
- (E) any event or circumstances of a nature analogous to any of the foregoing.



(iii) Political Event

A Political Event shall mean one or more of the following acts or events by or on account of any Government authority:

- (A) any change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of this Agreement;
- (B) compulsory acquisition in national interest or expropriation of Project assets or rights of the BOO Processor;
- (C) unlawful or unauthorised or without jurisdiction, revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by the BOO Processor to perform their obligations under this Agreement; provided that such delay, modification, denial, refusal or revocation did not result from the BOO Processor's inability or failure to comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit; or
- (D) any event or circumstance of a nature analogous to any of the foregoing.

31.2 Effects of Force Majeure Events

Subject to the provisions of the Agreement, in the event that a Party is rendered unable, by reason of event of Force Majeure affecting the Party after the date hereof to perform wholly or in part any material obligation of that Party set forth in the Agreement the obligations of both Parties shall be suspended or excused to the extent affected by such Force Majeure.

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31.3 Notice

Upon the occurrence of an event of Force Majeure, the affected Party shall notify the other Party in writing within 72 (seventy two) hours of the alleged beginning thereof giving full particulars, its estimated duration of Force Majeure event and satisfactory evidence in support of its claim, and notwithstanding the prior commencement of the force majeure event, the force majeure event shall be deemed to have occurred not earlier than 72 (seventy two) hours after the other Party receives the notice of the force majeure.

31.3.1 Upon cessation of the event of Force Majeure, the affected Party shall forthwith give written notice of such cessation to the other Party and shall as soon as reasonably possible, resume performance of its obligations suspended by the force majeure.

31.4 Actions consequent upon force majeure

31.4.1 The affected Party shall:

- (a) Use reasonable endeavours to minimize the effects of Force Majeure and remedy any inability to perform due to Force Majeure.
- (b) Provide daily reports to the other Party regarding its progress in overcoming the adverse affects of the Force Majeure.
- (c) As soon as reasonably practicable, provide the other Party in writing such information as may be reasonably required to justify the claim of Force Majeure.
- (d) If the BOO Processor's Production Plant is in whole or part damaged or destroyed due to the Force Majeure event, the BOO Processor shall forthwith take all steps necessary to repair, restore and/or replace the BOO Processor's Production Plant to make it operational and productive as soon as is reasonably possible. BOO Processor shall ensure to take all steps reasonably required to restore its ability to perform its obligations under the Agreement as soon as is reasonably possible, including the rebuilding of any affected part of the Production Facility provided that the affected BOO Processor shall not be obliged to take any steps which would not be in accordance with Good Industry Practice.



31.4.2 Upon the occurrence of the Force Majeure, both parties shall promptly meet to discuss in good faith the effect and the likely duration of the effect of the Force Majeure and the steps to be taken to overcome the effects of the Force Majeure and the remedial actions to be taken by the other Party to mitigate the effects of the Force Majeure on the BOO Processor's Production Plant or relative Owner's plant(s) as the case maybe.

31.5 Continuation of Force Majeure

If the duration of the Force Majeure is uncertain or exceed 6 (six) months, Owner and BOO Processor will each have the right to terminate the Agreement unless mutual Agreement is reached otherwise.

31.6 Monetary Obligations during Force Majeure

No amounts shall be payable in respect of Events or circumstances which are covered by Force Majeure Events. If there is Force majeure at Owner's premises and Owner is unable to

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consume Requested quantity of Ammonia then Owner will also not pay any penalty to BOO Processor.

- 31.7 In the event that Production in BOO Processor's Production Plant or Owner plant is suspended on account of Force Majeure, the duration of Agreement shall be extended by such period as mutually agreed between Owner and BOO Processor so that BOO Processor can recover the shortfall in Fixed Monthly Charges due to such Force Majeure, provided that the Agreement is not terminated as a result of such Force majeure in accordance with the provisions of the Agreement.



ARTICLE-32 – ARBITRATION

- 32.1 Any Dispute which is not resolved amicably by conciliation, as provided in Article 44.2, shall be finally decided by reference to fast track arbitration under the International Centre for Alternative Dispute Resolution, New Delhi (the "**Rules**") and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time. The place of such arbitration shall be the place from where the Contract has been issued and the language of arbitration proceedings shall be English.
- 32.2 There shall be an arbitral tribunal comprising 3 (three) arbitrators, of whom each Party shall select one, and the third arbitrator shall be appointed by the 2 (two) arbitrators so selected, and in the event of disagreement between the 2 (two) arbitrators, the appointment shall be made in accordance with the Rules.
- 32.3 The arbitral tribunal shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Article shall be final and binding on the Parties as from the date it is made, and the Processor and the Owner agree and undertake to carry out such Award without delay.
- 32.4 The BOO Processor and the Owner agree that an Award may be enforced against the BOO Processor and/or the Owner, as the case may be, and their respective assets wherever situated.
- 32.5 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.
- 32.6 The existence of any dispute or arbitration shall not operate as a suspension or discharge of any rights or obligations of Owner or BOO Processor under the Contract Documents.
- 32.7 The termination of the Agreement shall not result in the termination of any arbitration proceeding pending at the time of such termination nor otherwise affect the rights and obligations of the Parties under or with respect to such pending arbitration.

ARTICLE- 33: REPRESENTATIONS AND WARRANTIES

33.1 OWNER 's Representations and Warranties

Owner represents and warrants as to itself that:

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- (a) It is duly organised and validly existing entity under the laws of India and has all requisite legal right, power and authority to execute and deliver the Agreement and all the Agreements to which it is a Party and to carry out the terms, conditions and provisions hereof and thereof.
- (b) The execution, delivery and performance by it of the Agreement and all of the Agreements and documents referred to herein to which it is a Party have been duly authorised by all requisite corporate action, and will not contravene any provisions of, or constitute a default under, any other Agreement or instrument to which it is a party. The execution, delivery and performance by it of the Agreement and all of the Agreements and documents referred to herein to which Owner is a Party does not constitute a violation of any statute, judgment order, degree or regulation or rule of any court, government authority or arbitrator of competent jurisdiction applicable or relating to Owner , its assets or its business; and
- (c) The Agreement constitutes its valid, legal and binding obligation, enforceable in accordance with the terms hereof except that the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganisation, moratorium or other similar Law affecting Owner's rights generally and except to the extent that the remedies of specific performance, injunctive relief and other forms of equitable relief are subject to equitable defences, the discretion of the court before which any proceeding thereof may be brought and the principles of equity in general.



33.2 BOO Processor's Representation and Warranties

The BOO Processor represents and warrants as to itself that:

- (a) It is duly organised and validly existing entity under the laws of India. It has complied with the requirements of all applicable laws and all requisite legal right, power and authority to execute and deliver the Agreement and all the Agreements and documents referred to herein to which it is a Party and to carry out the terms, conditions and provisions hereof and thereof.
- (b) The execution delivery and performance by it of the Agreement and all of the Agreements and documents referred to herein to which it is a Party have been duly authorised by all requisite corporate action, and will not contravene any provisions of, or constitute a default under, any other Agreement or instrument to which it is a party . The execution, delivery and performance by it of the Agreement and all of the Agreements and documents referred to herein to which the BOO Processor is a Party does not constitute a violation:-
 - (i) of any statute, judgment order, degree or regulation or rule of any court, government authority or arbitrator of competent jurisdiction applicable or relating to the BOO Processor, its assets or its business;

OR



- (ii) the BOO Processor articles, constituting documents or any indenture, Agreement or Agreement to which it is a party or by which it or its property is bound.
- (c) The Agreement constitutes its valid, legal and binding obligation, enforceable in accordance with the terms hereof except that the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or other similar Law affecting BOO Processor's rights generally and except to the extent that the remedies of specific performance, injunctive relief and other forms of equitable relief are subject

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to equitable defences, the discretion of the court before which any proceeding thereof may be brought and the principles of equity in general.

- (d) There are no attachments or warrants served on it, in respect of GST, income tax, Central Govt. revenues or any other State Government of India revenues, any other taxes and dues, that might materially adversely affect its ability to meet and carry out its obligations under the Agreement.
- (e) There are no actions, suits or proceedings pending or, to its knowledge threatened against or affecting the BOO Processor, before any court or administrative body or arbitral tribunal that might materially adversely affect its ability to meet and carry out its obligations under the Agreement.
- (f) It is subject to the laws of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising there under, including any obligation, liability or responsibility hereunder.
- (g) The information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement.
- (h) It has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or Government body which results in or may result in a Material Adverse Effect and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement.
- (i) It has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a Material Adverse Effect.
- (j) No sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the Agreement or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Owner in connection therewith.
- (k) It is aware of the restrictions on procurement from a "bidder from a country which shares a land border with India", as defined and specified under the General Financial Rules, 2017 read with the OM no. F.No.6/18/2019-PPD dated 23 July 2020 issued by the Public Procurement Division, Department of Expenditure, Ministry of Finance, Government of India ("Indian Public Procurement Laws") and represents and warrants that it is not incorporated or registered in a country which shares a land border with India and is eligible to be considered, in terms of the Indian Public Procurement Laws] OR [is incorporated or registered in a country which shares a land border with India and is registered with the competent authority, as prescribed under the Indian Public Procurement Laws.
- (l) It is not in default under any Agreement to which it is a party **which may result in a Material Adverse Effect** or by which it or its property may be bound, nor in any material default of any obligation under the Agreement and all of the Agreements and documents referred to herein to which it is a Party.

33.3 In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or

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incorrect nor shall it adversely affect or waive any right, remedy or obligation of either Party under Contract Documents.

ARTICLE- 34: BREACH OF TERMS



Should either Owner or BOO Processor hereto commit breach of any of the terms of the Agreement and in any such case the other party, shall be entitled, without incurring any liability what-so-ever, to fore-bear from doing such acts or fulfilling such obligations as are to be done or fulfilled by it hereunder until the party committing breach of terms herein makes good the said breach.

ARTICLE-35: STATUTORY APPROVAL

- 35.1 The BOO Processor at its sole cost and expenses shall acquire and maintain all requisite Licenses for the performance of its obligations under the Agreement, including but not limited to the following:
- a) Environmental clearances from central and state pollution control boards, GOI and Government of Chattisgarh State as the case maybe.
 - b) Environmental clearances from Ministry of Environment & Forest & Climate Change (MOEFCC) , GOI if required.
 - c) clearance for effluent discharge approval by concerned department, Government of Chattisgarh State (if applicable).
 - d) Any other necessary approval other than mentioned above are to be obtained by the BOO Processor.
- 35.2 The BOO Processor shall obtain all necessary clearances(s), License(s) and will renew them, wherever applicable, from time to time as required by the statutory bodies of State Government & Government of India such as Factory Inspector, Boiler Inspector, Chief Controller of Explosives, Chief Electrical Inspector, Central Electricity Authority (CEA) etc.
- 35.3 The BOO Processor shall comply with all Applicable Laws and procure and maintain all applicable Licenses (including renewals as required) in relation to labour, industrial and environmental matters from Factory Inspector, Boiler Inspector, Chief Controller of Explosives, Chief Electrical Inspector, Central Electricity Authority (CEA)etc. as may be required in the performance of its obligations under this Agreement.
- 35.4 The BOO Processor shall take all necessary steps for registration, obtaining License from the appropriate authority for owning the Production Plant under its own management.
- 35.5 BOO Processor shall make payment to all it's Contractor(s)/laborers through bank only.

ARTICLE-36 : CO-ORDINATION COMMITTEE

- 36.1 Authorised representative of Owner shall have overview of all problems during erection of the Production Plant whereas during Commissioning, stabilisation and operation of the project, BOO Processor shall nominate it's representative for sorting out day to day problems till completion of contractual time period. Frequency of such coordination meetings shall be mutually agreed.

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ARTICLE- 37: JURISDICTION & GOVERNING LAW

- 37.1 Notwithstanding any other Court or Courts having jurisdiction to decide the question(s) forming the subject matter of the reference if the same had been the subject matter of a suit, any/all actions and proceeding arising out of or relative to the Contract Documents or any award arising there from, shall lie only in the Court of competent civil jurisdiction (where the Contract Documents has been signed on behalf of Owner) and only said Court(s) shall have jurisdiction to entertain and try any such action(s) and/or proceeding(s) to the exclusion of all other Courts.
- 37.2 These Conditions of Contract shall be governed in all aspects by the law of the Republic of India, without application of the doctrine of Renvoi.

ARTICLE-38 : NOTICES

- 38.1 Subject Any notice or other communication to be given by any party to the other party under or in connection with the matters contemplated by this Agreement shall be in writing and shall:

- (a) in the case of the BOO Processor, be given by facsimile or e-mail and by letter delivered by hand to the address given and marked for the attention of the person set out below or to such other person as the BOO Processor may from time to time designate by notice to the Owner; provided that notices or other communications to be given to an address outside the city specified in this sub-Article (a) may, if they are subsequently confirmed by sending a copy thereof by registered acknowledgement due, or by courier, be sent by facsimile or e-mail as the BOO Processor may from time to time designate by notice to the Owner:

Attention:

{Designation:

Address: Fax No: Email:}

- (b) in the case of the Owner, be given by facsimile or e-mail and by letter delivered by hand at the address given and marked to the attention of the person set out below with a copy delivered to the authority representative or such other person as the Owner may from time to time designate by notice to the BOO Processor; provided that if the BOO Processor does not have an office in the same city as the Owner, it may send such notice by facsimile or e-mail and by registered acknowledgement due, or by courier:

Attention:



{Designation:

Address:

Fax No:

Email:}; and

- (c) any notice or communication by a party to the other party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered and in all other cases, it shall be deemed to have been delivered on the actual date of delivery; provided that in the case of facsimile or e-mail, it shall be deemed to have been delivered on the working day following the date of its delivery.

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- 38.2 On award of the contract, both BOO Processor and Owner will communicate in writing each other's first point of contact for both operational and legal notices.

ARTICLE-39: NON-ASSIGNABILITY

The contract and benefits and obligations thereof shall be strictly personal to the BOO Processor and it shall not on any account be assignable or transferable to a third party by the BOO Processor without having obtained in writing the prior approval of Owner. Notwithstanding anything to the contrary contained in this Agreement, the Owner may, after giving 30(thirty) days' notice to the BOO Processor, assign and/ or transfer any of its rights and benefits and/or obligations under this Agreement to an assignee who is, in the reasonable opinion of the Owner, capable of fulfilling all of the Owner's then outstanding obligations under this Agreement and has the financial standing necessary for this purpose , provided that , the Owner shall obtain the prior approval of the BOO Processor (which approval shall not be unreasonably delayed or withheld) in the event the assignee or transferee is a Restricted Party.

For the purpose of this Article- 39 :

"Restricted Party" shall mean any person that is:

- (a) Listed on , or directly or indirectly owned or controlled by a person on , a Sanctions list; and/or
- (b) Resident or located in, operating from or incorporated under the laws of, a Sanctioned Country.

"Sanctions" shall mean any sanction or restriction under the trade or economic sanctions laws or regulations of the United States of America.

"Sanctions List" shall mean any of the lists of specifically designated nationals or designated or sanctioned Persons issued by the United States of America or its relevant sanctions authority as amended, supplemented or substituted from time to time.

"Sanctioned Country" shall mean any country or territory that is the subject or target of comprehensive or country-wide Sanctions, i.e., those that go beyond imposing restrictions on individuals or entities and restrict or limit dealings with the country or its government or institutions in general



ARTICLE-40: PUBLICITY

Owner and BOO Processor will mutually agree as to the timing, form and content, prior to issuing any press release, advertisement or announcement, or otherwise making any public statement with respect to the transactions contemplated hereby, and will not issue any press release, advertisement or announcement or otherwise make any published statement concerning the transactions contemplated hereby to any third party prior to receiving written Agreement with respect thereto from the other party, except as may be required by law.

ARTICLE-41: HEADINGS

- 41.1 Any headings contained in the Agreement are used only as a matter of convenience and reference and are in no way intended to define, limit, expand or describe the scope of the Agreement.

- 41.2 The singular includes the plural & vice versa.

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ARTICLE-42: WAIVER

- 42.1 No waiver by either Owner or BOO Processor of any default by the other in the performance of the Agreement (i) shall be effective unless recorded in a document duly executed by an authorised representative of such Party; (ii) shall operate or be construed as a waiver or any other or further default whether of a similar or different character; (iii) (c) shall not affect the validity or enforceability of this Agreement in any manner.
- 42.2 No failure or delay by Owner in enforcing any right or remedy of Owner in terms hereof or any obligation or liability of the BOO Processor in terms thereof shall be deemed to be a waiver of such right, remedy, obligation, or liability, as the case may be, by Owner and notwithstanding such failure or delay, Owner shall be, entitled at any time to enforce such right, remedy, obligation or liability, as the case maybe.
- 42.3 No failure of delay by the BOO Processor in enforcing any right or remedy of the BOO Processor in terms of the Agreement or any obligation or liability of Owner in terms thereof shall be deemed to be a waiver of such right, remedy, obligation, or liability, as the case may be, by the BOO Processor and notwithstanding such failure or delay, the BOO Processor shall be entitled at anytime to enforce such right, remedy, obligation or liability, as the case maybe.
- 42.4 The grant of additional time or order indulgence by one party to the other, or acceptance of any variation in performance, shall not constitute a waiver.



ARTICLE-43: CONTRACT DOCUMENTS

- 43.1 The following Documents shall constitute the Contract documents, namely:
- i. Contract Agreement
 - ii. Land Lease Agreement
 - iii. The Detailed Letter of Acceptance (DLOA) and accepted Price-Schedule.
 - iv. The Notification of Award/Letter of Award.
 - v. Amendments, if any, issued to the Tender Documents.
 - vi. Original Tender Documents issued with its enclosures.
 - vii. Letter of Waiver of Conditions / Deviations submitted by Contractor
 - viii. All Post-bid amendments to tender documents issued by Owner
 - ix. Post Bid Clarifications and replies exchanged between Owner and the Contractor
 - x. Minutes of meeting of Vendor Clarification Meetings (VCM) between Owner and Contractor
 - xi. All Pre-bid amendments to tender documents issued by Owner
 - xii. Reply to Pre-bid queries issued by Owner
 - xiii. Integrity Pact (IP) signed between the Owner and the Bidder/Contractor.

To the extent there is any conflict between the above-mentioned documents, the terms of the Conditions of Agreement shall govern.

ARTICLE-44: ENTIRE CONTRACT



The Contract Documents mentioned in Article- 43 hereof embody the entire agreement between the parties hereto, and the parties declare that in entering into the Contract Documents they do not rely upon any previous representation, whether express or implied and whether written or oral, or any inducements, understanding or agreements of any kind not

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included within the Contract Documents and all prior negotiations, representations, contracts and / or agreements and understandings are hereby cancelled..

ARTIICLE-45: GENERAL PROVISIONS

- 45.1 The provisions made under the Agreement shall be applicable except where the context requires otherwise.
- 45.2 **Disclosure of Information and Right of Inspection:** Owner & BOO Processor shall furnish to each other all information reasonably requested in regard to the performances of their respective duties and obligations under the Agreement in such manner and form as Owner & BOO Processor may mutually determine from time to time. The BOO Processor shall permit representatives of Owner to inspect the Project during construction period on prior reasonable notice thereof.
- 45.3 **Amendments and Supplements:** All additions, supplements, amendments or variations to the Agreement shall be in writing and shall be signed by the duly authorized representatives of Owner & BOO Processor.
- 45.4 **Indemnity:**
- (a) The BOO Processor will indemnify, defend, save and hold harmless the Owner and its officers, servants, agents, and SECL, owned and/or controlled entities/enterprises, (the "owner Indemnified Persons") against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach or default by the BOO Processor of any of its obligations under this Agreement or any related agreement or on account of any defect or deficiency in the provision of services to the Owner or from any negligence of the BOO Processor under any contract or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Owner Indemnified Persons.
- (b) Without limiting the generality of the Article above, the BOO Processor shall fully indemnify, hold harmless and defend the Owner and the Owner Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:
- (i) failure of the BOO Processor to comply with Applicable Laws and Licenses;
 - (ii) payment of Taxes required to be made by the BOO Processor in respect of the income or other Taxes of the BOO Processor's contractors, suppliers and representatives; or
 - (iii) non-payment of amounts due as a result of materials or services furnished to the BOO Processor or any of its contractors which are payable by the BOO Processor or any of its contractors.
- (c) Without limiting the generality of the provisions of this Article, the BOO Processor shall fully indemnify, hold harmless and defend the Owner Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Owner Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any valid domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the BOO Processor or by the BOO

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Processor's contractors in performing the BOO Processor's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the BOO Processor shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order.

- (d) Owner will indemnify, defend, save and hold harmless the BOO Processor against suits, proceedings, actions, demands and claims from third parties for any direct loss, damage or cost, whether arising out of any breach or default by the Owner of any of its obligations under this Agreement or from any negligence of the Owner under this Agreement, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the BOO Processor.



- (e) Notice and contest of claims

In the event one party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article (the "Indemnified Party") it shall notify the other party (the "Indemnifying Party") within 10 (ten) days of receipt of the claim or demand and shall not, unless the Indemnifying Party wishes to contest or dispute the claim, admit liability, settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party and the Indemnified Party shall take such action as the Indemnifying Party may reasonably request, including the issuance of a power of attorney, to allow the Indemnifying Party to conduct the proceedings, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

- (f) The Indemnifying Party hereby undertakes that it shall indemnify the Indemnified Party against all losses (except for indirect losses, consequential losses, loss of indirect profits) incurred by the Indemnified Party, for the reason of taking any action or inaction under and in accordance with the instructions of the Indemnifying Party under this Article 45.4 or as the direct result of any actions of the agent acting under the power of attorney issued in accordance with instructions of the Indemnifying Party.

- (d) If the Indemnifying Party exercises its rights under Article 45.4(d), the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:

- (A) the employment of counsel by such party has been authorised in writing by the Indemnifying Party;
- (B) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action;
- (C) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or
- (D) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:

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- that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or
- that such claim, action, suit or proceeding involves or could have a Material Adverse Effect upon it beyond the scope of this Agreement:

Provided that if sub-Articles (C) or (D) of this sub-Articles shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

45.5 **No Third party Beneficiaries:** The Agreement is intended solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any duty to, standard of care with respect to, any liability to, or any right of suit or action in, any third party.

45.6 **Severability:** If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision.

45.7 **Relationship of the Parties:** The Agreement shall not constitute either Party as a Partner, agent or legal representative of the other Party. Neither Party shall have any right or authority to assume, create or incur any liability or obligation of any kind, expressed or implied, against, in the name of or on behalf of the other Party except in accordance with the Agreement or as may otherwise be agreed in writing by the Parties.

45.8 **Governing Language:** The language which governs the interpretation of the Agreement is the English language. All Notices required to be given by either Party to the other and all other communications and documentation which are in any way relevant to the Agreement or which are relevant to the execution and implementation of the Agreement, including any dispute resolution proceedings, shall be in English language.



45.9 **Counterparts:** The Agreement may be executed in two counterparts, each of which when executed and delivered shall constitute an original, but both counterparts shall together constitute but one and the same instrument.

45.10 **General Liability Provision:** The rights and obligations of the parties are finally and conclusively defined in the Agreement. Claims for indirect, remote or consequential damages such as loss of production, loss of profit, loss of use are excluded.

45.11 **Successors and Assigns:** The Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns.

45.12 **No Partnership:** The Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

45.13 **Waiver of Immunity:** Each Party unconditionally and irrevocably:

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- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Party with respect to its assets;
- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally, in respect of the enforcement of any judgment or award against it in any such proceedings and to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).



ARTICLE-46: GOVERNMENT OF INDIA - EXCLUSION OF LIABILITY

Owner is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable laws of India and the general principles of contract law. BOO Processor expressly agrees and acknowledges that Owner is not an agent, representative or delegate of the Government of India and that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Agreement. BOO Processor hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims, against the Government of India arising out of the Agreement and covenants not to sue the Government of India for any manner of claim, cause of action or thing whatsoever arising out of or under the Agreement.

ARTICLE – 46: PLANNING AND DESIGNING IN PURVIEW OF VULNERABILITY ATLAS OF INDIA

Vulnerability Atlas of India (VAI) is a comprehensive document which provides existing hazard scenario for the entire country and presents the digitized State / UT-wise hazard, maps with respect to earthquakes, winds and floods for district-wise identification of vulnerable areas. It also includes additional digitized maps for thunderstorms, cyclones and landslides. The main purpose of this Atlas is its use for disaster preparedness and mitigation at policy planning and project formulation stage.



This atlas is one of its kind single point source for the various stakeholders including policy makers, administrators, municipal commissioners, urban managers, engineers, architects, planners, public etc. to ascertain proneness of any city/location/site to multi-hazard which includes earthquakes, winds, floods thunderstorms, cyclones and landslides. While project formulation, approvals and implementation of various urban housing, buildings and infrastructures schemes, this Atlas provides necessary information for risk analysis and hazard assessment.

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The Vulnerability Atlas of India has been prepared by Building Materials and Technology Promotion Council under Ministry of Housing and Urban Affairs, Government of India and available at their website www.bmtpc.org.

It is mandatory for the bidders to refer Vulnerability Atlas of India for multi-hazard risk assessment and include the relevant hazard proneness specific to project location while planning and designing the project in terms of:

- i) Seismic zone (II to V) for earthquakes,
- ii) Wind velocity (Basic Wind Velocity: 55, 50, 47, 44, 39 & 33 m/s)
- iii) Area liable to floods and Probable max, surge height
- iv) Thunderstorms history
- v) Number of cyclonic storms/severe cyclonic storms and max sustained wind specific to coastal region
- vi) Landslides incidences with Annual rainfall normal
- vii) District wise Probable Max. Precipitation.



	<p align="center">COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED SCHEDULE OF RATE /PRICE BID</p>	PNMM/PC- 277/E-4001/7.0	0	
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SECTION-7:

BOQ / SCHEDULE OF RATE /PRICE BID

(MS-Excel format Uploaded separately)

Annexures

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E-4001/ Annx-1.1	0	 SECL
		DOC. NO.	REV.	
		SHEET 1 OF 2		
BID FORM				



SUBJECT: COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED.

Ref.: 1. Tender No. _____ : 2. Tender Id: _____

Dear Sir,

Sub: Tender No.

1. We _____ (Name of the Bidder) hereby represent that we have gone through and understood the Bidding Documents, Tender No:PNMM/PC-277/E-4001 dated 29.01.2022 (including but not limited to) the Commercial & Technical Requirements/ Specifications in Volume-I Commercial and Volume-II-Technical of the Bidding documents and amendments, if any, and that our Bid has been prepared accordingly in compliance with the requirements stipulated in the said documents.
2. We confirm to accept all terms and conditions contained in the tender document unconditionally and to be abide by the same in all respect.
3. We confirm to accept that the bid is being submitted in accordance with the terms, conditions and instructions of Tender documents, after verifying all the facts relating to contract and Scope of Works and after being fully aware of the terms and conditions of Tender documents and being fully satisfied to the same.
4. We confirm to accept that the terms and conditions of this Tender including its implementation and the decision of SECL will not be challenged . We have perused the terms and conditions of Tender before submitting bid and submitted the bid after accepting the same in all respect.
5. We agree to abide by this bid for a period of 9 (nine) months from the date of technical and Unpriced bid opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. We confirm that until a formal contract is prepared and executed, this bid together with your written acceptance thereof and your Notification of Award/Letter of intent, shall constitute a binding contract between us.
7. We understand that you are not bound to accept the lowest or any bid you may receive.
8. We confirm that the contents of the offer are given after fully understanding and all information furnished by us are correct and true and complete in every respect.
9. We confirm to accept that the work shall be done and completed within the stipulated time.
10. We confirm to accept that the price shall remain fixed and firm without any price variation due to any escalation in price as provided in Tender documents.
11. We confirm that all information/ documents / credentials submitted along with the

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E-4001/ Annx-1.1	0	
		DOC. NO.	REV.	
		SHEET 2 OF 2		
BID FORM				

tender are genuine, authentic, true and valid.

12. We confirm that if any information or document submitted is found to be false / incorrect forged/tampered in any way, the said offer shall be considered absolutely null & void and action as deemed fit may be taken against us including termination of the contract, forfeiture of all dues including EMD / Security Deposit and Banning of our firm along with all partners of the firm as per provisions of tender document/Purchase Manual of SECL/Provisions of law inforce.
13. We have never been banned or delisted by any Government or Quasi-Government Agency or any Public Sector Undertaking or Private Firm or Financial Institutions.

Dated this __ day of _____ 2022

Signature _____

Name _____



Designation _____

Seal

Duly Authorised to sign bid for and on behalf of _____

Note:

1. This letter should be on the letterhead of the Bidder and should be signed by a person competent and having the authority to bind the Bidder as per Power of Attorney. Power of Attorney shall be submitted as per Cl. No.5.0 of ITB.
2. In case the person who has the Power of Attorney to sign the bid, is not bidding himself and has authorized another person whose DSC is mapped in the name of bidder, to bid online on his behalf, then the further authorization on non-judicial stamp paper duly notarized (as per [Annexure-1.8] by the person having the Power of Attorney to sign the Bid in favour of person bidding online is required to be submitted. In case of Consortium, similar authorization by each Consortium member is to be submitted.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PREAMBLE TO SCHEDULE OF RATE	PNMM/PC-277/E-4001/P-I/ Annx-1.2	0	 SECL
		DOC. NO.	REV	
		SHEET 1 OF 3		

PREAMBLE TO SCHEDULE OF RATE/BOQ

1.0 Pricing formula for Products/Feed and Utilities

1.0 Feed (RoM Coal) and Utilities (Power and Raw Water) shall be provided free of cost to the Bidder during the execution of the Contract Agreement. Accordingly, bidders to quote the Conversion Charges of these Feed and Utilities into Ammonia considering the credit (if any) for Sulphur and any other By-Product(s).

1.1 Feed and Utilities

The supply of Feed and Utilities by Owner shall be considered at the rates mentioned at Sl No. 21.0 of Instructions to Bidders for evaluation. Bidder is required to quote Guaranteed Consumption figures of Feed & Utilities per MT of Ammonia as detailed in Design basis, Technical Part of NIT. However, the same shall be supplied free of cost during execution of the Contract Agreement.

1.2 Conversion Charges quoted by Bidder shall be exclusive of Taxes and Duties.

2.0 Bidders should submit bid in Indian Rupees only and receive payment in Indian Rupees only.

3.0 A copy of BOQ, uploaded by Bidder in the CPP Portal keeping price blank (hiding the price) and in place indicating "Quoted" or "√", as a confirmation of price quoted against each head, shall be submitted in Cover-2 Part-II of Bid.

4.0 Conversion Charges for Ammonia:

The Conversion Charges shall comprise of the following two components ;

- Fixed Monthly Charge for Ammonia;
- Variable charge per MT of Ammonia

4.1 Fixed Monthly charge for Ammonia



The Fixed Monthly charge shall have three components;

- Constant amount (towards ROI of the BOO Processor);
- Component related to WPI for manufactured Products (towards maintenance cost & other overheads).
- Component related to CPI for industrial workers (towards manpower cost).

Fixed Monthly Charge shall be calculated on the basis of the

following formula: $FMC_M = FMC_{BM} \times [XM_{ROI} + XM_{WPI} \times WPI_N / WPI_O + (XM_{CPI} \times CPI_N / CPI_O)]$

Where,

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PREAMBLE TO SCHEDULE OF RATE	PNMM/PC-277/E-4001/P-I/ Annx-1.2	0	
		DOC. NO.	REV	
		SHEET 2 OF 3		

FMC_M = Fixed Monthly Charge computed on account of Ammonia delivered to Owner and will remain valid for that month, it will be released on pro-rata basis from first delivery date upto the end

of the month and thereafter on monthly basis every month (e.g. If the first delivery date is 15th January than FMC_M will be computed on pro-rata basis from 15th January to 31.01.2020.and from February onwards it will be computed in Calendar mon thly basis)

FMC_{BM} = Base monthly charge as per the Letter of Award

XM_{ROI} = Constant Component on account of Return On Investment (which will not be adjusted due to inflation)

XM_{WPI} = Constant Component related to “Wholesale Price Index for Manufactured Products”

XM_{CPI} = Constant Component related to “Consumer Price Index for Industrial Labour”

WPI_N = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to Billing month or latest available as on that date.

WPI_O = Average Wholesale Price Index as per RBI for Manufactured Products for the month of

CPI_N = Average Consumer Price Index for Industrial workers as last declared by Reserve Bank of India for the month prior to billing month.

CPI_O = Consumer Price Index for Industrial workers for the month of Letter of Acceptance or last published month before LOA.

The Constant Component - XM_{ROI} , XM_{WPI} & XM_{CPI} to be quoted by the Bidder in the Schedule of Rate / BOQ .



The Bidder will quote FMC_{BM} , XM_{ROI} , XM_{WPI} and XM_{CPI} for Ammonia in the Price Bid/BOQ,

Table-1: Table for values for Fixed Monthly charge for Ammonia (To be indicated in the Price Bid)

S.No	Price Factors	Values to be quoted by the Bidder	
1.0	FMC_{BM} (Rs./ Month)	To be indicated in the Schedule of Rate /BOQ	
2.0	XM_{ROI} (Note-1)		
3.0	XM_{WPI} (Note-1)		
4.0	XM_{CPI} (Note-1)		

Note:

$$XM_{ROI} + XM_{WPI} + XM_{CPI} = 100\%$$

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PREAMBLE TO SCHEDULE OF RATE	PNMM/PC-277/E-4001/P-I/ Annx-1.2	0	 SECL
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4.2 Variable charge per MT of Ammonia

$$\text{Variable Charge per MT of Ammonia} = A_{BM} \times (WPI_N / WPI_O)$$

Where,

A_{BM} = is the constant component of Variable Charge to be submitted in the Price Bid, as per Schedule of Rate /BOQ

WPI_N = Average Wholesale Price Index as per RBI for Manufactured Products for the month prior to

Billing month or latest available as on that date.

WPI_O = Average Wholesale Price Index as per RBI for Manufactured Products for the month of

Table-1: Table for values for Variable charge per MT of Ammonia



S.No	Price Factors	Values to be quoted by the Bidder	
1.0	A_{BM} (Rs./ MT of Ammonia)	To be indicated in the Schedule of Rate /BOQ	

5.0 FEED & UTILITIES PROVIDED BY Owner

Bidder to indicate the Guaranteed Quantity of Feed & Utilities in the Price Bid

FEED & UTILITIES	QUANTITY
1. ROM Coal	To be indicated in the Schedule of Rate /BOQ
2. Power	
3. Raw Water	

Note : Values for Guaranteed Consumption Figures to be quoted upto 4th decimal place.



	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E-4001/ Annx-1.3	0	
		DOC. NO.	REV.	
		SHEET 1 OF 2		
COMMERCIAL QUESTIONNAIRE				

SUBJECT : COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED

Note:

- 1) The Bidder shall submit reply to each query.
- 2) The Bidder's reply/ confirmation as furnished in the Commercial Questionnaire (CQ) shall supersede the stipulation mentioned else where in the bid.

Sl. No.	OWNER'S/PDIL'S QUERY	BIDDER'S REPLY / CONFIRMATION
1.	Complete Bidding Document and all technical and commercial amendments/addendums if any issued, digitally signed as a token of having received and read all parts of the bidding document and having accepted and considered the same in preparing their bid	
2.	Please confirm that all pages of the Bid have been signed and Stamped as per NIT requirement and numbered in sequential manner.	
3.	Please confirm that you have studied complete Bidding Document i.e. Technical and Commercial Part including PQ criteria (Volume-I, Commercial, Section-2.0), and your Bid is in accordance with the requirements of the Bidding Document.	
4.	Please confirm that PQC Documents/Bid, Techno-Commercial Bid has been submitted as specified in Clause 13.0 of Instructions to Bidders.	
5.	Please confirm that the Price Part does not include any terms and condition and Unpriced BOQ/ Schedule of Price, duly signed and stamped, and indicating "Quoted/Included" against each head has been submitted in Cover-2 In case any terms and condition is mentioned in the price part, the same shall be treated as null and void.	
6.	Please confirm your compliance to total scope of work mentioned in the Bidding Document.	
7.	Please confirm your acceptance for Time Schedule as mentioned in Instructions to Bidders.	
8.	Please confirm that your bid is valid for 9 (nine) months from the <u>date of opening of Technical and Unpriced commercial Bids.</u>	
9.	Please confirm EMD Validity for the period of Bid Validity plus 9 (nine) months.	
10.	Please confirm that the prices are quoted INR only.	
11.	Please confirm that your Bid is substantially	

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E-4001/ Annx-1.3	0	 SECL
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		SHEET 2 OF 2		

COMMERCIAL QUESTIONNAIRE

Sl. No.	OWNER'S/PDIL'S QUERY	BIDDER'S REPLY / CONFIRMATION
	responsive to the requirements of the Bidding Document and you have not stipulated any material deviation and submitted all details as specified in the Bidding Document.	
12.	Please confirm that you have proposed adequate project/ site organisation with qualified supervisory personnel having sufficient experience.	
13.	Please confirm that all costs resulting from safe execution of Work, such as safety induction, use of protective clothing, safety glasses and helmet, safety precaution taken during monsoon, or any other safety measures to be undertaken by the CONTRACTOR for execution of Work are considered.	
14.	Please confirm that all safety rules & regulations as mentioned in Bidding Document or notified at later date by Owner during execution shall be adhered by CONTRACTOR .	
15.	The safety measures as mentioned in Bidding Document shall not be considered as limitative. The CONTRACTOR will be required to develop their stringent safety measures and submit the same to Engineer-in - Charge with the provision of a dedicated safety group closely monitoring the construction activities in all working shifts.	



For and on behalf of

Stamp & Signature :

Name :

Designation :

Date :

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED CONTENTS OF BID AND CHECK LIST	PNMM/PC-277/E- 4001/ Annx-1.4	0	 SECL
		DOC. NO.	REV	
		SHEET 1 OF 4		

SUBJECT : COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED.

Bidder is requested to fill this check list and ensure that all details /documents have been furnished under relevant section as called for in the Bidding Document duly filled in, signed & stamped.



Please mention (Submitted / Not Submitted) against each head under Bidders' Response and ensure compliance:

PART-I : Pre-Qualification Bid: (Refer Section 2.0 of Volume-I, Commercial)



Sl. No.	Description	Bidder's Response
i.	Letter of submission and synopsis of the proposal (Submitted / Not Submitted)	
ii.	Organization Profile (Submitted / Not Submitted)	
iii.	Article of Association of the Company or Board Resolution (Submitted / Not Submitted)	
iv.	Consortium Agreement as per Annexure-1.12 (if applicable). (Submitted / Not Submitted)	
v.	MOU/ letter of undertaking by the Process Licenser(s) (Submitted / Not Submitted)	
vi.	Exhibit-1 for Technology Criteria (Submitted / Not Submitted)	
vii.	Exhibit-2 for Experience Criteria (Submitted / Not Submitted)	
viii.	Exhibit-3 for Financial criteria (Submitted / Not Submitted)	
ix.	Solvency Certificate (Submitted / Not Submitted)	
x.	A declaration shall be submitted to the effect Bidder/JV/Consortium members shall not be under liquidation, court receivership or similar proceedings as per Annexure-1.13. (Submitted / Not Submitted)	
xi.	Power of Attorney of Bid Signatory as per Annexure-1.11 (Submitted / Not Submitted)	
xii.	Undertaking from TPIA as per Annexure-1.15. (Submitted / Not Submitted)	
xiii.	Format for Financial Details of Holding Company as per Annexure-1.22 (Submitted / Not Submitted)	

PART-II : Technical and Unpriced Commercial Bid:

<u>SECTION-I</u>		
i.	Bid Form as per Annexure-1.1 (Submitted / Not Submitted)	
ii.	Preamble to SOR (BOQ / Price Bid/Price Schedule) as per annexure 1.2	

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED CONTENTS OF BID AND CHECK LIST	PNMM/PC-277/E- 4001/ Annx-1.4	0	
		DOC. NO.	REV	
		SHEET 1 OF 4		

	(Submitted / Not Submitted)	
iii.	Commercial Questionnaire as per Annexure-1.3 (Submitted / Not Submitted)	
iv.	Contents of Bid and Check List as per Annexure-1.4. (Submitted / Not Submitted)	
v.	Format for BIDDER's queries for Pre Bid Discussion as per Annexure-1.5. (Submitted / Not Submitted)	
vi.	Letter of Waiver of Conditions/Deviations as per Annexure-1.6 (Submitted / Not Submitted)	
vii.	Bidder's Proposed Schedule as per Annexure-1.7 (Submitted / Not Submitted)	
viii.	Authorization to DSC Holder , if applicable as per Annexure-1.8. (Submitted / Not Submitted)	
ix.	A copy of BOQ, uploaded by Bidder in the Portal keeping price blank (hiding the price) and in place indicating "Quoted" or "√", as a confirmation of price quoted against each head, shall be submitted. (Submitted / Not Submitted)	
x.	Certificate of Non-Involvement of Indian Agent as per Annexure-1.9 (Submitted / Not Submitted)	
xi.	Public Procurement (Preference To Make In India) Policy Undertaking as per Annexure 1.10. (Submitted / Not Submitted)	
xii.	Provision for Procurement from a Bidder which shares a land border with India as per Annexure1.23 (Submitted / Not Submitted)	
xiii.	Complete Bidding Document and all technical and commercial amendments/addendums if any issued, digitally signed as a token of having received and read all parts of the bidding document and having accepted and considered the same in preparing their bid (Submitted / Not Submitted)	
	<u>SECTION-II</u>	
i.	Technical Details/ documents specified under "Technical Information Required along with Bid". (Submitted / Not Submitted)	
iii.	Any other information required in the Bidding Documents or considered relevant by the Bidder. (Submitted / Not Submitted)	

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED FORMAT FOR BIDDER'S QUERIES FOR PRE BID DISCUSSION	PNMM/PC-277/E-4001/ Annx-1.5	0	
		DOC. NO.	REV.	
		SHEET 1 OF 1		

**SUBJECT: COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS
FOR SOUTH EASTERN COALFIELDS LIMITED.**

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S / PMC REPLY
	Section	Page No.	Clause No.	Subject		

NOTE: The Pre-Bid Queries shall be sent through e-mail to prsahu@pdilin.com, anjali@pdilin.com, dkchaturvedi@pdilin.com, hod-ced.secl@coalindia.in, hodcbm.cmpdi@coalindia.in, asheeshkumar.cil@coalindia.in



For and on behalf of

Stamp & Signature :

Name :

Designation :

Date :

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED LETTER OF WAIVER OF CONDITIONS/DEVIATIONS	PNMM/PC- 277/E- 4001/Annx-1.6	0	
		DOC. NO.	REV.	
		SHEET 1 OF 1		

(ON COMPANY'S LETTERHEAD)

SUBJECT: COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED

(Tender No : PNMM/PC-277/E-4001)

We * hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other condition whatsoever of the Bidding Documents and all Addenda / Corrigenda / Clarifications issued by Owner.

We further hereby waive, withdraw and abandon any and all deviations, variations, objections or reservations whatsoever hereto set out, given or indicated in our offer, clarifications, correspondence, communications, or otherwise with a view that the price bid submitted may be treated to conform to, in all respects, with the terms and conditions of the said tender documents including all Addenda / Corrigenda/Clarifications.

For and onbehalf of*

Stamp &Signature:**



Name :

Designation :

Date :

* Here fill in the name of Bidder.

** The Letter of Waiver must be signed by the person (s) authorised to sign.



	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E-4001/Annx-1.7	0	 SECL
		DOC. NO.	REV.	
		SHEET 1 OF 1		

SUBJECT: COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED.

BIDDER'S PROPOSED SCHEDULE

Bidder shall provide a bar-chart type schedule for the execution of the WORK and shall show the main activities with duration, their sequences, and the milestone events specified.

For and on behalf of :
Stamp & Signature :
Name :
Designation :
Date :

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E- 4001/Annx-1.8	0	
		DOC. NO.	REV.	
		SHEET 1 OF 1		

**FORMAT FOR AUTHORISATION TO DSC HOLDER BIDDING ONLINE BY THE PERSON
WHO HAS SIGNED LETTER OF BID**



(On NON JUDICIAL STAMP PAPER)

We do hereby authorise M/s. /Mr..... Address.....
whose DSC is mapped in the name of the Bidder, for online bidding on behalf of us for Tender
No._____ Dated_____invited by SECL on <https://eprocure.gov.in/eprocure/app> (CPP
e- tender portal).

Name, Signature & Seal of the person who has signed the Bidding Document and is Authorising
the DSC Holder for online bidding.

Name, Signature & Seal of the DSC Holder having DSC mapped in the name of the Bidder,
Authorised for online bidding

Signature & Seal of the PUBLIC NOTARY

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E- 4001/Annx-1.9	0	
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PROFORMAT OF CERTIFICATE OF NON-INVOLVEMENT OF AGENT

Where Indian Agent/Consultant/Representative/Retainer/Associates is not involved, the Bidder shall certify in the proforma given below on its letterhead.

This is to certify that we have not engaged/involved any Indian agent/representative/consultant/retainer/Associates who is not our employee for the purposes of accompanying bid or any resultant contract and therefore, no Agent's/Retainer's/ representative's/consultant's/associate's commission is payable in India or abroad against or in connection with any resultant contract.

For and on behalf of

Stamp & Signature :

Name :

Designation :

Date :

No. P-45021/2/2017-PP (BE-II)
Government of India
Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
(Public Procurement Section)

Udyog Bhawan, New Delhi
Dated: 16th September, 2020

To

All Central Ministries/Departments/CPSUs/All concerned

ORDER

Subject: Public Procurement (Preference to Make in India), Order 2017– Revision; regarding.

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019 and Order No.P-45021/2/2017-B.E.-II dated 04.06.2020, hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017' dated 16.09.2020 effective with immediate effect.

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued:

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.
2. **Definitions:** For the purposes of this Order:

'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

.....Contd. p/2

'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a "Class-I local supplier" may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR- 2017, and will also include 'turnkey works'.

3. Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

.....Contd. p/3

3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

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(d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

3B. Applicability in tenders where contract is to be awarded to multiple bidders - In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.

b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.

c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers' / 'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.

d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.

e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-paras above.

4. Exemption of small purchases: Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

5. Minimum local content: The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

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percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/ 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/ 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
9. **Verification of local content:**
 - a. The 'Class-I local supplier'/ 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
 - b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/ 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
 - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
 - d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
 - e. Nodal Ministries and procuring entities may prescribe fees for such complaints.
 - f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

- g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.
- h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
 - i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
 - ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
 - iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. Specifications in Tenders and other procurement solicitations:

- a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier'/ 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

d. Reciprocity Clause

- i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

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- ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
 - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
 - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
 - v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.
- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

10A. Action for non-compliance of the Provisions of the Order: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11. Assessment of supply base by Nodal Ministries: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. Increase in minimum local content: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

13. Manufacture under license/ technology collaboration agreements with phased indigenization: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. Powers to grant exemption and to reduce minimum local content: The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. Directions to Government companies: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

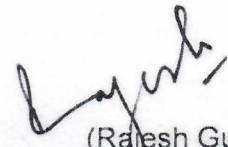
16. Standing Committee: A standing committee is hereby constituted with the following membership:

Secretary, Department for Promotion of Industry and Internal Trade—Chairman
Secretary, Commerce—Member
Secretary, Ministry of Electronics and Information Technology—Member
Joint Secretary (Public Procurement), Department of Expenditure—Member
Joint Secretary (DPIIT)—Member-Convenor

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The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.



17. **Functions of the Standing Committee:** The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee
- a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
 - b. shall annually assess and periodically monitor compliance with this Order
 - c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
 - d. may require furnishing of details or returns regarding compliance with this Order and related matters
 - e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
 - f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization
 - g. may consider any other issue relating to this Order which may arise.
18. **Removal of difficulties:** Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.
19. **Ministries having existing policies:** Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.
20. **Transitional provision:** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.



(Rajesh Gupta)
Director

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FORM – I of ANNEXURE -1.10

**SELF CERTIFICATION BY BIDDER WHO CLASS-I/CLASS-II LOCAL SUPPLIER TOWARDS
MANDATORY MINIMUM LOCAL CONTENT**

To,
M/s South Eastern Coalfields Limited (SECL),

SUB:

TENDER NO:

Dear Sir

We, M/s _____ (*Name of Bidder*) confirm that as per the definition of mentioned in PP-LC Policy we are:

Class-I Local supplier []

Class-II Local Supplier []

(Bidder is to tick appropriate option (✓ or X) above).



It is further confirm that M/s _____ (*Name of Bidder*)/ M/smeet the mandatory minimum Local content requirement of% specified for Class-I Local supplier/ Class-II Local supplier (*strikethrough which is not applicable*) under Policy to Provide Purchase Preference (linked with local content).

We further confirm that in case we fail to meet the minimum local content, the same shall be treated false information and SECL will take action as per provision of tender document.

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:

Designation:

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FORM-II of ANNEXURE-1.10

**CERTIFICATE BY STATUTORY AUDITOR/COST AUDITOR/ CHARTERED ACCOUNTANT
OF BIDDER WHO CLASS-I/CLASS-II LOCAL SUPPLIER TOWARDS MANDATORY
MINIMUM LOCAL CONTENT**

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

SUB:

TENDER NO:

Dear Sir

1. We _____ the statutory auditor/ cost auditor/chartered accountant (not an employee of the company) of M/s. _____ (*Name of the bidder*) hereby certify that as per definition specified in PP-LC policy, M/s. _____ (*Name of the bidder*) is

Class-I Local supplier []

Class-II Local Supplier []

(Bidder is to tick appropriate option (✓ or X) above).

2. It is further confirm that M/s _____ (*Name of Bidder*)/ M/s meet the mandatory minimum Local content requirement of% specified for Class-I Local supplier/ Class-II Local supplier (*strikethrough which is not applicable*) under Policy to Provide Purchase Preference (linked with local content) quoted vide offer No. _____ dated _____ against tender No. _____ by M/s _____ (*Name of the bidder*)."

Name of Audit Firm:

[Signature of Authorized Signatory]

Name:

Date:



Designation:

Seal:

Membership no.

Note:

- (i) This certificate it to be furnished by the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies)
- (ii) The above format is indicative, the statutory auditor/ cost auditor/ cost accountant can modify the format without changing the intent of certification.

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**POWER OF ATTORNEY (POA)
(To be submitted on the Non-Judicial stamp paper)**

Bid NO:
Description of work:

Name of Bidder: _____



“The undersigned _____ (Name of LEGAL PERSON, i.e. CEO/C&MD/Company Secretary/Partners) is lawfully authorized to issue this POA* on behalf of the company M/s _____ (Name of bidder) whose registered address is _____ and does hereby appoint Mr./Ms _____ (name of authorized person signing the bid document) _____ (Designation) of _____ M/s _____ (Name of bidder) whose signature appears below to be the true and lawful attorney/(s) and authorize him/her to sign the bid (both physically & digitally on CPP Portal), conduct negotiation, sign contracts and execute all the necessary matter related thereto, in the name and on behalf of the company in connection with the PQ no. _____.

The signature of the authorized person/(s) herein constitutes unconditional obligations of M/s _____ (Name of bidder). This Power of Attorney (POA) shall remain valid and in full force and effect before we withdraw it in writing (by fax, or mail or post). All the documents signed (within the period of validity of the Power of Attorney) by the authorized person herein shall not be invalid because of such withdrawal.

- (*)
- (I) In case of a single Bidder, the power of Attorney shall be issued as per the constitution of the bidder as below.
- In case of Proprietorship:** By Proprietor
 - In case of Partnership:** by all Partners or Managing Partner.
 - In case of Limited Liability Partnership:** by any bidder's employee authorized in terms of Deed of LLP.
 - In case of Public /Limited Company:** POA in favour of authorized employee(s) by Board of Directors through Board Resolution or by the designated officer authorized by Board to do so. Such Board Resolution should be duly countersigned by Company Secretary / MD / CMD / CEO.

SIGNATURE OF THE LEGAL PERSON

(Name of person with Company Seal)

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(Format for Consortium Agreement)



(Following Consortium Agreement is for Execution on Non-Judicial Stamp Paper of Rs.100/-)

THIS CONSORTIUM AGREEMENT ("CA") is made at (Place)_____on this day of_____(month) of 2022 amongst:-

- 1) M/S----- incorporated under the Laws of, ----- with its Registered Office at--- -----, (hereinafter referred to as "Lead Bidder/Member-I" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns); AND
- 2) M/S ----- incorporated under the Laws of, ----- with its Registered Office at,----- (herein after referred to as "Consortium Member-II/Member-II" which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns); AND
- 3) M/S-----incorporated under the Laws of-----with its Registered Office at,----- (hereinafter referred to as "Consortium Member-III/Member-III)" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns); AND

Note: (Hereinafter wherever reference or context requires "Lead Bidder/Member-I" and "Consortium Members (II/III)" are collectively referred to as "PARTIES" and "PARTY" shall mean any member of the Consortium (Member I / Member II / Member III).

For the purpose of making a bid and entering into a Contract Agreement (in case of award) in response to Tender No. _____ dated _____ for COAL GASIFICATION BASED

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AMMONIA PLANT, at Mahamaya SCG Plant, Bhatgaon Area, Surajpur District, Chhattishgarh, India of M/s South Eastern Coalfields Limited (SECL) (hereinafter called the "Owner")

AND WHEREAS



- (1) Owner is proposing COAL GASIFICATION BASED AMMONIA PLANT on BOO Basis at Mahamaya SCG Plant, Bhatgaon Area, Surajpur District, Chhattishgarh, India, (hereinafter referred to as "PROJECT") vide Tender No. _____ Dated _____ and award the above work to a experienced, qualified and selected contractors with proper technical back-up of reputed Process Licensors and requisite experience.
- (2) Lead Bidder and Other Consortium Members (PARTIES) are competent and vide their **Tender No. _____** desire to forge a strategic business alliance to combine their skills and work under the leadership of Lead Bidder who will, on awarding the contract, assume the responsibility for itself and vicariously for all the consortium members and all the PARTIES will work with one another/each other in the performance of the contract that may be entered into with the Owner in pursuance of the bid and assume joint and several liabilities for their execution/performance of the said contractual obligation towards the Owner including Technical Guarantees.

NOW, THEREFORE, THE PARTIES HERETO AGREE TO WORK TOGETHER AND BIND THEMSELVES AS FOLLOWS:-

1. In consideration of the bid submission by us to the Owner and the award of contract by the Owner to the Consortium (if selected by the Owner), we the members of the Consortium hereby agree that the Member-I(M/s _____) shall act as the lead bidder for self and on behalf of Member-II and Member-III and further declare and confirm that we shall jointly and severally be bound unto the Owner for execution of the contract in accordance with the contract terms and shall jointly and severally be liable to the Owner to perform all contractual obligations including technical guarantees. Further, the Lead Bidder/Member-I is authorized to incur liabilities and receive instructions for and on behalf of other members of the Consortium during the entire execution of the contract.
2. The terms and conditions contained in these presents constitutes a full statement of the contractual rights and obligations of Lead Bidder and other Consortium Members in relation to the PROJECT and supersedes all prior negotiations, agreements and documents unless specific reference has been made in the text of this Agreement to any such negotiations, agreements and documents.

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3. This Agreement defines and fixes the responsibilities governing the relations of the Lead Bidder and other Consortium Members in preparation of the Bid and subsequent execution of the Contract Agreement with Owner.
4. Notwithstanding anything containing hereinbefore, Owner has got the right to fix the responsibility and accountability on any and/or all Members of the Consortium of this Agreement with or without Lead Bidder.
5. The Lead Bidder shall be responsible for:
 - (a) Preparation of BID.
 - (b) Making the final decision on all strategy for the PROJECT, including performance of the PROJECT.
 - (c) Co-ordination responsibility for execution of the contract
 - (d) All negotiation and communications with the Owner
 - (e) Any other aspect/issue as described in this Agreement and/or Appendix-I of this Agreement.
6. All Costs incurred with regard to the Bid shall be borne amongst the members of the Consortium. Each party agrees to render complete assistance for providing to the other PARTY sufficient Data/information required for preparation of the Bid in its entirety.
7. At the time of submission of the bid, the PARTIES have jointly agreed to all Schedules, programs, terms and conditions, and all other matters whatsoever necessary for the submission of bid. The division of responsibilities of Scope of Work among different Consortium members is as per APPENDIX-I (Responsibility Matrix) (Appendix –I of this agreement is to be submitted by PARTIES) of this agreement, which shall form part of this CA. In case of award of the contract, each PARTY shall perform their respective scope of work and division of responsibilities in accordance with the scope indicated in APPENDIX-I (Responsibility Matrix). It is further agreed that the sharing of responsibilities and obligations shall not in any way be a limitation of the joint and several responsibilities of the Members under the Contract Agreement.
8. PARTIES declare and undertake to Owner that:
 - (a) It shall be the joint and several responsibility of Members of the Consortium to fulfill all obligations as are required under the CONTRACT entered into between Owner and PARTIES in furtherance of PQ Booklet issued by Owner vide **Tender No. [●]**.
 - (b) Each PARTY shall be jointly and severally liable to fully discharge their obligations and co-operate with one another with respect to the PROJECT during the term of this agreement and

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act at all times in such a way to further the common interest of the Consortium. Without limit to the foregoing, each PARTY reaffirms not to bid for the PROJECT separately or in combination with any third party.



- (c) In case of any breach of the Contract Documents by any PARTY, the remaining Members of the Consortium hereby agree to be fully responsible for the successful execution/performance of the contract in accordance of the terms of the Contract Documents.
- (d) Further, if the Owner suffers any loss or damage on account of any breach of the contract or any shortfall in the completed equipment/plant, meeting the guaranteed performance parameters as per the technical specifications/contract documents, each Member of the Consortium undertakes to promptly make good such loss or damage caused to the Owner, on the Owner's demand without any demur. It shall neither be necessary nor obligatory on the part of the Owner to proceed against the Lead Member to these presents before proceeding against other members of the Consortium.
- (e) The financial liability of the Member(s) to this CA, to the Owner with respect to the any or all claims arising out of the performance or non-performance of the Contract shall, however be not limited in any way so as to restrict or limit the liabilities of either of the Member.
- (f) In case of award of contract, PARTIES do hereby agree that the Security cum Performance Guarantee shall be submitted in favour of the Owner from the bank acceptable/approved by the Owner for the value as stipulated in the award of Contract and such guarantee shall be arranged by the Lead Bidder.

9. Each Party hereby represents and warrants that:

- (a) [it is duly organized and validly existing under the laws of the jurisdiction of their organization, and]¹ it has full power, authority and capability to enter into this CA and to perform all acts and obligations contemplated herein;
- (b) this CA has been duly signed and delivered by it and its obligations described in this CA are legal, valid and binding obligations of such Party; and
- (c) the execution, delivery and performance of this CA has been authorised by all necessary and appropriate [corporate or]² governmental action and the entry into and performance of this CA:



¹*Note to draft:* To be retained in the event any Party to the CA is a body corporate.

²*Note to draft:* To be retained in the event any Party to the CA is a body corporate.



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- (i) [will not conflict with or violate any provision of any of its constitutional documents / charters or other organizational document;]³
- (ii) will not require any notice to or filing with, or any approval of, any authority or the consent of any third party;
- (iii) will not conflict with, result in a breach of, or constitute (with or without due notice or lapse of time or both) a default under, result in the acceleration of obligations under, create in any person the right to terminate, modify or cancel, or require any notice, consent or waiver under, any contract or instrument to which such Party is a party or by which such Party is bound or to which any of such Party's assets are subject; and
- (iv) will not violate any Applicable Law or any order, writ, injunction, or decree applicable to it.
- (d) there is no litigation pending or, threatened to which it or any of its affiliates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfillment of its obligations under this CA.
10. Any changes or amendments to this agreement shall be made after obtaining approval of the Owner and are valid only when these are set out in writing as such amendments and signed by the PARTIES.
11. Notwithstanding the Lead Bidder's liability in terms of this Agreement, each PARTY shall be fully responsible, liable and accountable for all financial transactions under this Agreement and each PARTY shall pay its own taxes and make other statutory and mandatory payments / taxes / duties. The PARTIES herein further undertake to ensure that all applicable laws & compliances are observed, appropriate records are kept of all financial transactions and appropriate documentation, including, but not limited to contracts, orders and confirmations, receipts and invoices, time sheets of staff and payroll calculations are retained for all matters pertaining to this Agreement.
In case there is contradiction in any terms & conditions between Consortium agreement & the main Tender document/Contract Documents, the terms and conditions of the main Tender Document/Contract Documents shall prevail.

³*Note to draft:* To be retained in the event any Party to the CA is a body corporate.

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12. This agreement shall become valid upon execution and shall come to an end on the occurrence of any of the events stated herein below;
 - (a) Cancellation of PROJECT by Owner or award of PROJECT by Owner to a third party; OR
 - (b) Owner informing that no award of contract for this project will be made to any Bidder; OR
 - (c) End of Defect Liability Period (in case of award of contract).
13. This agreement shall in no way restrict any PARTY from engaging in any activities, which are not connected with this PROJECT and are not in direct competition to the activities of the PROJECT.
14. The PARTIES agree to keep confidential all information and data obtained from each other during the course of this agreement for a period of Three years from the effective date of this agreement.
15. No PARTY shall have the right to assign or in any way transfer any of its rights or obligations under this agreement to any other Company, firm or person(s) without prior consent in writing of the other members of the Consortium and Owner.
16. The PARTIES agree that as and when called upon by Owner, the PARTIES shall execute all further deeds, documents and agreements as may be required by Owner.
17. It is further agreed that this CA shall be irrevocable and shall form an integral part of the Contract Agreement and shall continue to be enforceable till such time as mentioned in Clause no. 11 above.
18. This CA supersedes and replaces any previous agreement or understanding between the Parties, whether oral or written, on the subject matter hereof, prior to the date of this CA. For the avoidance of doubt, this CA shall not supersede, and shall at all times be subject to, the Contract Agreement.
19. The Parties shall not assign or delegate its rights, duties or obligations under this CA and the Contract Agreement in any manner whatsoever, except with prior written consent of the Owner.
20. This agreement shall in all respects shall be governed, construed and interpreted in accordance with the applicable laws of India and Courts at Kolkata shall have exclusive jurisdiction in all matters arising under this CA.
21. Any dispute or difference arising between or amongst the PARTIES under or out of this agreement which cannot be settled amicably within

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sixty days, shall be finally decided by arbitration in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (as may be amended from time to time). The place of Arbitration shall be New Delhi, India and the language of Arbitration shall be English. The arbitration award given by the arbitral tribunal shall be final and binding on all the members of the Consortium.

IN WITNESS WHEREOF, the Parties have, through their authorised representatives, executed these presents and affixed the common seals of their respective companies on the day, month and year first mentioned above at (Place).

For and on Behalf of	For and on Behalf of	For and on Behalf of
(Lead Bidder/Member-I)	(Member-II)	(Member-III)
_____	_____	_____
Signature of Auth. Signatory	Signature of Auth. Signatory	Signature of Auth. Signatory
With Company Seal	With Company Seal	With Company Seal
(1)	(2)	(3)

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED.	PNMM/PC-277/ E-4001/Annx-1.13	0	
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DECLARATION REGARDING BANNED/BLACKLISTED/DELISTING AND LIQUIDATION, COURT RECEIVERSHIP (On Bidder's Letter Head)

To,

M/s South Eastern Coalfields Limited (SECL),
(A subsidiary of CIL)
Office of GM,CED
SECL HQ, Seepat Road
Distt.-Bilaspur-495006, Chhattisgarh (India)

SUB: COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED.

Dear Sir,

We hereby confirm that we have not been banned or blacklisted or de-listed or put on Holiday by any Government / Quasi-Government / Public Sector Undertaking / Private Firm / Financial Institutions on due date of submission of bid.

We also confirm that we are not under any liquidation, court receivership or similar proceedings or 'bankruptcy'.

If it is found at a later date that the Contractor has secured the contract by furnishing wrong information or by suppressing facts in the bid submitted, South Eastern Coalfields Limited, (SECL) reserves the right to cancel the contract and forfeit the EMD/ Security cum Performance Guarantee and put the CONTRACOR on Holiday / Banned / Blacklist list of SECL/CIL. Further, we also confirm that in case there is any change in status of the declaration prior to award of contract, the same will be promptly informed to SECL by us.

Place:



[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

Seal:

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(FORMAT FOR SOLVENCY CERTIFICATE)

(on Bank' s Letter Head)

REF NO:..... DATE:.....,,,,,,

To Whomsoever Concerned



This is to certify that to the best of our knowledge and information, M/s _____(Bidders name with complete address), a customer of our Bank, is respectable, and is capable of executing orders to the extent of Rs. _____(Rupees_____). M/s_____have been our customer since__to date and has been granted the following limits, at present, against various facilities granted by the Bank:

.....
.....

This certificate is issued without any guarantee, risk or responsibility on behalf of the Bank or any of its officials.

This certificate is issued at the specific request of the customer. Yours faithfully,

(Bank Official' s signature & stamp)

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/E- 4001/Annx-1.15	0	
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**Format for Undertaking from Third Party Inspection Agency (TPIA)
(on TPIA letter head duly stamped & signed)**

Ref.:

Date:

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

Subjects: Verification and certification of documents pertaining to Technical Bid Evaluation (BEC)

Ref: Bid No.....for.....

M/shaving Registered office at intend to participate in above referred tender of South Eastern Coalfields Limited (SECL) having registered office at SECL HQ, Seepat Road, District- Bilaspur, Chhattishgarh-495006 (India) The tender conditions stipulated that the Bidder shall submit documents pertaining to Technical PQC duly verified and certified by designated independent TPIA.

In this regard, this is to certify that copies of documents pertaining to Technical PQC submitted to us by the Bidder have been verified and certified by us with the originals and found to be genuine. We have signed and stamped on the copies of all the verified and certified documents.

(Signature of a person duly authorized to Sign on behalf of the TPIA)

(seal of the Company)

Name.....

Contact No.....

PRECONTRACTINTEGRITYPACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on.....day of the month of20..., between, on one hand, Coal India Limited/Subsidiary Cos. acting through Mr/Ms, Designation of the officer, (hereinafter called the "BUYER / Principal", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s.represented by Mr/Ms, Chief Executive Officer (hereinafter called the "BIDDER/Seller/Contractor" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure:

COAL GASIFICATION BASED AMMONIA PLANT AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA ON BUILD-OWN-OPERATE (BOO) BASIS

Tender No. PNMM/PC-277/E-4001

and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Central Public Sector Unit.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

- a. No employee of the Principal, personally or through family members, will in connection with the tender for , or the execution of a contract, demand ; take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.



- b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular , before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - c. Principal will exclude from the process all known prejudiced persons .
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- (1) The Bidder(s) / Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commit themselves to observe the following principles during participation in the tender process and during the contract execution.
- a. The Bidder(s) / Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 - b. The Bidder(s) / Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non- submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.
 - c. The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/ PC Act; further the Bidder(s) / Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - d. The Bidder(s) / Contractors(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India , if any, Similarly the Bidder(s) /Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s).Further, as mentioned in the Guidelines all the payments made to the Indian agent/ representative have to be in Indian Rupees only. *The guidelines and terms and conditions for Indian agents of Foreign supplier shall be as per the provisions at Annexure-1 of this document.*
 - e. The Bidder(s) / Contractor(s) will, when presenting their bid, disclose any and all payments made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.



- f. Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.
- (2) The Bidder(s) / Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder, before contract award, has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

- (1) If the Bidder / Contractor / Supplier has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is also entitled to exclude the Bidder / Contractor / Supplier from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case. In particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.
- (2) A transgression is considered to have occurred if the Principal, after due consideration of available facts and evidences within his / her knowledge concludes that there is a reasonable ground to suspect violation of any commitment listed under Section 2 i.e " Commitments of Bidder(s) / Contractor(s).
- (3) The Bidder accepts and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.
- (4) If the Bidder / Contractor / Supplier can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely."

Section 4 - Compensation for Damages

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- (2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent



to Performance Bank Guarantee.

Section 5 - Previous transgression

- (1) The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6 - Equal treatment of all Bidders / Contractors / Subcontractors

- (1) In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor.
- (2) The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violating Bidder(s) / Contractor(s) / Subcontractor(s)

If the Principal obtains knowledge of conduct of a Bidder , Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

- (1) The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- (2) The Monitor is not subject to instructions by the representatives of the parties and performs his/ her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him / her to treat the information and documents of the Bidders/Contractors as confidential.
He/ she reports to the Chairman, Coal India Limited / CMD, Subsidiary Companies
- (3) The Bidder(s) / Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/ her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is



or consortium members.

- (3) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- (4) Issues like Warranty / Guarantee etc. shall be outside the purview of IEMs.
- (5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.

Section 11- Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

Section 12- Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

Section 13 - Other Legal Actions.

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

(For & On behalf of the Principal)


GM (CED)
SECL, Bilaspur (C.G.)
(Office Seal)

(For & On behalf of Bidder/ Contractor)

(Office Seal)

Place Bilaspur

Date 28.01.2022

applicable to Sub-contractors.

- (4) The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) / Sub-contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information ' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Chairman, Coal India Limited / CMD, Subsidiary Companies and recuse himself / herself from that case.
- (5) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- (6) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/ she will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- (7) The Monitor will submit a written report to the Chairman, Coal India Limited / CMD, Subsidiary Companies within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- (8) If the Monitor has reported to the Chairman, Coal India Limited / CMD, Subsidiary Companies, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Chairman, Coal India Limited / CMD, Subsidiary Companies has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
- (9) The word '**Monitor**' would include both singular and plural.

Section 9 - Pact Duration



This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman Coal India Limited / CMD, Subsidiary Companies.

Section 10 - Other provisions

- (1) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- (2) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners



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Annexure-1.17

PROFORMA OF "BANK GUARANTEE"
FOR "EARNEST MONEY / BID SECURITY"
(To be stamped in accordance with the Stamp Act)

To, M/s South Eastern Coalfields Limited,(A subsidiary of CIL) SECL HQ, Seepat Road, District- Bilaspur, Chhattishgarh-495006 (India)	Bank Guarantee No.	
	Date of BG	
	BG Valid up to	
	Claim period up to (There should be three months gap between expiry date of BG & Claim period)	
	Stamp Sl. No. / e-Stamp Certificate No.	



Dear Sir(s),

In accordance with Letter Inviting Tender under your reference No _____ M/s. _____ having their Registered / Head Office at _____ (hereinafter called the Tenderer), wish to participate in the said tender for _____

As an irrevocable Bank Guarantee against Earnest Money for the amount of _____ is required to be submitted by the Tenderer as a condition precedent for participation in the said tender which amount is liable to be forfeited on the happening of any contingencies mentioned in the Tender Document.

We, the _____ Bank at _____ having our Head Office _____ (Local Address) guarantee and undertake to pay immediately on demand without any recourse to the tenderers by South Eastern Coalfields Limited (SECL), the amount _____ without any reservation, protest, demur and recourse. Any such demand made by SECL shall be conclusive and binding on us irrespective of any dispute or difference raised by the Tenderer.

This guarantee shall be irrevocable and shall remain valid up to _____ [this date should be Nine (09) months beyond the validity of the bid].If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s. _____ whose behalf this guarantee is issued.

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In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this _____ day of _____ 20__ at _____.

Notwithstanding anything contained herein:

- a) The Bank's liability under this Guarantee shall not exceed (currency in figures) _____ (currency in words only) _____
- b) This Guarantee shall remain in force upto _____ (this expiry date of BG should be Nine months beyond the validity of bid) and any extension(s) thereof; and
- c) The Bank shall be released and discharged from all liability under this Guarantee unless a written claim or demand is issued to the Bank on or before the midnight of(indicate date of expiry of claim period which includes minimum three months from the expiry of this Bank Guarantee) and if extended, the date of expiry of the last extension of this Guarantee. If a claim has been received by us within the said date, all the rights of SECL under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

WITNESS:

(SIGNATURE)
(NAME)



(SIGNATURE)
(NAME)
Designation with Bank Stamp

(OFFICIAL ADDRESS)



Attorney as per
Power of Attorney No. _____
Date: _____

INSTRUCTIONS FOR FURNISHING "BID SECURITY / EARNEST MONEY" BY "BANK GUARANTEE"

1. The Bank Guarantee by Bidders will be given on non-judicial stamp paper as per "Stamp Duty" applicable. The non-judicial stamp paper should be in the name of the issuing Bank. In case of foreign Bank, the said Bank's Guarantee to be issued by its correspondent Bank in India on requisite non-judicial stamp paper.
2. The expiry date should be arrived at in accordance with "ITB: Clause-15.1".
3. The Bank Guarantee by bidders will be given from Bank as specified in "ITB".
4. A letter from the issuing Bank of the requisite Bank Guarantee confirming that said Bank Guarantee / all future communication relating to the Bank Guarantee shall be forwarded to the Employer at its address as mentioned at "ITB".

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5. Bidders must indicate the full postal address of the Bank along with the Bank's E-mail / Phone from where the Earnest Money Bond has been issued.
6. If a Bank Guarantee is issued by a commercial Bank, then a letter to Employer confirming its net worth is more than Rs. 1,000,000,000.00 [Rupees One Hundred Crores] or equivalent along with documentary evidence.
7. The bank guarantee referred above shall be operative at our Branch at Bilaspur and payable at Bilaspur.

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Annexure-1.17 (A)

MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY VENDOR ALONG WITH BANK GUARANTEE (BG)

1. Bank Guarantee No.				
2. Vendor Name				
3. Nature of Bank Guarantee [Please Tick (✓) whichever is applicable]	<table border="1"> <tr> <td>Contract Performance Security (CPS)</td> <td>Earnest Money Deposit (EMD)</td> <td>Advance</td> </tr> </table>	Contract Performance Security (CPS)	Earnest Money Deposit (EMD)	Advance
	Contract Performance Security (CPS)	Earnest Money Deposit (EMD)	Advance	
4. Purchase Order (PO) / Fax of Acceptance (FOA) / Detailed Letter of Acceptance (DLOA) No.				
5. Details of Bank issuing Bank Guarantee (BG)				
(A) Name of Contact Person				
(B) E-mail ID				
(C) Address				
(D) Phone No. / Mobile No.				



COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED

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Annexure-1.18

PROFORMA OF BANK GUARANTEE FOR PERFORMANCE

SECURITY

To

.....

.....

Re: Bank Guarantee in respect of Contract No.....

Dated..... Between (Name of the company)

and (Name of the Contractor)

WHEREAS

..... (Name and address of the Contractor) (herein after called “the Contractor”) has entered into a contract made as per letter of acceptance.....dated.....(herein after called the said contract) with (name of the Company) (hereinafter called “the Company”) to execute (name of the contract and brief description of work) on the terms and conditions contained in the said contract.

It has been agreed that the Contractor shall furnish a Performance Security in the shape of Bank Guarantee from a Schedule bank for a sum of Rs..... as security for due compliance and performance of the terms and conditions of the said contract.

We..... (name of the Bank) having its branch/Office at..... have, at the request of the Contractor, agreed to furnish this bank Guarantee by way of performance Security.

NOW, THEREFORE, we the..... Bank (herein after called The Bank) hereby, unconditionally and irrevocably, guarantees and affirms as follows:

The Bank do hereby irrevocably guarantees and unconditionally agree with the Company that if the contractor shall in any way fail to observe or perform the terms and conditions of the said contract or shall commit any breach of its obligation thereunder, the Bank shall on its mere first written demand, and without any objection, demur and without any reference to the contractor, pay to the company the said sum of or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the sum, or failing on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the company and as regards the amount payable by the Bank under this Guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the company and the Contractor regarding the claim.

The Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contract which is likely to beday of but if the



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period of Contract is extended either pursuant to the provisions in the said contract or by mutual agreement between the contractor and the company, the Bank shall renew the period of the Bank Guarantee failing which it shall pay to the company the said sum of or such lesser amount of the said sum of as may be due to the company and as the company may demand.

This Guarantee shall remain in force until the dues of the company in respect of the said sum ofand interest are fully satisfied and the Company certifies that the Contract has been fully carried out by the Contractor and discharged the guarantee.

The Bank further agrees with the company that the company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of the said contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forbear to enforce any of the terms and conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the Contractor or to any forbearance, act or omissions on the part of the company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect or relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above, the Bank shall pay to the company the said sum of or such lesser sum as may then be deemed to the Company and as the Company may require.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs..... The guarantee shall remain in force till the day*.....of*..... and unless the guarantee is renewed or claim is preferred against the bank on or before the said date all rights of the Company under this guarantee shall cease and the Bank shall be relieved and discharged from all liabilities hereunder except as provided in the preceding Clause.

* The date of guarantee shall cover a period of minimum one year or 90 days beyond the date of completion whichever is more.

Any notice by way of request, demand or otherwise hereunder maybe sent by post/e-mail/Fax addressed to the bank branch/operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank has under its constitution power to give this Guarantee and Sri..... who has signed it on behalf of the Bank has authority to do so.

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Signed and sealed this.....day of.....at.....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code number)

(address)

“The bank guarantee referred above shall be operative at our Branch at Bilaspur and payable at Bilaspur.”

NOTE:- The department shall ensure extension of guarantee period in case of extension of time.

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Annexure-1.19

LIST OF SECL/ APPROVED BANKS

The Performance Bank Guarantee deposit issued by the issuing bank on behalf of the bidder in favour of “South Eastern Coalfields Limited” shall be in paper form (Stamp Paper) as well as issued under “Structural Financial Messaging System”. The message will be sent to the beneficiary bank through SMS. The details of the beneficiary banks for issue of BG through SFMS platform are furnished below:

A. State Bank of India as advising bank of SECL:

1	Name of the Beneficiary and his details	i	Name	South Eastern Coalfields Ltd.
		ii	Area	_____ (SECL, HQ, Bilaspur)
		iii	Name of Bank	State Bank of India
		iv	Bank Account No.	30285470636
		v	Department	_____ (Clean Energy Department)
2	Beneficiary Bank, Branch and Address	i	Name of Bank	State Bank of India
		ii	Bank Branch name	SME SBI Branch, Bilaspur
		iii	Branch Code	4177
		iv	Beneficiary Bank Branch IFSC	SBIN0004177
		v	Beneficiary bank Address	SBI, Galaxy Height Vyapar Vihar Bilaspur-495001 , C.G



B. ICICI Bank as advising bank of SECL:

1	Name of the Beneficiary and his details	i	Name	South Eastern Coalfields Ltd.
		ii	Area	_____ ((SECL, HQ, Bilaspur)
		iii	Name of Bank	ICICI Bank
		iv	Bank Account no.	028205003346
		v	Department	_____ (Clean Energy Department)
2	Beneficiary Bank,	i	Name of Bank	ICICI Bank

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	Branch and Address	ii	Bank Branch Name	Vyapar Vihar, Bilaspur
		iii	Branch Code	0282
		iv	Beneficiary bank Branch IFSC	ICIC0000282
		v	Beneficiary Bank Address	Surya Chambers, Plot No-A/09, Vyapar Vihar, Bilaspur-495001, C.G
		vi	Field No. 7037	SECL14265

Original copy of the Bank Guarantee issued by the issuing bank shall be sent by the issuing bank to the concerned area.”

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DRAFT FOR CONTRACT AGREEMENT

CONDITIONS OF AGREEMENT

This Contract Agreement (hereinafter referred to as the “**Contract Agreement**”) is, made and entered into on the _____ day of _____ 2022 between:

1. South Eastern Coalfields Limited (SECL) a coal producer based in India. The Company came into existence in 1985, when the Government of India, decided to bifurcate a part of coal mines held by Western Coalfields Limited into new company called South Eastern Coalfields Limited, along with Central Coalfields Limited, which was bifurcated into Northern Coalfields Limited, for administrative purpose and having its registered office at, M/s South Eastern Coalfields Limited, (A subsidiary of CIL) SECL HQ, Seepat Road, District- Bilaspur, Chhattishgarh-495006 (India) (hereinafter referred to as the "Owner", which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns), of One Part¹ ;



AND

2. [●], a company incorporated in India under the provisions of the Companies Act, 1956/ 2013 and having its registered office at [●], (hereinafter referred to as the "**BOO Processor** ", which expression shall, unless repugnant to the context or meaning thereof; include its successors, administrators, executors and permitted assigns) of the Other Part.

WITNESSETH:

WHEREAS

- A. Owner has decided to diversify into a new “Coal to Chemical” business domain by converting the high calorific value, low ash thermal coal into synthesis gas (CO+H₂) and downstream chemicals and accordingly, intends to set up a Coal to Ammonia Complex on Build Own Operate (BOO) basis. In pursuit of implementing this new strategy, the premises of the project site have been identified as the geo- strategic location for setting up a Coal to Ammonia Complex on Build Own Operate basis (BOO) by using the good quality Indian coal from Mahamaya OC Mine.
- B. In order to meet the requirement of Ammonia, Owner issued Tender No.-----
---- for supply of Ammonia at Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattishgarh (India) ON BUILD-OWN-OPERATE (BOO) Basis (hereinafter referred to as the “Tender”) for the Construction, Commissioning and thereafter, for Operating and Maintaining a new Ammonia Plant referred to as “Production Plant” and which is more specifically defined in the Tender) in a designated plot), within the premises of project site
- B During the course of tendering process, -----submitted its bid and on acceptance----- awarded Letter of Award No.-----dated -----and subsequent Detailed letter of Acceptance No. _____ dated _____ to _____
- C The BOO Processor agrees to Build, Own, Operate and Maintain the "Production Plants" with all brand new equipment, items, accessories and auxiliaries, designed and capable of

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steadily operating, by making its own investment, for the production of Ammonia as Product to meet Owner's requirements to be set up on the land allocated to by Owner under lease for use from which ----- will supply Ammonia to Owner.

- D The BOO Processor is having requisite experience and competence in the business, inter-alia of, production and supply of Ammonia and intends to produce and supply Ammonia of specified parameters on continuous, reliable and long term basis by building, owning, operating and maintaining the Ammonia Plant (hereinafter referred to as Production Plant) .
- E The BOO Processor has presently satisfied itself to the Project site conditions and has acquainted itself in general with all local conditions and all its responsibilities for compliance to applicable laws and regulations and has obtained all other information on its own both as to risk, contingencies & other circumstances which may influence or affect the work and other requisites for proper installation, operation and maintenance of the Production Plant after due inspection of site and surrounding and scrutiny of other related factors.

NOW, THEREFORE, in consideration of the foregoing and the mutual promises contained herein, Owner and -----intending to be legally bound, hereby agree as follows:

ARTICLE 1



CONTRACT DOCUMENT

- 1.1 The Contract Documents shall comprise the following:
- i. Contract Agreement
 - ii. Land Lease Agreement
 - iii. The Detailed Letter of Acceptance (DLOA) and accepted Price-Schedule.
 - iv. The Notification of Award/Letter of Award.
 - v. Amendments, if any, issued to the Tender Documents.
 - vi. Original Tender Documents (including the Conditions to Contract) issued with its enclosures.
 - vii. Letter of Waiver of Conditions / Deviations submitted by Contractor
 - viii. All Post-bid amendments to tender documents issued by Owner
 - ix. Post Bid Clarifications and replies exchanged between Owner and the Contractor
 - x. Minutes of meeting of Vendor Clarification Meetings (VCM) between Owner and Contractor
 - xi. All Pre-bid amendments to tender documents issued by Owner
 - xii. Reply to Pre-bid queries issued by Owner
 - xiii. Integrity Pact (IP) signed between the Owner and the Bidder/Contractor.

ARTICLE 2

JURISDICTION & GOVERNING LAW

- 2.1.1 Notwithstanding any other court or courts, having jurisdiction to decide the question(s) forming the subject matter of the reference if the same had been the subject matter of a suit, any and all actions proceeding arising out or relative to the contract or any award arising there from, shall lie only in the Court of competent civil jurisdiction in this behalf at Bilaspur.

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All legal matters should be under the jurisdiction of Bilaspur High Court (where this contract has been signed on behalf of Owner and only the said Court(s) shall have jurisdiction to entertain and try any such action(s) and/ or proceeding(s) to the exclusion of all other Courts.

- 2.1.2 This Contract Agreement shall be governed in all aspects by the law of the Republic of India, without application of the doctrine of Renvoi.

ARTICLE 3

ENTIRE CONTRACT

- 3.1 The Contract Documents mentioned in Article-1 hereof embody the entire agreement between the parties hereto, and the parties declare that in entering the Contract Documents they do not rely upon any previous representation, whether expressed or implied and whether written or oral, or any inducement, understanding or agreements of any kind not included within this Contract Agreement documents and all prior negotiations, representations, contracts and/or agreements and understandings are hereby cancelled.
- 3.2 All additions, supplements, amendments or variations to this agreement shall be in writing and shall be signed by the duly authorised representatives of Owner and BOO Processor.

ARTICLE 4



NOTICES

- 4.1 Subject to any provisions in the Contract Documents to the contrary, any notice, order or communication sought to be served by the BOO Processor on the Owner with reference to the Contract Agreement shall be deemed to have been sufficiently served upon the Owner notwithstanding any enabling provisions under any law to the contrary, only if delivered by hand or by Courier to the Owner at the address mentioned in this Agreement.
- 4.2 Without prejudice to any other mode of service provided for in the Contract Documents or otherwise available to the Owner, any notice order or other communication sought to be served by the Owner on the BOO Processor with reference to the Contract Agreement, shall be deemed to have been sufficiently served if delivered by hand or through Courier to the principal office of the BOO Processor at -----, or other address for service subsequently notified by -----to the Owner in this behalf in writing.

ARTICLE 5

WAIVER

- 5.1 No waiver by either Owner or BOO Processor of any default by the other in the performance of the Agreement (i) shall be effective unless recorded in a document duly executed by an authorised representative of such Party; (ii) shall operate or be constructed as a waiver or any other or further default whether of a similar or different character.
- 5.2 No failure or delay by Owner in enforcing any right or remedy of Owner in terms of the contract or any obligation or liability of the BOO Processor in terms thereof shall be

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deemed to be a waiver of such right, remedy, obligation, or liability, as the case may be, by Owner and notwithstanding such failure or delay, Owner shall be, entitled at any time to enforce such right, remedy, obligation or liability, as the case maybe.

- 5.3 No failure of delay by the BOO Processor in enforcing any right or remedy of the BOO Processor in terms of the Agreement or any obligation or liability of Owner in terms thereof shall be deemed to be a waiver of such right, remedy, obligation, or liability, as the case may be, by the BOO Processor and notwithstanding such failure or delay, the BOO Processor shall be entitled at anytime to enforce such right, remedy, obligation or liability, as the case maybe.
- 5.4 The grant of additional time or order indulgence by one party to the other, or acceptance of any variation in performance, shall not constitute a waiver.

ARTICLE 6

LANGUAGE OF CONTRACT AND COMMUNICATION

- 6.1 The language of the Contract Agreement shall be English and all communications, drawings, design, data, information, codes specifications and other document whatsoever supporting the bid or otherwise exchanged under the Contract Agreement shall be in English. In the event that any technical documentation is in any language other than English, the document should be translated and presented to the Owner in English and English document/ translated document shall be regarded as the only authentic document.



ARTICLE 7

GOVERNMENT OF INDIA NOT LIABLE

- 7.1 It is expressly understood and agreed by and between the BOO Processor and the Owner that the Owner is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this agreement and has no liabilities, obligations or rights there under. It is expressly understood and agreed that the Owner is an independent legal entity with power and authority to enter into contracts, solely in its behalf under the Applicable Laws, of India and general principles of contract law. The BOO Processor expressly agrees, acknowledges and understands that the Owner is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Contract Documents. Accordingly, BOO Processor hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this Contract and covenants not to sue the Government of India on any matter, claim, cause of action or thing whatsoever arising out of or under this Contract Agreement.

ARTICLE 8

NON-ASSIGNABILITY

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The contract and benefits and obligations thereof shall be strictly personal to the BOO Processor and Owner and shall not on any account be assignable or transferable to third party by the BOO Processor or Owner without having obtained in writing the prior approval of Owner or BOO Processor.

ARTICLE 9

NO LIABILITY ON DIRECTOR AND EMPLOYEE

No Director, employee, consultant or agent of the Owner or other person representing the Owner or acting on behalf of the Owner in or pursuant to the Contract Agreement or in the discharge of any obligation to the Owner under the Contract Documents or otherwise in relation to the Contract Agreement shall have any personal liability to the or any Sub-Contractor, agent, representative, director or employee of the -----or to any other person acting for or on behalf of the ----- and the ----- on its own behalf and on behalf of its Sub- Contactors, directors, employees, agents and representatives, hereby waives, and disclaims any and all right of action which it or they may have whether under tort or contract or otherwise against any director, employee, agent, consultant or representative of the Owner for act of omission or commission done or omitted to be done.

ARTICLE 10

GENERAL

10.1 In this Contract Agreement, capitalized words and expressions used herein without having been defined, shall have the same meanings as are respectively assigned to them in the Conditions of Contract or the other Contract Documents, and they shall be deemed to form and be read and construed as part of this Contract Agreement.

IN WITNESS WHEREOF THE PARTIES hereto have executed this Contract Agreement in duplicate at the place, day and year first above written.

SIGNED AND DELIVERED
For and on behalf of
M/s-----

SIGNED AND DELIVERED
For and on behalf of
M/s-----

BY _____

BY _____

(THIS DAY OF _____ 2022)

IN THE PRESENCE OF:



IN THE PRESENCE OF:

1.

1.

2.

2.

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Person (s) authorised to sign.



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FORMAT FOR LAND LEASE AGREEMENT

LEASE DEED

(To be executed between SECL and BOO Processor)

THIS DEED OF Lease executed on this day of two thousand and between South Eastern Coalfields Limited, a Subsidiary of Coal India Limited which is a Government Company registered under the Indian Companies Act, 1956 and a, having its Registered Office at SECL HQ, Seepat Road, District- Bilaspur, Chhattisgarh-495006 (India), (hereinafter referred to as 'SECL' or 'Lessor' which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its successors and permitted assigns) on the one part, and _____ (Name of BOO Processor), a Body constituted under _____, (hereinafter referred to as " " or 'Lessee' which expression shall, unless it be repugnant to the context of meaning thereof, be deemed to mean and include its successors and permitted assigns) on the other part.

WHEREAS

1. The Lessor is the absolute owner of the piece of land totally measuring (Survey Nos. Separately shown in the schedule) situated in _____ Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattisgarh (India) _____ village of _____ Taluka more particularly described in the schedule hereunder written hereafter referred to as the Land to be leased out by the Lessor to the Lessee.
2. In terms of an Agreement dated _____ entered into between SECL and " " , SECL shall provide on lease the presently required land based on the detailed engineering of the plant/connected facilities being build, own and operate by " " subject to a maximum of land admeasuring less than Acres, as is where is condition, near _____ At Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattisgarh (India).
3. In terms of the said Agreement, the Lessor has agreed to grant by way of lease to the Lessee in respect of the said Land for a period of 25 years subject to the terms and conditions laid down below w.e.f. _____.

NOW THIS DEED WITNESSETH that the Lessor does in consideration of the lease rent to be paid as herein referred and other terms and conditions on the part of the Lessee to be observed, hereby grant to the Lessee, a lease of ALL THAT piece of land containing by admeasurement





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less than Acres or thereabouts, situated at Mahamaya SCG Plant Bhatgaon Area, Surajpur District, more particularly described in the Schedule hereunder written and for greater clarity delineated with the boundaries thereof on the Plan annexed (Plan No. dated) hereto TO HOLD the same for the term of LESS THAN TWENTY FIVE (25) YEARS from (hereinafter referred to as the "said term") subject to the following conditions:-

1. The Lessor has agreed to provide the property described in the schedule hereunder on lease for a period of 25 years with an option to renew the lease for a further period on mutual consent and on executing a fresh deed to the Lessee on a nominal rent of Re. 1/- (Rupee ONE) per Acre per Annum and the Lessor hereby grant and express permission to the Lessee to build, own and operate plant for production Ammonia at their cost and expenditure in the said property.
2. The Lessee shall pay to the Lessor during the said terms as yearly lease rent at a fixed rate of Rs 1/- (Rupees One) per Acre per Annum only alongwith applicable statutory levies (hereinafter referred to as the "said lease rent") for the entire term of less than Twenty Five (25) years. The Lessee shall pay the Lessor the Lease rent on an yearly basis on or before March of previous year.
3. The Lessee shall use the said land for construction of Plant premises to build, own and operate and other structures on the property described in Schedule at their cost for the purpose as provided in the said Agreement, unless otherwise agreed to by the Lessor in writing. The construction shall be according to and in conformity with the plans which has already been sanctioned by the appropriate authorities. The development and other protective measures for the said land shall be on the Lessee's account.
4. The Lessee shall have the liberty to use the said land for purposes connected with its trade or business. The land shall be used by the BOO Processor / Lessee for installation, commissioning and operation of Coal to Ammonia Plant.
5. The Lessee hereby agrees that the Lessor still holds the ownership of the said property and shall have rights to access their other properties through the pathway which will be used by both parties. Similarly, the Lessor shall use the pathways, approach roads only to access the Plant proposed to be constructed and structures thereon freely without distance by the Lessor.
6. The Lessor shall not be responsible to the Lessee or any other person(s) for any loss or damage or injury to life or property arising directly or indirectly from the use of the said

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land or the activities the Lessee is engaged in on the said land during the period of lease. The Lessee shall also indemnify the Lessor against all loss or damage or injury to life or property of any one including third parties or claims and costs thereof, arising directly or indirectly from the use of the leased land and the activities the Lessee is engaged in on the said land during the period of lease subject to Article 28.8 of Conditions of Contract.

7. Lessee shall be responsible to insure and to keep its plant and other facilities constructed on the land against the loss or damages by fire, earthquake, riot or affray with the insurance company and towards loss of public property and to public if any and Lessor shall not be responsible for any such losses described above or towards any other losses not mentioned above.
8. The Lessee shall not assign transfer, sublet or underlet the demised land without the consent in writing of the Lessor.
9. The Lessee shall not create any charge in respect of the leasehold interest relating to the property described in the schedule hereto vested in it as well as the building constructed on the same without the prior written consent of the Lessor, it being clearly understood that such consent will not be granted, except in the case of charges in favour of commercial Banks and State/ Central Government financial institutions. However, BOO Processor / Lessee shall have right to create lien on its Plant/Facility.
10. If the Lessee makes default in payment of the lease rent or any other dues related to lease rent to the Lessor and/or interest as provided hereinbefore, the Lessor shall be entitled to revoke this agreement and cancel the lease forthwith. The Lessee shall thereupon forfeit all its rights there under and shall remain liable for any sum then due by the lessee and also for any loss which may be caused to the Lessor by reasons of such default.
11. The Lessor shall from time to time and at all times during the said term pay and discharge all rates, taxes, charges and assessments of every description now subsisting, excluding arrears, if any, accrued due before the date of commencement of the term of the Lease related to the property leased or which may at any time hereafter during the said term be imposed, charged or assessed upon the said premises hereby demised of the building(s)/ structure(s) to be erected thereon, whether it be payable by the Lessor or the Lessee.
12. The Lessee shall use the said land for installation and commissioning of Coal to Ammonia plant for the construction of the building(s) / structure(s) for which , the land has been leased, unless otherwise approved by the Lessor and shall not make unnecessary excavation or remove or appropriate any minerals, mineral substances of any description,

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sand or clay, from the said land. Any such materials obtained from the site should be placed or disposed of as directed by the Lessor or its authorized representative.

13. It is made clear that the Lessee should utilise the maximum permissible area of the land leased for the construction of Plant as per the agreement and the Lessor reserves the right to re-possess without any claim to compensation whatsoever, the whole or part of the portion left un-utilised and use the same in any manner deemed expedient by the Lessor. In case, there is any dispute regarding the extent of land that should be utilized for the construction or the extent to be re-possessed, the decision of the Lessor shall be final and binding.
14. The lessee shall erect or construct any building/ structures for installation and commissioning of Coal to Ammonia Plant. However, the Lessee shall not at any time without the previous consent in writing of the Lessor erect or suffer to be erected on the said land any building(s)/ structure(s) nor permit the same to be used for any purpose other than that specified above. In case, Lessee fails to do so the lease shall be liable for termination.
15. The Lessee shall at all times during the subsistence of the lease maintain the premises in good sanitary condition and repair and keep the building(s)/ structure(s) erected and/or to be erected on the said land in good and tenantable condition.
16. Hoarding or advertisement boards shall not be erected in the leased premises by the Lessee without the written permission of the Lessor. However, BOO Processor can put its sign board/ nameplate capacity of the facility.
17. The Lessor hereby agrees that the Lessee observing all the aforesaid conditions, shall peacefully hold and enjoy the said land during the said term without any interruption by the Lessor or any one claiming under the Lessor, provided that upon any breach or non-observance by the Lessee or by a person claiming through or under the Lessee of any of the aforesaid covenants or conditions the Lessor may notwithstanding the waiver of any previous cause or right of re-entry enter upon the said premises and re-possess it, as if this lease had not been granted and thereupon this demise shall absolutely determine and the Lessee shall be entitled within 3 (three) months from the date of such re-entry to remove all building and fixtures which at any time during the currency of this lease shall have been erected for affixed by the Lessee upon the said land without any claim to any compensation whatsoever.
18. It is also distinctly agreed that the Lessee shall deliver up the demised premises at the expiration or sooner determination of tenancy restored to its former condition.

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19. The Lessor shall be entitled to allow any public utility services such as electric posts, or cables, water supply sewer lines, drains, sanitary lines or telegraph post or cables, to be taken through the said land and the Lessee shall not be entitled to any compensation in respect of the same including compensation, if any, relating to the space occupied by such public utility services to be taken through the said land, only the minimum possible hindrance shall be caused to other structures in the said land.
20. It is further agreed that if the Lessee does not remove the building and fixtures as allowed above, or restore the demised premises to its original condition as required above within the time prescribed in the said clauses, the Lessor shall have the right to remove the said building and fixtures and restore the demised premises to its original condition and the cost of such removal and restoration shall be realized by the Lessor by the sale of materials recovered and the balance if any from the Lessee. In case, there is any amount left from the sale price of the materials so removed, after realization of the cost of removal and restoration preferred to herein, the same may be utilized by the Lessor for recovery of any other amounts that may be due to the Lessor from the Lessee.
21. Notwithstanding anything contained hereinbefore, it is expressly agreed and understood that the Lessor shall be entitled to terminate the lease at the risk and cost of the lessee in the event of violation of any of the provisions hereof by the lessee which is not rectified with in a period of 90 (ninety) days of receipt of a notice issued in this behalf by the Lessor.
22. The Lessor shall sign necessary papers and application forms for getting plan sanction or for granting permission / rights for enabling the Lessee to build, own and operate the Plant.
23. The Lessee shall not use the property for construction of any structures not associated with the construction of the Plant without prior consent of the Lessor.
24. The Lessor is absolutely seized and possessed or otherwise well and sufficiently entitled to the demised property and is having full power and absolute authority to demand up to the Lessee the demised property.
25. The Lease Deed shall be executed induplicate. The original shall be retained by the Lessor and the duplicate by the Lessee.
26. The stamp duty and all other expenses in respect of this Lease Deed and duplicate thereof shall be borne and paid by the Lessee.
27. In respect of the terms and conditions not specifically mentioned herein the Lessor and Lessee shall mutually decide and agree in writing.

SCHEDULE OF PROPERTY LEASED OUT TO THE LESSEE BY THE LESSOR

	<p align="center">COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED</p> <p align="center">FORMAT FOR LAND LEASE AGREEMENT</p>	PNMM/PC176/ E-4001/Annx- 1.21	0	
		DOC. NO.	REV.	
		SHEET 6 OF 7		

District :

Sub District :

Taluk :

Firka :

Panchayat :

Village :

Kara :

Tenure :

Survey

No.

Sub

Division

:

Extent in Ares :

In Cents :

DESCRIPTION

All that pieces and parcels of land admeasuring to _____ cents (ares) made up of (ares) in Sy No. () cents (----ares) in Sy.No. () cents (ares) in Sy No.() owned by the Lessor with the right of way through the metres wide pathway at the.

BOUNDARIES



East :

Sough:

West:

North:

IN WITNESS WHEREOF THE Lessor and the Lessee have their respective hands on the original and a duplicate thereof the day and year first above writings in the presence of the following

	<p align="center">COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED</p> <p align="center">FORMAT FOR LAND LEASE AGREEMENT</p>	PNMM/PC176/ E-4001/Annx- 1.21	0	
		DOC. NO.	REV.	
		SHEET 7 OF 7		

witnesses :

Signed and delivered by within named Lessor _____

SECL

BOO Processor

(Lessor)

(Lessee)



Witness :

1.

1.

2.

2.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	DOC. NO.	REV	 SECL
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Format for Financial Details of Holding Company

(Details pertaining to Financial Criteria as per Clause No. 2.3 of PQC)

Since we do not satisfy the Financial Criteria stipulated at **Clause No. 2.3 of PQC** on our own, we give below the following details of our Holding Company interms of **Note ii & iii of Clause 2.3 of PQC of ITB** who meet the stipulated turnover requirements of INR.....USD and whose Net Worth as on the last day of the preceding financial years is at least equal to or more than the paid up share capital of the Holding Company.

1. Name and Address of the Holding Company: M/s.....
2. Annual Turnover of the Holding Company with following details:

ANNUAL TURNOVER OF LAST 3 FINANCIAL YEARS OF THE HOLDING COMPANY:

Year	Amount (Currency)
Year 1 (FY 2020-21 or Calendar year 2020)	
Year 2 (FY 2019-20 or Calendar year 2019)	
Year 3 (FY 2018-19 or Calendar year 2018)	
Average Annual Turnover of the Holding Company for the preceding three (3) Financial Years as on date of Techno- Commercial Bid Opening	
We have enclosed Audited Balance sheet and Profit and Loss Account (financial statements) for the last Three (3) financial years	Yes*/No*

Note: Other income shall not be considered for arriving at annual turnover.



(*) Bidder to strike-off whichever is not applicable

NET WORTH DETAILS OF THE HOLDING COMPANY :

Sl. No.	Description	As on last day of the preceding financial year
1.	Paid-up Share Capital	
2.	Net Worth of the Holding Company	
3.	%age of Net worth to Paid-up Share Capital of the Holding Company	
4.	Documentary evidence like Annual Report/Audited Balance sheet and Profit and Loss Account (financial statements) for the last preceding financial year	
5.	A Letter of Undertaking from the Holding Company, supported by Board Resolution, pledging unconditional and irrevocable financial support for execution of the Contract Agreement by the Bidder in case of award is enclosed as per the format at Appendix- A & B to this Attachment. A Power of Attorney of the person signing on behalf of Holding Company shall also be enclosed.	

Note:

Net worth means the sum total of the paid up share capital and free reserves. Free reserve means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further any debit balance of Profit and Loss

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		SHEET 2 OF 5		

account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.

We further confirm that notwithstanding anything stated above, the Employer reserves the right to assess the capabilities and capacity of the Bidder/subsidiaries/group companies/Holding company to perform the contract, should the circumstances warrant such assessment in the overall interest of the Employer.

[Signature of Authorized Signatory]



Name:

Designation:

Seal:

Date:

Place:

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD- OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	DOC. NO.	REV	
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APPENDIX-A

**PROFORMA OF CERTIFICATE FROM THE CEO/CFO OF THE HOLDING COMPANY
IN ACCORDANCE WITH CLAUSE NO. OF PQC**

(To be submitted by Bidder alongwith the Techno-Commercial Bid)

Ref. :

Date:

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

Ref: Tender no.

Dear Sir,

- 1) I, M/s (CEO of the company / CFO of the company) declare that
M/s (Name of the Holding Company) is the
Holding Company of M/s (Name of the Bidder)

- 2) I hereby confirm and undertake that the unaudited unconsolidated
financial statements (Balance sheet and Profit & Loss Account) submitted in
respect of the bidder as part of the Bid Reference No... ..dated... .. have been
considered for the purposes of the finalisation of Consolidated financial
statements of the Holding Company (Balance sheet and Profit & Loss
Account)as part of the Annual Reports.



- 3) I further, certify that the figures in the unaudited unconsolidated financial
statements (Balance sheet and Profit & Loss Account) are true and correct and
same have been duly reflected in the audited consolidated financial statements
and/or Annual Report of the Holding Company.

Yours faithfully,

(Signature)

(Name & Designation)

(Name of the Holding Company)
(Seal of Holding Company)

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	DOC. NO.	REV	
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APPENDIX-B

**PROFORMA OF LETTER OF UNDERTAKING
(TO BE FURNISHED ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)**

[To be executed by the Holding Company Supported by Board Resolution and submitted by the Bidder alongwith the Techno-Commercial Bid, in case financial support is being extended by the Holding Company to the Bidder for meeting the stipulated Financial Qualifying Requirement as per Clause No. 2.3 of PQC]

Ref. :

Date:

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

Dear Sir,

1. We, M/s (Name of the Holding Company) declare that we are the Holding Company of M/s. (Name of the Bidder) and have controlling interest therein therein.

M/s..... (Name of the Bidder) proposes to submit the bid for the package (Name of the package) for SECL under bid reference no... ..dated..... and have sought financial strength and support from us for meeting the stipulated Financial Qualifying Requirement as per **Clause 2.3 of PQC**.



2. We hereby undertake & pledge our unconditional & irrevocable financial support for the execution of Contract Agreement for the said package to M/s. (Name of the Bidder), in case they are awarded the contract for the said package, at the end of the bidding process. We further agree that this undertaking shall be without prejudice to the various liabilities that M/s (Name of Bidder) would be required to undertake in terms of the Contract Documents including the Performance Security as well as other obligations of the Bidder/Contractor.
3. This undertaking is irrevocable and unconditional, and shall remain in force till the successful execution and performance of the entire contract and/or till it is discharged by SECL.
4. We are herewith **enclosing a copy of the Board Resolution** in support of this undertaking.

Yours faithfully,

(Signature of Authorised Signatory)
on behalf of the Holding Company)
(Name & Designation)
(Name of the Holding Company)
(Seal of Holding Company)

Witness :

- (1)
(2)

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APPENDIX-C

(TO BE FURNISHED ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

[To be executed by the Holding Company/Bidder (as the case may be) Supported by Board Resolution and submitted by the Bidder alongwith the Techno-Commercial Bid, in case financial support is being extended by the Holding Company to the Bidder for meeting the stipulated Experience Criteria Requirement as per Clause No. 2.2 of PQC]

Ref. :

Date:

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

Dear Sir,



5. We, M/s.....(Name of the Holding Company/ Bidder (as the case may be)) declare that we are the Holding Company of M/s. (Name of the Bidder) and have controlling interest therein therein
M/s..... (Name of the Bidder) proposes to submit the bid for the package (Name of the package) for SECL under bid reference no.....dated and have sought financial strength and support from us for meeting the stipulated **for meeting the Experience Criteria Requirement as per Clause 2.2 of PQC.**
6. We hereby undertake & pledge our unconditional & irrevocable financial and technical support for the execution of Contract Agreement for the said package to M/s. (Name of the Bidder), in case they are awarded the contract for the said package, at the end of the bidding process. We further agree that this undertaking shall be without prejudice to the various liabilities that M/s (Name of Bidder) would be required to undertake in terms of the Contract Documents including the Performance Security as well as other obligations of the Bidder/Contractor.
7. This undertaking is irrevocable and unconditional, and shall remain in force till the successful execution and performance of the entire contract and/or till it is discharged by SECL.
8. We are herewith **enclosing a copy of the Board Resolution** in support of this undertaking.

Yours faithfully,

(Signature of Authorised Signatory)
on behalf of the Holding Company)
(Name & Designation)
(Name of the Holding Company)
(Seal of Holding Company)

Witness :

- (1)
- (2)

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Annexure-1.23

CLAUSE REGARDING PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA

1. Order (Public Procurement No. 1) dated 23.07.2020, Order (Public Procurement No.2) dated 23.07.2020 and Order (Public Procurement No. 3) dated 24.07.2020, Department of Expenditure, Ministry of Finance, Govt. of India refers. The same are available at website <https://doe.gov.in/procurement-policy-divisions>.
2. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. For details of competent authority refer to Annexure I of Order (Public Procurement No. 1) dated 23.07.2020.

Further the above will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs, Govt. of India

3. "Bidder" (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) for purpose of this provision means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.
4. "Bidder from a country which shares a land border with India" for the purpose of this:
 - a) An entity incorporated, established or registered in such a country; or
 - b) A subsidiary of an entity incorporated, established or registered in such a country; or
 - c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d) An entity whose beneficial owner is situated in such a country; or
 - e) An Indian (or other) agent of such an entity; or
 - f) A natural person who is a citizen of such a country; or
 - g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

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5. **"Beneficial owner"** for the purpose of above (4) will be as under:

- i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.
Explanation-
 - a) "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;
 - b) "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
- ii) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
- iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
- iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
- v) In case of a trust; the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

6. **"Agent"** for the purpose of this Order is a person employed to do any act for another, or to represent another in dealings with third persons

7. **SUBMISSION OF CERTIFICATE IN BIDS:**



Bidder shall submit a certificate in this regard as Form-1.

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If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate rejection of the bid/termination and further action as per "Procedure for Action in case of Corrupt/Fraudulent/ Collusive / Coercive Practices" of tender document.

8. The registration, wherever applicable, should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.
9. **PROVISION TO BE IN WORKS CONTRACTS, INCLUDING TURNKEY CONTRACTS:**

The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "contractor from a country which shares a land border with India" shall be as in Para 4 herein above. A Certificate to this regard is to be submitted by bidder is placed at Form-II

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Form-I of Annexure-1.23

UNDERTAKING ON LETTER HEAD

To,

M/s South Eastern Coalfields Limited (SECL),
(A subsidiary of CIL)
Office of GM,CED
SECL HQ, Seepat Road
Distt.-Bilaspur-495006, Chhattisgarh (India)

SUB:
TENDER NO:

Dear Sir

We have read the clause regarding Provisions for Procurement from a Bidder which shares a land border with India, we certify that, bidder M/s _____ (Name of Bidder) is:



- (i) Not from such a country []
- (ii) If from such a country, has been registered with the Competent Authority. (Evidence of valid registration by the Competent Authority shall be attached) []

(Bidder is to tick appropriate option (✓ or X) above).

We hereby certify that bidder M/s _____ (*Name of Bidder*) fulfills all requirements in this regard and is eligible to be considered against the tender.

Place: _____ [Signature of Authorized Signatory of Bidder]
Name: _____

Date: _____ Designation: _____
Seal: _____

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Form-II of Annexure-1.23

**CERTIFICATE FOR TENDERS FOR WORKS INVOLVING POSSIBILITY OF
SUB-CONTRACTING**

To,

M/s South Eastern Coalfields Limited (SECL),
(A subsidiary of CIL)
Office of GM,CED
SECL HQ, Seepat Road
Distt.-Bilaspur-495006, Chhattisgarh (India)

SUB:

TENDER NO:

Dear Sir

We have read the clause regarding Provisions for Procurement from a Bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; we certify that, bidder M/s _____ (Name of Bidder) is:

- (i) not from such a country []
- (ii) if from such a country, has been registered []
with the Competent Authority.
(Evidence of valid registration by
the Competent Authority shall be
attached)

(Bidder is to tick appropriate option (✓ or X) above).

We further certify that bidder M/s _____ (**Name of Bidder**) will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.

We hereby certify that bidder M/s _____ (**Name of Bidder**) Fulfills all requirements in this regard and is eligible to be considered.

Place: [Signature of Authorized Signatory of Bidder]
Name:

Date: Designation:
Seal:



भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)

PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 324]

नई दिल्ली, बुधवार, मई 29, 2019/ज्येष्ठ 8, 1941

No. 324]

NEW DELHI, WEDNESDAY, MAY 29, 2019/JYAISTHA 8, 1941

इस्पात मंत्रालय

अधिसूचना

नई दिल्ली, 29 मई, 2019

सा.का.नि. 385(अ).—घरेलू रूप से उत्पादित किए जाने वाले लौह एवं स्टील उत्पाद की सरकारी खरीद को प्राथमिकता दिए जाने के लिए संशोधित नीति सामान्य सूचना हेतु प्रकाशित की जाती है।

[फा. सं. 3(2)/2018-आईडीडी]

रसिका चौबे, अपर सचिव

सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता देने के लिए नीति - संशोधित, 2019

1. भूमिका

- 1.1 यह नीति सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों (डी एम आई एंड एस पी) को बरीयता देती है।
- 1.2 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित लौह एवं इस्पात उत्पादों जिसे परिशिष्ट क में दिया गया है और परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों के लिए पूंजीगत माल पर लागू होती है।
- 1.3 यह नीति सरकार के प्रत्येक मंत्रालय अथवा विभाग और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों तथा सरकारी परियोजनाओं के वास्ते लौह एवं इस्पात उत्पादों की खरीद के लिए इन एजेंसियों द्वारा वित्त पोषित परियोजनाओं पर लागू है। हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।

2. परिभाषाएं

- 2.1 **बोली** लगाने वाला लौह एवं इस्पात का कोई घरेलू/विदेशी निर्माता अथवा उनके बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह अथवा सरकारी एजेंसियों द्वारा वित्त पोषित निधि परियोजनाओं की बोली लगाने में कार्यरत कोई अन्य कंपनी हो सकती है।

- 2.2 **घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पाद (डी एम आई एंड एस पी)** वे लौह एवं इस्पात उत्पाद हैं जिनका निर्माण उन प्रतिष्ठानों द्वारा किया जाता है जो भारत में पंजीकृत और स्थापित हैं, जिसमें विशेष आर्थिक क्षेत्र (एम ई ज़ेड) शामिल है। इसके अलावा, इस प्रकार के उत्पाद परिशिष्ट क में किये गये उल्लेख के अनुसार घरेलू न्यूनतम मूल्यवर्धन के मानदंडों को पूरा करेंगे।
- 2.3 **घरेलू निर्माता** खंड 7 में दिशा-निर्देशों और केंद्रीय उत्पाद शुल्क अधिनियम में दी गई 'निर्माता' की परिभाषा के अनुरूप लौह एवं इस्पात उत्पादों का एक निर्माता है।
- 2.4 इस नीति के प्रयोजन से **सरकार** का तात्पर्य भारत सरकार से है।
- 2.5 **सरकारी एजेंसियों** में सरकार के सार्वजनिक क्षेत्र के उपक्रम, सरकार द्वारा स्थापित सोसायटी, ट्रस्ट और सांविधिक निकाय शामिल हैं।
- 2.6 **एम ओ एस** का आशय इस्पात मंत्रालय, भारत सरकार से है।
- 2.7 **निवल बिक्री कीमत** बीजक कीमत होगी जिसमें निवल घरेलू कर और शुल्क शामिल नहीं होंगे।
- 2.8 **अर्ध तैयार इस्पात** का तात्पर्य इनगोट्स, बिलेट, ब्लूम और स्लेब्स से है, जिसे बाद में प्रसाधित कर तैयार इस्पात बनाया जा सकता है।
- 2.9 **तैयार इस्पात** का तात्पर्य सपाट और लंबे उत्पादों से होगा जिन्हें बाद में प्रसाधित कर निर्मित मद बनाया जा सकता है।
- 2.10 **एल1** का तात्पर्य निविदा अथवा अन्य खरीद संबंधी अनुरोध के अनुसार मूल्यांकन प्रक्रिया में यथाघोषित निविदा, बोली लगाने संबंधी प्रक्रिया अथवा अन्य खरीद संबंधी अनुरोधों में प्राप्त निम्नतम निविदा अथवा निम्नतम बोली अथवा निम्नतम भाव से होगा।
- 2.11 **खरीद वरीयता के मार्जिन** का तात्पर्य उस अधिकतम सीमा से है जिस सीमा तक किसी घरेलू आपूर्तिकर्ता द्वारा लगाई गई कीमत खरीद वरीयता के प्रयोजन से एल1 से अधिक हो। डी एम आई एंड एस पी नीति के मामले में, खरीद वरीयता का मार्जिन परिशिष्ट ख में मदों के लिए 20 प्रतिशत होगा।
- 2.12 **लौह एवं इस्पात उत्पाद** का तात्पर्य ऐसे लौह एवं इस्पात उत्पादों से होगा जिनका उल्लेख परिशिष्ट क में किया गया है।
- 2.13 **घरेलू मूल्यवर्धन** निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिससे प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण संयंत्र (सभी सीमा शुल्कों सहित) में आयात की गई इनपुट सामग्री की पहुंच लागत घटाई गई हो, 'घरेलू मूल्यवर्धन' परिभाषा डी पी आई आई टी (पूर्व में डी आई पी पी) के दिशानिर्देशों के अनुरूप होगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जाएगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलू मूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।
- 3. अपवर्जन**
- 3.1 इस्पात मंत्रालय द्वारा इस प्रकार की सभी सरकारी खरीदों के लिये निम्नलिखित शर्तों के अधीन छूट प्रदान की जाएगी।
- 3.1.1 जहां विशिष्ट शेडों के इस्पात का निर्माण इस देश में नहीं किया जाता हो, अथवा
- 3.1.2 जहां परियोजना की मांग के अनुसार इन मात्राओं को घरेलू स्रोतों के माध्यम से पूरा नहीं किया जा सकता हो।
- अपवर्जन संबंधी अनुरोधों को घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों के उपलब्ध न होने के पर्याप्त प्रमाण के साथ स्थायी समिति को प्रस्तुत किया जाएगा।
- 4. स्थायी समिति**
- इस नीति के कार्यान्वयन का पर्यवेक्षण करने के लिए इस्पात मंत्रालय (एम ओ एस) के अधीन एक स्थायी समिति का गठन किया जाएगा। जिसके अध्यक्ष सचिव इस्पात होंगे। इस समिति में उद्योग/उद्योग संघ/सरकारी संस्था अथवा निकाय/इस्पात मंत्रालय (एम ओ एस) से लिए गए विशेषज्ञ होंगे। इस्पात मंत्रालय में उक्त समिति के पास निम्नलिखित के लिए अधिदेश होगा :
- 4.1 इस नीति के कार्यान्वयन की मॉनीटरिंग करना
- 4.2 परिशिष्ट क और परिशिष्ट ख में यथा उल्लिखित लौह एवं इस्पात उत्पादों की सूची और घरेलू बिक्री वर्धन की आवश्यकता से संबंधित मानदंडों की समीक्षा करना और उसे अधिसूचित।

- 4.3 खंड 3 के अनुसार खरीद एजेंसियों को अपवर्जन की स्वीकृति देने सहित इस नीति के कार्यान्वयन के लिए आवश्यक स्पष्टीकरण जारी करना।
- 4.4 शिक्कायत निवारण करने के लिए एक अलग समिति का गठन करना।
- 4.5 स्थायी समिति इस्पात मंत्रालय को अनुमोदन हेतु अपनी सिफारिशें प्रस्तुत करेगी।
- 5. सरकार द्वारा खरीदे जाने वाले लौह एवं इस्पात उत्पादों को अधिसूचित करना**
- 5.1 निम्नलिखित दिशानिर्देशों का उपयोग इस नीति के अंतर्गत उपरोक्त उत्पादों की पहचान करने और उमें अधिसूचित करने के लिए किया जा सकता है :
- 5.1.1 यह नीति परिशिष्ट क में दिए गए अनुसार लौह एवं इस्पात उत्पादों और परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल पर लागू है।
- 5.1.2 परिशिष्ट क में लौह एवं इस्पात उत्पादों की सूची दी गई है जिसका निर्माण अनन्य रूप से घरेलू स्तर पर किया जाना है और उसका आयात इस्पात मंत्रालय के अनुमोदन के बिना नहीं किया जा सकता है।
- 5.1.3 परिशिष्ट ख में पूंजीगत माल की एक सूची (जो विस्तृत नहीं है) दी गई है जिसके लिए खरीद संबंधी बरीयता घरेलू स्तर पर निर्मित पूंजीगत माल को दी जाएगी, यदि उनकी दी गई कीमत सदृश्य आयात किये गये पूंजीगत माल के लिए दी गई कीमत के 20 प्रतिशत के अंदर आती हो।
- 5.1.4 इस नीति का उद्देश्य सभी लौह एवं इस्पात उत्पादों को अधिसूचित करना है जिसकी खरीद सरकारी एजेंसियों द्वारा सरकारी परियोजनाओं के लिए की जाती है और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए उत्पादों के उत्पादन में प्रयोग करने के उद्देश्य से की गई हो।
- 5.1.5 यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा निधि प्रदत्त सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।
- 5.1.6 यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों का खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो। यह नीति अन्य खरीद (गैर परियोजना) के लिए भी लागू होगी जहां उस सरकारी संगठन के लिए लौह एवं इस्पात उत्पादों का वार्षिक खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो।
- 5.1.7 यह नीति सरकार के मंत्रालय अथवा विभाग अथवा उनके सार्वजनिक क्षेत्र के उपक्रमों की किसी अन्य आवश्यकता को पूरा करने के लिए और/अथवा ई पी सी संविदा को पूरा करने के लिए प्राइवेट एजेंसियों द्वारा लौह एवं इस्पातों की खरीद पर लागू है।
- 5.1.8 घरेलू लौह एवं इस्पात उत्पादों के विभिन्न ग्रेडों की उपलब्धता का विश्लेषण इस नीति के अंतर्गत अधिसूचित करने से पहले करना होगा। केवल उन लौह एवं इस्पात को उत्पादों को जिनके संबंध में कम से कम एक घरेलू निर्माता मौजूद हो, अधिसूचित किया जाएगा। स्थायी समिति से परामर्श किया जा सकता है।
- 5.1.9 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए लागू है।
- 5.1.10 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत मालों की घरेलू खरीद के लिए नीति लौह एवं इस्पात उत्पादों का निर्माण करने के लिए और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से पूंजीगत मालों की खरीद के वास्ते और सार्वजनिक क्षेत्र के इस्पात विनिर्माताओं और उनके प्रशासनिक नियंत्रणाधीन सभी एजेंसियों/प्रतिष्ठानों पर लागू है।
- 5.1.11 यह नीति ई पी सी संविदा और/अथवा सार्वजनिक क्षेत्र से इस्पात निर्माताओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों की किसी अन्य आवश्यकता को पूरा करने के लिए निजी एजेंसियों द्वारा लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की खरीद पर लागू है।
- 5.1.12 सरकारी एजेंसियां जो लौह एवं इस्पात उत्पादों के निर्माण के लिए पूंजीगत माल और लौह एवं इस्पात उत्पादों की खरीद में उन स्थितियों में शामिल है जहां लौह एवं इस्पात उत्पादों का उल्लेख परिशिष्ट क और परिशिष्ट ख में नहीं किया गया हो, स्थायी समिति को निर्धारित मानदंडों के साथ इस उत्पाद के विवरण और तकनीकी विनिर्देशन उपलब्ध करायेगा। स्थायी समिति खंड 3 और खंड 4 में अधिदेश के अनुसार कार्य करेगी।

- 5.2 इस्पात मंत्रालय (एम ओ एम) परिशिष्ट क में दिए गए न्यूनतम निर्धारित घरेलू मूल्यवर्धन के साथ लौह एवं इस्पात उत्पादों को अधिसूचित करेगा।
- 5.3 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के संबंध में नीतिगत दिशानिर्देश, परियोजना के आकार पर विचार किये बिना परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सभी खरीदों के लिए सार्वजनिक क्षेत्र के इस्पात निर्माताओं पर लागू होंगे।
- 5.4 परिशिष्ट क में लौह एवं इस्पात उत्पादों के लिए तथा परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए सुझाव दिए गए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता घरेलू आपूर्तिकर्ता का आधार, आपूर्तिकर्ताओं की संख्या और खपत की तुलना में आयात का अनुपात जैसे कारकों के आधार पर तय किया गया है।
- 5.5 घरेलू मूल्यवर्धन आवश्यकता संबंधी मानदंडों का इस प्रकार से निर्धारण किया जाएगा जिस से कि यह किमी दिए गए समय में लौह एवं इस्पात उत्पादों के लिए घरेलू उद्योग की औसत/औसत से अधिक निर्माण क्षमता दर्शाता हो। स्थायी समिति द्वारा समय समय पर उपयुक्त रूप से इसकी समीक्षा की जाएगी और आवश्यकता पड़ने पर इस्पात मंत्रालय के अनुमोदन से इसमें संशोधन किया जाएगा।
- 6. सरकार एवं सरकारी एजेंसियों द्वारा खरीद के लिए निविदा प्रक्रिया**
- 6.1 खरीद करने वाली/सरकारी एजेंसियां डी एम आई एंड एस पी का पालन करते समय वित्त मंत्रालय और सी वी सी के अनुदेशों के अनुसार मानक खरीद संबंधी प्रक्रियाओं का पालन करेगी। यह नीति सभी निविदाओं जहां कीमत बोली नहीं खोली गई है, में इसके अधिसूचना की तिथि से लागू होगी।
- 6.2 दोनों वस्तुओं की खरीद तथा ई पी सी संविदाओं के लिए निविदा दस्तावेज में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए लौह एवं इस्पात उत्पादों तथा पूंजीगत माल (जैसा कि परिशिष्ट क और परिशिष्ट ख में दर्शाया गया है, के लिए बोली लगाने वाले द्वारा न्यूनतम निर्धारित घरेलू मूल्यवर्धन का पालन करने के लिए अर्हता मानदंडों का स्पष्ट उल्लेख होना चाहिए।
- 6.3 घरेलू उत्पादों के विकास का सहयोग करने में, लौह एवं इस्पात व्यापार क्रियाकलापों में घरेलू मूल्यवर्धन का लक्ष्य निर्धारित किया गया है जिसे परिशिष्ट क और परिशिष्ट ख में दिया गया है।
- 6.4 परिशिष्ट क में लौह और इस्पात उत्पादों के खरीद की प्रक्रिया केवल उन निर्माताओं/आपूर्तिकर्ताओं के लिए ही खुली रहेगी जिसमें घरेलू मूल्यवर्धन लक्ष्यों को पूरा करने/उमसे ज्यादा पूरा करने की क्षमता हो। घरेलू मूल्यवर्धन लक्ष्यों को पूरा न करने वाले निर्माता/आपूर्तिकर्ता बोली लगाने में भाग लेने के लिए पात्र नहीं हैं।
- 6.5 परिशिष्ट ख में दी गई मदों के मामलों में, यदि खरीद करने वाली कंपनी की राय में, निविदाओं (खरीदी गई मात्रा) को 50:50 के निर्धारित अनुपात में नहीं बांटा जा सकता है, तब उनके पास मात्रा जो 50 प्रतिशत से कम नहीं हो, जो कि विभाज्य हो, के लिए पात्र घरेलू निर्माता को संविदा देने का अधिकार होगा।
- 6.6 उपर्युक्त शर्त को जारी रखते हुए, परिशिष्ट ख की मदों के लिए, यदि निविदा दी गई मद विभाज्य न हो (खरीद करने वाली कंपनी द्वारा निविदा दस्तावेज में शामिल किए जाने के लिए) यह संविदा समग्र मात्रा के लिए पात्र घरेलू निर्माता को दी जा सकती है।
- 6.7 परिशिष्ट ख के मदों के मामलों में, यदि घरेलू मूल्यवर्धन की आवश्यकताओं को पूरा करने वाले पात्र निर्माताओं में से कोई भी एल1 की बोली के अनुरूप न हो, तब एल1 की बोली धारण करने वाले मूल बोली लगाने वाला खरीद के पूर्ण मूल्य के लिए आदेश प्राप्त करेंगे।
- 6.8 वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं के बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं इस नीति के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं। हालांकि, यह निम्नलिखित शर्तों के अध्वधीन होगा।
- 6.8.1 बोली लगाने वाले घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों की बिक्री करने के लिए घरेलू निर्माता द्वारा जारी किए गए अधिकार प्रमाण पत्र प्रस्तुत करेगा।

- 6.8.2 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट क के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किया गया स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह और इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.3 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट ख के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि लौह और इस्पात उद्योग में उपयोग किये जाने वाले पूंजीगत माल का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.4 बोली लगाने वाले की यह जिम्मेदारी होगी कि वह इस नीति के अनुसार खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किये जाने के लिए अपेक्षित अन्य आवश्यक दस्तावेज प्रस्तुत करे।

7. घरेलू मूल्यवर्धन आवश्यकता

- 7.1 घरेलू रूप में निर्मित लौह और इस्पात उत्पाद अथवा पूंजीगत माल के रूप में उत्पाद के रूप में पात्र होने के लिए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता का उल्लेख परिशिष्ट क और परिशिष्ट ख में किया गया है।
- 7.2 घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिसमें से प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण करने वाले संयंत्र में आयात की गई इनपुट सामग्री की पहुंच लागत (सभी सीमा शुल्कों को शामिल करते हुए) घटाई जाएगी।
- 7.2.1 यदि लौह और इस्पात उत्पादों को घरेलू इनपुट इस्पात (अर्ध तैयार/तैयार इस्पात) का उपयोग करके निर्माण किया जाता हो, तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक घरेलू उत्पादों से खरीद का बीजक खरीद करने वाली सरकारी एजेंसी को अवश्य प्रस्तुत किया जाना चाहिए।
- 7.2.2 यदि लौह एवं इस्पात उत्पादों ने इनपुट इस्पात का आयात किया हो तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक उत्पादकों से खरीदों के बीजकों को अलग से प्रस्तुत किया जाना चाहिए। घरेलू मूल्यवर्धन की सीमा निकालने के लिए, दोनों इनपुट इस्पातों (आयात किये और घरेलू) की भारित औसत पर विचार यह सुनिश्चित करने के लिए किया जाएगा कि इस नीति की न्यूनतम निर्धारित घरेलू मूल्यवर्धन आवश्यकता का पालन किया गया है।
- 7.3 यह सिफारिश की जाती है कि निविदा की प्रक्रिया में भाग लेने वाले प्रत्येक बोली लगाने वाले को नीचे दिए गए सूत्र का उपयोग करते हुए घरेलू मूल्यवर्धन की गणना करनी चाहिए ताकि यह सुनिश्चित किया जा सके कि दावा किये गये घरेलू मूल्यवर्धन इस नीति के न्यूनतम निर्धारित घरेलू मूल्यवर्धन के अनुरूप है।

लौह एवं इस्पात उत्पादों के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

पूंजीगत माल के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये इनपुट सामग्री की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

8. प्रमाणन और लेखा परीक्षण

- 8.1 परिशिष्ट क में दिए गए उत्पादों के लिए, प्रत्येक घरेलू निर्माता यह घोषणा करते हुए खरीद करने वाली सरकारी एजेंसी को स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह एवं इस्पात उत्पाद का निर्धारित घरेलू मूल्यवर्धन के संबंध में घरेलू स्तर पर निर्माण किया गया है। परिशिष्ट ख के पूंजीगत माल के लिए, बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि पूंजीगत माल का निर्माण घरेलू स्तर पर निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं का एकमात्र बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं, ई पी सी के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं।

बोली लगाने वाला घरेलू निर्माताओं के द्वारा जारी किए गए स्व-प्रमाणन और सांविधिक लेखा परीक्षकों द्वारा जारी किये गये प्रमाणनों को यह घोषणा करते हुए खरीद करने वाली एजेंसी को प्रस्तुत करेगा कि लौह एवं इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। स्व-प्रमाणन का शपथ पत्र इन दिशानिर्देशों से संलग्न **प्रपत्र 1** में प्रस्तुत किया जाएगा।

- 8.2 घरेलू निर्माता की यह जिम्मेदारी होगी कि वह यह सुनिश्चित करे कि इस प्रकार से दावा किये गये उत्पादों का घरेलू स्तर पर उम उत्पाद के लिए निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। बोली लगाने वाले से यह भी अपेक्षित होगा कि वह घरेलू निर्माता के सांविधिक लेखा परीक्षकों द्वारा विधिवत प्रमाणित अर्धवार्षिक (मिंतंबर 30 और मार्च 31) आधार पर घरेलू मूल्यवर्धन प्रमाणपत्र उपलब्ध कराये कि पहले 6 महीनों के दौरान इस उत्पाद के लिए किये गये घरेलू मूल्यवर्धन के दावे इस नीति के अनुसार हैं। इस प्रकार के प्रमाण पत्र को संबंधित सरकारी एजेंसियों को प्रत्येक छमाही के शुरू होने के 60 दिनों के भीतर प्रस्तुत किया जाएगा और उस उत्पादों की आपूर्ति को पूरा करने तक प्रस्तुत करता रहेगा।
- 8.3 खरीद करने वाली एजेंसी बोली लगाने वाले द्वारा प्रस्तुत किये गये इस्पात उत्पाद में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन का शपथ पत्र स्वीकार करेगा। सामान्य तौर पर खरीद करने वाली एजेंसी की यह जिम्मेदारी होगी कि वह इस दावे की सत्यता की जांच करे। इसकी सत्यता प्रदर्शित करने की जिम्मेदारी बोली लगाने वाले की होगी जब उसे ऐसा करने के लिए कहा जाए।
- 8.4 यदि खरीद करने वाली एजेंसी अथवा संबंधित सरकारी एजेंसी द्वारा लौह एवं इस्पात उत्पादों में घरेलू मूल्यवर्धन के संबंध में बोली लगाने वाले के दावे के विरुद्ध कोई शिकायत प्राप्त होती है तब खरीद करने वाली एजेंसी के पास सभी संबंधित दस्तावेजों का निरीक्षण करने और उसकी जांच करने तथा निर्णय लेने का पूर्ण अधिकार होगा। यदि कोई स्पष्टीकरण की आवश्यकता होती है तब मामले को तकनीकी सहायता के लिए अनुरोध के साथ इस्पात मंत्रालय को भेजा जा सकता है।
- 8.5 सरकारी एजेंसी को भेजे गए किसी शिकायत का निपटारा सभी आवश्यक दस्तावेजों को प्रस्तुत करने के साथ इसे भेजे जाने के 4 सप्ताह के भीतर किया जाएगा। बोली लगाने वाले से यह अपेक्षित होगा कि वह शिकायत दायर करने के 2 सप्ताह के भीतर सरकारी एजेंसी को लौह एवं इस्पात उत्पादों में दावा किये गये घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे।
- 8.6 यदि इस मामले को इस्पात मंत्रालय के पास भेजा जाता है तब इस्पात मंत्रालय के अधीन गठित शिकायत निवारण समिति सरकारी एजेंसी के दृष्टिकोण पर विचार करने के बाद बोली लगाने वाले से सभी दस्तावेजों के प्राप्त होने और उसका संदर्भ भेजे जाने के 4 सप्ताह के भीतर शिकायत का निपटारा करेगी। बोली लगाने वाले से यह अपेक्षित होगा कि वे इस मामले के संदर्भ के 2 सप्ताह के भीतर इस्पात मंत्रालय के अंतर्गत शिकायत निवारण समिति को लौह एवं इस्पात उत्पादों में दावा किए गए घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे। यदि बोली लगाने वाले द्वारा कोई सूचना प्रस्तुत नहीं की जाती है तब शिकायत निवारण समिति दावे की प्रमाणिकता अधिक करने के लिए सरकारी एजेंसी के परामर्श से आगे आवश्यक कार्रवाई कर सकती है।
- 8.7 घरेलू मूल्यवर्धन की निर्धारित सीमा का आकलन करने की लागत का वहन खरीद करने वाली एजेंसी द्वारा किया जाएगा यदि घरेलू मूल्यवर्धन प्रमाण पत्र के अनुसार सही पाया गया हो। हालांकि, यदि ऐसा पाया गया हो कि दावा किए गए अनुसार घरेलू मूल्यवर्धन सही नहीं है तब आकलन की लागत बोली लगाने वाले द्वारा भुगतान के योग्य होगी जिन्होंने एक गलत प्रमाण पत्र प्रस्तुत किया है। इसे लागू करने के तरीके को निविदा दस्तावेज में परिभाषित किया जाएगा।

9. प्रतिबंध

- 9.1 प्रत्येक सरकारी एजेंसी निविदा दस्तावेज में निर्धारित घरेलू मूल्यवर्धन का बोली लगाने वाले के द्वारा गलत घोषणा किए जाने की स्थिति में दण्ड को स्पष्ट रूप से परिभाषित करेगा। इस दण्ड में ऐसे निर्माता/सेवा प्रदाता की ई एम डी को जब्त करना, अन्य वित्तीय दंड लगाना और उसे काली सूची में डालना शामिल हो सकता है।
- 9.2 संबंधित बोली लगाने वाले के द्वारा इस्पात मंत्रालय को किसी प्रकार की शिकायत भेजे जाने की स्थिति में, 10 लाख रुपए अथवा खरीदी जा रही डी एम आई एंड एस पी के मूल्य का 0.2 प्रतिशत (अधिकतम 20 लाख के अध्येधीन) इसमें से जो भी अधिक हो, का शिकायत शुल्क होगा जिसका भुगतान शिकायतकर्ता द्वारा शिकायत के साथ इस्पात मंत्रालय के अधीन शिकायत निवारण समिति के पास जमा किए गए डिमाण्ड ड्राफ्ट के द्वारा किया जाएगा। यदि, शिकायत को सही नहीं पाया जाता है तब सरकारी एजेंसी के पास उक्त राशि को जब्त करने का अधिकार सुरक्षित है। यदि शिकायत पर्याप्त रूप से सही पाई जाती है तब शिकायतकर्ता द्वारा जमा किए गए शुल्क को बिना किसी ब्याज के वापिस किया जाएगा।

10. इस्पात मंत्रालय द्वारा कार्यान्वयन की मॉनीटरिंग

- 10.1 इस नीति के प्रावधान प्रकाशन की तिथि से 5 वर्षों की अवधि के लिए लागू रहेंगे। इस नीति की अवधि को इस्पात मंत्रालय के विवेक से और आगे बढ़ाया जा सकता है।
- 10.2 इस्पात मंत्रालय इस नीति के कार्यान्वयन की मानीटरिंग करने के लिए नोडल मंत्रालय होगा।
- 10.3 डी एम आई एंड एम पी नीति के अंतर्गत सभी लागू एजेंसियां इस नीति का कार्यान्वयन मुनिश्चित करेंगी और वार्षिक रूप से जून के महीने में एक घोषणा भेजेगी जिसमें इस नीति के अनुपालन की सीमा और पिछले वित्तीय वर्ष के दौरान उसके अनुपालन न किए जाने के कारणों को दर्शाया जाएगा।

इस्पात मंत्रालय को संदर्भ

किमी ऐसे प्रश्न की स्थिति में कि क्या खरीदी जा रही मद इस नीति के अंतर्गत शामिल किए जाने वाले डी एम आई एंड एम पी है, इस मामले को स्पष्टीकरण के लिए इस्पात मंत्रालय के पास भेजा जाएगा।

परिशिष्ट क - धरेलू स्तर पर निर्मित उत्पादों के लिए अनन्य

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम धरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोल, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7208	50%
2	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, कोल्ड रोल (कोल्ड - कम किया हुआ), न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7209	50%
3	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7210	50%
4	600 मि. मी. से कम की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7211	35%
5	600 मि. मी. से कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से षंठा हुआ क्वाडल में बार्स और रॉड, हॉट रोल	7213	35%
7	लौह अथवा गैर एलॉय इस्पात के अन्य बार्स और रॉड्स जिसे फोर्ज किए जाने की तुलना में आगे अधिक वर्क नहीं किया हुआ, हॉट रोल, हॉट ड्रॉन अथवा हॉट एक्सट्रूडेड परंतु रोलिंग के बाद उसे टिबिस्ट किये जाने सहित	7214	35%
8	लौह अथवा गैर एलॉय इस्पात का अन्य बार्स एंड रोड्स	7215	35%
9	लौह अथवा गैर एलॉय इस्पात का एंगल, शेप और सेक्शन	7216	35%
10	लौह अथवा गैर एलॉय इस्पात का तार	7217	50%
11	600 मि. मी. अथवा उससे अधिक की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोल इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोल इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रोड्स; स्टेनलैस स्टील का एंगल शेप और सेक्शन	7222	50%
14	अन्य एलॉय इस्पात का तार	7229	35%
15	लौह अथवा इस्पात को रेल, रेलवे अथवा ट्रामवे ट्रेक निर्माण सामग्री	7302	50%

16	कास्ट लौह का ढूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ढूब पाइप और होलो प्रोफाइल, मीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ढूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिमकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ढूब, पाइप और होलो प्रोफाइल (उदाहरण के लिए ओपन मीन अथवा वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ढूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	7221	35%
22	स्टेनलैस स्टील का वायर	7223	35%
23	इलेक्ट्रिकल स्टील सहित 600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7225	35%
24	इलेक्ट्रिकल स्टील सहित 600 मि. मी. से कम की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7226	35%
25	अन्य एलॉय स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रोड, हॉट रोल्ड	7227	15%
26	अन्य एलॉय स्टील का अन्य बार्स और रोड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रिल बार्स और रोड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रिल किया हुआ हो अथवा नहीं, चाहे पंच किया हुआ हो अथवा नहीं, चाहे असेम्बल किये हुए तत्वों से बना हुआ हो अथवा नहीं; लौह अथवा इस्पात का वेल्ड किया हुआ एंगल, शेप और सेक्शन्स	7301	15%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफेब्रिकेटेड भवनों को छोड़कर) और स्ट्रक्चर्स का हिस्सा	7308	15%
29	300 लीटर से अधिक क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए भंडार, टैंक, वैट और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7309	15%
30	अधिकतम 300 लीटर की क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए टैंक, कास्ट, ड्रम, केन, बॉक्स और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7310	15%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	15%
32	लौह अथवा इस्पात का स्टेंडिड वायर, रोप, केबल, प्लेटिड बैंड, स्लिंग और उसके समान वस्तु जिसे त्रिचूतीय रूप से इन्सुलेट न किया गया	7312	15%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्रिवस्ट किया हुआ हूप अथवा सिंगल प्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्रिवस्ट किया हुआ डबल वायर	7313	15%
34	लौह अथवा इस्पात तार का ड्रिल, नेटिंग और फेनसिंग; लौह अथवा इस्पात का विस्तार किया हुआ धातु	7314	15%

35	लौह अथवा इस्पात का चैन और उसका हिस्सा	7315	15%
36	लौह अथवा इस्पात का टैंकर, ग्रेपनेल्म और उसका हिस्सा	7316	15%
37	लौह एवं इस्पात की वस्तुएं	7317	15%
38	लौह एवं इस्पात की वस्तुएं	7318	15%
39	लौह एवं इस्पात की वस्तुएं	7319	15%
40	लौह अथवा इस्पात का स्प्रिंग और स्प्रिंग के लिए लीन्स	7320	15%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हार्डिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), वारवेक्यूज, ब्रेजियर्स, गैस रिंग, प्लेट वामर्स और समान गैर-विद्युतीय घरेलू उपकरण और उसका हिस्सा	7321	15%
42	लौह अथवा इस्पात का केंद्रीय हार्डिंग के लिए रेडियेटर जिसे विद्युतीय रूप से हीट न किया गया हो और उसका हिस्सा; लौह अथवा इस्पात का हेयर हीटर और हॉट एयर वितरक जिसे विद्युतीय रूप से हीट न किया गया हो, फेन अथवा ब्लोअर जो मोटर से चलती हो और उसके हिस्से को शामिल करते हुए	7322	15%
43	लौह अथवा इस्पात का टेबल और समान घरेलू वस्तुएं और उसका हिस्सा	7323	15%
44	लौह अथवा इस्पात का सेनेटरी वेयर और उसको पार्ट्स	7324	15%
45	लौह अथवा इस्पात का अन्य कास्ट सामान	7325	15%
46	लौह अथवा इस्पात का विद्युतीय इस्पात और अन्य वस्तु	7326	15%
47	रेलवे अथवा ट्रामवे पेसेंजर कोच जो स्वयं आगे नहीं बढ़ता हो	8605	50%
48	रेलवे अथवा ट्रामवे माल वेन और वेगेन जो स्वयं आगे नहीं बढ़ता हो	8606	50%
49	रेलवे अथवा ट्रामवे लोकोमोटिव का हिस्सा अथवा रोलिंग स्टॉक जैसे बोगिज, बिसल बोगिज, एक्सेल और फोज्ड किया हुआ पहिया और उसका हिस्सा	8607	50%

विवरणों में शामिल किए गए उत्पाद सांकेतिक हैं, विनिर्दिष्ट एच एम कोड के अंतर्गत सभी उत्पादों को परिशिष्ट के भाग के रूप में शामिल किया गया है।

परिशिष्ट ख

लौह और इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सांकेतिक सूची (जो विस्तृत नहीं है)

क्र. सं.	संयंत्र शॉप	पूंजीगत माल	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	कच्चा माल संभाल प्रणाली	चूर्ण की हुई सामग्री के लिए एप्रोन फीडर, बेरल कप्लिंग, हैवी ड्यूटी वियेरिंग, हाइड्रोलिक डिक्स ब्रेक्स, टैंकर एंड कंटेनर, पाइप कंवेयर के लिए कंवेयर बेल्ट, हार्ड एंगल कंवेयर प्रणाली, क्रशर्स, क्रेन रेल लुब्रिकेशन, चार गरडर ग्राइडर ई ओ टी क्रेन, क्रेन वेइंग प्रणाली, क्रेन एयर कंडीशनिंग, फ्यूड कप्लिंग, 4 लिफ्ट ट्रक्स, हाइड्रोलिक मोटर्स, हाइड्रोलिक सिस्टम, लॉकिंग एसेम्बली (फ्रिक्शन ग्रिप), लोड सेल्स, लेवल सेन्सर्स, पाइप कंवेयर प्रणाली, प्लग/पाडेल फीडर, न्यूमेटिक हुलाई - धना एवं लिन फेस, रिक्लेमर्स, रेडियो रिमोट कंट्रोल, रेल फिक्सिंग व्यवस्था (विशेष), रेपिड/फ्लेड लोडिंग प्रणाली, स्टेर्स, स्पेशल स्क्रीन, स्लिव रिंग वियेरिंग, ट्रिप्लर्स, ट्रांसफर कार, टॉर्स (स्पेशल), वाइब्रेशन, आइसोलेशन प्रणाली (स्प्रिंग डम्पर) वेगन टिप्लर्स, वेगन लोडर	50%
2	मिनिरल बेनिफिकेशन (लौह अयस्क और कोयला) उपकरण	इंडस्ट्रीयल क्रशर्स, ग्राइनिंग मिल, परम्परागत स्क्रीन, स्लूरी पम्पस, हिरेट थिकनर्स, फिल्टर्स, हाइड्रोक्लोन्स	50%

3	कोक अवेन	कोक ओवन मिलिका रिफेक्टरी, एन्क्रेज सिस्टम, ब्रंच तरडन के साथ वेस्ट गैस वाल, फनेस प्लेट, डोर फ्रेम, डोर बॉडी, माइनर कास्टिंग: गुजनेक, बाल बॉक्स, ए पी लिड, चार्जिंग और इन्स्पेक्शन होल लिड एंड फ्रेम रिचर्सिंग मंकेनिजम, केंद्रीकृत लूत्रिकेशन प्रणाली हाइड्रोजेट डोर क्लीनिंग तंत्र, कोड कंवेयर सिस्टम, स्क्रिप होइस्ट, डोर लोवरिंग रैक, आइसोलेशन/रिचर्सिंग कॉक्स, II ऑटोमेशन, अवेन मशीन	50%
4	उप-उत्पाद संयंत्र	प्राथमिक गैस कूलर, इलेक्ट्रोस्टेटिक तार प्रेसिपिटेटर, H ₂ S, NH ₃ और नपथलिन स्कूब्वर, कोम्बी स्ट्रीप्पर, फ्लेशिंग लिक्व पम्प, क्लास किन, क्लाक रियेक्टर, वेस्ट हीट बायलर, डिक्लेटर्स	50%
5	सिंटर संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एंसेम्बली कब्ड रेल, स्लाइड रेल, हॉट सिंटर ब्रेकर और गिजली, डिप रेल एंड रनिंग रेल, प्रोसेस फेन के लिए इम्पेलर एंसेम्बली, सिंटर मशीन का ड्राइव एंसेम्बली, उच्च तीव्रता वाला मिक्सर और नोडूलाइजर	50%
6	पेलेट संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एंसेम्बली कब्ड रेल, स्लाइड रेल, रनिंग रेल बरटिकल रोलर मिल, प्रोसेस फेन के लिए इम्पेलर एंसेम्बली, इनडूरेटिंग मशीन का ड्राइव एंसेम्बली, उच्च तीव्रता वाला मिक्सर, बालिंग डिक्स, सिंगल डेक्स रोलर स्क्रीन एंड डबल डेक्स रोलर स्क्रीन	50%
7	ब्लास्ट फरनेस उपकरण	ब्लेडर बाल के साथ बेल रहित टॉप प्रणाली, एस जी आयरन स्टेव कूलर, कोपर स्टेव कूलर, स्टॉक लेवल इंडिकेटर (रडार टाइप), मड गन, ड्रिलिंग मशीन एंड मेनिपुलेटर, गैस किल्लिंग प्लांट प्रणाली, इसके बाइस-पास वाल सहित टॉप रिक्वरी टूबाइन सिस्टम, डि-ब्रिक्किंग मशीन, रि-रेलिंग उपकरण, पी सी आई प्रणाली, पी सी आई के लिए ग्राइनिंग मिल, स्टॉक लेवल इंडिकेटर, टूयेरे स्टाक एंसेम्बली, वेस्ट हीट रिक्वरी प्रणाली, बी एफ एवं हॉट ब्लास्ट स्टोव प्रौद्योगिकीय वाल, एन्व ब्रंडन प्रोब्स, स्लग ग्रेन्यूलेशन यूनिट, टूयेरे एंड टूयेरे कूलर, टोरपेडो लेडल कार, बी एफ हरथ रिफेक्ट्री	50%
8	डायरेक्ट रिडक्शन प्लांट उपकरण	चार्ज डिस्ट्रीब्यूटर, अपर एंड लोअर सील लेग, रिफोमर एंड रि-क्यूरेटर सिस्टम, बर्डन फिडर्स, टूबो-एक्सपेंडर, प्रोसेस गैस कम्प्रेसर, सील गैस कम्प्रेसर एवं बोटम सील गैस कम्प्रेसर, सील गैस जेनरेटर एवं डायर्स, प्रोसेस गैस हीटर, CO ₂ रिमूवल प्लांट	50%
9	वेमिक ऑक्सीजन फर्नेस उपकरण	मुख्य और अनुरक्षण उपकरण जिसमें कंवेटर, गनिंग मशीन, रिफेक्ट्री/स्लग मॉनीटरिंग उपकरण, कंवेटर वेसेल, ट्रनिअन रिंग एंड सम्पेशन प्रणाली, ट्रनिअन बियरिंग और हाउसिंग, कंवेटर बुल गियर यूनिट और टिल्ट ड्राइव सिस्टम, कंवेटर के रोटेरी ज्वाइंट, बोटम स्ट्रिंग सिस्टम, क्लपिंग के साथ लांस बाडी, लांस कोपर टिप्स, ऑक्सीजन ब्लोबिंग/बोटम स्टीरिंग के लिए बाल स्टेशन, सब-लान सिस्टम, प्रोसेस मॉड्यूल अर्थात् प्रोसेस साफ्टवेयर/हार्डवेयर के साथ ऑफ गैस एनेलाइजर, कंटेनर लैब मेजरमेंट प्रोब, स्विच ओवर स्टेशन, प्राइमरी गैस के लिए आई डी फेन, हॉट मेटल और स्टील लेडल, लेडल ट्रांसफर कार, लेडल अनुरक्षण उपकरण, स्लेग पोट, स्लग पोट ट्रांसफर कार, स्क्रैप बॉक्स क्रेप ट्रांसफर कार, लांस करेज, लांस गाइड, क्रेन एंड हाइस्ट, लांस होइस्ट एंड ट्राली, लांस टिल्टिंग उपकरण, लांस को लिफ्ट करने के लिए ट्रेवस, विभिन्न आकर के बंकर, बिन बाइब्रेटर, वेइंग हूपर, अनुरक्षण स्टेण्ड, डी इस्टिंग सक्शन हूड, टीमिंग/एच एम, लेडल रिलाइनिंग स्टैंड, स्टैंड कूलिंग स्टेक इन्स्पेक्शन उपकरण, हूड ट्रेवर्स करेज, रिफेक्ट्री, बाइपास एवं आइसोलेशन वाल्व, फ्लेयर स्टेक एवं इगनिवेशन सिस्टम, स्क्रबिंग टोवर सेल - वेट गैस क्लीनिंग सिस्टम, डॉंग हाउस लेडल डायर, लेडल	50%

		प्री-हीटर, लेडल कूलर, फ्यूम कोलेक्शन हूड्स, क्लीन गैस स्टेक, इस्ट सिलो, वेग ब्रिज, म्लग रिट्रैनिंग उपकरण	
10	इलेक्ट्रिक आर्क फर्नेस	फर्नेस प्रोपर (जिसमें फर्नेस लोवर सेल, अपर सेल और रूफ, टिल्टिंग प्लेटफार्म, फर्नेस गेन्ट्री शामिल है) और ट्रांसफार्मर, इलेक्ट्रोड रेगुलेशन प्रणाली, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेवल I एंड II आटोमेशन सिस्टम के पार्ट्स। एल एफ - वाटर कूल्ड लेडल रूफ, इलेक्ट्रोड मास्ट एंड आमर्स, इलेक्ट्रोड रेगुलैटिंग सिस्टम, वायर फिडिंग सिस्टम, बोटम इनडरट गैस स्टिरिंग बाल सिस्टम पोरुस प्लग और टॉप लांस के लिए, इमरजेंसी लांसतंत्र, ड्राइव यूनिट के साथ लांस केरेजि सिस्टम, स्वचालित तापक्रम, सेम्पलिंग और बाथ लेबल/ओ2 मेजरमेंट, तापक्रम और आक्सीजन इम्मजन लांस, ड्राइव यूनिट के साथ लांस केरेज सिस्टम, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेडल रूफ डेल्टा पोरशन, आर एच प्रोपर (जिसमें लेडल ट्रांसफर कार, बेक्यूम वेमेल, वेमेल लिफ्टिंग और लोवरिंग सिस्टम शामिल है, हाइड्रोलिंग सिस्टम, मल्टी फंक्शन लांस, वाल्व रेक्स/स्टेशन, इलेक्ट्रोड क्लेप यूनिट, इलेक्ट्रोड आमर्स का कंडक्टर, वाटर कूल्ड केबल, ए आर स्टेरिंग वाल्व रेक, लांस ट्रांसपोर्ट कार, रिफैक्ट्री लांस, हाइड्रोलिक सिलेंडर, लेडल रूफ लिफ्टिंग सिलेंडर, लूत्रिकेशन प्रणाली, सक्शन हूड, डम्पर, वाइब्रो फीडर, वेडंग होपर, वायर फिडिंग प्रणाली, इलेक्ट्रोड निपिलिंग स्टेड, क्रेन, होइस्ट, तापमान और सेम्पलिंग टिप्स, लेडल स्टैंड, ई एस पी, डिडिक्टिंग हूड, रिफैक्ट्री, वेग फिल्टर, क्रेन इत्यादि।	50%
11	सतत कास्टिंग उपकरण	लाइले टरेट, लेडल कवर मेनिपुलेटर, लेडल शारउड मेनिपुलेटर, टनडिस कार, कंटिन्यूअस टनडिस टेम्पेचर मेजरमेंट सिस्टम, टनडिस स्टोपर रूड मेकेनिजम, इमरजेंसी कट-आफ गेट, मोल्ड एसेम्बली, नोजल क्लिक चेंज डिवाइस, मोल्ड ओसीलेटर एंड ई एम एस सिस्टम, इलेक्ट्रो-मेगेनेटिक ब्रेकिंग सिस्टम, स्ट्रेड गाइड सेगमेंट, विदड्रावल एंड स्ट्रेघटेनिंग यूनिट (डब्ल्यू एस यू), रोल गेप चेकर इमरजेंसी टार्च कटर, टार्च कटिंग मशीन, डेबरर, मार्किंग मशीन, टेकेनोलोजी कंट्रोल सिस्टम एंड प्रोसेस मोडल, ब्लेक रिफैक्ट्रीज, स्ट्रेड गन्डे सेगमेंट, टनडिश, लाइले कवर, रोलर टेबल एंड आक्सीलिरीज, माल्ड एंड सेगमेंट मेनटेनेस इक्यूपमेंट टनडिस मेनटेनेस इक्यूपमेंट, ई एम बी आर सिस्टम	50%
12	फ्लेट मिल	लार्ज कास्टिंग एंड फाजिग लाइक मिल हाउसिंग, बेड प्लेट्स वर्क्स रोल, बेकअप रोल, इंड स्पिडल्स; रोलर टेबल, बेकअप रोल एंड वर्क रोल चक्स क्वाडलर/टेनशन रिल/अनक्वाइलर, ए जी सी सिलेंडर, शेयर्स, लेवेलेर्स, लाजेर वेल्डर, पेकेजिंग मशीन, नॉन कान्टेक्ट, गेज/प्रोफाइल गेज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, गियर बॉक्स, मिल मोटर्स	50%
13	लॉग मिल	मिलम हाउसिंग, बेड प्लेट, वर्क रोल, बेकअप रोल, स्पिनडेल्स; रोलर टेबल, कॉयलर /टेंशन रिल /अनकॉयलर, शेयर्स, बिल्डट वेल्डर, पेकेजिंग मशीन, नान-कान्टेक्ट गॉज/प्रोफाइल गॉज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, फिनिशिंग ब्लाक्स, गियर बॉक्स, मिल मोटर	50%

* परिशिष्ट ख में मर्दे निर्माण करने वाले इस्पात के लिए पूंजीगत सामानों की एक सांकेतिक सूची है। यह सूची विस्तृत नहीं है। इस्पात के निर्माण के लिए सभी पूंजीगत मालों पर 50% की न्यूनतम घरेलू मूल्यवर्धन आवश्यकता के साथ इस नीति के अंतर्गत खरीद बरीयता के लिए विचार किया जाएगा।

फार्म - 1

100/- रुपए के स्टाम्प पेपर पर दिए जाने के लिए लौह एवं इस्पात उत्पादों/पूँजीगत मालों में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन शपथ के लिए प्रपत्र :

मैं _____ सुपुत्र, सुपुत्री, पत्नी, _____ का निवासी _____
एतद् द्वारा निष्ठापूर्वक नीचे दिए गए अनुसार वचन देता हूँ और घोषण करता हूँ :

कि मैं अधिसूचना सं. : _____ के माध्यम से जारी किए गए भारत सरकार की नीति के नियम और शर्तों का पालन करने के लिए सहमत होऊंगा।

कि यहां नीचे दी गई सूचना मेरे सर्वोत्तम ज्ञान और विश्वास के अनुसार सही है और मैं घरेलू मूल्यवर्धन का आकलन करने के प्रयोजन से खरीद करने वाली एजेंसी के समक्ष संगत रिकार्ड प्रस्तुत करने का वचन देता हूँ।

कि सभी इनपुट्स के लिए घरेलू मूल्यवर्धन जिसमें उक्त लौह एवं इस्पात उत्पाद शामिल हैं का सत्यापन मेरे द्वारा कर लिया गया है और मैं उसमें किये गये दावों की सत्यता के लिए जिम्मेदार हूँ।

कि इसमें उल्लिखित उत्पाद घरेलू मूल्यवर्धन सही नहीं पाये जाने और मूल्यवर्धन के लिए निर्धारित मानदंडों को पूरा नहीं किये जाने की स्थिति में, घरेलू मूल्यवर्धन का आकलन करने के उद्देश्य से खरीद करने वाली एजेंसी के आकलन के आधार पर मैं 36 महीनों की अवधि के लिए किसी सरकारी निविदा से अयोग्य ठहराया जाऊंगा। इसके अलावा मैं इस प्रकार के आकलन की सभी लागतों का वहन करूंगा।

कि मैंने अधिसूचना संख्या _____ जिसमें सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता दी गई है, में संदर्भित सभी शर्तों का पालन किया है और यह कि खरीद करने वाली एजेंसी को एतद् द्वारा अधिकार दिया जाता है कि वह मेरे ई एम डी को जप्त करे। मैं यह भी वचन देता हूँ कि आकलन की लागत का भुगतान करूंगा और निविदा दस्तावेज में यथा उल्लिखित सभी दण्ड राशि का भुगतान करूंगा।

मैं 8 वर्षों की अवधि के लिए कम्पनी के रिकॉर्ड में निम्नलिखित सूचना रखने के लिए सहमत हूँ और किसी सांविधिक प्राधिकारी को सत्यापन के लिए इसे उपलब्ध कराऊंगा।

- i. बोली लगाने वाले का नाम और ब्यौरा (पंजीकृत कार्यालय, विनिर्माण इकाई का स्थान, कानूनी प्रतिष्ठान की प्रकृति)
- ii. वह तिथि जब यह प्रमाण पत्र जारी किया गया है।
- iii. लौह एवं इस्पात उत्पाद जिसके लिए इस प्रमाण पत्र को प्रस्तुत किया जाता है।
- iv. खरीद करने वाली एजेंसी जिसे यह प्रमाण पत्र प्रस्तुत किया जाता है।
- v. दावा की गई घरेलू मूल्यवर्धन की प्रतिशतता और क्या यह निर्धारित घरेलू मूल्यवर्धन के आरंभिक मूल्य को पूरा करता है।
- vi. विनिर्माता की इकाई का नाम और संपर्क विवरण
- vii. लौह और इस्पात उत्पादों की निवल बिक्री कीमत
- viii. संयंत्र तक भाड़ा, बीमा और रखरखाव
- ix. लौह एवं इस्पात उत्पादों का निर्माण करने के लिए उपयोग की जाने वाली इनपुट इस्पात (आयात किया गया) की सूची और कुल लागत मूल्य।
- x. इनपुट इस्पात जिसकी आपूर्ति घरेलू स्तर पर की जाती है की सूची और कुल लागत
- xi. कृपया यदि इनपुट इन हाऊस नहीं हो तब आपूर्तिकर्ताओं से प्राप्त घरेलू मूल्यवर्धन प्रमाणपत्र संलग्न करें।
- xii. आयात किये गये इनपुट इस्पात के लिए, सी आई एफ मूल्य, शुल्क और करों, पोर्ट पर उतारने से संबंधित प्रभारों और अंतर्देशीय भाड़े की लागत के ब्यौरे के साथ भारतीय पोर्ट पर पहुंच कीमत।

(प्रतिष्ठान/कंपनी का नाम) के लिए और उसकी ओर से

अधिकृत हस्ताक्षरकर्ता (निदेशक बोर्ड द्वारा विधिवत अधिकृत किये जाने के लिए)

<नाम, पदनाम और संपर्क सं. की प्रविष्टि करें>

MINISTRY OF STEEL

NOTIFICATION

New Delhi, the 29th May, 2019

G.S.R. 385(E).—The revised Policy for providing preference to domestically manufactured Iron & Steel Products in Government procurement is hereby published for general information.

[F. No.3(2)/2018-IDD]

RASIKA CHAUBE, Addl. Secy.

POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT- REVISED, 2019**1 Background**

- 1.1 This policy provides preference to Domestically Manufactured Iron and Steel Products (DMI&SP) in Government procurement.
- 1.2 The policy is applicable to iron & steel products as provided in Appendix A and capital goods for manufacturing iron & steel products in Appendix B, produced in compliance to prescribed quality standards, as applicable.
- 1.3 The policy is applicable to every Ministry or Department of Government and all agencies/entities under their administrative control and to projects funded by these agencies for purchase of iron & steel products for government projects. However, this policy shall not apply for purchase of iron & steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.

2 Definitions

- 2.1 **Bidder** may be a domestic/ foreign manufacturer of iron & steel or their selling agents/ authorized distributors/ authorized dealers/ authorized supply houses or any other company engaged in the bidding of projects funded by Government agencies.
- 2.2 **Domestically Manufactured Iron & Steel Products (DMI&SP)** are those iron and steel products which are manufactured by entities that are registered and established in India, including in Special Economic Zones (SEZs). In addition, such products shall meet the criteria of domestic minimum value-addition as mentioned in Appendix A.
- 2.3 **Domestic Manufacturer** is a manufacturer of iron & steel products conforming to guidelines in section 7 and confirming to the definition of 'manufacturer' as per Central Excise Act.
- 2.4 **Government** for the purpose of the Policy means Government of India.
- 2.5 **Government agencies** include Government PSUs, Societies, Trusts and Statutory bodies set up by the Government.
- 2.6 **MoS** shall mean Ministry of Steel, Government of India.
- 2.7 **Net Selling Price** shall be the invoiced price excluding net domestic taxes and duties
- 2.8 **Semi-Finished Steel** shall mean Ingots, billet, blooms and slabs, which can be subsequently processed to finished steel.
- 2.9 **Finished Steel** shall mean Flat and Long products, which can be subsequently processed into manufactured items.
- 2.10 **L1** means the lowest tender or the lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.
- 2.11 **Margin of purchase preference** means the maximum extent to which the price quoted by a domestic supplier may be above L1 for the purpose of purchase preference. In case of DMI&SP policy, the margin of purchase preference shall be 20% for items in Appendix B.
- 2.12 **Iron & Steel Product(s)** shall mean such iron and steel product(s) which are mentioned in Appendix A.
- 2.13 **Domestic value addition** shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in percent. The 'domestic value addition' definition shall be in line with the DPIIT (formerly DIPP) guidelines, and shall be suitably amended in case of any changes by DPIIT in the future. For the purpose of this policy document, domestic value addition and local content have been used interchangeably.

3 Exclusions

3.1 Waivers shall be granted by the Ministry of Steel to all such Government procurements subject to the below conditions.

3.1.1 Where specific grades of steel are not manufactured in the country, or

3.1.2 Where the quantities as per the demand of the project cannot be met through domestic sources

The exclusion requests shall be submitted to the Standing Committee along with sufficient proof of unavailability of domestically manufactured iron & steel products

4 Standing Committee

A Standing Committee under the Ministry of Steel (MoS) to be chaired by the Secretary (Steel), shall be constituted to oversee the implementation of the policy. The Committee shall comprise of experts drawn from Industry / Industry Association / Government Institution or Body / Ministry of Steel (MoS). The said Committee in MoS shall have the mandate for the following:

4.1 Monitoring the implementation of the policy

4.2 Review and notify the list of Iron & Steel products and the domestic value addition requirement criteria as mentioned at Appendix A and Appendix B.

4.3 Issue necessary clarifications for implementation of the policy including grant of exclusions to procuring agencies as per section 3

4.4 Constitute a separate committee to carry out grievance redressal

4.5 The Standing Committee shall submit its recommendations for approval to Ministry of Steel.

5 Notifying Iron & Steel Products Procured by Government

5.1 The following guidelines may be used for identifying and notifying the aforementioned products under the policy:

5.1.1 The policy is applicable to iron & steel products as provided in Appendix A and to capital goods for manufacturing iron & steel products in Appendix B.

5.1.2 Appendix A contains list of iron & steel products which are to be exclusively domestically manufactured and cannot be imported without the approval of the Ministry of Steel

5.1.3 Appendix B contains a list (non-exhaustive) of capital goods for which purchase preference shall be provided to domestically manufactured capital goods, if their quoted price falls within 20% of the price quoted for corresponding imported capital good.

5.1.4 The objective of the policy is to notify all iron & steel products which are procured by Government Agencies for government projects and not with a view to commercial resale or with a view to use in the production of products for commercial sale.

5.1.5 The policy is applicable to all projects funded by Ministry or Department of Government and all agencies/entities under their administrative control for purchase of iron & steel products.

5.1.6 The policy shall be applicable to projects where the procurement value of iron and steel products is greater than Rs. 25 crores. The policy shall also be applicable for other procurement (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 25 crores.

5.1.7 The policy is applicable to purchase of iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of Ministry or Department of Government or their PSUs.

5.1.8 Analysis of the availability of various grades of domestic iron and steel products needs to precede for notification under the policy. Only those iron & steel products, in respect of which at least one domestic manufacturer exists, shall be notified. Consultation may be carried out by the Standing Committee.

5.1.9 The policy is applicable to capital goods for manufacturing iron & steel products in Appendix B produced in compliance to prescribed quality standards, as applicable.

5.1.10 Policy for domestic procurement of capital goods for manufacturing iron and steel products is applicable to all public sector steel manufacturers and all agencies/entities under their administrative control for purchase of capital goods for manufacturing iron & steel products, not with a view to commercial resale.

5.1.11 The policy is applicable to purchase of capital goods for manufacturing iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of public sector steel manufacturers and all agencies/entities under their administrative control

- 5.1.12 Government agencies which are involved in procurement of iron and steel products, and capital goods for manufacturing of iron and steel products, in cases where the iron and steel products are not mentioned in Appendix A and Appendix B, shall provide description and technical specifications of the product along with prescribed standards to the Standing Committee. The Standing Committee will act as per mandate in section 3 and section 4.
- 5.2 The Ministry of Steel (MoS) would notify iron & steel products along with the minimum prescribed domestic value addition, furnished at Appendix A.
- 5.3 The policy guidelines on capital goods for manufacturing iron & steel products shall be applicable to public sector steel manufacturers for all purchases of capital goods for manufacturing iron & steel products in Appendix B, irrespective of the project size.
- 5.4 Minimum domestic value addition requirement suggested for iron and steel products in Appendix A, and for capital goods for manufacturing iron and steel products in Appendix B have been decided on the basis of factors such as domestic supplier base, number of suppliers and import to consumption ratio.
- 5.5 The domestic value addition requirement norm shall be so calibrated that it reflects the average/above average manufacturing capability of the domestic industry for the iron & steel products at a point of time. This shall be suitably reviewed by the Standing Committee from time to time and amended, if required with the approval of Ministry of Steel.

6 Tender procedure for procurement by government and government agencies

- 6.1 The procuring/ Government agencies shall follow standard procurement procedures, in accordance with instructions of Ministry of Finance and CVC while adhering to DMI&SP. The policy shall come into effect from the date of its notification in all tenders where price bid have not been opened.
- 6.2 The tender document, for procurement of both Goods as well as for EPC contracts, should explicitly outline the qualification criteria for adherence to minimum prescribed domestic value addition by the bidder for iron and steel products and capital goods for manufacturing iron & steel products(as indicated in Appendix A and Appendix B)
- 6.3 In supporting the growth of domestic products, the target of domestic value addition in iron and steel business activities has been set as contained in **Appendix A and Appendix B**.
- 6.4 For iron and steel products in Appendix A, the procurement process shall be open only to the manufacturers / suppliers having the capability of meeting / exceeding the domestic value addition targets. Manufacturers / suppliers not meeting the domestic value addition targets are not eligible to participate in the bidding.
- 6.5 In case of Appendix B items, if in the opinion of the procuring company, the tenders (procured quantity) cannot be divided in the prescribed ratio of 50:50, then they shall have the right to award contract to the eligible domestic manufacturer for quantity not less than 50%, as may be divisible.
- 6.6 In continuation to the above clause, for Appendix B items, if the tendered item is non divisible, (to be included in the tender document by procuring company) the contract can be awarded to the eligible domestic manufacturer for the entire quantity.
- 6.7 In case of Appendix B items, if none of the eligible manufacturers meeting domestic value addition requirements match the L1 bid, the original bidder holding L1 bid shall secure the order for full value of procurement.
- 6.8 The bidders who are selling agents/ authorized distributors/ authorized dealers/ authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of the domestic manufacturers under the policy. However, this shall be subject to the following conditions:
- 6.8.1 The bidder shall furnish the authorization certificate issued by the domestic manufacturer for selling domestically manufactured iron & steel products.
- 6.8.2 In case the procurement is covered under Appendix A of the DMI&SP policy, the bidder shall furnish the Affidavit of self-certification issued by the domestic manufacturer to the procuring agency declaring that the iron & steel products is domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.3 In case the procurement is covered under Appendix B of the DMI&SP policy, the bidder shall furnish the certification issued by the statutory auditor to domestic manufacturer declaring that the capital goods to be used in Iron & Steel industry are domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.4 It shall be the responsibility of the bidder to furnish other requisite documents required to be issued by the domestic manufacturer to the procuring agency as per the policy.

7 Domestic value addition requirement

- 7.1 Minimum domestic value addition requirement to qualify the product as a domestically manufactured iron & steel product or a Capital good are mentioned in Appendix A and B.
- 7.2 Domestic value addition shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in per cent.
- 7.2.1 In case the iron & steel products are made using domestic input steel (semi-finished/ finished steel), invoices of purchases from the actual domestic producers along with quantities purchased and the other related documents must be furnished to the procuring Government agency.
- 7.2.2 In case the iron & steel products have imported input steel, the invoices of purchases from the actual producers along with quantities purchased and the other related documents must be furnished separately. To derive the extent of domestic value addition, the weighted average of both (imported & domestic) input steel shall be considered to ensure that the minimum stipulated domestic value addition requirement of the policy is complied with.
- 7.3 It is recommended that each bidder participating in the tender process should calculate the domestic value addition using the below formula below so as to ensure the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy.

For Iron and Steel products*% Domestic value addition*

$$= \frac{\text{Net selling price of final product} - \text{Landed cost of imported iron or steel at plant}}{\text{Net selling price of final product}} \times 100\%$$

For Capital Goods*% Domestic value addition*

$$= \frac{\text{Net selling price of final product} - \text{Landed cost of imported input materials at plant}}{\text{Net selling price of final product}} \times 100\%$$

8 Certification and audit

- 8.1 For products in Appendix A, each domestic manufacturer shall furnish the Affidavit of self-certification to the procuring Government agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. For capital goods in Appendix B, the bidder shall furnish the certification issued by the statutory auditor to the domestic manufacturer declaring that the capital goods are domestically manufactured in terms of the domestic value addition prescribed. The bidders who are sole selling agents / authorized distributors / authorized dealers / authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of domestic manufacturers under the policy. The bidder shall furnish the Affidavits of self-certification issued by the domestic manufacturers and the certifications issued by the statutory auditors, to the procuring agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. The Affidavit of self-certification shall be furnished in **Form I** attached to these guidelines.
- 8.2 It shall be the responsibility of the domestic manufacturer to ensure that the products so claimed are domestically manufactured in terms of the domestic value addition prescribed for the product. The bidder shall also be required to provide a domestic value addition certificate on half-yearly basis (Sep 30 and Mar 31), duly certified by the Statutory Auditors of the domestic manufacturer, that the claims of domestic value addition made for the product during the preceding 6 months are in accordance with the Policy. Such certificate shall be filed within 60 days of commencement of each half year, to the concerned Government agencies and shall continue to be filed till the completion of supply of the said products.
- 8.3 The procuring agency shall accept the Affidavit of self-certification regarding domestic value addition in a steel product submitted by a bidder. It shall not normally be the responsibility of procuring agency to verify the correctness of the claim. The onus of demonstrating the correctness of the same shall be on the bidder when asked to do so.
- 8.4 In case a complaint is received by the procuring agency or the concerned Government Agency against the claim

of a bidder regarding domestic value addition in iron & steel products, the procuring agency shall have full rights to inspect and examine all the related documents and take a decision. In case any clarification is needed, matter may be referred to MoS with a request for technical assistance.

- 8.5 Any complaint referred to the Government Agency shall be disposed off within 4 weeks of the reference along with submission of all necessary documents. The bidder shall be required to furnish the necessary documentation in support of the domestic value addition claimed in iron & steel products to the Government Agency within 2 weeks of filing the complaint.
- 8.6 In case, the matter is referred to the Ministry of Steel, the grievance redressal committee setup under the MoS shall dispose of the complaint within 4 weeks of its reference and receipt of all documents from the bidder after taking in consideration, the view of the Government Agency. The bidder shall be required to furnish the necessary documentation in support of domestic value addition claimed in iron & steel products to the grievance redressal committee under MoS within 2 weeks of the reference of the matter. If no information is furnished by the bidder, the grievance redressal committee may take further necessary action, in consultation with Government Agency to establish bonafides of claim.
- 8.7 The cost of assessing the prescribed extent of domestic value addition shall be borne by the procuring agency if the domestic value addition is found to be correct as per the certificate. However, if it is found that the domestic value addition as claimed is incorrect, the cost of assessment will be payable by the bidder who has furnished an incorrect certificate. The manner of enforcing the same shall be defined in the tender document.

9 Sanctions

- 9.1 Each Government Agency shall clearly define the penalties, in case of wrong declaration by the bidder of the prescribed domestic value addition, in the tender document. The penalties may include forfeiting of the EMD, other financial penalties and blacklisting of such manufacturer/ service provider.
- 9.2 In case of reference of any complaint to MoS by the concerned bidder, there would be a complaint fee of Rs. 10 Lakh or 0.2 % of the value of the DMI&SP being procured (subject to a maximum of Rs. 20 Lakh), whichever is higher, to be paid by Demand Draft deposited with the grievance redressal committee under MoS along with the complaint by the complainant. In case, the complaint is found to be incorrect, the Government Agency reserves the right to forfeit the said amount. In case, the complaint is found to be substantially correct, deposited fee of the complainant would be refunded without any interest.

10 Implementation monitoring by Ministry of Steel

- 10.1 The policy provisions shall be applicable for a period of 5 years from the date of publication. The policy period may further be extended at the discretion of Ministry of Steel.
- 10.2 MoS shall be the nodal ministry to monitor the implementation of the policy.
- 10.3 All applicable agencies under DMI&SP policy shall ensure implementation of the policy and shall annually, in the month of June, send a declaration indicating the extent of compliance to the policy and reasons for noncompliance thereof, during the preceding financial year.

Reference to Ministry of Steel

In case of a question whether an item being procured is a DMI&SP to be covered under the policy, the matter would be referred to the Ministry of Steel for clarification.

Appendix A - Exclusive for domestically manufactured products

Sl. No.	Indicative list of Iron & Steel Products	Applicable HS code	Minimum domestic value addition requirement
1	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, hot rolled, not clad, plated or coated	7208	50%
2	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, cold rolled (cold-reduced), not clad, plated or coated	7209	50%
3	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, clad, plated or coated	7210	50%

4	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, not clad, plated or coated	7211	35%
5	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, clad, plated or coated	7212	35%
6	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy steel	7213	35%
7	Other bars and rods of iron or non alloy steel, not further worked than forged, hot rolled, hot-drawn or hot-extruded, but including those twisted after rolling	7214	35%
8	Other bars and rods of iron or non alloy steel	7215	35%
9	Angles, shapes and sections of iron or non-alloy steel	7216	35%
10	Wire of iron or non-alloy steel	7217	50%
11	Flat-rolled products of stainless steel, of a width of 600 mm or more	7219	50%
12	Flat-rolled products of stainless steel, of a width of less than 600 mm	7220	50%
13	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel	7222	50%
14	Wire of other alloy steel	7229	35%
15	Rails, railway or tramway track construction material of iron or steel	7302	50%
16	Tubes, pipes and hollow profiles, of cast iron	7303	35%
17	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	7304	35%
18	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406.4 mm, of iron or steel	7305	35%
19	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	7306	35%
20	Tube or pipe fittings (for example, connectors/couplings, elbow sleeves), of iron or steel	7307	35%
21	Bars and rods, hot-rolled, in irregularly wound coils, of stainless steel	7221	35%
22	Wire of stainless steel	7223	35%
23	Flat-rolled products of other alloy steel, of a width of 600 mm or more, including electrical steel	7225	35%
24	Flat-rolled products of other alloy steel, of a width of less than 600 mm, including electrical steel	7226	35%
25	Bars and rods, hot-rolled, in irregularly wound coils, of other alloy steel	7227	15%
26	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or nonalloy steel	7228	35%
27	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	7301	15%
28	Structures (excluding prefabricated buildings of heading 9406) and parts of structures	7308	15%
29	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 whether or not lined or heatinsulated, but not fitted with mechanical or Thermal equipment	7309	15%

30	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 L, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	7310	15%
31	Containers for compressed or liquefied gas, of iron or steel	7311	15%
32	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	7312	15%
33	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel	7313	15%
34	Grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel	7314	15%
35	Chain and parts thereof, of iron or steel	7315	15%
36	Anchors, grapnels and parts thereof, of iron or steel	7316	15%
37	Articles of iron and steel	7317	15%
38	Articles of iron and steel	7318	15%
39	Articles of iron and steel	7319	15%
40	Springs and leaves for springs, of iron or steel	7320	15%
41	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel	7321	15%
42	Radiators for central heating, not electrically heated, and parts thereof, of iron or steel; air heaters and hot air distributors, not electrically heated, incorporating a motor-driven fan or blower, and parts thereof, of iron or steel	7322	15%
43	Tables and similar household articles and parts thereof, of iron or steel	7323	15%
44	Sanitary ware and parts thereof, of iron or steel	7324	15%
45	Other cast articles of iron or steel	7325	15%
46	Electrical steel and other articles of iron or steel	7326	15%
47	Railway or tramway passenger coaches, not self-propelled	8605	50%
48	Railway or tramway goods vans and wagons, not self-propelled	8606	50%
49	Parts of railway or tramway locomotives or rolling-stock; such as bogies, bissel-bogies, axles and forged wheels, and parts thereof	8607	50%

Products included in descriptions are indicative; all products under the specified HS codes are included as part of the appendix

Appendix B

Indicative list of capital goods(non-exhaustive) for manufacturing iron & steel products

Sl. No.	Plant shop	Capital goods	Minimum domestic value addition requirement
1	Raw material handling system	Apron feeder, barrel couplings, heavy duty bearings, hydraulic disc brakes, tanker & container for powdered materials, conveyor belt for pipe conveyors, high angle conveyor system, crushers, crane rail lubrication system, four girder EOT Crane, crane weighing system, crane air conditioning, fluid couplings, fork lift trucks, hydraulic motors, hydraulic system, locking assembly (friction grip), load cells, level sensors, pipe	50%

		conveyor system, plough/ paddle feeder, pneumatic transportation - dense & lean phase, reclaimers, radio remote control, rail fixing arrangements (special), rapid/ flood loading system, stackers, special screen, slew ring bearings, tippers, transfer cars, tongs (special), vibration, isolation system (spring damper), wagon tippers, wagon loaders	
2	Mineral beneficiation (iron ore and coal) equipment	Industrial crushers, grinding mills, conventional screens, slurry pumps, hydrate thickeners, filters, hydroclones	50%
3	Coke oven	Coke Oven Silica Refractory, Anchorage System, Waste gas valve with branch pipe, Flash Plate, Door Frame, door body, Minor Casting: Gooseneck, Valve box, AP Lid, Charging & inspection hole lid and frame Reversing mechanism, Centralised lubrication system, Hydrojet Door Cleaning Mechanism, Spillage code conveyor system, skip hoist, Door Lowering Rack, Isolation/ Reversing Cocks, Level II automation, Oven machines	50%
4	By-product plant	Primary Gas Cooler, Electrostatic Tar Precipitator, H ₂ S, NH ₃ & Naphthalene Scrubber, Combi Stripper, Flushing Liquor Pump, Claus Kiln, Claus reactors, Waste Heat Boilers, Decanters	50%
5	Sinter plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, Hot sinter breaker and Grizzly, Dip rail & running rail, Impeller assembly for Process fan, Drive assembly of Sinter machine, Hi-intensity Mixer & Noduliser	50%
6	Pellet plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, running rail, Vertical roller mill, Impeller assembly for Process fan, Drive assembly of Indurating machine, Hi-intensity Mixer, Balling disc, Single deck roller screen and Double deck roller screen	50%
7	Blast furnace equipment	Bell less top system with Bleeder valve, SG Iron stove coolers, Copper stove coolers, Stock level indicator (Radar Type), Mud gun, Drilling machine and Manipulator, Gas Cleaning Plant system, Top Recovery Turbine system including its by-pass valve, De-bricking Machine, Re-railing equipment, PCI system, Grinding mill for PCI, Stock level indicator, Tuyere Stock assembly, Waste Heat Recovery system, BF & Hot Blast Stoves Technological Valves, Above Burden probes, Slag granulation unit, Tuyere & Tuyere cooler, Torpedo Ladle Car, BF hearth refractory	50%
8	Direct reduction plant equipment	Charge distributor, Upper & lower seal leg, Reformer & Re-cuperator system, Burden feeders, Turbo-expander, Process Gas Compressor, Seal gas compressors & bottom seal gas compressors, Seal gas generators & driers, Process Gas Heater, CO ₂ removal plant	50%
9	Basic oxygen furnace equipment	Main and Maintenance equipment comprising of converter, gunning machine, Refractory/ slag monitoring device, converter vessel, trunnion ring and suspension system, trunnion bearings and housing, Converter bull gear unit and tilt drive system, Rotary joint for converter, bottom stirring system, Lance body with clamping, Lance copper tips, Valve stations for oxygen blowing/ bottom stirring, Sub-lance system, Off gas analyzer with process module i.e. Process software/ hardware, container lab Measurement probes, Switch over station, ID fan for primary gas, Hot metal and steel ladle, Ladle Transfer car, Ladle maintenance equipment, Slag pot, Slag pot transfer car, Scrap boxes, Scrap Transfer car, Lance carriage, Lance guide, Crane & hoist, Lance hoist & trolley, Lance tilting device, Traverse for lifting lances, Bunker of various sizes, Bin Vibrator, Weighing Hopper, Maintenance stands, De dusting suction hood, Teeming/HM, ladle relining stands, Stand Cooling stack inspection device, Hood traverse carriage, Refractories, Bypass & isolation valves, Flare stack & ignition system, Scrubbing tower	50%

		shell - Wet gas cleaning system, Dog house, Ladle drier, ladle pre-heater, ladle cooler, Fume collection hoods, Clean gas stack, Dust silo, Weigh Bridge, Slag retaining device	
10	Electric arc furnace	Furnace proper (includes furnace lower shell, upper shell and roof, Tilting platform, Furnace Gantry) and transformer, Electrode regulation system, Hydraulic system, Refractories, Parts of Level I & Level II Automation system. LF - water cooled ladle roof, electrode mast and arms, electrode regulating system, wire feeding system, Bottom inert gas stirring Valve stand for porous plug and top lance, Emergency lance mechanism, Lance carriage system with drive unit, Automatic temperature, sampling & bath level / O2 measurement, Temp. & oxygen immersion lance, lance carriage system with drive unit, Hydraulic system, Refractories, Ladle roof Delta portion, RH proper (includes Ladle transfer car, vacuum vessel, Vessel lifting & lowering system. Hydraulic system, Multi Function lance, Valve racks/station, Electrode clamp unit, conductor of electrode arms, water cooled cable, A R stirring valve rack, lance transport car, Refractory lance, Hydraulic cylinder, Ladle roof lifting cylinder, Lubrication system, Suction hood, damper, Vibro feeder, weighing hopper, wire feeding system, Electrode nipping stand, Cranes, hoist, Temperature & sampling tips, ladle stands, ESP, Deducing hoods, Refractories, bag filter, Cranes etc.	50%
11	Continuous casting equipment	Ladle turret, ladle cover manipulator, Ladle Shroud manipulator, tundish car, Continuous tundish temperature measurement system, Tundish stopper rod mechanism, emergency cut-off gate, mould assembly, Nozzle quick change device, mould oscillator and EMS system. Electro-Magnetic braking system, Strand guide segment, Withdrawal & Straightening unit (WSU), Roll gap checker, Emergency torch cutter, Torch cutting machine, Deburrer, Marking machine, Technological control system & process models, Black Refractories, strand gunde segment, tundish, ladle cover, roller tables & auxiliaries, mould& segment maintenance equipments, tundish maintenance equipments, EMBR system	50%
12	Flat product mills	Large castings and forgings like mill housing, bed plates, work rolls, backup rolls, end spindles; roller tables, backup roll and work roll chucks, coilers / tension reels / uncoilers, AGC cylinders, shears, levelers, lazer welders, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, gear boxes, mill motors	50%
13	Long product mills	Mill housing, bed plates, work rolls, backup rolls, spindles; roller tables, coilers / tension reels / uncoilers, shears, billet welder, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, finishing blocks, gear boxes, mill motors	50%

**Items in appendix B are an indicative list of capital goods for manufacturing steel, the list is not exhaustive. All capital goods for steel manufacturing shall be considered for purchase preference under the policy with a minimum domestic value addition requirement of 50%*

Form-1

Format for Affidavit of Self Certification regarding Domestic Value Addition in Iron & Steel Products/capital goods to be provided on Rs.100/- Stamp Paper Date:

I _____ S/o, D/o, W/o, _____ Resident of _____ hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the policy of Government of India issued vide Notification No: _____.

That the information furnished hereinafter is correct to the best of my knowledge and belief and I undertake to produce relevant records before the procuring agency (ies) for the purpose of assessing the domestic value addition.

That the domestic value addition for all inputs which constitute the said iron & steel products has been verified by me and I am responsible for the correctness of the claims made therein.

That in the event of the domestic value addition of the product mentioned herein is found to be incorrect and not meeting the prescribed value-addition criteria, based on the assessment of procuring agency (ies) for the purpose of assessing the domestic value-addition, I will be disqualified from any Government tender for a period of 36 months. In addition, I will bear all costs of such an assessment.

That I have complied with all conditions referred to in the Notification No. _____ wherein preference to domestically manufactured iron & steel products in Government procurement is provided and that the procuring agency (ies) is hereby authorized to forfeit and my EMD. I also undertake to pay the assessment cost and pay all penalties as specified in the tender document.

I agree to maintain the following information in the Company's record for a period of 8 years and shall make this available for verification to any statutory authority.

- i. Name and details of the Bidder (Registered Office, Manufacturing unit location, nature of legal entity)
- ii. Date on which this certificate is issued
- iii. Iron & Steel Products for which the certificate is produced
- iv. Procuring agency to whom the certificate is furnished
- v. Percentage of domestic value addition claimed and whether it meets the threshold value of domestic value addition prescribed
- vi. Name and contact details of the unit of the manufacturer (s)
- vii. Net Selling Price of the iron & steel products
- viii. Freight, insurance and handling till plant
- ix. List and total cost value of input steel (imported) used to manufacture the iron & steel products
- x. List and total cost of input steel which are domestically sourced.
- xi. Please attach domestic value addition certificates from suppliers, if the input is not in house.
- xii. For imported input steel, landed cost at Indian port with break-up of CIF value, duties & taxes, port handling charges and inland freight cost.

For and on behalf of (Name of firm / entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>



सत्यमेव जयते

भारत का राजपत्र

The Gazette of India

सी.जी.-डी.एल.-अ.-04012021-224171
CG-DL-E-04012021-224171

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)
PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 1]
No. 1]

नई दिल्ली, शुक्रवार, जनवरी 1, 2021/पौष 11, 1942
NEW DELHI, FRIDAY, JANUARY 1, 2021/PAUSHA 11, 1942

इस्पात मंत्रालय

अधिसूचना

नई दिल्ली, 31 दिसम्बर, 2020

सा.का.नि. 1(अ).—सरकारी प्रापण में देशी निर्मित लोहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने हेतु नीति (डीएमआई एंड एसपी नीति) - परिशोधित, 2019 में संशोधनों को आम सूचना के लिए एतद्वारा प्रकाशित किया जाता है:

"सं. S-13026/1/-2020-आईडीडी

इस्पात मंत्रालय

आईडी प्रभाग

उद्योग भवन,

नई दिल्ली 31 दिसंबर, 2020

विषय : सरकारी खरीद में घरेलू निर्मित लोहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने की नीति-परिशोधित, 2019-में संशोधन/परिवर्धन

सरकारी खरीदमें स्वदेशी निर्मित लोहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने की नीति-परिशोधित, 2019-(डीएमआईएंडएसपी परिशोधित, 2019) में निम्नलिखित संशोधन/ परिवर्धन तत्काल प्रभाव से लागू हैं। ये संशोधन/

परिवर्धन ऐसी निविदा या खरीद पर लागू नहीं होंगे जिनके लिए निविदा आमंत्रित करने वाला नोटिस अथवा अन्य प्रकार का खरीद अधिवाचन इस अधिसूचना के जारी होने से पूर्व जारी हुआ है।

1 – संशोधन:तालिका 1

क्रम सं.	डीएमआईएंडएसपी परिशोधित 2019 ,में मौजूदा खंड	डीएमआईएंडएसपी परिशोधित 2019 ,में संशोधित खंड
1	<p>खंड 1.3:</p> <p>यह नीति सरकार के प्रत्येक मंत्रालय अथवा विभाग और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों तथा सरकारी परियोजनाओं के वास्ते लौह एवं इस्पात उत्पादों की खरीद के लिए इन एजेंसियों द्वारा वित्तपोषित परियोजनाओं पर लागू है। हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।</p>	<p>खंड 1.3:</p> <p>यह नीति सरकार के प्रत्येक मंत्रालय अथवा विभाग और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों तथा सरकारी परियोजनाओं के वास्ते लौह एवं इस्पात उत्पादों की खरीद के लिए इन एजेंसियों द्वारा वित्त पोषित परियोजनाओं पर लागू है। केन्द्रीय क्षेत्र की सभी योजनाएं (सीएस)/ केन्द्रीय प्रायोजित योजनाएं (सीएसएस) जिनके लिए राज्यों और स्थानीय निकायों द्वारा खरीद की जाती है, इस नीति की परिधि में आएंगी यदि उस परियोजना/योजना को भारत सरकार द्वारा पूर्णतया/ अंशतः वित्तपोषित किया जाता है।</p> <p>हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।</p>
2	<p>खंड 2.13:</p> <p>घरेलू मूल्यवर्धन निवल बिक्री कीमत(निवलघरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिससे प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण संयंत्र(सभी सीमा शुल्कों सहित) में आयात की गई इनपुट सामग्री की पहुंच लागत घटाई गई हो, 'घरेलू मूल्यवर्धन'परिभाषा डी पी आई आई टी (पूर्व में डी आई पी पी) के दिशानिर्देशों के अनुरूपहोगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जायेगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलूमूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।</p>	<p>खंड 2.13:</p> <p>घरेलू मूल्यवर्धन का तात्पर्य है- भारत में वर्धित मूल्य की राशि जो खरीदी/बेची जाने वाली वस्तुओं का कुल मूल्य होगा (निवल घरेलू अप्रत्यक्ष करों को छोड़कर)- खरीदी/बेची जाने वाली वस्तुओं के कुल मूल्य के समानुपात के रूप में प्रतिशत में मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित)। घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिससे प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण संयंत्र (सभी सीमा शुल्कों सहित) में आयात की गई इनपुट सामग्री की पहुंच लागत घटाई गई हो, 'घरेलू मूल्यवर्धन'परिभाषा डी पी आई आई टी (पूर्व में डी आई पी पी) के दिशानिर्देशों के अनुरूप होगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जायेगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलू मूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।</p>

<p>3 खंड 5.1.5</p> <p>यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा वित्त-पोषित सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।</p>	<p>खंड 5.1.5</p> <p>यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा वित्त पोषित सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है। केन्द्रीय क्षेत्र की सभी योजनाएं (सीएस)/ केन्द्रीय प्रायोजित योजनाएं (सीएसएस) जिनके लिए राज्यों और स्थानीय निकायों द्वारा खरीद की जाती है, इस नीति की परिधि में आएंगी यदि उस परियोजना/योजना को भारत सरकार द्वारा पूर्णतया/अंशतः वित्तपोषित किया जाता है</p>
<p>4 खंड 5.1.6</p> <p>यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों का खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो। यह नीति अन्य खरीद (गैर परियोजना) के लिए भी लागू होगी जहां उस सरकारी संगठन के लिए लौह एवं इस्पात उत्पादों का वार्षिक खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो।</p>	<p>खंड 5.1.6</p> <p>यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों (डीएमआई एंड एसपी नीति का परिशिष्ट-क) का खरीद मूल्य 5लाख रुपए से अधिक होता हो। यह नीति अन्य खरीद (गैर परियोजना) के लिए भी लागू होगी जहां उस सरकारी संगठन के लिए लौह एवं इस्पात उत्पादों का वार्षिक खरीद मूल्य 5 लाख करोड़ रुपए से अधिक होता हो। तथापि, प्रापण इकाइयों द्वारा इस बात को सुनिश्चित किया जाएगा कि इस नीति के प्रावधानों से बचने के प्रयोजनार्थ खरीद का विभाजन न किया जाए।</p>
<p>5 खंड 7.2</p> <p>घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजककीमत) होगी जिसमें से प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण करने वाले संयंत्र में आयात की गई इनपुट सामग्री की पहुंच लागत (सभी सीमा शुल्कों को शामिल करते हुए) घटाई जायेगी।</p>	<p>खंड 7.2</p> <p>घरेलू मूल्यवर्धन का तात्पर्य है- भारत में वर्धित मूल्य की राशि जो खरीदी/बेची जाने वाली वस्तुओं का कुल मूल्य होगा (निवल घरेलू अप्रत्यक्ष करों को छोड़कर)- खरीदी/बेची जाने वाली वस्तुओं के कुल मूल्य के समानुपात के रूप में प्रतिशत में मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित)।</p>
<p>6 खंड 7.3</p> <p>यह सिफारिश की जाती है कि निविदा की प्रक्रिया में भाग लेने वाले प्रत्येक बोली लगाने वाले को नीचे दिए गए सूत्र का उपयोग करते हुए घरेलू मूल्यवर्धन की गणना करनी चाहिए ताकि यह सुनिश्चित किया जा सके कि दावा किये गये घरेलू मूल्यवर्धन इस नीति के न्यूनतम निर्धारित घरेलू मूल्यवर्धन के अनुरूप है।</p> <p>लौह एवं इस्पात उत्पादों के लिए % घरेलू मूल्यवर्धन</p> <p>अंतिम उत्पाद की निवल बिक्री कीमत- संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत----- X100%</p>	<p>खंड 7.3</p> <p>यह सिफारिश की जाती है कि प्रापण करने वाली सरकारी एजेंसी/ निविदा की प्रक्रिया में भाग लेने वाले प्रत्येक बोली लगाने वाले को नीचे दिए गए सूत्र का उपयोग करते हुए घरेलू मूल्यवर्धन की गणना करनी चाहिए ताकि यह सुनिश्चित किया जा सके कि दावा किये गये घरेलू मूल्यवर्धन इस नीति के न्यूनतम निर्धारित घरेलू मूल्यवर्धन के अनुरूप है।</p> <p>लौह एवं इस्पात उत्पादों तथा पूंजीगत माल के लिए % घरेलू मूल्यवर्धन</p> <p>खरीदी/बेची जाने वाली वस्तु का कुल मूल्य (निवल घरेलू अप्रत्यक्ष करों को छोड़कर - मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित) ----- -----X100%</p>

अंतिम उत्पाद की निवल ब्रिकी कीमत पूँजीगत माल के लिए % घरेलू मूल्यवर्धन अंतिम उत्पाद की निवल ब्रिकी कीमत- संयंत्र में आयात किये गये इनपुट सामग्री की पहुंच लागत-----X 100% अंतिम उत्पाद की निवल ब्रिकी कीमत	खरीदी/बेची जाने वाली वस्तु का कुल मूल्य
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II डीएमआईएंडएसपी परिशोधित, 2019 के परिशिष्ट क में निम्नलिखित संशोधन किया जाता है:- जहां कहीं न्यूनतम घरेलू मूल्य वर्धन आवश्यकता कॉलम के अंतर्गत डीएमआईएंडएसपी परिशोधित, 2019 के परिशिष्ट क में 15% का न्यूनतम घरेलू मूल्य वर्धन विनिर्दिष्ट होगा, वहां उसे 20% न्यूनतम घरेलू मूल्यवर्धन से प्रतिस्थापित कर दिया जाएगा (परिशोधित परिशिष्ट-क संलग्न है)

III- परिवर्धन/सन्निवेशन: तालिका 2

क्रम सं	डीएमआईएंडएसपी परिशोधित, 2019 में शामिल/जोड़े गये खंड
1	<p>खण्ड 5.1.13 को खण्ड 5.1.12 के नीचे निम्नवत जोड़ा जाता है:</p> <p>खण्ड 5.1.13: लोहे और इस्पात उत्पादों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्कायरी (जीटीई) आमंत्रित नहीं की जाएगी (डीएमआई और एसपी नीति का परिशिष्ट-क)। लोहे और इस्पात उत्पादों के विनिर्माण जिनका अनुमानित मूल्य 200 करोड़ रु तक हो, (डीएमआई और एसपी नीति के परिशिष्ट- ख) के लिए पूँजीगत सामानों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्कायरी (जीटीई) व्यय विभाग द्वारा यथा नाम-निर्दिष्ट सक्षम प्राधिकारी के अनुमोदन के अलावा आमंत्रित नहीं की जाएगी,</p>
2	<p>खंड 6.9 को खंड 6.8 के नीचे निम्नवत जोड़ा जाता है:</p> <p>खंड 6.9: निविदाओं और अन्य खरीद अधियाचनों में विनिर्देशन:</p> <p>6.9.1 प्रत्येक क्रय इकाई यह सुनिश्चित करेगी कि किसी भी निविदा या अधियाचन में निर्धारित पिछले अनुभव के संबंध में पात्रता की शर्तों हेतु अन्य देशों में आपूर्ति के प्रमाण या निर्यात के प्रमाण की आवश्यकता नहीं है।</p> <p>6.9.2 क्रय इकाईयाँ यह देखने का प्रयास करेंगी कि पात्रता की शर्तों, जैसे टर्नओवर, उत्पादन क्षमता और वित्तीय ताकत जैसे मामलों में वैसे स्थानीय आपूर्तिकर्ता का अनुचित अपवर्जन नहीं होता है 'जो आपूर्तिकर्ता की गुणवत्ता या साख संबंधी पात्रता सुनिश्चित करने के लिए जो आवश्यक है, उससे परे अन्यथा पात्र होंगे।</p> <p>6.9.3 क्रय इकाईयाँ, इस नीति के जारी होने के 2 महीने के भीतर ऊपर उप-पैराग्राफ 6.9.1 और 6.9.2 के संदर्भ में सभी मौजूदा पात्रता मानदंडों और शर्तों की समीक्षा करेंगी।</p> <p>6.9.4 यदि इस्पात मंत्रालय इस बात से संतुष्ट है कि लौह और इस्पात उत्पादों के भारतीय आपूर्तिकर्ताओं को प्रतिबंधात्मक निविदा शर्तों के कारण किसी भी विदेशी सरकार द्वारा खरीद में भाग लेने और / या प्रतिस्पर्धा करने की अनुमति नहीं है, जिसका भारतीय कंपनियों को प्रतिबंधित करने पर प्रत्यक्ष या अप्रत्यक्ष प्रभाव पड़ता है, जैसे कि प्रापण देश में पंजीकरण, प्रापण देश इत्यादि में विशिष्ट मूल्य की परियोजना का निष्पादन इत्यादि। यदि उपयुक्त समझा जाएगा तो उस देश के बोलीदाताओं को इस्पात मंत्रालय से संबंधित उस वस्तु तथा/ या अन्य वस्तुओं की खरीद के लिए पात्रता से प्रतिबंधित या अपवर्जित किया जा सकता है।</p> <p>6.9.5 ऊपर उप-पैरा 6.9.4 के प्रयोजन से, किसी आपूर्तिकर्ता या बोलीदाता को उस देश से माना जाएगा यदि (i) इकाई को उस देश में निगमित किया गया है, या (ii) उसकी शेयरधारिता या इकाई का प्रभावी नियंत्रण उस देश से किया जाता है; या (iii) आपूर्ति की जा रही वस्तु के मूल्य का 50% से अधिक उस देश में शामिल किया गया है। भारतीय आपूर्तिकर्ताओं का अर्थ उन संस्थाओं से होगा जो भारत के संबंध में इनमें से किसी भी मानदंड को पूरा करते हैं। किसी देश की 'इकाई' (एन्टिटी) शब्द का अर्थ वहीं होगा जो डीपीआईआईटी की एफडीआई नीति के तहत समय-समय पर यथा संशोधित के अंतर्गत है।</p>

3	<p>खंड 6.10 को खंड 6.9 के नीचे निम्नवत जोड़ा जाता है:</p> <p>खंड 6.10: यदि घरेलू आपूर्तिकर्ताओं के खिलाफ प्रतिबंधात्मक या भेदभावपूर्ण शर्तों को बोली दस्तावेजों में शामिल किया जाता है, तो उस के लिए जिम्मेदारी तय करने के लिए खरीद (इसके प्रशासनिक नियंत्रणाधीन किसी ईकाई द्वारा खरीद सहित) करने वाले प्रशासनिक विभाग द्वारा जांच शुरू की जाएगी। तत्पश्चात्, संबंधित प्रावधानों के तहत खरीद संस्थाओं के अधिकारियों के खिलाफ उचित, प्रशासनिक या अन्यथा कार्रवाई की जाएगी। ऐसी सभी कार्रवाई की सूचना डीएमआई और एसपी नीति के तहत स्थायी समिति को भेजी जाएगी।</p>
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संशोधित परिशिष्ट क - घरेलू स्तर पर निर्मित उत्पादों के लिए विशिष्ट रूप से

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोल, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7208	50%
2	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, कोल्ड रोल (कोल्ड - कम किया हुआ), न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7209	50%
3	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7210	50%
4	600 मि. मी. से कम की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7211	35%
5	600 मि. मी. कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऎंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल	7213	35%
7	लौह अथवा गैर एलॉय इस्पात के अन्य बार्स और रॉड्स जिसे फोर्ज किए जाने की तुलना में आगे अधिक वर्क नहीं किया हुआ, हॉट रोल, हॉट ड्रॉन अथवा हॉट एक्सट्रूडेड परंतु रोलिंग के बाद उसे टिविस्ट किये जाने सहित	7214	35%
8	लौह अथवा गैर एलॉय इस्पात का अन्य बार्स एंड रॉड्स	7215	35%
9	लौह अथवा गैर एलॉय इस्पात का एंगल, शेष और सेक्शन्स	7216	35%
10	लौह अथवा गैर एलॉय इस्पात का तार	7217	50%
11	600 मि. मी. अथवा उससे अधिक की चौड़ाई का स्टेनलैस इस्पातका फ्लेट रोल इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पातका फ्लेट रोल इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रॉड्स; स्टेनलैस स्टील का एंगल शेष और सेक्शन्स	7222	50%
14	अन्य एलॉय इस्पात का तार	7229	35%
15	लौह अथवा इस्पात को रेल, रेलवे अथवा ट्रामवे ट्रेक निर्माण सामग्री	7302	50%

16	कास्ट लौह का ट्यूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ट्यूब पाइप और होलो प्रोफाइल, सीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ट्यूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिसकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ट्यूब, पाइप और होलो प्रोफाइल (उदाहरण के लिए ओपन सीन अथवा वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ट्यूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/ कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ऎंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोलड	7221	35%
22	स्टेनलैस स्टील का वायर	7223	35%
23	इलेक्ट्रिकल स्टील सहित 600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोलड इस्पात	7225	35%
24	इलेक्ट्रिकल स्टील सहित 600 मि. मी. से कम की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोलड इस्पात	7226	35%
25	अन्य एलॉय स्टील का अनियमित रूप से ऎंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोलड	7227	20%
26	अन्य एलॉय स्टील का अन्य बार्स और रॉड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रिल बार्स और रॉड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रिल किया हुआ हो अथवा नहीं, चाहे पंच किया हुआ हो अथवा नहीं, चाहे असेम्बल किये हुए तत्वों से बना हुआ हो अथवा नहीं; लौह अथवा इस्पात का वेल्ड किया हुआ एंगल, शेप और सेक्शन्स	7301	20%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफेब्रिकेटेड भवनों को छोड़कर) और स्ट्रक्चर्स का हिस्सा	7308	20%
29	300 से अधिक क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए भंडार, टैंक, वैट और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7309	20%
30	अधिकतम 300 लीटर की क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए टैंक, कास्ट, ड्रम, केन, बॉक्स और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7310	20%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	20%

32	लौह अथवा इस्पात का स्टैंडिड वायर, रोप, केबल, प्लेटिड बैंड, स्लिंग और उसके समान वस्तु जिसे विद्युतीय रूप से इन्सुलेट न किया गया	7312	20%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्विस्ट किया हुआ हूप अथवा सिंगल फ्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्विस्ट किया हुआ डबल वायर	7313	20%
34	लौह अथवा इस्पात तार का ड्रील, नेटिंग और फेनसिंग; लौह अथवा इस्पात का विस्तार किया हुआ धातु	7314	20%
35	लौह अथवा इस्पात का चैन और उसका हिस्सा	7315	20%
36	लौह अथवा इस्पात का टैंकर, ग्रेपनेल्स और उसका हिस्सा	7316	20%
37	लौह एवं इस्पात की वस्तुएं	7317	20%
38	लौह एवं इस्पात की वस्तुएं	7318	20%
39	लौह एवं इस्पात की वस्तुएं	7319	20%
40	लौह अथवा इस्पात का स्प्रिंग और स्प्रिंग के लिए लीव्स	7320	20%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हिटिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), बारबेक्यूज, ब्रेजियर्स, गैस रिंग, प्लेट वामर्स और समान गैर-विद्युतीय घरेलू उपकरण और उसका हिस्सा	7321	20%
42	लौह अथवा इस्पात का केंद्रीय हिटिंग के लिए रेडियेटर जिसे विद्युतीय रूप से हीट न किया गया हो और उसका हिस्सा; लौह अथवा इस्पात का हेयर हीटर और हॉट एयर वितरक जिसे विद्युतीय रूप से हीट न किया गया हो, फेन अथवा ब्लोअर जो मोटर से चलती हो और उसके हिस्से को शामिल करते हुए	7322	20%
43	लौह अथवा इस्पात का टेबल और समान घरेलू वस्तुएं और उसका हिस्सा	7323	20%
44	लौह अथवा इस्पात का सेनेटरी वेयर और उसकेपार्ट्स	7324	20%
45	लौह अथवा इस्पात का अन्य कास्ट सामान	7325	20%
46	लौह अथवा इस्पात का विद्युतीय इस्पात और अन्य वस्तु	7326	20%
47	रेलवे अथवा ट्रामवे पेसेंजर कोच जो स्वयं आगे नहीं बढ़ता हो	8605	50%
48	रेलवे अथवा ट्रामवे माल वेन और वेगेन जो स्वयं आगे नहीं बढ़ता हो	8606	50%
49	रेलवे अथवा ट्रामवे लोकोमोटिव का हिस्सा अथवा रोलिंग स्टॉक जैसे बोगिज, बिसल बोगिज, एक्सेल और फोज्ड किया हुआ पहिया और उसका हिस्सा	8607	50%

विवरणों में शामिल किए गए उत्पाद सांकेतिक हैं; विनिर्दिष्ट एच एस कोड के अंतर्गत सभी उत्पादों को परिशिष्ट के भाग के रूप में शामिल किया गया है।"

[फा. सं. एस-13026/1/2020-आईडीडी]

रसिका चौबे, अपर सचिव

MINISTRY OF STEEL
NOTIFICATION

New Delhi, the 31st December, 2020

G.S.R. 1(E).—The amendments in the Policy for providing preference to domestically manufactured Iron & Steel products in Government procurement (DMI&SP Policy)—Revised, 2019 is hereby published for general information.

"No. S-13026/1/2020- IDD

Ministry of Steel

ID Division

Udyog Bhawan,

New Delhi 31st December, 2020

Sub.: Amendments / additions to the Policy for Providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement - revised, 2019

The following amendments / additions to the Policy for Providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement - revised, 2019 (DMI&SP revised, 2019) are applicable with immediate effect. These amendments / additions shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this notification.

I - Amendments: Table 1

Sl. No.	Existing Clause in DMI&SP revised, 2019	Amended Clause in DMI&SP revised, 2019
1	<p><u>Clause 1.3:</u> The policy is applicable to every Ministry or Department of Government and all agencies/entities under their administrative control and to projects funded by these agencies for purchase of iron & steel products for government projects. However, this policy shall not apply for purchase of iron & steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.</p>	<p><u>Clause 1.3:</u> The policy is applicable to every Ministry or Department of Government and all agencies/entities under their administrative control and to projects funded by these agencies for purchase of iron & steel products for government projects. <u>All Central Sector Schemes (CS)/Centrally Sponsored Schemes (CSS) for which procurement is made by States and Local Bodies, would come within the purview of this Policy, if that project / scheme is fully / partly funded by Government of India.</u> However, this policy shall not apply for purchase of iron & steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.</p>
2	<p><u>Clause 2.13:</u> Domestic value addition shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in percent. The 'domestic value addition' definition shall be in line with the DPIIT (formerly DIPP) guidelines, and shall be suitably amended in case of any changes by DPIIT in the future. For the purpose of this policy document, domestic value addition and local content have been used interchangeably.</p>	<p><u>Clause 2.13:</u> Domestic value addition means - <u>amount of value added in India which shall be the total value of the item to be procured / sold (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value of the item to be procured / sold, in percent.</u> The 'domestic value addition' definition shall be in line with the DPIIT (formerly DIPP) guidelines, and shall be suitably amended in case of any changes by DPIIT in the future. For the purpose of this policy document, domestic value addition and local content have been used interchangeably.</p>

3	<p>Clause 5.1.5 The policy is applicable to all projects funded by Ministry or Department of Government and all agencies/ entities under their administrative control for purchase of iron & steel products.</p>	<p>Clause 5.1.5: The policy is applicable to all projects funded by Ministry or Department of Government and all agencies/ entities under their administrative control for purchase of iron & steel products. <u>All Central Sector Schemes (CS)/Centrally Sponsored Schemes (CSS) for which procurement is made by States and Local Bodies, would come within the purview of this Policy, if that project / scheme is fully / partly funded by Government of India.</u></p>
4	<p>Clause 5.1.6: The policy shall be applicable to projects where the procurement value of iron and steel products is greater than Rs. 25 crores. The policy shall also be applicable for other procurement (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 25 crores.</p>	<p>Clause 5.1.6 The policy shall be applicable to projects where the procurement value of iron and steel products (Appendix - A of the DMI&SP Policy) is greater than Rs. 5 lakhs. The policy shall also be applicable for other procurements (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 5 lakhs. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this policy.</p>
5	<p>Clause 7.2: Domestic value addition shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in per cent.</p>	<p>Clause 7.2: Domestic value addition means - amount of value added in India which shall be the total value of the item to be procured / sold (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value of the item to be procured / sold, in percent.</p>
6	<p>Clause 7.3: It is recommended that each bidder participating in the tender process should calculate the domestic value addition using the below formula below so as to ensure the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy.</p> <p>For iron and steel products</p> <p><u>% domestic value addition</u></p> <p><i>Net selling price of final product - landed cost of imported iron or steel at the plant-----</i> <i>----- X 100 %</i></p> <p><i>Net selling price of final product</i></p> <p>For capital goods</p> <p><u>% domestic value addition</u></p> <p><i>Net selling price of final product - landed cost of imported iron or steel at the plant</i> <i>----- X 100 %</i></p> <p><i>Net selling price of final product</i></p>	<p>Clause 7.3: It is recommended that procuring Government agency / bidder participating in the tender process should calculate the domestic value addition using the below formula so as to ensure that the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy.</p> <p>For iron and steel products & capital goods</p> <p><u>% domestic value addition</u></p> <p><i>Total value of the item to be procured / sold (excluding net domestic indirect taxes) - the value of imported content in the item (including all customs duties)</i> <i>----- X 100 %</i></p> <p><i>Total value of the item to be procured / sold</i></p>

II - Following amendment is made to the Appendix A of the DMI&SP revised, 2019 :- Wherever minimum domestic value addition of **15%** is specified in the Appendix - A of the DMI&SP revised, 2019 under the column Minimum domestic value addition requirement, same shall be replaced with **20%** minimum domestic value addition). (Revised Appendix - A is attached)

III - Additions / Insertions: Table 2

Sl. No.	Added / Inserted Clause in DMI&SP revised, 2019
1	<p>Clause 5.1.13 is inserted below Clause 5.1.12 as:</p> <p>Clause 5.1.13: No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of iron and steel products (Appendix-A of the DMI&SP Policy). No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of Capital Goods for manufacturing iron & steel products (Appendix- B of the DMI&SP Policy) having estimated value upto Rs. 200 Crore except with the approval of competent authority as designated by Department of Expenditure.</p>
2	<p>Clause 6.9 is inserted below Clause 6.8 as:</p> <p>Clause 6.9: Specifications in Tenders and other procurement solicitations:</p> <p>6.9.1 Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.</p> <p>6.9.2 Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.</p> <p>6.9.3 Procuring entities shall, within 2 months of the issue of this policy review all existing eligibility norms and conditions with reference to sub-paragraphs 6.9.1 and 6.9.2 above.</p> <p>6.9.4 If Ministry of Steel is satisfied that Indian suppliers of iron and steel products are not allowed to participate and/ or compete in procurement by any foreign government due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of project of specific value in the procuring country etc., it may, if deemed appropriate, restrict or exclude bidders from that country from eligibility for procurement of that item and/ or other items relating to Ministry of Steel.</p> <p>6.9.5 For the purpose of sub-paragraph 6.9.4 above, a supplier or bidder shall be considered to be from a country if (i) the entity is incorporated in that country, or (ii) a majority of its shareholding or effective control of the entity is exercised from that country; or (iii) more than 50% of the value of the item being supplied has been added in that country. Indian suppliers shall mean those entities which meet any of these tests with respect to India. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.</p>
3	<p>Clause 6.10 is inserted below Clause 6.9 as:</p> <p>Clause 6.10: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such action shall be sent to the Standing Committee under the DMI&SP Policy.</p>

IV - Revised Appendix A - Exclusive for domestically manufactured products

Sl. No	Indicative list of Iron & Steel Products	Applicable HS code	Minimum domestic value addition requirement
1	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, hot rolled, not clad, plated or coated	7208	50%
2	Flat-rolled products of iron or non alloy steel, of a width of 600	7209	50%



	mm or more, cold rolled (cold-reduced), not clad, plated or coated		
3	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, clad, plated or coated	7210	50%
4	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, not clad, plated or coated	7211	35%
5	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, clad, plated or coated	7212	35%
6	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy steel	7213	35%
7	Other bars and rods of iron or non alloy steel, not further worked than forged, hot rolled, hot-drawn or hot-extruded, but including those twisted after rolling	7214	35%
8	Other bars and rods of iron or non alloy steel	7215	35%
9	Angles, shapes and sections of iron or non-alloy steel	7216	35%
10	Wire of iron or non-alloy steel	7217	50%
11	Flat-rolled products of stainless steel, of a width of 600 mm or more	7219	50%
12	Flat-rolled products of stainless steel, of a width of less than 600 mm	7220	50%
13	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel	7222	50%
14	Wire of other alloy steel	7229	35%
15	Rails, railway or tramway track construction material of iron or steel	7302	50%
16	Tubes, pipes and hollow profiles, of cast iron	7303	35%
17	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	7304	35%
18	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406.4 mm, of iron or steel	7305	35%
19	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	7306	35%
20	Tube or pipe fittings (for example, connectors/couplings, elbow sleeves), of iron or steel	7307	35%
21	Bars and rods, hot-rolled, in irregularly wound coils, of stainless steel	7221	35%
22	Wire of stainless steel	7223	35%
23	Flat-rolled products of other alloy steel, of a width of 600 mm or more, including electrical steel	7225	35%
24	Flat-rolled products of other alloy steel, of a width of less than 600 mm, including electrical steel	7226	35%
25	Bars and rods, hot-rolled, in irregularly wound coils, of other alloy steel	7227	20%

26	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or nonalloy steel	7228	35%
27	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	7301	20%
28	Structures (excluding prefabricated buildings of heading 9406) and parts of structures	7308	20%
29	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 whether or not lined or heatinsulated, but not fitted with mechanical or Thermal equipment	7309	20%
30	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 L, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	7310	20%
31	Containers for compressed or liquefied gas, of iron or steel	7311	20%
32	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	7312	20%
33	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel	7313	20%
34	Grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel	7314	20%
35	Chain and parts thereof, of iron or steel	7315	20%
36	Anchors, grapnels and parts thereof, of iron or steel	7316	20%
37	Articles of iron and steel	7317	20%
38	Articles of iron and steel	7318	20%
39	Articles of iron and steel	7319	20%
40	Springs and leaves for springs, of iron or steel	7320	20%
41	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel	7321	20%
42	Radiators for central heating, not electrically heated, and parts thereof, of iron or steel; air heaters and hot air distributors, not electrically heated, incorporating a motor-driven fan or blower, and parts thereof, of iron or steel	7322	20%
43	Tables and similar household articles and parts thereof, of iron or steel	7323	20%
44	Sanitary ware and parts thereof, of iron or steel	7324	20%
45	Other cast articles of iron or steel	7325	20%

46	Electrical steel and other articles of iron or steel	7326	20%
47	Railway or tramway passenger coaches, not self-propelled	8605	50%
48	Railway or tramway goods vans and wagons, not self-propelled	8606	50%
49	Parts of railway or tramway locomotives or rolling-stock, such as bogies, bissel-bogies, axles and forged wheels, and parts thereof	8607	50%

Products included in descriptions are indicative; all products under the specified HS codes are included as part of the appendix."

[F. No. S-13026/1/2020-IDD]
RASIKA CHAUBE, Addl. Secy.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED	PNMM/PC-277/ E-4001/Annx- 1.24A	0	
		DOC. NO.	REV.	
		SHEET 1 OF 1		

**POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON
& STEEL PRODUCTS IN GOVERNMENT PROCUREMENT (TO BE SUBMITTED ON
BIDDER'S LETTERHEAD) SELF-CERTIFICATE**

To,

M/s South Eastern Coalfields Limited,
(A subsidiary of CIL)
SECL HQ, Seepat Road,
District- Bilaspur, Chhattishgarh-495006 (India)

SUB:

TENDER NO:

Dear Sir,

This has reference to "Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India, vide their revised notification "The Gazette of India, Notification No. 385 (E) dated 29.05.2019".

We confirm that we will obtain Affidavit of Self Certification of Domestic value addition in Iron & Steel Products from manufacturer before supply of iron and steel products required under the tender/bidding document.

Sign & Stamp of bidder

	PROJECTS & DEVELOPMENT INDIA LTD.	PC277/E/4001/P-II/ SEC-1.1	0	 SECL
		Document No.	Rev	
		Sheet 1 OF 9		

VOLUME - II: TECHNICAL



SECTION - 1.1

PROJECT DESCRIPTION

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

0	15.01.2022	15.01.2022	Issued for Tender Purpose	SK	SKK/DKV	MN
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD



	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PROJECT DESCRIPTION	PC277/E/4001/P-II/ SEC-1.1	0	
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2.0	Plot Area	3

LIST OF ATTACHMENT

SL. NO.	DESCRIPTION	NUMBER OF SHEETS
1.		

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PROJECT DESCRIPTION	PC277/E/4001/P-II/ SEC-1.1	0	
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1.0 INTRODUCTION

Coal India Limited (CIL) as an organized state owned coal mining corporate came into being in November 1975 with the government taking over private coal mines. With a modest production of 79 Million Tonnes (Mt) at the year of its inception CIL today is the single largest coal producer in the world. Operating through 82 mining areas CIL is an apex body with seven wholly owned coal producing subsidiaries and one mine planning and Consultancy Company spread over eight provincial states of India. CIL also fully owns a mining company in Mozambique christened as 'Coal India Africana Limitada'. It has core competence across the entire gamut of the coal business value chain. The business domain includes exploration, planning and design of mines, coal mining operations, coal beneficiation and marketing. CIL meets 42% of the nation's primary energy demand and caters 84% of the nation's coal requirement.

CIL having fulfilled the financial and other prerequisites was granted the Maharatna recognition in April 2011. It is a privileged status conferred by Government of India to select state owned enterprises in order to empower them to expand their operations and emerge as global giants. So far, the select club has only seven members out of around 300 Central Public Sector Enterprises in the country.

CIL encompasses the whole gamut of identification of coal reserves, detailed exploration followed by design and implementation and optimizing operations for coal extraction in its mines. The subsidiary companies of CIL are:

1. Eastern Coalfields Limited (ECL), Sanctoria, West Bengal
2. Bharat Coking Coal Limited (BCCL), Dhanbad, Jharkhand
3. Central Coalfields Limited (CCL), Ranchi, Jharkhand
4. South Eastern Coalfields Limited (SECL), Bilaspur, Chhattisgarh
5. Western Coalfields Limited (WCL), Nagpur, Maharashtra
6. Northern Coalfields Limited (NCL), Singrauli, Madhya Pradesh
7. Mahanadi Coalfields Limited (MCL), Sambalpur, Orissa

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PROJECT DESCRIPTION	PC277/E/4001/P-II/ SEC-1.1	0	
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8. Coal India Africana Limitada, Mozambique (A foreign subsidiary)
9. The consultancy company is Central Mine Planning and Design Institute Limited (CMPDIL), Ranchi, Jharkhand.

South Eastern Coalfields Limited (SECL)

South Eastern Coalfields Limited (SECL) is the largest coal producing company of India. It is a "Mini Ratna" Company, and one of eight fully owned subsidiaries of Coal India Limited. For effective administrative control and operation, the mines have been grouped in three Coalfields, namely, Central India Coalfields (CIC), Korba Coalfields and Mand-Raigarh Coalfields with 13 operating Areas. The company has its headquarter at Bilaspur, Chhattisgarh, India and 92 mines spread over Chhattisgarh & Madhya Pradesh; 70 underground, 21 opencast, and 1 mixed. It is a schedule 'B' Mini Ratna CPSE in coal & lignite under the administrative control of Ministry of Coal.



The Company came into existence in 1985, when the Government of India, decided to bifurcate a part of coal mines held by Western Coalfields Limited into new company called South Eastern Coalfields Limited, along with Central Coalfields Limited, which was bifurcated into Northern Coalfields Limited, for administrative purpose.

Our Hon'ble Prime Minister, Shri Narendra Modi's vision is to use 100 MT of coal for coal gasification by 2030.

In view of above further GOI's directive, for 100 Million MT Gasification of coal per annum for end use products like methanol, ammonia, SNG and petrochemicals.

In pursuit of implementing one of such initiatives, the premises of South Eastern Coalfields Limited (SECL) has been identified as a strategic location for initially setting up a 2200 MTPD capacity Coal to Ammonia (C2A) plant at Mahamaya, Chhattisgarh by utilizing Coal as a basic raw material. The Plant is proposed to operate as two separate units, a Coal Gasification Island and a Ammonia Production Island at South Eastern Coalfields Limited.

Since SECL has decided to venture into a vertical integration of business initiatives other than its conventional coal business with necessary approval of the Board, it desires to appoint an expert/ Technical Consultant to frame NIT documents for

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PROJECT DESCRIPTION	PC277/E/4001/P-II/ SEC-1.1	0	
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setting up of proposed C2A plant at SECL on BOO mode. The Consultant shall be responsible for completion of tendering and allied activities on behalf of SECL leading to preparation of a Detailed Feasibility Report (DFR) and recommendation with respect to award of work. CMPDI has been entrusted as a Project Implementing agency (PIA) for the above said coal gasification project at SECL.

M/s south Eastern Coalfields Limited has decided to build a world class Coal based Ammonia Complex. The Coal to Ammonia complex is to be built at Mahamaya SCG Plant Bhatgaon Area, Surajpur District, Chhattishgarh (India) and will consist of Coal Gasification Plant, Ammonia Plant, along with Offsite and Utility Plants. South Eastern Coalfield Limited, intend to invite quotations from eligible contractors on BOO basis for building of Whole Complex for production of Ammonia.



- 1.2** Projects & Development India Ltd. (PDIL) has been engaged by M/s South Eastern Coalfields Limited as Technical Consultant for selection of a suitable BOO Processor for execution of the project on a Build-Own-Operate basis with Single point responsibility.
- 1.3** BOO Processor is advised to visit and examine the site conditions and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into the Contract. Claims of any kind due to variation or ignorance of site conditions and environmental conditions will not be eligible in any circumstances.

2.0 Plot Area:

Coal to Ammonia Complex shall be built in the earmarked area as given in the overall site plan for Coal to Ammonia Project.

2.1 Plant Site:

- Total land area of the site is 250 acre including 33% green area in single patche is available for proposed Coal to Ammonia plant. Plant site will be handed over to BOO Processor after 1 month from award of work.
- The proposed project is located at Mahamaya SCG Plant and located in Surajpur district of Chhatisgarh. Raipur (Chhatisgarh), Ranchi (Jharkhand) and Varanasi (U.P.) Airports are around 330-340 Kms away from the proposed Site.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED PROJECT DESCRIPTION	PC277/E/4001/P-II/ SEC-1.1	0	
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2.2 **Process Technology:**

Coal Gasification

Coal gasification Technology must be the same as offered by Bidder to qualify the Pre Qualification Criteria.

BOO Processor shall procure license, basic engineering package and assistance during construction, commissioning & operation from selected technology providers for the proposed plant.

Ammonia



Ammonia Technology must be the same as offered by Bidder to qualify the Pre Qualification Criteria.

BOO Processor shall procure license, basic engineering package and assistance during construction, commissioning & operation from the selected technology provider for the proposed plant.

Process units:

Tentative List of envisaged process units for the 2200 MTPD Ammonia Complex :

S.N.	Process Unit	Designer/ Licensor
1.	Feed Coal Preparation based on ROM Coal supply at Battery Limit (B.L.)	Coal Gasification Licensor / BOO Processor
2.	Coal Gasification	Coal Gasification Licensor
3.	Gas Cooling & Cleaning	Acid Gas Purification Licensor
4.	Gas Purification, Air Separation Unit and Ammonia Synthesis Gas Generation	BOO Processor Based on Basic Engineering / Design from respective reputed system suppliers (Licensor) (with assistance of coal gasification licensor, if required).
5.	Sulphur Recovery Unit	
6.	Ammonia Syn. Gas Compression and Ammonia Synthesis Plant	Basic Design Engineering from respective reputed system suppliers
7.	Steam Generation Plant	BOO Processor to finalize

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8.	Ash Handling	Licenser/ BOO Processor
9.	Offsite & Utilities	BOO Processor to finalize

Coal Gasification Plant shall be capable of handling ash in the range of about **18% to 30%** (ROM).

2.3 Utility & Other Facilities:

Major facilities are described as under: All utilities & offsite Facilities required for the Coal to Ammonia project Complex shall be in the scope of BOO Processor.

2.3.1 Raw Water and Construction Water Source & Supply

It is envisaged that entire Raw Water for BOO Processor B/L will be supplied by Owner.

Construction, Erection and Operation & maintenance of raw water pump house at river and raw water pipeline from river end to BOO Processor BL shall be in Owner Scope.

Further treatment of raw water as per requirement in treatment plant shall be in the scope of BOO Processor.



BOO Processor at it's own expenses shall arrange the construction water for construction of plant. However, source of water shall be intimated to BOO Processor

2.3.2 Demineralised Water System

DMW Plant and Condensate polishing unit are in the BOO Processor's scope. BOO Processor shall arrange its own DM water requirement during construction, pre-commissioning & Commissioning, if required. Condensate generated within B/L shall be treated in Condensate Polishing Unit in complex for recycle and reuse.

2.3.3 Drinking and Service water system

Treated water from the raw water treatment system is used as make-up to the drinking and service water systems. The service water system takes treated raw water for supply to hose stations, etc. by dedicated service water pumps and a distribution pipe network. Water for gardening is also supplied from this system. BOO Processor shall arrange its own Drinking water requirement during construction period.

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2.3.4 Cooling water system

Process water make-up shall be used for cooling tower. If any further treatment is required for usage as cooling water, the same shall be in the scope of BOO Processor. BOO Processor shall consider the total CW system required for Coal Gasification Plant, downstream Gas processing units to make Ammonia Synthesis Gas & Entire Ammonia Production unit including Ammonia storage, Steam generation plant and any other requirement.

2.3.5 Steam Generation and Power Supply

Power for Operation : It is envisaged that entire power for BOO Processor B/L will be met from the grid supply.

Construction Power: Owner will provide construction power at 11 kV at single point on chargeable basis to BOO PROCESSOR.

Construction Power required for whole complex shall be provided by owner on chargeable basis. Charges for construction power will be on actual basis.

Power required for Plant start-up & operation for whole Complex shall be supplied by Electricity grid at a single point in substation located at BOO Processor B/L.



Steam: H.P steam requirement for Process use as well as drives shall be generated in Coal based Steam Generation Plant & same shall be in the scope of BOO Processor.

2.3.6 Plant and Instrument air system

Plant air and Instrument air will be generated by BOO Processor. Proper instrument air storage and Plant air & Instrument air distribution network shall be envisaged for the complex.

2.3.7 Nitrogen & Oxygen system

BOO Processor shall generate Nitrogen and Oxygen of desired specification to meet requirement of Nitrogen and Oxygen in the Coal Gasification Plant. Proper Nitrogen and Oxygen storage and distribution network shall be envisaged for the Coal Gasification Plant. In addition to this, provision for supplying of gaseous Nitrogen to other process plants along with separate Liquid Nitrogen storage to be used as utility Nitrogen as per requirement shall be under BOO Processor's scope.

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2.3.8 Sulphur Recovery Unit (SRU) & Sulphur Storage

Recovery of Sulphur from H₂S generated in Acid Gas Removal Unit and its disposal shall be in the BOO Processor scope.

2.3.9 Ash Handling System

BOO Processor shall construct the Slag/ Ash Handling System suitable for Slag, Slag-fines & fly ash and recycling/ transfer to Ash pond/ Storage for disposal by Owner.

2.3.10 Solid Waste Disposal

Disposal of all hazardous/ non hazardous solid waste generated in B/L shall be in BOO Processor's scope.

2.3.11 Effluent Treatment Plant

The effluent treatment system should be designed for a ZLD (Zero Liquid Discharge) concept & under BOO Processor's scope. Treatment system should be such that all liquid discharge shall meet the state and central pollution Control board's latest norms. Any changes for up-gradation/ modification is under scope of BOO Processor.



PART - II: TECHNICAL



SECTION – 1.2

SCOPE OF WORK

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA



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1.0 GENERAL

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The Scope of Work for BOO PROCESSOR shall include installation of Coal Gasification based Ammonia plant including all offsite & Utilities at owned by South Eastern Coalfields Limited, as per the requirements and specifications mentioned in the technical portion of the NIT. BOO PROCESSOR shall install the facilities, own and operate the same under the terminology and conditions commonly known as BUILD-OWN-OPERATE (BOO).

BOO PROCESSOR shall take care of all men and material and infrastructural facilities so as to operate and maintain the plant for uninterrupted supply of Ammonia as defined in Design basis.

Scope of work of the BOO Processor shall include supply of Process License from respective licensors, Basic Design and Detailed Engineering, Procurement, Supply, Fabrication, Inspection by Third Party Inspection Agency (TPI) as applicable, Expediting, Route survey for Over Dimensional Consignments (ODCs), Insurance, Transportation of all equipment / materials to work site, Storage, Construction of Temporary facilities, temporary work construction and erection of all civil, mechanical, electrical and instrumentation works, assembly and Installation, obtaining all necessary statutory approvals, painting, insulation, fire proofing, Testing, Mechanical Completion, Pre-Commissioning, Commissioning, Sustained Load Test Run, Performance Guarantee Test Run (PGTR) including Total Project Management so as to complete the Coal Gasification Based Ammonia Plant in all respect and operate the plants and supply Ammonia of specified quantity and quality to South Eastern Coalfields Limited (SECL) as per technical requirements defined in the bid document and as per defined in scope of work. The works shall be carried out as per the specifications, standards, codes etc.



2.0 OTHER REQUIREMENTS:

- 2.1 Perform construction management and supervision of all equipments, material and works.
- 2.2 Provide and perform comprehensive quality assurance, quality control and inspection of all equipments, materials works - both in manufacturing shop and at work site.
- 2.3 Provide all manpower, materials, consumables, construction equipment / machines, tools, instruments, storage, fabrication, facility and all other services and inputs etc. necessary to perform the work and complete the plant.
- 2.4 Comply with all Central, State & Local Govt. regulations, laws and requirements applicable to the work and seek and obtain approval/ clearance/ renewal from such statutory bodies/ agencies, as required. SECL's scope in this regard will be only to provide authorization in favor of BOO PROCESSOR for which necessary paper work will be done by BOO PROCESSOR subject to indemnity. Payment for any penalty is under scope of BOO

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Processor.

- 2.5 Provide necessary temporary construction facilities like construction water, fabrication, storage, illumination etc.
- 2.6 Comply with all safety practices for and during work.
- 2.7 Strictly comply with applicable codes and standards of Engineering, Fabrication, Inspection, Construction etc.
- 2.8 Arrange services of Manufacturer's installation, commissioning Engineer(s) at Site during Mechanical Completion, Pre-commissioning, Commissioning of all the major equipment and systems.
- 2.9 Provide all the temporary connections, supplies required for testing, pre-commissioning activities and also to provide all instrument metering systems required for measurements of various parameters, testing during test runs.
- 2.10 Arrange spare parts for start up, pre-commissioning, commissioning, PGTR, operation of plants. All such spares are to be available at site prior to commissioning/start up of the plant including various test runs.
- 2.11 Perform testing, flushing, cleaning and pre-commissioning, start-up/commissioning including guarantee performance runs of plant. Detail procedures in respect of these shall be submitted by BOO PROCESSOR for SECL/ PMC's approval before commencement of such work.
- 2.12 Submission of final As Built drawings and manufacturers, sub-vendor, vendor's documents, data, unit books in requisite copies soft & hard, duly catalogued and bound folders as per Final Document philosophy spelt out elsewhere in the Bid Document.
- 2.13 Project Management and planning, scheduling and monitoring/comprehensive reporting services, periodic reviews, meeting notes with SECL/ PMC.
- 2.14 The scope of work as described above shall be supplementary to the scope of work mentioned under various parts of Tender Document. In case of any contradiction between the two, the stipulations mentioned under various disciplines shall be governing. In this regard, SECL's interpretation shall be final and binding to BOO PROCESSOR.
- 2.15 Transportation of all the materials supplied by SECL, if any from SECL's store to BOO PROCESSOR's Store/ work site including loading/ unloading and transportation of all materials including under BOO PROCESSOR's Scope of Supply to work site.

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- 2.16 Total painting including for special paints, colour coding, insulations, refractory, CS / SS name plates etc.
- 2.17 Any other work not specifically mentioned above but required to complete the work in all respects as per tender specifications, drawings and **instruction of** Engineer-in-Charge and also to result in an fully operable and **maintainable plant. BOO PROCESSOR** shall provide Metal Analyzer at Site for In-Situ Metallurgical Analysis of Metal, during the Project Execution Stage. BOO PROCESSOR shall comply with the requirements of Positive Materials Identification, enclosed elsewhere in this Tender. PMI shall be carried out by BOO PROCESSOR for all pressure components of Mechanical (including **Rotary, Static & Package** equipment, Piping Items & Instruments). For Metal gaskets & welding PMI shall be carried out on Sample Basis.
- 2.18 BOO PROCESSOR shall implement the requirements if any, of HAZOP, HAZAN, SIL Study without any additional cost / time schedule implication to OWNER / PMC.
- 2.19 BOO PROCESSOR shall adhere to Design Control exactly as per latest provisions of ISO 9001. BOO PROCESSOR shall submit required records as evidence for review by SECL/ PMC as and when required, and shall carry out changes based on SECL/ PMC review.
- 2.20 Land Development for whole complex shall be in the BOO Processor Scope. Development and maintenance of 33% green zone shall be in the scope of BOO processor.

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SECTION – 1.3



PROJECT EXECUTION PLAN

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1.0 PURPOSE:

This procedure has been prepared with the objective of :

- Defining systematic and orderly administrative relationship amongst related parties during the execution and the operation of the plant.
- Progress reporting and review of progress of work

2.0 COMMUNICATION AND GENERAL CORRESPONDENCE:

Project Manager of SECL is the sole contract for all activities of the project. Therefore all the correspondence between SECL and BOO Processor shall be directly done with/ by Project Manager or by his authorized representative. The Name, Address, Telephone no, Fax, email id shall be intimated during the kick off meeting.

3.0 PROJECT MANAGEMENT & EXECUTION:

3.1 Kick-Off Meeting:



Immediately after the award of job, a kick-off meeting will be held to finalize and establish the modalities and procedures to be adopted for execution of the contract based on the enquiry document, commitments made by BOO Processor and subsequent agreements reached between SECL/PMC and BOO Processor during negotiations. The kick-off meeting will be attended by key members of SECL/PMC and BOO Processor. These will address the following details between SECL/PMC and BOO Processor:

- i) Execution Methodology/ Philosophy, in the line with project requirement.
- ii) Project execution schedule
- iii) Progress Reporting
- iv) Project Co-ordination Procedures.
- v) Organization Chart
- vi) Construction Site related issues.

3.2 Project Procedures and Methodology:

Detailed Technical Requirements along with the Detailed Scope of Work and overall proposed implementation schedule shall be prepared by BOO Processor. These will form the basis for formulation of the overall Project schedule of the plant by BOO Processor. BOO Processor is required to organize his services in a systematic manner to ensure execution and completion of the unit as per the schedule. BOO Processor is required to submit along with his bid the methodology/procedure proposed by him for this unit together with the organizational set up proposed and bio-data of Key-personnel.

In order to achieve uniformity in execution of various activities of the Ammonia Plant, BOO Processor shall develop Engineering Design Basis and Project Procedures/

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Methodologies to be adopted by the executing agency. BOO Processor is required to carry-out his supply of Know-How, Process Package, detailed engineering, procurement, tendering, construction supervision and management, planning scheduling, monitoring, reviewing, reporting, and Overall Project Management activities in accordance with the job specifications / procedures developed by BOO Processor based on the methodologies / procedures. All activities to be performed/services to be rendered by BOO Processor under this contract shall be monitored by SECL/PMC and will be subject to periodic reviews by the PMC. BOO Processor shall facilitate such reviews/monitoring by SECL/ PMC.

- 3.2.1 BOO Processor's service for engineering, procurement, tendering, construction, supervision and management, planning, scheduling, monitoring, reporting, and overall project management shall meet the requirements given in this section.
- 3.2.2 English language and Metric Units shall be used in all documents, drawings, reports, correspondences etc. under this contract.
- 3.2.3 All the drawings/documents prepared by BOO Processor /Sub-bidders/Vendors shall be submitted to SECL/PMC for review/Information purpose. Such review by SECL/PMC shall, however, not relieve BOO Processor of his responsibilities.
- 3.2.4 For achieving the Project schedule it may be necessary in some cases to prepare the drawings in stages and release it for construction so as to take up simultaneous execution of detail engineering and construction. Any revisions involved for the above is included in the scope of work of BOO Processor. Also any change required to meet the site conditions/statutory requirements shall have to be carried by BOO Processor at no extra cost.
- 3.2.5 BOO Processor is required to organize a Task Force of dedicated specialists from each discipline under a Project Engineering Manager who will be assisted by Engineering Coordinator. An engineering schedule will be prepared and submitted to SECL/PMC for review. This schedule shall be used for all engineering activities. The engineering coordinator shall coordinate all design and engineering activities and interact with Purchase, Inspection, expediting, C&T, tendering, planning, construction and project groups. His responsibilities shall include.

3.3 Procurement:



3.3.1 The procurement services to be provided by BOO Processor shall cover the purchasing, inspection, expediting, Custom clearance and transportation activities & transportation activities and demurrage charges if any.

3.3.2 Purchase:

The Purchase activities will cover all equipments and materials required for completion of the Ammonia plant.

3.3.3 Inspection and Expediting

BOO Processor is required to organize a proper inspection and expediting system so as to ensure timely delivery of all the items/equipment meeting the specified quality criteria.

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This function has to be carried out by appropriate deployment of qualified personnel who have wide experience in their respective fields. SECL/PMC will reserve the right to inspect items deemed necessary by them without any additional cost to BOO Processor/Sub- bidder/ vendor.

3.3.4 Customs Clearance and Transportation:

BOO Processor is required to organize a custom clearance and transportation (C&T) system to ensure prompt clearance of imported equipments from customs and transportation of equipments/materials to project site from Ports/Vendors works.



4.0 PROJECT PLANNING, SCHEDULING & MONITORING SYSTEM:

BOO Processor is required to institute and maintain a proper planning; scheduling and monitoring system and employ professionally qualified and experienced planning Engineer(s) for the Project. The system shall have latest state-of-the-art technique; to this effect. BOO Processor shall implement this system through the Prima Vera Project Planner. The system developed should be capable to support and enforce proper control Mechanism in the project. It should be based on hierarchical breakdown of works with elaborate level of detailing and control. The levels of controls should be such that it supports and foster controls at activity level, function level and management level with greater emphasis on target, scope and commitment at various stages of contract for accountability and action planning. Such multi-level/multi-tier system of planning, scheduling and monitoring, supports, effective information generation, assimilation, summarization and reporting in proper and adequate manner. The system shall be predictive type and should constitute pre-warning mechanism to diagnose and anticipate the problem well in advance and provide preventive features/measures. It is required that work breakdown structure should consist of details of systems, work packages, functions, work items and activities from monitoring point of view at micro level and summarization at higher levels. It is expected that the work breakdown structure coding system / methodology to be followed shall be informed / discussed with the successful BOO Processor during the kick-off Meeting.

Following schedules documents/reports shall be prepared and submitted by BOO Processor for SECL/PMC review at various stages of the Project:

- List of critical drawings.
- Breakdown of work packages to work items level.
- Input requirements of each work item/activity. s
- Schedule start and finish dates of all milestone/activities in line with overall schedule of the project.
- Overall system-wise, discipline-wise weightages for each item/activity.
- 3 month front end schedule within a week of award.

In this kick-off meeting, it will be endeavored to reach complete understanding with BOO Processor on activities, inputs and logic to establish Planning Documents for Monitoring.

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Venue of the Kick-off Meeting to be held between the successful BOO Processor, PMC & SECL, shall be either at PMC's Office or SECL's Office preferably at Noida / West Bengal and the same would be informed subsequently.

4.1 Overall Project Schedule:

BOO Processor shall submit within 30 days of Fax of Intent, the work breakdown structure showing Project work load i.e. preparation of Process Package, tenders, Material Requisitions, Construction Drawings equipments etc. alongwith a sufficiently detailed overall project schedule in the activity network form, clearly indicating the major milestones, inter relationship / interdependencies between various activities such as process, engineering, procurement tendering, manufacture / delivery, construction etc. together with a computer analysis of critical path and floats as well as quantum of work for major activities.

The schedule will be reviewed by SECL/PMC and the comments if any shall be incorporated in the network issued for implementation within 2 weeks from receipt of comments. The network thus finalized shall form part of the Contract and will become the basis for developing further detailed activity Network. This schedule shall not be revised without the prior permission from SECL/PMC during the entire period of contract. The changes made during revision of the contract shall be approved by SECL/PMC in writing.

4.2 Detailed Activity Network:



BOO Processor should develop detailed activity networks for various systems/plant/ unit of the Project, based on approved overall project schedule within 2 months of fax of intent. Such networks would be computerized for further monitoring and reporting.

4.3 Progress Measurement Methodology :

BOO Processor is required to submit during the Kick off Meeting, the detail methodology of progress measurement of Engineering, Procurement, Manufacturing / Delivery, computation of total service/physical progress at the unit-wise level and on the overall basis. The progress basis shall be physical realization of work such as in terms of deliverables and construction quantity/volume accomplished. The amalgamation of such output across the project to compute overall progress shall be suitably established with proper rational and norms and maintained throughout the project. SECL/PMC reserves the right to modify the methodology in part or in full.

4.4 Vendor Scheduling and Monitoring

BOO Processor shall establish schedules for pre-ordering and post ordering for follow up. The vendor monitoring preferably should be on logical networks and commitments at least on critical items in order to monitor them on regular basis for effective control. SECL/PMC may demand such follow up procedure and logical networks for the various critical equipment at any time during the course of order execution. The manufacturing schedule shall be established and agreed with the vendors and acceptance shall be brought to the notice of SECL/PMC in time.

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4.5 Construction Network :

BOO Processor shall prepare and submit a detailed construction network with full consideration of logistics, construction studies and method for SECL/PMC. BOO Processor shall describe the resources required and special construction equipments, Tools & Tackles to be mobilized. The network shall be developed subsequent of substantial progress of engineering and ordering with fairly known construction workload and quantities.

4.6 As indicated elsewhere, Project Schedules as above shall be developed/evolved using the latest version of the Prima Vera Project Planner Software Package.

4.7 Progress Reporting:

BOO Processor shall submit the following progress reports on a regular basis for SECL/PMC information/review.

4.7.1 Monthly Progress Report:

This report shall be submitted on a monthly basis within 7 calendar days from cutoff date, or as agreed upon, covering overall scenario of the project. The report shall include, but not limited, to the following:

- Executive summary - Summary of major events/activities.
- Schedule v/s actual percentage progress and progress curves for detailed Engineering, sub-ordering, Manufacturing/Delivery, Contracting, construction commissioning and overall. Areas of concern/problem/hold-ups, impact and recovery action plans/catch-up plan. Activities executed achievements during the months and targets for the following month. Analysis of critical activities and impact on overall completion. Chronological achievements of key events indicating schedules and actual occurrence date. Annexure giving status summary for drawings material requisitions, equipment and materials delivery, contracting & construction, Resource requirement & deployment status.



5.0 PROJECT TIME CONTROL METHODOLOGY:

5.1 The time for completion of the complete scope of work shall be strictly as per the time Schedule given in the tender document.

5.2 BOO Processor shall furnish the following documents along with the bid.

5.2.1 An overall schedule in the form of Network, clearly indicating all important milestones in design, engineering, fabrication, procurement construction, testing and commissioning for the plant commensurate with the overall time schedule.

5.2.2 Resource deployment schedule indicating mobilization of all critical resources including manpower and machinery for the smooth execution of the job at engineering offices, fabrication shops & construction site. The resource schedule shall also contain various construction aids envisaged to be deployed for execution.

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5.2.3 Organization structure for effective project management and control, clearly indicating the responsibility center as well as bio-data of the key personnel, who are permanent employees of BOO Processor, shall be identified for the project.

5.3 Within 30 days of issue of Fax / letter of intent BOO Processor shall finalize with SECL/PMC the following as:

5.3.1 Overall Project Schedule:

Overall Project Schedule in line with the agreed milestone and detailed to adequate work breakdown structure level covering all phases of the work such as supply of Know-how, Process Package, design engineering, procurement manufacturing, shipment, tendering & field erection. This schedule shall also include the interface activities to be provided by SECL/PMC and the dates by which such facilities are needed. BOO Processor shall get the scheduled submitted & reviewed by SECL/PMC and the agreed schedule shall form part of the Contract monitoring document based on which performance would be reported and evaluated. This document shall be signed by both the parties. SECL/PMC shall also review the weightage allotted to various activities and method of reporting to be adopted by BOO Processor. During the progress of the contract if in the opinion of SECL/PMC, desired progress as physically/sequentially is not maintained, it would be obligatory on BOO Processor to re-programme the work schedule in order to accommodate the backlog and/or provide work front to other agency, without any obligation to SECL / PMC.

5.3.2 BOO Processor at any point of time of operating would be permitted to revise the accepted schedule/control documents with SECL/PMC without changing the contractual completion date, subject to prior approval by SECL/PMC in writing.

5.3.3 The review of the performance of work would be made at different levels of management and BOO Processor is expected to ensure proper participation for effective reviewing and action plan.

5.3.4 BOO Processor should ensure availability of professionally qualified planning Engineer both at H.O and site deemed adequate by SECL/PMC.

5.3.5 BOO Processor at his own cost should maintain a control room at site highlighting all the features, schedule and achievements of the project.

5.3.6 Weighted percentage of each discipline/group of work shall be mutually agreed to between BOO Processor and SECL/PMC after the award of contract to facilitate compilation of progress.

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SECTION 1.4

DESIGN BASIS

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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ANNEXURES

SL. NO.	DESCRIPTION	NUMBER OF SHEETS

1.0 GENERAL

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED DESIGN BASIS	PC277/E/4001/P-II/ SEC-1.4	0	
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This document (Design basis) indicates the requirements for design of Coal Gasification based Ammonia Plant and all associated facilities such as Boiler, Raw water treatment Plant, DM Plant, Instrument Air Plant and ETP to be constructed by BOO Processor on BOO basis.

2.0 REQUIREMENT PERTAINING TO COAL GASIFICATION BASED AMMONIA PLANT:

- 2.1 The Coal Gasification based Ammonia Plant shall be designed to meet the following quantity requirement of Ammonia. However, BOO Processor shall specify the supply quantities of other by-products.

Coal Gasification Plant:

Coal Gasification Technology to be considered for tender job shall be based on reference plant submitted for establishing PQC. To meet the requirements of guaranteed Quality and Quantity of main Product i.e. Ammonia, optimum number(s) of operational Gasifier to be indicated by the bidder in Technical Bid.

Ammonia Plant :

Continuous Normal requirement: 2200 MTPD

By- products

Sulphur:

Continuous Normal supply: ----- Kg/hr (To be specified by BOO Processor)

Minimum supply: ----- Kg/hr (To be specified by BOO Processor)

Ash/ Slag/ Slag-fine:



Continuous Normal supply: ----- Kg/hr (To be specified by BOO Processor)

Minimum supply: ----- Kg/hr (To be specified by BOO Processor)

2.2 QUALITY SPECIFICATION

Product Ammonia produced from the Ammonia plant shall cater to the following minimum specification:

Sl. No.	Components	Composition
1.	Ammonia, wt% (min.)	99.9
2.	Oil, ppm wt% (max.)	5
3.	Moisture, wt% (max.)	0.1%

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4.	Pressure @ B.L of Ammonia Plant, kg/cm ² a (Min.)	BOO Processor to decide
5.	Temperature, °C (max.)	-33

By-product Sulphur (solid) produced from the plant shall cater to the following minimum specification:

Parameter	Unit	Value
Sulphur(S)	Wt. %(min, dry)	99.9
Hydrogen Sulphide (H ₂ S)	Wt.ppm(max, dry)	10
Ash	Wt.ppm (max)	200
Colour		Bright Yellow
Pressure	Kg/Cm ² abs	Not Relevant
Temperature	°C	Ambient
Physical Appearance		Solid lumps



By Product Fly Ash/slag (solid) / Slag-fine produced from the plant shall cater to the following minimum specification:

Parameter	Unit	Value
Fly-ash/ Slag/ Slag-fines	Wt.%/ Wt. %/ Wt. %	(To be specified by BOO Processor)
Moisture (H ₂ O)	Wt.%/ Wt. %/ Wt. %	(To be specified by BOO Processor)
Carbon Content	Wt.%	Fly Ash <10 Slag: <2 Slag fines: <50
Pressure	Kg/cm ² a	Atmospheric
Temperature	°C	<80
Physical appearance		(To be specified by BOO Processor)

2.3 Feed stock:

Specification of ROM Coal fed to Coal Gasification Plant for production of Ammonia Synthesis Gas is as follows: Available coal analysis mentioned in the Clause no. 1.1 of Section-1.5 (Raw Material & Utility Specification) Technical.

24% ash content in coal shall be the basis of design for Coal Gasification plant along with all associated facilities to generate Ammonia Syn. gas, Ammonia Plant (2200 MTPD), Steam Generation Plant and all associated offsite & utilities etc. Bidder shall also furnish the Guaranteed specific coal consumption (in Metric Tonnes of coal per tonne of Ammonia) at different levels of ash content as per table given below:-

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Sr. No.	Ash Content in Coal (%)	Guaranteed specific coal consumption per tonne of Ammonia* (MT)
1.	18.0 < Ash% < 20.0	
2.	20.0 < Ash% < 22.0	
3.	22.0 < Ash% < 24.0	
4.	24.0 < Ash% < 26.0	
5.	26.0 < Ash% < 28.0	
6.	28.0 < Ash% < 30.0	

*In case the ash content in the supplied coal is beyond the above range (i.e. beyond 18 < Ash% < 30), the guaranteed specific coal consumption on either side shall be derived mathematically through extrapolation at multiple of 2.0% intervals.



Required Raw Coal shall be supplied by Road trucks by the owner at plant B.L.. Unloading hopper shall be in the BOO processor's scope.

To ensure continuous feed supply at a constant rate at coal gasification plant & Steam Generation Plant through conveyor belts, proper facility shall be put up by BOO Processor for storage / transfer of coal from BOO Processor B.L. to gasification plant & Steam Generation

Sulphur Storage Construction, operation & maintenance shall be in BOO Processor scope.

Fly Ash/ Slag/ Slag-fine storage/ disposal: Details of Ash Dyke for storage of Ash/ Slag/ Slag-fine shall be provided by BOO Processor:

- Storage Capacity = Fifteen day's production
- Storage area = -----m² (To be specified by BOO Processor)
- Storage pressure = Atmospheric
- Operated/ maintained by = BOO Processor.
- Disposal of Fly ash/ Bottom ash from Fly/ Bottom Ash silo to Ash Dyke (Within BL) shall be the responsibility of BOO Processor.
- Disposal of slag from Gasifier to Ash Dyke (Within BL) shall be the responsibility of BOO Processor.
- Disposal of ash from Fly ash Silo and Ash dyke (Within BL) to the outside BL shall be the responsibility of Owner.
- Reclaimer system to empty the Ash dyke (Within Plant BL).

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Atm. Cryogenic Ammonia Storage & Loading Gantry

Atm. Cryogenic Ammonia Storage Tanks of 2 X 10000 MT capacities (excluding free board & dead volume) & Transfer Pump along with Ammonia loading gantry for Tank Truck and Rail wagon shall be in the scope of BOO Processor . Tank Truck loading gantry shall be designed for loading of 20% of total Ammonia production per day. Rail wagon loading gantry shall be designed for loading of total Ammonia production per day.

3.0 Guarantee

BOO Processor shall guarantee performance of Coal Gasification based Ammonia Plant as specified in this Clause under the following heads.

1. Capacity mentioned in clause no. 2.1
2. Quality of the product mentioned in clause no. 2.2
3. Works cost
4. Noise Level
5. Gaseous Emission
6. Liquid Effluent



Failure to meet capacity of the plants, quality of the products, specific consumption of raw material/ utilities, pollution levels and noise levels shall be breach of contract requiring corrective action by BOO Processor irrespective of the cost involved.

For penalty clauses, please refer Part-1 Commercial Section.

BOO Processor shall guarantee overall consumption of ROM Coal (refer clause no. 2.3 of this section), Power, make-up water for generating Ammonia at 100% plant capacity.

BOO Processor shall furnish all data and shall guarantee the Total Works Costs per day for production of Ammonia meeting the quality and conditions in the following manner.

Sl. No	Raw Materials/ Utilities	Consumption per day (Q)	Cost per day (Q*R) INR
1.	ROM Coal, MT		
2.	Make-up Water, M ³		
3.	Power, KWh		
4.	Guaranteed Total Works Cost "A"/Day = $\sum(Q \times R)$ {Sl.No.1-4}		
5.	Production figures (per day): Ammonia "N" (MTPD)		
6.	Guaranteed Specific Work Cost/ MT of Ammonia ("S" = A/N)		

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Notes:

- i) The guaranteed works cost shall include cost of materials and utilities required and power consumption for building cooling/ heating, lighting, ventilations, air conditioning and consequent costs of such materials which are in the usual operation of the plant
- ii) For Bid submission purpose, BOO Processor shall furnish consumption and generation figures of ROM Coal, Fluxant, Power, Make-up Water respectively whose actual works cost shall be calculated on the basis of Unit Price mentioned in the above table
- iii) For the purpose of calculating specific works cost of Ammonia; ROM Coal, Fluxant (if required), Make up water and Power
- iv) No meter tolerances are allowed
- v) Steam venting is not allowed

4.0 GENERAL REQUIREMENTS:

4.1 Plant On-stream factor:

BOO PROCESSOR may require from time to time to shut down the production facilities of the Production Plant for such period of time as may be necessary for BOO PROCESSOR to make ordinary repairs and for maintenance consistent with proper operation. However, such planned shutdown (turn-around) shall be limited to about 35 (thirty-five) days throughout the year. BOO Processor shall intimate 15 day in advance for such planned shut-down. BOO PROCESSOR will design all the equipment/ steam generators etc. those requires mandatory statutory inspection for a minimum run length of 2 years. BOO Processor is required to manage all the statutory inspection within this period.

4.2 Capacity Utilization



Name plate capacity of Ammonia Complex is 2200 MTPD i.e. 100%. However, Bidder shall consider sufficient design margin to meet the requirement of Name Plate Capacity i.e. 2200 MTPD.

4.3 Plant Availability:

Plant availability factor for all the Coal Based Ammonia Plant should be 100% excluding the planned shutdowns.

4.4 Flare:

Flare system shall be in the BOO Processor's scope. All the flaring requirement for the Coal Based Ammonia Plant shall be provided by the BOO Processor within the battery limit to cater to the discharge of mitigated flare load from the unit.

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HCN (beyond threshold limit) shall be captured from Flare streams before flaring.

Sour gases from Coal gasification unit, CO-shift Unit and Acid Gas Purification unit shall be treated in SRU/ Boiler. Sour gases from Coal gasification unit, CO-shift Unit and Acid Gas Purification unit can only be flared during start-up, Shut-down and abnormal condition of Plant.

All hydrocarbon / combustible gases and vapours shall be relieved to the flare through a knock out drum. Flare stake shall be in the scope of BOO Processor.

Quantity:

Provision for mitigated HP flare load from Coal Based Ammonia Plant	To be specified by BOO Processor
Provision for mitigated Acid flare load from Coal Based Ammonia Plant	To be specified by BOO Processor
Provision for mitigated LP flare load from Coal based Ammonia Plant	To be specified by BOO Processor



4.5 Reliability:

In order to install a high degree of confidence and reliability of the offered plant, the following shall be taken care of by BOO Processor:

- a) Providing adequate redundancy and standby requirements both for equipment and control systems based on their experience of operating similar BOO plants.
- b) Maintaining adequate inventory of spare parts – BOO PROCESSOR shall maintain adequate inventory for the spare parts required for routine maintenance.
- c) 2 out of 3 voting logic to be considered for major plant trip logic functions.
- d) Providing catalyst volumes in the reactors with minimum catalyst life of 3 years, standby reactors to be considered wherever catalyst life is less than 3 years.
- e) Provision of online changing of absorbents in desulphurisation section.

5.0 Catalysts, Chemicals, Adsorbents and Absorbents:

BOO PROCESSOR to arrange/ consider all facilities for receiving, sorting, loading and unloading Catalyst/ additive/ adsorbents/ chemicals & passivation facilities within ISBL of the BOO facility as required in their scope. Consumables and chemicals required by BOO Processor will not be supplied and same shall be sourced by BOO Processor directly.

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6.0 Effluents from Coal Based Ammonia plant

Basis of design of Coal based Ammonia Plant shall be for Zero effluent discharge. All type of effluent i.e. Process Waste Water, Boiler Blow Down water, Cooling water Blow-Down, oily water etc. from all the units within Complex during Normal, start-up, Shut down and upset conditions shall be routed to Effluent Treatment Plant through oily water sewer (OWS):-

▪ Liquid Effluent Parameter from ETP Outlet

As per Central Pollution Control Board/ State Pollution Control Board norms for effluent discharge.

BOO PROCESSOR has to confirm compliance to above rates and specifications.

7.0 Specific Process Design Guidelines:



- 7.1 BOO Processor has to design the unit for maximum energy efficiency, meeting benchmark numbers of international bench marking agencies. Process and equipment design should incorporate features for maximizing energy efficiency.
- 7.2 Special safety requirements such as Ammonia/H₂S leak detectors and snuffing rings around leak prone flanges, etc., shall be provided, wherever necessary.
- 7.3 Standards proposed by Central Pollution Control Board & State pollution Control Board of India for emissions from the Ammonia plant to be followed w.r.t. BOO units and periodic reports needs to be submitted to South Eastern Coalfields Limited.
- 7.4 Design of units shall incorporate various safely features in line with international safety standards and design practices. BOO Processor shall furnish brief write-up in the proposal highlighting such safety features.
- 7.5 Flare relief from production plant shall be kept as minimum as possible. Flare mitigation required to meet minimum flaring as per applicable API code shall be adopted.

8.0 SAFETY, HEALTH & ENVIRONMENT:

8.1 General

BOO PROCESSOR & his employees shall –

1. Comply with the conditions of the EC (Environmental Clearance), NOC/ Consent to Establish, Air & Water Consents, Hazardous Waste Authorization and the standards stipulated in the Gazette Notifications for the concerned industry.
2. Follow all the relevant rules & regulations like The Factories Act, The Environment (Protection) Act etc.

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3. Implement recommendations of EIA Report & Risk Analysis Report.

8.2 Safety

BOO PROCESSOR & his employees shall –

1. Observe own safety rules & regulations in the Production plant and rules & regulations of the refinery outside the Production plant.
2. Observe 'No Smoking' strictly in the BOO premises except the earmarked place (smoking booth). Any person who is found smoking or in the possession of match box or lighter or any other means of ignition in the Complex or in the Production plant shall be turned out of the Complex gate. Suitable action as decided by the OWNER's management shall also be taken.
3. Maintain good standards of housekeeping.
4. Take all safety precautions and obtain permission from the Fire & Safety Department of the Complex before carrying out any hot job.
5. Deploy a qualified safety officer to monitor the safety performance.
6. Obtain permission from the Fire & Safety Department of the Complex before drawing water from the fire water network of the Complex.
7. Report all accidents to the Fire & Safety Department of the Complex and fulfill all legal formalities.
8. Enlist all chemicals on stock with their respective MSDS.
9. Be a part of the OWNER's Emergency Response Team and shall participate in mock drills, rescue operations organized by the OWNER.
10. Take due insurance cover for affecting neighbourhood (damage, loss & injury to people, property & environment) due to any untoward incident.

8.3 Traffic Safety

BOO Processor & his employees shall –

1. Maintain the speed limit of 25 Km/hr inside the Complex premises.
2. Avoid traffic congestion and abide by the traffic rules by deploying trained and licensed drivers.

8.4 Environment

BOO Processor & his employees shall –

- 8.4.1** Shall avoid wastage of drinking water, etc. (Utilities supplied free of cost by OWNER)
- 8.4.2** Transfer only neutralized effluent to the Effluent Treatment Plant as specified in cl.4.0 above
- 8.4.3** Install Hydrocarbon (HC) leak detectors at strategic locations in the plant area.
- 8.4.4** Install SO₂, NO_x, CO analyzers in all the stacks for computerized monitoring as stipulated in the EC. Stack heights shall be as per standard/ codes and stacks shall have proper sampling & monitoring facilities.

Stack Emission Limit

SO ₂	100 mg/ Nm
NO _x	100 mg/ Nm ³
Particulate Matter	10 mg/ Nm ³
CO	100 mg/ Nm ³
Ammonia	< 50 mg/Nm ³
Sulphur	< 20 PPMv
Pressure	Atmospheric



Carbon Mono-oxide emission limit shall be 650 PPMv (max) for Rectisol Section.

Boo Processor to follow the latest norm of CPCB/ WBSPCB. State PCB or Central PCB norms whichever is more stringent shall be complied by BOO Processor

- 8.4.5** Monitor fugitive emission of Hydrocarbon (HC) / VOC & Benzene through Portable Monitor at periodicity as per the latest Gazette Notification.

Limit of VOC & Benzene Concentration

	VOC ppm	Benzene ppm
Pump/ Compressor	5000	2000
Valves/ Flanges	3000	1000
Other Components	3000	1000

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8.4.6 Ground Level Concentration:

The BOO Processor shall guarantee the ground level concentration in the atmospheric air of within plant area and shall not exceed the limits given below:

TLV (for 8 hrs working)

Parameter	Value
Carbon monoxide	2 ppm
PM ₁₀	100 µg/m ³
PM _{2.5}	60 µg/m ³
SO _x	80 µg/m ³
NO _x	80 µg/m ³

TLV for 8 hours shall be as per latest OHSAS/ ACGIH

8.4.7 Noise Level:

BOO Processor shall guarantee the noise level within the ISBL Plant premises. Noise nuisance from machinery is normally specified as sound pressure level which for standard design shall not exceed, in work areas, 85dBA at 1m distance from each source. However, Maximum allowable noise limit shall not exceed higher values of noise level (115 dBa) as per OSHA standard during any upset conditions.

8.4.8 Monitor noise level at a periodicity of 3 months.

8.4.9 Send all monitoring reports to the OWNER.



8.4.10 Allow access to the OWNER and their monitoring agencies in the Production plant and take action on any observation/ deficiency found within the timeframe directed by the OWNER.

8.4.11 Arrange for disposal of solid waste like spent catalyst, etc. through 3rd parties following all the applicable rules.

8.4.12 Maintain records of solid waste generation & disposal and send report to the OWNER.

8.4.13 Take adequate measures for protection of land & ground water and shall also be responsible for land reclamation. No waste, regardless of composition, shall be drained to sewers, trenches, ditches or channels.

8.4.14 Allow access to the statutory bodies for inspection in the Production plant and implement recommendations, if any within the stipulated timeframe.

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8.4.15 Take the OWNER's consent before doing any modification/ alteration/ deletion in the Production plant and if required, take necessary approval from the statutory authorities on behalf of the OWNER.

9.0 UTILITIES:

Refer Section-1.5 Part-II Technical

10.0 CLIMATIC DATA

Bidder to collect the climatic data from concerned IMD office

10.1 Wind:

Wind Load Design: as defined in IS: 875 Part 3

10.2 Air Temperature

10.3 Relative Humidity

10.4 Rainfall

10.5 Barometric Pressure

10.6 Seismic Design Code



10.7 Plant Elevation:

The final plant elevation shall be established by the BOO Processor based on overall project requirement.

11.0 CODES & STANDARD

Equipment and machinery shall be provided so that the PLANTS can operate for minimum two years without major overhaul or inspection. All design shall conform to the latest edition of the applicable sections of ASME, ASTM, IEEE, NFC, TEMA, AISI, NEMA, AISC, ACI, OSHA, UBE and other governing codes or standard practices. Any other equivalent and acceptable Code of Standard practice may be adopted with the approval of the LICENSEE. In addition, the following state/local Codes/laws shall supplement:

a)	Pressure Vessels/ Formed ends	ASME, Section VIII, DIV.I / Indian Standard IS 4049.
b)	Boilers	Indian Boiler Regulations Act
c)	Buildings & Structural	Relevant Indian Standard (BIS)
d)	Electricity	Indian Electricity Rules.
e)	Sanitary	Relevant Indian Standard (BIS)

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f)	Safety	a) Manual of Chief Inspector of Explosives, Govt. of India. b) Oil Industry Safety Directorate (OISD) norms
g)	Water Pollution	Relevant Indian Standard (BIS)

12.0 SYSTEM OF MEASUREMENTS

The system of measurement shall be Metric as follows:

Parameter	Preferred Units	Alternative Units
Temperature	°C	
Pressure - absolute	kg/cm ² abs	
Pressure - gauge	kg/cm ² g	
Flow (liquid)	m ³ /hr	kg/hr
Flow (gas)	Nm ³ /hr	kg/hr
Flow (steam)	kg/hr	
Length, Level	mm	m
Time	hr	sec, min
Heat	kcal	
Power	kW	
Fouling resistance	m ² hr °C / kcal	
Pipe size / diameter	mm (NB)	
Mass	kg	
Liquid relative density	sp gr T°C/15.6°C	
Liquid density	kg/m ³	
Vapor flowing density	kg/m ³	
Furnace draft	mm of WC	
Storage tank pressure	mm of WC	
Vacuum	mm of Hg, mm WC	
Standard vapor	Nm ³ /hr at 0°C & 1.033 kg/cm ² a	
Standard liquid	Sm ³ /hr at 15.6°C	
Thermal conductivity	kcal/hr-m-°C	
Heat Transfer coefficient	kcal/hr-m ² -°C	
Enthalpy, Entropy	kcal/kg	
Heat rate	10 ⁶ kcal/hr or MM kcal/hr	
Viscosity	cP	
Kinematic Viscosity	cSt	
Sound Pressure	dB(A)	
Sound Power	dB(A)	

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VOLUME II: TECHNICAL



SECTION – 1.5

RAW MATERIAL AND UTILITY SPECIFICATIONS

**PLANT: INTEGRATED COAL BASED AMMONIA PLANT,
AT MAHAMAYA SCG PLANT, BHATGAON
AREA, SURAJPUR DISTRICT,
CHHATTISHGARH, INDIA**

**PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH
COAL GASIFICATION ROUTE ON BUILD-OWN-
OPERATE (BOO) BASIS AT SOUTH EASTERN
COALFIELDS LIMITED, CHHATTISHGARH,
INDIA**

0	25.01.2022	25.01.2022	Issued for Tender Purpose	SK	SKK/ DKV	MN
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED RAW MATERIAL, PRODUCT AND UTILITY SPECIFICATIONS	PC277/E/4001/P-II/ SEC-1.5	0	 SECL
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2.0	BOO PROCESSOR'S SCOPE	3

LIST OF ATTACHMENT

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1. OWNER'S SCOPE

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Owner shall provide the followings Raw material and utilities on chargeable basis till first delivery of Ammonia (first start-up) and for all start-ups as mentioned in below clauses: -

1.1 RUN OF MINE (ROM) COAL

Specification of ROM Coal fed to Coal Gasification Plant for production of Ammonia Synthesis Gas is attached as 1.5 A.

1.2 RAW WATER

Raw water shall be taken from Mohan River. Raw water quality of Mohan River is attached as Annexure 1.5 B. **Water Analysis provided in the Annexure 1.5B is for information. Bidder shall arrange the river water analysis for design purposes.**

1.3 POWER

Power shall be provided from state grid. Further, Refer Section-1.10 Design Philosophy Electrical.

2. BOO PROCESSOR'S SCOPE

2.1	H.P Steam	
2.2	M.P Steam	
2.3	L.P Steam	
2.4	Cooling Water (Added with suitable chemicals)	
2.5	Nitrogen Gas (Utility)	
2.6	Nitrogen Liquid (Utility)	
2.7	Instrument Air	
2.8	Demineralised Water	
2.9	Boiler Feed Water	
2.10	Service Water	
2.11	Process Water (after treatment)	
2.12	Drinking Water (Drinking water quality shall be as per latest IS: 10500)	
2.13	Plant Air	
2.15	Fire Water	
	Pressure kg/cm ² g	Min. 7 at farthest point (As per NFPA/ TAC)
	Temp. deg C	Ambient
2.16	FLUXANT (if required)	
	Fluxant (Lime) procurement and transportation will be in the scope of BOO Processor. Fluxant (Lime) handling, storage, conveying etc. shall be in the scope of BOO Processor's scope.	

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VOLUME-II: TECHNICAL

SECTION – 2.1

ENGINEERING SPECIFICATION



PRESURE VESSEL (STATIC EQUIPMENTS)

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3.0	Inspection & Testing	
4.0	NDT Requirements	
5.0	Documents, Data & Drawings	
6.0	Spare Parts	

LIST OF ATTACHMENTS		
ATTACHMENT NUMBER	DESCRIPTION	NUMBER OF SHEETS
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1.0 REFERENCED PUBLICATIONS

This document defines the design philosophy to be applied for design of various types of static equipment i.e. Pressure Vessels, Columns/Towers, Heat Exchangers, Power and Waste heat Boilers, Storage tanks and Vessel Internals e.t.c for Coal Gasification based Ammonia Plant and all associated facilities such as Raw water treatment Plant, DM Plant, Instrument Air Plant and ETP to be constructed by BOO Processor on BOO basis for M/s **FOR SOUTH EASTERN COALFIELDS LIMITED**.

The following codes and standards (latest edition) including latest addenda as on the date of first issue of this engineering specification to be followed.

Code	Description
ASME Section VIII Div 1 & 2	Rules for construction of Unfired Pressure Vessels
TEMA 'R' / API 660	Standards of Tubular Exchangers Manufacturer's Association / For Shell & Tube Heat Exchanger
HEI	Heat Exchanger Institute standards for steam surface condensers and steam jet ejectors
API 661	Air Cooled Heat Exchangers
API 662	Plate type Heat Exchangers
ASME Section 1 & IBR	Rules for Construction of Power Boiler & Indian Boiler regulations
API 620	Design & Construction of Large, Welded, Low-pressure Storage Tank
API 934 - A	Materials and Fabrication of 21/4Cr-1Mo, 21/4Cr-1Mo-1/4V, 3Cr-1Mo, and 3Cr-1Mo-1/4V Steel Heavy Wall Pressure Vessels for High-temperature, High-pressure Hydrogen Service
API 934 - C	Materials and Fabrication of 1 1/4Cr-1/2Mo Steel Heavy Wall Pressure Vessels for High-pressure Hydrogen Service Operating at or Below 825 °F (441 °C)
API 934 - E	Materials and Fabrication of 11/4CR-1/2Mo Steel Pressure Vessels for Service Above 825 °F (440 °C)
API 941	Steels for Hydrogen Service at Elevated Temperature & Pressure
API 625	Tank Systems For Refrigerated Liquefied Gas Storage
API 650	Welded Steel Tanks for Oil Storage
API-653	Tank Inspection, Repair, Alteration, and Reconstruction
API Standard 2000	Venting Atmospheric and Low pressure storage Tanks
API 2550	Method for measurement and calibration of upright cylindrical Tanks
ASME Section II A&B/ASTM	Materials Specifications
ASME Section II PART C	Specification for welding rod, electrode & filler metal
ASME SEC II PART D	Properties
ASME Section V	Non-destructive Examination
ASME Section IX	Welding & Bracing Qualifications

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Code	Description
ASME PTC 4	ASME Power test code
ASME PTC 4.4	Power Boiler Test Code
EJMA *	Standard of Expansion Joint Manufacturers Association
NACE	National Association of Corrosion Engineers
ASME B 16.5	Pipe flanges & Flanged fittings
ASME B 16.47	Large diameter Steel flanges
ASME B 16.20	For gaskets
ANSI	Pipes, Flanges, Fittings and Valves
IS: 875/SITE DATA	For wind load consideration
IS: 1893 (Part 4):2015 / SITE DATA	For seismic design consideration
BS 4994	Design & Construction of vessel & Tanks in Reinforced Plastics



*- Except for heat exchangers, while for heat exchangers the expansion bellows shall be designed as per TEMA standard.

NOTES:

1. BOO PROCESSOR may select DIN, BS or any other well known international materials as substituted materials to ASTM/ASME ones, if they are equivalent or superior to ASTM / ASME ones.
2. Process licensors guidelines / standards may be adopted complying minimum requirements of this specification of static equipment. Details of such selected guidelines/standards along with the list shall be furnished in the bid.
3. The purpose of this document is to ensure consistency of approach to design of equipment across the Plant Site. The requirements given are for the purpose of general guide line for BOO PROCESSOR. However BOO PROCESSOR may follow process design guide lines as suggested by the process licensor, proven & established codes/standards for design, engineering, manufacturing, inspection and testing of various categories of equipment subjected to the followings.
 - BOO PROCESSOR shall comply with the technical, HSE (health, safety and environment) and any other statutory requirement like IBR, CCOE, and Factory Inspectorate etc.
 - BOO PROCESSOR shall indicate the codes and standards in his bid which shall be followed for design of plant.

b) **STATUTORY PROVISIONS:**

National laws and statutory provisions such as Indian Boiler Regulation and Department of Explosives, Nagpur, India together with any local by-laws for the state including statutory

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requirements shall be complied with. Static and Mobile Pressure Vessel (SMPV) rules as applicable shall also be complied with.

c) PUBLICATIONS

NACE MR 0103	Materials Resistant to Sulphide Stress Cracking in Corrosive Petroleum Refining Environments
NACE MR 0175 / ISO 15156	Petroleum and natural gas industries - Materials for use in H ₂ S containing environments in oil and gas production
NACE RP 0296	Guidelines for Detection, Repair and Mitigation of Cracking of Existing Petroleum Refinery Pressure Vessels in Wet H ₂ S Environment
NACE TM 0284	Evaluation of Pipeline and Pressure Vessel Steel for Resistance to Hydrogen Induced Cracking
NACE TM 0177	Laboratory Testing of Metals for Resistance to Sulphide Stress Cracking in Hydrogen Sulphide Environment
WRC Bulletin # 107	Local Stresses in Spherical & Cylindrical Shells due to External Loadings.
WRC Bulletin # 297	Local Stresses in Cylindrical Shells due to External Loadings on Nozzles

2.0 DESIGN PHILOSOPHY / GENERAL CRITERIA



Equipment shall be designed in compliance with the latest design code requirements and applicable standards/ specifications. All design calculations shall be performed considering all applicable loads & site condition (wind/seismic conditions e.t.c) for erection, operating and hydro test conditions.

2.1 MINIMUM SHELL/HEAD THICKNESS

Pressure components of equipment and supports shall have minimum thicknesses after forming not less than the requirements of the Code and this specification.

For vessels, the minimum thickness of shell & heads, including corrosion allowance shall be as indicated below:

S. No.	Shell Diameter (mm)	Thickness (Min.) mm	
		CS / LAS	HAS
1	ID < 500	5	3
2	501 < ID < 1200	5	4
3	1201 < ID < 2000	6	5
4	2001 < ID < 2600	8	6

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5	ID > 2600	10	8
CS = Carbon Steel LAS = Low-Alloy Steel HAS = High-Alloy Steel			

Minimum thickness of vessel skirts shall be 6 mm.

- a) Internal non-pressure piping and fittings in vessels (with up to 3mm C.A.) shall have the following minimum nominal wall thickness unless otherwise shown on the data sheet.

Carbon Steel

Up to 100 mm NB	Sch. 80
150 mm NB to 250 mm NB	Sch. 40 (STD Wall)
Over 250 mm NB	STD Wall
Alloy Steel or all sizes Non-Ferrous.	STD Wall

For higher C.A., thicknesses shall be suitably increased.

- c) For shell & tube heat exchangers, minimum thickness shall be as per TEMA & Tube sheet as per UHX of ASME SECTION VIII Div.1
- d) For Air Cooled heat exchangers, minimum thickness shall be as per API 661; however Minimum tube sheet thickness shall be 22mm (excluding corrosion allowance).
- e) For Storage tanks the minimum thickness shall be based on stability considerations. However Minimum thickness for roof & shell shall be 5 mm, and bottom plate 6 mm or as per applicable design code whichever is higher.



2.2 TEST PRESSURE

- a) Equipment shall be hydrostatically tested in the fabricator's shop as per design code.
- b) Equipment open to atmosphere shall be tested by filling with water to the top.
- c) Unless otherwise specified in applicable design code allowable stress during hydro test in tension shall not exceed 90% of yield point.
- d) Storage tanks shall be tested as per applicable code.

2.3 CORROSION ALLOWANCE:

The recommendation of Process Licensor and process Design Guidelines as per NIT shall be adopted for corrosion allowance of equipment.

Unless otherwise specified elsewhere, minimum corrosion allowance shall be considered as follows:

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- Carbon Steel equipment : 3.0 mm *
- Low alloy steel equipment : 1.5 mm* (3 mm for shell & tube exchangers)
- Stainless steel equipment : NIL
- CS Storage Tank : 1.5 mm

* Except for tubes

2.4 SUPPORTS:

- 2.4.1 All columns with diameter 1000 mm and more shall be self-supporting.
- 2.4.2 All columns with diameter less than 1000 mm shall be supported by superimposed structure around the column covering the entire height. Guy wires are not permitted to be used for supporting any equipment.
- 2.4.3 In specific cases, columns having diameter less than 1000 mm and total L/D ratio not exceeding 10 may be self-supported.
- 2.4.4 Buried vessels (If any) shall be suitably anchored to prevent the uplift due to underground water. Anchor bolts shall have corrosion allowance of 6 mm on diameter. Buried vessels shall be rested on concrete saddles with anchoring bracket at the centerline of the vessel.
- 2.4.5 All skirt supported columns/equipment with height 20 m and above (irrespective of weight) and weight 50 MT and above (irrespective of height) are to be provided with tailing lug.

2.5 MANHOLES:



Vessels and columns with diameter greater than 900 mm and up to 1500 mm shall be provided with 500 NB manholes. However, if required, vessels and columns with diameter 1500 mm and above may be provided with 600 NB manholes.

2.6 FLANGES:

- 2.6.1 Nozzle flanges up to 600 NB shall be as per ASME B16.5 and above 600 NB shall be as per ASME B 16.47 except that for high pressure heat exchanger.
- 2.6.2 Unless otherwise specified, W.N. Flanges shall be used for all classes.
- 2.6.3 Unless otherwise specified, all girth flanges and intermediate body flanges shall be of weld neck type only.
- 2.6.4 Flange rating shall be established based on design pressure, design temperature and considering all external loads (moments and axial force).
- 2.6.5 Girth flanges must be made in one piece. Segmental butt-weld construction shall not be accepted.

2.7 PIPE DAVIT:

- i) Vertical Vessel/Column having safety valve size 80 NB and above and or having internals, shall be provided with pipe davit.



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- ii) Exchangers shall be provided with davits for removal of flat channel cover and shell covers only.

2.8 IMPORTANT CONSIDERATIONS:

- Vessels and columns shall be designed considering maximum operating liquid head in addition to design pressure.
- All columns and vessels shall be capable of withstanding water full condition during system testing.
- In addition, all vertical vessels, columns and horizontal vessels shall be designed so as to permit site testing of the equipment with water at the test pressure on the top of the equipment considering 33% of design wind load. The design shall be based on fully corroded condition.
- Vessels and columns shall be tested at shop hydrostatically at pressure calculated as per applicable code in new and cold condition.
- Design of components not covered in IBR (Indian Boiler Regulations) shall be in accordance with ASME SEC VIII DIV I.
- All nozzle necks, all nozzle flanges and blind flanges shall be of weld deposit construction for clad equipment. Loose liners are not permitted.
- All vertical equipment shall be provided with two lifting lugs. Lifting lugs shall be designed with impact factor of two.
- Unless otherwise specified, SI unit shall be applied as the measurement system for the drawing and documents to be submitted.
- Climatic and other site conditions shall be as per Process Design basis Section- 1.6 and as defined elsewhere in ITB.
- Integrally clad metal and weld overlays shall not be considered as contributing to the strength of the vessel wall thickness of the Equipment. It should not be considered in the minimum thickness calculation.
- Material for vessel / column skirt shall be the same material as of vessel /column shell for the upper part with a minimum of 1000mm.
- Tube sheet and Girth flanges must be made in one piece. Segmental butt-weld construction shall not be allowed. Further Tube sheet from plate material is not acceptable.
- Tube sheets shall have a nominal clad or weld overlay thickness of 3/8 inch (10 mm) but not less than 5/16 inches (8 mm) regardless of shell side or tube side face. Minimum undiluted thickness of clad or weld overlay shall be 1/8 inch (3 mm).

2.9 SALIENT REQUIREMENTS OF STATIC EQUIPMENTS

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2.9.1 HEAT EXCHANGERS:

Testing accessories for shell and tube Heat Exchanger:

- a. Testing rings shall be provided on all floating 'S' & 'T' head type exchangers.
- b. Dummy shell shall be provided for fixing test ring for exchangers such as kettle type or floating head without shell covers (TEMA 'AHT' or 'AKT') or stab in bundle where shell design pressure is higher than tube side pressure.
- c. Test flanges shall be provided
 - i) For exchangers with removable bundle and bonnet type channel.
 - ii) For exchanger with removable bundle and channel with flat cover if tube side pressure is greater than shell side pressure.
- d. Minimum number of test rings/ test flanges/ dummy shells shall be at least one per set of three bundles.
- e. For shell side interconnected and stacked exchangers the minimum number of test rings shall be equal to the number of exchangers in one stack.
- f. For 'U' tube & removable bundle exchanger, number of test flanges shall be equal to number of exchangers in one stack.

2.9.2 Tall Columns

Mechanical design of self-supporting tall column and its anchorage block shall be carried out considering combination of various loads as below:



2.9.2.1 Loadings

The loadings to be considered in designing a self-supporting tall column/tower shall include:

- (i) Internal and or external design pressure specified on process data sheets.
- (ii) Self weight of column inclusive of piping, platforms, ladders, manholes, nozzles, trays, welded and removable attachments, insulation and operating liquid etc.
- (iii) Other loadings as specified in UG-22 of ASME Code Sec. VIII Div.1, wherever applicable.

2.9.2.2 Loading Condition

Analysis shall be carried out for following conditions:

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- (i) Erection Condition Column (uncorroded) erected on foundation, without insulation, platforms, trays etc. with welded attachments plus full wind on column.
- (ii) Operating Condition Column (in corroded condition) under design pressure, including welded items, trays, removable internals, piping, platforms, ladder, insulation and operating liquid etc. plus full wind on insulated column with all other projections open to wind, or earthquake forces.
- (iii) Test Condition: Column (in corroded condition) under test pressure, filled with water plus 33% of specified wind load on uninsulated column including all attachments shall be considered.
- (iv) Earthquake And Wind Shall Be Considered Not Acting Concurrently.

2.9.2.3 Deflection of Column

Maximum allowable deflection at top of column shall be equal to height of the column divided by 200 up to a maximum of 300 mm.

- (i) If the deflection of column exceeds the above allowable limit, the thickness of skirt shall be increased as first trial up to a maximum value equal to the column thickness and this exercise shall be stopped if the deflection falls within allowable limit.
- (ii) If the above step is inadequate, skirt shall be gradually flared to reduce the deflection. Flaring of skirt shall be stopped if the deflection falls within limits or half angle of cone reaches maximum limit of 9.
- (iii) If the above two steps prove inadequate in limiting the deflection within allowable limits, the thickness of shell courses shall be increased one by one starting from bottom course above skirt and proceeding upwards till the deflection falls within allowable limits.

2.9.2.4 Stress Limits

The stresses due to pressure, weight, wind/seismic loads shall be combined using maximum principal stress theory for ASME Section VIII Div. I.

2.9.2.5 Skirt Support Base



Base supporting including base plate, anchor chairs, compression ring, foundation bolting etc. shall be designed based on over-turning moment (greater of seismic or wind). A minimum number of 8 foundation bolts shall be provided. Nos. of foundation bolts shall be in multiple of four.

2.9.2.7 Dynamic Analysis of Column/Tower

Dynamic analysis of each column shall be carried out for stability under transverse wind induced vibrations as per standard design practice.

2.9.3 Towers /Column/Vessel

- a) The design shall be done based on Process Licensor's Specifications.
- b) Material selection shall strictly be as per Licensor's Specification.

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- c) Minimum thickness as per Licensor's Specification shall be adhered to.
- e) FEM Analysis shall be done for high temperature shell to head and skirt junction if forged Y type ring is used.
- f) All internals shall have minimum thickness as given in Process Licensor's Specification and shall be designed for loads defined by Process Licensor.

3.0 Inspection & Testing:

The following tests/procedures are to be witnessed / reviewed by BOO Processor \ authorized inspecting agency.

- i) Drawings, design calculations & ITP (Review of Owner for critical equipments, other equipment document for reference /Information of Owner.)
- ii) Material test Certificate (MTC)
- iii) Heat treatment procedure approval (if applicable).
- iv) Helium Leak test (if applicable)
- v) Hydraulic test
- vi) WPS & PQR
- vii) NDT tests reports e.g. RT, UT, MP / PT & hardness etc. including Leak test, ferrite check, irons contaminated test, inter-granular corrosion test, etc.
- viii) Material test certificates & Positive material identifications
- ix) PWHT charts
- x) Production test coupons
- xi) UT for Lack of bond in clad material.
- xii) Mock-up test for tube to tube sheet joint
- xiii) In-process inspection of tray / internal parts- Visual dimension, Shearing, Punching & bending.
- xiv) Vacuum box test for tank bottom plates, hydrotest of tank etc.
- xv) For Air cooled H.E, Inspection of tube sheet / plug sheet after machining & pull out test on fin tubes.

- 3.1 The equipment shall be considered acceptable for dispatch only after final certification for acceptance is issued by concerned inspector.
- 3.2 All nozzle reinforcing pads wherever applicable shall be tested pneumatically at 1.25 Kg/cm²g pressure with soap solution on attachment welds. Vent holes shall be plugged with non-hardening mastic to prevent ingress of water.
- 3.3 All completed equipment shall be tested hydraulically as per the requirements of codes, standards & specifications in presence of the inspecting authority. Pneumatic test of completed equipment shall be carried out only when specially mentioned in the specification sheets. Duration of test shall be as per applicable codes & standards. Test medium/water shall be tested for the chlorine contents before filling the equipment.
- 3.4 The temperature of test water shall comply with requirement of Fabrication code.

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3.5 Unless otherwise stated gaskets used during testing shall be same as specified for operating conditions. After testing, all joint gaskets shall be replaced by new gasket which will be opened after Hydro testing

3.6 Heat treatment of formed parts shall be carried out as per following:

For Carbon Steel:

- a. Cold formed dished ends or knuckles up to 16 mm nominal thickness shall be stress relieved.
- b. Cold formed dished ends or knuckles above 16 mm nominal thickness shall be normalised.

For Low alloy Steel: -

- c. Cold Formed Dish ends or Knuckles shall be stress relieved.
- d. Hot formed dished ends or similar parts, which have not been uniformly heated in the normalising range in the final stages of manufacture shall be normalised.
- e. When the completed vessel involves post weld heat treatment, heat treatment recommended in (a) above shall not be applicable.
- f. Vessels in caustic service, Amine or Sour gas service shall be stress relieved.
- g. All internal and external attachments, clips, insulation studs, name plate bracket, and the like shall be welded to the vessel before post weld heat treatment.

4.0 NDT REQUIREMENTS:

The following NDT requirements are mandatory in addition to codes, standards & specification requirements.

A) UT examination:



- i) All butt-welds in thickness greater than 50mm as supplement to radiography
- ii) FPW of nozzle attachments
- iii) All forgings
- iv) All butt welds after hydro test

B) MP / PT Examination:

- i) All edges of plates and opening in shell of CS and LAS/SS.
- ii) Root and final layer of all butt welds.
- iii) All weld surfaces after PWHT.
- iv) All forgings after machining.
- v) All fillet & butt weld after hydro testing.
- vi) Knuckle surface of dished ends / toriconical sections, pipe bends and expansions bellow.
- vii) All attachment welds.

C) Radiography:

- i) All weld seams of formed head, if made in more than one segment shall be full radiography after forming and heat treatment if any.

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- ii) When spot radiography is specified, all T joints & minimum 10% of total weld length excluding T joints shall be radiographed.
- iii) All nozzles fabricated from plates shall be 100% radiographed.
- iv) Radiography of welds in Cr- Mo - Steel to be carried out after heat treatment.

5.0 DOCUMENTS, DATA & DRAWINGS:

5.1 GENERAL

BOO OPERATOR/ Equipment manufacturer shall develop detailed mechanical design & fabrication drawings & Inspection Test Plan (ITP) pertaining to all Static Equipment.

BOO PROCESSOR shall be responsible for the review & approval of all such design and fabrication drawings, ITP submitted by the Equipment manufacturer. Owner's/PMC's review/approval shall be limited to the mechanical design, vendor fabrication drawings and ITP for critical items. A list of such critical items shall be furnished by BOO PROCESSOR along with bid.



5.2 DRAWINGS AND DOCUMENTS REQUIRED ALONG WITH BID

The Contractor shall furnish the following along with the bid:

- (a) Technical Compliance Pro-forma duly completed.
- (b) List of deviations if any, to the applicable specifications.
- (c) List of Critical items.

6.0 SPARE PARTS



BOO PROCESSOR may have their own Philosophy for procurement of commissioning, mandatory & operational spares within the contractual period.

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ANNEXURE –I

GENERAL POINTS FOR HYDROGEN SERVICE.

- 1 Applicability of hydrogen service and cyclic service shall be as per Licensor and code requirement.
- 2 Steel for Hydrogen service at elevated Temperature & pressure shall be selected as per API 941 & API 934 or as per Licensor recommendation.
- 3 When design pressure is more than 600# class or shell thickness is 50 mm and above or equipment is under Hydrogen/Lethal service/cyclic service, self-reinforced forged nozzle shall be provided.
- 4) A) Plates and forgings over 2 inches (50mm) thick or used for pressure containment in Hydrogen service shall be Ultrasonically examined with 100% scanning in accordance with the following:
 - (i) Plates shall be examined before forming in accordance with ASME SA-435 including supplementary requirements S1.
 - (ii) Forgings shall be examined in accordance with ASME SA-388 and ASME Section VIII, Division 2, AM-203.2.
- B) Examined by either liquid Penetrant (PT) or magnetic particle (MT) in accordance with the following:
 - (i) The entire surface of all forgings after finish machining.
 - (ii) Formed plate surfaces to be welded, i.e., the weld level area, and a minimum of 2 inches (50 mm) of the neighbouring surfaces.
 - (iii) Formed plate surfaces where weld overlay will be applied.
- 5) Internal support rings shall be continuously welded to the shell on the top and intermittently welded on the bottom. Internal lugs and brackets shall be continuously welded on the top and sides only. In hydrogen service all internal and external welds shall be full penetration, free of undercuts, through the support side of the joint.
- 6) In hydrogen services, all fillet welds (internal and external) to pressure containing components shall be ground to a smooth and generous concave contour.

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ANNEXURE-II

Material selection

The following table gives general guidelines for material selection for various pressure parts/ non pressure parts of the equipment based on design temperature **wherever material of construction is not specified by the process licensor.**

BOO Processor to ensure compatibility of material with service fluid. In case of any special material requirement as per service, same shall be as per recommendation of BOO Processor subjected to owner approval.

PRESSURE PARTS						NON PRESSURE PARTS				
TEMP. RANGE °C FROM TO	PLATE	SEAMLESS NOZZLE PIPE	SEAMLESS TUBE & SPACERS	FORGINGS COMPONENT/ TUBESHEET & BODY FLANGE	BOLTS/STUDS/ NUTS EXTERNAL	STRUCTURAL ATTACHMENT WELDED TO PRESSURE PARTS, BAFFLES, SUPPORTS, TIE RODS, SEALING, SLIDING STRIPS ETC	INTERNAL PIPES	BOLTS & STUDS/ NUTS	TIE RODS	
-254TO -196	SA 240 GR. 304L,304,316,316L,347 (IMPACT TESTED)	SA 312 TP 304,304L, 316, 316L, 347	SA 213 –TP 304,304L, 316, 316L, 347	SA 182GR. F 304,304L, 316, 316L,347	SA 320 GR. B8, 8C, 8T STRAIN HARDENED SA 194 GR.8,8C,8T	SAME AS PRESSURE PARTS				SS GRADE SAME AS TUBES
-196 TO -80	SA 240 GR. 304L, 304, 316, 316L, 347 SA 353/553 GR.A	SA 312 TP 304,304L, 316, 316L, 347 SA 333GR. 8	SA 213 –TP 304,304L, 316, 316L, 347 SA 334 -3	SA 182GR. F 304,304L, 316, 316L, 347 SA 522						
-80 TO -60	SA 203 GR.E IMPACT	A 333-3	A 334 - 3	SA 350 GR. LF3	SA 320-L7	SA 203-GR. E	SA 333 GR. 3	SA 193 GR.B8	CS KILLED	

0	20.01.22	20.01.22	ISSUED FOR CLIENT COMMENTS	SK	RJ	RRK
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD



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	TEST (SEE NOTE-7)				SA 194-4/7			SA 194 GR.8	
-60 TO -45	SA 537 CL.1 IMPACT TESTED (SEE NOTE-7)	A 333-3	A 334 - 3	SA 350 GR. LF3	SA 320-L7 SA 194-4/7	SA 537 CL.1	SA 333 GR. 3	SA 193 GR.B8 SA 194 GR.8	CS KILLED
-45 TO -29	SA 516 (ALL GRADES) IMPACT TESTED (SEE NOTE-7)	SA 333 GR.6 OR GR. 1	A 334 – 6 OR 1	SA 350 GR. LF3	SA 320-L7 SA 194-4/7	SA -516 (ALL GRADES)	SA 333 GR. 6	SA 193 GR.B8 SA 194 GR.8	CS KILLED
-29 TO 0	SA 516 (ALL GRADES) (SEE NOTE-8)	A-106B (SEE NOTE-8)	A 334 – 6 OR 1 (SEC NOTE -8)	SA 106/SA 266 (SEE NOTE-8)	SA -193 –B7 SA -194-2H	SA -516 (ALL GRADES)	SA 106-B	SA 193 GR.B8 SA 194 GR.8	CS KILLED
0 TO 343	SA 516 (ALL GRADES)	SA 106 – B	SA 179	SA -105 SA -266	SA -193 –B7 SA -194-2H	IS -2062	SA 106-B	SA 193 GR.B8 SA 194 GR.8	IS-2062(WEL DABLE QUALITY)
	SA 240 TYPE 304L,316,321 (SEE NOTE 9)	SA -312 - 304L,316L, 321,	SA 213- 304L,316L, 321	SA 182- 304L,316L,321	SA -193 –B7 SA -194-2H	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR.B8 SA 194 GR.8	SAME AS PRESSURE PARTS



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343 TO 427	SA 204-B	SA 335-P1,	SA 209-T1	SA 182 GR. F1	SA -193 -B7 SA -194-4	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR.B8 SA 194 GR.8	C-1/2Mo
	SA 387 -11 CL.1/CL.2	SA 335-P11	SA 213-11	SA 182 GR F11	SA -193 -B7 SA -194-4	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR.B8 SA 194 GR.8	11/4Cr. ½ Mo
	SA240 - 304L,316L, 321 (SEE NOTE9)	SA 312 - 304L,316, 321	SA 213 - 304L,316L, 321	SA 182 F 304L,316L, 321	SA -193 -B7 SA -194-4	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR. B8 SA 194 GR.8	SA 479 Gr. 304L, 316L, 321
427 TO 538	SA 387 GR.11 CL.1/CL.2 SA 387 GR. 12 CL1/CL2 ¼ Cr 1 Mo	SA 335 P11 SA 335 P12	SA 213 T11 SA 213 T12	SA 182 GR F11 SA 182 GR.F12	SA 193 GR. B16 SA 194 GR.4	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR.B8 SA 194 GR.8	11/4Cr. ½ Mo
427 TO 500	SA 240 TP- 304,316,321 (SEE NOTE 9)	SA 312/SA 376 TP 304,316,321	SA 213 TP 304,316,321	SA 182 F 304,316,321	SA 193 GR.B16 SA 194 GR. 4	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 193 GR.B8 SA 194 GR.8	SA 479 GR. 304, 316, 321
538 TO 593	SA 387 GR.22 CL.1/CL.2 SA 387 GR.	SA 335 P22	SA 213 T22	SA 182 GR F22 SA 336 GR. F22	SA 193 GR. B5 SA 194 GR.3	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	21/4Cr.1 Mo



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SECL

	21 CL1/CL2								
500 TO 815	SA 240 TP- 304H, 316H, 321H	SA 312/SA 376 TP 304H, 316H, 321H	SA 213 TP 304H, 316H, 321H	SA 182 F 304H, 316H, 321H	SA 193 GR.B8 SA 194 GR. 8 (STRAIN HARDENED)	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SAME AS PRESSURE PARTS	SA 479 GR. 304H,316H , 321H

1. Materials used in low temperature service shall be impact tested (Charpy V), if required as per Design code & specification. Impact test & energy value shall be in accordance with code requirement, unless specified otherwise.
2. This table is not applicable for atmospheric/low pressure storage tanks. Materials shall be selected as per API 650/API 620 as applicable
3. Materials for caustic service, sour service or sour service + HIC shall be selected based on specific recommendation of process licensor.
4. Material for pressure vessels designed according to ASME Section VIII Division 2 shall be given special consideration as per code.
5. Nozzle pipes shall be of seamless construction up to 12". For nozzles, greater than 12"NB seamless pipe is preferred or from rolled plates and welded with 100% radiography of the weld seams.
6. Non-ferrous material and super alloys are not covered above and shall be selected based on specific recommendation.
7. Plates are purchased to the requirement of the standard ASME SA 20, which requires testing of individual plates for low temperature service.
8. Check for impact testing requirement as per code, for coincident temperature and part thickness.
9. Selection of stainless steel material shall be based on process recommendation.

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PART-II, TECHNICAL

SECTION – 2.2

DESIGN PHILOSOPHY – MACHINERY (ROTATING EQUIPMENTS)



PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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1.0 REFERENCED PUBLICATIONS

The following codes are referred and applicable for the equipment as enlisted.



Table 1: Applicable/Referred Codes and Standards

Sno.	Description	Standards / Codes	Remarks
1	PUMPS:		
1.1	Centrifugal Pumps (Special Purpose Process Service)	API Std. 610 (Latest edition.)	(1)
1.2	Centrifugal Pumps (General Purpose Process Service)		(2)
1.3	Centrifugal Pumps (General Water Service)		(3)
1.4	Centrifugal Pumps (Slurry & Liquor Service)		
1.5	Positive Displacement Pumps (Reciprocating)	API Std. 674 (latest edition.)	
1.6	Positive Displacement Pumps (Controlled Volume)	API Std. 675 (latest edition)	
1.7	Positive Displacement Pumps (Rotary)	API Std. 676 (latest edition)	
1.8	Liquid Ring Vacuum Pumps	API Std. 681 (latest edition)	
1.9	Seal-less Pumps	API Std. 685 (latest edition)	
2	COMPRESSORS / FANS & BLOWERS		
2.1	Centrifugal Compressors	API Std. 617 (latest edition)	
2.2	Axial Compressors	API Std. 617 (latest edition)	
2.3	Expander-Compressors	API Std. 617 (latest edition)	
2.4	Centrifugal Fans		
2.5	Induced Draft / Forced Draft Fans	API 673 (latest edition)	
2.6	Packaged Integrally Geared Centrifugal Air Compressors	API Std. 672 (latest edition)	
2.7	Reciprocating Compressors (Utility & Instrument Air Service)		
2.8	Reciprocating Compressors (Process Service)	API Std. 618 (latest edition)	

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2.9	Positive Displacement Compressors (Rotary)	API Std. 619 (latest edition)	
2.10	Roots Blowers		
3	MECHANICAL DRIVERS / GEAR BOXES		
3.1	Diesel Engines		
3.2	Gas Turbines	API Std. 616 (latest edition)	
3.3	Steam Turbines (General Purpose)	API Std. 611 (latest edition)	(4)
3.4	Steam Turbines (Special Purpose)	API Std. 612 (latest edition)	(5)
3.5	Special Purpose Gear Box	API Std. 613 (latest edition)	(6)
3.6	General Purpose Gear Box	API Std. 677 (latest edition)	(7)
3.7	Special Purpose Coupling	API Std. 671 (latest edition)	(8)
4	AUXILIARIES		
4.1	Lubrication, shaft sealing and control-oil systems and auxiliaries	API Std. 614 (latest edition)	
4.2	Shaft sealing for centrifugal & rotary pumps	API Std. 682 (latest edition)	
4.3	Vibration, Axial Position & Bearing Temp. Monitoring Systems	API Std. 670 (latest edition)	
5	MISCELLANEOUS	(For reference)	
5.1	Steam Turbines	PTC 6	
5.2	Centrifugal compressor, Turbines and Exhausters	PTC 10	
5.3	Large Industrial Fans	PTC 11	
5.4	Gas Turbines	PTC 22	
5.5	Gear units	ANSI/AGMA	
5.6	Bearings	ABMA	
5.7	Laboratory Methods of Testing Fans for Rating Purposes	AMCA	
5.8	Mechanical Vibrations - Balancing quality requirements of rotating rigid rotors	ISO 1940 and Respective API standard	



NOTES:

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1. BOO PROCESSOR may select DIN, BS or any other well known international materials as substituted materials to ASTM/ASME ones, if they are equivalent or superior to ASTM / ASME ones.
2. Process licensors guidelines / standards may be adopted complying minimum requirements of this specification of rotating equipment. Details of such selected guidelines/standards along with the list shall be furnished in the bid.
3. The codes and standards mentioned in the tender documents are for guidelines only. The purpose of this document is to ensure consistency of approach to design of equipment across the Plant. The requirements given are for the purpose of general guide line for BOO PROCESSOR . However BOO PROCESSOR may follow process design guide lines as suggested by the process licensor, proven & established codes/standards for design, engineering, manufacturing, inspection and testing of various categories of equipment like pumps, compressor, fan etc. subjected to the followings.
 - BOO PROCESSOR shall comply with the technical, HSE (health, safety and environment) and any other statutory requirement.
 - BOO PROCESSOR shall indicate the codes and standards in his bid which shall be followed for design of plant.

Remarks:

- (1) **Centrifugal pumps for special purpose process service** are classified as pumps which are meant for process service (both for on-site & offsite) but excluding the pumps covered either under general- purpose process service or general water service.
- (2) **Centrifugal pumps for general purpose process service** are classified as pumps for applications where maximum pressure by all considerations does not exceed 16.0 kg/cm² g, pumping temperature remains within -29°C to 205°C, Specific gravity is not less than 0.7 at the specified operating conditions or when dual pressurized / unpressurised mechanical seals are not required/specified. Typical areas of application are non-process services & utility services such as De-mineralised Water (DMW) plants, Raw Water Treatment Plants (RWTP), Effluent Treatment Plants (ETP), Blow down services etc.
- (3) **Centrifugal pumps for general water service** are classified as pumps for applications such as Large Capacity Cooling Water Pumps, Auxiliary Cooling Water Pumps & other centrifugal pumps handling clean & cold water.
- (4) **General-purpose steam turbines** (conforming to API Std. 611) shall be used where driven equipment is usually spared, or is in non-critical service and where the steam supply conditions will not exceed 48 bar,g inlet pressure or 400°C inlet temperature or both and where speed will not exceed 6000 rpm. General-purpose steam turbines may also be used, subject to market availability, for cases where the steam supply conditions will not exceed 60 bar,g inlet pressure and 475°C inlet temperature and where speed will not exceed 6000 rpm and where turbine rating will not exceed 1500 kW and where driven equipment is usually spared, or is in non-critical service.

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- (5) **Special-purpose steam turbines** (conforming to API Std. 612) shall be used where driven equipment is not spared and/or is in critical service.
- (6) **General-purpose gear units** (conforming to API Std. 677) shall be used in equipment trains that are usually spared, or are in non-critical service and up-to a maximum driver rating of 750 kW. All ID fan trains are to be considered as meant for non-critical service.
- (7) **Special-purpose gear units** (conforming to API Std. 613) shall be used in equipment trains that are usually not spared, or are in critical service.
- (8) **Special-purpose couplings** (conforming to API Std. 671) shall be used in equipment trains, as specified in the Engineering specification.

2.0 DESIGN PHILOSOPHY

2.1 SCOPE

This Specification covers the design criteria for the purpose of carrying out Engineering for Procurement of various rotating equipment required including requirements with regard to spare parts & special tools. This Engineering specification shall be applied for supply of COAL TO AMMONIA PROJECT THROUGH COAL GASIFICATION ROUTE AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT CHHATTISHGARH, INDIA.

Electrical items, Instrumentation & Controls, Piping, Pressure Vessels, Mechanical Equipment, Heat exchangers etc. associated with rotating equipment shall comply with the design requirements as given in the respective specifications forming part of the bid package / inquiry.

All technical specification used by PDIL/ BOO PROCESSOR if in conflict with licensor's specification, Licensor's specification shall override.



2.2 ASSOCIATED ACCESSORIES AND AUXILIARY SYSTEMS

- 2.2.1 BOO PROCESSOR shall furnish all rotating equipment, drivers, auxiliary systems, instrumentation and control systems, all necessary electrical and safety devices as applicable or required for safe and reliable operation of the unit.

BOO PROCESSOR in his scope of supply and work shall also include the hardware required over and above what is specified, for safe and satisfactory operation of the equipment package.

- 2.2.2 Motors, electrical/instrument components and electrical/instrument installations shall be suitable for the area classification specified by the BOO PROCESSOR and shall meet the requirements as defined in the electrical/instrument specification attached with the relevant sections of the bid package /order.

2.3 SEALING SYSTEM SELECTION CRITERIA

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2.3.1 Centrifugal Pumps

2.3.1.1 All Pumps shall be provided with mechanical seals only.

2.3.1.2 Gland packing can be used where high chances of suspended solid like dust, sand and other particle water service.

2.3.2 Centrifugal Compressors

2.3.2.1 Centrifugal Compressors (for gas service) shall be provided with Dry Gas Seals except for services (like Air, N₂ etc.) where normally labyrinths shall be used for sealing.

2.3.2.2 Dry gas seal and sealing skid comprising of dry gas seal filters, valves and instrumentation etc. shall be procured from Dry Gas seal supplier only. Seal gas/reference gas filters shall have stand by unit for cleaning/replacement during operation of compressor. Dry gas seal shall be bi-directional type and interchangeable between drive and non-drive end.

2.4 COUPLINGS & COUPLING GUARDS

2.4.1 Unless otherwise specified, Couplings shall be of metallic, non-lubricated, flexible element type (i.e. either diaphragm or discs) with spacer, for all equipment. All coupling models shall be selected for a minimum service factor of 1.5.

2.4.2 Couplings for the following equipment shall conform to API Standard 671:

- Centrifugal compressors (API Std. 617)
- Special purpose Steam Turbines (API Std. 612)
- Gas Turbines (API Std. 616)
- Rotary Screw Compressors (API Std. 619)
- Multi-stage (greater than two stages) centrifugal pumps with driver rating greater than 160 kW.



2.4.3 Couplings as per manufacturer's standard may be supplied for the following equipment:

- Reciprocating Compressors
- Packaged Integrally Geared Centrifugal Air Compressors
- Packaged Rotary Compressors (Screw type for Plant & Instrument Air Service)

2.4.4 Removable coupling guard shall be provided which shall be fabricated from non-sparking material, and shall be open at the bottom to permit manual shaft rotation. The guard shall be sufficiently rigid to withstand deflections as a result of bodily contact of nominally 100 kgs. Centrifugal compressors and Gas Turbines coupling guards may have vendor standard features.

2.5 ALLOWABLE NOISE LEVEL

2.5.1 Equipment noise level (Driver + Driven equipment train + auxiliaries) shall not exceed 85 dBA when measured at One-meter distance from the equipment skid in any direction.

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This requirement is not applicable for equipment for infrequent operation such as diesel engine driven fire water pump package.

- 2.5.2 Acoustic hoods shall not be used for any equipment excepting for DG sets (rating up-to 1000 kVA), gas turbines, rotary compressors & roots blowers.

2.6 EQUIPMENT STORAGE

All rotating equipment shall be packed for an outside storage period of at least 12 months.

2.7 INSTALLATION CRITERIA

2.7.1 Pumps

All pumps shall be suitable for outdoor installation. No equipment shelter is envisaged.

2.7.2 Compressors

- 2.7.2.1 All compressors shall be located under-roof with side walls partially open and shall be suitable for outdoor installation.

- 2.7.2.2 Centrifugal compressors driven by steam turbine/electric motor:

All centrifugal compressors driven by steam turbine/electric motor shall be installed on Mezzanine floor with adequate working platform all around and drop out facility for maintenance. Other associated auxiliaries such as lube oil system, surface condenser, Condensate water pumps etc. shall be located on ground floor (i.e. on finished floor level). Alternative arrangement shall be subject to PMC/OWNER approval.

- 2.7.2.3 Reciprocating multi-stage/multi-cylinder compressors:



Reciprocating compressors shall be so located that no trenches are required for volume/pulsation bottles. Large reciprocating multi-stage/multi-cylinder compressors can be installed on Mezzanine floor with its interstage piping/auxiliary equipment located on the ground floor. Skid mounted reciprocating compressors shall be located on finished floor level.

2.8 MAINTENANCE FACILITIES

2.8.1 General

Equipment layout shall incorporate adequate maintenance platforms, support structures, hand rails, operational access, material handling facilities for inspection and maintenance of equipment.

2.8.2 Compressors

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2.8.2.1 Centrifugal Compressors

Adequately sized EOT crane with inching facility with 2 speeds (micro & macro) shall be provided for maintenance of the centrifugal compressor. Electric motor driver if applicable shall be considered as a single component for maintenance.

2.8.2.2 Plant & Instrument Air Compressors

Adequately sized EOT crane with inching facility shall be provided for maintenance of the Compressor and its electric motor driver. Electric Motor Drivers shall be considered as a single component for maintenance.

2.8.2.3 Reciprocating Compressors

Adequately sized EOT crane with inching facility shall be provided for maintenance of the compressor and its driver. Electric motor driver shall be considered as a single component for maintenance except for the single bearing motors where the Motor Rotor and stator shall be considered as individual components.

2.9 HEAT EXCHANGERS

2.9.1 Lube Oil Coolers

2.9.1.1 Unless otherwise specified, Oil coolers shall be water-cooled shell and tube type with removable bundle as per TEMA 'C'.

2.9.1.2 In case of oil coolers, the oil-side operating pressure shall be higher than waterside operating pressure except for cases where this is not feasible.

2.9.1.3 The material of construction shall be suitable for specified service. The tube material of construction shall be admiralty brass on tube side

2.10 SAFETY



2.10.1 Equipment design and engineering shall incorporate adequate safety features (as per applicable specifications of respective equipment as well as Health, Safety and Environment Codes & Standards applicable for the subject project) to provide protection to operating personnel, equipment and environment.

2.10.2 Thermal relief valves shall be provided for components that may be blocked in by isolation valves (including any cooling water return circuit piping of a cooler or a jacket).

2.10.3 All electrical components & installations, instruments shall be suitable for the electrical area classification and grouping in which the equipment is installed.

3.0 SPECIAL REQUIREMENTS

All inspection/ testing/measurement/record shall be done as per respective API/ASME & PTC.

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3.1 CENTRIFUGAL COMPRESSORS

3.1.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.1.2 Inspection and Testing

The following tests may be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic test.
- Helium Pressure test (For casing of compressors handling gas containing 30% mole or higher of H₂).
- Impeller overspeed test.
- Mechanical run test (For main and spare rotor)

During the test apart from other API requirements, the following data shall be recorded

- Vibration data in polar form and Tape recording of Vibration data.
- Gas leak test (After post test inspection).
- Post test inspection after mechanical run test.
- Performance test as per PTC-10.
- Sound level test (during mechanical run test) Complete unit test (including all Auxiliaries)
- Dry gas seal test.
- Full load, Full pressure, Full speed test, if specified.

3.2 RECIPROCATING COMPRESSORS



3.2.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.2.2 INSPECTION AND TESTING

3.2.2.1 Material certificate for Chemical and Physical properties of the following components shall be provided: Cylinder liner, Piston, Piston rod, Crankshaft, Connecting rod, Cross head, Crankcase, Valves, Heat exchangers, Pressure vessels, Bolts (Connecting rod and Main Bearing).

- 3.2.2.2
- a. Ultrasonic testing of the following -Crank shaft, connecting rod, Piston rod, Pressure vessels.
 - b. Magnaflux testing/D.P. Testing of the following - Cross Head, Connecting rod, Piston rod, Pressure vessels.
 - c. 100% X-ray examination for all the welded joints for Pipes, Vessels and Heat Exchangers handling process gas.

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- d. Surface roughness and hardness check for the following - Cylinder bore/Liner bore, Piston rod in packing area, Crankshaft journal and Crank pin.

3.2.2.3 The following test may be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic test (for all pressure containing parts and auxiliaries)
- Leak proof test of Crankcase and Distance piece (24 hrs with Kerosene)
- Helium pressure test (as applicable).
- Checking of Cylinder clearance and rod run out.
- Mechanical run test (for 4 hours) with job auxiliaries.
- Stripping check and Internal inspection: Main Bearing Drive end side, Connecting rod Big End Bearing (at least 1 no.), Piston assembly (1 no.), Cylinder bore effective surface (all cylinder).
- Vibration level check (for record during mechanical run test).
- Lube oil console, Cylinder cooling circuit console run test at Sub vendor works (as applicable)
- Functional test of control panel (By simulation at Sub Vendor works)

3.3 ROTARY TYPE POSITIVE DISPLACEMENT COMPRESSOR

3.3.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.3.2 Driver Sizing

The motor nameplate rating (with Service Factor =1) shall be at least 110% of the maximum power required for any of the specified operating conditions. Equipment driven by Induction Motors shall be rated at the actual motor speed for the rated load condition.

3.3.3. INSPECTION & TESTING



3.3.3.1 The following tests shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic Test
- Mechanical Run Test
- Mechanical Run Test for the spare rotor, if ordered along with the main equipment
- Performance Test
- Dismantle-Reassembly Inspection
- Sound level test

3.3.3.2 The vendor shall also furnish material certificates for major components.

3.4 LIQUID RING VACUUM PUMPS/COMPRESSORS

3.4.1 EQUIPMENT QUALIFICATION CRITERIA

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Equipment qualification criteria as per clause 2.2

3.4.2 DRIVER SIZING

The motor name plate rating (with service factor equal to one) shall be at least 110% of the maximum power required (including gear and coupling losses) for any of the specified operating conditions.

Particular attention shall be given to starting conditions especially when the LRVP is required to start with the suction at the atmospheric pressure.

3.4.3 INSPECTION AND TESTING

3.4.3.1 The following tests shall be witnessed by BOO PROCESSOR \authorized Inspecting agency:

- Hydrostatic Test
- Mechanical Run Test
- Gas Leak test under
- Performance Test
- Sound level Test

3.4.3.2 The vendor shall also furnish material certificates for major components.

3.5 DIAPHRAGM COMPRESSORS

3.5.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2



3.5.2 Driver Sizing

For motor driven units, the maximum continuous rating (MCR), i.e. service equal to 1, shall be a minimum of 110% of the greatest power (including transmission losses) required under any of the specified compressor operating conditions or 5% higher than the power required at the relief valve setting pressure condition (including transmission losses) whichever is greater.

3.5.3 INSPECTION AND TESTING

The following tests shall be witnessed by BOO PROCESSOR \authorized inspection agency:

- Hydrostatic Test
- Mechanical Run Test (4 hrs)
- Helium Test if applicable
- Noise Level Test
- Functional test of control system and other auxiliaries as applicable.

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3.6 **PACKAGED INTEGRALLY GEARED CENTRIFUGAL AIR COMPRESSOR.**

3.6.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.6.2 INSPECTION AND TESTING

The following test shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic Test (Pressure containing parts and auxiliaries).
- Combined Mechanical and Performance test (for main and spare rotor as applicable).
- Check Bearings and Seals after test.
- Functional tests of job lube oil system and job control panel at sub-vendor works.
- Noise level test.
- Guide Vane Test (if applicable)
- Gear contact pattern check.

3.7 **POSITIVE DISPLACEMENT (ROOTS TYPE) BLOWER**

3.7.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.7.2 INSPECTION AND TESTING

3.7.2.1 The following test shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic Test
- Performance test of the blower at manufacturer's works
- Mechanical run test of the blower at manufacturer's works -Noise level test

3.7.2.2 The vendor shall also furnish material certificates for major components.



3.8 **CENTRIFUGAL PUMPS**

3.8.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.8.2 No centrifugal pump shall be selected where the difference of NPSH available and NPSH required is less than and equal to 1.

3.8.3 Inspection and Testing (For Each Pump)

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3.8.3.1 Material Certificates for the following are required

- Casing, Impeller & shaft.

3.8.3.2 The material inspection requirement for pressure containing parts shall be as per the following inspection category:

Category A:

This category is applicable for carbon steel & cast iron for services with process design pressure upto 40 bar and design temperature from 0 to 150°C. Application area in this category shall be for non API pump for water service only.

Inspection requirement: As per vendor's standard Quality Assurance Plan.

Category B:

This category is applicable for services within the design pressure range of 0-70 bar and temperature range of -29°C to 300°C. Inspection requirement includes visual inspection and magnetic particle or liquid penetrant inspection of following components as a minimum:

- Nozzle weld
- Butt welds on pressure containing components
- Fillet welds on pressure containing components.
- Shaft

Liquid penetrant inspection shall be performed only when specified magnetic particle inspection is not feasible.



Category C:

This category is applicable for all hydrocarbon pumps and for services with process design pressure above 70 bar or process design temperature below -29°C and above 300°C. Inspection includes all the requirements of Category B together with radiographic or ultrasonic inspection of

- Nozzle weld
- Butt welds on pressure containing components. Ultrasonic inspection shall be carried out when radiography is not feasible.

3.8.3.3 Inspection shall also include dimensional check of pump, driver and auxiliaries (if any) duly mounted on the base plate, in accordance with certified general assembly drawing. This will include all main pump dimensions, base plate dimensions, location of foundation bolt holes, size/position/rating of flanges, coupling guard arrangement, verification of the required material certificates and their traceability to the respective components. In addition, following checks shall also be carried out:

- A measurement of the actual running clearances throughout the pump.
- A check of the hardness of wear rings.
- A check for good workmanship and finish throughout.

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3.8.3.4 All tests, measurements & records shall be as per API 610 latest edition. The following tests shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic (For all pressure containing parts including auxiliaries)
- Performance
- NPSH (In case difference between NPSHA and NPSHR is less than or equal to 1.0m or when specified in the job specification)
- Dismantling inspection and reassembly after the running test, which shall include examination of mechanical seals, close clearance parts and measurement of running clearances. In case of multistage pumps having hydrodynamic bearings, the bearing shall be removed inspected and reassembled.
- Sound level test (During Performance Test).

3.9 FANS CENTRIFUGAL/F.D./I.D. FANS

3.9.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.9.2 Performance tolerance shall be as follows:

Capacity:	- 0%
Static Diff. Pressure:	-0%
Power:	+0%

3.9.3 INSPECTION AND TESTING

3.9.3.1 Material test certificate shall be furnished for casing, impeller, shaft & shaft sleeve.

3.9.3.2 Following NDTs are required: -DP/MT for impeller welds.

- Ultrasonic/DP for shaft.



3.9.3.3 Following tests shall be witnessed by the BOO PROCESSOR \authorized inspecting agency:

- No-load running test for 4hrs.
- Vibration test at rated speed.
- Performance test as per BS848/AMCA210/ASME PTC11
- Vibration test at minimum flow (turndown capacity)

3.10 RECIPROCATING PUMPS

3.10.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

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3.10.2 Electric motor drivers shall have a rating as specified in API, however the motor rating shall be adequate to start the pump at the specified maximum suction pressure.

3.10.3 INSPECTION AND TESTING

The following tests shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic test.
- Performance test (including mechanical performance) for 4hours for pump along with job accessories.
- NPSH test when difference between NPSHA including allowances for acceleration head & NPSHR is less than 2m.
- Dismantling inspection of liquid end after performance test.

3.11 POSITIVE DISPLACEMENT PUMP CONTROLLED VOLUME

3.11.1 EQUIPMENT QUALIFICATION CRITERIA

Equipment qualification criteria as per clause 2.2

3.11.2 INSPECTION AND TESTING

Following test shall be witnessed by BOO PROCESSOR \authorized inspecting agency:

- Hydrostatic Test.
- Performance Test.
- Linearity and Repeatability.
- Dismantling and Inspection after Test.
- Diaphragm Rupture Detection (as applicable).

3.12 CRYOGENIC PUMPS

3.12.1 EQUIPMENT QUALIFICATION CRITERIA



Equipment qualification criteria as per clause 2.2

3.12.2 The following tests shall be witnessed by BOO PROCESSOR \authorized Inspecting agency:

- Hydrostatic Test
- Mechanical Run Test
- Performance Test
- Sound level Test
- Impact test

3.13 SPECIAL PURPOSE GEAR UNITS

3.13.1 In case of alternators gears shall be designed for short-circuit condition of the alternator.

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3.13.2 Gears shall be of double helical or herringbone type.

3.13.3 INSPECTION AND TESTING

3.13.3.1 Following test shall be witnessed at lube oil system vendor's works by BOO PROCESSOR \authorized inspecting agency:

- Hardness verification.
- Contact check
- Journal run-out test.
- Mechanical run test.

4.0 SPARES & SPECIAL TOOLS

4.1 BOO PROCESSOR may have their own philosophy of mandatory spares & 2 year spares, tool & tackles within the contractual period. .

5.0 DOCUMENTS, DATA & DRAWINGS

5.1 GENERAL

BOO PROCESSOR shall develop detailed specifications for vendor data requirements pertaining to each type of Rotating Equipment as applicable.

BOO PROCESSOR shall be responsible for the review & approval of all Vendor Data & Drawings submitted by the Equipment manufacturer. OWNER/PMC's review/approval shall be limited to the vendor drawings and datasheets for critical items. A list of such critical items shall be furnished by BOO PROCESSOR along with bid.

5.2 DRAWINGS AND DOCUMENTS REQUIRED ALONG WITH BID: BOO PROCESSOR shall furnish the following along with the bid:

- (a) Technical Compliance Pro-forma duly completed.
- (b) List of deviations if any, to the applicable specifications.
- (c) List of critical items

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PART II: TECHNICAL

SECTION – 2.3 ENGINEERING SPECIFICATIONS– PIPING

**PLANT: INTEGRATED COAL BASED AMMONIA PLANT,
AT MAHAMAYA SCG PLANT, BHATGAON
AREA, SURAJPUR DISTRICT, CHHATTISGARH,
INDIA**

**PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH
COAL GASIFICATION ROUTE ON BUILD-OWN-
OPERATE (BOO) BASIS AT SOUTH EASTERN
COALFIELDS LIMITED, CHHATTISGARH, INDIA**





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1.0 SCOPE

The scope of this document is pertaining to the design philosophy, norms and specific requirements which shall be adhered to by BOO Processor or his associates and representatives during the course of the project in designing, procurement & construction of piping material based on following Standard & Codes:

Applicable Standard & Codes

Standard No.	Title
ASME/ANSI B16.5	Steel Pipe Flanges and Flanged Fittings
ASME/ANSI B16.9	Steel Butt-Welding Fittings
ASME/ANSI B16.10	Face to Face and End to End Dimensions of Valves
ASME/ANSI B16.11	Forged Fittings Socket Welded and Threaded -
ASME/ANSI B16.20	Metallic Gaskets for Pipe Flanges – Ring Joint, Spiral Wound, and Jacketed.
ASME/ANSI B16.21	Non-Metallic Flat Gaskets for Pipe Flanges
ASME/ANSI B16.25	Butt-Welding Ends
ASME/ANSI B16.34	Valves – Flanged, Threaded Welding End.
ASME/ANSI B16.47	Large Diameter Steel Flanges
ASME/ANSI B31.1	Power Piping
ASME/ANSI B31.3	Process Piping.
ASME/ANSI B31.5	Refrigeration Piping
ASME/ANSI B36.10M	Welded and Seamless Wrought Steel Pipe.
ASME/ANSI B36.19M	Stainless Steel Pipe
API 6D	Specification for Pipe Line Valves (Gate, Plug, Ball and Check Valves).
API 6FA	Fire Test for Valves.
API 501	Specifications for Metallic Gaskets for Refinery Piping.
API 594	Check Valves:, Wafer-Lug and double flanged type
API 598	Valve Inspections and Testing.
API 599	Steel Plug Valves Flanged and Butt-weld ends
API 600	Steel Gate Valves Flanged and Butt-welding ends, Bolted Bonnets
API 602	Gate, Globe, and Check Valves for Sizes DN 100 (NPS 4) and Smaller for the Petroleum and Natural Gas Industries
API 603	Corrosion resistant, bolted bonnet gate valves-flanged & butt welding ends

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API 604	Ductile Iron gate valves – flanged ends.
API 606	Compact C.S. Gate Valve extended body.
API 607	Fire Test for soft seated Ball Valve.
API-608	Metal Ball Valves, Flanged, Threaded & BW Ends.
API 609	Butterfly Valves, Lug type & Wafer type.
API 623	Steel Globe Valves—Flanged and Butt-welding Ends, Bolted Bonnets
IBR	Indian Boiler Regulations
AWWA C207-D	Large Dia. Steel Flanges (Ring Type).
EJMA	Expansion Joints Manufacture Association.
MSS SP 6	Standard Finishes for Contact Faces of Pipe Flanges and Connecting End Flanges of Valves and Fittings.
MSS SP 25	Standard Marking System for Valves, Fittings, Flanges & Unions
MSS SP 43	Wrought Stainless Steel Butt-weld Fitting
MSS SP 45	By-pass and Drain Connection.
NACE MR0175-94	Sulphide Stress Cracking resistant Metallic Material
NFPA	National Fire Protection Association.
EN 10204	Metallic Products - Types of Inspection documents

2.0 DESIGN PHILOSOPHY



The latest edition of codes listed above shall be applicable for piping system design, materials, fabrication, manufacture, erection, construction and inspection etc. For any item not covered in the list of codes and standards / International Standards / proven design may be finalized based on discussion with SECL/PMC.

Material of construction shall be suitable for specified process duty (both normal and abnormal operations) and have a projected life and corrosion/ erosion allowance in excess of minimum life of the project. Piping materials specified in piping materials specification by licensor shall be used for selection of material of construction of major services.

3.0 PLANT LAYOUT & DESIGN GUIDELINES

3.1 General

The plant layout shall be based on Plot Plan of Proposed Plant, P&I Ds, Equipment Data Sheets, Wind Direction, Safety Distance as per statutory requirements, access for Fire appliances, ensuring adequate access, to allow construction, inspection, maintenance and operation to be performed in a safe and efficient manner.

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Flushing connections shall be provided on all lines containing flammable or toxic material, slurries, and materials which solidify- when the line is dead. Sufficient Nitrogen purging points shall also be provided.

The BOO Processor shall optimize the layout with the approval of the owner and include any changes resulting from HAZOP studies.

Piping and all other services shall be arranged so as to permit ready access of Cranes for removal of Equipment for inspection and servicing.

All utility and process piping shall be located above ground, and major lines shall be located in overhead pipe ways.

The following lines may be buried providing they are adequately protected.

- Cooling Water Lines 18" dia. and larger.
- Fire water mains.
- Drain and Sewer (oily and chemical) lines from catch basin to mains and manholes.

Sleeper-ways shall not be used in process areas where they may block access for personnel and equipment. Where sleeper ways are used the elevations shall be staggered to permit ease of crossing or change of direction at intersections. Flat turns may be used when entire sleeper ways change direction. Flat turns must not be used within pipe racks.



Locate cooling towers a minimum of 30m away from process units, utility units, fired equipment, and process equipment, downstream direction of wind

Locate flare stacks upwind of process units, with a minimum distance of 90 m from process equipment, tanks and cooling towers.

3.2 Pipe-Rack/T-Post/Small Portals

In general, equipment layout shall be prepared considering straight pipe rack, however other shapes like L / T / U / H / Z etc can also be considered based on area available.

The width of the rack shall be 4M, 6M, 8M, 10M or 12M for single bay having four (4) tiers maximum. In general, the spacing between pipe rack portals (span) shall be taken as 8 M for main rack. However it can be decreased to 6 M depending on the size/number of the pumps to be housed below pipe rack. Intermediate Beams between two portals shall be provided to support smaller pipes ≤ 2 .

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The minimum size of piping to be used in pipe-racks shall be 2" NB.

Clearance beneath pipe rack shall be 3.8 M minimum.

Road clearance shall be 9 M minimum wherever heavy duty crane movement is required during construction and maintenance.

Road clearance shall be 7.5 M minimum for main roads.

Road clearance shall be 5 M minimum for secondary roads.

T-Portal's width shall not be more than 2.5 M and height shall not be less than 3.0 M

3.3 Towers and Vessels

Towers and vertical vessels shall be arranged in a row with common centre line, decided by the largest vessels, placing O.D. Of the equipment minimum 4 M away from the pipe rack. A minimum clearance of 3 M shall be allowed between tower shells, but in any case adjacent towers shall be checked so that platforms do not overlap considering the deflection of towers (deflection of towers shall be considered minimum $L/200$ MM, WHERE, (L=height of tower). A minimum 100 mm horizontal gap shall also be provided between platforms of adjacent towers after deflection and that a minimum 900 mm is left between tower plinths. Also the gap between vertical vessels shall allow full opening of manhole covers without restriction.



Efforts shall be made to provide interconnecting platforms at suitable levels for adjacent towers and/or adjacent technological structure etc., after taking thermal expansions of towers into consideration.

Handling facilities such as davits and monorails shall be provided on vessels over 10m in height where the weight of removable internal and/or external equipment is greater than 35 Kg.

The maximum vertical distance between platforms shall be 6 m. All level switches, LGs etc including their isolation valves shall be accessible from ladders or platforms. To handle heavy items (like relief valves, blinds etc.), davit of suitable capacity to lift higher weight of safety valves/ Blind/ Internals etc. is needed. The davit shall be on the side of the vessel away from the rack. The area at grade shall be kept clear for a dropout.

The horizontal vessels shall be laid perpendicular to pipe rack and shall be placed minimum 4M away from the pipe rack. The clearance between horizontal vessel shells shall be minimum 2M or 900 'mm clear aisle whichever is higher.

3.4 Re-boiler

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Re-boiler shall be located next to the tower they serve. Horizontal thermo siphon types are usually supported by the tower and are located on the back side to be accessible for maintenance. Large vertical types may require a supporting structure which cannot be supported from the tower/column

3.5 Pumps

Wherever practicable pumps shall be arranged in rows with the centre line of the discharge on a common line.

Pump foundation height shall be 300 mm above H.P.P.

Gap between each pump foundation / and foundation of technical structure should be sufficient for easy removal of equipment after piping. Clearance between two adjacent pumps shall be such that clear 900 mm aisle is available.

All pumps not open to sky with motor rating ≥ 45 KW shall be provided with monorail.

Reducers immediately connected to the pump suction shall be eccentric type flat side up to avoid the accumulation of gas pocket. For end suction pumps, elbows shall not be directly connected to the suction flange. A straight piece minimum 3 times the line size shall have to be provided at the suction nozzle.

Pump discharge check valve if installed in vertical lines shall be fitted with a drain connection as close as possible downstream of the valve.



All small bore piping connected to pump (drain to OWS & CBD, seat and gland leak drain) shall have provision for break up flanges for removal of pumps.

3.6 Exchangers

In most of the cases floating head of exchangers are placed on a line minimum 4M away from pipe rack. Shell and tube type exchangers may have a removable shell cover with flanged head. Tube pulling or rod cleaning area must be allowed at the channel end. This shall be minimum the tube bundle length + 1.5M from the channel head. In case of vertical exchanger suitable platform shall be provided below the top flange of channel or bonnet.

Minimum clearance in between two horizontal exchangers shall be 2M or 900mm clear aisle whichever is higher.

Likewise Heat Exchanger train should be suitably spaced such that shell/ tube inlet/outlet piping do not foul floating Head Covers creating maintenance problem.

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Hydro extractor is considered for exchanger bundle/ shell removal. Monorails to be provided for tube bundle removal only for exchangers not accessible to Hydro extractor. Davit shall be provided for floating head cover for all exchangers.

3.7 Fin Fan Exchangers

Fin fan exchangers shall be located over the main pipe rack or on technological structure.

15.0 M horizontal distance shall be maintained from furnace/heater. Concrete floor shall be provided below the fin-fan coolers located above the pipe rack. Monorail shall be provided at one end of air cooler platform area for lowering the gear boxes. Adequate headroom /clearance shall be provided between concrete floor and fan location.

3.8 Compressors and their Prime Movers

Compressors shall be located to keep suction lines as short as possible. The gas compressors shall be located downwind side of furnace so that leaks are not blown towards furnace. compressors shall be kept under shed, with-sides fully open for the low shed or partially closed from top for high shed to avoid accumulation of heavier gases in the shed.

In case of a turbine driven compressor, if exhaust steam is condensed, turbine and compressor to be located at an elevated level and condenser to be located below turbine.



A major consideration in centrifugal compressor location is the lube and seal oil console. It must be accessible from road and must be lower than the compressor to allow gravity drain of oil to the consoles oil tank.

Intercoolers are placed near compressor, keeping the safe distance. Knockout pots and after coolers may be kept outside the shed but near compressor house.

Where the line between knockout drum and the compressor cannot be routed without pocket, low point in compressor line shall be provided with drains to remove any possible accumulation of liquid. In no case accumulation at low point should be allowed to go towards the compressor.

Low points in the discharge line from an air compressor shall be avoided because it is possible for lube oil to be trapped and subsequently ignited. If low points are unavoidable, they shall be provided with drains- In case of reciprocating compressor, piping shall be suitably supported to avoid vibrations due to pulsating flow. Unless specific requirements of no pockets are there from the licensor, all the piping shall run at 500 mm above grade level so that proper. Supports can be provided and also to minimize vibrations.

Pulsation dampers or surge bottles at the suction and discharge of reciprocating and displacement type compressors shall be provided according to manufacturer's recommendations.

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A suction filter shall be provided in each compressor suction line to completely remove debris from the system

For compressors one electrically operated Crane to handle heaviest removable piece shall be provided for each compressor house. Maintenance bay for compressors, accessible from road shall be provided.

In case the compressors are located at grade level; the finished floor level for compressor house shall be 300 mm above HPP. However if the compressors are located at elevated structure the finished floor can be same as HPP.

Layout of compressor house shall be such as to have minim. Distance of:

- a) When installed in a line
 - 5 metres on either side of compressor train.
 - 5 metres between compressors.
- b) When installed in parallel.
 - 5 metres at both ends of compressor/turbine train.
 - 5 metres between compressors

All distances are to be measured from the edge of base plate.

3.9 Platforms ladders and Stairs

Two means of access (i.e. two ladders or one ladder and one stair case) shall be provided at any elevated platform which serves three or more vessels & for B/L valves operating platform.

Stairway for tanks to be provided on upstream of predominant wind direction.



Platform at elevated structure

Dual access (i.e. one staircase and one ladder) shall be provided at large elevated structure if any part of platform has more than 22.65M (75 ft) of travel.

Air coolers shall have platforms with interconnected walk-ways provided to service valving, fan motors and instruments. Access requirements shall conform to paragraph (a) above.

Platforms with stair access shall be provided for:

Location at which normal monitoring (once a day or more) is required or where samples are taken.

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Locations where vessels or equipment items need operator attention "such as compressors, heaters, boilers etc.

Platforms with ladder access shall be provided for:

Points which require occasional operating access including valves, spectacle blind and motor operated valves, heater stack sampling points.

Man ways above grade on equipment.

Ladder location

Wherever practicable, ladder shall be so arranged that users face equipment or platform rather than facing open space.

Landings shall be staggered. No ladder shall be more than 6 M in one flight.

3.10 Valves

Frequently operated valves shall be located in such a way that the valves are easily accessible from grade, platforms, stairs or ladders, and that the bottom of a hand wheel is located less than 1.8 m above the operating floor level.



For valves placed in trenches shall be provided with extension stems extending to within 100 mm below the cover plate.

Manually operated valves, which are used in conjunction with locally mounted flow indicators, shall be placed at the same operating level and located where the instrument can be readily observed.

Double block valves shall be provided with interconnecting piping where intolerable contamination could result from valve leakage.

Where block valves are installed in branch lines from headers, the valves shall be located in horizontal runs at high points so that lines will drain both ways.

In Class 900 and higher pressure rating double block valves shall be used for systems open to atmosphere, such as vents and drains. Piping in hazardous service shall have vents, drains routed to a safe location. Category 'M' substances shall be vented to the flare system.

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All valves shall be so installed that the stems are not below horizontal positions unless otherwise specified.

All valves shown on the piping and instrument flow diagrams as located at nozzles of equipment, such as towers and reservoirs, shall be connected directly to the nozzles.

Battery limit valves, if required, shall be grouped together and shall have a common operation platform.

Vessel nozzles located below the normal or emergency liquid level shall be provided with the block valves.

All drains and vents shall be provided with valve, except that vents for test purpose for flare liens (header), may be plugged. Exposed threads shall generally be seal welded.

Low-point hydrostatic drains and high-point hydrostatic vents shall be added as required; locations to be determined during the design review

Vent valves shall be the globe or gate type and drain valves the gate type

Control valves shall be provided with block valves, a bypass valve and a drain valve for maintenance.

Control valves, where practicable, shall be installed with the stems vertical.

4.0 PIPING LAYOUT



4.1 Unit Piping

Proper access to all operating points including valves, and for all orifice tapping points and instruments in particular.

Proper access to interrelated operating points for specific purpose and for maintenance.

4.2 Pipe Ways/Rack piping

Racks shall be designed to give the piping shortest possible run and to provide clear head rooms over main walkways, secondary walkways and platforms.

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Predominantly process lines are to be kept at lower tier and, utility & hot process lines on upper tier.

Generally the top tier is to be kept for Electrical (if not provided in underground trench as per electrical design basis) and Instrument cable trays. Cable tray laying to take care of necessary clearances for the fire proofing of structure.

Generally the hot lines and cold lines shall be kept apart in different groups on a tier.

Generally the bigger size lines shall be kept nearer to the column.

Minimum spacing between adjacent lines shall be decided based on O.D of bigger size flange'(minimum rating 300# to be considered), O.D of the smaller pipe, individual insulation thickness and additional 25 mm clearance, preferably. Wherever even if flange is not appearing the minimum spacing shall be based on above basis only. '

Actual line spacing, especially at 'L' bend and loop locations, shall take care of thermal expansion / thermal contraction / non expansion of adjacent line. Non expansion / thermal contraction may stop the free expansion of the adjacent line at "L' bend location.

Anchors shall be provided within unit on all hot lines leaving the unit.

Process lines crossing units (within units or from unit to main pipe way) are normally provided with a block valve, spectacle blind and drain valve. Block valves are to be grouped and locations of block valves in vertical run of pipe are preferred.



Hot lines on pipe racks or sleepers shall be grouped and expansion loops shall be nested together.

Piping handling corrosive fluids shall be run under piping handling non corrosive fluids, and shall not, where possible, be run overhead across walkways or normal passages for personnel.

All piping shall be arranged in horizontal banks, where possible, to facilitate supporting.

Vertical lines at vessels shall run close to the vessel shell to facilitate supporting. The line shall be arranged and grouped to allow the use of single support.

Lines carrying molten solids, slurries or highly viscous liquids shall have a sufficient slope for each gravity flow.

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Pipes at road crossing shall be under culverts in general. Overhead pipe bridges may be used for areas where pipe racks are provided. Where culverts are not provided, pipe sleeves shall be used for underground road crossing

4.3 Piping around Tanks Area

The number of pipelines in the tank dyke shall be kept at minimum and shall be routed in the shortest practicable way to main pipe track outside the tank dyke, with adequate allowance for expansion. With nozzle tank Dyke the piping connected to that tank shall only be routed. Pad shall be provided at pipette sleeve interface at dyke wall entry point.

Nozzles for level controlling instruments shall be oriented within an angle not exceeding 60 degrees against the fluid inlet nozzles.

Plug valves whenever specified shall be of pressure balance type.

4.4 Relief System/blow down System Piping

Flare System shall be designed such that:

- There will be 1 Running + 1 standby Safety Valve. (For all process & utilities lines)
- Each Valve shall have full relieving capacity.
- Isolation Valve shall be provided on Up Stream side & Spectacle Blind with Valve on downstream side so that individual safety valve can be isolated for maintenance purpose.



Relief of liquids and easily condensable hydrocarbons are usually discharged to a closed system.

Relief & Safety valve discharge piping shall be taken to safe location as per following:

3M above top platform of column or structure, within 6M radius for steam and 8M for Hydro carbon / toxic discharge.

25M horizontally away from furnace.

Relief valve discharging steam, air or other non-flammable vapour or gas directly to atmosphere shall be equipped with drain and shall be suitably piped to prevent accumulation of liquid at valve outlet. Liquid phase blow down system piping connected to a closed system shall be self draining to the blow down drum.

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Liquid-vapour phase relief valves shall discharge into the flare header at an angle 45 degrees in the direction of header flow, to minimize the effect of kinetic energy and to avoid accumulation of liquid.

Pockets in the flare header and blow down system shall be prohibited.

4.5 Steam Piping - Indian Boiler Regulations (IBR)

Generally steam lines with conditions listed below fall in the scope of IBR.

Lines having design pressure (maximum working pressure) Above 3.5 Kg/cm² (g)

Line sizes above 10" inside diameter having design pressure 1.0 Kg/cm² (g) & above.

Lines with pressure less than 1.0 Kg/cm² (g) are excluded.

Users of steam like steam tracing lines, jacket of the steam jacketed lines, steam heating coil within the equipment are excluded from IBR scope.

Boiler feed water lines to steam generator, condensate lines to steam generator and flash drum shall be under purview of IBR.

IBR requirements (in brief)

All materials used on lines falling under IBR must be accompanied with IBR Inspection Certificate in original. Alternatively, photocopy of the original certificate duly countersigned and attested by local IBR inspector is acceptable. Whereas for Indigenous (Indian) supply, only IBR is the inspection authority. However, for non - indigenous supply, IBR inspection shall be carried out by the inspection agencies approved by IBR.

Drawings like General Arrangement Drawings (GAD) and system isometrics / line wise isometrics of lines falling under IBR must also be approved by IBR authority of State in which the system is being installed.

All welders used on fabrication of IBR system must possess IBR welding qualification certificate.



IBR system must be designed to comply IBR regulations as well as ASME B31.3. All design calculations towards the same must be approved by IBR authority.

IBR approval is obtained with requisite fees payable to Indian Boiler Board of the State concerned.

Steam generators (boilers/heat exchangers) shall require exclusive IBR approval along with its integral piping up to the final isolation valve.

The discretion of IBR authority of state is final and binding for the above cases.

4.6 Steam Header & Supply Lines / Steam and Condensate Systems

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Steam piping shall be designed to have complete condensate removal. Drip legs shall be provided with steam traps at low points in the system.

All steam branch connections shall be taken from the top of the header.

Return exhaust steam / condensate lines shall connect to the top of the exhaust steam Condensate header.

Where block valves have been installed in the main steam header such that condensate can collect either side of the valve when closed, a safe means of draining the condensate prior to opening the valve shall be provided.

Steam header shall be located generally on the upper tier and at one end of the rack adjacent to columns.

Drip legs & steam traps shall be provided at all low points and dead ends of steam header. Drip legs at low points shall be closer to downstream riser and shall be provided to suit bidirectional flows, if applicable.

All turbines on automatic control for startup shall be provided with a steam trap in the steam inlet line.

All traps shall be provided with strainers if integral strainers are not provided.

4.7 Supports and Anchors



Supports and/or anchors shall be provided close to changes in direction of lines, branch lines and, particularly, close to valves to prevent excessive sagging, vibration and strain.

Allowable spans between pipe supports shall be determined to keep the maximum deflection within 16 mm.

In cases where periodic maintenance requires removal of equipment, such as pumps and relief valves, and where lines must be dismantled for cleaning, piping shall be supported to minimize the necessity of temporary supports.

Spring-loaded hangers may be used on piping subject to thermal expansion or contraction. In cases where the movement is very large, or the limitation of reaction and stress are very severe, constant support spring hangers shall be used.

Suction and discharge lines of rotating equipment shall be supported as close as possible to equipment nozzles, and shall be relieved of excessive strains by using proper pipe supports.

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Supports shall not be directly welded to pipes. Where welding is unavoidable, supports having the same chemical composition as pipe shall be carefully welded.

Outlet piping of safety and relief valves shall be supported so that the inlet piping is capable of withstanding the reaction caused by operation of safety and relief valves. Furthermore, the supports shall be designed to minimize the stresses due to thermal expansion and the stresses in the valve body due to the weight of piping.

Expansion joints shall be guided and anchored to the extent necessary for their proper operation and alignment.

Anchors shall provide sufficient fixation to substantially transmit all load effects into the foundations.

Underground piping shall be given special anchoring consideration for differential settlement.

4.8 Utility Stations



Requisite number of utility stations shall be provided throughout the unit to cater for the utility requirement. Utility stations shall have four connections one for LP steam, one for Plant Air, one for Service Water and one for nitrogen each. Utility connection with nitrogen shall be provided with NRV along with isolation valve kept separate from the cluster

Air, water and Nitrogen lines shall have quick type hose connection and steam line shall have flanged type hose connection. All connections shall be directed downward. All connections shall have globe valve for isolation purpose.

Number of utility stations shall be such that all equipments shall be approachable from at least one utility station. The approach of utility station shall be considered 15 M all around the station location.

The Utility stations shall generally be located adjacent to pipe-rack column.

The utility stations shall also be provided on elevated structures like - technological structure, operating platforms of vertical equipments etc.

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Operating platforms having manholes must have a utility station. Utility station locations shall be limited to a height of 35 M from H.P.P.

4.9 Underground Piping

Underground piping passing under loaded areas, such as main roads in the plant, shall be protected from heavy traffic by casing pipes or covers extending at least 1 m on either side of the area or having the wall thickness sufficient to bear earth pressure.

Underground piping shall be sloped to all drain points.

At location where Underground Piping becomes above ground, INSULATING GASKET with material Glass Filled Teflon or Phenolic Laminated with rubber shall be provided.

Impressed Current Cathodic Protection (ICCP) shall be provided to all underground piping.

Underground piping shall be wrapped & coated & shall be "HOLIDAY TESTED" before Hydro Test.

All underground pipes shall have Sand Bed, at least 150 MM all around the pipe.

Valve chamber wherever required shall be made of brick or concrete. Valve chamber should be spacious to attend valves during operation/Maintenance.

The following points to be considered in designing of trench pipes

Piping located below grade, requiring inspection, servicing or provided with protective heating.

Fire water lines/Process lines. (Ref Fire Fighting Design Philosophy-Section 5.7)

Drain lines requiring gravity flow trenches.

Sump for valves and trenches shall be provided.



Suitable draining scheme for trenches shall be provided.

4.10 In-Line Instruments

Liquid level controllers and level glasses shall be located so as to be accessible from grade, platform or permanent ladder. The level glass shall be readable from grade wherever possible.

Orifice runs shall be located in the horizontal. Orifice flanges with a centre line elevation over 4.5m above grade, except in pipe racks, shall be accessible from a platform or permanent ladder.

4.11 Strainers

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For fabricated strainers, all BW joints shall be fully radiographed and fillet welds shall be 100% DP/MP checked.

All the strainers shall be hydrostatically tested at twice the design pressure

4.12 Flexibility Analysis And Supporting

Pipe Supporting Criteria & General Guidelines.

Piping system shall be properly supported taking into account the following points:

- Load of bare pipe + fluid + insulation (if any).
- Load of bare pipe + water fill.
- Load of valves and online equipment and instrument.
- Thermal loads during operation.
- Steam-out condition, if applicable.
- Wind loads for piping at higher elevation, e.g. transfer lines, column over head lines, flare headers, etc.
- Forced vibration due to pulsating flow.
- Vibration due to two phase flow.
- Loads due to internal pressure.
- Any external loads/concentrated loads and cold load of springs.



Additional supports, guides, anchors, special supports like spring supports and sway braces shall be provided after detailed analysis of piping system to restrict the forces experienced on nozzles of critical items like pumps, compressors, turbines, exchangers, air fin coolers etc.

Bare pipes of size 14" and above on elevated structures shall be supported with pad or shoe. While bare pipes of size 6" and above, on sleepers, corrosion pads shall be provided.

Pads shall be provided for insulated pipes before welding the shoes for sizes 8" & above.

Adequate stiffening shall be provided for the following:

- Lines in above 600#,
- Lines having two phase flow,
- Lines having Pulsating flow such as discharge of reciprocating compressors & reciprocating pumps,

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For pulsating flow lines detailed thermal and vibration analysis by analog study shall be done to decide location of anchor supports and guides etc.

Wherever two phase flow in piping is expected, piping design shall be checked by dynamic analysis to prevent vibrations.

Pipe support design shall be such that deflection in piping systems due to sustained loads shall not exceed 15mm, in any case, between two adjacent supports.

As far as possible long trunnion types of supports (more than 0.5 metre) are to be avoided. In case long trunnion support is unavoidable in straight length of pipe, trunnion height to be restricted to 0.5 M and balance height to be made up by providing extended structure.

Piping passing through the technology structure or passing near the concrete column etc. should have adequate annular space to avoid restriction of line movement during thermal expansion. The gap should take care the thermal expansion along with insulation thickness.

High density PUF blocks shall be considered for cold piping supports. Use of wood blocks shall be avoided.

All pipes supports shall be so designed that there is no undue tension on equipment flanges. Flange joints should not move away from each other in case of unbolting of the joint.

Flexibility Analysis Criteria & General Guidelines



The directions of forces and moments shall be in accordance with Welding Research Council Bulletin 107 (WRC 107), with the exception that the radial force (P) shall be away from the vessel. All forces and moments shall be assumed to act simultaneously and apply at the nozzle/vessel interface.

Air coolers to API 661 shall be specified with Fx forces and Mz moments increased to 1.2 times the value shown in Figure 8 of API 661 for nozzle sizes 6"NPS and larger to simplify piping flexibility analysis and facilitate piping layout.

Piping stress analysis and equipment nozzle loading analysis shall be in accordance with ASME B31.3 and the relevant API, ANSI/ISO and NEMA Codes.

API 610 Pumps

The allowable nozzle loads on centrifugal pumps shall meet the load criteria of API 610. Heavy duty base plate shall be specified where the pump design temperature is in excess of 150°C.

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ASME or Manufacturer's Standard Pumps

The allowable nozzle loads on horizontal centrifugal pumps design to ASME B73.1 shall be specified by the manufacturer. For preliminary layout and analysis NEMA SM 23 criteria shall be used for individual nozzles.

Other Horizontal Centrifugal Pumps

The allowable nozzle loads shall meet the load criteria specified by the manufacturer.

Vertical Turbine, Can-Types Pumps

The combined bending and tensional thermal stress in the piping attached to the nozzle shall be limited to 25 percent of the allowable stress range shown in ASME B31.3. The combined stress due to dead load and other sustained loads shall be limited to 25 percent of the allowable hot stress.

For piping design purposes, differential settlement between items of major equipment on separate foundations shall be taken as 10 mm.

Cold springing of piping directly connected to rotating equipment is not permitted under any circumstances.



The design of piping systems shall take into account the different conditions expected during operation, start-up, shut-down, cold branch in case of standby pump, tracing, etc. Hydrocarbon lines shall be designed for steam-out conditions, if specified in line schedule. The use of expansion joints shall be considered only when space or pressure drop limitation does not permit pipe bends. Expansion joint of axial type shall be avoided.

Forces and moments due to weight, thermal loads and other imposed loads on the equipment nozzle must not exceed the allowed loads for the equipment.

Minimum analysis temperature shall be the design temperature of the line as per line list.

4.13 Personnel Protection

Eyewash and emergency safety showers shall be provided in areas where operating personnel are subject to hazardous sprays, emissions or spills.

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Personnel protection shall be provided on un-insulated lines and equipment operating above 70 deg C when they constitute a hazard to the operators during normal operation of the facility.

5.0 MATERIALS

Basic material selection of particular line depending on its service, temperature and corrosivity shall be spelt out in process package. Material specification shall follow the Licensor's requirement. PMS / VMS shall be supplied by bidder and will be approved by owner / PMC. PMS shall generally follow the requirements given in this section.

5.1 Piping Materials

All materials for piping components shall be new and conform to the relevant code and/or specification.

All plate, sections, pipe, fittings, flanges, valves and special items shall have Material Test Certificates.

All alloy materials shall have Material Certificates verifying the alloy content.

All bolting and gasket material shall have Letters of Compliance as a minimum.

Category 'M' and Normal Service piping shall use seamless or 100% radio graphed EFW pipe and fittings, only listed in ASME B31.3.



ERW pipe and fittings shall only be used for category 'D' service as defined by ASME B31.3.

Only piping materials listed in ASME B31.3 shall be used for Category 'M' and Normal Service piping. For Category 'D' utility piping, where scaling and impurities are to be avoided (such as instrument air, potable water and deluge water) hot dipped galvanized and threaded fittings may be used in sizes up to and including 4" NB. Galvanized piping shall not be used in environments containing acids or other corrosive commodities. In corrosive environments stainless steel piping material shall be used for such utility systems.

For services defined within ASME B31.3 as Category 'M', no socket welded or threaded construction or connections shall be used for process equipment piping systems. Construction shall be by butt-welding with a minimum 20% radiography. Flanged connections shall be minimized.

All insulation and gaskets shall be asbestos free. Aluminium or copper alloys shall not be used for any component in the piping systems.

The use of 1.25Cr-0.5Mo alloy shall be a minimum requirement for piping systems having a design temperature above 425°C.

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All alloy steel piping items shall be Normalized & Tempered.

All alloy steel and higher alloyed piping material shall be subjected to PMI test.

Nelson Curves in accordance with API 941 shall be applicable to piping system materials in hydrogen service.

Material for Naphtha service shall be in accordance with NACE Std. – MR-0175-94 (Sulphide Stress Cracking Resistant Material).

The minimum corrosion allowance for any material, other than stainless steel, shall not be less than 1.5 mm.

All instrument air pipe line shall be of SS304.

Austenitic Stainless Steel

All items/parts shall be supplied in solution annealed condition.

For all Austenitic Stainless steels, Inter granular Corrosion' (IGC) Test shall be conducted as per following:

ASTM A262 Practice 'B' with acceptance criteria of 60 mils/year (max.) for casting.

ASTM A262 Practice 'E' with acceptance criteria of 'No cracks as observed from 20 X magnification & microscopic structure to be observed from 250 X magnification for other than casting.

For IGC test, two sets shall be drawn from each solution annealing lot; one set corresponding to highest carbon content and other set corresponding to the highest rating/thickness. When testing is conducted as per practice "E" photograph of microscopic structure shall be submitted for record.

For all items of stabilized SS grades, resolution annealing shall be done. It shall be carried out subsequent to normal resolution annealing. Soaking temperature and holding time for stabilizing heat treatment shall be 900 deg. Celsius and four hours



5.2 PIPE

5.2.1 General

Where-ever permitted in below table, the thickness shall be calculated based on actual service conditions(line condition) subject to a minimum of 80% class rating. Maximum 10% of corrosion allowance may be reduced in special cases, to optimize the pipe schedules.

In general, the pressure-temperature combination to calculate wall thickness shall be as follows:

Material	Class	Size	Design Condition
C.S. (A 106 GR.,B, API-5L GR.B, A672	150	Up to 24"	Class condition
		Above 24"	Line condition

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GR.B60/C60 :CL 12) LTCS (A333 GR.6), Low Alloys (1.25% Cr- 0.5% Mo. 2.25% Cr-1.0% Mo. 5%Cr-0.5% Mo. 9%Cr- 1.0% Mo	300	Up to 14"	Class condition	
		Above 14"	Line condition	
	600	Up to 8"	Class condition	
		Above 8"	Line condition	
	900	Up to 8"	Class condition	
		Above 8"	Line condition	
	1500 & 2500	Up to 4"	Class condition	
		Above 4"	Line condition	
SS (A312 TP304, 304L,316L,321,347) OR (A358 TP304,304L,316, 316L, 321,347)	150	Up to 24"	Class condition	
		Above 24"	Line condition	
	300	Up to 14"	Class condition	
		Above 14"	Line condition	
	600	Up to 6"	Class condition	
		Above 6"	Line condition	
	900,1500	Up to 4"	Class condition	
		Above 4"	Line condition	
	2500	Up to 2"	Class condition	
		Above 2"	Line condition	
Higher Alloys	150	Up to 6"	Class condition	
		Above 6"	Line condition	
	300-2500	All sizes		Line condition

Up to sizes 48", D/t ratio shall be restricted to 100(max.) Where D is nominal dia. And t is nominal thickness. However for category-D classes D/t ratio may be taken as max.150 where t is minimum calculated thickness excluding Corrosion and Manufacturing allowance. The minimum corrosion allowance for all material shall be as specified by the Process Licensor.

5.2.2 Pipe Type

Up to 900#

Material	Size	Type
CS, LTCS, AS (except for Cat 'D' fluids & LP hydrocarbon in offsite)	Up to 14"	Seamless
	16" and above	E.F.S.W
SS Process lines	Up to 6"	Seamless
	8" and above	E.F.S.W
SS Non process lines	Up to 1.50"	Seamless

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	2" & Above	Welded
CS (Cat 'D' fluids)	ALL size	Welded
CS (LP hydrocarbons (offsite))	Up to 6"	Seamless
	Above 6"	E.F.S.W /Welded

1500# & above

Material	Size	Type
CS, LTCS, AS & SS	Up to 24"	Seamless
	24" and above	E.F.S.W

Note: Instrument impulse piping for steam services shall be S-160 – ½ " Seamless

5.2.3 Materials and manufacture

Furnace butt-welded, furnace lap-welded, and spiral/Helical welded pipes are not permitted.

Unless exempted, welded pipes shall be acceptable only with longitudinal weld made employing automatic welding with 100% radiography for all welds.

Double Longitudinal seam 180° apart is allowed for sizes 36" and larger only.



ERW Pipes shall not have any circumferential seam joint in a random length. However, in case of EFW pipe (48"&above), in one random length one welded circumferential seam joint of same quality as longitudinal weld is permitted which shall be at least 2 meters from either end. The longitudinal seams of two portions of same random length shall be staggered by at least 90 degree apart and all welds shall be 100% radiographed. However, circumferential seam joint is permitted only with one longitudinal seam.

When galvanizing specified, it shall be coated with zinc inside and outside by hot-dip process to ASTM A53.

5.2.4 Ends

Unless otherwise specified, the ends of piping items shall be to the following standards:

SW/SCRD	:	ASME B 16.11
FLANGED	:	ASME B16.5 and ASME B16.47
THREADING	:	ASME/ANSI B1.20.1 (NPT, Taper threads)
BW	:	ASME B16.25

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Wall thicknesses 22 mm and smaller shall be as shown on Figure 2a and the 22 mm greater on Figure 3a in ANSI B16.25.

5.2.5 Inspection and Tests

Hydrostatic tests shall be applied to each length of pipe and be in accordance with the requirements of ASTM A530/A999, as applicable, unless otherwise specified.

Water for hydrostatic test of austenitic stainless steel pipes shall not contain chlorides more than 50 ppm in weight.

In case of seamless & welded pipes, parent material including weld and heat effected zone for low temperature service shall be impact tested (on charpy v notch) at the lowest design temperature in accordance with requirements of code/ specification.

All welded pipes indicated as 'CRYO' & 'LT' shall be impact tested, as per requirement and acceptance criteria of ASME B31.3. The impact test temp shall be -196°C, -80 °C & -45°C. For stainless steel, 3-1/2 Ni steel and Carbon steel respectively unless specifically mentioned.

Specified heat treatment for carbon steel and alloy steel, solution annealing for stainless steel pipes shall be carried out after weld repairs; number of weld repairs at same spot shall be restricted to maximum two (2) by approved repair procedure.



Transverse tension test shall be carried out on pipes of nominal size 8" and above and thickness of Sch.120 and above as per supplementary requirements of respective standards.

Check analysis shall be carried out as per ASTM-A-530 for pipes as per ASTM-A-312 and pipe size > 8" and thickness > Sch.120, Check analysis shall also be carried out as per supplementary requirement S1 of ASTM-A-312.

For seamless pipes, each length of pipe with following specifications shall be ultrasonically tested as per ASTM E 213 or ASTM A 388.

- Size upto 4 inches and Sch > 120
- Size > 5 inches and thk. > 12 mm.
-

Any defects producing signal greater than the appropriate reference groove shall be unacceptable. The allowable defect shall be longitudinal flat bottom groove on the outside or

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inside surface of the pipes and length not greater than 25 mm, width not greater than 1.6 mm and depth not greater than the smaller of 1 mm or 5% of the wall thickness.

5.3 FITTINGS

5.3.1 General

Type of fittings shall be equivalent to pipe type in construction.

Thickness of fittings at ends to match pipe thickness for BW fittings. For reducing BW fittings having different wall thicknesses at each end, the greater one shall be employed and the ends shall be matched to suit respective thickness.

SW fittings shall be 3000#, 6000# and 9000# depending on the pipe thicknesses S80, S160 and above S160 respectively.

All branch connections shall be as follows;

Up to 1-1/2" NB: O-lets/ Tee

2" and above: Tees/O-lets / Pipe to Pipe with or without reinforcement pad up to 600# rating.

Only Tees/O-lets above 600# rating.



If the branch connections are made by welding the branch pipe directly to the run pipe, the required reinforcement shall be designed in accordance with the ASME B31.3. For underground piping, all branches shall be with reinforcement pad of 2D diameter & thickness similar to header shall be used.

Fittings of NPS 2 and larger shall be butt weld type and fittings of NPS 1-1/2 and smaller socket weld or threaded type. For the rating 900 # & above only butt welded fittings, valves etc. have to be used. SW fitting are allowed up to 600 # only

Long radius butt welding elbows shall be used wherever possible. Unless otherwise specified, flanged elbows shall not be used.

All welded fittings shall have maximum negative tolerance equivalent to pipe selected.

All welded fittings shall be double welded for size 16" and above. Inside weld projection shall not exceed 1.6mm, and the welds shall be ground smooth at least 25mm from the ends.

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For fittings made out of welded pipe, the pipe itself shall be of double welded type, manufactured with the addition of filler material and made employing automatic welding only.

All welded fittings shall be normalised for CS, normalised & tempered for AS.

All welded fittings shall be 100% radiographed by X-ray for all welds made by fitting manufacturer as well as for welds on the parent material.

Bevel ends of all BW fittings shall undergo 100% MP/DP test.

All pipes employed for manufacturing of fittings shall be required to have undergone Hydro test to ASTM A530/A999, as applicable.

When fluids have the possibility of causing corrosion in crevice, socket welded piping fitting will not be used.

Miters may be used in Category 'D' service above 6". For other than Category 'D' fluid in 150# and 300# Class miters can be permitted for sizes above 48". Miters to be designed as per ASME B31.3. However, use of miters shall be minimum. All miters shall be with 100% Radiography.

Bushings shall not be used.

5.3.2 Materials and Manufacture



Elbows and tees shall not be machined direct from bar stock.

Caps shall be of one piece material without welded seams unless prior written approval by the Purchaser has been obtained.

Nozzle welded type tees(fabricated type tees) are not permitted except for NPS 60 and larger.

Galvanized fittings shall be coated with zinc inside and outside by hot-dip process to ASTM A153 after all forming and heat treatment has been completed.

All beveling on galvanized fittings shall be made after galvanizing.

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Large diameter fittings that the material standards(ANSI) do not cover in size or shape shall be designed in accordance with ANSI B31.3 and be manufactured to have the same quality as the requirements of the applicable material standards.

Threaded ends shall have NPT taper threads in accordance with ANSI B1.20.1 up to 1.5" NB & IS: 554 from 2" to 6" NB.

All welded fittings shall be double welded. Inside weld projection shall not exceed 1.6 mm. However 25 mm from the ends shall be flush smooth.

Specified heat treatment for carbon steel & alloy steel fittings and solution annealing for stainless steel fittings shall be carried out after weld repairs. Number of weld repair at same spot shall be restricted to maximum two by approved repair procedure.

All welded stainless steel fittings indicated as "CRYO" shall be impact tested as per requirement and acceptance criteria of ASME B31.3. The impact test temperature shall be -196 °C, -101°C & -45°C. For Stainless Steel, 3-1/2 Ni steel and carbon steel respectively unless specifically mentioned otherwise in MR.

Finished dimensions shall be in accordance with ANSI B16.9, B16.11 and B16.28. Dimensions not specified in the standards may be to the Vendor's standards with the Purchaser's approval.



Unless otherwise specified on the purchase order documents, end connections shall be as follows:

- Threaded : Threaded to American National Standards Taper Pipe Threads(ANSI B1.20.1)
- Socket-Welding : Socket weld to ANSI B16.11
- Beveled : End preparation shown on Figure 2a for pipe wall thickness 22 mm and smaller, And Figure 3a for pipe wall thickness greater than 22 mm in ANSI.

Dimensional tolerances on fittings shall be within the limit specified in the applicable ANSI or MSS standards, except that circumferential tolerance at the bevelled end in sizes NFS 26 and larger shall be within the range of -0.2 to +0.3 percent of the nominal circumferential length.

5.4 FLANGES

5.4.1 General

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Hardness of the Flanges

For Ring Joint Flanges, Blinds and Spacers, the hardness shall be as follows:

Flange Material	Min. Hardness of Groove (BHN)
Carbon Steel	120
1% Cr to 5% Cr, 1/2 Mo	150
Type 304, 316, 347,321	160
Type 304L. 316L	140

Flanges shall be as follows.

Rating	Size	Type	Remarks
150	Up to 1.50"	SW RF	
		WN RF	
	2" & above	WN RF/LJ FF	For SS (Utility services)
		WN RF/ Slip-On	If used in CAT 'D' service
300,600	Up to 1.50"	SW RF	
	2" & above	WN RF	except H2 SERVICE
		WN RTJ	For H2 SERVICE
For 900, & Above	All	WN RTJ.	

Ring joint type flanges shall be used for flanges of 900 Lb rating or higher, or for design temperatures exceeding 450°C. This is applicable for all type of service. These flanges can also be used for lower ratings for service conditions which require higher degree of tightness.

5.4.2 Materials and Manufacture

All flanges shall be of forged one piece material (seamless), and plate may not be substituted without written approval from the Purchaser.

When galvanizing is specified, forged flanges shall be coated with zinc inside and outside by hot-dip process to ASTM A153 after all forming and heat treatment has been completed.

All threads on galvanized forged flanges shall be cut after galvanizing.

5.4.3 Dimensions

Flanges shall be designed as follows:

NPS 24 and smaller : ANSI B16.5

Above NPS 24 : ANSI B16.47



Unless otherwise specified, end connections shall be as follows:

Threaded : Internal taper pipe threads to ANSI B1.20.1

Socket welding : ANSI B16.5 Slip-on and Lapped joint

Beveled : Figure 8 for wall thickness 22mm and smaller

Figure 9 for wall thickness greater than 22mm in ANSI B16.5.

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5.4.4 Inspection and Tests

One tension test shall be carried out for each heat in each heat treatment charge.

Impact test for low temp service shall be carried out at the lowest design temperature and shall meet the requirements of the applicable material specifications.

5.5 GASKETS

Gaskets shall be as follows:

Rating	Material/ service	Type	Material of construction
150	CS & SS (utilities)	Plain/ Spiral wound	Asbestos free/ SS304
150,300,600	CS, AS & LTCS (except H2 service)	Spiral wound	SS304
150,300,600	SS(except H2 service)	Spiral wound	SS316 (where trim material is SS304/316) SS316L (where trim material is SS304L/316L)
300(*),600(*),900, 1500, 2500	CS	OCTAGONAL RTJ	Soft Iron
300(*),600(*),900 1500, 2500	AS	OCTAGONAL RTJ	5Cr-Alloy steel
300(*),600(*),900 1500, 2500	SS	OCTAGONAL RTJ	SS

* Only if RTJ is specially mentioned in PMS.

Gasket material shall be asbestos free.



Full face gaskets shall have bolt holes punched out.

Non-metallic ring gaskets as per ASME/ANSI B16.21 shall match flanges to ASME/ANSI B16.5 up to 24", and ASME/ANSI B16.47 unless otherwise specified.

Spiral wound gaskets as per ASME B16.20 shall match flanges to ASME/ANSI B16.5 up to 24", and ASME B16.47 for sizes > 24" unless otherwise specified.

Inner ring shall be provided for the following:

- As per ASME B16.20 requirement.
- For sizes 26" & above in all classes.
- For vacuum and hydrogen service.

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- For SS321, SS347 and H grade SS classes.
- For classes where temperature is higher than 427°C.
- For 900# rating and above classes.

In case of RTJ gaskets, only octagonal section ring gaskets shall be used & shall have proper marking stamped. Material certificate shall be available for the gasket.

Hardness of RTJ gasket shall be 20 BHN (min) less than the corresponding flange groove hardness.

5.6 STUD, BOLTS, NUTS AND JACK SCREWS

All bolting shall be as per ASME/ANSI 818.2.1 for Studs, M/C Bolts and Jack screws, and ASME/ANSI B18.2.2 for nuts. Machine Bolts shall not be used in piping flange joint, except for Butterfly Valves, which shall be lug type, having UNC Threads in lugs facilitating opening of flanges from both sides.

Threads shall be unified (UNC for; 1" dia and 8UN for > 1" dia) as per ANSI B1.1 with class 2A fit for Studs, M/C Bolts and jack screws, and class 2B fit for nuts.

Stud bolts shall be threaded full length with two heavy hex nuts. Length tolerance shall be in accordance with the requirement of table F2 of Annexure 6 of ASME B16.5.

The nuts shall be double chamfered, semi-finished, heavy hexagonal type and shall be made by the hot forged process.



The length of the studs/ bolts should be such that minimum two threads should be out of the nut on either side.

All the stud bolt should have metallurgical certificates in case of Alloy/ SS metallurgy with identified color marking at the stud ends/ bolt side face.

For Stainless steel flanges fasteners should also be SS.

Heads of jack screws and M/C bolts shall be heavy hexagonal type. Jack screw end shall be rounded.

Tops and Bearing Surface of Nuts in size 5/8 inch nominal size and smaller shall be double chamfered. Larger size nuts shall be double chamfered or have washer faced bearing surface and chamfered top.

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Wherever bolt tensioning is specified stud bolt length shall be longer by minimum one diameter do suit bolt tensioner. Excess threads shall be protected by a threaded cap.

5.7 VALVES

5.7.1 Type

SW Valves up to 1-1/2 inch – up to 600# except ball & plug valves which shall be flanged for all sizes.

Flanged cast valve above 1-1/2" for 150#, 300#, 600#

Welded Valves – 900# and above

Criteria for Body Bonnet Joint & Ends of the Valves

Pipe Class Rating	Body / Bonnet	Body / Bonnet	Ends	Ends
	Size =< 1.5 "	Size > 1.5 "	Size =< 1.5 "	Size > 1.5 "
150 / 300#	Bolted	Bolted	SW	Flanged
600 #	RTJ	RTJ or Pressure seal	SW	Flanged
Above 600#	Threaded seal welded/ Welded bonnet	Pressure Seal	BW	BW

All flanged valves (except forged) shall have flanges integral with the valve body.

Yoke material shall be at least equal to body material.

Valves shall have pure graphite as gland packing material. Asbestos and other gland packing material shall not be used.

Forgings are acceptable in place of Castings but not vice-versa.

All "IBR" valves shall be painted red in body–bonnet / body–cover joint.

5.7.2 Design

General

The minimum body wall thickness for the steel valves in size and/or rating not specified in the applicable standards shall conform to ANSI B16.34.

Steel Gate Valves

General use valves : API 600

150Lb stainless steel valves : API 603



Steel Globe Valves

General use valves : API 623 / ASME B16.34.

Steel Swing Check Valves

General use valves : API 602 / API 6D / API594/ BS 1868.

Single/Dual Plate Wafer Check Valves

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Wafer check valves shall conform to API 594.

Ball Valves

Ball valves shall conform to API 6D/API608/API607.

Butterfly Valves

Butterfly valves shall conform to API 609.

Plug Valves

Minimum body wall thickness to ANSI B16.34

Face to face dimension to ANSI B16.10

5.7.3 Valve Dimensions

End flanges, when specified, shall be as follows:

- NPS 24 and smaller : ANSI B16.5
- NPS 26 to NPS 60 : ANSI B16.47
- Threaded end(NPT) : ANSI B1.20.1
- Socket welding end : ANSI B16.11
- Butt welding end : ANSI B16.25

(Wall thickness 22mm and smaller - Fig 2a,

For over 22mm thickness- Fig 3a)

Face-to-Face/End-to-End dimension shall be as per ANSI B16.10. In case the same is not covered under B16.10, the dimension shall be as per BS 2080/manufacturer standard.

Valve under cryogenic service (temp. below -45°C) shall be as per BS-6364 and shall be procured from pre-qualified vendor.

Hand wheel diameter shall not exceed 750mm and lever length shall not exceed 500 mm on each side. Effort to operate shall not exceed 35 kgf at hand wheel periphery. However, failing to meet the above requirement, vendor shall offer gear operation.

By-Pass

A globe type valve (size as per ASME/ANSI B16.34) shall be provided as by-pass for the following sizes of the gate valves:

Class	Size
150	26" & above
300	16" & above
600	6" & above
900	4" & above
1500	4" & above
2500	3" & above



By-pass Piping, Fitting and Valves shall be of compatible material and design. Complete fillet welds for by-pass installation shall be DP/MP tested.

NDT of by-pass valve shall be in line with main valve.

5.7.4 Inspection and Tests

Shop inspection and tests shall be carried out to API 598 and related MSS standards.

Radiography of Cast Valves

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Radiography procedure, areas of casting to be radiographed, and the acceptance criteria shall be as per ASME/ANSI B16.34.

a) The minimum requirement of radiography for other than category 'D' service shall be as under:

Class	Size	Qty.
150	Up to 24"	10%
150	26" & above	100%
300	Up to 16"	10%
300	18" & above	100%
600 & above	All	100%

Note: Radiography is required for category 'D' service classes (Minimum 5 %)

b) Radiography requirement for casting sizes for special critical services, as hydrogen / hydrogen bearing, oxygen, NACE, stress relieved caustic services etc shall be as follows:

Class	Size	qty.
150	up to 24"	50%
150	26" & above	100%
300	up to 16"	50%
300	18" & above "	100%

The welds of body-to-bonnet and body-to-end flange shall be subjected to 100% NDT; both radiographic and magnetic or liquid penetrant examinations.

Beveled ends on each butt welding end valves shall be subjected to 100% radiographic examination and, magnetic particle or liquid penetrant examination.

High pressure closure test shall be required for gate and globe valves.

Water for pressure tests on austenitic stainless steel valves and those having internals of austenitic stainless steel shall not contain chlorides more than 50 ppm in weight.

5.8 Special valves (Y -body globe, Jacketed valves of all types)

Special Valves shall strictly follow the requirements of Valve data sheet, Process data sheet/Specialty data sheet.

Special Valves shall be made out of 100% radiographic casting/ 100% ultrasound forging.

Jacketed Valves shall be tested to 100% DP/ MP check on Jacket welding, 100% radiography test of valve body, 100% hydro test of Jacket.



Large diameter swing check valves shall be equipped with an anti-hunting device, ~~only~~ where closing of the check valve could cause a surge.

5.9 TRAPS

Parts subject to wear and tear shall be suitably hardened. Traps shall function in horizontal as well as in vertical installation.

Traps shall have integral strainers.

All traps shall be hydrostatically tested to twice the design pressure.

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5.10 EXPANSION JOINTS

The applicable codes are ASME B31.3 and EJMA (Expansion Joint Manufacturer's Association).

Bellows shall be formed from solution annealed sheet conforming to the latest ASTM Spec. Any longitudinal weld shall be 100% radiographed. The finished longitudinal weld must be of the same thickness and same surface finish as the parent material.

Circumferential welds are not permitted. Bellows are to be hydraulically or expansion (punched) formed. Rolled formed bellows are not acceptable. Noticeable punch or die marks resulting from expansion operation are not acceptable.

No repairs of any kind are allowed on the bellows after forming. Deep scratches and dents are not acceptable. .

The out of roundness shall be limited to ± 3 mm. This is the max. deviation between the max. & min. diameter.

The actual circumference of the welding end shall be maintained to ± 3 mm of the theoretical circumference.

5.11 SUPPORTS & SPRING ASSEMBLIES

The Material, Design, Manufacture and Fabrication shall be generally as per MSS-SP-58/ MSS-SP-89 and/or BS 3974.

Testing of springs shall be as per BS1726.

5.12 NDT REQUIREMENTS FOR PIPING

Classes in 150# for normal service shall be subjected to 10% radiography and 10%DP/ MP test (for CS&AS) or 10% DP test (for SS).

Classes in 300# for normal service shall be subjected to 20% radiography and 20% DP/MP test (for CS&AS) or 20%DP test (for SS).

Classes in 600# and above, 100% radiography on weld joints shall be employed. In 100% radiography classes any fillet welds employed shall have 100% DP/MP test in CS/AS classes and 100% DP test in SS classes.

For hydrogen and hydrogen bearing hydrocarbon services radiography and DP/MP shall be 50% in 150# and 300# class ratings.



All oxygen, NACE and any other lethal service shall have 100% radiography on weld joints in all class ratings. Castings used in these services shall have 100% radiography.

For fire water service, IBR, etc., any statutory NDT requirements, not covered above, shall also be complied.

Classes in Cat-D service shall be subjected to 5% radiography and 10% DP/ MP test (for CS&AS) or 10% DP test (for SS).

6.0 THERMAL INSULATION OF PIPING

This consist of insulation for heat conservation, process stabilization, temperature maintenance, insulation for steam traced lines, jacketed lines, insulation for electrical traced lines insulation for fire protection for operating temperatures above ambient temperature for all sizes of lines.

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Wherever insulation for personnel protection is mentioned, the same shall be provided judiciously as per insulation specifications.

All materials shall be of high quality and good appearance. Insulation materials shall be of low chloride content, chemically inert, non sulphurous, rot proof, vermin proof, impervious to hot water and steam, non-injurious to health and non-corrosive to steel and aluminum (even if soaked in 'water at ambient temperatures for extended periods). The use of insulation or finishing materials containing ASBESTOS in any form is not permitted.

The insulation of piping, equipments and vessels shall be carried out with the recommended insulating materials and the thicknesses as per process design basis. Hot insulation over austenitic stainless steel surfaces shall be inhibited with sodium silicate as per ASTM C-795. The inhibited insulation material shall be tested as per ASTM C-692. Restriction of reachable chloride to 10ppm (max) shall be demonstrated as per the test method ASTM C-871.

APPLICATION

All insulation work shall commence only after successful completion of hydro testing of piping and equipments including steam tracing systems.

Surfaces to be insulated shall be thoroughly cleaned, dried and made free from loose scale, oil or grease. Painting under insulation shall be applied to carbon steel, low alloy steel, stainless steel piping and equipments

No welding or drilling of equipments and piping shall be permitted for insulation application.

All projections, such as lifting lugs, trunnion, support lugs , support cleats shall be insulated to the same extent that of equipment or piping.

Cleats used for supporting of insulation shall not project outside insulation.

To ensure perfect water proofing, all cladding joints shall be packed with sealing materials which may either be in the form of a elastomeric sealing compound or fibre based bituminous felt strips.

Minimum overlap in sheet metal at joints shall be 100 mm.

Support skirts of vertical vessels and columns shall be insulated both from inside and outside to a minimum distance of 600 mm from bottom tangent line. The insulations must terminate at minimum 300 mm above support concrete or steel work.

Tank shell insulation shall have continuity in insulation cladding even at stiffener retainer ring location on shell.

Proper expansion/contraction joints shall be provided to allow movement of pipe or vessel without producing random cracking of all the insulation.



Vapour barrier shall be applied on piping and all the vessels & equipments in cold services and also for services up to 125 deg C.

7.0 PAINTING

The following surfaces and materials shall require painting.

All un-insulated C.S & A.S piping, fittings, valves, columns, vessels, drums, & storage tanks, heat exchangers etc. including painting of identification marks on insulated lines.

Identification color bands on all piping as required including insulated aluminium clad, galvanized, SS and non ferrous piping.

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Pipes, fittings & valve surfaces under insulation of carbon steel and alloy steel insulated piping system.

Pipes, fittings, valves surfaces under insulation of stainless steel insulated piping system.

All structural steel works, supports, walkways, handrails and platforms etc.

8.0 WELDING

All welding work, equipment for welding, heat treatment, other auxiliary functions and the welding personnel shall meet the requirements of the latest editions of the following accepted standards and procedures.

Process Piping ASME: B31.3

The Indian Boiler Regulations IBR

In addition, the following codes and specifications referred in the code of fabrication shall be followed for the welding specifications, consumable qualifications and non destructive test procedures.

Welding and Brazing Qualifications ASME BPV- Sec. IX.

Non destructive examination ASME BPV Sec. V.

Material specifications: Welding rods, electrodes and filler metals ASME BPV Sec II Part C.

The additional requirements mentioned in this specification, over and above those obligatory as per codes, shall be followed wherever specified.

9.0 DESIGN PHILOSOPHY FOR 3-D MODELLING

9.1 Introduction

The BOO Processor shall carry out Detailed Engineering of the plant areas specified in the scope using 3D intelligent software.

9.2 Software

Anyone of the following two software with Oracle database shall be used by the BOO Processor.

- i) PDS/SP3D by Intergraph USA on Windows with design review through dynamic walkthrough.
- ii) PDMS/E3D by AVEVA UK on Windows with design review through dynamic walkthrough.



Latest version of all the software released as on the date of ITB shall be used by the BOO Processor. The BOO Processor shall clearly specify in his bid the software to be used with version number.

9.3 Objective

The objective of 3D modelling is to carry out detail engineering and produce deliverables using 3D tools and conduct reviews. 3D model shall be developed and demonstrated with dynamic walk through facility. BOO Processor shall deliver to SECL/PMC a complete 3D model.

9.4 Extent Of Modelling / Scope Of Work

9.4.1 Piping

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All design within Unit, Facility battery limit above ground and underground piping inclusive of fire fighting lines and sprinkler system, big bore and small bore, except tubing, for all piping materials shall be modelled. Details shall include all pipes, valves, flanges, fittings, reducers, spectacle blinds, drains, temperature/pressure connections, sample points, drip legs jacketed pipes, fittings and flanges etc. Existing lines inside the battery limit (If any) along with tie-in points shall also be modelled.

All in line instruments like control valves, safety valves, rotameters, orifice plate etc. with near exact geometry.

All piping special items like expansion bellows, slide valves, special valves with purge points, steam traps, strainers etc. with near exact geometry.

Complete vessel trims with level gauges, level switches, level transmitters, equipment, instrument, vent/drains utility connections, pressure gauges etc. with exact geometry.



Steam supply and condensate recovery stations up to the first valves in tracer lines

All pipe supports to be Physical modelled for all sizes with secondary steel sleeper way as follows.

- All spring hangers, roller supports to be modelled with all details.
- Pipe supports along with concrete pedestals ,Type of support
- Details of the spring hanger's i.e. operating load, travel, spring constant should be keyed in as user-defined attributes.
- Details of expansion bellows i.e. type, axial/lateral deflections, stiffness etc to be keyed in as user defined attributes.
- Structural steel members used for the pipe supports to be modelled in complete details.

All equipment to be modelled with exact geometry including but not limited to: manholes with davits, pipe davits on top platforms, nozzles, stiffener rings, bellows, break flanges, platforms, ladders, handrails, lifting lugs, etc. for all the equipment in the plant like vessels, columns, reactor, receivers, pumps with motors, compressors with details of volume bottles, cylinders etc., blowers, centrifugal compressors, furnaces with soot blowers, fired heaters, burners and peep holes, air coolers with motors and fans, filters, blow down drums, all equipment within packages and heat exchangers etc.

- Maintenance areas around equipment, davit swing areas, swing elbows sweep areas, tube bundle removal areas for heat exchangers, rotor removal areas, drop out areas to be modelled as soft envelopes and should be used for clash detections.

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- Equipment supports: skirts, support legs/lugs, saddles to be modelled along with the equipment
- Insulation type (hot, cold, tracing, jacketed, etc). Insulation thickness operating/design. Pressure /temperature, hydro test medium/pressure to be given.
- Equipment 3D model shall include all attachments like platforms. nozzles, ladders. pipe supports, etc.

Skid mounted Equipment / Package units (if applicable) shall be modelled as a Block and Piping connections at Skid/Package unit battery limit to be precisely modelled depicting complete connectivity.

- Skid to be tagged as main equipment.
- All sub-equipment of all skids to have skid tag as a prefix.
- All sub-equipment to be modelled with exact geometry.
- Complete internal Piping of the skid with all inline and online instruments to be modelled.
- All pipe supports with the skids are to be modelled.

Tagging of all line nos., Instrument nos., special items. equipment nos. shall be as marked in the P&ID's.

Complete underground piping man hole vent piping to atmosphere. catch pits, cable trays etc. to be modelled. Envelopes to be modelled on top of manholes and catch pits and shall be used for interference detection.

Material handling equipment e.g. Catalyst loading chutes. drums. etc to be modelled in near exact geometry.



Hard stands, fabrication space for tall columns, erection access for tall structures considering crane boom and movement, crane access. unit approaches from main roads. main roads outside the units shall also be modelled. Incorporation of site changes during fabrication and erection with 3D Model in order to deliver a complete as built model.

General Arrangement Drawing Extraction

Piping General Arrangement Drawings are to be extracted from the 3D model on AO size with a scale of 1:33 / 1:50 for rack Vital installations and battery limits shall be marked with coordinates.

All locating dimensions like spacing for equipment, structural columns, pipe-to-pipe etc. shall be marked on the GAD's. Equipment tag numbers, line numbers, instrument and speciality item tag numbers shall be marked on the GAD's. Electrical instrument ducts shall be marked and labelled. Access ways, maintenance corridors, dropout areas, bundle removal areas catalyst-handling areas shall be marked on the GAD's.

Isometrics shall be extracted from 3D model along with Bill of Material and logical pipe supports.

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9.4.2 Structural

The scope of modelling for structural shall include but not limited to the following:

Main steel/secondary steel equipment support beams, bracing, columns with footings, stiffener plates, platforms, ladders, pipe racks, stair cases, walkways, supporting structure for all coolers with operating platforms, handrails and staircase, monorails, EOT support. including fire proofing shall be modelled in exact geometry. Existing structures inside the working battery limit to be modelled.

Equipment and structure foundations, technological buildings, equipment supporting structure, flue gas stack and any other concrete structure to be modelled in exact geometry with exact locations of all insert plates.

Foundation and structure for platforms, gratings, handrails etc. for packaged item and items are also included .

9.4.3 Instrumentation

Instrument ducts, cable trays greater than or equal to 300 mm width, Instrument Junction boxes to be modelled in exact geometry.

Transmitters and other floor stand mounted instruments on grade/platform to be modelled in approximate geometry with tag nos. as per P&ID's.

9.4.4 Electrical

Electrical cable trays greater than or equal to 300 mm width. Electrical cable trenches all sizes, junction boxes to be modeled in exact geometry.

Electrical stop/start switches for motors, to be modelled in approximate geometry.

Lighting details, earth pits.



Fire alarm system, e.g. fire detection point, hooters, etc.

9.5 Deliverables



Complete 3D model as built along with as built GAD's, Isometrics, and MTO reports, all extracted from the model, nozzle orientations for Piping and 3D models for all disciplines along with complete reference databases, component catalogues for all the size range in the specifications shall be furnished in electronic form.

There shall be minimum 3 review stages to be done as follows. 4th and 5th further reviews shall be required after all comments are incorporated by the BOO Processor.

1. Equipment layout review from erection, construction, operation and maintenance point of view & Conceptual review of critical lines (thermal & process critical) (30%).

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2. Before issue of model for engineering (60%).
3. Before issue of model for construction (before isometric generation commences) (90%).

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ANNEXURE-1

MAXIMUM SPACING OF GUIDES FOR VERTICAL & HORIZONTAL PIPES

NOM PIPE SIZE IN INCHES	VERTICAL SPACING METRES	HORIZONTAL SPACING METRES
1	6.0	6.0
1 ½	6.0	6.0
2	6.0	6.0
3	8.0	12.0
4	8.0	12.0
6	8.0	12.0
8	8.0	12.0
10	12.0	18.0
12	12.0	18.0
14	12.0	18.0
16	12.0	18.0
18	12.0	18.0
20	16.0	18.0
24	16.0	18.0
26 & ABOVE	16.0	18.0

NOTES:-

1. These spacings may be varied to suit column spacing of rack. The above spacing is for straight runs of pipe & does not include guides which are used for control of thermal movements, as decided by stress group.
2. The guide spacings given in the above table are indicative only.



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ANNEXURE – 2

CLEARANCES

Minimum clearances for piping, equipment, structures, platforms, and supports shall be in accordance with the following table:

Item	Description	
Roads	Headroom for primary access roads wherever heavy duty crane movement is required.	9 M
	Headroom for primary access roads	7.5 M
	Width of primary access roads excluding shoulders.	Refer Civil
	Headroom for secondary roads	5 M
	Width of secondary roads excluding shoulders.	Refer Civil
	Clearance from edge of road shoulders to platforms, equipment, pipe associated with equipment, or similar features.	1.5 M**
Maintenance Aisles at Grade	Horizontal clearances for equipment maintenance by hydraulic crane (12t capacity)	3 M
	Vertical clearance for equipment maintenance by hydraulic crane (12t capacity)	3.6 M
	Horizontal clearance for fork lift and similar equipment (2500 kgs capacity)	2.4 M
	Vertical clearance for fork lift and similar equipment (2500 kgs capacity)	2.4 M
	Horizontal clearances for equipment maintenance by portable manual equipment (A-frames, hand trucks, dollies or similar equipment)	1 M
	Vertical clearances for equipment maintenance by portable manual equipment (A-frames, hand trucks, dollies or similar equipment)	2.4 M
	Walkways	Horizontal clearance (not necessarily in a straight line)
Headroom (except for hand wheels)		2.2 M
Platforms	Minimum width	1200mm
	Headroom from stairwell treads.	2.2 M
	Minimum clearance around any obstruction on the platform.	500 mm
Platforms	Headroom	2.2 M

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Item	Description	
	Maximum vertical distance between platforms	6 M
	Minimum toe clearance behind a ladder.	210 mm
	Minimum handrail clearance.	100 mm
Equipment	Minimum maintenance space required between flanges of exchangers or other equipment arranged in pairs.	500 mm
	Minimum maintenance space required for structural members or pipe.	300 mm
	Clearance from edge of road shoulder (the extreme projection)	1.5 M
Fired Equipment	Horizontal clearance from hydrocarbon equipment (shell to shell)	15 M
	Exception: Reactors or equipment in alloy systems shall be located for the most economical piping arrangement.	
	Clearance from edge of road to heater shell.	3 M
Valve Hand wheels	Clearance between the outside of the hand wheel and any obstruction.	25 mm*
Pipe (aboveground)	Clearance between the outside diameter of the flange and the outside diameter of pipe insulation.	25 mm*
	Clearance between the outside diameter of the pipe, flange or insulation and a structural member.	50 mm*
	Clearance between the outside diameter of the flange and the outside diameter of bare pipe.	25 mm*
	Minimum distance from underside of pipe to grade or platform.	300 mm
Control Valve Arrangement	Centreline of control valve above grade or platform.	450 mm
	Minimum centreline of control valve from face of column or wall.	600 mm
	Where process conditions require steam or hydrocarbon vapours to be discharged to atmosphere at a safe location, the tail pipe shall terminate as below:	
	Distance above nearest operating platform.	3 M
	Within radius of nearest operating platform.	7.5 M
** Verify conformance with local regulations. * With full consideration of thermal movements		

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PART II: TECHNICAL

SECTION – 2.4 ENGINEERING SPECIFICATIONS – FIRE FIGHTING

**PLANT: INTEGRATED COAL BASED AMMONIA PLANT,
AT MAHAMAYA SCG PLANT, BHATGAON
AREA, SURAJPUR DISTRICT, CHHATTISGARH,
INDIA**

**PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH
COAL GASIFICATION ROUTE ON BUILD-OWN-
OPERATE (BOO) BASIS AT SOUTH EASTERN
COALFIELDS LIMITED, CHHATTISGARH, INDIA**



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9.0	Safety Equipments
10.0	Execution, Inspection & Testing
11.0	Approval Of Drawings

LIST OF ATTACHMENTS

ATTACHMENT NUMBER	DESCRIPTION
Annexure-1	Detection, Actuation, Alarm and Communication System

1.0 SCOPE

This specification covers design basis and execution requirements for fire protection system. The provisions shall be made as per statutory regulations, NFPA codes and safe engineering practices.

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The BOO Processor shall design, supply and erect complete fire fighting network / system inside and around plant.

This specification shall be read in conjunction with SECTION – 1.9 DESIGN PHILOSOPHY – PIPING

2.0 GENERAL

The BOO Processor's design and engineering activities listed below are the minimum requirements to be complied with preparation of detailed design basis, specifications, standards and list of codes for each system based on guidelines given in subsequent clauses of scope of work.

The term 'Fire Fighting System' referred here generally covers various equipments and facilities being provided for controlling fires. These include facilities such as fire water network accessories and fire detection & control system, fire water piping network together with hydrants, monitors, detectors/alarms, various kinds of portable fire extinguishers like Dry Chemical Powder type, etc., as well as sand and water buckets and sign boards.

The Fire Fighting System shall be designed to provide adequate facilities for extinguishing any fire in the entire area of Plants and associated facilities of the proposed Scope of work. The system shall be designed and installed as per TAC / NFPA/ API/ IS standards and also as per latest applicable standards/ codes.



The detail design, calculations for the respective fire protection system, drawings and documents shall take into consideration of all stipulations, practices followed by Statutory Regulations/Authorities for all types of jobs of this package.

All required approvals from statutory authorities shall be obtained by BOO Processor.

3.0 CODES, STANDARDS & REFERNECE DOCUMENTS

Latest editions of applicable Codes and standards shall be followed for the Fire Fighting system offered.

S.No.	Stds No.	Title
1	NFPA-1	Uniform Fire Prevention Code
2	NFPA-10	Portable Fire Extinguishers
3	NFPA-11	Low Expansion Foam and Combined agent Systems
4	NFPA-12	Carbon dioxide extinguishing Systems
5	NFPA-12A	Halon 1301 Fire Extinguishing Systems
6	NFPA-13	Installation of Sprinkler Systems



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7	NFPA-14	Installation of Stand Pipe & Hose Systems
8	NFPA-15	Water Spray Fixed System for Fire Protection
9	NFPA-16	Installation of deluge foam-water sprinkler and foam water spray systems.
10	NFPA-17	Dry chemical extinguishing systems.
11	NFPA-17A	Wet Chemical Extinguishing Systems
12	NFPA-18	Wetting Agents. Systems.
13	NFPA-18A	Water additives for Fire Control and Vapor Mitigation.
14	NFPA-20	Installation of stationary pumps for fire protection.
15	NFPA-22	Water tanks for private fire protection.
16	NFPA-24	Water tanks for private fire service mains and their appurtenance.
17	NFPA-26	Supervision of valves controlling water supplies for fire protection
18	NFPA-30	Flammable and combustible liquids.
19	NFPA-49	Hazardous chemical data
20	NFPA-52	Vehicular fuel System
21	NFPA-70	National electric code.
22	NFPA-72	National Fire Alarm Code
23	NFPA-77	Recommended Practice on Static Elect.
24	NFPA-174	Fire Protection symbols for risk analysis diagrams.
25	NFPA-291	Recommended Practice for Fire flow testing and marking of hydrants.
26	NFPA-496	Purged and pressurized enclosures for electrical equipment
27	NFPA-2001	Clean Agent Fire Extinguishing Systems
28	IS 2189	Selection, Installation and. Maintenance of Automatic Fire. Detection and Alarm System- Code of Practice
29	IS 15394	Fire Safety in Petroleum Refineries & Fertilizer Plants
30	API 1102	Steel pipelines crossing railroads & highways
31	NIT SECTION 1.9	DESIGN PHILOSOPHY – PIPING

4.0 FIRE PROTECTION SYSTEMS

The following fire protection facilities shall be provided depending upon the nature or the installation and risk involved.

- Fire water hydrant system

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- Water spray system
- Fire detection and alarm system
- Gas detectors
- Communication with central fire station
- Clean Agent system
- Foam system, as applicable.
- CO2 system, as applicable.
- Portable fire fighting equipments
- First aid fire fighting equipments
- Fire proofing (if required)

5.0 DESIGN BASIS

The Fire Protection Philosophy is based on Loss Preventive and Control.

The design shall meet requirement of applicable standards.

BOO Processor to finalise hydrant layout on plot plan, with all the requirements such as number of Hydrants, Monitors, Foam system, sprinkler system etc., based on all statutory requirements & TAC Guidelines, considering ease of maintenance and safe approach for fire fighting. Due consideration is to be given for providing Emergency escape routes also. Hydrants are to be strategically located to obtain maximum advantage of layout.

The BOO Processor shall route the piping taking into cognisance other aboveground and underground piping like chemical sewer and OWS, coming in proximity, civil foundations and underground structures.

Automatic/ manual fixed water spray requirements shall be as per TAC/NFPA Guidelines.

Foam system shall be fixed/semi-fixed type surface application.

CO2 system & Clean agent system shall be automatic type

5.1 Process Units, and Flammable Pump stations



BOO Processor shall provide the following:

Water Curtain for pumps operating toxic fluids.

Water/Foam Monitors for Elevated platforms / tall columns.

For fired heaters and process columns, minimum of 2 monitors should be available for each such heater and process column.

Wet Risers (with hose reels and hose boxes) for multi-storeyed unit (2 floors and above)

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Landing valves for hydrants on technological structures and at 30 m distance on floor of process units.

Hose Reels with each landing valve on staircases.

5.2 Buildings and Other Miscellaneous Structures

BOO Processor shall provide the following:

Control Room and Sub-Station : Automatic fixed high pressure CO₂ system for the cable cellar for sub-stations (unmanned) Clean agent protection system for control room, computer room, substations (manned) etc.

Detection and actuation as per NFPA and Electrical / Instrument specifications given in the bid documents.

Landing valves as per TAC rules.

Automatic Fixed water spray system for transformers having capacity 10MVA or above.

Multi-storeyed buildings : Hydrant/ landing valves /Hose reels for multi-storeyed buildings at first floor and above as per TAC rules.

Detection as per Electrical/instrumentation specifications.

6.0 FIRE SYSTEM DESCRIPTION

Fire water network shall consist of mostly aboveground and/or underground, if required..

The hydrants shall not be installed directly vertical to the headers. It shall be installed with a branch “L” shape piping to avoid directly fall of leaking water on main header.

1.5 To 2.0 m portions of the headers (if above ground) and the entire branch piping near hydrants shall be epoxy painted.

Fire water ring header shall be extended to all the process plants and storage areas.



Material used for fire protection system shall be in accordance with TAC requirements. All equipments connected to fire water system shall either be TAC approved or ISI marked from companies which carry ISO certification.

Material for fire water piping shall be outer wrapping/coating carbon steel with cathodic protection for underground piping and carbon steel for aboveground piping.

Fire water pressure at the farthest point shall be a minimum of 7 kg/cm² after installation of headers and sub headers

All fire water piping shall be tested to hydraulic test pressure of 18 kg/ cm² (g).

Indoors hydrants for plant and non-plant buildings shall be provided as required.

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For process units, external ring header with hydrants and an internal distribution with monitors and hose reels shall be installed.

Restriction Orifice

Suitable restriction orifice shall be provided in fixed medium velocity water spray system to maintain the pressure requirements as per TAC.

Isolation Valves

At every 300m and at crossings (Junctions) to ensure easy maintenance and uninterrupted water supply in case of break down and shall be planned in such a way that outage of any section of fire water line should not affect other section.

Along the network, a number of block valves shall be located in such a way that the various areas of the plant can be fed with fire water even during maintenance operations on part of the fire water network

Isolation valves shall also be provided below monitor and at all hydrants.

Landing valves on tech structure, platforms, columns, buildings, shall have individual 4" isolation valve at each hydrant.

Isolation valve shall be provided at all tapping points on firewater headers.

Gate valves shall be used as Isolation valves.

Only carbon steel valves shall be used. No Cast iron valves shall be used.

Deluge valve

Deluge valve shall have flanged body/housing & cover (Cast Steel ASTM 216 Gr. WCB), Internal Metallic parts SS304, Diaphragm Rubber/ Non metallic) UL listed, Red Painted, pneumatically actuated.



7.0 FIRE PROTECTION FACILITIES SALIENT DETAILS

7.1 Fire Water Hydrant System

The firewater network shall be to ensure multi-directional flow.

Hydrant heads shall be placed at a minimum distance of 15 M from process equipment

Monitors around heater areas shall be located in such a manner that the heater can be isolated from the plant.

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Long range monitors shall be provided wherever required. Long range monitors must be provided to cover the high rise columns, equipments etc., as mentioned in the scope of work.

There may be cases where due to horizontal obstruction, a particular vessel/ process column may not be approachable by ordinary monitor or hydrant, elevated long range monitors shall be provided to take care of such conditions

Hydrant shall be BIS approved with following detail:

Number of hydrants shall be based on one hydrant/ water monitor for every 30 m of external perimeter of process units and storage tank area. For utility and other building areas, this distance shall be a minimum of 45 m.

Hydrants and/or water monitors shall be located keeping in view the different risks within the premises which are to be protected and ensuring effective coverage

Double headed hydrants type A as per IS:5290 on each hydrant post (i.e. two hydrant valves mounted on each stand post) and at every 30 m centre to centre along the hydrant mains shall be provided.

Extension of hydrants/monitors for spill fire (as required by TAC) shall also to be provided



Inlet	3"- 150 # RF as per ANSI
Outlet	63mm double headed
Pipe Size	4" CS
Capacity	36 cum/hr
Type	Oblique angle type as per TAC requirement
Material	SS304

Flange Drilling for Hydrant valve shall be 3"- 150 # RF as per ANSI

Water Monitor shall be BIS approved with following detail

Nozzle bore size	38mm (Aqua fog /foam with arrangement of jet and spray).
End connection	4"- 150 # RF
Run Pipe Size	Min. 6", CS
Capacity	2580 LPM
Material	SS304

Water cum Foam Monitor

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Nozzle bore size	38mm (Non aspirating type-Aqua fog / foam with arrangement of jet and spray)
Run Pipe Size	Min. 6”, CS
Capacity	2580 LPM
Material	SS304
Approval	UL

Long Range Water monitor

Capacity	2000/1000/750/500 GPM (as required)
Horizontal Range	50 m approx.
Material	SS304
Approval	UL

Hose Reel

Fire hose reels shall be considered at strategic locations around block as first aid fire contingency. These shall be floor mounted type and shall have water connection from hydrant network. Each hose reel shall have 30 metre long hose with nozzle.

Hose reel shall be located as per Std and should cover all process areas in ground floor. Additional hose reels shall be provided with each landing valve.



Hose reel shall be 30m x 20mm bore.

Hose Box

Hose boxes shall be made of M.S. material and painted red with dimensions 18 SWG thick M.S. sheet , size 750 mm x 600 mm x 250 mm. Each box shall contain 2 nos.x 15 m of 21/2” fire hose with gun metal coupling and accessories to suit connection of two reinforced rubber line (RRL) on each hydrant. Hose Boxes shall be provided for each landing valve and hydrant. Hose box shall be installed around process units and other areas of the plant.

7.2 Portable Fire Extinguishers

Portable fire extinguisher (BIS marked / BIS approved) shall be provided for all plant buildings & Plant area wheeled type (40 kg charge) and portable store type (5 kg charge) dry powder extinguishers, suitable for class ABC fire, shall be provided as per NFPA requirements. Portable type (5 kg charge) and wheeled (30kg charge) Carbon Dioxide extinguishers shall be provided for fire fighting in the electrical substation and control rooms and other agreed locations as per NFPA

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requirements. BOO Processor shall specify the numbers and location for Owner's review and approval.

7.3 Breathing Apparatus

Shouldered type compressed air cylinders shall be provided for breathing in the CCR and substation buildings, field operators cabins, LCR(s) for emergency use.

Minimum quantities shall be:

CCR-4 nos. , Substations -2 nos. (each) , Field Operator Cabin-1 no (each)

2 nos. Online Air line mask shall be provided for each Control room.

7.4 Water Spray System

Water spray systems provided shall meet the requirements of NFPA /TAC, and job specifications. The rate of water applications and mode of operation shall be as per TABLE-1 and:- Low point drains shall be provided in the water spray network.



Linear heat sensing device shall be provided for all floating roof tanks. If applicable

Rate of Water Application and Mode of Operation of Water Spray & Foam System

Facilities	Mode of Operation	Rate of Application
Process Unit handling hydrocarbon On Pumps Other Equipments Tall Columns Coal/ Pet coke	Manual/Auto(Deluge system)	As per TAC / Standards
Transformers	Auto (Deluge system) for hot oil transformer with oil capacity more than 2000 lit as per Standard .	As per TAC / Standards
Cable Cellars	Auto (Deluge system)	As per TAC / Standards

Note;- 1. For Transformers automatic deluge operation shall be with QB detectors.

2. For Cable cellars automatic deluge operation shall be with Smoke detections.

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3. Auto (deluge system) shall be deluge valve with an isolation valve at its upstream and also a manual valve acting as by-pass to the automatic deluge system.

7.5 Foam System

Type of Foam:- Low and medium expansion foam protein based

Operation: - Manual

System Type: - Semi fixed.

Application Time: - As per TAC

Foam Solution:- 3% foam

Foam Solution Application Rate:

5lpm/m², of liquid surface: - for fixed roof and cone cum floating roof tank.

12lpm/m², of vapour seal area i.e. foam dam area for floating roof tanks

8.1lpm/m², for roof collapse case for floating roof tanks.

The foam system shall be considered for protecting transformers and other equipments. The foam system shall comprise of foam concentrate proportioning equipment, foam makers, piping system and foam discharge devices. The system shall automatically actuate foam on detection of fire.

The system shall be designed as per NFPA/ guidelines.

Foam system shall be provided for transformer area. The transformer area shall be surrounded on at least 2 sides by strategically installed water cum foam monitors (SS304 body & nozzle, fixed stand post type, manual operation, 500-750 USGPM variable type flow, self inducing foam induction mechanism) along with portable type foam cans (each 200 Litres capacity).

7.6 Fixed CO₂ System

Automatic Fixed CO₂ system shall be provided in un-manned sub-stations & cable cellars.

The system shall be designed as per NFPA-12 with high-pressure CO₂ cylinders.

The CO₂ system shall be designed classifying fire in cable cellars as deep-seated fires.

The design concentration shall be 50 with a flooding factor of 1.6 for 20 minutes



Minimum effective time of discharge for computing quantities of CO₂ shall be 30 seconds

The actuation of fixed CO₂ system to give indication in local control room.

7.7 Clean Agent System

The clean agent protection system shall be provided in control rooms, computer rooms & following buildings as

Central Control Building

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Main Substation

Material Handling Substation & Local Control Room

As Per NFPA 2001. The system shall be automatic and detection & actuation shall meet the requirements of NFPA 2001. The design shall be with 100% standby consideration.

The system shall be designed to meet the minimum requirement of total flooding, fire extinguishing clean agent system as per NFPA 2001 and having design concentration as specified at the ambient temperature.

The actuation of clean agent system shall be indicated in the control panel located in the fire station control room. & CCR

Preferred clean agents are either Argonite or Inergen only. Refer Standard Specification

7.8 Sprinkler System

The system, shall be designed according to NFPA 13. The sprinkler system shall be designed and installed at the following locations, but not limited.

Sprinkler system with deluge valves (dry type), shall be installed at the following Location:

- All Buildings as per NBC 2016 (and/or latest edition)
- Laboratory
- Chemical room/storage area
- Empty bag storage area

Sprinkler system (wet type with QBD), shall be installed at the following Location:



- All buildings as per NBC 2016 (and/or latest edition)
- Admin Building
- Workshop building
- Technical Building
- Meeting Room/Hall
- Canteen
- Fire brigade building

7.9 Fixed Water Spray System

A manually operated- water spray system shall be a spray density of 20.4 L/min/m² of horizontal protected area, and shall be provided for protection of the compressors and pump handling flammable gas & liquid respectively.

Automatic fixed water spray system shall be provided for the cable cellars of Sub-station and the oil filled transformers and Diesel Oil Tank. The system shall be designed in accordance with NFPA 15.

8.0 FIRST AID FIRE FIGHTING EQUIPMENTS

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The selection of equipment should be such that it is correctly related to the type of fire expected in the area.

The general guideline for use and selection shall be as per TAC requirements

Hoses and Hose boxes and Hose house with accessories shall be provided as per TAC.

9.0 SAFETY EQUIPMENTS

BOO Processor shall consider the following safety items (BIS approved) with minimum qty. specified for their scope of work :



- Safety helmets – 10 nos per control room & per sub station.
- Stretcher – 4 nos. per ISBL Plant.
- Fibre glass First Aid Box with all necessary items/kit & Anti snake serum -2 nos. per ISBL plant.
- Rubber hand gloves for electrical jobs– 10 pairs for each sub station and each control room.
- Explosimeter- 2 nos. per ISBL plant.
- Fire Proximity suit – 4 nos. per ISBL plant.
- Resuscitator– 2 nos. per ISBL plant.
- Electrical siren (3 Km range) - 1 no. per ISBL plant.
- Hand operated siren - 2 no. per ISBL plant.
- Water jel blanket – 4 nos. per ISBL plant.
- Red/Green flag for fire drill – 10 nos. each color per ISBL plant.
- Positive Pressure type self contained breathing apparatus – 4 nos. per control room & per sub station.
- Hand held battery loaded Emergency light , each with 1 set spare battery- 4 nos. per ISBL plant.
- Ambulance (4 wheeler motor vehicle) - 1 no.

10.0 EXECUTION, INSPECTION AND TESTING

All execution, inspection and testing for completion of fire protection system shall be carried out based on Codes, standards and specifications. BOO Processor shall develop a detail inspection, and testing procedures based on codes, standards and specifications. Following minimum tests but not limited to, shall be carried out after completion of the system testing Fire water network piping

Demonstration test for system capacity requirements

Demonstration test for auto start and stops for the main fire pumps and jockey pumps, if applicable.

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Demonstration test for foam application

Demonstration test for water spray

Demonstration test for CO₂ system (using N₂ in place of CO₂)

The BOO Processor shall meet all requirements for inspection and testing of the system.

11.0 APPROVAL OF DRAWING

Drawings and documents shall be prepared as required by approval authorities in all respects and submitted by the BOO Processor. The BOO Processor shall make arrangement for inspection and testing for statutory authorities at various stages of the work.

ANNEXURE-1

Detection, Actuation, Alarm and Communication System

For detail refer electrical and instrumentation specifications attached with the bid document.

General Features Design

An addressable type of Fire Alarm System shall be provided for the plant. The design shall be as per NFPA and applicable local requirements.

The fire protection facilities for the Project shall meet the local rules and requirements. These facilities include providing smoke and heat detectors in the buildings.

Salient Feature

Smoke/Heat Fire Detection

The fire detection system shall be made by means of optical smoke detectors, ionization smoke detectors and heat detectors. The above system shall be installed in the control room, electrical sub-stations and other buildings. The signal coming from the above detectors shall be sent to Local Fire Alarm Panels at various locations and in turn to the Main Fire Alarm Panel.

Alarm Push Button Outdoor/Indoor

Outdoor/ indoor Alarm push button shall be located in the plant area/ buildings so that the maximum travelling distance is no more than specified as per NFPA Code. The push buttons shall send the signal to the respective Fire Alarm Panel at various locations.

Fire Alarm Monitoring System



General

Fire Alarm Main Control Panel shall be provided in Fire Station Building and Sub Control Panels (Local Fire Alarm Panels) shall be provided, one each in control room, and other agreed location.

Fire alarm control panels shall be provided in the respective Non-plant buildings. Interconnection of these fire alarm panels to the main fire alarm shall be done by the BOO Processor. Summary of Fire alarm to be connected to DCS shall be prepared.

Each fire alarm panel shall be suitable for the following tasks:

- To receive signals coming from:
- Smoke detection and heat detection systems

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- Manual push buttons to actuate audible and visible alarm for each received signal and a siren for general alarm.
- The control panel shall supply operating low voltage D.C. to the system and have an in-built charging system to maintain in-built batteries, which shall operate the system in the event of mains failure. EDG/UPS power connection shall be provided the fire alarm system.
- There shall be sufficient zones on the panel to quickly identify the area of alarm. Such zones shall either indicate the area on the panel in English with standard model available in the market. NFPA code for zone classifications shall be followed.
- The panel shall be capable of supervising faults on the alarm lines, battery leads, batteries, sounders, and contain both audible and visual warnings of such faults within the panel. Only the use of a supervisory key should control such fault indications. Fire conditions must always overcome faults. Indicating lamps shall be dual filament type, having twin lamp circuits or LED type.
- It is preferred that the panel shall have an "alarm" and "evacuation" circuit on an automatic basis so that the "alarm" signal shall move to "evacuate" signal within a given period unless controlled with key by a responsible person.
- The alarm shall be by electronic hooter and siren capable of giving two distinct sounds - one "alarm" the second "evacuate". The number and location of such hooter and siren shall be determined by a qualified fire protection engineer and be designed to be clearly heard above background noise of the operating plant. The cable feeding the alarm system shall be monitored and protected from fire. Cables for fire alarm system will be fire retardant type. However, the cables and components shall comply with the local regulation requirements.
- Manual alarm shall be given by break glass call points which shall be located beside all exits to the open air, or from the department to a safe route, and at all points of high risk. The glass shall be of the fiber glass reinforced plastic type and of copper free aluminium in hazardous area and a test facility shall be incorporated. The instructions shall be in English.
- Alarm points in external conditions shall be weather proof and where conditions require this, be explosion proof.
- In areas of high background noise, flashing or rotating lamps shall be placed alongside hooter /siren to give visual as well as audible warning.
- The system shall also be capable of:
 - Accepting automatic detection systems.
 - Closing down air conditioning or similar functions.
 - Having repeater mimic panels added to the system.
 - Serial interface between main fire alarm panel and DCS (to be displayed F&G console) shall be provided. Necessary alarms shall be repeated on DCS.
- The use of taped voice messages in English in conjunction with alarm sounder shall be provided.



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PART - II: TECHNICAL



SECTION – 2.5

ENGINEERING SPECIFICATION - ELECTRICAL

PLANT: INTEGRATED COAL BASED AMMONIA PLANT,
AT MAHAMAYA SCG PLANT, BHATGAON AREA,
SURAJPUR DISTRICT, CHHATTISHGARH, INDIA



PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH
COAL GASIFICATION ROUTE ON BUILD-OWN-
OPERATE (BOO) BASIS AT SOUTH EASTERN
COALFIELDS LIMITED, CHHATTISHGARH, INDIA

0	19.01.2022	19.01.2022	For client's review/comments	BK	KS	KS
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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9.0	INSTALLATION
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1.0 GENERAL

This document defines broadly the scope & the specific interface requirement for developing detailed design and engineering for complete electrical facilities along with Fire Alarm, Plant Communication System, Public Address, etc. required in Installation of Coal to Ammonia project through Coal Gasification route. All data required in this regard shall be taken into consideration for acceptable, satisfactory, reliable, safe and trouble free operation of the system as per good engineering practices.

2.0 STATUTORY REQUIREMENTS, CODES & STANDARDS

The design and the installation shall be in accordance with established codes, good engineering practices and shall conform to the statutory regulations applicable in the country. BOO Processor shall be responsible for obtaining necessary approvals from the statutory authorities e.g. Central Electricity Authority (CEA) / Electrical inspectorate, Chief Controller of explosives (CCoE) as applicable before commissioning of electrical facilities.

Liaison with SECL / PMC electrical engineers in charge / other contractors for implementing interfaces as required.

2.1 Latest version of main codes, standards and statutory regulations to be considered as minimum requirements are as given below:

- OISD standards-Indian Standard Specification
- Indian Electricity act
- Indian Electricity rules
- Indian Standard Specification or equivalent IEC Standards
- Publications of IEEE
- The Indian Explosives Act.
- Indian Boiler Regulation Act
- Statutory requirement of Govt. of Chhattisgarh and Govt. of India.
- Guidelines, instructions, directions issued by Pollution control Boards of state as well as central government. Guidelines, instructions, directions issued by Chief Controller of Explosives (CCoE), CPCB, CMRI, DGMS, CEA etc.
- Guidelines of Tariff Advisory Committee
- Guidelines of Insurance Companies Association.
- National Electrical safety Code (NESC)
- Standards of Underwrites laboratory (UL)
- American Society for Testing Material (ASTM)
- American National Standards Institute (ANSI)
- Other International Standards
- The Factory act
- API Standards / IEEE
- NFPA
- Any other applicable Rules / Acts / Regulations.
- Requirements of other authorities concerned with the Project
- All statutory provisions of India / Govt. of Chhattisgarh

2.2 Some of the bare minimum relevant Indian Standards / OISD Standards are as listed below. However, system / equipment design shall be in line with latest edition of all applicable standards.





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IS: 325, IEC: 60034	Three phase induction motors
IS: 335	New insulating oil for transformers and switchgears
IS: 722	AC electricity meters
IS: 732	Code of practice for electrical wiring installations system voltages not exceeding 650V
IS: 737	Specification for wrought aluminium and aluminium alloys, sheet and strip (for engineering purpose)
IS: 996, IEC: 60034	Single phase AC motors
IS:1248	Direct acting analogue electrical measuring instruments and their accessories:
IS: 1367 Part-13	Hot dip galvanised coatings on threaded fasteners.
IS: 1646	Code of practice for fire safety of buildings and electrical installations
IS: 1913	General and safety requirements for Luminaries (Tubular fluorescent Lamp)
IS: 2071	Method of high voltage testing
IS: 2099	High voltage porcelain bushings
IEC: 62305	Code of practice for the protection of buildings and allied structures against lightning
IS/IEC: 60079	Electrical apparatus for Explosive gas atmosphere
IS: 2544	Porcelain post Insulators for system with normal voltage greater than 1000 volts
IS: 2633	Methods of testing uniformity of coating on zinc coated articles
IS: 2705	Current Transformers
IS: 3034	Code of practice for fire safety of industrial buildings, electrical generating distributing stations.
IS: 3043	Code of practice for earthing
IS: 3156	Voltage Transformers
IS: 3177 IEC: 60034	Crane duty motors
IS: 3347	Dimensions for porcelain transformer bushings
IS: 3637	Gas operated relays
IS: 3639	Fittings and accessories for power transformers
IS: 3646	Interior illumination: Part I & Part II
IS: 3716	Application guide for insulation co-ordination
IS: 4691	Degree of protection provided by enclosure for rotating electrical machinery
IS: 4722	DC motors
IS: 4759	Hot dip zinc coating on structural steel and allied products

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IS: 5082	Specification for wrought Aluminium alloys bars, rods, tubes and sections for electrical purposes
IS: 5561	Electric power connectors
IS: 5571	Guide for selection of electrical equipment for hazardous areas
IS: 5572	Hazardous areas other than mines for electrical insulations area having flammable gases and vapours
IS: 5578	Guide for marking of insulated conductors (1st rev)
IS: 6362	Designation of methods of cooling of rotating electrical machines
IS: 6600	Guide for loading of oil immersed transformers
IS: 6665	Code of practice for Industrial lighting
IS: 7689	Guide for control of undesirable static electricity
IS: 8084	Interconnecting Bus bars for AC voltage above 1 KV upto and including 36 KV
IS: 9676	Reference ambient temperature for electrical equipment
IS: 10028	Code of practice for selection, installation and maintenance of transformers
IS: 10322-1	Specification for Luminaries,Part-1,General requirements
IS: 11353	Guide for uniform system of marking & identification of conductor & apparatus terminals
IS: 11448	Application Guide for AC electricity meters
IS: 12360	Voltage bands for electrical installations including preferred voltage and Frequency
IS: 12459	Code of practice for fire protection of cable runs
IS: 12615	Energy efficient motors
IS: 13234	Guide for short circuit calculations
IS: 13346	General requirements for electrical apparatus for explosive gas atmosphere.
IS: 13408	Code of practice for the selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres
IS: 13947	Low voltage switchgear and control gear
IS: 60034-5	Degree of protection provided by Integral design of rotating electrical machines
IS: 60079-0	Explosive atmospheres, Equipment General Requirements
IS: 60079-1	Explosive gas atmospheres – Part-1 Equipment protection by Flame proof enclosures “d”.
IS: 60079-7	Equipment protection by increased safety “e”
SP: 30	National Electrical Codes (NEC) - BIS Publication
IEC 62271-203	Gas insulated metal enclosed switchgear for rated voltages of above 52 kV.
IS/IEC 62271	HV Switchboard.

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IEC 60947	LV switchboard.
IEC 61439-1/2	LV switchboard (PCC/PMCC/MCC) for TOTAL TYPE TESTED (TTA). Type Test Certificates for short circuit withstand of 50kA for 1 sec. along with ACB mounted in the Switchboards shall apply.
IEC 61641	Switch Board with INTERNAL ARC CONTAINMENT test.
ANSI C-37: 23	Metal enclosed bus
ANSI C-37: 24	Effect of Solar radiation on metal enclosed bus.
IEC 60034	Rotating Electrical Machinery
IEC 61131	Programmable controllers
OISD 113	Classification of areas for electrical installation at hydrocarbon processing and handling facilities
OISD RP 147	Inspection and safe practices during electrical installations.
OISD RP 149	Design aspects for safety in Electrical system.
OISD 173	Fire prevention and protection system for electrical installation.
OISD GDN 180	Lightning protection.

2.3 Any other standard may be followed provided it is equivalent or more stringent than the standards specified above.

3.0 CONSTRUCTION POWER

3.1 SECL will provide construction power at 11kV at single point on chargeable basis to BOO Processor. SECL will bring the 11kV power line at the battery limit and further distribution including installing transformer, switchboard, cable laying, its termination at both end, at different voltage level as per the requirement shall be in BOO Processor's scope. However, BOO Processor, at its own cost, shall also arrange alternative source of power to meet interruptions, if any in construction power supply provided by SECL.



3.2 BOO Processor shall include adequately rated sub distribution boards, power supply cables, other associated material, trenches, overhead structures, road crossings etc. for feeding loads to carry out construction, fabrication activities, etc.

3.3 BOO Processor shall provide adequate area lighting at site of construction, fabrication yards, office, etc. by means of high flood light masts, flood lighting poles etc. which are to be supplied and maintained by the BOO Processor.

4.0 ELECTRICAL SYSTEM DESCRIPTION & SCOPE

Normal power supply shall be provided by SECL at 220 kV level from State Electricity Board. However, 220 kV Switchyard and further Distribution to 33kV / 6.6kV / 415V shall be in BOO Processor's scope.

The Emergency power shall be arranged by the BOO Processor through adequately rated DG set at requisite voltage through suitably rated Switch board, transformer etc. In addition to power required for safe shut down of plant the Emergency DG set shall also cater to the load of emergency lighting, Fire alarm & communication system, Critical load for process, UPS system, battery charger, HVAC of control room etc.

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SECL will provide encumbrance free land (i.e. free from Electric line) to BOO processor. However, BOO processor will facilitate to get requisite statutory clearance from concerned authority.

5.0 SYSTEM DESIGN PHILOSOPHY

5.1 The electrical installation shall be designed to provide:

- Necessary amount of power
- Flexibility
- Service reliability
- Ease of expansion
- Ease of operation and maintenance & inter changeability of equipment
- Safety of personnel

The design of electrical installation shall ensure provision of a safe, efficient and reliable supply of electricity at all times including adverse system conditions. Safe conditions shall be ensured under all operating conditions including those associated with start up and shut down of plant as well as those arising out of failure of electrical equipment. The isolation of part of system of electrical equipment due to either maintenance or shut down shall not compromise safety aspects.



5.2 System shall be designed considering following aspects in general:-

- To facilitate inspection, cleaning and maintenance with the care to safety in operation and personnel protection.
- To minimize turnaround time.
- To provide safety, reliability and flexibility of service.
- Adequate provision for future extension and modification.
- Maximum interchangeability of equipment.
- Desired level of operator interface to achieve coordinated efficient and fail-safe operation, data logging and maintenance of the equipment.
- To decide redundancy, stand by, spares and overload capacities to achieve desired reliability and flexibility requirement.
- To get cost effective and techno commercially proven technology. Economic considerations shall cover capital and running costs and an assessment of the reliability of the system.

5.3 All the electrical consumers within the battery limit shall be identified and listed to have complete details of rating, efficiency, power factor, operating duty cycle (continuous, intermittent, standby), category of supply required (emergency, normal, critical) etc.

5.4 Required redundancy (based on specific process/operating needs) shall be built in substation which feeds power supply to process units/important facilities so that in case of tripping of one feeder, the unit may not be adversely affected and continuity in operation at full capacity is achieved.

5.5 While sizing the system necessary consideration shall be given to restrict the system voltage drop within permissible limits during starting of large rated motors. At the same time, the short circuit current shall be kept within limits keeping in view of the market availability of switchgears rating. For this purpose current limiting reactors/unit ratio transformers if required may be used.

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5.6 Load Grouping



Electrical consumers shall be classified as 'normal / non-essential, emergency / essential or vital / critical loads as per the concepts defined below:

- 5.6.1 'Emergency' or 'essential' loads shall be identified on the criteria that, when failing in operation or when failing if called upon, will affect the continuity of operation, the quality or the quantity of product. For such loads, reliable source shall be ensured. Such feeders shall be grouped on a separate bus section in the respective Switchboards / MCCs / PCCs.
- 5.6.2 Some of the loads which can be identified as emergency / essential load but not essentially limited to following:
- Electrical loads required for continuous operation of process plants utility.
 - Electrical loads required for safe shut down of facilities in case of normal supply failure.
 - Emergency lighting & communication facilities.
 - Fire Detection and Alarm System.
 - AC & DC UPS / Battery charging equipment.
 - Control room AC equipment - Essential ventilation system for offices / Manned areas of other buildings.
 - Motorised valves as per process requirement
 - PA & Paging system.
 - Barring gear
 - AC Emergency Lube Oil Pump
 - I.D. Fan Lube Oil Pump
 - F.D. Fan Lube Oil Pump
 - A.C. Seal Oil Pump
 - Compressors
 - Flame Scanner Cooling Air Fan
 - Any other load
- 5.6.3 Critical' or 'vital' loads shall be identified on the criteria that, when failing in operation or when called upon, can cause an unsafe condition of the installation, jeopardize life or cause a major damage to the installation. For critical loads if any, UPS shall be provided to facilitate uninterrupted supply. The loads on UPS are AVR / PLC / DCS / Auxiliary supply for drives etc. Critical drives if any shall be provided with DC motors.
- 5.6.4 Some of the load which can be identified as critical / vital load but not essentially limited to following:
- Loads providing control and protection to plant equipment.
 - Loads serving critical equipment for safety of plant, equipment and / or personnel
- 5.6.5 Non-essential service is a service, which is neither 'essential' nor 'vital'. Hence the non-essential load does not require any special measure such as standby feeder or standby source to safeguard the continuity of service.

5.7 SYSTEM VOLTAGES

Following factors shall be taken into account while selecting the voltage levels:

- Short circuit level
- Availability of the switchgear with suitable current rating and short circuit rating.
- Existing available voltage levels in the refinery.
- Utilisation voltages of various equipment
- Provision of future extension.
- Size and location of loads
- Choice of voltage may also be affected by local regulations, standards as well as the

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voltage of existing installations

- Overall economy for optimum voltage selection.

5.8 All the components of electrical system shall be designed to take into account following :

- After Diversity Maximum demand (ADMD) after diversity under most severe operating and ambient conditions with an additional 10% contingency.
- Intermittent service loads, if any.
- 30% spare for future addition.

5.9 PLANT UTILITY LEVELS

5.9.1 The various voltage levels for in plant power distribution shall be as follows:

A. Normal Power (State Grid Power)	Grid power shall be available at 220KV. Necessary outdoor type switchyard shall be in BOO Processor's scope. BOO Processor shall co-ordinate with Local State Electricity Board.
B. Emergency Power	Through 1 No. Diesel Generator Set to be provided by the BOO Processor
C. Distribution Equipment	a) 6.6KV \pm 10%, 50 Hz \pm 5%, 3 Ph, 3 W with resistance earthed neutral b) 415V \pm 10%, 3 Ph, 4 W/240V \pm 10%, 1 Ph, 2W, 50 Hz \pm 5% solidly grounded neutral.
Combined variation in voltage & frequency	\pm 10%
Control Supply for: - 415V motors	AC 240V \pm 10%, 50 Hz \pm 5%, 1Ph (For contactor controlled motors) DC 110V \pm 5% (For breaker controlled motors)
- Switch Gear Breaker controlled feeders: a. Closing, tripping & spring charging motor b. Auxiliary power	DC 110V \pm 5%, 2 W AC 240V \pm 10%, 50 Hz \pm 5%, 1Ph, 2W
- Instrumentation and Automation, DCS & Auxiliaries	AC 115 V \pm 10%, 50 Hz \pm 3% 1Ph, 2W
Voltage Ratings	
- Motors above 150 KW	6.6 KV, 3 Ph AC
- Motors up to 150 KW	415 V, 3 Ph AC
- Space heaters	240V, 1 Ph AC
- Lighting	415V/240V AC
- Panic Lights	110V DC
- Power Sockets/Receptacle	415V, 3 Ph AC/240V, 1 Ph AC
- Portable safety lamps & Tools	24V AC

5.9.2 VOLTAGE DROP

The maximum voltage drops in various sections of the electrical system shall be within the limits stated in the following table:

Sl. No.	System Element	Maximum Permissible Voltage Drop
a)	Extra High/High voltage cables for general distribution	1 %
b)	Bus duct / Cable between transformer secondary and Switchboards	0.5%
c)	Cable between PMCC and MCC or auxiliary switchboard i) MCC / Auxiliary Switchboard near PMCC ii) MCC / Auxiliary Switchboard situated remote from PMCC	0.5% Note-3b 2 to 2.5% Note-3a
d)	Cables between HV Switchboard and HV Motor (during running)	3%
e)	Cable between PMCC and motor (during running)	5%
f)	Cable between MCC (situated near PMCC) and motors	5%
g)	Cable between MCC (situated remote from PMCC) and motors	3%
h)	Cable between Auxiliary Switchboard / MLDB and Lighting Panel / Power Panel	1 to 1.5% (Note-2)
i)	Circuit between lighting panels and lighting points	4% (Note-2)
j)	DC Supply Circuit (electrical Controls)	5% and/or as per instrumentation requirement
k)	DCDB to Control Room	2% (Note-1)
l)	UPS outgoing circuit	5% (Note-1)

Note-1

Minimum voltage available across any instrument in the field / control room / satellite rack room shall be as per instrumentation design basis. Distribution system for instrumentation supplies shall be designed accordingly. In case of any conflict between electrical equipment specification sheet and instrumentation design basis report, the latter shall govern regarding instrumentation power supplies.

Note-2

In case of difficulty in achieving specified voltage drops in cables up to lighting panel, 5% drop from Auxiliary Switchboard / MLDB up to lighting points may be permitted.

Note-3

- Higher voltage drop may be permitted between PMCC and remote mounted MCC / ASB; if overall voltage drop up to motor (from PMCC) is limited within 5.5%.
- For large substations 1% drop may be permitted.

The maximum voltage drop at various buses during start-up of large motor and / or motor reacceleration conditions shall be within the limits stated below:-

Sl. No.	System Element	Operating Condition	Maximum Permissible Voltage Drop
a)	At the bus bars of the worst affected Switchboard	Start-up of the large HV motor with other loads on the bus or reacceleration of a group of HV motors (Simultaneous start-up or group reacceleration of HV motors is not envisaged)	10%
b)	At the bus bars of the worst affected LV Switchboard (PMCC / MCC)	Start-up of large LV motor with other loads on the bus, or reacceleration of a group of LV motors.	10%
c)	Cables between HV Switchboard and motor	Motor start-up or reacceleration	5% (Note-a)
d)	Cable between MV Switchboard (PMCC / MCC) and motor	Motor start-up or reacceleration	10% (Note-a)

Notes:

- Higher voltage drop in motor cables may be permitted, in case the conditions given in Note b), c) and d) are complied.
- The voltage available at the motor terminals during start-up must be sufficient to ensure positive starting or reacceleration of the motor (even with the motor fully loaded, if required), without causing any damage to the motor.
- For medium voltage motors, the voltage available at the motor terminals must not be less than 80% of the rated value during start-up or reacceleration.
- For high voltage motors, the voltage available at the motor terminals must not be less than 85% of the rated value during start-up or reacceleration.
- Soft Starter / VFD Starter shall be considered for starting large HV motors if essential / unavoidable as per system design requirement / equipment design limitation. For cases other than starting limitation, requirement of soft starter / VFD for any drive shall be confirmed by Process Department.
- Unless otherwise specified as in clause e), all HV motors and MV motors shall be suitable for Direct on Line (DOL) starting.

5.9.3 Design Criteria for Cables / Bus Duct & Short Circuit Withstand Time

Sr.No.	Design Criteria	220kV	33kV	6.6 kV	415 V
1.	Loads beyond 1000A rating and located near the transformer	1-core cable	Bus Duct / 1-core cable	Bus Duct / 1-core cable	Bus Duct / 1-core cable
2.	Loads located up to 200 M	1-core cable	Cable	Cable	Cable
3.	Loads located 200 - 1000 M	1-core cable	1-core cable / 3-core cable	1-core cable / 3-core cable	1-core cable / 3.5-core cable

4.	Loads located beyond 1 KM	Cable	Cable	Cable	Cable
5.	Recommended limiting size of multi-core cable (sq. mm) / Single Core (sq. mm)	1C x 630 sq. mm.	3 Core x 300 / 1 Core x 630 sq. mm.	3 Core x 400 / 1 Core x 630 sq. mm.	3.5 Core x 300 / 1 Core x 630 sq. mm.
6.	Insulation voltage grade	220 kV Unearthed	33 kV Unearthed	6.6 kV Unearthed	1100 V Suitable for Earthed & Unearthed
6.	Type of cable insulation	XLPE	XLPE	XLPE	Power: XLPE Control: XLPE
7.	Power, Control & Earthing Cables	Armoured	Armoured	Armoured	Armoured

For breaker control motor circuits the selection of size will be made ensuring that the cable shall withstand a short circuit fault directly for 0.2 sec.

Suitable derating factors based on the site ambient conditions, method of laying and the no. of cables laid together shall also be applied.

Short circuit withstand time (seconds) shall be as follows for Breaker controlled feeders.

Bus duct	1 sec.
Feeders to motors and transformer	0.25 sec
Feeders from PCC/PMCC to MCC	0.6 sec
220kV feeder	3 sec.
Main 33 KV switchgear feeders	1 sec
Main 6.6 KV primary distribution feeders	0.7 sec
6.6 KV cable from generator & transformer to switch board	1 sec
Incomer from other switchboard	0.6 sec

5.10 Electrical System

BOO Processor shall carry out following Electrical System Studies of the entire electrical installation using latest software preferably ETAP latest version and the result of the same shall be furnished. ETAP Native file (editable copy) along with its base file & complete library shall also be submitted for SECL's review as well as with final documentation.

- Load Flow Studies
- Short Circuit Studies
- Transient Stability Studies
- Motor Starting Studies
- Relay Co-ordination and Relay settings.
- Harmonic studies
- Arc Flashing



Electrical Equipment shall be designed as per worst operating conditions.

5.11 All the switchgears shall be designed for following Minimum fault level withstand capacity.

33 kV Switchgear: 1800MVA for 3 Seconds

6.6 kV Switchgear: 500MVA for 3 Seconds

The fault level for 415V switchboards shall be 50KA for 1 sec.

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5.12 Sizing of high voltage cables shall be based on short circuit withstand capacity in addition to the current capacity.

5.13 33 kV, 6.6 KV systems shall be non-effectively earthed through resistance. The earth fault current of 6.6 KV shall be limited to full load current of the transformer or 400 A, whichever is less.

The neutral of 415V supply system shall be solidly earthed.

5.14 INSULATION SYSTEM

Following factors shall be considered while designing the Insulation of Electrical system.



- System voltage
- System grounding
- Switching over voltages
- Lightning surges
- For HT motors (VCB controlled) surge arresters shall be provided.

For resistance grounded systems, the resistance value shall be chosen to limit the earth fault current to a value recommended by motor manufacturer for insulation protection and sufficient for selective and reliable operation of earth fault protection system. The value of limited earth fault current shall generally not exceed 50% of transformer or generator full load current.

5.15 AUTO CHANGE OVER SCHEMES

The normal operation of the 33 kV, 6.6 kV Switchgears, Power & Motor Control Centre (PMCC) and Motor Control Centre (MCC) shall be as under:

- i. Bus-coupler shall be provided between all the sources. Incomer and Bus-coupler breaker rating shall be same for all the switchboards. Each incoming feeder shall independently feed the loads on respective buses with full rated bus tie breaker open and the load on each bus balanced. In order to ensure maximum degree of reliability and continuity, automatic transfer from one incoming feeder to other shall be possible through auto/manual closing of bus tie breaker in case of sustained loss of power on any bus section.
- ii. The bus tie breaker shall be provided with auto/manual selection. The bus tie breaker shall be independent in manual mode. In auto selection mode, the bus tie breaker is electrically interlocked with incoming circuit breakers, so that it cannot be closed unless one of the incoming breakers is open.
- iii. When one of the incoming feeder trips, the bus tie breaker is closed automatically based on the philosophy described below and the total load is transferred to other healthy incoming feeder which is capable of carrying the entire load. Sufficient switchgear capacity is to be provided.
- iv. Motors requiring reacceleration as per process requirement shall be provided with starter suitable for reacceleration.
- v. Auto changeover scheme shall be provided for incomer feeders and bus coupler feeder of 33 kV switchboard, 6.6kV Switchboards and 415V Switchboards. Under normal operating conditions, incomer-1 and incomer-2 breakers shall be closed and bus coupler breaker shall remain open with 'Local-Remote-Off' switch in 'Remote' position. The bus coupler breaker shall close automatically under the following conditions being fulfilled:
 - Either of the incoming breaker trips due to under voltage (70% or below).
 - Voltage on the healthy bus is more than 80% for the set period.
 - Residual voltage on the bus with no power supply comes down to 30% or below.

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Required nos. of bus PT, line PT and under voltage relays shall be provided to achieve the desired automatic changeover.

- vi. Auto transfer shall take place only on sustained loss of power on either of bus sections. Auto transfer shall be blocked in case of fault on either of bus sections or no power on both incomers.
- vii. Paralleling of two incoming feeders is not foreseen. However, facility for momentary paralleling shall be provided for intentional changeover without interruption of supply with synchro check relay in Bus Coupler panel. There shall also be provision of selective tripping of one feeder out of three feeders (two incoming feeders and one Bus Coupler).



5.16 PROTECTION AND METERING SCHEMES

- 5.16.1 Selection and coordination of Protection and metering system shall be such as to ensure:
- Selective and sensitive and reliable protection of equipment against damage due to internal or external faults or atmosphere discharge.
 - Isolation of fault in the shortest possible time.
- Simplicity of the scheme with maximum protection at minimum cost.
- Uninterrupted operation of healthy system.
 - Personnel & plant safety.
- 5.16.2 Important plant feeders in particular, which are connected to power generation bus, shall be provided with differential protection. The CT arrangement / locations provided for differential protection shall be such that overlapping zones are formed for differential protections provided for HT feeders, incomers, bus couplers, tie feeders etc. so that the protection zone gets extended up to the last breaker / zone for which differential protection is provided. Restricted earth fault protection shall be provided for transformer secondary.
- 5.16.3 Protective relays shall be of latest version, numerical / communicable type with non-volatile memory, comprehensive unit providing protection, metering, control as per IEC 61850 compatible to communicate with MMI and ECS. 100% redundancy shall be provided for communication. Relays shall support features like remote relay parameterization, disturbance recorder etc. It shall be possible to set / operate the relay from the front facia. A separate convention type lock out relay shall be provided with hand reset facility. Numerical relay shall indicate MWH, MVAR, MVA, V, A, Hz, PF. It shall have future provision for connecting with substation HMI. Separate multifunction meter with communication (for centralized energy monitoring) shall be used and shall not be part of protective device. Relays shall support features like remote relay parameterization, disturbance recorder etc. It shall be possible to set/operate the relay from the front facia. Lock out relay shall be conventional type with hand reset facility.
- 5.16.4 Special protection for any feeder such as differential, restricted earth fault, directional distance power relays etc. shall also be through numerical relay having serial port for monitoring.
- 5.16.5 In general, fast acting relays (with time delays if required) shall be used and all fault tripping shall be done through high speed tripping relays.
- 5.16.6 Bare minimum Protection devices for power distribution system shall be as indicated below, however, BOO Processor shall provide any other necessary protection relays required for complete protection of system:



Sl. No.	Relay Description	Relay No.	HV Tr. Fdr. Sec Wdg. Volt=> 6.6 KV	HV Tr. Fdr. Sec Wdg. Volt=< 6.6 KV	HV /LV Motor Fdr., HV Breaker controlled contactor controlled	O/G Bkr. HV Plant Fdr.	O/G Bkr. MV PMCC	I/C EHV/ HV	I/C MV PMCC
1.	IDMTL Over-Current Relay	51	YES	YES	-----	YES	YES	YES (2)	YES
2.	IDMTL Earth-Fault Relay	51N	YES (4)	YES	-----	YES	YES	YES (2)	YES
3.	Standby / Backup Earth Fault Relay (earthed neutral)	51G (11)	YES (23)	YES (23)	-----	-----	-----	-----	-----
4.	Motor Protection Relay with (50, 50N, 46, 49, 50L/R, 95)	99	-----	-----	YES	-----	YES	-----	-----
5.	Instantaneous Restricted Earth Fault Relay (Earthed side)	64R (11)	-----	-----	-----	-----	-----	YES (25)	YES
6.	Instantaneous Over current Relay	50	YES	YES	-----	-----	-----	-----	-----
7.	Instantaneous Earth Fault Relay	50N	YES (5)	YES	-----	-----	-----	-----	-----
8.	Differential Protection Relay	87	YES (6)	-----	YES (7)	YES (8)	-----	-----	-----
9.	High speed tripping relay	86 (20)	YES	YES	YES	YES	YES	YES	YES
10.	Trip Circuit Supervision Relay	95 (20)	YES	YES	YES	YES	YES	YES	YES
11.	Transformer Auxiliary Relay	63	YES	YES	-----	-----	-----	-----	-----
12.	Under Voltage Relay with timer	27 / 2	-----	-----	YES	-----	-----	YES (9)	YES (9)
13.	Check Synchronisation Relay	25	-----	-----	-----	-----	-----	YES (10)	YES (10)
14.	Busbar Differential	87B & 95B	YES (16)	YES (16)	YES (16)	YES (16)	-----	YES (16)	-----

Notes for Relay Protection Philosophy

1. All the numerical relays shall be of communicable type and connected to LMS on IEC 61850 (Ethernet based) communication protocol with time stamping and time synchronization.
2. In case of HV switchboards with continuous parallel operation of incomers, following additional relays shall be provided:
 - a. One set of 87B (Bus differential) and 95 B (Bus wire supervision) for each bus section.
 - b. 32 (Directional IDMTL over current and earth fault) relays for the incomers.
3. In case of grid power supply EHV incomer following additional relays shall also be provided:
 - a. Relay 21 for distance protection, Relay 59 for overvoltage protection with timer, Relay 67 for directional over current protection, Relay 67N for directional earth fault protection, Relay 81 for under frequency / df/dt protection and Relay 98 as dead bus charging relay.
 - b. Minimum protection relays for EHV Transformer shall be 50, 50N, 51, 51G, 51N, 63TX, 64R, 86, 87T, 87F & 95.
4. Instantaneous earth fault (50N) shall be provided only for transformer with delta primary.
5. Directional IDMTL earth fault (67N) shall be provided for transformer with star primary.
6. For transformers rated 5 MVA and above.
7. For motors rated 1500 kW and above, excluding VFD fed motors.

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8. For critical/long feeders and plant feeders connected to main power generation and distribution bus. A plant feeder implies outgoing feeders from one switchboard to another switchboard of same voltage level.
9. Wherever auto-transfer feature is provided.
10. For switchgears where continuous or momentary paralleling of Incomers is envisaged, check synchronizing relay shall be provided.
11. 51G and 64R relays for input transformer of VFD system shall be decided by VFD Manufacturer.
12. The bus tie feeders in HV switchboards shall be provided with 51, 51N, 86 and 95 relays.
13. HV capacitor bank feeders shall be provided with 51, 51N, 59 (over voltage), 60 (Neutral displacement), 86 and 95 relays.
14. The following feeders shall be provided with timers for delayed tripping on bus under voltage while the under voltage relay shall be common for the bus
 - a. HV and MV capacitor feeders.
 - b. HV and MV breaker controlled motor feeders.
 - c. Contactor controlled motor feeders with DC control supply.
 Numerical relays wherever provided for motor and capacitor feeders shall use in built under voltage relay and timer for delayed tripping on bus under voltage.
15. One no. DC supply supervision relay (80) shall be provided for each incoming DC supply to the switchboard.
16. One set of bus differential relays (87B) and bus wire supervision relay (95 B) for each bus section shall be provided for HV switchboards connected directly to generation buses.
17. In case of numerical relays, all relays shall be comprehensive units including all protection, metering and control.
18. Under voltage and over voltage function along with associated timer shall be part of the numerical relays.
19. Auto changeover scheme control & logic between Incomers and bus coupler shall be built in the numerical relay.
20. Tripping relays (86) & Trip Circuit supervision relay (95) shall be separate relay. There shall be two nos. high speed tripping relay for motor feeder. One for electrical fault and one for process fault. Electrical fault relay shall be hand reset type and process fault relay shall be self reset.
21. 2 Nos. of 86 relays shall be considered for HV and MV breaker fed motors for ease of differentiating between process & electric trip. Process trip relay shall be electromechanical, self reset type.
22. Breaker control switch shall be hardwired type.
23. Stand by earth fault relay 51G shall be provided in the incomer of switchboard fed from transformers where transformer & switchboard both are located remotely from HV substation as well as in same HV substation.
24. For transformers located remotely away from HV Substation, a local power isolating device in the form of breaker panel without any protection relay shall be provided before transformer. A local emergency stop push button shall also be provided in transformer bay for tripping remote breaker.
25. Restricted earth fault relay 64R shall be provided for transformer rating ≥ 1 MVA in the incomer of switchboard fed from transformers having secondary winding star connected. This shall trip the HV side breaker.
26. DG set shall be provided with protection but not limited to 51V, 51G, 40, 46, 86, 95, 80, 64R etc. for generator rated above 500KVA and Generator rated less than 500KVA shall have 51V, 51G, 40, 46, 86, 95, 80 unless otherwise agreed with the SECL.
27. Relay 87 and 64R shall be separate numerical relay. Hence shall not be part of main comprehensive numerical relay. CT for 87 and 64R can be clubbed, as two core of single CT.
28. Accuracy class of the current transformers shall be

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- Class PS for differential and special requirements.
- Class 1.0 / 0.2 S for metering purpose.
- Class 5P20 for protection purpose

All the CTs shall have rated burden of minimum 15VA and secondary rated current of 1A.

29. Accuracy class of the potential / voltage transformers shall be
- Class 5P for protection purpose.
 - Class 1.0 for metering purpose.
- All the PTs shall have secondary voltage 110 V or 110 V / sqrt.3 and rated burden of minimum 50 VA per phase for both metering and protection core.
30. All the incoming, outgoing and tie breaker feeders of any HV & MV Switchboard shall be provided with numerical relays only with communication facility as protection devices. Releases shall not be acceptable in any case. The relays for outdoor 220 kV EHV switchyard shall also be of numerical type with communication facility.
31. Numerical relays in all HV motor feeders shall be suitable for RTD / BTD inputs.
32. Each bus section shall be provided with separate under voltage relays.
33. Multifunction meter shall be provided to keep a record of power consumption and supervision of all concerned parameters like current, voltage, power, frequency, power factor etc. as specified. All the metering instruments shall be flush mounted.
34. All metering shall be a part of comprehensive relay, if accuracy for metering in LAN can be obtained within 1.0%. If not, separate digital meters or comprehensive metering unit shall be provided in various feeders. These meters shall also be communicable type with open protocol, suitable to communicate with LMS system.
35. The protection of generator and generator isolation transformer shall be effected thru' redundant (2 x 100%) numerical Relays.
36. Motors shall also be provided with Unbalanced (-Ve) Sequence Protection Relay (46), as required.
37. Numerical under voltage relays (27) with time delay relay including VT fuse failure relay shall be provided for Bus VTs.
38. Reverse power protection relay shall be provided in all incomer feeders of 33 kV Switchgear.
39. No Meters, transducers or measuring equipments to be installed in the Protection CT circuit.
- 5.17 Metering instruments shall be provided to keep record of power consumption and supervision of all concerned parameters like current, voltage, power (Active, Apparent and Reactive), frequency, power factor, Energy (Active & Reactive) etc. All the instruments shall be flush mounted. All meters shall be digital multifunctional meters with communication port for Load management at remote location. Additionally digital type ammeter, voltmeter and Hour Meter shall be provided separately for various feeders as indicated below :



The metering devices in EHV control & relay panel, HV and MV switchboards shall be as below:

- Type of metering: Analogue/As part of the Numerical relay (Figure inside bracket refers to note below) (YES - Applicable)

Sl. No.	Feeder type	A	V	Hz	PF	MW	MWH	HM	MVAR	MVAH	MVA
1.	Grid Incomers	YES	YES	YES	YES	YES (2)	YES	----	YES (2)	YES (2)	YES (1,2)
2.	Grid Bus Tie	YES	----	----	----	----	----	----	----	----	----
3.	Grid Transformer	YES	----	----	----	YES	YES	----	----	----	----
4.	Grid Bus PT	----	YES	----	----	----	----	----	----	----	----
5.	HV Incomer	YES	YES	YES	YES	YES	YES	----	YES	YES	YES
6.	HV Bus Tie	YES	----	----	----	----	----	----	----	----	----
7.	HV Transformer	YES	----	----	----	YES	YES	----	----	----	----
8.	HV Bus PT	----	YES	----	----	----	----	----	----	----	----
9.	HV Plant Feeder	YES	----	----	----	----	YES	----	----	----	----
10.	HV Motor	YES	----	----	----	----	YES (kWh)	YES	----	----	----
11.	HV Capacitor	YES	YES	----	----	----	----	----	YES	----	----
12.	PMCC Incomer	YES	YES	----	YES	----	YES (kWh)	----	----	----	----
13.	PMCC Bus Tie	YES	----	----	----	----	----	----	----	----	----
14.	PMCC Bus PT	----	YES	----	----	----	----	----	----	----	----
15.	ACB Outgoing (Non Motor)	YES	----	----	----	----	YES (kWh)	----	----	----	----
16.	MV Motor (>55 KW)	YES	----	----	----	----	----	----	----	----	----
17.	MCC / ASB Incomer	YES	YES	----	----	----	----	----	----	----	----
18.	MCCB O/G (250A)	YES	----	----	----	----	YES (kWh)	----	----	----	----
19.	MLDB Incomer	YES	YES	----	----	----	YES (kWh)	----	----	----	----
20.	DG Set - HV	YES	YES	YES	YES	YES (kW)	YES (kWh)	YES	----	----	----

Notes for Metering:-

1. MVA meter in external power supply incomers shall include maximum demand indication also.
2. Separate MW, MVAR, MVA and MVAH meters shall be provided for EHV external power and STGs incomers supply only.
3. Separate analogue type voltmeters with voltmeter selector switch and analogue type ammeters with ammeter selector switch shall be provided for incomers of all switchboards.
4. Ammeter (size 48mm x 48mm) shall be provided in space heater circuit of breaker fed HV & MV motors.
5. Apart from metering which shall be part of the numerical relays, digital multi-function meters shall be provided in all the breaker feeders of HV & MV Switchboard i.e. in incomers, bus coupler, outgoing plant feeders, transformer feeders, motor feeders, capacitor bank feeders, etc.
6. Multi function meters with serial communication over RS-485 or fibre optic cable, preferably with IEC protocol shall be provided in all the breaker feeders.
7. Power factor meter shall be provided for synchronous motors in addition to the metering provided for induction motors.
8. For current feedback to DCS and VFD feeders motor current transducers shall be provided and mounted in switchgear panel.

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9. CT operated Ammeter for all motor feeders above 5.5 KW, all MOV and LOPs shall be provided at both LCS and feeder end of switchboard.
10. All ammeters for LV motors shall be connected through CT. Only HV motors shall have 3 ammeters or ammeter selector switch or Voltmeter and Voltmeter Selector Switch.
11. Hour run meter shall be provided in all breaker controlled motor feeder.

5.18 CONTROL AND MONITORING

The following provision shall be made for control and monitoring of following electrical equipments.

- Transformers



- TNC switch in primary & secondary side of switchgear.
- Emergency trip from secondary side for tripping primary side of transformer.
- VCB with all required protection to be considered in all the 33kV, 6.6kV switchboards.
- Lockable 'OFF' push button in transformer room to trip sending end switchgear.
- Indication lamp for 'ON' 'OFF' 'Auto-trip', 'Non-trip' and 'Trip Circuit Healthy'.
- Ammeter and voltmeter on both primary and secondary side.
- ICOG VCB panel shall be provided on transformer primary side (only where primary side circuit breaker is not located in the same sub-station).
- Annunciator for each feeder of switchboard.

- Motors Controlled Through Circuit Breakers

- OFF-ON switch with Ammeter on LCS
- OFF-AUTO/MAN-L/R-ON switch with Ammeter on DCS.
- Ammeter in LCS and in switchgear.
- Current monitoring at DCS, where required from process point of view.
- Indication Lamps in switchgear for 'ON', 'OFF', 'Auto-trip' and 'Trip Circuit Healthy', 'Ready for Service', 'Test', 'Service', 'Space Heater ON'.
- Emergency trip in switchgear.
- Winding and bearing temperatures of motors shall be available at DCS in control room.
- Process interlock in CCR, where required.
- Indication lamp for 'ON', 'OFF' and 'TRIP' in remote (DCS/PLC etc.)
- Motor space heater & Panel board space heater Ammeter in switchgear, where required
- Motors controlled through Circuit breakers should also be provided with ammeter, KVAh, KWH and running hour counter.
- Annunciator for each feeders switchboard

- Medium Voltage Motors Controlled Through Contactors

- OFF-ON switch on LCS
- Ammeter in LCS for motors of 1.5 KW and above or as required from process point of view.
- OFF-AUTO/MAN-L/R-ON switch on DCS.

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- Current monitoring in DCS, where required from process point of view.
- Emergency Trip in PCC/MCC.
- Process interlock in CCR, where required shall be wired through separate auxiliary relay.
- Indication lamp for 'ON', 'OFF' and 'Fault' in switchgear.
- Indication lamp for 'ON', OFF' and 'TRIP' in remote (DCS/PLC etc.)
- Motor space heater & Panel board space heater shall be provided with Ammeter & LED in Switchgear.

5.19 DC POWER SUPPLY

5.19.1 110 V DC system shall be provided for control of circuit breaker feeders and panic lighting.

It shall be obtained from Ni-Cd batteries to be located in respective Substation in a separate room. Separate dedicated Battery, Battery Charger and DC Distribution Board shall be provided in each substation.

5.19.2 The battery shall be provided with SCR controlled automatic rectifier-cum battery chargers and shall consist of load-cum-float-cum-boost charger and stand by unit for the same and one common battery bank of 100% capacity having backup time of 2 hours.

5.19.3 Each rectifier-cum- battery charger shall have independent power supply to be fed from the emergency source.

5.19.4 Each Substation requiring 110V DC shall have 2 sources with auto changeover facility in case of failure of 1 source, redundant battery chargers with separate battery banks shall have to be provided.

5.19.5 DC Battery Charger, AC UPS and HVAC for control room shall be fed from emergency switchboard.

5.19.6 Battery end cell voltage shall 1.1V. Aging factor shall considered 120% and spare capacity shall have 125%.

5.19.7 For temperature derating factor shall be based upon minimum ambient temperature.

5.20 EMERGENCY POWER SUPPLY

The emergency power supply system shall be designed to feed the following types of loads as required:



- Electrical loads essential for safe shut down
- Emergency lighting
- Fire alarm / communication system
- DC supply system
- UPS system
- Loads critical for process, plant and personnel safety.

5.21 SUB-STATION



5.21.1 Substations shall be located at a safe distance from the process areas, hazardous areas and dusty areas, near the load centres.

5.21.2 Substations shall be two storeyed building with ground floor mainly used as a cable gallery with minimum height of 3 meters. Also minimum elevation of bottom most cable tray shall not be less than 1.5 meter to allow access for man movement.

5.21.3 The switch room shall have Kota stone flooring. False ceiling and air conditioning shall be provided in VFD room, staff room & Engineers room.

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- 5.21.4 Staircases shall be paved with anti skid tiles.
- 5.21.5 All door and windows shall have anodized aluminium frame and provided with toughened glass.
- 5.21.6 Arrangement shall be provided for lifting heavy equipment to be brought into substation.
- 5.21.7 Switchgears and MCCs etc. shall be located on the first floor of the building.
- 5.21.8 Cables shall penetrate walls and floor via fire resistant barriers rated for 1 hour fire capacity.
- 5.21.9 The batteries shall be located in a suitable room provided with exhaust fan for the vapours released by the batteries. Battery room shall have Acid / Alkali resistance Tiles for floor and wall up to 2.0 M.
- 5.21.10 Oil immersed transformers shall be located outdoor and under shed. The transformers shall be separated from each other by a fireproof wall. All the building walls surrounding transformers shall also be fireproof walls. The transformer basements shall be provided with oil collecting system. The transformer yard shall be fenced.
- 5.21.11 Dry type transformers shall be housed in a separate room in an enclosure.
- 5.21.12 The substation shall be provided with rubber mats in front of switch boards, safety signs, exist signs and danger signs etc. to satisfy local regulations and statutory requirements.
- 5.21.13 The layout of equipment shall be such that it shall have adequate space for installation, operation, maintenance and future expansion.
- 5.21.14 In all substations HV Switchgear equipment shall be segregated from LV switchgear equipment as per IE rules.
- 5.21.15 The clearance of equipment from the walls / other equipment shall be adequate to ensure safety of working personnel and shall be as per IE rules.
- 5.21.16 Sufficient nos. of entrances (Min. 2) shall be provided for each floor.
- 5.21.17 Epoxy flooring shall be done to reduce the heat load and improve the aesthetic look.
- 5.21.18 The Sub-Station shall house all the Electrical Power, Control and Monitoring equipment except those required for operation in the field. The equipment shall broadly include the following depending on the requirement :
- Step up / Step down Transformers, Special type Transformer etc. each located in separate Bay / room outside the substation.
 - High Voltage Switch Boards
 - Power Control Centres
 - Power & Motor control centres
 - Emergency Power & Motor control centres
 - Motor Control Centres
 - Auxiliary Service Panel Boards
 - Lighting Transformer (Indoor / Outdoor as per requirement)
 - Main Light Distribution Board
 - Lighting Distribution Boards
 - Lighting Sub-Distribution Boards
 - Battery Sets
 - Rectifier-Cum-Battery Charger
 - DC Distribution Boards
 - Rectifier-inverter Sets
 - UPS System alongwith UPS distribution board.
 - Neutral Earthling Resistors (Indoor / Outdoor as per requirement)
 - Input / Output Panels
 - VFD System / Soft Starter

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- Any other equipment required

5.21.19 All static devices such as Rectifier-Cum-Battery Chargers, Static Inverter Sets, Programmable Logic Controller, Variable Speed Drive Panels etc., shall be housed in air conditioned room. However, complete switch room shall be air pressurised type. All equipments shall be suitable for operation under specified ambient condition even on failure of air conditioning system.

5.21.20 Substations shall be provided with smoke detectors and fire alarm system.

6.0 AREA CLASSIFICATION

6.1 Following factors shall be considered for proper selection of electrical equipment for use in hazardous areas:

- Area classification (Zone 0 / Zone1 / Zone2)
- Gas classification (Gr. II A / IIB / IIC) – Characteristic of the gas / vapour involved
- Temperature classification (T1 to T6)
- Environmental conditions – selected electrical equipment shall be protected against corrosive and solvent agencies, water ingress, dusty, chemically polluted atmosphere as determined by the environmental conditions.

6.2 All electrical equipment installed in classified areas shall be selected as per IS 5571, OISD 113 and other relevant standards. For Zone 2 areas as a minimum Ex(e) type of equipment shall be used. However, Ex(e) type of equipment shall not be used for Zone – 1 area.

6.3 Pressurised type of motors Ex(p) may be considered in case flameproof motors in required kW rating and gas gr. are not available. All pressurised motors shall be complete with flameproof pressurisation panel, control valves, flow meter, pressure switch etc. DC power supply shall be considered for the pressurisation panel of the pressurised motors. Pressurisation system shall have parallel filter and draining arrangement prior to purging. Necessary interlock shall be provided such that on failure of pressurisation system, electrical equipment will be switched off with audiovisual alarm.



6.4 Selection of equipment for hazardous areas shall be as follows:

Area Classified	Type of protection	Symbol
Zone 0	- No electrical equipment to be installed.	
Zone 1	- Flameproof enclosure	‘ d ‘
	- Intrinsic safety category	‘ I ‘
	- Pressurised	‘ p ‘
	- Other electrical apparatus specifically designed for Zone 1	‘ s ‘
Zone 2	- Increased safety	‘ e ‘

6.5 Increased safety apparatus located outdoor shall be provided with minimum IPW55 protection as per IS 4691.

6.6 All electrical equipment for hazardous areas shall be certified by testing authorities like CMRI, PTB, BASEEFA, UL / FM for the service and the area of installation and shall be approved by CCE. All indigenous flameproof equipment Ex(d) shall be under BIS license.

6.7 As additional safety features, the following requirements for electrical equipment shall be followed:

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- 6.7.1 All electric motors for agitators, mixers, LPG Pumps and metering pumps handling flammable material shall be flameproof type irrespective of the area being classified as Zone-2 or Zone-1.
- 6.7.2 All electric motors for vertical oil sump pumps shall be flameproof type Ex-d.
- 6.7.3 Irrespective of the area classification (whether Zone-1 or Zone-2) all motors and lighting fixtures within the storage areas, pump house associated with storage areas and within the loading / unloading gantries shall be flameproof type.
- 6.7.4 Even though fired heaters in process units are not considered for area classification, all electrical equipment associated with fired heaters in process units shall, as a minimum be suitable for installation in Zone-2 area.
- 6.7.5 All electrical equipment installed for an analyser room shall be flameproof type suitable for gas group-IIA, IIB, IIC irrespective of the area being classified as Zone-1 or Zone-2.
- 6.7.6 All equipment inside the process units shall be suitable for Zone-2 Ex (e) temperature class T3 irrespective of area being safe.
- 6.7.7 Process units having different types of gas groups like IIA / IIB / IIC or different area classification like Zone-1 or Zone-2 or safe shall have electrical equipment to meet that gas groups / area classification. Hazardous Area Classification shall be as per Process Licensor.

7.0 EQUIPMENT DESIGN PHILOSOPHY



Brief specification of the equipment has been mentioned. Equipment design shall be in line with latest edition of all applicable Indian / International standards.

7.1 General Constructional Features

- 7.1.1 The equipment shall be suitable for tropical climate conditions and corrosive and saline atmosphere.
All electrical equipment accessories and wiring shall have fungus protection involving special treatment of insulation and metal against fungus, insects and corrosion.
Fine mesh screen of corrosion resistant material shall be furnish on all ventilating openings to prevent entry of insects.
- 7.1.2 The equipment to be installed in indoor plant area shall be enclosed in dust, damp and vermin proof enclosure equivalent to IP 54 as per relevant Indian Standards/IEC.
- 7.1.3 The equipment excluding motors to be installed in outdoor plant area shall have IP 65 enclosure. Motors of Coal Conveyor, Coal Handling Section, Ash Handling Section shall have IP 65 enclosure. Motors of other sections of plant shall have IP 55 enclosure.
- 7.1.4 4 mm FRP (fire retardant and UV stabilized) canopies shall be provided for all outdoor equipments like motors, starters, LCS, SDBs, sw. sockets etc. PA stations shall have acoustic hood.
- 7.1.5 The switch boards, to be installed inside the building shall have enclosure IP 4X for HV switchgear, for LV switchgear degree of protection shall be IP 52 up to 1600A rating and IP-4X above 1600A rating. Equipment requiring ventilation opening such as battery charger/UPS etc. located in air conditioning room may have IP 43 enclosure however, opening for the ventilation shall be covered with fine wire mesh.
- 7.1.6 Creepage distance shall be 31mm/kV (for highest system voltage) for all equipment.



7.2 D.G. SET

- 7.2.1 In order to meet the emergency power requirement for critical loads and also for safe shut down of plant. There shall be one no. DG set rated for full emergency power requirement, in

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the event of the failure of normal power DG set will supply the total emergency power requirement.

- 7.2.2 DG Sets, Diesel tanks and associated switchgears shall be located at centralized place away and at a minimum safe distance from substations and hazardous areas as per relevant IS/IEC of hazardous area classification. Emergency power from DG Set shall cater to:-
- Loads of emergency shut down
 - Essential loads of the package
 - Loads of emergency and aviation lighting
 - UPS Loads
 - Battery Charger & DCDB Loads
- 7.2.3 The DG Sets control shall have PLC/microprocessor based latest state of art technology. Brushless excitation system shall be used in generator.
- 7.2.4 The engine shall of high speed increase the efficiency of DG set, a system of air preheating (turbo charger etc.) shall be employed.
- 7.2.5 The starting of engine of DG Sets shall be electric type. System should be capable of minimum 3 starts.
- 7.2.6 DG set shall have all its auxiliaries installed and controlled from same place. The control of DG set shall be based on 110 V DC which shall be supplied from the DC panel.
- 7.2.7 The auto starting time (i.e. the time between actuation of loss of power in case of failure of main power to the time of loading of total emergency load) shall be in accordance with the requirement of process. The maximum starting and synchronising time of Sets shall be 30 seconds even after 3rd attempt and shall be able to take full load within lower of two i.e process and 45 seconds. The DG power shall be made available within such a period that none of the plant unit is affected due to failure of normal power.
- 7.2.8 The auxiliary power supply board/MCC to feed the auxiliaries of DG set shall have dual power supply, one from the normal power supply source of plant and other from the DG set itself. There shall be a provision of auto changeover in the incoming supply of auxiliary power supply board of DG set. The Emergency power distribution board shall be kept in a separate room near to engine room of DG set. The outgoing feeders for 400 A and below in Emergency power distribution board shall have Switch Fuse unit. The incomer and larger rated feeders shall be provided with Air Circuit Breaker. A comprehensive electrical protection system shall be provided to protect the generator as well as individual feeder. The incomer shall have a KWH meter along with ammeter, voltmeter etc.
- 7.2.9 There shall be a separate control panel to control the auxiliaries and comprehensive alarm and fault indication system shall be provided to indicate the status of auxiliaries as well as Diesel Generator set.
- 7.2.10 The quick start auto-mains failure DG set of adequate rating shall be battery/compressed air started and radiator cooled type suitable for supplying emergency load.
- 7.2.11 DG set shall be supplied with day oil storage tank (12 Hr. capacity at full load continuous operation), bulk oil storage tank, associated piping, valves, accessories, earthing of all equipments, all power and control cables as required.
- 7.2.12 Emission from DG set shall meet the requirement of Local Pollution norms.
- 7.2.13 DG set inside the DG Building shall be provided with suitable acoustic enclosure to restrict the noise level to 85db at 1Mtr.

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7.3 TRANSFORMERS

- 7.3.1 The transformers except lighting transformers shall be ONAN / ONAF, 3 phase, oil immersed, double wound type suitable for outdoor installation. Lighting transformers shall be dry type.
- 7.3.2 Transformer sizing shall be such as to take care of minimum 8 hour maximum demand, starting of highest rated induction motor with other load in running condition and minimum 25% spare capacity for future requirement.
- 7.3.3 The ONAN rating of ONAN/ONAF type power transformers shall be equal to or higher than maximum demand. ONAF rating shall be equal to or higher than 125% of ONAN rating.
- 7.3.4 In general, rating and % impedance of each transformer shall be selected to limit the short circuit current to values within the current rating and rupturing capacity of switchgear available and also to ensure the voltage drop within permissible limit. The transformer impedances shall be as per Indian standards unless otherwise required.
- 7.3.5 Power transformers shall be of low losses type. Usually no load & load losses shall be optimised for operation around 40-50% of their ONAN rating.
- 7.3.6 Grid Transformers shall be equipped with 'ON' load tap changer (OLTC) and RTCC Panel. For on load tap changer, provision shall be made for Auto-Manual and Local-Remote electrical operation of the tap changer.
- 7.3.7 Routine test on all transformer and heat run test on one transformer of each rating shall be performed.

7.4 Neutral Earthing Resistor (NER)

- 7.4.1 The NER shall be provided to earth the neutral of 33kV, 6.6 KV systems. Neutral of 415V supply system shall be solidly earthed.
- 7.4.2 Neutral earthing resistor shall be outdoor type made of AISI 304/406 punched stainless steel grid element. The earth fault current of 33kV & 6.6 KV shall be limited to full load current of transformer or 400 A, whichever is less.
- 7.4.3 Neutral earthing resistor shall be designed to carry continuously 20% of the rated short time current.

7.5 HT SWITCHGEAR

- 7.5.1 All switchgears and associated equipment shall be rated for the rating of motor being fed from it under any circuit configuration.
- 7.5.2 There shall be three positions for Breaker/Contactor trolley: - Service, Test and Isolate. In service position, the power connections shall be made; but in test and isolate mode, the power connection of bus bars shall be automatically removed.



ACB feeder for PCC, PMCC & MCC shall be single front for ease of operation & maintenance. Non-ACB feeders for motors or power may be double front type.

Breaker duty cycle shall be O-0.3sec-CO-3min-CO.



Separate CT shall be provided for differential and REF protection.

LV circuit breaker shall be 4 Pole type except for outgoing motor feeders which shall be 3 Pole type.

- 7.5.3 Suitable shutter arrangement shall be provided to protect the person from accidental contact with live bus in trolley chamber.
- 7.5.4 The degree of protection shall be IP 4X for HV switchboards and IP 52 for LV Switchboard up to 1600A rating and IP-4X for LV switchboards above 1600A rating.
- 7.5.5 All HV, MV & LV Switchboards shall be LOTO compliance.

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- 7.5.6 33kV & 6.6 kV Switchboard shall conform to IS/IEC 62271-200, IAC-A FLR-50KA/40KA 1 Sec, PM, LSC 2B which means that the switchgear panels shall be four side internal arc tested, shall have metal partitions and shall conform to loss of service continuity. LV switchboard shall conform to IEC 60947.
- 7.5.7 LV switchboard (EPMCC/PMCC/MCC) shall be TOTAL TYPE TESTED (TTA) design as per IEC 61439-1/2. Type Test Certificates for short circuit withstand of 50kA for 1 sec along with ACB mounted in the Switchboards shall be provided.
- 7.5.8 LV switchboard (EPMCC/PMCC/MCC) shall comply with Internal Arc Containment test as per IEC 61641.
- 7.5.9 The minimum thickness of sheet steel used in HV and LV switchgear including charger, UPS, ASPB etc. shall be as under:-
- Base Channel minimum 3.0 mm
 - Load Bearing Members minimum 2.0 mm
 - Doors and covers minimum 1.6 mm
- 7.5.10 A bottom channel of not less than 100 mm shall be provided.
- 7.5.11 Minimum 25% spare feeders or one no. of each rating and type on each side of the bus section whichever is more shall be provided.
- 7.5.12 In case of HT vacuum circuit breaker, adequate provision shall be made for motor switching to limit the over voltage to 2.2 per unit of rated peak line to earth voltage. Required surge arrestors may be provided for this purpose.
- 7.5.13 The rating of Circuit breakers/contactors used in Motor feeder shall be at least 125% of the maximum continuous motor rating.
- 7.5.14 Electrical running loads shall be uniformly distributed on each bus and it shall be ensured that running and standby loads are fed from two different bus sections.
- 7.5.15 One panel of highest breaker rating shall be subjected to type test. This test can be exempted only in case of extension of existing panels.
- 7.5.16 Switchgears shall be supplied with necessary earthing trolleys / earthing rods / breaker lifting trolleys.
- 7.5.17 For tie feeders, receiving end circuit breaker shall have ON / OFF control and indicating lamps for sending end circuit breaker with selective closing of sending end breaker.
- 7.5.18 Antipumping relay used, if any, shall be considered as part of Breaker mechanism.
- 7.5.19 LT Switchgears shall have rating atleast equal to maximum demand under any circuit configuration and provision for 30% future requirement
- 7.5.20 Internal physical separation / segregation of LT Switchboards shall be 3 B for Non-ACB feeders and 4 B for ACB feeders.
- 7.5.21 Separate feeders shall be provided in the switchboard for each load / motor. However, max. 2 nos. welding receptacles may be looped from single feeder.
- 7.5.22 All ACBs shall be electrically operated-EDO type only. All ACBs shall be without any internal releases. The required protections shall be wired by means of external numerical relays.
- 7.5.23 Service breaking capacities (Ics) for all breakers and MCCBs shall be equal to or higher than the maximum fault level at the point of installation.
- 7.5.24 For feeders rated above 630A, ACBs shall be provided and that below and including 630A, MCCB shall be provided.
- 7.5.25 All the switchgear components shall be designed to withstand maximum expected fault level for a minimum time of 1 second.

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- 7.5.26 All motor feeders shall be provided with IEC type 2 co-ordinations.
- Motors rated above 75 kW & up to 150 kW shall be controlled through ACB & motor protection relay and shall be fed from PCC.
- All motors feeders rated above 22 kW & up to 55 kW shall be controlled through switch fuse unit, contactor, overload relay with CBCT, ELR for earth fault protection & shall be fed from MCC.
- All motors feeders rated upto & including 22 kW shall be controlled through switch fuse unit, contactor & overload relay. All loads upto 22 KW rating shall be provided with ELCBs.
- All motor feeders rated above 5.5 kW shall be provided with CT for remote metering.
- 7.5.27 The maximum rating of incomers / bus couplers of motor control centres / auxiliary switchboards / power distribution boards / lighting distribution boards shall be preferably limited to 800A. The incoming / tie feeders shall be with heavy-duty type load break switches / ACB suitable for key interlocks.
- 7.5.28 Motor Control Centres with breaker incomer and breaker buscoupler shall be provided with synchro check relay for momentary paralleling during auto transfer. Switching off shall be manually.
- 7.5.29 Electrical running loads shall be uniformly distributed on each bus and it shall be ensured that running and standby loads are fed from two different bus sections.
- 7.5.30 All the MCCB feeders shall be provided with ammeter. All emergency / critical drives, irrespective of their ratings shall be provided with ammeters.
- 7.6 **MAN MACHINE INTERFACE (MMI)**
- 7.6.1 MMI shall include CPU, Keyboard, Monitor, Mouse, Printer etc. Four number Man Machine Interfaces shall be provided in the substation, two number laptop for engineering workstation and two number PC for operator's workstation. System Configuration shall be latest proven model and upgradable. Power supply for Substation MMI shall be obtained from emergency / critical source available in the substation / nearby substation / control room.
- 7.6.2 MMI shall allow minimum of the following functions
- Feeder status monitoring
 - Data Logging
 - Relay parameterisation
 - Event recording
 - Annunciation
 - View of historical data and trends
 - Preparation of maintenance schedule.
- 7.6.3 Data concentrator for system relays shall be such as to get faster and effective communication for control, monitoring and supervising the electrical system. Suitable switching hardware shall be provided for selection of required data concentrator with click of a mouse from MMI.
- 7.6.4 User-friendly windows based software shall be provided for interactive display of substation data in multi-window feature. Software shall have the capability to display substation single line diagrams, display for electrical system parameters, reports, alarm annunciation, daily and monthly data logging, continuously polling, relay programming, relay monitoring, data logging, relay supervision, tripping features, fault disturbance record of each relay, graphic representation and trending of data etc. The display shall have electrical system overview and detailed information about its sub system. All softwares shall be written for operating on a common operating system platform plant wide and shall be able to communicate with existing ECS. A change of operating platform for MMI, CPU during detail engineering shall not have any commercial implications. Audio / Visual Alarm annunciation shall be provided along with hooter.

- 7.6.5 MMI system shall have two distinctive passwords one for viewing of data metering etc. and second for authorisation for change in relay setting etc.
- 7.6.6 All numerical relays shall communicate to its data concentrator serially on dual redundant RS 485, mod bus / proprietary protocol. All relays shall be as per IEC 61850. Data concentrator shall have dual redundant architecture including internal bus and processor for the reliability of data communication. Scan time of Relay LAN shall be less than one second. Data not available on relay LAN shall be acquired through hardwired connections to MMI / ELMS-RTU.
- 7.6.7 Data concentrator shall be interfaced with RTU of integrator's system on dual redundant RS485, mod bus protocol. In case relays are communicating serially to data concentrator on proprietary protocol, suitable protocol converter shall be supplied as a part of supply of data concentrator. Signals, data as required for MMI / ELMS system serially and through hard wiring as designed elsewhere shall be wired upto RTU panel.
- 7.6.8 The system shall be complied with standard IEC 60073 -Basic and safety principles for man-machine interface, marking and identification
- 7.6.9 Each relay / MMI system shall be time synchronised.

7.7 MOTORS

- 7.7.1 In general, three phase squirrel cage induction motors designed for direct on line starting shall be used. Motors shall be totally enclosed fan cooled suitable for outdoor application.
- 7.7.2 The type of enclosure for motors (i.e. indoor /outdoor, industrial / increased safety/ flameproof) shall be adequate for the application and area in which it is to be used.
- 7.7.3 The rating of LV and HV motors shall be selected from the sizes as recommended in relevant Indian Standard/IEC.
- 7.7.4 The margin between the installed power and absorbed power shall be as recommended by the driven machine supplier but shall not be less than the following:-

Motor Rating	Margin above Driven M/C Absorbed Power
Less than 22 KW	25%
22 KW to below 75 KW	15%
75 KW and above	10%

7.7.5 Voltage Ratings:



Voltage rating for the motors of different ratings shall be as below:

Upto 150 KW: 415 V, 3-phase, 50 Hz AC

Above 150 KW: 6.6 KV, 3-phase, 50 Hz AC



All motors shall be designed for 3-Phase supply only.

- 7.7.6 The mechanical parameters such as duty, mounting type, shaft extension, direction of rotation, starting torque requirements etc. shall be adequate for the application. Sleeve or anti friction type bearings shall be used. Vertical motors shall have thrust bearings suitable for the load imposed by the driven machinery. Motors with sleeve bearings may require proximity probes to measure shaft vibration adjacent and relative to the bearings. Generally, all motors, except for application such as crane, hoist, turbine/engine starting, shall be designed for continuous duty with rated load.
- 7.7.7 All HT motors shall be provided with 6 nos. duplicate RTDs temperature detectors for winding:
- Temperature detection and 2 nos. for bearing temperature detection. Dual dial type temperature



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ii. Indicator without contacts for bearing also shall be provided for all HT motors. All LT motor including & above 75 KW shall be provided with PTC thermistors.

- 7.7.8 The terminal box of HT motor shall be designed to withstand the specified short circuit current for 0.25 second without damage. A separate neutral terminal box shall be provided for making star connection and it shall be adequately sized to accommodate the current transformers for differential protection.
- 7.7.9 For critical synchronous motors, excitation panels shall have reliable power supply either from dedicated three phases or single phase UPS or any other reliable source as feasible.
- 7.7.10 All the motors shall have class ' F ' insulation with temperature rise limited to class ' B '.
- 7.7.11 Motors shall be capable for 20% over speed without danger of mechanical failure.
Limiting Conditions for Motor start up (e.g. starting current limitation or method of starting): -
- 7.7.12 Starting current of motors rated upto 75 kW shall be limited to 700% (inclusive of +ve tolerance) of normal current.
- 7.7.13 Starting current of motor rated more than 75 KW and up to 150 kW shall be limited to 600% (inclusive of +ve tolerance) of normal current.
- 7.7.14 Any assisted type of starting method (e.g. soft starter, Auto transformer etc.) for HT / LT motors may be considered for regulation / voltage drop within limits, ensuring proper acceleration of the driven equipment.
- 7.7.15 Re-acceleration for identified critical motors shall be provided to cover brief interruption up to 5 seconds in normal power supply. Insulation for these motors shall be designed for 140% of rated insulation level to take care of any over voltages that might result during changeover.
- 7.7.16 Outdoor motors shall be provided with canopy.
- 7.7.17 Motors of rating above 30 kW shall be provided with space heater. Ammeter shall be provided on the panel for the space heater circuit.
- 7.7.18 Motors shall be rated for starting at 80% voltage at motor terminals.
- 7.7.19 Winding temperature and bearing temperature alarm and trip shall be provided for all HT motors. Minimum 10% additional RTD points shall be provided.
- 7.8 HT CAPACITOR BANK**
- 7.8.1 HT Capacitor bank shall be connected on bus to improve the power factor of the system.
- 7.8.2 HT Capacitor shall comprise appropriate nos. of basic single phase units (minimum 4 nos. basic units in parallel per phase) which shall be connected in star formation.
- 7.8.3 Capacitor banks shall be with necessary discharge resistors to reduce the terminal voltage of each unit to a value equal to or less than 50V in 5 minutes.
- 7.8.4 Necessary rack assembly for housing Capacitor units with necessary post insulators, Discharge resistors, series reactors, etc. shall be provided for outdoor assembly. For indoor assembly, necessary panel to accommodate the basic capacitor units, interconnecting busbars, insulators, discharge resistors, series reactors, switching units, metering, protection units etc. The panel shall have minimum IP55 protection and shall be constructed with sheet steel of minimum thickness 2.0 mm.
- 7.8.5 Necessary series reactor shall be provided to limit inrush current and suppress harmonics.
- 7.8.6 Capacitor dielectric medium shall be MPP or mixed dielectric. Impregnant in the capacitors shall be non-toxic.
- 7.8.7 Necessary protections include IDMTL over current with high set element for protection against short circuit, Instantaneous earth fault, under voltage, over voltage, built in fuse for each element, neutral unbalance voltage and current.



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- 7.8.8 The capacitor bank feeders shall generally be tripped on bus under voltage / over voltage conditions. Necessary interlock / timer shall be provided for blocking re-switching operation to take care of capacitor residual voltage.
- 7.8.9 The continuous current rating of fuses and switching devices for capacitors shall be 30% higher than the normal full load current.
- 7.9 **BUS-DUCT**
- 7.9.1 LT bus ducts shall be phase segregated.
- 7.9.2 Bus bars shall be of electrolytic grade aluminium / copper.
- 7.9.3 It shall be suitably supported at regular intervals and both busbars and supports shall be adequately sized and clamped to withstand rated short circuit current without permanent deformation.
- 7.9.4 The bus insulators shall be nonhygroscopic, non-inflammable material. Earth bus shall run along the full length of bus duct without any break.
- 7.9.5 Outdoor bus duct shall be weatherproof to IP-55 and shall be provided with canopy, silica gel breather.
- 7.9.6 Busduct shall be supplied with busbar flexible links for connection at both the ends and expansion joints for every 3m of busduct and busduct support materials.
- 7.9.7 Openings with cover at suitable locations shall be provided on busduct for accessing the bus bars for maintenance.
- 7.10 **BATTERIES**
- 7.10.1 While sizing the batteries, temperature correction, ageing factor and maintenance factor shall be considered.
- 7.10.2 Batteries shall be complete with batteries and battery racks.
- 7.10.3 Float type of level indicators shall be provided for each cell in the battery bank.
- 7.10.4 Batteries shall be adequate to meet the requirements as per duty cycle, type of load and min. 20% spare capacity for future requirement.
- 7.10.5 Batteries back-up time shall be 60 minutes.
- 7.10.6 Isolator shall be provided for battery bank isolation near battery.
- 7.10.7 All Ni-Cd batteries are of suitable construction to suit the application.
- 7.11 **BATTERY CHARGER**
- 7.11.1 The Rectifier-Cum-Battery Charger shall be fully automatic using silicon controlled rectifier and shall consist of units as described below:-
- i) Main Float cum Load charger: To supply continuous load and keep the battery in healthy state.
 - ii) Standby Float cum Load charger: To supply continuous load & keep the battery in healthy state in case any abnormality in Main charger.
 - iii) Boost charger: To charge the battery set initially and recharge (after meeting emergency or sudden application of heavy loads.)
- 7.11.2 Battery Charger shall have at least 30% extra capacity for future load requirement. Battery Charger shall have 110 V DC system.
- 7.11.3 Separate Rectifier-Cum-Battery Charger with DC Distribution Board and Battery Bank shall be provided for each Substation.
- 7.11.4 Each substation shall be provided with redundant battery charger with 2x100% battery banks

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and connected to each Charger.

- 7.11.5 DCDBs of all substations shall be interconnected with each other in such a way that in the event of failure of battery bank of any substation, the DC power requirement of that substation shall be met by the remaining healthy battery banks of other substations.
- 7.11.6 The battery and charger combinations shall be such as to ensure continuity of D.C. supply at load terminals without even momentary interruption.
- 7.11.7 AC Ammeter and AC Voltmeter on Charger Input; DC Ammeter, DC Voltmeter for charger output/ battery voltage and on demand type Battery Charge / Discharge Ammeter shall be provided.
- 7.12 **UNINTERRUPTED POWER SUPPLY (UPS).**
- 7.12.1 The UPS shall have duty and ratings of feeders adequate for the application and shall be suitable for indoor use. UPS system shall be sized to take care of the crest factor of the load current.
- 7.12.2 The UPS System shall have IGBT type with touch screen LCD display and shall be backed up by nickel cadmium (Ni-Cd) battery rated for 2 hour at rated capacity of the UPS. Battery (100% Capacity) shall be separate for each Inverter.
- 7.12.3 The UPS shall have REDUNDANT SCHEME WITH INDIVIDUAL BYPASS and 100% Battery Bank for each UPS. Under normal operating conditions, one Inverter Unit alongwith Bypass shall cater 100% load, while other Inverter Unit alongwith Bypass shall be in HOT Standby Mode.
- 7.12.4 On failure of one of the inverters, the faulty inverter shall get automatically disconnected from the load and healthy inverter shall supply 100% load. In the event of second inverter also developing a fault, a no-break load transfer to bypass supply (by second inverter) shall take place through static switch. In the event of bypass supply of second inverter also developing a fault, a no-break load transfer to bypass supply (by first inverter) shall take place through static switch.
- 7.12.5 All four sections, i.e. Rectifier-I, Rectifier-II, Bypass-I and Bypass-II shall be fed through four separate feeders of emergency bus of PMCC.
- 7.12.6 Fused disconnect switch shall be provided for each outgoing feeder of the UPS and the fuse shall be of fast clearing type. The fuse rating shall be selected to achieve co-ordination to protect the UPS during short circuit. The rating of the largest branch circuit shall not exceed 25% of the system rating.
- 7.12.7 The UPS rating shall be adequately sized considering 25% spare capacity for future load.
- 7.12.8 25% spare outgoing feeders for future use shall be provided in each ACDB for each rating and type of feeder.
- 7.12.9 AC distribution boards (Dual ACDB), fed from parallel redundant UPS shall be used for instrumentation power distribution system for the improved reliability of instrumentation system. Redundant outgoing feeders shall be provided in ACDB.
- 7.12.10 The distribution shall be designed such that the failure of a single sub circuit does not cause an unacceptable loss of control or loss of data display to the plant operator.
- 7.13 **LIGHTING, POWER & DC DISTRIBUTION BOARDS**
- 7.13.1 No. of LPs, PPs & DCDB shall be provided for complete lighting & power distribution adequate for the plant.
- 7.13.2 Lighting distribution boards fed through 415/415 V lighting transformers with off circuit taps +10% in steps of 2.5% shall be planned for feeding the lighting system of the package units.
- 7.13.3 Each lighting transformers shall be sized to feed the entire plant normal lighting load with



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30% as a minimum spare capacity.

- 7.13.4 Lighting distribution board shall have two incomers and one buscoupler. One Incomer shall be fed from PCC and other bus section of PCC.
- 7.13.5 Normally both the incomers shall be 'ON' with bus coupler in open condition. In case of any problem to any of the incomer, tripping of the affected incomer followed by closing of bus coupler shall be done manually. Under voltage relay contacts of both the bus sections wired in parallel shall be used to switch on the DC lighting circuits. Where second incomer is from emergency PCC, Normal running condition normal incomer and bus coupler shall be in closed condition. During the fault on normal incomer, Bus coupler shall open and emergency incomer shall be switched 'ON'.
- 7.13.6 No. of LPs shall be considered based on location / area served and total loading.
- 7.13.7 Plant lighting circuits shall be fed from dedicated lighting distribution boards installed in a safe area. For LPs, incomer shall be provided with switch fuse unit / MCB and outgoing shall be with MCBs for control and protection of lighting circuits. ELCB shall be provided in each LDB outgoing circuits to lighting panels.
- 7.13.8 Plant lighting circuits shall be single phase (P & N) rated 240 V AC. Each circuit shall be rated to 16A but not loaded more than 8 A. A minimum of 25% of MCBs of each board shall be left as spares. Normally about 8-10 fittings shall be wired in each circuit.
- 7.13.9 Plant lighting distribution board shall include 25% spare outgoing circuits
- 7.13.10 Adjacent lighting fittings shall not be fed from the same circuit.
- 7.13.11 Plant lighting circuits (excluding level gauge lighting) for open to sky areas shall be designed for auto/manual switching through timer. In addition, it shall be possible to switch ON/OFF entire lighting from ECS and local switchboard.
- 7.13.12 Lighting control scheme shall also be designed to trip the entire lighting system in case of air raid warning. Tripping signal for the lighting system shall be wired from the BOO Processor's substations.
- 7.13.13 Auxiliary relays as required for remote switching ON / OFF of lighting system shall be included in lighting distribution board.
- 7.13.14 Main Lighting distribution board shall feed Lighting Sub Distribution board having 63A TPN RCBO as incomer and 16Amp as SPN MCB as outgoing. The incomer ELCB shall have rating of 300 mA. Six, Nine or Twelve way Lighting Sub Distribution board shall be used having 30 % as spare outgoing MCB feeder.

7.14 LOCAL CONTROL STATIONS (LCS)

- 7.14.1. The local control stations shall be of aluminium alloy (LM6) construction.
- 7.14.2. The type and number of switchgear components such as push buttons, selector switches, ammeters, lamps etc. shall be based on the functional requirements of the control scheme and the type of equipment.
- 7.14.3. Control stations shall be provided for each motor in the field.
- 7.14.4. Enclosure of the control station shall be suitable for site conditions such as weather proof, dust proof, flame proof, corrosion resistant etc. All outdoor control stations shall be with canopy.

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- 7.14.5. Stop push button shall be of stay put type, however it can be of momentary type in case of drives such as lube oil pump etc which are critical.
- 7.14.6. Two numbers of stop push buttons shall be provided for the motors, which are installed at elevated platforms, such as cooling tower fan etc. One of the push buttons shall be installed at ground level and the other near the motor.
- 7.14.7. Local control station shall be provided with ammeter for motors rated above 5.5 kW. LCS for all emergency / critical drives shall be provided with ammeters.
- 7.14.8. Weatherproof, break glass type emergency push button station shall be provided near transformers to trip the transformer feeder in case of emergency. Emergency trip push button shall also be provided for motors above 1000 kW rating if required.

7.15 Industrial Goods Lifts

- 7.15.1 Lifts shall have automatic centre opening doors, SS cabin with aluminium chequered plate flooring cabin and steel belts (rope), closed loop VFD, A low – inertia gear less machine with a permanent magnet (PM) synchronous motor, battery-operated rescue system with electronic speed monitoring, machine on the rails to transfer loads down to the pit.
- 7.15.2 Automatic Rescue Device shall be capable of moving the lift to the nearest landing on main power failure.
- 7.15.3 Lift Machine room shall be located at ground floor.
- 7.15.4 Following Control & Indication shall be provided on all landings and ground floor:
- Digital Car position indicator for each lift on top as well as on side wall
 - Audio alarm & direction indicator for each lift
 - Common up/down call buttons
 - Fireman switch
 - Braille marking on all buttons
- 7.15.5 Following Control & Indication shall be provided in car:
- Braille marking on all buttons inside the car
 - Voice announcement system with all necessary equipments.
 - Appropriate positioning of Car Operating Panel
 - Floor selector button
 - Emergency stop and alarm button
 - Combined digital position and direction indicator.
 - Wiring for telephone and telephone instruments (intercom) in lift car, machine room and ground floor, lift lobby
 - Lighting, emergency alarm and fan to be provided with emergency supply through inverter having at least half an hour battery backup.
 - Car Operating Panel (COP) should be on the front panel as approved by the SECL.

7.16 Variable Speed Drives (VSD/VFD)

- 7.16.1 Microprocessor based variable speed drive shall be communicable type and shall be able to communicate with LMS/DCS. It shall be possible to set speed from process DCS for optimum performance through 4-20 mA signal. Speed/current/status feedback to DCS shall be provided. Drive will run at preset speed in the event of loss of signal from DCS.
- 7.16.2 System shall be highly reliable, efficient and shall provide high power factor, low harmonic distortion, low noise level etc.
- 7.16.3 System shall be provided with complete by pass circuit to ensure the power supply reliability in case of VSD/VFD failure.
- 7.16.4 The system shall be suitable for load characteristics, continuous speed control. Drive shall be able to accelerate the load over the full speed range (0-100 %) with incoming line voltage

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regulation of 10%.

7.16.5 The system shall be designed for 150% over current withstand for 1 minute. The system shall be equipped with an automatic restart facility which will restart the system in case of voltage dip over 20% or power interruptions less than 4 seconds and recovery of voltage to 95% with a facility to block the automatic restart.

7.16.6 The system shall be suitably designed with due care for long length of cables, output filters, chokes, motor insulation, cable voltage grades etc.

7.17 CABLES (HT / LT)

7.17.1 Cables shall be sized considering the following factors.

- Maximum continuous load current
- Voltage drop
- System voltage
- Laying conditions
- (Derating due to ambient air temperature, ground temperature, grouping and proximity of cables with each other, thermal resistivity of soil etc. shall be taken into account).
- Short circuit withstand criteria for HT cables

7.17.2 All power, control, data, signal cables shall be FRLS PVC outer sheath.

7.17.3 All LV power cables shall be with stranded aluminium/copper conductor with XLPE insulation, PVC inner sheathed FRLS type, armoured, PVC outer sheathed FRLS type and construction as per IS: 7098 (Part 1). Power cables with conductor size upto and including 16 sq. mm shall be with copper conductor, conductor size 35 sq. mm and above shall be aluminium conductor.

Single core LV Power cable shall be of aluminium conductor. The construction of same shall be as per above

7.17.4 All control cables shall be with 2.5 sq. mm, stranded copper conductor with XLPE insulation, PVC inner sheathed FRLS type, armoured, PVC outer sheathed FRLS type and construction as per IS: 7098 (Part 1). Control cables shall be twisted pair or shielded wherever electro-magnetic/electrostatic interference is anticipated.

7.17.5 All control cables shall have 20 % spare cores. All cores shall be identified with numerical core numbers printed on core instead of colours.

7.17.6 All HT power cables shall be made of stranded aluminium or copper conductor with dry cured XLPE insulation, PVC sheathed armoured, conductor screen, insulation screen and construction as per IS 7098.

7.17.7 All cables shall be armoured and shall have extruded inner and outer sheath



7.17.8 Cables connected in parallel shall be of the same type, cross section and terminations.

7.17.9 All power and control cables shall be in continuous lengths (except for very long feeders) without any joints. The cables used for lighting and wires in conduits shall have appropriate junction boxes with adequately sized terminals. Cable joints in hazardous areas shall not be permitted.

7.17.10 In case of difficulty in connecting the cables to instrument or relay terminals, minimum cross section may be reduced to 1.5 sq. mm Cu. For lighting inside the building, minimum 1.5 sq.mm Cu conductor, PVC insulated wire shall be used in conduit system (for circuit and point wiring), with proper colour coding.

7.17.11 All LT power cables shall be 3 core / 3 1/2 core / 4 core with stranded aluminium / copper conductor with XLPE insulation and construction as per IS 7098. For all LPs / PPs incoming power supply cable shall be 4 core of required cross section.

7.17.12 HT cables shall be unearthed grade.

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7.17.13 Size of Aluminium conductor cable shall be limited to 3.5C x 300 sq. mm in LT, 3C x 400 sq. mm in HT and 1C x 1000 sq. mm in LT/HT.

7.18 CABLE TRAYS

7.18.1 Cable trays shall be run in either cable trenches / on overhead cable rack or along the pipe rack to suit the site conditions.

7.18.2 Separate cable trays shall be selected for:-

- HT cables
- LT power cable
- LT control cable
- Instrumentation cables/communication cable
- Cable trays shall be sized considering single layer of cables.

7.18.3 The trays shall not show deflection / bend / deformation after laying of cables.

7.18.4 All cable trays and accessories shall be prefabricated, G.I. ladder type. For tray system design, in addition to self-load and wind forces, following guidelines for design shall be considered.

- Support span : 2000 mm
- Cable load for
- 150 mm wide cable tray : 30 kg/m
- 300 mm wide cable tray : 60 kg/m
- 600 mm wide cable tray : 90 kg/m
- 750 mm wide cable tray : 120 kg/m



7.18.5 In addition to this, 70 kg concentrated load at centre span shall be considered. All structural steel design shall be as per Indian Standards and shall be suitable / designed to withstand fire for a minimum period of 30 minutes.

7.18.6 Bends, tees, reducers, crosses, droppers etc. shall have the required bending radii as recommended by the manufacturer with 10% allowance for various cable sizes with a minimum of 300 mm.

7.19 LIGHTING EQUIPMENT

7.19.1 LED type lighting shall be provided. The average illumination levels in the various sections of the plants shall be as indicated in Annexure-I. All the plants and area lighting shall be energy efficient.

7.19.2 LED type lighting shall be provided for all areas. LED shall conform to the following types and standards:-

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Product Type	Safety Standard	Performance Standard
Self ballasted LED lamps for general lighting services > 50 V	IEC 62560 Latest Edition	IEC 62612 / PAS Publicly available specification
Control gear for LED modules	IEC 61347-2-13 Latest Edition	IEC 62384 Latest Edition
LED modules for general lighting	IEC 62031 Latest Edition	IEC / PAS 62717 Latest Edition
LED luminaries	IEC 60598-1 Latest Edition	IEC / PAS 62722-2-1 Latest Edition Luminaries performance – Part 2-1: particular requirements for LED
LEDs and LED modules	IEC TS 62504 Terms and Definitions for LEDs and LED modules in general lighting.	

Maintenance factor for indoor lighting shall be considered as 0.7 and for Outdoor lighting 0.6.

The colour rendering index shall not be less than 90%.

The LED lights shall work satisfactorily at the design temperature of 50 Degree Celsius.

All the LED fittings shall be selected in accordance with Hazardous Area Classification.

The life assessment of LEDs shall include control gears/ driver as well.

7.19.3 The specified illumination level shall be maintained after considering maintenance factor 0.5 for Coal Dust Area, 0.6 for plant & outdoor areas (other than Coal Dust Area) & 0.7 for indoor areas and utilisation factor as per manufacturer catalogues for size of room & type of fixture.

7.19.4 Voltage drop at the fixture from the MLDB bus shall not exceed 3%.

7.19.5 Aviation lights shall be provided on tall structures and all isolated structures. Aviation Lighting shall be in accordance with International Civil Aviation Organization (ICAO) Publication Annexure 14 and to Indian Standards, together with the approval of local aviation authority.

LED type Low Intensity Aviation Obstruction Light suitable for 240V, 50 Hz supply. It shall be covered under Indian patent act (Govt of India) No. 188995. Degree of protection shall be IP-65.

The illumination intensity of aviation lights and mounting height shall be considered based on vicinity of civilian air terminal within 1 KM radius. Aviation lights at each location shall be fed from two separate and distinct DBs (one fed from normal bus and another fed from emergency bus of MLDB). In case aviation lights are not switched ON for any reason, whatsoever, a signal shall be sent to control room which will sound buzzer and also result in flashing of red light. On acknowledgement, buzzer shall stop but flasher will continue unless aviation lights are turned ON.

The fixtures shall have body of corrosion resistant aluminium alloy casting and shall be suitable for outdoor use and mounting on 40 mm NB G.I. pipe. Necessary electrical threading shall be tapped in the fixture for mounting.

7.19.6 Plant lighting circuits shall be single phase (Phase & Neutral) rated 240 V AC. Each circuit shall be rated to 16A but not loaded more than 8A. A minimum of 25% of MCBs of each board shall be left as spares. The load on one lighting sub-circuit of lighting sub-distribution board and junction box shall be limited to 1000W approx.

7.19.7 LED Tube Lighting Fixtures (inside Substations)

- a) High quality LED fluorescent tube twin batten type complete with 2 X 20W tube eco friendly, no UV radiation as per the specification tabulated below:

Sl. No.	Parameter	Technical Specification
1.	Degree of Protection	IP-20
2.	Lumen output per Lamp	≥ 2000
3.	CCT	6500K
4.	Luminous efficacy	≥ 100 lm/watt
5.	CRI	>80
6.	Life	≥ 40000 burning hours
7.	PF	>0.95
8.	THD	<10%

7.19.8 Street Lighting And Security Lighting

7.19.9 63A TPN outlet from outdoor lighting bus of main lighting board shall be taken direct to the TPN junction box to be mounted on pole through cable and looped from pole to pole.

7.19.10 Hot dip GI octagonal poles of suitable mounting height shall be used for street light. However, for plant lighting (platforms/ structures/ access ways/ walk ways/ pump house/ pump bay etc.), steel tubular poles of suitable mounting height shall be used

7.19.11 Hot dip galvanized octagonal high mast lighting shall be used for yard and general area lighting. LED type fittings may be used.

7.19.12 LED Street Lighting Fixtures

- a) LED Street Light Fitting with cool white light in Pressure Die Cast Aluminium Housing with UV Stabilized Poly Carbonate Cover with in-built power unit of 3500 lumen suitable for 240V, 50 Hz, System shall be used.
- b) Lighting fixture shall have 50000 hrs. Life Time, CRI>75, IP-65.

7.20 **JUNCTION BOXES**

7.20.1 The Junction boxes/Telephone Tag boxes shall be MS with epoxy paint for safe areas or die cast aluminium alloy construction with IP 55 degree of protection suitable for installation in classified areas, hazardous areas. It shall be suitable for terminating or looping armoured signal/power cables. JB's shall be provided with earthing stud. It shall be suitable for wall/column/structure/ceiling mounting.

7.20.2 Junction boxes installed in classified hazardous area shall be explosion proof or increased safety type depending on area classification.



7.21 **CONVENIENCE / WELDING RECEPTACLES**

7.21.1 Enclosure of the convenient receptacle shall be suitable for site conditions such as weather proof, dust proof, flame proof, corrosion resistant etc. Necessary interlocks and earthing facilities shall be provided as per safety requirements. These receptacles shall be provided at selected locations in the plant.

7.21.2 Welding receptacles shall be provided at suitable locations to make sure the receptacle is accessible from any point of the process area with a trailing cable of 30 meters length. The welding receptacle shall be rated for 63A, 415V, 3 phase and shall have a scraping earth.

7.21.3 63A, 415V, 3 phase receptacle (with scraping earth) shall be provided at suitable location near major equipment like compressors, blowers etc to provide power for portable equipment.

7.21.4 15A, 240V, single phase, three pin sockets shall be provided at suitable locations to make sure that the receptacle is accessible from any manholes of the equipment, near static/rotary

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equipment with a trailing cable of 15 meters length. However for hazardous areas 240/24V transformer shall be provided with socket to supply 24V to the portable equipment.

7.21.5 Bulk Power Point near Heat exchange area for Hydro blast purpose for use during plant running condition / shutdown.

7.21.6 Outdoor receptacles shall be provided with canopies.

7.22 PUBLIC ADDRESS (PA) SYSTEM / PAGING SYSTEM

7.22.1 Public Address system suitable to provide reliable and quick source of communication among operating personnel shall be provided. The system shall be microprocessor based with modular construction for ease of expansion capabilities and capacity. The system shall have speakers, calling points etc. suitable to area of classification for that location.

Substation shall be connected with the PA System.

PA system shall be located in respective control room.

1 Nos. Master Call Station shall be considered and to be install at each control room.

7.22.2 Stand alone systems shall be provided for different process units, substations etc. which shall be suitable for interfacing with Fire alarm system, EPABX system, Radio Paging system etc.

7.22.3 Paging speakers provided in areas having ambient noise levels shall produce a paging sound level at least 10 db above the anticipated ambient noise level. Where it is not possible to achieve the sound level of above 10 dB above the ambient, rotating beacons shall be installed in such a way that the operator is alerted in the area. The typical area where the provision of rotating beacons are envisaged as compressor house, generator house etc. Acoustic hoods shall be provided for call stations located in high noise areas.

7.22.4 Separate UPS with batteries shall be provided for each exchange.

7.22.5 The design of the system shall be such as to provide two channel communication i.e. Page & Party in each zone. Page & Party system shall comprise of one channel for paging & one channel for party talk.

7.22.6 Close talk mode shall be provided for conversation between two or more stations through close talk channel. Speeches from any hand set shall be heard over all the speakers. The system shall have the following facility:-



- i) Alert tone facility
- ii) Paging facility
- iii) Private conversation facility
- iv) Loud speaker mute facility
- iv) Emergency tone facility.

7.22.7 In the Party mode, conversation shall not be heard over the loud speaker but it shall be carried out on the handsets. This mode shall be used for actual conversation, exchange of information etc.

7.22.8 It shall be possible to make a paging call by lifting the handset, off the hook switch & pressing the "press to page" switch. The paging message shall get transmitted over all the loud speakers when the paging person speaks in the microphone of the handset. While paging, it shall automatically mute the loud speaker near the paging handset to eliminate the acoustic feedback.

7.22.9 It shall be possible to communicate between two field stations without the interference of the MCS / operator. Also it shall be possible to have direct communication with the MCS.

7.22.10 A facility to monitor the health of the system including field stations / speaker shall be

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provided in the system.

7.22.11 The equipment shall be sturdy, impact resistant, dust & damp proof generally conforming to minimum IP-55 degree of protection. For classified hazardous areas flameproof equipment shall be provided duly certified by recognised certifying authority for the area of installation. The equipment for outdoor shall be weatherproof type conforming to IP 55 degree of protection & shall be provided with canopy. All equipment & accessories shall be given tropical protection against fungus, insects & corrosion. Equipment shall be made tamper proof by use of non standard screws, which can be opened only by means of special keys supplied by the manufacturer. Solid state components shall be used throughout & assembled in plug-in type modules.

7.22.12 Paging system shall have battery backup for 8 hours in case of power failure.

7.23 FIRE ALARM SYSTEM

7.23.1 BOO Processor shall provide the Fire Detection and Alarm System which shall be an independent system comprising of individual break glass type manual call points, automatic sensors e.g. smoke and heat detectors, main panel, repeater panel, hooter, battery, battery charger and any other hardware.

7.23.2 The system shall be designed to provide audio-visual indication at the main panel to be located in sub-station and repeater panels shall be provided in fire station.

7.23.3 The manual call points shall be provided at strategic locations with access along all exit routes and roads.

7.23.4 Electrical sirens shall be provided to cover entire Coal to Ammonia plant. Hooters and exit lights shall be provided at required locations in the buildings.

7.23.5 Panel design and component selection shall be done for future extension up to 10% of specified zones or one zone, whichever is maximum in each panel. The design of common facility and hardware shall be provided for required future extension of zones.

7.23.6 The fire detection system shall be interfaced with fire suppression system.

7.23.7 Fire Alarm system shall be microprocessor based, intelligent, analogue addressable type.

7.23.8 System shall be stand alone for entire plant area consisting of individual process units, utility areas, substation, control rooms etc. System shall be designed to provide necessary audio visual signals at the main control panel with mimic panel and repeater control panel. The system shall be hooked up with main fire control panel located at fire station control room.

7.23.9 However system shall be suitable for integration with CCTV, PA, EPABX, Gas Detection system, Fire suppression system and HTAC system.

7.23.10 System shall be comprising of individual break glass type manual call points, detectors main panel, repeater panel, hooter, siren, battery, battery charger and other hardware.

7.23.11 Battery and charger shall be provided for each panel separately, rated for complete fire alarm system operation for failure of power supply for at least 48 hours. FRLS armoured cables shall be used for the system.

7.23.12 Detectors & Manual call points shall be connected in separate loop.



7.24 COAL HANDLING AND ASH DISPOSAL HANDLING SYSTEM

7.24.1 The Electrical system shall be suitable for the full capacity of coal conveying and ash disposal system.

7.24.2 Suitable switchgears, motors, cabling etc, for these systems shall be as described in the Electrical design philosophy under these headings.

7.24.3 Conveyor Control Panel (PLC based).

7.24.4 The conveyor control panel (CCP) is required to perform the various control operation to

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obtain the material flow in the desired patterns. Vendor to develop control schematic diagram, trip/interlock logics and furnish the same for the safe & proper operation of all conveyor motors.

7.24.5 Emergency Safety Devices

Following emergency safety device shall be provided at the provided at the specified intervals to trip the conveyor under abnormal operating conditions:-

- i. Pull cord switch
- ii. Belt sway switch
- iii. Zero speed switch
- iv. Emergency stop push button
- v. Gravity take up switch
- vi. Chute choking device
- vii. Bunker level indicating device

In addition status of all safety switches on CCP also to be also provided.

8.0 SYSTEM LAYOUTS

8.1 CABLE LAYOUTS / ROUTING.

8.1.1 Cabling system for various areas shall be generally as under.

- For process equipment RCC trenches with removable RCC covers shall be used.
- Lighting, fire alarm, communication cables shall be laid directly buried in road berms. The communication and fire alarm cables shall be laid in road berm opposite to the berm where street lighting cables are laid.

8.1.2 Cable trenches shall be sized depending upon the no. and voltage grade of cables used for different applications. Trenches in hazardous areas shall be filled up with sand. At road crossing, cables shall be laid through culverts / hume pipes / pre-cast RCC duct banks etc. Concrete lined trenches shall have suitable drainage arrangement to avoid water collection or these trenches shall be connected to nearest storm water drain. Concrete lined cable trenches shall be sealed against ingress of liquid and gases.

8.1.3 The top of cable trenches before entering the substation, shall be maximum 1m above the ground level and also all cutouts shall be properly sealed by a sealing compound. Pipes laid for mechanical protection shall be sealed at both the ends.



8.1.4 All entry and exit openings for cables crossing in substation, control room etc. shall be provided with fire barrier and it shall have minimum three hours rating.

8.1.5 Fire proofing / painting for all power cables on 3 meter length of cable at motor end and load end in the field and panel end in the substation shall be provided. Fire barriers shall also be provided below the opening of all HT and HT switchboard in all substations.

8.1.6 The offered painting and fire barriers shall be tested at site and comply to the requirement defined in the BS: 476 (part-20) Method of determination of fire resistance of element of construction and IS: 12458 Fire resistance test of fire barriers and UL: 1479 Fire test of through penetration fire barriers. Fire protection for cables shall be provided as per IS 12459: code of practice for fire protection of cables.

8.1.7 For directly buried under ground cables, route markers shall be provided at every 30m interval all along the cable routes, at cable joints and where direction of cable trench changes. Cable joint pits shall be sand filled.

8.1.8 Whenever cables will be required to run above ground, these shall be run in a single layer form in covered G.I. cable trays. Separate cable trays shall be provided for HT power, LT

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power, control and communication cables. Necessary tees and bends shall be provided to have neat and easily accessible routing.

- 8.1.9 Above ground cables shall be well supported on cable trays and shall be suitably protected against mechanical damage. Routing shall be decided to avoid interference with hot surfaces or places subject to undue fire risk. Cable trays shall be covered whenever they are running below pipes.
- 8.1.10 Cable trays, racks and trenches shall be sized to allow for 30% future cables. Cable installations shall provide minimum cable bending radii as recommended by cable manufacturer. Separate trays shall be provided for HT / LT power, control & plant communication cables. Separate cables shall be provided for AC and DC signal / control circuits.
- 8.1.11 Wherever pipe rack / pipe sleepers are not available for laying of above ground cable trays, cable tray support shall be sized to ensure lowest tray level to be min. 2.7m above grade.
- 8.1.12 Cables running between cable tray and the equipment shall run through rigid GI conduits. Necessary supports shall be provided for the same. Cables shall be protected by conduit up to a length of at least 300 mm above the floor level.
- 8.1.13 Plant cables shall run in either of the two directions formed by main axis, avoiding as much as possible crossings with instrument cable trenches and pipelines and preferably away from restricted areas.
- 8.1.14 Underground cable routes shall be designed to avoid close pipe crossings and adjacent runs with underground pipelines. A distance of at least 30 cm between cable and pipe shall be maintained. Cables shall preferably cross underneath buried pipelines.
- 8.1.15 Parallel / Duplicate feeder cables shall be laid separately as far as possible.

8.2 CATHODIC PROTECTION SYSTEM

- 8.2.1 Entire underground pipe work including those laid in concrete trench and filled with sand, the steel structures (within battery limit), tank bottom etc. shall be provided with cathodic protection in their battery limit. The scope shall include, site surveying to collect required information, design, supply, installation, commissioning, maintenance, monitoring and performance guarantee of impressed current cathodic protection system as per relevant Indian/IEC/BS/NACE Standards and codes of practices. BOO Processor shall have to design and engineering of complete CP system for their battery limit. The design life of CP System shall be 30 years.



Following shall be excluded from Cathodic Protection system.

- Underground Pipes with SS material / GRP Material,
 - Above Ground reinforcements bars of reinforced concrete,
 - Reinforcements bars of reinforced concrete foundations.
 - Reinforcement bars in concrete piles.
- 8.2.2 Shed shall be provided for all Cathodic Protection equipment installed in the field. .
- 8.2.3 Solid State Polarization Cell shall have short time fault current withstand capacity:- 5 kA/ 5000 A @ 30 Cycles and Lightning Surge Current rating : 50000 A Crest for 8 to 20 μ seconds with DC Blocking voltage range of - 3.0 V to + 1.0 V.
- 8.2.4 Surge over voltage diverter shall be provided across each monolithic isolation joint.

8.3 EARTHING AND LIGHTNING PROTECTION



8.3.1 Earthing

- 8.3.1.1 Complete earthing installation shall be done as per IS: 3043, IEEE-80, IE Rules and IEC recommendations. The earthing system shall be designed to:

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- (a) Provide a permanent & continuous path from equipment and conductor enclosures to earth from circuits for flow of fault current.
 - (b) Provide sufficient current carrying capacity to conduct safely any current liable to be imposed on it.
 - (c) Provide sufficient low resistance to earth to limit the potential between metalwork and earth within safe limits.
 - (d) Provide equal distribution of potential and minimum potential difference for safety of personnel.
 - (e) Ensure sufficient current in case of fault to facilitate the operation of relays, over current devices, fuses etc. provided in the circuit.
- 8.3.1.2 Common underground earthing grid shall be provided covering switchyard, sub-stations and plants which is further connected to overall Earthing Grid. The overall earth resistance (dry) shall be limited to 1 ohm.
- 8.3.1.3 Earthing rings shall be provided around sub-stations and plants which in turn shall be connected to the common earthing grid. Minimum size of main grid shall be 75mm×12mm.
- Anti-corrosive bituminous paint shall be provided at each joint of earth flat after necessary finishing and priming treatment.
- 8.3.1.4 Earthing grid/ring shall comprise of buried GI earth strips and GI pipes/electrodes.
- 8.3.1.5 Separate earth electrodes shall be provided for system neutral earthing. For equipment earthing, minimum two numbers of electrodes shall be provided around each plant/section. However, all these earth electrodes shall be interconnected.
- 8.3.1.6 Inter-connecting pits having an earth bus in an enclosed brick chamber without earth electrode shall be provided in the common underground earthing grid for convenience of taking earth conductors inside the plants.
- 8.3.1.7 As far as possible, the reinforcement rods inside concrete column shall be connected to the earthing grid/ring to reduce the overall earth resistance.
- 8.3.1.8 Individual electrical equipment shall be earthed by GI strip/GI wire/Cu/Al cable. Earth buses shall be provided in plants for earthing groups of electrical/non-electrical equipment to earthing grid/rings.
- 8.3.1.9 Size of earthing grid/ring and earth conductors of equipment for generating station and sub-stations shall be as per relevant standards. The fault current magnitude shall be decided based on system fault level. The time duration shall be taken as 1 second for voltage level above 66 kV and 3 seconds for voltage upto 66 kV as per IS -3043.
- 8.3.1.10 All equipment rated above 250 V shall have two external earth connections and those rated up to 250 V shall have one external earth connection. However, for lighting fixtures, earthing shall be done through 3rd core of the cable in safe as well as in hazardous area.
- 8.3.1.11 Flameproof equipment, in addition, shall have one internal earth connection. This means that 4 core cables to be used for all the flameproof equipments and 3.5 core cables to be used for all flameproof motors located at hazardous area.
- 8.3.1.12 All steel structures, tanks, vessels, pipes, pipe joints, valves etc. shall be earthed against static charge accumulation by 50x6 mm GI strip. The no. of earth connections shall be as follows:

Equipment having diameter	Hazardous area	Non hazardous area
30 M	2	2
More than 30 M	3	2

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- 8.3.1.13 Wherever process equipments are mounted on steel structures, the structures shall be earthed instead of earthing the individual equipment.
- 8.3.1.14 The pipe structures shall be earthed at not more than 25M apart.
- 8.3.1.15 For all equipment in hazardous area, in addition to external earthing one internal earthing shall be provided.
- 8.3.1.16 Minimum sizes of earth conductors to be used shall be as given below.

Sl.No.	Equipment	GI conductor size	Al conductor Size
1.	HV/LV switch board, transformers, HV motors	50mm×8mm	150 sq. mm
2.	Motors rated 75 KW and above	50mm×6mm	150 sq. mm
3.	Motors rated 30 KW to less than 75 KW and vessel earthing	35mm×6mm	95 sq. mm
4.	Motors rated 5.5 KW to less than 30 KW	25mm×6mm	25 sq. mm
5.	Motors less than 5.5 KW	8 SWG	6 sq. mm
6.	All minor equipment rated 250V & above.	10 SWG	6 sq. mm
7.	Earth Grid	75mm x 12 mm.	-

However, vendor to calculate the actual size:-

All GI conductors shall meet the galvanizing requirement as per IS.

- 8.3.1.17 The main ground grid shall be buried in earth at a minimum depth of 1000 mm below finished grade level unless stated otherwise

8.3.2 Lightning Protection



- 8.3.2.1 All structure ,buildings like substation ,control room etc. shall be protected against lightning strokes by suitable lightning protection system to be designed and installed as per IS/IEC-62305.
- 8.3.2.2 The number of down conductors shall be minimum two. All the lightning protection earth pits shall be inter connected and same shall be connected with power system earth pits .The resistance at the earth pit shall not be more than 5 ohms .
- 8.3.2.3 Bare metallic structures shall not have any air termination rods at the top. The earth connections shall be welded to the bottom of structure at 300 mm above floor level. However, tall metallic columns with insulation at top shall be provided with air termination rods. Separate earth electrodes shall be provided for each down conductor of lightning protection. However, these shall be inter-connected with the other electrodes in main grid.
- 8.3.2.4 Air Terminal

The vertical air terminal rods shall be installed at the roof of buildings (including power house main building), at the top of chimney and cooling towers to protect these objects from lightning strokes.

The vertical air terminal except for chimney shall be made of 20 mm dia galvanized steel rod. The projected length of the rod shall be as required to protect the object (on which the rod is fixed) from lightning stroke.

The air terminal rods provided at the top of chimney/stack for lightning protection shall be 20 mm dia lead coated solid copper rod.

The air terminal rod shall be properly fixed on the top of the building/structure to withstand very high wind pressure. In case the air terminal rod is embedded at the top of roof of

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building: the portion embedded inside the concrete shall not touch the reinforcement bars and shall be duly insulated from them.

All the vertical air terminal rods shall be electrically connected together by means of horizontal conductors of size 50 x 6 mm galvanized steel flats.

The shielding angle for one vertical air termination shall be 45 degrees. For more than one rod, shielding angle between the rods shall be taken as 60 degrees.

Horizontal air termination (i.e. G.S. Flat conductor) shall be so laid that no part of the rod will be more than nine (9) metres from the nearest roof conductor.

8.3.2.5 Shielding Masts

The shielding mast for lightning protection shall be installed at the top of steel columns cap plates of power house main building.

The shielding mast shall be made of galvanized steel pipe and the height of the same shall be decided considering the zones to be protected.

Each shielding mast shall be connected to grounding grid by a down conductor 50 x 6 mm. Galvanized steel flat run along the building column. In addition all power house building columns joints shall be electrically bonded.

8.3.2.6 Down Conductors

The down conductors shall be 50 x 6 mm galvanized steel flats. The connection between each down conductor and earth electrode shall be made via test link located at approximately 1500 mm above ground level.



8.4 LIGHTING LAYOUTS

8.4.1 The lighting layouts shall be designed to meet the illumination levels recommended in IS 3046.

8.4.2 Average illuminations levels as specified below shall be achieved while designing the lighting system.

Sl. No.	AREA	LUX
1.0	<u>ROADS</u>	
1.1	Plant roads	20
1.2	Security roads	20
2.0	<u>YARD</u>	
2.1	Marshalling yard	20
2.2	Loading/unloading areas	50
2.3	Open areas	20
3.0	<u>PLANT</u>	
3.1	Operating platforms	100
3.2	Non-operating platform/ general process areas & walk ways	50
3.3	Compressor house	150
3.4	Turbine Hall	200
3.5	Pump house/Pump bay	250
3.6	Top of cooling towers	60
3.7	Boiler gallery	100
3.8	Area near large rotating equipment/plant	200
3.9	Air Conditioning Plant Room	200
3.10	Elevator machine Room	200
3.11	Power House Coal conveyor floor	100
3.12	Conveyors, junction/transfer towers	100
3.13	ESP hopper area, platforms and ESP top	100
4.0	<u>SUB-STATION</u>	
4.1	Switch room - Front of panel	250
	- Back of panel	150
	- Battery room	150
4.2	Transformer room, cable room.	70
4.3	Outdoor/transformer bay	70
5.0	<u>CONTROL ROOMS</u>	
5.1	Front of panel	500
5.2	Back of panel	200
6.0	OFFICES	300
7.0	<u>STORES, BATH ROOM</u>	100
8.0	<u>STAIR CASES</u>	
8.1	Safe areas	100
8.2	Hazardous areas	100
9.0	<u>PANIC LIGHTING</u>	-

- 8.4.3 Lighting design shall conform to relevant International Codes & Standards, IES Hand Book and shall take into consideration the requirements from point of view of safety and ease in operation and maintenance. A maintenance factor of 0.8 shall be assumed for lighting illumination level calculation for normal areas. However, for dusty areas, maintenance factor as per relevant codes and standards shall be considered.
- 8.4.4 Generally plant lighting shall be classified as under: Normal lighting Emergency lighting Critical lighting.
- 8.4.5 Normal & emergency lighting system shall be on 415 / 240 V system, where critical lighting shall be on 110 V DC.
- 8.4.6 Sufficient lighting shall be provided so as to enable plant operators to move safely within the accessible areas of plant and to perform routine operations.

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8.4.7 Lighting requirements provided during the failure of power supply for normal lighting shall be broadly,

- To facilitate carrying out of specified operations, for safe shutdown of the plant.
- To gain access and permit ready identification of fire fighting facilities.
- Escape route for safe evacuation of operating personnel.

Recommended areas for critical lighting:

- Fire station
- Fire water pump house
- First aid centre
- Emergency escape route.
- Operator cabin, plant area, pump house
- Any other specific areas requiring critical lighting.

Recommended areas for AC emergency lighting:

- Fire stations
- Staircases
- Platforms with ladder changing directions
- Strategic locations in process, utility areas where specific safety operations are to be carried out, such as Areas near heat exchangers, condensers, Barring gears of turbine.
- Areas around drives fed by emergency supply.
- Some portions of roads interconnecting substation and process plant.
- Any other specific areas requiring emergency lighting.

8.4.8 Generally 25 % of normal lighting load shall be considered for AC emergency load.

8.4.9 Wiring for lighting and convenience outlets in outdoor areas shall be carried out with copper conductor, PVC insulated, armoured cables run along the column/platforms and structures on GI perforated trays of required width. The armoured cable shall enter lighting fixture / JB through double compression gland for safe area and through flameproof glands for Ex(d) and Ex(e) equipment. Where required, suitable mechanical protection shall be provided for lighting fixtures (e.g. wire guard).

8.4.10 The lighting installations shall be designed to obviate stroboscopic effect.

8.4.11 Lamp fittings in structures shall be so located that maintenance and lamp changing can be effected without use of ladder or scaffolding.

8.4.12 The lighting fittings shall be situated in such a way that reflection on instruments / VDU etc. in control rooms and sub-stations is avoided.

8.4.13 All lighting fittings shall be wired using armoured PVC cable of suitable no. of cores and size. Necessary type and no. of junction boxes shall be provided for branch connections.



8.4.14 DC critical lighting shall employ incandescent lamps.

8.4.15 Adequate no. of ceiling fan points shall be provided in offices, rooms allocated for operating and maintenance personnel etc.

8.4.16 Pole isolation devices shall be used for controlling fixtures in hazardous areas to isolate phase as well neutral.

9.0 INSTALLATION

Installation of all electrical equipment shall be carried out with high standard of workmanship, neat routing/layouts, and clearances/access as per recommendations by the manufacturer. After installation the system equipment shall be tested for pre-commissioning test as recommended by the manufacturers & established practises. Further, commissioning tests shall be conducted to prove agreed performance within specified tolerance, temperature

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rise, noise and vibration.

10.0 FIELD TESTING AND COMMISSIONING

Field tests as per the procedures approved by SECL shall be performed on the electrical equipment before being put into service. Acceptance of the complete electrical installation shall be contingent upon inspection and test results. Field tests shall include but not be limited to the following:

- 10.1 A visual inspection at both ends of a cable/conduit run, and all intermediate joints to ensure that terminal chambers and other enclosures are clean, joints tight and sound, wiring correctly dressed and labelled and no obvious faults are present.
- 10.2 After visual inspection, all the covers shall be replaced and cover screw (and gaskets, if any) checked to be present and tight.
- 10.3 **ELECTRICAL TESTS SHALL INCLUDE:**
 - 10.3.1 An insulation test for each winding and circuit with a separate test for each core of power circuit
 - 10.3.2 Continuity test for all power circuits and windings.
 - 10.3.3 Earth continuity test for all circuits.
 - 10.3.4 An earth resistance measurement for each group of electrodes, and the earthing system as a whole.
 - 10.3.5 Lighting installation shall be tested for correct illumination levels with the fittings installed. Fittings shall be operated only with their designed size of a lamp or tube.
 - 10.3.6 All protective relays and meters shall be tested and calibrated. All relays must be checked settings.
 - 10.3.7 After the above tests and inspection are completed. Control circuit shall be tested for correct operation under all operating combinations and proved correct before applying power to main circuits.
 - 10.3.8 Main circuits shall be checked for correct phasing and rotation.
 - 10.3.9 All motors except those having sealed prefabricated ball bearings shall be checked for proper lubrication prior to energisation and shall be tested for correct rotation.
 - 10.3.10 A close visual inspection of all electrical equipment in hazardous area shall be made to ensure that the equipment is both suitable and correctly installed.
 - 10.3.11 Capacity test shall be carried out on UPS / batteries / battery charger after installation at site.
 - 10.3.12 After completion of tests BOO Processor shall prepare a joint test report for each test carried out on each equipment and shall get signed by PMC/ SECL's representative. A copy of such test reports shall form a part of completion report.

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SECTION 2.6

ENGINEERING SPECIFICATION-INSTRUMENTATION

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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Scope of Instrumentation job, wherever specified in this document as well tender for BOO Processor for supply of Ammonia (C2A) To M/s South Eastern Coalfields Limited, Chhattisgarh, India on BUILD-OWN-OPERATE (BOO) Basis.



1.0 GENERAL

- All instruments, equipments and all its associates items shall be suitable for use for specified site climatic conditions and industrial environment in which corrosive gases, ammonia service & environment, combustible dust protection, flammable gas/vapours, flammable dust/fibers and/or chemicals may be present. In general, all instruments and enclosures in field shall be dust proof and weatherproof to IP-68 per IEC-60529/IS-13947 to be considered, and secure against the ingress of fumes, dampness, insects and vermin. All external surfaces shall be suitably treated to provide protection against corrosive plant atmosphere. However where specific type of instrument is not available in IP 68 as standard, latest IP available shall be considered.
- All instrumentation shall be as per SIL Assessment and HAZOP recommendation. The implementation of SIL requirements and verification shall be in accordance with IEC 61508 & 61511.
- Notwithstanding the hazard classification assigned to the area in which an instrument or any other item is located, which shall be generally Zone 2 for hazardous areas subject to flammable gas Class 1 vapours, all instruments, except the drive section of motorised valves, shall be :
 - Certified, as a minimum, EEx'ib', suitable for Zone 1, with the Gas Group determine by the process area classification in which the instrument is located.
 - Certified EEx'ia' in locations specified as Zone 0.
 - The certification listed above, shall be provided by the Chief Controller of Explosives (CCOE), Nagpur, India, and an Internationally recognised authority.
- The drive section of motorised valves shall be certified EEx'd', suitable for Zone 1, with the Gas Group determine by the process area classification in which the instrument, for hazardous areas subject to flammable gas / vapours, or EEx'tD' for hazardous areas subject to flammable dust / fibres. These certifications shall be provided by the Chief Controller of Explosives (CCOE), Nagpur, India, and an internationally recognised authority.
- **Electromagnetic Compatibility Requirements**

All equipment shall meet the technical requirements as defined in the following specifications:



- IEC 61000 Sections 4.1 thru 4.5 – Electromagnetic Compatibility.
- IEC 61326 section 1 - Electrical Equipment Measurement, Control Laboratory use – EMC requirements
- IEEE C37.90.1 - 2002 - Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

Other requirements as per OISD & IBR standards

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2.0 Standards/Codes (Latest revision and its amendments) to be followed for instrumentation jobs:

	Standard & Code	Description / Title
1.	API RP 520 Parts I & II	Design and Installation of Pressure Relieving Systems in Refineries
2.	API Std 526	Flanged Steel Safety Relief Valves
3.	API Std 527	Commercial Seat Tightness of Safety Relief Valves with metal-to metal seats
4.	API RP 551	Process Measurement Instrumentation
5.	API RP 552	Transmission Systems
6.	API RP 553	Refinery Control Valves
7.	API RP 554	Process Instrumentation & Control
8.	API RP 555	Process Analysers
9.	API RP 557	Guide to Advance Control Systems
10.	ANSI B1.20.1	Pipe Threads, General Purpose
11.	ASME B16.5	Steel pipe flanges, flanged valves and fittings
12.	ASME B16.10	Face-to-Face and End-to-End Dimensions of Valves
13.	ANSI/ASME B16.36	Orifice Flanges
14.	ASME B16.47	Large Diameter Steel Flanges (NPS 26 thru NPE 60)
15.	ANSI B40.1/ASME	Gauges and Pressure Indicating Dial Type Elastic Element
16.	ASME Boiler and Pressure Vessel Code: Part 1 .	Power Boilers
17.	ASME Boiler and Pressure Vessel Code: Part VIII	Unfired Pressure Vessels
18.	BS 3463	Observation and Gauge Glasses for Pressure Vessels
19.	IEC 60529	Degrees of Protection provided by enclosures
20.	IEC 60534.1	Control valve terminology and general considerations
21.	IEC 60534.2.1	Flow capacity - Sizing equations for fluid flow under installed conditions
22.	IEC 60534.2.3	Flow capacity - Test procedures
23.	IEC 60534.2.4	Flow Capacity - Inherent flow characteristics and rangeability
24.	IEC 60534.2.5	Flow capacity - Sizing equations for fluid flow through multistage control valves with inter stage recovery
25.	IEC 60534.3.1	Face-to-face dimensions for flanged, two-way, globe-type, straight pattern and centre to-face dimensions for flanged, two-way, Globe-type, angle pattern control valves
26.	IEC 60534.3.2	Face-to-face dimensions for rotary control valves except butterfly valves
27.	IEC 60534.8.3	Industrial Process Control Valves- Aerodynamic Noise Prediction
28.	IEC 60534.8.4	Industrial Process Control Valves– Prediction of Noise Generated by Hydrodynamic Flow
29.	IEC 60751	Industrial Platinum Resistance Thermometer Sensors

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30.	IEC 60079	Code of Practice for the Selection, Installation and Maintenance of Electrical Apparatus for use in Potentially Explosive Atmospheres
31.	IEC 60584	Thermocouples
32.	IEC 61000.4.1	Testing and Measurement techniques- Overview
33.	IEC 61000.4.3	Testing and Measurement techniques- Radiated, Radio Frequency, Electromagnetic Field Tests
34.	IEC 61000.4.4	Testing and Measurement techniques- Electrical Fast Transient/burst Immunity Tests
35.	IEC 61000.4.5	Testing and Measurement techniques – Surge Immunity
36.	IEC 61508	Functional Safety of Electrical, Electronic, Programmable Electronic Safety Related Systems
37.	IEC 61511	Functional Safety of Safety Instrumented Systems for the Process Sector
38.	IEEE C37.90.1 - 2002	Surge Withstand Capability(SWC) Tests for Protective Relays and Relay Systems
39.	ISA 5.2	Binary Logic Diagrams for Process Operations
40.	ISA 18.1	Annunciator sequences and Specifications
41.	ISA S84-01-1996	Application of Safety Instrumented Systems in the Process Industries
42.	ISO 5167-All Parts	Specification for Square-edges Orifice Plates, Nozzles and Venturi Tubes Inserted in Circular Cross Section Conduits Running Full
43.	ISO 5208	Pressure Testing of Valves
44.	ISO 4266: 1994	Petroleum and liquid petroleum products- Measurement of temperature and level in storage tanks-Automatic methods
45.	NACE MR0175 ISO 15156	Petroleum & Natural Gas Industries – Material for Use H ₂ S-Containing Environments in Oil & Gas Production



The latest published issue or amendment at the time of contract placement shall apply unless otherwise stated. Any other standard/code which is NOT specified above but essentially required to full fill tender requirement or any other manner , latest edition shall be followed.

• PUBLICATIONS

AUTHOR	TITLE
R.W.Miller	Flow Measurement Engineering Handbook.
Fieldbus Foundation	AG-181 Foundation Fieldbus System Engineering Guidelines,

- All local and statutory requirements to be followed.
- CPCB and SPCB norms related to pollution monitoring and control shall be followed and all items at CPCB and SPCB offices/center shall be considered.

3.0 Design requirements for flow instruments:

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The reference conditions for standardised flows shall be
Liquids - 15 Deg C and 760mm HG
Gas/Vapours- 0 Deg C and 760mm Hg
Ammonia application : (-) 33 Deg C

4.0 All instrumentation requirements as per the NOC of Pollution control board and Environmental Clearance accorded by the MOE & F.



5.0 Interfacing jobs

- Interfacing of ICSS (Integrated Control and Safety System) for individually BOO units including Utility and Offsite with Main project ICSS (Integrated Control and Safety System) for critical data exchange for monitoring only. Necessary hardware for interfacing to be provided by BOO Processor in their control room.
- Interfacing of Fire & Gas Detection and Alarm system with main project system for availability of data in Fire & safety control room. Necessary hardware for interfacing of Fire Detection and Alarm System & Gas Detection system shall be provided by BOO Processor in their Control Room.
- All interface / interconnection with any third party system / global web service / OPC / WAN etc. shall be with Firewall security.
- CCTV system shall be standalone system and considered for process monitoring as well as periphery surveillance purpose and shall be separate from each other.
- Telephone system – EPBAX system shall be considered and interface with Public Switched Telephone Network (PSTN) through the PABX, and shall comply with all the telecommunication carrier's requirements; technical compatibility between the public and private networks shall be ensured. Necessary hardware for interfacing to be provided by BOO Processor.
- Any connectivity from third party or WAN or global web etc. shall be through Firewall only.
- Data availability and interface with CPCB and SPCB portal shall be through also Firewall. Necessary hardware for interfacing to be provided by BOO Processor.

6.0 Custody transfer metering system:

- For. Liquid/Gas Custody transfer, international standard like AGA5, AGA 7, AGA 8, AGA9, AGA 11 to be followed based on experience of similar application and concept.
- BOO Processor shall provide all the metering for all the interfaces given with relevant Flow meters and accuracies as specified elsewhere in the tender document.
- BOO Processor shall match all the material of construction at the battery limit.

7.0 Central Control room / Local Control Room / SRR

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BOO Processor shall be responsible for construction of Central control room or Local control or SRR (Satellite Rack Room) for installation of System/marshalling cabinets and all other control system related equipment under their scope of work. BOO Processor shall install all the relevant hardware required for integration of BOO units with Main project control system.

8.0 Metering Equipment:

Following Instruments to be used for various measurements for Coal to Ammonia Plant.

Sr. No.	Measurement of	Measurement through	Accuracy (Reading)
1	Power	Energy Meter	Class 0.2S *
2	Raw Water/Construction Water	Magnetic Flow Meter	0.5 %
3	Treated Effluent	Orifice Plate	0.5 %
4	Coal a. Through Wagon b. Unloading Ground Hopper	a1. In-motion weighbridge a2. Static rail weighbridge b. Belt Weigher	a1. +/-0.5% for Wagon, +/-0.2% for rake a2. +/-0.02% to 0.05% b. +/-0.25 %
5	Ammonia a. Flow b. Analytic measurement of impurities in Ammonia / other parameters	a .Coriolis Mass Flowmeter b. GC / MS	a. 0.05 % b. 1%
* However same shall be in line with WBSEDCL.			

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PART II: TECHNICAL SPECIFICATIONS



SECTION -2.7

CIVIL, STRUCTURAL & ARCHITECTURAL WORKS

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA



PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

0	20.01.2022	ISSUED FOR TENDER	GC	RNS	UPT
REV	REV DATE	PURPOSE	PREPD	REVWD	APPD



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1.0 GENERAL

- 1.1 This section of the Tender Documents deals mainly with the Scope and Technical Specifications needed for the Detail design, preparation of detailed Drawings and getting the design/ drawings approved by Owner/Consultant, execution and construction of complete Civil, Structural and other Allied Works on BOO basis.
- 1.2 This document defines the Technical Specifications & Brief scope of works under this Contract for Civil, Structural and Architectural Works for the “**COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS**“ and associated allied services within battery limit.
- 1.3 The scope of Civil Structural and Architectural Works under this Contract shall include carrying out surveying, geotechnical investigation, Grading & Leveling, Detailed Design, Drawings, Supply, Procurement of all materials, Construction, Demolitions, Supervision of all relevant Civil and Structural Works including providing all labour, supervision, material, scaffolding, construction equipment, tools, tackles and plants, supplies, transportation, all incidental items though not indicated or specified but reasonably implied or necessary for successful completion of the project.
- 1.4 This standard specification shall be read in conjunction with the Technical Specifications documents from other department (Process, Mechanical & Electrical.etc) issued for the Job and Standard Specification for Material & Construction requirements.
- 1.5 This engineering design basis defines the minimum design criteria that shall form the basis for carrying out detailed structural design and engineering of all plant and non-plant structures and buildings. All data required in this regard shall be taken into consideration for acceptable, satisfactory and trouble-free engineering of the structures.

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1.6 Compliance with this design basis and / or review of any of the contractor documents shall in no case relieve the contractor at the contractual obligations. All structures shall be designed for the satisfactory performance of the functions for which they are being constructed, abiding all relevant Indian Standards (Latest Revisions).



1.7 SCOPE OF CIVIL, STRUCTURAL AND OTHER ALLIED WORKS

The scope of work under this contract includes the complete civil, structural and other allied works associated with the “**COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS**” and associated allied services within battery limit.



The general description of structures / facilities shall be read in conjunction with the technical requirements & specifications given elsewhere in this document. The tentative sizes of various process units, utilities, storage facilities and Plant structures / building and non-buildings with demarcated with areas on the plot plan is provided for reference.

Scope of the BOO Processor shall include but not limited to the following:-

- a) Topographical survey and geotechnical investigation.
- b) Engineering related to site leveling & preparation.
- c) Specific soil Investigation, if required for specific design.
- d) Preparation of concept notes for design, engineering & construction.
- e) Structural Analysis and design calculations as per specifications and as per referred codes. for all Civil works including but not limited to pile, pile-cap, foundation, plinth beam, RC superstructure, steel super structure, RC underground structures and water retaining structures, trenches, drains, pits etc.
- f) Architectural design and drawings including details for doors, windows, partitions, false floor, false ceiling, toilet, finishes etc.

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- g) General Arrangement and detail design drawings for pile, pile-cap, foundations, plinth beams etc, based on the soil investigation carried out by the bidder for the proposed site.
- h) General Arrangement and structural drawings at grade level showing foundations, extent of paving, trenches, drains, pits etc.
- i) General Arrangement and detail design drawings for superstructure (RCC and structural steel) at all levels.
- j) RCC drawings showing all necessary details for all foundations and structures.
- k) Structural steel detail drawings for all steel structures.
- l) General Arrangement and detail drawings for access roads, storm water drains, effluent drains, cable trenches, sewerage, manholes, pits, sumps with all necessary details.
- m) Effluent Treatment Plant (having zero liquid discharge) and Sewage treatment plant within battery limit.
- n) Bar Bending Schedules for all RCC works.
- o) Fabrication drawings with all details for steel structures.
- p) Coordination with OWNER / PMC for various activities including approvals of design basis, concept note, drawings, material samples, laboratory test results etc.
- q) Procurement of all items necessary for completion of scope of work.
- r) Construction of all units / structures, items of work included in scope of work.
- s) Preparation of as built drawings & final documentation.
- t) Obtaining Statutory Approvals.
- u) Adherence to Quality Assurance Plan

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2.0 DETAILED SCOPE OF WORK



2.1.0 SITE RELATED INVESTIGATION

2.1.1 SOIL INVESTIGATION

- a) The Soil Investigation Report carried out for proposed plant area is enclosed with the tender. This is indicative only and is enclosed purely for information/guidance purpose to the bidder. However Bidder shall make his own assessment for the type of foundations envisaged based on his site visit and data collected from site during the site visit.
- b) The interpretation of the results should be re-assessed by the bidder on the basis of bore logs and soil data. If bidder feels then he may conduct preliminary soil investigation for bidding purpose. However, the successful bidder shall carryout detailed soil investigation for the proposed plant afresh at the time of detail engineering.

2.1.2 TOPOGRAPHICAL / CONTOUR SURVEY

- a) Topographical / Contour survey drawing has been attached with the NIT for reference to the bidders. The plant battery limit co-ordinates shall be as per enclosed plot plan (plant). This is indicative only and is enclosed for reference to the bidder for bidding purpose only.
- b) The BOO Processor shall carry out his own topographical survey. For the purpose of surveying the BOO Processor's scope is not limited only up to Battery Limit, but shall extend up to the adjacent roads around the unit.
- a) Before commencement of work / Contour Survey, the BOO Processor shall clear the site from all the debris lying on the site if any.
- b) At bidding stage, the BOO Processor shall visit the site and study the existing site conditions & existing structures, etc.

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2.2.0 SITE CONDITIONS

At bidding stage the BOO Processor shall visit the site for studying the site condition & existing structures. Levels like Finished Ground Level (FGL) and Highest Point of Paving (HPP) shall be finalized by the BOO Processor in consultation with OWNER / PMC based on contour survey of the unit, levels of adjacent units and levels of adjacent roads.

2.2.1 GRADING

- a) The land shall be handed to the BOO Processor on '**As is where As**' basis. BOO Processor to develop the site as per requirement.
- b) The BOO Processor shall establish the finished grade levels of buildings after studying the existing site conditions, high flood level so as to maintain proper efficient drainage of the plant area at no extra cost to OWNER / PMC. These grade levels shall be approved by the OWNER / PMC.

2.2.2 TRANSFER OF BENCHMARK

The Benchmark will be made available inside plant complex premises. However, it may be verified at BOO Processor's side. The reference benchmark is available inside the premises. This reference benchmark will be shown to BOO Processor during execution. Same shall be used to transfer the levels to new benchmark near or inside the unit.



2.2.3 ROAD LEVELS

BOO PROCESSOR shall carryout contour survey of roads adjacent to the unit and also roadways around the unit as defined in plot plan drawing.

2.3.0 SITE DATA

2.3.1 METEOROLOGICAL DATA

For metrological data refer topographical survey report.

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2.3.2 WIND LOAD

Basic wind speed for structural design shall be taken as per IS 875 (Part-3) Codes. Design wind load for process structure & equipment shall be established from IS:875 Part III. The Wind forces on buildings / structures and equipments due to effects of wind shall be calculated as per IS 875 (Part-3) except for switchyard structures and transmission towers for which IS: 802 shall be applicable.

This standard specifies the minimum design requirements for wind loadings to be imposed on buildings, equipment, vessels, structures and their foundations.

Design loads shall be in accordance with the Refinery norms & the latest revisions of relevant Indian Codes and Standards.

2.3.3 EARTHQUAKE LOAD



Earthquake loads for Proposed Complex shall be considered as per BIS Codes. All buildings, structures, foundations shall be designed to resist the effects of earthquakes in accordance with IS: 1893 (Part 1):2002 and IS: 1893(Part 4):2005. Seismic loads shall be as per IS: 1893 (Latest Revision).

2.4.0 DISPOSAL OF SURPLUS EARTH

BOO PROCESSOR shall dispose-off all surplus and unserviceable earth (if any), at his own cost with the consent of Owner / Consultant .The location of disposal area of surplus earth / sand shall be provided by Owner. However, location of disposal area of unserviceable earth, sand, rubbish/debris shall be decided by BOO PROCESSOR and the required necessary approvals from the local bodies shall be BOO PROCESSOR's responsibility.

2.5.0 SITE CLEANING

During construction and on completion of construction (inclusive all internal and external finishes), cleaning all the debris, waste materials scattered in and around

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the site and disposal of the same shall be in the scope of BOO PROCESSOR with the consent of the OWNER.

2.6.0 ROADS, PAVING AND HARD STAND

BOO PROCESSOR shall be responsible for complete planning and construction of the roads for access to all buildings and units of the plant including necessary approach road from peripheral main roads to the site area from at least two sides.

The recommended width of the roads including berms shall be as follows:-

	<u>Main Road</u>	<u>Access Roads</u>	<u>Tank/In-unit Areas</u>
Minimum width (m)	12	7.5	7.5

2.6.1 PAVING



BOO PROCESSOR shall provide RCC pavement for the complete area of the unit as job specific requirement. For the purpose of paving BOO PROCESSOR's scope is not limited only up to Battery Limit, but shall extend up to the adjacent roads around the unit.

2.6.2 HARD STAND

Based on soil data, the hard stand required for erection of heavy equipments to be Designed and provided as per equipment erection philosophy / type of cranes to be used inside and outside the battery limit of units.

2.7.0 SURFACE DRAINAGE, STORM WATER DRAINS AND CULVERTS

The BOO PROCESSOR's scope work includes providing all internal services such as water supply, sanitary sewerage, drainage and storm water drains etc. and connecting the same to nearest external prevailing facilities complete in all respects in around and within the Unit battery limit.

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2.7.1 SURFACE DRAINAGE

BOO PROCESSOR shall ensure proper drainage of all parts of the Ammonia Plant under reference. BOO PROCESSOR shall provide proper drainage system for all roads mentioned in the above clause 2.6.0 Storm Water Drains shall be connected to the main drainage system by providing suitable tie-in points in consultation with Owner / Consultant.

2.7.2 CONTAMINATED RAIN WATER SYSTEM & OILY WATER SEWER SYSTEM

BOO PROCESSOR shall provide proper underground drainage system for contaminated rain-water and OWS. These shall be connected to Main contaminated rain-water system (CRWS) & Oily Water Sewer System (OWS) networks at suitable tie-in points to be decided in consultation with Owner / Consultant during detailed engineering.

2.7.3 SEWAGE DISPOSAL SCHEME



BOO PROCESSOR shall provide proper underground sewage disposal. This shall be connected to Main sewerage system at suitable tie-in points to be decided in consultation with Owner / Consultant during detailed engineering.

2.8.0 STRUCTURES BUILDINGS Etc.

BOO PROCESSOR's scope shall include are technological/ Process structures steel & R.C.C. structures, pipe rack, buildings, equipment foundations, pits, cable trench, sheds, etc. as required for the complete execution and commissioning of the plants.

2.9.0 SIZING OF VARIOUS FACILITIES

Sizing, nos., location etc. of various facilities viz. buildings, pipe rack, structures, equipments, etc. shall be in the scope of the BOO PROCESSOR.

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2.10.0 FIRE PROOFING

BOO PROCESSOR shall design, supply and apply fire proofing to steel structures wherever required as per OISD – STD – 164 standards, published by 'Oil Industry Safety Directorate, Government of India, Ministry of Petroleum & Natural Gas / Tariff Advisory Committee (TAC) rules and regulations and other Codes / requirements as applicable.

2.11.0 SURFACE FINISHING

BOO PROCESSOR shall be responsible for complete planning and detailing of all surfaces finishes viz. painting, flooring etc.

2.11.1 ACID / ALKALI PROOF LINING

BOO PROCESSOR shall be responsible for surface treatment of floors, exposed portion of foundations, pits and basins against acid / alkali as per process requirement.

2.11.2 ANTI-TERMITE TREATMENT / DAMP PROOF COURSE / WATER PROOFING



BOO PROCESSOR shall provide anti-termite treatment, damp proof course and water proofing as per requirement.

2.12.0 ENGINEERING AND CONSTRUCTION

Preparation of detailed design, drawings, supply and construction of all civil, structural, architectural, plumbing and building works shall be in the scope of BOO PROCESSOR's work.

2.13.0 RULES AND REGULATIONS

All the facilities shall conform to all Local Rules and Regulations, Factory Inspector, Rules, TAC rules, OISD norms, etc. whichever is more stringent. Getting the approval of the various documents through the various authorities, including all statutory approvals shall be in BOO PROCESSOR's scope, at no extra cost to OWNER.



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2.14.0 MISCELLANEOUS

- 2.14.1 Boundary wall / Fencing /Gate / Security Room shall be provided by the BOO PROCESSOR as per the prevailing fertilizer plant/refinery norms/plant requirements.
- 2.14.2 The scope shall include local platforms, pipe sleepers, local foundations, local supports, etc. as per requirement.
- 2.14.3 Design Rainfall intensity shall be as mentioned in the attached topographical report.
- 2.14.4 Portable water shall be made available at one point location on free/chargeable basis. Further distribution shall be in the scope of BOO PROCESSOR.

3.0 DETAILED ENGINEERING

- 3.0.1 BOO PROCESSOR shall carryout Analysis and Design of the structures required and prepare all the required Architectural, Civil and Structural drawings needed for correct and accurate construction based on scope and requirements as indicated in the NIT, elsewhere as per Internationally accepted standards and engineering practices, all safety rules pertaining to Refinery, OISD Norms, BIS Codes, International Codes, wherever applicable and Design Specifications given in the Tender.
- 3.0.2 It shall be the responsibility of BOO PROCESSOR, to accommodate all the functional requirements such as access, cutouts, clearances, interference etc. while designing / detailing of various structures / facilities.



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3.1.0 REFERENCES & DOCUMENTS

3.1.1 CODES AND STANDARDS

The latest edition or revision of the following Codes and Standards relative to building design, specification and construction work at the time of contract award, shall form part of this specification. These shall include but not limited to:

- National Building Code
 - Technical Sections – Specifically:
 - Part 4 - Fire and Life Safety
 - Part 5 - Building Materials
 - Part 6 - Structural Design
 - Part 7 - Constructional Practices and Safety
 - Part 8 - Building Services
 - Part 9 - Plumbing Services
 - Part 10 - Landscaping, Signs and Outdoor Structures.
- Bureau of Indian Standards (IS)
- Oil Industry Safety Directorate Standards (OISD)
- British Standards Institution (BSI)
- IEE Regulations for Electrical Installations
- Steel Structure Painting Council
- State Government Factory Acts
- Local Municipality, Government Authorities and Bye Laws
- Bye Laws of Town and Country Planning Organization
- Building Bye Laws
- Tariff Advisory Committee Guidelines & Recommendations (TAC)
- Bureau of P/A Guidelines
- ISO 1999 Acoustics – Assessment of Occupational Noise Exposure for Hearing Conversation Purposes.



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3.1.2 INDIAN AUTHORITIES STATUTORY REQUIREMENTS, RULES & REGULATIONS



Title
Factories Act; (As specific to site)
Indian Petroleum Rules;
Liquid effluent discharge, as per Minimal National Standards for liquid effluent and air emissions conforming to Pollution Control Board Standards;
Civil Aviation Rules;
Indian Boiler Regulations;
Indian Electricity Rules,;
Requirement of Chief Controller of Explosives;
Static & Mobile Pressure Vessels (SMPV) rules of the Chief Controller of Explosives
Requirement of Town & Country Planning Department;
Requirements of other authorities concerned with the Project as follows: <ul style="list-style-type: none"> • Indian Weights and Measures • Bhaba Atomic Research Centre

3.1.3 REFERENCE STANDARDS & PUBLICATIONS

SL. NO.	CODES	
1.	Codes of practice for plain & reinforced concrete	IS:456
2.	Code of practice for general construction in steel	IS:800
3.	Code of practice for use of cold formed light gauge steel structural members in general building construction	IS:801
4.	Code of practice for use of structural steel in overhead transmission line towers	IS:802

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5.	Code of practice for use of steel tubes in general building construction	IS:806
6.	Covered electrodes for manual metal arc welding of carbon and carbon manganese steel	IS:814
7.	Code of practice for use of metal arc welding for general construction	IS:816
8.	Code of practice for design loads	IS:875
9.	Code of practice for construction of stone masonry	IS:1597
10.	Fillers for expansion joints	IS:1838
11.	Criteria for earthquake resistant design of structures	IS:1893
12.	Code of practice for structural use of unreinforced masonry	IS:1905
13.	Recommended practice for hot dipped galvanizing on iron and steel	IS:2629
14.	Methods for testing uniformity of coating of zinc coated articles	IS:2633
15.	Code of practice for design & construction of raft foundations	IS:2950
16.	Code of practice for design & construction of machine foundations	IS:2974
17.	Code of practice for concrete structures for storage of liquids	IS:3370
18.	Code of practice for design and construction of foundation for transmission line towers and poles	IS:4091
19.	Code of practice for earthquake resistant design and construction of buildings	IS:4326
20.	Criteria for blast resistant design of structures for explosions above ground	IS:4991
21.	Criteria for design of RCC chimneys	IS:4998

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22.	Code of practice for anti-termite measures in buildings	IS:6313
23.	Code of practice for design & construction of steel chimney	IS:6533
24.	Method for determination of mass of zinc coating	IS:6745
25.	Chlorpyrifos emulsifiable concentrates	IS:8944
26.	Recommendations for metal arc welding of carbon and carbon manganese steel	IS:9595
27.	Two parts polysulphide based sealants	IS:12118
28.	Code of practice for ductile detailing of reinforced concrete structures subjected to seismic forces	13920
29.	Control Room Safety (a publication of Oil Industry Safety Directorate)	OISD-STD-163
30.	Fire Proofing in Oil and Gas Industry (a publication of Oil Industry Safety Directorate)	OISD-STD-164
31.	Code of practice for Design and construction of Pile foundations	IS:2911
32.	Code of practice for structural safety of buildings - Shallow foundations	IS:1904
33.	Code of practice for determination of bearing capacity of shallow foundations	IS:6403
34.	Code of practice for calculation of settlements of foundations	IS:8009 (Pt I, II)
35.	Determination of dynamic properties of soil	IS:5249
36.	Fire Protection System for Electrical Installations	OISD-STD-173
37.	National Building Code (other relevant clauses)	



NOTE:

The above list is suggestive and nor exhaustive. Apart from these basic codes any other related codes shall also be followed wherever required.

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3.1.3 INDIAN CODES AND STANDARDS

IS 6533		Codes of practice for design and construction of steel chimney
	Part 1	Mechanical Aspect
	Part 2	Structural Aspect
IS 875		Codes of practice for design loads (Other than Earthquake) for Buildings & Structures.
	Part 1	Dead Loads – Unit weights of building materials and stored materials
	Part 2	Imposed Loads
	Part 3	Wind Loads
	Part 4	Snow Loads
	Part 5	Special Loads & Load combinations
IS 802		Overhead Transmission Line Towers
	Part 1	Code of Practice for loading and Permissible stresses.
IS 1893		Criteria for Earthquake Resistant Design of Structures.
	Part 1	General Provisions and Buildings
	Part 4	Industrial Structures including Stack like structures
IS 4326		Code of practice for Earthquake resistant design and construction of Buildings
IS 13920		Code of practice for Ductile detailing of reinforced concrete structures subjected to seismic forces
NBC		National Building code of India 2005
	Part 6	Structural Design



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3.1.4 OTHER STANDARDS AND CODES

In situation where sufficient information / guidance are not found available in Indian Codes and Standards, the following Standards and Codes of Practice shall apply. The revision current at the time of Contract Placement shall be used.

BRITISH STANDARDS

BS 4076		Specification for Steel Chimneys
BS 6399		Loadings for Buildings
	Part 1	Codes of practice for Dead and Imposed Loads
	Part 3	Code for Practice for Imposed Roof Loads
BS 6399-2		Loadings for Buildings : Code of Practice for Wind Loads
BS 8100		Lattice Towers and Masts
	Part 1	Code of Practice for Loading
	Part 2	Guide to the background and use of Part 1
BS CP 3		Code of Basic Data for the Design of Buildings
	Ch. V, Part 2	Wind Loads
BS DD 133		Code of Practice for Strength Assessment of Members of Lattice Towers and masts
BS EN 1991-1-4 Euro code 1		Action on Structures, General Actions – Wind Actions, Annex E. Vortex Shedding and aero elastic instabilities.
American		Uniform Building Code
NZS 4230		Code of Practice for Structural Design and Design Loadings for Buildings

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	Vol. 1	Code of Practice
	Vol. 2	Commentary

3.1.5 TECHNICAL LITERATURE

- CICIND Model Codes for Stacks
- AC I Standards
- Engineering Specification Design Units. Wind Engineering, London ESDU International
- Cook N.J. The designers guide to wind loading of building structures. Part 2: Static structures. London: Butterworth Scientific, 1985
- Wiliford, M.R., and Allsop, A.C. Design guide for wind loads on unclad framed building structures construction (Supplement 3 to the designer's guide to wind loading of building structures). Gartson: Building Research Establishment, 1990
- Blackmore P. Wind loads on unclad structures. BRE Special digest SD5 BRE Press
- ASCE - Wind Loads and Anchor Bolt Design for Petrochemical Facilities



3.1.6 CONFLICT IN STANDARDS

Where conflict exists between specification and Standards, the stringent of the two shall be followed.

3.2.0 DESIGN CALCULATION & DRAWINGS

3.2.1 BOO PROCESSOR shall submit a List of Documents, & Drawings, which shall be prepared for this project in line with the overall Project Schedule given in the document.

3.2.2 Analysis and design of structures shall be done on latest version of STAAD-PRO SOFTWARE. For other miscellaneous works Excel and Word shall be used.

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3.2.3 Before taking up any construction activity, AFC drawings of all the important buildings, technological structures & Equipments shall be submitted to the Owner / Consultant for information.

3.2.4 After the mechanical completion of the plants “As built drawings” pertaining to Civil, Structural and Allied works for the complete Ammonia plant, shall be submitted to the Owner, for their records, bearing certificate for structural soundness, strength & serviceability, as per attached Performa in **Appendix A**.

4.0 CONSTRUCTION

4.0.1 Construction of all civil and structural works including all material, labour, supervision, tools and tackles etc. shall be carried out by BOO PROCESSOR.

4.0.2 Materials of construction, construction method etc. shall be such, so as to protect the structures and foundations against the harmful effect of chemical, fumes etc. present in the plant, its vicinity, in ground and / or subsoil water.



4.0.3 Construction water & power shall be made available to BOO PROCESSOR on free/chargeable basis.

5.0 SPECIAL CONSIDERATIONS FOR STORAGE TANKS

Seismic design of storage tanks shall be carried out as per the provisions of API 650 Appendix-E, API 620 Appendix-L, as applicable. For doubled walled tanks inner and outer tanks have to be checked separately and the outer tank has also to be checked for possible inner tank failure.



The value of Z and I (refer API 650 Appendix-E, API 620 Appendix-L) shall be taken as unity.

The values of CI shall be taken as the site-specific seismic spectral ordinate of 2% damping curve corresponding to the calculated time period of the tank.

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The value of C2 shall be taken as the site-specific seismic spectral ordinate for 0.5% damping curve corresponding to the natural period of sloshing.

The spectral acceleration values for periods greater than 3.0 seconds may be considered same as that per 3.0 seconds.

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APPENDIX – A: CERTIFICATE OF SAFETY, SERVICEABILITY AND MAINTENANCE



Certificate of Safety, Serviceability and Maintenance

1. It is certified that the Design & Construction of all the Structural Steel & RCC Structures of the proposed COAL TO AMMONIA PROJECT THROUGH COAL GASIFICATION ROUTE, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA, have been checked for Structural soundness & serviceability requirements as per the relevant codes / safety provisions.
2. The functional viability of sewage system, storm water drainage, drainage systems for OWS, CRWS & CBD, road / paths, culverts, water supply schemes have been checked for design and optimization as per the relevant BIS codes.
3. BOO PROCESSOR M/s shall be responsible for proper maintenance of all the Structural Steel & RCC Structures and ensure proper functioning of all the systems /schemes/ services, once completed, for the period mentioned in the contract.



(Signature & Seal of Authorised signatory)

Dated:

For & Behalf Of BOO PROCESSOR

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APPENDIX – B: TOPOGRAPHICAL SURVEY DRAWING

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APPENDIX – C: GEOTECHNICAL INVESTIGATION REPORT

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PART-II: TECHNICAL



SECTION – 2.8

ENGINEERING SPECIFICATIONS- MATERIAL HANDLING

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISGARH, INDIA



PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISGARH, INDIA

P	25.01.22	25.01.22	Issued for Review/Comments	EL	AM/SAH	PK
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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1.0	SCOPE
2.0	CODES AND STANDARD
3.0	RAW MATERIAL HANDLING SYSTEM
4.0	TECHNICAL SPECIFICATION
5.0	DUST EXTRACTION SYSTEM
6.0	ASH & SLAG HANDLING SYSTEM
7.0	ROAD WEIGH BRIDGE
8.0	ACCESS TO MACHINERY

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1.0 SCOPE



This document lays down for scope of Coal/Fluxant and Ash Handling System of Coal Gasification based Ammonia Plant of **M/s South Eastern Coalfields Limited** for Coal based Ammonia Plant on Build-Own-Operate (BOO).

- i) Required quantity of raw Coal shall be supplied by the owner at the unloading ground hopper from truck/Dumper. For fluxant, the procurement, transportation, handling, storage, conveying etc will be in the scope of BOO Processor.
- ii) Raw material received by BOO Processor shall be transferred to storage yard with series of belt conveyor. In storage yard stacker cum reclaimers shall be used to stack and reclaim the raw material and transferred to crusher house for crushing and then transfer to bunkers of CMD system or transfer as recommended by licensor.
- iii) Blended Coal milling, drying and feeding to burners of the gasifier via the “Coal Pressurisation and Feeding” system or as recommended by process licensor.
- iv) Conveying Ash / slag produced from gasifier and SGP to overhead bunkers or ash/slag disposal pond shall be carried out with the help of Pipe/ belt conveyors/dumpers/ truck etc or as recommended by process licensor.
- v) BOO Processor shall adhere to these specifications for engineering. However BOO Processor may follow material specification as recommended by Process Licensor.

2.0 CODES AND STANDARDS

The design, manufacture, inspection and testing of Coal and Ash Handling System for Coal based Ammonia Plant shall comply with all the currently applicable statues, regulations and safety codes in the locality where the equipment is to be installed. The equipment shall confirm to the latest edition of the following standards & codes. Other internationally acceptable standards/codes, which ensure equal or higher performance, shall also be accepted.

Conveyor System	“Conveyor Equipment Manufacturer’s Association” (CEMA) or IS : 11592 latest edition
Conveyor Belting	IS : 1891 latest edition or equivalent / ISO
Flat Belt/Slat Conveyors	IS : 8597 latest edition or equivalent / ISO
Conveyor Pulleys	IS : 8531 latest edition or equivalent / ISO
Conveyor Idlers	IS : 8598 latest edition or equivalent / ISO
Conveyor safety	IS : 7155 latest edition or equivalent / ISO
Troughed Belt Conveyors	IS : 4776 latest edition or equivalent / ISO
Use & Selection of Bucket Elevator	IS : 7167 latest edition or equivalent / ISO
Code of practices for selection of belt feeder	IS : 12215 latest edition or equivalent / ISO

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Design criteria for pneumatic conveying systems	IS : 8647 latest edition or equivalent / ISO
Mobile Continuous Bulk Handling Equipment	ISO : 5049/1 latest edition or equivalent / IS
Dust Extraction system	ACGIH (American Conference of Governmental Industrial Hygienists) latest edition or equivalent /ISO
Belt conveyors - Travelling tripper - Motorised-for belt widths 650 mm to 1600 mm - Dimensions	IS : 14386 latest edition or equivalent / ISO
Federation Europeanne De La Manutention Section-I-Rules for Design of Hoisting Appliances.	FEM

3.0 RAW MATERIAL HANDLING SYSTEM

3.1 COAL/FLUXANT HANDLING

ROM Coal (100mm) / Fluxant (Limestone) shall be received from trucks/ dumpers at the plant battery limit. Coal shall be further transferred to storage yard with the help of Ground Hopper, belt conveyor, rack & pinion gate / rod gate, vibrating feeder, stacker/reclaimer etc. Scope of BOO Processor shall be started from ground hopper. Measurement of coal shall be done through weigh bridge arrangement and weigh scale installed at ground hopper downstream belt conveyor.



Suspended magnets are provided above head pulleys of conveyors at transfer points for removal of tramp Iron pieces. Metal detectors are also provided to detect non-ferrous materials present in the coal/fluxant before crusher.

Emergency reclaim hopper (ERH) shall be provided to reclaim coal/ Lime by dozers when stacker/ reclaimer are not in operation. Emergency reclaim hopper shall also be used for coal /Fluxant (limestone) feeding by dozers / pay loader etc.

Raw material storage & handling facilities:

- a) Coal storage
 - Open Coal Yard: 15 days
 - Covered storage: Decide by BOO Processor (uninterrupted supply of Ammonia)
- b) Lime storage: 15 days/ Decide by BOO Processor



Fluxant (Lime) handling, storage, conveying etc. shall be in the scope of BOO Processor scope.

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4.0 TECHNICAL SPECIFICATION

4.1 BELT CONVEYORS

1. Conveyor capacity shall be such that it shall be adequate to handle raw material for Steam Generation Plant capacity. Design capacity shall be considered as min. 20% more than the rated capacity.
2. All conveyors shall include adequate structural supports, transfer towers, all drives, pulleys, idlers, chutes, belting, skirt boards, belt cleaners, hold backs(for inclined conveyors), emergency switches, protective devices etc.
3. Conveyor supporting structure should be closed gallery with walkway on both sides.
4. All the equipment of coal handling system shall be designed to operate on continuous duty i.e. 24 hours per day and 330 days in a year.
5. All belt conveyors shall have suitable gravity take-up unit, except material weigh feeder which have short length and wherever agreed by owner/ consultant.
6. Continuous belt weigher shall be installed on conveyor at suitable locations. Display of this weigher would be connected through control panel.
7. Electro Magnetic separator arrangement of adequate capacity to be provided at suitable location to separate any unwanted particle from the feed coal and fluxant.
8. All the conveyors shall be provided with identical designed frame size, roller size, pulley size etc. as far as possible to have better interchangeability and reducing the inventory spare parts.
9. The belting shall be of either synthetic fabric such as Nylon-Nylon / Polyester Polyamide, Steel Cord etc. with rubber covers of adequate flexibility. For all the conveyors the number of plies, cover thickness, factor of safety etc. shall be as per the recommendation of belt manufacturer of adequate strength.
10. Conveyor drive shall be directly coupled through suitable helical gear box.
11. Minimum service factor for coupling shall be taken as 2.0 on the absorbed power.
12. Minimum service factor on gear boxes shall be taken as 1.5 over the absorbed power.
13. All conveyor belts shall be fitted with belt cleaners/scrapers which will be located between the head and snub drums, on the return belt side. All conveyors' belts shall be fitted with multi-blade sprung type external belt scraper below head pulley and V-type internal belt scraper. All cleaned material from the belt shall fall within the head chute.

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14. The skirt boards and sealing with overlapping block design shall be provided with labyrinth seals.
15. All equipment's / assemblies shall use antifriction bearing fitted in Plummer block.
16. All discharge Chutes shall be lined with material Tiscral /Sailhard(Adequate thickness minimum 12 mm).
17. In Belt conveyor system, Deck plate shall be provided minimum thickness 3.15mm with 4 m length (min.) at receiving end and 2 m length (min.) at discharge end.
18. In Double stream conveyors central walk way width shall be minimum 1100mm and side walkway 750mm.
19. Self-aligning training idler spacing to be considered as maximum 15m for carrying side & maximum 30m for return side.
20. Return idler shall be with rubber rings or rubber lined. Vertical guide rollers shall also be rubber lagged type.
21. Impact idlers (minimum 5 nos.) shall be provided at loading points at spacing of 300 mm. Impact idlers shall be of rubber lagged type.
22. All pulleys shall be lagged in herring-bone pattern. Head/Drive pulleys shall be lagged with 12 mm thickness Neoprene and Tail & Snub pulleys shall be lagged with 10 mm thickness Neoprene.
23. All diverter & gate shall be electrically or pneumatically operated.
24. For safety of conveyors and personnel, all conveyors shall be provided with safety switches like zero speed switch, belt sway switch and pull cord. In addition to these there shall be provision of audible warning (Hooter) of starting of conveyor.
25. Suitable hold back devices for preventing running back of the conveyor belt in case of conveyor being stopped in loaded conditions due to power failure or during normal operational delays shall be provided to give positive protection. The hold back shall instantaneously engage without shock and be capable of protecting equipment and personnel. It shall be released instantly when 'power' resumes or the 'delay' is removed. The holdback devices shall be integral with gearbox.
26. All Conveyor galleries shall be provided with dust sweeping chutes covered with removal chequered plates. There shall be one dust hopper for each walkway of gallery and the same shall be provided at the middle of walkway near trestle location.
27. All over ground conveyors are provided with covered galleries. Crossover shall be provided at 100 m intervals (no cross over for conveyors less than 100 m). Gallery shall

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be designed to accommodate cable & pipes including fire water, Dust Suppression pipelines.



28. Walkway shall be of chequered plate construction with anti skid arrangement. Both sides of the central and side walkway shall be provided with pipe hand rail with kerb plate using pipe of 'medium' class as per IS: 1239 having 32mm nominal size. Handrail shall not be connected to conveyor supporting stringer.
29. BOO Processor to consider redundancy / stand-by for belt conveying system (1W+1S) from battery limit to bunkers for gasifier feeding.
30. The inclination of conveyors inside the tunnel shall be limited to 10 degree. The inclination of conveyors above the ground level shall be as per CEMA / IS11592. The conveyor shall be horizontal at the feed point as far as possible. In case the same is not possible, the inclination at the feed point shall be limited to 6 degree. Conveyor system shall be designed with zero leakage of coal / fluxant .
31. Wherever the conveyor crosses the road, a minimum clearance of 8 M shall be provided below the structure.
32. Minimum 3.15 mm thick seal plate shall be provided at all locations wherever conveyor crosses the road / building / any other facilities.

4.2 HOPPERS

The hoppers shall be fabricated from Carbon steel plates (min. 10 mm thickness.) conforming to IS : 2062 or equivalent / ISO and to lined with Tiscral /Sailhard (Adequate thickness minimum 12 mm) from inside not only on bottom portion but also on vertical portion for free flow of material.

4.3 FEEDERS

1. The design of the feeder shall be sturdy and robust in construction to withstand worst duty conditions and given uninterrupted flow of material. The unit shall have unbalanced motors with vibration control and variable control mechanism for controlling the rate of flow. The design shall be such that it consumes less power per ton of material handled, with less maintenance.
2. The feeder shall be able to start at full load quickly, stop smoothly and shall operate at an extremely low noise level. With the empty tray the noise level shall be less than 85db within one meter radius of the unit.
3. The width of the deck and height of skirts shall be sufficient to suit the duty conditions. The length of the deck shall be suitable for arresting the flow from hopper efficiently when the feeder is stopped or not in working condition.
4. The deck and skirts shall be provided with abrasion resistant liners. The through shall be suitably stiffened to avoid bending.

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- Adequate capacity feeder shall be selected by BOO Processor at all locations. Design capacity shall be considered as min. 20% more than the rated capacity.

4.4 BUCKET ELEVATORS

- The bucket elevator shall be designed for continuous duty at full load as specified under operating conditions and the various components shall conform to relevant codes.
- Top cover shall be in pieces for easy to disassemble for the maintenance and inspection of complete drive assembly. The housing shall be provided with inspection opening at appropriate location.
- Dust proof labyrinth metallic seal for the drive & return shaft shall be provided.
- Bucket chain shall be of heavy duty and the chain specification with manufactures designated type/ number shall be specified in the bid.
- Elevator shall be provided with Heavy duty positive holdback in order to prevent it from rotating backwards.
- Hoods & safety guard shall be provided for the coupling and any other exposed rotating components. All safety switches shall be provided.
- Adequate capacity bucket elevator shall be selected by BOO Processor at all locations. Design capacity shall be considered as min. 20% more than the rated capacity.

4.5 VIBRATING SCREENS

- The solid deck section shall be provided with replaceable Tiscral /Sailhard(Adequate thickness minimum 12 mm). The perforated deck shall be wear resistant and shall be rigidly fixed with main frame along the length of grizzly deck.
- The vibrating screening feeders shall be mounted on the floor with the help of helical springs made of alloy steel. No rubber/synthetic material for the support shall be acceptable.
- Vibrator bearings shall be grease lubricated, double spherical roller type suitable for vibrating equipment. The bearings shall be sized for minimum 8,000 hours of operation.
- Suitable sealing arrangement shall be provided between the vibrating structure and chute work to avoid dust nuisance in the surrounding area.
- Proper arrangement to avoid dust ingress into lubricant of eccentric shafts shall be provided.
- Necessary arrangements shall be provided for maintaining / replacing the complete vibrator assembly.



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4.6 CRUSHER AND VIBRATION MONITORING SYSTEM(VMS)

- Crusher shall be provided for sizing the input coal and fluxant. Crusher shall be supplied complete with accessories and subsystems.
- The crusher design should be such that the crushing action is accompanied by the minimum of attrition.
- Uniform crushing impact shall be assured.
- The crusher shall be capable of delivering the normal rated output even when handling damp sticky coal having maximum moisture content. No clogging or building up of material on the crushing element shall develop.
- Temperature sensing devices shall be installed on both bearings of each of the crusher to trip the crusher in case temperature goes beyond limit.
- The entire inside surface of crusher coming in contact with coal shall be provided with abrasion resistant steel liners.
- The Plummer block shall be of 'Split Type' design and shall be fixed with minimum four numbers of high tensile steel bolt studs of adequate size complete with adequate locking device and locating arrangement. In addition, the jacking screw shall be provided for easy lifting of top part of the plummer block. The same shall be of solid base with flat machined bottom surface all around having maximum contact on the foundation plate.
- Maximum accessibility shall be provided for routine inspection and replacement of parts. For these purposes, the doors shall be of hinge connection with effective dust sealing arrangement. Hydraulically operated top cover of crushers shall be provided for quick inspection.
- Crusher shall be mounted on independent foundation with vibration dampning device like GERB springs and dampers.

4.7 VERTICAL ROLLER MILL

- Vertical Roller mills shall be supplied complete with accessories and subsystems.
- Design capacity shall be considered as min. 10% more than the rated capacity. The vertical roller mill shall be used for grinding, drying, separation and transportation.
- Vertical roller mill shall have following features like better utilisation of grinding area, even distribution of load on the table, comparative less dynamic forces on table due to lesser mass of single moving part, variable speed mill drives and "hydraulic loading system" for maximum flexibility to vary grinding pressure.

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4. Roller swing-out device for quick and easy changing of grinding components shall be provided or other facilities shall be used for quick and easy maintenance.
5. Bevel Planetary gearbox with full lubrication and gear system shall be used.
6. High efficiency dynamic classifier shall be used.
7. There shall be no metallic contact between the grinding rollers and grinding tracks.
8. Mill feed shall be sealed through rotary air lock

4.8 TRANSFER CHUTES



1. Chutes transferring Coal from one conveyor to another shall be designed in such a way that material fall height is minimum and the change in direction is achieved as smoothly as possible.
2. All the chutes shall be provided with IS: 2062 material of construction of 8 mm thickness and lined with material Tiscral /Sailhard(Adequate thickness minimum 12 mm).
3. Inspection holes / window with covers shall be provided at all convenient locations.
4. Speed of the material falling on conveyor belt in the direction of belt travel should be almost the same as that of the conveyor.
5. The angle of chutes shall be 55⁰ as far as possible but in no case less than 50⁰ for proper flow of material.

4.9 BUNKERS

1. The bunkers shall be of round shape/rectangular shape and fabricated from Carbon steel plates (min. 10 mm thickness) conforming to IS : 2062 or equivalent / ISO and to lined with Tiscral /Sailhard (Adequate thickness minimum 12 mm) from inside not only on bottom conical portion but also on vertical portion for free flow of material.
2. Bunkers shall be provided with load cells, vibrators/poking hole, radar type level indicator etc. The angle of conical portion of bunkers shall be kept as 55° with the horizontal.
3. Feeding to bunkers shall be automatic with the help of series of conveyors system.

4.10 FLAP GATES

1. The motor operated 2 position flap gates shall be provided in transfer chutes as specified and shall be complete with electrically operated actuators. The gates shall be of robust construction and suitable for trouble free operation.

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2. The motor rating for the actuator shall be so selected as to provide sufficient thrust for operation of the flap gates against the moving weight of coal and/or flap gate. The flap gate travel shall be 60 deg. The motor shall be completely dust proof.
3. The actuators shall be capable of preventing any over travel. These shall be placed internal to the drive unit and shall be completely dust-proof. The limit switches shall be capable of adjustments to vary the total length of travel of the gates.
4. Provision for alternative manual operation shall also be made using de-clutch able hand wheel. The diameter of hand wheel shall be selected considering convenient force to be applied by a single operator. However, minimum diameter of hand wheel shall be 500 mm. Limit switch for safety of person operating the hand wheel shall be provided. Manual effort required to operation the flap gate shall not exceed 25 kg.



4.11 RACK & PINION GATES / ROD GATE

1. Rotary actuator operated rack and pinion gates shall be provided at various locations as required. The gate shall be mounted such that coal load does not act vertically on gate.
2. Suitable manually operated rod gates shall be provided over rack and pinion gates for their easy operation and maintenance. The rack and pinion gate shall be guided properly and suitable rollers with bearings sealed for life and dust proof shall be provided.
3. Provision for alternative manual operation of motorized rack and pinion gates shall also be made. Limit switch for safety of person operating the hand wheel shall be provided. Manual effort required to operate the rack and pinion gate shall not exceed 25 kg.

4.12 BELT SCALE

1. Belt weigh scale for measurement of coal flow rate and quantity shall be provided at specified locations. System shall be complete with flow rate indicator, totaliser, control panel etc. The weigh scale shall be automatic and electronic type. It should be designed for continuous automatic weighing, metering and printing of coal flow.
2. Belt scale shall be electronic microprocessor based with its program stored in non-volatile memory. It shall be provided with self-diagnostic features for trouble shooting of the entire belt scale system. Fully automatic zero and span calibration facility shall be provided.
3. The electronic systems offered by the BOO Processor shall include all signal conditioning, power amplifiers and printed circuits etc. The printed circuits shall be encapsulated against dust and moisture.
4. The flow rate indicator shall have minimum 4 digits. The flow totalizer should have 8 digits display scale with reset facility.



4.13 INLINE MAGNETIC SEPARATOR / SUSPENDED MAGNET

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Inline Magnetic Separators shall be provided for continuous and automatic extraction and discharge of tramp magnetic pieces from coal being discharged from conveyors as specified. The sets shall be complete in all respects with drives, magnets, inline belts, hoppers, chutes, tramp-iron boxes and all electrical ancillaries like control panels etc. Suspended Magnetic Separator shall be provided for picking up tramp magnetic pieces buried under coal from moving coal over Conveyor as specified.

4.14 TRAVELLING TRIPPER UNIT / SHUTTLE CONVEYOR & BUNKER SEALING ARRANGEMENT

1. Rail mounted movable travelling Tripper / shuttle conveyor shall be provided to feed coal to overhead bunkers of Boilers.
2. Mobile Trippers on bunker conveyors along with belt sealing arrangement shall be furnished and erected complete with rails, including necessary supporting structures, approach/maintenance platforms with ladders and hand railings, trailing cables, all electrical including machine mounted local control panel & control panel on one end of bunker, location of which shall be decided during detail engineering.
3. The Mobile tripper conveyors shall be motor driven type. It shall consist of structures, supports, walkways, rails, belt scrapper with adjustable rubber strip, rubber lagged head and bend pulleys complete with shaft bearings, chutes, stops, limit switches, brakes etc. The rating of tripper travel motor shall be adequate to move the tripper smoothly either in same or opposite direction to belt direction under fully loaded conditions. Minimum two drive axles shall be provided for tripper travel. Arrangement shall be provided at the starting point of the tripper to avoid folding of belt.
4. Supply of adequate length of rails to cover the runway length for the motor driven tripper shall be included. Suitable belt hold down guide pulley shall be provided over the concave curve of belt over tripper.
5. The travelling trippers shall be provided with fail safe A.C. thruster operated brake of totally enclosed type which shall engage as soon as tripper travel motor stops. A.C. thruster operated rail clamps along with manual Rail clamps on both side of the tripper shall also be provided.
6. Monorail & electric hoist shall be provided for lifting conveyor drum to floors. Monorail all along the tripper travel length to facilitate maintenance of tripper shall be provided.
7. Suitable dust cover shall be provided over tripper head pulley. Serrated rubber seal shall be provided at open side to prevent dust nuisance. Suitable dust tight access doors shall be provided. Spring loaded scraper type belt cleaner shall be provided below the tripper head pulley for cleaning the carrying side of the belt.
8. The tripper shall run on rails with double flanged wheels. Rails for tripper travel shall be mounted on supporting structure of respective conveyors.

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9. Suitable access platform of chequered plate with ladders, hand railing and walkways on both sides shall be provided for access/maintenance of equipment on tripper. In addition, crossover platform shall be provided with tripper so that operator can cross the belt through the same.
10. Suitable rail cleaners shall be provided on leading and trailing edge of tripper for either track.



4.15 STACKER CUM RECLAIMER

1. Stacker cum reclaimer operating in conjunction with yard conveyor shall be provided as specified. Stacker-cum-Reclaimers shall be capable of both stacking and reclaiming complete with adequate length of rail track, and its foundation, cantilever boom conveyor, boom hoist, reclaimer bucket wheel, control panel, operators cabin, electrical power distribution system, motorised cable reeling drum, adequate length of trailing cables etc.
2. The design average capacities shall not be less than 110% of rated (guaranteed) capacities as specified elsewhere for both stacking & reclaiming. The continuous motor rating at 50 degree celcius of the drive motor to be provided on each side of the yard conveyor shall be 120% of the actual power requirement at motor output shaft.
3. Stacker/Reclaimer shall be capable of operating at high wind velocities upto 65 km/hr. It shall also be able to withstand maximum wind velocity as indicated in Project Synopsis, when it is not operating. A suitable anemometer shall be provided which shall indicate the wind velocity in the control cabin. Electro-hydraulic thruster operated rail clamp and manual rail clamp shall be provided for holding the stacker-cum-reclaimer. Suitable arrangement shall be provided for keeping the stacker-reclaimer in fixed stable position when the weather is stormy.
4. Stacker-cum-reclaimer shall operate on rail track running for adequate length to cover the entire coal stockyard. The wheel load of stacker-reclaimer shall not exceed 27.0 tonnes. The ratio of boom length (as specified) to the rail track gauge shall not exceed 5. Top of rail level shall be maintained at 0.7 m above the ground level, i.e., coal pile base level unless specified otherwise. Suitable number of rail scrappers shall be provided.

5.0 DUST EXTRACTION SYSTEM

Dust control system shall be of dry / wet / extraction type / dust suppression type to suit at the application point.

The BOO Processor shall require providing suitable dust control system at suitable location for Coal/Fluxant screening, crushing, coal/Fluxant crushing and feeding system etc.

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The dust control system to be furnished under this specification is required for control of fugitive dust emissions from dust generation points such as transfer points, feeders, crushers etc. Dust control is achieved by dust suppression/extraction system.

Dust control system which shall not allow a dust concentration in the ambient air inside the buildings more than acceptable limits as per the approved guidelines or any internationally recognized hygienic Standards/Codes.

6.0 ASH & SLAG HANDLING SYSTEM

Fly Ash/ Bottom Ash: The Fly ash generated in Gasifier and Steam Generation plant and the Bottom Ash generated in the Steam Generation Plant shall be transported to respective Fly Ash and Bed Ash Silo. This shall be further transported in slurry form to emergency Ash Pond within plant B.L. with the help of Pump in case fly ash/ bed ash is not transported outside the Plant B.L. from silo.

Slag, wherever applicable: The slag produced in the Gasifier shall be transported to emergency Ash pond (within Plant B.L.) with the help of Pipe/ Belt conveyors/ dumpers etc.

Fly ash/ Bed ash/ slag shall be further transported from Ash Silo/ emergency Ash pond for utilization outside plant B.L. Necessary arrangement for ash/ slag transportation shall be in the scope of BOO Processor.



7.0 ROAD WEIGH BRIDGE

Measurement of coal shall be done through weigh bridge arrangement.

- Two (2) Nos. Electronic type road Weigh Bridge (Pitless type) of 80 MT capacity each of platform size minimum 18m x 4m (approx) each with boom barrier along with weigh bridge cabin facility shall be provided for weight recording and transfer of urea dispatched via road.
- Weigh bridge shall complete with all parts/mechanism including weighbridge platform, load cells, indicator, barriers, safety devices, Lighting & Surge Protection devices etc.
- Load cells and digitizers of electronic weighbridge shall be very robust in construction and suitable for urea environment. Load cell shall be with high protection class & with lightning protection. Load cells should have self diagnostics capabilities to identify problems and predict failures before it occurs.

- Broad specification of load cell is as under –

Hermetically sealed and Lightening protected
Protection :- min. IP 68
Safe load:- 150% of nominal capacity
Ultimate load:- 300% of nominal capacity
Load cell Accuracy :- +/- 0.01% of Nominal capacity
Combined error:- ±0.03%
Covering:- Stainless Steel.

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- Weigh bridge cabin (BOO Processor shall provide space for min 4 persons of SECL sitting arrangement) shall be provided with necessary Desktop computer with compatible control software as required, printer, paper, consumables for six (6) months of operation and associated instrumentation & Control system.

8.0 ACCESS TO MACHINERY

- Special attention shall be given in providing adequate access to all machinery for safe operation / maintenance and cleaning purpose.
- Gravity take-up of conveyor shall be provided with the platform and access ladder for maintenance.
- Provision shall be made for lifting out and replacing equipment's such as motors, gearboxes, conveyor pulleys, idlers parts and other heavy machinery in each Transfer Towers with the help of electric hoist. Capacity of the hoist would be based on the weight of the heaviest part to be lifted.

NOTE: - BOO Processor to strictly follow licensor's specification for the mentioned items of Coal Gasification Plant.

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SECTION – 3.1

SAFETY, HEALTH AND ENVIRONMENT



PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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BOO PROCESSOR shall abide by all Safety, Health and Environment rules applicable for SECL Complex during construction and subsequent operation of the Ammonia plant. BOO PROCESSOR shall also ensure compliance to all Safety, Health and Environment rules including (but not limited to) following points.

1.0 FIRE AND SECURITY REGULATIONS:

1.1 No Smoking:



- 1.1.1 BOO PROCESSOR shall instruct his personnel/ employees NOT TO SMOKE except at the prescribed smoking booths as provided by the SECL. BOO PROCESSOR shall be responsible for all defaults of his workers in this regard.
- 1.1.2 Carrying of matchboxes, lighters or any other means of ignition is strictly prohibited inside the SECL premises.
- 1.1.3 Any BOO PROCESSOR's employee who is found smoking or in the possession of match box or lighter or any other means of ignition in a prohibited area will be turned out from the premises of the SECL. Suitable action as decided by the management will also be taken.

1.2 SECL Area:

- 1.2.1 BOO PROCESSOR and his employee shall observe all fire & safety regulations of the SECL and shall so organize his work as not to interfere with the running of the SECL in any manner whatsoever. BOO PROCESSOR shall ensure that their staff/ workmen carry with them valid passes for proper identification inside the battery area.
- 1.2.2 The complete job is to be carried out within SECL complex. BOO PROCESSOR shall take all necessary safety precautions and obtain required certificates/ fire permits / safety/ work permits etc. from the competent authority before carrying out any hot works during the execution of the entire works covered by this tender. Safety barricade wherever necessary are to be put up at his own cost.
- 1.2.3 BOO PROCESSOR's employees shall abide by the Fire & Safety rules and regulations of SECL.
- 1.2.4 BOO PROCESSOR shall make his own arrangements of Gate Pass with photo for his employees as prescribed and instructed by the Security dept. i.e. CISF, SECL at his own cost, each gate pass has to be endorsed by the Security Officer of the SECL before the pass be used by any employee. In case of termination of the service of any of his employee during the contractual period, BOO PROCESSOR shall have to surrender the Gate Pass issued to the employees to the Security Dept. At the end of the project all the gate passes endorsed by the Security Dept. for use of BOO PROCESSOR's employees shall have to be returned.
- 1.2.5 For any damage done by BOO PROCESSOR's employees to the existing facilities of the SECL, BOO PROCESSOR shall be solely responsible to make good as per the instruction of the Engineer-in-Charge or full satisfaction of the SECL belt for his workman at his own cost.
- 1.2.6 For any hazardous/ overhead work BOO PROCESSOR has to arrange necessary safety belt for his workman at his own cost.

2.0 SAFETY REGULATIONS:

The following is a list of Rules and Regulations which must be observed by BOO PROCESSOR working in the SECL premises.



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2.1 Safety:

- 2.1.1 BOO PROCESSOR shall ensure that all labourers/ supervisor engaged by him will carry I-Card/ Photo Pass displayed on their person during working hours at the work place in/ outside SECL for their easy identification.
- 2.1.2 BOO PROCESSOR shall ensure that their supervisors must undergo Fire & Safety Training & subsequent Test at Fire Station before starting the job. BOO PROCESSOR must disclose to CISF the name of supervisors and arrange safety training at GR Fire Station, before obtaining a gate pass. CISF will issue the gate pass meant for supervisor, only after getting the confirmation from Fire & Safety. It is the duty of supervisor to train his work force in Fire & Safety on regular basis. The violation of this will be viewed seriously.
- 2.1.3 BOO PROCESSOR shall ensure that their workmen/ supervisors shall not move to other places other than their work premises without proper permission/ authorization.
- 2.1.4 BOO PROCESSOR shall ensure verification of antecedents of the labourers/ supervisors from Polices / Sarpanch/ other officials before they are engaged by him. No person having adverse antecedent shall be employed by BOO PROCESSOR. BOO PROCESSOR shall be held responsible for all the acts carried out by his workmen.
- 2.1.5 BOO PROCESSOR shall ensure that the workmen working with him are given do's and don'ts for strict adherence.
- 2.1.6 BOO PROCESSOR/ his workmen/ supervisor shall fully adhere to the security instructions issued by Management from time to time.
- 2.1.7 Persons below the age of 18 (Eighteen) will not be employed in any part of the SECL.
- 2.1.8. The weekly safety report should be submitted in the prescribed format without fail.

2.2 Work Permit:

- 2.2.1 Any work carried out within the SECL premises must be covered by a work permit issued by the concerned department or area-in-charge. In addition, a clearance must be obtained from the concerned department's officer or supervisor prior to commencement of any job. A fire permit is required for all the hot jobs.
- 2.2.2. Any work involving open flames and spark such as welding, gas cutting, soldering, grinding, concrete breaking, use of hurricane lamps and internal combustion driven vehicles/equipment.
- 2.2.3. Sand blasting, trucks, Jeeps, Cranes, Lifts, Cars or any kind of vehicle/equipment driven by an internal combustion engine or by batteries.
- 2.2.4. Use of gasoline, diesel or electrical power engines or tools. 2.2.5. Entry of vehicles inside battery limits of process area, within tank dykes and adjacent to pump houses / API separator and loading gantries.
- 2.2.6. Open fire such as burning of wood, coal etc. is strictly prohibited inside the Battery area.

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2.2.7. While carrying out the hot job, BOO PROCESSOR and his workmen must ensure the following safety measures and job should not be carried out without these:

- Valid hot job permit.
- Availability of Tested and proper Fire Extinguisher at the work places.
- Provision of running fire water hose at the work place.

2.2.8. All Flammable / combustible materials should either be removed from the work place or should be properly protected.

2.3 Safety Permits:

2.3.1 BOO PROCESSOR must obtain the safety permit from the Area In-charge of the concerned department, prior to the starting of the job as stated below.

2.3.2. Entry of personnel into any process area of storage facilities that has been in service etc. Entry into hazardous areas, Dosing area

or any other area where chemicals and hazardous materials are either in use or kept as store.

2.4 Vessels Entry Permit:

2.4.1 BOO PROCESSOR must obtain this permit prior to the start up of the job, column, vessels, tanks or any enclosed area where the chemicals and hazardous materials is either used or stores into it. It is BOO PROCESSOR's duty to ensure daily that the above permits are obtained from the area-in-charge till the completion of the job. All precautionary points stipulated in the permit and instruction of the Area In charge/Engineer In charge must be strictly complied with.

2.4.2 BOO PROCESSOR shall ensure the following at the time of entry into the vessels:

- Standby persons
- Provision of exhaust fan
- Use of breathing apparatus

2.5 Excavation:



2.5.1 All the areas where the existing grading is disturbed in the course of work by BOO PROCESSOR shall be made good by him to the full satisfaction of the Engineer-in-Charge.

2.5.2. This job must be executed only after obtaining a valid excavation permit for the particular area where the excavation is required to be done. The permit shall be considered valid only when it is signed by the authorized person of SECL in addition to other signatories like F&S officer, Civil Engineer, the electrical section and supervising Engineer-in-Charge of the particular area where the excavation is to be carried out.

2.5.3. The company reserves the right to cancel a permit without assigning any reasons. When called upon to stop the work by any personnel of the company, BOO PROCESSOR shall immediately cease to continue the work. Before re-commencement, a fresh permit must be obtained.

2.5.4. If any excavation job is being done at the depth, then following precaution needs to be taken up.

- BOO PROCESSOR has to obtain the permit "Working at Depth" duly authorized by competent authorities.

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- Proper barricading shall be provided at all sides of the opening.
- Excavation shall be done with adequate slop instead of vertical to avoid collapse of wall.
- Proper shoring / strutting shall be provided without fail.
- At least two no. of escape ladders shall be provided at two sides.
- Adequate illumination shall be provided as per site requirement.
- Minimum person shall be kept inside the pit. All idle workers should be removed from there.
- Heavy machinery like crane etc. should not be used near the pit.

2.6 Working at Heights:

2.6.1 While working at height, more than 2 meters from floor level, following safety precautions has to be followed.



- BOO PROCESSOR has to obtain the permit for working at height duly approved by competent authority.
- Proper type of scaffolding / platform /ladder should be made to facilitate the job at height. Minimum 2 nos. of ladders should be provided at opposite sides.
- Use of bamboo scaffolding is strictly prohibited inside the Battery area. Only steel scaffolding shall be used for work inside the SECL premises. The steel scaffolding material and its erection shall be done as per relevant IS specification.
- BOO PROCESSOR shall ensure the use of safety belts by the person who is working at heights. Safety belt to be used should be of good quality (IS marked) and shall be hooked up with firm support.
- Safety nets also to be used as per site conditions.
- Before starting the job, scaffolding shall be inspected by competent person and a record of the same shall be kept at site.

2.7 Working with Electrical System:

2.7.1 BOO PROCESSOR should have valid electrical license for working in the state of West Bengal. BOO PROCESSOR shall furnish a copy of the same to Engineer-in-Charge before commencement of any work pertaining to Electrical System. In any case, no work shall be permitted to be executed at site without a valid Electrical License, and the decision of the Engineer-in-charge in this regard shall be final and binding and no claim / compensation whatsoever shall entertain on this account.

2.7.2 While working on electrical system, BOO PROCESSOR and his workmen shall ensure that the following safety measures are in place:

- Proper & valid Electrical line clearance is obtained for the equipment.
- The cables are properly insulated and are without any temporary joint.
- All Flammable / combustible materials should either be removed from the work place or should be properly protected.
- Suitable Earth leakage Circuit Breaker (ELCB) is provided for incoming and all outgoing feeders.

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- Proper earthing is provided to distribution board and other electrical equipments like welding machines & grinding machines etc.
- Pipe sleeves are provided for road crossings of temporary cables laid by BOO PROCESSOR for his work.
- The power connection should not be overloaded and suitable overload protection should be provided.
- The tools used by BOO PROCESSOR personnel should be properly insulated and in good condition
- The grinding machine & other power tools should have proper guard.

2.8 Electrical Apparatus:



- 2.8.1 BOO PROCESSOR should ensure that the portable electrical equipment like grinding machine, drilling machine etc. is in healthy condition. BOO PROCESSOR should take all precautionary safety action, as providing of earth leakage circuit breakers for their portable electric machines. In lieu of the above, double insulated portable equipment may be used.
- 2.8.2 All portable electrical apparatus shall be regularly examined, tested and maintained to ensure the apparatus and leads are in good order.
- 2.8.3 Ensure that all portable appliances are provided with 3 pin plug and socket connections and that all the metallic parts of the apparatus are effectively earthed. All loose wiring such as flexible cables for portable lamps, tools and trailing cables and other portable and transportable apparatus shall be tested regularly at frequent intervals to ensure safety.
- 2.8.4 No dry battery or accumulator, type of electric hand lamp or torch which is not of flameproof safety type shall be taken inside the SECL premises.

2.9 Use of Company Facilities:

Under no condition shall any BOO PROCESSOR personnel temper with or use any property belonging to the SECL without obtaining prior sanction from the supervisor of area concerned.

2.10 Radiography:

- 2.10.1 The radiography agency employed by BOO PROCESSOR shall be duly approved by BARC.
- 2.10.2. Specific approval from the Engineer-in-charge for the radiography agency shall be obtained by BOO PROCESSOR prior to any radiography work.
- 2.10.3 BOO PROCESSOR shall ensure the following safety precautions for the work to be done by the radiography agency.
- The radiography work shall be carried out under the supervision & guidelines of their site in-charge duly approved by BARC.
 - As far as possible, field radiography should be done only during night time when there is little or no occupancy around.

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- Field radiography during day time may be permitted with due permission of EIC when the occupancy around is minimum i.e. during lunch interval or on holidays.
- A suitable area around the radiography job should necessarily be cordoned off, so that the radiation level outside the area does not exceed the permissible radiation level. The radiation level along the cordon should be monitored by suitable & calibrated survey meter.
- Radiation warning symbol during day time & red warning light during the night to be prominently displayed while carrying the radiography work.
- The concerned radiographer shall remain physically present outside the cordoned area during exposure.

2.11 Temporary Structure/ Fixtures:

2.11.1 Before erecting temporary shelters like sheds or tents anywhere within the SECL premises, written permission of the concerned authorities must be obtained.

2.11.2 Temporary fixtures like sheds, tents, etc. shall be erected in conformity with normal safety standards. Thatched roof to such fixtures will not be permitted.

2.11.3 Temporary piping, hose connections and electrical wiring must be laid in such manner that they do not cause tripping or hitting hazard.

2.11.4 Temporary sheds can be constructed only for the storing of the material / site office. It should not be used for any other purpose.

2.11.5 Following information shall be clearly written on the shed.

- Name of BOO PROCESSOR
- Work Order No.
- Working under the Department
- Name of the Engineer-in-charge.
- Permit No. & it's validity period.

The shed shall be made of safe construction material and good aesthetic view. The shed shall be made strictly at the authorized location and size.



2.11.6 All windows shall be either of wire mesh or glass.

2.11.7 After completion of the job, shed must be demolished within 10 days and area must be cleaned.

2.11.8 All precautions should be taken to ensure that any temporary electrical wiring used within the SECL premises will not cause spark or shock.

2.12 Compressed Gas Cylinders:

2.12.1 Compressed gas cylinders should be used in upright position. They must be firmly located on the ground or to a sturdy stand and the cylinder should be chained to prevent accidental fall.

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2.12.2 Rolling or throwing of cylinders is strictly prohibited. Cylinders shall be handled carefully and transported through hand trolleys. 2.12.3 Cylinders shall be stacked properly. Empty cylinders shall be stacked separately and filled cylinders separately. After completion of job, all cylinders must be removed.

2.13 House Keeping:

2.13.1 Good Housekeeping must be practiced by BOO PROCESSOR personnel at all times while within the plant. During and after completion of the work, they are to ensure that their work area is kept clean and tidy. Materials and equipment should be stored in a safe and orderly manner so that they will not block exits to roads, buildings, aisles, passage and approach to fire fighting equipment such as fire hydrants, fire hose and fire extinguishers or area where emergency safety showers, electrical switch panels and switch rooms are located.

2.13.2 The work / construction sites are to be cleaned daily and all debris / scrap generated is to be kept at the designated place only every day by BOO PROCESSOR as directed by the Engineer-In-charge. The scrap / debris so generated shall be disposed off to the designated places once a week as per the direction of Engineer-in-charge.

2.13.3 A job will not be considered completed until all surplus material, scrape and debris / rubbish are removed from the job site.

2.13.4 In case BOO PROCESSOR does not clear the area within 5 days of completion of work, the same shall be got done by SECL and recoveries shall be made from the bills of BOO PROCESSOR at double the rate at which SECL has got it done.

2.13.5 Any failure by BOO PROCESSOR in maintaining good house-keeping / clearing the site as above shall be recorded in the performance report of BOO PROCESSOR.



2.13.6 At all work sites, BOO PROCESSOR have to display a board containing following information:

- Name of BOO PROCESSOR
- Name of the work
- Work Order No.
- Job site warning instruction
- Emergency Telephone Number
- Do's and don'ts on safety and security
- Working under the Department
- SECL site in-charge name
- Permit No. & Validity period.

2.13.7 BOO PROCESSOR has to maintain the following at job site:

- First Aid Box with required medicines
- Safety Register
- Injury record
- Records of Weekly Staff safety meeting.
- Record for Safety briefing / Training at site by BOO PROCESSOR.

2.14 Personal Protective Equipment:

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2.14.1 For the safe conduct of any job, BOO PROCESSOR has to arrange personnel protective equipments for his personnel as per requirement. The equipment's shall be approved type, good condition and adequate numbers. Use of PPE such as Safety helmets, safety shoes, double harness safety belt, hearing aids, hand gloves, safety aprons, safety goggles, etc, is a must. SECL shall not provide any personal protective equipment. However, in certain cases, personal protective equipment maintained by the SECL will be made available for this purpose in which event such equipments shall be returned to the authorities in good condition.

2.14.2 BOO PROCESSOR shall arrange all Non-Respiratory Type of Personal Protective Equipment (PPE) (e.g. Safety Goggles, Welding Helmets, Belts etc.) at their own cost and shall ensure use of these PPE by their workmen/ personnel during execution of the job as per Fire & Safety Rules and Regulations of the SECL and as directed by the Site Engineer-in-Charge. Fire & Safety Dept. may be contacted for any clarification on Safety Regulations.

2.14.3 Special precautions and personal protection shall be taken as per SECL Safety Regulation during the following jobs:

- (i) Handling of Hazardous Chemicals, gases and Materials etc. (e.g. TEL, Acids, Chlorine, Ammonia, Pyrophoric Iron etc.)
- (ii) Working in presence of Suspended Solids (e.g. Catalyst, Refractory, Sand, Dust etc.)
- (iii) Cleaning / Maintenance of equipments in Lead/ Sulphur/ Phenol rich Hydrocarbon service.
- (iv) Cleaning/ handling of oily sludge.
- (v) Welding/ Grinding/ Gas cutting jobs.
- (vi) Radiography of Mechanical jobs.

2.15 Clothing & Personal Protection:

BOO PROCESSOR Personnel shall not wear loose clothing while working around moving or rotating machinery and equipment, and must wear helmets and safety shoes while working in SECL area.

2.16 Unsafe Practices:



Any unsafe practices in disregard of normal safe working practices by BOO PROCESSOR personnel when pointed out by company personnel shall be immediately corrected.

2.17 Personal Conduct:

2.17.1 Working under influence of alcohol/ narcotics and entering SECL premises while in the influence of alcohol/ narcotics is strictly forbidden. BOO PROCESSOR should ensure compliance of above by him and all his workmen.

2.17.2 Horseplay:

- (i) Fooling on the job, mock fighting within the SECL premises will not be tolerated.
- (ii) Gambling within the SECL premises is strictly forbidden.

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- (iii) Entering the SECL premises while in possession of weapons such as knives etc. is prohibited.
- (iv) BOO PROCESSOR personnel shall not pick up quarrel or get into arguments with SECL personnel or act in any manner, which is in violation of plant discipline. In case of any misunderstanding, such problems should be referred to appropriate SECL personnel.

2.18 Driving of Motor Vehicles:

2.18.1 BOO PROCESSOR shall ensure that all State traffic rules and regulations are complied with while motor vehicles are driven inside the SECL premises. In addition, the following points are also outlined for compliance:

- (i) Speed Limit: Speed limit within the SECL premises is 25 kmph except around the process area where the speed limit is 20 kmph. In any case, vehicle drivers should take cognizance of road, weather and vehicle condition and adjust their driving accordingly. All vehicles must be mechanically sound and have an efficient exhaust with approved spark / flame arrestor, silencer, horn, breakers and fuel cap.
- (ii) Parking: Park vehicles only in approved area. Vehicles must be parked in such manner that they will not move while unattended. As a general rule, vehicles should not be parked at road bends; in front of fire equipment sheds and fire fighting equipment thereby blocking access to them.
- (iii) No vehicles should enter into any operating area without valid fire permit followed by a safety clearance from the area-in-charge (this includes process areas, tank farms and loading racks).
- (iv) Vehicles driven inside the SECL premises should have effective brakes horns, lights, mufflers, flame arrestors etc.
- (v) Vehicles shall carry only the number of passengers or weight of load it is authorized to carry as per law. Loads carried in trucks shall be properly secured so that they will not accidentally fall off while vehicle is in motion.
- (vi) Tractors and trucks should not be used for transporting personnel.
- (vii) Vehicle drivers shall always check overhead and side clearance while driving vehicles.
- (viii) Any kind of repair work on BOO PROCESSOR's vehicle is not allowed inside the Battery area.
- (ix) BOO PROCESSORS shall prominently display the name of their company on all the vehicles including tractor trolleys, trucks, open jeeps, cranes which are allowed by the Engineer-in-charge to enter inside the SECL premises for carrying out the job. The display board shall be put on front and rear side of each of the vehicle.
- (x) Hand cart, tractor-trolley etc should also bear the name of BOO PROCESSOR clearly.
- (xi) Only open type of vehicles like jeep etc are allowed inside the SECL premises having fitted with approved spark arrestor.

2.19 Use of Heavy Equipment:

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2.19.1 If hoists, cranes, derrick, mixer machine, pumps etc. are used by BOO PROCESSOR, the following are to be ensured by BOO PROCESSOR and his workmen:

- Testing of crane for its capacity.
- Inspection & maintenance logs
- Crane operation logs
- Safety latch is provided on the hooks.
- The area is notified through display of Sign boards/ barricades
- Over head power cables is removed or kept at a safe distance.
- The exhaust of machines should have a proper flame arrester
- Carrying material by hydra inside SECL.
- No change of boom length beyond permissible limit.

2.20 Fire Protection Equipment:

2.20.1 SECL will provide fire protection equipment wherever it is required. BOO PROCESSOR personnel who are working on such jobs will be instructed by the concerned department about the operation of such standby fire protection equipment. In the event of an accidental fire, it is expected of such personnel to make efforts to extinguish the fire with the standby equipment made available and BOO PROCESSOR personnel should immediately get in touch with any the SECL personnel available or break the nearest fire alarm point glass. In all cases, accidental fires shall be reported to the supervisor of the area concerned.

2.20.2 A work permit must be obtained prior to BOO PROCESSOR personnel drawing water from the SECL fire water loop.

2.20.3 All efforts should be made by BOO PROCESSOR personnel to prevent occurrence of any unwanted fire, Gasoline driven engines, trucks, tractors etc. shall not be filled with fuel while the motor is still running.

2.20.4 Gasoline, naphtha, benzene or toluene must not be used as a cleaning agency or solvent.



2.21 Report on Accidents:

2.21.1 All accidents such as personal injuries sustained by BOO PROCESSOR personnel and damages to vehicle and property, no matter how slight they are, shall be immediately reported to the engineer-in-charge / RSM & Fire & Safety in writing. It is the responsibility of BOO PROCESSOR to fulfil all legal formalities.

2.21.2 Medical treatment for injured BOO PROCESSOR personnel will be entirely the responsibility of BOO PROCESSORS. However, if required, emergency first aid treatment may be given by SECL hospital.

2.21.3 Any questions or doubts on the safety regulations enumerated in this tender or the generally accepted safety working practices may be clarified with the concerned department of safety section.

2.22 The following actions shall be taken by BOO PROCESSOR and his employees/ workmen about bombs, unattended baggage / objects lining in secluded places in the plant:

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2.22.1 On noticing any bomb/ unattended baggage or object lying in the plant area, they should immediately inform the CISF control room.

2.22.2 They should not touch the object or try to open the baggage or fiddle with the wires or battery if found attached to the object.

2.22.3 They should move away to a safety distance of approximate 100 m without creating any panic.

2.22.4 In case of unattended baggage, they should help CISF personnel in identifying the claimant.

2.22.5 They should not move to the area unless clearance is given by security personnel.

2.23 Do's and Don'ts – Safety:

Do's and Don'ts in case of Bomb/ Unattended baggage's lying in secluded places in the plant:

Do's

- Do's on noticing any bomb or CISF unattended baggage, inform control room by quickest possible means. Move away from the bomb/ unattended baggage.
- Help security personnel in identifying unattended baggage.
- Move back to your place of work after clearance has been given.

Don'ts



- Do not touch the bomb/ unattended baggage.
- Do not lift any attended baggage.
- Do not go very close to the object.
- Do not create panic.
- Do not fiddle with wires or battery if found attached with any object.
- Do not open any unattended baggage.
- Do not try to defuse any bomb of explosive material.

3.0 PENALTIES IN CASE OF NON-COMPLIANCE TO SAFETY RULES AND REGULATIONS:

3.1 BOO PROCESSOR has to follow all Safety, Health and Environment rules & regulations of the SECL. In case of non-compliance of any of these rules and regulations by BOO PROCESSOR or his employees, BOO PROCESSOR shall be held responsible. If any violation or non-fulfilment of these Safety, Health and Environment rules and regulation is observed by SECL authorities during checking at any time, a penalty of Rs. 5000.00 (Rs. Five Thousand Only) shall be imposed on BOO PROCESSOR for each occasion of noncompliance to these rules and regulations by him or his employees. The decision of SECL authorities shall be final and binding on to BOO PROCESSOR in this regard.

4.0 COMPENSATION IN CASE OF ACCIDENTS:

In case of any accidents/injury of a BOO PROCESSOR's workmen, BOO PROCESSOR shall pay a suitable compensation (subjected to the minimum compensation as mentioned below) to the affected person / his family members in the presence of Engineer-in-charge and in consultation with Chief Medical Officer of the SECL. The said compensation shall depend on the seriousness of injury, etc, and shall be in addition to the hospitalization /treatment charges and Group Insurance Amount

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payable to the effected person. The following are the minimum compensation shall be paid to the affected person / his family as stated above:



- 4.1 In case of fatal accidents: Rs. One Lakh within 5 days of accident.
- 4.2 In case of loss of both the limbs (hand/legs/eyes/ears): Rs.50,000/- (Rs. Fifty Thousand) within 1 week.
- 4.3 In case of loss of one limb (hand / legs/eyes/ ears): Rs.25,000/- (Rs. Twenty Five Thousand) within 1 week.
- 4.4 In case of any injury not specified above, Rs.1000/- (Rs. One Thousand) to Rs.5000/- (Rs. Five Thousand) as directed by Engineer-in-charge within 1week

5.0 EMERGENCY RESPONSE PLAN:

- 5.1 BOO PROCESSOR has to adhere and respond to the on-site emergency plan and co-ordinate with the site main controller of SECL.
- 5.2 BOO PROCESSOR personnel shall stop their work and proceed to a safe area in the event an emergency arises in the area where they are working like, in case of fire, oil spillage, power failure etc. Before re-commencement of the job they should obtain clearance of supervisor of area involved.
- 5.3 In view of the hazards associated with Hydrocarbon processing, on site emergency plan has been prepared in the event of major accident occurring on site. The plan envisages handling emergency situation, which shall be communicated through siren, based on nature of emergency as mentioned below.
- 5.4 In case of major emergency, it is the responsibility of BOO PROCESSOR to headcount his personnel and take them out with the help of concerned SECL Co-ordinator. BOO PROCESSOR must confirm the safe evacuation of his personnel to SECL Coordinator. In case of any missing person, it must be brought into the notice of SECL authorities immediately.

TYPES OF COMMUNICATION, IN CASE OF EMERGENCY

TYPE OF EMERGENCY	SIREN
Air Raid Warning	Siren for two minutes on a wailing note or intermittent blasts each for 4 sec. duration followed by 4 sec. silence.
All clear or Raiders Passed Warning	Continuous siren for 2 min. at steady pitch
Small fire	No siren
Major fire	Wailing type siren: 3 min. for 30 sec. with an interval of 15 sec. in between (Total Duration: 2 min.)
Disaster	Same type of siren as in the case of major fire except that it will be sounded three times at an interval of two minutes.
All clear	Straight siren for two minutes.
Siren testing	Straight siren for two minutes (daily at 0815 hrs). First Monday of every month, all sirens will be tested in all the modes.

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5.5 Evacuation and Sheltering:

In case of emergency/major accident or disaster, Muster points shall be identified for assembling of people for head counting /transportation to a safe place. BOO PROCESSOR site-in-charge shall coordinate with Site Main Controller for sheltering and evacuation and advise his workmen to rush to the identified locations of muster points.

6.0 ENVIRONMENTAL MANAGEMENT SYSTEM:



- 6.1 BOO PROCESSOR shall inculcate environmental awareness among their workmen/personnel and strive for enhancement of systems and skills for minimizing the environmental impact out of their activities/ services.
- 6.2 BOO PROCESSOR shall avoid wastage of water, compressed Air and Steam supplied to them from owner's source of supply for execution of the job and closes the supply valves properly while not in a use.
- 6.3 BOO PROCESSOR shall ensure that while carrying out Modification/ Repair/ Replacement jobs of any equipment of pipeline, the spillage of Hydrocarbon Oily sludge etc. are cleaned and routed to nearby OWS, at regular interval as well as after completion of jobs. BOO PROCESSOR must ensure that the spillage of hydro-carbon oily sludge etc. is not drained in Storm water channel or open channel.
- 6.4 Before attending any blinding/ de-blinding jobs, all tools, tackles and spares shall be kept ready at site in order to minimize Hydrocarbon spillage.
- 6.5 BOO PROCESSOR shall clear and level the job-site and remove all metallic and non-metallic surplus materials, scrap and other waste materials generated out of his job, from time to time as well as after completion of job to a specific location as per Engineer-in-charge.
- 6.6 BOO PROCESSOR shall ensure to avoid idle running of all electrical equipments e.g. welding machines etc. used for execution of the job.
- 6.7 BOO PROCESSOR's vehicles, trucks, tractor, cranes and other portable equipments. Air Compressor, DG Set, Dewatering pumps etc. used inside SECL premises (where Hydrocarbon is used as fuel) for execution of the job must be mechanically sound and have an approved spark arrester and have exhaust complying pollution norms. Idle running of those vehicles and equipments shall be avoided.

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SECTION – 3.2



QUALITY ASSURANCE PLAN

0	17.01.2022	17.01.2022	ISSUED FOR TENDER	HP	HP	RRK
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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1.0 QUALITY ASSURANCE/ QUALITY CONTROL:

All work/services to be performed by BOO Processor under this contract shall be of specified/ approved quality and BOO PROCESSOR shall have a QUALITY ASSURANCE/ QUALITY CONTROL (QA/QC) system during the performance of various activities such as engineering, procurement, tendering, construction etc. Review of the activities by OWNER/ PMC shall not however, dilute the responsibility of BOO Processor for maintaining quality.

1.1 QA/QC Procedure:

BOO Processor shall submit the QA/ QC Procedure to be adopted for the engineering procurement and construction activities of the PLANT for review to OWNER / PMC. The QA/ QC procedure shall cover all activities to be performed by BOO Processor/ Contractor/ Vendors. Some of the important activities & procedures to be evolved are listed below:

a) General Document control:

- Coordination
- Non-conformance report of sub-Bidders.
- Output identification and traceability
- QA system review



b) Residual Basic Engineering:

- Residual Basic Engineering & detail engineering performing, checking, review and approval.
- Drafting - performing, checking, review & approval.
- Engineering for procurement.

c) Procurement / Inspection; Incoming material control Welding qualification and repair:

- Manufacturing/fabrication process control.
- Applicable non-destructive examination.
- Coating/lining.
- Preservation.
- Post-weld heat treatment wherever applicable Packaging and dispatch control
- Transportation
- Inspection/Test plans for all specific and mandatory tests (as per drawings and codes) with clear indication of Witness, Verification and Hold points.



d) Construction Pre-construction activities viz., incoming material all control receipt control etc. Job construction, Welding qualification and repair Inspection/ Test Plans for all specified and tests (as per drawing & codes).with clear indication of witness, Verification and Hold points.

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BOO Processor shall prepare Construction QA Plans for review of the OWNER/ PMC and the same shall cover as minimum the areas as under, and shall confirm their compliance to approved codes/ standards/ specifications, etc. Site preparation Tie-ins Buildings and structures Incorporation of all witness tests/ hold points of the construction work Clean-up testing Instrumentation installation and construction. As a part of Construction & Quality Assurance BOO Processor shall also comply with the following activities:

- Stage wise inspection of quality of work as per approved QA plan and contract specifications.
- Develop welding procedures and welders qualification procedures for their work.
- Ensure compliance of various statutory rules, regulations and safety measures and to arrange and co-ordinate site inspection, testing etc. as required under local- statutory rules and regulations prevalent in India.
- Take all necessary precautions to protect construction work and material from damage by climate, outside elements and construction activities.
- Ensure that materials used are in accordance with the drawings and Project specification.
- Review safety procedures prepared by BOO Processor for compliance with applicable codes, regulations and OWNER's requirements.
- Prepare schemes for heavy/ critical equipment's erection/ lifts/ rigging before and submit the same for OWNER/ PMC review.
- Ensure alignment (hot/cold) of all critical rotary equipment/machinery and their up-keep/ maintenance as per supplier's recommendations.
- Perform house-keeping activities which include maintaining sanitary facilities, sweeping clean-up, removal of excess materials/ temporary facilities, scaffolding, as necessary.
- Conduct periodic Quality/Technical Audits for ensuring quality and conformance with the Contract.
- To take immediate appropriate corrective actions as & when such discrepancy arises to fulfill quality, safety obligations. All inspection and Test Plans are required to be submitted for finalization and approval to PMC immediately after award of contract.

The QA/ QC Procedure shall also include Quality Plans, mostly in tabular formats defining the specific quality practices and flow of every identifiable activity of a discipline. All disciplines concerned with the performance of work are to be covered. These quality Plans should indicate the following:

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1.2 For Design and Engineering:

Activity description Preparation, checking, review and approval requirements Code of conformance (applicable standard specification number) Applicable procedure number Q A. data/ records produced.

1.2 For Procurement & Construction:

- Activity description Procedure number/Inspection and Test Plan number Conformance Code Testing and Inspection Code.

The QA/ QC Procedure together with Quality Plans will be discussed during kick-off meeting and Hold, Witness and Verification points and OWNER/ PMC / Licensor review/ audit requirements will be finalized between BOO Processor and OWNER/ PMC .

2.0 IMPLEMENTATION:

During the performance of the contract, BOO Processor shall Implement approved Quality Assurance programme including but not limited to:

2.1 Performance of internal quality audits, preparation of audit reports and submission for review of OWNER/ PMC. BOO Processor shall evolve a comprehensive system of planned and documented audit to verify whether various performed activities comply with detailed procedures, specifications, guidelines etc. and to determine the effectiveness of QUALITY SYSTEM. Scope of such internal audits shall be furnished to OWNER/ PMC for review. Verification documents shall be generated during audit and submitted periodically to OWNER/ PMC for review. Throughout all stages of the scope of contract, BOO Processor's procedures, documents, activities, products & services and those of his sub-bidder's shall be subject to OWNER/ PMC review / approval. Such surveillance and audit are optional and shall not relieve BOO Processor of his contractual obligations and liabilities.



- Generation of Q. A. records (mostly inspection and test plans) as per Quality Plan and submission for review by OWNER/ PMC. BOO Processor shall submit all quality records (generated during activity execution) and audit results on well laid formats/ performance for OWNER/ PMC- review. The rights of such review are reserved by OWNER/ PMC. OWNER/ PMC may review it in full, parts or selectively. However, complete correctness of the Q. A. records shall be the sole responsibility of BOO Processor irrespective of its review by OWNER/ PMC.

2.2 Facilitate OWNER/ PMC in the quality audit at works.

2.3 Certify "QA Programme" documents of BOO Processor and submit to OWNER/ PMC - for review.

2.4 Carry out audits/inspection at BOO Processor works as per approved Q. A. programme and submit the reports for review by OWNER/ PMC.

2.5 Get similar Q. A. System implemented at his Sub-Bidder's works/office. Q .A. records

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from BOO Processor shall be reviewed and certified for compliance by BOO Processor before submitting to OWNER/ PMC for information.

- 2.6** Carry-out audits at BOO Processor office/works and submit the report to OWNER/ PMC for information.
- 2.7** Ensure that all personnel shall be assigned tasks commensurate with their qualification. Specialized workmen shall be qualified and certified.
- 2.8** Handle non-conformance brought out by internal and external sources as follows:
- Non Conformance Handling (Internal sources):
Non-conformance brought out by BOO Processor own review/ audit shall be resolved by BOO Processor himself. One level higher than those responsible to carry-out the activity shall resolve the non-conformance. Such resolution shall be in full knowledge of Departmental Manager. Corrective action shall be initiated at the earliest. Report of such resolution shall be submitted to OWNER/ PMC for information.
 - Non Conformance Handling (External sources):
Non-conformance brought out by OWNER/ PMC through any of the following shall be resolved by BOO Processor. Such corrective actions shall be submitted to OWNER/ PMC for review. However, corrective action shall be initiated at the earliest.
 - Technical Reviews
 - Q. A. Review & Surveillance
 - Inspection
 - External Audit (OWNER/ PMC)



2.9 Glossary of Terms used in the Section:

i) Hold Point:

A Point designed by OWNER/ PMC/ BOO Processor in the approved Quality Plan submitted by BOO Processor in the kick-off meeting which requires inspection/verification and acceptance by OWNER/ PMC before any further progressing is permitted. BOO Processor shall not process the activity/ item beyond a hold point without written approval by OWNER/ PMC/ BOO Processor except where prior writer permission for further processing is available.

ii) Witness Point:

An activity designated by OWNER/ PMC/ BOO Processor which requires witnessing by OWNER/ PMC/ Licensor as the activity is performed. After proper notification has been provided (notification modalities and period shall be finalized in kick-off meeting) BOO Processor is not obliged to hold further processing if OWNER/ PMC/ Licensor is not available to witness the activity or does not provide comments before the date notified. Basis of acceptance shall be as per relevant technical specification.

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iii) Verification Point:

Point where OWNER/ PMC/ Licensor Plans to audit, monitor or witness in-process activity. BOO Processor is not obliged to provide any advance written notification of these points. Basis of acceptance shall be as per relevant technical specification.

iv) Quality Surveillance:

Monitoring or making observations to verify whether or not material/items or services conform to specified requirements. Surveillance activities may include audit, inspections, witness of testing, review of Quality documentation, personnel qualifications etc.

v) Q. A. Records Documents which demonstrate achievement of required quality and verify effective operation of Quality System, viz.

- Inspection reports
- Test data/Inspection
- Test Plans
- Qualification reports
- Validation reports
- Audit report
- Material review reports
- Calibration data

vi) Quality Audit:

A systematic examination of the acts and decisions by people with respect to quality in order to independently verify or evaluate and report degree of compliance to the operational requirement of the quality programme, or the specifications or contract requirements of the product or service.

3.0 CONSTRUCTION EQUIPMENT:

BOO Processor is required to organize and mobilize the construction equipment and other tools tackles in a sequential manner to ensure that plant installation is carried out in a mechanized manner and its mechanical completion is achieved within targeted time schedule. BOO Processor shall without prejudice to his responsibility to execute and complete the work strictly as per the specifications and other laid down procedures by mechanizing the construction activities to the maximum extent by deploying all necessary construction equipment/ machinery of adequate capacities and numbers. For this purpose, BOO Processor shall deploy a Rigging team headed by a Rigging foreman reporting to Area Engineer responsible for equipment erection. Area Engineer should be well conversant with various erection techniques and shall be responsible for preparing erection schemes in accordance with the approved procedures and based on crane manuals suiting to plan layout. Area Engineer will have to foresee various other constructive activities in the surroundings while planning erection schedules including safety aspects of man and machinery also. BOO Processor will prepare erection schedule based on the overall project schedule of the Plant in phased manner with



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erection schemes of various equipments, vessels and submit to OWNER/ PMC for approval, Monitoring and control of erection schedule and erection activities will be carried out as per the approved construction procedures Or efficient working and maintenance of construction aids. BOO Processor shall establish and maintain crane Yard/ workshop equipped with regular maintenance facility for various construction aids for carrying out routine field maintenance during performance for the contract. Temporary approach road, wherever required for the movement of the Crane and other vehicles for equipment erection and transportation of material shall be properly planned and be made by BOO Processor for quick mobilization of the transportation system. The proper padding for the crane movement shall be done to avoid any delays of erection schedule. Weekly/ fortnightly maintenances shall be planned in such a way that it should not hamper the erection schedule BOO Processor shall ensure the timely augmentation of the Plant, equipment and machinery depend upon the exigencies of the requirement to meet the overall project schedule. During performances of the work, BOO Processor to ensure to keep structures, materials or equipment is adequately braced by Guys, Struts or otherwise approved means which shall be supplied and installed by BOO Processor as required till the erection works is satisfactorily completed. Such guys, shoring, bracing, strutting, planking supports etc. shall not interfere with the work of other agencies and shall not damage or cause distortion to other works executed by him or other agencies. BOO Processor to submit the construction equipment schedule along with the bid. A specimen of the same is enclosed herewith.

SI.No	ACTIVITY DESCRIPTION	DURATION IN MONTHS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
A.	TEMPORARY WORKS														
1	SITE OFFICE & MOBILISATION														
2	CONSTRUCTION POWER-DG SET														
B	CIVIL WORKS														
1															
2															
3															
C	MECHANICAL EQUIPMENT														
1															
2															
3															
D	PIPING														
1															
2															
3															
E	ELECTRICAL/ INSTRUMENTATION														



1																			
2																			
3																			
F	INSULATION/ PAINTING																		
1																			
2																			
3																			
G	MISC																		
1																			
2																			
3																			

Note: May be corrected suiting to job requirement.

4.0 CONSTRUCTION MAN POWER:

BOO Processor is required to organize and mobilize construction staff in a sequential manner to ensure that Plant installation is carried out in accordance with the S curve defined with other chapter of the Bid package. Mobilization of construction staff should be such that “S” curve based on the time schedule and progress achieved in the phased manner should match with the overall project time schedule. For this purpose, BOO Processor shall clearly indicate in his construction methodology that work shall be done departmentally or by engaging such sub-bidder or the combination of both. BOO Processor will prepare detailed methodology for the work to be carried out departmental as well as by Sub-Bidder clearly defining the scope and responsibility of main BOO Processor and Sub-Bidder.

BOO Processor proposes to engage Sub-Bidder for the erection of various activities, he must enter into an agreement of Memorandum of Understanding and same shall be furnished along with their credential with the bid. Sub-Bidder’s credential will be evaluated along with the offer. BOO Processor shall not be permitted to change the Sub-Bidder after the award of work under any circumstances. Non-compliances of the above will be strictly dealt with relevant provision(s) of the contract. During the execution of works at site, if the principal BOO Processor engages Sub-Bidders for execution of works at site as per approval obtained from OWNER/ PMC in line with contract provision(s). BOO Processor to submit the construction manpower schedule as per the specimen enclosed. All Sub-Bidders will be managed by the main BOO Processor construction staff, which will perform the duties of construction management and will administer, co-ordinate, and inspect the work of the sub-Bidder and be responsible for the Quality. BOO Processor will establish the pre-requisite for successful construction of sub-Bidder work. However, by deploying the sub-Bidder(s) as approved by OWNER/ PMC for any discipline does not absolve the principal BOO Processor for his total responsibility under the subject contract. BOO Processor to ensure that in case of Sub-contract failure to execute the works as per standards/ specifications/drawings and negligence & disobedience in carrying out any order or instruction of OWNER/ PMC will be viewed very seriously & dealt with appropriately in accordance with provision(s) of the contract. BOO Processor to submit the construction manpower schedule along with the bid.

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5.0 QUALITY ASSURANCE SYSTEM AND INSPECTION REQUIREMENTS FOR BOUGHT OUT ITEMS & DURING CONSTRUCTION:

5.1 Quality Assurance System:

Contractors are required to follow a well-documented quality assurance and quality control system covering all phases of project viz. design, engineering, procurement, installation, testing and commissioning.

5.2 Inspection Co-ordination Methodology:

Contractors are required to develop their own resources for inspection of all bought-out items supported by third party inspection services for specific cases. A typical inspection co-ordination write-up defining PMC's involvement during inspection of various equipment is enclosed herewith.

5.3 Inspection Requirement during construction:

Considering that the day to day supervision of construction activities is the responsibility of the BOO Processor, OWNER/ PMC's role during construction phase is for quality surveillance. Typical write-up on inspection requirements during construction phase is attached herewith. The BOO Processor is required to follow and comply with the above requirements during the bidding and contract execution stage.

5.4 Specification for BOO Processor's Quality Assurance System:

5.4.1 Introduction:

This specification establishes the Quality Assurance requirements to be met by BOO Processor during execution of CONTRACTED SERVICES. In case of any conflict between the requirements of this specification and other documents such as technical specifications, contract conditions etc. the BOO Processor shall notify OWNER/ PMC of all such conflicts for final resolution.

5.4.2 Scope of Work by BOO Processor:

Prior to the award of contract: The following documents shall be submitted along with the bid for evaluation:

5.4.3 Quality Policy, Quality Objective & Company Quality Manual (Apex Document) Project Quality Plans (Tentative). After the award of contract: Within 4 weeks after the award of the Contract the Contractor shall participate in the pre-start meeting with OWNER/ PMC to finalize "Project Quality Plans" as regards to the following:

- Standard practices specified by the contractor.
- Hold, Witness and Verification point.
- OWNER/ PMC's review/ audit requirements.

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SECTION – 3.3

DRAWINGS AND DOCUMENTS

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA



PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED DRAWINGS AND DOCUMENTS	PC277/E/4001/P-II/ SEC-3.3	0	
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1.0 DRAWINGS AND DOCUMENTS

This chapter details out various drawings and documents to be generated at various stages during the course of execution of the Project by BOO PROCESSOR for different project activities. Categorization of the documents / drawings for review / information / records of PMC and the review requirements of SECL/ PMC along with routing of the documents / drawings will be conveyed separately as a philosophy.

Drawings and documents to be prepared by BOO PROCESSOR under the contract is the key to the timely completion of the plant. BOO PROCESSOR to ensure that all drawings and documents to be submitted by him to SECL and/ or PMC shall be of professional quality and conforming to the contractual requirements. BOO PROCESSOR also undertakes to institute a formal drawing control system which will be documented and submitted to SECL/PMC for review or approval.

The drawings / documents are generated by BOO PROCESSOR at various stages of the project covering different activities. The drawings / documents generated will be in the category of Approval/review/information. The drawings and documents required with bid and after order are given below. The categorisation for the Drawings/docs will be informed separately. However, this will in no way relieve BOO PROCESSOR of responsibility to conform to drawings, standards, specification, codes and contractual requirements / obligations.



BOO PROCESSOR shall prepare the drawing numbering procedure and submit to SECL/PMC for review. Each Drawing submitted by BOO PROCESSOR shall be clearly marked with the name of SECL, PMC with revision number & date. It should contain the minimum following details:

1. Size of Drawing.
2. Discipline of Engineering for which the drawing is issued.
3. Discipline wise segregation of numbering sequence.

BOO PROCESSOR to note that the number corresponds to Ammonia plant and shall be prefixed to all related documents/deliverables which shall be indicated to successful BOO PROCESSOR. For drafting of Drawings Computer aided design and drafting, AutoCAD shall be used. Further, standard, approved and well established P.C. based computer programmes/software packages, available in market shall only be used by BOO PROCESSOR/his sub-bidders/vendors etc. BOO PROCESSOR shall bring out the list of all such packages in the offer for each discipline for evaluation of bid. Every time a computer aided design is submitted for review/ approval to SECL/PMC, it shall accompany with input/output data on Compact disc (CD) along with the name of the software package and operable on any system along with the requisite No. of Hard Copies.

For drawing, data sheet and all graphic works AUTOCAD release 14 and for all texts, MS Word Package 2013 or above shall only be used. Soft Copies of all calculations & Drawings shall be made available by BOO PROCESSOR for PMC review/records. Line List, Data Sheet & spread sheets shall be provided in MS Excel & all text items shall be in MS Word.

The review by the PMC/SECL shall not be construed by BOO PROCESSOR, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and drawings.

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Each drawing submitted by BOO PROCESSOR shall be clearly marked with the name of the OWNER, the unit designation, the specifications, title, the specification number and the name of the Project with revision No. and date. If standards catalogue pages are submitted the applicable items shall be indicated therein. All titles, noting,-markings and writings on the drawings shall be in English. All the dimensions should be in metric units. Upon receiving comments on Drawings and Documents by BOO PROCESSOR, the subsequent submission should give compliance report, separately on each of the comments, document-wise. Comments given by PMC/SECL to be discussed and finalized within agreed schedule.

The schedule of submission of the Drawings and Documents shall be in accordance with project plans only. The detailed list under different category, document-wise, shall be prepared by BOO PROCESSOR for approval of SECL/PMC. This activity is to be completed within one month of Fax of Intent.

Sequence of submission of drawing is essential for proper review of documents and timely completion of the project is to be adhered. In case sequence is not maintained, the documents submitted will not be reviewed by SECL/PMC and responsibility of timely execution of plant shall be to BOO PROCESSOR's accounts.



2.0 CATEGORY OF DOCUMENTS:

Sl.No	Category	Action by SECL/PMC
1	Records/ Information	BOO PROCESSOR can continue to progress with the work. This drawings or documents will be retained with SECL/PMC for information only. SECL/PMC reserves the right to advise BOO PROCESSOR of any comments at any time and BOO PROCESSOR is liable to respond to satisfy that the work being done is in accordance with the contract; deviations, if any will be BOO PROCESSOR's risk and cost.
2.0	Review	SECL/ PMC will review and advise BOO PROCESSOR of any comments on BOO PROCESSOR's Drawings/ Documents within specified schedule (i.e, 2 weeks), from date of receipt in PMC office. The review period is defined as date of receipt of documents by PMC, to date of issue of comments by PMC. This review period shall be valid only if submission of drawings is done by BOO PROCESSOR in accordance with approved drawings/ documents schedule as indicated in ITB. In case of any non-conformity to the above by BOO PROCESSOR due to which the period of review extends beyond 2 weeks by PMC, Schedule delay, if any will have to be absorbed by BOO PROCESSOR.

The documents falling under Review category will be returned with comments within specified time schedules subject to fulfilling other conditions enumerated. The information category document will be retained for information only but however SECL/PMC reserves the right to comment at any stage of the Project, but not later than two weeks of receipt.

2.1 As-Built Drawings:

BOO PROCESSOR will furnish reproducible and electronic files of all the drawings under their scope to SECL / PMC, certified as "As-Built Issue" by Third Party Inspection Agency (TPIA) for Vendor Items coming under Third Party Inspection / BOO PROCESSOR for all other drawings.

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Upon completion of identifiable units or components of the fabrication, construction and installation phase of the project BOO PROCESSOR will complete all the related plans to the "as built" stage including all Vendor drawings and furnish SECL/PMC with the following:

One complete set of all original tracings/ copies.

- a) One complete set of reduced size (A3-297x420 mm) reproducible copies of all drawings.
- b) One set of floppies for all documents/drawings/data.
- c) All the as built drawings duly certified should be scanned and converted into electronic files made on magnetic/discs/optical long storage. All other project documents such as operating and maintenance manuals, manufacturers' Catalogues etc. shall also be scanned on magnetic/optical discs for safe storage and retrievals by SECL when needed. 15 complete sets of full size prints of the drawings and 4 sets of reduced size prints.
- d) 6 complete bound sets of Manufacturer's specifications.
- e) 6 complete sets in hard binders of the Manufacturers data book including certified prints and data for all items including test reports. Data Books shall be complete with index as tag numbers associated with Manufacturer's data shown. Equipment data shall include as a minimum requirement the principal and description of operation, drawings and dimensions, spare parts lists and unpriced purchase orders and bill of material.
- f) 6 bound copies each of the Spare Parts data books and the Lubricants inventory Schedule.
- g) 6 complete sets of field records shall be signed by both BOO PROCESSOR's and SECL's Representative at the site.
- h) Original approvals and related drawings and documents from the statutory authority.
- i) Copies of correspondence with the statutory authorities.

Sl. No	Description	With Bid	Remarks
1	Process Flow diagram	√	
2	Design Basis	√	
3	P & ID with interlock and logic diagram and write-up		
4	A write-up explaining the configured plant and how various demands will be met by BOO PROCESSOR	√	
5	Data sheet for equipments		
6	Flare Load summary	√	
7	Utility (both normal and peak consumption figures)	√	
8	Tie-In List	√	
9	Process Description	√	



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Sl. No	Description	After Job Award			Remarks
		For Review	For Information	For Record	
1	Process Flow diagram	√		√	
2	Design Basis	√	√	√	
3	P & ID with interlock and logic diagram and write-up		√	√	
4	Equipment Specification		√	√	
5	A write-up explaining the configured plant and how various demands will be met by BOO PROCESSOR	√		√	
6	Data sheet for equipments	√		√	
7	Flare Load summary	√		√	
8	Utility (both normal and peak consumption figures)	√		√	
9	Interface Engineering Data	√		√	
10	Report on HAZOP study	√		√	
11	Instrument data sheets	√		√	
12	Control Philosophy	√		√	
13	Line Schedule	√		√	
14	Tie-In List	√		√	
15	Electrical Load list	√		√	
16	Process Description		√	√	

Bidder shall submit all the data/ drawing/ documents mentioned in above table along with the Bid.

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Note:

BOO PROCESSOR to note that all final drawings and documents including installation, operation and Maintenance manuals for all disciplines, viz., Process, Mechanical, Electrical, Instrumentation, General Civil, Structural, Architectural, Rotating, Static, Heat and Mass Transfer, Environmental etc covering all equipment/ item for the entire plant shall be furnished in 3 sets of hard copy and also soft copies for SECL's record, after the commissioning of the plant or before. The above also includes all inspection and test records, FATs, Performance Test Records, Material test Certificates, Characteristic curves, Catalogues, Nomographs etc.

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SECTION – 3.4

INFORMATION REQUIRED IN THE TECHNICAL PROPOSAL

PLANT: INTEGRATED COAL BASED AMMONIA PLANT, AT MAHAMAYA SCG PLANT, BHATGAON AREA, SURAJPUR DISTRICT, CHHATTISHGARH, INDIA

PROJECT: COAL TO AMMONIA (C2A) PROJECT THROUGH COAL GASIFICATION ROUTE ON BUILD-OWN-OPERATE (BOO) BASIS AT SOUTH EASTERN COALFIELDS LIMITED, CHHATTISHGARH, INDIA

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10.0	Other Technical Information To Be Submitted Along With The Bid	9

LIST OF ATTACHMENT

Attachment Number	Description	Number of Sheets

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Successful Bidder shall furnish the plant data within 15 days from the Price Bid opening as mentioned in below clauses:

1.0 PLANT DATA:

1.1 COAL GASSIFICATION PLANT:

1.1.1 AMMONIA SYN GAS:



Sl. No.	Description	Units	At 100% capacity	At 50% capacity
i	Capacity	Nm ³ /hr of Ammonia Syn. Gas		
ii	Plant Turn-down ratio	%		
iii	Product Ammonia Syn Gas			
	Hydrogen (H ₂) Vol% (Min.)			
	Nitrogen Vol% (min.)			
	Argon (Ar), PPM			
	CO+CO ₂ +other O ₂ bearing components, PPM by Vol.			
	Mercury (Hg) PPBv (max.)			
	Pressure ____ (Min.)	Kg/Cm ² abs		
	Temperature ____ (Max.)	°C		
	Quantity of Ammonia Syn. gas	Nm ³ /MT of Feed Coal		

1.1.2 CARBON DI-OXIDE GAS:

Sl. No.	Description	Units	At 100% capacity	At 50% capacity
i	Capacity (Note:1)	Nm ³ /hr of CO ₂		
ii	Plant Turn-down ratio	%		
iii	Carbon di-oxide Gas (Dry)			
	Carbon dioxide (CO ₂),	Vol % (min).		
	Other Components,	Vol. %		
	Pressure ____ (min.)	Kg/Cm ² abs		
	Temperature ____ (max.)	°C		

1.1.3 BY-PRODUCT SULPHUR:



Sl. No.	Description	Value	Units	At 100% capacity	At 50 % capacity
i	Capacity		TPH of Sulphur (Solid)		
ii	Plant Turn-down ratio		%		
iii	Sulphur (Solid)	99.9	Wt. %(min, dry)		

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	Hydrogen Sulphide (H ₂ S)	10	Wt.ppm(max, dry)		
	Ash	200	Wt.ppm (max)		
	Colour	Bright Yellow	-		
	Physical Appearance		-		
	Pressure	Not Relevant	Kg/cm ² a		
	Temperature	Ambient	OC		

1.1.4 BY-PRODUCT FLYASH/ SLAG/SLAGFINES:

Sl. No.	Description	Value	Units	At 100% capacity	At 110% capacity	At 50% capacity
i	Capacity	(To be specified by BOO PROCESSOR)	TPH of Ash/ Slag			
ii	Flyash	(To be specified by BOO PROCESSOR)	Wt. %			
	Moisture (H ₂ O)	(To be specified by BOO PROCESSOR)	Wt. %			
	Pressure	Atmospheric	Kg/Cm ² abs			
	Temperature	<80	OC			
	Physical appearance	(To be specified by BOO PROCESSOR)	Wt.%			
iii	Slag	(To be specified by BOO PROCESSOR)				
	Moisture (H ₂ O)	(To be specified by BOO PROCESSOR)	Wt.%			
	Pressure	Atmospheric	Kg/Cm ² abs			
	Temperature	<80	OC			
	Physical appearance	(To be specified by BOO PROCESSOR)	Wt. %			
iv	Slagfines	(To be specified by BOO PROCESSOR)				
	Moisture (H ₂ O)	(To be specified by BOO PROCESSOR)	Wt.%			
	Pressure	Atmospheric	Kg/Cm ² abs			
	Temperature	<80	OC			
	Physical appearance	(To be specified by BOO PROCESSOR)	Wt. %			

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1.2 AMMONIA PLANT:



PRODUCT AMMONIA (99.9 wt% (min.)):

Sl. No.	Description	Units	At 100% capacity	At 110 % capacity	At 50% capacity
i	Capacity	MT/hr of Ammonia			
ii	Plant Turn-down ratio	%			
iii	Product Ammonia				
	Ammonia, (99.9)	wt% (min.)			
	Water, (0.1)	wt% (max.)			
	Oil (5)	ppm wt% (max.)			
	Pressure @ B.L of Ammonia Plant, (BOO Processor to decide)	kg/cm ² a (Min.)			
	Temperature, (41 Max.)	°C (max.)			
	Quantity of Ammonia Syn. Gas ()	MT/MT of Feed Coal			

2.0 RAW MATERIAL & UTILITY CONSUMPTION:

Gasification Plant

Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Coal	MT/hr			
2.	Fluxant	MT/hr			
3.	DM Water	M ³ /hr			
4.	Steam Condensate export	M ³ /hr			
5.	Process Condensate export	M ³ /hr			
6.	Turbine Condensate export	M ³ /hr			
7.	Net import of HP steam	MT/hr			
8.	HP/MP/LP Steam Export	MT/hr			
9.	Power Consumption	KW/hr			
10.	Cooling water circulation	M ³ /hr			
11.	Cooling water Make-up	M ³ /hr			
12.	Make-up water for Ash and slag(if any)	M ³ /hr			
13.	Service water requirement	M ³ /hr			
14.	Drinking Water	M ³ /hr			
15.	Fire water	M ³ /hr			
16.	Fuel gas	Nm ³ /hr			
17.	Instrument Air	Nm ³ /hr			

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED INFORMATION REQUIRED IN THE TECHNICAL PROPOSAL	PC277/E/4001/P-II/ SEC- 3.4	0	
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18.	Plant Air	Nm ³ /hr			
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Ammonia Plant

Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Ammonia Syn. Gas	MT/hr			
2.	DM Water	M ³ /hr			
3.	Steam Condensate export	M ³ /hr			
4.	Process Condensate export	M ³ /hr			
5.	Turbine Condensate export	M ³ /hr			
6.	Net import of HP steam	MT/hr			
7.	HP/MP/LP Steam Export	MT/hr			
8.	Power Consumption	KW/hr			
9.	Cooling water circulation	M ³ /hr			
10.	Cooling water Make-up	M ³ /hr			
11.	Service water requirement	M ³ /hr			
12.	Drinking Water	M ³ /hr			
13.	Fire water	M ³ /hr			
14.	Fuel gas	Nm ³ /hr			
15.	Instrument Air	Nm ³ /hr			
16.	Plant Air	Nm ³ /hr			

Steam Generation Plant

Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Coal	MT/hr			
2.	Fluxant	MT/hr			
3.	DM Water	M ³ /hr			
4.	Power Consumption (Internal)	KW/hr			
5.	Steam Consumption (Internal)	MT/hr			
6.	Cooling water circulation (if any)	M ³ /hr			
7.	Cooling water Make-up (if any)	M ³ /hr			
8.	Service water requirement	M ³ /hr			
9.	Drinking Water	M ³ /hr			
10.	Fire water	M ³ /hr			
11.	Instrument Air	Nm ³ /hr			
12.	Plant Air	Nm ³ /hr			

Water Treatment Plant/ DMW Plant/ Condensate Polishing Unit

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED INFORMATION REQUIRED IN THE TECHNICAL PROPOSAL	PC277/E/4001/P-II/ SEC- 3.4	0	 SECL
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Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Raw Water	M ³ /hr			
2.	Power Consumption (Raw water/ DMW/ CPU)	KW/hr			
3.	Cooling water Make-up	M ³ /hr			
4.	Instrument Air	Nm ³ /hr			
5.	Plant Air	Nm ³ /hr			

Effluent Treatment Plant



Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Effluent	M ³ /hr			
2.	Power Consumption (Raw water/ DMW/ CPU)	KW/hr			
3.	LP Steam	Mt/hr			
4.	Cooling water Make-up	M ³ /hr			
5.	Instrument Air	Nm ³ /hr			
6.	Plant Air	Nm ³ /hr			

Instrument Air Plant

Sl. No.	Raw Material & Utility	Units	Plant Capacity		
			50%	100 %	Remark
1.	Power Consumption	KW/hr			
2.	Cooling water Make-up	M ³ /hr			

3.0 PLANT START UP REQUIREMENT:

Sl. No.	Item (Bidder to specify)	Units	
1.			Bidder to specify
2.	Normal		Item-wise quantity, quality at B.L.
3.	Peak, including duration		required for start-up
4.	B/L Pressure		
5.	B/L Temperature		
6.	Minimum purity required		
7.	Minimum acceptable limit of		

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED INFORMATION REQUIRED IN THE TECHNICAL PROPOSAL	PC277/E/4001/P-II/ SEC-3.4	0	
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4.0 CATALYST REQUIREMENT :

Bidder to specify Item-wise information on catalysts used in their process as per pro-forma given below:

Type	Supplier	Loaded Volume	Expected Life
		m ³	Years

5.0 EFFLUENTS AND EMISSIONS:-

5.1 Liquid Effluents:

- a) Continuous
- b) Intermittent

5.2 Gaseous Emissions:

- a) Continuous
- b) Intermittent

6.0 FLARE LOAD SUMMARY:

- a) HP Flare Load
- b) Acid Flare Load
- c) LP Flare Load



7.0 LIST OF EQUIPMENT

8.0 LIST OF ON-LINE ANALYZERS:

9.0 OTHER TECHNICAL INFORMATION TO BE SUBMITTED ALONG WITH THE BID:

In addition to the requirements indicated in the earlier paragraphs, the following technical information:

- a) Process Flow
- b) Steam Balance Diagram
- c) Water Balance Diagram
- d) Process description indicating the functions of various sections.
- e) Turndown capability and operating range.
- f) System suggested for on-line product quality control.
- g) The details of effluent treatment facilities included in the battery limit and the quantities of gaseous, liquid and solid wastes released from the plant along with their specifications for normal operation and during regeneration, if any.

	COAL GASIFICATION BASED AMMONIA PLANT ON BUILD-OWN-OPERATE (BOO) BASIS FOR SOUTH EASTERN COALFIELDS LIMITED INFORMATION REQUIRED IN THE TECHNICAL PROPOSAL	PC277/E/4001/P-II/ SEC- 3.4	0	
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- h) Utility summary including the requirements of start-up / shutdown of Coal Gasification Plant, Ammonia Plant, Offsite utilities
- i) Flare load summary for various failure cases (cooling water, reflux, power, blocked out, fire).
- j) Plant battery limit tie point details.

k) Equipment Layout plan:

Equipment Layout plan showing location of various equipment based on relevant appropriate norms

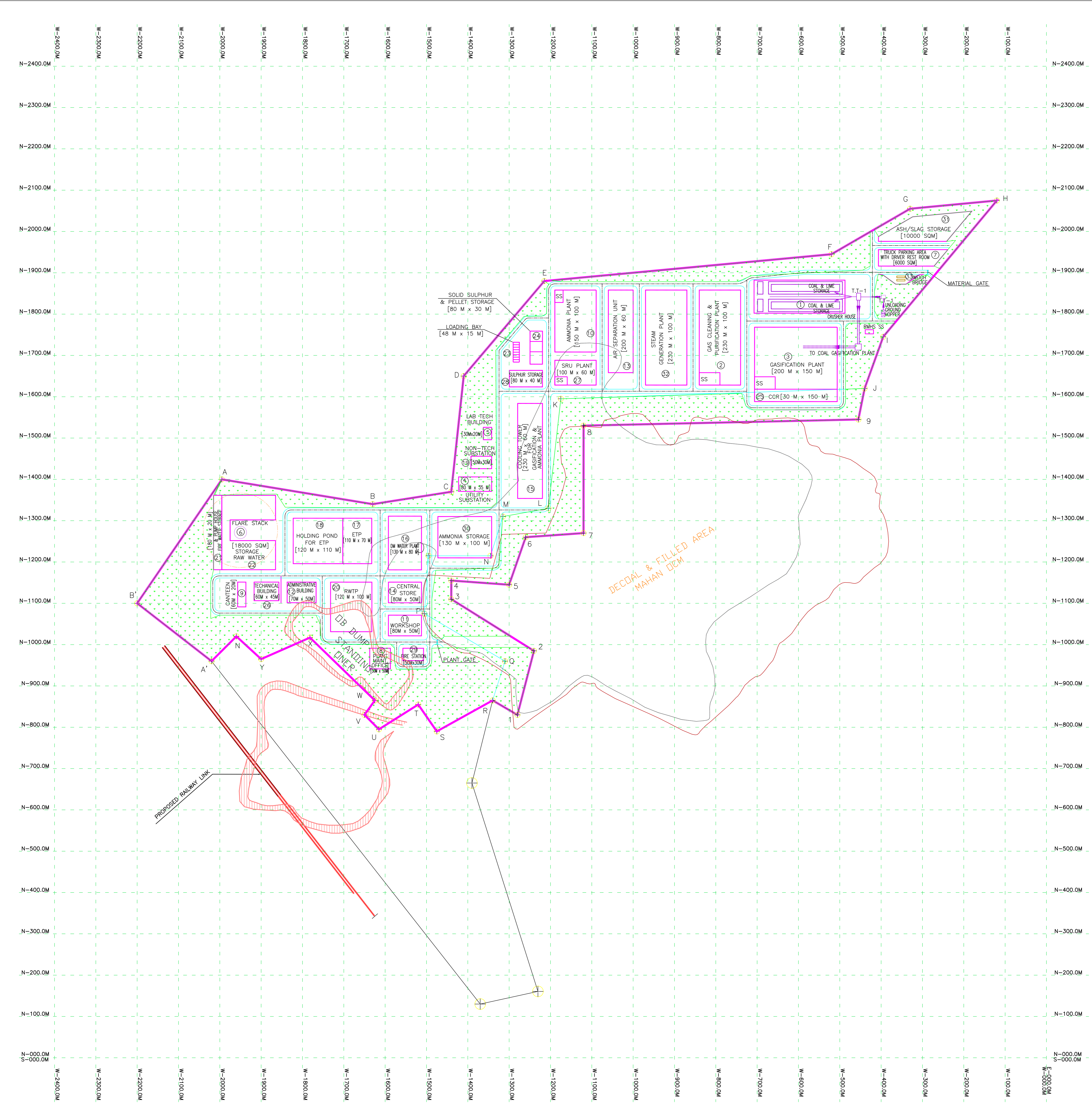
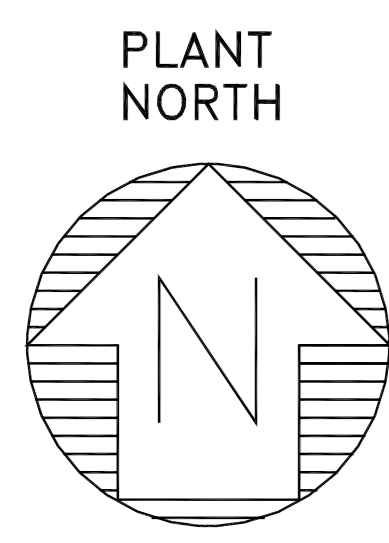


TABLE FOR FACILITIES/UNITS

SL.NO.	BLOCK DESCRIPTION	SIZE IN METRE	REMARKS
1.	COAL & LIME STORAGE	220 M x 80 M	
2.	GAS CLEANING & PURIFICATION PLANT	230 M x 100 M	
3.	GASIFICATION PLANT	200 M x 150 M	
4.	UTILITY SUBSTATION	80 M x 35 M	
5.	LAB TECH BUILDING	30 M x 20 M	
6.	FLARE STACK	R 90M	
7.	TRUCK PARKING AREA WITH DRIVER REST ROOM	6000 SQM.	
8.	PLANT MAINT. OFFICE	50 M x 50 M	
9.	CANTEEN	60 M x 20 M	
10.	AMMONIA PLANT	150 M x 100 M	
11.	WORKSHOP	80 M x 50 M	
12.	ADMINISTRATIVE BUILDING	70 M x 50 M	
13.	AIR SEPARATION UNIT	200 M x 60 M	
14.	CENTRAL STORE	80 M x 50 M	
15.	COOLING TOWER FOR GASIFICATION & METHANOL PLANT	230 M x 60 M	
16.	DM WATER PLANT	130 M x 80 M	
17.	ETP	110 M x 70 M	
18.	HOLDING POND FOR ETP	120 M x 110 M	
19.	NON-TECH. SUBSTATION	50 M x 30 M	
20.	RAW WATER TREATMENT PLANT	120 M x 100 M	
21.	FIRE WATER STORAGE	180 M x 20 M	
22.	RAW WATER STORAGE	18000 SQM.	
23.	LOADING BAY	48 M x 15 M	
24.	SOLID SULPHUR & PELLET STORAGE	80 M x 30 M	
25.	CENTRAL CONTROL ROOM	30 M x 150 M	
26.	TECHNICAL BUILDING	60 M x 45 M	
27.	SRU PLANT	100 M x 60 M	
28.	SULPHUR STORAGE	80 M x 40 M	
29.	FIRE STATION	50 M x 30 M	
30.	AMMONIA STORAGE	130 M x 100 M	
31.	ASH/SLAG STORAGE	10000 SQM.	
32.	STEAM GENERATION PLANT	230 M x 100 M	
33.	WEIGH BRIDGE	-	

LEGEND :-

- PROPOSED FACILITIES (represented by a pink outline)
- GREEN BELT AREA (represented by a green dotted pattern)

TOTAL PLANT AREA WITH GREEN BELT = 210 ACRE (APPROX.)
 GREENBELT AREA = 70 ACRE (APPROX.)

NOTE:-
 1. BLOCK FACILITIES ARE INDICATIVE ONLY. THIS IS PRELIMINARY LAYOUT
 FINAL LAYOUT WILL BE SUBMIT BY BDD OPERATOR.

PRELIMINARY LAYOUT

P	06.12.21	PRELIMINARY ISSUE	AM	SAH/NS	PK
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT : SOUTH EASTERN COALFIELDS LIMITED			REV.	P	1
LOCATION : INDIA			SCALE :- 1 : 3500		
TITLE : PRELIMINARY LAYOUT OF COAL BASED AMMONIA PLANT CAPACITY : 2200 MTPD AMMONIA			DRG. No.:-	PC277-0000-0001	
			FILE :-	PC277-0000-0001_REV P	
			DRG. SIZE:	A0	

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