



**NEELACHAL ISPAT NIGAM LIMITED
IRON AND STEEL PLANT
KALINGA NAGAR INDUSTRIAL COMPLEX
DUBURI, ORISSA - 755026**

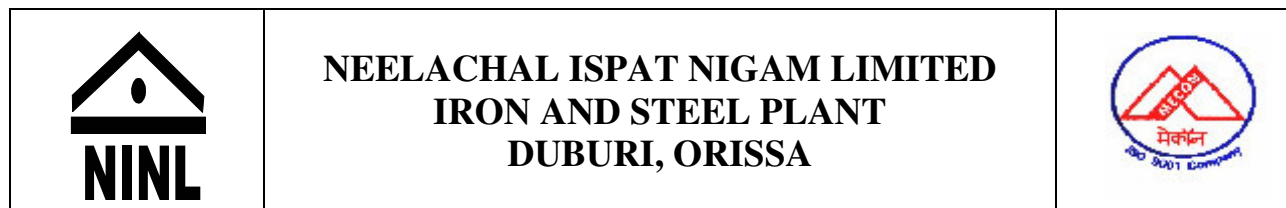
**GENERAL SPECIFICATION
FOR
INSTRUCTION TO TENDERER
(GS-01)
NINL-PHASE-II**



**MECON LIMITED
RANCHI - 834002
INDIA**

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01. **INTENT OF SPECIFICATION**

The purpose of this general specification is to provide the Contractor with certain general information on the location and conditions existing at site and to lay down common guidelines and specifications which the Contractor shall follow in designing of the plant and during execution of work as applicable to the Contractor as per his scope of work

MECON LIMITED, have been appointed by Neelachal Ispat Nigam Limited (NINL) for rendering the detailed engineering and consultancy services to NINL for the above project.

The Contractor should visit the site and satisfy himself of the site conditions and get themselves conversant with other relevant matters.

02. **INTRODUCTION**

Neelachal Ispat Nigam Limited is already operating Coke Oven & By Product Plant, Sinter Plant Complex (180 sq.m sinter machine), B.F. Complex (1915 cu.m B.F), Captive Power Plant (62.5 MW) and producing Pig Iron.

Now NINL intends to install a BOF Shop Complex (1 x 110 t converter), CCP Complex (1 x 6 strand billet caster), Bar and Rod Mill Complex (capacity 0.7 mt/yr). Other auxiliary units for the plant consists of Raw Materials Storage and Handling Facilities, Oxygen Plant (BOO basis), Lime & Dolomite Calcination Plant and related services, utilities, etc.

It is envisaged to produce the following finished products after final commissioning of the steel plant.

Pig Iron	~	0.153 Mt/yr
Continuous Cast Billets	~	0.175 Mt/yr
Bar and Rods	~	0.700 Mt/yr



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03. **SITE CONDITIONS AND INFRASTRUCTURE FACILITIES**

03.01 **Site Conditions**

03.01.01 **Location**

Neelachal Ispat Nigam Limited is located at Duburi, Orissa. The site lies between $20^{\circ} 57'$ - $21^{\circ} 3'$ - North latitude and $85^{\circ} 59'$ - $86^{\circ} 5'$ East longitude.

The location of Duburi is as follows:

From Daitari iron ore deposit	-	25	Kms
From Kolkata by rail/road	-	360/380	Kms
From Bhubaneswar by rail/road	-	110	Kms
From Paradip Port by rail/road	-	166/125	Kms

Nearest town is Jajpur Road located at a distance of about 10-12 kms and the nearest city is Cuttack located at a distance of about 80 kms from NINL site. Cuttack is a big commercial and educational centre with many small scale industries located in and around the city.

03.01.02 **Meteorological Data**

In absence of any meteorological observatory near the plant site, data of the observatory at Chandbali (latitude $24^{\circ} 47'$ North, longitude $86^{\circ} 44'$ East, altitude 6 meters) in Balasore district has been considered representative of Daitari as per the advice of the Meteorological Deptt of Govt. of India. Daitari is 25 Km north west of Duburi.

The meteorological details are given below:

Air Temperature

Dry bulb	:	27.7° C (mean)
Dry bulb	:	31.6° C (max.)
Wet bulb	:	23.2° C (mean)
Wet bulb	:	27.2° C (max.)
Maximum	:	41.6° C (May)
Minimum	:	10.8° C (January)
Extreme maximum	:	46.7° C (June, 1942)
Extreme minimum	:	8.30° C (January, 1934/ December, 1937)



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Relative Humidity

Maximum : 84%
Minimum : 57%

Rainfall

Maximum rainfall : 321.8 mm
in 24 hours

Minimum monthly : 646.9 mm
rainfall (October, 1955)

Wind

Predominant wind direction

- (a) South – West to North - East
- (b) South to North.

Altitude

- Average elevation above mean sea level - 60 m

03.02 **Infrastructure Facilities Outside the Plant**

03.02.01 **Railway**

The main Howrah-Chennai rail line of South-Eastern Railway is located about 20 Kms South-east of the proposed site. The nearest railway station is Jajpur Keojhar Road railway station at a distance of about 10-12 Km from NINL Plant. The Jakhapura – Daitari section runs close to the East of Site (Jakhapura station is on the main line). The plant is connected with this Jakhapura – Daitari line by taking a link track from Sukinda Road Railway Station. The track gauge of the works railways is standard broad gauge i.e. 1676 mm.

03.02.02 **Road**

Both Daitari – Paradip expressway and Talcher – Jajpur state highway are located very close to the site. A good road network exists in this area connecting the site to Cuttack and Bhubaneswar, the capital city of Orissa State.

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03.02.03 **Sea Port**

Well developed Paradip Port is located in the Bay of Bengal at a distance of 166/125 Kms by rail/road.

03.02.04 **Air ways**

The nearest Airport connected to the national network is Bhubaneswar which is about 110 Km from Duburi site is well connected with all Metropolitan cities of India by air. The nearest International airport is Kolkata.

03.03 **Infrastructure Facilities Inside the Plant.**

03.03.01 **Railway**

The track gauge for the entire plant correspond to the Railway standard broad guage i.e. 1676 mm.

03.03.02 **Road**

Main road and side roads of the Plant shall have roadways of 7.0 m and 4.0 m width respectively and the temporary roads provided during the construction stage shall be designed to cater the needs of movement of heavy construction vehicles.



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04. **GENERAL RULES AND REGULATIONS AND STANDARD**

04.01 **General Rules and Regulations**

04.01.01 All plant units with respect to their location, layout, general arrangement and design of equipment, structural design, etc. shall be safe to the personnel and conform to the relevant statutory requirements issued by Orissa Government and the Central Government but not limited to the following.

- Orissa State Factory Rules/Acts.
- Indian Electricity Rules/Acts
- Electricity Regulatory Commission Act
- Indian Petroleum Regulations/Acts
- Indian Boiler Regulations/Acts
- Indian Explosives Acts
- Gas Cylinders Rules/Acts
- Carbide of Calcium Rules/Acts
- Static and mobile Pressure Vessels Codes (unifired) Rules/Acts
- Fire Protection Manual issued by Tariff Advisory Committee (India)
- Pollution Control Regulations/Acts

04.01.02 Pollution control measures shall be provided considering the latest norms and international standards. These should satisfy the stipulations of Central Pollution Control Board and Department of Environment and Forest, Government of India.

04.02 **Standard**

04.02.01 **Preferred Makes of Equipment & Supplies**

To restrict/minimise stock/inventory of spares, the Purchaser will limit the makes of equipment & supplies to those listed in the “preferred makes of equipment and supplies” unless other-wise expressly so agreed.

04.02.02 **Unit of Measurement**

All dimensions & weights shall be given in metric system.

04.02.03 **Language**

All drawings, sheets, etc. shall be in English language.



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05. **SAFETY**

05.01 **Safety Regulations**

05.01.01 The Contractor shall comply with the, relevant Safety Rules and Regulations but not limited to the following:

- Orissa State Factory Rules/Acts.
- Indian Electricity Rules/Acts
- Electricity Regulatory Commission Acts
- Indian Petroleum Regulations/Acts
- Indian Boiler Regulations/Acts.
- Indian Explosive Acts
- Gas Cylinder Rules/Acts
- Carbide of calcium Rules/Acts.
- Static and Mobile Pressure Vessels codes(Unfired) Rules/Acts
- Fire protection manual issued by Tariff advisory committee (India)
- Pollution Control Regulations/Acts

05.01.02 Strict attention shall be paid to all statutory regulations and safety rules for prevention of accidents.

05.01.03 The safety posters/regulations for prevention of accidents shall be displayed by the Contractor at appropriate places. Notices and warning signs shall be displayed for all sources of dangers.

05.01.04 The Contractor is not permitted to construct any temporary road crossing on the rail tracks for the sake of their convenience at work site.

05.01.05 When the work is carried out at night or in the obscure day light, adequate arrangements for flood lighting in the working area shall be made by the Contractor at his own cost and got approved by the Purchaser.

05.01.06 All handling/transport and rigging equipment including lifting tools and tackles shall be checked at regular intervals and kept in good and safe working condition.

A register is to be maintained regarding the results of periodical tests/checks and other particulars in respect of each and every such equipment.

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05.01.07 The Contractor must take sufficient care in moving his construction plant and equipment from one place to another, so that those do not cause any damage to the property of the Purchaser or obstruct construction activities of other Contractors.

05.01.08 The Contractor shall depute a full time safety engineer who will exclusively look after all the jobs pertaining to safety at site and keep close liaison with NINL/MECON. He will be responsible for maintaining safe working conditions at site, promoting safety consciousness among the workmen and reporting to concerned authorities in case of accident/dangerous occurrences.

05.01.09 Before execution of work in hazardous area like

- Gas contamination
- Working at height.
- Storage of inflammable materials
- Danger of electric shocks
- Explosion risks
- Excavations more than 2 m deep, etc.

a protocol should be prepared in association with the concerned agencies of NINL/MECON.

05.02 **Safety while Working with Explosives.**

05.02.01 Explosives shall not be used on the work site by the Contractor without the written permission of the Purchaser and that too only in the manner and to the extent to which it has been prescribed.

05.02.02 Explosives shall be stored in special premises approved by the Purchaser and at the cost of the Contractor who shall be liable for all damages, loss or injury to any person or property and shall be responsible for complying with all statutory obligations in these respects.

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05.03 **Safety Appliances**

05.03.01 The Contractor shall provide the safety appliances conforming to the relevant Indian standards to all their workmen and supervisors engaged by them as well as by the sub contractors.

05.03.02 The Contractor shall ensure that all the workmen and supervisors, are using the safety appliances regularly during work at site.

05.03.03. Any form of compensation in lieu of safety appliances shall not be permitted. Any violation in safety provisions or failure to maintain safe working conditions will lead to serious penalty on the Contractor and finally may lead to termination of the Contract.

05.03.04 The workmen of the Contractor deployed for construction and erection in hazardous areas shall be provided with personnel protective safety appliances of special nature suitable for hazardous working conditions.

05.04 **Safety during Construction/Execution**

05.04.01 The Contractor shall be responsible for the safety of his workmen and employees. The Contractor shall ensure that safety practices are followed so as to prevent personal injury to his workmen and also to other persons working/passing by in that area.

05.04.02 The Contractor shall ensure that in case of any accidents, the same are reported without delay to the Purchaser/Statutory Authorities as per Rules. In case of any injury/accident the Contractor shall bear all the expenditure for medical treatment and shall pay the compensation in case of permanent disability or death.

05.04.03 The Contractor shall ensure that all personnel employed do not stray into other areas. Any injury caused due to this shall be the sole responsibility of the Contractor.

05.04.04 The Contractor shall ensure that skilled labours required for specific works have necessary trade certificates and adequate experience of the job. This is likely to be checked by the Purchaser. The concerned operator, mechanics, electricians, fitters, riggers, etc. must be fully conversant with the hazards associated in operation/maintenance of their relevant equipment.

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05.04.05 **Safer Working Platforms**

- Contractor shall use strong and secured planks and boards of the right sizes.
- These planks shall be painted at the edges brightly to warn the workers for any misuse (usually zebra paint)
- Barricades should be put-up to prevent them from falling.
- Contractors shall make sure that scaffolds are erected by trained scaffolders.
- Supervisors must inspect scaffolds once every week.

05.04.06 **Falling Objects and Debris**

- No loose materials which can fall down should be kept on the working platforms.
- Overhead shelters should be provided to minimize damage from falling objects.
- Strong nets to be provided to catch these objects or debris.
- Nets must envelop all sides of the building.

05.04.07 **Personal Safety Equipment**

- Workers must wear approved safety helmets and shoes.
- For those working in high places safety belts shall be provided.
- The safety belts must be attached to strong anchorage points.

05.04.08 **Operating Construction Machine**

- Contractors shall make sure that those operating the construction machinery are well trained for their jobs.
- The keys of such machinery shall be kept with the authorized persons.
- The keys shall be removed after use of the machine.

05.04.09 **Safer Electrical Installations**

- Contractor shall use approved types of electrical sockets and plugs.
- Proper insulators for all electrical wirings shall be provided.
- Wiring should not be allowed to lie on the floor or on the ground.

05.05 **Safety in Designing of Equipment**

05.05.01 All machinery and equipment must be equipped with safety devices. The safety provisions shall conform to the recognised standards, safety codes and statutes.

05.05.02 All safety measures as required to be adopted as per the statutory regulations and the safety rules of the plant shall be strictly followed by the Contractor during the execution of the Contract.

06. **DRAWINGS AND DOCUMENTS**

06.01 **Drawings**

06.01.01 The drafting standards adopted in preparation of drawings shall be such that good clean and legible print of the drawings can be obtained.

06.01.02 For preparation of original drawings guidelines contained in Indian Standard specification IS:10164-1985 (preparation of engineering drawings and diagrams) shall be followed.

06.01.03 The Contractor shall submit the drawings in any of the following standard sizes.

Size Code	Working Space (mm)	Cut Size (mm)	Uncut Size (mm)
A0	811 x 1144	841 x 1189	880 x 1230
A1	564 x 796	594 x 841	625 x 880
A2	390 x 549	420 x 594	450 x 625
A3	267 x 375	297 x 420	330 x 450
A4	180 x 252	210 x 297	240 x 330


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However, Contractor's standard drawings are exempted from the above size limitations. It is desirable to keep the same size for all drawings for ease of filing, reference and record keeping.

- 06.01.04 All drawings shall be oriented to match the plant layout drawings and shall have a key plan identifying the plant area to which they apply.
- 06.01.05 All drawings shall be made with the north arrow pointing to the top of the sheet.
- 06.01.06 There shall be sufficient reference notes and cross references on the drawings to permit identification of all related drawings and documents which are required for proper understanding.
- 06.01.07 When a drawing is revised by the Contractor, every change made shall be identified on the drawing by placing the revision number in a small triangle so as to be easily recognisable. In addition, a record of revisions along with the co-ordinates showing the location of revisions shall be indicated at the left hand bottom corner of the drawings as per standard practice. In case of revision of drawing, for which different number is allotted, the new drawing shall clearly indicate the number of the drawing which it supersedes.
- 06.01.08 Approval of drawings from the statutory authorities such as the Indian Boiler Inspectorate, Inspectorate of Explosive, Electrical Inspector, etc. is the responsibility of the Contractor.
- 06.01.09 Any additional drawings not specifically mentioned by the Purchaser/Consultant but is required for the approval of drawings, shall be submitted by the Contractor.
- 06.01.10 The title block of the drawing shall be as per the title block enclosed as Annexure 01.
- 06.02 **Approval of Drawings.**
- 06.02.01 Approval of Contractor's drawings will generally be accorded within four (4) weeks of receipt.

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- 06.02.02 Approval of Contractor’s drawings means that these will be checked for conformity with applicable specifications and general conformity with the engineering requirement for the areas covered in the scope of work. It is understood that approval by the Purchaser’s Consultant does not include checking for drafting and other errors but only reviews of basic concepts and general principles involved.
- 06.02.03 The Contractor shall be responsible for any discrepancy, errors and omissions in the drawings and other information furnished by them, irrespective of whether these drawings have been approved by the Purchaser/Consultants or not. The Contractor shall bear all extra cost due to alterations necessitated by reasons of any discrepancies, errors or omissions in the drawings and particulars supplied by the Contractor.
- 06.02.04 Drawings furnished by the Contractor shall be certified as correct for use and shall bear the signatures of responsible persons of the Contractor.
- 06.02.05 Approval of Contractor’s drawings shall not relieve the Contractor of his responsibility to comply with the intent of the contract, manufacture/fabrication or procurement prior to approval of drawings shall be at the Contractor’s risk.
- 06.02.06 The Contractor shall submit 8 sets of drawings to MECON/NINL for approval (6 sets to MECON, Ranchi and 2 sets to NINL, Duburi).
- 06.02.07 If the drawing is “Approved” then one print shall be returned back to the Contractor duly stamped “Approved” by the Consultant.
- 06.02.08 If the drawing is “Not approved” or “Approved as Noted”, then one stamped print with appropriate comments shall be returned back to the Contractor for incorporation of comments and re-submission of revised drawings for approval in 8 sets within 7 days.
- 06.02.09 After approval of drawings the Contractor shall submit 10 sets of approved drawings to MECON/NINL (8 sets to MECON, Ranchi and 2 sets to NINL, Duburi). The Contractor shall incorporate the following note on the tracing before taking additional prints for submission to MECON/NINL.
“Approved by MECON vide letter no.dtd.....”

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- 06.02.10 The drawing shall become a contract drawing after approval and there after the Contractor shall not deviate from them in any way whatsoever except with the written permission of the Purchaser/Consultant.
- 06.02.11 All reference and information category drawings shall be submitted in 10 sets to MECON/NINL (8 sets to MECON, Ranchi and 2 sets to NINL, Duburi). These drawings shall be submitted to MECON/NINL before forwarding the same to the erection Contractor at site for construction/erection activities.
- 06.02.12 The information category drawings shall not be approved by the Consultant. However, information category drawings shall be stamped “For Information Only” and one set shall be returned back to the Contractor.
- 06.02.13 In case any discrepancy is observed on these drawings, same shall be informed to the Contractor by marking the comments on the drawings. The Contractor shall resubmit these drawings after incorporating the comments in 10 sets to MECON/NINL (8 sets to MECON, Ranchi and 2 sets to NINL, Duburi).
- 06.02.14 After receipt of stamped “For Information Only” drawings, the Contractor shall submit 10 sets of drawings to MECON/NINL (8 sets to MECON, Ranchi and 2 sets to NINL, Duburi). The Contractor shall incorporate the following note on the tracing before taking additional prints for submission to MECON/NINL.

Stamped “For Information Only” by MECON vide their letter no. Dt.

06.03 **Submission of Drawings, CD, Reproducible and Documents**

The Contractor shall submit the following drawings/documents to MECON and NINL.

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06.03.01 **Drawings**

	MECON	NINL
1 Approval category drawings for approval of consultants	6 Sets	2 Sets
2 Fabrication drawings for approval of consultants	6 Sets	-
3 Drawings after approval along with list of drawings (for distribution)	8 Sets	2 Sets
4 Information category drawings	8 Sets	2 Sets
5 Information category drawings after stamping "For Information Only" by consultants.	8 Sets	2 Sets
6 Erection drawings	8 Sets	2 Sets
7 As built drawings	-	2 Sets
8 Spare parts drawings	-	2 Sets
9 Wearing parts drawings	-	2 Sets

06.03.02 **Compact Disc and Reproducibles**

	MECON	NINL
1 As built drawing of approval category	-	1 Set
2 As built drawing of information category	-	1 Set
3 Spare parts drawings	-	1 Set
4 Wearing parts drawings	-	1 Set

06.03.03 **Documents**

	MECON	NINL
1 Erection manual	1 Set	6 Sets
2 Operating and maintenance manuals	1 Set	6 Sets
3 Storage and reconservation manuals	1 Set	6 Sets
4 Safety manuals	1 Set	6 Sets
5 List of consumables	1 Set	6 Sets
6 List of lubricants and hydraulic oil	1 Set	6 Sets
7 List of special tools and tackles	1 Set	6 Sets
8 Test certificates and inspection certificates in bound volume	1 Set	6 Sets

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07. **PROGRESS REPORT**

- 07.01 The Contractor shall submit a detailed PERT Network showing completion time which would indicate starting and completion dates of all activities of engineering, purchasing, procurement of materials, manufacturing, inspection, dispatch, erection, testing and commissioning, etc. under his scope of work.
- 07.02 The Contractor shall submit the progress report in such details as may be required by the Purchaser so as to enable them to monitor the progress of work.
- 07.03 The Contractor shall submit the progress report every month in the proforma mutually discussed and agreed upon with Purchaser/Contractor.
- 07.04 The Contractor shall submit 8 sets of progress report (6 sets to NINL, Duburi and 2 sets to MECON, Ranchi) every month as on 20th of the month so as to reach NINL and MECON by 25th of month.