PRE – FEASIBILITY REPORT

FOR PRODUCT INCORPORTATION AND CAPACITY ENHANCEMENT (EXPANSION)

BY

GALWALIA ISPAT UDYOG PVT. LTD.

AT

Narain Nagar, Industrial Estate, Bazpur Road, Kashipur, Distt. Udhamsingh Nagar

1. EXECUTIVE SUMMARY

a) M/s Galwali Ispat Udyog Private Limited **(GIUPL)** is an existing unit in Narain Nagar Industrial Estate, Bazpur Road, Kashipur, Distt. Udham Singh Nagar (Uttarakhand) engaged in production of MS Billet, MS Structure, TMT Bars through Furnace – CCM – Rolling Mill etc. As such after analyzing the market demand of the products of Steel Industry, GIUPL has proposed to incorporate some more products and to enhance its existing capacity as follows :

Product Name	Section	Existing Capacity (MTPA)	Proposed Capacity (MTPA)	Total Capacity (MTPA)
Ballet	Melting	2,37,600	3,24,000	5,61,600
TMT Bars	Rolling	2,00,000	2,20,000	4,20,000
MS Structure	Rolling	92,160	87,840	1,80,000
Wire Rod	Rolling	--------	4,20,000	4,20,000

b) Salient Features of The Project

Proponent Name	**Galwali Ispat Udyog Private Limited (GIUPL)**
Location	Narain Nagar Industrial Estate, Bazpur Road, Kashipur, Distt. Udham Singh Nagar (Uttarakhand)
Latitude	29° 11' 25.96" N
Longitude	79° 00' 17.64" E
Land use	Industrial
Nearest Habitat/Town	Kashipur
Nearest Railways Station	Kashipur Railway Station 5.5 Km
Nearest Airport	Pant Nagar Airport 49.71 Km
Nearest Highway	NH 309, 1.30 km
Water Demand and Supply source	375 KLD Industrial + 25KLD Domestic Total = 400 KLD Supply of Bore well
Nearest Tourism Place	Nainital 48 Km
Seismic Zone	Zone – IV
Altitude	550m
Proposed Activity	Production of Billets, TMT Bars, MS Structure with enhance capacity and Wire Rod.
Estimated Project Cost	INR 41.21 Cr.
Working Days	340
Man Power	500

2. PROJECT /BACKGROUND INFORMATION

The promoters of Galwali Ispat Udyog Private Limited has been involved in production of MS Billet, MS Structure, TMT Bars through Furnace – CCM – Rolling Mill etc. As such after analyzing the market demand of the products of Steel Industry, GIUPL has proposed to incorporate some more products and to enhance their existing capacity.

A. Identification of the project and project proponent.

Category of Project: The unit is categorized under B 3(a) (ii) (general condition shall apply) of Gazette Notification Sep. 14th, 2006 and subsequent amendment on dated 01.12.09 {Metallurgical industries (ferrous and non-ferrous-secondary metallurgical processing industry.

But, as per the Gazette Notification mentioned above, the project/activity falls under **"A"** Category because the project attracts general condition that any project or activity specified under Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of Inter-State boundary, International boundary and Protected Areas notified under the Wild Life (Protection) Act, 1972. **The site is located about 2.75 Km away from Uttarakhand – Uttar Pradesh Border.**

B. Brief Description of Nature of Project.

M/s Galwali Ispat Udyog Private Limited is an existing unit in Narain Nagar Industrial Estate, Bazpur Road, Kashipur, Distt. Udham Singh Nagar (Uttarakhand) engaged in production of MS Billet, MS Structure, TMT Bars through Furnace – CCM – Rolling Mill etc. and propose to enhance the production capacity MS Billet 2,37,600MTPA to 5,61,600MTPA, TMT Bars 2,00,000 MTPA to 4,20,000 MTPA, MS Structure 92,160 MTPA to 1,80,000 MTPA and MS Wire Rod 4,20,000MTPA.

C. Need for the Project & Importance to the Country

Indian economy has been rapidly growing and various projects in every sector are being proposed and undertaken in order keep the smooth running of the economy. The growth in the Indian Steel sector has been driven by domestic availability of raw materials such as iron ore and cost effective labour. As such Iron & Steel plays a vital role in every project, mainly in Construction Project, Highways and National Highways etc.

D. Demand and supply gap

In the last two decade it has been witnessed the economic growth and expansion in every sector in the country. This has resulted in requirement of more and more developmental works for which more and more raw materials required. Various Construction projects including Highways and National Highways and setting up of new industrial units are being undertaken in the country on a larger scale, as such raw material in form of Iron products for completion of various projects has always been in demand and still growing more.

E. Domestic/Export Markets

The product has a huge domestic market and also in abroad countries where there are no Iron industry.

F. Employment Generation (Direct & Indirect) due to the project

Although there are **347** people working in different categories in the unit, but after the expansion there will be requirement of **153** people. Hence total man power would reach to **500**. Indirect generation of employment will also be there in way of contractors, transportation, suppliers. Other service providers with continues chain of employment will also have a chance.

3. PROJECT DESCRIPTION

A. Type of Project including Interlinked and Interdependent Projects, if any

There is no interlinked and/or interdependent project linked with it. No other allied activities and/ or services will be carried out with this project.

B. Land allocation within plant

The total land area for project is 29 acres .

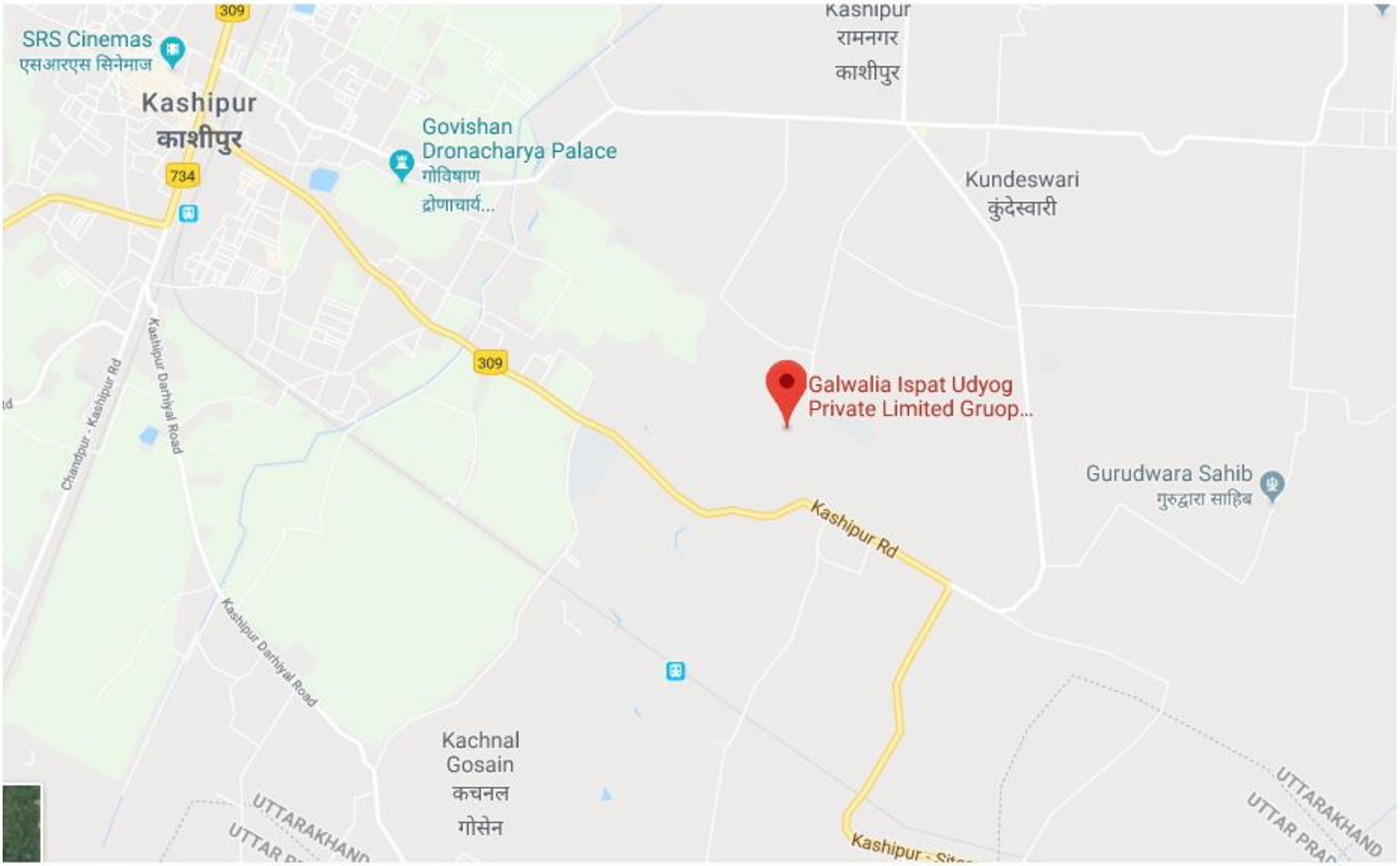
C. Location (map showing general location, specific location, and project boundary & project site layout) with coordinates.

M/s Galwalia Ispat Udyog Private Limited **(GIUPL)** is situated in Narain Nagar Industrial Estate, Bazpur Road, Kashipur, Distt. Udham Singh Nagar (Uttarakhand)

D. Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental consideration gone into should be highlighted.

No Alternative Site.

LOCATION MAP

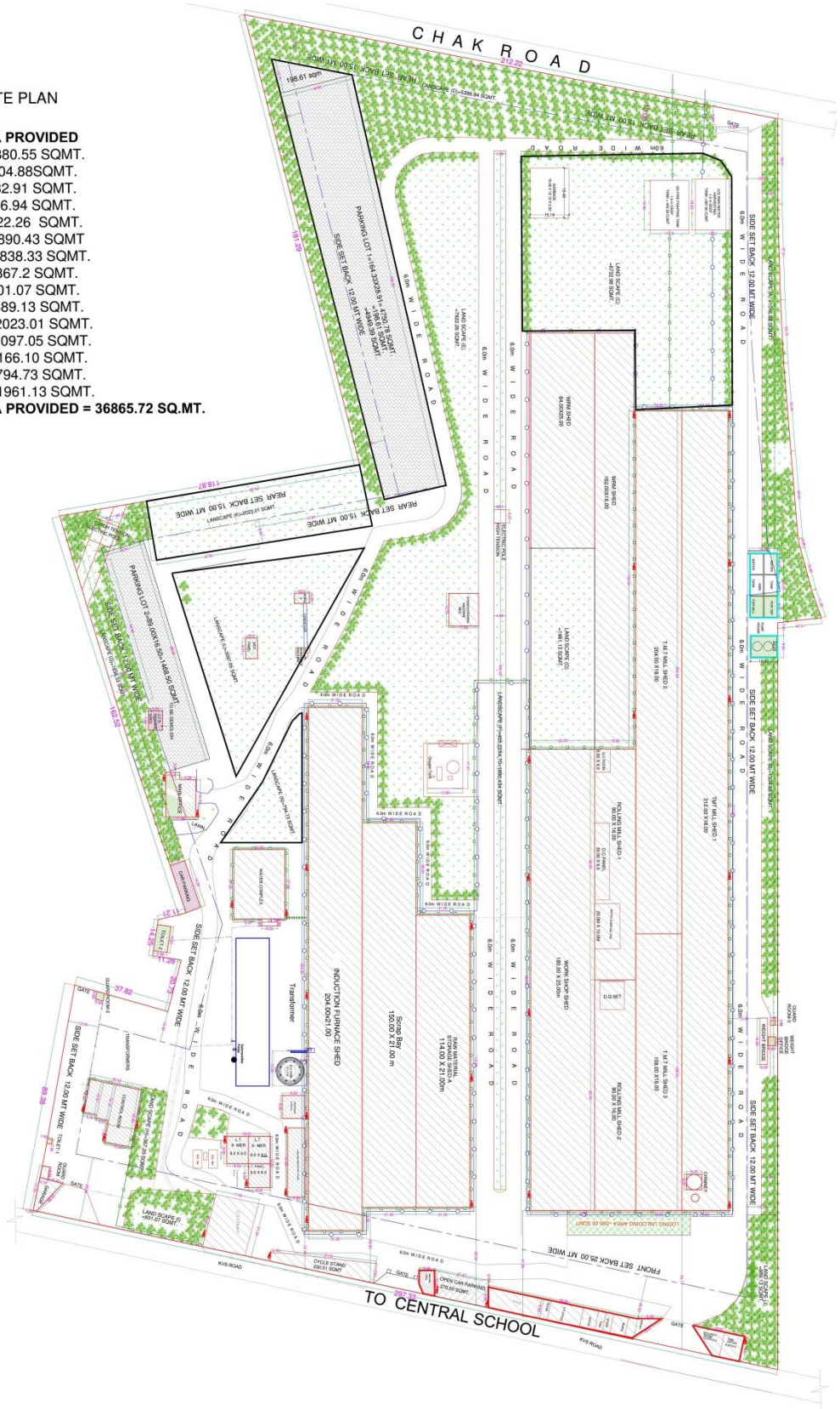


M/s Galwali Ispat Udyog Private Limited **(GIUPL)** is situated in Narain Nagar Industrial Estate, Bazpur Road, Kashipur, Distt. Udham Singh Nagar (Uttarakhand)

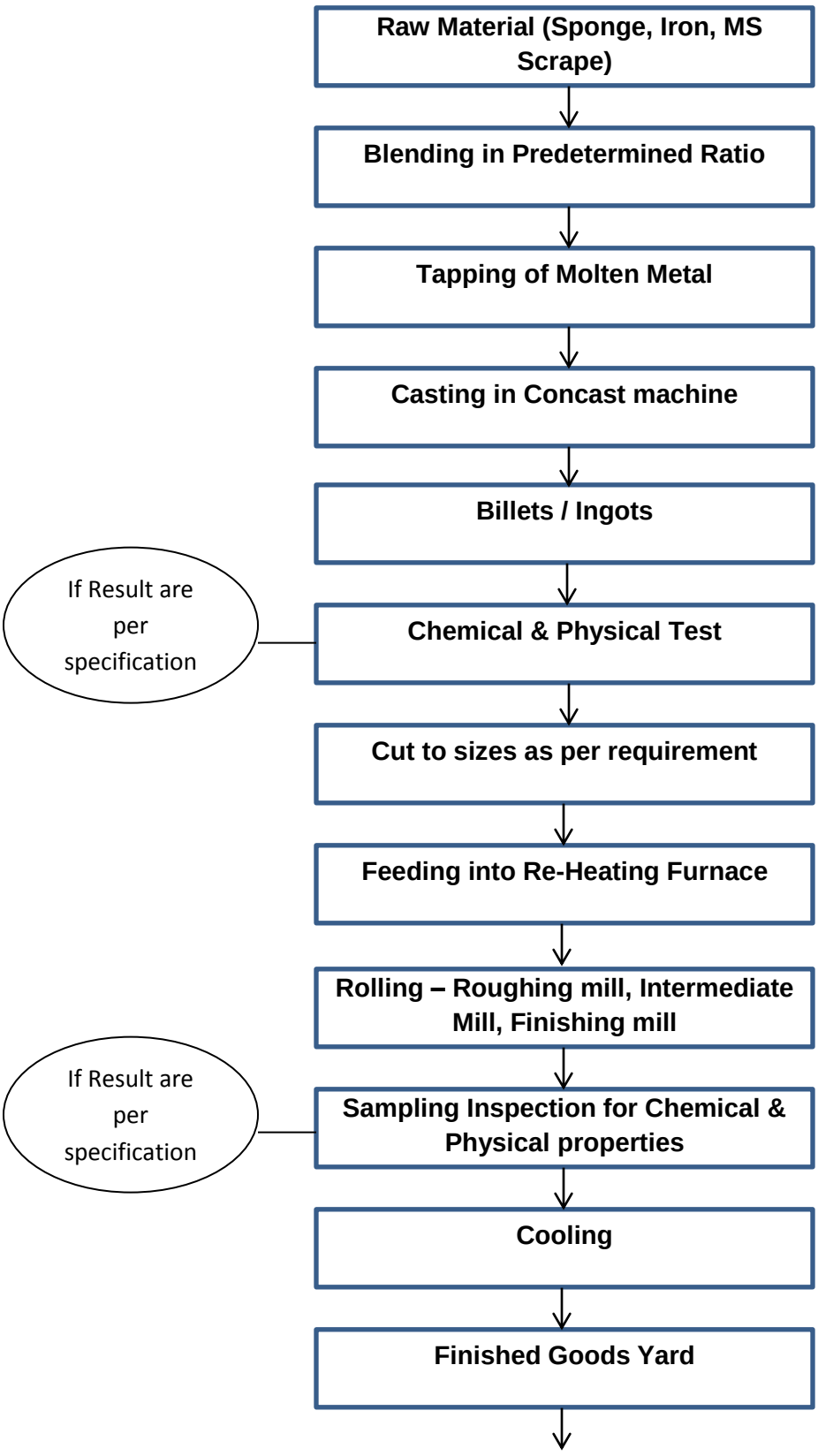
SITE LAYOUT PLAN

SITE PLAN

LANDSCAPE AREA PROVIDED
LANDSCAPE (A)=1880.55 SQMT.
LANDSCAPE(B)=1304.88SQMT.
LANSCAPE (C)=6732.91 SQMT.
LANSCAPE (D)=5396.94 SQMT.
LANSCAPE (E)= 7922.26 SQMT.
LAND SCAPE (F)=1890.43 SQMT
LAND SCAPE (G)=1838.33 SQMT.
LAND SCAPE (H) =367.2 SQMT.
LANDSCAPE (I) = 601.07 SQMT.
LAND SCAPE (J) =889.13 SQMT.
LAND SCAPE (K) =2023.01 SQMT.
LAND SCAPE (L) =3097.05 SQMT.
LAND SCAPE (M) =166.10 SQMT.
LAND SCAPE (N) =794.73 SQMT.
LAND SCAPE (O) =1961.13 SQMT.
LANDSCAPE AREA PROVIDED = 36865.72 SQ.MT.



MANUFACTURING PROCESS



PROCESS DESCRIPTION

The basic raw materials required for producing liquid steel are Sponge Iron, Iron Scrap, and Ferro-Alloys etc. The main raw materials and their annual requirement along with the source of the raw materials for the proposed project are given below:-

Quantity of Raw Material with Source of Supply

For making of Melting Division

Sr. No.	Raw Materials	Ratio	Quantity (MT/annum)			Source of Supply
			Existing	Additional	Total	
1.	Sponge Iron	50	1,32,000	**1,80,000**	3,12,000	Open Market
2.	Iron Scrap	50	1,32,000	**1,80,000**	3,12,000	Open Market
TOTAL		**100**	**2,64,000**	**3,60,000**	**6,24,000**	

For making of Rolling Division

Sr. No.	Raw Materials	Quantity (MT/annum)			Source of Supply
		Existing	Additional	Total	
1.	MS Billets/Ingots	2,99,651	7,46,503	10,46,154	Open Market / Own Manufacturing

PROCESS

1. INDUCTION FURANCE

Induction furnace is basically furnaces meant for use of Sponge Iron and MS Scrap as major raw material to produce mild steel. These furnaces work on the principal of electromagnetic induction. After the furnace is switched on, current start flowing at a high rate and comparatively low voltage through the induction coil of the furnace, producing an induced magnetic field inside the central space of the coils where the crucible is located. The induced magnetic field thus generated cut through the packed charge in the crucible. As the magnetic flux cut through the scrap and complete the circuit, they generate an induced current in the scrap. The induced current as it flows the highly resistive path of scrap mix, generate tremendous amount of heat and melting the scrap. When these

additives have melted completely, the power input may be increased to bring the temperature of metal up to the point most desirable for pouring. The current is then turned off and the furnace is tilted for pouring into the ladle. As soon as pouring has ceased, the crucible is cleaned completely from any slag or metal droplets adhering to the wall of the crucible and the furnace is now ready for charging again.

The slagging & pouring usually takes 15-20 minutes and one cycle/heat is completed in about 2hrs. During charging of sponge iron, Ferro alloys & Scrap and also during pouring, some hot gases and small amount of smoke (resulting from burning of carbon & gangue materials in the charge) comes, out from the mouth (top opening) of the furnace. These gases & smoke are taken care of. For 15/20 ton furnace where up to 11-12 heats can be obtained by using 50% sponge iron and 50% MS Scrap. The installed capacity and number of heats can be calculated as below for 50:50 (Sponge/pig iron) charge.

Induction Furnace Capacity (Existing & Proposed)

Parameters	Existing	After Expansion
Furnace capacity	15MT (03 Nos.) and 20MT (01 No)/heat = 65MT/heat	15 MT (03 Nos.) & 20MT (01No) and 30 MT (02 Nos.)/heat = 125 MT/heat
Tap-to-Tap cycle time/ min	120	120
Number of heat/ day	11-12	12-13
No. of Operating days	360	360
Equivalent liquid steel	2,37,600	5,61,000
Production of Cast billet / Ignots or Bars / Sections tons/year	2,37,600	5,61,000

It may be seen from above table that tap to tap time has been aimed at approx. 120 minutes enabling production of 12 heats per day from each Induction Furnace. The Induction Furnace lining will require repair/replacement after about 15-16 heats. Lining repair will be done in-situ. In order to ensure uninterrupted operations a second crucible, lined and readily should be available.

Thus, each furnace station will consist of two crucibles complete with all fitting and auxiliaries installed adjacent to each other.

Molten metal in an induction furnace is caused to circulate automatically by electromagnetic action. When alloy additions are made to molten metal, the stirring action results in creating a homogenous product at minimum time. For making medium carbon steel in electric induction furnace, the foremost consideration is the optimum utilization of the furnace with emphasis on elimination of delays so as to save power i.e. the most effective cost.

However, time between tap and charge, charging time, power delays etc. are items of utmost importance for meeting the objective of maximum output with lower operational cost. First of all the crucible/furnace is brought to a vertical position and after checking all the safety conditions, powers switched on immediately; molten heel is formed at the bottom of the crucible. Now sponge iron is charged in bucket by the crane and pig iron is charged either by electromagnet or buckets by overhead crane. The charging usually takes 15 minutes. Thereafter, the furnace lid is closed and melting continues for about an hour. Alloy additions and de-oxidants are added as from the top into the molten metal.

Once the furnace contains the full capacity of molten steel (1600 – 1650^{o}C) slag is manually skimmed off from the top. The slag is skimmed into a slog pot kept near the mouth of the furnace on the furnace platform. Next the hydraulic titling device is actuated and liquid metal from the ladle is discharged in there factory lined central pouring trumpet, which then flows through the bottom plate runners

and comes up through bottom hole of the ingot moulds. Arranged properly molten metal is poured through the tunic. Two sets of pencil ingot moulds are usually kept, where one cools the other is prepared etc. for the next pouring.

The most advantageous aspect of Induction Furnace is that they are relatively low in capital cost as compared to other types of melting units. Its installation is comparatively easier and its operation is also simpler. Among other advantages, there is a very little heat loss due to radiation from the furnace as the bath is constantly covered and there is practically no noise in attending their operation. However, time between tap and charge, charging time, power delays etc. are items of utmost importance for melting the objective of maximum output with lower operational cost. At the ladle treatment station, liquid steel is ringed with nitrogen to homogenize its temperature and composition.

High Tension power supply is transferred to the converter through step down transformers where power is converted from AC to DC Furnace Transformer has been provided with each Furnace.

The three phases Oil immersed Transformer is rugged designed to meet the requirement of lad redefining operation. It will be of continuous duty. The selection of secondary voltage is effected by means of triple pole remote operated on load, tap changer. He transformer is designed for forced cooling and the oil is circulated in the heat exchanger (mounted on tank) by means of an oil pump, and is cooled by water. In the water circuit, a flow meter with electrical contacts is provided which gives an alarm in case the cooling water rate falls below the set value. The primary terminals of the transformer are terminated on top of the tank into HV bushings and the secondary terminals in heavy sectional copper bars.

a) **Cranes :** EOT cranes to handle the raw material and finished product have been provided. All cranes will comply IS 3177 – Code of practice for electric overhead travelling cranes and IS 807 – Code of practice for electric overhead travelling cranes, which is meant for EOT cranes in steel plants.

b) **Cooling Water System :** The system will take care of cooling water requirement of Induction Coil, magnetic yokes, and water cooled cables.

c) **Ventilation Plant :** Ventilation system for Air Cooling of the electrical room and the electrical equipment comprising of blower fan and exhaust fan, fan motor and filters are housed in the same building. Air from the blower leads to the electrical room through ducts.

2. CONTINUOUS CASTING MACHINE

The ladle containing liquid steel is placed on the turret and brought over the tundish. The tundish act as a buffer and enable the liquid steel to move homogeneously down through the nozzles, provided at the bottom of the tundish into moulds. The automatic mould level controller controls the steel level in the mould. The subsequent primary and secondary cooling transform the liquid steel into billets of the required dimensions and is drawn out with the help of a withdrawal and straightened unit and cut into required length by the shear provided in each strand. Once a ladle is emptied another ladle is brought into the casting position and the casting continues. The billets are gradually shifted to the rolling mill through conveyer or stacked orderly at the dispatch end for outside dispatch or for rolling plant. The details about the cast number and quality of billets are marked on the billet stack. CCM is used to produce billets of cross sections 100mm x 100mm to 125mm x 125mm directly from molten metal by passing the same through mould tubes designed to produce specific sections. Molten metal passes through the mould tubes by gravity where solidification of outer layer of the metal occurs due to Mould tube cooling by cooling water. As the metal moves out of the tube & progresses along a curve from vertical to horizontal direction, water through nozzles is sprayed over the metal shell which results in thickening of the shell. This thickness continuously increases with cooling as the metal (section produced after passing through mould tube) progresses & the section finally becomes solid. As the section becomes horizontal, it is passed through straightening & withdrawal unit where it is straightened. The section (billet) is then cut online into pieces of desired length.

3. PLANT WATER SYSTEM

Water required in Cooling Tower as make up. Raw water requirement for CT, DM plant, area cleaning system etc. shall be met through bore-wells. Water tank of adequate capacity (depending upon equipment requirement & workforce) has been constructed within the premises.

4. COMPRESSED AIR SYSTEM

Compresses air is required primarily at three locations in the plant viz. in Induction Furnace, in CCM & in Dust Extraction System (bag filter).

5. FIRE PROTECTION SYSTEM

Adequate fire-fighting equipment has been provided for each production unit. Following systems of fire protection has been provided in the steel plant :

- Water hydrants network around all the shops.
- Smoke detectors in critical areas such as control rooms.
- CO_2 type portable fire extinguishers for electrical rooms flooding system and
- Foam type fire existing near lubrication, hydraulic and fuel oil installation.

Adequate number of portable fire extinguishers will be provided at various locations in the plant shed, LT panel room & DG set room.

6. PLANT ELECTRICAL SYSTEM

The power supply through furnace transformers will be supplied to furnace whereas power supply through auxiliary transformer which will be used for EOT crane operations, CCM operations, furnace auxiliaries, pumps for cooling water, lighting etc.

7. EMERGENCY BACK-UP POWER

1 no. of 1010 KVA & 2 nos of 500 KVA each silent type DG set has been provided already. DG Set is proposed for power to the auxiliaries of plant when UPCL power is not available. This will also be useful for emergency power to take care of safe shut down of important auxiliaries of plant. During total power

failure, above DG set will also support for Emergency lighting for personnel movement in some main location of steel plant.

8. STORAGE YARD

Raw material shall be brought to the yard by trucks are unloaded and stacked indifferent piles by pay loaders.

9. EMISSION CONTROL SYSTEM

i.e. a compartment type bag house having 8 to 10 compartments with polyester felt filter bags is installed to comply with the emission norm from the Induction Furnace. The flue gases from furnace are being drawn through an interconnecting ductwork by induced draft fan & exhaust to the chimney. The system will meet the emission standards during operation of the plant and ensure clean plant operation. The fume exhaust hood with duct provided around the furnace circumference to capture the fumes generated during tapping operation. Cyclone separator and Bag Filter are also providing to control the emission. Emission level at the outlet for Induction Furnace is ensured less than 50 mg/ Nm^3.

10. REHEATING FURNACE

Reheating furnace is used for heating of billets before hot rolling in Rolling Mill. Coal based furnace is used as fuel in reheating furnace. The billets manufactured as described above are cut into required sizes and then fed into a reheating furnace where it is reheated to temperatures up to of1050°C; the rate at which heat is absorbed by the billet has to be controlled to avoid partial rolling. Company is now proposed to replace the existing Coal fired Furnace with natural gas as fuel under the cleaner technology, thereby reducing the emission tremendously.

At present Billets are directly fed from CCM to the Rolling Mill bypassing the Reheating Furnace. Reheating Furnace is used only when there is no feed from CCM.

11. ROLLING MILL

The billets produced in CCM (Size-100x100 to 125x125 mm) will be fed directly to Rolling Mill of the steel plant. There will be One Hi speed rolling mill for production of TMT bars , MS Structure and Wire Rod..

MACHINERY & EQUIPMENT DETAILS

Sr. No.	Facilities	Existing (Nos).	Proposed (Nos).	Total (Nos).
1.	Induction Furnace	15 Tons (3 Nos) 20 Tons (1 Nos)	30 Tons (1 No)	15 Tons (3 Nos) 20 Tons (1 No) 30 Tons (2 Nos)
2.	CCM	01 no	01 no	02 nos
3.	Coal Based Furnace	01 no. (Reheating at Structure Plant)	01 no.	02 nos
4.	Furnace Transformer	04 nos.	02 nos	06 nos
5.	Auxiliary Transformer	04 nos.	---------	04 nos.
6.	E.O.T. Crane	08 nos.	04 nos.	12 nos.
7.	Cooling Tower	06 nos.	02 nos.	08 nos.
8.	Mono Block pumps & Borewell	Lot	Lot	Lot
9.	H.T. Sub-station with breaker, Control Panel, Control Cable	Lot	Lot	Lot
10.	L.T Panel, M.C.C. Panel, VCB, DBS, FDBS, LT Cables, Light lifting, Man Cooler Fan, Switch Gear etc.	Lot	Lot	Lot
11.	Weigh Bridge 60/80/100 Ton capacity	3 nos.	----------	3 nos.
12.	Mould Stand, Charging Box, Tundas, Treamer Table, Span etc.	Lot	Lot	Lot

5. REHABILITATION AND RESETTLEMENT (R & R) PLAN

R & R Plan is not required in this Project.

6. PROJECT SCHEDULE AND COST ESTIMATES

- Project is expected to be complete within 01 year after obtaining Clearance from MoEFCC.
- The Total Cost of the Project is Rs. 41.21 Crores

7. ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

The demand of Iron & Steel product always remains in the market because of its consumption in almost every development work. As such after analysis and observations from the market, M/s Galwalia Ispat Udyog Pvt. Ltd. proposes to expand its existing capacity and also to incorporate new products in the production line. Due to this incorporation of product and expansion there will be generation of the employment for the local people which will contribute in enhancing socio-economic condition of the area. After observation and findings it is concluded that the Project for Expansion aforesaid is feasible in all respect.