

J & K ENTREPRENEURSHIP DEVELOPMENT INSTITUTE (JKEDI)

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DETAILED TECHNO-ECONOMIC
CUM PRE-INVESTMENT PROJECT
REPORT

ON

(MANUFACTURE/FABRICATION OF STEELGATES, GRILLS, ROOF TRUSSES,
TRACTOR TROLLIES, ROLLING SHUTTERS, SHUTTERING PLATES, ANGLE
IRON POSTS AND WATER TANKIES AND STEEL FURNITURE)

FOR

INTRODUCTION

Fabrication process

Fabricators work with iron, the 'black' metal, and steel, its derivative. The black color comes from fire scale, a layer of oxides that forms on the surface of the metal during heating. The term 'smith' originates from the word 'smite', which means 'to hit'. Thus, a blacksmith is a person who smites black metal.

Fabricators work by heating pieces of wrought iron or steel until the metal becomes soft enough to be shaped with hand tools, such as a hammer, anvil and chisel. Heating is accomplished by the use of a forge fueled by propane, natural gas, coal, charcoal, or coke.

Modern Fabricators may also employ an oxyacetylene or similar blowtorch for more localized heating. Color is important for indicating the temperature and workability of the metal: As iron is heated to increasing temperatures, it first glows red, then orange, yellow, and finally white; then it melts. The ideal heat for most forging is the bright yellow-orange color appropriately known as a "forging heat." Because they must be able to see the glowing color of the metal, some Fabricators work in dim, low-light conditions. Most work in well-lit conditions. The key is to have consistent lighting which is not too bright. Direct sunlight obscures the colors.

The techniques of Fabrication may be roughly divided into forging (sometimes called "sculpting"), welding, heat treating, and finishing.

Forging

Forging is the process in which metal is shaped by hammering. Forging is different from machining in that material is not removed by these; rather the iron is hammered into shape. Even punching and cutting operations (except when trimming waste) by smiths will usually re-arrange metal around the hole, rather than drilling it out as swarf.

There are five basic operations or techniques employed in forging: drawing, shrinking, bending, upsetting, and punching.

These operations generally employ hammer and anvil at a minimum, but smiths will also make use of other tools and techniques to accommodate odd-sized or repetitive jobs.

Drawing

Drawing lengthens the metal by reducing one or both of the other two dimensions. As the depth is reduced, the width narrowed, or both the piece is lengthened or "drawn out".

As an example of drawing, a smith making a chisel might flatten a square bar of steel, lengthening the metal, reducing its depth but keeping its width consistent.

Drawing does not have to be uniform. A taper can result as in making a wedge or the woodworking chisel blade. If tapered in two dimensions a point results.

Drawing can be accomplished with a variety of tools and methods. Two typical methods using only hammer and anvil would be: hammering on the anvil horn, and hammering on the anvil face using the cross peen of a hammer.

Another method for drawing is to use a tool called a fuller, or the peen of the hammer to hasten the drawing out of a thick piece of metal. The technique is called fullering from the tool. Fullering consists of hammering a series of indentations (with corresponding ridges) perpendicular to the long section of the piece being drawn. The resulting effect will be to look somewhat like waves along the top of the piece. Then the hammer is turned over to use the flat face and the tops of the ridges are hammered down level with the bottoms of the indentations. This forces the metal to grow in length (and width if left unchecked) much faster than just hammering with the flat face of the hammer.

Shrinking

Shrinking, while similar to upsetting, is essentially the opposite process as drawing. As the edge of a flat piece is curved—as in the making of a bowl shape—the edge will become wavy as the material bunches up in a shorter radius. At this point the wavy portion is heated and the waves are gently pounded flat to conform to the desired shape. If you were to compare the edge of the new shape to the original piece, you would discover that the material is thicker than before. This change in thickness is due to the excess material that formed the waves being pushed into a uniform edge that has a smaller radius than before.

Bending

Heating iron to a "forging heat" allows bending as if it were a soft, ductile metal, like copper or silver.

Bending can be done with the hammer over the horn or edge of the anvil or by inserting a bending fork into the Hardy Hole (the square hole in the top of the anvil) and placing the work piece between the tines of the fork and bending the material to the desired angle. Bends can be dressed and tightened or widened by hammering them over the appropriately-shaped part of the anvil.

Some metals are "hot short", meaning that they lose their tensile strength when heated. They become like Plasticine: although they may still be manipulated by squeezing, an attempt to stretch them, even by bending or twisting, is likely to have them crack and break apart. This is a problem for some blade-making steels, which much be worked carefully to avoid hidden cracks developing that will cause failure in the future. Although

rarely hand-worked, titanium is notably hot short. Even such common Fabrication processes as decoratively twisting a bar are impossible with it.

Upsetting

Upsetting is the process of making metal thicker in one dimension through shortening in the other. One form is by heating the end of a rod and then hammering on it as one would drive a nail: the rod gets shorter, and the hot part widens. An alternative to hammering on the hot end would be to place the hot end on the anvil and hammer on the cold end.

Punching

Punching may be done to create a decorative pattern, or to make a hole. For example, in preparation for making a hammerhead, a smith would punch a hole in a heavy bar or rod for the hammer handle. Punching is not limited to depressions and holes. It also includes cutting, or slitting and drifting: these are done with a chisel.

Combining processes

The five basic forging processes are often combined to produce and refine the shapes necessary for finished products. For example to fashion a cross-peen hammer head, a smith would start with a bar roughly the diameter of the hammer face, the handle hole would be punched and drifted (widened by inserting or passing a larger tool through it), the head would be cut (punched, but with a wedge), the peen would be drawn to a wedge, and the face would be dressed by upsetting.

In the example of making a chisel, as it is lengthened by drawing it would also tend to spread in width, so a smith would frequently turn the chisel-to-be on its side and hammer it back down—upsetting it—to check the spread and keep the metal at the correct width for the project.

As another example, if a smith needed to put a 90-degree bend in a bar and wanted a sharp corner on the outside of the bend, the smith would begin by hammering an unsupported end to make the curved bend. Then, to "fatten up" the outside radius of the bend, one or both arms of the bend would need to be pushed back into the bend to fill the outer radius of the curve. So the smith would hammer the ends of the stock down into the bend, 'upsetting' it at the point of the bend. The smith would then dress the bend by drawing the sides of the bend to keep it the correct thickness. The hammering would continue—upsetting and then drawing—until the curve had been properly shaped. In the primary operation was the bend, but the drawing and upsetting are done to refine the shape.

Welding

Welding is the joining of metal of the same or similar kind of metal

A modern blacksmith has a range of options and tools to accomplish this. The basic types of welding commonly employed in a modern shop include traditional forge welding as well as modern methods, including oxyacetylene and arc welding.

In forge welding the pieces to be welded are heated to what is generally referred to as "welding heat". For mild steel most smiths judge this temperature by color: the metal will glow an intense yellow or white. At this temperature the steel is near molten .

Any foreign material in the weld, such as the oxides or "scale" that typically form in the fire, can weaken it and potentially cause it to fail. Thus the mating surfaces to be joined must be kept clean. To this end a smith will make sure the fire is a reducing fire: a fire where at the heart there is a great deal of heat and very little oxygen. The smith will also carefully shape the mating faces so that as they are brought together foreign material is squeezed out as the metal is joined. To clean the faces, protect them from oxidation, and provide a medium to carry foreign material out of the weld the smith will use flux—typically powdered borax, silica sand, or both.

The smith will first clean the parts to be joined with a wire brush, then put them in the fire to heat. With a mix of drawing and upsetting the faces will be shaped so that when finally brought together the center of the weld will connect first and the connection spread outward under the hammer blows, pushing the flux and foreign material out.

The dressed metal goes back in the fire, is brought near to welding heat, removed from the fire, brushed, flux is applied, and it is returned to the fire. The smith now watches carefully to avoid overheating the metal. There is some challenge to this, because in order to see the color of the metal it must be removed from the fire, and this exposes the metal to air, which can cause it to oxidize rapidly. So the smith might probe into the fire with a bit of steel wire, prodding lightly at the mating faces. When the end of the wire sticks on to the metal is at the right temperature (a small weld has formed where the wire touches the mating face so it sticks on to the metal).

Now the smith moves with rapid purpose. The metal is taken from the fire and quickly brought to the anvil, the mating faces are brought together, the hammer lightly applying a few taps to bring the mating faces into complete contact and squeeze out the flux, and finally returned to the fire again.

The weld was begun with the taps, but often the joint is weak and incomplete, so the smith will again heat the joint to welding temperature and work the weld with light blows to "set" the weld and finally to dress it to the shape.

Finishing

Depending on the intended use of the piece a blacksmith may finish it in a number of ways:

- A simple jig (a tool) that the smith might only use a few times in the shop may get the minimum of finishing: a rap on the anvil to break off scale and a brushing with a wire brush.
- Files can be employed to bring a piece to final shape, remove burrs and sharp edges, and smooth the surface.
- Heat treatment and case-hardening to achieve the desired hardness.
- The wire brush either as a hand tool or power tool can further smooth , brighten and polish surface.
- Grinding stones, abrasive paper, and emery wheels can further shape, smooth and polish the surface.

There are a range of treatments and finishes to inhibit oxidation of the metal and enhance or change the appearance of the piece. An experienced smith selects the finish based on the metal and intended use of the item. Finishes include but are not limited to: paint, varnish, bluing, browning, oil, and wax.

Fabrication of STEELGATES, GRILLS, ROOF TRUSSES, TRACTOR TROLLIES, ROLLING SHUTTERS, SHUTTERING PLATES, ANGLE IRON POSTS, WATER TANKIES. The tourism, commercial and industrial activity in J&K State received a major set back in the last years due to unforeseen disturbances. However, of late the things are looking up and the outlook is improving the economic revival and revival of Industry. Industry appears to be on horizon. There is an urgent need for re-construction of the infrastructure, which has received a major set back and not much time can be lost in it. For these proposed fabrication items such as STEELGATES, GRILLS, ROOF TRUSSES, TRACTOR TROLLIES, MIXERS, HAND DRIVEN CARTS, ROLLING SHUTTERS, SHUTTERING PLATES, ANGLE IRON POSTS, WATER TANKIES AND BODIES OF VERHICLES, Signboards will be of great help. The outlook for the proposed venture seems to be very bright and the unit shall be receiving orders on the infrastructure proposed to be developed by the promoters. The details of which have been projected in the report. The proposed details of machineries incorporated in the report are sufficient to undertake light and medium range fabrication as and when tendered to the unit.

PROCESS OF MANUFACTURE

Steel sheets of assorted Gauge are cut to size and pressed wherever need arises and reinforced with angle iron to with stand the approved load. The different patterns are welded either by arc or gas welding and the semi-finished products is grinded at welded spots to make the surface smooth and the product is coated with lead oxide or any anti-corrosion agent. Then the item is coated with final touches of paint under Bhati observation. The Bureau of India Standards (ISI) has carried out specification standards for about all these type of items. In brief following operations are required for manufacturing of steel furniture items.

1. Cutting

2. Bending
3. Welding
4. Grinding
5. Drilling
6. Riveting
7. Painting

Steel furniture, chainlink fencing, steel , steel roof trusses, storage tanks Shutters as Angle iron posts, Penals, aluminum doors, windows, frames, structures Frames, and great potential in Kashmir valley both in Government as well as in private sector. Though a number of units are carrying out the above activities still there exists a gap in the demand supply curve. The above items have tremendous demand in defense sector also.

TECHNICAL KNOW-HOW

Fabrication of Steel gates, grills, Steel roof trusses, Steel, is well established in the country and in the state. There are number of units in the country including in the state who are in this line of activity. Fabrication of steel related items are well-established business and no sophisticated know-how is required. There are number of small-scale units of such nature in the state. No specialized know-how is required for such type of units except experienced operator for operating the equipment as per the design and specifications. The promoters can easily recruit experienced and skilled manpower from within the state and in case of need from the neighboring states of Punjab, Haryana, and Delhi. In addition, the machinery suppliers have agreed to train the persons in operating the different machines. In view of this, it is felt that the unit will not face any difficulty as far as technical know-how is concerned

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PROJECT COST SUMMARY			
S.NO	PARTICULARS		AMOUNT(LACS)
1	LAND		-----
2	Civil Works		NIL
3	Plant & Machinery		2.15
4	Miscellaneous Fixed Assets		0.38
5	Preliminary & Preoperative expenses		0.43
6	Working Capital Requirement		7.04
			10.00
MEANS OF FINANCE			
1	Seed Capital (Maximum for this Category)		3.00
2	Promoters Contribution		0.50
3	Loan from Bank (65 %)		6.50
DETAILS OF LOANS			
A	Long Term Investment		2.96
1	Promoters Contribution/Seed Money		1.04
2	Term Loan From Bank		1.92
B	Working Capital Requirement		7.04
1	Promoters Contribution/Seed Money		2.46
2	Working Capital Finance From Bank		4.58

POLLUTION NORMS.

The steel fabrication works are mostly carried out by the different nature of machines having different operation besides are also undertaken at the respective sites for execution of steel truss/bridge related works. Which forms the basic operation for the envisaged program, therefore, the materials required are in finished form and the waste produced during the process of fabrication has better marketing support. Since the project is assumed to operate at 50% capacity utilization during first year of operation and would subsequently increase during 2nd, 3rd, years and so on till optimum utilization is achieved, as such, the process of fabrication for making steel related products as per the design and specifications is free of pollution and are controlled within the prescribed norms constituted for such type of ventures.

1: Apart from the above recommendations, the promoter has agreed in principle that he will strictly adhere pollution norms as and when shall be implemented and shall use all possible devices to prevent pollution measures.

2: The diesel generating set of rated capacity considered in the project report shall be housed in acoustic proof room and shall be provided with anti-vibration mountings/pads besides shall be purchased of ISO Standards both for Quality as well as safety measures, therefore, the cost to be incurred for such equipmentS

3: Adequate provision of toilets, septic and soakage pit has been made to take care of human wastage and the wash water before discharging in the main drainage system, hance, there is no effluents discharged in the form of solid, liquid and gaseous and the plant, thus is considered free from the pollution aspects.

Manpower

The category wise break-up manpower including salary as shown at Annexure. A Manager who would be assisted by his selected staff member to look after accounts as well as procurement of raw material and sale of the product would look after the operations of the factory. Regarding technical staff, the production function would be looked after by a production foreman/supervisor who would be assisted by machine and other skilled operators to look after various jobs. The unit would provide employment opportunities to 18 number of persons on Permanent Basis and 10 No. of Persons on Part time including those required under administrative categories on permanent basis. The break up of requirement, monthly salary, annual salary as well as total cost on manpower. Necessary provision of perks and annual increase in salaries made in the estimates. It may be mentioned that except for the technical staff all the manpower will be recruited from local sources, if need arises, the same could be recruited from the neighboring states.

SEED CAPITAL ASSISTANCE

The Promoter is setting up the unit under Sher-E-Kashmir Employment & Welfare Programme for the Youth (SKEWPY), an initiative of Government of Jammu and Kashmir for unemployed youth of J&K State. Under the Scheme, the Promoter, being a 10+2, will be eligible for Seed Capital equivalent to 35% of the Project Cost of Rs.10.00 lakhs upto a maximum of Rs.3.00. The Seed Capital Scheme is implemented through J&K Entrepreneurship Development Institute (JKEDI). Loan assistance of Rs.6.50 lakhs at 65% of the Project Cost is proposed to be sanctioned by J&K Bank Ltd. at 9.00% rate of Interest. The balance amount of Rs.0.50 lakhs to meet the shortfall in the Project Cost of Rs.10.00 lakhs will be met by the Promoter from own sources.

CONCLUSION

On critical examination and analysis of various indicators, it may be stated that the proposed unit is a bankable proposition, deserving the support and favourable consideration of Institution/Bank(s)

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PRELIMINARY AND PREOPERATIVE EXPENSES

The details of preliminary and pre-operative expenses generally are expenses on travelling, postage, interest and bank charges during construction period, security deposits, project report preparation and other un-fore seen expenses, the details on account of preliminary & pre-operative expenses follows as:

<u>S.NO.</u>	<u>PARTICULARS</u>	<u>INT. RATE</u>	<u>PERIOD MONTHS</u>	<u>TOTAL COST(lacs)</u>
<u>A1</u> <u>PROPOSED PRELIMINARY EXPENCES</u>				
<u>1</u>	Start up Expenses % of Project cost			0.15
<u>2</u>	Project Report Preparation			0.04
<u>A2</u> <u>PROPOSED PREOPERATIVE EXPENCES</u>				
<u>1</u>	Stamp duty, Legal Documentation, Security Deposits,			0.02
<u>2</u>	Printing Stationery communication, Traveling, Boarding and other sundry expenses			0.05
<u>3</u>	Miscellaneous Expenses			0.05
<u>4</u>	Interest during moratorium period			0.17
	<u>TOTAL</u>	-	-	<u>0.43</u>

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MISCELLANEOUS FIXED ASSETS

The details of misc. fixed assets mostly comprise of office furniture / fixture, fire fighting equipment's, electrical generation and distribution network, lighting equipment and misc. equipment, load carrier etc.

The cost of misc. fixed assets is considered reasonably and is given as under.

<u>S.NO.</u>	<u>PARTICULARS</u>	<u>NUMBER</u>	<u>UNIT COST</u> <u>(Rs.lacs)</u>	<u>TOTAL</u> <u>COST(lacs)</u>
<u>A</u>	<u>Office Furniture & Fixture</u>			
<u>1</u>	Office Furniture & Fixture		L.S	0.10
<u>B</u>	<u>Power distribution</u>			
<u>1</u>	P.V.C Cables, Conduit pipes, Pipes, Earthing, Lighting, Switches, MCB, and other distribution Network at the rate of 5% of Plant and Machinery			0.08
<u>D</u>	<u>Quality control and Testing</u>			
	Tensile testing m/c, Varniers, Analytical balance and other allied testing equipment's.	1	0.10	0.10
<u>E</u>	<u>Hand Tools</u>			0.10
<u>TOTAL PROPOSED COSTS</u>				<u>0.38</u>

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DETAILS AND ESTIMATED COST ON PLANT AND MACHINERY

While arriving at the requirement of various types of equipment and machinery required for the plant, due consideration has been given to the following points.

- Minimum wastage.
- High productivity.
- Maximum flexibility in operation.
- Adequate stand by provision where ever necessary.

The production plant and equipment proposed have been selected for the envisaged production capacity and incorporates features that permit smooth operation of the plant. After making a preliminary study of the source of supply of such equipment it has been identified that all the equipments will be available indigenously and no imports will be necessary.

The concern is expected to purchase the requisite machinery from reputed authorized dealer, who would also assist in the installation of plant and machinery. For estimating the cost on plant and machinery the quotations provided to us by the promoter has been taken into account.

The details of plant & machinery is as follows: –

<u>S.NO.</u>	<u>PARTICULARS</u>	<u>NUMBER</u>	<u>UNIT COST</u> (Rs.lacs)	<u>TOTAL COST(lacs)</u>
<u>1</u>	WELDING SET 300 AMP HEAVY DUTY	1	0.50	0.50
<u>2</u>	GAS WELDING SET	1	0.20	0.20
<u>3</u>	AIR COMPRESSOR	1	0.19	0.19
<u>4</u>	SHEET CUTTER HEAVY DUTY	1	0.10	0.10
<u>5</u>	PIPE CUTTER COMPLETE	1	0.17	0.17
<u>6</u>	DRILL MACHINE COMPLETE	1	0.26	0.26
<u>7</u>	HAND DRILL	2	0.05	0.10
<u>9</u>	BENCH GRINDER	1	0.06	0.06
<u>9</u>	PIPE BENDING MACHINE MANUAL	1	0.05	0.05
<u>10</u>	ANGLE CUTTER	1	0.08	0.08
<u>11</u>	PORTABLE GRINDER	1	0.04	0.04
<u>12</u>	PRESS	1	0.20	0.20
13	HAND TOOLS			0.20
<u>Total Proposed Machinery</u>				<u>2.15</u>

Installed capacity per annum

The envisaged program is order based, having institutional demand from P.W. Dept. Defense, forest, PHE, P.D. Deptt and other departments engaged in providing infra- structure facilities for promotion and development of works programs. However out of proposed items the furniture related products are mostly utilized by common masses besides demand from above departments. But the products should qualify all standards constituted by B.I.S/ISI to ensure quality and approved specifications. As regards fabrication of steel trusses/, which shall strictly be followed by approved drawings drafted as per design in order to ensure safety measures and other imposed load normally encountered during practical observations. As such, the concern department during fabrication shall supervise the promoter, launching and erection of approved specification of Steel trusses/. In order to determine the viability of the proposed venture. The following assumption has been considered for working out the installed capacity of the unit. Keeping 300 working days on single shift basis of 8 hours a day into consideration per annum.

1	NUMBER OF WORKING DAYS	300
2	NUMBER OF WORKING HOURS	8
3	SHIFTS	1
4	EFFICIENCY FACTOR	80%

I	PROPOSED PRODUCTION		
A	AGRICULTURE IMPLIMENTS	5	MT
B	STEEL GATES	100	NO.S
C	STEEL GRILLS	100	NO.S
D	ROLLING SHUTTERS	100	NO.S
E	ROOF TRUSSES	2	NO.S
F	TRACTOR TROLLIES/HAND DRIVEN CARTS	2	NO.S
G	SHUTTER PLATES	2	MT
H	PREFAB HUTS	5	NO.
I	ELECTRIC CROSS IRON CHANNELS	0	MT
J	ANGLE IRON POSTS (8' LONG)		

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<u>1</u>	<u>NUMBER OF WORKERS</u>	2	NO.S
<u>2</u>	<u>PRODUCTION PER DAY</u>	7	NO.S
<u>3</u>	<u>PRODUCTION PER DAY</u>	7	NO.S
<u>4</u>	<u>PRODUCTION PER ANUM</u>	2100	NO.S

K WATER TANKS (3'X8'X4')

<u>1</u>	<u>NUMBER OF WORKERS</u>	2	NO.S
<u>2</u>	<u>PRODUCTION PER 4 DAYS PER 2 NO.S</u>	1	NO.S
<u>3</u>	<u>PRODUCTION PER ANUM</u>	75	NO.S

L STEEL FURNITURE

<u>1</u>	<u>STEEL ALMIRAH/WADROBES</u>	300	NO.S
<u>2</u>	<u>STEEL CHAIRS</u>	1000	NO.S
<u>3</u>	<u>STEEL TABLE /COTS</u>	100	NO.S

The basic materials required for fabrication / manufacture of proposed line of activities are M.S. Angles, M.S.Sheets, C.R.Sheets, M.S. Pipes, gussets, plates girder section and other steel related items besides anodized aluminum sections of varies specifications under B.I.S norms or IRC class loading of each proposed items in face of installed capacity shall be worked out as: -

S.NO	PARTICULARS	QTY.	UNIT	RATE/UNIT	AMOUNT
				<u>RS.</u>	<u>RS.</u> <u>LACKS</u>
<u>01</u>	<u>ANGLE IRON OF VARIOUS SPECIFICATIONS</u>	22.22	MT	0.45	10.00
<u>02</u>	<u>ALIMUNIUM SECTIONS</u>	5.00	MT	2.00	10.00
<u>03</u>	<u>NUTS BOLTS TOWER HINGES</u>	LS	LS	LS	3.00
<u>04</u>	<u>HARDWARE ITEMS WELDING ELECTRODES GLASSES LEAD OXID ETC</u>	LS	LS	LS	3.00
<u>05</u>	<u>MS SHEETS OF ASSORTED SIZE</u>	22.73	MT	0.44	10.00
<u>06</u>	<u>TUBES PIPES PLATES</u>	17.78	MT	0.45	8.00
<u>07</u>	<u>SPAN AND SPACING</u>	15.00	MT	0.40	6.00
<u>08</u>	<u>MS SHEETS OF ASSORTED SIZE, SHEETS AND FLATS</u>	22.22	MT	0.45	10.00
<u>09</u>	<u>SPRING WIRE</u>	4.35	MT	0.46	2.00

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10	<u>BP/GP SHEETS OF ASSORTED SIZE</u>	17.78	MT	0.45	8.00
11	<u>PAINTS</u>	LS	LS	LS	1.20
	<u>TOTAL PURCHASES</u>				71.20

SALES REALIZATION AND PURCHASES IN PHASED MANNER

YEAR	CAPACITY	SAL/WAG	PURCHASE	UTILITIES	SALES
	UTILISATION		(Lacs)		(lacs)
1ST	40.00	1.73	28.48	0.38	37.18
2ND	45.00	1.94	32.04	0.43	41.83
3RD	50.00	2.16	35.60	0.48	46.48
4TH	55.00	2.38	39.16	0.53	51.12
5TH	60.00	2.59	42.72	0.58	55.77
6TH	65.00	2.81	46.28	0.62	60.42
7TH	70.00	3.02	49.84	0.67	65.07
8TH	70.00	3.02	49.84	0.67	65.07

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STATEMENT OF CALCULATION OF MANPOWER REQUIREMENT & THEIR REMUNERATION				
S.NO	PARTICULARS	Nos	Salary Per Month	Total Per Annum
1	Manager	1	3000	36000.00
2	Skilled Workers	4	2500	120000.00
3	UnSkilled Workers	8	1500	144000.00
4	Accountant	1	2500	30000.00
5	Marketing Executives	2	2500	60000.00
6	Peon	2	1500	36000.00
		18		
				426000.00
			Add- fringe benefits	6000.00
				432000.00
			Say	4.32 Lacs

ESTIMATED COST OF UTILITIES PER ANNUM

The main utilities for running the unit successfully are water and electricity.

• **Power**

• **Water**

1	Total connected load	= 10 hp or 7.5 KW
2.	Total power load after taking load factor (0.89)	= 6.675 KW
3.	Power consumption per annum	= 16020 Kwhr
4.	From PDD (80%) @ 2.50 Kwhr	= Rs 32040 /
5.	From own generator	= Rs 62960 /
	Total	= Rs 95000/

B) Water

The PHE departmental supply shall mostly be utilized for drinking and sanitation purposes, which is available at cheaper rates from P.H.E Department. However under certain unfavorable conditions Rs 1,000 / annum has been kept on account of water

Total cost on Utilities (A + B) Rs 96000/ Say Rs 0.96 Lacs

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REPAIRS AND MAINTENANCE PER ANNUM.

On the basis of norms available from similar plants in actual operation provision has been made for annual cost of maintenance and repairs for the proposed items of fixed out lay. It has been taken as 2%, 3%, 4%, 5%, 5%, 6%, 6% and 6% for 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th year to keep the fixed assets in working conditions.

REPAIRS AND MAINTENANCE PER ANNUM.

<u>Year</u>	<u>Percentage</u>	<u>Building</u>	<u>P&M</u>	<u>MFA</u>	<u>Total</u>	<u>R & M</u>
1st	2%	0.00	2.15	0.38	2.53	0.05
2nd	3%	0.00	2.15	0.38	2.53	0.08
3rd	4%	0.00	2.15	0.38	2.53	0.10
4th	5%	0.00	2.15	0.38	2.53	0.13
5th	5%	0.00	2.15	0.38	2.53	0.13
6th	6%	0.00	2.15	0.38	2.53	0.15
7th	6%	0.00	2.15	0.38	2.53	0.15
8th	6%	0.00	2.15	0.38	2.53	0.15

DETAILS OF ADMINISTRATIVE EXPENSES PER ANNUM

It is taken as 1% of net sales in every year which includes printing, traveling, telegraph, petty expenses, audit fee, telephone bills, legal fee, bank charges and other sundry expenses both for the basic program shall be worked out as:

<u>Year</u>	<u>Capacity Utilization</u>	<u>Sales</u>	<u>%</u>	
1 st	40.00	37.18	1	0.37
2 nd	45.00	41.83	1	0.42
3 rd	50.00	46.48	1	0.46
4 th	55.00	51.12	1	0.51
5 th	60.00	55.77	1	0.56
6 th	65.00	60.42	1	0.60
7 th	70.00	65.07	1	0.65
8 th	70.00	65.07	1	0.65

DETAILS OF SELLING EXPENSES PER ANNUM

It is taken as 3 % of net sales in every year, which includes sales promotion expenses, advertising expenses, commission to intermediaries, carriage outwards, discount, brokerage etc.

<u>Year</u>	<u>Cap. Utiliz</u>	<u>Sales</u>	<u>%</u>	<u>Selling expenses/annum</u>
1 st	40.00	37.18	3	1.12
2 nd	45.00	41.83	3	1.25
3 rd	50.00	46.48	3	1.39
4 th	55.00	51.12	3	1.53
5 th	60.00	55.77	3	1.67
6 th	65.00	60.42	3	1.81
7 th	70.00	65.07	3	1.95
8 th	70.00	65.07	3	1.95

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DETAILS OF WORKING CAPITAL REQUIREMENT AT DIFFERENT LEVELS.

YEAR	CAPACITY	SAL/WAG	PURCHASE	UTILITIES	SALES	Repair	Admn.	Selling	WIP	F.Goods
	UTILISATION		(Lacs)		(lacs)	Maint.	Expen.	Expen.		
1ST	40.00	1.73	28.48	0.38	37.18	0.05	0.37	1.12	30.59	32.08
2ND	45.00	1.94	32.04	0.43	41.83	0.08	0.42	1.25	34.42	36.09
3RD	50.00	2.16	35.60	0.48	46.48	0.10	0.46	1.39	38.24	40.10

<u>S.no</u>	<u>Particulars</u>		<u>1st</u> <u>Year</u>		<u>2nd</u> <u>year</u>		<u>3rd year</u>	
			40.00		45.00		50.00	
		<u>Days</u>	<u>Amount</u>	<u>Margin</u>	<u>Amount</u>	<u>Margin</u>	<u>Amount</u>	<u>Margin</u>
1	Stock of Raw Material	30	2.85	0.00	3.20	0.00	3.56	0.00
2	Stock of work in progress	3	0.31	0.00	0.34	0.00	0.38	0.00
3	Stock of finished goods	15	1.60	0.00	1.80	0.00	2.00	0.00
4	Sundry debtors	25	3.10	0.00	3.49	0.00	3.87	0.00
5	Working expenses	30	0.13	0.13	0.13	0.13	0.13	0.13
6	Sundry Creditors	10	0.95		1.07		1.19	
7	Working capital requirement		7.04		7.90		8.76	
8	Margin money			2.46		2.46		2.46
9	Working capital limit		4.58		5.44		6.30	

J & K ENTREPRENEURSHIP DEVELOPMENT INSTITUTE (JKEDI)www.jkedi.org**ANTICIPATED SALES REALIZATION PER ANNUM**

The anticipated sales on the products envisaged in the report, while calculating total quantity of materials required for manufacture of poultry feed have been analyzed on the basis of conservative rules. The specific detail in view of installed capacity of plant follows as: -

<u>SNO.</u>	<u>PARTICULARS</u>	<u>SALES QUANTITY</u>	<u>UNITS</u>	<u>AVERAGE RATE (RS.)</u>	<u>AMOUNT Lacs (RS.)</u>
A	AGRICULTURE IMPLIMENTS	5	MT	54360.00	2.72
B	STEEL GATES	100	NO.S	11198.16	11.20
C	STEEL GRILLS	100	NO.S	3261.60	3.26
D	ROLLING SHUTTERS	100	NO.S	7719.12	7.72
E	ROOF TRUSSES	2	NO.S	54000.00	1.08
F	TRACTOR TROLLIES	2	NO.S	45000.00	0.90
G	SHUTTER PLATES	2	MT	45000.00	0.90
H	PREFAB HUTS	5	NO.S	272452.32	13.62
J	ANGLE IRON POSTS (8' LONG)	2100	NO.S	550.00	11.55
K	WATER TANKS (3'X8'X4')	75	MT	30000.00	22.50
L	STEEL FUNITURE				
1	ALMIRAH	300	NOS	4000	12.00
2	CHAIRS	1000	NOS	250	2.50
3	TABLES/COTS	100	NOS	3000	3.00
G. TOTAL					92.95

FUNDING OF CAPITAL EXPENDITURE

The total capital investment cost of the project is estimated at Rs.10.00 Lakhs, which shall be financed for term loan as per the projections made in the report subject to furnishing of latest cost comparative quotations from the authorized dealers besides contribution from the promoters during the implementation of the project, the specific details interalia as:

S.no	Particulars	Amt.(Lacs)
1	Promoters contribution	0.50
2	Seed Capital	3.00
2	Long term borrowings	1.92

A: Equity

The share capital of the unit has been fixed at Rs.3.50 Lakhs comprising Rs. 0.50 Lacs Promoters Contribution and Rs. 3.00 Lacs Seed Capital Margin of the total project cost. The unit has to raise share capital within this limit. The promoter shall arrange equity from the ancestral resources and from the established business of the family for the purpose of availing long term borrowings.

B: Term loan

Term loan requirement to the extent of Rs. 1.92 Lakhs for the purpose of construction of civil structures and purchases of plant & machinery and misc. fixed assets shall be made available from the financial institutions or commercial banks well operating in the valley on the basis that the unit being proven technically feasible and financially viable. As the policies are liberal for such type of ventures to avail packages/incentives to encourage the entrepreneurs to promote industrial culture in the backward area of the country. The state Govt. is equally eager to give all possible support to the development of industry in the area, where the unit is being established more so when the promoter share is about 35% of the capital formulation, which is higher than the normal requirement of funding, insisted upon by the bankers.

INTEREST CALCULATION

It is proposed to raise the sum of Rs 1.92 lacs as long term loans from financial institutions to meet the capital cost of the project. For the purpose of calculating the interest on long-term loans an interest rate of 9.00% per annum is taken into consideration in the project report.

A: Interest on long term loan

<u>S.no</u>	<u>Particulars</u>	<u>Amt.(Lacs)</u>
		1.92
01.	Long term borrowings	
02.	Rate of interest	9.00 %
03.	Installment	Rs. 0.38 Lacs
04.	Repayment schedule	5 years
05	Moratorium Period	12 Months

YEAR	INT T/Loan	T.Loan	Decrease	Yr.Term	Rem. Term
		Payment	Term Loan	Loan Paym.	Loan
1	0.17	0.00	0.00	0.00	1.92
2	0.17	0.38	0.38	0.38	1.54
3	0.14	0.38	0.77	0.38	1.15
4	0.10	0.38	1.15	0.38	0.77
5	0.07	0.38	1.54	0.38	0.38
6	0.03	0.38	1.92	0.38	0.00

B: INTEREST ON WORKING CAPITAL LIMIT

To meet the working capital requirements of the project, the promoters will have to make arrangements for cash credit facilities with the nationalized bank.

RATE OF INTEREST	9.00%
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YEAR	INT W/C	Increase w/ Cap	Increase Curr. Asse	Current Assets	Working Capital
1	0.41	4.58	7.04	7.04	4.58
2	0.49	0.86	0.86	7.90	5.44
3	0.57	0.86	0.86	8.76	6.30
4	0.57	0.00	0.00	8.76	6.30
5	0.57	0.00	0.00	8.76	6.30
6	0.57	0.00	0.00	8.76	6.30
7	0.57	0.00	0.00	8.76	6.30
8	0.57	0.00	0.00	8.76	6.30

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COMPUTATION OF DEPRECIATION CALCULATION

For the purpose of claiming extra depreciation and amortization, the preoperative expenses and contingencies will be capitalized with the cost of fixed assets. The distribution of pre-operative expenses and contingencies has been done approximately in proportion to the cost of all the fixed assets (except land and site development). In the estimation of cost of sales and in books of accounts of the firm the normally adopted practice is to depreciate the various assets by straight-line method.

For income tax purposes, the depreciation of depreciable assets (all fixed assets except land and site development) is carried out by written down value method.

COMPUTATION OF DEPRICIATION

<u>S.no</u>	<u>Particulars</u>	<u>Building</u>	<u>P&M</u>	<u>MFA</u>	<u>Total</u>
1	Cost Price	0.00	2.15	0.38	2.53
2	Preliminary & Preoperative exp.	0.00	0.37	0.06	0.43
	Total	0.00	2.52	0.44	2.96

Depreciation under WDV method

		BUILDING		
Rate of depreciation		6.25%		
		Cost	Dep	WDV
1st	Year	0.00	0.00	0.00
2nd	Year	0.00	0.00	0.00
3rd	Year	0.00	0.00	0.00
4th	Year	0.00	0.00	0.00
5th	Year	0.00	0.00	0.00
6th	Year	0.00	0.00	0.00
7th	Year	0.00	0.00	0.00
8th	Year	0.00	0.00	0.00

Depreciation under WDV method

		Plant & Machinery		
Rate of depreciation		10%		
		Cost	Dep	WDV
1st	Year	2.52	0.25	2.26
2nd	year	2.26	0.23	2.04
3rd	Year	2.04	0.20	1.83
4th	Year	1.83	0.18	1.65

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5th	Year	1.65	0.17	1.49
6th	Year	1.49	0.15	1.34
7th	Year	1.34	0.13	1.20
8th	Year	1.20	0.12	1.08

Depreciation under WDV method

Misc. Fixed Assets

	Rate of depreciation		15%	
		Cost	Dep	WDV
1st	Year	0.44	0.07	0.38
2nd	Year	0.38	0.06	0.32
3rd	Year	0.32	0.05	0.27
4th	Year	0.27	0.04	0.23
5th	Year	0.23	0.03	0.20
6th	Year	0.20	0.03	0.17
7th	Year	0.17	0.03	0.14
8th	Year	0.14	0.02	0.12

Depreciation under WDV method

		<u>Building</u>	<u>P&M</u>	<u>M F A</u>	<u>Total</u>
	Rate of depreciation	6.25%	10%	15%	
1st	Year	0.00	0.25	0.07	0.32
2nd	Year	0.00	0.23	0.06	0.28
3rd	Year	0.00	0.20	0.05	0.25
4th	Year	0.00	0.18	0.04	0.22
5th	Year	0.00	0.17	0.03	0.20
6th	Year	0.00	0.15	0.03	0.18
7th	Year	0.00	0.13	0.03	0.16
8th	Year	0.00	0.12	0.02	0.14

Depreciation under SL Method

	Rate of depreciation	5.00%	15%	10%	Total
	Amount of depreciation	0.00	0.38	0.04	0.42

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Projected Profitability Statement

The annual cost of sales and profitability during the first eight years of operation of the plant is estimated in the following table.

S.no	Particulars	Operating Years							
		1 st	2 nd	3 rd	4th	5th	6th	7th	8th
1	Year of operation								
2	Capacity Utilization (%)	40.00	45.00	50.00	55.00	60.00	65.00	70.00	70.00
3	Sales realization	37.18	41.83	46.48	51.12	55.77	60.42	65.07	65.07
A:	<u>Cost of production</u>								
1	Raw Material	28.48	32.04	35.60	39.16	42.72	46.28	49.84	49.84
2	Salary & wages	1.73	1.94	2.16	2.38	2.59	2.81	3.02	3.02
3	Utilities	0.38	0.43	0.48	0.53	0.58	0.62	0.67	0.67
4	Repairs & Maintenance	0.05	0.08	0.10	0.13	0.13	0.15	0.15	0.15
5	Administrative expenses	0.37	0.42	0.46	0.51	0.56	0.60	0.65	0.65
6	Selling expenses	1.12	1.25	1.39	1.53	1.67	1.81	1.95	1.95
7	Total	32.13	36.17	40.20	44.24	48.25	52.28	56.29	56.29
8	Gross profit	5.05	5.66	6.27	6.89	7.52	8.14	8.77	8.77
B:	<u>Financial expenses</u>								
1	Interest on term loan	0.17	0.17	0.14	0.10	0.07	0.03	0.00	0.00
2	Interest on WCL	0.41	0.49	0.57	0.57	0.57	0.57	0.57	0.57
3	Depreciation (SLM)	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
4	Total	1.01	1.08	1.13	1.09	1.06	1.02	0.99	0.99
5	Profit before tax	4.04	4.58	5.15	5.79	6.47	7.11	7.79	7.79
6	Taxation	0.00	0.00	0.00	0.00	0.00	0.71	1.17	1.56
7	Profit after tax	4.04	4.58	5.15	5.79	6.47	6.40	6.62	6.23
8	Withdrawals	0.00	0.00	2.00	3.00	4.00	3.00	3.00	3.00
9	Profit carried to B/S	4.04	4.58	3.15	2.79	2.47	3.40	3.62	3.23
10	Cumulative profit	4.04	8.62	11.77	14.56	17.03	20.43	24.05	27.28
11	Add back depreciation	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
12	Total cash surplus	4.47	9.04	12.19	14.99	17.45	20.85	24.47	27.70
C:	<u>Less payment</u>								
1	Term Loan	0.00	0.38	0.38	0.38	0.38	0.38	0.00	0.00
2	Withdrawals	0.00	0.00	2.00	3.00	4.00	3.00	3.00	3.00
3	Total payments	0.00	0.38	2.38	3.38	4.38	3.38	3.00	3.00
4	Net Cash accruals	4.47	8.66	9.81	11.60	13.07	17.47	21.47	24.70

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PAY BACK PERIOD

Pay back period is the length of time in which, the unit recovers its initial investment. It may also be defined as the number of months or years required for the unit to generate commutative gross operating surplus equal to the fixed capital investment in the project. The payback period of the unit is estimated in the following table.

<u>Year</u>	<u>CFAT</u>	<u>Cumulative Cash inflow</u>	
1st	4.47		4.47
2nd	5.00		9.47
3rd	5.57		15.03
4th	6.22		21.25
5th	6.89		28.14
6th	6.82		34.96
7th	7.04		42.00
8th	6.65		48.65
<u>2 year</u>	<u>±</u>	<u>2</u>	<u>Months</u>

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DETAILED DEBT SERVICE COVERAGE:

The debt service coverage ratio shows the ability of the unit to repay interest and principal amount of composite loans.

<u>S.no</u>	<u>Particulars</u>		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>	<u>6th</u>
<u>A</u>	<u>Source of funds</u>							
1	Profit after tax		4.04	4.58	5.15	5.79	6.47	6.40
2	Depreciation		0.42	0.42	0.42	0.42	0.42	0.42
3	Interest on term loan		0.17	0.17	0.14	0.10	0.07	0.03
	Total A		4.64	5.17	5.71	6.32	6.96	6.86
<u>B</u>	<u>Disposition of funds</u>							
4	Repayment of term loan		0.00	0.38	0.38	0.38	0.38	0.38
	Total B (3+4)		0.17	0.56	0.52	0.49	0.45	0.42
C	Debt service coverage ratio		26.84	9.29	10.93	12.96	15.35	16.39
<u>D</u>	<u>Average DSCR</u>		15.29					

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BREAK EVEN ANALYSIS AT 60% UTILIZATION

The break even point analysis of the plant is developed from the assumed plant efficiency, fixed cost of sales, variable cost of sales and sales revenue.

BREAK EVEN ANALYSIS		50.00	PERCENT
S.no	Particulars	Amount.(Lacs)	
A	Sales realization	46.48	
B	Variable cost		
1	Raw material	35.60	
2	Utilities	0.48	
3	Selling expenses	1.39	
4	Interest on WCL	0.57	
	Total	38.04	
C	Contribution (A-B)	8.43	
D	Semi-variable/ fixed costs		
1	Salary & wages	2.16	
2	Repairs & maintenance	0.10	
3	Administrative expenses	0.46	
4	Interest on term loan	0.14	
5	Depreciation	0.42	
	Total	3.29	
	B. E. P.	%	38.96

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PROJECTED CASH FLOW STATEMENT

The following table gives the cash flow analysis of 8 years of operation of the plant. A cash flow statement is basically an analysis of sources of availability of funds, extent of the utilization and availability of surplus funds or their deficit at the end of each year of operation.

S.no	Particulars	Const period	1st	2 nd	3rd	4th	5th	6th	7th	8th
	Capacity utilization (%)		40.00	45.00	50.00	55.00	60.00	65.00	70.00	70.00
A	Source of funds									
1	Profit before interest, tax but after depn.		4.63	5.24	5.85	6.47	7.10	7.72	8.35	8.35
2	Depreciation		0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
3	Increase in Share Capital	3.50								
4	Increase in Term loan	1.92								
5	Increase in WCL		4.58	0.86	0.86	0.00	0.00	0.00	0.00	0.00
	Total (A)	5.42	9.63	6.53	7.14	6.89	7.52	8.14	8.77	8.77
B	Application of funds									
1	Capital expenditure	2.96								
2	Prelim / Pre-operative expenses									
3	Increase in current assets		7.04	0.86	0.86	0.00	0.00	0.00	0.00	0.00
4	Decrease in term loan		0.00	0.38	0.38	0.38	0.38	0.38	0.00	0.00
5	Interest on term loan		0.17	0.17	0.14	0.10	0.07	0.03	0.00	0.00
5a	Interest on WCL		0.41	0.49	0.57	0.57	0.57	0.57	0.57	0.57
6	Taxation		0.00	0.00	0.00	0.00	0.00	0.71	1.17	1.56
7	Withdrawal		0.00	0.00	2.00	3.00	4.00	3.00	3.00	3.00
	Total (B)	2.96	7.62	1.91	3.95	4.06	5.02	4.70	4.74	5.12
C	Opening Balance		2.46	4.47	9.08	12.27	15.10	17.60	21.04	25.08
D	Net Surplus	2.46	2.01	4.62	3.19	2.83	2.50	3.44	4.04	3.65
E	Closing Balance	2.46	4.47	9.08	12.27	15.10	17.60	21.04	25.08	28.73

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PROJECTED BALANCE SHEET

The balance sheet of a unit is a very important feature of the working of the unit. In a healthy unit, there is always a growth in total assets and liabilities every year. In a projected balance sheet on the liabilities side the reserves and surplus and on the assets side the cash and bank balances should show healthy growth.

S.no	Particulars	Year	1st	2nd	3rd	4th	5th	6th	7th	8th
A:	<u>Liabilities</u>									
1	Promoters Contribution		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
2	Seed Capital		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3	Reserves & Surplus		4.04	8.62	11.77	14.56	17.03	20.43	24.05	27.28
4	Term Loan		1.92	1.54	1.15	0.77	0.38	0.00	0.00	0.00
5	WCL		4.58	5.44	6.30	6.30	6.30	6.30	6.30	6.30
	Total		14.04	19.10	22.73	25.14	27.22	30.24	33.85	37.08
B:	<u>Assets</u>									
1	Gross Block		2.96	2.54	2.12	1.69	1.27	0.85	0.43	0.01
2	Depreciation		0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
3	Net Block		2.54	2.12	1.69	1.27	0.85	0.43	0.01	-0.41
4	Current Assets		7.04	7.90	8.76	8.76	8.76	8.76	8.76	8.76
5	Cash and bank balance		4.47	9.08	12.27	15.10	17.60	21.04	25.08	28.73
	Total		14.04	19.10	22.73	25.14	27.22	30.24	33.85	37.08