STATEMENT OF THE STUDY:

To prepare a plant layout for a denim jacket manufacturing unit with a capacity of 8000 denim jackets per day.

Objective: Preparation of a layout plan for a denim jacket manufacturing unit.

Factors considered for layout construction

A. Movement

This factor includes inter and interdepartmental transport and handling at various operations, at storage, at inspections, the type of equipments and methods for material handling. This remains the most important factor while deciding upon the selection of layout and utilization of available land.

The various support departments are planned such that they are near to their requisite sections of the plant, so that lesser material handling takes place as well as time is saved.

The material handling equipments are selected and designed as per department's requirement and interdepartmental movement.

B. Product

This factor includes type of product, the range and variety it covers, the quantity in a shift, the number of shifts, necessary operations and their sequence. The product to be made is high quality dress shirt for export. There are various variations of the dress shirt which have been covered while selecting the type of machinery. The operation breakdown was done along with the time study and the final sequence of operations is decided by elimination of unnecessary operations.

C. Machinery

This factor includes the process, production equipments / furniture type, special precautions to be taken, tools - their utilization and service net-work related to the same. During selection of machinery, the type, productivity, price and service provided by the supplier was kept in mind, so that no hassles are met in future.

D. Waiting

This factor includes permanent and temporary storage and delays and their locations. The stores and warehouse are planned such that there is minimum amount of material handling happening between various departments and the store/warehouse. Proper amount of inventory storage capacity is planned so that inventory cost never goes higher.

E. Man

This factor includes direct workers, supervision and service help personals, working hours, safety and manpower utilization method. Standard aisle space for movement is provided, so that there is no problem in movement or supervision. Proper amount of area for each workstation is provided so that the direct workers have no problem while doing the operations or during movement. All the safety precautions are undertaken while designing the layout like exits, emergency exits, fire extinguishers.

F. Service

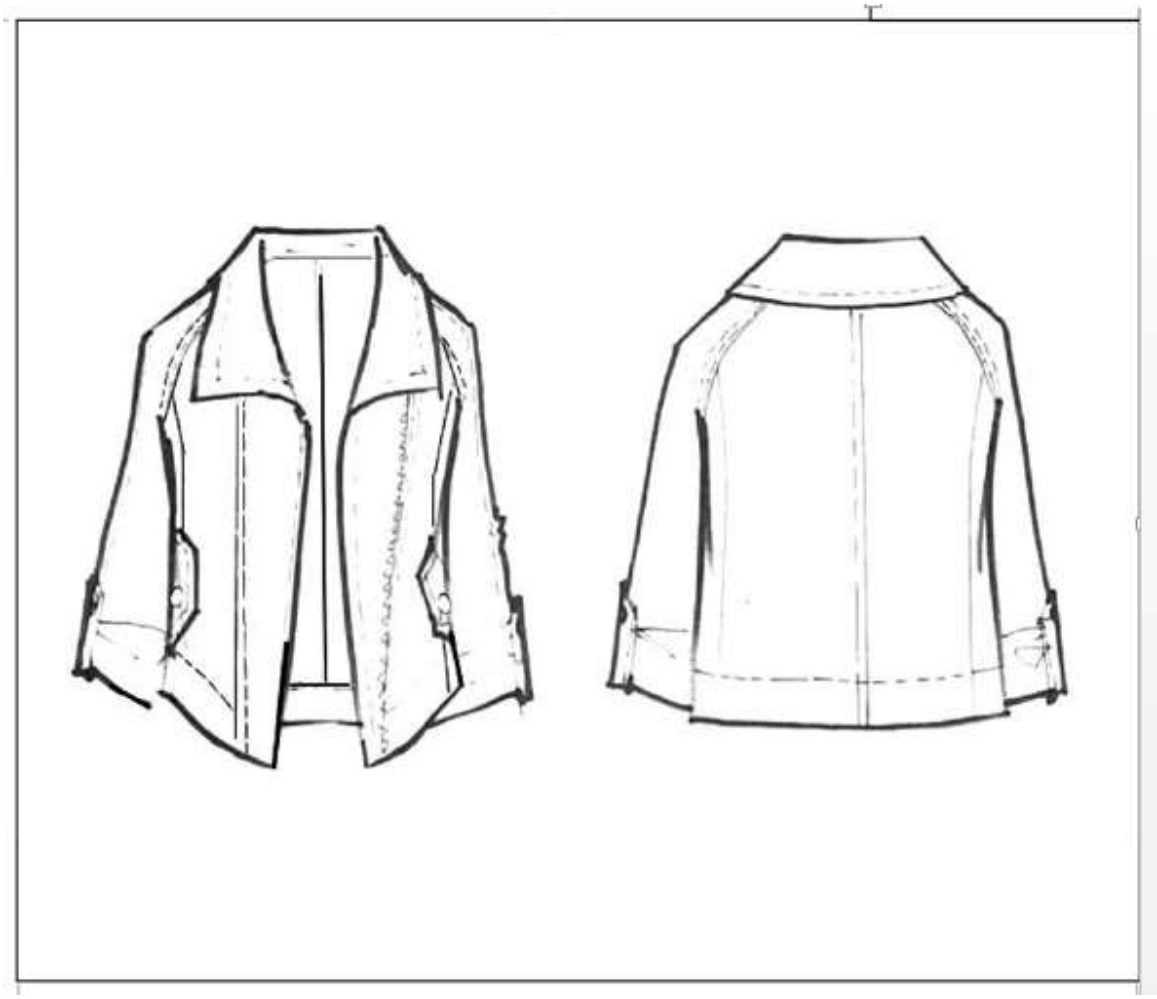
This factor includes service relating to employee facilities such as parking, lockers, rooms, toilets, waiting rooms etc, service related to materials in terms of quality, production controls, scheduling, dispatching, waste control etc and service related to maintenance and repair, its schedule, frequency and intensity.

G. Building

This factor includes outside, inside building features, utility distribution, nature of service integration. The various blocks are planned as per their requirement like of height,

inside features, type of shedding, flooring etc. The final building is to be done in two floors with Kirby sheds while the administration, canteen and other utilities block would be an RCC structure.

PRODUCT-INFORMATION:



Sketch (front) **Sketch (back)**

Sample Comments **(Page 2 of 2)**

Dept 162 **405301**

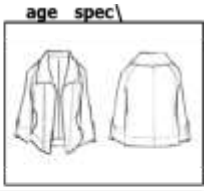
Woven Jacket

Style Description: Cropped Anorak

Supplier: Unknown

Tech Designer: Jackie Lee

age spec



\\zymspec\ImageRepos\Style Technical\2016Q1\imgRp-bab9367a-4978-4323-9771-45a783a328bf.jpg

OPERATION BREAKDOWN

	Operation	M/c	SAM
Collar Section	**Collar run stitch**	SNLS	0.4
	Collar turn & iron	Turning m/c	0.5
	Collar top stitch	DNLS	0.4
Cuff Section	**Cuff run stitch R**	SNLS	0.3
	Cuff turn & iron R	Turning m/c	0.5
	Cuff top stitch R	DNLS	0.4
	Cuff run stitch L	SNLS	0.3
	Cuff turn & iron L	Turning m/c	0.5
	Cuff top stitch L	DNLS	0.4
Pocket Flap Section	**Pocket flaps finish R**	SNLS	0.25
	Pocket flaps turning & iron R	Turning m/c	0.35
	Pocket top stitch R	SNLS	0.25
	Pocket flaps finish L	SNLS	0.25
	Pocket flaps turning & iron L	Turning m/c	0.35
	Pocket top stitch L	SNLS	0.25
Front panels	**Front panels attach R**	SNLS	0.2
	Front panels R O/L	O/L	0.15
	Front panel R Top Stitch	DNLS	0.2
	Front panels attach L	SNLS	0.2
	Front panels L O/L	O/L	0.15
	Front panel L Top Stitch	DNLS	0.2
Back Panels	**Back panels attach R**	SNLS	0.3
	Back Panels O/L R	O/L	0.3
	Back Panel Top Stitch R	DNLS	0.5
	Back panels attach L	SNLS	0.3
	Back Panels O/L L	O/L	0.3
	Back Panel Top Stitch L	DNLS	0.5
	Front left placket attach	SNLS	0.25

Placket Section	**Front left placketTop Stitch**	401	0.25
	Front right placket attach	SNLS	0.25
	Front right placketTop Stitch	401	0.25
Sleeve Section	**Top & Bottom Sleeve attach R**	FOA	0.35
	Top & Bottom Sleeve attach L	FOA	0.35
Assembly Section	**Back panel & Back yoke attach**	SNLS	0.25
	Back panel & Back yoke attach O/L	O/L	0.2
	Back panel & Back yoke attach	DNLS	0.2
	Front panel & yoke attach (with pkt flaps) R	SNLS	0.25
	Front panel & yoke attach (with pkt flaps) O/L R	O/L	0.2
	Front panel & yoke attach (with pkt flaps) R	DNLS	0.2
	Front panel & yoke attach (with pkt flaps) L	SNLS	0.25
	Front panel & yoke attach (with pkt flaps) L	O/L	0.2
	Front panel & yoke attach (with pkt flaps) L	DNLS	0.2
	Shoulder attach R	SNLS	0.2
	Shoulder attach O/L R	O/L	0.15
	Shoulder attach Top Stitch R	DNLS	0.2
	Shoulder attach L	SNLS	0.2
	Shoulder attach O/L L	O/L	0.15
	Shoulder attach Top Stitch L	DNLS	0.2
	Armhole attach R SNLS	SNLS	0.35
	Armhole attach R O/L	O/L	0.15
	Armhole attach R Top Stitch	DNLS	0.3
	Armhole attach L SNLS	SNLS	0.35
	Armhole attach L O/L	O/L	0.15
	Armhole attach L Top Stitch	DNLS	0.3
	Side seam + Sleeve R	SNLS	0.4

	Side seam + Sleeve R O/L	O/L	0.4
	Side seam + Sleeve L	SNLS	0.4
	Side seam + Sleeve L O/L	O/L	0.4
	Collar to yoke attach	SNLS	0.25
	Collar to yoke attach finish	SNLS	0.25
	Cuff attach to sleeve R	SNLS	0.2
	Cuff attach to sleeve R Top Stitch	DNLS	0.2
	Cuff attach to sleeve L	SNLS	0.2
	Cuff attach to sleeve L Top Stitch	DNLS	0.2
Bottom Hem Section	**Bottom Hem Panel attach**	SNLS	0.3
	Bottom Hem Panel O/L	O/L	0.3
	Bottom hem Top Stitch	SNLS / DNLS	0.35
Button & Bartack Section	**Button hole (5)**	404	1.25
	Buttons attach (5)	Shank button attach m/c	1.25
	Bartacks (6)	Bartack m/c	0.6
		Total	22

	Operation	**M/c**	**SAM**
Collar Section	**Collar run stitch**	SNLS	0.4
	Collar turn & iron	Turning m/c	0.5
	Collar top stitch	DNLS	0.4
Cuff Section	**Cuff run stitch R**	SNLS	0.3
	Cuff turn & iron R	Turning m/c	0.5
	Cuff top stitch R	DNLS	0.4
	Cuff run stitch L	SNLS	0.3
	Cuff turn & iron L	Turning m/c	0.5
	Cuff top stitch L	DNLS	0.4
	Pocket flaps finish R	SNLS	0.25

Pocket Flap Section	**Pocket flaps turning & iron R**	Turning m/c	0.35
	Pocket top stitch R	SNLS	0.25
	Pocket flaps finish L	SNLS	0.25
	Pocket flaps turning & iron L	Turning m/c	0.35
	Pocket top stitch L	SNLS	0.25
Front panels	**Front panels attach R**	SNLS	0.2
	Front panels R O/L	O/L	0.15
	Front panel R Top Stitch	DNLS	0.2
	Front panels attach L	SNLS	0.2
	Front panels L O/L	O/L	0.15
	Front panel L Top Stitch	DNLS	0.2
Back Panels	**Back panels attach R**	SNLS	0.3
	Back Panels O/L R	O/L	0.3
	Back Panel Top Stitch R	DNLS	0.5
	Back panels attach L	SNLS	0.3
	Back Panels O/L L	O/L	0.3
	Back Panel Top Stitch L	DNLS	0.5
Sleeve Section	**Top & Bottom Sleeve attach R**	FOA	0.35
	Top & Bottom Sleeve attach L	FOA	0.35
Placket Section	**Front left placket attach**	SNLS	0.25
	Front left placketTop Stitch	401	0.25
	Front right placket attach	SNLS	0.25
	Front right placketTop Stitch	401	0.25
Assembly Section	**Back panel & Back yoke attach**	SNLS	0.25
	Back panel & Back yoke attach O/L	O/L	0.2
	Back panel & Back yoke attach	DNLS	0.2
	Front panel & yoke attach (with pkt flaps) R	SNLS	0.25
	Front panel & yoke attach (with pkt flaps) O/L R	O/L	0.2
	Front panel & yoke attach (with pkt flaps) R	DNLS	0.2
	Front panel & yoke attach (with pkt flaps) L	SNLS	0.25

	Front panel & yoke attach (with pkt flaps) L	O/L	0.2
	Front panel & yoke attach (with pkt flaps) L	DNLS	0.2
	Shoulder attach R	SNLS	0.2
	Shoulder attach O/L R	O/L	0.15
	Shoulder attach Top Stitch R	DNLS	0.2
	Shoulder attach L	SNLS	0.2
	Shoulder attach O/L L	O/L	0.15
	Shoulder attach Top Stitch L	DNLS	0.2
	Armhole attach R SNLS	SNLS	0.35
	Armhole attach R O/L	O/L	0.15
	Armhole attach R Top Stitch	DNLS	0.3
	Armhole attach L SNLS	SNLS	0.35
	Armhole attach L O/L	O/L	0.15
	Armhole attach L Top Stitch	DNLS	0.3
	Side seam + Sleeve R	SNLS	0.4
	Side seam + Sleeve R O/L	O/L	0.4
	Side seam + Sleeve L	SNLS	0.4
	Side seam + Sleeve L O/L	O/L	0.4
	Collar to yoke attach	SNLS	0.25
	Collar to yoke attach finish	SNLS	0.25
	Cuff attach to sleeve R	SNLS	0.2
	Cuff attach to sleeve R Top Stitch	DNLS	0.2
	Cuff attach to sleeve L	SNLS	0.2
	Cuff attach to sleeve L Top Stitch	DNLS	0.2
Bottom Hem Section	**Bottom Hem Panel attach**	SNLS	0.3
	Bottom Hem Panel O/L	O/L	0.3
	Bottom hem Top Stitch	SNLS / DNLS	0.35
Button & Bartack Section	**Button hole**	404	1.25
	Buttons attach	Shank button attach m/c	1.25
	Bartacks	Bartack m/c	0.6
		Total	22

ACTIVITY RELATIONSHIP CHART

ACTIVITIES		Fabric Store	Trim Store	Spreading & Cutting	Sewing	Finishing	Washing	Quality	Packaging	Warehouse	Merchandising	Sampling	Designing	PD and R&D	Export	Machine	Training room	ETP	DG room	Canteen	crèche	Medical room	Admin block
Fabric Store			O	A	O	U	X	O	U	U	I	O	I	O	U	X	U	X	X	X	X	U	U
Trim Store		O		O	A	U	U	U	U	U	I	O	I	U	U	X	U	X	X	X	X	U	U
Spreading & Cutting		A	O		A	U	X	U	U	U	U	U	O	U	U	U	E	X	X	X	X	O	U
Sewing		O	A	A		A	X	O	U	U	I	I	O	U	U	E	E	X	X	X	X	O	U
Finishing		U	U	U	A		I	A	A	O	O	U	U	U	X	U	O	X	X	X	X	O	X
Washing		X	U	X	X	I		U	U	X	U	U	U	U	X	U	O	X	X	X	X	O	X
Quality		O	U	U	O	A	U		A	U	I	O	U	A	O	U	U	X	X	X	X	U	X
Packaging		U	U	U	U	A	U	A		A	O	U	U	O	I	U	O	X	X	X	X	U	U
Warehouse		U	U	U	U	O	X	U	A		U	U	U	U	U	X	U	X	X	O	X	U	U
Merchandising		I	I	U	I	O	U	I	O	U		A	I	O	I	X	X	X	X	O	O	U	I
Sampling		O	O	U	I	U	U	U	U	U	A		A	I	O	X	X	X	X	O	U	U	U
Designing		I	I	O	O	U	U	O	U	U	I	A		E	U	X	X	X	X	O	O	U	U
PD and R&D		O	U	U	U	U	U	A	O	U	O	I	E		O	X	X	X	X	O	O	U	U
Export documentation		U	U	U	U	X	X	O	I	U	I	O	U	O		X	X	X	X	O	O	U	O
Machine maintenance		X	X	U	E	U	U	U	U	X	X	X	X	X	X		O	X	X	O	X	O	X

Training room		U	U	E	E	O	O	U	O	U	X	X	X	X	X	O		X	X	O	X	O	U
ETP		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		O	X	X	X	X
DG room		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O		X	X	X	X
Canteen		X	X	X	X	X	X	X	X	O	O	O	O	O	O	O	O	X	X		O	O	O
Crèche		X	X	X	X	X	X	X	X	X	O	U	O	O	O	X	X	X	X	O		E	O
Medical room		U	U	O	O	O	O	U	U	U	U	U	U	U	U	O	O	X	X	O	E		U
Admin block		U	U	U	U	X	X	X	U	U	I	U	U	U	O	X	U	X	X	O	O	U	

A – Absolutely Necessary

E- Essential

I – Important

O – Ordinary Important

U – Unimportant

X - Undesirable

LOCATION PLANNING- KACHCHH, GUJARAT

Gujarat is located on the Western coast of India and has the longest coastline of 1,600 km in the country. The state shares its border with Rajasthan, Madhya Pradesh, Maharashtra and the Union Territories of Daman & Diu and Dadra & Nagar Haveli. The Arabian Sea borders the state both to the West and the South-West.

There are eight agro climatic zones in the state that support cultivation of a wide range of crops.

The most commonly spoken language of the state is Gujarati. Hindi and English are the other Indian languages used.

Parameters	Gujarat
Capital	Gandhinagar
Geographical area (sq km)	196,024
Administrative districts (No)	26
Population density (persons per sq km)*	308
Total population (million)*	60.3
Male population (million)*	31.4
Female population (million)*	28.9
Sex ratio (females per 1,000 males)*	918
Literacy rate (%)*	79.3

GUJARAT IN FIGURES

Parameter	Gujarat	All-States	Source
Economy			
GSDP as a percentage of all states' GSDP	7.5	100	CMIE, 2010-11, current prices
Average GSDP growth rate (%)*	16.6	15.9	CMIE, 2004-05 to 2010-11, current prices
Per capita GSDP (US$)	1,918.3	1,324.3	CMIE, 2010-11, current prices
Physical Infrastructure			
Installed power capacity (MW)	21,971.8	199,627.0	Central Electricity Authority, as of March 2012
Wireless subscribers (No)	51,494,090 ^	903,727,208	Telecom Regulatory Authority of India, as of January 2012
Broadband subscribers (No)	834,250#	13,350,938	Ministry of Communications & Information Technology, as of December 2011
National Highways (km)	3,281	71,772	Ministry of Road Transport & Highways, Annual Report 2011-12
Major and minor ports (No)	1 + 41	12 + 187	Indian Ports Association
Airports (No)	14	133	Airport Authority of India

Parameter	Gujarat	All-States	Source
Social Indicators			
Literacy rate (%)	79.3	74.0	Provisional Data – Census 2011
Birth rate (per 1,000 population)	21.8	22.1	SRS Bulletin (www.censusindia.gov.in), 2011
Investments			
FDI equity inflows (US$ billion)	8.0	160.0	Department of Industrial Policy & Promotion, April 2000 to January 2012
Outstanding investments (US$ billion)	1,295.1	11,318.3	CMIE (2011-12)
Industrial Infrastructure			
PPP projects (No)	74	881	www.pppindiadatabase.com
SEZs (No)	32	386	Notified as of July 2012, www.sezindia.nic.in

KACHCHH- Bhachau

Kutch district (also spelled as Kachchh) is a district of Gujarat state in western India. Covering an area of 45,652 km², it is the largest district of India. The population of Kutch is 21 Lacs, literacy rate is 59.79% and the sex ratio is 908. It has 10 Talukas, 939 villages and 6 Municipalities.

Geographical Location	78.89° to 71.45° East (Longitude)
	22.44° to 24.41°North (Latitude)
Temperature	45° Centigrade (Maximum)
	4° Centigrade (Minimum)
Average Rainfall	587 mm
Area	45,652 sq.km.
District Headquarter	Bhuj
Talukas	10
Population	1.5 million (As per Census 2001)
Population Density	33 persons per sq.km.
Sex Ratio	964 Females per 1000 Males
Literacy Rate	60.36%
Languages	Kutchi, Gujarati, Hindi and English
Seismic Zone	Zone V

Land cost: Rs. 64,800 / square meter (approximate)

Labour cost: Rs. 400-500 / day

Topography

Temperature fairly remains average in the district. Highest temperature goes up to 44.8 degree centigrade in summer and lowest temperature comes down to 3.7 degree centigrade in winter season. Rainfall is very low in Kutch district as low as 350 to 375 mm during the whole monsoon.

Availability of Minerals

Nearly 75 % of the total minerals of Gujarat State are produced in the Kutch only.

Road & Rail Connectivity

Road

National Highway 8A connects Kutch with Ahmedabad (91 km), Vadodara (465 km), Rajkot (218 km) and Surat (632 km).

Bhuj is connected with Kandla (45 km from Bhuj) by a State Highway via Anjar.

Connectivity with major industrial districts: Jamnagar (261 km), Surat (632 km), Bhavnagar (396 km), Valsad (699 km), Ankleshwar (359 km) and Mehsana (311 km).

Map 11: Kutch Road & Rail Network

Rail

Mumbai is connected with Bhuj by 5 broad gauge stations.

Mundra and Kandla ports are linked by broad gauge rail to the Delhi-Mumbai Industrial Corridor.

Bhuj-Gandhidham-Kandla-Ahmedabad broad guage line provide direct connectivity from Kutch to other parts of country.

Airports

Bhuj has the only operational airport in Kutch.

Kandla, Mandvi Mundra air strips are under development.

Ports

Mundra Port has a total length of 17.5 mts. Other ports in the district include Kandla and Mandvi. Mundra Port Project has just established the longest non- government railway line, put up at a cost of INR 160 crore (USD 38 Million), between Adipur and Mundra, totalling a distance of 57 km.

Mundra port is connected to Gandhidham by National Highway and a broad gauge railway line.

Other ports are at Kandla and Mandvi Port.

Mundra Port has 4 mulipurpose cargo berth, 4 container berth, 2 Bulk cargo bertha and one SBM. Other ports in the district include Kandla, Koteshwar, Jakhau and Mandvi. Mundra Port Project has established non- government railway line, put up at a cost of INR 160 crore (USD 38 Million), between Adipur and Mundra, totalling a distance of 57 km. Mundra port is connected to Gandhidham by National Highway and a broad gauge railway line. It has one SBM to handle POL Product. It is handling Bulk major Bulk liquid bulk and General Cargo including containers. One of India's largest privately developed ports (Adani Group), offers the shortest land route from any port to the vast hinterland of western and northern India. 6.3 million tonnes of container cargo and 13.53 million tonnes of bulk cargo was handled in 2006-07, registering a compound annual growth rate (CAGR) of 41%. Facilities include 10 operational berths, with drafts upto 17.5 meters to handle dry bulk, break bulk and liquid cargo. The Mundra International Container Terminal (operated by Dubai Ports Limited), has 2 berths with a draft of 17.5 meters.

Kandla is the only major port in the State with many industries in its vicinity. The port has 1800 metres of dry cargo berths with a capacity for at least ten ships. It owns 10 berths, 6 oil jetties, 1 maintenance jetty, 1 dry dock and jetties for small vessels with 66 KV power supply and standby power to the extent of 2000 KVA available for emergency operations. The total custom bonded port area inside the custom fencing is 185 hectares. An additional 76.5 hectares is being developed gradually.

Proposed Infrastructure Projects

Ports

Kandla Port Trust plans Roll–On, Roll-Of facilities at a cost of INR 1 billion for export of Maruti Cars.

Adani Group plans to set up an SEZ spread over 10,000 acres at an estimated investment of INR 7,300 crore (USD1.74 billion)

Power

Gujarat Mineral Development Corporation (GMDC) is implementing a 2X125 MW lignite based Akrimota Power Project at Chher Nani village, in Lakhpat.

For setting up of 20 wind mills of 1500 KW, Gujarat NRE Coke Limited (GNCL) has proposed an investments of INR 175 crore (USD 41.6 million).

Rail and Road

Gandhidham–Palanpur gauge conversion project by Rail & Bridge Department (RBG) and Rail Vikas Nigam Limited (RVNL) will connect SEZs with Saurashtra region.

Nakhatrana–Panandhro Road and Bhuj-Bhachau Road are planned in the district by Gujarat State Road Development Corporation (GSRDC).

Power supply

The district owns Lignite Power Stations located in Panandhro city. It also has 42 sub stations installed with a capacity of 215 Mega Watt (MW).

Wind power has a great potential in the district. Few wind power projects proposed in Kutch are :

-250 MW project by NEG Micon

-500 MW project by Suzlon Energy (to manufacture tubular tower in the region)

Map 12: Power Map of Kutch

Water supply

Sardar Sarovar Project

The project envisages supply of water for drinking purposes, irrigation and industrial use. Sardar Sarovar Project water for industrial supply is made available through branch canals. The rate for industrial water supply was INR 10 per 1000 litres as in November, 2007. One branch canal that supplies water to Kutch district is listed in Table 7

Table 7: Sardar Sarovar Branch Canal Network

Branch canal	Length (Km)	District	Starting point	Ending point
Kutch Branch Canal	360	Banaskantha, Patan, Kutch	Salimgarh	Modukuwa

LOCATION PLANNING RATING CHART

Criterion		Weighting	Possible factory location					
			Kuchchh		Gurgaon		Bangalore	
PROXIMITY TO:	Skilled labour	7	5	35	3	21	4	28
	A pool of unskilled labour	8	6	48	4	32	7	56
	A motorway	7	6	42	5	35	5	35
	An airport	4	2	8	3	12	2	8
	The sea	4	3	12	1	4	2	8
	Housing	5	4	20	4	20	3	15
Planning constraints		5	4	20	3	15	3	15
Potential for expansion		7	5	35	4	28	5	35
Environmental impacts		4	3	12	2	8	2	8
		Total	38	232	29	175	33	208

FABRIC ROLL DIAMETER:

GSM:- 340gsm

Width:- 58'' = 1.4732mts

Length:- 90mts

Fabric roll length:- 60''

Weight:- (1.5*90)*340

=45,900grams

=45.900kg

Thickness:- 1.1

Inside diameter:- 3''

Outside Roll Diameter:- 14.29''

Fabric consumption:- 1.75mts

Total Fabric consumed for 8000 jackets= 14000mts

Rolls required:- 155.55

Rolls Required= (Total fabric consumption/length per roll)= 156 rolls per day

15 Days Inventory:- 156*15

= 2340 rolls

Rach Dimemsions:-

Breadth= 120''

Per Roll Diameter= 14.29''

So, you can store 8 rolls in 1 line and 7 rolls on top of it.

Therefore, the height of each rack is 36''(8'' allowance)

Total height of the rack:- 36*4

=144''= 3.6576mts

In each section, 15 rolls can be stored.

So, in whole rack 60 rolls (15*4) can be stored.

Total number of APRs required= 2340/60 = 39 racks = 40 racks

AREA CALCULATION

GROUND FLOOR: FINISHING, WASHING, PACKAGING, DOCUMENTATION and MARKETING								
Sub Departments	**No.of Rooms**	**Components**	**Quantity**	**Machine (Length) (feet)**	**Machine (Width) (feet)**	**Area(sq.ft.)**	**Total Area(sq.ft.)**	**Remarks**
Supervisor	1	Table	1	6	4	24	24	
		Chair	3	1.5	1.5	2.25	6.75	
		Water Dispenser	1	2	2	4	4	
PPC, SAMPLING, TESTING								
PPC Office	1	Table	12	4	2	8	96	
		Chair	12	1.5	1.5	2.25	27	
		Water Dispenser	1	2	2	4	4	
		Rack	10	3	2	6	60	
PPC Asst Office	1	Table	1	4	2	8	8	
		Chair	3	1.5	1.5	2.25	6.75	
Sampling	1	Table	5	4	2	8	40	
		Quality Table	2	6	4	24	48	
		machine area	30	3	2	6	180	
		maniquines	6	2	1.5	3	18	
		Chair	30	1.5	1.5	2.25	67.5	
		Racks	6	3	2	10	60	
PD and RnD	1	Table	2	6	4	24	48	
		Chair	6	1.5	1.5	2.25	13.5	

		Machines	4	3	2	6	24	
Testing	1	Table	1	4	2	8	8	
		machine area	10	3	2	6	60	
		Chair	15	1.5	1.5	2.25	33.75	
		Racks	6	3	2	10	60	
Total							862.5	
DOCUMENTATION								
Export Documentation	1	Table	6	4	2	8	48	
		Chair	18	1.5	1.5	2.25	40.5	
		Water Dispenser	1	2	2	4	4	
		Rack	16	3	2	6	96	
Merchandising and Marketing	1	Table	6	4	2	8	48	
		Chair	18	1.5	1.5	2.25	40.5	
		Water Dispenser	1	2	2	4	4	
		Rack	16	3	2	6	96	
Total							377	
Total Area							**1239.5**	
Total Area (150%)							**3098.75**	
Washrooms	180 workers	Female	7	6	3	18	126	98
		Male	5	6	3	18	90	82
Urinals	180 workers	Female	3	2.03	2.03	4.12	12.36	98
		Male	3	2.03	2.03	4.12	12.36	82

Total Area							**240.72**	

Total Department Area of the Ground Floor (sq.ft)						**3339.47**	3098.75 + 240.72

MASTER LIST OF MACHINERY ON GROUND (FINISHING and PACKAGING) FLOOR

M/c	Brand name	Model	Machine (Length) (feet)	Machine (Width) (feet)	Area of Machine (sq.feet)	No.of Machines	Total Area of Machine (sq.feet)	Remarks
WASHING								
washing machine	Ramsons	RTD 25	6	4	180	8	1440	
hydro extracters			8	10	80	4	320	
driers	Ramsons	RVWE 60	6	4	180	4	720	
PACKAGING								
Packing Tables			6	4	24	8	192	
FINISHING								
Thread Sucking	Ramsons	TSM 77	2.13	4.66	9.93	3	29.78	
Jeans Turner	OGM	T 3	2.13	4	8.52	5	42.6	
Iron Table			6	4	24	4	96	
Thread Trimmers	Focus	US-100V	3.41	1.18	4.1	3	12.07	

INSPECTION								
Needle Detectors		HN-770G	3.5	5.5	19.25	4	77	
Total Area							**2929.45**	
Total Area (150%)							**7323.63**	

Total Area of the Ground Floor (sq.ft)		3339.47	7323.63	**10663.1**

FIRST FLOOR: SEWING ROOM								
Sub Departments	**No.of Rooms**	**Components**	**Quantity**	**Machine (Length) (feet)**	**Machine (Width) (feet)**	**Area(sq.ft.)**	**Total Area(sq.ft.)**	**Remarks**
Factory HR Manager Office	1	Table	1	6	4	24	24	
		Chair	3	1.5	1.5	2.25	6.75	
		Water Dispenser	1	2	2	4	4	
		Rack	6	3	2	6	36	
Floor Manager Office	1	Table	1	6	4	24	24	
		Chair	3	1.5	1.5	2.25	6.75	

		Water Dispenser	1	2	2	4	4	
		Rack	1	3	2	6	6	
IE	1	Table	1	6	4	24	24	
		Chair	3	1.5	1.5	2.25	6.75	
		Water Dispenser	1	2	2	4	4	
		Rack	1	3	2	6	6	
Machine Maintenance	1	Table	5	4	2	8	40	
		Chair	15	1.5	1.5	2.25	33.75	
		Racks	6	5	2	10	60	
Total Area							**286**	
Total Area(150%)							**715**	
Washrooms	560 workers	Female	15	6	3	18	270	392
		Male	8	6	3	18	144	168
Urinals	560 workers	Female	10	2.03	2.03	4.12	41.2	392
		Male	5	2.03	2.03	4.12	20.6	168
Total Area							**475.8**	

Total Department Area of the First Floor (sq.ft)							**1190.8**	715+475.8

MASTER LIST OF MACHINERY ON FIRST(SEWING) FLOOR

M/c	Brand name	Model	Machine (Length) (ft)	Machine (Width) (ft)	Area of Machine (sq.ft)	No.of Machines per line	Total No.of Machines (for 8 lines)	Total Area of Machine (for 8 lines) (sq.ft)
SNLS	Juki	DDL-5530N	1.8175	3.5	6.36125	23	184	1170.424
Turning m/c	shweishi	ADT-0112	2	3.6	7.2	5	40	288
DNLS	brother	PW45001	1.8175	3.5	6.36125	13	104	661.544
O/L	juki	MO-3616	1.8175	3.5	6.36125	12	96	610.656
401	Juki	mh-481-5	1.8175	3.5	6.36125	1	8	50.888
FOA	brother	DT6-B927-3	1.8175	3.5	6.36125	1	8	50.888
404	singer	404A	1.8175	3.5	6.36125	1	8	50.888
Shank button attach m/c	mms	bat16	1.8175	3.5	6.36125	1	8	50.888
Bartack m/c	juki	LK-1901B	1.8175	3.5	6.36125	1	8	50.888
inspection table			6.0000	4.0	24.00000	1	8	192
ironing table			9.0000	3.0	18.00000	1	8	144
loading table			3.0000	4.0	12.00000	2	16	192
Total						**62**	**496**	**3513.064**
Total Area(150%)								**8782.66**

Total Area of the First Floor(sq.ft)		1190.8	8782.66	**9973.46**

SECOND FLOOR: CUTTING ROOM and WAREHOUSE								
Sub Departments	**No.of Rooms**	**Components**	**Quantity**	**Machine (Length) (feet)**	**Machine (Width) (feet)**	**Area(sq.ft.)**	**Total Area(sq.ft.)**	**Remarks**
Floor Manager Office	1	Table	1	6	4	24	24	
		Chair	3	1.5	1.5	2.25	6.75	
		Water Dispenser	1	2	2	4	4	
		Rack	1	3	2	6	6	
CAD/CAM	1	Tables	8	4	2	8	64	
		machine	2	6	4	24	48	
		chair	10	1.5	1.5	2.25	22.5	
Cutting Line		Racks	20	12	4	48	960	
Warehouse and Fabric Store		Racks(Fabrics, Trims and Accessories)	40	12	4	48	1920	
Total Area							**3055.25**	
Total Area(150%)							**7638.12**	
Washrooms	61 workers	Female	2	6	3	18	36	25
		Male	2	6	3	18	36	36
Urinals	61workers	Female	1	2.03	2.03	4.12	4.12	25
		Male	1	2.03	2.03	4.12	4.12	36

Total Area							**80.24**	

Total Department Area of the Second Floor (sq.ft)						**7718.37**	7638.12+ 80.24

MASTER LIST OF MACHINERY ON SECOND (CUTTING and WAREHOUSE) FLOOR

M/c	Brand name	Model	Machine (Length) (feet)	Machine (Width) (feet)	Area of Machine (sq.feet)	No.of Machines	Total Area of Machine (sq.feet)	Remarks
CUTTING ROOM								
Spreading Table			36.089	5.833	210.51	4	**842.04**	
Cutting Table			36.089	5.833	210.51	4	**842.04**	
Bundling and Ticketing Table			6	4	24	4	**96**	
fabric relaxation	oshima	UW-2	8.038	2.625	21.099	2	42.198	
band knife cutting machine	diamond	r1250	6.561	5.908	38.764	3	116.292	
straight knife cutting machine	hashima	**KS-AUV**	1.5	1.5	2.25	12	27	
WAREHOUSE								

inspection machine	Ramsons	RFI 01	6.56	6.4	41.984	4	167.936	
colour cabinet	verivide	CAC 150-4	5.117	2.033	10.404	1	10.404	
fork lift			4.25	2.25	9.563	4	38.25	
Inspection Table			6	4	24	4	96	
Total							**2278.16**	
Total Area(150%)							**5695.4**	

Total Area of the Second Floor (sq.ft)		7638.12	5695.4	**13333.52**

ADMINISTRATION								
Sub Departments	**No.of Rooms**	**Components**	**Quantity**	**Machine (Length) (feet)**	**Machine (Width) (feet)**	**Area(sq.ft.)**	**Total Area(sq.ft.)**	**Remarks**
Accounts, Finance and Purchase	3(1 Each)	tables	24	4	2	8	192	
		racks	24	3	2	6	144	
		chairs	72	2	2	4	288	
		water dispenser	3	2	2	4	12	
Admin Head	1	tables	1	6	4	24	24	

		head chair	1	2.5	2	5	4.5	
		chairs	3	2	2	4	12	
		washroom	1	6	3	18	18	
		water dispenser	1	2	2	4	4	
		Cupboard	1	2.5	2	6.25	6.25	
HR	1	tables	1	6	4	24	24	
		head chair	1	2.5	2	5	4.5	
		chairs	3	2	2	4	12	
		washroom	1	6	3	18	18	
		water dispenser	1	2	2	4	4	
		Cupboard	1	2.5	2	6.25	6.25	
GM	1	tables	1	6	4	24	24	
		chair	1	2.5	2	5	4.5	
		chairs	3	2	2	4	12	
		washroom	1	6	3	18	18	
		water dispenser	1	2	2	4	4	
		Cupboard	1	2.5	2	6.25	6.25	
Conference Room	1	Conference Table	1	14	5	70	70	
		Chairs	14	2	2	4	56	
PA	1	tables	3	3	2	6	18	
		chair	9	2	2	4	36	
		racks	12	3	2	6	72	
Pantry	1		1	25.29	17.25		436.25	

Reception	1		1	6	3	18	18	
Sofa	1		3	7.5	2.5	18.75	56.25	
Total Area							**1604.75**	
Total Area (150%)							**4011.875**	
Washroom		WC	1	6	3	18	18	
		Urinal	1	2.03	2.03	4.12	4.12	
Total Area							**22.12**	

Total Area of Administartion Block (sq.ft)				4011.875	22.12	**4033.995**	

CRECHE, MEDICAL ROOM and CANTEEN								
Sub Departments	**No.of Rooms**	**Components**	**Quantity**	**Machine (Length) (feet)**	**Machine (Width) (feet)**	**Area(sq.ft.)**	**Total Area(sq.ft.)**	**Remarks**
MEDICAL ROOM								
Medical Room	1	table	2	4	2	8	16	
		chair	5	1.5	1.5	2.25	11.25	
		bed(800 labor)	6	6	3	18	108	
		racks	5	3	2	6	30	

Total Area							**165.25**	
Total Area (150%)							**413.13**	
Washroom	50workers	Patients	1	6	3	18	18	
Total Area							**18**	
Total Area for Medical Room (sq.ft)					413.13	18	**431.13**	
CRECHE								
Creche	1		50	6	5	30	1500	
Total Area							**1500**	
Total Area (150%)							**3750**	
Washroom		Kids	1	6	3	18	18	
Total Area							**18**	
Total Area for Creche (sq.ft)					3750	18	**3768**	
CANTEEN								
canteen	1	table	70	4.5	2.5	11.25	787.5	420 at a time
		benches	140	4.5	1.5	6.75	945	
		cooking area	1	30	30	900	900	
		basin area	1	10	20	200	200	
		serving area	1	20	5	100	100	
Total Area							**2932.5**	

Total Area (150%)							**7331.25**	

Total Department Area of the Ground Floor (sq.ft)			431.13	3768	7331.25	**11530.38**	