

**FINDINGS & RECOMMENDATIONS OF VARIOUS
GROUPS USING TATKAL NIRMITI GHAR KIT
(T.N.G. KIT)**
(Technology development jointly sponsored by BMTPC and
NALDEHRA)

A CASE STUDY

**OF A THEORETICAL B.P.L BENEFICIARY HOUSE
DESIGN - COMPONENT, ASSEMBLY, COSTING
FEATURES FEASIBILITY**

AT

**STATE INSTITUTE OF RURAL DEVELOPMENT, M.M.NAGAR
(TAMIL NADU)**
DURING H.S.M.I. PROJECT FORMATION OF RURAL HOUSING
FROM 27 - 31 AUGUST, 2001

FACULTY : DR. H.S.GILL, SR. FELLOW, HSMI AND
MR. AJAY SINGH, PRESIDENT
NALDEHRA BUILDING CENTRE

INDEX

	PAGE NO.
1. Title	Front page
2. Group Recommendations	2
3. Group Bio-data	3
4. Cost of BPL/EWS housing unit	4
5. Salient features of house	5 & 6
6. Items not included in the house	7
7. List of participants (Annexure - I)	8 to 10
8. Estimated quantity of material and costing of house (Annexure - II)	11 & 12
9. Copy of case study (Annexure - III)	10 pages

GROUP RECOMMENDATIONS

1. The costing and overheads hold good for construction of 10 houses at a time in one location.
2. One actual house should be constructed for practical verification of Theoretical calculations in different locations of India.
3. Tatkal Nirmiti Ghar Kit (TNG KIT) is a very simple equipment which saves cost, time and does not need any special skill to produce building components.
4. Such TNG KIT should be made available to the beneficiary or NGO constructing an individual house or a group housing for economically weaker section / BPL population. The same should be placed at Panchayat/BDO/regional level where beneficiary is able to borrow the same and return back after completing the house within 2-3 weeks.
5. The nominal rent equivalent to 1% to 1 1/2% cost of the KIT could be collected from the beneficiary for each house being constructed.

GROUP BIO-DATA

The group had five days (six sessions) programme including practical work and discussions. The participants include B.E.Civil / Structural Engineer (4 Nos.), Senior Members of N.G.O having experience of constructing 1500-5000 B.P.L/E.W.S Houses and strong grass root level supervisor actively participating in Rural Housing at Tamilnadu, Kerala and Maharashtra.

The group also had participation from Shankaracharya Voluntary Health Education and Rural Development Society and a few faculty members of SIRD.

COST OF A B.P.L/E.W.S. HOUSING UNIT

Total Area	-	212 sq. ft
Cost of construction	-	Rs.181.00/sq.ft
Total Cost	-	Rs.38,318.00

a) Without the support from beneficiary

b) Provision of Rs.5,500.00 for foundation is included in the cost

SALIENT FEATURES OF HOUSE

1. Provision for one electrical point
2. Provision for one water supply point
3. Sanitation (pour flush two pit) latrine
4. Roof utilisation by availability of an open staircase
5. Smokeless Chulka
6. White Wash
7. Ventilation
8. Safety Provision
9. Thermal and sound Insulation due to hollow block and clay covering

10. Fire and Damp Resistant
11. Earthquake resistance features incorporated
12. Loft for keeping material
13. Kitchen slab and floor lable sink
14. Opportunity for local employment and beneficiary's contribution for further improvement

ITEMS NOT INCLUDED IN THE HOUSE

1. Water Tank
2. Compound Wall
3. High level (2 1/2") parapet wall
4. Partition walls
5. Water harvesting system
6. Solar System
7. Bio-gas system
8. Water purification solar system
9. Solar lantern
10. Horticulture (oath of 5 plants with each unit)

PARTICULARS OF MEMBERS

Sl. No.	Name of Participant	Education	Experience	Name & address of organisation	Residence Address with Phone No.
1.	Ghowthami K.S.	B.A.Psy.	Already build 300 L.C.Housing Unit	Annai Kasthuribai Nahaleer Nala Sangam 13-B/29 Ennaikara Street Kanchipuram - 631 502	13-B/29, Ennaikara Street, Kanchipuram Pin - 631 501 Ph: 04112 60325
2.	N.Sundara Rajan	M.A.	20 years in social work. 6 years in building 5000 L.C.Housing Units	'AGRID' Association for Gramarajyam & Rural Integrated Development, Sarvodayaillam, M.P.Nagar Vadipatty, Madurai -625 218	Sarvodayaillam M.P.Nagar, Vadipatty- 625 218 04543 54343
3.	M.Gnanasuriyan	B.A(Eco.)	Nil	Statistical Inspector Faculty Member, SIRD M.M.Nagar	Plot No. 141 M.G.Nagar - VIII Adhanur Village Dist. Kanchipuram
4.	W.L.Victor	B.A.Diploma I.T.I	Co-operated with Kerala State Housing Board	KARD, Kerala- Association for Rural Development and Peace Manchamcode P.O. Trivandrum - 695 125 Kerala	Sevasrom Manchamcode P.O Trivandrum - 695 125 Kerala Ph: 0471 255401
5.	P.Balasubramanian	Pre-University Class	4 years as Block Development Officer and 3 years as Dist.Level Officer	Assistant Project Officer District Rural Development Agency Karur	6/36 John Pillai Lane Solai Hall Road Dindigul Ph 0451 436519

Sl. No.	Name of Participant	Education	Experience	Name & address of organisation	Residence Address with Phone No.
6.	Sulochana R	PDC,ITI	15 years SIRD RP Community Organiser	Yova Jana Mahila Samajam Kanavila, Venpakal Thiruvanthapuram Kerala (State)	Vishu Nivas Venpakal P.O. Pin 232 152
7.	M.V.Kumar	B.E.(Civil)	Construction Activities	Kattidamaiyam, Collectrate Thiruchirapalli	418, Goneshapuram Trichy Ph : 0431 513 147
8.	R.Bhaskaran	M.A. S.W.	Social Service (NGO)	12.3.36/H,Anna Nagar Batlagundu - 624 202	04543 23237
9.	S.S.Kumar	L.Tech	Social Service	WDS, Kalasamudram Village Kannamangalam - 632 311	04173 41321
10.	P.R.Komalakumari	Pre-Degree	Govt. Service	Collectrate, Pathanamthitta	0473 300565
11.	K.Karunakaran	B.E.	Civil Engg. Constn.	DRDA, Collactrate Namakkal	37-A, Nella Maliga Ganesapuram PO Namakkel
12.	A.Mariadoss	M.A. B.Ed.	Founder President Now Secretary	Multipurpose Com.Dev.Soceity	Pavitiram - 606806 T.V.Malai T.K.& Dist. Ph: 45302
13.	N.Sathish Kumar	DME	Steam Cured Mud Block & Hydraulic ram pump	Murugappa Chettiyar Research Centre, Tharamani	126E, West Street Kamaraj Nagar Thiruvanniyoor

Sl. No.	Name of Participant	Education	Experience	Name & address of organisation	Residence Address with Phone No.
14.	P.K.Shanmugam	MA. B.Ed.	Faculty SIRD M.M.Nagar	SIRD, M.M.Nagar	149, III cross Street Bulaich Garden Chennai - 600 091
15.	Krishnamma	S.S.L.C	Social Work	Gramotharana Vanitha Sangam	Saruluvitga Paniyarakunu Kodachal Kuzhi PO Thiruvananthapuram

Note : The details of six members of Group No. 2 - Leader Mr. B.Ravi, B.E.(Civil) not available.

(TYPOGRAPHICAL VERSION OF HAND WRITTEN SUBMISSIONS)

Annexure -III

ESTIMATED QUANTITY OF MATERIAL AND COST OF HOUSING

(House of 196 sq.ft + 4 x 4 Pour flush toilet Total - 212 sq.ft)

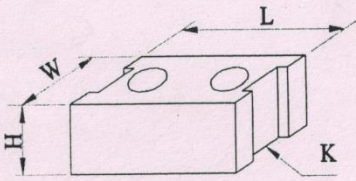
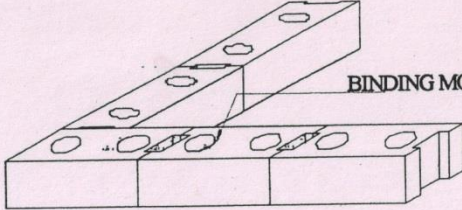
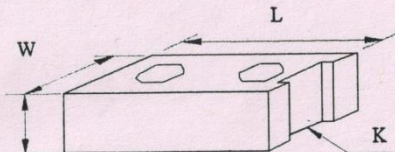
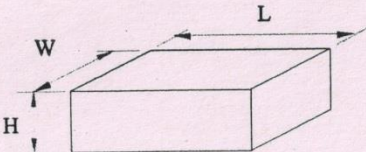
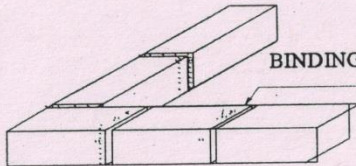
Page - 11

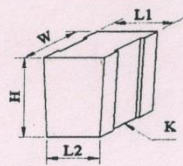
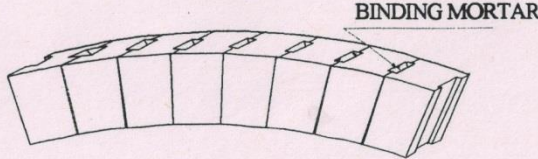
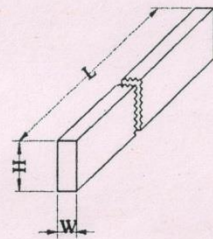
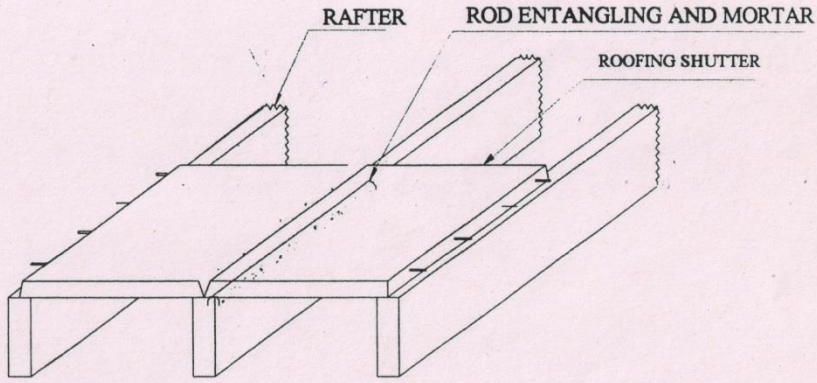
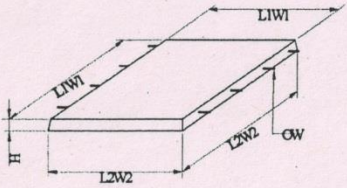
Sl.No.	Item Description	Application	Rate	Qty (Nos)	Amount
1.	Hollow Block (16"x8"x6")	Walling	13.50	600	8,100.00
2.	Solid Block (16"x8"x6")	Parapet	10.00	31	310.00
3.	RCC Rafter 14'	Roofing	350.00	6	2,100.00
4.	Roofing Slab 2' x 2'	Roofing	40.00	49	1,960.00
5.	Roofing Tiles 9" x 9" (25mm)	Roof Cover	2.50	260	650.00
6.	Door Frame 7' x 3'	Doors	350.00	1	350.00
7.	Door Steel 6' x 9" x 3"	Shutter	1,000.00	1	1,000.00
8	Window frame 9' x 12"	Ventilation	50.00	3	150.00
9	For Loft 22" x 12'	Storage		1	700.00
10	Earthquake ring 6mm bars x 2 ring beam on door frame level and corner bars 12mm x 4 nos each corner	Safety	L.S		1,000.00
11	Flooring Tiles	Flooring	3.50	200	700.00
12	Staircase with two extra carbels stone complete	Climbing		10 sets	700.00

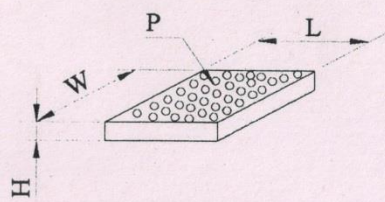
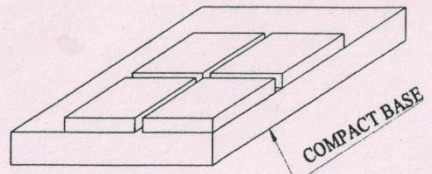
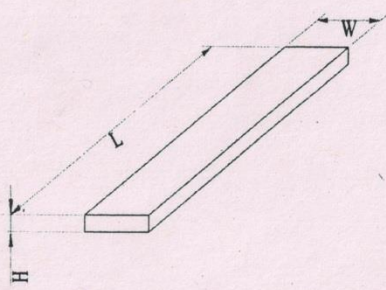
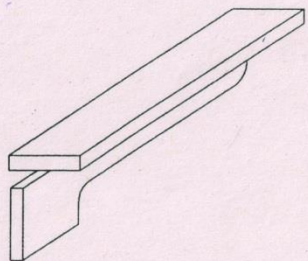
Sl.No.	Item Description	Application	Rate	Qty (Nos)	Amount
13.	Toilet Unit (pour flush)	Privacy & Defecation	3,288.00	1	3,288.00
14.	Cement	Jointing & Assbly (Mortar)	140.00	15 bags	2,100.00
15.	Sand	"	7.00	100	700.00
16.	Provision for Electrical / Water	Utilities	1%		600.00
17	Provision for foundation		L.S		5,500.00
18	Kitchen Slab and floor lable Sink	Cooking & washing utensils		1	700.00
19	Whitewash & painting	Beautification			323.00
20	Labour Cost (including fixing of clay for roofing)		16.63	196	2,940.00
	Add : 10% margin for NGO including cost of utilising the TNG Kit				33,871.00
					3,387.00
					37,258.00
	Add: Rs.5.00/cft for miscellaneous expenses or unexpected expenditure				1,060.00
	Rate / sq. ft - Rs. 181.00			Total :	38,318.00

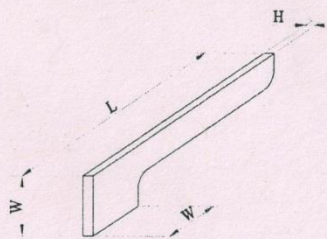
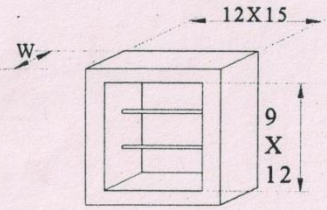
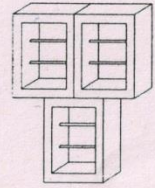
ABSTRACT SHEET OF TATKAL NIRMITI GHAR KIT

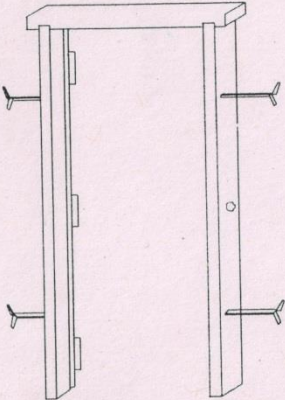
TECHNOLOGY DEVELOPMENT JOINTLY SPONSORED BY B.M.T.P.C AND NALDHERA BUILDING CENTRE

SL. NO	ITEM	DIMENSIONS	RECOMMENDED CONCRETE MIX	ASSEMBLY	APPLICATION
1	<p>1.1 HOLLOW BRICK BOTH SIDE KEY</p> 	<p>L=400 W=200 H=150</p> <p>SIDE KEY (K) W=100 H=150 DEEP= 12.5</p> <p>HOLLOW CAVITY I/D=90 DEEP=150</p>	<p>CEMENT -1 SAND -6 AGGREGATE -6</p>	 <p style="text-align: center;">BINDING MORTAR</p>	<p style="text-align: center;">WALLING</p>
	<p>1.2 HOLLOW BLOCK ONE SIDE KEY</p> 	<p style="text-align: center;">DO</p>	<p style="text-align: center;">DO</p>	<p style="text-align: center;">AS ABOVE</p>	<p style="text-align: center;">TO GETS BENDS/ CORNER FLATS</p>
	<p>1.3 SOLID BLOCK</p> 	<p>L=400 W=200 H=150</p>	<p>CEMENT -1 SAND -7 AGGREGATE -7</p>	 <p style="text-align: center;">BINDING MORTAR</p>	<p style="text-align: center;">FOUNDATION AND PARAPIT</p>

SL. NO	ITEM	DIMENSIONS	ASSEMBLY	APPLICATION
1.3	ARCH BRICK 	L1 (TOP)=200 L2(BOTTOM)=175 W=200 H =300 K=KEY W=100 DEEP=12.5 H=300		EXPOSED ARCH AND ARCH FOUNDATIONS
2	2.1 ROOFING RAFTER 	L=7' TO 14' W= 3" H=6" SHUTTER JOINT WIRE EVERY 12" X 2 NOS. REINFORCEMENT 1/2" ROD X 3 DESIGNED RING OF 5/64" DIA. EVERY 12"		
3	3.1 ROOFING SHUTTER 	(TOP) L1W1 = 23" X 23" (BASE) L2W2= 24" X 24" H =1 1/2" OUT WIRE(OW)=2' X 5/64"		

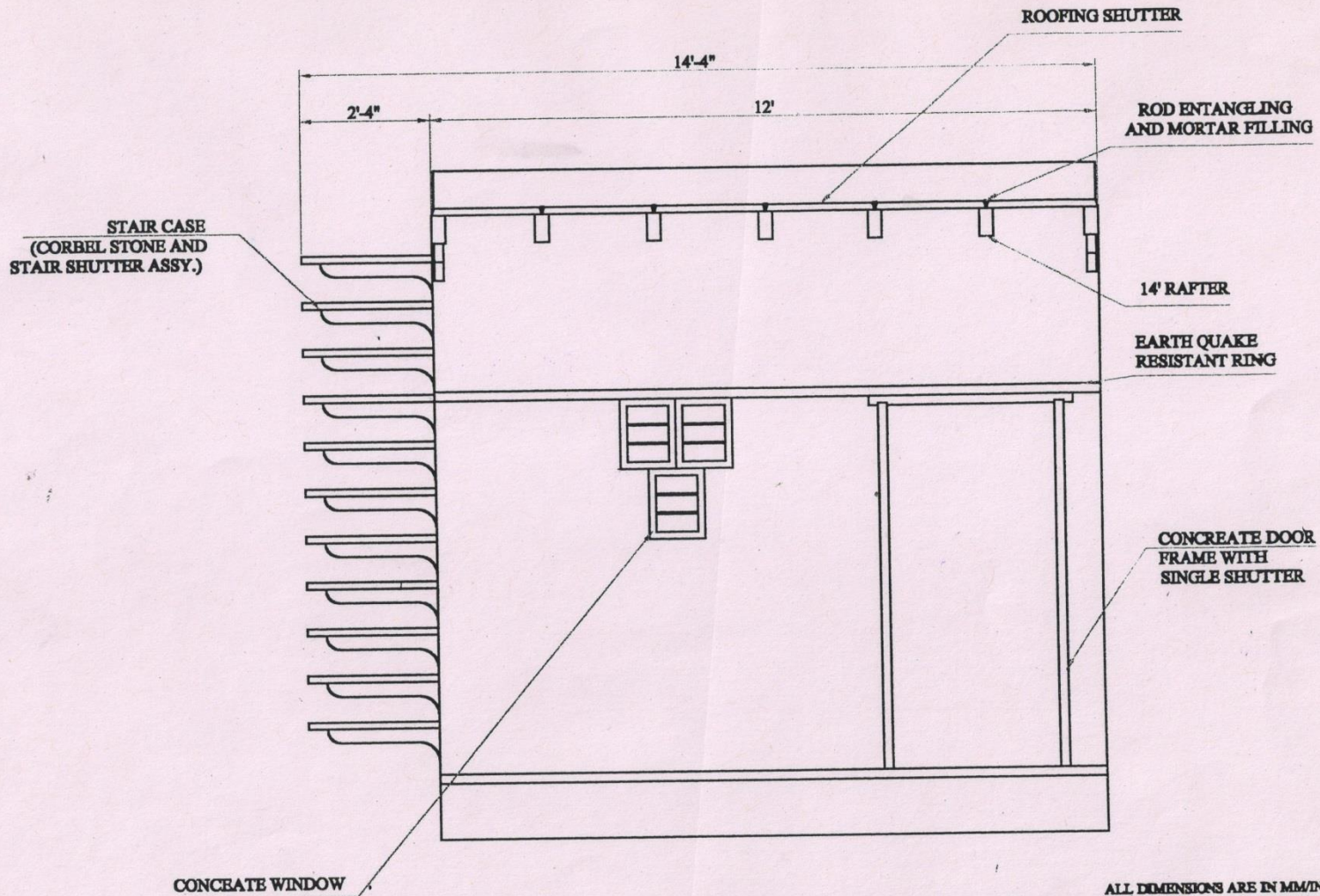
SL. NO	ITEM	DIMENSIONS	RECOMMENDED CONCRETE MIX	ASSEMBLY	APPLICATION
4	4.1 FLOORING TILE 	$L=9''$ $W=9''$ $H=1\ 1/2''$ PIGMENT(P)=OPTIONAL	CEMENT -1 SAND -3 AGGREGATE - 6		FLOORING(40 mm) AND ROOFING (25 MM)
5	5.1 STAIR SHUTTER 	$L = 32''$ $W = 9''$ $H = 1\ 1/2''$ REINFORCEMENT $5/64''$ DIA M S WIRE LENGTH WISE =3, WIDTH WISE=5,	CEMENT -1 SAND -2 AGRIGATE -4		STAIR CASE OR ALMIRAH SHUTTERS

SL. NO.	ITEM	DIMENSION	RECOMMENDED CONCRETE MIX		APPLICATION
6	6.1 STAIR CASE SHUTTER SUPPORT 	L = 32" W = 8" H = 2"	CEMENT - 1 SAND - 2 AGRIGATE - 4		USED AS CANTILEVE RAFTER AND STAIRS ETC.
7	7.1 WINDOW 	REINFORCEMENT 3/8" RECTANGULAR RING O/D 11" X 14". PARTITION RODS 2 NOS. 3/8" DIA X 11" LG PLACED AT EQUAL DISTANCES. W=2 1/2"	CEMENT -1 SAND -2 AGRIGATE - 3		WINDOW ARRANGEMENTS AS PER THE CHOICE OF BENEFICIARY

SL NO.	ITEM NO.	DIMENSIONS	RECOMMENDED CONCRETE MIX	ASSEMBLY	APPLICATION
8	8.1 R.C.C DOOR FRAME SINGLE SHUTTER	TO SUIT SHUTTER OF 3' X 6'-9"	CEMENT -1 SAND -2 AGRIGATE -3	TO BE ASSEMBELED IN THE WALL AS PER THE CONVENTION	TO HOLD THE DOOR SHUTTER
		REINFORCEMEN T OF 2 RODS OF 3/8" DIA WITH RING OF 2.5" ELEPTICAL 1/8" WIRE EVERY 6" THROUGH OUT THE LENGTH IN EACH MEMBER.			

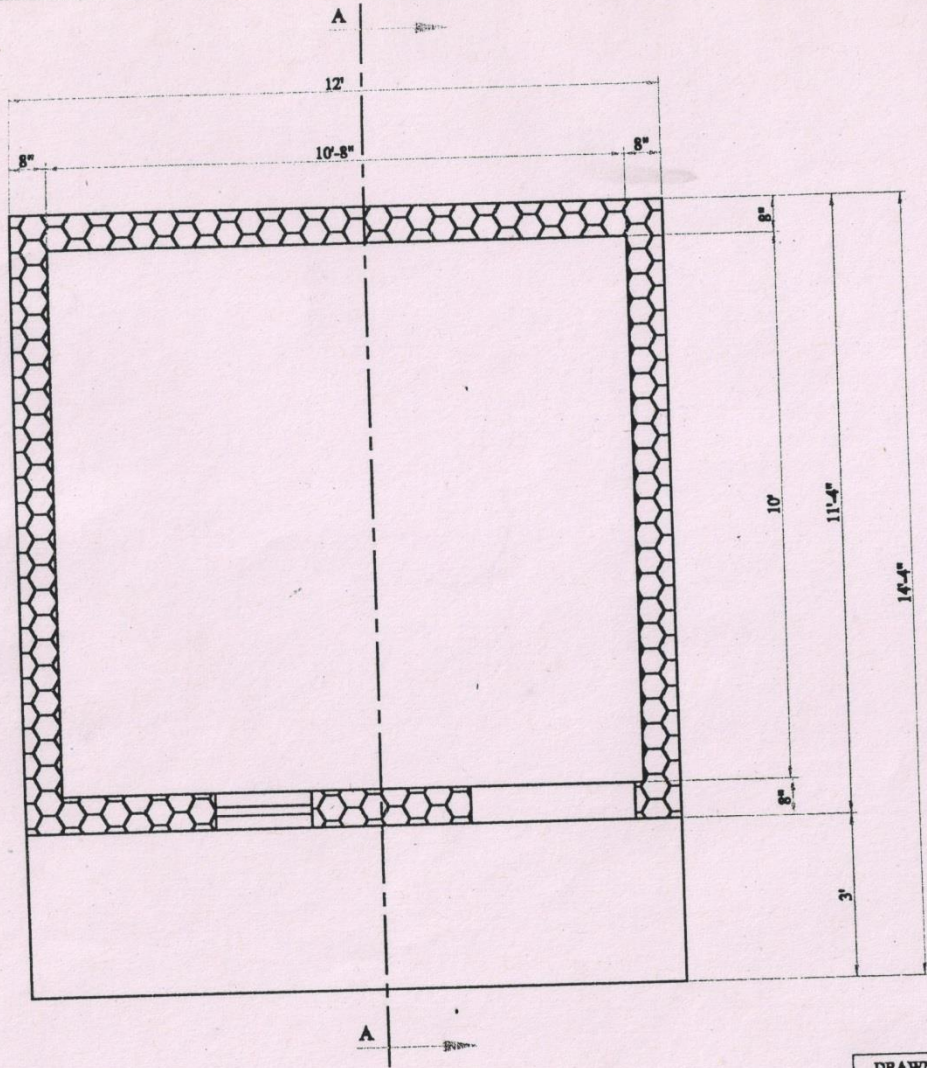
NALDEHRA BUILDING CENTRE
 (GOVT.OF INDIA HUDCO ASSISTANCE)
 1370, SECTOR-29,
 FARIDABAD,HARYANA , I N D I A

PH# +129-5277212
 FAX. +129-5276239
 MOBILE -+9811330025



ALL DIMENSIONS ARE IN MM/INCH.

DRAWN	CHECKED	APPROVED	DATE	SCALE
Suresh			23-08-2001	N T S
NALDEHRA BUILDING CENTRE 1370, SECTOR-29, H.B. COLONY FARIDABAD, HARYANA -121003		ELEVATION OF BPL THEORETICAL HOUSE		
DRG NO.	TNG KIT-YZK1	SHEET NO: 1 OF 4		

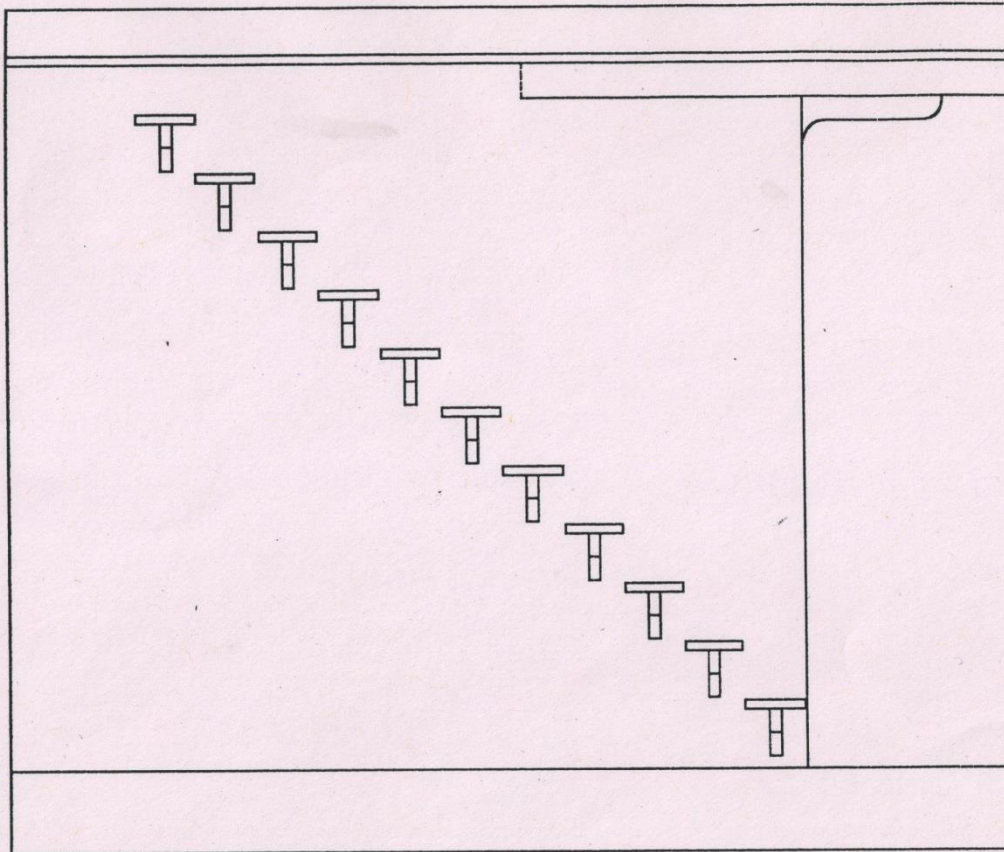


POINT NO.1- FOUNDATION TO BE CONSTRUCTED BY THE BENEFICIARY AS PER
SOIL CONDITION AVAILABILITY OF RAW MATERIALS

POINT NO.2- VALIDATE BEFORE ACTUAL CONSTRUCTION

ALL DIMENSIONS ARE IN MM/INCH.

DRAWN	CHECKED	APPROVED	DATE	SCALE
Surosh			23-08-2001	NTS
PLAN VIEW OF BPL-THEORETICAL HOUSE				
NALDEHRA BUILDING CENTRE		DRG NO.	TNG KIT Y2K1	SHEET NO:
1370, SECTOR-29, H.B. COLONY				2 OF 4
FARIDABAD, HARYANA -121003				

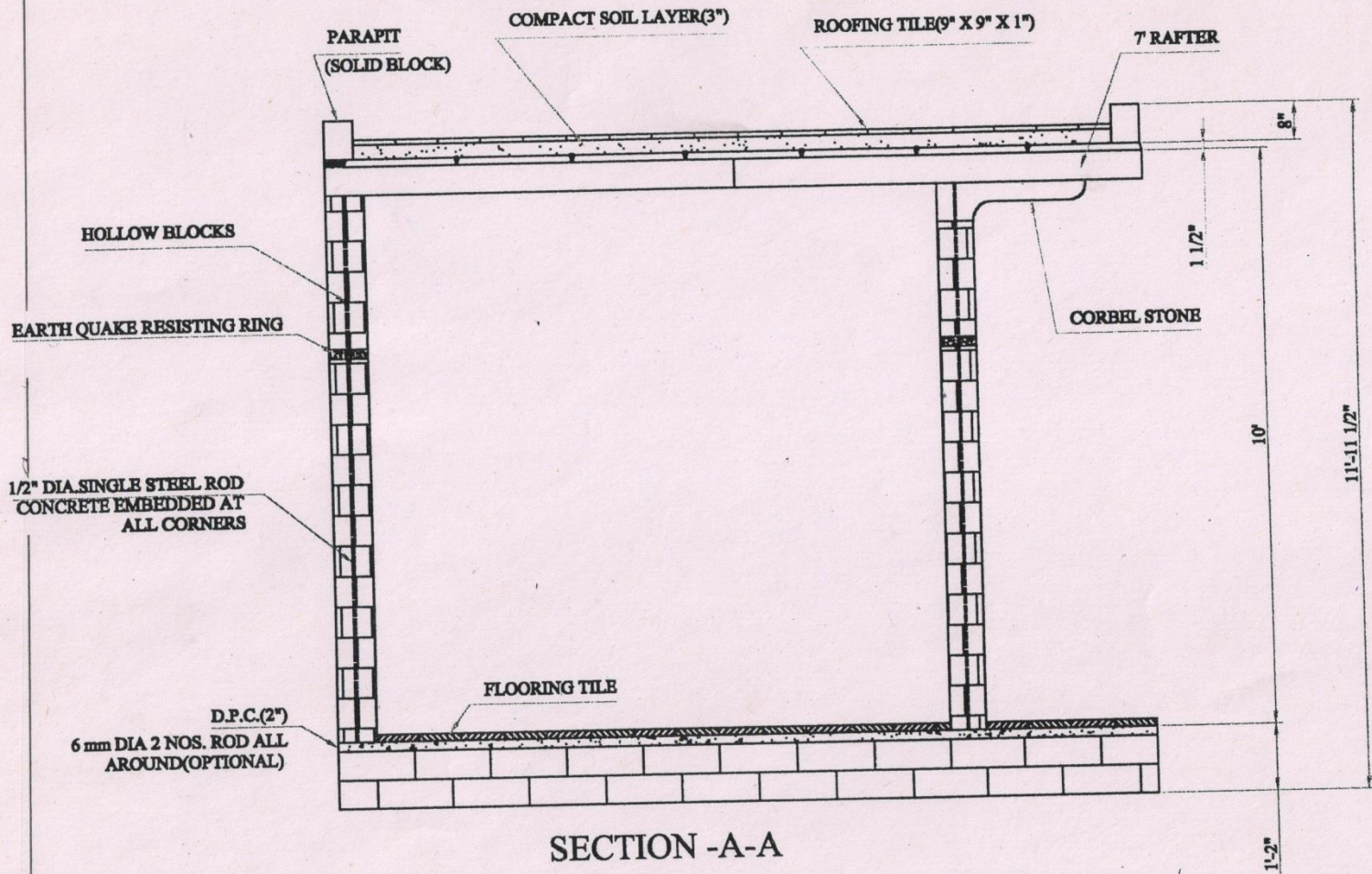


SIDE VIEW

(UNDER THE SOIL FOUNDATION NOT SHOWN)

ALL DIMENSIONS ARE IN MM/INCH.

DRAWN	CHECKED	APPROVED	DATE	SCALE
Suresh			23-08-2001	N TS
NALDEHRA BUILDING CENTRE 1370, SECTOR-29, H.B. COLONY FARIDABAD, HARYANA -121003		SIDE VIEW OF BPL-THEORETICAL HOUSE		
DRG NO.	TNG KIT YZK1	SHEET NO: 3 OF 4		



ALL DIMENSIONS ARE IN MM/INCH.

DRAWN	CHECKED	APPROVED	DATE	SCALE
Suresh			28-08-2001	NTS
NALDEHRA BUILDING CENTRE 1370, SECTOR-29, H.B. COLONY FARIDABAD, HARYANA -121003		SECTION A-A		SHEET NO: 4 OF 4
DRG NO.	TNG KIT-Y2K1			

NALDEHRA BUILDING CENTRE

- (Govt. of India HUDCO and BMTPC assistance)

THANKS