



# Rehabilitation of Kachi Abadis using PEB in Steel

by

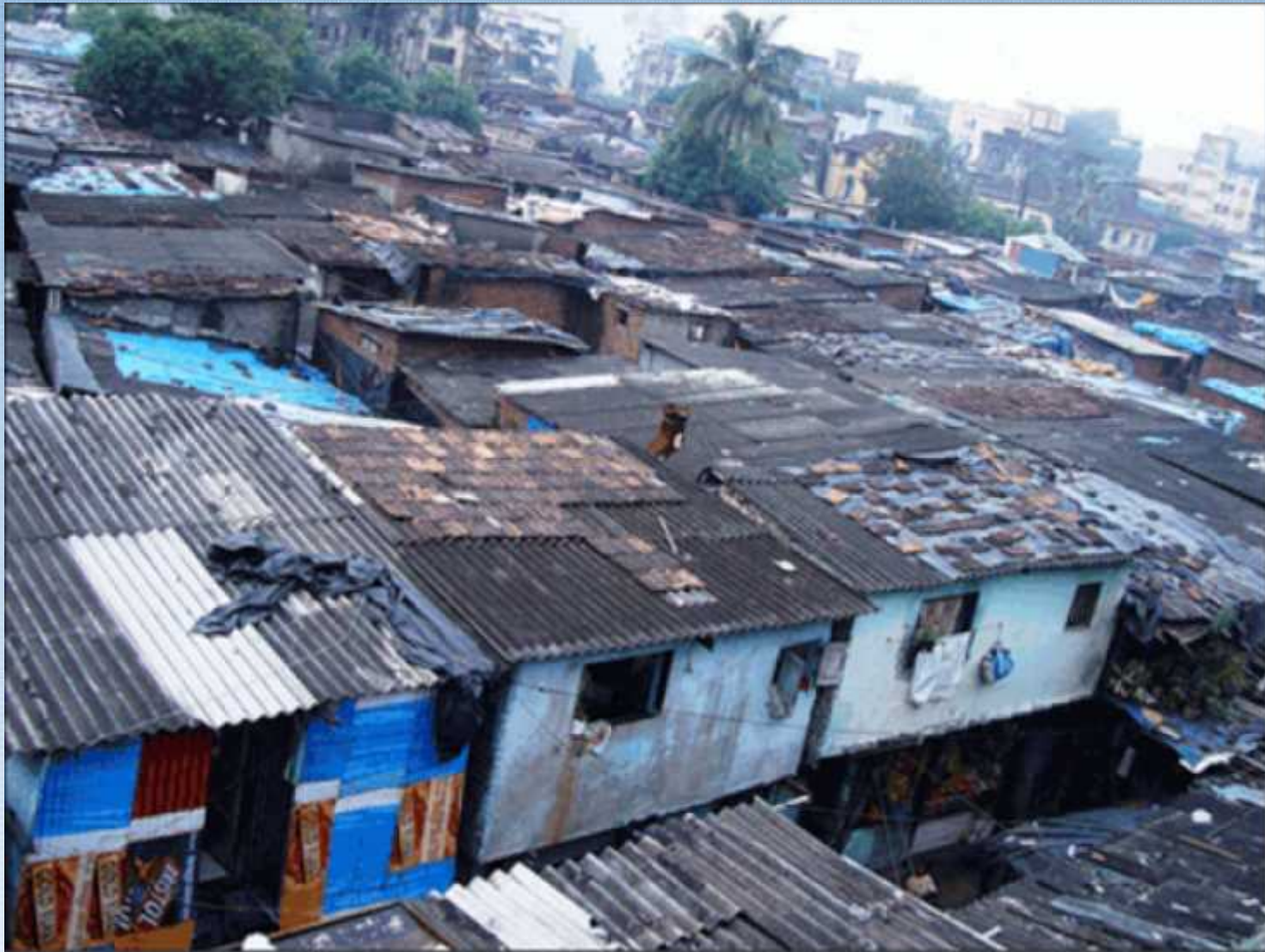
**NEDians Social Engineers Trust**



# Aim

**To present a workable  
concept of providing Low  
Cost Housing  
to  
Kachi Abadis**











**Katchi Abadis marked on Satellite data (Year 2005)**





# Problems

- **Social Problems**
- **Economic and Environmental Problems**
- **Lack of government initiative**
- **No legislation**

**Can we continue to neglect a serious national problem ?**





# The Proposal

- **Enact Legislation to rehabilitate in the same areas or a new location**
- **Develop methodology for the implementation of the legislation**
- **Plan must determine the house sizes, the amenities plots, roads, water & sewerage lines**



# The Proposal

- Initial survey for Rehabilitation in the same location
- Demolish a part of Kachi Abdi, relocate residents to temporary shelters
- Use quick construction method to build homes & give the first lot ejected, possession in new homes in the same location



# The Proposal

- If the location is not viable because it is inside a Storm channel (nalla) etc. then a new location has to be provided
- The new location must have ground +2 or ground +3 flats
- The social scientists and the community leaders have to decide how to deal with the tenants living in the owners house





# The Proposal

- **Expenditure to be borne by the dwellers in 15-20 years installments**
- **Government to provide free / subsidised land**
- **Selection of an appropriate technology**
- **The technology must ensure fast construction, should be durable & environment friendly**



# Technologies

- Prefabricated concrete
- Prefabricated Hot Rolled Steel (HRS) construction for ground +3
- Prefabricated Light Gauge Steel (LGS)
- Pre fabricated concrete construction is time taking and expensive
- **LGS the best option for ground +2 individual houses.**
- **HRS for structure & LGS for the walls for ground+4 apartments**



# **Types of Construction for Individual Homes**

## **Light Gauge Steel Construction ( LGS)**

**This is a module type expandable,  
earthquake resistant prefabricated  
system, easy to build**

**The walls and roofs could be converted  
in to solar panels**





# **Types of Construction for Apartments**

**HRS structure + LGS wall panels for  
G+ 4 apartments**

**These apartments can also be built as fast  
as the LGS ones but they are slightly more  
expensive than LGS construction**



# Criteria for Selection of LGS

- Much less time for construction
- Lower cost than RCC
- Minimal manpower requirement
- Minimal power requirement
- Low cost of Transportation
- No cranes or forklift needed



# Criteria for Selection of LGS

- **Easy Assembly**
- **Modular expansion even by dwellers**
- **Environment friendly**
- **Earth quake resistant**
- **Machines are locally developed**





# Criteria for Selection of LGS

- **Fire resistant**
- **Long durability**
- **Low maintenance**
- **Good insulation**

# Light guage steel 0.55mm- 1.6mm thick sheet roll





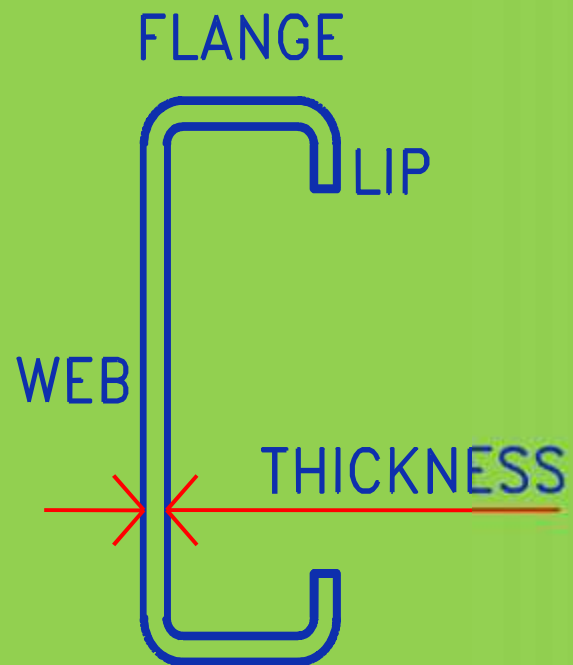
## Locally Built Computerized LGS Rolling Machine







# The capabilities of cold formed steel



Thickness 0.5mm to 2.0mm





## Flat packed assembled panels





## Sustainable Solutions – Turnkey Factory

The full end to end building solution providing - design software, manufacturing equipment, building materials and training.

3D Modelling



Engineering &  
Detailing



Manufacture



Design, Software, Manufacturing  
Equipment, and Training

Individual  
Components



Assembly



Construction







## Portability of Rolling Machine







## Production

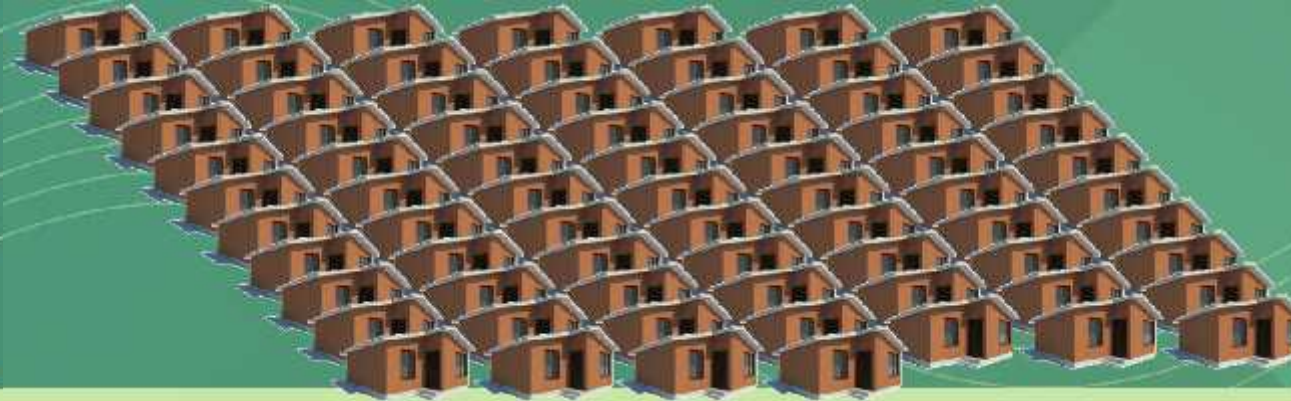
**Number of  
Houses**

1 Shift =  
8 Hours



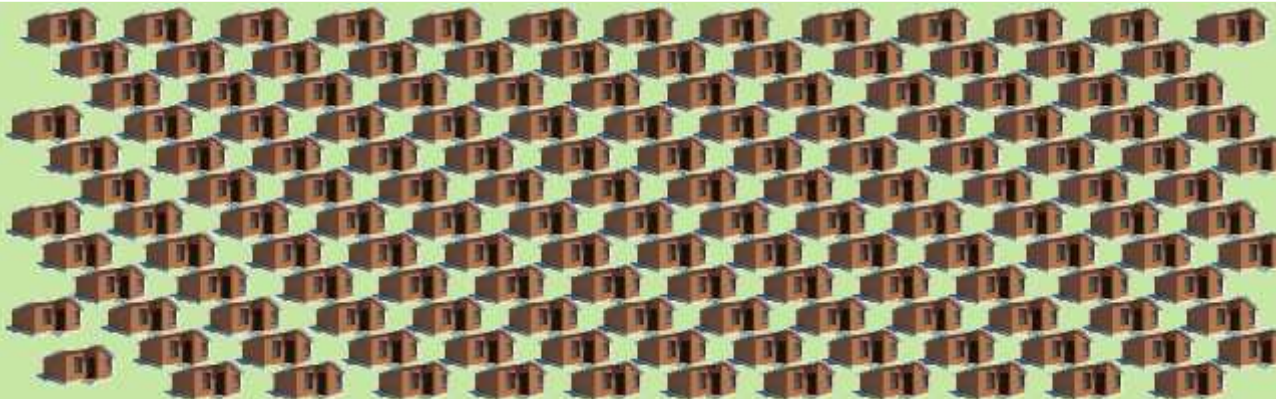
4 houses  
per shift

1 Week  
=  
7 Days x  
2 Shifts  
= 112  
Hours



56 houses  
per week

1 Year =  
50  
Weeks =  
5600 hrs



2800  
houses per  
annum



# Model House Built for Sindh Government







# LGS Structure G+3 building



# Multi-storey Steel apartments





# Way Forward

- The committee for affordable housing to select pre-fab PEB of Steel Technology.
- Govt. to legislate for rehabilitation of *Kachi abadi* & approve methodology for leasing of Land free or at subsidized rates.
- Involve *Kachi abadi*'s community and social workers in planning.





**Thank You**



## NEDians Social Engineers Trust

*Engineering is serving the underserved*

- NED-SET is a registered trust dedicated to serving the poor in Education, Health, & Low cost housing.
- Running 2 primary schools in TandoAllahyar, and commissioned operation Theater in Taluka Hospital Chachro.

### •Contact:

NEDians Social Engineers Trust,  
25, Street 1, Falcon House, Shaheed Millat Road,  
Karachi, Pakistan 75350

Cell: 92-301 8220930

E-mail: [islambrazil@yahoo.com](mailto:islambrazil@yahoo.com)

[www.nedset.org](http://www.nedset.org)



## List of LGS Manufacturers in Pakistan

1. Fabcad Building System, Fabricon (Pvt.) Ltd. Karachi.
2. Pakistan Insulation, Port Qasim, Karachi.
3. H.H. Technofab Korangi Karachi.
4. Coolmax (Pvt.) Ltd. SITE 2, Karachi.
5. PEBI, Islamabad.
6. Microtech Lahore.
7. International Steels Ltd. Karachi.
8. RECO, Lahore.
9. Stoneguard, Peshawar.
10. 110 Building System, Islamabad.





# Pre Fab LGS Ground Floor House

## **Fabrication:**

- Computerized fabrication of structures with required holes and notches for plumbing and electrical conduit.
- Pitched roof trusses fabricated with screw connection of LGS profiles
- The outer skin of wall panels shall be with 0.6mm galvanized sheet pre-painted with shallow ribs and the inner skin will be 12mm thick composite Gypsum board.
- The panel will be filled with 50mm glass wool insulation.
- Roof panels shall be PPGI with Glass wool lined with PP fiber with 4" projection on all sides.
- 40mm thick solid core plywood flush doors 840mmx 2100mm.
- steel openable windows 3'x3' 5mm plain glass.

Concealed wiring in wall and roof panels.

## **Transport to Site & Assembly :**

- One room 12'x9', lounge with kitchen 17'.8" x 8'.5" one bath 5'.3"x9' Total Area: 365 sq.ft. on a concrete pad with approved ceramic tiles not included in the price.

## **Painting Plumbing and electrical supply and fittings:**

- Internal paint distemper, external walls weather proof painting. Electrical concealed wiring as per BS-7671 with distribution board and circuit breakers. The fans and lights shall be of Pak fans and Philips. Switches and sockets of Clipsal.