

# **Experience of the first commercial scale pilot project for C &D Waste Management in India**

**– IL&FS Environmental  
Infrastructure & Services Ltd.**

**for  
CSE Media Briefing on Urbanscapes**

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# **500 TPD pilot demonstration project in Delhi**

- Collaboration of Municipal Corporation of Delhi and IL&FS Environmental Infrastructure & Services Ltd.
- Objective: to demonstrate the possibility and potential of scientifically managed storage, collection, transportation and processing / recycling of C&D waste.
- Set up on PPP basis – design, develop and finance, operate and maintain for 10 years. Commissioned in December 2009.
- 7 acre land at Burari (Jahangirpuri).

# **The scope of work**

- Collection from designated points by IL&FS Environmental Infrastructure & Services Ltd. (IEISL).
- Collection also done by the Municipal Corporation and brought to the processing plant
- Large generators, such as, DMRC, PWD etc. also truck their bulk C&D waste material to this plant
- Tipper trucks are the most common vehicles of transport
- Incoming material subjected to inspection and computerized weighment



**The site before construction of plant**

# Process flow in the plant

- C&D waste dumped at the tipping floor
- Segregation of undesirable items like rags, plastics, metal, FRP sheets etc. with mechanical (JCB) and manual means
- Remaining waste segregated into 3 parts:
  - Whole bricks
  - Big pieces of concrete and
  - Mixed C&D waste
- Whole bricks kept separate for internal use and sale



**Crushing of C&D waste – dry process**

# Large pieces of concrete

- Large concrete pieces are broken using rock breaker and mechanical hammer (200-400 mm size)
- Fed into horizontal impact crusher:
- Screening of the crushed material (Fractions of 10-20 mm, 5-10 mm and below 5 mm to 75 micron size)
- RMC is used to make kerb stones, paving blocks, tiles etc. including colour and pattern of choice
- Moulded bricks (cold) made from mixed aggregate and cement using brick laying machine



**Processing site at Burari (Jahangirpuri)**

# Mixed C&D waste

- The material is passed through a grizzly set at 200 mm
- Larger pieces broken as in the earlier mentioned case
- The mixed material passed through a jaw crusher to reduce size to 60 mm and less
- Fed into wet processor
- Washed material size graded into different fractions - from 60 mm to 75 $\mu$  size



**Dry process – crushing and grading**



**Wet process at Burari plant**

# Recycled products

- Crushed and size-graded products:
  - GSB
  - Brick pozzolana
  - Recycled concrete / stone / tile aggregate of different sizes
  - Recycled manufactured sand – mix of coarse, medium and fine
- Mixed and moulded products:
  - Ready mix concrete (RMC)
  - Kerb stones
  - Paving blocks and tiles
  - Bricks (solid, hollow)

# **Application in road construction**

- In collaboration with CRRI, one test strip was taken up in the vicinity of the C&D waste processing plant
- GSB was used to widen the road on both sides
- Inside the processing plant, all roads have been constructed with recycled GSB material
- The access road to the plant (150 m length) was entirely made with recycled C&D waste material
- For the past three and half years this road has been used to transport all the raw material coming to the plant and the road is still in very good condition



**Test road strip using C&D waste**



**Making of the test road strip**

# Rules and standards for C&D waste

- The Ministry of Environment and Forests, Government of India is already in the process of making “The Construction and Demolition Waste (Management and Handling) Rules, 2014”
- These rules propose norms for storage, collection, transportation, processing / recycling and disposal
- Schedule V of the draft rule has incorporated the issue of standards and specifications
- BIS has set up expert committee for making standards for recycled products from C&D waste

## Our Learning at Burari

With over three years of in-house R&D in processing of C&D waste, we have now developed the technology and are able to recycle/recover about 95% of incoming C&D waste in mixed form.



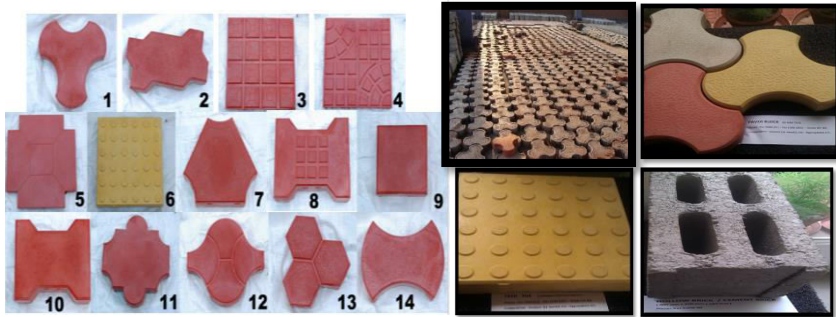
**EVO Wash**



**Thickener**



During April-Dec'13 the facility has revived and processed 3.34 lakh tons of C&D waste (about 1200 tons per day). This waste also included pile heads of M-40 grade. These pile heads has been broken and crushed into recycled concrete



# Learning and conclusion

- Rules and standards crucial for development of the sector apart from developing technology and experience.
- The commercial scale pilot plant has provided invaluable knowledge and experience in terms of process and product development
- Saving of natural resources can be significant
- Sustained awareness generation and strict regulation essential
  - For prevention of littering
  - For proper storage at source and
  - Safe use of recycled C&D waste products

**Thank You**