GOVERNMENT OF KERALA

Abstract

Local Self Government - Guidelines for managing Construction and Demolition waste in Kerala - approved - orders issued

LOCAL SELF GOVERNMENT (W.M.)DEPARTMENT

G.O.(Ms)No.168/2022/LSGD Dated,Thiruvananthapuram, 30-07-2022

Read 1 Construction and Demolition Waste Management Rules 2016
2 Draft guidelines submitted by Executive Director, Suchitwa Mission on 30.06.2022

ORDER

Rapid urbanization in the State has resulted in the profileration of civil structures. Many new buildings are either constructed in new premises or after the demolition of existing buildings. Renovations also result in the generation of significant material waste in the form of Construction & Demolition (C&D) Waste.

2. The roles of local authorities as per the Construction and Demolition Waste Management Rules 2016 include instructions and incentives to waste generators regarding proper disposal of waste, arrangements for transportation, containment and disposal, keeping track of C&D waste generated and maintaining data base and incentivising processing of C&D waste. C urrently reusable C&D waste materials like steel, window & door frames, wood, roofing tiles etc generated in the State are being collected by various scrap dealers and the major portion of concrete waste generated are being used for ground leveling activities including road construction. There have been few instances reported with regard to C & D waste being illegally used to fill up water bodies and wetlands around urban centres. I t is necessary to frame State guidelines for managing C&D waste and to set up adequate C&D waste processing facilities to prevent haphazard management, violation of the rules and damage to the environment.

3. In these circumstances, Government are pleased to issue the guidelines attached as Annexure, for management of Construction and Demolition waste in Kerala State.

(By order of the Governor)
SARADA MURALEEDHARAN I A S

ADDITIONAL CHIEF SECRETARY

To:

The Executive Vice Chairperson, Haritha Kerala Mission
The Principal Director, LSGD
Director, Local Self Government (Urban) Department
Director, Local Self Government (Rural) Department
The Chief Town Planner, L.S.G.D Planning
The Commissioner , Rural Development Department
The Chief Engineer, L.S.G.D
The Executive Director, Kudumbhasree
The Mission Director, AMRUT
The Managing Director, IMPACT Kerala
The Executive Director, Suchitwa Mission
The Director General, KILA
The Principal Accountant General (A & E)(Audit - I/Audit-II) Kerala
The Executive Director, Information Kerala Mission

Forwarded /By order

Section Officer

Copy To,

Private Secretary to Hon'ble Minister for L.S.G.D
P.A to Additional Chief Secretary, L.S.G.D
C.A to Special Secretary, L.S.G.D

I/5371320/2022

GUIDELINES FOR MANAGING CONSTRUCTION & DEMOLITION WASTE IN KERALA

1. BACKGROUND

The rapid urbanization in the State has resulted in the coming up of a number of civil structures, either new ones or renovated ones. The new ones are either constructed in new premises or after the demolition of an existing building. Such construction activities including renovation generate huge quantities of material waste termed as Construction & Demolition (C&D) Waste. Proper management including segregation, collection, processing, and reuse of C&D waste has been the focus of various bodies of the Government; **C&D Waste Management Rules, 2016** has been issued by MoEF&CC vide notification no. GSR 317(E) dated 29th March 2016, **Guidelines on Environmental Management of C&D wastes** has been issued by CPCB in March 2017, **Integrated SWM Strategy** in which the strategy on management of C&D Waste generated in the State is included has been issued by the Government of Kerala Vide G.O (Rt) 811/2020/LSGD dated 01/05/2020. In addition to this, in order to have a clear strategy on managing the C&D waste, these State-level guidelines are framed.

Major Components of C&D Waste are (Ref-CPCB guidelines, 2017):

➢ Cement concrete – 36 %

➢ Bricks Masonry – 31 %

➢ Soil, Sand and Gravel – 23 %

➢ Steel (from RCC, door/window frames, roofing support, railings of staircase, etc.) – 5 %

➢ Bitumen (In road excavations) – 2 %

➢ Timber/wood (especially demolition of old buildings) – 2 %

➢ Stone (marble, granite, sandstone) – 1 %

Currently reusable C&D waste materials like steel, window & door frames, wood, roofing tiles etc generated in the State are being collected by various scrap dealers and the major portion of concrete waste generated are being used for ground leveling activities including road construction. Cases often reported are C & D wastes are used to illegally fill up water bodies and wetlands around urban centres for 'creating land' for real estate development. It is necessary to frame State guidelines for managing C&D waste and to set up adequate

C&D waste processing facilities to prevent C&D waste from getting dumped in public places/water bodies/drains or being managed haphazardly in the State.

2. GOVERNING LEGISLATIONS

C&D waste management in the State shall be governed by the following legislations:

a. Construction and Demolition (C&D) Waste Management Rules 2016.

Duties of various stakeholders like waste generator, service provider and their contractors, local authority, pollution control board, State Government, Central Government agencies, and Schedules & Forms as mentioned in the C&D rules 2016 shall be deemed to be applicable regarding C&D waste management.

b. KMBR/KPBR Amendment Rules 2020

Amendments were made in Kerala Municipality Building Rules and Kerala Panchayat Raj Building Rules vide G. O. (P) No. 57/2020 /LSGD dated 24/09/2020 and G. O. (P) No. 56/2020/LSGD dated 24/09/2020 respectively with an objective to manage the C&D waste generated in the State. The amendments made in the building rules through inserting 'section 79A: Management of Construction and Demolition Waste'are as below:

i. Every permit holder for construction of a building, and for demolition of an existing building or concrete structure shall be responsible for safe disposal of waste generated during the process of such construction and demolition in accordance with the Construction and Demolition Waste Management Rules, 2016.

ii. The Government shall from time to time fix the Waste disposal charges for municipalities or a group of municipalities payable by applicants at the time of submitting applications seeking permits. It shall be competent for the Government to fix differential charges depending on load and distance factor.

iii. The Government shall in consideration of the provisions of the said Rules by notification provide for mechanisms for transportation, utilization, processing and downstream uses of the finished and intermediary products for construction and other purposes including their mandatory usage in specific types of infrastructure.

iv. Municipalities shall establish or cause to establish waste processing facilities for such wastes on Public Private Partnership mode or outsourced model or lease franchise model or on any structure utilizing the funds accrued from the charges and other receipts with them including plan fund.

v. The Government shall provide technical and financial support to Municipalities for the above purposes

3. OBJECTIVES

The objectives of these guidelines are to:

a. standardise the facility requirement for C&D Waste Management in all Local Self Government Institutions (LSGIs) in the State
b. standardise the procedure for licensing and operation of C&D Waste Management facilities in all LSGIs.
c. regulate the management of C&D Waste in the State.
d. promote reuse of C&D waste and thereby reduce the quantum of waste to be processed
e. make recycling of C&D waste mandatory in the State
f. enable cities to achieve garbage-free city star rating as per SBM Urban 2.0 guidelines
g. develop a monitoring mechanism in the State for managing C&D waste

4. DEFINITIONS

In these guidelines unless the context otherwise requires,-

“bulk waste generator” means C&D waste generators generating more than 20 tons or more in one day or 300 tons per project in a month.

"construction" means the process of erecting of building or built facility or other structure, or building of infrastructure including alteration in these entities.

"**construction and demolition waste**" means the waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure.

“demolition” means breaking down or tearing down buildings and other structures either manually or using mechanical force (by various equipment) or by implosion using explosives.

"**facility**" means any establishment wherein the C&D waste management processes namely segregation, recovery, storage, collection, recycling, processing, treatment or safe disposal are carried out

"operator of a facility" means a person or entity, who owns or operates a facility for handling C&D waste which includes the local body and any other entity or agency appointed by the local body

"processing" means any scientific process by which segregated C&D waste is handled for the purpose of reuse, recycling or transformation into new products

"recycling" means the process of transforming segregated C&D waste into new

material or product or as raw material for producing new products which may or may not be similar to the original products

"tipping fee" means a fee or support price determined by the local authorities or any state agency authorised by the State government to be paid to the concessionaire or operator of waste processing facility or for disposal at the landfill

"transportation" means conveyance of C&D waste, either processed, partly processed or unprocessed from one location to another location in an environmentally sound manner through specially designed and covered transportation system so as to prevent air pollution, littering and unsightly conditions

"waste generator" means any person or association of persons or institutions, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defence establishments who undertakes construction of or demolition of any civil structure which generates construction and demolition waste.

5. QUANTIFICATION OF C&D WASTE

Quantification of C&D waste is a primary requirement for managing the waste. Various approaches which can be considered for quantifying the C&D waste generation are listed below:

a. Activity-wise C&D waste quantification

Technology Information, Forecasting and Assessment Council's (TIFAC) estimation to quantify activity-wise C&D waste generation is as follows:

i. 40-60 kg per sq.m of C&D waste will be generated during new construction,
ii. 40-50 kg per sq.m of C&D waste will be generated during building repair,
iii. 300-500 kg per sq.m of C&D waste will be generated during the demolition of buildings.

Based on the study conducted by LSGD planning, Kozhikode (February,2022) in the selected LSGIs in the Kozhikode district the estimated C&D waste generation is as follows:

i. 20-30 kg per sq.m of C&D waste will be generated during new construction,
ii. 300-350 kg per sq.m of C&D waste will be generated during the demolition of buildings.

A study similar to that undertaken at Kozhikode may be carried out by all ULBs taking the above-estimated values as reference to assess the activity-wise C&D waste generation in their jurisdiction.

b. Local Self Government wise C&D waste quantification

10 % of total Municipal Solid Waste generated in the Local Self Governments may be taken as the approximate quantity of C&D waste generation for planning purposes.

However, LSGIs shall be responsible for carrying out the C&D waste quantification in their jurisdiction. The Study on "Construction & Demolition Waste Generation and Management- Kozhikode" conducted by the LSGD Planning Kozhikode, could be taken as a pointer to the quantity of C&D Waste being generated in various districts in the State. The methodology followed in the report could be adopted for further studies on the quantitative estimation of C&D Waste in Kerala.

6. SPECIFICATIONS OF C&D WASTE COLLECTION CENTRES

The location of collection centres shall be identified and decided by the Local Self Government Institutions. LSGI shall facilitate collection of C&D waste from premises of non-bulk generators through:

• Mobile collection units (on call basis facility and weekly schedule); and/or

• Designated collection centres within reasonable distance for the generator to bring and deposit the C&D waste

LSGIs shall ensure suitable vehicles of different capacities (such as Tempos, Tractors, Trucks etc) are made available at a fixed rate, and staff is assigned at each level to ensure C&D waste collection from various generation points are carried out properly.

a. C&D waste collection centres may be of the following types

i. Local Self Government owned
ii. LSGI cluster type
iii. PPP model
iv. Private owned

b. Minimum area required for C&D waste collection centres-

Identified C&D waste collection centres shall be well fenced demarcating a minimum area of 100 SqM for the facility. It shall be ensured that the debris and dust do not interfere with the adjacent plots.

The existing dumpsites shall not be used as C&D waste collection centres and if areas adjacent to the existing dumpsites are to be used for C&D waste collection, it is to be ensured that the mixing up of waste does not happen at any instance. Dumpsites after remediation may be used for managing C&D waste in a scientific manner.

c. Distance between C&D waste collection centres-
Collection centres shall be established at regular intervals such that a non-bulk generator of C & D waste is not required to transport the debris to a distance more than 5 km or this distance can be fixed by the concerned LSGIs based on the C&D waste generation potential of the area. Mobile collection units may also be adopted at the discretion of LSGs to ensure smooth C&D waste collection operations.

d. C&D waste collection centres shall be included in the storage category '**H'** of the building rules

e. Facilities required at collection centres:
Collection centres shall have a weighing bridge, C&D waste unloading area and segregated waste storage facility with roofing.

f. C&D waste collected shall be segregated at the collection centres in the designated areas with clear separation or in separate storage bins into the following categories:

Concrete, soil, steel, wood, plastics, bricks & mortar, paper (eg: paper sack cement bags), electrical items and metallic items.

g. Required pollution control measures are to be adopted at the collection centres as specified in the **CPCB Guidelines on Environmental Management of C&D wastes**.

h. Storage of C&D waste shall be in a permanently enclosed area wherever possible or else in a fenced area with a roofing facility.

i. Adequate number of water sprinkling arrangements shall be provided in the collection centres to mitigate the dust generated.

j. The unloading area shall be enclosed appropriately to prevent dust pollution during unloading operations.

k. SOP- Siting requirements and pollution control measures in construction & demolition waste processing plants by Kerala Pollution Control Board No. PCB/HO/SEE-3/TECH/139/2022 dated 04/04/2022 shall be adhered to (Annexure VI)

7. SPECIFICATIONS OF C&D WASTE TRANSPORTATION MECHANISM

C&D waste collection/transportation mechanism may be of the following types:

i. LSGI owned
ii. Private owned

The required C&D waste collection/transportation mechanism-including the capacity

of vehicles, staff strength, equipment/machinery needed for collection operations shall be adequate to meet the assessed C&D waste generation of the concerned local bodies. Whether an in-house mobile collection facility is to be provided or it may be an on-call private service facility to be decided by the concerned local bodies.

8. STANDARD OPERATING PROCEDURE FOR C&D WASTE TRANSPORTATION

C&D waste transporting agencies shall maintain a manifest in the format as attached in **Annexure I**. C&D waste transportation operation shall be without causing any traffic issues or disturbance to the public. All the environmental norms and safety precautions as specified in the CPCB guidelines on environmental management of C&D waste are to be followed by the authorised agency engaged in C&D waste transportation. Proper transportation of C&D waste includes but not limited to the following conditions:

a. Transportation of C&D waste from collection centres to processing facilities shall be done within a time period not exceeding 7 days to prevent the accumulation of C&D waste at the collection facility.

b. Transportation of C & D wastes shall be done in covered vehicles to prevent fugitive dust emission.

c. There shall be various compartments inside the vehicle to prevent mixing of waste or non mixing type of waste shall only be transported during a trip.

d. Vehicles engaged in C&D transportation shall be fitted with GPS tracking facilities.

e. C&D waste management operations shall be carried out avoiding peak times of 8AM to 11AM and 3PM to 8PM

f. Regular checking and maintenance of vehicles should be ensured (valid PUC)

9. PROCEDURE TO BE FOLLOWED BY THE SECRETARY WHILE PROCESSING APPLICATION FOR C&D WASTE COLLECTION CENTRE/ TRANSPORTATION MECHANISM AT THE LSGI

The format of application to be submitted to the Secretary for establishing C&D waste collection centres shall be as per **Annexure II** and the format of application for C&D waste collection/transportation mechanism shall be as per **Annexure III**. On receipt of the application, if any supporting document is missing with the application, the Secretary or Officer authorised by him shall immediately inform the applicant and allow the applicant to submit the missing document at the earliest, but not later than 7 days from the date of receipt of application. On filing the application in full, the Secretary or the Officer authorised by him shall issue an acknowledgement to the applicant with the date of inspection not exceeding 7 working days. Secretary or the Officer authorised by him shall visit the premises/inspect the infrastructures as per the time fixed for inspection and shall verify that all the compliances have been met and approve/reject the application within 14 days from the date of inspection.

10. HANDING OVER OF C&D WASTE BY THE GENERATOR AND THE CHARGES TO BE PAID

a. Non bulk-generator of small quantity of C&D waste for one time upto 2 tonnes in total (not per day) can register the requisition with the local authority for the collection of the segregated C&D waste and they shall be exempted from paying collection fees.This will encourage them to comply with the law. They may also deposit the segregated waste at designated collection centres by their own arrangement.

b. Non bulk-generator of C&D waste exceeding the above quantity and **less than 20 tonne** per day can register the requisition with the local authority for the collection of the segregated C&D waste and in such case collection charges as fixed by the local authority shall be payable by generator or may deliver the C&D waste material duly segregated to the designated C&D **waste collection centres** notified by the local authority at their own cost.

c. Bulk generator of C&D waste of **more than 20 tonnes per day or 300 tonnes per project in a month** shall deliver the C&D waste to the **processing plant site** at their own cost. **Processing charges for C&D waste as may be fixed by the local authority shall also be paid by the bulk generator** (eg: South Delhi Municipal

Corporation has imposed a processing fee of Rs 205 per MT at time of sanctioning building plan and Rs 225 per MT for lifting waste. The transportation charges would be increased by 10% every two years, **Ref. CPCB guidelines, 2017**)

11. APPLICATION FORMAT & WASTE MANAGEMENT PLAN TO BE SUBMITTED BY THE WASTE GENERATOR

The format of application to be submitted by the C&D waste non-bulk generator shall be as per the format attached as **Annexure IV.** Before new construction/repairing works/demolition activities which generate C&D waste, the non-bulk generators handing over C&D waste through accredited third-party agencies shall come into agreement with the respective agencies. A nominal charge as fixed by the LSG may also be levied for new constructions at the time of approval of the building plan by the LSGI.

Bulk generators of C&D waste shall submit a waste management plan to Local Self Government in the format attached as **Annexure V.** LSGI to accord the approval with or without modifications for C&D waste management plan submitted by the generator within a month

12. C & D WASTE COLLECTION/TRANSPORTATION CHARGES

Maximum charge for the collection/transportation of C&D waste by LSGI owned vehicles shall be fixed by the District Level Facilitation and Monitoring Committee (DLFMC) in Rupees per tonne for a distance upto 10 kms. This distance include distance from the construction/demolition site or collection centre to the processing facility. For distance more than this an additional charge of in Rupees per km shall also be fixed. This collection/transportation charges shall be reviewed and modified by the DLFMC from time to time.

Maximum charge for the collection/transportation of C&D waste by the accredited private agencies shall be fixed by the DLFMC after due consideration of the quantum of waste generated in the area and the distance to the facility for collection and processing of C&D waste.

13. DISTRICT LEVEL FACILITATION AND MONITORING COMMITTEE

A District Level Facilitation and Monitoring Committee (DLFMC) with the structure specified in this guideline shall be constituted in each district to regulate the C&D waste management charges and monitor the C&D waste management operations.

The structure of the committee shall be as follows;

- District Collector-Chairman
- District Co-ordinator, Suchitwa Mission - Convener
- District Co-ordinator, Haritha Keralam Mission- Member
- Joint Director (LSGD) in charge of the district - Member
- Representative of Kerala Pollution Control Board- Member
- Representative of Town and Country Planning Department - Member
- Representative from District Industries Department- Member

DLFMC shall fix the maximum C&D collection charges and tipping fee that can be levied by the C&D processing units accepting wastes for processing based on the following parameters from time to time:

a. Quantity of C&D waste collected/processed
b. Transportation expenses
c. Operational expenses of the Plant
d. Geography of the district (spatial data)

14. C&D WASTE PROCESSING FACILITIES

Local Self Government Institutions shall be responsible for assessing the quantity of C&D waste generated in their jurisdiction to arrive at the required capacity of C&D waste processing facility. In the study conducted by LSGD planning, Kozhikode (February, 2022) the volume of C&Dwaste generated in Kozhikode district is worked out to be 1,240 TPD and assuming that only half of the present volume of C&D waste is likely to reach the processing plant, a plant of capacity 500 TpD is suggested in the study for the district to handle the present C&D waste.

DLFMC shall be responsible for proposing the capacity and number of plants required in the district. Existing quarries, crusher units can be utilized for processing C&D waste as these units are already having installed machinery and with some alterations, the same can be made suitable for processing C&D waste. Hollow brick manufacturing units, paver brick manufacturing units etc may be involved in C&D waste processing activities to ensure forward linkage. This will lead to easier and timely setting up of C&D processing facilities in the State.

The secondary transportation to the off-site (centralized) C&D waste processing plant may be taken up by the ULB or third party or processing facility management agency. In addition, the bulk generators/service providers can directly transport their C&D waste to the processing facility as per their waste management plan by paying the required charges to the local authority.

C&D processing facility in the State shall comply with the following conditions:

a. C&D waste processing facilities can be of the following types

i. Local Self Government owned

ii. PPP model-

A. Land shall be owned by the Government and a facility to handle a minimum of 100 TPD C&D waste including the logistic facility shall be created by the private party. The operational cost shall also be met by the private party. The land has to be wisely selected by the LSG such that it has proper road connectivity for the movement of trucks and road development itself won't become a burden for the project. The processing or recycling plant shall be large enough to last for 20-25 years. The collection centres of C&D waste shall be pre-approved by the LSG. The primary sources of benefits are disposal fees (Tipping fee) and sale of recycled products. The price of recycled materials has to be lower than that of primary virgin materials. This gives a strong motivation to buy the recycled materials. LSG may give a buy-back assurance to the plant owner that it will use a certain percentage of the recycled materials in its various projects. Notification for user charges for C&D processing shall be fixed by the LSG.

B. Minimum waste assurance: ULB shall ensure that the bidder will be the sole agency responsible for collection of C&D Waste in the project area. The ULB shall assure the bidder a minimum quantity of C&D Waste on a monthly/quarterly basis to ensure financial viability of the project. If minimum guaranteed amount is not met, the ULB shall provide monetary compensation to the bidder at a rate quoted in the tender by the bidder.

C. Mobile type Mini-C&D waste crushing & processing enterprise providing rental services- The case considers a scenario in which an agency (public or private) invests in a mini-mobile crusher suitable to be transported easily to different demolition sites where C&D waste is crushed according to the needs of the client. The business model considers that the mini-crusher is rented out to the clients in ULBs where the C&D waste is crushed in-situ and used in-house by the client. In this case the income for investor is through renting out the machine.

D. Mobile type Mini-C&D waste crushing & processing and sales enterprise- In this case the agency (public or private) invests in a mini-mobile crusher suitable to be transported easily to different demolition sites where C&D waste is crushed transported back and stock piled by the entrepreneur in his stockyard. The processed material is later marketed by the entrepreneur. This is a mini-mobile version of the standalone crushing units.

iii. Private owned- Both land and the facility owned by the private party

b. Minimum area of at least 1 hectare is preferred for construction & demolition waste processing plant (because of its similarity to crusher units). However, considering the non availability of adequate land, a thumb rule of one acre per 100 tons/day may be taken as the minimum requirement. ie, for 200 tons/day plant, area of two acre is required and 75 tons/day plant area of 75 cents is required. However, in no case, the minimum area shall be less than 75 cents, however small the capacity is.

c. The non-availability of C&D waste due to improper collection/transportation/enforcement of law can adversely affect the economical functioning of the C&D waste processing plants. C&D plants may not be needed in all the districts since in some districts the waste generation may be low. Hence, one common C&D waste processing plant may be sufficient for multiple districts.

d. There shall be no residence/public building/place of worship within 100m of the processing facility. Minimum setback of 10m shall be available on all sides.

e. The processing facility shall consists of the following components

i. Compound Wall / Fencing Arrangements

ii. Weigh bridge at entry/exit gate

iii. C&D waste unloading platform

iv. Sorting/Segregation Area

v. Conveyor belt to the crusher plant

vi. Crusher plant

vii. Wet Processing Plant

viii. Screening Mechanism to screen various size of aggregates

ix. Processed Material Storage Area

x. Material Testing / Administrative block buildings

xi. Processing or recycling site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.

xii. The crushing plant shall be fully enclosed in a brick/concrete walled building

with opening for material handling only.

xiii. Adequate water storage facilities and water sprinkling and dust suppression systems have to be provided in the plant.

xiv. The waste received, the waste processed, the products and the rejects shall be correctly quantified using weigh bridge.

xv. The owner of the facility shall prepare annual reports as per the prevailing rules and submit to the local bodies & the PCB

xvi. There shall be earmarked areas for parking vehicles and carrying out vehicle cleaning operations

xvii. The approach and or internal roads shall be concreted or paved so as to avoid generation of dust particles due to vehicular movement and shall be so designed to ensure free movement of vehicles and other machinery

xviii. Utilities such as drinking water and sanitary facilities (preferably washing/bathing facilities for workers) and lighting arrangements for easy landfill operations during night hours shall be provided and Safety provisions including health inspections of workers at landfill sites shall be carried out made.

xix. Provision of storm water drains to prevent stagnation of surface water

xx. fire protection equipment and other facilities as may be required shall be provided.

xxi. provision for the prevention of NOISE pollution from processing and recycling plant:

xxii. provision for treatment of effluent if any, to meet the discharge norms as per Environment

xxiii. Work Zone air quality at the Processing or Recycling site and ambient air quality at the vicinity shall be monitored.

xxiv. the measurement of ambient noise shall be done at the interface of the facility with the surrounding area, i.e., at plant boundary.

xxv. A vegetative boundary shall be made around Processing or Recycling plant or

site to strengthen the buffer zone.

xxvi. Pollution control measures as specified in the CPCB Guidelines on Environmental Management of C&D wastes.

xxvii. SOP- Siting requirements and pollution control measures in construction & demolition waste processing plants by Kerala Pollution Control Board No. PCB/HO/SEE-3/TECH/139/2022 dated 04/04/2022 shall be adhered to (Annexure VI)

15. MANDATORY USE OF C&D WASTE PRODUCTS

As and when a C&D waste recycling plant is commissioned in a district and recycled products are available within 100 km from construction site, it shall be mandatory for below listed construction activities to use specified percentage of available building construction materials manufactured from recycled C&D waste.

a. All Government constructions including shall mandatorily use at least 20 percent of recycled C & D waste products.

b. All renovation projects involving demolition, even in the private sector, shall mandatorily use at least 20 percent of recycled C & D waste products.

Example: Delhi government advisory C & D waste utilization-The Delhi government has issued an advisory on the use of products made out of recycled C & D waste by the Public Works Department (PWD). All Delhi government agencies will be required to incorporate a clause in their tenders that mandates use of a minimum of 2 per cent recycled products from construction waste in all future contracts for building works and 10 per cent recycled products for road works, **Ref- CPCB Guidelines, 2017**.

16. C&D ITEM REUSE AND C&D WASTE RECYCLED PRODUCTS

Various options to ensure the best possible use of C&D items and C&D waste recycled products are depicted below:

a. REUSE OF C&D ITEMS

i. According to waste management hierarchy, the priority should be to extract the maximum practical benefits from products and to prevent and minimize the waste that

is generated. Prevention is the most desirable waste management option as it eliminates the need for handling, transporting, recycling or disposal of waste. Reuse of C&D waste is important as it helps to reduce the dependence on natural resources and eliminates adverse environmental impacts like mining which is an energy intensive activity. Reuse of C&D wastes has the additional advantage of controlling the quantum of C&D waste destined for disposal and recycling besides reducing transportation costs.

ii. The list of reuse and salvage materials include appliances, bathroom fixtures, bricks, blocks, masonry stone, structural steel, cabinets, carpeting, ceiling tiles, timber and timber based boards, door and window frames and shutters, flooring tiles, stone tiles/platforms, insulation, landscaping materials, lighting fixtures, metal framing including for partitions and ceiling, panelling, pipes, antique mouldings, accessories and hardware of furniture, PVC water tanks, roofing sheets used for garages, outdoor areas, fabric of tensile structures etc.

iii. When the opportunities for reuse or salvage are exhausted, recycling is the next level.

iv. C&D waste materials that can be recycled include acoustical ceiling tiles, asphalt, asphalt shingle, carpets, concrete, drywall, fluorescent lights, land clearing debris (vegetation, dirt), metals and metal alloys, structural steel, plastic film (sheeting, packaging), glass, wood etc.

b. THE DIRECT PRODUCE OF RECYCLING OF C&D WASTE

i. **Fine aggregate-**The produce of C&D waste processing i.e. fine and coarse aggregates are good materials for road construction. Road stretches have been already constructed in India using these materials.

ii. **Recycled Concrete Aggregates**-It is derived from concrete after requisite processing of different sizes (5-10 mm, 10-20 mm, 20-40 mm or as required)

iii. **Recycled Aggregates**- It is made from C&D waste, which may comprise concrete, brick, tiles,stone, etc. of different sizes (5-10 mm, 10-20 mm, 20-40 mm or as required)

iv. **Manufactured soil**- The manufactured soil is quite suitable for landfill, landscaping as a substitute of excavated soil. Fine and coarse aggregates are ready raw materials for Ready Mix Concrete plants and construction sites. The manufactured soil is also a good substitute for soil for construction of road and fly over embankments. It saves precious topsoil.

c. THE VARIOUS DOWNSTREAM PRODUCTS WHICH CAN BE MANUFACTURED USING RECYCLED C&D WASTE

i. **Tetrapods** and other similar structures which can be used for coastal protection (As Kerala is having long coastline, the demand for bulk materials to be used in coastal protection is high and C&D waste recycled products can substitute enormous quantity of natural materials in this aspect)

ii. Bricks, blocks, tiles, hollow bricks, wall tiles;

iii. Pavers, kerb stones;

iv. Park benches, drain covers, planters, compound wall, fence post, tree guards, tree pit covers, manhole covers, underground cable covers, precast boundary wall panels and poles, etc.

17. INCENTIVIZE UTILISATION OF RECYCLED C&D WASTE PRODUCTS

The tipping fee for delivery of C & D waste to the recycling plant, terms & conditions of the civic body with the concessionaire shall be designed to keep the price of C & D waste recycled products atleast 20 per cent lower than the corresponding conventional products. The price of C&D waste recycled products shall be published in the State Schedule of rates.

18. QUALITY CONTROL FOR C&D WASTE RECYCLED PRODUCTS

C&D waste recycled product use shall be according to the following specifications/guidelines:

a. IS: 383(2016) Indian Standard COARSE AND FINE AGGREGATE FOR CONCRETE – SPECIFICATION. Utilisation of C&D waste permitted in various concrete works by IS: 383(2016) are as below:

C & D waste BIS IS: 383	Plain Concrete	Reinforced Concrete	Lean Concrete (< M15 grade)	Extent of Utilization
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	as Coarse Aggregate
Recycled Aggregate (RA)	nil	nil	100%	as Coarse Aggregate
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	as Fine Aggregate

b. National Building Code (NBC- CED 46) of India 2005 : Part 11 of NBC 2005 on 'Approach to Sustainability'(Chapter 11), states that :

i. Recycled Coarse Aggregate may be used in concrete for bulk fills, bank protection, base/fill of drainage structures, pavements, sidewalks, kerbs and gutters etc.

ii. Up to 30 percent of natural crushed coarse aggregate can be replaced by the recycled concrete aggregate

iii. This percentage can be increased up to 50 percent for pavements and other areas which are under pure compression specific to the standards and practices pertaining to construction of roads.'

c. Building Materials and Technology Promotion Council (BMTPC) in 2016 released "Guidelines for utilization of C & D waste in construction of dwelling units and related infrastructure in housing schemes of the Government".

d. The PART IV of Central Pubic Works Division (CPWD): The "Guidelines for Sustainable Habitat (March 2014)" discusses 'Guidelines on reuse and recycling of Construction and Demolition (C & D) waste'.

e. Indian Road Congress has permitted the use of produce of C&D waste processing and has issued IRC: 121-2017 "Guidelines for use of construction and demolition waste in road sector".

Note- The Concerned Departments in the State need to ensure the above criteria through separate orders.

19. MONITORING MECHANISMS

Strict enforcement of rules combined with regular monitoring procedures and supporting policies can serve as effective systems for the management of C&D waste. A series of monitoring and inspection mechanisms should be in place for disposal practices of C&D waste in order to prevent unauthorised dumping. Tracking systems involving multiple stakeholders to be in place to ensure proper disposal and handling

of C&D waste. For effective monitoring, the ULBs can make use of extensive IT systems such as GPS tracking of vehicles and centralized data entry for movement of waste streams from one place to another besides appropriate tests and inspections.

20. PUNISHMENTS TO ILLEGAL COLLECTION, TRANSPORTATION AND DUMPING OF C&D WASTE

a. Mixing construction debris with municipal solid waste-Rs.10,000

b. Dumping C&D waste in public places- Rs.20,000

c. Dumping C&D waste into water bodies and drains- Punishment with imprisonment for a term which may extend to three years or with fine which may extend to Rs.2,00,000 or with both (Ref-Kerala Irrigation & Water Conservation (Amendment) Act, 2018, dated 03.07.2018)

d. Penalty for not removing C & D waste from the site within 7 days after the completion of construction/demolition works- Rs. 5,000/- per tonne

e. Penalty for not delivering Construction and Demolition waste in a segregated manner Rs. 10,000

f. Improper transportation of C&D waste- Rs.10,000

g. Carrying out C&D management operations without necessary licence- Rs.10,000

Note- For recurring incidents, the above fine shall be doubled.

21. ROLES AND RESPONSIBILITIES OF VARIOUS STAKEHOLDERS

a. LOCAL SELF GOVERNMENT INSTITUTIONS

Local Self Government Institutions shall:

i. issue detailed directions with regard to proper management of construction and demolition waste within its jurisdiction in accordance with the provisions of C&D waste management rules and the local authority shall seek detailed plan or undertaking as applicable, from generator of construction and demolition waste;

ii. chalk out stages, methodology and equipment, material involved in the overall activity and final clean up after completion of the construction and demolition ;

iii. seek assistance from concerned authorities for safe disposal of construction and demolition waste contaminated with industrial hazardous or toxic material or nuclear waste if any;

iv. shall make arrangements and place appropriate containers for collection of waste and shall remove at regular intervals or when they are filled, either through own resources or by appointing private operators;

v. shall get the collected waste transported to appropriate sites for processing and disposal either through own resources or by appointing private operators;

vi. shall give appropriate incentives to generator for salvaging, processing and or recycling preferably in-situ;

vii. shall examine and sanction the waste management plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission;

viii. shall keep track of the generation of construction and demolition waste within its jurisdiction and establish a data base and update once in a year;

ix. shall device appropriate measures in consultation with expert institutions for management of construction and demolition waste generated including processing facility and for using the recycled products in the best possible manner;

x. shall create a sustained system of information, education and communication for construction and demolition waste through collaboration with expert institutions and civil societies and also disseminate through their own website;

xi. shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads.

xii. operate helpline toll free number for citizens for availing C&D waste management services

xiii. incorporate the details of the expected quantity of C& D waste in the building permit. The proposed mode of disposal of C&D waste shall also be specified in the building permit.

xiv. issue licence to C&D waste Management facilities as per the provisions of these guidelines

xv. regulate illegal collection, transportation and dumping of C&D waste and penalise the defaulters as per the legal provisions

xvi. facilitate C&D waste generators to enter into tie up with authorised C&D waste management facilities. Mobile collection facility is always preferable under Kerala circumstances.

xvii. take action regarding non-collection of C&D waste by authorised agencies

xviii. collect and maintain records from the C&D waste generators regarding the quantum of waste generated, transported, processed and disposed by them

xix. Shall prepare and submit an annual report to the PCB as per the rule.

xx. fix maximum tipping fee in consultation with DLFMC that can be levied by the C&D waste management facilities accepting C&D wastes for processing based on the following parameters from time to time;

A. Quantum of C&D waste processed

B. Operational expenses of the facility

C. Transportation expenses

D. Geography of the district (spatial data)

xxi. Intervene if any social issues related to functioning of C&D waste management facilities arise.

b. STATE GOVERNMENT

Duties of State Government-

i. The concerned department in the State Government dealing with land shall be responsible for providing suitable sites for setting up of the storage, processing and recycling facilities for construction and demolition waste.

ii. The Town and Country planning Department shall incorporate the site in the approved land use plan so that there is no disturbance to the processing facility on a long term basis.

iii. Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.

c. KERALA STATE POLLUTION CONTROL BOARD

Kerala State Pollution Control Board shall:

i. monitor the implementation of C&D waste management rules by the concerned local bodies and the competent authorities and the annual report shall be sent to the Central

Pollution Control Board and the State Government or Union Territory or any other State level nodal agency identified by the State Government or Union Territory administration for generating State level comprehensive data. Such reports shall also contain the comments and suggestions of the State Pollution Control Board or Pollution Control Committee with respect to any comments or changes required;

ii. grant authorization to construction and demolition waste processing facility in Form-III as specified under C&D waste management rules after examining the application received in Form I;

iii. prepare annual report in Form IV with special emphasis on the implementation status of compliance of C&D rules and forward report to Central Pollution Control Board before the 31st July for each financial year.

iv. issue NOC/Consent to Operate to C&D waste management facilities that follow required conditions

v. prepare and publish Standard Operating Procedure (SOP) for (collection, storage, transportation and processing) C&D waste management facilities in the State from time to time. SOP attached as annexure VI.

vi. ensure that the C&D waste management facility operators are following the SOP through periodical inspection and submit quarterly reports to the Government

vii. bring to the notice of Local Self Government, any case of non-compliance of SOP by approved C&D waste management facilities

viii. ensure that the C&D waste management facilities maintain proper records of all their activities including quantity of wastes managed, processing done etc.

ix. ensure that C&D waste management facilities have appropriate pollution control systems.

d. C&D WASTE GENERATOR

C&D Waste generator shall ensure proper management of C&D waste and its site as per C&D waste management rules 2016 including but not limited to following aspects:

i. Every waste generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority in consonance with these rules.

ii. The generator shall ensure that other waste (such as solid waste) does not get mixed with this waste and is stored and disposed separately.

iii. Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall segregate the waste into different streams such as concrete, soil, steel, wood and plastics, bricks and mortar and shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work and keep the concerned authorities informed regarding the relevant activities from the planning stage to the implementation stage and this should be on project to project basis.

iv. Every waste generator shall keep the construction and demolition waste within the premise or get the waste deposited at collection centre so made by the local body or handover it to the authorised processing facilities of construction and demolition waste; and ensure that there is no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.

v. Every waste generator shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities; Waste generators who generate more than 20 tons or more in one day or 300 tons per project in a month shall have to pay for the processing and disposal of construction and demolition waste generated by them, apart from the payment for storage, collection and transportation. The rate shall be fixed by the concerned local authority or any other authority designated by the State Government.

vi. The reusable items such as bricks, doors, windows, cupboards, kitchen & bathroom fittings, other fittings, wooden items, glass, wall panels, roof slabs, other structural elements, etc. may be removed first without damaging these items and be stored separately and supplied to re-users/ second hand markets.

vii. The recyclable items like electrical wires, metals, glass, plastics, paper boards, gypsum boards, etc. be collected separately and supplied to re-meltors.

viii. Concrete debris be kept separately and be processed/ supplied to the processing plant without mixing with masonry, soil and other debris.

ix. MSW, toxic waste, electronic waste, hazardous waste etc. are not to be mixed with the C&D waste and are to be disposed off separately in a safe manner as prescribed in Solid Waste Management Rules, 2016.

x. C&D waste is to be segregated in different streams such as concrete, soil, steel, wood, plastic, bricks & mortar, paper (eg:paper sack cement bags), electrical items, metallic items and other streams stated above for supply to second raw materials market/ re-meltors/re-users/ processors.

xi. Separate storage area to be earmarked for segregation & storage of construction waste

xii. The C&D waste generated at the site is to be evacuated promptly to avoid mix up and spilling over to neighbouring areas

xiii. C&D waste generators shall identify the nearest collection centre notified by LSGI and transport the C&D waste to the facility.

xiv. Safety of equipment and manpower is to be ensured.

xv. The C&D waste generation site shall not allow littering of debris or create any type of pollution as specified in CPCB guidelines

xvi. Rules and regulations of local agencies regarding permissions required and other aspects be followed.

xvii. Details of C&D waste generated and its disposal/ re-use/ processing, etc. as may be reported to the local authority as may be required.

xviii. strictly adhere to the Standard Operating Procedures of CPCB and KSPCB in handling and storage of C&D waste

xix. Bulk generators shall enter into an agreement with authorized C&D waste management facility operators for the removal of the waste and shall strictly abide by the protocol for storage, collection, transportation and processing of C&D waste as per the directions and guidelines of PCB

xx. shall have appropriate pollution control measures as specified by Central Pollution Control Board/KSPCB

xxi. ensure that C&D waste is handed over only to authorized C&D managing facilities and not to any other agency/ person.

xxii. pay Tipping fee as approved by the concerned authority

xxiii. inform the LSGI, if the C&D waste is not regularly picked up by the authorised agencies

xxiv. shall maintain proper records/manifests regarding quantum of waste generated, quantity transferred to authorised agencies

e. C&D WASTE MANAGEMENT FACILITY OWNERS

C&D Waste Management facility owners/operators shall:

i. collect, transport, store and process the C&D waste as per the prevailing Standard Operating Procedure (SOP) and based on the agreement with the bulk generators

without fail.

ii. collect, transport, store, process the C&D waste from collection centres notified by LSGIs as per the SOP

iii. levy Tipping fee only as per the LSGI recommendations.

iv. obtain statutory clearance/s (and renew it correctly on expiry) as per prevailing rules and provisions of these guidelines

v. maintain the C&D waste storage and processing facilities in an environment friendly manner without littering/ spill over of C&D waste material

vi. own/ rent and maintain enough vehicles and logistic equipments in good condition for transportation of C&D wastes. Ensure that the crew carry proper manifests/documents when waste is transported.

vii. ensure that the transport crew have proper uniforms and Personal Protective Equipments (PPEs) while in duty

viii. ensure that the C&D waste is not transferred to other vehicles/dumped anywhere during transport

ix. ensure that no disturbance to public occurs during transport

x. treat all wastes generated as a part of processing

xi. maintain all records/manifests related to clients, quantity collected, transported, processed, product obtained and sold, waste generated and treated etc

xii. maintain on its website real time information about availability of produce of C&D waste and downstream products as well as their quality report and price along with the system for placing online order and payment

xiii. inform the LSGI in case the generators fails to provide the C&D waste to the facility regularly

f. SUCHITWA MISSION

Suchitwa Mission shall:

i. provide technical support and issue guidelines regarding C&D waste management in the State

ii. monitor and supervise the implementation of these guidelines

iii. empanel C&D waste management operators/service providers in the sector

iv. convene the district level committees

v. facilitate setting up of C&D waste management facilities

vi. ensure that adequate C&D waste collection points are arranged by the LSGs

vii. channelise resources and facilitate setting up of C&D processing facilities by public sector institutions/local governments

viii. undertake education and capacity building activities for the demolition contractors as well as builders to adopt modern technologies/ techniques for de-construction of structures and maximize recovery of reusable items than demolition

ix. guide and facilitate the C&D waste processors for utilization of produce & downstream products in various construction projects

Annexure I

Format of C&D Waste Transportation Manifest

1	Sender's name and address (including Phone No. and email)	
2	Manifest Document No.	
3	Transporter's name and address: (including Phone No. and email)	
4	Type of vehicle	(Truck/Tempo/Tractor/others please specify)
5	Vehicle registration No.	
6	Collection Centre/Processing facility/Sanitary Land Fill name and address (including Phone No. and email)	
7	Waste description (predominant type of waste)	
8	Total quantity	……..m3 or MT
9	Purpose of transportation	To collection centre/processing plant/recycling/scientific landfilling/others please specify
10	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above with proper shipping details
	Date: Name and designation: Signature:	
11	Transporter acknowledgement of receipt of Wastes:	I hereby declare that the contents of the consignment described above has been received for transportation and are

		properly covered and are in all respects in proper conditions for transport by road according to applicable government regulations.
	Date: Name and designation: Signature:	
12	Receiver's certification for receipt of C&D waste	I hereby declare that the contents and quantity of waste as described above has been received for temporary storage/treatment/disposal
	Date: Name and designation: Signature:	

Annexure II

Application format for the service provider for obtaining approval from LSG for setting up C&D waste collection centre

1. Consent to establish obtained from KSPCB: Yes / No

2. Basic Information

    a. Name& address of Applicant/Company:

    b. Contact number :

    c. Email address :

    d. Type of ownership :

3. Land details

    a. Survey No :

    b. Ownership : Own land/ Leased land

    c. If leased, copy of lease agreement : Attached/ Not attached

    d. Plot area : …….(cents)

    e. Width of approach road : ……..(metres)

    f. Distance of the plot boundary from nearest

        i. Building: …….metres

        ii. Water body : …….metres

Declaration

I hereby declare that all the statements made in and all documents submitted along with this applications are true.

Place: Name & Signature

Date:

Annexure III

Application format for the service provider for obtaining approval from LSG for carrying out C&D waste collection/transportation operations

A. Basic Information

a. Name & address of Applicant/Company:

b. Contact number :

c. Email address :

d. Type of ownership :

B. Collection/transportation capacity details

a. Total C&D waste collection capacity : ……(Tons/day)

b. Vehicle details

i. Number of trucks proposed to be used for collecting C&D waste:

ii. Number of trucks which are of closed type:

iii. Total capacity in tons of vehicles:

iv. Vehicle List: Specify number and capacity in tons of each

c. Details of equipments/ machineries:

d. Staff strength of waste collection crew:

C. Details of pollution control measures and safety measures proposed to be provided:

i. Pollution control measures-

ii. Safety measures-

Declaration

I hereby declare that all the statements made in and all documents submitted along with this application are true.

Place: Name & Signature

Date:

Annexure IV

Application format for the C&D waste non-bulk generator for obtaining approval from LSG before commencing construction or demolition activities

A. Basic Information

a. Name & address of Applicant:

b. Contact number :

c. Email address:

B. C&D waste management details

a. Type of activity- New construction/Repair/Demolition

b. Area of proposed demolition/construction structure-

c. Proposed C&D waste handing over arrangement:

i. Agency name (copy of agreement with the C&D collecting agency)

or

ii. Collection center name (if handing over of C&D waste done through LSG arrangements or by the generator themselves-

Declaration

I hereby declare that all the statements made in and all documents submitted along with this application are true. I shall abide by all rules and regulations pertaining to C&D waste management issued by the State and Central Government.

Place: Name & Signature

Date:

Annexure V

Format of Waste Management Plan to be submitted by C&D bulk waste generators to LSGI

A. Basic Information

a. Name & address of Applicant:

b. Contact number :

c. Email address :

B. C&D waste generation details

a. Type of activity- New construction/Repair/Demolition

b. Area of proposed demolition/construction-

c. Approximate quantity of C&D waste generation-

d. Segregation arrangements for C&D waste-

C. Details of pollution control measures proposed to be provided:

a. Details of air pollution control measures-

i. details of covering of site boundaries-

ii. details of water sprinkling system-

b. Details of Noise pollution control measures-

c. Other pollution control measures-

Declaration

I hereby declare that all the statements made in and all documents submitted along with this applications are true and correct to the best of my knowledge & belief. I shall abide by all rules and regulations pertaining to C&D waste management issued by the State and Central

Government.

Place: Name & Signature

Date:

Annexure VI

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: ms.kspcb@gov.in FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

No. PCB/HO/SEE-3/TECH/139/2022 Date: 04/04/2022

SOP- Siting requirements and pollution control measures in

construction & demolition waste processing plants

1. "Construction and demolition waste" means the waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure. Waste generated during construction & maintenance of roads also comes under this category.

2. “Demolition” means breaking down or tearing down buildings and other structures either manually or using mechanical force (by various equipment) or by implosion using explosives.

3. The major components of construction & demolition waste are concrete, brick masonry, steel, wood, stone (marble/granite etc), soil/sand/gravel.

4. Processing of construction waste is aimed at segregation/conversion of the construction & demolition waste for reuse, recycling and/or transformation into new products.

5. The quantum of construction waste generated as per CPCB Guidelines are as follows:

a. Range 40-60 kg per sq.m of new construction,

b. Range 40-50 kg per sq.m of building repair,

c. Range 300-500 kg per sq.m for demolition of buildings.

6. Construction & demolition waste is approximately 10% of the municipal solid waste.

7. Demolition of buildings can be done either by manual methods (using excavators, bulldozers, sledge hammers, jack hammer, drillers etc) or by engineering methods (wrecking

ball, pusher arm, concrete saw, implosion etc).

8. The contractor doing the demolition does the segregation in the site itself. Materials that can be recycled are collected by the scrap dealers. The concrete waste shall be dispatched to the collection centres or transported directly to the processing centres.

Pollution control measure to be provided in construction sites

The following facilities shall be provided in the construction/demolition sites:

1. Construction & demolition waste need to be segregated into concrete, soil, steel, wood, plastic, brick & mortar, paper (eg:paper sack cement bags), glass, ceramic, electrical items and metallic items.

2. Separate storage area need to be earmarked in the construction site for segregation & storage of each type of construction/demolition waste.

3. Construction waste shall not mix with domestic waste.

4. Enclosure of the construction site using garden nets/GI sheets shall be done to prevent spreading of dust to the nearby areas.

5. Water storage facilities with adequate number of waste sprinklers shall be provided for containing the dust generated.

6. Only DG sets having acoustic enclosure shall be used in the site.

7. Facilities for treatment of sewage generated from the workers quarters shall be provided. Domestic solid waste generated from the workers quarters shall be segregated and bio-degradable solid waste shall be treated using bio-gas plant, compost etc.

A detailed construction waste management plan shall be submitted by the proponents of medium & large scale industries (incorporating the mode of segregation, storage, reuse, transportation & disposal of construction waste) along with the application for ICE of the Board.

2

Collection Centres

1. Facilities required at collection centres include weighing facility, unloading area & storage area. The weight of the incoming & outgoing waste shall compulsorily be recorded at the centre.

2. The collection centres shall have the control measures mentioned below:

a. Enclosures with GI sheets shall be provided for the loading & unloading and storage areas.

b. Adequate water storage facility shall be provided.

c. Adequate number of water sprinklers shall be provided in the collection centres to mitigate the dust generated.

3. The collection centre shall have adequate land area to ensure that the facilities mentioned above can be provided comfortably.

4. The local bodies shall provide the details of collection centres in its jurisdiction to the Board.

Processing Centres

1. Construction & demolition (C & D) waste processing activity falls under orange category (as per CPCB guidelines). C & D waste processing facility shall inspect each waste load before unloading debris and shall accept only C & D Debris - no industrial waste shall be accepted at the C & D facility (as per CPCB guidelines). The primary step in the processing plant is the segregation of waste. The waste need to be segregated into concrete, soil, steel, wood, plastic, brick & mortar, paper (eg:paper sack cement bags), electrical items and metallic items. Only stationary processing facilities are permitted (mobile or semi-mobile are not permitted because of possibility of public resistance).

2. Such facilities are equipped for carrying out crushing, screening as well as purification to separate the contaminants. In the usual construction waste processing plant, concrete waste is fed into the hopper and then crushed in crusher (jaw or horizontal impact crusher) resulting in particles size

reduction from 400mm to less than 80mm. The under 80mm size particles are discharged into grizzley feeder (vibrating feeder) through conveyor and then into log washer (intensive washing in an inclined washer {sloped} using shaft and paddles) for removal of plastic/wood/ silt/clay and then sorted in vibrating screens to generate particles in the size range 80mm – 20mm, 20mm – 8.5mm and < 8.5mm. The under 8.5mm particles are then sent to the cyclone separator to separate into two fractions of size 0.75mm – 3.75mm & 3.75 – 8.5mm. Processing methodology may vary from that mentioned above. However, the aim in all processing technology is to crush the concrete waste into uniform aggregates of specified size.

3. The resultant crushed aggregates can be used as follows:

80mm – 20mm : Road works

20mm – 8.5mm : Concreting other than for load bearing structures.

8.5mm – 3.75mm : As plaster sand

3.75mm – 0.75mm : Machine sand (M sand).

Schedule II of the Construction and Demolition Waste Management Rules, 2016 may be followed if the products are used in the operation of sanitary land fill.

4. The processing or recycling site shall be away from habitation clusters, forest areas, water bodies, monuments, National Parks, Wetlands and places of important cultural, historical or religious interest.

5. There shall be no residence/public building/place of worship within 100m of the processing facility. Minimum setback of 10m shall be available on all sides.

6. Minimum area of at least 1 hectare is preferred for construction & demolition waste processing plant (because of its similarity to crusher units). However, considering the non availability of adequate land, a thumb rule of one acre per 100 tons/day may be taken as the minimum requirement. ie, for 200 tons/day plant, area of two acre is required and 75 tons/day plant area of 75 cents is required. However, in no case, the minimum area shall be less than 75 cents, however small the capacity is.

7. Usually, the capacity of the plant is specified in ton/hour. However, the land area may be fixed based on the construction waste processed per day.

4

8. The control measures shall be as follows:

a. The entire plant (including the conveyors)shall be installed in building with side walls of brick/concrete of minimum thickness 23cm and with door opening for material handling only.

b. Minimum water storage facility of 10,000 litres per day shall be provided.

c. Adequate number of sprinklers & dust suppression system shall be provided.

d. Internal roads shall be concreted or paved.

e. Facilities for treatment of wash water including settling tank and sludge drying facilities for the sludge settled in the settling tank shall be provided.

f. Processing or recycling site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.

g. Storm water drains shall be provided. Adequate facilities to ensure that the storm water does not carry waste or waste water generated in the unit shall be provided.

h. Green belt with suitable species of trees/curtain plants shall be provided within and along the boundary of the premises.

9. Fire fighting/protection equipments may be provided in the site.

10. A buffer zone of no development shall be maintained around solid waste processing and disposal facility, exceeding 20 tonnes per day or 300 tonnes per project in a month of installed capacity (CPCB guidelines on environmental management of construction & demolition waste- March, 2017). This will be maintained within the total area of the solid waste processing and disposal facility. A vegetative boundary shall be made around Processing or Recycling plant or site to strengthen the buffer zone (see item 8.h).

11. The service providers shall submit along with the application for consent a comprehensive waste management plan covering segregation, storage, collection, reuse, recycling, transportation and disposal of construction and demolition waste generated within their jurisdiction. The consent

incorporates the authorization (Form II) as per the Construction and Demolition Waste Management Rules, 2016. The application for the consent of the Board shall be accompanied by the following details:

a. Average quantity (in tons per day) and composition of construction and demolition waste to be handled at the specific site.

b. Details of construction and demolition waste processing or recycling technology to be used.

c. Quantity of construction and demolition waste to be processed per day. Site clearance from Prescribed Authority.

d. Salient points of agreement between competent authority or local authority and operating agency (attach relevant document).

e. Expected amount of process rejects and plan for its disposal (e.g., sanitary landfill for solid

waste).

f. Measures to be taken for prevention and control of environmental pollution. Investment on project and expected returns.

g. Measures to be taken for safety of workers working in the processing or recycling plant.

h. Any preventive plan for accident during the collection, transportation and treatment including processing and recycling should be informed to the Competent Authority(Local Authority) or Prescribed Authority

12. The waste received, the waste processed, the products and the rejects shall be correctly quantified. Weigh bridge facilities shall be provided in the processing site. The unit shall submit annual report to the Board in the prescribed format.

Waste Transportation

1. The vehicle transporting construction waste shall be fully covered to prevent spreading of dust.

2. The vehicles shall be GPS tagged.

3. Regular checking and maintenance of vehicles should be ensured.

6

4. For long distance, transportation routes of C & D wastes to be selected after discussion with local authorities (CPCB guidelines on environmental management of construction & demolition waste- March, 2017).

-sd-

04.04.2022 CHAIRMAN

Forwarded by order

ALEXANDER GEORGE
Digitally signed by ALEXANDER GEORGE
Date: 2022.04.04 13:37:36 +05'30'
Senior Environmental Engineer-3