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**Construction and demolition waste
management — Code of practice**



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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 367 was prepared by Technical Committee RSB/TC 013, *Environment, Health and Safety*.

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on Environment, Health and Safety (RSB/TC 013) in the preparation of this standard.

Compagnie pour l'Environnement et le Développement (COPED)

Horizon Group

NPD-COTRACO

Real Contractors Ltd

Rwanda Mines, Petroleum and Gas Board (RMB)

Rwanda Transport and Development Agency (RTDA)

Shine Engineers Multisectoral Company Ltd (SEMC)

Standards for Sustainability (SfS)

The Integrated Polytechnic Regional Centre-Kigali (IPRC-Kigali)

Rwanda Standards Board(RSB) – Secretariat

Introduction

Construction and demolition (C&D) materials are generated when new building and civil-engineering structures are built and when existing buildings and civil-engineering structures are renovated or demolished (including demolition activities). Civil engineering structures include public works projects such as streets and highways, bridges, utility plants, piers and dams.

Building materials have an environmental impact at every step of the building process: extraction of raw materials, processing, manufacturing, transportation, construction and disposal.

We usually witness waste from individual house construction or demolition finding its way into nearby municipal bin/vat/waste storage depots, making the municipal waste heavy and making it difficult for further treatment. C&D waste include building materials such as insulation, nails, electrical wiring, gravel and roofing as well as waste originating from site preparation such as dredging materials, tree stumps and rubble. Construction waste may contain lead, asbestos, or other hazardous substances.

Governments worldwide have responded to the need to reduce waste with regulation and legislation that have framed a market for building materials and products derived from the construction and demolition (C&D) waste stream. In addition, illegal dumping of C&D debris can result in future health risks, decreased property values, and clean up costs. Proper management and reduction of the amount of C&D waste generated can save money, conserve resources, and preserve the environment.

This standards aims at guiding concerned construction companies or individuals on how to properly manage debris from construction or renovation works, among others, commercial or residential houses, roads, bridges, etc.

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Construction and demolition waste management — Code of practice

1 Scope

This Draft Standard prescribes management of construction and demolition (C&D) waste which includes prevention, reduction, reuse, recycling and disposal.

Domestic, commercial and industrial solid waste, waste within healthcare facilities and e-waste are covered in separate standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

RS 181, Solid waste — Handling, collection, transportation and disposal — Code of practice

RS 182, *Solid waste disposal sites, guidelines for design* — Code of practice

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1

operative

worker who does physical operations of construction machines

4.2

construction

process of constructing, rehabilitating, renovating and refurbishing a building or infrastructure

4.3

demolition

tearing down of buildings and other man-made structures. Demolition also includes deconstruction

4.4

construction and demolition waste

waste resulting from new construction, remodelling or demolition of a structure. Construction waste is normally combined with demolition waste and described as "construction and demolition" (C&D)

4.5

reuse

reuse is the process of using the same material several times either for the same purpose or for different purpose

4.6

recycling

process of converting waste materials into new materials and objects

4.7

waste disposal

all the activities and actions required to manage waste from its inception to its final disposal

4.8

landfill

site for the disposal of waste materials by burial and the oldest form of waste

4.9

infrastructure

basic physical and organizational structures and facilities (buildings, roads and power supplies) needed for the operation of a society or enterprise. Both individual or community have to be catered for in this standard

4.10

ground-breaking/pioneering

introducing new ideas or methods

4 Construction and demolition (C&D) waste management

4.1 The C&D waste management plan shall be included in the project before ground-breaking or the beginning of demolition. This allows time for all parties to participate in developing the plan, allows contractors and subcontractors to integrate recycling into their setup and work plans.

4.2 Small scale projects including but not limited to individual houses shall contract with licensed waste collectors.

4.3 A site space for waste management shall be available to perform on-site waste collection, sorting and handling. Since C&D waste is often the mixture of inert and organic materials, it shall be segregated with contaminated waste which is not suitable for reuse or recycling, generally disposed of at landfills directly

4.4 The management plan of C&D waste shall reflect the waste management hierarchy, with waste prevention and minimization being the first priority succeeded by reuse, recycling and disposal.

4.1 Prevention of waste

4.1.1 The primary effort shall be to engage in waste prevention or reduce the amount of waste generated.

4.1.2 Material wastage on site shall be avoided.

NOTE 1 Renovation may be encouraged to retain and repair existing structural and decorative elements.

NOTE 2 Minimizing the resources needed to do the work, reducing the purchase of construction materials and avoid the need to remove waste from site.

4.2 Reduction of waste

3.2.1 Efficient use of construction and packaging materials shall be encouraged.

4.2.3 Waste reduction efforts shall incorporate purchasing agreements that prevent excess materials and packaging from arriving to the construction site.

4.3 Reusing C&D materials

4.3.1 The waste material that is generated shall be reused on site or collected for subsequent reuse to the greatest extent possible and disposal shall only be considered as a last resort.

4.3.2 The contractor shall be specialised in planned demolition so that recovery of valuable materials can be maximised for re-use.

4.3.3 Demolition shall be applied carefully on a number of levels to salvage usable materials and significantly reduce waste.

4.3.4 Although the responsibility of removing the waste shall be primarily assigned to the demolition contractor, items that cannot be re-used shall be disposed off to landfill site by licensed waste operator.

4.4 Recycling of C&D waste

4.4.1 The recycling of C&D waste materials shall be done to control the extent of waste disposal and reduce overall transportation and disposal costs as well.

4.4.2 Recycling of C&D waste materials shall be done in accordance with environmental protection standards and regulations.

4.4.3 Using recycled material shall be encouraged to protect the environment and to reduce the use of unrecovered natural resources provided that relevant laws and regulations are respected.

4.4.4 Source separation - Similar materials shall be separated from other waste at the site by category (such as wood, metal and concrete, gypsum, drywall board) and sent to licensed facility for recycling.

4.4.5 On-site processing - Recyclable materials can be processed on site and made ready for reuse.

4.4.6 C&D recycling shall be done by a licensed operator authorized by a competent authority.

4.5 Removing and disposing of C&D hazardous waste

4.5.1 A contractor shall take into consideration safety and capability issues regarding removal and disposal of C&D hazardous waste.

4.5.2 C&D hazardous waste transportation and site clean-up shall be the responsibility of the contractors.

4.5.3 Any C&D waste materials shall be safely sorted and removed from other waste and disposed of in accordance with hazardous waste disposal rules.

4.5.4 Any material/substance that is qualified to be hazardous by a competent authority shall be handled in accordance with this standard.

4.6 Handling

4.6.1 Construction and demolition waste shall be segregated at source. Inert and non-inert waste shall be separately kept in different designated containers to separate recyclable materials from hazardous materials.

4.6.2 The handler of such waste shall wear complete protective garments that shall include heavy-duty water resistant overalls, respirator and waste-resistant hand gloves. For the safety and health of the waste-handler, hard hats, heavy-duty rubber gloves, boots with slip-resistant and puncture-resistant soles, chemical splash goggles and respirators shall be provided.

4.7 Storage

4.7.1 Proper storage of C&D materials and related hazardous waste shall be put on site to prevent the discharge of pollutants to storm drains and watercourses.

4.7.2 The contractor shall be prepared to respond to spills or leaks that occur anywhere on the project site.

4.8 Transportation of C&D hazardous waste

4.8.1 Where the designated waste transporter fails to meet the designed collection schedule the waste generator shall have a stand-by system for the transportation of the waste to the disposal site.

4.8.2 C&D materials that are potentially hazardous shall be stored under watertight conditions, while still making them readily available for transportation to disposal site.

4.8.3 C&D debris shall be transported to a permitted facility by a licensed hazardous waste transporter.

4.8.4 Spill clean-up kits shall be maintained on site at storage locations to facilitate and expedite clean up.

4.8.5 Spills of C&D hazardous waste or materials, including any affected soil or water, shall be stored as hazardous waste and disposed of properly.

4.9 Landfilling of C&D hazardous waste

Disposal site for C&D hazardous waste shall comply with RS 182. The disposal methods are outlined in RS 181.

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Annex A (informative)

Origins and causes of construction waste

Table 1 — Origins and causes of construction waste

S/N	Origins of waste	Causes of waste
1.	Contractual	<ul style="list-style-type: none"> ● Errors in contract documents ● Contract documents incomplete at commencement of construction
2.	Design	<ul style="list-style-type: none"> ● Design changes ● Design and construction detail errors ● Unclear/unsuitable specification ● Poor coordination and communication (late information, last minute client requirements, slow drawing revision and distribution)
3.	Procurement	<ul style="list-style-type: none"> ● Ordering errors (i.e., ordering items not in compliance with specification) ● Over allowances (i.e., difficulties to order small quantities) ● Supplier errors
4.	Transportation	<ul style="list-style-type: none"> ● Damage during transportation ● Insufficient protection during unloading ● Inefficient methods of unloading
5.	On-site management and planning	<ul style="list-style-type: none"> ● Lack of on-site waste management plans ● Improper planning for required quantities ● Lack of on-site material control ● Lack of supervision
6.	Material storage	<ul style="list-style-type: none"> ● Inappropriate site storage space leading to damage or deterioration ● Improper storing methods ● Materials stored far away from point of application
7.	Material handling	<ul style="list-style-type: none"> ● Materials supplied in loose form ● On-site transportation methods from storage to the point of application ● Inadequate material handling
8.	Site operation	<ul style="list-style-type: none"> ● Accidents due to negligence ● Equipment malfunction ● Poor craftsmanship ● Time pressure
9.	Residual	<ul style="list-style-type: none"> ● Waste from application processes (i.e., over-preparation of mortar) ● Packaging
10.	Other	<ul style="list-style-type: none"> ● Weather ● Vandalism

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