

Guidelines for Pre-Demolition Audit, Sequential Demolition and Site Waste Management Plan

1. Aim

The aim of “Pre-Demolition Audit, Sequential Demolition and Site Waste Management Plan” is to facilitate and maximize resource recovery of demolition materials for beneficial reuse/recycling, without compromising all safety measures and practices outlined in the standard SS 557: Code of Practice for Demolition.

2. Pre-Demolition Audit

The completion of Pre-Demolition Audit prior to works commencing enables materials capable of being recovered for recycling to be identified (such as *concrete, bricks, metals, wood/timber, etc*). The benefit includes identifying potential resources available and the level of material segregation required to achieve this potential which normally depends on the type of buildings to be demolished. The audit covers:

- Types of waste generated on-site
- Quantity of waste
- Recovery/Recycling Target

3. Sequential Demolition

The demolition process is separated into phases in which one type of material is carefully dismantled at one time and salvaged for reuse and recycling. The wastes generated in each dismantling stage are of similar types and nature such that contamination of nonrecyclable items can be significantly reduced. The sequence of demolition is principally carried out in reverse order to the construction process and it shall be planned to allow the separation and sorting of building materials.

Principal phases in Sequential Demolition involve:

1. Demolition of part of the building structures with higher concrete content (such as concrete parapet walls, etc)
2. Stripping of deleterious materials (such as bricks, tiles, etc) which may contaminate the clean concrete debris of building bearing structure.
3. Step-by step demolition of the bearing and main structure by dismantling part of the structures that are of similar materials to avoid contamination of clean concrete debris and allow separation of concrete debris with other demolition arising

4. Site Waste Management Plan

All demolition materials arising from or in connection with demolition work shall be separated into different groups, such as *concrete, bricks, metals, wood/timber, etc*. To facilitate sorting, a site waste management plan is required for allocation of on-site temporary storage points for various materials generated from demolition process before sending them off-site. These sorted materials should then be delivered to an approved disposal facility or accredited

recycling facilities for further processing into recycled products and aggregates for beneficial reuse/recycling.

DEMOLITION CHECKLIST FOR RESOURCE RECOVERY

1. Before Demolition: Pre-Demolition Audit & Method Statement

- Obtain a set of the building plans of the structures to be demolished

- Assess the construction method, structural framing system, and critical building elements that need special treatment during sequential demolition.

- Assess the types of material used in the construction of the building through desk study of the building blueprint and site visits

- Conduct a Pre-Demolition Audit by:
 - Identifying the types of waste that can be recycled. Examples include: concrete, bricks, metals, wood/timber, etc
 - Calculating the respective quantity of demolition waste to be generated
 - Setting targets for maximum resource recovery of demolition waste

- Develop Method Statement for Sequential Demolition by:
 - Identifying part of the building structures with higher concrete content (such as concrete parapet walls, ground slabs, carparks, etc)
 - Establishing the most effective demolition sequence to reclaim the clean concrete without cross contamination with other waste materials such as bricks, timber, etc. It shall state clearly the sequence of demolition of structural elements on each floor, i.e. parapets, brickwall, slabs, beams, columns, walls, etc
 - Identifying existing fixtures and fittings that may affect the demolition progress and need to be removed prior to commencement of demolition works (such as false ceiling, air conditioning units, doors, wooden floors, partitions, ceilings, windows, and other mechanical services).
 - Identifying potential removal of materials which may contaminate the clean concrete debris (such as bricks, tiles, etc) and the level of material segregation/sorting required.

- Develop Method Statement for Site Waste Management Plan by:
 - Measuring the available working spaces on-site for waste segregation based on site constraints
 - Drawing up a site plan of the building/structures to be demolished, indicating available temporary storage space for different types of waste materials, and feasibility for mobile/on-site recycling

- Planning of traffic route for debris handling, including provision of lorry car parks

Deliverables

- Submit a Pre-Demolition Audit which identify waste types and quantities
- Establish recovery / recycling target (e.g. 70% recovery rate of the concrete waste quantity declared)
- Submit a method statement for Sequential Demolition specifying clearly the order of demolition with realistic schedule to deliver the specified target without compromising safety
- Submit a method statement for Site Waste Management Plan to achieve proper waste segregation on-site

2. During Demolition

Phase 1: *(can be done before demolition commences)*

- Removal of existing fixtures and fittings (such as false ceiling, air conditioning units, doors, wooden floors, partitions, ceilings, windows, and other mechanical services).
- Stripping of deleterious materials which may contaminate the clean concrete debris of building bearing structure (such as bricks, tiles, etc).

Phase 2: Sequential Demolition

- Demolition of the bearing and main structure to be progressed in conformance with the method statement approved by the QP
- Demolition of part of the building structures with higher concrete content (such as concrete parapet walls, etc)
- Step-by step demolition of the bearing and main structure by dismantling part of the structures that are of similar materials to avoid contamination of clean concrete debris and allow separation of concrete debris with other demolition arising

Phase 3: Site Waste Management Plan

- Separation of demolition debris into different groups (such as concrete, bricks, metals, wood/timber, plastic, etc).
- Proper labeling and storage of sorted waste generated in the demolition process

Deliverables

- Production of cleaner quality of concrete demolition waste on-site
- Establish temporary storage areas for various categories of waste generated in the demolition process

3 After Demolition: Book-keeping

- Record details of debris disposal in terms of the amount and types of demolition waste generated weekly from the site
- Record details of debris management system and the movement of the waste from the site (either used for hardcore, or for road access, or sent to an approved disposal facility and/or accredited recycling facilities for

further processing into recycled products and aggregates for beneficial reuse/recycling)

Deliverables

- Submit details of debris disposal and management system
- Evaluation of resource recovery and recycling target from demolition wastes