

Sensitive Construction Techniques

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- Avoid compacting soil around vegetation
- Restrict the impact area (area of land affected by driveways, parking lots, buildings, etc.) for the lot
- Restrict the overall building size as well
- Specify the protection of trees, topsoil, etc.
- Try to avoid altering the topography of the ground, instead use terraces to maintain the original grade
- Do not remove old stumps unless absolutely necessary
- Consider native ground cover
- Using a narrow staging area would increase building costs but decrease landscaping costs
- Introduce penalties for damaging existing vegetation on site
- Install contaminant “sinks” (such as carpets, ceiling tiles, furniture, etc.) after VOC’s have had time to release: i.e. it is a good idea to air these items out wherever possible
- Block ventilation ducts from dust and compounds during the construction process so they don’t reside there during use
- Reduce the need for on-site storage with just in time (JIT) delivery of construction materials and equipment
- Ensure that wastes are properly separated on-site - while aiming to reduce waste generated
- Use obvious mechanical fasteners for future disassembly or renovation
- Run HVAC to flush toxins out of building before occupancy
- It is important that design professionals educate contractors on green building materials and systems that may be relatively unknown to them
- Specific regulations should be followed regarding detection and abatement of hazardous materials on-site
- Protect natural resources wherever possible
- Identify organic debris that is free of disease and chemical contaminants, that are suitable to be recycled on-site
- Where vegetation must be removed for construction, coordinate to avoid loss of top

soil and the contamination of nearby waterways

- Protect trees from damage during construction by fencing off the “drip line”
- Avoid the construction of private docks and other waterfront development to help protect the marine ecosystem

Recycling Construction Waste

- Virtually all materials generated on a construction site can be recycled, subject to local opportunities. Wastes must be kept clean and separated to ensure opportunities for reuse or recycling
- Prior to construction, planning must be done
- Cardboard packaging can be broken down and recycled
- Top soil can be saved and reused on site for landscaping or sold to nurseries
- Metals can be recycled
- Carpeting can be recycled
- Offering scrap material to the workers, that would have otherwise gone to a landfill, is an effective method of recycling
- Paper from trailers and offices can be easily recycled into a fine paper bin
- The use of glass mugs and metal teaspoons reduces the amount of waste produced by the workers
- It has been suggested that materials be separated according to:
 1. Timber
 2. Metals
 3. Masonry
 4. Plastics
 5. Plaster
- Wood can easily be recycled and used for various crafts, stakes for gardening, pieces for dog houses, doll houses, and the list goes on
- A little consideration during the construction phase will produce more “reusables”
- Briefly train workers prior to the job about waste minimization goals
- Centralize cutting operations to reduce waste and simplify the sorting process
- Set up clearly marked bins or trashcans for different types of usable waste: i.e. wood for wood chips in flower beds, sawdust for compost, etc.

Waste Management Action Plan

The Canada Mortgage and Housing Corporation developed the following action plan for the residential housing industry, but it can easily be adopted and modified for larger projects.

1. Designate a person responsible for waste management
 - Oversee that the waste management system is running efficiently
 - Ensure that contamination is not occurring
 - Ensure that the appropriate people are cleaning up their wastes
 - Coordinate the storage of materials on site so that theft and damage do not occur
2. Examine design details of building to ensure efficient use of materials
 - Favour designs using standard sizes
 - Favour the use of materials which are made from recycled materials and are recyclable
 - Favour durable materials which are energy saving
 - Reuse materials from renovation or demolition sites
 - Look for opportunities to reuse materials on site
3. Evaluate materials ordering and storage procedures on site
 - Identify how materials are wasted on site
 - Investigate storage methods in terms of preventing damage from careless handling or weather
4. Evaluate site layout
 - Analyze where new, reusable and waste materials can be stored on site
 - The size and location of the site will significantly impact how wastes can be managed – are regular pick-ups required?
5. Estimate waste production on site
 - Estimate the types and amounts of recyclable and non-recyclable wastes which are expected to be generated
6. Investigate waste disposal options

- Identify local landfill bans and regulations
- Identify local waste recycling companies

7. Investigate waste separation, storage, and transportation systems

Approaches	Pros and Cons
Bins or piles for separated wastes	Costlier to sort, but you benefit from lower tipping fees. Separated loads must be transported by a waste hauler or company truck to recycling depots.
Mixed bins sorted off site	Materials are recycled, but there is generally minimal or no cost saving on disposal fee because of the sorting required off site.
Removal of waste by subcontractors	Subcontractors usually generate a specific type of waste. If waste is cleaned up and separated as it is generated, recycling should be easy. Enforcing subcontractors to clean up can be a problem. A clause should be written into the contract before work begins.
Clean up and removal of waste by a specialized waste hauler	Some specialized waste haulers will clean up and sort wastes from around a site. This saves the time of on site workers from sorting the wastes. Contamination is also minimized since the hauler has direct control over what is loaded onto the truck.

8. Develop a system of worker incentives
 - Throw a party with the money recovered from selling recyclable materials
 - Reward workers who come up with environmentally friendly ideas
 - Institute a system of warnings and penalties for non-compliance
 - Back charge any trades who fail to comply with contract requirements to clean up or manage waste
 - Suggest to contractors that you may only deal with workers who manage their waste in environmentally sound ways

9. Choose a strategy for each stage of construction
 - a) Landclearing
 - Minimize disruption to existing vegetation and soils
 - Limit the use of heavy machinery which damage soils and vegetation
 - Excavated soils and trees can be used for final landscaping
 - b) Excavation
 - Limit the amount of excavation-need to limit the soil disturbance
 - Excavated materials can be used as backfill or landscaping
 - c) Foundation work
 - Specify reusable forms
 - d) Framing
 - Design using standard sizes to reduce cutting waste
 - Use prefabricated wall, roof, and floor systems
 - Use timber which has been recovered from demolished buildings
 - Send waste wood to recycling facility to make chips for pulp, composite wood products, etc.
 - e) Metalwork HVAC/wiring
 - Use second hand materials (e.g. Used circuit breaker boxes from used building material supply stores)
 - Send scrap metals to be remelted
 - f) Plumbing
 - Reuse fixtures from old buildings
 - g) Insulation
 - Use prefabricated wall systems with insulation already included
 - Use blown in cellulose in walls
 - Use scrap insulation to insulate the attic or for sound proofing interior walls
 - h) Drywall
 - Design using standard sizes
 - Send scrap materials to a recycling depot
 - i) Paint
 - Use leftover paint as undercoating at next job
 - Send excess paints and solvents to a recycling plant
 - j) Exterior finishing
 - Cut and measure carefully
 - Store materials carefully to avoid damage
 - Salvage bricks and blocks from demolition projects
 - Broken bricks and blocks can be used as backfill in some situations
 - Send vinyl and aluminum siding to recycling facilities
 - k) Roofing
 - Send asphalt shingles to a local recycling facility (if one exists)
 - l) Demolition
 - Favour renovation over demolition where appropriate
 - Strip home of fixtures, hardwoods, large dimensional timbers, and anything else with resale value
10. Count your money and time and build on your successes
 - Records of time and costs should be evaluated against previous practices
 - Will help identify areas that need improvement