

Cushman & Wakefield *Green* Operations & Maintenance Practices

Green Construction Policy

1.0 Intent

The environmental impact associated with construction activities can be mitigated by utilizing sustainable materials, improving indoor air quality, minimizing site disturbance, and reducing waste. C&W's policy acknowledges the value of sustainable construction practices and focuses on maintaining a healthy environment for all occupants, construction and maintenance personnel, during and post construction activities.

Implementation of the policy must include the following:

1. Review and understand the policy.
2. Determine to what extent the policy can be implemented within your portfolio, building or facility.
3. Discuss pertinent policy issues with the appropriate service suppliers/vendors.
4. Determine if there are any major impacts to the current building operations or additional costs associated with the implementation of the policy.
5. Develop written implementation plans along with the policy and discuss them with your client or building ownership (i.e. cost impact, changes in operation, notification to occupants).
6. Obtain client approval in writing.
7. In the event that a property is unable to implement the policy or parts of the policy, supporting documentation outlining the reasons for non-compliance should be maintained on file. The elements of this policy will be incorporated into the C&W Quality Assurance Review (QAR) process.

Please note that the approaches described in each of the "green" policies constitute a baseline. Individual facilities/properties are encouraged to further enhance the policies as appropriate in consultation and approval with your respective clients and building ownership.

This policy will be periodically reviewed and updated as required. Notification will be provided as updates occur.

2.0 Scope

C&W's Green Construction Policy (the Policy) applies to changes that affect the usable space in the building. Mechanical, electrical or plumbing system upgrades that do not involve disruption of usable space are not covered by the Policy. Construction occurring onsite which meets the following qualifications are subject to the Policy:

- Use of multiple trades.
- Substantial changes made to at least one entire room in the building which requires isolation of the work site from regular building occupants for the duration of construction.
- Requires a building permit.

The C&W Green Construction Policy establishes guidelines for developing a construction indoor air quality plan, a construction waste management plan, an erosion and sedimentation control plan and sustainable purchasing practices for construction materials.

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3.0 Policy

The U.S. Green Building Council's (USGBC) [LEED EB: O&M rating system](#) was used as a framework of reference for the C&W Green Construction Policy. Please note that the LEED certification requirements may include more stringent application and documentation.

Construction Indoor Air Quality

At a minimum, fourteen (14) days prior to any construction activity, the contractor should submit for review a construction indoor air quality (IAQ) plan specific for the site and type of work to be performed. This specification should be included in the construction contract addressing indoor air quality management during construction as follows:

- Develop and implement an indoor air quality (IAQ) management plan for the construction and occupancy phases. During construction, meet or exceed the recommended design approaches of the [Sheet Metal and Air Conditioning National Contractors Association \(SMACNA\)](#) "IAQ Guidelines for Occupied Buildings Under Construction", 1995 (or subsequent updates).
- Provide a list of IAQ protective measures to be instituted on the site
- Provide a schedule for inspection and maintenance of IAQ measures
- When system must remain operational during construction, use temporary filters. Filters should be a Minimum Efficiency Reporting Value (MERV) of 8 or equivalent efficiency and be used at each return air grill as determined by ASHRAE 52.2-1999.
- When the system is off, all supply ducts, equipment and openings should be sealed with plastic for further protection.
- Replace all filtration media immediately prior to occupancy.
- If the building undergoes a tenant improvement, develop and implement an IAQ Management plan for the pre-occupancy or re-occupancy phases as follows:
 - Upon completion of construction and installation of interior finishes, contractor shall install new filtration media and flush-out the affected space by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60°F and, where mechanical cooling is operated, relative humidity no higher than 60%.
 - The affected space may only be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq. ft. of floor area to the space, and provided the space is ventilated at minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate, whichever is greater, a minimum of three hours prior to occupancy and during occupancy, until the total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.
- Upon the completion of construction, HVAC and lighting systems must be returned to the designed or modified sequence of operations.
- Protect stored on-site or installed absorptive materials from moisture damage.

Construction Indoor Air Quality Best Practices

In addition to these minimum standards, implement the following best practices for construction IAQ as stated in the SMACNA standards as applicable to facility and construction scope.

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HVAC Protection

- If possible, avoid using permanently installed air handlers for temporary heating/cooling during construction – particularly during demolition.
- If an open / unducted plenum over the construction zone must be used, isolate it by having all ceiling tiles in place.
- Check and seal all leaks in the return ducts and air handlers.
- The systems should be isolated from the surrounding environment as much as possible.
- Do not store construction or waste materials in any mechanical room.
- If considerable accumulation of particles can be observed under diffusers or if ventilation is restricted, clean the ducts and associated equipment. This decision should be based on a detailed visual inspection of the system.

Source Control

Use low emitting products when feasible.

Construction Materials

Use construction materials with reduced environmental and air quality impacts.

Cleaning Solutions (See C&W's Green Cleaning & Sustainable Purchasing Policies)

- Sustainable cleaning products, disposable janitorial paper products and trash bags shall comply with the [U.S. Environmental Protection Agency's \(EPA\) Comprehensive Procurement Guidelines](#) and should be used on all construction projects. Exceptions to this policy may include special circumstances where the specified products are unable to satisfy the critical need.
- Request that all outside contractors follow the [EPA Comprehensive Procurement Guidelines](#), and [Green-Seal GS-37 cleaning products](#) or products that comply with the [California Code of Regulations](#) maximum allowable volatile organic compound (VOC) levels.
- Use electrically powered equipment (such as fork lifts and chain saws) when feasible and use bottled gas instead of diesel for equipment such as generators or fork lifts.
- Exhaust pollution sources to the outside through an available exhaust system or portable fan vented to the outside. Depending on the nature of the material and the location of the exhaust, special filtration may or may not be necessary.
- Use a portable air cleaner if exhaust is not feasible and it would be effective.
- Keep lids on containers of wet products or waste materials.
- Control surfaces with persistent odors by applying a sealer.
- Recover, isolate and ventilate containers housing toxic materials.
- Locate the storage of pollutant sources outside the range of occupied areas.

Pathway Interruption

- Depressurize the work area by adjusting the balance of the HVAC and exhaust systems or installing portable exhaust fans. Exhaust the space at a rate of 10% greater than the rate of supply. Depending on the nature of the materials, location of the exhaust and any applicable regulations - the exhausted air may or may not need to be filtered.
- If areas of the building are occupied during construction, increase supply air and/or reduce return/exhaust air in area.

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- Erect barriers to contain construction area. Barriers can range from dust curtains to a plastic seal around the construction areas. The barrier should be based on the materials used and the implications of the dust or odor escaping from the construction area.
- Locate pollution sources to favorable locations in regards to air quality.
- Depending on the weather conditions, ventilate using 100% outside air to exhaust contaminated air directly to the outside during installation of VOC-emitting materials.

Housekeeping

- Control dust with wetting agents or sweeping compounds and use efficient dust collection methods.
- Increase the cleaning frequency in order to reduce dust.
- Protect porous building materials from exposure to moisture and store in a clean and dry area prior to installation.
- Keep all surfaces clean (including higher ledges and inside mechanical equipment).
- Remove spills or excessive applications of solvent-containing products as soon as possible.
- Keep site as dry as possible and remove accumulated water.
- Use a high efficiency particulate air (HEPA) filter in vacuums to prevent the aerolization of settled dust.

Scheduling

- Sequence the installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wallboard. Protect stored on-site or installed absorptive materials from moisture damage.
- When working in an occupied building, schedule to ensure that construction activity and building occupancy do not coincide.
- Upon completion of construction, replace all filtration media immediately prior to occupancy.
- When using materials with a high pollution potential, schedule their installation during off-hours to allow time for materials to air out.

Construction Waste Management

Construction Waste Management Plan

At a minimum, fourteen (14) days prior to any construction activity, the contractor shall develop and submit for review a Waste Management Plan to ensure that existing site and building materials are reused, salvaged, or recycled and to ensure that waste disposal in landfills shall be minimized.

If any waste materials encountered during the deconstruction/demolition or construction phase are found to contain lead, asbestos, polychlorinated biphenyls (PCBs), fluorescent lamps, or any hazardous substances, they are to be handled and removed in accordance with local, state, and federal laws and requirements concerning hazardous waste. These materials and any other hazardous materials must be excluded from the construction waste stream calculations.

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Construction plans and contracting documents should specify that all construction waste, including demolition and land clearing waste (if applicable) will be qualified by type of material and weight. As applicable, a target of 70% will be recycled and/or salvaged.

The waste management plan shall include (but not be limited to) the following:

- List of the recycling facilities, reuse facilities, municipal solid waste landfills, and other disposal area(s) to be used. Include name, location, and phone number.
- List of proposed materials to be reused or recycled identified on a site pre-assessment.
- List of materials that cannot be recycled or reused with explanation or justification.
- Scheduled meetings to be held to address waste management. Meetings shall include subcontractors affected by the Waste Management Plan.
- Storage and collection methods of waste and recyclables, handling procedures, and means of keeping recyclables free of contamination.
- Description of the means of transportation of the commingled construction and demolition recyclable materials and an estimate of how often bins will need to be emptied.
- Approval of the Contractor's Plan shall not relieve the Contractor of responsibility for compliance with applicable environmental regulations.

Construction Waste Management Report

The Contractor will record and track the type and quantity, by weight, of each material salvaged, reused, recycled or disposed on a monthly basis. The contractor personnel will report the waste diversion to the C&W manager.

Erosion Control and Landscape Management Plan

All new construction, modifications to the exterior of existing buildings, landscaping, and project site work must meet the erosion and sedimentation requirements of the [2003 EPA Construction General Permit](#) OR local erosion and sedimentation control standards and codes, whichever is more stringent. The interface between new construction and existing site development may not compromise existing erosion and sediment controls. Changes to landform and runoff patterns must be incorporated into the overall site drainage plan and submitted for review and approval by the client or client's architect.

The contractor shall develop and submit for review an Erosion Control and Landscape Management Plan that addresses the following erosion and sedimentation control tactics:

- Minimization of the amount of disturbed soil.
- Prevention of runoff from offsite areas flowing across disturbed areas.
- Slowing the runoff flowing across the site.
- Removing the sedimentation from onsite runoff before it leaves the site.
- Meeting local or State requirements for sediment and erosion control plans.

In addition, all site construction resulting in disturbance of soil or removal of plant material must include a dust control program to minimize loss of soil through wind erosion as well as minimization of particulate (dust) air pollution.

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Erosion Control and Landscaping Best Practices

In addition to these minimum standards, implement the following environmental best practices as appropriate

- Diversion of landscape waste from the waste stream via mulching, composting or other low-impact means.
- Utilize locally adapted plants that do not require fertilizers, less polluting alternatives to artificial chemicals, or other low-impact maintenance to minimize the use of artificial chemicals.

Sustainable Purchasing of Construction Materials

C&W acknowledges the value of purchasing sustainable products and requires that vendors utilize sustainable products when appropriate and/or possible. Contractors shall provide information on recycled content, rapidly renewable, FSC Certified, low VOC adhesives, sealants, and paints, FloorScore certified flooring, and products with no added urea formaldehyde that meet the below specifications in addition to providing reduced packaging options.

Construction plans and contracting documents should specify that the use of environmentally sensitive materials is preferred. As applicable, a target of 50% of total facility alteration and addition material purchases should meet the following standards:

- Contain at least 10% post-consumer (served its intended use as a consumer item and can be recycled into a new product) or 20% post-industrial material (waste produced during manufacturing process).
- Contains at least 70% salvaged material from off-site or outside the organization.
- Contains at least 70% salvaged material from on site through an internal organization materials and equipment reuse program.
- Contains at least 50% rapidly renewable material.
- Contains at least 50% Forest Stewardship Council (FSC) certified wood.
- Contains at least 50% harvested and processed or extracted and processed within 500 miles of the project.

Adhesives and Sealants

Adhesives and sealants that have VOC content less than the current VOC content limits of [South Coast Air Quality Management District Rule #1168](#).

Paints and Coatings

Use paints and coatings that do not exceed the limits of [Green Seal Standard GS-11](#).

Exceptions to this may include mechanical rooms which are not regularly occupied and require certain paints to meet the needs of the area.

Carpet and Carpet Cushion

Purchase and use carpet and carpet cushion that complies with the requirements of the [CRI Green Label Plus Testing Program](#). The CRI Green Label Plus Testing Program certifies carpet and carpet cushion products that emit low amounts of VOCs (volatile organic compounds), which is crucial to improving indoor air quality.

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Non Carpeted finished Flooring

Purchase and install [FloorScore-certified](#) and constitutes a minimum of 25% of the finished floor area.

Composite Panels and Agrifiber

Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, oriented strand board (OSB), wheatboard, strawboard, panel substrates and door cores. Materials that are not considered base building elements are not included in this category.

Coal Combustion Products

C&W will give preference to the use of coal combustion products (CCPs) pursuant to the [EPAs Coal Combustion Partnership](#) recommendations such as fly ash in construction projects in lieu of portland cement.