CONSTRUCTION INDOOR AIR QUALITY REQUIREMENTS FOR TENANT SPACE

The General Contractor (known as GC) is responsible for ensuring that all subcontractors involved with construction are fully aware and comply with the following Construction Indoor Air Quality (IAQ) Requirements during construction. The purpose of these requirements is to minimize exposure of construction workers to air pollutants; prevent pollutants from collecting in the building systems and on building materials and prevent air pollutants caused by construction from migrating into occupied areas.

I. SUMMARY

A. Meet or exceed the design approaches of the SMACNA IAQ Guideline of Occupied Buildings under Construction, 1995, Chapter 3 (Control Measures).

B. Protect stored on-site and installed absorptive materials from moisture damage.

C. If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of eight (8), as defined by ASHRAE 52.2-1999, must be used at each return air opening.

D. Replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13, as determined by ASHRAE 52.2-1999 for media installed at the end of construction.

II. PROJECT PERSONNEL & RESPONSIBILITIES

A. Appoint an IAQ Representative to inform all construction personnel of the IAQ requirements and ensure all requirements are met. Contact information of the appointed IAQ Representative shall be provided to Simon Mall Management Office at The Shops at Crystals.

III. SMACNA IAQ CONTROL MEASURES

A. HVAC Protection

The air handling system is the distribution method for air and potential contamination throughout the building. Protection of the system during construction is mandatory to keep the system clean and free of visible dust, debris and odor contamination.

B. Storage of HVAC Equipment
Store all HVAC equipment (ductwork, air handling components, fans, motors, etc.) and materials in a clean, dry location where it will not be exposed to moisture, dust, or other contaminants. Keep all openings covered with plastic or other appropriate material.

C. Covering Ductwork & Air Handling Equipment

1. Openings of supply and return ductwork and air handling equipment not in active use will be covered using taped plastic, cardboard or other reasonable covering. Duct pieces being stored do not require each end to be protected individually. Duct may be protected by a sheet material wrapped over the open ends of multiple duct pieces stored together.

   a. The openings will be covered prior to exposure to dust, fumes and/or odor. Open ends on completed ductwork and overnight work-in-progress will be protected.

   b. Protection during transport is not required.

   c. Protection of the return air grilles is required during construction.

   d. Protection of the supply air diffusers is required during construction.

2. It is the responsibility of the mechanical subcontractors and the IAQ Representative to conduct regular walk-through field observations once per week or more frequently as needed. Repair or replacement of damaged or displaced coverings will occur upon discovery or at the direction of the IAQ Representative and the repair procedure noted.

3. Individual ductwork section openings will be covered except during active installation.

   Remove the cover prior to continuing the duct run – re-cover ducts at the end of each additional segment.

   a. It is suggested that a sheet metal cap that can be easily removed and returned and will withstand the length of construction be provided for temporary close-off of major duct work while in progress.

D. Use of Mechanical Systems During Construction

1. During fume-generating activities, use a temporary ventilation system during construction when possible (see Source Control – Temporary Exhaust and Ventilation).
2. When any permanent air handling equipment or duct system is used during construction or start-up, filtration media will be employed as follows per ASHRAE 52.2-1999:

   a. MERV 8 – Return air grilles and ducted return openings, transfer duct, shaft or plenum openings, air handlers, fan coil units or fan powered VAV box intakes.

   b. An alternate method (workaround) to achieve compliance:

      1) If practicable, disconnect return ductwork from air handling unit (AHU) and protect both ends of the ductwork. Install MERV 8 filters or filter box at the air handler’s return. Allow the hallways and other passageways to be used as return conduits.

      2) Maintain filters and/or filter units at AHU.

E. Filter Maintenance & Replacement

1. During Construction – Inspect, clean and maintain MERV 8 filters used for protection (see above) on a regular basis (no less than monthly) when the permanent system is used during construction activity. Document filter maintenance. Replace damaged or defective filters.

2. End of Construction – Immediately prior to occupancy or at the end of construction (as determined by the owner representative) replace all filtration media used during construction or start-up on air handling units supplying air to occupied spaces with MERV-13 filtration media. Document filter replacement on EQc3.1 & 3.2 LEED Product Information Form found in attachment. The Commissioning Agent will verify completion of filter installation.

F. Duct Installation

1. The working area will be clean and dry and protected from the elements.

2. Protective coverings will only be removed immediately before installation and inspected to insure the duct is free of debris. Remove any visible debris. No wipe down is required.

G. Duct and HVAC Equipment Cleaning

   HVAC systems shall be clean of visible debris.
1. If cleaning is required:
   
a. Follow the manufacturer instructions paying careful attention to not introduce any cleaning chemicals, solvents or fluids.
   
b. Do not use solvent cleaners on the interior of any HVAC system component
   
c. Wipe interior with a clean rag.
   
d. When duct liners, ductwork or equipment cannot be cleaned successfully; replace them at no cost or schedule impact to the Owner.

2. If duct cleaning occurs while construction is in progress, recover openings to avoid recontamination

IV. SOURCE CONTROL

A. Building Entrances: Avoid tracking pollutants into the work area once the building or portions thereof are fully weather-tight. The following items are the responsibility of the Contractor to determine the benefit and initiate the measures if appropriate.

1. Provide controlled entryways in and out of the building. Limit entrances to controlled areas when possible.

2. Provide walk-off mats at the entryways to remove dust, moisture and contaminant from workers shoes and equipment.

   a. Provide regular cleaning and maintenance of exterior mats as required.

C. Equipment Operation: To reduce air pollution during construction, when practical:

1. Electric equipment will be preferred over gasoline-powered equipment.

2. Bottled gas will be used in place of diesel fuel.

3. Exhaust from gasoline or diesel equipment and/or vehicles will be directed away from air intakes & doorways when in operation.

4. Fuel-burning equipment will be cycled off during extended periods between uses.

D. Temporary Exhaust and Ventilation: Minimize exposure of personnel to fume generating activities (e.g. welding & grinding). The following methods may be initiated.
1. Passive ventilation and temporary exhaust fans, which exhaust to the exterior, will be the primary approaches to minimize pollutant build-up within the building.

2. When possible, avoid the use of the building HVAC system altogether during construction and rely instead on a temporary ventilation system that introduces outside air and ventilates dust and polluted air directly to the outside.

E. Mitigating Sources of Emissions: Construction workers shall use work practices that reduce the generation and distribution of indoor air pollutants as follows:

1. Containers of emitting materials will be covered whenever they are not in active use.

2. Waste materials, particularly those that emit odors, will be regularly removed from the building.

3. Construction work that generates air pollution will be avoided where ductwork or air-handling equipment is being installed.

4. Prevent contaminated air entry into the building interior

5. No smoking is permitted inside a building or portion thereof after the installation of the curtain wall or other exterior enclosure.

F. Moisture Control: Keep building materials dry to avoid the introduction of moisture.

1. Keep all porous materials such as drywall, ceiling tile, insulation, carpeting and wood free from any water or moisture exposure.

2. Any porous materials damaged by moisture must be discarded and not used in the project.

V. PATHWAY INTERRUPTION

A. The following are control options that should be considered as a method to prevent air movement from the work site to clean spaces. Contractor shall define areas and install measures that require control under items 1 and 2 below to prevent contamination of clean or occupied areas.

1. Use dust curtains or temporary enclosures to prevent visible dust, debris and otherwise polluted air from migrating to other areas when applicable.
2. Isolate work areas by creating pressure differentials to prevent the migration of dust, debris and otherwise polluted air.

3. Subcontractors are responsible to protect their equipment and materials. Measures will be taken to minimize dust accumulation on material surfaces and the absorption of other pollutants by absorptive materials like duct liner, acoustic tile, carpeting or insulation. The measures will include the following:

   a. Materials will be handled and stored according to the manufacturer’s recommendations.

   b. Unwrapped absorbent materials will be covered as necessary.

   c. Highly absorbent materials will be stored indoors in the original packaging, or covered and sealed.

   d. Moderately porous materials like gypsum board will be stored onsite and in the building, protected from moisture and off-gas VOCs.

VI. HOUSEKEEPING

A. Each contractor is to perform its standard, General Conditions, daily clean-up to its normal level of acceptability.

B. Final construction cleaning will be performed using Green Seal approved cleaning products prior to turnover.

VII. SCHEDULING

A. It is the responsibility of the contractor to consider the following when scheduling construction activities:

   1. Sequencing of construction activities will occur to minimize the absorption of dust and odorous materials by porous materials. Account for curing times and offgassing of materials when scheduling construction activities

      a. Installation of porous materials will occur only after the building or portion thereof is protected from the elements. Should any damage occur to stored materials prior to protection from the elements, subcontractors are responsible for replacement of un-useable materials and equipment.

      b. Adhesives, fire sealants, and paints will be installed prior to carpets, ceiling tiles and furnishings. All walls must be painted prior to installing
carpets, furnishings or any material that might off-gas significant levels of VOC’s.

2. Activities with a high pollution potential will be considered for off-hour shift installations.

3. It is the responsibility of the subcontractor to provide sufficient ventilation and air circulation if VOC-high emitting materials are installed.

VIII. DOCUMENTATION

A. Document filter replacement on EQc3.1 LEED Product Information Form found in appendix A.

B. Provide 18 photographs documenting the progress of the IAQ requirements. Each photograph will be accompanied with a narrative identifying the date, location and SMACNA IAQ Guidelines Chapter 3 strategy applied.

I understand as the below listed Tenant, that the construction indoor air quality requirements pertains to all subcontractors performing work in the Tenant Build-Outs.

Please PRINT the following information:

Tenant Representing: ________________________________________________________

General Contractor: ________________________________________________________
Address: ________________________________________________________
______________________________________________

GC Representative - Signature          GC Representative – Printed Name            Date

 Tenant Representative - Signature          Tenant Representative – Printed Name            Date

CityCenter Representative – Signature          CityCenter Representative – Printed Name            Date
Appendix A – Filter Replacement Product Information Form

SECTION 01 81 13.53.IEQ3
LEED PRODUCT INFORMATION FORM
INDOOR ENVIRONMENTAL QUALITY - CREDIT 3.1

This form is to be completed by a corporate officer of the Contractor prior to or with your first submittal. The Contractor must submit the certification, completed for all filter changes as identified in the Project Specifications. Attach additional sheets if necessary along with back-up documentation.

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<th>CONTRACTOR:</th>
<th>Project Name: (i.e. Theater, etc)</th>
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<tr>
<th>Filter Install Date</th>
<th>Equipment ID &amp; CSI Section Number (Required for all Products)</th>
<th>Filter Manufacturer</th>
<th>Measured Efficiency Reporting Value (MERV)</th>
<th>Model Number</th>
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Installed during Construction

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“Expand Table as Needed”

Installed after Construction

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All vendors and contractors are required to certify in writing, under penalty of perjury, to the Architect of Record, the information supplied above for the materials, goods or supplies offered or used.

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<th>Legibly Printed Name</th>
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<tbody>
<tr>
<td>(a corporate officer of Contractor)</td>
<td>Signature</td>
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