SECTION 018119 - INDOOR AIR QUALITY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 00 and Division 01 Specification Sections, apply to this section.
B. Indoor Air Quality Management required throughout this section and during all work must comply with LEED V4/V4.1 at all times.

1.2 SECTION INCLUDES

A. Construction procedures to promote adequate indoor air quality after construction.

1.3 PROJECT GOALS

A. See Section 018113 – Sustainable Design Requirements, for overall project goals relating to LEED, environmental and energy criteria.

B. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment, other mechanical equipment and lighting.
   1. Cleaning of any newly installed ductwork is not contemplated under this Contract and if required is the responsibility of the HVAC contractor. All new ductwork shall be wrapped and protected as outlined in part 3 below. Determination and identification of ductwork contamination requiring cleaning will be by Owner, Architect or Commissioning Agent.

C. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
   1. Furnish products meeting the specifications and VOC content limits outlined in 018113.
   2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

D. Ventilation: HVAC system has been designed to achieve the minimum requirements for ventilation specified in ASHRAE 62.1.

1.4 REFERENCES

A. Building Air Quality: A Guide for Building Owners & Facility Managers; EPA 1991

B. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2007.

C. ASHRAE Std 62.1 - Ventilation For Acceptable Indoor Air Quality; 2007.

D. ASHRAE Std 129 - Measuring Air-Change Effectiveness; 1997 (Reaffirmed 2002).

E. ASTM E 779 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization; 2003.

F. CA (EESR) - 2005 California Energy Efficiency Standards Residential Alternative Calculation Method (ACM) Approval Manual, Chapter 7; www.energy.ca.gov/title24/2005standards/residential_acm.

G. SMACNA (OCC) - IAQ Guideline for Occupied Buildings Under Construction; 1995.

1.5 DEFINITIONS

A. Absorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.

B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.

C. Particulates: Dust, dirt, and other airborne solid matter.

D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.6 SUBMITTALS

A. See Division 1 Sections - Administrative Requirements and/or Submittal Requirements, for submittal procedures.

B. LEED Submittals: Submit all submittals required in this section in accordance with procedures specified in Division 1 Sections Administrative Requirements and/or Submittal Requirements.

C. Indoor Air Quality Management Plan: Describe in detail, measures to be taken to promote adequate indoor air quality upon completion; must meet or exceed SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition 2007, ANSI/SMACNA 008-2008, Chapter 3.
   1. IAQ Management Plan has been provided and it is the responsibility of each contractor to read, understand, sign and return a copy of the plan to the LEED Consultant and Construction Manager for their records.
   2. The plan identifies potential sources of odor and dust.
   3. The plan identifies construction activities likely to produce odor or dust.
   4. The plan identifies areas of project potentially affected, especially occupied areas.
   5. The plan evaluates potential problems by severity and describe methods of control.
   6. The plan describes construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
   7. The plan describes cleaning and dust control procedures.
   8. The plan describes coordination with commissioning procedures.

D. Filter Information: Provide model number and manufacturer for each filter along with list of locations of use and dates of all filter installation, changes, and removal. Take dated photos of filter changes to show LEED compliance. Utilize the “HVAC & Grille Filter Change Log” found at the end of this section to track and keep record of all filter changes and photos taken to show compliance.

1.7 QUALITY ASSURANCE

A. HVAC Contractor is responsible for the cost of cleaning all ductwork should they become contaminated due to negligence or improper work when wrapping and protecting inlets, outlets and/or plenum spaces during construction. General Contractor shall not reimburse or compensate HVAC contractor for any amount of the cost of Duct Cleaning if required.

B. Owner, Architect, Commissioning Agent and/or General Contractor will perform an inspection to determine if duct cleaning is required at the cost of the HVAC contractor. To avoid incurring this cost all ducts, inlets, outlets and plenum spaces should be kept clean and sealed at ALL times.

PART 2 PRODUCTS

2.1 MATERIALS

A. Low VOC Materials: See other sections (018113) for specific requirements for materials with low VOC content.

B. Auxiliary Air Filters:

a. MERV 13 Permanent Filters = minimum required at all units, supply and outdoor air intakes.

b. MERV 8 Filters = minimum required at all return air grilles when system is used during construction. If system is not used during construction all return air grilles are to be covered and protected with plastic or with a MERV 8 filter at all times.

PART 3 EXECUTIONS

3.1 CONSTRUCTION PROCEDURES

A. Prevent the absorption of moisture and humidity by absorptive materials by:
1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
3. Provide sufficient ventilation for drying within reasonable time frame.
4. Store absorptive materials on pallets or other via other methods to prevent moisture from the floor from migrating into the material.
5. Provide Dated Photos of the stored and protected Dry Absorptive Materials to document requirements per LEED V4/V4.1.

B. Begin construction ventilation when building is substantially enclosed.

C. New HVAC equipment and ductwork may NOT be used for ventilation during construction. Where outlined in other sections that HVAC equipment can NOT be used the following procedure applies. Coordinate use of all HVAC equipment with Owner.
1. Provide temporary ventilation equivalent to 1.5 air changes per hour, minimum.
2. Exhaust directly to outside, filter as required.
3. Seal new HVAC air inlets and outlets IMMEDIATELY after duct installation or prior to their arrival onsite whichever is easier.
a. Seal ends of ducts with plastic sheathing completely as to not allow contaminates to

enter the system.

b. Ducts and/or grilles are to remain sealed until owner grants permission for system to be used.

4. If owner allows HVAC system to be used for any phase of construction up to final cleaning, each return air grille is to be provided with a MERV 8 filter, to prevent contamination of system.
5. Return grilles shall be provided with continuous protection with duct seals or MERV 8 filters. Return ducts shall in no case, be left unprotected.
6. Dated photos are required to document installation of During Construction filters. Include all model and serial numbers of new filters on the provided "HVAC & Grille Filter Change Log" provided at end of this section, that will be submitted upon completion. A Filter Change Log is Required showing dates of filter changes during construction if system is to be used during construction.
7. All duct marking is to be with wax pencils or chalk. Spray paint, lacquers and varnishes are NOT to be used.

D. Do not store construction materials or waste in mechanical or electrical rooms.

E. Prior to use of return air ductwork without intake filters, clean up and remove dust and debris generated by construction activities.
1. Inspect duct intakes, return air grilles, and terminal units for dust & debris.
2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
3. Clean tops of doors and frames.
4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
5. Clean return plenums of air handling units.
6. Remove intake filters last, after all cleaning is complete.
7. Dated photos are required to document cleaned rooms and changes of old filters to new filters. Include all model and serial numbers of new filters on the provided "HVAC & Grille Filter Change Log" provided at the end of this section, that will be submitted upon completion.

F. Do not perform any dust generating construction work after starting use of return air ducts without MERV 8 filters at each return and MERV 8 or better filters at each unit.

G. Use other relevant recommendations of SMACNA IAQ Guidelines for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures.

H. HVAC Contractor is responsible for the cost of cleaning all ductwork should they become contaminated due to negligence or improper work when wrapping and protecting inlets, outlets and plenum spaces during construction. General Contractor shall not reimburse or compensate HVAC contractor for any amount of the cost of Duct Cleaning if required.

I. Owner, Architect, Commissioning Agent and/or General Contractor will perform an inspection to determine if duct cleaning is required at the cost of the HVAC contractor. To avoid incurring this cost all ducts, inlets, outlets and plenum spaces should be kept clean and sealed at ALL times.

J. Project will achieve EQ4 Indoor Air Quality Assessment via Air Quality Testing. See Section 018113 for complete requirements of Air Testing that shall be provided on the project.

K. See Project LEED Checklist in section 018113 for complete list of all credits anticipated for the Project.

END OF SECTION

HVAC & Grille Filter Change LOG

Project Name: **Massillon – Eastside PK-3**

HVAC Contractor Name: _____

Note: To aid in the record keeping of filter changes during the course of the job. This form is to be filled out and shall include every filter change performed by the Mechanical Contractor. ALL filters must be changed after the building substantial completion and immediately prior to occupancy.

Date Installed or Changed	***Filter Manufacturer***	***Model #***	***MERV Rating***	***Location of Installed Filter***	***Was Photo Taken*** ***(a minimum of 30+ dated photos must be taken and submitted over the course of the project)***

As the responsible party I declare that all ductwork, grilles and returns were adequately protected and/or had filters installed before any of the mechanical systems were used and immediately after any ductwork was installed. I further certify that ALL filters were changed as is required per the IAQ Requirements of the project (see specifications). I further certify that all filter information provided regarding the manufacturer, model #, MERV rating and location of install provided above is accurate.

Name (printed) Signature Date