



## Construction Indoor Air Quality Management Plan

### San Diego International Airport Terminal 1 Replacement Project Issue Date: August 19, 2022

**Scope:** This Construction Indoor Air Quality Management Plan applies to the new T1 terminal building, including both Phase 1A and 1B. The entire terminal is pursuing LEED v4 BD+C under one project application.

This plan describes the measures to be taken to provide good indoor air quality (IAQ) during construction and after construction is complete and the occupants moved into the building. This plan is based on the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under construction, 2nd Edition 2007, ANSI/SMACNA 008-2008, Chapter 3.

This plan is not intended to replace or supersede OSHA regulations as to safe construction workplace practices. It remains the responsibility of the Arrive Joint Venture (JV) and the individual subcontractors to maintain a safe building and site operations. Additional precautions may be necessary when hazardous materials are present.

This plan will address construction IAQ by recommending procedures in five areas of concern, which in turn will allow the project to achieve LEED credits:

1. HVAC System Protection
2. Contaminant Source Control
3. Pathway Interruption
4. Housekeeping
5. Scheduling

#### **HVAC System Protection:**

1. The most significant potential IAQ sources from construction are dust, moisture, and VOC's which infiltrate both porous and non-porous materials. The approach for preventing dust-related problems is to identify all sources of contaminants and protect the HVAC systems. Avoid using HVAC equipment during demolition. If the HVAC system must be used during construction, return air inlets shall be protected by MERV 8 filters which receive frequent inspection and replacement as necessary. When activities that produce high dust or pollution levels occur, such as drywall sanding, concrete cutting, masonry work, or application of high emitting materials, the return air inlets should be sealed off completely for the duration of the task. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***

2. If the HVAC system is not used during construction, the supply and return air system openings should be sealed off to prevent the accumulation of dust and debris in the duct system. The diffusers should also be sealed in plastic. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***
3. The mechanical rooms should not be used to store construction or waste materials. Rooms should be kept clean and neat at all times. ***This activity is the responsibility of all Subcontractors.***
4. Filtration is critical during construction and during startup of the HVAC system. Filter media needs to meet the ASHRAE requirement for MERV 8. Where possible, utilize 30-35% dust spot efficiency filtration. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***
5. Upon periodic inspections during construction, if the ducts become contaminated due to inadequate protection, the ducts will be cleaned professionally. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***
6. Replace filtration media immediately before occupancy with MERV 13 or better filters, per the mechanical schedules. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***
7. To document that the above guidelines are followed during the construction phase of the project, pictures will be taken weekly by the ACCO and submitted to the Arrive JV. The Arrive JV will also inspect periodically and take pictures throughout the duration of the project. Photographs must be date stamped and annotated to identify IAQ measure depicted and general location of photograph. ***This activity is the responsibility of the ACCO, the Mechanical Trade Partner and Contractor.***

#### **Source Control:**

1. Use of low VOC products as indicated by the specification should be utilized to reduce potential problems. This activity will be verified and checked by the Arrive JV. Reference EQ Credit 2: Low Emitting Materials. Materials such as caulks, sealants, and cleaning products are the responsibility of the subcontractors to meet the specification. ***This activity is the responsibility of all Subcontractors working in the interior of the terminal.***

#### **USE OF MATERIALS THAT FAIL TO MEET LOW VOC LEVELS IS PROHIBITED IN THE INTERIOR OF THE BUILDING.**

2. Restrict equipment producing exhaust emission that passes or park/idle where intake air into the HVAC equipment could be introduced. ***This activity is the responsibility of the Arrive JV.***
3. Cycle-off all equipment producing exhaust emission when not used or needed. ***Subcontractors will be responsible for their own equipment usage.***
4. Use electric or natural gas alternatives for gasoline and diesel equipment where possible and

practical. ***Subcontractors need to be responsible and coordinate with the Arrive JV.***

5. Use work practices that have a minimal impact on air quality by using demolition techniques that produce less air born dust, using painting techniques that release less odor, using cleaning practices that raise less dust, using hand tools that may be cleaner than power tools and using vacuum-assisted drywall sanders and concrete saws. ***Subcontractors need to be responsible and coordinate with the Arrive JV.***
6. Containers of wet products should be kept closed as much as possible. Waste materials, which can release odor or dust, should be covered, or sealed. ***This activity is the responsibility of the Arrive JV and all Subcontractors using wet-applied products or collecting waste materials.***
7. Protect stored on-site or installed absorptive building materials from weather and moisture; wrap with plastic and seal tight to prevent moisture absorption. ***Each Subcontractor will be responsible for securing their own materials.***

ELEVATE AND COVER ALL ABSORBATIVE BUILDING MATERIALS SUCH AS DRYWALL, CEILING TILES, AND INSULATION WHILE BEING STORED ONSITE. DO NOT INSTALL WATER DAMAGED MATERIALS.

8. Any form of tobacco use (including e-cigarettes) is prohibited anywhere within the jobsite fence including inside of the building during construction or within 25 feet of all building entrances, operable windows, or supply air intakes. There is a designated smoking area outside of the jobsite fence, near the main entrance for use during construction hours. The designated smoking area location is subject to change as the jobsite fence will adjust throughout construction schedule. Arrive JV to provide adequate signs on the building to remind workers on the No-Tobacco Rules. ***Compliance with this is the responsibility of all Subcontractors.***

THE USE OF ANY TOBACCO PRODUCTS WITHIN THE JOBSITE FENCE IS PROHIBITED. ALL SMOKING OR VAPING SHALL BE DONE IN THE DESIGNATED SMOKING AREA OUTSIDE OF THE JOBSITE ENTRANCE.

9. Whenever possible, a local exhaust source, such as a portable fan, shall be used to exhaust dust, debris and odors caused by construction activities. ***It is the responsibility of the Subcontractor generating dust, debris and/or odor to provide the required local exhaust source.***
10. Take photographs and provide narratives documenting methods used to protect absorptive materials from moisture during construction and before occupancy. Take photographs showing compliance with measures in place. Photographs must be date stamped and annotated to identify IAQ measure depicted and general location of photograph. ***This activity is the responsibility of the Arrive JV.***

#### **Pathway Interruption:**

1. In condition where construction dust or debris will be excessively generated, provide dust curtains or temporary enclosures to prevent dust from migrating to the other areas, when applicable. It is the responsibility of the subcontractor performing the work generating dust or debris to provide the required curtains or temporary enclosures. HVAC system should be shut

down serving the area. **Subcontractors should coordinate with Arrive JV.**

2. Locate pollutant sources as far away as possible from supply and return ducts and areas where occupied by workers when feasible. Supply and exhaust system may have to be shut down or isolated during such activities. **Subcontractors should coordinate with Arrive JV.**
3. Avoid conflicts between critical airflow paths and equipment or staging areas. For example, roofing kettles are to be located as far away from air intakes as possible, generally at least 30 feet away. Air intakes can be closed momentarily for an activity or redirected with duct extensions for longer ongoing activities. **Subcontractors should coordinate with Arrive JV.**
4. During construction, isolate areas of work to prevent contamination of clean or occupied areas. Pressure differentials can be utilized to prevent contaminated air from entering clean areas. **Subcontractors should coordinate with Arrive JV.**
5. Depending on climate, ventilate using 100% outside air to exhaust contaminated air directly to the outside during installation of VOC emitting materials. Depressurize the work area and pressurize occupied spaces by using portable exhaust fans or HVAC equipment if used during construction. **Schedule activities with Arrive JV and ACCO, Mechanical Trade Partner and Contractor.**

#### **Housekeeping:**

1. Institute cleaning activities concentrating on HVAC equipment and building spaces to remove contaminants from the building on an ongoing basis. Daily cleaning for dust is often necessary. **Subcontractors should coordinate activities with Arrive JV.**
2. All coils, air filters, fans and ductwork shall remain clean during installation and, if required, will be cleaned prior to performing the system balancing, commissioning, and building flush-out. **This activity is the responsibility of ACCO, the Mechanical Trade Partner and Contractor.**
3. Suppress dust with wetting agents or sweeping compounds. Use an efficient and effective dust collecting method such as a damp cloth, wet mop, vacuum, with particulate filters, or wet scrubber. **This activity is the responsibility of all contractors.**
4. Ensure all surfaces, including higher ledges, behind furniture, and inside mechanical equipment are kept clean. **This activity is the responsibility of all subcontractors.**
5. Remove accumulations of water inside the building. Protect porous materials such as insulation and ceiling tile from exposure to moisture. **This activity is the responsibility of the Arrive JV.**
6. Encourage all trades not to store any VOC emitting materials inside the building during construction.
7. Provide photographs of the above activities during construction to document compliance. Photographs must be date stamped and annotated to identify IAQ measure depicted and general location of photograph. **This activity is the responsibility of the Arrive JV.**

### Scheduling:

1. Subcontractors will schedule high pollution activities that utilize high VOC level products to take place prior to installing highly absorbent materials such as ceiling tiles, fabric furnishing, carpets, etc. These materials will act as "sinks" for VOCs, odors, and other contaminants and most like will release them later after building occupancy. ***Subcontractors should coordinate with Arrive JV.***
2. Schedule HVAC equipment start-up for each zone after all dust, debris and/or odor generating activities has been completed. Ensure that all areas are clean prior to HVAC equipment start-up. ***This activity is the responsibility of the Arrive JV.***
3. Ensure that all zones/areas are thoroughly cleaned prior to installation of air devices to prevent and/or minimize dust or debris from entering the HVAC duct system. ***This activity is the responsibility of the Arrive JV.***
4. NO CONSTRUCTION ACTIVITIES, INCLUDING PUNCH LIST ITEMS, ARE PERMITTED DURING FLUSH-OUT PERIOD. ***This activity is the responsibility of all Subcontractors.***

### Indoor Air Quality Assessment. Option 1 Flush-out:

All flush out procedures prior to occupancy must be performed when interior finishes including furniture are installed and all VOC punch list items are complete. It is advised to thoroughly clean the building a few days prior to beginning a flush out or testing. Careful coordination must be done with concession, lounge, and airline build outs, as those areas will need to be completely isolated, or work must be complete in those spaces prior to flush out activities.

The project intends to pursue Path 2 for early occupancy, which includes an abbreviated building flush out prior to occupancy and continuing after occupancy for a calculated duration.

Initially, the building must be flushed by supplying 3,500 CF of outdoor air per SF of gross floor area, while maintaining an internal temperature of at least 60°F and no higher than 80°F with relative humidity no higher than 60%. Once complete, occupancy can commence. During occupancy, continue the flush out and provide ventilation at a minimum rate of 0.30 CF of outdoor air per SF of gross floor area or the design minimum outdoor air rate determined in EAp1, whichever is greater. During each day of the occupancy flush out, ventilation must begin at least 3 hours before occupancy and continue during daily occupancy until 14,000 CF of outdoor air per gross floor area has been delivered to the space.

**Calculations of Flush Duration:** The mechanical engineer, MA Engineers, has provided calculations of flush out duration for each air handler. Early calculations show a flush duration prior to occupancy of between 2 and 7 days, running 24 hours, in addition to an occupied flush lasting between 6 and 22 days, with units running 24 hours.

Note that calculated **durations do not consider** the assumed temperature and RH values that need to be maintained throughout the test period. If the temperature/RH deviate during flush, additional time must be added to reach the minimum time duration withing the temperature and humidity requirements.

In addition, **these durations do not consider the construction schedule** as it relates to furniture installation, readiness, phasing of building construction which will have to also be considered for the flush out time period.

**Documentation:** If the project and Arrive JV decide to pursue this credit for LEED credit, provide a narrative describing building flush out procedures including actual dates of building flush out, along with final flush out calculations.

END PLAN