GREEN BADGER

ULTIMATE GUIDE TO LEED V4 & V4.1

IEQc3:
Construction Indoor Air Quality Management Plan

A Resource Guide for General Contractors

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January 2022

Earning IEQc3 Construction Indoor Air Quality Management Plan in LEED v4.1

Did we... did we finally... did we finally find a credit that isn't a significant deviation from prior versions of LEED? OMG we did!

The Construction IAQ Management Plan credit is essentially unchanged from LEED 2009, heck even from LEED 2.2! It took running through burning coals to get here, but alas – take a deep breath of (clean because we've had an IAQ management plan) air and exhale because this one is pretty straightforward.

Develop and implement an IAQ plan that hits the SMACNA standards, don't let stuff get wet, use filters if running the HVAC, and don't smoke in or near the building. Boom, you've earned the credit.

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Requirements for the IEQc3 Construction Indoor Air Quality Management Plan Credit

Develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building.

The plan must address all of the following:

- During construction, meet or exceed all applicable recommended control measures of 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.
- Protect absorptive materials stored on-site and installed from moisture damage.
- Do not operate permanently installed air-handling equipment during construction unless filtration media with a minimum efficiency reporting value (MERV) of 8 are installed at each return air grille and return.
- Immediately before occupancy, replace all filtration media with the final design filtration media, installed in accordance with the manufacturer's recommendations.
- Prohibit the use of smoking inside the building and within 25 feet (7.5 meters) of the building openings during construction. Smoking includes tobacco smoke, as well as smoke produced from the combustion of cannabis and controlled substances and the emissions produced by electronic smoking devices.
- Pretty straightforward stuff (for once). If you've been on a LEED project, you're likely familiar with all of these. The only that has changed from the older versions to v4/4.1 is to prohibit smoking from within 25' of the building during construction.

What are the SMACNA measures?

The good people at the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) have put forth pretty straightforward measures to be implemented on your project - when applicable!

Not every project will have every measure listed below - make sure your plan incorporates relevant measures - if you put something in your plan that you don't actually implement, the reviewers are going to ask why it is documented. Kinda makes you wanna SMACNA a LEED reviewer, if you know what I mean.

Without further ado, here are the SMACNA Measures and examples of implementation:

- **HVAC Protection** - Keep contaminants out of the HVAC system. Do not run permanently installed equipment if possible, or maintain proper filtration if it is used.
  - Seal all ductwork, registers, diffusers, and returns with plastic when stored on site or not in service. Seal unfinished runs of ductwork at the end of each day.
  - Replace all filtration media before occupancy.
  - Do not store materials in mechanical rooms, to reduce potential debris and contamination to mechanical systems.
- **Source Control** - Keep sources of contaminants out of the building and have a plan to eliminate any that are introduced.
  - Use low-toxicity and low-VOC materials to the greatest extent possible.
  - Develop protocols for the use of any high- toxicity materials. Isolate areas where high- toxicity materials are being installed and use temporary ventilation for that area.
  - Prevent exhaust fumes (from idling vehicles, equipment, and fossil-fueled tools) from entering the building.
  - Enforce the no-smoking job site policy.
  - Protect stored materials from moisture because absorbent materials exposed to moisture during construction can mold and degenerate long after installation. Store materials in dry conditions indoors, under cover, and off the ground or floor.
- **Pathway interruption** - Prevent circulation of contaminated air when cutting concrete or wood, sanding drywall, installing VOC-emitting materials, or performing other activities that affect IAQ in other work spaces.
  - Isolate areas of work to prevent contamination of other spaces, whether they are finished or not. Seal doorways, windows, or tent off areas as needed using temporary barriers, such as plastic separations. - Provide walk-off mats at entryways to reduce introduced dirt and pollutants.
  - Depressurize the work area to allow a differential between construction areas and clean areas. Exhaust to the outdoors using 100% outdoor air, if possible.
  - Use dust guards and collectors on saws and other tools.
- **Housekeeping** - Maintaining a clean job site results in fewer IAQ contaminants to manage.
  - Maintain good job site housekeeping on a daily basis. Use vacuum cleaners with high-efficiency particulate filters and use sweeping compounds or wetting agents for dust control when sweeping.
  - Keep materials organized to improve job site safety as well as indoor air quality.

- **Scheduling** - Sequence construction activities to reduce air quality problems in new construction projects. For major renovations, coordinate construction activities to minimize or eliminate disruption of operations in occupied areas.
    - Keep trades that affect IAQ physically isolated on-site and separated from each other by the construction schedule. For example, schedule drywall finishing and carpet installation for different days or different sections of the building. Consider after-hours or weekend work if practical.
- Install absorptive-finish materials after wet-applied materials have fully cured whenever possible. For example, install carpet and ceiling tile after paints and stains are completely dry.
- If applicable, plan adequate time to conduct
- A flush-out and/or perform IAQ testing before occupancy, in compliance with EQ Credit Indoor Air Quality Assessment.
- Remove all temporary filtration media and replace them with new filters before occupancy.

What about the Absorptive Material Protection?

Funny you should ask! There's an acronym for this one: **DLSGWIYB**

Don't
Let
Stuff
Get
Wet
Inside
Your
Building

Ok, fine, I just made that up, but it pretty much gets to the point. Some materials on your project water doesn't just roll off of, and if it gets wet and installed, there's a mold issue as well as an overall warranty and all things associated. So let's keep it dry!

This includes common items including:

- Gypsum board
- Ceiling tiles
- Carpet

Really anything that can absorb moisture!

There are multiple ways to address this issue, from just in time delivery of products, so they aren't spending time on site prior to installation, to elevate these materials off the floor while keeping them elevated and away from openings, to finally protecting them after installation by covering the carpet with walk-off paper to avoid trekking moisture and dirt onto it. None of it is rocket science. Just remember DLSGWIYB and you should be all set!

STRATEGIES

Strategies for IEQc3

This credit is pretty straightforward to achieve. You need plenty of time to plan this out as none of really goes into effect until your vertical. For Interiors projects, you don't have this luxury. You'll have to show up on-site with a plan ready to go.

First off, identify which SMACNA measures are relevant for your project and include them in your IAQ management plan, which will have to be submitted as part of your documentation. Inform subs of the plan and make sure it is communicated AND enforced.

Finally, document implementation with IAQ inspection reports (you're using the Green Badger mobile app to do these instantly, right?).

Take pictures and create reports at least monthly, if not more frequently. For new construction projects, this typically starts when HVAC equipment arrives at the site. For Interiors projects, it's pretty much day one.

Here's what to include in your IAQ management plan.

HVAC Protection

Every project will need to incorporate HVAC protection - seal all ductwork, registers, diffusers, and returns with plastic when stored on site or not in service. Seal unfinished runs of ductwork at the end of each day. Replace all filtration media before occupancy.

For HVAC protection, the biggest challenge tends to be making sure the duct runs and grills stay taped throughout. Every sub working in the area seems to want to remove or damage your wrapped ducts, so inspecting this frequently will ensure any deficiencies are fixed in short order.

Housekeeping

Housekeeping is necessary on every project as well - keep a clean jobsite, sweep up, use dust control and sweeping compounds and vacuum when possible.

Source Control

Source control is also on every project and is likely things you're doing without thinking about it. It's a LEED project, so you're already using low-VOC materials. Just make sure to keep them centrally stored so you don't have buckets of paint everywhere. Provide ventilation if you've got onsite combustion or high toxicity materials inside the building. Enforce the non-smoking policy, which you're already doing, and finally, keep absorptive materials dry!

Pathway Interruption

Pathway interruption you may or may not have. If you're working on a project with sections of the building finishing at separate times, consider hanging plastic sheeting to prevent contaminants from getting into the finished areas, and use walk-off mats to prevent pollutants from getting dragged into the building from all the onsite personnel.

Scheduling

Scheduling may be an issue. If possible, keep trades that affect IAQ physically isolated on site and separated from each other by the construction schedule. For example, schedule drywall finishing and carpet installation for different days or different sections of the building. Other items are referenced by SMACNA and include:

Install absorptive-finish materials after wet-applied materials have fully cured whenever possible. For example, install carpet and ceiling tile after paints and stains are completely dry.

If applicable, plan adequate time to conduct a flush-out and/or perform IAQ testing before occupancy, in compliance with EQ Credit Indoor Air Quality Assessment.

Remove all temporary filtration media and replace them with new filters before occupancy.

NOTE: This one is pretty tough to document with photos even though LEED reviewers have been known to ask for it - take pictures of paint drying to show carpet wasn't installed? Who knows, but try and get something on record.

Summary of Strategies

Develop IAQ Management Plan

Once HVAC arrives, do IAQ testing at least monthly

Communicate that plan and expectations to all subs and team members

DLSGWIYB

Absorptive material protection

Absorptive material protection is covered under Source Control, but you may want to have a section specific to it in your plan, because LEED reviewers need things to be blatantly obvious to them to not issue review comments (and even then it isn't a guarantee).

Remember - DLSGWIYB.

If you can get away without running the HVAC system, you're set. If you do use it, because it can get awfully hot/cold out there, make sure MERV 8 filters are installed at each return air grille and return. Replace them throughout construction as they get dirty, and replace all filtration with the design-specified filters immediately prior to occupancy.

You're going to need lots of pictures of those filters, as well as the make/model number so make sure you've got good records.

Last but not least, prohibit and enforce no smoking in the building or within 25' throughout construction. Make sure you've got signage posted and that it is actually being enforced for onsite personnel. In your cannabis-friendly states, this includes cannabis (and vaping), so no pulling tubers by the building.

Side note: *If you are going to do air quality testing or a flush out after construction it's a good practice to reference it in your plan as well. Even though the plan is for during construction, it's good to have in there. Now, if you're using a template plan and you're NOT doing testing or flushout - delete that section so the reviewers don't ask about it.*

MORE **BEST PRACTICES**

for Indoor Air Quality Management

The strategies we've provided will help you earn the Construction IAQ Management credit, and may contribute to Indoor Air Quality Assessment if you're going that way. Here are a few other best practices for consideration to help make it as seamless as possible.

1. Use a Template

Use an IAQ plan template that's been vetted in the past on other LEED projects. There's plenty of examples out there, so don't start from scratch.

2. Don't put off IAQ inspections

Don't put off doing IAQ inspections, and don't just take 10,000 construction photos and go back and try and dig out ones of your ductwork taped off. Go ahead and create standardized monthly reports. Using your Green Badger project license just use the mobile app.

3. Enforce no smoking policy

Make sure the smoking policy is clearly posted around the building exterior and enforce it.

4. Track all filters

Track all your filters during construction and prior to installation because the reviewers will ask about it.

Summary for IEQc3

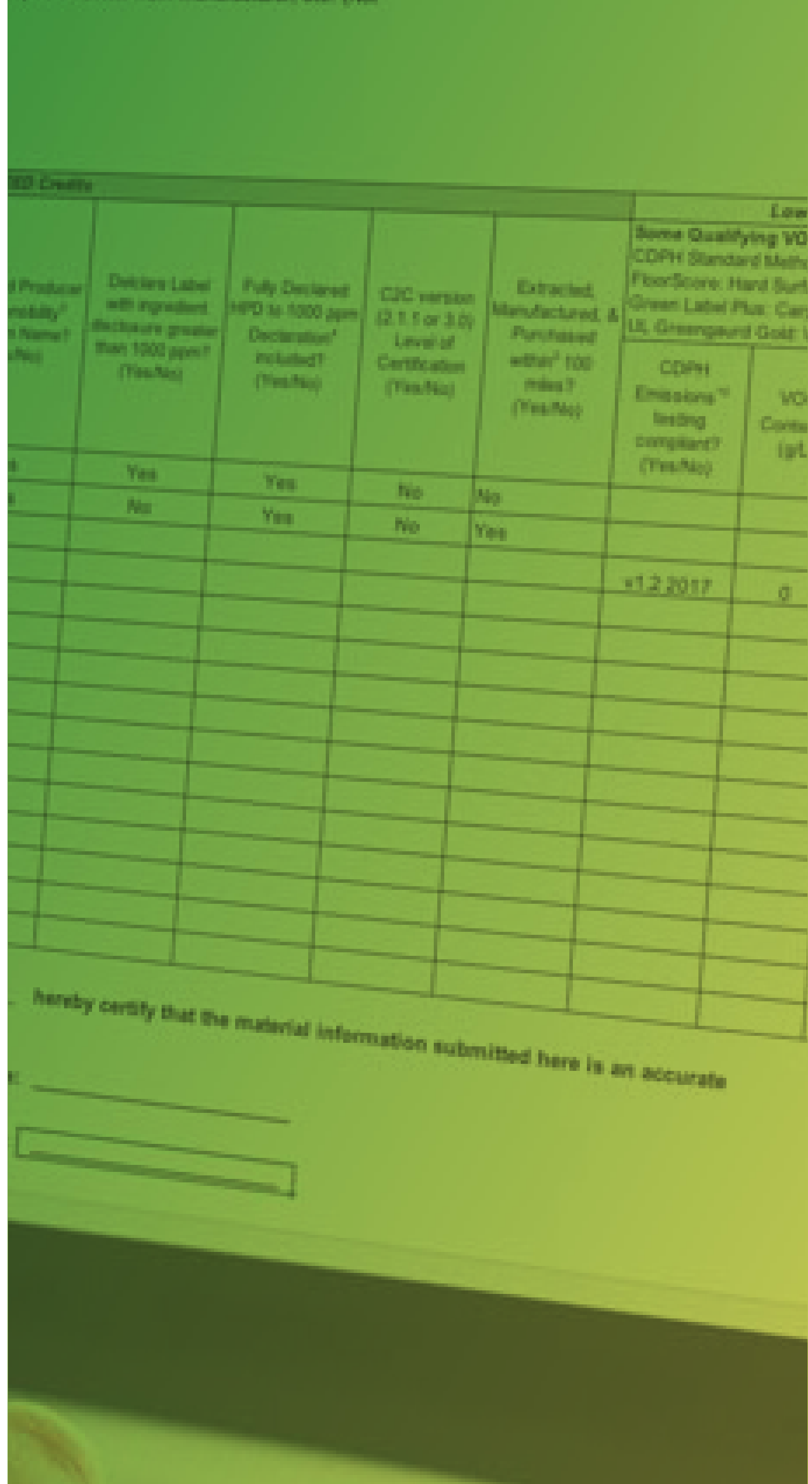
Recaping how to earn 2 points:

- Use v4 or v4.1, it doesn't really matter...
- Develop your indoor air quality management plan early in the process
- Remember to create monthly inspection reports

BADGER TIP:

Developing and implementing an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building is required to earn the IEQc3 credit – and this template is a great place to start!

Download your template here.



SUMMARY