IFC-SC Committee Hearing Agenda
May 28, 2019 2pm-5pm
City and County of Denver, Room 4i5

1. Roll Call and Introductions

2. Discussion and voting on IFC-SC Staff Block Vote packaged proposals
   (All proposals that are marked with an X on the summary spreadsheet)

3. Discussion and voting on Section 909 of DBC-IFC
   a. P87/F86: DBC-IFC Smoke Section 909.15.4
   b. P97/F88: DBC-IFC Smoke Section 909.15.3, 909.15.4, 909.15.5
   c. P130/F111: DBC-IFC Smoke Section 909.3.3.5

Please note that any items that we do not get to in this hearing will be automatically transferred to the
next scheduled hearing date and will be the first items on the agenda for that hearing.
Proposal # F16 (Block Vote Item) Pulled to be heard on individual agenda.
Revise Scope and Purpose to remove reference to tenability.

Proposal # F18 (Block Vote Item)
This section was incorrectly placed in the smokeproof enclosure section during the 2016 amendments proposal is to relocate this section.
Committee Ok with this one.

Proposal # F17 (Block Vote Item) Pulled to be heard on individual agenda.
The IBC requires a minimum of 4ACH. This amendment would allow Denver’s method to better align with the IBC provisions and provide greater rates ensuring building occupants and responding firefighters are better protected as intended by these provisions.
Issue last year as to how to achieve this, needs more discussion.

Proposal # F19 (Block Vote Item)
This section on Minimum Pressure Differential was incorrectly sized and was driving the need for administrative modification for most projects. The new language ensures mechanical equipment operates within its required tolerances to avoid equipment malfunction or damage.

Questions from the Committee to Proponent:
1. Question the HZ in this proposal.
   a. Interpretation that you can’t go lower than 12 hz.

Committee Discussion:
Have seen below 12 HZ, seems safe
Most are more than 12 that have problems.
Committee is ok with this one.

Proposal # F20 (Block Vote Item) Pulled to be heard on individual agenda.
Remove the following from Requirement: Two-hour fire resistance rated duct wrap is permitted to substitute for the two-hour fire resistance rated fire barrier and/or horizontal assembly.

Proposal # F21 (Block Vote Item) Pulled to be heard on individual agenda.
It is well known among industry experts that Denver’s approach required oversized fans (common discussions involve oversized by 40 to 60%). This proposal reduces sizes by 20% with the intent of ensuring mechanical equipment operates within acceptable tolerances to avoid damage to controls or motors due to overheating because systems were tuned to speeds below manufacture prescribed parameters.

Proposal # F22 (Block Vote Item) Pulled to be heard on individual agenda.
It is well known among industry experts that Denver’s approach required oversized fans (common discussions involve oversized by 30 to 40%). This proposal reduces sizes by 10% with the intent of ensuring mechanical equipment operates within acceptable tolerances to avoid damage to controls or motors due to overheating because systems were tuned to speeds below manufacture prescribed parameters.

Proposal # F23 (Block Vote Item) Pulled to be heard on individual agenda.
Because the pressure sandwich concept was eliminated and construction tightness has improved, existing systems must be afforded makeup air to ensure door opening forces can be satisfied but more importantly a true exhaust quantity provided for the zone of alarm to achieve the intent of
909.10.1(8) and based IBC 403.4.7 (’15).

**Proposal # F24 (Block Vote Item) Pulled to be heard on individual agenda.**
Because the pressure sandwich concept was eliminated and construction tightness has improved, existing systems must be afforded makeup air to ensure door opening forces can be satisfied but more importantly a true exhaust quantity provided for the zone of alarm to achieve the intent of 909.10.1(8) and base IBC 403.4.7 (’15).

*Final Vote on Block Vote Items: A/S 7-0*

**Motion to table F21 and F22 to be heard with other Greg Bradshaw proposals.**

**Proposal # P87-F86**
To simplify an IFC requirement at the ground floor of mixed-use buildings, and to eliminate the need for a common administrative modification,

*Public Testimony in Support: None*
*Public Testimony in Opposition: None*
*Questions from the Committee to Proponent: None*

**Committee Discussion:**
Proponents say they have submitted it several times for admin modification.

We have had a few in Denver but it’s a small number of residences. We have a few buildings with lofts, every one of those they must do an admin mod for smoke control. Residential corridor goes out to floor.

In regard to positive pressure generation, if we have an incident how do we exhaust smoke quickly and get building back in operation?

It should probably stay as is and they would have to ask for modifications.

Basically, the city wants to avoid writing admin modifications for these exceptions. Those approved have a separate entrance.

If something has a way directly outside that’s fine, but 10 residences don’t have a way to get out they have a corridor, no way to get out but that corridor.

Think the proposal is too broad to generally accept. Preferred to be left so building department can consider them individually.

*Original Motion); Disapprove (D)*

*Final Vote: D 7-0 Passes*

**Additional staff or committee comments for the record:**

**Proposal # P97**
To clarify the intended use of the “smoke exhaust” system on a high-rise floor is to create the negative pressure zone of the floor of fire – or known as the zoned smoke control scheme.

*Public Testimony in Support: None*
Public Testimony in Opposition: None
Questions from the Committee to Proponent: None
Committee Discussion:
Lots of things to discuss, tenability containment, floor of incident whether that should be tenable or contained. NFPA 92 says we are trying to get rid of all these words. I think this one will need to be tabled. Don’t see how we can accept or reject without other discussions on tenability.

This tries to make smoke control language more understandable? This would add a fourth method when we have worked hard to move to 2 basic methods.

Motion to Table: Table this proposal to be heard with other proposals for this section. Motion passes 6-1

Proposal # P130
Revise Smoke Exhaust to Smoke Control
Public Testimony in Support: None
Public Testimony in Opposition: None
Questions from the Committee to Proponent:
Committee Discussion:
Denver has always been containment only. Exhaust implies air movement, if you’re containment you’re not exhausting.

Always read that air changes based on assumption, that’s just telling us how much oomph fan should have. When doing atriums there’s always a rule that if you bring fresh air in to get rid of the smoke you have a low rate, when attempted to reach the ACH makeup air into fire zones, never measured, not sure of ramifications back in the day you don’t feed a fire with fresh air. Agree with Lyle exhaust should be controlled.

Looking through 92, Smoke control systems, smoke control exhaust systems different definitions, so lack of consistency there under pressurization systems.

Lyle may have hit upon the controversial section. This is what we changed to when going away from sandwiched and pressurization. This was the language of choice, this section really is where we see air changes, tenability etc. There needs to be a discussion on a high-rise floor residential or office, are we in Denver going to call out for supply air to enable us to have a specific number of air changes per hour, based on buildings staying so much tighter than before. We don’t have “leaky” buildings any more.

Are we saying we still need to have rated air changes or are we just looking for differential pressurization, trying to contain the floor of incident, pressure differential or are we trying to flow that smoke out for level of tenability even though everything says we can’t have tenability in floor of incident. Do we artificially inject make up air to allow you to have exhaust?

A lot of bldgs. We don’t have that amount of supply hours.

We need rules of engagement, what do we truly want to do here. Is it reasonable that we just say we are going to have containment or air flow?
Focus in on Exhaust to Control, perhaps they are just allowing flexibility.
Exhaust to Control is broader, but this proposal may be our only way to address tenability.

At some point we need to discuss with DFD whether we tackle exhaust or containment.
Sounds like DFD would say exhaust and to address what you’re saying, when doing testing if you look at intent of 909.10 Acceptance Testing 909.10 emphasizes containment. #7 and #8

From DFD perspective our fire dept responds to these high rises, because we have active systems to help our crews. Further complicated 2009 IBC put in a 4-air change mop up system. Doesn’t work in Denver. We are doing some level of containment, but it doesn’t coincide with national and Denver code. This is for mop up operations, not intended to run when system goes in to smoke control mode, it’s for after the fire. Using Air Handlers after the fire. IFC and IRC standard method. After fire they flip the switch and get rid of exhaust.

100% outside air is the way to go.

Important that we don’t waste time, tenability in a national sense says tenability does not relate to area of incident. It is required to have tenability so fire department can find a fire. Reality with high ceilings likely hood of having no smoke in there, not likely. Trying to get from DFD what they want to do.

National standard says 4 air changes per hour. Should perform better than 4 air changes per hour and let us purge.

Now that buildings are tight, are we proposing the design community be aware that they need air movement included?

No reason for us to approach containment, let’s be consistent of what the fire department wants. There has to be some minimum requirements. We want to know what that is up front, or we are wasting our time. Mapped out with operations team, need minimum flow.

From operations stand point it all works in sync. In Denver it’s all correlated to work with each other including smoke control, providing some level of exhaust.

**Original Motion: Disapprove (D)**

**Support:** This is simple and removes what we wanted to see changed in last proposal.

Did we catch them all? I’m going to trust that Lyle was diligent and went through all of them. Looking back through there are some sections that were not touched.

Could a blanket statement be issued to change all from smoke exhaust to smoke control systems?

**Moderator:** There may be intent where sometimes exhaust is the correct term. Committee can propose specific sections. Don’t think appropriate without looking at individual sections

This is not prohibiting just recognizing that this is smoke control. All for simplifying.

**Opposition:**
Commentary for clarification not considered an exhaust system because they are unique focused on occupant tenability. If you look in IMC different requirements for exhaust systems.

**Final Motion:** Disapproved (D)

**Final Vote:** D 5-2 Passes

**Additional staff or committee comments for the record:**
**Proposal # F16 (Pulled from Block Vote)**

**Public Testimony in Support:** Proponent - We have been speaking all meeting long about conventional high-rise building tenability not being applicable. At the design exhaust rates and the configuration of high-rise smoke control systems, reaching tenable capability is not possible. Tenability would imply all egress routes would maintain smoke 6’ above floor levels.

**Public Testimony in Opposition:** None

**Questions from the Committee to Proponent:** None

**Committee Discussion:**

909 Base code does a good job of defining tenability, Denver Building Code does not. It’s important to remember that this was placed in the amendments as a copy and paste per request from BOMA.

We know that for med small size fires, a 654-air change rate won’t give us tenability, did a study at DIA. Tenability just isn’t on the table for fire floor. Tenability is only being described to get out.

Striking it out creates confusion.

If it stays in tenability needs to be further defined.

If you leave it in, you could use statement and definition. Un strike, put right after that period insert,

**Original Motion: As-Submitted (AS) Fails 2-5**

**Final Motion: As Modified (AM)**

Leave the language in. Un strike and then Base Code 909.6 Maintenance of a tenable environment is not required in the smoke-control zone of fire origin.

Committee would like to un strike language and make a note that needs to be added to 909.15.3 1 then becomes administrative. Moving 909.6 (May need to reach out to Tony/ Shaunna to verify exactly how this plays out)

Modification: Mod final section IFC 909.6 include in item 3 to DBC _IFC 909.15.3.1 and restore or do not approve strike out from original proposal.

**Vote on Modification 6-0-1**

**Final Vote: AM 6-0-1**

**Additional staff or committee comments for the record:**