Commissioning
Lessons Workbook
Mechanical, Electrical, and Plumbing

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Condensate Drains for Ceiling Mounted HVAC Units

We have all seen the brown spots on ceiling tiles. There are multiple reasons that this happens but for this discussion we will address Condensate Drains for Ceiling Mounted HVAC Units. Since clogging of the condensate pans have been a problem they are addressed in the codes.

The International Mechanical Code 2003 and 2006 editions have addressed this specifically under Section 307 Condensate Disposal
Subsection 307.2.3- Auxiliary and Secondary Drain Systems.

Even though the code addressed this in IMC 2003 there are still projects that have not addressed it in either the design, project documents not being clear enough, or the mechanical contractor misinterprets the designer's intent. The current plumbing code officials have started to be knowledgeable and are pointing it out in the field.

Look to address this in the design review stage or in the early submittal stages. This will avoid change orders or misunderstandings. It is a good idea to meet with the mechanical contractor to see how they are going to address this. Also, condensate crosses the line into the plumbing contractor so it is good to address this right away.

The code boils down to "A unit that has a cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping."

FCU-17 requires Auxiliary condensate pan with switch and connection to condensate piping. Current condition shows 2 connections in primary pan. See Mech Constr Note 1 on M-1.0. This applies to all BCU's and FCU's not recessed.	Add Second Pan with switch	

The above deficiency was noticed by a commissioning visit and provided to the Construction Manager to address. This particular unit is a Fan Coil unit. It could be a Blower Coil unit (BCU), Air Handling Unit (AHU), Unit Ventilator (UV), Air Handling Unit (AHU) or Split System Unit (AC).

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In the case above the mechanical contractor put two (2) condensate connections on the primary drain pan. His thinking was that if one plugged you would then have the other one. The problem is that the code will allow this only if the second connection goes to a conspicuous point of disposal. This would mean the second connection would need to be piped to a location that the maintenance staff would notice. If they noticed condensate then they would know that the primary connection was clogged. **Too many If's involved**. The intent of the code for this unit is to have the unit shutdown on condensate high level.

Below are the issues for each type of unit and also where the mechanical engineer would put this information on the design documents.

- ✓ For large air handling units located above a ceiling a condensate high level switch is put in the large pan inside the unit. This is usually done by the Controls contractor and tied back to the Automatic Temperature Control System. The unit is shutdown on high level. The Mechanical Engineer usually defines this in the air handling specification and in the controls specification.

- ✓ For Blower coil units, Fan coil units, and Unit Ventilators in the ceiling a condensate high level switch can be put in the primary pan usually by the manufacturer or a condensate high level switch can be put in a secondary pan by the mechanical contractor. The switch can shutdown the unit directly or be tied back to the Automatic Temperature Control System. The Mechanical Engineer can put this in drawing notes stating the code, on a drawing detail and/or in the specification.

- ✓ For Blower coil units, Fan coil units, and Unit Ventilators located on the floor a switch can be used like the ceiling mounted units but if there is a drain located next to the unit or if it is deemed that no building components will be affected then the unit might not require a high level switch.

- ✓ For Split type units usually found in a server closet or room a high level switch can be used in the primary or secondary pan or if the second condensate is taken to a conspicuous place that a technician or maintenance staff will notice and inform the facility management.

- ✓ Rooftop units do not usually have a high level condensate switch because the excess would normally spill to a roof drain causing no harm to a building component.

Note: IMC 2006 was revised to so that a high level switch could be added by the manufacturer in the primary pan. The 2003 code had stated it had to be in the secondary pan. Because of this more manufacturers are making their units with the option of adding a condensate switch which makes it easier on all of us.