

By Amanda Parolise

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## Hybrid Infection Control Lobby Retrofit Design-Build Project

This month's Facility File will focus on the B2B November test for HVAC applications to transform an existing walk-in clinic lobby into a hybrid infection control (IC) initiative by improving IAQ and ventilation and maintaining year-round humidity control.

The project delivery method is design-build (D-B) with a guaranteed turnkey cost. The D-B firm will assign a project manager with health care and IC background to the project. The D-B firm has in-house engineering, technicians, and estimator staff to be involved in the design and cost estimate the initial "design" phase. The scope of work will be a basis of design to meet the hospital's lobby health care improvements as well as sustainable O&M requirements.

Prior to the D-B team's concept document submission for the project, the facility manager and his O&M staff will want to contribute information to the D-B team's writing of the contract specification/basis of design document, with specific attention to the following activities: service contracts, parts inventory, and as-built drawing requirements. Reviewing the design phase documents, this O&M staff will want to be assured that equipment serviceability is adequate and safe (e.g., how to service coil removal at central air-handling unit ICAHU-1?).

At the recommendation of the D-B team leader, the HVAC engineer and the O&M staff will review ASHRAE 2015 *HVAC Applications Handbook* chapter 58, Integrated Building Design, to get a better understanding of how design-build is a team effort. In addition, the staff will read chapter 52 (Evaporative Cooling) along with chapter 41 of the 2016 *ASHRAE Handbook* to better understand the hybrid evaporative humidifier-cooling system within ICAHU-1. A D-B team meeting will be coordinated so that the hospital members, the owner representative, 3rd-party IC consultant, and 3rd-party commissioning and TAB consultant can review together ASHRAE chapters 36 through 46 (Building Operations and Management). This information, combined with the owner's own knowledge of operating the hospital's existing HVAC systems and the hospital's infection control department, will assist the D-B team in understanding intricacies owning, operating, and managing this building.

The D-B engineers will meet with the hospital's O&M facility management/maintenance manager to discuss specific building standards that need to be applied to this project. In particular, the construction/build phase infection control requirements will be followed, placing the construction area under a negative pressure for dust particle control using HEPA 99.99% fan-filter units. The D-B team will also outline the specific collection of equipment documents in a manner that is CMMS system-ready so that the existing PM program will be workorder-ready for day one of hospital occupancy of the renovated lobby space and IC lobby workstation.

In the startup and pre-commissioning phases, the O&M staff will be proactive in following along with the D-B's trade technicians to receive equipment, system, and ATC tablet computer training using the O&M manuals and design phase documents (that will eventually become the as-built drawings).

Once the startup has been completed, the ATC subcontractor and owner representative/3rd-party CxTAB consultant will complete the functional performance testing of the newly renovated lobby HVAC system and the associated air distribution balancing work. The D-B team shall go through an automatic control system initial dry-run demonstration prior to the D-B firm demonstration for the CxTAB consultant. The 3rd-party infection control commissioning consultant shall complete her close-out of process, including updating the IC workstation visitors instruction document for cleaning procedures. The ATC subcontractor will begin collecting lobby space performance by trending the localized monitoring via computer data collection of the following:

- outdoor dry bulb and wet bulb temperature
- lobby dry bulb and wet bulb temperature
- associated indoor relative humidity
- space air particulate count
- space pressure
- HVAC alarms
- safety alarms

Taking the same approach as the owner representative and design engineers, the hospital's O&M personnel will use a series of computer-generated touchscreen project checklists that allow his staff to confirm that the following facility data has been collected. This process should start at the beginning of construction/build phase and not at project closeout, so that the facility files can be inputted into the CMMS system. Touchscreen O&M checklists should include:

- equipment shop drawings
- O&M manuals, parts list, and lubricants
- troubleshooting tips
- seasonal startup and shutdown instructions

The training process should include not only specific HVAC and ATC system and equipment training, but also IC policy and procedure plan training. Training should also include the PM workorder system to routinely assure continuously adequate IAQ for the patient, visitors, and hospital staff. This will require the D-B firm to provide the infection control reports along with the associated system flow diagrams, noting set points versus actual and adjustment as part of the project closeout documents. Touchscreen training checklists should include:

- equipment
- system
- emergency plan
- automatic controls
- infection control management