

memo

TO	TAG Committee	DATE	October 5, 2018
ATTN.	Eric Vander Mey, PE	REGARDING	EM085-2018 – Minority Report
FROM	Michael Baranick, PE Hargis Engineers	SUPPORTED BY	Robby Oylear, PE Affiliated Engineers, Inc.

Proposal Status: Failed the WSEC TAG meeting on 7/20/18

Objection: The code currently forces centralized DOAS units that provide ventilation to multiple zones (where one or more of the zones require an occupancy sensor per Section C403.7.2) to be variable air volume (VAV), thus requiring pressure independent VAV units at ALL zones. Not approving this change proposal (w/ modifications as noted below) will increase the first cost, system complexity, and annual maintenance requirements of centralized DOAS units.

Recommendation: Approve change proposal EM085-2018 as modified below (modifications in red). This modification was recommended by Mike Kennedy to prohibit the use of this exception for centralized DOAS units that serve zones of various occupancy types (e.g. classrooms and administration areas). The goal of this modification is to avoid scenarios in which the centralized DOAS unit provides ventilation to space types that are unoccupied (e.g. classroom) since the unit's operating schedule would be driven by the space type with the longest operating hours (e.g. administration areas).

C403.7.2 Occupancy sensors. Classrooms, gyms, auditoriums and conference rooms larger than 500 square feet of floor area shall have occupancy sensor control that will either close outside air dampers or turn off servicing ventilation equipment when the space is unoccupied except where equipped with another means to automatically reduce outside air intake below design rates when spaces are partially occupied.

Exceptions:

1. A space that is ventilated by a dedicated outdoor air system (DOAS) complying with Section C403.3.5 that serves more than one space. All spaces served by the DOAS must be of the same occupancy classification per Table 403.3.1.1 of the International Mechanical Code.

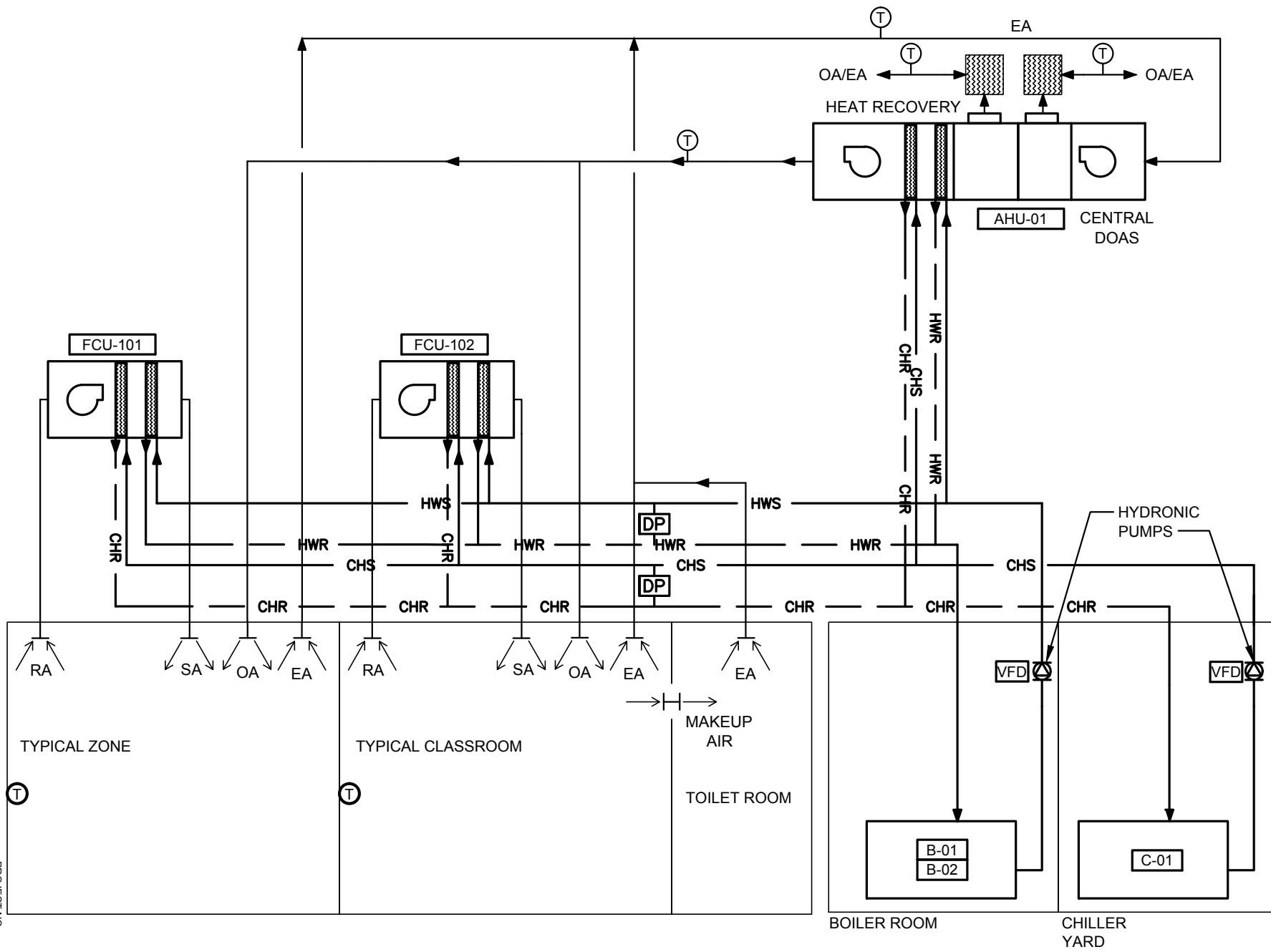
Reasoning:

- 1) No economic analysis was completed (during 2015 change proposals process). The occupancy sensor section was not updated in the 2015 WSEC even though the DOAS section was entirely new; therefore, the interconnections and cost implications between these two sections was never evaluated.
- 2) System complexity. See SBCC's interpretation #17-25. This is a complicated issue that leads to an overly-complicated system design. One-line schematic drawings have been provided on the subsequent pages that illustrate the increase in complexity between constant volume and variable volume DOAS units.
- 3) System cost. See economic impact from original change proposal. In summary, converting constant volume DOAS units to VAV for a typical elementary school increased the project cost by \$150,000 (\$2.78 per square foot). Annual maintenance costs will increase as well. For comparison, the cost to install a solar PV system to generate similar savings (~1 EUI reduction) would cost \$50,000 (one-third the cost).

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CONSTANT VOLUME MULTI-ZONE DOAS

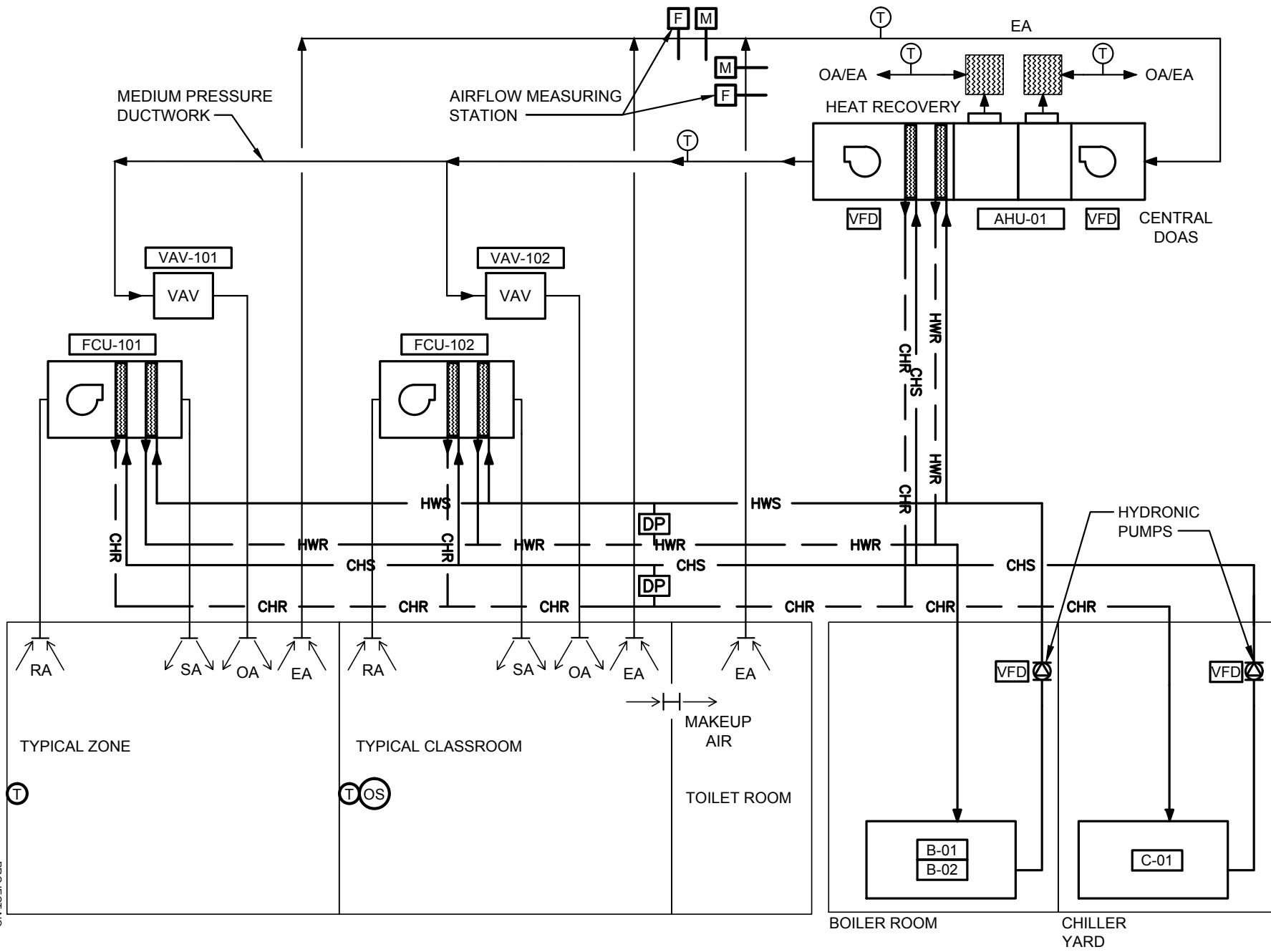


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