Lab 1 (2017): HVAC Site Investigation

Note: As this is your first lab it is worth pointing out that each lab in this course is worth more marks than any single assignment. By saying this I am suggesting that it is worth your time to do a good job.

Groups: Do this work in groups of one or two. Submit one report per group.

Over the last few weeks we have talked about how to lay out duct systems and how to determine the amounts and quality of air provided to people that interact with "The Space". In this lab you will be required to go out into the big world and find a ventilation system and an environment to document. Here is what I have in mind:

- Find an environment that has a ventilation system that is exposed to view. What I mean by this is that there is no solid ceiling system and the ductwork and diffusers are visible. Secondarily, I am interested in you finding a really good example of a ventilation system or a really bad one. Most fall into one of these two categories but by looking for the extremely good or the really bad it will give you something to cheer or complain about and thus will allow you to generate a much more interesting report.

- Us your Phone camera or some other digital camera to visually document the ventilation system with a series of still images.

  Be careful of privacy issues here. I know your photographic work will be directed upward but there are some spaces where people get suspicious of photo taking. Be careful of spaces like washrooms, changing rooms in swimming pools, etc. Not surprisingly many people will question your motives in places like this. If you need/want to, just ask anybody working in your place of HVAC interest if you can take some photos. They will always say yes but the amused looks on their faces as you go about doing this lab is always worth it

- While you are in the space you are examining, note some or all of the following:
  a. How does the air feel (too hot/cool, too humid/dry, too still/breezy)
  b. Is there any noticeable difference between the air at your head compared to your feet? (Often the air is quite stale at floor level because there are many objects preventing fresh air, delivered from the ceiling, from getting to floor level and clearing it out.)
  c. How does the space sound? What makes it noisy or quiet? What could the owners do to improve the situation?
  d. Find and note the location where air enters the supply-air part of the system.
  e. Find and note the location of the return-air duct and where the air finally leaves the space.
  f. Note problems with how "they" have laid out the duct and ventilation system. Make some sketches of what was done and how it might have been corrected. (I do not need anything approaching a complete sketch of the duct system. Don't do it! I only need a few cleanly done sketches that detail good and bad parts of the system.)
  g. In general terms note how well the duct work coordinates with other equipment in the ceiling (electrical conduit, lighting, fire sprinkler heads/piping, etc.). Note areas where an awkward situation has occurred.

h. Note, if you observe them, evidence of air flow control devices. These could take the form of:
    i. Boxes in the ceiling with ducts going in and out that also have wires and tubes attached (VAV boxes, heating/cooling coils, etc.).
    ii. Simply metal rods with a slight bend in them that extend from the sides of ducts near connection points (these attach to control valves called *dampers* inside the duct).
    iii. Thermostats and other environment adjustment points.

- Report on all this.

  Your report should be an organized and coherent amalgamation of your group's written observations and your edited visual record. Please reference and briefly describe each photograph in your report.

  As always, your work needs to wonderfully organized, spectacularly insightful, and stunningly complete … but … fairly brief. I am thinking that the written (actual text) part will be at most 2 pages and the length of the rest will depend on how many photos and sketches you include.

  Email your report to me at: spaulding@camosun.bc.ca.

  IMPORTANT: Format the 'Subject Line' to look like 'me162 - Lab1' - <place group member names here>.

  (It is important to use the course number in the subject because I get about a million emails every day and I'd hate to miss your Lab report email in that great pile of stuff. In short I need a tag I can search for. Thanks.)