

**White Paper #5**

**Service and Access Items – A Designer Checklist**

Maintenance is important to achieve and sustain energy efficiency. Making maintenance a priority is an important part of this. It is equally important to have systems that are maintainable to begin with. The following checklist provides some items for consideration, to help you 'build-in' a maintainable facility.

<b>SERVICE AND ACCESS PROVISIONS</b>	
1.	Will there be drains in mechanical areas and other areas where cleaning operations or splashing can occur ?
2.	Will there be section valves to isolate hydronic systems by floor, bathroom groups, etc. to allow servicing of sections without total building shutdown ?
3.	Will there be secondary drain pans below ceiling-mounted equipment that contains water (that can leak) to allow cleaning ?
4.	Will there be a floor drain and hose bibb in each common area bathroom, in each mechanical room, and within 100 feet of rooftop equipment to facilitate cleaning?
5.	For cleaning purposes, will air coils be limited to 10 fins per inch and 6 rows deep?
6.	Will the roof system have traffic pads to accommodate regular maintenance activities without roof damage? Once the equipment on the roof is drawn to scale, the maintenance areas and traffic paths can be identified to meet this requirement.
7.	Are service clearances shown with dotted lines? These include filter and motor removal zones, coil pulls, tube pulls, compressor removal, VAV box and fan coil controls and filter access, etc.  This will demonstrate that clearance is intended and available, and will facilitate coordination between trades both in design and construction phases. Equipment will need to be drawn to scale to do this effectively.
8.	Can equipment be removed from the building after the building is built?
9.	Can all equipment be reasonably and safely accessed for normal servicing such as: <ul style="list-style-type: none"> <li>• Filter replacement</li> <li>• Belt adjustment and replacement</li> <li>• Motor replacement</li> <li>• Lubrication</li> <li>• Coil cleaning</li> <li>• Fan cleaning</li> <li>• Control panel and control device access</li> <li>• Valve access</li> <li>• Pump seal repair</li> </ul>
10	Are access doors shown in rigid walls and ceilings for access, and are they large enough to work through?
11	For equipment above a lay-in ceiling, is there sufficient room to remove the ceiling tiles for access?
12	Can equipment located over a lay-in ceiling be accessed from the floor by a step ladder?
13	Can equipment located over a lay-in ceiling be removed clear to the floor? If the equipment is larger than the ceiling tiles, have removable ceiling support areas been provided in the Architectural layout?

<b>SERVICE AND ACCESS PROVISIONS</b>	
14	Is there a permanent access to the roof for roof mounted equipment (preferably from indoors)?
15	Are shutoff valves and flanges/unions provided in a location to allow coil or equipment removal (without cutting off a pipe, etc.)?
16	Do all equipment, coils, and control valves have unions or flanges for removal?
17	Are shutoff valves provided to isolate all equipment?
18	Will shutoff valves be strategically located, preferably in corridors?
19	Are drain, fill and vent provisions provided at all equipment?
20	Are drain, fill and vent provisions provided for piping systems?
21	For piping that is racked (above ceilings, in chases, in tunnels, etc.) can each individual pipe system be serviced or repaired? E.g. it should not be 'trapped' by other piping.
22	Is there a blank space (e.g. 24 inches) between successive air handler coils sections for cleaning?
23	Are roof mounted duct and piping supports designed to carry the piping at least 18 inches above the roof to allow re-roofing?
24	Will roof-mounted equipment be located on curbs or raised equipment supports to allow for re-roofing?
25	Will roof-curbs be high enough to keep equipment above normal snow build-up?
26	Are removable sections of durable insulation provided for items requiring routine servicing, such as pumps, strainers, control valves, etc.?
27	Are service platforms provided for equipment on steep roofs?
28	Are service platforms provided for large or suspended equipment?
29	For equipment with multiple manufacturers, have the clearances been designed to accommodate each of the substitutions?
30	Where barometric dampers are used in roof curbs, will they be specified with extended height curbs with access door?
31	Will equipment be clearly labeled (tagged) to match the drawings?
32	Will ASHRAE 15 be met for refrigeration rooms (as ventilation, alarms, self-contained breathing apparatus, doors to outside, no boilers, etc.)?
33	Will air handler access doors swing against the normal pressure of the system, to avoid abrupt opening or slamming?
34	Will there be access doors upstream and downstream of each duct coil, duct humidifier, etc. for inspection and service?
35	Will belt drive units over 5 hp have belt guards?
36	Will plug fans have safety screens over the fan wheel and inlet bell?
37	Will there be hour meters for system leak indication for the following? <ul style="list-style-type: none"> <li>• hydronic make-up</li> <li>• centrifugal chiller purge unit</li> <li>• fire protection dry pipe air compressor</li> </ul>
38	Will manhole covers be round, so they inherently can't fall through the opening?
39	Will storm and waste stacks have clean-outs at the base of the stack?
40	Will there be 24 inches clear in between back-to-back bathroom groups for servicing in the chase?
41	Will there be drain pans under all rooftop air handler coils, even dry coils, for a place for the water to go when being cleaned? The drain fitting need only be capped on the exterior of the unit for these drains.