



Master Planning and Asset Management

Master planning is analogous to creating and following a roadmap. This map begins at the starting point and travels out to an end point. From an asset management point-of-view master planning can be a number of roadmaps based on the following categories:

Building Use Master Plan: A specific building structure, such as a school, will often need to change with the educational program activities. What is taught in a K through 12 school today based on latest educational procedures changes with time. A perfect example of this has been experienced first-hand starting last year with the requirement for students to remote learn. The impact on in-school learning and on-going remote learning will influence the master plan for the school to accommodate students through its Internet infrastructure, hardware, software, etc.

Building Structure Life Cycle Master Plan: A building ages and the materials that make up this structure will age too requiring modernization of the facility over time. Buildings have a useful life cycle and then it will often be renovated, sold, or torn down.

Building Utility Infrastructure Master Plan: With every facility there is its mechanical and electrical systems, as well as telecommunication and life safety systems. These infrastructure assemblies usually have shorter useful life cycle than the building itself. A heating, ventilating, and air-conditioning (HVAC) system serving the building will be made up of equipment and parts each having their own end-of-useful-service life.

Building Change of Use Master Plan: Programs change and so do facility applications. A master plan evaluating the current use and future need and/or use of a facility can often lead to reassessing the building application. A common, popular example being an elementary school eventually becoming outdated and renovated to serve another use for the organization e.g., conversion to assisted living, apartments, condos, etc.



So what is an asset manager to do to develop master plans for the building he or she is responsible for, the long range use of this building, and the infrastructure that supports the building? Probably the best approach is to draw upon a select few individuals and form a master plan committee. For this discussion, we'll focus on the master planning of the HVAC systems serving an elementary school.

The steps in this master plan process should be similar to most other plans, although the type of planning may be different based on the 4-types of master planning noted above. The purpose of this HVAC Infrastructure Committee will be to assess the existing conditions of the HVAC systems, score these conditions in a "facility assessment" process (refer to June 2019: [Facility Assessment = Your Building Condition Index](#)). When completed with this scope of work and the committee has voted their approval, then it is time to submit this master plan with its recommendation to those in charge of the organization. But, before we jump ahead to this submission here are some prerequisites:

The Committee:

- Assemble a select few to make up the committee who have education and/or experience with HVAC equipment and systems. Ideally the members should collectively have experience in design, construction operation, maintenance, service, and estimating.
- Vote on a committee chair-person and secretary. Others will be committee members but may have assignments as the lead with specific assignments e.g., heating system committee sub-chair, maintenance sub-chair, etc.
- Task members should be comfortable with contributing to decision-making discussions.
- Draft a tentative work schedule to keep the process moving forward in a timely manner.

Quality Control Process: The committee should consider and select a time-tested problem-solving method with the most successful based on quality control, a.k.a., Six Sigma, Total Quality Management, LEAN, etc. With each of these known problem-solving systems their foundation is based on the following:

- Select a Theme: *HVAC 10-Year Master Plan 2021-2030*
- Data Collection: *Existing Equipment Database using survey. Checklists, photographs, histograms, pareto chart, etc. Also current code compliance, latest guidelines, etc.*
- Data Analysis: *Condition Assessment Scoring based on categories such as physical appearance, vibration, etc.*
- Solution Planning: *Year-By-Year Facility Budget to repair or replace equipment, systems, technology, etc.*
- Draft Master Plan: Based on data collection, analysis, solution, cost, and timeline recommendations.

The Master Plan:

- An introduction into the purpose and the goals of this initiative.
- Provide existing condition facts and “Basis of Design” documentation of existing systems.
- Score the equipment and systems as to their physical conditions, repair records, and design intent.

- Consider current technology and potential future technology as it pertains to HVAC, space criteria, human comfort, the environment, and operating cost.
- Draft a revised “Basis of Design” based on the building application, current thinking, and future use of the building.
- System-by-system assessment, costs, estimated remaining useful life, and system summary.

The HVAC Systems Committee should forward a copy of the master plan to those responsible for the organization’s asset management, annual operating budget, and long-range planning. This presentation should be visual, as well as technical. As the saying goes, “A picture is worth a thousand words”. It is also important to note that there is never one answer.

With the facility assessment index the finding may be very encouraging but the building itself may require too much investment from a programming point-of-view e.g., with a growing program more space is needed than what this facility can provide, and it may influence the decision to sell the building and move, or build a larger building for the application. Therefore, other issues should be taken into account utilizing the Building Use Master Plan and the Building Change of Use Master Plan.

The Diocese of Cleveland Facilities Services Corporation is available to assist and will work with you to review your site, identify capital improvement opportunities and help you build a 5-year capital plan.

For more information:
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