



The Equipment Survey: Assuring A Strong Foundation For Integrated Laboratory Design

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"25-37-18." Football play? The lottery? Bingo? No, it's the sound of an equipment survey in progress. An equipment survey of existing instrumentation in the laboratory is a valuable tool that will be referenced countless times by the project team during the planning and design of a renovation project or new forensic facility. How does an equipment survey work and what types of information are collected? Why is this information important to the design team? What impact does the survey information have on design? This article addresses these questions and will help you to understand how an equipment survey is an integral part of the foundation of a facility construction project.

How does an equipment survey work? The survey can either be initiated by the in-house staff or can be part of the services rendered by the design team for a project. The act of surveying and the intricate nature of the data management can be a daunting task for the in house staff. Without a firm understanding of the importance of the data collected, quite often in-house surveys will lack critical design information. However, even when the equipment survey process is contracted to a design team, the first part of an equipment survey still starts with the end user.

Our information collection process begins a few weeks before the survey team arrives on site. We begin by sending the in-house staff a packet of materials that includes a welcome letter, instructions, and the necessary tools for pre-labeling equipment for the survey team. One easy method for the labeling process is providing the lab with a series of dot stickers in green, yellow, and red. Green dots on a piece of equipment denote that the instrument will be moving to the new facility, yellow dots indicate that an item may or may not be moving, and red dots visually explain to the team that an item is not relocating to the new space.

Once the pre-survey identification process is complete, the survey team will arrive on-site to conduct the actual survey. The colored stickers alert the design team which equipment requires survey, allowing them to move silently through the lab collecting data without disturbing employees from their work.

What exactly needs to be surveyed? What the team surveys will depend on the specifics of your project. Often almost everything in the lab is surveyed. On some occasions only equipment of substance will be surveyed. Equipment of substance is defined as items which require infrastructure for support, require special floor or bench space, or have other critical needs that should be documented such as vibration sensitivity. Examples of potential infrastructure support include:

- Items which require water and drain connections.
- Equipment utilizing services such as vacuum, air, or a specific gas.
- Items which require nonstandard electrical such as 208V or emergency power.
- Equipment which requires building exhaust connections for venting.

Each piece of equipment and its ancillary component have an individual survey sheet. The sheet includes basic information: manufacturer, model number, dimensions, mounting requirements, and infrastructure requirements. The survey team will also document each piece photographically. The surveyors will also examine equipment for any helpful information on the unit itself, such as name plates that often list additional critical information. Last, the team will survey

each existing laboratory space as a whole, noting equipment adjacencies, and will often include a scale drawing of the room to show relative distances.

After the survey is complete, the survey team will review and compile the survey information into an equipment matrix or schedule. Once the information is finalized it is communicated to both the laboratory and to the design team, who use that information to help design the new space. The overall process from pre-labeling to a final equipment matrix is anywhere from 4–6 weeks depending on the amount and types of equipment surveyed.

Why is this information so important to the design team, and how does an equipment survey add value to your project? There are several ways in which the survey can be used, both by the end user and the design team. For the end user, the survey process allows the laboratory to reflect upon both equipment and needs. Have you been making a plan for equipment replacement? Have you considered the move management aspect of the new facility in design? The survey can assist the end user with both. For the design team, the survey is crucial in planning for equipment needs; it informs laboratory designers of specific equipment needs that impact casework and flow design and it instructs the engineering team on the specific needs of each instrument.

The laboratory planning staff will use critical adjacencies to better design the future laboratory to take advantage of spatial needs for the equipment along with the rhythm of the work process for a given section. Units such as DNA have very linear workflow processes. Taking into account equipment survey information and the associated instrumentation for a process as well as the physical size constraints and infrastructure needs are key development tools in the laboratory layout and design process.

In a similar fashion, having precise equipment information is critical for the engineering team in the planning and design of the infrastructure of a building that specifically supports your instrumentation. Coming back after-the fact to supply additional gas lines or to provide ventilation where none was provided can be unsightly and awkward. Most important, afterthought construction will be disruptive to your laboratory and process and may not function as well as required. There is

no substitute for upfront planning and design in regards to building infrastructure and support.

For the laboratory, utilizing the equipment survey information as a basis for move management can help relieve some of this daunting task. Having a list of all of your equipment and manufacturers is a solid start in beginning the move documentation process that often includes contacting vendors for move and recalibration services. Additionally, having an annotated list of equipment that corresponds to a drawing showing equipment locations in the new facility is a tremendous help in the chaos of the move.

The equipment survey is an exacting and precise tool that forms the basis of understanding for all design team members. It is the common guideline on which everyone operates. Without this level of coordination, details will undoubtedly fall through the cracks and the final project may fall short. The process of collecting this information can be very tedious and time consuming but the ends justify the means. The solid foundation of an equipment survey rewards both the laboratory and the design team with the exacting information required for the design and construction of a laboratory facility that meets and exceeds the specific needs of the scientists and the scientific process.

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