A Clinician's Guide to Construction/Renovation Project Success

At sometime during your career you will probably be involved in a renovation project or have the opportunity to work with a team creating a new healthcare facility. Long before the first shovel hits dirt or hammer is swung, you will find yourself committed to many hours of planning meetings with non-clinical professionals such as architects, contractors, designers, and facilities staff. You will be part of the project team. Since Construction 101 is generally not in the typical clinical core curriculum, this paper is written to give you a summary of processes and responsibilities involved in construction projects. It is intended to give direction on ways you can successfully participate to ensure patient welfare and clinical efficiencies are considered in both the planning and implementation phases. The following topics provide guidelines for a successful project:

I. Your Role

You will be the liaison and interpreter between your staff and other members of the construction project team. So, get yourself a hardhat and plan on taking on a part-time job.

- Be an active involved member of the planning team as early on as possible.
- As soon as you hear an architect has been hired, find out when you can start attending planning meetings. It is never too early to become involved.
- Try to keep a copy of the most up-to-date plans. This way you can keep up with progress and revisions.
- Keep a current plan located in a strategic location so staff and physicians can become familiar with the project.
- Take your own project meeting notes. You can double check them with the architectural minutes to make sure you don't forget anything. You should be on the mailing list for project meeting notes.
- Involve your staff: Invite key members of your department to architectural planning sessions.
- Form a staff planning committee and meet regularly for feedback and plan reviews. Involve a cross section of staff from different shifts, those that embrace change and, yes, those that are most resistant.
- Create flow charts of critical work processes. Determine what your problems and issues are with your current plan. How will these processes be supported in the new plan? Examples of processes to consider include chart flow within a department, supply flow and storage, soiled/clean linen flow and clean/soiled instrument/procedure tray pathways.

II. The Project Team

Core members of the project team typically include architects, general contractor, designers, equipment planners, project coordinator (typically from hospital administration) and someone from the facilities department.

Architect:
Many healthcare organizations have their own architectural staff. Even if they do, contracted architects are frequently employed for many projects. Their responsibilities include:

- Gathering functional information about how you work
- Determining how much square footage is needed
- Designing the layout of the space
- Specifying construction materials
- Developing project budgets
- Producing all the architectural drawings (plans or blueprints)
- Issuing change orders

General Contractor:
This may be an in-house crew or independent general contractor depending on the scope of the project. Their responsibilities include:

- Following the architectural plans while building
- Hiring subcontractors such as electricians, plumbers, carpenters
- Staying within the construction budget and timelines
- Implementing change orders

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Facilities Department:
Most facilities personnel have a construction or engineering background. They need to become your “new best friends.” Anything you don’t understand or need help with they can be the best place to start. Their responsibilities include:

- Interface with all project team members
- Keep project on schedule
- Supervise in-house construction staff

Equipment Planners:
An independent equipment planner is often employed to provide a number of functions related to equipment and/or furniture. They are either contracted through the architect or through the hospital. Functions may include:

- Providing an inventory list of your department that includes existing equipment and furnishings - those which should be moved and used in the new or renovated space, those that need replacement and any additional items required (This inventory will be helpful for your use during the planning process)
- Assisting in establishing capital equipment and other equipment budgets such as for carts and furniture
- May be contracted to either coordinate or purchase equipment needed for the project

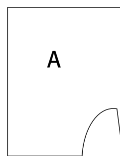
Be sure to provide input to the equipment planner as to what your preferences are before he or she specifies something you may not want. If you do not have an equipment planner on your project, develop your own inventory and equipment lists.

III. Plans and Space

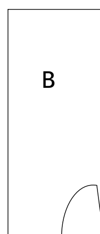
Reading architectural drawings: Drawings or plans are produced in reduced scale. The two most common scales are 1/8 inch equals 1 foot and 1/4 inch equals 1 foot. Once you have your first plan to review, get a scale or architectural ruler to help read the drawings and determine the planned size of spaces.

Relating plans to space:
Once you can read the blueprints, relating them to your frame of reference of space is critical in planning. Here are a few quick tricks:

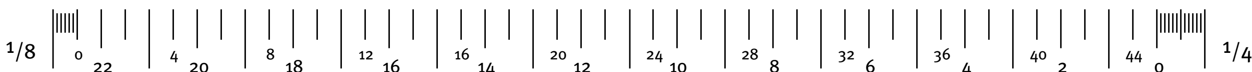
- Find a room in your current department such as a patient room or supply room. Measure the size of the room. A room that is close to 8 foot by 10 foot is a good manageable frame of reference. You can then relate the size of your room to a comparable size room on the plans.
- Measure doorways both on the plan and in your department. Doorways are usually standardized in an acute care setting to 42 inches or 48 inches wide. Are these doorways going to be used by people, carts, beds, linen tubs?
- Code requires acute care hallways to be at least 8 feet wide in public spaces. In spaces the public cannot access, hall-ways must be at least 5 feet wide.
- Compare the new space with what you have. For example, if the supply and equipment rooms are changing sizes, compare the new space with what you have.
- The amount of square footage doesn’t always provide a guide for actual useable space. The two rooms shown here give examples of different shaped rooms that are the same square footage.



Room A would make for a good equipment room because of the amount of space in the middle of the room for equipment needing floor space.
Not to scale
10' x 12'
120 s.f.

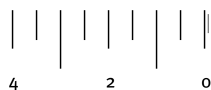


Room B would make a better supply room as the wall space can be used for shelving.
Not to scale
8' x 15'
120 s.f.



Examples:

4ft (1/4" scale)



4ft (1/8" scale)

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IV. Planning, Programming and Blueprints

Perhaps the most misunderstood part of a construction process is what the architectural process is and when you need to be involved. What is put down on paper is what will turn into bricks and mortar. Understanding what is involved in each phase of the architectural process will help you make the right decisions at the right time.

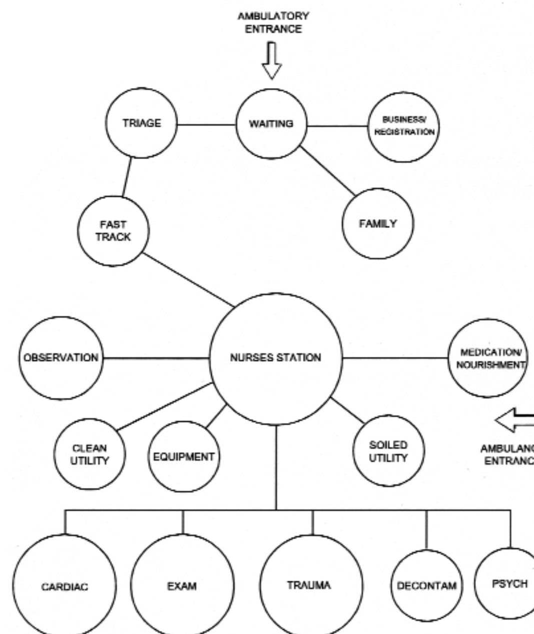
Initial architectural programming
The process of data collection that includes answers to many questions such as:

- The amount of space needed
- The types of rooms and/or areas needed
- The amount of workstations necessary
- How work, people and materials should flow through the new space
- What equipment needs to be accommodated
- The type, size and location of all storage areas
- Requirements for services such as telecommunications, pneumatic tubes, data systems and medical gases

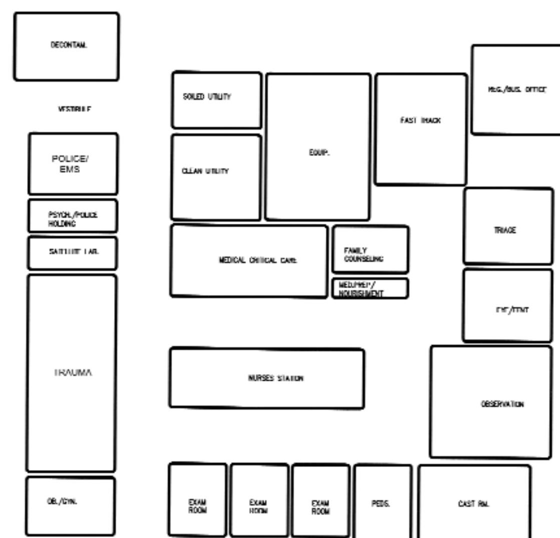
Schematic design
Early architectural drawings of your space outline placement of rooms, corridors and work areas. This phase of planning is when you should be getting a good sense of adjacencies between different workspaces, sizes of rooms and general workflow patterns. This is the more prudent and cost effective stage to move or adjust walls. For example:

- Does the nurse station need more square footage?
- Can office areas be reduced to make room for more critical clinical spaces?

Bubble Diagram
Functional adjacencies are shown (i.e., what functions need to be next to each other).



Block Diagram
Space is starting to be assigned relative to the other areas.



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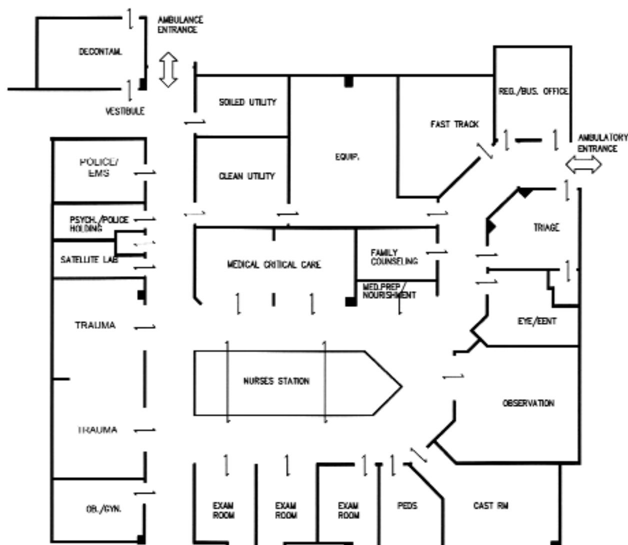
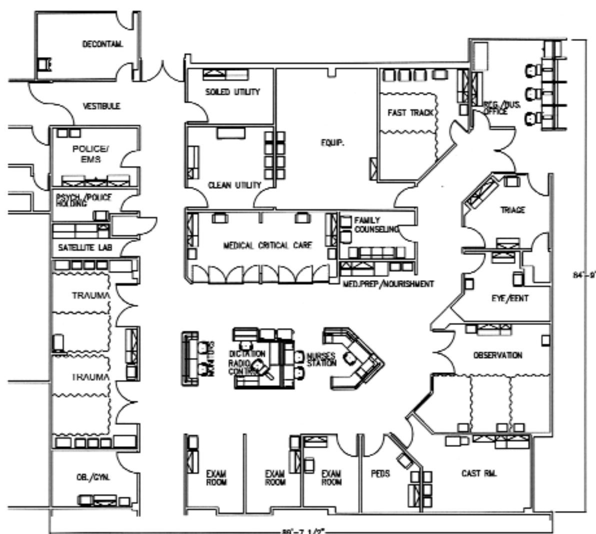
Preliminary Plan
Corridors are added and the plan shows movement.



Schematic Plan
Some furniture is placed to show size of rooms and how you might move space.



Design development
At this stage of the project, walls, windows and doorways have been placed. Detailed drawings that include equipment, cabinets (particularly if built in and fixed) and furniture layouts may be included here. Plumbing and other fixtures are shown.

Note: The more detailed the architectural plans become the more difficult and expensive it becomes to make changes. The earlier you are involved, the more influence you can have in your new space.

Construction drawings
The final architectural drawings that will be provided to all subcontractors and used to build the space. ANY changes made once construction drawings are issued require a change order. Each change order has a cost to it. This is not a good time to make anything except absolutely necessary changes.

V. Being a proactive participant

Now that you have an overview of the planning process you can be proactive by doing a lot of homework. Once you know when the project is going to begin you can begin the legwork necessary to be armed with all pertinent data.

Don't let anyone tell you it's too early to start determining your department's needs. The earlier you have information, the more appropriate input you can give early on in the planning process.

Internal resources:

- An essential place to start is with your information services department. When planning workspaces such as nurse stations and patient rooms, many of the issues will relate to technology. Discuss technology for your department and facility for the next 2 to 5 years so your department plans can be designed with enough flexibility to support change.
- Meet with key support department heads. Their future plans may impact your department. Or, you may be considering changing a work process that impacts another department. For example, decentralizing supplies would affect materials handling. In either case, input from these departments can provide you with valuable decision making information and ideas.
- Visit other departments that have undergone recent construction, renovation and/or have purchased new equipment. Get their feedback on how the process was managed and the quality of the decisions made.

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- Check with the purchasing department and facilities department to see what current information they may have from vendors about new equipment. The Internet is also an excellent source of product information.
- Depending upon the scope of the project it may be practical to build a mock-up room, for example a patient room, trauma room or an OR somewhere on your campus. This is a great place not only to actually see the proposed size of the rooms but also to have mock-up product and equipment brought in for staff to see and touch.

External resources:

- Your peers in other facilities. If you already haven't done so, talk to managers who have been or are going through their own construction project. Visit their departments and have them share their experiences with you.
- Sales reps. Word gets around the sales community pretty quickly so sales reps may be contacting you before you think you are ready for them. They are a great resource for up-to-date information and future trends in their industries and for references regarding other new facilities. They should have a list of installed or built sites for you to see or key contacts for you to talk to. Trial and mock-up products are frequently available to assist you and your staff in making purchasing decisions.
- Site and/or factory visits. Many people feel that a site visit to another healthcare facility is as good or better use of their time than the traditional factory visit. Some of the advantages of a factory visit include being able to see the full range of products and services available to you from a manufacturer and obtaining customer references.
- Professional meetings. Professional meetings that have large exhibit areas provide the opportunity to see many different kinds of technology and to touch, move, and learn product features and benefits in a short condensed period of time. Registering at each booth may not only get you a free gift, but also put you in touch with a local representative.
- The Internet. More and more manufacturers and professional organizations have Web sites that will let you research information and/or shop right from your office. Professional organizations such as the American Institute of Architecture have Web sites with articles on architectural trends and current projects.

VI. Demolition/Construction...Time to get out your hard hat.

Many construction projects, especially renovations, are phased construction unless you can relocate to another hospital space or temporary building during construction. Disruptions in operations, patient care delivery and compromises of work areas are to be expected. Working closely with project team members including infection control staff will ensure a smooth process.

- Identify your priorities for the order of phasing and match them with the reality of construction constraints.
- Get as realistic a schedule as possible, accepting the fact that time lines are bound to change.
- Keep your staff up to date so there are a minimal number of surprises for them.
- Visit the construction site frequently. As the building is being completed it will be easier for you to visualize what was on the plans. You will also be able to recognize situations that do not match the plans. It may be something as simple as a missing electrical outlet or a thermostat placed where furniture or equipment will obstruct it.
- When construction is far enough along, usually after the drywall is put up, bring your staff through and start orienting them to the new space. A three-dimensional space is very different from the flat blueprints you have been reviewing for a long time.
- Keep your sense of humor! Generally, even if you had to make some compromises, the new department will be better than what you are currently working in.

VII. The Move – Transition Phase

It is, unfortunately, more the rule than the exception that timelines will slip. Weather and unforeseen existing conditions are only two of a long list of complexities that will have an impact on your timeline. Include contingency options in your planning for the move.

Whatever you do, don't leave your move plan to the last minute. Depending on how the purchasing process is done, any equipment that is not fixed or wired to the building may be able to be put in use while your new space is under construction. For example, if you are getting new carts for supplies or specialty equipment, an early purchase may be possible so that you can load and label the carts prior to the move. It would be a good time for the vendor to provide staff in-service and training, and for your staff to get used to supply/equipment placement.

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There will need to be a plan for thoroughly cleaning the new space and for scheduling the move of equipment from the old space. Clinical procedure schedules will also need to be accommodated. For instance, when moving to a new surgical department, when will the last surgeries be scheduled and how will emergencies during the move be supported? When will scheduled surgeries begin in the new facility and at what capacity level on day one?

Settling in takes a little time. Give your staff 2 to 3 weeks to get themselves oriented, know where things are and adjust to new workflow patterns. Try not to make any dramatic changes from your original plans until this period of time passes. Once the initial settling in is complete, criticisms tend to diminish and the true need for changes can be identified.

VIII. The Punchlist

Keep a written list of things you or your staff (they won't be bashful!) identify that may need fine-tuning. This includes all furnishings, equipment and construction issues. These issues should be communicated and acknowledged by the general contractor or vendors sometime shortly after you take possession of your new space. These communications may go through the facilities department or project coordinator. Either way, each item needs to be reviewed with the individual who will be responsible for correcting the situation.

Conclusion

All in all, the process of renovation or new construction can be challenging and fun if you are well prepared. You are the key to creating a more effective, functional and efficient clinical department that supports both staff and patient care. This is your opportunity to make a difference in this important work and care environment. If you have further questions or would like to discuss the processes mentioned here in more detail, contact Herman Miller for Healthcare. Our consulting, design, and sales representatives would be pleased to share their experience and expertise with you and your team.

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