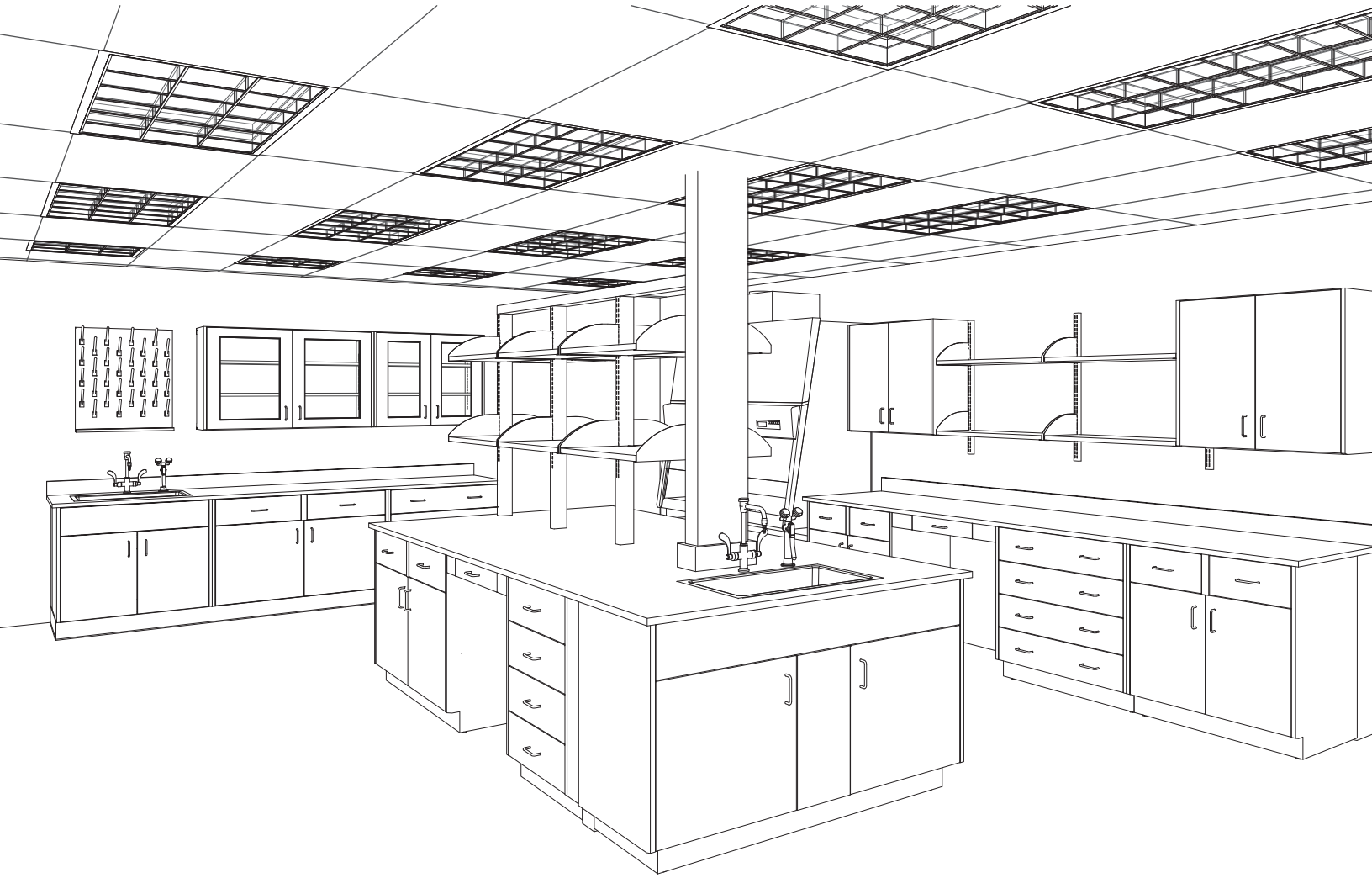
Lab Layout and Design Considerations



Developing Project Goals

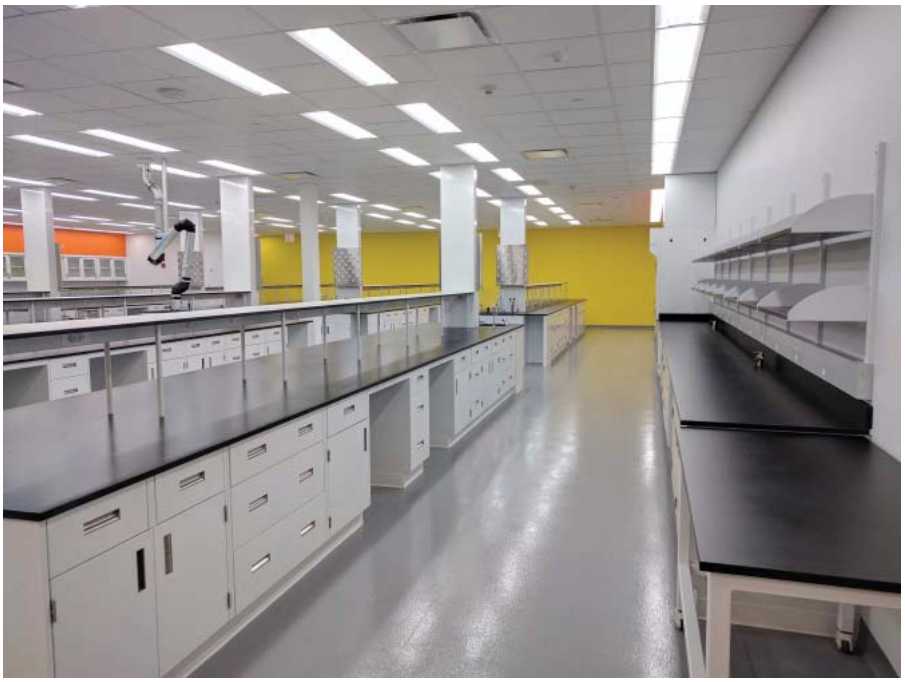
Your project timeline could be as little as a few weeks to as much as a few years. We are here to help minimize this process. We can help to formulate a clear understanding of the project goals and navigate normal project pitfalls.

A Project team needs to be selected
The team will need a captain to ensure that the project will run smoothly. The team should consist of the people who understand all elements of the project, from the fundamental design, to how it will suit current objectives and future requirements. The team will be responsible for establishing budgets and developing schedules.

The Team should include:

- Facilities Operations and Management - These are the people to help determine if the design meets facility guidelines, maintenance requirements, and available utilities
- The Health and Safety Officer at the facility to ensure compliance with site, state and federal safety codes and guidelines
- Laboratory Management for the lab space
- Individuals that will be using the lab space
- One of our Sales Representatives

The team captain needs to organize the members and guide them on their contribution to the project. That person will document details, developments, changes, and keep the project on track.



Lab Layout & Design Considerations

We suggest following a basic set of considerations for general laboratory layout & design. It is not intended to be a comprehensive list, but it will be helpful in the review of the needs & requirements for most laboratories. This information will form a sound foundation for the interaction with our lab design team on the layout of furnishings for your lab.

1. Determine the general purpose of each lab, support or work space:
   - Number of people
   - Amount of bench required per person or per operation
   - Number of fume hoods or biological safety cabinets
2. Confirm the rough lab spaces & sizes needed and their locations within the building:
   - Review service runs required
   - Confirm the floor to deck space in the labs
   - Inspect proposed mechanical distribution and passageways
3. Engage your Environmental Health & Safety person as well as Facilities Operations & Maintenance for input
4. Develop a lab equipment listing reflecting the sizes of each piece, service requirements and respective heat loss:
   - Confirm if the equipment will fit on the bench or floor and consider future operations and needs
   - All equipment should be placed into a plan view drawing to confirm fit and flow
   - Review overall voltage and total amperage needed for the project
   - Review venting requirements, data connections, and any ancillary equipment needed
5. Examine the proposed lab layout & work flow:
   - Confirm that the lab will fit the process
6. Review the need for flexible, open space in the lab layout, consider future needs
7. From a historical perspective, review what's working and not working in the current lab
8. Review specific needs within the lab for:
   - Radioactive or biological materials
   - Hazardous operations
   - ADA compliance
   - Access for rolling equipment
9. Confirm the need for ancillary lab space or other space that makes the rest of the lab work more efficiently:
   - Sample Receiving
   - Work in process
   - Glass wash/prep areas
   - Equipment support space
   - Offices or desk spaces
10. Examine lab storage needs:
    - Supplies
    - Glassware
    - Chemicals
    - Samples
    - Receiving

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11. Review hood selection and distribution in the lab:
    - They should be sized to safely fit the purpose
    - Provide access for people, equipment, & the process
    - Positioned correctly within the lab
    - Confirm plumbed and wired service needs
    - Confirm the HVAC requirements and the need for both supply and exhaust air systems
12. Confirm the effective separation of lab areas:
    - Lab and office
    - Higher and lower areas of hazard or chemical use
    - Sinks & electronics
    - Safety showers & electronics
    - Centrifuges and balances
13. Review needed availability & service distribution in the lab:
    - Deck mounted pedestals
    - Wall mounted fittings
    - Overhead service panels or carriers
14. Review lab lighting & orientation for effective illumination of the work spaces
15. For sinks, review location, size, purpose & services needed
16. Confirm locations for:
    - Coat racks
    - Safety Glasses
    - Gloves
    - Shoe Covers
    - Tack mats
17. Review room air changes needed within the lab and storage spaces
18. Review aisleway clearance
    - Code considerations
    - Passage of equipment
    - Avoid back to back chair arrangements
19. Confirm the placement of all lab safety fixtures and equipment:
    - Eye washes
    - Safety showers
    - Fire blankets
20. Review the need for controlled access to the lab and support spaces

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