Laboratory Renovation at WalCoMet

Planning, Design, and Implementation
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Walworth County Metropolitan Sewerage District
This Map Shows the WalCoMet Sewerage District 70-Square Mile Service Area
Planning the New Lab

• Determine needs

• Examine current use
Original Floor Plan 1981
Planning the New Lab

Draw out existing layouts for each station on ¼ or ½ grid paper

- TSS
- Ammonia
- BOD
- Phosphorous
Planning the New Lab

Design an ideal layout for procedure.

Place sink, meters, work area

Locate major equipment

Incubators
Dishwasher
Storage

Glassware
Chemicals (temp. Or light sensitive?)

Acid or caustic storage.
Ammonia, pH work station
# Drawer and Cabinet Inventory

<table>
<thead>
<tr>
<th>OLD Lab</th>
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</thead>
<tbody>
<tr>
<td>Laboratory Drawers + Cabinets</td>
</tr>
<tr>
<td>Sizes &amp; Quantities</td>
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<table>
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**Note:**
- Need 46
- Need: 2

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**Note:**
- Need 74
Specialized Areas

- Sample reception
- Personal Hygiene and PPE
- Hoods
- Storage
Our Wish List

A window
Separate sample reception area
Separate sink area for personal hygiene
More storage in lab
Shelves above benches, reduce clutter
Move all incubators and refrigerators to lab
A second door
Integrate LIMS system at stations
Better traffic pattern
More electrical outlets
Planning the New Lab

Consider

Flow of work within the station
Traffic flow between stations
Flexibility
Future needs
Specialized Needs

• Ventilation
• Utilities: Electric, Gas, Vacuum, Air
• Computer

Cabinet Selection and Esthetics

• Colors
  • Basic wall colors fixed to match existing plant
  • Cabinets
• Floor
An initial submittal from a bidding sub-contractor.
Plot location and space for equipment and procedures
What do we do with the Lab During Construction?

• Maintain Lab Functions?
  • Permit Compliance
  • Process Control
  • Billing

• Options
  • Set up a temporary lab
    • Adequate space
    • Clean
    • Temperature control
    • Electric
    • Computer access
    • Water & drains
    • Ventilation
What do we do with the Lab During Construction?

• Or: Use a certified lab?
  • Cost
  • Sample preparation
  • Delay in data for process control
  • Enter data into our LIMS system

• Our Choice
  • Set up a small workspace in a shop
  • Only pH and DOs done on site
  • Temp. Computer in Instrumentation Room

• Not anticipated: Problem entering data received as “parameters” not “calculated variables”
What do we do with the contents of the laboratory

Solution

• Instruments, equipment, and supplies packed up and stored in basement of administration building.
• Refrigerator and Incubators turned off and stored in hallway
• A small storage room contained acids and flammable cabinets
• Use consumables before move
Packing Up
• Demolition
Construction

• Stay out of the way
• Follow channels of communication
• Study the plans
• Develop a relationship with the tradesmen
• Observe the progress
• You may be the only one with the complete picture.
Observe where utilities run before the ceiling is installed.
Partial Floor Plan
Make sure electrical service is adequate
Lessons Learned

• Good Choices
  – General layout and flow
  – Cabinet color
  – Bench tops
  – Utilities
  – Specialized areas and workstations
  – Lab office
Lessons learned

• Lesser choices
  – Stainless steel in Sample Area
    • Delineates area but requires more care
  – Selection of modular shelves above benches
    • Eliminate clutter and work well
    • Shelve that extend forward limit areas tall equipment can be used. (burets, lid of centrifuge.)
    • But shelves are modular and can be replaced.
  – Shadows below some shelves.
    • Can be corrected by installing area lighting below.
Lesson learned

• Lesser choices 2
  – Wasted area between hoods and upper shelves at wall.
    • One area usefully contains DI water system
    • One area poorly used. Could be more useful with a cup drain, cold water tap and electric outlet’
  – Bench meters not integrated into LIMS system.
Lessons learned

• Mistakes to avoid.
  – Flooring
  – Include label holders on cabinet doors & drawers
  – Include a garbage disposal?
Happy! Happy!

Window is great!
• Lots of space
• Comfortable
• Flexible
• Easy to organize work
• Efficient
Phosphorous
Solids Area

Sample Receiving