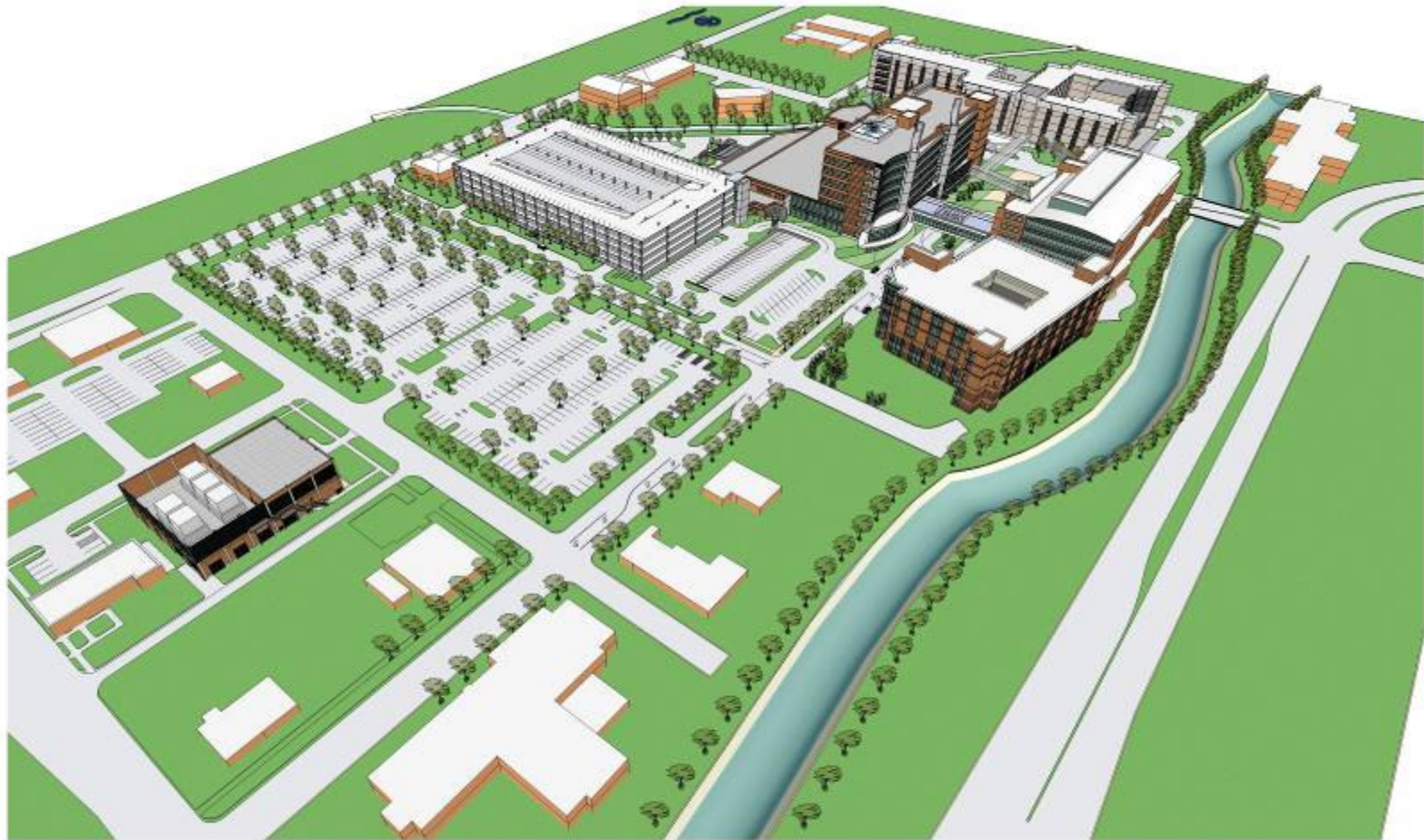


Salem Hospital Campus



Salem Hospital Campus



Central Energy Plant



New Patient Care Tower



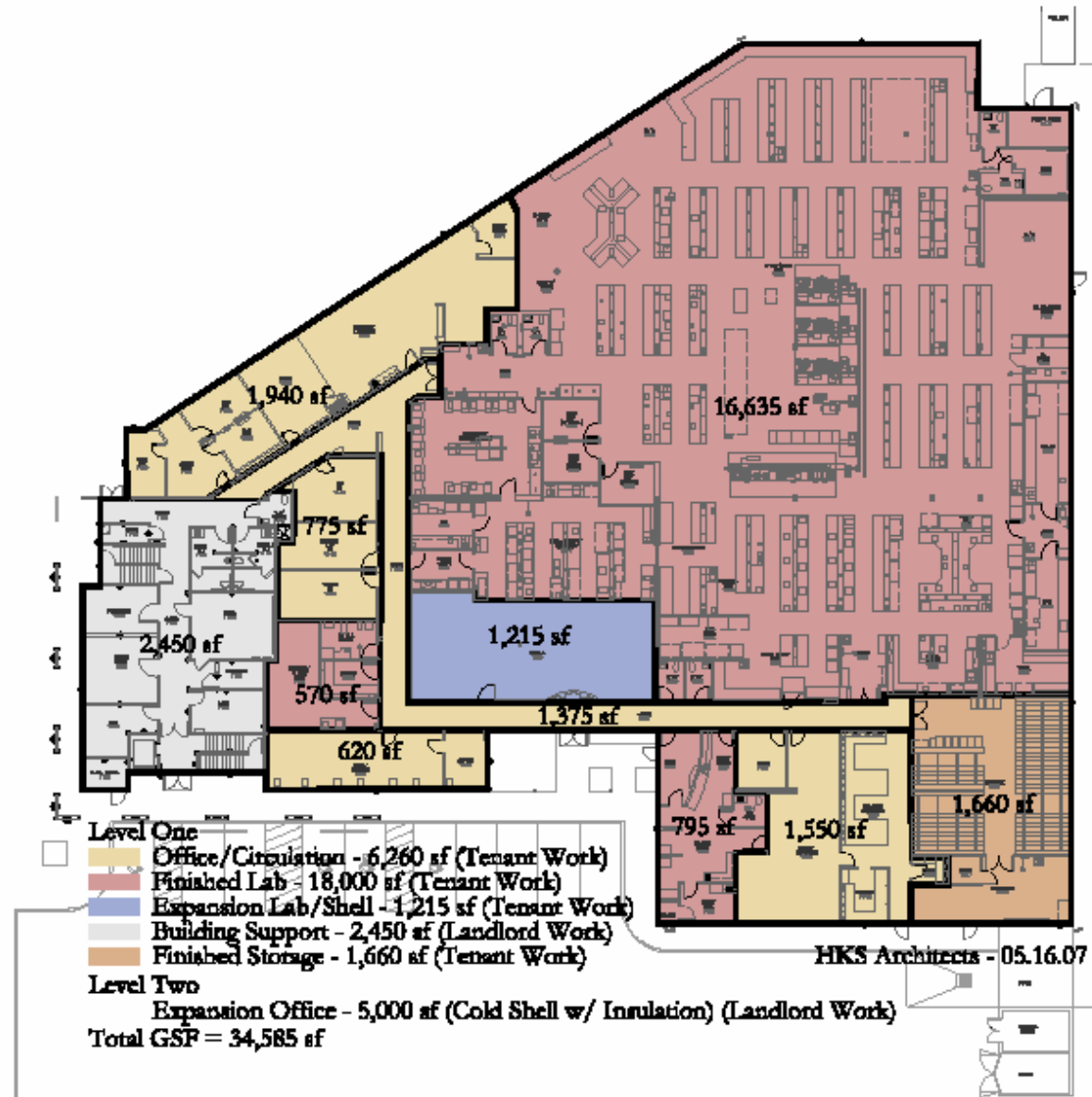
Regional Lab



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Regional Lab Floor Plan



Commissioning Goals

- Maintain focus on quality and proj. req'ts
- Achieve high level of assurance that equip. & systems are as intended
- Help ensure issues are thought through
- Do it right the first time -- reduce need for rework and callbacks
- Foster communication and cooperation
- Provide clear record of issues and resolutions

Commissioned (Cx'd) Systems

- 4 rooftop airhandlers (2 with heat recovery)
- 18 exhaust fans
- Bio-Safety Level 3 (BSL-3) lab
- Domestic hot water, lab water, pure water
- Xylene treatment & waste pre-treatment
- Lighting control
- Electrical switchboards
- Emergency generator & ATS's

Commissioning Services

- Owner's Project Req'ts, and Basis of Design
- Cx plan, and incorporating Cx in specs
- Design review
- Meetings and site visits
- Pre-functional checklists
- Functional testing
- O&M review
- Oversight of training, TAB, duct & pipe testing
- Warranty phase review

Highlight on Design Phase

- Owner's Project Requirements
 - We asked the questions and recorded the information
- Basis of Design
 - We requested and provided guidance to the engineer
- Cx plan (x2)
 - Details Cx roles, responsibilities, process
- Cx in specifications / project manual (x2)
- Design review
 - Requirements for each design submittal?
 - Engineer was asked for his quality control procedures

Challenges Encountered

- Coord'n between Developer and TI team
 - Two projects instead of one
 - Developer use of TI engineering firm
- Getting timely and complete response from engineers
- Getting Cx in Developer Project Manual
- Managing scope and expectations
- Information management

Early Benefits of Cx

- Creation of OPR and BOD
- Realization of improved set of CD's (especially for BAS controls)
- Savings from not putting temporary controls & ductwork on RTU-2
- Early identification of insufficient space in electrical switchgear for TI

Summary Advice

- Create and implement a plan for quality
- Assign someone whose primary responsibility is quality
 - Someone who sees the big picture, attends to detail, and relates well
- Clearly define and cover all needed scope
- See “Building Operating Management” article of Nov. 2005 on Cx