

Report Summary

In general, all the repairs and upgrades noted for 607, 608, 648, and 619, with few exceptions, are not discretionary; they are required for the University's programs in these buildings to remain viable. The reasons are not unusual for buildings of their age and function; the systems have exhausted their usable life span, and life safety requirements and accessibility codes that are common place today did not exist when these buildings were built.

Building 607/608 (SEL) is basically a good building, but because of its age, it needs significant renovation to remain viable. And despite some basic planning deficiencies, once renovated, it should serve the University Teaching and Research needs very well for decades to come. The cost to make the necessary improvements will be significant, but should be within the normal range of renovation costs for such a facility and will result in a very serviceable building.

Building 648 (ERF) is the newest building and overall is in fine condition; however, it does require some repairs and upgrades to be made to remain viable. The cost for these repairs and upgrades should be the least expensive of these buildings and will be a very sound investment.

Building 619 (SES) has such a significant list of problems that must be addressed; it is unclear whether it is reasonable to think that this building will be able to serve the University in its present function much longer. The reason for such a dire estimate is based upon its age coupled with its design. Similar to SEL, it is normal for a building of SES age to require significant upgrades; there is nothing unusual about this condition. The serious concern that we have stems from many aspects of its design. Making the necessary repairs and upgrades may well be more expensive than replacing the building. And if the decision were to invest in the necessary repairs and upgrades, we are concerned that the resulting building will not meet reasonable expectations for a modern research facility.

The Science Library on the 3rd floor of 619 is inadequate in almost every regard. Seating is substandard; lighting is uncomfortably dim; heating and cooling fluctuates widely; leaks have damaged materials, furnishings, equipment and carpeting. The stacks can only shelve about one quarter of the library's important collections; the balance is scattered in six separate locations across and off campus.

The overall purpose of Phase 2 of this study is to confirm and quantify the preliminary findings of the above comments and to develop a reasonable game plan for moving forward to address the many requirements for these buildings to remain viable.

System by System Summary Notes

A1 Structural System: 607, 608, 648, & 619 are very acceptable, rigid, and serviceable for an indefinite period of time. The first floor slab-on-grade in 648 has settled significantly and requires remedial action.

A2 Structural Bay Spacing: 607, 608, & 648 are acceptable and will service either teaching labs or research labs, but are not well suited for large classrooms.

619 is bad except to service the current layout. The bay spacing is uniform in both directions at 19.5' which is below the minimum width of 20' for Research lab, and 30' for Teaching Labs or classrooms. The 19.5' bay spacing is inappropriate for standard library shelving which works best in 27', 30' or 33' bays. From an adaptability perspective, 619 meet none of the appropriate criteria.

A3 Floor-to-Floor Height: 607, 608, & 648 are generally very good at 14.25' to 16.25' height. 619 at 12.5' height greatly restricts adaptability for any space functions that require heavy mechanical system support such as Research or Teaching Labs. The current plan generally worked when initially constructed because of the excessive number of mechanical shafts that are scattered throughout the floor plan that allow services to reach different spaces. Unfortunately, this large number of scattered mechanical shafts also precludes almost all adaptability and makes the building extremely inefficient in terms of space utilization.

B1 Exterior Enclosure: 607, 608, & 648 are acceptable and serviceable for an indefinite period of time. 619 has a similar exterior enclosure system as the other three buildings, however, because of its geometry and layout, it has many existing problems that will be difficult if not impossible to avoid. Much of the challenge to maintain exterior enclosure integrity is not only a result of the many, many corners and edges that combine with the many separate roof levels to create a very challenging construct to build and maintain with integrity.

B2 Roofing: 607 & 608 are acceptable design and construction. 648 is more complicated in it's design, but appears to be in acceptable condition and should be reasonable to maintain. 619 is very poor design as noted above because there are so many different levels and many corners and intersections that are routinely the weak points in roofing systems. It is reasonable to assume that the roof of 619 will always be a source of problems to maintain it's integrity.

C1 Interior Construction: 607 & 608 typical interior walls are CMU (concrete Masonry Units) which is very durable and appropriate even though it is more difficult to modify. 648 typical interior walls is Gypsum board on metal studs, which is not as durable as CMU, but very appropriate and easier to modify. 619 typical interior walls are CMU in most spaces while the research labs are made of custom construction that uses metal stud framing with a portion being covered with gypsum board and the upper portion being sheet metal. The CMU walls cannot be modified easily, but are acceptable. The custom construction in the labs is not acceptable, as it cannot be modified without damaging the sheet metal panels, and should be replaced with more conventional construction.

There are typically no ceilings in 607, 608, and 619, which is generally an acceptable method of construction for both Research labs and Teaching labs. 648 has suspended ceilings in most labs, which provides more reflective surface for better lighting and also provides acoustical attenuation, which is missing in the other three buildings. However, this does not seem to be a major problem—ceilings are not generally required in engineering labs, except where dust and noise control are significant concerns (e.g., laser labs).

C2 Stairs: The existing stairs in 607 and 608 north are concrete and terrazzo while the two south buildings are building are built of concrete with a rubber or vinyl finish material. Both designs are very acceptable. 648 stairs are constructed of concrete in metal pans which is also very appropriate. The size of the stairs in these three buildings is also appropriate to meet current codes, but the handrails in 607 & 608 do not meet current code.

619 stairs are all concrete and may not meet current building codes in terms of width, and handrail details.

C3 Interior Finishes: Except for the deep red and deep blue floor in 607 & 607, the interiors are generally lifeless in all four buildings. This lifeless condition contributes to poor orientation and makes for an unpleasant space to spend time. Finish types in the labs are generally appropriate.

C4 Exiting/Circulation: 607, 608, & 648 have generally good exit patterns, except there are dead end corridors in 607 & 608 that are not acceptable and must be addressed. The circulation in 607 & 608 are not as good. When the south portions of building 607 & 608 were built the resulting circulation pattern is extremely poor and disorienting. This was an instance where the exterior architecture design and a rigid interior organizational concept took precedent over good circulation. This is a fundamental weakness to what is otherwise are quality buildings.

648 generally have good exit and circulation patterns. It does seem that the perimeter racetrack, single-loaded corridor contributes to poor efficiency in the building, but is clear and well organized.

619 exiting and circulation is hopeless. It is confusing, frustrating, and offers no orientation. While the exit stairs continue from top to bottom, there are other stairs that do not require one to either not use the stairs to circulate or to frustrate the user to find an alternate route once at the stairs end.

D1 Elevators: The elevators in 607 and 608 need to be replaced due mostly to age. The location of the elevators in 607 & 608 are extremely poor and add to the poor circulation patterns in these buildings. The elevators are located at opposite ends of the building from where one would normally expect them and not in any appropriate relationship to the circulation pattern that reinforces one moving about. The freight elevator in 607 is too small. An example was the need to remove cadavers from their gurney and stand them upright to be able to transport them to the upper floor.

The elevators in 648 are wonderful by comparison to all others. Although 607 had to wait 22 years after the south portion was built before the elevators in 648 were built, the elevators in 648 strongly reinforce the circulation in 607 over what it had been. The vertical circulation pattern in 607 and how deleterious it is to the horizontal circulation pattern is still very poor. The freight elevator in 648 is still too small. But one of the real benefits of the passenger elevators in 648 is that there are two of them and they are approximately in the center of the building right next to public toilets and at an intersection of corridors that serve both north/south and east/west circulation.

There are two elevators in 619; one is an extremely large freight elevator that is located next to a narrow passenger elevator. The passenger elevator needs replacement due to its age.

D2 Plumbing: 607, 608, and 619 need substantial system replacement due to their age. 648 system requires little updating.

D3 Rest Rooms: 607, 607, & 619 fixtures and layout do not meet current accessibility requirements and must be completely renovated. 648 layout and fixtures are acceptable.

D4 Heating, Cooling & Ventilation: 607, 608, & 619 systems require complete replacement. They are at the end of their useful life and while they may be able to be kept in service for any number of years with a continuous investment of repairs, they must be replaced to maintain these buildings as viable. It is not a matter of if, but when. 607 & 608 systems will be reasonable to replace for several reasons. 1) The basement level mechanical rooms have an appropriate amount of space and the

systems are well laid out. 2) The vertical distribution shafts are well laid out. 3) The floor-to-floor height is appropriate for service distribution. 4) The fact that 607 and 608 have separate systems serving the north and south will help facilitate partial occupancy while portions of the building are renovated.

619 will be extremely difficult to replace since the existing systems are inserted into very minimal spaces. It is unclear how or if there will be space to remove and replace these systems. The many distribution shafts will also make rebuilding a challenge although it will be a benefit that the building HVAC systems may be divided into four quadrants to facilitate partial occupancy while portions of the building are renovated.

648 systems are generally in good conditions and the equipment layouts in the penthouse and basement are well done. Improving these systems should be fairly straight forward.

D5 Infrastructure Adaptability: The ability to adapt these buildings has already been discussed in other sections. In summary, many of the systems in 607, 608 and 648 are very adaptable. 648 support systems are adaptable in part because of the central service corridor that is the primary distribution spine for utility services. 619 is not adaptable to anything other than what it already is and may not be able to be adapted to meet current codes and standards.

D6 Fire Protection / Sprinklers: 607, 608, and 619 are not sprinklered, but should be. This will be a code requirement under any significant renovation project..

D7 Fire Alarm System: Fire alarm systems in 607, 608 & 619 are obsolete and are not addressable systems and need to be replaced. The fire alarm system in 648 is in fair condition; however it too is not addressable, and should be replaced. In general, each building needs to be equipped with more fire alarm notification appliances, for compliance with current life safety and NFPA requirements.

D8 Power Distribution: 607, 608, 619 & 648 are not designed to meet the requirements of a modern research facility. The equipment in 607, 608 & 619 is at the end of its useful life and needs to be replaced with a new and more reliable distribution system. Much of the electrical distribution equipment in 648 is in good condition; however some of it is installed in violation of current electrical code mandates and needs remedial work.

619 lack of space in the primary electrical room and in the electrical closets will make replacement / renovation work especially difficult.

D9 Emergency / Standby Power: 607, 608 & 648 lack an on-site emergency power supply system for supporting life safety, emergency egress and alarm functions. This is a very serious life safety concern. 619 has a small emergency diesel generator, however it is aged, and of inadequate capacity to support all of the building's life safety and emergency power requirements.

All four buildings lack a reliable standby power source. In the event of a utility system power outage, there is no standby power system for maintaining critical research projects relying on continuous reliable power. This is unacceptable for a modern research facility.

D10 Lighting: 607 & 608 is generally in fair condition, however is unacceptable in some areas such as at stairwells. Some of the laboratory & classroom spaces have luminaries which are becoming obsolete, and which tend to produce glare. Recent renovations have been made in some of the laboratories, making the lighting in those spaces only minimally adequate for the usage of the rooms. The quality and illuminance of existing luminaries in rooms that have not undergone renovation within the past 10 to 15 years is inadequate for modern research tasks. With no ceiling in 607 & 608, there is little or no overhead reflectance, contributing to a “cave” effect in some of the labs and classrooms. Recent painting with a light color has helped.

648 lighting is acceptable.

619 lighting is very poor and is generally unacceptable. Many of the public spaces and corridors are poorly lit. Labs are poorly lit unless they have been recently updated. Some of the luminaries in lab spaces lack lenses, exposing bare bulbs. Many of the luminaries are obsolete. The lighting in the science library is also inadequate for reading or study at many of the user stations.

All four buildings have a very serious lack of sufficient Code mandated life safety emergency egress lighting; this is especially so in some of the corridors in building 619.

D11 Data/Communications: In all four buildings the data/communication infrastructure is generally inadequate, especially with regard to bulk distribution of cabling. 607 & 608 each have a small cable tray system in some of the corridors; however it is of inadequate capacity. In 607 & 608, much of the data cabling is exposed and susceptible to damage, especially in the basement utility area. In some lab areas of 607 & 608, the cabling lacks support.

The data/communication system infrastructure in building 619 is especially problematic, due to its peculiar geometry. Buildings 607, 608 & 619 lack useful space for data/communication closets. Building 619 lacks stacked communication closets, and has very little space for data/communication equipment on each floor.

648 has a more favorable cabling infrastructure system than the other three, inasmuch as it has vertical shaft space dedicated to data & communication cabling, though this too is inconvenient.

E1 Lab Layout: The overall layout of the labs in 607 and 608 should be clarified to be more modular, in order to improve flexibility for future changes to the labs. Sizes for the engineering labs are generally appropriate.

Prep and support spaces in 607, 608, and 648 are generally well located and sized appropriately for lab support use. Support spaces in 619 are very limited in availability, small in size, and often irregular in plan, severely limiting their usefulness.

Most of the lab doors in all of the buildings swing into the labs, which is not desirable, and in some cases may not meet current code requirements; since the doors are not pocketed off the corridors, reversing the door swings would require construction of recesses to meet code requirements for clearances around doors opening into corridors.

All of the buildings should have spaces outside the labs, but adjacent to them, to encourage informal interactions among the students and faculty. 619 has the most potential for this, as it already has a number of these kinds of spaces, although they will require upgrading. 648 has the highest quality informal space, the atrium in the faculty office area, but it does not have any such spaces adjacent to the labs; these should be developed. 607 and 608 have few such spaces, and the spaces that do exist are very poorly suited to this use. Upgrading of the existing spaces and development of new

ones will be difficult due to the size of the floor plates, lack of exterior windows, and overall lack of clarity of the interior circulation system.

E2 Lab Equipment: Fixed equipment in the labs is generally original to the building, and is either in poor condition and/or beyond the end of its useful life in 607, 608, and 619; due to the relatively recent construction of 648, its equipment is in substantially better condition than in the other buildings.

Utilities supporting equipment are generally suitable for lab use. Distribution systems are in varying conditions, with conditions along wall benches generally better than at or above islands. Most fittings and piping systems need replacement due to age and deterioration in 607, 608, and 619; in 648, these items are generally acceptable. Overhead utility distribution to islands and freestanding equipment in 648 is very basic, with mostly electrical and data systems only and piped services run as needed, but appears to be suitable overall. In 607, 608, and 619, utility distribution to center islands and freestanding equipment needs replacement or significant upgrading.

E3 Lab Casework: Casework is also typically original to the buildings, with the casework in 648 and the upgraded labs in the other buildings in reasonably acceptable condition, while other casework in 607, 608, and 619 is beyond the end of its useful life. The metal cabinet construction with epoxy countertops is suitable for the laboratory types, although much of it is in poor condition. The large amount of fixed casework in 607 and 608 is not typical of more recent labs, and the teaching lab layouts cannot be easily modified to suit different classroom needs. The casework in 619 is designed to be movable, but not with ease; and there is no signs that it has ever been moved.

Sinks and fittings have deteriorated finishes and operating parts need repair or replacement; fittings are not accessible.

Many of the fume hoods, especially in the research labs, are being used for storage, rather than experiments; hood density in the labs needs to be reviewed and modified. UIC Chemical Health and Safety has placed several hoods in 607, 608, and 619 out of service due to their deteriorated condition. Energy use does not comply with current recommended practice.

E4 Lab Safety: Lab safety is marginal and needs substantial upgrading, especially in 607, 608, and 619; 648 is generally acceptable, but will require more careful review to identify specific issues that may need to be addressed. In 607, 608, and 619, safety showers and eye washes are not well placed, and are poorly marked. Fire extinguishers and other safety equipment (spill kits, fire blankets, safety manuals, etc.) do not appear to be available inside all labs, and are not consistently located for easy access in labs where they are available.

Exiting from the labs varies; most labs have two exits, but few of them have doors swinging in direction of exit travel. Several labs have second exits through adjacent labs, which are acceptable, but the exit routes through the adjacent labs are not always clear.

Equipment and experiment placement also varies. Due to space constraints, many of the labs, especially in 619, are very tightly packed with equipment and supporting paraphernalia, which presents safety concerns. However, most of these items could be moved where necessary to improve aisle widths and/or clearances around them, provided sufficient space can be made available in the labs.

Most of the labs in 619 have fume hoods directly adjacent to the lab entrances, which are both a safety and hood performance issue; they should be removed or relocated.

E5 Furnishings: The furnishings have aged with each building and 607, 608 & 619 are in need of replacement.

F1 ADA/Accessibility: 607, 608, & 619 do not meet current accessibility standards. Doors are too narrow. There is not adequate space of the pull or push sides of doors. The door knobs are the shape of a round ball and are not accessible. In the library, the radiating shelving arrangement creates aisles that are difficult for a non-handicapped person, let alone someone in a wheelchair, to navigate. Shelving and seating would need to be significantly reconfigured and reduced to achieve minimal compliance.

648 is generally accessible.

Except for most of the labs in 648, labs will need to be upgraded for accessibility—emergency showers are frequently not reachable, the casework and fume hoods are not accessible, and sinks and fixtures are not accessible. A general strategy for making the labs accessible needs to be developed, as teaching and research labs have different requirements.

G1 Sitework: 607, 608, and 619 are generally not accessible. 648 is accessible.
