STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION

DOA # 21I2J / HGA #1190-035-00

1 WEST WILSON STREET
BUILDING ASSESSMENT AND RECOMMENDATIONS STUDY

PREPARED BY:

HGA

FINAL REPORT - MAY 10, 2022

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PROJECT INTRODUCTION

HGA Architects and Engineers was contracted by the State of Wisconsin's Department of Administration to provide a Building Assessment and Renovation Recommendations for the State Office Building located at 1 West Wilson Street in Madison, Wisconsin. This approximately 445,000 gross square foot building is home to the Wisconsin Department of Health Services. The building was built in three phases starting in the early 1930's. While the exterior façade and roof have received recent significant refurbishments, the building systems and infrastructure are much older (some original to the building) and are in need of major renovation and replacements. This study will assess the following major components of the 1 West Wilson facility:

- Mechanical Systems
- Electrical Systems
- Plumbing Systems
- Fire Protection System
- Telecom/Data, Audio Visual and Security Systems
- Interior Finishes
- Building Restrooms and Staff Break Rooms (Condition, Fixture Counts and Accessibility)
- Revolving Entrance Door System at the Main Entrance

Following the initial condition assessments, the HGA team will provide recommendations for individual system upgrades, improvements or replacements that propose a pathway for the State to get to a building that meets today's systems standards and provides a facility that delivers efficient, safe, dependable, low maintenance heating, cooling, power, water, and communications and electronic security systems. The last component of HGA's effort will be to provide a high-level cost estimate for each component of the work so that the State has an understanding of both the required upgrades and their total project costs.

PROCESS

The HGA Team met at the 1 West Wilson building on November 22, 2021 to spend the day investigating the building and its systems. A project architect, interior designer, mechanical engineer, electrical engineer, plumbing engineer, fire protection engineer, and technology engineer each toured through the 1 West Building focused on the spaces, equipment and existing conditions of their disciplines' components and systems. At this meeting, the HGA team was also given access to the plan room to review the existing documents that were available. This included the original drawings for each wing of the three phase building project dating back to 1929. HGA borrowed over 1,000 pages of documents, many of which were scanned for use by the team during their investigation.

The next step involved a review of the initial findings and recommendations for the systems with the State DFD reviewers, Doug Schorr (Mechanical and Plumbing), Cleven McChesney (Electrical), Robert Lux (Telecom. IT, AV, Security), Heather Gionta (Interiors) along with Emily Kuntz, 1 West Wilson's building manager and the building's trades staff. This team reviewed the initial assessments of each system and discussed options for the future renovation. After this meeting, HGA's engineers each scheduled a review with their discipline's DFD reviewer to discuss the system assessment and recommendations in more detail. The complexity of the mechanical system led to a second site investigation and review of potential approaches for mechanical system replacement options. This meeting included HGA, along with the State's Ted Crawford, Doug Schorr, Section Chief for Engineering Technical Services, and 1 West Wilson Building Manager, Emily Kuntz.

Following these reviews and discussions the HGA team documented their findings and had several meetings with an HGA cost estimator to begin to develop a high-level systems-based cost estimate for the renovation/ replacement scope. The condition assessments, findings and recommendations became the foundation for the full project cost estimate. All of the components of that effort, including the cost estimate are documented in this report.

PREFACE

The Project Process can be summarized into the following major efforts:

- **Investigate and Immerse.** Review of the existing building, systems and existing documents.
- **Condition Assessment.** Understand each systems scope, issues, life expectancy and overall condition.
- C**omponent Recommendations.** Given the configuration and realities of the building and current system condition provide recommendations to improve or replace the existing system to meet the long-term needs of the building and to reduce maintenance expense and time while providing a system that will meet today's code and provide a safe, reliable, efficient system for the next 30 – 50 years.
- **Review and Refine.** Review the assessment and recommendation with the DFD reviewer prior to writing report to confirm that the general system direction is supported.
- **Cost Estimate.** Each component of the architectural, interior finishes, and system upgrades and replacements are to be priced to create a total project cost for the effort.
- **Document.** The findings and recommendations are to be documented in a concise Report for use by the State in planning for future capital projects.

PREFACE INTRODUCTIONS & ACKNOWLEDGMENTS

ACKNOWLEDGMENTS

HGA thanks each member of the Core Team for their invaluable input and for the information, knowledge and helpful guidance that you provided throughout this study. We extend our deepest appreciation to each Core Team member for their commitment, time and energy on this 1 West Wilson Report.

DOA CORE TEAM

Ted Crawford	Section Chief, Facilities Project Manager
Heather Gionta	Section Chief, Space Management
Emily Kuntz	1 West Wilson Building Manager
Megan Wolf	Division of Facilities and Transportation Services, Bureau Director, Building Management
Doug Schorr	Section Chief, Engineering Technical Services
Cleven McChesney	Team Leader, Electrical, DOA, DFD
Robert Lux	Telecom / Data / Security, DOA, DFD

HGA TEAM

Kevin Allebach	Principal / Project Manager
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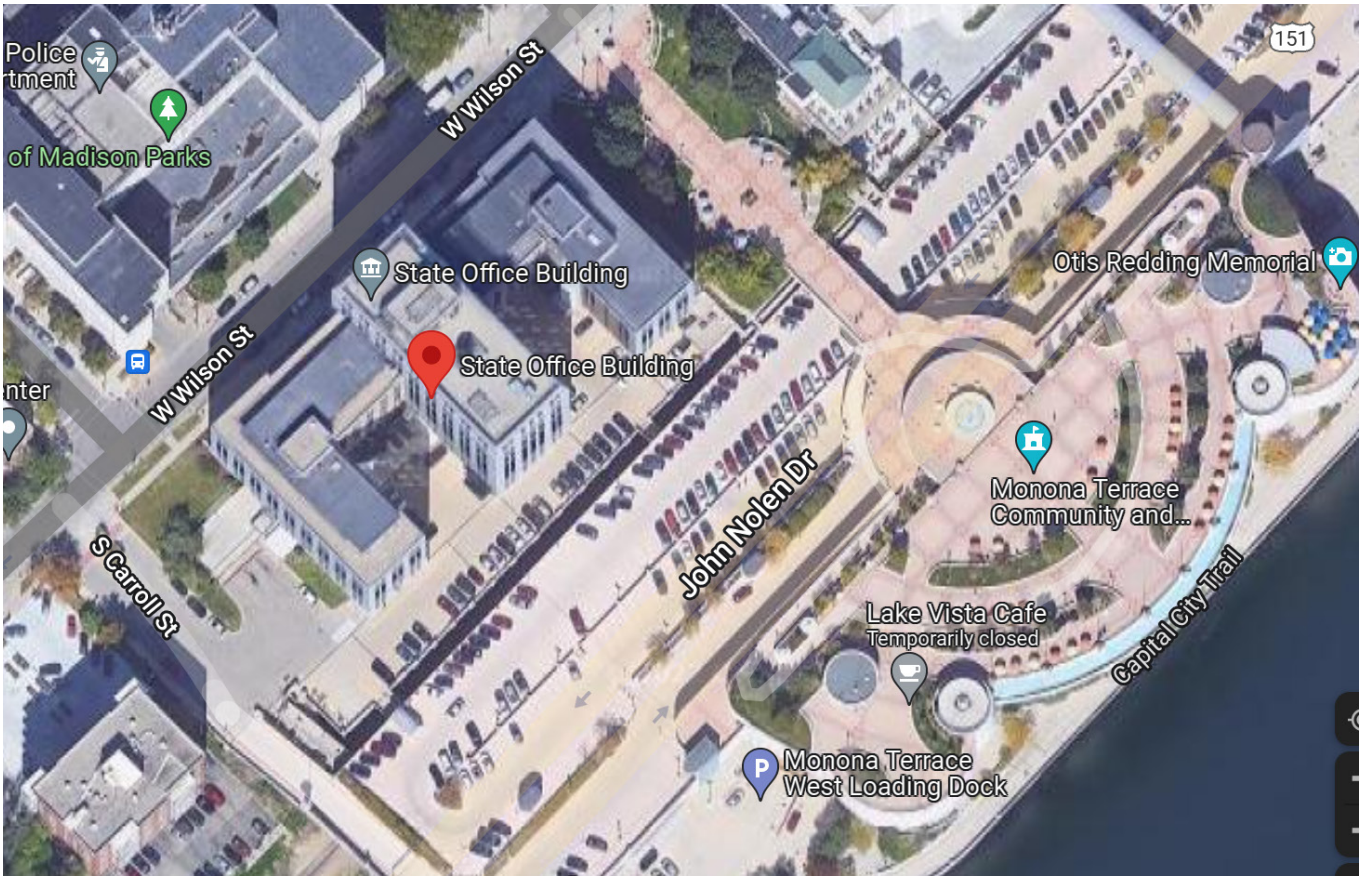
Ray Schwalbe	Plumbing Engineer
Craig Mertes	Technology Engineer
Nic Johnsen	Fire Protection Engineer
Joe Tarlizzo	Cost Estimator
Tiffany-Jo Bradley	Report Documentation

SECTION 0 | EXECUTIVE SUMMARY

0.1 EXISTING SITE & BUILDING HISTORY

SITE

The State Office Building is located at 1 West Wilson Street in Madison. It is the home of the Wisconsin Department of Health Services. The site slopes down both from the east to west and north to south. The main entry is not accessible with stairs to main entry doors and then additional stairs inside of the lobby entrance to get up to the main level. There is an accessible entrance from the northeast corner of the building. A ramp rises to the mid-point of the east façade along the plaza that extends from West Wilson Street to the Monona Terrace Community and Convention Center. Prior to the construction of Monona Terrace in 1997, the building had an expressed plinth along John Nolen Drive to the south, however, that façade is now obscured by a large multi-level parking structure which serves the convention center as well as the State Office Building.



Aerial view showing 1 West Wilson State Office Building and adjacent Monona Terrace Parking Structure to the south

0.1 EXISTING SITE & BUILDING HISTORY

BUILDING HISTORY

The State Office Building is designed in the Art Deco style and was constructed in three phases. The architect, Arthur Peabody, was Wisconsin's first State Architect, and he designed the original east tower in 1931 with a central tower that was added in 1938 and the final western tower added in 1959. The original east tower rises 6-stories above Wilson Street, while the center tower is 11 stories above grade. The west tower is 7-stories above Wilson Street, with an additional level exposed as grade falls to the west. The four basement levels create a plinth on which the rest of the building sits. The building exterior was built of gray granite and features columns of windows alternating with slender stone pilasters.

The original rendering for the building by Arthur Peabody, circa 1929

East Tower was built as the first phase in 1931

Plaque noting the building is on the State Register of Historic Places

0.1 EXISTING SITE & BUILDING HISTORY

The façade has many decorative details that enliven the structure with zig-zag patterns and motifs inspired by nature including incised medallions with eagles. The main entrance along West Wilson Street is a two-story space flanked with composite columns and centered with bronze doors.

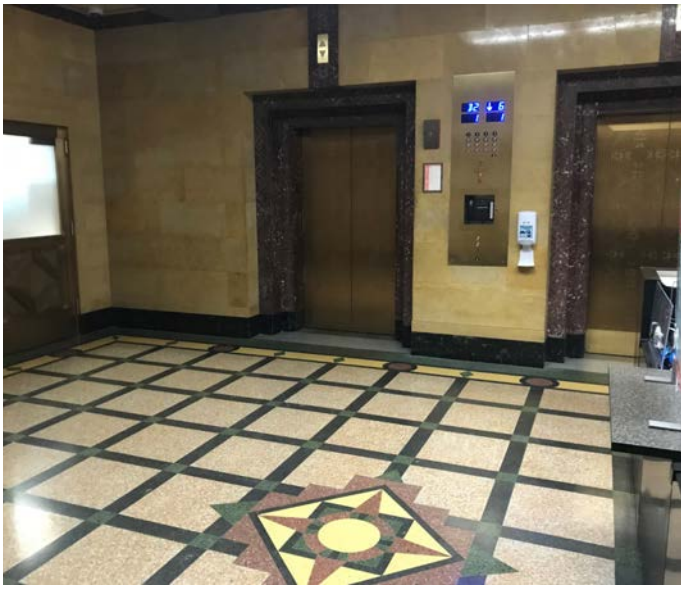
The interior public spaces include the main lobby which is a 2-story space with marble-faced walls, patterned terrazzo floors and bronze doors, light fixtures and detailing. It is important to note the main entry lobby is not accessible – having both interior and exterior stairs to get to Level 1. The entry features beautiful bronze windows and a center revolving door system. After nearly a century of use, the revolving door is no longer functioning and is no longer repairable and will need to be replaced.

Marble Lobby with doors to Main Level; Lobby ceiling detail with bronze light fixture

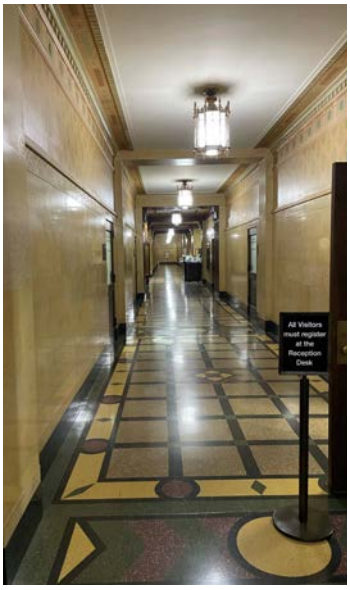
0.1 EXISTING SITE & BUILDING HISTORY

The central public corridors still retain much of their original detailing especially on Levels 1 and 2 with terrazzo floors, bronze elevator doors and some bronze suite entry doors to office areas.

While the terrazzo floors in the corridors continue on the upper levels there is far less ornamentation and fewer examples of the brass light fixtures, ceiling ornamentation and marble detailing.



Level 1 public corridor / elevator lobby



Level 1 Corridor

Typical Level 3 above corridor

BUILDING METRICS

Some of the important metrics of the building include:

- The building contains 445,000 Gross Square Feet.
- The central tower has 11 stories above grade and the east and west towers have six stories above grade.
- The building is a high-rise structure at 177' tall.
- The building structure features concrete columns and a concrete structural floor framing system.
- Current capacity in the building is 1,600 employees in 1,300 systems furniture cubicles, 200 free-standing cubicles and 100 private offices.
- The building has 83 conference rooms with a capacity for over 1,000 people. The largest conference room holds up to 150 people.

0.2 PROJECT SCOPE & KEY PROJECT DRIVERS

PROJECT SCOPE

The goal of this report is to provide a roadmap and cost to bring the 1 West Wilson building up to code and provide mechanical, plumbing, electrical, and communications and electronic security upgrades that will allow the building to function safely, efficiently and without the current daily repairs to systems. Some of these systems are decades old, well past their life expectancy and are quite simply failing. The Scope of this report will focus on five primary areas of work in the 1 West Wilson Building:

1. **Review and Assessments.** The HGA Team shall review and assess the following components of the existing building:
    - Building Systems including Mechanical, Electrical, Plumbing, Fire Protection, Communications, Low Voltage and Security Systems (MEP/FP/T).
    - Interior Code and ADA Compliance (with a goal of improving the accessibility in the building).
    - Confirmation of Restroom ADA compliance and adequacy of fixture count.
    - The scope of work required by the MEP/T systems will necessitate the removal of the existing ceilings in all office, conference rooms, and open workspace areas, this in turn will allow for an Interior Finishes refresh (floor, wall, ceiling finishes along with doors and accessories such as base, trim, bathroom partitions and cabinetry).
2. **System, Code + Finishes Recommendations.** HGA will provide recommendations on proposed upgrades and replacement systems for the mechanical, electrical, plumbing, fire protection, communications, low voltage and security systems. As well as proposals for the new finishes and high-level recommendations on any significant work that is required to bring the building up to code. The goal of the recommendations is to provide a path for the future building renovation to meet functional needs and to provide MEP/FP/Telecom and Security systems upgrades or replacements that bring the systems to a condition where they are able to provide reliable and efficient service for the next 30 - 50 years (depending on the system and equipment).
3. **Functional Improvements.** It has been 20 years since the last meaningful interior upgrade and the way that staff work in the building has evolved. The users of the building have requested that a kitchenette be included on each floor for staff use and that single user (gender-neutral) restrooms be added to each level. The building still contains floors where only a men's or women's restrooms are present requiring staff to go up or down a level to find a restroom. The existing men's and women's restrooms should also be renovated to improve flow and accessibility.
4. **Cost Model.** A full cost model will be provided for all of the system upgrades/replacements, finishes upgrades/replacements and any of the proposed new building improvements. The cost estimate will include system breakdowns and include the typical State soft costs to provide a total project cost including escalation, management fees and contingencies.
5. **Phasing Plans.** Based on the systems and scope of work, HGA shall develop two options for the approach to completing the renovations in the building. One option will temporarily relocate all staff in the building and allow the construction to happen all at once, and a second option would break the scope of work into at least three phases of work that allow major portions of the building to remain occupied during construction.

0.2 PROJECT SCOPE & KEY PROJECT DRIVERS

KEY PROJECT DRIVERS

The major driver for the proposed renovation to the 1 West Wilson Building is to replace antiquated and failing mechanical, electrical, and plumbing systems (MEP). As highlighted in the following individual assessments in this report some of the equipment serving the building is over 50 years old. The systems infrastructure and piping is in poor condition – much of it original to the building and now approaching 100 years old. Two examples of these issues include the building's steam heat system having hundreds of steam traps failing consistently and the building having 23 air handling units spread throughout, with maintenance as a never-ending time-consuming task. The entire building heating system is steam. The goal of the proposed renovation project will be to completely rework and update the MEP systems to establish a modern office building with code compliant, efficient, easy to maintain systems that will serve the building for decades to come. The focus of this report and the proposed renovation will be on:

- SYSTEMS: The mechanical, electrical, and plumbing systems and the overall infrastructure in the 1 West Wilson building.
- FINISHES: The MEP work will trigger removal of all ceilings in the office area and the removal of all systems furniture in order to install new ductwork, VAV's and piping on each floor. This will require the installation of new ceilings and lighting and will provide the perfect opportunity to refresh the finishes by installing new carpet tile and paint throughout the building.
- ACCESSIBILITY: Most of the restrooms in the building are not accessible with dimensional issues at entry doors and non-compliant fixtures and stalls. The requirement to replace all of the plumbing piping again presents the opportunity to greatly improve accessibility and provide more equitable restrooms across the building.
- FUNCTIONALITY: Over the 20 years since the last major interior renovation the workplace standards have changed. There is a greater need for break rooms and one of the goals of the renovation is to provide at least one break room on every floor. The proposed restroom renovations include the goal to add a gender-neutral restroom on every floor which will also improve functionality and equity in the building.

0.3 ASSESSMENT SUMMARY

INTRODUCTION

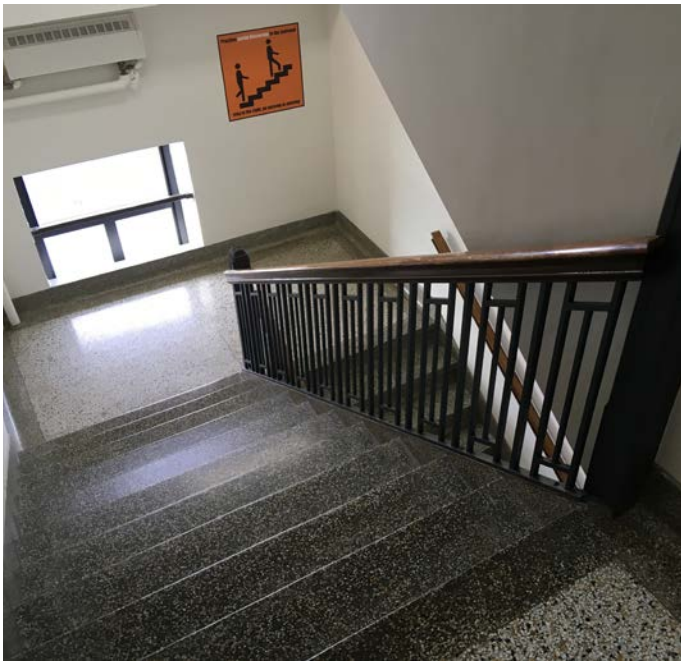
This section provides a high-level summary of the assessment of existing conditions along with the proposed renovation recommendations for each of the seven major components of this Report - mechanical systems, electrical systems, plumbing systems, AV/Telecom systems, fire protection systems, architectural elements and interior finishes. Section 3 of this Report contains a more detailed review of the current conditions and analysis of the proposed recommendations for each of these components.

ARCHITECTURE

It is important to note that the exterior of the building including the stone, mortar joints, windows, roof and doors all received a major refurbishment in 2012/2013 and the enclosure elements of the building are in good condition. There are several significant architectural issues that this report has documented and that are recommended for renovation:

- Most of the restrooms are not accessible and while the materials are historic and durable they have not been touched in 50+ years and require many upgrades, including all new fixtures. Several floors have only restrooms for one gender. The proposed renovation will provide accessible restrooms on every floor, as well as a gender-neutral or single-user restroom on each floor.
- There are only a couple of break rooms for staff in a 15-story building that serves 1,600 employees. This has become a major functional issue for the building occupants. The recommendation is to provide one break room for each floor in the building.
- One element on the exterior of the building that is in poor condition are the two mechanical shafts that were added to the exterior walls on the southern courtyards. These shafts are not water-tight and have been leaking with the walls and finish showing deterioration. These shafts are proposed to be resized for the new mechanical equipment and completely rebuilt.
- The existing bronze revolving door no longer functions and will need to be replaced with a new bronze swing door.

See Section 3.1 for the full review.



Existing Stair towers feature terrazzo and are in good condition

Existing bronze revolving door will need to be replaced

0.3 ASSESSMENT SUMMARY

INTERIOR FINISHES

The public spaces and corridors in 1 West Wilson are in good condition due to the use of durable materials such as terrazzo floors and marble wainscot. These public areas are recommended to receive minor patching and cleaning of the historic stone and floors. However, the finishes in most of the open work and office areas have not been refreshed since 1980 when a major interior renovation was completed and new workstation cubicles were added to the entire building between 1995 - 2005. The finishes in the office and open office areas and conference rooms are worn and tired and should be replaced. It is important to note that all the offices and open office areas are proposed to receive new HVAC, electrical, and telecom systems which will require new ceilings be installed. This report is recommending that new acoustical ceiling tile systems (with new LED lighting), new carpet tiles and patching and painting of all interior walls be completed as part of the renovation.

The non-public, non-agency assigned and general building support space will be receiving new MEP systems as well and therefore should be renovated in kind. Some of these spaces have acoustical ceiling tiles and these should be replaced with new. All walls and open ceilings in the building should be repainted.

See Section 3.2 for the full finishes review.

Typical open office space

0.3 ASSESSMENT SUMMARY

MECHANICAL

Mechanical system upgrades and replacements represent a significant portion of the cost of the 1 West Wilson renovation project. Many mechanical system components are decades old and some are original to the building and approaching 100 years old.

The building heat is provided by a low pressure steam system. Much of this system is original to the building and is in constant need of repair; this steam system is proposed to be replaced with a new hydronic heating system. The ventilation system in the building consists of 23 different air handling units of varying sizes spread throughout many of the floors. Some of the units are more than 50 years old and do not meet current ventilation code requirements. The recommendation is for all new air handling units, however two options or approaches for the replacements are proposed. The building is cooled by a chilled water system. The existing chilled water pumps and chilled water piping are in fair to good condition and only reconfiguration of the piping to new equipment locations will be required as part of the renovation. Lastly, the controls on the systems are a blend of pneumatic, electric and DDC; all controls should be removed and replaced with a new DDC Control System.

See Section 3.3 for the full system review.

Example of old AHU with no access between heating and cooling coils or humidifier

0.3 ASSESSMENT SUMMARY

ELECTRICAL

The main switch boards are all 40+ years old and reaching the end of their useful life. Many of the feeders in the building are aluminum and should be replaced. The emergency generator is new (2019), however, the branch panels should be updated. Most of the electrical panels in the building are 40+ years old and they will require replacement along with all branch circuiting.

Lighting is primarily fluorescent and should be replaced with new LED fixtures throughout the building with historic fixtures being retrofitted were possible. The building currently has little to no lighting control and could see significant savings in energy consumption with the addition of all LED fixtures and a lighting control system.

The fire alarm system is relatively new and should be maintained; however the device locations will need to be modified as required by code when the new ceilings are installed in the building.

See Section 3.4 for full system review.

Typical Switchboard 1-7

0.3 ASSESSMENT SUMMARY

PLUMBING SUMMARY

With some small exceptions, the plumbing equipment and piping infrastructure has exceeded their life expectancy. Some of the plumbing equipment requires frequent maintenance and repair to keep it operational. The sanitary waste/vent, storm water, and domestic water piping infrastructure is completely deteriorating with cracking, corroding, and leaking in many locations. Some valves are inoperable, and rust is prevalent in the building water supply. A large majority of the plumbing systems in the building require full demolition, removal, and replacement with new products.

See Section 3.5 for full system review.

Plumbing piping in chase behind typical existing toilet room

0.3 ASSESSMENT SUMMARY

FIRE PROTECTION SUMMARY

The existing fire sprinkler was installed during a complete retrofit of the building around 2018. The installation of the sprinkler system included a fire pump, fire pump controller, fire pump transfer switch, jockey pump, jockey pump controller, floor control valves, and sprinklers installed throughout the building. The existing fire sprinkler and standpipe systems are in good working condition with no discernible leaking or issues per the site investigation and discussions with building users. There are no modifications required for the system to meet the applicable codes. Modifications will be required to the fire sprinkler system to accommodate new HVAC systems and to maintain code required coverage in areas where walls and ceilings are modified. See Section 3.6 for full system review.

Fire Pump with service equipment

0.3 ASSESSMENT SUMMARY

COMMUNICATIONS SUMMARY

Currently, each floor is typically served by four small Telecommunication Rooms which are stacked vertically in the building. Recommendations include creating a new Main Equipment Room in the location of the current Telephone Equipment Room and consolidating the Telecommunication Rooms into two larger vertically stacked rooms per floor. Existing voice and data services and associated infrastructure shall be investigated to determine if a service upgrade is necessary based on current agency needs. Existing utility obsolete infrastructure shall be removed. All existing intra-building DET fiber optic backbone cabling terminating in 1 West Wilson shall be investigated to determine its origin, function and whether it is currently active or necessary for future connectivity. All existing intra-building cabling and terminations shall be relocation / extended to the new Main Equipment Room. All existing premise fiber optic and copper backbone cabling will be removed and replaced with new single mode fiber optic cabling. All of the existing Category 3 and Category 5 horizontal cabling will be removed from the building and replaced with Category 6A cables. The existing Emergency Responder Radio Communications System (ERRCS), US Cellular cellular reinforcement system, electronic access control system and surveillance systems head end systems are all in good condition, however cabling and locations will be modified to work with the new Telecommunication Rooms on each floor. By the time the renovation of 1 West Wilson is completed it is anticipated that the conference rooms will require an update to all of the audio visual equipment currently installed in each of the rooms. New audio visual systems will replace the existing. The requirements for the audio visual application within each conference room / space will be confirmed with the agency occupying the space at the time. At a minimum, the audio visual systems will support video teleconferencing.

See Section 3.7 for full system review.

Typical existing Data / Network Closet

0.4 PHASING SUMMARY

PHASING OPTIONS

Two primary phasing options were explored, and while there are certainly options to renovate the building in more phases, these two options were considered the most efficient and most likely scenarios given that the new mechanical, electrical, plumbing and communications systems must distribute vertically through the building. It should be noted that some mechanical and electrical components are currently dealing with extremely long lead times and this may have an impact on the timing and phasing. See Section 4 in this Report for full phasing and schedule information.

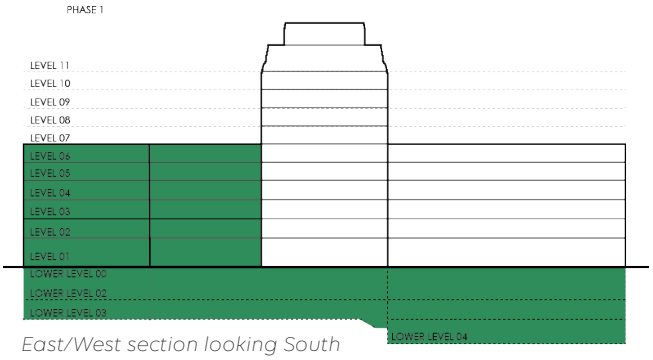
PHASING OPTION 1

Phasing Option 1 would relocate all of the staff to temporary surge locations and close the entire building for the renovation period. This option is certainly be the easiest for the construction effort and would create the fastest time-line to completion. However, it requires finding available surge space in Madison for up to 1,600 employees and would require that the entire 1 West Wilson facility be emptied to allow the construction to begin. It should be noted that at the time of this report, the impact of the Covid pandemic has dramatically reduced the number of staff in the building. See Section 4 for full Phasing and Schedule Review.

PHASING OPTION 2

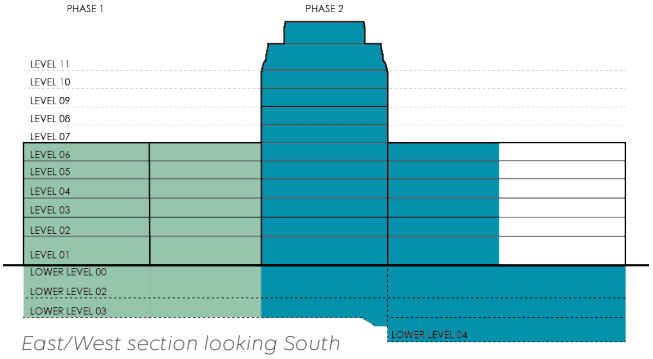
Phasing Option 2 would split the renovation into 3 distinct vertical slices through the building. See diagrams on this page. This would extend the overall duration of the construction; however, the building could remain open and occupied throughout construction.

This option would begin by moving staff and all furniture and equipment out of the east third of the building along with the basement levels. Staff would consolidate into the remaining two-thirds of the building. Temporary wall partitions would separate construction zones from occupied space. Once the first phase is completed staff would move back into the Phase 1 area and Phase 2 would commence, followed by Phase 3. This options avoids a major move to temporary surge space locations for all staff, but would require a longer duration of noise, dust and disruptions in the building and would require multiple moves for some staff. See Section 4 for full Phasing and Schedule Review.



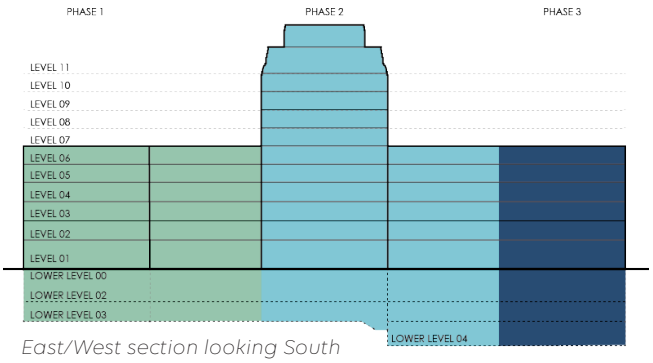
East/West section looking South

Option 2 - Phase 1



East/West section looking South

Option 2 - Phase 2



East/West section looking South

Option 2 - Phase 3

0.5 COST MODEL SUMMARY

HIGH-LEVEL COSTS

The cost summary below shows the major categories of work with a construction cost subtotal. This is followed by projected soft cost estimates for items such as temporary relocation costs, furniture, fixture and equipment (FFE) costs, and design and management fees. The construction cost plus the soft costs provide the estimated total project costs for the 1 West Wilson renovation. It is important to note that because of the early (conceptual nature of the report both a design and construction contingency are being applied. Escalation through mid-2025 is also being added to the construction cost.

COST SUMMARY

DEMOLITION / SITE PREP (INCL. ABATEMENT)	$8,925,000
STRUCTURE	$2,464,000
ENCLOSURE	$864,000
INTERIORS	$28,768,740
FIRE PROTECTION	$1,513,000
PLUMBING	$4,156,250
HVAC	$24,577,000
ELECTRICAL	$16,360,391
COMMUNICATIONS & ELECTRONIC SECURITY	$5,846,250
SUBTOTAL CONSTRUCTION COST (2022)	**$93,474,631**
CM/GC GEN REQ./GEN COND./FEES/BOND/INSUR. (15%)	$14,021,195
DESIGN & CONST. CONTINGENCY (15%)	$16,124,374
TOTAL CONSTRUCTION COST (2022)	**$123,620,199**
PROF. A/E FEES (12%)	$14,834,424
ADMINISTRATIVE FEES (4%)	$4,944,808
FF&E/AV - NEW SPACE	$1,811,460
FF&E/AV - EXISTING SPACES	$4,175,010
OWNERS PROJECT CONTINGENCY	$18,543,030
TOTAL PROJECT COST (2022)	**$167,928,931**
ESCALATION (2022 TO 2025) (15.75%)	$26,452,165
TOTAL PROJECT COST (2025)	**$194,381,096**

SECTION 1 | PROJECT GOALS, OBJECTIVES & CONSTRAINTS

1.1 Project Goals & Objectives

1.2 Project Constraints

1.1 PROJECT GOALS & OBJECTIVES

1 WEST WILSON SYSTEMS AND INTERIOR RENOVATIONS

The reality is that the Wisconsin Department of Health Services occupies a historic building that has had a recently completed exterior and enclosure systems renovation, but the interior spaces have not been updated in decades and the mechanical, electrical, plumbing and technology systems (MEP/T) are failing and are increasingly prone to repair and maintenance issues. The primary goal for this study, and ultimately the renovation itself, is to replace the MEP/T systems and refresh the building interiors.

Identified goals include the following:

- The renovation shall create a building whose systems and components will meet the needs of the building occupants for the next 30 - 50 years.
- The systems replacements should significantly reduce system maintenance and repairs in the building and increase the efficiency while decreasing energy costs.
- Improve the overall functionality and accessibility of the building.

BUILDING OBJECTIVES

The following specific objectives were identified as priorities for this report to investigate and propose renovations:

- **SYSTEMS:** The mechanical, electrical, plumbing and technology systems and the overall infrastructure in the 1 West Wilson building is decades old (some equipment and piping is still original to the 1930's construction), are at the end of their useful life, and are failing.
- **FINISHES:** The MEP/T work will trigger removal of all ceilings in the office area and the removal of all systems furniture in order to install new ductwork, VAV's and piping on each floor. This will require the installation of new ceilings and lighting and provides the perfect opportunity to refresh the finishes by installing new carpet tile and paint throughout the building.
- **ACCESSIBILITY:** Most of the restrooms in the building are not accessible with dimensional issues at entry doors and non-compliant fixtures and stalls. The requirement to replace all of the plumbing piping again presents the opportunity to greatly improve accessibility in the restrooms throughout the building.
- **FUNCTIONALITY:** Over the 20+ years since the last major interior renovation workplace standards have changed. There is a greater need for break rooms and one of the goals of the renovation is to provide at least one break room on every floor. The proposed restroom renovations and the goal to add a gender-neutral restroom on every floor will also improve the functionality and equity in the building.

Example of decades old air handler that needs to be replaced

Typical open office space

Example of existing inaccessible restroom

1.1 PROJECT CONSTRAINTS

ISSUES TO WATCH

The following issues have been identified during the process of this Study that will need to be monitored and addressed as this project moves forward into design.

ESCALATION

At the time of this Study escalation has been an issue for construction projects. There is a lot of volatility in bidding and the escalation factor that has been applied in the cost model should be reviewed and confirmed based on the timing of a confirmed construction start.

MATERIAL LEAD TIMES

Material lead times, especially for HVAC equipment and some types of electrical equipment have been challenging for construction projects. Once a schedule has been confirmed, the design team should look into specific equipment lead times and potential early purchase options of some equipment based availability.

PHASING IMPACTS

Several phasing options are outlined in this Study, one that would relocate all building occupants to surge space and renovate the building in a single phase, and a second option that would renovate the building in thirds and allow the staff to be consolidated into occupied zones in the building. The cost and availability of surge space, as well as the impact of the Covid pandemic on the numbers of staff working from home will need to be evaluated to determine the final phasing approach for the project.

STRUCTURAL VERIFICATION

For the mechanical penthouse proposed for the 11th floor, a structural engineer will need to verify the capacity of the existing roof and columns.

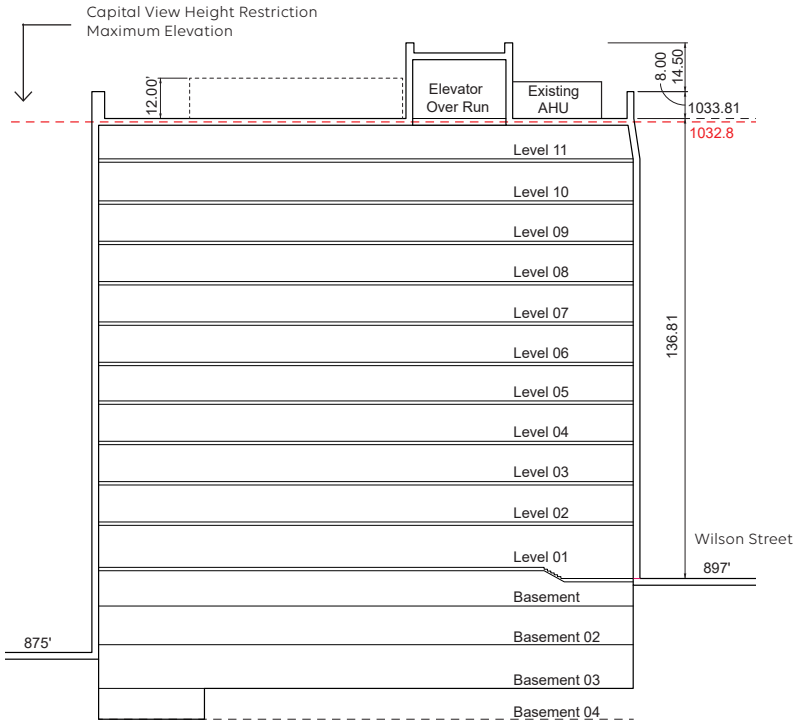
Existing rooftop of central tower is the location of a proposed mechanical air handling unit. The tall parapet will help conceal the unit.

1.1 PROJECT CONSTRAINTS

CAPITAL VIEW HEIGHT RESTRICTION

The City of Madison has a zoning restriction, (62.23 (i) Capital View Preservation Limit, which restricts any building within an area identified by a zoning map to a maximum elevation of 1,032.8 above sea level. The 1 West Wilson property is within that area. The recommendation (one of two options proposed) does add a penthouse to the roof of the center tower. The on the total height of that unit would be below the large adjacent elevator over-run for the building, however, it does extend above the noted height restriction. The zoning code does grant exceptions for mechanical equipment, elevator overruns, chimneys and flag poles. A presentation to the Zoning Board and approval of this mechanical unit will be required by the City of Madison Zoning Board.

The diagram below shows the north/ south building section looking to the east. The tallest part of the building is at the center tower and includes the elevator over-runs which are the tallest portion of the building. In the diagram, the red line shows the appropriate location of the Capital View Height Restriction maximum elevation of 1,032.8. This elevation occurs just below the roofline of level eleven (the top level) in the 1 West Wilson building. However, the existing elevator overrun extends approximately 24' above the maximum elevation. The recommended mechanical solution outlined in this report would place a mechanical unit directly behind this elevator over-run on the flat roof area shown in the photo on the previous page. The maximum height of this unit would be 12' above the roof line, and also approximately 12' above the Capital View Height Restriction Elevation. However, it is important to note that the top of this unit would also be approximately 12' below the top of the elevator over-run. The unit would not be nearly as wide as the elevator over-run enclosure and again much lower than the existing elevator over-run. This unit, if installed directly behind the over-run would not impact any views to the Capital building. It is important to note that the Capital View Height Restriction Zoning Code does allow exceptions for elevator over-runs and for mechanical equipment. Any exceptions must be presented to and approved by the City of Madison Zoning Board. Given the fact that this new piece of mechanical equipment would be directly behind the elevator over-run and is 12' lower than the over-run it would seem reasonable that this exception would be granted. However, it is important to note this as a constraint because a variance from this Zoning Requirement would be required prior to the mechanical unit being installed on the roof.



Capital View Height Restriction Diagram (North/South Section looking West)

SECTION 2 | EXISTING BUILDING - PREVIOUS RENOVATION PROJECTS

2.1 Previous Projects

2.1 EXISTING BUILDING - PREVIOUS RENOVATION PROJECTS

PREVIOUS PROJECTS

It is important to understand some of the renovation work that has already been completed on the 1 West Wilson building. The most recent work on the building has been the complete renovation of the exterior of the building and the installation of a fire protection system. There has been less work on the interior and systems and much of that work dates back to several decades ago. The following renovation timeline provides an important background for this project:

- Recent Renovations: Elevator replacements/refurbishment; parking deck and roof over the Loading Dock.
- 2018: New Fire Protection system was added throughout the entire 1 West Wilson building.
- 2018: New Emergency Responder Radio Communication System (ERRCS) was added to portions of 1 West Wilson building.
- 2012-2013: The building exterior was completely refurbished, a new roof installed, and all of the windows were replaced.
- 1995-2005: Most of the office space was fitted out with new workstation cubicles.
- 1995 and 1998: Some HVAC units were upgraded.
- 1997: Parking for the building was added as park of the Monona Terrace community and Convention Center.
- 1993: The building received new telephone and data cabling.
- 1980's: Saw a major renovation of the interior which included some HVAC and electrical upgrades. It was at this time that most of the plaster walls were removed and dropped acoustical tile ceilings were added throughout the building. Electrical trays with linear lighting were added in the corridor ceilings for distribution.

The extent of the completed prior projects allows the next renovation to focus on systems and an interiors refresh. There is very little need for work on the exterior or on the historic public spaces in the building.

Exterior of 1 West Wilson is in good condition

Historic areas are in good condition requiring little work

SECTION 3 | SYSTEMS ASSESSMENT & RECOMMENDATIONS

3.1 ARCHITECTURAL ASSESSMENT & RECOMMENDATIONS

COMPONENTS OF WORK

RESTROOMS

The existing building has adequate numbers of sinks and lavatories, however the issue is that many of the restrooms are not accessible and there are also inequities in how the men's and women's restrooms are laid out per floor. The recommendations are shown on the subsequent plans and overall floor plans will provide a singe-user restrooms as well as an accessible restroom on each level.

BREAK ROOMS

The existing building only has a handful of Break Rooms. In the existing condition some occupants are having to go up or down multiple levels to get to the nearest break room. The recommendations are shown on the subsequent plans and overall floor plans will show one Break Room on each floor of the building.

BRONZE ENTRY DOOR

The existing main entry off of Wilson Street contains a set of three bronze doors - two swing doors on either end with a center revolving door. The revolving door has been broken for some time and is currently locked. There is currently a sign on the door directing visitors to the adjacent doors. It has been determined that the revolving door which is original to the building is not repairable. This study recommends keeping the overall framing of the system and inserting a new bronze swing door in place of the revolving door mechanism.

EXTERIOR MECHANICAL SHAFTS

The existing building has triangular exterior HVAC shafts that were added to the courtyards. These shafts, shown in the photo to the right, are in poor condition with serious water infiltration issues. This report is recommending that the shafts be completely rebuilt. The shafts can be triangular or rectangular. A total of four shafts are required. Each shaft will house a single 60x70 duct or a single 72 in. diameter round duct. Two shafts will be for outdoor air intake. The other two shafts will be for building relief air. The louvers for the outdoor air intake shafts should be as high as possible (minimum 20 ft. above grade) to minimize intake of any parking lot fumes.

Exterior Mechanical Shafts in southern courtyards

3.1 ARCHITECTURAL ASSESSMENT & RECOMMENDATIONS

PLUMBING FIXTURE COUNT

HGA completed a 'Required Plumbing Fixtures' Study that reviewed the existing rest rooms in the building, as well as the proposed fixture count with the new proposed layout. As is shown in the Fixture Count Spreadsheet below, the building exceeds the required plumbing fixture counts in both the existing and proposed options.

CHAPTER 29: PLUMBING SYSTEMS - REQD PLUMBING FIXTURES; TABLE 2902.1							
OCCUPANT GROUP	OCCUPANT LOAD		WATER CLOSETS		LAVS		DRINKING FOUNTAIN
	Per assigned (workstations)	Per IBC 1004.1	MALE	FEMALE	MALE	FEMALE	
BASEMENT B4							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		44	0.02	0.02	0.02	0.02	0.04
BUSINESS AREAS		0	0.00	0.00	0.00	0.00	0.00
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required		44 occ	0.02	0.02	0.02	0.02	0.04
Currently Provided			0.0	0.0	0.0	0.0	0.0
Proposed			0.0	0.0	0.0	0.0	0.0
BASEMENT B3							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		217	0.11	0.11	0.11	0.11	0.22
BUSINESS AREAS		0	0.00	0.00	0.00	0.00	0.00
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	15 occ	217 occ	0.11	0.11	0.11	0.11	0.22
Currently Provided			7.5	2.5	4.5	2.5	0.0
Proposed			7.5	2.5	4.5	2.5	0.0
BASEMENT B2							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		132	0.07	0.07	0.07	0.07	0.13
BUSINESS AREAS		0	0.00	0.00	0.00	0.00	0.00
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	43 occ	132 occ	0.07	0.07	0.07	0.07	0.13
Currently Provided			3.5	3.5	2.5	2.5	0.0
Proposed			3.5	3.5	2.5	2.5	0.0
BASEMENT B1							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		377	4.77	4.77	3.36	3.36	3.77
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	162 occ	377 occ	4.77	4.77	3.36	3.36	3.77
Currently Provided			10.0	4.0	6.0	2.0	0.0
Proposed			10.0	4.0	6.0	2.0	0.0
LEVEL 01							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		380	4.80	4.80	3.38	3.38	3.80
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	193 occ	380 occ	4.80	4.80	3.38	3.38	3.80
Currently Provided			4.0	3.0	3.0	2.0	0.0
Proposed			4.0	3.0	3.0	2.0	0.0
LEVEL 02							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		374	4.74	4.74	3.34	3.34	3.74
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	209 occ	374 occ	4.74	4.74	3.34	3.34	3.74
Currently Provided			12.0	6.0	5.0	3.0	0.0
Proposed			7.5	5.5	3.5	4.5	0.0
LEVEL 03							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		374	4.74	4.74	3.34	3.34	3.74
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	218 occ	374 occ	4.74	4.74	3.34	3.34	3.74
Currently Provided			5.0	8.0	3.0	5.0	0.0
Proposed			6.5	5.5	3.5	3.5	0.0
LEVEL 04							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		374	4.74	4.74	3.34	3.34	3.74
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	194 occ	374 occ	4.74	4.74	3.34	3.34	3.74
Currently Provided			12.0	6.0	5.0	3.0	0.0
Proposed			7.5	5.5	3.5	4.5	0.0
LEVEL 05							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		374	4.74	4.74	3.34	3.34	3.74
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	178 occ	374 occ	4.74	4.74	3.34	3.34	3.74
Currently Provided			6.0	8.0	3.0	5.0	0.0
Proposed			6.5	5.5	3.5	3.5	0.0

3.1 ARCHITECTURAL ASSESSMENT & RECOMMENDATIONS

PLUMBING FIXTURE COUNT

CHAPTER 29: PLUMBING SYSTEMS - REQD PLUMBING FIXTURES; TABLE 2902.1							
OCCUPANT GROUP	OCCUPANT LOAD		WATER CLOSETS		LAVS		DRINKING FOUNTAIN
	Per assigned (workstations)	Per IBC 1004.1	MALE	FEMALE	MALE	FEMALE	
LEVEL 06							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		374	4.74	4.74	3.34	3.34	3.74
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	148 occ	374 occ	4.74	4.74	3.34	3.34	3.74
Currently Provided			10.0	6.0	4.0	3.0	0.0
Proposed			7.5	5.5	3.5	4.5	0.0
LEVEL 07							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		232	3.32	3.32	2.45	2.45	2.32
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	98 occ	232 occ	3.32	3.32	2.45	2.45	2.32
Currently Provided			5.0	0.0	2.0	0.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
LEVEL 08							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		129	2.29	2.29	1.62	1.62	1.29
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	50 occ	129 occ	2.29	2.29	1.62	1.62	1.29
Currently Provided			0.0	4.0	0.0	2.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
LEVEL 09							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		114	2.14	2.14	1.42	1.42	1.14
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	52 occ	114 occ	2.14	2.14	1.42	1.42	1.14
Currently Provided			5.0	0.0	2.0	0.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
LEVEL 10							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		114	2.14	2.14	1.42	1.42	1.14
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	55 occ	114 occ	2.14	2.14	1.42	1.42	1.14
Currently Provided			0.0	4.0	0.0	2.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
LEVEL 11							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		0	0.00	0.00	0.00	0.00	0.00
BUSINESS AREAS		114	2.14	2.14	1.42	1.42	1.14
ASSEMBLY A-3 (Conference rooms)		0	0.00	0.00	0.00	0.00	0.00
SUBTOTAL Required	48 occ	114 occ	2.14	2.14	1.42	1.42	1.14
Currently Provided			5.0	0.0	2.0	0.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
PENTHOUSE							
ACCESSORY STORAGE AREAS, MECHANICAL EQUIP.		9	0.00	0.00	0.00	0.00	0.01
BUSINESS AREAS		0	0.00	0.00	0.00	0.00	0.00
TOTAL OCCUPANTS: Required	occ	9 occ	0.00	0.00	0.00	0.00	0.01
Currently Provided			0.0	0.0	0.0	0.0	0.0
Proposed			2.5	2.5	1.5	1.5	0.0
TOTAL FIXTURES REQUIRED:	**1663 occ**	**3734 occ**	**46**	**46**	**32**	**32**	**34**
TOTAL FIXTURES CURRENTLY PROVIDED:		**0**	**85**	**55**	**42**	**32**	**0**
TOTAL FIXTURES PROPOSED:		**0**	**76**	**56**	**43**	**39**	**0**

Note: Both the existing condition as well as the proposed renovation provide more fixture counts than are required.

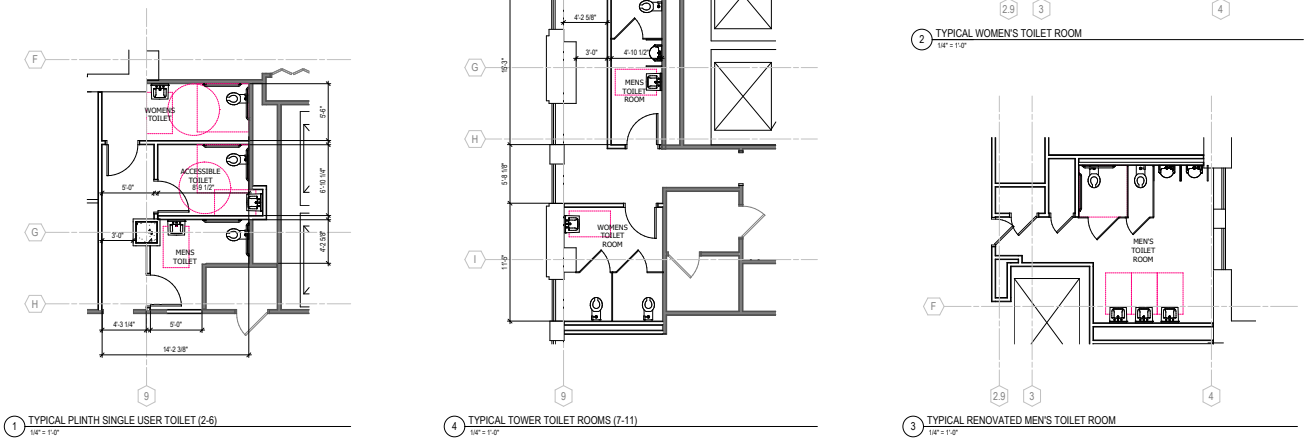
Regarding drinking fountains, the typical plinth floor (this would include level B2 – 6) each requires four (4) drinking fountains. The tower floors require two (2) each. Once you get above Level 6, typically two (2) would be required, but see the Fixture Count spreadsheet above for specifics.

For reference, a high/low drinking fountain counts as two (2). If there is a bottle filler on it as well, that counts as three (3).

3.1 ARCHITECTURAL ASSESSMENT & RECOMMENDATIONS

RESTROOM STUDY

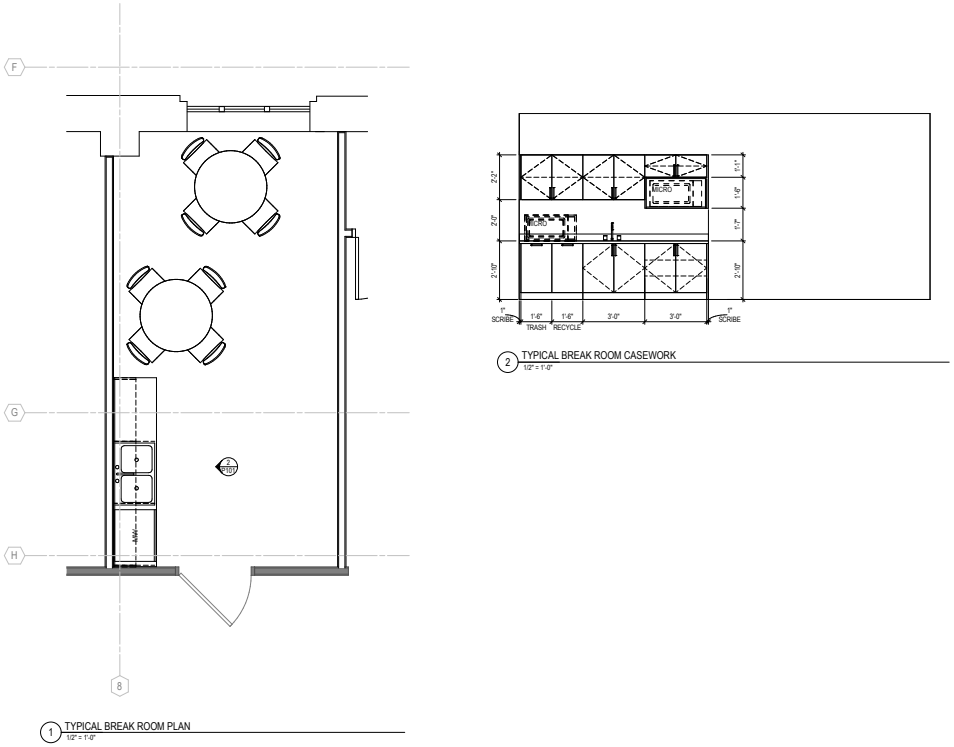
The recommendation for restrooms to have at least one single user and one accessible restroom on each floor. The plans below show some typical configurations. The overall floor plans, later in this section, show the locations of the restrooms per floor.



Renovated Toilet Room Diagrams

BREAK ROOM STUDY

A goal of the renovation is to provide a minimum of one Break Room on each floor. The overall floor plans, later in this section, show the proposed locations of the new Break Rooms. The drawings to the right show a typical Break Room approach with one wall of kitchen base cabinets and wall cabinets above. The rooms will contain a sink, refrigerator and 2 microwaves. In addition, where ever possible, the rooms will be large enough for up to two tables with chairs.



Typical Proposed Break Room Plan and Elevations (each floor to have a break room)

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

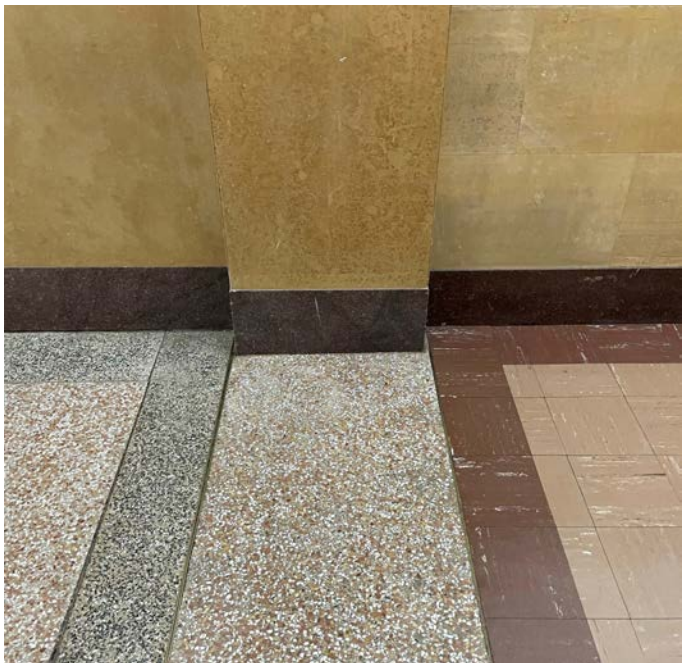
The building interiors in the Public Corridors consist of marble walls, ornamental wallcovering in specific areas and Terrazzo Flooring and base. The walls and floors are in very good condition given their age. Toilet Rooms also consist of marble walls and toilet partitions, and terrazzo flooring and base. The base in some areas is integrated into the toilet partitions.

Spaces beyond the Public area Corridors include MEP areas and Office/Conference Space. The Office/ Conference space finishes are Carpet, Painted Walls (both plaster and gypsum board) and Acoustical Ceiling Tile

Main Corridor showing marble walls and terrazzo floors/base

Vestibule Entry existing terrazzo floor and removable floor mats

Elevator and surrounding finishes

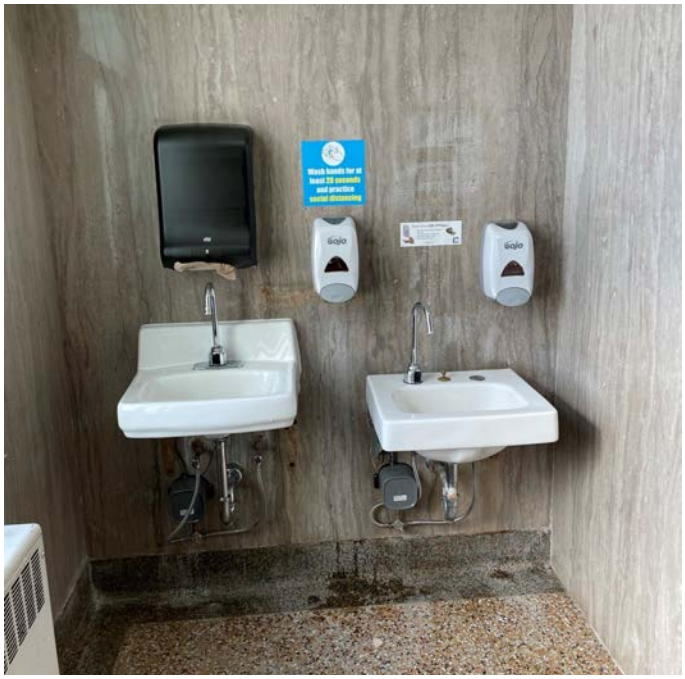


Flooring where terrazzo meets VCT

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

Overall toilet room



Images shows damage done over the years by water staining

Marble walls of Toilet Room, "accessible" stall uses shower curtain as door

Toilet Room terrazzo floors, integrated base into toilet partition

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

PUBLIC CORRIDORS

Finishes in public corridor will remain as is, with allowances for repair of walls and floors.

CONFERENCE ROOMS / OPEN OFFICE / OFFICES

The State has requested new finishes for all Office and Conference Room spaces, which includes new carpet, painted walls and acoustical ceiling tile.

It is important to note that each typical floor will also be receiving new Telecommunications Rooms and the rework of the mechanical systems will introduce new shafts for ductwork and piping. These shafts will need to be framed with metal stud and drywall enclosure.

TOILET ROOMS

HGA was tasked with indicating locations for new Accessible and Gender Neutral toilet rooms which are indicated on the following diagrams. The State also requested locations for two Break Rooms on every floor. See attached diagrams. This will include new Casework and an area for seating should space allow (see Room Finish Schedule).

BACK OF HOUSE SPACES

There are back of house spaces such as storage rooms, mechanical rooms, work rooms and corridors that typically have open ceilings and painted walls and floors. All of these spaces, as shown on the subsequent floor plans, will require new finishes as well, with painted walls, painted structure above and painted floors (or match existing material).

CONVERTED MECHANICAL AND COMPUTER ROOMS

The renovation of the building will result in fewer mechanical rooms. Some of these rooms, once emptied of equipment, could become usable space for storage or even office or open office areas. On several of the basement levels previous raised floor computer rooms are currently empty. These plans propose renovating these spaces, removing the raised floors and refinishing these spaces as open office areas.

Back of house corridor

Typical open office space

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

The first chart below identify the proposed materials being recommended for the finish renovations. The second chart shows the space types where the new finishes are proposed.

MATERIAL IDENTIFICATION: FINISHES

HGA

Project: **1 West Wilson**
Location: Madison, WI
Project No: 1190-035-00

333 East Erie St, Milwaukee, WI 53202

Material Name	Material ID	BOD Manufacturer	Material Cost
Acoustical Ceiling Tile	ACT	Armstrong Optima Tegular 9/16" Grid	
Carpet Tile	CPT		$18 / square yard
Ceramic Tile Base	CTB	(use 4" high cut CTF w/ Schluter Strip above)	$4.50 / square foot
Ceramic Tile Floor	CTF		$4.50 / square foot
Ceramic Tile Wall	CTW		$6.00 / square foot
Paint	PT	Sherwin Williams or equal	
Plastic Laminate	PLAM	Wilsonart or equal	
Solid Surface	SSF	Corian Group 4 or equal	
Resilient Base	RB	4" Tarkett or equal	
Resilient Floor Tile	RFT	Patcraft #1316V Wood Planx Facet	
Wall Corner Gaurds	WCG	Full-height Stainless Steel, Koroguard or equal	

BASIS OF DESIGN: FINISHES

HGA

Project: **1 West Wilson**
Location: Madison, WI
Project No: 1190-035-00

333 East Erie St, Milwaukee, WI 53202

Room Space / Type	Flooring	Base	Walls	Ceiling	Casework	Notes
Vestibule	Ext Terrazzo/Walk off	Terrazzo	Existing Plaster - PT	Existing Plaster - PT		1,2
Lobby	Ext Terrazzo	Ext Terrazzo	Existing Plaster - PT	Existing Plaster - PT		1,2
Elevator Lobby	Ext Terrazzo	Ext Terrazzo	Existing Plaster - PT	Existing Plaster - PT		1,2,3,4
Historic Corridors Levels 1 & 2	Ext Terrazzo	Ext Terrazzo	Existing Plaster - PT	Existing Plaster - PT		1,2
Existing Toilet Rooms	Ext Terrazzo	Ext Terrazzo	Existing	Existing Plaster - PT		1,2
New Toilet Rooms	CTF	CTB	CTW - full height	ACT		
Open Offices	CPT	RB	PT	ACT		
Break Rooms	RFT	RB	PT	ACT	PLAM base / SSF countertops	
Stairs	Ext Terrazzo	Ex Terrazzo	PT	-		

General Notes:

A	All walls to be patched and repaired; plaster walls to receive plaster repair, drywall walls to receive drywall repair; prep for new paint
B	Remove all existing asbestos floor tile; replace with new porcelain tile (color to match terrazzo field color)
C	Murals/Wallcovering on walls and ceiling in historic portions of floors are Existing to Remain

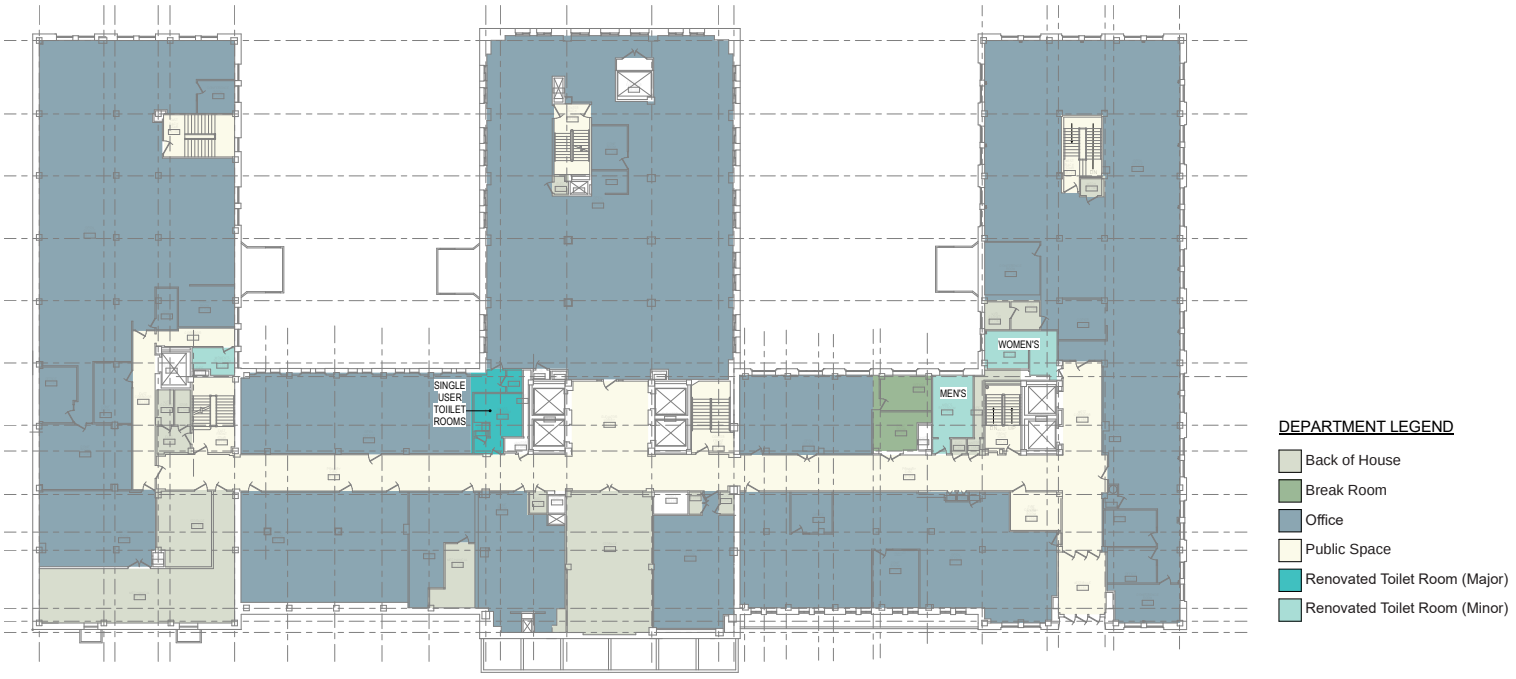
Room Specific Notes:

1	Clean and repair all existing marble walls
2	Clean and repair all existing terrazzo floors and base
3	Add WCG to corners of Elevator Lobby Marble
4	Clean and repair all existing marble toilet partitions

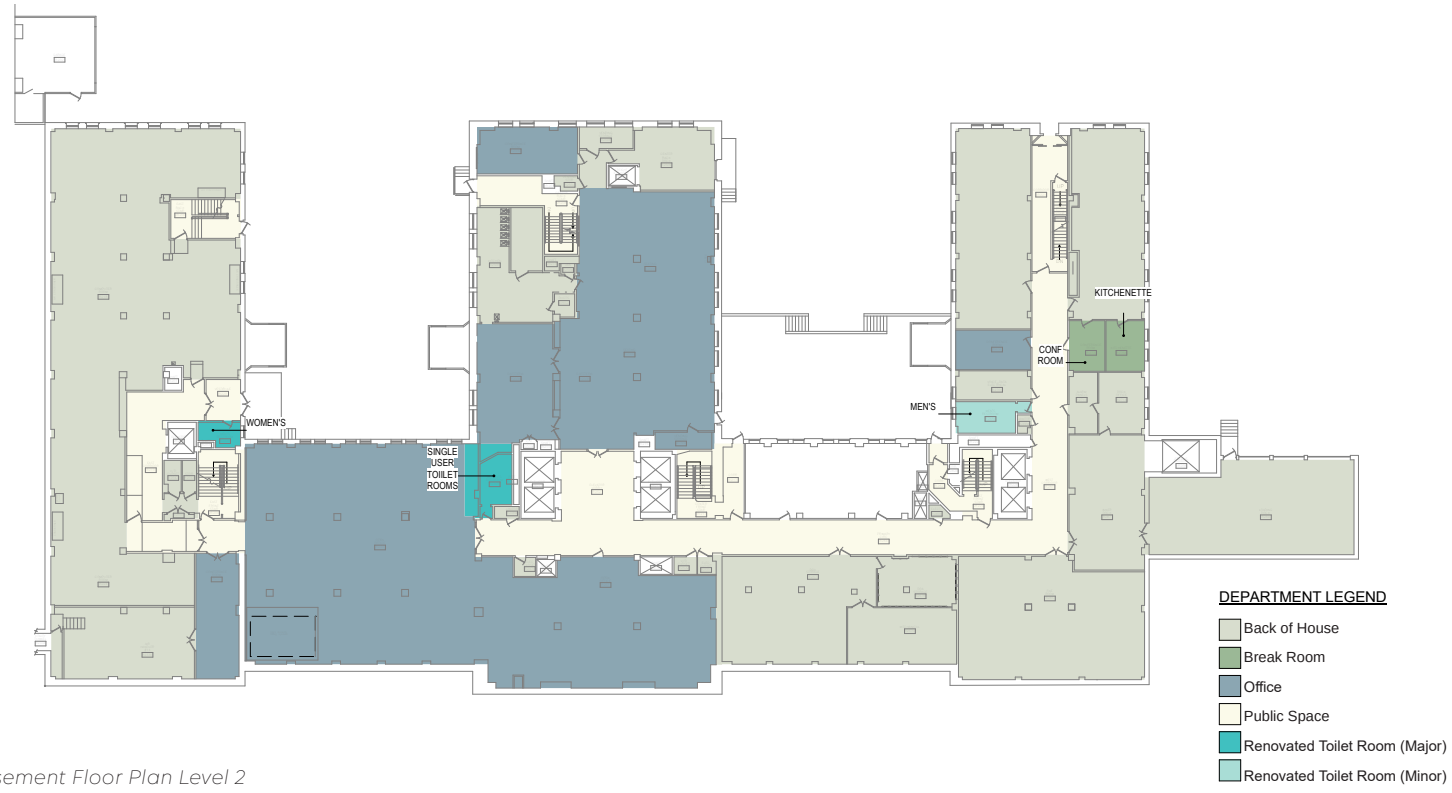
3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

FLOOR PLANS

The following floor plans show the locations of renovated and new restrooms and break rooms, as well as the typical locations of public space, office areas and back of house spaces.



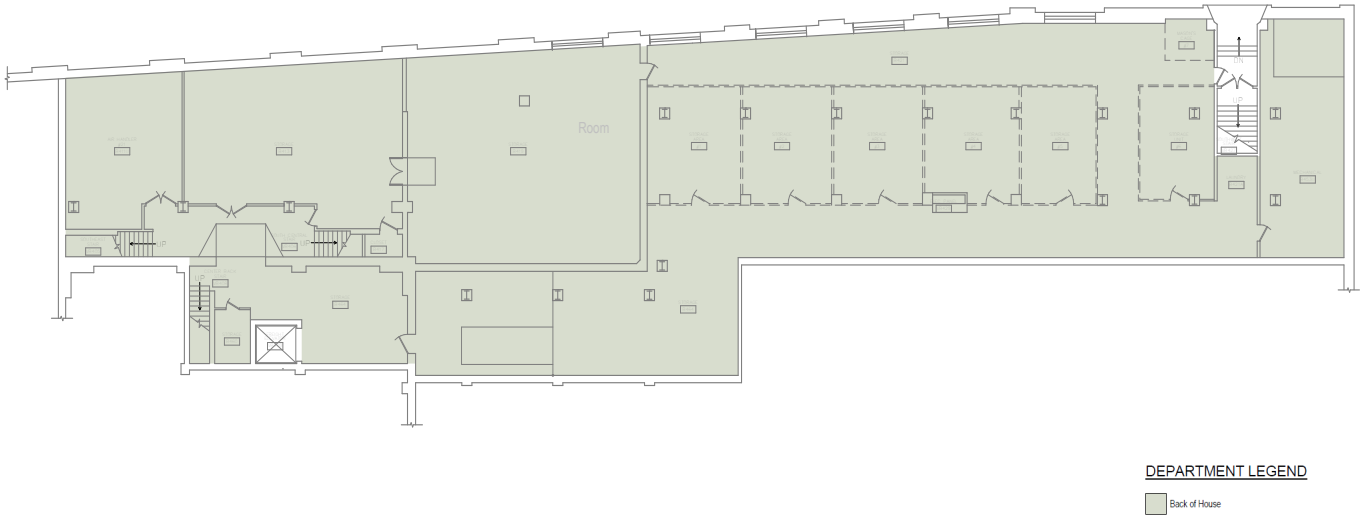
Basement Floor Plan



Basement Floor Plan Level 2

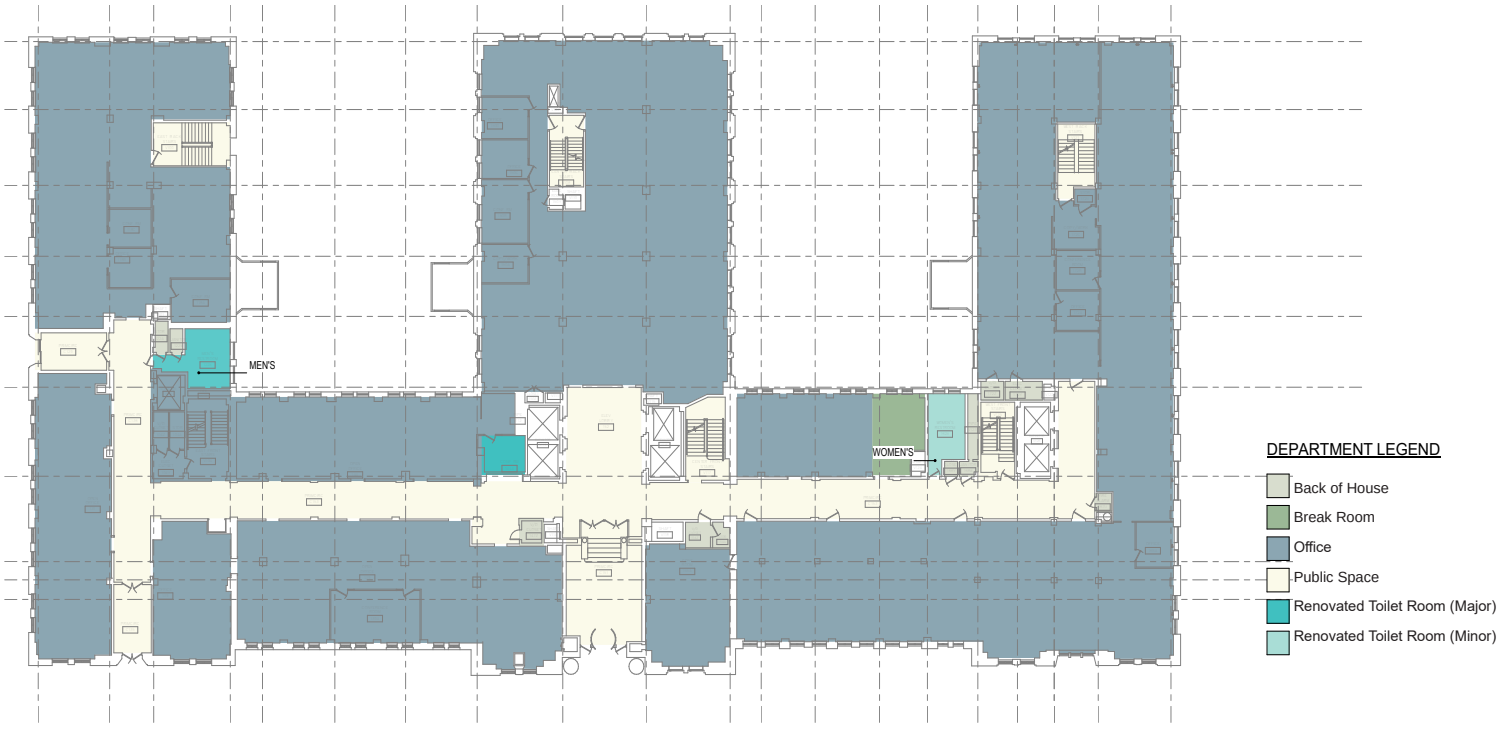
3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

Basement Floor Plan Level 3

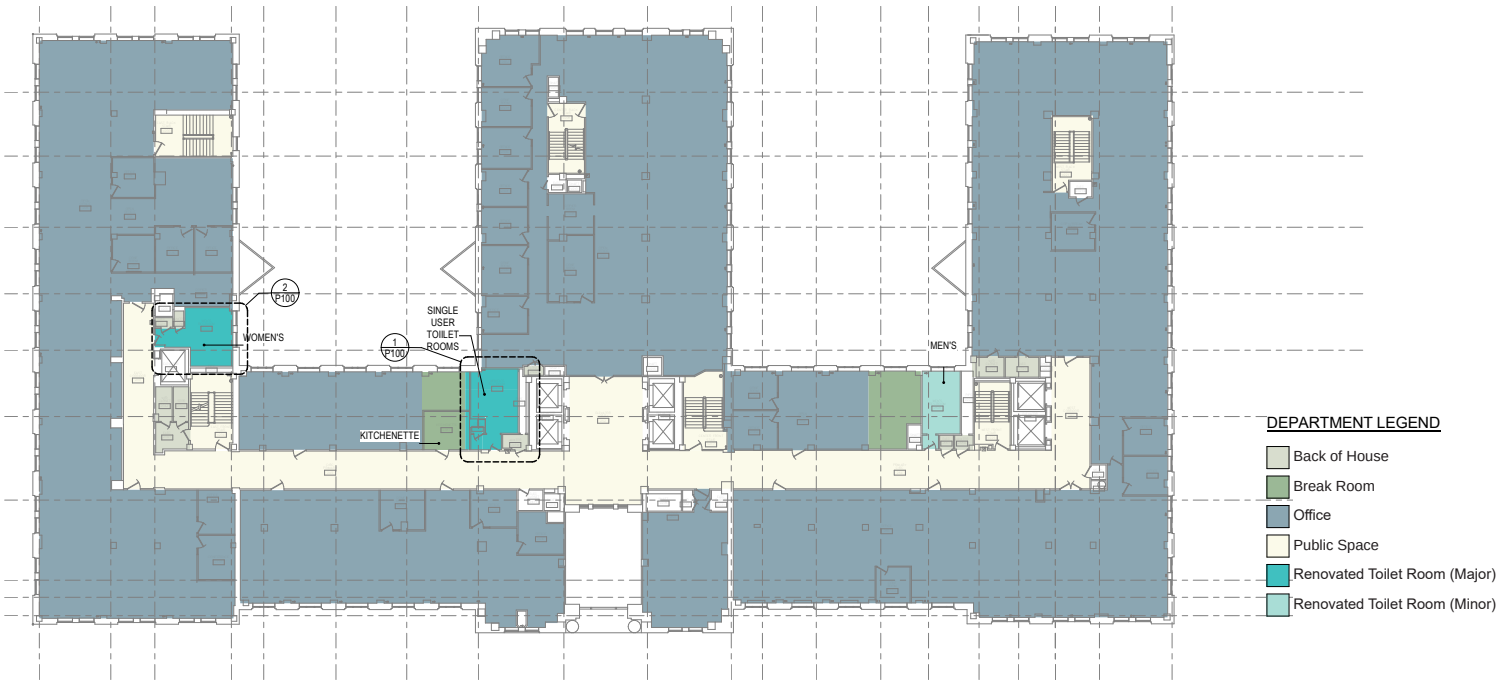


Basement Floor Plan Level 4

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

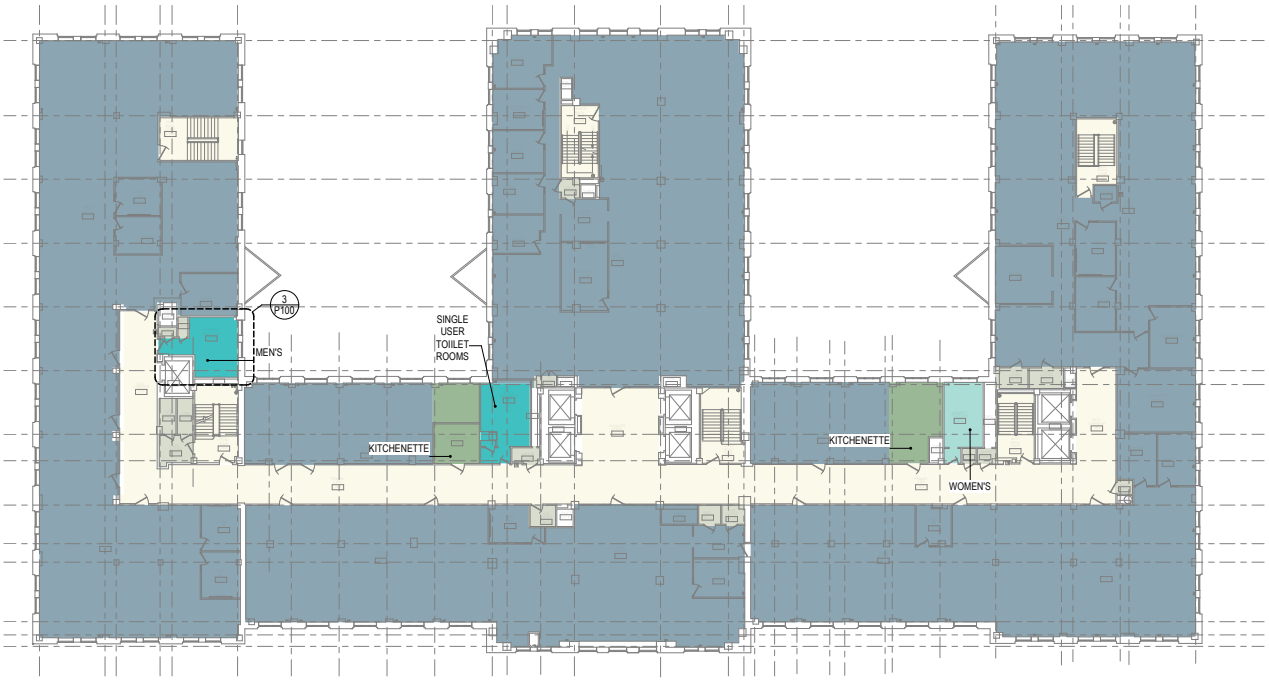


Level 1 Floor Plan

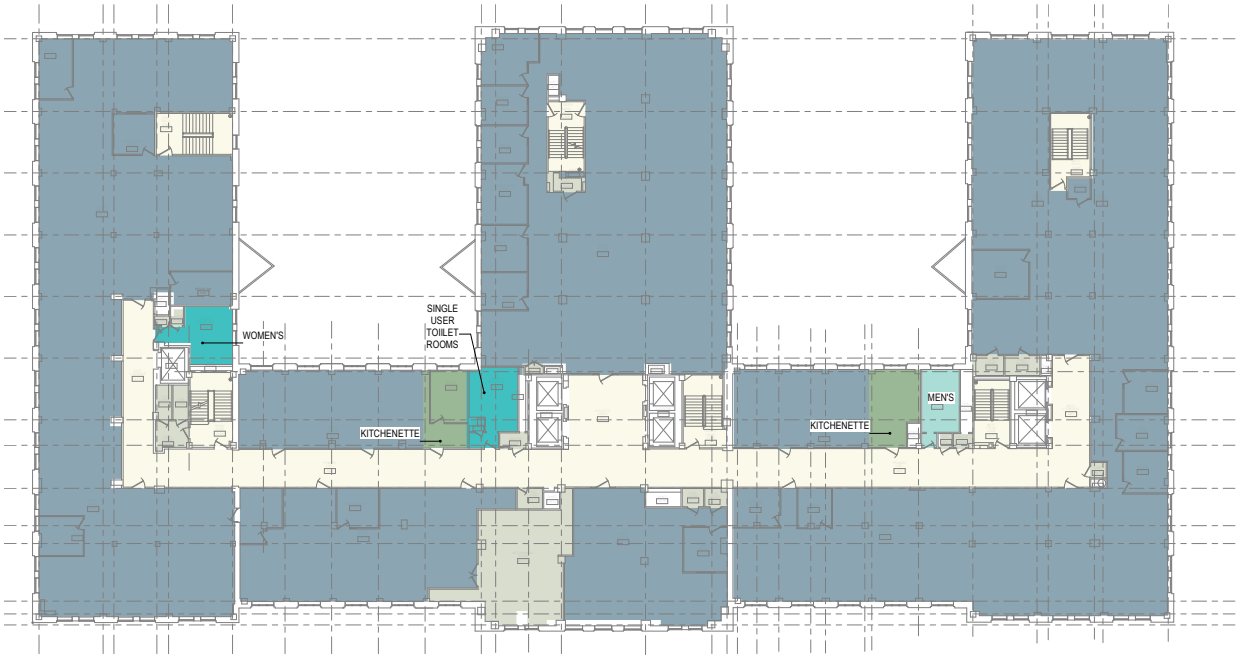


Level 2 Floor Plan

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS



Level 3 Floor Plan



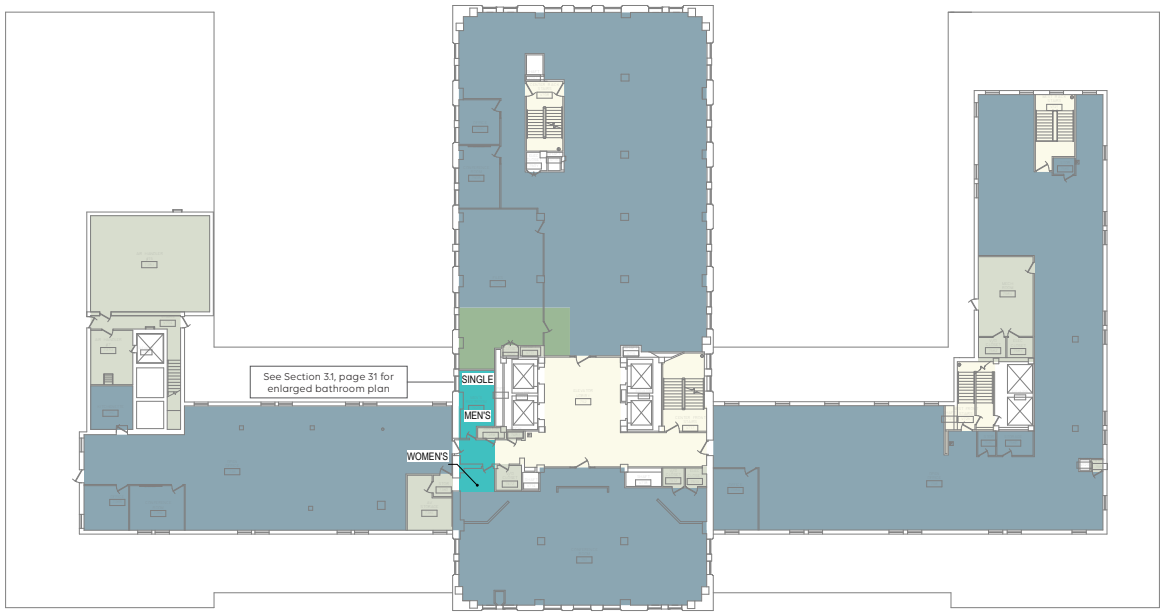
Level 4 Floor Plan

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS

Level 5 Floor Plan

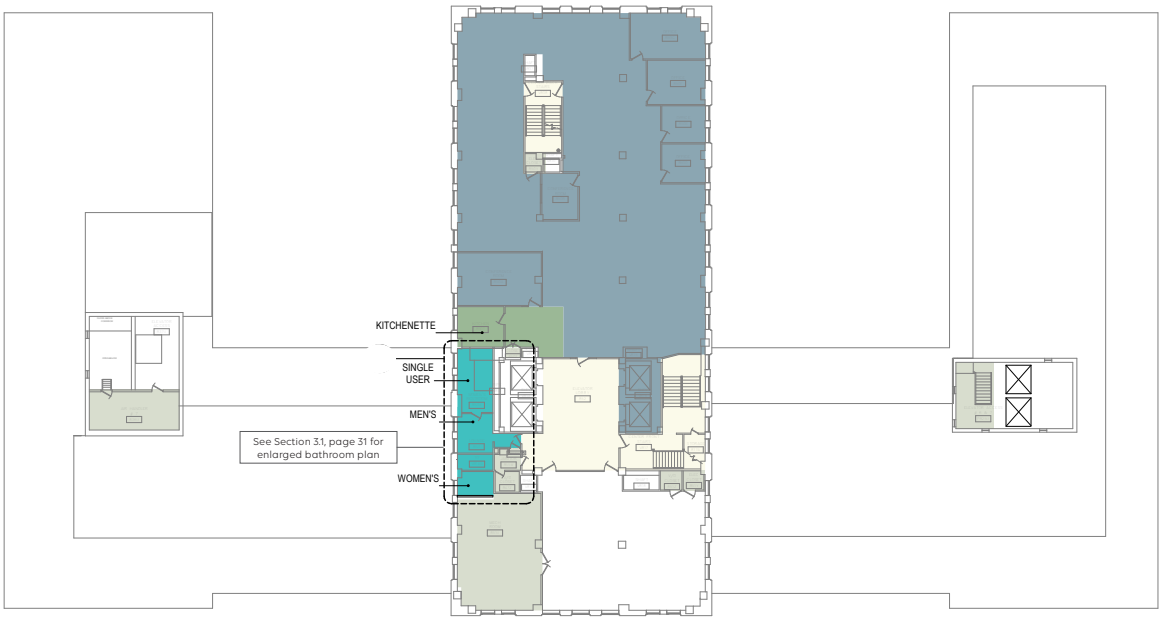
Level 6 Floor Plan

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS



DEPARTMENT LEGEND
- Back of House
- Break Room
- Office
- Public Space
- Renovated Toilet Room (Major)

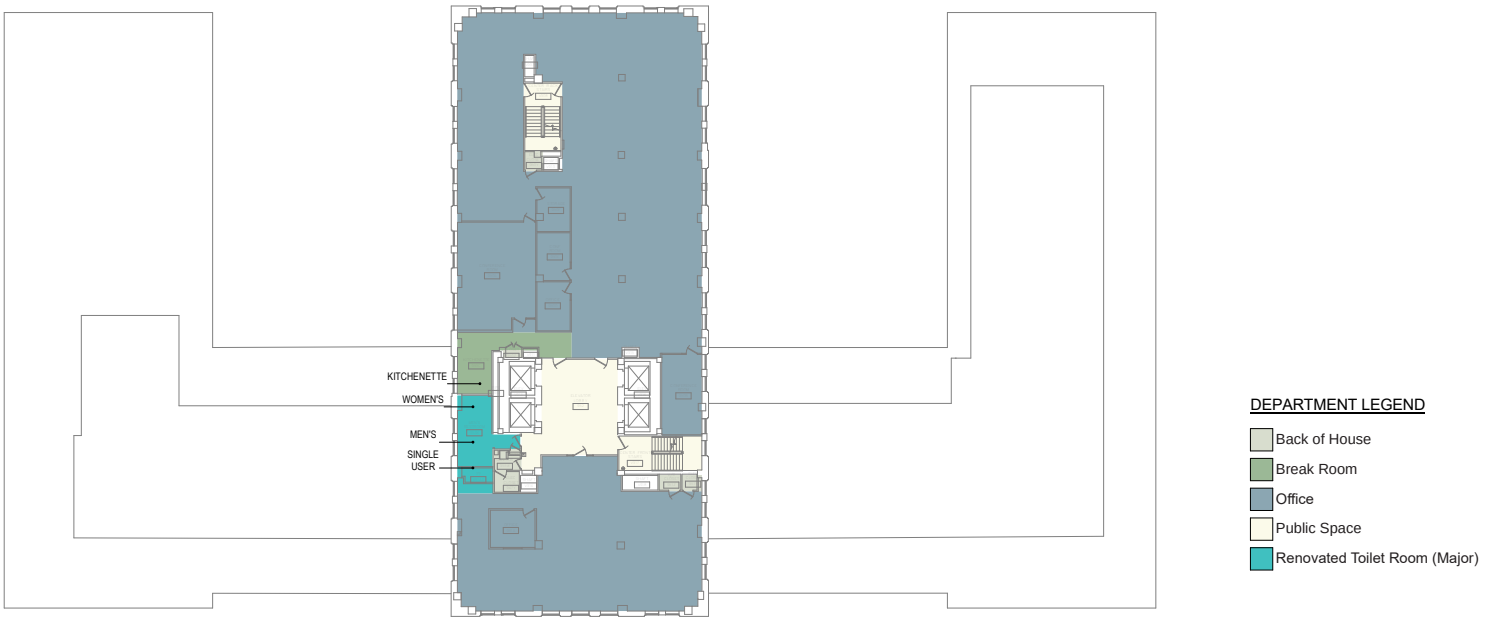
Level 7 Floor Plan



DEPARTMENT LEGEND
- Back of House
- Break Room
- Office
- Public Space
- Renovated Toilet Room (Major)

Level 8 Floor Plan

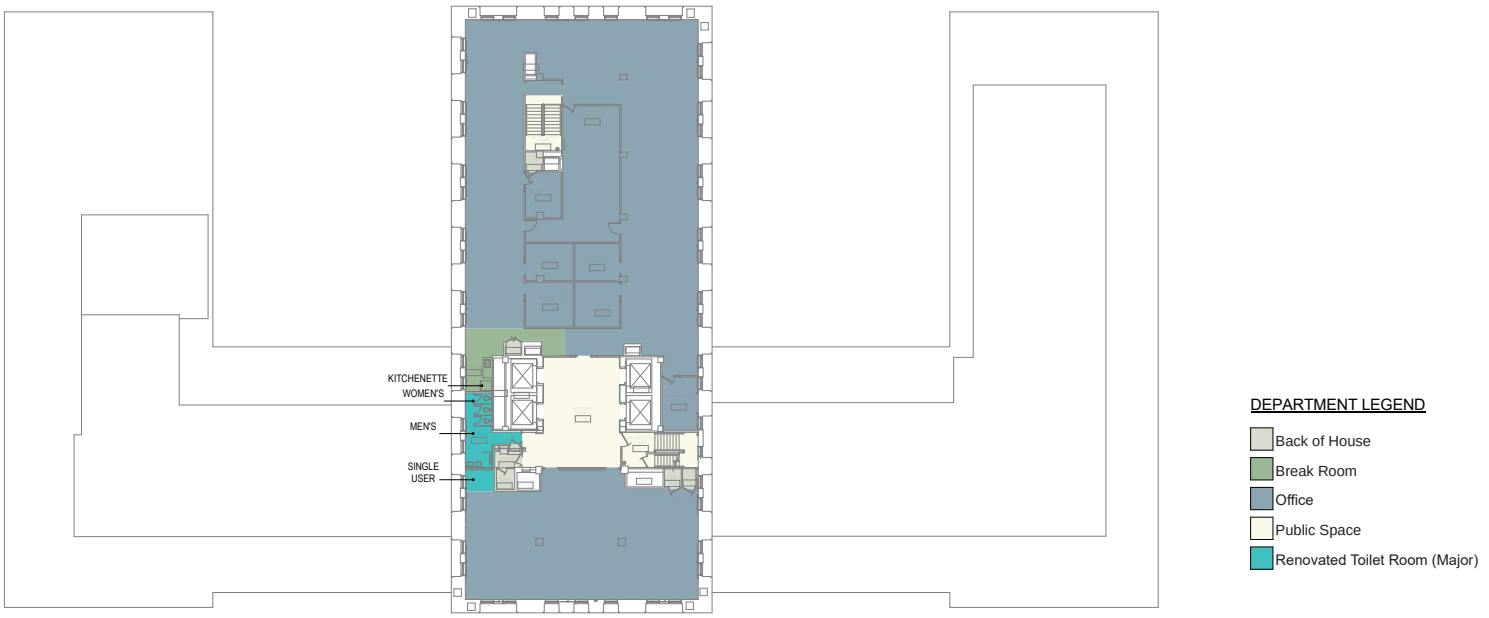
3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS



Level 9 Floor Plan

Level 10 Floor Plan

3.2 INTERIORS ASSESSMENT & RECOMMENDATIONS



Level 11 Floor Plan

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

HEATING SYSTEMS

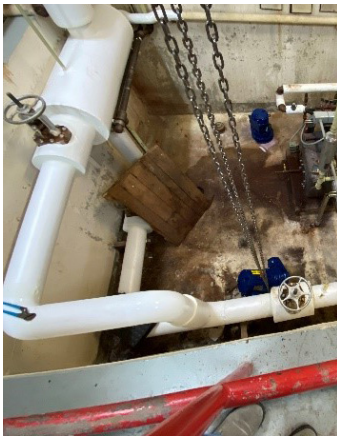
The existing building heating system is supplied low pressure steam from the Capitol Power Plant. Steam enters the building via an underground steam tunnel system. Steam is distributed throughout the building and provides for all building heating needs. All heating devices use steam. Much of the steam distribution system is original to the building and in constant need of service and repair.

Low pressure steam condensate is returned via combination of two methods. Vacuum condensate pump units and conventional condensate transfer pumps. All units appear to have been replaced at some point in the life of the building. However, all are in fair to poor condition requiring constant service and repair.

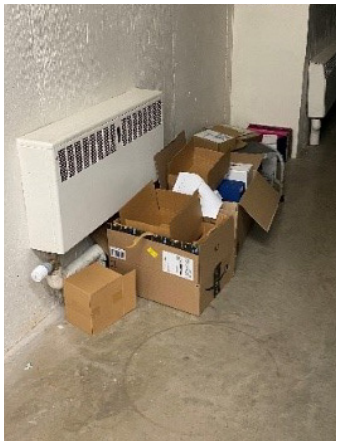
Low pressure steam and condensate is distributed throughout the building to air handling units and perimeter heating terminals. Many of the existing heating terminals are original to the building and have exceeded their life expectancy. Many original heating terminals have been replaced somewhere in the life of the building and too have reached their life expectancy.

Many of the existing steam system zone isolation valves have poor accessibility or are completely inaccessible. The existing steam distribution systems have reached their life expectancy and should be replaced with a new hydronic heating system.

One aspect of the existing heating system with regards to historical preservation if possible, is keeping some of the original ornate grilles used to house cast iron steam radiators.



Typical condensate transfer pump in pit; Typical vacuum pump unit in pit



Typical steam original cast iron radiator; Typical radiator replaced with convector

Steam service in basement

Main entrance steam radiators behind ornate grilles

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

COOLING SYSTEMS

The building is cooled with a chilled water system. Chilled water to the building is supplied from the Capital Heating Plant. Chilled water pumps in the building circulate chilled water throughout the building to cooling coils in air handling units. The existing chilled water pumps appear to be in fair condition. Much of the existing chilled water piping distribution is original to the building when chilled water was first installed and appears to be in fair to good condition.

HYDRONIC DRY COOLER SYSTEMS

There is an existing hydronic dry cooler system installed in the building that was used to serve water cooled computer room AHU's. This system was decommissioned some time ago and is abandoned in place. The system consists of pumps, heat exchanger, fluid cooler and piping distribution. This system is obsolete and should be removed.

Building Chilled Water Pumps

Newer Chilled Water Piping

Older Chilled Water Piping

Existing heat recovery system pumps and piping abandoned in place

Existing heat recovery system heat exchanger abandoned in place

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

VENTILATION SYSTEMS

The building air handling systems consist of 23 air handling units ranging in capacity from less than 1000 CFM to more than 30,000 CFM located throughout the building. All air handling units are indoor type consisting of supply fan, return fan, steam heating coil, cooling chilled water coil, filters and steam humidifier. The age of air handling units range from fairly new to more than 50 years old. Many of the older air handling units do not provide adequate amounts of outdoor air to comply with current ventilation code requirements.

Small fairly new AHU

Fairly new larger AHU

Small 50+ year old AHU

Larger 50+ year old AHU

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

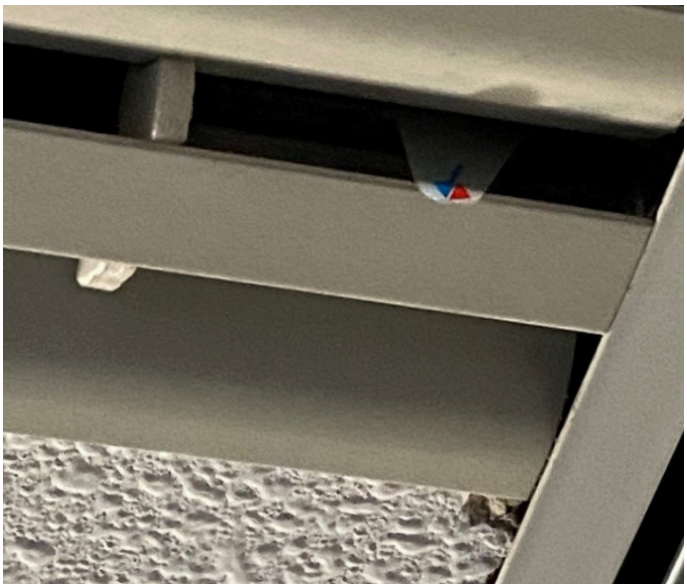
All of the older air handling units have exceeded their life expectancy and are not equipped with features commonly available with air handling units manufactured today. These old AHU's only have 2-inch-thick pre-filters with no final filters, no access between heating and cooling coils, no access at humidifiers, single belt driven fans providing no redundancy and are overall less efficient.

The ventilation supply and return air distribution systems are single duct. Many of these systems are 50+ years old, have reached their life expectancy and are in need of replacement. The supply duct systems supply conditioned air to 30+ year old VAV boxes or 40+ year old Moduline supply diffusers. None of the VAV boxes have any reheat. Most if not all of the VAV boxes are pneumatically controlled, have reached their life expectancy and are in need of replacement with more efficient Direct Digitally Controlled VAV boxes. Moduline supply diffusers are an obsolete technology no longer manufactured. The moduline diffusers have reached their life expectancy and are continually being service and repaired. Replacement parts are becoming harder and harder to find.

Ventilation exhaust is provided in the building. Much of the exhaust systems appear to have been added over time with many of the exhaust fans replaced over time. It is most likely that the amount of exhaust provided by these systems does not comply with current code.

Many fire dampers installed in the existing exhaust ductwork distribution systems have poor accessibility or are completely inaccessible. These systems have reached their life expectancy.

Example of old AHU with no access between heating and cooling coils or humidifier



Moduline supply diffuser with manual adjustment tab for heating and cooling supply air control.

Typical utility set exhaust fan

Typical inline exhaust fan

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

TEMPERATURE CONTROL SYSTEMS

Building temperature controls are a mix of pneumatic and Direct Digital Control (DDC). The pneumatic control system is original to the building and is an obsolete technology. The pneumatic control system has exceeded its life expectancy and should be replaced new Direct Digital Controls (DDC). Pneumatic controls do not provide the level of control, monitoring and efficiency DDC controls provide today.

Original pneumatic control panel

New DDC panel next to old pneumatic panel

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

New hot water heating system should include the following.

- Existing 8 in. Low Pressure Steam and 2 in. pumped condensate return service to building is of adequate size to serve proposed steam and condensate return loads and will remain to provide steam and condensate return to building.
- Two steam-to- water heat exchangers providing N+1 redundancy. Capacity of each heat exchanger is estimated to be no more than 14,000 lbs/hr.
- Condensate transfer pump unit with duplex pumps for N+1 pump redundancy. Capacity of transfer pump unit is estimated to be no more than 14,000 lbs/hr.
- Two base mounted hot water pumps providing N+1 redundancy. Capacity of each pump is estimated to be 1200 GPM.
- Expansion tank and all associated air control accessories.
- Hot water supply and return distribution piping throughout the building with 10 in. diameter pipe being the largest pipe required.
- Hot water heating would be distributed to heating terminal units consisting of air handling unit pre-heat coils, VAV reheat coils, unit heaters, cabinet unit heaters, convectors and finned tube radiation.

New chilled water cooling system should include the following.

- Existing 8 in. chilled water service to building is of adequate size to serve proposed chilled water loads and will remain to provide chilled water to building.
- Three base mounted chilled water pumps providing N+1 redundancy. Capacity of each pump is estimated to be 1200 GPM. Present existing chilled water pump should be evaluated to determine feasibility of re-using pump.
- Expansion tank and all associated air control accessories.
- Chilled water supply and return distribution piping throughout the building with 14 in. diameter pipe being the largest pipe required. Present existing chilled water piping distribution should be evaluated to determine extent of existing piping that could remain.
- Chilled water cooling would be distributed to cooling terminal units consisting of air handling unit cooling coils and fan coil cooling coils.

There are many existing air handling units located throughout the building in need of replacement or capacity improvement. Replacement of air handling units should include consolidating as many smaller capacity air handling units as possible into fewer larger capacity air handling units. The challenge in doing so is the ability to fit new air handling units of larger dimension in to both existing and possibly new mechanical spaces. Several options were considered and reviewed. The following options are considered feasible.

- Option 1: Locate air handling units on Basement Level 3, Level 7 and Level 11 roof.
    - This option places approximately 70,000 CFM of air handling unit in a new mechanical penthouse on the Level 11 roof.
    - This option places approximately 80,000 CFM of air handling unit on Level 7 requiring new mechanical rooms on Level 7.
    - This option places approximately 165,000 CFM of air handling units on Basement Level 3.
    - This option is our recommended option for the following reasons.
        - Consolidates 22 existing air handling units into 9 new air handling units.
        - Utilizes as much of the existing Basement Level 3 mechanical rooms as possible.

- Places as much air handling unit capacity on Basement Level 3 as possible.
- Trade-offs between program space taken up for new mechanical rooms and existing mechanical rooms turned over for program space results in potentially 1000 sq.ft. gain for program space.

- Option 2: Should costs for options 1 prove too costly, plans for consolidation of air handling units can be partially or completely abandoned and instead replace existing air handling units 1 for 1 with new air handling units. This should be a lower cost option because not all existing air handling units need replacement. Approximately 5 of the 22 existing air handling units would not need replacement as they are fairly new, in good condition and are performing well.

1 WEST WILSON OPTIONS SUMMARY		
Option Features	Option 1	Option 2
Highest Construction Cost (includes new mechanical room construction costs)	Yes	No
Requires Construction of New Mechanical Rooms	Yes	No
Consolidates AHU's into as few AHU's as possible	Yes	No
Locates AHU's on Three Levels Only (Basement 3, Level 7 & Level 11)	Yes	No
Increases Available Program Space (estimated 1000 sq.ft. increase)	Yes	No

HGA did look at options to placing all existing air handling units with new air handling units located either all in the basement or all on the roof of the building. Both options proved to be not feasible due to limited space and clearances in the basement and on Level 7.

Much of the building is served by a modulating supply diffuser system manufactured by Moduline. This is an obsolete technology and is experiencing significant failures. Replacement parts are becoming more and more difficult, and costly to obtain. This system should be replaced with a new VAV with reheat system.

Remaining portions of the building are served by variable air volume (VAV) systems or single zone, constant volume air handling units. All existing VAV boxes are close to 40 years old and should be replaced with new. All spaces served by single zone, constant volume air handling units should be converted to VAV. All new VAV boxes should include hot water reheat coils and controls.

Most if not all existing supply and return ductwork distribution in the building will need to be removed and replaced with new for all new and existing air handling options.

Energy recovery in compliance with energy code at the time of design will be required for all proposed air handling units with possible exception of the southeast and southwest basement AHU's. Energy recovery of the enthalpy type will most likely be required. Energy in all building relief air and general exhaust air will be recovered to the outdoor air intake of all AHU's requiring energy recovery.

All existing controls in the building should be removed and replaced with new. This includes all existing pneumatic controls, existing electric controls, and existing Direct Digital Controls (DDC). All new controls will be latest state-of-the-art DDC.

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

PROPOSED MECHANICAL PENTHOUSE LOCATION

The photo below shows the roof of the 11th floor (center tower) which is the area proposed to receive a new mechanical penthouse. The rooftop area is adjacent to elevator over-runs which are in the roof area to the north (closest to Wilson Street). See Section 1.2 Constraints for information about the Capital View Height Restriction requirements and also the Mechanical Plans that follows which show the equipment that will be placed in the penthouse on this roof.

Existing Penthouse Rooftop

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

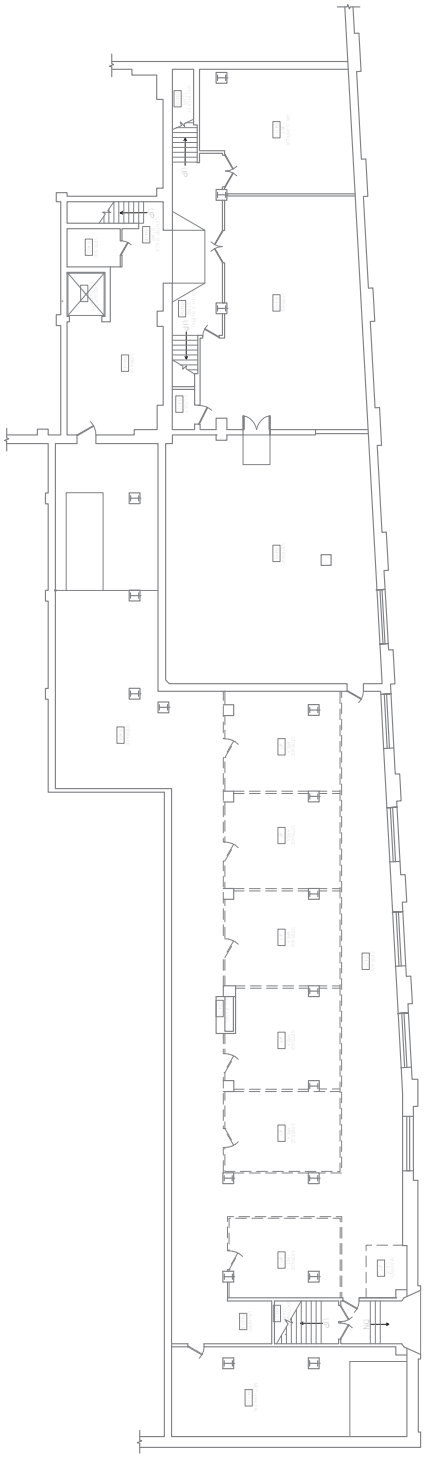
	Area	Ventilation Sysems							
		Supply		Exhaust		Outdoor Air			
	Sq. Ft.	CFM/SF	CFM	CFM/SF	CFM	People /1KSF	No. People	CFM/Person	CFM
Basement Level 3	9,300	0.75	6975	0.0500	465	10	93	15	1395
South East Basement AHU			**6975**		**465**				**1395**
Basement Level 4	12,600	0.75	9450	0.0500	630	10	126	15	1890
Basement Level 3	12,600	0.75	9450	0.0500	630	10	126	15	1890
South West Basement AHU			**18900**		**1260**				**3780**
Basement Level 2 East	7,285	0.65	4735	0.0500	364	10	73	15	1093
Basement Level 2 Northeast	4,200	0.65	2730	0.0500	210	10	42	15	630
Basement Level 2 Center	5,275	0.65	3429	0.0500	264	10	53	15	791
Basement Level 1 East	8,085	0.75	6064	0.0500	404	10	81	15	1213
Basement Level 1 Northeast	4,200	0.75	3150	0.0500	210	10	42	15	630
Basement Level 1 Center	5,355	0.75	4016	0.0500	268	10	54	15	803
Level 1 East	8,085	0.75	6064	0.0500	404	10	81	15	1213
Level 1 Northeast	4,200	0.75	3150	0.0500	210	10	42	15	630
Level 1 Center	5,275	0.75	3956	0.0500	264	10	53	15	791
Level 2 East	8,085	0.75	6064	0.0500	404	10	81	15	1213
Level 2 Northeast	4,200	0.75	3150	0.0500	210	10	42	15	630
Level 2 Center	5,275	0.75	3956	0.0500	264	10	53	15	791
Level 3 East	8,085	0.75	6064	0.0500	404	10	81	15	1213
Level 3 Northeast	4,200	0.75	3150	0.0500	210	10	42	15	630
Level 3 Center	5,275	0.75	3956	0.0500	264	10	53	15	791
East Basement AHU			**63634**		**4354**				**13062**
Basement Level 2 West	7,930	0.65	5155	0.0500	397	10	79	15	1190
Basement Level 2 Northwest	3,945	0.65	2564	0.0500	197	10	39	15	592
Basement Level 2 Center	5,120	0.65	3328	0.0500	256	10	51	15	768
Basement Level 1 West	8,305	0.75	6229	0.0500	415	10	83	15	1246
Basement Level 1 Northwest	4,250	0.75	3188	0.0500	213	10	43	15	638
Basement Level 1 Center	5,120	0.75	3840	0.0500	256	10	51	15	768
Level 1 West	8,305	0.75	6229	0.0500	415	10	83	15	1246
Level 1 Northwest	4,250	0.75	3188	0.0500	213	10	43	15	638
Level 1 Center	5,120	0.75	3840	0.0500	256	10	51	15	768
Level 2 West	8,305	0.75	6229	0.0500	415	10	83	15	1246
Level 2 Northwest	4,250	0.75	3188	0.0500	213	10	43	15	638
Level 2 Center	5,120	0.75	3840	0.0500	256	10	51	15	768
Level 3 West	8,305	0.75	6229	0.0500	415	10	83	15	1246
Level 3 Northwest	4,250	0.75	3188	0.0500	213	10	43	15	638
Level 3 Center	5,120	0.75	3840	0.0500	256	10	51	15	768
West Basement AHU			**64072**		**4385**				**13154**
Level 4	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 5	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 6	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 7	11,500	0.85	9775	0.0500	575	10	115	15	1725
Level 8	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 9	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 10	11,500	0.75	8625	0.0500	575	10	115	15	1725
Level 11	11,500	0.75	8625	0.0500	575	10	115	15	1725
Center Tower Roof AHU's			**70150**		**4600**				**13800**
Level 4	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 5	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 6	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 7	4,700	0.85	3995	0.0500	235	0	0	15	0
East Tower Roof AHU's			**33245**		**2185**				**5850**
Level 4	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 5	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 6	13,000	0.75	9750	0.0500	650	10	130	15	1950
Level 7	6,800	0.85	5780	0.0500	340	0	0	15	0
West Tower Roof AHU's			**35030**		**2290**				**5850**
Totals	**390,775**		**292,006**		**19,539**				**56,891**

	Steam and Hydronic Systems							
	Area	Heating		Cooling		Humidification		Steam
	Sq. Ft.	Btu/SF	MBH	SF/Ton	Tons	Lb/Hr/SF	Lb/Hr	Lb/Hr
Basement Level 3	9,300	25	233	600	16	0.0100	93	333
Basement Level 4	12,600	25	315	600	21	0.0100	126	451
Basement Level 3	12,600	25	315	600	21	0.0100	126	451
Basement Level 4	12,600	25	315	600	21	0.0100	126	451
Basement Level 3	34,500	25	863	600	58	0.0100	345	1,236
Basement Level 2	36,900	30	1,107	500	74	0.0100	369	1,513
Basement Level 1	36,900	30	1,107	400	92	0.0100	369	1,513
Level 1	36,900	30	1,107	400	92	0.0100	369	1,513
Level 2	36,900	30	1,107	400	92	0.0100	369	1,513
Level 3	36,900	30	1,107	400	92	0.0100	369	1,513
Level 4	36,900	30	1,107	400	92	0.0100	369	1,513
Level 5	36,900	30	1,107	400	92	0.0100	369	1,513
Level 6	36,900	35	1,292	400	92	0.0100	369	1,703
Level 7	23,300	35	816	400	58	0.0100	233	1,075
Level 8	11,500	30	345	400	29	0.0100	115	471
Level 9	11,500	30	345	400	29	0.0100	115	471
Level 10	11,500	30	345	400	29	0.0100	115	471
Level 11	11,500	35	403	400	29	0.0100	115	531
Penthouse	2,800	35	98	600	5	0.0000	0	101
Totals	448,900		13,432		1,033		4,461	18,337

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

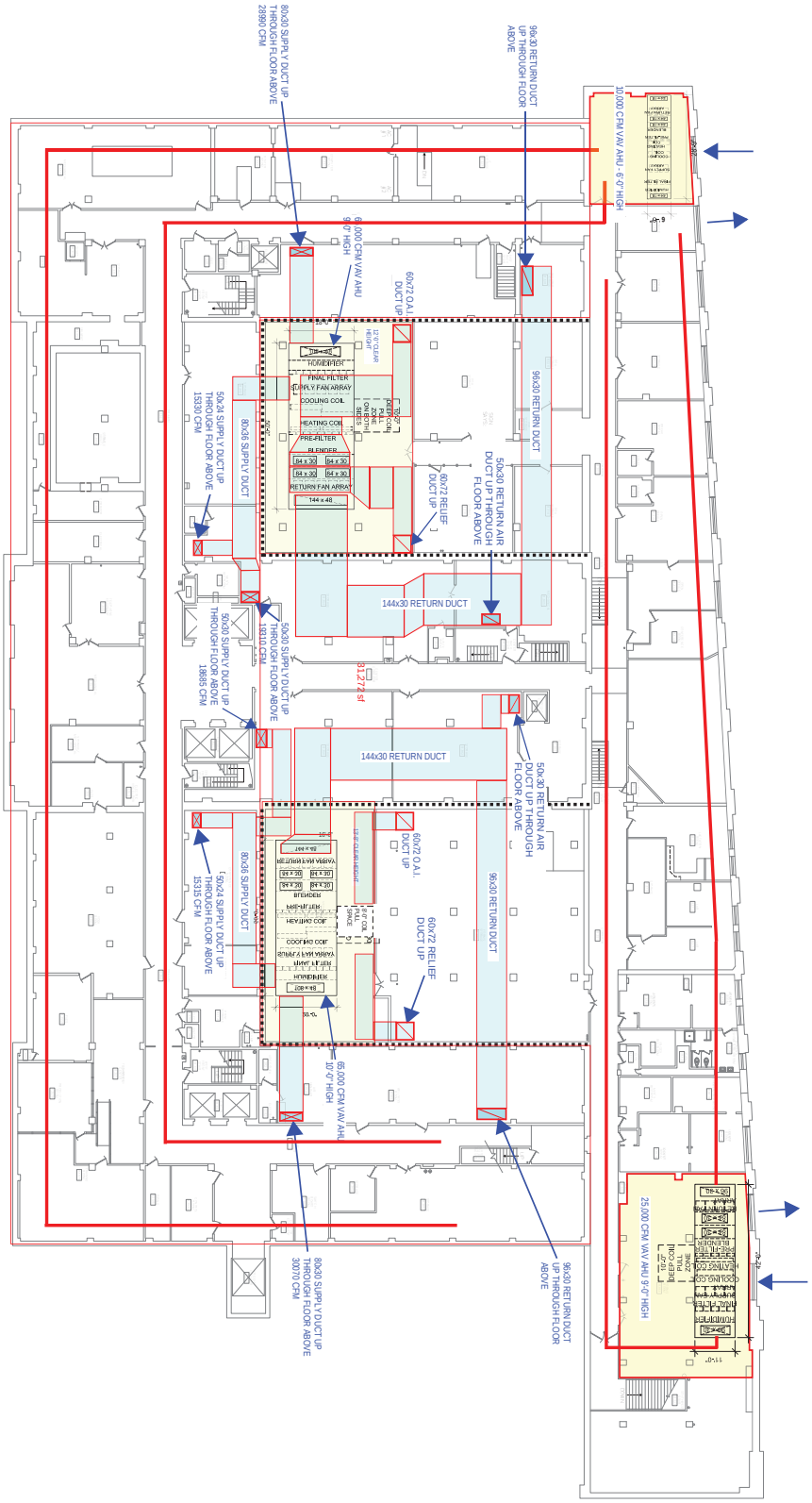
MECHANICAL PLANS

The following plans show the proposed locations for major equipment, along with major ductwork and shaft locations.



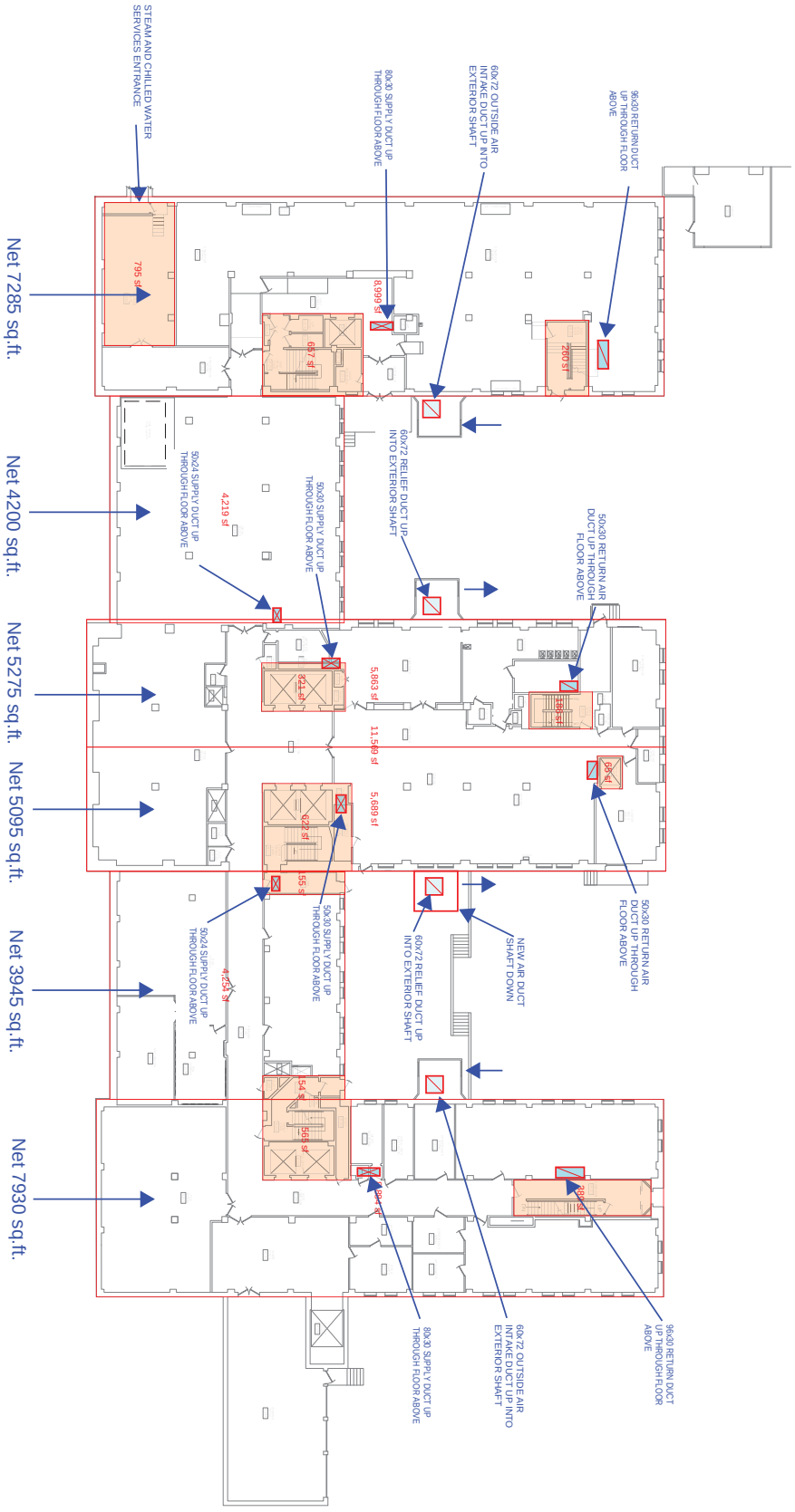
Overall Floor Plan - Level B4

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



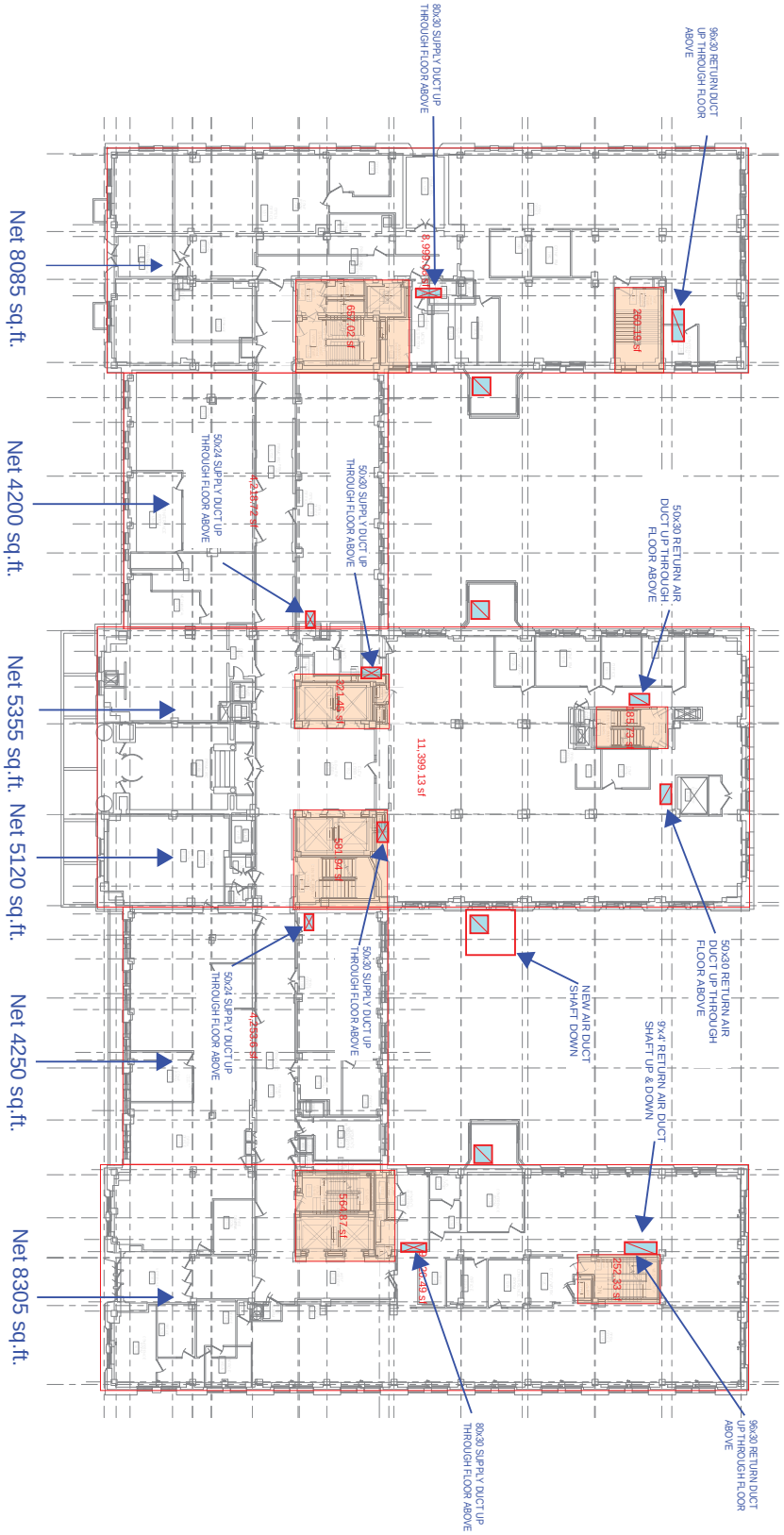
Overall Floor Plan - Level B3

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



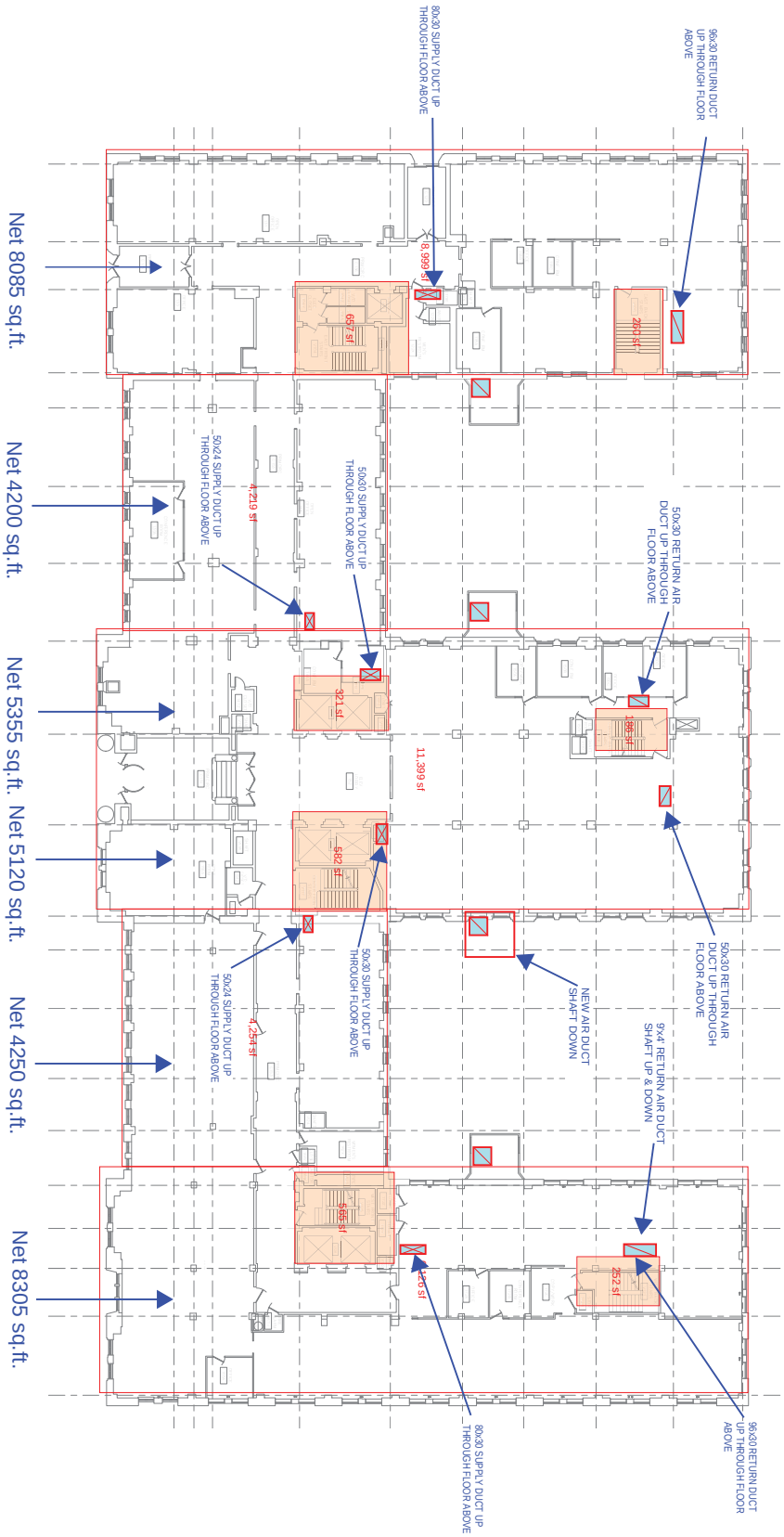
Overall Floor Plan - Level B2

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



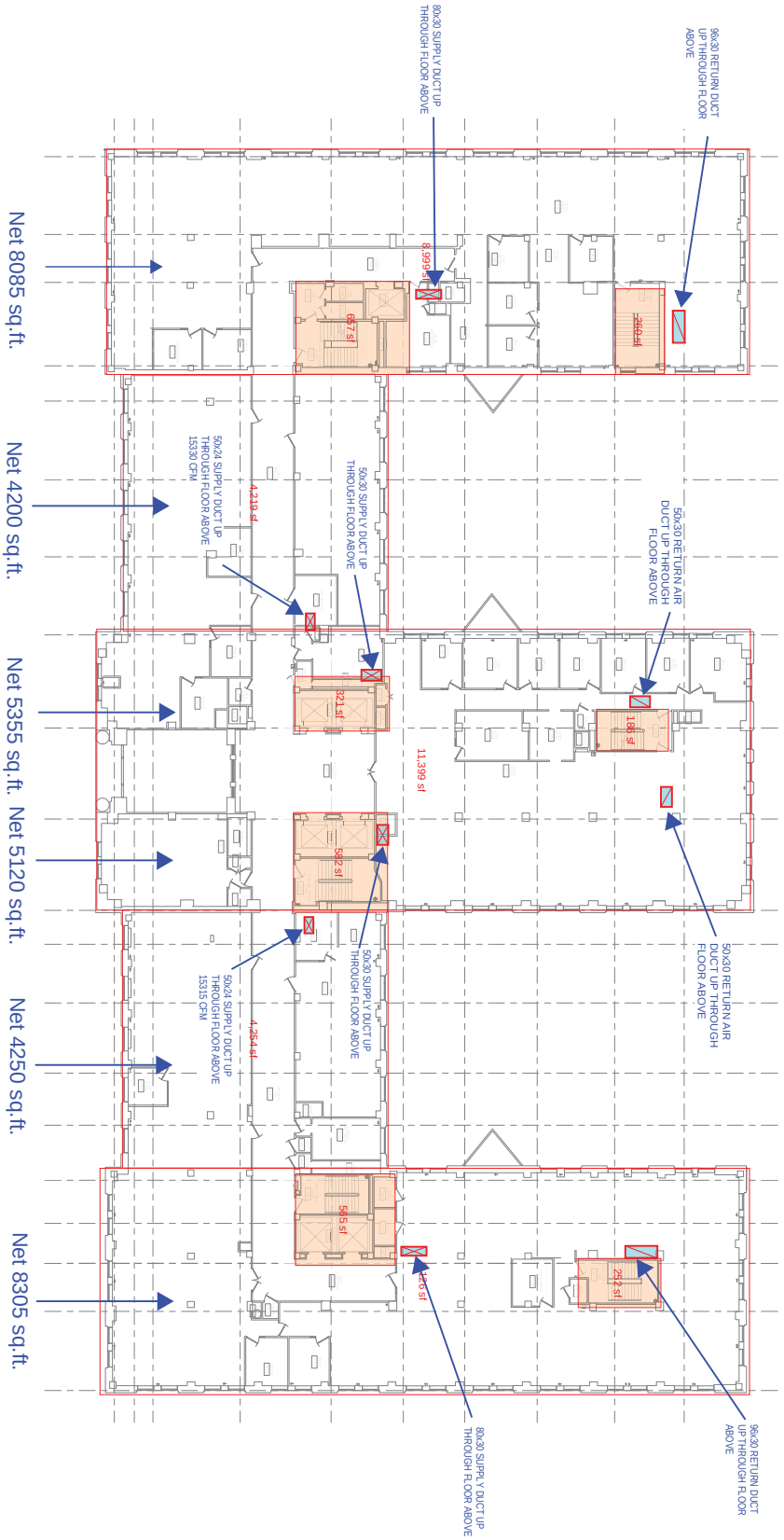
Overall Floor Plan - Basement

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



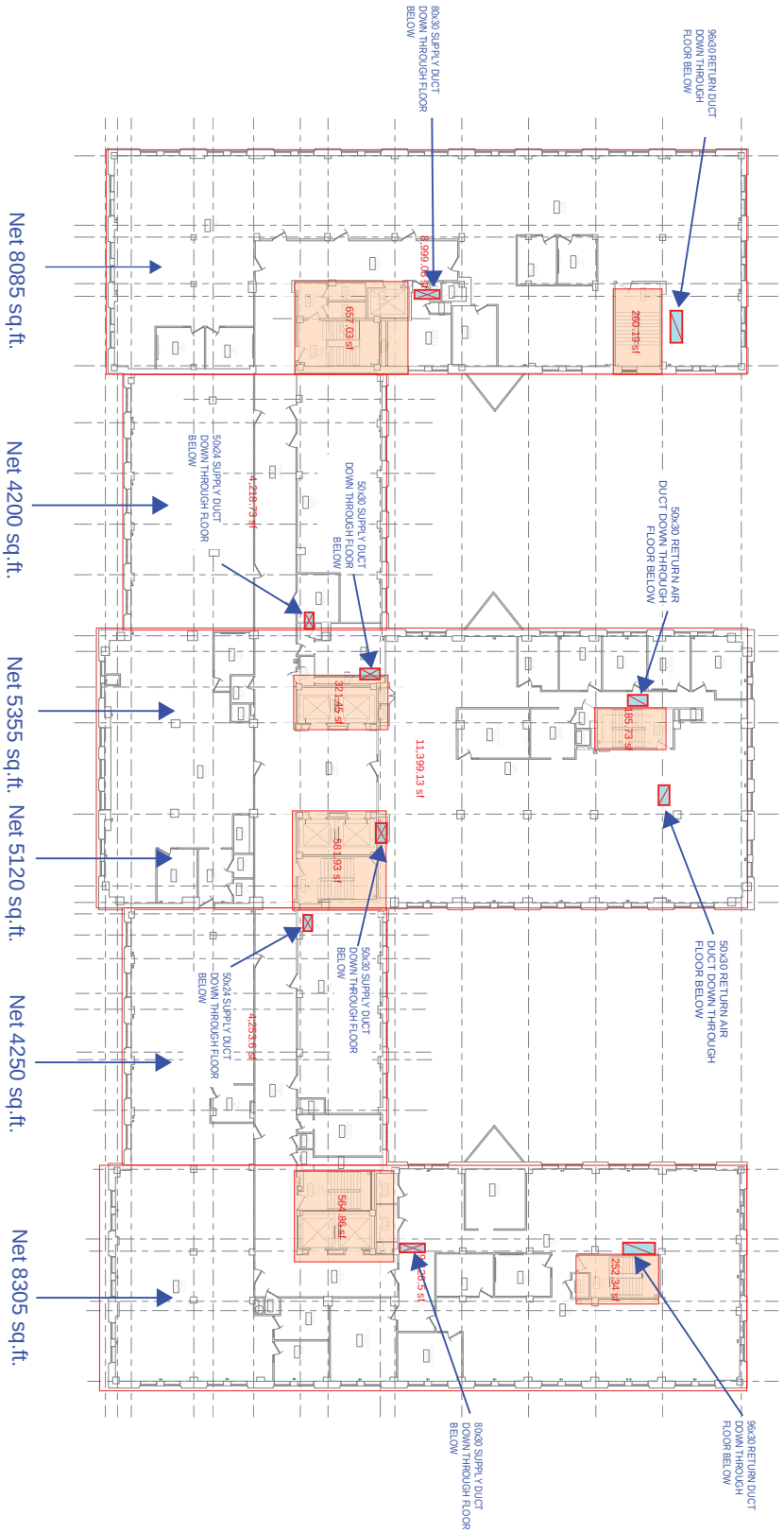
Overall Floor Plan - Level 01

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



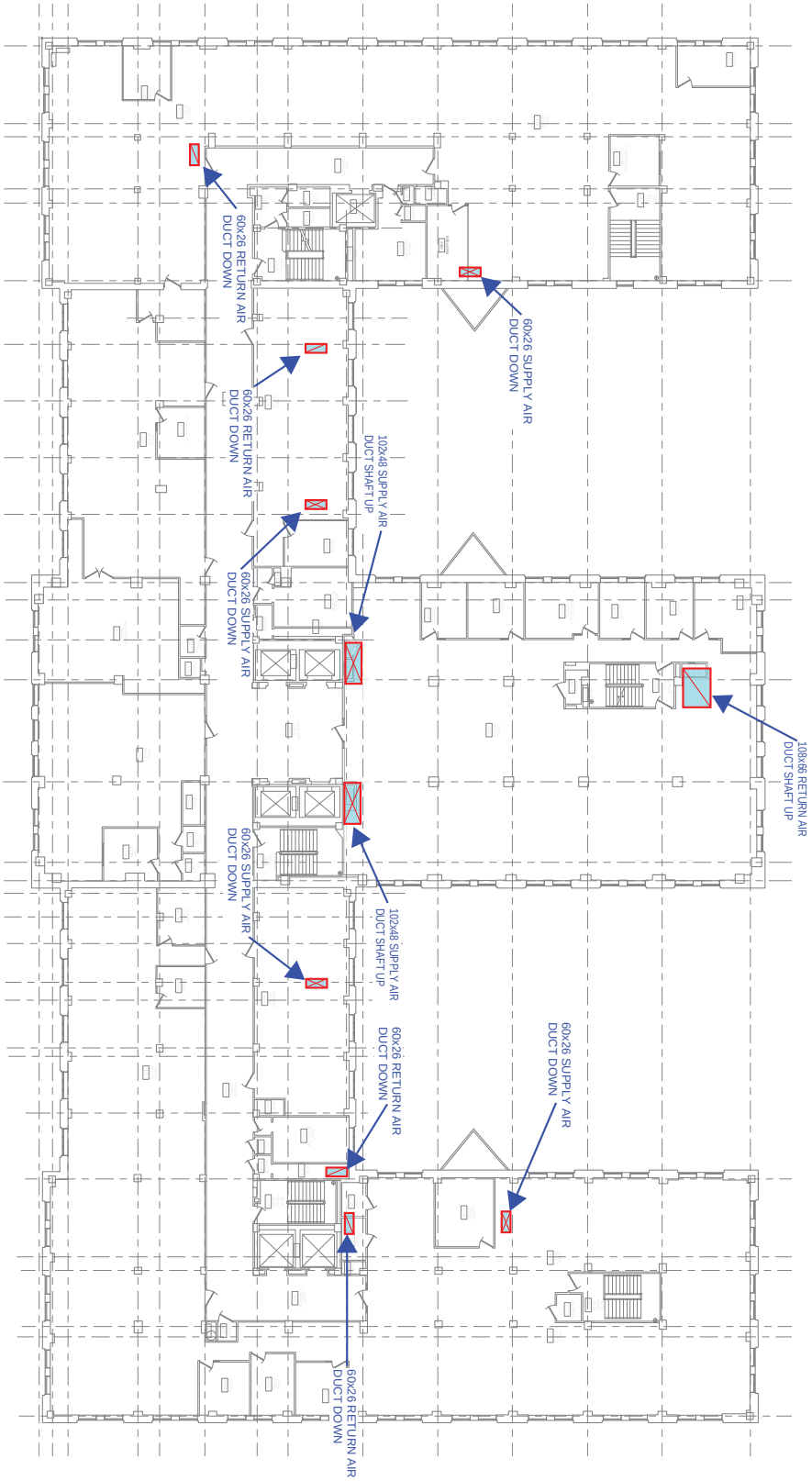
Overall Floor Plan - Level 02

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



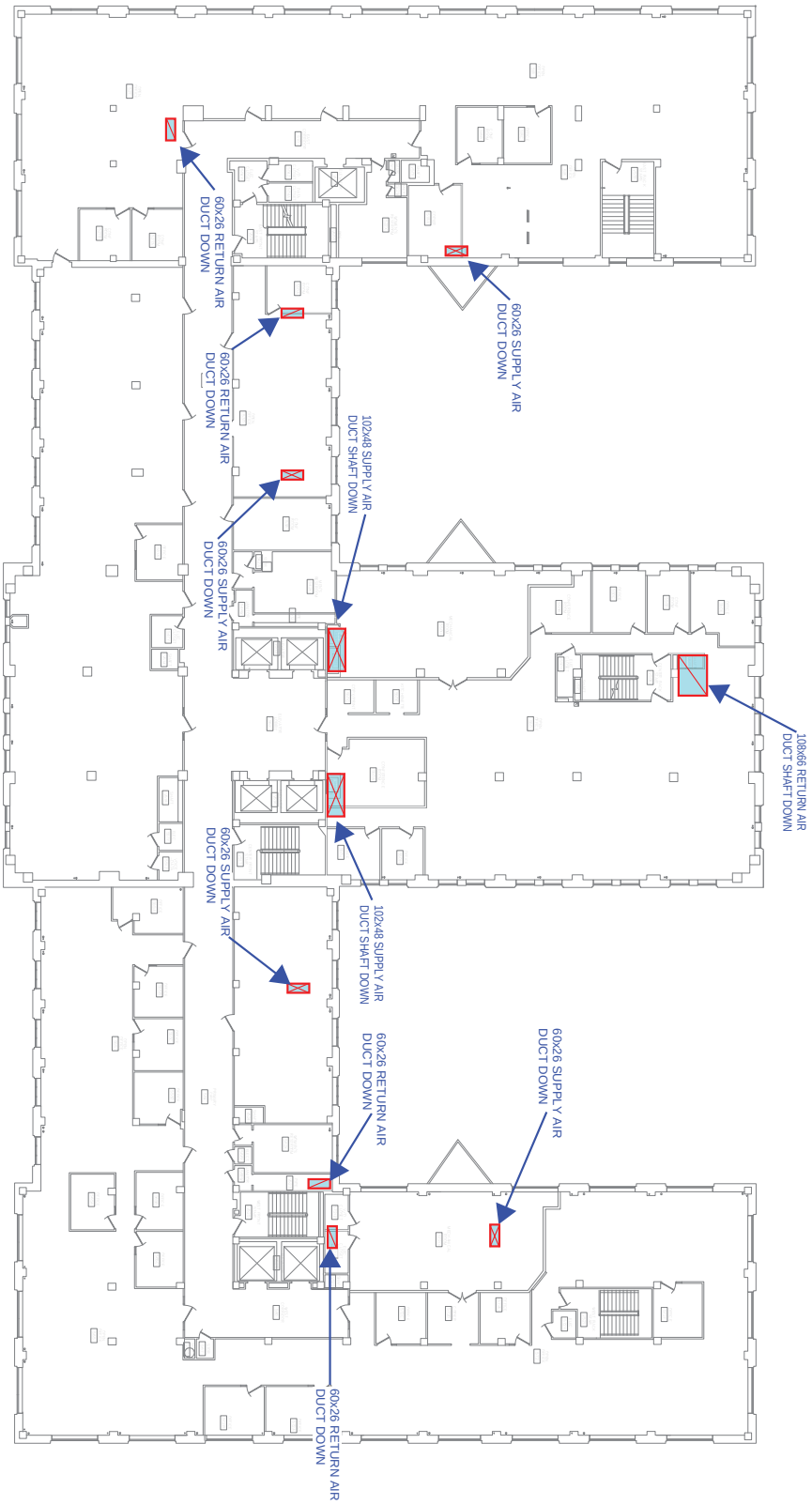
Overall Floor Plan - Level 03

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



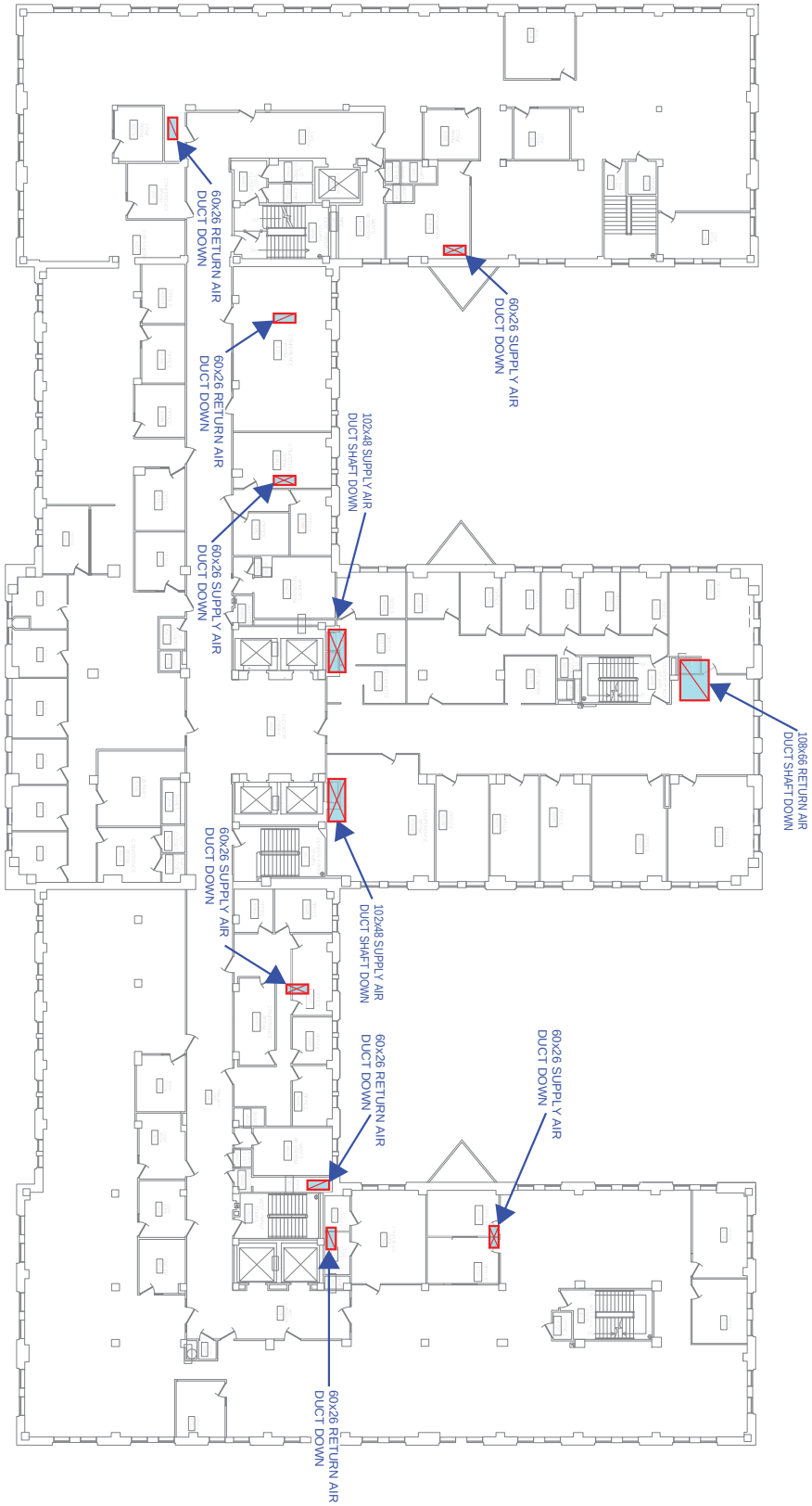
Overall Floor Plan - Level 04

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



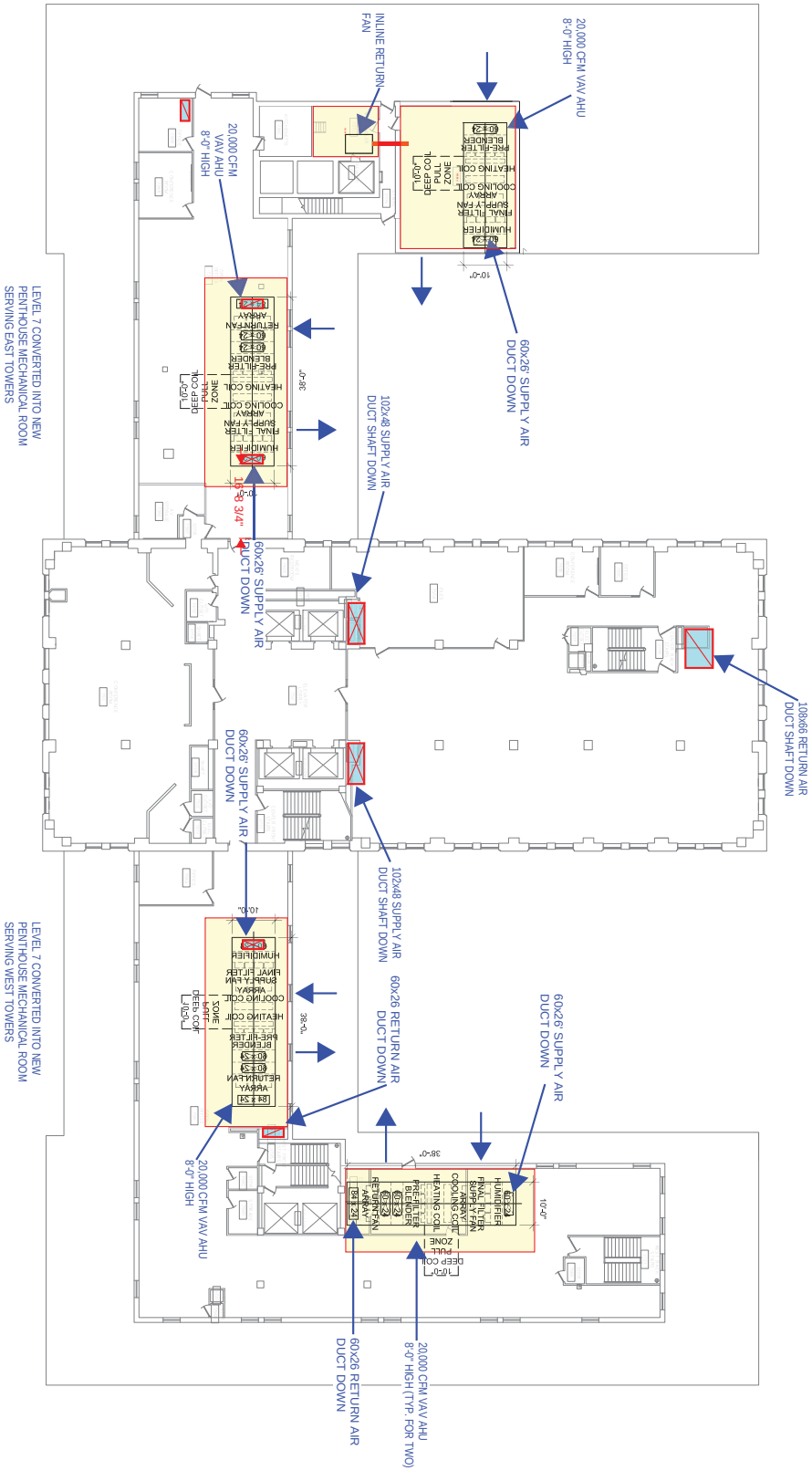
Overall Floor Plan - Level 05

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



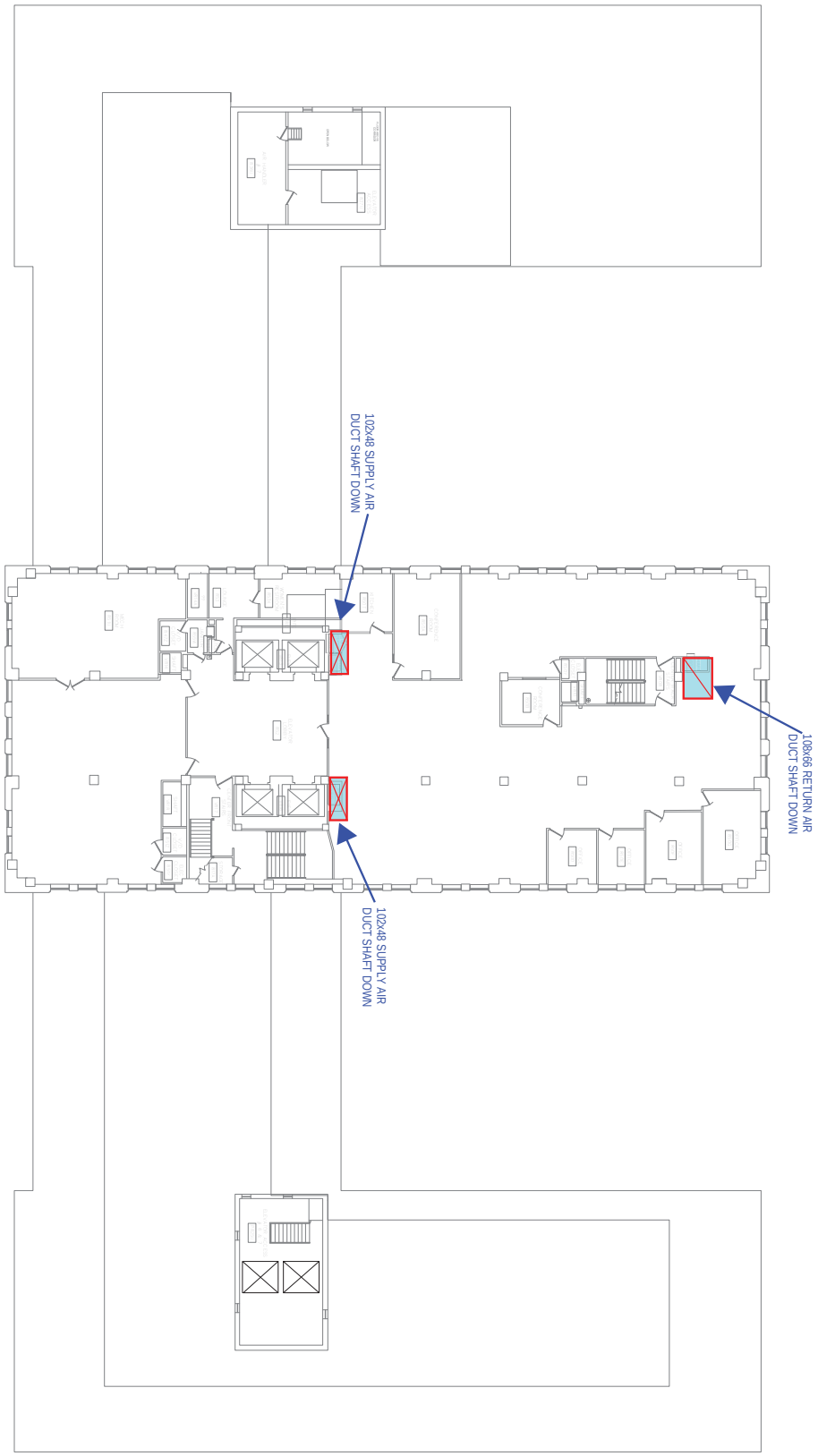
Overall Floor Plan - Level 06

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



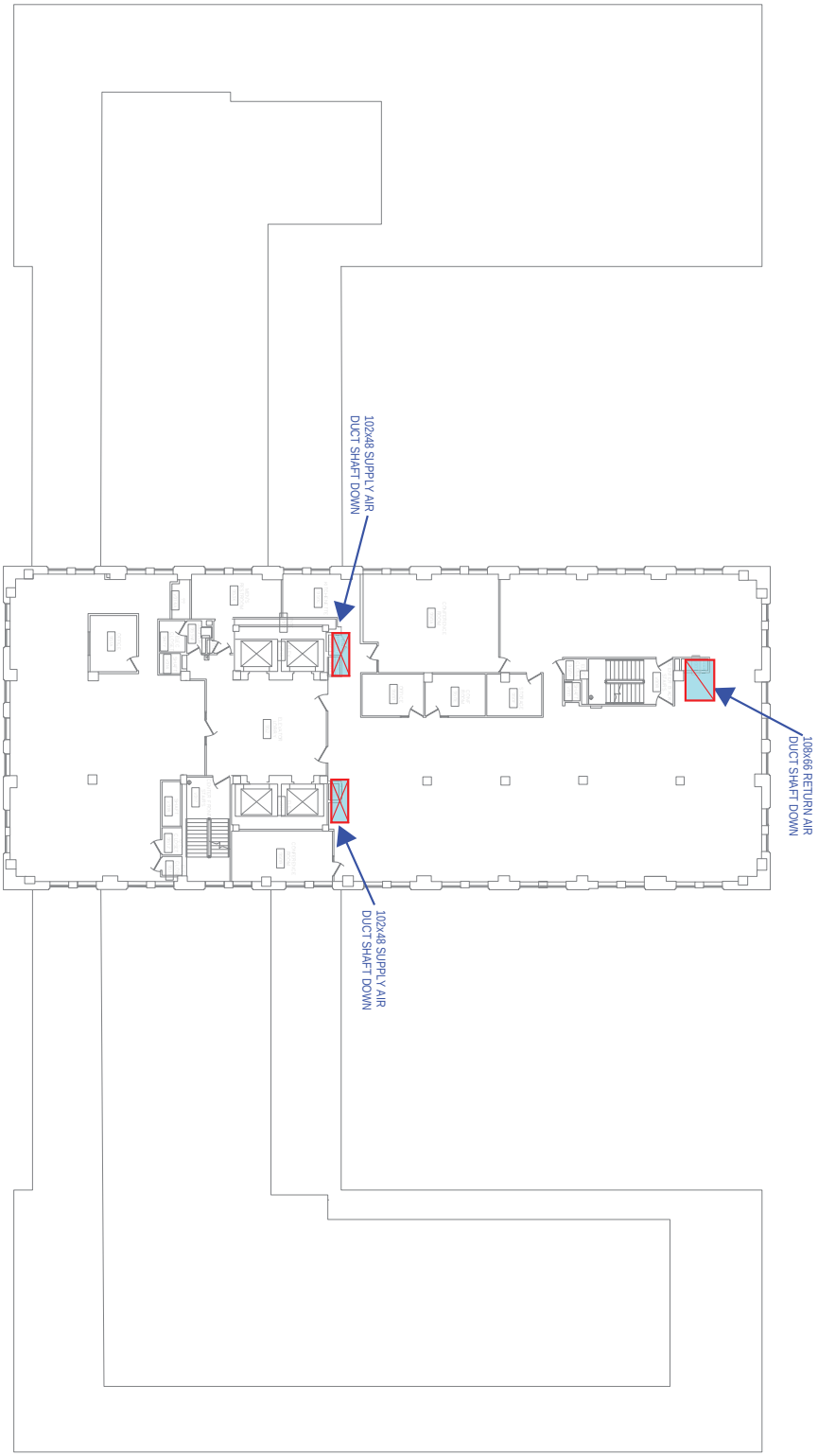
Overall Floor Plan - Level 07

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



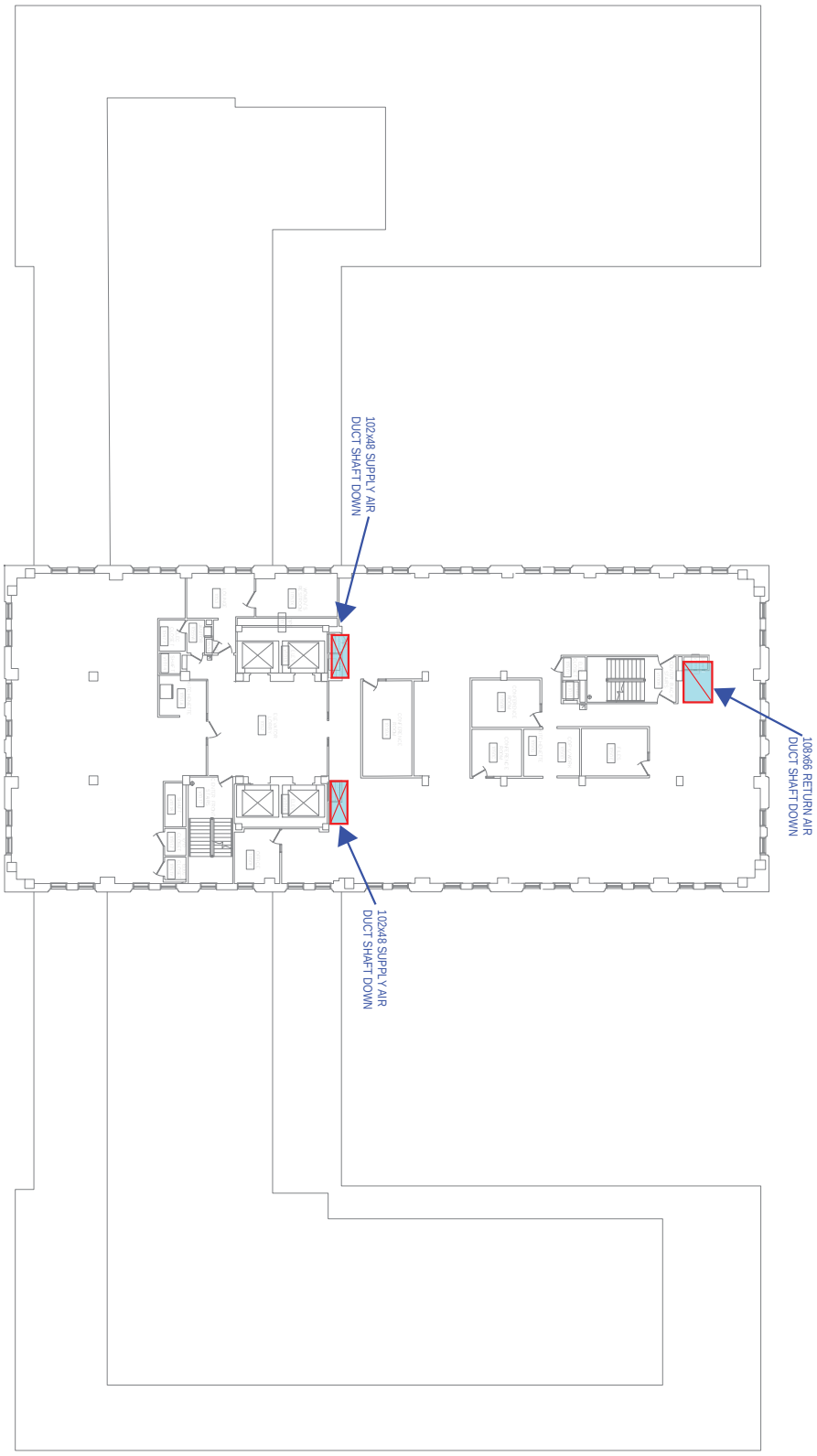
Overall Floor Plan - Level 08

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



Overall Floor Plan - Level 09

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

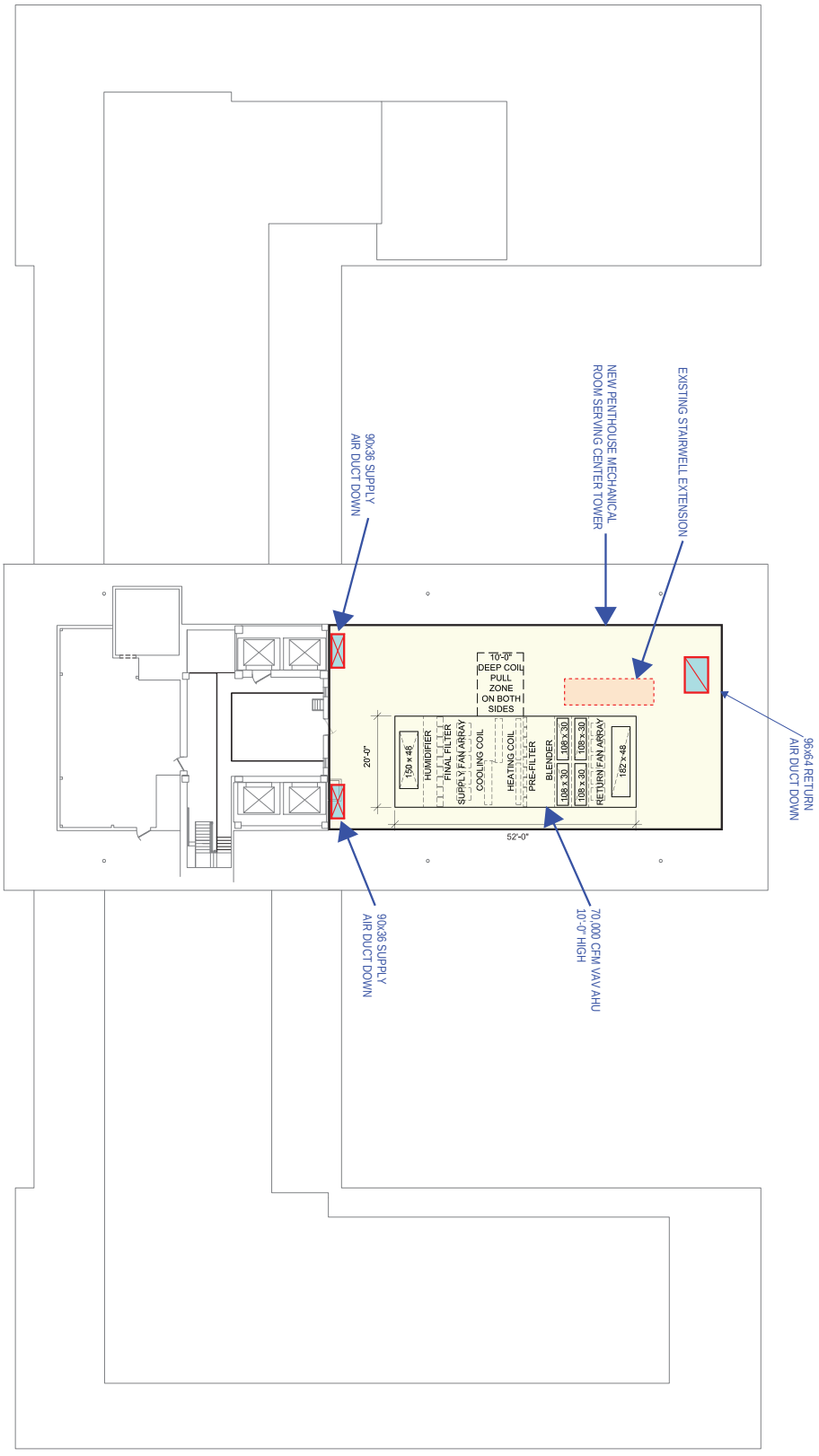


Overall Floor Plan - Level 10

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS

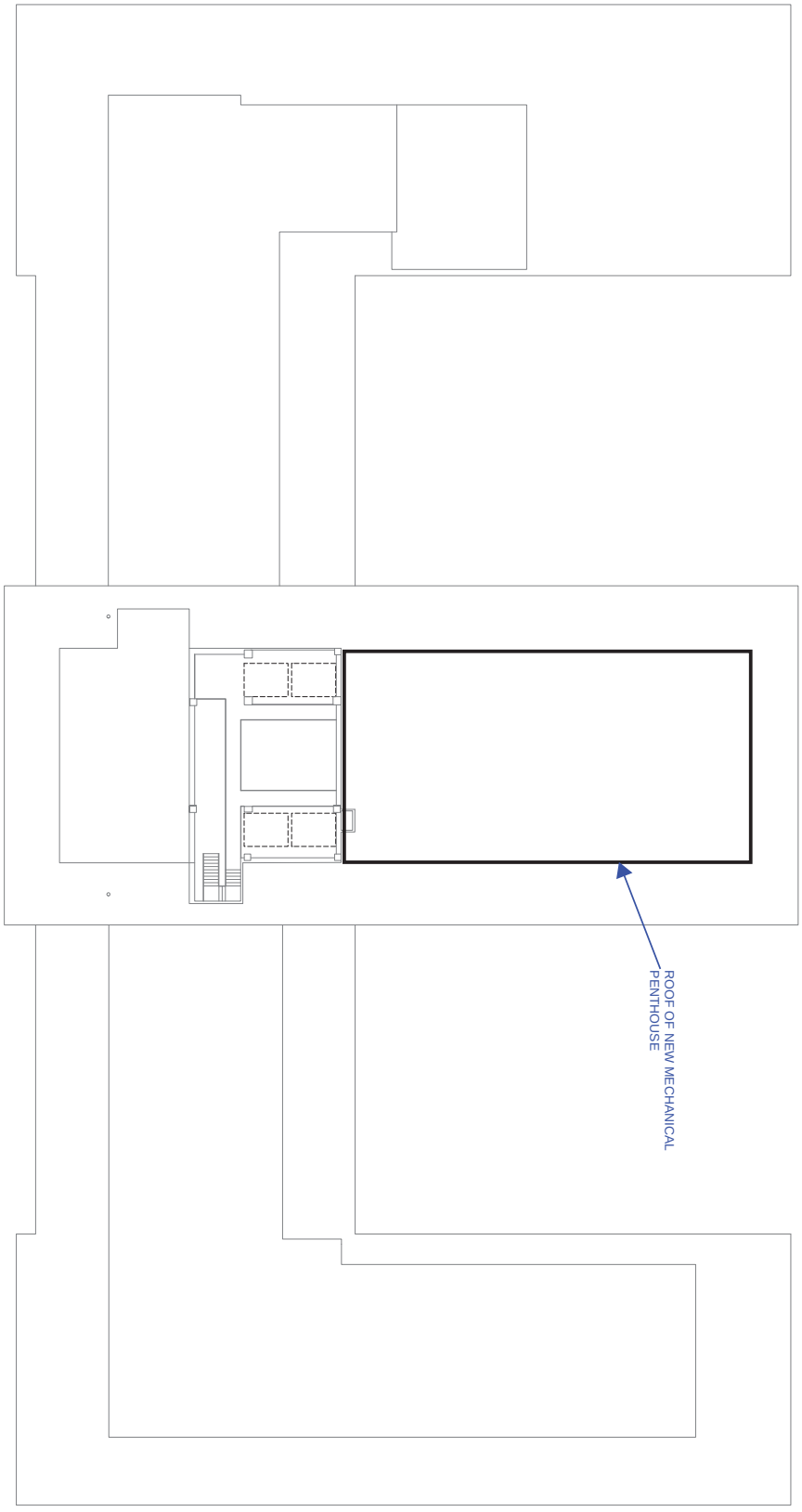
Overall Floor Plan - Level 11

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



Overall Floor Plan - Penthouse

3.3 MECHANICAL ASSESSMENT & RECOMMENDATIONS



Overall Floor Plan - Roof

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

EXISTING SYSTEMS CONDITIONS

ELECTRICAL SERVICES

The building is currently served with (3) secondary electrical services from Madison Gas & Electric Company. Utility transformers are located in (2) transformer vaults that are located under the sidewalk, between the building and W. Wilson Street.

One of the services feeds Electrical Room B347Y, which houses Switchboards 1-4. One of the services feeds Electrical Room B257A, which houses Switchboards 5-7. The third service feeds the Fire Pump for the building. MG&E Peak Load readings for the 2 main services is 684kW or 1898 Amps at 208Y/120 Volt.

Switchboards 1-7 are all Gould-ITE, 208Y/120 Volt, 2000 Amp rated with 1500 Amp fuses. Switchboards were all installed around 1982 are all reaching end of useful life. Degradation of some of the equipment due to moisture was observed.

The third service serves the building fire pump and was installed 2018. The service is 208Y/120 Volt and Peak Demand is 88kW. This service is in good condition and is intended to remain.

It was noted that many of the electrical feeders in the building were Aluminum. These wires were manufactured prior to the current "compact strand" Series 8000 type that was developed to greatly reduce the problems found in earlier products. These feeders should not be reused.

MG&E Transformer Vaults

Typical Switchboard 1-7

Moisture degradation of Electrical Service Equipment

Fire Pump with service equipment

Typical Switchboard Nameplate

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

EXISTING EMERGENCY SYSTEM

The building emergency generator, generator switchboard, transfer switches and distribution panels were replaced in 2019 and are in good condition. The generator is a 500 kW, 208Y/120 Volt diesel, Cummins generator. The generator switchboard is fusible, as are down-stream distribution panels. The building as (7) transfer switches to separate the Essential Power System into NEC 700, 701, 702 and also feeds the fire pump transfer switch. Branch panels served from distribution panels are of 1980's vintage or older and were not replace when the generator was installed.

Existing Emergency Generator

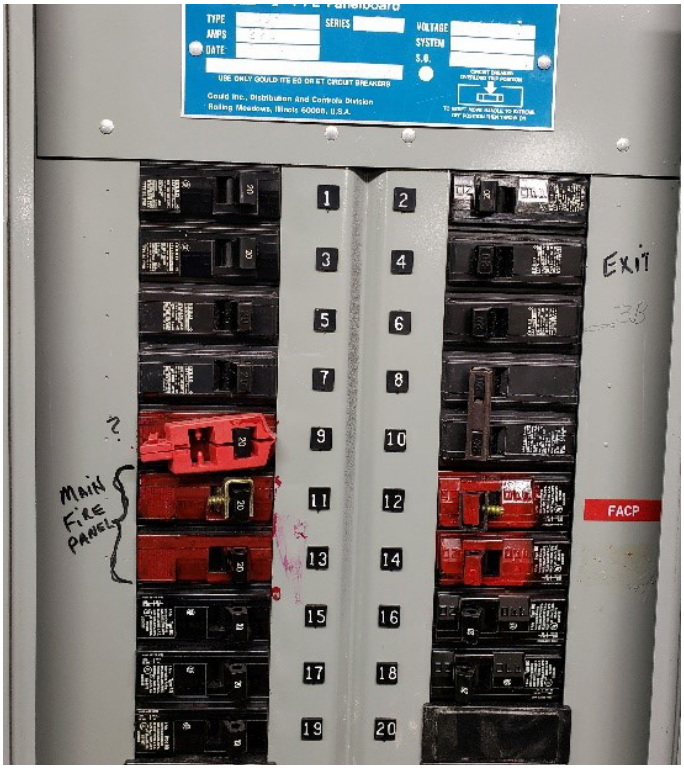
Generator Switchboard

Automatic Transfer Switches

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

ELECTRICAL PANELS AND BRANCH CIRCUITING

Electrical panels are of various vintages and manufactures with most being installed prior to 1980. Electrical Panels are generally at end of useful life and should be replaced. Many electrical panels are no longer in use. Significant computer equipment had been in use in the building and is no longer in use and are to be removed.



Existing Emergency Panel

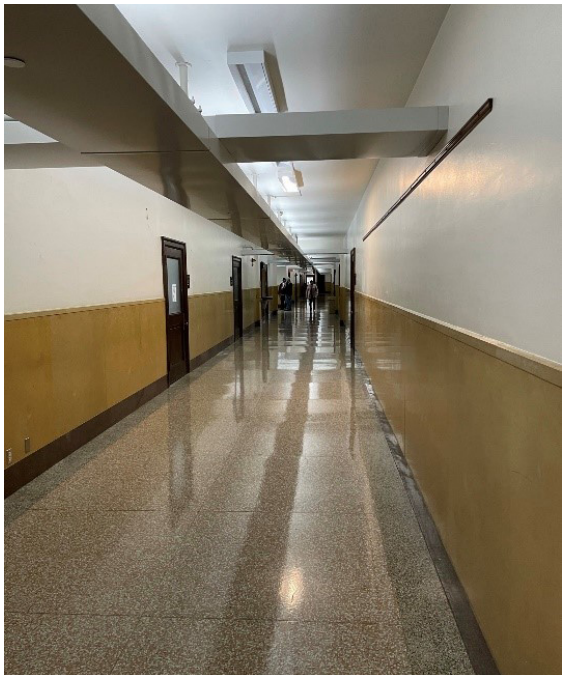
Existing Electrical Panel

Existing Unused Panels to Support Computers

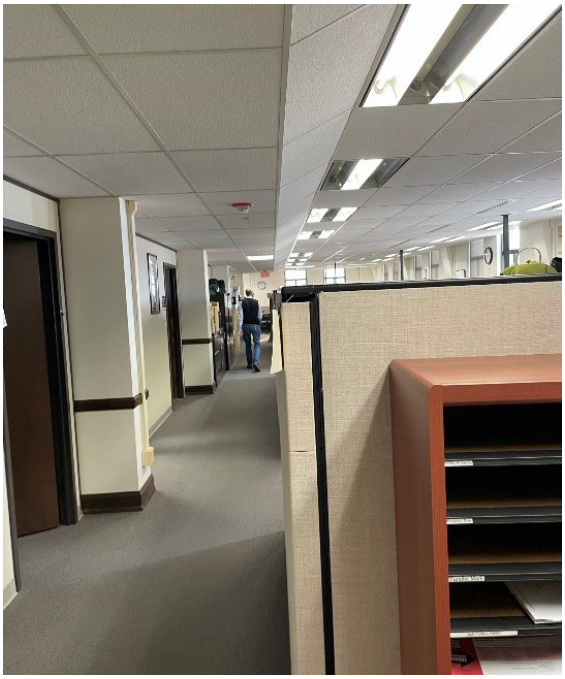
3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

EXISTING LIGHTING AND CONTROLS

Existing light fixtures generally appear to be fluorescent, with some LED retrofitted fixtures in the common areas. Both T8 and T12 style fluorescent lamps were observed. LED appears to have been installed as part of the generator installation in 2019. Exit lights appear to have been retrofitted to LED technology. Lighting controls in general appear to be manual type controls with very few automatic lighting controls observed. Significant energy savings and reduction in ongoing maintenance would be achieved by utilizing LED technology and the addition of automatic lighting controls

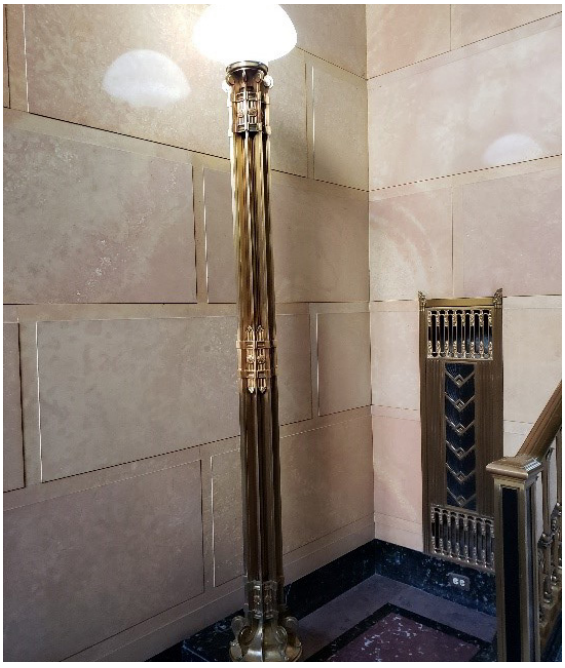


Main Corridor Lighting



Open Office Lighting

Historic Corridor Lighting



Historic Entry Lobby Fixture

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

FIRE ALARM SYSTEM

The fire alarm system is a Notifier Addressable system with Voice capability and appears to be designed for a high rise building with fireman's phones. System was installed in 1999 and the fire alarm control panel was upgraded in 2019. Facilities has indicated that fire alarm components have been piecemeal replaced and has a significant amount of old and original devices. Fire alarm system is nearing end of life and should be completely replaced.

Fire Alarm Control Panel in Fire Command Center

Audible Visual Fire Alarm Device

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

ELECTRICAL SERVICES

- Provide (2) new MG&E electrical services to replace the (2) services that currently serve Switchboards 1-7.
- Estimated service size for each is 2500A, 208Y/120V. Switchboards are to be fusible to account for high available fault current from the downtown utility loop.
- Option – Depending on final design of mechanical systems for the renovation a 480Y/277V service could be considered for serving the larger mechanical loads.
- New switchboards are intended to be located in existing Basement Switchboard rooms where switchboards will be removed.
- New feeders, distribution, branch circuit panels and branch circuit wiring.
- New electrical closets shall be created within the three towers to serve the building areas on a floor by floor. Electrical closets are to be stacked vertically.
- New receptacles, branch circuit wiring from new branch circuit panels to serve all building spaces. Branch circuit wiring to include new feeds to powered furniture systems.
- Reuse of existing generator, generator switchboard, transfer switches and distribution panels. Provide new feeders and branch panels from the existing emergency distribution panels.
- Refeed existing transfer switches from new MG&E electrical service switchboards.
- Refeed existing elevators that are to remain.
- Provide new electrical feeders and branch circuits to Mechanical Air Handling Units, hot water circulation pumps, cold water circulation pumps, exhaust fans, temperature and control panels and other new mechanical equipment. Refer to mechanical narrative for specific system components.
- Provide new electrical feeders and branch circuits to new plumbing equipment. Refer to plumbing narrative for specific equipment.
- Provide new lightning protection system for the building.
- Provide new normal feeders to refeed the (7) existing transfer switches serving the building.
    - Switchboard 1 serves ATS EM DP2 and ATS LRS ELEV 3 & 4.
    - Switchboard 4 serves ATS EM DP3, ATS OSB DP1 and ATS LRS DP 1.
    - Switchboard 5 serves ATS EM DP 1
    - Switchboard 6 serves ATS LRS ELEV 1 & 2.
    - EM DP = Emergency Distribution Panel (NEC 700)
    - LRS = Legally Required Stand-By (NEC 701)
    - OSB = Optional Stand-By (NEC 702)
- Removal of all existing electrical panels, branch circuit wiring, feeders, abandoned cables unless specifically identified to remain and be reused.
- Underfloor electrical ducts are to be emptied of wires and cables and capped at each activation locations.

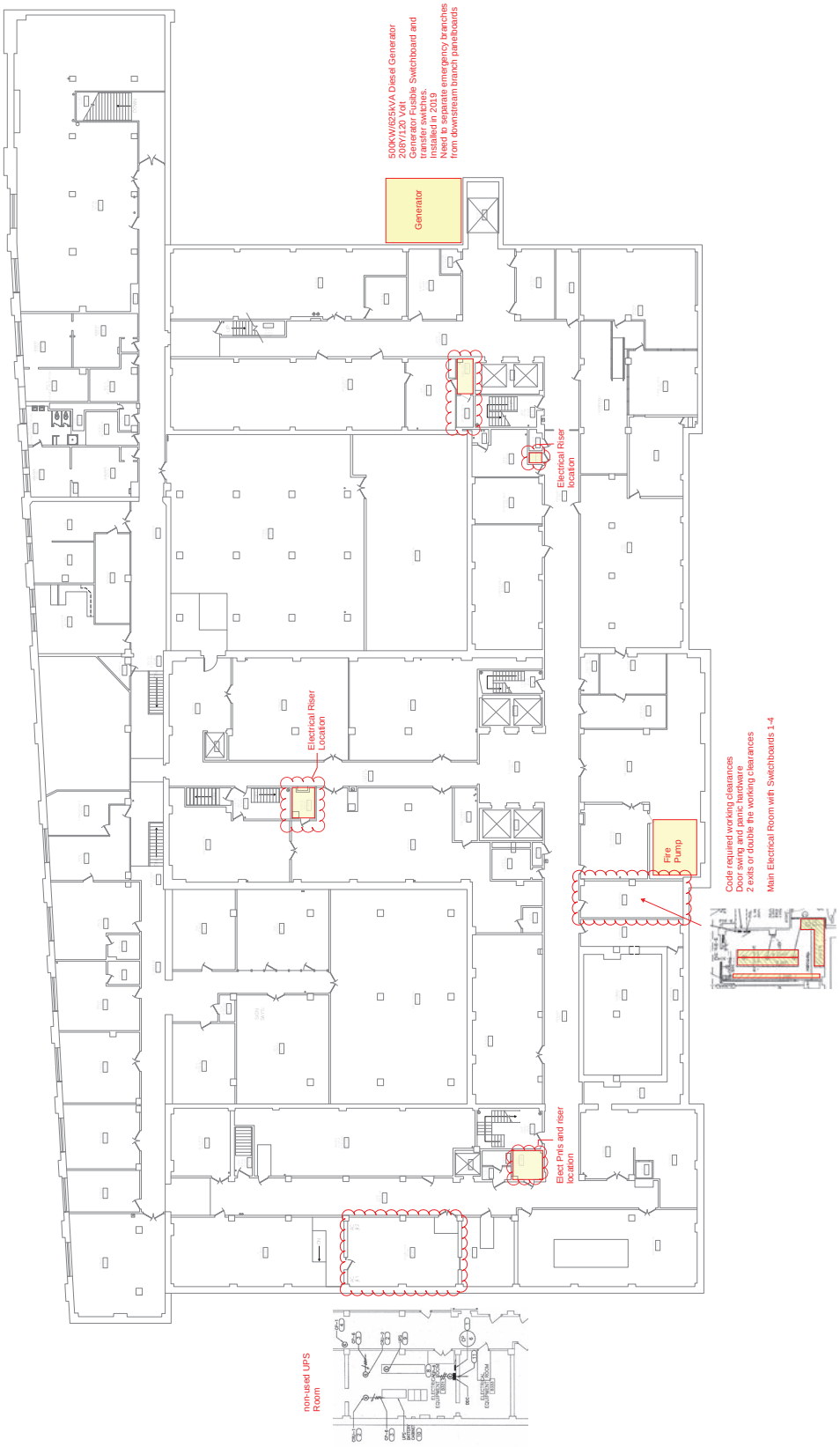
3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

Unit 1
208Y/120 Volt
1500 Amp Main Fuse
(18) total distribution switch fuse units
Feeds ATS-LRS/ELEV 3-4
Feeds ATS-EM/DP-2 - (Basement equipment emergency panel boards)
Significant portion of loads are mechanical equipment

Unit 2
208Y/120 Volt
1500 Amp Main Fuse
(12) total distribution switch fuse units
Significant portion of loads are mechanical equipment

Unit 3
208Y/120 Volt
1500 Amp Main Fuse
Manual Transfer Switch serves entire panel. Back feed from Unit 4 not generator
(11) total distribution switch units (1 spare)
Serves mostly "CP" panels, UPS, etc. that are no longer in use in the building.

Unit 4
208Y/120 Volt
1500 Amp Main Fuse
(14) total distribution switch units
Feeds normal to ATS-EM/DP-3, ATS-OSB/DP-1 and ATS-LRS/DP-1
Serves Kitchen - not in use
Significant portion serves mechanical equipment
AHU-12, RTU-12, Cond Pump 01, Cond Pump 02, AHU-2, RF-2, AHU-19, RF-19, AHU-5, RF-5
Mechanical loads have step up transformers to get 480 V power.



Basement Level B3 – Main Electrical Room – Switchboards 1-4

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

Unit 5
208Y/120 Volt
1500 Amp Main Fuse
(16) total distribution switch fuse units
Feeds ATS-EMDP-1 - (Basement equipment emergency panel boards)
Portion of loads are mechanical equipment
AHU-3, RF-3, AHU-1, RF-1, AHU-17, RF-17
Mechanical loads have step up transformers to get 480 V power

Unit 6
208Y/120 Volt
1500 Amp Main Fuse
(15) total distribution switch fuse units. (1 spare)
Feeds ATS-LRSELEV 1-2
Significant portion of loads are mechanical equipment
Trash Compactor, AHU-8, RF-8, AHU-18, RF-18, AHU-20, AHU-15, RF-15
Mechanical loads have step up transformers to get 480 V power

Unit 7
208Y/120 Volt
1500 Amp Main Fuse
(16) total distribution switch fuse units, (1 spare)
Serves Elevators 6 & 7, AHU-4, RF-4, AHU-10, sump pumps 1 & 2
Mechanical loads have step up transformers to get 480 V power

All 7 of the existing Fusible Switchboards were installed in the late 1970's or Early 1980's and are nearing end of useful life and are to be replaced.

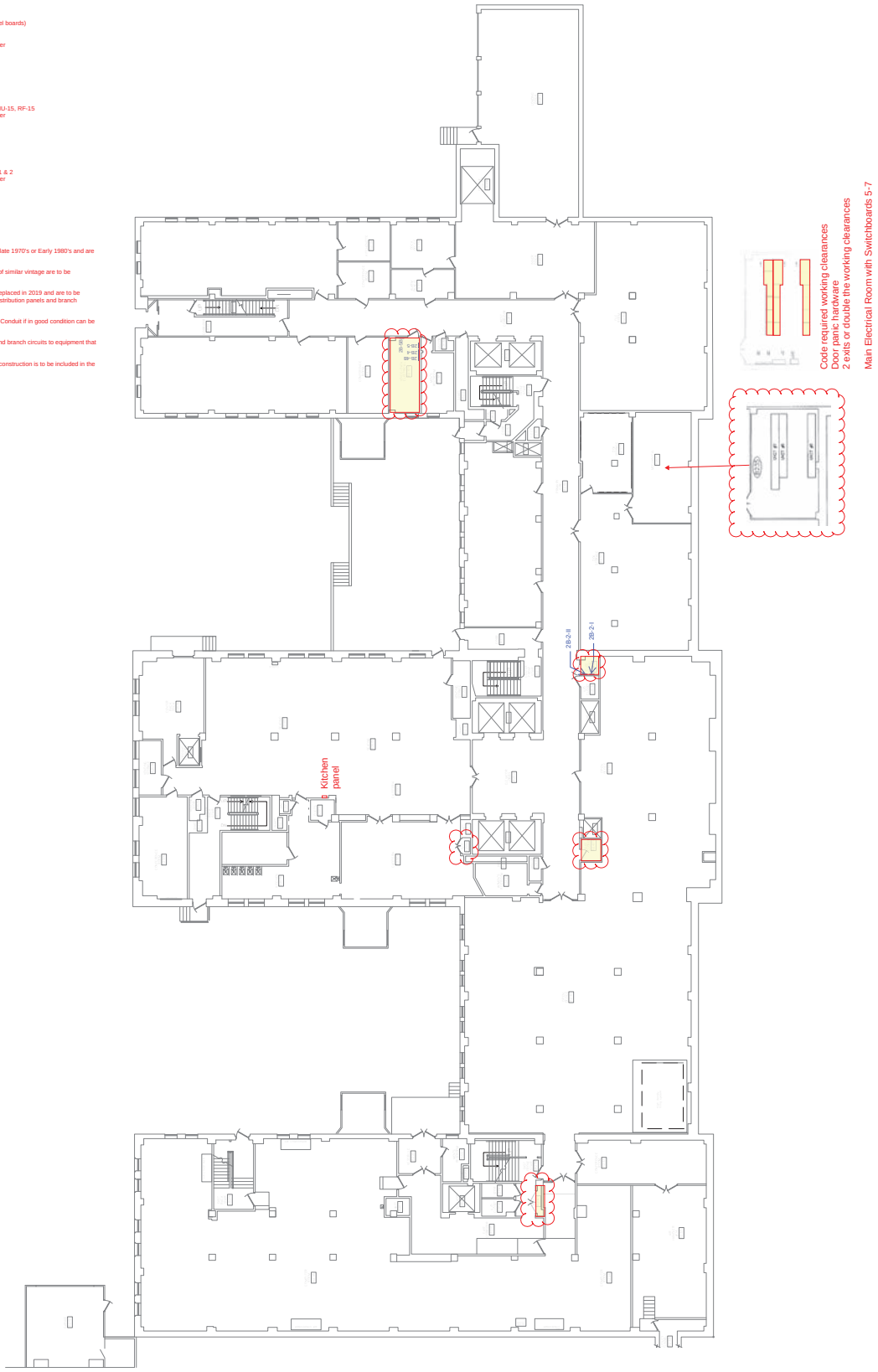
All existing electrical panel boards and distribution panels are of similar vintage are to be replaced.

Emergency generator, transfer switches and distribution was replaced in 2019 and are to be reused. Separation of emergency branches in down stream distribution panels and branch panelboards is required as areas are remodeled.

All existing aluminum feeders and conduit are to be removed. Conduit if in good condition can be reused.

Removal of all existing electrical equipment, feeders, panels and branch circuits to equipment that is being removed is to be included in the scope of the project.

Installation of a new Voice type fire alarm system for high rise construction is to be included in the remodeling of the building.



Basement Level B2 – Main Electrical Rom – Switchboards 5-7

3.4 ELECTRICAL ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

EMERGENCY POWER SYSTEM

- Provide new feeders from distribution panels that were installed as part of the emergency generator installation in 2019 to new branch panels to serve NEC 700, 701 and 702 loads throughout the building.
- Reuse the existing generator, generator distribution panels, (7) transfer switches and feeders to distribution panels.

NEW LIGHTING AND LIGHTING CONTROLS

- Provide LED retrofit of existing "Historical" light fixtures in the entry lobby and public corridors.
- Provide new LED lighting in all areas of the building.
- Lighting levels to meet recommended levels as established by the Illuminating Engineering Society of North America (IESNA) based on the use of spaces within the building.
- Provide new lighting controls that meet the requirements of the Wisconsin Energy Code and the DFD Master Specifications and Design Guidelines.
- Include new emergency lighting and exit lighting to meet the requirements of the IBC.
- Lighting is to meet the requirements of the DFD Sustainability Guidelines for Capitol Projects V3-December 2021.

FIRE ALARM SYSTEM

- Provide a new voice type, addressable, high rise fire alarm system for the entire building. Control panel to be located in the fire command center in the building. Fire alarm system to be complete and include:
  - Speaker strobes and fire alarm speakers for an intelligible voice type system.
  - Manual pull stations, smoke and heat detectors as required by the building code with any local modifications.
  - Smoke and heat detectors, monitor, control modules as required for elevator fire fighter operation and shut down.
  - Fire alarm control interface for access controls and automatic door operation and power disconnects.
  - Smoke duct detectors for AHU shutdown, monitor and control of smoke dampers.
  - Include monitor of any sprinkler system valve and flow.
- Fire alarm system to meet the DOA Fire Alarm System Standards and Design Guidelines, current edition.

3.5 PLUMBING ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

WATER SERVICE AND WATER SOFTENER SYSTEM

The existing water service and water softener system are in basement mechanical areas. They appear to be only a few years old. They may have been replaced or modified as part of a larger fire protection renovation in 2018. These systems are in satisfactory condition.

Water Service/Meter

Water Softener

HEAT EXCHANGER

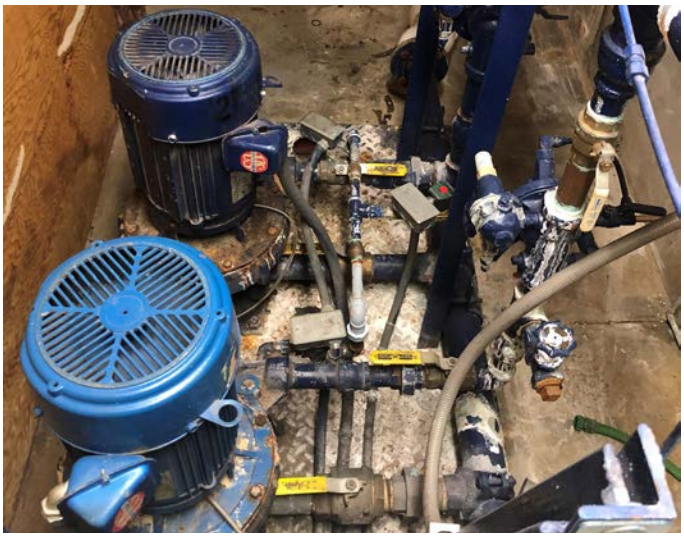
A shell and tube heat exchanger utilizes the building steam supply to heat the domestic hot water. It is quite old and is likely exceeding it's expected life cycle. Although operational, it may not be running efficiently. Depending on the maintenance schedule, it could be fouled and corroded within.

Domestic Water Heater

3.5 PLUMBING ASSESSMENT & RECOMMENDATIONS

DOMESTIC COLD AND HOT WATER SUPPLIES

The domestic cold water and hot water supplies are separately boosted for the building needs. The cold water duplex booster pump is located in a basement mechanical space. It provides boosted cold water pressure for the entire building. As indicated by building maintenance staff, it is a manual changeover system that requires near constant maintenance and repair to keep it running. The simplex domestic hot water booster pump is in a janitor's closet on a tower floor. The pump serves to boost the city water pressure to provide hot water to the upper floors of the building. The pump is in good working condition.

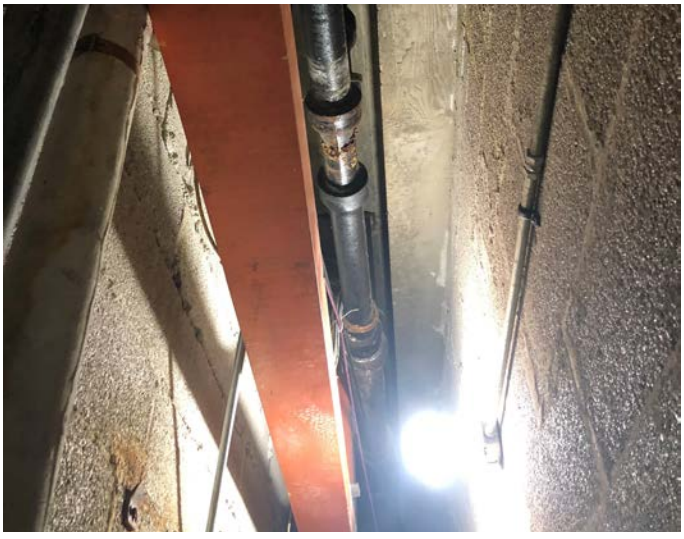


Domestic Cold Water Pumps

Domestic Hot Water Pump

SANITARY WASTE, STORM WATER AND WATER PIPING

The sanitary waste/vent, storm water, and domestic water piping infrastructure is original to the building. Aside from small repairs done throughout the life of the building, the waste, vent, and storm water piping is all hub & spigot cast iron. The domestic water is a mixture of threaded galvanized and soldered copper. The waste & storm water piping is cracking, corroding, and leaking in many locations. The domestic water piping is leaking in certain locations. Building staff has indicated many valves are inoperable. Rust is present in the building water supply. The source is likely the building domestic water piping.



Condition of cast iron piping (note: this vertical plumbing chase will need to be infilled at each floor)

3.5 PLUMBING ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

The water service and water softener system appear to be relatively new. They are in good working condition and do not require repair or replacement. During a new design, the plumbing engineer should evaluate the needs of the system. The softener system could be modified or added to as needed to accommodate building needs.

The existing shell and tube steam heat exchanger is past its life expectancy. Replacing it with a new semi-instantaneous steam heat exchanger would efficiently provide domestic hot water to the building. A new heat exchanger would also likely require less maintenance while taking up less space in the mechanical room.

The domestic cold water booster pump skid requires constant maintenance to keep it up and running. The domestic hot water booster pump is in good working condition but is in an obscure location in the building. Both the domestic cold and hot water booster pumps should be replaced with new duplex pumping skids. During a new design, the plumbing engineer should evaluate what piping strategy is appropriate for the boosted systems and what portions of the building supply should be boosted above city water pressure. The building likely requires two pressure zones. One would be on city water pressure and the other would be boosted as necessary for the upper floors. The engineer should consider using separate water heaters and softeners for each zone as well.

The piping infrastructure is original to the building and well past its life expectancy. It is failing in many locations and rust is present in the water supply. Due to these extensive issues a full replacement of all piping systems is recommended. This includes a replacement of all below grade piping as well.

Currently, the plumbing utility spaces serving the main restrooms in the building are full shafts. These spaces house the waste/vent piping, domestic water piping, and some ductwork. A review of the fire rating requirements for these spaces is recommended. A renovation may require the addition of floors to these shafts. Floors may also be required to mount carriers to support the weight of wall-hung toilets.

Building Staff indicated the mechanical rooms are lacking adequate floor drains for general maintenance and operating needs. As part of a new design, a review of these spaces should be conducted to determine where floor drains can be added to better serve the spaces.

3.6 FIRE PROTECTION ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

FIRE SPRINKLER

The existing fire sprinkler was installed during a complete retrofit of the building around 2018. Prior to the retrofit the building had only standpipes and hose connections in the stairwells and hose cabinets throughout the floors. The installation of the sprinkler system involved a fire pump, fire pump controller, fire pump transfer switch, jockey pump, jockey pump controller, new floor control valves, sprinklers installed throughout the building, and removal of hose cabinets in certain locations. Sprinkler systems are valved per floor and supplied by the standpipes in the stairwells.

Typical floor control valve

FIRE PUMP

The fire pump is rated at 1,000 gpm with 120 psi boost. The fire pump is provided with a variable speed controller. The supply for fire pump is by way of two separate 8" incoming water lines which enter on Level B1 from West Wilson Street. The incoming water lines are combination service lines and provide water for both plumbing and fire sprinklers. A double check backflow preventor is provided in the fire pump room. The fire pump is full flow tested on an annual basis and churn tested monthly. The most recent full flow test indicates the pump is performing as intended.

Double check backflow preventer in fire pump

Existing Fire Pump

3.6 FIRE PROTECTION ASSESSMENT & RECOMMENDATIONS

DOUBLE INTERLOCK PREACTION SYSTEM

There is a double interlock preaction system that protects the server and electrical equipment rooms on Level B3. The preaction system is provided with a nitrogen generator to reduce corrosion in the piping network. The secondary detection for the preaction system is a VESDA system. There is a dry system protecting the dock on Level B2, the dry system also protects the generator room on Level B3. The dry system is provided with a riser mount air compressor and galvanized piping. It should be noted that the life span of the preaction system filled with nitrogen is anticipated to last longer than the dry system filled with air.

Dry-pipe valve at loading dock

Double Interlock Preaction System with nitrogen on B3

RECOMMENDATIONS

The existing fire sprinkler and standpipe systems are in good working condition with no discernible leaking or issues per the site investigation and discussions with building users. There are no modifications required for the system to meet the applicable codes.

Modifications to the sprinkler systems will be required when walls and/or ceilings are modified to maintain proper coverage. Provisions shall be made to modify existing sprinkler head locations and drops to accommodate the changes in ceilings. The existing main and branchline piping is recommended to be maintained as installed. Minor modifications to accommodate new ductwork maybe necessary during construction but is not anticipated to be substantial.

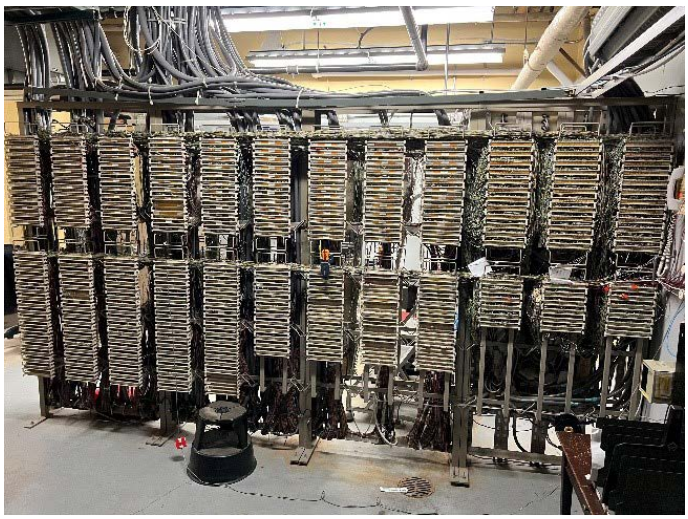
3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

EXISTING CONDITIONS ASSESSMENT

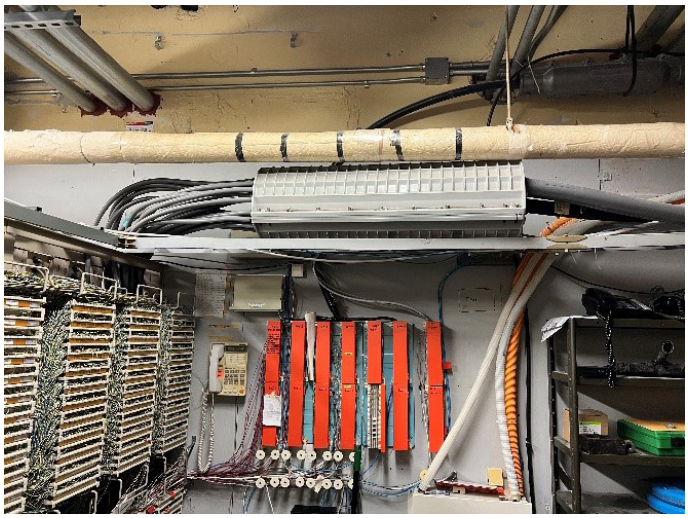
TELECOMMUNICATIONS ROOMS AND SPACES

Main Equipment Rooms

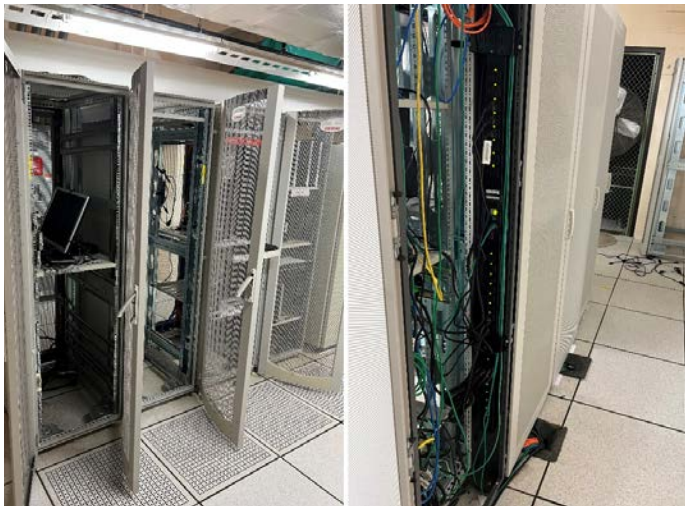
- Telephone Equipment B349Z is the existing voice/ telephone equipment room. This room includes the following:
  - Service provider cabling, splice cases and terminations.
  - Voice cabling termination frame field.
  - Wall mounted voice cabling terminations.
  - Space where a previous PBX / Voice Switch was located (which has been removed).
- Router Room B333U and Computer Room B331 are raised floor spaces that originally served as the building's main data equipment rooms.
  - Router B333U originally served as 1 West Wilson's network core equipment room.
  - Computer B331 originally served as the building's primary network equipment or server room.
  - Neither Router B333U or Computer B331 are currently in use serving the 1 West Wilson Network.
  - The raised floor system is installed on top of the floor slab (not a depressed slab) with stairs and ramps providing access to the raised floor.
- Raised Floor Storage B332 is a raised floor storage area that contains DET Capital Ring fiber optic terminations mounted on the wall and in a two-post equipment rack located within the room which are currently in use (refer to "Existing Fiber Optic Backbone" section for details on the fiber optic cabling).
  - The raised floor system is installed on top of the floor slab (not a depressed slab) with stairs and ramps to access the raised floor.
- Computer Room B218 and B224 is a raised floor space that previously served as a server room. There are existing inter-building fiber optic cabling terminations located in Computer B218 (refer to "Existing Fiber Optic Backbone" section for details on the fiber optic cabling).
  - The raised floor system is installed on top of the floor slab (not a depressed slab) with stairs and ramps to access the raised floor.



Existing voice Main Distributor (Telephone Equipment B349Z)

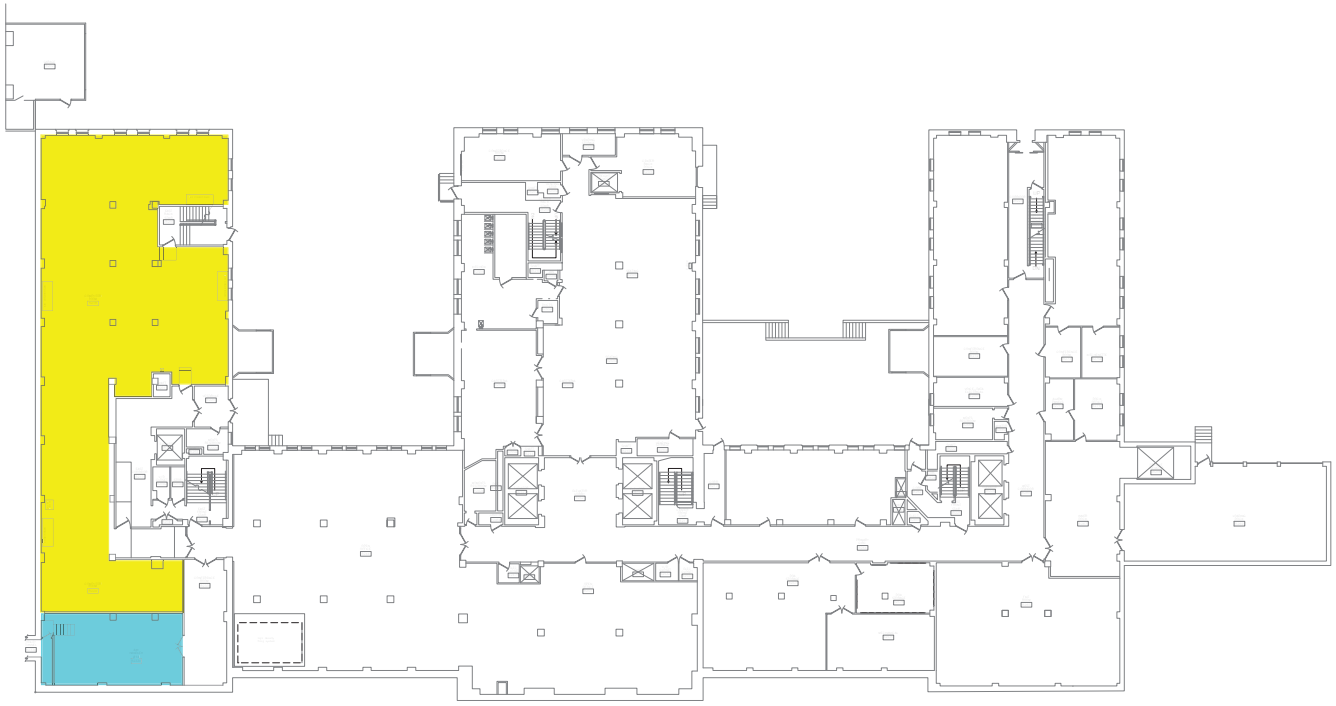


Existing voice demarcation point (Telephone Equipment B349Z)



Existing equipment cabinets (Computer Room B331)

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS



Level B2: Cyan indicating the location of Capital Ring fiber optic cable entrance. Yellow indicating Computer Room B218

Level B3: Cyan indicating Router Room B333U and Computer B331. Green indicating Raised Floor Storage B332. Yellow indicating Telephone Equipment Room B349Z

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

TELECOMMUNICATION ROOMS

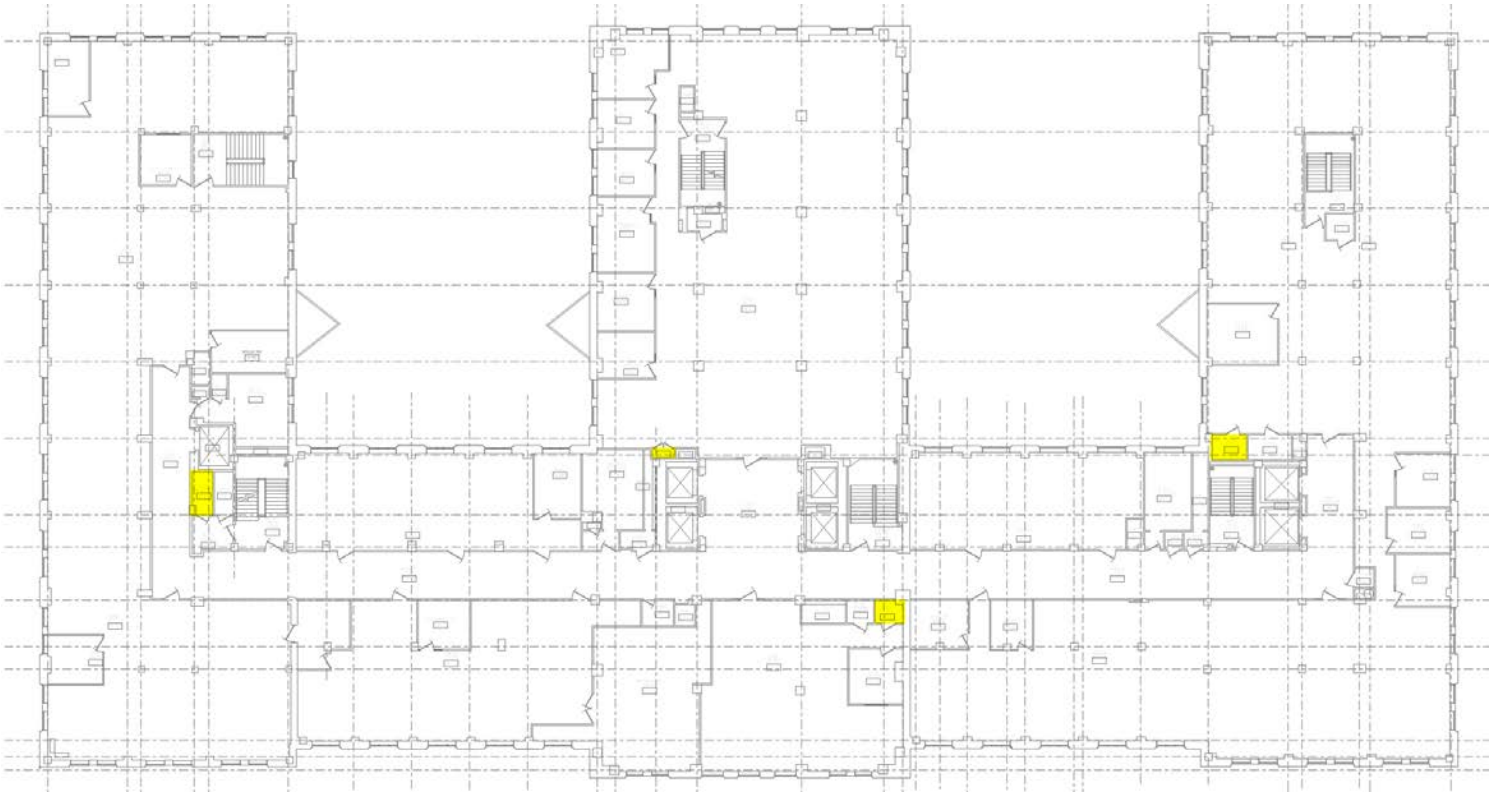
Each floor of 1 West Wilson is typically served by four Telecommunication Rooms (TR). The building is separated into a left, center and right wing with a fourth room serving the Wilson Street facing portion of the building. Each of these spaces is stacked vertically within the building.

The majority of vertical cable pathways are located within existing Telecommunication Rooms. Preliminary observations of existing sleeves dedicated to communication cabling is that these sleeves are full with little to no existing room for new cabling.

Horizontal Category 3 copper voice cabling is terminated within the Telecommunication Room serving the area of the floor the voice cable originates.

Horizontal Category 5e copper data cabling is terminated within Telecommunications Rooms located on alternating floors. Data cabling it typically routed to outlets located on the floor the Telecommunication Room is located and the floor below. However, there are some deviations to this configuration within the building.

Isolated networks created by agency work groups consisting of dedicated structured cabling systems and equipment rooms exist within the building service specific areas and workstations.



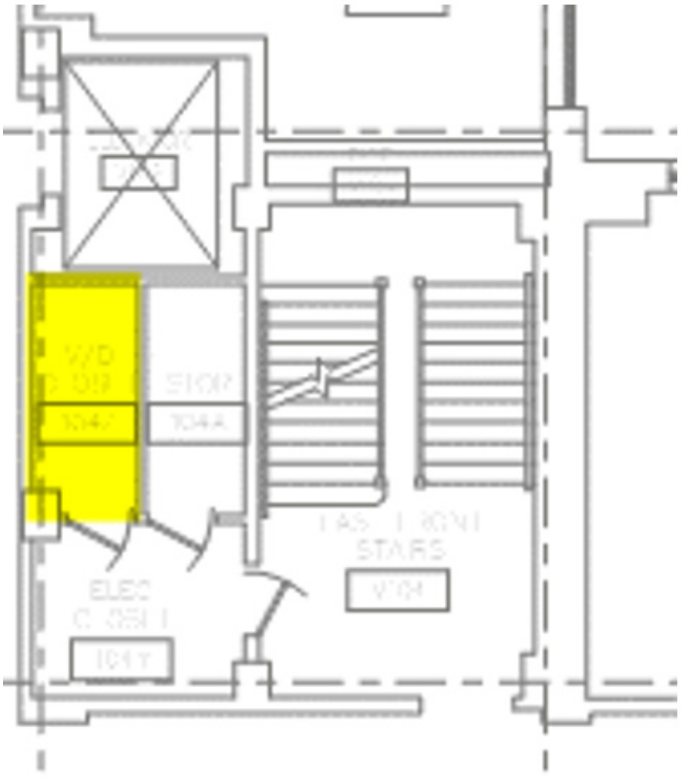
Typical 1 West Wilson Floor Plate with typical TR locations highlighted in yellow

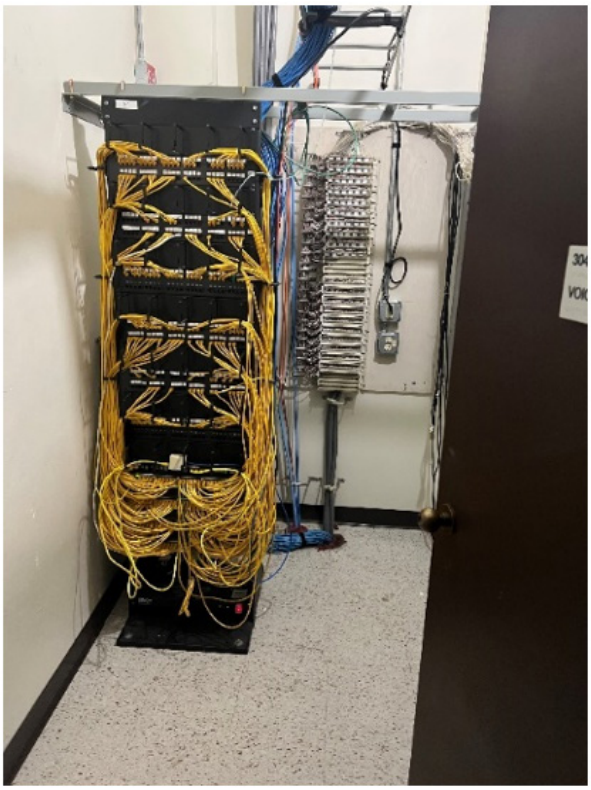
3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

TELECOMMUNICATION ROOMS

Telecommunication Room x04Z contains voice terminations on every floor and data/network connectivity on every other floor (see room numbering and installed connectivity below). This room is located in the East Front Stair tower on levels B1 through 6. Voice terminations are typically made on wall mounted punch block fields. Data/network connectivity is typically located in a floor mounted two-post equipment racks terminating on 8P8P jacks located in modular patch panels.

- TR B204Z: Voice Terminations / ERRCS Cabling
- TR B104Z: Voice Terminations
- TR 104Z: Voice Terminations / Data Terminations
- TR 204Y: Voice Terminations
- TR 304Z: Voice Terminations / Data Terminations
- TR 404Z: Voice Terminations / Data Terminations
- TR 504A: Voice Terminations
- TR 604Z: Voice Terminations / Data Terminations





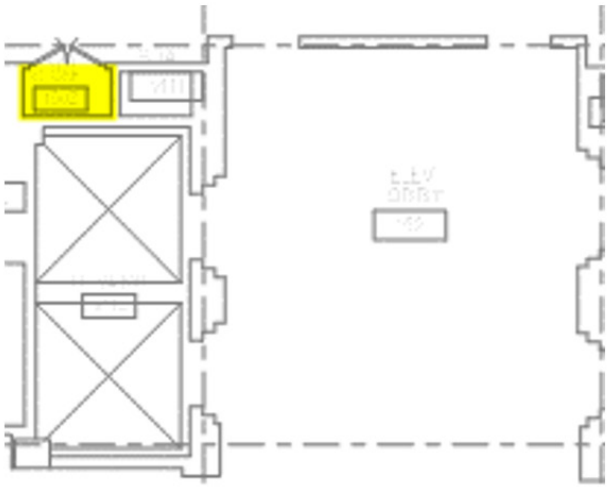
Location of TR x04Z and equipment located in TR 304Z.

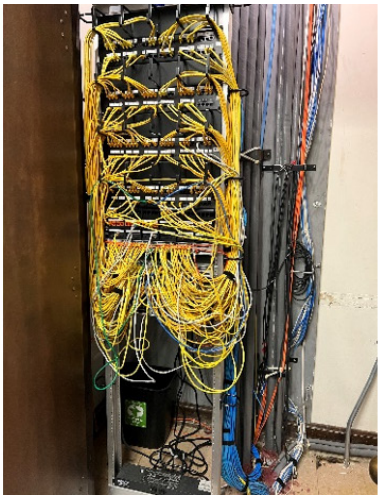
3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

TELECOMMUNICATION ROOMS

Telecommunication Room x50Z contains voice terminations on every floor and data/network connectivity on every other floor (see room numbering and installed connectivity below). This room is located in adjacent to the Elevator Lobby. Voice terminations are typically made on wall mounted punch block fields. Data/network connectivity is typically located in floor mounted two-post equipment racks terminating 8P8P jacks located in modular patch panels.

- TR B354Y: Voice Terminations / Data Terminations
- TR B250Z: Voice Terminations
- TR B150Z: Voice Terminations
- TR 150Z: Voice Terminations / Data Terminations
- TR 250Z: Voice Terminations
- TR 350Z: Voice Terminations / Data Terminations
- TR 450Z: Voice Terminations / Data Terminations
- TR 550Z: Voice Terminations
- TR 650Z: Voice Terminations / Data Terminations
- TR 750Z: Voice Terminations
- TR 850Z: Voice Terminations / Data Terminations
- TR 950Z: Voice Terminations
- TR 1050Z: Voice Terminations / Data Terminations
- TR 1150Z: Voice Terminations





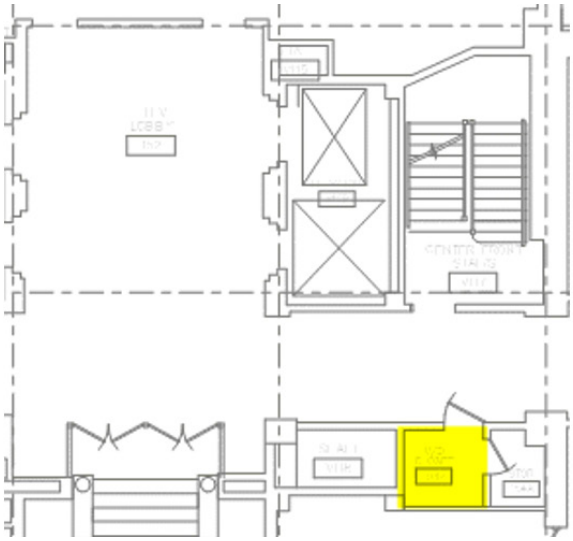
Location of TR x04Z and equipment located in TR 150Z

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

TELECOMMUNICATION ROOMS

Telecommunication Room x51Z contains voice terminations on every floor and data/network connectivity on every other floor. This room is located in adjacent to the Elevator Lobby. Voice terminations are typically made on wall mounted punch block fields. Data/network connectivity is typically located in floor mounted two-post equipment racks terminating on 8P8P jacks located in modular patch panels. This Telecommunication Room is also the location of the buildings Surveillance Video Management Server.

- TR B253Y: Voice Terminations / Data Terminations
- TR B253Z: Voice Terminations
- TR B155: Voice Terminations
- TR 154Z: Voice Terminations / Data Terminations
- TR 253Z: Voice Terminations / US Cellular DAS Equipment
- TR 351Y: Voice Terminations / Data Terminations
- TR 451Y: Voice Terminations / Data Terminations
- TR 551Y: Voice Terminations
- TR 651Z: Voice Terminations / Data Terminations /Access Control Door Controller & Power Supplies / US Cellular DAS Equipment
- TR 751Z: Voice Terminations / Fire Alarm Control Panel
- TR 851Z: Voice Terminations / Data Terminations
- TR 951Z: Voice Terminations
- TR 1051Z: Voice Terminations / Data Terminations
- TR 1151Z: Voice Terminations / CATV Head-End Equipment



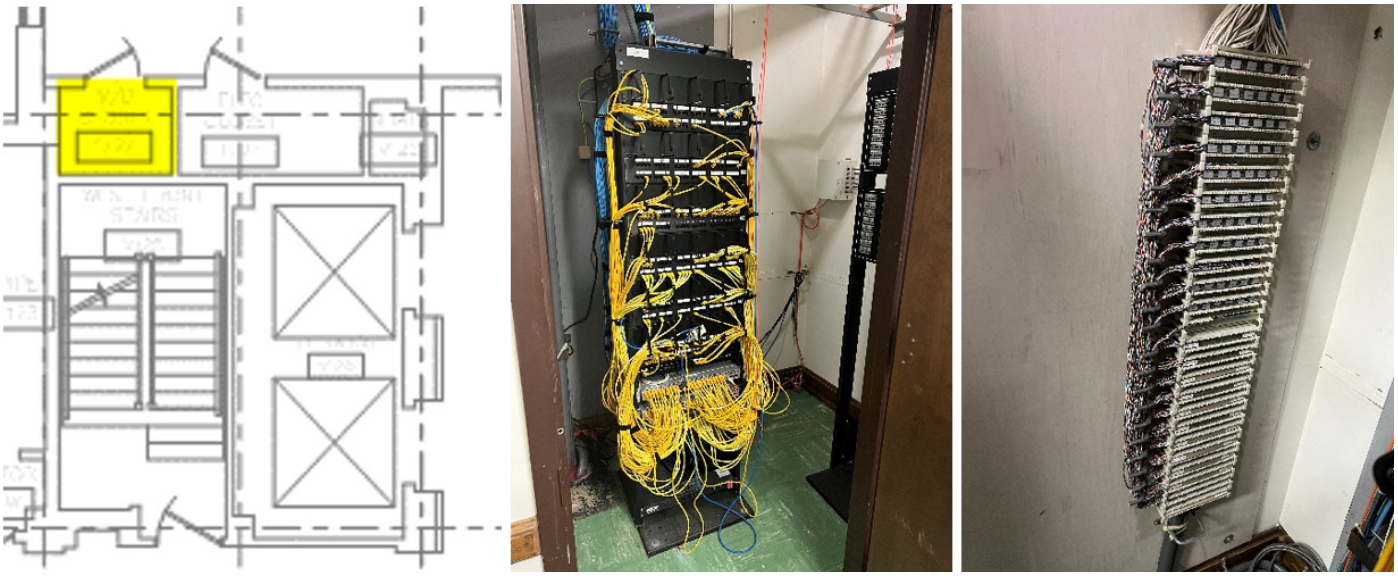
Location of TR x51Z and equipment located in TR 157Z.

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

TELECOMMUNICATION ROOMS

Telecommunication Room x72Z contains voice terminations on every floor and data/network connectivity on every other floor. This room is located in adjacent to the Elevator Lobby. Voice terminations are typically wall mounted punch block fields. Data/network connectivity is located in floor mounted two-post equipment racks terminating on 8P8P jacks located in modular patch panels.

- TR B382Z: Voice Terminations / Data Terminations
- TR B270Y: Voice Terminations
- TR B174Z: Voice Terminations
- TR 172Z: Voice Terminations / Data Terminations
- TR 272Z: Voice Terminations
- TR 372Z: Voice Terminations / Data Terminations
- TR 472Z: Voice Terminations / Data Terminations
- TR 572UZ: Voice Terminations
- TR 672Z: Voice Terminations / Data Terminations



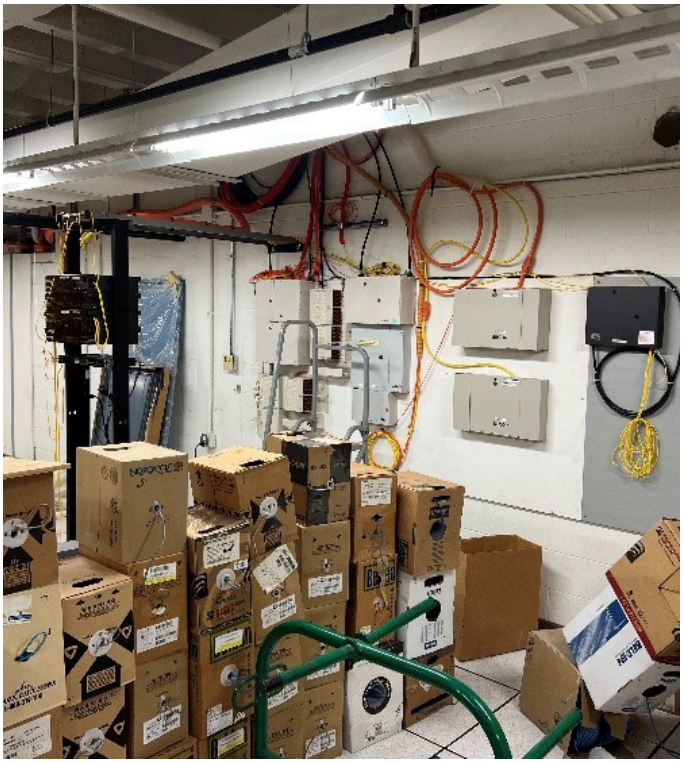
Location of TR x72Z and equipment located in TR 472Z

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

Backbone Fiber Optic System

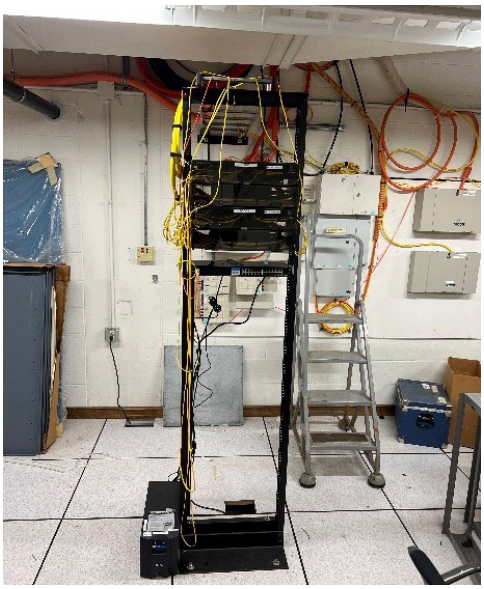
Capital Fiber Optic Ring

- The 1 West Wilson building is a node on the Department of Administration (DOA) Division of Enterprise Technology (DET) Capital Fiber Optic Ring. The Capital Ring fiber optic cabling enters and exits the 1 West Wilson building through Air Handler #14 B233U located on Level B2.
- The Capital Ring fiber optic cabling is terminated in wall and equipment rack mounted fiber cabinets located in Raised Floor Storage B332.
- Every fiber strand of the 96-strand single mode fiber optic cable in both directions (inbound and outbound) is terminated within 1 West Wilson (and within each building served by the fiber optic ring). Although not within the scope of the 1 West Wilson renovation project, it is the intention of DET to modify the Capital Ring to reduce the number of fiber optic terminations within each building served by the ring by only terminating a select number of fiber optic strands in each building in lieu of every single strand being terminated in each building with the ring.
- Additional DET intra and inter-building fiber optic cabling is terminated in Computer Room B218 and B224 on Level B2 within wall mounted fiber optic cabinets. The destination of the DET inter-building fiber optic cabling appear to include (but is not limited to) 1 West Main, 1 East Main, and 101 West Wilson. These connections do not appear to be currently in use.



Wall Mounted Terminations (Raised Floor Storage B332)

Inter-building Fiber Optic Cabling Terminations (Computer Room B218)



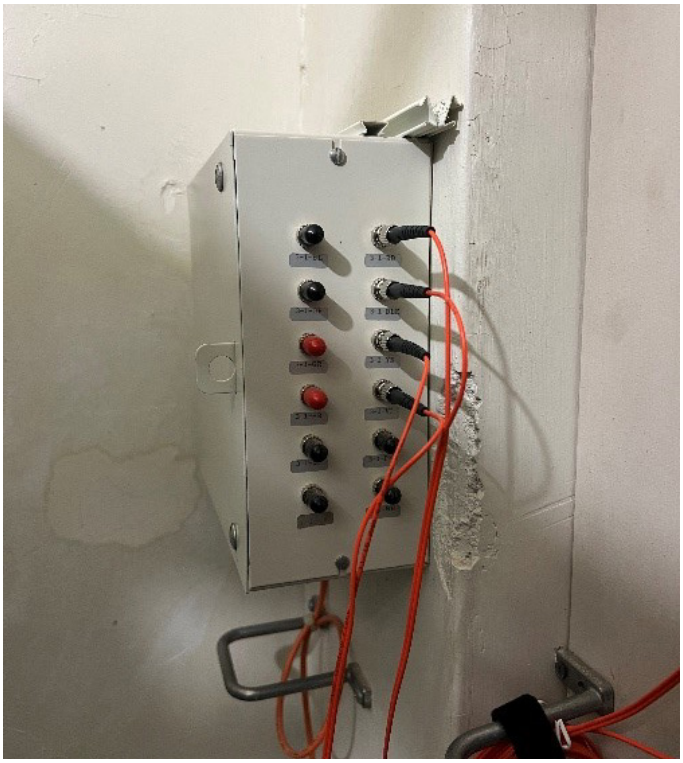
Equipment Rack Mounted Terminations (Raised Floor Storage B33

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

Backbone Fiber Optic System

Premise Backbone Fiber Optic Cabling

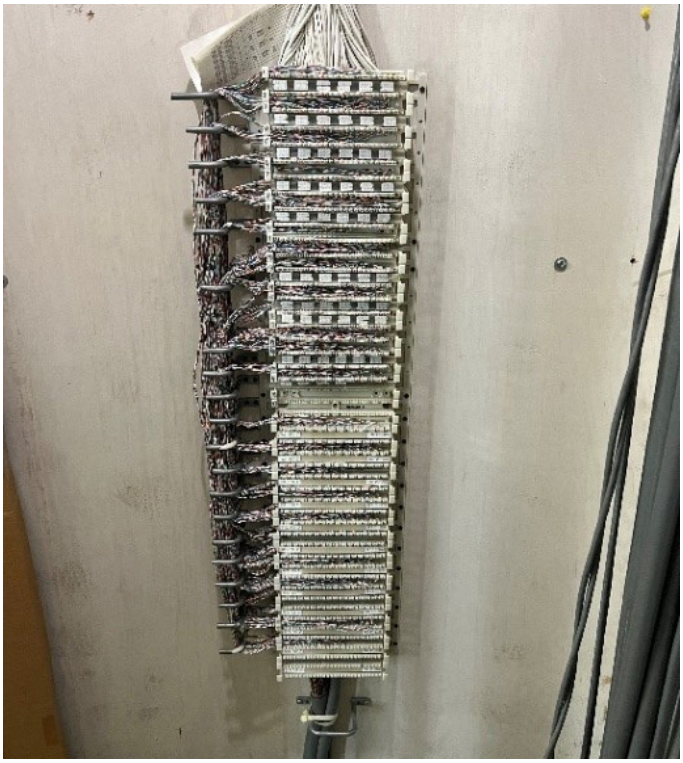
- The existing premise backbone fiber optic cabling system consists of 62.5 µm multi-mode cabling which is approaching end of life and has no industry roadmap for continued use. Each Telecommunication Room containing network connectivity is served by a 12-strand multi-mode cable terminated on ST connector.
- The fiber optic termination cabinets are typically wall mounted in the Telecommunication Rooms.
- Refer to the schematic drawing on the following page for backbone fiber optic cabling details.



Typical Telecommunication Room Wall Mounted Fiber Termination Cabinet

Premise Backbone Copper Cabling

- The existing premise backbone copper cabling system consists of Category 3 cabling. The backbone copper cabling originates in Telephone Equipment B349Z and is terminated on 110 punch blocks mounted on the wall and floor mounted frames.
- Backbone copper cabling is terminated on wall mounted 110 punch blocks located in each Telecommunication Room (refer to the Telecommunication). Preliminary observations indicate that each of the 4-pairs in the horizontal cabling is cross-connected to the backbone copper cabling system. This is to be verified during the design process to validate new backbone copper cable sizes.
- Refer to the schematic drawing on the following page for backbone copper cabling details.



Category 3 Termination located in Telecommunication Room 272Z

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

- (A) Copper cabling originating in Telephone Equipment Room B349Z
- (B) Fiber optic cabling originating in Raised Floor Storage B332
- (C) Telephone Equipment Room B349Z: Voice Utility Service Entrance
- (D) Raised Floor Storage B332: Premise Fiber Optic and Capital Loop Fiber Optic Terminations
- (E) Air Handler #14 B233U: DET Capital Loop Fiber Optic Cable Entrance to Building
- (F) Computer Room B218: DET Intra-Building Fiber Optic Terminations

Schematic drawing indicating backbone cabling within 1 West Wilson

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

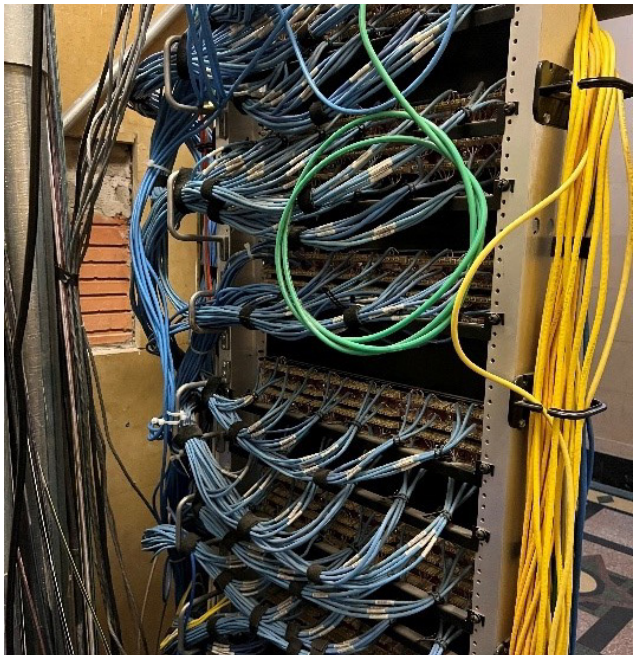
COPPER HORIZONTAL CABLING SYSTEM

Horizontal Copper Voice Cabling

- Horizontal Copper voice cabling consists of Category 3 cablet terminated on wall mounted 110-punch blocks located in each Telecommunication Room.
- Category 3 cabling is routed to workstation outlet on the floor and terminating on modular jacks in wall outlet faceplates.

Horizontal Copper Data Cabling

- Horizontal Data voice cabling consists of Category 5e cablet terminated on modular jacks in equipment rack mounted patch panels located in alternating Telecommunication Room (Refer to the Telecommunication Room section above for details).
- Category 5e cabling is routed to workstation outlet on the floor and terminating on modular jacks in wall outlet faceplates.
- Patch panels outlets are patched to Agency provided network switches.



Category 5e horizontal cabling located in Telecommunication Room 154Z

EXISTING RADIO SYSTEMS

Emergency Responder Radio System Communication System (ERRCS)

- An existing Emergency Responder Radio system is actively serving the 1 West Wilson building.
- Cabling is routed through existing Telecommunication Rooms.
- The ERRCS head-end equipment is located in the penthouse. Represented in the red cabinets in the adjacent photo).
- The ERRCS donor antenna is located on the roof.

Cellular Reinforcement System

- A US Cellular owned cellular reinforcement system distributed antenna system is currently serving the 1 West Wilson building.
- Cabling and equipment is located within existing Telecommunication Rooms.
- The coverage area of the cellular reinforcement system is unknown at the time of this assessment.

Additional Radio Systems

- Additional radio systems are located within 1 West Wilson, which may include State Police radio repeaters. These radio systems primarily reside in the Penthouse with antennas located on the roof.
- These systems may not currently be operational.

Existing Penthouse Radio Equipment and Roof Mounted Antennas

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

EXISTING AUDIOVISUAL SYSTEM

- Existing audiovisual system are present in conference rooms within 1 West Wilson. These systems consist of displays, video teleconferencing and voice lift capabilities. Conference Room capabilities vary by conference room.
- Audiovisual systems have recently been refreshed with new equipment.

EXISTING SECURITY SYSTEMS

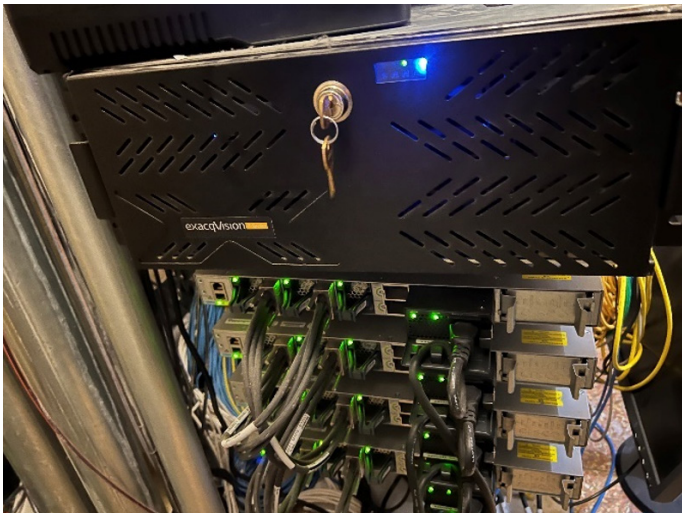
Electronic Access Control System

- The existing access control system consists of a Software House CCure 9000 system. Doors are managed by Software House iStar Pro door controller panels powered by Altronix power supplies. HID card readers control entry points.
- The electronic access control system typically controls openings between common spaces and offices spaces.
- The age of the electronic access control system is unknown at the time of this assessment.

Surveillance System

- The existing surveillance system consists of Exacq Vision Video Management System (VMS) with video being archived on a local network video recorder which is located in Telecommunication Room 154Z.
- The surveillance system is federated via a wide area network connection to a Capital Police Department Video Management System.
- The existing cameras are IP based and connect to the VMS via the facility network via owner network switches.
- Existing cameras currently survey the building exterior at the loading dock, the east face of the building, and the Level B4 exit to the railroad tracks. Existing cameras currently survey the building interior at the loading dock, the west exit located on Level B1, the two primary rear exits, and the Level 1 main hallway.
- Cameras currently consist of Axis cameras.
- The age of the surveillance system is unknown at the time of this assessment.

Software House iStar Pro door controller panel located in Telecommunication Room 651Z



The existing Exacq Vision network video recorder located in Telecommunication Room 154Z

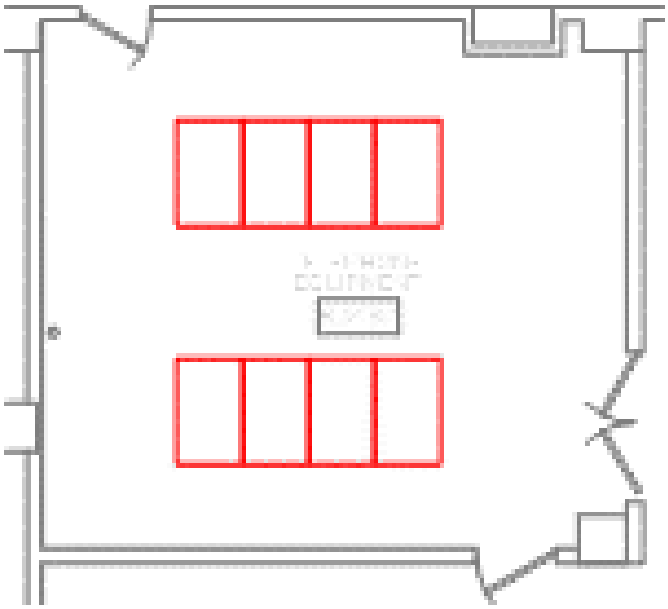
3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

TELECOMMUNICATION ROOMS AND SPACES

Main Telecommunication Equipment Rooms

- All telecommunication services and core network equipment will be consolidated in the existing Telephone Equipment Room B349Z creating a new Main Telecommunication Equipment Room for the Building.
  - The existing copper cabling and frames will be removed (refer to the Voice Backbone Cabling System section for details). Removal should be aligned by project phasing.
  - The renovated room will contain network equipment racks to house new backbone terminations and Agency provided equipment.
  - The existing Telephone Equipment Room B349Z has adequate space to house a minimum of eight equipment cabinets. Final space requirements and configuration shall be coordinated with the Agency during design.
- Backbone and horizontal cabling recommendations are detailed on the following pages.
- Existing spaces including Router Room B333U, Computer Room B331, Raised Floor Storage B332, Computer Room B218 and Computer Room B224 are currently not in use and are not anticipated to be re-used for Telecommunications purposes. These rooms may be reallocated to new programmatic functions.



Example of Telephone Equipment Room B349Z equipment rack configuration with 5'-0" center aisle and minimum 3'-0" rear aisles

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

Telecommunication Rooms

- New Telecommunication Rooms located on each floor shall be created starting with Level B3 and continuing up the entirety of 1 West Wilson.
- All new Telecommunication Rooms shall meet DFD Design standards and are expected to have minimum interior dimensions of 10'-0" wide by 11'-0" long. Existing Telecommunication Rooms shall be reallocated to new programmatic functions.
- New Telecommunication Rooms will serve both voice and data connectivity on each floor. The rooms will also contain electronic access control, Emergency Responder Radio System, Cellular Reinforcement equipment (as required by each radio system architecture), and other low voltage telecommunication equipment as coordinated with DFD and Agency representatives.
    - Power serving new Telecommunication Rooms will be provided meeting or exceeding DFD standards, consisting of a minimum of two 20 ampere, 120 volt circuits for equipment power (receptacles to be coordinated based on equipment requirements).
    - New Telecommunication Room cooling will be provided, serving each new room and meeting or exceeding DFD Standards consisting of a temperature maintained between 65- and 80-degrees F with a relative humidity between 55% and 30%. The system should provide a minimum of one air change per hour and operate independently of surrounding systems, 24 / 7 / 365.
- The new rooms shall stack vertically throughout the building (Levels B3 and B2 may be an exception to vertical stacking due to Mechanical equipment requirements).
- There are two Telecommunication Room configurations available to serve a typically 1 West Wilson floor.
    - Each floor may be served by two new Telecommunication Rooms without exceeding the Permanent Installed Link cable length limit. In order to serve each floor with only two new Telecommunication Rooms the location of the rooms is limited to the general location indicated below.
    - Alternatively each floor may be served by three new Telecommunication Rooms. Due to shorter Permanent Installed Link cable lengths the location of each IDF is more flexible than the two per floor option. Optional locations are indicated below.
    - The pros and cons of each Telecommunications Room configuration should be discussed with DFD and Agency representatives during the design process.

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

Suggested service areas and location of two new Telecommunication Rooms per floor

Suggested service areas and location of three new Telecommunication Rooms per floor.

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

CABLING SYSTEMS

Fiber Optic Backbone Cable Systems

- The Capital Ring fiber optic cabling entering 1 West Wilson in Air Handler #14 shall remain. This service entrance current extends to Raised Floor Storage B332 for termination. These terminations shall be relocated to Telephone Equipment Room B349Z, via either utilizing existing cable slack or by splicing to extend the cabling as determined.
    - Any additional fiber optic cabling entering the building shall be investigated to determine if the fiber optic cabling is in use or will be necessary in the future. Existing active fiber optic cable terminations shall be relocated to Telephone Equipment Room B349Z.
    - The existing inter-building fiber optic cabling should be investigated to determine active and inactive connections. The design process should identify connections for determination on whether the fiber optics cabling is necessary or not. The new design process should address limiting connectivity outages (potentially via temporary cabling) and ensuring proper connectivity for future use.
- All existing premise backbone cabling will be removed and replaced with new single mode fiber optic cabling to support an intra-building Passive Optical Network serving network switches. The fiber optic backbone cabling surveyed to ensure that there are no active connections on the cables prior to removal. Temporary cabling may be necessary to accommodate active circuits depending on the phasing of the renovation work.
- Each new Telecommunication Room shall be allocated a minimum of a 12-strand single mode fiber optic cable terminating in Telephone Equipment Room B349Z. Fiber optic cabling shall be terminated on LC duplex connectors located in an equipment rack mounted fiber termination cabinet.

Copper Backbone Cable Systems

- Existing utility voice services entering 1 West Wilson should be evaluated to determine if the service is appropriately sized or can be reduced in size. Existing services terminated in Telephone Equipment Room B349Z shall remain. It is anticipated that the copper voice infrastructure may be reduced.
- Existing premise copper backbone cabling routed between Telephone Equipment Room B349Z and each Telecommunication Room will be removed as the Telecommunication Rooms are decommissioned. The copper backbone cabling surveyed to ensure that there are no active connections on the cables prior to removal.
- New premise copper backbone cabling will be routed between Telephone Equipment Room B349Z and each new Telecommunication Room. Pair counts in the copper backbone cabling will be determined through coordination with DFD and Agency representatives during the design phase.

Copper Horizontal Cable Systems

- All of the Category 3 and Category 5e horizontal cabling will be removed from the building.
- The new copper horizontal cable system will consist of Category 6A cabling terminated in the new Telecommunication Rooms on each floor serving voice and data outlet located on each floor. The use of Category 6A is above and beyond current DFD guidelines. However, based on long-range planning, the nature of occupant (DHS) work and difficulty in future upgrades cabling in this building, installation of Category 6A cabling is recommended.
- New outlets shall be located per the programmatic requirements within each area of the building meeting DFD and Agency needs.
- Because the ceilings are being replaced, existing wireless access points shall be removed, stored and reinstalled. Each wireless access point location shall receive two Category 6A cables.

Copper Horizontal Cable Systems

- All of the Category 3 and Category 5e horizontal cabling will be removed from the building.

General Cabling Systems

- All existing cabling with 1 West Wilson is investigated to determine to determine if the cabling is active. All abandoned and inactive cabling determined to be unnecessary for future building operation is to be removed in its entirety.

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

RADIO SYSTEMS

Emergency Responder Radio Communication System (ERRCS)

- The existing Emergency Responder Radio system currently serving the 1 West Wilson building will remain active and shall be reworked to accommodate the renovations throughout the building.
- A new site survey shall be performed ensure code required coverage following the renovations throughout the building.
- The architecture of the existing ERRCS system will be evaluated during the design process to determine if existing cabling and infrastructure may be maintained or should be replaced and how construction phasing will impact the necessary functionality of the system.

Cellular Reinforcement System

- The US Cellular owned cellular reinforcement system distributed antenna system shall be reworked to accommodate the new Telecommunication Rooms.
- US Cellular shall be consulted to perform all work associated with their distributed antenna system.
- US Cellular shall be consulted to identify the coverage of the cellular reinforcement system and the impact of the construction process on the US Cellular owned system and infrastructure.

Additional Radio Systems

- All other existing radio and antenna systems within 1 West Wilson should be surveyed to determine the organization that owns the system and if the system is still active.
- Radio systems that are not currently active shall be removed only upon receiving approval from the system owner/operator.

AUDIOVISUAL SYSTEM

- At the time of the work occurring within the 1 West Wilson building, the audiovisual system equipment will most likely be ready for an update. New audiovisual systems shall provided replacing the existing systems in the building and shall be included within the scope of the project. Audiovisual system updated shall included devices, cabling and associated infrastructure.
- The new audiovisual systems shall at a minimum provide presentation and video teleconferencing capabilities. Voice lift and additional capabilities shall be provided in specific conference rooms as required by DFD, DFTS and Agency representatives.
- Existing architectural design shall be evaluated in relation to the needs of each new audiovisual system application during the design process.

3.7 COMMUNICATIONS & ELECTRONIC SECURITY ASSESSMENT & RECOMMENDATIONS

RECOMMENDATIONS

SECURITY SYSTEMS

Electronic Access Control System

- The existing Software House CC9000 electronic shall remain and continue to control openings throughout 1 West Wilson.
- Existing iStar Pro door control panels and power supplies shall be relocated to the new Telecommunication Rooms. New access control cabling shall be routed to existing doors from the new door control panel locations.
- Electronic access control door hardware shall be coordinated with any new doors or updated finishes.
- New access control locations shall be added per the requirements of the new program as coordinated with DFD, DFTS and Agency representatives.
- The existing access control equipment, cabling and associated infrastructure should be evaluated against the phasing of the construction process to ensure system operation and potentially system improvements associated with relocating equipment to new Telecommunication Rooms.

Surveillance System

- The existing Exacq Vision network video recorder currently located in Telecommunication Room 154Z. This surveillance appliance will be relocated to Telephone Equipment Room B349Z.
- Because the ceilings are being replaced, existing cameras shall be removed, stored and reinstalled in new ceilings. Each camera location shall receive one Category 6A F/UTP cable.
- New camera locations shall be added to the building per the requirements of the new program as coordinated with DFD, DFTS and Agency representatives.
- The existing surveillance system operation and camera connectivity shall be evaluated in relation to the project phasing and coordinated with DFD personnel to limit system interruption and down times.

Emergency Intercom System

- A new emergency elevator intercom system shall be installed at each elevator landing located on a floor that does not exit to grade. The emergency elevator intercom system control panel shall be located at the existing Fire Alarm Annunciator Panel.

SECTION 4 | PHASING & SCHEDULE

4.0 PHASING & SCHEDULE

PHASING OPTIONS

Two primary phasing options were explored, and while there are certainly options to renovate the building in more phases, these two options were considered the most efficient and most likely scenarios given that the new mechanical, electrical, plumbing and telecommunications systems must distribute vertically through the building. See Section 4 in this Report for full phasing and schedule information.

PHASING OPTION 1

Phasing Option 1 would relocate all of the staff to temporary surge locations and close the entire building for the renovation period. This option is certainly the easiest for the construction effort and would create the fastest time-line to completion. However, it requires finding available surge space in Madison for up to 1,600 employees and would require that the entire 1 West Wilson facility be emptied to allow the construction to begin. It should be noted that at the time of this report, the impact of the Covid pandemic has dramatically reduced the number of staff in the building.

While this single phase approach will have the benefit of being the shortest construction duration, another benefit will be the ability to demolish and remove all of the infrastructure and systems at the same time. Not having to attempt to trace down systems and utilities and then isolate and cap off areas so that the only the renovated areas can be removed while the rest of the building stays live would be a challenge. However, there are still some concerns or issues that will need to be addressed such as the lack of lay-down space for materials and the current long-lead times for mechanical and electrical components. It should be noted that some mechanical and electrical components are currently dealing with extremely long lead times and this may have an impact on the timing and phasing.

4.0 PHASING & SCHEDULE

PHASING OPTION 2

Phasing Option 2 would split the renovation into three distinct vertical slices through the building. See diagrams on this page. This would extend the overall duration of the construction; however, the building could remain open and occupied throughout construction.

This option would begin by moving staff and all furniture and equipment out of the east third of the building along with the basement levels. Staff would consolidate into the remaining two-thirds of the building. Temporary wall partitions would separate construction zones from occupied space. Once the first phase is completed staff would move back into the Phase 1 area and Phase 2 would commence, followed by Phase 3. This options avoids a major move to temporary surge space locations for all staff, but would require a longer duration of noise, dust and disruptions in the building and would require multiple moves for some staff.

We are projecting that this approach would add an additional 12 months to the overall construction schedule and it would also add cost and complexity. Complexities between each of the phases would include:

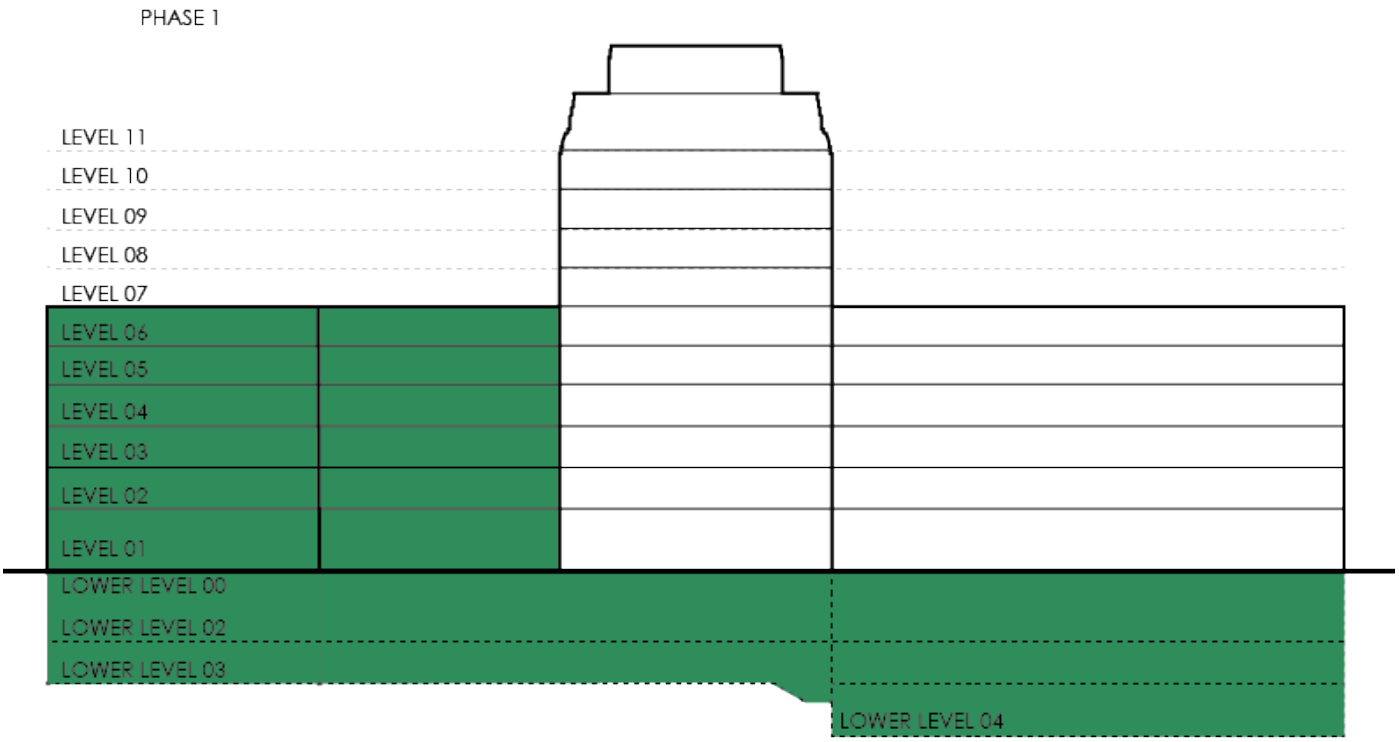
- Finding ways to consolidate 1/3 of the staff into the rest of the building.
- Installing temporary partitions to mitigate dust, noise and separation of construction workers and building occupants.
- Building systems and infrastructure systems that feed the whole building would need to be traced down and then isolated in order to cap off areas so that the only the renovated spaces can be removed while the rest of the building stays live would be a challenge.
- Building users would have to deal with occasional shutdowns of power and water.
- Temporary cabling may be necessary to support active communications and electronic security systems operation to limit or eliminated interruptions and/or down time. Coordinate with building operators to determine the tolerable interruption on a system by system basis.

However, there are some benefits as well. The biggest advantage may be that the building would remain occupied throughout the duration and there would either be no or a minimal need for surge space outside of the building. This approach allows more time for the delivery of materials and also reduces the amount of construction materials that need to be staged and stored on site. It should be noted that some mechanical and electrical components are currently dealing with extremely long lead times and this may have an impact on the timing and phasing.

4.0 PHASING & SCHEDULE

MULTIPLE-PHASED PROJECT

Since the systems in the building are mostly rising vertically through the building it makes the most sense to separate the building into 3 vertical areas. The basement levels would also need to be included in the initial phase in order to incorporate some of the major required head-end and infrastructure system upgrades that need to support the Phase 1 and subsequent renovations.

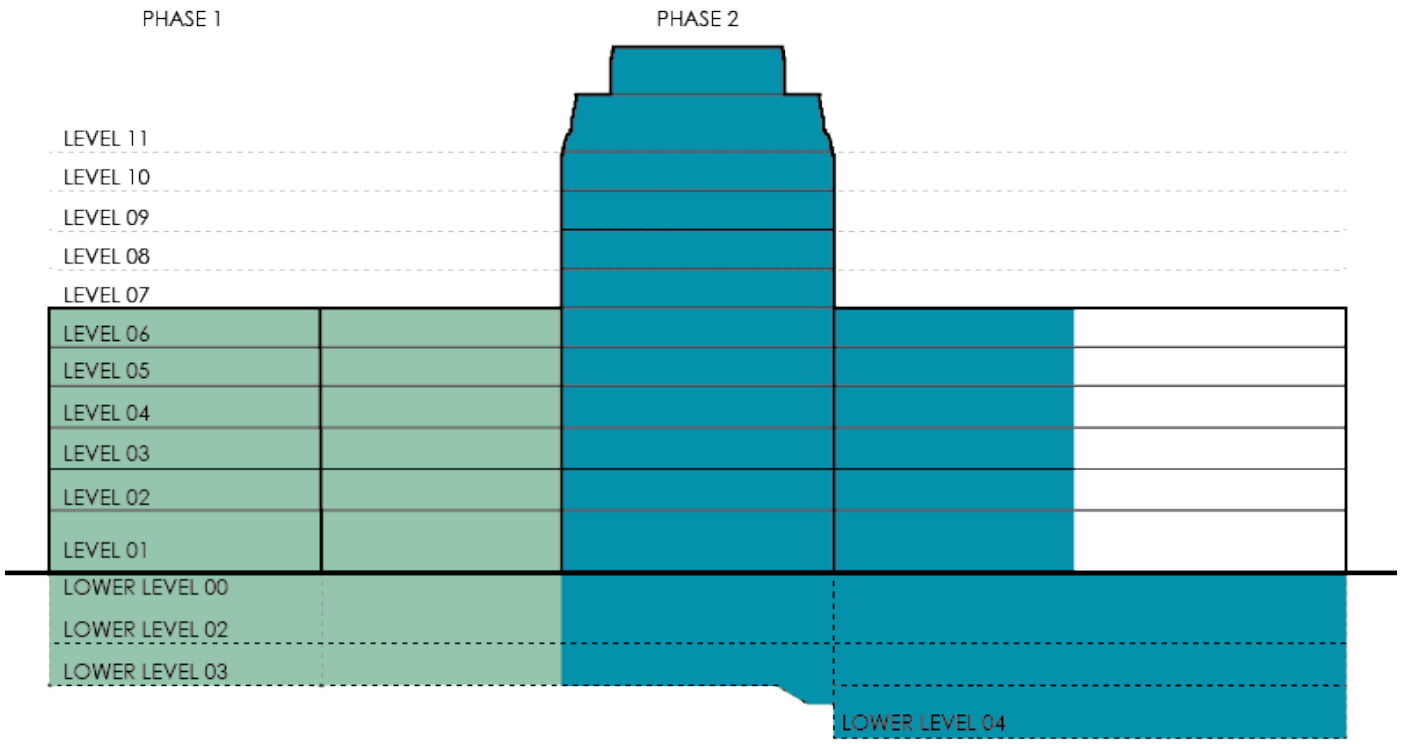


Option 2 - Phase 1

4.0 PHASING & SCHEDULE

MULTIPLE-PHASED PROJECT SECOND PHASE

There would need to be a 3-month transition period between the first and second phase to allow staff to relocate into the completed first phase and then move out of the Phase 2 area. Temporary partitions would also need to be built. This second phase would include construction of the penthouse on the roof of the center tower and given this phase includes more square footage some extra time was added to this phase.

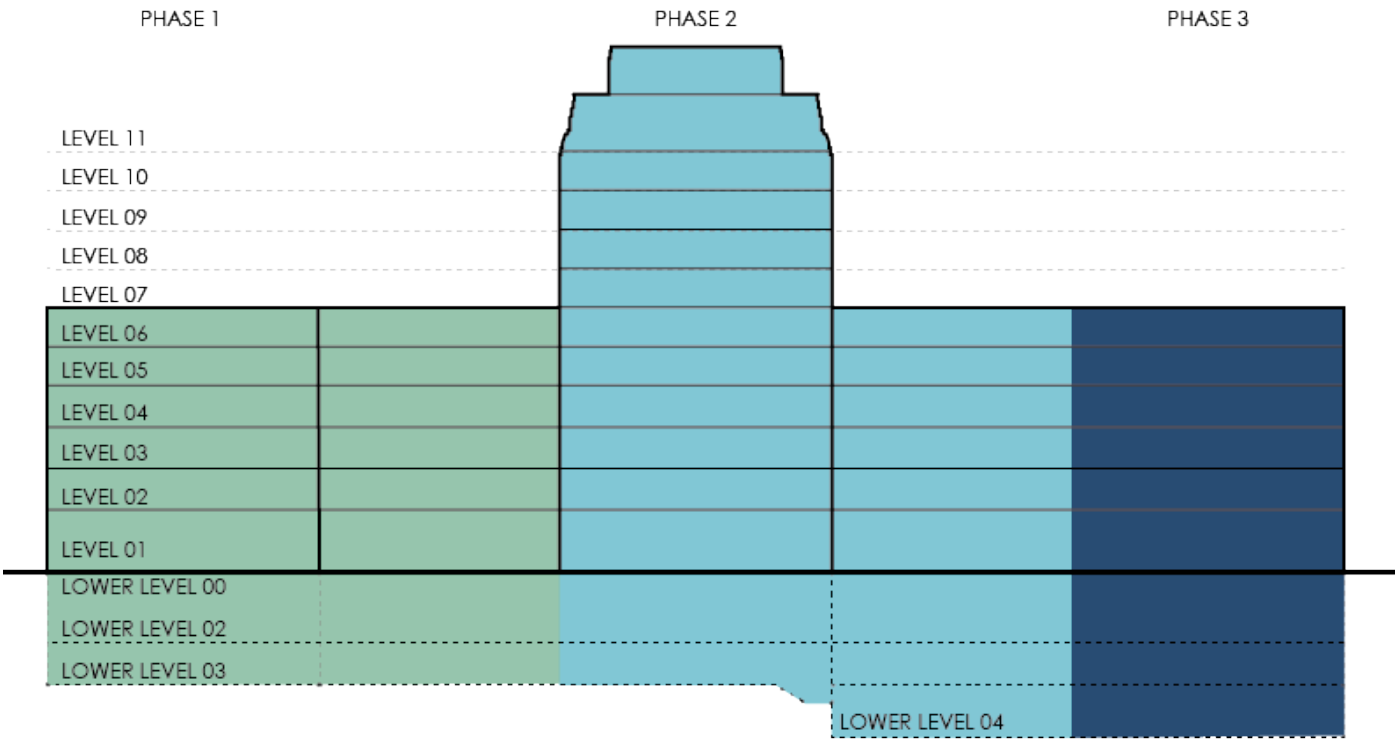


Option 2 - Phase 2

4.0 PHASING & SCHEDULE

MULTIPLE-PHASED PROJECT THIRD PHASE

Again, there would need to be a 3-month transition period between the second phase and this final phase to allow staff to relocate into the completed phase and then move out of the Phase 3 area. Temporary partitions would also need to be built.



Option 2 - Phase 3

4.0 PHASING & SCHEDULE

PROJECT SCHEDULE OPTIONS

The follow schedules show the overall durations for design, bidding, construction and closeout for each of the two phasing options. The single phase construction option completes 12 months faster than the 3 phase option.

SCHEDULE FOR ONE PHASE PROJECT

A/E Selection	Preliminary Design	Final Design	Review	Bidding + Contracts	Staging / Order Long Leads / Move Out	Construction	Substantial Completion + Comm.	Close out
4 months	7 months	5 months	2 months	4 months	4 months	24 months	1 month	6 months

SCHEDULE FOR THREE PHASE PROJECT

A/E Selection	Preliminary Design	Final Design	Review	Bidding + Contracts	Phase Approach	Substantial Completion + Comm.	Close out
4 months	6 months	6 months	2 months	4 months	36 months	1 month	6 months

Staging/ Order Long Leads/ Partial Consolidation. Move Out/ Temp Partition	PHASE 1 Construction	Move In / Move Out Temp Partition	PHASE 2 Construction	Move In / Move Out Temp Partition	PHASE 3 Construction
3 months	9 months	3 month	10 months	3 month	8 months

SECTION 5 | COST MODEL

5.0 COST MODEL

State of WI - 1 West Wilson

HGA

Preliminary Cost Modeling

		Full Renovation		
		QUANITITY	UNIT	TOTAL $
	GSF	445,000		
DEMOLITION / SITE PREP				
DEMO GC'S, ACCESS, PROTECTIONS	Zero lot site, assumes street closures	5%		$425,000
HAZMAT ABATEMENT	Existing bldg - per Owner report	1 lsum		$2,500,000
FINISHES DEMO & REMOVAL	Incl. haul off & disposal	445,000 sqft	$12.00	$5,340,000
REMOVE RAISED ACCESS FLOOR	Former data ctr, basement areas	16,000 sqft	$10.00	$160,000
CORE & SHELL DEMO	Structural, exterior	1 lsum		$250,000
DISTRIBUTION, DISCONNECTS, MAKE-SAFE	Mods & connection to existing services	1 lsum		$250,000
			$20.06	$8,925,000
STRUCTURE				
NEW PENTHOUSE STRUCTURE	Complete core & shell construction	3,700 sqft	$320.00	$1,184,000
MISC STRUCTURAL SUPT	MEP equipment, bldg space mods	1 lsum		$350,000
NEW OPENINGS	Shafts, roof	100 loc	$5,500.00	$550,000
FLOOR INFILLS	Plumbing shafts, etc.	38 loc	$10,000.00	$380,000
			$5.54	$2,464,000
ENCLOSURE				
NEW/REBUILD EXTERIOR SHAFTS	4 loc	3,640 sqft	$100.00	$364,000
MAIN ENTRY DOOR	Historic swing doors - per Vendor quote	1 lsum	$350,000.00	$350,000
EXTERIOR, ROOF PATCHING	Penetrations	1 lsum		$150,000
			$1.94	$864,000
INTERIORS				
MAJOR RENOVATION - RESTROOMS	Reconfig, high end finishes, reloc fixtures	9,030 sqft	$320.00	$2,889,600
MAJOR RENOVATION - BREAKROOMS	Full reconfig, high end finishes, technology	5,756 sqft	$165.00	$949,740
INTERIOR FITOUT - PUBLIC SPACE	Lobby/Corridor - minor finishes refurb	41,300 sqft	$25.00	$1,032,500
INTERIOR FITOUT - OPEN OFFICE SPACE	Open space finishes	237,034 sqft	$50.00	$11,851,700
INTERIOR FITOUT - OFFICE BUILD-OUT	New functions in new & newly available space	46,000 sqft	$120.00	$5,520,000
INTERIOR FITOUT - BOH SPACE BUILD-OUT	Storage spaces, basement spaces, IT rms	37,000 sqft	$20.00	$740,000
MEP SPACE RENOVATIONS	Reconfig, new rooms	50,880 sqft	$40.00	$2,035,200
INTERIOR FITOUT - VERTICAL CIRCULATION	Stair finishes, upgrades	18,000 sqft	$75.00	$1,350,000
NEW DOOR HARDWARE	Passage/level + 10% new	850 each	$1,000.00	$850,000
NEW CORNER GUARDS	Public/Corridor spaces, stainless	2,000 each	$375.00	$750,000
NEW INTERIOR ROOM SIGNAGE	Allowance - approx 250 loc	1 lsum		$100,000
TERRAZZO FLOOR REFURB/REPLACE	minor repairs, patching, replace vinyl area	1 lsum		$350,000
INTERIOR PATCHING	Penetrations, ratings	1 lsum		$350,000
			$64.65	$28,768,740
VERTICAL CIRCULATION	No Scope Included			
			$0.00	$0
FIRE PROTECTION				
RECONFIG FIRE PROTECTION	To accommodate arch/mech/elec renovations	445,000 sqft	$3.40	$1,513,000
			$3.40	$1,513,000
PLUMBING				
PLUMBING INFRASTRUCTURE	HW heating, booster pumps, reloc softener	1 lsum		$350,000
PIPING MAINS	W&V, H/C water verticals, underground	1 lsum		$850,000
PLUMBING FIXTURES	New at new restrooms, break, drains, etc.	320 each	$7,500.00	$2,400,000
ROOF DRAINS	Complete new system	445,000 sqft	$1.25	$556,250
			$9.34	$4,156,250
HVAC				
MECH EQUIPMENT REMOVAL	Major equipment demo	1 lsum		$250,000
HVAC DISTR DEMO/REMOVALS	ductwork, terminals, etc.	445,000 sqft	$1.85	$823,250
DISTRIBUTION, DISCONNECTS, MAKE-SAFE	Mods & connection to existing services	1 lsum		$150,000
STEAM TO HOT WATER EQUIPMENT	Exchanger, pumps, etc.	1 lsum		$850,000
NEW HOT WATER PIPING VERT MAINS	S/R system	280 lnft	$1,000.00	$280,000
NEW CHILLED WATER PIPING VERT MAINS	S/R system	280 lnft	$1,000.00	$280,000
HW HORIZ DISTRIBUTION	VAVs, per floor	445,000 sqft	$3.25	$1,446,250
NEW AHUS - ROOF	Complete system w/ energy recovery	70,000 cfm	$14.00	$980,000
NEW AHUS - 7TH FLOOR	Complete system w/ energy recovery	80,000 cfm	$17.50	$1,400,000
NEW AHUS - BASEMENT	Complete system, some energy recovery	165,000 cfm	$19.50	$3,217,500
MISC HVAC EQUIPMENT/INFRASTRUCTURE	Allowance	1 lsum		$550,000
PERIMETER HEATING TERMINAL REPLACEMENT	ex steam to new hw	1 lsum		$350,000
DUCT MAIN DISTRIBUTION	Vert duct	1 lsum		$650,000
DISTRIBUTION & ZONING	Complete new VAV+reheat, duct, terminals	445,000 sqft	$22.00	$9,790,000
CONTROLS	Complete new BAS system	445,000 sqft	$8.00	$3,560,000
			$55.23	$24,577,000

5.0 COST MODEL

State of WI - 1 West Wilson

HGA

Preliminary Cost Modeling

			Full Renovation		
			QUANITITY	UNIT	TOTAL $
		GSF	445,000		
ELECTRICAL					
ELEC EQUIPMENT REMOVAL	Major equipment demo		1 lsum		$100,000
ELECTRICAL HORIZ FLOOR DISTR REMOVAL	In-floor duct wiring removal, cap outlets		283,034 sqft	$1.20	$339,641
DISTRIBUTION, DISCONNECTS, MAKE-SAFE	Mods & connection to existing services		1 lsum		$150,000
NEW ELECTRICAL SERVICE	(2) 2500a service setups		2 each	$950,000.00	$1,900,000
GENERATOR SYSTEM CONNECTIONS	Refeed existing gen system		1 lsum		$250,000
FEEDERS & MAIN DISTRIBUTION	Vert to floors		1 lsum		$850,000
POWER DISTRIBUTION	Complete horizontal system, incl panels		445,000 sqft	$9.85	$4,383,250
EQUIPMENT CONNECTIONS	HVAC, etc.		1 lsum		$350,000
NEW LIGHTING	Complete LED system & controls		445,000 sqft	$17.50	$7,787,500
RENOVATE/REFURB HISTORIC FIXTURES	Public Spaces		50 each	$5,000.00	$250,000
				$36.76	$16,360,391
COMMUNICATIONS AND ELECTRONIC SAFETY & SECURITY					
COMMUNICATIONS DISTR & EQUIP DEMO/REMOVALS	fiber, copper pathways, rooms, equip		445,000 sqft	$1.00	$445,000
DEMO/RELOCATE FIBER SERVICE CONNECTION	Build out new main room		1 lsum		$150,000
FIBER & COPPER BACKBONE	To new telecom rooms		1 lsum		$250,000
TELECOM ROOM INFRASTRUCTURE	Build out new rooms, per floor		30 loc	$10,000.00	$300,000
CAT 6A DISTRIBUTION	Horizontal on floors		445,000 sqft	$4.25	$1,891,250
AV SYSTEM INFRASTRUCTURE	per floor		42 room	$15,000.00	$630,000
SECURITY SYSTEM RELOC/MODS	Relocate video, connections, local mods		1 lsum		$250,000
FIRE ALARM SYSTEM	Complete system replacement		445,000 sqft	$4.00	$1,780,000
EMERGENCY RESPONSE SYSTEMS MODS	Renovation, relocation of systems		1 lsum		$150,000
				$13.14	$5,846,250
SUBTOTAL CONSTRUCTION COST (2022)				$210/sf	$93,474,631
CM/GC GEN REQ/GEN COND/FEE/BOND/INSUR		15.00%			$14,021,195
DESIGN & CONSTRUCTION CONTINGENCY		15.00%			$16,124,374
TOTAL CONSTRUCTION COST (2022)				$278/sf	$123,620,199
PROFESSIONAL SERVICE FEES		12.00%			$14,834,424
ADMINISTRATIVE FEES		4.00%			$4,944,808
FF&E/AV - NEW SPACES	Breakrooms, reno'd office areas		51,756 sqft	$35	$1,811,460
FF&E/AV - EXISTING SPACES	Office & public spaces - majority reuse		278,334 sqft	$15	$4,175,010
OWNERS PROJECT CONTINGENCY		15.00%			$18,543,030
TOTAL PROJECT COST (2022)				$377/sf	$167,928,931
ESCALATION (2022 to 2025)	6%-'22/'23 + 5%-'23/'24 + 4%-'24/'25	15.75%			$26,452,165
NOTE 1 : Escalation has been included at a rate reflective of higher-than-typical recent market conditions, and adjusted down for the progressive years of escalation included. This assumes a gradual return to the average historical construction escalation rate of approximately 4%.					
NOTE 2 : Escalation should be added at a rate of 4%/yr (compounded) for any extension of schedule beyond a Q1/2-2025 construction start.					
TOTAL PROJECT COST (2025)				$437/sf	$194,381,096
ADD ALT : PHASING (3 phases, per tower)	(Pricing above assumes a single continuous construction phase)				(total constr cost in 2025)
TEMP PARTITIONING, PROTECTIONS, ACCESS	Horizontal separations on floors, at entries		2,000 lnft	$250	$500,000
PHASING - ADDED MOB/DEMOB, PROJECT SETUP	Assumes non-continuous schedule		4 each	$150,000	$600,000
SYSTEMS SEGREGATION, TEMP, SWITCH-OVER	Accommodations for phased & occupied construction		5%		$2,622,645
SCHEDULE EXTENSION	Phases 2 & 3 extended - 12m total extension		1 lsum		$3,600,000
					$7,322,645
DEDUCT ALT : REPLACE AHUS IN PLACE I.L.O. RECOMMENDED OPTION			1 lsum		($2,150,000)

APPENDIX