UNIVERSITY of WISCONSIN
LA CROSSE

WITTICH HALL RENOVATION

10% CONCEPT DESIGN REPORT – VOLUME 1 OF 3

DFD Project No. 14I20

FINAL DRAFT

November 1, 2016

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PREFACE

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William Ross	Management, Chair
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COMMONLY USED ABBREVIATIONS / DEFINITIONS

A/E	Architect / Engineer
ANSI	American National Standards Institute
ASF	Assignable Square Feet
ASTM	American Society for Testing and Materials
Assoc.	Associate
BTU	British Thermal Unit
BTH	British Thermal Unit Hour
BMP	Best Management Practices
CBA	College of Business Administration
CEI	Center for Entrepreneurship and Innovation
CFM	Cubic Feet per Minute
CHW	Chilled Water
DCV	Demand Control Ventilation
Dept.	Department
DFD	Division of Facilities Development
DFD#	Division of Facilities Development Project Number
DSPS	Department of Safety and Professional Services
EIS	Environmental Impact Statement
FP	Fire Protection
FONSI	Finding of No Significant Impact
GFSB	General Fund Supported Borrowing
GSF	Gross Square Feet
HVAC	Heating, Ventilation, and Air Conditioning
Instr.	Instructional
IT	Information Technology
KGSF	Thousand Gross Square Feet
KW	Kilowatts
LB	Pounds
LCCA	Life Cycle Cost Analysis
LPD	Lighting Power Density
MBA	Masters of Business Administration
MDF	Medium Density Fiberboard
MEP	Mechanical / Electrical / Plumbing
Misc.	Miscellaneous
No.	Number
PRSB	Project Revenue Supported Borrowing
Prog.	Program
SBDC	Small Business Development Center
SF	Square Foot
Spec.	Specialist
UW	University of Wisconsin
UWL	University of Wisconsin – La Crosse
W	Watts
WALMS	Wisconsin Asbestos and Lead Management System
WEPA	Wisconsin Environmental Policy Act
WRH	Weekly Room Hours
WI	Wisconsin

1. EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION / OVERVIEW

The Wittich Hall Renovation project will create a new central home for the University of Wisconsin – La Crosse College of Business Administration (CBA). Through careful investigation, planning and collaboration with stakeholders from UW-La Crosse, UW System Administration, the Division of Facilities Development (DFD), and the Wisconsin Historical Society, the Design Team is developing an adaptive reuse intervention of an historic structure that will simultaneously breathe new life into an aging historic structure, and provide a home to a College with provisional lodgings.

This report is a compilation of the work that has been completed for the 10% Concept Design Report, the first phase of the Wittich Hall Renovation project. The team has led extensive investigation into facility conditions, historic preservation, detailed programming, conceptual design, audio-visual and technology needs, site design, code compliance, project cost, and schedule through independent work and in participation with project stakeholders.

Figure 1.1-1: 1916 Gymnasium; UW-La Crosse Area Research Center (c. 1920)

1.2 SITE MAP

Figure 1.2–1: Site Map

Buildings											
Residence Halls		7	Reuter Hall	14	Campus Child Center	22	Health Science Center	32	Roger Harring Stadium	40	Wimberly Hall
1	Angell Hall	8	Sanford Hall	15	Cartwright Center	23	Heating Plant	33	Student Center	41	Wing Technology Center
2	Coate Hall	9	Wentz Hall	16	Centennial Hall	24	Hoeschler Tower	35	Tennis Courts	42	Wittich Hall
3	Drake Hall	10	White Hall	17	Center for the Arts	26	Mitchell Hall	36	Veterans Memorial Field Sports Complex		
4	Eagle Hall	**Other Facilities**		19	Cleary Alumni & Friends Center	27	Morris Hall	37	Veterans Memorial Monument		
5	Hutchison Hall	11	Anatomy & Physiology Annex	20	Cowley Hall of Science	28	Murphy Library	38	West Chiller Plant		
6	Laux Hall	12	Archaeology Center and Laboratories	21	Graff Main Hall	30	Police Services	39	Whitney Center		

Figure 1.2-2: Site Map Key

1.3 BACKGROUND AND PURPOSE

The Wittich Hall Renovation project has its roots in a Preliminary Design Report dated October 25th, 2011, authored by Pasture Consulting. The report evaluated the existing conditions of Wittich Hall and evaluated the structure for use as a central home for the College of Business Administration (CBA).

A second report, the Wittich Hall Facility Study, dated November 10, 2014 was assembled by River Architects. It assessed the Preliminary Design Report (Pasture Report) and elaborated on facility condition, code issues, structural analysis and offered a conceptual design strategy for relocation of the CBA within Wittich Hall.

During the time-frame of the Wittich Hall Facility Study, Paulien & Associates was collaborating with the UW-La Crosse campus to prepare a comprehensive Academic Space Planning Study, which elaborated upon the basic programmatic requirements for the CBA.

In August of 2015, a team comprising of Aro Eberle Architects, River Architects, Paulien & Associates, Henneman Engineering, Oneida Total Integrated Enterprises, SmithGroupJJR, The Sextant Group, Middleton Construction Consulting, and Immel Construction, kicked off the Wittich Hall Renovation project with all of the key project stakeholders.

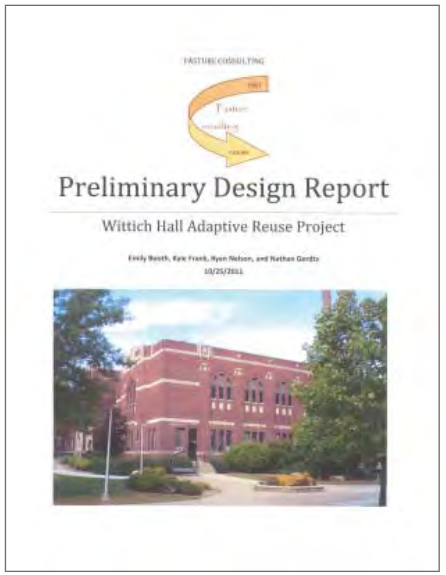


Figure 1.3-1: Wittich Hall – Preliminary Design Report 2011

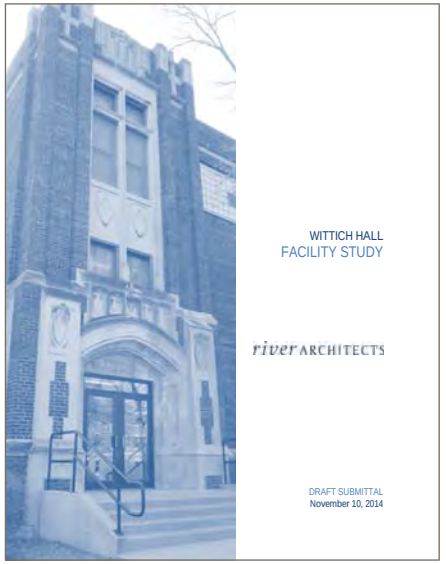


Figure 1.3-2: Wittich Hall Facility Study 2014

1.4 ANALYSIS OF NEED

The primary impetus for adapting Wittich Hall for the College of Business Administration was the implementation of the University's Growth, Quality and Access program in Fall of 2008. This resulted in the growth of the institution by 1,000 students and the hiring of 153 new faculty and 34 staff positions. A lack of office space availability resulted in significant space compression across the institution. As a result, the university convened its Joint Planning and Budget Committee during the 2010 Spring Semester to determine the highest priority for repurposing Wittich Hall. After extensive deliberations and consultation with campus shared governance, a recommendation was made to designate Wittich Hall as the home for the College of Business Administration.

The building had a number of space and code limitations which precluded its continued use as the home of gymnastics. The status of the pool and its limited functionality was also a contributing factor in the decision to discontinue using Wittich Hall as a gymnasium facility. UW System and the DFD would not support funding the renovation or replacement of the remaining swimming pool. In the final analysis, the academic priorities of the university emerged as the supporting rationale to recommend the renovation of Wittich Hall for the College of Business Administration.

1.5 DESIGN METHODOLOGY

1.5.1 INTRODUCTION

The Design Team worked collaboratively with UW-La Crosse campus and other project stakeholders to understand the needs of all project constituents. Six multi-day workshops were hosted on the UW-La Crosse campus and facilitated by the project team.

The process began with an in-depth look at programming, connecting with each entity of the CBA to understand their current space functions and future needs. After two sessions of program discussions, the team began to look at adjacency and stacking diagrams. Preferred layouts were selected and developed into finalized schematic concepts. In conjunction with planning and design concepts, the team also led workshops to discuss audiovisual technology, MEP systems, site utilities, and site integration with the larger campus.

Additional effort went into developing an Historic Structure Report and a Preservation Plan, which emphasizes the exterior and interior preservation and renovation work that will be completed as part of the project.

1.5.2 ESTABLISHMENT OF PROJECT DESIGN GOALS AND PRIORITIES

Through the course of the workshops the team developed a list of goals and priorities for the project. These are the ideas that help guide decision making throughout the project. The team often had a mix of ideas that ranged from "overall feeling of the space" to specific detailed requirements. This list will continue to evolve, but our team is developing designs that aim to achieve the following:

PROJECT GOALS

- Create an identity and home for the CBA.
- Provide attractions to draw CBA students to the building.
- Active and flexible work environment.
- Facilitate public outreach.
- Provide collaborative learning spaces to facilitate faculty-faculty, faculty-student, and student-student interaction within the space.
- Respect historic character of building while contrasting with new construction.
- "Healthy work environment" – encourage movement and a healthy work space.
- Provide seamless accessibility where possible.
- Maximize daylight and access to daylight within space (where desirable).
- Provide private faculty offices.
- Daylight and privacy control. Balance of open and light.
- Ease of maintenance.
- Provide spaces with good acoustic properties.

Figure 1.5.2-1: Participation in Image Survey Workshop

1.5.3 PROGRAMMING

Paulien & Associates, Inc. worked under contract to Aro Eberle Architects, Inc. for this project. The focus of Paulien & Associates' work was to develop a space allocation program for the Wittich Hall Renovation on the University of Wisconsin – La Crosse campus. The Final Working Document was submitted in June 2016.

The process of determining the space program began by collecting data and meeting with each of the departments, the Executive Committee and others as appropriate. Data included existing facilities information for Wittich Hall, a course file from the Fall of 2015, and a list of all faculty and staff to be included in the program.

The first programming workshop occurred in May 2016. The two primary goals of the first campus visit were validation of data received to date and meeting with all CBA entities to begin development the draft space allocation program. The project moved forward with the second programming workshop occurring in June 2016. The draft space allocation program was discussed during the June visit, and the space program was further refined. Several follow-up discussions resulted in further refinement of the space program and the resulting program is detailed within this report.

During the design process, the team discovered unanticipated plan efficiencies and additional bonus space. These left-over spaces have been ear-marked as classroom space. Much of the feedback received from the faculty was that more academic space would increase the student population within the building and provide resources to the College.

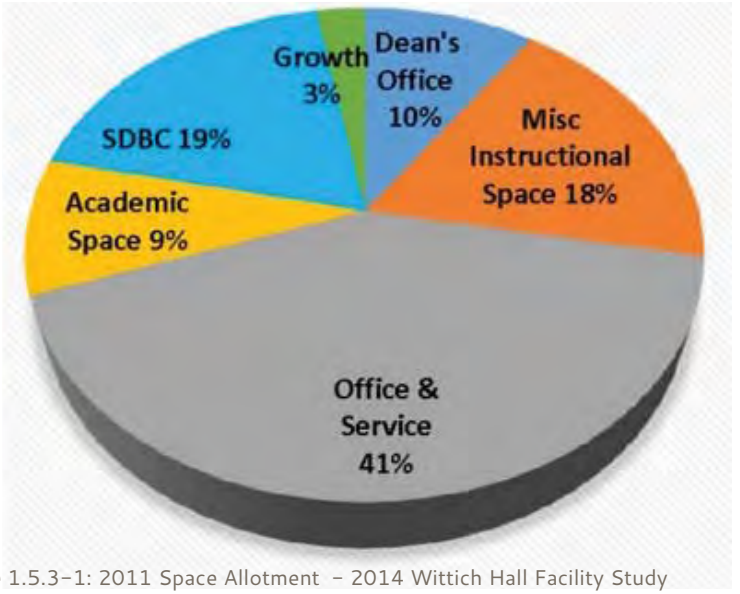


Figure 1.5.3-1: 2011 Space Allotment - 2014 Wittich Hall Facility Study

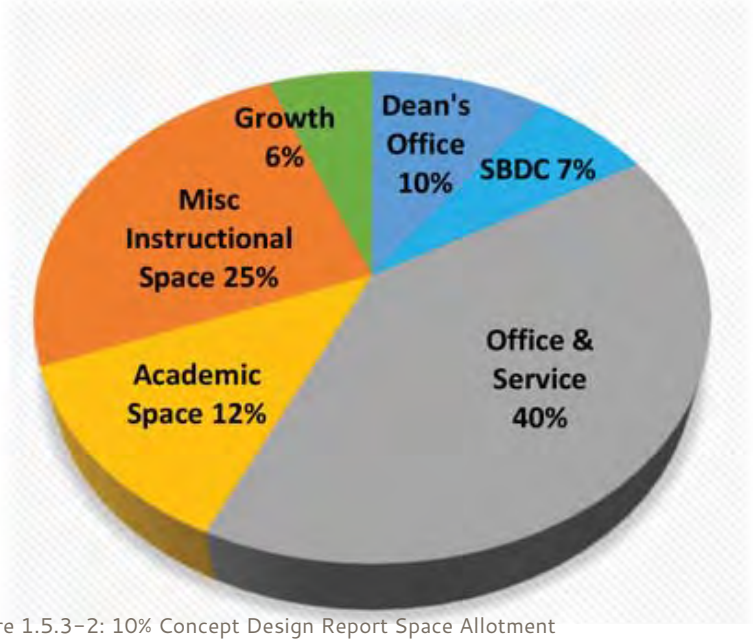


Figure 1.5.3-2: 10% Concept Design Report Space Allotment

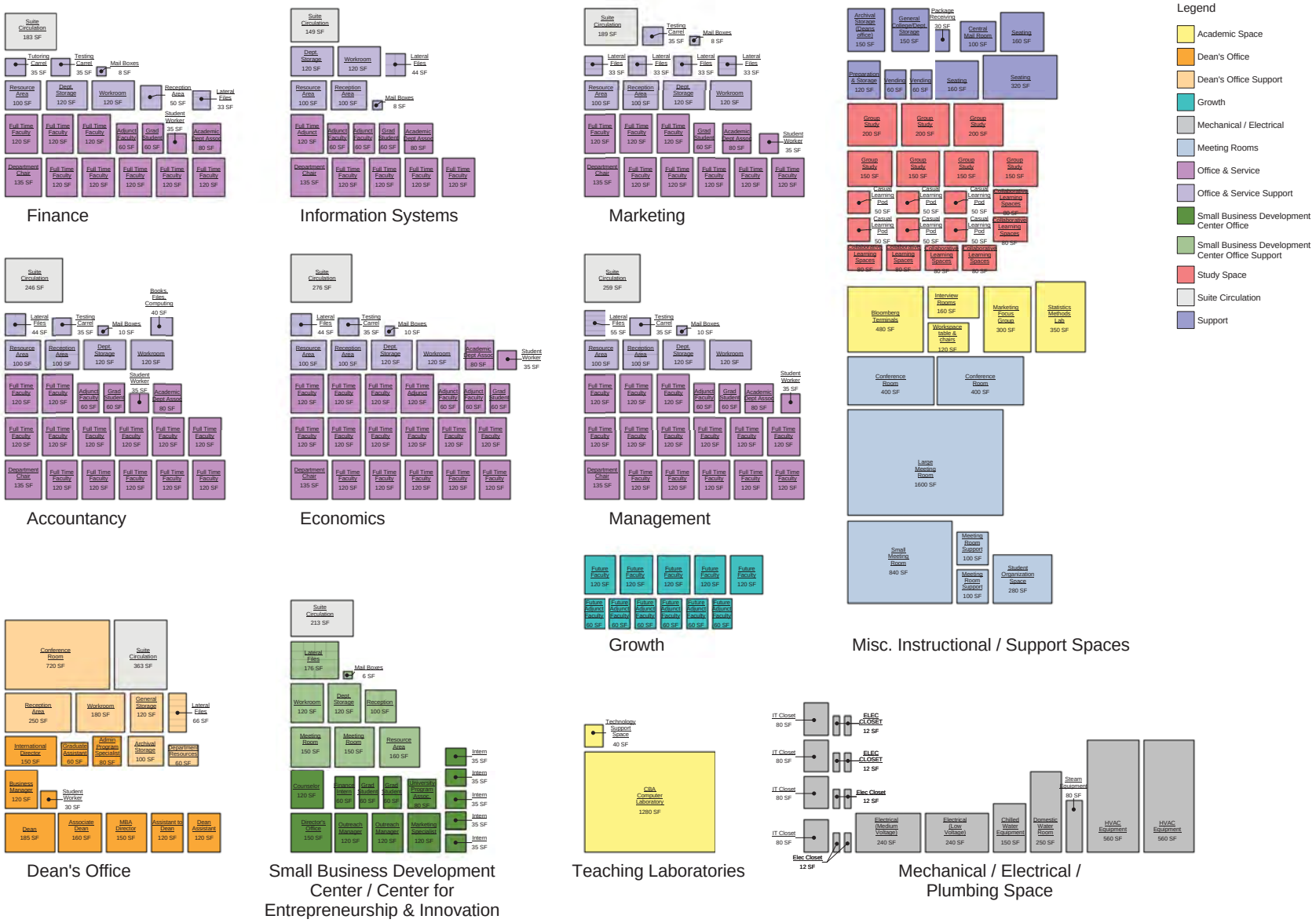


Figure 1.5.3-3: Graphic Program

1.5.4 BENCHMARKING

Benchmarking involves visiting other facilities that are similar in size and function to the facility being designed. In addition to physical, in-person visits, the architectural team provides virtual benchmarking through imagery or other drawings and descriptions of relevant facilities as a comparison.

For the 10% report, our team visited several facilities for benchmarking purposes. The team toured Timothy J. Hyland Hall and Laurentide Hall at the UW-Whitewater campus. Hyland Hall is Whitewater's College of Business Administration facility, which opened in 2009. Laurentide Hall is now home to the College of Letters and Sciences, completed in 2013. Both facility tours inspired insights and ideas to forward and improve the design for Wittich Hall.

The team also made a brief visit to the Red Gym at UW-Madison's campus. The Red Gym represents an excellent example of a National Register of Historic Places building that was originally designed as a gymnasium and then adeptly repurposed for academic uses.

Figure 1.5.4 -1: UW-Whitewater - Hyland Hall

More benchmarking opportunities should be pursued in the future as the team begins to develop the Preliminary Design (35%) Documents.

Figure 1.5.4-2: UW-Madison - Red Gym

1.5.5 EXECUTIVE COMMITTEE AND USER GROUPS

The Design Team sought feedback from several groups and committees. Over the course of the 6 workshops, these groups provided feedback on programming, systems and design, as well as sharing their vision and dreams for the project.

Organization	Title	Name
Executive Committee		
DFD	Project Manager	Craig Weisensel
UW System	Historic Preservation Architect	Maura Donnelly
UW System	Senior Architect	Cathy O'Hara Weiss
UWL	Vice Chancellor of Admin. And Finance	Bob Hetzel
UWL	Exec. Director, Planning and Construction	Doug Pearson
UWL	Assoc. Director, Planning and Construction	Scott Schumacher
UWL CBA	Dean of the CBA	Laura Milner
UWL CBA	Associate Dean of the CBA	Glenn Knowles / Ken Rhee
Aro Eberle Architects	Project Manager	Mike Eberle
Aro Eberle Architects	Project Designer	Doug Pahl
River Architects	Preservation Archirtect	Val Schute
River Architects	Preservation Director	Mike Adler
Design Committee		
UWL	Assoc. Director, Planning and Construction	Scott Schumacher
UWL	Planning & Construction	Edward Scholl
UWL CBA	Dean of the CBA	Laura Milner
UWL CBA	Associate Dean of the CBA	Ken Rhee
UWL CBA	Economics	Mary Grattan
UWL CBA	Economics	Taggert Brooks
UWL CBA	SBDC / CEI	Anne Hlavacka
UWL CBA	Management	Nicole Gullekson
UWL CBA	Marketing	Stacy Trisler
Student Advisory Committee		
UWL CBA	Student	Megan Molling
UWL CBA	Student	Austin Nastrom
UWL CBA	Student	Isaac Mansur
UWL CBA	Student	Hannah Schambow
UWL CBA	Student	Peter Kopanon
UWL CBA	Student	Lauren Carr
Dean's Office		
UWL CBA	Dean of the CBA	Laura Milner
UWL CBA	Dean Assistant	Corinne Rheineck
UWL CBA	Associate Dean	Glenn Knowles
UWL CBA	Assistant to the Dean	Becky Vianden
UWL CBA	Business Manager	Susan Sharpe
UWL CBA	Student	Shari Schoohs
Accountancy		
UWL CBA	Accountancy	Deanna Wachter
UWL CBA	Accountancy	William Maas
UWL CBA	Accountancy	Sergey Komissarov
UWL CBA	Accountancy	Mark Huesmann

Continued Next Page

Figure 1.5.5–1: Executive Committee and User Groups

Organization	Title	Name
Economics		
UWL CBA	Economics Chair	Taggert Brooks
UWL CBA	Economics ADA	Mary Grattan
Finance		
UWL CBA	Finance Chair	Robert Wolf
UWL CBA	Finance	Maureen Spencer
UWL CBA	Finance	Diana Tempski
UWL CBA	Finance	Soohyung Kim
Marketing		
UWL CBA	Marketing	Susan Hengel
UWL CBA	Marketing	Gwen Achenreiner
UWL CBA	Marketing	S.C. Brokaw
UWL CBA	Marketing	Stacy Trisler
Management		
UWL CBA	Management Chair	William Ross
UWL CBA	Management	Nicole Gullekson
Information Systems		
UWL IS	Information Systems	Peter Haried
UWL IS	Information Systems	Kyung Hoon Yang
UWL CBA	Information Systems	David Annino
SBDC		
UWL CBA	SBDC / CEI	Sarah Bratnober
UWL CBA	SBDC / CEI	Anne Hlavacka
UWL CBA	SBDC	Marie Rieber
Technology Committee		
UWL CBA	Dean	Laura Milner
UWL CBA	Associate Dean	Ken Rhee
UWL IS	Information Systems	Mark Valenti
UWL IS	Information Systems	Joe Gunderson

1.5.6 HISTORIC PRESERVATION

River Architects are the Historic Preservation consultant on the Wittich Hall Renovation project. They have produced two separate report documents that are appendices to the 10% Concept Design Report, the Historic Structure Report and the Preservation Plan.

The Historic Structure Report serves as the basis for the restoration and rehabilitation of Wittich Hall on the campus of the University of Wisconsin-La Crosse in La Crosse County, Wisconsin. This professional and technical document provides an architectural analysis of the building from its construction to the time of this study, and addresses the rich history of the structure and its former occupants. It also includes an analysis of the existing conditions of the structure and recommendations for the repair and treatment of the building and the site.

This historic structure report contains the results of several areas of investigation that, when combined, will provide a master plan for future actions to be taken by the Division of Facilities Development, University of Wisconsin System Administration, and the University of Wisconsin-La Crosse, for the purpose of restoring and maintaining Wittich Hall. Wittich Hall is owned and operated by the State of Wisconsin, University of Wisconsin System.

Figure 1.5.6-1: 1930 Gymnasium

Figure 1.5.6-2: West Elevation; UW-La Crosse Area Research Center (c.1920)

The Preservation Plan serves as a planning and decision-making tool for applying the optimal historic treatment approaches to Wittich Hall at the University of Wisconsin-La Crosse. Ideally, this planning process will both preserve and enhance the historic nature of the building in general character as well as in the details. The document has engaged the professional expertise of the architects, engineers, and consultants on the project, along with representatives from the University of Wisconsin System, the Division of Facilities Development, and the Wisconsin Historical Society. As such it is a collaborative product: both the planning and construction phases will continually respond to the opinions and guidance of these professionals.

It is assumed that the document will change as the project evolves and more information about the building's history, its physical condition, and programming priorities are clarified. It is a work in progress; at the end of each phase of the project, review and assessment may change priorities or specific treatment plans. In addition, a complete record of treatment, including photographs, will be provided at the end of the project.

Members of the Design Team, including members from Aro Eberle Architects, River Architects, UW-La Crosse and UW system, held a brief preliminary meeting with Jen Davel and Chip Brown of the Wisconsin Historical Society to discuss the project. Due to limited time, the discussion covered a number of subjects in a short time, including adding floors within the building, preservation versus removal of stairs, adding light monitors in lieu of skylights, and replacement of windows among other items. The meeting outcome will be covered in more detail within this report.

Figure 1.5.6-3: Wittich Hall Under Construction

1.5.7 SPACE PLANNING & DESIGN

Aro Eberle Architects created a variety of options for the location and layout of the academic departments, instructional space, administrative space, Small Business Development Center and other support spaces. The Design Team met with each department individually as well as the other committees, gathering their feedback on the options.

After several workshops, the Design Team identified the preferred option and began creating more detailed plans of the facility. To communicate the design more clearly, we also created 2D building sections and 3D interior perspectives and sections.

Priority toward public outreach and student traffic required placing academic spaces, student study spaces, large meeting rooms and the SBDC on the lower and main levels of Wittich Hall. A generous floor opening allows light and views into and out of the lower level, allowing for a more alive and active main level. The project team also deemed it important to provide an administrative presence on the main level of the building, so the Dean's office also takes a position on the first floor, in the 1930's addition to the south.

Faculty offices are placed on the upper floors. Major effort went into making efficient use of the upper floor space, while balancing the departments appropriately. Privacy was a major concern for the faculty office spaces, so the design is driven by providing private offices.

To encourage interaction and to provide daylight to the second floor, floor openings and a feature staircase are designed into the new floor slabs being added as part of the adaptive reuse. These openings also provide an understanding of the original gymnasium's volume as a reminder of the building's original purpose.

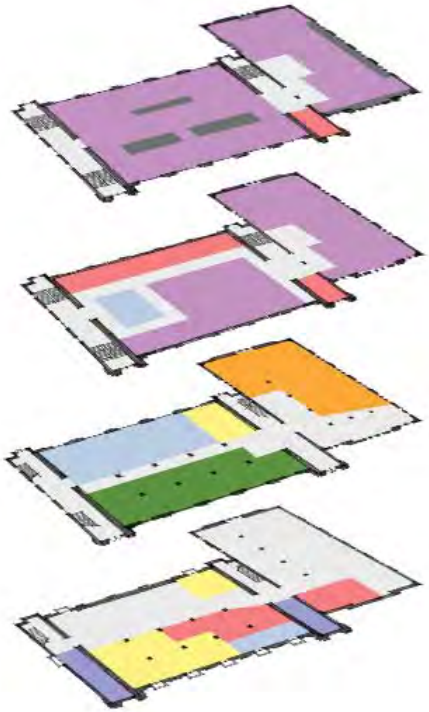


Figure 1.5.7-1: Preliminary Blocking and Stacking Diagram

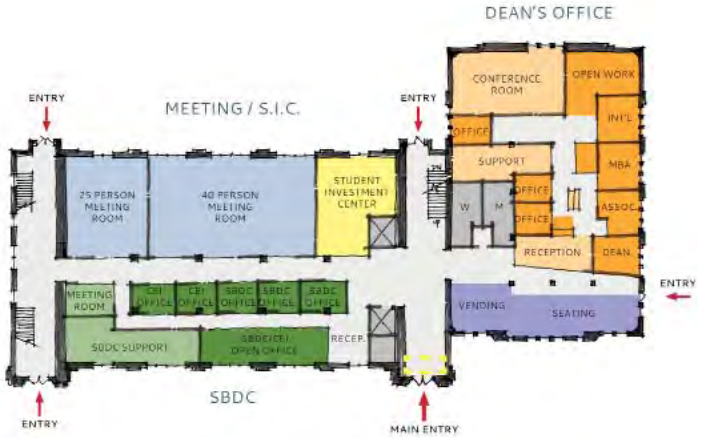


Figure 1.5.7-2: Preliminary Space Allocation Floor Plan

Figure 1.5.7-3: First Floor Interior Rendering

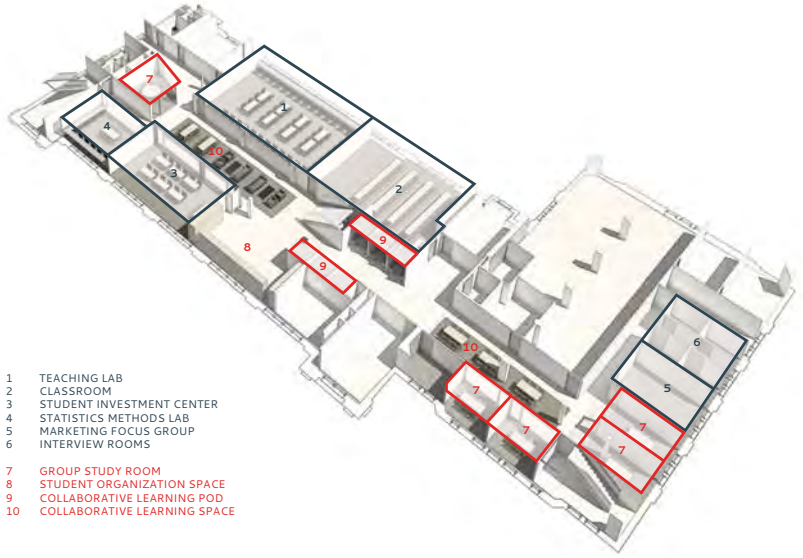


Figure 1.5.7-4: Lower Level – Axonometric

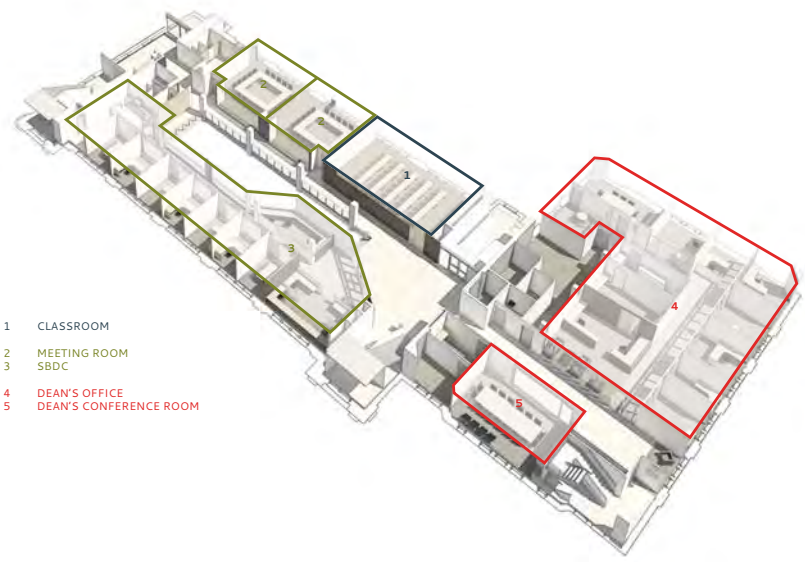


Figure 1.5.7-5: First Floor – Axonometric

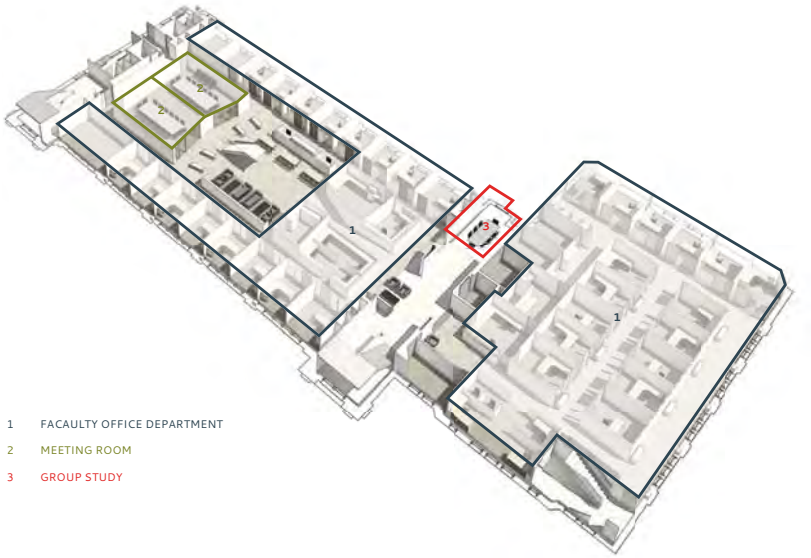


Figure 1.5.7-6: Second Floor – Axonometric

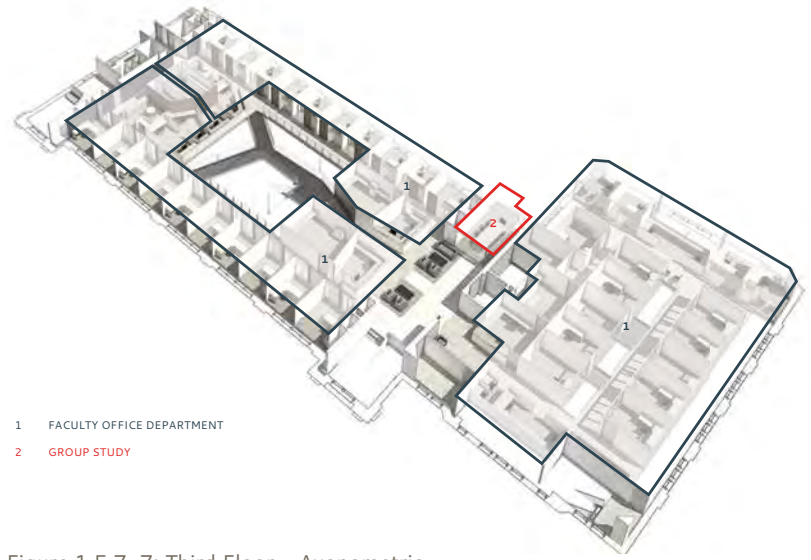


Figure 1.5.7-7: Third Floor – Axonometric

1.5.8 SITE INTEGRATION

SmithGroupJJR is the site/civil consultant for the Wittich Hall Renovation. Members of the Aro Eberle team and Campus Planning & Construction worked with SmithGroup JJR to come up with the preliminary design for the 10% Design Report. Beyond analyzing the basic utility improvements needed for the project, the teamed worked on new concepts for improving access to the facility. Balancing the desires of the Wisconsin Historical Society and the desire for seamless accessibility, the team created a concept that includes a small plaza space at the main accessible entrance (center west) of the building. The plaza ties into the mall landscape through gentle grade changes that eliminate the need for ramps and railings. An accessible entrance on the East side of the building is the closest to accessible parking. Due to grading constraints, a ramp will be required at this entrance, however the team's strategy is to integrate the ramp into the entry experience in a way that is more inclusive and egalitarian.

The current site concept also includes replacing stairs to non-accessible entrances at three other locations. These staircases will more closely resemble the original entrances to the buildings, with masonry cheek walls alongside the stairs.

Storm water runoff from the roof will also be managed with a small infiltration basin incorporated into the project near the building.

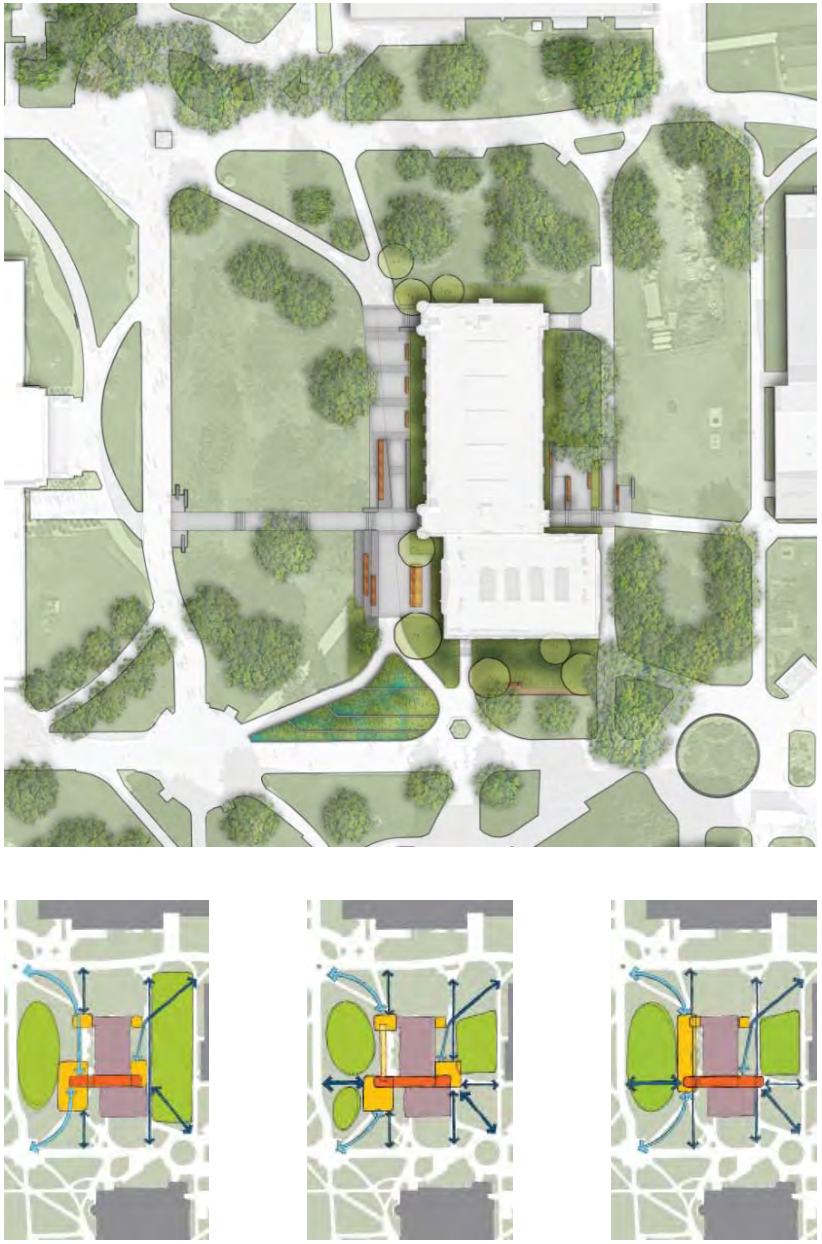


Figure 1.5.8-1: Site Organization Diagrams and Site Plan

1.6 PROJECT BUDGET

Middleton Construction Consulting performed a 10% cost estimate for the project team. Their pricing document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been generated from current material / labor rates, historical production data, and discussions with relevant subcontractors and material suppliers. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractor's overhead and profit, unless otherwise stated.

Pricing assumes competitive bidding for every portion of the construction work for all subcontractors with a minimum of 3 bidders for all items of subcontracted work and a with a minimum of 3 bidders for a general contractor.

Assumed Construction parameters include:

- A construction start date of September 2018.
- A construction period of 18–24 months.
- The contract will be competitively bid to multiple contractors.
- All contractors will be required to pay prevailing wages.
- The contractors will have full access to the site during normal working hours.
- Estimate includes pricing as of October 2016.

The project budget currently allocated for the Wittich Hall renovation is $24,599,362 which includes construction, design, and equipment. The budget has been validated and is included in this Concept Report. Refer to Section 8.0 for the detailed cost estimate.

A summary of the project budget as compared to the All Agency Project Budget, dated July 2014 is as follows:

Description	All Agency Project Budget	10 % Concept Report
Construction / Demolition Cost	$16,917,000	$17,097,709
Asbestos Abatement	$50,000	$50,000
A/E Fees	$1,588,000	$1,432,019
Other Fees	$540,000	$448,912
DFD Management Fee (4%)	$781,000	$788,795
Movable Equipment Allowance	$1,697,000	$1,709,771
AV Equipment	$500,000	$500,000
Total	**$24,618,000**	**$24,599,362**

Figure 1.6–1: Project Budget Summary

1.7 PROJECT SCHEDULE

The Pre-Design phase of this project is scheduled for completion in November 2016 while design and preparation of the final bid documents and specifications is estimated to begin in July 2017. The project schedule will be reviewed by DFD and UW System Administration upon completion of this Concept Report.

A detailed analysis of the project schedule is included in Section 9.0 of this report.

Description	All Agency Project Budget	10 % Concept Report
10% Concept Design Report Complete	September 2016	November 2016
35% Document Submittal	-	April / June 2017
BOR/SBC Approval	-	May / June 2017
100% Documents Submitted	-	January 2018
Bid Date	August 2017	May 2018
Begin Construction	October 2017	September 2018
Substantial Completion / Occupancy	November 2019	June 2020
Final Project Closeout	January 2020	September 2020

Figure 1.7-1: Project Schedule Summary

1.8 10% DESIGN WORKPLAN

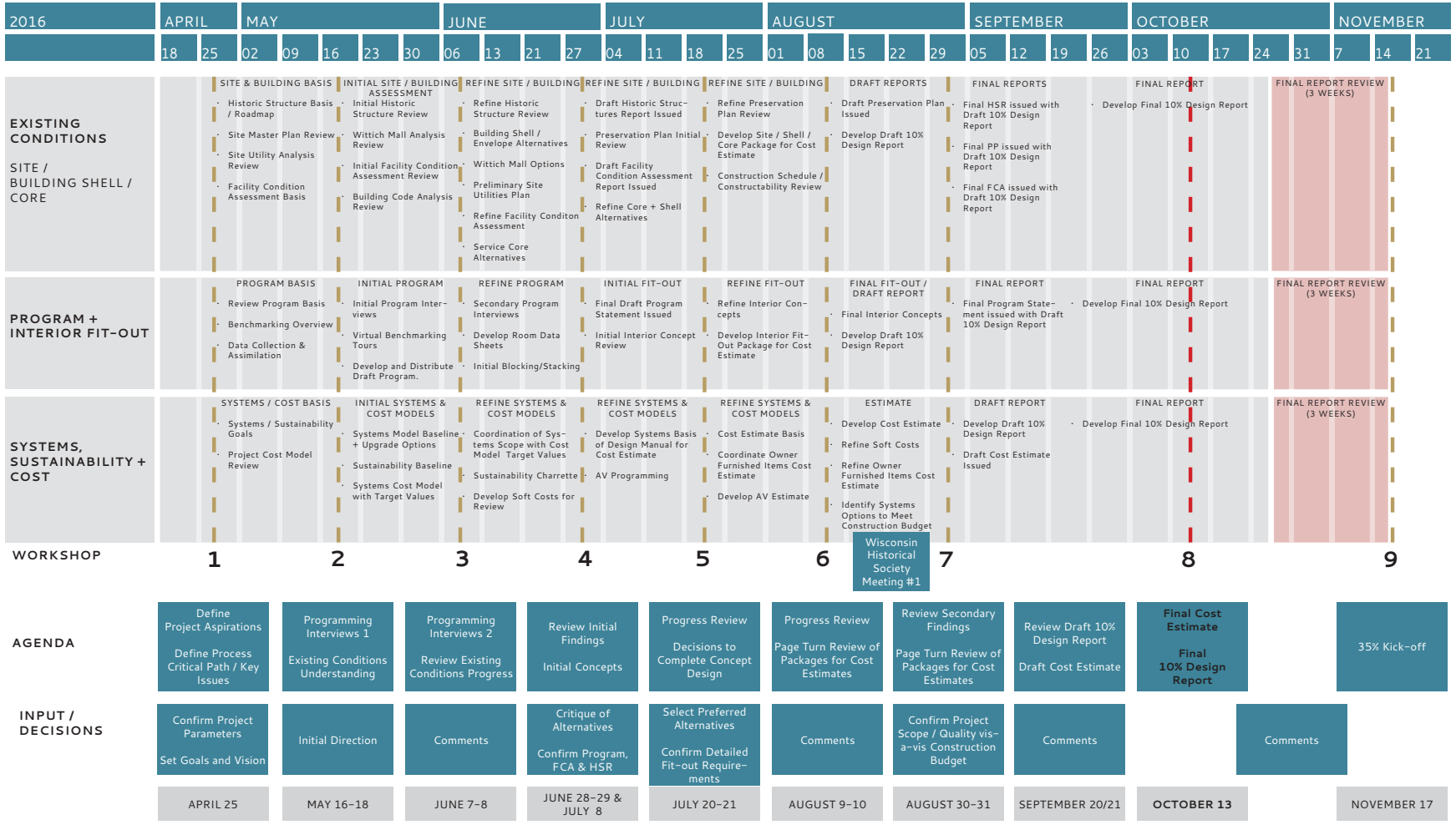


Figure 1.8-1: 10% Design Workplan

2. BUILDING PROGRAM

2. BUILDING PROGRAM

2.1 OVERVIEW

The process of determining the space program began by collecting data and meeting with each of the departments, the Executive Committee and other stakeholders. Data included existing facilities information for Wittich Hall, a course file from the Fall of 2015, and a list of all faculty and staff to be included in the program. The first set of meetings to begin the space planning effort occurred during May 2016. The focus of the first campus visit related to validation of data received and meeting with all concerned parties to develop the draft space allocation program.

The project moved forward with the second campus visit occurring in June 2016. A preliminary space program was discussed during the June visit, and the space program was revised as a result.

Several follow-up emails resulted in refinement of the space program, and the result is shown in this document.

2.1.3 OCCUPANTS / USERS AND ACTIVITIES

The types, quantities and amounts of space for the following departments and programs were determined:

- College of Business Administration, Dean's Office
- Accountancy Department
- Economics Department
- Finance Department
- Management Department
- Marketing Department
- Small Business Development Center
- Information Systems Department

The Information Systems Department presently resides in Wing Technology Center, will remain in this facility in the future, and will not move with the rest of the CBA to Wittich Hall.

The building will not include regularly scheduled classroom space. The College presently uses classrooms primarily located in Centennial and Carl Wimberly Halls and will continue to use these classrooms into the future.

2.1.2 DEFINITIONS

The space allocation program identifies the types and amounts of space for each cluster within the building. Details of space specifics such as equipment, lighting, electrical requirements, and space layout are components of the architectural design process.

The space program uses various terms:

- Assignable Square Feet (ASF): A term used to describe space that can be assigned to an occupant or specific use. It does not include stairways, corridors, public restrooms, mechanical/electrical areas, or structural space.
- Storage: Closet or small room with shelving for materials relevant to the department.
- Suite Circulation: Hallways and circulation within an office suite or area allocated as 20% of the office and office support space
- Reception Area: Seating area clustered with or close to the Department Associate or student employee work space
- Workroom/File Area: Area or room for office equipment such as printer/copier as well as counter area for document layout, cabinets for storing office supplies and paper, recycling bins, and file cabinets.

The allocation of office space is based on UW System Office Planning Guidelines developed under direction of the president of the University System. The goal of the office space guidelines is to minimize the amount of space constructed while providing adequate functional working space for faculty and staff.

2.2 SPACE TABULATION SUMMARY

The space allocation program is determined as assignable square feet (ASF). During design, Aro Eberle Architects will convert the ASF to gross square feet (GSF). The GSF includes public restrooms, primary circulation, elevator shafts, stairways, mechanical/electrical areas, and structural areas.

An early plan tak-off of Wittich Hall provided an estimated figure of approximately somewhere 28,300 ASF during the programming phase. The column "Current ASF" results from the figure provided by the Aro Eberle Architects after completing the present schematic design plans. The amount of existing space is shown to provide comparison for the space program. The amount of existing space for Item/Unit is not available as the interior of Wittich Hall is assumed to be completely renovated from its existing gymnasium use to reflect the needs of the College of Business Administration.

Departmental Office Generalities

The space allocation program for each department contains only office and office support spaces only. As mentioned previously in this document, the allocation of office space is based on UW System Office Planning Guidelines developed under direction of the president of the University System. During the programming exercise it is assumed that each department is a self-contained unit so support spaces such as workrooms and storage are allocated to each department. During the design phase of the project as departments are aggregated it may be possible for smaller departments, if adjacencies allow, to share some of the support facilities so saving in the space allocation may be possible.

Each departmental program was allocated a "testing carrel" to allow for makeup testing to occur in a semi-proctored environment. During physical planning these spaces may be aggregated to better serve their function.

Unit No.	Unit	Current ASF	Program ASF	Difference (neg=under; pos=over)
1	Teaching Laboratories	3,440	1,320	2,120
2	Accountancy	3,641	2,745	964
3	Economics	4,091	3,035	1,056
4	Finance	2,550	2,014	536
5	Information Systems	0	0	0
6	Management	4,355	2,849	1,506
7	Marketing	2,452	2,074	378
8	Small Business Development Center	2,166	2,385	-219
9	Dean's Office	3,537	2,990	547
10	Misc. Instructional/Support Spaces	7,822	8,420	-598
11	Growth	1,674	960	714
Total Assignable SF		**35,796**	**28,792**	**7,004**

Figure 2.2-1: Space Tabulation Summary

The space program reflects the types and amounts of space understood to be needed to meet the goals of the departments and programs that will be housed in Wittich Hall after the renovation. The amount of space allocated may change during the architectural design and construction to accommodate spaces within the building (e.g., a 120 ASF office in the space program may be 118 ASF or 125 ASF as an outcome of architectural design).

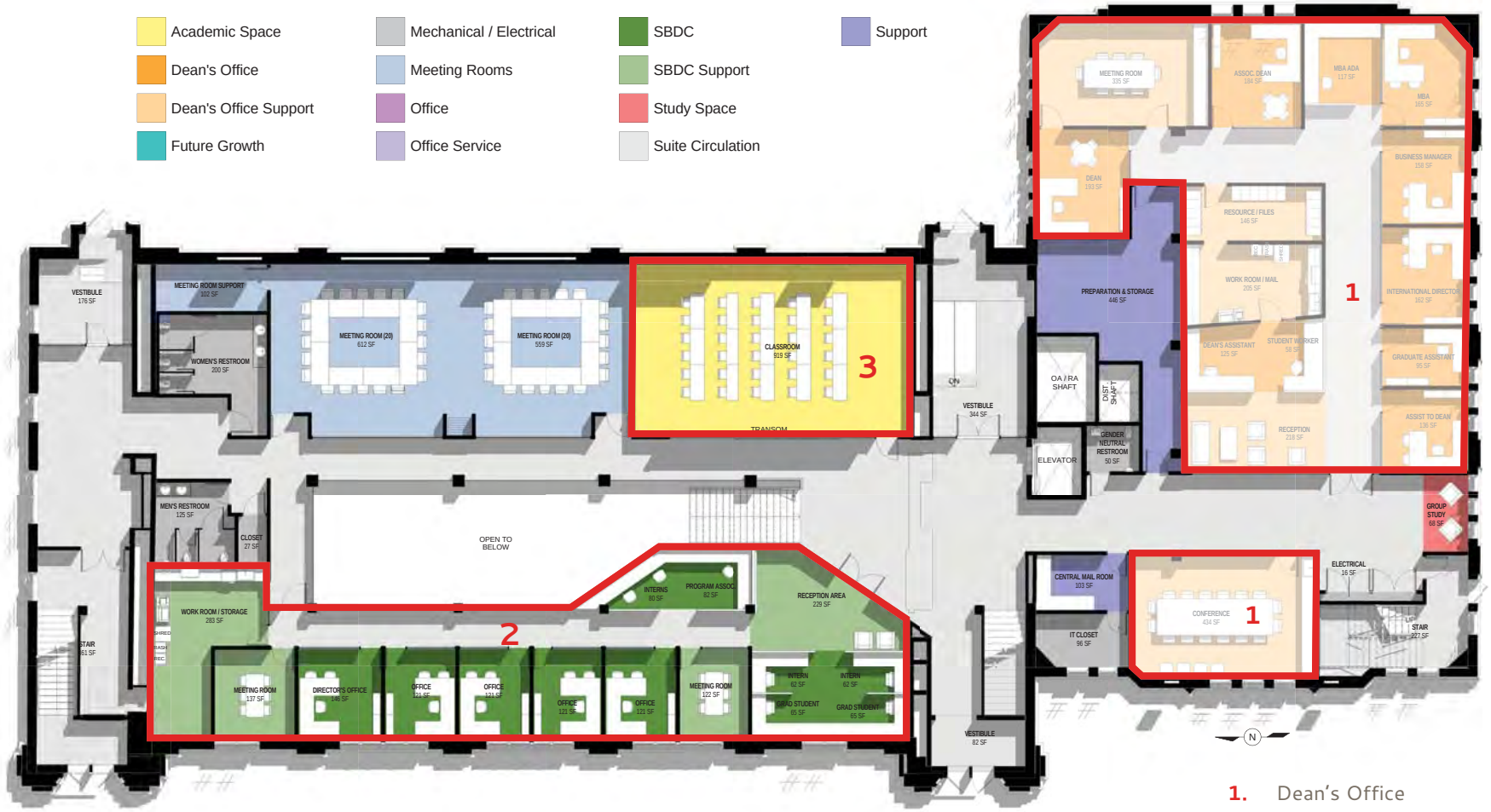
2.3 FLOOR PLANS

FLOOR PLAN – LOWER LEVEL

1. Teaching Laboratories

Figure 2.3-1: Floor Plan – Lower Level

FLOOR PLAN – FIRST FLOOR



1. Dean's Office
2. SBDC
3. Teaching Laboratories

Figure 2.3-2: Floor Plan - First Floor

FLOOR PLAN – SECOND FLOOR

Figure 2.3-3: Floor Plan – Second Floor

1. Economics
2. Management

ARO EBERLE ARCHITECTS

FLOOR PLAN – THIRD FLOOR

Figure 2.3-4: Floor Plan – Third Floor

1. Accountancy
2. Finance
3. Marketing

2.4 SPACE TABULATION DETAIL

TEACHING LABORATORIES – SPACE TABULATION

1. Teaching Laboratories	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Teaching Lab & Service – SUC 210s						**1,320**			**3,440**
CBA Computer Laboratory	32	40	1,280	1	1,280		1	1,318	
Technology Support Space			40	1	40		1	40	
Classrooms	0	0	0	0	0		2	2,029	
TOTAL UNITS ASF						**1,320**			**3,440**

Figure 2.4–1: Teaching Laboratories – Space Tabulation

TEACHING LABORATORIES – GRAPHIC PROGRAM

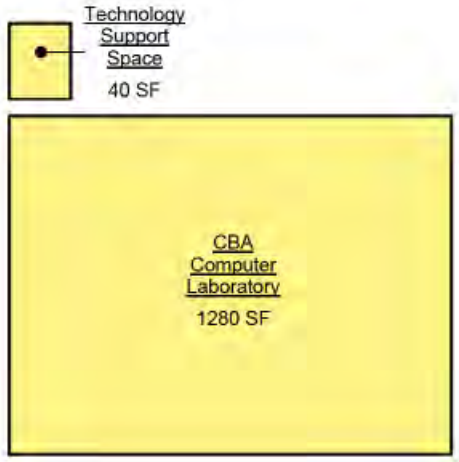


Figure 2.4-2: Teaching Laboratories – Graphic Program

TEACHING LABORATORIES – PROGRAM NOTES

The College presently uses computer laboratory facilities in Wimberly Hall and the Wing Technology Center. These computer laboratories are not currently meeting some of the needs of the curriculum so one teaching computer laboratory is included in the program. The three computer laboratories in Wimberly and Wing are currently used between 36 and 46 weekly room hours (WRH) for scheduled credit instruction.

It is anticipated that the College will use this laboratory for sections such as BUS 230, Acct 327, MKT 367, MGT 300 and MGT 393 totaling well over the 24 WRH per week in scheduled instruction as prescribed the UW System for laboratory use. This will help relieve the overuse of the existing laboratories in Wimberly and Wing. However, the usage of these spaces will remain above the prescribed 24 WRH per UW System requirements.

ACCOUNTANCY – SPACE TABULATION

2. Accountancy	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**2,705**			**3,598**
Department Chair	1	135	135	1	135		1	132	
Full Time Faculty	1	120	120	13	1,560		13	1,518	
Future Faculty (see Growth)	1	120	120	0	0				
Adjuct Faculty	1	60	60	1	60		1	67	
Grad Students	1	60	60	1	60		1	62	
Support Staff / Reception / Files									
Academic Dept. Assoc.	1	80	80	1	80		1	84	
Student Workers	1	35	35	1	35		1	38	
Testing Carrel	1	35	35	1	35		1	43	
Reception Area	4	25	100	1	100		1	89	
Lateral Files	4	11	44	1	44		1	38	
Mail Boxes	20	.5	10	1	10		1	10	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		1	134	
Dept. Storage			120	1	120		1	118	
Resource Area			100	1	100		1	62	
Suite Circulation @ 10%					246		1	1,202	
Research Laboratories & Service – SUC 250S–255S						**40**			**43**
Books, Files, additional space for computing			40	1	40		**1**	43	
TOTAL UNITS ASF						**2,745**			**3,641**

Figure 2.4–3: Accountancy – Space Tabulation

ACCOUNTANCY – GRAPHIC PROGRAM

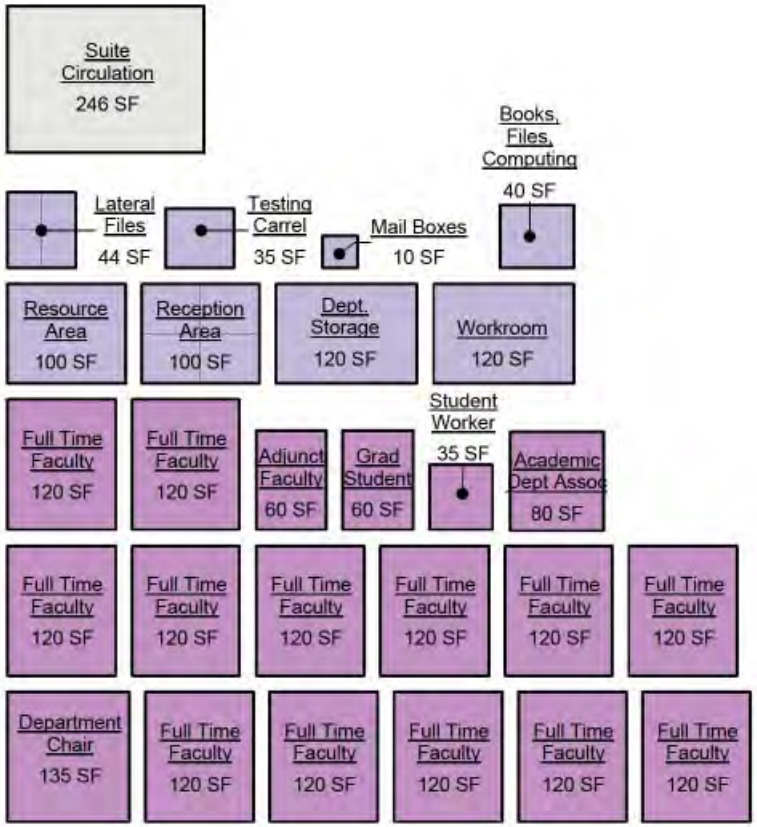


Figure 2.4-4: Accountancy – Graphic Program

ACCOUNTANCY – PROGRAM NOTES

Accountancy has been tentatively located in the 1930's wing of the third floor. All of the programmed spaces for the Accountancy Department have been accounted for.

The Resource Area spaces have been split into three open plan pieces and distributed along the hallway. Mail boxes have been included within the Workroom, which is slightly enlarged to accommodate them. The plan does not show the space for "Books, Files, Computing," however this space is available near the Testing Carrel that is labeled as future growth (Additional future growth space is available in the Department).

ECONOMICS – SPACE TABULATION

3. Economics	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**3,035**			**4,091**
Department Chair	1	135	135	1	135		1	136	
Full Time Faculty	1	120	120	13	1,560		13	1,531	
Full Time Faculty (1 sem on; 1 sem off)	1	120	120	1	120		1	116	
Full Time Faculty (full time adjunct)	1	120	120	1	120		1	116	
Future Faculty (see Growth)	1	120	120	0	0		0	0	
Adjunct Faculty	1	60	60	2	120		2	111	
Grad Students	1	60	60	1	60		1	60	
Support Staff / Reception Area / Files									
Academic Dept. Assoc	1	80	80	1	80		1	80	
Student Workers	1	35	35	1	35		1	32	
Testing Carrel	1	35	35	1	35		1	17	
Reception Area	4	25	100	1	100		1	84	
Lateral Files	4	11	44	1	44		1	112	
Mail Boxes	20	0.5	10	1	10		1	10	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		1	65	
Dept. Storage			120	1	120		1	120	
Resource Area			100	1	100		1	213	
Suite Circulation @10%					276		1	1,287	
TOTAL UNITS ASF						**3,035**			**4,091**

Figure 2.4–5: Economics – Space Tabulation

ECONOMICS – GRAPHIC PROGRAM

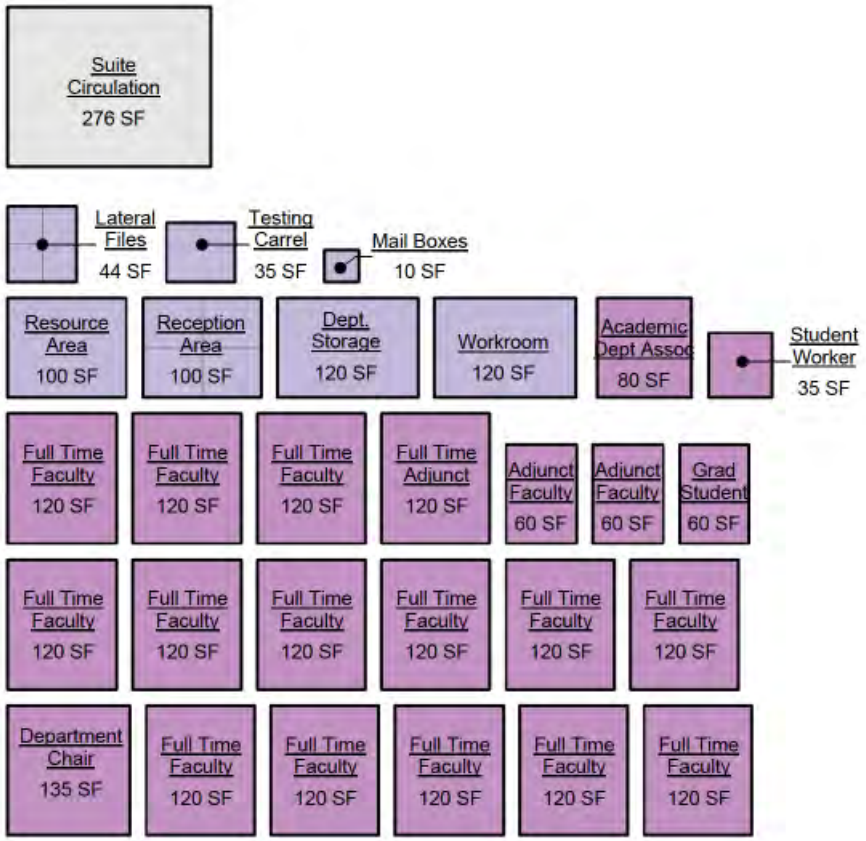


Figure 2.4-6: Economics – Graphic Program

ECONOMICS – PROGRAM NOTES

The Economics Department is the largest of the faculty departments. This Department has been tentatively located on the second floor of the 1916 wing. All of the spaces in the program have been accounted for and there is additional space within the Department for future growth.

FINANCE – SPACE TABULATION

4. Finance	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**2,014**			**2,550**
Department Chair	1	135	135	1	135		1	136	
Full Time Faculty	1	120	120	8	960		8	945	
Future Faculty (see Growth)	1	120	120	0	0		0	0	
Adjunct Faculty	1	60	60	1	60		1	59	
Grad Students	1	60	60	1	60		1	55	
Support Staff / Reception Area / Files									
Academic Dept. Assoc.	1	80	80	1	80		1	80	
Student Workers	1	35	35	1	35		1	36	
Testing Carrel	1	35	35	1	35		1	12	
Tutoring Carrel	1	35	35	1	35		1	17	
Reception Area	2	25	50	1	50		1	68	
Lateral Files	3	11	33	1	33		1	103	
Mail Boxes	16	0.5	8	1	8		1	8	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		1	93	
Dept. Storage			120	1	120		1	120	
Resource Area			100	1	100		1	90	
Suite Circulation @10%					183		1	728	
TOTAL UNITS ASF						**2,014**			**2,550**

Figure 2.4–7: Finance – Space Tabulation

FINANCE – GRAPHIC PROGRAM

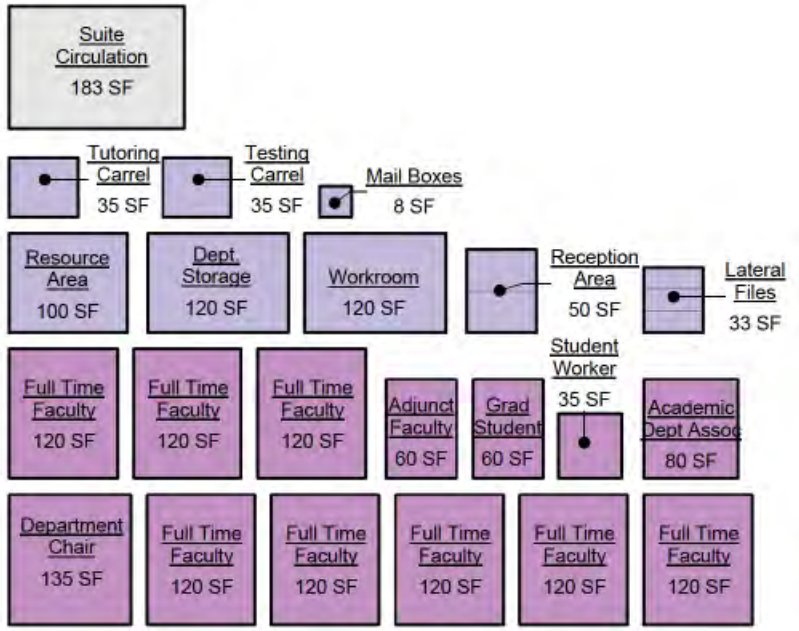


Figure 2.4-8: Finance – Graphic Program

FINANCE – PROGRAM NOTES

The Finance Department is tentatively located in the 1916 wing of the third floor on the east side. It is co-located with with the Marketing Department.

The Resource Area is slightly undersized but it shares space with the Testing Carrel, which can be used in conjunction with the Resource Area when not being used for testing.

The Workroom is slightly oversized, but is designed to allow for Departmental storage and mailboxes within the Workroom space

Future office and future adjunct space is provided within the Department.

INFORMATION SYSTEMS – SPACE TABULATION

5. Information Systems	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**1,636**			**0**
Department Chair	1	135	135	1	135		0	0	
Full Time Faculty	1	120	120	4	480		0	0	
Full Time Faculty (full time adjunct)	1	120	120	1	120		0	0	
Future Faculty (see Growth)	1	120	120	0	0		0	0	
Adjunct Faculty	1	60	60	2	120		0	0	
Grad Students	1	60	60	1	60		0	0	
Support Staff / Reception Area / Files									
Academic Dept Assoc	1	80	80	1	80		0	0	
Student Workers	1	35	35	0	0		0	0	
Testing Carrel	1	35	35	0	0		0	0	
Reception Area	1	25	25	4	100		0	0	
Lateral Files	4	11	44	1	44		0	0	
Mail Boxes	16	0.5	8	1	8		0	0	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		0	0	
Dept. Storage			120	1	120		0	0	
Resource Area			100	1	100		0	0	
Suite Circulation @10%					149				
TOTAL UNITS ASF						**1,636**			**0**

Figure 2.4–9: Information Systems – Space Tabulation

INFORMATION SYSTEMS – GRAPHIC PROGRAM

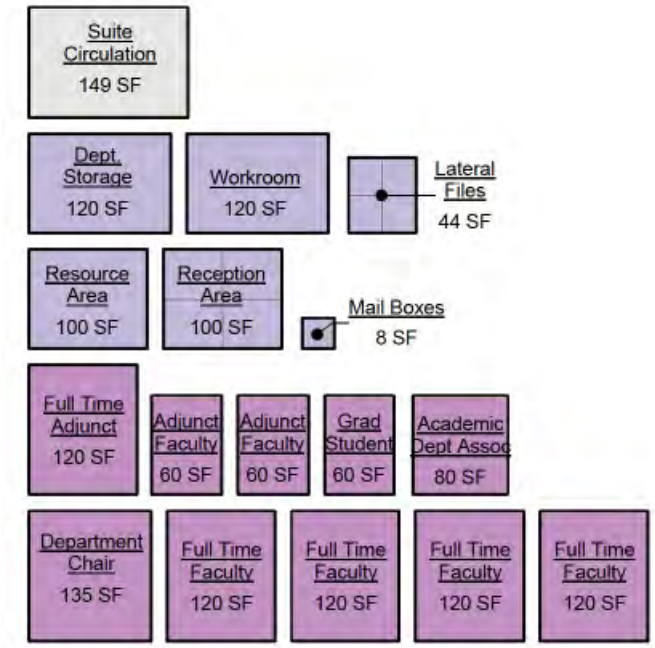


Figure 2.4-10: Information Systems – Graphic Program

INFORMATION SYSTEMS – PROGRAM NOTES

This Department is **NOT** included in the overall space allocation program. Because the data was available the office space was calculated using a purely data driven exercise and should not be used to inform space needs for the building.

MANAGEMENT – SPACE TABULATION

6. Management	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**2,849**			**4,355**
Department Chair	1	135	135	1	135		1	130	
Full Time Faculty	1	120	120	12	1,440		12	1,386	
Full Time Faculty (vacant)	1	120	120	2	240		2	235	
Future Faculty (see Deans Office)	1	120	120	0	0				
Adjunct Faculty	1	60	60	1	60		1	61	
Grad Students	1	60	60	1	60		1	61	
Support Staff / Reception Area / Files									
Academic Dept. Assoc	1	80	80	1	80		1	81	
Student Workers	1	35	35	1	35		1	41	
Testing Carrel	1	35	35	1	35		1	59	
Reception Area	4	25	100	1	100		2	93	
Lateral Files	5	11	55	1	55		1	85	
Mail Boxes	20	0.5	10	1	10		1	10	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		1	121	
Dept. Storage			120	1	120		1	116	
Resource Area			100	1	100		1	94	
Suite Circulation @10%					259		1	1,783	
TOTAL UNITS ASF						**2,849**			**4,355**

Figure 2.4-11: Management – Space Tabulation

MANAGEMENT – GRAPHIC PROGRAM

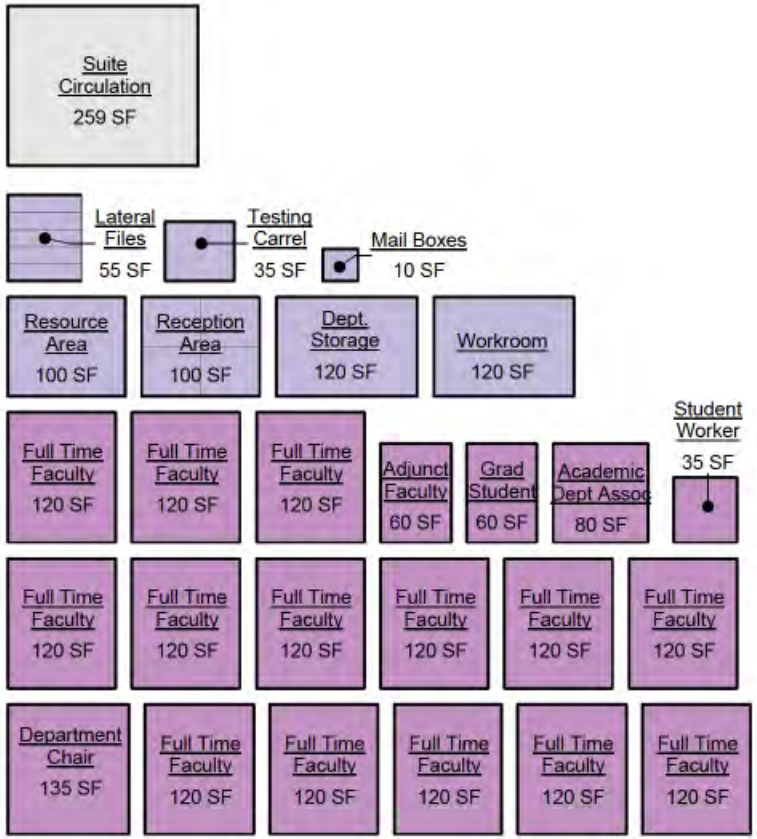


Figure 2.4-12: Management – Graphic Program

MANAGEMENT – PROGRAM NOTES

The Management Department is tentatively located on the second floor of the 1930's wing.

All of the programmed spaces are accomodated within the Department. The Resource Area spaces have been split into three open plan pieces and distributed along the hallway. Mail boxes have been included within the workroom, which is slightly enlarged to accommodate them.

There are future growth spaces for Faculty office and future adjuncts. There is an additional future growth space which may accommodate other space needs within the Department.

MARKETING – SPACE TABULATION

7. Marketing	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**2,074**			**2,452**
Department Chair	1	135	135	1	135		1	133	
Full Time Faculty	1	120	120	8	960		8	929	
Future Faculty (see Growth)	1	120	120	0	0		0	0	
Adjunct Faculty (see Growth)	1	60	60	0	0		0	0	
Grad Students	1	60	60	1	60		1	59	
Support Staff / Reception Area / Files									
Academic Dept. Assoc	1	80	80	1	80		1	80	
Student Workers	1	35	35	1	35		1	32	
Testing Carrel	1	35	35	1	35		1	20	
Reception Area	4	25	100	1	100		1	97	
Lateral Files	3	11	33	4	132		1	96	
Mail Boxes	16	0.5	8	1	8		1	8	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120		1	120	
Dept. Storage			120	1	120		1	67	
Resource Area			100	1	100		1	85	
Suite Circulation @10%					189		1	727	
TOTAL UNITS ASF						**2,074**			**2,452**

Figure 2.4-13: Marketing – Space Tabulation

MARKETING – GRAPHIC PROGRAM

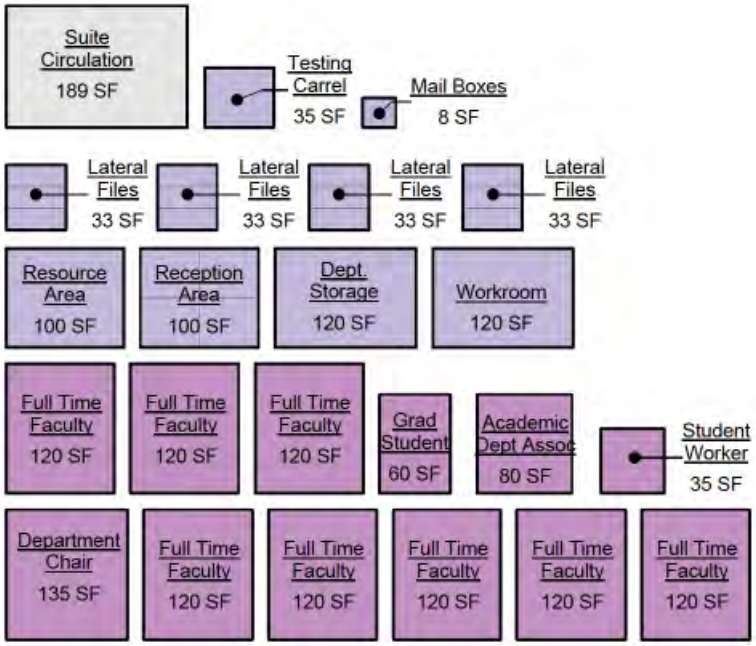


Figure 2.4-14: Marketing – Graphic Program

MARKETING – PROGRAM NOTES

The Marketing Department is located in the 1916 wing of the third floor on the east side. It is co-located with with the Marketing Department.

The Resource Area is slightly undersized but it shares space with the Testing Carrel, which can be used in conjunction with the Resource Area when not being used for testing.

The Workroom is slightly oversized, but is designed to allow for departmental Storage and mailboxes within the Workroom space

Future office and future adjunct space is provided within the Department.

SMALL BUSINESS DEVELOPMENT CENTER (SBDC) – SPACE TABULATION

8. Small Business Development Center	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s									
SBDC						**957**			**967**
Director	1	150	150	1	150		1	146	
Outreach Manager	1	120	120	1	120		1	121	
Counselor	1	120	120	1	135		1	121	
Interns (Finance)	1	60	60	1	60		1	62	
Interns	1	35	35	2	70		1	62	
Grad Students	1	60	60	1	60		1	65	
Support Staff / Reception Area / Files									
University Program Assoc.	1	80	80	1	80		1	80	
Student Workers	1	35	35	0	0		0	0	
Reception Area	4	25	100	1	100		1	229	
Lateral Files	16	11	176	1	176		1	75	
Mail Boxes	12	0.5	6	1	6		1	6	
Center for Entrepreneurship & Innovation (CEI)						**485**			**387**
Marketing Specialist	1	120	120	1	120		1	121	
Outreach Manager	1	120	120	1	120		1	121	
Grad Students	1	60	60	1	60		1	65	
Interns	1	35	35	3	105		1	80	
Support Staff / Reception Area / Files									
University Program Assoc.	1	80	80	1	80		0	0	
Workroom (Copier, Supplies, Coffeemaker)			120	1	120	**700**	1	64	**461**
Dept. Storage			120	1	120		1	63	
Resource Area			160	1	160		1	75	
Meeting Rooms (other uses evenings)	6	25	150	2	300		2	259	
Suite Circulation @10%					213	**213**		251	
TOTAL UNITS ASF						**2,355**			**2,166**

Figure 2.4-15: SBDC – Space Tabulation

SBDC – GRAPHIC PROGRAM

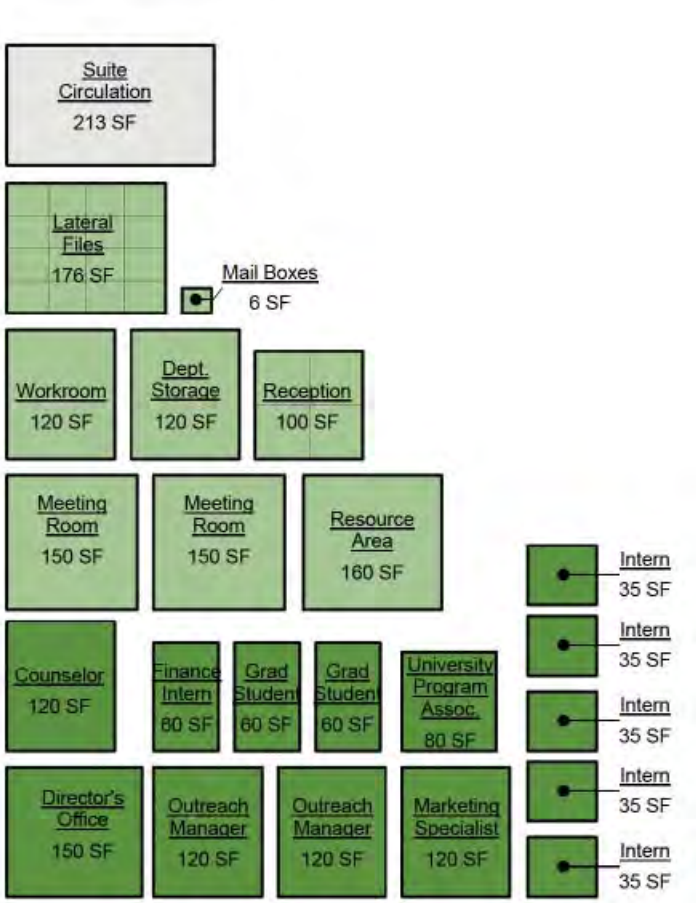


Figure 2.4-16: SBDC – Graphic Program

SBDC – PROGRAM NOTES

The space allocation program for the SBDC is divided into two general areas

- Small Business Development Center (SBDC)
- Center for Entrepreneurship and Innovation (CEI)

While the SBDC will be one focus of entry, the CEI is anticipated to be another focus of the Center. The general office support spaces will be available to both entities and should be centrally located. Two Meeting Rooms were moved from the Misc. Instructional/Support Space tab and placed in the SDBC program. These two spaces need to be easily accessible to the Center for ad hoc meetings but can also be used by others for gathering spaces for course work, meetings between students and faculty and as general study space as needed. The Center will also continue to use other campus facilities for larger events that cannot be accommodated within Wittich Hall.

DEAN'S OFFICE – SPACE TABULATION

9. Dean's Office	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**2,990**			**3,537**
Dean	1	185	185	1	185		1	193	
Associate Dean	1	160	160	1	160		1	184	
MBA Director	1	150	150	1	150		1	165	
Academic Dept. Associate	1	80	80	1	80		1	117	
Assistant to Dean (Admin. Prog. Spec.)	1	120	120	1	120		1	136	
Business Manager (Admin. Spec.)	1	120	120	1	120		1	158	
International Director	1	150	150	1	150		1	162	
Graduate Assist	1	60	60	1	60		1	95	
Support Staff / Reception Area / Files									
Dean Assistant	1	80	80	1	80		1	125	
Student Workers	1	30	30	1	30		1	62	
Reception Area	10	25	250	1	250		1	218	
Lateral Files	6	11	66	1	66		1	66	
Departmental Resources			60	1	60		1	80	
Workroom (Copier, Supplies, Coffeemaker)			180	1	180		1	205	
General Storage			120	1	120		1	120	
Archival Storage (also see Misc. Inst. Support)			100	1	100		1	73	
Conference Room (with servery)	24	30	720	1	720		1	335	
Suite Circulation @10%					359		1	609	
TOTAL UNITS ASF						**2,990**			**3,537**

Figure 2.4–17: Dean's Office – Space Tabulation

DEAN'S OFFICE – GRAPHIC PROGRAM

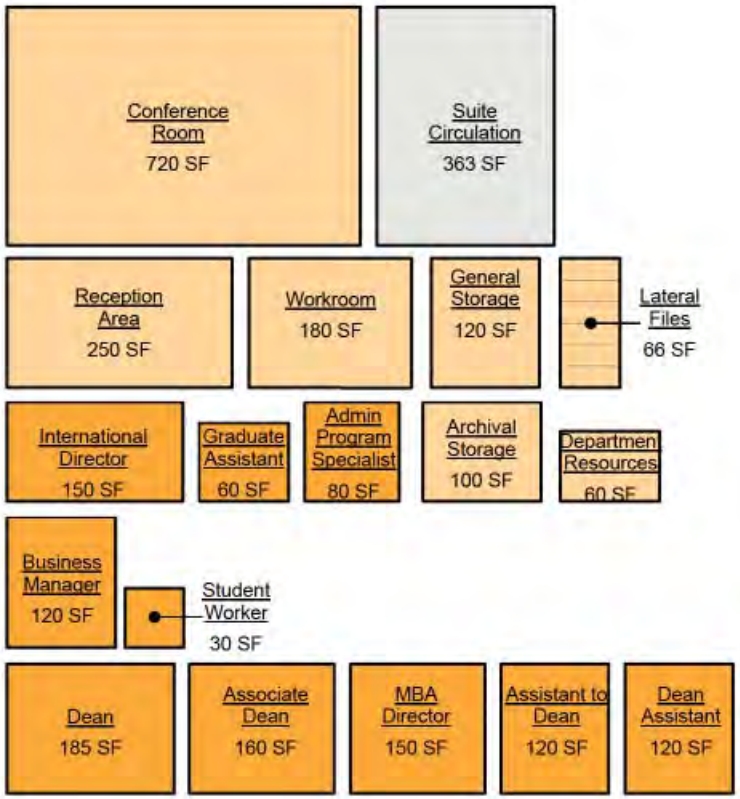


Figure 2.4-18: Dean's Office – Graphic Program

DEAN'S OFFICE – PROGRAM NOTES

All the program spaces of the Dean's Office have been accommodated. The conference room function is split into two smaller rooms, one room for more intimate meetings (adjacent to the Dean's Office), and one for larger meetings (located across the hall from the Dean's Office suite).

MISC. INSTRUCTIONAL / SUPPORT SPACES – SPACE TABULATION

10. Misc. Instructional / Support Spaces	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Meeting Rooms						**2,990**			**1,633**
Large Meeting Room	40	40	1,600	1	1,600		1	1,170	
Small Meeting Room	24	35	840	1	840		0	0	
Meeting Room Support			100	2	200		1	120	
Statistics Methods Lab	10	35	350	1	350		1	343	
Student Investment Center						**600**			**611**
Bloomberg Terminals	12	40	480	1	480		1	492	
Workspace table & chairs	6	20	120	1	120		1	119	
Marketing Focus Group & Sales Lab						**460**			**494**
Focus Group	10	30	300	1	300		1	256	
Interview Rooms	2	80	160	1	160		4	238	
Conference Rooms						**800**			**1,278**
Dean's Conference Room – listed under Office of Dean									
Conference Rooms	16	25	400	2	800		2	817	
Student Organization Space	14	20	280	1	280	**280**	1	461	**461**
Study Space						**1,980**			**2,286**
Collaborative Learning Spaces	4	20	80	6	480		3	832	
Casual Learning Pods	2	25	50	6	300		6	200	
Group Study	6	25	150	4	600		4	551	
Group Study	8	25	200	3	600		3	703	

Figure 2.4–19: Misc. Instructional / Support Spaces – Space Tabulation

Continued on next page.

MISC. INSTRUCTIONAL / SUPPORT SPACES – SPACE TABULATION

10. Misc. Instructional / Support Spaces	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Vending/Collaboration						**880**			**993**
Vending			60	2	120		0	0	
Servery / Preparation/Storage Area			120	1	120		1	100	
Seating	8	20	160	2	320		1	446	
Seating	16	20	320	1	320		1	447	
Storage						**300**			**440**
Archival Storage (Dean's office)			150	1	150		1	288	
General College/Dept. Storage			150	1	150		1	152	
Mail Room						**130**			**103**
Central Mail Room			100	1	100		1	73	
Package receiving			30	1	30		1	30	
TOTAL UNITS ASF						**8,420**			**7,822**

MISC. INSTRUCTIONAL / SUPPORT SPACES – GRAPHIC PROGRAM

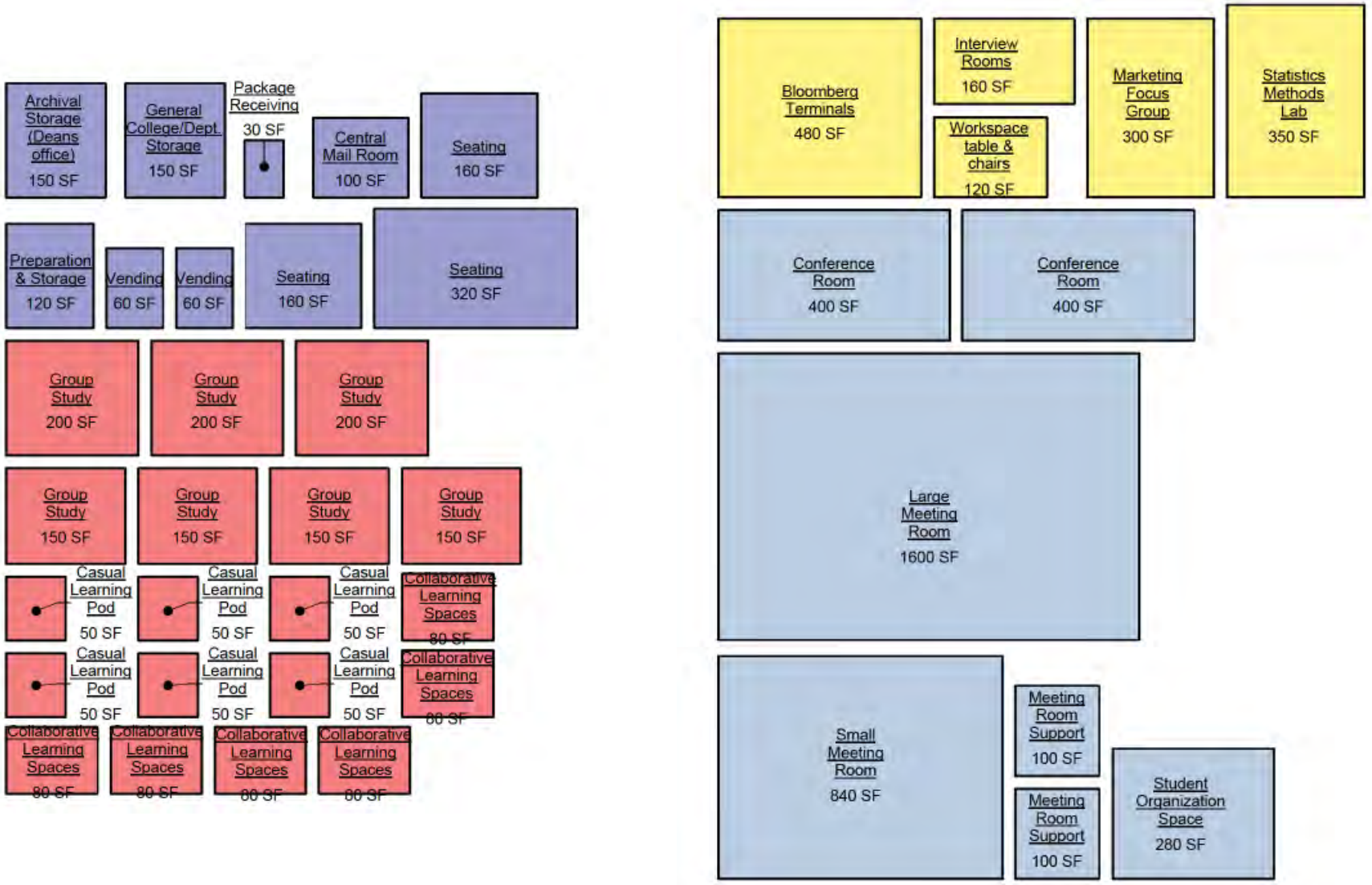


Figure 2.4-20: Misc. Instructional / Support Spaces - Graphic Program

MISC. INSTRUCTIONAL / SUPPORT SPACES – PROGRAM NOTES

This grouping includes spaces that are to be located in various areas of the building. None of this space is considered assigned to a particular department, however, some of the spaces will have departmental academic priority for delivery of curriculum. All of the spaces are assumed to be well mediated to allow for multiple forms of program delivery as needed by the College.

Meeting rooms include a large and small room with the ability to be configured in many formats. The Student Investment Center should be a showcase room with significant prominence in the facility. The Marketing Focus Group and Sales Lab as well as the Student Methods Lab are presently located in Wimberly Hall and are replicated in this program. These spaces can be used as open gathering spaces for study and collaboration when not being used by the Departments.

In addition to the conference rooms defined in the Dean's Office program, two conference rooms are programed to be disbursed throughout the office suites.

Student Organization Space was added to the program to provide an area for student organizations to advertise and hold meetings. The space is intended to be flexible and organic in its design. Various sized study and collaboration spaces are included. Some study spaces have walls and others are open spaces for impromptu gatherings throughout the facility.

Vending /Collaboration spaces are anticipated in two locations to allow for food service gathering spaces in Wittich Hall. If located near the meeting rooms this space could act as a servery space for meeting room functions.

Campus Facilities is constructing a central storage facility for all University functions, therefore, minimal central storage is included in the program for the Wittich Hall Renovation. A mail room for central receiving is included in the program for the facility.

GROWTH – SPACE TABULATION

11. Growth	Program						Actual		
Functional Area	No. of Occ. / Items	ASF / Occ.	ASF / Space	No. of Spaces	Total ASF	Total Area	No. of Spaces	Total ASF	Total Area
Offices & Office Service – SUC 300s						**960**			**1,742**
Future Faculty	1	120	120	5	600		5	628	
Future Adjunct Faculty	1	60	60	6	360		6	356	
Unassigned				0	0		5	758	
TOTAL UNITS ASF						**960**			**1,742**

Figure 2.4–21: Growth – Space Tabulation

GROWTH – GRAPHIC PROGRAM

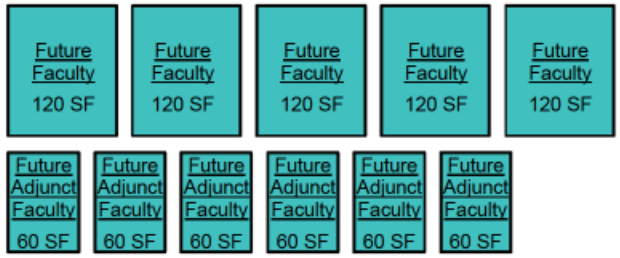


Figure 2.4-22: Growth – Graphic Program

GROWTH – PROGRAM NOTES

The program for growth includes office space for potential future full time faculty, adjunct faculty. These offices and workstations should be placed throughout the building so the Departments can grow in place.

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3. PHYSICAL PLANNING ISSUES

3. PHYSICAL PLANNING ISSUES

3.1 SITE CONDITIONS AND CAMPUS CONTEXT

Wittich Hall is located in the central core of the University of Wisconsin–LaCrosse campus. The front building face (west) addresses the future campus pedestrian mall across a large front lawn and anchors the southeast section of the mall. Other mall anchors are Centennial Hall directly west of Wittich, Murphy Library (northwest), and Cowley Hall (northeast). These four buildings front the mall and directly address the clocktower plaza located in the center of the two block long mall.

Figure 3.1-1: Wittich Hall Renovation Project Area

The west lawn fronting the mall is filled with an excessive amount of trees, large shrub massings and a residential rail style fence. These elements hide Wittich Hall from the mall and create a feeling of separation detaching Wittich Hall from feeling connected to campus.

The north lawn area features many large trees, landscape beds and lawn and generally has a shady feel.

The east lawn of Wittich Hall fronts to an unbuilt green space that is relatively open with exception of tree plantings and select sidewalks. The area is predominantly open sod and is an underutilized area. Across the green space is the campus heating plant.

South of Wittich Hall is Graff Main Hall and the Wing Technology Center. The south lawn consists of large shrub foundation plantings as well as an area of reflection featuring a bench swing, memorial boulder, and pavers. Another bench is located near the west central entry as well as another bench swing located midway between the west entries. The area of reflection has donor significance and will need to be integrated into the final site design, either preserving the elements as best as possible or as a new interpretation of the original concept.

Figure 3.1-2: South Lawn

Figure 3.1-3: West Lawn

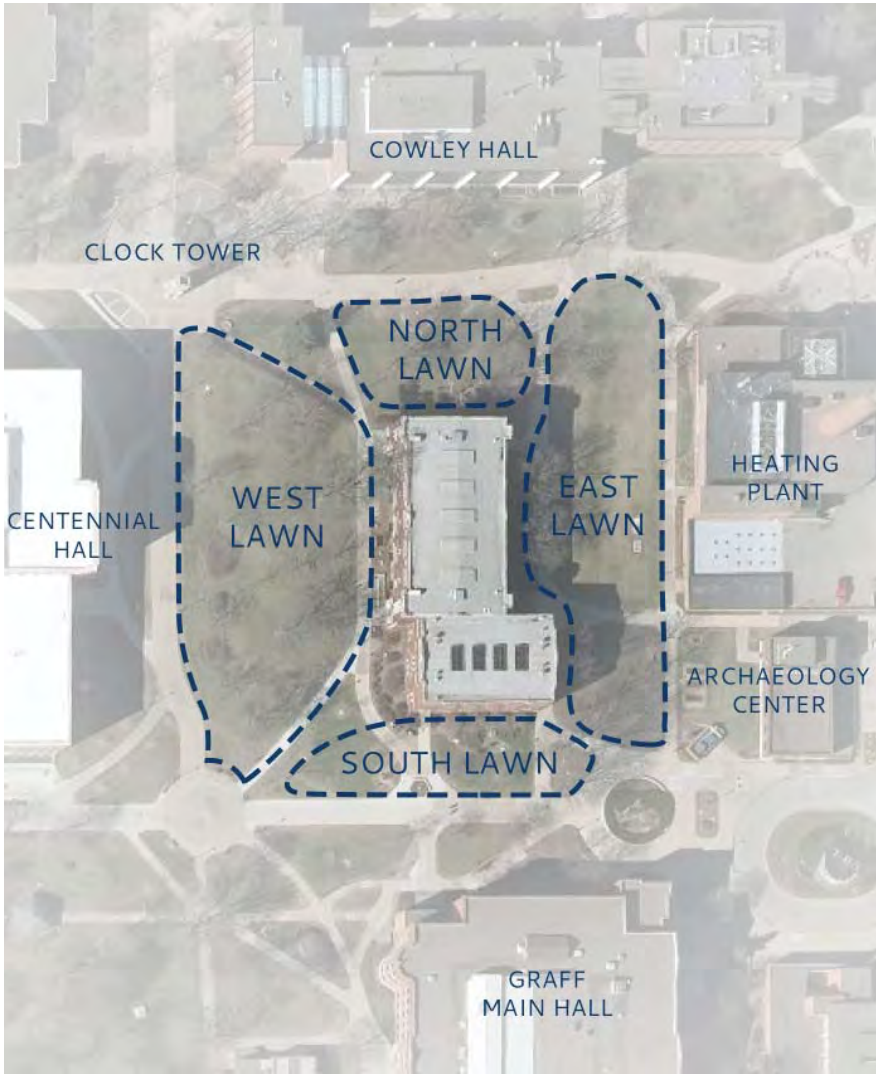

Figure 3.1-4: Wittich Hall - Site Diagram

The First Floor of Wittich Hall is approximately seven (7) feet above the surrounding site and buildings. The west site features entry stairs and ramps accommodating 2' of grade change and then slopes gradually west to meet the mall. The north site slopes more steeply, accommodating the same grade change in a shorter run. The east site is mostly flat, meeting the east-west sidewalks to the north and south of the site. Stairs negotiate grade from the site to the building entries with an ADA ramp at the south entry. The south end of the site is predominately flat, matching grade of the adjacent sidewalk. A stair provides access to the single door at the southwest corner of the building addition.

3.2 TRANSPORTATION / CIRCULATION

Sidewalks connect the west building entries to the clock tower and north primary sidewalk and to the southwest node and primary sidewalk. There is no direct connection to Centennial Hall. The east sidewalk connects the two building entries to the primary sidewalks to the north and south of the sidewalk. The building is landlocked and the only vehicle access is via the sidewalks. Limited bike racks exist on site.

3.3 CIVIL AND SITE UTILITY PLAN

Existing utilities serving Wittich Hall appear to be from original construction and have never been upgraded. Water is served via a 4" lateral from a 20" main north of the building. Condition of the water lateral is not known and no issues have been stated. Sanitary sewer and storm sewer services to the building are combined. Roof risers, area well drains and building plumbing all connect together (some internally, some externally) and route to a 27" sanitary main west of the building in the mall. Condition of the sewer collectors around the building perimeter are unknown, however UWL has stated the lateral leading from the main to the collecting manhole is in poor condition.

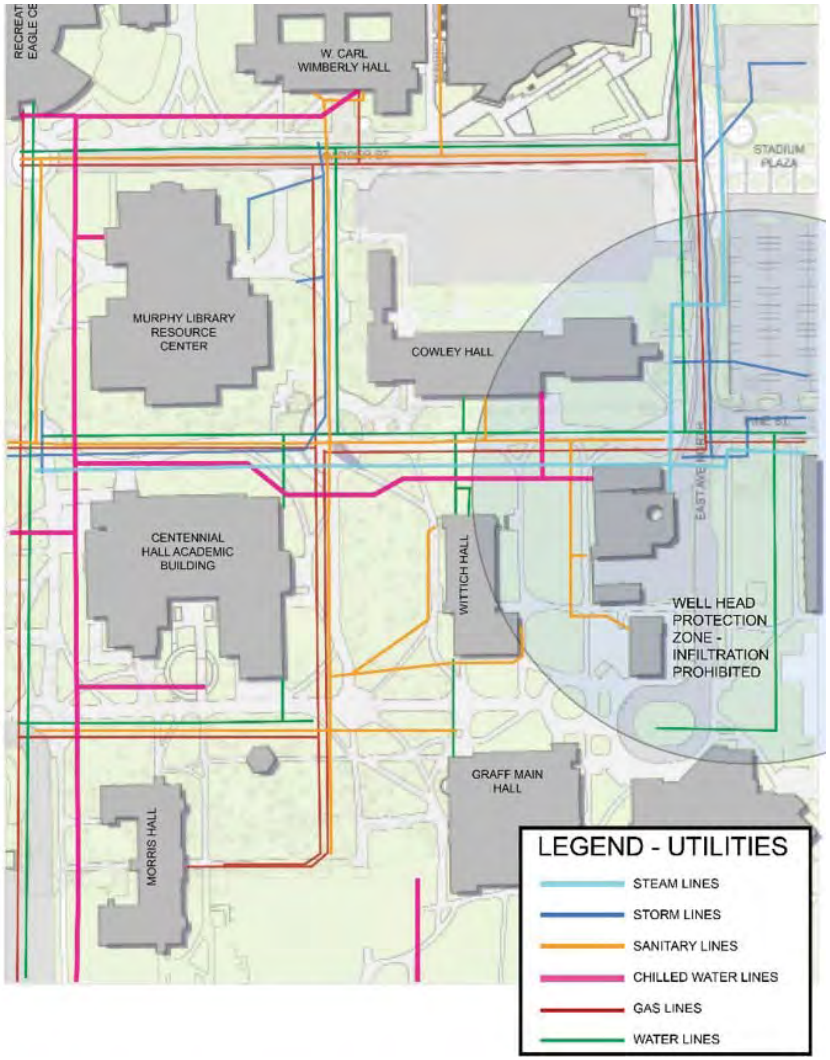

Figure 3.3-1: Existing Utility Plan

3.4 EXISTING BUILDING CONDITIONS

The following items were evaluated as part of the Facility Condition Assessment (Appendix 3) dated November 1, 2016. Additional detail can also be found in the Historic Structure Report (Appendix 1) dated November 1, 2016 and the Preservation Plan (Appendix 2) dated November 1, 2016.

Exterior

Wittich Hall's exterior is generally in good condition. The load bearing brick and cut stone are in very good physical condition. The masonry components are dirty and will require cleaning to bring the façade back to its past grandeur. In exception to the majority of the masonry, the parapet condition will require additional restoration as deterioration to the limestone coping joints and flashings was evident.

The fenestration systems include original wood windows, wood window replacements, glass block infill replacement, and modern aluminum storefront systems.

The wood windows are generally in poor condition. Original windows will need to be either replaced or restored. Non-original windows will be replaced with new to replicate the original units.

While glass block is in fair condition and aluminum storefront entrance systems are in excellent condition, this project will replace these units because they are not historically accurate to the original building.

The roof was last replaced in 1985 and is in poor condition and should be replaced. During the 1985 roof replacement, the skylights over the 1916 portion of building were infilled and roofed over while the skylights over the 1930 portion were replaced. This project proposes to provide new light monitors at both of these locations.

Figure 3.4-1: Window Condition

Figure 3.4-2: West Entry Damage

Figure 3.4-3: East Entry

Interior

The interior of Wittich Hall is generally in poor condition. As part of the facility condition assessment, the building was laser scanned and floor elevation maps were created. The laser scanning revealed that the floors are uneven, especially the Lower Level and will require extensive leveling. Many of the interior finishes are original and likely contain hazardous materials and will need to be remediated.

A small pocket of renovation occurred on the First Floor to provide updated offices. While this space is in good condition, the program requires the space to be drastically reconfigured. The restrooms are also generally in good condition, however they do not meet current accessibility requirements.

Wittich Hall is intended to be an adaptive re-use of an historic structure to create of a state-of-the-art academic center for the College of Business Administration. This change of use will significantly alter the interior of the building from its former use as a gymnasium and school of physical education.

There are a few interior areas that the Preservation Plan identified as having a higher degree of historical importance. These spaces include the North Entrance Lobby / Stairwell, the South Entrance Lobby / Stairwell, the 1916 Gymnasium and the 1930 Gymnasium.

Elevators

An alteration in 1978 included an addition of an elevator to the South Entrance Lobby. This elevator does not currently serve the Third Floor and it at the end of its useful life. The elevator will be replaced.

Figure 3.4-4: Second Floor Window Condition

Entrance Lobbies / Stairwells

Both entrance lobbies and stairwells are generally fair condition. The plaster walls are in fair condition and have some signs of visual cracking, primarily along the exterior. The plaster ceilings are in good condition. Both lobbies have terrazzo flooring which is good condition, however it has been painted over and further analysis will be required upon paint removal. The window sills and jambs have weathered and are in need of repair, while the associated wood trim is stained and in good condition.

Other notable features include wood trim rails up the stairs, built-in wood benches, a set of 6 panel wood doors. The approach outlined in the Historic Structure Report is to restore the terrazzo floors, bases, and staircase along with preserving the wood wall trim and built-in benches, and install new windows and doors.

Figure 3.4-5: Stair Condition

Figure 3.4-6: Lobby Condition

Gymnasiums

The gymnasiums, in contrast, are generally in poor condition with the track level of the 1916 gymnasium in unsatisfactory condition. The plaster walls in both gymnasiums are in very poor condition. The 1916 gymnasium has an interesting brick and wood trim wainscot feature and is in good condition.

The plaster ceiling of the 1916 gymnasium is in poor condition with numerous areas of peeling paint and deteriorated plaster. The 1930 ceiling is in fair condition but is currently covered in historically inaccurate acoustical tiles that may mask unforeseen conditions. Structural wood decking is believed to be directly above the acoustical tile.

Both gymnasium floors appear to be original and in good condition, although further investigation will need to occur after removal of athletic equipment. The track plywood floor however is very unsatisfactory condition.

The most interesting features of both gymnasiums are the roof structures framed of painted metal trusses that span the entire width (60' at the original 1916 building, and 66' at the 1930 addition.) These trusses appear to be in good condition. The suspended track structure in the 1916 gymnasium is also an interesting element.

The Historic Structure Report indicates that due to this project being an adaptive reuse of this space for a very different function, little of the existing space will be salvaged or restored. Consideration will be given to retaining the brick wainscot in the 1916 gymnasium and the roof trusses will be restored and maintained. The 1916 track will, however, be demolished to allow a partial floor infill of new programmatic features.

The project will salvage the gymnasium wood floor for re-use as a finish material.

Figure 3.4-7: Gymnasium Plaster

Building Infrastructure

The buildings mechanical, electrical, plumbing, and fire suppression systems are inadequate and obsolete and should be replaced.

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4. SPECIAL PLANNING ISSUES

4. SPECIAL PLANNING ISSUES

4.1 ENVIRONMENTAL IMPACT

The University of Wisconsin System publishes a guideline for categorizing the environmental impact of various project types. This guideline references the Wisconsin Environmental Policy Act (WEPA), which became effective April 29, 1972. More information on WEPA can be found at http://docs.legis.wisconsin.gov/.

UW System identifies three categories of projects with varying levels of impact analysis requirements. WEPA Type I actions are those that require an Environmental Impact Statement (EIS). WEPA Type II actions are those that may or may not require an EIS, but must be evaluated by completing an Environmental Impact Assessment (EIA) to determine if an EIS is required. Environmental Impact Statements and Assessments are defined in Chapter NR 150 of the Wisconsin Administrative Code. The third category is WEPA Type III, actions that do not require an EIS or EIA.

The UW System Environmental Affairs Officer has categorized The Wittich Hall Renovation Project as a WEPA Type III project. Therefore, neither an Environmental Impact Statement nor an Environmental Impact Analysis are required.

4.2 ACCESSIBILITY REQUIREMENTS

The design documented in this report was conceived with accessibility as a major consideration. The project goals contain the statement "provide seamless accessibility where possible." This important principle was foreshadowed by the Design Team's interview presentation, which included seamless accessibility as one of the major goals for the project. Due to the complex nature of historic preservation projects and the difficulty of introducing modern accessibility principles while maintaining historic character, there are challenges in fully implementing this goal. The design intent is to maintain the balance of character and modern usability, enhancing access to Wittich Hall.

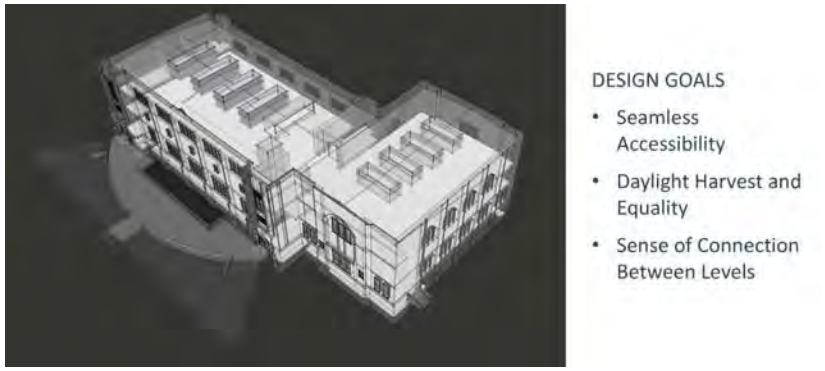

Figure 4.2-1: Design Goals - Interview

The project will adhere to the DFD accessibility guidelines. DFD guidelines adhere to SPS 362, IBC 2009 (at the time of this report), ANSI 117.1-2003, and ADAAG standards – July 23 2004. The guidelines declare that at least 20% of the architectural cost to alter the primary function space is to be allocated to path of travel accessibility improvements, unless the existing facility is in full compliance. The project budgeting process has not analyzed or allocated funds specifically for path of travel improvements, however, the project, when complete, will be fully accessible in accordance with all the referenced codes and guidelines, and will achieve that result within the limits of the budget.

One major accessibility improvement that this report is proposing is to provide wheelchair access to the main entrance of Wittich Hall without the use of a ramp. The West Entrance between the 1930 addition and the 1916 building is considered to be the main entrance of the facility, as the interior spaces have been laid out in consideration of this. The site has been designed to slowly rise at a five percent grade to the height of the main floor of the building, terminating at a raised plaza. This eliminates the need for switchback ramps and railings, and provides a feature outdoor space for the CBA to use for events.

Figure 4.2-2: West Terrace

4.3 SUSTAINABLE FACILITIES

The project will be designed in a manner to take every sustainability opportunity that is available and practical. The team will implement DFD's sustainable facility standards on the project. The project will not pursue documented LEED Certification; however, the project will seek to achieve every reasonable requirement listed on the DFD's sustainability checklist.

Applicable?	Requirements		Primary Responsibility	Remarks Note any: Reason if Unknown or Not Applicable Any goals beyond Min. Req'ts, Other Comments
	1. Portfolio Management & Assessment of Need			
Yes		** Portfolio Management & Assessment of Need	A	
	2. Program Development			
Yes		** Program Development	A	
	3. Integrated Design			
Yes		** Integrated Design	D, DFD	
	4. Sustainable Site Requirements			
Yes	**SS W1/P1**	***Construction Site Erosion & Sedementation Control**	D/C	
Yes	**SS C1**	**Site Selection**	A	Existing building location
Yes	**SS C2**	**Development Density & Community Connectivity**	A	
No	**SS C3**	**Brownfield Redevelopment**	A	
Yes	**SS C4.1**	**Alternative Transportation** Public Transportation Access	A	Located near 2 or more bus lines
No	**SS C4.2**	* **Alternative Transportation** Bicycle Storage & Changing Rooms	D	Will not be providing changing facilities
No	**SS C4.3**	* **Alternative Transportation** Low Emitting & Fuel Efficient Vehicles	D	No parking associated with this project
Yes	**SS C4.4**	**Alternative Transportation** Parking Capacity	A	No new parking added with this project
No	**SS C5.1**	**Site Development,** Protect or Restore Habitat	A/D	
No	**SS C5.2**	**Reduced Site Disturbance** Development Footprint	A/D	
Yes	**SS C6.1**	**Permanent Stormwater Management** (Discharge Rate & Vol - DNR 151)	D	
Yes	**SS C6.2**	* **Permanent Stormwater Management** (Quality Treatment - DNR 151)	D	
Yes	**SS C7.1**	**Heat Island Effect:** Non-Roof	D	
	SS C7.2	*LEED Credit Not Used*		
No	**SS C8**	Light Pollution Reduction	D	
	5. Water Efficiency Requirements			
	WE C1.1	*Incorporated into WE C1.2*		
Yes	**WE C1.2**	**Water Efficient Landscaping** No Potable Use or No Irrigation	D	
	WE C2	*LEED Credit Not Used*		
Yes	**WE C3.1**	**Water Use Reduction**, 20% Reduction	D	
	WE C3.2	*LEED Credit Not Used*		
	6. Energy & Atmosphere Requirements			
Yes	**EA P1**	* Commissioning	D, C	Indicate DFD Level 1 or Level2
Yes	**EA P2**	Minimum Energy Performance	D	
Yes	**EA P3**	* CFC Reduction in HVAC&R Equipment	D	
Yes	**EA C1**	* Optimize Energy Performance for Projects > $2 million	D	
No	**EA C2**	* Renewable Energy	D	
	EA C3	*Incorporated into EA P1*		
	EA C4	*LEED Credit Not Used*		
Yes	**EA C5**	* Measurement & Verification	D, O	
Yes	**EA C6**	Green Power	A, O	

Figure 4.3-1: DFD Sustainability Checklist

Applicable?	Requirements		Primary Responsibility	Remarks Note any: Reason if Unknown or Not Applicable Any goals beyond Min. Req'ts, Other Comments
	7. Materials & Resources Requirements			
Yes	**MR P1**	Storage & Collection of Recyclables	D	
Yes	**MR C1.1**	Building Reuse	A	
	MR C1.2	*Incorporated into MR C1.1*		
	MR C1.3	*LEED Credit Not Used*		
Yes	**MR C2.1**	Construction Waste Management	C	
	MR C2.2	*Incorporated into MR C2.1*		
Yes	**MR C3.1**	Resource Reuse	D	
	MR C3.2	*Incorporated into MR C3.1*		
Yes	**MR C4.1**	**Recycled Content**	D	
	MR C4.2	*Incorporated into MR C4.1*		
Yes	**MR C5.1**	**Local/Regional Materials**	D	
	MR C5.2	*LEED Credit Not Used*		
No	**MR C6**	**Rapidly Renewable Materials**	D	
Yes	**MR C7**	* **Certified Wood**	D	
No	**MR W1**	** **Durable Buildings**	D	
	8. Indoor Environmental Quality Requirements			
Yes	**EQ P1**	**Minimum IAQ Performance**	D	
Yes	**EQ P2**	* **Environmental Tobacco Smoke (ETS) Control**	O	Tobacco free Campus Policy
	EQ C1	*LEED Credit Not Used*		
	EQ C2	*LEED Credit Not Used*		
Yes	**EQ C3.1**	**Construction IAQ Management Plan** During Construction	C	
Yes	**EQ C3.2**	**Construction IAQ Management Plan** Before Occupancy	C	
Yes	**EQ C4.1**	**Low-Emitting Materials** Adhesives & Sealants	D	
Yes	**EQ C4.2**	**Low-Emitting Materials** Paints	D	
Yes	**EQ C4.3**	**Low-Emitting Materials** Carpet	D	
Yes	**EQ C4.4**	**Low-Emitting Materials** Composite Wood	D	
Yes	**EQ C5**	**Indoor Chemical & Pollutant Source Control**	D	walkoff mats, full height walls at janitor's and copy rooms
	EQ C6.1	*LEED Credit Not Used*		
	EQ C6.2	*LEED Credit Not Used*		
	EQ C7.1	*LEED Credit Not Used*		
	EQ C7.2	*LEED Credit Not Used*		
No	`	* Daylight and Views	D	Existing windows do not qualify for this credit
	EQ C8.2	*LEED Credit Not Used*		
	9. Operation & Maintenance Requirements			
Yes		**Operation & Maintenance	O	
	10. Purchasing of Furniture, Fixtures and Equipment Requirements			
Yes		**Purchasing of Furniture, Fixtures and Equipment	A	
	11. Accountability, Verification, and Reporting Requirements			
Yes	**AR 1**	** Accountability for Sustainability	DFD	
Yes	**AR 2**	** Verification during Project Design	DFD	
Yes	**AR 3**	** Verification during Project Construction	DFD	
Yes	**AR 4**	** Verification following Construction	DFD	
Yes	**AR 5**	** Reporting on Construction Results	DFD	
	LEED Goals			
No		Seeking LEED Certification	A	
	LEED NC (Agency Operations Equal to LEED New Construciton)		A	

	DFD Requirement / LEED Credit Comparison		Primary Responsibility	
			A	Agency - Planning, Budget Analyst
		* DFD variation of LEED 2.1 or 2.2 Credit	D	Architect/ Engineer
		* DFD variation of LEED 2.1 or 2.2 Credit	DFD	Division of Facilites Development
		** DFD only Standard	C	Contractor
	LEED Credit Not Used, Incorporated into another Standard or not Supported		O	Agency - Operation & Maintenance

Daylighting

Wittich Hall has major daylight contributions from 9 existing skylight openings and large window openings on the west, east and south facades. DFD daylighting standards for state facilities require an integrated approach between the architect and the mechanical and electrical engineers or lighting designer. As design moves ahead, further consideration of daylight use and control will optimize the balance of daylight and heat gain with building electrical and mechanical systems.

DFD expects that state-owned projects exceed code minimums for energy usage and requires designers to fulfill the following objectives without adding significant cost increase to the project:

- Promote user health and comfort, and enhance satisfaction and productivity;
- Incorporate more sustainable, environmentally-responsible design and construction practices;
- Reduce peak electrical demand;
- Reduce total installed air-conditioning capacity and total fan power;
- Reduce total installed lighting power density;
- Reduce building-related energy use significantly below building code requirements;
- Minimize lifetime building utility, maintenance and repair costs.

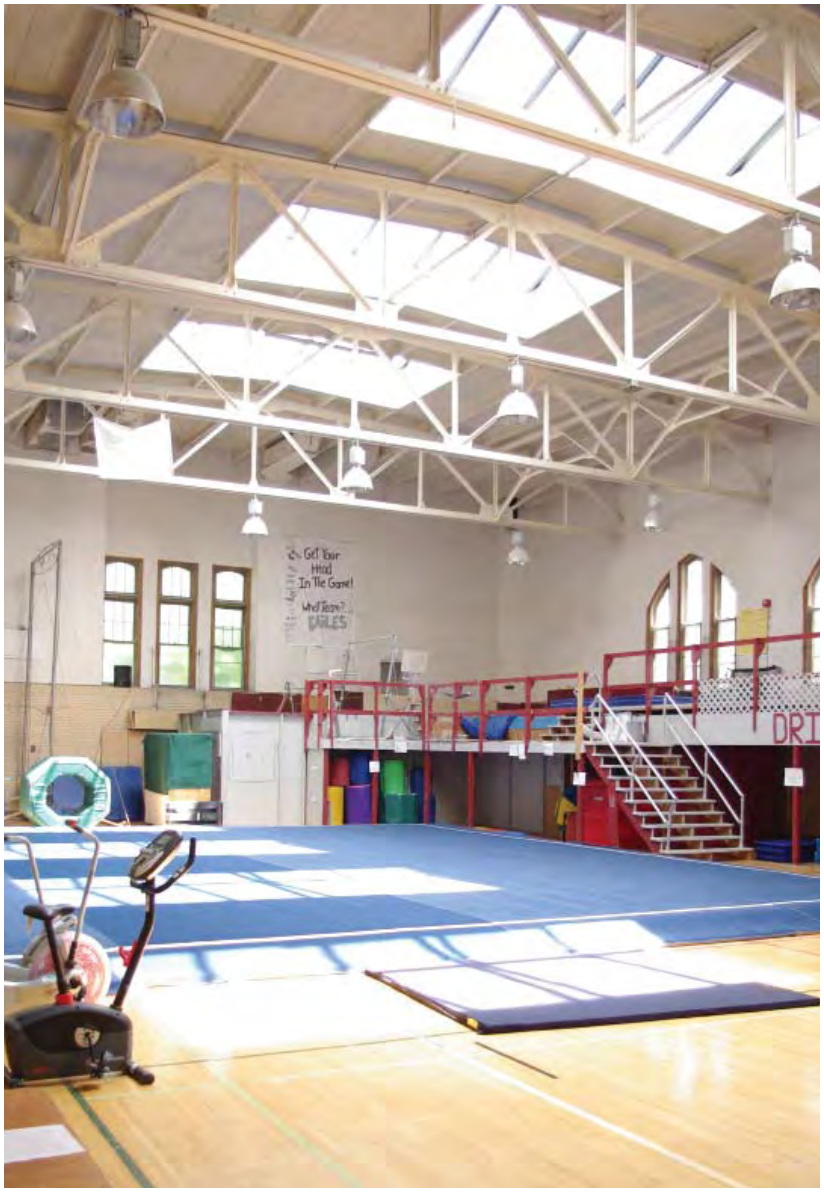

Figure 4.3-2: Wittich Hall 1930 Gymnasium Daylight

Energy Modeling

The DFD Policy and Procedure Manual requires life-cycle cost analysis for remodeling projects such as this one, to evaluate all relevant costs for each alternative. The document "Guidelines for Life-Cycle Costing on State Building Projects" and Policy and Procedure Section 4.G.7 "Life-Cycle Cost Analysis" will be utilized.

State Building Commission

The policy of the State Building Commission is to be a leader in improving the overall quality and performance of state facilities and to minimize the total cost of occupancy. The Building Commission adopts a sustainable facilities policy to promote the planning, improvement and management of state facilities in a sustainable manner that:

- Promote the effective use of existing state space;
- Respects the larger environmental and social context into which they fit;
- Promotes human health, comfort and performance;
- Conserves natural resources and reduces detrimental effects on the environment;
- Ensures energy efficiency; and
- Considers the life-cycle cost of initiatives.

University of Wisconsin – La Crosse

UW-La Crosse Facilities Planning and Management incorporates the Brundtland Commission's description of sustainability as a planning and operational principle. UWL's track record with promoting sustainability includes several new facilities receiving LEED certification as well as a commitment to preserving the campus' existing building stock.

The practice of sustainability is a significant focus of many projects conducted by Facilities Planning and Management, from maintenance to new construction. The department is committed to improving their environmental footprint while working to serve the needs of campus. The projects they complete, of all scales and types, incorporate energy efficient strategies as much as possible.

UWL's commitment to preserving and repurposing Wittich Hall for another 100 years of use is a concrete example of their commitment to sustainability.

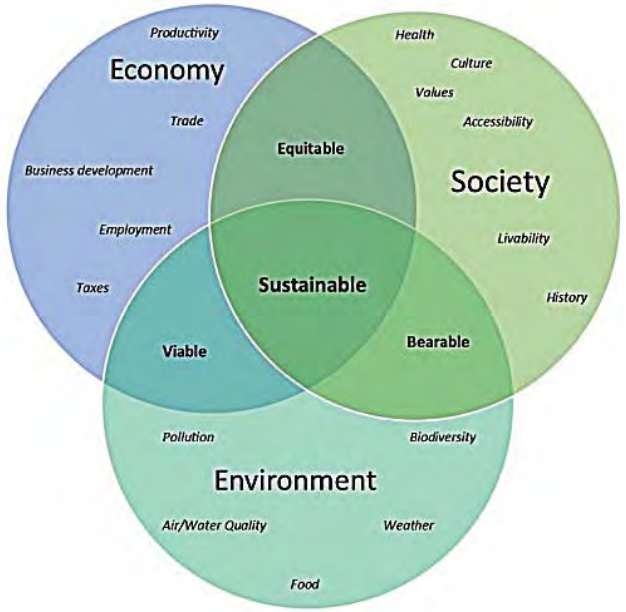

Figure 4.3-3: UW-La Crosse Sustainability Diagram

Sustainability

Some of the energy conservation strategies being studied for the Wittich Hall Renovation project include:

- Daylighting via skylights, exterior windows and interior borrowed lights.
- Energy efficient glazing system for the skylights and exterior windows.
- Energy recovery systems for mechanical and plumbing systems.
- Demand controlled ventilation (DCV) in the office spaces. DCV is code required in large, high density spaces.
- Occupancy control of HVAC systems and lighting systems.
- Daylighting control for a select number of lighting systems.
- Reduced lighting power densities – via LED fixtures.
- Provisions for recycling / reducing waste.
- Strategies to share resources.
- Separation of storm and sanitary sewer systems and provisions for storm water storage on the site.
- Work with the Wisconsin Historical Society and DFD to improve the exterior envelope to the fullest extent agreeable by all stakeholders without creating long term issues or concerns.

4.4 COMMISSIONING

Commissioning ensures that the systems installed in the building are performing as intended. The commissioning process also involves the proper training of building operators in the correct and knowledgeable operation of the systems within the building.

Level 2 Commissioning will be provided for the Wittich Hall Renovation project. The commissioning process will ensure that building systems are designed, installed, and perform according to DFD's agreed upon project requirements, basis of design, and construction documents.

As outlined in the DFD Policy and Procedure Manual for Architects / Engineers and Consultants, Level 2 commissioning includes the following tasks:

- A Commissioning Team, including a Commissioning Provider (CxP) DFD staff, UW-L staff and the A/E team will be identified by the DFD after the 10% Concept Report is complete.
- The Commissioning Team will review the Basis of Design / Design Concept for compliance with the Owner's project requirements.
- Any commissioning requirements will be incorporated into the Bidding Documents.
- A Commissioning Plan will be developed.
- Issue tracking and resolultion, as well as construction verification will occur during construction.
- A series of reviews, performance tests and training will occurr during and after construction.
- A Commissioning Report will be prepared.
- Additional requirements are identified in the DFD Policy and Procedure Manual.

4.5 HAZARDOUS SUBSTANCES

The State of Wisconsin identifies and records the presence of hazardous substances with state owned facilities. The information is kept within a database known as "Wisconsin Asbestos and Lead Management System (WALMS)." The information contained within the database was updated during the Pre-Design Phase by Tim Stratton, one of DFD's Hazardous Materials Specialists. Asbestos containing materials (ACM) will require abatement prior to construction work beginning at Wittich Hall. Probable ACM include floor tile and mastic, carpet mastic, glazing compound, and pipe insulation fittings.

The Division of Facilities Development will commission a consultant outside of the Design Team after the Pre-Design Phase to define the scope of required abatement and develop the abatement documents, if the scope warrants this level of service.

The scope of this report does not include observation or testing of hazardous materials including but not limited to asbestos, radon, PCBs, mold, or lead-based paint.

4.6 EQUIPMENT

Equipment that will be provided with the Wittich Hall Renovation project will fall into one of three categories. Each category is coordinated and funded differently. Equipment needs for the Wittich Hall Renovation will continue to be developed as design continues. Certain equipment has been identified for the 10% Concept Design Report and is documented in the room data sheets, which are part of Volume 3, Appendix 4 of the 10% Concept Design Report.

Fixed Equipment

Fixed or built-in equipment is that which is specified by the Design Team, provided and installed by the contractor under the construction contract.

In some cases, where appropriate justification is made, items may be purchased by the University for installation by the contractor. All fixed equipment has been included in the construction cost estimate.

Fixed equipment may involve permanent plumbing, mechanical or electrical connections and includes items such as appliances, exterior building signage, fixed interior signage (code required and directional), fixed marker boards, marker board rails, etc.

Moveable Equipment

Moveable equipment consists of equipment and furnishings such as tables, chairs, desks, waste baskets, fire extinguishers, mobile tack boards, etc., and may be purchased directly by the University. It may be considered a capital expenditure and may or may not be included in the total project budget, separate from construction. These items will need to be coordinated so that the contracting scope reflects the proper installation and connection to the moveable equipment.

Special Equipment

Special equipment is defined as equipment – fixed or moveable – which is uniquely specialized for a particular program or functional need. The University is to identify specific environmental, operational or mechanical, electrical or plumbing requirements that are required to support the equipment. As of the end of the Pre-Design Phase, no specialty equipment, other than audiovisual equipment, has been identified for this project.

The following is a partial list of Moveable and Special Equipment that will be provided and / or provided and installed by the University:

- Office and classroom furnishings (desks, file cabinets, chairs, bookshelves, tables, etc.) will be provided by the University. They will provide furnishings design, specifications, purchasing, installation coordination, and punchlist.
- Communications equipment will be provided by the University.
- One wall-mounted clock / transmitter (wireless master clock system) will be located in each wing (2 per floor for a total of 8). Classrooms and Learning Labs will not have clocks.
- Teaching podiums should be provided in each learning lab, classroom, and meeting room greater than 16 seats. UWL standard teaching podium design is to be used as a reference for podium design.
- Mobile marker boards should be provided in all classrooms and will hang on a marker board rail that is provided and installed as fixed equipment.
- Waste and recycling containers should be provided in all offices, classrooms, workrooms, corridors, lobbies, resource areas, etc. by the University.
- The lobby should be provided with a signage directory and an area for donor recognition plaques. All interior signage is included and facilitated by the University.

A more detailed definition of all significant equipment needed in the building will be developed in the preliminary design phase including utilities, purchasing, installation, and a refined budget.

Audiovisual Equipment

The design of the audiovisual system will be in conjunction with the building design. Procurement of the owner-furnished contractor-installed equipment will occur at a later date while all corresponding infrastructure (boxes, conduits, wiring, termination, testing, programming, etc.) will be incorporated into the contract documents. A complete narrative summary of the audiovisual system is outlined in Section 6.8 of this 10% Concept Design Report.

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5. DESIGN CONCEPT

5. DESIGN CONCEPT

5.1 OVERVIEW

Reimagining Wittich Hall presents many challenges and opportunities for the Design Team. This section details the process of solving problems and taking advantage of Wittich's qualities to create a new "place" on Campus. The Design Team is creating a new identity for the College of Business Administration, new learning and collaboration opportunities for students and faculty, and a sense of vibrancy in and around a beautiful historic structure. The design takes advantage of the great open space and airy structure of Wittich Hall wherever possible and provides a sense of community in bright, day-lit space. The design maintains open space wherever possible to encourage activity and movement throughout the building.

5.1.1 PROJECT GOALS

The design process begins with establishing a list of design goals for the project. These goals help to objectively evaluate the work that the team produces. As the Design Team compared options and weighed the merits of each, those that best met the goals and fulfill the priorities set forth by the team become the preferred option.

There are many "givens" when lists of project goals are created. For example, making sure that the design is within budget, or complies with state codes or campus policies, are taken for granted and do not get added to the list.

The Design Team began formulating the Project Goals during the interview process to guide thinking for the presentation. The initial goals were developed and some members of the team have prior experience working on studies of Wittich Hall. Therefore, the basic ideas and impetus for the project were somewhat formulated going into the 10% Concept Design Report process.

Through six multi-day workshops the Design Team held on campus with project stakeholders, the Project Goals were honed and fine tuned into a final list to reflect the ideal outcome of the project. The Project Goals fall into two categories. Some are abstract because their success is contingent upon a multitude of decisions; these are labeled "Abstract Goals." The other category contains more tangible ideas that tend to have a simple, straightforward solution; these are labeled "Tangible Goals."

Abstract Goals

- Create an identity and home for the CBA.
- Provide attractions to draw CBA students to the building.
- Accommodate active and flexible work environment.
- Facilitate public outreach.
- Provide collaborative learning spaces to facilitate faculty-faculty, faculty-student, and student-student interaction within the space.
- Respect historic character of building while contrasting with new construction.
- "Promote a healthy work environment" – encourage movement and a healthy work space.
- Provide seamless accessibility where possible.

Tangible Goals

- Maximize daylight and access to daylight within the space (where desirable).
- Provide private faculty offices.
- Facilitate public outreach.
- Provide daylight and privacy control. Balance of open and light.
- Design for ease of maintenance.
- Provide spaces with good acoustic properties.

Figure 5.1.1-1: Inspiration Image - University of Washington Foster School of Business, LMN Architects

5.1.2 DESIGN PROCESS

Goalsetting

The design process begins with discussions with the future users of the space to understand their needs and desires for the project. The results of those discussions are described earlier in the Project Goals section of this report.

Programming

The programming process also involves elaborate discussions with various groups of building users to understand their space needs. This approach looks at current space use, then builds upon that by anticipating new spaces or spatial improvements that will facilitate better function. The programming process and outcome is detailed in the Programming section of this report.

Hand Sketching

The Design Team began to fit the pieces of the program into the shell of the existing building. The CBA program had a total of ten different categories of programmed space and roughly 250 different spaces. There are a number of ways to fit these spaces into a building, and one way to understand where things fit and how well they relate to one another is to study many different options.

Figure 5.1.2-1: Preliminary Hand Sketch

The Design Team began the study by preparing hand sketched diagrams, which allow for quick work and the preparation of many more options than using computer drafting. The drawings became the basis of the initial design discussions during which the Design Team presented six different options for laying out the spaces within the building.

3D computer study models

Three-dimensional models were used to study the architecture of the interior and exterior spaces. The Design Team tested not only to see if the program fits within the shell of Wittich Hall, but that it fits elegantly, that it inhabits the former gymnasium space and leaves behind recognizable traces of the building's past. Many of these models were used for the interview presentation as well as internally during the beginning stages of the project to enhance the team's understanding of the space.

Figure 5.1.2-2: Preliminary 3D Study Model

BIM

Building Information Modeling, known as BIM, is a term that refers to design documentation that goes beyond the two-dimensional page. The documentation software creates a database of information about the model as it is being drawn. So, while two-dimensional floor plans and elevations are being created, the Design Team is also creating a three-dimensional model, schedules of building elements, and tabulations of space. Our model can produce live comparisons of programmed square footages to actual square footages, or the same information can be manipulated to compare gross area to useable area.

The team engaged RA Smith National to perform laser scanning of the exterior and interior of Wittich Hall. These laser scans accurately map out the detail of the building surfaces. The data comes to the architectural team in the form of a point cloud. These point clouds are used to build the virtual model of the building in a far more dimensionally accurate and efficient manner over conventional field verification techniques.

The consultant also produced floor elevation maps that allow the team to locate high or low spots in the floors that may become problematic to new construction.

Cumulitive Effect

In the design process we employ many different strategies for acquiring information. The more informed the design, the better. At this point in the process, we have very complete information about the building, the surrounding area, and desired function on which to base our schematic design, and to carrying forward the design process beyond the 10% Concept Report.

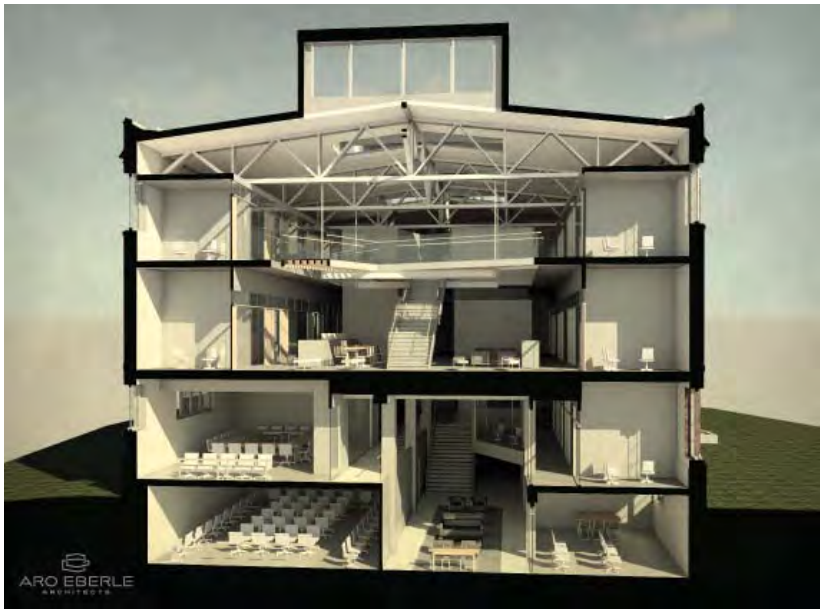


Figure 5.1.2-3: Section Perspective

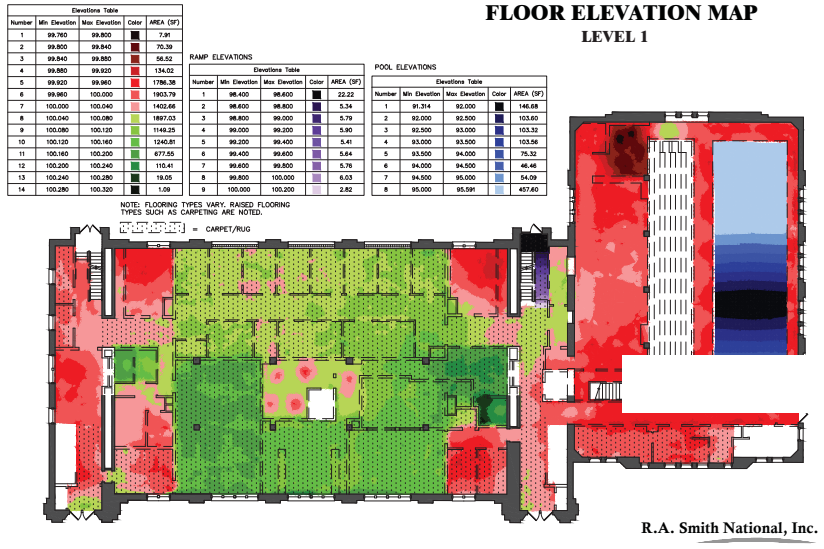


Figure 5.1.2-4: Floor Elevation Map

5.2 SITE PLAN

1. **Northwest Entrance**
   Maintain existing site grade & restore stairs and cheekwalls.
2. **Wittich Terrace**
   Maintain existing grade to allow views of the Wittich Hall facade. Amenities include accent paver bands in the terrace, cast-in-place seatwall with hardwood seat tops and LED accent lighting.
3. **Sloped Walk**
   Stadium seatwall with hardwood seat top along sloped sidewalk.
4. **Main Entrance**
   Raise grade to existing Wittich Hall finished floor elevation.
5. **Stadium Seatwall**
   Stadium seatwall with hardwood seat top overlooking the Wittich Hall lawn.
6. **Gathering Space**
   Outdoor plaza for formal and informal gatherings. Enlarged hardwood seating plinth.
7. **Central Campus Mall Connection**
   Staircase to Mall with reconfigured Cowley Hall entrance.
8. **Terraced Stormwater Rain Garden**
   Structure Rain Garden with formalized plantings.
9. **Area of Reflection**
   Relocated swing, commemorative boulder and bench.
10. **East Terrace**
    Sloped walk, stairs and seating plinth / seating walls matching West Terrace.

Figure 5.2-1: Proposed Site Plan

5.2.1 FOCUS AREAS

West Terrace

The West Terrace is comprised of a lower terrace at elevation 673.50 and an upper terrace which registers at the first floor elevation of 675.85. The lower terrace sits roughly one foot above the adjacent West Lawn, creating a defined, occupiable seating edge. The upper terrace steps down to the West Lawn in a series of 18" high, 36" wide stadium steps, and it connects to the lower terrace by way of a sloping (5%) walk. This sloping walk is bound by a wide concrete plinth along its west edge. Together with the stadium steps, this plinth bookends a primary stair at the main (southwest) building entrance. This stair extends west into the West Lawn, connecting the pedestrian mall and Wittich Hall with a series of alternating steps and walks.

The components of the upper and lower terrace are intended to feel monolithic, different expressions of a single site feature. The stadium steps and the wide plinth at the sloping walk are integral to the pavements, stair, and lower terrace edge. The leading edges of this variously articulated feature – the plinth edges, stairs, and stadium steps – are alternately capped with precast concrete slabs and slatted hardwood seats. An oversized slatted hardwood platform serves as a seating element and focal point for the upper terrace landing.

Figure 5.2.1-1: West Terrace

The plinth pavement is accented with bands registering on the building's buttresses. This banding will be executed by varying the pavement material – using a plank paver in a subtle color to accent the building façade. Other pavement zones within the terrace will use varying types of concrete finish – exposed aggregate alternating with broom finish concrete, sandblasted concrete alternating with broom finish concrete, or a comparable method.

Stair handrails are welded stainless steel flat bar, cored and grouted in place.

West Lawn

The slope of the West Lawn will be maintained as-is, though the tree count will be significantly reduced to improve visual connectivity between Wittich Hall and the pedestrian mall, and in order to create a sunnier, more inviting open space.

The split rail fence at the west edge of the lawn will be removed, and the lawn will be locally re-graded as required for the construction of the stairs and walks between the West Terrace and the pedestrian mall, and at the reconstructed sloping walks connecting the north and south ends of West Terrace to the pedestrian mall.

East Terrace

The character of the East Terrace is comparable to the West Terrace, though the extent and scale of the improvements are more modest at this location. Two sets of stairs provide direct access to the southeast entrance, and a series of low retaining walls and landings create an accessible route without the need for handrails. The north-south walk that parallels the east face of the building is regraded throughout this zone to minimize the number of stairs and the length of sloping walkway required at the terrace. The adjacent quad is regraded to match the new walk elevation.

At several locations, retaining walls are capped with slatted hardwood seats which match those found at the West Terrace, and complementary slatted hardwood benches add additional seating.

Stormwater Detention

Figure 5.2.1-2: East Terrace

The reconfigured approach paths at the southwest corner of the building wrap a terraced stormwater detention planter. A series of low concrete retaining walls with weirs allow for detention on the sloping site. Native wetland perennials and shrubs are planted in a special stormwater planter soil mix and mulched with stone.

5.2.2 IMPROVEMENTS AND MATERIALS

Pavements

Pavers will be used in accent bands within the West terrace. All concrete pavements will be CIP concrete. The finish of the concrete pavement at the West and East Terraces will vary; this variable finish will be executed using special aggregate mixes, special finishing techniques, integrally colored concrete, or a combination thereof. All other pavements will be medium broom finish concrete per campus standards.

Stairs and Handrails

The stairs at the West Lawn, West Terrace, and Northwest entry are CIP concrete with precast concrete treads.

Stairs at the southeast (East Terrace) and south building entrances will be CIP concrete. Stair cheekwalls at the southeast and south will be as-cast concrete with minimally chamfered edges. Stair cheekwalls at the northwest and west will be CIP concrete with precast veneer and caps.

All handrails will be shop welded stainless steel flat bar, surface mounted.

Walls and Curbs

The walkways stitching the pedestrian mall and adjacent pathways to the south end of the West Terrace will be steepened in order to connect to the new upper terrace elevation. Because the finish grade of adjacent landscape areas will not be raised to this same elevation, these walkways will be supported by CIP concrete cheekwalls or thickened edge concrete with curb as they approach the terrace. These walls will be as-cast concrete with minimally chamfered edges.

The east edge of the upper portion of the West Terrace will be similarly bound by low retaining walls to support the terrace and serve as edge protection. These walls will be as-cast concrete with minimally chamfered edges.

Plantings

Perennial, groundcover, and shrub plantings are limited to foundation plantings in the vicinity of the building. The planting palette will be focused on texture, seasonal interest, and climate adaptive species. Small trees will be incorporated through the foundation planting. Existing lawn areas will be reseeded or sodded as required to mitigate disturbance.

Lighting

LED accent lights will be integrated into the slatted hardwood benches at the West and East Terraces, and into the stair handrails at the West Lawn. Campus standard pedestrian lighting will be used elsewhere to provide safe, adequate light levels on pathways and stairs.

Figure 5.2.1-3: West Terrace Rendering -Aerial

Figure 5.2.1-4: West Terrace Rendering - Looking North

Figure 5.2.1-5: West Terrace Site Elevation

Figure 5.2.1-6: West Terrace Rendering - Looking South

5.2.3 WITTICH MALL

Master Plan Background

A master plan document was created in 2005 in which Wittich Hall was noted as being in the southeast portion of campus. The master plan of the time defined pedestrian corridors with nodes and enhanced gathering spaces and a central campus feature was created with the clock tower (Hoeschler Tower).

The North–South Mall master plan has been evolving in recent years as new projects fronting the mall are being developed. The two major projects are Centennial Hall and Cowley Hall. The extent of the first phase of site development with Cowley Hall converts a portion of Badger Street to a pedestrian mall.

The master plan looks to break down the Mall into several distinct zones and define unique spaces. The Mall has a cross axis with nodes at Centennial Hall and the Stadium. An additional consideration includes the New Student Rec Center coming on line in the fall and less traffic to Cartwright.

The area being defined as Wittich Mall for the purposes of this study was defined as west face of Wittich Hall and east face of Centennial Hall. Wittich aligns in the east-west direction with Graff Main Hall.

Figure 5.2.3-1: 2005 Master Plan

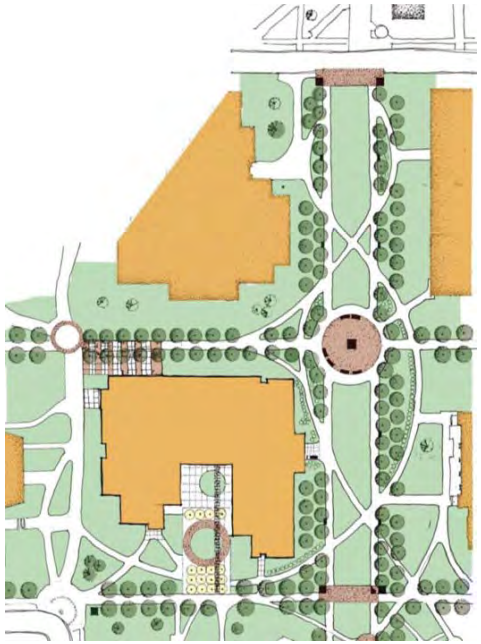


Figure 5.2.3-2: Centennial Hall Plan

Figure 5.2.3-3: Cowley Hall Plan

Wittich Reuse Site Influence

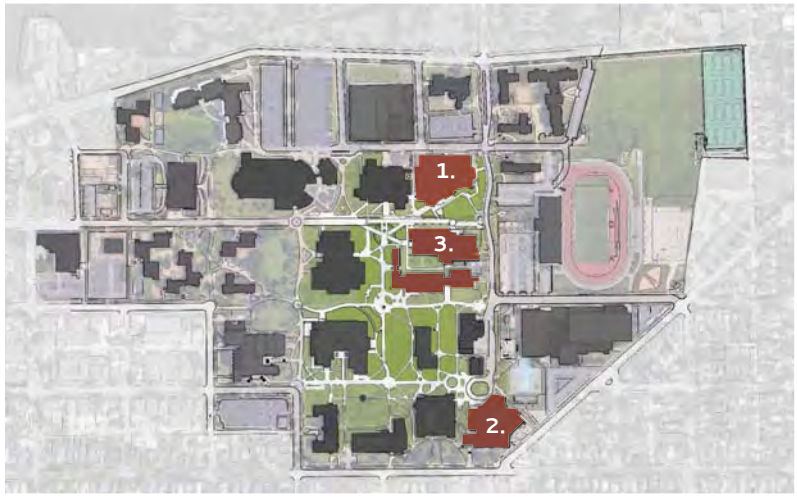
The renovation of Wittich Hall will cause a change to the existing traffic patterns to and from the facility. For example, as currently planned, student traffic to Wittich Hall will be increasing as classroom and study space will be provided. Student traffic will come from various locations. Students that live on campus will come from residence halls to the West. Any new residence halls will be added in the same location. Students that commute to campus will likely park in the commuter lot to the north of Wimberly Hall, unless it is full, at which point they would arrive from the stadium parking lot.

Aside from residences or parking facilities, students are likely to come from all over campus and the goal is to provide good access for students from all directions. Wittich Hall's current configuration already supports this with five entry points located at the corners of the building.

Faculty traffic is also a consideration. When not teaching in Wittich Hall classrooms, CBA Faculty will primarily teach in Wimberly Hall and Centennial Hall. Wittich Hall already has a network of paths connecting from the northwest corner to the northern part of the Mall, connecting faculty to Wimberly Hall. This connection may be foreshortened further in the future when the Cowley Hall project is complete, providing relief along the northern section of the Mall.

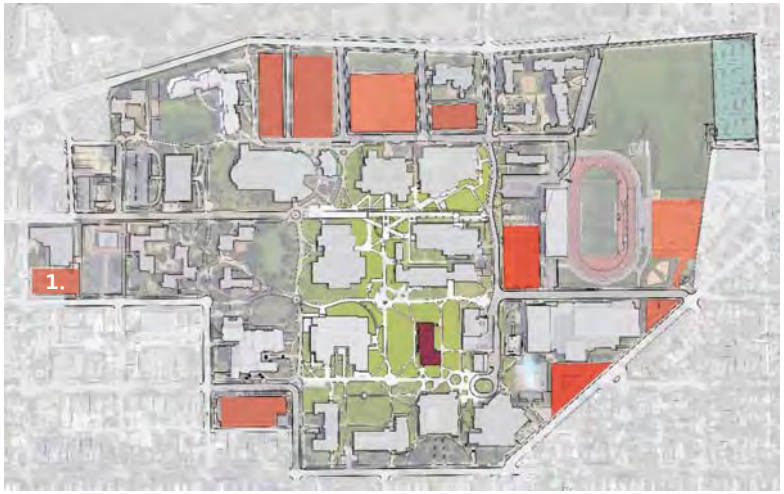
Connection directly across the Mall to Centennial is desired, and should be a consideration of the Wittich Mall plan, and may be implemented as part of the renovation project.

Access to Wittich Hall from the major parking areas was previously discussed. However, the nearest accessible parking must be considered for students and members of the public visiting Wittich Hall. The nearest accessible parking stalls are located to the east of the building at the MVAC facility. The development of a Wittich Mall master plan may not influence the site to the east, however the site design for the Wittich Hall Renovation project will look at improvements to building accessibility from the east.



1. Student Center 2. Vacated Cartwright Center (upcoming)
3. Cowley Hall (upcoming)

Figure 5.2.3-4: Campus Changes



1. MVAC Facility

Figure 5.2.3-5: UW-La Crosse Parking Locations

Mall Organization

Nate Novak of SmithGroupJJR developed and presented many different Mall organization strategies to the Executive Committee. There was discussion about the various options and strategies, however no major decisions were made on a large-scale Mall strategy. It was requested that the Design Team look to limit impact on the Wittich Mall with this project as a new master planning project was likely to occur after the completion of Cowley Hall Phase 1 is complete.

For short term planning purposes, the site design will incorporate a porch or terrace element at the main entry, will create a direct connection across the existing Mall to Centennial Hall, and will implement a low impact "campus green" design strategy for any Mall improvements made at this point for utility or infrastructure upgrades.

Figure 5.2.3-6: Classic Campus Green Example

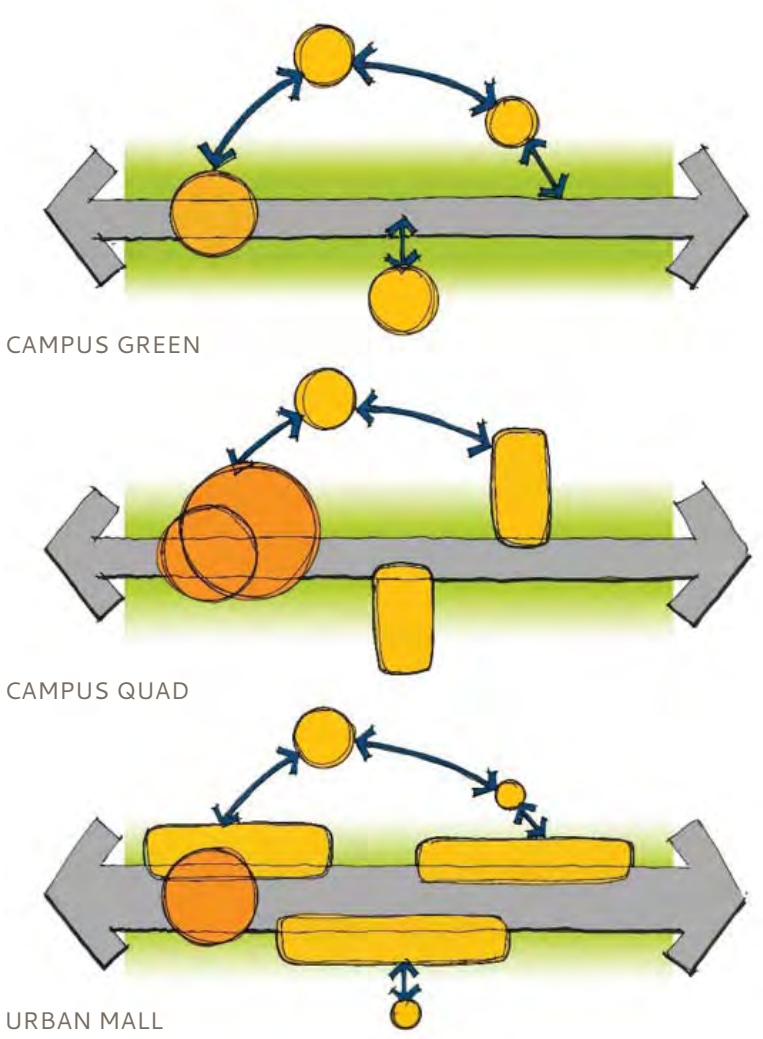


Figure 5.2.3-7: Mall Organization Diagrams

5.3 INTERIOR DESIGN

5.3.1 CODE COMPLIANCE

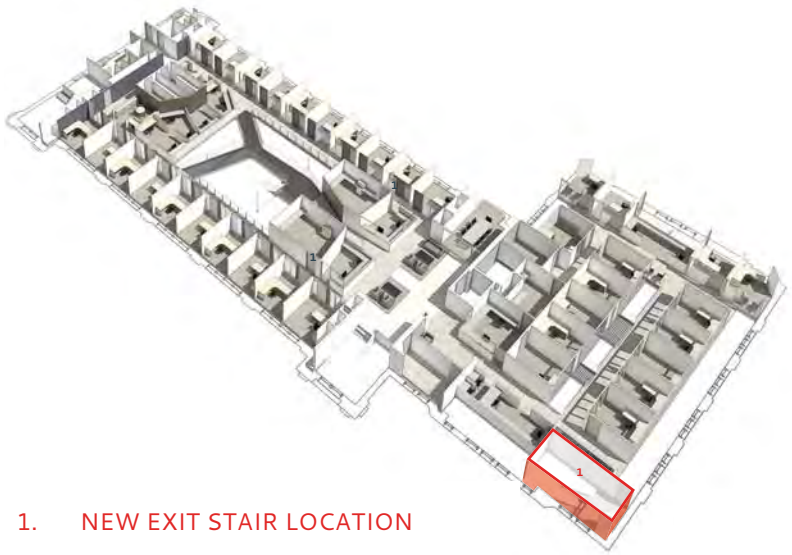
Wittich Hall is a great building for many reasons. One characteristic that makes it very user friendly for the Design Team, is that it is classified as Type III construction, a special classification for load bearing masonry structures. There are no area or height limitations with adapting the building to modern standards, especially with the introduction of a sprinkler system that is included in the project.

One area where the building is surprisingly deficient, considering that it originally had four staircases, is exiting from the upper and lower floors. This is because the 1930 addition did not include a stair tower to serve that wing. With a wide-open gymnasium, the issue is less apparent, however, by today's code the gymnasium does not have the adequate number of exits (IBC Chapter 1015.1).

With its new use, the 1930's wing does have a reduced occupant load, eliminating the need for multiple exits. However, an issue remains with exiting travel distance. The code requires that a maximum distance of 75' can be traveled before an occupant has two clear choices for exit paths (IBC 1014.3). From the most remote office occupants must travel 134' feet before two choices are available.

The team determined the best solution for this problem was an added stair tower in the southwest corner of the building, which allows the stair shaft to exit through an existing building entrance. This is important because, due to the historic nature of the building, changes to the façade are not permitted.

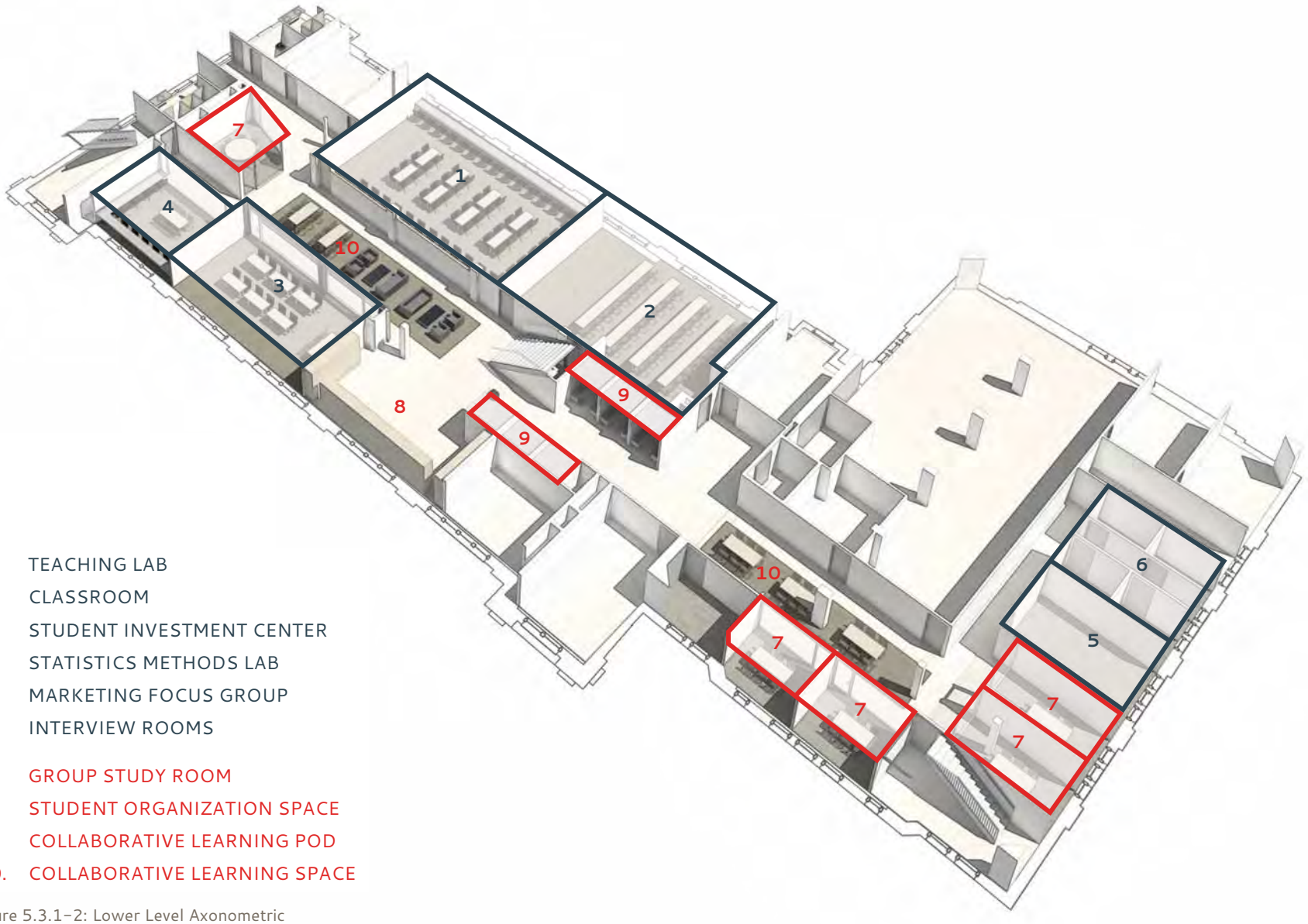
The stairs serving the Lower Level are also inadequate in terms of their width. The design put forth in the 10% report adds a wider stair at the northwest corner beneath an existing staircase, in addition to the new stair at the southwest corner.



1. NEW EXIT STAIR LOCATION

Figure 5.3.1-1: New Exit Stair Location

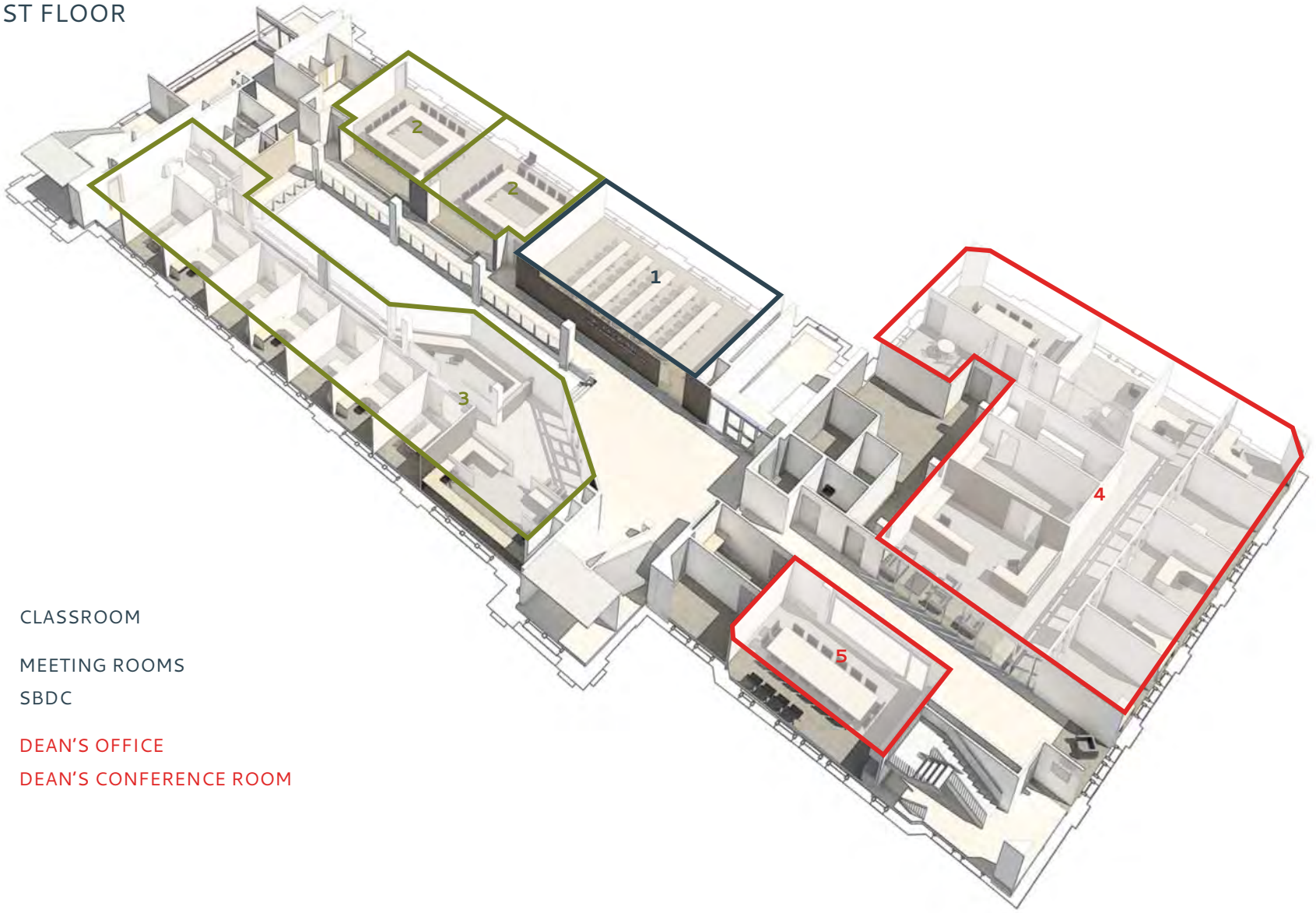
LOWER LEVEL



1. TEACHING LAB
2. CLASSROOM
3. STUDENT INVESTMENT CENTER
4. STATISTICS METHODS LAB
5. MARKETING FOCUS GROUP
6. INTERVIEW ROOMS
7. GROUP STUDY ROOM
8. STUDENT ORGANIZATION SPACE
9. COLLABORATIVE LEARNING POD
10. COLLABORATIVE LEARNING SPACE

Figure 5.3.1–2: Lower Level Axonometric

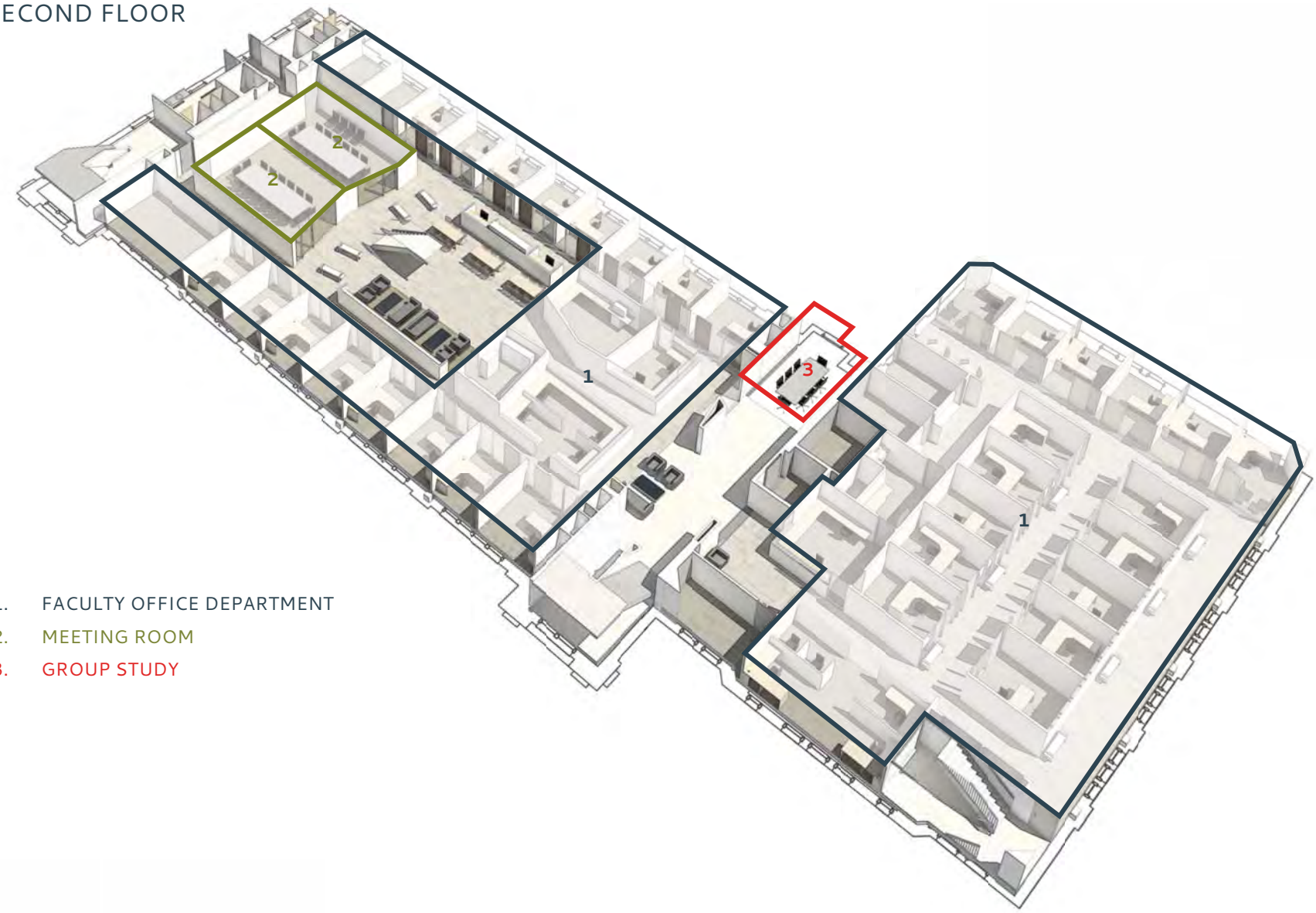
FIRST FLOOR



1. CLASSROOM
2. MEETING ROOMS
3. SBDC
4. DEAN'S OFFICE
5. DEAN'S CONFERENCE ROOM

Figure 5.3.1-3: First Floor Axonometric

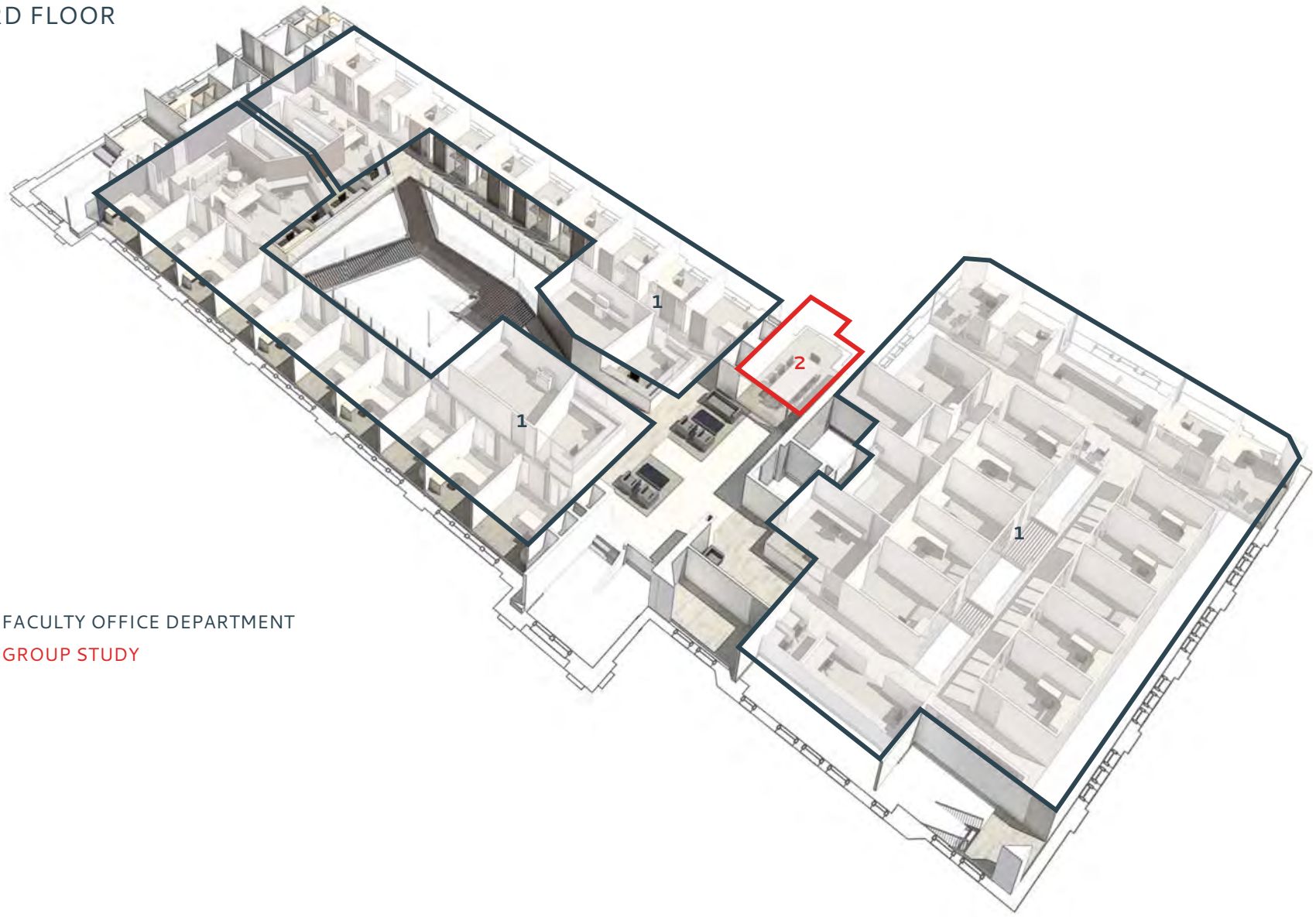
SECOND FLOOR



1. FACULTY OFFICE DEPARTMENT
2. MEETING ROOM
3. GROUP STUDY

Figure 5.3.1-4: Second Floor Axonometric

THIRD FLOOR



1. FACULTY OFFICE DEPARTMENT
2. GROUP STUDY

Figure 5.3.1-5: Third Floor Axonometric

5.3.2 DAYLIGHT

Daylight is a major consideration in the design of this project. One of the primary reasons that daylight becomes such a focal point is the Design Team wants to create a bright and positive work environment. However, adding a Third Floor within the building will cut off daylight to the Second Floor.

The floor opening strategy allows for more distribution of light to the Second Floor offices and also solves another construction issue. The windows in the 1916 wing of the building sit up high and relate nicely to the new Third Floor. The window openings in the 1930s addition were installed lower on the façade, and create a conflict with the new floor structure. By locating the floor openings near the existing windows, the team effectively shared the light source and respected their historic character.

Glass has been used on the first floor as much as possible. This allows for transparency of the spaces, and allows transmission of daylight into the core of the building and down into the Lower Level, which is connected to the First Floor with a generous opening.

Figure 5.3.2-1: Daylight Study Section – 1916 Building

Figure 5.3.2-2: Daylight Study Section – 1930 Building

5.3.3 AESTHETIC CHARACTER

The design of the building exterior will not change. The historic façade will be repaired and restored to its original grandeur. The interior however, provides more opportunities for change. Considering a complete transformation of the space from a Physical Education program to a College of Business Administration program, the team has chosen to make the intervention reflect the architecture of our times. Knowing that some areas of the building are very important for defining the historic character and maintaining the memory of the past, the balance between original architecture and current design will be met.

In areas where the intervention needed to adapt the space are significant, the current construction will be replaced with new, modern looking architecture. The new work will contrast and complement the historic architecture, and also become the ongoing story of Wittich Hall and its transformation.

While early in the process, the design has developed, and is illustrated in rendered images of specific interior spaces. These images set a baseline interior design standard to progress the design. The character illustrated in this report has been influenced by the image survey results gathered during Workshop 6, through the discourse that has occurred with the project stakeholders, and in keeping with projects of a similar type that have been observed by the Design Team to date.

Figure 5.3.3-1: 1916 Gym Interior

The design attemps a clean, modern and warm environment, focused is on simple detailing and a subtle material palette that lets the spaces connect seamlessly, allowing the building to be a backdrop to the life within.

On the upper floors, the design accentuates the volume of the original gymnasiums by allowing the second and third floors to connect. The original roof trusses will remain exposed and uninterrupted and the skylights will be reconstructed to provide usable daylight within the space. Pieces of the original running track will be re-imagined as the structure of a new bridge element that crisscrosses the space across the opening.

Figure 5.3.3-2: 1930 Gym Interior

INTERIOR RENDERING – FIRST FLOOR

Figure 5.3.3-3: Interior Rendering – First Floor

INTERIOR RENDERING – THIRD FLOOR

Figure 5.3.3-4: Interior Rendering – Third Floor

FLOOR PLAN – LOWER LEVEL

Figure 5.3.3–5: Floor Plan – Lower Level

FLOOR PLAN – FIRST FLOOR

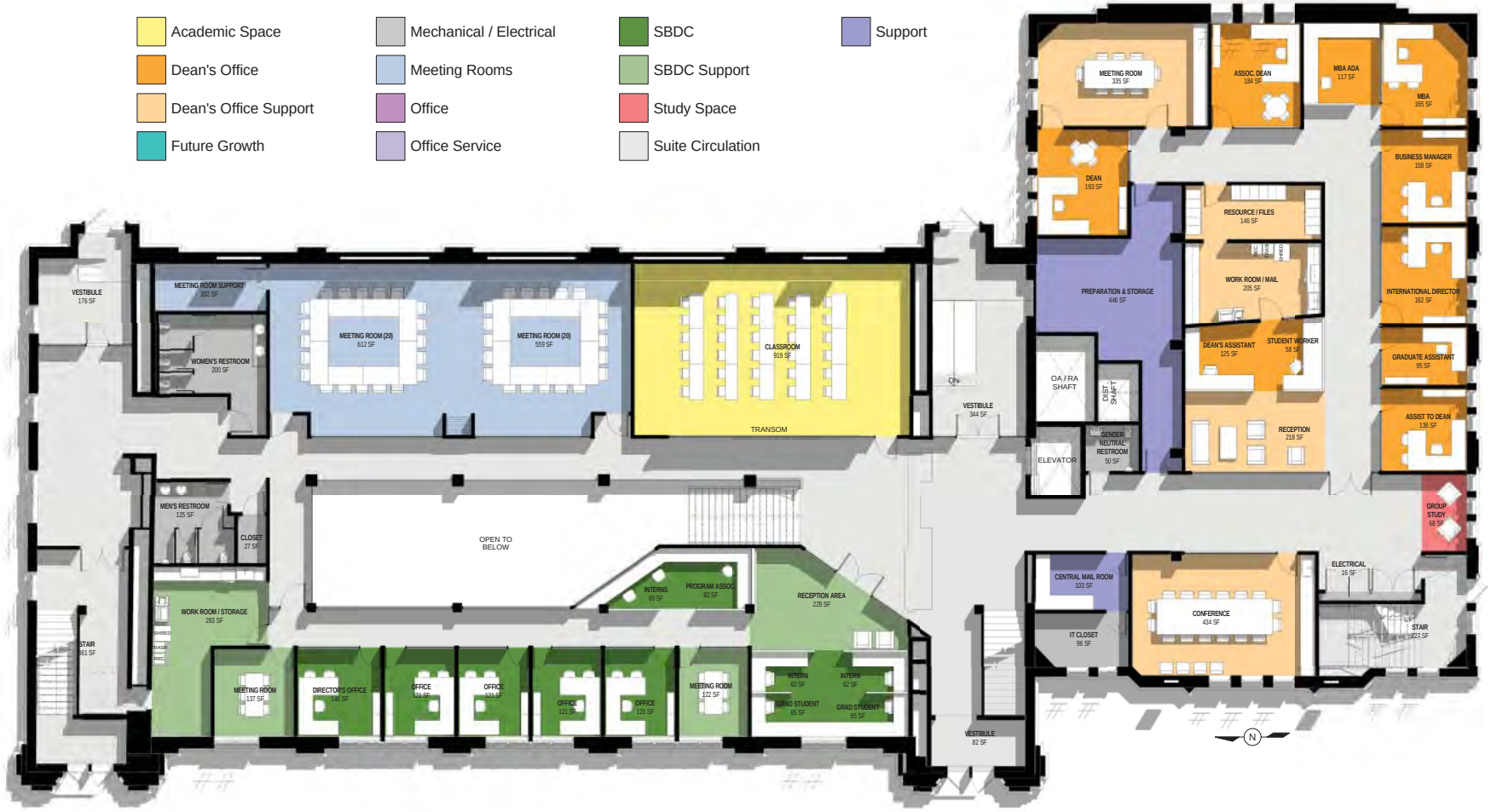


Figure 5.3.3-6: Floor Plan – First Floor

FLOOR PLAN – SECOND FLOOR

Figure 5.3.3-7: Floor Plan – Second Floor

FLOOR PLAN – THIRD FLOOR

Figure 5.3.3-8: Floor Plan – Third Floor

5.4 EXTERIOR

Wittich Hall has retained almost all of its historic integrity over the nearly 100 years of its existence. This façade exemplifies the Collegiate Gothic style of the building with its vastly detailed entrances at the northwest and southwest corners.

As an historic structure, the goal of this project is to preserve, restore, and rehabilitate the exterior facade.

The general approach to treatments includes the following:

1. Clean masonry and limestone.
2. Replace non-original windows with metal-clad wood units matching the profile of originals.
3. Replace original windows with metal-clad wood units matching profile of the originals.
4. Remove non-original mechanical / electrical equipment.
5. Remove limestone coping to install new flashing.
6. Consider removal of exterior concrete stairs and ramp with something more historically accurate.
7. Recreate flag pole to match existing.
8. Re-create light monitors at roofed-over original skylight locations at 1916 building.
9. Replace light monitors over the 1930 addition.
10. Re-roof building.

A more detailed analysis of the historic preservation efforts of the exterior can be found in Appendix 1 - Historic Structure Report and Appendix 2 - Preservation Plan.

Figure 5.4-1: Existing Exterior - West Elevation

Figure 5.4-2: Existing Exterior - East Elevation

5.5 HISTORIC APPROACH

The approach for the preservation of the exterior of Wittich Hall is not without complexities, but the overall charge is simple: stabilize and preserve the historic architecture as close to the period of significance as possible. The interior poses more opportunity to pair the original architecture with new architecture. The extent of interior renovations is somewhat dependent on the position that the Wisconsin Historical Society (WHS) will take after reviewing the 10% report. The Design Team presented the project concept which emphasized the major historic preservation issues to the WHS, but the engagement was limited to 30 minutes. Discussion of major issues were left to a later phase of work. Therefore, some major design decisions made in the 10% report are unconfirmed by WHS.

The design aims to compromise between preserving examples of the historic character within the building and retaining the memory and feeling of certain significant spaces, while providing a functional and modern space for the College of Business Administration.

The two main circulation staircases are to remain in the lobby spaces on the west side of the building. The Northwest Lobby will be preserved in its original state from the entry doors to the end of the lobby at the pair of vestibule doors separating the back staircase. A new flight of stairs from the lobby to the Lower Level will be added beneath the existing stairway for egress purposes. The Northwest Lobby will serve as a complete example of the historic character of Wittich Hall.

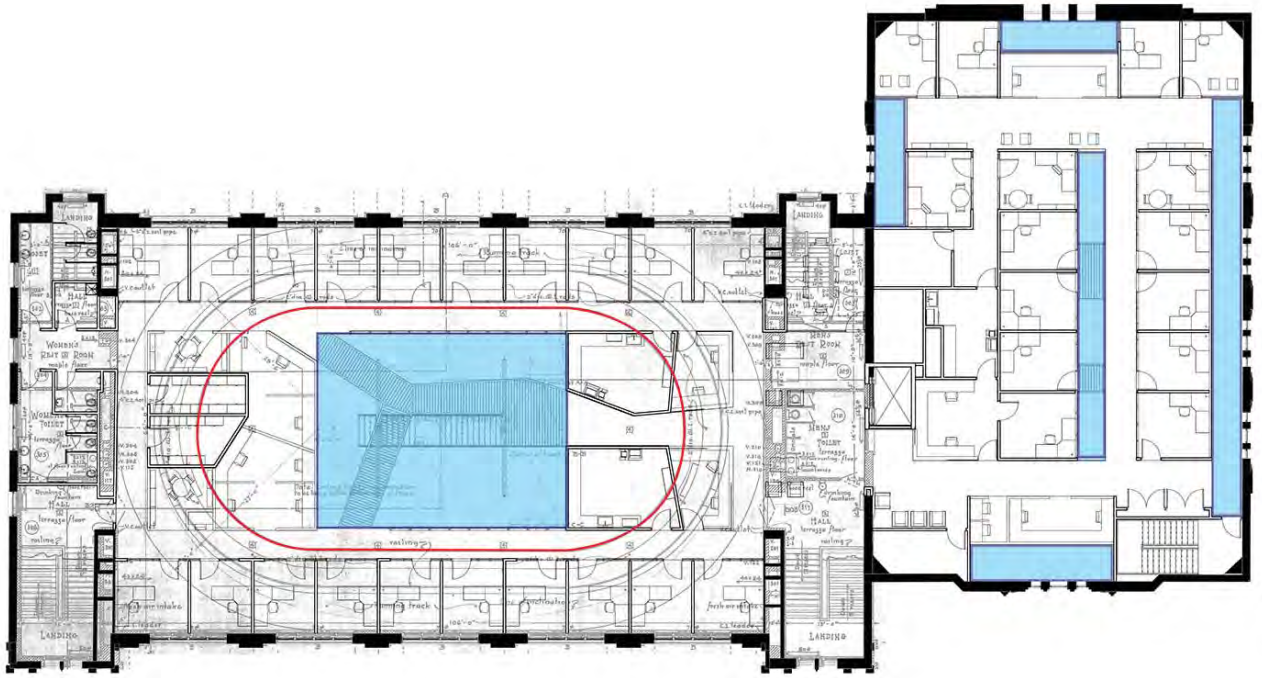


Figure 5.5-1: Proposed Third floor Openings / Existing Track Location

The Southwest Lobby will retain much of its original character, however to achieve many of the CBA's design goals, the Design Team is altering this lobby more than the Northwest Lobby. The College has a strong desire to create openness and connectivity within the building. Wittich Hall's original floor plan provides small, doorway sized openings from the lobby spaces into the main First Floor space that will serve the Small Business Development Center, large meeting room, and classroom. The First Floor overlooks the Lower Level through a large, 60-foot-long by 16-foot-wide opening. This "openness" is crucial for creating a lively and welcoming environment that speaks to the CBA's purpose.

New faculty offices will occupy the space on the upper levels where the gymnasium spaces now sit. These gymnasiums offer large volumes of daylit space and exposed steel roof trusses. To fit all programmed spaces within Wittich Hall, the Design Team is adding new floor levels above the Second Floor within both the 1916 and 1930 gymnasiums. To best preserve the historic characteristics of volume and daylight within the gymnasiums, the new floors will include floor openings. In the 1916 gym, a large opening with a suspended bridge structure and convenience stair will be introduced. This allows the user to experience the original volume of the space and allows natural light from the skylights into the second floor.

The 1930's addition presents a different situation with the added floor level. The new floor must not connect to the exterior wall at the window locations because the new level lands at the midpoint of the windows. The openings on the 1930's addition floors then become long, slotted openings, five feet deep throughout the space. They allow views of the original windows and provide shared daylight.

The Design Team plans to replace the skylights on both wings of the building. The skylights in the 1916 wing were covered, while replacement skylights were installed in the 1930's wing. The Design Team will create light monitors at these locations with vertical glazing for better light quality and easier maintenance.

Figure 5.5-6: Historic Lobby

6. BUILDING SYSTEMS

6. BUILDING SYSTEMS

6.1 ARCHITECTURAL DESCRIPTION

Wittich Hall, formerly known as the Physical Education Building at the La Crosse Normal School located in La Crosse, Wisconsin, was the second building constructed on campus. Still standing today in the center of the University of Wisconsin-La Crosse, it remains one of three originally constructed facilities along with Graff Main Hall to the south and Morris Hall to the southwest. As the only elevated site on campus, the building sits atop a hillside along the eastern edge of the future campus mall.

Originally designed by the La Crosse firm Parkinson & Dockendorff, Wittich Hall is a three-story above grade structure designed in a Collegiate Gothic style. Its ornate stone detailing make it one of the most unique buildings on campus.

Wittich Hall was designed in the Collegiate Gothic style and is a strongly rectilinear structure with a three-story massing. The exterior features a unique fenestration pattern with a blend of single, double, and quadruple window units, allowing for an abundance of natural light to enter the interior. The exterior's overall design employs a columnar motif of base-shaft-capital for vertical organization, and its decorative details are inspired by the Collegiate Gothic style.

The positioning of Wittich Hall provides for four primary facades and the structure currently has multiple entrances. The east entrances nearest East Avenue provide the closest access to parking and are also the primary entrance for the public. The west entrances serve off of a primary quad located between Wittich Hall and Centennial Hall. The west entrances will eventually serve as the most used entrances for the building as they will connect the academic functions of Wittich Hall to the administrative functions of Main Hall to the south.

6.1.1 ARCHITECTURAL INTEGRITY

Overall, Wittich Hall appears to be in good physical condition. The exterior and interior masonry walls show no signs of distress. Modifications to exterior windows and an introduction of suspended ceilings in various spaces are the only interventions to the structure itself. Modifications were made to the entrances in 1978 and an elevator was added in the central lobby area.

While the available drawings and photographs have guided this team into certain areas of focus, other areas or features have been or may be uncovered as the project moves forward and additional resources are explored. There are a number of items that appear to have limited documentation, including the glass block windows, tiered seating at the track, and various window sash replacements. Because these items are being removed entirely, additional research is unnecessary.

6.1.2 SITE

Wittich Hall, the second building constructed at the University of Wisconsin-La Crosse and one of three remaining historic structures, is positioned at the center of campus sitting atop a slightly elevated site.

The site encompassing Wittich Hall has undergone major changes since the early years of the La Crosse Normal School. Originally, Wittich Hall was surrounded by the streetscapes of 17th Street to the west, Pine Street to the north, the Green Bay & Western Railway to the east, and Graff Main Hall to the south. Residential neighborhoods once located to the north and east of Wittich Hall have since been acquired by UW-La Crosse. The greenspace between Wittich Hall and Centennial Hall is slated to become the main campus mall as outlined by the 2005 Campus Master Plan. Directly north of Wittich Hall, the science facility of Cowley Hall, constructed in 1963 and added to in 1968, remains as the campus' primary science building and will inevitably be razed and reconstructed as part of a two-phase project. Phase 1 of the science building project broke ground in the parking lot directly north of Cowley Hall in August 2016. Due east of Wittich Hall lies the central heating and cooling plant for the campus. Constructed in 1940, it replaced the original heating plant connected to Graff Main Hall as depicted in many of the historic photographs found in this report.

The positioning of Wittich Hall provides for five entrances. The east entrances allow the closest access to parking and are also the primary entrances for events held in the two gymnasiums. The west entrances serve off a proposed primary campus mall located between Centennial Hall and Wittich Hall. The south entrance functions as the primary connection point to Graff Main Hall directly to the south.

Today, the landscaping features surrounding Wittich Hall consist of shrubs, flowers, and planting beds. Tall trees have grown up around the building, making Wittich Hall difficult to see at many times of the year. These elements create a completely different appearance than the historic version of Wittich Hall.

Wittich Hall's raised entrances present unique challenges with regard to the building's accessibility. Currently, the accessible entrances are centrally located along the east and west sides of the building. These ramps were added in 1978 as an effort to make Wittich Hall accessible to all users.

The existing campus utility plan identifies one storm drain connection from Wittich Hall to the existing utility network. The storm service exits the building on the west side near the south entrance. Campus has verified that these connections are still in use and functioning. There are currently three water services to Wittich Hall. Two 4" lines are located on the north end and one 4" line is located on the south end. Two sanitary sewer lines serve Wittich Hall. One is located on the north end and the other on the south end of the building. Steam service is currently located at the south end of the building and is connected to Graff Main Hall. There is currently no chilled water service to Wittich Hall. The IT service enters the building at the far southeast corner and is routed to an MDF room located in the Lower Level. The power service enters the building at the far southeast corner.

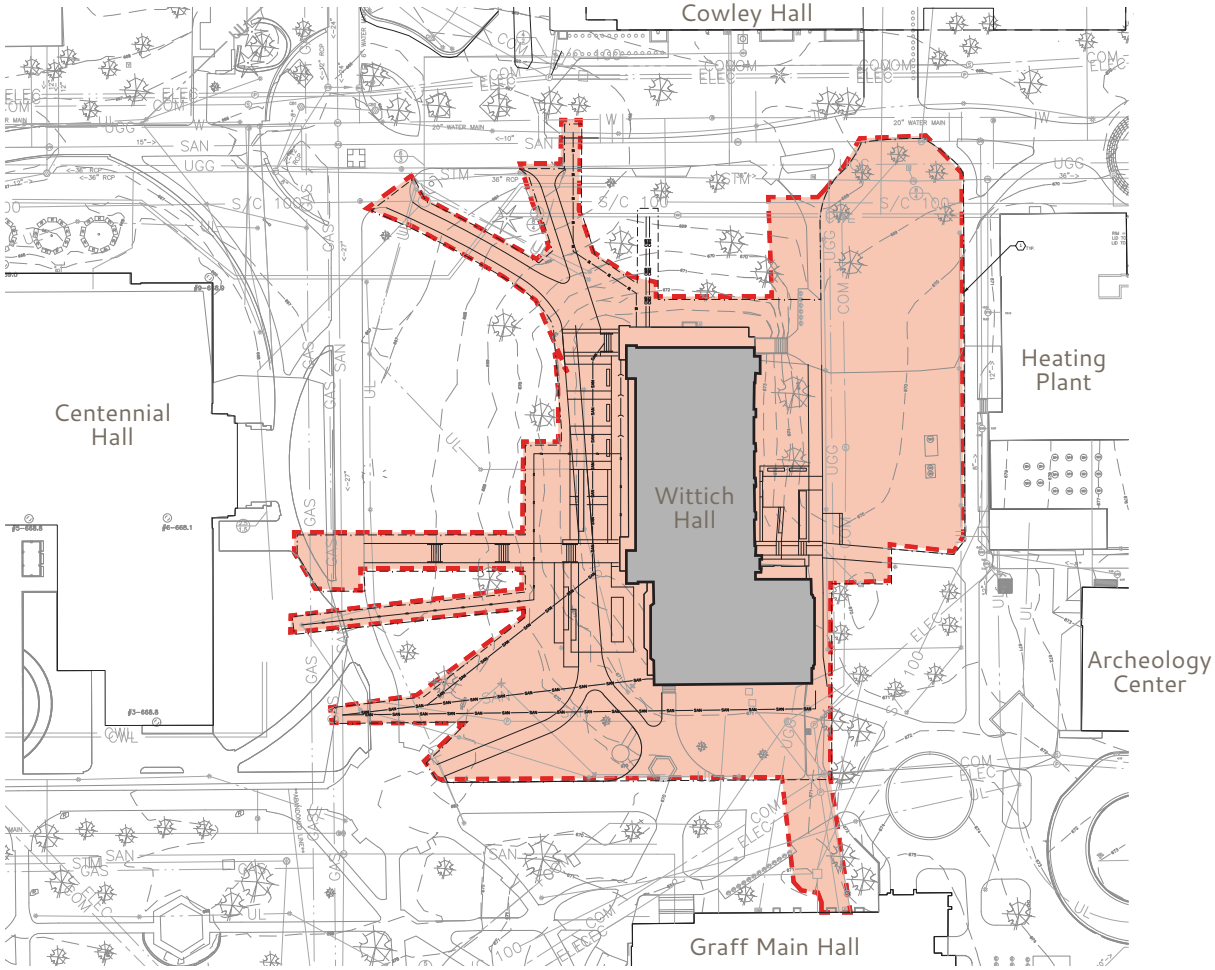


Figure 6.1-1: Proposed Site Disturbance Area

6.1.3 EXTERIOR CHARACTER

Wittich Hall has retained almost all of its original architecture over the nearly 100 years of its existence. This façade exemplifies the Collegiate Gothic style of the building with its vastly detailed entrances at the northwest and southwest corners. These entrances mark the corners of the original 1916 building and are marked with original engravings of "Physical Education" along with newer engravings of "Wittich Hall". The elaborate stone carving at the parapets enhances the overall character of the building.

The façade features two main materials, clay brick and limestone paneling and trim. The brick on both the 1916 and 1930 portions of the building is in good condition. The joints appear to be stable while some areas appear to have been pointed over the course of the building's lifespan. There is a noticeable difference in color between the brick colors of the two portions of the building and upon further review, the brick appears to be of a different style. Intricate detailing over the pointed arched windows of the 1930 addition appears to be in good condition. Steel lintels placed over the windows appear to be stable with little to no signs of movement where the lintel bears on the masonry jambs.

About 50% of the original windows to Wittich Hall remain and are in need of repair. Over time, the remaining 50% of windows have been replaced with glass block infill. Most of the original window units were double-hung or pivoting windows with divided lights. Renovations will include replacement of glass block units with new units that mimic the original character.

6.1.4 INTERIOR PARTITIONS

Solid Partitions

Typical solid partition construction will be 5/8" gypsum wall board on metal studs. Finished surfaces of gypsum wall board will have a level 4 finish with one coat of primer and two finish coats of latex paint.

Sound-transmission-mitigating partitions

Gypsum wall board along corridors and in classrooms and other heavy-use areas shall be abrasion resistant. Partitions separating classrooms, computer labs, offices, conference rooms, toilet rooms and meeting rooms from other rooms of the same type or corridors shall be constructed with sound attenuating batts and shall achieve a minimum STC rating of 55.

All sound-transmission-mitigating partitions shall extend from the floor to the bottom of structure above, and shall be acoustically sealed.

Where sound-transmission-mitigating partitions intersect with perpendicular running ductwork, sound attenuation baffles shall be installed within the ducts to reduce sound transmission.

Where sound-transmission-mitigating partitions intersect with a parallel running duct or other sound transmitting feature, partitions shall be offset above the ceiling plane to allow for complete construction of the wall assembly on one side of the duct or feature.

Wall protection

In classrooms, computer labs, conference rooms and rooms with moveable furnishings, protective chair rails are to be provided.

In high traffic areas, such as corridors, hallways and lobbies, other than in areas where historic detailing is being restored or preserved, type 304 stainless steel corner guards with countersunk oval head screws are to be provided.

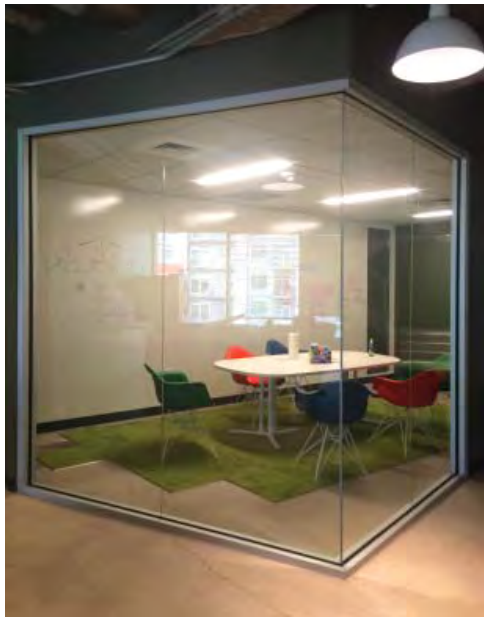


Figure 6.1.4-1: Glazed Partition Example

Glazed partitions and borrowed lights

Typical glazed partitions or borrowed lights shall be anodized aluminum storefront systems with 1-3/4" x 4-1/2" framing. Glazing shall be clear, tempered glazing, center glazed, 3/8" thick minimum. Vertical panel joints in glazing shall be without mullions except at doors or at the perimeter. Joints between glazing panels shall be filled with a clear rubber gasket or clear silicone caulking. (Refer to figure 6.1.4-1)

6.1.5 DOORS

Interior Solid Core Flush Doors

1-3/4" thick solid core doors with natural wood veneer face panels finished with a semi-transparent oil-based stain and a clear top coat. Typical width of doors will be 3'-0"; typical height will vary.

Latch-sets will be lever operated, heavy-duty mortise type units, compatible with campus standards for keying. Material will be chrome-plated brass with satin finish or stainless steel with satin finish. Typical lock function will be "classroom style."

Hinges: Heavy Duty stainless steel hinges; Five knuckle, full mortise type with non-removable pin.

Provide concealed overhead stops where applicable; provide cam-action door closers with internal stops where applicable.

Provide fire rated door and frame assemblies at shaft walls, fire barriers or where specified by code.

Provide vision lights in doors that are part of the means of egress; vision light size must comply with table 715.5.4 in the IBC, based on door rating.

Interior Aluminum Entrance Doors

Interior aluminum entrance doors shall be narrow stile aluminum doors with a clear anodized finish with clear, tempered glazing.

Closers and hold-opens shall be provided at all interior aluminum entrances.

Where latching or security is required, doors shall be provided with mortise-style deadlatches or latch bolts with lever style operators on both sides. Classroom style operation is preferred.

Exterior Entry Doors

Solid wood doors with aluminum clad exteriors; three-quarter lights with clear insulated glass; to match original exterior entry door design.

6.1.6 - WINDOWS

Exterior Replacement Window Units (Where Applicable)

Window units constructed of a wood interior with a metal clad exterior matching the original sizes, profiles, and muntin patterns will be used; true divided lights.

Provide clear, insulated glazing units.

Windows at exterior walls will be provided with clutch-driven roller shades.

Exterior window glazing will follow DFD standards for daylighting.

6.1.7 CEILINGS

General Ceilings

Minimum Height of ceilings 8'-0."

Careful coordination and layout efforts of above ceiling mechanical systems will maximize available ceiling heights, with a target of 10'-0" in large meeting rooms and academic spaces not located on the Lower Level.

Provide hard ceilings in all restrooms.

Suspended Ceilings

Areas with suspended ceilings will have 2'x2' grid modules, 9/16" track, and tegular edge tiles with a minimum NRC of .70.

Third floor ceilings

Enclosed offices, workrooms, resource rooms and storage rooms on the Third Floor will be built with a dust cap built below the bottom chord of the existing trusses structuring the roof.

Dust cap construction: exposed select grade pine 2x8 framing with blocking and acoustic batts at edges between adjacent spaces; provide light gauge metal deck above framing; set in acoustic felt blankets between framing members.

Plaster Ceilings

Portions of existing plaster ceilings in entrance lobbies and stairwells may be restored and repaired.

6.1.8 FLOORING

Public Circulation

First Floor and Lower Level public circulations spaces will have terrazzo floors.

Stairwell lobbies and hallways adjacent to restrooms will have porcelain tile floors or terrazzo floors.

Textured, laminated glass will be used at bridge elements to allow the passage of light.

Offices

Office suites will have high traffic, backed commercial carpet tile installed with removable adhesive; provide toeless rubber base.

Classrooms

Classroom areas will have high traffic, rubber backed commercial carpet tile installed with removable adhesive; provide toeless rubber base.

Textured, laminated glass will be used at bridge elements to allow the passage of light.

Restrooms

Restrooms will have porcelain tile floors.

6.1.9 CASEWORK

Cabinet Construction

Cabinets to be constructed to industry standards.

Provide doweled and clamped construction.

Provide high pressure laminate finishes on exterior, white melamine interior.

Counter top construction

Typical counter top construction: high pressure horizontal grade laminate.

Conference Room counter top construction: solid surface material or quartz.

Grommets to be provided where counter top equipment or technology cables pass beneath the counter to receptacles or other equipment.

6.1.10 RESTROOMS

Restrooms shall have porcelain tile wall finishes; full height.

Toilet partitions shall be HDPE partitions made of recycled material.

Handwashing stations shall be integral cast quartz units with integrated soap dispensers and hand driers.

All restrooms to have gypsum wall board hard ceilings with recessed lighting.

Provide automatic door operators at all restrooms.

Provide baby-changing stations with stainless steel finish at gender-neutral bathrooms.

6.1.11 SIGNAGE

Provide interior room signage, directories, and wayfinding graphics throughout the building.

Digital signage will be considered in main corridors and lobby spaces and is further described in Section 6.9.

Existing exterior building signage to remain.

6.1.12 TECHNOLOGY LEVELS

Audiovisual technology will be described in the A/V section of this document and in the individual room data sheets.

6.2 STRUCTURAL SYSTEMS

6.2.1 STRUCTURAL EVALUATION – OVERVIEW

The building was originally built in 1916 as the Physical Education Building. The building measures approximately 140 feet by 69 feet. The structure is a combination of concrete and steel framing. Foundations are concrete spread footings and continuous wall footings.

In 1930, an addition was made to the original building. This addition housed the swimming pool and gymnasium. This addition measures approximately 63 feet by 93 feet. The structure is a combination of concrete and steel framing. Foundations are concrete spread footings and continuous wall footings.

In 1978, a remodeling was done and as part of the scope of that project, the pool in the original building was filled with dry sand and a concrete slab was poured over the top.

1916 Building – Structural Systems

Lower Level

From the existing plans, the ground floor slab on grade appears to be 3". Reinforcement was not specified.

First Floor

The First Floor framing consists of a concrete pan joist with a clay tile form and 2" concrete slab with an approximate 3" cinder concrete topping. The depth of the clay tile varies from 4" to 6". The concrete joists are supported on bearing walls and concrete beams and columns.

Second Floor

The Second Floor framing consists of a concrete pan joist with a clay tile form and 2" concrete slab with an approximate 3" cinder concrete topping. The depth of the clay tile varies from 6" to 10". The concrete joists are supported on bearing walls and concrete beams and columns.

Third Floor

The Third Floor framing consists mostly of 5" solid concrete slab and concrete beams for the upper part of the gymnasium including the running track and seating area. There are no interior supports for this framing and all the load is transferred to the exterior load bearing walls. The center of this floor is open to the main gymnasium floor below. The floor at each end of the gymnasium is of a concrete pan joist with a 6" clay tile form and 2" concrete slab with an approximate 3" cinder concrete topping. The concrete joists are supported on bearing walls and concrete beams and columns.

Roof

The roof over the gymnasium is framed with steel trusses and a concrete pan joist system with 7" clay tile and a 2 ½" concrete slab. The roof on either side of the gymnasium is a concrete pan joist with 4" tile and a 2" concrete slab.

1930 Building – Structural Systems

Lower Level

From the existing plans, the ground floor slab on grade appears to be 4" with a 1" cement finish. Reinforcement was not specified.

First Floor

The First Floor framing consists of a concrete pan joist with a clay tile form and 2" concrete slab. The depth of the clay tile varies from 3" to 8". The concrete joists are supported on bearing walls and concrete beams and columns. The pool is a cast concrete structure with 16" thick walls and an 8" concrete slab on grade. There is also a cast-in-place concrete seating area supported by concrete beams and columns.

Second Floor

The Second Floor framing consists of a concrete pan joist with a clay tile form and 2" concrete slab. The depth of the clay tile varies from 6" to 8". The concrete joists are supported on bearing walls and concrete beams and columns. The beams over the pool area are steel beams enclosed in 1 1/2" of concrete and nested with ¼" diameter bars. The beam sizes are approximately 24" deep and weigh 141 pounds per foot.

Roof

The roof over the gymnasium is framed with steel trusses and steel channels and decking.

Exterior

The outside facade for both buildings consists of brick masonry and cut stone.

6.2.2 EXISTING LOADING

There were no design loads indicated, nor were there any allowable or presumptive soil bearing pressures indicated on the original 1916 drawings or the 1930 addition drawings.

Although no loads were indicated in the either set of drawings, an approximation of the design loads used at the time was obtained from the Industrial Commission of Wisconsin – Building Code - 1915.

From the Part IV – Structural Design, it can be surmised that the following loadings are appropriate during the time of design of the building.

Existing Loading	
1. Office	
First Floor	100 psf
Upper Floors	60 psf
2. School Buildings	100 psf
Classrooms	60 psf
Corridors, laboratories, etc	80 psf
3. Assembly Areas	120 psf
4. Roofs	30 psf
5. Wind Pressure	30 psf

Figure 6.2.2-1: Existing Loading

6.2.3 NEW LOADING

The new design will follow the requirements of the International Building Code (IBC) and the ASCE 7 – Minimum Design Loads for Buildings and other Structures.

New Loading	
First floor public areas and corridors	100 psf
Corridors - upper levels	80 psf
Classroom - all levels	40 psf
Mechanical - as required by equip. but not less than	100 psf

Wind and Seismic: per requirements of ASCE 7 (American Society of Civil Engineers).

Snow loading: per requirements of ASCE 7. LaCrosse area ground snow load – 40 psf.

Figure 6.2.3-1: New Loading

6.2.4 FLOOR FRAMING MODIFICATIONS

To accommodate the new program space for this existing facility, each level had to be carefully evaluated. It is critical to understand the load path for each slab, beam, column and wall.

The removal of the existing pools and interior bearing walls in the Lower Level requires a significant demolition of the First Floor in both the original building and 1930 addition. In the 1930 addition, the concrete seating will also be demolished. As a result of the removal of all the existing slabs, new floor systems will need to be designed.

The new layout of the Lower Level will require additional changes with the structure as the floor to floor height is limited. The preferred option to accommodate a relatively long span while also being relatively lightweight is to utilize steel beam, metal deck and concrete topping construction. The design of the new floor will also account for the new openings in the floors.

The Second Floor structure in each building will remain mostly untouched. In the original building there will be two floor infills where the existing stairs are being removed. Four existing beams will need to be structurally upgraded to carry the loads of the new floor above. A large portion of the existing south chase wall is being removed. To support the floor and walls above after the removal of the chase wall, new beams and columns will need to be designed. In the 1930 addition, new shafts will be added for mechanical chases and stairs.

The Third Floor will be new structure with the exception of the north and south end of the original building. In those areas, there will be two floor infills where the existing stairs are being removed. A large portion of the existing south chase wall is being removed. To support the roof above after the removal of the chase wall, new beams and columns will need to be designed. The existing running track is being removed to accommodate a new Third Floor. Portions of the existing running track will be salvaged and re-used to build the new bridge in the center of the floor space. The bridge will be suspended from the trusses above (similar in detailing to the original running track suspension design).

The layout of the new Third Floor will pose the same challenges as the floor system at the First Floor. Due to the limited floor-to-floor height. The new floor systems will be designed using steel beams, metal deck and concrete topping.

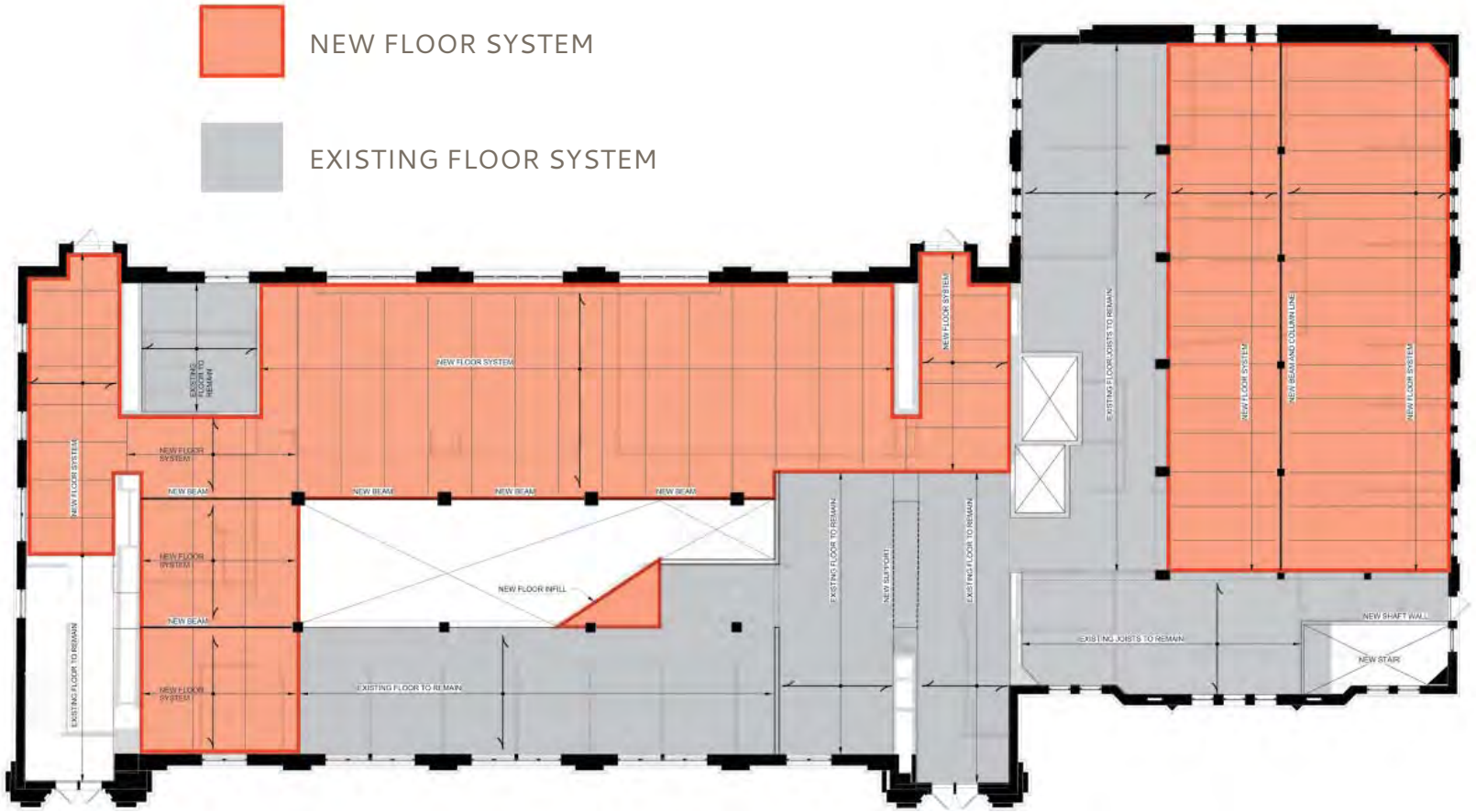


Figure 6.2.4-1: First Floor Structural Diagram

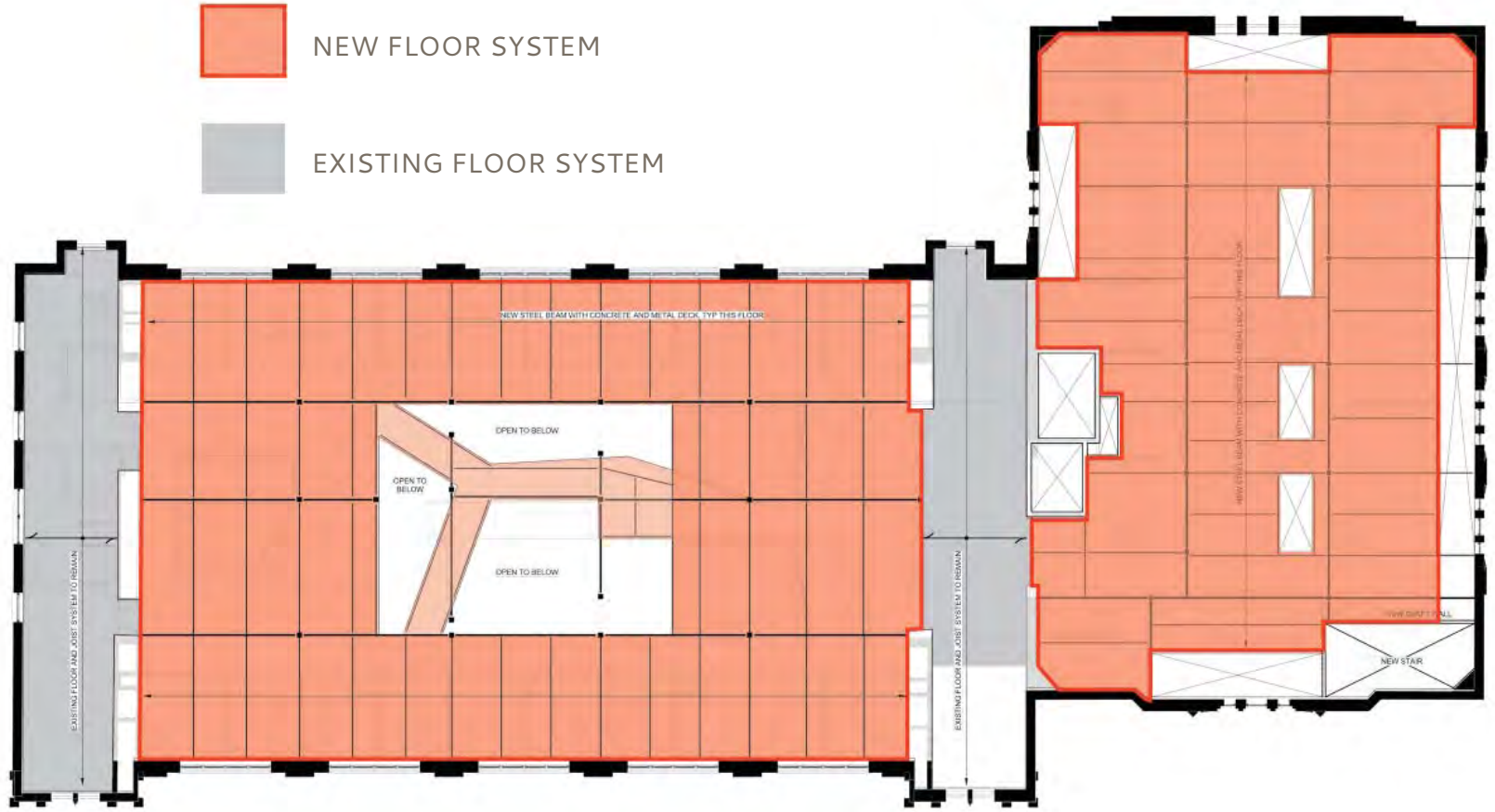


Figure 6.2.3-2: Third Floor Structural Diagram

6.3 FIRE PROTECTION SYSTEMS

6.3.1 APPLICABLE CODES, GUIDELINES, AND STANDARDS

The fire protection systems will be designed in accordance with the following codes, guidelines and standards:

NFPA 13, Installation of Sprinkler Systems, latest edition.

NFPA 14, Installation of Standpipe and Hose Systems, latest edition.

NFPA 20, Installation of Stationary Pumps for Fire Protection, latest edition.

NFPA 45 Standard for Fire Protection for Laboratories Using Chemicals.

NFPA 70, National Electric Code, latest edition.

NFPA 72, National Fire Alarm Code, latest edition Local and State Codes.

6.3.2 SYSTEM DESCRIPTIONS

Fire Protection Water Service

The new combined domestic water and fire protection water service will feed the new fire protection system.

A double check backflow prevention assembly will be provided on the water supply to the fire protection system.

Wet Pipe Sprinkler System

The building will be protected throughout with an automatic sprinkler system.

Design Criteria:

The sprinkler system shall be designed and installed in accordance with NFPA 13.

All systems to be hydraulically calculated with a computer calculation program using the Hazen-Williams method. The pipe sizing for the systems will be as required to satisfy the hydraulic demand, but the velocity in any portion of the system shall not exceed 20 fps.

Areas designated as Light Hazard Occupancy will be designed for a minimum sprinkler flow of 0.10 gpm per sq. ft. over the hydraulically most remote 1500 sq. ft.

Areas designated as Ordinary Hazard, Group 1 will be designed for a minimum sprinkler flow of 0.15 gpm per sq. ft. over the hydraulically most remote 1500 sq. ft.

Areas designated as Ordinary Hazard, Group 2 will be designed for a minimum sprinkler flow of 0.20 gpm per sq. ft. over the hydraulically most remote 1500 sq. ft.

Minimum water supply requirements for a hydraulically designed sprinkler system shall be determined by adding the appropriate hose stream demand per NFPA 13 to the total sprinkler water demand.

Each building floor is a separate sprinkler zone with floor control valve, supervisory switch, and water flow indicator switch.

Wiring from supervisory switches and flow switches are extended to and connected to the building fire alarm panel.

Materials:

The piping for the wet pipe sprinkler system will be black steel. Piping 2" and smaller in size will be Schedule 40 with threaded joints. Piping larger than 2" will be Schedule 40 with welded, threaded, or cut groove couplings.

Unscheduled specialty steel and CPVC plastic piping is not allowed.

Flexible sprinkler connectors are allowed.

Quick response fusible link or glass bulb sprinklers, UL listed / FM approved. Provide ordinary temperature rated sprinklers except at skylights, adjacent to unit heaters, and adjacent to un-insulated heating piping.

Standpipes

Manual wet standpipes will be located in stairwells and will be provided with fire department hose connections.

Manual wet standpipes are designed to utilize the La Crosse Fire Department pumper truck capabilities and will eliminate the need for a fire pump.

6.4 PLUMBING SYSTEMS

6.4.1 APPLICABLE CODES, GUIDELINES AND STANDARDS

The piping systems will be designed in accordance with the following codes, guidelines and standards:

SPS 381-387 Wisconsin Plumbing Code, latest edition.

NFPA 45 Standard for Fire Protection for Laboratories Using Chemicals.

NFPA 54 National Fuel Gas Code.

6.4.2 SYSTEM DESCRIPTIONS

Sanitary Drain Waste and Vent

System Description

A sanitary drain waste and vent system will be provided for all plumbing fixtures, floor drains, indirect waste receptors, and equipment that require drainage. Plumbing fixtures and devices will be drained by gravity through a conventional drain, waste and vent stacks, the sanitary building drains and building sewers to the municipal sewer.

All the new plumbing fixtures throughout the building will have new sanitary and vent pipe connected to them. All the sanitary and vent piping below the Lower Level floor will be new.

Design Criteria

The sanitary drainage system will be pitched to maintain flow at a minimum velocity of 2 fps.

Piping 2" and smaller shall be pitched at 1/4" per foot.

Piping 3" and larger shall be pitched at 1/8" per foot.

Every trap and trapped fixture shall be vented so that the water seal of the trap shall be subject to a maximum pneumatic pressure differential of one inch water column.

Equipment and Material

Above ground sanitary waste and vent piping will be hubless cast-iron pipe, ASTM A888, with heavy duty stainless steel couplings.

Harmful or hazardous wastes (including soil or sediment) will run through proper interceptors, constructed of appropriate materials, and will discharge into the sanitary system.

Floor drains will be provided with automatic trap primers or other means to maintain a water seal when subject to loss of trap seals due to evaporation.

Piping cleanouts will be provided as per code and cleanouts on below floor waste piping will be turned up so as to be accessible from the floor above.

Storm and Clearwater Waste and Vent

System Descriptions

The existing storm drainage system, including roof drains, will be replaced with new. This system will convey rainwater from the roof of the building to site storm sewers. Roof will be drained by gravity through storm building drains and building sewers to the site storm sewers or municipal sewer.

Any modifications to the floor plans that require rerouting of the storm water risers will be made. The underfloor storm pipe will be replaced with new.

Clearwater waste from air handling units, ice machines, etc. will be conveyed by gravity through a separate drain and vent piping system and will connect to the building storm drainage system.

Elevator Sump Pumps: Elevator sump basin and pumps will be provided in any new elevator system.

Design Criteria

The storm drainage system will be sized based on a maximum rainfall rate of 3 in/hr, which corresponds to a 100 year, 60 minute rainfall.

The storm drainage system will be pitched to maintain flow at a minimum velocity of 1 fps when flowing full. Minimum pitch shall be 1/16" per foot.

The clearwater waste drainage system will be pitched to maintain flow at a minimum velocity of 2 fps. Minimum pitch shall be 1/8" per foot.

Materials

Above ground storm and clearwater waste and vent piping will be hubless cast-iron pipe, ASTM A888, with heavy duty stainless steel couplings.

Roof drain bodies and above ground horizontal storm and clearwater waste piping will be insulated.

Domestic Water Service

System Description

Potable water will be supplied throughout and an all-new domestic water supply system will be provided in the building.

Design Criteria

The water service will be designed to provide water to the building's fixtures and equipment at a minimum pressure of 30 psig.

Equipment and Material

A new water meter will be provided at the building entrance. The water meter will be sized for the building's design flow and maximum allowable pressure drop.

The new combined domestic water and fire protection water service for the building will be ductile iron with mechanical joints.

Domestic Water Distribution

System Description

Domestic hot and cold water piping will be provided to serve all new plumbing fixtures and any other devices and equipment that require a domestic water supply from the building's domestic water system.

Design Criteria

The piping will be sized to limit the velocity in any section of the system to a maximum of 8 fps.

Maximum pressure of 80 psi.

Minimum available pressure at the most remote fixture of 30 psi.

Hot water temperatures to all sections of the building shall be limited to not exceed 125˚F.

Equipment and Material

The existing water heating system will be replaced with a new steam fired semi instantaneous domestic water heater system.

The existing water softener will be replaced with a new metering controlled water softening system.

Hot water system temperature will be maintained by a new hot water re-circulation system.

Water hammer arrestors will be provided at all solenoid valves and at other potential sources of water hammer.

The domestic hot and cold water systems will be Type L copper tube with wrought copper fittings and soldered joints. Solder will be lead-free, 95-5 type solder.

Copper mechanical grooved fittings and couplings on roll grooved pipe may be used in lieu of soldered fittings.

Mechanically formed brazed tee connections may be used in lieu of specified tee fittings for branch takeoffs up to one-half (1/2) the diameter of the main.

Copper press fittings shall conform to the material and sizing requirements of ASME B16.18 or ASME B16.22. O-rings for copper press fittings shall be EPDM.

The water system piping will be insulated with fiberglass pipe insulation.

Isolation valves will be provided at all riser connections, branch piping connections to fixture groups, and at each plumbing fixture.

Non-Potable Water Systems

System Description

Non-potable water system will provide make-up water to mechanical (HVAC) systems.

Design Criteria

The piping will be sized to limit the velocity in any section of the system to a maximum of 8 fps.

Equipment and Material

Water hammer arrestors will be provided at all solenoid valves and at other potential water hammer sources.

Pressure reducing valves will be provided as required for equipment.

The non-potable water system will be Type L copper tube with wrought copper fittings and soldered joints. Solder will be lead-free (< .2%) type solder.

The non-potable water system will be insulated the same as the domestic water system.

Plumbing Fixtures and Specialties

Design Criteria

Water closets will be 1.28 gal per flush, wall mounted, white vitreous china with manually operated flush valves.

Urinals will be 0.13 gal per flush, wall mounted white vitreous china with hard wired sensor operated flush valves.

Lavatory faucets will be manually operated and flow controlled to 0.5 gallon per minute.

Sink faucets will be manually operated and flow controlled to 1.5 or 1.6 gallons per minute.

Cold water hose bibs and floor drains shall be furnished in all multiple fixture toilet rooms.

Manufacturers: Fixture descriptions establish fixture type, quality, materials, features and size. Products of the following manufacturers determined to be equal by the Architect/Engineer will be accepted.

Floor, Hub, & Roof Drains: Josam, J.R. Smith, Wade, Watts, Zurn.

Cleanouts: Josam, J.R. Smith, Wade, Watts, Zurn.

Water Hammer Arrestors: PPP Industries, Sioux Chief, Watts.

Vacuum Breakers & Backflow Preventers: Watts, Wilkins.

Grease Interceptors: Josam, J.R. Smith, Schier, Wade, Zurn.

Vitreous China Fixtures: American-Standard, Kohler, Sloan, Toto, Zurn.

Electric Water Coolers: Elkay, Oasis, Halsey-Taylor, Haws.

Carriers and Supports: Josam, J.R. Smith, Wade, Watts, Zurn.

Stainless Steel Sinks: Elkay, Just.

Mop Basins: Fiat, Mustee.

Faucets: Chicago Faucet, Speakman, Zurn.

Flush Valves: Sloan, Zurn, Delaney.

Hose Bibbs & Wall Hydrants: Chicago Faucet, Watts, Woodford, Zurn.

6.5 MECHANICAL SYSTEMS

6.5.1 SUMMARY OF MECHANICAL SYSTEM

In general, the mechanical system goals for this project are environmental comfort and quality, energy conservation, and sustainability. All proposed HVAC systems will be designed in accordance with DFD Standards and Guidelines.

6.5.2 APPLICABLE CODES AND STANDARDS

- International Building Code (IBC) – 2009 as adopted by the State of Wisconsin.
- International Existing Building Code (IEBC) – 2009 as adopted by the State of Wisconsin.
- International Energy Conservation Code (IECC) – 2009 as adopted by the State of Wisconsin.
- International Mechanical Code (IMC) – 2009 as adopted by the State of Wisconsin
- International Fuel Gas Code (IFGC) – 2009 as adopted by the State of Wisconsin.
- State of Wisconsin, DOA, Division of Facilities Development, HVAC Design Guidelines
- State of Wisconsin, DOA, Division of Facilities Development, Energy Design Guidelines.
- State of Wisconsin, DOA, Division of Facilities Development, Daylighting Standards.
- State of Wisconsin, DOA, Division of Facilities Development, Sustainable Facilities Standards.
- Wisconsin SPS 341 – Boilers and Pressure Vessels.
- Wisconsin SPS 345 – Mechanical Refrigeration.

6.5.3 DESIGN CRITERIA

Temperatures	
Outside Design Conditions	
Summer	90°F Dry Bulb
	73°F Wet Bulb
Winter	-25°F Dry Bulb
Inside	
Office Spaces, Conference Rooms, Administrative Support Area and Classrooms	
Summer	
Dry Bulb	76°F
Relative Humidity	50% r.h. +-5%
Winter	
Dry Bulb	68°F
Relative Humidity	No humidification provided
Telecommunications and Server Rooms:	
Summer	
Dry Bulb	77°F (per BICSI guidelines)
Relative Humidity	No humidification provided
Winter	
Dry Bulb	68°F (per DSF HVAC Guidelines)
Relative Humidity	Not controlled
Electrical Rooms and Mechanical Rooms:	
Summer	
Dry Bulb	100°F (No mechanical cooling)
Relative Humidity	No specific control
Winter	
Dry Bulb	65°F
Relative Humidity	Not controlled

Figure 6.5.3-1: Mechanical Design Criteria - Temperatures

Miscellaneous Design Parameters	
Internal Loads and Ventilation Rates	
Office Spaces and Administrative Support Areas	
People	
Number	125 sf per person
Sensible Heat	250 Btu/h per person
Latent Heat	200 Btu/h per person
Lighting	1.0 watts per square foot maximum
Equipment	1.5 watts per square foot
Ventilation Rates	7.5 cfm per person
Conference Spaces	
People	
Number	20 sf per person
Sensible Heat	250 Btu/h per person
Latent Heat	200 Btu/h per person
Lighting	1.0 watts per square foot maximum
Equipment	1.5 watts per square foot
Ventilation Rates	7.5 cfm per person
Classrooms	
People	
Number	30 sf per person
Sensible Heat	250 Btu/h per person
Latent Heat	200 Btu/h per person
Lighting	1.0 watts per square foot maximum
Equipment	1.5 watts per square foot
Ventilation Rates	7.5 cfm per person

Figure 6.5.3-2: Mechanical Design Criteria – Misc. Design Parameters

Telecommunications and Server Rooms	
People	
Number	0
Sensible Heat	N/A
Latent Heat	N/A
Lighting	1.0 watts per square foot maximum
Equipment	To be determined based on actual equipment in room
TR Rooms	9,600 Btu/h
MTR Rooms	19,200 Btu/h
Ventilation Rates	0 cfm per person (rooms are considered unoccupied)
Electrical Rooms and Mechanical Rooms	
People	
Number	0
Sensible Heat	N/A
Latent Heat	N/A
Lighting	1.0 watts per square foot maximum
Equipment	To be determined based on actual equipment in room
Ventilation Rates	0 cfm per person (rooms are considered unoccupied)

Noise Criteria	
Office Spaces and Administrative Support Areas	NC ≤ 35
Conference Spaces	NC ≤ 30
Classrooms	NC ≤ 30
Telecommunications and Server Rooms	N/A
Electrical Rooms and Mechanical Rooms	N/A

Figure 6.5.3-3: Mechanical Design Criteria – Noise Criteria

Infiltration

The building HVAC load calculations will include an infiltration load.

Summer (10 mph wind; average construction): 0.10 cfm per square foot of wall area.

Winter (15 mph wind; average construction): 0.18 cfm per square foot of wall area.

The infiltration load for entrance doors will be 200 cfm per door.

Heated Only Spaces

The following spaces will be heated only:

- Staircases.
- Vestibules.

The following spaces will be heated and ventilated only:

- Janitor Rooms.
- Toilet Rooms.
- Unoccupied Storage Rooms.
- Mechanical and Electrical Rooms.

Air Conditioned Spaces

Corridors and spaces that are regularly occupied will be heated and air conditioned. Examples of these spaces include classrooms, computer labs, offices, conference rooms, collaboration spaces, and support spaces.

No provisions are being made for future expansion of this building.

6.5.4 CHILLED WATER SYSTEM

Refer to Section 6.9.4 Site Utilities.

6.5.5 COOLING SYSTEMS

The campus utilizes the central plant secondary pumps to distribute chilled water throughout the buildings on campus. Tertiary pumps are not required and will not be provided by this project.

The central air-handling equipment will be furnished with chilled water coils. The chilled water piping will remain charged (full) throughout the year; however, coils will be drained and dried via connection to the high pressure side of air handling system. It is anticipated that the proposed project will require approximately 230 tons of cooling capacity.

6.5.6 SITE STEAM AND CONDENSATE SYSTEMS

Refer to Section 6.9.4 Site Utilities.

6.5.7 BUILDING HEATING SYSTEMS

A steam pressure reducing station will reduce the high pressure steam 100 PSIG to a nominal 10 PSIG for use in the building utilizing a 1/3-2/3 arrangement with a safety valve downstream of the station.

Low pressure steam will be extended to the new steam-to-water heat exchanger in Mechanical Room.

Condensate will be collected into a single condensate receiver located in Mechanical Room in the Lower Level. The condensate receiver will be equipped with duplex pumps and pump condensate back to the central plant. The condensate pumps will be on the emergency power system.

Condensate flow back to the plant will be measured as it leaves the building.

A single steam-to-water shell and tube heat exchangers will use steam to generate building heating water. The hot water pumping system will utilize variable volume pumping. Two hot water circulating pumps (one of them standby) will distribute hot water to air handling unit coils, reheat coils, finned tube radiation, and unit heaters. Hot water temperature will be reset down based on an increase in outside air temperature. The hot water heating pumps will be on the emergency power system.

The hot water heating system will utilize a combination pot feeder / bag filter piped in a bypass arrangement around pumps.

6.5.8 VENTILATION DESIGN CRITERIA

Ventilation air through intake louvers will be ducted to the air handling unit. Ductwork will be designed for proper mixing of outdoor air and return air so that stratification does not occur before the air handling unit heating coils. The outdoor and relief air distribution systems will be sized to utilize a full economizer (free cooling) mode of operation when outdoor air conditions permit.

Outside air louvers will be sized at a maximum of 500 fpm of the net free area. Duct connections to the outside air plenums will be minimized to the greatest extent practical.

Minimum outside air requirements will meet or exceed the requirements of the Wisconsin Administrative Code, Chapter 64. Verification of the minimum outside air quantities will be done through use of airflow measuring stations located in the outside air intake ductwork.

Air flow measuring stations will also be provided in the supply and return air systems and will be used to maintain the building at a slight positive pressure at all times.

6.5.9 CENTRAL AIR HANDLING SYSTEMS

Demolition

The existing ventilation air handling system located in the First Floor mechanical room along with its associated ductwork, piping and controls will be removed.

The relief fan and ductwork systems in the Attic will be removed.

The packaged air handling units along with their associated ductwork, piping and controls located in the Third/Fourth Floor Stairwell mechanical space will be removed

New Construction

Lower Level, First Floor, Second Floor and Third Floor:

A new 50,000 cfm air handling system will be provided in a new mechanical to serve the Lower Level, First Floor, Second Floor, and Third Floor areas of the building. The overall Wittich Hall building area is 59,395 GSF. The system will be a variable air volume (VAV) system consisting of a packaged air handling unit with flat pre-filter section with MERV-A13 filters, bag filter section for future bag filters, pumped hot water heating coil, access section, chilled water cooling coil and fan section; inline return fan, duct mounted outside air, return air and relief air dampers.

The individual zones will be served by variable air volume terminal units with hot water reheat coils. Each classroom, conference room and office will be a separate zone. The VAV boxes will be ducted to ceiling mounted ceiling diffusers.

The majority of the horizontal distribution will occur on the First and Second Floor levels. No ductwork, piping or conduit crossings may occur in the Third Floor.

Return air will be ducted from each space back to the Lower Level mechanical room.

Air intake louvers, air intake control dampers on the outside air intake ductwork will be provided as required.

An exhaust fan will be provided to serve the toilet rooms and janitors closets.

6.5.10 AIR DISTRIBUTION

The proposed air distribution system is variable air volume with hot water reheat.

The supply, return, and exhaust air systems will be distributed using a fully ducted system constructed of sheet metal per SMACNA standards.

The acoustician is recommending that the first 5 feet of supply duct downstream of each VAV box be lined to achieve the acoustic requirements of many of the spaces. Other than the 5 feet downstream of the VAV boxes, no lining will be used in the supply air stream. The return and exhaust air ductwork system will be internally lined were necessary for acoustics only. The duct liner will be mat-faced type 1-1/2" thick. All transfer ducts located in sensitive areas will be lined for acoustics. Additional sound attenuation will be reviewed for critical spaces in the building such as conference spaces and tutoring areas.

All supply air ductwork systems will be externally insulated. In addition, all outside air, mixed air, return air ductwork in mechanical spaces and exhaust duct downstream of isolation dampers will be externally insulated.

6.5.11 TERMINAL HEATING DEVICES

The existing steam based terminal heating devices and piping will be removed.

Finned tube radiation or similar hot water heating terminal unit will be provided in all spaces with exterior exposures to improve occupant comfort and provide unoccupied heating of the building for shutdown of central air handlers when the building is unoccupied.

VAV boxes serving occupied spaces will be provided with reheat coils. VAV boxes will modulate from maximum to minimum airflow prior to opening the hot water valve to the reheat coils. A VAV box will be furnished for each thermostatic zone.

Each thermostatic zone will take into consideration exposure, occupancy schedule, and space use. Each classroom, private office and conference room will be a zone.

Cabinet unit heaters will be installed in entry vestibules and stairwells. Cabinet unit heaters will be hot water type with wall-mounted thermostat and be recessed or semi recessed into the wall whenever possible.

Unit heaters will be provided in mechanical rooms.

6.5.12 TELECOMMUNICATION ROOM SPACE CONDITIONING

The telecommunication rooms on each level will be provided with a ductless split system air conditioner to control the space temperature. This will allow the continuous cooling required for these spaces without having to operate the building main air handling units during building unoccupied periods. The condensing units for these systems will be located in the air handling unit mechanical spaces to allow continuous operation year-round.

6.5.13 MECHANICAL SPACE CONDITIONING

The new mechanical space will be provided with a mechanical ventilation system consisting of a constant volume supply fan with a mixing box and filter section and a variable volume relief fan. The system will utilize outdoor air to provide cooling as required. The supply fan mixing box will be controlled to maintain the require space temperature as the outside air temperature varies. The relief fan will be controlled to maintain the space pressure in relation to the adjacent occupied spaces.

6.5.14 EMERGENCY GENERATOR SYSTEM

New Work

The Graff Main Hall generator will be replaced with a new indoor, natural gas fired emergency generator to supply power underground to Wittich Hall.

The project will provide the engine exhaust from the generator and extend the engine exhaust up through the building and terminate above the roof. This will include the engine exhaust muffler and the engine manifold connectors. The engine exhaust stack will be provided with an inline expansion joint to account for the thermal expansion when the emergency generator is in operation.

Air intake louvers, air intake control dampers and air intake silencers on the outside air intake to the generator room will be provided. The intake louvers shall be sized for a maximum 250 fpm velocity through the free area of the louver to minimize snow and rain penetration in addition to minimizing the pressure drop through the louver. The outside air dampers will be provided with normally closed, fail open (spring return) actuation. On a loss of power, the outside air dampers shall open fully.

Exhaust/recirculating plenum and dampers on the discharge of the emergency generator engine mounted radiator will be provided. The exhaust dampers will be provided with normally closed, fail open (spring return) actuation. The recirculation damper will be provided with normally open, fail open (spring return) actuation.

The emergency generator room will be provided with an exhaust fan to continuously exhaust the room at a rate of a minimum 1 cfm per square foot. The make-up air for this exhaust will be transferred to the generator room through the penthouse mechanical room.

Hot water unit heaters will provide space heating as required.

6.5.15 TEMPERATURE CONTROLS

Demolition

All existing temperature controls will be removed from all areas of the building. The existing pneumatic air lines will be removed during demolition work. The existing control air compressor will be removed and turned over to the User Agency.

New Work

The new mechanical systems will be provided with new direct digital control (DDC) temperature controls with electric actuation. The DDC system will be integrated to the Campus building automation system through a Niagara based interface.

Direct digital controls with electric actuation will be used to control the air handling units, booster coils, VAV boxes, and wall fin.

The temperature control system and lighting will use a common occupancy sensor in all spaces except corridors, and lobbies. Upon receiving a signal from the occupancy sensor that the space is unoccupied, the VAV box will be allowed to go to further closed to its unoccupied minimum airflow. This will reduce fan energy, chilled water use, and re-heat energy use. This signal will also be used to reduce the amount of ventilation air being that is being introduced into the building when spaces are unused.

The temperature control system will use carbon dioxide (CO2) sensors in the large, densely occupied spaces to reduce the amount of ventilation air that is being introduced into the building when spaces are lightly occupied.

All cabinet unit heaters and unit heaters are to have electronic control.

All control valves and dampers are to have electric actuation.

Air handling units will be provided with economizer controls.

All temperature control systems will be on the emergency power system.

The DDC system will monitor critical plumbing systems and equipment. This would include but not limited to sump pump alarms, water heater status, etc.

The DDC system will also monitor critical electrical systems and equipment. This would include but not limited to electrical power usage, fire alarm system status, etc.

A minimum of 24 hours of temperature control training will be specified.

6.5.16 INDOOR AIR QUALITY

The new air handling systems will incorporate the following Indoor Air Quality (IAQ) features:

Supply air ductwork will only be lined in limited applications (typically 5' downstream of air terminal units).

Return and transfer ductwork will be lined only when necessary for acoustical purposes.

Air handling units will be specified with stainless steel drain pans that are pitched to the drain connection to ensure proper drainage.

Air handling units will be specified with double-wall construction.

Air handling units will be provided with MERV-A13 pleated filters and with the capability to add bag/cartridge filter.

All air terminal units (VAV Boxes) will be provided with hot water reheat coils to allow minimum airflows without overcooling spaces.

Ductwork ends will be specified to be covered during construction to minimize dust build-up in the ductwork.

6.6 ELECTRICAL SYSTEMS

6.6.1 ELECTRICAL SERVICE

Electrical service entrance to the building is served from a campus owned 4.16Y/2.4kV – 208y/120V, 150k pad mount transformer with a primary connection to Campus medium voltage distribution system. The transformer is located at the southeast corner of the building and in good condition. However, it is anticipated that the proposed renovations will increase the facility demand such that a replacement is necessary. The pad mounted sectionalizing switch mounted adjacent to the transformer would remain. It appears to be in good condition, however the operation of it was not verified. User agency did not suggest any known issues as part of the preliminary MEP programming meeting.

As part of the MEP programming meeting, it was noted that indoor mounted facility transformers as part of a secondary unit substations is the preferred campus standard instead of the existing pad mounded exterior transformer. The project will look to incorporate the equipment into the interior of the Lower Level and remove the pad mounted transformer.

Work associated with the pad mounted switch is not anticipated other than to extend a new medium voltage radial feed into the Lower Level of the building to supply the secondary unit substation. It is recommended that the switch be inspected and any relevant preventative maintenance be done at the time of construction.

A new electrical meter will be installed on the incoming service. Meter specification shall be provided by campus and connected to their existing campus metering network.

6.6.2 ELECTRICAL DISTRIBUTION

The existing main distribution equipment will be removed and replaced with a floor mounted circuit breaker switchboard in the Lower Level. During the MEP programming meeting the facility voltage was discussed in regards to 480V vs 208V. There does not appear to be a great deal of building loads which will require 480V. The building footprint is compact and with centrally located panelboards, it seemed as if supplying all of the LED lighting at 120V would be an acceptable approach. The primary compromise would be the increased feeder sizes associated with some of the air handling equipment which is currently identified to be located in the Lower Level near the electrical service entrance equipment and therefore making the supply feeders relatively short.

The preliminary electrical service entrance size at 208y/120V, 3 phase, 4 wire is 2500A.

All existing branch circuit panelboards will be removed.

New 208y/120V-3 phase, 4 wire branch circuit panel boards shall be provided on each floor for lighting and receptacle loads. Each 208y/120V panel shall be connected to the new main switchboard. New 208y/120V panelboards shall be circuit breaker type. Panel boards shall have copper bus with a separate ground bus. All panel boards shall have the entire front trim hinged to the box with a standard door within the hinged trim cover for access to breakers.

Lighting shall operate at 120 volts, motors where possible shall operate at 208v, 3 phase, and general receptacles and computer loads shall operate at 120 volts.

Short Circuit/Coordination Study/Arc Flash will be included as part of the project specifications. Provide arc flash labels at all electrical distribution equipment based on this study.

Distribution Equipment and Material

- Switchboards: Service entrance rated, free standing, individually fixed main circuit breaker or fuse (if required), and group mounted molded case distribution circuit breakers.
- Power Distribution Panel: Wall mounted, group mounted bolt-on molded case distribution circuit

breakers. Panel door trims shall be "door in door" construction.

- Natural gas Generator Set: Indoor mounted with critical grade exhaust silencer.
- Elevator Disconnect Modules: Wall mounted with required fire alarm interface and power disconnect features.
- Motor Starters: Wall mounted combination motor circuit protector and motor starter, full voltage, non-reversing type with solid state overload protection.
- Disconnect Switches: Wall mounted, heavy duty type. Non-fused unless prohibited by code.
- Normal Power Branch Panel: Wall mounted, 42 circuit panel with bolt-on molded case circuit breakers. Panel door trims shall be "door in door" construction.
- Generator Power Branch Panel: Wall mounted, 42 circuit panel with fusible branch devices. Panel door trims shall be "door in door" construction.
- Automatic Transfer Switches: Wall mounted ,4-pole, open transition type.

6.6.3 EMERGENCY ELECTRICAL SYSTEMS

There is no existing emergency power source in the facility. During the MEP programming meeting various options were discussed which included installing a new generator in Wittich, a replacement generator in Main Hall with feeder to Wittich or utilizing spare capacity in adjacent buildings such as Centennial Hall. The group seemed to agree on pursuing the Main Hall generator replacement with underground feeder to Wittich. Further investigation is required.

At this time, estimating efforts shall proceed with the concept of a replacement generator in Main Hall with underground feeder to Wittich. The generator will supply the existing ATS in Main Hall and two new 100A-4pole ATS in Wittich. One ATS for NEC 700 legally required loads and the other ATS for NEC 701/702 legally required and optional standby loads.

Generator power distribution shall consist of one panelboard for emergency life safety and one panelboard for legally required standby / optional standby loads.

Emergency Life safety distribution shall be provided for emergency egress lighting, fire alarm system, and elevator cab lighting.

Legally Required Standby distribution shall be provided for one elevator to be designated as a means of egress.

Optional Standby distribution shall be provided for telecom closets and mechanical loads for building freeze protection such as boilers and heating pumps.

Emergency distribution panel, transfer switches and distribution panels shall be located in a dedicated electrical room, separate from the normal electrical distribution room.

For overcurrent coordination reasons, panelboards connected to the emergency power system shall be a fusible type.

6.6.4 LIGHTING SYSTEMS

The existing indoor and outdoor building mounted lighting and lighting control systems shall be removed.

At the time of our facility condition assessment no luminaires were found to have historic significance however some may be found to be stored or concealed within building finishes. Luminaires designated to have historical significance shall be salvaged for refurbishment and shall be reinstalled.

A complete lighting system for indoor spaces will be provided. The indoor lighting system shall consist of LED luminaires only.

Lighting layouts shall provide an average maintained ambient light level consistent with the Illuminating Engineering Society criteria and DFD Electrical Design Guidelines.

Luminaires within classrooms, offices, conference rooms and similar occupancies will be recessed high performance architectural troffers or suspended linear direct/indirect.

Luminaires installed within areas with historical significance such as upper level corridors and main entrances will be historically appropriate with the use of modern lamping technologies.

Storage rooms and utility spaces such as janitor's closets, mechanical rooms, electrical rooms, etc. with lay-in ceilings shall be provided with 2'x4' recessed lensed fixtures. Spaces without a ceiling shall be provided with industrial type fixtures.

Additional accent / wayfinding illumination will be provided at exterior entrances. These luminaires will be discrete to avoid conflict with the historical nature of the building façade.

Emergency egress lighting for interior and exterior spaces shall be provided from the emergency life safety distribution system. Un-switched night lights shall be avoided where possible. Emergency lighting control units shall be installed to permit the switching of emergency lighting.

All exit signs shall be LED source type and connected to the emergency life safety distribution system.

All lighting controls shall comply with the Wisconsin Energy Codes and be a combination of general switching, occupancy sensors, and light level sensors. The interior lighting shall be controlled locally. Exterior lighting shall be connected to the Campus Automation System to coordinate On/Off times with the other exterior campus lighting.

All office and conference room spaces shall utilize multi-level switching schemes to allow the lighting to be reduced based on needs within the spaces. Switches shall be provided to allow the occupants to manually control lighting as desired.

All classrooms shall utilize dimming controls with integration into AV system for 3rd party control. Additional, local scene recall stations will be provided to control the lighting system independently of the AV system.

Occupancy sensors shall be used for automatic off control of lighting circuits. Occupancy sensors shall be ceiling or wall mounted depending of space layouts and requirements. Passive infrared (PIR), ultrasonic, or duel-technology (both PIR & ultrasonic) shall be used as required to meet the required space requirements.

The use of photo-sensors for "daylight" harvesting shall be considered based on architectural layouts within common circulations spaces only. When adequate levels of daylight are available, the daylight zones shall be controlled to a preset level using automatic dimming controls. Automatic daylight controls are not anticipated in offices or classrooms.

6.6.5 ELECTRICAL DEVICES

The existing electrical wiring devices shall be removed along with associated branch circuit conductors and raceway.

Devices shall be flush mounted and specification grade with white finish. Cover plates shall be smooth nylon with white finish.

Devices mounted to exterior walls will be routed in a non-metallic surface raceway system.

The existing floor system will be cored as required to install floor boxes.

6.6.6 GROUNDING SYSTEM

A new grounding electrode system shall be installed which is to include new perimeter ground bussing around the secondary unit substation room. Equipment grounding conductors shall extend from the building service entrance equipment to the branch circuit panelboards. All grounding system connections shall be made using exothermic welds or irreversible compression connections.

6.6.7 FIRE ALARM SYSTEM

The fire alarm system control panel is currently installed within the Lower Level and is designated to be reused. The panel will be relocated based upon the interior renovations. The campus utilizes a fiber backbone network audio system which will be extended to Wittich. Additional hardware shall be installed in the FACP to accommodate the network audio addition. Existing FACP is Simplex 4100U.

Existing audible and visual signaling devices shall be removed and reinstalled as required to accommodate room modifications.

Audible and visual signaling devices shall be provided in all public areas including double occupancy offices. Additional signaling devices shall be provided in mechanical equipment rooms. Audiovisual signals shall be placed to cover all areas of the building for alarm signaling. Fire alarm pull stations and visual and audible devices shall be located to comply with public mode operations.

Smoke detectors shall be provided in storage areas, elevator equipment rooms, stairwells, elevator shafts, elevator lobbies, and mechanical equipment rooms. An elevator recall system with all relays and controls shall be provided.

Smoke detectors shall be provided in corridors at all smoke door locations. Smoke detectors shall also be placed inside HVAC ducts at smoke damper locations, upstream of each damper location. This requirement applies to all ducts supplying or returning in excess of 2,000 CFM and/or crossing smoke walls. Addressable control relays shall be provided for air handling equipment shut down.

LCD style alarm annunciator shall be provided at the main entry.

Monitor relays shall be provided for fire protection valves and flow switches.

System shall comply with campus standards for emergency notification systems including, but not limited to, a building wide public address system.

6.6.8 LIGHTNING PROTECTION

A new lighting protection system will be installed. All down conductors will be concealed within the building interior.

6.6.9 EXCLUSIONS FROM SCOPE OF WORK

Fire Pump electrical service, controller and associated connections.

Area of Rescue Assistance.

UPS systems to support technology equipment.

6.7 TELECOMMUNICATIONS SYSTEMS

6.7.1 COMMUNICATIONS CIRCUITS

All communications circuits (fiber optic and copper cables) currently enter the south east side of the building via a manhole and conduit system.

The circuits originate in Graff Main Hall.

The fiber optic cable is older vintage and is scheduled to be replaced by a separate campus project. The copper backbone to the building is in good shape and will be removed temporarily during the construction activities. It will be replaced with a 25 pair cable due to reduce requirements for copper cable. There is hardline coax cable that will be removed and not replaced.

6.7.2 TELEPHONE CABLE

The existing telephone cable should be pulled back with care to the nearest manhole and capped or cut dead in the manhole or in a splice case. New cable will require only 25 pairs and could come from this same source or routed through a tunnel to Graff Main Hall.

6.7.3 FIBER OPTIC CABLE

A new 24 or 36 strand singlemode (SM) fiber optic cable will be provided by the campus under the auspices of a separate project. That project will need to coordinate with this project to be sure fiber is brought into the building at the right location at the right time.

6.7.4 COAX CABLE

The existing .500 hardline cable should be carefully removed back to the steam tunnel and coiled for future use. It should be brought in to the new MTR and re-terminated during renovation.

6.7.5 BUILDING SPACE REQUIREMENTS

Provide new 10' x 12' Telecommunications Rooms centrally located on each floor plan, stacked one above the other.

If centrally located, only one Telecommunication Room will be required on each floor of the renovation. If this is not possible, two Telecommunications Rooms per floor will be necessary. Telecommunications Rooms (TR) shall not be located in the far corners of the building. Providing two TRs per floor should be a last resort.

The Telecommunication Room on the Lower Level, where campus backbone cable enters, should be designated as the Main Telecommunication Room (MTR) and be sized at 12'x14' to accommodate campus backbone services and to consolidate all riser cable within the building. The Main Telecommunications Room may also serve as a Telecommunications Room for that floor. Because campus cable will enter into this room, it may also be considered the building entrance facility.

Additional spaces for AV equipment cabinets may be required in or near larger classrooms. Restricted lengths of AV cable may preclude use of Telecommunications Rooms for AV systems. As a general rule, AV equipment should not be located within Telecommunications Rooms. If sufficiently sized lecterns and podiums are used, AV equipment can be housed within them, precluding the need for additional closet space. Consult AV narrative.

Hallway ceiling space should be reserved for communications cable tray. The space required is approximately 12" wide for the cable tray, another 12" wide for side access, and 12" high for top access.

6.7.6 TELECOMMUNICATIONS ROOMS (TRS)

Systems anticipated to be located within Telecommunications Rooms include cable and electronics for: voice, data, paging, security CCTV, access control, fire alarm, cable TV, cable connections to other floors, cable connections to outside campus or telecommunications services, connections to roof or antennae, other systems as determined by User or local departments.

Three data racks to be provided per TR with overhead cable ladder and vertical cable management between the racks.

Telecommunication Rooms shall have continuous walls from floor to deck, key locked doors, non-static floor covering (treated, sealed concrete), no drop ceiling tiles, and ¾" plywood on all walls painted a light color.

The TRs shall have no utilities passing through them that do not directly serve the TR. Fire suppression is recommended to be dry –pipe, pre-action type. Lighting shall be 50 foot candles at 36" AFF. Power shall begin with one 20amp circuit per rack plus (3) additional circuits for other equipment and convenience. The MTR may require a larger 30 amp and/or 220VAC circuit.

Cooling for MTR and all TRs shall function 24/7/365 without interruption. Building systems may be utilized for this purpose if they function all year. If not, a separate cooling system shall be provided for the MTR and TRs. Cooling loads shall start at 3 tons for the MTR and 1 ton for each TR. These loads can be adjusted as the design progresses and the actual equipment can be more accurately determined.

6.7.7 GENERAL REQUIREMENTS

While it is often good practice to provide a conduit to the roof for possible antenna use, it is not anticipated by the User that outdoor antennae will be required.

No intercoms, doorbells or emergency phones are anticipated.

6.7.8 TELEPHONE SYSTEM

Telephone system hardware, electronics and handsets to be provided by the user. The contractor shall have no responsibility for the system other than provision of backbone and station cable. The user shall provide all final cross connects to obtain dial tone.

6.7.9 DATA SYSTEM

A universal structured cabling system utilizing category 6 for both voice and data is anticipated.

The standard jack quantity at each workstation shall begin at three jacks each. One for voice, one for data and one spare. Actual quantity may vary depending on user needs to be discovered during the design process.

SM Fiber optic cable shall be used as riser cable between Telecommunications Rooms on multiple floors.

Fiber optic cable will be provided to the building from the campus data center by the User Agency as part of a separate project. As part of the Wittich Hall Renovation project, it will be terminated on patch panels in the MTR and cross connected to new riser cables as needed.

6.7.10 CABLE TV SYSTEM (CATV)

One RG6 coax cable with F-connector shall be provided from the TRs to all classrooms, labs and office areas. When not used to distribute academic programming it could be used to distribute sporting events and news.

In addition to the F-connector for coax, one standard data outlet will be provided to each TV location for future streaming or control. For other systems that may utilize TV such as AV or digital signage, consult the AV narrative.

6.7.11 SECURITY ACCESS CONTROL SYSTEM

A card access system is recommended. Any new devices must integrate with existing systems.

Doors that should be considered for access control are: entry doors with ADA requirements, and all entries into departmental suites.

6.7.12 SECURITY CLOSED CIRCUIT TV SYSTEM (SECURITY CAMERAS)

It is anticipated that CCTV security cameras will not be required for the project.

6.7.13 WIRELESS ACCESS

Provide cabling to ceiling locations as appropriate for installation of wireless access points (WAPs). Ceiling-mounted data jacks to be provided at approximately 50 foot intervals above major corridors and near lecture halls and public areas.

Additional wireless access points may be required in high-traffic areas.

Consideration should be given to provide a distributed antenna system (DAS) to accommodate frequencies used for mobile (cell) phone service, emergency responders, and faculty or maintenance staff. If windows are replaced with low-e glass, (and due to the thickness of the walls), it is possible that the interior of the building will have no cell phone coverage without the provision of a DAS system. For budgetary purposes, plan $2.00 per sq ft for a DAS installation.

6.7.14 SYNCHRONIZED CLOCKS

Provide a wireless synchronized clock system consisting of GPS receiver, wireless transmitter and analog clocks to coordinate with the historic nature of the building. No bells or alarms are required.

6.8 AUDIOVISUAL (AV) SYSTEMS

At the time of this writing, elements of the audiovisual program and functional requirements remain uncertain until confirmed by the University. The following describes the portions that have been defined to date along with assumptions and anticipated requirements based on discussions held to date with the university and project team.

SPACE SPECIFIC AUDIOVISUAL SYSTEMS

6.8.1 FIRST FLOOR: 30 CLASSROOM (919 SF) - QTY. 1

A 30-seat classroom on the First Floor will feature instructor-controlled audiovisual systems configured using the campus standard to support typical multimedia presentations. While predominantly planned for use in a traditional lecture style layout with student seated in front-facing rows, the classrooms will have flexible furniture with mobile tables and chairs to allow a degree of reconfiguration for group work and collaboration.

One ceiling-recessed projection screen is planned at the front teaching wall to support typical lecture-style instruction. The projection screen is planned to be tab tensioned for a flat image and in a "widescreen" aspect ratio as 16:10 image format with a screen height to maximize sight lines. The video projector will be ceiling-mounted and specified to display in native 16:10 image format. Mobile chairs and tables will permit some reconfiguration to support group collaboration. A whiteboard will extend the length of the teaching wall. Source devices include an all-in-one instructor computer, a walk-in laptop connection, Blu-ray/DVD player, and document camera.

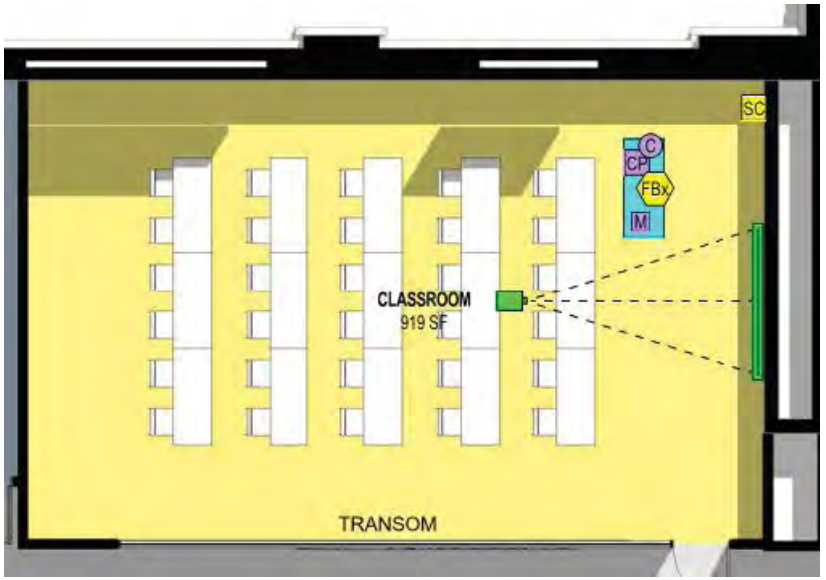


Figure 6.8.1-1: Classroom (30-seat) - AV Floor Plan

Figure 6.8.1-2: Classroom (30-seat) - Example Image

A widescreen touch screen display will connect to the instructor computer for use in annotation, electronic note taking, and highlighting of presentation content using University-provided software. Notes or annotations can then be saved back to the resident computer for future review or incorporation into an electronic document. The document camera can also be used for class-wide note taking and/or on-screen problem solving. A wireless presentation gateway, leveraging the University's wireless and wired network, will be provided to support Bring Your Own Device (BYOD) screen sharing and collaboration. Instructors and students alike can use this system to share content to the projection system for class-wide viewing. The instructor will administer access and sharing of wireless mobile devices through the gateway.

An instructor's station in the front of the room will secure rack-mounted equipment and will conform to campus standards. The instructor's console will include a large dedicated color touch panel for intuitive AV and room control, including lights, if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout.

In keeping with campus trends and standards, lecture capture will be provided using software installed on the instructor computer. Instructor audio will be recorded and synchronized with computer-based presentation materials or the document camera's video output. A dedicated in-room video camera for capture of the instructor is not planned at this time. A small rechargeable wireless microphone will be worn by the presenter for high quality audio pickup. When not in use, the microphone will reside in a desktop charging base. Two microphones will be provided to permit cycling through charging during use and for two-person presentations.

Stereo program sound will be supported through full-range loudspeakers mounted on the front wall, flanking the projection screen. Voice reinforcement will be supported through distributed ceiling-mounted loudspeakers. A connection for a portable assistive listening transmitter will be provided to meet ADA compliance requirements. A portable assistive listening system will be provided and available for use across rooms upon request.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One ceiling-mounted, motorized projection screen
	One fixed, ceiling-mounted video projector
Input Sources	Dedicated all-in-one instructor computer with dual output display card and wireless keyboard and mouse (OFCI)
	Annotation via instructor touch screen computer display
	Laptop connection
	Blu-ray™ / DVD player
	Document camera
	Wireless presentation gateway for BYOD connections
	Auxiliary input for portable devices
Capture/ Collaborate	Lecture capture system (audio and graphics only)
	Basic collaboration system to allow simple screen sharing of student devices (via wireless presentation gateway)
Sound	Wireless microphone system with two rechargeable lavalieres
	Wall-mounted loudspeakers for stereo program audio
	Distributed in-ceiling loudspeakers for speech reinforcement
	Assistive listening system for ADA compliance (portable)
Control	Color, wired touch panel at the lectern for simplified control of audio, display and lighting systems
Furnishings	Custom instructor station to house all user interfaces and rack-mounted equipment

Figure 6.8.1-3: Classroom (30-seat) - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for a large image. Ideally, 11 foot ceilings would provide an adequate screen size to maximize sight lines for the furthest viewer.
- Proper lighting to support front-screen projection and whiteboard use will be critical, while reducing ambient light onto the screens.
- Coordination of screen location is needed to optimize viewing angles and allow use of the whiteboard.
- Coordination of projector, ceiling-mounted document camera, and in-ceiling loudspeakers with lighting fixtures and other ceiling-mounted devices is needed.
- At least four zones of lighting are recommended: white board illumination, task light for the student seating, task lighting for the presenter, and overall lighting.
- Coordination of instructor station with floor box for power, network, and AV connectivity.
- Specialty floor and wall boxes are planned to consolidate power network and AV connectivity; general coordination is required.
- Instructor station cut-outs for access to cables and select devices.

Discussion Points:

- Confirm only one projection screen is required.
- Confirm two-way distance learning and video or web conferencing is not required.
- Confirm need for Blu-ray/DVD player or use of all-in-one computer for media playout.
- Consideration for high lumen laser projectors to reduce total cost of ownership.

6.8.2 LOWER LEVEL: ACTIVE LEARNING CLASSROOM (1109 SF) – QTY. 1

A second classroom will be provided at Wittich Hall and will feature instructor-controlled audiovisual systems with flexible furniture to support both a lecture format and reconfiguration for group work and collaboration. This larger classroom provides additional student space with approximately 30-35 feet per student, allowing for a forward-thinking technology-based active learning configuration.

Multiple flat panel displays will be wall-mounted and located across both side walls to support break outs and student team-based project work. It is envisioned that five separate group stations would be available to support student teams of six or more students. Each group of flat panel displays will have a connected computer for use in working with both off-the-shelf and proprietary business and financial software. Wireless presentation gateways at each station will permit wireless BYOD screen scraping and sharing of walk-in student devices to the local group display. A wired walk-in laptop connection will also be available and can be shared at each student group station. A dedicated wall-mounted control panel at each student group location will permit simple display control, including power and volume. Whiteboards are planned for each student group to support traditional collaboration. When not scheduled for class instruction, we envision that this unique classroom will be available as an open lab for students to access and work on projects outside of class.

One ceiling-recessed projection screen is planned at the front teaching wall to support typical lecture-style instruction. The projection screen is planned to be tab tensioned for a flat image and in a "widescreen" aspect ratio as 16:10 image format with a screen height to maximize sight lines. The video projector will be ceiling-mounted and specified to display in native 16:10 image format.

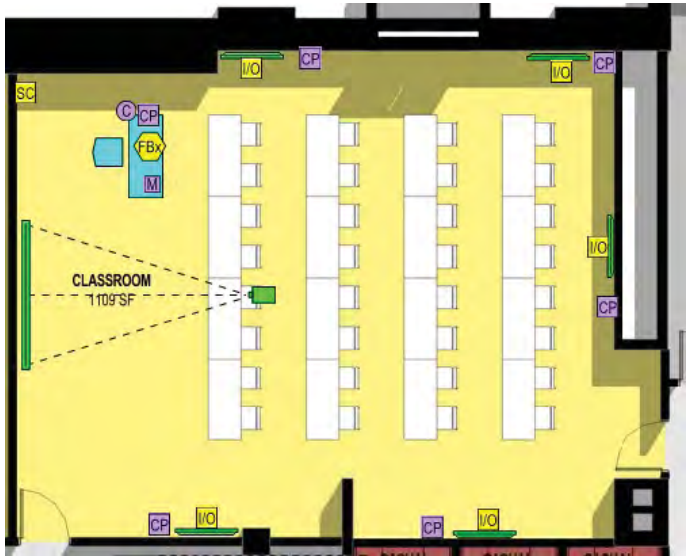


Figure 6.8.2-1: Active Learning Classroom - AV Floor Plan (Lecture Layout)

Figure 6.8.2-2: Active Learning Classroom - Example Image

Mobile chairs and tables will permit some reconfiguration to support group collaboration. A whiteboard will extend the length of the teaching wall. Source devices will include an all-in-one instructor computer, a walk-in laptop connection, Blu-ray/DVD player, and document camera.

A widescreen touch screen display will connect to the instructor computer for use in annotation, electronic note taking, and highlighting of presentation content using University-provided software. Notes or annotations can then be saved back to the resident computer for future review or incorporation into an electronic document. The document camera can also be used for class-wide note taking and/or on-screen problem solving. A wireless presentation gateway, leveraging the University's wireless and wired network, will be provided to support Bring Your Own Device (BYOD) screen sharing and collaboration. Instructors and students alike can use this system to share content to the projection system for class-wide viewing. The instructor will administer access and sharing of wireless mobile devices through the gateway.

An instructor's station in the front of the room will secure rack-mounted equipment and will conform to campus standards. The instructor's console will include a large dedicated color touch panel for intuitive AV and room control including lights if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout.

In keeping with campus trends and standards, lecture capture will be provided using software installed on the instructor computer. Instructor audio will be recorded and synchronized with computer-based presentation materials or the document camera's video output. A dedicated in-room video camera for capture of the instructor is not planned at this time. A small rechargeable wireless microphone will be worn by the presenter for high quality audio pickup. When not in use, the microphone will reside in a desktop charging base. Two microphones will be provided to permit cycling through charging during use and for two-person presentations.

Stereo program sound will be supported through full-range loudspeakers mounted on the front wall, flanking the projection screen. Voice reinforcement will be supported through distributed ceiling-mounted loudspeakers. A connection for a portable assistive listening transmitter will be provided to meet ADA compliance requirements. A portable assistive listening system will be provided and available for use across rooms upon request.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One ceiling-mounted, motorized projection screen
	One fixed, ceiling-mounted video projector
	Five wall-mounted flat panel displays for student groups
Input Sources	Dedicated all-in-one instructor computer with dual output display card and wireless keyboard and mouse (OFCI)
	Annotation via instructor touch screen computer display
	Laptop connection
	Blu-ray™ / DVD player
	Document camera
	Wireless presentation gateway for BYOD connections
	Auxiliary input for portable devices
Capture/ Collaborate	Lecture capture system (audio and graphics only) using software on the instructor computer
	Basic collaboration system to allow simple screen sharing of student devices (wireless)
	Multiple dedicated student group computers (OFCI)
	Instructor matrix switcher
Sound	Wireless microphone system with two rechargeable lavalieres
	Wall-mounted loudspeakers for stereo program audio
	Distributed in-ceiling loudspeakers for speech reinforcement
	Internal loudspeakers of student group flat panel displays
	Assistive listening system for ADA compliance (portable)
Control	Color, wired touch panel at the lectern for simplified control of audio, display and lighting systems at instructor station
	Wall-mounted button panel control at student group stations
Furnishings	Custom instructor station to house all user interfaces and rack-mounted equipment

Figure 6.8.2-3: Active Learning Classroom – Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images. Ideally, 11 foot ceilings would provide an adequate screen size to maximize sight lines for the furthest viewer.
- Proper lighting to support front-screen projection, student group displays and whiteboard use will be critical, while reducing ambient light onto the screens.
- Coordination of screen location is needed to optimize viewing angles and allow use of the whiteboard.
- Coordination of wall-mounted dual flat panel display locations to optimize room space and support group work.
- Coordination of projectors, ceiling-mounted document camera, and in-ceiling loudspeakers with lighting fixtures and other ceiling-mounted devices.
- At least five zones of lighting will be required: white board illumination, task light for the student seating, zoned lighting for each student group area, task lighting for the presenter, and overall lighting.
- Coordination of instructor station and with floor box for power, network, and AV connectivity.
- Coordination of flat panel displays with wall boxes for power, network, and AV connectivity.
- Specialty floor and wall boxes will be used; general coordination is required.
- Instructor station cut-outs for access to cables and select devices.

Discussion Points:

- Confirm two-way distance learning and video or web conferencing is not required.
- Confirm need for Blu-ray/DVD player or use of all-in-one computer for media playout.
- Consideration for high lumen laser projectors to reduce total cost of ownership.
- Consider portable white boards for use by student groups versus fixed wall-mounted whiteboards or use of writable whiteboard paint on walls to support collaboration.
- If this space will be mostly utilized for active learning classes, lecture capture systems may not be necessary. Further discussion is required.

6.8.3 LOWER LEVEL: INTERVIEW ROOMS (2-SEATS EACH) – QTY. 4

On the Lower Level are four 2-person Interview Rooms to be used by students of the Marketing Department for practice, delivery and capture of mock sales calls, interviews, and presentations.

Each Interview Room represents a mock office and is used for role play. A hallway separates the Interview Rooms to provide privacy and help with acoustical isolation.

The student presenter or "Salesperson" sits across a fixed desk or table from the student prospect or "Buyer" during a sales call scenario. One remote controlled video camera is planned as a Pan Tilt Zoom (PTZ) Camera. A second fixed camera will provide a wide shot of the interactions. The two cameras will connect to a rack-mounted encoder (recorder). One encoder will be assigned per room to support concurrent sessions. Markers can be set in content at important points with meta-data to log and locate session points. Videos can be uploaded to the network for later review, editing, and archiving. Removable external storage can also be used. A wall-mounted flat panel display in each Interview Room will be used by students to review recorded sessions and for logging and marking content. An AV wall plate will provide a connection for a walk-in laptop. A wall-mounted in-room computer will provide students access to view and edit network streams. A full size equipment rack will be located in the Marketing Focus Group to house AV components serving the Interview Rooms and adjoining Marketing Focus Group Room.

Voice pickup in each Interview Room will be achieved by an unobtrusive high quality ceiling microphone. The microphone will connect to a simple audio mixer to provide automatic levels.

Figure 6.8.3-1: Interview Rooms - AV Floor Plans

A simple wall-mounted touch panel controller in each Interview Room will provide simple automated control of the recording process. Camera controls will be via simple presets. The control system will be password protected and integrated with campus IT to extend security policies and permissions.

A reservation panel is planned outside of each Interview Room. The reservation panel will be password protected with connection to an online room reservation system. The Interview Rooms will not be available for general campus use.

During scheduled class times and sales competitions, each of the four Interview Rooms can be monitored remotely via a network stream. Instructors can view live interviews remotely from Group Study Rooms on the Lower Level floor. Recorded sessions will also be accessible for debriefs.

Each of the four Interview Rooms will be equipped with a wall-mounted IP-based intercom. The intercom will connect to the network and will be accessible to the adjoining Marketing Focus Group Room and to Group Study Rooms on the Lower Level. With the intercom system, remotely located faculty or judges can speak via computer connected microphone to students in one or all Interview Rooms. A student within the Interview Room can use the intercom system to contact the IT helpdesk or campus security should assistance be needed or in the event of an emergency.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One wall-mounted flat panel display
Input Sources	Dedicated in-room computer with wireless keyboard and mouse (OFCI)
	Laptop connection
	Rack-mounted encoder (recorder playback)
Capture / Collaborate	One wall-mounted pan/tilt/zoom camera for capture
	One fixed wide angle camera
	Rack-mounted encoder (recorder) for capture
Sound	Ceiling microphone
	Wall-mounted IP-based intercom system
	Internal loudspeakers of flat panel display
Control	Wall-mounted touch panel control system
Furnishings	Equipment rack located in adjacent Marketing Focus Group Room
	Under table mounting hardware

Figure 6.8.3-2: Interview Rooms – Planned Audiovisual Components

Space Planning:

- Proper acoustical isolation within and between Interview Rooms will be needed.
- Proper lighting to support camera capture and general room use.
- Coordination of the camera, microphone and furniture.
- Coordination of ceiling equipment with other ceiling-mounted devices; general coordination is required.
- Specialty wall boxes will be used; general coordination is required.
- Coordinate reservation panel with doors and walls.

Discussion Points:

- Confirm Interview Room computer is not required.
- Confirm one or two cameras are required
- Consider if session review/playback is desired in these spaces.
- Confirm off-campus streaming and viewing is not required.
- Is a white board in each Interview Room needed for note taking.
- Confirm IP-based intercom system and coordinate remote connectivity.
- Confirm no web conferencing for this space.
- Coordinate control system and reservation system selection, access and security with campus IT.

6.8.4 LOWER LEVEL: MARKETING FOCUS GROUP ROOM (256 SF) – QTY. 1

The Marketing Focus Group Room will have multiple uses including the following:

- Capture of multi-person focus group presentations and Q&A.
- Monitoring of live interview sessions.
- Review of recorded sessions for debriefs, for meetings,
- Staging and queuing area during sales competitions.

It is anticipated that the room can comfortably seat 8-10 students and one or two facilitators.

A large wall-mounted interactive multi-touch flat panel display is planned as the main display in the room. The interactive display will permit annotation over content such as interviews. An in-room computer will connect to the display for use in typical presentations and for access to archived sessions on the network drive. A Blu-ray/ DVD player will provide playback of disc-based content. A dedicated in-room encoder will be accessible to record multi-person focus group sessions or review recorded sessions via the network. The individual Interview Room encoders will also be accessible for viewing live or pre-recorded sales interviews from within the Marketing Focus Group room.

A wireless presentation gateway will be provided to allow students to connect their laptops or tablet devices wirelessly to the in-room display for content collaboration. Users will also be able to connect the video output of their laptop/tablet to the flat panel display through wired audiovisual cable connections at the table.

Figure 6.8.4-1: Marketing Focus Group Room - AV Floor Plan

Figure 6.8.4-2: Marketing Focus Group Room - Example Image

Two remote controlled video cameras will be located in the room to record focus group interactions. One camera will be a static wide-angle camera and a second as a Pan Tilt Zoom (PTZ) camera for close up shots to capture interactions. Cameras can also be used for web-base conferencing with connection to the in-room computer and use of a soft codec such as Skype. The two cameras will connect to a rack-mounted in-room encoder (recorder). The encoder can capture both cameras on screen simultaneously with corresponding audio. No camera switching will be required. Markers can be set at important points with meta-data to log and locate session points. Videos can be uploaded to the network for later review, editing, and archiving. Removable external storage can also be used

Voice pickup in the room will be achieved by unobtrusive high quality ceiling microphones. The microphones will connect to a simple audio mixer with automatic levels and gain control. The microphones can also be used to communicate over an IP-based intercom system to communicate with students in interview rooms during in-class use or sales competitions. Access to the system will be password protected. Stereo program sound will be supported through loudspeakers as part of the flat panel display. Playback and intercom will be available through in-ceiling distributed loudspeakers.

Lecture capture will be provided in keeping with campus trends and standards using software installed on the instructor computer. Instructor audio will be recorded and synchronized with video from computer-based presentation materials or the in-room camera for instructor capture. Students can then view recorded lectures later off-line for study and review. A small rechargeable wireless microphone will be worn by the presenter for high quality audio pickup. When not in use, the microphone will reside in a desktop charging base. Two microphones will be provided to permit cycling through charging during use and for two-person presentations. A connection for a portable assistive listening transmitter will be provided to meet ADA compliance requirements. A portable assistive listening system will be provided and available for use across rooms upon request.

A small touch panel at the table will serve as the interface for controlling the audiovisual system within the Marketing Focus Group Room. Hidden password protected pages on the control panel will provide authorized persons access to the audiovisual components to control cameras, audio and the encoder. The control panel will be connected to the campus IT network to extend security policies and permissions.

Whiteboards will be provided for taking notes and traditional collaboration.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	Wall-mounted interactive flat panel display with multi-touch capability
	Whiteboard (by others)
Input Sources	Dedicated in-room computer with wireless keyboard and mouse
	Laptop connection
	Blu-ray™ / DVD player
	Rack-mounted encoder (recorder playback)
Capture/ Collaborate	One fixed wide view camera for capture
	One wall-mounted pan/tilt/zoom camera for capture
	Basic collaboration system to allow simple screen sharing of student devices
	Web capture and streaming system
	Software-based videoconferencing codec (such as Skype)
	Rack-mounted encoder (recorder) for capture of audio and multi-window videos
Sound	Ceiling microphones
	Simple audio mixer
	IP-based intercom system connection
	Internal loudspeakers of flat panel display
	Distributed in-ceiling loudspeakers
	Assistive listening system for ADA compliance (portable)
Control	Table-mounted touch panel control system
Furnishings	Equipment rack located within the room

Figure 6.8.4-3: Marketing Focus Group Room – Planned Audiovisual Components

Space Planning:

- Proper acoustical isolation within the room and between the room and adjacent spaces will be needed.
- Proper lighting to support camera capture and general room use.
- Coordination of the flat panel display, cameras, microphones and furniture.
- Coordination of ceiling equipment with other ceiling-mounted devices; general coordination is required
- Specialty floor and wall boxes will be used; general coordination is required.

Discussion Points:

- Confirm off-campus streaming and viewing is preferred.
- Confirm IP-based intercom system and verify need for connection to both Interview Rooms and Group Study or other spaces.
- Confirm web-based conferencing.
- Coordinate control system selection, access and security with campus IT.

6.8.5 LOWER LEVEL: TEACHING LAB (1318 SF) – QTY. 1

A 32 seat computer-based Teaching Lab will be located on the Lower Level. The room will be used by multiple departments in the CBA for teaching software. The flexibility of the space allows the room to be used for both lab work and instructional lecture delivery. Around the room periphery will be 32 stations equipped with computers and displays for computer-based instruction. In the center of the room will be flexible table configurations to support lectures and mobile devices. Floor boxes along the center of the room will provide power for walk-in BYOD devices. A specialty floor box at the instructor station will support power, network and wired AV connectivity.

Two large wall-mounted flat panel displays with one display located on each end of the room will be used as the primary display during computing and lecture, including when students are seated in the center area. A fixed lectern will provide a touch down spot for the instructor and will be equipped with an all-in-one instructor computer, a walk-in laptop connection, Blu-ray/DVD player, and a ceiling-mounted document camera for hands-free access. A wide touch screen display will connect to the instructor computer for use in annotation, electronic note taking, and highlighting of presentation content using University-provided software. Notes or annotations can then be saved back to the resident computer for future review or incorporation into an electronic document. The document camera can also be used for class-wide note taking and/or on-screen problem solving.

A wireless presentation gateway will be provided to support Bring Your Own Device (BYOD) screen sharing and collaboration from instructor and student devices to both displays for class-wide viewing. The instructor will administer access and sharing of wireless mobile devices through the gateway. Wireless access points to the University network will be available from others.

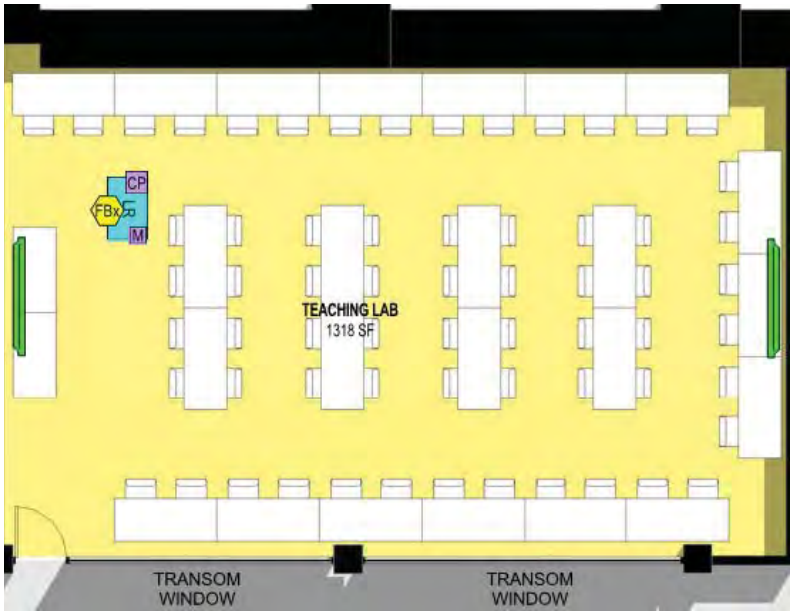


Figure 6.8.5-1: Teaching Lab - AV Floor Plan


Figure 6.8.5-2: Teaching Lab - Example Image

Classroom management software provided by the University will allow the instructor to screen share to all University-provided student computers/screens, share a specific student screen class-wide, blank out screens to keep eyes to the front, or work privately one-on-one with a student requiring assistance.

An instructor's lectern in the front of the room will secure rack-mounted equipment. Cut outs will provide access to needed devices and cables while securing components that do not require hands-on contact. The instructor's console will include a large dedicated color touch panel for intuitive AV and room control, including lights if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout. A wireless iPad or tablet can also be used to control the presentation allowing the instructor the freedom to walk around the room and assist students while presenting or annotating.

Stereo program and speech reinforcement will be supported through distributed ceiling-mounted loudspeakers. A small rechargeable wireless microphone will be worn by the presenter for high quality audio pickup. When not in use, the microphone will reside in a desktop charging base. Two microphones will be provided to permit cycling through charging during use and for two-person presentations.

A connection for a portable assistive listening transmitter will be provided to meet ADA compliance requirements. A portable assistive listening system will be provided and available for use across rooms upon request.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	Two large wall-mounted flat panel displays
Input Sources	Dedicated all-in-one instructor computer with dual output display card and wireless keyboard and mouse (OFCI)
	Student computers (through classroom management software)
	Annotation via instructor touch screen computer display or portable device
	Laptop connection
	Blu-ray™ / DVD player
	Ceiling-mounted document camera
	Wireless presentation gateway for BYOD connections
	Auxiliary input for portable devices
Capture/ Collaborate	Basic collaboration system to allow simple screen sharing of student devices (wireless)
Sound	Wireless microphone system with two rechargeable lavalieres
	Distributed in-ceiling loudspeakers for speech reinforcement and program sound
	Assistive listening system for ADA compliance (portable)
Control	Color, wired touch panel at the lectern for simplified control of audio, display and lighting systems
	Wireless control via iPad or other mobile device
Furnishings	Custom instructor station to house all user interfaces and rack-mounted equipment

Figure 6.8.5-3: Teaching Lab - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images.
- Proper lighting to support displays, whiteboard use, and computer use will be critical while reducing ambient light onto the screens.
- Coordination of screen location to optimize viewing angles.
- Coordination of in-ceiling loudspeakers with lighting fixtures and other ceiling-mounted devices.
- At least four zones of lighting will be required: white board illumination, task light for the student seating, task lighting for the presenter, and overall lighting.
- Coordination of instructor station with floor box for power, network, and AV connectivity.
- Specialty floor and wall boxes will be used; general coordination is required.
- Instructor station cut-outs for access to cables and select devices.

Discussion Points:

- Confirm two-way distance learning and video or web conferencing is not required.
- Confirm need for Blu-ray/DVD player or use of all-in-one computer for media playout.
- Consideration for high lumen laser projectors with large projections screens over large flat panel displays.
- Fixed ceiling-mounted doc cam or desk-based unit?
- Is lecture capture or web conferencing needed in this lab?

6.8.6 LOWER LEVEL: STUDENT INVESTMENT CENTER/TRADING ROOM LAB (480 SF) – QTY. 1

A 30 seat computer-based Student Investment Center / Trading Room Lab will be located on the Lower Level. The room will be used by multiple departments in the CBA for teaching software and used primarily by the Finance Department for access to specialty software and computer-based instruction. The lab is envisioned to be setup in rows facing the teaching wall. Student workstations will be located at fixed tables. It is anticipated that students will have a dual-screen arrangement typical of financial analysts. An instructor station will be located in the front of the room to house source devices for presentation and control. Inside the Center, a group of wall-mounted flat panel displays will show live news feeds and other related investment information. Multiple world clocks will display time from major financial centers from around the world. A scrolling LED stock and news ticker will be provided outside of the lab for additional visual impact.

Dual side-by-side projection screens are planned at the teaching wall. This provision allows for comparison and contrast between multiple full size images and offers additional visual persistence by allowing images to remain viewable longer. The two screen arrangement mimics the dual screen display setup at student tables. It also opens up possibilities to mixing and matching images from multiple input sources including the all-in-one instructor computer, a walk-in laptop connection, Blu-ray/DVD player, document camera, and live news feeds. Both projection screens are planned to be tab tensioned for a flat image and in a "widescreen" aspect ratio as 16:9 image format with a screen height to maximize sight lines.

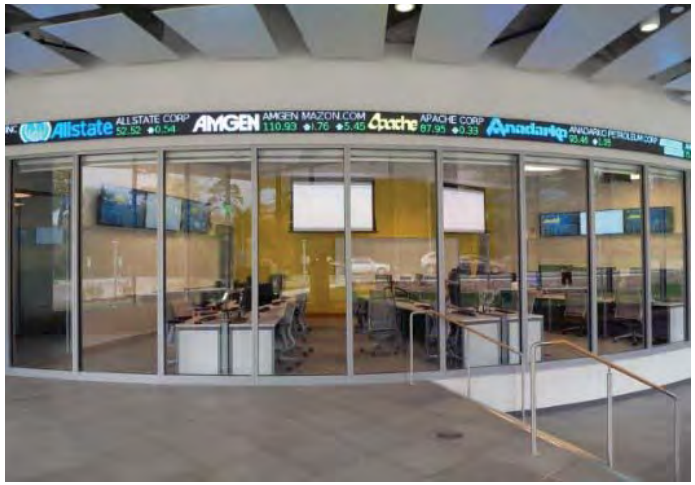


Figure 6.8.6-1: Student Investment Center - Example Image

Since dual projection screens will likely occupy a portion of the teaching wall and some dry erase white boards will be behind them, electronic annotation is also planned. A widescreen touch screen display will connect to the instructor computer for use in annotation, electronic note taking, and highlighting of presentation content using University provided software. Notes or annotations can then be saved back to the resident computer for future review or incorporation into an electronic document. The document camera can also be used for class-wide note taking and/or on-screen problem solving. A USB camera on the instructor computer can be used for web conferencing to bring in live guests such as alumni, guest speakers, and financial analysts to speak to the class. A soft-codec loaded on the instructor computer will serve as the connection.

A wireless presentation gateway will be provided to support Bring Your Own Device (BYOD) screen sharing and collaboration from instructor and student devices to the projection system for class-wide viewing. The instructor will administer access and sharing of wireless mobile devices through the gateway. Wireless access points to the University network will be available from others.

Classroom Management software provided by the University will allow the instructor to share his/her screen to all student screens, share a specific student screen class-wide, blank out screens to keep eyes to the front, or work privately one-on-one with a student requiring assistance.

An instructor's station in the front of the room will secure rack-mounted equipment. Cut outs will provide access to needed devices and cables while securing components that do not require hands-on contact. The instructor's console will include a large dedicated color touch panel for intuitive AV and room control, including lights if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout.

Stereo program sound will be supported through full-range loudspeakers mounted on the front wall. Voice reinforcement will be supported through distributed ceiling-mounted loudspeakers. Lecture capture will be provided in keeping with campus trends and standards using software installed on the instructor computer. Instructor audio will be recorded and synchronized with video from computer-based presentation materials or the document camera. Students can then view recorded lectures later off-line for study and review. A dedicated in-room video camera for capture of the instructor is not planned. A small rechargeable wireless microphone will be worn by the presenter for high quality audio pickup. When not in use, the microphone will reside in a desktop charging base. Two microphones will be provided to permit cycling through charging during use and for two-person presentations. A connection for a portable assistive listening transmitter will be provided to meet ADA compliance requirements. A portable assistive listening system will be provided and available for use across rooms upon request.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	Two ceiling-mounted, motorized projection screens
	Two fixed, ceiling-mounted video projectors
	Multiple wall-mounted flat panel displays
	Standard whiteboard (budgeted elsewhere)
Input Sources	Dedicated all-in-one instructor computer with dual output display card and wireless keyboard and mouse
	Annotation via instructor touch screen computer display
	Laptop connection
	Blu-ray™ / DVD player
	Ceiling-mounted document camera
	Wireless presentation gateway for BYOD connections
	Auxiliary input for portable devices
Capture/ Collaborate	Lecture capture system (audio and graphics only)
	Consumer-grade USB camera to support software-based web conferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of student devices (wireless)
Sound	Wireless microphone system with two rechargeable lavalieres
	Wall-mounted loudspeakers for stereo program audio
	Distributed in-ceiling loudspeakers for speech reinforcement
	Assistive listening system for ADA compliance (portable)
Control	Color, wired touch panel at the lectern for simplified control of audio, display and lighting systems
Furnishings	Custom instructor station to house user interfaces and rack-mounted equipment
	An in-room standalone equipment cabinet

Figure 6.8.6-2: Student Investment Center - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images.
- Proper lighting to support front-screen projection, computer displays, multiple wall-mounted flat panel displays, and whiteboard use will be critical while reducing ambient light onto the screens.
- Coordination of screen location is needed to optimize viewing angles and allow use of the whiteboard.
- Coordination of projectors, ceiling-mounted document camera, and in-ceiling loudspeakers with lighting fixtures and other ceiling-mounted devices.
- At least four zones of lighting will be required: white board illumination, task light for the student seating, task lighting for the presenter, and overall lighting.
- Coordination of instructor station with floor box for power, network, and AV connectivity.
- Specialty floor and wall boxes will be used; general coordination is required.
- Instructor station cut-outs for access to cables and select devices.

Discussion Points:

- Confirm web conferencing is required.
- Confirm if two-way distance learning and video conferencing is needed.
- Confirm need for Blu-ray/DVD player or use of all-in-one computer for media playout.
- Consideration for high lumen laser projectors to reduce total cost of ownership.

6.8.7 LOWER LEVEL: STATISTICS METHODS LAB (343 SF) – QTY. 1

The Statistics Methods Lab is an existing space that will be provided in the newly renovated Wittich Hall.

The Statistics Methods Lab is a non-scheduled space used for research, group meetings, and computer-based work. A center table supports meetings and review of group work at a large wall-mounted interactive touch screen display. A dedicated presentation computer connects to a large interactive touch screen display for collaboration. Around the periphery of the room are student workstations with specialized software. Standard whiteboards are planned for group collaboration and brainstorming.

Program sound will be supported through loudspeakers as part of the interactive display.

A USB camera connected to the presentation computer and mounted on the large flat panel display can be used for web conferencing and support student group collaboration. A soft-codec loaded on the presentation computer will serve as the connection.

A wireless presentation gateway will be provided to support Bring Your Own Device (BYOD) screen sharing and collaboration from student devices to the large display. Wireless access points to the University network will be available from others.

A small wall-mounted button panel will serve as the interface for controlling the audiovisual system within the Statistics Methods Lab.

Figure 6.8.7-1: Statistics Methods Lab – Example Image

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	Wall-mounted flat panel display with multi-touch capability
Input Sources	Dedicated computer with wireless keyboard and mouse
	Laptop connection
	Wireless presentation gateway
	Wireless connection to display
	Auxiliary input for portable devices
Capture/ Collaborate	Consumer-grade USB camera to support software-based videoconferencing codec (such as Skype)
	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of student devices (wireless only)
Sound	Loudspeakers integrated into the flat panel display for stereo program audio
Control	Wall-mounted control system button panel
Furnishings	Equipment rack cabinet located within the room

Figure 6.8.7-2: Statistics Methods Lab – Planned Audiovisual Components

Space Planning:

- Coordination of screen locations to optimize viewing angles.
- Coordination of displays / whiteboards and furniture layout.
- Specialty floor and wall boxes will be used; general coordination is required.

Discussion Points:

- Confirm need for Blu-ray/DVD player.

6.8.8 FIRST FLOOR: DIVISIBLE MEETING ROOM – 40 SEAT TOTAL (1,171 TOTAL SF) – QTY. 1

A large divisible Meeting Room is located on the First Floor and used primarily by the Small Business Development Center for training of outside groups, alumni, and business people. The spaces will also support lectures, presentations, seminars, poster sessions, executive education, and campus events. It is envisioned that many sessions would include catering support and run a full day or more.

Each divided Meeting Room can seat between 20 and 40 persons depending on room configuration and layout. When the two rooms are combined it is expected that the space would comfortably seat between 60 and 70 persons. Furniture in the space will be flexible with foldable tables and chairs on wheels. An acoustical partition will separate the two meeting rooms.

The meeting rooms will include equipment to support enhanced audiovisual presentation, rich media capture and web conferencing.

The following provides a brief description of the audiovisual system in each room, when the dividing wall is in the closed position.

Each room will operate as a separate and discreet space. Each Meeting Room will use a front projection system with a ceiling-recessed motorized projection screen and ceiling-mounted projector. An equipped mobile lectern will provide access to a variety of audiovisual source devices and functionalities include a dedicated computer, laptop connections, wireless presentation gateway, document camera, and support for rich media capture and web conferencing via a wall-mounted video camera. A microphone system will include wireless lavaliere, wired and ceiling-mounted microphones. Ceiling-mounted loudspeakers are planned for program audio and speech

Figure 6.8.8-1: Divisible Meeting Rooms (40 Seat) – AV Floor Plan

Figure 6.8.8-2: Divisible Meeting Rooms (40 Seat) – Example Image

reinforcement. A wireless hearing assist system will be integrated into the system to meet the needs of the hearing impaired. A color touch panel will be located on the presenter's station and will be used for control of audio, display, source selections, lighting systems and motorized window shades within the space.

The following describes the audiovisual system in each room, when in use with the dividing wall in the open position.

IR sensors in the ceiling will detect when the dividing wall is opened and communicate this to the room control system to operate in combined mode. The rooms will then function as if one single large space. The lectern can be moved to a center operating position. The system will prompt the user to operate the room as a single audiovisual system, with one instructor's station as the "master console." For example, a single laptop input will be displayed on the screens for the room; lights for the overall space will be controlled from a single button push. The multiple projection screens will be capable of displaying independent or redundant images. The same sources will be available to the presenter from the lectern.

The same components would be used but in a combined mode.

All equipment that does not need to be accessed on a regular basis will be housed in audiovisual equipment racks within a closet or adjacent space.

The following describes the audiovisual components available for breakout sessions.

To support small group breakouts within both the divided and open space configurations, two wall-mounted flat panel displays will be provided for each divided room. Participants can use the displays for breakouts with wired

and wireless connectivity and collaboration. When not in use for breakouts the displays can be used as confidence monitors for the presenter.

A full size rack in the adjoining storage room will contain a fixed rack for components that do not require regular access by the presenter.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	Two ceiling-mounted, motorized projection screens
	Two ceiling-mounted video projectors
	Two wall-mounted flat panel displays
Input Sources	Dedicated computer with wireless keyboard and mouse
	Laptop connection
	Blu-ray™ / DVD player
	Document camera
	Auxiliary input for portable devices
	Wireless presentation gateway
	Wireless BYOD connection to display
Capture/ Collaborate	One wall-mounted pan/tilt/zoom video camera to support web-based conferencing and rich media capture
	Software based rich media capture
	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of student devices (wireless only)
Sound	Wireless microphone system including lavaliere microphones
	Ceiling microphones
	Microphones and inputs to support panel discussions
	Distributed ceiling loudspeakers for program audio and speech reinforcement
	Internal speakers of flat panel displays
	Assistive listening system for ADA compliance
Control	Color, wired touch panel at the lectern for simplified control of audio, display, lighting systems and motorized shades
	iPad / tablet control to supplement above
Furnishings	Two mobile presenter's lecterns to house all source devices and user interfaces
	Equipment rack located in adjacent Equipment Room

Figure 6.8.8-3: Divisible Meeting Rooms (40 Seat) - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images.
- Coordination of projector, projection screens, ceiling mics, and in-ceiling loudspeakers with lighting fixtures and other ceiling-mounted devices.
- At least four zones of lighting will be required: task light for the seating, task lighting for the lectern position, overall lighting, and lighting for breakout areas.
- Coordination of lectern with floor box locations for combined and divided spaces to support power, network, and AV connectivity.
- Coordination of break out configurations with floor box locations for combined and divided spaces to support power, network, and AV connectivity.
- Specialty floor and wall boxes will be used; general coordination is required.
- Confirm dividing wall meets acoustical isolation requirements.

Discussion Points:

- Should the projectors recess into the ceiling when not in use via projector lift?
- Are more than two flat panel displays required for small group use? Are mobile stand-mounted displays preferred over wall mounted displays?
- A closet or adjoining space location for one full sized rack is needed with access to power, network, and AV connectivity. The Meeting Room support space can be used but should not be shared with catering or storage of furniture due to sensitive electronics. Alternately, a credenza with internal rack would be used in the back of each room.
- Are two cameras needed for each divided individual room?

6.8.9 SECOND FLOOR: CONFERENCE ROOMS – 16 SEAT TOTAL (816 TOTAL SF) – QTY. 2

Two 16-person Conference Rooms with an acoustical partition are located adjacent to each other to allow for a larger Conference Room as needed. These rooms will be used primarily by the smaller departments for training and meetings. Each individual Conference Room can seat approximately 16 persons, depending on room configuration and layout. When the two rooms are combined it is expected that the space would comfortably seat approximately 32 persons. Furniture in the space will be flexible, with foldable tables and chairs on wheels. An acoustical partition will separate the two Conference Rooms. These rooms will be able to be scheduled for use through the University's standard touch panel scheduling system.

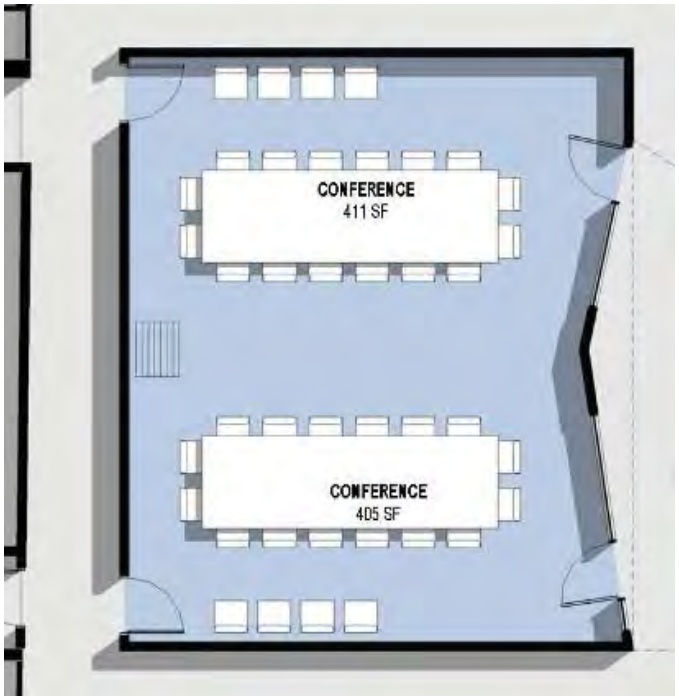


Figure 6.8.9-1: Conference Rooms (16 Seat) - AV Floor Plan

The Conference Rooms will include equipment to support enhanced audiovisual presentation, and web conferencing.

Each conference room will use a ceiling-recessed motorized projection screen and ceiling-mounted projector. The projection screen is planned to be tab tensioned for a flat image and in a widescreen aspect ratio of 16:9 image format with a screen height to maximize sight lines.

A lectern in the front of the room will secure rack-mounted equipment and will conform to campus standards. The lectern will include a large dedicated color touch panel for intuitive AV and room control, including lights, if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout.

A flat panel display will be wall mounted and located at the front of the room. A wireless presentation gateway will be provided to allow users to connect their laptops or tablet devices wirelessly to the in-room display for content collaboration. Users will also be able to connect the video output of their laptop/tablet to the flat panel display through wired audiovisual cable connections at the table.

Wall mounted fixed whiteboards are planned on walls opposite or adjacent to the main presentation wall for taking notes and traditional collaboration.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One ceiling-mounted, motorized projection screen
	One ceiling-mounted video projector
	One wall-mounted flat panel display
Input Sources	Laptop connections
	Auxiliary input for portable devices
	Wireless presentation gateway
	Wireless BYOD connection to display
Capture/ Collaborate	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of user devices (wireless only)
Control	Color, wired touch panel at the lectern for simplified control of audio, display, lighting systems
	Wall mounted reservation panel
Furnishings	One presenter's lectern to house all rack mounted equipment and user interfaces

Figure 6.8.9-2: Conference Rooms (16 Seat) - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images.
- Coordination of projector, projection screens, with lighting fixtures and other ceiling-mounted devices.
- At least two zones of lighting will be required: overall lighting, and presentation lighting.
- Coordination of lectern with floor box locations for combined and divided spaces to support power, network, and AV connectivity.
- Confirm dividing wall meets acoustical isolation requirements.

Discussion Points:

- Should the projectors recess into the ceiling when not in use via projector lift?
- Should whiteboards be fixed or mobile?
- Are fixed lecterns desired for each room or mobile lecterns?

6.8.10 GROUP STUDY ROOMS – 6-8 SEAT TOTAL (1,252 TOTAL SF) – QTY. 7

There will be seven 6-8 person Group Study rooms located throughout the Lower Level, Second and Third Floors. These rooms will be used primarily by students for group meetings and collaboration. Each study room can seat approximately 6-8 persons depending on size and location of the rooms within the building. Furniture in the space will be flexible with foldable tables and chairs on wheels. These rooms will be able to be scheduled for use through the University's standard touch panel scheduling system.

The study rooms will include equipment to support audiovisual based collaboration.

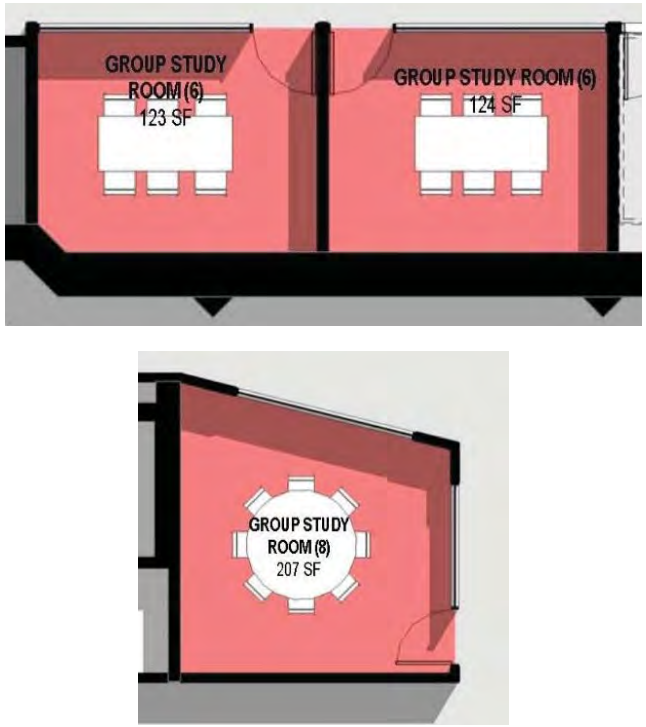


Figure 6.8.10-1: Group Study Rooms - AV Floor Plans

Each room will have a wall mounted flat panel display located on one wall. A wireless presentation gateway will be provided to allow users to connect their laptops or tablet devices wirelessly to the in-room display for content collaboration. Users will also be able to connect the video output of their laptop/tablet to the flat panel display through wired audiovisual cable connections at the table.

Wall mounted markerboard rails with mobile markerboards are planned on walls adjacent to the monitor for taking notes and traditional collaboration.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One wall-mounted
Input Sources	Laptop connections
	Auxiliary input for portable devices
	Wireless presentation gateway
	Wireless BYOD connection to display
Capture/ Collaborate	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of user devices (wireless only)
Control	Wall mounted reservation panel
Furnishings	Moveable tables and chairs (OFOI)

Figure 6.8.10-2: Group Study Rooms - Planned Audiovisual Components

Space Planning:

- Proper acoustical isolation within and between study rooms will be needed.
- Coordinate reservation panel with doors and walls.

Discussion Points:

- Should whiteboards be fixed or mobile?

6.8.11 DEAN'S MEETING ROOM – 8 SEAT TOTAL (335 TOTAL SF) – QTY. 1

A Meeting Room adjacent to the Dean's Office is sized to accommodate 8 people. The intent of this space is to allow private meetings required by the Dean, Assistant Dean, International Director or MBA Director with students, families, businesses, donors and staff. Furniture in the space will be a large center-located conference table with chairs on wheels. This room will not be available for use by other departments or general campus use.

The Meeting Room will include equipment to support audiovisual based presentations, and have floor mounted casework along one wall for food service and storage.

The Meeting Room will have a flat panel display located on one wall. A wireless presentation gateway will be provided to allow users to connect their laptops or tablet devices wirelessly to the in-room display for content collaboration.

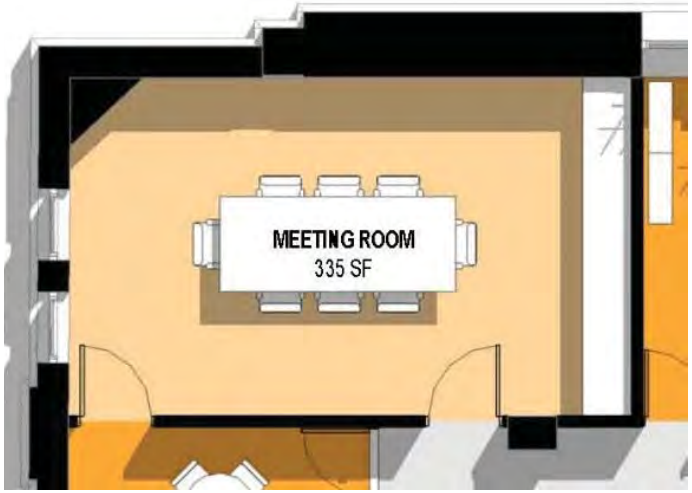


Figure 6.8.11-1: Dean's Meeting Room – AV Floor Plan

Users will also be able to connect the video output of their laptop/tablet to the flat panel display through wired audiovisual cable connections at the table.

Wall mounted markerboard rails with mobile markerboards are planned on walls adjacent to the monitor for taking notes and traditional collaboration.

Window shades are planned for control of daylight during presentations and meetings.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One wall-mounted flat panel display
Input Sources	Laptop connections
	Auxiliary input for portable devices
	Wireless presentation gateway
	Wireless BYOD connection to display
Capture/ Collaborate	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of user devices (wireless only)
Control	Wall mounted reservation panel
Furnishings	Fixed center table and chairs (OFOI)
	Fixed floor mounted casework along one wall

Figure 6.8.11-2: Dean's Meeting Room – Planned Audiovisual Components

Space Planning:

- Proper acoustical isolation between meeting room and adjacent office space will be required.

Discussion Points:

- Should whiteboards be fixed or mobile?

6.8.12 DEAN'S CONFERENCE ROOM – 24 SEAT TOTAL (434 TOTAL SF) – QTY. 1

A Conference Room located near the Dean's Office will be similar to other conference rooms available for use in the building. This room will be used primarily by the larger departments for training and meetings. The Conference Room can seat approximately 24 persons depending on room configuration and layout. Furniture for the space is planned to be a fixed large center table and chairs on wheels. This room will be available to be scheduled for use through the University's standard touch panel scheduling system.

The Conference Room will include equipment to support enhanced audiovisual presentation, and web conferencing and have a sink and floor mounted casework for food service and storage.

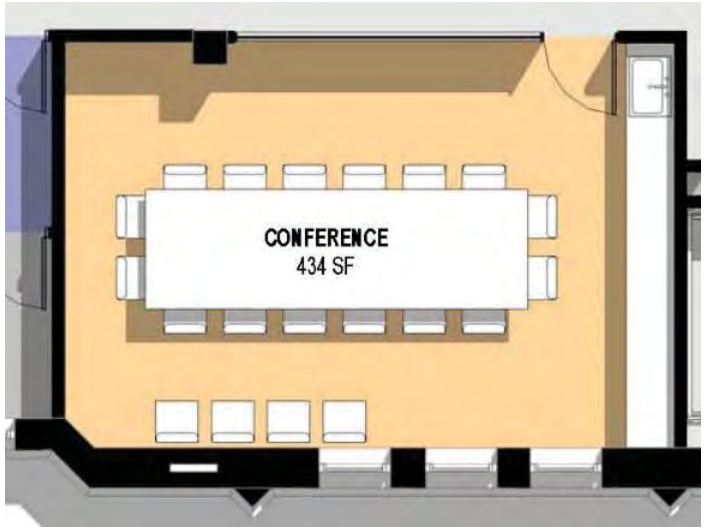


Figure 6.8.12-1: Dean's Conference Room - AV Floor Plan

The Conference Room will use a ceiling-recessed motorized projection screen and ceiling-mounted projector. The projection screen is planned to be tab tensioned for a flat image and in a widescreen aspect ratio of 16:10 image format with a screen height to maximize sight lines.

A portion of the casework will house secure rack-mounted equipment needed for AV control. Equipment will include a large dedicated color touch panel for intuitive AV and room control, including lights, if a dimming system is provided. The general user interface for the control system will be in keeping with University standards and layout.

A flat panel display will be wall mounted and located at the front of the room. A wireless presentation gateway will be provided to allow users to connect their laptops or tablet devices wirelessly to the in-room display for content collaboration. Users will also be able to connect the video output of their laptop/tablet to the flat panel display through wired audiovisual cable connections at the table.

Wall mounted fixed whiteboards are planned on walls adjacent to the main presentation wall for taking notes and traditional collaboration.

The following audiovisual components are planned:

Planned Audiovisual Components	
Display	One ceiling-mounted, motorized projection screen
	One ceiling-mounted video projector
	One wall-mounted flat panel display
Input Sources	Laptop connections
	Auxiliary input for portable devices
	Wireless presentation gateway
	Wireless BYOD connection to display
Capture/ Collaborate	Software-based videoconferencing codec (such as Skype)
	Basic collaboration system to allow simple screen sharing of user devices (wireless only)
Control	Color, wired touch panel at the wall for simplified control of audio, display, lighting systems
	Wall mounted reservation panel
Furnishings	Fixed floor mounted casework along one wall with sink

Figure 6.8.12-2: Dean's Conference Room - Planned Audiovisual Components

Space Planning:

- Plan to maximize ceiling height to allow for large images.
- Coordination of projector, projection screens, with lighting fixtures and other ceiling-mounted devices.
- At least two zones of lighting will be required; overall lighting, and presentation lighting.
- Acoustical isolation from adjacent corridor will be required.

Discussion Points:

- Should the projectors recess into the ceiling when not in use via projector lift?
- Should whiteboards be fixed or mobile?
- Would a mobile lectern to house AV equipment be desired?

6.8.13 BUILDING-WIDE AUDIOVISUAL SYSTEMS

Audiovisual Metacontrol System

Each room-specific audiovisual system described above will contain a control system with a standard user interface to facilitate ease of use. While this equipment is assigned to each room-specific system, all control system processors will be connected to the building LAN and thus will have Internet Protocol (IP) capabilities. The information carried by the LAN is low-bandwidth control command only, and does not include high-bandwidth audio or video signals.

The University will need to plan an allowance for facility-wide IP capabilities to provide software monitoring, control, and scheduling of systems on a room-by-room basis. This capability will allow remote management by authorized support staff of assets such as projector lamps and air filters, and will even provide email notifications of required service or breaches of security. This approach will enable the use of mobile devices such as Android phones, tablets, iPhones, and iPads to provide alternative control possibilities. Additionally, all push-button and touchpanel control functions for each system should be replicated on HTML-based web pages.

The cost of this capability is highly dependent on existing practices and software agreements.

Public Information Display and Digital Signage System

A budgetary allowance for public displays and digital signage is provided in the Opinion of Probable Cost .The campus standard for digital signage should be followed with this building. This will require close coordination with campus IT staff. A wall-mounted flat panel display with rear-mounted media player will be located on each floor to provide campus-wide news and announcements. A wall-mounted flat panel display with media player will also be located outside of the Dean's Office to provide College of Business Administration specific information.

Room Scheduling and Display System

A room scheduling system places touch-panel displays outside of various gathering spaces. In addition to displaying information related to when the room is scheduled and for what purpose, the system allows users to reserve the space based on availability, either at the panel or remotely via a web interface.

These systems are most valuable serving rooms with an irregular schedule, rather than a classroom with an established schedule.

An allowance is included in the Opinion of Probable Cost.

Television Distribution System

Standard cable television systems (CATV) based on coaxial cable are often provided as part of the structured cable design package. If this type of system is included within the building, cable TV "drops" should be provided at audiovisual equipment racks, digital signage and other locations that would benefit from having TV signals, including in the Student Investment Center.

Though an allowance is included to cover basic in-room estimated costs, this system must be designed in close coordination with campus technology staff to determine the optimal approach for this building. In addition, the cost of this system is typically part of the IT budget.

Portable Equipment Pool

Included is a budgetary allowance for a pool of portable equipment: The exact contents of this pool needs to be determined through further discussions, but could likely include any of the following:

- Portable assistive listening system.
- Additional wireless microphones.

6.9. SITE

6.9.1 SITE PREPARATION

Tree Removal

Remove and dispose of all trees as indicated and required for project construction.

Underground Site Demolition

Utilities shall not be abandoned in place.

Remove existing utility structures completely.

Site Earthwork

Grade site to achieve topography as indicated on plans.

Provide and maintain erosion and sediment control in compliance with WIDNR and City of La Crosse standards.

Topsoil and Planting Beds

Clean salvaged or imported material capable of passing the 1" sieve and meeting the requirements of Section 625.2(1) of the Standard Specifications for Highway Construction. The material shall be free of rocks, gravel, wood, debris, and of noxious weeds and their seeds.

Provide organic soil amendments and fertilizers as determined by soil tests.

Soil tests shall be performed on all salvaged or imported materials by an independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

Topsoil Mix for Lawns

Amended topsoil mix for seed lawn shall consist of a mix of one part of well-pulverized topsoil, as approved by the Landscape Architect upon review of soil test compliance for mechanical properties and pH range, and five parts coarse sand, one part organic amendment and all amendments recommended by the Soil Test Laboratory and as specified herein. Depth shall be 12 inches.

Topsoil for planters

Planting mix for raised planters and curbed planting beds shall consist of a mix of two parts of well-pulverized topsoil, as approved by the Landscape Architect upon review of soil test compliance for mechanical properties and pH range, and one part coarse sand, and all amendments recommended by the Soil Test Laboratory and as specified herein. Depth shall be as shown on plans.

Planting backfill mix for all trees over 1" in caliber planted into raised or curb planters shall include a "root" growth/acclimator, application rate, per manufacturer.

Topsoil for biofiltration areas

Engineered Soil shall comply with WI DNR Standard 1004. Engineered Soil hall be a blend of Sand and Compost. Engineered Soil shall consist of a mixture of 70 to 75% Sand and 25 to 30% Compost. The percentages are based on volume.

Engineered soil mix shall be free of rocks, stumps, roots, brush or other material over 1 inch in diameter. No other materials shall be mixed with the planting soil that may be harmful to plant growth or prove a hindrance to planting or maintenance.

Engineered soil mix shall have a pH between 5.5 and 8.0.

6.9.2 SITE PREPARATION

Paved Surfaces

Portland Cement concrete shall have a minimum design flexural strength of 4.48 to 4.83 MPa (650 to 700 psi) in not more than 28 days.

Concrete pavement (as permitted by DFD).

Bases & Subbases: Crushed concrete meeting specified gradation for aggregate base or subbase courses may be used.

Pedestrian paving

Provide a network of Portland Cement concrete sidewalks, separated from, but connected to vehicular circulations systems, to allow pedestrian circulation between various elements of the project.

Provide concrete paver areas (patios and walks as indicated on plans) Heavy vehicular paving brick; ASTM C 1272, Type F and Application PX designation appropriate for setting method.

Exterior Furnishings

All site furnishings will be provided by the Agency and shall conform to campus standard products, installation and appearance. Provide trash receptacles, benches, recycling receptacles, ash urns as indicated on the drawings.

Retaining Walls

Provide new cheek walls with brick veneer wall with cavity drain, weeps and decorative caps at northwest entry. Wall shall be concrete core construction with brick veneer and cap.

Provide concrete retaining walls with formliner finish for new plaza at main entry.

Provide concrete stairs and cheekwalls leading from main entry, west to Centennial Hall

6.9.3 LANDSCAPING

Provide complete landscaping consisting of lawn, groundcover, trees, shrubs, perennials and ornamental grasses as required to provide a quality, cost-effective, functional and visually appealing landscape program that will enhance the development.

Guarantee all landscaping for a period of three years after final acceptance of the project.

Provide complete landscaping maintenance, including routine mowing, for three full growing seasons after completion of planting.

Sodding

Provide Highland type, nursery-grown sod of dense growth, with a strong, fibrous root system, and shall be composed of at least seventy-five (75) percent Kentucky Bluegrass, mixed with fescue and perennial rye grasses, and free of pernicious weeds. Cut the sod at a length of approximately 2" (5.1 cm), and rake the sod free of debris.

Sod shall be grown in mineral soil and not peat.

Install standard sections of sod of enough strength to support their own weight and to retain their size and shape when held within its upper ten (10) percent and suspended vertically.

Plants

Preserve existing trees to the greatest extent possible.

All plant material shall conform to the American Standards for Nursery Stock.

6.9.4 SITE UTILITIES

Site Domestic Water Distribution

Domestic water supply will need to be replaced from water main north of project site.

A redundant water connection will be required for fire protection.

Sanitary Sewerage Utilities

Existing sanitary lines are original and need to be replaced. Connections are primarily on the west and south sides of the building. Connections around the building are 4" and 6" and upsize to an 8" at the south side of the building. These will need to be replaced, including the lateral run to the sewer main in the Mall area west of the building.

Stormwater Management

Storm is currently combined with sanitary sewer. These services will need to be separated and plumbed independently.

The stormwater management strategy for Wittich Hall should include a number of different practices to promote infiltration, capture of pollutants, and reduction of runoff rates and quantities. The following practices should be evaluated, pending the results of percolation testing on site:

Send roof runoff and other impervious areas to bioswales or bioinfiltration areas.

Use pervious pavers for outdoor plaza and seating areas where practicable.

Utilize underground detention chambers if the soil conditions do not support infiltration, or if the site area required for infiltration and detention is greater than what is available. (Using data from recent projects on the UWL campus indicates a soil and water table profile very conducive to high rates of infiltration).

Site Chilled Water

Demolition

Chilled water piping to Wittich Hall does not exist. No demolition is required.

New Work

Chilled water piping will be installed from the utility service corridor along the east side of the building and into the Lower Level of the 1930 wing where it will serve the new air handling units.

A chilled water BTU meter/flow meter will be provided for the building.

No filtration of chilled water is anticipated in this building.

There are no process cooling needs in the building.

Site Steam

General

The campus heating needs are met by the central heating plant that produces high pressure steam and distributes the steam at a nominal 100 psig. The high pressure steam is distributed throughout the campus through concrete box conduits.

Demolition

The existing low pressure steam and condensate pump discharge that serves Wittich Hall will be removed and replaced.

New Construction

A new concrete box conduit with 4" HPS branch piping and 2" CPD branch piping will be connected to steam pit. The box conduit will be extended into the existing service tunnel serving Wittich Hall.

The high pressure steam and condensate pump discharge will extend through the tunnel to a Mechanical Room where a new steam pressure reducing station will be provided.

6.9.5 ELECTRICAL SITE IMPROVEMENTS

Site Lighting

Provide new walkway/ security lighting in the revised green space to correspond with new sidewalks and paths. Fixtures shall be campus standard.

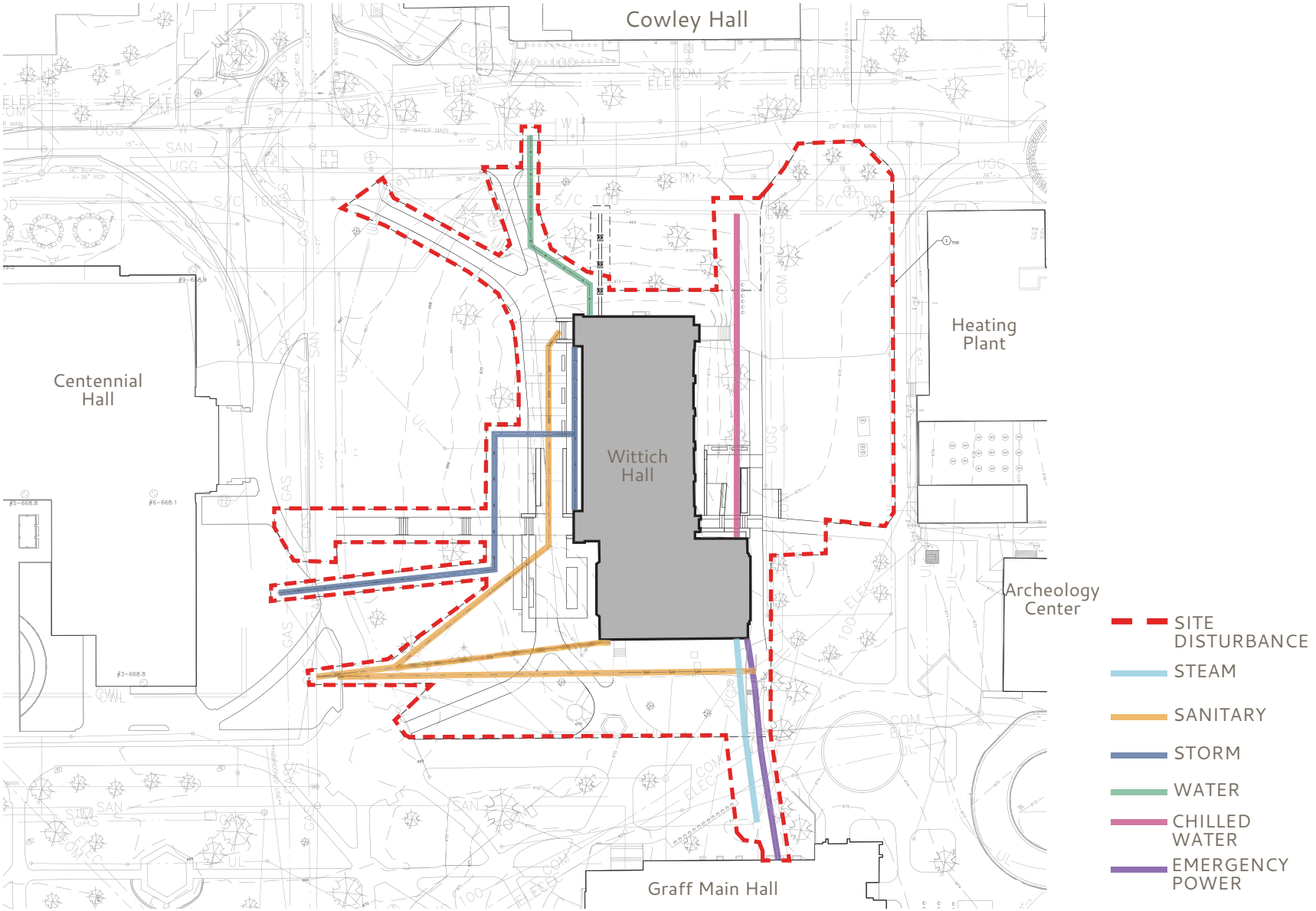


Figure 6.9.4-1: Proposed Site Utilities

7. CODE ANALYSIS

7. CODE ANALYSIS

7.1 OVERVIEW

During the time of this writing the Wisconsin Department of Safety & Professional Services (SPS) Chapter 362 uses the 2009 edition of International Building Code (IBC) as its basis. Adoption of a newer edition of the International Codes between now and plan review submittal is a realistic possibility. Analyis of future codes and DSPS ammendments are not considered in this code analysis.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
PROJECT DESCRIPTION	The Building was built in 1916 is located on the University of Wisconsin – LaCrosse Campus in LaCrosse, Wisconsin. The structure was originally designed per the 1915 Wisconsin Building Code. The addition was built in 1930 and was designed using the 1927 Wisconsin Building Code with 1929 Amendments.	The Wittich Hall Building is an approximately 59,395 SF concrete structure formed with clay tile. The structure consists of two connected wings; a three story wing to the north that contains offices, locker rooms, and a two story gymnasium with elevated running track, and a two story wing with an indoor pool, locker rooms and a two story gymnasium.	The code assessment for the Wittich Hall Building is to be used as a guide in determining existing code compliance requirements as well as a guide for the development of future plans for repairs, and alterations.
JURISDICTION	State of Wisconsin		
APPLICABLE CODES	International Building Code (IBC) 2009, Wisconsin Department of Safety & Professional Services (SPS) Chapter 362, International Existing Building Code (IEBC) 2009		International Code Council / American National Standards Institute ICC/ANSI A117.1 (2003), International Fire Code (IFC), ASTM International (ASTM) UL Underwriters Laboratory, International Mechanical Code (IMC)
CHAPTER 3 USE AND OCCUPANCY CLASSIFICATION			
PRIMARY USE	IBC (304.1)	Business Group B: (Educational occupancies above the 12th Grade)	
ACCESSORY USE	IBC (303.1)	Non-separated A-3 Occupancy	
ALTERATIONS – LEVEL 3	IEBC (801)	Level 3 alterations apply where the work area exceeds 50 percent of the aggregate area of the building.	This building will be a level 3 Alteration, all Level 2 alteration requirements apply
CHANGE OF OCCUPANCY	IEBC (901)	The provisions apply where a change of occpancy occurs including: 1. Where the occupancy classification is not changed, or 2. Where there is a change in occupancy classification or the occupancy group designation changes.	The occupancy group changes from an A-3, gymnasium to a type B Business Occupancy

Figure 7.1-1: Building Code Assessment

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
HISTORIC BUILDINGS	IEBC (1101)	Historical buildings shall comply with the provisions of this chapter relating to their repair, alteration, relocation and change of occupancy.	This building is an historic building and chapters 1104 Alterations and 1105 Change of Occupancy apply.
CHAPTER 5 BUILDING HEIGHTS AND AREA LIMITATIONS			
GENERAL	IBC (503.1) IEBC (1105.2) – Building Area	IBC – The building heights and areas shall not exceed the limits specified in Table 503 based on Type of Construction determined by Section 602 and the occupancies determined by Section 302. IEBC – Allowable floor area for historic buildings undergoing change of occupancy are permitted to exceed by 20% allowable areas in Chapter 5 of the IBC	
ALLOWABLE BUILDING HEIGHTS AND AREAS CONSTRUCTION TYPE & ALLOWABLE AREA	IBC (Table 503) IBC (504) IEBC (Table 912.5) IEBC (915.5.2)	IBC – Construction Type IIB with a group B allows 3 stories above grade plane, 19,000sf per story, and 55ft building height IEBC – When a change of occupancy classification is made to an equal of lesser hazard category the height and area of the existing building shall be deemed acceptable.	Actual area of the building is 14,869 sf per story, number of stories is 3 above grade plane, and building height is 47ft. Building meets existing IBC allowable areas without any increases for historic building or sprinkler system.
AUTOMATIC SPRINKLER SYSTEM INCREASE BUILDING AREA MODIFICATIONS	IBC (504.2) IBC (506.3)	Where a building is equipped throughout with an approved automatic sprinkler system, values for heights and areas may be increased.	With sprinkler system increase of 200%, floor area is allowed to be 38,000sf per story. Allowable story increase of 1 additional story to allow 4 stories, and an additional 20ft of building height. Building area meets the code requirements.
INCIDENTAL ACCESSORY OCCUPANCIES	IBC (Table 508.2.5)	Incidental accessory occupancies shall be separated from the remainder of the building, or be equipped with automatic fire-extinguishing system, or both per table 508.2.5.	Verify if separation is required for furnace room, boilers, or fire pump rooms, etc. No furnaces or fire pumps planned, boiler BTU's to be verified.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
CHAPTER 6 TYPES OF CONSTRUCTIOIN			
CONSTRUCTION CLASSIFICATION	IBC (602.3)	Type IIIB – Noncombustible exterior walls, interior of any material allowed by the code.	
FIRE-RESISTANCE RATING FOR BUILDING ELEMENTS	IBC (Table 601)	Primary Structural Frame = 0 hours Bearing Walls – Exterior = 2 hours Bearing Walls – Interior = 0 hours Nonbearing Walls – Exterior = (See Table 602), Nonbearing Walls – Interior = 0 hours Floor Construction = 0 hours Roof Construction & Secondary Members = 0	
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE	IBC (Table 602)	Less than 5' = 1 hour Greater than or equal to 5' but less then 10' = 1 hour Greater than or equal to 10' but less then 30' = 0 hour Greater than or equal to 30' = 0 hours	Building is greater than 30ft from adjacent buildings
MAXIMUM AREA OR EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION	IEBC (912.6.2)	Exterior wall rating for change of occupancy classification to an equal or lesser hazard category per table 912.6, the existing exterior walls and openings shall be accepted	Type A existing occupancy changing to type B Occupancy is an equal hazard level of 3, therefore existing exterior walls and openings are acceptable.
CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES			
OPENING PROTECTIVES	IEBC (912.6.3)	Openings in exterior walls shall be protected as required by the IBC.	Exception 4: Opening protectives are not required when the change of occupancy group is to an equal or lower hazard per table 912.6

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
FIRE PROTECTION	IEBC (804.1) IEBC (704.2.2) IEBC (1103.12)	In buildings with occupancy group B, that have exits and corridors serving an occupant load greater than 30 shall be provided with an automatic sprinkler system where all of the following occur: 1. The work area is required to be sprinklered per the IBC 2. The work area exceeds 50% of the the floor area 3. The building has sufficient water supply Every historic building that cannot be made to conform to the IBC for occupancy or use and constitutes a fire hazard shall be provided with a fire extinguishing system.	The work area is not required to be sprinklered per the current IBC, however a sprinkler system is being provided in the building.
FIRE BARRIERS	IBC (707)	Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of floor or roof sheathing, slab, or deck above and shall be securely attached thereto. Continuous through concealed spaces, such as above suspended ceilings.	Supporting construction for 1-hour fire barriers at incidental accessory occupancy locations for type IIIB is not required to be fire resistance rated unless required by other sections of the code.
SHAFT ENCLOSURES – GENERAL	IBC (708.1)	Shafts required to protect openings and penetrations through floor/ceiling and roof/ ceiling assemblies shall be constructed as fire barriers per Section 707 or horizontal assemblies per Section 712, or both.	Exception 2: The section shall not apply to buildings equipped throughout with automatic sprinkler system in accordance with Sections 903.3.1.1 for stairway that are not a portion of the means of egress and where the floor area does not exceed twice the horizontal projected area of stair and is protected by draft curtain and NFPA 13 approved sprinklers. Exception 11: Shaft enclosures not required for unenclosed stairs meeting exemption 3 or 4 of section 1016.1 (only connecting 2 stories and sprinklered throughout)
FIRE RESISTANCE RATING	IBC (708.4)	Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four or more stories and not less than 1 hour where connecting less than four stories (including basements). The rating shall not be less than the floor assembly penetrated, but need not exceed 2 hours and shall meet Section 703.2.1 requirements.	All new shaft enclosures will be built and comply with required fire resistance ratings.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
VERTICAL OPENINGS	IEBC (703.2) IEBC (912.7.3)	Existing interior vertical openings connecting two or more floors shall be enclosed with fire-resistant rated assemblies of not less than 1 hour with approved opening protectives. Interior Vertical Shafts other than stairways shall be enclosed as required by the IBC when there is a change of occupancy to a higher hazard category.	Exception 5: In Group B a minimum 30 minute enclosure shall be provided to protect all vertical openings not exceeding three stories, however it is not required in buildings protected throughout with an automatic fire sprinkler system Change of occupancy is to a lower hazard category
STAIRWAYS	IEBC (912.7.2)	Interior stairways shall be enclosed per the IBC where the change of occupancy is to a higher hazard category	Change of occupancy is to a lower hazard category
SUPPLEMENTAL STAIRWAY ENCLOSURE REQUIREMENTS	IEBC (703.2.3)	Where the work area on any floor exceeds 50% of the floor area stairways that are part of the means of egress serving the work area shall be enclosed with smoke-tight construction on the highest work area floor and floors below.	Exception: Where stairway enclosure is not required per the IBC or IFC.
SMOKE PARTITIONS	IBC (711)	Smoke partitions are not required to have a fire resistance rating and should extend from the foundation to the roof, deck or floor above	
HORIZONTAL ASSEMBLIES	IBC (712)		
PENETRATIONS - SCOPE	IBC (713.1)	This section governs the materials and methods of construction used to protect through penetrations and membrane penetrations of horizontal assemblies and fire-resistance-rated wall assemblies.	Ducts, piping, and conduit penetrations at stairs, duct shafts, and between floors shall be properly sealed.
THROUGH-PENETRATION FIRESTOP SYSTEM	IBC (713.4.1.1.2)	Through penetrations shall be protected by an approved through-penetration firestop system.	System shall be installed and tested per ASTM E 814 or UL 1479 with a min. positive pressure differential of .01" of water and a F rating/ T rating of not less than 1 hour or not less then the requirement of the floor penetrated.
DISSIMILAR MATERIALS	IBC (713.4.1.4)	Noncombustible penetrating items shall not connect to combustible materials beyond the point of firestopping, unless fire-resistance of assembly can be maintained.	
PENETRATIONS IN SMOKE BARRIERS	IBC (713.5)	Penetrations in smoke barriers shall be tested per the requirements of UL 1479 for air leakage.	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
OPENING PROTECTIVES FIRE DOOR AND SHUTTER ASSEMBLIES	IBC (715) (Table 715.4)	Approved fire door and fire shutter assemblies shall be constructed of materials that conform to the test requirements of sections 715.4.1 – 715.4.3, Table 715.4, and NFPA 80.	Doors in 1-hour shaft and exit enclosure walls: 1-hour rated Other 1-hour fire barriers: 3/4-hour rated Doors in fire partition: .5 to 1-hour corridors walls: 1/3-hour rated Doors in 1-hour smoke barriers: 1/3-hour rated
GLAZING IN DOORS ASSEMBLIES	IBC (715.4.3.2)	In 20 minute fire door assembly, the glazing in door shall have a min. 20 minute fire rating. (exempt from hose stream test) Other glazing areas shall be tested per NFPA 257 or UL 9 and hose stream test.	
GLAZING IN DOORS	IBC (715.4.4.1)	Fire-protection-rated glazing in excess of 100 square inches is permitted when tested as a door component and not a glass light. Maximum transmitted temp rise of 450 degrees F.	Exception: Max transmitted temp rise not required with automatic sprinkler system.
FIRE DOOR FRAMES AND TRANSOM LIGHTS AND SIDELIGHTS	IBC (715.4.5)	Door frames with transom lights, sidelights or both are permitted in 3/4 hour or less fire protection rating is required. Where fire protection rating of 3/4 hour or more is required, transom lights, sidelights or both are permitted where fire-resistance rated glazing is used.	
GLAZING MATERIAL SIZE LIMITATIONS	IBC (715.4.7.1)	Fire protection rated glazing used in fire doors shall comply with the size limitations of NFPA 80	
DOOR CLOSING	IBC (715.4.8)	Fire doors shall be self or automatic-closing per NFPA 80.	
SMOKE-ACTIVATED DOORS	IBC (715.4.8.3)	Automatic-closing doors by actuation of smoke detectors per Section 907.3 or by loss of power shall not have more than a 10 second delay.	Verify existing or new construction meet these requirements for door installed: 1) across corridors, 2) that protect exits or corridors in fire-resistance-rated construction, 3) smoke resistance, 4) smoke barriers, 5) fire partitions, 6) fire walls, 7) shaft enclosures, 8) refuse, laundry, or termination rooms, 9) underground compartments, 10) underground elevator walls, 11) smoke partitions.
DUCTS AND AIR TRANSFER OPENINGS	IBC (713.1.1) (716.1.1)	Penetrations of fire-resistance-rated walls by ducts that are not protected with dampers shall comply with Sections 713.2 – 713.3.3.	Duct and air transfer openings that are protected with dampers shall comply with Section 716.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
FIRE DAMPERS – WHERE REQUIRED	IBC (716.5) (716.5.1) (716.5.2) (716.5.3)	Required for duct penetrations of fire walls (horizontal exits) fire barriers, and shaft enclosures,.	(716.5.2) Exception 3: Not required in 1-hour fire rated barriers (716.5.3) Exception 1: Not required at shaft penetrations where steel exhaust subducts extend at least 22" vertically in exhaust shafts provided there is a continuous airflow upward to outside.
SMOKE DAMPERS – HORIZONTAL EXITS	IBC (716.5.1.1) (716.5.2.1)	A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a fire wall or fire barrier that serves a horizontal exit.	Not required at duct penetrations of shaft enclosures.
THERMAL AND SOUND INSULATION MATERIALS	IBC (719.3 & 719.7)	Exposed insulating material and coverings on pipe and tubing shall have a flame spread index of not more than 25 and a smoke index of not more than 450 and shall comply with all IMC requirements.	
CHAPTER 8 INTERIOR FINISHES			
INTERIOR WALL AND CEILING FINISHES	IBC (803.1.1) (Table 803.9)	ASTM E 84 or UL 723 material classifications: Class A: Flame spread index 0-25; Smoke index 0-450 Class B: Flame spread 26-75; Smoke 0-450 Class C: Flame spread 76-200; Smoke 0-450 **Class C interior finish materials shall be permitted for wainscoting or paneling of not more than 1,000 square feet of applied surface area in the grade lobby where applied directly to a noncombustible base or over furring strips applied to a noncombustible base and fireblocked as required by Section 803.11.1	Group B: Sprinklered Exit enclosure and exit passageway = Class B Corridors = Class C Rooms and Enclosed spaces = Class C
INTERIOR FLOOR FINISHES	IBC (804.4.1)	Minimum Class II floor coverings	Exception: Where building is sprinklered throughout materials complying with DOC FF-1 "pill test" are permitted

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
CHAPTER 9 FIRE PROTECTIVE SYSTEMS			
AUTOMATIC SPRINKLER SYSTEM	IBC (903) (903.2.1.3) (903.2.10)	Every historic building that cannot be made to conform to the IBC for occupancy or use and constitutes a fire hazard shall be provided with a fire extinguishing system.	
AUTOMATIC SPRINKLER SYSTEM	IEBC (704.2.2)	In group B occupancies where the occupant load is greater than 30, the the work area exceeds 50% of the floor area, and there is sufficient water supply without installing a fire pump, sprinklering is required	Building work area is greater than 50%, occupant load is over 30 and there is suffiencent water supply, therefore sprinklers are required.
MANUAL FIRE ALARM BOXES AND AUTOMATIC FIRE DETECTION	IEBC (804.2) IBC (907.2.2)	804.2 – Manual fire alarm and Automatic Fire Detection systems are to be installed as required by the IBC 907.2.2 – Manual fire alarm system shall be installed in Group B occupancies where one of the following conditions exist: Combined occupant load is 500 or more, or occupant load is more than 100 persons above or below the lowest level of exit discharge.	Exception: Manual boxes are not required where the building is equipped with an automatic sprinkler system
HEIGHT	IBC (905.3.1)	Class III standpipe systems shall be installed where the floor level of the highest story is located more than 30 feet above the lowest level of fire department vehicle access.	Highest story is 29'–8" above lowest grade point adjacent to building. Verify with fire department that standpipes are not required. Refer to Exceptions: 1) Class I standpipes are allowed in buildings with automatic sprinkler systems. Installation shall comply with NFPA 14 and locations per Section 905.4
PORTABLE FIRE EXTINGUISHERS	IBC (906)	Portable fire extinguishers shall be installed and maintained per this section and NFPA 10.	Class A – Light Hazard Occupancy requires 2–A fire extinguisher and a maximum travel distance of 75ft to each extinguisher.
FIRE ALARM AND DETECTION SYSTEMS NEW BUILDINGS AND STRUCTURES	IBC (907.2)	An approved fire alarm system installed per this code and per NFPA 72 shall be provided.	See Group B requirements below

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
GROUP B	IBC (907.2.2)	A manual fire alarm system shall be installed in Group B where one of the follow exists: 1) The combined Group B occupant load of all floors is 500 or more, 2) The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge. 3) Area contains ambulatory health care.	Exception: Not required where the building is equipped throughout with automatic sprinkler system in accordance with Sections 903.3.1.1 and the occupant notification appliance will activate in the zone upon waterflow.
SMOKE DETECTORS	IBC (907.4.3)	Where an automatic smoke detection system is required it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detection cannot be used approved heat detectors shall be permitted.	
MANUAL FIRE ALARM BOXES	IBC (907.4.2)	Where a manual fire alarm system is required by another section of this code, it shall be activated by fire alarm boxes.	Review sections 907.4.2.1 through 907.4.2.5 for installation requirements.
FIRE DEPARTMENT CONNECTIONS	IBC (912.1)	Fire department connections shall be installed per NFPA standards applicable to the system design and per Sections 912.2 – 912.5.	Locate connections on the street side in a visible location at the nearest point of fire department vehicle access. Clear space required at the connection is 36”wx36”D,78”H, verify existing fire department connections.
EMERGENCY RESPONDER SAFETY FEATURES – SHAFTWAY MARKINGS	IBC (914.1)	Vertical shafts shall be identified per Sections 914.1.1 – 914.12.	Verify all shaftways exterior or interior are labeled ”SHAFTWAY” per requirements of this section.
EMERGENCY RESPONDER RADIO COVERAGE	IBC (915.1)	Emergency responder radio coverage shall be provided in all new buildings per Section 510 and the IFC.	Provide radio coverage as required.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
CHAPTER 10 MEANS OF EGRESS			
DESIGN OCCUPANT LOAD	IBC (1004.1)	In determining means of egress requirements, the number of occupants for whom means of egress facilities shall be provided shall be determined in accordance with this section. Where occupants from accessory areas egress through a primary space, the calculated occupant load for the primary space shall include the total occupant load of the primary space plus the number of occupants egressing through it from the accessory area.	Business = 100 gross / sf Lower Level Occupant Load = 14,826 / 100 = 149 people First Floor Occupant Load = 14, 849sf / 100 = 149 people Second Floor Occupant Load = 14,868sf / 100 = 149 people Third Floor Occupant Load = 14,869sf / 100 = 149 people
EGRESS WIDTH MINIMUM REQUIRED EGRESS WIDTH	IBC (1005.1)	The means of egress width shall not be less than required by this section. The total width of means of egress in inches shall not be less than the total occupant load served by the means of egress multiplied by 0.3 inch per occupant for stairways and by 0.2 inch per occupant for other egress components. The width shall not be less than specified elsewhere in this code. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. The maximum capacity required from any story of a building shall be maintained to the termination of the means of egress. Exit capacity shall not decrease in the direction of egress travel.	Occupant load x .2" = Door Width Occupant load x .3" = Stairways Stairways = 149 x .3" = 45", or not less than 44" per 1009.1 Other egress components = 149 x .2" = 30", or not less than 32" clear but less than 48" required by section 1008.1.1
DOOR AND DOOR HARDWARE ENCROACHMENT	IBC (1005.2 – 1005.3)	Doors, when fully opened, and handrails shall not reduce the required means of egress width by more than 7 inches. Doors in any position shall not reduce the required width by more than one-half. Surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch max. rule when: 1. The hardware is mounted to the side of the door facing the corridor width when the door is in the open position; and 2. The hardware is mounted not less than 34 inches or more than 48 inches above the finished floor.	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
PANIC HARDWARE	IEBC (705.4.4)	Group A occupancies (lecture halls, classrooms, commons) with occupant load >100	If work area exceeds 50% of floor, entire floor shall comply.
MEANS OF EGRESS ILLUMINATION	IBC (1006.1) (1006.4)	The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.	Additional exit signs may be required. A lighting upgrade is required, verify emergency power for all: corridors, exist enclosures, and exit passage ways in building required to have two exits and exterior landings.
MEANS OF EGRESS ILLUMINATION	IEBC (705.7.2) IBC (1006)	The means of egress including the exit discharge shall be illuminated at all time the building is occupied.	Illumination level shall be not less than 1 footcandle at the walking surface. Emergency power required for no less than 90 mins to illuminate aisles and egress stairways, corridors, exit enclosures and exit passageways, exterior egress components at level of discharge.
ACCESSIBLE MEANS OF EGRESS	IBC (1007.1) (IEBC 605.1.1) (ICC/ANSI A117.1 – Table 405.2, 405 & 505)	Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress.	Exceptions: 1. Accessible means of egress are not required in alterations to existing buildings. IEBC Section 605.1.1. Requires accessible entrances and routes to primary functions.
ELEVATORS REQUIRED	IBC (1007.2.1)	In buildings where a required accessible floor is four or more stories above or below a level of exit discharge, at least one required accessible means of egress shall be an elevator.	Elevator is not required, there are only three stories, however one will be provided.
CONTINUITY AND COMPONENTS	IBC (1007.2)	Each required accessible means of egress shall be continuous to a public way.	
STAIRWAYS	IBC (1007.3)	In order to be considered part of an accessible means of egress, an exit access stairway shall have a clear width of 48 inches minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge or a horizontal exit.	This requirement is exempt with an automatic sprinkler system, and per 1007.1 exception 1, but may want to considered for design of the facility.
DOORS, GATES, AND TURNSTILES SIZE OF DOOR	IBC (1008.1.1)	32" minimum clear width & 48" maximum single door leaf	36" recommended for wheelchair use.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
DOOR SWING	IBC (1008.1.2) (1008.1.9.2) IEBC (705.4.2)	Doors shall swing in the direction of egress travel where serving an occupant load of 50 or more persons	All rooms of A-3 occupancy apply.
HARDWARE	IBC (1008.1.9.1)	Door handles, pulls, latches, locks and other operating devices on doors shall not require tight grasp, pinching, or twisting of the wrist to operate.	Building locksets require re-keying are obsolete and do not meet ADA requirements. Replacement of all door hardware required.
HARDWARE HEIGHT	IBC (1008.1.9.2)	Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches minimum and 48 inches maximum above the finished floor.	
STAIRWAY DOORS	IBC (1008.1.9.10)	Interior stairway means of egress doors shall be operable from both sides without the use of a key or special knowledge or effort.	
PANIC & FIRE EXIT HARDWARE	IBC (1008.1.10)	Doors serving a Group H occupancy and doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock unless it is panic hardware or fire exit hardware.	Panic hardware required at all A-3 occupancies.
STAIRWAY WIDTH	IBC (1009.1)	Stairways serving 50 or more occupants are required to be a minimum of 44" wide, an occupant load of less than 50 shall have a width of not less than 36 inches. Also see Sections 1005.1 and 1007.3	Stairway width per 1005.1 requires 45" based on occupant load of the floor.
HEADROOM	IBC (1009.2)	Stairways shall have a minimum headroom clearance of 80 inches measured vertically from a line connecting the edge of the nosings.	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
RISER HEIGHT AND TREAD DEPTH	IBC (1009.4.2) IEBC (912.4.2)	Stair riser heights shall be 7 inches maximum and 4 inches minimum. Tread depths shall be 11" min. IEBC – Where a change of occupancy to a lower classification is made of equal or lesser hazard category, existing elements shall comply with IEBC 805. Newly contructed stairways shall comply with Chapter 10 of the IBC.	Exception: Any stair replacing an existing stairway where the pitch or slope cannot be reduced because of existing construction shall not be required to comply with riser height and min. tread depth requirements. IEBC 805 requires egress lighting and exit signage per the IBC.
STAIRWAY CONSTRUCTION	IBC (1009.6)	Can be of any material permitted in type IIIB construction.	
ENCLOSURE UNDER STAIR	IBC (1009.6.3)	The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways shall be protected by 1-hour fire-resistance-rated construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stair enclosure.	Stairs enclosed as a headroom barrier is must meet requirements of this section.
VERTICAL RISE	IBC (1009.7)	No rise greater than 12ft permitted between floors or landings.	
HANDRAILS	IBC (1009.12) (1012.6) (1012.3) (1022.7) (1012.3) (1012.7)	Stairways shall have handrails on each side. Where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. A stairway in an exit enclosure shall not continue below its level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided.	Upgrade all stair guard and handrails that remain to meet code. Handrail height, measured above stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches and not more than 38 inches and must meet graspability and clearance requirements.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
ROOF ACCESS	IBC (1009.13.1) (1009.13.2)	In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet in area and having a minimum dimension of 2 feet. Buildings four or more stories require a stair to the roof. Provide protection if within 10 feet of roof edge.	There is an existing roof hatch for the building.
EXIT SIGNS	IBC (1011.1) (1011.3) IEBC (805.3)	Required indicating the direction of egress travel for rooms and areas that require more than one exit access. No point in exit access corridor shall be more than 100' from visible exit sign. Signs shall be provided adjacent to each door to an egress stairway.	Exit signs required in rooms of 50 or more occupants; type A-3 occupancy.
GUARDS	IBC (1013.1) (1013.2)	Guards shall be located along open-sided walking surfaces, mezzanines, platforms, stairs, ramps and landings that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side.	Guards shall be not less than 42 inches in height.
EXIT ACCESS – EGRESS THROUGH INTERVENING SPACES	IBC (1014.2)	Egress from a room or space shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms or areas and the area served are accessory to one or the other, are not a Group H occupancy and provide a discernible path of egress travel to an exit.	
COMMON PATH OF EGRESS	IBC (1014.3)	In type B occupancies the common path of egress shall not exceed 75ft.	Exception 1: With sprinkler system type B occupancy common path of egress is increased to 100 ft.
EXITS AND EXIT ACCESS DOORWAYS	IBC (1015.1) IEBC (705.4.1)	Two exits or exit access doorways from any space shall be provided where any of the conditions exist. 1. Occupant load exceeds 49 for type B or A occupancy. 2. The common path of egress travel exceeds 100ft per 1014.3. Per IEBC 705.4.1 All rooms over 50 occupants where travel distance exceeds 75ft shall have 2 egress doors.	Occupant load for type A-3 exceeds 49, therefore 2 exits are required from large meeting room.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
EXIT ACCESS DOORWAY ARRANGEMENT	IBC (1015.2.1) (1015.2.1.2)	Where two exits or exit access doorways are required from any portion of the exit access, the exit doors or exit access doorways shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between exit doors or exit access doorways.	Where a building is equipped throughout with an automatic sprinkler system the separation distance of the exit doors or exit access doorways shall not be less than one-third of the length of the maximum overall diagonal dimension of the area served.
EXIT TRAVEL DISTANCE	IBC (Table 1016.1)	The maximum travel distance to an exit (exterior exit, enclosed stairway, or horizontal exit) is 200 feet (B Occupancy), with 300 feet permitted with a sprinkler system.	Exception 3 and 4: 50% of stairways can be unenclosed if only connecting 2 stories or the first and second floor provided there are two means of egress from those levels.
CONSTRUCTION	IBC (1018.1) (709.1)	The corridor walls are required to be fire-resistance rated unless an automatic sprinkler system is installed.	Corridor walls not required to be rated with a automatic sprinkler system.
CORRIDOR WIDTH OR EXIT PASSAGEWAYS	IBC (1018.2) (1023.2)	The minimum corridor width shall be as determined in Section 1005.1 , but not less than 44 inches.	Exception: May be reduced to 36 if serving 50 or fewer occupants.
DEAD END CORRIDORS	IEBC (705.6) IBC (1018.4)	35 ft maximum dead end corridor length.	Per IBC section 1018.4; exception 2: In type B occupancies that are sprinklered dead end corridor length can be increased to 50 ft.
NUMBER OF EXITS AND CONTINUITY	IBC (Table 1021.2)	Exits required per story are: 1-500 occupants = 2 exits.	Two exits per story are required.
EXIT ENCLOSURES	IBC (1022.1) IBC (708.2)	Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories.	A shaft enclosure is not required with sprinkler system for a stairway that is not a means of egress. IBC Section 708; Exception 2: The section shall not apply to buildings equipped throughout with automatic sprinkler system in accordance with Sections 903.3.1.1 for stairway that is not a portion for the means of egress and where the floor area does not exceed twice the horizontal projected area of stair and is protected by draft curtain and NFPA 13 approved sprinklers.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
REDUCED VERTICAL CLEARANCE AND PROTRUSION LIMITS.	ICC/ANSI A117.1 (307.2) (307.4)	Guardrails or other barriers shall be provided where object protrusion is beyond 4" max. and greater than 27" and not more than 80 inches above floor.	Provide guardrails or barriers at 27" max. above floor where required.
DISCHARGE IDENTIFICATION	IBC (1022.7) (1022.8.1)	A stairway in an exit enclosure shall not continue below its level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Signage shall be provided per Section 1022.8.1.	Provide barriers and signage at the level of discharge as required.
HORIZONTAL EXITS	IBC (1025)	Horizontal exits serving as an exit in a means of egress system shall comply with the requirements of this section. A horizontal exit shall not serve as the only exit from a portion of a building, and where two or more exits are required, not more than one-half of the total number of exits or total exit width shall be horizontal exits.	
EXIT DISCHARGE	IBC (1027)	Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide direct access to grade. The exit discharge shall not reenter a building. The combined use of Exceptions 1 and 2 below shall not exceed 50 percent of the number and capacity of the required exits.	A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule or areas on the level of discharge provided all of the Section 1027.1 sub-requirements are met.
CHAPTER 15 ROOF ASSEMBLIES AND ROOFTOP STRUCTURES			
ROOF COVERING CLASSIFICATION	IBC (Table 1505.1)	Roof Covering Classification = Class C	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
CHAPTER 16 STRUCTURAL DESIGN			
LOAD CAPACITY	IEBC 707.3	Existing structures may be analyzed under the loads applied at the time of construction, provided that loading conditions have not changed.	Structural elements for all areas that do not change use may remain in service without alteration.
LIVE LOAD CAPACITY	IEBC 707.4 IBC 1607.3	Existing structural elements supporting any additional gravity loads as a results of alternations, shall comply with the IBC. Floors were designed for: Typical (Classrooms, Offices) = 60 psf Stairs = 100 psf Corridors, Lobbies = 80 psf Partitions = 20 psf (Low Rise), 10 psf (High Rise) Mechanical Rooms = 100 psf Roof = 30 psf Floor loads are reduced by 20 psf for non-combustible construction Current Load Requirements are: Classroom = 40 psf Office = 50 psf Corridors, Lobbies = 80 psf upper floors, 100 psf first floor Stairs and exits = 100 psf Storage = 100 psf Partitions = 15 psf (Where partitions are fixed in place for future use, they can be analyzed specifically and the floors of the High Rise may be capable of supporting those loads) Roof = 20 psf	
SNOW LOAD CAPACITY	IEBC 707.4 ASCE 7-05 Section 7.7 & 7.8	Existing structural elements supporting any additional gravity loads as a results of alternations, shall comply with the IBC.	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
WIND LOAD CAPACITY	IEBC 707.5 & 807.4 ASCE 7-05 Chapter 6	If structural alterations affect greater than 30 percent of the floor and roof areas of the building, structure must comply with the IBC for wind loading. If structural alterations affect less than 30 percent of the floor and roof areas of the building, structure must comply with the wind loads applicable at the time of construction. Wind Loads applied at time of construction = 30 psf Wind Loads per IBC = 18 psf maximum	Main Wind Force Resisting System (MWFRS) wind loads from the current IBC are lower than the wind loads applied at the time of construction. The building currently meets IBC requirements. Any specific structural alterations will need to be checked for compliance with IEBC.
SEISMIC LOAD CAPACITY	IEBC 707.5 & 807.4 ASCE 7-05 Chapters 11 & 12	At the time of construction, the Wisconsin Building Code did not address seismic design. The IEBC addresses this as follows: If structural alterations affect greater than 30 percent of the floor and roof areas of the building, structure must comply with reduced IBC level seismic forces as specified in Section 101.5.4. If structural alterations affect less than 30 percent of the floor and roof areas of the building, structure must comply with the seismic loads applicable at the time of construction.	
SEISMIC LOAD CAPACITY	IEBC 707.5 & 807.4 ASCE 7-05 Chapters 11 & 12	Base Shear from Seismic Loads per IBC: Low Rise, both directions = 112 kips.	
GRAVITY LOADS	IEBC (707.4)	Alteration shall not reduce the capacity of existing gravity load-carrying structural elements unless demonstrated able to carry per IBC.	
LATERAL LOADS	IEBC (707.5)	Any existing lateral load-resisting structural element whose demand-capacity ratio with the alteration considered is more than 10 percent freater than its demand-capacity with the alteration ignored shall comply with IEBC 807.4	

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
CHAPTER 29 PLUMBING SYSTEMS			
FIXTURE CALCULATIONS	IBC (2902.1.1) (Table 2902.1)	Fixture calculations for Business Occupancy: Male & Female: Water closets – Provide 1 per 25 for the first 50 and 1 per 50 after. Urinals – Not more than 50%. Lavatories – 1 per 40 for the first 80 and 1 per 80 after. Drinking Fountains: 1 per 100 Service sink: 1 per building	3rd Floor: Occupant Load = 149 Women's: Water closets (3) required – (3) provided, Lavatories (2) required – (2) provided. Men's: Water closets (3) required – (3) provided, Lavatories (4) required – (2) male (2) female provided (1) Gender neutral toilet provided additionally 2nd Floor: Occupant Load = 149 Women's: Water closets (3) required – (3) provided, Lavatories (2) required – (2) provided. Men's: Water closets (3) required – (3) provided, Lavatories (4) required – (2) male, (2) female provided (1) Gender neutral toilet provided additionally
			1st Floor: Occupant Load = 149 Women's: Water closets (3) required – (3) provided, Lavatories (2) required – (2) provided. Men's: Water closets (3) required – (3) provided, Lavatories (4) required – (2) male, (2) female provided (1) Gender neutral toilet provided additionally Lower Level: Occupant Load = 149 Women's: Water closets (3) required – (3) provided, Lavatories (2) required – (2) provided. Men's: Water closets (3) required – (3) provided, Lavatories (4) required – (2) male, (2) female provided (1) Gender neutral toilet provided additionally (2) Drinking Fountains required per floor – (2) provided per floor (1) Service Sink required for building – (4 provided; one on each floor)
CHAPTER 30 ELEVATOR & CONVEYING SYSTEMS			
OPENING PROTECTIVES	IBC (3002.1)	Elevators shall be shaft enclosures per Section 708 constructed of fire barriers = 2 hours for 4 stories or more.	Elevator shaft will need to be 2 hour rated.

CATEGORY	APPLICABLE CODE REFERENCE	DESCRIPTION	REMARKS
EMERGENCY SIGNAGE	IBC (3002.3)	An approved pictoral sign to be located at each floor instructing occupants to not use elevator and use exit stairs in case of fire emergency.	
ELEVATOR SIZE	IBC (3002.4) (3003 – 3004)	Provide an elevator car to accommodate ambulance stretcher in buildings 4 stories stories or more above grade.	Building is only 3 stories above grade plane, but will be included as part of the design.
ELEVATOR ENCLOSURE	IBC (3002.7)	Elevator cannot be located in a common shaft enclosure with a stairway.	
EMERGENCY OPERATIONS	IBC (3003)	Where standby power is required or provided, one elevator shall automatically transfer to to standby within 60 seconds after failure of normal power.	Standby power is not required, however it will be provided.
MACHINE ROOM VENTILATION	IBC (3003.1.4)	Machine room venting and air conditioning must be connected to standby power.	
FIRE FIGHTER'S OPERATION	IBC (3003.2)	Provide with Phase 1 emergency recall and Phase 2 in car operation per ASME A17.1/CSA B44.	
HOISTWAY VENTING	IBC (3004)	Hoistways penetrating more than 3 stories shall be provided with a means for venting smoke and hot gases in case of a fire.	Exception 1: Venting not required in B occupancy where equipped with a sprinkler system throughout.
PLUMBING AND MECHANICAL	IBC (3004.4)	Plumbing and Mechanical systems are not allowed in the elevator shaft except floor drains, sumps, and sump pumps at the base level.	
MACHINE ROOMS	IBC (3006) IBC (3006.5) IBC (3006.6)	Must be enclosed by fire barrier not less than that required for the elevator hoistway. Must have independent ventilation and air conditioning. If serving a pressurized hoistway, it shall be pressurized upon activation of a heat or smoke detector in the hoistway.	Shunt trip required to disconnect main power line before water is applied. Also, no plumbing allowed in elevator machine rooms.
MECHANICAL	IEBC (709.1)	Reconfigured converted spaces in work area per IMC.	
PLUMBING	IEBC (710)	If occupant load of story is increased more than 20%, fixtures to meet IPC based on increased occupant load.	
ELECTRICAL	IEBC (708.1)	All newly installed electrical equipment and wiring relating to work done in any work area shall comply with the materials and methods requirements of Chapter 6.	

8. PROJECT COST ESTIMATE

8. PROJECT COST ESTIMATE

8.1 BUDGET COMPARISON

A detailed cost analysis was prepared by Middleton Construction Consulting for this report. The following is a comparison of the 10% concept report budget and the initial budget established in the All Agency Request dated 7/28/14. In summary, the project is slightly under the budget established by the All Agency Request.

	Major Project Budget Worksheet 7/28/14		10% Concept Report Budget 10/12/2016		Delta	Comments
	UWSA Estimate	% of total		% of total		
Summary						
General Prime		0.0%	$5,957,232	53.0%	$5,957,232	
Electrical (including IT & 50% AV)		0.0%	$2,103,708	18.7%	$2,103,708	Includes $500K for AV boxes, conduits, wiring, back of house equipment installation, OFCI equipment installation
Fire Protection		0.0%	$232,746	2.1%	$232,746	
Plumbing		0.0%	$494,080	4.4%	$494,080	
Mechanical		0.0%	$2,453,731	21.8%	$2,453,731	Includes controls
Sub-total	$13,670,000	0.0%	$11,241,097	100.0%	-$2,428,903	
General Conditions/Bonds			$899,288		$899,288	8% used for Concept Design Estimate
Overhead & Profit			$526,083		$526,083	4% used for Concept Design Estimate
Escalation (16%)	$2,340,000		$1,011,699		-$1,328,301	9% to Mid-point of Construction
Design Contingency (25%)	$957,000		$3,419,542		$2,462,542	25% used for Concept Design Estimate
Total Construction Cost	**$16,967,000**		**$17,097,709**		**$130,709**	
A/E Basic Services	$1,527,000		$1,410,519		-$116,481	Actual A/E Fee amount, includes CO-1
A/E Additional Services						
Pre-Planning	$169,700		$256,935		$87,235	Actual A/E Fee amount
LEED	$120,000		$0		-$120,000	Not in scope per kick-off meeting
Systems Furniture Design	$0		$0		$0	By UWL
Commissioning	$169,700		$170,977		$1,277	1% of construction cost (estimated)
EIS/EIA consultant	$0		$0		$0	Not included
Construction Testing	$21,000		$21,000		$0	To Be Determined
Testing & Balancing	$20,000		$0		-$20,000	Included in construction cost above
HSR & PP	$40,000		$0		-$40,000	Included in Pre-Planning above

Figure 8.1-1: Budget Comparison

Continued Next Page

	Major Project Budget Worksheet 7/28/14		10% Concept Report Budget 10/12/2016		Delta	Comments
	UWSA Estimate	% of total		% of total		
A/E Reimbursable Expenses	$61,000		$21,500		-$39,500	Estimated
Controls	$0		$0		$0	TBD
Asbestos Abatement	$0		$50,000		$50,000	Pulled out of Construction Cost, Verified by Tim Stratton – DFD
Project Contingency (15%)	$2,545,000		$2,572,156		$27,156	15% used for Concept Design Estimate
DFD Project Management (4%)	$781,000		$788,795		$7,795	4% used for Concept Design Estimate
Moveable Equipment Allowance (10%)	$1,697,000		$1,709,771		$12,771	10% used for Concept Design Estimate
Special Equipment						
Audio-Visual	$500,000		$500,000		$0	
Total Project Budget	**$24,618,000**		**$24,599,362**		**-$18,638**	**Slightly under budget**
Renovation Square Feet	**45300**		**58473**		**13,173**	**Includes the roof**
Construction Cost / Total Square Feet	**$374.55**		**$292.40**		**-$82.14**	
Project Cost / Square Feet	**$543.44**		**$420.70**		**-$122.75**	

Figure 8.1-1: Budget Comparison (continued from previous page)

8.2 ASSUMPTIONS / EXCLUSIONS

NOTES REGARDING PREPARATION OF ESTIMATE	
This estimate was prepared based on the following documents provided by Aro Eberle Architects	
1.	Final Review Drawings provided by Aro Eberle Architects received October 1-6, 2016.
2.	Information regarding the project was also obtained via meetings, phone conversations, and email messages that clarified the project scope.

Figure 8.2-1: Notes Regarding Preparation of Estimate

BIDDING PROCESS – MARKET CONDITIONS
This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been generated from current material/labor rates, historical production data, and discussions with relevant subcontractors and material suppliers. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated.
Pricing reflects probable construction costs obtainable in the La Crosse, Wisconsin area on the bid date. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors with a minimum of 3 bidders for all items of subcontracted work and a with a minimum of 3 bidders for a general contractor. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.
Since Middleton Consulting has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, this statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents Middleton Consulting's best judgment as professional construction cost consultants familiar with the construction industry. However, Middleton Consulting cannot and does not guarantee that the proposals, bids, or the construction cost will not vary from opinions of probable cost prepared by them.

Figure 8.2-2: Bidding Process - Market Conditions

ASSUMED CONSTRUCTION PARAMETERS	
The pricing is based on the following project parameters:	
1.	A construction start date of September 2018.
2.	A construction period of 18-24 months
3.	The contract will be competitively bid to multiple contractors.
4.	All contractors will be required to pay prevailing wages.
5.	The contractors will have full access to the site during normal working hours.
6.	Estimate includes pricing as of October 2016.

Figure 8.2-3: Assumed Construction Parameters

EXCLUSIONS	
	The following are excluded from the cost of this estimate:
1.	Professional Design Fees.
2.	Testing Fees.
3.	Owner Contingencies/Scope Changes.
4.	Construction Contingency.
5.	Premium Time / Restrictions on Contractor Working Hours.
6.	Finance and Legal Charges.
7.	Environmental Abatement Costs.
8.	Temporary Facilities.
9.	Loose Furniture.
10.	Equipment (Owner Furnished/Installed).

Figure 8.2-4: Exclusions

8.3 CONSTRUCTION COST SUMMARY

COST SUMMARY		58,473	GSF	$/SF	BUILDING TOTAL
01000	GENERAL REQUIREMENTS			$0.00	$0
02000	EXISTING CONDITIONS			$10.11	$591,248
03000	CONCRETE			$3.39	$198,350
04000	MASONRY			$4.71	$275,403
05000	METALS			$12.50	$730,902
06000	WOODS, PLASTICS & COMPOSITES			$3.90	$227,828
07000	THERMAL & MOISTURE PROTECTION SYSTEM			$5.64	$329,533
08000	OPENINGS			$20.97	$1,226,333
09000	FINISHES			$26.07	$1,524,564
10000	SPECIALTIES			$1.86	$108,953
11000	EQUIPMENT			$0.00	$0
12000	FURNISHINGS			$0.00	$0
13000	SPECIAL CONSTRUCTION			$0.00	$0
14000	CONVEYING EQUIPMENT			$2.43	$142,027
21000	FIRE SUPPRESSION			$3.98	$232,746
22000	PLUMBING			$8.45	$494,080
23000	HEATING, VENTILATING & AIR CONDITIONING			$41.96	$2,453,731

Figure 8.3-1: Construction Cost Summary

Continued Next Page

COST SUMMARY		58,473	GSF	$/SF	BUILDING TOTAL
26000	ELECTRICAL			$24.42	$1,427,623
27000	COMMUNICATIONS & AV			$8.53	$498,912
28000	ELECTRONIC SAFETY AND SECURITY			$3.03	$177,173
31000	EARTHWORK			$1.67	$97,513
32000	EXTERIOR IMPROVEMENTS			$4.15	$242,551
33000	UTILITIES			$4.47	$261,627
	SUBTOTAL			**$192.24**	**$11,241,097**
	ESCALATION TO MID-POINT OF CONSTRUCTION	9.0%		$17.30	$1,011,699
	GENERAL CONDITIONS/BOND/INSURANCE	8.0%		$15.38	$899,288
	CONTRACTOR'S FEES	4.0%		$9.00	$526,083
	DESIGN CONTINGENCY	25.0%		$58.48	$3,419,542
	TOTAL ESTIMATED BID			**$292.40**	**$17,097,709**

Figure 8.3-1: Construction Cost Summary (continued from previous page)

8.4 CONSTRUCTION COST DETAIL

Description	Quantity	UM	Unit Cost	Total Cost
Selective Demolition				
Temporary covering at roof and window openings	4,200	SQFT	8.08	33,919
Remove roofing	15,373	SQFT	0.66	10,117
Remove limestone copings for flashing install	656	LNFT	6.20	4,069
Remove window grating	14	LNFT	8.27	116
Remove skylight infill	1,200	SQFT	4.96	5,955
Remove footings at pool	164	LNFT	39.45	6,469
Remove window trim	3,100	LNFT	3.54	10,988
Remove glass block	305	SQFT	7.09	2,162
Shoring for bearing wall removal	1	EACH	37,443.60	37,444
Remove windows	3,474	SQFT	4.96	17,239
Remove locker bases	476	SQFT	1.81	859
Remove balance SOG in basement for footing and underground plumbing	13,087	SQFT	2.71	35,437
Remove SOG at pool	1,224	SQFT	2.71	3,314
Remove topping slab and old infill at pool	1,182	SQFT	2.46	2,910
Remove elevated slab at 1st floor	1,837	SQFT	10.83	19,897
Remove openings at roof shafts	2,200	SQFT	9.03	19,857
Remove raised running track	3,085	SQFT	10.83	33,415
Remove raised seating platform	681	SQFT	9.85	6,706
Remove foundation walls at pool	1,312	SQFT	9.12	11,961
Remove masonry walls with plaster	36,353	SQFT	6.27	227,846
Remove wood wall paneling	10,600	SQFT	0.77	8,177
Remove ceramic tile wall, mud set @ exterior walls	600	SQFT	1.99	1,191
Remove marble at north wall	7,560	SQFT	1.99	15,007
Remove wood flooring- and salvage	6,907	SQFT	1.65	11,426
Remove door	95	EACH	9.40	893
Remove frame	95	EACH	21.94	2,084
Remove hardware	95	EACH	31.34	2,977
Remove toilet partition	8	EACH	41.78	334
Remove entrance doors	5	EACH	248.12	1,241

Figure 8.4-1: Construction Cost Detail

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Remove concrete stairs	8	FLT	2,707.82	21,663
Remove concrete stairs @ exterior	5	FLT	2,461.65	12,308
Remove appliance and hand over to owner	4	EACH	125.35	501
Remove locker benches	136	LNFT	4.14	562
Remove base cabinets & countertops	12	LNFT	14.18	170
Remove lockers	238	LNFT	13.23	3,149
Saw cut concrete slab, 5" thk	1,200	LNFT	11.22	13,469
Saw cut concrete elevated slab	166	LNFT	32.63	5,416
*** Total Selective Demolition**				**$591,248**
Concrete Formwork				
Formwork for isolated column footings	1,920	SQFT	7.30	14,009
*** Total Concrete Formwork**				**$14,009**
Concrete Reinforcement				
Reinforcement in isolated column footings, avg 80 lbs/cy	5	TONS	2,271.19	10,902
*** Total Concrete Reinforcement**				**$10,902**
Cast in Place Concrete				
Concrete in isolated column footings, 4,000 psi	120	CUYD	164.24	19,709
Modify existing columns	1	LS	25,232.48	25,232
Concrete slab on grade, 4" thk-replace existing	15,500	SQFT	3.53	54,675
CA-6 base at basement slab-rework	120	CUYD	29.20	3,503
Vapor barrier at slab	15,500	SQFT	0.95	14,734
*** Total Cast in Place Concrete**				**$117,854**
Precast Structural Concrete				
LTWT concrete on metal deck, 4-1/2" thk, with W6x6-1.4x1.4	11,901	SQFT	4.67	55,586
*** Total Precast Structural Concrete**				**$55,586**
Exterior Masonry				
Limestone coping, -reinstall	656	LNFT	48.46	31,789
*** Total Exterior Masonry**				**$31,789**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Exterior Masonry Restoration				
Remove and rebuild brick parapet,approximately 25%	492	SQFT	138.62	68,200
Clean face brick facade	22,031	SQFT	3.02	66,485
Clean limestone facade	4,821	SQFT	3.02	14,549
Tuckpoint brick facade, 40% of surface	8,812	SQFT	8.76	77,197
Tuckpoint stone facade	2,400	LNFT	7.16	17,184
*** Total Exterior Masonry Restoration**				**$243,614**
Structural Steel				
Structural steel beams & columns, floor, allow 11 lbs/sf	11,901	SQFT	18.54	220,604
Modify beams at second floor	1	LS	18,703.96	18,704
Structural steel beams, W-shapes- added	6	TONS	3,325.33	19,952
Structural steel columns, W-shapes- new	17	TONS	3,325.33	56,531
Modify existing trusses for bridge	1	LS	14,562.80	14,563
Composite metal floor deck, galvanized, 2" thk, 18 ga	4,354	SQFT	2.77	12,039
Structural metal studs, 6" thk @ exterior clerstory	7,000	SQFT	5.12	35,867
Miscellaneous angles, channels, lintels, etc.	58,473	SQFT	1.31	76,518
*** Total Structural Steel**				**$454,777**
Stairs				
New stair at SW corner	4	FLR	6,839.70	27,359
Monumental stair 3rd to 2nd floor	1	LS	41,618.80	41,619
Monumental stair Lower Level to 1st Floor	1	LS	27,939.20	27,939
*** Total Stairs**				**$96,917**
Metal Fabrications				
Bridge/Grating at 3rd floor- with laminated glass	366	SQFT	96.51	35,324
Glazed guardrail at openings	364	LNFT	395.29	143,885
*** Total Metal Fabrications**				**$179,208**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Rough Carpentry				
Miscellaneous wood blocking & rough carpentry	58,473	SQFT	0.85	49,848
*** Total Rough Carpentry**				**$49,848**
Millwork				
Finish carpentry	1	LS	50,000.00	50,000
P-lam base cabinets and solid surface countertops	138	LNFT	322.16	44,458
P-lam wall hung cabinets	138	LNFT	194.36	26,822
Solid surface countertops w/ integral bowls	54	LNFT	215.89	11,658
Window trim & stools	3,100	LNFT	14.53	45,042
*** Total Millwork**				**$177,980**
Thermal Insulation				
5" polyisocyanurate insulation	15,373	SQFT	1.99	30,572
5/8" fiberglass faced asphalt roof coverboard	15,373	Sqft	1.90	29,227
*** Total Thermal Insulation**				**$59,799**
Roofing				
Remove elevator assemblies	1	EACH	6,981.10	6,981
EPDM roof	154	SQS	205.00	31,570
#65 roll roofing	154	SQS	37.02	5,701
Flashing under coping stone	656	LNFT	12.44	8,161
Miscellaneous flashing @ roof perimter and clerestories	1,136	LNFT	6.99	7,937
Roof walkway	1,200	SQFT	4.19	5,022
*** Total Roofing**				**$65,372**
Roofing Specialties				
Roof hatch & ships ladder, 3'-0" x 6'-0"	1	EACH	4,131.60	4,132
*** Total Roofing Specialties**				**$4,132**
Metal Panel Systems				
Metal Panels at clerestory	3,800	SQFT	50.73	192,787
*** Total Metal Panel Systems**				**$192,787**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Caulking & Sealants				
Miscellaneous caulking & sealants	58,473	SQFT	0.13	7,444
*** Total Caulking & Sealants**				**$7,444**
Windows				
Exterior window replacement	3,779	SQFT	109.04	412,062
*** Total Windows**				**$412,062**
Curtainwall & Storefront				
Exterior curtainwall @ clerestory areas	3,200	SQFT	74.73	239,132
*** Total Curtainwall & Storefront**				**$239,132**
Interior Doors, Frames, & Hardware				
HM / aluminum frame-single	172	EACH	326.09	56,088
HM frame-Double	7	EACH	346.09	2,423
HM / wood door	186	EACH	303.41	56,435
Hardware set, single	0	EACH	503.34	0
Hardware set, double	7	EACH	1,122.60	7,858
*** Total Interior Doors, Frames, & Hardware**				**$122,804**
Interior Glazing				
Interior glazing system at offices	8,000	SQFT	56.54	452,334
*** Total Interior Glazing**				**$452,334**
Plaster & Gypsum Board				
Gypsum ceilings as accents	0	SQFT	10.37	0
Plaster patch	6,000	SQFT	7.64	45,811
3-5/8" 25 ga metal studs, 5/8" abuse-resistant gypboard each side, 3" mineral fiber blanket insulation, full-height	58,473	SQFT	8.29	484,934
*** Total Plaster & Gypsum Board**				**$530,745**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Floor Finishes				
Ceramic tile floor, 8"x8"	1,682	SQFT	10.76	18,096
Ceramic tile base, 6" high	652	LNFT	15.11	9,849
Epoxy terrazzo flooring, 3/8" thick	15,840	SQFT	24.07	381,305
VCT	3,933	SQFT	2.83	11,145
Rubber floor tile @ stairs?	722	SQFT	9.98	7,205
Rubber base, 4" high	8,759	LNFT	1.90	16,645
Carpet tile @ offices	26,028	SQFT	4.22	109,924
*** Total Floor Finishes**				**$554,169**
Ceiling Finishes				
ACT system, 2'-0" x 2'-0"	48,205	SQFT	4.15	199,945
Add for soffitts and hard ceilings	9,600	SQFT	9.07	87,041
Accoustic ceiling treatments at 3rd floor opening.	1,000	SQFT	21.04	21,045
*** Total Ceiling Finishes**				**$308,030**
Paints & Coatings				
Concrete sealer	2,945	SQFT	1.20	3,539
Misc. painting	1	LS	10,009.60	10,010
Prime & paint walls, by sprayer, 3 coats	129,762	SQFT	0.91	118,070
*** Total Paints & Coatings**				**$131,619**
SPECIALTIES				
Flagpole-refurbish or copy original	1	EACH	5,084.15	5,084
Directories	1	EACH	790.00	790
Plaques	1	EACH	2,280.00	2,280
*** Total SPECIALTIES**				**$8,154**
Visual Display Units				
Markerboard, 4'-0" H	200	LNFT	39.58	7,917
Tackboards, 4'-0" H	200	LNFT	22.08	4,417
*** Total Visual Display Units**				**$12,333**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

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Description	Quantity	UM	Unit Cost	Total Cost
Signage				
Sign and graphic allowance	1	LSUM	10,000.00	10,000
Exterior signage	1	EACH	6,226.72	6,227
Interior wayfinding signage – allowance	58,473	SQFT	0.16	9,490
*** Total Signage**				**$25,717**
Movable Partitions				
Folding partition	300	SQFT	47.19	14,157
*** Total Movable Partitions**				**$14,157**
Toilet Accessories				
Toilet partition	20	EACH	922.67	18,453
Toilet paper dispenser, double roll	20	EACH	100.56	2,011
Paper towel dispenser, recessed	20	EACH	136.34	2,727
Paper towel dispenser, surface mounted	6	EACH	83.34	500
Waste receptacle, recessed	12	EACH	313.34	3,760
Napkin disposal, stainless steel, surface mounted	16	EACH	108.34	1,733
Utility mop holder & shelf, stainless steel	2	EACH	180.56	361
Grab bar set, three piece	12	EACH	230.01	2,760
Mirrors	20	EACH	162.50	3,250
*** Total Toilet Accessories**				**$35,556**
Fire Protection Specialties				
Fire extinguisher & cabinet, recessed	8	EACH	379.45	3,036
*** Total Fire Protection Specialties**				**$3,036**
Miscellaneous Specialties				
Miscellaneous specialties allowance	1	LSUM	10,000.00	10,000
*** Total Miscellaneous Specialties**				**$10,000**
CONVEYING EQUIPMENT				
Machineroom less OH elevator	4	EACH	35,506.67	142,027
*** Total CONVEYING EQUIPMENT**				**$142,027**

Figure 8.4–1: Construction Cost Detail (continued from previous page)

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Description	Quantity	UM	Unit Cost	Total Cost
Fire Sprinkler Equipment & Specialties				
Wet sprinkler system - $/SF	58,473	SQFT	3.98	232,746
*** Total Fire Sprinkler Equipment & Specialties**				**$232,746**
Selective Demolition				
Remove existing wall-mount water closets including carrier and piping	14	EACH	251.76	3,525
Remove existing self-rimming sinks	18	EACH	125.88	2,266
Remove existing showers, head/valve systems	12	EACH	167.84	2,014
Disconnect and remove plumbing equipment	1	EACH	3,356.80	3,357
Remove floor drain	16	EACH	167.84	2,685
Remove plumbing piping, aboveground/suspended	3,200	LNFT	12.59	40,282
Remove existing plumbing risers	32	EACH	188.82	6,042
*** Total Selective Demolition**				**$60,171**
Plumbing Fixtures				
Water closet, wall hung, dual-flush manual flush valve	24	EACH	2,086.67	50,080
Lavatory or sink	25	EACH	1,201.94	30,049
Urinal, wall hung, manual flush valve	6	EACH	1,793.70	10,762
Electric water cooler, ADA-bilevel	4	EACH	4,643.80	18,575
Mop basin, floor fixture	2	EACH	2,034.62	4,069
*** Total Plumbing Fixtures**				**$113,535**
Plumbing Equipment & Specialties				
Plumbing equipment and specialties	58,473	SQFT	1.10	64,145
*** Total Plumbing Equipment & Specialties**				**$64,145**
Domestic Water, Waste & Vent, & Storm Drainage Piping				
Plumbing piping	58,473	SQFT	4.30	251,434
*** Total Domestic Water, Waste & Vent, & Storm Drainage Piping**				**$251,434**
Lab Plumbing System				
Tie new CHWS/R HDPE piping into existing	2	EACH	2,397.44	4,795
*** Total Lab Plumbing System**				**$4,795**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Selective Demolition				
Demolition of existing equipment and ductwork	1	LS	32,948.80	32,949
*** Total Selective Demolition**				**$32,949**
Ventilation & Exhaust				
HVAC systems	58,473	SQFT	33.90	1,982,235
*** Total Ventilation & Exhaust**				**$1,982,235**
Temperature Controls				
DDC controls	58,473	SQFT	7.50	438,548
*** Total Temperature Controls**				**$438,548**
Selective Demolition				
Disconnect and remove main service and associated feeder	1	EACH	319.00	319
Disconnect and remove emergency service and associated feeder	1	EACH	239.25	239
Disconnect and remove switchboard 1200A to 2000A and associated feeder	1	EACH	957.00	957
Disconnect and remove distribution panel up to 1200A and associated feeder	1	EACH	638.00	638
Disconnect and remove panelboard up to 250A and associated feeder	4	EACH	319.00	1,276
Disconnect and remove associated conduit and wiring	1	LSUM	25,520.00	25,520
*** Total Selective Demolition**				**$28,949**
Main Power Distribution				
Service and distribution – main switchboard, distribution panels, transformers and associated feeders	58,473	SQFT	2.68	156,550
Service and distribution – branch panelboards and associated feeders	58,473	SQFT	1.66	96,966
*** Total Main Power Distribution**				**$253,516**
Emergency Power Distribution				
Emergency Service and distribution – emergency generator and associated feeders	58,473	SQFT	0.78	45,814
Emergency Service and distribution – distribution panels, ATSs and associated feeders	58,473	SQFT	0.90	52,579
*** Total Emergency Power Distribution**				**$98,393**

Figure 8.4–1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Grounding & Lightning Protection System				
Lightning protection system per code	58,473	SQFT	0.51	29,979
*** Total Grounding & Lightning Protection System**				**$29,979**
Lighting				
Lighting System – light fixtures including installation and hook up	58,473	SQFT	7.14	417,643
Lighting System – emergency and exit light fixtures including installation and hook up	58,473	SQFT	0.65	37,961
Lighting System – dual level, dimmed switching, occupancy sensors, time-based lighting control for exterior lighting	58,473	SQFT	1.50	87,663
Lighting System – branch wiring installation 600 V, including 3/4" EMT conduit and THWN wire, 20A	58,473	SQFT	1.92	112,104
*** Total Lighting**				**$655,371**
Branch Power Distribution & Devices				
Branch Power – miscellaneous receptacles and electrical equipment hook up	58,473	SQFT	3.42	199,685
Branch Power – branch wiring installation 600 V, including 3/4" EMT conduit and THWN wire, 20A	58,473	SQFT	1.92	112,104
*** Total Branch Power Distribution & Devices**				**$311,790**
Mechanical Equipment Connections & Feeders				
Motors connection, disconnect switches and associated feeders	58,473	SQFT	0.85	49,626
*** Total Mechanical Equipment Connections & Feeders**				**$49,626**
Tele/Data Systems				
Provision for IT room, plywood, cable tray, grounding, sleeves	1	EACH	9,990.00	9,990
Provision for IT closet, plywood, cable tray, grounding, sleeves	3	EACH	5,095.00	15,285
AV allowance per current configuration- carried in equipment line item	1	EACH	0.00	0
Telecommunication / Data & Television System	58,473	SQFT	8.10	473,637
*** Total Tele/Data Systems**				**$498,912**
Fire Alarm Systems				
Fire alarm system, complete	58,473	SQFT	1.87	109,228
*** Total Fire Alarm Systems**				**$109,228**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Intrusion Detection & Access Control Systems				
Intrusion detection system, rough-in only	58,473	SQFT	1.16	67,946
*** Total Intrusion Detection & Access Control Systems**				**$67,946**
Site Preparation & Excavation				
Remove concrete paving, 4" mesh reinforced	8,000	SQFT	2.04	16,350
Excavate for pavements, bases, and planting beds	200	CUYD	3.66	732
*** Total Site Preparation & Excavation**				**$17,082**
Foundation Excavation & Fill				
Excavate for foundations	100	CUYD	10.46	1,046
Remove old fill at pool	350	CUYD	83.69	29,293
Backfill with excavated material	60	CUYD	7.57	454
Backfill at pool that was infilled	350	CUYD	42.99	15,046
Backfill old pool	364	CUYD	43.04	15,667
Haul off excavated material as CCDD	40	CUYD	29.60	1,184
Haul off excavated material as CCDD for site	200	CUYD	29.60	5,920
Haul off excavated material as CCDD from pool infill	350	CUYD	29.60	10,359
*** Total Foundation Excavation & Fill**				**$78,969**
Erosion & Sedimentation Control				
Silt fence w/wire mesh, filter fabric and stakes	800	LNFT	1.83	1,462
*** Total Erosion & Sedimentation Control**				**$1,462**
Pavement				
CA-6 base, 4" thk at concrete walk	122	CUYD	33.38	4,072
Concrete walk, 5"	5,960	SQFT	4.81	28,697
Stamped/Raised walks	5,354	SQFT	8.25	44,192
*** Total Pavement**				**$76,961**
Athletic & Recreational Surfacing				
Replace exterior concrete stairs & railings	1	LS	20,016.40	20,016
Concrete pavement, heavy duty	4,000	SQFT	7.50	30,013
*** Total Athletic & Recreational Surfacing**				**$50,030**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Fencing & Walls				
Raised seating with hardwood tops	140	LNFT	112.31	15,723
*** Total Fencing & Walls**				**$15,723**
Enclosures				
Chainlink fence -site construction	600	LNFT	8.00	4,800
*** Total Enclosures**				**$4,800**
Landscaping				
Landscaping allowance	1	LSUM	70,000.00	70,000
Rain garden area	2,010	SQFT	7.48	15,037
Miscellaneous landscape restoration allowance	1	LSUM	10,000.00	10,000
*** Total Landscaping**				**$95,037**
Site Water Service				
Domestic water service pipe and fittings, DIP, 8"	132	LNFT	44.26	5,843
Gate valve, 8"	1	EACH	1,389.24	1,389
Incoming service, 8", w/4" meter & backflow preventers	1	EACH	6,525.44	6,525
Thrust blocks	1	LSUM	1,204.35	1,204
Trench excavation, pipe bedding, and backfill (<=18" pipe)	132	LNFT	24.95	3,294
Line flushing, cleaning, and testing	1	LSUM	1,488.72	1,489
*** Total Site Water Service**				**$19,744**
Site Sanitary & Storm Sewer				
Misc site utility re-locates	1	LS	50,000.00	50,000
Storm sewer pipe, RCP	368	LNFT	23.01	8,469
ESVCP sanitary sewer pipe	720	LNFT	19.52	14,053
Trench excavation, pipe bedding, and backfill storm pipe	368	LNFT	31.81	11,706
Trench excavation, pipe bedding, and backfill (<=18" pipe)	720	LNFT	24.95	17,967
*** Total Site Sanitary & Storm Sewer**				**$102,195**
Natural Gas Service				
Coordinate gas service provision with local utility	1	LSUM	1,488.72	1,489
*** Total Natural Gas Service**				**$1,489**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

Continued Next Page

Description	Quantity	UM	Unit Cost	Total Cost
Special Utilities				
UG concrete box conduit for steam	130	LNFT	591.70	76,921
Steam pipe, fittings, and supports (inside UG conduit box), std. weight blk. steel, welded/flanged, 6"	145	LNFT	130.88	18,978
Condensate return pipe, fittings, and supports (inside UG conduit box), sch. 80 blk. steel, welded/flanged, 6"	145	LNFT	181.26	26,282
Pipe insulation, steam, 6"	145	LNFT	16.34	2,370
Pipe insulation, condensate return, 6"	145	LNFT	16.34	2,370
Tie new steam piping into existing	1	EACH	2,794.88	2,795
Tie new condensate return piping into existing	1	EACH	2,445.52	2,446
CHWS/R pipe and fittings, buried HDPE, 10"	126	LNFT	18.61	2,345
Trench excavation, pipe bedding, and backfill (<=18" pipe)	64	LNFT	24.95	1,597
Line flushing, cleaning, and testing	1	LSUM	2,096.16	2,096
*** Total Special Utilities**				**$138,199**
Total Estimate				**$11,241,099**

Figure 8.4-1: Construction Cost Detail (continued from previous page)

9. PROJECT SCHEDULE

9. PROJECT SCHEDULE

9.1 SCHEDULE SUMMARY

The accompanying figure 9.1-1, reflects an overall Design / Bid / Build Process to accomplish the renovation project by mid-year 2020. Crucial to that outcome is continued progress with the design and documentation stages. The headlines:

1. Review of the 10% Concept Design Report in November 2016.
2. Start Preliminary Design Phase (35%) on November 14, 2016.
3. BOR approval in March 2017 and SBC approval in April 2017.
4. Completion of Preliminary Design Phase and approval by June 2017.
5. Completion of contract documents and final review by March 2018.
6. Bid April 2018.
7. Construction contract award July 2018.
8. Renovation completed by June 2020.
9. Move in to start school year Fall Semester 2020.

Given the complexity of the effort, this is an ambitious schedule. Continuation of dialogue with the Wisconsin Historic Society should be carried through 35% to ensure an agreed upon Historic Preservation Plan prior to BOR / SBC approvals and the Final Design Phase.

Alternate Schedule

An alternate schedule was studied to provide an early demolition package (refer figure 9.1-2.) The objective of this delivery method was to discover unforeseen hidden conditions early in the process and remove hazardous materials prior to construction.

In this schedule. an Early Abatement and Demolition Bid Set would be developed in conjunction with the Preliminary Design Phase (35%) documents.

This Early Abatement and Demolition set would be completed in April 2017 with contract award anticipated in July 2017. The early abatement and demolition work would be completed by October 2017. At this point the interior could potentially be laser scanned with fewer partition and ceiling obstructions present. Findings can then be incorporated into the Final Design documents.

This schedule is dependent on the building being vacated by UWL by August 2017.

The benefits discussed of this delivery method include the following;

1. The ability for the Design Team to integrate discovered conditions into the bid documents, therefore potentially reducing the number of unforseen condition change orders.
2. Modifications to the design would occur prior to bid and contract award rather than in the construction phase, possibly making the integrations less costly.
3. The possibility of reducing the construction and overall schedule by four months allowing less dollars spent on escalation and UWL to occupy the building earlier.

The risks that were determined to outweigh the benefits of this approach include the following:

1. Concern regarding submitting a demolition package that isn't fully coordinated with the final design, possibly requiring additional demolition at the final design phase.
2. Unknown costs associated with two bid packages.
3. Concern that bidding and construction delays with the Early Abatement and Demolition Set may cause delay in the Construction Package and occupancy.

TRADITIONAL PROJECT SCHEDULE

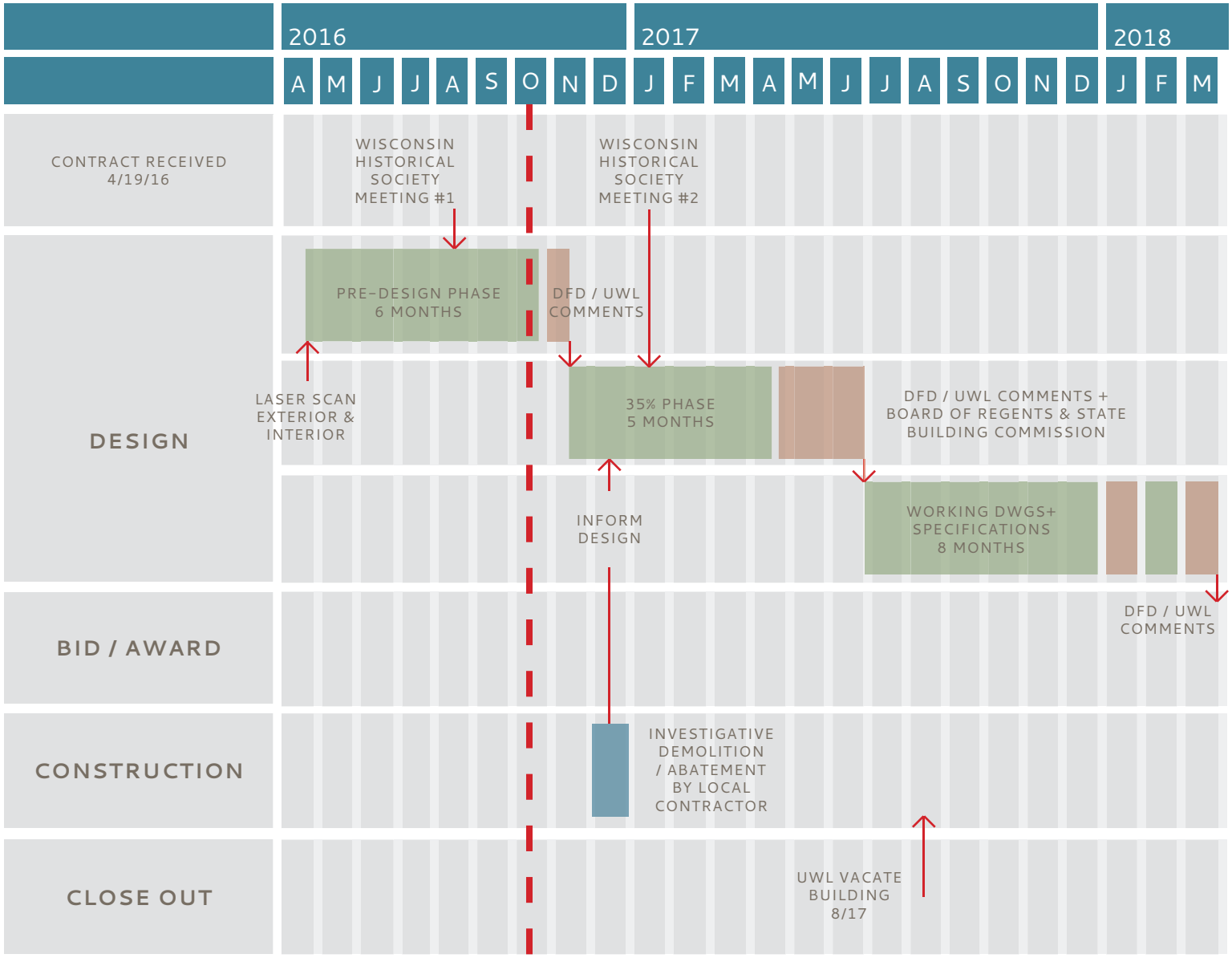
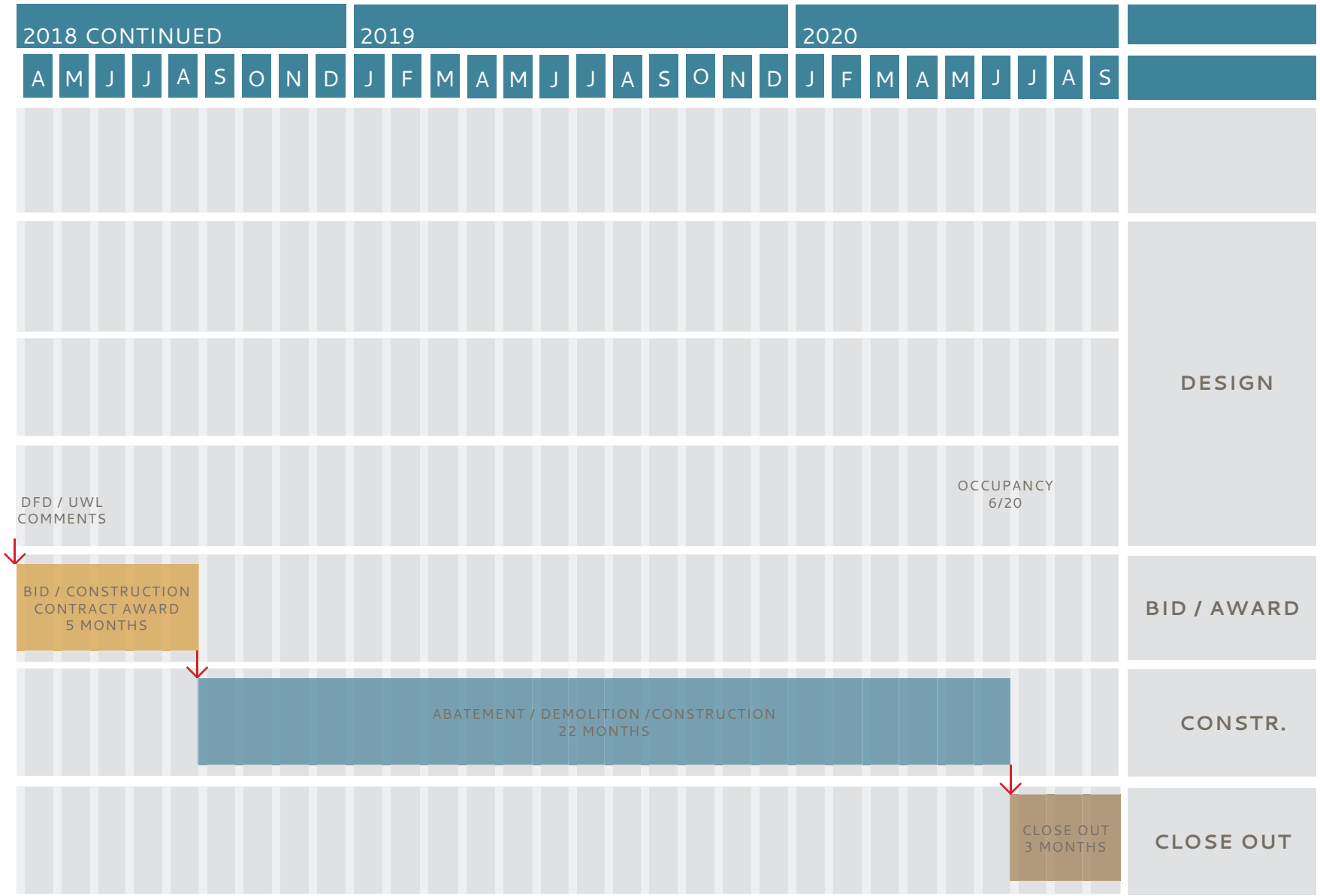


Figure 9.1-1: Design / Bid / Build Schedule


2018 CONTINUED
2019
2020
A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S
DESIGN
DFD / UWL COMMENTS
OCCUPANCY 6/20
BID / CONSTRUCTION CONTRACT AWARD 5 MONTHS
BID / AWARD
ABATEMENT / DEMOLITION /CONSTRUCTION 22 MONTHS
CONSTR.
CLOSE OUT 3 MONTHS
CLOSE OUT

ALTERNATE PROJECT SCHEDULE

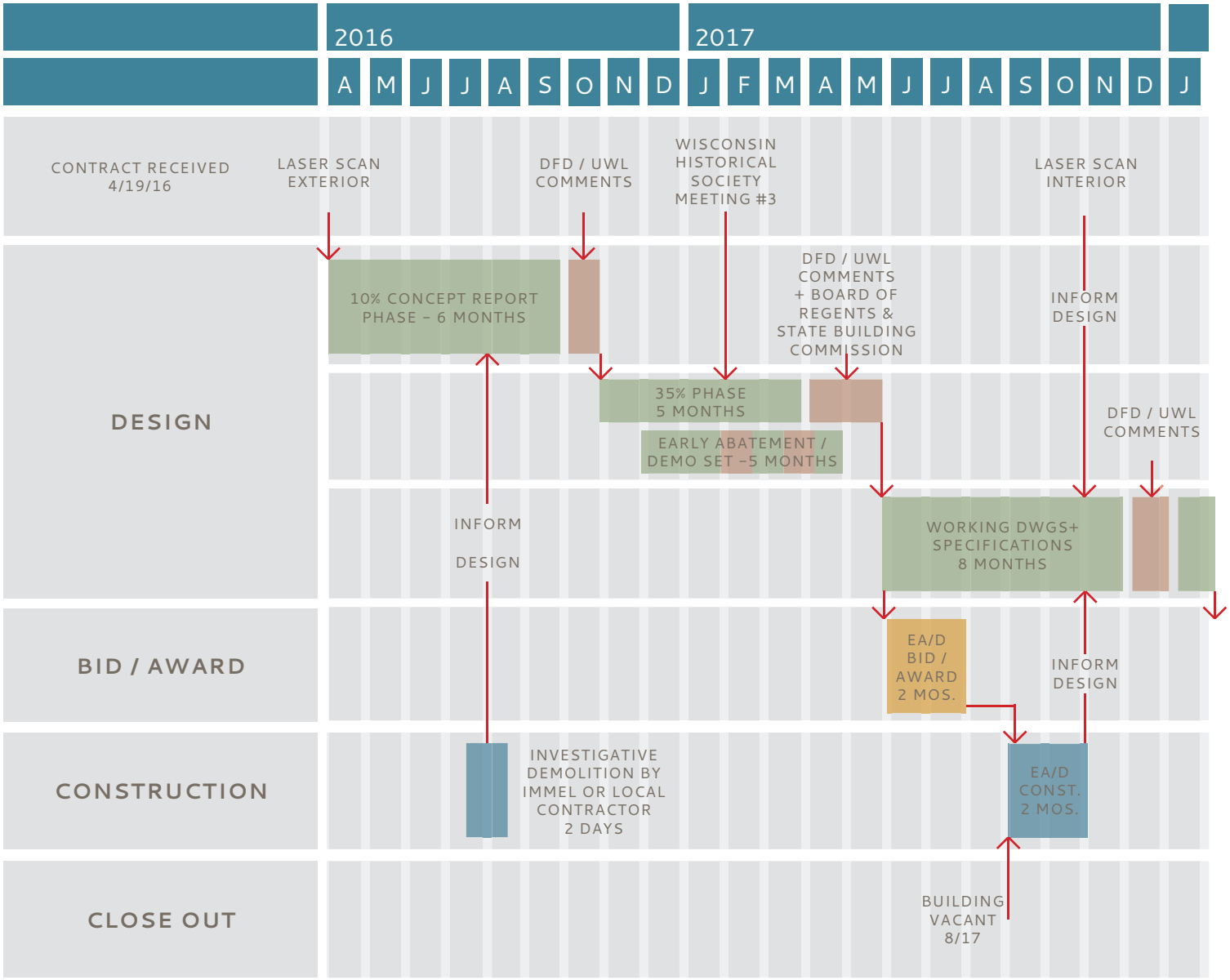
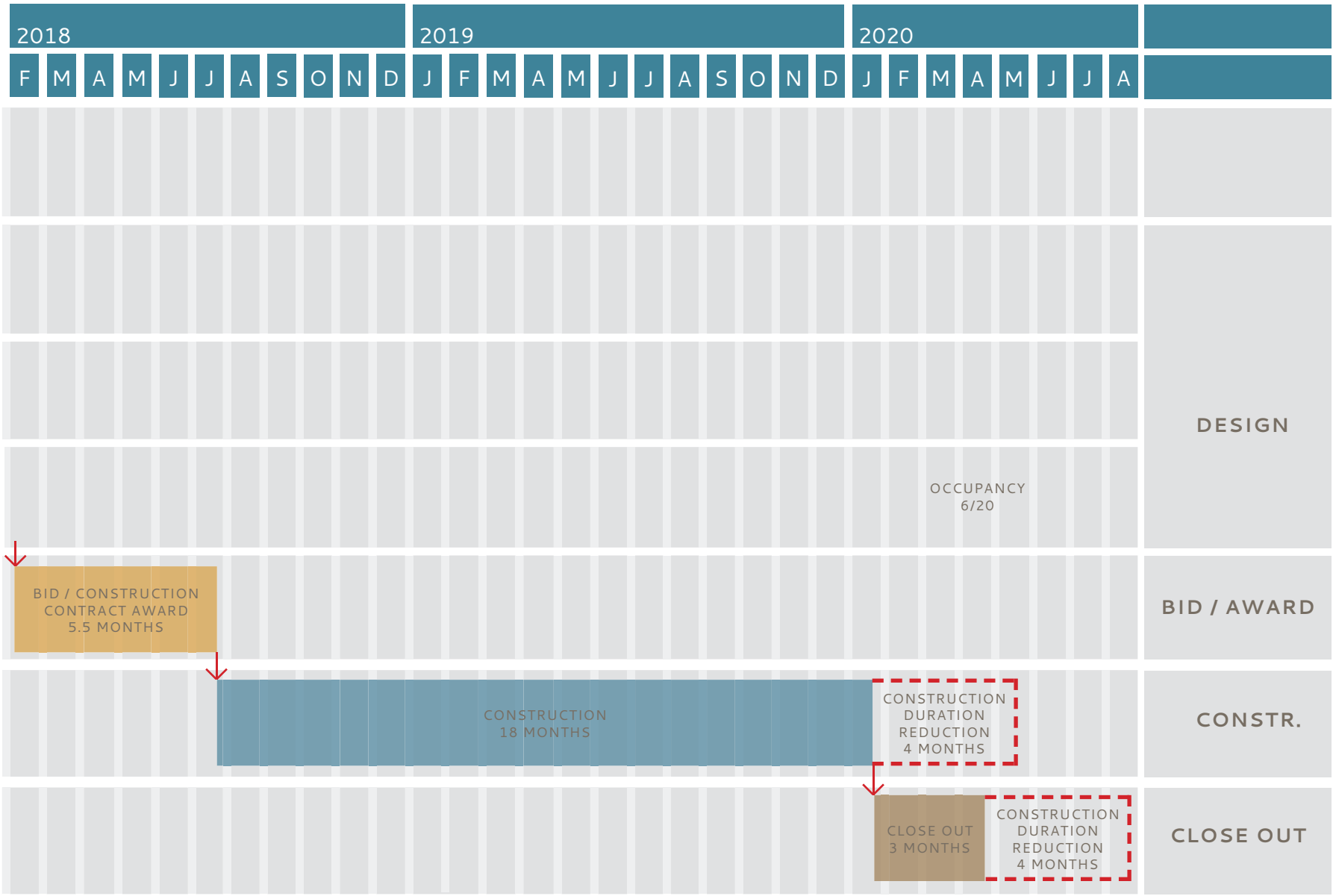


Figure 9.1–2: Alternate Early Abatement / Demolition Schedule


2018
2019
2020
F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A
DESIGN
OCCUPANCY
6/20
BID / CONSTRUCTION
CONTRACT AWARD
5.5 MONTHS
BID / AWARD
CONSTRUCTION
18 MONTHS
CONSTRUCTION
DURATION
REDUCTION
4 MONTHS
CONSTR.
CLOSE OUT
3 MONTHS
CONSTRUCTION
DURATION
REDUCTION
4 MONTHS
CLOSE OUT

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10. LIST OF FIGURES

10. LIST OF FIGURES