# UNIVERSITY OF WISCONSIN WHITEWATER

## Comprehensive Campus Master Plan

DFD PROJECT NO. 1211D

PDF Part 6: Technical Appendices A-D


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The 2014 Campus Master Plan provides an ambitious framework for the University's physical campus over the next twenty years. Establishing the foundation for campus's growth and development has been an important undertaking. Our physical campus is one of our great assets. This plan ensures we are responsible stewards of our campus, enhancing the collegiate experience for future generations. The plan recognizes the critical importance of shaping a community through the development of spaces for our students to live, work, and learn.

As described on the following pages, the plan envisions:

- Identifying facility renewal and growth necessary to provide the high quality teaching and learning spaces necessary to support our University mission.
- Providing opportunities for residential growth, creating new living and gathering spaces that enhance student quality of life and reinforce a strong sense of community.
- Making our campus more welcoming and accessible by enhancing connections between buildings and grounds and establishing clear campus gateways.
- Establishing a new entry sequence for first time visitors with the addition of consolidated student services in a new facility centrally located along a primary pedestrian mall.
- Enhancing and preserving the natural features unique to campus, promoting efficient use of resources, and connecting people with each other and with their environment.

The plan balances new development with facility renewal and the preservation of abundant green space that is a defining characteristic of campus. The long-term strategy takes into account needed new infrastructure, utilities, and open spaces while establishing architectural and landscape design guidelines to help define a coherent sense of place. This integrated approach defines a more efficient campus for years to come.

I look forward to our continued work together as we continue to realize the aspirations of the plan.

Sincerely,

Richard J. Telfer, Chancellor

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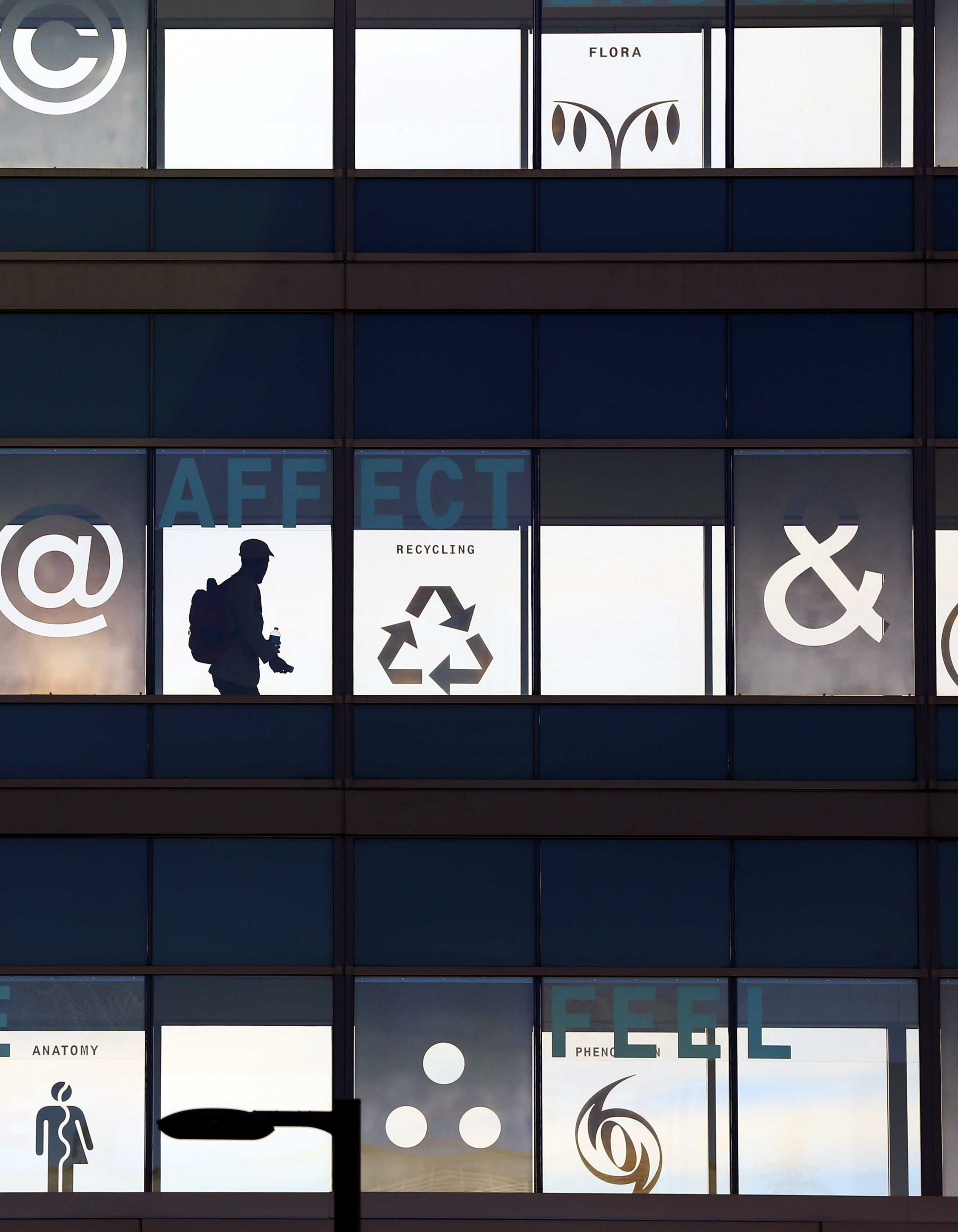
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# Technical Appendices

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# Appendix A - Technical Report Summary

## CIRCULATION

### *Existing Conditions*

This section summarizes a review of current traffic and circulation conditions on the University of Wisconsin-Whitewater (UW-W) campus for use in updating the Campus Master Plan. The analysis of current traffic conditions at the University of Wisconsin-Whitewater, considered existing data provided by campus staff, a field visit completed in September 2013, and subsequent communication with campus staff.

**A. Motor Vehicle Operations**

Vehicular circulation to and within the University of Wisconsin-Whitewater is accommodated on a combined system of public City of Whitewater and private, campus, streets. In general, vehicular access to and circulation within the UW-W campus are adequate.

Congestion and queuing on streets and at intersections within and adjacent to campus are generally light, with the exception of some slowdowns and queuing along Starin Road during peak class times.

Starin Road between Prince Street and Prairie Street is a section of roadway where motor vehicle congestion and queuing were observed. In general, Starin Road serves the multiple modes of transporation adequately. During periods of high volume pedestrian crossings, conflicts arise. Figure 1 shows one of the high volume pedestrian crossings of Starin Road.

Most of the motor vehicle traffic on Starin Road is related to the UW-W campus. An informal turning movement count revealed that about 70 percent of motor vehicles entering the intersection of Starin Road and Warhawk Drive made a turn, rather than traveled through the intersection; which would indicate that traffic is directly associated with UW-W activity. Further, some portion of the 30 percent traffic through the intersection, is likely UW-W-based trips. Figure 2 is a photo of Starin Road and Warhawk Drive and the multiple transportation modes that are served by the facility.

During peak pedestrian circulation periods, typically from about 9:00 AM to about 3:30 PM, UW-W Campus Police provides officers to control the pedestrian crossings of Starin Road leading to Wyman and Carter Pedestrian Malls. Observation indicates the officers are actually there to provide gaps in pedestrian traffic so motor vehicles may proceed along Starin Road. This managed control began in 2011.

An interview with one of the officers controlling the easternmost crossing revealed the following:

The officer feels compliance between travel modes is generally good, and she has not witnessed any crashes or near misses.

The officer feels speeds of some eastbound motor vehicles on Starin Road approaching the westernmost pedestrian crossing can be higher than desirable.

The most notable congestion observed occurred occasionally from about 1:00 PM to 2:00 PM. During this period, westbound motor vehicles on Starin Road queuing at the westernmost pedestrian crossing sometimes backed up into the Warhawk Drive intersection. This, in turn, caused queuing for southbound vehicles leaving campus that reached 8 to 10 vehicles in length. While the queue lengths are notable, the delay experienced by the average driver was still relatively low - perhaps a minute or less.

While on-street bike lanes are marked along Starin Road, at the major pedestrian crossings they are partially blocked by “Yield to Pedestrian” signage (see Figure 3). This may encourage some bicyclists to ride on the sidewalk, which was also observed during the site review.

**B. Pedestrian Circulation**

Pedestrian infrastructure internal to campus is abundant, direct, and generally in good condition. Presently, pedestrian circulation encounters conflict with vehicles at street crossings, particularly at Starin Road.


FIGURE 1 - PEDESTRIANS CROSSING STARIN RD

FIGURE 2 - STARIN RD AT WARHAWK DR.


FIGURE 3 - SIGN INFRINGING IN BICYCLE LANE

### *Recommendations*

Following is a summary of recommendations for circulation improvements. Some of the items listed will require coordination with the City of Whitewater regarding modifications to the streets and facilities surrounding campus.

**A. Vehicular Circulation**

The existing vehicular circulation system does not have significant vehicular traffic congestion issues. Conflicts between pedestrians and vehicles does create limited congestion for vehicles and safety concerns for pedestrians. The following measures could be implemented, in coordination with the City, if pedestrian/vehicle conflicts increase to unmanageable levels.

1. Consider traffic calming measures on Prince Street between Main Street and Starin Road. This might be accomplished primarily through markings in the form of on-street bike accommodations and/or additional marked crosswalks.

2. Consider traffic calming measures on Prairie Street between Main Street and Starin Road. This might be accomplished primarily by restoring on-street parking on the northbound side and/or through markings in the form of on-street bike accommodations and/or additional marked crosswalks.

3. Consider restoring on-street parking along both sides of Tratt Street from Main Street to Starin Road. Time limits and/or metering could be used to control who uses the parking and during which periods of the day/week/year. This recommendation could contribute to traffic calming and could also be a parking supply tool (see parking section).

Starin Road between Prince Street and Prairie Street is a corridor requiring focused considerations and solutions.

Campus officials should consider prohibiting large truck traffic (such as food delivery) serving campus destinations during peak activity times (i.e., Monday through Friday, 10:00 AM to 2:00 PM). During the field observation period, several full-size tractor trailers and single-unit delivery trucks traveled through campus on Starin Road. A delivery to the Moraine Campus Bookstore occurred at approximately 11:00 AM and required the tractor trailer to stop in the eastbound lanes and back across the westbound lanes to the loading dock, mounting some of the curbs in the process. It caused considerable disruption during a very heavy travel period.

The speeds of some eastbound motor vehicles on Starin Road approaching the westernmost pedestrian crossing appear to be higher than desirable. This may be mitigated by extending the traffic calming features that exist between Prince Street and Prairie Street farther west to Tratt Street. Alternatively, the intersection of Starin Road and Prince Street could be converted to all-way stop control, pending additional engineering analysis.

Standard pole mounted pedestrian crossing signs should be installed to eliminate existing interference with bicycle travel along Starin Road.

Modifications could be considered to ease this congestion including the following:

1. Instruct the officer controlling the intersection to monitor the westbound queue length and hold the pedestrians for a longer period when the vehicular backup nears Warhawk Drive to "flush" this westbound queue.

2. Evaluate more significant and permanent changes to control at one or more intersections along Starin Road.

**B. Bicycle Circulation**

Consider improvements along Schwager Drive. Collaborate with the City of Whitewater on improvements to the routes surrounding campus. Possible improvements include the following:

1. Add “Sharrow” shared lane use markings along Schwager Drive to convey that the street space is intended for both cars and bikes.

2. Consider modifying the multiuse path crossing at the intersection of Schwager Drive and Fremont Street to address poor visibility to path users for eastbound vehicles at the stop bar looking to the north. One option would be to modify the decorative pillar and signage and/or to bulb the path and relocate the crossing farther west.

3. Relocate “Yield to Pedestrian” signs along Starin Road to be outside of the marked on-street bike lanes.

4. Add on-street bike accommodations to Tratt Street from Main Street to Starin Road:

   Requires coordination with the City of Whitewater.

   Would need additional investigation to determine optimal configuration (narrow travel lanes and shared bike/parking lane, standard lanes with generous buffer to bike lane and no parking, etc.).

5. Add on-street bike accommodations to Prince Street from Main Street to Starin Road:

   Requires coordination with the City of Whitewater.

6. Add on-street bike accommodations to Prairie Street from Main Street to Starin Road:

   Requires coordination with the City of Whitewater.

   Would need additional investigation to determine optimal configuration (narrow travel lanes and shared bike/parking lane on both sides, maintain parking prohibition on northbound side of the street and add marked bike lanes in each direction, etc.).

7. Add on-street bike accommodations to Main Street:

   Longer-term goal that requires coordination with the City of Whitewater and a larger study of benefits/costs of implementation.

   Alternatively, a designated east-west Bike Route parallel to and south of Main Street could be investigated.

**C. Pedestrian Circulation**

Given UW-Whitewater’s special mission addressing students with disabilities, another future consideration may be to reduce confusion in the existing pedestrian circulation system by simplifying or consolidating routes. Editing the overall system may make wayfinding more intuitive and direct, particularly for students with certain disabilities. Future circulation considerations should anticipate increases in bicycle use and other alternative transportation methods, some of which do not exist presently.

## PARKING

### *Existing Conditions*

Parking for UW-W commuter students, staff, faculty, and visitors is adequate in quantity, but is nearing capacity. Data provided by campus staff indicates there are currently about 5,120 on-campus parking stalls in surface parking lots plus about 120 additional metered, on-street spaces available on Prince Street and Prairie Street. During the field visit, the metered parking stalls had very low occupancy. The waiting list for parking permits is modest. For the 2012 - 2013 academic year, there were 25 students on the waiting list for Resident Lots 2 and 8, and 9 faculty and staff on the waiting list for Reserved Lots 2, 12, and 14.

Campus staff performed an occupancy survey of campus parking stalls the week of October 28 through November 1, 2013. The results confirm that current parking is adequate, but lots are nearing capacity at peak times (defined as 85 percent occupancy during some portion of a typical day). Table 1 shows the results of the parking survey. Based on the field data, there is a modest buffer of about 140 to 250 stalls that could be displaced before parking demand would exceed the supply.

Current UW-W enrollment is approximately 12,000 students. This results in a current parking stall to student ratio campus-wide of about 0.44 stalls per student. The current growth agenda projects incremental growth over the next 20 to a future total of 13,875 students.

Assuming 13,875 as the student enrollment target, 6,105 parking spaces would be required to maintain the status quo at 0.44 spaces per student; an increase of just under 1,000 stalls.

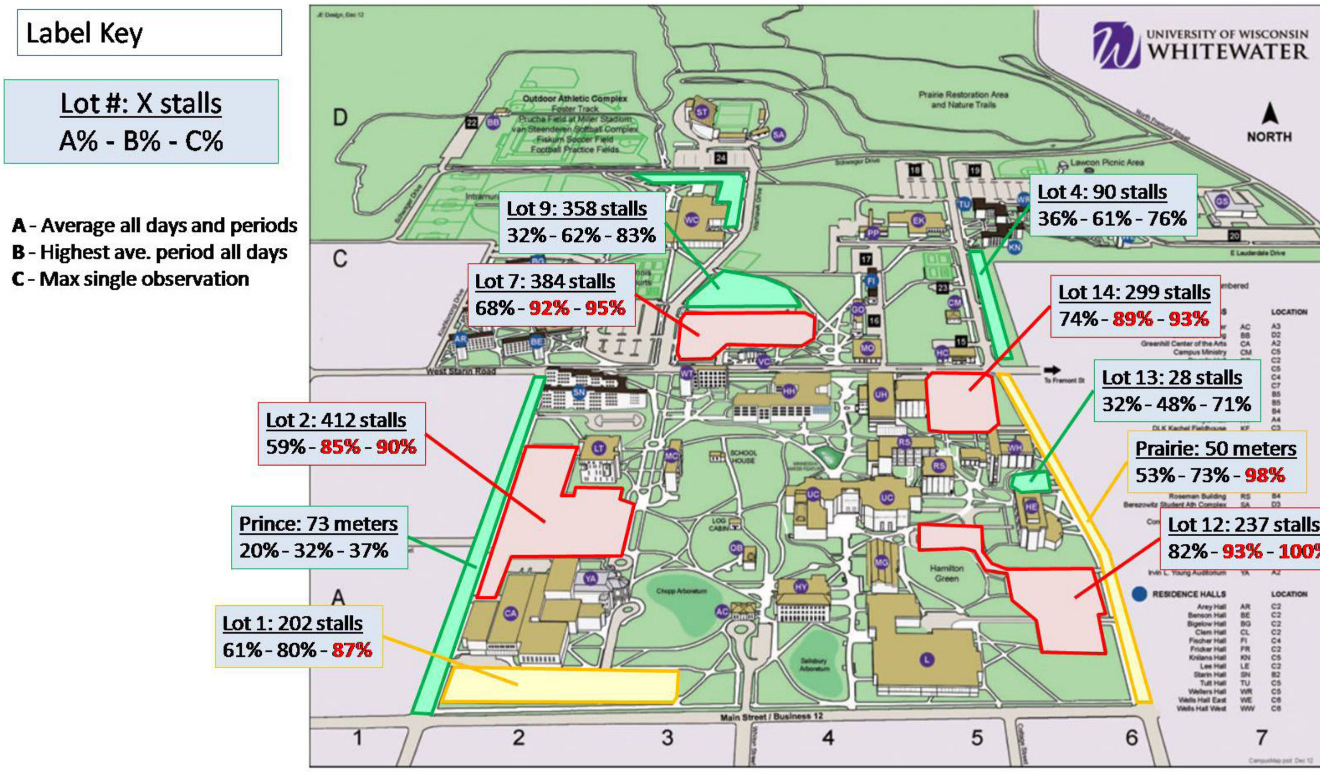
Many of the new buildings, building additions and new open space embodied in this campus master plan are proposed on existing surface parking areas. Approximately 1,000 existing parking stalls are eliminated in this manner. The combination of the loss of parking due to new buildings and the increase in student population results in a decrease in the parking to student ratio from 0.44 spaces/student to 0.31 spaces/student.

Another way to understand the parking situation is that about 1,865 new parking spaces would need to be constructed to maintain the current ratio.

Ultimately, a successful parking strategy for UW-W will determine the proper parking ratio that balances the impacts and costs of constructing new and/or replacement parking supply with managing parking demand.

| Parameter | Existing Campus Reductions | MS4 Required Reduction | TMDL Required Reduction | Reduction Gap |
|---|---|---|---|---|
| Total Suspended Solids (TSS) | 8.70% | 20% | 49% | 40.30% |
| Total Phosphorus | Not reported | NA | 66.40% | >57.7% |

TABLE 1 - PARKING SURVEY STATISTICS




## *Recommendations*

UW-Whitewater will be faced with a changing parking scenario as enrollment growth is combined with loss of surface parking areas to accommodate new buildings. Managing the changing parking scenario will require modifications affecting supply and demand. The following parking supply, demand and management tools are all components worthy of consideration and many may be part of the ultimate solution.

**A. Parking Supply Modifications**
There are areas on campus where surface parking could be feasibly added. However, existing lots 2, 7, 9, 12, and 14 represent the same area required to add the full 1,865 stalls that would be needed to maintain a 0.44 ratio long term. That area is about 12 acres, or roughly equivalent to the drumlin open space between Carter Mall and the University Center east to west and from Hyland Hall to Main Street north to south.

Some areas on campus that are currently in the Federal Land and Water Conservation Fund (LAWCON) restricted area might be made available for parking expansion by revising the LAWCON boundary as was done previously. There are properties adjacent to campus that could be considered for assembly and acquisition to add new areas for surface parking, but costs and timing add to the complexity of this solution.

Parking ramps and parking under new buildings could add supply and might be able to provide 1,855 parking spaces or some portion of that quantity. The cost of these spaces would dramatically impact the overall campus transportation budget because of debt service on the cost of the structure(s). This would most likely require significant increases in parking permit costs, which in turn impacts parking demand.

UW-W has an agreement with the City of Whitewater making some on-street parking stalls available for campus use. There are other streets nearby that could be added to this agreement and could add to the UW-W parking supply. There are various combinations of these strategies and more that could increase parking supply in the master plan build-out.

However, it is not likely that a master plan could include the new buildings required to accommodate the current growth agenda while establishing the desired setting for the future campus without impacting parking supply.

For a number of reasons, it does not seem likely that the current parking ratio will be maintained.

**B. Parking Demand Modifications**

Assuming the parking supply cannot keep pace with campus growth at the current parking ratio, UW-W campus decision makers should consider ways to manage the demand side of the parking equation. Demand can be influenced by adjusting prices, availability at different location, rules for distinct user groups,and transportation demand management strategies.

The fee for parking permits for faculty, staff, and students has a direct impact on the demand for on campus parking. Permit prices that are too low may encourage excess motor vehicle trips to campus and consume extra parking spaces. Permit prices that are too high may result in spillover parking to neighboring streets and properties, but they also tend to encourage ridesharing and alternative modes of transportation.

Current occupancy rates confirm that parking stalls closer to central campus are in higher demand by faculty, staff, and commuter students.

Additional data is needed regarding where off-campus residents and commuters live, where on-campus residents need to travel and how often, and so on. Regulations can be developed for on-campus residents and car parking or storage and off-campus students related to commute distances.

**C. Travel Demand Management**

Reducing the demand for on-campus parking stalls during peak times can be accomplished through many measures that can generally be classified as Traffic Demand Management (TDM). Such measures can include the following:

Improved pedestrian infrastructure and connections both internal and external to campus.

Improved bicycle infrastructure and connections both internal and external to campus.

Satellite parking areas with shuttle service and/or a larger campus transit system.

Enhanced accommodations for commuting students, faculty, and staff from other communities such as ride-matching and expanded commuter shuttles.

A modified growth agenda that results in an increase in the share of on-line, non-traditional, or other student types that contribute less to peak period parking demand.

**D. Future Parking Study**

The master plan recommends an in-depth study of parking supply, projected demand, parking policy and management to address the changes in parking that will occur as campus grows. Additional data and study are needed to fully address parking in a balanced manner for UW-Whitewater. This should include an in-depth study of users, parking use patterns, evaluation of scenarios based on financial availability and the “market” for parking at UW-W, property acquisition opportunities, cooperation/negotiation with City of Whitewater representatives, and more. In the near term of campus growth, design and construction of new buildings and additions should seek to limit net surface parking losses. Upcoming projects should limit net parking space losses to 150 stalls or less in total to avoid a significant impact on parking operations.

Additional study is needed to determine whether a parking structure or structures should be part of the long-term plan for UW-Whitewater. At this time it is recommended that two locations be held in reserve for a possible future parking structures and that future projects not preclude that possibility at these two locations: northeast of the intersection of Main Street and Prince Street on Lot 2 and northwest of the intersection of Main Street and Prairie Street on Lot 12.

## STORMWATER

### *Introduction*

This section summarizes a review of stormwater-related issues on the University of Wisconsin-Whitewater (UW-W) campus. The review considered existing data provided by campus staff, previous stormwater management studies and efforts.

This summary documents existing stormwater-related management efforts, describes the existing storm sewer system, provides commentary on the existing storm sewer system capacity, provides background on current stormwater quality requirements affecting the campus as a whole, provides an estimate of stormwater management needs for the proposed future building projects, and provides an implementation plan based on regulatory agency and master plan timing.

### *Existing Stormwater Management Planning Documents*

Stormwater issues on the UW Whitewater campus generally revolve around stormwater quality and stormwater quantity (flooding) issues. The following documents past efforts in both stormwater quality and quantity on the campus.

### *Stormwater Quality Management*

Stormwater Management Plan, UW Whitewater, Summer 2006, DFD Project No. 04B2C, Norris & Associates, Inc.- This plan addresses all the requirements of UW-Whitewater's Wisconsin Pollutant Discharge Elimination System Permit (WPDES General Permit No. WI-S050075-1) except the required stormwater quality modeling and planning. The plan includes the following sections: Executive Summary, Pertinent Codes, Existing Campus Features, Existing Storm Water Management Practices, Proposed/Anticipated Campus Development, Anticipated Storm Water Management Efforts, and Conclusions and Recommendations.

Stormwater Quality Management Plan, UW-Whitewater, December 2008, Strand Associates, Inc. As a WPDES-permitted area administered through NR 216, the UW-Whitewater's Municipal Separate Storm Sewer System (MS4) is required to comply with the requirements of the general permit. This plan provided baseline and existing conditions stormwater quality modeling to comply with the requirements of the permit at the time.

Stormwater Quality Management Plan Updates, UW-Whitewater, June 2011, Strand Associates, Inc. To provide a plan to achieve the general permit requirement of a campus-wide reduction in total suspended solids (TSS) discharge to Waters of the State of 20 percent by March 10, 2008, and 40 percent by March 10, 2013, this plan updated the December 2008 baseline and existing conditions stormwater quality modeling and evaluated alternatives to achieve the 40 percent TSS reduction requirement. The plan documented an existing conditions (March 2011) 8.7 percent TSS reduction, leaving a 31.3 percent TSS reduction gap that would need to be closed. The plan evaluates six alternatives comprised of various combinations of sixteen potential best management practices (BMPs) that range in cost from $982,000 to $3.1 million. Alternative No. 1 at a cost of $1.1 million and achieving a 40.8 percent TSS reduction was recommended as the most cost effective alternative.

It should be noted that since the date of the 2011 plan, the State of Wisconsin has rescinded the 40 percent TSS reduction requirement. However, with the United States Environmental Protection Agency (USEPA) approval of the Rock River Total Maximum Daily Load (TMDL) on September 28, 2012, compliance with new, more stringent stormwater pollution reduction requirements (41.1 percent TSS reduction and 81.2 percent total phosphorus (TP)) will be required. These requirements are further discussed below.

### *Stormwater Quantity Management*

Lauderdale Drive Drainage Study, UW Whitewater, March 2010, DSF Project No. 08G3J, GRAEF- Recurring flooding in the northeast section of the campus, adjacent to Lauderdale Drive, prompted the need for this study. Hydrologic and hydraulic modeling of the contributing watersheds was used to evaluate six alternatives to address the flooding. A combination of Alternative 1 and Alternative 6 was recommended for implementation at a cost of $213,500. Strand Associates, Inc.® completed the design of the improvements for the area that were constructed in 2012. Figure 1 shows a flood relief bioswale constructed as part of the project.Heide Hall Drainage Study, UW Whitewater, July 2011, Strand Associates, Inc.- This drainage study was commissioned by UW-Whitewater to address localized flooding on the west and southwest sides of Heide Hall. The study recommends a $26, 300 project to address the flooding consisting of storm sewer and storm inlet improvements. It is our understanding that improvements (see Figure 2) in this area were completed in 2013.

### *Existing Storm Sewer System*

As shown in Figure 3, the UW-Whitewater campus is split into 18 individual drainage basins. Basin designations starting in WC drain to Whitewater Creek and starting in GC drain to Galloway Creek. These areas are drained through a drainage system consisting mainly of storm sewers, manholes, and inlets with portions of Schwager Drive (east half), Prairie Street (north end), and Fremont Street drained by ditch/swale.

FIGURE 1 - FLOOD RELIEF BIOSWALE -PRAIRIE ST.

FIGURE 2-HEIDE HALL STORMWATER IMPROVEMENTS

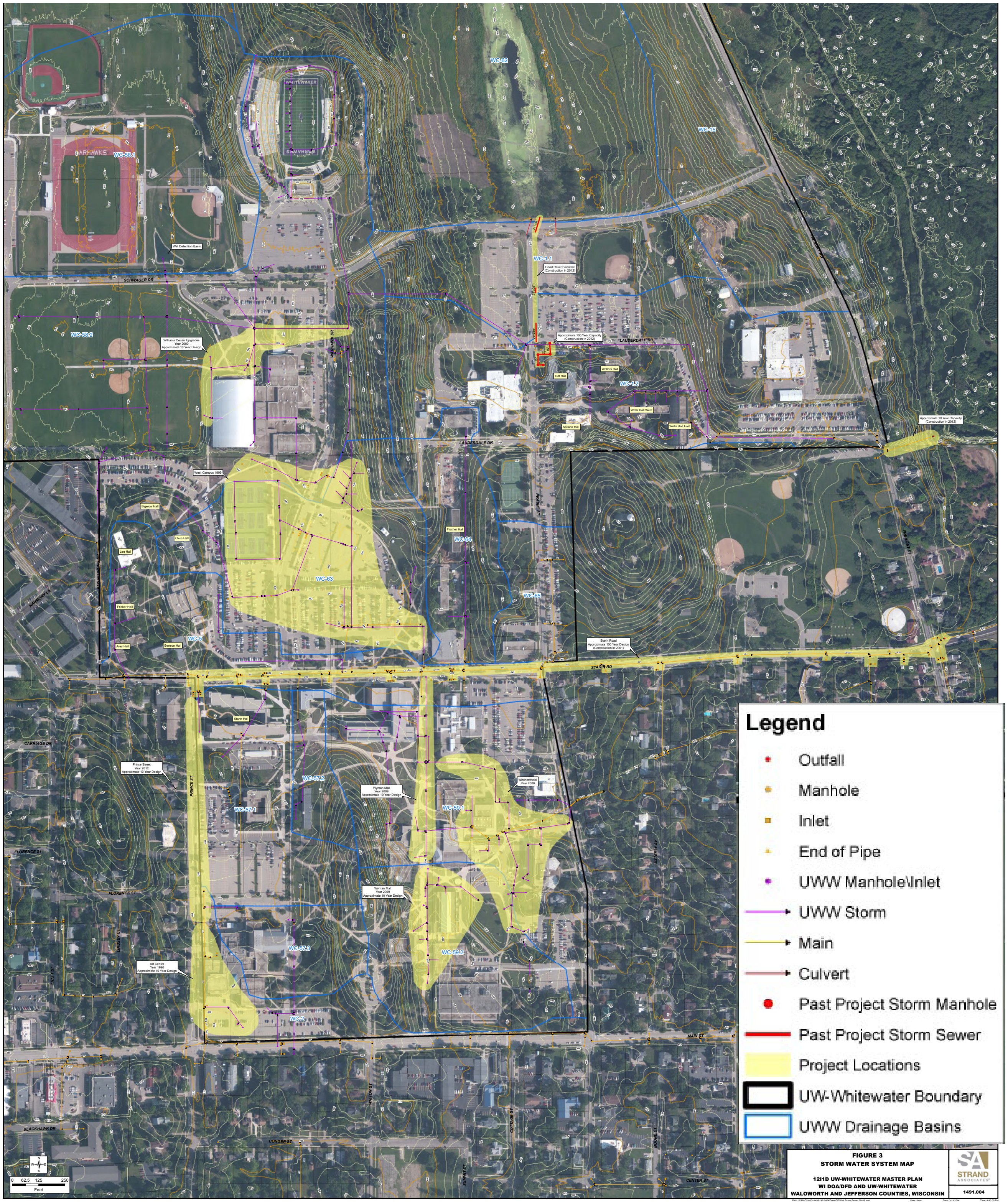



FIGURE 3 - STORM SEWER SYSTEM (NOTE-FULL SIZE DIAGRAM AVAILABLE IN THE DIGITAL APPENDIX)

From a stormwater treatment standpoint, existing BMPs include street sweeping, two bioretention basins serving Parking Lot 8 (drainage basin WC-5) as shown on Figure 4, one bioretention basin serving Parking Lot 2 (drainage basin WC-57.1) as shown in Figure 5, and a wet detention basin serving sports fields and the track (drainage basin WC-58.1).

### *Existing Storm Sewer System Capacity*

Through discussions with UW-W staff, it is understood that there are currently no outstanding flooding problems on the campus. The flooding problem along Lauderdale Drive, north of Tutt and Wellers Hall, has been addressed by a flood relief system constructed in 2013. Flooding west of Heide Hall was addressed by a flood relief system constructed in 2012.

Existing Storm Sewer System Capacity-Figure 3 provides a map of the campus storm sewer system including contours, watersheds, storm sewers, and existing stormwater management BMPs. Where available, a design storm capacity is indicated. Over the years, various storm sewer extensions and upgrades have been completed though a specific design storm is not associated with the project. Figure 3 shows the locations of these upgrades and their year of construction.

### *Stormwater Quality Requirements*

The UW-W campus is a Wisconsin Pollution Discharge Elimination System (WPDES)-permitted area (WPDES General Permit No. WI-S050075-1). As such, the UW-W Municipal Separate Storm Sewer System ([MS4] a designation assigned by EPA) must comply with the eight requirements of the permit:

- Public Education & Outreach
- Public Involvement & Participation
- Illicit Discharge Detection & Elimination
- Construction Site Pollutant Control
- Postconstruction Site Stormwater Management
- Pollution Prevention
- Storm Sewer System Map
- Annual Report and Compliance Schedule

The existing stormwater quality management documents listed above provide efforts that generally comply with the requirements of the WPDES permit.
However, the WPDES permit reissued in 2013 as WPDES Permit No. WI-S050075-2, which will require updates to the campus stormwater program, including compliance with the Rock River Total Maximum Daily Load (TMDL).

Updates to the campus stormwater program including a TMDL Compliance Plan can be funded by a Wisconsin Department of Natural Resources' (WDNR) Urban Nonpoint Source and Stormwater Grant program that provides a 70 percent state and a 30 percent local (campus) match. The permit requires that the stormwater program updates be completed between March 15, 2015, and March 31, 2018, depending on the specific requirement. The grant program if successful, will provide funding in the January 1, 2015, through December 31, 2017, timeframe. This grant time frame works well to provide funding that will allow completion of permit requirements within the permit time frame. Compliance with the permit will require the implementation of sustainable green stormwater infrastructure on campus.

The scope for the stormwater program update and TMDL Compliance Plan would include updates to each of the bulleted requirements above.

One of the most critical items of the update will be stormwater quality modeling to close the TSS and TP reduction gaps shown in Table 1. The TMDL Compliance Plan would look at ways to close this gap by way of stormwater infrastructure on the campus as well as the framework to potentially achieve the reductions through watershed adaptive management, pollutant trading, or through joint projects with the City of Whitewater.

Stormwater quality modeling efforts will need to comply with the DNR's TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance, currently in draft format. This document provides guidance for updating previous MS4 modeling to conform to requirements of the TMDL, among others.

The cost for the stormwater program update and TMDL Compliance Plan can be partially offset by grant funding, but in general can be in excess of $100,000.

As a state institution, UW-Whitewater is not normally regulated under Jefferson County, Walworth County, or City ordinances. State facilities are not subject to local ordinances except land use provisions of local zoningregulations.

However, the DOA has determined that the applicable stormwater regulations for each UW System campus shall include the most stringent of state and local ordinances to foster a good neighbor relationship with the local municipalities and counties where the campuses are located and to prevent degradation of the state's water resources. The master plan recommends that UW-Whitewater aspire to most stringent stormwater management requirements as a responsible steward and in keeping with the goals of a sustainable institution.

However, the campus is subject to Subchapter III of NR 151, Nonagricultural Performance Standards.


FIGURE 4 - LOT 8 BIORETENTION BASIN

FIGURE 5 - LOT 2 BIORETENTION BASIN

## Applicable Stormwater Requirements

Review of Jefferson County, Walworth County, City of Whitewater, and NR 151 requirements reveals that there are no county ordinances. The most stringent of the City and NR 151 requirements will apply to the proposed new building and building addition projects on the UW-Whitewater campus.

New buildings and additions are characterized as "redevelopment" actions by DNR, and will require 40% reduction in Total Suspended Solids (TSS) from runoff from roads and parking areas per NR 151.

Stormwater quality requirements of the Rock River TMDL should also be considered. Again, as "redevelopment" actions, the federally mandated compliance with the Rock River TMDL requires:

49% Reduction in TSS and
66.4% Reduction in Total Phosphorus

### *Required Improvements for Proposed Building Projects*

Conceptual stormwater management requirements for new buildings are shown in Table 2. It was assumed that the project size of a particular project would be 30 percent larger (of which 10 percent is parking, 10 percent is sidewalk, and 10 percent is grass) than the roof area identified in the Master Plan. HydroCAD and WinSLAMM modeling was completed to determine the size of the bioretention facility necessary to meet the stormwater requirements of NR 151 and the Rock River TMDL for each project.

A relationship between impervious roof area and bioretention top surface area was developed from this modeling information. This relationship can be expressed by the formula: Impervious Roof Area x 0.1085 + 595.22 = bioretention top surface area.

From a cost standpoint, a relationship can also be developed between the bioretention top surface area and the cost of the bioretention features. Again, this relationship can be expressed by the formula: Surface area (in sq. ft.) x $24.13 + $37,577 = probable cost for this aspect of storm water management.

Table 2 shows estimated areas of bioretention, probable cost in 2014 dollars related to building and building addition projects.

| Parameter | Existing Campus Reductions | MS4 Required Reduction | TMDL Required Reduction | Reduction Gap |
|---|---|---|---|---|
| Total Suspended Solids (TSS) | 8.70% | 20% | 49% | 40.30% |
| Total Phosphorus | Not reported | NA | 66.40% | >57.7% |

TABLE 1 - MS4 AND TMDL REQUIRED REDUCTIONS

| Proposed Building Project | Roof Area/Total Area (sq. feet) | Bioretention Surface Area | BMP Cost |
|---|---|---|---|
| Williams Center Additions | 88,215/114,680 | 10,167 | $ 282,900 |
| New Res. Halls | | | |
| #1 | 28,135/36,576 | 3,648 | $ 125,600 |
| #2 | 35,742/46,465 | 4,473 | $ 145,500 |
| #3 | 29,452/38,288 | 3,791 | $ 129,050 |
| #4 | 31,707/41,219 | 4,035 | $ 134,950 |
| #5 | 30,036/39,047 | 3,854 | $ 130,600 |
| #6 | 31,504/40,955 | 4,013 | $ 134,400 |
| New Dining Hall | 59,207/76,969 | 7,019 | $ 206,950 |
| Laurentide Hall Addition | 7,149/9,294 | 1,371 | $ 70,650 |
| Carter Mall Academic Bldg. | 53,312/69,306 | 6,380 | $ 191,500 |
| Upham Hall Bldg. Addition | 30,772/40,004 | 3,934 | $ 132,500 |
| Athletics Additions | | | |
| #1 | 2,542/3,305 | 871 | $ 58,600 |
| #2 | 2,365/3,075 | 852 | $ 58,150 |
| #3 | 2,477/3,220 | 864 | $ 58,400 |

TABLE 2 - STORMWATER MANAGEMENT PROJECTIONS FOR NEW BUILDINGS AND ADDITIONS

## WATER SYSTEM

### *Introduction*

This section summarizes a review of the current water distribution system on and around the University of Wisconsin-Whitewater (UW-W) campus. The review considered existing data provided by campus staff, available Geographical Information System records of the water system, the existing water system model for the City of Whitewater, and record drawings of recent facility improvements.

In general, the water system in the campus area is very robust, with significant, relatively recent water main improvement projects being completed on Starin Road, Wyman Mall, Carter Mall, and around the Williams Center/Kachel Field House. Eight and twelve-inch mains provide a strong network of mains through a majority of the campus.

The existing distribution system pressures during normal operation of the water systems range from 45 to 65 pounds per square inch (psi) throughout the study area. Pressure will be dependent upon water use throughout the city, water levels in the existing elevated tanks, and the wells that are in operation. A typical pressure contour map is shown in Figure 1. This is a relatively conservative estimate of the typical pressures in the area.

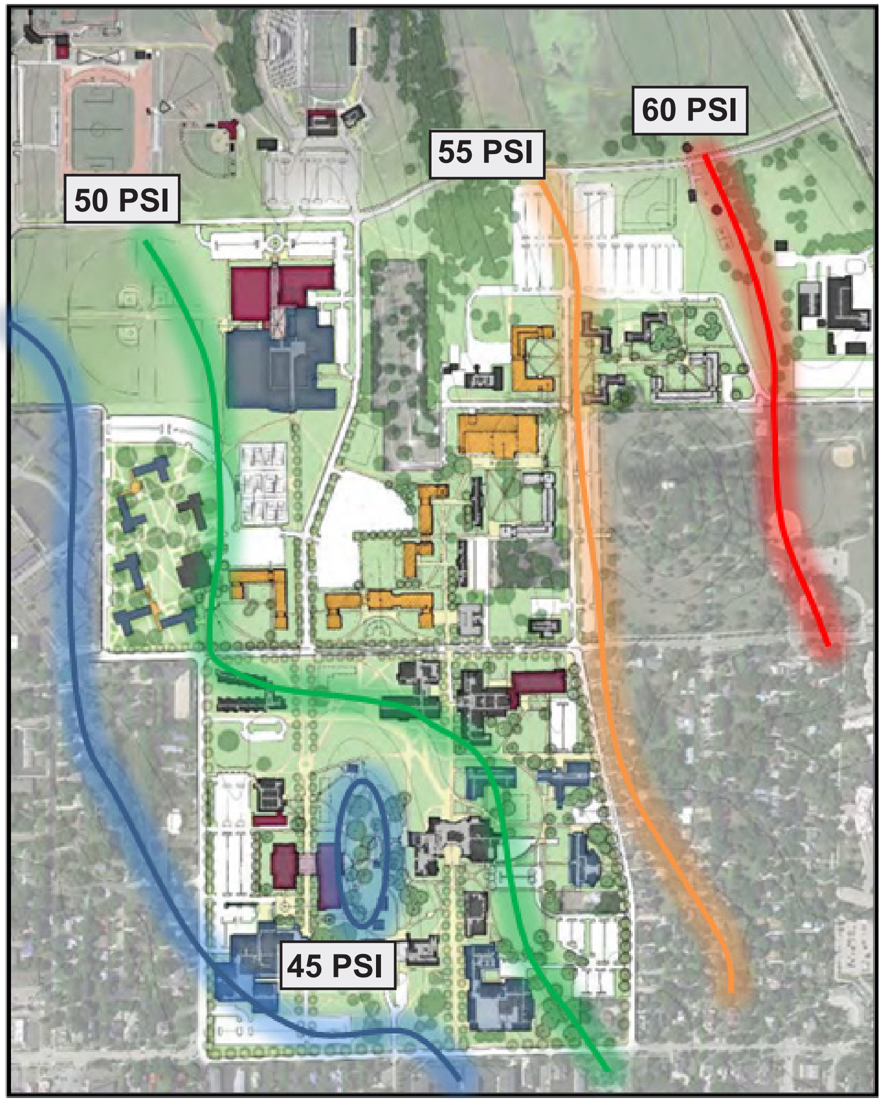



FIGURE 1 - WATER PRESSURE CONTOUR MAP

For planning purposes, conservative levels of demands, well operation, and tank levels were used. Typical pressures at grade in the area of the proposed residence halls, north of Starin Road, are expected to be a minimum of 50 psi under typical conditions. This will provide adequate pressure to serve the domestic demands of four-story residence halls as are currently proposed.

Additional floors would likely require booster pumps to supply them, as pressures would start to become marginal on the upper floors without. Pressures are slightly lower, on the order of 45 psi at grade, in the Carter Mall area. This is primarily due to the higher elevation in this area, rather than any weakness in the water distribution system. This will still provide adequate pressure for the proposed three story academic building proposed at this location. Again, additional floors will require booster pumps to achieve required pressure for domestic water use.

| | | Fire Protection (GPM) | | |
|---|---|---|---|---|
| Building Type | General Use/Description | Est. Ave. H2O Use (GPD) | Sprinkler | Hydrant |
| Residence Halls | 400-450 beds, 4 stories | 45,000 | 345 | 1500 |
| Dining Hall | General Dining Facility, 60,000 GSF | 60,000 | 345 | 1500 |
| Gymnasium/Locker Rooms | Accessible gymnasium and locker space, 70,000 GSF | 15,000 | 345 | 1500 |
| General Classroom | 3 stories 170,000 GSF | 20,000 | 345 | 1500 |
| Laboratory | 3 stories, 75,000 GSF | 20,000 | 345 | 1500 |

FIGURE 2 - DOMESTIC WATER USE

### *Fire Protection*

In general, the controlling feature of the water system design is the necessary fire protection for the proposed and existing facilities. Sprinkler system requirements appear to be capable of being met relatively easily by the existing distribution system. Hydrant flows, based on National Fire Protection Association guidance, on the other hand are more difficult to attain.

Depending upon the operating scenarios, the available fire flow throughout the study area varies from 1,800 gallons per minute (gpm) to greater than 3,500 gm at a 20 psi residual. The lowest flows were generally found around the west campus residence halls and Goodhue/Fischer Hall area. Fireflows are generally strong in the Fieldhouse area, Carter Mall, along Starin Road, and the Connor University Center. These areas include a network of newer 8 and 12-inch mains that provide solid fire flow capabilities.

The hydrant fire flows listed in Figure 2 are based upon structures that are fully protected by sprinkler systems. Areas with unsprinklered buildings will require larger hydrant fire flows and larger diameter water mains. Where no sprinklers are currently installed, these recommended hydrant flows increase by 75 percent and would range from 3,000 to 6,000 gpm with a residual pressure of 20 psi.

In general, the water utility is unlikely to be able to support hydrant flows in excess of 3,500 gpm. This level of water use exceeds the supply capacity of the overall system and would quickly deplete the storage available in the system.

A summary of the anticipated water needs for typical facility development included in the master plan is found in Figure 2 - Domestic Water Use.

***Water System Recommendations***
The following water system improvements or modifications are recommended as part of the master plan.

**1. Indoor Tennis/New Gym and Entry Addition to Williams Center**
An existing 12-inch water main runs just north of the existing Williams Center. This watermain will need to be relocated to avoid conflict with the proposed new structure. Replacement with a 12-inch water main is recommended.

**2. West Campus Residence Complex Utility Project**
This is an area of lower available fire flow. The modeled flow is just above the anticipated required fire protection need presented in Figure 1 for residence halls. A 12" water main replacement of the existing 6" main is currently planned as part of Phase I of the West Campus Residence Hall renovation project.

**3. New Academic Building #1 (Carter Mall Location)**
There is an existing north-south 8-inch water main located within the bounds of the proposed building footprint. The master plan specifically notes that the new building would "straddle" the exisitng water main, maintaining that service throughout and folllowing construction.

**4. New Residence Hall 1/New Dining Facility/New Residence Hall2**
This area is served by an existing 6-inch main that runs between Starin Road and the Lauderdale Drive/Prairie Road Intersection. The current water main also falls within the proposed footprint of the new dining facility.

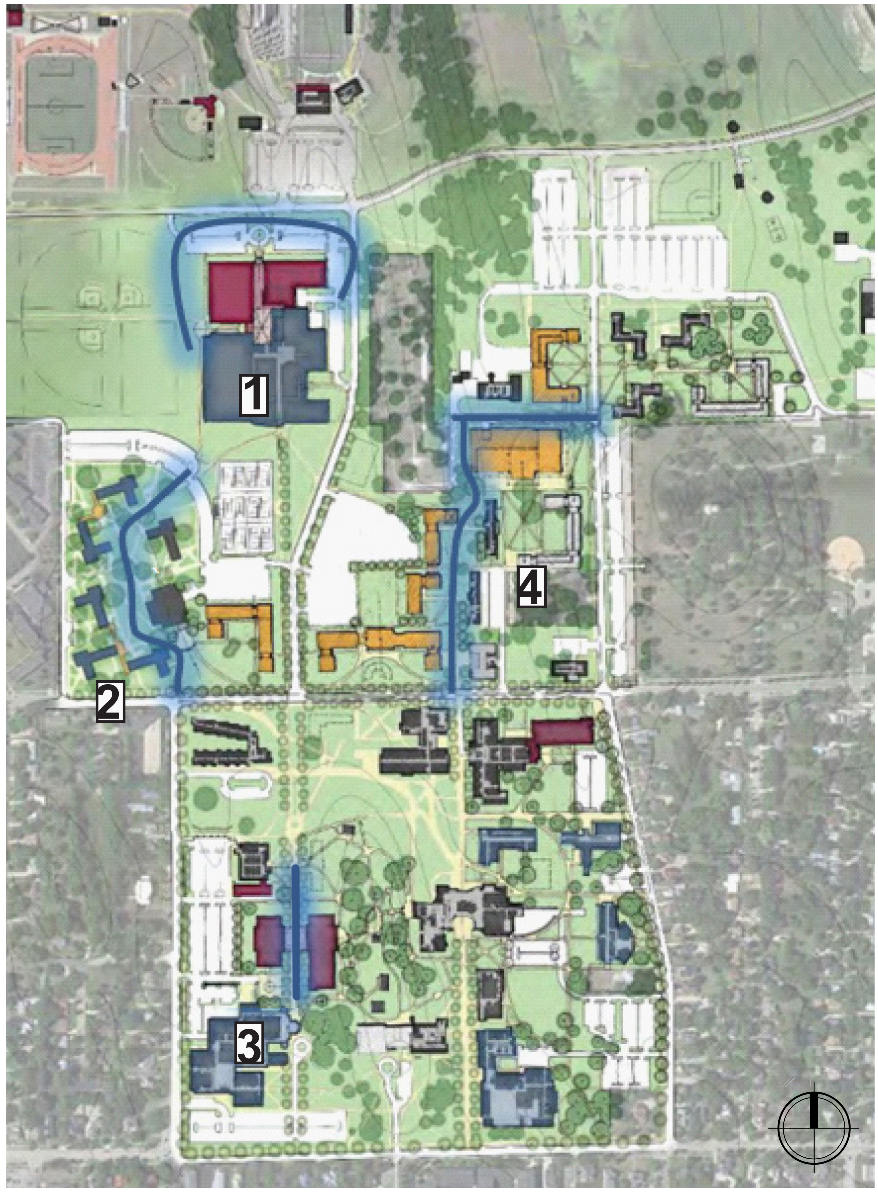


FIGURE 3 - WATER SYSTEM RECOMMENDATIONS

Relocation of the main around the proposed dining facility will be necessary.

Similar to the west campus residence halls, available fire flows in this area just meet the anticipated requirements and may be considered marginal. Replacement of the 6-inch main with a 12-inch main between Starin Road and Prairie Road is recommended.

## CAMPUS UTILITIES

### *Overview*
This utility master plan provides a high level assessment of steam, chilled water electrical and telecommunications systems which serve the University of Wisconsin – Whitewater campus. The assessment will review the overall condition, capacity and layout of the utilities and the ability of the utilities to meet the needs of the campus for a minimum of the next 20 years to coincide with the Campus Master Plan.

Strategies and upgrades are based on new proposed buildings, buildings being remodeled and buildings proposed for demolition as identified in the Master Plan. Strategies also consider the impact of the building changes to the boilers, chillers and electric services.

### *Profile*
**Steam - Buildings**
The campus currently consists of 2,961,716 gross feet of building area of which 2,874,076 square feet (97%) is provided steam from the central steam system. Estimated building demands are included in the Campus Central Steam System Analysis (See Appendix A).

Over the time period of the master plan the gross building square footage of heated space on campus is projected to increase by approximately 58% (1,680,330gsf) to 4,554,406 gross square feet.

The 58% increase in building square footage will require a projected net increase in the profected campus steam demand of 43%. This will have a significant impact on the steam generation and distributions systems.

**Steam - Generation**
Campus steam is provided from nearby combined cycle gas-fired LS Power cogeneration plant operated by NAES. Currently the UW is in a 3 year contract (started September 2012) to purchase steam from the LS Power Plant at $2.63/1000#/hr. LS Power currently owns and maintains the main steam pressure reducing valve, condensate pumps and steam flow meter within the UW-Whitewater steam plant. Steam is utilized for building heating and for campus cooling thru three existing absorption chillers.

The UW-Whitewater steam plant is maintained to provide backup service to the LS Power supply to the campus. The steam plant consists of the following boilers:

- Boiler-1 (1965) 45,000 LB/HR Gas fired
- Boiler-2 (1965) 45,000 LB/HR Gas fired
- Boiler-3 (1970) 35,000 LB/HR Gas fired
- Boiler-6 (2010)100,000 LB/HR Gas fired

The current peak steam demand is 82,936 lbs/hour based on metered data. This demand equates to an average use of 27 BTU/gross square foot of connected building. The future peak steam demand is projected to increase 44% to 119,618 lbs/hour assuming demolition of identified buildings. Boiler-6 remains in stand-by mode in case the cogeneration plant goes off line. Boiler-3 and Boiler-6 are available to provide campus demand during annual LS Power scheduled maintenance shutdown in May. Boilers-1 and 2 have not been on-line since 1987 and are considered non-functional.

Boiler-3 and Boiler-6 could meet current and projected future peak winter campus demand if LS Power would go off line. If Boiler-6 would go down when LS Power is off line in the winter the campus would not have adequate back up to meet current demand.

The plant steam header operates at 125 psig and provides 80 psig to the underground campus distribution system to the campus buildings.

Existing plant equipment such as the boiler feed water pumps, dearator and condensate tank are original and in good working condition. Individual buildings are equipped with condensate meters.

There is currently a planned project to upgrade the make-up water treatment system with an RO system.

**Steam - Distribution**
The steam distribution system consists of approximately 12,679 lineal feet of concrete box conduit and 1,465 lineal feet of direct buried conduit. There are a total of 44 steam Pits. The existing layout of the steam distribution system is provided in Appendix A

There are currently two main steam routes from the plant to feed the campus, one 10” main to feed the area east of the plant and one 12” main to feed steam south and west of the plant. Both mains are of adequate size to handle current campus steam loads. The 10” main is lightly loaded. The 12” main is considered at its maximum capacity.

The “Steam Distribution Condition Assessment” in Appendix A summarizes the condition of the steam distribution system. There have been ongoing upgrades to the steam distribution system since it was first installed in 1963.

The campus experiences an approximate 7-8 psig pressure drop at the far south end of the campus on a peak day.

Condensate is returned to the Heating Plant in the same pipe route as the steam system. With all campus isolation valves open there is not an issue with returning condensate to the plant. If condensate is isolated at Pit 3 and directed back to the plant via the west campus cross connect, condensate will backup and overflow from condensate receivers serving buildings on the south end of campus.

**Chilled Water - Campus Buildings**

The campus currently consists of 2,961,716 gross feet of building area of which 1,906,241 square feet (64%) is provided chilled water for cooling. Estimated building demands are included in the Campus Chilled Water Load Projections (See Appendix A).

Over the time period of the master plan the gross building square footage of air conditioned space is projected to increase by approximately 60% (1,142,292gsf) to 3,048,533 gross square feet. In addition there is an additional 230,841 gross square feet of existing buildings outside the 20 year timeline of this study that may require air conditioning..

**Chilled Water - Generation**

The original chiller plant was constructed as an addition to the central heating plant in 1999 with (3) 800 ton rated absorption chillers (CH-1, 2, 3). In 2006 a 1,400 ton electric chiller (CH-4) was installed in a new addition to the existing chiller plant.

The current total nominal plant capacity is 3,800 tons. Actual performance is significantly less. Data for a 94 degree 51% humidity day the plant could only generate 3400 tons of chilled water at 46 degree supply and 58.2 degree return with 6689 GPM. This demand was recorded on a day that was slightly above a design day condition. The chillers are currently set to provide a supply water temperature of 41 degrees with a 10 degree temperature difference. Based on the design day performance it is anticipated that the absorption chillers are underperforming with Chiller-2 producing significantly less than its name plate tonnage. Observations indicate that it is producing approximately 600 tons.

Each chiller has its own independent cooling tower and condenser water pump.

Each chiller has a primary chilled water pump. Chilled water is distributed to the campus with one electrically driven secondary pump with a variable frequency drive and one steam driven secondary pump with 13 psi backpressure steam. Low pressure steam from the backpressure turbine pump is used for the absorbers. A bypass/decoupler line is installed between the supply and return line upstream of the campus distribution pumps which creates a primary-secondary pumping arrangement.

The system distribution pumping differential pressure is approximately 30 psig on a design day.

Metering of chilled water is provided only at program revenue buildings; Esker Hall, Drumlin Hall, Conner Center, Fischer Hall, and Starin Hall. Metering information is brought back through the Metays control system.

**Chilled Water Distribution System**

The existing direct buried underground chilled water distribution system is fed thru ductile iron and some PVC piping from the chiller plant to the campus buildings. The distribution system is a radial concept with no loops. There is a single 20” main feed from the plant to serve the campus.

Evaluation of the hydraulic performance of the existing and proposed chilled water pipe distribution system was completed using the AFT Fathom pipe flow analysis program.

**Electrical Power - Campus Buildings**

The campus currently consists of

2,961,716 gross feet of building area of which 2,943,697 square feet (99%) is served by the campus electrical service. Estimated building demands are included in the Campus Electrical Load Projections (See Appendix C).

Over the time period of the master plan the gross building square footage is projected to increase by approximately 28% (1,154,048 gsf) to 4,097,745 gross square feet.

The 4160V switchgear presently has 6 spare circuit spaces that can be utilized to serve future load growth.

**Electrical Power - Generation**
The campus electrical service was installed in 2011. The service consists of 24.9 kV switchgear that supplies (2) 7.5 MVA 24.9kV to 4.16kV transformers and switchgear line-ups, labeled North and South. Electrical power is distributed from the (2) lineups of 4.16 kV switchgear to the various buildings on campus. The two transformers and associated 4.16 kV switchgear are designed to be redundant, should one fail the other system can handle the entire load of the campus.

Currently, the total load on the two transformers is 6.54 MVA. Thus a single transformer is loaded to 87% of maximum capacity.

**Electrical Power - Distribution**
The 4.16 kV electrical power is distributed to the various buildings via underground ductbanks. The distribution system is a loop concept so each building can be served from either of the 4.16 kV switchgear lineups (North and South). The switching of a building(s) from one lineup to the other occurs in various pad mounted switchgear units around the campus.

There are several locations in the ductbank system with limited or no spare duct capacity. There is one spare duct between manholes P1 and P3. This is the main ductbank that supplies the campus with the exception of the northwest quadrant.

While each building can be supplied from either the North or South 4.16 kV switchgear lineups, feeder #10 from the south lineup is the back-up feeder to feeders #4 and #6 from the north lineup and feeder #7 from the south lineup.

Currently if one feeder in each loop has to serve the entire load, the maximum loading of any feeder is 63%.

**Telecommunications - Generation**
The campus has two hubs for telecommunications, McGraw Hall and Goodhue Hall with a redundant link between the two buildings. The data center is located in McGraw Hall.

**Telecommunications - Distribution**
The communications cabling is distributed to the various buildings via underground ductbanks. The distribution system is a radial concept with no loops.

The buildings south of Starin Road are connected to McGraw while the rest of the campus is connected to Goodhue.

The existing distribution system of underground ductbanks has significant obsolete fiber optic cable but still in use, coax cable bot in use and abandoned and other miscellaneous cables. The ductbank system also contains a significant amount of underutilized multi-pair telephone cable. When the campus switched to voice-over-internet-protocol (VOIP), the amount of pairs in telephone cable still utilized is very low, some is completely abandoned.

Refer to the fiber optic study, Appendix D, for more details.

## *Recommendations*

**A. Steam - Generation**
Boiler-3 and Boiler-6 should be maintained in good operating condition to continue accommodating LS Power maintenance shutdowns. A third boiler of 100,000 LB/HR would be required to provide reliable adequate backup capacity if full winter backup is required.

Due to age, condition and duration of non-operation Boiler-1 and 2 should be considered for removal although removal is not necessary. Removal of these two boilers would provide three open bays in the plant for other functions. One of the three open bays should be reserved for a third boiler.

**B. Steam Distribution**
Incremental maintenance repairs/upgrades to the existing aging steam/condensate distribution system will be necessary to continue to provide reliable distribution and adequate capacity for existing buildings and anticipated new construction identified in this master plan. Steam pits noted with “Poor” structural condition are the highest priority and recommended for reconstruction in the near term. Steam pits noted with “Poor” insulation or piping are the second highest priority and recommended for reconstruction in the mid term.

With a projected increase in campus steam demand of approximately 44% the steam pressure drop through the existing distribution system to the south end of the campus is anticipated to increase to 12-14 psig. An increase in the distribution pressure could be considered if pressure drop becomes excessive. An evaluation of the system components would need to be done toverify the ability to increase the system pressure. The system safety valve is set for 160 pounds per square inch.

A second 12” steam with 6” condensate is recommended to be extended from the plant to Pit 17. This line would supplement additional buildings for the south and west portion of the campus and also allow shutdown of the single deteriorating 12” steam and 6” condensate from the plant to Pit 3 for reconstruction.

Building condensate pumps on the far south end of campus should be upgraded to provide adequate pumping head back to the plant. Any new building should include a steam or condensate meter for monitoring energy use.

**C. Chilled Water - Generation**
The chiller capacity is currently at capcity. The projected future campus demand is estimated to be approximately 6,000 tons of cooling or about a 2600 ton (75%) increase from the current 3,400 ton plant capability. In addition, 2,000 tons of absorber capacity should be scheduled for replacement within the next zero to six years due to age and condition.

Four initial options for increasing plant capacity were considered for planning purposes. These options are indicated in the appendix. Based on the building master plan the capacity increase and upgrade of the existing chillers is suggested to occur in three separate increments. The first increment would be required before the occupancy of the first new building. The second increment would be required around year five and the third increment would occur at approximately year 10. In addition to the four options there are several other possible options that should be evaluated in a detailed plant study.

The existing chiller plant is not anticipated to have adequate space for the projected increase in cooling capacity. An addition to the plant or a second plant on campus should be further evaluated. Expansion into a portion of the boiler plant may also want to be evaluated depending on the long term plan for the plant.

Consideration was given to adding a second plant at the south end of the campus but the relatively inexpensive steam from LS Power and the available distribution, steam and electrical infrastructure would dictate the capacity be added at or near the existing plant.

Further study is required to evaluate whether to replace the existing absorbers with steam turbine driven chillers or a combination of steam turbine driven and electrically driven chillers. Both the existing steam plant or the LS Power steam service have enough capacity to serve 6,000 tons of turbine driven chilling capacity.

A detailed study is recommended to evaluate the various chiller/driver, cooling tower, plant and location options.

**Chilled Water Distribution System**
The flow model did not identify any areas of high velocity (exceeding 10 feet per second) at the “current” loading with a 10 degree tempera-

ture differential.
Evaluation of the distribution system for projected new buildings and with flows designed at a 14 degree temperature differential indicates that the system would exceed recommended pipe capacity in the next 10 to 15 years. It is recommended that a second 20" main be extended from the plant to provide increased capacity and reliability to the west and south portion of the campus.

All new buildings should be designed with a minimum 14 degree temperature rise between the supply and return water to reduce the need to upsize distribution lines and minimize distribution energy costs. Metering of chilled water and trending of energy use through the campus automation system should be provided for any building connected to the chilled water system.

**D. Electrical Power Generation**
The campus 5kV electrical load is approaching the capacity of one of the two 7.5MVA power transformers. When the load reaches this point, 100% electrical power transformer redundancy will not be available. . The campus load will reach this point with the construction of one building or the addition of electric chillers. An additional 24.9 to 4.16 kV transformation and associated distribution will be required to maintain redundancy.

Projected load growth to 12.2 MVA would require an additional 7.5 MVA transformer and distribution. The new equipment would be installed near the existing service equipment and the new transformer would connected to serve as a spare to either of the existing transformers along with serving the Heating and Chiller plants. Moving the large motor load of the plant to a dedicated transformer will cause less voltage variation of the two original transformers along with providing some year around load for the new transformer.

If the State decides to transfer ownership of the steam plant to a private entity, the electrical system will have to be reviewed to determine how the electricity to the plant can be metered.

**E. Electrical Power Distribution**
Upgrades to the existing electrical power distribution system will be necessary to continue to provide reliable distribution and adequate capacity for the anticipated new construction identified in this master plan.

With the anticipated new construction, an expansion of the ductbank system from the electrical manhole P1 to manhole P3 and east to manhole P20 and new ductbank from P20 south to manhole P8 will provide the pathway for new power distribution. A new loop feeder will be installed for the anticipated new residence halls and dining facility. All other anticipated new construction will be served from existing feeders.

**Telecommunications Generation**
The existing hub points will remain as is.

**Telecommunications Distribution**
Based on the Fiber Optic study, (see following appendix section) new underground ductbanks are only required for the anticipated new construction that cannot be served from the existing system. New looping ductbank is proposed between manholes SX1 and S36 to facilitate a possible future telecommunications ring system.

Otherwise, if the new fiber optic cable system as recommended by the Fiber Optic Study is installed and the existing abandoned cable is removed, the ductbank system has sufficient capacity for new fiber optic cable for the anticipated new construction.

### *Summary - Recommendations*

- Study Chiller/Boiler options
  -Evaluate need for back-up boiler on firm capacity basis
  -Increase Cooling capacity.
- Add metering/monitoring controls.
- Increase campus electrical power

**Buildings**
- Upgrade condensate pumps.
- Add building metering and monitoring controls for steam, condensate, chilled water.

**Distribution**
- Provide loops in distribution where appropriate.
- Align utilities in defined corridors.
- Upgrade existing aging lines.
- Increase lines with inadequate capacity

**Geothermal**
An assessment was made to determine if geothermal would be a viable strategy for the University of Wisconsin-Whitewater. When assessing the viability of geothermal systems there are several factors which were considered:

Utility Rate Structures: Purchased steam rates ($2.83/1,000LBS/HR)from LS for the UW Whitewater Campus are significantly lower than other system campuses. The low rates would not allow the ability to recoup the high cost of the bore holes and other related first costs. The rate structure would need to significantly change (double or triple current rates) in order for geothermal to be considered.

Building Mechanical Systems: Geothermal systems require that buildings have heat pump systems or low temperature hot water systems. Existing buildings would require system replacement to be considered. New buildings could be designed for geothermal systems. Application would be most appropriate for the central campus area where the most new construction would be occurring.

Space Availability: With a current campus cooling load of 3,400 tons and the type of soils it is estimated that 2,775 bore holes would be needed, requiring an area of approximately 25 acres. With a projected campus cooling load approaching 6000 tons and the type of soils it is estimated that 4,900 bore holes would be needed requiring an area of approximately 45 acres.

The athletic fields on the north end of the campus as well as existing parking lots would be areas to consider locating geothermal fields. The athletic fields and the parking lots on campus encompass approximately 58 acres. Field areas are significantly scattered throughout the campus making a central system approach very costly. Parking areas and athletic fields on the north end of the campus are considered to provide the least opportunity for future building sites because they are the furthest from potential users thus increasing first cost and operating cost.

Intermittent green space around campus may be available for additional wells. The wells would need to be interspersed around existing trees, streets and utilities. In addition, geothermal loop piping would need to be extended to the various geothermal field locations. This piping would be disruptive to the campus landscape and has a high cost for the value.

Of the available areas of parking and athletic fields approximately 6 to 7 acres are considered available near proposed new Residence Hall-1, 2 & 4 as well as Academic Building-2 (Carter Mall).

Existing Campus Infrastructure: The campus has an existing chilled water distribution system in place that can be used for a central geothermal system.

The campus is heated by steam and therefore there is no central low temperature hot water distribution system in place. There is also no distribution system in place that could distribute water to dispersed bore fields for a central system.

With this lack of distribution infrastructure a central geothermal system is not considered viable. Localized new building or clustered new or remodeled building are considered to be the most viable applications to consider if the rate of electricity would decrease by 50% or more and the cost of steam would increase by 50% or more.

The addition of 6 to 7 acres of bore field for a geothermal system could reduce the need for approximately 800 to 1000 tons of cooling in the central plant and place it into the buildings. It would also reduce the amount of steam demand by approximately 9 to 10 million BTU/HR. This reduction in chilled water generation at the plant could eliminate the need to add another distribution line to serve the west and south area of campus. In a similar fashion steam infrastructure would not need to be extended from Pit 30 to Starin. Additional power would be required at the location of such a geothermal system which would offset some of the potential steam and chilled water distribution savings.

Summary: The current rate structure of steam and electricity will not allow for a payback of a geothermal system. The rate structure is not anticipated to change significantly in the immediate or distant future to justify implementation especially in the time frame for the construction of the core buildings in the central campus area.

# Appendix B -
# Building Condition Assessment & Repurposing

## GENERAL OBSERVATIONS

Five building were reviewed to collect information on suitability for current uses, building conditions, and suitability for re-purposing the buildings into different uses.

The buildings that were reviewed were built between 1962 and 1979, and have not had any significant improvements since they were occupied.

MEP systems are past their normal service lives.

Superstructures generally are concrete frame, with bay spacing and floor to floor heights that would accommodate several types of academic uses.

Large areas in some buildings are underutilized, and could be re-purposed for use as classrooms, class labs, or offices.

Partitions are concrete block, which are durable, but not easily remodeled.

Building envelopes have little insulation in walls.  Most windows are original single pane units.

Finishes, fixtures, and furnishings are existing, worn, and dated.

Functional spaces are arranged for 45 year old pedagogies.

Technology needs improvement.

Accessibility is makeshift and piecemeal.

Daylighting is absent in many spaces.

## BUILDING SPECIFIC OBSERVATIONS

### *Andersen Library*
First and Third floors appear to be underutilized.

Collection security is challenging with collections located on multiple floors.

Large floor plates with long structural spans and high floor to floor heights are suitable for continued use as a library, or adaptable for other uses.

The portion of the building that has 2 levels of heavyweight storage structural framing at +/- 10 feet on center and very short floor to floor heights is unuseable for anything other than storage.

### *Center of the Arts*
Finishes, furnishings, and lighting throughout this building are drab, worn, and uninspirational.

Multiple basement levels are not harmonious with universal accessibility, but nearly impossible to change.

Lack of daylight is correctable.

Superstructure has good bay spacing and floor to floor heights that would allow significant remodeling, but all partitions are concrete block, and therefore costly to change.

### *Heide Hall*
Superstructure has good bay spacing and floor to floor heights that would allow significant remodeling, but all partitions are concrete block, and therefore costly to change.

Finishes, furnishings, and lighting throughout this building are drab, worn, and uninspirational.

Use of the fourth floor for offices may not be the highest and best use of the space.

### *Williams Center*
First floor has decent structural bay sizing, decent floor to floor heights that could accommodate significant remodeling of locker rooms, classrooms, and office spaces.

Gymnasiums and pool areas are very purpose built and not easily changed.

Accessibility needs to be improved throughout the locker rooms of this building is problematic.

It would be challenging to locate an addition to this building.

### *Winther Hall*
Classrooms have no daylight, original finishes, and original instructional furnishings designed for teaching pedagogies from the mid-sixties.

Toilet rooms do not meet accessibility requirements.

The elevator does not meet accessibility requirements.

Narrow footprint of office tower is inefficient, and not suitable for any use other than offices

This building has a lot of circulation space relative to useable space.

### *Roseman Building*
This building was not included in the 5 buildings targeted for study

Only the gym, locker rooms, and fitness center were reviewed.

The men's wheelchair basketball team practices in this gym, and the women's team practices in the Williams Center due to space and timing constraints.

Men's and women's competition games are held at the Williams Center.

The men's competition wheelchairs are stored at the Roseman Bulding, and the women's are stored at the Williams Center. The men's chairs need to be transported to Williams Center the night before games. Any repair work for the women's chairs is done at Roseman, so they need to be transported back and forth for repairs.

The wheelchair rec programs are conducted at the Roseman Building.

There aren't enough lockers at Roseman for everyone on the men's wheelchair basketball team.

The fitness center at Roseman is much less crowded than Williams Center.

A new resilient floor was installed in the Roseman gym 2 years ago. When the daycare uses this gym the students and teachers track in salt and dirt, making the floor less suitable for use as a practice and recreational facility for wheelchair users.

The Roseman gym is not big enough to accommodate a full sized competition basketball court.

The wheelchair rec and athletics group likes having a dedicated space for their use. Ideally, it would be large enough to accommodate all of their programs, rather than having them split between Roseman and Williams Center

**Individual Building Data Follows**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building Name | Andersen Library | | | | | | |
| Building No. | 2, 2A, 2B | | | | | | |
| Building Type | Academic Library | | | | | | |
| Constructed | 1952 | | | | AG | UG | |
| Addition(s) | 1964, 1969 | | Floors | | 3 | 1 | |
| ASF | 150,408 | GSF | 198,813 | GPR | - % | PR | - % |

| CENTRAL UTILITY CONNECTIONS | | | | | | | | HISTORICAL | |
|---|---|---|---|---|---|---|---|---|---|
| CW | ☒ | ELEC | ☒ | C. AIR | ☒ | WATER | ☐ | US | ☐ |
| HPS | ☒ | FIBER | ☒ | N. GAS | ☒ | SEWER | ☐ | WI | ☐ |

| C+ | FUNCTIONAL RATING | PHYSICAL RATING | iii |
|---|---|---|---|

Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

## Background and History

Andersen Library is the main library on campus and this was the building's original purpose. The library was expanded significantly in 1964 and 1969.

## Occupant(s) and Use(s)

Andersen Library, Communications Dept (partial) including Cable TV and Radio Station studios, Center for Students with Disabilities, iCIT, Honors Program and Outside Reasearch Sponsored Programs (ORSP), MAGD program lab, Long Distance Learning Classroom.

## Functionality Assessment

Building is not centrally located on campus.

The circulation arrangement makes it challenging to control Library inventory while at the same time allowing access to the multiple uses inside the Library.

Creation of spaces within the Library to address evolving needs has been piecemeal, resulting in an inconsistency of circulation, finishes, and separation of uses.

## Other Building Issues

There is evidence of structural settlement at the Northeast exit stairwell of the 1952 archives area.

## Future Building Plans

A detailed study of the space utilization and circulation in the Library building should be undertaken. This is a very large building with several spaces that seem to be underutilized.

The majority of this building has windows and a structural arrangement that allows for re-configurations of internal partitioning that could accommodate a variety of low impact academic, study, or office uses, but the depth of the building is such that many internal spaces might not have any daylight if measures for light sharing aren't included in the planning.

The 10' x 10' column spacing in the second and third floor high density storage areas of the original 1952 building make these spaces very difficult to repurpose.

## Code and Health/Safety

Construction Type is 1A, building is unsprinklered. Site is generally accessible. Stairs over tunnel on the North side are not accessible, southeast exit is not accessible. Circulation to the high density storage area would not comply with current codes.

## Architectural

Construction Type: Site cast concrete waffle slab, concrete columns

Exterior Materials: CMU back up with stone and brick veneer, in good condition. Windows are original. Exterior walls have no insulation.

Interior Partitions: Predominantly plaster on metal studs.

Newer Building: This portion of the building has large floor plates with long structural spans and high floor to floor heights, and is suitable for continued use as a library, or adaptable for other uses.

Original Building: This portion of the building has some first and second floor spaces that have floor to floor heights and structural bays that would accommodate office/computer lab space or classroom space.

The portion of the original building that has 2 levels of heavyweight storage structural framing at +./- 10 feet on center and very short floor to floor heights is not useable for anything other than storage.

Site: Building has access to parking and is located adjacent to pedestrian paths

## Mechanical

HVAC performance is reported to be inconsistent. This building component was not reviewed; it appears that these systems are original to the building construction.

## Electrical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Communication

This building component was not reviewed; it appears that these systems are original to the building construction.

## Plumbing

This building component was not reviewed; it appears that these systems are original to the building construction.

## Conveying

This building component was not reviewed; it appears that these systems are original to the building construction.

## Equipment and Furnishings

Finishes and furnishings in the Library areas are mostly original, are worn, and do not support current occupant expectations of higher education libraries.

Institution UW-Whitewater
Date 4-10-2015


Building Name Andersen Library
Building Number 2, 2A, 2B

See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Site/Entry Location/Access | B | C | B | B | B | B | B | Connectivity to campus circulation routes, both exterior and interior, were reported by users as appropriate. Some users suggested that the library functions would better serve campus if the library was centrally located on campus. | |
| Center for Students with Disabilities Entry/Common Area | B | B | B | B | B | B | B | This area was remodeled in the last decade. Occupants reported that the physical environment was good, but they needed more space. | Fig. 2 |
| IT Office and Support Areas | C | C | B | C | C | B | C | IT areas seem to be backfilled “leftover” spaces. IT space that is remodeled in a more holistic way would better serve this user group. | Fig. 6 |
| Library Lobby | C | C | B | C | C | C | C | Current library lobby and collection circulation control is very awkward with collections on 3 levels connected by a stairway controlled by delayed egress door hardware. | Fig. 9, 10, 12 |
| Library floor 1 | C | C | B | C | C | C | C | The library functions on this floor underutilize this space. Access to this floor is awkward. This area could be repurposed for other uses. | Fig. 1, 17, 18, 19 |
| Communications Dept., Cable TV station | B | B | B | B | C | B | B | Better identification of entrances to these areas and better interior wayfinding signage is needed. | Fig. 3, 4, 6, 19 |
| Student study and meeting areas | B | B | B | B | B | B | B | Several people requested that more of this type of space be constructed. | Fig. 11, 16 |
| Library floor 2 | B | B | B | B | C | B | B | This is the main floor of the library, and the level that gets the highest use. Better configuration of the entrance/collection control point to this area would improve its functionality. | Fig. 13, 14, 15 |
| Library floor 3 | C | C | B | B | B | B | C | This is an underutilized, very large space. This area could be repurposed for other uses. | Fig. 5, 8 |

Institution UW-Whitewater

Date 4-10-2015



Building Name Andersen Library

Building Number 2, 2A, 2B

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *COMPONENT* |
|---|---|---|---|---|---|---|---|---|---|
| Original archive area in 1952 building | I | I | I | I | I | I | I | This area is inefficient, has poor access, and poor MEP systems even for archive use. This area has columns at 10' x 10' spacing and 8' floor to floor height, which make the space unusable for any other function. | |
| MEP Systems | C | C | C | C | C | C | C | Review of MEP Systems was not part of this study, but MEP Systems appear to be original to the building and past their practical lifespan. The State Risk Management office recommends adding fire sprinklers. | |
| Exterior envelope | B | B | B | B | B | B | B | The exterior envelope is in good condition, but has original windows and no insulation, which is lower performing than what would be constructed today. Roofing is in need of replacement. | Fig. 20 |
| Adaptability for other Uses | B | B | B | B | B | B | B | The 1965 and 1969 portions of the Andersen Library have large bay spacing, robust structural framing, and good floor to floor heights that make this building capable of accommodating a variety of other uses thorough a repurposing renovation. Partitioning is generally drywall on metal studs, ceilings are generally ACT, both of which are relatively easy to remove and replace. Concrete superstructure is relatively capable of accommodating new MEP openings. This building does not have fire sprinklers, so any additions need to be Type 1A construction to match existing unless fire separations between new and existing areas are provided. The 1952 archive areas on levels 2 and 3 are inefficient, have poor access, and poor MEP systems even for archive use. This area has columns at 10' x 10' spacing and 8' floor to floor height, which make the space unusable for any other function. | |
| Overall Average Rating | | | | | | | C+ | | |
| | | | | | | | | | |

**FAC-B** – FACILITIES CONDITION ASSESSMENT - FUNCTIONALITY



Institution UW-Whitewater
Building Name Andersen Library
Building Number 2, 2A, 2B

Date 4-10-2015

Photos are intended to provide the reader a general view of typical areas in the building, and are not necessarily identifying specific issues.

Figure 1, ground floor corridor between 1952 bldg and 1964 bldg.

Figure 2, 1st floor entry of depts in 1952 bldg.

Figure 3, 1st floor corridor between 1952 bldg and

Figure 4, 1st floor entry of depts in 1952 bldg.

Figure 5, high density storage, 2nd floor of 1952 bldg.

Figure 6, 2nd floor of 1952 bldg, high density storage area converted to office space for IT Department.

Figure 7, cracked CMU in 1952 bldg mech penthouse.

Figure 8, access stair in 1952 bldg high density storage.

Figure 9, 1st floor library entry at 1962 building.

Figure 10, main stair from 1st floor to 2nd floor, 1962 bldg.

Figure 11, stair from 3rd floor to 2nd floor, 1962 building.

Figure 12, 1st floor entry at link btwn 1951 and 1962 bldg.

| | | |
|---|---|---|
| Institution | UW-Whitewater | Date 4-10-2015 |
| Building Name | Andersen Library | |
| Building Number | 2, 2A, 2B | |

Figure 13, library stacks & mtg rooms, 1st floor 1962 bldg.

Figure 14, children's library, 1st floor 1962 bldg.

Figure 15 children's library and main stacks, 1st floor

Figure 16, computer lab, ground floor, 1962/1969 bldg.

Figure 17, reference stacks, mtg room, ground floor, 1962 bldg.

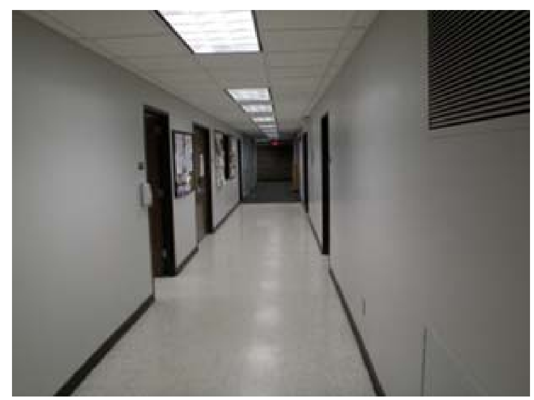


Figure 18, faculty offices, ground floor, 1962 bldg.

Institution UW-Whitewater | Date 4-10-2015
Building Name Andersen Library
Building Number 2, 2A, 2B

Figure 19, faculty offices, ground floor, 1962 bldg.

Figure 20, main entry, 1962 building

Figure 21, southeast corner, 1962 Building

Figure 22, southwest corner of 1962 building

Figure 23, northwest corner, 1969 addition


Figure 24, north face of 1952 building

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date 4-10-2015 | **7** |
| Building Name | Andersen Library | | |
| Building Number | 2, 2A, 2B | | |

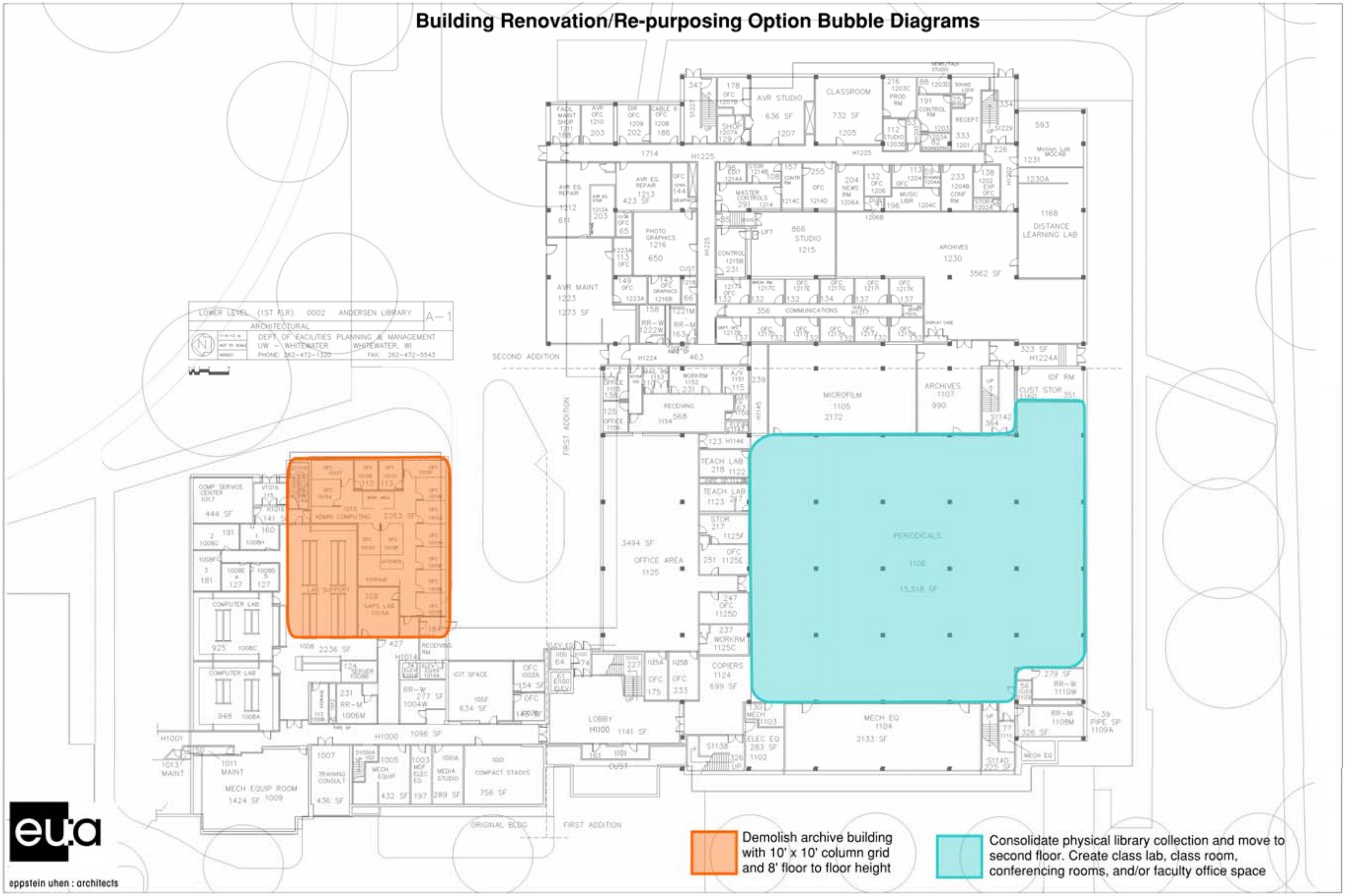
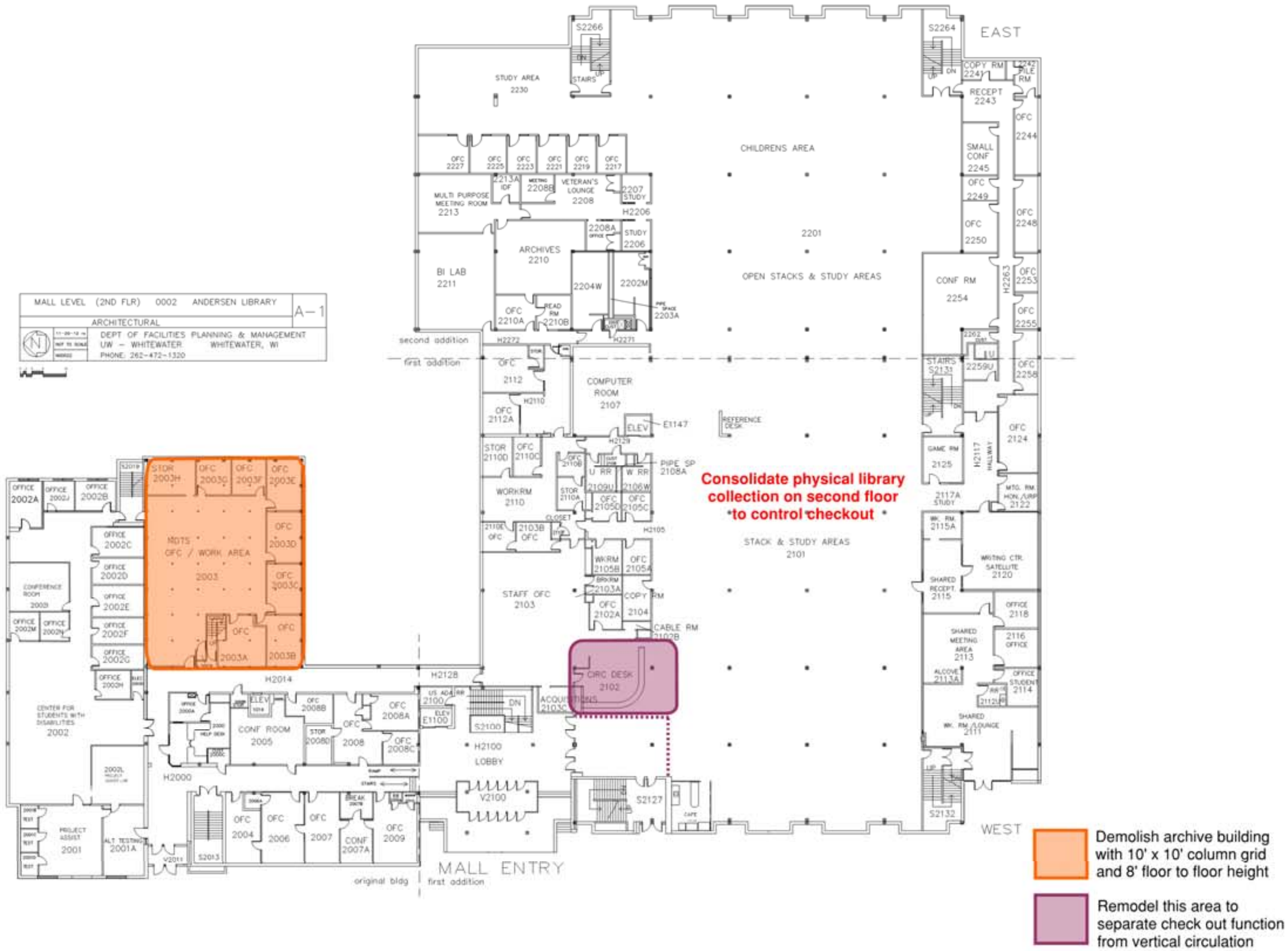



*Figure 21*

## Building Renovation/Re-purposing Option Bubble Diagrams




eppstein uhen : architects

*Figure 22*

Institution UW-Whitewater
Building Name Andersen Library
Building Number 2, 2A, 2B

Date 4-10-2015

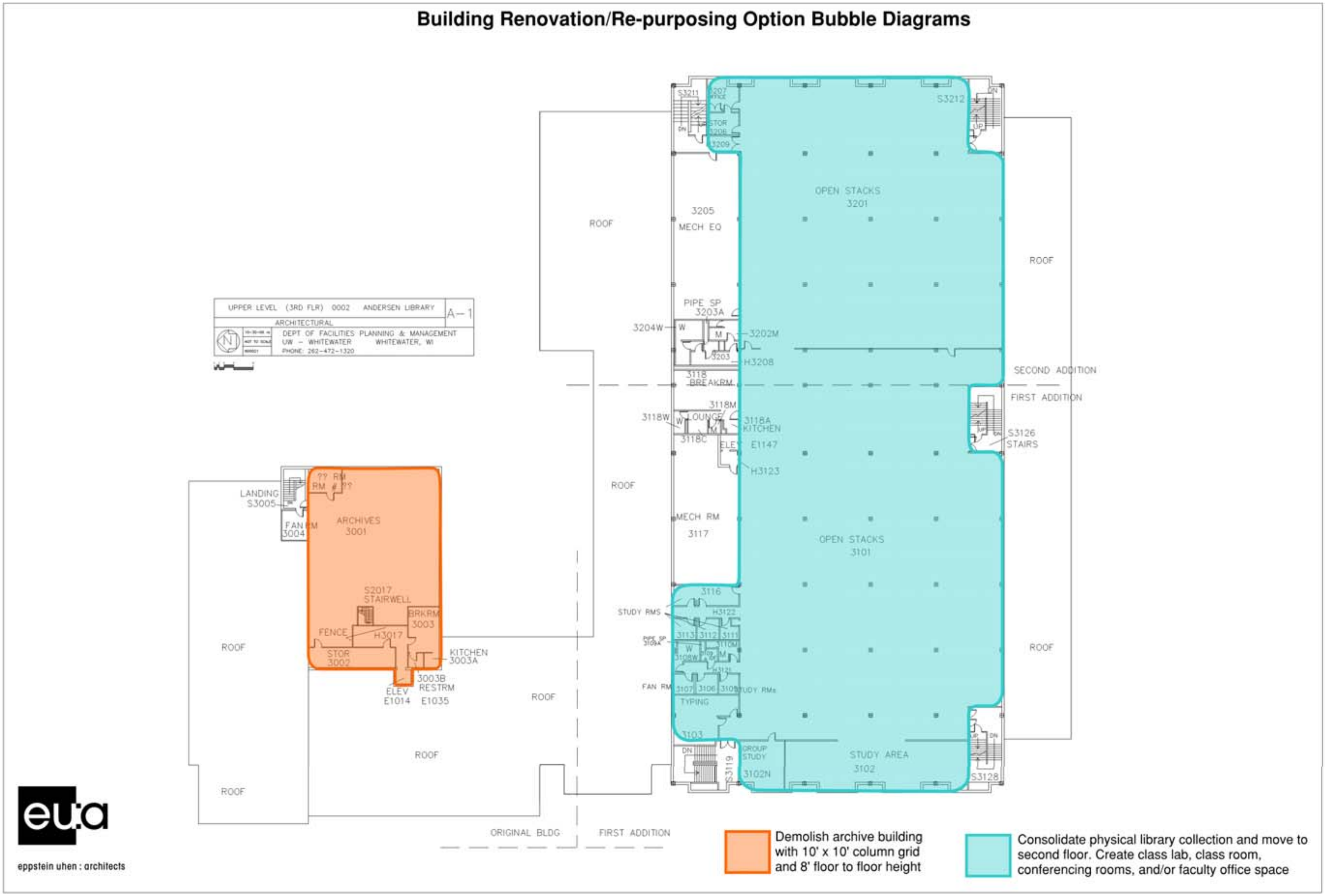



*Figure 23*

| | | | |
|---|---|---|---|
| Building Name | Greenhill Center of the Arts | | |
| Building No. | 4 | | |
| Building Type | Academic & Performance Building | | |
| Constructed | 1970 | | |
| Addition(s) | 1994 | | |
| Floors | AG: 2 | UG: 1 | |

| ASF | GSF | GPR | PR |
|---|---|---|---|
| 89,040 | 153,310 | - % | - % |

CENTRAL UTILITY CONNECTIONS

| | | | |
|---|---|---|---|
| CW ☒ | ELEC ☒ | C. AIR ☒ | WATER ☐ |
| HPS ☒ | FIBER ☒ | N. GAS ☒ | SEWER ☐ |

HISTORICAL

US ☐
WI ☐

| C- | FUNCTIONAL RATING | PHYSICAL RATING | iv |
|---|---|---|---|

Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition. See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

## Background and History

Greenhill Center of the Arts has theaters, art programs, music and dance spaces, faculty offices, and gallery spaces. This was the building's original purpose. The "courtyard" area was converted to an "atrium" in 1994.

## Occupant(s) and Use(s)

Theater, music, art and dance programs are the main uses.

## Functionality Assessment

Unclear and complex circulation arrangement.
The multiple basement levels are not harmonious with universal accessibility, but are nearly impossible to change.

## Other Building Issues

Lack of daylight is correctable.
Inflexible CMU partitions can be altered but it is costly to do so.

## Future Building Plans

Finishes and lighting throughout most areas of the building are original, drab, worn, and dull. Corridor ceilings and lighting was replaced in summer of 2014.
Adding windows to occupied spaces that have exterior walls but no windows would greatly improve the quality of space. for the classrooms in this building.
Better shelter of outdoor kiln areas controlling precipitation and temperature is recommended.
This building has a robust concrete column and joist structural system with good bay spacing and good floor to floor heights, which could accommodate significant remodeling. The lack of daylight at instructional spaces, concrete block partitions, and multitude of different levels at the basement level add to the cost of a major remodeling.

## Code and Health/Safety

Construction Type is 1A, the building is unsprinklered. The site is generally accessible. All entrances are accessible. Accessibility to bathrooms needs significant improvement.

## Architectural

Construction Type: Site cast concrete waffle slab, concrete columns
Exterior Materials: CMU back up with brick veneer, masonry and concrete are in good condition, but could use routine maintenance.
Leaks at exterior walls at performance space need to be repaired.
Interior Partitions: Predominantly CMU
Site: has access to parking, entries are located adjacent to pedestrian paths, limited areas for expansion. Kilns are outdoors with an outdoor storage area. Trash and recycling are located in the parking lot.

## Mechanical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Electrical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Communication

This building component was not reviewed; it appears that these systems are original to the building construction.

## Plumbing

This building component was not reviewed; it appears that these systems are original to the building construction.

## Conveying

An elevator was added to this building in 1994 as an external, stand-alone element.

## Equipment and Furnishings

The drab interior finishes, beat up instructional furnishings, lack of furnished informal study spaces, lack of daylight, and lack of inspirational aesthetics seems incongruous with a Center for the Arts.

Institution UW-Whitewater

Date, 4-10-2015



Building Name Greenhill Center of the Arts

Building Number 4

Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

| | CONFIGURATION/LAYOUT | SPACE UTILIZATION | ADAPTABILITY/FLEXIBILITY | INFRASTRUCTURE | ACCESSIBILITY | CODE & LIFE SAFETY | OVERALL | REMARKS | PHOTOS |
|---|---|---|---|---|---|---|---|---|---|
| Site/Entry Location/Access | C | C | C | C | C | C | C | Like other buildings of this era on campus the Greenhill Center of the Arts has its main entrance oriented toward the street rather than to current internal pedestrian circulation routes, although the west entrance did get some upgrades when the Young Auditorium addition was built. | |
| Performance Spaces | B | B | B | B | C | B | B | Performance spaces appear to be in good condition, but seem to have had little in the way of performance A/V and technology upgrades since the building was constructed in 1970. | |
| Studios | D | D | D | D | D | D | D | Most studio spaces have no access to daylight, and spaces with no daylight are unpleasant to be in for long periods of time. Studios appear to have original finishes and lighting, which are drab an un-inspirational. | Fig. 11, 12, 13 |
| Offices | C | C | C | C | C | C | C | Offices appear to be in the original configuration from when the building was built. Arranging offices around a light well provides some daylight to these internal spaces, but this arrangement also separates occupants so casual interaction is less likely to occur. | |
| | | | | | | | | | |
| | | | | | | | | | |

**FAC-B** – FACILITIES CONDITION ASSESSMENT - FUNCTIONALITY



Institution UW-Whitewater

Date, 4-10-2015

Building Name Greenhill Center of the Arts

Building Number 4

| | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Study & Breakout areas | C | C | C | C | C | C | C | There are one or two areas where furniture or built in elements are provided to accommodate informal break out or studying gatherings, but there is far more opportunity for more of these types of spaces. | Fig. 4 |
| Toilet Rooms | D | D | D | D | D | D | D | Toilet rooms are original to the building, and have had makeshift changes to improve accessibility. All existing toilet rooms should be gut remodeled. | Fig. 6, 7 |
| Internal Circulation | D | D | D | D | D | D | D | Internal circulation in this building is mazelike, confusing, and has circuitous paths for accessible routes to some spaces. Finishes and lighting is drab and un-inspirational. | Fig. 2, 9, 10 |
| Monumental Stair (south entrance) | C | C | C | C | C | C | C | The south side of the building was designed as a main entrance, but campus circulation patterns have changed, and the entrances on the northwest and tucked behind the Young Auditorium addition are now the most heavily used. The “stair in a glass box” is cold, has worn finishes, and is not in a location that links destinations well. A major project that would include creation of a new entry element that provides daylight to basement areas and better links destinations would improve this area considerably. | |
| Atrium | C | C | C | C | C | C | C | The enclosure of this space in 1994 improved the opportunity for better use of this space. Campus report that this space is used frequently for pre-event gathering area, impromptu performances, student study areas, social gatherings and extended gallery space. | Fig. 1, 4, 5 |
| Elevator | C | C | C | C | C | C | C | An elevator was added to this building as an external, stand-alone element in 1994 to provide a vertical accessible route in the building. Incorporating a new elevator or two in a more integrated way as part of a major entrance remodeling would provide better energy efficiency to the enclosure, and better, clearer access to all spaces in the building. | Fig. 8 |

**FAC-B** – FACILITIES CONDITION ASSESSMENT - FUNCTIONALITY



Institution UW-Whitewater

Building Name Greenhill Center of the Arts

Building Number 4

Date, 4-10-2015

| | CONFIGURATION/LAYOUT | SPACE UTILIZATION | ADAPTABILITY/FLEXIBILITY | INFRASTRUCTURE | ACCESSIBILITY | CODE & LIFE SAFETY | OVERALL | REMARKS | PHOTOS |
|---|---|---|---|---|---|---|---|---|---|
| Interior Finishes | D | D | D | D | D | D | D | Interior finishes are original to the building, are worn, drab, un-inspirational, and should be replaced. | Fig. 1- 2, Fig. 4-13 |
| MEP Systems | C | C | C | C | C | C | C | Review of MEP Systems was not part of this study, but MEP Systems appear to be original to the building and past their practical lifespan. Corridor lighting was replaced in 2014. Lighting fixtures that provide light density, color, and controllability in a manner more appropriate to creating and displaying art should be installed in this building. | |
| Exterior envelope | C | C | C | C | C | C | C | The exterior envelope is in good condition, but has thermal properties that are much lower performing than what would be constructed today. Construction drawings for the original building do not indicate the presence of any insulation on exterior walls, nor any air spaces. Some insulation was added to spandrel glass areas and roofing in 1987. A building constructed today would have daylighting to occupied spaces. | Fig. 3 |
| Adaptability for other Uses | D | D | D | D | D | D | D | This building has a robust concrete column and joist structural system with good bay spacing and good floor to floor heights, which could accommodate significant remodeling. The lack of daylight at instructional spaces, concrete block partitions, and multitude of different levels at the basement level add to the cost of a major remodeling. The unique configuration of the performance spaces make these areas poor candidates for re-purposing into a different use. | |
| Overall Average Rating | | | | | | | C- | | |
| | | | | | | | | | |
| | | | | | | | | | |

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | **4** |
| Building Name | Greenhill Center of the Arts | | |
| Building Number | 4 | | |

Figure 1, atrium

Figure 2, internal circulation ramp next to “flat” circulation

Figure 3, east entry between Young Auditorium and Center of the Arts

Figure 4, space adjacent to atrium

Figure 5, gallery entry adjacent to atrium



Figure 6, renovated toilet room


Figure 7, renovated toilet room


Figure 8, freight elevator, service area


Figure 9, internal circulation ramp next to “flat” circulation

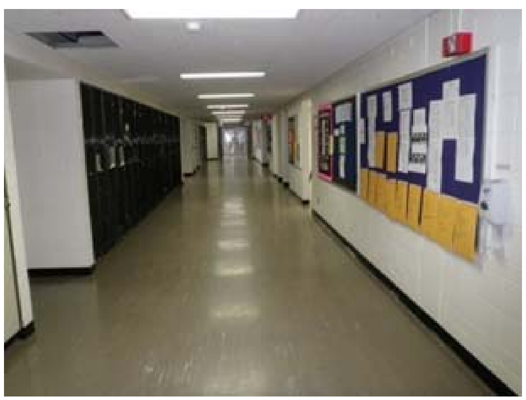


Figure 10, hallway and lockers at music wing, 1st floor

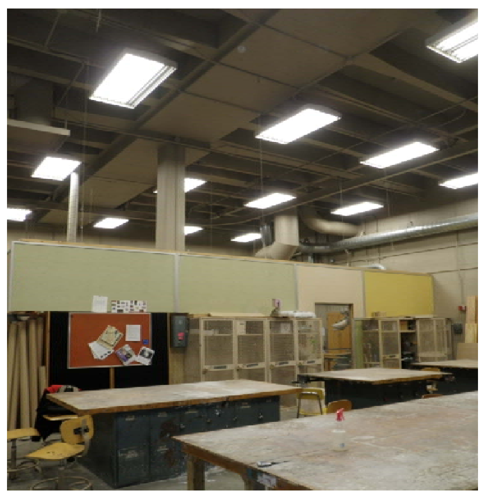


Figure 11, first floor, sculpture lab


Figure 12, first floor, ceramics lab

Figure 13, metals casting lab

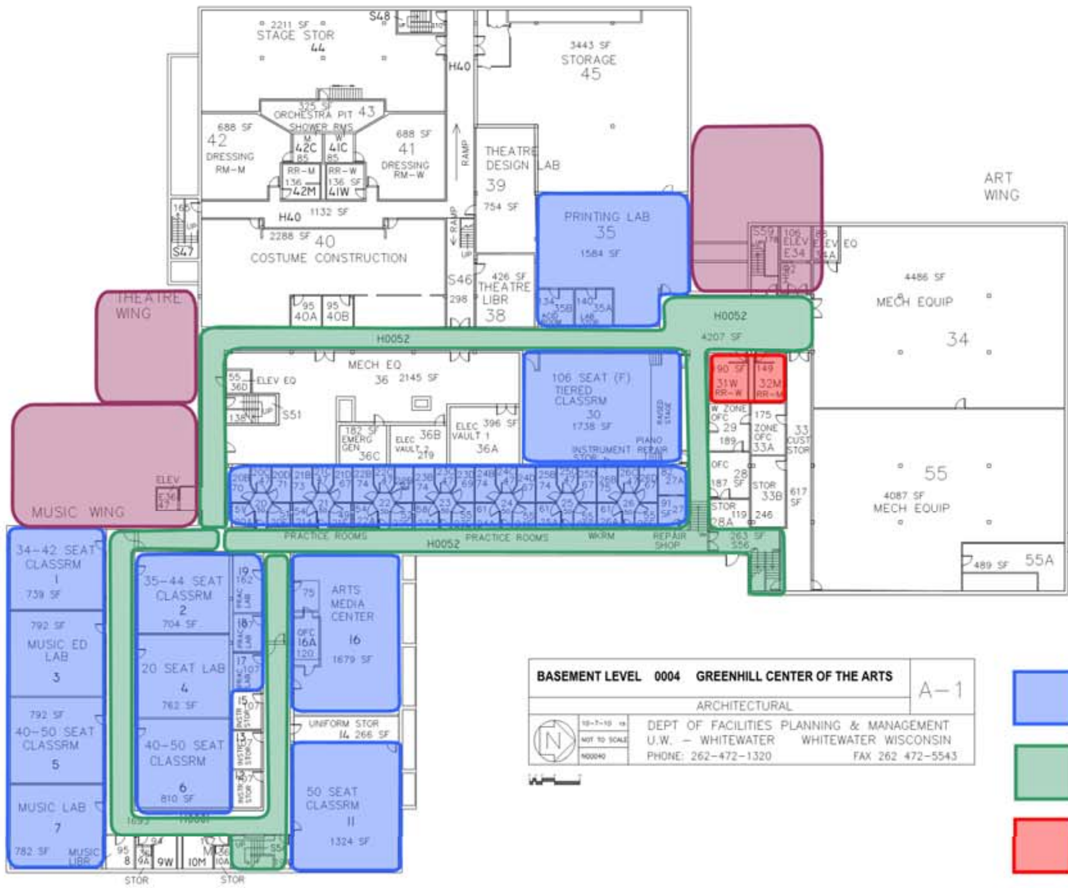
Figure 14, main entry on south side of building

Figure 15, entry on east side

Figure 16, exterior kiln area

Building Name | Greenhill Center of the Arts
Building Number | 4

## Building Renovation/Re-purposing Option Bubble Diagrams




All instructional spaces to get new finishes, lighting & technology

Replace Lighting and Finishes in Public Areas

Gut and remodel bathrooms

New entry element to replace stair, improve vertical circulation to all levels, and bring natural light to the basement

eu:a
eppstein uhen : architects

Figure 17

Institution UW-Whitewater
Building Name Greenhill Center of the Arts
Building Number 4

Date, 4-10-2015

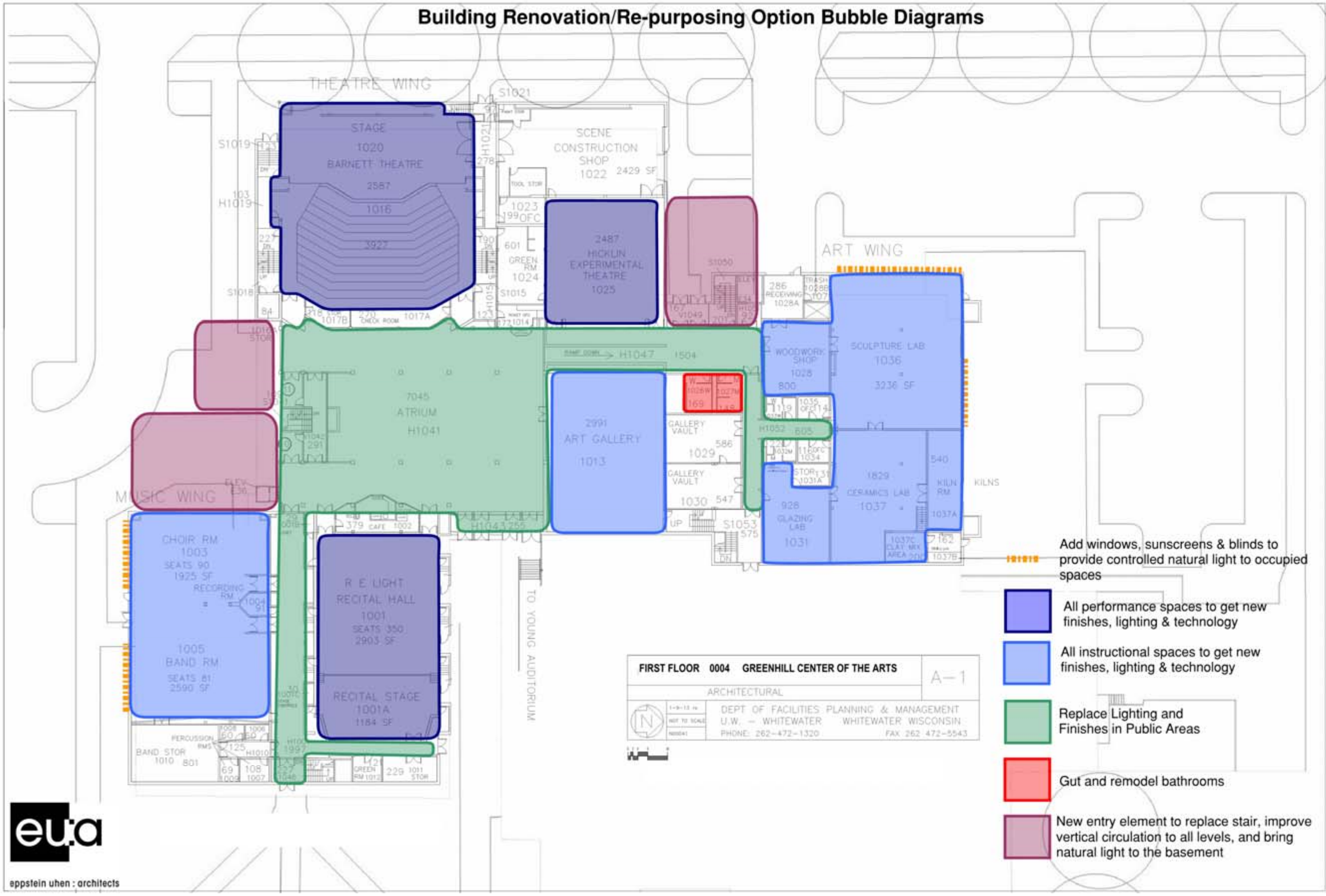


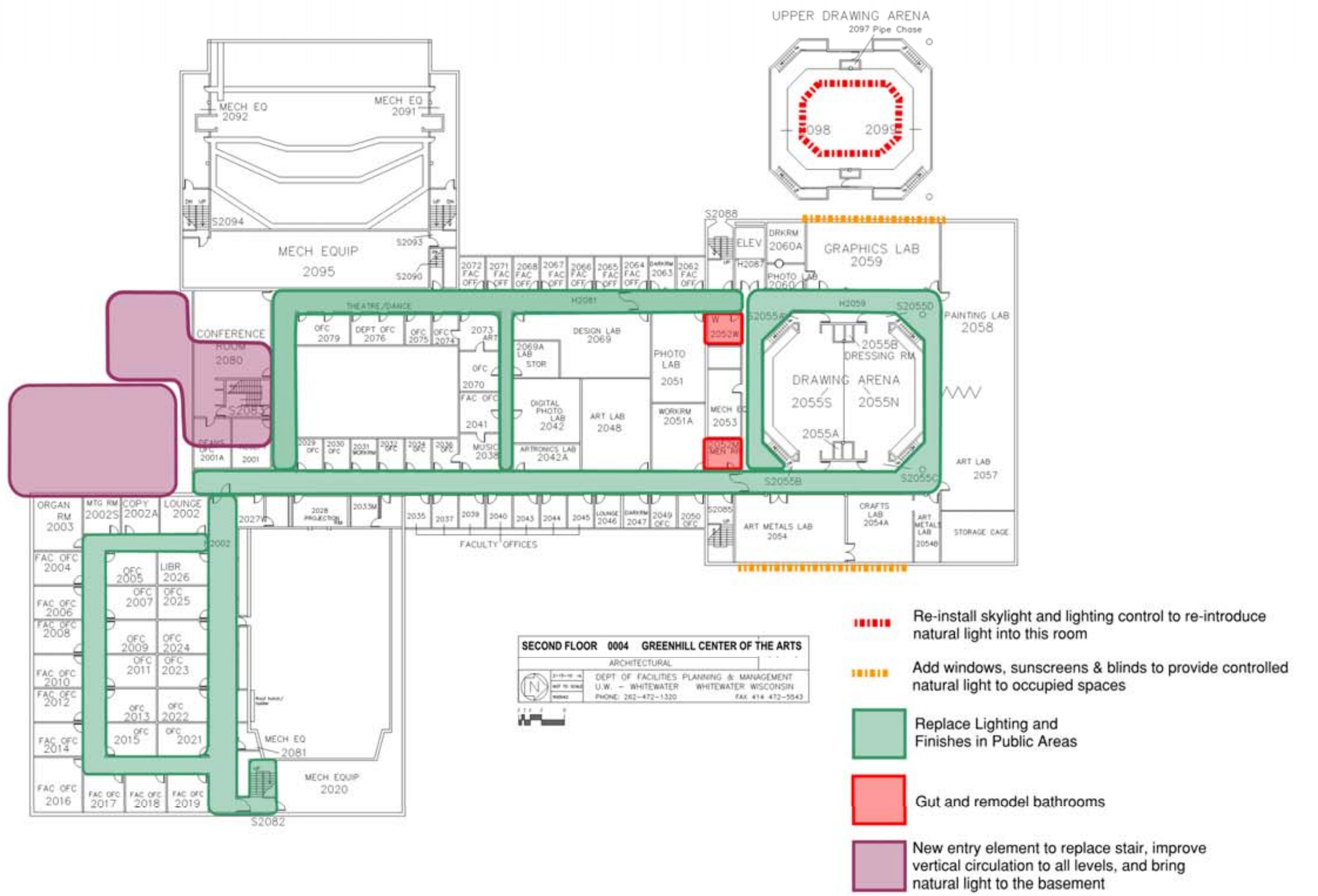

Figure 18

Institution UW-Whitewater | Date, 4-10-2015



Building Name Greenhill Center of the Arts
Building Number 4

## Building Renovation/Re-purposing Option Bubble Diagrams




eua
eppstein uhen : architects

Figure 19

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building Name | Heide Hall | | | | | | |
| Building No. | 9 | | | | | | |
| Building Type | Academic Building | | | | | | |
| Constructed | 1965 | | | | AG | UG | |
| Addition(s) | | | | Floors | 4 | 0 | |
| ASF | 36,910 | GSF | 62,552 | GPR | - % | PR | - % |

CENTRAL UTILITY CONNECTIONS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CW | ☒ | ELEC | ☒ | C. AIR | ☒ | WATER | ☐ |
| HPS | ☒ | FIBER | ☒ | N. GAS | ☒ | SEWER | ☐ |

HISTORICAL

| | |
|---|---|
| US | ☐ |
| WI | ☐ |

| C- | FUNCTIONAL RATING | PHYSICAL RATING | iv |
|---|---|---|---|

Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition. See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

## Background and History
Heide Hall was built as an academic building. In the summer of 2011 Heide Hall had its main lecture halls renovated.

## Occupant(s) and Use(s)
Building contains faculty offices and classrooms.

## Functionality Assessment
Classroom sizes and shape are compatible with many current instructional setups. Technology and lighting need major upgrades. Finishes are original to the building and un-inspirational. Building main entry location that is oriented to the east is no longer located on the current campus circulation routes. Three quarters of the offices on the 4th floor are original to the building, have demountable partitions in the original configuration, which doesn't necessarily optimally serve current uses. Technology is poor. Finishes are original and un-inspirational.

## Other Building Issues
Windows are leaking. Inflexible CMU partitions at classrooms can be altered but it's costly to do. Lack of inspiring interior lighting and finishes is correctable. Circulation of pedestrian traffic crosses delivery and automobile routes. There is no airlock vestibule at the northwest and southwest entries. Toilet rooms have had slight modifications to improve accessibility, but are mostly original to the building and in need of major renovation to provide correct accessibility and privacy.

## Future Building Plans
This building has a concrete column and joist structural system, good bay spacing, and good floor to floor heights that would accommodate remodeling for continued use as classroom space. This building does not have fire sprinklers, so any additions need to be Type 1A construction unless fire separations between new and existing areas are provided.

## Code and Health/Safety
Construction Type is 1A. This building does not have fire sprinklers Site is generally accessible. All entrances are accessible. Bathrooms could use accessibility improvements.

## Architectural
The exterior envelope is in good condition, but has original 1965 windows (which are leaking) and insulation, which are lower performing than what would be constructed today. Replacing the yellowed plastic glazing in the skylight over the lecture hall wing entry would help improve daylighting and aesthetics. Adding airlock vestibules to the north and south stairs would improve comfort and efficiency. There are some water infiltration issues that need to be addressed at some below grade areas.

## Site
Circulation of pedestrian traffic crosses delivery and automobile routes. There is space for additions on the North, South and West.

## Mechanical
This building component was not reviewed, it appears that these systems are original to the building construction.

## Electrical
This building component was not reviewed, it appears that these systems are original to the building construction.

## Communication
This building component was not reviewed, it appears that these systems are original to the building construction.

## Plumbing
This building component was not reviewed, it appears that these systems are original to the building construction.

## Conveying
Elevator is original to the 1965 building. Size is the minimum required to meet accessibility requirements and is not capable of servicing high volumes of traffic. If an entry improvement is constructed new elevators should be provided as part of it.

## Equipment and Furnishings
Finishes, furnishings are original, dated, and uninspirational.

Institution UW-Whitewater

Building Name Heide Hall

Building Number

Date, 4-10-2015



Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition. See the UW System Building Rating explanation at the beginning of this section for information regarding the purpose of this form and the ratings provided below.

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Site/Entry Location/Access | C | C | C | C | C | B | C | The "main entry" of this building is oriented to North Prairie Street, but most people access this building from the internal campus side at the north entry. | Fig. 1, 2,4 |
| Internal Circulation | B | B | B | B | B | B | B | Internal circulation is simple and easy to navigate. Size of circulation spaces are adequate. The stairways act as vestibules at the northwest and southwest entries which are not energy efficient. | Fig. 2, 5, 7, 9, 11, 12, 13, 14, 16 |
| Classrooms | C | C | C | C | C | C | C | Classroom sizes and shape are compatible with many current instructional setups. Technology and lighting need major upgrades. Finishes are original to the building and un-inspirational. | Fig. 10 |
| Lecture Rooms | B | B | B | B | B | B | B | The lecture halls had technology, finish and accessibility upgrades within the last decade. | Fig. 8 |
| Offices | C | C | C | C | C | C | C | Three quarters of the offices on the 4th floor are original to the building, have demountable partitions in the original configuration, which doesn't necessarily optimally serve current uses. Technology is poor. Except for the small recent renovation, finishes are original and un-inspirational. | |
| Toilet Rooms | F | F | F | F | F | F | F | Toilet rooms have had slight modifications to improve accessibility, but are mostly original to the building and in need of major renovation to provide correct accessibility and privacy. | Fig. 15, 17 |
| Study and Breakout areas | D | D | D | D | D | D | D | Where study and breakout areas do exist in the lecture hall wing furnishings and finishes are un-inspirational. There are | Fig, 14, 16 |

Institution UW-Whitewater | Date, 4-10-2015 | 

Building Name Heide Hall

Building Number

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | no furnishings, finishes or architectural elements on upper floor hallways that would better facilitate informal student gathering/study activities. | |
| | | | | | | | | | |
| Elevator | D | D | D | D | D | D | D | Elevator is original to the 1965 building. Size is the minimum required to meet accessibility requirements and is not capable of servicing high volumes of traffic. If an entry improvement is constructed new elevators should be provided as part of it. | Fig. 3 |
| Interior Finishes | C | C | C | C | C | C | C | With a few exceptions noted above, interior finishes and lighting are original to the building, are worn, drab, un-inspirational, and should be replaced. | Fig. 1-17 |
| MEP Systems | C | C | C | C | C | C | C | Review of MEP Systems was not part of this study, but MEP Systems appear to be original to the building and past their practical lifespan, except for lecture hall HVAC, which was replaced as part of the 2011 lecture hall remodeling project. | |
| Exterior Envelope | C | C | C | C | C | C | C | The exterior envelope is in good condition, but has original 1965 windows and insulation, which are lower performing than what would be constructed today. Replacing the yellowed plastic glazing in the skylight over the lecture hall wing entry would help improve daylighting and aesthetics. Adding airlock vestibules to the north and south stairs would improve comfort and efficiency. | |
| Adaptability for Other Uses | B | B | B | B | B | B | B | This building has a concrete column and joist structural system, good bay spacing, and good floor to floor heights that would accommodate remodeling for continued use as classroom space. This building does not have fire sprinklers, so any additions need to be Type 1A construction unless fire separations between new and existing areas are provided. | |
| Overall Average Rating | | | | | | | C- | | |
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|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 3 |
| Building Name | Heide Hall | | |
| Building Number | | | |

Figure 1, main entry, east side of building.

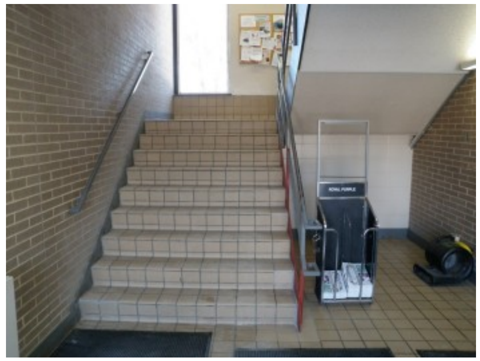

Figure 2, stairwell, north side of building.

Figure 3, original elevator.

Figure 4, main entry, east side of building.

Figure 5, corridor.

Figure 6, translucent skylight, main entry, east side.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 4 |
| Building Name | Heide Hall | | |
| Building Number | | | |

Figure 7, ramp from east side entry to first floor.

Figure 8, remodeled tiered lecture hall.

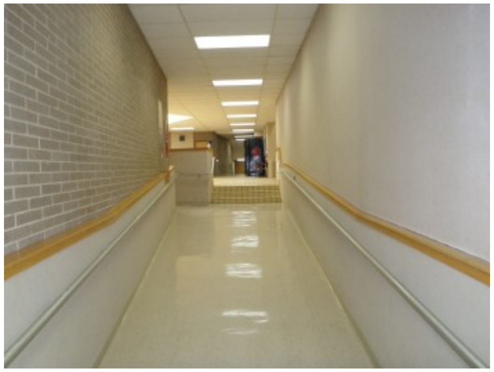

Figure 9, stair from east side entry to lecture hall.

Figure 10, computer lab.

Figure 11, faculty offices on $4^{th}$ floor.

Figure 12, faculty offices on $4^{th}$ floor.

Institution UW-Whitewater
Building Name Heide Hall
Building Number

Date, 4-10-2015

Figure 13, typical classroom.

Figure 14, stairs from east main entry to first floor.

Figure 15, typical bathroom.

Figure 16, top landing of central stair.

Figure 17, typical bathroom.

Figure 18, exterior view of the west side of the building.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | **6** |
| Building Name | Heide Hall | | |
| Building Number | | | |

Figure 19, birdseye view of the east side of the building.

Figure 19, east entry of the building.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | **7** |
| Building Name | Heide Hall | | |
| Building Number | | | |

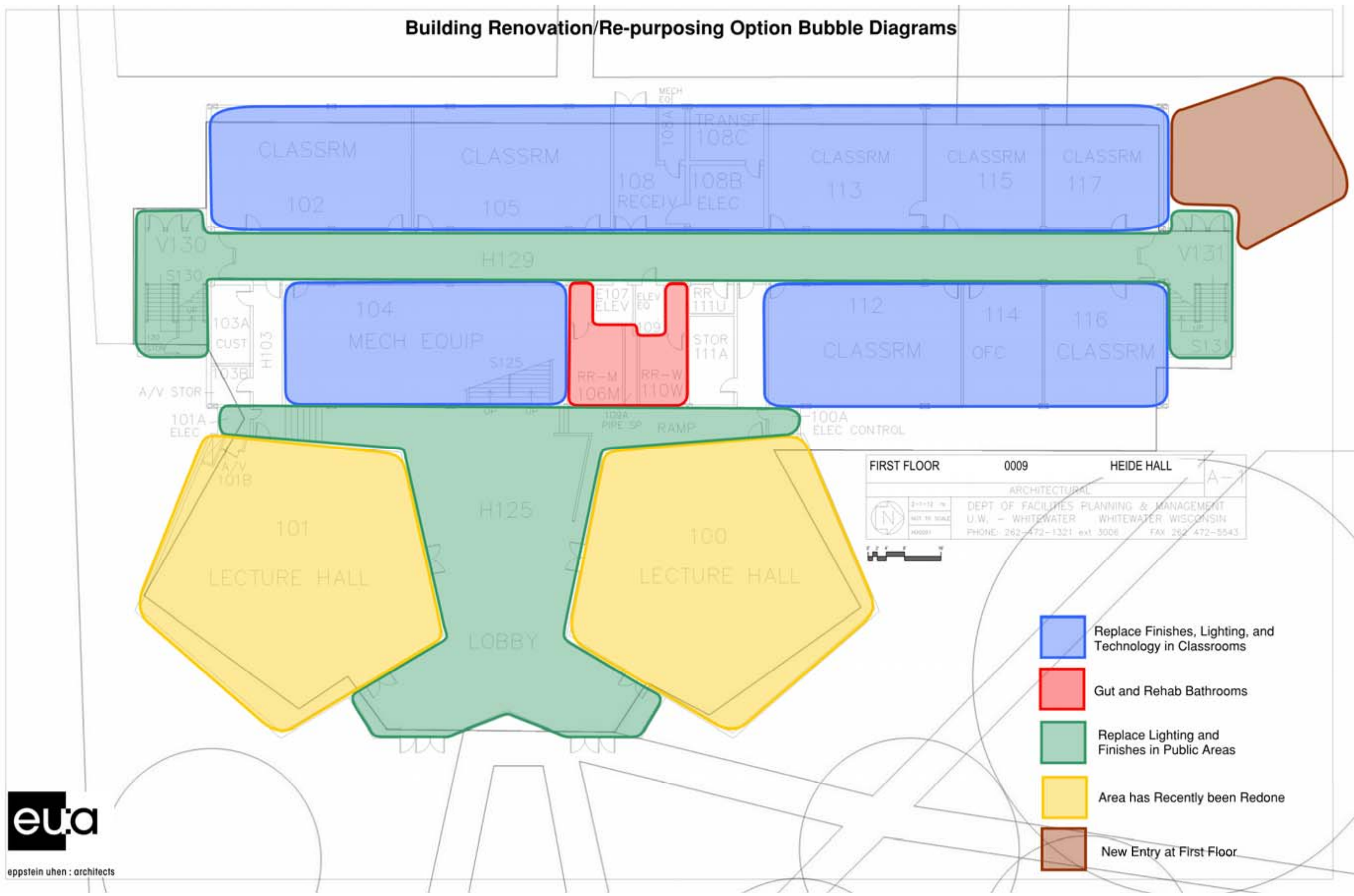


*Figure 18*

**Building Renovation/Re-purposing Option Bubble Diagrams**


eppstein uhen : architects

*Figure 19*

## Building Renovation/Re-purposing Option Bubble Diagrams

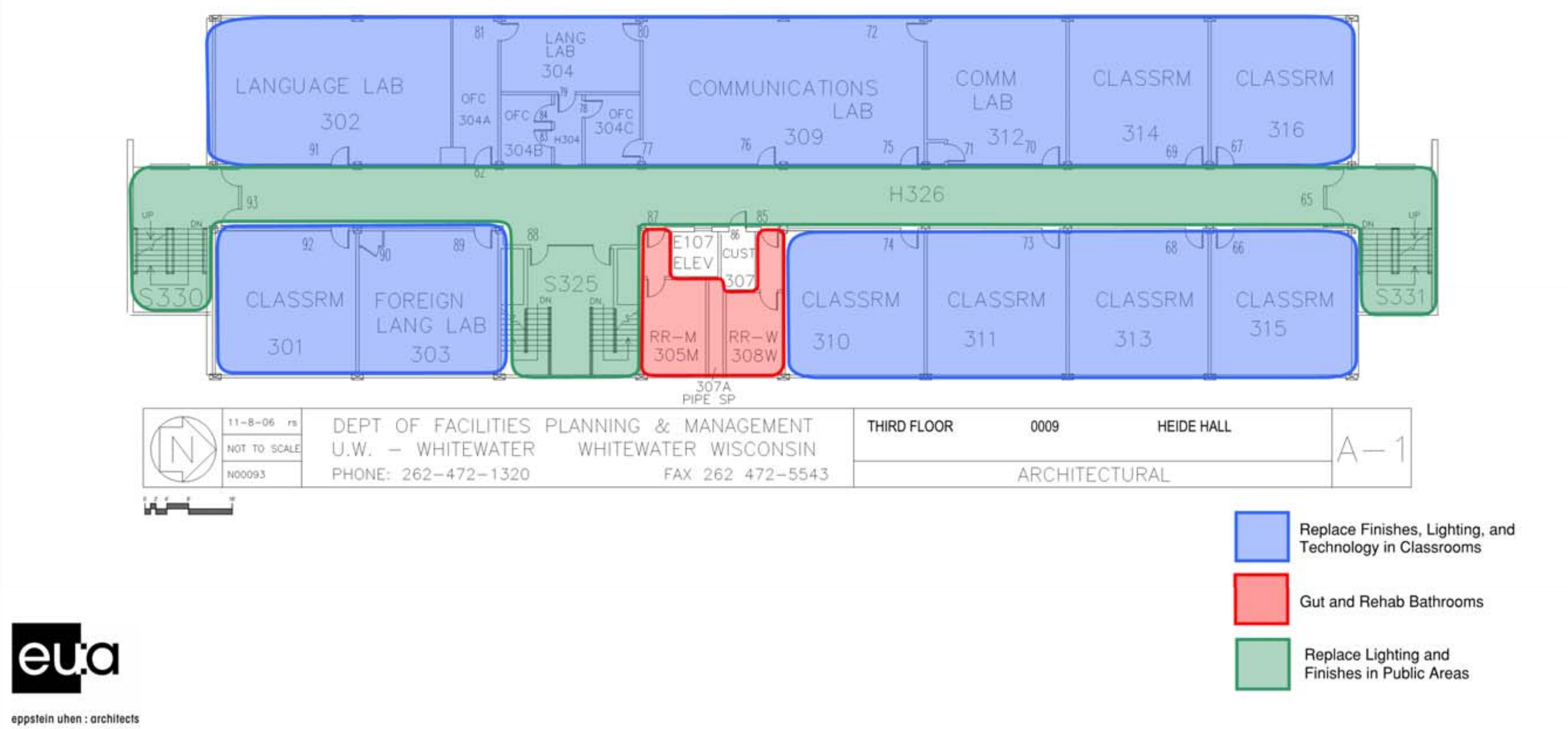


*Figure 20*

| | | |
|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 |
| Building Name | Heide Hall | |
| Building Number | | |



## Building Renovation/Re-purposing Option Bubble Diagrams

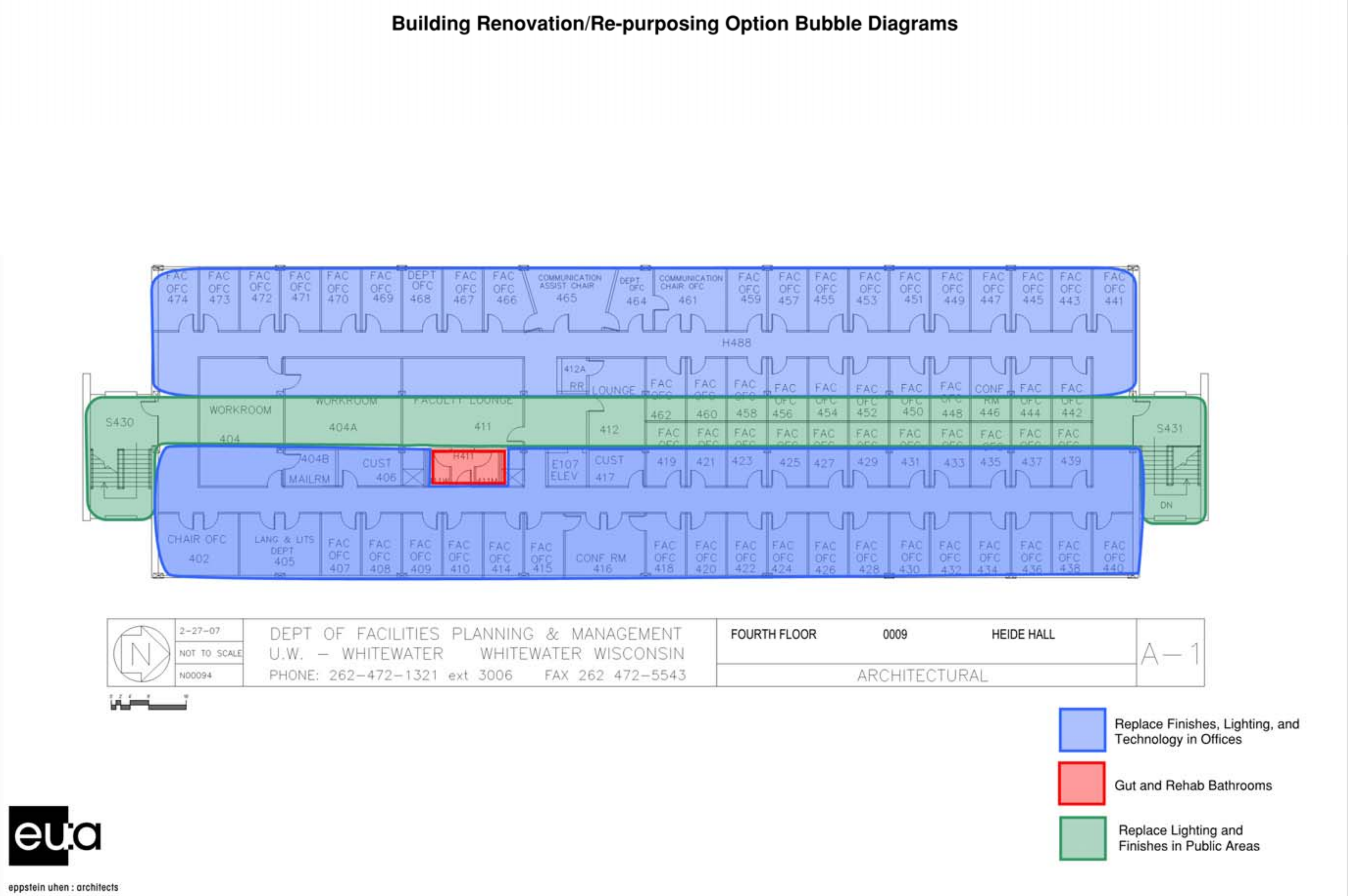


*Figure 21*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Building Name | Williams Center | | | | | | | |
| Building No. | 14, 14A | | | | | | | |
| Building Type | Athletic & Rec Building | | | | | | | |
| Constructed | 1966, 1979 | | | | | AG | UG | |
| Addition(s) | | | | Floors | | 2 | 0 | |
| ASF | 180,490 | GSF | 329,278 | GPR | - % | PR | - % | |

| CENTRAL UTILITY CONNECTIONS | | | | | | | | HISTORICAL | |
|---|---|---|---|---|---|---|---|---|---|
| CW | ☒ | ELEC | ☒ | C. AIR | ☒ | WATER | ☐ | US | ☐ |
| HPS | ☒ | FIBER | ☒ | N. GAS | ☒ | SEWER | ☐ | WI | ☐ |

| C+ | FUNCTIONAL RATING | PHYSICAL RATING | iii |
|---|---|---|---|

*Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition*

## Background and History

Williams Center is used for recreational purposes, and houses the Intercollegiate Athletics and the Physical Education Academic Program. It is the main gym and pool on campus. This was the building's original purpose. The building has not been completely renovated but has had some finishes updated.

## Occupant(s) and Use(s)

Heavily used for recreational, athletic and community purposes.

## Functionality Assessment

Aside from some very basic revisions to improve accessibility locker rooms are original to the building, worn, cramped, hard to navigate and provide little privacy. These areas should be completely gutted and remodeled.

Office spaces within Williams have been upgraded and appear to meet modern standards for technology, although space allocations and arrangement remains largely the same as when the building was constructed.

Study and breakout areas within the original Williams building could use improvements, especially the former main entry and stair area.

## Other Building Issues

CMU partitions on the first floor are changeable, but costly to do so.

Gymnasiums and pool areas are purpose built and not easily changed.

## Future Building Plans

This building has a robust concrete column and flat slab superstructure at the first level, with a 12'-8" floor to floor height – this arrangement could accommodate a gut re-model well, whether its improving the locker rooms or adding other spaces to accommodate athletics functions, such as training facilities, classrooms or offices. The gymnasium spaces and pool spaces on the upper levels have steel framed high roof structures, some bearing on exterior masonry walls, and some supported by columns and beams. While this structural arrangement provides clear spans and high floor to floor heights that could accommodate many uses, continued use as gymnasium space is the best use.

## Code and Health/Safety

Construction Type is 1A. This building does not have fire sprinklers. Locker rooms are inconsistently accessible. Thresholds into some gyms exceed accessible route limits There is no accessible route to bleachers in the pool area.

## Architectural

The exterior envelope is in good condition, but has original single pane windows and no wall insulation, which is lower performing than what would be constructed today. Daylight is provided to office and classroom areas of this building. There is opportunity to add daylight openings to north facing walls of gymnasium spaces.

## Mechanical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Electrical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Communication

This building component was not reviewed; it appears that these systems are original to the building construction.

## Plumbing

This building component was not reviewed; it appears that these systems are original to the building construction.

## Conveying

Elevators were provided as part of the Field House addition.

## Equipment and Furnishings

Many of the finishes are original/dated

**FAC-B** – FACILITIES CONDITION ASSESSMENT - FUNCTIONALITY



Institution UW-Whitewater

Building Name Williams Center

Building Number 14, 14A

Date, 4-10-2015

Insert Text Here

| COMPONENT | CONFIGURATION/LAYOUT | SPACE UTILIZATION | ADAPTABILITY/FLEXIBILITY | INFRASTRUCTURE | ACCESSIBILITY | CODE & LIFE SAFETY | OVERALL | REMARKS | PHOTOS |
|---|---|---|---|---|---|---|---|---|---|
| General Note regarding Scope of Review | | | | | | | | For the purposes of this study the portion of the Williams Center that was reviewed is limited to the areas constructed in 1966 and 1979. | |
| Site/Entry Location/Access | B | B | B | B | B | B | B | The addition of the Kachel Fieldhouse greatly improved the entrance on the south and north sides of the facility. Entries on the east are small and non-descript, although a lot of pedestrian traffic passes through this side of the building. | Fig. 1 |
| Internal Circulation | B | B | B | B | B | B | B | The addition of the Kachel Fieldhouse greatly improved the major circulation routes at Williams. | |
| Classrooms | B | B | B | B | B | B | B | Classroom spaces within the Williams Center have been upgraded and appear to meet modern standards for technology. | |
| Locker Rooms | D | D | D | D | D | D | D | Aside from some very basic revisions to improve accessibility locker rooms are original to the building; worn, cramped, hard to navigate and provide little privacy. These areas should be completely gutted and remodeled. | Fig. 15, 16, 17, 18, 19 |
| Offices | B | B | B | B | B | B | B | Office spaces within Williams Center have been upgraded and appear to meet modern standards for technology, although space allocations and arrangement remains largely the same as when the building was constructed. | |
| Toilet Rooms | D | D | D | D | D | D | D | The addition of the Kachel Fieldhouse greatly improved toilet rooms outside of the locker rooms. Toilet rooms inside the locker rooms are original, don't meet accessibility requirements, and should be replaced as part of a locker room gut rehab. | Fig. 17 |
| | | | | | | | | | |

Institution UW-Whitewater

Date, 4-10-2015



Building Name Williams Center

Building Number 14, 14A

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Study and Breakout areas | C | C | C | C | C | C | C | Study and breakout areas that were updated as part of the Kachel Fieldhouse project are pleasant. Areas within the original Williams Center could use similar improvements, especially the former main entry and stair area. | |
| Pool Spectator Areas | D | D | D | D | D | D | D | Pool spectator areas are not accessible, and the current configuration of spaces adjacent to the pool would make it very challenging to provide an accessible route. | Fig. 11, 12 |
| Elevator | B | B | B | B | B | B | B | Elevators to provide accessibility between floors of the Williams Center were installed as part of the Field House addition. | Fig. 2 |
| Interior Finishes | C | C | C | C | C | C | C | There is an inconsistency between the levels of finish in the un-remodeled Williams Center spaces compared to the spaces updated as part of the Kachel Fieldhouse work. Finishes in public areas are muted compared to areas in the addition. Finishes inside locker rooms are dated and worn. | Fig. 1-19 |
| MEP Systems | C | C | C | C | C | C | C | Review of MEP Systems was not part of this study, but MEP Systems appear to be original to the building and are at the end of their lifecycle. | |
| Exterior Envelope | B | B | B | B | B | B | B | The exterior envelope is in good condition, but has original single pane windows and no wall insulation, which is lower performing than what would be constructed today. Daylight is provided to office areas of this building. There is opportunity to add daylight openings to north facing walls of gymnasium spaces. | |
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Institution UW-Whitewater

Date, 4-10-2015



Building Name Williams Center

Building Number 14, 14A

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Adaptability for Other Uses | B | B | B | B | B | B | B | The Williams Center has a robust concrete column and flat slab superstructure at the first level, with a 12'-8" floor to floor height – this arrangement could accommodate a gut re-model well, whether its improving the locker rooms or adding other spaces to accommodate athletics functions, such as training facilities, classrooms or offices. The gymnasium spaces and pool spaces on the upper levels have steel framed high roof structures, some bearing on exterior masonry walls, and some supported by columns and beams. While this structural arrangement provides clear spans and high floor to floor heights that could accommodate many uses, continued use as gymnasium space is the best use. This building does not have fire sprinklers, so any additions need to be Type 1A construction unless fire separations between new and existing areas are provided. | |
| Overall Average Rating | | | | | | | C+ | | |
| | | | | | | | | | |
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Institution UW-Whitewater

Date, 4-10-2015

Building Name Williams Center

Building Number 14, 14A

Figure 1 entry on north side.


Figure 2, existing elevator.

Figure 3, flooring at gym entry.

Figure 4, threshold at gym entry.

Figure 5, existing stairs and railings.

Figure 6, existing gym.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 5 |
| Building Name | Williams Center | | |
| Building Number | 14, 14A | | |


Figure 7, existing gym.


Figure 8, wrestling gym.

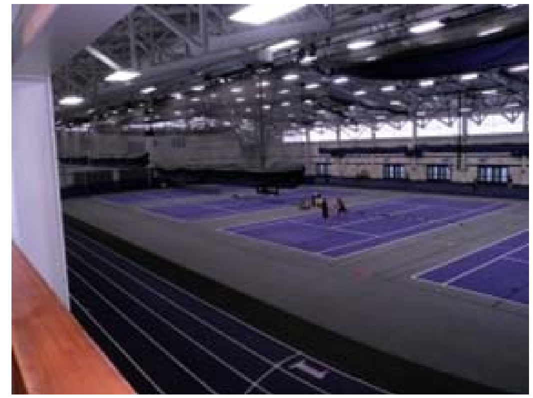

Figure 9, Kachel Fieldhouse.

Figure 10, dance studio.

Figure 11, bleachers in pool area.


Figure 12, racing pool.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 6 |
| Building Name | Williams Center | | |
| Building Number | 14, 14A | | |

Figure 13, diving pool.

Figure 14, diving pool.

Figure 15, accessible shower.

Figure 16, men's locker room.

Figure 17, men's locker room.

Figure 18, men's shower room.

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|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 7 |
| Building Name | Williams Center | | |
| Building Number | 14, 14A | | |

Figure 19, men’s locker room.

Figure 20, Williams Center north building entry,

Figure 21, Kachel Fieldhouse, south building entry

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 8 |
| Building Name | Williams Center | | |
| Building Number | 14, 14A | | |

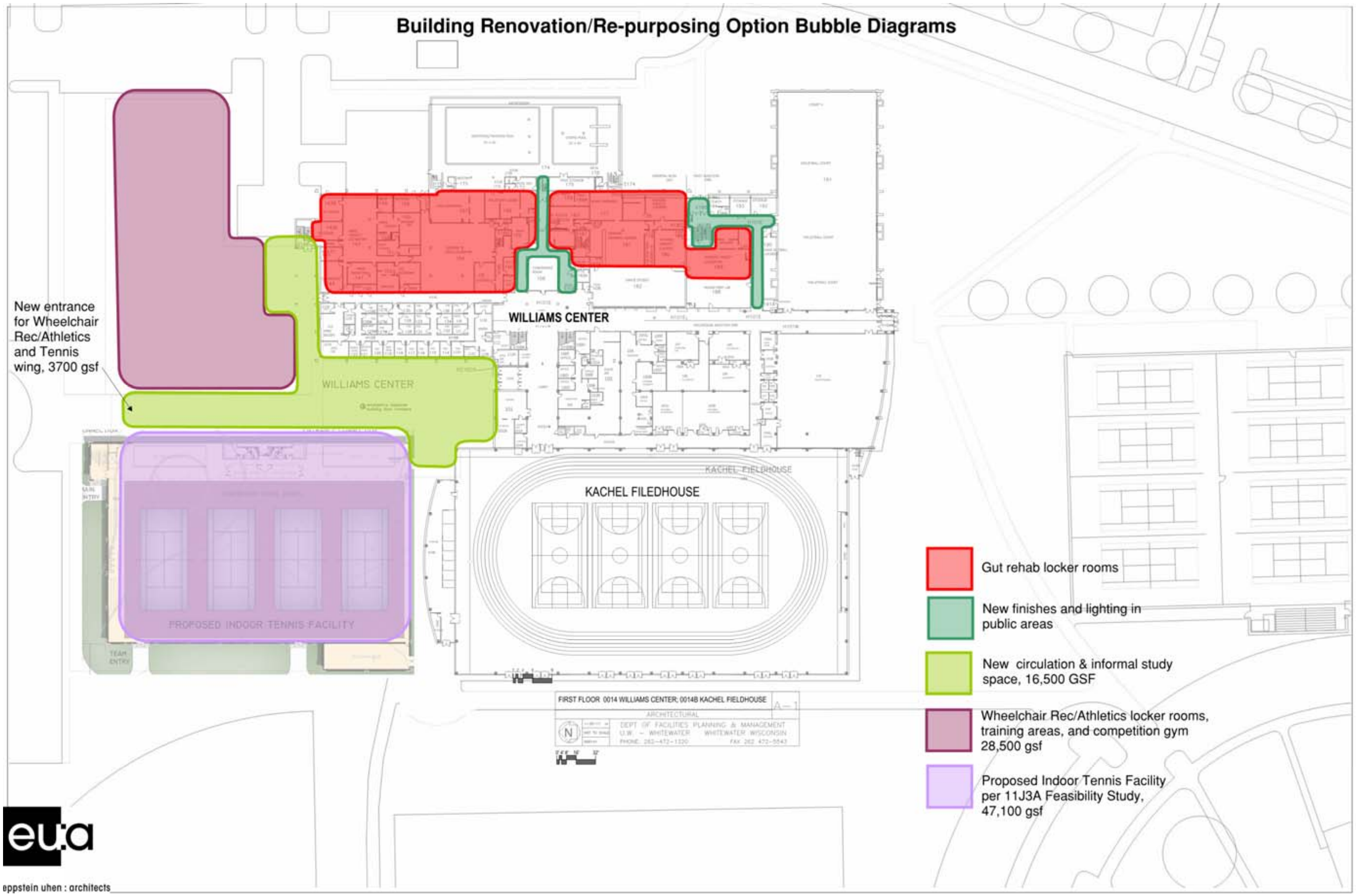


Figure 20

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | **9** |
| Building Name | Williams Center | | |
| Building Number | 14, 14A | | |

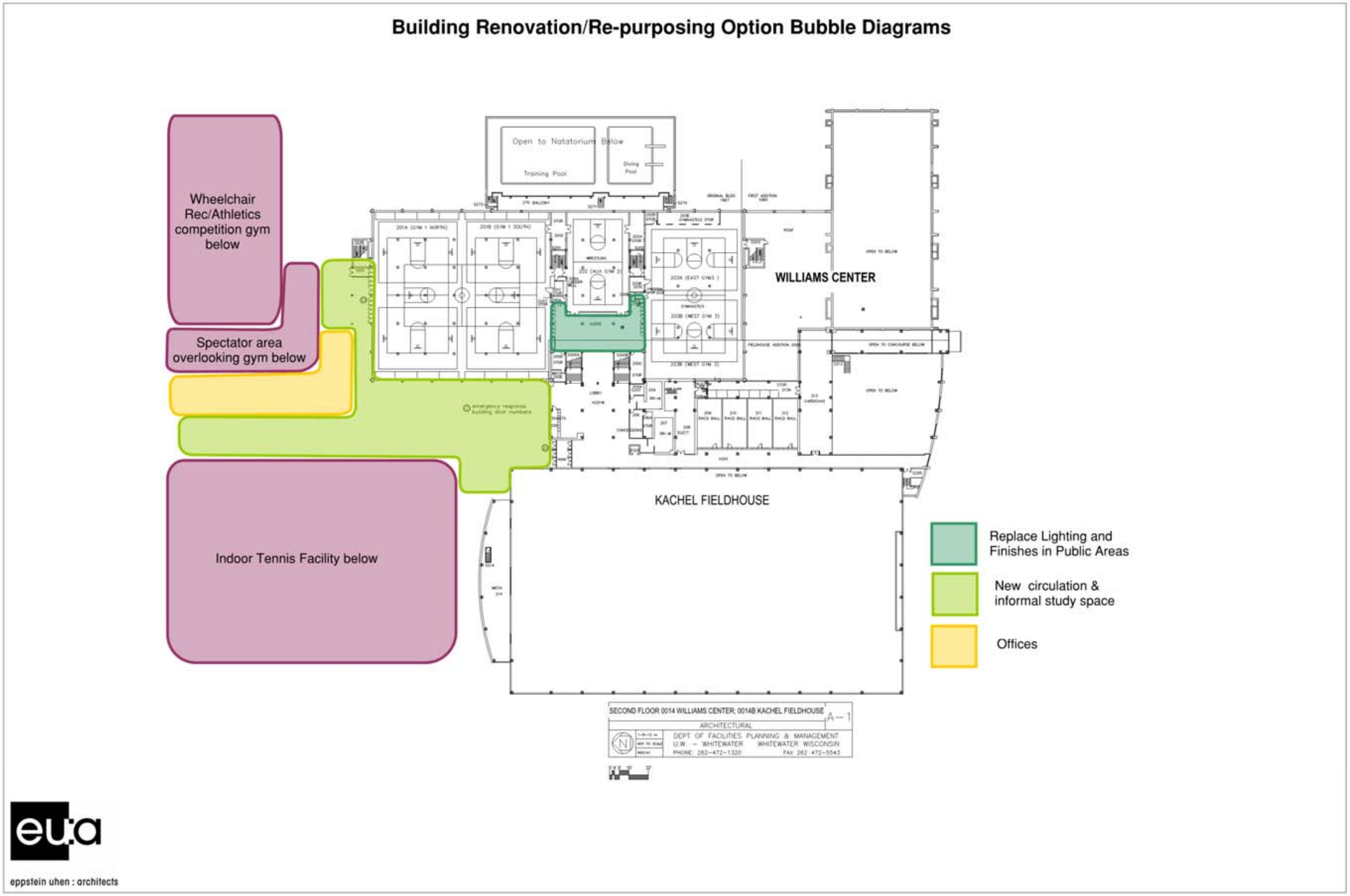


Figure 21

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building Name | Winther Hall | | | | | | |
| Building No. | 10 | | | | | | |
| Building Type | Academic Building | | | | | | |
| Constructed | 1969 | | | | AG | UG | |
| Addition(s) | | | Floors | | 6 | 0 | |
| ASF | 45,115 | GSF | 77,010 | GPR | - % | PR | - % |

| CENTRAL UTILITY CONNECTIONS | | | | | | | | HISTORICAL | |
|---|---|---|---|---|---|---|---|---|---|
| CW | ☒ | ELEC | ☒ | C. AIR | ☒ | WATER | ☐ | US | ☐ |
| HPS | ☒ | FIBER | ☒ | N. GAS | ☒ | SEWER | ☐ | WI | ☐ |

| C- | FUNCTIONAL RATING | PHYSICAL RATING | iv |
|---|---|---|---|

*Building Profile ratings based on the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition*

## Background and History

Winther Hall was constructed as, and continues to be used as an academic building.

## Occupant(s) and Use(s)

The College of Education and Professional Services is the primary user. Additionally, Psychology, Race and Ethnic Studies are part of the College of Letters and Sciences functions in this building.

## Functionality Assessment

An Instructional Lab or Classroom building constructed today would have daylighting to occupied spaces.

The east side of the building was designed as a main entrance, but campus circulation patterns have changed, and the entrance on the north is most heavily used. The south entrance (at junction between wings) is also heavily used since it connects with Heide Hall and is direct route to Andersen Library.

Existing toilet rooms are original to the building, are not accessible, and rooms for each gender are not provided on every floor. Existing toilet rooms can't be expanded in their current location – new accessible toilet rooms should be constructed elsewhere in the building.

Office configuration in the 6 story tower is original to the 1969 building, and modern office configurations are quite different in terms of size, configuration, and support spaces.

## Other Building Issues

Lack of daylight in classrooms, sun glare and temperature variations in different zones in the building, finishes are worn and uninspiring.

## Future Building Plans

A conceptual design for improvements to the building was created by one team as part of a UW Madison School of Engineering Senior Capstone class in the Fall of 2013. This study addressed improvements to the north primary entrance, improvements to vertical circulation, created accessible toilet rooms for each gender on each floor, and created study/breakout areas on each floor.

The classroom wing has good bay spacing and good floor to floor heights that would accommodate remodeling for continued use as instructional classroom space. The office wing has a narrow footprint that does not accommodate uses other than office space. This building does not have fire sprinklers, so any additions need to be Type 1A construction unless fire separations between new and existing areas are provided.

## Code and Health/Safety

This building is classified as Type 1A. It does not have fire sprinklers. Accessible routes to the building could be improved, and currently only the high demand entries are accessible.

Existing bathrooms do not meet current accessibility codes.

Automatic door openers are rough in but not provided on Eastern entry due to low use of this entry.

## Architectural

The classroom wing has a concrete column, beam and waffle slab construction system, good bay spacing, and good floor to floor heights. The office wing has a concrete column, beam and joist structural system, and a narrow footprint that does not accommodate uses other than office space. Partitions are constructed of concrete block, which is institutional looking and not easy to reconfigure.

The exterior envelope is in good condition, but has original windows and insulation, which is lower performing than what would be constructed today.

The site has access to parking and is adjacent to pedestrian paths. The site has space for additions on the North, South and West.

## Mechanical

This building component was not reviewed; it appears that these systems are original to the building construction and are nearing the end of their lifecycle.

## Electrical

This building component was not reviewed; it appears that these systems are original to the building construction.

## Communication

This building component was not reviewed; campus reports that data fiber was added to this building.

## Plumbing

This building component was not reviewed; it appears that these systems are original to the building construction.

## Conveying

Elevator should be replaced as part of a building remodeling. Elevator is original to the building, does not meet accessibility requirements, and does not adequately handle traffic volume.

## Equipment and Furnishings

Other than new finishes and furnishings in the classroom wing corridors the Interior Finishes, Fixtures and Equipment are original (40 years old) in many areas of the building. Finishes are worn and uninspiring.

**FAC-B** – FACILITIES CONDITION ASSESSMENT - FUNCTIONALITY



Institution UW-Whitewater

Building Name Winther Hall

Building Number 10

Date, 4-10-2015

Insert Text Here

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Site/Entry Location/Access | C | C | C | C | C | B | C | The "raised" entry level of this building and half story exit to the south is not the best configuration for accessible routes to this building. The "street entrance" oriented to N Prairie Street does not serve current circulation patterns on campus. | Fig. 9 |
| Lecture Halls | B | B | B | B | B | B | B | Finishes, lighting, and AV systems were updated in these areas in 2001. | Fig. 3 |
| Classrooms/Labs | D | D | D | D | D | D | D | Classrooms/Labs have original 1967 finishes, MEP systems, lighting, and instructional fixtures – these are extremely obsolete. None of the classrooms/labs have access to daylight, and spaces with no daylight are unpleasant to be in for long periods of time. | Fig. 1, 2, 4 |
| Offices | C | C | C | C | C | C | C | Office configuration is original to the 1967 building, and modern office configurations are quite different in terms of size, configuration, and support spaces. Partitions are constructed of concrete block, which is institutional looking and not easy to reconfigure. Finishes are worn and uninspiring. | Fig. 5, 6 |
| Study & Breakout areas | C | C | C | C | C | C | C | Furnishings have been provided in several areas to facilitate informal breakout and study functions, but no purposely defined spaces exist for these functions. | Fig. 7, 8 |
| Toilet Rooms | F | F | F | F | F | F | F | Existing toilet rooms are original to the building, are not accessible, and rooms for each gender are not provided on every floor. All existing toilet rooms should be removed and replaced elsewhere. | Fig. 12. 13 |
| Circulation at Instructional Spaces | C | C | C | C | C | C | C | Some areas of existing circulation are used for informal study spaces, while other circulation areas are too narrow to accommodate classroom turnover effectively. Remodeling these areas in conjunction with replacing bathrooms and adding study space could remediate these deficiencies. | Fig. 11 |

Institution UW-Whitewater | Date, 4-10-2015 | 

Building Name Winther Hall

Building Number 10

| *COMPONENT* | *CONFIGURATION/LAYOUT* | *SPACE UTILIZATION* | *ADAPTABILITY/FLEXIBILITY* | *INFRASTRUCTURE* | *ACCESSIBILITY* | *CODE & LIFE SAFETY* | *OVERALL* | *REMARKS* | *PHOTOS* |
|---|---|---|---|---|---|---|---|---|---|
| Monumental Stair (east side of classroom wing) | C | C | C | C | C | C | C | The east side of the building was designed as a main entrance, but campus circulation patterns have changed, and the entrance on the north is now the most heavily used. Lighting and finishes in both stairs are dated and gloomy. The current configuration in which the east stair tower is essentially the vestibule for this entrance is not energy efficient. | Fig. 10 |
| Circulation at Office Spaces | C | C | C | C | C | C | C | Entrance zones of the office floors are cramped. Corridors are narrow and long. Finishes and lighting are original to the building and un-inspirational. | |
| Elevator | F | F | F | F | F | F | F | Elevator should be replaced as part of a building remodeling. Elevator is original to the building, does not meet accessibility requirements, and does not adequately handle traffic volume. | |
| Interior Finishes | C | C | C | C | C | C | C | With a few exceptions noted above, interior finishes and lighting are original to the building, are worn, drab, un-inspirational, and should be replaced. | Fig. 1-13 |
| MEP Systems | C | C | C | C | C | C | C | Review of MEP Systems was not part of this study, but MEP Systems appear to be original to the building and past their practical lifespan. | |
| Exterior envelope | F | C | C | C | C | C | D | An Instructional Lab or Classroom building constructed today would have daylighting to occupied spaces. The exterior envelope is in good condition, but has original windows and insulation, which is lower performing than what would be constructed today. | |
| Adaptability for other Uses | C/D | C/D | C/D | C/D | C/D | C/D | C/D | The classroom wing has a concrete column, beam and waffle slab construction system, good bay spacing, and good floor to floor heights that would accommodate remodeling for continued use as instructional classroom space. The office wing has a concrete column, beam and joist structural system, and a narrow footprint that does not accommodate uses other than office space. This building does not have fire sprinklers, so any additions need to be Type 1A construction unless fire separations between new and existing areas are provided. | |
| Overall Average Rating | | | | | | | | | |

Institution UW-Whitewater | Date, 4-10-2015 | 3

Building Name Winther Hall

Building Number 10

Figure 1, classroom.

Figure 2, classroom.

Figure 3, lecture hall.

Figure 4, classroom.

Figure 5, faculty work room.

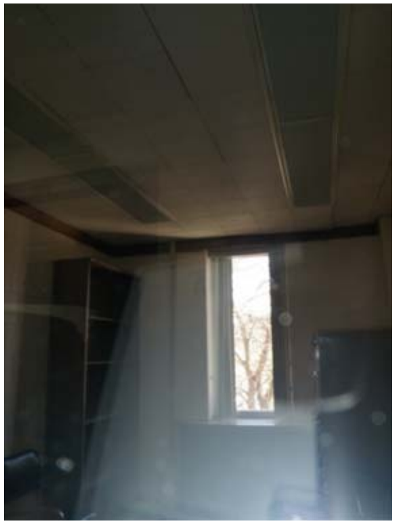

Figure 6, faculty office.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 4 |
| Building Name | Winther Hall | | |
| Building Number | 10 | | |

Figure 7, study lounge.

Figure 8, study lounge.

Figure 9, entry area.

Figure 10, monumental stair.

Figure 11, corridor in classroom wing.

Figure 12, toilet room.

| | | | |
|---|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 | 5 |
| Building Name | Winther Hall | | |
| Building Number | 10 | | |

Figure 13, faculty toilet room.

Figure 14, exterior view from southeast

Figure 14, exterior view from southwest

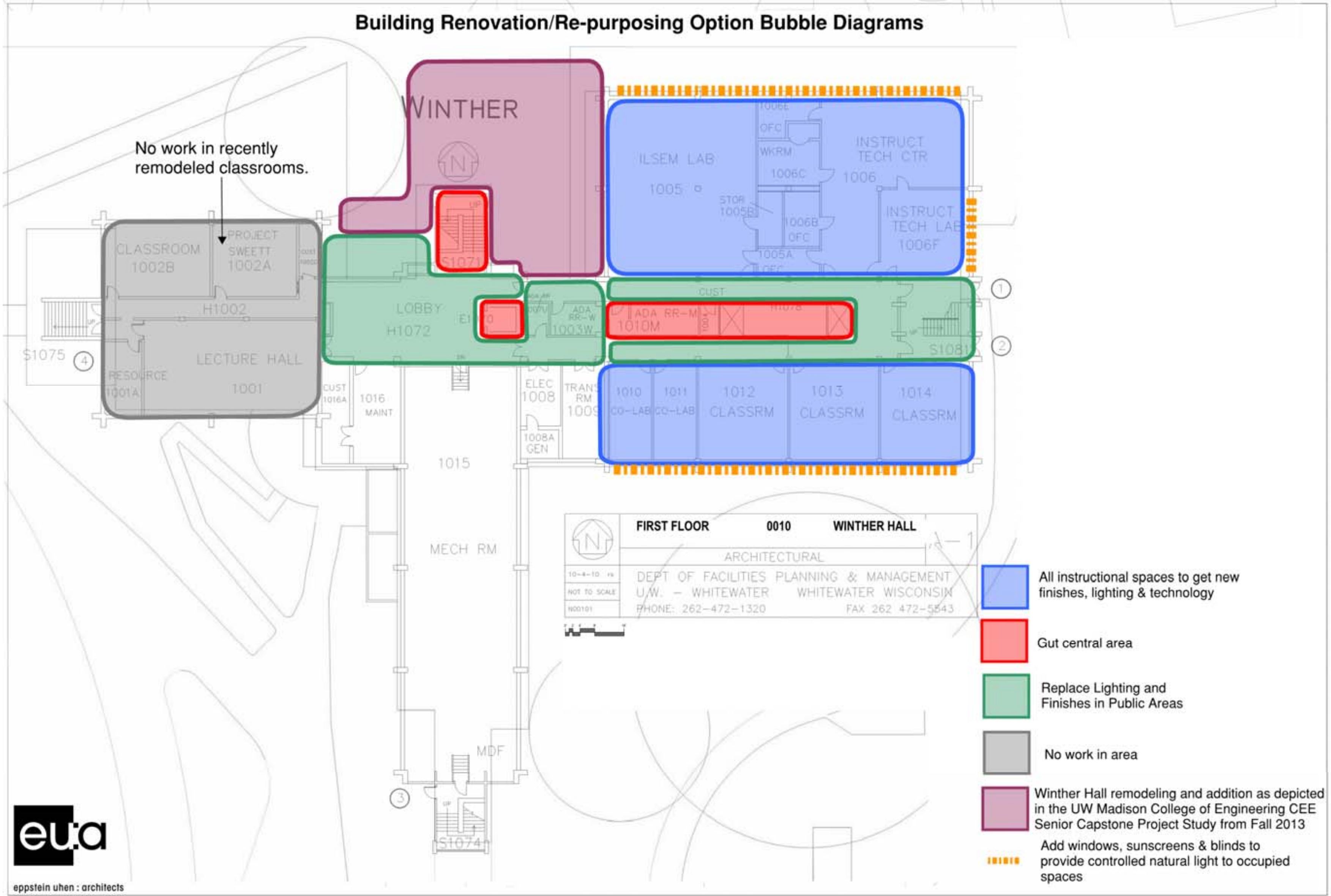
Building Renovation/Re-purposing Option Bubble Diagrams
No work in recently remodeled classrooms.
WINTHER
ILSEM LAB 1005
INSTRUCT TECH CTR 1006
INSTRUCT TECH LAB 1006F
CLASSROOM 1002B
PROJECT SWEETT 1002A
LECTURE HALL 1001
LOBBY H1072
1010 CO-LAB
1011 CO-LAB
1012 CLASSRM
1013 CLASSRM
1014 CLASSRM
1015
MECH RM
FIRST FLOOR 0010 WINTHER HALL
ARCHITECTURAL
DEPT OF FACILITIES PLANNING & MANAGEMENT
U.W. – WHITEWATER WHITEWATER WISCONSIN
PHONE: 262-472-1320 FAX 262 472-5843
All instructional spaces to get new finishes, lighting & technology
Gut central area
Replace Lighting and Finishes in Public Areas
No work in area
Winther Hall remodeling and addition as depicted in the UW Madison College of Engineering CEE Senior Capstone Project Study from Fall 2013
Add windows, sunscreens & blinds to provide controlled natural light to occupied spaces
eppstein uhen : architects

Figure 14

| | |
|---|---|
| Institution | UW-Whitewater |
| Building Name | Winther Hall |
| Building Number | 10 |

Date, 4-10-2015

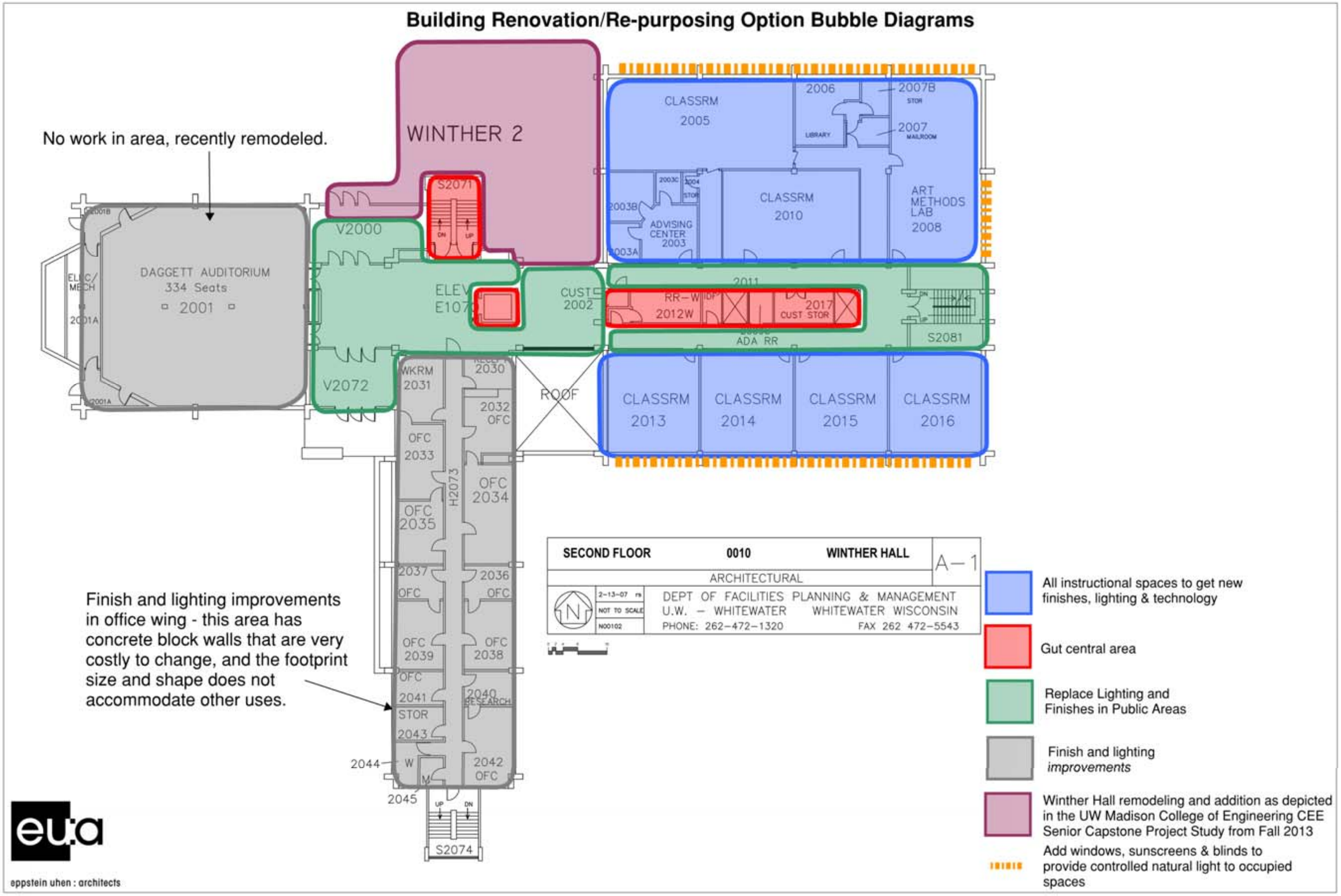


Figure 15

## Building Renovation/Re-purposing Option Bubble Diagrams

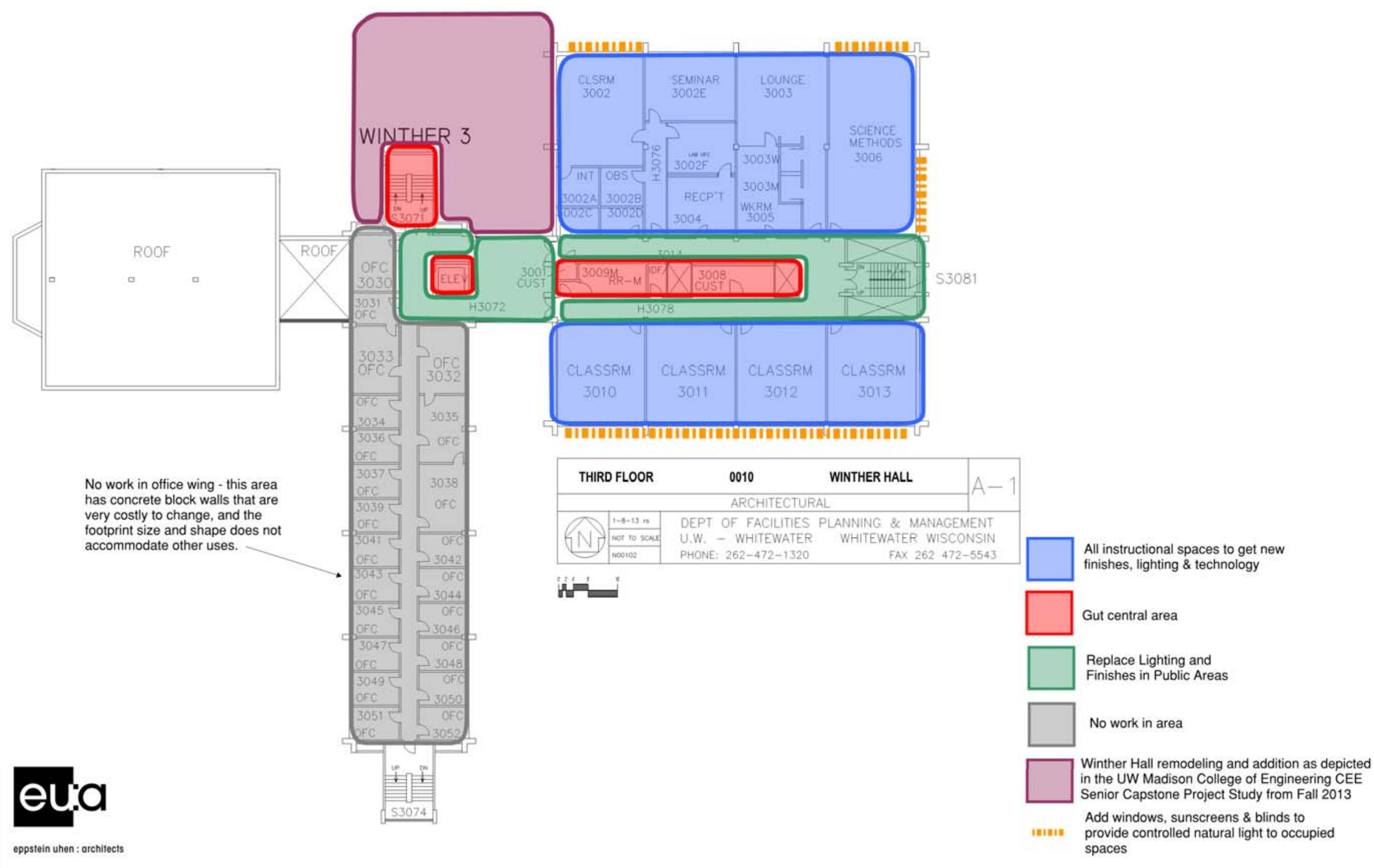


Figure 16

Institution UW-Whitewater

Building Name Winther Hall

Building Number 10

Date, 4-10-2015

## Building Renovation/Re-purposing Option Bubble Diagrams

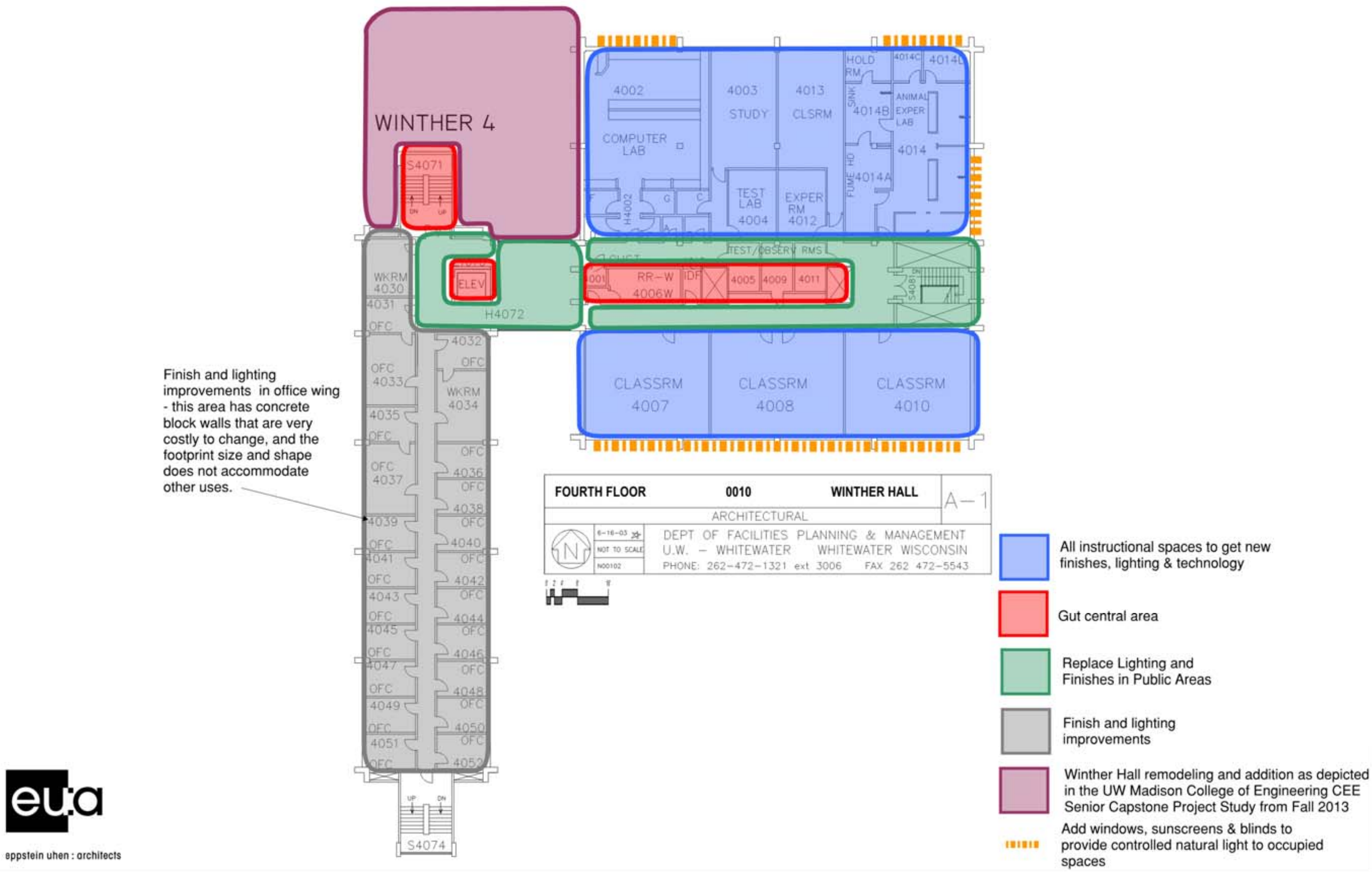


Figure 17

**Building Renovation/Re-purposing Option Bubble Diagrams**

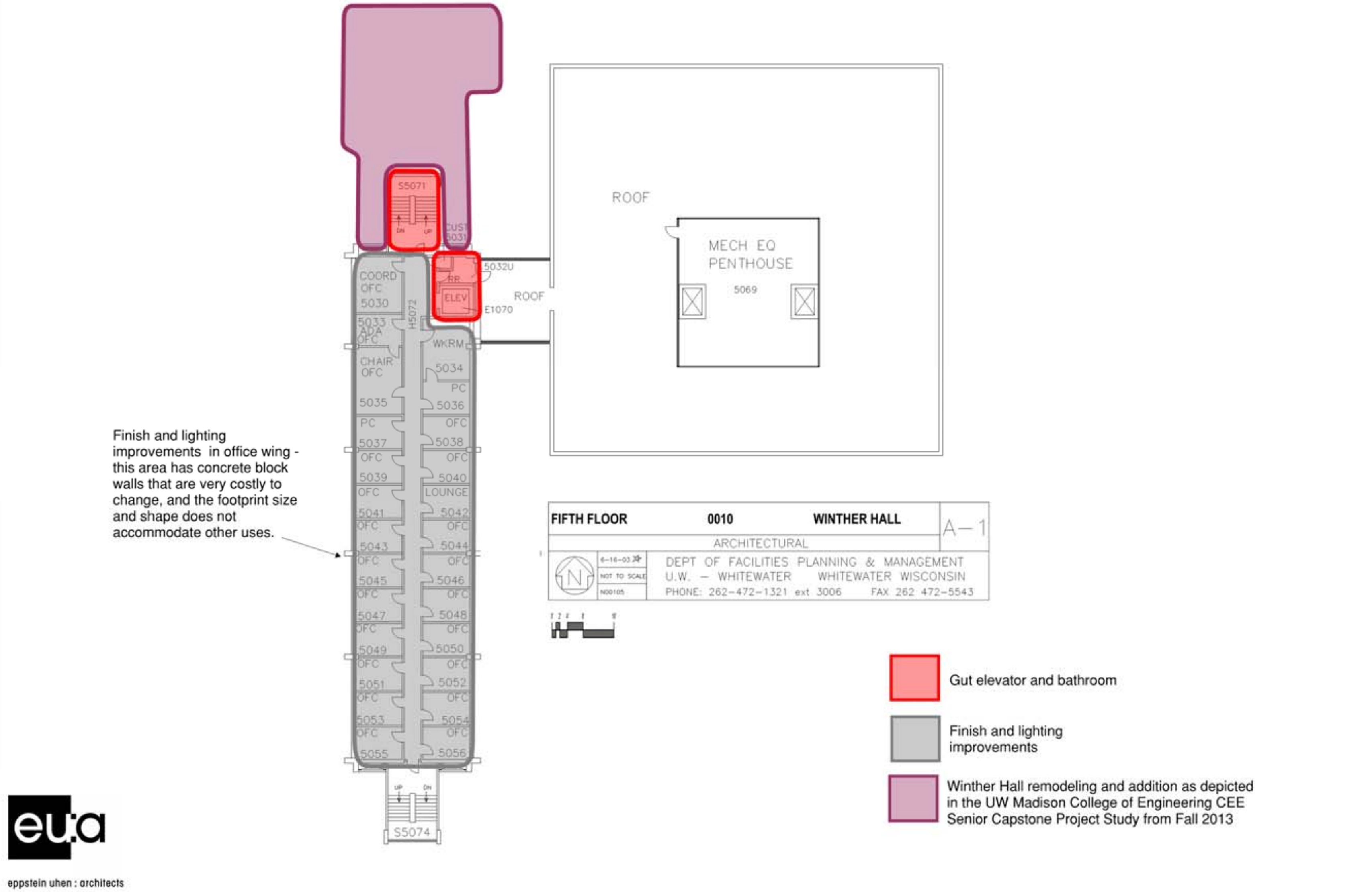


Figure 18

| | | |
|---|---|---|
| Institution | UW-Whitewater | Date, 4-10-2015 |
| Building Name | Winther Hall | |
| Building Number | 10 | |

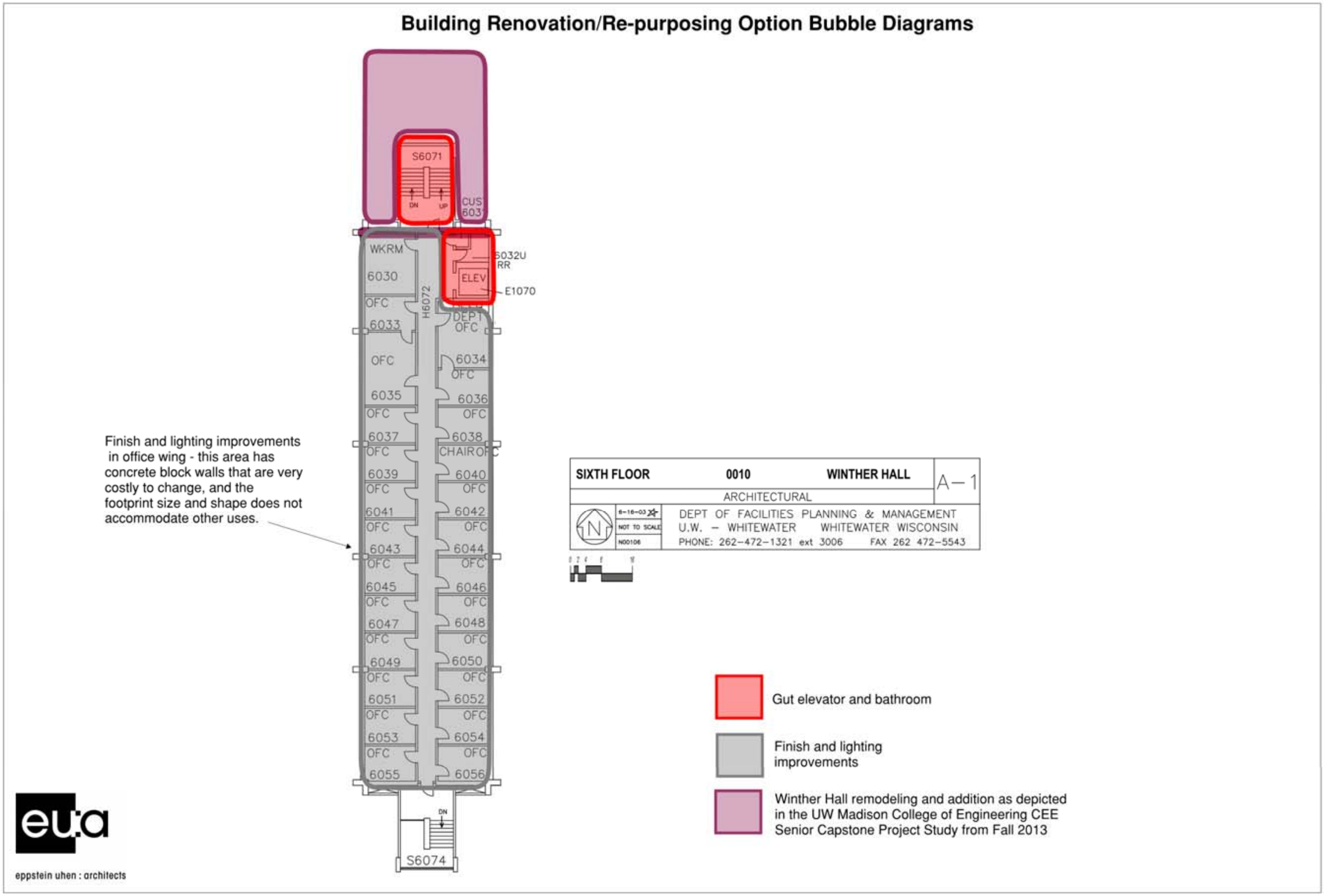


Figure 19

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Tennis Facility | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 48800 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jul-15 | PROJECTED ENR INDEX: | (7/2014)/5927(7/2015)=1.04 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Tennis Facility | 48,000 | 162 | 1.04 | 0 | $8,087,040 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | SUBTOTAL: | $8,087,040 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> $ 8,087,040.00

WORKSHEET (Page 2)

| | | | |
|---|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ | 8,087,040 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | | |
| 1. Special Foundations/Site Preparation | | $ | 510,000 |
| - Selective Demolition | $ 30,000.00 | | |
| - Demolition (entire structure) | $ - | | |
| - Site Excavation/Site Preparation | $ 480,000.00 | | |
| - Pilings | $ - | | |
| - Dewatering | $ - | | |
| 2. Special Design Freatures/Other Construction | | $ | 25,000.00 |
| - Plaza | $ - | | |
| - Special Exterior/Interior Finishes | $ - | | |
| - Window/Exterior Door Replacement | $ - | | |
| - Remove Architectural Barriers | $ - | | |
| - Interface with Existing Building | $ 25,000.00 | | |
| - Roof Replacement | $ - | | |
| - Other (specify) | $ - | | |
| 3. Built-in Architectural Equipment | | $ | 102,000.00 |
| - Food Service/Equipment | $ - | | |
| - Dry/Cold Rooms | $ - | | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | | |
| - Prison Security | $ - | | |
| - Parking/Loading Dock/Waste Handling | $ - | | |
| - Signage (ADA) | $ 2,000.00 | | |
| - Other (specify) Athletic Equipment | $ 100,000.00 | | |
| 4. Special Mechanical/Electrical Systems | | $ | - |
| - HVAC Source Equipment | $ - | | |
| - Heat Recovery/Refrigeration | $ - | | |
| - Chemical Fire Suppression | $ - | | |
| - Energy Management | $ - | | |
| - Electronic Surveillance | $ - | | |
| - Lighting Controls | $ - | | |
| - Service to Owner’s Equipment | $ - | | |
| - Testing & Balancing | $ - | | |
| 5. Building Complexity Cost Factors | | $ | - |
| - Irregular Shape/Story Height | $ - | | |
| - Floor Loading/Structural Details | $ - | | |
| - HVAC/Electric Loads | $ - | | |
| - Multi-Story Building | $ - | | |
| - Design Life | $ - | | |
| - Other (specify)___________________ | $ - | | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ | 8,724,040.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 8,724,040.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 35,000.00 |
| - Water | $ 10,000.00 | | |
| - Sewer | $ 20,000.00 | | |
| - Gas | $ 5,000.00 | | |
| - Electric | $ - | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 90,994.00 |
| - Parking/Roads/Walks/Curbs | $ 31,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 29,994.00 | | |
| - Landscaping | $ 20,000.00 | | |
| - Exterior Signage | $ 10,000.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 8,850,034.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 819,955.65 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 796,503.06 |
| 4. DSF Management, , 4% of const & cont | | | $ 385,861.48 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 354,001.36 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 11,206,355.55 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Residence Hall 2 | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 130000 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jan-17 | PROJECTED ENR INDEX: | (7/2014)/6290(1/2017)=1.104 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Residence Hall | 130,000 | 208 | 1.104 | 0 | $29,852,160 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $29,852,160 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> $ 29,852,160.00

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 29,852,160 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 780,000 |
| - Selective Demolition | $ 150,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 600,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ 30,000.00 | |
| 2. Special Design Freatures/Other Construction | | $ 120,000.00 |
| - Plaza | $ 120,000.00 | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 20,000.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 20,000.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 950,000.00 |
| - HVAC Source Equipment | $ 300,000.00 | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 200,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 150,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 300,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 31,722,160.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | |
|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | $ 31,722,160.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | |
| 1. Utilities/Service Extensions | | $ 1,205,000.00 |
| - Water | $ 180,000.00 | |
| - Sewer | $ 275,000.00 | |
| - Gas | $ 130,000.00 | |
| - Electric | $ 620,000.00 | |
| - Steam/Chilled Water | $ - | |
| 2. Site Development | | $ 697,290.00 |
| - Parking/Roads/Walks/Curbs | $ 247,290.00 | |
| - Stormwater Management | $ - | |
| - Site Lighting | $ - | |
| - Storm Sewer | $ 230,000.00 | |
| - Landscaping | $ 150,000.00 | |
| - Exterior Signage | $ 70,000.00 | |
| - Other (specify)___________________ | $ - | |
| - Other (specify)___________________ | $ - | |
| 3. Location/Site Conditions Cost Factors | | $ - |
| - Time for Construction | $ - | |
| - Restricted or Remote Site/Limited Access | $ - | |
| - Occupied/Secure Site | $ - | |
| - Market Conditions/Location Factor | $ - | |
| - Other (specify)___________________ | $ - | |
| 4. Telecommunications | | $ - |
| Workstation/Staff 200 x $600 | $ - | |
| 5. Asbestos Abatement/Environmental Clean-up | | $ - |
| TOTAL CONSTRUCTION COST | | $ 33,624,450.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | % | |
| 1. Design | | $ 3,115,305.29 |
| Architect/Engineer, 8.5% of const & cont | | |
| 2. Other Design Fees | | $ - |
| - Survey/Soils Engineer | $ - | |
| - Miscellaneous Fees (specify) | $ - | |
| - Audio/Visual Consultant | $ - | |
| - Asbestos/Environment Consultant | $ - | |
| - Commissioning | $ - | |
| 3. Project Contingency, 9% of construction | | $ 3,026,200.50 |
| 4. DSF Management, , 4% of const & cont | | $ 1,466,026.02 |
| 5. Work by Owner | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | $ 1,344,978.00 |
| 7. Special Equipment | | $ - |
| 8. Other Allowances (specify) | | $ - |
| 9. Land Purchase | | $ - |
| 10. Percent for the Arts | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | $ 42,576,959.81 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Williams Center Addition | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 0 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 66,700 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | | PROJECTED ENR INDEX: | (7/2014)/6416(7/2017)=1.13 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Gymnasium | 28,500 | 165 | 1.13 | 0 | $5,313,825 |
| Entrance | 3,700 | 180 | 1.13 | 0 | $752,580 |
| Offices /Study Space | 34,500 | 165 | 1.13 | 0 | $6,432,525 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $12,498,930 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | $ - |
| -COMPLETE | | | | | $ - |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | $ - |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | $ - |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | $ - |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | $ - |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |
| TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> | | | | | $ 12,498,930.00 |

WORKSHEET (Page 2)

| | | | |
|---|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | | $ 12,498,930 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | | |
| 1. Special Foundations/Site Preparation | | | $ 337,100 |
| - Selective Demolition | $ | 85,000.00 | |
| - Demolition (entire structure) | $ | - | |
| - Site Excavation/Site Preparation | $ | 252,100.00 | |
| - Pilings | $ | - | |
| - Dewatering | $ | - | |
| 2. Special Design Freatures/Other Construction | | | $ 80,000.00 |
| - Plaza | $ | - | |
| - Special Exterior/Interior Finishes | $ | - | |
| - Window/Exterior Door Replacement | $ | - | |
| - Remove Architectural Barriers | $ | - | |
| - Interface with Existing Building | $ | 80,000.00 | |
| - Roof Replacement | $ | - | |
| - Other (specify) | $ | - | |
| 3. Built-in Architectural Equipment | | | $ 8,500.00 |
| - Food Service/Equipment | $ | - | |
| - Dry/Cold Rooms | $ | - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ | - | |
| - Prison Security | $ | - | |
| - Parking/Loading Dock/Waste Handling | $ | - | |
| - Signage (ADA) | $ | 8,500.00 | |
| - Other (specify) Lab Equipment | $ | - | |
| 4. Special Mechanical/Electrical Systems | | | $ 180,000.00 |
| - HVAC Source Equipment | $ | - | |
| - Heat Recovery/Refrigeration | $ | - | |
| - Chemical Fire Suppression | $ | - | |
| - Energy Management | $ | 65,000.00 | |
| - Electronic Surveillance | $ | - | |
| - Lighting Controls | $ | 80,000.00 | |
| - Service to Owner's Equipment | $ | - | |
| - Testing & Balancing | $ | 35,000.00 | |
| 5. Building Complexity Cost Factors | | | $ - |
| - Irregular Shape/Story Height | $ | - | |
| - Floor Loading/Structural Details | $ | - | |
| - HVAC/Electric Loads | $ | - | |
| - Multi-Story Building | $ | - | |
| - Design Life | $ | - | |
| - Other (specify)___________________ | $ | - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | | $ 13,104,530.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 13,104,530.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ - |
| - Water | $ - | | |
| - Sewer | $ - | | |
| - Gas | $ - | | |
| - Electric | $ - | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 450,000.00 |
| - Parking/Roads/Walks/Curbs | $ 340,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ - | | |
| - Landscaping | $ 80,000.00 | | |
| - Exterior Signage | $ 30,000.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ 15,000.00 |
| TOTAL CONSTRUCTION COST | | | $ 13,569,530.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 1,257,216.95 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 1,221,257.70 |
| 4. DSF Management, , 4% of const & cont | | | $ 591,631.51 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 542,781.20 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 17,182,417.36 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Williams Center Building Renovation | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 0 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 18,000 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | | PROJECTED ENR INDEX: | (7/2014)/6416(7/2017)=1.13 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $0 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 6000 | 40 | 1.13 | | $ 271,200.00 |
| -COMPLETE | 12000 | 76 | 1.13 | | $ 1,030,560.00 |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | 12000 | 9 | 1.13 | | $ 122,040.00 |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 6000 | 15 | 1.13 | | $ 101,700.00 |
| -COMPLETE | 12000 | 29 | 1.13 | | $ 393,240.00 |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 6000 | 16 | 1.14 | | $ 109,440.00 |
| -COMPLETE | 12000 | 24 | 1.14 | | $ 328,320.00 |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ 2,356,500.00 |
| TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>> | | | | | $ 2,356,500.00 |

WORKSHEET (Page 2)

| | | | |
|---|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | | $ 2,356,500 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | | |
| 1. Special Foundations/Site Preparation | | | $ 60,000 |
| | - Selective Demolition | $ 60,000.00 | |
| | - Demolition (entire structure) | $ - | |
| | - Site Excavation/Site Preparation | $ - | |
| | - Pilings | $ - | |
| | - Dewatering | $ - | |
| 2. Special Design Freatures/Other Construction | | | $ - |
| | - Plaza | $ - | |
| | - Special Exterior/Interior Finishes | $ - | |
| | - Window/Exterior Door Replacement | $ - | |
| | - Remove Architectural Barriers | $ - | |
| | - Interface with Existing Building | $ - | |
| | - Roof Replacement | $ - | |
| | - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | | $ 4,500.00 |
| | - Food Service/Equipment | $ - | |
| | - Dry/Cold Rooms | $ - | |
| | - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| | - Prison Security | $ - | |
| | - Parking/Loading Dock/Waste Handling | $ - | |
| | - Signage (ADA) | $ 4,500.00 | |
| | - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | | $ 32,000.00 |
| | - HVAC Source Equipment | $ - | |
| | - Heat Recovery/Refrigeration | $ - | |
| | - Chemical Fire Suppression | $ - | |
| | - Energy Management | | |
| | - Electronic Surveillance | $ - | |
| | - Lighting Controls | $ 12,000.00 | |
| | - Service to Owner's Equipment | $ - | |
| | - Testing & Balancing | $ 20,000.00 | |
| 5. Building Complexity Cost Factors | | | $ - |
| | - Irregular Shape/Story Height | $ - | |
| | - Floor Loading/Structural Details | $ - | |
| | - HVAC/Electric Loads | $ - | |
| | - Multi-Story Building | $ - | |
| | - Design Life | $ - | |
| | - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | | $ 2,453,000.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | |
|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | $ 2,453,000.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | |
| 1. Utilities/Service Extensions | | $ - |
| - Water | $ - | |
| - Sewer | $ - | |
| - Gas | $ - | |
| - Electric | $ - | |
| - Steam/Chilled Water | $ - | |
| 2. Site Development | | $ - |
| - Parking/Roads/Walks/Curbs | $ - | |
| - Stormwater Management | $ - | |
| - Site Lighting | $ - | |
| - Storm Sewer | $ - | |
| - Landscaping | $ - | |
| - Exterior Signage | $ - | |
| - Other (specify)___________________ | $ - | |
| - Other (specify)___________________ | $ - | |
| 3. Location/Site Conditions Cost Factors | | $ - |
| - Time for Construction | $ - | |
| - Restricted or Remote Site/Limited Access | $ - | |
| - Occupied/Secure Site | $ - | |
| - Market Conditions/Location Factor | $ - | |
| - Other (specify)___________________ | $ - | |
| 4. Telecommunications | | $ - |
| Workstation/Staff 200 x $600 | $ - | |
| 5. Asbestos Abatement/Environmental Clean-up | | $ 80,000.00 |
| TOTAL CONSTRUCTION COST | | $ 2,533,000.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | % | |
| 1. Design | | $ 234,682.45 |
| Architect/Engineer, 8.5% of const & cont | | |
| 2. Other Design Fees | | $ - |
| - Survey/Soils Engineer | $ - | |
| - Miscellaneous Fees (specify) | $ - | |
| - Audio/Visual Consultant | $ - | |
| - Asbestos/Environment Consultant | $ - | |
| - Commissioning | $ - | |
| 3. Project Contingency, 9% of construction | | $ 227,970.00 |
| 4. DSF Management, , 4% of const & cont | | $ 110,438.80 |
| 5. Work by Owner | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | $ 101,320.00 |
| 7. Special Equipment | | $ - |
| 8. Other Allowances (specify) | | $ - |
| 9. Land Purchase | | $ - |
| 10. Percent for the Arts | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | $ 3,207,411.25 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Heide Building Renovation | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 0 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 68,000 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | | PROJECTED ENR INDEX: | (7/2014)/6416(7/2017)=1.13 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Class Room Space | 0 | 0 | 0 | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $0 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 40950 | 40 | 1.13 | | $ 1,850,940.00 |
| -COMPLETE | 13650 | 66 | 1.13 | | $ 1,018,017.00 |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | 68000 | 6 | 1.13 | | $ 461,040.00 |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | $ - |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | 68000 | 29 | 1.13 | | $ 2,228,360.00 |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | 68000 | 31 | 1.13 | | $ 2,382,040.00 |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ 7,940,397.00 |
| TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> | | | | | $ 7,940,397.00 |

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 7,940,397 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 146,890 |
| - Selective Demolition | $ 121,890.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 25,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ - | |
| 2. Special Design Freatures/Other Construction | | $ 328,400.00 |
| - Plaza | $ - | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ 209,200.00 | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ 119,200.00 | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 6,500.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 6,500.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 210,000.00 |
| - HVAC Source Equipment | $ - | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 75,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 90,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 45,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 8,632,187.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 8,632,187.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ - |
| - Water | $ - | | |
| - Sewer | $ - | | |
| - Gas | $ - | | |
| - Electric | $ - | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 230,000.00 |
| - Parking/Roads/Walks/Curbs | $ 145,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ - | | |
| - Landscaping | $ 60,000.00 | | |
| - Exterior Signage | $ 25,000.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ 125,000.00 |
| TOTAL CONSTRUCTION COST | | | $ 8,987,187.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 832,662.88 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 808,846.83 |
| 4. DSF Management, , 4% of const & cont | | | $ 391,841.35 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 359,487.48 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 11,380,025.54 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

DATE: 10/22/14
BY: MCC

PROJECT TITLE: 12i1D UW/Whitewater Campus Master Plan-Winther Hall

AGENCY: DFD

LOCATION: Whitewater

NEW BLDG AREA: 12005 (GSF New Const)
(ASF New Const)
(% Efficiency)

REMODELING AREA: 43,938 (GSF Remodeling)
0 (GSF Total Bldg)
(% Remodeling)

ESTIMATED BID DATE: Jul-18
PROJECTED ENR INDEX: (7/2014)/6544(7/2018)=1.15
CURRENT ENR: 5697

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Entry Additon | 12,005 | 240 | 1.15 | 0 | $3,313,380 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | SUBTOTAL: | $3,313,380 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | 15,267 | 25 | 1.15 | | $ 438,926.25 |
| -PARTIAL | 28,671 | 55 | 1.15 | | $ 1,813,440.75 |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 28,671 | 15 | 1.15 | | $ 494,574.75 |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | 28,671 | 12 | 1.15 | | $ 395,659.80 |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ 3,142,601.55 |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>> $ 6,455,981.55

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 6,455,982 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 800,000 |
| - Selective Demolition | $ 200,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 600,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ - | |
| 2. Special Design Freatures/Other Construction | | $ 396,340.00 |
| - Plaza | $ 60,000.00 | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ 336,340.00 | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 20,000.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 20,000.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 100,000.00 |
| - HVAC Source Equipment | $ - | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 50,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 50,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 7,772,321.55 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | |
|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | $ 7,772,321.55 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | |
| 1. Utilities/Service Extensions | | $ - |
| - Water | $ - | |
| - Sewer | $ - | |
| - Gas | $ - | |
| - Electric | $ - | |
| - Steam/Chilled Water | $ - | |
| 2. Site Development | | $ 100,500.00 |
| - Parking/Roads/Walks/Curbs | $ 55,000.00 | |
| - Stormwater Management | $ - | |
| - Site Lighting | $ - | |
| - Storm Sewer | $ 20,000.00 | |
| - Landscaping | $ 15,000.00 | |
| - Exterior Signage | $ 10,500.00 | |
| - Other (specify)___________________ | $ - | |
| - Other (specify)___________________ | $ - | |
| 3. Location/Site Conditions Cost Factors | | $ - |
| - Time for Construction | $ - | |
| - Restricted or Remote Site/Limited Access | $ - | |
| - Occupied/Secure Site | $ - | |
| - Market Conditions/Location Factor | $ - | |
| - Other (specify)___________________ | $ - | |
| 4. Telecommunications | | $ - |
| Workstation/Staff 200 x $600 | $ - | |
| 5. Asbestos Abatement/Environmental Clean-up | | $ 90,000.00 |
| TOTAL CONSTRUCTION COST | | $ 7,962,821.55 |
| DESIGN/CONTINGENCY/ALLOWANCES: | % | |
| 1. Design | | $ 737,755.42 |
| Architect/Engineer, 8.5% of const & cont | | |
| 2. Other Design Fees | | $ - |
| - Survey/Soils Engineer | $ - | |
| - Miscellaneous Fees (specify) | $ - | |
| - Audio/Visual Consultant | $ - | |
| - Asbestos/Environment Consultant | $ - | |
| - Commissioning | $ - | |
| 3. Project Contingency, 9% of construction | | $ 716,653.94 |
| 4. DSF Management, , 4% of const & cont | | $ 347,179.02 |
| 5. Work by Owner | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | $ 318,512.86 |
| 7. Special Equipment | | $ - |
| 8. Other Allowances (specify) | | $ - |
| 9. Land Purchase | | $ - |
| 10. Percent for the Arts | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | $ 10,082,922.79 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Anderson Library Renovation | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 0 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 61,718 (GSF Remodeling) | | |
| | 191,210 (GSF Total Bldg) | 32.3% | (% Remodeling) |
| ESTIMATED BID DATE: | | PROJECTED ENR INDEX: | (7/2014)/6416(7/2017)=1.13 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $0 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | 2000 | 40 | 1.13 | | $ 90,400.00 |
| -PARTIAL | 63033 | 54 | 1.13 | | $ 3,846,273.66 |
| -COMPLETE | 12000 | 76 | 1.13 | | $ 1,030,560.00 |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | 2000 | 6 | 1.13 | | $ 13,560.00 |
| -PARTIAL | 63033 | 12 | 1.13 | | $ 854,727.48 |
| -COMPLETE | 12000 | 25 | 1.13 | | $ 339,000.00 |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | 2000 | 8 | 1.13 | | $ 18,080.00 |
| -PARTIAL | 63033 | 9 | 1.13 | | $ 641,045.61 |
| -COMPLETE | 12000 | 16 | 1.13 | | $ 216,960.00 |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ 7,050,606.75 |
| TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> | | | | | $ 7,050,606.75 |

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 7,050,607 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 116,000 |
| - Selective Demolition | $ 116,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ - | |
| - Pilings | $ - | |
| - Dewatering | $ - | |
| 2. Special Design Freatures/Other Construction | | $ - |
| - Plaza | $ - | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 6,500.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 6,500.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 195,000.00 |
| - HVAC Source Equipment | $ - | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 65,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 80,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 50,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 7,368,106.75 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 7,368,106.75 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ - |
| - Water | $ - | | |
| - Sewer | $ - | | |
| - Gas | $ - | | |
| - Electric | $ - | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 40,000.00 |
| - Parking/Roads/Walks/Curbs | $ - | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ - | | |
| - Landscaping | $ 20,000.00 | | |
| - Exterior Signage | $ 20,000.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ 75,000.00 |
| TOTAL CONSTRUCTION COST | | | $ 7,483,106.75 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 693,309.84 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 673,479.61 |
| 4. DSF Management, , 4% of const & cont | | | $ 326,263.45 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 299,324.27 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 9,475,483.92 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

DATE: 10/22/14

BY: MCC

PROJECT TITLE: 12i1D UW/Whitewater Campus Master Plan-Residence Hall 3

AGENCY: DFD

LOCATION: Whitewater

NEW BLDG AREA: 130000 (GSF New Const)

(ASF New Const)

(% Efficiency)

REMODELING AREA: 0 (GSF Remodeling)

0 (GSF Total Bldg)

(% Remodeling)

ESTIMATED BID DATE: Jul-21

PROJECTED ENR INDEX: (7/2014)/7518(7/2021)=1.32

CURRENT ENR: 5697

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Residence Hall | 130,000 | 208 | 1.32 | 0 | $35,692,800 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $35,692,800 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> $ 35,692,800.00

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 35,692,800 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 1,250,000 |
| - Selective Demolition | $ 320,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 900,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ 30,000.00 | |
| 2. Special Design Freatures/Other Construction | | $ 120,000.00 |
| - Plaza | $ 120,000.00 | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 20,000.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 20,000.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 950,000.00 |
| - HVAC Source Equipment | $ 300,000.00 | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 200,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 150,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 300,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 38,032,800.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 38,032,800.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 1,361,000.00 |
| - Water | $ 233,000.00 | | |
| - Sewer | $ 275,000.00 | | |
| - Gas | $ 123,000.00 | | |
| - Electric | $ 730,000.00 | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 809,406.00 |
| - Parking/Roads/Walks/Curbs | $ 251,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 240,000.00 | | |
| - Landscaping | $ 185,000.00 | | |
| - Exterior Signage | $ 133,406.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 40,203,206.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 3,724,827.04 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 3,618,288.54 |
| 4. DSF Management, , 4% of const & cont | | | $ 1,752,859.78 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 1,608,128.24 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>>> | | | $ 50,907,309.60 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Center for the Arts Renovation | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 12600 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 18,000 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | | PROJECTED ENR INDEX: | (7/2014)/7668(1/2022)=1.35 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| New Entry Addition | 12,600 | 180 | 1.35 | 0 | $3,061,800 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | SUBTOTAL: | $3,061,800 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | 23316 | 25 | 1.35 | | |
| -PARTIAL | 23095 | 35 | 1.35 | | $ 1,091,238.75 |
| -COMPLETE | 900 | 56 | 1.35 | | $ 68,040.00 |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | 900 | 12 | 1.35 | | $ 14,580.00 |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | 23316 | 6 | 1.35 | | $ 188,859.60 |
| -PARTIAL | 23095 | 12 | 1.35 | | $ 374,139.00 |
| -COMPLETE | 900 | 29 | 1.35 | | $ 35,235.00 |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | 23316 | 8 | 1.35 | | $ 251,812.80 |
| -PARTIAL | 23095 | 14 | 1.35 | | $ 436,495.50 |
| -COMPLETE | 900 | 22 | 1.35 | | $ 26,730.00 |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ 2,487,130.65 |
| TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>> | | | | | $ 5,548,930.65 |

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 5,548,931 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 80,000 |
| - Selective Demolition | $ 80,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ - | |
| - Pilings | $ - | |
| - Dewatering | $ - | |
| 2. Special Design Freatures/Other Construction | | $ - |
| - Plaza | $ - | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 8,500.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 8,500.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 110,000.00 |
| - HVAC Source Equipment | $ - | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 60,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 50,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 5,747,430.65 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 5,747,430.65 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ - |
| - Water | $ - | | |
| - Sewer | $ - | | |
| - Gas | $ - | | |
| - Electric | $ - | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ - |
| - Parking/Roads/Walks/Curbs | $ - | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ - | | |
| - Landscaping | $ - | | |
| - Exterior Signage | $ - | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ 120,000.00 |
| TOTAL CONSTRUCTION COST | | | $ 5,867,430.65 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 543,617.45 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 528,068.76 |
| 4. DSF Management, , 4% of const & cont | | | $ 255,819.98 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 234,697.23 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 7,429,634.06 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Academic Building #1 Science | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 177000 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jul-22 | PROJECTED ENR INDEX: | (7/2014)/7668(7/2022)=1.35 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Office Lab Space | 177,000 | 340 | 1.065 | 0 | $64,091,700 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
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| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | SUBTOTAL: | $64,091,700 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> $ 64,091,700.00

WORKSHEET (Page 2)

| | | | |
|---|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ | 64,091,700 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | | |
| 1. Special Foundations/Site Preparation | | $ | 785,000 |
| - Selective Demolition | $ 150,000.00 | | |
| - Demolition (entire structure) | $ - | | |
| - Site Excavation/Site Preparation | $ 600,000.00 | | |
| - Pilings | $ - | | |
| - Dewatering | $ 35,000.00 | | |
| 2. Special Design Freatures/Other Construction | | $ | 200,000.00 |
| - Plaza | $ 200,000.00 | | |
| - Special Exterior/Interior Finishes | $ - | | |
| - Window/Exterior Door Replacement | $ - | | |
| - Remove Architectural Barriers | $ - | | |
| - Interface with Existing Building | $ - | | |
| - Roof Replacement | $ - | | |
| - Other (specify) | $ - | | |
| 3. Built-in Architectural Equipment | | $ | 3,790,000.00 |
| - Food Service/Equipment | $ - | | |
| - Dry/Cold Rooms | $ 200,000.00 | | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ 70,000.00 | | |
| - Prison Security | $ - | | |
| - Parking/Loading Dock/Waste Handling | $ - | | |
| - Signage (ADA) | $ 20,000.00 | | |
| - Other (specify) Lab Equipment | $ 3,500,000.00 | | |
| 4. Special Mechanical/Electrical Systems | | $ | 1,150,000.00 |
| - HVAC Source Equipment | $ 500,000.00 | | |
| - Heat Recovery/Refrigeration | $ - | | |
| - Chemical Fire Suppression | $ - | | |
| - Energy Management | $ 200,000.00 | | |
| - Electronic Surveillance | $ - | | |
| - Lighting Controls | $ 150,000.00 | | |
| - Service to Owner's Equipment | $ - | | |
| - Testing & Balancing | $ 300,000.00 | | |
| 5. Building Complexity Cost Factors | | $ | - |
| - Irregular Shape/Story Height | $ - | | |
| - Floor Loading/Structural Details | $ - | | |
| - HVAC/Electric Loads | $ - | | |
| - Multi-Story Building | $ - | | |
| - Design Life | $ - | | |
| - Other (specify)___________________ | $ - | | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ | 70,016,700.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 70,016,700.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 768,000.00 |
| - Water | $ 120,000.00 | | |
| - Sewer | $ 140,000.00 | | |
| - Gas | $ 65,000.00 | | |
| - Electric | $ 443,000.00 | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 898,744.00 |
| - Parking/Roads/Walks/Curbs | $ 540,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 188,700.00 | | |
| - Landscaping | $ 120,044.00 | | |
| - Exterior Signage | $ 50,000.00 | | |
| - Other (specify)__________________ | $ - | | |
| - Other (specify)__________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)__________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 71,683,444.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 6,641,471.09 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 6,451,509.96 |
| 4. DSF Management, , 4% of const & cont | | | $ 3,125,398.16 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 2,867,337.76 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 90,769,160.97 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| DATE: | 10/22/14 | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Residence Hall 4 | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 130000 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jan-27 | PROJECTED ENR INDEX: | (7/2014)/10296(1/2027)=1.807 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Residence Hall | 130,000 | 208 | 1.807 | 0 | $48,861,280 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

SUBTOTAL: $48,861,280

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |

SUBTOTAL: $ -

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>> $ 48,861,280.00

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 48,861,280 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 1,790,000 |
| - Selective Demolition | $ 460,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 1,300,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ 30,000.00 | |
| 2. Special Design Freatures/Other Construction | | $ 240,000.00 |
| - Plaza | $ 240,000.00 | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 20,000.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 20,000.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 1,150,000.00 |
| - HVAC Source Equipment | $ 400,000.00 | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 300,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 150,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 300,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 52,061,280.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 52,061,280.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 1,930,600.00 |
| - Water | $ 335,000.00 | | |
| - Sewer | $ 375,600.00 | | |
| - Gas | $ 200,000.00 | | |
| - Electric | $ 1,020,000.00 | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 1,043,873.00 |
| - Parking/Roads/Walks/Curbs | $ 351,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 387,873.00 | | |
| - Landscaping | $ 185,000.00 | | |
| - Exterior Signage | $ 120,000.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 55,035,753.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 5,099,062.52 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 4,953,217.77 |
| 4. DSF Management, , 4% of const & cont | | | $ 2,399,558.83 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 2,201,430.12 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 69,689,022.24 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Residence Hall 5 | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 130000 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jul-28 PROJECTED ENR INDEX: | (7/2014)/11136(7/2028)=1.955 | |
| | CURRENT ENR: | 5697 | |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Residence Hall | 130,000 | 208 | 1.955 | 0 | $52,863,200 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

SUBTOTAL: $52,863,200

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |

SUBTOTAL: $ -

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>> $ 52,863,200.00

WORKSHEET (Page 2)

| | | | |
|---|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | | $ 52,863,200 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | | |
| 1. Special Foundations/Site Preparation | | | $ 2,190,000 |
| | - Selective Demolition | $ 560,000.00 | |
| | - Demolition (entire structure) | $ - | |
| | - Site Excavation/Site Preparation | $ 1,600,000.00 | |
| | - Pilings | $ - | |
| | - Dewatering | $ 30,000.00 | |
| 2. Special Design Freatures/Other Construction | | | $ 240,000.00 |
| | - Plaza | $ 240,000.00 | |
| | - Special Exterior/Interior Finishes | $ - | |
| | - Window/Exterior Door Replacement | $ - | |
| | - Remove Architectural Barriers | $ - | |
| | - Interface with Existing Building | $ - | |
| | - Roof Replacement | $ - | |
| | - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | | $ 20,000.00 |
| | - Food Service/Equipment | $ - | |
| | - Dry/Cold Rooms | $ - | |
| | - Library Shelving/Fixed Seating/Stage Rigging | $ - | |
| | - Prison Security | $ - | |
| | - Parking/Loading Dock/Waste Handling | $ - | |
| | - Signage (ADA) | $ 20,000.00 | |
| | - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | | $ 1,150,000.00 |
| | - HVAC Source Equipment | $ 400,000.00 | |
| | - Heat Recovery/Refrigeration | $ - | |
| | - Chemical Fire Suppression | $ - | |
| | - Energy Management | $ 300,000.00 | |
| | - Electronic Surveillance | $ - | |
| | - Lighting Controls | $ 150,000.00 | |
| | - Service to Owner's Equipment | $ - | |
| | - Testing & Balancing | $ 300,000.00 | |
| 5. Building Complexity Cost Factors | | | $ - |
| | - Irregular Shape/Story Height | $ - | |
| | - Floor Loading/Structural Details | $ - | |
| | - HVAC/Electric Loads | $ - | |
| | - Multi-Story Building | $ - | |
| | - Design Life | $ - | |
| | - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | | $ 56,463,200.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 56,463,200.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 1,930,600.00 |
| - Water | $ 335,000.00 | | |
| - Sewer | $ 375,600.00 | | |
| - Gas | $ 200,000.00 | | |
| - Electric | $ 1,020,000.00 | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 1,149,585.00 |
| - Parking/Roads/Walks/Curbs | $ 457,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 387,585.00 | | |
| - Landscaping | $ 185,000.00 | | |
| - Exterior Signage | $ 120,000.00 | | |
| - Other (specify)__________________ | $ - | | |
| - Other (specify)__________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)__________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 59,543,385.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 5,516,694.62 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 5,358,904.65 |
| 4. DSF Management, , 4% of const & cont | | | $ 2,596,091.59 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 2,381,735.40 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 75,396,811.26 plus land cost |

DSF PROJECT BUDGET WORKSHEET (page 1)

| | | | |
|---|---|---|---|
| | | DATE: | 10/22/14 |
| | | BY: | MCC |
| PROJECT TITLE: | 12i1D UW/Whitewater Campus Master Plan-Academic Building #2 Communication | | |
| AGENCY: | DFD | LOCATION: | Whitewater |
| NEW BLDG AREA: | 75000 (GSF New Const) | | |
| | (ASF New Const) | | (% Efficiency) |
| REMODELING AREA: | 0 (GSF Remodeling) | | |
| | 0 (GSF Total Bldg) | | (% Remodeling) |
| ESTIMATED BID DATE: | Jan-28 | PROJECTED ENR INDEX: | (7/2014)/11136(1/2028)=1.96 |
| | | CURRENT ENR: | 5697 |

| SPACE | GSP | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| Office/Teaching Space | 75,000 | 221 | 1.96 | 0 | $32,487,000 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | 0 | $0 |
| | | | | SUBTOTAL: | $32,487,000 |

REMODELING SPACE/COST SUMMARY:

| TRADE | REMOD SF | UNIT COST | INFLATION | SIZE/COST ADJUSTMENT | BUDGET |
|---|---|---|---|---|---|
| GENERAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| PLUMBING | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| HVAC | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| AC ONLY | | | | | |
| ELECTRICAL | | | | | |
| -MINOR | | | | | |
| -PARTIAL | | | | | |
| -COMPLETE | | | | | |
| -SPECIAL NEEDS | | | | | |
| ELEVATOR | | | | | |
| | | | | SUBTOTAL: | $ - |

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>> $ 32,487,000.00

WORKSHEET (Page 2)

| | | |
|---|---|---|
| TOTAL BASE BUILDING/REMODELING COST (From Page 1) | | $ 32,487,000 |
| ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS: | | |
| 1. Special Foundations/Site Preparation | | $ 1,385,000 |
| - Selective Demolition | $ 150,000.00 | |
| - Demolition (entire structure) | $ - | |
| - Site Excavation/Site Preparation | $ 1,200,000.00 | |
| - Pilings | $ - | |
| - Dewatering | $ 35,000.00 | |
| 2. Special Design Freatures/Other Construction | | $ 200,000.00 |
| - Plaza | $ 200,000.00 | |
| - Special Exterior/Interior Finishes | $ - | |
| - Window/Exterior Door Replacement | $ - | |
| - Remove Architectural Barriers | $ - | |
| - Interface with Existing Building | $ - | |
| - Roof Replacement | $ - | |
| - Other (specify) | $ - | |
| 3. Built-in Architectural Equipment | | $ 270,000.00 |
| - Food Service/Equipment | $ - | |
| - Dry/Cold Rooms | $ - | |
| - Library Shelving/Fixed Seating/Stage Rigging | $ 250,000.00 | |
| - Prison Security | $ - | |
| - Parking/Loading Dock/Waste Handling | $ - | |
| - Signage (ADA) | $ 20,000.00 | |
| - Other (specify) Lab Equipment | $ - | |
| 4. Special Mechanical/Electrical Systems | | $ 950,000.00 |
| - HVAC Source Equipment | $ 300,000.00 | |
| - Heat Recovery/Refrigeration | $ - | |
| - Chemical Fire Suppression | $ - | |
| - Energy Management | $ 200,000.00 | |
| - Electronic Surveillance | $ - | |
| - Lighting Controls | $ 150,000.00 | |
| - Service to Owner's Equipment | $ - | |
| - Testing & Balancing | $ 300,000.00 | |
| 5. Building Complexity Cost Factors | | $ - |
| - Irregular Shape/Story Height | $ - | |
| - Floor Loading/Structural Details | $ - | |
| - HVAC/Electric Loads | $ - | |
| - Multi-Story Building | $ - | |
| - Design Life | $ - | |
| - Other (specify)___________________ | $ - | |
| TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> | | $ 35,292,000.00 |

Continue on Page 3--

WORKSHEET (Page 3)

| | | | |
|---|---|---|---|
| TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2; Rounded) | | | $ 35,292,000.00 |
| UTILITIES/SITE DEVELOPMENT/LOCATION COSTS: | | | |
| 1. Utilities/Service Extensions | | | $ 1,485,264.00 |
| - Water | $ 220,000.00 | | |
| - Sewer | $ 245,000.00 | | |
| - Gas | $ 129,275.00 | | |
| - Electric | $ 890,989.00 | | |
| - Steam/Chilled Water | $ - | | |
| 2. Site Development | | | $ 1,213,817.00 |
| - Parking/Roads/Walks/Curbs | $ 600,000.00 | | |
| - Stormwater Management | $ - | | |
| - Site Lighting | $ - | | |
| - Storm Sewer | $ 300,000.00 | | |
| - Landscaping | $ 234,500.00 | | |
| - Exterior Signage | $ 79,317.00 | | |
| - Other (specify)___________________ | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 3. Location/Site Conditions Cost Factors | | | $ - |
| - Time for Construction | $ - | | |
| - Restricted or Remote Site/Limited Access | $ - | | |
| - Occupied/Secure Site | $ - | | |
| - Market Conditions/Location Factor | $ - | | |
| - Other (specify)___________________ | $ - | | |
| 4. Telecommunications | | | $ - |
| Workstation/Staff 200 x $600 | $ - | | |
| 5. Asbestos Abatement/Environmental Clean-up | | | $ - |
| TOTAL CONSTRUCTION COST | | | $ 37,991,081.00 |
| DESIGN/CONTINGENCY/ALLOWANCES: | | % | |
| 1. Design | | | $ 3,519,873.65 |
| Architect/Engineer, 8.5% of const & cont | | | |
| 2. Other Design Fees | | | $ - |
| - Survey/Soils Engineer | $ - | | |
| - Miscellaneous Fees (specify) | $ - | | |
| - Audio/Visual Consultant | $ - | | |
| - Asbestos/Environment Consultant | $ - | | |
| - Commissioning | $ - | | |
| 3. Project Contingency, 9% of construction | | | $ 3,419,197.29 |
| 4. DSF Management, , 4% of const & cont | | | $ 1,656,411.13 |
| 5. Work by Owner | | | $ - |
| 6. Movable Equipment Allowance (4% of const) | | | $ 1,519,643.24 |
| 7. Special Equipment | | | $ - |
| 8. Other Allowances (specify) | | | $ - |
| 9. Land Purchase | | | $ - |
| 10. Percent for the Arts | | | $ - |
| TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>> | | | $ 48,106,206.32 plus land cost |

# Appendix D
# UW – Whitewater
## Fiber Optic
## Study Assessment

**DFD Project #14C1D**
**Whitewater, WI**

**March 31, 2014**

# UW Whitewater Fiber Optic Study Assessment

**Table of Contents**

# UW Whitewater Fiber Optic Study Assessment

**Part I: Purpose of Study**

The purpose of this study is to provide an assessment of the existing Optical Fiber Backbone cabling system and existing Signal Duct Bank System for the University of Wisconsin Whitewater Campus and develop a Pre-Design Report with Associated Budgetary Cost. This was accomplished using existing Optical Fiber and Signal Duct Bank site drawings from UW-System Nine Campus original backbone design (P#9006-55), UW-System Signal System Study (P#03H1K) and UW-Whitewater Wyman Mall Utility Upgrade - central campus signal duct bank and fiber backbone upgrade (P#06B2D). We were also contracted to perform a detailed physical site survey of all the Telecommunication Rooms for every building on campus and all the Manholes and Signal Duct Bank south of West Starin Road. It was determined by the DFD and Whitewater University that the manholes south of West Starin Road would have the most updates based on changes that were made in the last 9-10 years. The first part of the physical site survey included updating existing and new Manhole drawings, this included documentation of all existing cabling and signal duct bank sizing and fill capacities. The second part of the physical survey included providing Telecommunication Room narratives and schedules noting the type of optical fiber and the optical fiber strand counts per building. In addition to this information we also gathered other crucial information that can contribute to the health of the network systems on campus such as Telecommunication room size, room temperature, the amount of lighting in each room, number of racks, rack utilization, grounding, cable support mechanisms, copper backbone pairs, CATV cabling, riser conduit capacity, and station cabling. We also provided additional documentation for Fire Alarm Panel locations, Security Access Control Panel locations, and Building Automation (JCI/Metasys) Control Panels where they existed within the Telecommunication Rooms.

The Pre-design Report with the Associated Budgetary Implementation Cost has been provided as part of the study to replace the Optical Fiber Backbone System campus wide due to ongoing maintenance and capacity issues. The current cable plant is comprised of Multimode and Singlemode fiber that were manufactured approximately 20 years ago. The current Multimode fiber cabling was not designed to support the high bandwidth requirements of the campus network today. This report and the pricing provided includes the replacement of all Inter-building Optical Fiber Backbone with new Singlemode OS2 fiber, as well as, all Intra-building Optical Fiber Backbone with new Multimode 50 micron OM4 Laser Optimized fiber. The cost provided includes the removal of all dead, cut-off, and unused Copper, Optical Fiber, CATV and Campus Signal Cabling that can be removed in order to free up the necessary additional Signal Duct Bank capacity and Building Entrance Duct capacity required. The report also includes a number of add alternates that would provide additional redundant Signal Duct and Optical Fiber connectivity between the two campus network hubs at Goodhue Hall and McGraw Hall. The addition of these redundant Optical Fiber connections would help increase survivability to the campus network in the event the primary connection between the two campus hubs was severed.

**Part II: Findings**

The following areas identified can affect the campus network performance either directly or indirectly. These finding were based on the campus site survey that was performed over the spring and summer months of 2013 and are based on the overall campus assessment of the Telecommunication Rooms, Manholes, and Signal Duct. Refer to the individual building Telecommunication Room Narratives, Optical Fiber Schedules, Building Entrance Schedules and Manhole/Signal Duct documentation for specifics on each building, each Manhole or Signal Duct Bank pathway. The following codes and standards were used as reference for our review for this Optical Fiber Study:

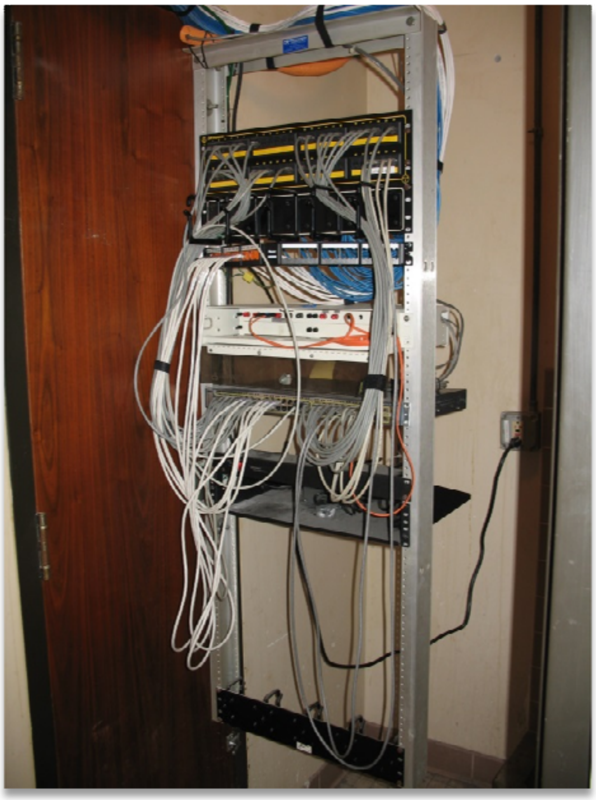
- NFPA 70 2011 National Electrical Code
- IEEE/ANSI 142-1982 Recommended Practice for Grounding of Industrial and Commercial Power Systems
- ANSI/TIA 568C Commercial Building Telecommunications Cabling Standard
- ANSI/TIA 569B Commercial Building Standards for Telecommunications Pathways and Spaces
- ANSI/TIA 606A Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- ANSI-J-STD 607A Commercial Building Grounding and Bonding Requirements for Telecommunications
- BICSI TDMM Telecommunications Distribution Methods Manual Latest Edition

**Telecommunication Rooms**

Telecommunication Rooms can also be referred to as Main Distribution Frames (MDF), Intermediate Distribution Frames (IDF), Main Equipment Rooms (MER), Telecommunication Room (TR), or Entrance Facilities (EF). For the most part the last buildings built or remodeled on campus, Hyland Hall, Laurentide Hall, and Starin Hall all appeared to have been developed based on the current standards for Telecommunication Rooms. There were only a few minor discrepancies noted that were documented on the Building Telecommunication Room Narratives for these facilities and they mainly addressed some additional labeling that can be accomplished in each for the data racks and the grounding. As you will see below, we have tried to list some of the conditions we encountered in quite a few of the older Building's Telecommunication Rooms across the remainder of the campus.

- Room Size and Layout
    - Telecommunication Rooms that are not sized properly to accommodate the communications infrastructure as the infrastructure grew have been noted in the Telecommunication Room Narratives. In a number of instances the cabling infrastructure and network equipment required have come to outgrow the room. In other cases, such as one particular Telecommunication Room in the Anderson Library for an example, the data rack has been installed in an old Custodial Room having a sink. Since floor space was limited a floor standing data rack has been modified so it could be mounted on the back of a door. The door the rack is mounted to is the door to the closet that the cable riser conduits are in. In order to

access the conduits you have to open the door and pull on the cabling that is installed to the data rack on the rear of the door. This telecommunication room should not have been constructed as such and will not allow adequate support of any future upgrade to the cable infrastructure for the floor it supports (See Pictures Below).



- Telecommunication Rooms should be dedicated rooms with proper cooling and lighting, similar to the rooms constructed for Hyland, Laurentide and Starin Halls (See Pictures Below of Hyland Hall 3rd Floor TR). This allows for better access control to the spaces and less chance that other mechanical or electrical systems installed within the rooms would have an adverse effect on the operation of the network. The following are standards based requirement for the development of a new Telecommunication Room:
    - The room should be no smaller than 8ft. x 10ft. if serving an area 5000sqft. or less.
    - Ceiling heights within the room should be no less than 8ft. AFF.
    - Doorways to the room should have full opening ability to 180° if permitted and be a minimum of 3ft. wide and 6.6ft. high.
    - Dust and static electricity should be avoided by installing tile vs. carpeting or, floor, walls and ceiling should be treated to minimize dust.

- Environmental control should be maintained 24 hours a day 365 days a year and maintain a positive pressure with a minim of one air change per hour. Temperature should be between 64°F to 75°F with the relative humidity in the range of 30% to 55%.
- Lighting should be coordinated with the equipment layout, especially overhead cable trays so fixtures are not obstructed. Light colored wall finishes can be used to enhance room lighting.

- Temperature

    - Most MDF, MER and EF rooms surveyed were sharing the same room with Electrical or Mechanical Equipment for the facility which generates a substantial heat load. Other rooms dedicated to just Telecommunications Equipment did not have proper cooling and a lack of air movement. Most rooms were found to have temperatures above the standards compliant 64-75°F temperature range and not conducive to the temperature controlled spaces that typical network equipment requires. This type of heat can shorten the life cycle of active network equipment.
- Lighting
    - Many rooms were found to have inadequate lighting that would make identification and termination of voice/data network cabling and equipment patching and cross connections difficult. Standards typically require 500 lux (50 foot-candles) measured at the point of cable termination. The equivalent would be a well-lit office space.
- Grounding
    - Most rooms had inadequate grounding or no grounding based on ANSI/TIA -607A standards. The following problems were found repeatedly:
        - Main Telecommunication Grounding Busbar (TMGB) or Telecommunications Grounding Busbar (TGB) sized improperly.
        - No non-conductive insulators present on busbar to isolate the installation of the busbar from the plywood wall field it is attached to.
        - Telecommunications Bonding Backbone (TBB) sized improperly. The TBB connects the main Telecommunication Ground in each Telecommunications Room to the same ground potential throughout the facility. This ground is typically installed from the main building ground to the MDF or Main Equipment Room Busbar and from this busbar it is extended to each of the busbar in all of the other IDF or Telecommunication Rooms within the building.
        - Ground wire within the room grounding the racks, lightning protection, equipment shields, cable shields, etc. sized improperly.
        - No ground labeling.
- Labeling
    - Labeling should be standardized between buildings and across the campus. The ANSI/TIA-606A standard should be used as a guide to develop proper campus wide labeling guidelines. The following labeling issues need to be resolved:
        - No data rack labeling.
        - Horizontal Voice/Data workstation labeling scheme inconsistent between buildings.
        - All cabling should be labeled at each end with wrap around computer generated labels. Labels should match faceplate and patch panel or wall field termination hardware labeling (110 or 66 Block labeling). Labeling was very inconsistent.

- All termination hardware within the Telecommunications room should be labeled. This includes all patch panels, fiber termination shelves, 110 hardware, 66 blocks, CATV hardware, etc. Much of the labeling of these was poor or inconsistent.
- Optical Fiber, Innerduct, Copper Backbone, CATV, Campus Signal Cabling was not labeled in the manholes or at the building entrances of all buildings surveyed.
- Signal Ducts at the entrances to the buildings and within the manholes have not been labeled.
- Telecommunications ground cable and busbar labeling in all buildings surveyed has not been done.

- Cable support
    - Cable support within many of the Telecommunication Spaces was inadequate or reaching beyond its capacity. In many rooms there were unmanaged slack coils of horizontal workstation, optical fiber and CATV cabling hanging directly above the data racks using tie wraps, D-rings, black electrical tape, or Velcro as a means of support. Cable tray or Ladder runway should be installed above the data racks to support cabling and provide slack management. These cable tray or ladder raceways should be sized based on current cabling capacity and future capacity needs. This becomes of the utmost importance as older category 5 and 5e cabling is replaced with higher performance category 6 cabling (See Pictures Below of TR 22 Center of the Arts).
    - In many cases vertical and horizontal cable management within the data racks was either not present or not being utilized. Patch cords dangling down in front of network equipment will block airflow to the equipment and can cause cooling issues even for equipment in well air conditioned Telecommunication Rooms.

- Firestopping & Firestop Labeling
  - Life safety drawings showing smoke and fire rated wall, or fire partitions for the buildings surveyed were not provided, however it has been noted in the building Telecommunication Room narratives where it appeared firestop was originally installed and at the time of the survey firestop was no longer present. It is our suggestion that the riser and horizontal penetrations within each of the buildings be reviewed and that proper UL Listed Firestop Assemblies with the proper labeling be installed were necessary to prevent the spread of fire and smoke in the event of fire. There are a significant amount of riser sleeves between floors that did not have firestop putty or pillows installed, and in most cases it has been our experience that the floors in most buildings carry a 2 to 4 hour fire rating.
- Abandoned Cabling
  - Many of the building surveyed have abandoned, cutoff, unused or outdated cabling that if left in place can increase fire loading unnecessarily or block air flow where installed in plenums. In some cases the abandoned cabling is filling up riser and horizontal conduits that could be used for the newer Optical Fiber or workstation Category 6 cabling as building communication infrastructures are updated. In most cases this removed copper cabling can be recycled. Based on current copper prices the return on the recycled copper cabling can be substantial.
  - Abandoned cabling per current code and standards shall be removed where accessible or identified for future use with a tag. The tag shall be of sufficient

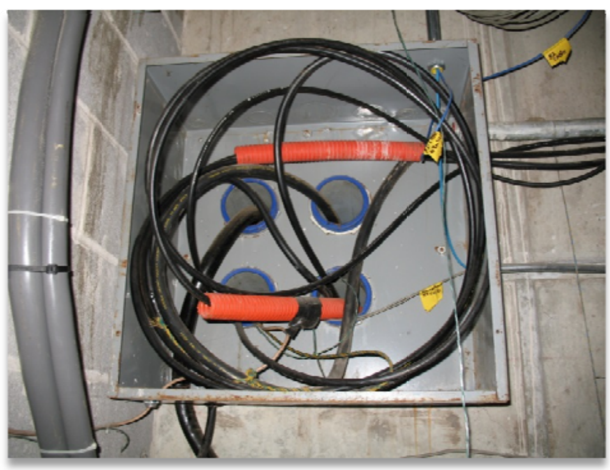
durability to withstand the environment the cable is installed in. (NEC 2011 Article 800.25 and 770.2)

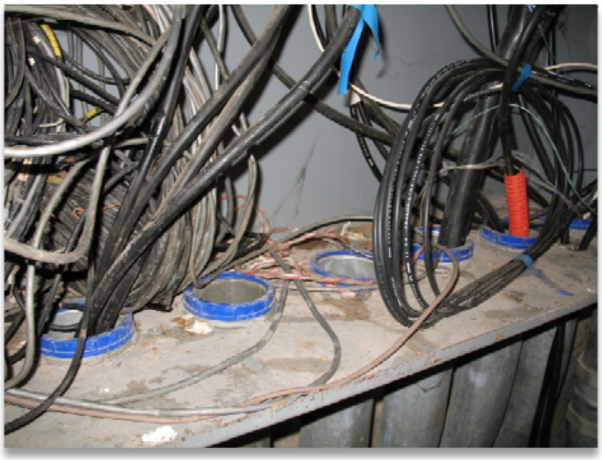
**Manholes, Handholes and Signal Duct Bank**

Manhole, Handholes and Signal Duct Bank – The campus site survey included all Communications Signal Duct Manholes and Signal Duct Bank south of West Starin Road. Additional Manholes and Signal Duct Bank north of West Starin Road were surveyed where it was thought that the existing Communications Signal Duct Bank may be troublesome or inadequate for the future needs of the Campus, these include: S6, S7, S8, S9, S10, SX46, SX16, SX17, SX18, S45, S3 and Athletic Field Hand-Hole.

- Manholes and Handholes
    - Most Signal Duct Manholes surveyed were adequately sized with the exception of SX7, SX8, SX17, SX18, and S3. These Manholes appear to be older, much smaller and have more abandoned cabling than many of the other holes. Manholes SX7 and SX8 East of Hyland Hall should be phased out of use or made larger since it is impossible to get into these holes without damaging potentially active optical fiber or signal cabling (See Pictures below of SX7 and SX8). It appears based on the new signal duct installed and surrounding Manholes that this has already been identified and these two holes will eventually be empty. SX17, SX18 and S3 located just outside Goodhue going north should be easier to work in once all old Multimode and the existing abandoned CATV and Campus Signal cabling is removed.
    - In most of the Manholes that where surveyed it was noted that an extreme amount of cable slack was coiled and left in each hole. This coiled cable slack in most cases was not secured to the wall of the hole; it was coiled around the inside of the hole or lying on the bottom of the hole. Most holes surveyed had metal strut built into the wall to support the installation of cable support hardware within the hole to facilitate an organized means to address cable slack and cable support thru the hole. This existing channel is underutilized.

- Signal Duct Bank
  - Most signal duct bank identified is adequate for the installation of the new Inter-building Singlemode Optical Fiber installation as detailed in the Pre-Design Report provided, however cable removal must be accomplished during the installation process to free up Signal Duct as the installation progresses. The removal of the old Multimode and in some cases, the Singlemode optical fiber and any abandoned cable must take place during the installation of the new Singlemode Optical Fiber in order for the existing Signal Duct Bank to accommodate all the new Singlemode Optical Fiber cabling. This new fiber installation and old cable removal has to be accomplished in a rather strategically planned fashion.
  - As a minimum all Signal Duct Bank conduits should be plugged with Duct Seal designed for that purpose to allow easy reentry in the future at the entrance to each of the buildings to prevent gases, rodents, insects and/or water from entering the building. Not a single Signal Duct Bank conduit was plugged at the entrance facility in the buildings surveyed. Most of the Signal Duct Bank that was examined was installed to a junction box mounted at the entrance inside the facility but not one of these junction boxes had a gasket on its cover or duct seal installed to the conduits within preventing potentially toxic gases, rodents, insects and/or water from entering the building. In 25% of the cases the junction box covers were not installed or missing (See Photos below from Hyland Hall, Anderson Library, Hyer Hall, Food Service Area In Perkins Stadium ).





**Part III: Future Considerations**

**Optical Fiber**

The optical fiber solution provided for the Pre-design Report and Associated Budgetary Cost is a conventional Inter-Building Singlemode and Intra-building Multimode an Singlemode optical fiber cabling solution, meaning Singlemode between the buildings and Multimode and Singlemode optical fiber in the riser within each building connecting all the telecommunication rooms. This solution was proposed in order to clearly identify and capture all of the potential cost associated with the new fiber installation, removal of old abandoned cabling and to address the signal duct bank capacity in a worst case scenario. There are other optical fiber solutions available. The optical fiber itself, Singlemode & Multimode is the same, same connectors, same optical fiber shelves, but the installation technique is different. Below we have list two such solutions in order to better educate you on what is available.

The following two Optical Fiber solutions work well for a campus environment. Sumitomo FutureFLEX Airblown optical fiber or AFL/Duraline's FuturePath jetted optical fiber solution. Under these two solutions a Tube/Microduct system is installed between all the buildings. The Tube/Microduct quantities are based on the current optical fiber and potential future optical fiber needs within each of the facilities. Once the Tube/Microduct system is in place Multimode and Singlemode optical fiber cables bundled in 6, 12, 18, 24, and 48 strands can be blown or jetted in from building to building eliminating the need to re-enter the manhole system to install individual optical fiber cables. These two systems also maximize the Single Duct Bank usage because multiple 19-24 Tube/Microduct cables can be installed in a single 4"duct. This allows the potential to install 19-24 or more 48-strand optical fiber cables in a single 4" signal duct. This would be impossible using a conventional fiber installation without performing splices in the manhole system and breaking down large strand count optical fiber cables so smaller strand count cables can then be spliced to the larger cables and installed to each of the buildings on campus. This many splices within a manhole and signal duct system lend itself to future problems if the splices have to be re-entered at a later date for any reason. Under the Airblown/jetted optical fiber solutions individual Tube/Microducts can be coupled within the manholes and the appropriate smaller amount of Tube/Microduct cables can be installed to each building. This allows a 48-strand or less optical fiber cable to be installed building to building without the need for splicing. There are both advantages and disadvantages to these solutions we will discuss (Also see Appendix B for Data Sheets on each solution).

- Advantages
  - A larger amount of optical fiber cables and strand counts can be installed using a smaller amount of duct space.
  - Optical fiber cables can be installed at any time, during any season that additional fiber is required. It is not necessary to physically run cabling through the manhole and signal duct system. Optical fiber can now be blown or jetted from building to building in another tube/Microduct when needed up to 5000ft. or more.
  - Optical Fiber can be installed with less manpower at speeds of up to 150 feet per minute.
  - Return on Investment on the initial Tube/Microduct system installation is short as additional fiber is installed or additional buildings are added to the system.
  - As new optical fiber solutions evolve the same Tube/Microduct system can be used. Older fiber can be blown/jetted out and new fiber can be blown/jetted in.
  - Installation of the Tube/Microduct system will take less labor if planned correctly than individual installation of 48-Strand optical fiber cables to each facility and additional fiber can be installed in a day's time afterward if required.
  - When optical fiber is added there will be little to no disruption to campus operations required. The fiber can be installed from Telecommunications Room to Room without the need to open ceiling within buildings and manholes between buildings.
  - Optical fiber and Tube/Microduct cable can be re-used as the campus changes, it is unnecessary to abandon optical fiber or Tube/Microduct cable if building are remodeled or replaced.
  - Tube/Microduct cables can be direct buried or installed in signal duct or conduit systems. When installed in signal duct or conduit systems, less ducts or conduits are required.
- Disadvantages
  - There are a limited amount of companies certified to perform the installation, but the list is growing as the solution becomes more wide spread. There are currently as many as 6 or more companies in Southeastern Wisconsin that can install one of the two solutions.
  - The initial Tube/Microduct cable system installation is more than it would cost to install conventional innerducts that could only be used once between all the buildings.
  - This solution is less cost effective for optical fiber riser cabling within a facility unless the facility has a large communications infrastructure with large grown potential such as a facility that may house a data center.
  - The system is only as good as the Tube/Microduct system initially installed. If spare Tube/Microduct cables are not provided to each building, or installed incorrectly the system will be limited in its gains and benefits. The initial Tube/Microduct system cable installation planning is of the utmost importance.
  - Once a solution is chosen either Sumitomo FutureFLEX or AFL/Duraline FuturePath the course needs to stay true to one solution or the other. The two solutions are not easily combined.

AFL/Duraline claims there fiber cable solution can be installed in Sumitomo's Tube cable system; however it would be difficult to warranty the combined solutions.

**Manhole & Signal Duct Bank**

The following are some Manhole and Signal Duct Bank considerations going forward. These are based on the ANSI and BICSI Standards.

- When having a contractor install cabling within the campus Signal Duct and Manholes always have them install from the bottom up when addressing which Signal Duct to use. This will ease subsequent cable placement.
- At a minimum all underground ducts entering buildings need to be plugged to prevent gas, rodents, insects and/or water from enter the building via the Signal Duct Bank.
- Have each cable labeled in the manhole, handhole and each building entrance with the same identifier label or tag.
- Be sure the contractor provides pull strings or ropes for all conduits, preferably with footage markers on it.
- Have a divider installed in each of the ducts such as a MaxCell cable sleeve or 1" innerducts. Innerducts however can also limit the amount that can be installed in a duct. If there are plenty of ducts in the series of manholes needed this may not be an issue (See Pictures Below).

- Be sure the contractor is utilizing a pulling shoe in each conduit duct prior to installing the cable to prevent damage to the cable from the rough edges of the duct.  This can scrape off important cable information from the cable jacket for future identification.
- Be sure the contractor is using the cable management features of the manhole or handhole for managing cable slack.  Slack left in the manhole or handhole should be a reasonable length from 20-40ft., not in the hundreds of feet.  Longer cable runs do not require slack coiled in every manhole or handhole.  All slack coils should be managed separately instead of coiled with other cables in case the slack is ever needed.  It will prevent the chance of a knot or unmanageable loop from forming.
- Have the contractor take pictures of all manholes and handholes or have them inspected by IT or Facilities personnel, or the owners engineer upon completion of an installation to assure proper cable pulling, management, and administration standards are being implemented by the contractor.

# University of Wisconsin - Whitewater

*Fiber Optic Replacement Study*

**Outside Plant Fiber Plan**

| | | | | |
|---|---|---|---|---|
| Outside Plant Fiber Plan - 48s SM cabling to all buildings<br>(except for Hyland, Starin, and University Center) | | $ 2,115,000.00 | | |
| Johnson Controls System Budget Estimate | | $ 764,000.00 | | |
| Simplex System Budget Estimate | | $ 792,000.00 | | |
| Inside Plant Fiber Plan - 24s SM & 24s MM MER to each TR | | $ 997,000.00 | | |
| TOTAL CONSTRUCTION COST | | | $ | 4,668,000.00 |
| Project Contingency | 10% | | $ | 466,000.00 |
| A/E Fee | 8% | | $ | 373,500.00 |
| DFD Management Fee | 4% | | $ | 205,400.00 |
| Total Fees | | | $ | 1,044,900.00 |
| TOTAL BASE PROJECT BUDGET (excluding any alternates) | | | $ | 5,712,900.00 |

# University of Wisconsin - Whitewater

*Fiber Optic Replacement Study*

**ALTERNATE #1 - MALL CORRIDOR REDUNDANT FIBER ROUTE**

| | | | | | |
|---|---|---|---|---|---|
| ALTERNATE #1 - Redundant 144 strand TIE cabling between McGraw & Goodhue (Mall Corridor) | | $ 87,000.00 | | | |
| | Duct Package | N/A | | | |
| TOTAL CONSTRUCTION COST | | | | $ | 87,000.00 |
| Project Contingency | | 10% | | $ | 8,700.00 |
| A/E Fee | | 8% | | $ | 7,000.00 |
| DFD Management Fee | | 4% | | $ | 3,900.00 |
| Total Fees | | | | $ | 19,600.00 |
| TOTAL ALTERNATE #1 BUDGET | | | | $ | 106,600.00 |

# University of Wisconsin - Whitewater

*Fiber Optic Replacement Study*

**ALTERNATE #2 - WEST CORRIDOR REDUNDANT FIBER ROUTE**

**PREFERRED ALTERNATE FOR REDUNDANT FIBER ROUTE**

| | | | | |
|---|---|---|---|---|
| ALTERNATE #2 - Redundant 144 strand TIE cabling between McGraw & Goodhue (West Corridor) | | $ 138,000.00 | | |
| Duct Package | | $ 1,040,000.00 | | |
| TOTAL CONSTRUCTION COST | | | $ | 1,178,000.00 |
| Project Contingency | 10% | | $ | 117,800.00 |
| A/E Fee | 8% | | $ | 94,300.00 |
| DFD Management Fee | 4% | | $ | 51,900.00 |
| Total Fees | | | $ | 264,000.00 |
| TOTAL ALTERNATE #2 BUDGET | | | $ | 1,442,000.00 |

# University of Wisconsin - Whitewater

*Fiber Optic Replacement Study*

**ALTERNATE #3 - EAST CORRIDOR REDUNDANT FIBER ROUTE**

| | | | | |
|---|---|---|---|---|
| ALTERNATE #3 - Redundant 144 strand TIE cabling between McGraw & Goodhue (East Corridor) | $ | 103,000.00 | | |
| Duct Package | $ | 1,920,000.00 | | |
| TOTAL CONSTRUCTION COST | | | $ | 2,023,000.00 |
| Project Contingency | | 10% | $ | 202,300.00 |
| A/E Fee | | 8% | $ | 161,900.00 |
| DFD Management Fee | | 4% | $ | 89,100.00 |
| Other Fees | | 2% | $ | 40,500.00 |
| Total Fees | | | $ | 493,800.00 |
| TOTAL ALTERNATE #3 BUDGET | | | $ | 2,516,800.00 |

# University of Wisconsin - Whitewater

*Fiber Optic Replacement Study*

**ALTERNATE #4 - FIBER EXPANSION TO REMAINING BUILDINGS**

| | | | |
|---|---|---|---|
| ALTERNATE #4 - 48 strand singlemode fiber to Hyland and University Center | | $ 37,000.00 | |
| TOTAL CONSTRUCTION COST | | | $ 37,000.00 |
| Project Contingency | 10% | | $ 3,700.00 |
| A/E Fee | 8% | | $ 3,000.00 |
| DFD Management Fee | 4% | | $ 1,500.00 |
| Total Fees | | | $ 8,200.00 |
| TOTAL ALTERNATE #4 BUDGET | | | $ 45,200.00 |

## *PROJECT PLAN*

| Building Name | OSP Fiber | Simplex Est. | Johnson Controls Est. | ISP Fiber | PREFERRED Alt#2 - 144s West Corridor Route | Associated Fees | TOTAL PROJECT BUDGET |
|---|---|---|---|---|---|---|---|
| POP (NW by ballfields) | $65,000 | $18,000 | $16,000 | | | | |
| Stadium Pressbox (Stad.Ath.Svs.) | $16,000 | $18,000 | $16,000 | | | | |
| Stadium Athletic Service Bldg (Goodhue) | $53,000 | $18,000 | $16,000 | $26,000 | | | |
| Student Athletic (Stad.Ath.Svs) | $20,000 | $18,000 | $16,000 | | | | |
| Williams Center (Goodhue) | $44,000 | $18,000 | $16,000 | $47,000 | | | |
| Bigelow (Goodhue) | $52,000 | $18,000 | $18,000 | | | | |
| Clem (Goodhue) | $51,000 | $18,000 | $18,000 | | | | |
| Lee (Goodhue) | $52,000 | $18,000 | $18,000 | | | | |
| Drumlin (Goodhue) | $50,000 | $18,000 | $18,000 | $17,000 | | | |
| Fricker (Goodhue) | $54,000 | $18,000 | $18,000 | | | | |
| Benson (Goodhue) | $50,000 | $18,000 | $18,000 | | | | |
| Arey (Goodhue) | $50,000 | $18,000 | $18,000 | | | | |
| General Svs. (Goodhue) | $62,000 | $18,000 | $16,000 | $17,000 | | | |
| Residence Life Storage Building (Gen.Svs.) | $13,000 | $18,000 | $16,000 | | | | |
| Hazardous Material Storage Building (Gen.Svs.) | $13,000 | $18,000 | $16,000 | | | | |
| Wellers (Goodhue) | $52,000 | $18,000 | $18,000 | | | | |
| Tutt (Goodhue) | $51,000 | $18,000 | $18,000 | | | | |
| Knilans (Goodhue) | $55,000 | $18,000 | $18,000 | | | | |
| Wells East (Goodhue) | $60,000 | $18,000 | $18,000 | $70,000 | | | |
| Wells West (Goodhue) | $55,000 | $18,000 | $18,000 | $104,000 | | | |
| Esker (Goodhue) | $46,000 | $18,000 | $16,000 | $17,000 | | | |
| Central Heating Plant (Goodhue) | $36,000 | $18,000 | $16,000 | | | | |
| Fischer (Goodhue) | $29,000 | $18,000 | $16,000 | | | | |
| Moraine Book Store (Goodhue) | $25,000 | $18,000 | $16,000 | | | | |
| Ambrose Health Center (Goodhue) | $34,000 | $18,000 | $16,000 | | | | |
| Visitor Center (Goodhue) | $31,000 | $18,000 | $16,000 | | | | |
| Laurentide (McGraw) | $56,000 | $18,000 | $18,000 | $65,000 | | | |
| Starin (McGraw) | $4,000 | $18,000 | $18,000 | $173,000 | | | |
| Hyland (McGraw) | $4,000 | $18,000 | $18,000 | $111,000 | | | |
| White (McGraw) | $50,000 | $18,000 | $18,000 | | | | |
| McCutchin (McGraw) | $55,000 | $18,000 | $18,000 | | | | |
| University Center (original) (McGraw) | $30,000 | $18,000 | $18,000 | $48,000 | | | |
| Observatory (McGraw) | $32,000 | $18,000 | $18,000 | | | | |
| Center of the Arts (McGraw) | $71,000 | $18,000 | $18,000 | $47,000 | | | |
| Hyer (McGraw) | $26,000 | $18,000 | $18,000 | $32,000 | | | |
| Alumni Center (McGraw) | $32,000 | $18,000 | $18,000 | | | | |
| Upham (McGraw) | $39,000 | $18,000 | $18,000 | $63,000 | | | |
| Roseman (McGraw) | $35,000 | $18,000 | $18,000 | $17,000 | | | |
| Winther (McGraw) | $44,000 | $18,000 | $18,000 | $63,000 | | | |
| Heide (McGraw) | $44,000 | $18,000 | $18,000 | $17,000 | | | |
| Library (McGraw) | $25,000 | $18,000 | $18,000 | $63,000 | | | |
| Library Add. (McGraw) | $30,000 | $18,000 | $18,000 | | | | |
| Mcgraw | $232,000 | $18,000 | $18,000 | | | | |
| Goodhue | $187,000 | $18,000 | $18,000 | | $138,000 | | |
| Duct Bank | | | | | $1,040,000 | | |
| | $2,115,000 | $792,000 | $764,000 | $997,000 | $1,178,000 | $ 1,308,900 = | **$7,154,900** |

**Master Plan Consultant Team:**

Ayers Saint Gross
Eppstein Uhen Architects
Ring and DuChateau Engineers
Strand Associates, Engineers
Middleton Construction Consulting
Ken Saiki Design